

# Contributions of the U.S. Honey Industry to the U.S. Economy



**William A Matthews**

**Project Scientist, University of California Agricultural Issues Center**

**National Honey Board Annual Fall Meeting**

**October 19, 2018**

**Denver, Colorado**

**Co-authors: Daniel A. Sumner and Tristan Hanon**



# Objectives for Today

- Provide overview of current US honey industry
- Understand how and to what degree the US honey industry contributes to the US economy



# Core Facts about US Honey Industry in 2017

## US Honey Production:

- Number of honey producing colony: **2.7 million**
- Total pounds of honey produced: **147.6 million**
- Pounds of honey per colony: **55.3**

## US Honey Trade:

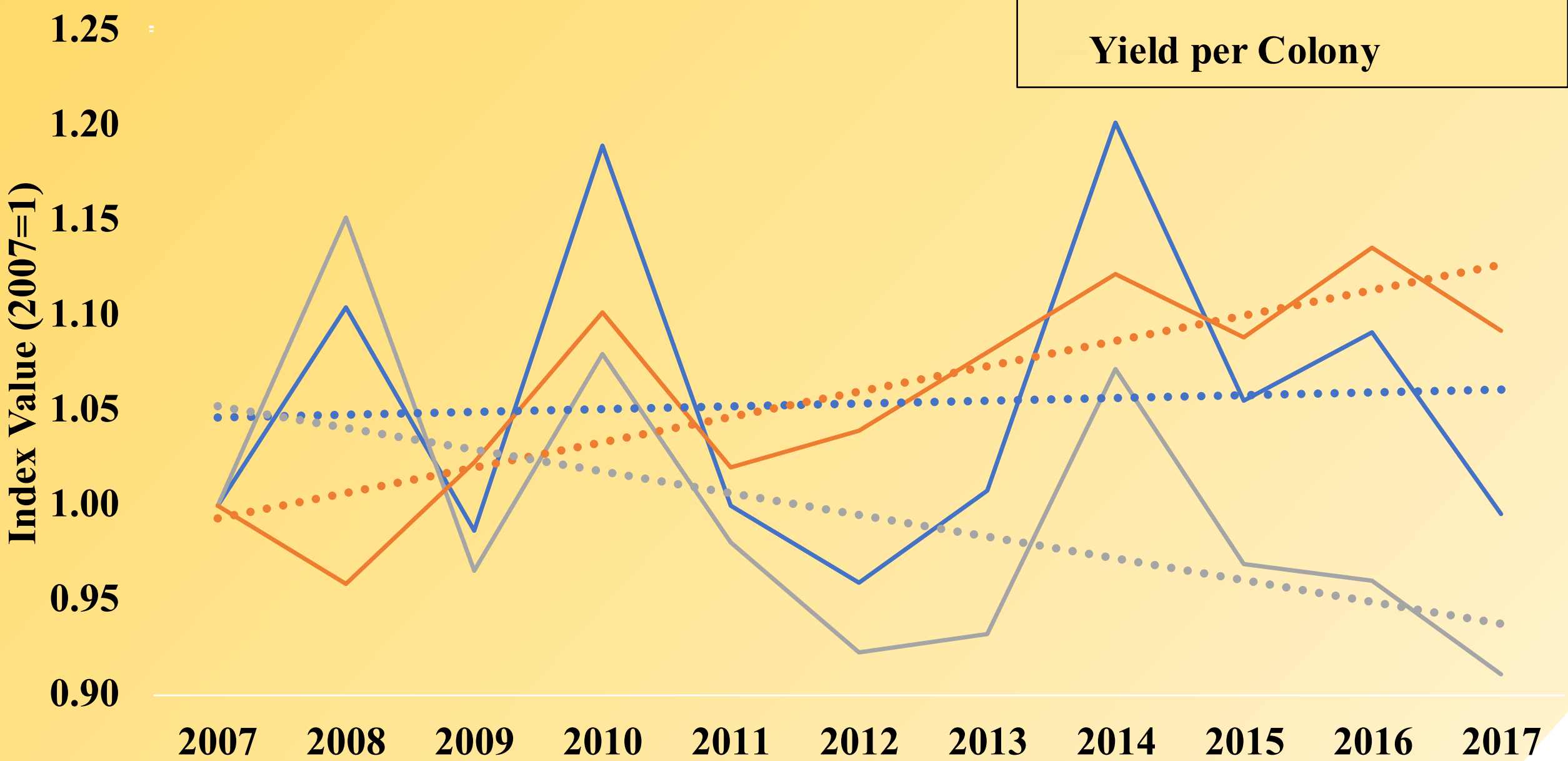
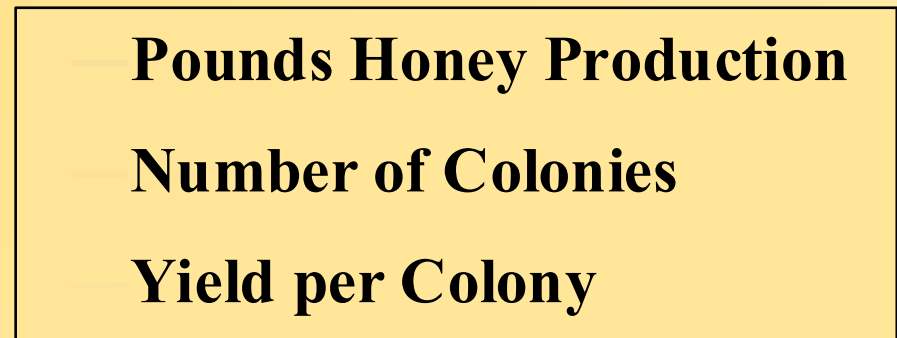
- Pounds of honey imported **447.5 million**
  - Pounds organic honey **62.8 million**
  - Pounds of non-organic **384.7 million**
- Pounds of honey exported **9.9 million**

## US Honey Consumption:

- Total US honey supply **585.2 million**
- Pounds of honey per capita **1.80**



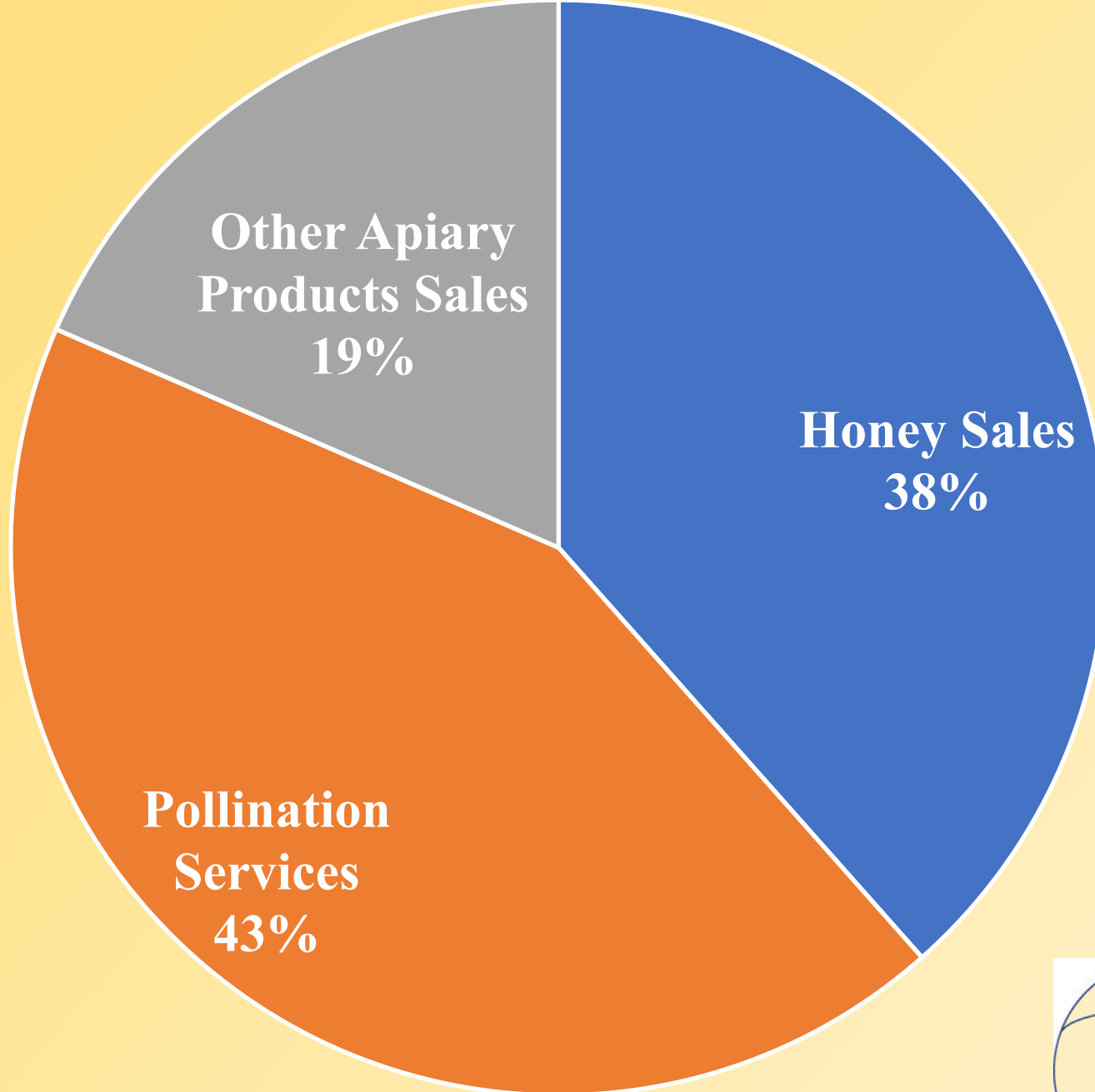
# Index of Annual U.S. Honey Production, Number of Colonies and Yield per Colony, 2007-2017



# Annual Honey Production, Number of Colonies and Yield per Colony for 2007, 2012 and 2017

|                                 | 2007  | 2012  | 2017  |
|---------------------------------|-------|-------|-------|
| Honey Production (million lbs.) | 148.3 | 142.3 | 147.6 |
| Number of Hives (1,000)         | 2,443 | 2,539 | 2,669 |
| Yield (lbs./colony)             | 60.7  | 56.0  | 55.3  |

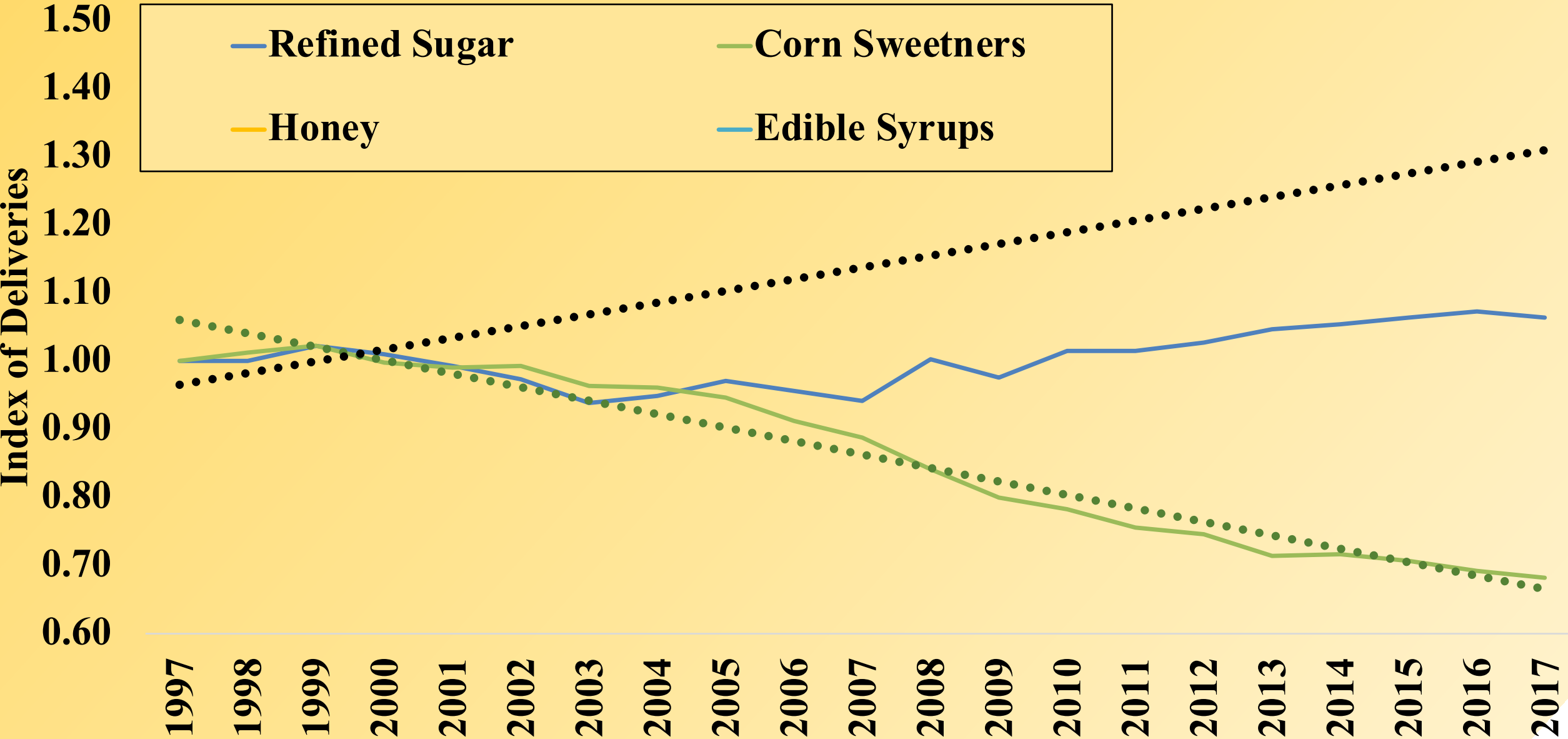
# Average Share of Annual Beekeeper Revenue by Source, 2015-2017



# Average Maximum Number of Bee Colonies per Quarter and Number of Honey Producing Colonies for Top Five Honey Producing States, 2015-2017

| State      | Jan-March Colonies | April-June Colonies | July-Sept Colonies | Oct-Dec Colonies | Number of Honey Producing Colonies <sup>2</sup> | Share of Honey Producing to Maximum Number of Colonies |
|------------|--------------------|---------------------|--------------------|------------------|-------------------------------------------------|--------------------------------------------------------|
|            | 1,000 colonies     |                     |                    |                  |                                                 |                                                        |
| California | 1,528              | 1,095               | 763                | 1,263            | 307                                             | 0.20                                                   |
| N. Dakota  | 120                | 465                 | 513                | 358              | 477                                             | 0.93                                                   |
| Texas      | 300                | 331                 | 131                | 282              | 126                                             | 0.38                                                   |
| Florida    | 283                | 248                 | 207                | 267              | 213                                             | 0.76                                                   |
| S. Dakota  | 63                 | 200                 | 215                | 154              | 275                                             | 1.28                                                   |

# Comparison of Changes in Annual Per Capita U.S. Sweetener Deliveries for U.S. Food and Beverage Use by Product, 1997-2017





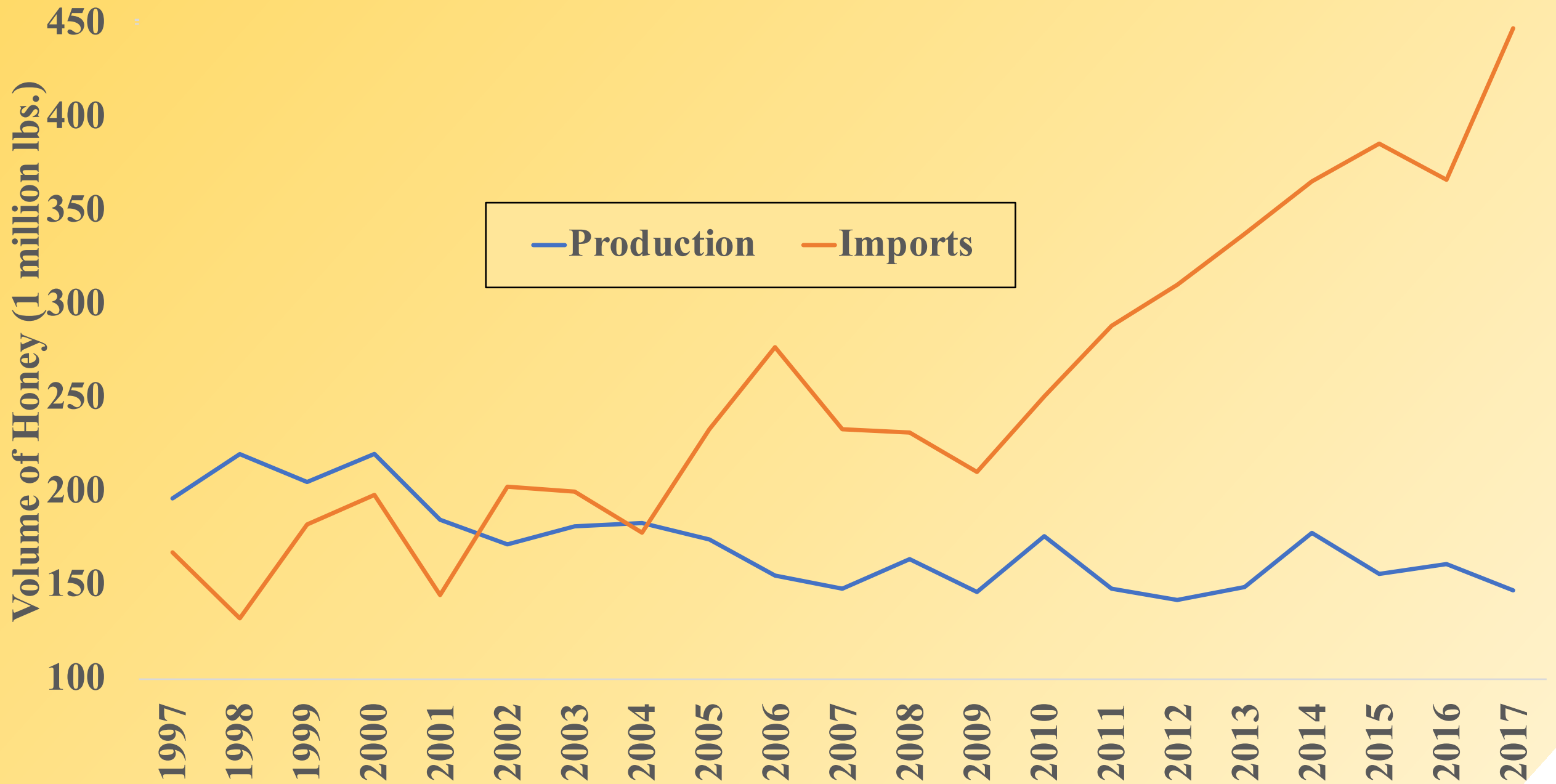
# Annual Per Capita Deliveries of Sweeteners for U.S. Food and Beverage Use by Product in 1997, 2007 and 2017

|                | 1997                 | 2007  | 2017  |
|----------------|----------------------|-------|-------|
|                | <u>Lbs. per year</u> |       |       |
| Refined Sugar  | 64.94                | 61.19 | 69.17 |
| Corn Sweetener | 81.80                | 72.57 | 55.78 |
| Honey          | 0.95                 | 0.93  | 1.43  |
| Edible Syrups  | 0.60                 | 0.62  | 0.68  |

# Total Annual Honey Consumption, 1997-2017



# Total Annual US Production and Import of Honey, 1997-2017



# Source of US Honey Supply in 2017

| Source of Honey         | Volume of Honey<br>(million lbs) | Share of US<br>Supply (%) |
|-------------------------|----------------------------------|---------------------------|
| <b>US Production</b>    | <b>147.6</b>                     | <b>25.2</b>               |
| India                   | 99.6                             | 17.0                      |
| Vietnam                 | 80.0                             | 13.7                      |
| Argentina               | 78.0                             | 13.3                      |
| Brazil                  | 53.0                             | 9.1                       |
| Ukraine                 | 42.7                             | 7.3                       |
| Canada                  | 34.8                             | 5.9                       |
| Mexico                  | 10.5                             | 1.8                       |
| Rest of World           | 49.0                             | 8.4                       |
| <b>Total Imports</b>    | <b>447.5</b>                     | <b>76.5</b>               |
| <b>Total US Exports</b> | <b>-9.9</b>                      | <b>-1.7</b>               |
| <b>Total US Supply</b>  | <b>585.2</b>                     | <b>100.0</b>              |

# Understanding the Economic Contributions of Honey

- The US honey industry is a dynamic part of US agriculture and contributes to the US economy.
- Per capita honey consumption in the US is increasing faster than other sweetener options
- US honey industry meets US demand through efforts of beekeepers, honey packers and services of honey importers.
- The economic impact of honey extends well beyond direct industry output into supporting industries.
- Our study evaluates the full economic impact of the industry on the US economy.



# The Bottom Line

The US honey industry meets market demand through the efforts of beekeepers, honey importers and honey packers, which collectively contribute:

- **\$1.96 billion of output** to US economic activity, including purchases from supporting industries.
- **\$718 million of value added** to the US Gross Domestic Product
- **12,502 jobs** to US employment opportunity



## Where do these numbers come from:

- Our task was to dig further than the value of production and other industry-specific data to trace the influence of the honey industry on the rest of the economy.
- In addition to direct employment, value of honey production, and net contribution within the honey industry, we measure:
  - (1) indirect impacts through demand for inputs to honey production, importing and packing.
  - (2) Induced impacts through how honey income allows consumption of other goods and services in the US.

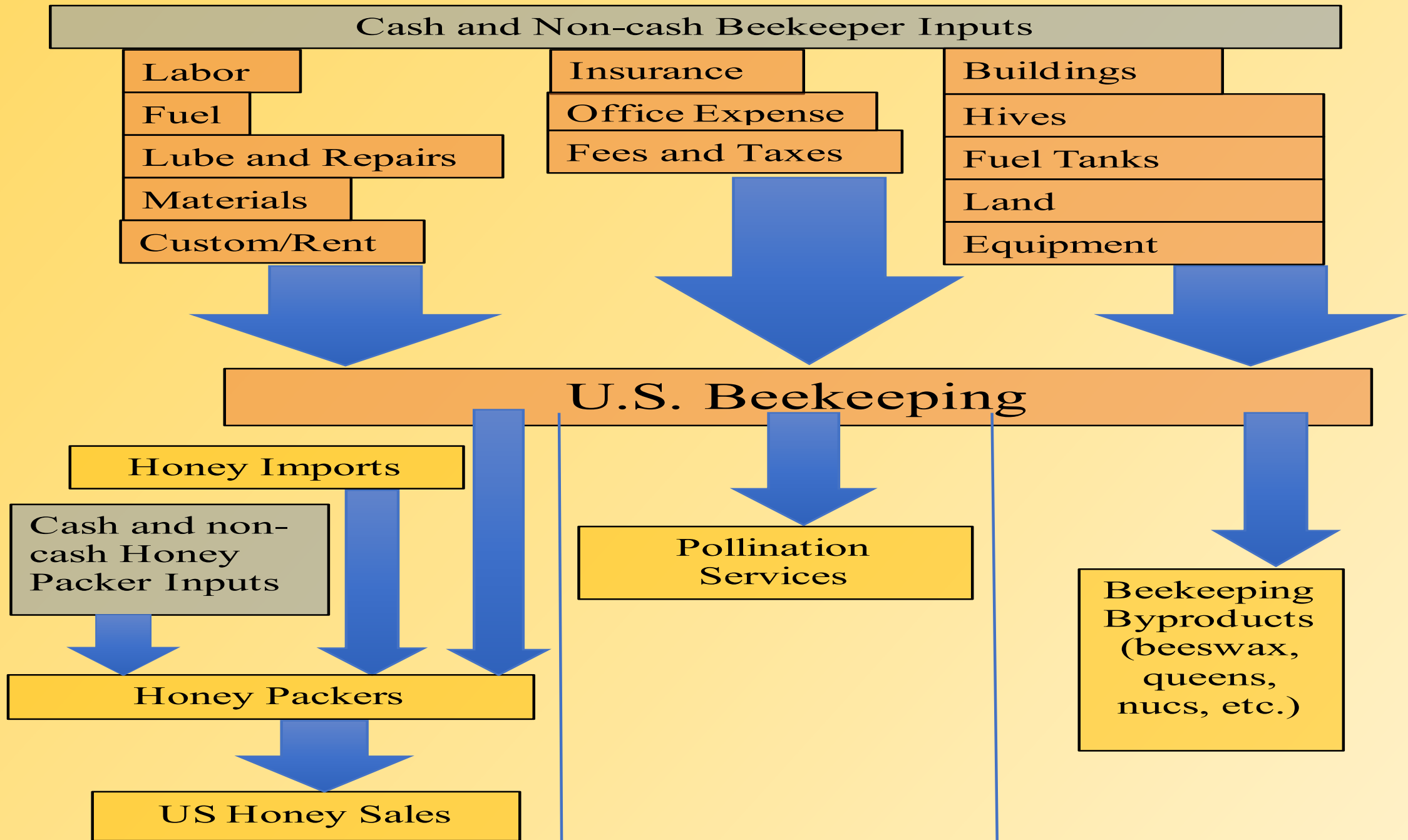


## We base our calculations on:

- A massive and complex set to data on the employment and purchases of every industry in the US.
  - This demonstrates how honey production, importing and packing links to other industries in the US economy.
- We surveyed beekeepers, honey packers and honey importers and conducted interviews with beekeepers to collect data on costs and revenues for 2017.
- We used the information collected to calibrate the data linkages and provide estimates that more closely resemble the honey industry.

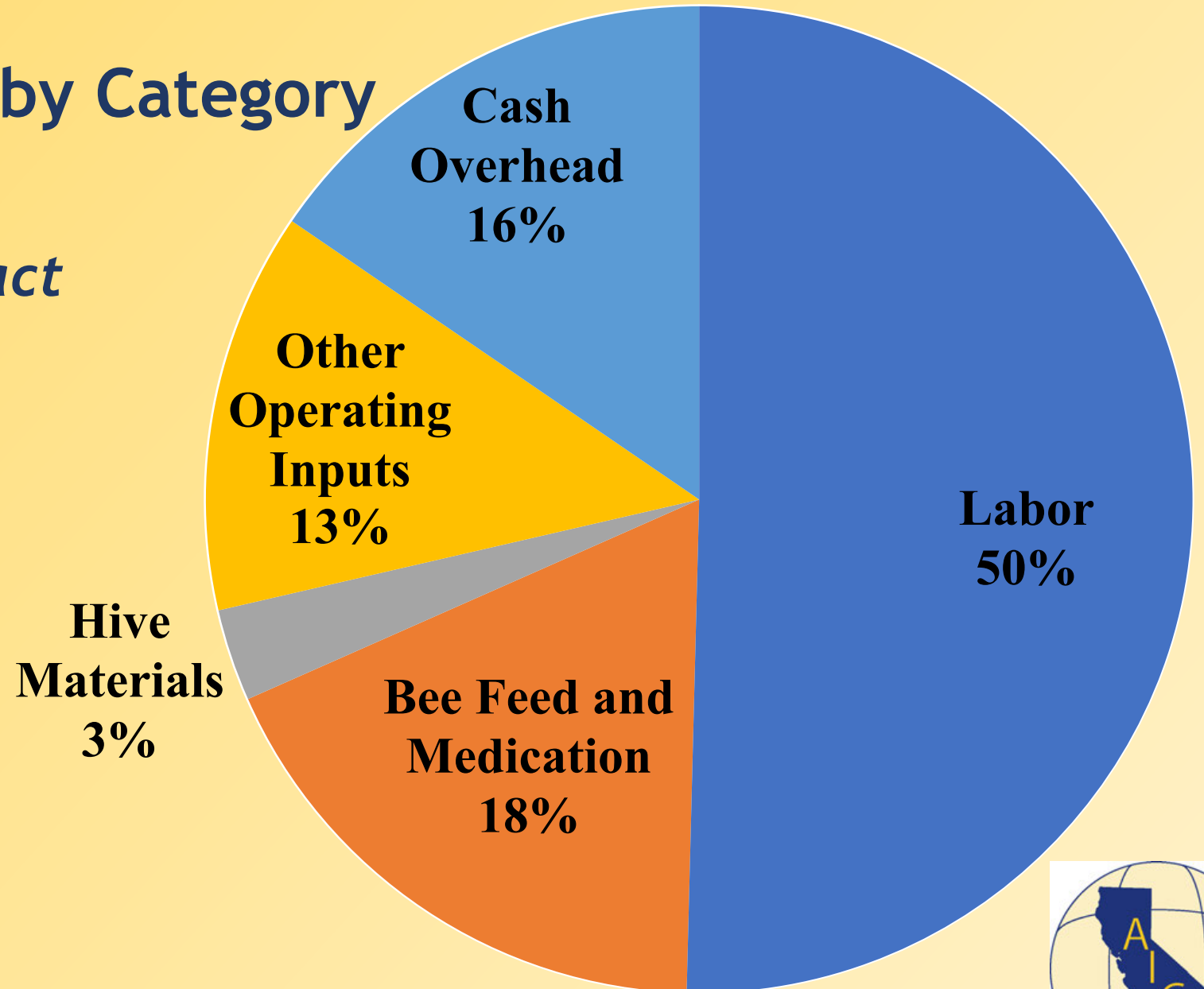






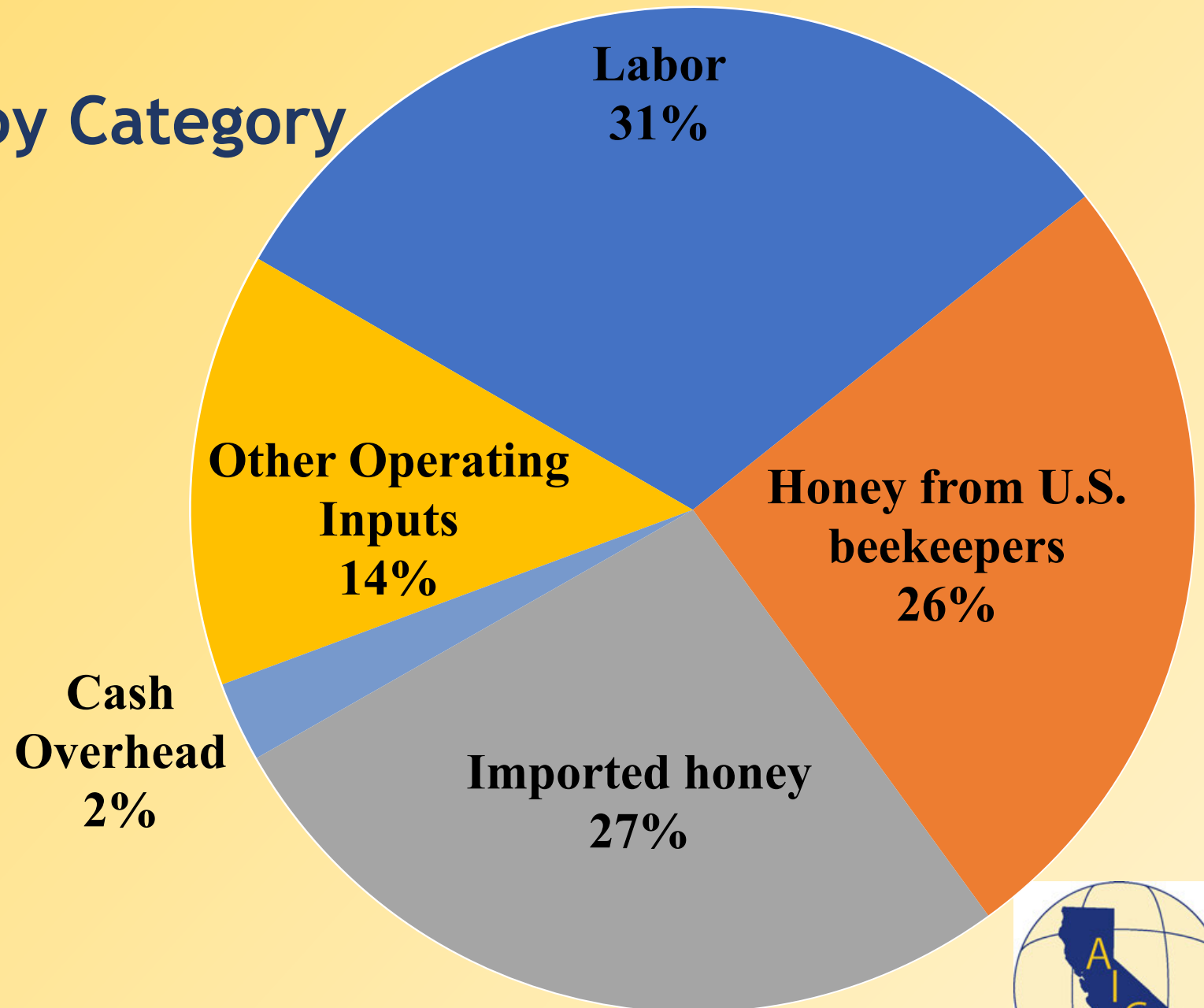
# Beekeeper Costs of Production by Category

*Cost categories are areas that US beekeepers interact with US economy through input purchases, capital investments and labor*



# Honey Packing Costs of Production by Category

*Cost categories are areas that US honey packers interact with US economy through input purchases, capital investments and labor*



# Classification of Impacts:

- **DIRECT EFFECTS:** Direct effects are impacts directly within the affected industry. For example, hiring 50 workers to move beehives has a direct employment effect of 50 jobs.
- **INDIRECT EFFECTS:** Indirect effects are the changes in supporting industries through purchases of input goods and services. For example, an increase in honey demand would entail increased volume of honey packaging materials purchased from suppliers, and these input suppliers have purchases of their own that ripple further.
- **INDUCED EFFECTS:** Induced effects are economic ripples that result from added consumption generated by the added income spent by those with income from the direct and indirect effects. For example, beekeepers, packers and their employees spend their incomes at local grocery stores, auto dealerships and barbershops and these local firms have workers of their own.



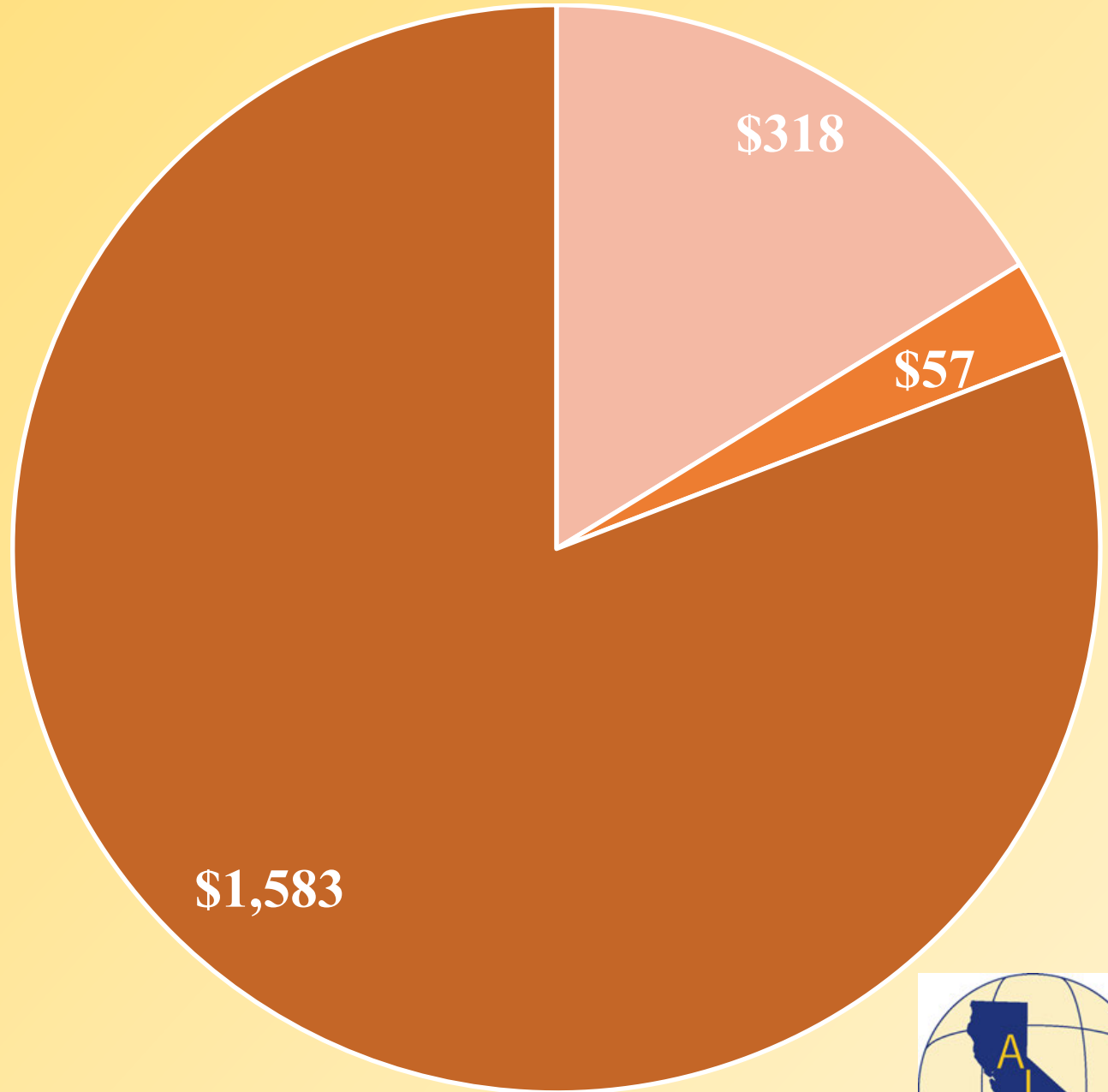
## Economic Measures of Impact:

- **VALUE OF OUTPUT:** The value of direct output of an industry. For example, the direct value of beekeeper output is simply the sum of market values of honey and honey byproducts produced and pollination services offered. For honey packers it's the total market value of processed and packaged honey and includes the value of honey coming from beekeepers. Can include double counting.
- **VALUE ADDED:** Value added is the measure of salaries and wages, proprietor income and profit minus business taxes. It is that proportion of value of output contributed by labor and capital within the sector. This is the industry's contribution to GDP.
- **EMPLOYMENT:** Employment is the number of jobs including part-time or seasonal employment supported by industry activity.



# Now on to the numbers: DIRECT EFFECTS

**DIRECT Value of Industry  
Output = \$1.958 billion**

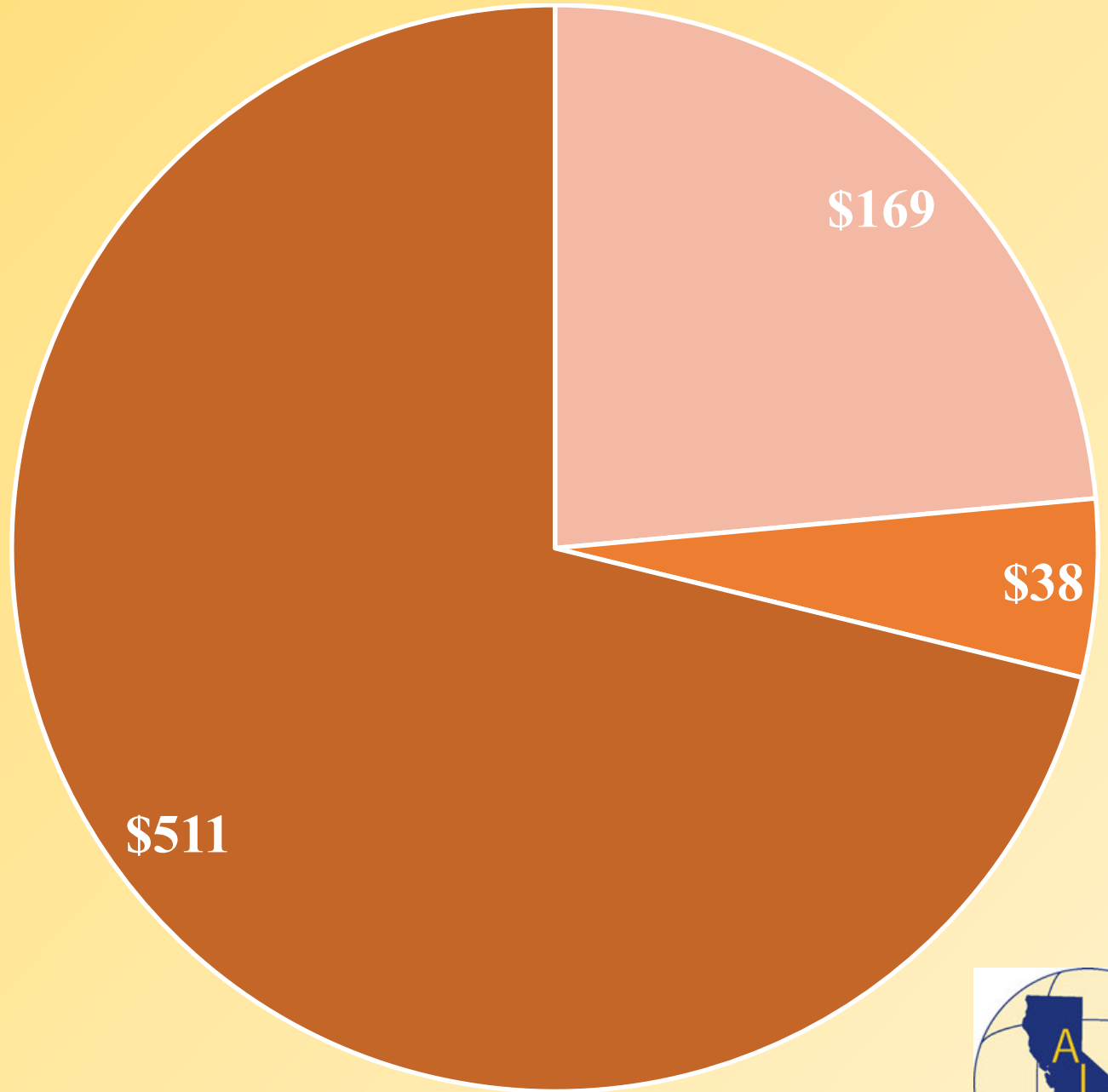
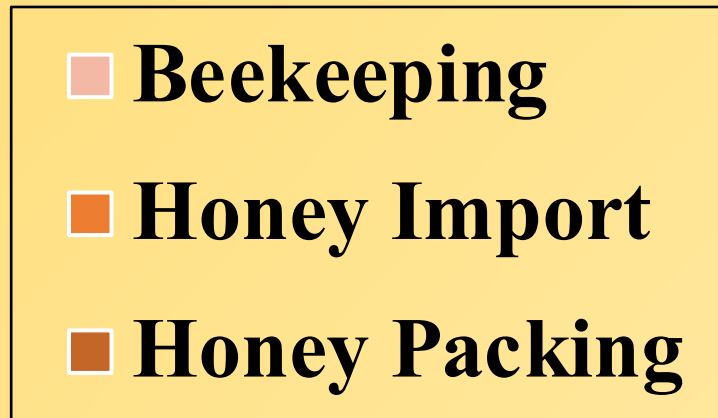


- **Beekeeping**
- **Honey Import**
- **Honey Packing**



## Impact on US GDP:

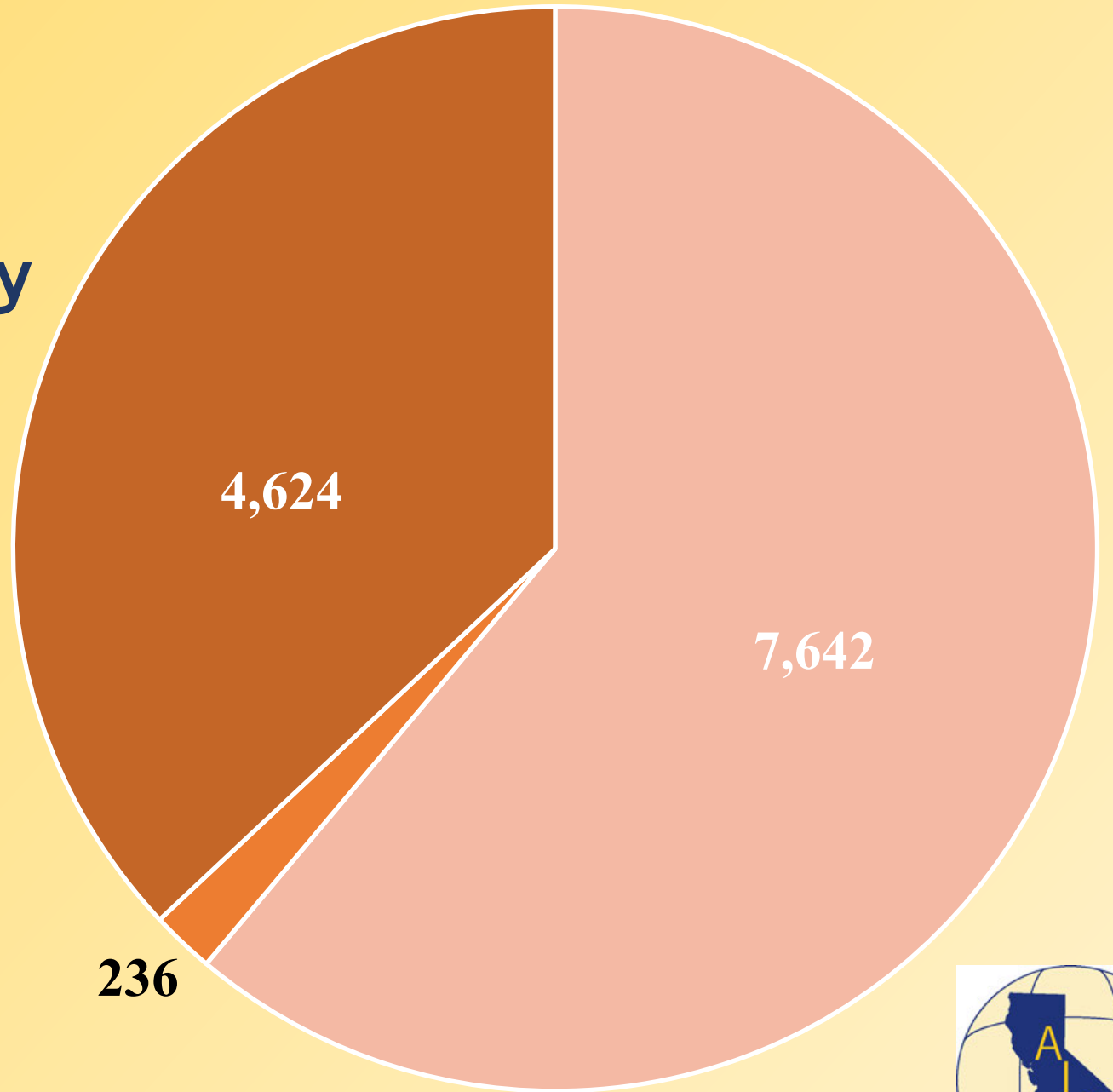
**DIRECT Value Added of Industry= \$718 million**



# Impact on US Jobs:

**DIRECT Jobs supported by Industry= 12,502**

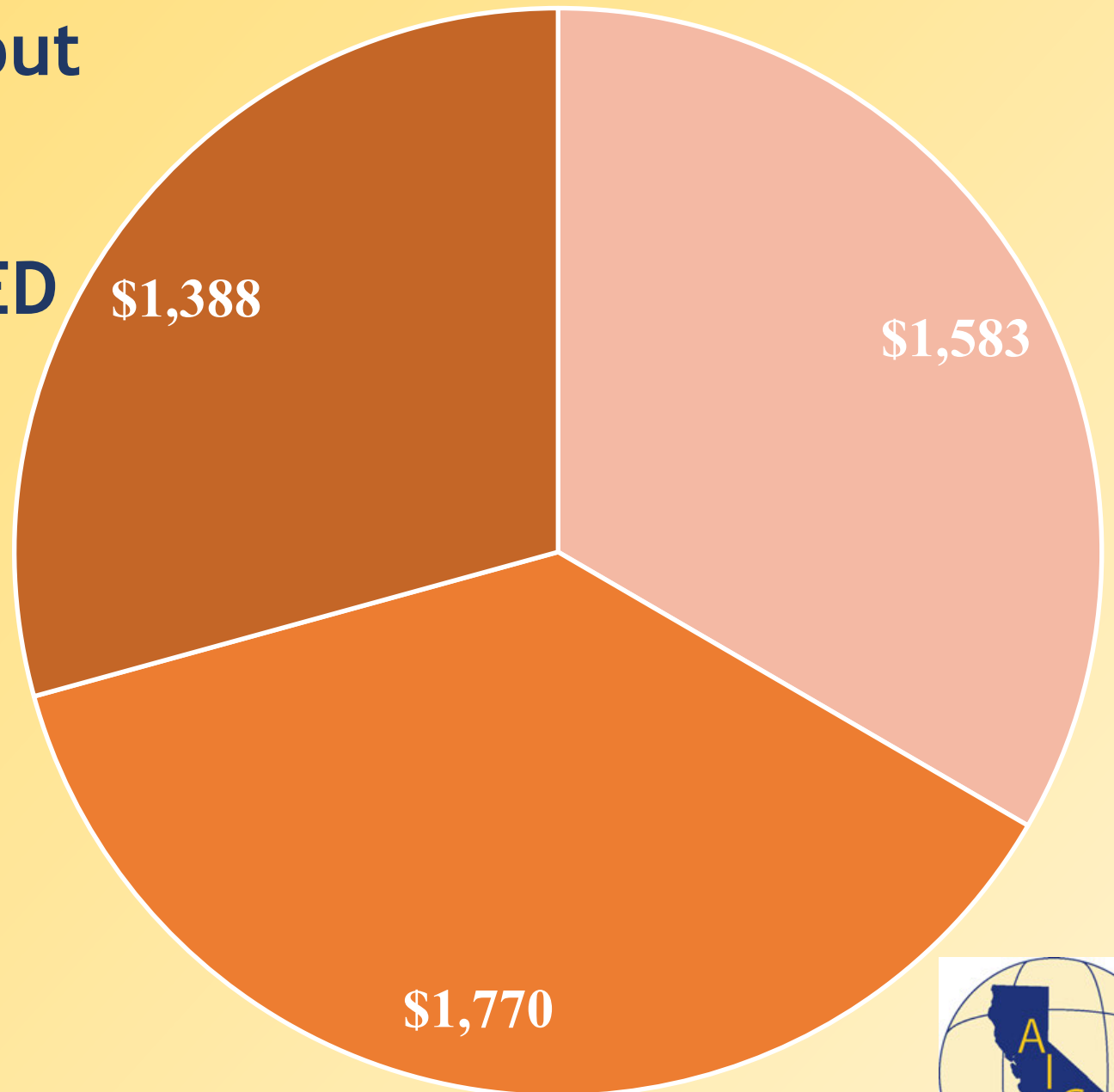
-  **Beekeeping**
-  **Honey Import**
-  **Honey Packing**





# FULL EFFECTS on US Output (in \$millions):

**DIRECT+INDIRECT+INDUCED  
=\$4.74 billion**

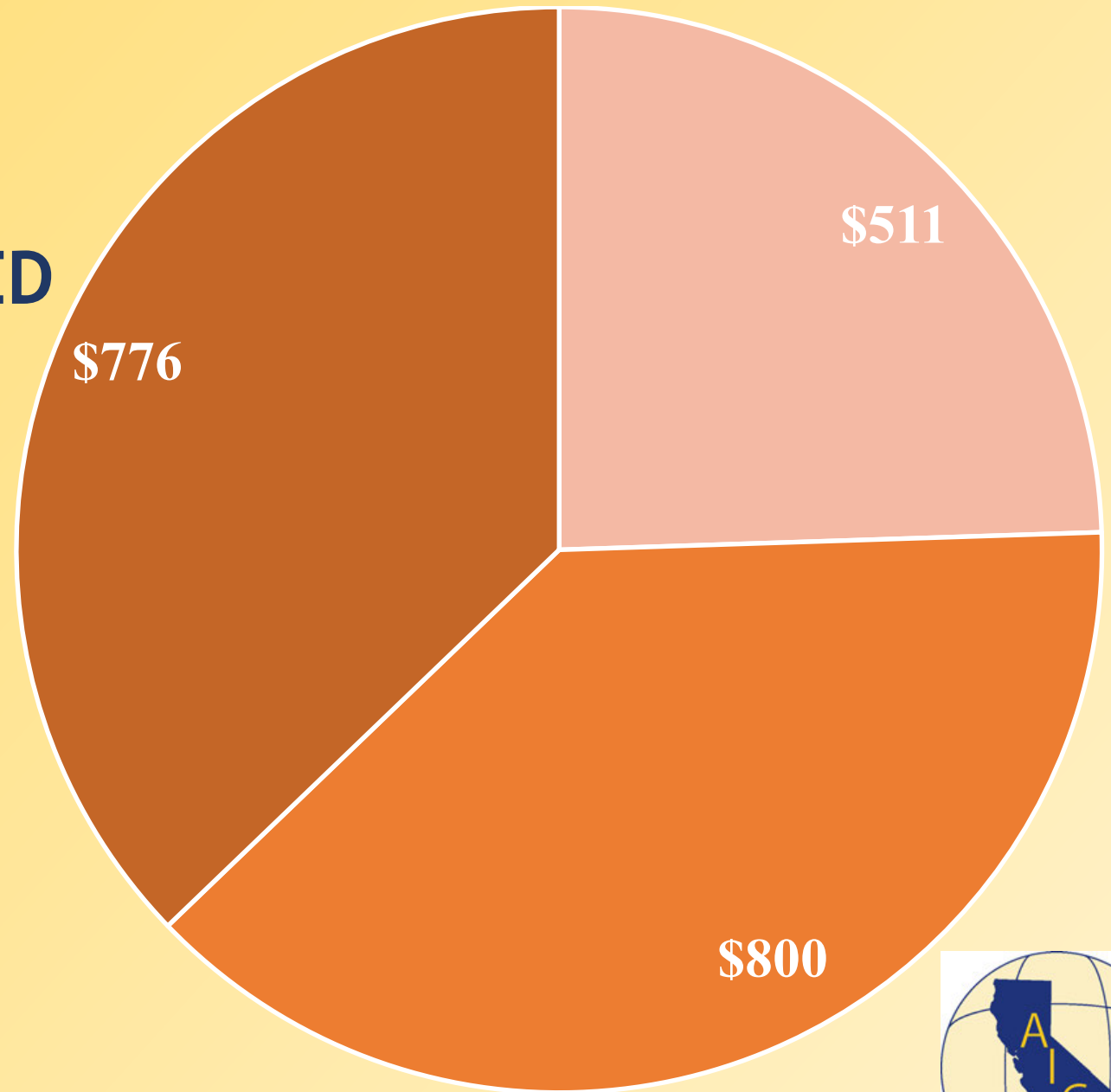
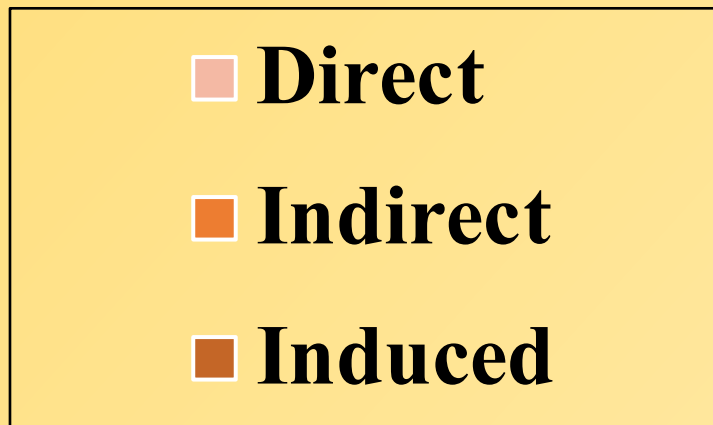


- Direct
- Indirect
- Induced



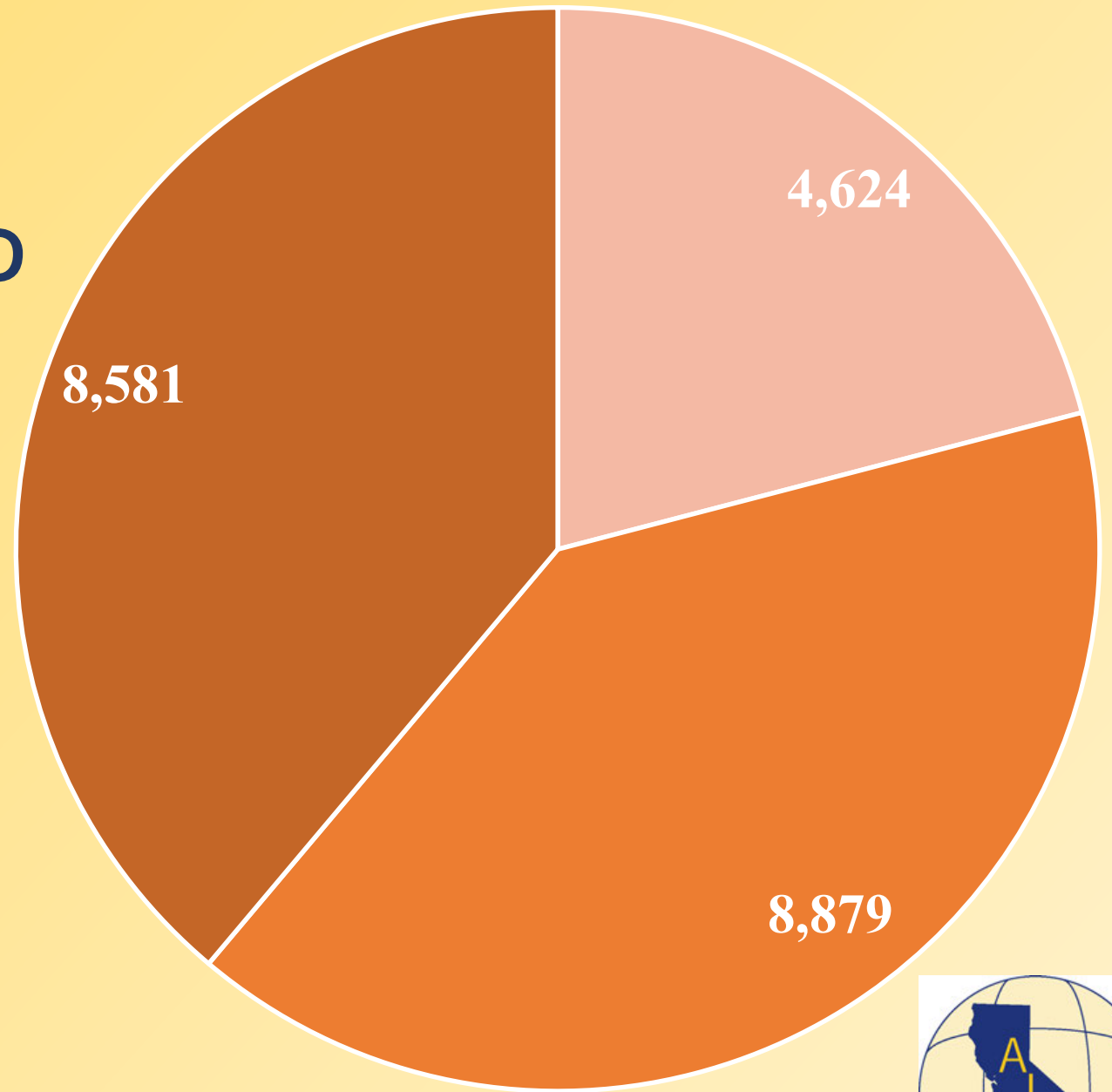
# FULL EFFECTS on US GDP (in \$millions):

**DIRECT+INDIRECT+INDUCED  
=\$2.09 billion**



# FULL EFFECTS on US Jobs:

**DIRECT+INDIRECT+INDUCED  
=22,084 jobs**



- Direct
- Indirect
- Induced



# Forward Effects: Impacts of Honey in Food Processing

| <b>Food Processing Impact Measure</b> | <b>Value</b> |
|---------------------------------------|--------------|
| <b>Value of Output</b>                |              |
| Direct Output                         | \$737        |
| Total Output                          | \$2,160      |
| <b>Value Added</b>                    |              |
| Direct Value Added                    | \$277        |
| Total Value Added                     | \$939        |
| <b>Employment</b>                     |              |
| Direct Employment                     | 2,192        |
| Total Employment                      | 7,968        |

## Concluding Remarks:

- US honey industry is a dynamic part of US agriculture.
- The focus of many US beekeepers on managing colonies to provide pollination services contributes to lower honey yield per hive in the US
- Meanwhile, honey demand per capita is growing in the US.
- Increased demand is met through increased honey imports
- Providing honey to US consumers requires the assembly of capital, labor and inputs on the part of US beekeepers, honey packers and honey importers that make up the US honey industry.
- The actions of US honey industry contributes to the US economy.

