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 - 1987
 - FFA & 4-H
- Lake Land College, Mattoon, IL
- University of Illinois
 - Meats Judging Team & Meat Animal Evaluation Team
 - BS & MS
- University of Missouri
 - Coached Meats Judging Team
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- University of Kentucky
 - Extension Meats Specialist
- Married, 1 daughter, 1 Golden Retriever, 2 Cats
- Motorcycles & Powerlifting

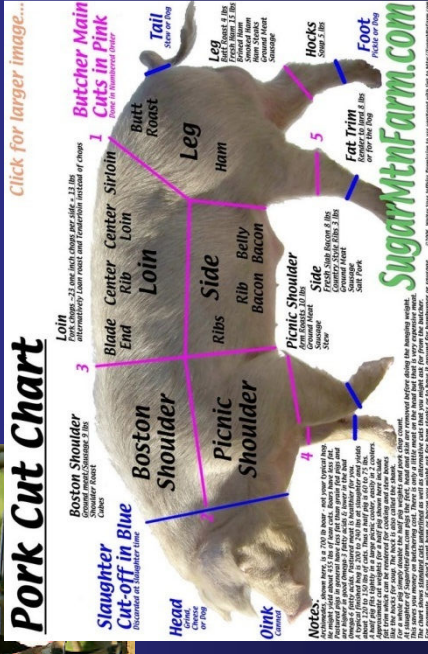


Objectives

- **History of the Meats Industry**
 - **Objectives**
 - **How our livestock got here**
 - **What is Meat Inspection**
 - **What do we eat**
 - **How has the industry changed**

What does muscle do, Why should we study muscles?

- Locomotion
- Protection
- Thermogenesis
- Attraction
- Sexual function
- Digestion
- Most abundant tissue
- Um, Um Tasty
- High protein source



The History of Meat



How it all began

- Domestication of animals
 - Goat 9,000 years ago
 - Sheep 7,000
 - Pig 9,000
 - Cattle 5,000
 - Chicken 5,500

- Cattle, Sheep, & Hogs are not native to the US

- Cattle = Norsemen landing in "Vinland" in 1007



How they got here!

- 1493 all three major species shared Columbus' second voyage
- 1519 Cortez introduced livestock to Mexico
- 1521 Ponce de Leon introduced all three to Florida



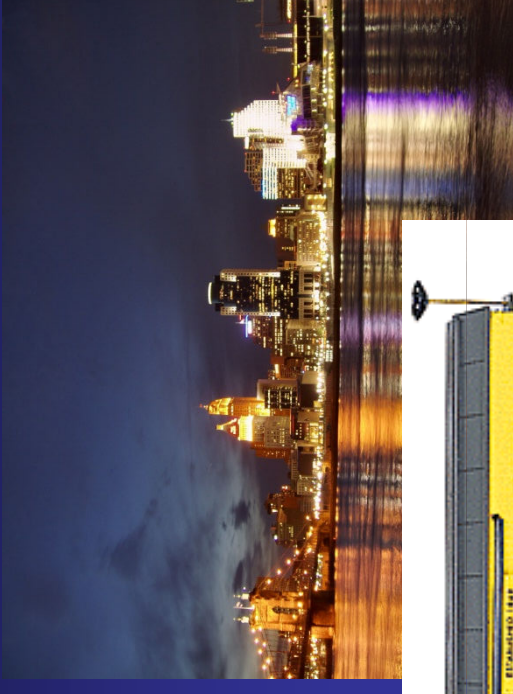
How they got here!

- 1539 Hernando DeSoto (father of the pork industry) landed in Cuba and took 13 pigs to Florida
- 1540 Coronado brought sheep & cattle from Mexico to Arizona & Texas
- Buccaneers got their name from “boucaned” beef they sold



Development of the Industry

- Porkopolis = Cincinnati
- Natural ice refrigeration
- Development of Railways
- Ammonia refrigeration meat processing becomes a year round industry
- Refrigerated railway cars
 - G.H. Hammond & Gustavus Swift



Swift's Meat Packing Plant, Cincinnati, Ohio, 1880s. Photo by G. H. Hammond & Gustavus Swift. Copyrighted by G. H. Hammond.

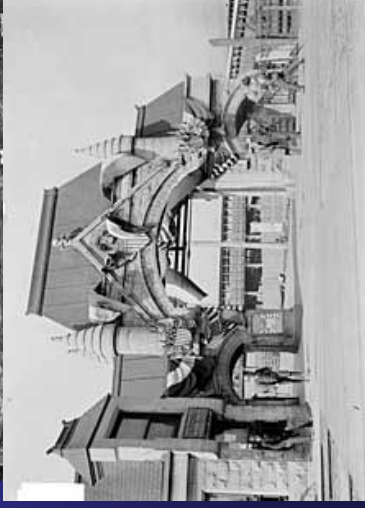
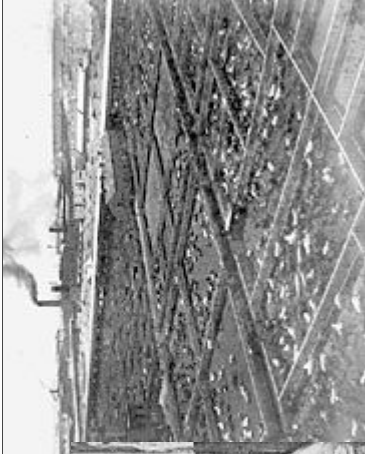
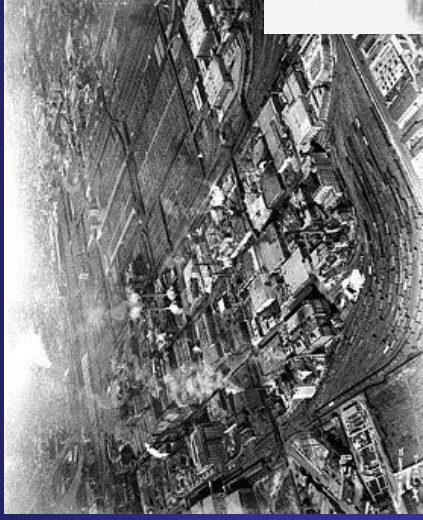
**Who is often credited with being
the first US meat processor?**

Sam Wilson

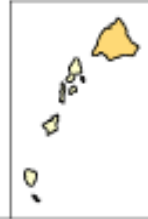
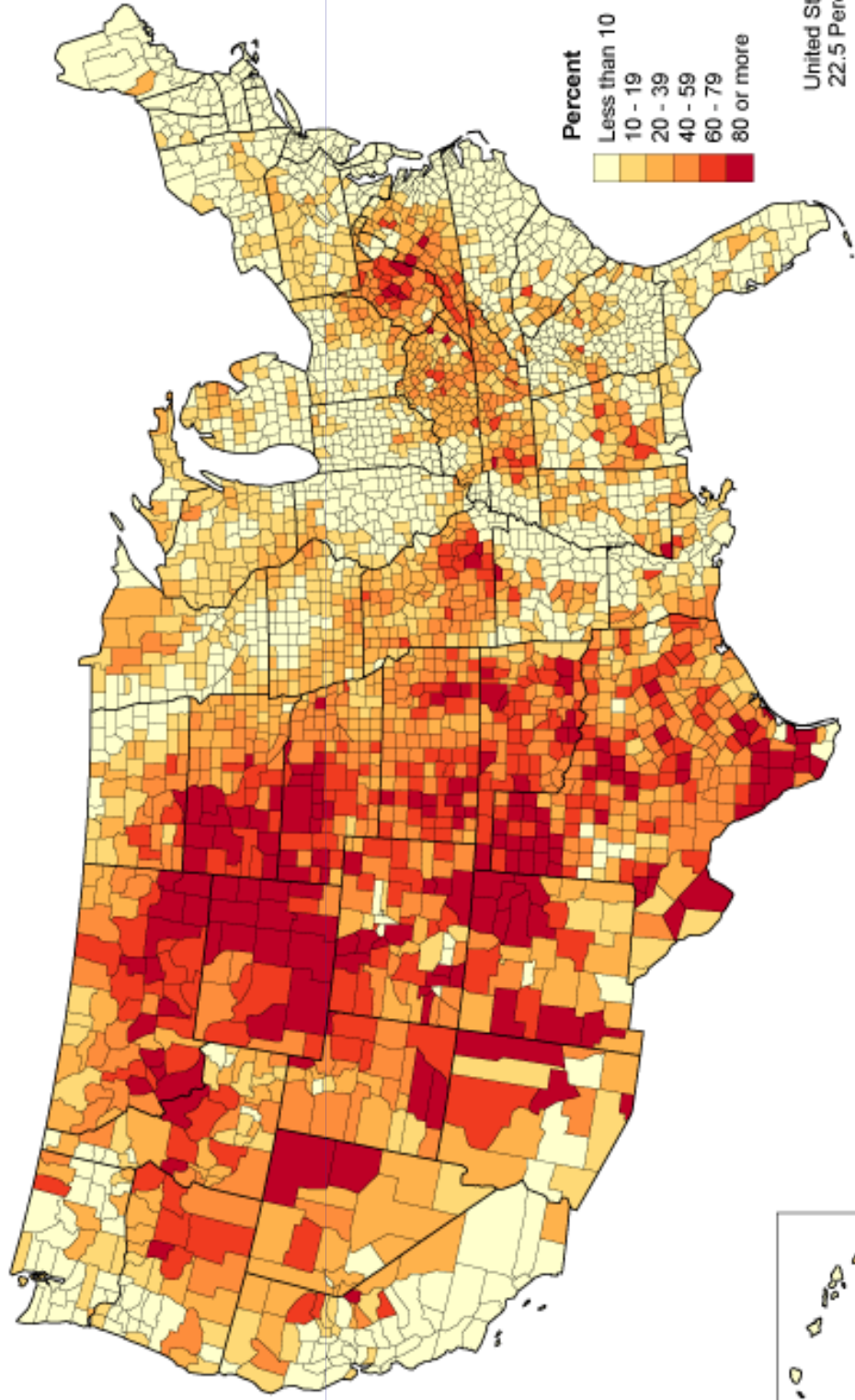


The Start of the Modern Industry

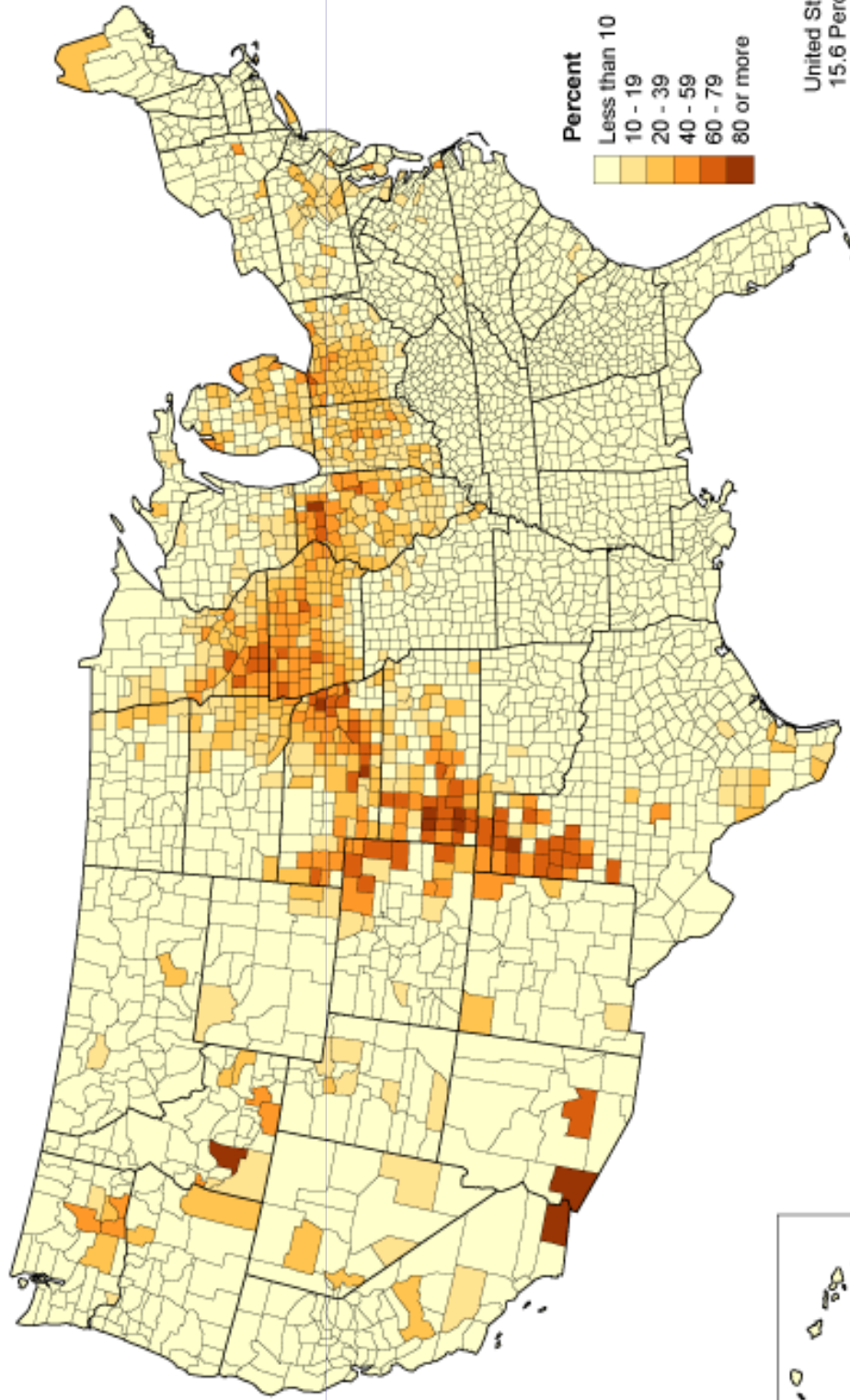
- Dec. 25th, 1865 to July 31st, 1971
- Union Stockyard, Chicago
- The largest stockyard ever!
 - Swift
 - Oscar – Mayer
 - Armor
 - Morris
 - Hammond



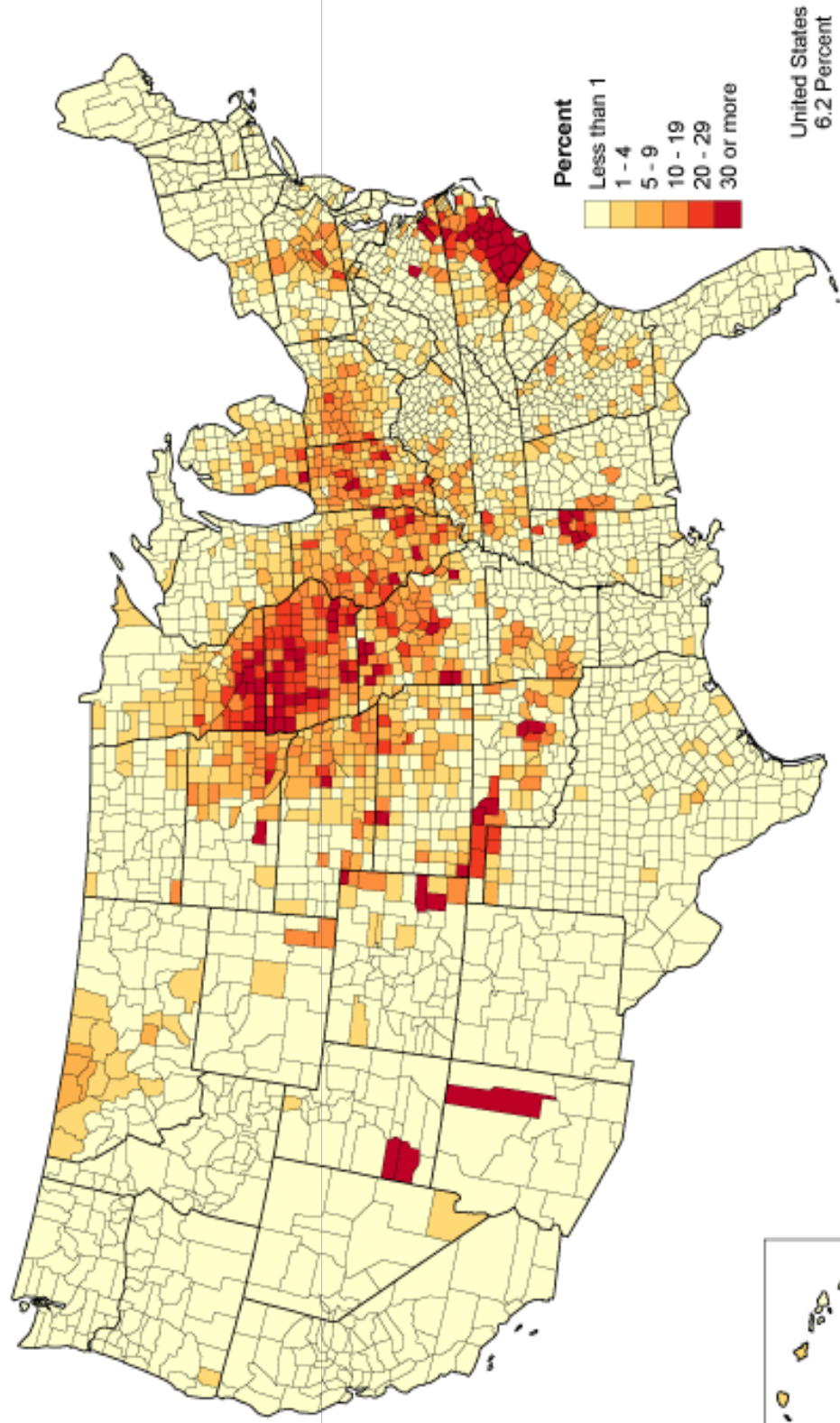
Value of Cattle and Calves as Percent of Total Market Value of Agricultural Products Sold: 2002



Cattle on Feed - Inventory as Percent of Cattle and Calves: 2002



**Value of Hogs and Pigs
as Percent of Total Market Value
of Agricultural Products Sold: 2002**



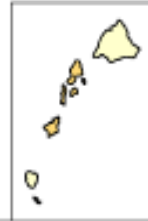
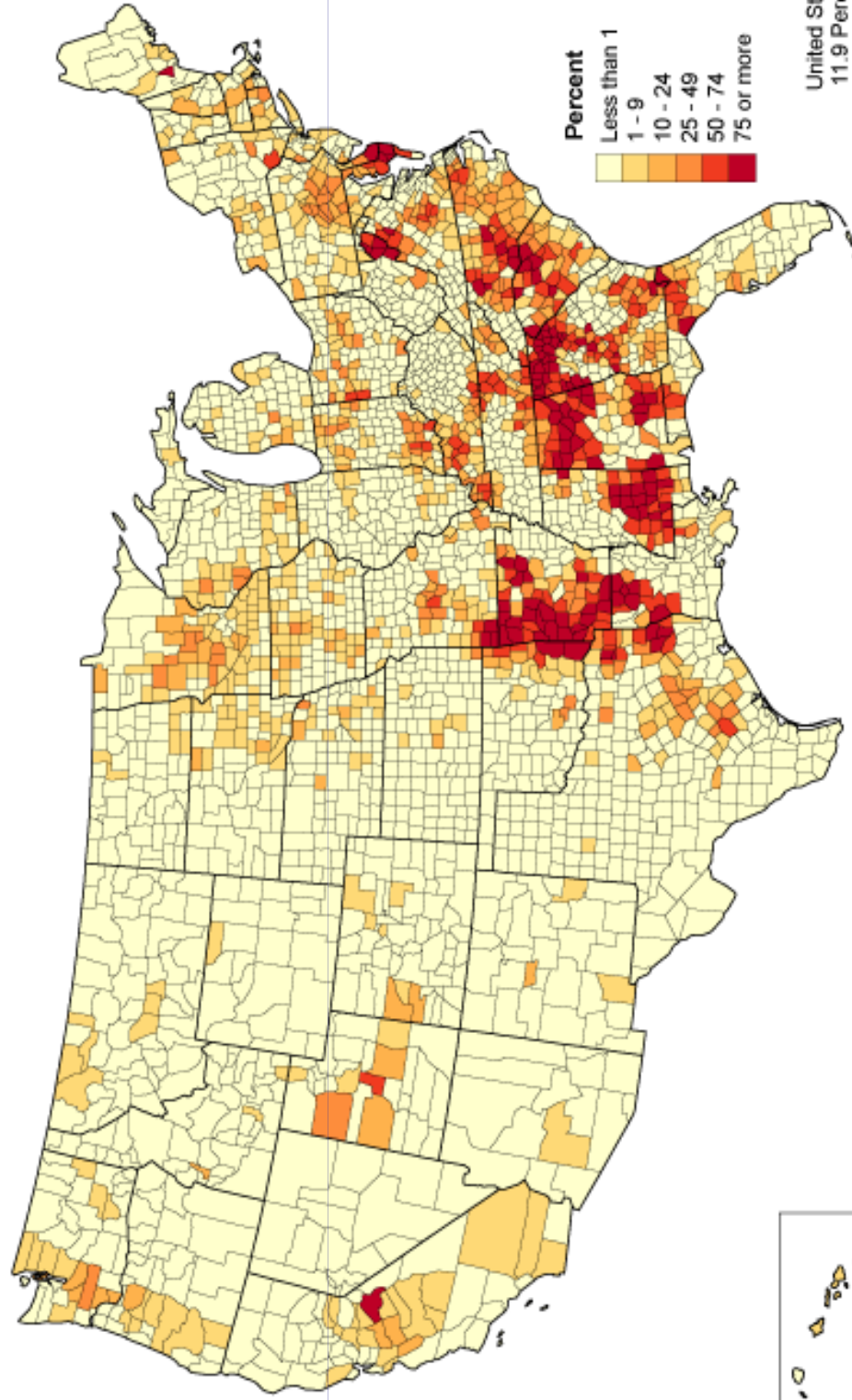
Percent
Less than 1
1 - 4
5 - 9
10 - 19
20 - 29
30 or more

United States
6.2 Percent



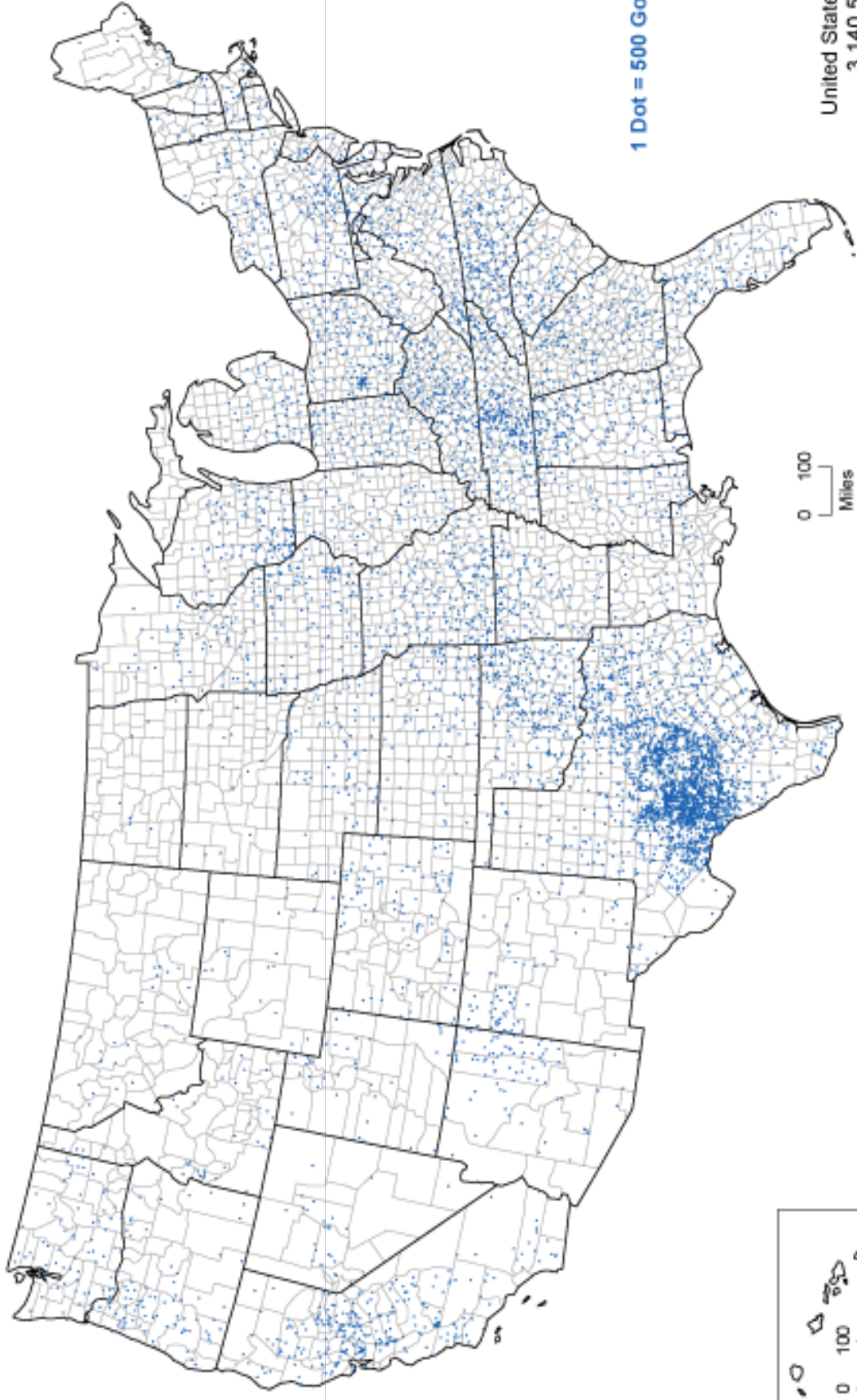
02-M030
U.S. Department of Agriculture, National Agricultural Statistics Service

Value of Poultry and Eggs as Percent of Total Market Value of Agricultural Products Sold: 2002



All Goats - Inventory: 2007

0 200
Miles



1 Dot = 500 Goats

0 100
Miles

United States Total
3,140,529



0 100
Miles

The Current Industry

- Plants have moved to the animals
- Clean and Sanitary
- Humane Handling
- Automated
- Slaughter Rates:
 - Cattle = 450 to 500/h
 - Pigs = 1,000 to 1,300/h
 - Chickens = 12,000/h;
200,000/d



The Winds of Change!

- How have things changed in the last 100 years?
 - Mega Farms
 - Animal Handling
 - Animal Welfare/Rights
 - Ground Beef
 - BSE, H1N1 Virus (Swine Flu), Foot and Mouth Disease
 - HACCP
 - Export
 - Country of Origin Labeling



Meat Exports

- The US feeds the world
- Cattle
 - Mexico, Canada, Taiwan, Japan, China
- Pork
 - Pacific Rim, Mexico, Canada, China, & Taiwan
- Poultry
 - Russia, China/ Hong Kong, Latvia, Mexico, Japan

Meat Inspection

- **Ensure the wholesomeness**
- **Healthy Animals (no diseases)**
- **Facilities are clean and sanitary**
- **Proper labeling of meat products**
- **Mandatory, paid through taxes**



The Law!

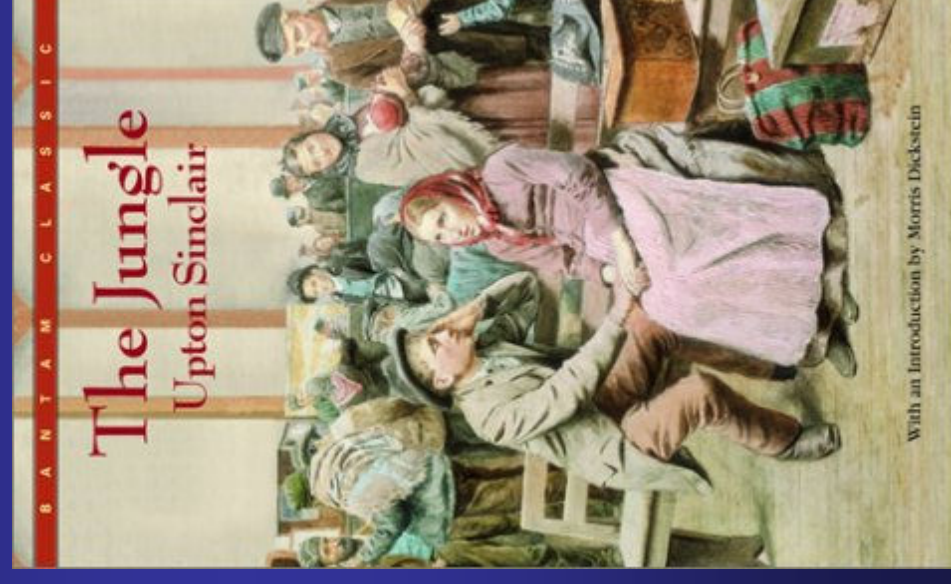
- **Meat Inspection**
- **1891 – First meat inspection act**
- **Called for voluntary inspection of livestock and meat intended for interstate and foreign commerce**
- **Do we still operate under this law?**



Legal Stuff

Meat Inspection came about due to a book about the Chicago Meat Industry

- **The Jungle**; by Upton Sinclair
- Listen to this passage....



Current Meat Inspection

- The Federal Meat Inspection Act of 1906
- Mandated that a federal meat inspector be present at any packing plant processing meat for interstate commerce
- Started October 1, 1906
- Two types of inspection practices:
 - Antemortem Inspection
 - Postmortem Inspection



What Happens?: Antemortem

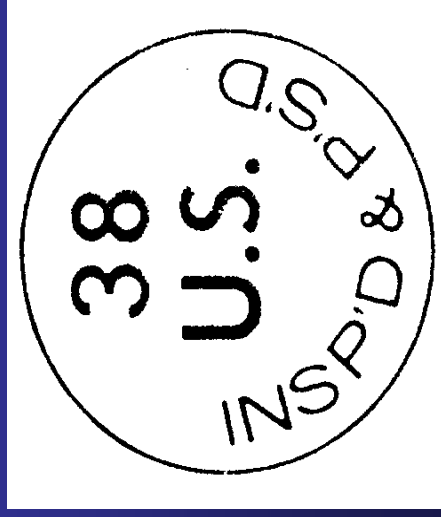
- **Inspector will:**
 - Walk the pens prior to slaughter
- **US Suspect – seriously crippled, minor eye problems**
- **US Condemned – downers (cattle), deads, moribund (about to die), comatose, temperature above 105°F (106°F swine), suspect dies in pen, obvious signs of disease**

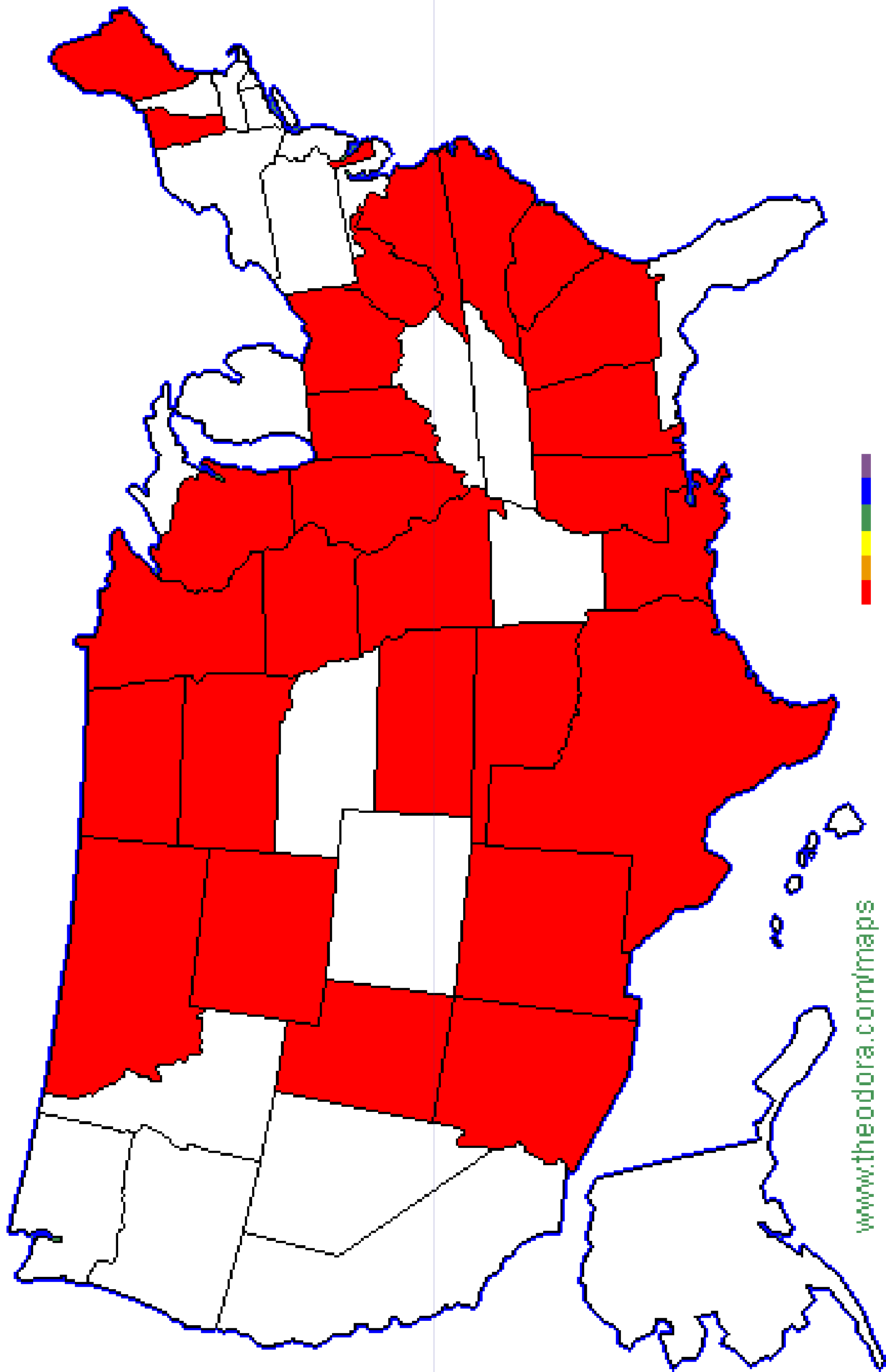
What happens?: Postmortem

- **Inspector will:**
 - Facilities are clean and sanitary
 - Ensure humane handling & slaughter
- **Inspects the head (cattle, swine), viscera, and carcass**
- **US Retained – temporary, but can be condemned. Can retain whole carcass or part of a carcass**
- **US Condemned – cannot enter food chain! Tuberculosis, hog cholera, pneumonia, abscesses, arthritis, bruises, contamination from kill floor**

Types of Meat Inspection

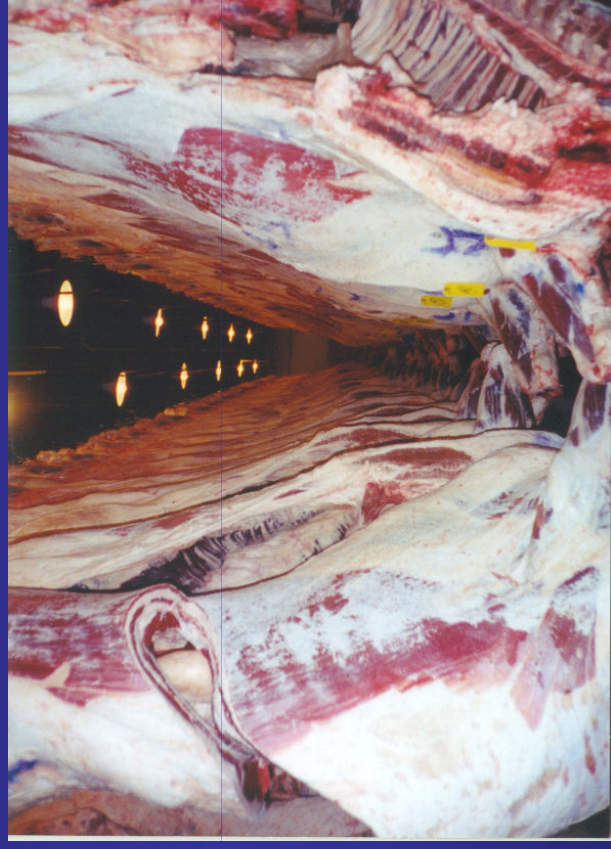
- Custom = Contract between livestock producer and processor; must be labeled “NOT FOR SALE”
- What’s the difference between Federal and State Inspection?
- Federal = any of the 50 states
- State = within state lines



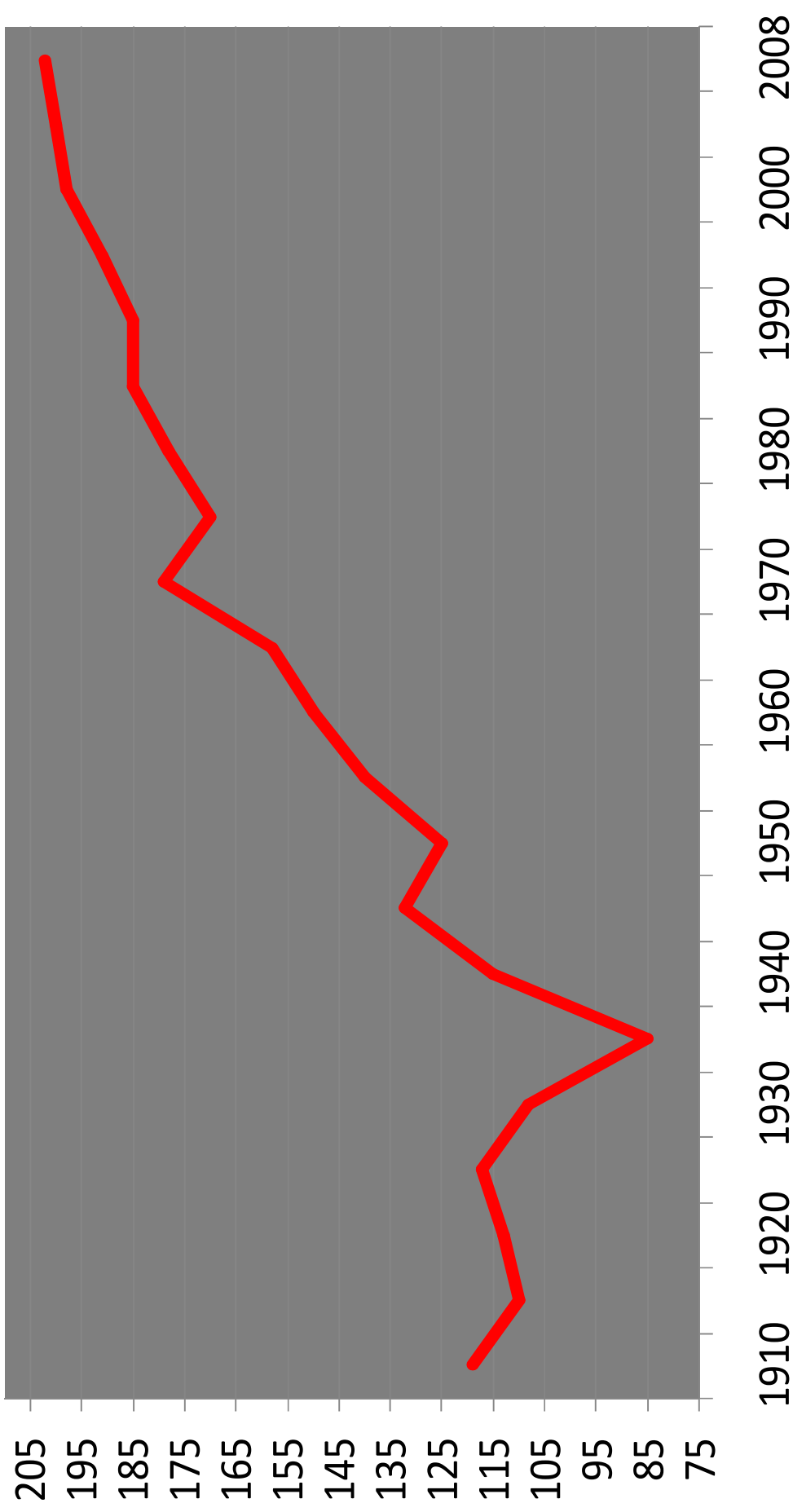


Other red letter dates!

- **Meat Inspection was later broadened to include**
- **Horse Meat Act: 1919**
 - Due to be repealed
- **Imported Meat Act: 1930**
- **Humane Slaughter Act: 1958, 1973, 2002**
- **Poultry Producer Meat Act: 1959**
- **Wholesome Meat Act: 1967**
- **HACCP (Final Rule): 1997**
- **Country of Origin Labeling (COOL): 2008**



Total Muscle Protein Consumption in the United States (1910-2000)



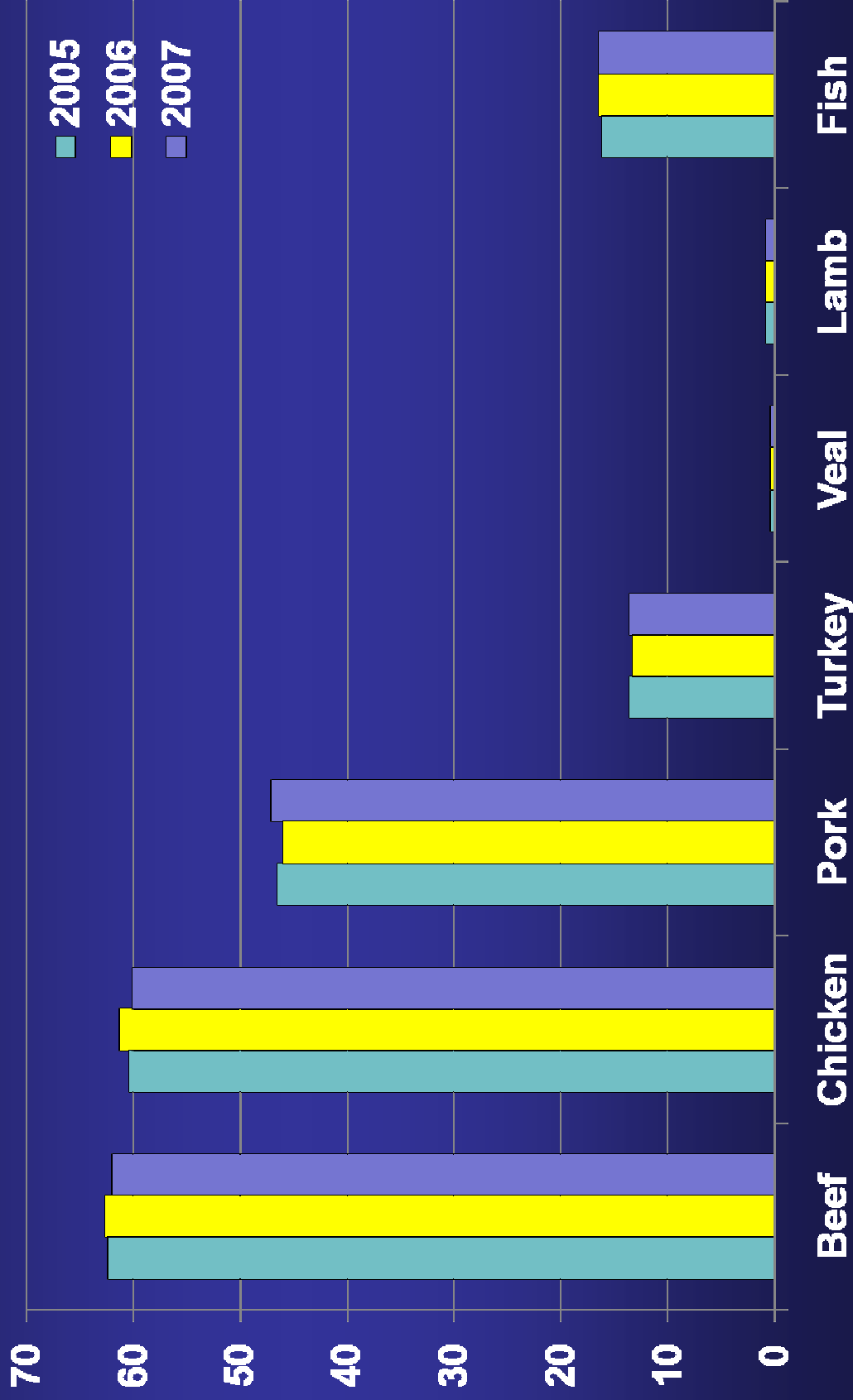
We eat a lot of meat!

- Per capita consumption of red meat, poultry, and fish, boneless
- 2000 – 196.7
- 2001 – 196.7
- 2002 – 200.3
- 2003 – 199
- 2004 – 201.3
- 2005 – 199.8
- 2006 – 200.9
- 2007 – 200.4

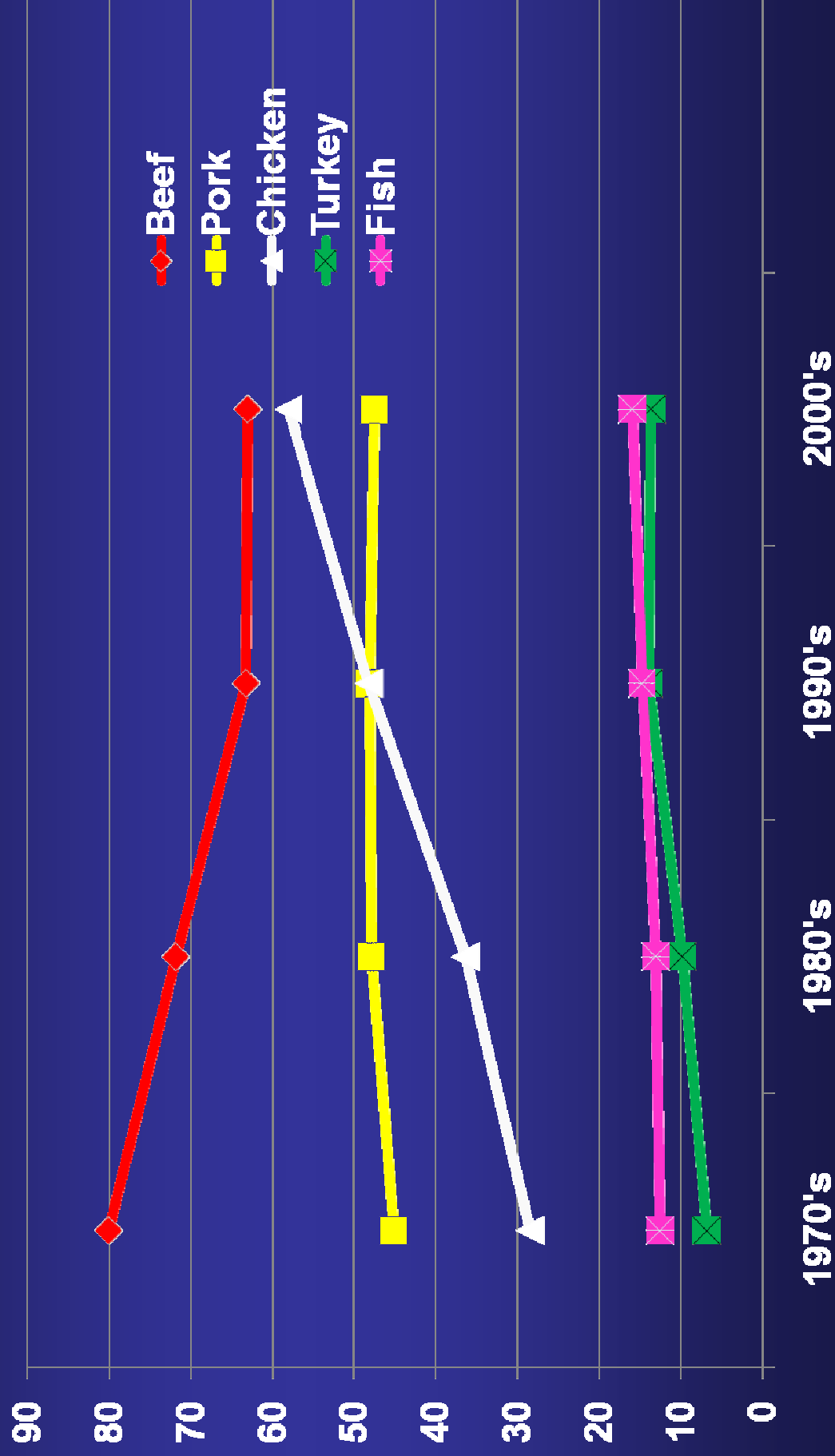


Source: <http://www.amimeat.org>

Per Capita Consumption '05 – '07

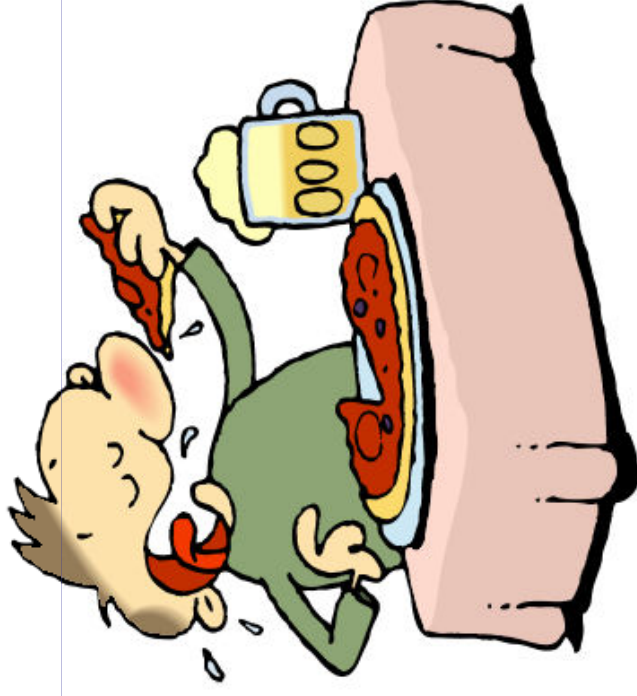


Consumption Data



Top Years for each Commodity

- Beef – 1976, 88.8lbs
- Pork – 1971, 52.6lbs
- Chicken – 2006, 61.3lbs
- Turkey – 1996, 14.3lbs
- Fish – 2004, 2006, 2007, 16.5



How have animals changed?

- More and more crossbreeding
- Composite breeds
- EPD's (Expected Progeny Differences)
- Cattle; everything black
 - “Belt Buckle Cattle” to “Sky Scrapper Cattle”
- Pigs; everything white
 - Fat to extremely lean
- Goats

Objective

- **To assess differences in economically important traits between pigs representative of 1980 and 2005 commercial industry when fed feeding programs representative of the same time periods**
- Differences in Economically Important Traits of 1980 vs. 2005 Pigs When Fed 1980 or 2005 Feeding Programs;
 - J. S. Fix*, D. J. Hanson, E. van Heugten, J. P. Cassady and M. T. See

Carcass Data

Genetics	1980		2005	
	1980	2005	1980	2005
Diet				
10 th rib fat, in	1.23	1.26	1.02	1.03
LEA, sq inch	5.89	6.38	6.78	7.45
Color Score	2.33	2.37	2.61	2.16
Marbling Sc	1.72	1.94	2.43	1.63
<hr/>				
	1980		2005	
	1980	2005	1980	2005
ADG, lbs	1.69	1.85	1.70	1.84
ADFI, lbs	4.73	4.27	4.56	4.44
ADG:ADFI	0.36	0.43	0.38	0.42

1980's



2005's



Current Trends

- Convenience
- Fast, Fast, Faster
- 4:30 pm meal solution
- Organic
- Natural
- Family raised, locally grown (Kentucky Proud), Free range, Free roaming, Predator Friendly
- Grass/ Forage Fed
- No Nitrites Added



Essential Question

- **What is meat quality?**
- Described as:
 - Color
 - Marbling
 - Tenderness
- **But everything we cover will affect one, two, or all three of these factors**
- **We'll start from the beginning to hot dogs**

Be gone children, get out of here