

Uncovering the Regional Connections that Drive the U.S. Economy

Inside BEA's Work to Build a Comprehensive System of Regional Accounts

Presentation to the Council of Professional Associations
on Federal Statistics (COPAFS)

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Background

- BEA publishes a suite of regional statistics, including:
 - State and county gross domestic product (GDP)
 - State and county personal income
 - Consumer spending by state
 - Regional Price Parities (RPPs)
- BEA periodically updates and improves its statistics
 - Incorporate updated data and methodological improvements
 - Develop more timely and granular statistics
- BEA's long-term goal is to develop a comprehensive system of regional accounts that fully integrates with its national accounts
 - Measure state GDP using all three approaches (expenditure, income, and value added)
 - Develop input-output tables that link production and uses across all states and sectors

Today's Presentation

- BEA's long-term research efforts to build a system of regional accounts
 - Merchandise trade by state
 - Gross output by state
 - Government spending by state
 - Private fixed investment by state
 - Research and development (R&D) production and investment by state
- BEA's efforts to expand and improve its existing statistics
 - Gridded GDP
 - Consumer spending by county
 - Expanded quarterly industry detail in GDP and personal income

Why A System of Regional Accounts?

System of Regional Accounts

State Income
and Product
Accounts

State Input-
Output
Accounts

Maintain relevance

- Develop new regional measures, including trade, investment, and government spending
- Show links between industries, products, and final demand
- Enable trade flow and supply chain risks analysis
- Identify growth opportunities across regions
- Inform policymaking, investment decisions, and resource allocation

Enhance data quality and consistency

- Reconcile production, consumption, and trade statistics across regional accounts
- Ensure consistency with the broader national accounts while reflecting sectoral and regional nuances

General Approach

- A comprehensive system of regional accounts is an ambitious, long-term undertaking
- In the near term, our focus is on developing useful, standalone statistics for individual components
- Over the longer term, the goal is to integrate these components into a complete, interconnected system

Components and general timeline

Near-term

- Merchandise trade by state
- Gross output by state
- Government expenditures and gross investment by state
- Private fixed investment by state

Medium-term

- Services trade by state
- Inventories by state
- Intermediate inputs by state

Long-term

- State Income and Product Accounts
- State Input-Output Accounts

Merchandise Trade by State

- A measure of trade flows between states, rather than just gross trade balances for each state
 - Includes flows to/from abroad for each state
 - Expands on the national concept of trade to include flows to/from other states. When aggregated to the U.S., these inter-state flows net to zero
- Main data sources
 - Freight Analysis Framework (Bureau of Transportation Statistics)
 - Commodity Flow Survey (Census Bureau)
 - Origin of Movement/State of Destination Trade Data (Census Bureau)

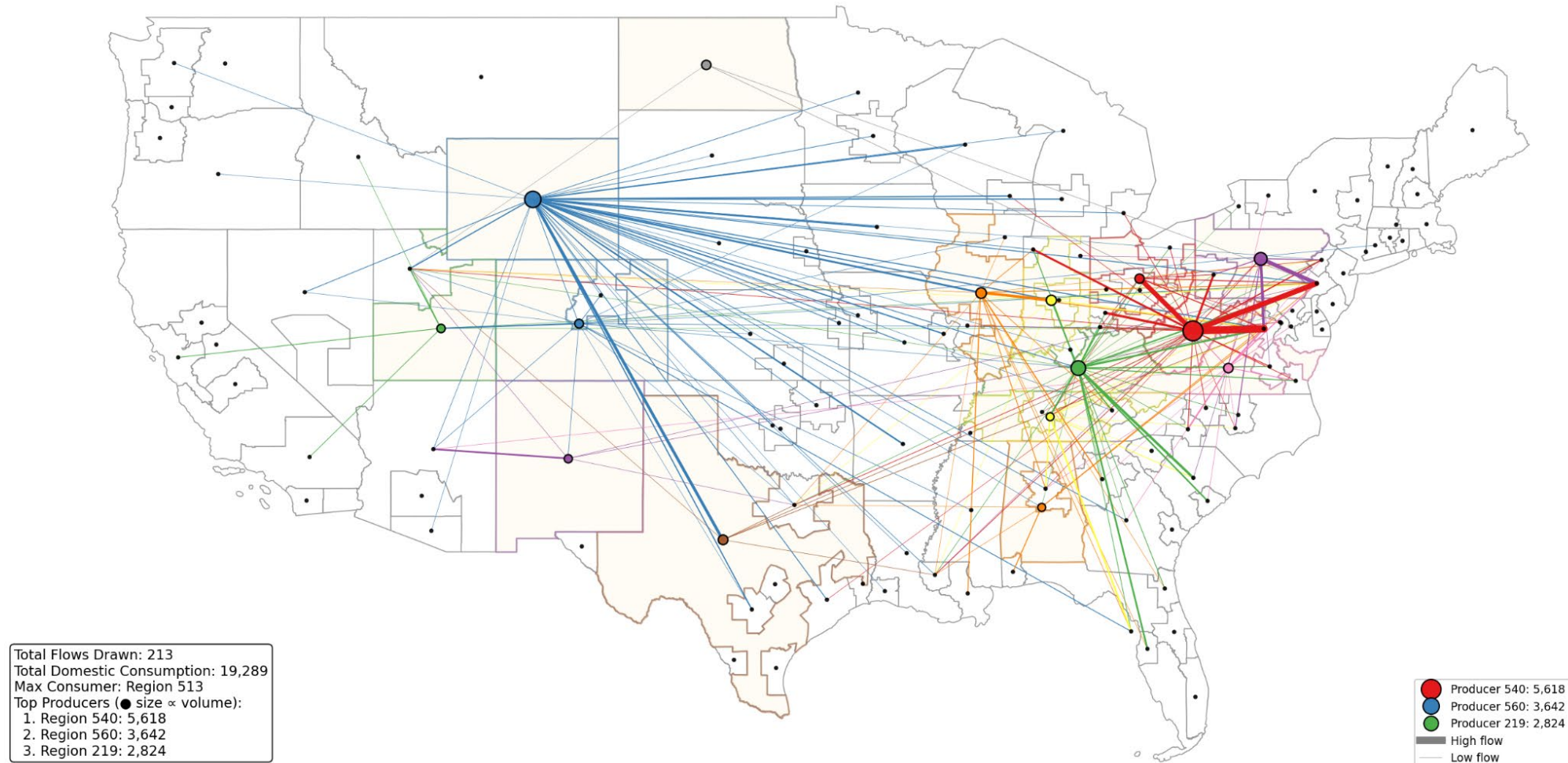
Merchandise Trade by State: 2017 Highlights

Merchandise	\$ Millions
Total Production	6,735,352
Destination:	
Self	1,361,807
Other States	3,869,669
Abroad	1,503,876
Overall Exports	5,373,545

Merchandise	\$ Millions
Total Consumption	7,494,438
Origin:	
Self	1,361,807
Other States	3,869,669
Abroad	2,262,961
Overall Imports	6,132,631

Merchandise Trade: Coal Domestic Flows, 2017

Domestic Consumption Flow Map: All Major Producers
Commodity 15 | 15 Producers (90% of Production) | Total Production: 22,857

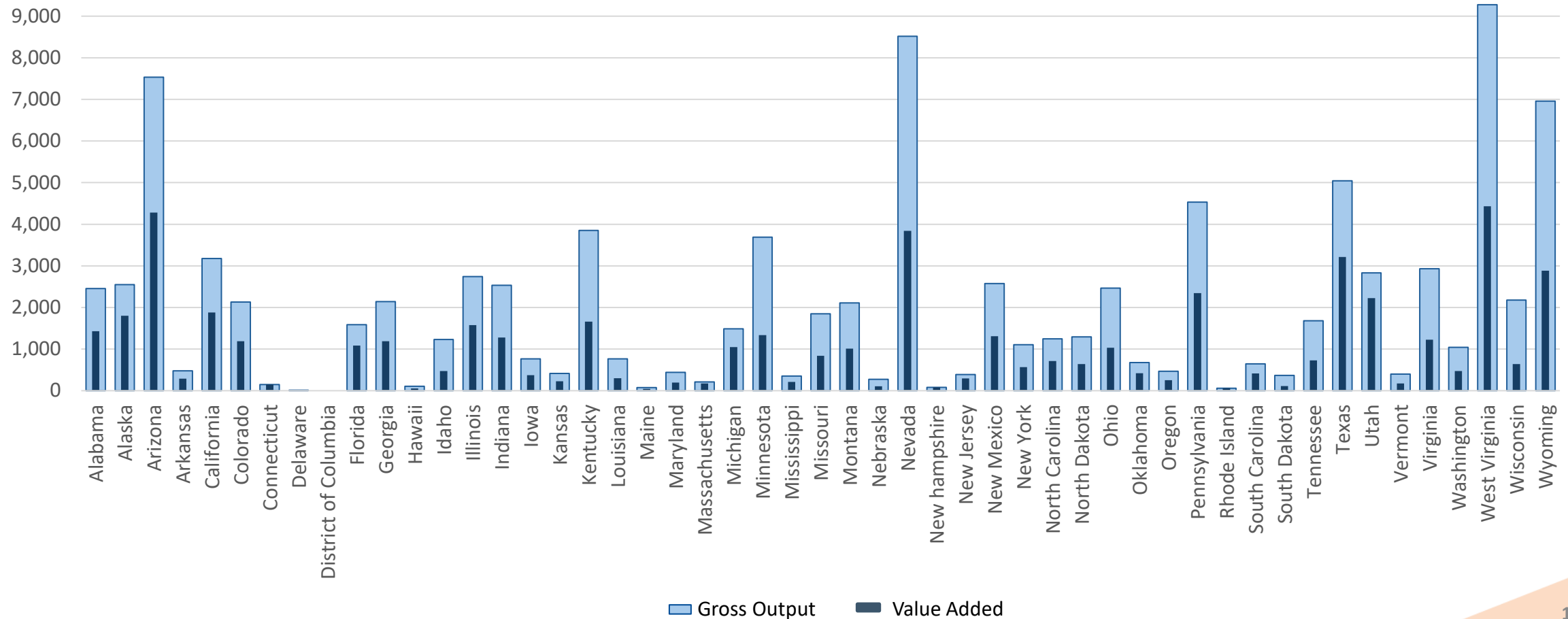


Gross Output by State

- The broadest measure of production in national economic accounting
 - Expands on value added statistics by including intermediate inputs to production
 - Key link between final expenditures and gross domestic income
- Main data sources
 - Economic Census (Census Bureau)
 - Annual Integrated Economic Survey (AIES) (Census Bureau)
 - Quarterly Census of Employment and Wages (QCEW) (Bureau of Labor Statistics)

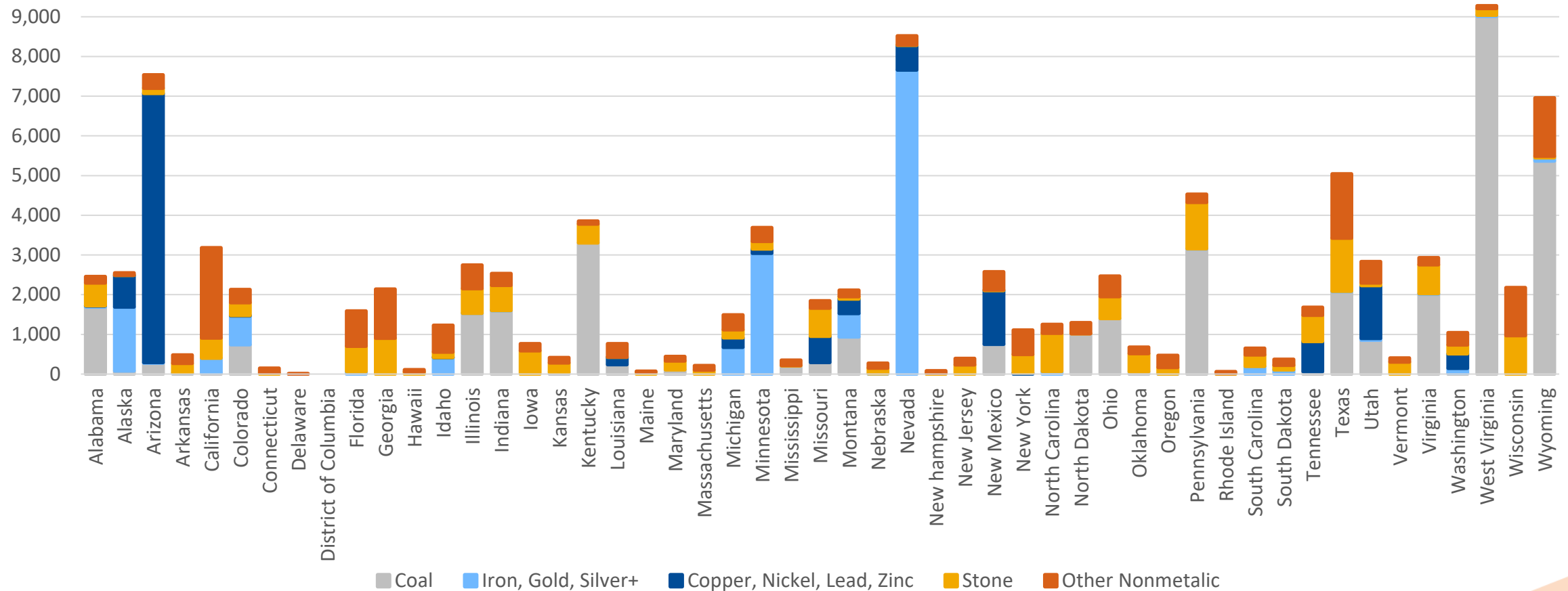
Gross Output by State: Mining Highlights, 2017

Mining, Except Oil and Gas
[Millions of Dollars]



Gross Output by State: Mining Highlights, 2017

Mining By Type
[Millions of Dollars]



The scatter plot displays the relationship between the Value Added as a Share of Gross Output (X-axis) and the Services Share of Total Value Added (Y-axis) for various US states. The X-axis ranges from 0.40 to 0.65, and the Y-axis ranges from 0.60 to 1.00. The plot shows a positive correlation, with states like District of Columbia, New York, and Maryland having high values on both axes, while states like North Dakota and Wyoming have lower values.

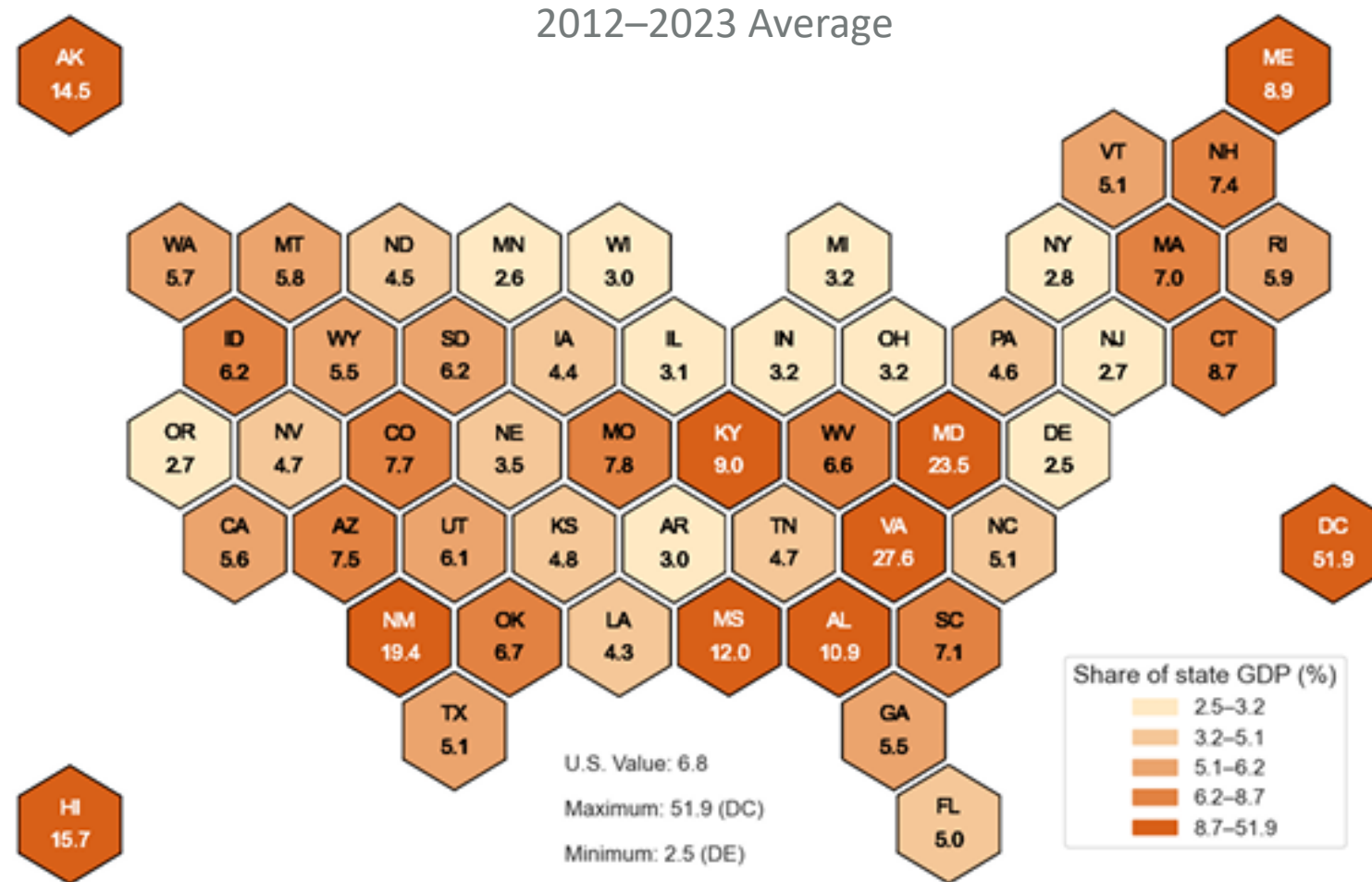
State	Value Added As a Share of Gross Output (X)	Services Share of Total Value Added (Y)
District of Columbia	0.51	0.98
New York	0.62	0.92
Maryland	0.63	0.88
Hawaii	0.59	0.91
New Jersey	0.60	0.89
Delaware	0.47	0.89
Rhode Island	0.55	0.88
Florida	0.57	0.87
Massachusetts	0.58	0.86
Virginia	0.54	0.86
Maine	0.57	0.85
Vermont	0.49	0.85
Georgia	0.58	0.84
Illinois	0.58	0.83
Mississippi	0.46	0.79
South Dakota	0.43	0.81
Montana	0.49	0.81
Missouri	0.51	0.82
New Mexico	0.53	0.83
Arkansas	0.51	0.80
Idaho	0.52	0.79
South Carolina	0.54	0.80
Minnesota	0.55	0.81
Tennessee	0.58	0.80
Ohio	0.57	0.79
North Carolina	0.58	0.78
California	0.60	0.83
Pennsylvania	0.61	0.82
Washington	0.61	0.81
Oregon	0.61	0.80
Wisconsin	0.54	0.77
Texas	0.55	0.75
Oklahoma	0.53	0.72
Alaska	0.51	0.74
Alabama	0.52	0.77
Iowa	0.48	0.74
Kansas	0.48	0.78
Louisiana	0.46	0.71
Kentucky	0.45	0.76
Wyoming	0.44	0.69
North Dakota	0.42	0.68
Indiana	0.51	0.68

Government Consumption and Gross Investment by State



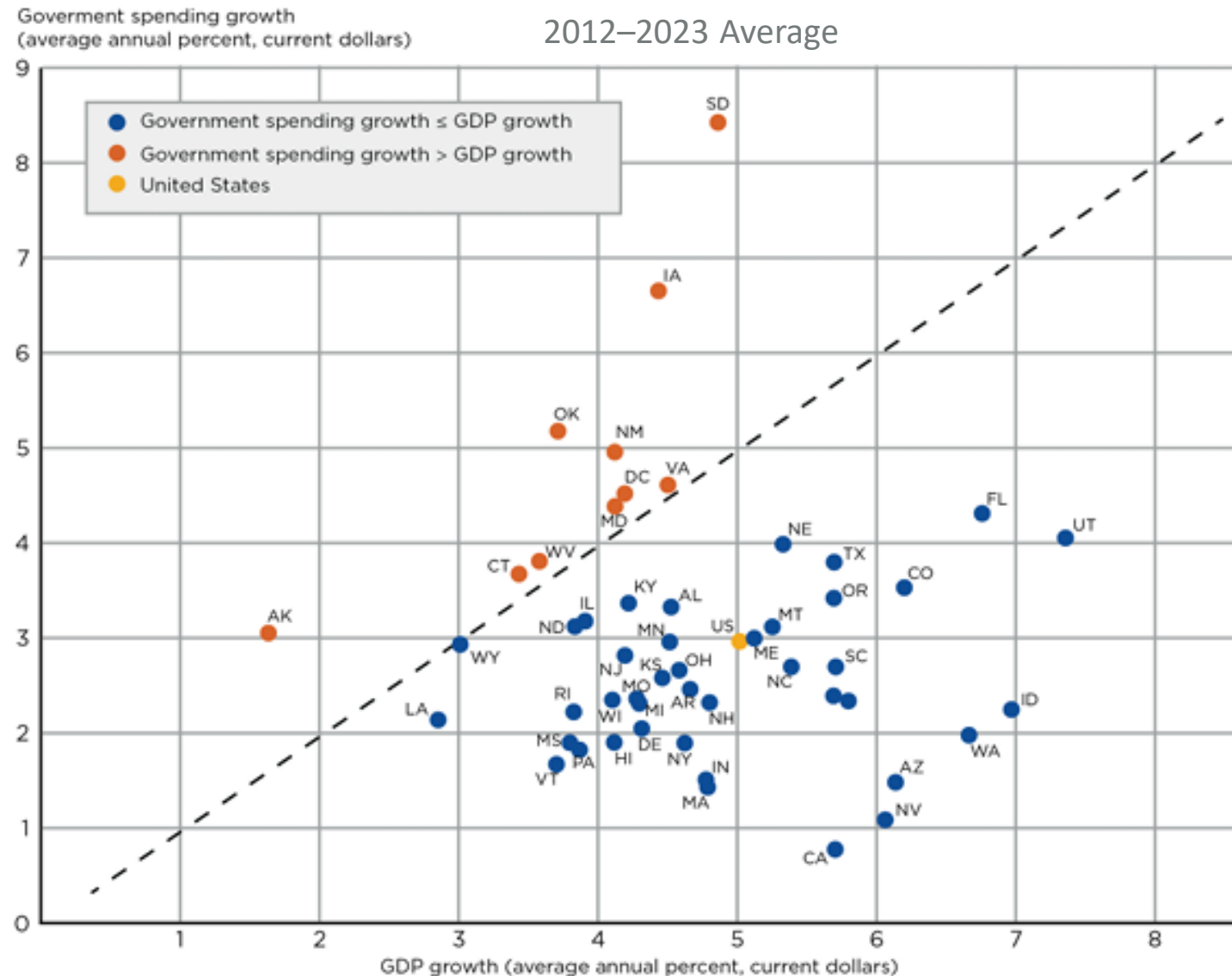
- A measure of the portion of GDP accounted for by the government sector
 - Provides valuable insights into how government spending impacts state economies
 - *Consumption expenditures*—spending to provide public services (e.g., education, national defense)
 - *Investment*—spending on fixed assets (e.g., highways, military equipment)
 - Working paper on federal spending, upcoming paper on state and local spending
 - [Developing Federal Government Consumption Expenditures and Gross Investment Statistics by State](#) [nomic Analysis \(BEA\)](#)
- Main data sources
 - Government contract spending data (Treasury)
 - Census of Government (Census Bureau)
 - Annual State and Local Government Finances Survey (Census Bureau)
 - QCEW (Bureau of Labor Statistics)

Federal Government Spending by State: Percent of State GDP



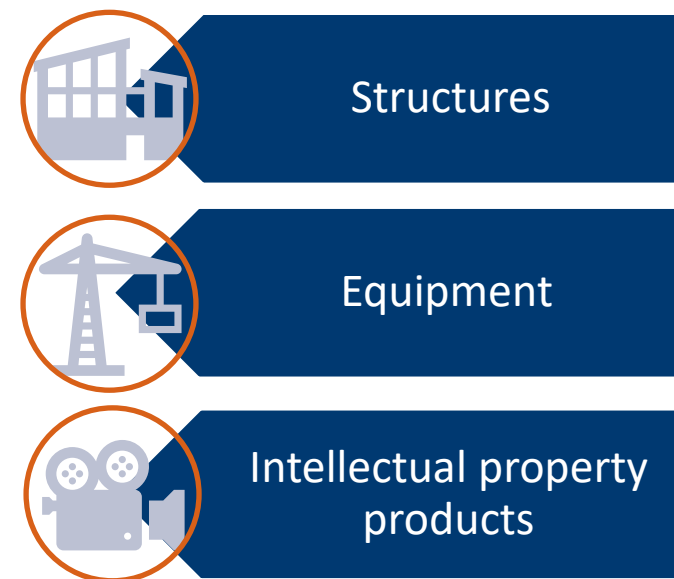
U.S. Bureau of Economic Analysis

Federal Government Spending by State and State GDP



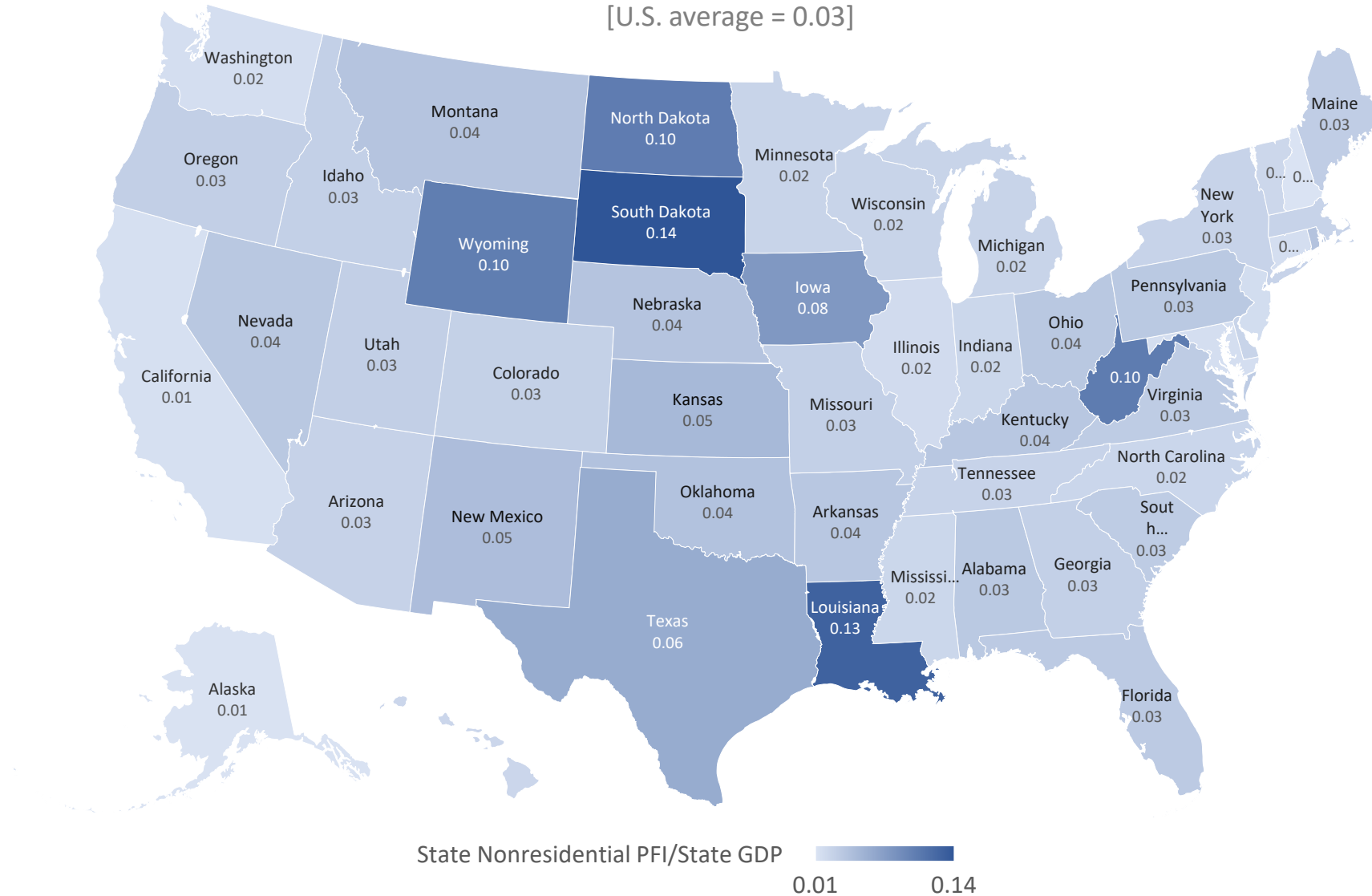
Private Fixed Investment by State

- A measure of spending by private businesses, nonprofit institutions, and households on fixed assets
 - An indicator of the future productive capacity of the economy and an integral part of capital stock, used to measure rates of return on capital and multifactor productivity
- Main data sources
 - Value-put-in-place (VPIP) data (Census Bureau, Dodge Analytics)
 - Annual Survey of Manufactures (ASM), AIES (Census Bureau)
 - Annual R&D surveys (National Science Foundation)



PFI in Nonresidential Structures, 2019

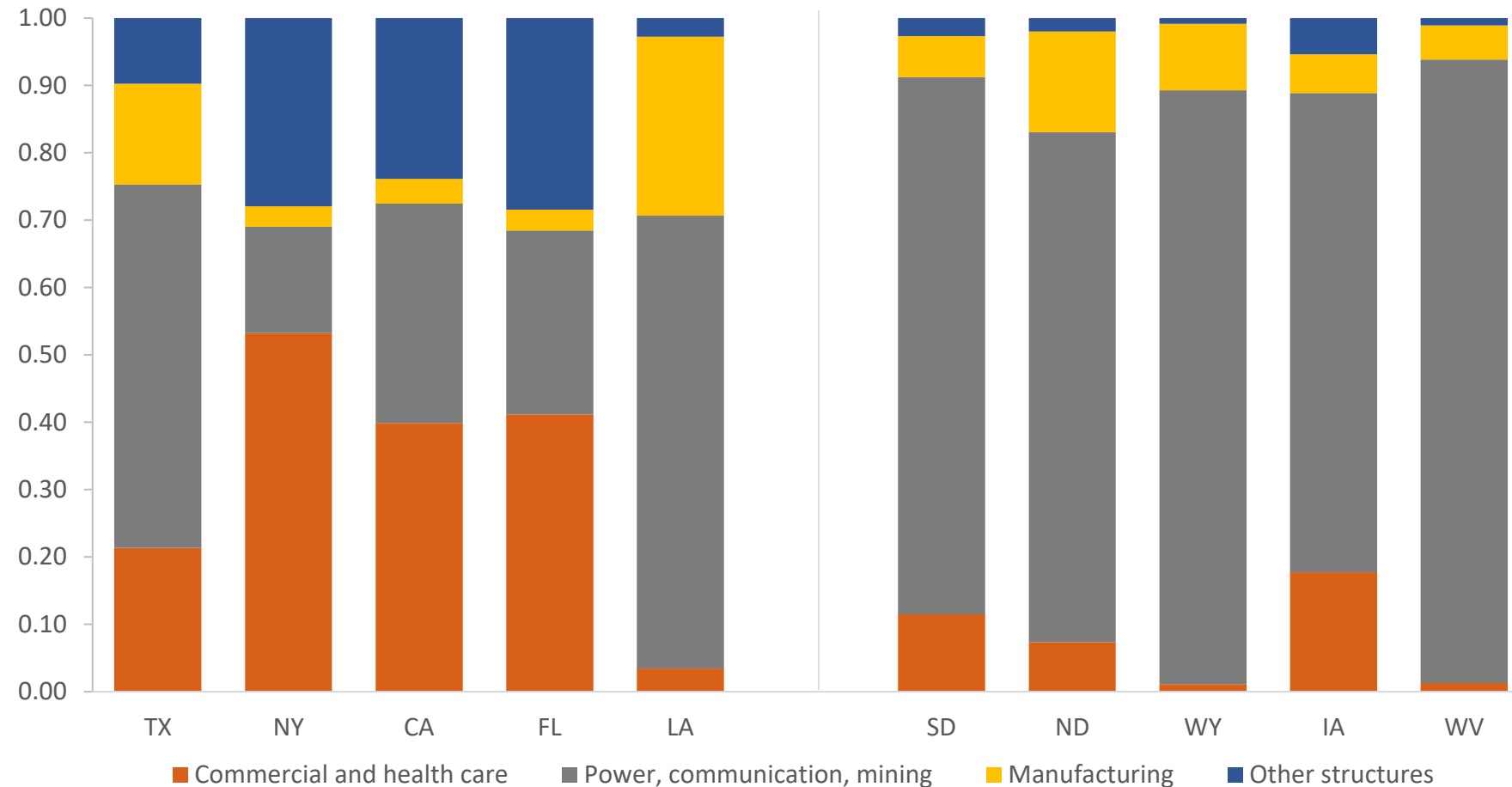
State PFI in Nonresidential Structures per Dollar of GDP
[U.S. average = 0.03]



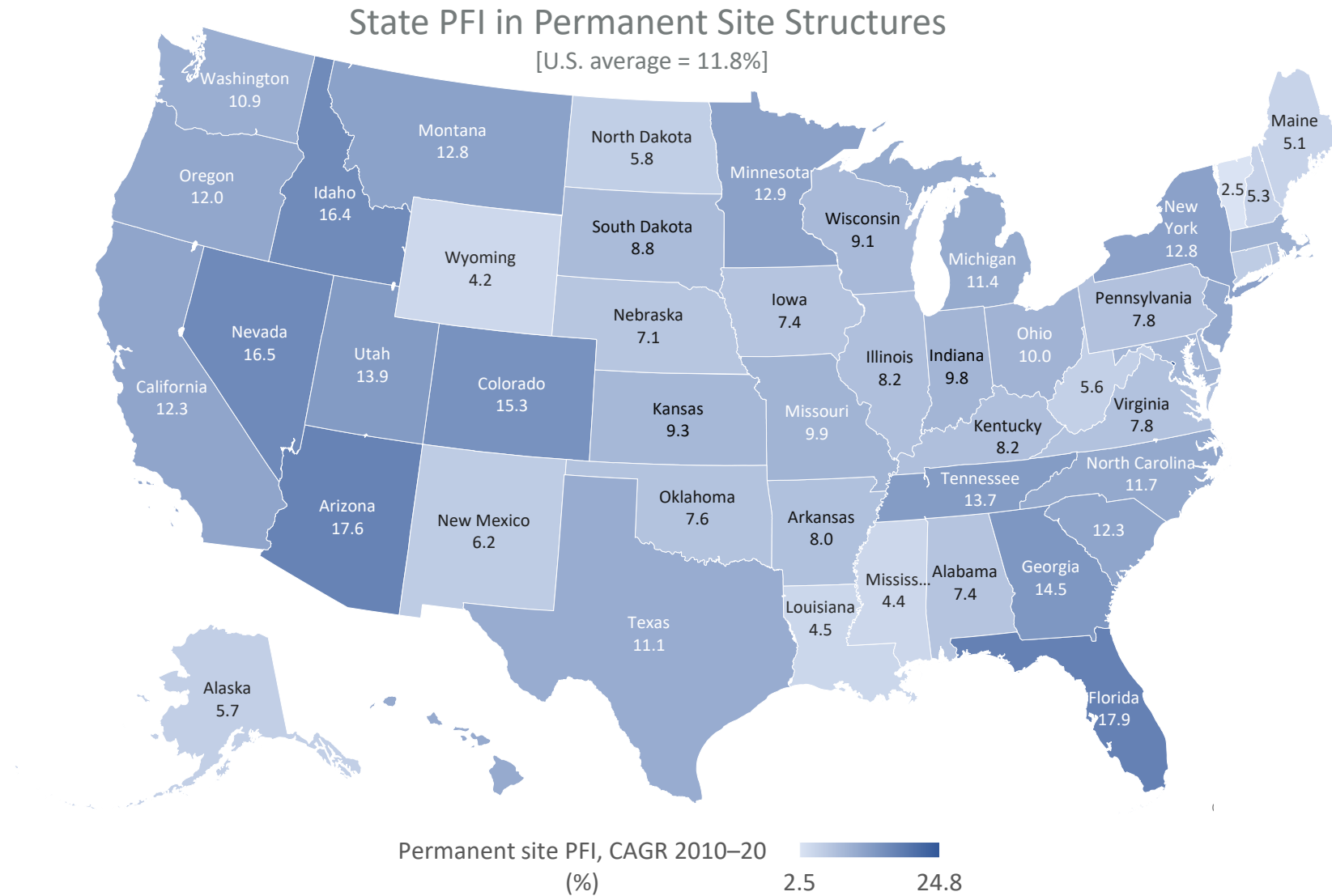
PFI in Nonresidential Structures by Type, 2019

PFI in Nonresidential Structures for Selected States

Share of total PFI



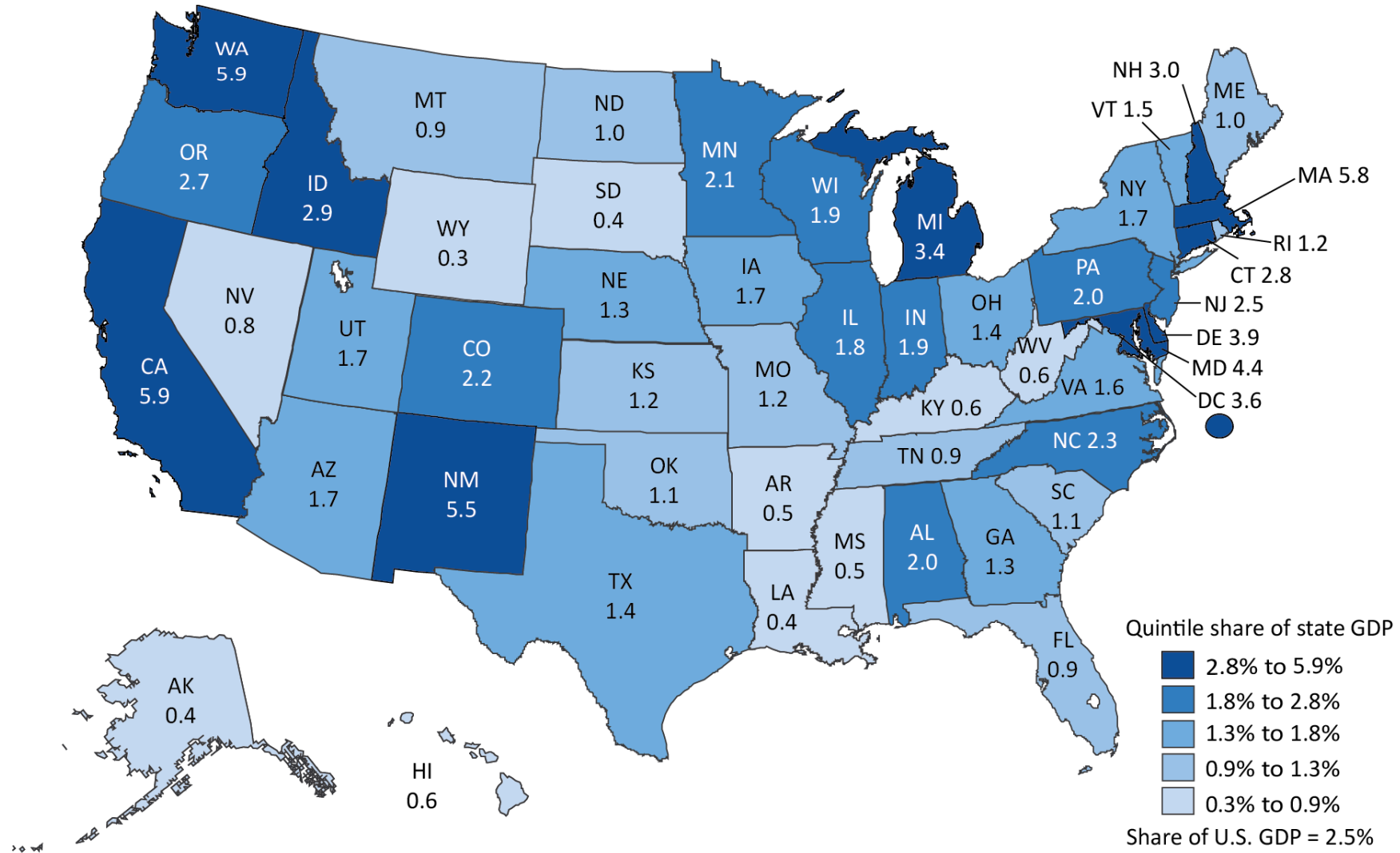
PFI in Residential Structures, 2010–20



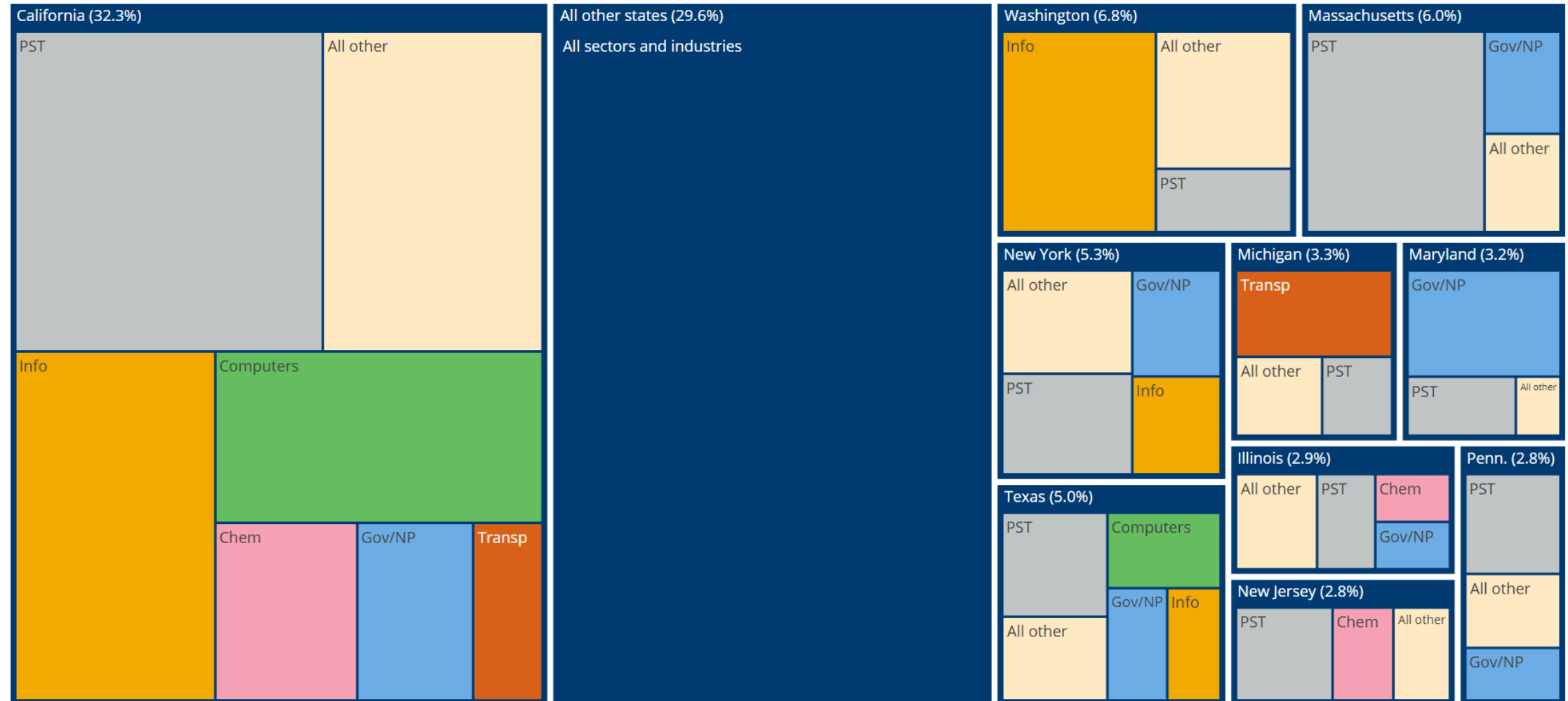
R&D Production and Investment by State

- Experimental state statistics on R&D production consistent with GDP and other BEA statistics
 - Measures R&D's contribution to GDP and associated R&D employment and compensation
 - Provides key indicators for innovation and productivity growth
 - Part of the larger research effort to measure private fixed investment and government gross investment by state
 - [Research and Development | U.S. Bureau of Economic Analysis \(BEA\)](#)
- Main data sources
 - Annual R&D Surveys and survey microdata (National Science Foundation)
 - Economic Census (Census Bureau)
 - Quarterly Census of Employment and Wages (Bureau of Labor Statistics)

R&D Value Added as a Share of State GDP, 2023

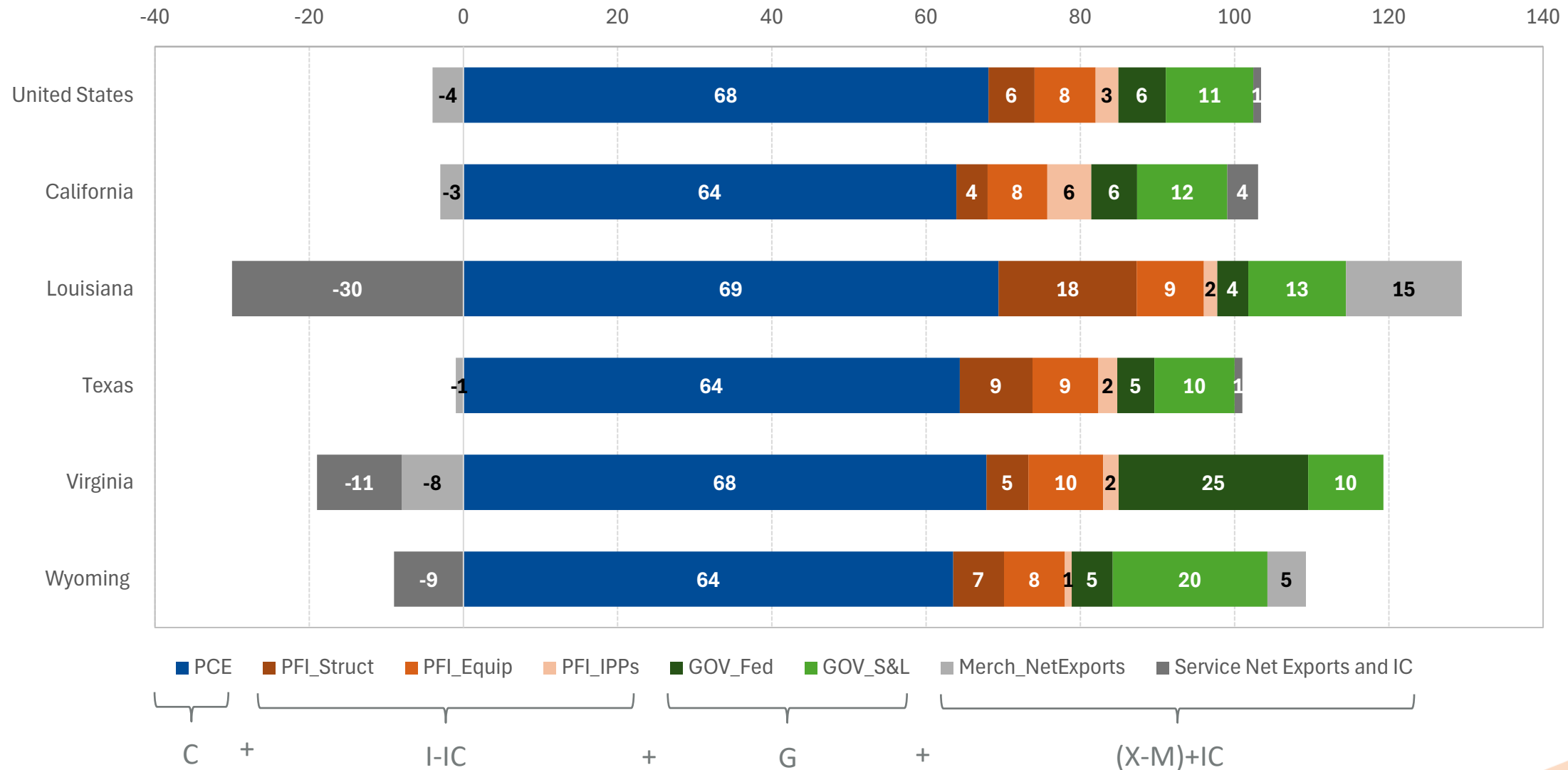


State Distribution of U.S. R&D Value Added, 2023



PST: Professional and scientific services
NP: Nonprofits

Bringing It All Together: Expenditure Approach to GDP, 2017



Next Steps

- Incorporate new data, refine methodologies across components, and assess remaining data needs
- Develop a public-facing webpage to showcase our research
 - Central hub for preliminary estimates, working papers, presentations, and related materials
 - Invite feedback throughout the development process
- For these projects to move beyond the research phase additional resources are required

Other Research

- Highlighted research

- Gridded GDP
- Personal consumption expenditures (PCE) by county
- Expanded quarterly industry detail in state GDP and personal income

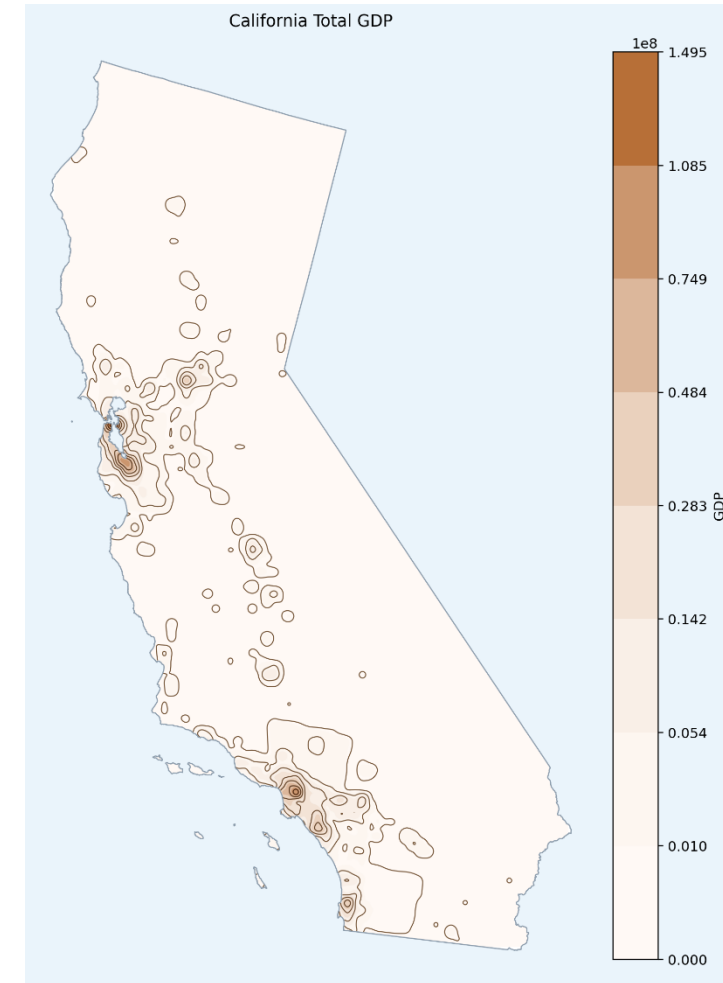
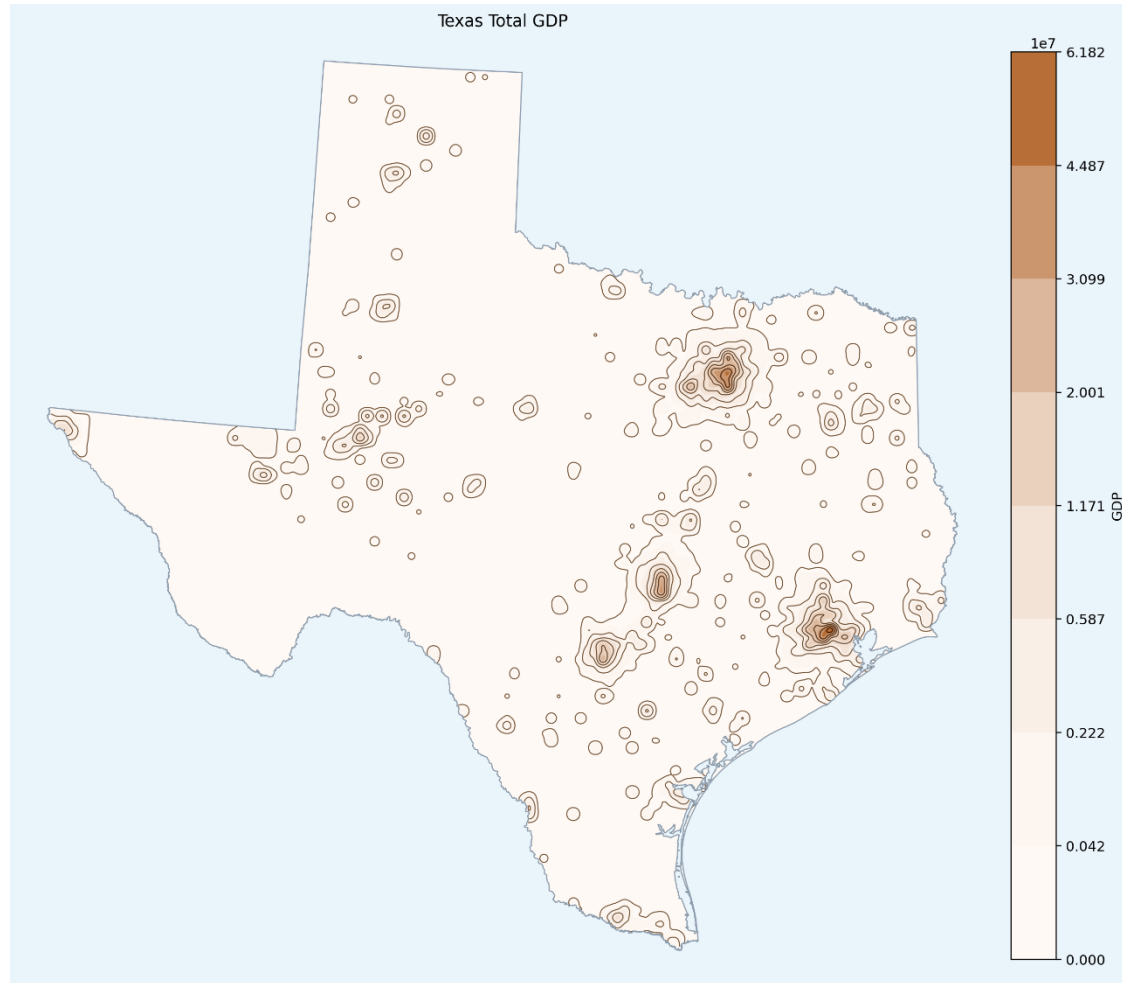
- Other research

- Regional energy and emissions accounts
- Quarterly PCE by state
- Regional Input-Output Modeling System (RIMS II) improvements
- RPP improvements (nowcasting county housing price relatives)
- Outdoor recreation (real dollar estimates and assessing feasibility for county statistics)

Gridded GDP

- Provides economic indicators for custom geographies (“areal units”)—not just states or counties
 - Enables integration with remote sensing, environmental, and other spatial data for richer modeling and sensitivity analysis
 - Sample outputs include grid-based allocations and contour maps showing spatial GDP concentration
- Main data sources
 - GDP by state (BEA)
 - QCEW microdata (wages) for manufacturing, retail, and services; other point/line data for extraction, transportation, utilities
 - Raster data for agriculture, forestry; census and real estate data for owner-occupied housing and private business

Gridded GDP: Texas and California Contour Maps, 2023

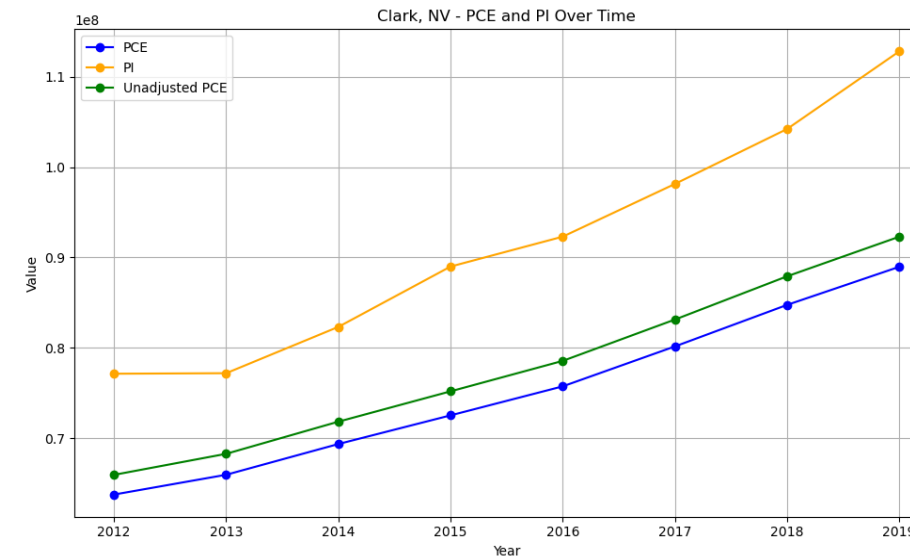
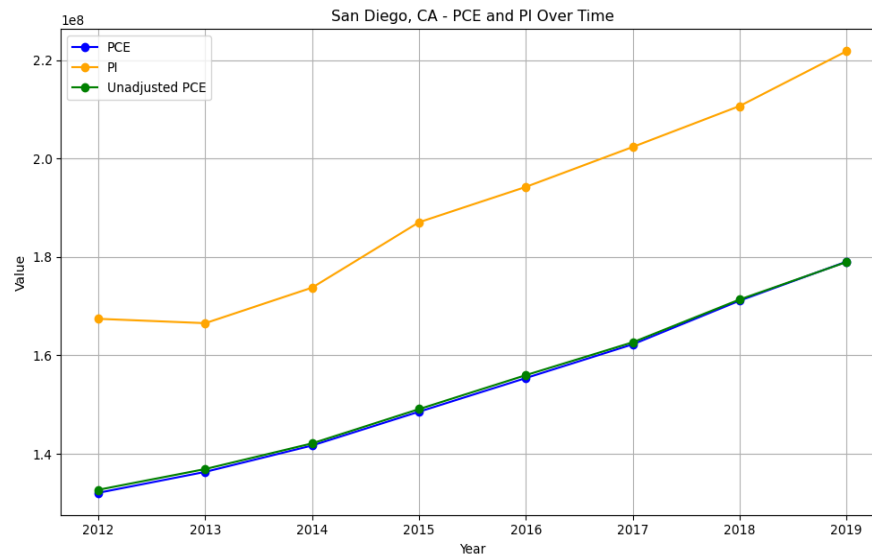
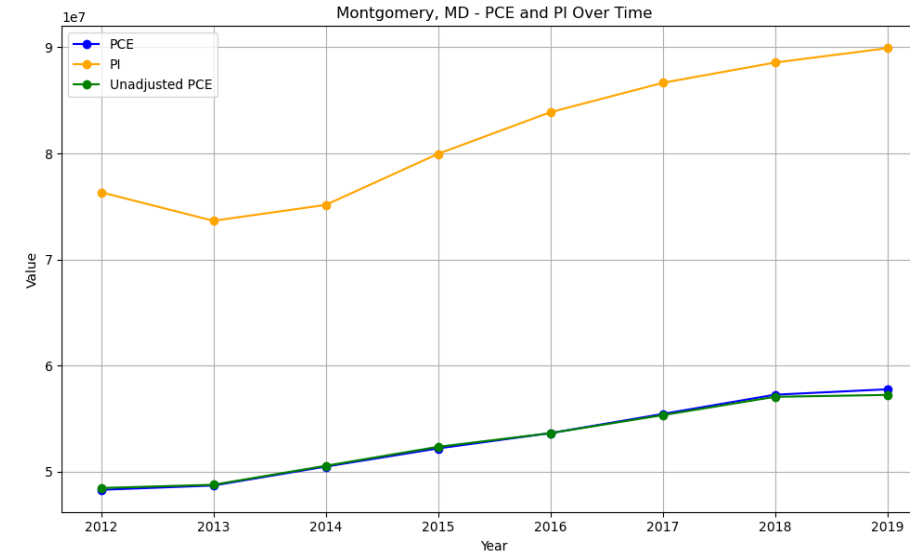
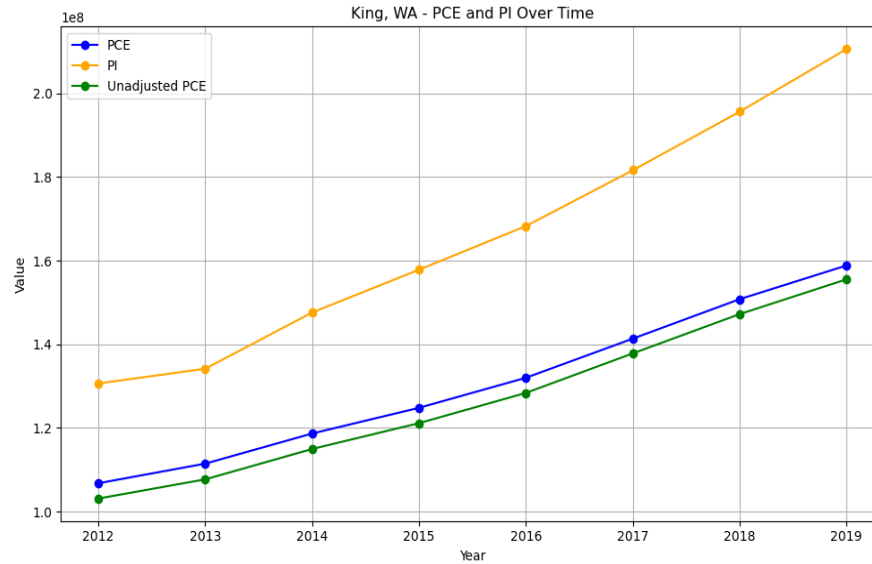


PCE by County



- The only core BEA regional statistic not yet produced at the county level
 - Similar methodology to PCE by state, extended to counties
 - Important to localize as PCE makes up roughly two-thirds of final demand
 - Links local consumption to local income and output
- Main data sources
 - PCE by state (BEA)
 - Economic Census (Census Bureau)
 - QCEW (Bureau of Labor Statistics)
 - American Community Survey (Census Bureau)

Relationship of PCE and Personal Income by County



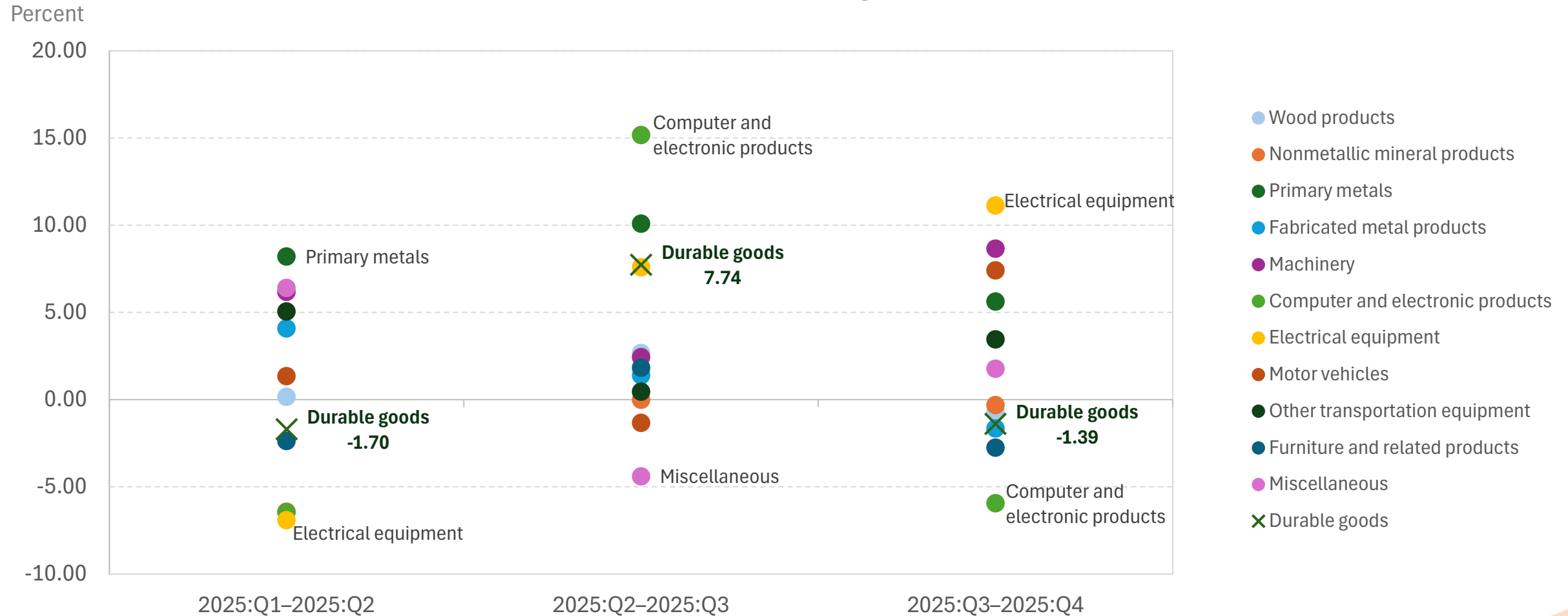
- Personal income by county of residence
- PCE by county of purchase
- PCE by county of residence

Expanded Quarterly Industry Detail

- Industry detail for quarterly GDP by state and state personal income expanded to 82 industries
 - Highlights important sectoral differences across states
 - Improves real GDP estimates through more granular matching between production and prices
 - Uses Current Employment Survey to measure wages more granularly in leading quarters
- Main data sources
 - GDP by state (BEA)
 - Personal income by state (BEA)
 - Current Employment Survey (Bureau of Labor Statistics)

Quarter-Over-Quarter Growth in Wages, California

Durable Goods Manufacturing, 2025 Quarters



Conclusion

- Questions for the Council
 - Which potential state statistics resonate most with you?
 - Would you be interested in BEA returning to provide a more detailed presentation on any of the research discussed today?
- Continued support and advocacy will be critical to securing the resources needed to advance this work