

# The Impact of COVID-19 on China's Consumption

Haiqiang Chen, Wenlan Qian, and Qiang Wen (2021). **The Impact of the COVID-19 Pandemic on Consumption: Learning from High-Frequency Transaction Data.** *AEA Papers and Proceedings*.

What have been the economic consequences of COVID-19 and the associated controls on China's economy? New research systematically estimates the financial impacts of the earliest lockdowns and on consumption in particular, a sector of the economy that China's government has sought to strengthen in recent years.

**The data.** The research team analyzed high-frequency transaction data gathered by China UnionPay Merchant Services Corporation (UnionPay) on offline consumer spending from January 1 to April 14, 2020. UnionPay is one of China's largest payment service providers for offline spending, serving over one billion people in the country. In 2019, UnionPay covered 30% of China's total retail consumption offline, and offline spending constituted 76% of China's overall retail consumption that year.

The dataset included transaction data associated with bank cards and Quick Response (QR) codes linked to Alipay and WeChat Pay and recorded on UnionPay's point-of-sale machines and QR scanners. The researchers analyzed offline consumption data, in particular, for 214 prefecture-level cities with populations above 1 million. These 214 cities accounted for 92% of China's 2018 GDP and 90% of the country's urban population in 2017.

## INSIGHTS

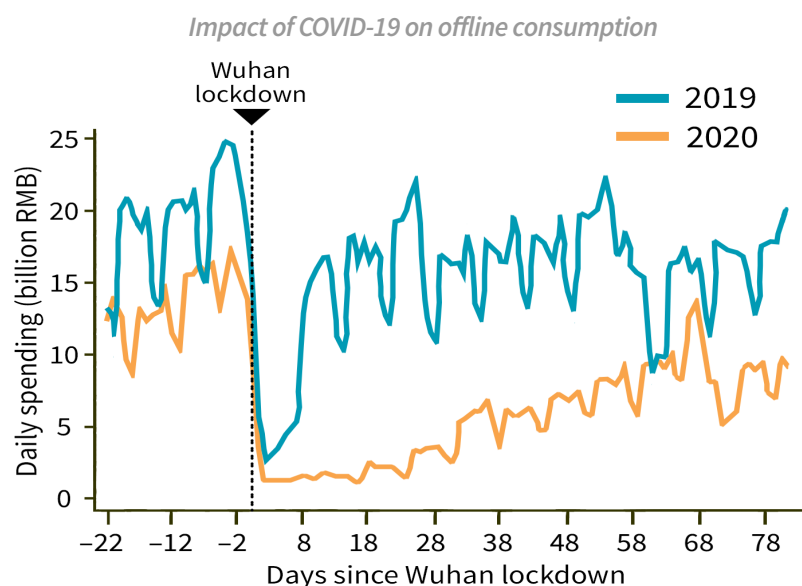
- The leadership in China has imposed citywide lockdowns and multiple control measures since January 23, 2020, when COVID-19 first broke out in Wuhan.

- Uncertainty generated by the pandemic as well as public health restrictions have impacted daily economic behaviors, including spending.

- The 12-week period following the outbreak of COVID-19 saw a 32% decline, or 329.84 billion RMB decrease, in offline consumption in 214 cities in China.

- Researchers extrapolate from this sample that China's offline consumption decreased by over 1.22 trillion RMB, equivalent to 1.2% of China's 2019 GDP, during this 12-week post-outbreak period.

To estimate the changes in spending caused by COVID-19 and the associated public health restrictions, researchers compared consumption data for 12 weeks following January 23, 2020, when Beijing implemented the citywide lockdown of Wuhan, to the same period one year earlier, while controlling for differences in the date of China's Lunar New Year holiday.



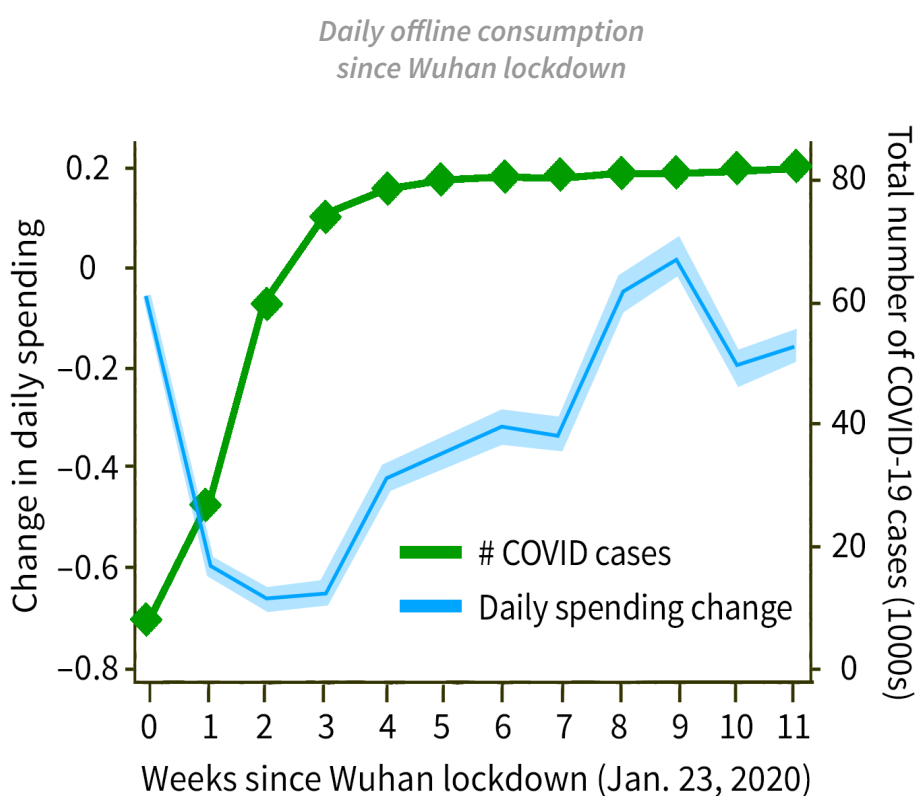
**Impact of COVID-19 on offline consumption.** According to this research, daily offline consumption — via bank card and mobile QR code transactions — fell, on average, by 18.57 million RMB per city during the post-outbreak period relative to the baseline period in 2019. The 214 cities in the sample witnessed a statistically significant 32% decline, or 329.84 billion RMB decrease, in offline consumption during the 12-week period compared to 2019.

UnionPay captures 30% of China's offline consumption, and the 214 cities cover 90% of China's urban population. From this, the researchers further deduced that China's offline consumption declined by 1.22 trillion RMB during the entire 12-week period. The country's total GDP in 2019 was 99.1 trillion RMB. As such, they infer a loss of approximately 1.2% of China's 2019 GDP from declining offline consumption during this post-outbreak period.

**Online consumption.** To account for the possibility that consumers may have substituted online shopping for offline consumption, the research team also analyzed the online spending data captured by ChinaPay (held by UnionPay). They provide a coarse estimate of 13% decline in online spending in response to the COVID-19 outbreak during the 12-week period. Given that offline consumption constitutes 76% of China's total consumption, the researchers further infer that total consumption (both offline and online) in China declined by 27% in the 12 weeks after the outbreak.

### Impact on consumption traced over 12 weeks.

On average, the sampled cities experienced accelerated decline in consumption for the first 4 weeks and gradual recovery starting in the second month. More specifically, a city's offline consumption fell by 6.6% on average during the immediate week after Wuhan's lockdown before reaching the largest decline (59–66%) in the next 3 weeks after the outbreak. Starting from the fifth week, the pandemic curve showed signs of flattening, and by the end of March (week 9), consumption had fully rebounded. However, consumption fell again, to



20% and 16% below the baseline level, in the first 2 weeks of April (weeks 10–11). This retreat, researchers suggest, echoed the rising concerns over a potential second wave of infections.

**A severe hit.** The raw data from this research demonstrates that China's offline consumption took a severe hit due to the pandemic outbreak, resulting in a loss of approximately 1.2% of China's 2019 GDP in the 12-week post-outbreak period. This research further suggests that during the first few months of the outbreak, the drop in offline consumption was highly sensitive to day-to-day pandemic severity relative to the less frequent changes introduced by disease control measures, income shocks, or supply disruptions. The unease provoked by the pandemic during the first few months directly impacted people's willingness to consume, rendering a significantly negative impact on China's economy.