

Prolific Pigs?

Mating Capacity with Market Price in Early Twentieth Century Pig Breeding

Gabriel Rosenberg, PhD, Chris Glynn, Yanmin Ma, Manchen Fang

Data Sources
Example

Historical Data
Reconstruction

Data Analysis

BLACK PRINCE 1235.

FARROWED FEBRUARY 21, 1876.

Owned by S. D. SMITH, Demopolis, Ala.

Bred by T. S. COOPER, Coopersburg, Penn.

Sire—*Mark Antony 237*, bred by RUSSELL SWANWICK, Cirencester, England.

American Berkshire Record

Genealogy

Transaction

Price

Reproductive
Capacity

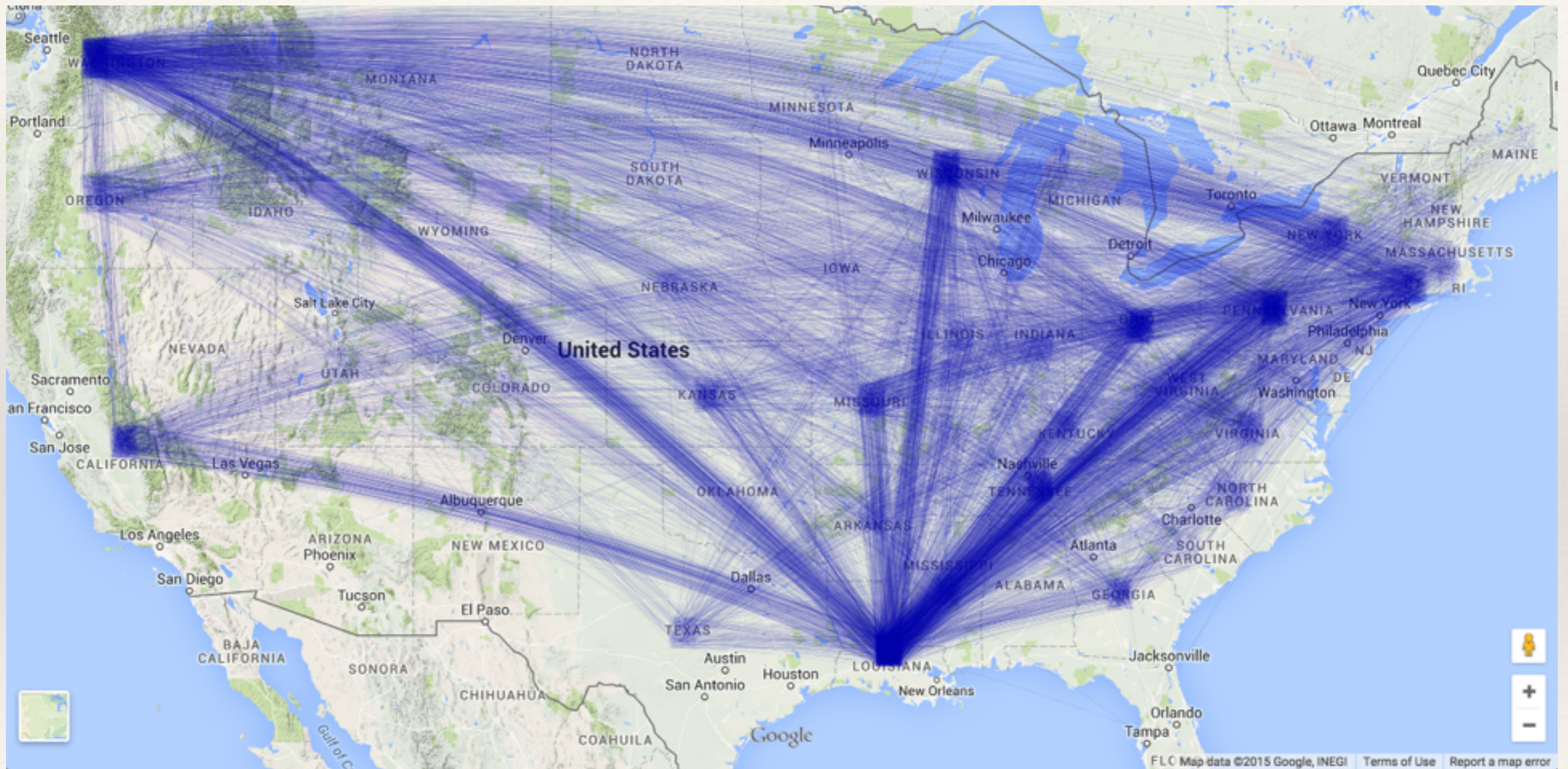
Immigration
Pattern

Comparison
between avg.
prices of boars
and sows

No.		Price.
1.	Lady Goods 18th 121729, sire Royal Goods 6th 93874, dam Robinhood's Lady Lee 8th 100459 by Purdue's Robinhood 85421, to W. K. Pickens, Livingston, Ala.	\$ 95.00
2.	Lady Goods 19th 121741, sire Royal Goods 6th 93874, dam Lord Lee's Gem 105234 by Lord Lee 61138 to G. Murrell Middleton, Shelbyville, Ky..	80.00
3.	Lady Goods 17th 121727, sire Royal Goods 6th 93874, dam Victor Belle 15th 100226 by Young Premier Chief 69940 to Radford & Garrett, Gracey, Ky.	65.00

Berkshire World Cornbelt Stockman

Berkshire Pig Transaction Map from 1900 to 1920



Immigration pattern — one of our exploratory data analysis from transaction data.

Summary

Motivation

Are livestock markets efficient?
What might be the source of inefficiency?
Do breeders price pigs rationally?

Difficulties

Detailed but incomplete archives
Difference between the number of actual offspring and that of recorded offspring
Cross-referencing and reconstruction needed

Results

$$Price_i = \beta_1 \times PorkPrice_i + \beta_2 \times AgeMonths_i + \beta_3 \times nChildren + \epsilon_i$$
$$\epsilon_i \sim N(0, \sigma^2)$$

Table 1: Regression Model Fit

	Estimate	Std. Error	t value	Pr(> t)
nChildren	0.2877	0.0414	6.95	0.0000
PorkPrice	3.4215	0.5121	6.68	0.0000
Age	1.8482	0.2803	6.59	0.0000

Berkshire pig transaction price is influenced by factors including the age of the pig, the number of offspring and the prevailing pork price.

And we can conclude that within 1910 - 1920, breeders and buyers did price Berkshire pig rationally to a large extent.