January 2020 Parking Violations

Parking Tickets from Washington D.C.’s Open Data Site

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16 Oct, 2020

Contents

This notebook provides information about parking tickets in Washington D.C.

Aquiring the Data

First, we'll need to grab data directly in R using the [Parking Ticket dataset]'s API.

```
# url <- 'https://opendata.arcgis.com/datasets/009dedf-
 ↪  baf364905a8e25181b3490cd9_0.geojson'
# destination_file <- 'january_2020_dc_parking_tickets.geojson'
# download.file(url, destination_file, 'curl')
# library(rgdal)
# sp_parking_tickets <- readOGR('january_2020_dc_parking_tickets.geojson')

library(tidyverse)
url <- 'https://opendata.arcgis.com/datasets/009dedf-
 ↪  baf364905a8e25181b3490cd9_0.csv'
destination_file <- 'january_2020_dc_parking_tickets.csv'
download.file(url, destination_file, 'curl')
df_violations <- read_csv(destination_file)
colnames(df_violations) <- tolower(colnames(df_violations))
```

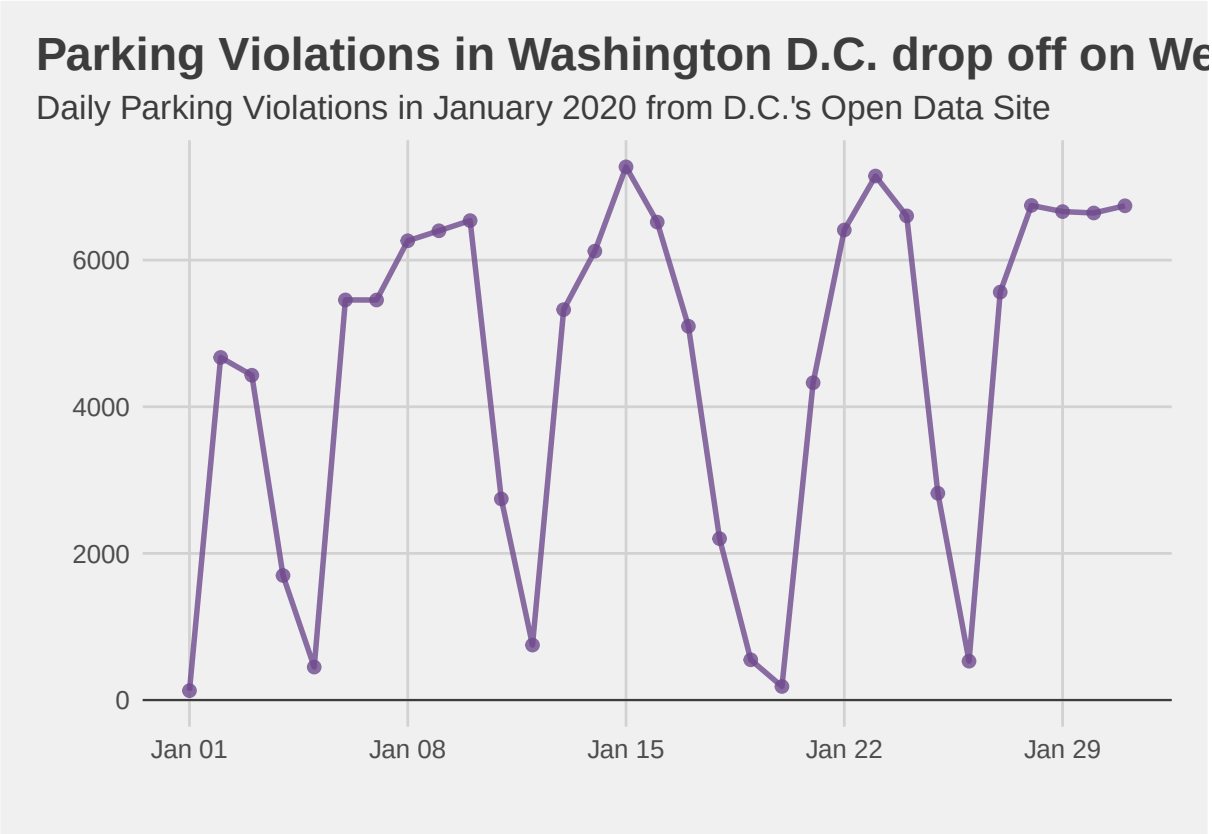
The first violation in our data set is a 'PARK IN OFFICIAL PARKING PERMIT ONLY SPACE' violation.

Before going further, we'll need to do a little more work to get our dataframe set up properly!

```
df_violations <- df_violations[c('objectid', 'issue_date',
 ↪  'issuing_agency_code',
                                 'issuing_agency_name',
                                 ↪  'issuing_agency_short',
                                 ↪  'violation_code',
                                 'violation_proc_desc', 'location',
                                 ↪  'disposition_type',
                                 'disposition_date', 'fine_amount',
                                 ↪  'total_paid', 'latitude',
                                 'longitude', 'mar_id',
                                 ↪  'gis_last_mod_dttm')]
cat(paste('#', 'This is a heading for Object', df_violations$objectid[1], '
 ↪  \n'))
```

Creating a Chart of Violations

```
df_violations$issue_date <- as.Date(df_violations$issue_date,
 ↪  format='%Y/%m/%d')
df_violations_per_day <- df_violations %>% count(issue_date)
plt <- ggplot(df_violations_per_day) +
  geom_hline(yintercept=0, size=0.4, color='#3C3C3C')+
  geom_line(aes(x=issue_date, y=n), color='#6f4a8e', alpha=0.8, size=1) +
  geom_point(aes(x=issue_date, y=n), color='#6f4a8e', alpha=0.8, size=2) +
  labs(x='', y='', title='Parking Violations in Washington D.C. drop off on
 ↪  Weekends',
       subtitle="Daily Parking Violations in January 2020 from D.C.'s Open
        ↪  Data Site") +
  scale_x_date(date_labels='%b %d', breaks=seq(as.Date('2020-01-01'),
 ↪  as.Date('2020-01-31'), by='weeks')) +
  theme(text=element_text(size=12, color='#3C3C3C'),
        plot.title=element_text(hjust=0, size=rel(1.5), face='bold'),
        plot.subtitle = element_text(hjust=0, size=rel(1.1)),
        plot.caption=element_text(hjust=0),
        plot.title.position = 'plot',
        plot.background = element_rect(fill='#F0F0F0'),
         ↪  axis.ticks=element_blank(),
        panel.background = element_rect(fill='#F0F0F0'),
         ↪  panel.grid=element_line(color=NULL),
        panel.grid.major=element_line(color='#d2d2d2'),
         ↪  panel.grid.minor=element_blank(),
        strip.background=element_blank(),
         ↪  strip.text=element_text(face='bold'),
        plot.margin=unit(c(1,1,1,1), 'lines'))
print(plt)
```




```
ggsave('Parking Violations in Washington DC.png', plot=plt, type='cairo',
       height=5,width=8,units='in')
```

Creating a Table of Violations

```
library(kableExtra)
df_violations$fine_paid <-
 ↪  ifelse(df_violations$fine_amount==df_violations$total_paid,
                                  1, 0)

df_violations$fine_bin <- case_when(
  df_violations$fine_amount < 50 ~ '<$50',
  df_violations$fine_amount < 100 ~ '$50 - $99',
  df_violations$fine_amount < 200 ~ '$100 - $199',
  df_violations$fine_amount >= 200 ~ '$200+'
)
```

```
# Preparing the final dataframe for table generation
df_violations_fines <- df_violations %>%
  drop_na(fine_amount) %>%
  group_by(fine_bin) %>%
  summarise('Tickets (thousands)'=round(length(fine_paid)/1000,1),
            'Percent
             ↪  Paid'=paste0('%',round(sum(fine_paid)/length(fine_paid),3)*100))
             ↪  %>%
  gather('Tickets (thousands)', 'Percent Paid', key='value_type',
 ↪  value='value') %>%
  spread('fine_bin', 'value') %>%
  select(value_type, '<$50', '$50 - $99', '$100 - $199', '$200+')

colnames(df_violations_fines)[1] <- 'Fine Amount'

kb <- kbl(df_violations_fines, format = 'latex',
          booktabs=T, digits=1, linesep='', align=c('lrrrr')) %>%
  kable_styling(latex_options = 'striped') %>%
  add_header_above(c(' ', 'Cheaper'=2, 'More Expensive'=2))

# kb <- kbl(df_violations_fines,
#             'latex', booktabs=T, digits=2, linesep='',
#             col.names = c('', 'Hours', strftime(recent_weeks[1],
 ↪  '%Y-%m-%d'),
#                           strftime(recent_weeks[2], '%Y-%m-%d'),'Perc.
 ↪  Diff'),
#             align=c('lrrrr')) %>%
#   kable_styling(full_width = F, latex_options = 'striped')
print(kb)
```

	Cheaper		More Expensive	
Fine Amount	<$50	$50 - $99	$100 - $199	$200+
Percent Paid	%30.7	%22.7	%19.3	%10.3
Tickets (thousands)	62.3	40.6	27.2	3.3