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

• Data series constructed using FRB and Palantir methodology
  o FRB Paper - Aladangady et al. (2019) – rolling panel of merchants
  o Produces a more stable and informative series
  o 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
  o Estimates potentially understate spending decline and overstates spending recovery
Comparison with MRTS

Not Seasonally Adjusted, Monthly % Change

-25.0% to 25.0%

Fiserv
Monthly Retail Trade Survey

2014m8 2014m11 2015m2 2015m5 2015m8 2015m11 2016m2 2016m5 2016m8 2016m11 2017m2 2017m5 2017m8 2017m11 2018m2 2018m5 2018m8 2018m11 2019m2 2019m5 2019m8 2019m11 2020m2
Event study regression

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

- \(\gamma_{t,\text{naics}}\) — day specific fixed effects around March 11\textsuperscript{th} event date
- \(X_{t,\text{naics}}\) — holiday, month, year and day of week fixed effects
- \(\varepsilon_{t,\text{naics}}\) — error term
Patterns in Retail and Food Services

Food Service and Drinking Places (NAICS 722)

Gas Stations (NAICS 447)

Clothing stores (NAICS 448)

Food and Beverage (NAICS 445)
State-level event study

States: Restaurants (NAICS 722)

Pandemic declared

- bottom 10%
- mean
- top 10%
- Washington
- New York
Lessons

• Benefits of BEA working with Fiserv data before the pandemic
  o 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