Measuring the Effects of the COVID-19 Pandemic on Consumer Spending Using Card Transaction Data

Introduction

- Large shifts in the economy are occurring in days and weeks, not months and years

- Use daily card transaction data to get an early read on the effects of the pandemic on spending

- Timely data already help inform monthly and quarterly estimates at BEA

Data

- Fiserv card transaction data
  - One of the world's largest card transaction intermediaries
  - $2.6 trillion in annual card transactions worldwide
  - Each observation is a single transaction (e.g., debit, credit or gift card) or online transaction
  - Transactions are aggregated and anonymized to the state and national level by 3-digit NAICS

- Data series constructed using FRB and Palantir methodology
  - FRB Paper - Aladangady et al. (2019) – rolling panel of merchants
  - Produces a more stable and informative series
  - Correlated with national estimates, especially for retail categories

Limitations

- Not nationally representative

- Poor coverage for e-commerce (i.e., non-store retail category)

- Challenges in capturing exiting businesses
  - Estimates potentially understate spending decline and overstates spending recovery
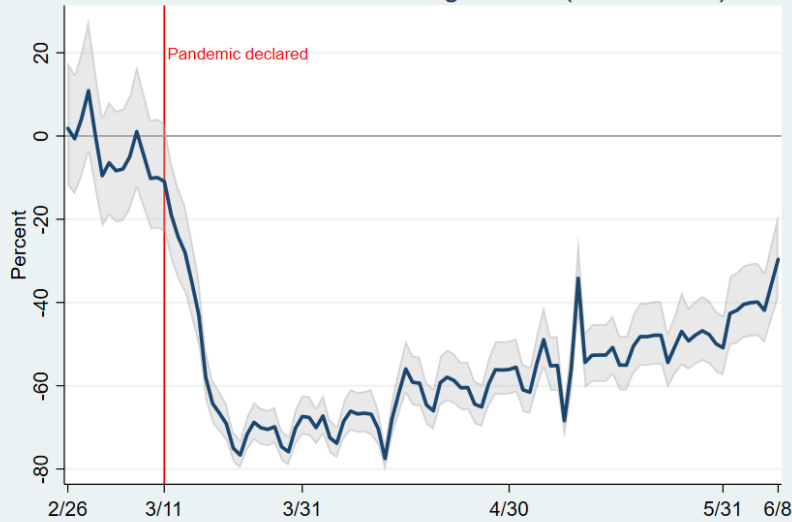
Comparison with MRTS

Not Seasonally Adjusted, Monthly % Change
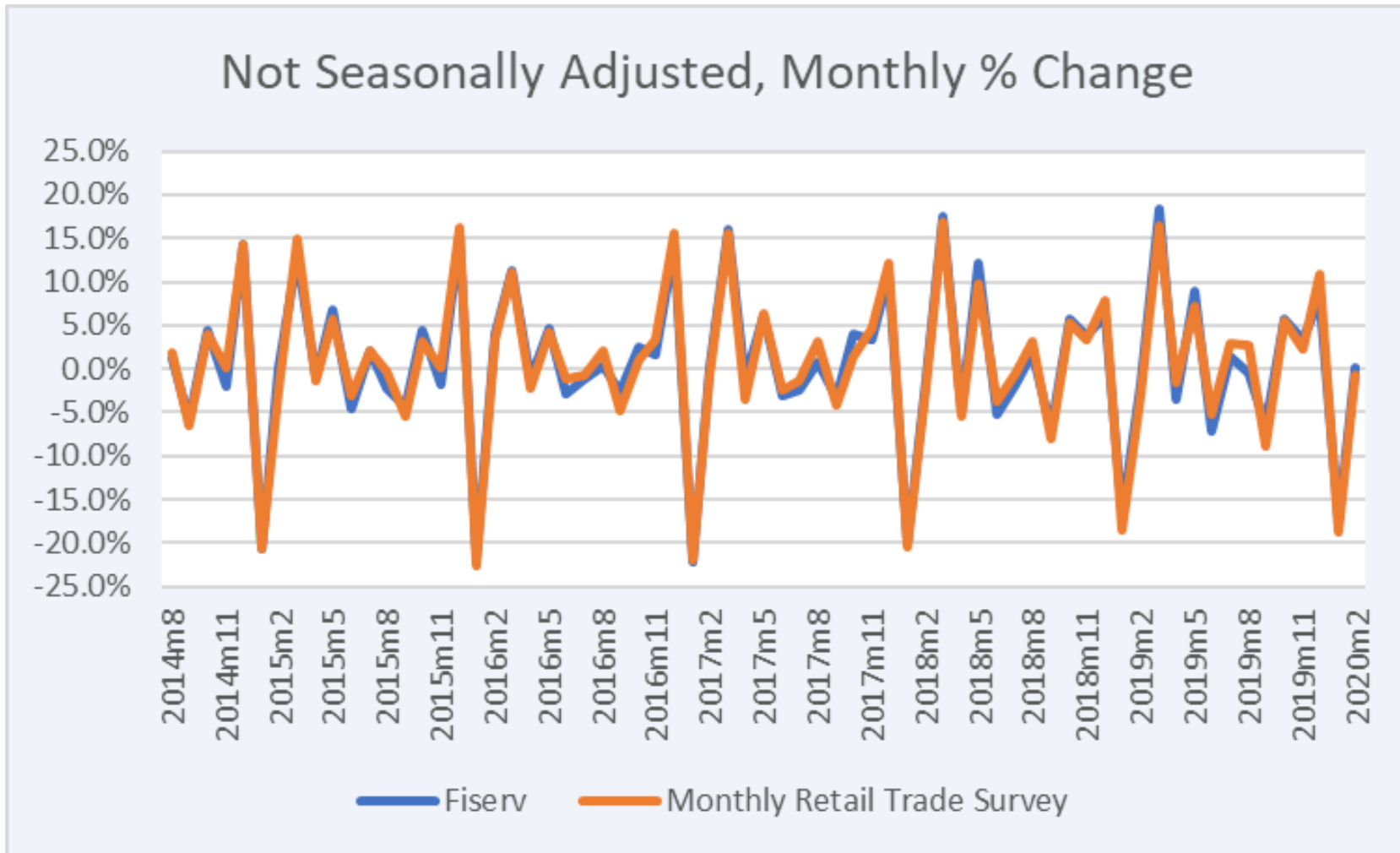
$$Log(Spend_{t,naics}) = \gamma_{t,naics} \cdot (t > event_{start}) + \beta \cdot X_{t,naics} + \varepsilon_{t,naics}$$
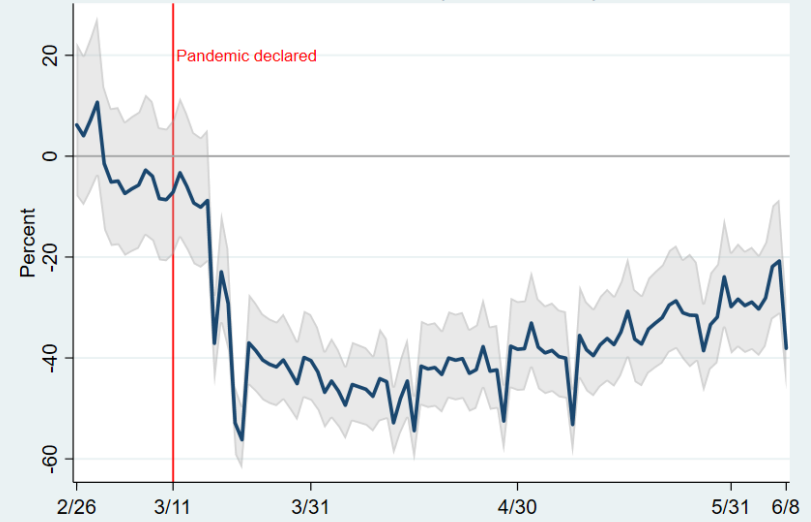
- $\gamma_{t,naics}$ — day specific fixed effects around March 11th event date

- $X_{t,naics}$ — holiday, month, year and day of week fixed effects

- $\varepsilon_{t,naics}$ — error term
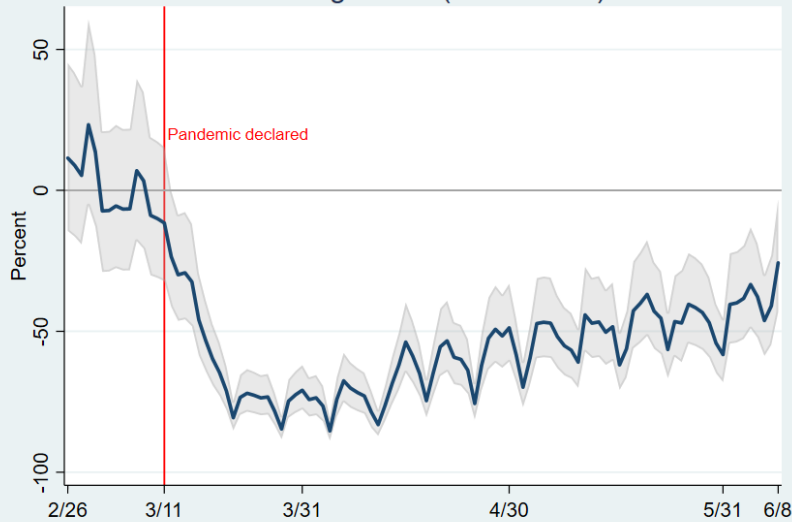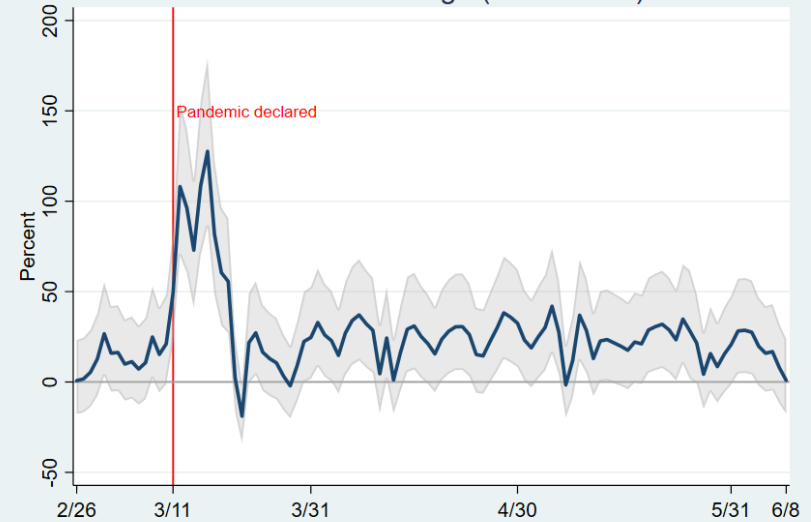
Patterns in Retail and Food Services

Services
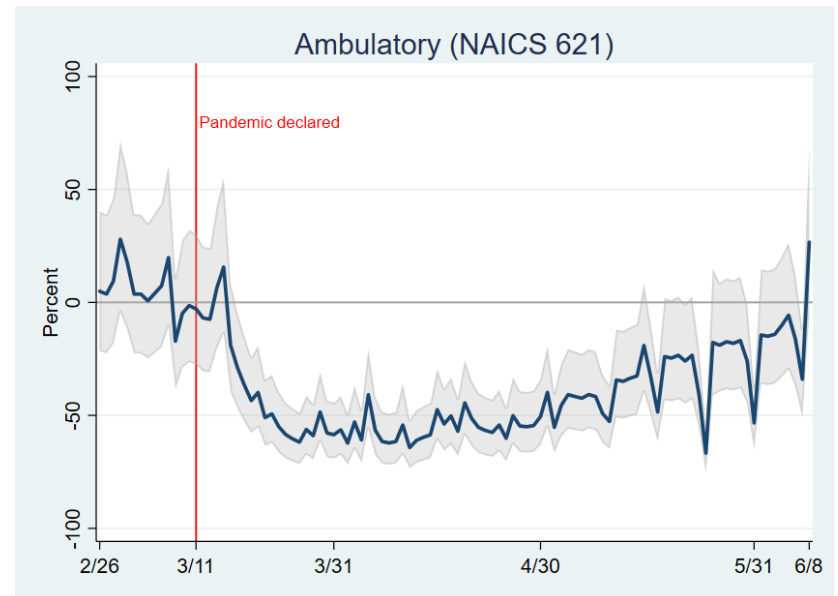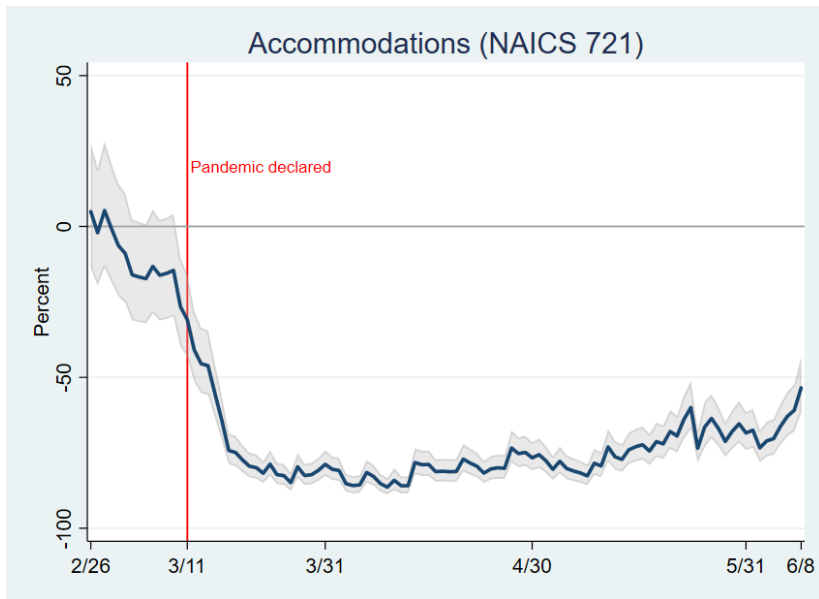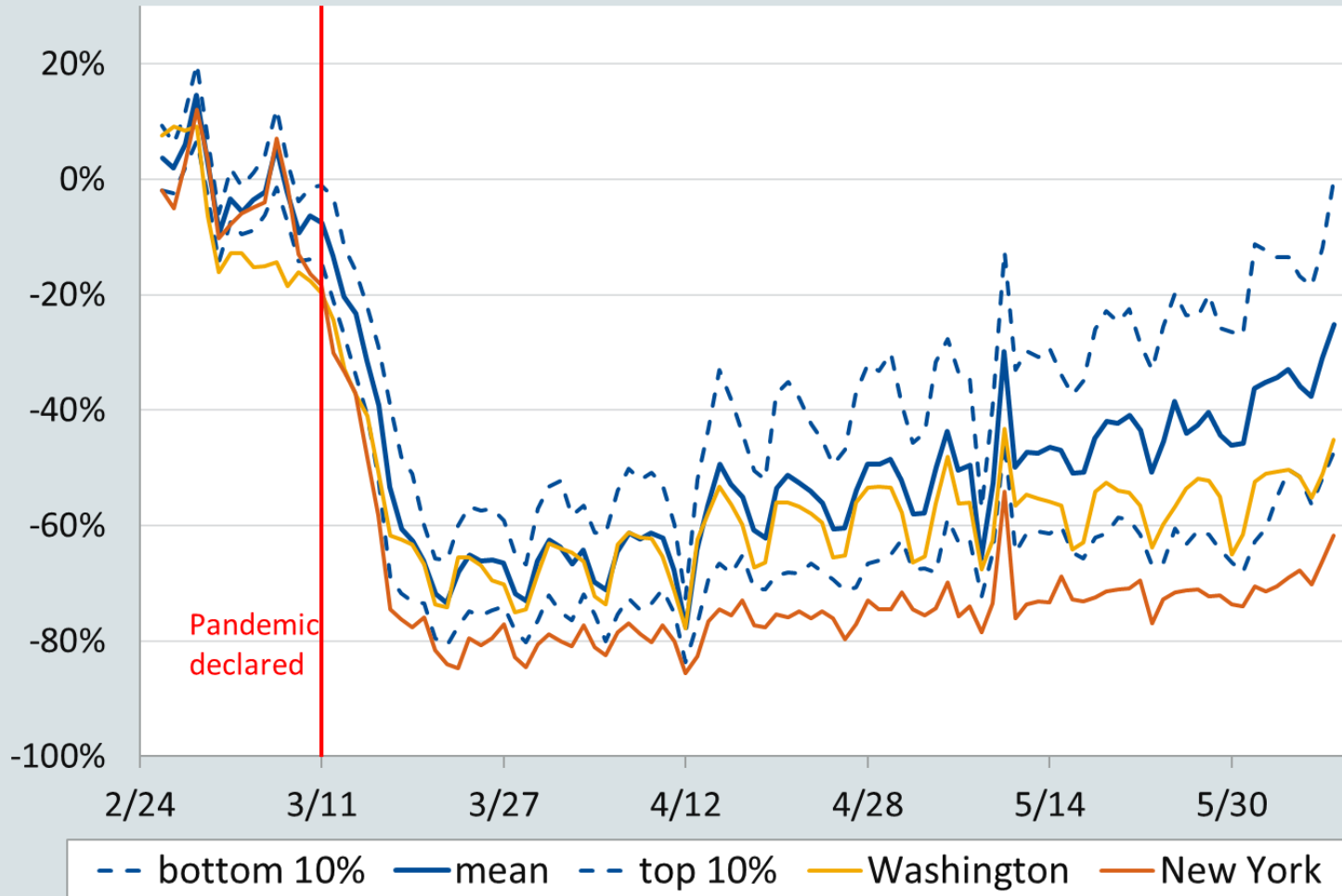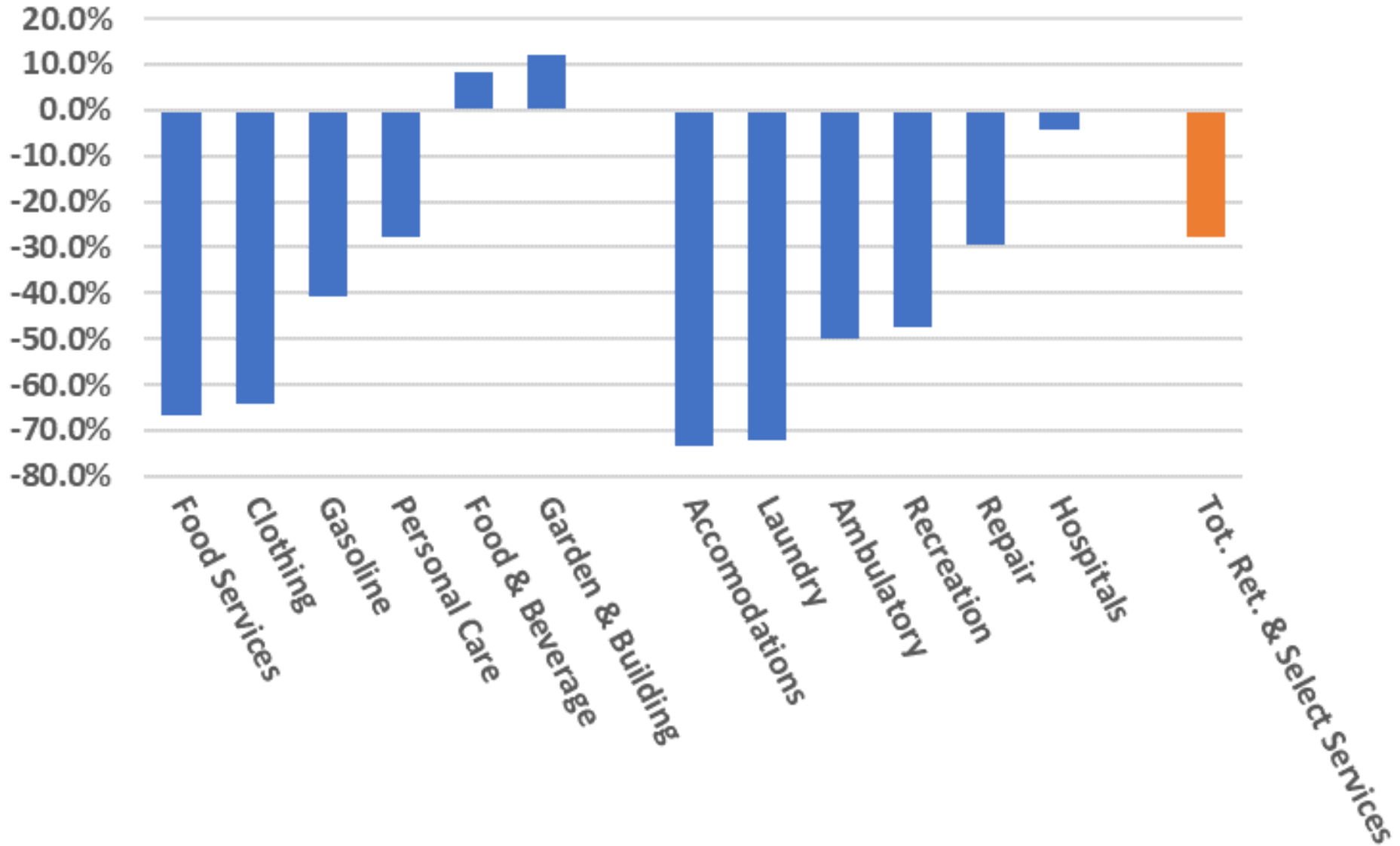
State-level event study

States: Restaurants (NAICS 722)

Pandemic effect – March 21ᵗʰ to April 22ⁿᵈ

Lessons

- Benefits of BEA working with Fiserv data before the pandemic
  - Contracting, analysis and production

- Card data is a promising, especially when timeliness is important

- More work needed to validate the accuracy of these data

- Uncertainty → important to consider multiple data sources

- "Measuring the Effects of the COVID-19 Pandemic on Consumer Spending Using Card Transaction Data" by Abe Dunn, Kyle Hood and Alex Driessen

- BEA - COVID 19 and Recovery