



Center for
Research
On the
Wisconsin
Economy
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Consumer Responses to the COVID-19 Pandemic

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<https://crowe.wisc.edu>

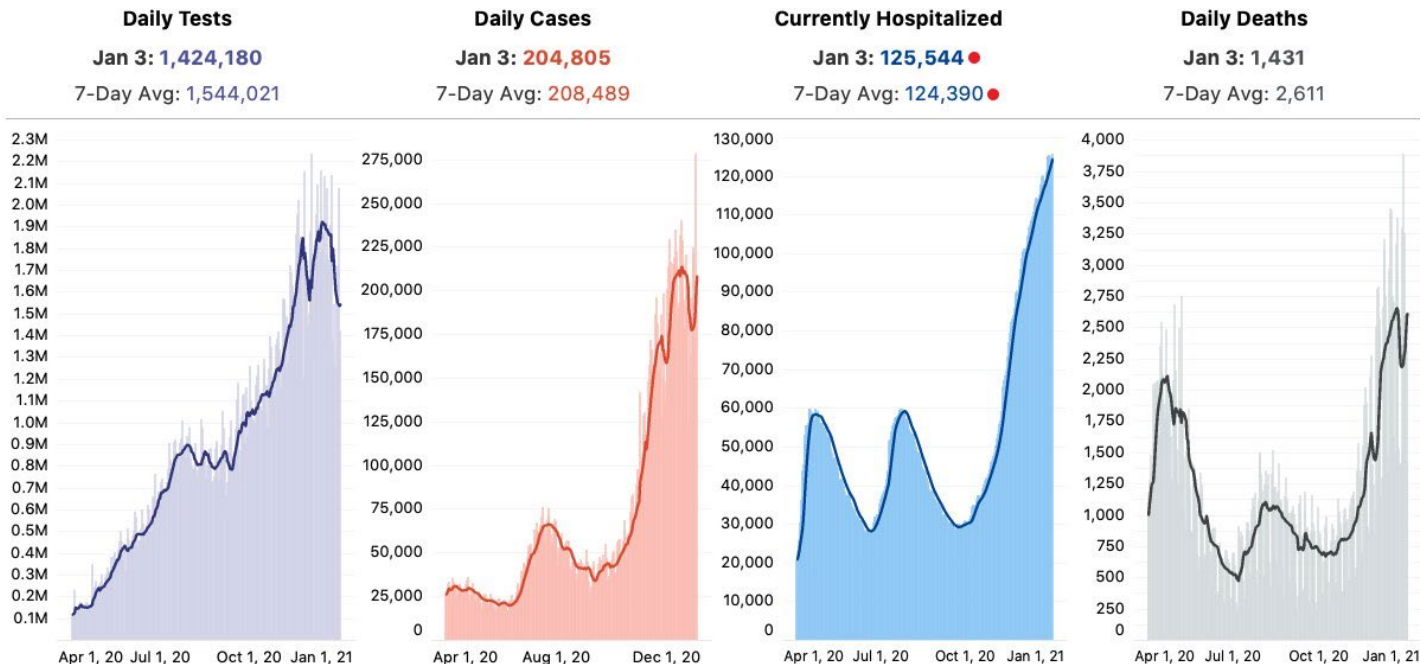
Consumption Responses to the Pandemic

- While the virus spread remains severe in US, consumption, especially according to higher frequency private data, recovered rapidly.
- Overall consumption changes mask adjustment on other dimensions:
 - Shift in consumption bundle
 - Channel: in-store vs. online
 - Frequency: sales vs. transactions (and transaction size)
- Changes driven by spread risk, public health restrictions, available time, supply responses (prices/costs)
- Strong geographic variation in all of these factors.

The Virus Spread Remains Severe

NATIONWIDE COVID-19 METRICS. 7-DAY AVERAGE LINES

Apr 1 - Jan 3

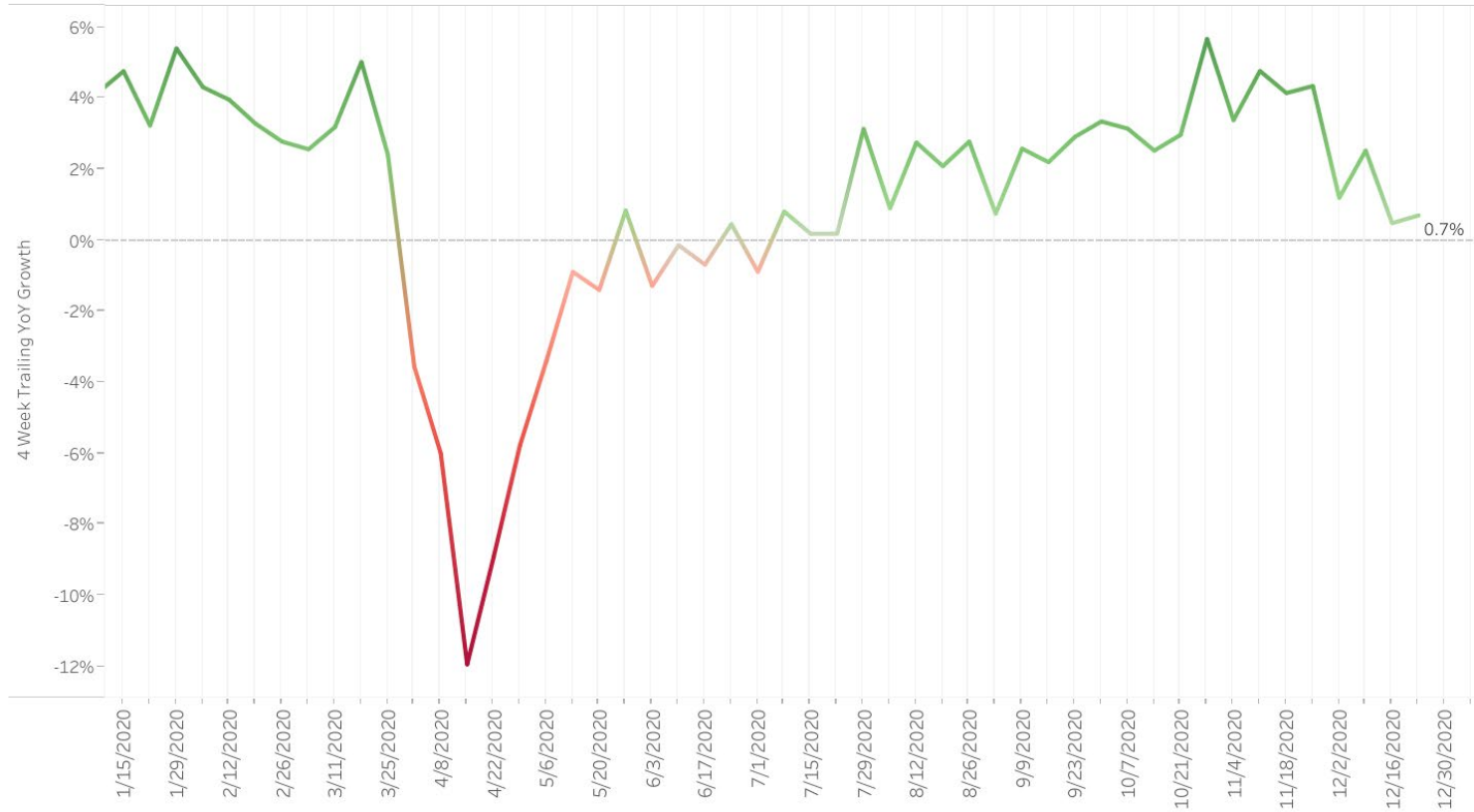


Source: The COVID Tracking Project

● Single-day Record

Private Measures of Spending Recovered Quickly...

Aggregate Consumer Activity

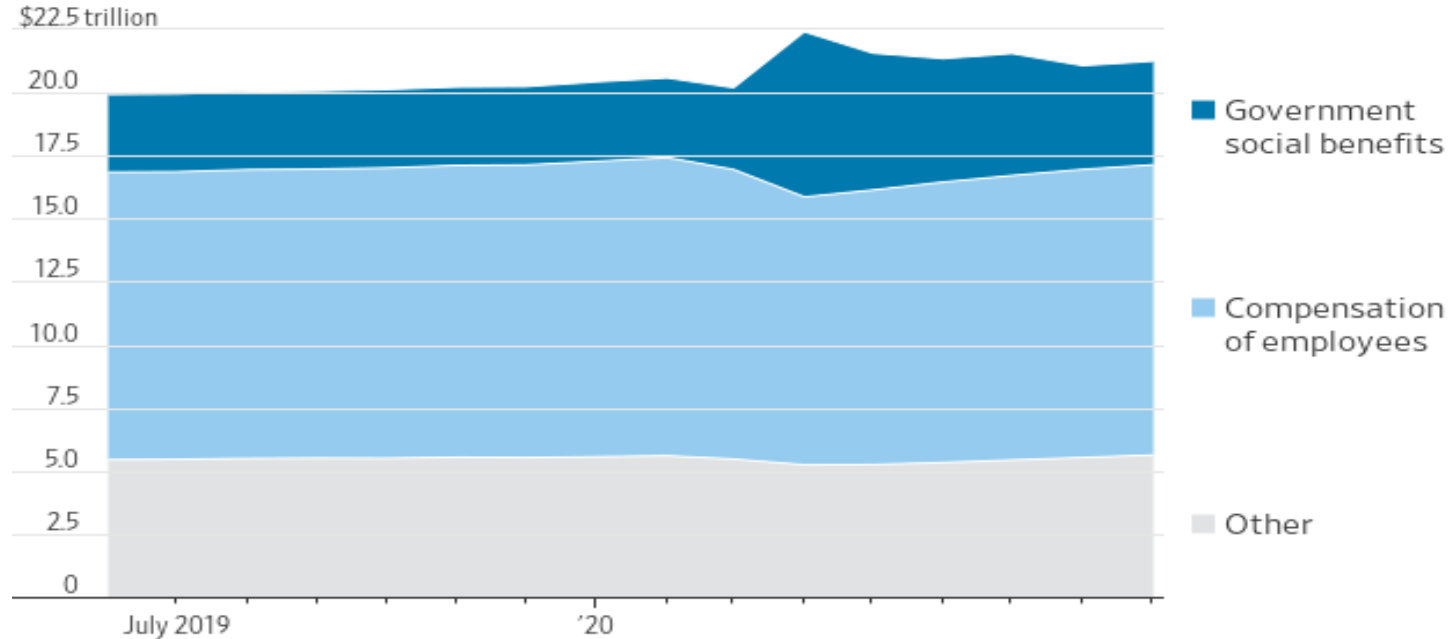


Spending was Supported by Government Benefits...

Helping Hand

Unemployment insurance and other government social benefits lifted household incomes when the pandemic hit and millions of Americans lost their jobs.

U.S. personal income, monthly

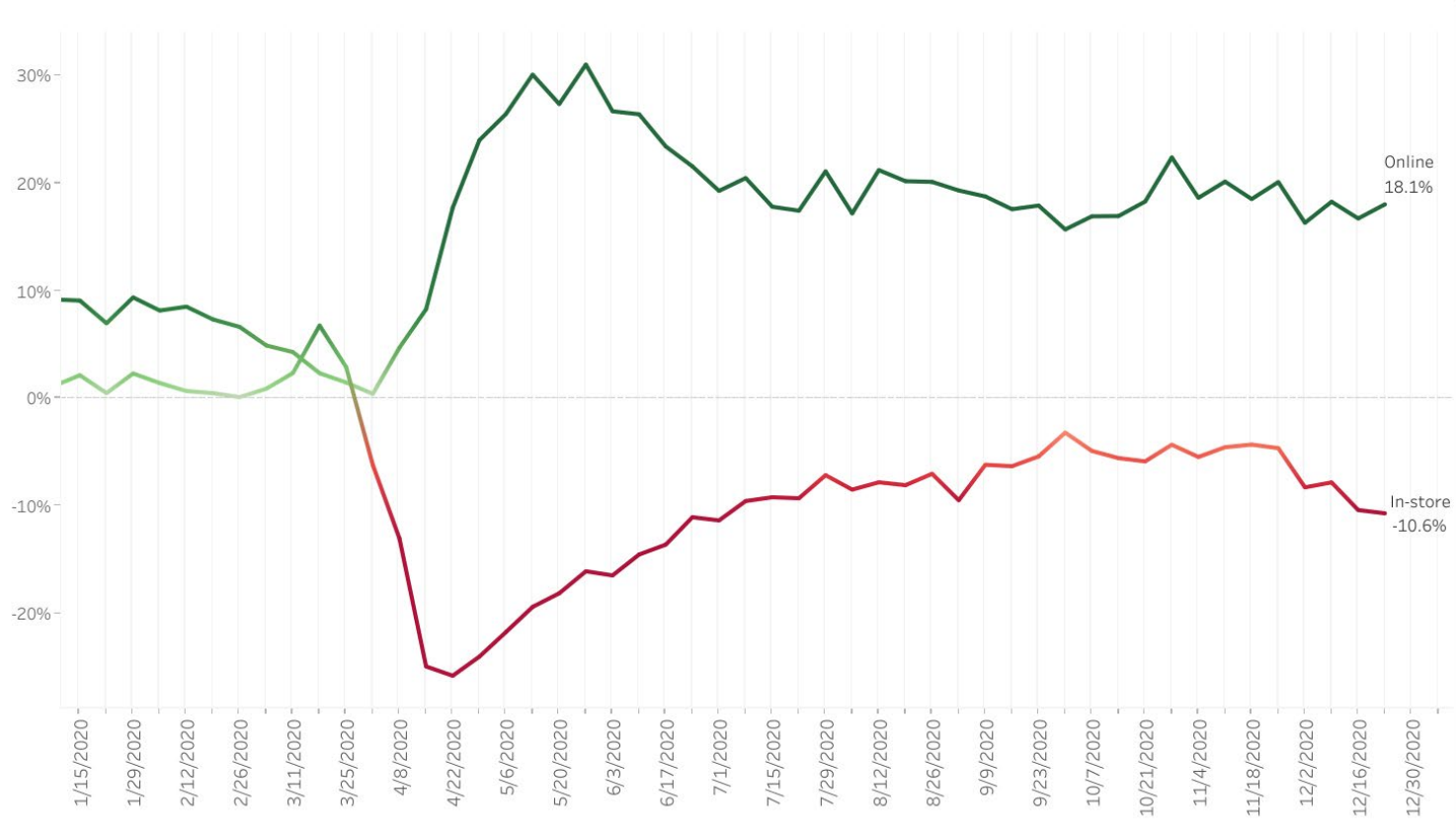


Note: Seasonally adjusted annual rate; does not deduct contributions for government social insurance

Source: Commerce Department

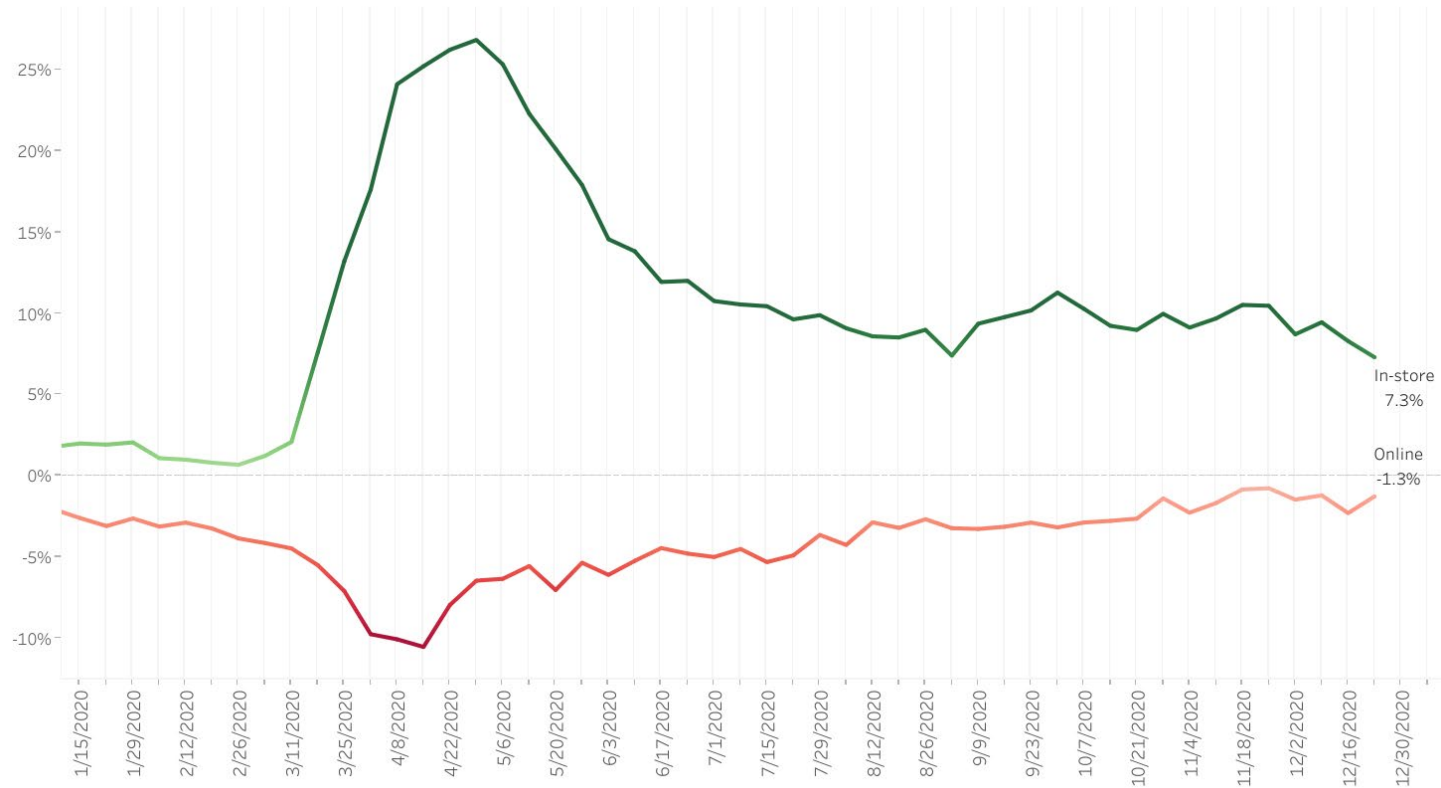
With a Big Shift in How Purchases are Made: More Online

Aggregate Consumer Activity by Channel



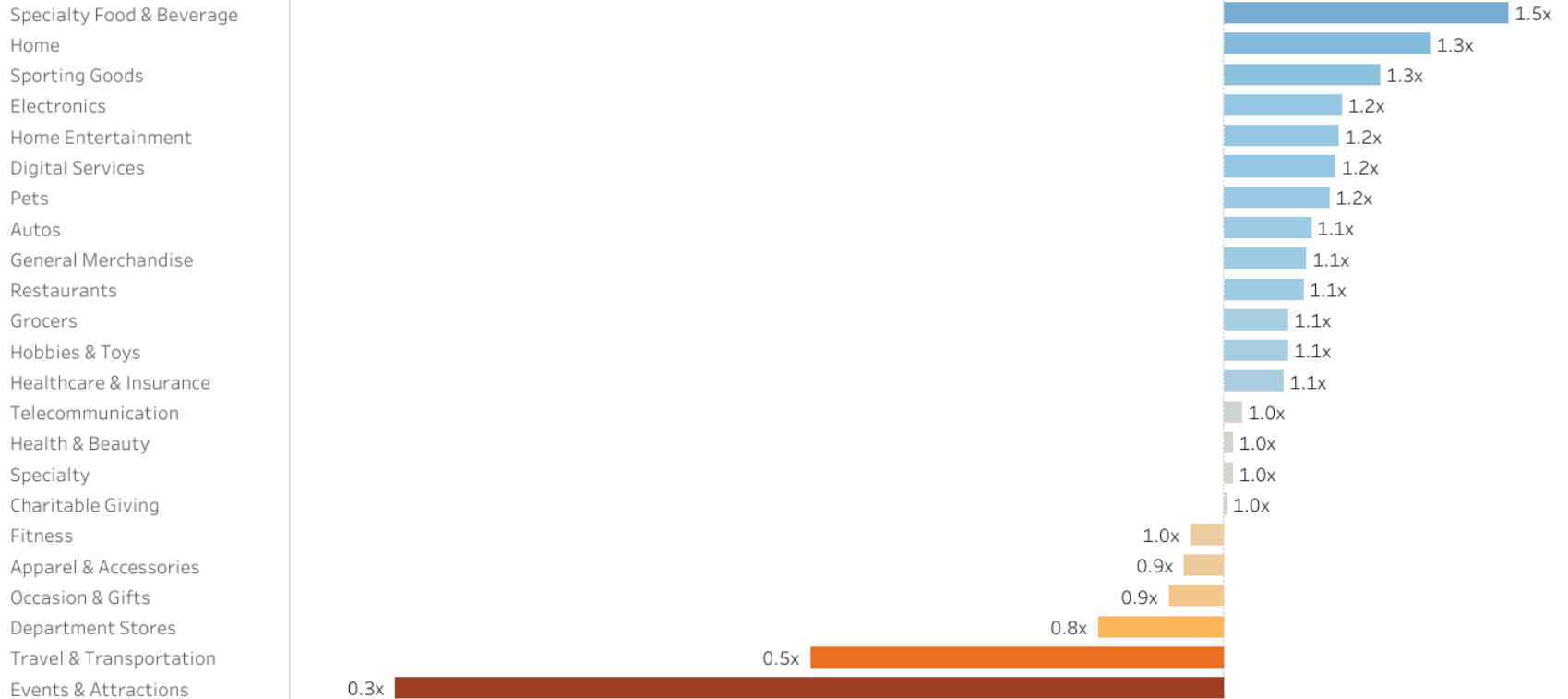
With Big Change in How Purchases are Made: Fewer Trips

- In-store transactions down more than sales, sales per transaction up

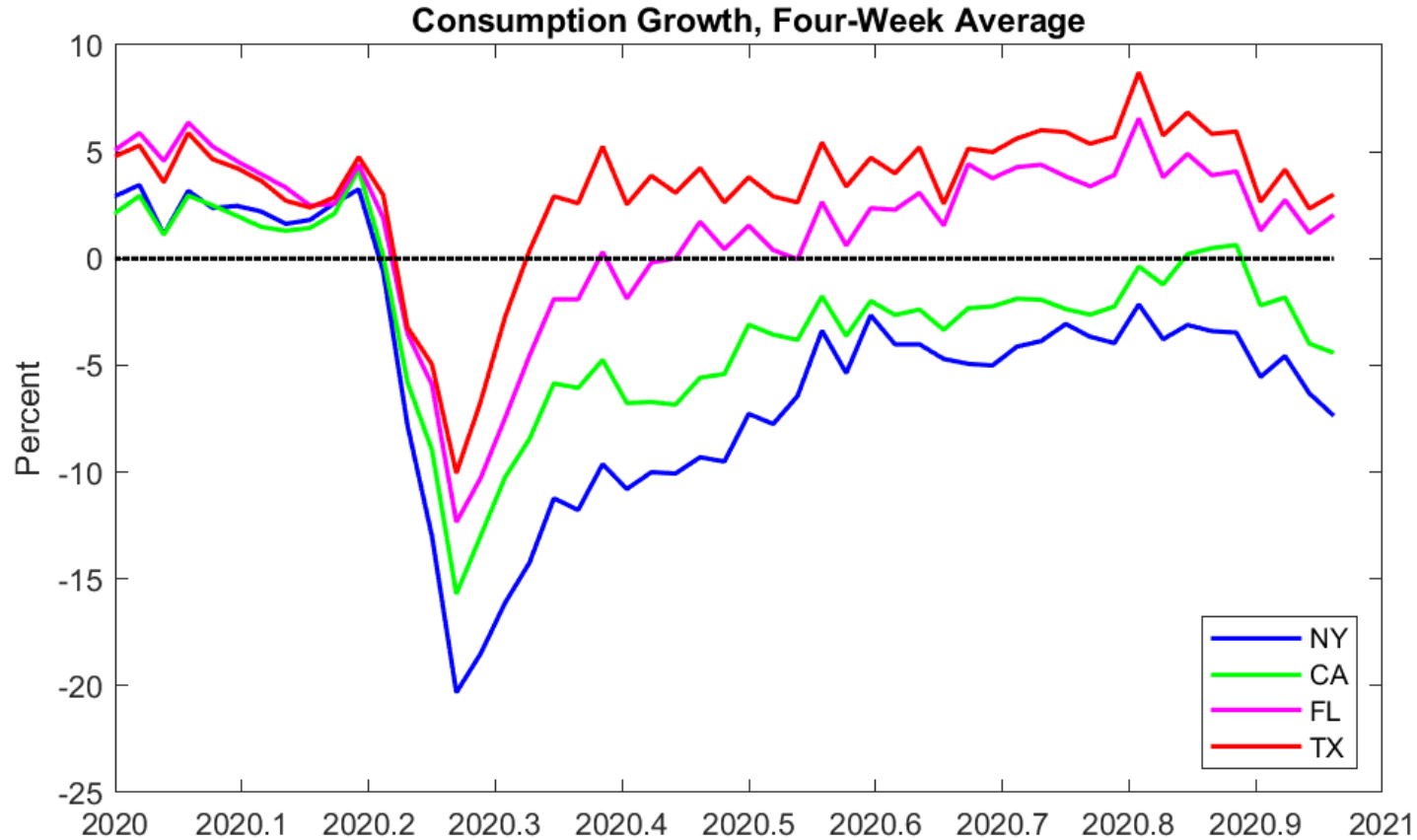


And Big Changes in Consumption Patterns

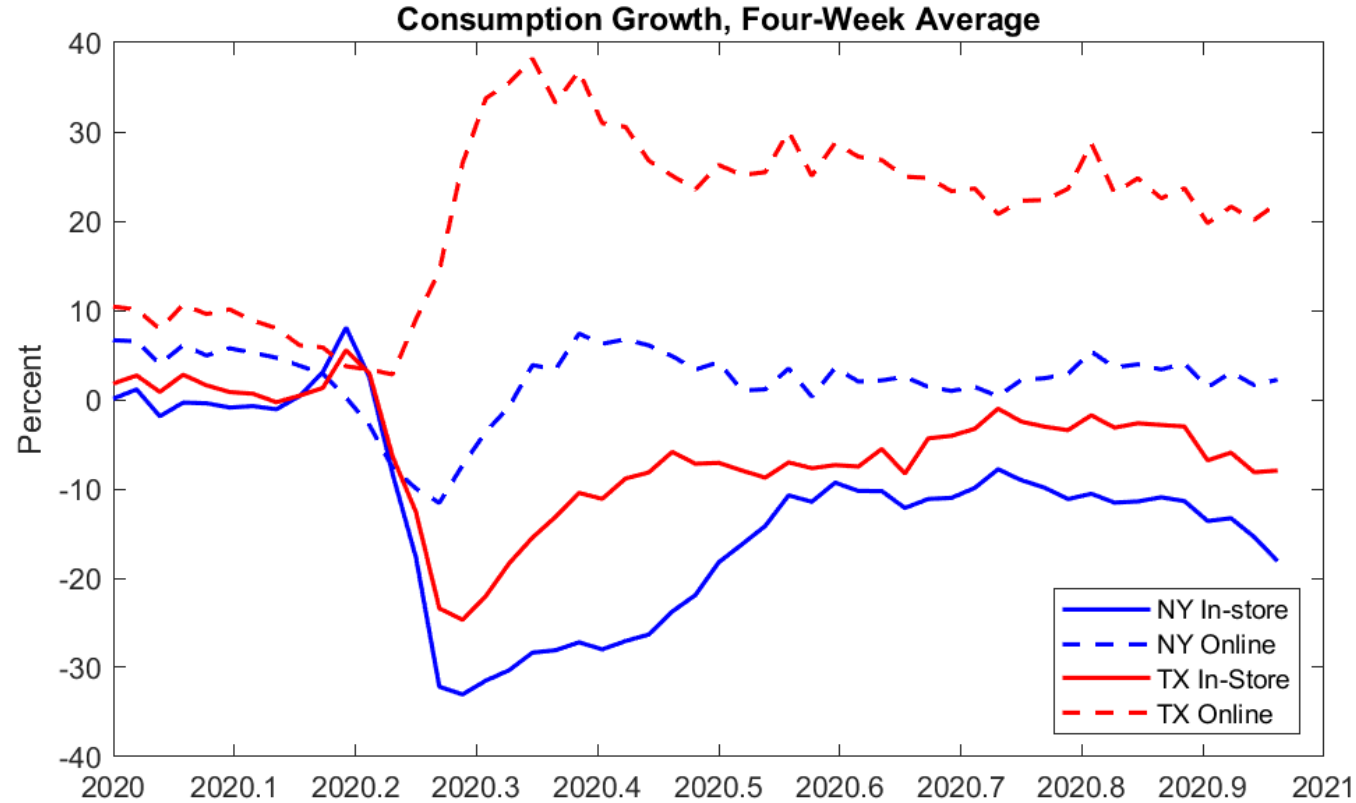
4 Week Trailing YoY Growth by Category for Week Ending 10/28/2020



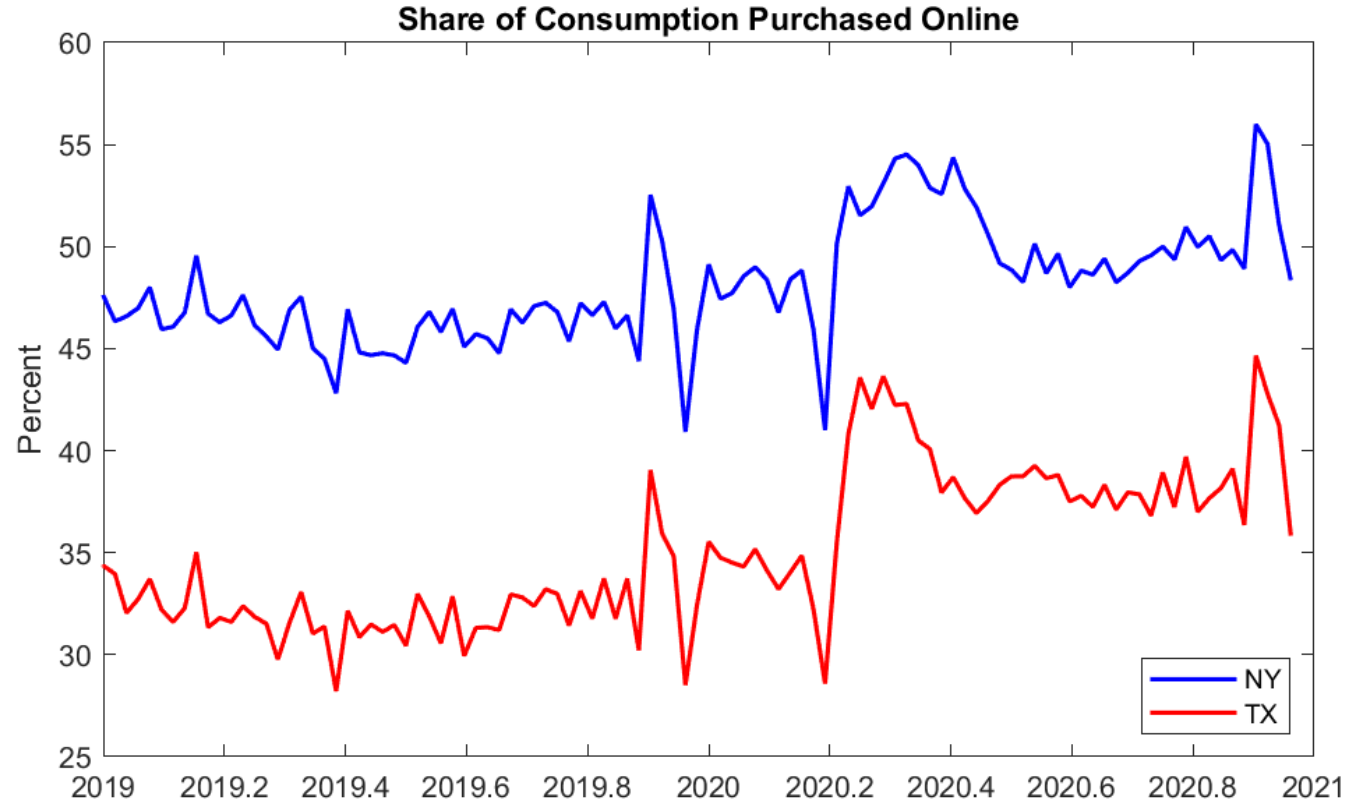
And all of these differ geographically (total consumption)



And all of these differ geographically (online/in-store)



And all of these differ geographically (online share)



Data Source: Earnest Research

- Aggregated consumption and transaction data, from a sample of roughly 6M households (25-30M credit & debit cards) nationwide. Transactions tagged and matched to collection of over 2,000 recognized brands and merchants.
- Weekly data from 2018-2020 (155 weeks currently). 23 main consumption categories with further sub-categories.
- Geographic disaggregation by state & CBSA (varying coverage)
- Metrics: sales, transaction. Channels: in-store, online, store card.
- Misses local retailers, non-chain restaurants & cash transactions. Captures 80% of variation in retail sales, over 90% in some categories.

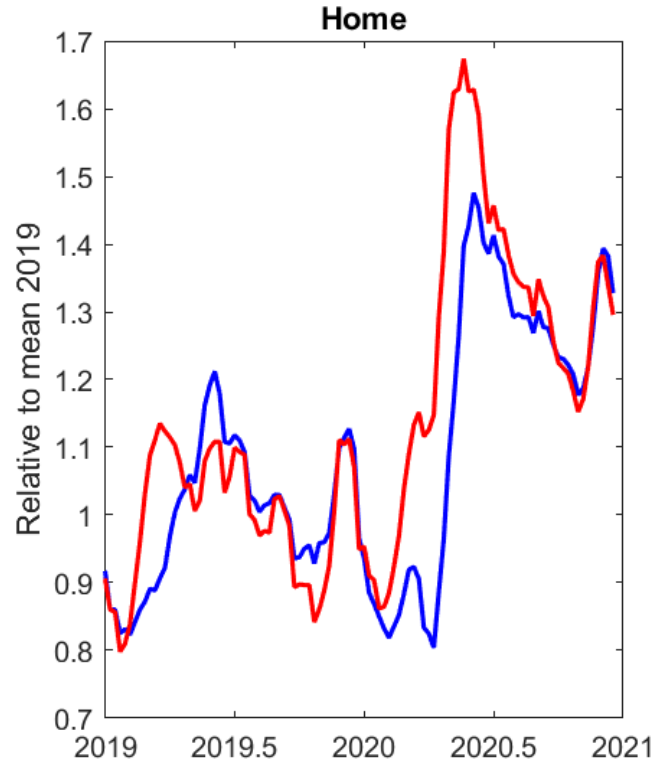
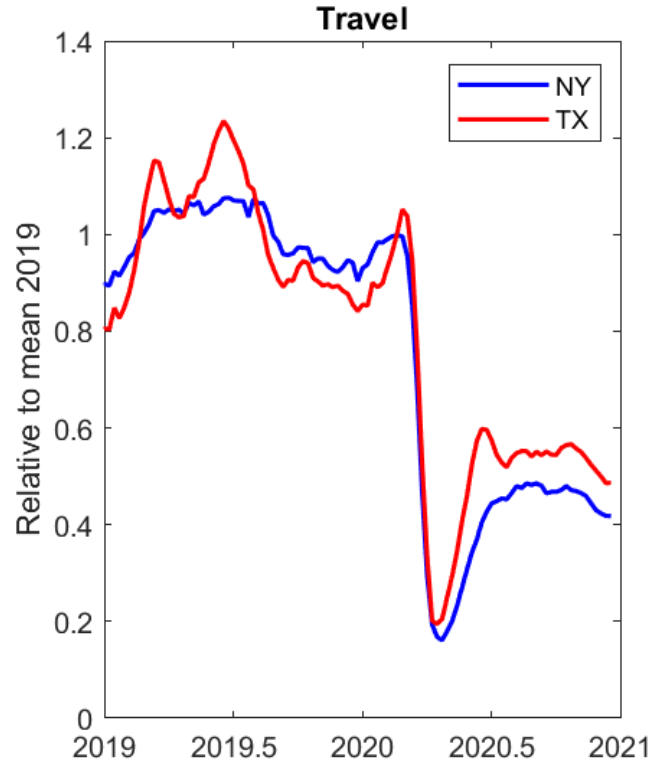
Toward a Decomposition and Quantification

- Use variation across goods, channels, frequencies, and geography to decompose consumption changes.
- Model as multi-stage (aggregated) consumption decision in each location:
 - Aggregate consumption based on income, interest rates
 - Aggregate consumption composed of varieties/categories
 - Each category is (nested) composite of in-store & online purchases: captures imperfect substitution (convenience, timing) and cost variation (virus risk, restrictions, improved on-line platforms)
 - Transaction cost at level of channel-good. Baumol-Tobin type w/inventory holding cost determines transaction size and frequency.

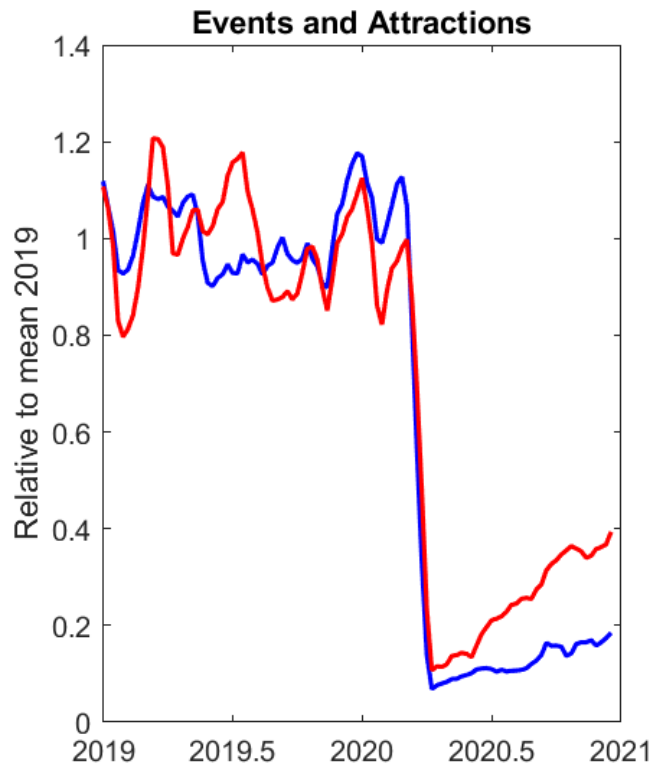
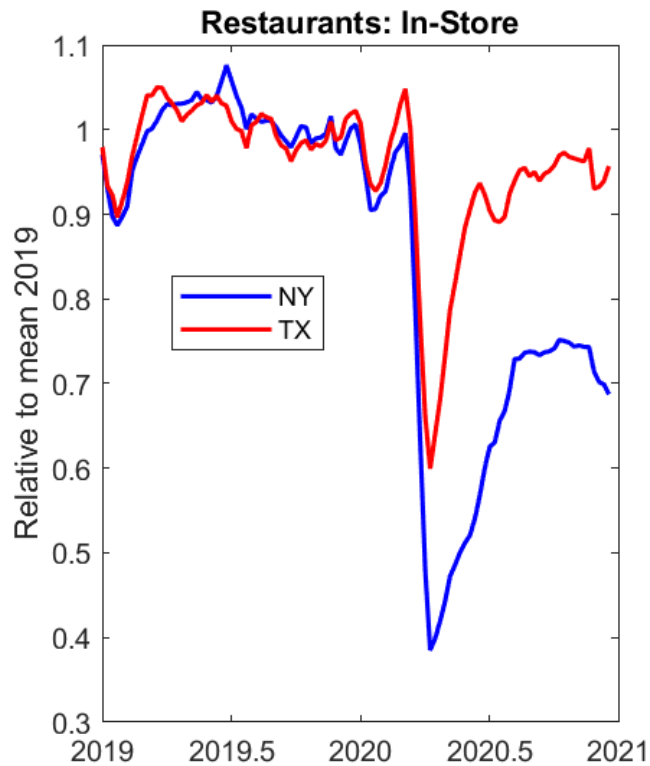
Using the Framework

- Estimate model on 2018-2019 data to get elasticities, baseline cost parameters. Use 2020 data to back out implied cost-inclusive prices.
- Relate cost-inclusive prices to public health restrictions, virus spread, other local and good-specific factors (market structure/competition)
- Quantify some counterfactuals:
 - How much of consumption shift due to endogenous response to virus risk vs. public health restrictions?
 - How much did on-line services cushion consumption during the pandemic?
 - How important was good substitution (and home production) for consumers during the pandemic? (consumption vs expenditure)

Similar Consumption Shifts Across Some Goods



Local Restrictions Mattered Less Early, More Now



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- Changes driven by spread risk, public health restrictions, available time, supply responses (prices/costs)
- Strong geographic variation in all of these factors.
- Shift toward on-line sales favors larger national retailers.
- Consumption does not seem to respond strongly to variation in COVID spread, more affected during recovery by local restrictions