

# **Bol-FRB Conference**

## **Nontraditional Data & Statistical Learning with Application to Macroeconomics**

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The views expressed herein represent the views of the author and do not indicate concurrence by other members of the Board's staff or by the Board of Governors.

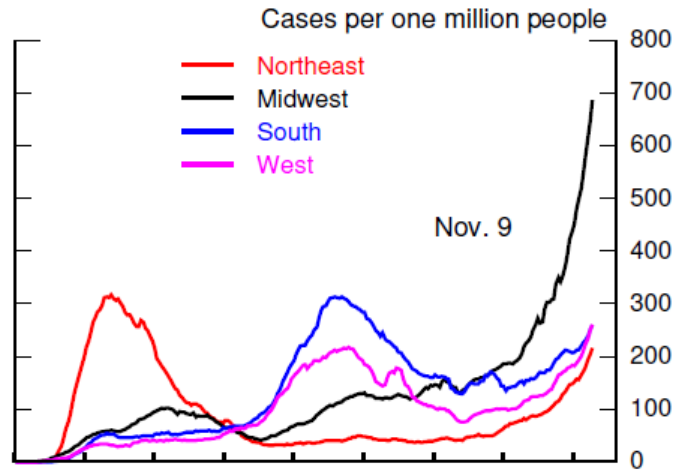
# This Time *IS* Different

- Not the Global Financial Crisis
- U.S. economy was in great shape at the start of 2020
  - Unemployment below 4 percent
  - Job opportunities widely available
- The current economic downturn due to pandemic
  - Need different source of data for monitoring
    - Health
    - Movement & Geolocation
    - Services & Retail
- Fed's expanded measurement agenda

# High Frequency Indicators

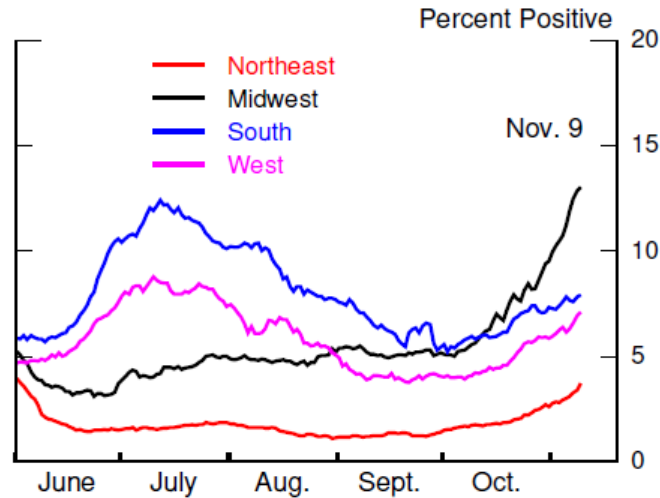
- Since the start of the pandemic, provided policymakers with much high frequency information
- Financial and economic
  - Currently sent to policymakers weekly
- HFI package
  - Health information at state and national level
  - Mobility
  - Economic data--small businesses, consumer confidence, home sales, spending, labor market, demographics, consumer prices, industrial activity

### New US Cases of Covid-19



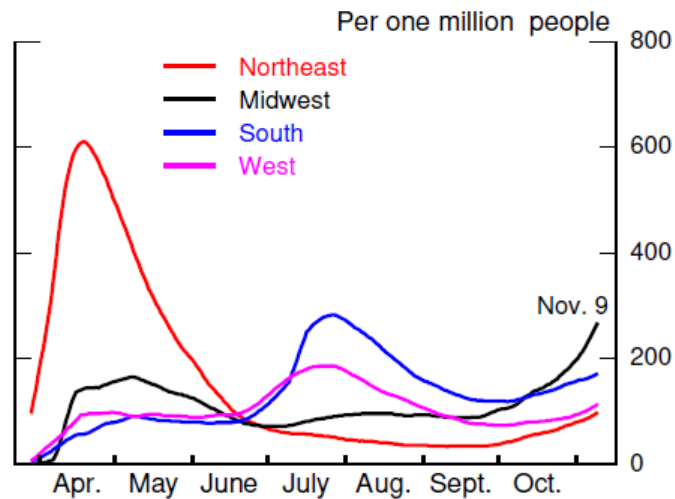
Note: Seven-day trailing average.  
Source: Covid Tracking Project.

### Rate of Positive Covid-19 Tests



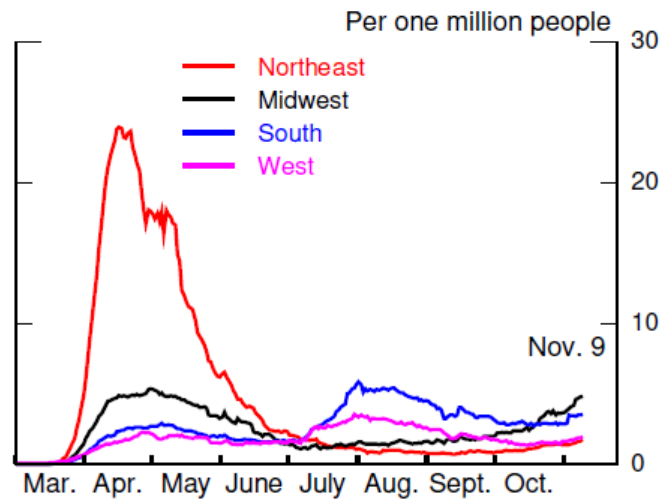
Source: Covid Tracking Project.

### Current Hospitalizations for Covid-19



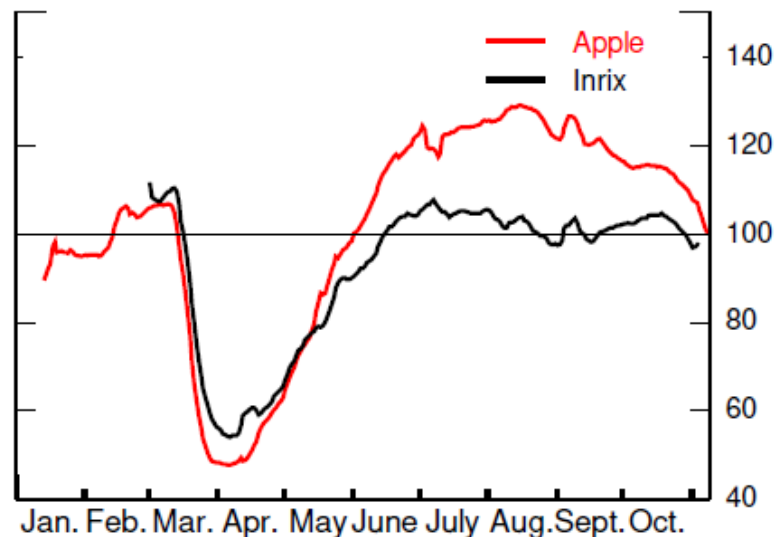
Note: Seven-day trailing averages.  
Source: The Covid Tracking Project.

### New US Deaths from Covid-19



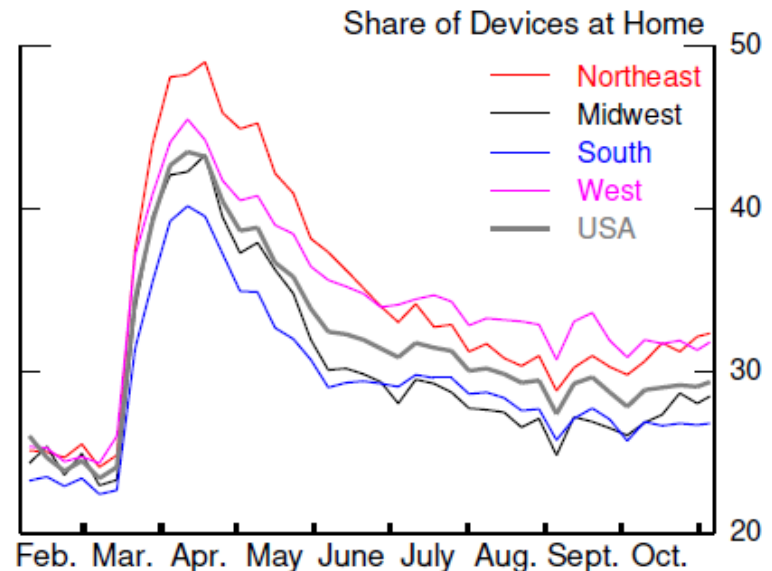
Note: Seven-day trailing average. Data are smoothed to adjust for an anomalous reading for NJ on June 25.  
Source: Covid Tracking Project.

### Mobility Indexes



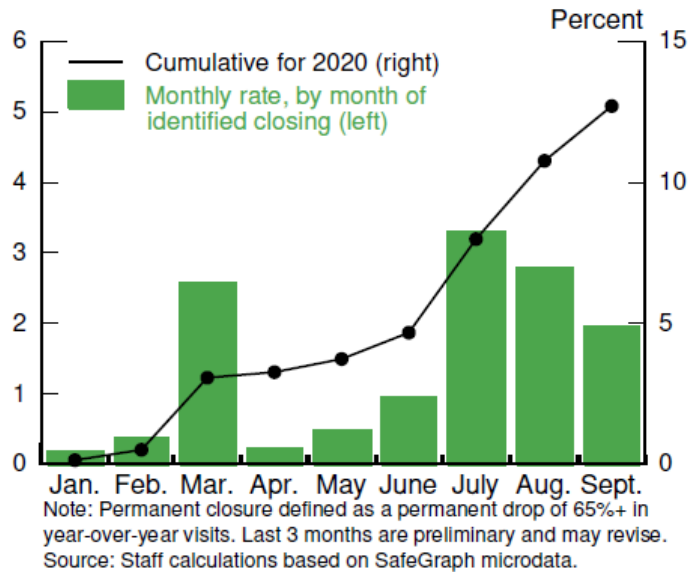
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.  
Note: 7-day moving averages. Inrix data measures distance traveled normalized by typical travel behavior between January 20th and February 28th; Apple data reflects routing requests through their server, also normalized over the same period. Last value for Apple is Nov. 8, and last value of Inrix is Nov. 4.  
Source: Apple and Inrix.

### Fraction of Population Staying at Home

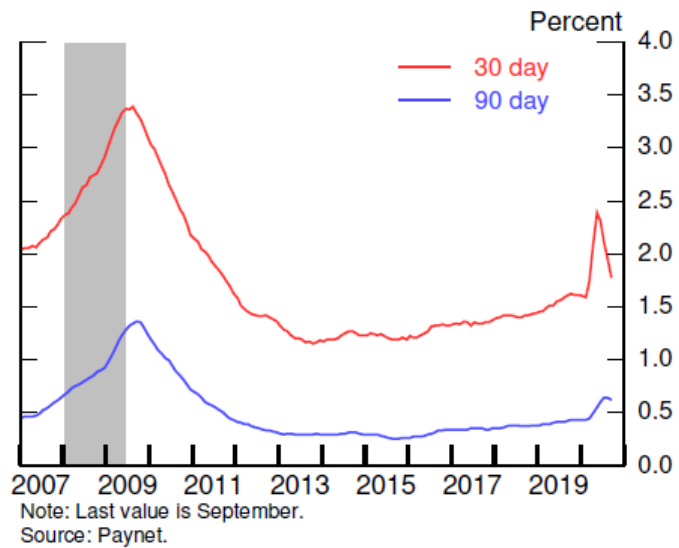


Feb. Mar. Apr. May June July Aug. Sept. Oct.  
Note: Using opt-in cell phone geo-location data. Last date is Nov. 5.  
Source: Safegraph.

### Percent of Restaurants Permanently Closed

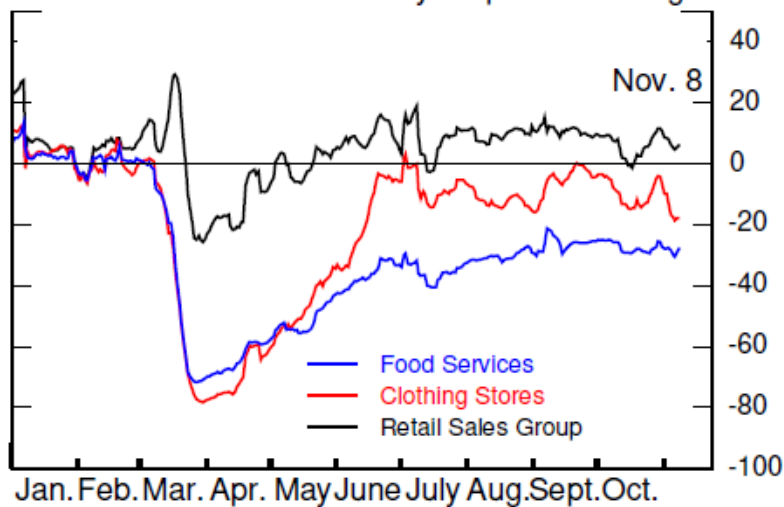


### Small Business Delinquency Rates



### Daily Credit/Debit Spending

Year-over-year percent change

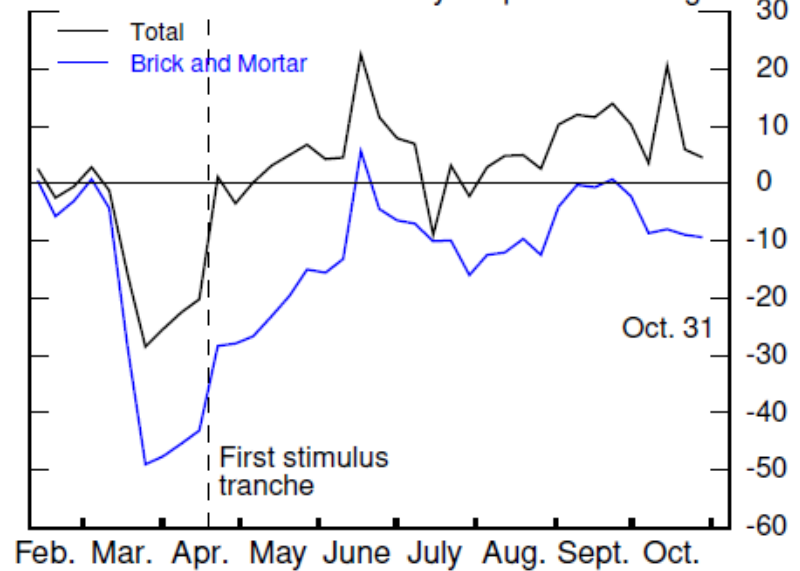


Note: Fiserv is a 7-day moving average and excludes non-store merchants.

Source: Fiserv, Inc.

### Spending on Non-Food Retail Goods

Year-over-year percent change



Source: NPD Group.

# Central Bank Communication

- Central banks provide wealth of data for NLP research
- NLP can be very helpful for some types of analysis
- Can CBs use NLP techniques to craft policy messages?
- NLP challenges
  - Meaning & intent
  - Past, present, future
- Fed aims to communicate consistently across time and across vehicles



# Fed Communication since March

- Volume of communications unprecedented
- Swift policy actions
  - Monetary policy
  - 13(3) facilities
- Key themes of Fed's pandemic communications

# 1. Virus as source of economic downturn

FOMC Statement, March 15: The coronavirus outbreak has harmed communities and disrupted economic activity in many countries, including the United States. Global financial conditions have also been significantly affected. Available economic data show that the U.S. economy came into this challenging period on a strong footing. ...

FOMC Statement, April 29: The virus and the measures taken to protect public health are inducing sharp declines in economic activity and a surge in job losses.

## 2. Risks rooted in public health

### FOMC Statement, July 29:

The ongoing public health crisis will weigh heavily on economic activity, employment, and inflation in the near term, and poses considerable risks to the economic outlook over the medium term.

Said many times and in many places: *The path of the economy will depend on the course of the virus.*

### **3. Virus Containment $\equiv$ Confidence**

Chair's press conference, June 10:

The extent of the downturn and the pace of recovery remain extraordinarily uncertain and will depend in large part on our success in containing the virus. We all want to get back to normal, but a full recovery is unlikely to occur until people are confident that it is safe to reengage in a broad range of activities.

## 4. Wear Masks!

### Chair's press conference, September 16:

As we have emphasized throughout the pandemic, the outlook for the economy is extraordinarily uncertain and will depend in large part on our success in keeping the virus in check. All of us have a role to play in our nation's response to the pandemic. Following the advice of public health professionals to keep appropriate social distances and to wear masks in public will help get the economy back to full strength.

## 5. Role of monetary and fiscal policy

### Chair's press conference, September 16 (italics added):

[Fed has] lending powers, not spending powers. The Fed cannot grant money to particular beneficiaries. ... [Fed can only lend to solvent entities. Many borrowers are benefiting from Fed's 13(3) programs.] But for many others, getting a loan that may be difficult to repay may not be the answer. In these cases, *direct fiscal support may be needed. Elected officials have the power to tax and spend and to make decisions about where we, as a society, should direct our collective resources. The fiscal policy actions that have been taken thus far have made a critical difference to families, businesses, and communities across the country. Even so, the current economic downturn is the most severe in our lifetimes. It will take a while to get back ... and it may take continued support from both monetary and fiscal policy to achieve that.*

**Can NLP identify key themes  
and changes in communications  
from pandemic onset?**