The Value Chain of Colorado Agriculture

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COLORADO DEPARTMENT OF AGRICULTURE

Boulder County Open Space
Organic Options Conference
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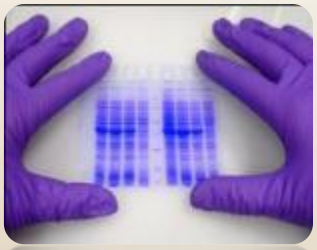
The Value Chain Analysis and the Colorado Blueprint's Six Core Objectives

Intended to assist in efforts **to engage agriculture more deeply** in the state's strategic planning and investments in economic development,

the Value Chain analysis looked at Colorado agriculture and food through the lens of the Blueprint's **six core objectives**. These statewide objectives are to:

1. *Build a business-friendly regulatory environment;*
2. *Recruit, grow, and retain companies;*
3. *Improve access to capital;*
4. *Create and market a stronger "Colorado" brand;*
5. *Educate and train the workforce of the future; and*
6. *Cultivate innovation and new technologies.*



What is a Value Chain?

The idea of a value chain refers to ***the series of steps or links that turn raw materials and other inputs into final products or services delivered to end users***.

For practical purposes, we have identified the core of the agriculture value chain to be that set of enterprises counted as farm and ranch operations in the 2007 USDA Census of Agriculture.

Mapping the Value Chain of Colorado Agriculture

Encompasses more than 200 individual sectors or NAICS codes.

Source: Graff et al, *The Value Chain of Colorado Agriculture*, CSU, 2013

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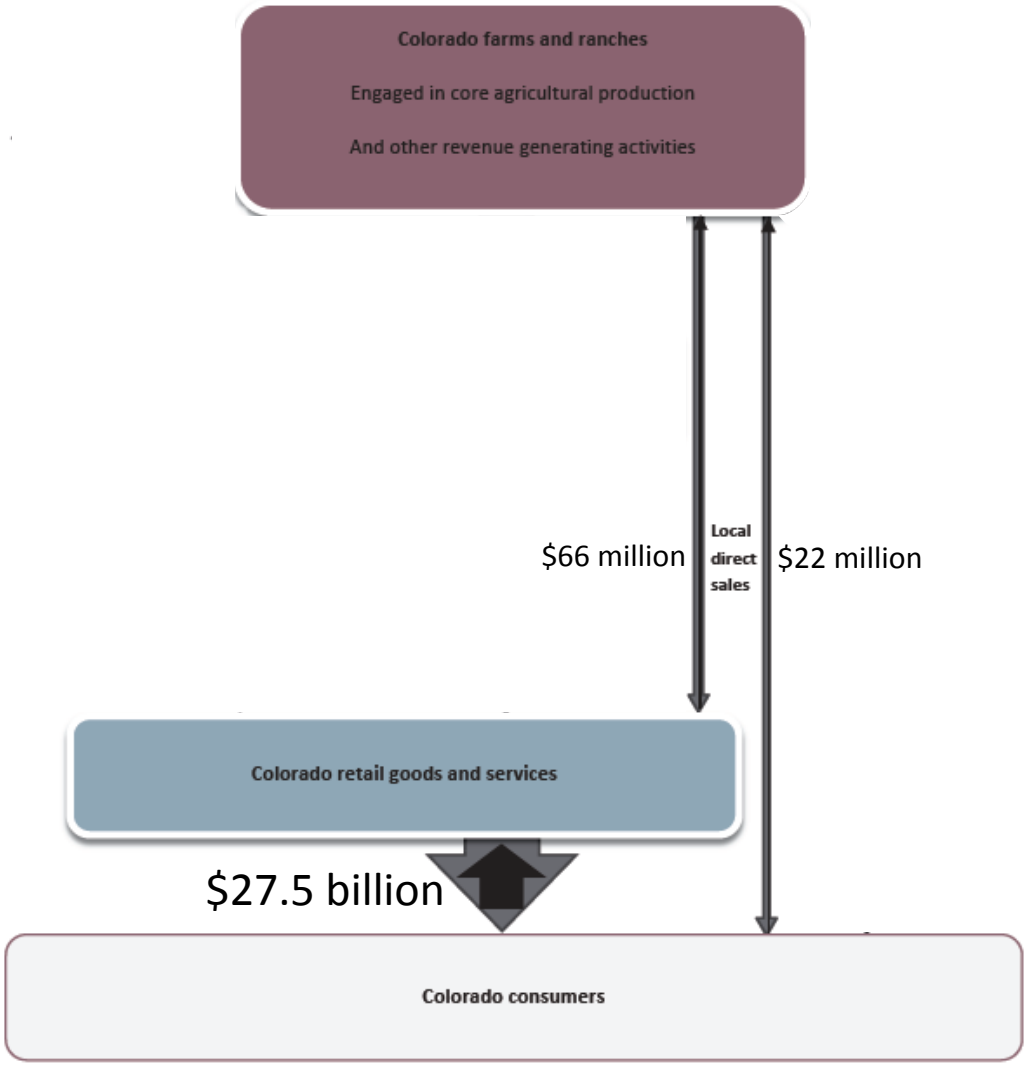

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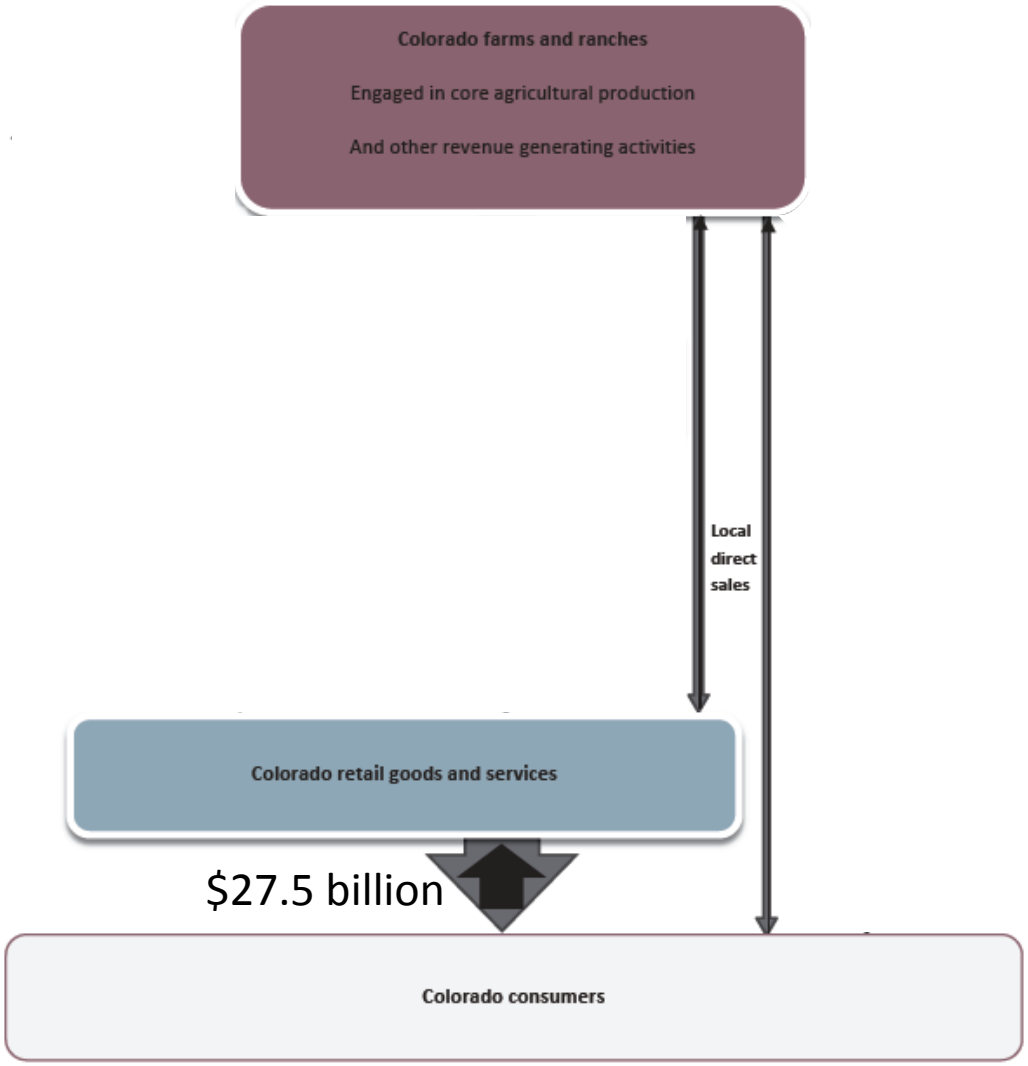

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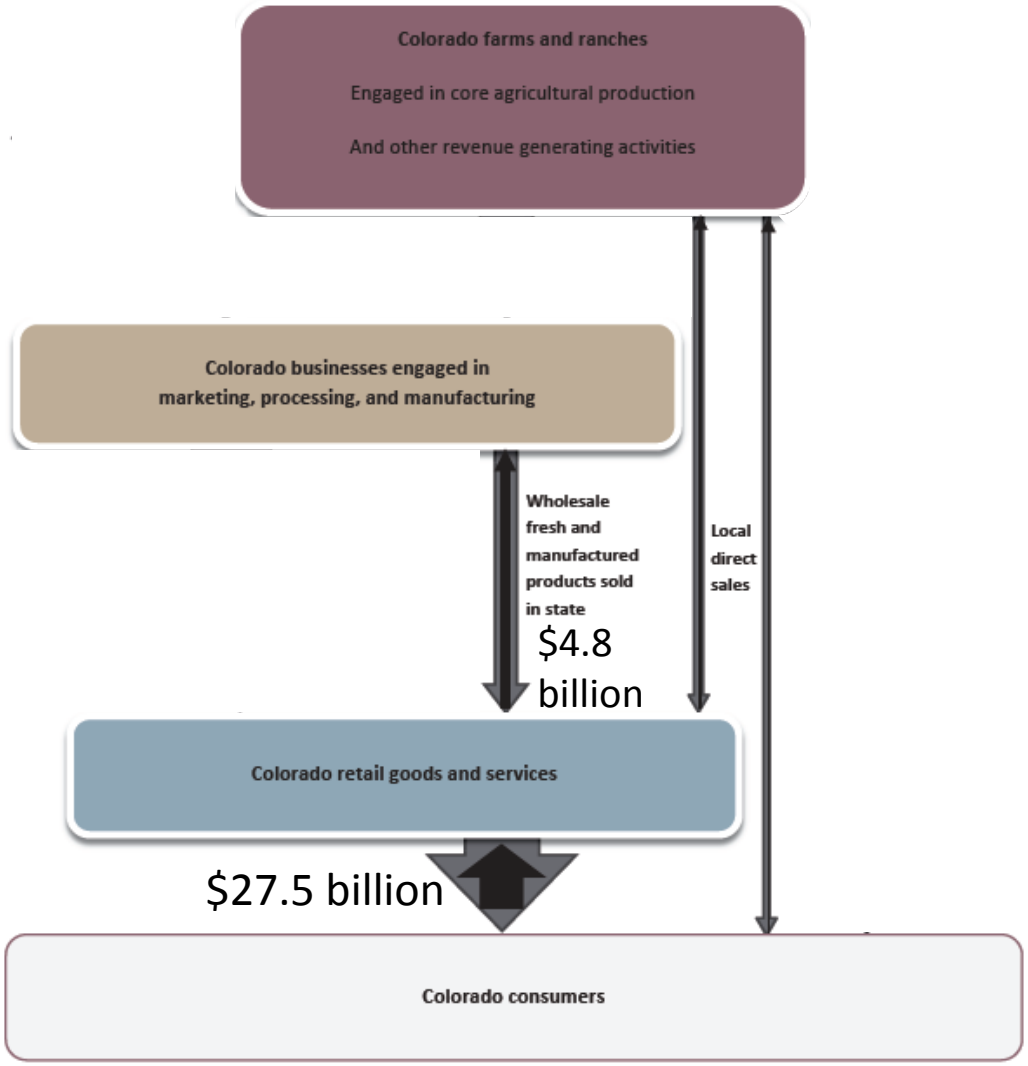

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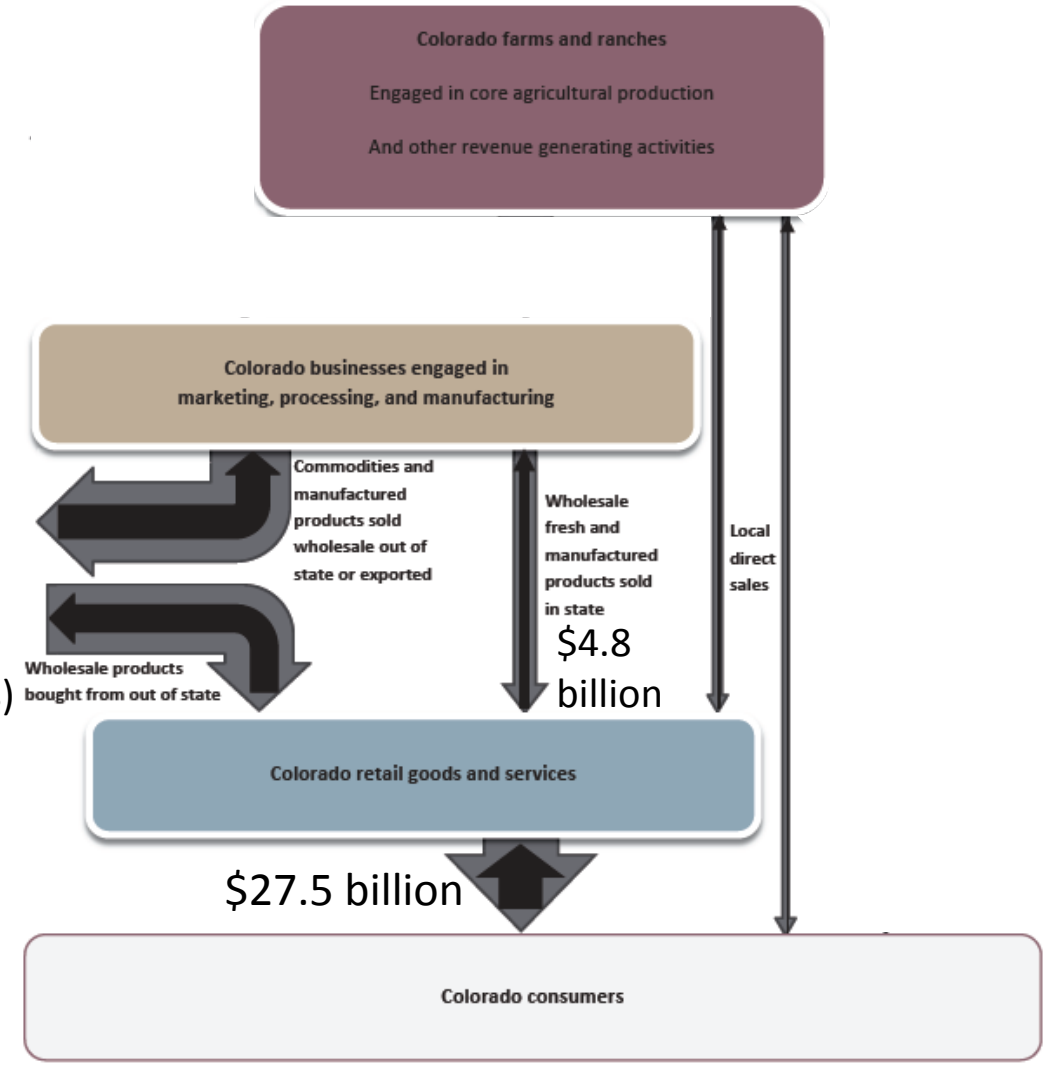

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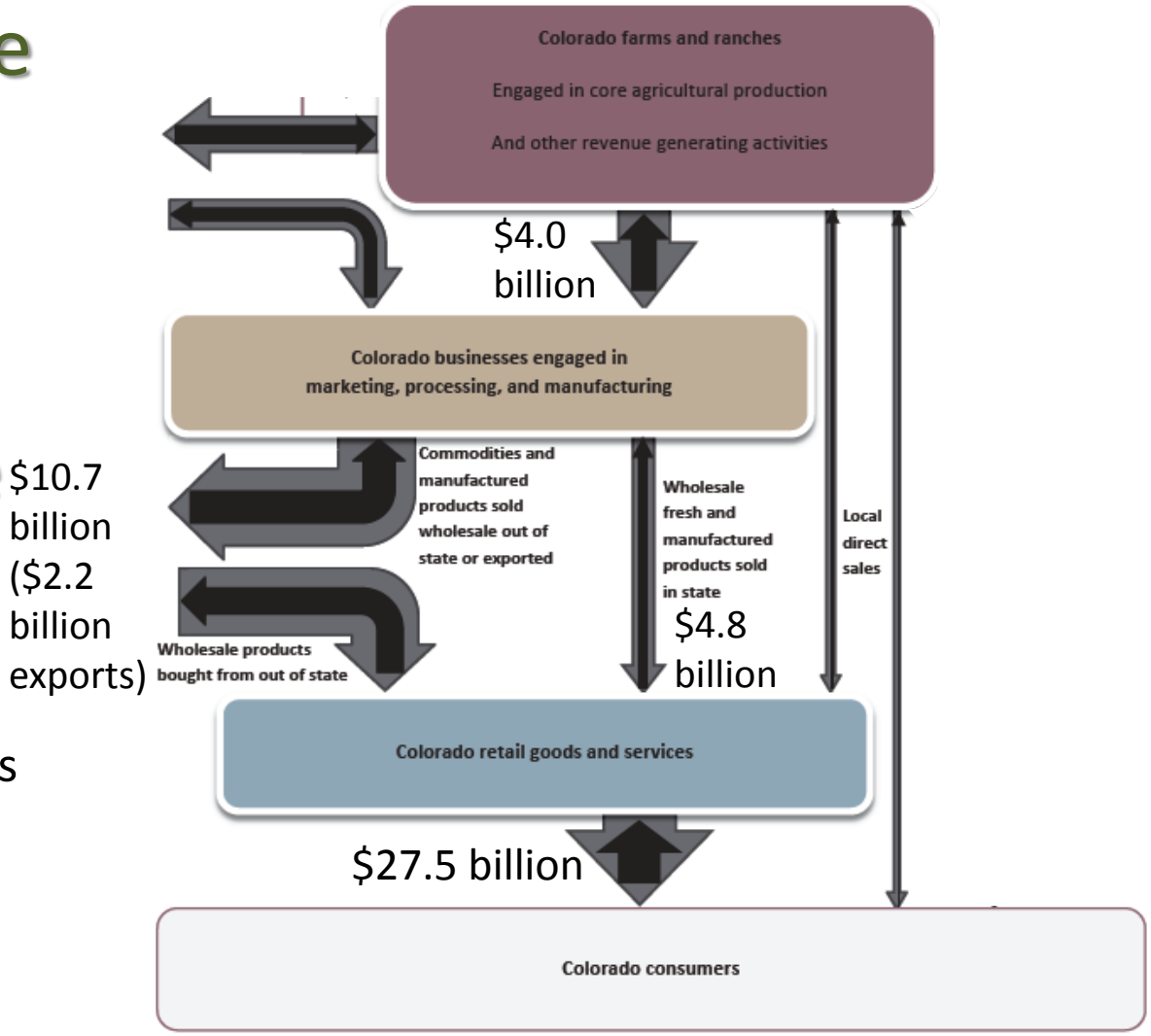

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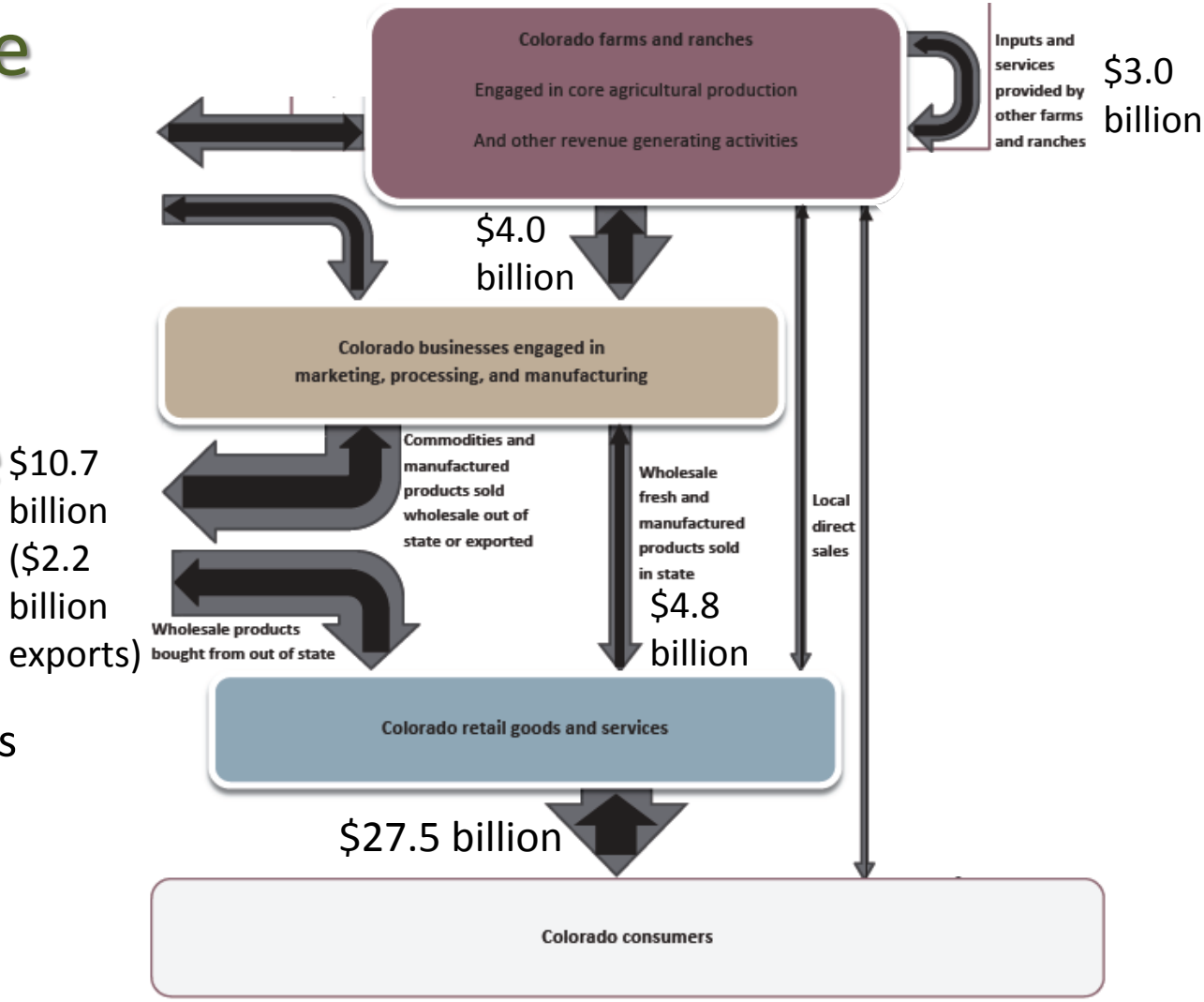

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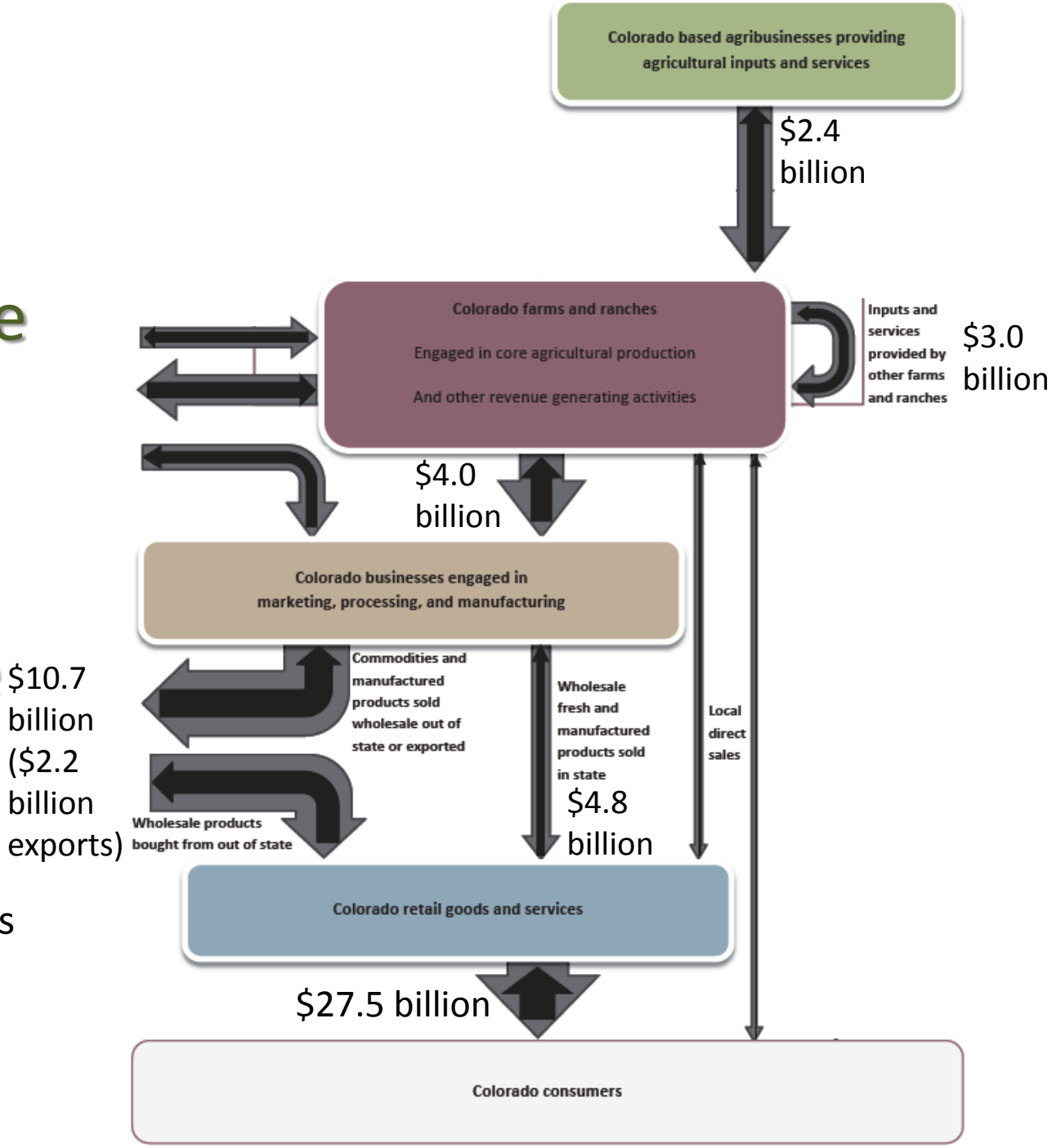

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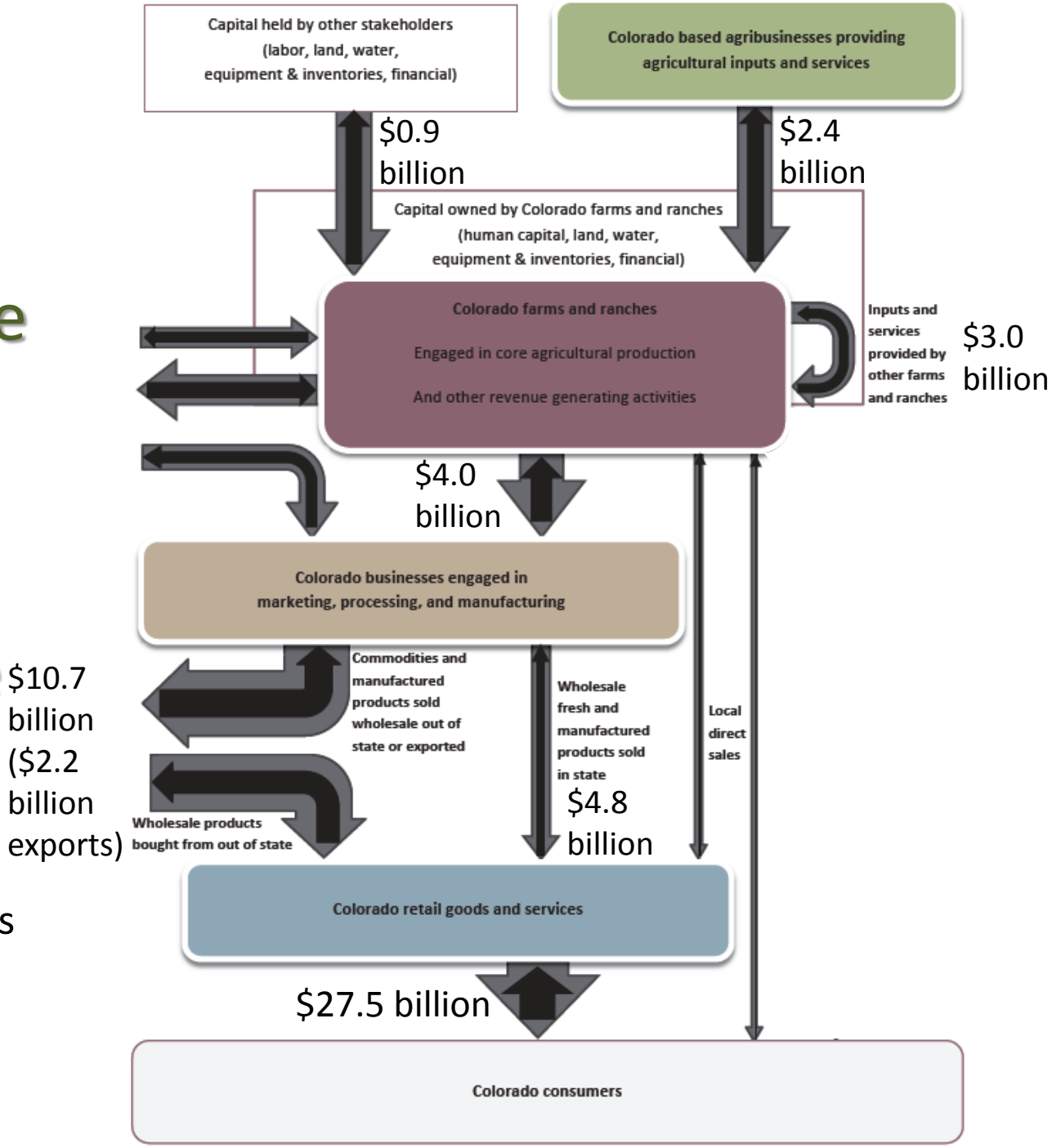

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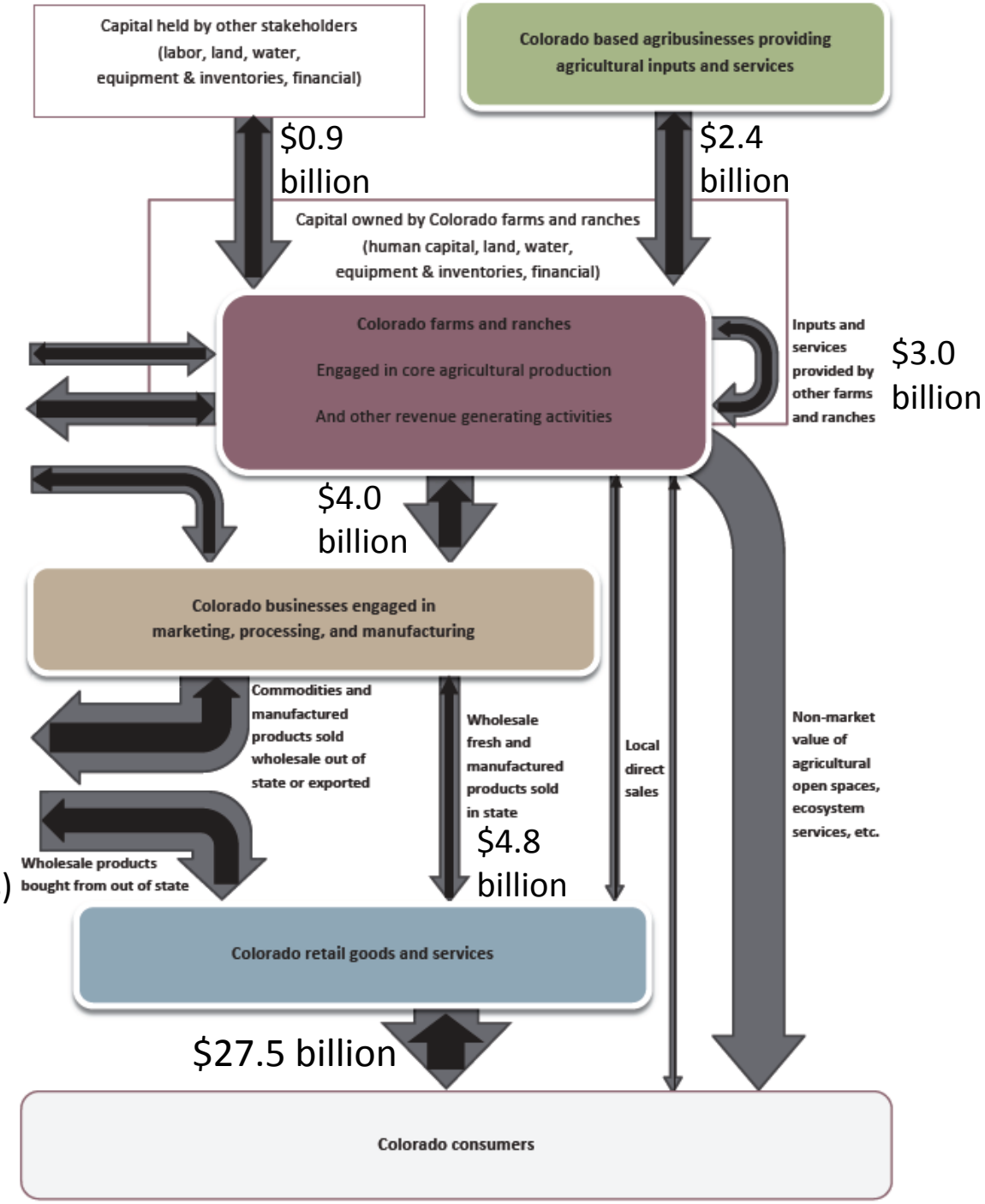

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What we found:

SOME OBSERVATIONS (AND A FEW SURPRISES) FROM THE VALUE CHAIN

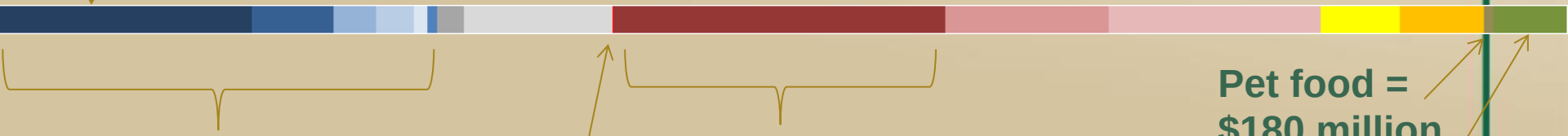
The Reality of Retail

Total retail sales of $27.5 billion

Food at home = $12.3

Food away from home = $13.9

Alcoholic bev. = $2.9 billion



The big six = $8 billion

"Locally grown" = $88 million

Full service restaurants = $5.8 billion

Pet food = $180 million

Garden center, landscaping = $1.2 billion

The Quiet Link in the Value Chain: Wholesale

Over **1,000** companies and almost **20,000** jobs in Colorado.

Highest average earnings among the major segment of the value chain = **$58,000/year**

Strongest jobs growth in 2012 = **5.7%**

Feeding the World

Combined sales of Colorado's agricultural commodities and manufactured foods and beverages are estimated at **$13.3 billion**.

Of that, an estimated

- **$2.2 billion (17%)** is exported from the US,
- **$6.3 billion (47%)** is sold out of state,
- **$4.8 billion (36%)** is sold within CO.

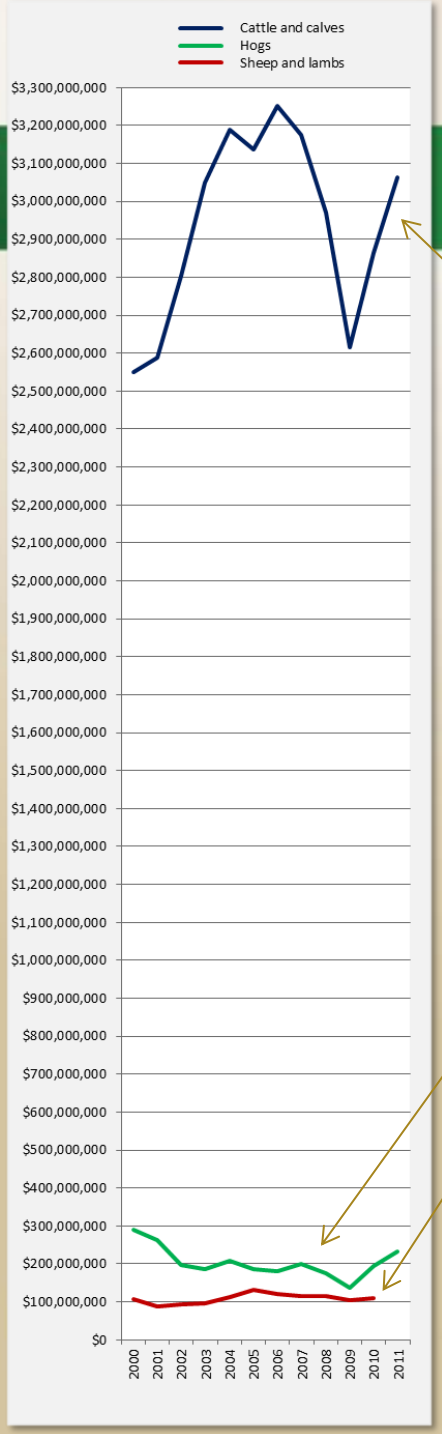
A State of Beef and Beer

Marketings of beef cattle = **$3.1 billion**

All animal slaughter and meat packing = **$2.9 billion**

Value of grains, hops, water for beer = $**?? million**

Beer brewing = **$3.9 billion**



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Revenues from livestock in Colorado

Marketings of beef cattle = **$3.1 billion**

Marketings of hogs = **$233 million**

Marketings of sheep and wool = **$115 million**

Source: Graff et al, *The Value Chain of Colorado Agriculture*, CSU, 2013

Dairy: Up and Coming

On farm milk production = **$600 million**

Dairy manufacturing = **$1.9 billion**
(of which, cheese = **$1.2 billion)**

All Cattle and Calves:

Inventory by county, 2013

The Livestock Feed (Im)balance

Feed purchases are way up.

A decade ago, feed costs made up about **25%** of Colorado livestock producers' total costs.

In 2011 they made up an estimated **37%.**

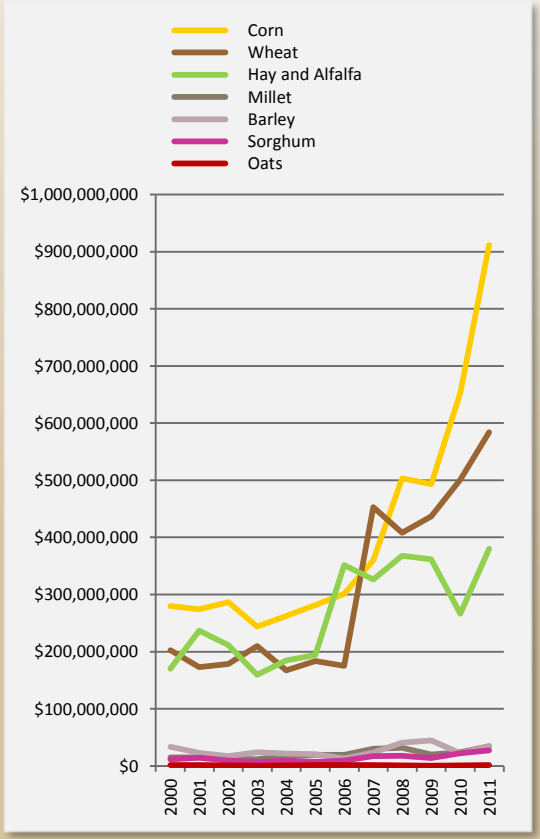
The *value* of farm sales of feed crops is up **3X**.

Colorado experiences an ongoing feed deficit worth $100 - $200 million per year.

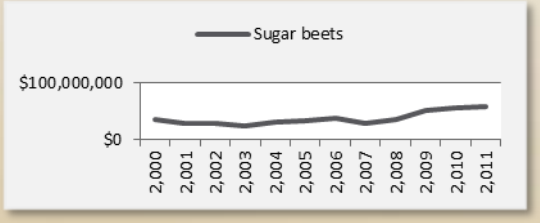
Between demand for cattle feeding and for ethanol production, an estimated **80 - 90 million bushels** of grain corn is shipped into the state each year.

Revenues from crop production in Colorado

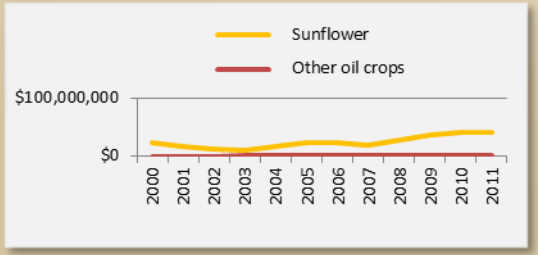
On farm production = **$2.9 billion**
Organic = **$19 million** (in 2007)



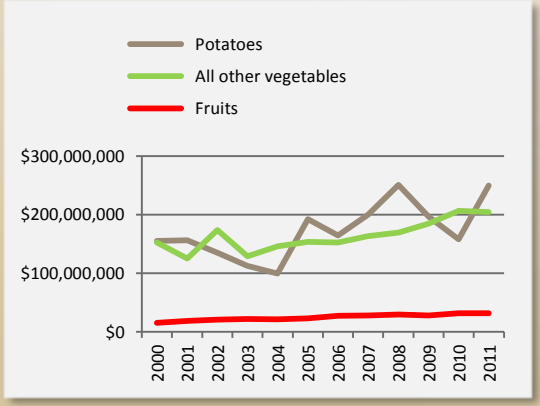
Grains and fodder



Sugar crops

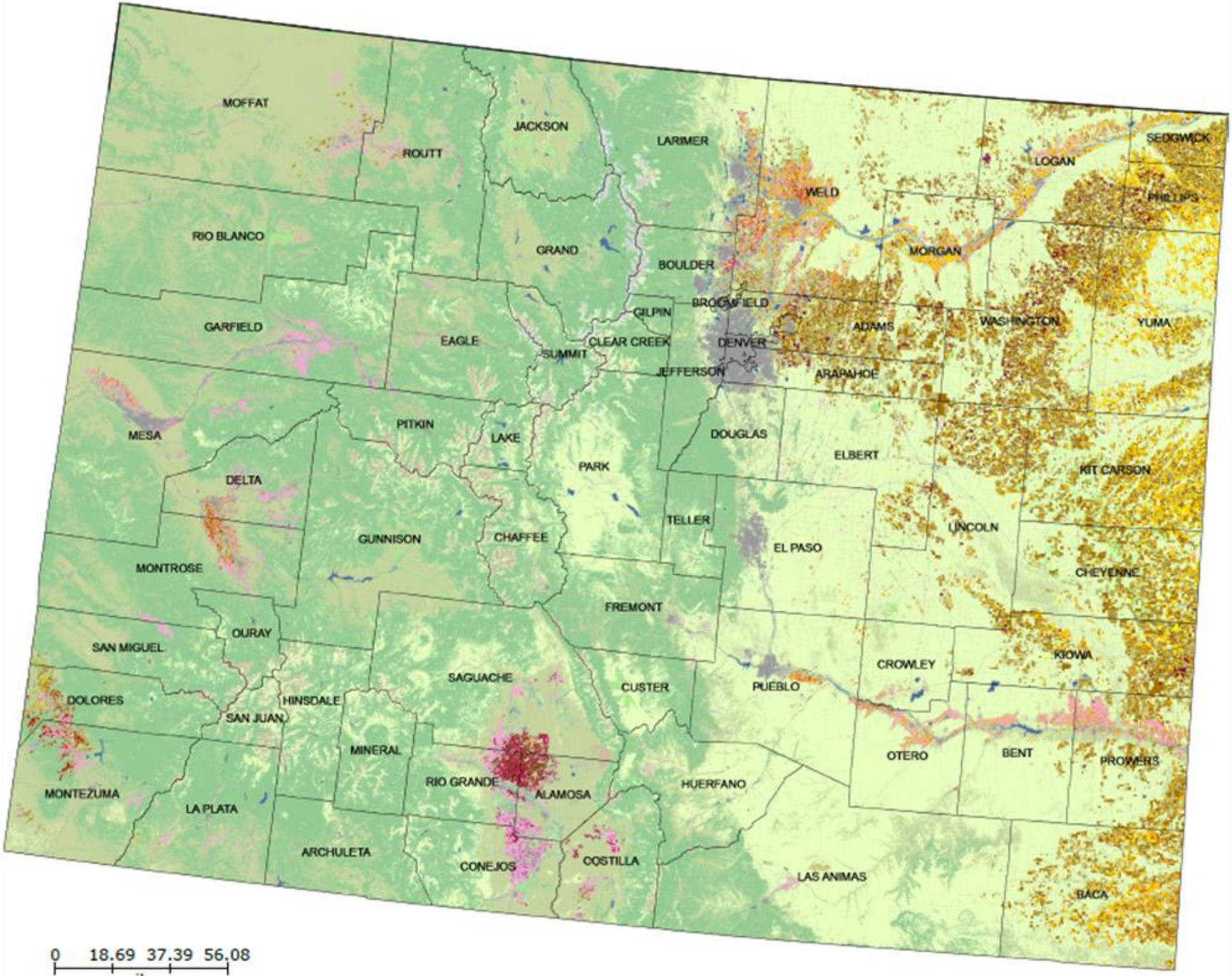


Oilseeds

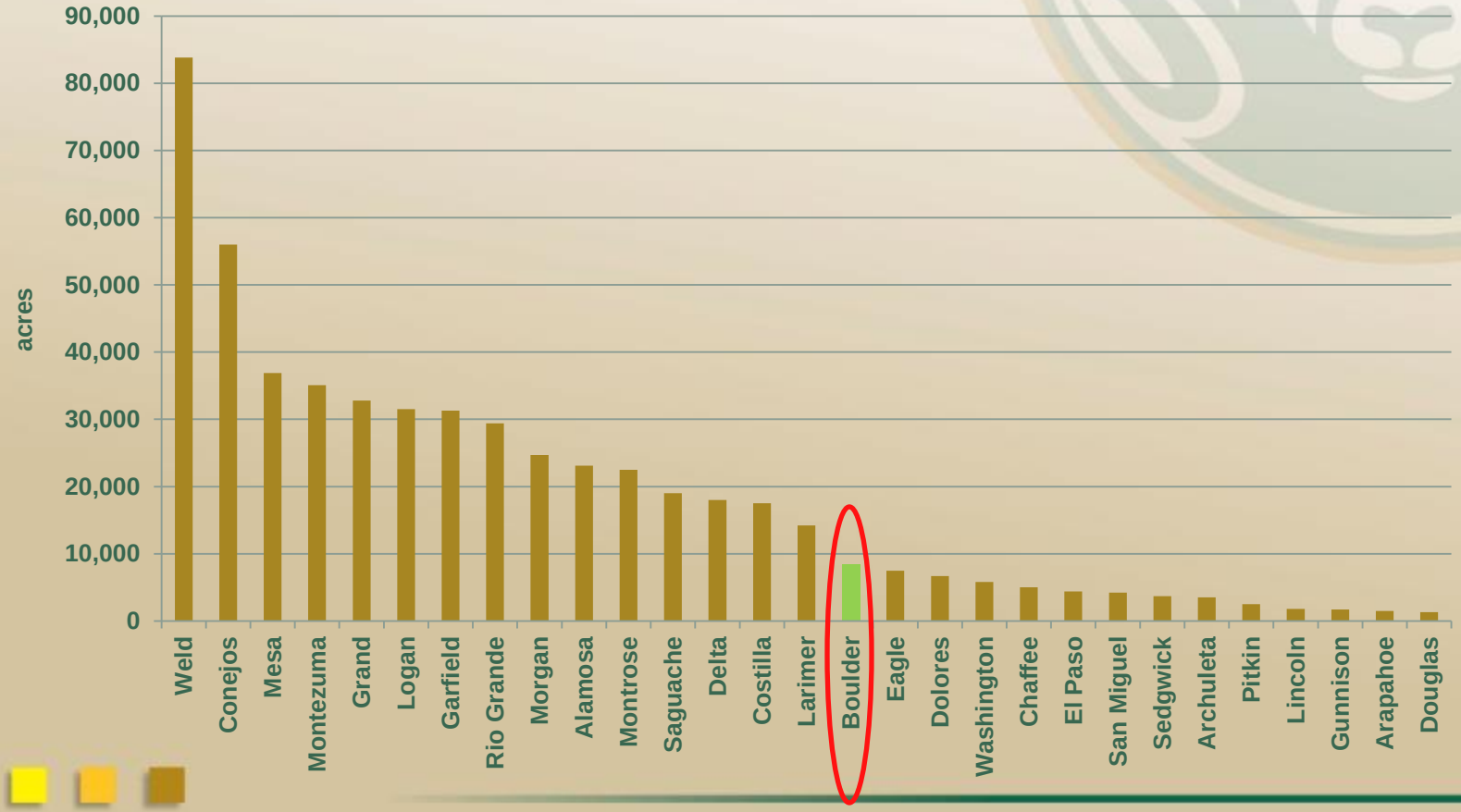


Fruits and vegetables

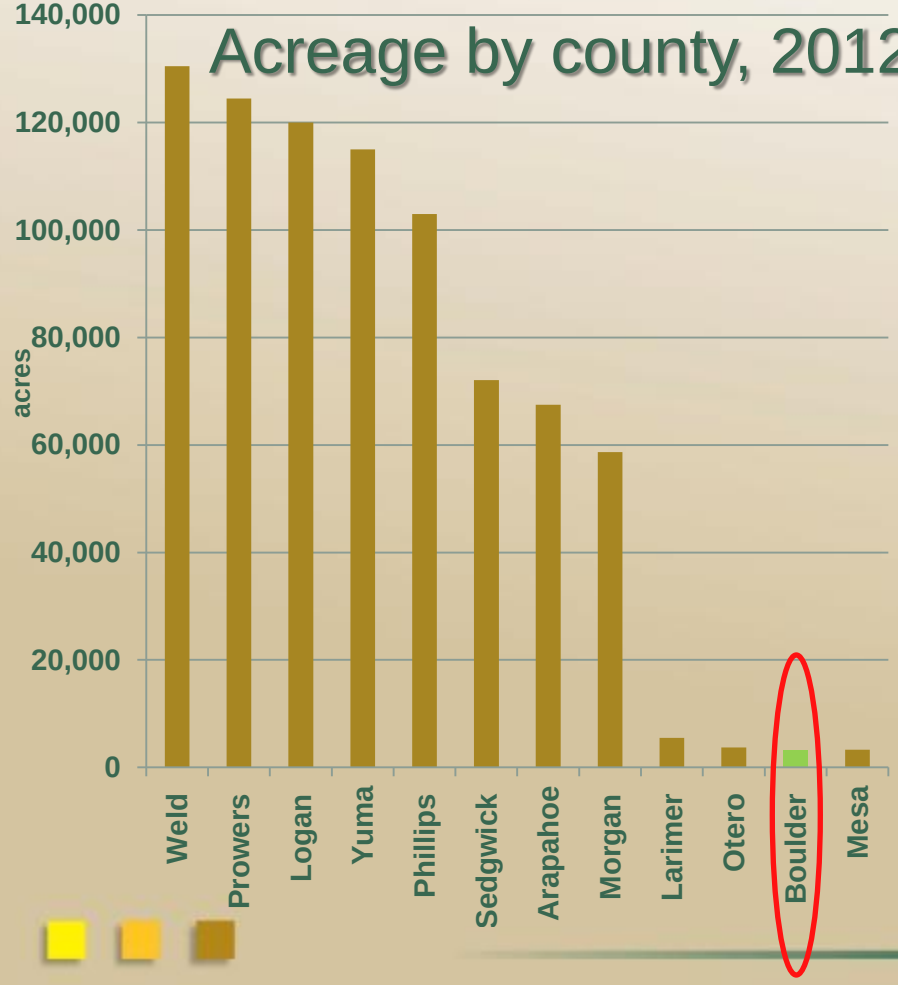
Source: Graff et al, *The Value Chain of Colorado Agriculture*, CSU, 2013


MOFFAT
ROUTT
JACKSON
LARIMER
SEDGWICK
LOGAN
WELD
PHILLIPS
RIO BLANCO
GRAND
MORGAN
BOULDER
BROOMFIELD
GILPIN
GARFIELD
EAGLE
CLEAR CREEK
DENVER
ADAMS
WASHINGTON
YUMA
SUMMIT
JEFFERSON
ARAPAHOE
MESA
PITKIN
LAKE
DOUGLAS
ELBERT
PARK
KIT CARSON
DELTA
TELLER
LINCOLN
GUNNISON
CHAFFEE
EL PASO
MONTROSE
CHEYENNE
FREMONT
OURAY
SAN MIGUEL
KIOWA
CROWLEY
SAGUACHE
CUSTER
PUEBLO
DOLORES
HINSDALE
SAN JUAN
MINERAL
OTERO
BENT
PROWERS
RIO GRANDE
ALAMOSA
HUERFANO
MONTEZUMA
LA PLATA
ARCHULETA
CONEJOS
COSTILLA
LAS ANIMAS
BACA
0 18.69 37.39 56.08
miles
Grassland
Winter Wheat
Fallow
Corn
Alfalfa
Hay (non-Alfalfa)
Millet
Sorghum
Sunflower
Dry Beans
Barley
Potatoes
Oats
Sugar beets
Spring Wheat
Triticale

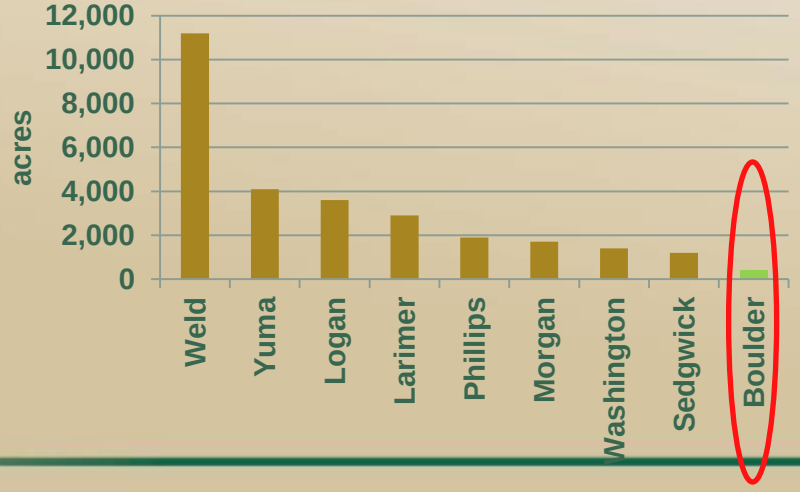
Alfalfa and Other Hay:
Acreage by county, 2012



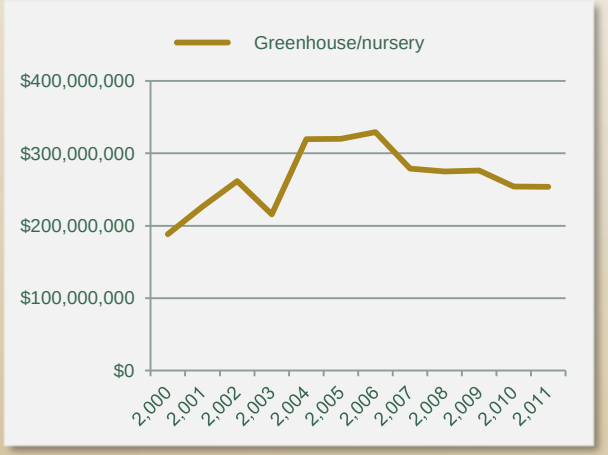
Winter Wheat:
Acreage by county, 2012



Sugar Beet:
Acreage by county, 2012



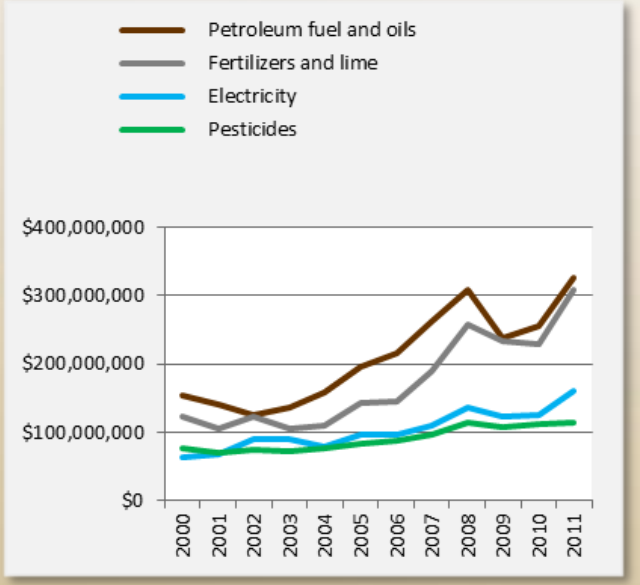
Greenhouse and Nursery Crops: Farming the urban landscape



On farm production
= **$250 million**

Retail sales of nursery and greenhouse products and landscaping services
= **$1.3 billion**

Input Costs of Farming



Farm and ranch fuel expenses have **doubled** over the last decade, while fertilizer expenses have almost **tripled**.

The prices of these two are highly correlated, given the cost of fertilizer manufacturing is heavily influenced by the price of natural gas.

To Rent or To Own?

Of the **31 million acres of land** in ag production each year,

22 million acres (69%) are owned by ag operators
= **$35 billion**

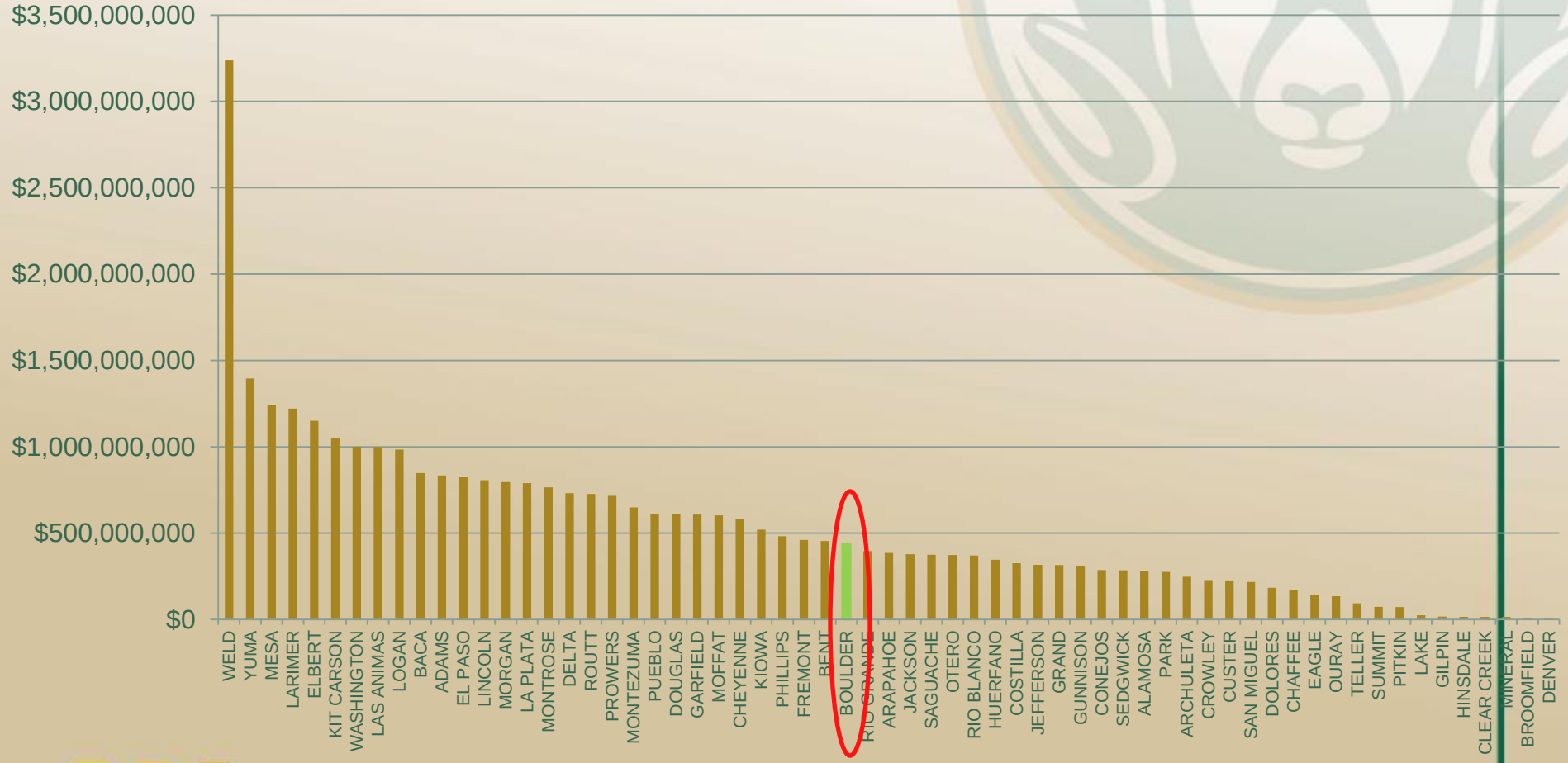
10 million acres, or 31%, are rented
= **$93 million/year**

Of the **13.8 million acre feet of water** diverted for ag uses each year,

≈ 12.2 million AF per year (88%) are owned by ag
≈ **$6 to $20 billion**

≈ 1.6 million AF per year (12%) are rented
= **$40 million/year**

Agricultural land value, by county, in rank order



THE COLORADO BLUEPRINT'S SIX CORE OBJECTIVES

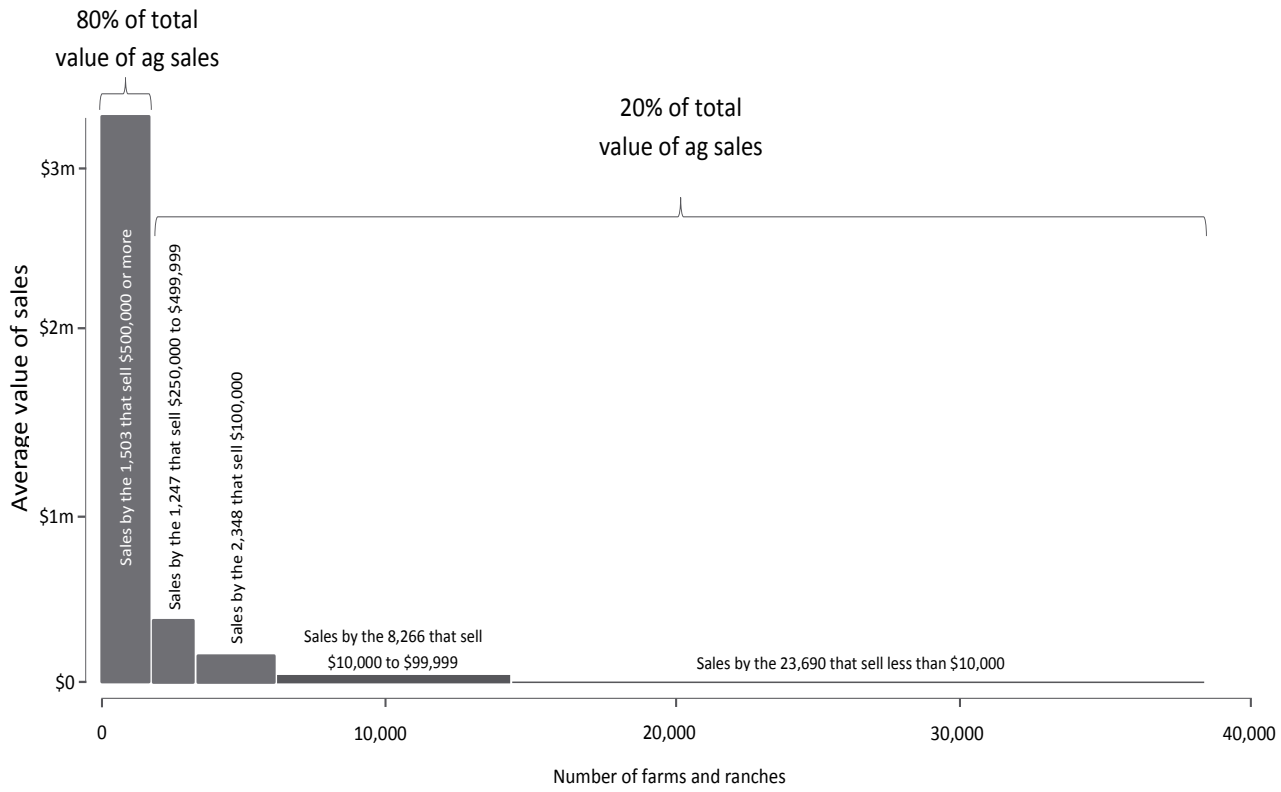
Core Objective:
A business-friendly regulatory environment

Regulatory red tape issues:

- Favor operations at larger scales
- Tend to discourage smaller-scale operations and new agribusinesses

Smaller-scale operations and agribusinesses:

- The largest population of enterprises
- The seedbed of innovation and experimentation



Distribution of total value of agricultural sales across Colorado farms and ranches of different economic classes

Core Objective:
Create and market a stronger "Colorado" brand

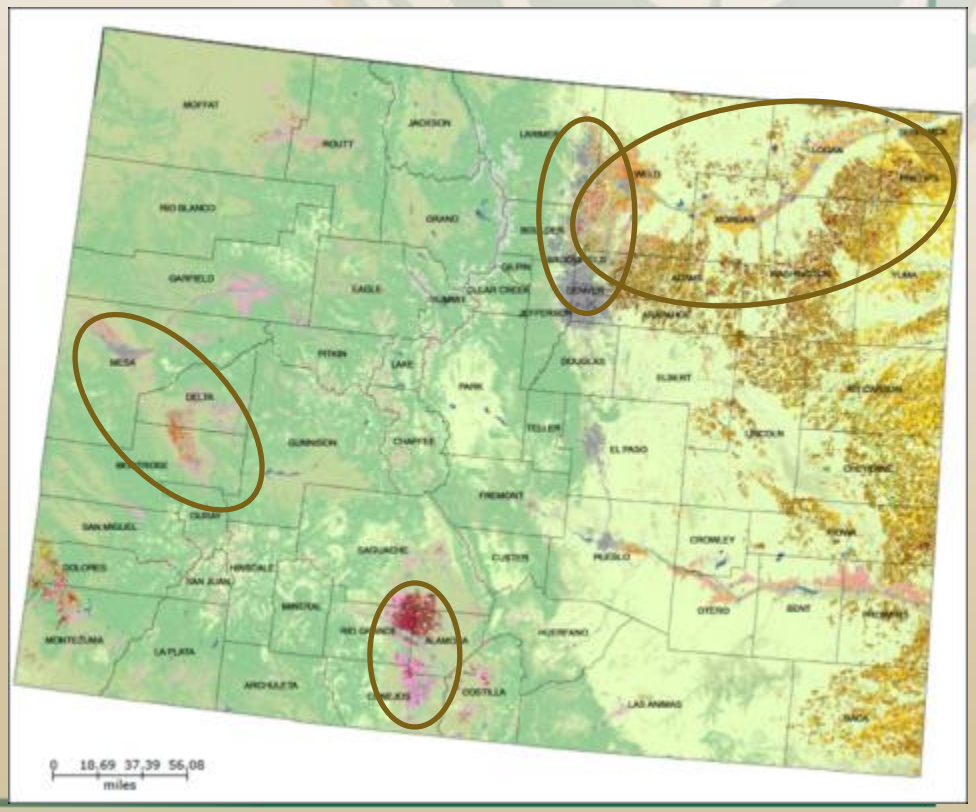
Colorado's agriculture, food, and beverage could play a pivotal role in establishing the state's image as a brand and a destination for healthy living and active lifestyles:

- Water fresh from the Rocky Mountains
- Whole grains from the golden plains
- Grade A beef from the western range
- Mountain-raised lamb
- Fresh-caught trout
- Seasonal produce of exceptional quality due to unique conditions of altitude, temperature, sun, or water, such as: Olathe sweet corn, Palisade peaches, and Rocky Ford melons
- Craft beers and wines
- Natural foods

Core Objective:
Recruit, create, and retain food and ag businesses

Key issues for creating and retaining food and ag businesses:

- Availability of land and water
- Transportation infrastructure
- Quality of life = Quality of workforce
- A pioneering business culture where "small is beautiful"
- Leveraging natural concentrations of regional specialization:
  - Northern Colorado / South Platte River commodity crop and livestock
  - San Luis Valley potato and grains cluster
  - Western Slope / Tri-Valley fruit and vegetables
  - Northern Front Range natural, organic, and local foods

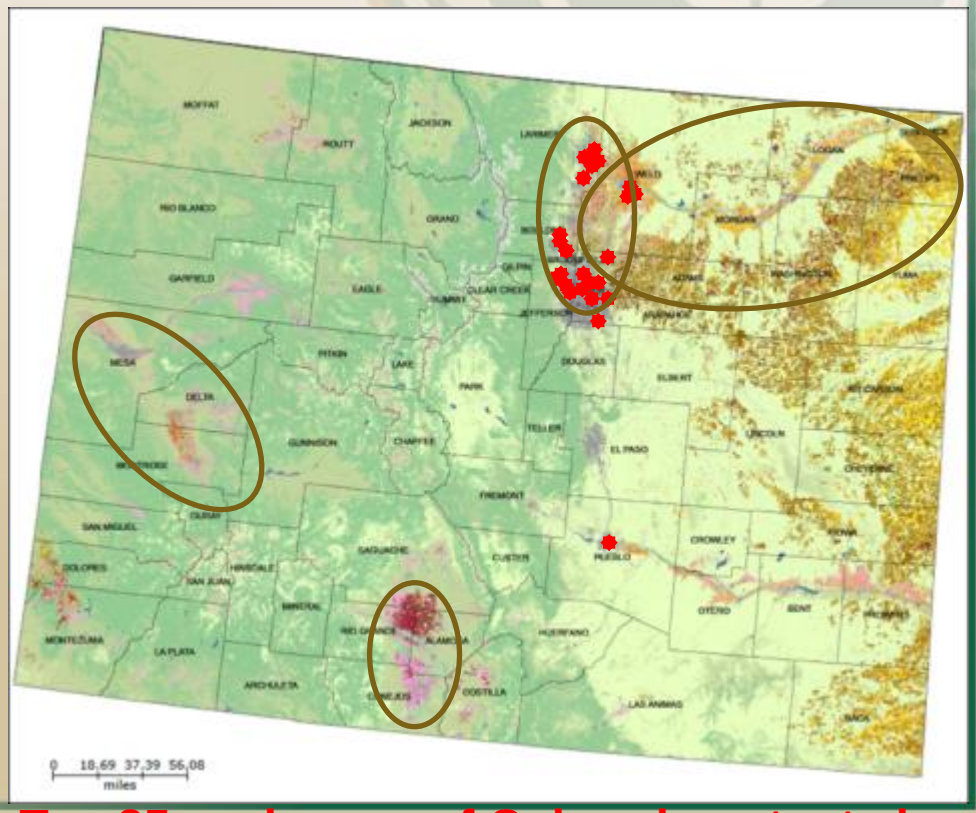


Core Objective:
Foster innovation and new technology

Geography may hold a key to innovation in food and agriculture in Colorado, given *close proximity* and *high concentrations* of:

- Agricultural production and processing;
- Research institutions;
- Innovative food product development and ag technology companies;
- Top talent;
- Discerning consumers.

All of the elements needed for the emergence of an innovation-led industry cluster.



Top 25 assignees of Colorado patents in agriculture and food related technologies

Core Objective: Improve access to capital

Farm and ranch owners have plenty of access to capital. Some, in fact, have ability to invest.

- Historically high commodity prices and returns on capital
- Significantly underutilized debt repayment capacity
- Typically invest in land and resource-based businesses which are oversubscribed.

Innovative technology-based startups aiming to serve ag and food value chain have trouble raising capital:

- Venture capital investors are unfamiliar or uncomfortable with agricultural and food markets.
- At the same time, ag investors are unfamiliar or uncomfortable with high-risk venture investing, deal structures, & intellectual property valuation.

An innovation-led industry cluster?

Colorado State University

What is an *industry cluster?*

"*A geographically proximate group of interconnected companies and associated institutions in a particular field, linked by various commonalities and complementarities*."

Michael Porter
Harvard Business School

"*Co-location of different stakeholders accelerates knowledge-sharing and development of new products and services in ways that you can't do if they're scattered*."

Navi Radjou
University of Cambridge
Judge Business School

Patents by Colorado inventors

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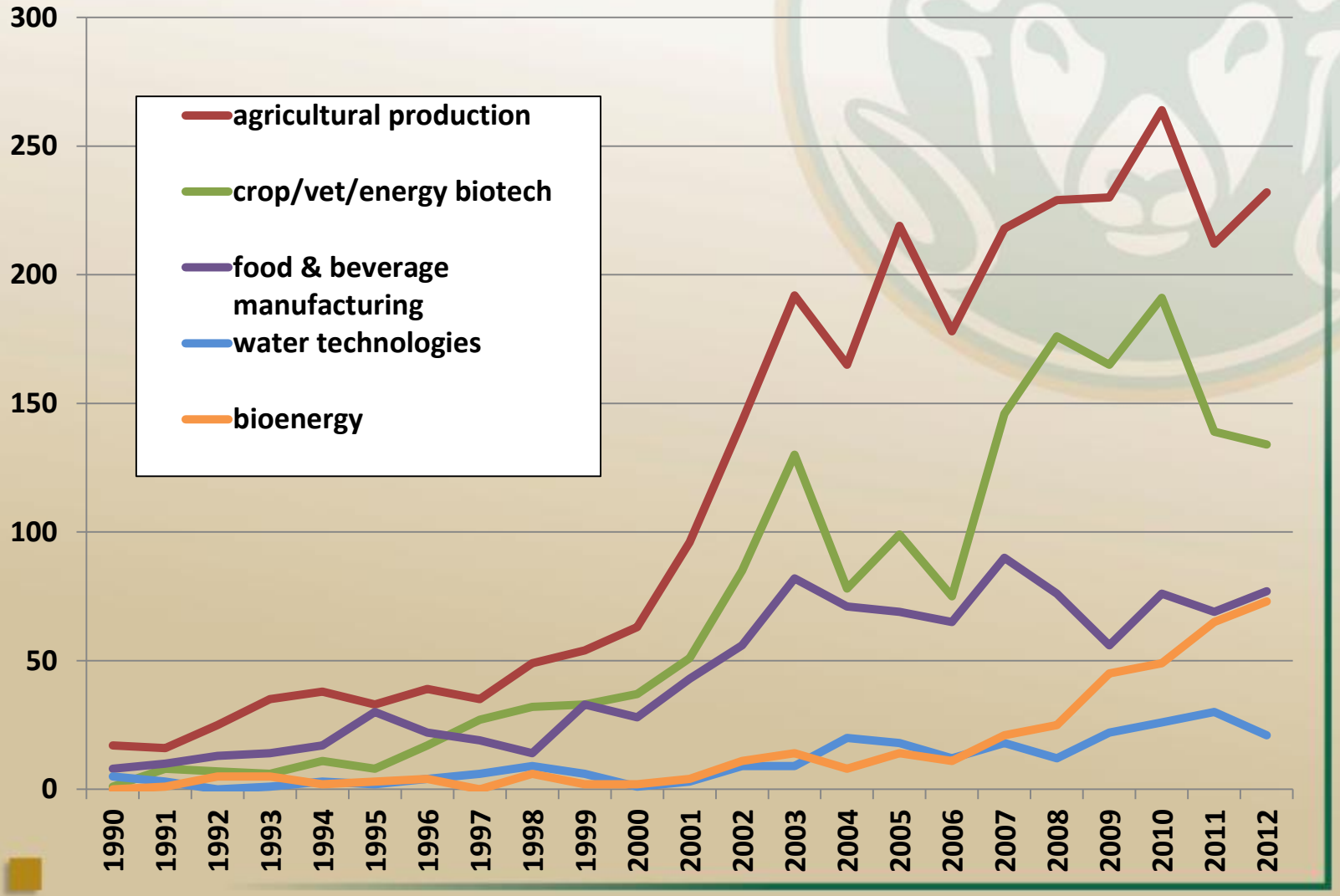


9 counties in the Northern Front Range:

66% of Colorado population

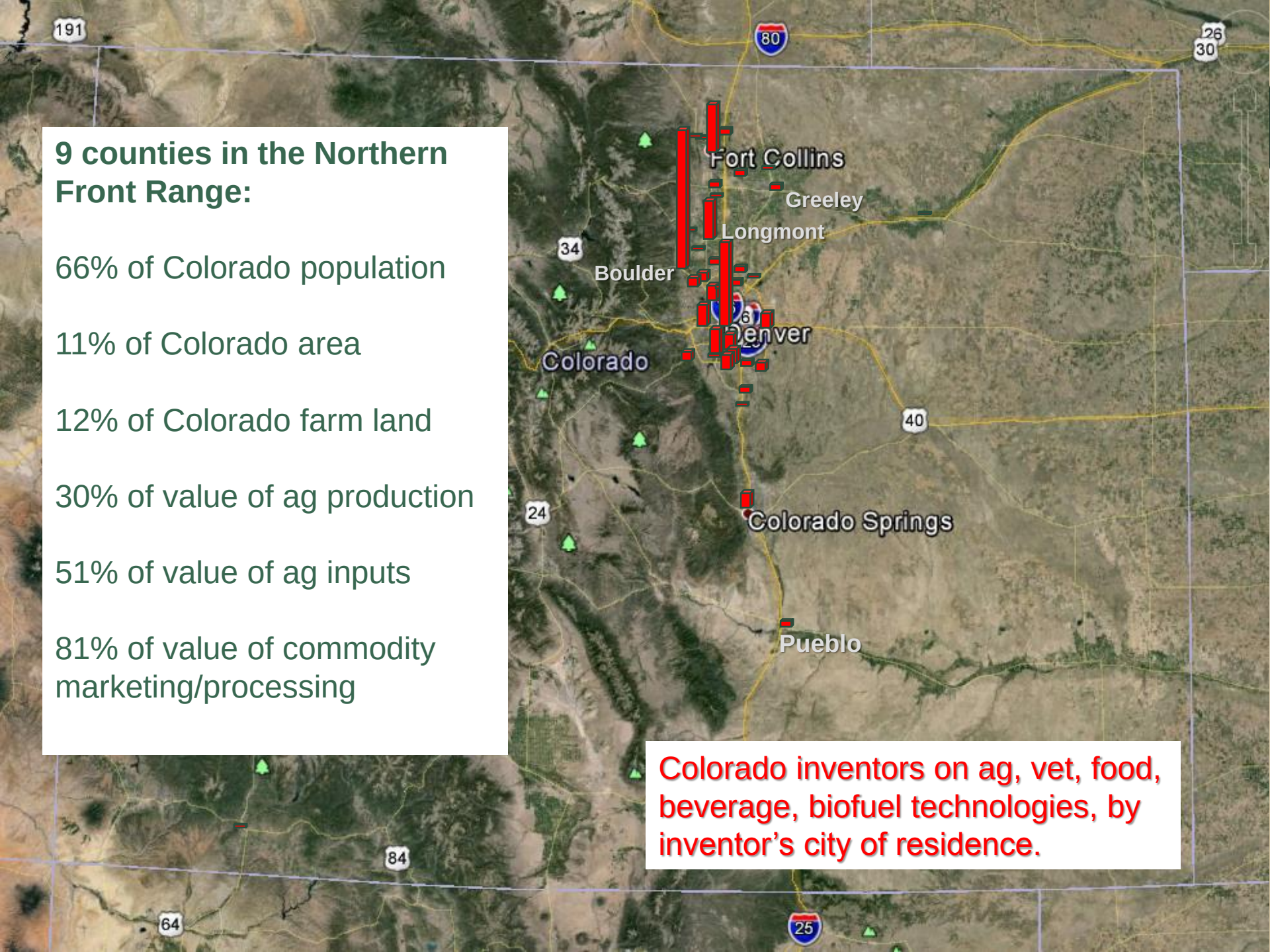
11% of Colorado area

12% of Colorado farm land

30% of value of ag production

51% of value of ag inputs

81% of value of commodity marketing/processing



Colorado inventors on ag, vet, food, beverage, biofuel technologies, by inventor's city of residence.

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Questions?

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