

# Developing Experimental Statistics to Measure Economic Activity in Real Time

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# Evolving Measurement for an Evolving Economy\*

- Traditional surveys may miss aspects of rapidly evolving economy
- Surveys may not be sufficiently timely and/or granular to meet increasingly complex needs of data users
- Declining response rates to surveys
- Administrative records and third-party data sources have potential to complement federal surveys
- Surveys remain a critical part of economic measurement

\*Jarmin, Ron. 2019. "Evolving Measurement for an Evolving Economy: Thoughts on 21<sup>st</sup> Century US Economic Statistics." *Journal of Economic Perspectives* 33(1): 165-184.

# Potential Uses for Third-Party Data

- Produce experimental, alternative indicators that are more current and/or granular
- Blend with official data to increase detail/granularity
- Inputs for model-based estimation
- Selectively substitute for more expensive traditional data collection – only if/where demonstrated reliability is sufficient

# Use of Third-Party Data Sources

## Potential Pros

- Timely
- High frequency
- Big: Granular
- Inexpensive to generate: By-product of commercial activity
- Accurate: Minimal response error

## Potential Cons

- Not representative
- Lack coverage
- Not measure the right things
- Lack stability
- Privacy issues
- Not transparent
- Expensive to acquire
- Expensive to process
- Vulnerable to external disruptions

# Examples of Agency Work Exploring Third-Party Data Sources

- Bureau of Economic Analysis (BEA)
  - Alternative data and ML models to improve advance estimates – [Chen et al. \(2019\)](#)
  - Using card transaction data to provide timely estimates around the pandemic – [Dunn et al. \(2021\)](#)
- Bureau of Labor Statistics (BLS)
  - Motor fuel prices
  - Other alternative price data at various stages of research and development (see Appendix)
- U.S. Census Bureau
  - State-level retail sales estimates using blended data – [Monthly Retail Trade - State Retail Sales \(census.gov\)](#)
  - Construction statistics reengineering effort

# Project Overview

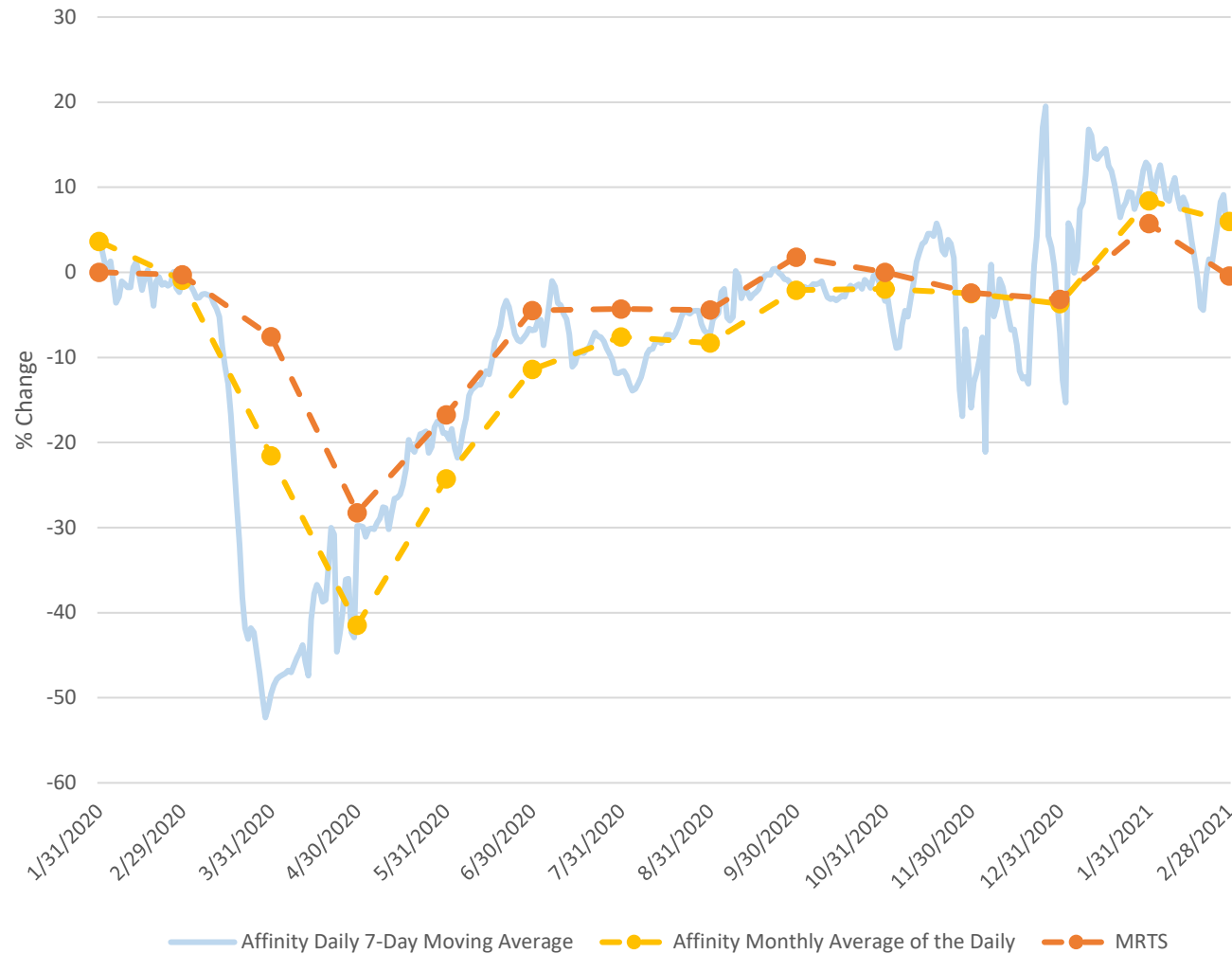
- BEA, BLS, and the Census Bureau are undertaking a research collaboration with Opportunity Insights (OI)
- Explore ways in which these alternative data sources may be used to complement and improve the data produced at the statistical agencies
- Goals
  - Benchmark statistical series in the OI Economic Tracker and assess the quality of the data
  - Refine methodologies
  - Develop and release new experimental economic statistics
  - Explore long term dissemination of experimental statistics

# Project Status

- Set up two collaborative cross-agency teams
  - Consumer Spending and Small Business Revenue
  - Employment and Earnings
- Agencies have undertaken quality assessments using publicly available data
- Agencies have recently been granted access to select restricted-use data and have just started assessing the quality of these data

# Affinity and Monthly Retail Trade Survey (MRTS)

Percentage Changes Relative to January 2020  
General Merchandise and Apparel (Seasonally Adjusted)



Note: Affinity Daily data is a percentage of a 7-day moving average of seasonally adjusted daily data relative to January 4-31, 2020. Affinity Monthly data is a monthly average of the Affinity Daily data. The MRTS data is a percentage change of seasonally adjusted data relative to the January 2020 MRTS value. In the graph, the Affinity Monthly and MRTS data is attributed to the last day of the data month.

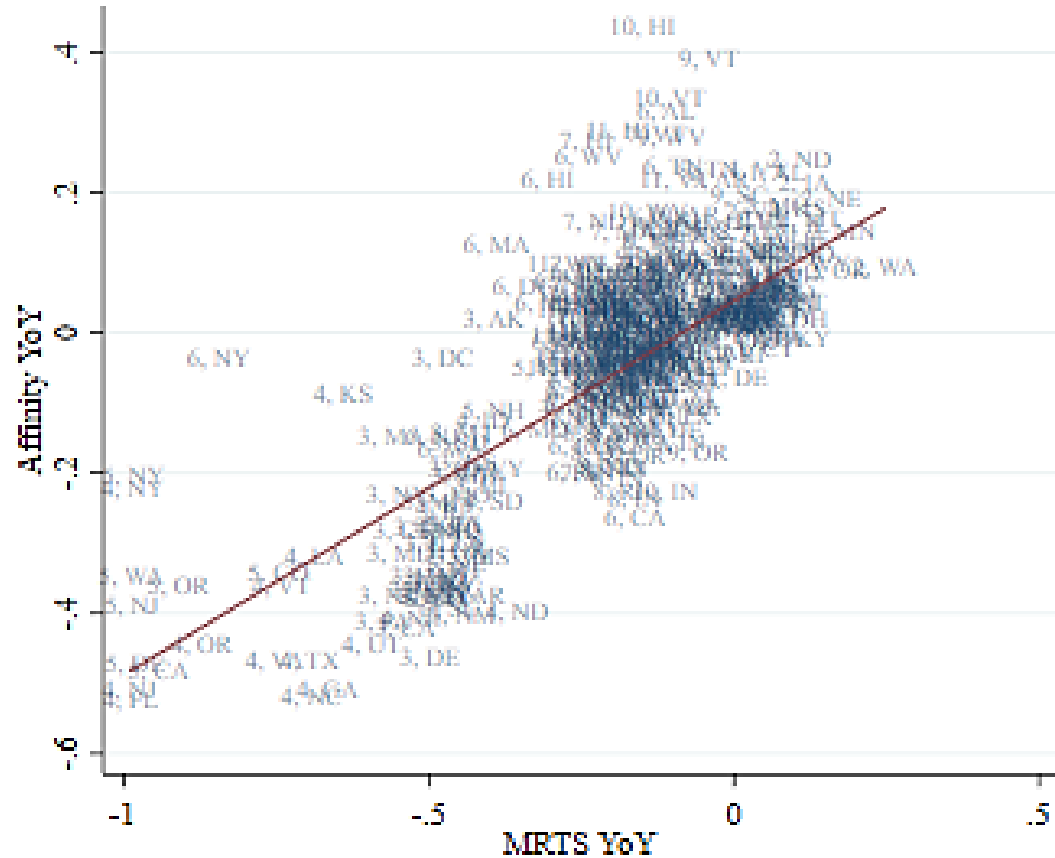


# State Year-over-year Correlations Affinity and State MRTS

## State Correlations 2020

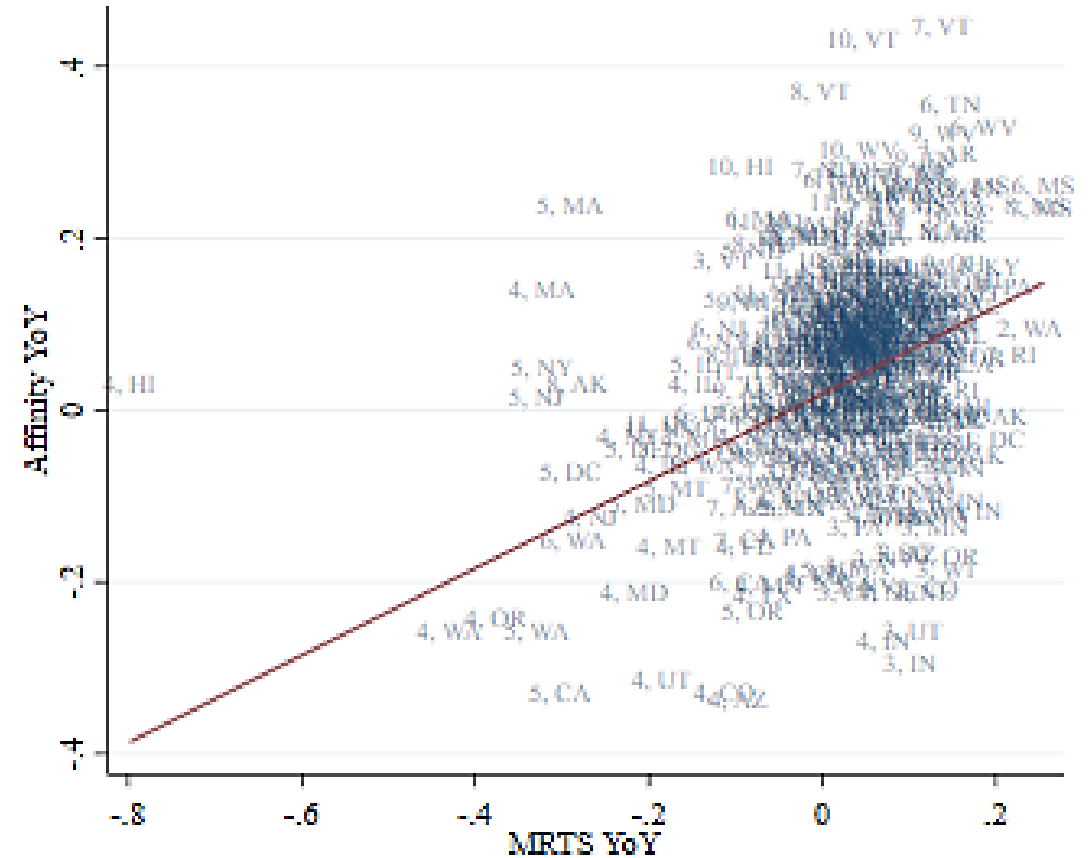
### State-Level Affinity and MRTS

AAP -- Apparel and Accessories, Correlation .752



### State-Level Affinity and MRTS

GEN -- General Merchandise, Correlation .282

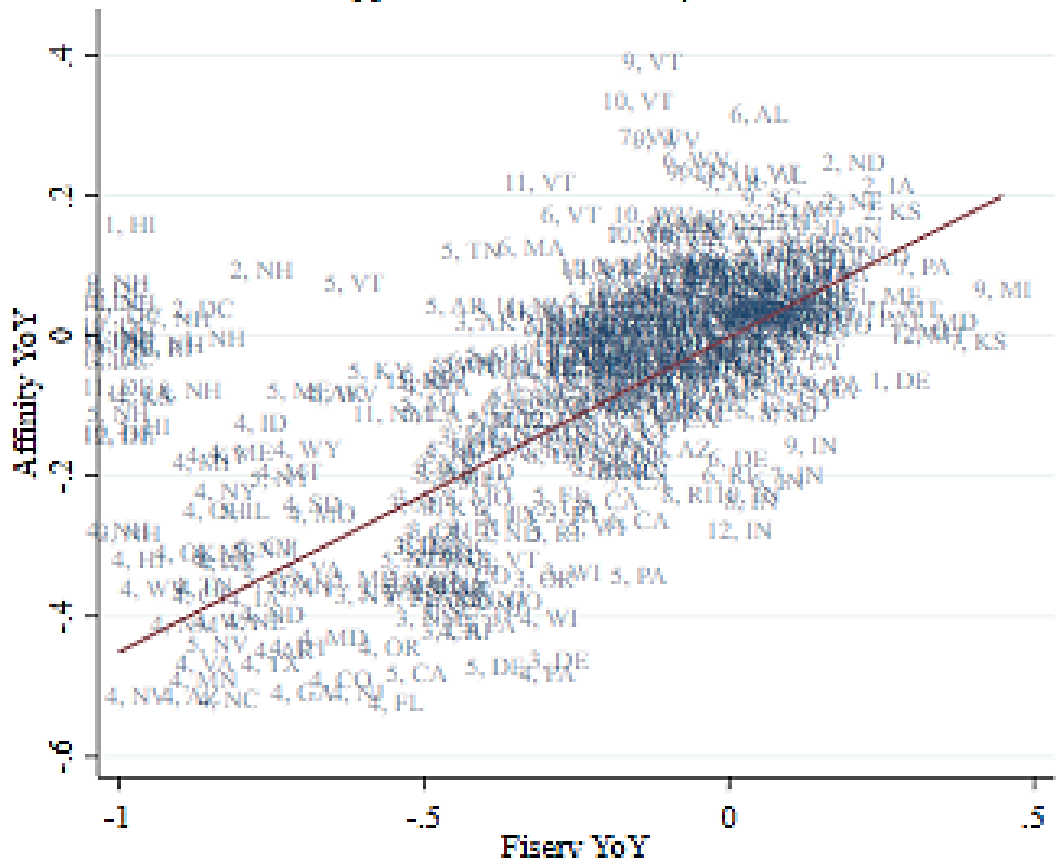


Each graph plots state/month observations of year-over-year percentages between 2019 and 2020. Plots and correlations weighted by state population in 2019.

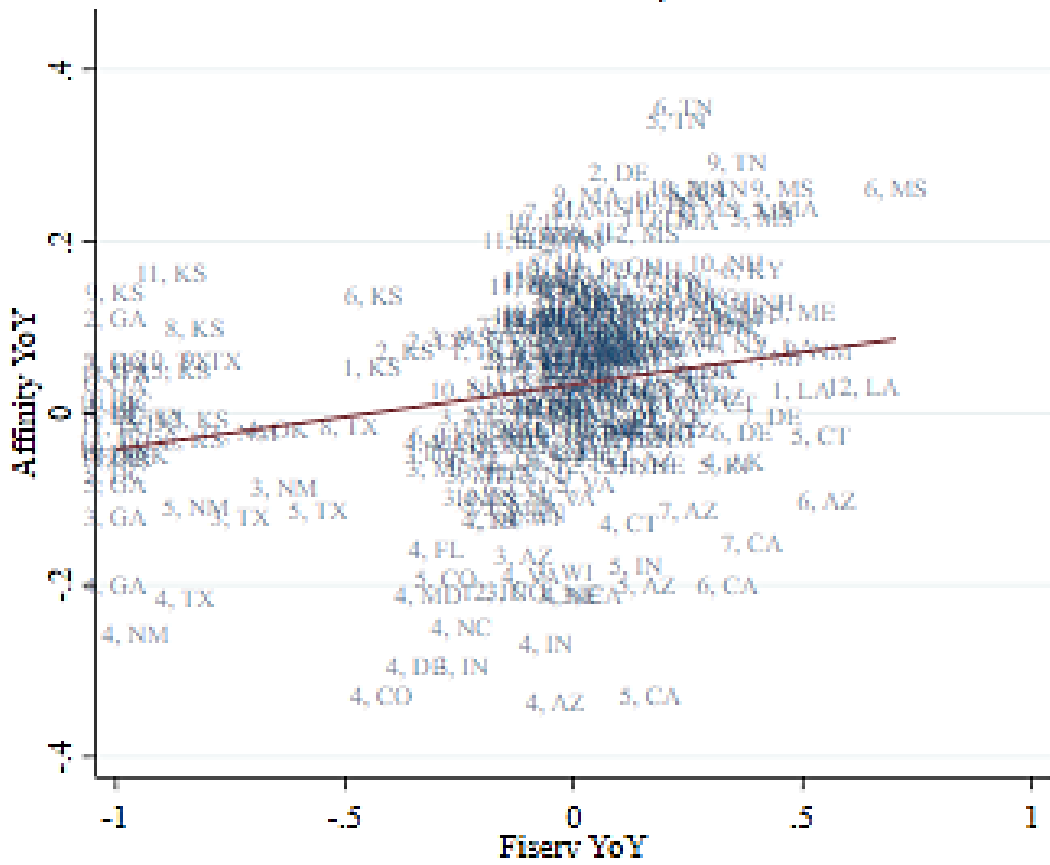
# State Year-over-year Correlations Affinity and Fiserv

## State Correlations 2020

State-Level Affinity and Fiserv  
AAP – Apparel and Accessories, Correlation .572



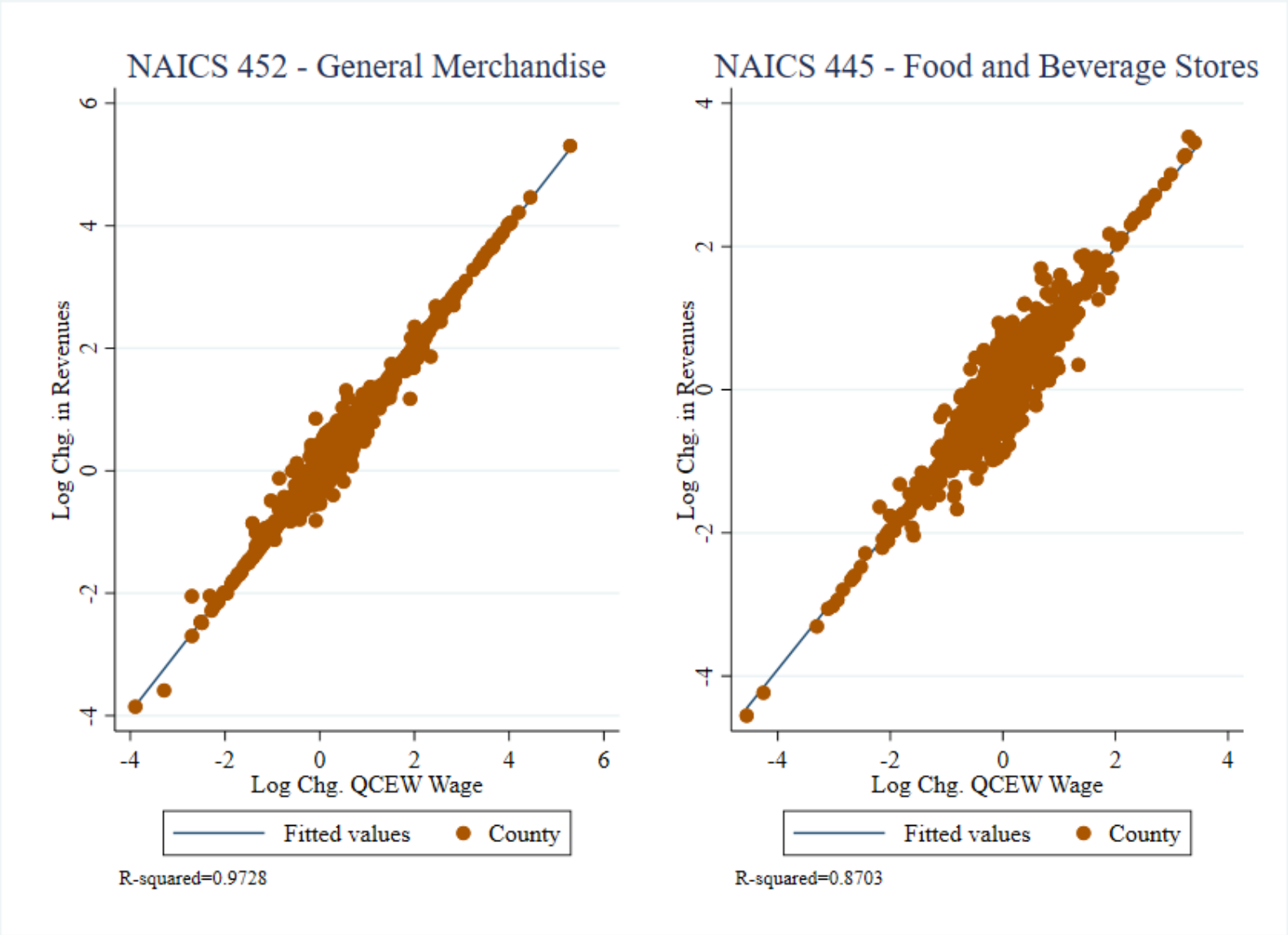
State-Level Affinity and Fiserv  
GEN – General Merchandise, Correlation .303



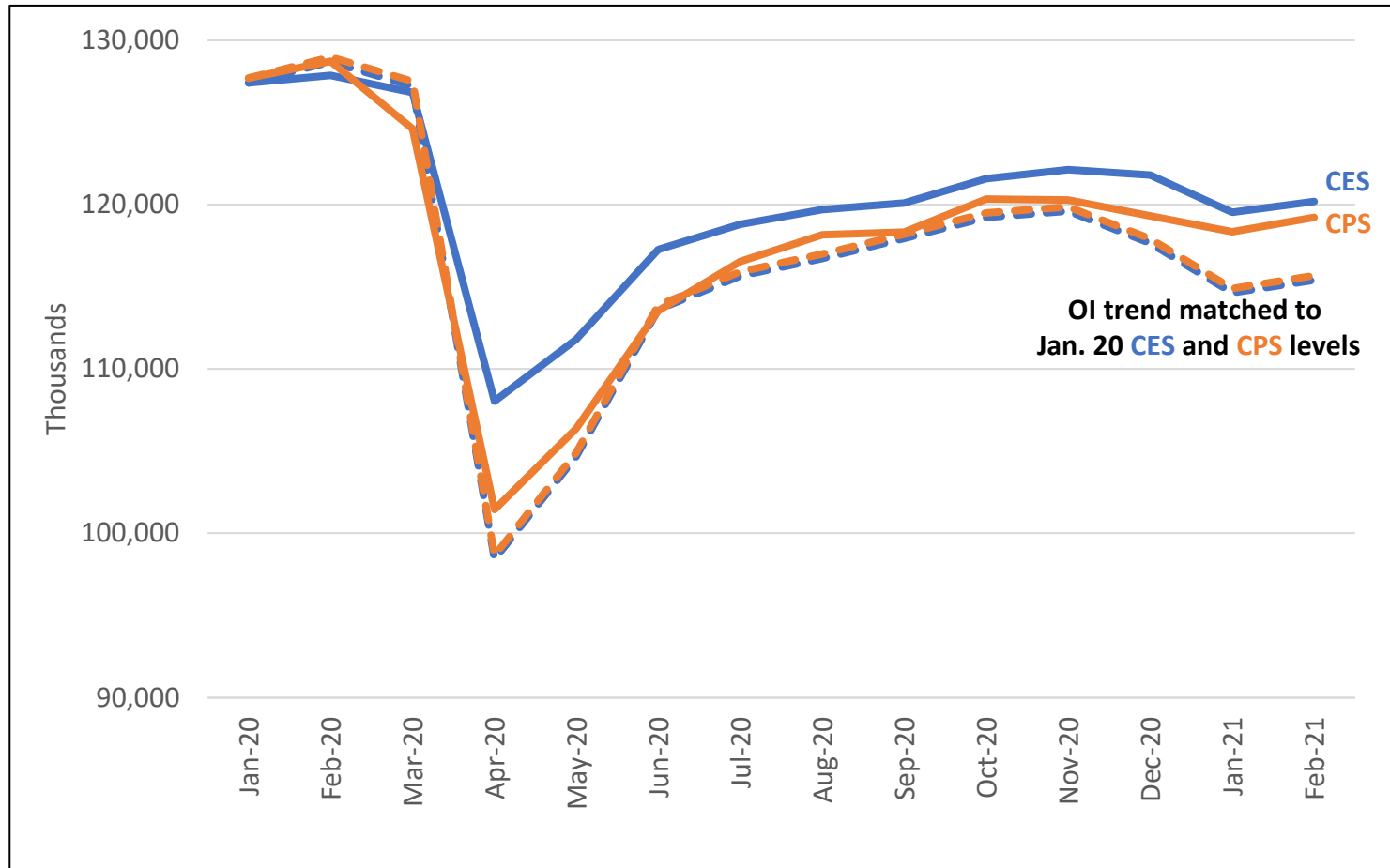
Each graph plots state/month observations of year-over-year percentages between 2019 and 2020.  
Plots and correlations weighted by state population in 2019.

# 5-Year County Revenue Growth and Wage Growth

(Economic Census and Quarterly Census of Wages and Employment)

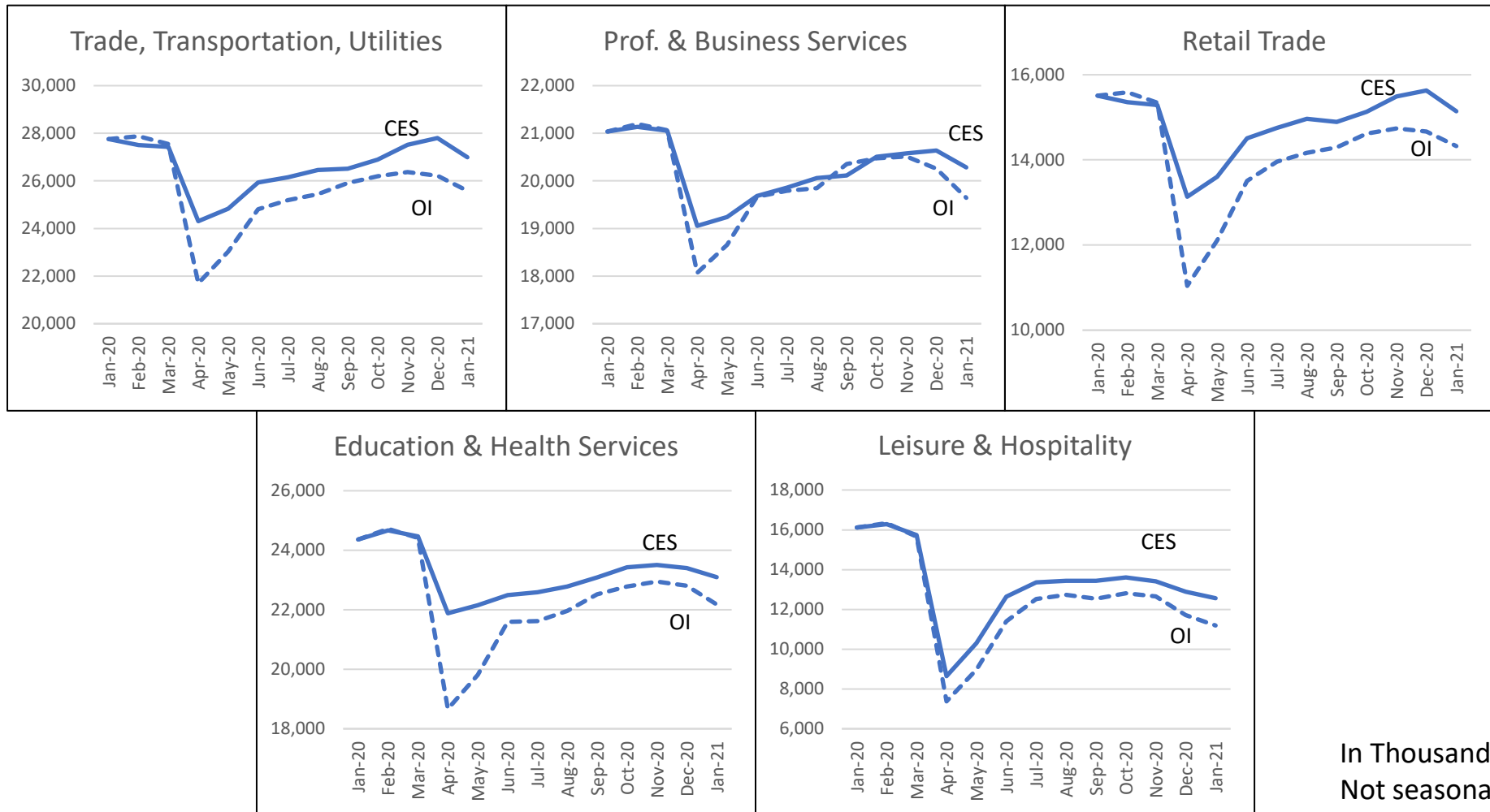


# Employment - National



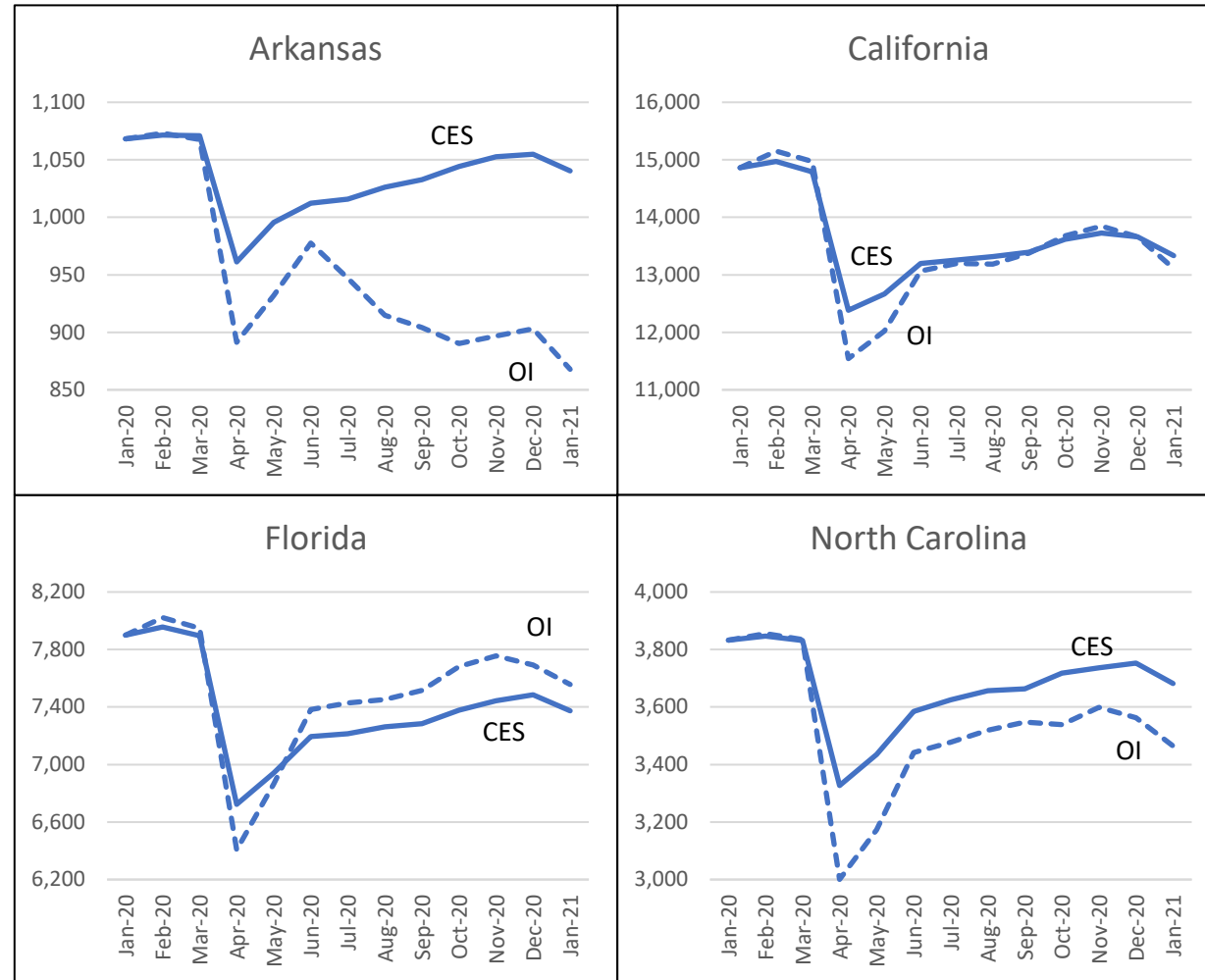
In Thousands  
Not seasonally adjusted

# Employment – Industry Patterns



In Thousands  
Not seasonally adjusted

# Employment – State Patterns



In Thousands  
Not seasonally adjusted

# Next Steps

## Consumer Spending

- Additional comparisons to other data sources (e.g., QSS, MRTS, state retail sales, CEX, Fiserv and other sources)
- Mapping of NAICS and MCC codes

## Employment

- Comparison to other data sources (e.g., CES, QCEW, and CPS)
- Explore weighting schemes

## Small Business Revenue

- Will begin to benchmark these data once new data source is acquired

## Firm Births and Deaths

- BLS will conduct research to improve modeling for the CES
- Census will research feasibility of developing firm birth and death statistics from OI data

# Questions for the Committee

1. What value do you place on the agencies producing more real-time and granular estimates from these sources?
2. How much benchmarking/quality checking is necessary? How much discrepancy with official statistics is tolerable?
3. How should we communicate fitness for use, measurement error, and anomalies from estimates generated by third-party data?



# Thank you!

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# Appendix: CPI Alternative Data Pipeline

