

Iowa's Changing Swine Industry

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Summary and Implications

Iowa has led the U.S. in swine production and pig inventory since the 1880s. Pig production has been a reliable value-added enterprise on many Iowa farms for generations. In spite of this 120-year national leadership, Iowa's swine industry has been changing profoundly within the state.

Iowa agriculture from 1978 to 2002 endured many changes. During the 1980s, Iowa endured the Farm (debt) Crisis. In the 1990s industrialization of the swine industry became widespread in the U.S. and Iowa. In 1997 and 1998, hog prices plummeted to historic lows. In the face of all of these changes, Iowa has continued to lead the U.S. in pig production, but major changes in the industry's structure have caused remarkable shifts in the location of Iowa's pigs and the numbers of people involved in pig production. For example, in 25 years, the number of Iowa farms with pigs declined 83% from 59,134 farms in 1978 to 10,205 farms in 2002.

Using Census of Agriculture data and U.S. Hogs and Pigs Report data, hog inventories were plotted by county in Iowa. The results are dramatic. Maps of Iowa's counties with numbers of hogs per county are shown for 2002, 1987 (15 years earlier) and 1980 or 1978 (depending on the data source). In 1980 and prior to that time, every Iowa county had significant numbers of pigs. Some counties – Delaware, Washington, Mahaska, Crawford, Carroll, Plymouth, and Sioux – had larger numbers of pigs than other counties. In 1978, Iowa's 14.7 million pigs were significant in every county. Even populous counties like Linn and Scott had notable inventories of pigs.

But in 2002, the most recent Census of Agriculture, Iowa's 15.5 million pigs have shifted location and are much less evenly distributed. North central Iowa – Hamilton, Hardin, Wright, and Franklin counties, western Iowa – Audubon, Carroll, and Sac counties, and northwest Iowa – Lyon, Osceola, Sioux, Plymouth, O'Brien, Emmet, and Palo Alto counties have more pigs than prior years. Except for the Washington/Mahaska county and the Union/Ringgold county areas, southern and eastern Iowa generally have fewer pigs.

One way to look at the data is to look at the total inventory of pigs per county. In 1978, there were two Iowa counties with less than 50,000 pigs. Twenty-five years later in 2002 there were 24 counties with less than 50,000 pigs. In 1978, there were no Iowa counties with more than 400,000 pigs but in 2002 there were nine Iowa counties with

more than 400,000 pigs. Two of those counties – Hardin and Sioux – had more than 800,000 pigs. The pig inventory of Iowa has become increasingly concentrated into a few areas.

When the data is presented as pigs per square mile or pig density, the shifts are even more pronounced. In 1987, the entire state of Iowa was a relatively pig dense state with density somewhat evenly distributed across the state. In 2002, Iowa is a state with very high and also low pig densities. There are about 25 counties that have a high density of pigs. However, some counties have few pigs per square mile. In fact, Fremont and Clarke counties in southern Iowa have less than one pig per square mile.

Introduction

Iowa has led the U.S. in swine production and pig inventory since the 1880s. Pig production has been a reliable value-added enterprise on many Iowa farms for generations. In spite of this 120-year national leadership, Iowa's swine industry has been changing profoundly within the state. This article looks at the Iowa swine industry using U.S. Census of Agriculture data that was last taken in 2002 and USDA Hogs and Pigs Report data for 1997 and 1978, respectively. Other information sources were included at those dates or as close as possible.

Iowa agriculture from 1978 to 2002 endured many changes. During the 1980s, Iowa endured the Farm (debt) Crisis. In the 1990s industrialization of the swine industry became widespread in the U.S. and Iowa. In 1997 and 1998, hog prices plummeted to historic lows. In the face of all of these changes, Iowa has continued to lead the U.S. in pig production, but major changes in the industry's structure have caused remarkable shifts in the location of Iowa's pigs and the numbers of people involved in pig production. For example, in 25 years, the number of Iowa farms with pigs declined 83% from 59,134 farms in 1978 to 10,205 farms in 2002.

Materials and Methods

U.S. Census of Agriculture data and USDA Hogs and Pigs Report data were used to plot maps by county in Iowa and to compare the Iowa swine industry of 2002 to prior years. Additional information was added to help tell the story of change in the Iowa swine industry.

Results and Discussion

The national maps of pig inventories by state for 1997 and 2002 look quite similar (figures 1 and 2). Iowa continues to have the most pigs and North Carolina has the second most in the nation. In 2002, Iowa had about 15.5 million pigs; in 1997, 14.5 million pigs; in 1987, 13.0 million pigs; and in 1978, 14.7 million pigs. During those five years, Oklahoma, Kansas, and Colorado have slightly

more pigs and Indiana and Illinois have slightly fewer pigs. But the changes are minor.

The location of pigs across Iowa has changed dramatically. Using Census of Agriculture data and U.S. Hogs and Pigs Report data, hog inventories were plotted by county in Iowa. The results are dramatic. Maps of Iowa's counties with numbers of hogs per county are shown for 2002 (Figure 3), 1987 (15 years earlier) (Figure 4), and 1980 (Figure 5). In 1980 and prior to that time, every Iowa county had significant numbers of pigs. Some counties – Delaware, Washington, Mahaska, Crawford, Carroll, Plymouth, and Sioux – had larger numbers of pigs than other counties. In 1978, Iowa's 14.7 million pigs were significant in every county. Even populous counties like Linn and Scott had notable inventories of pigs.

But in 2002, Iowa's 15.5 million pigs have shifted and are much less evenly distributed. Except for the Washington/Mahaska counties and the Union/Ringgold county areas, southern and eastern Iowa have fewer pigs. North central Iowa – Hamilton, Hardin, Wright, and Franklin counties, western Iowa – Audubon, Carroll, and Sac counties, and northwest Iowa – Lyon, Osceola, Sioux, Plymouth, O'Brien, Emmet, and Palo Alto counties have more pigs.

One way to look at the data is to look at the total inventory of pigs per county. In 1978, there were two Iowa counties with less than 50,000 pigs. Twenty-five years later in 2002 there were 24 counties with less than 50,000 pigs. In 1978, there were no Iowa counties with more than 400,000 pigs but in 2002 there were nine Iowa counties with more than 400,000 pigs. Two of those counties – Hardin and Sioux – had more than 800,000 pigs. The pig inventory of Iowa has become increasingly concentrated into a few areas.

When the data is presented as pigs per square mile or pig density, the shifts are even more pronounced. In 1987, the entire state of Iowa was still a relatively pig dense state (Figure 6). In 2002, Iowa is a state with very high and also low pig densities (Figure 7). There are about 25 counties that have a high density of pigs. However, some counties have few pigs per square mile. In fact, Fremont and Clarke counties in southern Iowa have less than one pig per square mile.

Every county in Iowa had fewer pig farms in 2002 compared with 1997. Over half of the counties (54 out of 99 counties) also had fewer pigs in 2002 compared with 1997. In 1997, there were 2 counties with fewer than 50 pig farms. Five years later, there were 25 counties with fewer than 50 pig farms. In 1997, there were 28 Iowa counties with more than 200 pig farms. There were 8 Iowa counties with more than 200 pig farms in 2002. The only Iowa county with more than 500 pig farms in 2002 was Sioux county in northwest Iowa.

When comparing 1978 to 2002, some major trends are noted (Table 1).

- The total number of pigs in Iowa has remained about the same. The total number of pigs has increased only 4.8% in Iowa in 25 years.
- Interestingly, the number of pigs sold in Iowa has increased from 22.1 million in 1978 to 26.7 million in 2002. This is a 21% increase in the finishing phase of pig production in 25 years. The increase is a reflection of more feeder pigs imported into the state and more intensive management of pigs that results in rapid growth, fewer days to market, and more pigs produced per sow. Additionally, market hogs are 10% heavier (264 lbs per pig in 2001) than 25 years ago (240 lbs per pig in 1978). The finishing phase of pig production consumes the most feed, produces the most manure and is usually viewed as the least management intensive.
- The average size of pig farms has dramatically increased 6 fold in 25 years. In 1978, the average Iowa pig farm had about 250 pigs. In 2002, the average Iowa pig farm had more than 1,500 pigs.
- The number of pig farms has decreased by 83% in 25 years. In 1978 there were about 59,000 Iowa pig farms and in 2002 there were 10,205 pig farms in Iowa.
- The location of pigs in Iowa has shifted and concentrated in certain areas. The areas of pig concentration are often where large pig companies are active.
- The number of sows in Iowa has decreased. Iowa had 23% of the U.S. sow herd in 1978 and 17% of the U.S. sow herd in 2002. There were 2.11 million breeding swine in Iowa in 1978, and in 2002 there were 1.15 million breeding swine or about a 45% decline in 25 years. However, sows have become more productive weaning almost 15 pigs per sow per year in 2002 compared to 10.2 pigs per sow per year in 1978. This is 44% more pigs weaned per sow annually in Iowa. The breeding and farrowing of sows and managing of young pigs is the most labor and usually viewed as the management intensive phases of pig production.
- The number of pigs brought to Iowa for finishing has increased, particularly feeder pigs imported from Canada.
- The business structure of Iowa pig farms has shifted from independent family farms involved in farrow-to-finish production to networks of producers that are tied by contracts or ownership to large swine

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companies or swine packers. In 2002, 50% of Iowa pigs sold were fed under a contracting arrangement.

- The number of swine youth projects has declined by 55% from 1978 to 2002. In 1978, Iowa 4-Hers had 14,663 swine projects. In 2002 there were 6,549 swine projects. In 2004, the number of swine projects declined an additional 860 projects to 5,689 or a 61% decline in 27 years. During the same period, the number of Iowa 4-Hers actually increased. Some counties may have difficulty sponsoring 4-H or FFA county fair youth swine shows if the trend continues.
- Iowa's extensive infrastructure of swine-related veterinarians, feed suppliers, hog buyers, and equipment suppliers has rapidly diminished. These changes are difficult to quantify. One approach is to look at the membership in trade associations. For example, most swine veterinarians are members of the American Association of Swine Veterinarians. In 1993, there were 401 Iowa members of the American Association of Swine Veterinarians. In 2002, there were 250 members and in 2004 there were 217 members – a 46% reduction in swine veterinarians in the last 11 years.
- Iowa's pig marketing infrastructure has rapidly changed. In 2002, there are fewer hog buying stations, livestock haulers, and pork packing plants. In 1987, there were 253 hog buying stations in Iowa. In 2005, there are 44 buying stations. This is an 83% reduction in the number of Iowa hog buying stations in the last 18 years. In fact, in 1987, Carroll County had 14 stations, Sac and Cedar Counties had nine stations each, and Delaware and Mahaska Counties had eight stations each.
- A counter trend of smaller family-based swine farmers producing for pork niche markets is occurring in Iowa. Natural meat sales in the US are increasing 15 to 40% annually. About 40 pork niche markets were identified in Iowa in 2002. A large pork niche marketer is Niman Ranch Pork of Thornton, Iowa, which has over 400 farmer-producers, mostly in Iowa, and processes 2,500 pigs weekly in Iowa.
- Iowa's purebred swine seedstock producers have experienced a profound decline in numbers as swine genetics companies have taken over much of this business and artificial insemination has become common. On the other hand, boar studs and show pig providers have flourished.

In conclusion:

- Iowa's pig production culture has shifted to be more industrial and more mobile. Examples of mobility are feeder pigs from Canada, custom manure applicators, professional pig loading crews, and mobile swine managers that oversee thousands of pigs fed at multiple contract sites.
- Risk has changed. In the past, many pig farmers had to deal with the risk of market swings. As more pigs are fed on contract, and the size of pig units increase, the risks facing Iowa farmers are often related to regulations, legal contracts, pig flow, and neighbors' perceptions.
- A traditional proven entry path for beginning Iowa farmers – pig production – has greatly changed. Rather than independent entrepreneurs, many pig farmers are contract growers. Contract feeding of pigs may offer an alternative entry path for beginning Iowa farmers, but it has distinct characteristics.
- A source of rural community leadership – pork producers – may be drying up. There are simply many fewer pig farmers in Iowa's rural areas.
- Pigs once viewed positively across Iowa may now be viewed negatively. Pigs in rural Iowa were once called "mortgage lifters" and pig manure odor was the "smell of money." But in 2004, the ISU Rural Life Poll found that when rural Iowa residents were asked their preferences about rural development activity, hog confinements ranked below prisons, solid waste landfills, slaughter plants, and sewage treatment plants as desirable rural development.
- As pigs become concentrated in certain areas and vacate other areas of the state, the environmental impacts of pig production are more concentrated. Will statewide regulations apply to all areas of Iowa equally?
- In the summer of 2005, the city zoo in Des Moines added two sows ready to farrow in a new agricultural display with ISU ag students to answer questions. As the state becomes more removed from pig production, Iowans now go to a zoo to see pigs.

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Table 1. Iowa Swine Industry At-a-Glance.

	<u>2002</u>	<u>1997</u>	<u>1978</u>
Hogs and pigs inventory, million head	15.5	14.5	14.7
Hogs and pigs marketed, million head	26.7	20.4	19.9
Farms with pigs	10,205	17,585	59,134
Breeding swine, million head	1.15	1.35	2.11
Finishing pigs, million head	14.3	13.2	12.2
Pigs per/farm, head	1,518	825	250
Pigs sold by contract production, %	50%	N/A	N/A
4-H swine projects	6,549	7,741	14,663
Hog buying stations	44 (2005)	--	253 (1987)
Iowa counties with <50 pig farms	25	2	0
Iowa counties with >200 pig farms	8	28	99
Iowa counties with >500 pig farms	1	2	54
Iowa counties with <50,000 pigs	24	18	2
Iowa counties with >400,000 pigs	9	4	0
Iowa counties with >800,000 pigs	2	0	0
Purebred swine seedstock producers (4 breeds) ¹	99	135	500 est.
Registered litters purebred swine (4 breeds) ¹	3,857	6,475	20,000 est.
U.S. average market wt, lbs	264 (2001)	256	240
Pigs per sow per year	14.7	13.5	10.2
Iowa swine veterinarians ²	250	335	401 (1993)

¹Duroc, Hampshires, Landrace, and Yorkshire

²Iowa members of American Association of Swine Veterinarians

Figure 1. U.S. hog numbers in 2002.

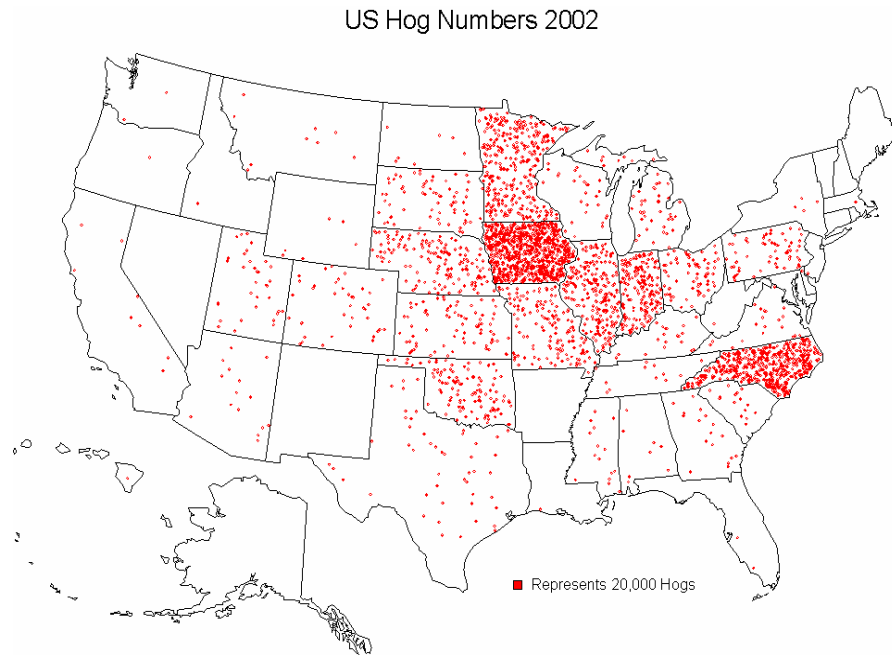


Figure 2. U.S. hog numbers in 1997.

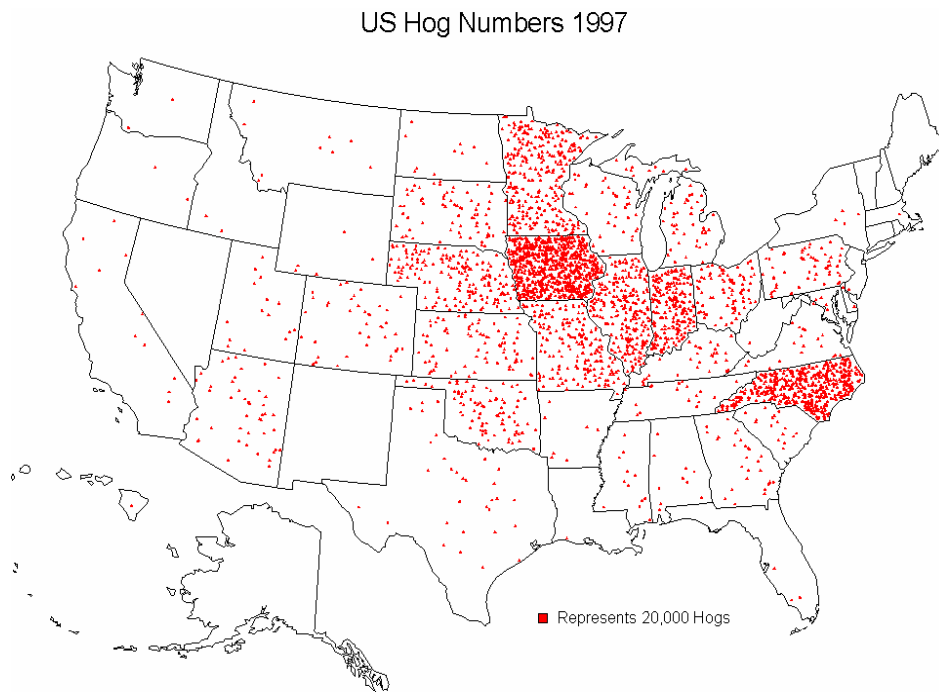


Figure 3. Hogs per county in 2002.

Hogs Per County 2002

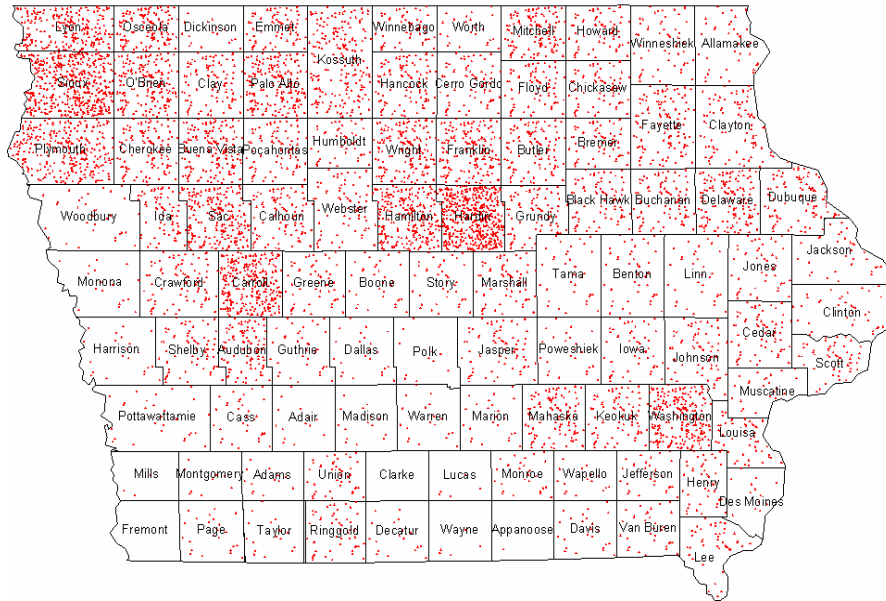


Figure 4. Hogs per county in 1987.

Hogs Per County 1987

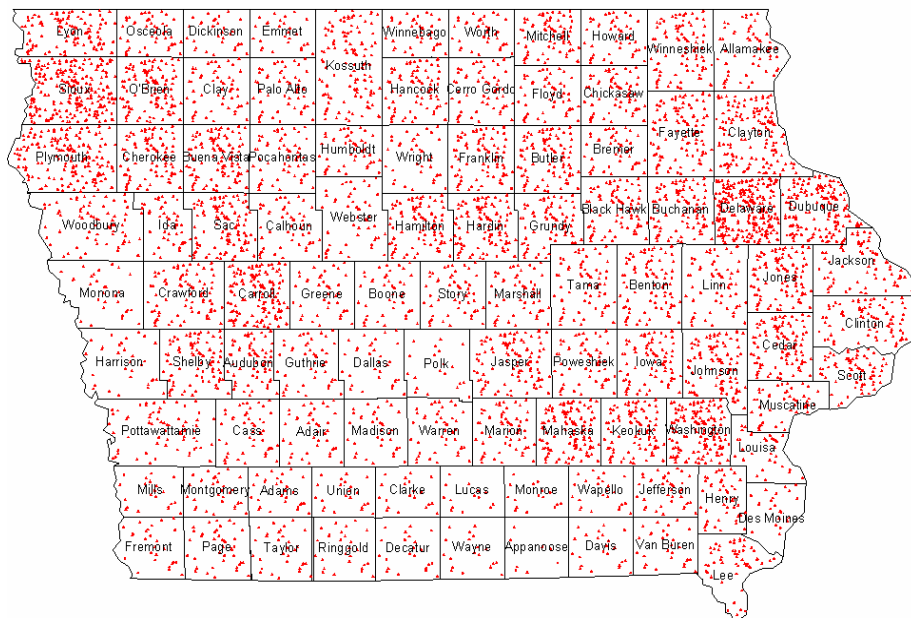


Figure 5. Hogs per county in 1980.

Hogs Per County 1980

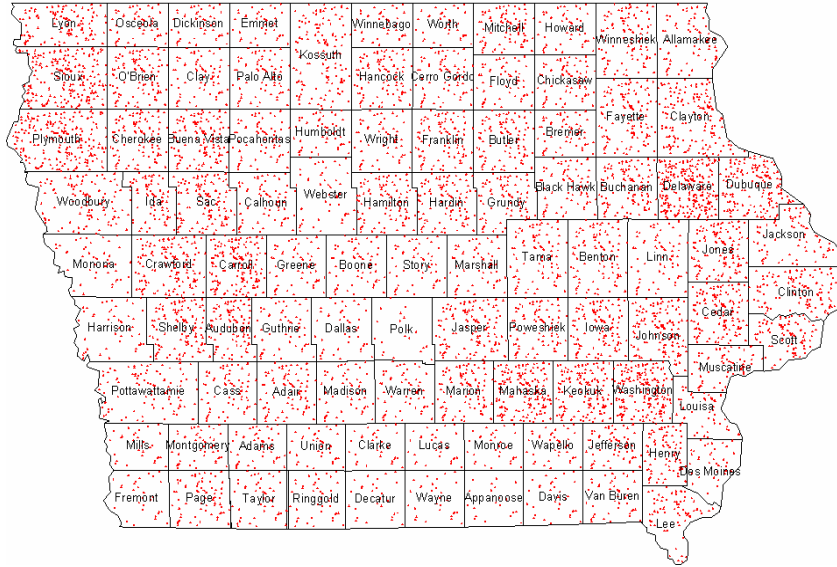


Figure 6. Hogs per square mile in 2002.

Hogs per Square Mile 2002

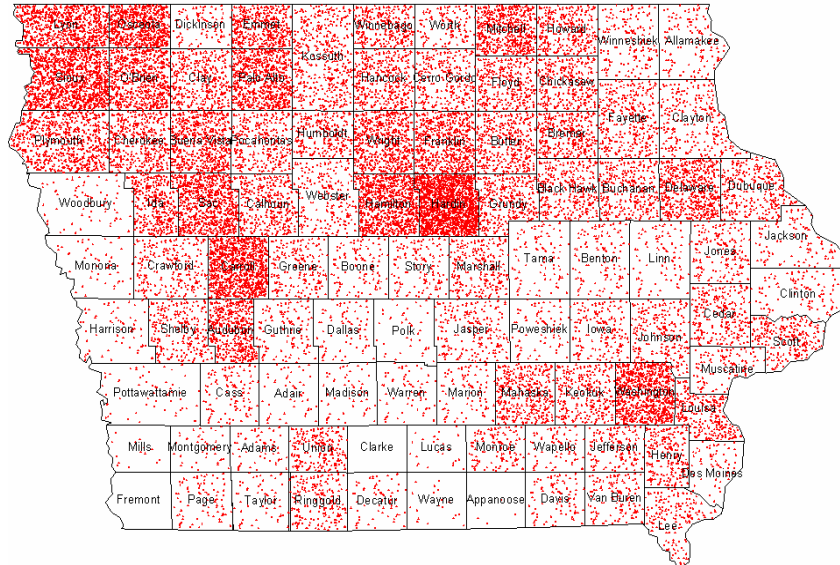


Figure 7. Hogs per square mile in 1987.

Hogs per Square Mile 1987

