

Effective Resource Planning and Disbursement during the COVID-19 Pandemic

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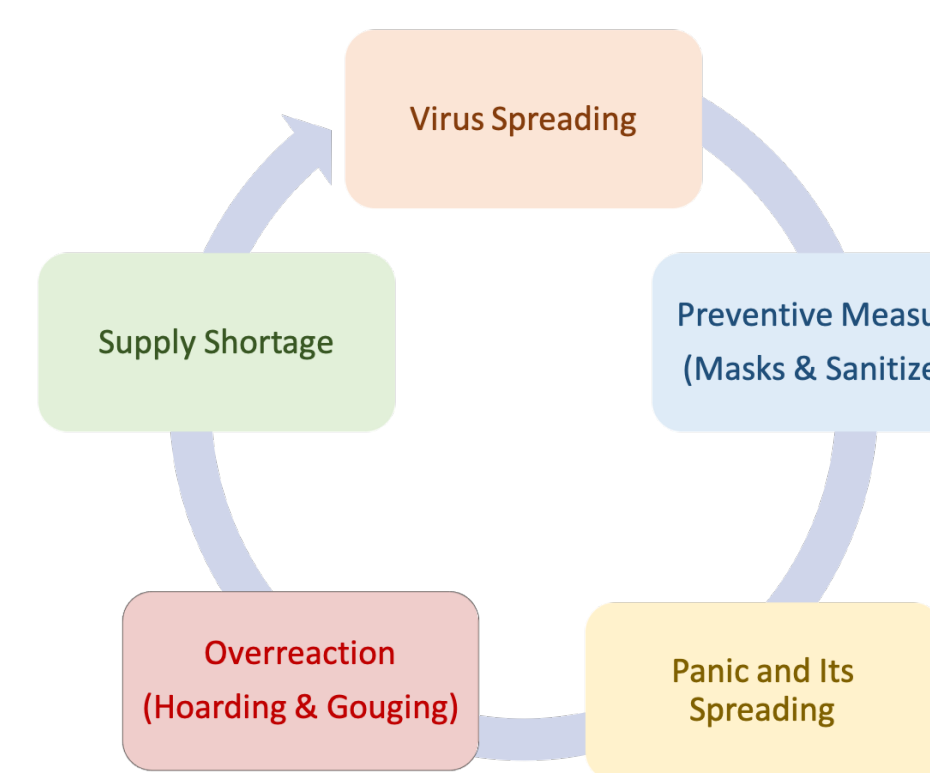
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Overview

During spread of viruses with no known cures such as COVID-19, uncertainty can generate fear and anxiety, which may spread faster than the disease itself. This is resulting in panic-buying and over-reactive consumer behavior. It involves behaviors such as overstocking of preventive equipment, e.g., masks, sanitizers, etc., and theft of supplies from public facilities such as hospitals and shelter homes, leading to lack of resource availability for emergency managers and those in dire need.

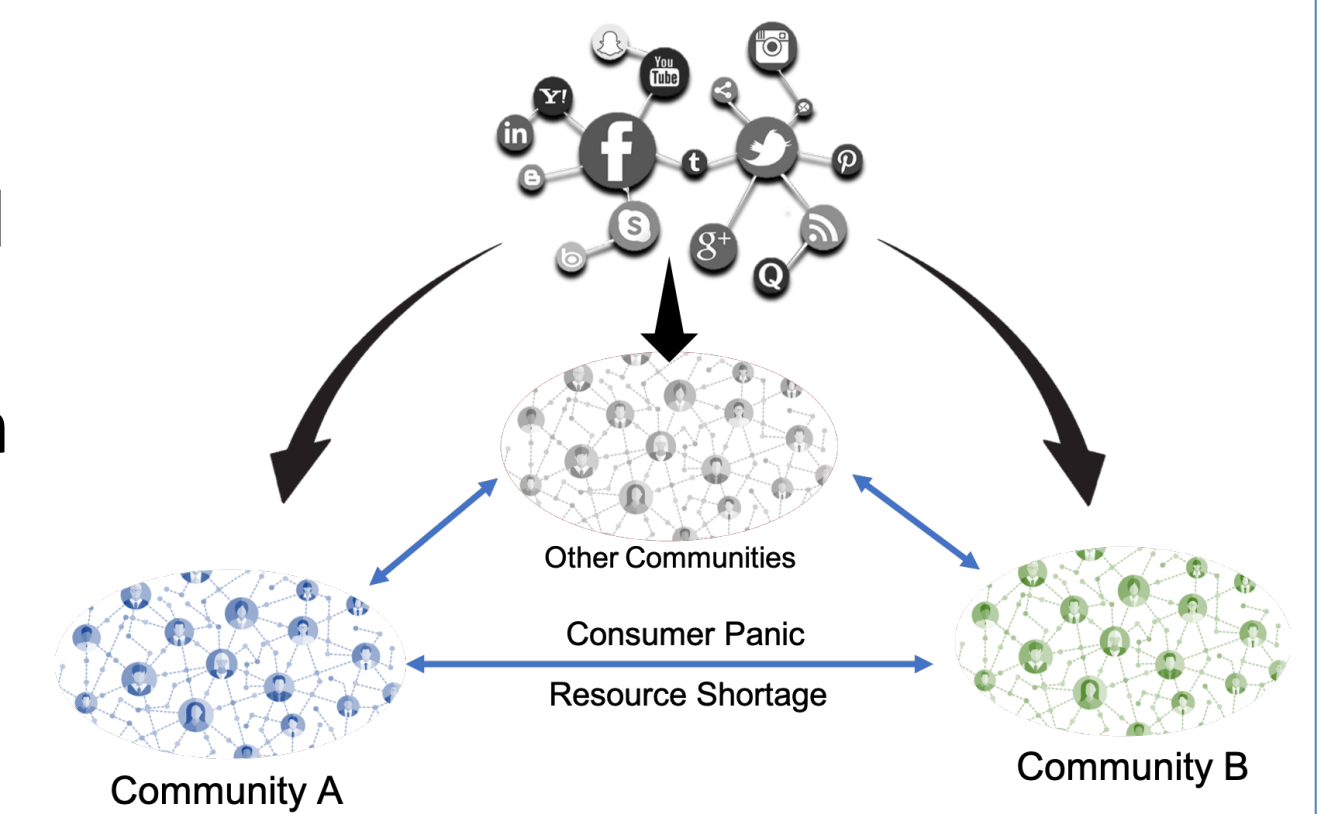
Problem Description

- Media reports influence consumer behavior and can create panic.
- Overreactive behavior can lead to overstocking and shortages of consumer goods.
- This project aims to measure the impact of consumer panic, and analyze how it spreads among the population through the media reports.



Intellectual Merits

- Understanding and quantification of linkages between media reports and consumer panic behavior.
- Study the role of socio-economic community factors including population demographics in entanglement between media reports and virus spread.
- Decision analytics for planning and disbursement of critical disease prevention resources to cater for the effects of panic-buying consumer.



Project Activities

- Data Collection on sales and prices of critical items

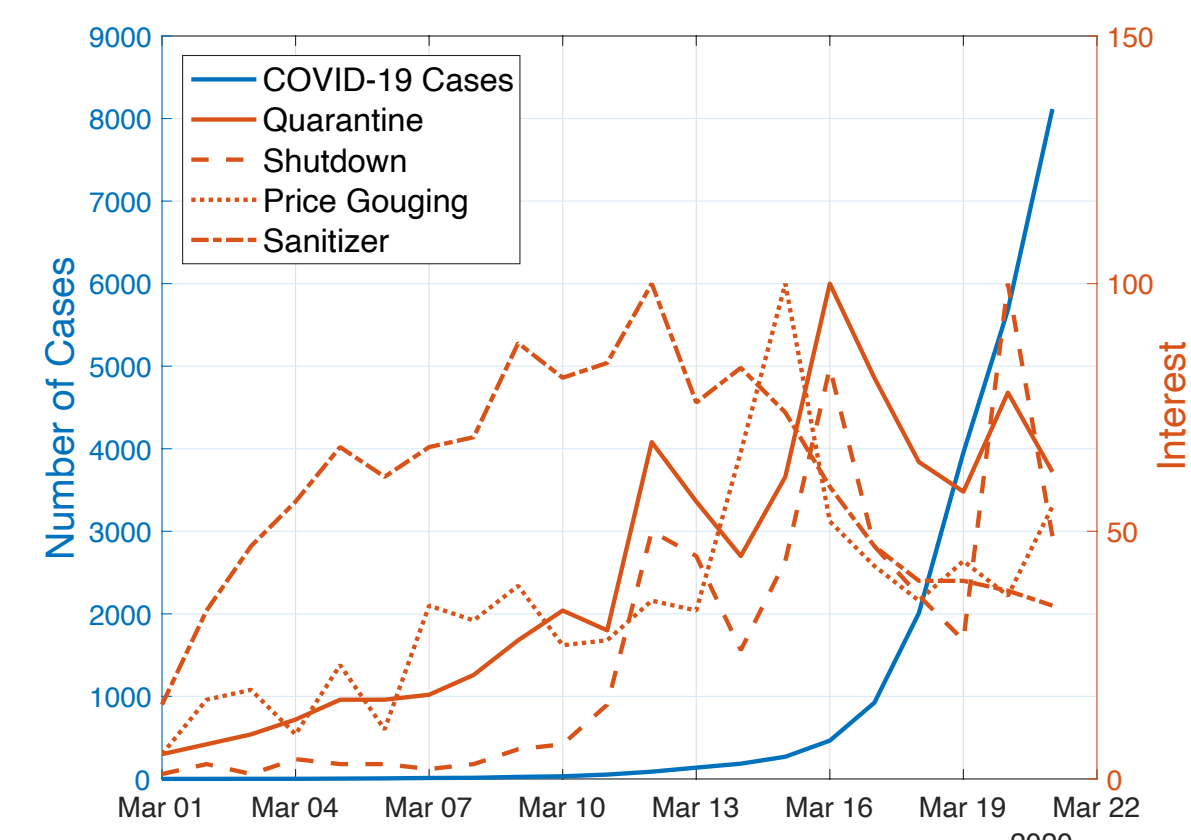


Fig: Price of cleaning wipes in recent weeks from third party online vendors

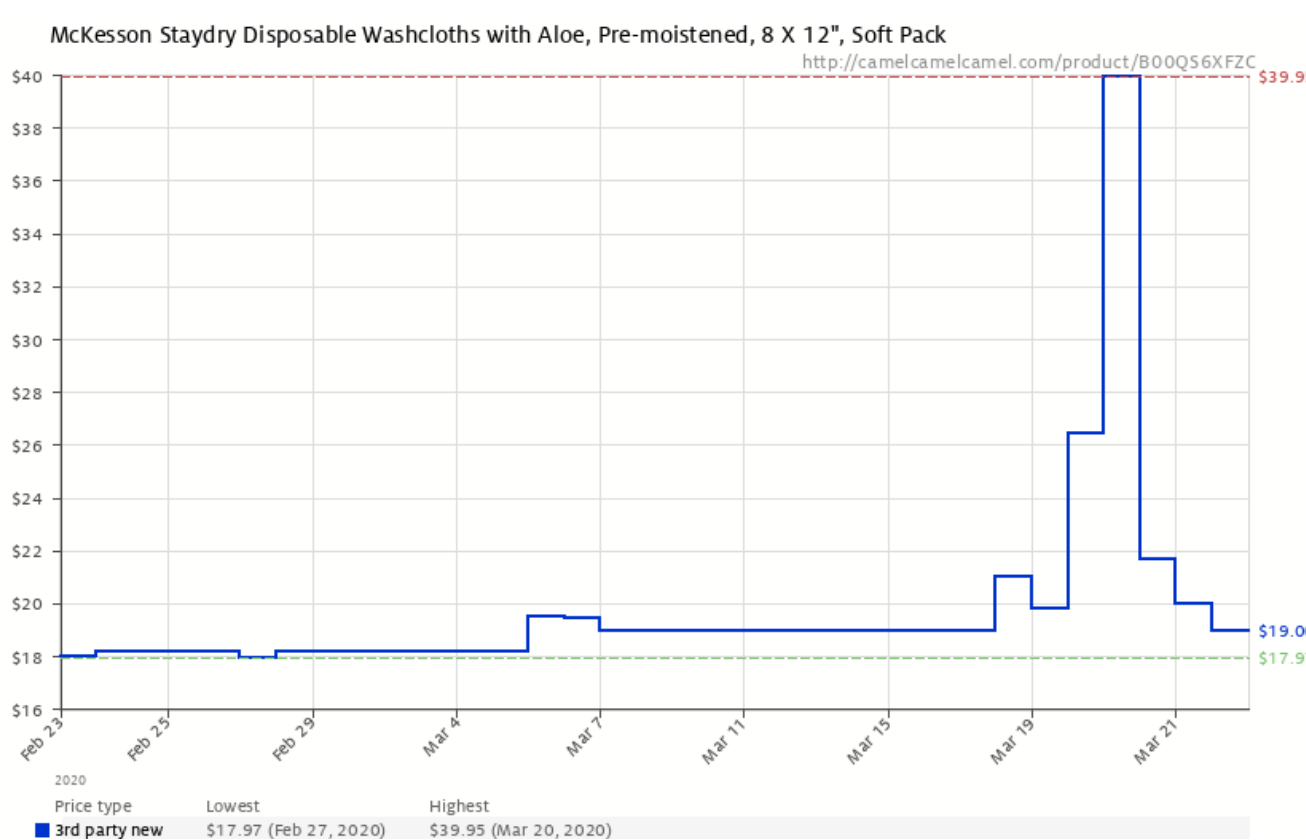


Fig: Number of reported COVID-19 cases in NYC as of March 21, 2020 and Google trends of selected terms.

- Causal Analysis and Correlation Studies

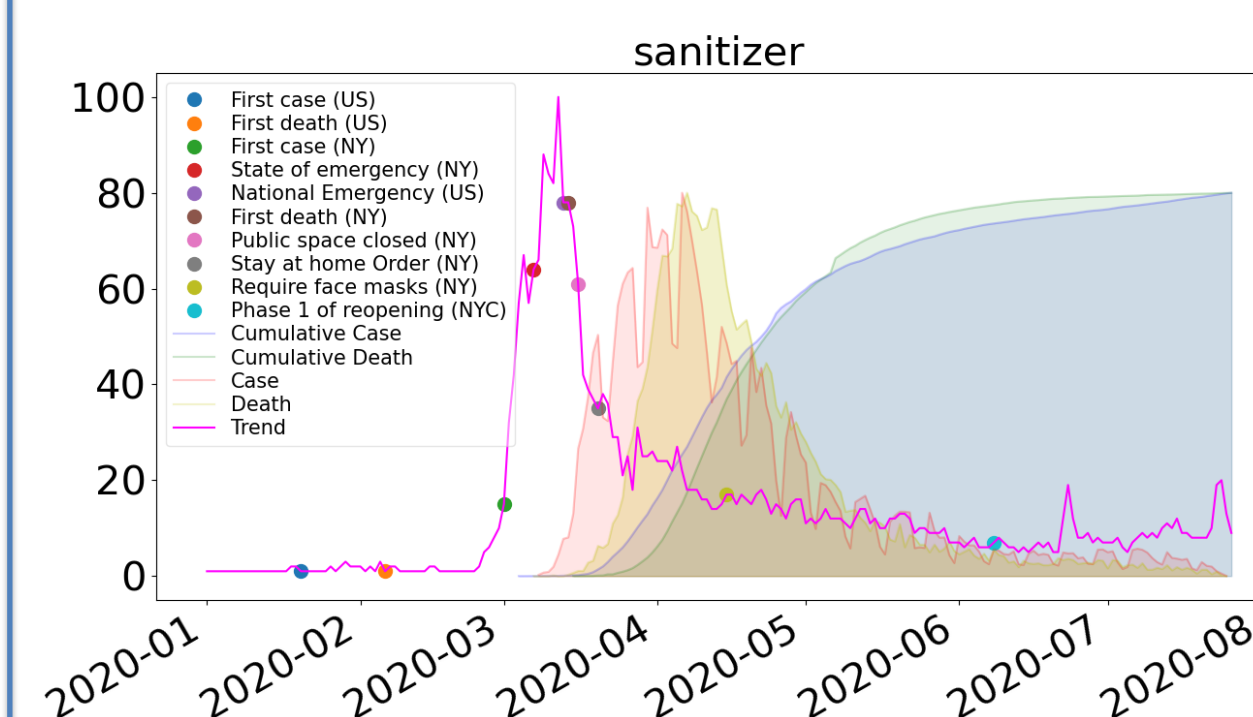


Fig: Analysis of online community interest in term 'sanitizer' over time compared with actual COVID cases and deaths.

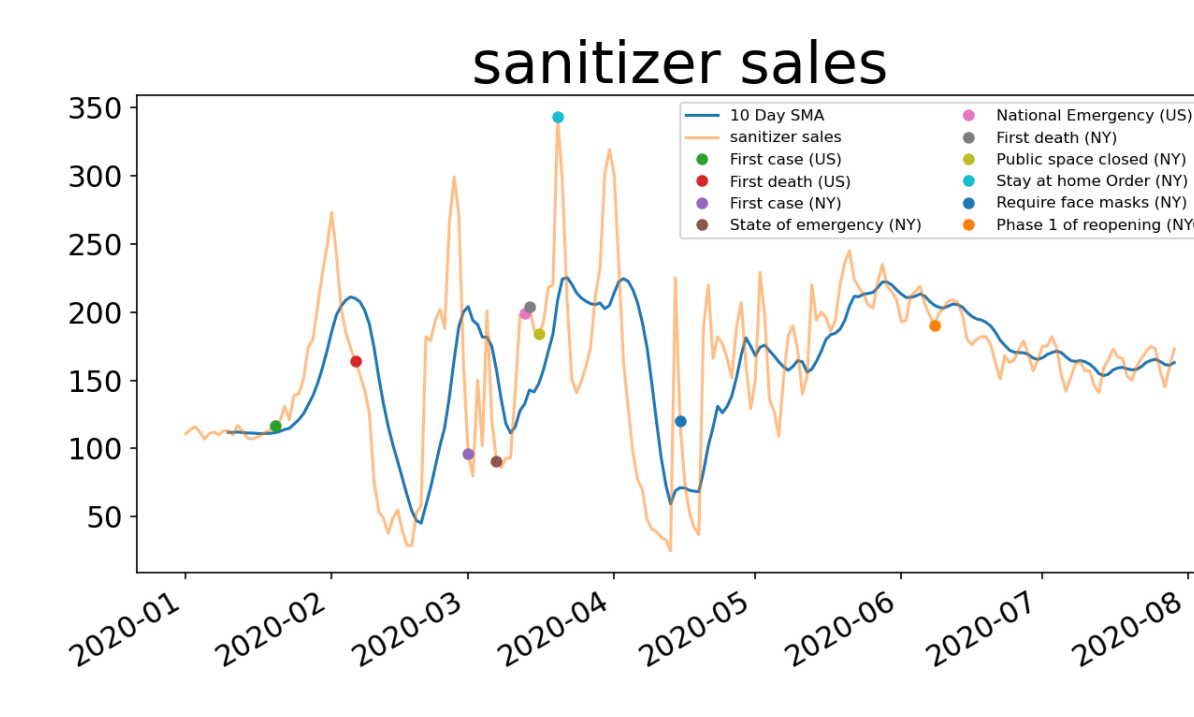


Fig: Analysis of the amount of sanitizer sales from a particular vendor on Amazon along with key events.

- Predictive Modeling

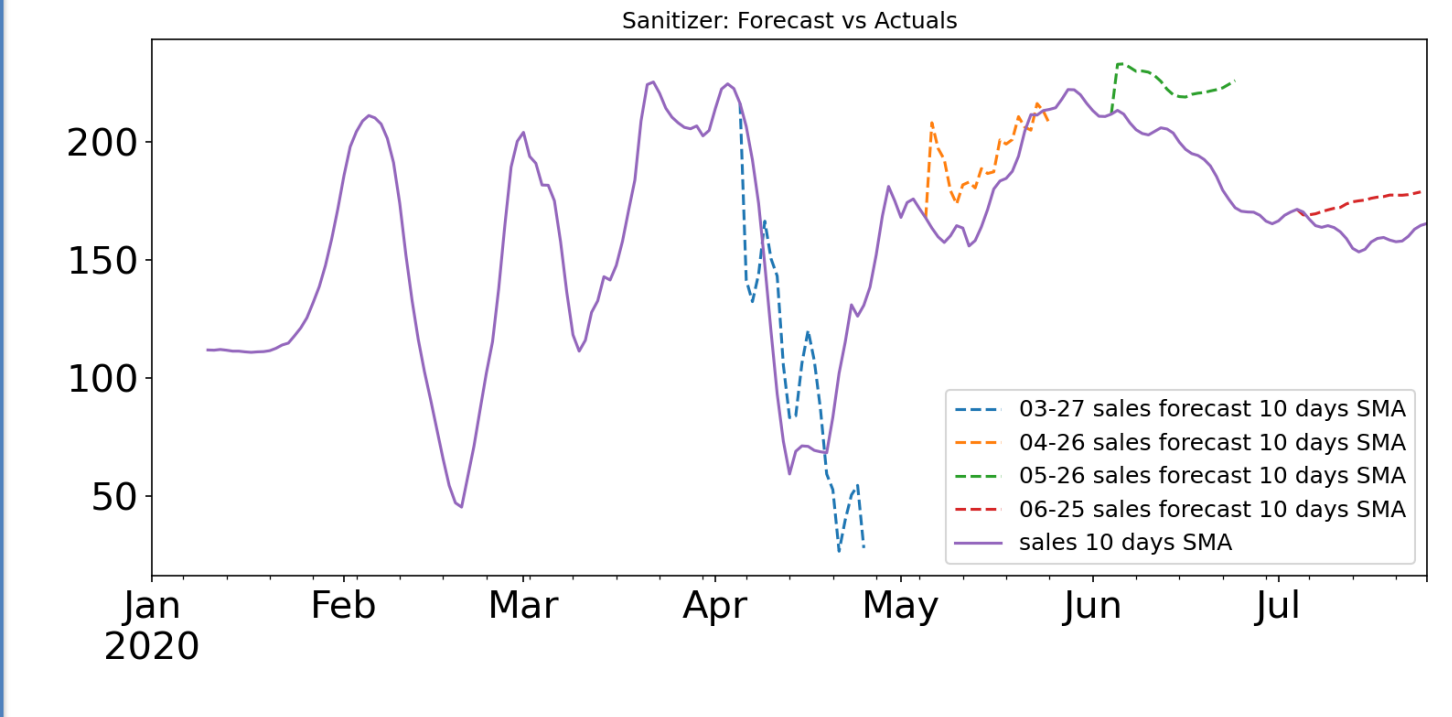


Fig: Forecasts of sanitizer sales using predictive models based on multiple causation analysis.

Impact on Society

- Restrict and control consumer exploitation from price gouging and shortage of essential goods.
- Provide tools and software solutions that can be helpful for NYC City Planning Department and the NYU Langone Medical Center in providing effective medical response to new COVID-19 cases

Education and Outreach

- Sponsored undergraduate and graduate **research internships** on resource provisioning under panic scenarios.
- Develop interactive educational materials to educate and create awareness on the spread of panic and diseases

Next Steps

- Correlation analysis and predictive modeling of sales, prices, etc.
- Resource allocation strategies and prioritization mechanisms for disbursement of disease prevention resources in the population.