CRISIS IN THE SKY: THE CHALLENGES OF DEVELOPING A UNITED STATES NATIONAL AVIATION POLICY

By

ROBERT A. CHECCHIO

A Dissertation submitted to the
Graduate School-New Brunswick
Rutgers, The State University of New Jersey
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy
Graduate Program in Planning and Public Policy
written under the direction of
Professor Michael Lahr

and approved by

____________________________________________
Michael Lahr, Ph.D.
____________________________________________
Joseph Seneca, Ph.D.
____________________________________________
Jocelyn Crowley, Ph.D.
____________________________________________
Alain Kornhauser, Ph.D.

New Brunswick, New Jersey

January 2011
ABSTRACT OF THE DISSERTATION

CRISIS IN THE SKY: THE CHALLENGES OF DEVELOPING A UNITED STATES NATIONAL AVIATION POLICY

By ROBERT CHECCHIO

Dissertation Director: Michael L. Lahr

This dissertation examines the issues militating in favor of a national aviation policy and the obstacles standing in the way of such a policy. In spite of the impact that the nation's air transportation system has on the United States' economy, the U.S lacks a comprehensive national aviation policy that takes into account the diverse challenges that issues such as the need for the free flow of people and goods, national security, environmental sustainability, and financial stability place upon the nation's air transportation system.

The absence of a comprehensive aviation policy comes at a critical time. The economic activity associated with air transportation accounts for over five percent of the U.S. Gross Domestic Product, yet congested airports, declining commercial airline service to small cities, and the stresses of enhanced security processes combine to make commercial air travel less and less convenient. In spite of these issues, firms increasingly
depend on effective and efficient air transportation to interact with customers and suppliers. The value of being able to travel for face-to-face meetings is reflected in how access to both large and small airports affects job growth, shown in a study of 113 metropolitan statistical areas along the United States east coast. The importance of convenient air travel is seen further in the introduction of air taxi services providing convenient travel to regional and community airports.

Experts in the private and public sectors indicate that a comprehensive national aviation policy must address five broad areas: national interest and international leadership, aviation and economic development, national and international connectivity, energy sustainability and environmental protection, and aviation safety and security. They note, however, that obstacles preventing the development of a national aviation policy include ambiguous national interests, government institutions, financing of the aviation system, and competing industry interests. These obstacles combine to make policymaking difficult in the absence of a national crisis.

After an examination of attempts in the UK and the United States to address aviation issues comprehensively, the final chapter recommends a new process for creating national aviation policy in the United States: a national aviation policy oversight commission.
ACKNOWLEDGEMENTS

I would like to thank my dissertation chair, Michael Lahr, for his support, guidance, and patience throughout the time it took me to complete my research and write this dissertation. In spite of unforeseen obstacles which resulted in my totally redirecting the direction of my research, his continuing willingness to guide my efforts were instrumental in seeing my ideas and efforts result in a completed contribution to policy research. I would also like to thank the other members of my dissertation committee, Professors Joseph Seneca, Jocelyn Crowley, and Alain Kornhauser, who generously gave their time to see that my work was as professional and scholarly as possible. Finally, I want to thank my family, especially my wife Linda Jadach, for their support and patience during the long and often stressful Ph.D. process.
TABLE OF CONTENTS

Abstract of the Dissertation ........................................................................................................... ii
Acknowledgements ......................................................................................................................... iv
Table of Contents ........................................................................................................................... v
List of Tables .................................................................................................................................. vi
List of Charts ................................................................................................................................. vii
List of Figures ............................................................................................................................... viii
Chapter 1. The Evolution of Aviation Issues .................................................................................. 1
Chapter 2. Why Firms Fly .............................................................................................................. 41
Chapter 3. An Economic Rationale for National Aviation Policy .................................................. 66
Chapter 4. New Paradigms in Air Travel ...................................................................................... 91
Chapter 5. Air Transportation: The Policy Perspective ................................................................. 120
Chapter 6. The Role of Crisis in the Evolution of National Policy ............................................... 176
Chapter 7. A Framework for U.S. Aviation Policymaking ............................................................. 239
Appendices .................................................................................................................................. 261
Acronyms ..................................................................................................................................... 279
References ..................................................................................................................................... 281
Curriculum Vita .............................................................................................................................. 289
LIST OF TABLES

Table 1-1: Very Light Jet Comparison .................................................................................40
Table 3-1: Initial Regression Model.........................................................................................87
Table 3-2: Descriptive Statistics ...............................................................................................88
Table 3-3: Correlation Results ..................................................................................................89
Table 3-4: Regression Results ..................................................................................................90
Table 5-1: Air Travel Taxes and Fees .......................................................................................174
LIST OF CHARTS

Chart 1-1: U.S. Commercial Carrier Enplanements .................................................. 16
Chart 1-2: Delayed Flights ......................................................................................... 18
Chart 1-3: Cost of Delay per Minute ......................................................................... 22
Chart 1-4: Annual Cost of Airline Delays ................................................................. 23
Chart 1-5: Annual Deliveries of VLJs ....................................................................... 31
Chart 2-1: Media Hierarchy of Communications .................................................... 51
Chart 2-2: Message and Media Mix ........................................................................... 52
Chart 2-3: Manager Performance and Media ........................................................... 53
Chart 4-1: Frequent Destinations ............................................................................. 100
Chart 4-2: General Air Travel Factors .................................................................... 102
Chart 4-3: Positive Air Travel Factors ..................................................................... 104
Chart 4-4: Negative Air Travel Factors ................................................................... 105
Chart 4-5: Worst Air Travel Factors ....................................................................... 106
Chart 5-1: Air Transportation Taxes and Surcharges as Percentages ...................... 175
Chart 6-1: Congressional Record Search Term Results .......................................... 178
Chart 6-2: Flights Delayed by Three Hours or More .............................................. 180
Chart 6-3: Percentage of Long-Delayed Flights ..................................................... 180
Chart 6-4: Recent Long-Delayed Flights by Month ............................................... 181
Chart 7-1: Aviation System Users ........................................................................... 244
Chart 7-2: Air Travel Operating Models ................................................................. 245
Chart 7-3: Aviation System Oversight Level ........................................................... 246
Chart 7-4: Marketplace Models .............................................................................. 247
LIST OF FIGURES

Figure 1-1: Hub and Spoke Routing.................................................................21
Figure 3-1: United States Mega-Regions..........................................................75
Figure 6-1: John Kingdon's Agenda-Setting Process .....................................186
Figure 6-2: Federalization of Airline Security Workers in the Kingdon Framework.....187
Figure 6-3: Sabatier Policy Evolution ...............................................................208
Chapter 1. The Evolution of Aviation Issues

1.1 The Importance of Air Travel to the United States

The air transportation system in the United States, by all accounts, plays an important role in the economic health of the nation. The Federal Aviation Administration (2008) reported that in 2006, aviation-related activity contributed over $1.2 trillion in economic activity, accounting for 5.6 percent to the U.S. economy. Aviation-related fields employed eleven million Americans, resulting in $369 billion in earnings. In this same year, commercial airlines carried 738 million commercial passengers and forty billion revenue ton-miles of freight. A 2000 Wilbur Smith report called aviation “America’s not-so-secret weapon in the battle to retain world economic leadership in the era of global competition.” The report noted that the U.S. economic activity driven either directly or indirectly by aviation is greater than the gross national product of all countries but the United States, Japan, Germany, France, United Kingdom, Italy and China.

Yet, as important as the nation’s air transportation system is to the economic health of the nation, the United States lacks a comprehensive national aviation policy. This dissertation explores the challenge confronting policymakers today: how can the nation develop a national aviation policy that successfully addresses the vastly different challenges posed by commercial aviation and general aviation,¹ environmental and

¹The Federal Aviation Administration classifies aviation into three general segments. The first is commercial scheduled airlines, the largest (at least in terms of financial impact to the country) and the most easily recognized by the general public. The second is military operations. The last is general aviation, which includes all other types of aviation operations, including air freight, air taxi, air charter, medical evacuation, agricultural aviation (e.g., crop dusting), corporate aviation and personal aviation. Commercial aviation and general aviation are regulated by different parts of the Code of Federal Regulation (CFR), with commercial aviation being subjected to the most stringent requirements.
energy needs, air travel security, system financing, and broad national interests?

Given the expansive set of issues faced by the air transportation system, and the impact that air travel has on the U.S. economy, it is somewhat discouraging that there has been little formal debate on fundamental air transportation policy. Instead, changes in national policy have been crisis-driven and limited largely to commercial airline passenger security. This research documents the policymaking that has occurred and places it in theoretical frameworks suggested by John Kingdon, Paul Sabatier and others. Three examples of policymaking are presented to demonstrate how U.S. aviation policymaking has developed in recent years. The first illustrates a policymaking success - the federalization of airline security workers. The second is an example of policymaking failures – the unsuccessful attempt to implement a passenger profiling system that many said crossed the line separating unconstitutional actions from reasonable attempts to ensure passenger safety. The last is a failed attempt by the Transportation Security Administration to expand security protocols.

Besides airline security, what other important issues remain? This research draws on the views of experts from all of the major industry groups to obtain a comprehensive set of common elements that might inform national aviation policy. In addition to representatives from the industry groups, public sector experts are included. The participants identify the obstacles that might be responsible for hindering the development of a national aviation policy.

The research concludes with a potential model for a national aviation policy.

---

2 In this context, a policymaking is a success if decision makers in all three branches of the government support the policy and it was successfully implemented. Of course, we also need to ask if the resulting policy actually resolved the problem that was initially identified. That discussion, however, falls more properly into the purview of policy evaluation.
development and recommends some approaches for eliminating some of the obstacles to national aviation policymaking. While it is impossible to predict the challenges that will face policymakers over the next decade, this last chapter can serve, hopefully, as the starting point for a more robust national debate over the formation of national aviation policy.

1.2 Why is this Dissertation Important?

Why is this dissertation important? Without the guidance that a national policy might provide, different government agencies address serious issues that affect the efficiency and the effectiveness of the country’s air transportation system in a piecemeal manner, with departments focusing solely on their own perceived missions. Policies developed by agencies working in isolation may work at cross-purposes with those developed by other agencies. As long as agencies judge themselves on the effectiveness with which they address their own missions, however, they can consider themselves successful even if their actions harm nation’s interests in the process. Further, the act of creating a national aviation policy requires an open debate about the relative importance of air transportation, safety and security, energy sustainability and the environment, and financing. Concerns focused on many of these issues have not reached the U.S. political agenda, placing U.S. leadership in global aeronautics at risk. Such a debate could have long-lasting effects on critical issues. For example, most of the discussions at the federal level center on annual appropriations levels and reauthorizations of continuing activities by the FAA. Indeed, some industry experts look at that inability of the federal

---

3 For example, the Departments of Transportation (DOT) and Commerce each have influence over transportation policy. DOT and the National Aeronautics and Space Administration both conduct aeronautical research. The Department of State has the lead in negotiations of air transportation treaties with other countries. The Department of Homeland Security and the Federal Aviation Administration both regulate different aspects of airline operations.
government to provide multi-year funding authorizations as a major obstacle to accomplishing many key goals. In a recent report, the Government Accountability Office (GAO 2009) found that “short-term funding extensions and continuing resolutions could delay key capital projects” (p. 4). If the improvements needed to expand the capacity of the nation’s large commercial airports are delayed, the need to employ existing capacity at smaller, less congested airports might well become even more important. Yet the country does not have a policy of preserving airports. While the FAA and the Department of Transportation are hardly alone in dealing with this issue, the enormous time needed even to build one new runway at an existing airport militates in favor of a long-term funding process.

Just as critical, people in multiple federal departments, each with their own set of priorities, drive aviation policy in directions without consideration of the other Departments’ priorities, a phenomenon known as stove piping. The Department of Transportation, for example, focuses on the overall effectiveness of the air travel system. The Department of Homeland Security concentrates on preventing hijackings and bombings, including the potential for using aircraft as weapons. The Department of State must look at international issues such as international trade agreements while the Department of Commerce needs to look at the impact of aviation on domestic business. No one agency addresses these interrelated issues and understands how policies

---

4 Stove piping is a metaphorical term that recalled a stovepipe's function as an isolated vertical conduit, and has been used, in the context of intelligence, to describe several ways in which raw intelligence information may be presented without proper context. The lack of context may be due to the specialized nature, or security requirements, of a particular intelligence collection technology. Alternatively, the lack of context may come from a particular group, in the national policy structure, selectively presenting only that information that supports certain conclusions. Accessed from http://en.wikipedia.org/wiki/Stovepiping, on May 6, 2009.
developed by different departments might interact.\textsuperscript{5}

The result is a collection of department-specific policies that often act in cross-purpose.\textsuperscript{6} The extra time needed to clear security lines, for example, slows down passenger throughput at airline terminals, thus interfering with the efficient operations of the airport. Worse, the focus placed on high profile issues such as security potentially distracts policy makers from the long-term needs of the nation’s air traffic management system. This results in difficulty in obtaining the level of support from Congress sufficient to drive forward new programs designed to expand the capacity of the nation’s airspace system, such as the Next Generation Air Transportation System (NextGen).

Without these new programs, congestion will likely increase, as well delays, costing the country billions in lost commerce. The following sections examine more closely some of the key issues facing policymakers.

1.3 **Troubles in the Skies**

As former Federal Aviation Administration Administrator (FAA) Marian Blakey stated in 2007\textsuperscript{7}, “We’re watching a steady slide towards gridlock.” Congestion and delays have become commonplace at the nation’s busiest airports, causing costly delays both to commercial airlines and to the flying public.\textsuperscript{8} On-time arrival rates\textsuperscript{9} at the nation’s busiest

\textsuperscript{5} This is not solely a public sector problem, of course. Many large firms suffer from the same silo mentality.

\textsuperscript{6} An example is the case of Morristown Airport in New Jersey, where the FAA ordered the airport’s management to remove trees that blocked the view of airport taxiing on certain areas of the airport from ground controllers in the airport’s control tower. The New Jersey Department of Environmental Protection refused to grant a permit to remove the trees, arguing they were on protected wetlands.


\textsuperscript{8} This is not to argue that all delays are bad. A system that was total congestion-free would be vastly oversized, and therefore very expensive. The question is how to size the system so that the delays and congestion do not cause severe passenger discomfort and problems such as missed connections.

\textsuperscript{9} The FAA considers a flight to have arrived on time if it arrives at the terminal gate within 15 minutes of its scheduled arrival time. Similarly, the FAA considers a flight departure on time if it pushes back from the
airports are frequently under 75 percent. Departure delays are increasingly common, leading some states, as well as Congress, to consider “passenger rights” legislation requiring commercial airlines to provide basic services to passengers forced to sit in delayed aircraft for more than three hours. Delays at the nation’s busiest airports are especially significant. At the New York City metropolitan area’s three major airports, Newark Liberty International Airport, John F. Kennedy International Airport, and LaGuardia Airport, congestion-based delays are so severe that the FAA imposed limits on the number of flights the airlines may schedule. In an attempt to respond to public outcries about congestion and delayed flights, the FAA proposed in 2008 to conduct auctions for the most valuable time slots at the three New York metropolitan area airports. The Port Authority of New York and New Jersey, and the Government Accountability Office all opposed this action. The Port Authority argued that the auctions would have seriously affected the free flow of air commerce at the airport, and the GAO argued that the FAA did not have the legal authority to conduct the auctions.

Security practices imposed after the terrorist attacks of September 11, 2001, may be the most important stressor of the air travel system. The shock of experiencing internationally based terrorism on United States mainland resulted in the creation of an entirely new cabinet department, Homeland Security (DHS). To address transportation-specific issues, Congress created the Transportation Security Administration (TSA). Within weeks of the terrorist attacks, the TSA implemented new rules for boarding aircraft. What was once a process that focused primarily on whether or not a passenger

---

11 http://www.faa.gov/about/office_org/headquarters_offices/aep/ny_auctions/
12 http://www.gao.gov/products/A84460
might be bringing a weapon such as a gun onboard an airplane became a rigorous procedure that attempts to detect potential suicidal hijackers. New procedures now add many minutes to the passenger terminal process, and at the busier airports, airlines advise passengers to add at least an extra hour to their travel plans to allow for the time needed to clear all security lines. These new requirements exacerbate the "hassle factor" already caused by bad weather and scarcity of airport resources and make the ability to travel to and from non-commercial airports more attractive. This is especially true for business travelers for whom the time cost in money may be significantly higher than for non-business travelers.

Both the public and private sectors are responding to the difficulties faced by air travelers. Through a project named Next Generation Air Transportation System, or NextGen, the FAA is coordinating a private and public sector plan designed to employ advanced technologies that will increase the capacity of the system to meet the growing demand for air travel. At the same time, innovations developed in the private sector as a response to increasing congestion at large commercial airports take advantage of the FAA-led projects by making smaller community and regional airports desirable for business travel. These innovations, in the form of technologically advanced aircraft (TAA) and very light jets (VLJs), make use not only of advanced manufacturing and avionics technology, but also the advanced navigation capabilities made possible by the NextGen project. The combined effect of expanding the capacity of the nation’s airspace using new technology and the development of new aircraft technology could well be a more efficient use of the nation’s regional and community airports. This is especially true for business people for whom the time saved by being able to travel from closer airports
outweighs any potential higher airfares. The next advance in our nation’s air transportation history might easily be the dramatically expanded use of smaller airports not currently served by the commercial airlines.

The ability of business travelers to realize the potential air travel benefits created by the technological advances now under development might be limited, however, by fragmented aviation policymaking. Examples include policy initiatives by the TSA to extend security requirements from commercial airlines to general aviation users in response to TSA concerns that terrorists, thwarted in their intentions by security practices implemented at commercial airports, might turn their attention to general aviation users. General aviation operators have not been required to implement such practices as checking passengers against a watch list, checking for banned items (including shoe bombs), or carrying federal air marshals aboard the aircraft, practices that the TSA has proposed imposing on all operators of aircraft weighing in excess of 12,500 pounds. Industry advocates argue that the differences between commercial airline operations, in which passengers are generally not known to the pilots, and general aviation operations, in which they are, render the requirements unnecessary and that implementing these requirements will cause irreparable harm to the industry that contributes significantly to the nation’s gross domestic product.

Even more problematic may be the role of federalism in aviation policymaking. While the FAA helps fund airport improvements and regulates aviation safety, the existence of airports themselves relies on state and local authorities. As seen in Chicago in the case of Meigs Field, an entire airport can be closed if a local authority wishes. Yet to be debated at all is the role that the federal government might play in assuring the
continued existence of airports that the FAA itself has deemed important to the national airspace system. The next section briefly explores why airports need to be preserved.

1.4 **The Economic Impacts of Air Travel**

The evolution of air travel over the past century has been nothing less than world changing. Soon after the invention of powered flight, business processes changed and theories of business location decisions needed modification. Firms could reach new customers and suppliers in ways that had been unimaginable only five or ten years before. This section provides an overview of the dramatic changes that have occurred since two brothers changed the world.

1.4.1 **A World Transformed**

On December 17, 1903, the meaning of space and time changed forever. On a wind-swept sand dune in Kitty Hawk, North Carolina, two bicycle makers from Dayton, Ohio, accomplished a feat that would eventually overshadow other transportation-affecting feats as the completion of the trans-continental railroad or the opening of the Panama and Suez canals. On that day, Orville Wright made the first successful manned flight in a powered airplane. No one recognized it at the time, but the Wright brothers’ feat caused, as Star Trek aficionados might describe it, a rift in the time-space continuum. Within a few decades, the way that people perceived time and distance bore little resemblance to pre-1903 paradigms.

Early aircraft were not particularly conducive to business air travel. They were noisy and often perceived as unsafe. They were better suited to the daredevil barnstormers of the post World War I era than to the heads of firms seeking new customers and suppliers. The first real breakthrough in passenger travel came with the
Douglass DC-3, introduced in 1935. Capable of flying over 1,000 miles, the DC-3 had an enclosed cabin and was large and powerful enough to carry fare-paying passengers. It reduced the per-seat-mile operational cost to the point where passenger service became somewhat affordable. Air travel was not yet a viable option for the average person, however. Trains were far less expensive and less vulnerable to delays due to inclement weather. It was only when firms began to consider the value of time as a transaction cost that air travel began to take hold within the business world. Heppenheimer (1995) noted that because of the relative value of their time, executives became an important source of air passengers for the budding airlines.

Around 1940, improvements in aircraft safety and comfort and larger capacity aircraft drove down the per-seat cost, and passenger traffic began to grow. By 1940, annual passenger traffic grew to three million. By 1956, annual commercial enplanements rose to 55 million people.

The introduction of the first successful jet airliner in 1959 led to a dramatic
increase in the widespread use of air travel. The Boeing 707\(^{13}\) reduced flying time from New York to London, for example, from twelve hours to six. In contrast, crossing the Atlantic Ocean by ship required spending a full six days. By 1965, 95 percent of transatlantic travelers were crossing in the fast jets of Pan Am and European airlines such as British Overseas Airways Corporation (BOAC). Air traffic enplanements soared from 205 million in 1975 to 297 million in 1980, and to 638 million in 2000. By 2008, annual enplanements totaled over 800 million.\(^{14}\)

As aircraft technology improved, improved ground based radio navigation systems made air travel safer. Navigation aids evolved from lighted signal beacons on hilltops to sophisticated satellite-based systems that allow commercial airliners to find their way to distant cities without ever seeing the ground. Instrument landing systems allow them to land safely even when clouds completely obscure the ground. Larger aircraft drove down per-seat costs, lowering airfares and making air travel more accessible to more people.

Business travel grew with the growth of the air transportation system. By 2002, air travel captured 16 percent of the 405 million annual long distance business trips (National Household Travel Survey 2003). As trip lengths increased, so did the reliance upon air travel. Air travel accounted for 31 percent of all business trips between 250 and 499 miles. For trips between 500 and 749 miles, air travel captured 64 percent of trips. Of business trips between 750 and 1,500 miles, almost 85 percent of business travelers chose to travel by air, with that percentage increasing to 90 percent for trips over 1,500 miles.

\(^{13}\) The DeHavilland Comet was actually the first commercial airliner powered by turbojet engines. Structural problems resulting from pressurization and depressurization, however, led to its withdrawal from service.

\(^{14}\) Source: Bureau of Transportation Statistics T100 Market data.
The profile of typical business travelers is particularly important to understanding the acceptance of travel innovations. Those who identified their occupations as professional, managerial, or technical accounted for over 53 percent of all business trips, a figure greater than their 40 percent representation in the general population. Sales or service workers were the next largest traveling cohort, accounting for 28 percent of business trips. Between them, these two groups account for over 81 percent of all business trips. A potential indicator of the value that these travelers might attach to their time is their income. While only 12 percent of all households have incomes greater than $100,000, the National Household Travel Survey found that in 2002 this group accounted for 27 percent of business trips during the study period. Households with incomes between $75,000 and $99,000 accounted for another 18 percent of business trips. Households with incomes greater than $75,000, therefore, accounted for 45 percent of all business trips.

The introduction of commercial air travel dramatically reduced the cost in personal time associated with long distance travel. As the airlines grew, capital costs declined and airplanes became increasingly efficient per passenger seat-mile. By the late 1970s, the lowering costs of travel compared favorably to the potential benefits of being able to expand markets, reaching out to new customers and suppliers. Moss (2000) cited airports and the Internet as “backbone systems…vital for the location of new information-based industries” (p. 3). In a survey-based study of business locations (Schmenner, 1980), a good share of establishments listed the proximity of an airport sufficiently close for using corporate aircraft as an important locational consideration. More recently, Cohen and Paul (2007) noted that access to air transportation ranks high
on the priority list for firms selecting sites for headquarters locations. Checchio (2006) documented the importance of business air travel as a productivity aid for corporate executives and technical managers. In interviews with the heads of New Jersey corporate flight departments, Checchio notes that many establishments have no choice but to travel by air for important face-to-face meetings.\(^{15}\) This was especially true in firms with multiple locations. In one interview, a manager noted that the value of time for not only high-level corporate executives but also technical managers far exceeded the cost of travel.

In any case, air travel clearly plays an essential role in firms’ business practices. Why is this true? Certainly, firms have many options for conducting business interactions. The next section explores why businesspeople continue to travel.

1.5 **The Need for Face to Face**

While airline travel has become better able to facilitate business travel, other technologies made long distance communications possible. Audio and video teleconferencing made “virtual” face-to-face business meetings possible for the first time in 1964. By the 1990s, the advent of the personal computer and the internet enabled worldwide web-conferencing. They also made desktop video conferences possible. In spite of evolving technology that makes it possible to communicate with virtually anyone in the world in near real time, people continue to travel to transact some business. Why is this? Since teleconferencing allows people separated by thousands of miles to see each other and even exchange documents, how can costly face-to-face contact possible yield any advantage? Daft, Lengel, and Trevino (1987) merely suggest rather vaguely that

---

\(^{15}\) More details on this are provided in Chapter 2.
face-to-face communications provides senior managers with enhanced abilities to communicate. Ota and Fujita’s (1993) formal model of information exchange among corporate headquarters at a single information-rich location and between each headquarters at that location and its production plants at information-poor locations explained not only export-based businesses’ decentralization tendencies but also the centralization tendencies of headquarters operations. The need for face-to-face contact appears to be a key factor in the financial industry’s location decisions (ter Hart and Piersma, 1990).

Thrift (1994) suggests that in the financial sector, the need for expertise that filters and interprets information quickly and for the tacit information attached to the social contact facilitates the explicit information exchanged. That is, such contact is important because it engenders trust, which helps in the information filtering process by reducing information uncertainty. Athanassiou and Nigh (2000) go a bit further by finding that top management team members need “to meet face-to-face to share the individual tacit knowledge stocks and create a shared team-level perspective of the multinational establishment’s overseas activities and environments” (p. 472). They conclude that face-to-face communications is particularly necessary for problem-solving tasks involving ambiguity and uncertainty. This conclusion helps to explain why business travel continues in spite of the development of technology that greatly facilitates video-conferencing.

1.6 The Air Travelers' Dilemma

At the same time that the nation’s economy came to depend more and more on an effective system of air travel, the performance of the system started to seriously decline.
In essence, it became a victim of its own success. Improvements in air safety and reductions in cost achieved over the past 100 years led to increased acceptance of air travel by the public. In 1954, commercial airlines flew 35.4 million passengers. By 1980, this figure had risen to 296.9 million, an increase of 738 percent, in large part because of the deregulation of the airlines in 1978, which led to the introduction of numerous new low cost carriers, and the introduction of wide body jets that dramatically increased the efficiency with which airlines can operate. In 2008, 806.8 million passengers flew on commercial airlines. Yet, as more people depend on air travel, the more difficult it seems to become for passengers.

1.6.1 Terminal Fatigue – Life in an Airline Terminal

According to the Bureau of Transportation Statistics, the FAA expects annual passenger enplanements in the United States to rise to over one billion by 2023 (see Chart 1-1). Accompanying this increased demand for air travel, however, are problems such as congestion, which leads to delayed and canceled flights and to diminished levels of service at outlying airports.

The following sections highlight some of the issues in the U.S. air travel system making business air travel increasingly problematic, such as congestion, delays, and declining airline service. The costs of delays and declining airline service are examined next, and the section finishes with an overview of the responses being developed in the

---

16 Source: Bureau of Transportation Statistics
17 In comparison, United States Gross Domestic Product increased from $380.4 billion to $2,789 billion during this same period, an increase of 633 percent
18 While I would like to credit Rutgers Professor Joseph Seneca for coining this term during the initial presentation of this research’s proposal, the initial use of this term goes back at least to June 21, 1971, where it was used in a Time Magazine article.
19 The FAA forecast methodology is described at http://www.faa.gov/data_research/aviation/aerospace_forecasts/2010-2030/media/Appendix%20B%20Forecast%20Accuracy.pdf
The issues faced by business people traveling by air fall into two general categories: flight delays and cancellations. Both are largely due to poor weather conditions at major airports and airport capacity shortfalls. Recent increases in fuel costs have led airlines to reduce service to less profitable routes, which led to a decline in the number of cities served by commercial airlines (e.g., “you can’t get there from here, regardless of how long you want to wait.”).

1.6.3 Flight Delays and Canceled Flights

The steady increase in demand for air travel noted earlier has led to increased demand for flights. While the number of accessible gates at a given airport might be
increased, the air travel system as a whole has a relatively fixed arrival and departure capacity based on the number of usable runways at airports as well as the need to separate aircraft in flight to minimize the risks of mid-air collisions and wake turbulence.\textsuperscript{20} The result is that increased congestion at the nation’s busiest airports has become so severe that some states have passed “air traveler rights” legislation, forcing airlines to provide water and other necessary support to passengers sitting in aircraft waiting to depart. In some well-publicized cases, conditions forced passengers to sit in aircraft for over four hours.

On-time arrival statistics are dismal, according to Bureau of Transportation Statistics. At New Jersey’s Newark Liberty International Airport, for example, less than 60 percent of flights may arrive on time. The New York metropolitan region’s other two major airports, John F. Kennedy International Airport and LaGuardia Airport fare little better, with on-time arrival rates at both airports under 65 percent.\textsuperscript{21} Delays are not a localized problem. As noted in Chart 1-2, arrival delays nationwide have increased steadily since 2003 as people regained confidence in the national air travel system after the events of September 11, 2001.\textsuperscript{22}

Business travelers flying to and from airports in the United States experience uncertainty in the form of delayed flights (which can result in missed connections\textsuperscript{23}) in the commercial air travel environment. In the 12 months ending December 2008, only 76

\textsuperscript{20} Wake turbulence is the result of wing-tip vortices created by aircraft wings creating lift. They can cause severe bumps to aircraft flying through them. These vortices descend slowly and can affect aircraft for miles behind the aircraft that created them.

\textsuperscript{21} Source: Bureau of Transportation Statistics.

\textsuperscript{22} The drop in delayed flights in 2008, 2009, and 2010 can be attributed to the drop in air travel caused by the U.S. economic recession.

\textsuperscript{23} With deregulation of the airlines in 1978, most carriers eliminated point-to-point flights in favor of hub-and-spoke routing. More flights, therefore, required passengers to make connections at hub airports, which tend to be the more congested ones.
percent of all airline flights arrived on time. According to the 2008 Air Travel Quality

Chart 1-2: Delayed Flights

![Bar chart showing delayed flights by year](chart.png)

study, passenger complaints about air service are increasing rapidly. Air Travel
Consumers Reports, issued by the U.S. Department of Transportation, show similar
renewed upward trends in delayed flights.

1.6.4 **Declining Airline Service**

Even if the system functions as planned by the commercial airlines, the spatial
expanse of passenger service is declining. Perez and Trottman (2006) noted that airlines
have sought to maximize their load factors (the percentage of seats on an aircraft filled
with passengers) in order to increase profitability. These efforts lead to another disturbing
trend affecting air travelers: cutting back scheduled airline service on the least profitable

---

24 Bureau of Transportation Statistics, On-Time Arrival Performance National (January-December, 2008). Keep in mind that the FAA considers an arriving flight to be on time if it arrives within 15 minutes of its scheduled arrival time.
routes, leaving many cities with far fewer scheduled flights. In some cases, airlines have even eliminated service on the least profitable routes. The authors proffer as evidence a 21 percent decrease in the combined fleet size of the major airlines.\(^{25}\) American, Continental, Delta, Northwest, United, and US Airways, which had a total of 3,469 aircraft in 2000, had 21 percent fewer aircraft (2,747) in 2005. Further, while some airlines created in the wake of airline deregulation in 1978 (Continental and Southwest, for example) continue to fly, 130 airlines have gone out of business.\(^{26}\) Thus while higher load factors have yielded improved profitability for these establishments, passengers now have fewer travel options and less flexibility in their travel plans.

The U.S. Government Accounting Office (2002) found that at 200 commercial airports the total number of scheduled daily departures declined by 19 percent during the 12 months ending October 2001. A 2007 U.S. Government Accounting Office study found that, according to a key industry association, flights to small communities are the first flights to be eliminated due to their limited profitability and that in July 2006 scheduled flights for small communities were 26 percent below the number of scheduled flights in July 2000 (GAO 2007).

1.7 Why is Airline Travel a Hassle?

What is responsible for the delays at our nation’s airports? While poor weather is a significant cause of delayed and canceled flights, former FAA Administrator Marian Blakey named over-scheduling a culprit. Other potential causes, such as a shortage of pilots and understaffed control towers, have been identified. Some airline advocates have

\(^{25}\) One might expect that the reduction in fleet size might reduce delays. The concentration of flights through hub airports, however, seems to have outweighed any network benefit accruing from the reduction in the fleet.

\(^{26}\) Minneapolis Star Tribune, August 28, 2005.
placed blame on an antiquated air traffic management system. Whatever the cause, delays are now endemic at major commercial airports.

Making matters even worse for air travelers, major airlines have increasingly employed a “hub and spoke” routing topology to maximize seat load factors. While it is good strategy for maximizing revenue and therefore profits, the change is not good for travelers. Under this topology, passengers from smaller airports (located off one hub) traveling to other smaller airports (off another hub) must fly at least three flight legs and suffer two layovers. Worse is the traveler’s nightmare in which they might be forced to disembark from a late-arriving aircraft and run to another boarding gate at the airport hoping to make the scheduled flight to their final destination while hoping that their luggage joins them at their final destination.

Figure 1-1 shows a single hub routing topology. In order to travel from Birmingham, Alabama, to Indianapolis, Indiana, a passenger must first fly to Atlanta, Georgia, along with other Birmingham area residents who want to travel to other destinations. Once at Atlanta, the passenger then boards another aircraft bound for Indianapolis, accompanied by passengers from other originating cities. Prior to airline deregulation in 1978, point-to-point flights were more common and few airports had dominating airlines.

Adding to the problems faced by air travelers, security procedures implemented after the terrorist attacks of September 11, 2001, have increased the time needed by air travelers once they arrive at the airport. From having to submit to full body scans to removing their shoes, the “hassle” factor associated with air travel has reached the point where more and more people are actively seeking alternative travel solutions. In a study
of Lakeland, Florida, business people noted the “hassle” factor as one important reason to turn to alternatives to commercial line service such as air taxi service offered at a local airport. At least one report (Velocity Group 2006) predicts a bright future for the service.

**Figure 1-1: Hub and Spoke Routing**

![Hub and Spoke Routing](http://science.howstuffworks.com/transport/flight/modern/airline3.htm)

Source: http://science.howstuffworks.com/transport/flight/modern/airline3.htm

1.7.1 *The Cost of Delays*

Delays impose costs both on the airlines and on the flying public. For the traveling public, personal and business travelers face different types of costs. The following sections review those costs.

**The Cost of Delays to Airlines**

For the airlines, delays result in increased fuel costs and additional personnel
costs. Tables 1-3 and 1-4 illustrate the cost of delays to the airlines.\textsuperscript{27} These costs do not include the loss of good will that occurs when flights are chronically late or when airlines compensate passengers bumped from overbooked flights.

**Chart 1-3: Cost of Delay per Minute**

![Chart showing cost of delay per block minute to airlines](chart.png)

- **Cost of Delay per Block Minute to Airlines**
- Fuel: $1.88
- Crew - Pilots/Flight Attendants: $7.72
- Maintenance: $10.09
- Aircraft Ownership: $13.08
- Other: $39.35

**Source:** Air Transport Association

**The Cost of Delays to the Traveling Public**

Air travel delays impose enormous costs to the traveling public. One cost is the value of lost time. The Joint Economic Committee of the U.S. Senate and House of Representatives (JEC 2008) reported that passengers lost an estimated $12 billion worth

\textsuperscript{27} Costs based on year-end 3Q 2008 U.S. DOT Form 41 data as reported by U.S. scheduled passenger airlines with annual revenues of at least $100 million. Arrival delay minutes reflect operations at 77 U.S. airports and are taken from the FAA Aviation System Performance Metrics (ASPM) database.
of time in 2007 due to flight delays. According to Air Transport Association, the value of lost time to passengers in the 12 months ending September 2008 exceeded $4.9 billion.

Chart 1-4: Annual Cost of Airline Delays

Total delay minutes reached 138 million in this period. These costs, substantial as they might be, hide the indirect costs of delays and canceled flights. Personal travelers whose flights have been canceled often must pay for overnight stays in hotels and extra

---

28 Delayed travelers, their employers, and others lose productivity, business opportunities and leisure activities when air travel takes extra time. Costs cascade when delayed flights resulted in other late flights. These costs to passengers could be even higher than JEC estimates, as a result of missed connections, cancelled flights, disrupted ground travel plans, forgone pre-paid hotel accommodations, and missed vacation times.

29 This figure is based on total system delay minutes of 138 million, based on FAA Aviation System Performance Metrics and FAA-recommended values adjusted for BLS employment costs.
meals waiting for an available flight. Trips taken for vacations can be time sensitive, especially when passengers have pre-paid for their vacations. Further, the social costs in the form of stress created by flight delays and outright cancellations are difficult to measure, but they certainly exist. The prospect of spending hours in a crowded airline terminal, not knowing if the flight will depart at all, can be chilling, especially to a family with small children.

What impact does uncertainty in the air transportation system cause for business people? Needing to be at a critical meeting at a specified time and day might result in a business person traveling the night before, thus incurring lodging and meal expenses that might have been avoided if direct reliable air travel had been available. The value of lost time due to flight delays is particularly serious for business travelers. In the limited Lakeland, Florida, study mentioned earlier, business people placed an average value of over $100 per hour on their time. It is therefore reasonable to suggest that firms might forego personal contact with markets that require significant amounts of air travel to service new customers effectively.

1.7.2 The Effect of the Shrinking Airline Network

What does a decline in service levels - fewer flights to small market cities, fewer cities actually served by commercial airlines, and fewer airlines - mean to air travelers? For personal travelers, a smaller airline network might be mostly an inconvenience. After all, if it takes an additional hour or two to get to Disneyland, not much is lost. Being able to fly on a low-cost carrier might result in air fares low enough to compensate for the inconvenience of having to drive a longer distance to the closest commercial service airport.
Business travelers, however, face a different calculus. Longer drives to airports, longer waits in check-in lines, and longer waits to be scrutinized at security checkpoints all add up to large amounts of non-productive time, and since the various waits are unpredictable, greater uncertainty in the minimum total time needed for air travel. Add to that the time that airliners sit on taxiways waiting to depart, and business people are faced with hard choices. Should they depend upon airline schedules when making travel plans, or should they factor delays into their itineraries? This latter option means possibly traveling a day in advance of an important meeting to be sure of not being late, further adding to both travel cost and non-productive time. Even when the system functions without significant delays, the need to either drive to an airport with scheduled commercial service, or just having to wait for one of the few flights that serves the area, increases the lost productivity associated with flying.

1.8 Technology as an Answer

Both the public and the private sector are responding to the challenges described in the previous section. The federal government is leading an effort to expand the capacity of the national airspace system (NAS). Aircraft manufacturers are producing new aircraft tailored to smaller airports. As business people become more interested in the ability to save travel time, entrepreneurs are responding by introducing new flexible air travel options such as air taxi services that offer business travel to regional and community airports not served by the commercial airlines. This section examines each of those responses.

1.8.1 Government Response

Even before the most recent series of flight delays, the federal government
recognized the need to overhaul its air traffic management processes. In December 2003, Congress enacted Public Law 108-176, “Vision 100 - Century of Aviation Reau-
thorization Act”, to begin work on the planning and implementation of the Next Generation Air Transportation System (JPDO 2007). Included in the legislation was the establishment of the Joint Project Development Office (JPDO). Congress charged this office with the responsibility for coordinating the efforts of multiple government departments and many civilian contractors. The overall system, the Next Generation Air Transportation System, is expected to cost over $44 billion over ten years.\textsuperscript{30} NextGen is a complex project developed by a consortium of public agencies and private firms working together to implement a number of technologies that will allow commercial carriers to operate both more efficiently and more safely. While the specific tools and processes to be combined into the NextGen architecture have yet to be fully defined, the broad goals of NextGen have been established. Appendix 1, taken from a recent Joint Planning and Development Office planning document\textsuperscript{31}, describes those goals.

Key participants from the federal government in JPDO leadership roles include the FAA, National Aeronautics and Space Administration (NASA), the Departments of Transportation, Defense, Commerce and Homeland Security, and the White House Office of Science and Technology Policy. Private sector participants in leadership positions include Boeing, Lockheed-Martin, Computer Sciences Corporation, Carter and Burgess, and the National Business Aviation Association.\textsuperscript{32}

\textsuperscript{30} This figure includes both the cost to transform the FAA’s air traffic management (ATM) system from one that depends on ground-based radar systems to one based on satellite technology. It also includes the cost to equip the nation’s air fleet with the avionics required to utilize the new ATM system.


The mission of the JPDO is to coordinate the development of ground- and space-based technologies that can combine to create an air traffic management system capable of supporting the volume of airline traffic forecast by the FAA in 2020, expected to exceed 2 billion annual enplanements. The backbone of the NextGen effort is the transition from a network of radar systems monitored by a spatial hierarchy of ground controllers to a satellite-based system. The bulk of the intelligence required to maintain safe separation of airliners will subsequently reside with the aircraft themselves. The role of ground personnel will be to monitor the effective operations of the system. Other systems will address delays caused by weather (the most significant cause of delays in the airline system), wide area navigation and national security.

1.8.2 *Technologically Advanced Aircraft*

At the same time that the federal government is working hard to increase the capacity of the nation’s airports and air traffic management system, aircraft manufacturers are introducing a new generation of aircraft generically known as technologically advanced aircraft (TAA) and light turbine-powered aircraft known as very light jets (VLJs).

TAAs employ the latest aviation electronics, or avionics, to better manage the aircraft’s navigation and control systems. The aircraft uses computers to monitor the engine systems and to provide appropriate information to the pilot. Navigation systems based on satellites have largely supplanted older generation processes that depend on ground based radio systems and, when coupled to autopilots, allow the pilot to spend less time manipulating the controls and more time monitoring the aircraft’s overall situation.
Large flat panel displays have replaced the older instrument displays, quaintly referred to as “steam gauges.”

An excellent example of a technologically advanced aircraft is the Cirrus SR-22. The advanced avionics in the SR-22 greatly reduce the pilot’s workload, especially in poor weather conditions, and make it possible for safe flight operations in instrument meteorological conditions (IMC) with a single pilot. This greatly increases the utility of the aircraft, making its operation much more reliable. It, therefore, has enormous implications when choosing an aircraft for a mission-oriented application such as air taxi or charter service.

These advances come at a price, however. The complexity of the TAA’s systems requires pilots to undergo new training regimens designed to teach them the new idiosyncrasies.

VLJs represent a continuation of the trend in the business jet industry to take advantage of emerging technologies. What qualifies an aircraft as a VLJ? VLJs are distinguished from other aircraft on three primary dimensions: initial and on-going cost, avionics technology, and performance. While VLJs have differing characteristics and performance profiles, they are generally similar in the following ways according to
Mahon (2007):

- Weigh less than 10,000 pounds or less at maximum certificated takeoff weight
- Single pilot operations
- Four to seven passengers
- Range of up to roughly 1,000 nautical miles
- Employ the latest technology to reduce pilot workload. These technologies include:
  - Advanced flight deck automation such as global positioning system (GPS) systems for navigation
  - Multi-function displays eliminating multiple separate flight instruments and engine monitoring gauges
  - Automated engine and aircraft systems management
  - Integrated flight planning and autopilot equipment
- Operate from runways as short as 3,000 feet, far shorter than runways used by the current generation of business aircraft.
- High reliability and maintainability
- Under $3 million acquisition cost.

Some aircraft, especially at the high end of the performance scale, blur the distinction between VLJs and the existing business jet fleet. The Embraer Phenom 100, for example, has been classified by the Business Aviation Subcommittee of the Transportation Research Board in the category one step higher than a VLJ because its performance and cost exceeds that of most other VLJs. It is designed, however, for the same market targeted by other VLJ manufacturers. The total number of forecast VLJ deliveries is

---

33 While a VLJ operated by an owner/pilot in accordance with CFR Part 91 (private, non-commercial use) can use 3,000 feet, an air taxi or charter operator must comply with CFR Part 135 which requires that the aircraft must be able to stop within 60 percentage of the total runway length unless certain conditions are met. Even when those conditions are satisfied, the air taxi operators cannot land on a runway that just fits the aircraft’s landing performance. In essence, the runway must exceed the minimum stopping distance of the aircraft by as much as 67 percent.
provided in Chart 1-5. A comparison chart listing the characteristics of the very light jets currently being operated or planned is included in Table 1-1.

1.8.3 Expanding the System

Why are TAAs and VLJs important new additions to the business aviation fleet?

The ability to operate from small runways opens up thousands of small airports to business air travel. According to the FAA, only 560 airports (of 5,199 public use airports\(^{34}\)) in the United States have been granted Part 139 certification, a requirement for scheduled commercial operations. If VLJs are not used to provide scheduled service, they may operate from airports that fall under different parts of the federal regulations, CFR Part 91 and CFR Part 135. According to the Aircraft Owners and Pilots Association, in the United States and adjacent countries (mostly Canada and the Caribbean) there are over 2,000 airports with runways at least 3,500 feet long and with a precision landing approach.\(^ {35}\) Thus, VLJs dramatically expand the number of locales that may become

---

\(^{34}\) Source: Federal Aviation Administration, Airport Facility Data, accessed June 19, 2009.

\(^{35}\) A precision landing approach today requires a ground-based radio system. Only about 25 percent of airports in the U.S. have precision landing approaches.
more attractive to businesses that have integrated air travel into their business processes.

Chart 1-5: Annual Deliveries of VLJs

1.8.4 Air Taxi Service

New short haul travel firms commonly referred to as air taxis\textsuperscript{36} have recently entered the competition for business travelers. A number of factors, documented earlier, have led to the introduction of these services. Foremost among them is the increasing congestion at the nation’s busiest airports that creates uncertainty about the reliability of commercial airline schedules, Air taxis capitalize on the growing demand for point-to-point travel that commercial airlines no longer offer to many locales. Second, the recent spate of mergers and acquisitions lead to the creation of more multi-establishment firms, which require upper level managers to travel between multiple business locations. New short haul air travel firms will help to minimize this generally less productive time that

\textsuperscript{36}The term air taxi does not accurately apply to all of the short haul air travel firms. Some of the firms plan to employ very light jets much in the same way that propeller driven aircraft are used today in the air charter business, but plan to employ VLJs because of the lower initial cost, higher speed, and the appeal that a jet aircraft may have to potential clients
Third, air taxis may fill the gap left when commercial airlines discontinue service to less profitable markets.

Very light jets add to the viability of the short haul travel industry by offering turbine-powered aircraft that can operate from small community and regional airports. Firms will be able to locate in new areas with less concern about the time required to drive to and from commercial airports. Cities with community airports, which do not have commercial service but can accommodate VLJs, are ripe for experiencing economic growth as they become more desirable as business locations. Chapter 3 examines the effect of noncommercial airports on regional economic development in 113 metropolitan statistical areas along the east coast of the United States.

The combination of VLJs and new air taxi firms create exciting new travel alternatives for businesspeople. Will they, however, be embraced by people used to the amenities provided by large commercial airlines? The next section examines some of the factors that lead to the adoption of new technology.

1.8.5 Transportation Innovation Diffusion and Technology Adoption

Firms in any industry rarely adopt innovations immediately after their introduction. Instead, firms must first become aware of the innovations. They then must determine that the innovation might somehow benefit their business. Ettlie and Vellenga (1979) describe this process using a six-stage innovation model, consisting of awareness, interest, evaluation, trial, adoption and implementation. Innovation adopters will typically progress through each phase sequentially.

The key issues addressed by Ettlie and Vellenga are how much time do firms require to make the transition from one stage to the next, what characteristics of a firm
and of individual decision makers influence that time, and how do the characteristics of
the innovation itself effect the interstage time periods. Time can be critical for new air
taxi firms entering a market, especially when the industry is capital intensive (such as
needing to purchase a multi-million dollar jet aircraft). Unless a sufficient market can be
developed to allow the firm to become profitable in a reasonable timeframe (as
determined primarily by investors), the firm might fail.

Hence, the factors that influence the inter-stage time periods are vital to the
success of failure of new air taxi firms. First, Ettlie and Vellenga find that the risk-taking
climate that exists in a firm\textsuperscript{37} is a primary determinant of the inter-stage times, and
therefore affects the overall elapsed tie between awareness and implementation. Firms
perceived as risk takers shared key attributes:

- The relative advantage of an innovation (the advantage of adopting an
  innovation compared to remaining with existing technologies and processes)
  is lower. A risk-taking firm seems willing to adopt innovations without a large
  expected benefit offsetting the risk that the innovation may fail to be effective.

- Risk taking firms spend more on research and development than do firms that
  are more conservative.

- Risk taking firms adopt innovations with less need for demonstrable
  performance criteria.

- Innovations are likely to be viewed by risk taking firms as less complex than
  by conservative firms.

Interestingly, Ettlie and Vellenga find that the presence of risk taking individuals
in a firm is not enough to change the risk-taking climate of an organization. They also

\textsuperscript{37} In the discussion that follows, the "firm" is the organization that is a potential user of air taxi service.
find that individuals are more successful at stimulating the innovation process immediately after an organizational restructuring has taken place, especially when it involves the introduction of a key organizational member to the group. Perhaps the disintegration of past patterns of behavior that accompany a restructuring facilitates risk taking.

In addition to a firm’s characteristics, those of the innovation itself might play a role in determining the innovation timeline. The first is cost, the financial commitment to the use of the innovation. The second is relative advantage, or how much the innovation is perceived as being better than previous ideas. The consistency of an innovation with the values, experiences and needs of the adopting unit is vital. The complexity of an innovation is determined by how difficult it is to understand and use the innovation. The trialability of an innovation is determined by how easy it is to experiment with the innovation or to test it without making an irrevocable commitment to its use. Finally, observability is the ability to see the benefits accruing from the use of the innovation as well as how easily those benefits are communicated to others. Ettlie and Vellenga posit that cost and complexity vary directly with interstate time lags, while relative advantage, compatibility, trialability, and observability are expected to show an inverse relationship.

A factor not included by Ettlie and Vellenga, however, is the effect of national policy. Governmental policy can facilitate or hinder the introduction of new technologies. This dissertation hopes to draw attention to the need to include national aviation policy in the national debate about the future of air travel in the United States.
1.9 **Research Objectives and Importance**

This research attempts to identify the most important issues that a national aviation policy must address as well as the obstacles to forming national policy. Without a comprehensive national aviation policy, various government departments risk developing policies that not only act at cross-purposes, harming the nation’s economy. Many factors go into any policy formation process. Besides the air travel security issue that has been so dominant, the effect of air travel on the environment, funding requirements, domestic and international trade, foreign policy, labor policy, regulation, anti-trust law, tax law, and the costs of technology must also be included as important components of any comprehensive national policy. The goal of this dissertation is to create a framework for understanding how the federal government should formulate national aviation policy.

1.9.1 **Approach**

The next chapter presents the results of with interviews of the heads of business aviation departments within New Jersey-based pharmaceutical firms. Common themes that link different corporations’ use of business aircraft as alternatives to commercial air travel are identified. These themes help suggest a theoretical framework for understanding the importance of air travel to business people.

Chapter 3 places the importance of general aviation policy into an economic context by studying the economic importance of general aviation airports. Research by Irwin and Karsarda (1991), Brueckner (2003), and Green (2007) document the relationships between large commercial airports and regional economic growth. With few

---

38 Pharmaceutical firms were picked for two reasons. First, the industry plays a key role in the New Jersey economy. Second, the heads of the respective flight departments were recommended by an industry expert whom I consulted when beginning this research.
exceptions, however, the impact of smaller regional and community airports on regional economic growth is largely ignored. When these airports are studied, the focus tends to be on aviation-related industries such as those that provide fuel and maintenance services, rental cars and other business activities driven by users of an airport. Usually uncaptured is the value that accrues to firms having convenient access to the air travel system. This chapter illustrates the impact of regional and community airports by probing the association between general aviation airport capacity (e.g., how much airport infrastructure capable of supporting business air travel) and economic growth of metropolitan statistical areas (MSAs).

The results help form the framework for Chapter 4, which presents the results of a study of potential business people’s use of air taxi service, operating from a local regional airport, as an alternative to commercial airline service.

In Chapter 5, the opinions of aviation industry experts create a broad view of what a national aviation policy should look like. This chapter contains the results of interviews with a series of industry elites representing the following organizations:

- General Aviation Manufacturers Association
- Port Authority of New York and New Jersey
- National Business Aviation Association
- Aircraft Owners and Pilots Association
- Airports Council International
- Delaware Valley Regional Planning Commission
- Air Transport Association
- American Association of Airport Executives
In addition to representatives from the above groups, a number of key individuals who are in a position to have a significant role in forming or advising on national or state aviation policy provided their views. After private sector views were collected, the views of multiple government policy makers were brought together.

Chapter 6 illustrates the role of crisis and core values in the U.S. government’s policy formation process. The chapter includes an examination of the federal government’s responses to the changing needs of air travel security, focusing primarily on events involving the TSA since its creation in 2001 after the September 11, 2001, terrorist attacks. The first example is the successful federalization of airport security workers. Some members of Congress had urged this action prior to 2001, but there was no sense of urgency attached to the recommendation. The second is the unsuccessful attempt to implement a computerized passenger screening process, CAPPS-II. An earlier system, Computerized Passenger Profiling System (CAPPS) had been deployed by at least one airline in the 1990s. CAPPS-II greatly expanded the range of information that would be searched for each passenger. Privacy advocates strongly opposed many of CAPPS-II’s provisions (which included a personal credit check) and only one airline agreed to implement the system before it was eventually scrapped. The last is the attempt by TSA to expand the use of security protocols from commercial airlines to certain general aviation operations. Not only did the attempted expansion of TSA’s oversight fail, but the Administration was chastized by Congress for failing to adequately communicate with the general aviation industry before submitting its proposal.

The research concludes with a review of attempts made in the United Kingdom and the United States to address many of these issues. This final chapter ends by
presenting recommendations for resolving some of the obstacles to developing a U.S. national aviation policy.

1.9.2 Importance of the Study

How is national policy formed? As we have seen over the last nine years, politicians all too frequently craft policy piecemeal in response to a crisis. We see this not only in aviation policy, but also in national economic policy. The financial crisis of 2008-2009 led to new policies supporting government assistance to banks and other large institutions that previously might have been unthinkable.

So it has been with aviation policy. A crisis in the form of terrorist attacks on American soil led to the implementation of new policies designed to prevent a recurrence of the attacks. The TSA now proposes to extend those policies to more of the aviation industry. But are those policies sensible in the context of their overall impact on the U.S. economy? Certainly, another successful attack could have dramatic financial ramifications. According to the Center for Contemporary Conflict (2002), the total cost of the 9/11/2001 attacks to the U.S. economy exceeded half a trillion dollars. Security precautions enacted since the attacks, however, have hopefully greatly reduced the likelihood of another successful attack, thus lowering the expected cost in any one year. A reduction in the effectiveness and efficiency of the nation’s air travel system, however, has long-lasting direct and indirect ongoing costs. If firms cannot conduct business effectively and efficiently, the economy suffers. Thus far, however, Congress has not required the TSA to justify its proposals with the same benefit/cost analysis required for other agencies.
More importantly from a national perspective, the prominence of security on the policy agenda may be hampering efforts to address other significant issues that have not yet been associated with a crisis. In spite of shaky financial underpinnings, most of the airlines continue to survive. Financing of the aviation system continues to a source of contention and Congress has responded with a series of temporary reauthorizations of the FAA, each year narrowly averting a crisis. Questions about the environmental impact of aviation remain unanswered.

Can policymakers act effectively in response to the latest crisis? Following this paradigm runs the risk of ignoring the impact of a new policy on the other important factors listed above. How can policymakers avoid this? It is the goal of this dissertation to inform the judgment of policy makers regarding the importance of forming a national aviation policy by presenting a model aviation policy and the impacts to the nation of not having a comprehensive national aviation policy. Going forward, this dissertation creates an initial context for forming future national aviation policy.
**Table 1-1: Very Light Jet Comparison**

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Construction</th>
<th>Pax</th>
<th>Cruise *</th>
<th>Range **</th>
<th>Ceiling</th>
<th>Price</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>A700 - AAI Acquisition, Inc.</td>
<td>Carbon Fiber</td>
<td>7</td>
<td>340 kt</td>
<td>1100 nm</td>
<td>41 K ft</td>
<td>$2.25 M</td>
<td>3/08</td>
</tr>
<tr>
<td>D-Jet - Diamond Aircraft</td>
<td>Carbon Fiber</td>
<td>5</td>
<td>315 kt</td>
<td>1350 nm</td>
<td>25 K ft</td>
<td>$1.38 M</td>
<td>2009</td>
</tr>
<tr>
<td>Elite - Epic Aircraft</td>
<td>Carbon Fiber</td>
<td>6-8</td>
<td>412 kt</td>
<td>1650 nm</td>
<td>41 K ft</td>
<td>TBD</td>
<td>2009</td>
</tr>
<tr>
<td>HondaJet - Honda</td>
<td>Comp./Aluminum</td>
<td>6</td>
<td>420 kt</td>
<td>1180 nm</td>
<td>43 K ft</td>
<td>$3.65 M</td>
<td>2010</td>
</tr>
<tr>
<td>Independence - Spectrum</td>
<td>Carbon Fiber</td>
<td>6-9</td>
<td>415 kt</td>
<td>2000 nm</td>
<td>45 K ft</td>
<td>$3.65 M</td>
<td>2009</td>
</tr>
<tr>
<td>Mustang - Cessna Aircraft</td>
<td>Aluminum</td>
<td>6</td>
<td>340 kt</td>
<td>1150 nm</td>
<td>41 K ft</td>
<td>TBD</td>
<td>2009</td>
</tr>
<tr>
<td>Phenom 100 - Embraer</td>
<td>Aluminum</td>
<td>4</td>
<td>360 kt</td>
<td>1160 nm</td>
<td>41 K ft</td>
<td>$2.85 M</td>
<td>2008</td>
</tr>
<tr>
<td>PiperJet - Piper Aircraft</td>
<td>Aluminum</td>
<td>6-7</td>
<td>360 kt</td>
<td>1300 nm</td>
<td>35 K ft</td>
<td>$2.19 M</td>
<td>2010</td>
</tr>
<tr>
<td>SmartJet - Maverick Jets</td>
<td>Comp./Aluminum</td>
<td>5</td>
<td>290 kt</td>
<td>1250 nm</td>
<td>22 K ft</td>
<td>$899 K</td>
<td>TBD</td>
</tr>
<tr>
<td>SoloJet - Maverick Jets</td>
<td>Comp./Aluminum</td>
<td>5</td>
<td>350 kt</td>
<td>1200 nm</td>
<td>31 K ft</td>
<td>$1.25 M</td>
<td>TBD</td>
</tr>
<tr>
<td>SPn - Grob Aerospace</td>
<td>Carbon Fiber</td>
<td>6</td>
<td>TBD</td>
<td>1800 nm</td>
<td>41 K ft</td>
<td>TBD</td>
<td>10/2007</td>
</tr>
<tr>
<td>Sport-Jet - Excel-Jet</td>
<td>Comp./Aluminum</td>
<td>4-5</td>
<td>375 kt</td>
<td>1000 nm</td>
<td>25 K ft</td>
<td>$1 M</td>
<td>TBD</td>
</tr>
<tr>
<td>Stratos Aircraft -714</td>
<td>Comp./Aluminum</td>
<td>4</td>
<td>414 kt</td>
<td>1585 nm</td>
<td>41 K ft</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>The-Jet - Cirrus Design</td>
<td>Carbon Fiber</td>
<td>5</td>
<td>300 kt</td>
<td>TBD</td>
<td>25 K ft</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Victory - Epic Aircraft</td>
<td>Carbon Fiber</td>
<td>4-5</td>
<td>320 kt</td>
<td>1200 nm</td>
<td>28 K ft</td>
<td>$1 M</td>
<td>TBD</td>
</tr>
</tbody>
</table>

* High Speed Cruise
** IFR Range
Average Cost Per Hour are based on Variable Cost plus Fixed Cost Per Hour as published

Source: very-light-jet.com, January 5, 2009
Chapter 2. Why Firms Fly

2.1 Air Travel and the Need for Speed

In spite of the many problems associated with air travel documented in Chapter 1, people continue to fly. For personal fliers, the calculus is straightforward. The reduction in ticket prices that came about after the 1978 deregulation of the commercial airlines in the U.S., combined with the introduction of more efficient wide-body aircraft, opened up air travel to millions of people who could not afford to fly previously. A 2007 MIT study ("Airline Industry Overview") reported that real airfares in 2006 were half of their 1978 levels. Instead of driving days to visit family or friends, or to visit vacation spots, families can now board an airplane and reach their destination in hours.

For business people, the question seems more complicated. Firms continue to use air travel extensively to conduct critical transactions, reach out to new markets, find new suppliers, and reach agreements with other companies. Why should this be true, when it is so easy to pick up the telephone and talk to virtually anyone in the world? Even in third world countries where landline service is impractical or prohibitively expensive, cellular networks create access and connectivity to vast markets unreachable just a few decades ago. Personal computers and high-speed internet service combine to provide billions of people with access to good quality video teleconferencing, yet thousands of firms continue to employ both commercial and privately owned aircraft to travel hundreds or thousands of miles for a single business meeting. Clearly, these firms perceive some benefit to the personal contact that face-to-face meetings permit. What are those benefits?
As rational travelers, business people apparently conclude that the benefits of face-to-face meetings outweigh the costs of travel: ticket costs, personal time driving to and from airports, time spent on airplanes, and the opportunity costs of the actual meeting time.

2.1.1 The Policy Perspective and Air Travel Accessibility

Why is this issue important? While the regulation of the nation’s airspace and aircraft operations are the responsibility of the Federal Aviation Administration, important policy issues such as airport funding mechanisms are left largely to states (and sometimes to regional or local authorities) and land use decisions are most often left to local governments. Without a formal national aviation policy, local politics can easily thwart the national interest as municipal leaders, driven by local interests, oppose the development of local airports. Because of local interests, even the operators of large commercial airports with seemingly powerful backers find it difficult, if not impossible, to expand existing runways, let alone build new ones.

Further, policymakers in Congress and the Administration have generally failed to develop a comprehensive approach to the issues that the air transportation system faces: the need for long-term financing, energy sustainability and environmental protection, balancing air travel security with the need for the free flow of passengers and freight, and the rationalizing of federal, state, and local rulemaking. With a better understanding of the importance of forming a national aviation policy, these issues might rise in the political agenda and find the champions needed to press through needed policy changes. The ability of businesspeople to effectively employ air travel, as explored in this chapter, may well depend on that happening.
2.2 Constructing a Theoretical Framework For Flying

This section explores both the reasons behind the continued use of travel for face-to-face meetings and the underlying factors responsible for the dramatic rise in business air travel that has occurred over the past two decades. According to futurists in the 1970s, advances in telecommunications technology would eventually result in fundamental changes in business processes (Tofler 1980). The need to travel to meetings with colleagues or clients would wane, with audio teleconferencing or videoconferencing replacing expensive and time-consuming air travel. In spite of these predictions of business travel obsolescence, the use of business air travel to conduct face-to-face meetings has grown at a double-digit rate (Blank 2005).

2.2.1 Globalization and the Communications Challenge

The increased globalization of businesses creates new challenges for firms as they endeavor to find ways to balance the need for effective inter- and intra-firm communications to conduct business with the need to control overall communications costs. Multinational firms, in particular, face challenges created by the need for communications between people in different time zones and in different cultures. The ability to meet with colleagues and clients has changed from when firms located establishments in a single building, and clients were usually found in the same general area, to today’s environment in which a firm may have establishments in dozens of countries.

The communications challenge is not limited strictly to multinational firms. Increased globalization of business has led to complex networks of inter-related supply
chains. A firm may depend, for example, on effective working relationships with firms in other continents for intermediate products necessary for final production.

Before exploring the reasons why face-to-face meetings have remained so important, the advantages of using technology as a substitute for travel are discussed.

2.2.2 The Advantages of the Virtual Meeting

The need to interact with customers that are simply too far away for convenient meetings to occur presents its own challenges. As a result, more firms have turned to technology. Audio-teleconferencing, video-teleconferencing, computer-conferencing, and electronic mail and data transmission have all been used as ways to bridge the time and space gaps between meeting participants as the world shrinks because of both increased integration of world economies (Kreuger 2004) and improvements in communications technology.

Firms employ virtual meetings in a number of environments. The three broadest categories in which virtual meetings occur are:

- Meetings between groups within a single non-multi-establishment firm
- Meetings between groups within a single multi-establishment firm
- Meetings between members of a firm and individuals (e.g., clients, professional colleagues) outside the firm.

Each environment is associated with conditions in which conducting technology-assisted virtual meetings maximizes the effectiveness of the firm. Weisband et al. (1995) point to research that indicates that “participation in group discussion and influence over final decisions have generally been found to be more equal in electronic groups than in traditional face-to-face groups” (p. 1125). Studies from as far back as McLeod (1992)
conclude that the applications of computer technology mitigate some of the social inhibitions that can occur in face-to-face meetings, thus reducing some of the social barriers to communications that can occur. Tan et al. (1998) argue that the electronic framework of the computer-based communications mitigates the majority influence in meetings and results in greater meeting participation by participants with minority views. Weisband argues further that part of the equalization effect is due to the ability of members of computer-supported groups to engage in uninterrupted participation in the decision-making process. Others argue that electronic meeting systems supporting groups with a suite of computer-based communications tools allow companies to reduce the growing costs of executive travel and shrink the effects of geographic distances (Chidambaram and Jones 1993).

Meetings between groups within single establishment firms, where cultural and temporal differences are less likely to be present, may experience the fewest problems associated with virtual meetings. This is especially true when the purpose of the meeting is to reduce uncertainty about a specific issue (Daft and Lengel 1986) or to collect additional data about a problem. In cases such as these, there is less a need for a rich, personal medium. Since meeting participants are, by definition, members of the same firm, trust between the participants is already likely to be at a significant high level. Participants have less need for the non-verbal cues that face-to-face meetings provide, and the emphasis is on the data, not the messenger.

2.2.3 Multi-establishment Communications Challenges and Virtual Solutions

The rise of multi-establishment firms has created multiple management problems. One of those is how to bridge effectively spatial, temporal, and cultural gaps. Here, as
with the preceding section, firms see technology as a solution. Videoconferencing permits visual and aural communications over long distances. The advantages to business people are clear: firms can conduct meetings without the need to travel, saving both time and travel costs. Since the divestiture by AT&T of its local operating companies in 1984, long distance telecommunications costs have decreased dramatically. From 1997 to 2007, the real cost of long-distance charges dropped 28 percent (Federal Communications Commission 2008). Hewlett-Packard implemented a communications program connecting a 16-country, multilingual team that operates on both sides of the International Date Line (Snyder 2003). The program required careful attention and sensitivity to cultural differences and temporally displaced workdays, but the result was reduced compliance costs for customers in Argentina and faster cycle times in Korea.

Elliott (2002) argues further that inconveniences imposed on travelers (primarily air travelers) since September 11, 2001, have induced business people to more aggressively investigate technology as an alternative to traveling. He claims that “business travel is obsolete” due to the combination of higher airline prices (especially in the business and first-class sections of most airlines), the long wait times at airports, the concerns about safety and security, and the growing availability of relatively low-cost technology-based alternatives. Yet, face-to-face meetings continue to be vital to many firms.

2.2.4 Business Communications and the Need for Face-to-Face Contact

In spite of rapidly evolving technology that facilitates visual communications, face-to-face meetings continue to be important. Communications between different firms or offices within a firm can be problematic because of the need to establish first a trusting
relationship. Once firms establish that relationship, however, technology might present a viable alternative to face-to-face meetings, especially when the purpose of the meeting is information exchange. Yet, a 2009 survey by UK-based Barclay's found that 75 percent of the respondents intended to travel more or the same in 2009 compared to 2008, in spite of recessionary pressures. Why, then, in the face of obstacles (both physical and financial) to face-to-face meetings, do firms continue to spend an increasing amount of time traveling to meetings?

The differences between face-to-face meetings and the use of computer-based technology for information exchange have been the subject of studies for over 20 years. Daft et al (1987) found that face-to-face communications have a special ability to communicate the types of decisions made by senior managers, especially the types of decisions that have major effects on firms’ futures. Schmenner (1980) noted that some firms he studied listed proximity to an airport close enough to be able to use their corporate aircraft as an important consideration in the location decision. Futurists of the 1980s, while predicting a move away from the centralized office environment, cautioned against assuming too much change due to technology. In forecasting the current shift to home offices in his book “The Third Wave”, Toffler (1980) claimed that "it would be a mistake to underestimate the need for direct face-to-face contact in business, and all the subliminal and non-verbal communication that accompanies that contact." Sobczak (1998, pp. 22-23) noted:

"Videoconferencing, perhaps the application most sensitive to service quality, is a case in point. Though it has been commercially available in one form or another for almost 20 years, it hasn't caught on. While most major corporations use videoconferencing for specific applications, it has not achieved any mass appeal. Even in companies where these specific uses have been very successful, the use of video rarely proliferated—perhaps the most telling indication that
videoconferencing will never have widespread appeal. Any suggestion that video will become commonplace reflects wishful thinking rather than discernible market forces.”

Snyder (2003) further noted that [during an audio conference] “… Unable to see each other, people inadvertently interrupt and miss significant visual cues.” Video conferencing provides many other advantages over audio-only conferencing. Participants can see each other, which helps engender trust, especially between people who do not already have established relationships. It is also easier to know who is speaking at any moment. Video conferencing also helps to focus participants’ attention on the meeting.

Multi-establishment firms, in particular, face greater challenges, especially when the communications involves groups in different countries. The existence of different cultural standards complicates the need for inter-group understanding, increasing the likelihood that the same words or idioms have different meanings in the differing cultures. Snyder (2003) noted that what might seem to the sender to be a simple email exchange might result in frazzled nerves because of cultural misunderstandings.

Athanassiou and Nigh (2000) examined the need by top management teams of multinational corporations (MNCs) to interact on a face-to-face basis with their counterparts in other countries by studying 39 multinational corporations. They concluded that top management team members need “to meet face-to-face to share the individual tacit knowledge stocks and create a shared team-level perspective of the multinational firm’s overseas activities and environments” (pp. 471-487). The authors argued that firms develop rich, multidimensional, robust relationships “only through face-

---

39 Sobczak might not have been able to foresee the combined effects of personal computers and high-speed internet service on the ability to conduct desk-top video-conferencing. Before applications such as Skype were developed and multi-megabit per second transmission speeds were available, video-conferencing was limited to dedicated rooms, making the service expensive and hence available only to the few who could afford it. Today, effective videoconferencing is available from virtually anywhere in the world.
to-face interaction because it allows all senses into the process and it is the only way to capture the entire bandwidth of human interaction” (p. 474). They also noted that face-to-face communications is particularly necessary for problem-solving tasks involving ambiguity and uncertainty. A key finding is that MNCs that have worldwide activities that are highly interdependent across international markets have the greatest need for face-to-face communications. The increased globalization of business in which supply chains cross national boundaries (thus creating “virtual” MNCs) results in even non-MNCs potentially having the same need for face-to-face communications as do the true MNCs.

2.3 Face to Face Communications and the Theoretical Framework

According to Daft et al. (1987), the two main drivers of business communications are the need to reduce uncertainty (e.g., the need to collect data needed for business decision-making), and the need to reduce ambiguity (what they term “equivocality”): the existence of conflicting interpretations about organizational situations. Equivocality is equated with confusion, disagreement, and a lack of understanding, not because all parties to the interaction lack specific knowledge about a situation, but because people from different cultures\textsuperscript{40} view the same events using different frames of reference. In relationships where equivocality is high and trust is low, the building of trusts and relationships is of key importance.

It is important to understand how uncertainty and equivocality lead to different managerial responses. Daft et al. note that uncertainty drives managers to collect more

\textsuperscript{40} I do not mean to limit the term “culture” as resulting from different national or ethnic backgrounds; culture includes the particular frame of reference used by an individual. Even within a single firm, different cultures exist because of the presence of different sub-organizations (R&D, marketing, sales, etc.), all of which tend to view events differently.
data, whereas equivocality leads to “the exchange of subjective views among managers to define the problem and resolve disagreements” (p. 357). It can be argued that reducing ambiguity about a problem is a necessary precursor to developing a plan to solve it.  

The environment of the communications need, therefore, serves as a driver for the communications model choice. If a problem is data-oriented, e.g., if there is a common understanding of the problem’s context and significance, then a lean communication method – passing information using electronic mail, for example – might be an appropriate response. If the need for communications results from equivocality, however, then lean communications media that do not allow for social support might not be appropriate. Daft et al. (1987) define a hierarchy of media richness, which associates a level of media richness with four basic forms of communications (Chart 2-1). Each form differs in the amount and quality of feedback (the ability to provide instant feedback where questions are asked and corrections made), multiple cues (the ability to have physical presence, body gestures, and voice inflection to add to the words actually spoken), language variety (the ability to provide data in different formats), and personal focus (the ability to convey a message infused with personal feelings and emotions). Face-to-face communications, the richest form, brings the greatest level of these qualities.

Daft et al. (1987) then consider a set of 60 different communications scenarios ranging from one in which a manager needs to give a subordinate a set a cost figures to one in which a manager needs an explanation from a peer in another department regarding a complicated technical matter (one in which the manager has little formal

---

41 My own experiences as a systems analyst for a large telecommunications firms support the argument that more time that is spent in defining the problem and in communicating the problem in an unambiguous format, the time needed to develop a solution to the problem and the likelihood of developmental errors declines.
training or experience). A panel of 30 judges rated each of the 60 scenarios for equivocality of each of them on a scale of 1 to 5, with 1 representing low equivocality (e.g., low ambiguity) and 5 representing high equivocality. Next, the researchers asked 95 managers to associate each of the communications scenarios with a preferred form of communications.

Chart 2-1: Media Hierarchy of Communications


Chart 2-2 summarizes the results. As the equivocality of the scenario increases, the preference for face-to-face communications increases dramatically from less than 14 percent for the least ambiguous scenario to over 84 percent for the most ambiguous.

Daft et al. (1987) further discover that the managers who are more sensitive to the choice of communications media tend to be higher performing than those who are less
media-sensitive (Chart 2-3). It is reasonable to conclude that in cases where ambiguity is highest, face-to-face communications are the preferred medium.

**Chart 2-2: Message and Media Mix**


### 2.3.1 Making Sense of the Theory

Looking at the theoretical framework developed in this chapter, the need for face-to-face contact is likely to remain as strong in the future as it ever has been. Human nature being what it is, we still gain much from body language. The strength of a handshake remains a measure of a person's sincerity and commitment to a partnership. As economic interactions become more global, increasing the cultural diversity of multinational firms, these effects will likely become increasingly important in spite of the
technology-based alternatives to business travel. The next section of this chapter explores these issues and examines the integration of corporate air travel into business processes.

Chart 2-3: Manager Performance and Media

<table>
<thead>
<tr>
<th>Percentage of Managers</th>
<th>High Performing</th>
<th>Low Performing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Media Sensitive Managers</td>
<td>Media Insensitive Managers</td>
</tr>
<tr>
<td>100%</td>
<td>87%</td>
<td>53%</td>
</tr>
<tr>
<td>90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


2.4 An Initial Exploration of the Theory of Business Travel Needs

Does the theoretical framework discussed in the preceding section hold up to scrutiny in the business world? This section explores the increased use of corporate aircraft, both owned and operated by the firm or owned through a fractional ownership arrangement\(^{42}\) as opposed to traveling on commercial airlines, a phenomenon that has become important as travel prices on airlines have become increasingly expensive for many city pairs.

Before the 1980s, most business people traveled on commercial airlines, and

\(^{42}\) A fractional ownership program, such as one operated by the firm Net-Jets, allows companies to pay for a certain number of flight-hours per year and be guaranteed access to a corporate jet aircraft within a contracted time
corporate aviation represented (in many peoples’ minds) an expensive frill. Many firms today, however, integrate corporate aviation into their business processes, driving up demand for corporate aircraft. According to one industry report, business aircraft manufacturers will deliver almost 23,000 aircraft between 2005 and 2025 (Rolls Royce 2005). The number of firms employing “fractional ownership” (essentially a form of shared ownership in which shareowners are guaranteed a certain number of flight hours) is growing rapidly (Frost & Sullivan 2005). From its modest beginning in 1986, with three shares, fractional ownership has come a long way. The total number of shares has increased from 548 shares in 1996, to more than 7,000 shares by 2004. Although this growth appears to be phenomenal, Frost & Sullivan estimates that the majority of the fractional ownership market is yet to be tapped. There are 15,000 flight departments run by companies in the United States alone, and several more thousands of aircraft privately run by wealthy individuals. In addition, there are thousands of people that fly first class every day on commercial airlines that represent potential customers for fractional ownership.

2.4.1 The Research Approach to Business Air Travel: Corporate Aviation as a Replacement for Commercial Aviation

This study began with an analysis of nine first-hand reports documenting the advantages of face-to-face meetings and the advantages of using corporate aviation in place of commercial airlines, obtained from the National Business Aviation Association web site, http://www nbaa.org/membership/profiles. The reports were coded as if they were individual interviews, using an open-coding method to record them. The results support the observation when the communications scenario is ambiguous, and the economic payoffs of the meeting to the firms involved are sufficiently high, business
managers prefer to meet face to face with colleagues and clients. The reports also support a second observation that more and more firms recognize the advantages of corporate air travel over the use of commercial airlines by allowing business travelers to be more productive compared to other forms of air travel. The results guided the development of the interview guide used later.

The former president of a national business aviation organization then reviewed the purpose of the study. He provided references to heads of corporate flight departments in New Jersey who might be willing to participate in this study. When contacted, both flight department heads agreed to be interviewed for the study. They were assured of confidentiality and their names (both the people interviewed and the firms) were changed to protect their identities.

The first firm is a member of the pharmaceutical industry. The second is a member of the medical device industry. Both are representative of Fortune 500 firms that have multiple locations not only in the United States, but also around the world. The pharmaceutical firm is identified as "Big Purple" and the head of its flight department is identified as "Oscar." The medical device firm is identified as "Device Red." The head of its flight department is identified as "Walter." In addition, both Oscar and Walter were offered copies of the transcribed interviews (both offers were accepted and the transcribed interviews were sent to the interviewees about a week after each interview).

The two New Jersey firms selected for this study share many common characteristics. They are both multinational, Fortune 500 firms with multiple locations both in the United States and around the world. The firms have their own flight

43 New Jersey firms were chosen partly because of the access made possible by the references, and partly because of the high concentration of Fortune 500 firms.
departments consisting of own multiple fixed wing corporate jet aircraft and helicopters and dedicated flight crews and supporting staff. In one case, the corporate headquarters of the firm is located very close to the airport base of the flight department, while in the other the corporate headquarters is located in New York City some miles from the flight department's base. Big Purple sold manufacturing equipment and used their corporate aircraft primarily for transporting technical managers, although Oscar indicated that a larger cross-section of company employees used the aircraft after the terrorist attacks of September 11, 2001. Device Red used a two-tiered structure for corporate flying and limited the use of the 6-10 passenger corporate aircraft to the top 14 executives in the firm. It also employed two higher seat capacity aircraft for lower-level employees, essentially operating an “in-company airline” that served origin-destination city pairs not well served by commercial airlines. In both cases, managers traveled year round, with 50 percent or more of the travel to international destinations.

The interviews were conducted at the flight departments’ headquarters and audio taped with both Oscar's and Walter's permission. The interviews began with discussions of operational issues, such as the types of aircraft employed, the general characteristics of the flights in terms of destinations and length, in the hope that they would be the most comfortable with this initial line of inquiry. Interestingly, both Oscar and Walter volunteered their opinions as to the value of corporate air travel to their firms even before they were asked many of the questions.

The interviews were processed using the open-coding method, identifying key concepts and relationships using word, phrase, and sentence analysis. Recurring themes were noted and general concepts developed, referring to the literature where possible.
Commonalities with prior observations were identified. In particular, references by the interviewees to the need for face-to-face meetings and for the factors driving the decision by their firms’ managers to use their own aircraft instead of commercial airlines were identified.

### 2.4.2 Flight Department Interview Results

Three key themes emerged during the interviews with the two flight department managers:

- Trust and Relationships
- Productivity
- Safety and Security

#### Trust and Relationships

Consistent with Daft, Lengel, and Trevino’s 1987 findings, the theme of relationship building was primary in the discussion of why key business managers travel for face-to-face meetings. When asked about the potential use of telecommunications-based methods such as video teleconferencing, Oscar responded

"Face-to-face meetings are still vital to the company… Our executives still need to shake hands and see people. When they go to conferences, when they go to sales meetings, our executives need to be there physically to make a statement on behalf of the company…. If you need to either reach out to someone personally or see a machine, or see a product that you really need to touch and feel, then videoconferencing may not be the answer."

Walter’s response to the same question stressed the trust and relationship building of face-to-face contact.

"There is a certain percentage of business that requires person-to-person interaction. You’ve got to be able to convince somebody and we all know, just from interaction, that the content of the voice alone only delivers part of the message\(^{44}\) and you have to be able to form a relationship with a business partner,

---

\(^{44}\) Remember the discussion on the "richness" of various communications media.
you have to gain their trust, so they want to business with you and while that can be done with some business transactions, it cannot be done for other business transactions, especially when there are certain cultural requirements for a company to say 'I will go with you'.

The theme of trust and relationship building was not limited to interactions with other companies. Even within a firm, Oscar and Walter both noted face-to-face contact as important contributors to success. Walter stated, “It’s critical that senior leadership make periodic visits to the locations that they are in charge of.” He indicated that, as the head of the flight department, he felt that if he did not make trips to that part of the corporate aviation department for which he had responsibility, he would begin to lose effectiveness:

"A lot of times you have to retain the trust and confidence of the group that you are leading, and I think personal contact, when you show that you care enough to be there, it helps, especially when you are going through a difficult event."

**Productivity**

The discussion of productivity centered on the decision to travel using corporate aircraft versus commercial airliners. Both Oscar and felt that business travel was an integral part of their firms’ business processes. This was consistent with the themes discovered while analyzing the NBAA reports. As a decentralized firm, Big Purple sold their equipment to many manufacturers located throughout the country and the world. Oscar pointed out that the engineers had no choice but to travel to repair machines and build new lines.

"They must [travel]. I can tell you that we can do in one day what it takes them three days of travel to do. Now think about that. When you multiply that salary of one engineer times [6 or 8], however many are going out there, times three days versus one day. That gives you a sense of the productivity gained or lost as the case is."
Oscar described benefits realized by executives within the firm, especially after the security measures implemented after September 11, 2001, increased travel time:

"We had a sea change, from 9/11 forward in that at that point the aircraft started to be used as more of an executive tool, in addition to still maintaining our manufacturing connection with the engineers. But the executives started using it more for various reasons, including security, time efficiency became a very, very important part due to the deterioration of the airline schedules."

The benefits of corporate air travel were not lost on the executives. Oscar noted that the mix of passengers, which had been all engineers in the beginning, has shifted to a 50 percent/50 percent mix of executives and engineers:

"We’re about at 50/50 level, and the main purpose of the executive travel is similar to that before. They need to reach out to their constituents, their colleagues in other companies, their vendors. We do a lot of work with investors. We visit investors all over the country to tell our story. So those weren’t exactly new missions but they became more …frequent in terms of missions."

Walter noted that while the firm treated the aviation department traditionally as a cost center, it was also a productivity tool. When asked how he would position corporate aviation to a company he replied:

"I would say that your aviation department, while it is a cost center, it’s a productivity tool. And … our charge is …to provide as much improvement in their productive use of time. And we do that by simply saving them time getting to their required business locations and providing them a mobile office, a productive environment while they’re enroute, so they’ve got to be capable. We have to save them time."

Oscar provided examples where executives made effective use of the time traveling on the corporate aircraft that would not have been on a commercial airliner.

"One division president told me that on a trip that we took him to that he actually used the time to do performance reviews, something that he would have to do, I would think, that he would have to take the time presumably out of his day at home. We had a 4-5 hour trip. He brought his team with him, he did his performance reviews along the route, completed. So again, time saved, productivity efficiency. So it is changing in those ways. And I see it happening more and more as time goes by."
Deteriorating commercial airline schedules were noted as contributing to the use of corporate aircraft, making that travel integral as a business tool. Oscar stated that in the past ten years, corporate aviation had become “integral to the company” versus a “nice to have” business tool. While air travel had always been important to the firm due to its of decentralized locations, the increasing disamenities associated with commercial travel, the time value of executives, and the hub and spoke routing replacing point-to-point capabilities (which creates the need for making connections at hub airports instead of flying direct), have increased the value of business aircraft to businesses. The lack of convenient commercial airline service affected Device Red so much that in order to maximize its employees’ productivity, it acquired two regional jet aircraft to transport staff between corporate locations in the Midwest and the East coast.

**Safety and Security**

Safety and security emerged as the third key theme during the interviews, with security playing a greater role in the post-9/11 environment. This emphasis was unexpected. This theme was completely absent from the pre-9/11 NBAA studies.45

The board of directors of Big Purple mandated that the chairman of the corporation use the firm’s corporate aircraft whenever possible for security reasons. More key executives are using the firm’s aircraft for the same reason. Device Red, citing safety and security in a post-9/11 world, requires its chairman to use the corporate aircraft for all of his travel, both business and personal. Walter also noted safety and security as a motivating factor in not using charter aircraft unless no other option is available.

45 It's possible that the profiles included on the NBAA web site were provided before safety and security issues rose in importance after 2001. None of the profiles were dated.
"We rarely, rarely use charter. We have a company policy, signed by the Chairman, that we will not use charter unless we absolutely have to. And the reason we do that is we feel that our operations and maintenance that we totally control are of a higher quality. We have direct control of the safety and security [of the complete flight: who is on board, what security procedures are being followed, and so on], much more so than by contracting out."

An interesting adjunct to personal safety and security is corporate security. Oscar noted the importance of intellectual security in the decision to employ corporate air travel. While the effect might be business-dependent, Oscar noted that firms were more conscious about the security of corporate information than they were decades ago.

"The confidentiality of the travel is critical, much more critical today than it was 10, 15, 20 years ago. People are much more concerned about what they open and who sees it than they were 10-15 years ago."

2.4.3 Expanding Our Conceptualizations on the Need for Corporate Aviation

In both interviews, the theme of trust and relationship building is a primary motivating factor in deciding on face-to-face meetings, consistent with the literature. As noted in the discussions with Big Purple, the very practical issue of problem solving – needing to fix manufacturing equipment – also plays a key role in the travel decision. The initial observations can now be revisited:

**When the communications scenario with colleagues and clients is ambiguous (when the relationships are new or the problems are unclear), business managers prefer to meet face to face contact to other forms of communications.**

When the purpose of the interaction is more than the simple exchange of information, a richer form of communications is appropriate. When the purpose of the interaction is to create trust between two groups or individuals, or when it is to build a new relationship with new potential clients or partners or when it is to reinforce existing relationships, the richness of face-to-face communications and the commitment to the
other party that it signals creates the best outcome: to engender trust and a solid business relationship.

Once the firm makes the decision to employ face-to-face communications rather than a technological solution, the choice necessarily becomes to use commercial airlines or some form of corporate aviation when firms are far apart. The second observation is now revisited.

**Corporate air travel provide firms with productivity advantages compared to other forms of air travel**

The more the firm values a person’s time, the more likely it is to permit the employee to use corporate aviation as opposed to commercial airlines. The opportunity cost of top-level executives' time makes corporate aviation attractive. These executives, whose time is at a premium, see productivity gains associated with corporate travel where the time in the aircraft is put to productive use. This apparently is not the case with the use of airline travel. Engineers and sales management, many of whom have no choice but to travel, experience productivity gains when not bound to commercial airline schedules. Of course, this relationship is augmented as commercial airline service becomes increasingly unreliable, service to many cities declines, and improved alternatives to commercial flight become available.

As an example, if the perceived value of a CEO's time is $1,000 per hour, then saving four hours of total travel time on just a single business trip results in saving $4,000. If he makes just one trip per week, then the annual savings are $200,000. For technical managers, the benefit might not be just the value of their time, but might also include the value of customer contracts gained by being able to respond to on-site customer problems faster than their competitors can.
The interviews also suggested an observation explaining the use of corporate air travel over commercial airlines:

**Corporate air travel provides firms with safety and security advantages compared to other forms of air travel**

These advantages were not limited to physical safety suggested after 9/11. Corporate air travel also provides a level of privacy, aircraft maintenance, and aircrew expertise unmatched by commercial airlines.

These observations form the basis for a comprehensive rationale for why firms undertake corporate air travel:

1. The need to create inter- or intra-firm trust and relationships increases the preference for face-to-face meetings, especially when the firms serve geographically dispersed customer and partner networks or when customer service-related functions require in-person interaction due to the ambiguity of the situation (i.e., problem solving is needed as opposed to information providing).

2. Air travel creates the potential for time saving and thus greater productivity gains than other forms of transportation. Other benefits include the ability to establish the trust generated by ambiguous situations, cultural differences, and multi-firm differences.

3. The higher the value placed on a manager’s time, the greater the likelihood that the firm will use corporate aviation in place of commercial air service.

4. Corporate aviation provides advantages in passenger, aircraft, and aircrew safety and security that commercial airlines cannot match.

### 2.5 Implications of the Research for Aviation Policy

The existing literature describes why firms might need face-to-face communications. This research supports the need for air travel in general, and corporate air travel in particular, in the two firms studied. Initial conjectures about the need for business travel can thus be expanded, allowing the development of an explanatory theory of business air travel.
What does this suggest for policy makers? The ability to access the nation's air transportation system is important for firms involved in high value activities, the very kind of firms that many states work hard to attract. Policy makers, therefore, should be cautioned against making land use decisions that prevent either the needed improvement of existing airports or the construction of new ones.

Unfortunately, current policies in most states place land use management decisions in the hands of local municipalities. Hence airport managers are presented with the classical paradox: the benefits of airports are regional, while the disamenities (primarily noise, air pollution and congestion) are felt mostly locally. Thus towns may wish to limit the operations of an airport (or even close it) because of local financial and political issues while totally disregarding the positive effects on surrounding towns. The fact that local communities can control the destinies of airports continues to plague many airport managers.

To illustrate the problem, we need only to look at Teterboro Airport in New Jersey. Even though the airport is a major contributor to the regional economy, towns immediately adjacent to the airport have fought against its expansion. Indeed, at least one politician has vowed to close the airport.

"There are two choices," says Rep. Steven Rothman (D-9th Dist.), who represents the area. "The community decides that it must be closed, or it doesn't. So far, it has decided that, as long as the airport continues to make strides in being a good neighbor, it will stay open. Despite everything, it's the source of much-needed economic activity, especially in a recession. "But it's always been my position that when it doesn't continue to make progress on safety and other good-neighbor issues, we reserve the right to shut it down."46

The challenge to policy makers is how to balance legitimate local interests against those of neighboring communities. To give a municipality the ability to close an airport or to limit its operations gives that municipality control over the economic future of an entire region. Some states have attempted to deal with this issue by vesting the authority to approve airport projects to a state transportation commissioner. New Jersey statutes, for example, give the Commission of Transportation the authority over the "establishment, location, maintenance, operation, size, design, repair, management and use of airports, landing fields, landing strips, heliports and helistops." Yet, for largely political reasons, the tradition of home rule, whereby a municipality is presumed to be in the best position to govern itself, has resulted in a failure of New Jersey to protect its aviation infrastructure. Whether or not this will remain the case might well depend on the ability of this research to inform the judgment of state policy makers. In consideration of the roles that airports might play in regional economic development (a topic explored in Chapter 3), incentives might be found to compensate communities that host airports for the asymmetry between the benefits and disamenities associated with airports. These incentives might include regional revenue sharing or other tax benefits designed to encourage the siting of transportation facilities.

47 New Jersey Permanent Statutes, 6:1-29. Powers and duties of the commissioner; adoption of rules, regulations and orders.
Chapter 3. An Economic Rationale for National Aviation Policy

3.1 **How Do Airports Affect Regional Economies?**

The previous chapter discussed how business people continue to place a high premium on the ability to employ air travel in spite of increasing difficulties associated with air travel ranging from increased congestion and delays to loss of access and connectivity to outlying cities. The use of aircraft has become a core component of their business processes. Might this suggest that air travel has the potential to affect regional economies by allowing firms to locate in areas where other advantages, such as a trained workforce, can be found? To address this question, this chapter reviews the literature on how the nation's air travel system affects the U.S. economy. It then provides the results of a new study of the importance of airport infrastructure on the East Coast mega-region economy.

3.2 **The National Impact of Air Travel**

The air travel industry accounts for a substantial portion of the U.S. gross domestic product. Comparing all of the impacts to the total United States economy, researchers found that aviation and related activity accounted for over four percent of U.S. GDP. Wilbur Smith Associates (2000) found that aviation and related economic activity in 1998 in the United States totaled $976 billion. This is more than the gross national product of all of the countries in the world except the United States, Japan,
Germany, France, the United Kingdom, Italy, and China. This industry \(^{48}\) employed 10.9 million people, earning $278 billion in wages and salaries. Not surprisingly, commercial aviation accounted for the bulk of the economic activity, over $911 billion of the total impact. \(^{49}\) General aviation, defined as all aviation except scheduled commercial airlines and military aviation, contributed almost $65 billion. Jobs followed the same pattern, with commercial aviation providing over 10 million jobs and general aviation contributing over 637,000.

A report published only two years later cast further light on the importance of air travel. Researchers at DRI-WEFA (2002) found that the total impact of aviation was more like 9.2 percent of U.S. GDP, over $903 billion out of a total U.S. GDP in 2000 of $9,873 billion. Over 11 million jobs were created through civil aviation.

3.3 **Review of Regional Economic Studies**

It should be clear from the previous chapter that air travel has a major influence on current day business processes. It is somewhat surprising, therefore, that the effect of air travel on regional economic growth has, by and large, escaped the notice of formal researchers. Irwin and Kasarda (1991, p. 525) echo this surprise, noting:

“…despite the exponential growth in the national airline network and its pervasive utilization by business organizations, in over 30 years no sociological work has examined its role in reorganizing the spatial economy. This sociological lacunae is particularly puzzling given the theoretical importance of transportation systems to human ecology.”

---

48 The authors of the study include the impacts of total civil aviation -- including the nation’s commercial service airports, general aviation airports, civil aircraft manufacturing, the airlines, FBO’s, flight schools and all of the other business activities that use aviation or provide services to the aviation industry and/or its users.

49 The study used the Federal Aviation Administration recommended procedures concerning how to identify and quantify the economic impact of airports. It uses US. Department of Transportation databases regarding the nation’s airports, and it is “input - output model-based,” utilizing the “RIMS-II” Model of the U.S. Department of Commerce, Bureau of Economic Analysis (Wilbur Smith, page 8).
Green (2007, p 91) drew the same conclusion, noting:

“The popular press and local economic development boosters often cite hub airports as mechanisms for helping metropolitan areas grow. We will present a number of examples of such boosterism below. Moreover, there are a variety of literatures that touch on the importance of infrastructure in general, and airports in particular, to economic development and also on the financing of such infrastructure. Yet, so far as I can tell, there have been a limited number of studies that have looked at the impact of airports on regional growth (Brueckner 2003 being the key exception). In light of the many claims that have been made about the importance of airports to economic activity, this may seem surprising.”

Indeed, a search of the literature results in only a handful of articles describing the relationship between air travel infrastructure and regional economic growth. Irwin and Kasarda (1991) were among the first to study this connection. They found that the centrality of an airport, that is, the relative position of the airport compared to other airports in terms of overall passenger activity, was positively associated with employment growth.

Brueckner (2003) was among the first to study the linkage between airline passenger enplanements and regional economic activity. The study started with the premise that Chicago’s O’Hare Airport is constrained in the number of passengers it can handle due to airspace and ground environment limitations, and that this constraint limits the amount of economic activity that can take place. Based on this, he determined how economic activity would increase if those limitations were removed. Controlling for variables such as age, energy costs (using heating degree days as a proxy), and education, he found that a ten percent increase in passenger enplanements is associated with a one percent increase in service-related employment. He found no relationship between enplanements and employment growth in manufacturing and other goods-related businesses, mirroring the findings of Irwin and Kasarda. By applying his results to
current employment levels in the Chicago metropolitan area, Brueckner suggested that expanding O’Hare Airport’s capacity by 50 percent will increase service related employment by 185,000 jobs. This, of course, assumes that the elasticity between passenger enplanements and employment remains constant and that a different equilibrium between enplanements and employment is not reached before the new airport capacity limit is reached.\textsuperscript{50}

Green (2007) took a slightly more comprehensive approach, looking at passenger enplanements and population at airports in 83 Metropolitan Statistical Areas.\textsuperscript{51} He used commercial boardings per capita as an explanatory variable instead of simply total enplanements. He found that a one standard deviation increase in boardings per capita was associated with eight percent growth in employment during the period 1990-2000. Green was perhaps the first to recognize explicitly the potential contributions of smaller airports. In his initial regressions, he includes measures for airports that can support smaller commercial airliners.

The methods used by Irwin and Kasarda, Brueckner, and Green provide reasonable results for large commercial airports. Irwin and Kasarda explicitly incorporate this focus by presuming that commercial airport centrality is vital to the conduct of business travel. While this may be true if one considers only commercial airlines, the assumption breaks down as one considers the growth of corporate aviation over the past 20 years. While business travelers once depended upon commercial airlines for fast travel between cities, this is no longer true. More and more firms, especially those in the

\textsuperscript{50} This also ignores, of course, the physical and financial barriers to such an expansion. The study is instrumental, however, in establishing the general relationship between the airport's capacity and job growth.

\textsuperscript{51} Green describes how he accounted for the possibility that an MSA might have more than one airport.
Fortune 500 category, have access to non-commercial aircraft. Some firms even have their own aircraft, which fly out of non-commercial airports.

By using only commercial passenger enplanements to explain regional economic development, Brueckner and Green do not account for air travel provided by other than commercial airlines. Green went so far as to limit his research to the largest 100 airports in the country based on passenger enplanement data available from the Federal Aviation Administration. He explicitly discounts the possibility that non-commercial airports might make significant contributions to regional economic development, saying, “I stop at the arbitrary ranking of 100 because at that point there are airports that are small enough that likely have little economic impact” (p. 99, emphasis added). That is, he does not include small airports in his analysis because he surmises that their regional economic benefits are not significant.

While the contributions to regional economies made by the large commercial jetports (often referred to as “primary” airports by the Federal Aviation Administration) are important, the limited approach taken by previous researchers explicitly ignores the possible contributions made to regional economies by those airports that do not have scheduled commercial service. Smaller airports have few (if any) commercial enplanements, and thus fall under Brueckner’s and Green’s radars (figuratively and literally speaking). Nonetheless, they often support significant levels of corporate aviation activity, and therefore may be significant contributors to regional economies. Teterboro Airport, for example, plays an important role in the northeastern New Jersey economy, yet it does not have scheduled commercial airline service. This creates
potential problems with the models previously described. Any increase in economic activity generated by firms using Teterboro Airport in New Jersey, for example, is attributed by Brueckner's and Green's models to passenger enplanements at the nearby commercial airports (Newark Liberty International Airport in New Jersey, and JFK International and LaGuardia Airport’s in New York City), thereby inflating the perceived effects of those enplanements. The same scenario plays out in other metropolitan areas. Boston’s Logan Airport, for example, is the area’s commercial jetport, but nearby Hanscom Field is a major destination for corporate travelers. Relying on commercial enplanements to explain economic growth also ignores the impact of large freight operations. Firms such as Federal Express and United Parcel Service might well serve as significant contributors to the economies of the regions surrounding their major hub airports (such as Memphis, Tennessee), yet the effect of this activity on those regions’ economies is not considered using current models.52

3.3.1 A Different Perspective on Airports

Clearly, an alternative model is needed, one that accounts for potential effects of non-commercial airports. Admittedly, no one has developed an accepted method for measuring all of the regional economic impacts of airports. The authors of the Van Nuys Airport economic study explicitly recognized this difficulty, saying “the fact that the airport is an important factor in some firm’s location decision is agreed to by many, but no universally accepted methodology has been established for accurate and statistically sound measurement of these additional and important off-site impacts” (Wilbur Smith

52 Numerous studies (SH&E 2003, Wisconsin 2007) have shown linkages between airports and state economic growth. Some regional economists, however, have criticized these studies. A decision was therefore made not to include these reports in this research.
1998, p. 5). The authors respond to this difficulty by deciding to ignore the potential impact altogether in their study. The research reported here does not ignore the effects of smaller regional and community airports (e.g., those that do not provide scheduled commercial airline service) on regional economies. Instead, an alternative hypothesis to those used by previous researchers is developed and tested: the total amount of airport operating capacity, as measured by the total length of runways at all airports capable of supporting business aircraft, not just airports with scheduled commercial service, is associated with employment growth.

3.4 Objective of the Research

The purpose of this research is to quantify the contributions made to regional economies by all airports – not only those that support commercial airlines, but also those that do not support scheduled commercial service. These latter airports, commonly referred to as "reliever" and "general aviation airports," provide businesses with the ability to operate aircraft such as corporate and charter aircraft. They can also cater to freight operators. Their users are thus able to avoid the congestion and delay present at many larger commercial airports. Firms located near these airports likely gain some advantage over those firms who choose to use only commercial airlines by being able to travel with fewer delays and with greater convenience. This research seeks to find empirical evidence that regional economies do indeed benefit from the existence of all airports, commercial, and general aviation airports alike. With such evidence, public policy is likely better informed and transportation planners are better able to make decisions that reflect those benefits.
3.5 **Theoretical Framework for the Regional Economic Impacts of Airports**

The theoretical framework for this research is economic location theory, where transportation cost is the common thread. Christaller (1933) first observed in Germany how population centers differed in size with the size of their hinterlands. Lösch (1964) expanded the explanation of the geography of population growth by explaining how comparative advantages could give rise to a more polycentric topology (e.g., a city located on the water might have more firms engaged in international trade). Generally, these retail-oriented theories assume that the costs of production tend to be spatially invariant, and that transportation costs are a main determining factor in retail location decisions. Firms locate to minimize the access costs incurred by customers traveling to their places of business.

As transportation costs per unit distance decline, however, other factors may play a greater role in firms' location decisions. Firms that tend to use air transportation services heavily might locate near an airport, particularly if the time costs of key business travelers are high. Furthermore, if this is true for firms that are growing, business growth should tend to agglomerate near airports. As a consequence, a correlation between a region having any level of air service and higher levels of economic activity should. Schmenner’s (1980) work on business location decisions in which he cited a link between the availability of an airport suitable for use by corporate aircraft and business location decisions made by firms supports this hypothesis.

3.5.1 **Regional Economic Study Research Frame**

The present study focused on the East Coast of the United States, including all states from Maine to Florida. Mega-regions will eventually account for 50 percent of the
nation's population growth and 66 percent of its economic growth over the next 45 years (Bullard 2007). Referring to research by Armando Carbonell (2005), Bullard reports that three mega-regions already exist:

- **NORTHEAST:** The Northeast mega-region is the oldest, most populous, and most established mega-region. It includes the major metropolitan areas of Boston, New York City, Philadelphia, and Washington, DC. Major clusters in the Northeast include Transportation, Mass Media, Financial Services, Software and IT, and Biotechnology.

- **PIEDMONT ATLANTIC:** The Piedmont Atlantic mega-region is the most rapidly growing, and includes the major metropolitan areas of Raleigh, Charlotte, and Atlanta. Major clusters in the area include Communication Services, Software and IT, Utilities, and Construction.

- **FLORIDA:** The state of Florida is a mega-region to itself with primary hubs in Jacksonville, Miami, Orlando, and Tampa. Dominant clusters in Florida include Hotels and Entertainment, Financial Services, Eat/Drink, Retail, Professional Services, and Logistics and Distribution.

Why study mega-regions? According to Bullard, the Regional Plan Association, through the America2050 initiative\(^{53}\), has defined mega-regions as "large networks of metropolitan regions that are linked by environmental systems and geography, infrastructure systems, economic linkages, settlement patterns, and shared culture and history." As the population continues to grow, it is not unreasonable to expect that the three east coast mega-regions will also continue to grow and expand until they eventually merge into one large mega-region subsuming the entire Atlantic coast of the United States. Based on these projections, the 114 Metropolitan Statistical Areas (listed in Appendix 2) along the Atlantic coastline form the research frame.

\(^{53}\) http://www.america2050.org/megaregions.html
3.5.2 Research Data and Discussion of Variables

The original data model is shown in Table 3-1. Following are the descriptions of the dependent and independent variables.

**Dependent Variable**

The dependent variable *NEW JOBS* is defined as the difference between the total employment in 2000 and 2007. The source of the data, as well as the employment data used in the independent variables below, is the Regional Economic Information System 1969-2007, version 4.1.4, issued 2009 by the Bureau of Economic Analysis.

**Figure 3-1: United States Mega-Regions**

![United States Mega-Regions](image)


**Independent Variables**

The independent variables used in the research model are listed below, along with the reason for including each variable.
Major Airport Infrastructure Index

The variable MAJOR is the total amount of runway infrastructure contained within each MSA. To capture the effect of having a large airport in the region, the total amount of runway length at airports determined by the Federal Aviation Administration to be one of the top 100 airports in the nation based on passenger and freight traffic is calculated. The source of the data is FAA Form 5010 records.\(^5\) Identifying the top 100 airports was accomplished by studying the Passenger (enplanement) and cargo data from the Air Carrier Activity Information System (ACAIS).\(^6\)

To avoid endogeneity, the Activation Date field in the FAA Form 5010 were checked to confirm that only airports that were in existence in 2000 are included. None of the 1021 airports in the study area were excluded. The combined runway length was divided by 1,000. A commercial database to correlate the zip code of the airport manager to the MSA identified the primary MSA where the airport is located.

Minor Airport Infrastructure Index

The variable MINOR captures the amount of airport capacity at regional and community airports. As noted earlier, Green only considered in his model commercial airports having a number of passenger enplanements ranking in the top 100 in the nation, concluding that airports with fewer enplanements would not have significant effects on regional economies. As pointed out earlier, however, not only do some airports with no commercial service affect regional economies (e.g., Teterboro Airport in New Jersey), but declining airline service at many cities is stimulating demand for others forms of air

---

travel, such as charter, air taxi, and corporate air travel. This variable reflects this effect.

To capture the effect of having a business-capable airport in the region, the total amount of runway length at airports is calculated at all airports having a runway is at least 3,000 feet long and are not one of the top 100 airports in the nation as defined above. The source of the airport and runway data is FAA Form 5010 data.\textsuperscript{56} To avoid endogeneity, the Activation Date field in the FAA Form 5010 data was checked to confirm that only airports that were in existence in 2000 are included. None of the 1,021 airports in the study area were excluded. Identifying the top 100 airports was accomplished by studying the Passenger (enplanement) and cargo data from the Air Carrier Activity Information System (A CAIS).\textsuperscript{57}

\textbf{Right-To-Work}

The dummy variable \textit{UNION represents} whether or not in state in the study area is a right-to-work state. Both Brueckner (2003) and Green (2007) postulated a link between right-to-work laws in state and employment growth. Brueckner and Green theorize that states with right-to-work laws, e.g., unions cannot force workers to join the union in order to work at a given firm, are associated with lower wage rates. This makes the state potentially more attractive to firms that depend on low-cost labor. The source of the right-to-work data from the United States Department of Labor.

\textbf{Climate}

The variable \textit{CLIMATE} is the sum of the heating degree-days and the cooling-


degree-days. Green and Brueckner posited a possible association between heating energy
costs and employment. This analysis seems incomplete, since cooling costs might also
play a role in business location decisions (although admittedly not as much as before the
widespread introduction of air conditioning). Using heating-degree-days alone might not
capture the effects of extremes in temperature on establishment location decisions. The
source of the data is Historical Climatology Series Report issued by the U.S. Department
of Commerce, National Oceanic and Atmospheric Administration, National
Environmental Satellite, Data, and Information Service. The heating degree-days report
covers the period July 2001 through June 2003, and the cooling degree-days report covers
the period January 2000 through December 2001.

**Percentage of FIRE Jobs**

The variable FIRE represents the percentage of jobs within the MSA found in the
finance, insurance, and real estate sectors, sectors associated with high levels of
economic activity. The source of the data is the Regional Economic Information System

**Percentage of Manufacturing Jobs**

The variable MANUFACTURE represents the percentage of jobs found in the
manufacturing sector, which has been traditionally associated with well-paying jobs. The
source of the data is the REIS 1969-2007, issued by the BEA.

**Percentage of Services Jobs**

The variable SERVICE represents the percentage of jobs within the MSA found in
the finance, insurance, and real estate sectors, which are associated with high levels of
economic activity. The source of the data is the REIS 1969-2007, issued by the BEA.

**Percentage of Information Sector Jobs**

The variable *INFORMATION* represents the percentage of jobs found in the Information services sector. The growing dependence of business processes computer-based processes potentially make information sector jobs increasingly important. The source of the data is the REIS 1969-2007, issued by the BEA.

**Human Capital**

The variable *COLLEGE* captures the effect of human capital on job development. It is the percentage of college graduates in the MSA population. The sources of the data are the U.S. Department of Commerce, Census Bureau, Census 2000 Brief, "Educational Attainment: 2000" and "Educational Attainment in the United States: 2004."\(^{58}\)

**Local Educational Investment**

As a surrogate for the level of municipal services provided, the variable *EDUCATION* represents per capita spending on public schools expressed in thousands of dollars. The source is the report “Public Education Finances 2004”, issued March 2006, by the Governments Division of the U.S. Census Bureau.

**Driving Distance to Primary Market**

The variable *DRIVING* represents the average driving distance from the major city within the MSA to the closest major market city: Boston, New York City, Washington, D.C., or Atlanta. The ability of a region to grow economically might depend

---

on access to markets. A longer distance to the primary market increases the delivery costs both because of labor costs and because of transportation costs. The source of the driving distance was maps.google.com.

**Gasoline Cost**

Higher fuel prices increase the cost of delivering goods to the primary market. This should have a depressing effect on profits and thus make it harder for firms to expand. The variable FUEL captures the average price of gasoline in 2009 as reported by the U.S. Department of Energy’s Energy Information Administration.  

**Electricity**

Business costs might affect the ability of firms to expand. Higher energy costs result in lower profits, everything else being equal. The variable ELECTRICITY represents the average price per kilowatt-hour. The source of the information is the “State Electricity Profiles 2001” issued October 2003 by the U.S. Department of Energy’s Energy Information Administration.

**Corporate Tax Rates**

Tax rates might affect where firms locate by increasing firms’ costs. High tax rates might also be used as a surrogate for the state’s overall attitude towards business. The variable CORPTAX represents the tax rate data for 2009 obtained from the Tax Foundation, www.taxfoundation.org.

---

59 While the data are from outside the study period, they do reflect relative differences in fuel prices.
**Employment Rate**

This variable WORKING captures the percentage of the total population that is employed in 2000. The source is U.S. Census data for 2000.

**Population 2000**

U.S. Census data provides the year 2000 population for each MSA. The POPULATION variable accounts for any agglomeration effects that might have impacts on job growth.

### 3.5.3 Regression Analysis Results

**Descriptive Statistics**

The descriptive statistics for the independent variables are shown in Table 3-2. Values range widely, as might be expected due to the inclusion of not only MSAs that are comprised of large metropolitan areas but also those that consist of relatively small regions.

**Correlation Analysis**

The initial correlation analysis, producing the Pearson’s r coefficients, showed evidence of strong relationships between some of the independent variables. As a result, CLIMATE and RIGHT TO WORK were removed from the model. The final correlation results are provided in Table 3-3.

**Regression Results**

The regression results are shown in Table 3-4. Consistent with previous research, the presence of large commercial airports is positively associated with job growth in the
study period. The amount of major airport infrastructure predicts over 2,300 jobs were created for each 1,000 existing feet of major airport runways. Importantly for public policy makers, however, runway infrastructure at smaller airports is also positively associated with job creation. While the coefficient is smaller (811 compared to 2,307), the effect is nonetheless significant. These results support the hypothesis that smaller airports also play a key role in regional economic development. Of the other variables in the model, only the 2000 population showed a statistically significant association with job creation, perhaps substantiating the agglomeration hypothesis that a high concentration of jobs attracts newcomers, many of whom are then hired. The cost of electricity was significant at the $p=0.1$ level, suggesting that utility costs do play a role in the ability of firms to create jobs.

That the other independent variables did not have statistically significant effects is somewhat surprising, and it is not clear why this was the case. It is possible that the years selected for the study was a period of low overall job growth. One study\textsuperscript{60} indicates that many large metropolitan areas actually lost jobs during the period. Further study is needed to determine if the absence of additional explicatory variables is due simply to a bad overall job market or if there are improvements needed in the regression model.

At the same time, however, the results buttress the argument that access to air transportation is important. This suggests that firms that incorporate air travel into their business models, resulting in larger areas from which to draw customers and suppliers might be better able to withstand economic shocks.

3.5.4 Discussion

Initial studies on the economic impacts of airports hypothesized that regional economies are affected by the presence of large commercial airports such as New Jersey’s Newark Liberty International and Chicago’s O’Hare Airport. This research model expanded the argument by taking into account not only airports that provide scheduled commercial service, but also non-commercial airports such as Teterboro Airport in New Jersey and Van Nuys Airport in California by including an airport infrastructure index determined by the amount of runway capacity existing at airports that can support business air travel. The research then examined the effect of this index on job growth, controlling for a number of other potentially influencing variables. The regression results show that the amount of business aircraft-capable airport runway infrastructure is positively associated with job growth during the study period 2000-2007, regardless of the size of the airport.

3.6 Implications for Policy Makers

The study's results reinforce the observations made in Chapter 2. Firms that have the potential to affect regional economies because of the jobs that they create and that need access to the nation's air transportation system are indeed important to regional economies. Does this mean that a community should build an airport to attract businesses? Perhaps not, since other factors might be required by certain industries. Moreover, market saturation (an issue raised by Brueckner) might be a problem. Furthermore, building a new airport might be physically impractical, given the state of land development in many states.

What, then, does all this mean for policy-makers? Having shown the positive
effect of airport infrastructure on employment growth, this does not mean that, as Green noted, that every community should immediately build an airport. It does suggest, however, that policy makers might need to address the potential role of non-commercial airports in stimulating economic growth, especially as the larger airports experience more and more congestion.

3.6.1 Aviation Technology and Policy

Changes in aviation technology have the potential to make more areas of the country attractive to firms seeking to locate or expand their establishments. A recent pilot study (Checchio 2007) described in the next chapter suggests that the value that business people place on their time may be greater than any fare premium associated with air taxi service. Policy makers may now have to balance the increased economic impact of smaller airports, which will likely increase as air taxi service areas expand, against the potential externalities. While local leaders might still focus on their own constituents, state and regional leaders cannot ignore the potential that local decisions does affect regional and state economies. For example, the impending introduction of air taxi service\textsuperscript{61} using very light jets makes any region with an airport having a runway of least 3,000 feet reachable by business people from hundreds of miles away. Conversely, firms located in regions served by these airports have the ability to expand their market areas by being able to reach customers and suppliers previously out of reach. Economic development planners in these regions now have an additional tool to make their areas more attractive to firms.

\textsuperscript{61} The DayJet Corporation launched its on-demand air taxi service in Florida in October 2007.
Further adding to the potential future importance of smaller airports is the evolution of the nation's air traffic management system from a ground radio-based system to one based on satellite technology. The FAA is adding instrument landing approaches based on global positioning satellite (GPS) at many small airports around the country, increasing their utility in poor weather.

3.6.2 Aviation Policy, Regionalism and Federalism

This spatial dispersion of firms' establishments and the resulting growth in economic development in new regions, however, might well depend upon the local support given to community and regional airport owners and managers as they plan to add to ground-side infrastructure needed to support additional flight operations. All too often, unfortunately, local decision makers do not recognize the benefits of general aviation airports, and they see airports only as creating negative local externalities (and thus problems with constituents if they support the airport).

3.7 Guiding the Future of Aviation Policy

The results of this project should help inform the judgment of policy makers as they develop transportation policy. The regional economic impact of airports militates for a regional approach to transportation planning. The closing of an airport or the imposition of operating restrictions on it has implications that transcend municipality boundaries, just as the closing of one portion of an interstate highway would affect ground traffic not just locally, but possibly in an entire region. Certainly, there is always a tension between local and regional planning. A policy of allowing host municipalities to govern the operations of smaller airports is, however, allows those municipalities to determine not only regional transportation policy, but regional economic policy as well. This research
suggests that a regional approach to transportation planning may be more appropriate.

3.7.1 Areas for Further Study

Will the importance of regional and community airports, established in this chapter, remain the same in the coming years? Will declining commercial airline service, combined with technological advances that increase the utility of these smaller airports and increased congestion on the highways, lead travelers to seek out alternatives to the airlines? Will the implementation of NextGen technology lead to a permanent shift of business traveler traffic away from commercial airport and towards regional and community airports?

The evolution of aviation technology strongly suggests that patterns of business travel need to be studied closely over the next decade. The frequency of operations at smaller airports and patterns of corporate travel also seem to be potential study areas. Other areas for potential study include corporate expenditures by mode of travel and relocations of firms by type to areas with easy access to business airports.
### Table 3-1: Initial Regression Model

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>NEW JOBS</th>
<th>Net jobs added between 2001 and 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables</td>
<td>MAJOR</td>
<td>Total runway infrastructure, top 100 airports</td>
</tr>
<tr>
<td></td>
<td>MINOR</td>
<td>Total runway infrastructure, non-top 100 airports</td>
</tr>
<tr>
<td></td>
<td>WORKING</td>
<td>The percentage of the total population that is employed</td>
</tr>
<tr>
<td></td>
<td>UNION</td>
<td>Right to work state status</td>
</tr>
<tr>
<td></td>
<td>FIRE</td>
<td>Percentage of jobs in Finance, Insurance and Real Estate sectors</td>
</tr>
<tr>
<td></td>
<td>MANUFACTURE</td>
<td>Percentage of jobs in Manufacturing sector</td>
</tr>
<tr>
<td></td>
<td>SERVICES</td>
<td>Percentage of jobs in Services sector</td>
</tr>
<tr>
<td></td>
<td>INFORMATION</td>
<td>Percentage of jobs in the Information Services sector</td>
</tr>
<tr>
<td></td>
<td>CLIMATE</td>
<td>Sum of Heating and Cooling Energy Days</td>
</tr>
<tr>
<td></td>
<td>COLLEGE</td>
<td>Percentage of the population that has attained a college degree</td>
</tr>
<tr>
<td></td>
<td>EDUCATION</td>
<td>Per-Student Primary and Secondary Spending</td>
</tr>
<tr>
<td></td>
<td>DRIVING</td>
<td>Driving time from primary city in an MSA to the primary market city</td>
</tr>
<tr>
<td></td>
<td>FUEL</td>
<td>Average cost of diesel fuel</td>
</tr>
<tr>
<td></td>
<td>ELECTRICITY</td>
<td>Average cost of commercial electricity</td>
</tr>
<tr>
<td></td>
<td>CORP-TAX</td>
<td>Top corporate tax rate</td>
</tr>
<tr>
<td></td>
<td>POPULATION</td>
<td>MSA Population in 2001</td>
</tr>
</tbody>
</table>
Table 3-2: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR</td>
<td>111</td>
<td>8.306306</td>
<td>17.63096</td>
<td>0</td>
<td>107</td>
</tr>
<tr>
<td>MINOR</td>
<td>111</td>
<td>22.94598</td>
<td>22.76256</td>
<td>0</td>
<td>138.973</td>
</tr>
<tr>
<td>WORKING</td>
<td>112</td>
<td>58.46604</td>
<td>7.485237</td>
<td>32.87836</td>
<td>76.11639</td>
</tr>
<tr>
<td>FIRE</td>
<td>108</td>
<td>7.070406</td>
<td>2.154176</td>
<td>3.355191</td>
<td>13.41776</td>
</tr>
<tr>
<td>MANUFACTURING</td>
<td>109</td>
<td>11.36981</td>
<td>6.594583</td>
<td>1.833074</td>
<td>36.79132</td>
</tr>
<tr>
<td>SERVICES</td>
<td>99</td>
<td>5.135455</td>
<td>2.060486</td>
<td>1.76</td>
<td>14.24</td>
</tr>
<tr>
<td>INFORMATION</td>
<td>105</td>
<td>1.908571</td>
<td>0.741116</td>
<td>0.7</td>
<td>4.6</td>
</tr>
<tr>
<td>RIGHT TO WORK</td>
<td>112</td>
<td>0.571429</td>
<td>0.497096</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>CLIMATE</td>
<td>112</td>
<td>5234.964</td>
<td>1090.928</td>
<td>4066</td>
<td>8082.5</td>
</tr>
<tr>
<td>COLLEGE</td>
<td>112</td>
<td>25.08482</td>
<td>3.686919</td>
<td>20.4</td>
<td>33.2</td>
</tr>
<tr>
<td>EDUCATION</td>
<td>112</td>
<td>77.07929</td>
<td>16.16716</td>
<td>60.2</td>
<td>109.22</td>
</tr>
<tr>
<td>CORP TAX</td>
<td>112</td>
<td>71.08482</td>
<td>16.2447</td>
<td>50</td>
<td>99.9</td>
</tr>
<tr>
<td>DRIVING TIME</td>
<td>112</td>
<td>3.9375</td>
<td>2.145614</td>
<td>0</td>
<td>10.03333</td>
</tr>
<tr>
<td>ELECTRICITY</td>
<td>112</td>
<td>7.994196</td>
<td>1.922411</td>
<td>5.77</td>
<td>11.63</td>
</tr>
<tr>
<td>FUEL</td>
<td>112</td>
<td>19.20223</td>
<td>0.761966</td>
<td>17.84</td>
<td>20.59</td>
</tr>
<tr>
<td>POPULATION</td>
<td>112</td>
<td>800.7632</td>
<td>1967.921</td>
<td>50.553</td>
<td>18353.35</td>
</tr>
</tbody>
</table>
Table 3-3: Correlation Results

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
<th>(11)</th>
<th>(12)</th>
<th>(13)</th>
<th>(14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR (1)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MINOR (2)</td>
<td>0.78</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WORKING (3)</td>
<td>0.19</td>
<td>0.03</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIRE (4)</td>
<td>0.43</td>
<td>0.41</td>
<td>0.06</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANUFACTURING (5)</td>
<td>0.50</td>
<td>0.44</td>
<td>0.48</td>
<td>0.48</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SERVICES (6)</td>
<td>0.49</td>
<td>0.45</td>
<td>0.22</td>
<td>0.36</td>
<td>0.54</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFORMATION (7)</td>
<td>-0.23</td>
<td>-0.31</td>
<td>0.02</td>
<td>-0.48</td>
<td>-0.27</td>
<td>-0.25</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLLEGE (8)</td>
<td>0.04</td>
<td>-0.01</td>
<td>0.25</td>
<td>0.13</td>
<td>0.37</td>
<td>0.24</td>
<td>-0.10</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDUCATION (9)</td>
<td>0.05</td>
<td>-0.03</td>
<td>0.06</td>
<td>-0.07</td>
<td>0.21</td>
<td>0.22</td>
<td>0.04</td>
<td>0.66</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CORP TAX (10)</td>
<td>-0.07</td>
<td>-0.05</td>
<td>0.15</td>
<td>-0.15</td>
<td>0.15</td>
<td>0.12</td>
<td>0.15</td>
<td>0.34</td>
<td>0.54</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRIVING TIME (11)</td>
<td>-0.01</td>
<td>0.02</td>
<td>-0.29</td>
<td>0.10</td>
<td>-0.19</td>
<td>-0.26</td>
<td>-0.33</td>
<td>-0.57</td>
<td>-0.42</td>
<td>-0.33</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELECTRICITY (12)</td>
<td>0.13</td>
<td>0.09</td>
<td>0.01</td>
<td>0.08</td>
<td>0.33</td>
<td>0.31</td>
<td>-0.18</td>
<td>0.60</td>
<td>0.80</td>
<td>0.40</td>
<td>-0.17</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FUEL (13)</td>
<td>0.09</td>
<td>0.10</td>
<td>-0.07</td>
<td>0.15</td>
<td>0.28</td>
<td>0.17</td>
<td>-0.23</td>
<td>0.18</td>
<td>0.35</td>
<td>0.55</td>
<td>0.22</td>
<td>0.62</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>POPULATION (14)</td>
<td>0.82</td>
<td>0.78</td>
<td>0.06</td>
<td>0.35</td>
<td>0.45</td>
<td>0.43</td>
<td>-0.16</td>
<td>0.10</td>
<td>0.16</td>
<td>0.04</td>
<td>-0.19</td>
<td>0.18</td>
<td>0.11</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Table 3-4: Regression Results

| job_growth     | Coef.   | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|----------------|---------|-----------|-------|------|----------------------|
| **MAJOR**      | 2,307.6 | 432.4     | 5.34  | 0.00 | 1,445.8 - 3,169.3    |
| **MINOR**      | 811.9   | 291.1     | 2.79  | 0.01 | 231.8 - 1,392.1      |
| WORKING        | 185.9   | 728.3     | 0.26  | 0.80 | -1,265.5 - 1637.5    |
| FIRE           | -1,430.6| 2,286.5   | -0.63 | 0.53 | -5,987.6 - 3,126.3   |
| MANUFACTURING  | -1,295.7| 3,254.2   | -0.40 | 0.69 | -7,781.3 - 5,1090.0  |
| SERVICES       | -9.84.8 | 770.9     | -1.28 | 0.21 | -2,521.1 - 551.5     |
| INFORMATION    | 7,699.1 | 6,608.9   | 1.16  | 0.25 | -5,472.4 - 20,870.5  |
| COLLEGE        | -449.7  | 1,797.3   | -0.25 | 0.80 | -4,031.6 - 3,132.3   |
| EDUCATION      | 198.5   | 512.4     | 0.39  | 0.70 | -822.7 - 1,219.8     |
| CORP TAX       | -534.2  | 414.2     | -1.29 | 0.20 | -1,359.7 - 291.2     |
| DRIVING TIME   | -716.4  | 3,072.7   | -0.23 | 0.82 | -6,840.3 - 5,407.6   |
| ELECTRICITY    | -8,745.0| 5,016.0   | -1.74 | 0.09 | -1,8741.9 - 1,252.0  |
| FUEL           | 3331.0  | 11,174.3  | 0.30  | 0.77 | -18,939.3 - 2,5601.3 |
| POPULATION     | 17.0    | 3.9       | 4.34  | 0.00 | 9.2 - 24.8           |
| _CONS          | 38,395.0| 194721.5  | 0.20  | 0.84 | -349,685.0 - 426,474.5|

Adjusted R-Squared = .8807
Prob > F = 0
Chapter 4. New Paradigms in Air Travel

4.1 Creating New Paradigms in Air Travel

Innovations in any industry are rarely adopted immediately after their introduction. As with any transportation innovation, the path from awareness to implementation may be an arduous one. As noted in Chapter 1, Ettie and Vellenga (1979) describe this process using a six-stage innovation model, consisting of awareness, interest, evaluation, trial, adoption and implementation. Innovation adopters will typically progress through each phase sequentially as they evaluate important characteristics of the innovation itself: cost, relative advantage, complexity, trialability, and observability. In 2007, the DayJet Corporation launched what the firm hoped would be an innovation in air travel, a very light jet-based air taxi service (DayJet 2006). DayJet introduced the service first in Florida providing transportation to adjacent states as an alternative to commercial airline service for short haul travel. The firm positioned the service also as an alternative to automobile travel within Florida. In order to assess the service's characteristics, that is, those listed by Ettie and Vellenga, the firm commissioned a study of businesspeople in one of the cities in its initial service area, Lakeland, Florida. Lakeland is served by a mid-size regional airport, Lakeland Linder Regional Airport, but does not have scheduled commercial airline service. The city is about 267 miles from Tallahassee, requiring a driving time of over four and a half hours. The objective of this research is to assess how business people in Lakeland, Florida, may adopt the very light jet-based air taxi service like that offered by the DayJet Corporation as an alternative to
commercial airline service for short haul travel. It also assesses the acceptance of the service as an alternative to long distance automobile travel. Key dimensions studied include price, reliability, value of time, and service area. All of the participants were recommended by the Lakeland Chamber of Commerce. The remainder of this chapter is based on the report that was presented to DayJet.

4.2 Why Might Air Taxi be a Viable Mode Choice?

The national commercial air travel system is increasingly characterized by congestion, delays, and canceled flights. In 2006, less than 74 percent of all nationwide flights arrived on time. At the nation’s 32 busiest airports, delays are an even more severe problem. Business travelers who frequently travel are especially affected by these delays for at least three reasons. First, being able to attend an important meeting may depend on flights arriving on time. A late arriving flight might well prevent a businessperson from transacting important business. The issue of late arriving flights is especially problematic given the commercial airlines’ adoption of hub and spoke scheduling topology in which direct flights have been replaced by flights that fly first to a large hub airport. Passengers then typically must deplane and board other aircraft for the flight to their eventual destination. A late flight arriving at the hub airport can easily result in a missed connection.

Second, business people may attach greater value to their time than does the average personal traveler. Especially for key executives, the time spent driving to airports over congested roads, then arriving at airports in enough time to pass through security

---

62 The research reported on in this chapter was funded by a grant from the DayJet Corporation.
63 Source: Bureau of Transportation Statistics, Year to Date through September, 2007. The Federal Aviation Administration considers a flight as having arrived on time if it reaches the gate within 15 minutes of the scheduled arrival time.
checkpoints, often amounts to hours of lost productivity. When airliners spend time on ramp areas waiting for takeoff clearances, this lost productivity mounts.

The need for business people to arrive at their destinations in time to transact important business combine with the increasing percentage of late flights to create a new travel calculus: the personal cost of air travel, expressed in terms of potential lost business opportunities plus the value of lost productivity now may outweigh the higher price of air fares associated with air taxi service. In response to this new calculus, firms are introducing a new travel mode referred to as air taxi. Air taxi differs from previous modes of air travel, such as charter air travel, in an important way. The new air taxi firms have developed business models that hope to maintain high seat-load factors, that is, to minimize empty seats on any flights. Unclear at this time, however, is whether the advantages that air taxi service provide (e.g., increased convenience and reduced unproductive time by being able to fly from closer and less congested airports) will translate into a market share sufficient to maintain a viable air taxi industry. This report seeks to examine, in a small controlled setting, how attractive an air taxi service might be to business people in various industries as an alternative to commercial airline service or automobile travel.

4.3 Objectives

The objective of this study is to gain insight into the decision processes used by business people when choosing an air travel mode. In particular, the study seeks to determine if air taxi service employing very light jets (VLJs) that can operate from regional and community airports represents a viable travel option.
VLJ-based air taxi service has certain advantages over commercial airline service. Air taxis can operate from regional and community airports with runways too short for commercial airliners. These airports are often located in suburban areas, providing travelers with the option of driving a relatively short distance compared to a drive to a commercial jetport. Lakeland-Linder Regional Airport is about a ten-minute drive from the Lakeland central business district compared to a drive of an hour or more to Tampa-St. Petersburg or Orlando airports. Further, the time needed to board an air taxi is measured in minutes, compared to hours at primary commercial airports. Parking at regional and community airports is not the problem as it is often is at busy airports. For business people who place a premium on their time, these issues can represent important mode choice factors.

Further, air taxi provides significant advantages over automobile travel. The 480 mile drive from Miami, Florida, to Tallahassee takes a minimum of eight hours, precluding the possibility of a single day meeting. A Miami businessperson wanting to drive to Tallahassee for an important meeting would need to allocate three full days for the meeting, two of which would be nonproductive. In contrast, a businessperson could easily accomplish the trip in one day using DayJet’s on-demand air taxi service. The savings from being able to conduct business in a single day includes not only the regained productivity, but also the avoided hotel and other travel costs.

Other important factors may lead business travelers to select an air taxi in place of a commercial airline. Air taxis, since they operate on-demand as opposed to a fixed schedule, can provide travel times that meet travelers’ needs. This can further enhance their value to time-conscious travelers. In addition, air taxis offer point to point service

64 Source: Mapquest
without the need to fly first to hub airports. This eliminates possible plane changes that bring the risk of missed connections and misplaced baggage. Finally, regional and community airports might be closer to a business traveler’s ultimate destination. This further reduces the time spent traveling. Whether or not air taxis will be successful, however, depends on a number of factors, discussed later in this report.

4.3.1 Research Environment

Lakeland is a city in Polk County, Florida, located approximately 35 miles east of Tampa and 55 miles southwest of Orlando along Interstate Highway I-4. Neighboring communities include Polk City, Winter Haven, Bartow, Mulberry, and Dover. The city is home to Florida Southern College and Polk Community College. The city has a population of 100,502, ranking as the 21st most populous city in Florida. When accounting for the metropolitan area that includes Winter Haven, Lakeland ranked ninth. The mean household income is $50,508, and the median household income is $37,870. The per capita income is $21,705.

Management, professional and related occupations account for over 33 percent of employment for workers 16 years of age and older. Sales and office occupations account for almost 29 percent of employment for that group. The largest industry sector is Education Service and HealthCare/Social Assistance, accounting for over 23 percent of employment, more than twice as much as any other sector. Government jobs account for about 12 percent of employment. Of persons 25 years of age and older, 83.2 percent have at least a high school diploma. Over 20% have a bachelor’s degree or higher.

---

65 http://www.citytowninfo.com/places/florida/lakeland
66 U.S. Census Bureau, 2006
67 http://www.stateofflorida.com
Area residents are served by Lakeland-Linder Airport (see Figure 4-1 at the end of this chapter), a publicly-owned, public-use regional airport located approximately five miles from the Lakeland central business district. The airport has two runways: 9/27 that is 8,500 feet long and 5/23 that is 5,000 feet long. Runway 5 has a precision instrument landing approach (ILS). All runways have a GPS (Global Positioning Satellite) approach. The Lakeland-Linder Airport control tower operates 16 hours per day. Aviation gas and jet fuel are both available. Lakeland-Linder does not have any scheduled commercial service – area residents who need to travel by airline must first drive to Tampa International Airport or Orlando International Airport.

Lakeland hosts Florida’s largest convention – the Sun’n Fun Fly-In sponsored by the Experimental Aircraft Association – which brings 300,000 visitors and contributes over $25 million to the economy each year, while involving nearly 3,000 volunteers and 20 service organizations. Lakeland also offers a wealth of artistic and cultural attractions, some of which are listed here:

- **Florida Southern College Frank Lloyd Wright Architecture & Visitors Center:** Home to the largest single-site collection of Frank Lloyd Wright architecture, the College offers a wealth of information about the famous architect, including a permanent exhibition of his photos, drawings, and correspondence.
- **Florida Air Museum at Sun ’n Fun:** Among the exhibits are personal artifacts from legendary aviator Howard Hughes and "Sweetie Face", the famous aircraft of aerobatic legend Bob Hoover.
- **Florida Dance Theatre:** Polk County's only professional dance company and one of Central Florida's most innovative forces in contemporary dance.
• Polk Theatre: A restored facility originally built in 1927 as a vaudeville and movie house.
• Exploration's V Children's Museum: Three floors of hands-on exhibits for kids and families.
• Polk Museum of Art: Exhibitions include Contemporary American Art, European Decorative Art, Asian Art, and a permanent display of Pre-Columbian artifacts.
• Imperial Symphony Orchestra.
• Pied Piper Players.
• Lakeland's Community Theatre.

4.3.2 Research Methods

The President of the Lakeland Chamber of Commerce identified 16 business people from the Lakeland area as potential participants in the study. All 16 were contacted by telephone to determine first, if they were willing to participate in a series of in person interviews. One person declined to participate; the other 15 were willing to participate contingent upon their schedules allowing it. Two days for in-person interviews were allocated. The Lakeland Chamber of Commerce provided a conference room at their offices on Lake Morton Drive.

In-person interviews were successfully completed with seven of the identified business people in Lakeland. Due to scheduling conflicts, interviews with two business people were conducted by telephone. Conflicts prevented the completion interviews with the remaining business people, although attempts to complete interviews with them continued.
Data was collected using a survey instrument (Appendix 3) that collected information about the respondents' air travel preferences as well as their inclination to employ a air taxi service such as DayJet’s as alternative to commercial air travel and/or automobile travel. The survey consisted of open-ended questions designed to collect qualitative information, and questions designed to collect quantitative information. The first type of questions allowed participants to provide greater depth in their answers and to allow for the development of new questions. The second type of questions allowed for statistical measurement of key data elements. These questions were generally constructed using a five point Likert Scale. The survey instrument was validated by DayJet staff who confirmed that it captured all of the elements important to the firm.

An extensive interview was also conducted with the manager of the Lakeland-Linder Airport and two members of his staff. This interview provided insight into the impact that a successful air taxi service might have both on the airport and on the region’s economy. It also resulted in suggestions about how DayJet might better position its air taxi service.

4.4 Research Findings

The findings are grouped into four categories: current air and automobile travel behavior, air travel factors and needs, air taxi awareness, and the airport management perspective.

4.4.1 Current Air and Automobile Travel Behavior

Participants averaged 24 airline trips per year. One participant reported making 52 airline trips in the past year. Another reported that as his business grew, the number of required trips could grow to dozens of flights per month. The typical distance for trips by
air ranged from 300 to over 1,000. The average reported trip was 694 miles. All of the participants said they only used coach travel in order to minimize travel costs. The participants reported using commercial airlines the vast majority of the time, although some participants reported having used charter air travel on occasion.

In general, participants traveled alone more often than not. The average number of people traveling together was 1.4. No one reported a travel group size larger than three. The number of days spent traveling range from one to four, with the average being just over two days. All of the participants reported a preference for taking early flights. When asked why, answers included “airports are a pain in the ass”, to avoid the backlog (caused by long lines at airport check-in counters), and a desire to maximize their productivity. While no strong preference for flying on particular days of the week emerged, the tendency was to travel during the middle of the week when road and air congestion were likely to be less a factor. Of those participants that did specify a preferred day of the week to travel, Tuesday, Wednesday and Thursdays were mentioned most often.

All of the participants reported using their own car for the drive to the airport. The time required for the drive to the airport averaged just less than one hour. The shortest drive (35 minutes) was reported by a participant who lived midway between Lakeland and Tampa. When asked whether road congestion was a factor in their travel plans, participants reported that the possibility of congestion resulted in their decision to take early flights. One participant stated that he only travels between 6:00 a.m. and 7:00 a.m. when there is little road traffic. The participants agreed that road congestion was a meaningful problem when making travel plans. Congestion at Tampa International Airport was not described as a significant problem. Only one participant was concerned
about the possibility of delays at the airport; he reported that he planned to arrive at the airport two hours before the flight’s scheduled departure time.

The most often reported airport used by the participants was Tampa International Airport. The most frequently reported destinations were Tallahassee and Washington, D.C. A complete list of all reported destination cities is included in Chart 4-1.

Chart 4-1: Frequent Destinations

![Bar chart showing frequent destinations.]

The participants were asked how close an airport needed to be in order for it to be considered convenient. Answers ranged from 30 minutes to two hours, with the average being 76 minutes. One participant noted that being able to take a charter flight from Lakeland-Linder Airport made even a 30 minute drive to Tampa Airport seem inconvenient.\(^{68}\)

\(^{68}\) This has important implications for how DayJet markets its service. It suggests that giving free “demo” flights on a “seat-available” basis might serve as an important tool in generating awareness and interest in the air taxi service.
Participants were asked what was the longest trip they would make by automobile before considering air travel. The average distance for automobile travel was 191 miles, or about four to five hours depending on the route chose. The maximum car trip was 250 miles, and the minimum reported trip was 150 miles.

4.4.2 *Travel Factors and Needs*

Why business people travel and what factors cause them to choose one travel mode over another are important questions that any travel provider must answer. This area was probed with a number of questions about why they traveled, and what factors were important to them. The factors and the participants’ responses are described here. The first question was open-ended, allowing the participants to answer in their own words. The next eight questions were developed using a Likert Scale where 1 indicated Very Unlikely or Not Important and 5 indicated Very Likely or Very Important. The score for a factor is simply computed as the arithmetic mean of the participants’ scores. A summary of the results is shown in Chart 4-2. This section ends with eight additional open-ended questions

*Why Travel?*

The need for business people to travel has been well documented in prior research. The Lakeland responses, listed below, parallel those found in previous studies.\(^{69}\)

The reasons given include:

- Need to shake hands
- $75 million business needs to be ‘‘eyeball to eyeball’’
- Establishes trust
- In-person carries more weight

\(^{69}\) See especially Chapter 2 for the discussion on the need for face-to-face meetings.
– Need to see body language

Chart 4-2: General Air Travel Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Average Number of Times Factor was Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time savings is important to me</td>
<td>4.7</td>
</tr>
<tr>
<td>Convenient Departure Airports</td>
<td>4.7</td>
</tr>
<tr>
<td>Convenient Arrival Airports</td>
<td>4.3</td>
</tr>
<tr>
<td>Price is Important</td>
<td>4.3</td>
</tr>
<tr>
<td>Air travel is important overall</td>
<td>4.2</td>
</tr>
<tr>
<td>No air travel affects business</td>
<td>4.2</td>
</tr>
<tr>
<td>Airport is important factor in locating business</td>
<td>3.9</td>
</tr>
<tr>
<td>Not applicable</td>
<td>2.9</td>
</tr>
</tbody>
</table>

**Price Importance**

Participants were asked about the importance of air fares. The average score for price was 4.2. This is consistent with the participants’ decision to purchase coach seats when traveling on commercial airlines.

**Time Savings**

The importance of time savings scored even higher than price, achieving a score of 4.7. The lowest score given by a participant was 4. The ability to save clients’ time is likely to be an important factor is DayJet’s marketing.
Scheduling

The importance of convenient flight scheduling scored 4.3, results very similar to the price importance question. The ability of DayJet to arrange for departure times is likely to be a competitive advantage over commercial airlines.

Convenient Departure Airports

Being able to fly from a convenient departure airport was very important to the participants, scoring 4.7 with very little deviation (0.5). This indicates that proximity to a regional or community airport might be a significant factor in DayJet’s marketing process.

Convenient Arrival Airports

Having a convenient arrival airport, that is, an airport that is close to the eventual destination, was less important, scoring 4.3.

Location Factor

When asked if having close proximity was an important factor in choosing a location for their business, the participant’s responses varied widely. The average score was 2.9, but responses also included “strongly agree” and “strongly disagree.” This is consistent with other studies of location decisions that show that other factors, such as the availability of a qualified labor force, rank higher in a firm’s location decision-making process.

Air Travel Affects Business

There was general agreement that without the use of air travel, their ability to conduct business would be adversely affected (average score = 3.9).
**Air Travel Importance**

The importance of air travel to their overall business was rated as important, scoring 4.2.

4.4.3 **Factors Leading to More Air Travel**

A list of factors possibly leading to greater use of air travel was read to the participants. Each participant was asked if the factor would make him more likely to employ air travel. The most frequently reported factor was direct flights. This is consistent with anecdotal evidence that suggests that needing to make connections at hub airports is a serious detriment to air travel. The number of times each factor was reported is presented in Chart 4-3.

**Chart 4-3: Positive Air Travel Factors**
4.4.4 **Factors Leading to Less Air Travel**

A list of factors possibly leading to lesser use of air travel was read to the participants. Each participant was asked if the factor would make him less like to employ air travel. No one factor stood out more than any other did. Notably, some participants said that the need to travel outweighed factors such as air fares and delays. The number of times that each factor was reported is presented in Chart 4-4.

**Chart 4-4: Negative Air Travel Factors**

![Chart 4-4: Negative Air Travel Factors]

4.4.5 **Air Travel Benefits**

Participants were asked to list the major benefits of air travel. Every participant except one reported that saving time was the most important benefit. One participant reported that flying allowed him to have the face-to-face contact that was vital to him.
4.4.6 *Air Travel Drawbacks*

Participants were asked about the drawbacks of air travel. The most frequently mentioned drawback was missed connections, especially when using Atlanta as the connecting airport. Chart 4-5 lists the reported drawbacks.

**Chart 4-5: Worst Air Travel Factors**

4.4.7 *Value of Time*\(^70\)

In order to gain a better perspective on the value of time to business people, the participants were asked what price premium they would pay in order to save travel time. The average premium they expressed a willingness to pay to save one hour of total travel time was just over $107. For two hours of time savings, participants expressed willingness to pay an average of $175. For three hours, the premium rose to $214.

---

\(^70\) These results may be difficult to interpret. Some of the participants were self-employed and would directly pay the added premium for time saved. In other cases, participants were employed by a firm that paid the travel costs. Here, while a participant might see value to saving time, he was not necessarily the travel mode decision-maker.
Two possible issues arose during this section. One participant who worked for a county government unit indicated that while he placed a high value on his time, he was bound by county procedures to employ the least cost means of travel, even if meant incurring overnight expenses at a hotel.

Another participant, an attorney, reported that he billed the customer for his travel time, so there was no particular incentive on his part to save travel time. In this case, the beneficiary of reduced travel time was not the travel decision maker.

4.4.8 Flying and Security

Participants were asked if airline security issues that arose in the wake of the 2001 terrorist attacked had affected their travel decisions. In general, there was no material impact on their decisions to travel by air, although two participants indicated that they had looked into using automobile travel more.

4.4.9 Air Taxi Adoption

The participants were asked a series of questions about DayJet’s air taxi service, using Ettlie and Vellenga's research as an initial framework.

Awareness

Every participant was aware of DayJet’s air taxi service. One participant had already become a member.

Interest

All but two participants indicated that they were very likely to use DayJet’s service. One participant said that he would use the service if he lived in Lakeland; the other seemed neutral to the service.
When asked why they would or would not use DayJet’s air taxi service, the following reasons were given:

- Frequent destinations (Miami, Jacksonville, and Fort Myers) were all within reasonable driving distance
- Cost analysis needed
- Hard to compete with Airtran
- Does not fly to Florida locations today (but looks forward to expansion of the service into the southeast.

Amenities and Comfort

The participants indicated that the longest trip they would make in an air taxi was, on average, three hours. One participant (who reported that he enjoyed small planes) said that he was fine with a five hour trip. Only one participant indicated that having a restroom on the aircraft was an important consideration. No one indicated that flying in a relatively small aircraft was a disincentive to using an air taxi service.

4.4.10 Regional Economic Value

When asked about how DayJet’s air taxi service affected their perception of Lakeland as a place to do business, all of the participants agreed that having an air taxi service available made Lakeland a much more attractive place in which to do business. One participant said that having DayJet was a great attribute; another noted that their Tallahassee representative was difficult to reach. One participant, however, was still concerned about the price of the service. More than half of the participants reported that having an air taxi nearby made them more likely both to stay in Lakeland and to expand.

71 All of the participants were men. Whether women would have this same perspective is open to conjecture and might be an area for further research
their market area. Three participants indicated that they were more likely to expand their business because of having DayJet nearby.

4.4.11 Price Comparisons

To obtain more information on willingness to pay, the participants were asked how likely they were to use DayJet’s service at prices relative to commercial coach fare. At a price equivalent to coach fare, all of the participants said they were very likely to use DayJet. At 125% of coach fare, the participants were still very likely to use DayJet. At 150% of coach fare, likelihood dropped off, but participants were still likely to use DayJet.

4.4.12 Personal Travel

The prospective use of DayJet was not included in the original set of survey questions, but a question on this issue was added after the participants’ apparent distaste for commercial air travel became apparent. All but two of the participants expressed a willingness to employ DayJet for personal travel. The price requirements paralleled the requirement for business travel.

4.4.13 Airport Management Perspectives

The manager of Lakeland-Linder Airport and two key members of his staff were interviewed to obtain additional perspectives on DayJet’s service. The key points resulting from the discussion are presented here, grouped in categories representing common themes.
Positive Effects of DayJet’s Presence

1. People will eventually want to avoid large airports (especially those who can make choices).

2. Key issues include delays, crowding: stress with decision makers that VLJs are an answer to business travel.

3. High end business travelers may move to air taxi. Airlines become flying buses.

4. DayJet may make making flying easy again.

5. Are behavioral changes needed? Will people have to try it multiple times? Will needed behavioral change occur quickly enough for DayJet to succeed?

6. DayJet will allow businesses to focus on the area around Lakeland for growth (Tampa and Orlando).

7. Florida Department of Transportation is pushing the use of underutilized airports. The presence of DayJet might stimulate terminal and other infrastructure development.

8. FAA implemented WAAS-LPV approaches for all runways sooner than planned because of DayJet (helped entire airport).

9. What will DayJet do for Lakeland-Linder? There will be little impact to the airport itself. But even if DayJet does not make financial contribution to airport, DayJet will bring other business to the airport. Example: one business person has opened a branch office made possible only by the travel convenience made possible by DayJet.

Concerns

1. DayJet’s operating from main terminal building at Lakeland. At other airports, DayJet operates from GA FBOs. So the public does not have the mainstream public access to DayJet.
2. Dayjet’s needs to show all advantages of using DayJet – time savings, avoidance of lost productivity, avoidance of overnight travel expenses.

3. DayJet needs to prove viability. DayJet needs to get many people to say “we’re glad you’re here” and to use the service.

4.5 **Recommendations for DayJet**

1. DayJet needs to convince economic development organizations working with startup firms to include the availability of DayJet in the marketing mix.

2. DayJet should work with Chambers of Commerce to demonstrate the advantages of air taxis. Chambers and Economic Development Councils could be one venue for getting their word out.

3. Lakeland officials should help DayJet by using DayJet for its official travel – DayJet will help city.

4. Dayjet needs to develop case studies showing how DayJet allows avoidance of overnight hotel, food, rental car/taxi. – actually reducing overall costs. These case studies should go to all government policy makers, especially government officials who make travel policy (e.g., trips to Tallahassee from far enough away to necessitate an overnight trip); these case studies should be on the DayJet website (use NBAA case studies as examples).

5. DayJet should find a large firm who sees the benefit and agrees to use DayJet a lot

6. DayJet should be giving decision makers demo (or at least reduced costs) flights to Tallahassee and back.
4.6 **DayJet's Value Proposition**

The business people interviewed as part of this study generally acknowledged the value proposition offered by air taxi service. The participants could not necessarily be characterized as frequent fliers, but even so, the value proposition offered by DayJet’s air taxi service was well understood and generally accepted as a worthwhile alternative to commercial airlines and automobile travel (for certain distances). The participants agreed that time savings, convenient scheduling, convenient departure locations, and convenient arrival locations (airports closer to the eventual destination than the closest commercial service airport) were important factors in selecting a travel mode. These factors, of course, reflect the value proposition presented by air taxi service. Notable, however, was the price factor. All of the participants indicated that price was an important factor, yet they expressed a willingness to pay a substantial price premium in order to save time. This suggests that the participants were not as price conscious as their original answers might have suggested. This was supported by the expressed willingness to employ DayJet’s air taxi service even when the fare was substantially higher than existing commercial airline coach fares.

Factors other than financial were also important. Trips that required traveling through a hub airport such as Atlanta were seen as very inconvenient, not only because of the additional time required for the total trip, but also because of the possibility of lost luggage and missed connections. The ability to fly nonstop to a destination was seen as a major benefit of air taxi service. It was noted, however, that Southwest Airlines, the commercial carrier most often mentioned by the participants, strongly positions its use of nonstop flights in its own marketing mix as opposed to an airline such as Delta Airlines...
which uses Atlanta’s Hartsfield Atlanta International Airport as a major hub. According to Southwest Airlines, nearly 80 percent of their flights are non-stop.\textsuperscript{72}

The inconvenience of post-9/11 air travel was noted as a major disadvantage of air travel. Most participants indicated that the time needed to get through airport security lines was an important factor in deciding when to fly. Selecting flights that left very early in the day was seen as a way to mitigate the “hassle factor” mentioned by many participants. This suggests that being able to avoid the inconvenience of security checks might be a strong marketing factor.

The participants agreed that having convenient access to an airport was important to their firm’s business. Whether or not they would make a location decision based on the availability of a nearby airport is less clear. While there was general agreement that the introduction of DayJet’s air taxi service makes Lakeland a more attractive location in which to locate a business, other factors are probably more important. Research has shown that factors such as labor pool availability, stable tax rates, proximity to markets and customers, sources of inventory and materials, and sources of technical, managerial and financial assistance can rank very high in a firm’s location decision.

The overall attractiveness of air taxi service manifested itself in the participants stated willingness to employ the service for personal travel. Even at fares of up to 150 percent of normal coach rates, most of the participants expressed a preference for air taxi service over commercial airline service.

Some obstacles to the adoption of air taxi service, however, were identified. Concern was raised by one participant about DayJet’s ability to provide reliable positioning of aircraft, that is, being able to schedule a flight at the time requested by the

\footnote{\url{http://www.blogsouthwest.com/2006/07/25/}}
customer. This concern will only be dispelled over time as DayJet demonstrates its ability to meet its demand as it introduces service in Florida.

Not all employment sectors are likely users of the service. Travel by public sector employees is frequently governed by policies that require the use of the lowest cost carrier. In most cases (although, interestingly, not all), commercial airline service will be less expensive than DayJet’s service. While travel to and from Tallahassee by government workers can be time-consuming (especially for those workers in the southern portions of Florida), the gains in productivity made possible by air taxi service are precluded by bureaucratic requirements that, ironically, are designed to minimize public expenses. DayJet might mitigate this issue if the firm works closely with public officials to demonstrate how the use of DayJet’s air taxi service can lead to lower overall travel expenses.73

Attorneys represent another sector where the use of air taxi service is problematic. At first glance, the value of even one hour of a typical attorney’s time would justify the employment of an air taxi service. Looking more closely, however, there is actually a disincentive for an attorney to save time. Since travel expenses that are billed to clients include travel time, any travel time saved results in fewer billable hours. Hence only the client would benefit from an attorney’s use of air taxi service. A client, however, would likely not be aware of the potential costs savings resulting from the use of air taxi.

4.7 Conclusions

Study participants see DayJet’s air taxi service as an attractive alternative to commercial airline service for short to medium length trips, and for medium to long

73 Subsequent to the research, the author learned that some government workers have received authorization to employ DayJet’s air taxi service
automobile trips. Price does not seem to be a significant obstacle as long as DayJet maintains service reliability. Notwithstanding this perception, DayJet is left with many challenges based on the concerns noted above.

4.7.1 Challenges to Air Taxi Service

The first challenge is identifying those potential customers most likely to use air taxi service. The participants in this pilot study were from a variety of industry sectors, and attitudes towards air taxi service were consistent across the sectors. No one sector, or group of sectors, seems more likely to adopt the service than other sectors. Subsequent research may be able to uncover some variation across industries, possibly by analyzing the characteristics of firms that express a willingness to adopt air taxi service. For now, however, DayJet is left with the challenge of projecting its marketing message as efficiently as possible.

A second, and possibly more significant challenge, is demonstrating the ability to position aircraft to customers’ airports at the time promised in a reliable fashion. Any failure to provide service when promised could have a long lasting effect on customers’ perceptions of the service. Here, a major advantage of the service is also a major disadvantage. Many innovations require a significant investment in time or money to adopt. An example is the use of robotics in factories. Air taxi service, however, requires no significant investment on the part of the customer. Customers may try and evaluate the service very easily. By the same token, a customer may elect to stop using the service just as easily.

Finally, since the major benefit of air taxi may be the time saved through the use of regional and community airports, DayJet must find an effective way to stress the
importance of time to prospective customers and must find a way to help those customers translate time savings into willingness to pay a premium price. In the end, the ability to represent the advantages of air taxi over alternatives such as driving will determine DayJet’s long term success or failure. These advantages are not limited to time savings, but also include direct costs such as overnight stays and other travel related expenses.

4.7.2 Analysis of Air Taxi Viability

The business people interviewed during this project had strongly positive impressions of DayJet’s air taxi service. Overall, the value of time savings was seen as more important than price. Indeed, the research participants expressed willingness to pay a significant premium above current airline coach airfares to achieve the gains in productivity made possible by air taxi service. Contributing to this willingness are the increasing disamenities associated with commercial air travel. The adoption by most of the major airlines of a hub and spoke route topology has resulted in a decrease in the number of direct flights available. When combined with the inconveniences associated with post 9/11 security requirements, the oft-mentioned “hassle factor” becomes an important issue for business travelers. Finally, the congestion-caused delays and hence lack of predictability of commercial airline travel become important considerations for business travelers, especially when the reason for the travel is to conduct important business.

There are two keys to DayJet’s success. The first is achieving awareness and interest in target markets. This includes being able to influence the travel mode decision makers who might not travel themselves. The participants in this study were themselves responsible for their travel choices (with the one exception noted). In many cases,
however, the people who might benefit, such as sales executives, engineers, and other senior manager, are not the travel mode decision makers. DayJet must be able to create awareness among corporate travel planners as well as with travelers themselves.

As DayJet expands its service, more aircraft will be required, increasing its capital expense. It is important, therefore, to achieve not only awareness, but also actual adoption of the service by enough customers to achieve the cash flow from operations needed to cover both day-to-day operations as well as capital expenses.

The second key to DayJet’s success is successfully demonstrating the ability to meet agreed upon departure and arrival times while maintaining a seat load factor that results in profitability. Some participants stated that they wanted to see how DayJet’s service matched its promises. The complex positioning model developed by DayJet must meet the challenges created by expanding service into additional areas. The possible combinations of point-to-point routes increase as a function of the square of the airports served, placing demands not only on the business model, but also on pilots and maintenance staff.

A further challenge for DayJet concerns three aspects of it pricing model. The existing model for non-commercial air travel is the air charter paradigm in which a client pays for the entire airplane, and pricing is based on the total aircraft’s operational costs. DayJet has selected a “per seat” model in which the aircraft is shared by 3-4 passengers. It is possible, therefore, that a flight might take place with only one revenue-paying passenger. While DayJet’s business model has the potential to minimize this problem, it remains a concern, especially as DayJet's service area expands.
Second, since the pricing of the service depends essentially on a dynamic negotiation between the client and DayJet – involving required arrival times and acceptable departure times – no one price between two destinations can be predicted. This seems to preclude the advertising of prices on internet services such as Travelocity, Orbitz, and Expedia. This may place DayJet at a competitive disadvantage to other low cost carriers.

Lastly, the current flight planning process does not provide flight time information to a customer until the night before the flight. This could potentially deter some users from using the service.

4.7.3 **Key Points**

1. The time for an air taxi service seems to be right, with public outrage over commercial airline delays reaching the point where it has received presidential attention.
2. DayJet’s air taxi service has a promising future, provided they successfully meet the challenges described in this report. The business model seems to provide a basis for financial success.
3. While the value of time savings is an important factor is promoting air taxi service, other benefits might be even more important. These include the ability to offer direct flights (especially when they allow avoiding the Atlanta hub airport), avoiding security lines, and being able to depart from a much more convenient airport.
4. Challenges remain:
   a. the ability of DayJet to maintain a high degree of service reliability as it expands its market area is an open question, considering the increases in complexity of its routing and aircraft positioning algorithms as the number of served airports increases
   b. establishing awareness within the decision-making community is key to achieving the density of users needed to maintain a high seat load factor.
Figure 4-1: Lakeland-Linder Airport
Chapter 5. Air Transportation: The Policy Perspective

5.1 The Case for a National Aviation Policy

The previous chapters present a compelling case for the need to develop a comprehensive national aviation policy, especially one that recognizes the economic impacts of all airports. The research now turns to the difficulties of forming national aviation policy itself. Why is it so difficult to establish a national aviation policy? The stakes are certainly high, yet the federal government has so far failed to establish a national policy that effectively addresses all of the major issues. The issues faced by users of the air transportation system are so severe and the difficulty of developing a national aviation policy to address them so intractable that in late 2009 Department of Transportation Secretary Ray LaHood formed a Federal Advisory Committee on the Future of Aviation, bringing together experts in the field to suggest possible answers to the many problems faced by the industry.

Finding solutions will not be easy. There is little agreement yet on the fundamental nature of the problems besetting the aviation industry. Are the problems institutional, having to do with the various governmental agencies that govern the various aspects of air travel? Is the way government itself functions responsible for some of the problems? Or are the problems mostly a function of how the air travel system itself has evolved since deregulation? That is, are the benefits of the air transportation system, such as lower airfares, so closely linked to the problems (overscheduled flights, for instance) that it is impossible to eliminate the problems without losing the benefits? For example,
the hub and spoke routing topology now predominant in the airline industry has increased
the airlines' efficiency, resulting in lower airfares, yet that strategy has made flying less
convenient by eliminating direct flights.

Of the millions of people who fly on commercial airlines every year, few are
comprehensively familiar with the underlying factors that affect the air transportation
system. This chapter draws on the expertise of those industry experts who are deeply
involved in the issues faced by the aviation system and its problems and the aviation
policy process. Many of the individuals who would be most affected by the development
of a national aviation policy or the absence of one are engaged in dialog in the hope of
developing a broad picture of the aviation policy landscape. Key questions include: what
are the key issues that a national aviation policy should address and what are the
obstacles to gaining consensus for a national aviation policy?

5.2 Aviation Policy Issues and Obstacles

The issues faced by air travelers today documented in Chapter 1, characterized by
long delays at many of the major airports, declining service levels, and discontinued
flights at many smaller cities, represent dramatic challenges for the U.S. aviation
industry. The need for enhanced airline security continues to be a serious issue, even nine
years after the 2001 terrorist attacks. Modernization of the air traffic system is a common
objective among most aviation groups, yet finding the billions of dollars needed for the
development and implementation of the ground equipment and the billions of dollars
needed to equip commercial airliners is a source of major contention between the

---

74 Here, familiarity refers to an understanding of the vast set of issues that affect the stability of the air
transportation industry. For example, mention “hub and spoke” and most people will probably envision a
bicycle wheel, not the routing topology that has come to dominate commercial air travel since the
deregulation of the airlines in 1978.
government and the aviation industry. Delays in modernizing the system prolong congestion problems at major airports. Escalating fuel costs have wreaked havoc with airlines' net income statements, prompting some airlines to reduce service on some of their less profitable routes, sometimes eliminating service outright.

Despite these problems, millions of people continue to fly. As detailed in Chapter 2, businesses continue to believe that air travel remains an integral part of their core business processes, allowing them to reach customers and suppliers in the United States and around the world. Despite advances in communications technology that have made videoconferencing effective and inexpensive, business people continue to place a premium on the face-to-face meetings that air travel makes possible.

As further noted in Chapter 3, the U.S. economy reflects this dependence on air travel. Regions that have more airport infrastructure, e.g., runways capable of supporting operations by business aircraft, experience greater job growth. This effect is not limited to large commercial airports. Even smaller regional and community airports that do not have scheduled commercial service contribute to job growth, ceteris parabus. New technologies currently being implemented have the potential to increase the importance of smaller airports by enhancing their operational capabilities, and hence to reduce travelers' dependence on congested commercial airports. Chapter 4 illustrated how changes in aviation technology might change business flyers' behavior. Instead of continuing to use large commercial airports, some business travelers might choose to fly from smaller regional and community airports. This shift, however, might well depend on new policies that reflect the growing importance of smaller airports.
This chapter focuses on specific federal policies governing air travel. These policies include FAA financing, environmental standards, and air traffic management modernization to name just a few. Given the demonstrated importance of air travel to the U.S. economy, one might expect to see not just a robust debate on the issues that affect the future of the nation’s air transportation system, but also action by Congress and other federal authorities to address them. In spite of numerous federal governmental discussions about aviation, policy makers in the Administration and Congress have suggested few significant policy shifts. They have implemented virtually none. In only one area - commercial airline security - has Congress enacted legislation directly aimed at addressing a specific issue. One component of the new law, changing the responsibility for conducting passenger searches prior to boarding commercial airline flights, was so controversial that the Congress did not pass the legislation for over two months after the 9/11 attacks. This aspect of the legislation is reviewed in detail in the next chapter. In another policy area, airline passenger rights, the Obama Administration issued rules defining certain airline passenger rights. The new rules, collectively known as the "tarmac rule", require airlines to provide water, working ventilation systems and working restrooms. Airlines are now also required to permit passengers to deplane the aircraft after three hours or risk fines up to $27,500 per passenger.

Looking back at the changes in the policy landscape that occurred over the past ten years or so, it took the national crisis of 9/11 and a perceived passenger comfort crisis to drive policy changes. In spite of the worsening congestion at the nation's busiest airports, the mounting need to provide long-term funding to the Federal Aviation Administration in order to modernize the U.S. air traffic management system, and the
growing need to address serious environmental issues, no policy changes have addressed those areas.

5.3 **Why is a National Aviation Policy Important?**

Why might many industry experts believe the country needs a national aviation policy? The most important reason might be to establish a context for decision-making by Congress and by administrative departments and agencies. For example, Congress has repeatedly failed to pass a permanent reauthorization of the Federal Aviation Administration that provides long-term funding (either using contributions from the general fund or fees from passengers and freight shippers). Instead, it has only passed temporary reauthorization bills allowing the FAA to continue operations for the next fiscal year. Without the assurance that needed funding will be appropriated in subsequent years, the FAA cannot plan and implement effectively for long-term projects such as the Next Generation Air Transportation System (NextGen).

A second reason the United States might need a national policy involves government institutions. It is possible that, without an overarching national policy, governmental institutions might implement policies focused strictly on their own missions without evident consideration of general national interest. The Environmental Protection Agency, for example, has expressed concerns about the use of leaded gasoline in aircraft engines, even though no safe and effective replacement yet exists. A rule banning leaded fuel could have a costly effect on tens of thousands of aircraft operators. Hence, the EPA runs the risk of confronting a hostile industry and ultimately delaying (because of the inevitable lawsuits) the removal of lead from aviation gasoline.
Establishing a national aviation policy might have still other benefits. By establishing the Essential Air Service program, which provides subsidies to airlines serving small cities, Congress recognized the value of air travel to smaller markets. For many smaller cities, the EAS is vital to obtaining commercial air service. Yet Congress has provided only limited funding, just $163 million connecting 109 small cities to hub airports in 2010.\textsuperscript{75} A national policy that formally recognized the importance of air travel to economic development might well serve as the basis for an expanded and more comprehensive EAS program.

Finally, developing a national aviation policy might lead to a comprehensive national airport planning process, creating a structure that might meet the future demands for air transportation more effectively than the current system. Some industry experts, for example, have advocated the creation of a national general aviation airport network that would result in airports capable of supporting corporate aircraft in virtually every county in the U.S. While this is an ambitious goal, it is worthy of debate.

\textit{Is There a Downside to a National Aviation Policy?}

The United States has generally avoided setting national policies for most industries. Congress deregulated the airline industry in 1978 (Airline Deregulation Act of 1978, P.L. 95-504) believing that free market forces would yield a more efficient system of air travel than one that the federal government regulated. It is possible that a implementing a national aviation policy might well lead to a return to some form or level of regulation. For example, when the barriers to entry into the airline service were effectively removed by the ADA, few, if any, foresaw how the additional options made

\textsuperscript{75} Source: http://ostpxweb.dot.gov/aviation/x-50%20role_files/essentialairservice.htm
possible for air travelers in the form of new low-cost air carriers might be counter-balanced by the negative effects on industry profits and, therefore, overall industry viability. Along with the freedom to add and delete routes and change airfares at will came the freedom to fail: the previous regulation by the Civil Aeronautics Board was now replaced by Adam Smith's invisible hand. It is very possible that the 1978 ADA is an excellent example of "be careful what you ask for, you just might get it."

5.4 **The Qualitative Approach to National Aviation Policy**

The research employed a qualitative approach based on in-depth interviews of industry elites. The methodology was guided by the qualitative approaches described by Strauss and Corbin (1990), Thorne (2000) and Ryan and Russell (1989). The objective was to determine the most important issues that a national aviation policy might need to address and the obstacles to developing such a policy. In order to obtain as many diverse views as possible, individuals selected for interviews were drawn from both the public and private sectors. Quasi-governmental agencies were included in this study as well.

In the private sector, all of the major industry advocacy organizations were asked to participate. Most of them did. In the few cases where an organization chose not to participate, an organization in the same sector with seemingly similar views did participate. Private sector organizations that participated included:

- Air Transport Association
- National Business Aviation Association
- Aircraft Owners and Pilots Association
- Airports Council International

---

76 In response to the effect of new entries into the low cost market, some airline unions have suggested that there be some barriers to new entrants. Understandably, these suggestions have not been taken very seriously. Government policy continues to favor lowering of existing barriers to entry (GAO 1996-1, GAO 1996-2). To be fair, however, it must also be noted that the new carriers such as Jet Blue tend to be non-union.
General Aviation Manufacturers Association

In the public sector, key individuals from the following departments were interviewed:

- Department of Transportation
- Federal Aviation Administration
- Department of Homeland Security
- Environmental Protection Agency

Beside the above agencies, representatives from the Port Authority of New York and New Jersey and the Delaware Valley Regional Planning Commission also agreed to participate in the research. In addition to these agencies, key prominent individuals from various private firms participated in the research. In all, the research consisted of conducted 29 in-depth interviews in order to capture perspectives from all sides of the issues.

5.4.1 Elite Interviews - Seeking the Experts

In order to better understand the needs of the aviation industry, interviews with private sector participants were conducted first. These interviews continued until saturation was reached, that is, until the likelihood of uncovering new issues was negligible. Public sector representatives were then interviewed. All participants were asked to name a set of core issues that a national aviation policy should contain, as well as the major obstacles to a national aviation policy. Each participant was also asked questions that were specific to their area of expertise or responsibility.

Whenever possible, interviews were conducted face-to-face and were digitally recorded. This helped achieve three results. First, the interviews were able to be more conversational in nature. Time and effort were not spent taking notes or asking the

---

77 Only one organization did not permit the interview to be recorded. Citing concerns about the possibility that sensitive information might be inadvertently disclosed, the Department of Homeland Security requested that only hand-written notes be taken.
participant to slow down until ideas were captured on paper. Second, by recording the interviews, it was possible to have them professionally transcribed. Finally, the benefits of face-to-face interactions are well documented (see Chapter 2). Being able to sit down in the same room seemed to engender a more relaxed atmosphere and feelings of trust, although it must be said that even when the interview had to be conducted by telephone, there was no apparent evidence that any of the participants felt constrained or repressed in any way. All interviews with current government employees were conducted in person in their offices.

All but one of the interviews lasted about 45 minutes. After each interview was completed, a copy of the audio file was sent to a professional transcription service for conversion to a Microsoft Word™ file. After the transcribed file was received, it was imported into QSR International's Xcite™ program for coding. All files were coded by highlighting potential themes and likely keywords, looking especially for words and phrases that have been associated with issues that have been mentioned in the aviation or general press in recent years, or were mentioned by at least two of the individuals that were interviewed. After the interviews were coded, the key points identified by the respondents were reviewed to identify important themes. Once the key themes were identified, the coded responses were grouped by theme.

5.4.2 Identifying Key Aviation Policy Themes

The first question was “What key elements should be contained in a national aviation policy?” The responses were varied, as one would expect, with answers reflecting the perspectives of the respondent. Even with individual perspectives coloring the responses, however, key themes did emerge, as noted later.
The second question asked to all participants was “What are the obstacles to forming a national aviation policy?” Here, the experience of the participant was less obvious. Still, from the nature of their responses, those who had experience in working with government agencies voiced concerns about the nature of government institutions, while those who did not pointed to the aviation industry itself as a potential source of problems.

The next general question focused on the effects of not having a national aviation policy. All participants were asked to describe the effects of not having a national aviation policy. Here, as with the first question, the background of the participant seemed important. Private sector participants expressed concern about the effects on the industry. In particular, they noted how the absence of a national policy subjected the industry to differing and sometimes contradictory policies from different federal departments and agencies. Some public sector participants expressed frustration over the ability to “get things done” while others (notably the current FAA and EPA participants) were happy with the level of inter-departmental cooperation.

The remainder of the questions depended on the participants’ background. For example, private sector participants were asked how the current recession affected the ability to develop a national aviation policy. Public sector participants were asked probing questions about linkages to different departments outside the traditional transportation sector, such as the Department of Homeland Security or the Environmental Protection Agency.
5.5 **Interview Results**

When asked about the key issues that a national aviation policy should address, answers fell within five broad categories.

1. National interest and international leadership
2. Aviation and economic development
3. National and international connectivity
4. Energy sustainability and environmental protection
5. Aviation safety and security.

5.5.1 *National Interest and International Leadership*

The U.S. has been the leader in the development of new aircraft and avionics, and aircraft exports have been an important stimulus for the U.S. economy. As noted by National Research Council (NRC 1997), “the aeronautics industry, one of the largest positive industrial contributors to the U.S. balance of trade, plays a vital role in maintaining the safety and convenience of air travel throughout the world and provides important contributions to the defense of U.S. interests.” At a workshop held by the Aeronautics and Space Engineering Board (ASEB) in October, 1996, the steering committee and participants agreed that (NRC 1997, p. 23)

“It is essential for the United States to maintain its superiority in aeronautics products and services by continually improving safety, efficiency, cost, and long-term environmental compatibility. Without leadership, effective strategic planning and subsequent R&D implementation, aeronautics technology and jobs could quickly move to other nations, adversely affecting employment opportunities, trade balances, national security, and the efficiency of our transportation system.”

A steering committee formed under the auspices of the ASEB developed four dimensions of U.S leadership (NRC 1997, p. 11):
- U.S. economic competitiveness—the relative U.S. share of internationally traded products and services in the world economy.
- Worldwide demand for aeronautics products and services—the level of demand for aeronautics products and services related to civil, military, and access to space applications in local, regional, and global markets.
- Threats to global security and/or quality of life—direct threats to the health and safety of people, and/or the stability and viability of governments, and their implications for the United States.
- Global trend in government participation in society—the tendency of governments to regulate and/or intervene in key aspects of society and the economy.

The workshop participants noted that as early as 1992, firms in other countries threatened U.S. dominance in aeronautics. European Aeronautic Defence and Space Company (the manufacturer of the Airbus line of commercial aircraft) now challenges Boeing for sales around the globe. Even in the development of air traffic management technology, Europe is seizing the initiative and implementing new technologies that rival those that will eventually be provided by NextGen. As other national priorities dominate Congressional attention, the U.S risks losing its position of international aeronautical leadership to a more focused Europe.

Against this background, a number of research participants recounted how U.S. national leadership in aviation has helped shape the decisions made by the International Civil Aviation Organization (ICAO), a specialized United Nations organization and the leading group for resolving potential conflicts that might affect international air travel. The failure of the United States to develop a strong national policy addressing environmental issues, however, threatens the ability of the U.S. to influence international policy. One participant argued that U.S. leadership is threatened in both ICAO and the International Air Transportation Association (which represents the airline industry) as Europe now demonstrates leadership on environmental issues. The U.S. is not perceived
(rightly or wrongly) as a leader is promulgating aggressive environmental standards. The inability of the U.S. to influence ICAO and IATA outcomes, argued the participants, could well result in environmental standards for both noise and emissions that put the U.S. airline industry at a disadvantage. This results from the lead time required to develop technology that will meet any proscribed environmental standard. For example, European policymakers have taken a more aggressive stance on a variety of environmental issues, such as noise and aircraft emissions. Instead of leading the world in aeronautics, the U.S. may soon find itself in a subordinate position, forced to adhere to aircraft standards established by the European community, yet without the technology needed to meet them because U.S. aircraft and engine manufacturers were working to meet standards set in the United States, not Europe.

Two participants underscored the threat by noting the importance of the U.S.’s leadership role and the need to maintain that role. One research participant argued:

"The European Community has begun to set higher standards than those set by the FAA; this is especially true with respect to noise and aircraft emissions. The US continues to play a leadership role in the International Civil Aviation Organization and in the International Air Transportation Association. However, these organizations have come to realize that the United States can be outvoted."

An advocate for business aviation echoed that view:

“I think that what we have seen [...] is an erosion on the world stage of the U.S.’s leadership and preeminence as the leader in aviation. I think Europe is taking a much stronger stance. I think they in fact are leading in many aviation areas where the U.S. has traditionally led. Where does that come from? I think it comes from handcuffs that Congress places on the FAA, not only in terms of priorities and policies, but also in terms of funding and in some cases, lack of funding.”

---

78 Here’s why this is true: many commercial airliners are built to serve not just domestic routes, but international routes as well. If the requirement for landing in Europe included a noise standard far below that set by any U.S. regulatory agency, then Boeing or any other American airliner manufacturer would be forced to design aircraft meeting that standard. U.S. manufacturers would be bound by European rules, even if they were driven by the unique spatial patterns that exist in Europe.
U.S. Leadership and Airline Security

Airline security is a second area in which U.S. leadership is vital. Arguably, the United States is the prime target for international terrorism. The U.S.'s ability to influence the nature of security measures put in place by foreign nations is limited to its political relationships with those nations. Without a formal policy that balances the goals and objectives of a airline security program, yet is in keeping with our national principles (that is, something that goes beyond “keep us safe at all costs”), the U.S. might easily find it more difficult to exercise any political leadership.

So far, however, the fear of another terrorist attack seems to have a created an environment in which the need to prevent another attack serves as justification for almost any proposed airline security program. An advocate for business aviation argued:

"We have a situation where our national security has trumped everything else. Now national security has a policy is doing battle with air transportation without a policy."

International Trade, Technology and Foreign Affairs

The development of the Next Generation Air Transportation System (NextGen) is another example of an area in which the participants argued that the U.S. needs to demonstrate leadership. Through the NextGen project, the U.S. is developing a suite of capabilities that include improved air traffic management, weather prediction, and information sharing to better support the increase in commercial enplanements expected to occur over the next 25 years. European aviation authorities are developing a competing system to overhaul air traffic management over Europe, known as Single European Skies Air Traffic Management Research (SESAR). SESAR's capabilities overlap those of NextGen significantly, though it lacks NextGen's objectives for integrating security and
weather components into the overall air traffic management concept. The concerns about SESAR lie in its different standards and technical specifications for the equipment required for both ground facilities and in aircraft. A private sector participant expressed strong concern that the lack of a national commitment to NextGen (primarily by devoting long term funding to the project) could result in the establishment of the SESAR solution as the de facto international standard. This could render much of the U.S.’s research and development efforts fully irrelevant. One participant in the private sector said that the absence of a policy made it difficult to interact affectively with European aviation policy makers and planners in developing a seamless system of air traffic management. He argued "You want to be sufficiently strong as a nation with a clear policy so that the Europeans combine forces with the Americans and we develop an integration of NextGen and Single European Skies program."

The lack of a commitment to NextGen's development is reflected in Congress's failure to provide long-term funding for the aviation in general. Instead, Congress is making short-term appropriations that fund projects on an incremental basis. One participant decried the lack of urgency in providing the necessary support for NextGen:

"[We have] the ability to address an urgency that exists now: [We would] stimulate the economy by funding infrastructure where the returns of that funded infrastructure will show immediate benefits to the nation. … If we had a national policy on air transportation that clearly articulated the importance of air transportation and how vital it is that we have an infrastructure to support that transportation system, we would say, invest those stimulus dollars right now in advancing NextGen."

This was particularly frustrating in light of the broad range of benefits that the NextGen project provides. Not only will the technologies increase the capacity of the system, but delays will be decreased and fuel will be saved. This will provide enormous
environmental benefits as less fuel burned results in fewer emissions. The airline industry will benefit from the cost savings from lower fuel burned. Prices to transport goods will decrease as the overall cost of travel declines. A representative from the airline industry noted that the benefits of the new technology extended across multiple national issues:

"We think [NEXTGEN] is a potentially transformative technology that could go a long way towards eliminating all of this screeching about delays and lost baggage … that we hear day-in and day-out about the way the system operates today. It would save a huge amount of fuel in the process, and … that [would bring] a huge [amount] of environmental benefit to the society as a whole."

The linkage between establishing a national aviation policy that facilitates the advancement of our aviation infrastructure and establishing a position of leadership in technology sales was made by at least one participant. One argued that if the U.S. develops the air transportation infrastructure in this country, U.S. firms will be able to sell their hardware throughout the world more effectively than if SESAR becomes the dominant way to manage the world's air traffic. Perhaps the most powerful statement in favor of developing a national aviation policy as a means to maintain the U.S.'s leadership position came from a public sector participant.

“…. If it was an enormously expensive undertaking to continue to be the leader in the aviation industry, you could make an argument against it. Given that the change is going to happen and it is inevitable and maintaining a leadership position is not expensive and it's mostly just a matter of dedicating itself to it and being energetic and competent and trying, it seems a no-brainer. There is no reason we shouldn’t do it.”

5.5.2 Aviation and Economic Development

When asked to address the role played by economic development in the need for a national aviation policy, research participants agreed that continued economic development is dependent on support from a national aviation policy. As seen in Chapter
3, aviation has a significant impact on regional economic development. The impact of aviation to the entire U.S. economy was a recurrent theme.

**Aviation's Contributions to the U.S. GDP**

Earlier sections of this paper referenced other studies into the linkages between civil aviation and national economic development. Many of the participants (especially those in the private sector) were quick to voice opinions consistent with the earlier research. One key industry consultant pointed to not only the direct contributions of aviation to the economy (e.g., the value of aircraft sold, salaries paid to pilots and mechanics, value of fuel sold, and so on), but also the ability of air travel to expand a firm's economic opportunities (reaffirming the arguments made in Chapters 2 through 4).

Representative of the comments made by all of the private sector participants were those made by one representing aircraft manufacturing. He noted not only the contributions made by aviation, but also the fact that the industry does not do an effective job of making people know how important aviation is to the economy.

"People don’t realize how important [aviation] is…. Data points like five, seven, or eight percent of aggregate GDP [are] straight out of aviation. People forget about it. We’re taken for granted. We need to do a better job at [aviation advocacy]."

**Facilitating Business Through Aviation**

The people interviewed for this section provided additional support for the conclusions reached in Chapter 4 in which business people in Lakeland, Florida, argued that access to air travel is an important business location consideration. Virtually all of the private sector participants stressed the need for an aviation policy that reflected the importance of air travel to firms. They noted that the ability to travel by air gave firms a
competitive advantage over those without that option. As noted by one industry expert, the ability to travel by air, and therefore getting to a meeting early in the morning, greatly improved business efficiency.

"At 11:30 you don’t start a meeting with a bureaucrat who is going to go to lunch at 12, and … [interviewer: So that perhaps kills your entire morning] Yes. And what requires therefore is pretty much two days to conduct one meeting, and a hotel overnight."

Air travel does not benefit only those firms traveling away from their establishments. Participants linked efficient air service to the ability of communities to attract new businesses. This creates secondary and tertiary economic effects as support industries benefit from the influx of new business travelers. Hotels, restaurants, and rental car firms all benefit from the presence of an airport that can support business air travel.

Just-in-time delivery is another important reason why air travel is so important. With easy access to an airport, suppliers can deliver critical parts and supplies in a fraction of the time required by ground-based transportation alternatives. A business aviation advocate summarized the issues:

"I truly believe that efficient air service … is a key driver to a community's economic growth and its ability to bring in new businesses. [This is] because you have the just in time delivery. You have the recognition that people need to travel so I think if … you continue to see communities lose service and you get more and more legislators interested then we may have something that is like a national aviation policy."

5.5.3 Beneficial Effects of Air Travel on Access and Connectivity

The benefits of air travel go far beyond the measureable benefits provided by access to quick and efficient air travel. Both our quality of life (admittedly, a somewhat nebulous concept), and our sense of connectivity to the rest of the world are enhanced by our ability to travel virtually anywhere in hours. More importantly, from a policy
perspective, a national aviation policy would recognize the indirect beneficiaries of air travel such as those discussed below.

**Air Travel and Improved Quality of Life**

Aside from the directly measurable benefits, participants drew linkages between air travel and quality of life. Quality of life is represented by many characteristics of modern life. Besides the improvement in standards of living made possible by the economic development previously described, people are able to visit friends and family more easily than they might if they are limited to automobile, bus, or train travel. This is certainly true when considering trips to faraway destinations, especially when traveling with small children. International travel would be limited to the relatively wealthy without the low-cost travel made possible by the latest generation of commercial airliners.

Further, a national system of air travel increases the degree to which people can feel connected to the rest of the world. A well-known aviation spokesperson stressed the historical importance of transportation, connecting the ability to travel, not to economic development alone, but also to quality of life, noting, "We know throughout history that transportation is an enabler of economic development. We also know that transportation enhances the quality of life." When asked what a national aviation policy must include, he asserted that any policy would communicate the importance of air travel to quality of life and international connectivity.

“It would articulate why air transportation is vital to the well-being of [a] country. That’s just essentially an economic study; it’s a quality-of-life study; it’s going out to rural American and saying, ‘What is your connectivity with the rest of the world?’”
Indirect Beneficiaries of Air Travel

The private sector participants frequently noted that often lost in discussions of the impact of air travel is the way that it interconnects much of the nation's economic activity. Many participants noted that even people who never have access to the nation's air travel system benefit from its existence. For example, many firms benefit from the ability to ship goods by air, and their managers understand the advantages of air shipping. The buying public, participants argued, are less likely to recognize the benefits that they receive from the speed of transport that aviation provides. Many products are made available that the public would go without if they were subject to the transport times that other modes of travel required. For example, one participant noted that many of the flowers that are sold around the country reach the florist only because of air travel. In many cases, the flowers originate in South America.

The value of air transportation to international trade was highlighted in the spring of 2010 when the ash from an erupting volcano in Iceland shut down the airspace over the United Kingdom and much of Europe. The Kenyan flower industry estimated that it had to dump 3,000 tons of roses and other blossoms due to the closure of its biggest markets in Europe.79 Not only were the flower exporters harmed by the inability to ship their goods to market, but potential buyers were deprived of the supply of flowers to which they normally had access. Two participants summarized the issue. A business aviation advocate noted:

"I think from our perspective, first everybody benefits from a safe, well managed aviation system. If I never get on an airplane, I still benefit if I order anything either through the mail or a cargo shipping company by having the ability to have that deliverable arrive quickly, safely and at a reasonable expense. There is an

overall benefit to the nation for having an efficient and safe aviation system as a result."

A regional planner supported the view that the impact of the nation's air transportation system extended to the entire country.

"If you change the debate from users of the system to beneficiaries of the system, it’s virtually the entire country that benefits from effective and efficient national air transportation. Even those that don’t fly [benefit] because they’re buying goods and using services that are expedited by aviation."

5.5.4 **Energy Sustainability and Environmental Protection**

Energy sustainability is a major challenge facing today's aviation industry. Not only does the industry face increasing problems on the supply side, emissions control is an ever-increasing concern. Volatile fuel costs have placed enormous pressure on airlines' income statements\(^{80}\) and concern about global warming has resulted in increasing scrutiny of air pollution resulting from commercial airline operations. Even the much smaller general aviation sector faces an enormous challenge as environmental groups press the EPA ban the use of aviation fuel containing lead.\(^{81}\)

The aviation industry has been very aggressive in reducing fuel usage, mostly because of dramatic increases in fuel prices. A participant representing aircraft manufacturers was proud of the industry's record.

"We are the industry that’s actually successfully reduced its emissions by about 50-70 percent over the past several decades, because in aviation it makes sense to burn less fuel. You’ll fly further, cheaper, and all these other things. So we’re

---

\(^{80}\) Not only has the price of jet fuel gone up dramatically over the past ten years (from $0.99 per gallon in 2002 to $2.67 in 2009), but the price has been extremely volatile, hitting an annual average of $3.28 in 2008. Because of these substantial price increases, engine manufacturers have placed a priority on developing more fuel-efficient engines.

\(^{81}\) Tetra-ethyl lead accomplishes two goals in piston engines. Lead increases octane, necessary for high powered, high compression engines. Lead also helps lubricate moving parts. While lead has been eliminated from automotive fuel, car engines generally require lower octane fuel than is required for the more powerful aircraft engines.
actually motivated to do this. If you put us on par with cars or any other type of transportation, our record is stellar."

A participant from the general aviation manufacturing industry indicated that the problem was international in nature, making the ability to produce a favorable message on the importance of aviation especially critical.

"In Europe, we are the target. … We did not have a good message on aviation, and we will forever suffer from it. … Let’s not make the same mistake in the United States, but ensure that aviation is understood for what it is. It’s not a luxury product. It’s not an inefficient way of traveling. It is something that is essential for productivity and therefore it should get that appropriate consideration as part of the environmental debate."

At the same time, there was general agreement that the industry needed to be seen as actively becoming more environmentally sustainable. This is especially true in a political environment in which local opposition to a project can literally add years to the time required to expand the operational capacity of an airport. The manager of a large airport system recognized the need to be perceived as a good environmental neighbor.

"This environmental sustainability program is a very interesting thing to me. We … want to be good stewards. We want to reduce our environmental footprint. We do not want to have a negative impact on people who live near our airports. … I say that we operate airports to benefit the quality of life of people in this region, not to detract from it, and that’s true. It doesn’t do any good to create a job for Joe here at the community while I’m killing people [by] polluting. … At the end of the day, environmental sustainability is very important."

**Aviation and National Energy Policy**

Many participants pointed to the absence of a national energy policy that might encourage the development of new fuels as well as realistic guidelines for aircraft emissions. A regional airport manager pointed to the absence of a comprehensive policy that addressed energy sustainability. Instead of being based on a policy that guides long-term plans, efforts to engage in energy sustainability efforts seemed to take place on a
more ad-hoc basis. Policy makers decide the next area that needs attention (frequently as a result of political and interest group pressure) and industry planners figure out how to meet the new environmental standards. As a regional airport manager stated,

"No one has ever put together a very comprehensive vision of sustainability that says that if you do the right things from the moment you initiate the construction, there’s actually not only economic benefits, there’re also great customer and travel benefits. …So what we’re doing is we’re retrofitting things ...."

Participants representing the airline industry expressed some frustration at the notion of single countries imposing their own environmental standards. Since aircraft operate across national borders, allowing countries to set widely different standards forces the industry into a dilemma: either aircraft must meet the most stringent standards defined by any country, or the countries with those standards cannot be served. As an airline representatives argued,

"We can’t have one country regulating it one way and another country [regulating a different way] . . . So it makes sense to do it through ICAO. What we are advocating is this global, sectoral approach. … The airlines, IATA members and ATA members have made specific commitments as to what they will do over the next fifteen years to achieve various steps along the way to becoming more environmentally beneficial. …We’d like to see that happen through ICAO."

A representative of a national aviation group expressed concern that environmental initiatives were a pretext to imposing operational limitations on airports. The absence of a national aviation policy that addresses environmental issues creates an policy vacuum in which states may be tempted to impose strict regulations. The problem is that some of the standards might not be based on genuine environmental concerns, but rather on the hope that fewer aircraft will be able to meet the standards. Hence, many airport and aircraft operators see local environmental regulations as a “back door” method of limiting airport operations.
Emissions Policy Priorities and Aviation

Closely linked to the more overarching issue of national policy is the attention that aviation issues receive relative to other sources of environmental concerns. For the most part, the only issue addressed in a substantive manner has been noise pollution. A former official with the Department of Transportation noted that only recently has action on emissions begun to get more attention than noise.

"Part of my role for a portion of the last decade has been … dealing with environmental issues and particularly with the European regulatory agencies in that regard. … [In the U.S.] we've not [given] the kind of environmental attention in aviation with the exception of noise that they've gotten in Europe. … The noise issues are [now] being superseded by the emissions issue. The one environmental area where the US had been engaged in aviation was the issue of aircraft noise."

In spite of advances made in adhering to environmental standards, the aviation industry remains a highly visible target for environmental activists. As an industry advocate noted,

"If we recognize the unique role of air transportation, then we can decide what priority aviation should have in burning hydrocarbons, right? Right now air transportation gets a pretty black eye from the environmentalists because they look up and they see a vapor trail."

Government sector participants noted a move away from noise as the dominant environmental issue as improvements in aircraft engine technology make airliners much quieter than they were just ten years ago. The realization that the NextGen model focused on an integrated approach to developing the future air traffic management system provided the inspiration to use the same approach with environmental issues. Instead of focusing on one aspect of the environment, the government wants to remove the largely artificial boundaries between the groups that worked on different elements of the environment. As a government participant put it:
"We're looking more at a larger array of important environmental impacts, and we're also thinking in a more integrated fashion. We shouldn't just stovepipe ourselves with aviation noise. We issued an aviation emissions one. [A] water quality [one], a climate one so we wanted to have the integrated approach that we were using for NextGen, environment, and energy. So we basically started over."

She further observed that the introduction of a collaborative model like NextGen has the potential to accomplish more regarding environmental concerns than does any independent initiative. What might be the most important benefit is the bringing together of people from different agencies as well as people from outside the government to facilitate discussions of the place of aviation-based emissions in the overall context of all environmental impacts.

"We're in the process of developing a comprehensive NextGen environment and energy policy giving fairly equal treatment … to noise, air quality issues, climate change, energy, and water quality. We are doing that through our mutual FAA processes, but also in addition …we have Joint Planning Development Office that Congress established for NextGen pulling in other agencies and other folks outside the government; I think [this] offers additional, very helpful consultation and brain power."

One aspect of the policy debate that has been underemphasized is the impact on the environment by making the air traffic system more efficient. While the NextGen project has primarily focused on creating a system capable of handling the air travel demand for 2020 and beyond, a major benefit is creating a system that uses fuel more efficiently. If airliners fly more direct routes covering shorter overall flight paths, they burn less fuel and thus create fewer emissions. If better weather prediction results in airliners delaying their departures until it is more certain that weather over their destinations will be safe for landing, less fuel will be burned while sitting in a holding area, or worse, flying in a holding pattern waiting for a landing clearance. As a manufacturing sector representative pointed out, "if you burn less fuel, you [the airline]
spend less money. If you burn less fuel, you put less carbon in the air." A government-
sector participant described NextGen as benefiting everyone. He pointed out that
"NextGen, for example, could be the basis for a win-win, because if you can find ways to
make airlines fly more effective routes, they save fuel [and] produce less emissions." A
policy maker in the Department of Transportation echoed the sentiment, noting
"[NextGen has been described as beneficial because] of the cost savings and stuff like
that. I am a big believer in it because fuel savings generate environmental benefits in net
absolute terms."

Yet, for all of the environmental benefits that result from the implementation of
NextGen, the Environmental Protection Agency was not included among the senior
leadership of the Joint Planning and Development Office established in 2003 by Congress
under Vision 100 – Century of Aviation Reauthorization Act (P.L. 108-176). A senior
government official noted that while the EPA did have representation in working groups,
the EPA was absent at the most senior level where major policymaking occurs. To date
there have been no major changes in the JPDO leadership that provide the EPA with a
significant role in pressing for the early implementation of NextGen technologies.

A public sector participant acknowledged the need for a comprehensive energy
policy that addressed all components of the aviation industry.

"Policy needs to be comprehensive to address the many aviation-related sources
and impacts, not just the ones that are most easily controlled. We have aircraft
engines including the main engines and the auxiliary power units. The ground
support equipment, passenger vehicles, the facilities themselves, and the
infrastructure on the airport. We have localized air quality impacts. We see certain
climate effects in the upper atmosphere, water quality impacts, and noise. …
Policy needs to address all of those factors and account for the local level
dynamics as well as a national perspective or a national scope. Multiple paths
need to be undertaken in moving towards solutions."
5.5.5 **Aviation Safety and Security**

As documented in Chapter 5, national policy towards aviation safety changed dramatically after the terrorist attacks of September 11, 2001. The focus of air travel security quickly evolved from a concern about hijacking to anxiety about international terrorism. The research participants recognized the need for implementing policies and programs that increased safety in airliners, but they also expressed concern about the practices and programs implemented by the government in the ten years since the attacks. The tension between recognizing the need for a safe and secure air transportation system and for providing an efficient travel system is obvious in many of the responses. It clearly indicates a lack of consensus about the direction of government policy. The starting point for the issue, of course, is the overall role of government. A senior government policy official summed up the role of government.

"The primary role of the government is, I think, … to ensure that travel is safe, to ensure that the consumer is not lied to or otherwise mistreated, and to assure a broad availability of infrastructure [that] allows the benefits of service to be shared as widely as the underlying economics of the business of providing service will allow."

Once the discussion goes beyond these fundamental principles, there is little agreement about the way that air travel should be made safe. A representative from the airport group stressed the need for a policy that recognized the primary goal of keeping passengers safe, yet took into account the need for a free flow of passengers and goods. A member of a national aviation group noted that the changing nature of the world played a part in the changing emphasis on air travel safety. While safety has always been the primary goal of regulators, concerns about the efficiency of the system are now
superseded by security concerns. A former government official described how government concerns evolved over the past 20 years or so:

"Safety, safety, safety. So that is the first item on the list. The second one— security—is kind of an add on. That wasn't a term that would have been in there a few decades ago, but it certainly is now. So that's kind of an added element thanks to … the geopolitical nature of the world. … Then the third one—efficiency … You can make it so safe that nothing moves, so you've got have some balance between assuring safety but still having an efficient as possible system as well."

**Financing Aviation Safety**

One of the issues that frustrated different participants was the financing of security for the nation's air travel system. In fiscal 2009, airlines and their passengers paid $2.16 billion in security fees.82 Much of that amount was in the form of passenger ticket surcharges, which hypothetically should not directly affect the airlines' profits since they are paid by passengers as surcharges to the airlines' base fares. Airlines claim, however, that since they lack pricing power,83 they cannot pass the fee along to passengers.84 Thus to retain demand they must reduce their share of the final ticket prices instead. The fees thus represent another drain on the profits of an entire financially troubled industry.

More than just airline and airport representatives believe that the current funding mechanism is flawed. This belief is based not just on the financial hardship it causes the industry. Rather, the mechanism fails to recognize the nature of the terrorist attacks and therefore who benefits from the added security. Islamic fundamentalists did not seize commercial airliners and fly them into buildings because they disliked the airlines. They

---


83 There's Adam Smith's "Invisible Hand" again.

84 An example of the airlines’ wish to maintain the illusion of low fares is the advertising of base fares which do not include all of the mandated government fees, even though they apply equally to the different airlines. See also [http://www.centreforaviation.com/news/2010/09/14/two-decades-lost-in-pricing-power/page1](http://www.centreforaviation.com/news/2010/09/14/two-decades-lost-in-pricing-power/page1).
committed their heinous crimes using airliners because they wanted to strike fear into as many Americans as possible. The airlines were merely a vehicle for damaging iconic symbols of America: the World Trade Center and the Pentagon.\textsuperscript{85} The downing of airliners and the killing of people aboard them were simply instances of collateral damage.

Airline security financing policy should recognize, therefore, that the attacks represented an assault on the United States. The government should treat the threats as a national defense problem. Participants representing airlines made it clear that the responsibility of securing air travel should be borne by the nation as a whole, not just a single industry and its customers. Three participants argued clearly in favor of treating the possibility of attacks on airliners as national security issues.

Aviation industry advocate: "We believe firmly that people … have attacked aviation not because they are out to get American Airlines or United Airlines. They are attacking because it’s the symbol of the United States. And defending against those threats is a responsibility of all of the citizens of the United States, not just the people who fly on airplanes."

Regional airport manager: "We’re in a bit of a unique situation there. … While the transportation security administration does baggage and passenger screening as well as screening of your accessible baggage, we do have a system where the airlines and the airports spend considerable amounts of money to supplement that system. We think it’s critical for a national aviation policy on the security side to recognize that aviation security is a national defense function and that it should be funded and implemented accordingly."

Airlines advocate: "I really believe that the United States government should be dealing with security as a national issue. I’m not a big proponent of airports’ need to take that on. I believe the federal government has to come up with the wherewithal and the ways and means, just like they do with other things, and they need to deploy a very consistent security program."

\textsuperscript{85} The target of United 93, the airliner that crashed in Pennsylvania is not known for certain. The flight path indicates that the aircraft was headed towards Washington, D.C., where potential targets included the White House or Congress, as well as the Pentagon, which was damaged by another hijacked airliner.
In spite of the view that the costs of securing the air travel system should be borne primarily by the users of the system, air transportation continues to be treated differently from other transportation modes. While the Transportation Security Administration is spending public funds on additional security at railway stations, surcharges have not been added to train fares. Therefore, the participants in this study do seem to have a point: the government is imposing costs on the aviation industry, yet it treats security in other transportation modes as a national security issue. Besides the philosophical objection to bearing the expense of air travel security, airline representatives were concerned that the burden of security costs threatens the viability of the airline industry.

"Another multiple-billion dollar expense … has been imposed on the industry, along with the other security responsibilities that are passed on to the carriers by TSA. I mean you start counting the billions here and pretty soon you can see why this business is not profitable. … At the core, I think you have to figure a way to make the commercial airline business at least have a fighting chance to be financially successful for the long term, or the rest of this stuff starts falling apart."

The Role of the Transportation Security Administration and the Impact on the Aviation System

Most of the private sector participants expressed concern about the role of the Transportation Security Administration in providing aviation security and the resulting impact on the aviation system. For the most part, they acknowledged that Congress had handed the TSA a difficult job by Congress. Airport representatives seemed to understand that the travel experience had changed in response to changing world conditions.

"Our view is that the TSA was given a very challenging job by Congress. And after some initial difficulty getting the program up, it’s working pretty well at this point in terms of providing the screening that Congress demands, providing any kind of processing through the airports. Certainly it’s not as pleasant and inviting
to go to an airport today as it might have been two decades ago, but a lot of things have changed today."

A number of participants, however, expressed concern about the TSA's fundamental approaches to aviation security. One problem noted by an industry advocate was the policy of centralizing security policymaking, excluding input from the aviation industry. Allowing the TSA alone to define which security programs would be implemented places an enormous amount of responsibility on TSA experts. This might not be a major concern if the aviation industry had confidence in the TSA. Many participants, especially those with day-to-day contact with the TSA, however, were less than satisfied with the TSA's understanding of how the aviation system works.

A representative from a national aviation group put it this way:

"I think what we have seen unfortunately is the application of a known security environment...Commercial standards that have been in place for decades are [being applied] broadly to a system that is so fundamentally different, general aviation. [As a result, they] threaten to really eliminate an industry that’s built upon freedom of movement and a very different security regime."

A regional airport manager was also very direct in his concerns about TSA competence. He complained that the "TSA in particular, often is almost keystone cop-like in their inability to [pursue rational security practices]. They are falling all over each other to do things that are sort of outside of their purview." He bemoaned the TSA practice of introducing new programs without seeking industry comment first. He said that the practice created the perception that the organization lacked an understanding of how to respond to realistic industry vulnerabilities. An example provided was Large Aircraft Security Program (LASP), which the TSA withdrew after an industry uproar. The introduction of the program combined with its withdrawal not only hurt the TSA's
image, but led to Congressional action calling for the TSA to vet their intended programs with the aviation industry before formally proposing them.

Another problem with TSA practices involves the rulemaking process used by government agencies. Using urgency as justification, the TSA has been accused of circumventing the normal rulemaking processes. A former government official expressed concern that the TSA might be acting beyond the intent of Congress: "When you have different agencies of government focused solely on their mission without context then you're going to run into the problems that the aviation has been having with TSA."

Part of the problem may be a characteristic of bureaucracies that seek to perpetuate themselves. For the first eight years of the TSA's existence, its focus was commercial airline security. After those initial years, programs and practices have reached a level of maturity. New technologies are implemented as they are developed, but the fundamental policies remain relatively static. Other than managing existing programs, there was little to be done to further secure commercial airline travel.

Somewhat cynically, an aviation advocate explained the efforts of the TSA to introduce new security protocols that target general aviation.

"There is an old joke in government that you always need to be working towards some permanence, but you never want to complete it because if you complete it then why would anybody need you anymore? So you're always working on getting the job done, but you don't want to necessarily ever get it entirely finished …. I mean that's just human nature, … [The TSA has] done as much as they probably can do at the commercial level in terms of … general acceptance of what goes on, but then they turn their focus on other areas. What makes it difficult is that there are also government reports that very clearly said general aviation is simply is not a threat of any significance."
Alternative Approaches to Aviation Security

Many interview participants found it frustrating that the TSA apparently is so reluctant to consider alternatives to the ideas that the agency itself develop. A regional airport manager argued that the TSA behaves in a very centralized and bureaucratic manner, with very little decision-making out in the field by people who have any real life experience.

Another problem that many participants described is the TSA's practice of developing security programs that bear little or no relation to the threat. A national aviation representative suggested an alternative approach that begins with legitimate and realistic risk identification.

"I think that what we have seen or what we would like to see is a security environment--a security policy—that is based not only on [worst case assessment of] risk and threats, but [on] probabilities. I can design a wonderful spreadsheet that will identify risks and work those through to consequences and assign a dollar value to all of that so somebody can make a determination of where the greatest risks are. But if I don’t include probability in that equation, then what I’ve done is build a security regimen for probably the least likely scenario which will most likely [yield] the most expensive results."

The basic difference between the current TSA methodology and the above methodology is the introduction of probability into risk assessment and reaction. Another difference is basing the risk assessment on intelligence. As noted by one participant,

"I think that would be an ideal… situation [is] where I take intelligence [and] I build a risk scenario around that. I understand the end result of those risks and their effects on the system. But [I would] also include an element, I think, a very required element, of probability in that as well to really determine where do I place my security assets to reduce the risk that something bad will happen?"

One aviation industry advocate expressed concern over how decision-making in the TSA remains so centralized. He argued that a more secure nation would result if the TSA found ways to elicit ideas from the entire population. The Aircraft Owners and
Pilots Association developed and introduced one such idea, the Airport Watch program.\footnote{See www.aopa.org/airportwatch for details on the program.} The program, which encourages pilots to be aware of any suspicious activity at their airports, is just one example of a more expansive approach to solving security challenges.

The view most often espoused by members of the aviation industry went to the notion of attempting to eliminate all risk. One participant noted, somewhat cynically, that the best way to achieve total security was just to ground all aircraft. This, of course, is not an acceptable solution. The participant recommended a more reasonable approach:

"We would be much better off if we recognize the fact that there is always going to be a little risk, but if we distribute the solution among many people and use the creativity of our nation, we’re going to have an acceptable outcome."

5.6 **Obstacles to Developing a National Aviation Policy**

The overwhelming majority of the interview participants agreed that the nation needed a national aviation policy for the reasons described in the previous section. When asked about the obstacles to developing a national aviation policy, the responses fell into four main groups:

1. Ambiguous national interests
2. Government institutions
3. Financing of the aviation system
4. Competing industry interests.

5.6.1 **Ambiguous National Interests**

A major obstacle to forming a national aviation policy is the failure to gain consensus on the goals and objectives such a policy might espouse. The major concerns mentioned by interview participants dealt with the tension between aviation security and
the freedom of movement, intermodal competition, policy on international alliances and
antitrust immunity, and the need for better industry advocacy.

**Aviation Security and Freedom of Movement**

There are major differences in attitudes within government about the security
processes that should apply to general aviation. Because of concerns about terrorist
attacks, for example, general aviation flights into Reagan National Airport in
Washington, D.C., have been severely restricted. Given the importance to key business
people of traveling to Washington, this represents a critical hardship. An aviation
industry representative who makes frequent trips to Washington described the impact of
this restriction.

"The biggest problem is that we’re probably overreacting to the threat of general
aviation. General aviation flights, as you know, are not allowed into Washington
National Airport. It is a major inconvenience to a person like me and to several
other businessmen. I used to go to Washington once a week, and I would leave
this office...at 8 o’clock in the morning. I could walk into NTSB or FAA at 800
Independence Avenue two hours later. ... I could land at Signature in
Washington. They would have a taxi waiting for me on the ramp. ... Now I have
to fly to Baltimore and either take a train into Washington or fly to Dulles or
Leesburg and rent a car to drive into Washington. It’s generally an unsatisfactory
arrangement. It adds at least an hour and a half to the trip, which means if I leave
at 8 o’clock in the morning, I don’t get there until 11:30, and that is, as you can
see, disrupting the workday."

Even flights to several general aviation airports in the Washington, D.C., area
have been severely curtailed. The Transportation Security Administration has
aggressively addressed potential security concerns by proposing new rules that further
restrict general aviation operations by applying security protocols that previously applied
only to commercial airlines.
**Intermodal Competition**

In spite of the demonstrated need for improvements in the nation's air travel system and the need for funding NextGen, the American Recovery and Reinvestment Act (ARRA) (P.L. 111-5) did not include any funds for that project. While ARRA did include $200 million for improvements to existing power systems, air route traffic control centers, air traffic control towers, terminal radar approach control facilities, and navigation and landing equipment, only projects that could be completed within two years were eligible for funding. ARRA made another $1.1 billion to airports, but with the requirement that half of the funds be awarded within 120 days of the legislation's passage with the rest awarded within one year. These requirements effectively precluded the use of the funds for the implementation of NextGen, since the aviation industry has not yet developed needed technology.

The failure to make a significant investment in NextGen may be one of the clearest examples of ambiguous national interests. Included in the $787 billion stimulus package was $8 billion for support of high-speed rail capital programs. This travel mode was characterized by airline advocates as the "current fair-haired child." As an airline sector participant put it,

"There were billions of dollars in the stimulus package for high-speed rail, whereas we have been trying to get the air traffic control system redesigned. Our infrastructure is there, the airports are there, the planes are there, and everything is there. High-speed rail? There is nothing there. You know to build a railroad between Las Vegas and Los Angeles [might cost] billions of dollars, [yet] there is nothing there. It will probably end up being subsidized forever like it is in Europe."
Airline advocates noted the federal government's attitude towards international partnerships as a stumbling block to developing rational aviation policy. Airline advocates see the ability of airlines to join with overseas partners as an important way to leverage air travel systems in other countries, particularly in Europe. Alliances and antitrust immunity were noted as "one of the few ways that the carriers can cope with the question of the limitations of the United States...", giving them "an opportunity to leverage their system with a competitor’s system in another part of the world, getting benefits from both parties in the United States and over there."

Congress, however, has raised concerns about potential violations of U.S. antitrust laws for which the airlines have been granted immunity in the past. This worries the airlines, since a key part of making international partnerships effectively serve both parties is the ability to make long-range commitments. According to the International Air Transport Association, the lead-time on purchasing a new airliner exceeds two years. Yet, the Department of Transportation is apparently considering implementing a new policy reviewing international alliances and antitrust immunity as often as every two years. As an airline sector participant put it,

"The Department of Transportation has the authority [to exempt airlines from antitrust laws] and yet now we’ve got people talking about revoking or changing that authority and having these things reviewed every two years or five years or making it impossible to really make a serious long-term and commitment to these kind of things. … It makes little or no sense, and yet that’s the kind of direction that we seem to be headed in."

The government's concerns about antitrust immunity further complicates the airlines' business by forcing them to respond to repeated Department of Justice queries. Airline advocates claimed that the government failed to adequately understand the network nature of international air travel and the benefits that accrue to passengers by being able to book a flight originating in the United States and arriving in Europe or Asia without having to interact with multiple airlines.

"We’ve got the Department of Justice existing on the anti-trust analysis that looks at city fares that make no sense when you are looking at the kind of network services that we’re talking about here. And yet, we get dragged into all of these sorts of extraneous fights without any focus on what’s the real problem here."

**The Need for Better Industry Advocacy**

A significant problem noted by some of the participants was the inability of the aviation industry to convince policymakers of its national importance. For whatever reason, the aviation industry has not generated support for aviation in general or for business aviation in particular. Instead, commercial air travel has been taken for granted. One participant put it this way:

"Our community has been deficient, in my judgment, in continually advocating the value of air transportation, and particularly on-demand private air transportation. We used to do this as a community. For one reason or another, we … said, 'We’ve done enough of that, and we’re not going to do it much anymore.' [One industry leader] stated that a community such as the business aviation community had to have an ongoing program of advocacy as part of its fabric."

A regional airport manager argued that aviation lacked an effective voice and the consequently other interest groups were more successful in advocating for their positions. While the industry has attempted to make its case, its voice has been drowned out by others. The failure to generate understanding of the importance of corporate aviation became crystal clear in 2008 when three automobile company chief executives were
castigated by members of Congress for taking corporate jets to travel from Detroit to Washington for hearings on auto firm bailouts. Representative Gary Ackerman from New York was particularly upset, saying,

"There is a delicious irony in seeing private luxury jets flying into Washington, D.C., and people coming off of them with tin cups in their hand, saying that they're going to be trimming down and streamlining their businesses. It's almost like seeing a guy show up at the soup kitchen in high hat and tuxedo. It kind of makes you a little bit suspicious."

Aviation advocates noted, as did other observers, that the auto executives failed to defend their decision to use their corporate jets to ensure that they would arrive on time for the hearings. Onlookers interpreted this lack of defense as an admission that they had done something wrong. One industry representative noted that the failure of the executives to vigorously defend the use of corporate aviation was a setback for that aviation sector.

"Advocacy is not lobbying, they go to different audiences. We are very, very strong as a community in lobbying. I think we took our eye off of the advocacy ball. The result of that was that flight departments and heads of companies didn’t really know how to address the type of question that Ackerman posed at that first bailout hearing of the automobile companies. Instead …[they should have said] ‘Yes Congressman Ackerman, we use corporate aircraft because that’s the way to get greatest productivity out of people and time.’"

He noted that the average person today does not understand air transportation. If people did, he argued, there would be greater support for the use of all air travel, even corporate air travel.

Airline advocates argued that part of the inability to develop a national aviation policy stems from the capacity of the airline industry as a whole to survive in the face of adversity, even as individual airlines might exit the industry. Congress sees the airline industry, one participant claimed, as having the ability to weather financial storms
without any government intervention. This results in Congress failing to address vital issues such as providing long-term FAA funding and facilitating international partnerships. As an airline advocate argued,

"The airlines always say they have been at death’s door for years, and they always figure out a way to keep going. … To an extent, we’re our own worst enemy there because it is true, we have continued to produce a service of incredible value to the economy at a very low cost to the consumer, and we just keep doing it. I think there is this expectation that that can go on forever. But increasingly, I think, we will be dealt out of the international markets where there is potential for real profit, unless some of these things change. But … you go up on Capitol Hill and … you can’t get anybody to seriously engage in a discussion about fundamental changes."

Aviation advocates argued that the inability of the aviation industry to garner support for significant funding in the ARRA legislation was an indication of the lack of effective industry advocacy. One noted "So as far as I am concerned in this administration, transportation is very, very low on the totem pole. And so we’re not getting the attention, we’re not getting the attention in the stimulus. The stimulus was pathetic." One participant offered a prescription for the aviation industry.

"The number one thing that needs to be done is that the aviation community and those who make decisions that govern it, those who report on it, those who analyze it in the academic community and elsewhere, and those who talk about it, who feel enlightened about it or want … they need to accurately, effectively, and fairly educate and enlighten the general population about this incredibly significant pillar of our society--aviation. ... Some people have said that [the model] for the 21st century aviation is the interstate highway system."

5.6.2 **Government Institutions**

One of the more frustrating obstacles to developing a comprehensive and cohesive national aviation policy that serves the nation’s interests is the difficulty in coordinating the priorities and planning processes of different government institutions. The problems associated with this issue fall into three main categories:
- Differing agency goals and objectives
- Lack of Congressional and Administration commitment
- Federalism and the role of states

**Differing Agency Goals and Objectives**

One of the most significant obstacles to developing a national aviation policy is a failure to harmonize the goals and objectives of different government agencies. Many of the participants agreed that specific in department and agency missions resulted in agencies pursuing objectives that focused on the agency’s mission, regardless of the impact that those objectives might have on those of other agencies. An industry advocate summarized the issue:

“A number of folks … have argued that we don’t have a true comprehensive national aviation policy, something that addresses all of the elements: economics, environment, and security. … As a result, different departments in government … start implementing their own types of requirements. We see the Department of Homeland Security taking one approach towards aviation policy. The EPA will be working on a different aviation policy focusing solely on the environment.”

The problem exists even within a single department. An airport representative noted that the Department of Homeland Security had the authority to integrate certain functions within its purview but failed to do so. As one private sector participant argued:

“As you know, the DHS is a relatively young agency. And we are still frustrated in the fact that aviation security is not even integrated into customs and border protection. I’ll give you an example. I’m not a proponent of this necessarily, but we had a program, which has sort of fallen out of favor called “registered traveler.” It was a way using your biographic signature … to identify the passenger, and then … you would have certain additional privileges conferred on that person. Maybe I wouldn’t have to take my shoes off. Maybe I wouldn’t have to do something else. Well now you have a program at CBP called “global entry,” which is in effect like that, but it’s run by the government. There was no talk of integrating that.”
She continued that theme, expressing some frustration caused by the duplication of processes.

“There is a requirement, and this is public, for employees whether they are the airline or airport employees to go through a criminal history records check in order to walk around in certain … security areas of the airport. … If I am an airport or airline person who works in a customer’s area, I have to get a criminal history record check, which in no way relates to the other one that I just had. … If I am an airline employee, and I handle mail … under a mail contract. I have to have a criminal history record check, which by the way has nothing to do with the other two. So, I could be an employee and have been subject to three different criminal history record checks that may have different crimes or different criteria. Maybe one is 5 years, one is 10 years, one is 20 years. … At least two of those DHS could harmonize, and there is no reason that the federal government couldn’t harmonize all of those."

Another industry representative agreed, bemoaning the fact that the Department of Homeland Security seemed to be pursuing its own set of policies without integrating them into an overall plan in the national interest. He argued that "Homeland Security is still … doing their own thing. That’s unfortunate. So if you look at a national aviation policy request, it would be that Homeland Security actually starts fitting into that in a natural way." Even a public sector participant recognized the difficulty in getting different agencies to pursue compatible policies, noting: "As we looked at [the Joint Planning and Development Office], one of the issues we came across was that we actually couldn't find a case study in the past where someone had said [to] five agencies: we want you to come together."

A former public sector official echoed concerns about TSA rulemaking and the need for a national aviation policy that would help frame decision making.

"When you have different agencies of government focused solely on their mission without context, you're going to run into the problems that the aviation industry has been having with TSA…. And when I mentioned originally safety, security, efficiency, a national policy would integrate all of those elements, the middle one being security and that being … TSA and Homeland Security's role. It would be
very helpful if there was a policy that addressed how those needs get balanced. ... That's one of the problems that we have been having with TSA. ... There are people in TSA who haven't a clue as to how aviation works."

A potential root cause of this problem is Congress's failure to understand and address the institutional nature of government planning. In particular, Congress fails to recognize the "smoke-stack" nature of government agencies. When it passed the legislation creating NextGen project, for example, Congress had an opportunity to create an environment in which different departments could work together and develop a cohesive policy. That opportunity was lost, however, when Congress failed to create such a facilitating structure. A public sector participant noted this:

"If you look at the NextGen legislation, it wants a product delivered and it wants cooperation among agencies. [But] it actually doesn't create any line authority, and it doesn't create any budget authority. ... One of the MIT professors told us how you do lateral integration without formal authority. [and] that's [the] sort of challenge that has been based institutionally in the NextGen effort. ... Congress set this up [as] a voluntary effort in the sense that there is no one that really is ultimately responsible for ... integration. It presents a certain set of challenges because ... all the different agencies involved ... have different responsibilities."

**Lack of Congressional Commitment**

Very frustrating to many participants, especially those who have extensive interaction with members of Congress, has been the inability of industry representatives to find ways to fully engage Congress in the significant issues facing the industry, especially when the problem involves an existing program. One participant observed a problem in the airport improvement program and how it relates to Congressional inaction.

"The airport improvement program ... money ... that goes to general aviation airports [is] ...something that ought to be looked at a very fundamental level. You can’t get anybody in Congress to take a serious look at that, or in the Administration for that matter, because they are all wed to the program as it exists. It takes a lot of work and effort to really change things."
He went on to note that the problem of lack of engagement is not limited to Congress. The Department of Transportation, which should be at the forefront of addressing problems in the air transportation industry, was criticized for its failure to be fully engaged in the industry's problems.

"We know what the problems are and we have some idea on what we think would be partial fixes to this. But the problem is there is no engagement on this other than among people in the industry themselves in trying to get the Department of Transportation … focused on the airline business at all. And yet it’s one of the critical pillars that support our economy."

An airline advocate noted that Congress had an opportunity to address many of the aviation system's problems with the American Recovery and Reinvestment Act of 2010, which provided about $1.1 trillion for all projects. For a rather small percentage of the overall package, about $45 billion, most of the funding requirements of the complete NextGen system could have been met.

"[NextGen] would save a huge amount of fuel in the process, and with that a huge of environmental benefit to the society as a whole. All kinds of benefits in this thing, and yet we can’t get the $12 billion that seems to [have] …been tossed at high-speed rail."

A regional airport planner also expressed regret that the stimulus package did not address the pressing funding requirements of NextGen. He argued that the project selection process had more to do with the ability of powerful Congressmen to bring dollars to their districts than it did with the values of the proposed projects.

"So I thought the whole stimulus and the lack of focus on aviation was just dumb. … It could have funded NextGen and put thousands of people back to work. It could have met all the goals and could have been a bigger win nationally in all kinds of ways, both in public perception ways as well as the realistic way. And instead, it became. . . pork quadrupled to the fourth power."

A regional planner who had frequent interactions with members of policymaking bodies saw Congress’s interests in "dollars for districts" predating the stimulus package.
He argued that "Congress’s interest in aviation has to do with pork and getting funding to projects in peoples' districts." This concern was noted even by a public sector representative. She noted that the Airport Improvement Program, intended to provide financial assistance to airports unable to raise the revenue needed for repairing runways, taxiways and ramp areas, installing lighting systems and other vital airport projects, had been transformed into a way for members of Congress to show support for their district.

A national aviation advocate had a different spin on the issue, arguing that Congress's interest was piqued when aviation stories hit the headlines, noting "The media, believe it or not, … has a large role to play in …[the focus of] pet projects of Congress."88

A regional airport planner pointed out another problem with the way that Congress addresses key issues. He argued that Congress seemed incapable of addressing multiple major programs at the same time. At the same time that the FAA reauthorization bill was introduced, President Obama was pressing for passage of his health care program. This brought deliberation on the FAA funding bill to a virtual halt.

"What you are seeing right now on Capitol Hill, nothing is really moving on aviation issues or anything else until healthcare gets out of the way. So in that regard, the Administration has a single focus and until that is resolved, they don’t want to hear anything about anything else."

**Federalism and Aviation Policy**

Another issue within government institutions is the differing roles of federal and state governments. While the FAA has jurisdiction over the safety of airports, it has no role in the preservation of airports. Nor does the FAA play any role in land use decisions

---

88 One good example of this is the requirement that airlines take steps to eliminate long pre-takeoff delays. In this case, it was the Administration that was spurred to action by a few well-publicized cases of passengers forced to remain aboard an airliner for many hours without access to food, water, or air-conditioning.
that impinge on airports even when FAA grant assurances are affected. A problem faced by airports advocates is one of differing benefit and disamenity areas: the benefits of airports are regional, while the disamenities are primarily local. This often results in decisions being made about airports being made primarily on the basis of the impact to the very localized community instead of being based on the broader regional benefits the airport provide. One aviation advocate pointed out the effect that the lack of a national aviation policy has on developing an effective national airport system:

“The major obstacle to implementing a national airport system is local resistance. This is substantially the reason a national policy is required. If one thinks about it, each additional airport is not only an additional economic engine, it also serves to dilute the traffic at all other airports. Once this is commonly realized the resistance will abate somewhat.”

Another issue that creates problems for the aviation industry is dealing with different local regulations, especially those that address noise and fuel emissions. Airline advocates pointed to past problems where local airport authorities imposed noise and emission regulations that exceeded federal regulations, affecting the ability of operators (especially corporate and business flyers) to operate at important airports. They stressed the need for consistent regulations across states, naming California as the state that was most likely to enact troublesome regulations. A national aviation advocacy group echoed the sentiment, expressing concern about the role of states in regulating aviation and the need for a national aviation policy.

"First of all, [states] need to recognize the limits of state authority and the state’s ability to regulate aviation. … What we always try to do is to avoid creating a patchwork of regulations across the country. The second element beyond that I think is the state ought to support aviation as a very important part of their transportation infrastructure. … Not enough states fully recognize the importance of aviation as part of a multimodal transportation system.”
While the regulation of aeronautical activities has long been the domain of the federal government, participants noted that some states attempted to apply their own form of regulations. A participant from a national aviation organization expressed concern over the actions by states to regulate various aspects of aviation.

"It is a well-established principle, both in law and in judicial decisions, [that aviation regulation is subject to the federal government, yet] states continually tinker with it, and say, gee, we wish we could control this. ... And we’re going to do it until somebody tells us we can’t. And so one of the things that my group does is ... constantly try to smack these efforts down across the county. Security issues, environmental issues, ... regulation of airspace, states and local governments are constantly trying to assert their ability to ... regulate these kinds of things when really they have got no business doing that."

A business aviation advocate noted the need for local support for airport projects, pointing to examples where some development ventures have taken literally decades to complete because of local opposition.

"The local support for project ... plays an important role. We have seen projects take 15, 16, 17 years to get through the legal system before the first tractor arrives to start moving earth. I think with our society willing to file a lawsuit at the drop of a hat because somebody stubs their toe, we face a substantial amount of delay and wasted time and money in the court systems when real improvements are waiting in the wings."

When asked for possible explanations of local actions to control aviation activity even when federal preemption seemed to bar that activity, he pointed to political needs.

"The biggest driver ... is the local need for some political actor, whether it’s a legislator or executive or whoever they are to ... demonstrate that they are fulfilling ...whatever their particular constituency thinks needed to be done about aviation."

He expressed concern about the motivations behind certain state and local land use rules, noting that while airport operators already work hard to become more environmentally responsible, state and local regulators still make life hard for airport managers.
"One of the initiatives … is looking at … how do you … make aviation more environmentally responsible. We think that steps have already been taken, but we can all do more. [In regard to the state issue] we look at some of these environmental issues in some places as backdoor attempts to create … operational restrictions on an airport. We have been active in opposing them in some places where there is the opportunity to do so. We continue to have lots of concerns in state aviation policy-making about the role states can play in protecting airports. We recognize that a lot of these land use decisions that really impact airports are local decisions."

A participant with regional planning responsibilities expressed similar concern over the ability of local authorities to control airport policy. He called for greater authority at federal and state levels.

"I think is a big problem - the local municipal issue, the need for overriding authority. It was interesting … that [state A] talked about the fact that they did have condemnation power on approaches and on obstructions off airport property. [State B] could do the same, but they refuse. The Governor … refuses to get involved with the absolute power of local governments, even when it comes to a facility that affects the whole state. So we need strong…[stronger] central government at the federal and state level on this issue, I think, and we need a budgetary process that puts more emphasis on aviation."

5.6.3 Financing of the Aviation System

Financing the air travel system probably generates as much controversy as any other issue. The concerns most often expressed by the research participants fell into two areas: the need for sustained funding of the FAA and other agencies that engage in multi-year projects and policies governing both airport funding and passenger facility charges.

The Need for Sustained Funding of Government Agencies

The need to finance the FAA and the modernization of the air traffic management system were seen by many to be major challenges faced by Congress. As noted earlier, the cost of the landside and airside infrastructure needed to support NextGen will exceed $20 billion. In addition, the commercial air carriers (the major beneficiaries of NextGen)
and general aviation operators will be required to equip their aircraft at a cost estimated to exceed $24 billion. So far, Congress has authorized funds only on an annual basis. Without assurance that the NextGen system will be in place or when the benefits will be available, system users (especially the commercial airlines) are reluctant to make sizable expenditures in avionics that might never be used.

**Airport Funding and Passenger Facility Charges**

One of the greatest sources of concern to airport advocates was the way that revenue is generated for airport infrastructure projects. In 1990, Congress authorized commercial airports to collect passenger facility charges (PFCs), which are added to the prices of airline tickets. Airport managers must use the funds for FAA-approved projects that (1) preserve or enhance airports’ safety, security, or capacity; (2) reduce noise; or (3) enhance airline competition. As might be expected, airport advocates expressed strong concerns about the low levels of PFCs. One advocate noted that while inflation has increased construction costs, PFCs have not kept pace. He argued that if an inflation factor had been incorporated into the PFC legislation, the charges would now be over $8.00 instead of the current $4.50. He noted that many airport-based businesses are allowed to increase revenue by adding an "airport infrastructure charge" to the price of their service. Rental car agencies, for example, employ infrastructure charges to increase revenue while still being able to keep their advertised prices low. A recent inquiry of the Hertz car rental web site for Newark Liberty International Airport found that Hertz applied extra fees totaling almost 16 percent of the base car rental fee. In contrast, a $4.50 PFC on a base airfare of $200 is less than 3 percent.
While most participants' concerns were directed at the Passenger Facility Charge program, a more general issue was uncovered: complete economic deregulation for the airports. Congress deregulated the commercial airlines in 1978, but commercial airports' financial planning and operations are still heavily regulated. Airports that apply passenger facility charges must show that the revenue generated is justified by the expense of the project. One airport advocate noted that commercial airports may not show a profit. "… There is a certain amount of money that the airport can have … The revenues have been based on the cost of running the airport. There can’t be a surplus." Another regional airport manager reinforced the concern, pointing to the requirement to base airport-related prices on long-range costs. "We’re not able to price our product in most cases….If it’s a private purpose activity like parking lots, I can use supply and demand, but on the runways, I’m still forced to long-range historical pricing."

Airports are specifically barred from imposing any charges that are intended to influence certain airline behavior. For example, airports may not impose congestion pricing to encourage airlines to schedule fewer flights during the busiest hours of the day. One airport manager noted that when one of the airports that he managed experienced congestion, he was barred from implementing slot auctions and peak-hour pricing. Citing various laws, the FAA required the airport (as it does all commercial airports) to set landing fees and other charges on "fair and reasonable terms without unjust discrimination."

Airport advocates had strong opinions regarding the flexibility that airports needed in pricing their services and campaigned for greater flexibility.

"We believe that the airports should have more flexibility in their rates and charges. The requirement would still be to be revenue neutral…You need to have a system that prevents the type of nightmare that we had in the summer of 2007. There is absolutely no penalty for bad behavior on the part of the airlines. Airports, we believe, should have that same ability to price their limited resources."

---

89 This is the same requirement applied to AT&T when it was a monopoly. Price increases requested through tariff submissions had to be justified on the total cost basis experienced by the company.
Another regional airport manager pointed out that if commercial airports were able to generate more revenue, the FAA could direct more funds from the AIP to smaller airports incapable of assessing PFCs.

"[Some of the] the money that I free up from federal user fees and taxes that are now going into federal aid … could be redistributed to small airports that don’t have that ability to self-support. And I would like to see more of it go to the federal government … for capacity that it controls, like the air space, like NextGen, which we just talked about. I think that’s absolutely essential."

5.6.4 Competing Industry Interests and the Allocation of Air Traffic Management Expenses

One of the controversial issues making it difficult to gain consensus on national aviation policy is determining how the costs of maintaining the U.S. air traffic management system should be allocated. The absence of a guiding national aviation policy has resulted in the country's failure to engage in debate about the more substantive issue - what are all of the components of the national airspace system and how should they be financed. An aviation industry advocate argued for the importance of establishing a national aviation policy.

"If we had a national policy that talks about … of the components of air transportation in this country, we would then be able to address such questions such as 'What is an appropriate way of spreading the cost of this infrastructure?'"

A business aviation advocate maintained that since the entire country benefits from the existence of a safe and efficient system of air travel, a significant portion of funding should come from the general taxpayer base.

"If I never get on an airplane, I still benefit if I order anything either through the mail or a cargo shipping company by having the ability to have that deliverable arrive quickly, safely and at a reasonable expense. There is an overall benefit to the nation for having an efficient and safe aviation system as a result. I believe that funding, in part, should come from the general taxpayer base."
Unfortunately, the industry has not been able to achieve any sort of consensus on the allocation of aviation system expense among the various stakeholders. The representative of a general aviation group termed the current industry disagreement on financing as "organizational in-fighting." As an airline sector participant put it, "One of the key questions is how do we fund our air traffic management system, which is critically important for safety and efficiency. The airline industry has advocated a user fee system. General aviation, private aviation, has advocated continuing the system of taxes, both on passengers and fuel tax, as well as cargo waybill taxes. They’ve advocated that system. Because both of those groups are extremely powerful and they have excellent relationships with Senators and Congressmen throughout the United States, I think that has hindered our ability to come together. So I think really those issues where the industry cannot achieve consensus make it difficult to have a unified national policy."

The industry finds itself divided into two competing camps. On one side are the commercial airlines, which advocate strongly for the imposition of user fees on general aviation users of the air traffic management system, using a cost-based approach. They argue that it takes as many system resources to manage a corporate jet carrying a single passenger as it does to manage an Airbus A380 carrying 500 passengers and that therefore the operators of both aircraft should be charged the same amount for a flight using the same ATM resources. On the one hand, assessing fees to the direct user of the aviation system (such a charging for weather briefings, the filing of instrument flight plans, entering certain controlled airspace) seems reasonable. The operators who drive the expense pay the cost. These Pigouvian taxes have the same theoretical basis as road tolls - the drivers who benefit from existence of the road pay for it. On the other hand, user fees are often expensive to collect - an entirely new bureaucracy would be required to collect fees based on the use of the various components of the air traffic system. User fees also ignore the benefits that accrue to secondary users of the air transportation
system - the millions of job-holders who are employed because of the nation's air transportation system. A former DOT official urged caution when deciding how to apportion costs. He brought up the notion of marginal costs, an issue used by general aviation advocates to challenge the airlines' "a blip is a blip" argument.  

"In terms of how the FAA gets the rest of it whether it's through the current system or with user fees, I am not opposed to user fees as long as they're rational, and by rational I mean that there is some relationship between, you know, the cost of the service provided and the appropriate distribution among those who use that service, and that whole issue of the marginal cost issue."

He went on to note that "We go back and forth on that when you come to navigation systems and I would certainly argue that if there were no general aviation in America, you would still have most of the ATC system in place because of the commercial air transportation system."

Largely unaddressed in the debate is the extent to which the general fund should support the air travel system. While Congress does endorse some contributions from the general fund, the FAA largely depends on airline ticket taxes and fuel taxes to keep it going (see Tables 5-1 and 5-2 for examples of taxes and fees applied to a typical flight).  

This represents an acceptance of the "user fee" approach to system funding and a failure to recognize the broad benefits of a national system of air transportation.

"The bulk of [FAA] funds have historically come from ... ticket taxes and other related taxes on commercial air transportation: taxes on fuel, and oil, and some other products, and then some contribution from the general fund. It has been predominately fees from users and purchasers of either tickets or fuel or whatever depending on the level of operation with some general fund contribution. There has always a debate about what that ratio ought to be, and you know how much general fund contributions ought to be. Should we have a user pays system above and beyond what we have now?"

---

90 Simply put, the airlines argue that a blip on a radar screen resulting from a Boeing 747 demands as much attention and resources as a blip resulting from a Piper Cherokee.

5.7 Summary

The absence of a national aviation policy has had dramatic impacts on the U.S. air travel system. Key issues remain unaddressed, and the effects of deregulation continue to affect the commercial air transportation system. As seen in this chapter, the obstacles to developing a national aviation policy are substantial and, in some cases, seemingly intractable.

What can be done to create an environment in which a national aviation policy might be formed? It was a critical event - the midair collision of a TWA Super Constellation and an American Airlines Douglas DC-7 over the Grand Canyon on June 30, 1956 - that led to the creation of the Federal Aviation Administration and the modern air traffic control system. Must it take another crisis before the nation's air travel system reaches the attention of Congress and the Administration? The next chapter examines the role of crisis in the evolution of public policy formation.
Table 5-1: Air Travel Taxes and Fees

<table>
<thead>
<tr>
<th>Sample Round-Trip Itinerary: Peoria, IL (PIA) - Raleigh/Durham, NC (RDU) via Chicago O'Hare (ORD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Airline Fare</td>
</tr>
<tr>
<td>: Federal Ticket (Excise) Tax (7.5%)</td>
</tr>
<tr>
<td>: Passenger Facility Charge (PIA)</td>
</tr>
<tr>
<td>: Federal Flight Segment Tax (PIA-ORD)</td>
</tr>
<tr>
<td>: Federal Security Surcharge (PIA-ORD)</td>
</tr>
<tr>
<td>: Passenger Facility Charge (ORD)</td>
</tr>
<tr>
<td>: Federal Flight Segment Tax (ORD-RDU)</td>
</tr>
<tr>
<td>: Federal Security Surcharge (ORD-RDU)</td>
</tr>
<tr>
<td>: Passenger Facility Charge (RDU)</td>
</tr>
<tr>
<td>: Federal Flight Segment Tax (RDU-ORD)</td>
</tr>
<tr>
<td>: Federal Security Surcharge (RDU-ORD)</td>
</tr>
<tr>
<td>Total Taxes and Fees</td>
</tr>
<tr>
<td>Taxes as % of Fare</td>
</tr>
<tr>
<td>Taxes as % of Ticket</td>
</tr>
</tbody>
</table>

Source: Air Transport Association
A complete description of the taxes and fees are found at http://www.airlines.org/Economics/Taxes/Pages/GovTaxesandFeesonAirlineTravel.aspx
Sample Round-Trip Itinerary: Peoria, IL (PIA) - Raleigh/Durham, NC (RDU) via Chicago O'Hare (ORD)
Chapter 6. The Role of Crisis in the Evolution of National Policy

6.1 Crisis, Core Values, and Policy Change

This chapter closely studies two inter-linked issues: the role of crisis in policymaking and the difficulty in implementing policies that are at odds with the population's core values. This is accomplished by examining a successful policy change as well as some policy implementation failures.

Why were security advocates in Congress able to enact legislation and policies designed to improve air traveler security while other important issues languish? What led DOT to enact the "tarmac" rule? What do those two events have in common, and what set them apart from other key issues such as systemic system congestion and environmental concerns? Answering these questions are a necessary prelude to attempting to address the obstacles to national aviation policy formation described in Chapter 5.

6.2 Crisis-Driven Policy Evolution

The vast set of issues that beset the U.S. air transportation system is hardly a secret to anyone in Congress or the Administration. Yet, for the most part, little action from Congress has been forthcoming. This inaction is not limited to aviation issues. In spite of the agreement among the world's scientists that global warming is a serious issue requiring near-term action, Congress has failed to take substantive steps to curb the U.S.'s contributions to the problem. The failure of the U.S. to join the Kyoto Accords is but one example.
In critical areas of transportation public policy, such as FAA financing, overall system congestion and delays, air traffic control modernization, and energy sustainability, voices aimed at these issues were simply not heard. As an apparent result, no major policy shifts have occurred in these areas. This is not to say that these policy areas have not driven some discussion in Congress and in the Administration. A brief electronic search of the Congressional Record of the key search terms revealed that a substantial number of discussions have taken place over the past ten years. The following phrases were used at the federal government's web site, http://www.gpoaccess.gov/crecord (Chart 6-1 presents the results):

- Air Traffic Control and funding
- ATC and funding
- congestion and airline
- congestion and airport
- congestion and aviation
- delay and airline
- delay and airport
- delay and airspace
- environment and airline
- environment and airport
- environment and aviation
- passengers and airline
- passengers and airport
- security and airline
- security and airport
- security and aviation

Not surprisingly, aviation security dominated Congressional debate. The crisis mentality resulting from the September 11, 2001, terrorist attacks overcame the inertia so frequently associated with Congress. Yet, with the exception of the Aviation and Transportation Security Act passed in November 2001, Congress has not enacted any major legislation on any aviation issue. After security, environmental issues were the next
most discussed area on Congress’s agenda, yet no major legislation addressing the environmental impact of air travel has been enacted.

Chart 6-1: Congressional Record Search Term Results

![Keyword Search Returns](chart)

To be fair, Congress did attempt in 2003 to address some of the systemic issues affecting air travelers with Vision 100 – Century of Aviation Reauthorization Act (Public Law 108-176), which called for the development of new technologies intended to expand the capacity of the national airspace system, collectively known as the Next Generation Air Transportation System. Yet, for the past seven years, Congress has consistently failed to provide the long-term funding, estimated at up to $22 billion, needed to fully implement the ground-side infrastructure for the new technologies being introduced.92

The cost of equipping the commercial airline fleet, considered by industry analysts to

---

92 The major change from today's operations is the evolution from a ground radar-based system to one based on satellite technology.
reach $20 billion, represents a potentially huge burden on an already financially stressed industry. The cost to equip the general aviation fleet, estimated at between $1.2 billion and $4.5 billion, is even harder to justify from a cost/benefit perspective, since the benefits of NextGen technologies mostly favor the airlines. Some industry analysts suggest that the government provide financial incentives to aircraft owners to ease the financial impact of installing the new equipment, but Congress has not addressed this issue.

6.3 Crisis Management and the Tarmac Rule

What set of conditions must exist for policymakers to take action? A crisis (or, at least, the perception of a crisis) seems necessary to drive policy makers into action. The tarmac rule is an example of the perception of a crisis, created largely by public reaction, spurring political action. In a few well-publicized instances, airlines required passengers to remain aboard aircraft on the ground for far too many hours. The problem was not a new one - as airline passenger enplanements increased during the late 1990s, the number of significantly delayed flights also increased (Charts 6-2 and 6-3). Interestingly, even small percentage increases in enplanements resulted in significant increases in delayed flights. Queuing theory suggests that this is likely the result of a saturated system and that any more demand will only result in added congestion. Even so, the percentage of long-delayed flights during this period has been relatively low, ranging from lows of .008 percent in 1995 and 2009 to a high of .03 percent in 2000 (Chart 6-3). Considering the number of passengers carried by the system, the likelihood of becoming stranded on an

93 From a strict cost/benefit perspective, general aviation users benefit little from NextGen. It will be necessary, however, to comply with NextGen equipage in order to be able to fly into certain classifications of airspace (mostly around large cities). Not being able to fly into these areas, even on an infrequent basis, represents a serious restriction and reduction in operational capability. Most GA operators, therefore, will have no choice but to install the expensive new equipment.
airliner for more than three hours is very low. The drop in delays in 2001 can reasonably be attributed to the drop in scheduled enplanements after the terror attacks of September

Chart 6-2: Flights Delayed by Three Hours or More

Chart 6-3: Percentage of Long-Delayed Flights

Source: Bureau of Transportation Statistics
181

11, 2001. A drop in scheduled enplanements of less than seven percent led to a decrease of more than 50 percent in three-hour taxi-out times, a characteristic of a queue ready for congestion.

Examining monthly data rather than annual data provides some insight into the possible causes of tarmac delays. It is notable that the peaks in long tarmac delays coincide with the times of the year associated with extreme weather events, supporting the contention that weather causes long delays, not over-scheduling by the airlines.

For example, the data from October 2008 through March 2010 show that the number of three hours delays is relatively low (see Chart 6-4). How do we explain, then, the enactment of the tarmac rule?

**Chart 6-4: Recent Long-Delayed Flights by Month**

![Recent Long-Delayed Flights by Month](image)

In June 2009, over 270 flights were delayed for over three hours, the highest number in the 18-month period between October 2008 and March 2010. The second highest number of three-hour delays during this same period occurred in December,
2008, when 187 flights were held on the ground. CNN reported in 2009 that a few significant delays sparked outcries and stirred up calls for passenger rights legislation. One series of delays on JetBlue flights in 2007 was even referred to by CNN as the "Valentine's Day crisis" when passengers were stranded up to ten hours at JFK International Airport.\(^4\) Two months before that event, passengers in Austin, Texas, were kept on an airliner for more than nine hours. One of the passengers on a delayed flight created an organization, FlyersRights.org, which operates a hotline that passengers on a delayed flight can call.

Highly publicized reports of overflowing toilets, lack of water and food, and non-functioning air conditioning on flights waiting to depart combined to create a "tipping point" of public outcry resulting in a crisis of confidence in the airline system. This culminated in Transportation Secretary LaHood's issuance of the tarmac rule in spite of concerns expressed by airline industry spokespeople that in order to avoid massive fines, airlines would cancel flights rather than risk long delays.\(^5\)

### 6.4 The Dynamics of Crisis-Driven Policy-Making and the Effect on Air Travel

Why was it possible for Congress and the Administration to implement new policy in the two cases described above? More importantly, how do the dynamics of policy formation affect the nation's ability to respond to changes in technology and the changes in national aviation policies that might be needed to fully implement those new technologies? The remainder of this chapter attempts to explore those questions.

What are the dynamics of a successful policy shift? Sometimes, as with the

---


\(^5\) The final rules were published in Volume 74, No. 249 of the Federal Register on Wednesday, December 30, 2009, Docket No. DOT-OST-2007-0022, "Enhancing Airline Passenger Protections."
tarmac rule, new policy results because of a perceived crisis in public confidence. DOT Secretary LaHood had the authority to issue new rules to address a public policy issue, and he exercised that authority. In other cases, attempts to change public policy evoke more complex responses. This chapter presents three examples of policy formation and implementation, using frameworks developed by political scientists to help explain the success or failure of each of the attempts. Discussed first is a successful policy change – the federalization of airport passenger screeners. Prior to 2001, airport passenger screening was a function delegated to commercial airlines. Each airline hired its own workers and developed its own processes for training and evaluating the people who checked airline passengers and luggage for potential weapons. Subsequent to the terrorist attacks of 2001, Congress passed legislation making passenger screening the responsibility of the federal government.

Next is a failure of policy change: the unsuccessful attempt to introduce an intrusive passenger pre-screening program named Computer Assisted Passenger Prescreening System II – CAPPS-II. This program changed the focus from objects that passengers might be carrying to the characteristics of the passengers themselves. CAPPS-II created a passenger profile of likely terrorists by using a broad array of personal information and comparing the information to the profiles of known terrorists.

Last examined is the Large Aircraft Security Program, (LASP). In October 2008, the Transportation Security Administration issued a Notice of Proposed Rulemaking (NPRM) that included new regulations intended to address what TSA felt was a gap in general aviation security. LASP, if implemented, would have applied many of the rules that were previously applicable only to commercial airlines to all operators of aircraft
with a maximum takeoff weight of at least 12,500 pounds. Reaction from the general aviation industry was loud and immediate, and TSA withdrew the proposed set of regulations in order to rework them.

6.5 Policy Success: The Federalization of Airline Security Workers

In response to the terrorist attacks of September 11, 2001, Congress passed, and President George W. Bush signed, the Aviation and Transportation Security Act (P.L. 107-71, November 19, 2001). ATSA dramatically changed the way that the nation administered security over air, land, and maritime transportation services. The most visible changes and the ones that have most directly affected U.S. citizens are in the area of airline security. For the first time in United States history, Congress transferred responsibility for airline security from the airlines to a government entity, the newly created Transportation Security Administration. The most controversial aspect of the Aviation and Transportation Security Act was the federalization of airport security workers. At first glance, one might conclude that this last change was a hastily constructed response to the catastrophic events of September 11, 2001 (especially if one remembers the allegations of inept security work performed by the company in charge of airport security at the airports used by the September 11th hijackers). Closer examination of the record reveals instead that federalizing aviation security workers is a classic example of the agenda-setting process postulated by John W. Kingdon (1984).

6.5.1 The Kingdon Framework

The framework for governmental agenda setting posited by Kingdon (1984) consists of the interaction between problems, politics, and the participants in the agenda-setting process, resulting in a stream of policy alternatives (Figure 6-1). Problems rise
and fall in relative importance, often as a result of focusing events such as natural
catastrophes, although sometimes issues can be placed on the agenda because of societal
indicators (for example, the unemployment rate) or feedback from a growing number of
constituents (such as input from senior citizens on the high cost of prescription drugs).
Politics affects whether or not problems can reach the policy stream, especially when the
likely solution to a particular problem runs contrary to the fundamental values of the
party in power. Finally, the visible participants, such as members of Congress, affect the
policy stream through their legislative roles. A member of Congress must sponsor
legislation before it can be discussed, either in committee or on the Senate or House
floor.

The policy stream, therefore, is a result of very dynamic forces, often pulling in
different directions. Kingdon perceives this policy stream as a mix of policy alternatives,
floating around in suspension until conditions are right, i.e., a focusing event opens a
window of opportunity in which policy entrepreneurs can gain consensus for placing a
policy on the agenda. In the case of federalizing airport security workers, an evolving
problem stream and set of political forces worked together with the policy entrepreneurs
in Congress to create a policy stream that included components of the eventual Aviation
and Transportation Security Act of 2001 (Figure 6-2). Yet even after the window of
opportunity opened after the terrorist attacks of September 11, 2001, it still took weeks
for policy entrepreneur Senator Ernest Hollings (D-SC), who had previously attempted to
rally Congressional support for airport security worker federalization, to push through a
compromise solution that achieved his goal.
6.5.2 Kingdon Framework in Action

The problem of airline terrorism (Kingdon’s “problem stream”) had grown steadily since the early 1970s. Aviation crime changed from being hijackings solely for the purpose of escaping from (or sometimes even fleeing towards) a particular regime to crimes involving violent hostage taking and sabotage. Policy responses (Kingdon’s “policy stream”) were developed well before 2001. Most of the responses involved
technology such as bomb-sniffing devices. As early as 1990, however, Congress questioned the FAA’s role in overseeing aviation security. The possibility of transferring the responsibility for airline security away from the individual airlines and airports thus entered the political agenda. Airline executives and others, however, were able to thwart any Congressional effort to federalize airline security by appealing to politicians (part of

Figure 6-2: Federalization of Airline Security Workers in the Kingdon Framework
Kingdon’s “political stream”) with strongly worded concerns about the cost of implementing the measures. Furthermore, general concerns about the invasiveness and oversize of the federal government kept federalization of airline security from the top of the political agenda. Even though a 1996 commission chaired by Vice-President Al Gore recommended significant changes to airline security, airlines implemented only incremental changes to security protocols.

The attacks of September 11, 2001, (Kingdon’s “focusing event”) created a window of opportunity during which policy entrepreneurs Senators Ernest Hollings (D-SC) and John McCain (R-AZ) were able to piggyback onto heightened public concerns about security. This enabled them to overwhelm political objections to the federalization of airline security workers so that it reached the top of the political agenda and obtained quick (for Congress) Congressional acceptance.

6.5.3 The Evolution of Aviation Terrorism – The Problem Stream

Hijacking airlines has been around for almost as long as commercial flight itself. Political expression and extortion were major reasons for hijackings. Cuba was a focus of U.S. airline hijackings in the 1960s (Choi 1994). In 1972 violence was added as a component when three wanted criminals hijacked a Southern Airways airliner and threatened to crash it into the Oak Ridge atomic facility if their demands were not met (Choi 1994). Still, hijackings rarely included the intention of causing death. As a result, negotiation was the main strategy for dealing with most aircraft hijackers, with safety of the crew and passengers being paramount. The nature of hijackings evolved in the mid-1970s and 1980s as airline bombs were added as part of the recipe so that hijacking

---

96 Note that prior to the passage of the Aviation and Transportation Security Act, the airlines were totally responsible for cost of providing security at airline terminals.
became one weapon of extreme political activists (Evans 1973). The result was deadly. Between 1975 and 1989 over 1,300 people died in 40 separate airline bombings (Choi 1994).

The bulk of aviation security literature prior to 2001 focuses on the risks posed by people who either sought to hijack a commercial aircraft for political, financial, or other personal reasons, or to cause the destruction of the aircraft through the use of explosives, typically bombs hidden within checked luggage. Evans (1973) reports that from 1961 through 1968, 66 aircraft of United State or foreign registration were hijacked. Hijackings escalated during the next three years, with the hijacking figure rising to 277. A sharp decline followed in 1973, with no U.S. airliners and nine aircraft of foreign registration hijacked.

This early period is marked by changes in governmental responses to hijacking (Evans 1973). Under pressure from the International Federation of Airline Pilots Associations, the 1970 Convention for the Suppression of Unlawful Seizure of Aircraft (Hague Convention) was rapidly concluded and accepted. The result was that some U.S. airlines instituted electronic surveillance, and the U.S. initiated the federal sky marshal program. Screening of all passengers and cabin luggage became mandatory, and the U.S. government ordered airports to provide armed guard at all boarding gates by early 1973.

Consistently throughout this early period, hijackers intended to survive the event. By the late 1980s, however, national authorities classified skyjackings as explicit terrorist incidents. Cauley and Im (1988) analyzed the intervention policies enacted by governments and looked at skyjacking within the overall context of international terrorism, considering skyjacking just one tactic that a terrorist might employ. They
reported that the deployment of metal detectors in 1973, accompanied by the electronic screening of passengers and carry-on luggage significantly reduced the number of skyjackings, but the total number of terrorist events increased. The upshot Cauley and Im suggest is that as terrorists found airliners to be harder targets, they turned their sights (figuratively and literally) elsewhere.

Even by 1990, however, aviation security had still received little attention from Congress. The General Accounting Office\textsuperscript{97} convened a conference in November 1990 at which aviation security was one of many components. Organization and management issues, air traffic management capacity, and consumer protection were equally placed on the GAO’s agenda. The 1990 report noted that while the government made significant improvements since the passage of the Aviation Security Improvement Act of 1990 (P.L. 101-604), weaknesses continued to exist. Specifically, better measures were needed to detect explosives, and security over cargo and mail needed to be improved. One suggested solution was the deployment of thermal-neutron analysis (TNA) machines at major airports to improve the explosives detection rate (GAO, 1991).

Security, however, seemed almost an afterthought to most conference participants. Even on the panel that discussed aviation security, attention was shared with airport capacity issues. Of the four speakers on the Airport Capacity and Security Panel, one speaker did not address security at all and a second only asked that money spent on

\textsuperscript{97}Congress renamed the General Accounting Office the Government Accountability Office in July 2004 (preserving the GAO acronym). In testimony before Congress, Comptroller General David M. Walker said that the new name would more accurately reflect GAO’s current role and mission in government. Walker pointed out that less than 15 percent of the agency’s workload is traditional financial audits. He said that the new name would dispel the common misconception that GAO keeps the government’s books and other financial records. “Our activities are designed to ensure the executive branch’s accountability to the American people,” Walker said. “Indeed, the word accountability is one of GAO’s core values, along with integrity and reliability.”
security be spent wisely. The primary concern of the two panelists who did address security continued to be bombs placed aboard airliners, not suicidal hijackers. For example, the bomb that exploded and destroyed Pan Am Flight 103 over Lockerbie, Scotland, continued to be a driving force in determining aviation security policy. Captain David Haase of the Air Line Pilots Association addressed security issues only after he had discussed flight safety and airport capacity issues (GAO, 1991). His concerns centered on the ability of TNA machines to detect small amounts of explosives and matching passengers with bags. Admiral Clyde Robbins, Director, Office of Intelligence and Security, Department of Transportation, expressed concern about the level of attention that aviation security received, saying “As we all know, it is always easy to say in hindsight that security should receive a higher priority within FAA and DOT. But until somebody really cares about it, it is hard to move it up a level of attention” (p. 75). His words would prove prophetic, and mirrored Kingdon's theory of policy change.

In 1998, GAO revisited the topic. This time, it reported on the implementation of recommendations made by the White House Commission on Aviation Safety and Security in part to counter the growing threat of terrorist activity within the United States (GAO 1998). Chaired by Vice President Al Gore, the Commission was established by Executive Order 13015 issued August 22, 1996, after the crash of TWA Flight 800 to look at the changing security threat and how the United Stated should react to it. Of the 31 recommendations made by the Commission to address aviation security, progress was made in only a few of them. Of the three recommendations scheduled to be completed by the end of 1997, giving properly cleared air carrier and airport security personnel access to classified information they need to know, establishing procedures to identify
passengers before boarding, and establish a volunteer partnership between airports and air carrier officials and law enforcement agencies, only the first had been completed.

Two years later, GAO released a report focusing on two aspects of aviation security, air traffic control computer systems and airport passenger screening checkpoints (GAO March 2000). The GAO reported that “the FAA and the airline industry have made little progress in improving the effectiveness of airport checkpoint screeners. Screeners are not adequately detecting dangerous objects and long-standing problems affecting screeners’ performance, such as the rapid screener turnover and the inattention to screener training, remain” (p. 2). The report cited the results of one joint testing program conducted with another country in which U.S. screeners detected half as many test objects as the screeners located overseas.

GAO further reported that the annual screener turnover rate in many airports exceeded 100 percent, with turnover between May 1998 and April 1999 at one airport, Lambert St. Louis International, reaching 416 percent. The clear culprit was the low pay. At many of the nation’s largest airports, screeners were paid the minimum wage. In many cases, wages paid by airport fast food establishments exceeded those paid to checkpoint screeners. GAO found additional factors to which FAA has paid too little attention:

- Individuals aptitude for effectively performing screening duties
- Sufficiency of the training provided to the screeners and how well they comprehend it
- The monotony of the job and the distractions that reduce the screeners’ vigilance.

The GAO found that in five other countries - Belgium, France, Canada, the Netherlands and the United Kingdom - screening operations, screeners’ qualifications,
screeners’ pay and benefits, and institutional responsibility differed significantly from United States’ practices. The lack of urgency noted in prior reports continued to be a serious problem resulting in delays in implementing procedures intended to improve aviation safety.

6.5.4 The Political Stream

The influence of the airlines, conservatism in Congress, and the attitude of the public towards increased federal responsibility all greatly affected the political stream. Airlines wanted to avoid creating a perception that commercial flight was unsafe. Hijackings of American-owned airliners had dropped significantly since 1970, so it was easy to fall into a trap of complacency. Yet, an editorial supporting the federalization of airline security workers referred to “a national complacency about the danger that could come from hijacked commercial jetliners” (*The Atlanta Journal and Constitution*, 2001, p. 22A).

Airlines also expressed concern about the premium cost of high quality security workers. Most of the airlines’ workers staffing X-ray machines were paid no more than twice the minimum wage while U.S. Customs Agents, even at the entry level, started out at the maximum wage rate of security workers (*Atlanta Journal and Constitution*, 2001). The implication of this is that costs of security screeners would roughly double if they were paid the same as federal workers. The airlines, remaining extremely price-sensitive, opposed federalizing security workers, apparently believing that even though the security workers would no longer be airline employees, the money to pay them would come from the airlines or their passengers instead of from the general fund.98 The airlines also

---

98 This fear turned out to be well-founded.
expressed concern about flight delays that might result from increased security. Paul Ignatius (1973), Executive Vice President of the Air Transport Association, wrote: “The airlines must be responsible for timely boarding and would lack the necessary control over it if the screening process were operated by government personnel.”

The airlines exercised their political power by making heavy contributions to the Democrat Party in the closing weeks of the 1996 presidential election, and the White House Commission on Airline Security backed away from most of the more stringent security measures initially proposed (Robinson 2001). Paul Hudson, executive director of the Aviation Consumer Action Project, a nonprofit watchdog group, reacted by noting, “There is a virtual interlock between the airline industry and the Transportation Department and the FAA. The aviation industry spends over $20 million to get their way. I’ve never seen a serious instance in which they haven’t”.99 The effectiveness of the airlines’ efforts was reflected in a statement made in letter sent by Vice President Al Gore to Carol B. Hallet, president of the industry’s trade group, the Air Transport Association. “I want to make it very clear that it is not the intent of this administration or of the commission to create a hardship for the air transportation industry or to cause inconvenience to the traveling public”.100

It is important to note the political mindset that existed in the late 1980s and 1990s towards the role of the federal government. The administrations of Presidents Ronald Reagan and George H. W. Bush placed much attention on reducing the size of the federal government and transferring to the private sector as much responsibility as

possible (Van Horn 2001). The airlines’ arguments to retain responsibility for airline security (and thus to control its cost) resonated with conservatives in Congress and the White House. Even President William Clinton found it necessary to proceed very cautiously on the subject of expanding the role of the federal government. President Clinton’s “Health Security” plan was defeated (at least in part) due to widespread concerns about the role that the federal government and the attendant bureaucracy might play.

Further militating against increasing the federal government’s role was the public attitude. Public trust of governmental institutions and public officials declined significantly during prior decades. The percentage of Americans that believed government will do "what’s right (always or most of the time)" slid from 80 percent in 1964 to about 30 percent in 1980 (Van Horn 2001, p. 32). This disjoint between Americans' belief in government action and their satisfaction with the results provided more fodder for conservatives in Congress who wished to shrink the size of government.

6.5.5 The Major Participants

The most prominent participants in the aviation security policy formulation process were found in Congress, in the Federal Aviation Administration, and in the airline industry. Senators Ernest Hollings and John McCain expressed concerns about aviation security well before September 11, 2001. While other members of Congress did speak out on the issue, it was typically only after some extraordinary event such as the Lockerbie Pan Am bombing.

The Federal Aviation Administration now faced the unusual challenge of both being responsible for creating the security regulations that the airline industry would
implement and at the same time, to evaluating its own performance. It should not have come as a surprise, therefore, that when asked (as it was in 1990) to determine if major changes to aviation security were warranted, the FAA recommended no changes. After all, to recommend that aviation security did not meet national requirements would be tantamount to admitting that the FAA was not doing its job.

The airlines were also in a peculiar position. As long as the cost of providing airport security was the airlines' responsibility, any externally mandated changes increased their costs without any concomitant increase in profits. Even when Sen. Hollings suggested federalizing airport security workers, there was no talk of the required funding. The airlines were placed into the unenviable position of facing dramatically reduced profits in response to problems not of their own making.

6.5.6 United States Response to Airline Terrorism - The Policy Stream

Until 1950, there was no federal statutory law specifically applicable to crimes committed on board aircraft, and it was not until 1961 that Congress deemed aircraft hijacking serious enough to label it a criminal act (Lissitzyn 1973, pp. 306-307). Legislation that amended the Federal Aviation Act of 1958 was a hasty response to a series of hijackings of American planes to Cuba. A subsequent increase in hijackings led to new measures enacted in 1968, when the Civil Aeronautics Board authorized carriers to deny transportation to any person who refused to permit a search of his person or luggage (Evans 1973). When the number of sabotage bombings of aircraft peaked in 1970, the federal government recognized airline sabotage as an increasing threat, and the Federal Aviation Administration developed regulations requiring the screening of all persons and carry-on baggage before entering an airport’s departure area (Sweet 2002,
101). Congress ordered additional measures in 1973, and airports provided armed guards at all boarding gates (Evans 1973, 649).

In the 1980s, airline terrorism finally reached the public policy agenda. On April 26, 1984, President Ronald Reagan sent Congress four separate bills to counter airborne terrorism. One of them, the Aircraft Sabotage Act (S. 2623/H.R. 5690), was in direct response to, as President Reagan put it, “the direct use of instruments of terror by foreign states” (Leich 1984, p. 915). The Aircraft Sabotage Act was an attempt to implement the provisions of the Montreal Convention for the Suppression of Unlawful Acts Against the Safety of Civil Aviation (ratified by the United States in 1972) by expanding the definitions of acts that would result in penalties. The Aircraft Sabotage Act also expanded jurisdictions of the parties to the Montreal Convention. In April, 1989, Senator Robert Byrd (D-WV), speaking in Congress about a potential terrorist attack on the United States, addressed the need to reassess the assignment of responsibility for airline security: “The response to such a concerted attack on our Nation, then, should properly be the domain of the Federal Government. We should not expect the commercial airlines to alone carry the burden of protecting American citizens against essentially political-military attacks on the United States” (Byrd 1989, S3432). So as early as twelve years before the attacks of September 11, 2001, the issue of federalizing airline security had entered the policy stream.

It was not until the 1990s, however, that the federal government first seriously studied federalizing responsibility for airline security workers. In August 1990, partially in response to the loss of Pan Am Flight 103 over Lockerbie, Scotland, in 1988, President George H. W. Bush established the Commission on Aviation Security and Terrorism.
This action resulted in the Aviation Security Improvement Act of 1990 (H.R. 5732). It created the position of Federal Security Manager\textsuperscript{101} at domestic high-risk airports. It also set new standards and procedures for the hiring of airport security personnel, but it left the responsibility for hiring airport security personnel to the airlines. Congress passed the legislation unanimously and President George H. W. Bush signed the bill into law on November 16, 1990 (P.L. 101-164).

Concerns about aviation security remained. The Aviation Security and Antiterrorism Act of 1996 (H.R. 3953) called for a review of the advisability of transferring responsibilities of air carriers to appropriate entities independent of air carriers (as had earlier studies). In July 1996, President Bill Clinton established a White House Commission on Aviation Safety and Security, and charged it with looking at airline security after a crash of TWA Flight 800. Although the Commission, chaired by Vice President Al Gore, did not recommend any sweeping changes in how responsibilities for airline security were assigned, the final report noted “The federal government should consider aviation a national security issue” (White House Commission 1997, p. 27).

The common theme running through the policy stream before September 11, 2001, is one of incrementalism and the maintenance (when politically feasible) of the status quo. The 1998 Study and Report to Congress on Civil Aviation Security Responsibility and Funding underscored a preference for slow change, noting, “the study recognizes the incremental increases [italics the author’s] that have taken place and

\textsuperscript{101}The Federal Security Manager is a senior level position who serves as the facility security officer for federal business. The position is responsible for oversight of all personnel and data security functions. This position is responsible for planning, development, coordination, implementation and executing with multiple government customers all aspects of the Federal Security programs. Source: http://www.fullofjobs.com/1465514/Federal-Security-Manager-Columbia-MD.html
predicts that such increases will continue, perhaps in the field of aviation security training” and “The FAA recommends that there be no change to the current system of shared responsibilities or funding at this time and therefore offers no legislative proposals” (FAA 1998, p. 4). Federal Aviation Administration officials took the official position that the “Air carriers bear the primary responsibility for applying security measures to passengers, service and flight crews, baggage and cargo” (FAA 1998, p. 14).

Legislators, however, became more and more uneasy about the nature of airline security. In April 2000, Senator John McCain (R-AZ) stated in regard to a bill to improve aviation security “I cannot overemphasize the importance of adequate training and competency checks for the folks who check airline baggage for weapons and bombs. The turnover rate among this workforce is as high as 400 percent at one of the busiest airports in the country. The work is hard, and the pay is low” (McCain 2000, pp. S2520-S2521).

Clearly, as the problem stream became more and more dominated by aircraft terrorism with associated violence, the policy stream became a mix of reactions in the form of criminalizing the behavior and incrementally increasing the physical safeguards against hijacking.

6.5.7 The Window of Opportunity Opens – September 11, 2001

Perhaps no single event in American history has caused such a radical restructuring of the United States government as the terrorist attacks of September 11, 2001. Even the attack on Pearl Harbor on December 7, 1941, did not result in the creation of a new cabinet level department, the creation of a new massive bureaucracy, the reorganization of many existing government agencies and the immense redirection of public policy and funds. The effects of the 9/11 attacks are seen most clearly in the way
that policy towards aviation security changed in the weeks and months following that fateful day in American history. On the day of the attacks, the nation’s focus changed from explosives to suicidal terrorists. The weapons concerning policy makers changed from bombs to airliners. The urgency of aviation security resulted in the creation of a cabinet level department, the Department of Homeland Security.

More significant, however, is how views of the world change in response to terrorism. Jervis (2002) examined some of the major shifts in policy analysis, focusing on the impacts that terrorism have on the world. The primacy of the nation-state in conducting wars (or, at least, military-style attacks) is diminished, and the response to acts of terror is less well defined. Jervis argues that not only are acts of terror easier to mount than full-scale attacks, but modern societies are more vulnerable to them, especially psychologically. This might be especially true in the United States, which had been largely spared from international terrorism.  

Ironically, civilian populations are more vulnerable than military targets, especially in a largely open society in which people travel freely.

American Response to Terrorism

The terrorist attacks of September 11, 2001, changed forever the response of the United States to airline terrorism. For the first time in history, airliners had been hijacked, not for escape, political statement, or extortion, but for the expressed purpose of using the aircraft as terrorist weapons. The strategy of non-violent accommodation of the hijackers played into the hijackers’ hands. The belief that the hijackers intended to use the airliners as weapons had not entered into our collective consciousness. Crew and passengers alike

---

102 The 1993 bombing of the World Trade Center in New York City that killed six people was the significant exception.
assumed that the airliners would at worst be flown to some destination chosen by the hijackers for some unknown purpose. There they presumably stood a good chance of leaving the airliner unharmed.\footnote{The notable exception was United Airlines Flight 93, the flight that crashed into a field in Pennsylvania. The accepted explanation is that passenger attempted to regain control of the airliner from hijackers after learning that other aircraft had been seized and used as weapons.} Ironically, as late as November 2001 the official hijacking survival guidelines issued by the U.S. government advised passengers to stay calm and encourage others around you to do the same and not to challenge the hijackers physically or verbally (Department of Commerce 2004).

Huddy, Khatib, and Capelos (2002) examined some of the ways that the United States changed after 9/11. Summarizing the results of a series of polls taken after the attacks, the authors found that a large segment of the American public (59 percent) was willing to support the monitoring of telephone conversations and electronic mail. Perhaps not surprisingly, support for this type of surveillance dropped to the low 30s when the monitoring was targeted to ordinary Americans and dropped even further when it was their own conversations being monitored. Support for violations of civil rights was mixed. Using military tribunals to try suspected terrorists gained initial support, but this support waned if the government could withhold evidence or if verdicts could be other than unanimous. Poll respondents supported identity checks at work and at public buildings, but strongly opposed random checks of personal possessions.

Support for the government’s ability to protect the homeland was strong, although respondents expressed ambiguity about the ability of the government to protect against future bioterrorism. Opinions were similarly mixed regarding protection for air travelers. Roughly half of poll respondents felt that the government had done enough to secure the air travel system. Most people, however, felt that airports themselves could do more to
protect travelers.

The attention that the federal government has placed on aviation security is reflected in the number of reports issued by the GAO. During the period 1958 to 1989, the GAO issued only twelve reports on aviation security, an average of less than one per year. Between 1990 and 2000, that number rose to 30. Between 2001 and December 2009, the GAO issued 104 reports dealing with aviation security. Virtually all of these latter reports focus on the progress made by the Department of Homeland Security, the Transportation Security Administration, and the FAA in meeting the air transportation security requirements defined by Congress.

The attacks of 9/11 were the first hijackings that were part of a planned and coordinated suicide attack. Yet, that factor alone might not have brought around the sort of sweeping changes encompassed in the Aviation and Transportation Security Act had it not been for three other factors. First, the attacks took place on American soil. Terrorist attacks involving suicide bombers had taken place before, but mostly in the Middle East with Palestinian extremists executing most of the attacks. Second, the loss of life was immense, surpassing the loss of American service men and women during the attack on Pearl Harbor by the Japanese on December 7, 1941, opening up World War II. During that attack, 2,403 men and women lost their lives. Third, they struck two iconic of American symbols: the Pentagon, representing U.S. military might, and the World Trade Center, representing American dominance in the financial industry. These factors swept away the complacency that had built up for years, and Congress quickly developed a response with the introduction by Sen. Hollings of the Aviation and Transportation Security Act (S. 1447).

6.5.8  **Congressional Response to 9/11 and the Aviation and Transportation Security Act**

Both the Senate and the House of Representatives quickly agreed on most of the components of the Aviation and Transportation Security Act. Reflecting the growing concerns over the ability of the airlines to manage aviation security, a new organization, the Transportation Security Administration, would be responsible for developing a comprehensive plan for addressing the security needs of all modes of transportation. The major source of contention between the two bodies of Congress was an issue that reflected the respective views of the political leaders – federalizing airport security workers. The policy issue that had been on hold for over twelve years became the obstacle that delayed the passage of the Aviation and Transportation Security Act by eight weeks.

6.5.9  **Senate Floor Action**

Immediately, aviation security hit the top of the political agenda. Concerns about the FAA’s ability to provide aviation security, concerns that had dated back to at least 1990, resulted in Senator Ernest Hollings (D-SC), Chairman of the Senate Commerce, Science and Transportation Committee, sponsoring the Aviation and Transportation Security Act (S. 1447). Senator Hollings, the primary policy entrepreneur in the entire process, took the opportunity to speak strongly in favor of federalizing airport screeners. Senator Ernest Hollings said (2001)

"The current system of aviation screeners is a hodgepodge of shared responsibilities among the air carriers, security subcontractors, the airports, and the Federal government. Make no mistake – lines of responsibility need to be made more clear. I have said for years that we need to professionalize the nearly 18,000 screeners in our nation’s airports who are employees of the airlines and private security companies. We need to make them Federal employees."
Support in the Senate for major changes in airline security was widespread and bipartisan. Senator John McCain (R-AZ), who previously expressed concerns about the effectiveness of airline security, joined Sen. Hollings in sponsoring the bill. Most other Senators spoke strongly in favor of federalizing airline security workers. Senator Paul Wellstone (D-MN) stated on October 9, “Senator Hollings is right that one of the best ways to get this industry back on its feet is to have people think they are safe. God knows the whole notion of federalizing the security forces is what the vast majority of people are for” (Wellstone 2001, p. 10354). On October 11, 2001, the Senate unanimously passed the bill that called for the federalizing all aviation security workers.

6.5.10 House Floor Action

The House GOP leaders opposed the Senate approach, and introduced H.R. 3150, the Secure Transportation for America Act of 2001. H.R. 3150 did not call for federalizing airport security workers. House Majority Whip Tom DeLay and Majority Leader Dick Armey, both Republicans from Texas, argued that simply placing the work force on the federal payroll would not make flying safer. In keeping with their conservative roots, perhaps, they did not want to see the role of the federal government expanded. They noted that federalizing the airport screeners might well increase the rolls of labor unions (which presumably would benefit the Democrat party). Senator Peter DeFazio (D-OR), however, focused on the fact that federal workers were performing many other law enforcement functions when he noted, “Mr. Speaker, when we come through Customs, those are Federal law enforcement agents. When we come through INS, they are Federal law enforcement agents. If we go to Hawaii, the agriculture agents are Federal law enforcement agents. Even the beagles that they use in the airport have
been deemed to be Federal law enforcement agents” (DeFazio 2001, HR6786). Rep. James Oberstar (D-Minn), ranking member of the House Transportation and Infrastructure committee, said at a news conference Thursday afternoon that while the President’s proposal was “commendable,” it was lacking because it did not require federalization of airport security personnel. Oberstar said federal security employees would “substantially improve the quality of the screening process,” adding that he was “troubled by reports of proposals to create a nonprofit organization” to handle the process instead (Government Executive Magazine, September 27, 2001).

With the support of President Bush, the House passed legislation, H.R. 3150. It did not guarantee the federalization of aviation security workers. Instead, federalization would be an option. It then took two weeks of arguments about negotiations between the House and the Senate for Congress to arrive at a compromise solution.

6.5.11 The Role of the President

President George W. Bush believed that the best way to address passenger and baggage screening was with a public-private partnership. Although Bush said the federal government would “take charge” of baggage and passenger screening, he indicated that government and industry would work together to tighten security standards at the 420 airports that serve civilian air travel. “The government and the private sector will make flying a way of life again in America,” Bush told a flag-waving crowd of airline employees at Chicago’s O’Hare International Airport (Government Executive Magazine, September 27, 2001). The President never did fully endorse the complete federalization of airport screeners, but there is no evidence that he was sufficiently invested in the issue to actively attempt to thwart federalization.
6.5.12 House and Senate Conference Results – the Final Bill

As noted above, the major point of contention between the House and Senate bills was the federalization of airport screeners. With ideological arguments being made on both sides, and with the public (and many in Congress) becoming more and more impatient for a decisive response to the terrorist attacks and the threat of future terrorism, the opposing camps finally hammered out a compromise solution. It was agreed that federalizing airport security workers would be the rule for most U.S airports, with provisions for future privatization (see Appendix 3). Congresswoman Juanita Millender-McDonald (D-CA) spoke of the compromise as being “glorious” (Millender-McDonald 2001). On November 19, 2001, over two months after the terrorist attacks of September 11, 2001, President Bush finally signed the compromise bill, transferring responsibility for transportation security to the Transportation Security Administration and federalizing the nation’s airport security workers.

6.6 CAPPS-II and Privacy – A Policy Failure

The previous section described how a national crisis was necessary to move a controversial issue, federalizing airport security workers, to the top of the political agenda. Even with the crisis, opponents of the change were able to delay the Aviation and Transportation Security Act (ATSA, P.L. 107-71) for months. Could Congress have effected such a significant change in policy in the absence of a crisis? While controversial, the move was not at odds with fundamental American principles (the positions of the most vocal conservatives notwithstanding). Yet, it took the 9/11 attacks to lead Congress to shift the responsibility for airport screening to federal hands.

A subsequent attempt to enhance airline security was a system designed to
computerize passenger screening. In the wake of the 9/11 attacks, Congress charged the Transportation Security Administration with developing an upgraded, computerized passenger-screening process intended to prevent potential terrorists from boarding commercial airliners. As the TSA began to implement these new requirements using a proposed system named "Computer-Assisted Passenger Pre-Screening-II", the Administration encountered many objections from interest groups such as the American Civil Liberties Union (ACLU). Concerned about privacy rights, the groups successfully pressed for the project’s cancellation. This section begins with a review of the model for policy evolution conceived by Paul Sabatier (1986). The model is then applied to the attempt to implement CAPPS-II.

6.6.1 The Sabatier General Policy Model – A Preview

Sabatier (1986) constructed a general model for policy evolution that combines his previously developed “top-down approach” in which the central policy formulators play the key role in successful policy implementation with the approach postulated by Hjern and Porter (1981) in which the low-level actors play the primary role. The model is illustrated in Figure 6-3. The model consists of four key components:

- A collection of relatively stable factors that exist throughout the policy evolution period;
- Some number of external events or socio-economic changes that lead to the policy changes;
- Resources available to the policy sub-system actors and the constraints on their behavior; and
- A policy sub-system in which opposing coalitions work to formulate policy changes, those policies are implemented, outcomes occur, and impacts are felt.
The formation of the opposing coalitions formed by various interest groups, not all of which are natural allies, is a key characteristic of the policy sub-system. These
coalitions tend to counter-balance each other during the policy formation stage and constantly receive information about the impacts caused by the policy shift resulting in a policy-learning process that can be a factor in later policy shifts.\textsuperscript{105} While at first glance the model might seem more appropriate for a discussion of policy formation, Sabatier’s framework provides insights as to why implementation efforts might fail, particularly as a result of competing coalitions that develop during the initial policy formation stage.

At this point, we note a potential weakness of analyzing the implementation of CAPPS-II using the Sabatier model. Sabatier points out that four to five years is a relatively short time-span over which to study implementation. Congress enacted ATSA in November 2001, just over three years before the original date of this study. As is pointed out later, the fundamental policy change goes far beyond the specific security requirements embodied in the legislation. Rather, it extends to the underlying belief systems that formed the context for both the policies that existed before September 11\textsuperscript{th} and those that which began to emerge afterwards. Fundamental belief systems can change only across longer time horizons. The Sabatier model is therefore helpful in discussing implementation failures that might arise in the case of rapid policy changes, however, because of the coalition framework that Sabatier creates.

6.6.2 \textit{Aviation Security Policy Before September 11\textsuperscript{th}}

Before the September 11\textsuperscript{th} terrorist attacks the nation was ambivalent about aviation security. Even though Congress expressed concerns about the precautions taken to protect airline travelers as early as the 1990s, national policy placed personal privacy, the convenience of air travelers, and the economic interests of airline companies above

\textsuperscript{105} That is, groups tend to learn to anticipate the effects of proposed policy shifts and adjust their tactics accordingly.
that of aviation security, though few would openly admit it. As discussed earlier, the airlines fought numerous measures that might have led to improved aviation security (for example, a bag-matching program whereby no bag of luggage may be placed on an aircraft unless it is confirmed that the associated passenger is also on board). The airlines deemed the measures too expensive and time-consuming, possibly resulting in numerous delayed flights. This illustrates how, according to Sabatier (1989), the deep (normative) core belief system of the policy elites placed privacy rights and traveler convenience ahead of security. The system failed to place the federal government in a key role in collecting personal information as a way of providing aviation security. Secondary aspects of the belief system included a near absence of government regulations defining standards of performance for passenger pre-screening.

Sabatier effectively predicts that to create a major policy change about personal privacy and national security, the deep core beliefs regarding their relative priorities must first be changed. Thus, to implement a system in which the federal government collects personal information, even in the name of national security, might require much more than a single event, regardless of how extreme that event might be. Instead, the initial shifts in the national belief system caused by the terrorist attacks of September 11th failed to result in the needed widespread support in key interest groups.

6.6.3 The Policy Shift Begins

The bombing of the World Trade Center in 1993 might have served as a warning that Islamic fundamentalists saw the United States as a vulnerable enemy. In a BBC report, New York Governor Mario Cuomo (1993) told journalists: “We all have that feeling of being violated. No foreign people or force has ever done this to us. Until now
we were invulnerable." The limited amount of damage, however, and the relatively small loss of life ("only" five people died in the attack) militated in favor of treating the event as an anomaly. Even the combined series of the 1993 attack, the attack on the USS Cole in Yemen and the attacks on U.S. embassies in Africa, with much greater loss of life, did not result in any fundamental changes in American policy.

This changed on September 11, 2001, when 19 terrorists seized control of four U.S.-owned commercial airliners, intentionally crashing two of the aircraft into the World Trade Center in New York City, and one into the Pentagon in Washington, D.C. These attacks served as much more than a final, unavoidable wake-up call. The sheer magnitude of the loss of life demanded dramatic action. As described earlier, these events led to the introduction of the Aviation and Transportation Security Act (PL 107-71) by Senators Ernest Hollings (D-SC) and John McCain (R-AZ) and the subsequent passage of the Act by Congress. CAPPS-II is now placed into the Sabatier model to see how various forces affected the implementation of the requirement to create watch lists and compare them to passenger lists.

6.6.4 CAPPS-II and the Sabatier Model - Stable Parameters

Stable parameters listed by Sabatier include socio-cultural values as well as basic constitutional structure. The fundamental socio-cultural norm regarding public privacy and government access to personal information at the time of the terrorist attacks was of paramount concern. The American people have always had a dim view of the collection of information about people by the government without their consent. The actions of the Federal Bureau of Investigation in performing surveillance of anti-war groups during the Vietnamese war served as a sobering reminder of what unconstrained government could
do. As reported in the *Los Angeles Times* on March 22, 2004, the FBI (both agents and informants) followed John Kerry, then a recently returned US Navy veteran and later to become a Senator from Massachusetts. Kerry created the protest group Vietnam Veterans Against the War after his return from Vietnam. The FBI recorded the content of the speeches and sent dispatches to FBI Director J. Edgar Hoover and President Richard Nixon. According to documents revealed after Hoover’s death in 1972, the FBI similarly harassed other activists and anti-war groups. After the FBI’s actions were disclosed, Congress implemented reforms to prevent such abuses and to restore the public’s confidence in government.

The United States Constitution is a stable framework within which policy can be changed. The Fourth Amendment\(^\text{106}\) of the Constitution provides (at least to most Americans) an overarching guideline for legislators and law enforcement officials concerning the individual’s right to privacy. Americans accept that their right under the Constitution to be free from searches without probable cause extends to having information about them collected by the government, and do not accept “well, you shouldn’t worry if you don’t have something to hide” as justification for unwarranted searches. As reported in an Associated Press article that appeared on April 28, 2004 (“ACLU battles FBI over ISP customer data”), the outcry over the Patriot Act’s provisions that allows for secret searches further exhibits this strong belief in the right to privacy.

\(^{106}\)“The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.”
Figure 6-2: CAPPS-II in the Sabatier Model

**Relatively Stable Parameters**
- American Tradition of the Right to Privacy
- United States Constitution (Fourth Amendment)

**External (System) Events**
- The rise of Islamic Terrorism
- Conservative Political Leadership
- Growing public support for government action

**Constraints and Resource of Sub-System Actors**
- TSA: Public Fears about flying safety
- TSA: Need for Congressional Support
- ACLU: Concern for Privacy Rights

**Policy Subsystem**

**Policy Brokers:**
Sens. McCain and Hollings

**Security Coalition**
- Ashworth
- FBI
- DHS

**Strategy:** National Security

**Congress Passes ATSA**

**TSA is formed**

**Policy Output:** CAPPS-II

**Policy Concern:** Privacy Violations

**Privacy Coalition**
- ACLU
- NAACP
- Arab-American Groups

**Strategy:** Constitutional Rights
6.6.5 External Events

External events affecting policy shifts include changes in socio-economic conditions, changes in systemic governing coalitions, and policy decisions and impacts from other sub-systems (Sabatier 1989). All three are present in the CAPPS-II policy shift process. The most important external event is, of course, the increase in terrorism throughout the world beginning on the 1980s culminating in the terrorist attacks of September 11th. The damage caused by the attacks went beyond the loss of lives and the economic impact. The attacks called into question the ability of the government to protect the homeland.

In 2001, a new administration took control of the White House when George W. Bush won the race for President of the United States. While he ran for office as a "compassionate conservative," many of his appointees demonstrated extreme conservative policies. Attorney General John Ashcroft, for example, called for the power for investigators to subpoena business records in terrorism investigations on their own rather than through a grand jury. A further demonstration of the new administration’s attitude toward privacy rights was the proposed development of a massive computer database named “Total Information Awareness” being developed by the Pentagon under the direction of retired Admiral John Poindexter (Billings 2002). Lee Tien, a senior staff attorney with the San-Francisco-based Electronic Frontier Foundation, compared Total Information Awareness with the invasion of personal privacy similar to Orwell's "1984".

Finally, while the 2001 terrorist attacks served as the catalyst for action, calls for governmental pre-screening of airline passengers began much earlier. The White House Commission on Aviation Safety and Security (White House Commission 1997) concluded that the FAA should complement technology with automated passenger
profiling as well as improving passenger manifests. Computer Assisted Passenger Screening (CAPS) was first deployed in 1996 by Northwest Airlines in 1997, implemented to avoid criticism that passenger profiling was being performed using subjective criteria.

Other airlines began to use CAPS in 1998, as recommended by the White House Commission on Aviation Safety and Security (also known as the Gore Commission). In 1999, responding to public criticism, the FAA limited the use of CAPS: it would no longer be used to screen passengers and their carry-on luggage, but only to determine whether to subject their checked luggage to heightened scrutiny. At the same time that external events pushed the policy window in favor of reducing privacy rights, or at least initiating a dialogue in which the rights to privacy are balanced against the need to provide security, rumblings of concern were also expressed.

6.6.6 Resources and Constraints of Sub-System Actors

The primary sub-system actors consist of the sub-organizations within the Transportation Security Administration that are responsible for implementing any new policy and the airlines that are responsible for, at the very least, interacting with any system that is developed. The TSA certainly has been allocated the resources to create a large database, but it is not clear if it can overcome the concerns of rights advocates over its use. The airlines may feel compelled to cooperate with government directives concerning passenger data, but they also need to be concerned with the privacy rights of their passengers as well as with the financial impact of changing their information systems in order to comply with government requirements. As seen later on, the impact of the sub-system actors was less influential on the implementation of ATSA than other
key factors.

6.6.7 The Policy Sub-System

Predicted by Sabatier's model, unlikely coalitions of that favored and opposed certain elements of the legislation quickly formed. Favoring the legislation was a “pro-
security” coalition consisting of the members of Congress, formed largely along bi-
partisan lines, who favored increased government control of airline security, as well as
former New Jersey Governor Tom Kean, head of the National Commission on Terrorist
Attacks Upon the United States. A key question raised by Senator Diane Feinstein (D-
CA) was how the terrorists were able to get aboard the aircraft at all. A report posted to
the CNN web site on June 2, 2002, ("Senator has tough questions for FBI") alleged that
suspected hijackers Nawaf Alhazmi and Khalid Almihdhar were already on a Central
Intelligence Agency (CIA) terrorist watch list, leading Senator Feinstein to question the
effectiveness of the government’s ability to keep known or suspected terrorists off
American airliners. A PBS News Hour broadcast reported that Gov. Kean suggested,
with 20/20 hindsight, that the attacks could have been prevented. Gov. Kean said

"The whole story might have been different if we had been able to put those
people on the watch list of the airlines, the two who were in the country; again, if
we'd stopped some of these people at the borders; if we had acted earlier on al-
Qaida when al-Qaida was smaller and just getting started."

This coalition was joined by conservative groups such as the Heritage Foundation
(a conservative think-tank) that strongly favored an information-driven passenger pre-
screening process. The Heritage Foundation (Rosenzweig 2003) argued that airports were
still using the same security system to identify individual threats that did not work on

107 I use this term not to imply that other coalitions were not in favor of increased security, but to indicate
the emphasis used by this coalition on using security as an overriding factor in their deliberations.
108 http://www.pbs.org/newshour/extra/features/jan-june04/rice_4-07.html
September 11 and that a new computer-aided system would improve the TSA's ability to assess the risk a passenger may pose to air safety.

The American Civil Liberties Union (ACLU) led the privacy coalition[^109] that voiced strong concerns about the impact of a computerized passenger-prescreening program on individual privacy rights. The system, by definition, would need to collect great amounts of personal data on prospective travelers. Anti-discrimination groups joined the privacy coalition. As reported in a September 21, 2001, meeting of the House Subcommittee on Aviation, Sam Husseini, a spokesman for the American-Arab Anti-Discrimination Committee, claimed that traveler profiling (e.g., subjecting travelers of certain ethnic backgrounds to greater scrutiny) had been going on for 20 years. As reported in the same hearing, due to the concerns raised about the potential for discrimination, DOT and the Gore Commission asked the Justice Department to review the CAPS profiling system. The Commission made the following recommendations:

- The FAA should periodically review the screening factors in CAPS to ensure that they are reasonable predictors of risk;
- Justice should undertake a post-implementation review within one year to ensure that passengers are not singled out on the basis of race, religion, or national origin;
- DOT and FAA should undertake efforts to inform the public about the profiling system;
- Airlines should be prohibited from altering CAPS without government approval; and
- FAA should require airlines to establish procedures for implementing CAPS to ensure that it is not done in a discriminatory or insensitive manner.

The strategies used by the two coalitions during House and Senate Committee

[^109]: The privacy coalition carefully avoided the appearance of being opposed to improved security measures, and instead focused attention on the Constitutional and economic impacts of the legislation.
hearings were simple yet predictable. The security coalition took advantage of the emotions created by the terrorist attacks and played the “national security card.” The privacy coalition could do little more than point to past governmental abuses.\(^{110}\) In the end, the policy elites in Congress (primarily Sens. McCain and Hollings) were able to use the new legislation as justification\(^{111}\) for ordering the Under Secretary of Transportation for Security to:

- Use information from government agencies to identify individuals on passenger lists who may be a threat to civil aviation or national security\(^{112}\); and
- Consider requiring passenger air carriers to share passenger lists with appropriate Federal agencies for the purpose of identifying individuals who may pose a threat to civil aviation or national security

Congress also created a new organization, the Transportation Security Administration, headed by an Under Secretary of Transportation for Security which was to be responsible for the implementation of the new requirements.\(^{113}\) The TSA was given the budget and the authority to implement the mandate created in §114 to improve airline security. Section 114 of the Aviation and Transportation Security Act (ATSA) (Pub. L. 107-71, November 19, 2001, 115 Stat. 597) grants TSA the responsibility for security in all modes of transportation. Specifically, Section 114(f) grants the TSA Administrator authority to “receive, assess, and distribute intelligence information related to transportation security” as well as to “assess threats to transportation.”\(^{114}\) This set the stage for the implementation stage of the

---

\(^{110}\) Of course, the debate was somewhat more complex, but this section’s primary purpose is to explore the post-formation implementation problems.

\(^{111}\) Title I – Aviation Security, §114, (h) “Management of Security Information.”

\(^{112}\) This section was broadly interpreted by the TSA as meaning more than maintaining a “watch list” of potential terrorists; it was used as the basis for creating a “risk assessment” process in which passengers were assigned a color code (similar to the well known “threat level”) and then subject to increased questioning based on their individual color code, similar to the original CAPS system.

\(^{113}\) On March 1, 2003, pursuant to the Homeland Security Act, Congress transferred the TSA to the newly created Department of Homeland Security (Berrick 2003, 3).

\(^{114}\) Source: http://www.dhs.gov/xlibrary/assets/privacy/privacy_pia_tsa_tiss.pdf
policy process.

6.6.8 Implementing Passenger Pre-Screening

Implementation of §114 of ATSA by the Transportation Security Administration did not begin immediately after ATSA's passage. The TSA initially focused on the recruiting and hiring of thousands of airport security screeners also mandated by ATSA.115 It was not until February 28, 2003, that Under Secretary of Transportation for Security Admiral James M. Loy announced that the TSA had selected Lockheed Martin to develop the new passenger risk assessment and prescreening system. The TSA decided to call its new system Computer Assisted Passenger Prescreening II (CAPPS-II). The passenger risk assessment process used information from various sources to compute a degree of risk for the passenger (Kettl 2004), represented by a color (e.g., red, yellow, or green). Passengers with a yellow color codes were subject to more intensive screening at terminal checkpoints. Passengers with red codes were not allowed to fly at all. The system also looked for potential terrorists by comparing the names of travelers (obtained from airlines passenger manifests) to names on a centrally maintained watch list.

From a technological perspective, a system such as CAPPS-II is easy to conceptualize. Large database technology is now very advanced, and the ability to quickly cross-reference passenger names to names on a watch list is a simple process, at least at the system design level. The plan for the new passenger-profiling network would piggyback on the data-collection revolution of the 1990s, that is, the data system produced by marketers and data services that compiled demographic, public-record and consumer files about virtually every adult in the United States.

115 As noted earlier, the federalization of airport security screeners was very controversial, and in fact held up approval of the legislation for over 8 weeks.
Problems with existing watch lists, however, became evident. Homeland Security officials said that the task of creating a single database was difficult because twelve lists from nine difference agencies were incompatible and contained overlapping but different information (Wodele 2004). Jerry Berman, president of the Center for Democracy and Technology, went on to say “Little information is publicly available about how U.S. watch lists are compiled and maintained, but numerous reports have suggested that current watch lists are deeply flawed” (Wodele 2004). The Washington Post reported in 2004 that over 2,000 people had complained to the TSA because of being named on a watch list for apparently no reason. Even the names of members of Congress including Senator Ted Kennedy (D-MA) and Representative John Lewis (D-GA) appeared on a watch list.116

The biggest obstacle to effective implementation, however, was the privacy coalition that formed during the time following the passage of ATSA. As reported in Air Safety Week (February 2, 2004) members of the European Union joined the American Civil Liberties Union, the National Association for the Advancement of Colored People, and Arab-American groups in expressing privacy concerns. This coalition asked questions that the TSA was unable or unwilling to answer. The length of time that the TSA would keep passenger data obtained from passenger manifests was unclear. The TSA did not reveal how names were placed on a watch list. There was no process for a passenger to get his or her name off the watch list.

The GAO reported in 2004 that the TSA had not fully addressed any of the issues noted by the privacy coalition, including:

- Accuracy of data,

Abuse prevention and unauthorized access prevention,
Privacy concerns, and
Redress process.

The GAO also expressed concern about the level of international cooperation needed to obtain passenger data, managing the possible expansion of the program’s mission beyond its Congressionally mandated purpose and the ensuring that identity theft (in which a terrorist steals another person’s identity) could not be used to circumvent the system. The TSA could not overcome the problems noted by the GAO (2004), and on July 14, 2004, Homeland Security Secretary Tom Ridge announced that the CAPPS-II system would be scrapped in spite of the $100 million that the government had spent on it.

6.6.9 Explanations

Why, in the aftermath of September 11th, with a country eager for protection from similar attacks, could the Transportation Security Administration not successfully implement the Computer Assisted Passenger Prescreening II system? For an answer, we look to the top-down factors that Sabatier (1989) argued were necessary for policy implementation to be effective.

- Clear and consistent objectives
- Changes in socio-economic conditions which do not substantially undermine political support or causal theory
- Committed and skillful implementing officials

---

117 Privacy groups had expressed concern that the data being collected by the TSA might be used by unauthorized persons resulting in identify theft.
118 The order of the conditions is changed from Sabatier’s original presentation.
• Implementing process legally structured to enhance compliance by implementing officials and target groups

• Adequate causal theory

• Support of interest groups and sovereigns

Certainly, the CAPPS-II policy met the first condition. The objectives of CAPPS-II were clear: keep potentially dangerous passengers off commercial airliners. There were no significant changes in social or economic conditions that undermined political support, although we see later that causal theory is a major problem. There is no evidence to suggest that implementing officials were not committed to the success of CAPPS-II, or that the contractors chosen to implement the program lacked the necessary skills.

It is in the last three conditions that we find the answers. The ability of the TSA to obtain the data necessary to create a consolidated watch list was thwarted by the diversity of the lists. That is, the existence of the diverse lists coalesced into a de facto opposition entity. While there is no explicit evidence to support this assertion, the historical tendency of government agencies such as the Federal Bureau of Investigation, the Defense Intelligence Agency, the National Security Agency, and the Central Intelligence Agency to protect their own turf probably contributed to the difficulties in creating a consolidated watch list.

Serious questions about the underlying causal theory also cropped up during the implementation phase. In response to a lawsuit filed by the American Civil Liberties Union on behalf of two peace activists whose names appeared on a no-fly list (Goo 2004), the TSA and the Federal Bureau of Investigation released documents that revealed early problems with the watch lists. The information showed that simply adding a middle initial to a reservation name would result in the name not being matched on the no-fly
list. The feasibility of creating a consolidated watch list to match against passenger manifests became highly questionable.

In the end, however, it was the privacy coalition that formed during the policy formation stage, led by the ACLU and joined by the NAACP, members of the European Union, and others that demonstrated in a powerful way that the Aviation and Transportation Security Act lacked sufficient political support from the affected interest groups. This lack of support, expressed via lawsuits, freedom of information requests, and other public expressions of concern, eventually led to the withdrawal of support from key government leaders (Sabatier’s “sovereigns”). Without it, the death of CAPPS-II was inevitable.

6.6.10 Conclusions

The terrorist attacks of September 11, 2001, led to an initial policy shift away from the traditional core belief of holding personal privacy sacrosanct. As Congress considered responses, the coalitions predicted by Sabatier formed and used different strategies, some more successfully than others, to affect government leaders’ decision-making resulting in the passage of the Aviation Transportation and Security Act. During the implementation phase of the ATSA provisions that called for the creation of a passenger pre-screening process, however, we see that the government failed to account for the core beliefs of the country. The privacy coalition successfully focused attention on the ways that CAPPS-II might erode the rights to privacy that Americans have come to hold so dear, and the project was cancelled.

The issues that led to the cancellation of the CAPPS-II program, accuracy of the data, abuse prevention, unauthorized access prevention, privacy concerns, and provisions
for a redress process must be addressed for any system such as CAPPS-II to succeed in
the United States. Instead of treating them as an afterthought, a project that tackles these
issues as it develops to meet the security needs of the nation has a much greater chance of
being implemented. Even the ACLU did not object to the need for increased security per
se, but to the failure of the TSA to address the serious privacy concerns.\footnote{119} A more
fundamental issue that must be addressed, however, is the national belief system
(Sabatier 1989). It must be changed before the government can successfully implement
any major policy shifts. There are no signs that the country is ready to surrender the
protections provided by the Constitution. Unless and until the policy elites in the federal
government can change the core values held by the American people, prospects for a
system like CAPPS-II seem dim.

6.7 The Large Aircraft Security Program - An Answer in Search of a Problem

This section reviews an attempt by the Department of Homeland Security to
extend the breadth of aviation security policy. Beginning around 2007, the Transportation
Security Administration turned its attention from commercial airline security to the
perceived security issues posed by general aviation operations. Crew and passengers at
non-commercial airports flying on non-scheduled flights are not subjected to the types of
security measures in place at commercial airports. Passengers are not subjected to body
searches and luggage is not searched. For reasons known best to TSA leadership, general
aviation became the focus of policy makers and the object of two major rulemakings –
the Large Aircraft Security Program and the introduction of Security Directives.

\footnote{119 As seen in the next section, the TSA has retained the tendency to propose new policy seemingly without
first considering the impacts on the targeted populations and the resulting political fallout.}
6.7.1 *The Beginning – The Issuance of the Notice of Proposed Rulemaking*

The October 30, 2008, edition of the Federal Register (Volume 73, Number 211) announced proposed changes to 49 CFR Parts 1515, 1520, et al, the Large Aircraft Security Program, the Other Aircraft Operator Security Program, and Airport Operator Security Program; Proposed Rule. Issued by the Transportation Security Administration, the Notice of Proposed Rulemaking (NPRM) included new regulations that extended security practices applied previously only to commercial airlines to all private and corporate operators of aircraft having a maximum certificated takeoff weight (e.g., the empty weight of the aircraft plus the combined weights of fuel, crew and passengers) greater than or equal to 12,500 pounds.

The proposed regulations were dramatic in their scope and in their approach to aviation security. The new rules took the form of four new sets of requirements. First, all aircraft operations with aircraft exceeding the above weight limit, including corporate and private operations, would be required to adopt a large aircraft security program (“LASP”), which would be based on the current security program that applies to those operators that provide scheduled or charter service. This proposal would expand the number of aircraft operators subject to TSA security requirements from 650 to over 10,000. The requirements applied not only to aircraft operators that carried passengers, but also to those that only carried cargo.

Second, operators of large aircraft would be required to contract with TSA-approved auditors to conduct biennial audits of their compliance with the new security programs, presumably with the cost to be borne by the operator. They would also be required to contract with a TSA-approved watch list service to verify that no passengers

---

120 Federal Register / Vol. 73, No. 211 / Thursday, October 30, 2008, pages 64790 through 64855.
are on a No Fly or Selectee portion of the consolidated terrorist watch list maintained by the Federal Government, again presumably with the cost to be borne by the aircraft operators.

Third, TSA proposed additional security measures for large aircraft operators in all-cargo operations and for operators of passenger aircraft with a maximum takeoff weight greater than 100,309 pounds operated for compensation or hire.

Last, the proposals required that certain airports that serve large aircraft adopt new security programs. Reliever airports, which perform the function of relieving congestion at commercial service airports by providing landing areas for non-commercial aircraft and that provide more general aviation access to the overall community as well as airports that regularly serve large aircraft with scheduled or public charter service, were subject to the new security requirements.

6.7.2 Reaction to LASP – Industry Groups Cry Foul

Affected parties in the aviation industry responded quickly to the NPRM. Most of the comments questioned the need for the new regulations, especially in light of past GAO reports that noted how cooperative efforts with the private sector had already resulted in beneficial effects on aviation security. In 2005, the GAO reported that stakeholders with an interest in general aviation security, including industry associations, state governments, general aviation operators (owners and managers), and users of general aviation airports and aircraft, had already taken steps to strengthen the security of general aviation airports and operations. General aviation airport operators and tenants, such as air charter services, had also implemented policy and procedural measures to restrict access to airport property and aircraft.
The National Business Aviation Association responded with a long list of concerns. On February 27, 2009, the NBAA submitted a 30-page letter to the Docket Management Facility of the Department of Transportation\textsuperscript{121} documenting the many issues created by the NPRM. Many of the issues concerned the inconsistency of the proposed regulations with the reality of the general aviation environment. For example, the regulations included the requirement for the designation of an Aircraft Operator Security Coordinator (AOSC), In-flight Security Coordinator (ISC), and a Ground Security Coordinator (GSC) for operations covered by the NPRM. In its regulations, the TSA barred one individual from fulfilling more than one of the positions (presumably to increase the likelihood that a security breach missed by one person would be caught by another). The NBAA pointed out, however, that in many cases, an aircraft is owned and operated by a single individual, making it impractical for the security positions to be staffed by three different people.

The NBAA also expressed concerns over the requirement that passenger information be given to a third-party watch-list service provider. Not only was NBAA concerned about privacy issues and how the introduction of a third party into the security process might increase the likelihood of inaccurate or compromised information, but the organization questioned the need for the process. It seemed somewhat bizarre that a corporate flight department would be required to submit the name of the firm’s CEO to the watch-list service provider before allowing the CEO to board an aircraft owned and operated by the CEO's company.

\textsuperscript{121} While the NPRM was issued by the Department of Homeland Security, the Department of Transportation was designated as the recipient of all comments. The complete NBAA letter is available at the NBAA web site http://www.nbaa.org/ops/security/programs/lasp/LASP-Comments-Final-20090227.pdf.
The National Air Transportation Association added its voice to the debate, noting that new security requirements would be imposed on over 300 general aviation airports (NATA 2009). The prohibition of certain items that applied to commercial airlines would apply to private aircraft under the proposed regulations. LASP would bar items such as firearms and knives from the aircraft if passengers could access them while in flight. This presented problems for many general aircraft users. First, most private aircraft have very limited baggage space compared to commercial airliners. A typical corporate aircraft, the Cessna Citation CJ2+, which has a maximum takeoff weight of 12,500 pounds and has seats for seven passengers, has only 65 cubic feet of baggage capacity. Even the much larger Citation X, weighing as much as 36,100 pounds at takeoff and seating eight passengers, only has 82 cubic feet of baggage space. Second, the new rule could prevent technicians from accessing tools while on their way to a customer service call or hunters from examining their gear enroute to a hunting destination. Even a passenger’s own golf clubs might be prohibited from being carried. NATA also expressed concern over the liability that a private operator might face if a mistake were made by a third party watch list service provider. NATA asked TSA to withdraw the proposed rule and instead work with industry representatives to develop solutions to security issues.

The Aircraft Owner and Pilots Association, which represents over 400,000 aircraft owners and pilots, supported improving security procedures at airports, but disagreed with TSA’s approach. In the official response to the NPRM, AOPA asserted that because the security requirements were based on the weight of the aircraft, sources: www.cessna.com/citation, accessed November 27, 2009.

AOPA created a program known at “Airport Watch” that encouraged pilots to notify law enforcement authorities of any suspicious activity seen at airports. See http://www.aopa.org/airportwatch/gasecure.html for information about the Airport Watch program.

Letter sent from Any Cebula, Executive Vice President, Government Affairs, AOPA, February 27, 2009.
and not on the type of operations conducted, the new security requirements might be extended to all 4,300 public use airports and 18,000 landing facilities across the country.

Even the U.S. Small Business Administration Office of Advocacy weighed in with concerns.\textsuperscript{125} The SBA Office of Advocacy hosted a small business roundtable on February 13, 2009, at which attendees expressed concern that the proposed rule seemed based not on demonstrated security risks posed by general aviation, but instead on anecdotal evidence and supposition by TSA. Contrary to statements that terrorists might be turning their attention to general aviation aircraft, no credible evidence of that threat was known to exist.

The Office of Advocacy also expressed concern about the cost of the program, estimated by TSA at between $859 million and $1.9 billion over ten years. Roundtable attendees asserted that TSA had understated the compliance costs with respect to developing security programs, conducting background checks and passenger screening, resolving discrepancies, and training security personnel. The Office of Advocacy recommended that instead of basing new security requirements on an arbitrary weight standard, they should be imposed according to the recognized security risk level.

\subsection*{6.7.3 Summary of Aviation Industry Concerns}

Most of the concerns raised by industry focus on the failure of TSA to recognize the difference between commercial air carrier operations in which passengers are not known to the operators and GA operations in which they are. The NPRM itself leads

credence to this concern, stating on page 64795:

“The proposed LASP provides a core security program for all large aircraft, irrespective of the FAA regulations under which they operate, whether they are air carriers, commercial operators, or GA.”

The industry characterized this approach as an inappropriate “one size fits all” standard that did not take into consideration the operational characteristics of the different types of flying. When one adds the concerns about TSA failing to adequately document the threat actually posed by general aviation operations, a compelling case is made for the withdrawal of the NPRM. In all, TSA received over 7,000 overwhelmingly negative comments on the NPRM.

6.7.4 Congress Responds to Industry Concerns

Member of Congress agreed with the aviation industry’s arguments. In a strongly worded letter to Erik Jensen, Chief, Policy, Plans & Stakeholder Affairs, seven members of Congress criticized TSA’s action, calling the NPRM a “rush to judgment” and based on a “flawed rulemaking procedure.”

Echoing the concerns voiced by industry, the writers called for TSA to withdraw the proposed rule and submit a replacement. Among the criticisms made in the letter were the following:

- TSA failed to fully account for the burdens the proposed rulemaking places on the general aviation industry.
- The NPRM does not contain an adequate notice for purposes of conducting rulemaking under the Administrative Procedures Act.
- TSA failed to comply with the Regulatory Flexibility Act.
- TSA failed to assess properly costs and benefits as required by Executive Order 12866.
- The proposed rule demonstrates that the TSA is not conducting rational rulemaking.

This latter criticism was a stinging rebuke to the TSA policymaking process.

126 The letter was signed by Sam Graves, Nathan Deal, Lynn Westmoreland, John Duncan, Jr., Blaine Luetkemeyer, W. Todd Akin and Todd Tiahrt.
At a roundtable discussion with key industry leaders, members of the House Aviation Subcommittee expressed strong reservations about the proposed LASP NPRM. Representative Jerry Costello referred to the LASP as a solution in search of a problem. Homeland Security Committee Chairman Bennie Thompson urged TSA to delay implementation of the rules. In a letter to TSA, Rep. Thompson labeled many elements of the new regulations “problematic, infeasible, or overly burdensome to industry.” Rep. Vernon Ehlers (R-Mich.) put it even more strongly. “One of the reasons I ran for public office was that I have always fought against stupid rules. This is a prime example of a stupid rule,” Ehlers said. “Simply put, the threat does not warrant this level of regulation.”

6.7.5 **TSA Backs Down**

As a result of mounting Congressional disapproval, TSA agreed to delay the issuance of the final rule until it had the opportunity to work with industry groups. AIN Online reported in July 2009 that the 7,000 response to the proposed LASP program received by the TSA had a significant effect on the Administration’s decision to proceed with the proposed rulemaking. In April and May of 2009, after the initial required comment period ended, TSA held public meetings to solicit more comments. At those meetings, TSA asked participants how a general aviation program should work. Some of the issues raised included the arbitrary characterization aircraft by weight, the concept of a “trusted pilot”, the prohibited items list, and how operators should secure unattended business jets. The TSA agreed to further meetings to secure information from additional stakeholders such as the Secret Service, the Department of Defense and safety experts.

---

The TSA agreed to take this information and either revise the current LASP proposal or write a new NPRM.

Security Directives issued by the TSA represented another source of concern to the aviation community. The TSA initiated the practice of issuing security directives in place of the normal rulemaking process to implement what TSA perceived as security vulnerabilities. One such security directive issued in 2009, known in its abbreviated form simply as “Security Directive -7G”, required pilots of general aviation aircraft who wish to fly to an airport that had commercial airline service to undergo background checks and obtain identification badges. After a response that matched that of the response to the LASP program, TSA issued a replacement security directive, “-8G”, which had less onerous requirements but still required pilots to remain near their aircraft or in the vicinity of the fixed base operator being visited by the pilot.

### 6.7.6 Fallout – Oversight of TSA

The response to TSA’s actions was not limited to complaints by pilots and by members of Congress. Members of the House of Representatives took the extreme steps of introducing legislation that would expressly limit the authority of the TSA to initiate the actions (notably, the LASP and the use of security directives) that was the source of so much controversy. An amendment to the Transportation Security Administration Authorization Act (H.R. 2200) limits the ability of TSA to use Security Directives to avoid the normal rulemaking process required for government agencies. The amendment requires the TSA to operate within the framework established by the Administrative Procedures Act, which requires that government agencies account for the operational impact and economic burdens imposed by new regulations. Agencies are also required to
obtain public input before a new regulation goes into effect.

Congress went so far as to include a provision creating an Aviation Security Advisory Committee (ASAC) for aviation stakeholders and a “General Aviation Working Group” within the ASAC to give the general aviation community a forum to make recommendations on GA security proposals for TSA consideration. Another provision prohibits the TSA from outsourcing terror-watch list reviews to third parties, as proposed in the agency’s Large Aircraft Security Program.

The issuance of Security Directives was the target for another piece of legislation. A bipartisan group in Congress introduced a bill, H.R. 3678, that would modify the Transportation Security Administration’s (TSA) authority to issue security directives (SD) without notice or public input. The bill amends the U.S. Code so that the TSA could not issue a Security Directive immediately. Instead, legislation would require the agency to submit the SD to the Transportation Security Oversight Board “to determine if the regulation or security directive is needed to respond to an imminent threat of finite duration.”

Rep. Charles Dent (R-Pa.) introduced a bill (H.R. 3093) that would require the Transportation Security Administration to negotiate with general aviation interests before promulgating security rules such as the controversial Large Aircraft Security Program (LASP). The General Aviation Security Enhancement Act of 2009 prevents the Department of Homeland Security (DHS) secretary from issuing a rule, an interim final rule or a new rulemaking involving the “Large Aircraft Security Program, Other Aircraft Operator Security Program, and Airport Operator Security Program (TSA-2008-0021)” unless the secretary first establishes a negotiated rulemaking committee and receives a
written report from that advisory committee. The bill is similar to the amendment attached to the TSA Authorization Act of 2009 (H.R. 2200), which the House passed on June 4, 2009. Dent’s bill would address the LASP specifically.

6.7.7 *Policy Theory and the TSA Policymaking Framework*

Sabatier (2007) notes the need to develop better theories of the policy process, and the mystery of the TSA's actions certainly buttresses his arguments. A review of most existing theories provides little in the way of explanation. Unlike the two policy initiatives previously discussed, the TSA’s recent focus on general aviation operations does not fit neatly into a single existing theory of policymaking. Institutional rational choice theory holds that the institution plays by certain rules, norms and strategies in responding to an action situation, e.g., a potential threat assessment. Yet the TSA was unable to document how large general aviation aircraft had suddenly evolved into a terrorist target.

Kingdon’s multiple streams framework does contain some elements that at first glance seem consistent with the TSA’s actions. For example, all of the aviation advocacy groups considered both the Large Aircraft Security Program and the Security Directives as unnecessary given the differences between commercial airline operations and general aviation operations. Zahariadis (Sabatier 2007) uses the Kingdon framework to explain how policies can be made in search of rationale. He also notes that policymaking can take a decidedly confrontational aspect, a conclusion certainly supported by the thousands of aircraft operators who found themselves labeled as security risks seven years after the terrorist attacks of 2001.

To properly apply Kingdon’s multiple streams framework, however, requires
some evidence of the policies as well of advocates of those policies prior to the TSA action. The announcements of the TSA actions caught the industry by surprise – there had been little or no public discussion of the policies before their proposed introduction, and there were few public advocates of the specific policies prior to 2008. The Government Accountability Office did issue a report in 2004 calling for greater federal oversight of general aviation operations (GAO 2004), but the GAO did not recommend specific security policies. In fact, a search of the GAO web site using “general aviation” and “security” as keywords returned only two reports published after 2005, and neither of these addressed the policy issues contained in the LASP and Security Directive initiatives.

Using the advocacy coalition framework (ACF) previously used to explain the withdrawal of the CAPPS-II system is tempting as well. Certainly it was the actions by various aviation advocacy groups that led TSA to withdraw (at least temporarily) the Large Aircraft Security Program, so from that perspective ACF explains what happened after LASP was proposed. Yet ACF theory provides no insight into why TSA introduced the LASP initiative in the first place. Punctuated equilibrium also fails to explain the seemingly arbitrary TSA action. No precipitating conflict or crisis was evident that made TSA analysts suddenly decide that large general aviation aircraft posed a threat to air travel security.128

6.7.8 Why Did TSA Act As It Did?

So how did TSA come to introduce LASP in the first place? That is, given the

---

128 Punctuated equilibrium does, however, explain very nicely many of the TSA's actions that followed the attempt to blow up a commercial aircraft on December 25, 2009. After many months of few changes in security protocols, TSA imposed a set of requirements including a ban on leaving one's seat within an hour of landing or employing a blanket on one's lap. These requirements were eased when cooler heads prevailed, realizing that none of the new requirements would have prevented the bombing attempt.
experience with CAPPS-II, why did TSA attempt to introduce new policy that was almost certain to generate strong opposition? Social construction theory provides possible insight into the TSA policymaking process. As Sabatier points out, target populations may be "socially constructed" to have certain characteristics. Typical examples of social construction include the assignment of certain characteristics to poor (e.g., "shiftless", "not willing to work"), or the rich ("feeling entitled"). It might be a bit of a stretch to apply social construction to an entity as diverse as an entire industry, but many of the theory's characteristics fit well with TSA behavior.

The decision to socially construct any group with negative characteristics depends on support from society in general, even if that support is passive at best. In the case of the general aviation, for example, the industry suffered a tremendous public relations failure when three CEO's of automobile manufacturers used three separate corporate jets to travel from their headquarters in Detroit, Michigan, to Washington, D.C., for a meeting with a Congressional committee at which they were to ask for government support. Corporate aircraft were perceived as playthings for rich executives, and the political power of general aviation advocates was significantly diminished. The problems faced by the industry were compounded by the fact that representation is dispersed rather than concentrated, as it is with gun owners (represented by the National Rifle Association) and retired people (represented by the American Association for Retired People). The aviation industry's political power was significantly diminished (at least in the short term), or so it might have seemed to the TSA.

This opened a window of opportunity for TSA to label the "phenomenon" of

129 Contrast this situation to that of the National Rifle Association (NRA) and the American Association of Retired People (AARP), both of which maintain enormous political power.
general aviation (as described by Sabatier) as a "problem" to be addressed with expanded security procedures and regulations, consistent with the TSA ideology of applying security protocols broadly as opposed to creating profiles and applying the security protocols to those individuals deemed to pose the greatest threat. As Edelman (1988, 12) puts it, "problems [such as general aviation security] come into discourse and therefore into existence as reinforcement of ideologies, not simply because they are there or because they are important for well-being." This treatment of the target population was a reflection of the TSA's inclination (again, supporting the explicable power of social construction) to apply past security designs to new problems. Fischer (2003) reinforces this notion, arguing that "every policy-related idea is an argument or rather a set of arguments, favouring different ways of looking at the world" (p. 16). Perhaps because of its mission, the TSA developed a way of looking at the world in which every aircraft represents a potential threat.

The ability to implement its proposed policies, however, was thwarted by the actual political power of the general aviation industry (as described earlier), not its power as perceived by the TSA. Even though the industry might still have been negatively socially constructed by the TSA and the general population, the ability of industry representatives to rally support in Congress (especially for corporate travel) ultimately resulted in a rebound in public attitudes towards general aviation, and, as with CAPPS-II, the TSA was forced to back away from policies seen as onerous, overbearing and at odds with core national beliefs.

6.8 Implications for National Aviation Policy Formation

As demonstrated in this chapter, effecting major policy shifts requires a major call
to action. Frequently, as in the case with national aviation policy, that call to action comes in the form of a national crisis. It took such a crisis, the terrorist attacks of September 11, 2001, for policy entrepreneurs to overcome Congress’s inertia and push through legislation that greatly increased the federal government’s role in providing airline travel security.

Yet we also see that even the motivation for policy change resulting from the 9/11 attacks were not enough to overcome the nation’s desire to maintain its core values. The intrusion of the government into passengers’ private lives in the form of computerized profiling seemed too great to accept – perhaps too “Orwellian” – and the Department of Homeland Security was forced to withdraw its plans for the CAPPS-II system. We also see that the nation will not passively accept enlarging the government’s role in overseeing travel security simply because the government wishes it. In the Large Aircraft Security Plan example, no clear and generally accepted call to action existed, and there was no pre-existing policy idea mixed in the policy soup, ready to be cooked when the time was right.

What does this hold for the development of a national aviation policy? In the absence of a crisis, major changes are unlikely. Instead, minor policy changes are likely to be the norm as policymakers tinker around the edges of existing policy frameworks. The major changes needed to address, for example, the FAA’s financing muddle and the need to address environmental concerns are unlikely to debated. This is unhappy news for anyone seeking to effect major policy shifts. Nonetheless, the next and final chapter lays out some ideas on how policy entrepreneurs might be able to address some significant problems faced by the air transportation industry.
Chapter 7. A Framework for U.S. Aviation Policymaking

7.1 What Have We Learned

This dissertation began with a review of many of the problems that face the U.S. aviation policymakers. As the demand for air travel has increased over the years as populations grew, so have the disamenities associated with air travel. Major airports are increasingly congested, smaller cities see their commercial air service reduced and sometimes eliminated, and mounting security concerns result in increasingly intrusive security protocols. While the FAA and other agencies are developing solutions to some of these problems, significant improvements remain years away.

The next major part of the dissertation (Chapters 2-4) showed just what is at stake. Chapter 2 provided the theoretical basis for the importance of air travel by illustrating how firms have incorporated air travel into their core business processes. Chapter 3 laid out the economic argument, demonstrating that access to air travel has an important effect on regional economies. Chapter 4 further illustrated the impact of air travel on business processes and how changes in aviation technology might lead to changes in the relative importance of non-commercial airports.

The second major part of the dissertation (Chapters 5 and 6) focused on policy and the issues that policymakers need to address. In Chapter 5, aviation experts in both the public and private sectors offered their thoughts on the key issues that face the industry. They identified five key subject areas: national interest and international leadership, economic development, national and international connectivity, energy
sustainability and environmental protection, and safety and security. Yet, as important as these issues might be, the nation has not conducted significant national debate on how to integrate them into a unified national aviation policy. Instead, major obstacles that include ambiguous national interests, government institutional barriers, conflicting approaches to financing of the air traffic management system, and warring industry groups have forestalled any attempts to integrate broad policy-oriented solutions.

Chapter 6 examined the role of crisis in the evolution of national policy. As that chapter showed, a recent crisis of sufficient magnitude can result in redirecting national policy (as it did with the federalization of airport security workers after the terrorist attacks of September 11, 2001). With the passage of time, however, complacency sets back in and policymakers face increasing difficulty in their attempts to implement policy changes that may be at odds with fundamental national values, especially when those policies involve government intrusion into the public's privacy.

7.2 A Well-Intentioned Attempt to Fix the System

A recent attempt to address the problems of the nation's air transportation system is the formation of the Future of Aviation Advisory Committee (FAAC) by DOT Secretary Ray LaHood in 2009. The mission statement the FAAC\textsuperscript{130} is:

"The Aviation Advisory Committee will provide information, advice, and recommendations to the Secretary of Transportation on ensuring the competitiveness of the U.S. aviation industry and its capability to address the evolving transportation needs, challenges, and opportunities of the global economy. The committee will assess fundamental changes in the following areas below, and identify the drivers of such change and the challenges and opportunities presented by industry developments:

- Addressing environmental challenges
- Balancing the industry’s competitiveness and viability"

\textsuperscript{130} Source: http://www.dot.gov/faac/
• Ensuring a world-class workforce necessary for a robust aviation industry
• Ensuring safety in aviation
• Securing stable and sufficient funding for our aviation systems”

As well-intended as the FAAC may be, this effort is flawed for three reasons. First, the Administration charged the Committee with finding answers to the aviation system's problems before an effort to first catalog the problems then determine the root causes of problems took place. Without these first steps, any recommendations made by the Committee are unlikely to address the root causes of problems plaguing the aviation system. The three-hour tarmac rule mentioned earlier is an example of this effect. The new rule addressed a symptom of underlying problems - long on-ground delays - instead of the root causes of the delays: severe weather events that are probably beyond the capability of anyone to control.

Second, the Committee is focused primarily on air transportation. This narrow approach to the aviation system's issues fails to recognize the multi-modal nature of travel in general. It risks missing opportunities for resolving some of the system's problems by addressing potential interactions with other travel modes. Various airlines, for example, operate flights between Boston and New York City and between New York City and Washington, D.C. in spite of the well-developed rail infrastructure connecting those city pairs. It is conceivable that improving rail service could reduce the demand for short-haul shuttle service, thus freeing airport capacity for the flights for which there is no other modal alternative. To be fair, the mission of the Competition and Viability Subcommittee includes investigating multi-modal alternatives. The Subcommittee chair, however, is Glenn F. Tilton, Chairman, President and CEO of UAL Corporation (parent of United Airlines), casting some doubt on the legitimacy of the Subcommittee's
recommendations and its diligence in exploring non-aviation travel alternatives. It is not clear if the Subcommittee attempted to draw on the experience of any multi-modal experts.

Third, while the committee's charter includes references to the entire aviation system, its focus is on the U.S. airline industry, not air transportation in general. All of the people on the Committee are leaders in their particular areas of expertise, but the composition of the committee reflects a strong bias towards commercial aviation. Of the 20 members of the committee as of August 10, 2010, ten members represent some component of commercial aviation. Two members come from the academy, while five members represent various industry groups. Two members represent the public sector. Only one industry group member has a direct connection to general aviation.

Why do these issues pose a problem? Certainly, the major problems experienced by the public occur within the realm of commercial aviation, so shouldn't members of that faction be responsible for finding solutions? Unfortunately, while people in the commercial aviation sector might be able to shed light on the factors that have caused many of the problems, it does not necessarily follow that they are the best people to develop solutions. As Albert Einstein is reported to have said, no problem can be solved from the same level of consciousness that created it. Thus, if we accept this reasoning, we cannot expect the FAAC to develop policy solutions to the general problems of air transportation. This is not because of any failings in the capabilities of the people on the committee, but is rather a consequence of socialization. Looking to Professor Einstein for

131 Admittedly, many more people are affected by problems in the commercial air travel system, and are less able to take action to mitigate them, than is the case with corporate and private aviation. Nonetheless, as more businesspeople turn to corporate aviation as an alternative to commercial aviation, it is important to include corporate aviation in the problem mix.
132 The complete list of members is shown in Appendix 4.
133 Source: http://rescomp.stanford.edu/~cheshire/EinsteinQuotes.html
insight once again, few people are capable of expressing with equanimity opinions that differ from the prejudices of their social environment. The existence of prejudices does not imply intentional bias or ill will, but is merely the result of natural conditioning. That is, if one is exposed to one aspect of an issue to the exclusion of others, then solutions to problems will be based on this limited view.

Ultimately, however, FAAC is the wrong first step because of the nation's failure to conduct a serious debate on fundamental issues. How important is it to preserve community airports? What is the value of preserving access to the commercial airline system at all of our small and mid-size cities? How do natural weather conditions affect congestion and delays? How important is it to reduce air pollution compared to the value of providing a robust air travel system? Where should oversight of the system be placed and what is the role of federalism in regulating a national transportation system? These and other basic questions should be answered before attempts are made to fix specific problems.

7.3 **Fundamental Questions to Resolve**

In large part, the obstacles to developing a national aviation policy remain because there is no agreement on fundamental issues affecting the air transportation system. First is the relationship between the major users of the aviation system (Chart 7-1). The commercial airlines and the general aviation industry are often at odds over issues such as financing and security. More importantly, freight shippers are largely absent from the national debate. Should shippers pay higher security fees for goods placed on commercial airliners, as airline passengers do? Should freight and passengers aircraft use

---

134 Source: http://www.quotationspage.com/quotes/Albert_Einstein
the same airports, a question that affects security as well as congestion? Could the answers affect our judgment on the need for multi-modal transportation systems? We will not know until we begin an open and free policy debate.

Chart 7-1: Aviation System Users

Second, the operating models of the air transportation system (Chart 7-2) have developed in an ad-hoc manner. Most commercial airport are owned and operated by cities, but many are owned and operated by quasi-public authorities such as the Port Authority of New York and New Jersey. Many small airports are privately owned. What is the best model? The operating model affects the availability of financing and the ability to advocate for airport improvements.

National tax policy also plays a potential role in airport operating models. Airports are considered private enterprises for bonding purposes - even if they are publicly owned. Bonds issued by the airport operating authorities are classified private activity bonds, and the income is therefore subject to the Alternate Minimum Tax. This
makes the bonds less attractive in the bond markets. Should income from bonds issued on behalf of public use airports that are vital to the overall national air transportation system be permanently exempt from the AMT? Such a move might dramatically increase the ability of airport managers to attract new capital for necessary airport improvements, as happened when the American Recovery and Reinvestment Act allowed for such an exemption. The exemption ends at the end of 2011.135

Chart 7-2: Air Travel Operating Models

This question leads to another fundamental policy question: should public use airports be treated a private enterprises for oversight purposes? Currently, airports are subject to various levels of oversight (Chart 7-3). Security at commercial airports is generally the responsibility of the Transportation Security Administration, but environmental regulations may be enforced by an amalgam of federal, state, and local authorities. Should public use airports be subject to a harmonized set of standards for all

of their operations? What is the appropriate balance between federalism and common regulations applied to entities engaged in interstate commerce?

**Chart 7-3: Aviation System Oversight Level**

Finally, a substantive national debate on air transportation policy must include a review of the marketplace models currently in place (Chart 7-4). Here, national and regional planning might play a vital role in allocating the nation's limited resources. The American Recovery and Reinvestment Act allocated $10 billion for high-speed rail, yet there has been no national debate regarding the proper role for rail versus other travel modes. In many cases, for example, cities might best be served by air travel alone, with different carriers engaging in limited competition within the framework of an *intra-modal oligopoly*.

In other cases, a combination of rail and air might best satisfy the transportation needs of a city or region. For example, a high-speed rail service connecting Manhattan with Stewart International Airport in upstate New York could be an important asset for
the residents of the region. Without a regional approach to transportation planning, however, plans to encourage *cooperative inter-modal* transportation systems might fail to gain the necessary support from funders. Instead, high-speed rail might be built in connecting city-pairs already well served by air carriers, resulting in a *competitive inter-modal* environment in which the different modes compete for passengers, providing alternatives for travelers but hurting the revenues of both.

**Chart 7-4: Marketplace Models**

![Marketplace Models Diagram]

Finally, there are questions about the extent of the air transportation system. The Essential Air Service program currently provides over $100 million in subsidies to airlines providing service to just over 100 smaller cities. Is this an appropriate use of public funds? Are there more effective ways to provide travel connectivity? As a matter of public policy, are we wed to the idea that intercity transportation must be provided by
commercial airlines? In debating these questions, we may find ourselves developing policy alternatives that extend to all travel modes.

7.4 First Step to a Comprehensive Policy - Is There a Model?

What are policy makers to do? It seems reasonable to suggest that to develop a national aviation policy that meets the needs of all stakeholders requires a coordinated and comprehensive approach, not one that reacts to the latest crisis of the day. This represents a major shift from how the U.S. has conducted national policy development. How, then, might the U.S. accomplish this ambitious goal?

A first step in developing a comprehensive national aviation policy might be to look at how other countries have addressed the same issues faced by the United States. The U.S. is not alone in facing challenges in developing cohesive and comprehensive aviation policy. In fact, any country that is large enough to derive a significant portion of its GDP from air transportation is likely large enough to face the same challenges ranging from financing issues, environmental problems, and the need for system-wide planning. The United Kingdom certainly falls within this category.

7.4.1 United Kingdom Aviation Background

One country that has addressed the issues facing its air transportation system is the United Kingdom. As in the United States, aviation contributes significantly to the UK economy.

---

136 Remember the crisis-driven policy decision by the U.S. Department of Transportation to fine airlines that keep passengers aboard a delayed airliner for more than three hours (the “Tarmac Rule.”) One independent study (Marks and Jenkins 2010) reports that in response to DOT's three hour tarmac rule, airlines have canceled many flights rather than run the risk of multi-million dollar fines. Thus, what might have been a four hour delay has the potential to become a 24 hour (or greater) delay.

137 The UK is a natural choice for a model in national policy development for a number of reasons. First, of course, are the cultural commonalities, including the common language. Second, the UK has taken bold steps in national approaches to major social problems. The National Health Service is but one example. Third, the UK has, fortuitously, taken the important step of developing a planning document that addresses many of the issues identified in this dissertation.
GDP. In 1999, air transportation was responsible for 4.2 percent of the UK GDP (direct industry impacts and stimulated effects on the total economy), a contribution comparable to that of the U.S. (Oxford Economic Forecasting 1999). The UK Civil Aviation Authority reported that at the end of 2009, the UK had 58 commercial service airports that provided air travel for over 218 million passengers. Heathrow Airport in London was the busiest airport with almost 66 million enplanements. The next busiest airport was London's Gatwick Airport with 32 million enplanements.\footnote{Source: http://www.caa.co.uk.}

As in the U.S., aviation planners in the UK face challenges posed by noise complaints, congestion problems, and other environmental concerns at the same time that they attempt to plan for increased demand for air travel. One example is the controversy surrounding the need for a third runway at Heathrow Airport in London, the busiest airport in the country. While adding capacity might have significant economic benefits, there exists considerable opposition because of the increase in jet airliner noise that many feel would result.

\subsection{7.4.2 The UK Policy Response}

The UK's Department for Transport responded to many of these challenges by developing a strategic framework for the development of airport capacity covering a period of 30 years. The objective of the project was to "set out a policy framework against which the relevant public bodies, airport operators and airlines can plan ahead, and which will guide decisions on future planning applications" (Department for Transport 2003, p. 9). This section describes the approach taken by the United Kingdom and highlights some of the differences between the UK and U.S. approaches.
The UK White Paper begins by setting out the strategic framework that the Department for Transport created and against which the government reached its conclusions. The report discusses the growth in air travel that has accompanied economic prosperity and technological improvements, noting that air travel has increased five-fold over the past 30 years. It notes that freight traffic has also increased greatly, doubling since 1990. The White Paper reports that, as in the United States, air transportation is important to the UK economy, directly and indirectly providing over 800,000 jobs. The report notes as significant the centrality of the UK to international travel, with one fifth of all international travelers passing through UK airports.

7.4.3 Differences in the UK and U.S. Approach

As reported earlier in this research, the United States does not yet have a national aviation policy. The document that comes closest to a policy statement is the Federal Aviation Administration’s report "Flight Plan 2009-2013", which provides a medium term plan to respond to the demand for U.S. air travel. As with the FAA’s report, the UK White Paper forecasts demand to increase in the future and describes steps needed to satisfy that demand. There are, however, major differences in approaches taken by the two countries. The major differences in the UK report fall into four areas:

1. integration of groundside issues in airport capacity planning
2. discussion of mode alternatives
3. integration of environmental concerns into specific airport planning
4. integration of regional planning in aviation planning decisions.
Integration of Groundside Issues In Airport Capacity Planning

Besides addressing the airside capacity needs, the UK White Paper considers the impact of airport expansion on the surrounding region. The report highlights as an important issue access to and from airports, observing that “ensuring easy and reliable access for passengers, which minimises environmental, congestion and other local impacts, is a key factor in considering any proposal for new airport capacity” (p. 60).

Sections addressing individual airports contain more specific references to needed groundside capacity improvements. For example, the discussion of adding capacity to Birmingham Airport in the UK Midlands includes a detailed review of the need for improved road access with references to specific motorways and intersections. The report calls for collaboration between the airport operator and the Highways Agency at an early stage to resolve potential congestion problems. In the discussion of Manchester Airport, the report points to the importance of increasing the public transport mode share to supporting the airport’s long-term growth. In that same section, the report notes that the motorway network in the vicinity of the airport is likely to require improvements. In contrast, the report "Capacity Needs in the National Airspace System" prepared by the Mitre Corporation for the FAA does not include any mention of groundside issues in its discussion of airport expansion needs.

Discussion of Mode Alternatives

When discussing airport capacity needs, the UK White Paper includes discussions of alternatives to air travel where appropriate. A substantial section of the report is devoted to long-distance rail alternatives. The report notes that some studies have suggested that rail competes well with air on point-to-point journeys of two to three hours
and might lessen the need for short-haul air travel. For example, the report notes that the introduction of high-speed rail in France has dramatically reduced the need for domestic air service on some short routes.

In contrast, travel policy research reports produced in the U.S remain largely mode specific. Both the report "Capacity Needs in the National Airspace System" prepared by the Mitre Corporation for the FAA as well as the FAA's "Flight Plan 2009-2013" focus solely on air travel as a means for travel needs.

**Integration of Environmental Concerns Into Airport Planning**

The UK White Paper devotes 13 pages to a comprehensive discussion of environmental issues. Specific areas of concern include noise, air quality, effect of aviation on biodiversity, and climate change. In contrast, the FAA Flight Plan devotes less than half a page to environmental issues. Besides the White Paper's general section on the environment, sections that address the air travel needs of specific areas the country address the environmental impacts of the construction of new airports or the addition of new or expanded runways to existing runways. For example, the discussion of adding capacity to Birmingham Airport in the Midlands section of the UK addresses the impacts of noise and NO₂ levels.

**Integration of Regional Planning in Aviation Planning Decisions**

One of the most significant differences between U.S and UK planning is the degree to which regional planning takes place. The UK White Paper employs a hierarchical approach. First, the report addresses overall policy issues. Next, individual airports are discussed, but within a regional context. The White Paper divides the UK into
seven regional planning areas: Scotland, Wales, Northern Ireland, the north of England, the Midlands, the South West, and the South East. Within each region, the report discusses subjects that affect the overall effectiveness and efficiency of the country’s aviation system. For example, in the section on the South East of England, the report states that the authors “do not support development of Alconbury [Airport] for passenger or freight services, but we recognize the potential for relocation there of aircraft maintenance operations from Cambridge Airport” (p. 111). In contrast, regional planning in the United States is conspicuous by its absence.

7.4.4 **Conclusions Drawn from UK White Paper**

In contrast to the approach taken by U.S. policymakers, the UK employs a more comprehensive approach to transportation planning. In a single planning document, “The Future of Air Transport” addresses all of the key issues that a planner needs to address: airside and groundside capacity needs, the environment, the need for multi-modal planning, the regional planning.\(^\text{139}\) U.S. aviation planning continues to be fragmented, with various components of aviation policy conducted by different agencies. The most obvious examples are the Department of Homeland Security and the Environmental Protection Agency, both of which were criticized by Chapter 5’s research participants for their tendency to implement new rules without consideration for the impact they might have on industry players.

Perhaps the most striking difference between U.S. and UK planning documents is the willingness of the UK Department of Transport to address national policy issues. The UK White Paper concludes with a section “Integrated Policy Appraisal” which addresses

\(^{139}\) To be fair, financing the system is omitted, a shortcoming the UK’s report shares with U.S. planning documents.
(albeit at a high level) the effects of the proposed policies on all aspects of British life, including public financing, choices made available to the traveling public, crime, social capital, climate change, biodiversity, and others. The U.S. aviation planning documents, as previously noted, largely fail to address most of these important issues. It is only when preparing environmental impact statements for individual airport projects are these issues tackled.

### 7.5 Creating a Framework for a U.S. Aviation Policy

The UK White Paper, while it still weak on some areas (for example, it touches only briefly on the question of funding and does not address business and personal aviation), is still is a good model for a national aviation policy. How can the U.S. develop a national aviation policy modeled after the UK's? First, the government must reexamine its current approach. While it is tempting to start by seeking solutions to some of the more salient problems, such as congestion at the major airports and long on-ground delays at those airports, to do before the root causes of the congestion and delays are understood might be a mistake. Instead, the government must address the obstacles identified in Chapter 5. Once the public and private sectors agree on the fundamental framework for moving forward, Congress and the Administration can address the finer points of aviation policy. With that accomplished, specific programs can be instituted to implement the national policy.

#### 7.5.1 Creating a National Aviation Policy Oversight Commission

How can the country conduct a serious debate on these important questions? Congress, with its focus on politics, it not a good venue. As argued above, the Federal
Advisory Committee on the Future of Aviation was a potential first step, but its composition makes it too vulnerable to the possibility of vested interests driving the debate. As unpleasant it might be to have to start over, that's exactly what Transportation Secretary LaHood should do. Secretary LaHood should charge a non-partisan commission comprised of transportation experts not driven by industry wishes with the responsibility to take the results of the FAAC and transform them, not into action items designed to address specific identified problems, but into a framework for a policy debate.

The scope of the policy oversight commission should extend beyond just air transportation, as did the UK Department for Transport’s White Paper. The Commission should examine all of the ways that air travel affects the country, beginning, starting with the five important elements identified in Chapter 5, national interest and international leadership, economic development, national and international connectivity, energy sustainability and environmental protection, and safety and security. The commission should also extend their policy consideration to issues such as international trade, effect on culture, public financing, choices made available to the traveling public and access to transportation, crime, social capital, climate change, and biodiversity.

The commission can add additional value if it examines the roles played by other modes of transportation. For example, given the congestion at the commercial airports in the northeast, does it remain sensible to employ air transportation for trips between Boston and New York, and New York and Washington, D.C.? The commission might also examine current FAA policy as it pertains to non-commercial airports. As commercial airlines consolidate service, non-commercial may play an increasingly
important role in providing access to the nation’s air travel system. Yet, current FAA policy does little to preserve them.

Another important issue for the commission to review might also be the processes used by various agencies to promulgate new regulations and requirements. Various government policies govern the manner in which agencies must determine the impact of proposed regulations. First, Executive Order 12866, Regulatory Planning and Review (58 FR 51735, October 4, 1993), directs each Federal agency to propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (5 U.S.C. 601, et seq., as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effect of regulatory changes on international trade. Fourth, the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531-1538) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually. Yet, it is far from clear if all agencies (notably the Transportation Security Administration) live up to the spirit, if not the letter, of these laws. The commission might serve as a watchdog agency, ensuring that all departments and agencies confirm to statutory requirements in their rulemaking.

Finally, the commission might examine why it is so hard to obtain long-term funding for the modernization of the nation’s air traffic management system. Has the industry failed to make a sufficient case for air travel being as important to the country's
economy as, for example, the U.S. interstate highway system begun in 1956 with the signing of the Federal-Aid Highway Act of 1956? The Federal-Aid Highway Act allocated over $1 billion for the first year alone, with the general fund as the source.\textsuperscript{140} The plan the President submitted to Congress called for establishment of a Federal Highway Corporation to issue bonds to pay for the Interstate System up-front, with the Federal excise tax on gasoline and lubricating oil (which then went to the general Treasury without a linkage to highways) dedicated to bond retirement. Congress rejected this plan, but adopted a proposal to finance the Interstate System on a pay-as-you-go basis with revenue from highway user taxes. The Department of the Treasury credits the revenue to the Highway Trust Fund established under the Federal-Aid Highway Act of 1956.\textsuperscript{141}

How is the Interstate Highway System a model for the aviation system? The IHS is funded by revenue from federal gas and other motor-vehicle user taxes. Hence, even drivers who never use the interstate highway system contribute to its support. Instead of forcing only those direct users of the system to pay for it, everyone who purchases gasoline helps maintain the system. Without explicitly recognizing it, Congress constructed a link between the IHS and the general welfare of the nation. In much the same way, an aviation commission focused on policy formation might make a strong argument that the country's air travel system is the 21\textsuperscript{st} century equivalent of the Interstate Highway System and that the cost of maintaining the aviation system should be borne not just by the direct users of the system, but by the nation in general.

\textsuperscript{140} This is in contrast with the current financing process for aviation which depends primarily on revenue generated directly by passengers.

\textsuperscript{141} Source: http://www.fhwa.dot.gov/interstate
7.5.2 **Aviation Policy Oversight Commission Composition**

Determining the composition of a national aviation policy commission is key to its success. The ideal composition would be one that avoided entanglements with industry groups, both firms directly involved with specific outcomes and lobbying firms. To his credit, Transportation Secretary LaHood avoided naming heads of aviation lobbying groups to the Federal Aviation Advisory Committee, but he did include the heads of major commercial airlines, unions, and aerospace manufacturers, all of which have stakes in certain outcomes. In some cases, they held subcommittee leadership positions, giving them the ability to subtly or explicitly influence the FAAC’s ultimate recommendations.

The undue influence that industry members might exert is at odds with policy theory suggested by people such as Frank Fischer (2003) and John Forester (1989) that encourage a more deliberative and participatory approach. The commission, therefore, should initially comprised of three groups:

- Public policy researchers from academic institutions with experience in aviation matters.
- Representatives from all executive departments.
- Key members of Congress: heads of Senate and House aviation sub-committees.

**Public Policy Researchers**

Public policy researchers from outside of the government are presumably less likely to be influenced by partisan biases and vested interests. The private sector, which does not need to justify any of its policies, conducts most of the research into the effects of policy on the aviation industry. There are any number of firms that can fill this role.
All Executive Departments

Secretary LaHood appointed only one person from the Administration, Pamela Hamilton of the FAA, to the Federal Aviation Advisory Commission. In spite of the impact that aviation policy has on many other departments, none of them were represented. Including all departments is key to ensuring that the potential ramifications of new policy prescriptions are learned at the earliest possible stage of policy formation.

Key Members of Congress

At the end of the day, the Commission will need Congressional support to implement policy. Having a few representatives from key members of Congress on the Commission helps to provide a reality check to new policy ideas. The likely members include the heads of the Senate and House subcommittees on aviation.

Support Members

Participation by industry representatives should be limited to providing information about the industry, its problems, possible solutions, and feedback concerning potential policy prescriptions developed by the Policy Commission. This is one area where the current composition of the FAAC might well be useful. It is important to remember, however, that industry insiders should not be the ones driving policy development.

Notably lacking in the FAAC are representatives of the traveling public. Groups such as the Association for Airline Passengers Rights should be invited to provide the passenger perspective. This addition will add to the perceived legitimacy of the Commission and its recommendations.
7.6 Final Thoughts

This dissertation began with a thorough review of the problems besetting the United States' air transportation system. It concluded with a recommendation for addressing the multitude of obstacles preventing the formation of a comprehensive national aviation policy.

The role of public debate in the formation of national aviation policy is vital. Questions of normative values, social and economic policy, and the role of technology cannot be answered separately if a broad national consensus is to be achieved, without which no policy is likely to be effectively implemented. By including all of the major stakeholders in the policymaking process, policymakers can identify potential policy problems at an early stage, avoiding the need to retract proposed policy after it has been publicized, as the TSA has been forced to do. Yet, as seen in Chapter 6, making new policy in the absence of a crisis is a skill mostly lacking in Congress and administrations.

Given these challenges of developing a national aviation policy, it remains encouraging to see a sense of collaboration coming from at least one public sector research participant.

"The best approach to developing national aviation policy is through collaborative and cooperative efforts amongst all the stakeholders. Despite the competing and conflicting interests of various stakeholders, the best policy would be with input from all of the stakeholders."

It is hoped that this dissertation will spur the debate needed to develop a comprehensive national aviation policy that will serve as the basis for planning decisions long into the 21st century.
APPENDICES

Appendix 1: Overview of Next Generation Air Transportation System Goals


1. Provide Collaborative Capacity Management: The ability to dynamically balance forecasted airspace and airport demand and utilization in collaboration with enterprise stakeholders through proactive strategic planning and automation (e.g. decision support systems), using airspace and airport design requirements, standards and configuration conditions, and with consideration of other air transportation system resources.

2. Provide Collaborative Flow Contingency Management: The ability to provide optimal, synchronized, and safe strategic flow initiatives and minimized operational impacts in collaboration with enterprise stakeholders, through real or near real time resolutions informed by probabilistic decision making that address large demand/capacity imbalances within capacity management plans.

3. Provide Efficient Trajectory Management: The ability to provide trajectories that minimize the frequency and complexity of aircraft conflicts within the flow through trajectory negotiation and adjusting individual aircraft trajectory and/or sequence when resource contention requires.

4. Provide Flexible Separation Management: The ability to establish and maintain safe separation minima from other aircraft, vehicles, protected airspace, terrain, weather, etc., predict conflicts, and identify resolutions (e.g., course, speed, altitude, etc.) in real time to accommodate increasing capacity demands and traffic levels using automation (e.g. decision support systems) while applying reduced separation standards.

5. Provide Effective Information Sharing Environment: The ability to improve information required by aviation regulation, situational awareness and enhance decision making by managing, integrating, and flexibly delivering, relevant and reliable data and information (e.g., advisories, signals, and alerts) on demand in a format that is accessible, secure, and available to authorized users in a unified and coordinated environment.

   a. Provide Integrated/Actionable NextGen Information: The ability for authorized stakeholders to provide, discover, and consume timely and accurate NextGen information (e.g. weather, surveillance (PNT), aeronautical, and geospatial) in a decentralized, distributed, and coordinated environment through trusted aviation stakeholder partnerships and aligned data policies and standards.
b. Provide Quality Net-centric Infrastructure: The ability to store, transport, and retrieve NextGen information between providers and consumers on a reliable, scalable, and secure net-centric infrastructure by managing and reconfiguring resources and existing infrastructure capabilities to sustain normal operations and service level agreements.

6. Provide Integrated Regulatory & Risk Management: The ability to provide appropriate, effective and scalable solutions to mitigate environmental impacts, and safety and security risks in the air transportation system based on proactive risk identification and analysis through improved automation, policies, procedures, and processes using established standards, requirements, and responsibilities.

   a. Provide Secure Air Transportation System: The ability to provide a secure air transportation system using a layered, adaptive, and collaborative approach to identify, prioritize, and assess security situations and appropriately defeat an evolving threat using appropriate tactics, techniques, and procedures.

   b. Provide Improved Environmental Performance: The ability to provide improved flexibility in the identification of environmental impacts and the optimized management of resources necessary to meet increasing capacity demands through collaboration and improved environmental operational policies, procedures, and practices.

   c. Provide Safe Air Transportation System: The ability to ensure a safe air transportation system through prognostic safety risk assessments of systems, organizations, or operations using collaboration, automation (e.g. decision support systems), and enhanced safety assurance techniques, using safety standards, requirements, and responsibilities.

7. Provide Flexible Airport Facility and Surface Operations: The ability to reallocate or reconfigure the airport facility and surface assets to maintain an acceptable level of service that will accommodate increasing passenger and cargo demand levels, or changes in operational requirements, through infrastructure development, predictive analyses, automation (e.g. decision support systems), and improvements to technology and procedures.

   a. Provide Flexible Airside Operations: The ability to allocate and utilize the airport assets and infrastructure to conduct safe, secure, and efficient operations on the airport surface through predictive analyses, automation (e.g., decision support systems), and improvements to technology and procedures within an acceptable level of service that accommodates demand levels.

   b. Provide Flexible Landside Operations: The ability to allocate and utilize the airport landside assets and infrastructure to conduct safe and efficient
operations, through predictive analyses, automation (e.g., decision support systems), and improvements to technology and procedures within an acceptable level of service that will accommodate demand levels.

8. Provide Collaborative Airport Management and Infrastructure Development: The ability to maintain acceptable levels of service that will accommodate increasing demand levels or changes in operational requirements through collaboration with airport planning and management organizations, predictive analyses, and infrastructure development.
Appendix 2: Metropolitan Statistical Areas included in the study

Albany, GA
Albany-Schenectady-Troy, NY
Allentown-Bethlehem-Easton, PA-NJ
Altoona, PA
Anderson, SC
Asheville, NC
Athens-Clarke County, GA
Atlanta-Sandy Springs-Marietta, GA
Atlantic City-Hammonton, NJ
Augusta-Richmond County, GA-SC
Baltimore-Towson, MD
Bangor, ME
Barnstable Town, MA
Binghamton, NY
Blacksburg-Christiansburg-Radford, VA
Boston-Cambridge-Quincy, MA-NH
Bradenton-Sarasota-Venice, FL
Bridgeport-Stamford-Norwalk, CT
Brunswick, GA
Buffalo-Niagara Falls, NY
Burlington, NC
Cape Coral-Fort Myers, FL
Charleston-North Charleston-Summerville, SC
Charlotte-Gastonia-Concord, NC-SC
Charlottesville, VA
Chattanooga, TN-GA
Columbia, SC
Columbus, GA-AL
Cumberland, MD-WV
Dalton, GA
Danville, VA
Deltona-Daytona Beach-Ormond Beach, FL
Dover, DE
Durham, NC
Elmira, NY
Erie, PA
Fayetteville, NC
Florence, SC
Fort Walton Beach-Crestview-Destin, FL
Gainesville, FL
Gainesville, GA
Glens Falls, NY
Goldsboro, NC
Greensboro-High Point, NC
Greenville, NC
Greenville-Mauldin-Easley, SC
Hagerstown-Martinsburg, MD-WV
Harrisburg-Carlisle, PA
Harrisonburg, VA
Hartford-West Hartford-East Hartford, CT
Hickory-Lenoir-Morganton, NC
Ithaca, NY
Jacksonville, FL
Jacksonville, NC
Johnstown, PA
Kingsport-Bristol-Bristol, TN-VA
Kingston, NY
Lakeland-Winter Haven, FL
Lancaster, PA
Lebanon, PA
Lewiston-Auburn, ME
Lynchburg, VA
Macon, GA
Manchester-Nashua, NH
Miami-Fort Lauderdale-Pompano Beach, FL
Myrtle Beach-North Myrtle Beach-Conway, SC
Naples-Marco Island, FL
New Haven-Milford, CT
New York-Northern NJ-Long Island, NY-NJ-PA
Norwich-New London, CT
Ocala, FL
Ocean City, NJ
Orlando-Kissimmee, FL
Palm Bay-Melbourne-Titusville, FL
Palm Coast, FL
Panama City-Lynn Haven, FL
Pensacola-Ferry Pass-Brent, FL
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Pittsburgh, PA
Pittsfield, MA
Portland-South Portland-Biddeford, ME
Port St. Lucie, FL
Poughkeepsie-Newburgh-Middletown, NY
Providence-New Bedford-Fall River, RI-MA
Punta Gorda, FL
Raleigh-Cary, NC
Reading, PA
Richmond, VA
Roanoke, VA
Rochester, NY
Rocky Mount, NC
Rome, GA
Salisbury, MD
Savannah, GA
Scranton--Wilkes-Barre, PA
Sebastian-Vero Beach, FL
Spartanburg, SC
Springfield, MA
State College, PA
Sumter, SC
Syracuse, NY
Tallahassee, FL
Tampa-St. Petersburg-Clearwater, FL
Trenton-Ewing, NJ
Utica-Rome, NY
Vineland-Millville-Bridgeton, NJ
Virginia Beach-Norfolk-Newport News, VA-NC
Washington-Arlington-Alexandria, DC-VA-MD-WV
Williamsport, PA
Wilmington, NC
Winchester, VA-WV
Winston-Salem, NC
York-Hanover, PA
Youngstown-Warren-Boardman, OH-PA
Appendix 3: Florida Survey Instrument

Travel Patterns Today

1. How frequently do you and your firm’s employees travel on business?
   _____ times per day
   _____ times per week
   _____ times per month
   _____ times per year

2. What is the average percentage of trips by travel mode?
   _____% Car
   _____% Rail
   _____% Bus
   _____% Air

3. What is the average percentage of trips by travel distance?
   _____% 0-100 miles
   _____% 101-250 miles
   _____% 251-500 miles
   _____% 501-1000 miles
   _____% 1001+ miles

4. When traveling on business, how many employees typically travel at the same time to the same destination?
   _____

5. How long are typical trips in days?
   _____

6. On what days is travel typically conducted?
   ___________________________ _____ No particular days

7. What is your preferred time to travel?
   _____ Morning _____ Afternoon _____ Evening _____ No Preference

8. What is the longest trip by automobile or other ground mode you would make before considering air travel?
   __________ hours / miles

AIR TRAVEL PREFERENCES

9. When you or your employees travel by air, what is the percentage of travel by type of air carrier?
% Commercial airline
% Charter
% Corporate owned aircraft
% Shared corporate aircraft
% Other (specify)

10. When you travel by commercial airlines, what is your preferred seating class?

Coach
Business Class
First Class

11. How do employees get to the airport?

Own car
Bus
Taxi
Limo
Other (specify: ________________________________)

12. How long do employees spend getting to a flight (leaving home/office to scheduled departure time)?

13. How important a problem is road congestion getting to the airport?

Very Important
Somewhat important
Not Very Important

14. Which airports do you or your employees usually fly from?

15. Do you have any particular destinations that are flown to more frequently than others?

______________________________________________________________________________

16. How close would an airport have to be to your home or office for you to consider it to be convenient?

17. What are your reasons for traveling on business instead of using other business meeting processes such as telephone, videoconferencing, web-conferencing?

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Please let me know how much you agree with the following statements:
18. Price is important to me:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

19. Time savings is important to me:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

20. Convenient scheduling is important to me:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

21. Convenient departure locations is important to me:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

22. Convenient arrival locations is important to me:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

23. Convenient access is an important factor in locating my business

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

24. Not being able to travel by air affects my business

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

25. Overall, air travel is very important to my firm

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

26. What factors would make you use air travel more?

- [ ] Price decrease
- [ ] Ability to travel from closer airport
- [ ] Shorter check-in and security lines
- [ ] Better security
- [ ] Direct flights
- [ ] Closer airport
- [ ] Other ________________________________

27. What factors would make you use air travel less?

- [ ] Price increase
- [ ] Increased time to get to the airport
270

28. What do you see as the benefits of air travel?

29. What are the worst things about air travel?

30. How much more would you pay for an air travel ticket to save one hour of total travel time?

$________

31. How much more would you pay for an air travel ticket to save two hours of total travel time?

$________

32. How much more would you pay for an air travel ticket to save three hours of total travel time?

$________

33. Has your firm’s air travel changed since 2001?

___ No Change  ___ Very Little  ___ A Great Deal

34. If your firm’s air travel did change since 2001, what are the reasons?

___ Concern about safety  ___ Delays  ___ Inconvenience

___ Other:

35. Have you sought alternatives to air travel since 2001?  YES  NO

If yes, what are they:

AIR TAXI SECTION

36. Would being able to travel from Lakeland Airport increase your use of air travel?

Very Likely  Likely  Possibly Unlikely Very Unlikely

If no, why not?

37. Have you ever heard of air taxi service?  YES  NO

If no, explain: Air taxi service employs a newly developed type of turbine powered aircraft. They hold 4 to 6 people, and can take off and land at smaller airports than those used by commercial airlines. For example, they would be able to use Lakeland Airport instead of Tampa Airport or Orlando Airport, and they would be able to travel to airports up to 1,000 miles away.  [show pictures]
38. If you were able to travel from Lakeland Airport instead of having to travel to Tampa Airport or Orlando Airport, would you consider using air taxi service?  

<table>
<thead>
<tr>
<th>Very Likely</th>
<th>Likely</th>
<th>Possible</th>
<th>Unlikely</th>
<th>Very Unlikely</th>
</tr>
</thead>
</table>

If no, why not?  

39. What is the longest trip you might consider making in an air taxi?  

<table>
<thead>
<tr>
<th>1 hour (about 300 miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hours (about 600 miles)</td>
</tr>
<tr>
<td>3 hours (about 900 miles)</td>
</tr>
</tbody>
</table>

40. How would being able to travel from an airport such as Lakeland Airport using an air taxi service affect your perception of Lakeland as a place to do business?  

| It makes Lakeland much more attractive |
| It makes Lakeland somewhat more attractive |
| It does not make a difference |

41. How would being able to travel from Lakeland Airport using an air taxi service affect your business operations? Please choose one or more from the following:  

| More likely to stay in Lakeland |
| More likely to expand business (hiring) |
| More likely to expand market area |
| Would not use air taxi service |

42. If you were able to travel from Lakeland Airport instead of having to travel to Tampa Airport or Orlando Airport, how likely do you think you would be to use air taxi service? Please answer considering the following sample fares:  

<table>
<thead>
<tr>
<th>Same as Coach fare</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% more than Coach fare:</td>
</tr>
<tr>
<td>Same as Business Class fare:</td>
</tr>
<tr>
<td>25% more than Business Class:</td>
</tr>
<tr>
<td>Same as First Class fare:</td>
</tr>
</tbody>
</table>
 DEMOGRAPHIC INFORMATION

43. How many people does your firm employ? _____

44. How many locations does your firm have? _____

45. What is your firm’s total annual payroll? $_____ 

46. Does your firm have a parent firm? Yes No

   If yes, where is it located?

   _____________________________________________________________________

47. How long has your firm been established?

   __________________________ year
Appendix 4: Key Provisions of the Aviation and Transportation Security Act (PL 107-71) Addressing the Federalization of the Airport Screener Workforce

- Screener Workforce: Under Secretary must hire, train and supervise security screeners at all airports (except for up to 5 airports that may participate in a Federal-private pilot program). Authority enables the TSA to hire and fire expeditiously, and prohibits strikes.

- Five Airport Pilot Program (44919): Upon certification of full federalization, the Under Secretary may establish a two-year, voluntary pilot program to allow qualified private screening companies to conduct screening at no more than 5 airports (one from each security/size category). The airport must apply to be included in the pilot. The Under Secretary would contract with the private company for the services. Such private screeners must be supervised by federal personnel, must meet all federal standards and qualifications, and must receive pay and benefits not less than federal screeners. Private screening companies must be U.S.-owned and may be terminated at any time for significant failures. At the end of the two-year time period, the airport can opt in to participate in the Federal system or continue with its private contract relationship. The Under Secretary would pay for the contract services.

- Airport Opt-Out Program (44920): Two years after certification of full federalization, an airport may apply to have screening carried out by a private company. Such application will be subject to the same conditions as the pilot program. Secretary before approving any opt out request must certify that the level of security to be provided under the private contract will be equal to or greater than security provided by federal personnel and that the firm is U.S.-owned.
Appendix 5: Future of Aviation Advisory Committee

The people listed below were members of the Future of Aviation Advisory Committee as of August 1, 2010. Complete biographical information is available at http://www.dot.gov/faac/biographies.html

-------

Committee Chair: Susan L. Kurland, Assistant Secretary for Aviation and International Affairs, Department of Transportation

Juan J. Alonso, Associate Professor in the Department of Aeronautics & Astronautics, Stanford University

Susan M. Baer, Director, Aviation Department, Port Authority of New York and New Jersey

David Barger, President and CEO, JetBlue Airways Corporation

Bryan K. Bedford, Chairman, President & CEO, Republic Airways

Severin Borenstein, E.T. Grether Professor of Business Administration and Public Policy at the Haas School of Business and Co-Director of the Energy Institute at Haas

Thella F. Bowens, President & CEO, San Diego County Regional Airport Authority

John M. Conley, International Administrative Vice President and Air Transport Division Director, Transport Workers Union of America, AFL-CIO

Cynthia M. Egnotovich, Segment President, Nacelles and Interior Systems, Goodrich Corporation

Patricia A. Friend, International President, Association of Flight Attendants-CWA, AFL-CIO

Robert L. Lekites, President, UPS Airlines

Ana McAhron-Schulz, Director of Economic and Financial Analysis, Air Line Pilots Association (ALPA)

William J. McGee, Travel and Aviation Consultant for Consumers Union

Daniel McKenzie, CFA, Hudson Securities

Jack J. Pelton, Chairman, President, and CEO, Cessna Aircraft Company
Nicole W. Piasecki, Vice President of Business Development, Boeing Commercial Airplanes

Raul Regalado, President & CEO, Metropolitan Nashville Airport Authority

Glenn F. Tilton, Chairman, President & CEO, UAL Corporation (parent of United Airlines)

Christopher J. Williams, Chairman, CEO and founder of The Williams Capital Group, L.P. and Williams Capital Management, LLC

Designated Federal Officer: Pamela Hamilton, Director of Rulemaking, Federal Aviation Administration
Appendix 6: Outline of UK Department for Transport White Paper "The Future of Air Transport"

Chapter 1 – Purpose

Chapter 2 – The strategic framework
  The growth in air travel
  Future demand
  Limitations on growth
  A balanced strategy

Chapter 3 – Environmental impacts
  Objectives
  Noise
  Noise mitigation and compensation
  Local air quality
  Other local impacts
  Climate change

Chapter 4 – The air transport sector
  An international industry
  Safety
  Aviation security
  Service quality
  Aviation and tourism
  Airports and regional economies
  Air freight
  Growing regional airports
  Regional air services to London
  Long-distance rail alternatives
  Access to and from airports

Chapter 5 – Scotland
  Key issues
  Main conclusions
  Edinburgh Airport
  Glasgow International Airport
  Glasgow Prestwick International Airport
  Aberdeen Airport
  Dundee Airport
  Highlands and Islands

Chapter 6 – Wales
  Key issues
  Main conclusions
  Cardiff International Airport
  Other proposals
Chapter 7 – Northern Ireland
   Key issues
   Main conclusions
   Belfast City Airport
   Belfast International Airport
   City of Derry Airport
   Surface access

Chapter 8 – The North of England
   Key issues
   Main conclusions
   Manchester Airport
   Liverpool John Lennon Airport
   Blackpool Airport
   Carlisle Airport
   Newcastle Airport
   Teesside International Airport
   Leeds Bradford International Airport
   Humberside International Airport
   Doncaster – Finningley Airport
   Sheffield City Airport

Chapter 9 – The Midlands
   Key issues
   Main conclusions
   New airport option
   Birmingham International Airport
   East Midlands Airport
   Other Midlands airports

Chapter 10 – The South West
   Key issues
   Main conclusions
   Bristol International Airport
   New airport – north of Bristol
   Bournemouth International Airport
   Exeter International Airport
   Plymouth
   Newquay Airport
   Other South West airports
   Other issues

Chapter 11 – The South East
   Key issues
   Main conclusions
A South East hub airport
Cliffe
Stansted Airport
Heathrow Airport
Gatwick Airport
London Luton Airport
Smaller South East airports
Alconbury
Alternative proposals

Chapter 12 – Next steps
Securing statutory approval
Land protection
Airport master plans
Green Belt
Blight
Delivering surface access improvements
Managing airspace
Monitoring and evaluation
Programme of action

Annexes
A – UK air travel forecasts
B – Emissions trading
C – Glossary
D – Bibliography
E – Integrated Policy Appraisal
ACRONYMS

ADA  Airline Deregulation Act of 1978
AIP  Airport Improvement Program
ATC  Air Traffic Control
ATM  Air Traffic Management
ATSA Aviation and Transportation Security Act
CAPPS-II Computer-Assisted Passenger Profiling System II
CFR  Code of Federal Regulations
DHS  Department of Homeland Security
DOT  Department of Transportation
EPA  Environmental Protection Agency
FAA  Federal Aviation Administration
FAAC Future of Aviation Advisory Committee
GAO  Government Accountability Office
GDP  Gross Domestic Product
IATA International Air Transport Association
ICAO International Civil Aviation Organization
IHS  Interstate Highway System
JEC  Joint Economic Committee
JPDO Joint Planning and Development Office
LASP Large Aircraft Security Program
MNC Multi-National Corporation
MSA Metropolitan Statistical Area
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAS</td>
<td>National Airspace System</td>
</tr>
<tr>
<td>NBAA</td>
<td>National Business Aviation Association</td>
</tr>
<tr>
<td>NEXTGEN</td>
<td>Next Generation Air Traffic Management System</td>
</tr>
<tr>
<td>NPRM</td>
<td>Notice of Proposed Rulemaking</td>
</tr>
<tr>
<td>PFC</td>
<td>Passenger Facility Charge</td>
</tr>
<tr>
<td>SESAR</td>
<td>Single European Skies ATM Research</td>
</tr>
<tr>
<td>TAA</td>
<td>Technologically Advanced Aircraft</td>
</tr>
<tr>
<td>TNA</td>
<td>Thermal-Neutron Analysis</td>
</tr>
<tr>
<td>TSA</td>
<td>Transportation Security Administration</td>
</tr>
<tr>
<td>VLJ</td>
<td>Very Light Jet</td>
</tr>
</tbody>
</table>
REFERENCES


Department of Commerce. (2004). Western Region Security Office


GAO. (2009, March 10), “Transportation Programs – Challenges Facing the Department of Transportation and Congress”, Statement of Katherine Siggerud, Managing Director, Physical Infrastructure Issues, Report GAO-09-435T.


National Household Travel Survey. (2003, October). “America on the Go. Findings from the National Household Travel Survey”, U.S. Department of Transportation, Bureau of Transportation Statistics.


Rosenzweig, P. and Nhuyen H. (2003, August 28)." CAPPS II Should Be Tested and Deployed", The Heritage Organization, Backgrounder #1683.


CURRICULUM VITA

ROBERT A CHECCHIO

EDUCATION:

2011 Ph.D. in Planning and Public Policy, Edward J. Bloustein School of Planning and Public Policy, Rutgers, the State University of New Jersey

2005 Masters in Public Affairs and Politics, Edward J. Bloustein School of Planning and Public Policy, Rutgers, the State University of New Jersey

1989 Master of Business Administration, Rutgers Graduate School of Management, Newark, NJ

1975 Bachelor of Arts, Mathematics, Rutgers College, New Brunswick, NJ

EXPERIENCE:


PUBLICATIONS


“Philadelphia International Airport Capacity Analysis”, E. A. Elsayed and Robert Checchio, Department of Industrial and Systems Engineering, Rutgers University, February 2008.


"Economic Impact of the Trenton-Mercer Airport", Michael Lahr and Robert Checchio, Center for Urban Policy Research, The Edward J. Bloustein School of Planning and Public Policy

"Creating a Motivating Environment in Software Development", Robert Checchio, Third IFAC Conference on Experience With The Management Of Software Projects, October 30-November 1, 1989, Purdue University, West Lafayette, Indiana.