

Stimulus Checks and Consumer Spending

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Do stimulus checks help the economy?

(using high customer spending as a proxy for economic health)

Why Should **YOU** Care How Healthy the US Economy Is?

Healthy Economy -> More Jobs

&

Healthy Economy -> Better-Paying Jobs

Data Source & Associated Paper

<https://github.com/OpportunityInsights/EconomicTracker>

“The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data”, by Raj Chetty, John Friedman, Nathaniel Hendren, Michael Stepner, and the Opportunity Insights Team. November 2020.

Available at: https://opportunityinsights.org/wp-content/uploads/2020/05/tracker_paper.pdf

Replace NA values with 0

```
# https://stackoverflow.com/questions/45576805/how-to-replace-na-values-with-0-in-a-data-frame  
  
df <- df %>% replace(is.na(.), 0)  
df <- df %>% filter(spend_all != 0)
```

Combine Weekly and Daily Data

```
df_weekly <- df %>%
  group_by(year, week, stateabbrev) %>%
  summarize(spend_all = mean(spend_all), contclaims_rate_c
## `summarise()` has grouped output by 'year', 'week'. You
df_weekly <- left_join(df_weekly, state_id, by = c("stateab
```

Adding Stimulus Check Data

```
df_weekly <- df_weekly %>% mutate(  
  first_check = (if (date < ymd("2020-04-15")) {  
    0  
  } else {  
    1  
  }),  
  second_check = (if (date < ymd("2021-01-04")) {  
    0  
  } else {  
    1  
  }),  
  third_check = (if (date < ymd("2021-03-18")) {  
    0  
  } else {  
    1  
  })  
)
```

Plotting spending over time for all states and categories

(The dates for the stimulus checks were approximated from this article.)

```
## Warning in x:y: numerical
## expression has 2 elements:
## only the first used

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## Warning in
## mask$eval_all_mutate(quo): NAs
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```

Training a Linear Model

```
##  
## Call:  
## lm(formula = spend_all ~ gps_retail_and_recreation + emp  
##       second_check + third_check, data = df_weekly)  
##  
## Residuals:  
##       Min        1Q    Median  
## -0.34163 -0.04494  0.00693  
##       3Q        Max  
##  0.04757  0.41405  
##  
## Coefficients:  
##                                     Estimate  
## (Intercept)                 -0.041870  
## gps_retail_and_recreation  0.308678  
## emp                      0.185988  
## first_check                0.044965  
## second_check               0.133771
```

Summarize the Model

It's not great, to be blunt.

Possible Better Models

- ▶ Neural Networks
- ▶ Decision Trees
- ▶ Time Series Models (LSTM, RNN, etc.)

Some Possible Biases

- ▶ Movement data only comes from Google
- ▶ Effect of stimulus checks won't fade, because of the way we encoded the data.

Conclusion

Stimulus checks -> Higher Consumer Spending

Therefore,

IF Higher Consumer Spending -> Healthier Economy (*needs separate analysis*)

THEN Stimulus Checks -> More Jobs and Better Jobs