

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

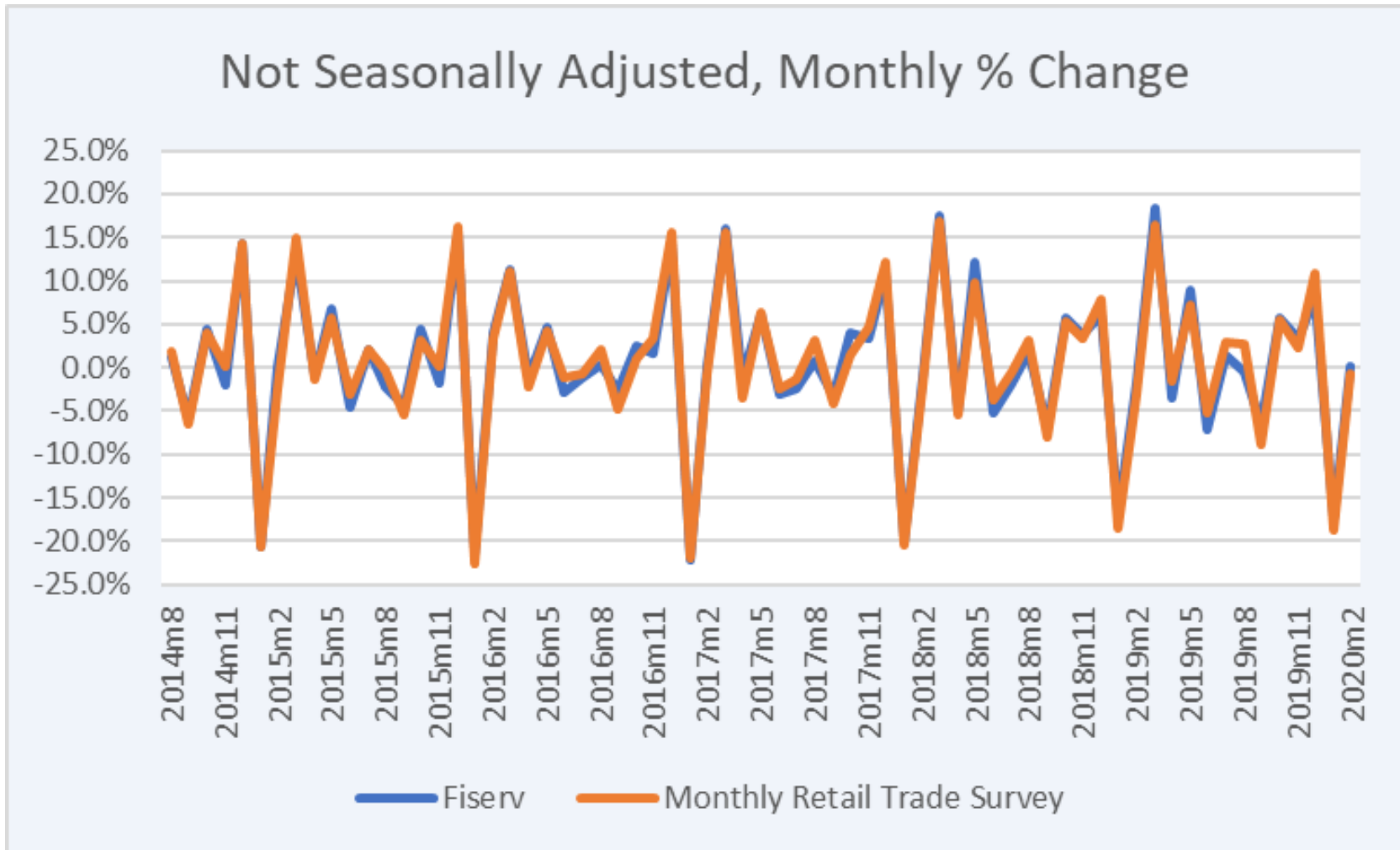
- Large shifts in the economy are occurring in days and weeks, not months and years
- Use daily card transaction data to get an early read on the effects of the pandemic on spending
- Timely data already help inform monthly and quarterly estimates at BEA

- 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

- 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

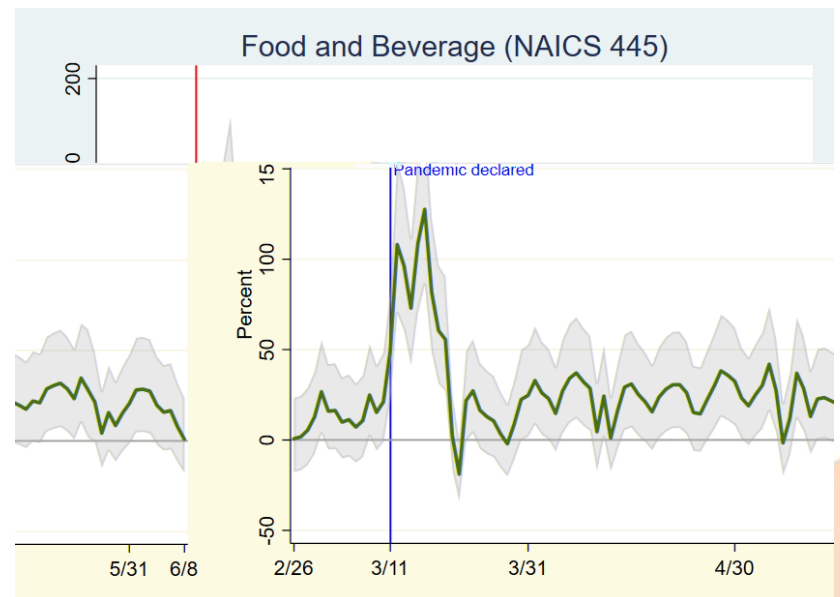
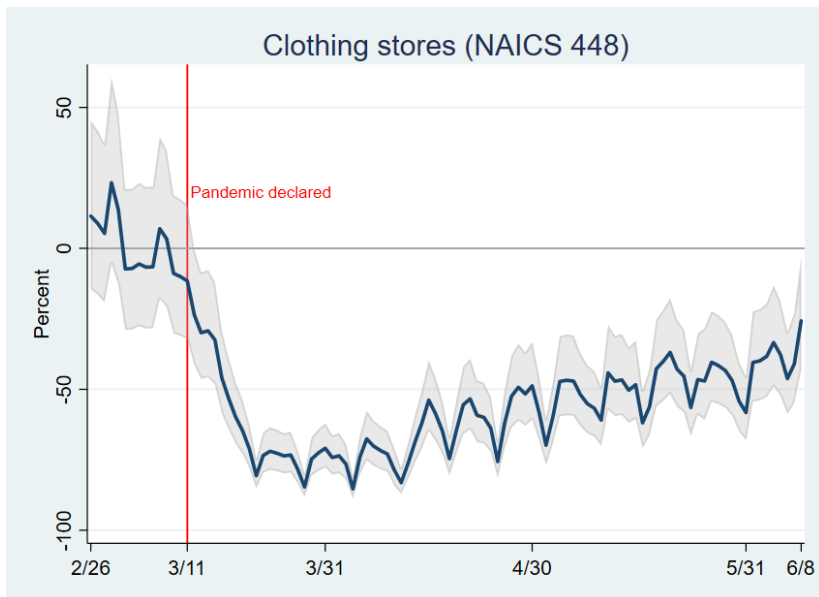
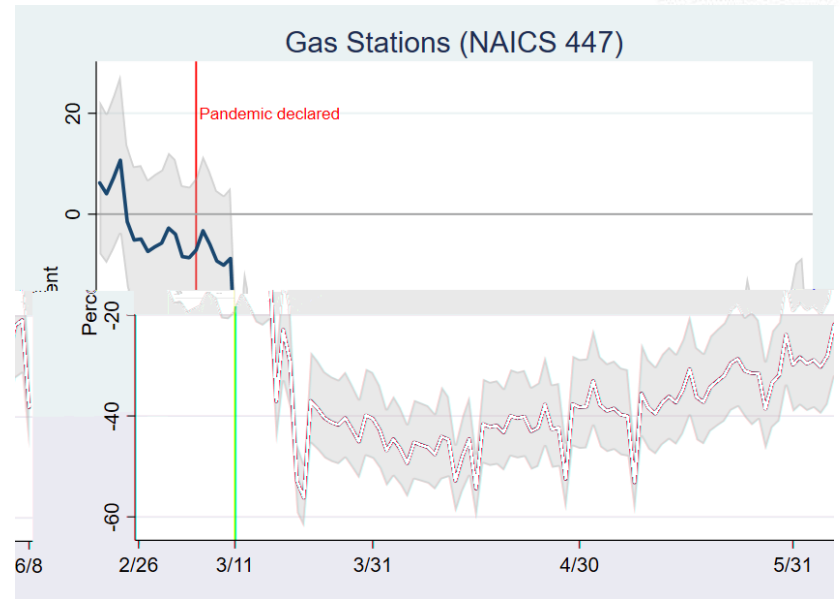
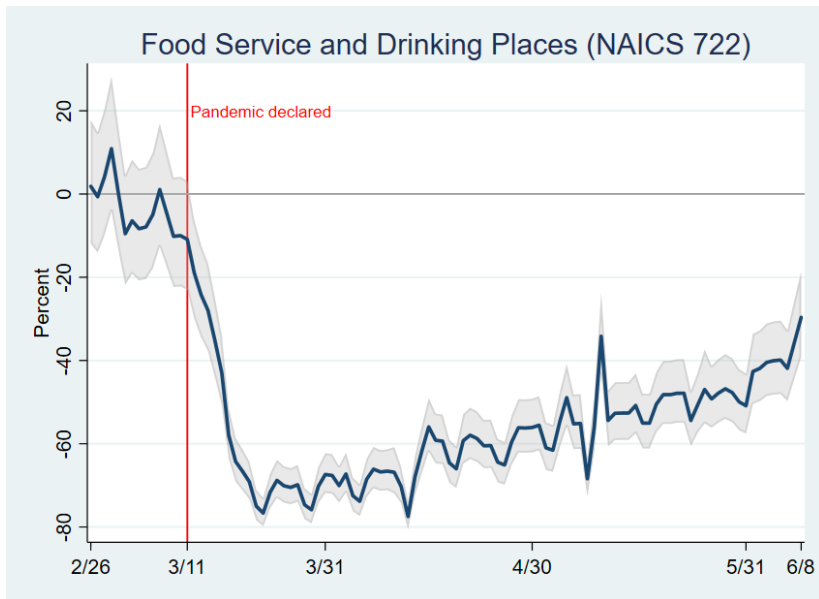
Comparison with MRTS



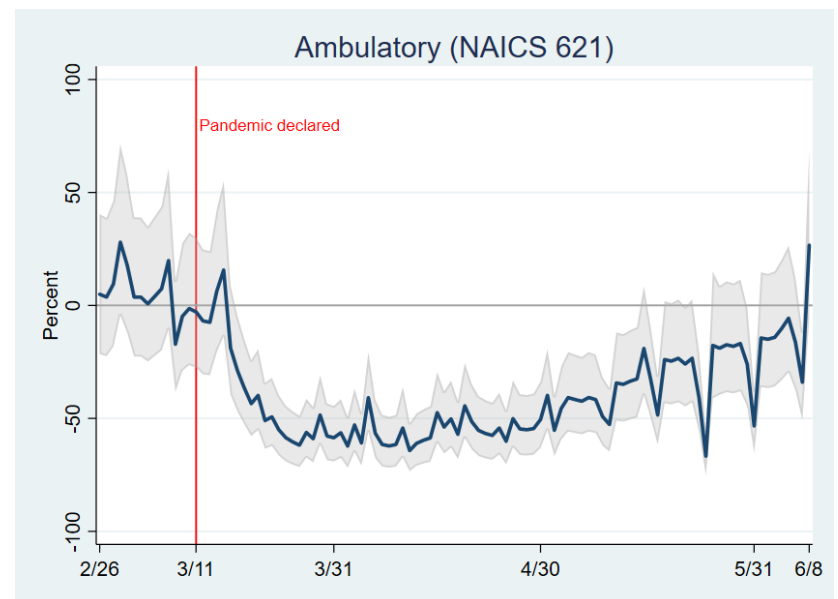
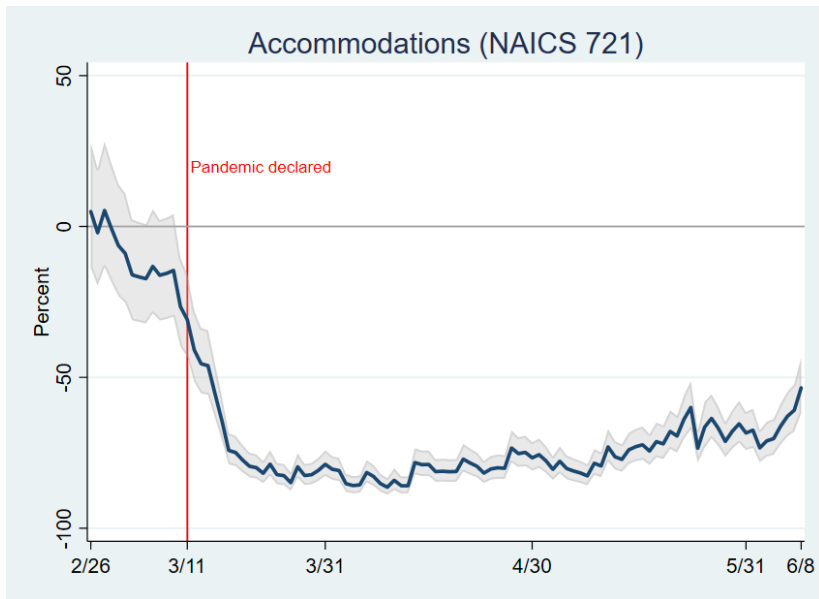
$$\text{Log}(\text{Spend}_{t,naics}) = \gamma_{t,naics} \cdot (t > \text{event}_{start}) + \beta \cdot X_{t,naics} + \varepsilon_{t,naics}$$

- $\gamma_{t,naics}$ – 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

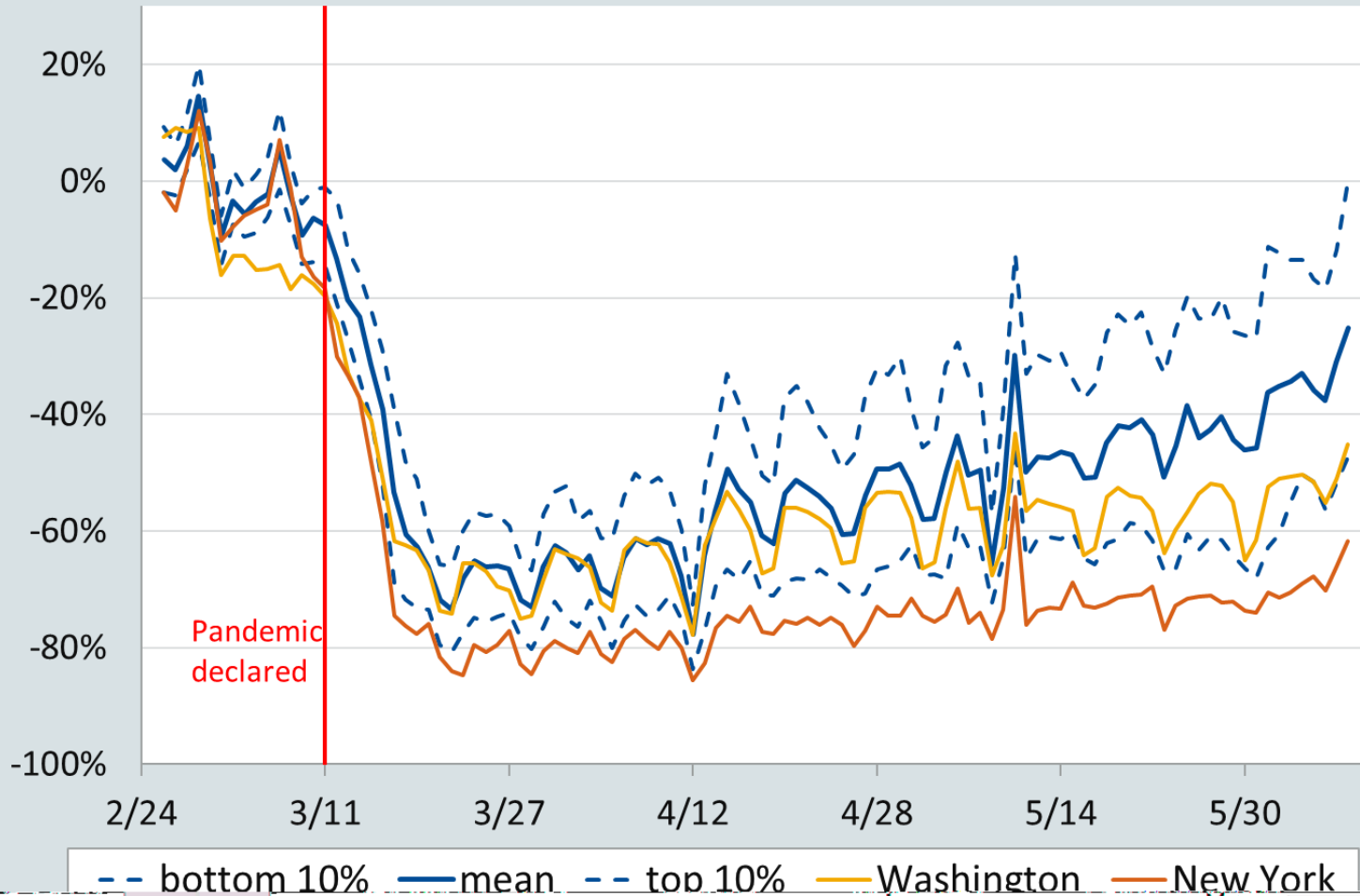


Services

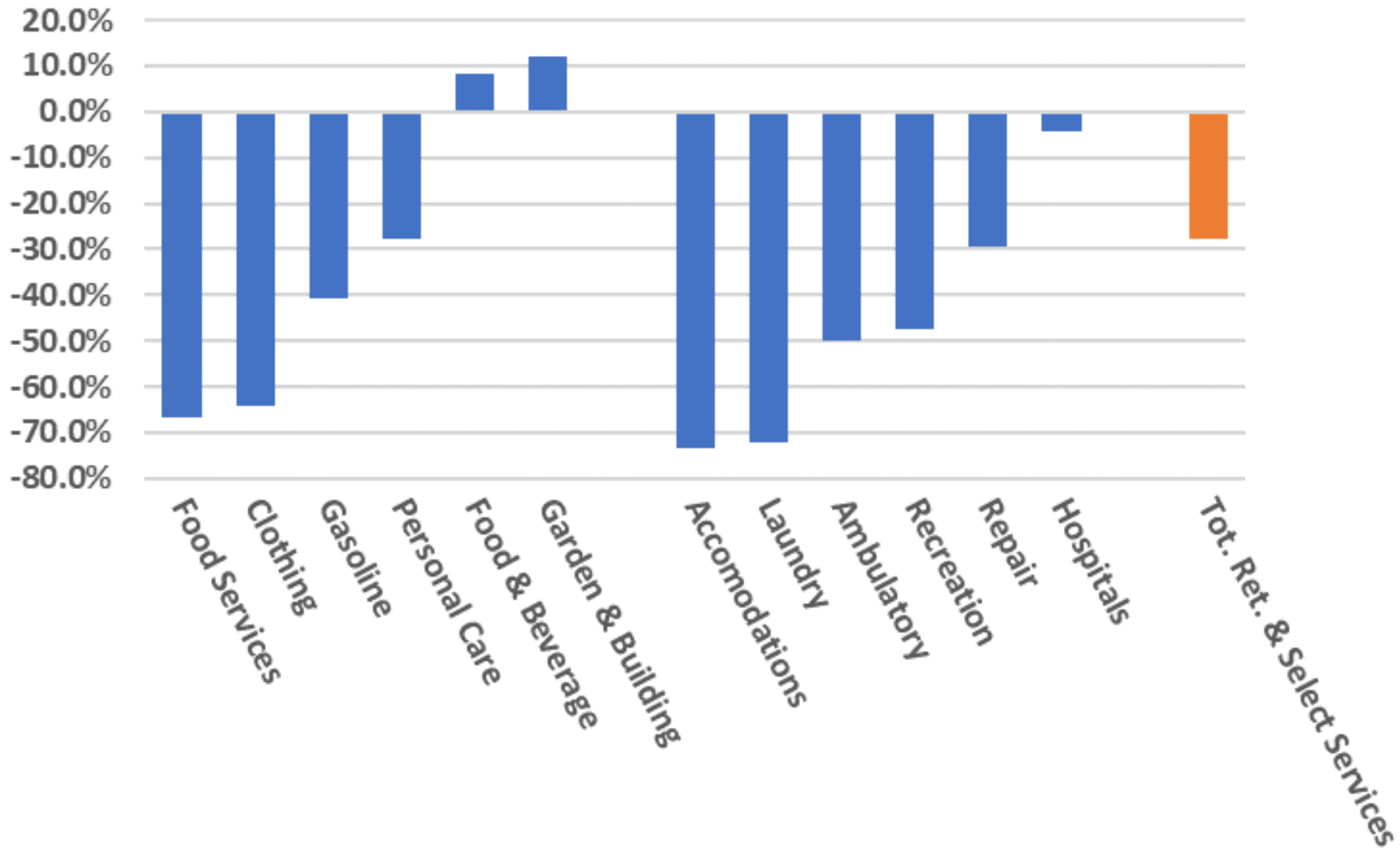


State-level event study

States: Restaurants (NAICS 722)



Pandemic effect – March 21th to April 22nd



- 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](#)