

# How To Help Restaurants Survive COVID-19

By Pablo Cruz, Troy Lawrence, Alejandro Mancillas, and Daniela Esparza  
**Team 86** | [https://github.com/Daesparz/DS4A2020\\_Empowerment](https://github.com/Daesparz/DS4A2020_Empowerment)

## BACKGROUND

Congress passed a \$25 billion COVID-19 bailout for the airline industry but not one tailored to the restaurant industry, which is four times bigger in terms of sales and 18 times bigger in number of jobs.

Our goal is to provide actionable insights in consumer behaviour by region so that restaurants can make the right investments and weather this volatility.

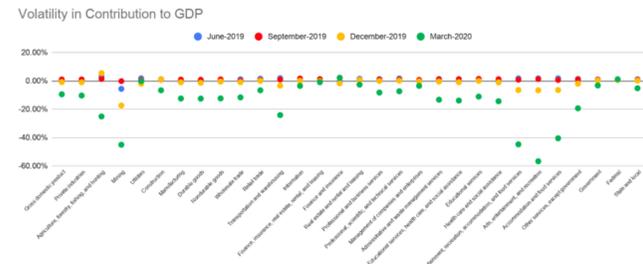
## DATASET & PRE-PROCESSING

### Target Datasets:

- Bureau of Economic Analysis Data (GDP, Personal Consumption, Income, and Employment)
- Federal Reserve Bank of St. Louis (Unemployment)
- Annual Retail Trade Survey (Monthly Retail Sales and Inventories)
- Mobility Patterns (Apple Mobility Reports, Descartes Lab Mobility - Changes, Google Community, Foursquare Community Mobility Data)
- Household Pulse Survey 2020
- Restaurants platforms (Yelp API)

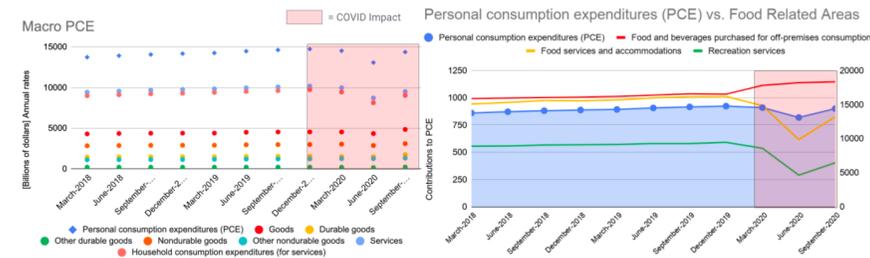
## ECONOMIC INTRODUCTION

### GDP



Arts, recreation, accommodation, and food services all experienced over 40% declines in GDP contribution

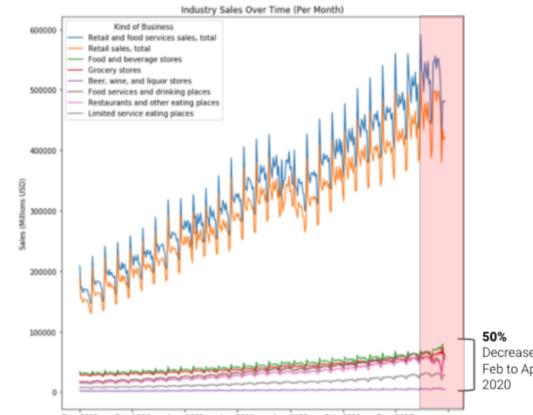
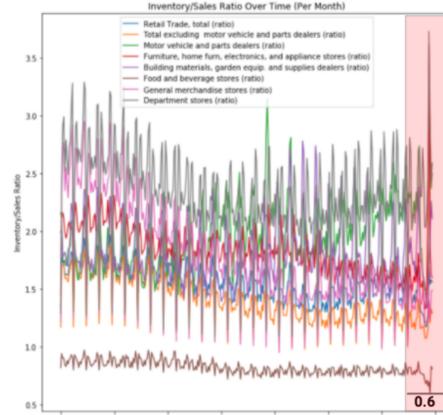
## Personal Consumption Expenditures (PCE)



- Not all Food Related Sectors were adversely affected during 2020
- Food and beverages purchased for off-premises consumption actually increased by the highest margin
- Consumers did spend in 2020, however, their behaviour switched from food services, accommodations, and recreation, to groceries

## INSIGHTS

### Inventory Sales

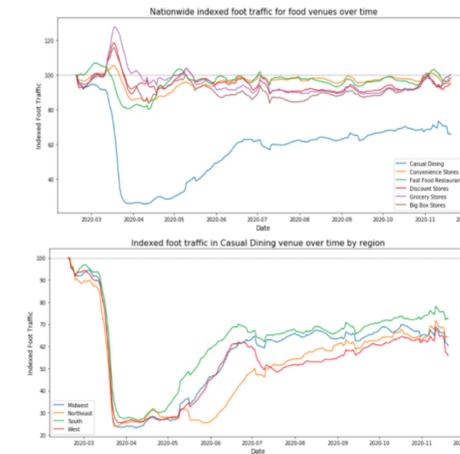


### Unemployment

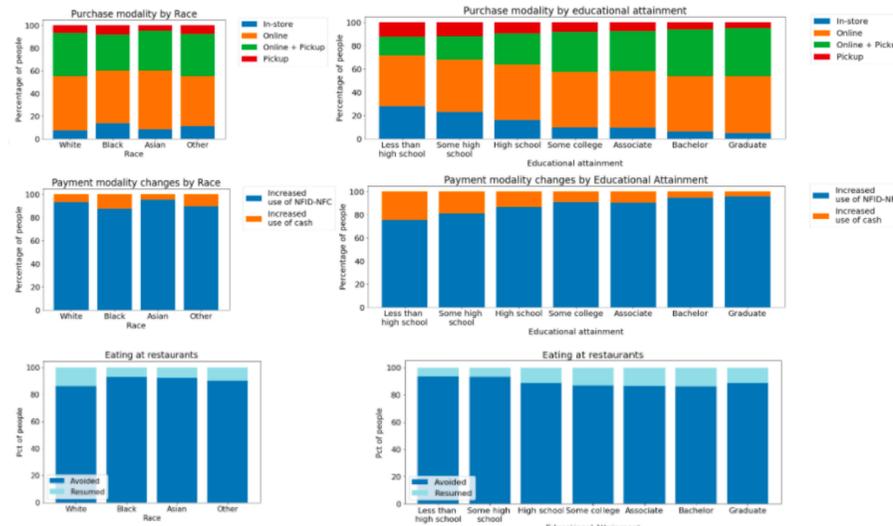


In April 2020, Leisure and Hospitality hit 39.4% unemployment compared to only 14% for the total economy.

### Mobility Patterns



## Consumer Behaviours



## RESULTS

## IN-DEPTH ANALYSIS

Development of case studies in the West and South regions.

- Consumer Preferences**
  - Triangular correlation Heatmaps between shopping and demographics.
  - K-Modes Clustering of consumer profiles.
- Mobility Preferences**
  - Average mobility distance
  - Route requests by type of transportation
  - Foot traffic into places of interest
- Restaurants Scenario**
  - Rankings, prices, popularity, locations and operation details.
- Insights & Recommendations**
  - Purchase modalities recommended by zip code.
  - Use of extra information:
    - Density of population.
    - Industrial, commercial, and recreational areas

## CITY ANALYSIS + RECOMMENDATION

### San Francisco

- Increase Delivery options:
  - Low and medium density residential areas
  - Commercial, Industrial areas
- Increase Pick-up options:
  - Mixed areas
  - Areas at most 1 km. from high density neighborhoods.

### Miami

- Switch Delivery for Pick-up options:
  - Medium and high density residential areas.
  - Consider preferences by demographics (using consumer profiles created).
- Increase Pick-up options:
  - Areas at 6 km. from high density neighborhoods.

## DASHBOARDS

Foot traffic in specific venues, daily mobility of members, consumer profiles, business statuses

