

The Macroeconomics of Micro Pigs

Debunking the myths surrounding mini pigs and educating potential buyers with facts gathered from both sellers and previous owners

Tag words: miniature pig, micro pig, teacup pig, pig, selective breeding, underfeeding, animal malnutrition, mini pig breeders, genetically engineered pigs

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Summary: For the past several decades, pigs have been leaving farms and gradually entering our homes as beloved pets. Mini pigs especially have been taking lead on this trend because of their small and manageable size. The issue is, there is no assurance that mini pigs will stay true to their small size. A direct result of this issue can be seen in animal shelters, sanctuaries, and rehoming advertisements. Mini pigs are a product of our own selfish preferences, as humans created mini pigs for both benefit and profit. The reason behind choosing this topic is that one of the authors herself was interested in owning a mini pig. It wasn't until after thorough research that she concluded there is no guarantee when buying a mini pig. It is our mission to educate other prospective owners and prevent any more mini pigs from being abused.

Video Link:<https://youtu.be/IFFr0KiJ9UU>

Understanding the Miniature Pig Controversy

What is a Mini Pig?

If you spend any time on the Internet, surely you have stumbled upon the adorable sensation of miniature pigs. Just as one would predict, a miniature pig is a smaller than average pig. It is easy to get lost in research, deciphering what is and how many miniature pig varieties exist. First things first, “mini,” “micro,” “teacup,” “Juliana,” “pixie,” “nano,” and “Royal Dandies” are interchangeable and all mean the same thing! Do not be surprised if you come across a different adjective prefixed to their name. Typical pig breeds that are often available as “mini” pigs are the Potbelly, Kunekune, Ossabow, Guinea, and Yucatan (1).

Do Mini Pig Breeds Exist?

Many articles concerning mini pigs begin with, “Mini pigs do not exist!” The statement is a gray area for there is no definite answer. Some agree mini pigs do not exist, many label them as breeds, and few claim them as strains. Breeds of animals are categorized based on morphological differences in either form or function. These differences are clearly visible, whether it be size, color, or shape. On the other hand, strains of animals are categorized based on physiological differences in physical and chemical function. These differences are internal, for instance, higher milk yield in a strain of cow. According to the dictionary's definitions, a mini pig would be considered a breed (2). You may find “breed” attached to many mini pig varieties, but keep in mind mini pig breeds are still only recognized by independents registries. Individual breeders create

breed registries. Therefore, the sizing criteria of mini pigs are dependent on the individual breeder's standards (3). Until a universal standard is developed and recognized by an association, there will exist as many different standards as there are breeders!

What is the difference between a mini pig and a teacup dog or mini horse?

It is important to acknowledge that teacup dogs are similar to miniature pigs, in that they are bred using the same methods. Teacup dogs also continue to grow to full size, reminiscent of miniature pigs. The only dissimilarity being, teacup dogs are generally smaller versions of already small dogs, like Yorkshire Terriers, Chihuahuas, and Malteses. And so, when they grow to be full size of less than 20 lbs., it is not as drastic as a 200 lb. pig (4). As you might have noticed, "teacup" is dominantly used when categorizing dogs rather than "mini." The reason for this is, small dog breeds like the toy Miniature Schnauzer already claimed the title. The American Kennel Club association does not recognize teacup dogs as a breed and so "teacup" is used to avoid any association with the valid toy breed.

Another popular mini animal is the miniature horse. Thankfully, miniature horses are its own breed! To achieve a miniature horse, one must mate two miniature horses. There are no unethical breeding methods involved. The origin of miniature horses is unknown, though there once existed a prehistoric Eohippus, which was a smaller horse, so it is possible that miniature horses occurred naturally through evolution (5). This would explain why miniature horses stay small for its entire life.

Projects Before Pets

Before miniature pigs occupied the homes of thousands as domesticated pets, miniature pigs were initially and intentionally bred for biomedical research. Genomic analysis' proved that pigs suffer from the same genetic and protein malfunctions that account for many human diseases, including obesity, Parkinson's, Alzheimer's, and dyslexia" (6). Thus, it is expected that pigs be one of the foremost organisms to be studied comparatively to humans. Due to the fact that farm breeds can weigh up to 600 lbs., it is not practical to study such enormous creatures directly in laboratories. Pigs in general have a rapid growth rate, so if a farm breed is to be studied, it is either for "non-survival or short-term projects of less than three weeks" (7). Miniature pigs have a noticeably slower growth rate and are logically smaller, so they are used for long-term projects. A study in China wanted to create the ideal pig breed for biomedical research by making them as valuable as possible for their cost. The study outbred Chinese Wuzhishan mini pigs through phenotypic selection, downsizing cultivation, and microbiological standardization for ten years. This practice resulted in slower growth rates, longer life spans, higher reproductive rates, all whilst maintaining original genetic diversity (8). These newly acquired characteristics were sought for in related biomedical research.

Selective breeding

Phenotypic selection, also known as selective breeding, is when humans actively select which genetic traits are to be passed onto offspring. In contrast, natural selection allows the environment to inactively select the organisms that are better suited to survive its conditions and encourage reproduction. Because natural selection takes years to wean out

undesirable traits, it is very common that breeders and farmers mate the two strongest of desired animal. By doing so, it guarantees the advantageous traits responsible for their strength will be directly passed onto their offspring. Unfortunately, when breeding miniature pigs, the two smallest and often weakest animals are chosen to mate instead. Consequently, the offspring may inherit genetic disorders that were responsible for said weakness. Inbreeding increases genetic disorders by 50% every generation (9). Not all mini pigs grow up to weigh 200 lbs. Selective breeding is widely accepted and breeders can minimize the defects but it would require years and years of dedication, as seen in Chinese study with Wuzhishan mini pigs. Due to high demand and popularity, many mini pig breeders are involved to gain as much money as quick as possible. This get rich quick attitude leads breeders to falsely advertise the piglets.

The Mini Pig's Initial Claim to Fame

Potbellies originate from Vietnam, but World War II forced farmers and their stock to migrate north into Europe. Keith Connell, a Canadian zoo director, arrived in Europe in the 1970s to find unique pigs to showcase at the Ontario Zoo. After all paperwork was filed and approved, Connell was able to secure eighteen newborn potbellies into Canada in 1985. Connell then took it upon himself to secure a second line of potbellies into the United States. Potbellies eventually arrived in Texas in 1989, and immediately won over America's hearts (10). Pigs in general, are the fourth smartest animal group known to date! It wasn't long before the public celebrated both the pig's intelligence and cuteness. Potbellies quickly became domesticated pets in the 1980s through 1990s. The potbelly fad eventually dwindled due to their fast growth rate and large size.

Mini Pigs Reclaim Popularity in the Past Decade

Paris Hilton and Miley Cyrus are two names that people love to hate, and two names that billions have heard of. Both women have been labeled as fashion icons, albeit questionable, and so the world watches them and fans emulate everything they do. Paris Hilton purchased a "Dandie Extreme" in 2009. As above-mentioned, "Dandie" is a synonym for mini, but "Extreme" convinces buyers that the pigs are that much smaller and cuter. Miss Pigelette, Paris' Dandie, weighed approximately 19-29 lbs. in 2009 (11). In 2011 however...refer to photo below (Figure 1). Paris' good fortune has allowed her to keep Miss Pigelette at home, rather than giving her up due to lack of funds and accommodations. Miley Cyrus purchased her mini pig, Bubba Sue, in 2014. Bubba Sue has already posed in magazines with Miley as well as appearing in her posts on Instagram, seen by her 29 million plus followers. Miley Cyrus did serve the mini pigs justice by testifying, "The vet told me she needs to lose some weight. I'm from the South and we don't believe in mini pigs ...As long as you give her food she's very cool" on the Tonight Show with Jimmy Fallon (12). Even though Miley Cyrus has made it clear to the public Bubba Sue is not a mini pig, it is only natural that the demand for miniature pigs increases as more and more celebrities appear with pigs.



Figure 1- Paris Hilton's Mini Pig in 2010 (left) and 2011 (right)
Retrieved from Hello Magazine and Star Magazine

Breeders Take Advantage Over Buyers

Whenever fads or trends come about, businesses take the opportunity to prey on the naïve. The first thing potential owners should do, before buying any pet, is research! Sadly, that is not always the case. There is a wonderful website, WWW.TEACUPPIG.INFO, which allows mini pig owners to submit their experiences regarding miniature pigs and false advertisements. For instance, one couple purchased a miniature pig from Texas and flew it over to their apartment in Los Angeles. The breeder claimed it was not a normal Potbellied pig, but rather a “special hybrid teacup variety” that has not yet received approval as its own breed, so no certification was available. The couple should have been suspicious from that statement alone, although people who do receive physical certificates also experience this misfortune due to independent registry standards. The couple's pig arrived at their two-bedroom apartment and weighed in at a mere 8 lbs., and at just four weeks, started growing. This “special hybrid teacup's” last announced weight was 220 lbs. (13). In almost every story, you will find that the seller promised the pig will get no larger than 40 lbs. Many sellers advise buyers to underfeed the pigs as well, so they do not surpass this 40 lb. marker.

Underfeeding Method to Keep Pigs “Mini”

Every organism is born with a gene that predetermines its size, as bones possess a genetic program that regulates one's length. Underfeeding an animal is a way to override the program by stunting growth. Stunting growth in miniature pigs may lead to the promised 40 lb. size, but it may also lead to malnutrition. Symptoms of malnutrition include retarded growth, lethargy, diarrhea, liver disease, bad temperament, and retarded mental development (14). Underfeeding should never be an alternative for keeping any animal “mini.” The prefix “under,” suggests that it is below accepted and obviously should be avoided.

Current Methods to Achieve Mini Pigs

Pigs do not reach maturity until three years of age. For that reason, mini pigs will continue to grow until they reach maturity. So in reality, the majority of miniature pigs sold are actually immature pigs, or piglets (15). Majority is said because as previously cited, pigs can be selectively bred to a smaller size. This leads many to believe that the mini pigs that grow to be 200 lbs. were most likely sold as piglets. To help clarify, there are three current, granted unethical, methods to achieve mini pigs:

Selective Breeding→true mini pig

Piglets→are mini in size, but will grow into an adult

Underfeeding→are mini in size, may or may not overpass stunt

The Issue: False Mini Pigs Overloading Shelters and Sanctuaries

Miniature pigs that outgrow their homes leave their owners with tough choices. If financially able, owners can either improve and expand space at their current home, or move to a bigger home. Extra spending money isn't as common these days and is almost always put towards mortgages or necessary payments. Building and buying both require time and effort. It is much easier for owners to send their pigs to sanctuaries, shelters, or euthanization for a substantially lesser fee. Owners may even release their pigs into the wild, for free! The number of pigs being given up is beyond an issue as shelters and sanctuaries are becoming heavily overburdened and are now denying pigs (16). Luckily, pigs can be sent to almost any sanctuary, as there are both unspecific livestock sanctuaries and specific pig sanctuaries. The need for more pig sanctuaries is dire if society wants to decrease the amount of pigs being euthanized and released into the wild. Many of the overburdened pig sanctuaries today were established in the 1990s to early 2000s, following the initial Potbelly boom. Hopefully more pig sanctuaries will be encouraged to open following the current boom.

New Genetically Engineered Mini Pigs

In September 2015, the Shenzhen International Biotech Leaders Summit in China revealed the first genetically engineered mini pig to be sold on market. These mini pigs were obtained from Bama pigs. Originally, the pig's genome was altered with to establish a more practical pig to be used in the lab. As aforementioned, China had already been working on Wuzhishan pigs for biomedical purposes, so it was expected that China would also establish the first gene-edited mini pig. The institute stated that their mature mini pigs all weighed approximately 30 lbs. Because this news was only released two months ago, little is known about the success rate of gene-edited mini pigs. The institute is breeding male clones of their mini pigs with normal female pigs to avoid potential health problems associated with cloning. The problem is, as with all mini pigs, only half of the offspring remain as mini pigs, or more simply, there is still no guarantee! (17). It is safe to assume that the institute will only be selling the half that does remain. Genetically modified organisms are an entirely different dispute, so not everyone is as accepting of these new mini pigs.

Pros and Cons with Genetically Engineered Mini Pigs

As with other methods of achieving mini pigs, genetically engineering them is seen as unethical to some. Geneticist, Jens Boch, replied to the news with, "It's questionable whether we should impact the life, health and well-being of other animal species on this

planet light-heartedly.” This is regularly a universal feeling regarding genetic modifications, as mini animals are not natural, and were solely created for both aesthetic preferences and our own benefit. The pros of genetically engineered mini pigs are that the ratio of mini pigs sold to pigs given up will decrease because they will not outgrow their home. The cons are for ethical reasons and also because people may hear this surety of small size and impulsively purchase a mini pig. Crystal Kim-Han, a pig rescuer, believes gene-edited pigs will still be given up to shelters and sanctuaries because pigs should not be housed inside or in apartments period. If they are, pigs become bored and destructive, forcing the impulsive shoppers to then make the decision of keeping the pig or not (17). But now there is a fourth method to achieve a mini pig.

Selective Breeding→true mini pig

Piglets→are mini in size, but will grow into an adult

Underfeeding→are mini in size, may or may not overpass stunt

Genetic engineering→true mini pig

Community Action: Surveying Mini Pig Sellers to Find Out What They are Really Selling

Breeders concentrated in the Tristate area were surveyed to find out what information they offered along with their mini pigs. Questions apropos of the mini pigs expected weight and required care were asked, and any additional information the seller provided were recorded. Blogs written on WWW.TEACUPPIG.INFO were also collected and scanned for any quantitative data comprising of mini pig weights to add to results.

Craigslist was the chosen outlet to contact breeders in the Tristate area. Craigslist is normally compartmentalized by city, so a separate search engine, Statewidelist, was utilized to search Craigslist and Ebay by state to quicken results. The tag words, “mini pig,” “micro pig,” and “pig” were searched for in the engine and were filtered by New Jersey, Pennsylvania, and New York separately. The advertisements that ensued were posted from June 2015 to October 2015. The advertisements were perused and only the current advertisements were further looked into. Depending on whether the seller requested contact by either email or phone, surveying began accordingly.

Questions asked to Sellers/Breeders

How much do they cost?

What is their current age and weight?

What is their expected weight?

What age do they reach full maturity, or stop growing?

Do I need to sign an agreement prior to purchasing?

Is there any policy concerning their health?

How can you tell which pigs will be “mini?”

Is there any way to prove to the buyer that the mini pig will remain small?

If the mini pig ends up being farm size, would you take it back?

*Record any additional information they offer

Out of 145 total pig advertisements listed from June 2015, 48% came from Pennsylvania, 41% came from New York, and only 11% came from New Jersey. 30 of the 145 advertisements were still active when surveying commenced in October. It was very

difficult gathering genuine answers regarding size from the sellers. They often declared that all the information needed was already listed on Craigslist, and advised the surveyor to “Google” for more information. None of the sellers mentioned underfeeding but did blame diet for large size, for instance, “...it depends on how you feed them, the recommendation is a quarter cup of food per day” (18). A quarter cup is only 0.68 pounds per day! It seems very low but it does agree with several feeding charts for mini pigs online. The rule of thumb for farm pigs is to feed “1 lb. of food each day for each month and up, up to a maximum of 6 lbs. per day (19). As said earlier, ethical reasons prevent the majority from accepting mini pigs as a breed, case in point, extreme dietary restrictions. Information from the ten most cooperative sellers was compacted into a table to clarify results (Table 1).

Seller	Cost	Age	Strict Diet?
1	\$150	5 mo.	Yes
2	\$200	3 mo.	Yes
3	\$350	2 mo.	Yes
4	\$100	2 mo.	Yes
5	\$200	2 mo.	Yes
6	\$250	4 mo.	Yes
7	\$200	6 w.	Yes
8	\$190	8 w.	Yes
9	\$475	4 mo.	Yes
10	\$80	4 mo.	Yes

Table 1-List of Mini Pig Costs and Ages Sold on Craigslist

Average cost= \$220

Average age sold (1 mo. is 30 days)= 3 months

Either the seller advised a strict diet on their own accord or because the surveyor alluded to it. Because sellers believe weight is solely dependent on the buyer’s feeding habits, sellers could not state expected weight to surveyor. Often, sellers would propose that if diet was monitored, mini pig should stay under 100 lbs. For this reason, other outlets, such as WWW.TEACUPPIG.INFO was utilized to gather weight statistics from actual mini pig owners (Figure 2).

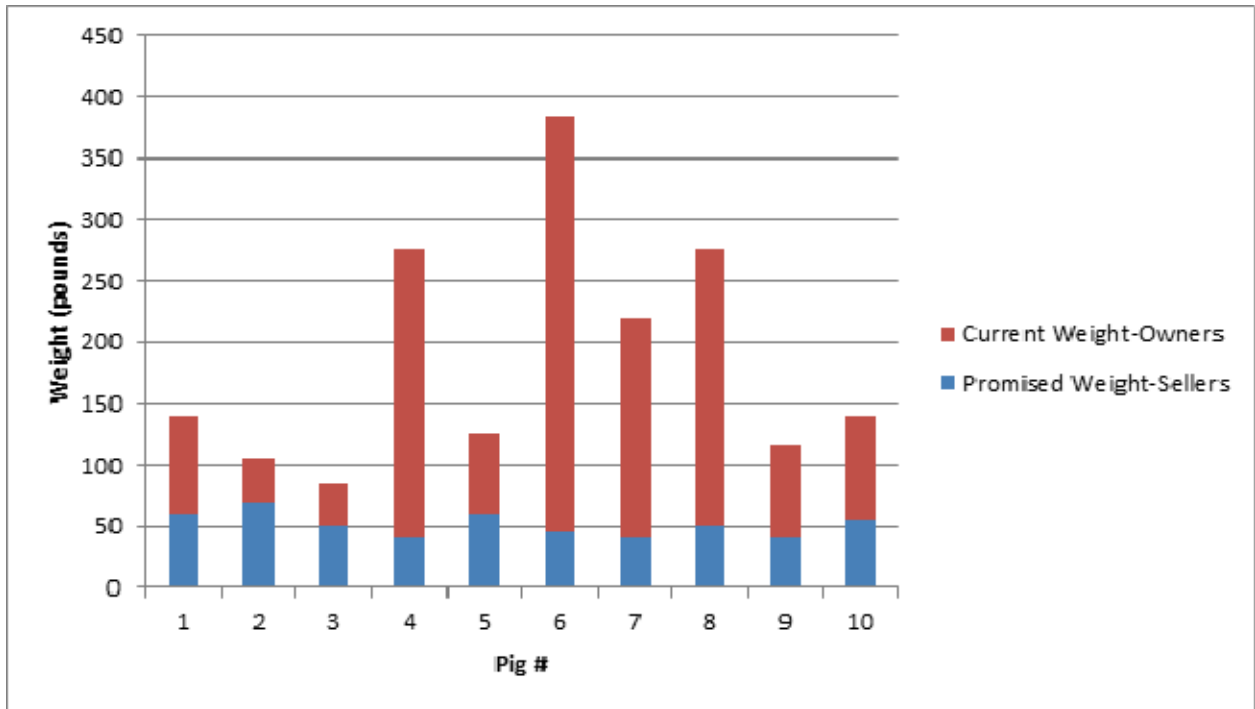


Figure 2-The Difference in Promised Mini Pig Weight from Actual Mini Pig Weight Gathered from www.teacuppig.info

As you can see, there is no consistency in differences of promised weight vs. actual weight. As aforementioned, no association recognizes mini pigs as a breed, and so there is no common standard size. Some “mini” pigs, like #6 grow up to be 375 lbs.! It is very likely that this mini pig was sold as a piglet and not selectively downsized like pig #3. The average amount a mini pig surpasses its promised weight is 127.6 lbs. As buyers are constantly being lied to by sellers, a truth to finally offer buyers is, mini pigs may grow over 127.6 lbs. past promised weight.

Mini pigs sold by means other than Craigslist generally sell for \$1000+ along with a \$500 deposit! The smaller and more colorful the mini pig, the more expensive the mini pig. Mini pigs can actually be reserved for and purchased online with a credit card! This further supports how high in demand mini pigs are. If one would type, “Buy mini pigs online,” and “Buy dogs online” individually into a search engine, the results for mini pigs would beyond exceed the dogs. Online vendors are beginning to alert buyers to be wary of mini pigs sold for anything less than \$1000 (20). Lesson to be learned, a higher price does not guarantee a smaller pig. There is no guarantee when purchasing a mini pig! Until an association identifies and distinguishes the breed, there are no widely accepted sizes or prices. As a result, online vendors will continue to compete and bash independent sellers advertising on Craigslist or classifieds. Below are answers collected from local vs. online breeders (Table 2).

Average	LOCAL	ONLINE
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Cost	< \$500	> \$1000 + deposit
Age sold	Various	8 weeks (after weaning)
Expected weight	Depends on diet	Depends on diet
Mature age	3-6 years	3-6 years
Contract?	Yes	Yes
Health policy?	Yes	Yes
Guarantee of size?	No	No

Table 2-Answers frequently received when surveying sellers

Mini pigs purchased online are sold fairly quickly. With technology today, waiting lists are automatically generated and when a recently weaned mini pig is ready to be sold, it notifies the next customer in waiting and does so within hours. Therefore, the age mini pigs are sold online are almost always at 8 weeks, or after weaning from the mother. Local breeders sell their mini pigs at a slower pace, so sometimes the mini pigs aren't sold until several months old. A majority of the local and online breeder answers fell in sync with one another. Both highly advise a strict diet to keep mini pig small and healthy. Mature pig age ranges, but one breeder mentioned when you notice hair on a pig's back or tail, they are an adult. Contracts are very similar, the only difference is with online breeders there are certain rules and regulations with shipping the animal. Their health policies are practically identical and both agree that there is absolutely no guarantee of size. Vital points in contracts are the buyers must prove mini pig has been spayed or neutered within six months, failure to comply results in a \$500 breeding rights fee. Every health policy found online or explained by phone states that any health issues must be brought to seller's attention within three days after obtaining mini pig. If any serious issues are found, buyer may exchange for a different mini pig, refunds are rare. If buyer purchased mini pig online several states away, buyer must again, cover shipping cost.

Hopefully now, you have a better understanding on what mini pigs are and the issue that surrounds them. The overall solution to the problem is to simply spread awareness. If you know someone interested in owning a mini pig, including yourself, consider only buying a mini pig if

- a) you can also provide for a full sized pig or
- b) you wait until gene-edited pigs are available for purchase

Even though not all mini pigs out grow their promised weight, there is no way to prove that a pig has been selectively downsized. DNA tests can offer insight on expected weight, but they are expensive and a burden. It is anticipated that when gene-edited mini pigs hit the market, they will be in the running for top household pets along with dogs and cats.

Check out the American Mini Pig Association website, for its main objective is, "To educate, advocate, protect miniature pigs, improve breeding practices, as well as encourage responsible mini pig ownership, to further the progression of the breed through

DNA percentage confirmation and future documentation of ancestry” (21). Even though AMPA has the word, “association,” it is not analogous to the American Kennel Club and so, is not a registry of mini pig breeds for the United States. AMPA is only currently furthering progression of the breed, eventually leading to recognizing the breed. Lastly, if size is not a factor, and you or someone you know wants any pig, please adopt one of the hundreds of abandoned mini turned big pigs in need of a home.

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Letter to the Editor

Dear Editor of the Daily Targum,

Please consider publishing my letter below and in attachment to the editor.

Thank You!

Want a Minipig?

Most recently, miniature pigs have been hogging the walls of many Facebook users. La petite swine look cute, cuddly, and can make unique pets. For that reason, thousands have posted wishes of buying one. Buyer Beware - do your research first! Unfortunately, not all miniature pig breeders are honest, and sell miniature pigs under false pretenses. Consequently, supposed mini pigs grow up to weigh 220 lbs.! Owners of the 220lb “miniature” pig end up needing to find another home for their pig when it can no longer live within their apartment or home. Pigs are continuously being brought into shelters and sanctuaries worldwide. It has been noted that shelters and sanctuaries have had to deny pigs due to full capacity. At that point, pigs may be euthanized, released into the wild, or kept in poor conditions

There are four ways to aesthetically achieve a miniature pig.

Selective Breeding → true mini pig strains.

Piglets → mini in size, but will grow to adult size.

Underfeeding → are mini in size, but may or may not override stunt.

Genetic Engineering → true mini pig strains.

However, there are only two ways to achieve a “true” miniature pig. Both selective breeding and genetic engineering can successfully maintain the promised 8 lb. to 40 lb. miniature pig weight. Although selective breeding works, it is hard to prove to the buyer that the pig has been selectively downsized. Genetically engineered miniature pigs were only developed this past September in China, and so have not yet been put on the market.

Still interested in owning a mini pig? Consider

a) only buying a mini pig if you can also provide for a full-sized pig OR

b) wait until gene-edited pigs are available for purchase.

Also, check out the American Mini Pig Association; one of its objectives is to create a code of ethics to wean out falsified breeders.

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An Ag Colloquium class project