Data Aggregation

Edie Espejo

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I just drove myself into a deep dark pit of data terror, but I was able to find one archive from Kaggle using an internet time machine that gave me an old download link that somehow still worked. 159490 businesses intersect between the 2017 data I found and the 2019 data…

Libraries

```
library(jsonlite)
library(tibble)
library(dplyr)
library(tidyr)
library(stringr)
library(readr)
library(ggplot2)
```

2019 Data

I downloaded this straight off of the Yelp Challenge.

```
yelp_2019 <- "../../../data/yelp-2019/business.json"
yelp_2019 <- stream_in(file(yelp_2019))
```

```
##
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 Found 188000 records...
 Found 188500 records...
 Found 189000 records...
 Found 189500 records...
 Found 190000 records...
 Found 190500 records...
 Found 191000 records...
 Found 191500 records...
 Found 192000 records...
 Found 192500 records...
 Found 192609 records...
 Imported 192609 records. Simplifying...
```

```r
yelp_2019 <- flatten(yelp_2019)
yelp_2019 <- as_tibble(yelp_2019)
```

2017 Data

I used the wayback machine to get me this download link.

```r
wayback <- "../../../data/yelp-2017/yelp_business.csv"
wayback <- read_csv(wayback)
head(wayback)
```

```
## # A tibble: 6 x 13
##   business_id name  neighborhood address city  state postal_code latitude
##   <chr>       <chr> <chr>        <chr>   <chr> <chr> <chr>          <dbl>
## 1 FYWN1wneV1~ "\"D~ <NA>         "\"485~ Ahwa~ AZ    85044           33.3
## 2 He-G7vWjzV~ "\"S~ <NA>         "\"310~ McMu~ PA    15317           40.3
## 3 KQPW81Ff1y~ "\"W~ <NA>         "\"602~ Phoe~ AZ    85017           33.5
## 4 8DShNS-LuF~ "\"S~ <NA>         "\"500~ Tempe AZ    85282           33.4
## 5 PfOCPjBrlQ~ "\"B~ <NA>         "\"581~ Cuya~ OH    44221           41.1
## 6 o9eMRCWt5P~ "\"M~ <NA>         "\"Ric~ Stut~ BW    70567           48.7
## # ... with 5 more variables: longitude <dbl>, stars <dbl>,
## #   review_count <dbl>, is_open <dbl>, categories <chr>
```

Combining the datasets

I want to get choose to use businesses that are in both the datasets only.

```
intersecting_businesses <- intersect(wayback$business_id, yelp_2019$business_id)
length(intersecting_businesses)
```

```
## [1] 159490
```

Sanity checks…

```
wayback_subset   <- wayback %>% filter(business_id %in% intersecting_businesses)
yelp_2019_subset <- yelp_2019 %>% filter(business_id %in% intersecting_businesses)
c(nrow(wayback_subset), nrow(yelp_2019_subset))
```

```
## [1] 159490 159490
```

I'm going to just collect the 0's and 1's.

```
yelp_2018_subberset <- yelp_2019_subset %>% select(business_id, is_open) %>% rename(open_2019=is_open)
head(yelp_2018_subberset)
```

```
## # A tibble: 6 x 2
##   business_id            open_2019
##   <chr>                      <int>
## 1 1SWheh84yJXfytovILXOAQ         0
## 2 QXAEGFB4oINsVuTFxEYKFQ         1
## 3 gnKjwL_1w79qoiV3IC_xQQ         1
## 4 68dUKd8_8liJ7in4aWOSEA         1
## 5 gbQN7vr_caG_A1ugSmGhWg         1
## 6 Y6iyemLX_oylRpnr38vgMA         0
```

```
wayback_subset <- wayback_subset %>% rename(open_2017=is_open)
causal_set <- merge(wayback_subset, yelp_2018_subberset, by="business_id")
head(causal_set)
```

```
##              business_id                             name
## 1 __1uG7MLxWGFIv2fCGPiQQ       "SpinalWorks Chiropractic"
## 2 __3I-DDkqM9XjLH1cJl3VA        "Montallegro Barber Shop"
## 3 __3qOwWFBUE8mdOToI7YrQ                   "Custom Kings"
## 4 __47_7H-yK3HChO5vyut_Q "Instant Muffler and Autorepair"
## 5 __6jYJ6Hm-Qq8XQEGDrOGQ               "Winfield Gene DO"
## 6 __8j8yhsmE98wNWHJNyAgw                    "Urawa Sushi"
##                            neighborhood                  address      city
## 1                                  <NA> "15640 N 7th St, Ste A3"   Phoenix
## 2 Villeray-Saint-Michel-Parc-Extension     "7244 Rue Hutchison"  Montreal
## 3                             Southeast                       "" Las Vegas
## 4                                 <NA>       "1295 Weston Road"      York
## 5                                 <NA>        "2121 S Mill Ave"     Tempe
## 6               Entertainment District  "254 Adelaide Street W"   Toronto
##   state postal_code latitude  longitude stars review_count open_2017
## 1    AZ       85022 33.62885 -112.06598     5           26         1
## 2    QC     H3N 1Z1 45.52986  -73.62373     5           13         1
## 3    NV       88901 36.05566 -115.16942     1           12         1
## 4    ON     M6M 4R2 43.68924  -79.49529     1            3         1
## 5    AZ       85282 33.40559 -111.93944     4            4         1
## 6    ON     M5H 1X6 43.64823  -79.38926     3           73         1
##                                           categories open_2019
## 1 Physical Therapy;Chiropractors;Health & Medical         1
## 2               Hair Salons;Barbers;Beauty & Spas         1
## 3 Screen Printing/T-Shirt Printing;Local Services         1
## 4                          Auto Repair;Automotive         1
## 5                        Doctors;Health & Medical         1
## 6                 Restaurants;Japanese;Sushi Bars         1
```

The businesses we look at should have been open in 2017.

```
causal_set <- causal_set[which(causal_set$open_2017==1),]
dim(causal_set)
```

```
## [1] 133828     14
```

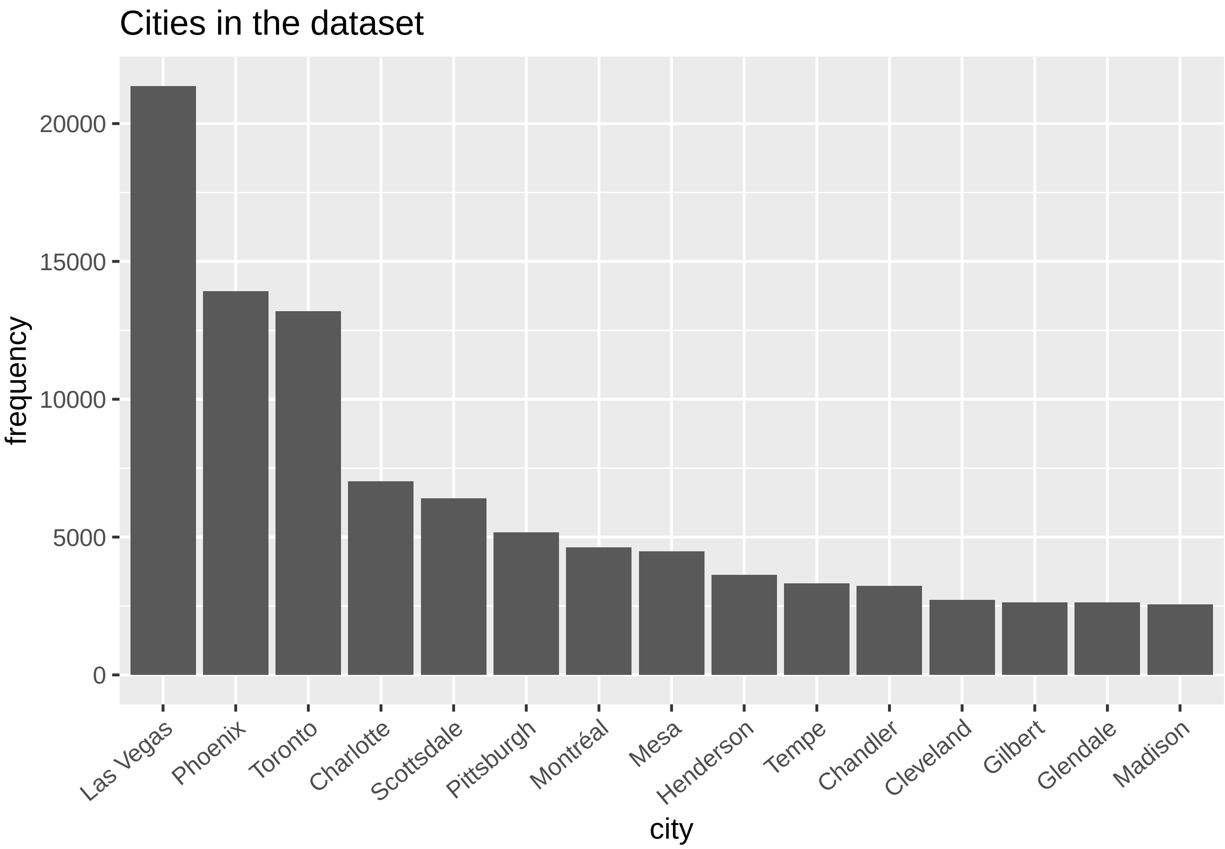
According to this, 6,267 closed in two years. The other 127,561 carried on.

```
table(causal_set$open_2019)
```

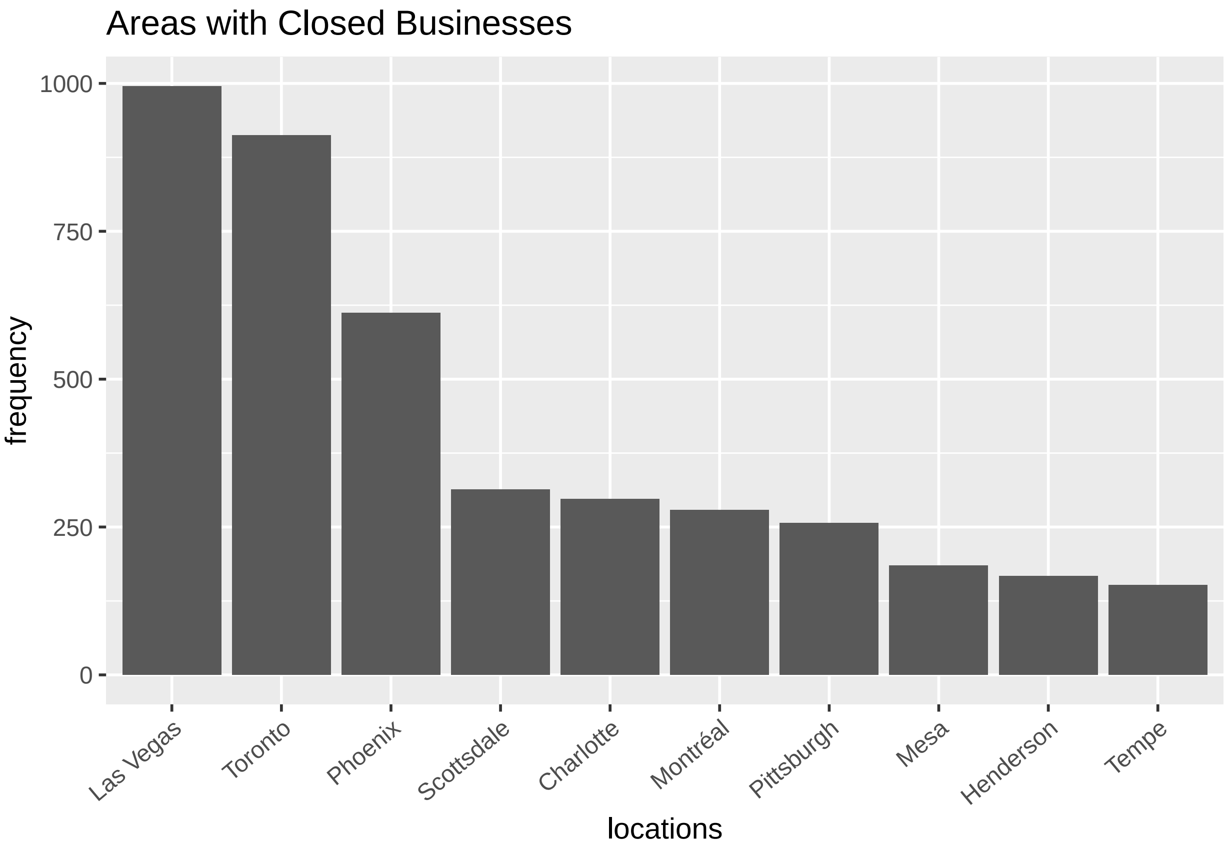
```
## 
##      0      1 
##   6267 127561
```

```
causal_set %>% filter(open_2019==0)
```

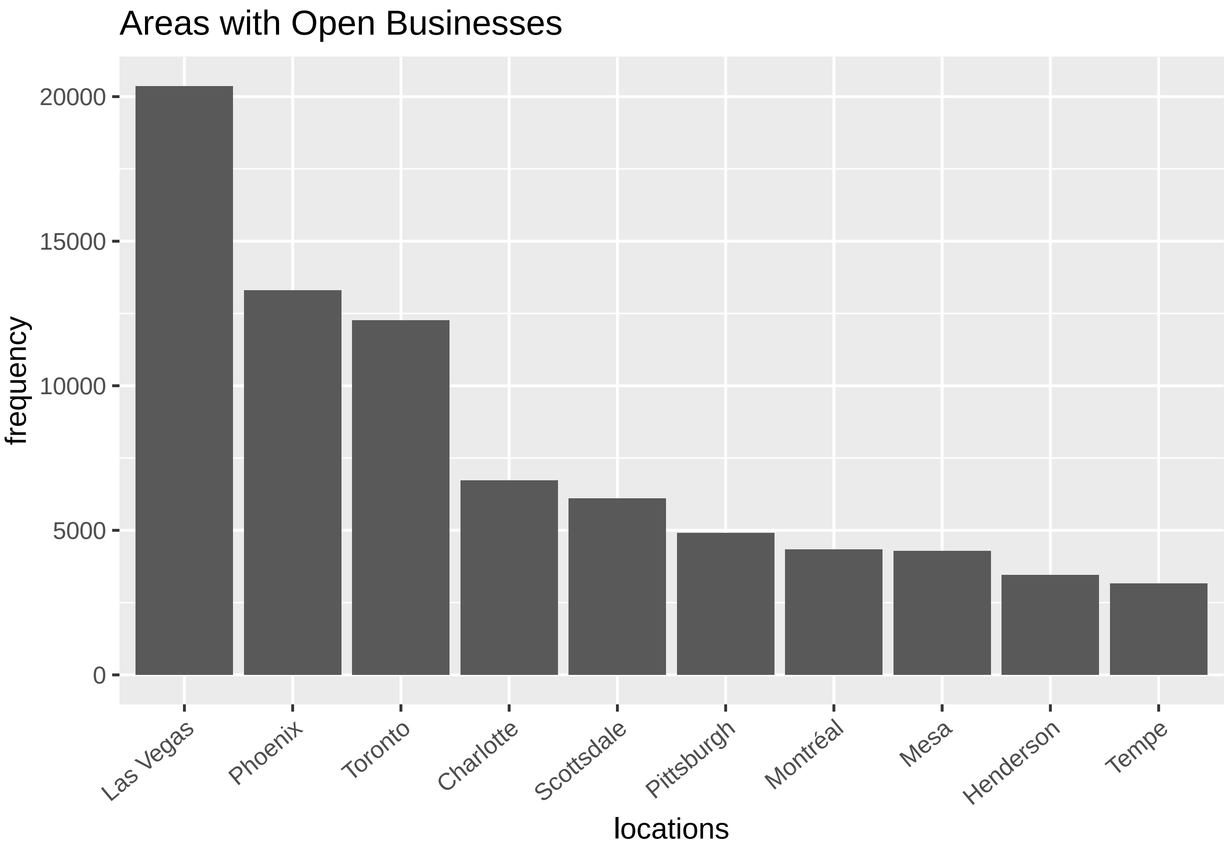
```
causal_set_cities <- data.frame(sort(table(causal_set$city), decreasing=TRUE))
names(causal_set_cities) <- c("city", "frequency")
ggplot(head(causal_set_cities, 15), aes(x=city, y=frequency)) + geom_bar(stat="identity") + theme(axis.
```



```
closed_businesses <- data.frame(sort(table(causal_set %>% filter(open_2019==0) %>% pull(city)), decreas
names(closed_businesses) <- c("locations", "frequency")
ggplot(head(closed_businesses, 10), aes(x=locations, y=frequency)) + geom_bar(stat="identity") + theme(
```



```r
open_businesses <- data.frame(sort(table(causal_set %>% filter(open_2019==1) %>% pull(city)), decreasing
names(open_businesses) <- c("locations", "frequency")
ggplot(head(open_businesses, 10), aes(x=locations, y=frequency)) + geom_bar(stat="identity") + theme(ax
```


Areas with Open Businesses
frequency
20000
15000
10000
5000
0
Las Vegas
Phoenix
Toronto
Charlotte
Scottsdale
Pittsburgh
Montréal
Mesa
Henderson
Tempe
locations