# Pulling back the curtain: Open records and Federal data bases reveal objective, verifiable revenue and employment estimates for Professional Pest Management Services

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Agribusiness and Entomology, respectively
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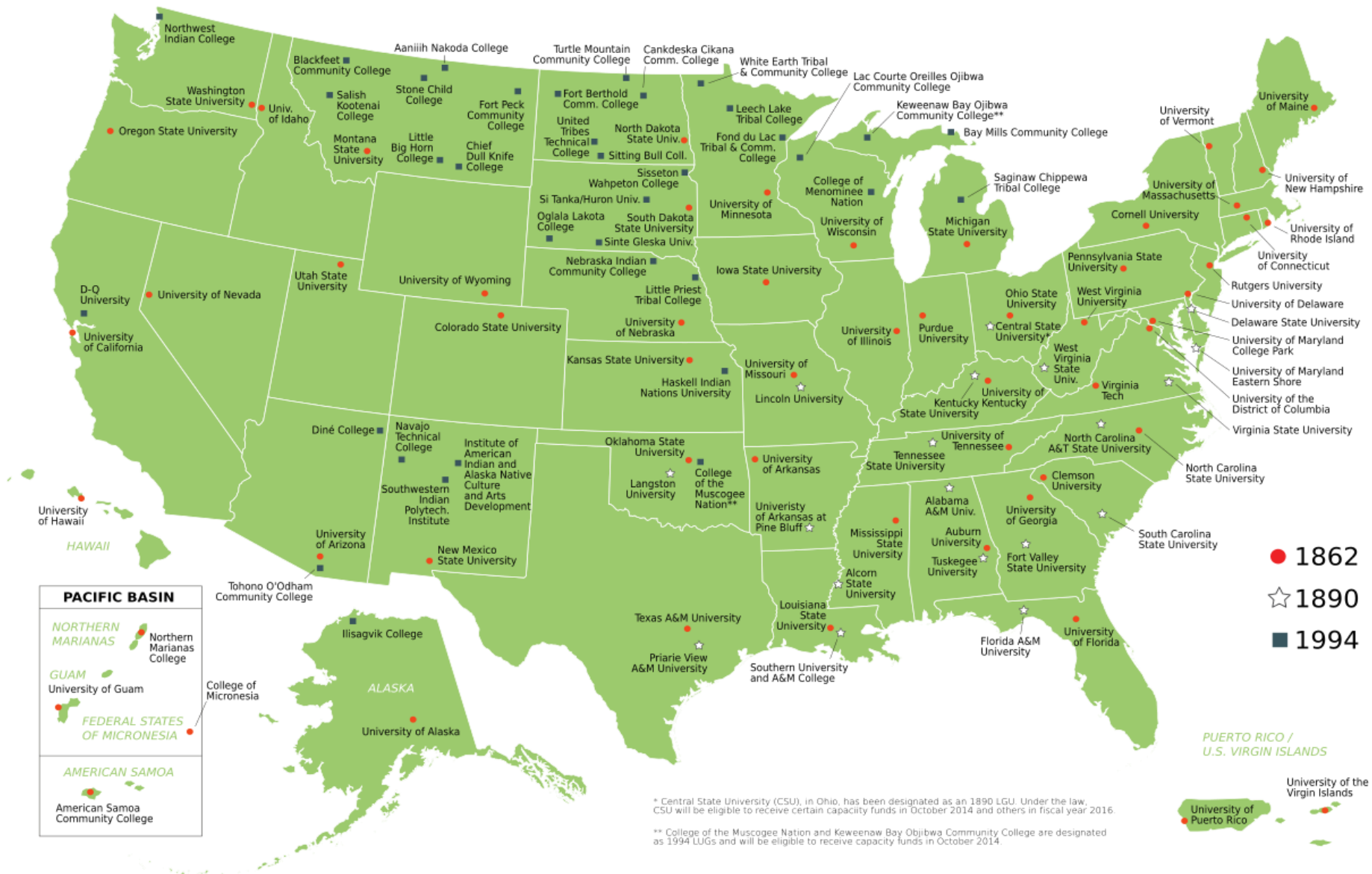
United States Department of Agriculture | National Institute of Food and Agriculture

# NIFA LAND-GRANT COLLEGES AND UNIVERSITIES




* Central State University (CSU), in Ohio, has been designated as an 1890 LGU. Under the law, CSU will be eligible to receive certain capacity funds in October 2014 and others in fiscal year 2016.

** College of the Muscogee Nation and Keweenaw Bay Objibwa Community College are designated as 1994 LUGs and will be eligible to receive capacity funds in October 2014.

# Professional Pest Management Industry (PPMI)

STRUCTURAL PEST

Residential and Commercial Pest Management

Does not include agricultural or forestry Pest Management

Structural Pest Control Commission (SPCC)

1955 formed within Georgia Department of Agriculture (GDA)

# Urban Pest Management

*A Report Prepared by the*

COMMITTEE ON URBAN PEST MANAGEMENT
Environmental Studies Board
Commission on Natural Resources
National Research Council

NATIONAL ACADEMY PRESS
Washington, D.C. 1980

Because of the lack of data, the Committee's analysis is largely conceptual. A number of research priorities for remedying the situation are identified.

• *To facilitate a more detailed analysis of the economic aspects of urban pest management, we recommend studies on:*

1. *The costs of urban pest management and their distribution among government and private sources;*
2. *The benefits of urban pest management and assessment of the comparative benefits of different control methods, including consideration of the cost-effectiveness of the modifications in legislation on housing and waste control that would be required;*
3. *The structuring of incentives for better urban pest management;*
4. *The results of urban pest management programs, including evaluation of their relative success or lack of success;* and
5. *Health and economic damages caused by urban pests.* 8

None of these questions can be answered without a major commitment of funds for research. *212*

# Previous Revenue Estimates for PPMI in Georgia

| Year | Source | Estimated Value | Published Economic Census Value |
|---|---|---|---|
| 1995 | UGA – Nolan & Forschler<br>Summary of loses from insect damage and cost of control in Georgia | $103,775,000 | $205,000,000* |
| 2000 | UGA – Suiter & Forschler | $390,000,000 | $260,675,000 |
| 2002 | UGA – Suiter & Forschler | $240,554,170 | $298,465,000 |
| 2012 | Industry Publication | $321,436,500 | $579,310,000 |
| 2020 | Leaflet | $321,436,500 | $908,526,000 |

# Objectives

01

Define Revenue, Contributions, and Impact

02

Provide template for finding publicly-available data

03

Compare and contrast economic estimates using 2 different data sets

*Journal of Economic Entomology*, XX(XX), 2024, 1–8
https://doi.org/10.1093/jee/toae029
Research

ENTOMOLOGICAL SOCIETY OF AMERICA
SHARING INSECT SCIENCE GLOBALLY
OXFORD

Household and Structural Insects

# Estimate of the revenue and economic contribution of the professional pest management industry in Georgia, United States

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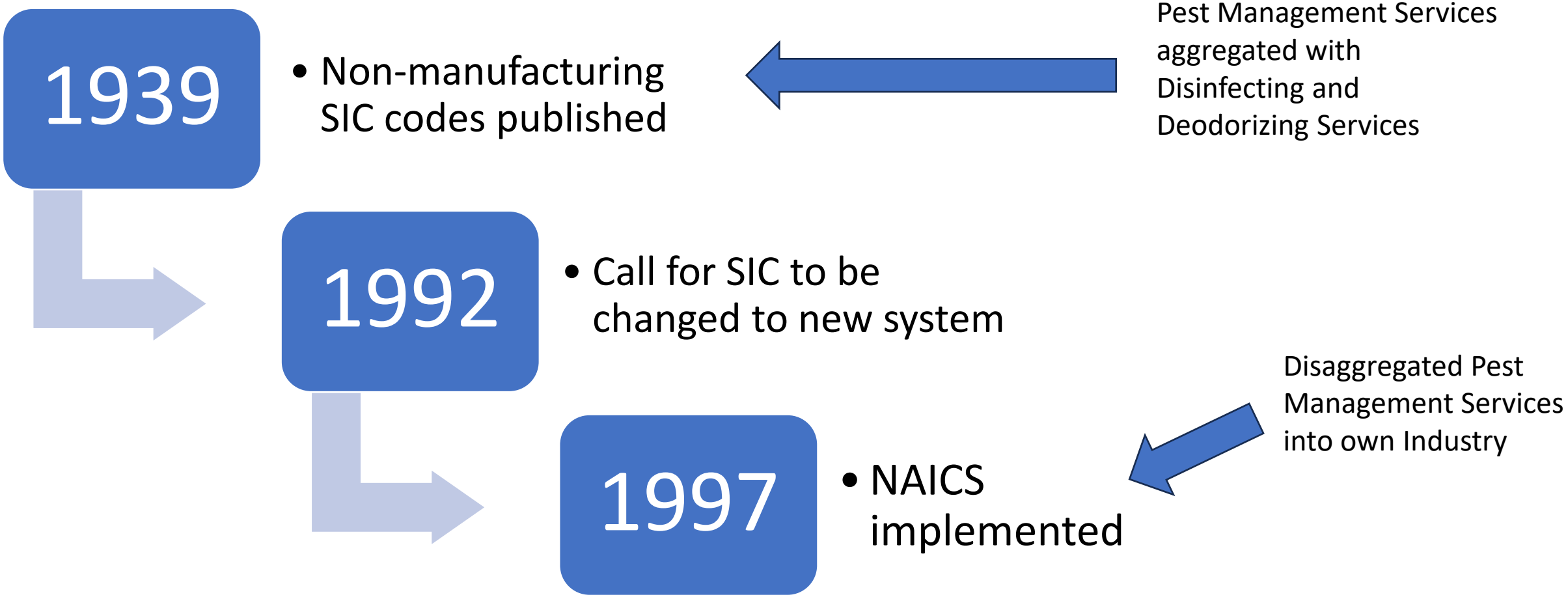
**Economic Contribution** – An analysis of revenue (total output) generated by an industry including the sum of direct, indirect and induced gross revenues within a defined timeframe for a specific region (city, county, state, or national).

**Economic Impact** – An analysis of the change in revenue (direct output) of an industry (i.e. new business moving into area, revenue-affecting policies, natural disaster) within a defined timeframe for a specific region

**Revenue** – Income generated over a set period through the sale of goods or services without expenditure costs removed. Revenue and total output are synonymous.

**Establishment** – All economic information collected for this assessment is based on data recorded by both State and Federal datasets at the level of an establishment. This is the baseline unit by which the GDA oversees regulation of the PPMI industry. Establishment refers to an ‘office’ or ‘branch office’ in the PPMI vernacular. Establishments have been referred to as “companies” in GDA Structural Pest Control Division as well as PPMI association fact sheets and communication. It is not feasible to report PPMI economic data by company because a single company can operate out of multiple establishments as well as consist of several brands that include multiple establishments.

# Standard Industrial Codes (SIC) to NAICS



# North American Industry Classification System (NAICS)

**Sector (56) – Administrative and Support Services and Waste Management and Remediation Services**

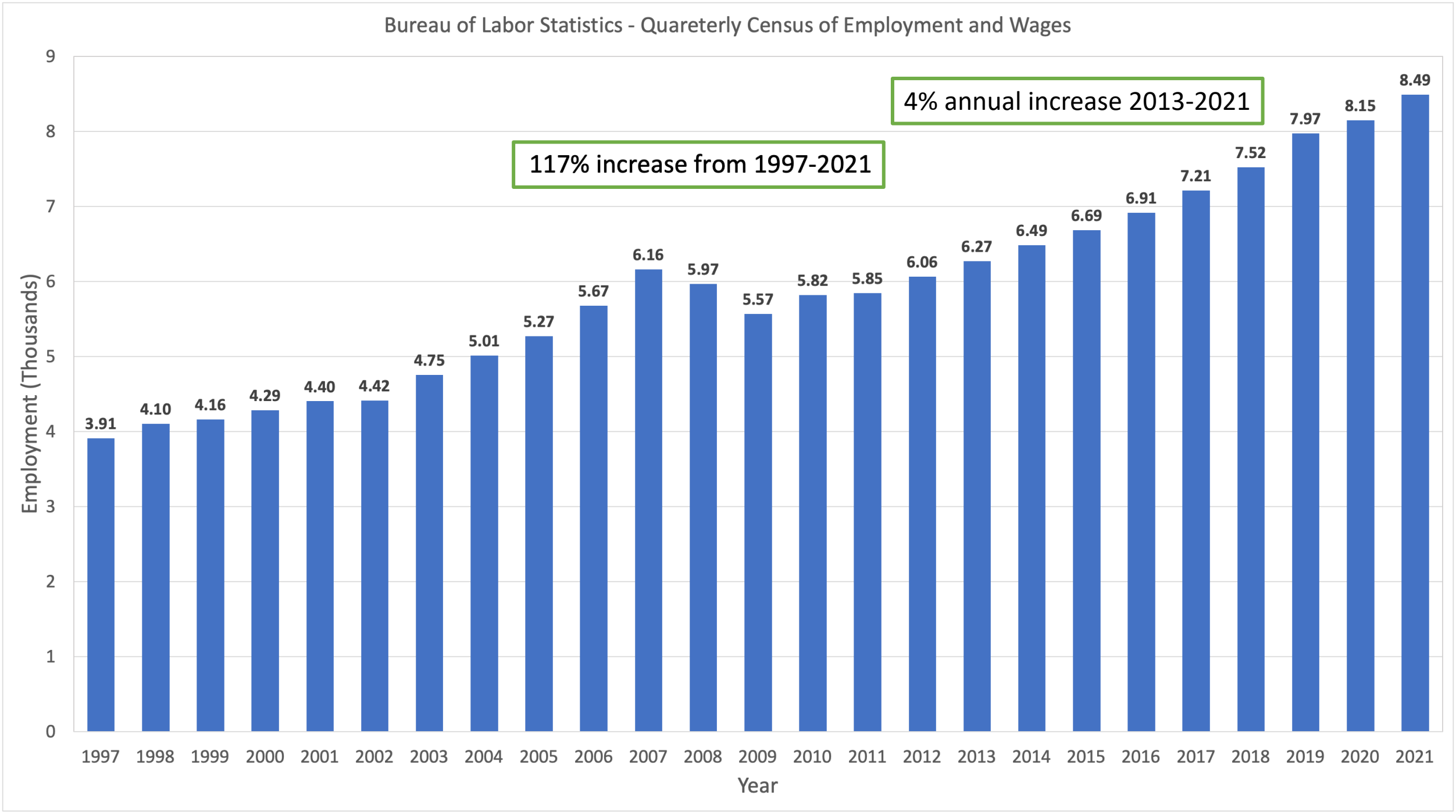
**Subsector (561) – Administrative and Support Services**

**Industry Group (5617) – Services to Buildings and Dwellings**

**Industry (561710) – Professional Pest Management Services**

# Indexes under 561710


- Bird-proofing services
- Exterminating services
- Fumigating services (except crops)
- Mosquito eradication services
- Pest inspection services
- Termite control services
- Pest control services (except ag and forestry)


Bureau of Labor Statistics - Quareterly Census of Employment and Wages
4% annual increase 2013-2021
117% increase from 1997-2021
Employment (Thousands)
Year
0
1
2
3
4
5
6
7
8
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3.91
4.10
4.16
4.29
4.40
4.42
4.75
5.01
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5.67
6.16
5.97
5.57
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5.85
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6.49
6.69
6.91
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7.97
8.15
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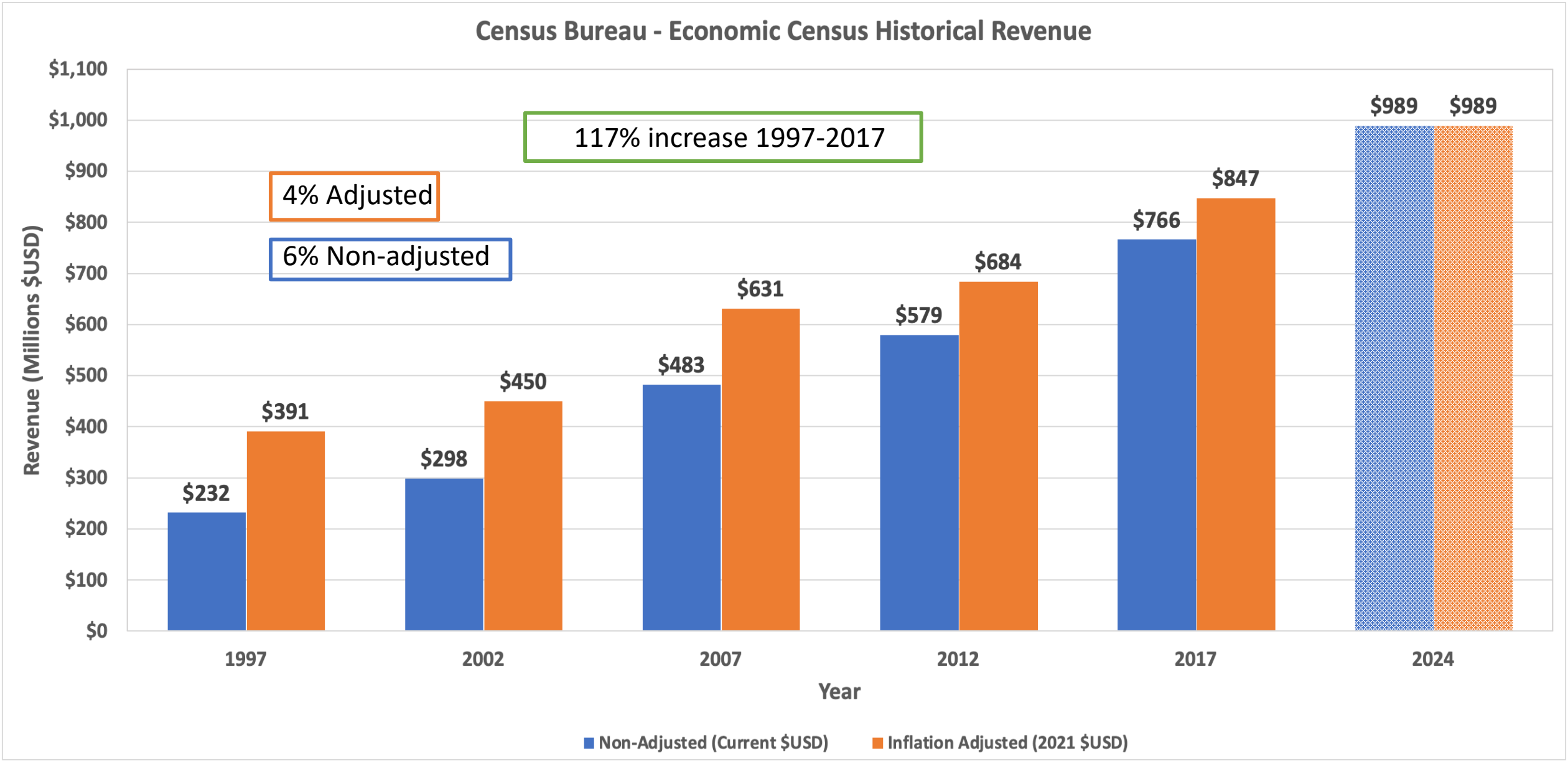

Census Bureau - Economic Census Historical Revenue
$1,100
$1,000
$900
$800
$700
$600
$500
$400
$300
$200
$100
$0
Revenue (Millions $USD)
117% increase 1997-2017
4% Adjusted
6% Non-adjusted
$232
$391
$298
$450
$483
$631
$579
$684
$766
$847
$989
$989
1997
2002
2007
2012
2017
2024
Year
Non-Adjusted (Current $USD)
Inflation Adjusted (2021 $USD)

# The 2 Data Sets

Business-owner survey data to generate average revenue per employee:

**$102,176** ± 8.9% at 90% CI

Average revenue per employee multiplied by employee value

**$833 million**

**Revenue Value**

**Economic Census 1997 & 2017**

Determine Real Compound Annual Growth Rate to Forecast into 2021

Average Revenue Per Employee

**$116,482**

Average Revenue Per Employee by employee value

**$988 million**

Mined from GDA – Structural Pest Division 2021 Licensure Datasets

Removed out-of-state based employees

**8,154 employees**

**Employment**

**Bureau of Labor Statistics (BLS)**

**Quarterly Census of Employment and Wages 2021 - Annual Average**

**8,489 employees**

| Survey Results and Georgia Department of Ag. Licensure | | | | |
|---|---|---|---|---|
| | Employment | Labor Income | Value Added | Output |
| Direct | 8,154 | $283,132,138 | $373,388,724 | $833,443,105 |
| Indirect | 2,596 | $172,678,512 | $260,778,896 | $477,167,684 |
| Induced | 2,262 | $126,142,099 | $234,915,637 | $398,985,858 |
| Total | 13,012 | $581,952,749 | $869,083,257 | $1,709,596,647 |

**Value added**
Money generated by labor income (e.g. accountants, lawyers), other property income, and taxes on revenue for an industry within a specified timeframe.

**Indirect effects**
Money spent on the supply chain, vendors, and distributors by industry for a specified time frame.

**Induced effects**
Data representing household spending by employees of the industry of interest within a specified timeframe.

| Economic Census and Quarterly Census of Employment and Wages Data | | | | |
|---|---|---|---|---|
| | Employment | Labor Income | Value Added | Output |
| Direct | 8,489 | $294,764,376 | $408,595,994 | $988,816,638 |
| Indirect | 3,275 | $217,782,162 | $328,894,378 | $601,803,944 |
| Induced | 2,544 | $141,845,587 | $264,159,544 | $448,654,679 |
| Total | 14,308 | $654,392,125 | $1,001,649,917 | $2,039,275,263 |

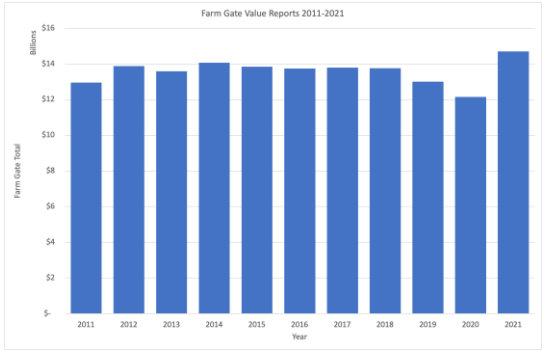
# Key Takeaways

$833 - $988 million in revenue for 2021

$1.7-2.0 billion in economic activity

“Contributions”

50+ year close-working relationship with GDA




# Navigating the Federal and State Data

Revenue Values

- https://data.census.gov/

Employment Values

- https://data.bls.gov/PDQWeb/en

Link to Published Paper

- https://doi.org/10.1093/jee/toae029

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Consistent growth in Employment and Revenue since 1997

Contribution to the Georgia state economy is well over a $2 billion

# Questions?

**Consumer Price Index Baseline Equation**

$$\frac{CPI\ of\ Baseline\ Year}{CPI\ of\ Year\ of\ Interest} * Revenue\ Estimate\ for\ Year\ of\ Interest$$

$$= Real\ Revenue\ for\ Year\ of\ Interest\ in\ Baseline\ Year$$

**Compound Annual Growth Rate Equation**

$$CAGR = (\frac{V_{Final}}{V_{Begin}})^{\frac{1}{t}} - 1$$

Where:

CAGR = Compound Annual Growth Rate
$V_{Final}$ = Final Value
$V_{Begin}$ = Beginning Value
t = time in years

**Future Value Equation**

$$Future\ Value\ (FV) = Present\ Value\ (PV) * (1 + r)^n$$

Where:

FV = Future Value (estimated value for year of interest)
PV = Present Value (value of last available year)
r = annual real growth percentage
n = number of years

**Consumer Price Index Inflation Adjusted Equation**

$$\frac{CPI\ of\ Year\ of\ Interest}{CPI\ of\ Baseline\ Year} * Revenue\ Estimate\ in\ Baseline\ Year\ Value$$

$$= Nominal\ Revenue\ for\ Year\ of\ Interest$$

# IMPLAN® Economic Modeling System

Input-Output (IO) modeling system

| | |
|---|---|
| 476 | Services to buildings |

Employed a two-event approach

1. Industry Impact Analysis to impute Revenue and Employment
2. Industry Contribution Analysis set at $1

IMPLAN

# NATIONAL PPMI REVENUE DATA