



Visualizing Food & Agricultural Data

Phil Howard, Dept. of Community Sustainability



Sight

Touch

**Hearing
Smell**

Taste

Vizualization: adapted from David McCandless
Data: Tor Nørretranders

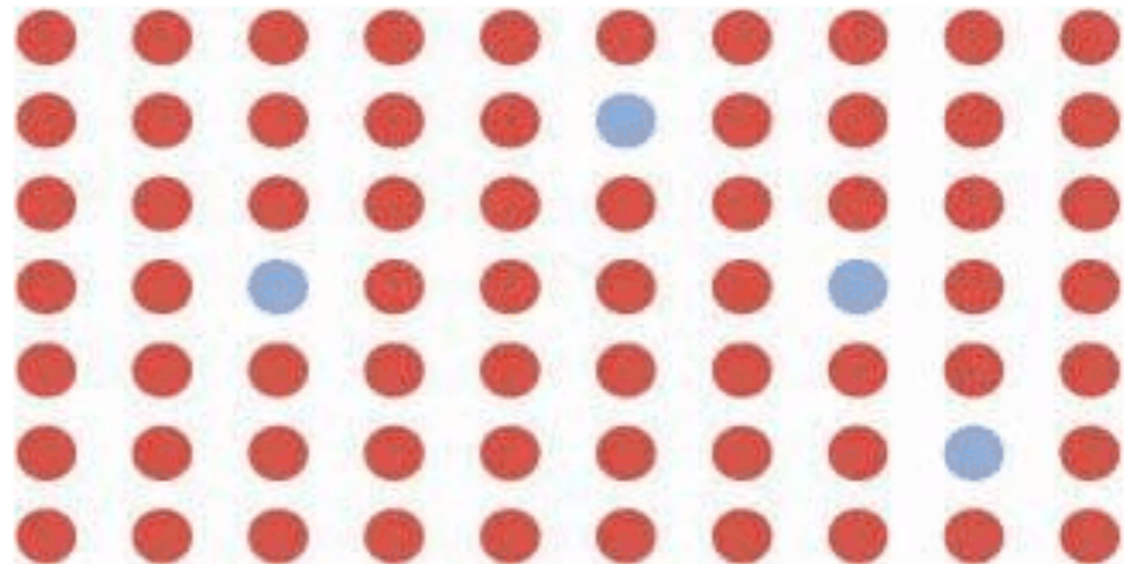
Figure 6-1. Find the blue objects

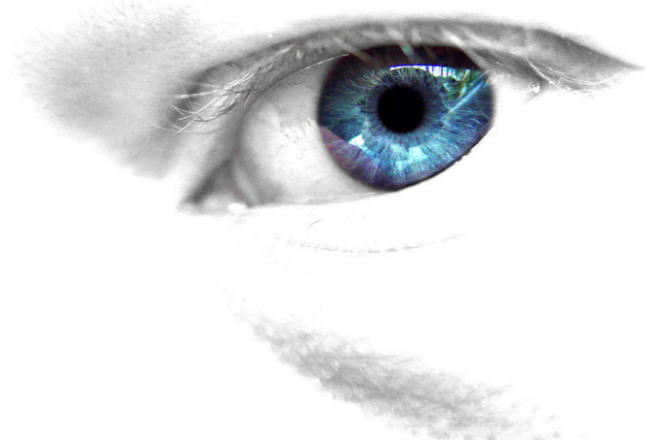


Figure 6-1. Find the blue objects



Figure 6-2. Again







5 principles to use for your visualizations

- Show context and detail
- Include features that “pop out”
- Avoid extraneous and distracting material
- Reduce search time
- Integrate words and images

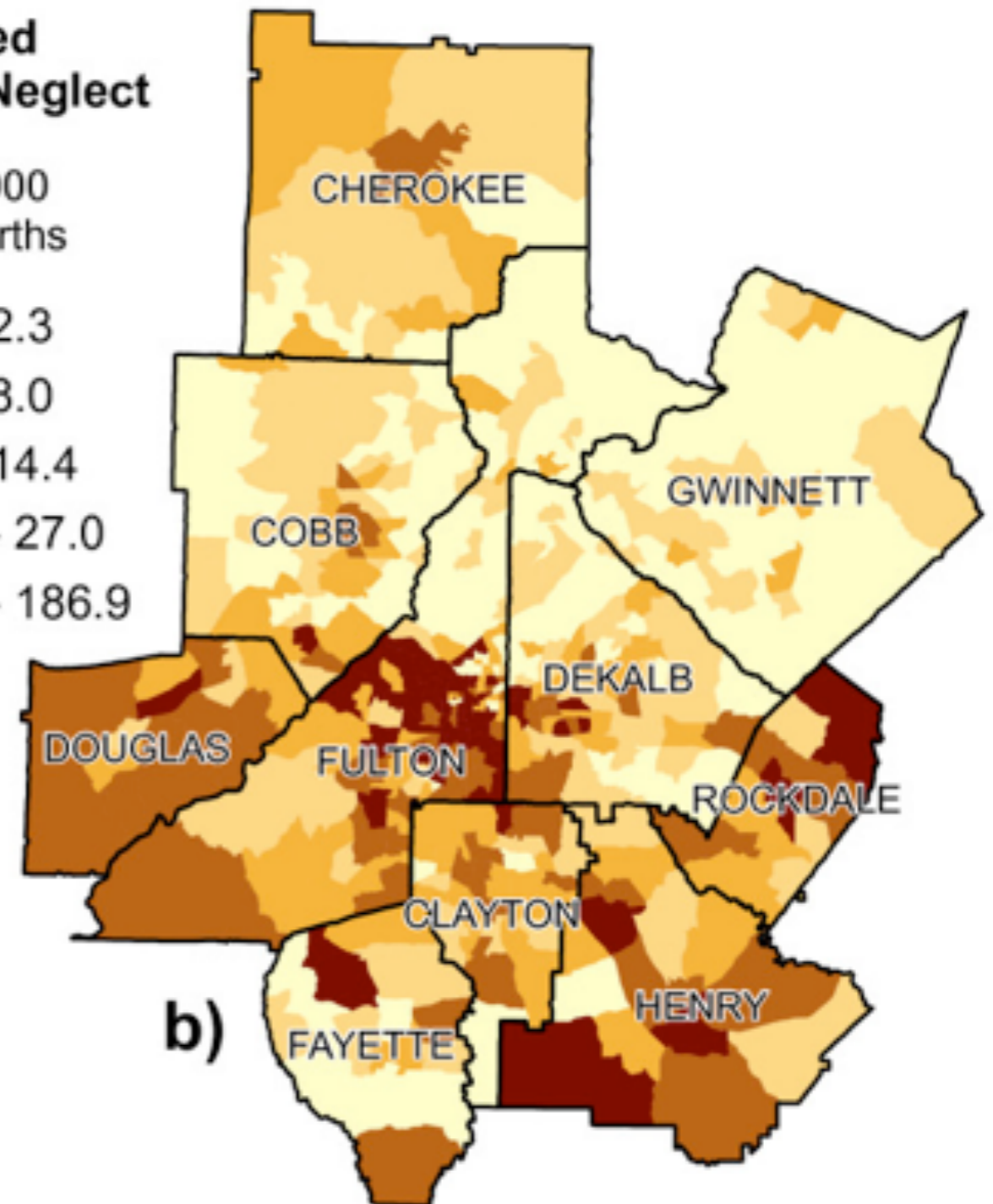
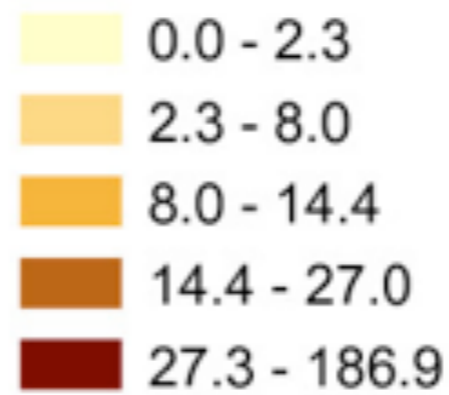
Show context and detail

State of Georgia

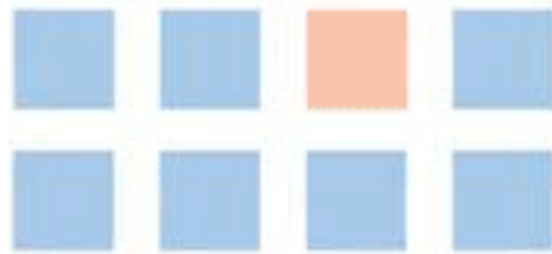


Substantiated Abuse and Neglect

Rate per 1,000 Weighted Births



Include features that 'pop out'



Color hue



Position and alignment



Color brightness



Orientation



Color saturation



Size

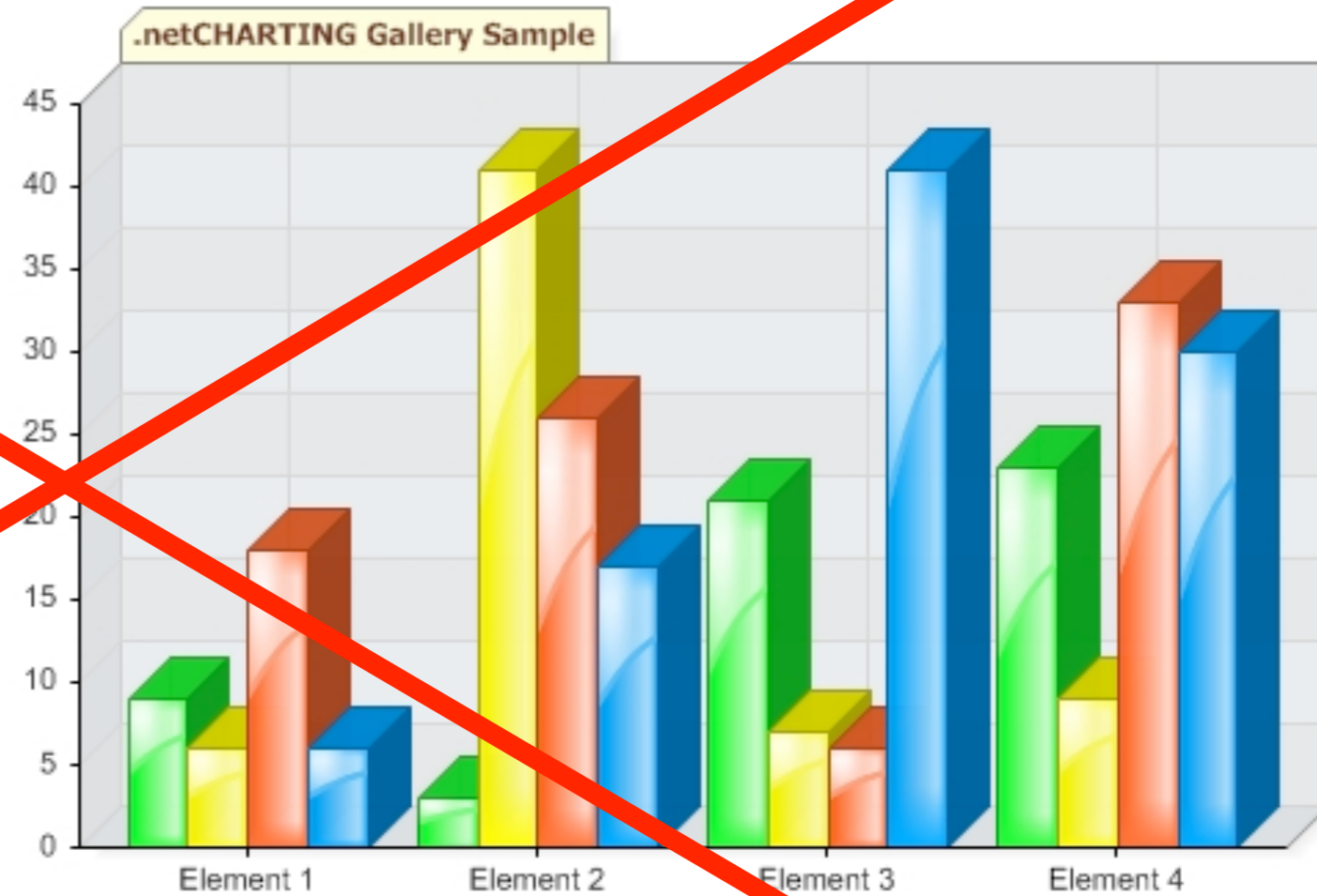
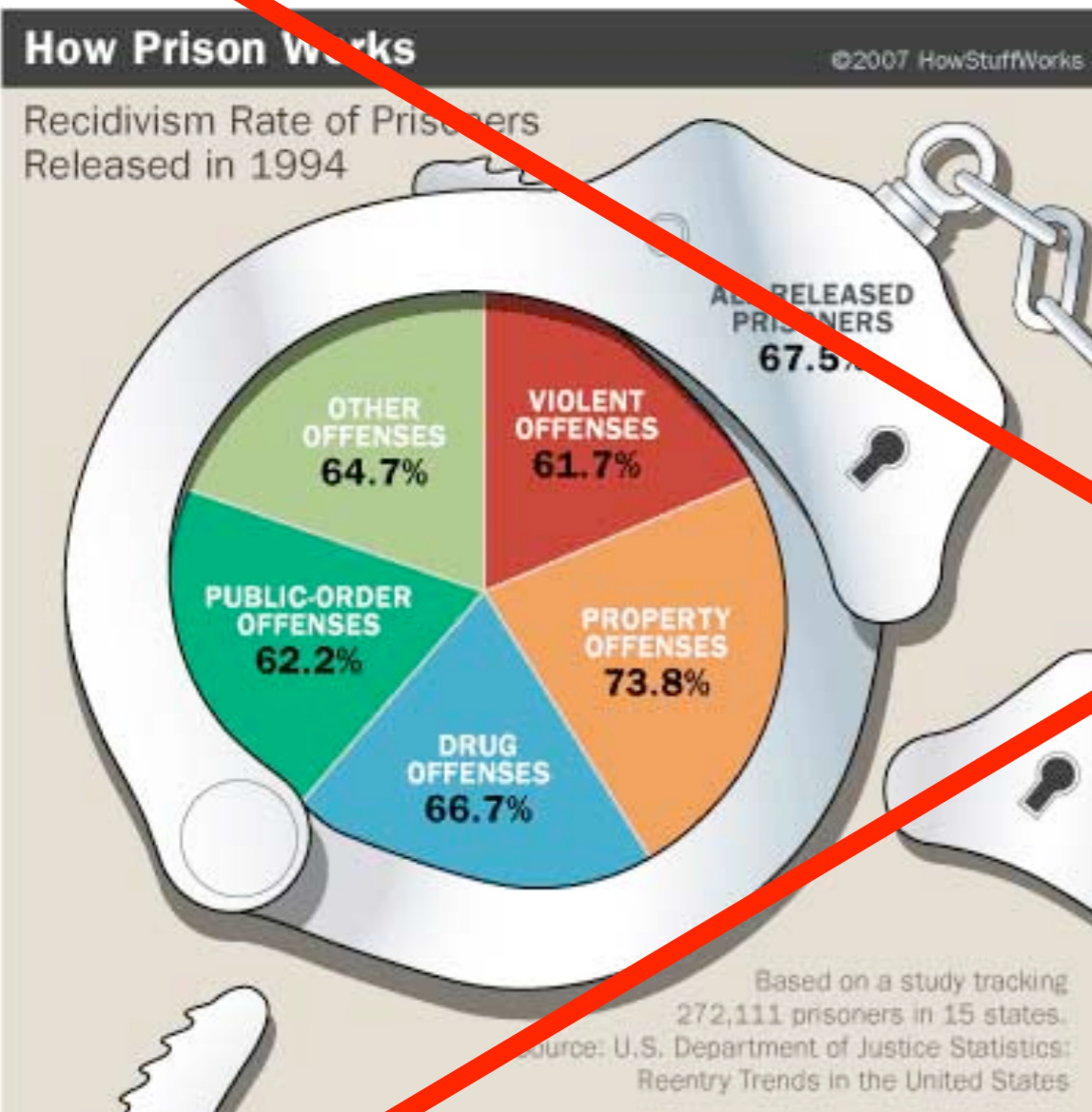


Texture

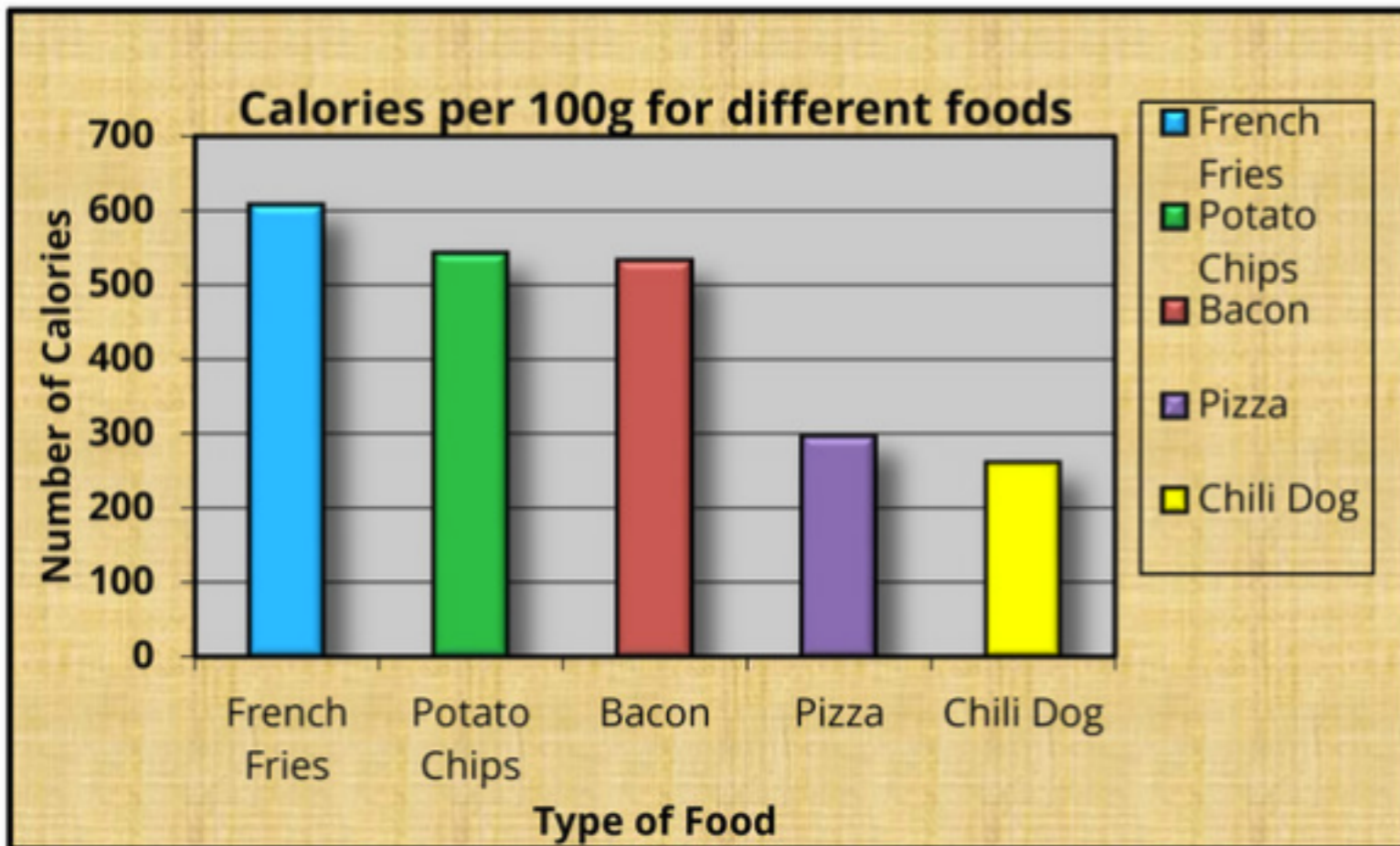


Shape

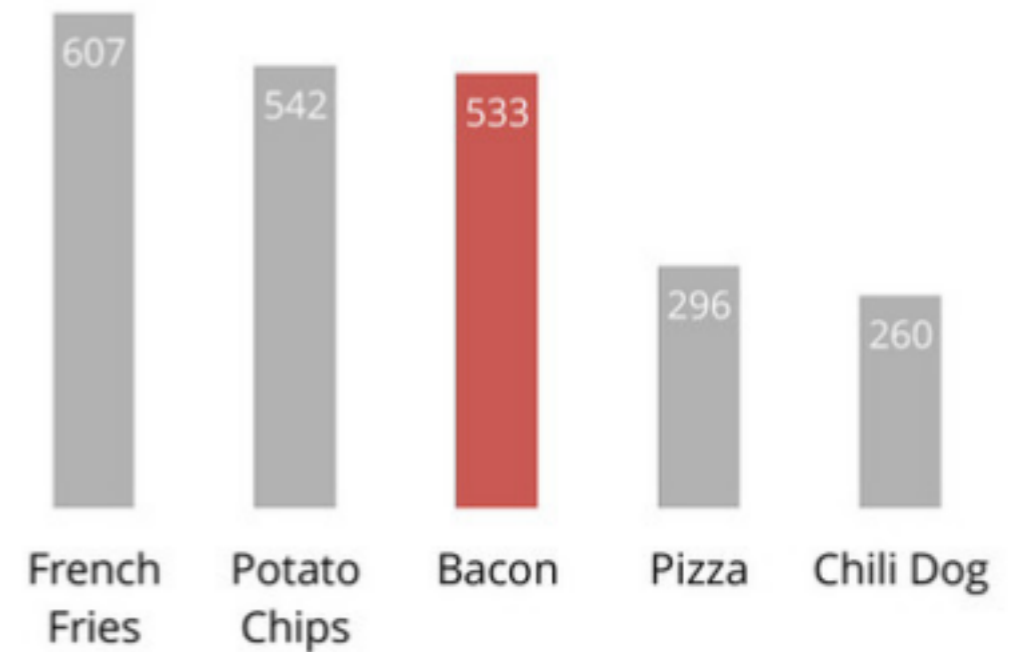
Avoid extraneous and distracting material



Avoid extraneous and distracting material



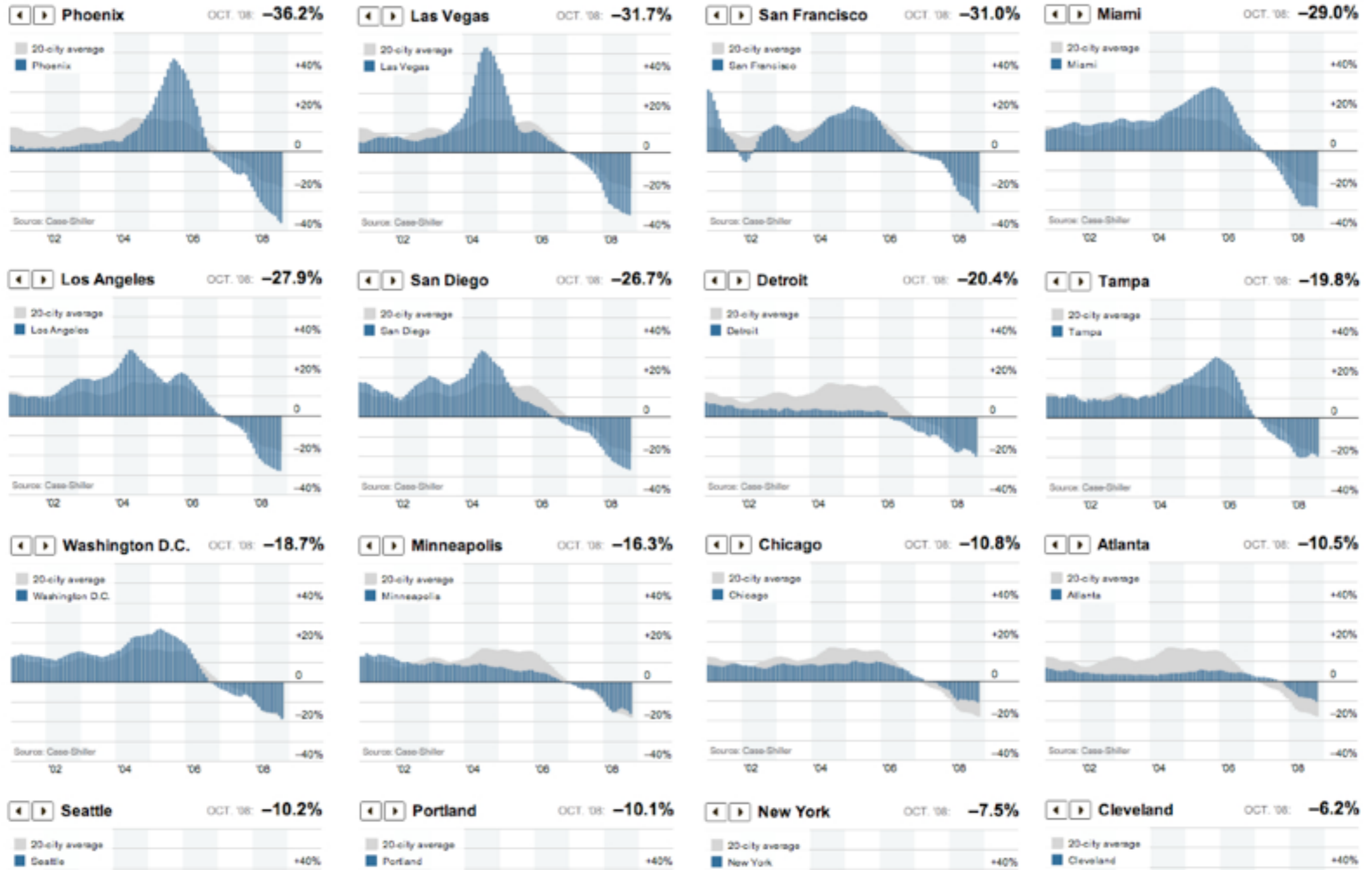
Calories per 100g



Reduce search time

Change in Home Prices (year over year)

From New York Times Economix blog



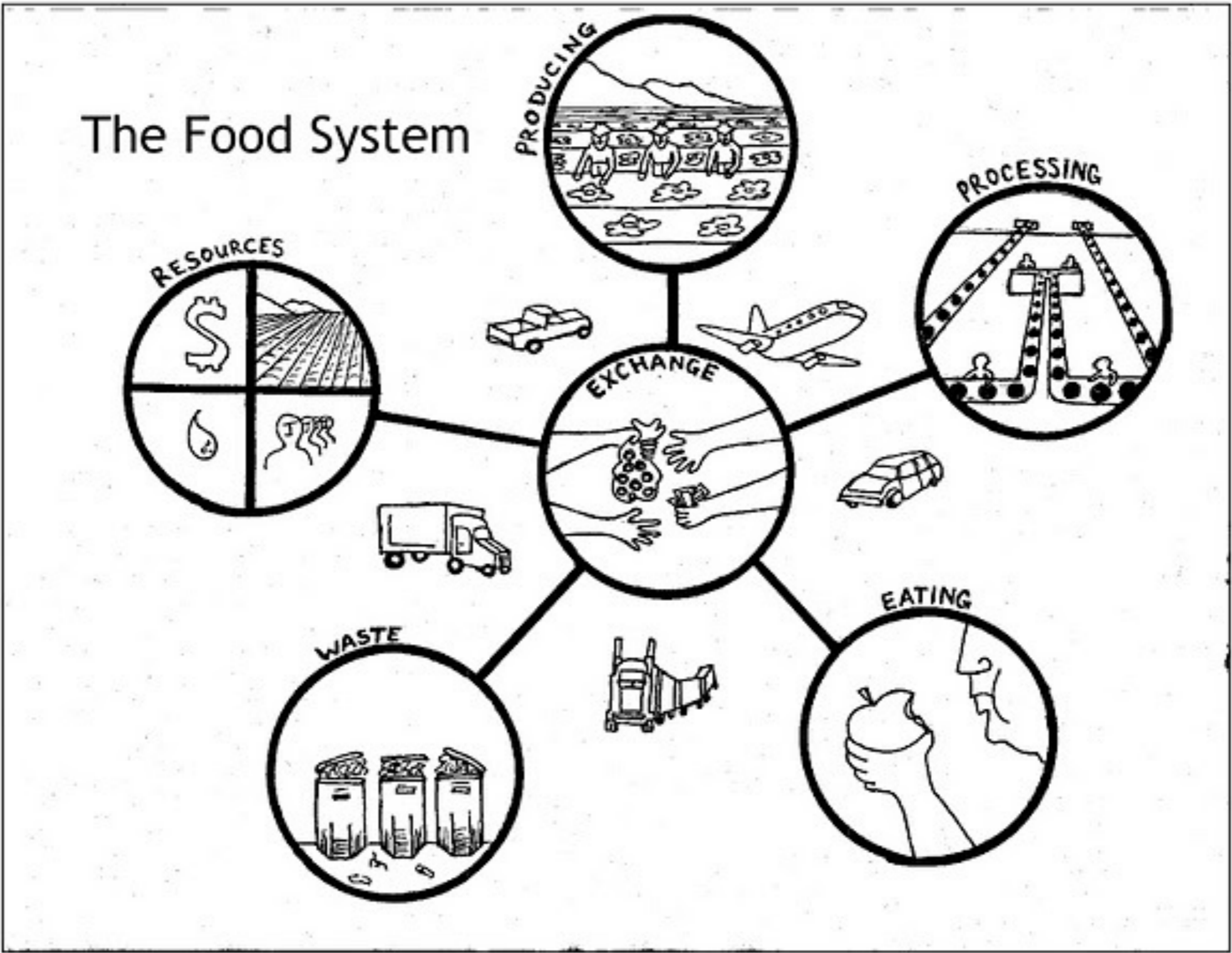
Integrate words and images



6 types of visualizations we might employ

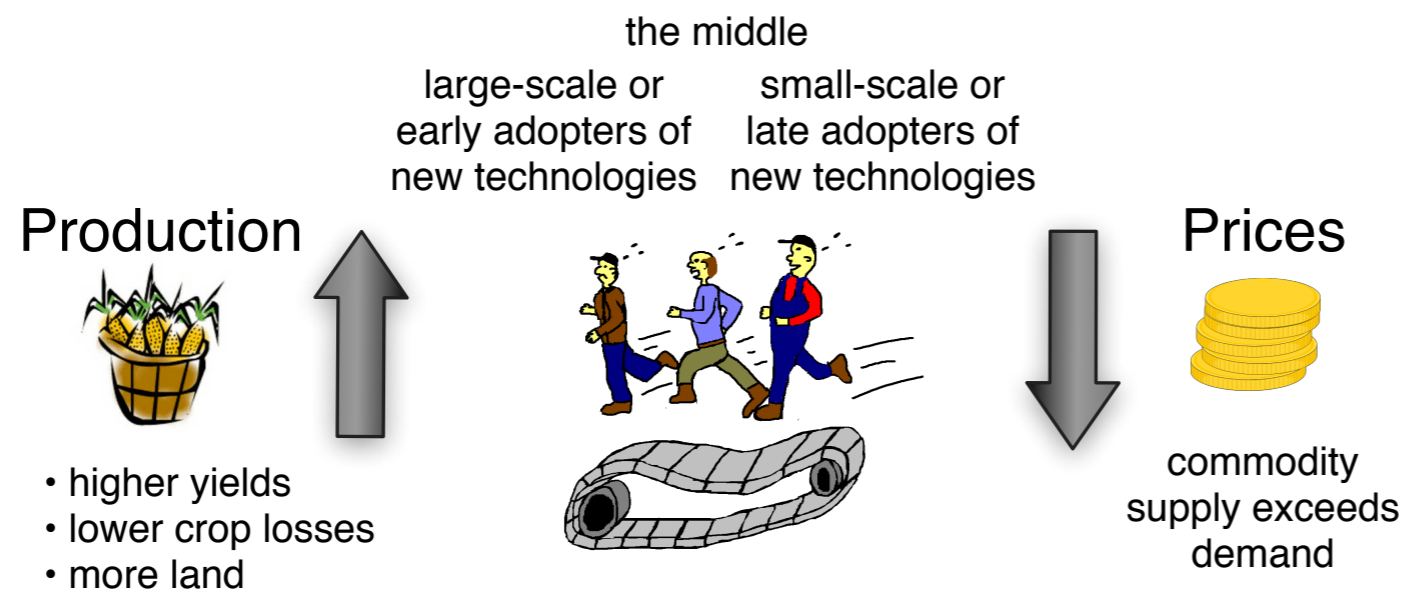
- Concept/metaphor visualizations
- Cartographic maps
- Timelines
- Treemaps
- Cluster diagrams
- Animations

Concept/Metaphor visualizations

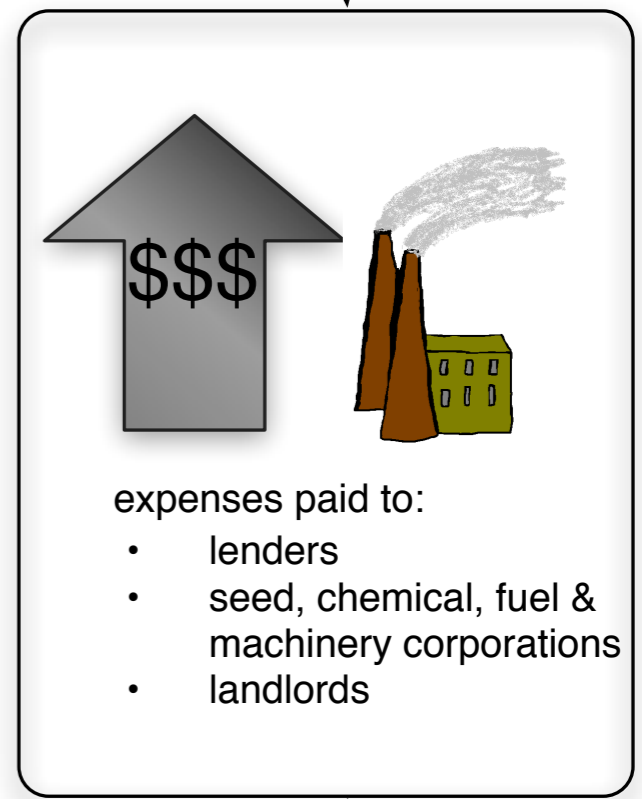
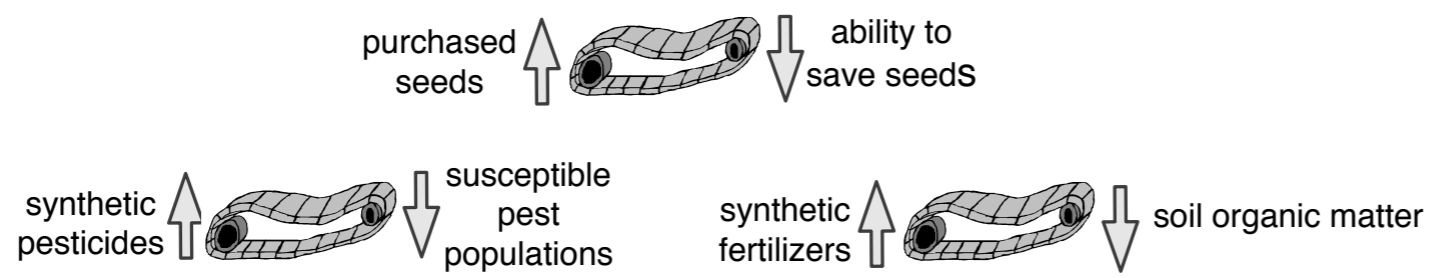


Agricultural Treadmills

The Technological Treadmill (Cochrane 1958)

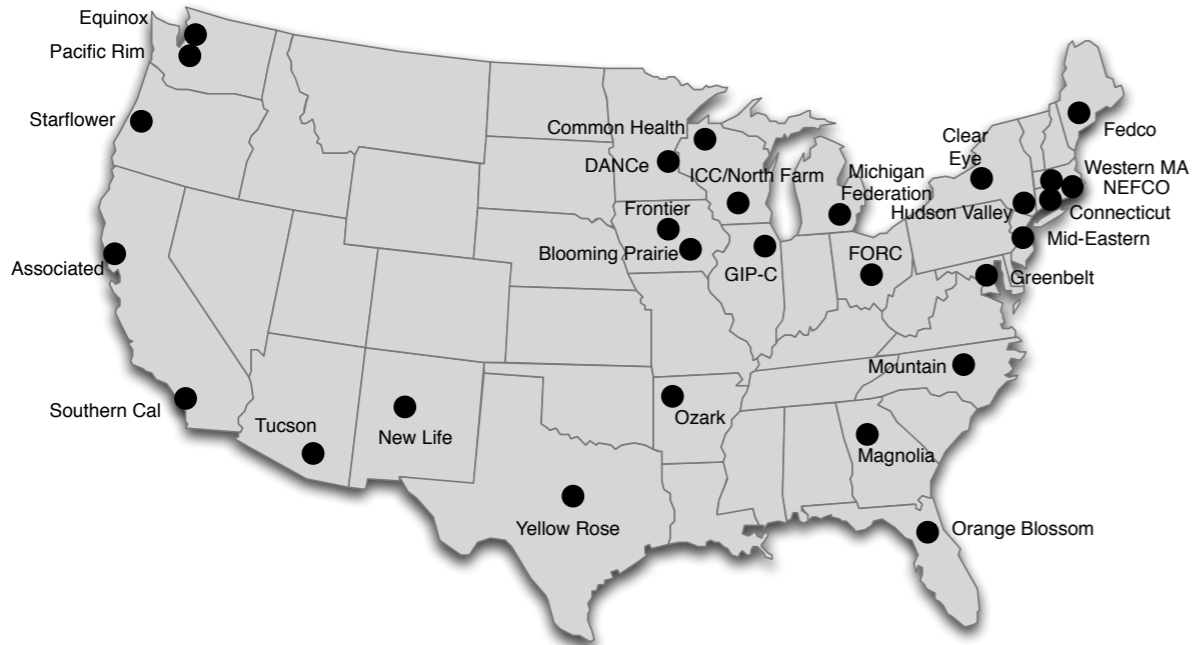


Off-Farm Input Treadmills

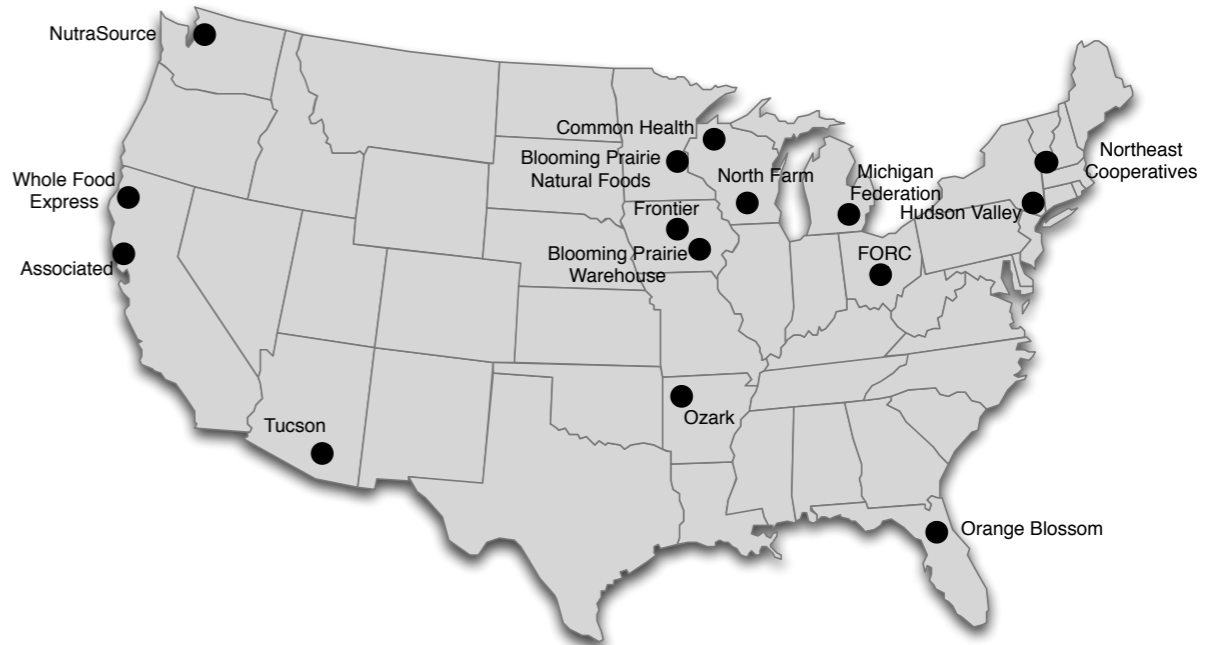


Cooperative Distributors, 1982-2008

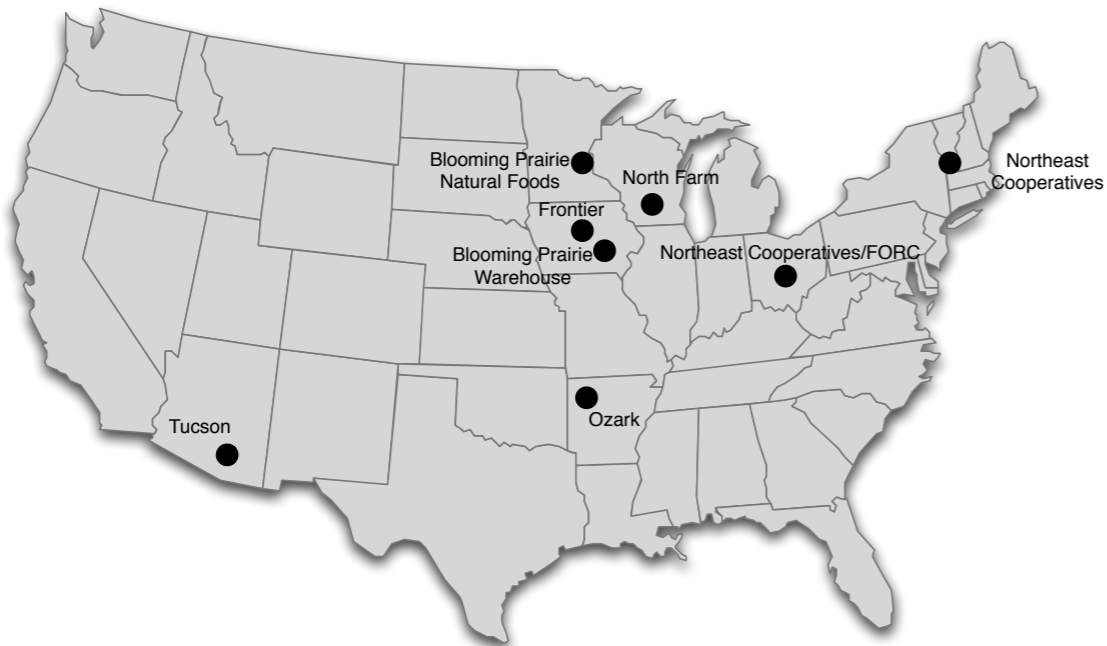
1982



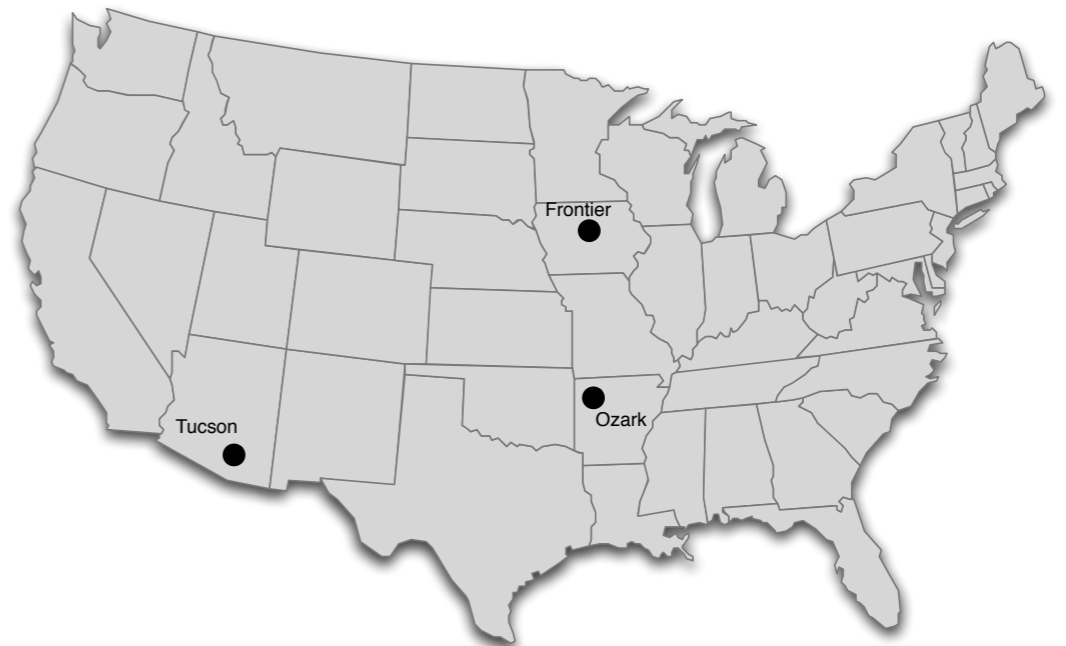
1989



2002



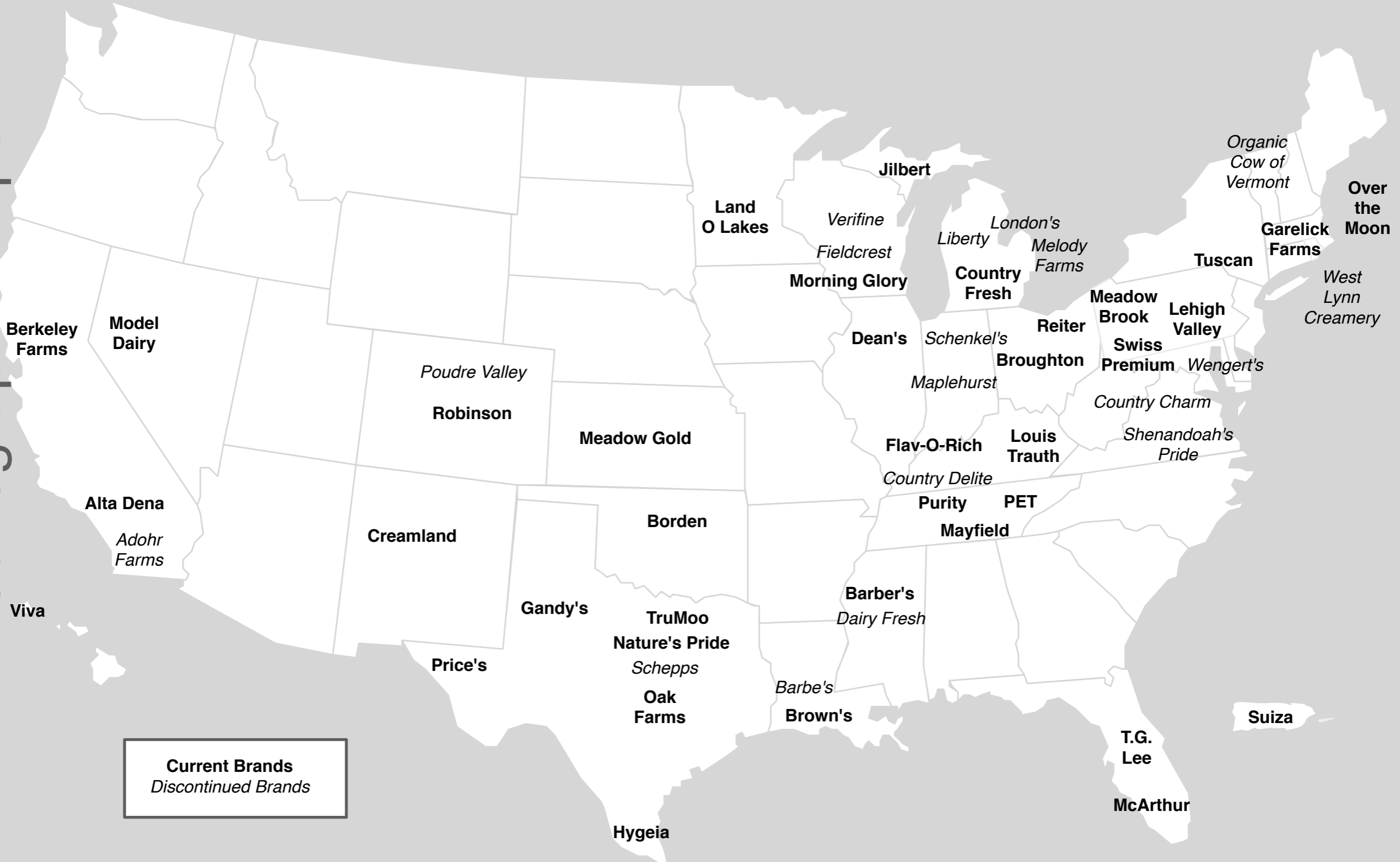
2003



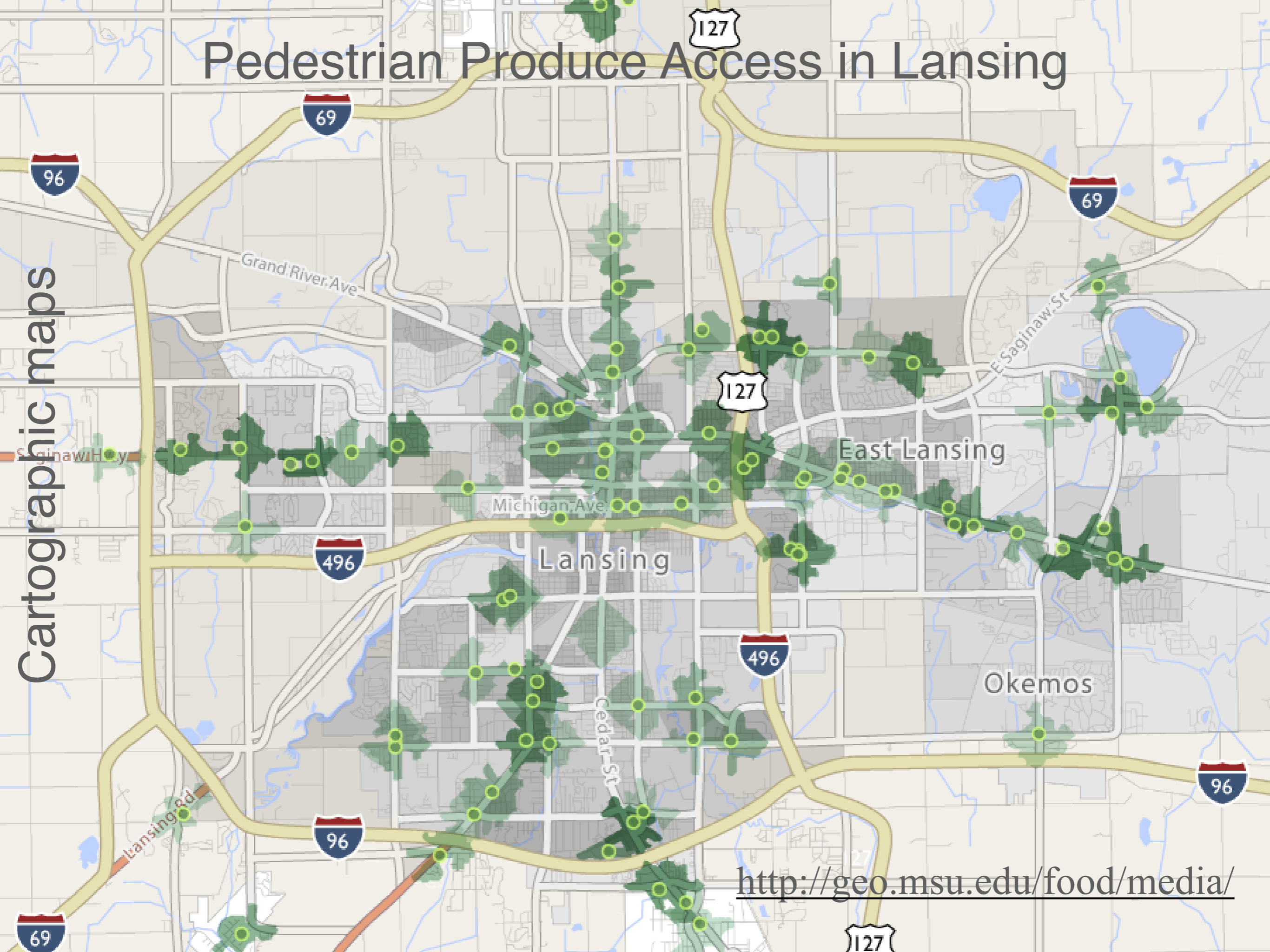
Cartographic maps

Brands Acquired by Dean Foods

Cartographic maps



Pedestrian Produce Access in Lansing



Cartographic maps

<http://geo.msu.edu/food/media/>

Timelines

Sysco: Selected Acquisitions & Alliances, 1990-2013



Multi-State Microbial Food Contamination Epidemics in the US, 1993 to 2008

Timelines



13 Jan 1993, E. coli 0157:H7, Jack in the Box



30 Jun 1993, Salmonella, United States



30 Jun 1994, Shigella, California

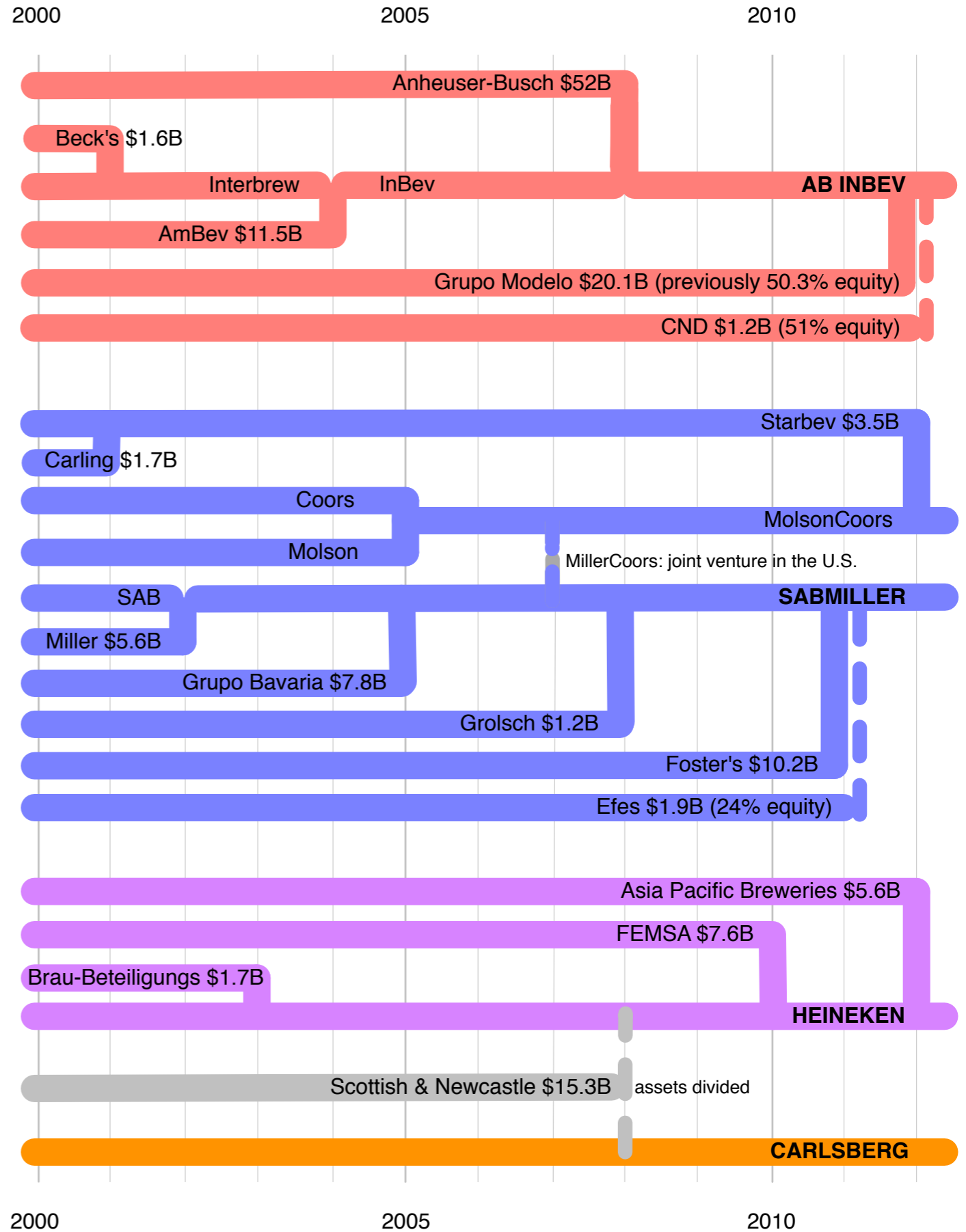


2000



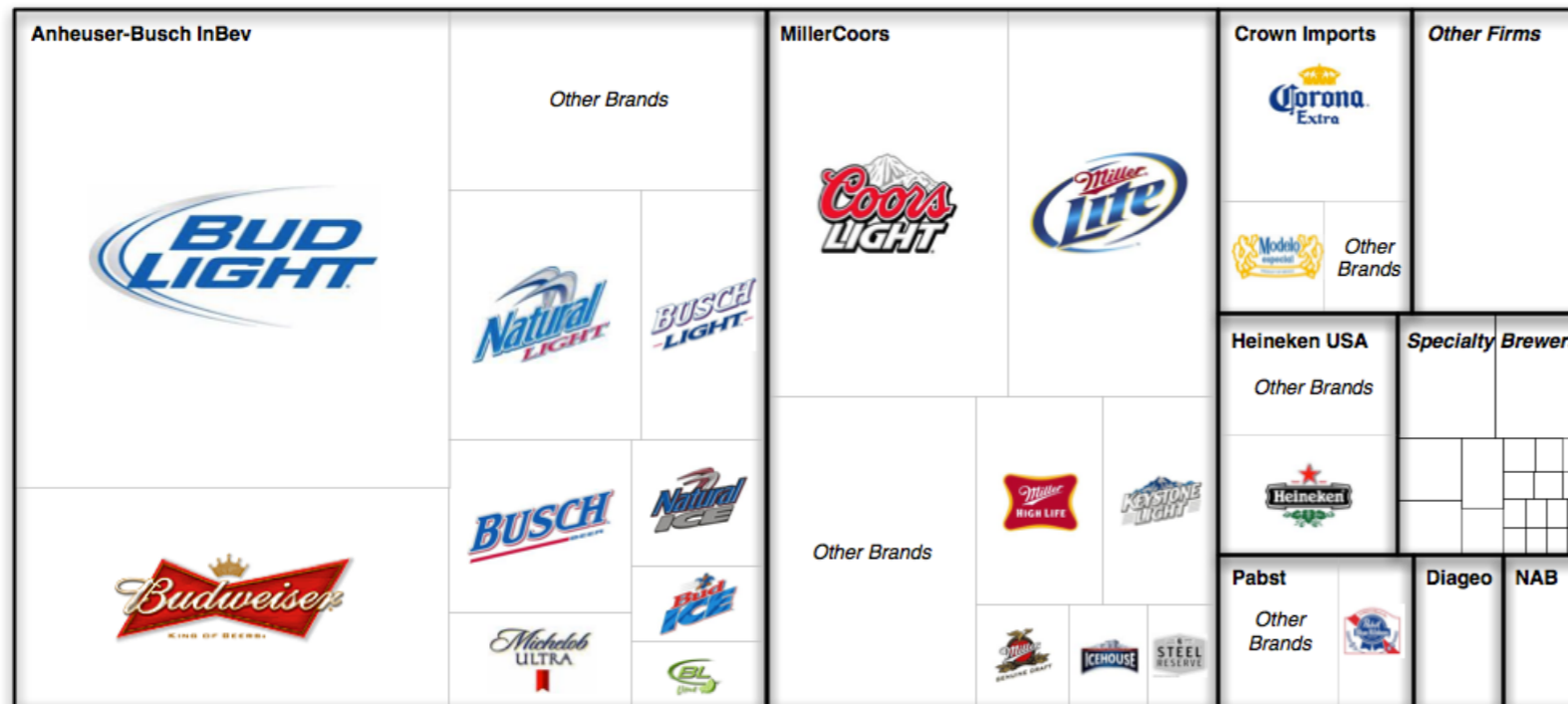
Consolidation in the Global Beer Industry

Timelines



Market share of major beer firms & the top 20 varieties, 2010

Specialty brewers account for less than 5% of all sales by volume.



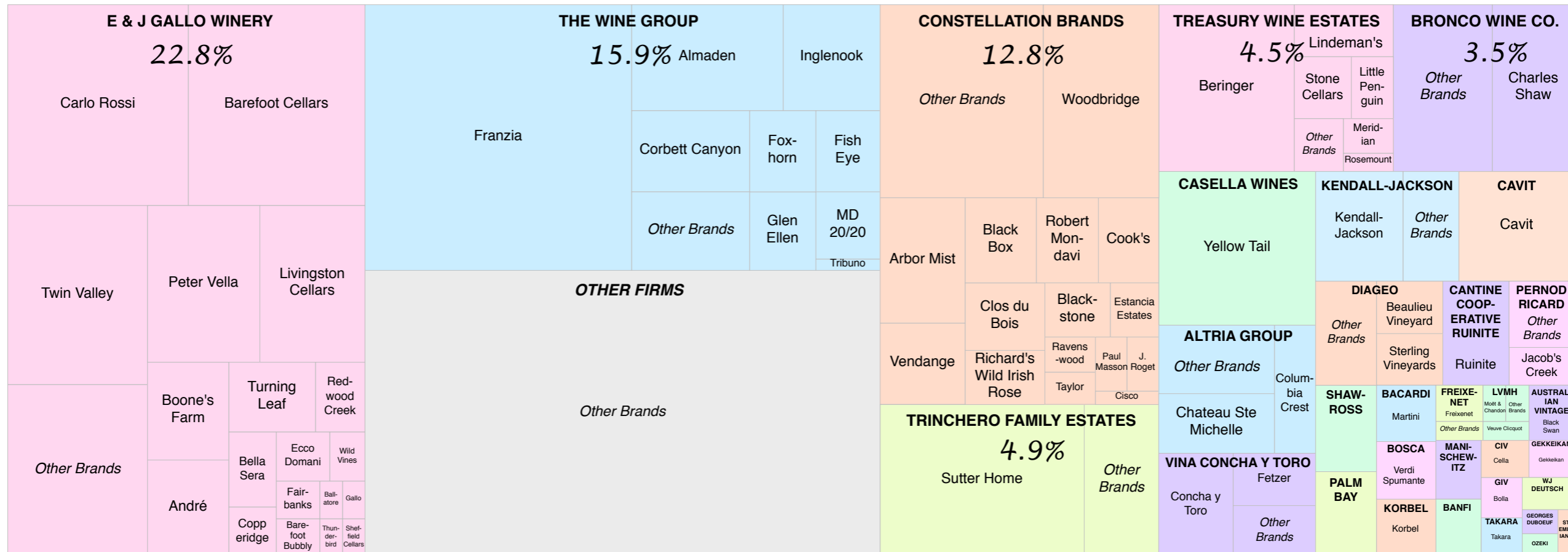
Each rectangle's size is proportional to US sales by volume

Data: Beer Insights, 2011; Brewers Association 2011
Graphic: Phil Howard & Ginger Ogilvie

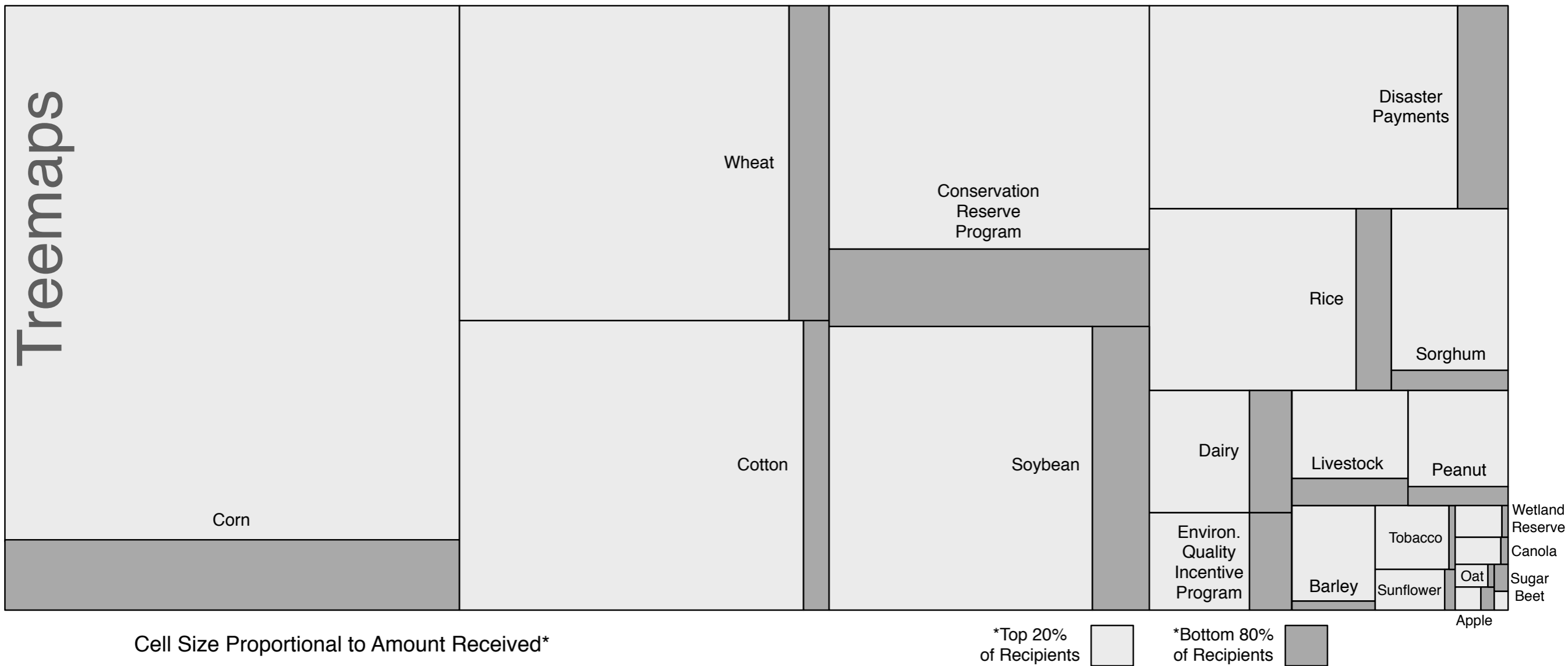


*Craft Brewers Alliance includes Red Hook, Kona and Widmer Brothers, and is 32.25% owned by AB InBev (which acquired former Craft Brewers Alliance brand Goose Island in 2011).

U.S. Wine Market Share, 2011



Distribution of Top 20 Agricultural Subsidy Programs 1996-2013

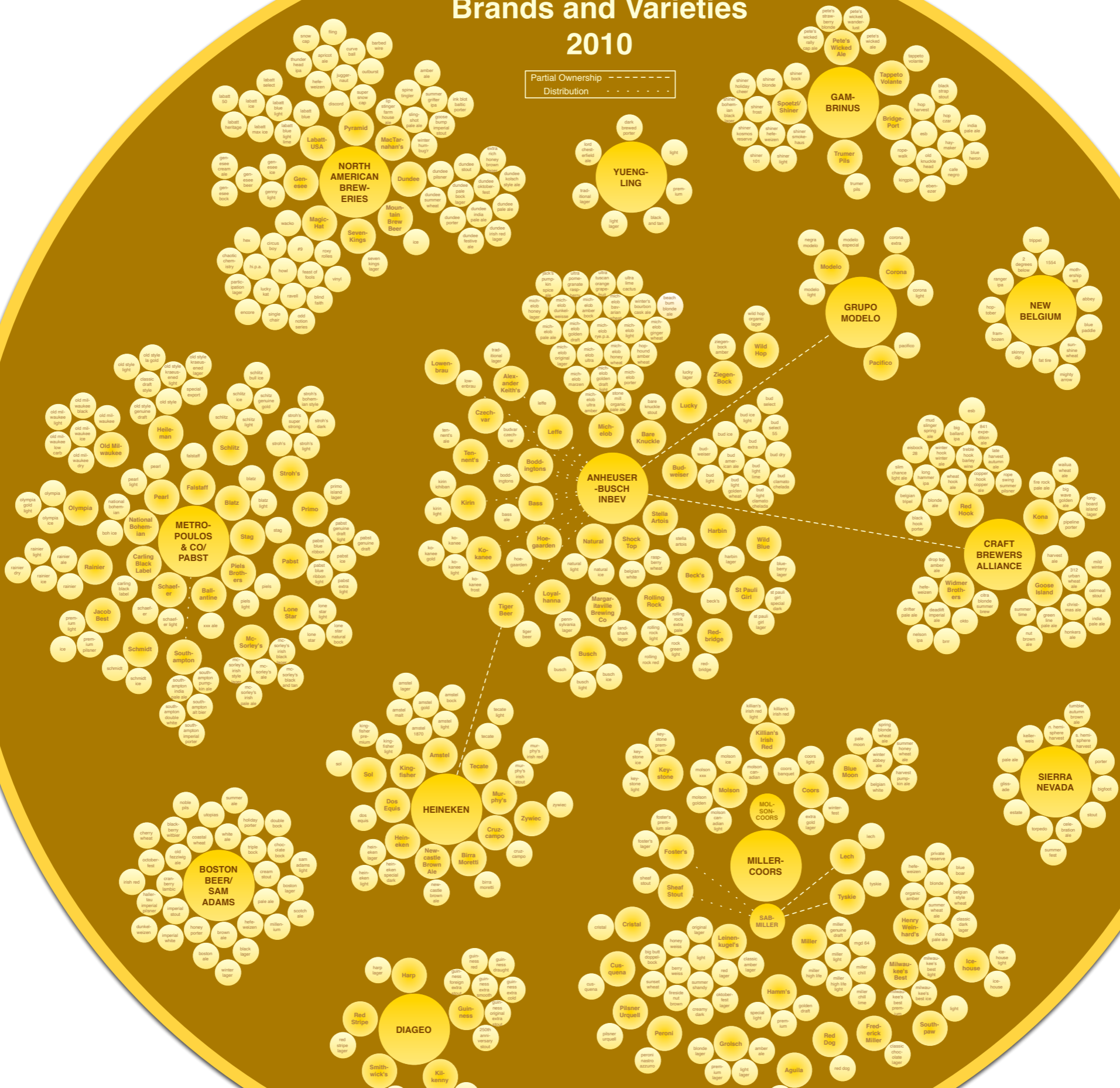


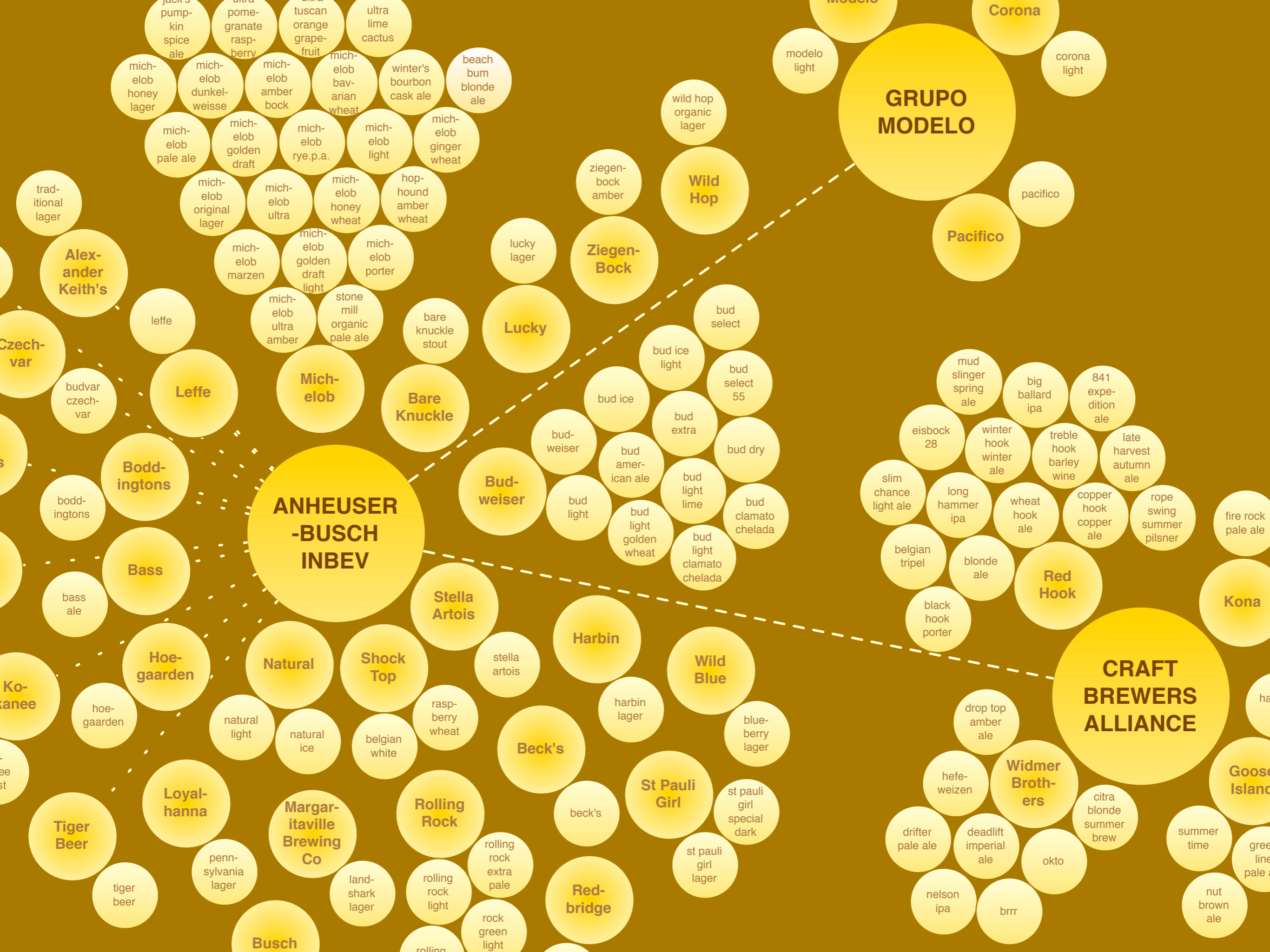
Ownership of Beer Brands and Varieties

2010

Partial Ownership - - - - -
Distribution - - - - -

Cluster Diagrams





GRUPO MODELO

Pacífico

Wild Hop

Ziegen-Bock

Lucky

ANHEUSER-BUSCH INBEV

Budweiser

Stella Artois

Harbin

Wild Blue

Beck's

St Pauli Girl

Red-bridge

Busch

CRAFT BREWERS ALLIANCE

Red Hook

Kona

Widmer Brothers

Goose Island

Nelson

Brrr

Okto

Summer Time

Nut Brown Ale

Alexander Keith's

Lefse

Michelob

Bare Knuckle

Boddingtons

Bass

Hoe-gaarden

Natural

Shock Top

Loyal-hanna

Margaritaville Brewing Co

Rolling Rock

Tiger Beer

Tiger Beer

Land-shark Lager

Rock Green Light

Michelob Honey Lager

Michelob Dunkelweisse

Michelob Amber Bock

Michelob Bavarian Wheat

Winter's Bourbon Cask Ale

Beach Bum Blonde Ale

Michelob Pale Ale

Michelob Golden Draft

Michelob Rye.p.a.

Michelob Light

Michelob Ginger Wheat

Michelob Original Lager

Michelob Ultra

Michelob Honey Wheat

Hop-hound Amber Wheat

Lefse

Michelob Golden Draft Light

Michelob Porter

Bare Knuckle Stout

Boddingtons

Bass Ale

Natural Light

Natural Ice

Belgian White

Hoe-gaarden

Natural Light

Natural Ice

Belgian White

Loyal-hanna

Pennsylvania Lager

Land-shark Lager

Rolling Rock Light

Tiger Beer

Rolling Rock Extra Pale

Rolling Rock Light

Rock Green Light

Michelob Ultra

Michelob Golden Draft

Michelob Rye.p.a.

Michelob Light

Michelob Ginger Wheat

Michelob Honey Lager

Michelob Dunkelweisse

Michelob Amber Bock

Michelob Bavarian Wheat

Winter's Bourbon Cask Ale

Beach Bum Blonde Ale

Michelob Pale Ale

Michelob Golden Draft

Michelob Rye.p.a.

Michelob Light

Michelob Ginger Wheat

Lefse

Michelob Original Lager

Michelob Ultra

Michelob Honey Wheat

Hop-hound Amber Wheat

Boddingtons

Bass Ale

Natural Light

Natural Ice

Belgian White

Hoe-gaarden

Natural Light

Natural Ice

Belgian White

Loyal-hanna

Pennsylvania Lager

Land-shark Lager

Rolling Rock Light

Tiger Beer

Rolling Rock Extra Pale

Rolling Rock Light

Rock Green Light

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Michelob Ultra

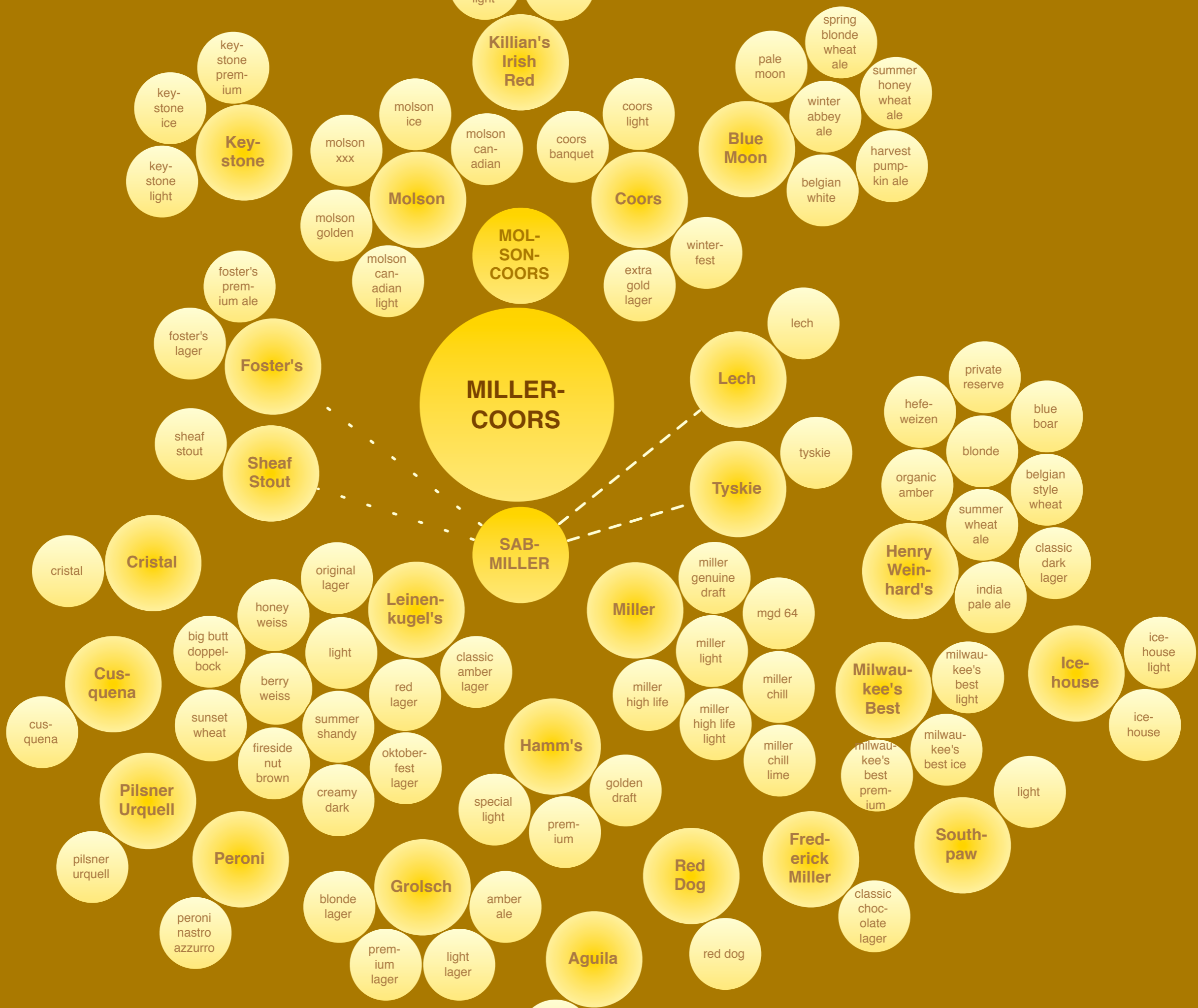
Michelob Golden Draft

Michelob Rye.p.a.

Michelob Light

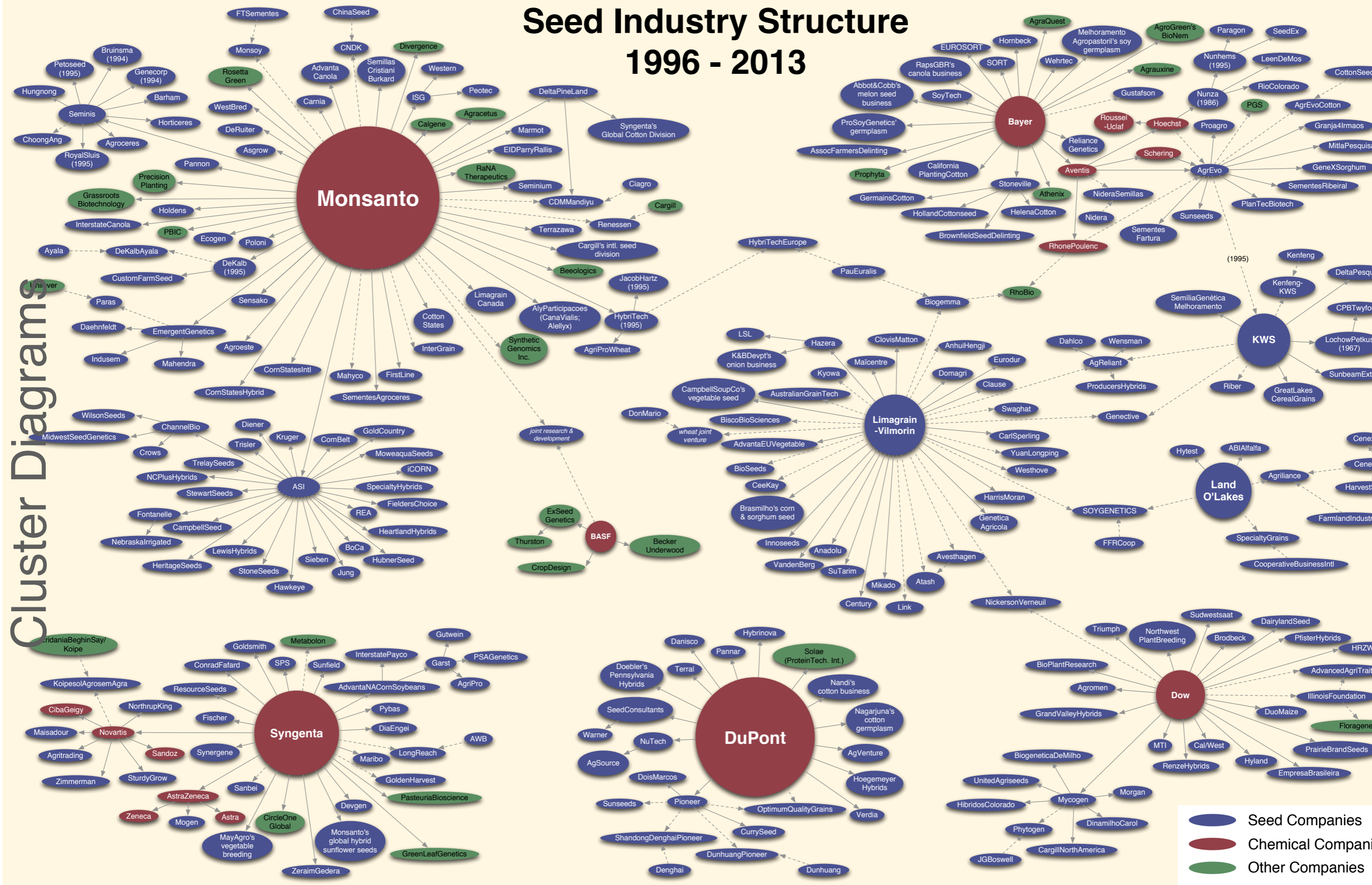
Michelob Ginger Wheat

Michelob Honey Lager



Seed Industry Structure 1996 - 2013

Cluster Diagrams

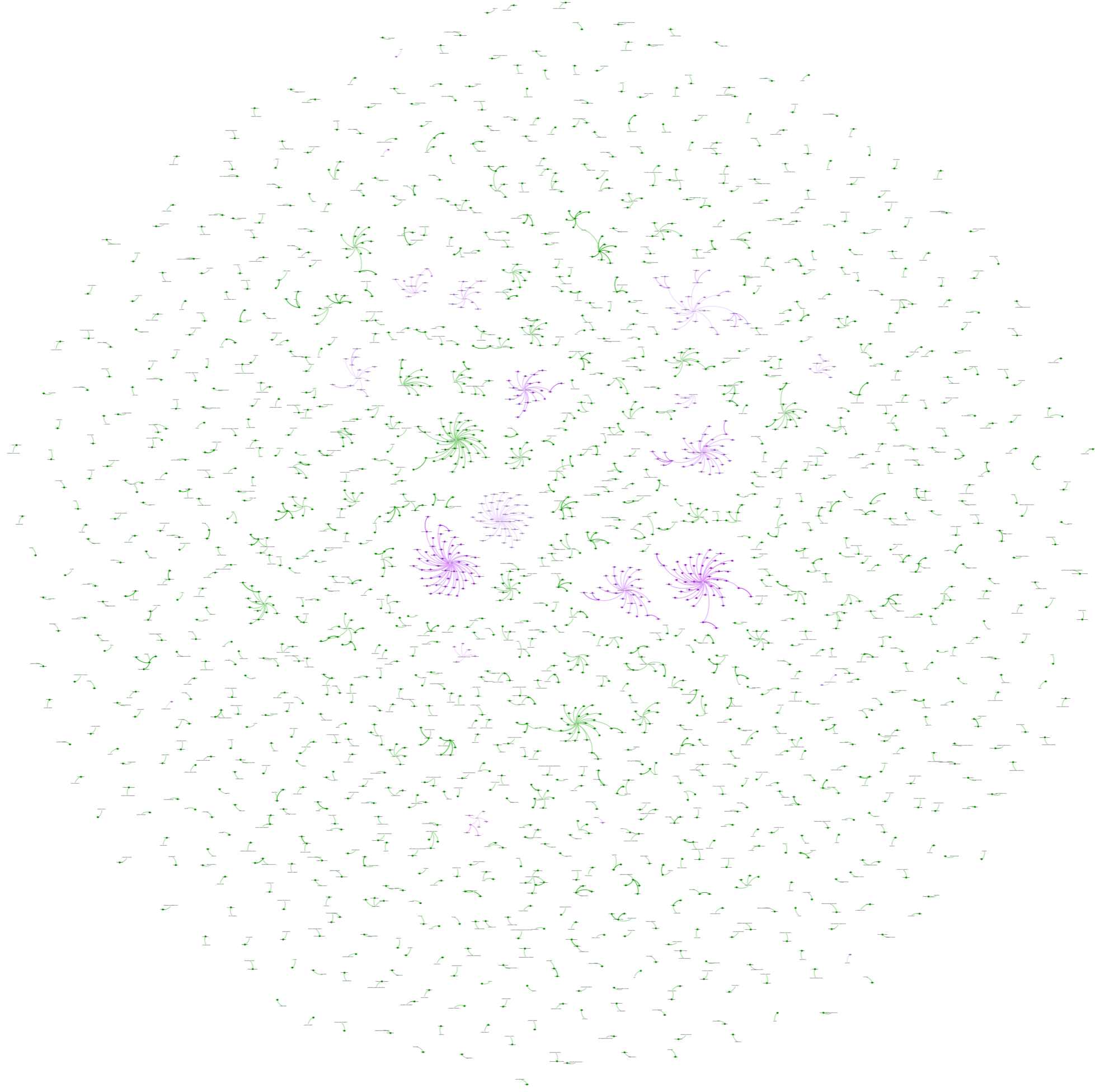


● Size proportional to global seed market share

Phil Howard, Associate Professor, Michigan State University
<http://www.msu.edu/~howardp>

- Seed Companies
- Chemical Companies
- Other Companies
- Full Ownership
- - - Partial Ownership

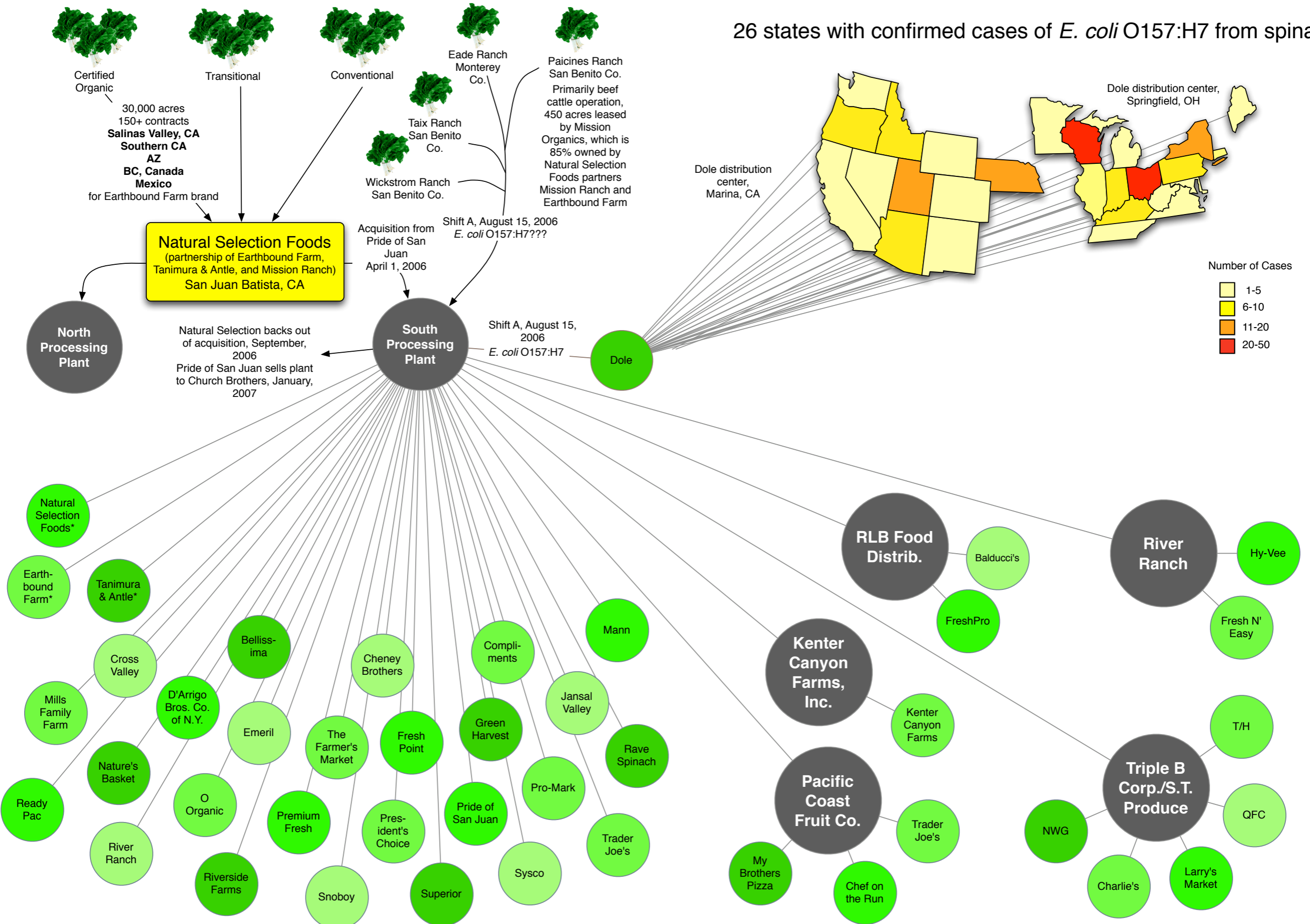
Cluster Diagrams





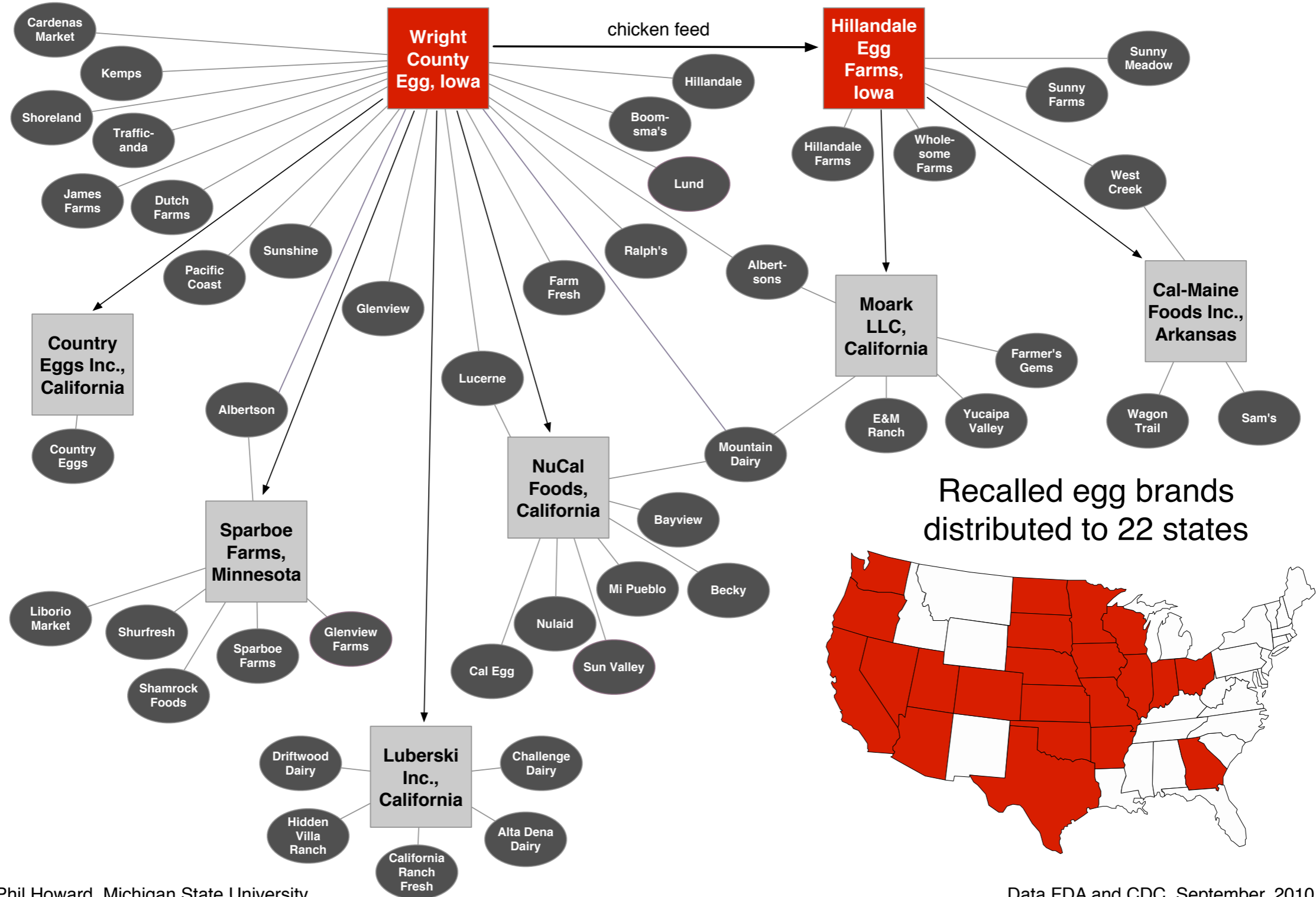
The 2006 *E. coli* outbreak in Natural Selection Foods' bagged spinach commodity chain

26 states with confirmed cases of *E. coli* O157:H7 from spinach



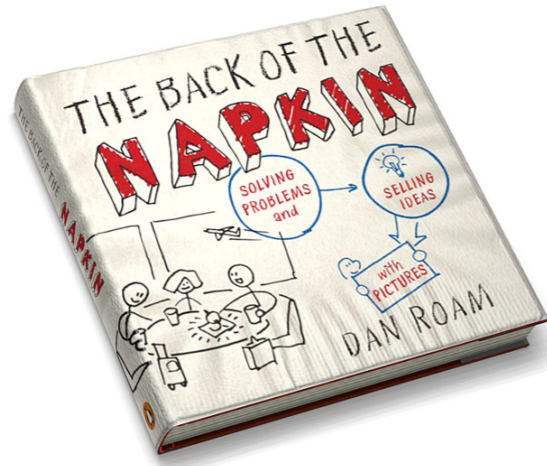
The 2010 Multi-State Salmonella Outbreak in Eggs

1,469 illnesses; 550 million eggs recalled



How might you
use visualization
in your own work





The Visual Thinking Codex

Drawn from:

The Back of the Napkin
Solving Problems and Selling Ideas with Pictures

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 Dan Roam
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Available everywhere from **Portfolio**

		② → which version					
		S.	Q.	V.	I.	Δ.	
		<u>simple</u> elaborate	<u>quality</u> quantity	<u>vision</u> execution	<u>individual</u> comparison	<u>change</u> as-is	
① ↓ which framework	1 who/what? (portrait)						
	2 how much? (chart)						
	3 where? (map)						
	4 when? (timeline)						

Software & Tools

- Omnigraffle
- SoNIA (animations)
- Gephi (networks)
- timetoast (timelines)
- zoom.it (web graphics)





<http://www.msu.edu/~howardp>