Arizona Fatal Shootings

2023-08-27

```r
## load libraries
library(ggplot2)
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----------------------- tidyverse 2.0.0 --
## v dplyr     1.1.3      v readr     2.1.4
## v forcats   1.0.0      v stringr   1.5.0
## v lubridate 1.9.2      v tibble    3.2.1
## v purrr     1.0.2      v tidyr     1.3.0
## -- Conflicts ------------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```r
library(dplyr)
library(stringr)
## load data
shooting.df <-read.csv("~/Documents/Stats Seminar/fatal-police-shootings-data.csv", header=TRUE)
summary(shooting.df)
```

```
##        id              date            threat_type         flee_status
##  Min.   :   3   Length:8721        Length:8721        Length:8721
##  1st Qu.:2447   Class :character   Class :character   Class :character
##  Median :4833   Mode  :character   Mode  :character   Mode  :character
##  Mean   :4804
##  3rd Qu.:7156
##  Max.   :9472
##
##   armed_with            city               county              state
##  Length:8721        Length:8721        Length:8721        Length:8721
##  Class :character   Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character   Mode  :character
##
##
##
##
##     latitude         longitude       location_precision      name
##  Min.   :19.50    Min.   :-160.01   Length:8721        Length:8721
##  1st Qu.:33.47    1st Qu.:-112.02   Class :character   Class :character
##  Median :36.09    Median : -94.32   Mode  :character   Mode  :character
##  Mean   :36.64    Mean   : -97.04
##  3rd Qu.:40.00    3rd Qu.: -83.19
##  Max.   :71.30    Max.   : -67.87
```

```
##   NA's   :980      NA's    :980
##       age              gender              race            race_source
##  Min.   : 2.00   Length:8721        Length:8721        Length:8721
##  1st Qu.:27.00   Class :character   Class :character   Class :character
##  Median :35.00   Mode  :character   Mode  :character   Mode  :character
##  Mean   :37.31
##  3rd Qu.:45.00
##  Max.   :92.00
##  NA's   :600
##  was_mental_illness_related body_camera        agency_ids
##  Length:8721                Length:8721        Length:8721
##  Class :character           Class :character   Class :character
##  Mode  :character           Mode  :character   Mode  :character
##
##
##
##
```

```r
head(shooting.df)
```
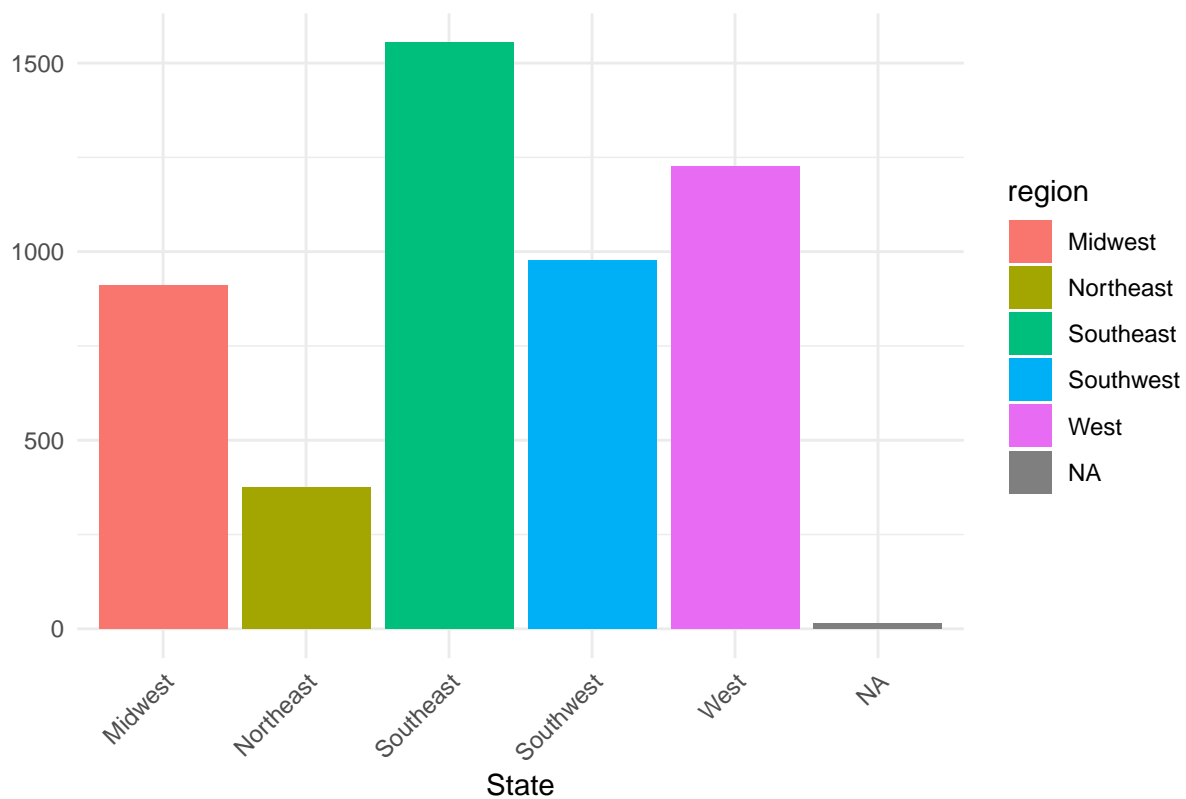
```
##   id       date threat_type flee_status armed_with          city         county
## 1  3 2015-01-02       point         not        gun       Shelton          Mason
## 2  4 2015-01-02       point         not        gun         Aloha     Washington
## 3  5 2015-01-03        move         not    unarmed       Wichita       Sedgwick
## 4  8 2015-01-04       point         not    replica San Francisco San Francisco
## 5  9 2015-01-04       point         not      other         Evans           Weld
## 6 11 2015-01-04      attack         not        gun       Guthrie          Logan
##   state latitude  longitude location_precision                name age gender
## 1    WA 47.24683 -123.12159      not_available         Tim Elliot  53   male
## 2    OR 45.48742 -122.89170      not_available   Lewis Lee Lembke  47   male
## 3    KS 37.69477  -97.28055      not_available John Paul Quintero  23   male
## 4    CA 37.76291 -122.42200      not_available    Matthew Hoffman  32   male
## 5    CO 40.38394 -104.69226      not_available  Michael Rodriguez  39   male
## 6    OK 35.87699  -97.42345      not_available  Kenneth Joe Brown  18   male
##   race   race_source was_mental_illness_related body_camera agency_ids
## 1    A not_available                       True       False         73
## 2    W not_available                      False       False         70
## 3    H not_available                      False       False        238
## 4    W not_available                       True       False        196
## 5    H not_available                      False       False        473
## 6    W not_available                      False       False        101
```

```r
gun_incidents <- shooting.df %>%
  filter(armed_with == "gun")
ggplot(gun_incidents) +
  aes(x = state, fill = state) +
  geom_bar() +
  theme(axis.text.x = element_text(angle = 90))
```

```
states_by_region <- data.frame(
  state = c("AL", "AK", "AZ", "AR", "CA", "CO", "CT", "DE", "FL", "GA", "HI", "ID", "IL", "IN", "IA", "
  region = c("Southeast", "West", "Southwest", "Southeast", "West", "West", "Northeast", "Northeast", "S

gun_incidents_with_regions <- gun_incidents %>%
  left_join(states_by_region, by = c("state" = "state"))

table(states_by_region$region)
```

```
##
##   Midwest Northeast Southeast Southwest      West
##        12        11        12         4        11
```

```
ggplot(gun_incidents_with_regions) +
  aes(x = region, fill = region) +
  geom_bar() +
  labs(title = "Distribution of Police Shootings Involving Armed Victims by Region", x = "State", y = "
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```
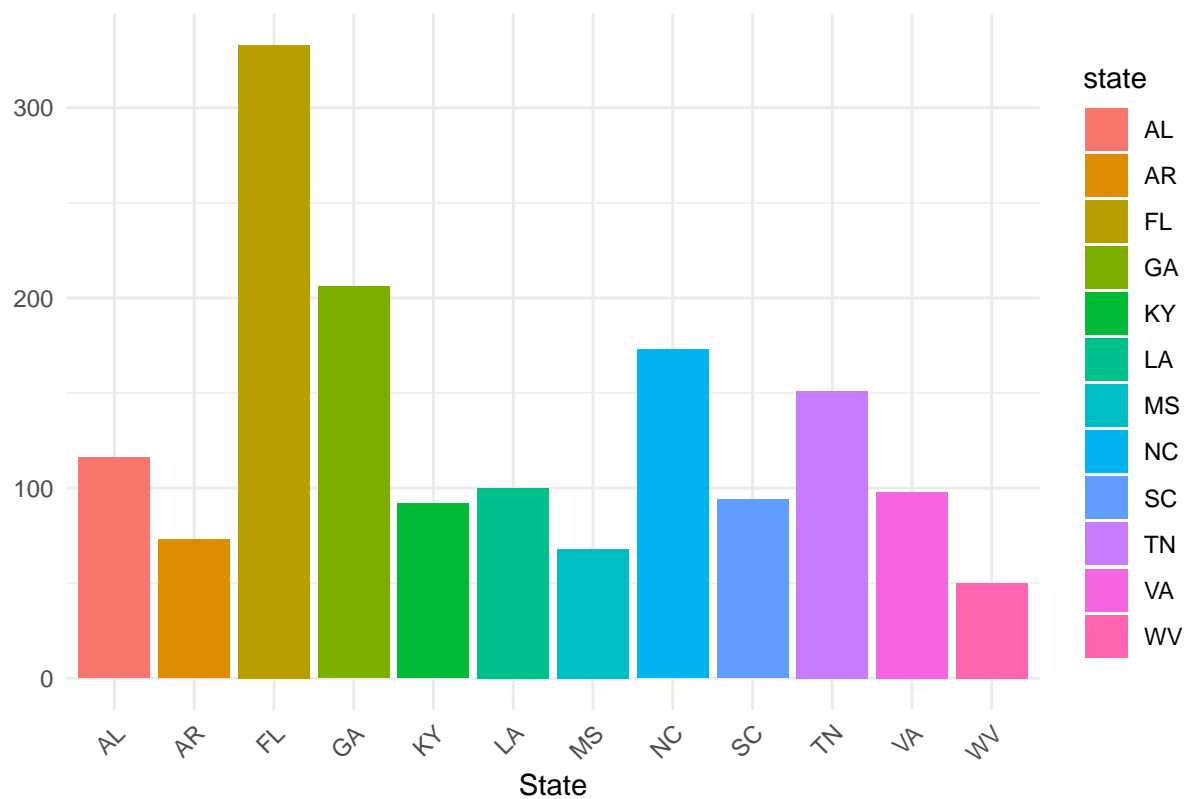
Distribution of Police Shootings Involving Armed Victims by Region
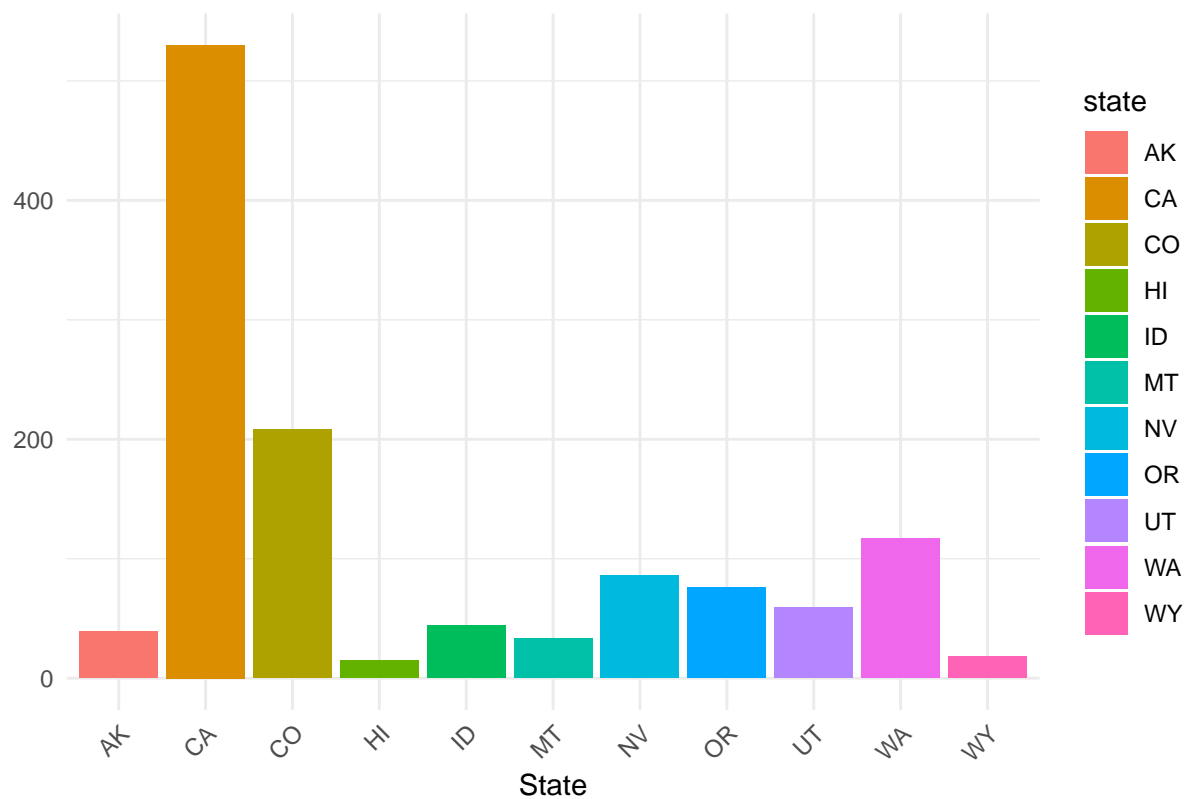


```
gun_incidents_southeast <- gun_incidents_with_regions %>%
  filter(region == "Southeast")
ggplot(gun_incidents_southeast) +
  aes(x = state, fill = state) +
  geom_bar() +
  labs(title = "Distribution of Police Shootings Involving Armed Victims in the Southeast by State", x =
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

Distribution of Police Shootings Involving Armed Victims in the Southeast b


```
gun_incidents_west <- gun_incidents_with_regions %>%
  filter(region == "West")
ggplot(gun_incidents_west) +
  aes(x = state, fill = state) +
  geom_bar() +
  labs(title = "Distribution of Police Shootings Involving Armed Victims in the West by State", x = "Sta
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

Distribution of Police Shootings Involving Armed Victims in the West by Sta


```
gun_incidents_southwest <- gun_incidents_with_regions %>%
  filter(region == "Southwest")
ggplot(gun_incidents_southwest) +
  aes(x = state, fill = state) +
  geom_bar() +
  labs(title = "Distribution of Police Shootings Involving Armed Victims in the Southwest by State", x =
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

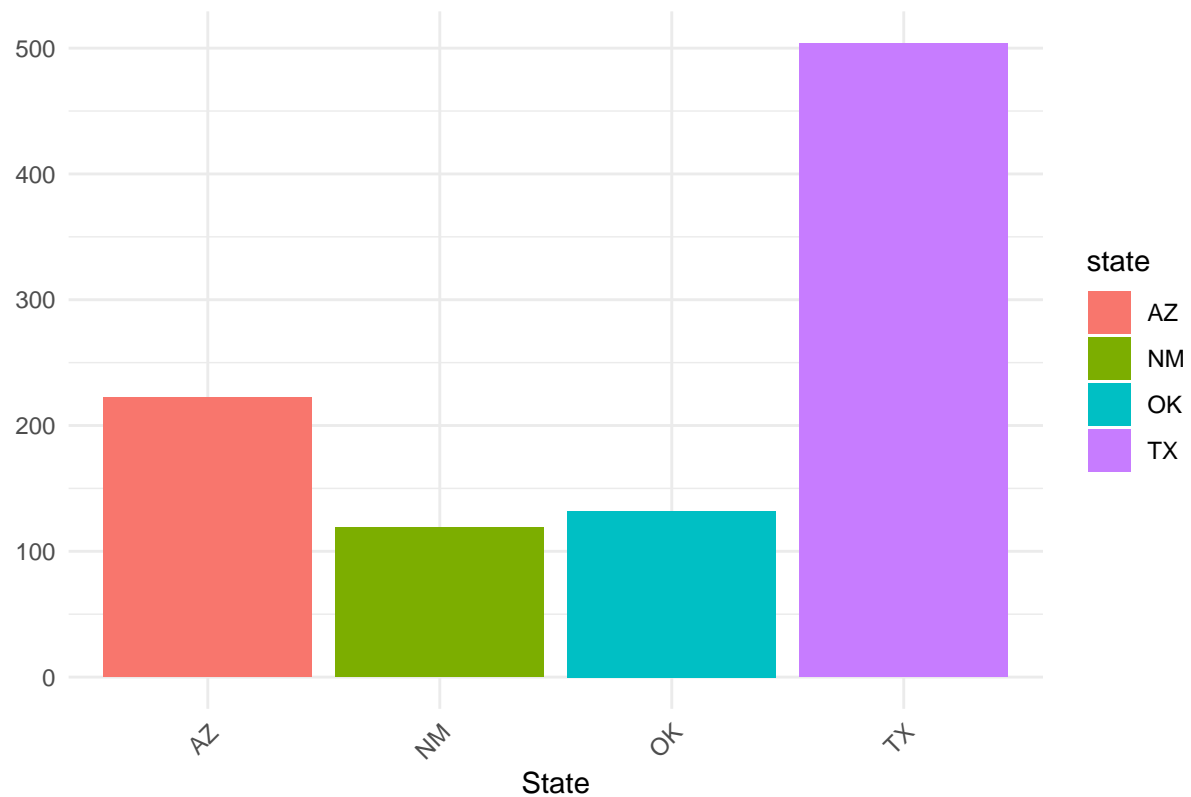## Distribution of Police Shootings Involving Armed Victims in the Southwest b


```
gun_incidents_northeast <- gun_incidents_with_regions %>%
  filter(region == "Northeast")
ggplot(gun_incidents_northeast) +
  aes(x = state, fill = state) +
  geom_bar() +
  labs(title = "Distribution of Police Shootings Involving Armed Victims in the Northeast by State", x =
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

Distribution of Police Shootings Involving Armed Victims in the Northeast by


```
gun_incidents_midwest <- gun_incidents_with_regions %>%
  filter(region == "Midwest")
ggplot(gun_incidents_midwest) +
  aes(x = state, fill = state) +
  geom_bar() +
  labs(title = "Distribution of Police Shootings Involving Armed Victims in the Midwest by State", x = 
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

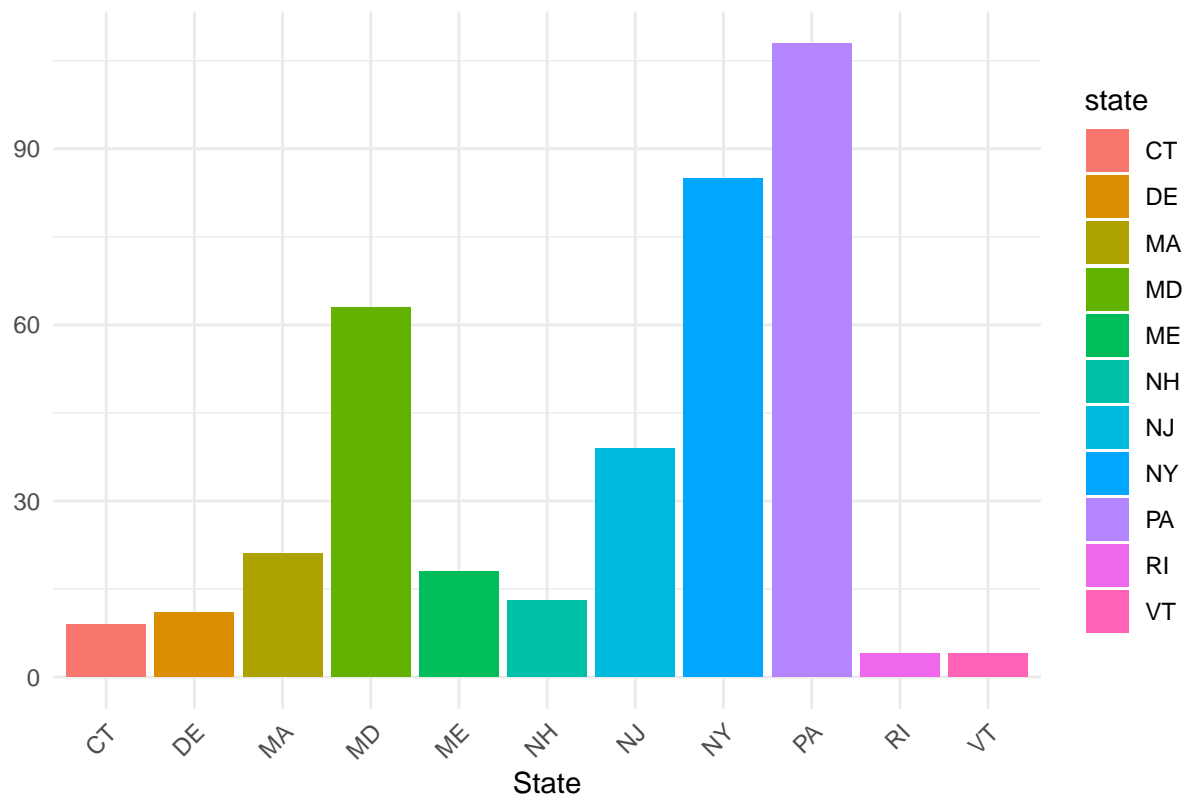# Distribution of Police Shootings Involving Armed Victims in the Midwest by
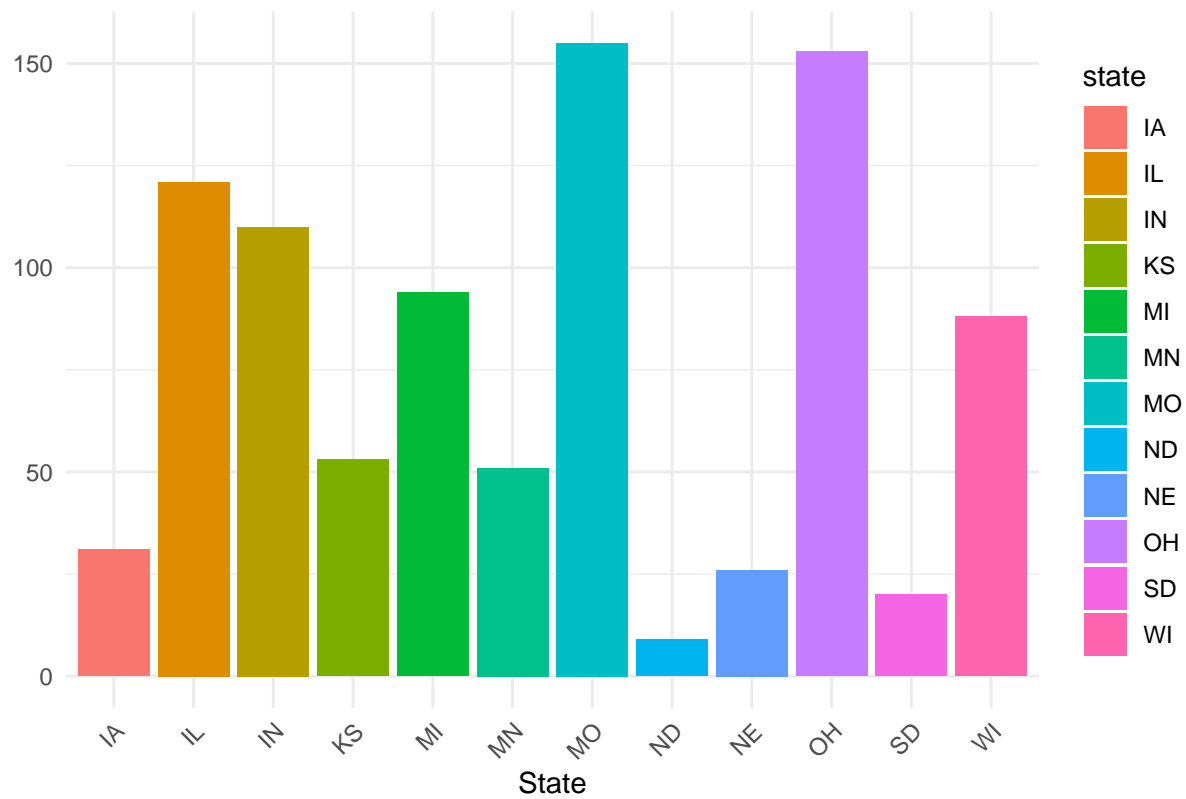

```r
ggplot(gun_incidents_southwest) +
  aes(x = date, y = state)
```

```
geom_point()
```

```
## geom_point: na.rm = FALSE
## stat_identity: na.rm = FALSE
## position_identity
```

```
#Clean the data
shootings_cleaned <- subset(shooting.df, age!="NA" & gender == "male" & race %in% c("A", "H", "B", "W")]
```

```
arizona_shootings_cleaned <- subset(shooting.df, age!="NA" & gender == "male" & race %in% c("A", "H", "I
arizona_pop <-read.csv("~/Documents/Stats Seminar/Arizona Population Data.csv", header=TRUE)
arizona_pop
```

```
##   Year Population Growth.Rate
## 1 2022  7,359,197       1.30%
## 2 2021  7,264,877       1.18%
## 3 2020  7,179,943      -1.53%
## 4 2019  7,291,843       1.78%
## 5 2018  7,164,228       1.65%
## 6 2017  7,048,088       1.49%
## 7 2016  6,944,767       1.64%
## 8 2015  6,832,810       1.48%
```

```r
library(lubridate)

# Create a new empty column named 'year'
arizona_shootings_cleaned$year <- NA

# Populate the 'year' column with extracted year values
for (i in 1:nrow(arizona_shootings_cleaned)) {
  specific_date <- arizona_shootings_cleaned$date[i]

  if (!is.na(specific_date)) {
    year <- year(specific_date)  # Extract year using lubridate
    arizona_shootings_cleaned$year[i] <- year
  }
}
```

```r
# Loop through each row in the shootings dataframe
for (i in 1:nrow(arizona_shootings_cleaned)) {
  year <- arizona_shootings_cleaned$year[i]  # Extract the year from the shootings dataframe

  # Match the year to the corresponding row in the population dataframe
  matched_row <- arizona_pop[arizona_pop$Year == year, ]

  # If a match is found, assign the population value to the 'population' column in the shootings dataframe
  if (nrow(matched_row) > 0) {
    arizona_shootings_cleaned$population[i] <- matched_row$Population
  }
}

# Print the updated shootings dataframe
arizona_shootings_cleaned <- subset(arizona_shootings_cleaned, year != "2023")
print(arizona_shootings_cleaned)
```

```
##         id       date  threat_type flee_status  armed_with
## 7       13 2015-01-05       shoot          car         gun
## 43      80 2015-01-18       point          not         gun
## 46      85 2015-01-20      threat          car
## 67     349 2015-01-27       shoot          not         gun
## 86     124 2015-02-04       point          car         gun
## 87     125 2015-02-04     accident         not     unarmed
## 110    154 2015-02-13      threat          not       knife
## 116    156 2015-02-16       point          not         gun
## 159    198 2015-03-03      attack          not       knife
## 168    271 2015-03-07       point          not         gun
## 183    281 2015-03-11       point          not     replica
## 215    235 2015-03-21       shoot          not         gun
## 229    242 2015-03-25        move          not         gun
## 257    301 2015-04-05      threat          not       knife
## 291    376 2015-04-18       shoot          not         gun
## 301    394 2015-04-22      threat          not       knife
## 323    416 2015-04-29       point          not         gun
## 345    439 2015-05-08      attack          not       knife
## 379    474 2015-05-23       shoot          car         gun
## 398    500 2015-05-30      attack         foot     unarmed
```

```
## 421   526 2015-06-08       point       not       gun
## 491   609 2015-07-07      threat       not blunt_object
## 501   623 2015-07-09       point      foot       gun
## 535   652 2015-07-18       shoot       not       gun
## 572   696 2015-08-01       shoot       not       gun
## 602   725 2015-08-10      threat       not
## 646   775 2015-08-25       point       not       gun
## 663   791 2015-08-30       point       not       gun
## 668   799 2015-09-02       shoot       not       gun
## 736   868 2015-09-25       shoot       not       gun
## 747   888 2015-10-02       shoot       car       gun
## 895  1035 2015-11-25       shoot       not       gun
## 902  1038 2015-11-29       point       not       gun
## 917  1056 2015-12-04      threat       not blunt_object
## 935  1075 2015-12-11      attack       not    unarmed
## 983  1121 2015-12-26      threat       not blunt_object
## 988  1132 2015-12-27      threat       not      knife
## 1038 1188 2016-01-17        move       not    unarmed
## 1039 1178 2016-01-18       shoot       not       gun
## 1042 1186 2016-01-18       point       not       gun
## 1083 1236 2016-02-04      threat       not      knife
## 1148 1317 2016-02-23       shoot       not       gun
## 1151 1314 2016-02-24        move       car
## 1168 1335 2016-03-03        move       car      knife
## 1249 1436 2016-03-30 undetermined      not       gun
## 1307 1486 2016-04-23       shoot       not       gun
## 1326 1507 2016-04-30      attack       car
## 1365 1546 2016-05-18       shoot       not       gun
## 1400 1575 2016-05-30       point       not       gun
## 1454 1638 2016-06-20      threat       not      knife
## 1514 1700 2016-07-08      threat       not      knife
## 1523 1708 2016-07-13 undetermined     foot       gun
## 1549 1736 2016-07-27      attack      foot    unarmed
## 1550 1739 2016-07-27      threat      foot      knife
## 1557 1743 2016-07-28       shoot     other       gun
## 1594 1782 2016-08-12      threat       car undetermined
## 1597 1781 2016-08-13      attack       not      knife
## 1604 1790 2016-08-16      threat       not    replica
## 1606 1792 2016-08-16      attack       not    unarmed
## 1618 1800 2016-08-19      attack       not       gun
## 1633 1820 2016-08-27       point       not    replica
## 1665 1864 2016-09-06       point       car       gun
## 1667 1868 2016-09-06      attack       not      knife
## 1683 1884 2016-09-15      threat     other       gun
## 1714 1941 2016-09-27      threat       car
## 1717 1921 2016-09-29       shoot       not       gun
## 1745 1954 2016-10-09      threat       car       gun
## 1796 2003 2016-10-30      threat       car
## 1826 2034 2016-11-09       shoot       not       gun
## 1834 2045 2016-11-12       shoot       car       gun
## 1865 2142 2016-11-25      threat       not    unarmed
## 1866 2077 2016-11-26      attack       car
## 1976 2205 2017-01-09        move      foot    unarmed
## 2038 2707 2017-01-28       point       not       gun
```

```
## 2095 2335 2017-02-13        shoot         not          gun
## 2116 2362 2017-02-19        point         not          gun
## 2149 2397 2017-03-02        point         not      replica
## 2179 2428 2017-03-15       threat         car
## 2202 2453 2017-03-23       attack         not        knife
## 2243 2499 2017-04-13       threat         not
## 2261 2518 2017-04-20       threat         car
## 2267 2526 2017-04-23        shoot         not          gun
## 2322 2579 2017-05-14        shoot         car          gun
## 2331 2587 2017-05-16       threat                     knife
## 2343 2601 2017-05-23        shoot       other          gun
## 2352 2616 2017-05-26        point         not      replica
## 2370 2625 2017-06-03        point         not          gun
## 2427 2704 2017-06-23       attack         car
## 2434 2696 2017-06-25        point         not          gun
## 2447 2727 2017-07-01       threat         not          gun
## 2487 2770 2017-07-11        shoot        foot          gun
## 2491 2774 2017-07-13       threat                       gun
## 2493 2776 2017-07-13       attack         not        knife
## 2520 2803 2017-07-25        shoot         not          gun
## 2522 2804 2017-07-26        shoot       other          gun
## 2584 2883 2017-08-17       threat         not        knife
## 2643 2935 2017-09-10       attack         not          gun
## 2651 2948 2017-09-13        shoot         car          gun
## 2676 2980 2017-09-22        point         not          gun
## 2705 3021 2017-10-04       threat         not          gun
## 2722 3033 2017-10-08        shoot         not          gun
## 2725 3027 2017-10-11       threat         not          gun
## 2728 3031 2017-10-12        shoot         not          gun
## 2736 3041 2017-10-16       threat         not          gun
## 2739 3044 2017-10-18        shoot        foot          gun
## 2809 3126 2017-11-10       attack         not        knife
## 2846 3166 2017-11-24       threat         not      unknown
## 2874 3190 2017-12-07       attack         car
## 2961 3277 2018-01-07         move         not      unarmed
## 2992 4244 2018-01-17       threat         not        knife
## 3061 3402 2018-02-09       threat         not          gun
## 3065 3404 2018-02-10        point         not          gun
## 3078 3408 2018-02-15        point         not          gun
## 3097 3432 2018-02-22       threat        foot          gun
## 3105 3438 2018-02-26        point                       gun
## 3115 3466 2018-03-01       threat         not      unknown
## 3117 3454 2018-03-02        shoot        foot          gun
## 3118 3458 2018-03-02       threat         not        knife
## 3120 3460 2018-03-02       threat         not          gun
## 3147 3492 2018-03-09        shoot        foot          gun
## 3165 3514 2018-03-15       attack         not      unarmed
## 3194 3540 2018-03-23       attack         not        knife
## 3196 3542 2018-03-23       threat         not        other
## 3207 3554 2018-03-27        point         not          gun
## 3213 3550 2018-03-28       threat         not        knife
## 3230 4255 2018-04-01       threat        foot          gun
## 3237 3584 2018-04-04        shoot        foot          gun
## 3276 3618 2018-04-14        point       other          gun
```

```
## 3278 3620 2018-04-14        shoot        not         gun
## 3427 3766 2018-06-12       threat        not     unarmed
## 3478 3818 2018-06-29        shoot        not         gun
## 3505 3831 2018-07-08       threat        not         gun
## 3522 3868 2018-07-17        shoot        car         gun
## 3534 3874 2018-07-21       attack       foot  vehicle;gun
## 3535 3878 2018-07-21       attack        not     vehicle
## 3551 3959 2018-07-25         move        not     unarmed
## 3569 3963 2018-07-31        shoot        not         gun
## 3571 3909 2018-08-01       threat        not         gun
## 3592 3933 2018-08-07       threat      other         gun
## 3616 3982 2018-08-18         move       foot         gun
## 3634 3990 2018-08-27       attack        car  gun;vehicle
## 3635 3991 2018-08-27        shoot        not         gun
## 3666 4041 2018-09-14        point        not         gun
## 3690 4082 2018-09-24        shoot        not         gun
## 3738 4100 2018-10-12        shoot        not         gun
## 3776 4137 2018-10-29        shoot        car         gun
## 3814 4175 2018-11-13       attack        car     unknown
## 3892 4304 2018-12-16        point        not         gun
## 3913 4325 2018-12-25        shoot        not         gun
## 3920 4346 2018-12-28         move        not         gun
## 3964 4390 2019-01-11       threat        not         gun
## 3981 4386 2019-01-15       threat       foot     replica
## 3997 4405 2019-01-23 undetermined       foot     unarmed
## 4001 4414 2019-01-23        shoot       foot         gun
## 4003 4514 2019-01-24         move        car     unarmed
## 4019 4511 2019-01-30        point       foot         gun
## 4023 4432 2019-02-02       attack        not       knife
## 4118 4557 2019-03-09        point        not         gun
## 4134 4570 2019-03-13         flee      other     unarmed
## 4177 4611 2019-03-31       attack        not       knife
## 4210 4643 2019-04-12       attack        not blunt_object
## 4245 4693 2019-04-29        point       foot     replica
## 4262 5417 2019-05-04        point        not       knife
## 4264 4699 2019-05-06       threat        not         gun
## 4271 4703 2019-05-09        point        not         gun
## 4292 4725 2019-05-19        shoot       foot         gun
## 4375 4790 2019-06-16       attack                    gun
## 4569 5002 2019-08-30       attack      other  gun;vehicle
## 4599 5027 2019-09-09        point        not   gun;knife
## 4682 5089 2019-10-13        shoot        not         gun
## 4684 5221 2019-10-13        shoot                    gun
## 4751 5154 2019-11-03        shoot        not         gun
## 4753 5172 2019-11-04       attack        not       knife
## 4787 5189 2019-11-16        point        not         gun
## 4862 5277 2019-12-14        shoot        not         gun
## 4884 5299 2019-12-20       attack        not       other
## 4894 5317 2019-12-23        shoot        car  gun;vehicle
## 4920 5332 2019-12-31       threat        not       knife
## 4944 5353 2020-01-06        shoot       foot         gun
## 4979 5391 2020-01-20       threat        not       knife
## 4986 5508 2020-01-22        shoot                    gun
## 4999 5424 2020-01-27       attack        car     vehicle
```

```
## 5003 5440 2020-01-28       attack         not        knife
## 5004 5442 2020-01-28        point         not          gun
## 5085 5579 2020-02-27       threat                     knife
## 5113 5609 2020-03-08        point         not          gun
## 5128 5654 2020-03-13        point         not      replica
## 5176 5697 2020-03-29        shoot         not          gun
## 5187 5710 2020-04-02       attack       other        other
## 5200 5728 2020-04-07       attack         not        knife
## 5256 5788 2020-04-28        shoot         car          gun
## 5331 5870 2020-05-21         move         not          gun
## 5341 5841 2020-05-25         move         not      unarmed
## 5409 5927 2020-06-16        shoot         not          gun
## 5455 5969 2020-07-04 undetermined        not undetermined
## 5459 5972 2020-07-05        point         not          gun
## 5555 6049 2020-08-13       attack         not          gun
## 5575 6103 2020-08-19        shoot         not          gun
## 5593 6121 2020-08-26        point        foot          gun
## 5659 6198 2020-09-25         move         car      unarmed
## 5723 6250 2020-10-20        point         not          gun
## 5727 6334 2020-10-20       threat         not      unarmed
## 5731 6258 2020-10-22        point         car          gun
## 5747 6253 2020-10-25        point         not      replica
## 5756 6273 2020-10-28        point        foot          gun
## 5853 6363 2020-11-30        point         not      replica
## 5861 6396 2020-12-03        shoot         not          gun
## 5866 6428 2020-12-04        shoot                      gun
## 5915 6437 2020-12-22       threat         not blunt_object
## 5921 6455 2020-12-25       attack         car      vehicle
## 5932 6519 2020-12-28         move        foot      unarmed
## 5948 6542 2021-01-02       threat       other          gun
## 5953 6509 2021-01-04       threat         not        knife
## 5970 6681 2021-01-09        shoot        foot          gun
## 5982 6502 2021-01-12       threat       other          gun
## 6001 6539 2021-01-20                      car undetermined
## 6020 6556 2021-01-30       threat         not          gun
## 6025 6553 2021-02-01       attack       other      vehicle
## 6050 6584 2021-02-06        point         not          gun
## 6172 7579 2021-03-22        shoot        foot          gun
## 6220 6743 2021-04-03        point        foot          gun
## 6267 6823 2021-04-17       threat         car undetermined
## 6284 6800 2021-04-23       threat         not          gun
## 6302 7630 2021-05-03       threat         not blunt_object
## 6316 7628 2021-05-09       threat        foot      unknown
## 6334 6863 2021-05-17       attack            undetermined
## 6360 6883 2021-05-24         flee         car undetermined
## 6374 6894 2021-05-31        point         not          gun
## 6389 6910 2021-06-04       threat         not        knife
## 6413 7605 2021-06-10        shoot         car          gun
## 6506 7012 2021-07-08        point         not      replica
## 6530 7395 2021-07-18        shoot         car          gun
## 6536 7068 2021-07-20        point         not        knife
## 6736 7291 2021-09-29         move         not          gun
## 6838 7328 2021-11-03       attack       other      vehicle
## 6901 7390 2021-11-29         move                     knife
```

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```
## 6980 7511 2021-12-26      attack      not        knife
## 6998 7459 2022-01-03        move      not blunt_object
## 7000 7448 2022-01-04       point      car          gun
## 7044 7717 2022-01-22      threat      not          gun
## 7085 7696 2022-02-07      threat      not          gun
## 7087 7718 2022-02-07      threat      not        knife
## 7089 7694 2022-02-08       point      not      replica
## 7125 7750 2022-02-17      threat    other          gun
## 7178 7782 2022-03-06 undetermined    car      unarmed
## 7192 7790 2022-03-12      attack      not        knife
## 7194 7793 2022-03-12      attack      car      vehicle
## 7242 7876 2022-03-27      threat                   gun
## 7247 7882 2022-03-29       point                   gun
## 7297 7969 2022-04-09        flee     foot undetermined
## 7311 7934 2022-04-14       shoot     foot          gun
## 7374 8027 2022-05-10      threat                 knife
## 7392 8050 2022-05-18       shoot      not          gun
## 7413 8084 2022-05-23      threat                 knife
## 7433 8091 2022-05-29       shoot                   gun
## 7552 8207 2022-07-05        move      not          gun
## 7590 8248 2022-07-17      threat                 knife
## 7678 8345 2022-08-20      threat                   gun
## 7696 8359 2022-08-25       point                   gun
## 7737 8397 2022-09-07      threat     foot        knife
## 7769 8439 2022-09-15        flee     foot      unarmed
## 7798 8449 2022-09-25      attack          blunt_object
## 7889 8548 2022-10-27       shoot      car          gun
## 7907 8638 2022-11-02       shoot                   gun
## 7939 8586 2022-11-12      threat                 knife
## 7974 8677 2022-11-23      threat     foot          gun
##                       city   county state latitude longitude
## 7               Chandler Maricopa    AZ 33.32789 -111.8410
## 43              Maricopa    Pinal    AZ 33.08466 -112.0420
## 46            Scottsdale Maricopa    AZ 33.50939 -111.9086
## 67               Morenci Greenlee    AZ 33.05386 -109.3263
## 86                 Tempe Maricopa    AZ 33.37818 -111.9783
## 87                 Tempe Maricopa    AZ 33.37818 -111.9783
## 110           San Manuel    Pinal    AZ 32.61442 -110.6283
## 116               Marana     Pima    AZ 32.35880 -111.0898
## 159                Tempe Maricopa    AZ 33.44023 -111.9308
## 168              Phoenix Maricopa    AZ 33.46938 -112.0433
## 183              Kingman   Mohave    AZ 35.20391 -114.0259
## 215           Cottonwood  Yavapai    AZ 34.71310 -112.0008
## 229             Glendale Maricopa    AZ 33.63828 -112.2029
## 257              Phoenix Maricopa    AZ 33.65472 -112.1435
## 291              Phoenix Maricopa    AZ 33.48031 -112.0388
## 301               Bisbee  Cochise    AZ 31.40119 -109.9168
## 323                 Mesa Maricopa    AZ 33.38952 -111.8000
## 345               Kearny    Pinal    AZ 33.07865 -110.9233
## 379                Eagar   Apache    AZ 34.09352 -109.3298
## 398           Cottonwood  Yavapai    AZ 34.69036 -111.9856
## 421             Sun City Maricopa    AZ 33.63125 -112.2575
## 491                 Mesa Maricopa    AZ 33.40506 -111.8213
## 501              Phoenix Maricopa    AZ 33.59656 -112.0996
```

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## 535                 Phoenix Maricopa    AZ 33.55312 -112.1516
## 572                  Tucson     Pima    AZ 32.27235 -110.9735
## 602                 Gilbert Maricopa    AZ 33.36471 -111.7560
## 646                 Phoenix Maricopa    AZ 33.46595 -112.1345
## 663                  Tucson     Pima    AZ 32.14670 -110.9596
## 668                Prescott  Yavapai    AZ 34.71986 -112.5433
## 736                 Wilhoit  Yavapai    AZ 34.41560 -112.5894
## 747            Sierra Vista  Cochise    AZ 31.46726 -110.2333
## 895                   Eagar   Apache    AZ 34.11615 -109.2929
## 902                Sun City Maricopa    AZ 33.59327 -112.2980
## 917                    Mesa Maricopa    AZ 33.46634 -111.6725
## 935                  Tucson     Pima    AZ 32.30876 -110.8749
## 983                 Phoenix Maricopa    AZ 33.68004 -112.0617
## 988                   Tempe Maricopa    AZ 33.38054 -111.9215
## 1038                   Mesa Maricopa    AZ 33.41466 -111.6846
## 1039                 Tucson     Pima    AZ 32.22174 -110.9265
## 1042                Phoenix Maricopa    AZ 33.58210 -112.0976
## 1083                   Mesa Maricopa    AZ 33.43685 -111.6586
## 1148                Phoenix Maricopa    AZ 33.59638 -112.1687
## 1151                Phoenix Maricopa    AZ 33.46574 -112.2206
## 1168                Gilbert Maricopa    AZ 33.32987 -111.7772
## 1249               Glendale Maricopa    AZ 33.52343 -112.2248
## 1307               Chandler Maricopa    AZ 33.25377 -111.8412
## 1326               Florence    Pinal    AZ 33.03145 -111.3873
## 1365                Phoenix Maricopa    AZ 33.37774 -111.9784
## 1400                 Tucson     Pima    AZ 32.23981 -110.9012
## 1454       Lake Havasu City   Mohave    AZ 34.49374 -114.3238
## 1514                 Tucson     Pima    AZ 32.24814 -110.9719
## 1523              Flagstaff Coconino    AZ 35.19369 -111.6343
## 1549                  Tempe Maricopa    AZ 33.36687 -111.9297
## 1550             Scottsdale Maricopa    AZ 33.58246 -111.8828
## 1557                 Tucson     Pima    AZ 32.17780 -110.9685
## 1594                   Mesa Maricopa    AZ 33.45145 -111.8397
## 1597                Phoenix Maricopa    AZ 33.49495 -112.1517
## 1604        Apache Junction    Pinal    AZ 33.42959 -111.5472
## 1606                 Tucson     Pima    AZ 32.18042 -111.1610
## 1618                Phoenix Maricopa    AZ 33.48023 -112.0388
## 1633                Phoenix Maricopa    AZ 33.48173 -112.1832
## 1665                Phoenix Maricopa    AZ 33.44838 -112.0740
## 1667                Phoenix Maricopa    AZ 33.48395 -112.1621
## 1683                Phoenix Maricopa    AZ 33.42402 -112.0305
## 1714                Phoenix Maricopa    AZ 33.67500 -112.0993
## 1717                Kingman   Mohave    AZ 35.21253 -114.0401
## 1745             Scottsdale Maricopa    AZ 33.66792 -111.9614
## 1796                Kingman   Mohave    AZ 35.23940 -114.0377
## 1826               Show Low   Navajo    AZ 34.15983 -109.9830
## 1834                 Tucson     Pima    AZ 31.97196 -110.9690
## 1865                 Tucson     Pima    AZ 32.20084 -110.9734
## 1866               Surprise Maricopa    AZ 33.60797 -112.4400
## 1976                Phoenix Maricopa    AZ 33.56756 -112.1342
## 2038        Apache Junction    Pinal    AZ 33.42235 -111.5634
## 2095           Golden Shores   Mohave    AZ 34.76724 -114.4959
## 2116                 Tucson     Pima    AZ 32.07406 -110.9591
## 2149                Phoenix Maricopa    AZ 33.45144 -112.0695
```

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## 2179                 Phoenix Maricopa     AZ 33.78391 -112.1175
## 2202                 Phoenix Maricopa     AZ 33.45154 -112.1981
## 2243                Avondale Maricopa     AZ 33.46071 -112.3409
## 2261                Glendale Maricopa     AZ 33.53845 -112.1707
## 2267                Prescott  Yavapai     AZ 34.52693 -112.4779
## 2322                 Kingman              AZ 35.18944 -114.0530
## 2331                   Tempe Maricopa     AZ 33.39295 -111.9263
## 2343                Glendale Maricopa     AZ 33.55312 -112.1516
## 2352                  Tucson     Pima     AZ 32.14861 -110.9562
## 2370                Avondale Maricopa     AZ 33.47894 -112.2899
## 2427                 Phoenix              AZ 33.45031 -112.0216
## 2434                 Phoenix Maricopa     AZ 33.75570 -111.9905
## 2447                Glendale Maricopa     AZ 33.53769 -112.2344
## 2487           Golden Valley              AZ 35.22249 -114.2231
## 2491                    Pima     Pima     AZ 32.09074 -111.2231
## 2493                Goodyear              AZ      NA       NA
## 2520                Avondale Maricopa     AZ 33.49335 -112.2985
## 2522                 Phoenix              AZ 33.68382 -112.1348
## 2584                 Phoenix Maricopa     AZ 33.45858 -112.0291
## 2643               Youngtown              AZ 33.59956 -112.3017
## 2651              Quartzsite   La Paz     AZ 33.66153 -114.2295
## 2676                    Mesa Maricopa     AZ 33.39313 -111.8498
## 2705                    Mesa Maricopa     AZ 33.41518 -111.8315
## 2722         Pinetop-Lakeside   Navajo     AZ 34.15480 -109.9749
## 2725                  Marana     Pima     AZ 32.34980 -111.0979
## 2728               Flagstaff Coconino     AZ 35.19961 -111.6143
## 2736           Picture Rocks     Pima     AZ 32.34455 -111.1994
## 2739                  Tucson     Pima     AZ 32.25115 -110.8254
## 2809                 Phoenix Maricopa     AZ 33.46263 -112.0782
## 2846                    Yuma     Yuma     AZ 32.70247 -114.6675
## 2874                  Tucson     Pima     AZ 32.23664 -110.8805
## 2961                  Sedona Coconino     AZ 34.86974 -111.7610
## 2992                 Phoenix              AZ      NA       NA
## 3061               Flagstaff Coconino     AZ 35.19847 -111.6566
## 3065                 Kingman   Mohave     AZ 35.22467 -114.0144
## 3078                    Mesa Maricopa     AZ 33.41097 -111.7925
## 3097                 Phoenix Maricopa     AZ 33.40646 -112.2723
## 3105                 Gilbert Maricopa     AZ 33.36937 -111.7048
## 3115                  Tucson     Pima     AZ 32.17744 -110.9826
## 3117                Glendale Maricopa     AZ 33.56747 -112.1517
## 3118                    Mesa Maricopa     AZ 33.37917 -111.6363
## 3120              Scottsdale Maricopa     AZ 33.57711 -111.8863
## 3147                 Phoenix Maricopa     AZ 33.48690 -112.1638
## 3165             Casa Grande    Pinal     AZ 32.94180 -111.7212
## 3194                 Phoenix              AZ 33.49467 -112.2206
## 3196                 Douglas              AZ 31.35082 -109.5483
## 3207                 Phoenix              AZ 33.45775 -112.1217
## 3213                Surprise              AZ 33.63875 -112.3247
## 3230                 Phoenix              AZ      NA       NA
## 3237                    Mesa              AZ 33.37929 -111.7396
## 3276                 Phoenix Maricopa     AZ 33.48044 -112.0892
## 3278                 Phoenix Maricopa     AZ 33.37775 -112.0733
## 3427                 Phoenix Maricopa     AZ 33.48752 -112.0737
## 3478                 Phoenix Maricopa     AZ 33.51380 -112.1447
```

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## 3505                 Tucson     Pima    AZ 32.22222 -110.7666
## 3522                 Tucson     Pima    AZ 32.17805 -110.9264
## 3534                 Tucson             AZ 32.13129 -111.0868
## 3535                   Mesa             AZ 33.39314 -111.8746
## 3551             Lake Havasu            AZ      NA        NA
## 3569                Glendale            AZ 33.37908 -111.7739
## 3571                 Tucson             AZ 32.14093 -110.9125
## 3592 Salt River Reservation            AZ 33.51671 -111.7674
## 3616                Phoenix             AZ 33.39224 -112.0905
## 3634                Phoenix             AZ 33.45958 -112.1431
## 3635                Phoenix             AZ 33.63951 -112.1344
## 3666                   Mesa             AZ 33.41545 -111.6718
## 3690                 Peoria             AZ 33.58119 -112.2290
## 3738               Chandler             AZ 33.33515 -111.8591
## 3776                Phoenix             AZ      NA        NA
## 3814                Phoenix             AZ 33.52389 -112.2031
## 3892                   Mesa             AZ 33.43686 -111.6153
## 3913                Buckeye             AZ 33.43624 -112.5713
## 3920                Phoenix             AZ 33.61078 -112.1685
## 3964                Phoenix             AZ 33.50880 -112.2550
## 3981                  Tempe             AZ      NA        NA
## 3997               Flagstaff            AZ 35.18812 -111.6812
## 4001               Flagstaff            AZ 35.19233 -111.6790
## 4003              Ehrenberg            AZ 33.61833 -114.5054
## 4019                Phoenix             AZ 33.54123 -112.0648
## 4023               Flagstaff            AZ 35.20718 -111.6061
## 4118                Phoenix             AZ 33.48042 -111.9955
## 4134                Phoenix             AZ 33.45023 -112.1023
## 4177                 Marana             AZ 32.35884 -111.1229
## 4210                Buckeye             AZ 33.33399 -112.5000
## 4245                Phoenix             AZ 33.45866 -112.1345
## 4262                Phoenix             AZ      NA        NA
## 4264                   Mesa             AZ 33.41548 -111.8357
## 4271                Phoenix             AZ 33.43684 -112.0825
## 4292                Phoenix             AZ 33.46051 -112.0476
## 4375                 Tucson             AZ 32.14836 -111.0031
## 4569               Tolleson             AZ 33.45181 -112.2383
## 4599                Phoenix             AZ 33.61082 -112.1512
## 4682                Glendale            AZ 33.57289 -112.2056
## 4684                Buckeye             AZ 33.42129 -112.5442
## 4751                Phoenix             AZ 33.39968 -112.0213
## 4753                Glendale            AZ 33.56756 -112.1517
## 4787                   Mesa             AZ 33.41076 -111.8577
## 4862                 Tucson             AZ 32.26909 -110.9694
## 4884                  Tempe             AZ 33.43398 -111.9263
## 4894                Phoenix             AZ 33.47640 -112.2255
## 4920                  Globe             AZ      NA        NA
## 4944                Phoenix             AZ 33.44503 -112.0752
## 4979                 Sedona             AZ 34.85728 -111.7659
## 4986                   Mesa             AZ 33.39315 -111.8487
## 4999               Chandler             AZ      NA        NA
## 5003              Scottsdale            AZ 33.48766 -111.9262
## 5004                Tuscson             AZ 32.17786 -110.9984
## 5085              Clarkdale             AZ 34.76818 -112.0637
```

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## 5113        Apache Junction        AZ 33.41509 -111.5807
## 5128              Chandler         AZ 33.30538 -111.8358
## 5176               Phoenix         AZ      NA       NA
## 5187                  Mesa         AZ 33.40777 -111.8230
## 5200             El Mirage         AZ 33.60022 -112.3165
## 5256               Buckeye         AZ 33.42119 -112.5564
## 5331               Phoenix         AZ 33.30607 -112.0557
## 5341               Phoenix         AZ 33.67428 -111.9745
## 5409               Phoenix         AZ 33.49502 -112.0999
## 5455               Phoenix         AZ 33.49477 -112.2082
## 5459                  Mesa         AZ 33.42279 -111.7191
## 5555               Phoenix         AZ 33.50941 -112.1108
## 5575       Lake Havasu City       AZ 34.50880 -114.2950
## 5593                Tucson         AZ 32.17061 -110.9920
## 5659                 Tempe         AZ 33.42224 -111.8834
## 5723               Phoenix         AZ 33.50929 -112.0345
## 5727               Phoenix         AZ 33.50929 -112.0345
## 5731            Casa Grande        AZ 32.89416 -111.7573
## 5747               Phoenix         AZ 33.73417 -112.1187
## 5756                Tucson         AZ 32.13495 -110.9985
## 5853               Phoenix         AZ 33.49476 -112.1121
## 5861               Phoenix         AZ 33.56761 -112.0995
## 5866               Tonopah         AZ 33.49348 -112.9371
## 5915              Glendale         AZ 33.55308 -112.1862
## 5921              Rio Rico         AZ      NA       NA
## 5932               Phoenix         AZ 33.54586 -112.1170
## 5948              Chandler         AZ 33.31073 -111.8364
## 5953                Payson         AZ 34.24501 -111.3215
## 5970               Phoenix         AZ 33.45131 -112.0129
## 5982               Phoenix         AZ      NA       NA
## 6001                Tucson         AZ 32.37197 -111.0132
## 6020        Paradise Valley       AZ 33.54065 -111.9282
## 6025                Tucson         AZ 32.18610 -110.9680
## 6050                  Mesa         AZ 33.40751 -111.8746
## 6172                Tucson         AZ      NA       NA
## 6220               Phoenix         AZ 33.49467 -112.2206
## 6267               Kingman         AZ 35.26681 -114.0394
## 6284            Casa Grande        AZ 32.88681 -111.7595
## 6302              Glendale         AZ      NA       NA
## 6316              Glendale         AZ      NA       NA
## 6334                Peoria         AZ 33.55291 -112.2704
## 6360               Nogales         AZ 31.36030 -110.9326
## 6374                Tucson         AZ 32.27198 -110.9733
## 6389                Tucson         AZ 32.21568 -110.8151
## 6413                Wilcox         AZ      NA       NA
## 6506               Phoenix         AZ 33.55309 -112.1170
## 6530                Tucson         AZ      NA       NA
## 6536               Phoenix         AZ 33.45856 -112.0172
## 6736                 Tempe         AZ 33.37841 -111.9372
## 6838              Glendale         AZ 33.53487 -112.1928
## 6901                Tucson         AZ      NA       NA
## 6980               Buckeye         AZ      NA       NA
## 6998                  Mesa         AZ      NA       NA
## 7000               Paulden         AZ      NA       NA
```

```
## 7044                   Phoenix          AZ      NA         NA
## 7085                   Marana           AZ      NA         NA
## 7087                   Phoenix          AZ      NA         NA
## 7089                   Mesa             AZ      NA         NA
## 7125                Beaver Dam          AZ      NA         NA
## 7178                   Peoria           AZ 33.66715 -112.2800
## 7192                   Tucson           AZ 32.17574 -111.0786
## 7194                   Phoenix          AZ      NA         NA
## 7242                   Maricopa         AZ 33.07315 -111.9963
## 7247                   Tucson           AZ 32.21592 -110.8095
## 7297                   Gilbert          AZ 33.30682 -111.7555
## 7311                   Glendale         AZ 33.59927 -112.1859
## 7374                   Yuma             AZ 32.71308 -114.6258
## 7392                   Guadalupe        AZ 33.36006 -111.9631
## 7413                Arizona City        AZ 32.75259 -111.6803
## 7433                   Safford          AZ 32.80234 -109.7078
## 7552                   Glendale         AZ      NA         NA
## 7590                   Chandler         AZ 33.30605 -111.8762
## 7678                   Tucson           AZ 32.17845 -110.9812
## 7696                   Tucson           AZ 32.14296 -110.9571
## 7737                   Flagstaff        AZ 35.22362 -111.5841
## 7769                   Kingman          AZ 35.22486 -114.0362
## 7798                   Phoenix          AZ 33.53458 -112.0998
## 7889                   Mesa             AZ 33.40765 -111.8567
## 7907                   Phoenix          AZ 33.46595 -112.1388
## 7939                   Goodyear         AZ 33.33499 -112.4298
## 7974                   Chandler         AZ 33.29892 -111.7909
##      location_precision                       name age gender race
## 7          not_available     Kenneth Arnold Buck    22   male    H
## 43         not_available      Jonathan Guillory     32   male    W
## 46         not_available            Dewayne Carr    42   male    B
## 67         not_available            Chris Ingram    29   male    W
## 86         not_available            Salvador Muna   28   male    H
## 87         not_available       Joaquin Hernandez    28   male    H
## 110        not_available             Daniel Mejia   37   male    H
## 116        not_available       Lawrence Caldwell   56   male    W
## 159        not_available            Matthew Metz    25   male    W
## 168        not_available            Adam Reinhart   29   male    W
## 183        not_available       Ryan Dean Burgess   31   male    W
## 215        not_available             Enoch Gaver    21   male    W
## 229        not_available        Joseph Tassinari   63   male    W
## 257        not_available            Ken Cockerel   51   male    W
## 291        not_available             Erik Tellez   43   male    H
## 301        not_available  Carlos Saavedra Ramirez  51   male    H
## 323        not_available           Joshua Deysie   33   male    H
## 345        not_available            Shaun Johnson   35   male    W
## 379        not_available           Eric Robinson   40   male    W
## 398        not_available      Ebin Lamont Proctor   19   male    W
## 421        not_available           Richard Warolf   69   male    W
## 491        not_available          Adam Dujanovic   33   male    W
## 501        not_available          Robert Hammonds   68   male    W
## 535        not_available       Kevin Thomas Snyder  46   male    W
## 572        not_available       Armando Serrano Jr.  29   male    H
## 602        not_available       Richard Tyler Young  24   male    W
```

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## 646          not_available                  Shane Rudolph  45    male    W
## 663          not_available                  David M. Leon  40    male    H
## 668          not_available                   Arthur Bates  45    male    W
## 736          not_available                  Jeffrey Blood  45    male    W
## 747          not_available                   David M. Diaz  28    male    H
## 895          not_available                Douglas R. Slade  52    male    W
## 902          not_available                  Ralph Aguilar  69    male    H
## 917          not_available                    Ivan Krstic  47    male    W
## 935          not_available                 Steven Wickert  36    male    W
## 983          not_available                  Lonnie Niesen  41    male    W
## 988          not_available                     Sean Mould  34    male    W
## 1038         not_available                  Daniel Shaver  26    male    W
## 1039         not_available               Jordan Szymanski  33    male    W
## 1042         not_available               Levi Gene Wilson  39    male    W
## 1083         not_available                  Kayden Clarke  24    male    W
## 1148         not_available                   Alex Buckner  26    male    W
## 1151         not_available                  Victor Rivera  27    male    H
## 1168         not_available                   Sergio Ochoa  27    male    H
## 1249         not_available               Ruben Cossyleon  25    male    H
## 1307         not_available                Mitchell Oakley  24    male    W
## 1326         not_available                    Bender Dass  55    male    W
## 1365         not_available            Israel Santos-Banos  20    male    H
## 1400         not_available                     Osee Calix  33    male    B
## 1454         not_available         Devin Christopher Scott  20    male    W
## 1514         not_available                  Abraham Smith  30    male    W
## 1523         not_available                Donald S. Myers  32    male    W
## 1549         not_available                 Dalvin Hollins  19    male    B
## 1550         not_available                  Dylan Liberti  24    male    W
## 1557         not_available                     Jesus Rael  31    male    H
## 1594         not_available          Jesus Armando Carillo  22    male    H
## 1597         not_available      Ruben Horacio Strand Alvear  38    male    H
## 1604         not_available         Larry Eugene Kurtley Jr.  53    male    W
## 1606         not_available        Marcos Antonio Gastelum  25    male    H
## 1618         not_available                Jorge Ceniceros  22    male    H
## 1633         not_available               Angel Torres Jr.  26    male    H
## 1665         not_available                 Steven Del Rio  31    male    H
## 1667         not_available                     Dylan Papa  25    male    W
## 1683         not_available                Robert Carrillo  32    male    H
## 1714         not_available          John Ethan Carpentier  26    male    W
## 1717         not_available             Jeffrey Clair Cave  53    male    W
## 1745         not_available              Luis Michael Hoff  40    male    W
## 1796         not_available          Kenneth Jack Kennedy  34    male    W
## 1826         not_available                Daniel Erickson  36    male    W
## 1834         not_available          Richard T. Herrera Jr.  29    male    H
## 1865         not_available                Carlos Valencia  26    male    H
## 1866         not_available                    Derek Adame  20    male    H
## 1976         not_available                    JR Williams  38    male    B
## 2038         not_available          Bradley Joseph Szacaks  45    male    W
## 2095         not_available                    Drey Krause  53    male    W
## 2116         not_available                 Manuel Encinas  26    male    H
## 2149         not_available               Michael Cisneros  27    male    H
## 2179         not_available                    Todd Munson  25    male    W
## 2202         not_available               Francisco Valdez  24    male    H
## 2243         not_available                    Erik Pamias  28    male    W
```

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```
## 2261       not_available              Brandon Pequeno  25   male   H
## 2267       not_available           Wayne Noel Simard   70   male   W
## 2322       not_available             David Jay Juarez  41   male   H
## 2331       not_available                  Tristan Long  25   male   B
## 2343       not_available        Jorge Alberto Fuentes  21   male   H
## 2352       not_available             Joseph Zimmerman  34   male   W
## 2370       not_available            Donald Lee Cramer  44   male   W
## 2427       not_available           Jesus Ramon Deltoro  34   male   H
## 2434       not_available            Nicholas Johnston  47   male   W
## 2447       not_available              Patrick Sanchez  23   male   H
## 2487       not_available           Silas Andrew Smith  54   male   W
## 2491       not_available            Chancey Chamblee   55   male   W
## 2493                                    Pedro Rubio    42   male   H
## 2520       not_available           Moises Balladares   33   male   H
## 2522       not_available               Andrew Collins  35   male   W
## 2584       not_available      Edgar Ramirez Carreto    28   male   H
## 2643       not_available                  Erick Perez  22   male   H
## 2651       not_available             Rodolfo Ballardo  31   male   H
## 2676       not_available            Scott Farnsworth   28   male   W
## 2705       not_available              Michael Ferrell  67   male   W
## 2722       not_available          Glenn Southwood Jr.  46   male   W
## 2725       not_available         Brandon Wade Rucker   43   male   W
## 2728       not_available               Sean D. Brady   29   male   W
## 2736       not_available            Luis David Flores  34   male   H
## 2739       not_available                 Daniel Spear  35   male   W
## 2809       not_available               Thomas Aikens   43   male   B
## 2846       not_available              Steve Steenhard  51   male   W
## 2874       not_available Frederick Douglas Wilburn Jr.  34   male   B
## 2961       not_available                 Tyler Miller  51   male   W
## 2992                                  Jordan Keckhut   22   male   H
## 3061       not_available                John Hamilton  78   male   W
## 3065       not_available               Michael Weber   63   male   W
## 3078       not_available      Arthur Joseph Gonzales   57   male   H
## 3097       not_available                 Jacob Uptain  27   male   W
## 3105       not_available              Joshua Kinnard   37   male   W
## 3115       not_available                 Joel Jacobo   29   male   H
## 3117       not_available               Stephen Hudak   44   male   W
## 3118       not_available            Christopher Race   36   male   W
## 3120       not_available                 Erik Dunham   48   male   W
## 3147       not_available                David Gardea   27   male   H
## 3165       not_available                 Cameron Hall  27   male   B
## 3194       not_available                 Kevin Robles  23   male   W
## 3196       not_available                  Robert Vega  48   male   H
## 3207       not_available          Jose Aaron Gonzalez  44   male   H
## 3213       not_available                George Pappas  61   male   W
## 3230                                   John Wussler    58   male   W
## 3237       not_available               Kelvin Baldwin  30   male   W
## 3276       not_available           Andre Lavance Rippy  39   male   B
## 3278       not_available              Eduardo Andrade  44   male   H
## 3427       not_available         Alexandre J. Aldrich  34   male   W
## 3478       not_available          Chukwumankpam Mbegbu  19   male   B
## 3505       not_available                 Craig Yelton  34   male   W
## 3522       not_available     Juan Manuel Correa-Leyva  27   male   H
## 3534       not_available          Vincent James Ewer II  39   male   W
```

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## 3535        not_available              Anthony C. Lopez  21   male   H
## 3551                                    Brent C. Bowdon   56   male   W
## 3569        not_available              Skyler Martin     23   male   H
## 3571        not_available              David Judge       53   male   W
## 3592        not_available              Pedro Lucero      42   male   H
## 3616        not_available              Andres Arteaga    28   male   H
## 3634        not_available              Fabian Ortiz Adame 25  male   W
## 3635        not_available              Bryce Schenkenberg 20  male   W
## 3666        not_available              David Huffines Jr. 40  male   W
## 3690        not_available              Michael Stout     20   male   W
## 3738        not_available              Kay Kenniker      84   male   W
## 3776                                   Arnaldo Caraveo   27   male   H
## 3814        not_available              Timothy Leon      24   male   B
## 3892        not_available              Edward Rudhman    50   male   W
## 3913        not_available              Antonio A. Ramos  34   male   H
## 3920        not_available              Edwin C. Bundy    46   male   W
## 3964        not_available         Jacob Michael Harris   19   male   B
## 3981                                   Antonio Arce      14   male   H
## 3997        not_available              Preston Oszust    20   male   W
## 4001        not_available              Marcus Gishal     20   male   H
## 4003        not_available              Christian Albarran 26  male   H
## 4019        not_available              Michael Joe Jolls 47   male   W
## 4023        not_available         Henry Harold Russell   47   male   W
## 4118        not_available              Eric Hagstrom     35   male   W
## 4134        not_available              Henry Wayne Rivera 30  male   H
## 4177        not_available              Juan Padilla      24   male   H
## 4210        not_available              Juan Torres       39   male   H
## 4245        not_available         Alejandro Hernandez    26   male   H
## 4262                              Jason Demarcus Larkin   35   male   W
## 4264        not_available         Pedro Colazo-villa     33   male   H
## 4271        not_available              Hector Lopez      29   male   H
## 4292        not_available              Robert Rabago     17   male   H
## 4375        not_available              Carlos Vale       31   male   H
## 4569        not_available         Rene Enrique Ruiz      51   male   H
## 4599        not_available              Hector Miranda    47   male   H
## 4682        not_available Levy Isacc Madueno Santibanez  17   male   H
## 4684        not_available         Jose Eduardo Flores    26   male   H
## 4751        not_available              Michael Austin    32   male   B
## 4753        not_available         Matthew Rasmussen      31   male   W
## 4787        not_available              Garrett Ryberg    27   male   W
## 4862        not_available              Victor A. Parsons 42   male   W
## 4884        not_available    Mohamed Ahemed Al-Hashemi   25   male   B
## 4894        not_available              Richard Ruiz      38   male   H
## 4920                                   Eric M. Tellez    28   male   W
## 4944        not_available              Xavier Jaime Rovie 28  male   H
## 4979        not_available         Jonathan David Messare 41  male   W
## 4986        not_available         Armando Moreno Garcia  37   male   H
## 4999                              Kevin Alan Smallman    32   male   W
## 5003        not_available              Joshua Greenleaf  27   male   W
## 5004        not_available              Robert Cocio      39   male   H
## 5085        not_available Joshua David Hernandez Lord    33   male   W
## 5113        not_available         Lawson Edward Schaber  84   male   W
## 5128        not_available         Rosario Angel Alvarado 41   male   H
## 5176                              Jacob Emry Mcilveen    22   male   W
```

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## 5187   not_available                       Jose Moreno    30   male   H
## 5200   not_available                       Joshua Bacco   31   male   W
## 5256   not_available                      Robert Musser   32   male   W
## 5331   not_available                      Ryan Whitaker   40   male   W
## 5341   not_available                       Dion Johnson   28   male   B
## 5409   not_available                        Donald Ward   27   male   B
## 5455   not_available                 James Porter Garcia   28   male   H
## 5459   not_available               Rodney Liveringhouse   70   male   W
## 5555   not_available              Derick Manuel Bonilla   39   male   H
## 5575   not_available               Ronald Stuart Chipman  39   male   H
## 5593   not_available                       Simon Pancho   17   male   H
## 5659   not_available                      Angel Benitez   21   male   H
## 5723   not_available                     George Cocreham  43   male   H
## 5727   not_available                     Emmett Cocreham  44   male   H
## 5731   not_available              Francisco Danny Flores  30   male   H
## 5747   not_available                        Paul Sarver   53   male   W
## 5756   not_available               Charles Robert Arviso  35   male   H
## 5853   not_available                        Ekom Udofia   33   male   B
## 5861   not_available                     Maurice Jackson   42   male   B
## 5866   not_available               Leonard Francis Kieren 60   male   W
## 5915   not_available                  Christopher Cuevas   45   male   H
## 5921                                         John Moreno   32   male   H
## 5932   not_available                     Jordan Crawford   30   male   W
## 5948   not_available                  Anthony Bernal Cano  17   male   H
## 5953   not_available                        Michael Romo   28   male   W
## 5970   not_available                         Paul Bolden   37   male   B
## 5982                                    Antonio Carbajal   23   male   H
## 6001   not_available             Bradley Alexander Lewis   19   male   W
## 6020   not_available              Kenneth Michael Dallas   61   male   W
## 6025   not_available                 Andrew Scott Kislek   34   male   W
## 6050   not_available                       Keenan Sailer   23   male   W
## 6172                                        Edward Kayer   42   male   W
## 6220   not_available                         Jose Arenas   26   male   H
## 6267   not_available                 Bradley Michael Rose  29   male   W
## 6284   not_available                     Edward Robbesom   52   male   W
## 6302                                     Mariano Villegas  45   male   H
## 6316                                  Maxwell Jerome Davis  28   male   W
## 6334   not_available                    Garrett Sheppard   32   male   W
## 6360   not_available                 Glen Ray Cockrum Jr.   39   male   W
## 6374   not_available                    Joshua Lee Moore   33   male   W
## 6389   not_available                     Raymond Edwards   45   male   W
## 6413                                  Josiah Li'Shon Byard  21   male   B
## 6506   not_available                      Stanley Howard   64   male   W
## 6530                               Leslie Stephen Scarlett  35   male   B
## 6536   not_available Miguel F. Hernandez-Rodriguez        31   male   H
## 6736   not_available                  Stephen Phil Franco  37   male   H
## 6838   not_available                  Jose Enrique Cortez  26   male   H
## 6901                                Richard Lee Richards   61   male   W
## 6980                                        Vincent Black   31   male   W
## 6998                                         James Schild  49   male   W
## 7000                                         Carl Schaede  53   male   W
## 7044                                        Dedrick Garcia  37   male   W
## 7085                                       Anthony Parker   48   male   W
## 7087                                       Emilio Chamizo   30   male   H
```

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## 7089                                          Brian W. Schneider  36    male    W
## 7125                                         Oscar Darwin Alcantara  30    male    H
## 7178          not_available            Jerry William Lott  33    male    W
## 7192          not_available              Zakareya Ibrahim  17    male    B
## 7194                                          Adam Vespoli  39    male    W
## 7242          not_available            Lawrence Knudsen  56    male    W
## 7247          not_available                  Eric Putnam  27    male    W
## 7297          not_available              Jonatan Mosqueda  25    male    H
## 7311          not_available        Anthony Hood-Schaffner  28    male    B
## 7374          not_available    Felipe De Jesus Herrera Jr.  34    male    W
## 7392          not_available            Rolando Abel Rojas  37    male    H
## 7413          not_available                Arthuro Rivera  30    male    H
## 7433          not_available              Steven Paul John  51    male    W
## 7552                                     Juan Carlos Bojorquez  15    male    H
## 7590          not_available                 Tyson W. Cobb  44    male    W
## 7678          not_available                  Adum Mahamat  25    male    B
## 7696          not_available    Francisco Javier Galarza  49    male    H
## 7737          not_available            Donald Wayne Henry  51    male    W
## 7769          not_available          Marcus Adam Fuentes  36    male    H
## 7798          not_available                    Ali Osman  34    male    B
## 7889          not_available                  Breen Reiss  41    male    W
## 7907          not_available                 Leontae Kirk  29    male    B
## 7939          not_available                  Adam Romero  26    male    H
## 7974          not_available           Cody Allan Smestad  30    male    W
##          race_source was_mental_illness_related body_camera          agency_ids year
## 7    not_available                      False       False                 195 2015
## 43   not_available                       True       False                 127 2015
## 46   not_available                      False       False                 510 2015
## 67   not_available                      False       False             174;175 2015
## 86   not_available                      False       False 247;195;2267;319 2015
## 87   not_available                      False       False 247;195;2267;319 2015
## 110  not_available                       True       False                 348 2015
## 116  not_available                      False       False                 215 2015
## 159  not_available                      False       False                 247 2015
## 168  not_available                      False       False                  80 2015
## 183  not_available                       True       False                 596 2015
## 215  not_available                      False       False                 422 2015
## 229  not_available                       True       False                  62 2015
## 257  not_available                       True       False                  80 2015
## 291  not_available                       True       False                  80 2015
## 301  not_available                      False       False                 297 2015
## 323  not_available                       True       False                 319 2015
## 345  not_available                      False       False                 498 2015
## 379  not_available                      False       False                 614 2015
## 398  not_available                      False       False                 763 2015
## 421  not_available                       True       False                 127 2015
## 491  not_available                      False       False                 319 2015
## 501  not_available                      False       False                  80 2015
## 535  not_available                      False       False                  80 2015
## 572  not_available                      False       False                 397 2015
## 602  not_available                      False       False                 710 2015
## 646  not_available                      False       False                  80 2015
## 663  not_available                      False       False                 397 2015
## 668  not_available                       True        True                 763 2015
```

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## 736  not_available                    False     False          817;763 2015
## 747  not_available                    False     False          834;835 2015
## 895  not_available                    False     False              614 2015
## 902  not_available                    True      False              944 2015
## 917  not_available                    False     False              319 2015
## 935  not_available                    False     False              964 2015
## 983  not_available                    True      False               80 2015
## 988  not_available                    True      True               247 2015
## 1038 not_available                    False     True               319 2016
## 1039 not_available                    True      False              397 2016
## 1042 not_available                    True      False               80 2016
## 1083 not_available                    True      True               319 2016
## 1148 not_available                    True      False               80 2016
## 1151 not_available                    False     False               80 2016
## 1168 not_available                    False     False          710;319 2016
## 1249 not_available                    False     False               80 2016
## 1307 not_available                    True      False              195 2016
## 1326 not_available                    False     False              348 2016
## 1365 not_available                    False     False               80 2016
## 1400 not_available                    False     False              397 2016
## 1454 not_available                    False     True              1320 2016
## 1514 not_available                    True      False              397 2016
## 1523 not_available                    False     True              1268 2016
## 1549 not_available                    True      False              247 2016
## 1550 not_available                    False     True               510 2016
## 1557 not_available                    False     False              215 2016
## 1594 not_available                    False     False              319 2016
## 1597 not_available                    True      False               80 2016
## 1604 not_available                    False     False              944 2016
## 1606 not_available                    False     False              964 2016
## 1618 not_available                    False     False               80 2016
## 1633 not_available                    False     False               80 2016
## 1665 not_available                    False     False               80 2016
## 1667 not_available                    True      False               80 2016
## 1683 not_available                    False     False               80 2016
## 1714 not_available                    False     False               80 2016
## 1717 not_available                    False     True               596 2016
## 1745 not_available                    True      False              817 2016
## 1796 not_available                    False     False             1504 2016
## 1826 not_available                    False     False              817 2016
## 1834 not_available                    False     False             1526 2016
## 1865 not_available                    False     True              1577 2016
## 1866 not_available                    False     True              1540 2016
## 1976 not_available                    False     True                80 2017
## 2038 not_available                    False     False             1787 2017
## 2095 not_available                    False     False             1320 2017
## 2116 not_available                    False     False              964 2017
## 2149 not_available                    False     False               80 2017
## 2179 not_available                    False     False               80 2017
## 2202 not_available                    False     False               80 2017
## 2243 not_available                    False     False               80 2017
## 2261 not_available                    False     False           62;319 2017
## 2267 not_available                    False     False             1725 2017
## 2322 not_available                    False     False             1504 2017
```

```
## 2331 not_available                        False       False              247 2017
## 2343 not_available                        False       False               62 2017
## 2352 not_available                         True       False              397 2017
## 2370 not_available                        False       False             1763 2017
## 2427 not_available                        False       False               80 2017
## 2434 not_available                        False       False               80 2017
## 2447 not_available                        False        True               62 2017
## 2487 not_available                        False       False             1504 2017
## 2491 not_available                        False       False              964 2017
## 2493 not_available                        False       False              944 2017
## 2520 not_available                         True       False             1763 2017
## 2522 not_available                        False       False               80 2017
## 2584 not_available                         True       False               80 2017
## 2643 not_available                        False       False        944;1875 2017
## 2651 not_available                        False       False              817 2017
## 2676 not_available                         True       False              319 2017
## 2705 not_available                        False       False              319 2017
## 2722 not_available                        False       False             1521 2017
## 2725 not_available                        False       False              215 2017
## 2728 not_available                         True        True             1268 2017
## 2736 not_available                        False       False              964 2017
## 2739 not_available                        False       False              397 2017
## 2809 not_available                        False       False               80 2017
## 2846 not_available                        False       False             1360 2017
## 2874 not_available                        False       False              397 2017
## 2961 not_available                         True       False             2013 2018
## 2992 not_available                        False       False               80 2018
## 3061 not_available                        False        True             1268 2018
## 3065 not_available                        False        True              596 2018
## 3078 not_available                        False       False              319 2018
## 3097 not_available                        False       False               80 2018
## 3105 not_available                        False       False              710 2018
## 3115 not_available                        False       False              397 2018
## 3117 not_available                        False       False               80 2018
## 3118 not_available                        False       False              319 2018
## 3120 not_available                        False       False             2086 2018
## 3147 not_available                        False       False               80 2018
## 3165 not_available                        False       False             1532 2018
## 3194 not_available                        False       False               80 2018
## 3196 not_available                        False       False             2123 2018
## 3207 not_available                        False       False               80 2018
## 3213 not_available                        False       False             1540 2018
## 3230 not_available                        False       False               80 2018
## 3237 not_available                        False       False              319 2018
## 3276 not_available                        False       False               80 2018
## 3278 not_available                        False       False               80 2018
## 3427 not_available                        False       False               80 2018
## 3478 not_available                        False       False               80 2018
## 3505 not_available                        False       False              397 2018
## 3522 not_available                        False       False              964 2018
## 3534 not_available                        False       False              964 2018
## 3535 not_available                        False       False              319 2018
## 3551 not_available                         True        True             1320 2018
## 3569 not_available                        False       False               62 2018
```

```
## 3571 not_available                        False      False              397 2018
## 3592 not_available                        False      False             2267 2018
## 3616 not_available                        False      False               80 2018
## 3634 not_available                        False      False               80 2018
## 3635 not_available                        False      False               80 2018
## 3666 not_available                        True       False              319 2018
## 3690 not_available                        False      False             2301 2018
## 3738 not_available                        True       False              195 2018
## 3776 not_available                        False      False              319 2018
## 3814 not_available                        False      False               62 2018
## 3892 not_available                        True       False             2361 2018
## 3913 not_available                        False      False             1342 2018
## 3920 not_available                        False      False               80 2018
## 3964 not_available                        False      False               80 2019
## 3981 not_available                        False      True               247 2019
## 3997 not_available                        False      False              817 2019
## 4001 not_available                        False      False             1268 2019
## 4003 not_available                        False      False              817 2019
## 4019 not_available                        False      False               80 2019
## 4023 not_available                        True       True              1268 2019
## 4118 not_available                        False      False               80 2019
## 4134 not_available                        False      False               80 2019
## 4177 not_available                        False      False              215 2019
## 4210 not_available                        True       True               944 2019
## 4245 not_available                        False      False               80 2019
## 4262 not_available                        False      False             1874 2019
## 4264 not_available                        False      False              944 2019
## 4271 not_available                        False      False               80 2019
## 4292 not_available                        False      False               80 2019
## 4375 not_available                        False      False              397 2019
## 4569 not_available                        False      False               80 2019
## 4599 not_available                        False      False               80 2019
## 4682 not_available                        False      False               62 2019
## 4684 not_available                        False      False              944 2019
## 4751 not_available                        False      False               80 2019
## 4753 not_available                        True       True                62 2019
## 4787 not_available                        False      False              319 2019
## 4862 not_available                        False      False              397 2019
## 4884 not_available                        False      False              817 2019
## 4894 not_available                        False      False               80 2019
## 4920 not_available                        False      False             2673 2019
## 4944 not_available                        False      False               80 2020
## 4979 not_available                        True       False             2690 2020
## 4986 not_available                        False      False              247 2020
## 4999 not_available                        False      False              195 2020
## 5003 not_available                        True       False              510 2020
## 5004 not_available                        False      False     964;397;215 2020
## 5085 not_available                        False      False             2740 2020
## 5113 not_available                        False      False             1787 2020
## 5128 not_available                        False      False              195 2020
## 5176 not_available                        True       False               80 2020
## 5187 not_available                        False      False             2361 2020
## 5200 not_available                        True       False             1875 2020
## 5256 not_available                        False      False               80 2020
```

```
## 5331 not_available          False     True           80 2020
## 5341 not_available          False     True          817 2020
## 5409 not_available          False     True           80 2020
## 5455 not_available          False     True           80 2020
## 5459 not_available          True     False          944 2020
## 5555 not_available          False    False           62 2020
## 5575 not_available          False    False         1320 2020
## 5593 not_available          False     True          397 2020
## 5659 not_available          False     True          319 2020
## 5723 not_available          True      True           80 2020
## 5727 not_available          False     True           80 2020
## 5731 not_available          False    False         1532 2020
## 5747 not_available          False    False           80 2020
## 5756 not_available          False     True          397 2020
## 5853 not_available          True      True           80 2020
## 5861 not_available          False    False           80 2020
## 5866 not_available          False    False         2986 2020
## 5915 not_available          False    False           62 2020
## 5921 not_available          False    False         2992 2020
## 5932 not_available          False     True           80 2020
## 5948 not_available          False     True          195 2021
## 5953 not_available          False    False         3001 2021
## 5970 not_available          False     True           80 2021
## 5982 not_available          False     True           80 2021
## 6001 not_available          False    False          964 2021
## 6020 not_available          False    False     944;3015 2021
## 6025 not_available          False    False          397 2021
## 6050 not_available          True      True          319 2021
## 6172 not_available          False    False          763 2021
## 6220          photo          False    False           80 2021
## 6267          photo          False    False         1504 2021
## 6284 not_available          False    False         1532 2021
## 6302 not_available          False    False           62 2021
## 6316 not_available          False    False           62 2021
## 6334 not_available          False     True         2301 2021
## 6360          photo          False    False    2992;3108 2021
## 6374          photo          False     True          397 2021
## 6389          photo          False     True          397 2021
## 6413          photo          False    False          817 2021
## 6506          photo          True     False           80 2021
## 6530 not_available          False    False          397 2021
## 6536 not_available          False    False           80 2021
## 6736 not_available          False    False          319 2021
## 6838          photo          False    False           62 2021
## 6901          photo          False    False          397 2021
## 6980 not_available          False    False         1342 2021
## 6998 not_available          False    False          319 2022
## 7000 not_available          False    False         1873 2022
## 7044 not_available          False    False           80 2022
## 7085          photo          False    False          817 2022
## 7087 not_available          False    False           80 2022
## 7089 not_available          False    False          319 2022
## 7125          photo          False    False    3364;3365 2022
## 7178          photo          False     True         2301 2022
```

```
## 7192          photo     True     False               964 2022
## 7194          photo    False     False                80 2022
## 7242          photo     True     False               944 2022
## 7247 public_record    False      True               397 2022
## 7297          photo    False      True               710 2022
## 7311 public_record    False     False                62 2022
## 7374 public_record    False     False              1360 2022
## 7392 public_record    False     False               944 2022
## 7413 public_record    False     False               348 2022
## 7433          photo    False     False   817;3474;3473 2022
## 7552          photo    False     False                62 2022
## 7590          photo    False      True               195 2022
## 7678          photo    False     False               397 2022
## 7696          photo    False     False               397 2022
## 7737          photo    False     False              1268 2022
## 7769  not_available    False     False               596 2022
## 7798 public_record    False     False                80 2022
## 7889 public_record    False     False               247 2022
## 7907  not_available    False      True                80 2022
## 7939 public_record     True     False              3622 2022
## 7974  not_available    False      True               195 2022
##       population
## 7     6,832,810
## 43    6,832,810
## 46    6,832,810
## 67    6,832,810
## 86    6,832,810
## 87    6,832,810
## 110   6,832,810
## 116   6,832,810
## 159   6,832,810
## 168   6,832,810
## 183   6,832,810
## 215   6,832,810
## 229   6,832,810
## 257   6,832,810
## 291   6,832,810
## 301   6,832,810
## 323   6,832,810
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## 379   6,832,810
## 398   6,832,810
## 421   6,832,810
## 491   6,832,810
## 501   6,832,810
## 535   6,832,810
## 572   6,832,810
## 602   6,832,810
## 646   6,832,810
## 663   6,832,810
## 668   6,832,810
## 736   6,832,810
## 747   6,832,810
## 895   6,832,810
```

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## 902   6,832,810
## 917   6,832,810
## 935   6,832,810
## 983   6,832,810
## 988   6,832,810
## 1038  6,944,767
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## 1042  6,944,767
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## 1168  6,944,767
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## 1326  6,944,767
## 1365  6,944,767
## 1400  6,944,767
## 1454  6,944,767
## 1514  6,944,767
## 1523  6,944,767
## 1549  6,944,767
## 1550  6,944,767
## 1557  6,944,767
## 1594  6,944,767
## 1597  6,944,767
## 1604  6,944,767
## 1606  6,944,767
## 1618  6,944,767
## 1633  6,944,767
## 1665  6,944,767
## 1667  6,944,767
## 1683  6,944,767
## 1714  6,944,767
## 1717  6,944,767
## 1745  6,944,767
## 1796  6,944,767
## 1826  6,944,767
## 1834  6,944,767
## 1865  6,944,767
## 1866  6,944,767
## 1976  7,048,088
## 2038  7,048,088
## 2095  7,048,088
## 2116  7,048,088
## 2149  7,048,088
## 2179  7,048,088
## 2202  7,048,088
## 2243  7,048,088
## 2261  7,048,088
## 2267  7,048,088
## 2322  7,048,088
## 2331  7,048,088
## 2343  7,048,088
## 2352  7,048,088
```

```
## 2370   7,048,088
## 2427   7,048,088
## 2434   7,048,088
## 2447   7,048,088
## 2487   7,048,088
## 2491   7,048,088
## 2493   7,048,088
## 2520   7,048,088
## 2522   7,048,088
## 2584   7,048,088
## 2643   7,048,088
## 2651   7,048,088
## 2676   7,048,088
## 2705   7,048,088
## 2722   7,048,088
## 2725   7,048,088
## 2728   7,048,088
## 2736   7,048,088
## 2739   7,048,088
## 2809   7,048,088
## 2846   7,048,088
## 2874   7,048,088
## 2961   7,164,228
## 2992   7,164,228
## 3061   7,164,228
## 3065   7,164,228
## 3078   7,164,228
## 3097   7,164,228
## 3105   7,164,228
## 3115   7,164,228
## 3117   7,164,228
## 3118   7,164,228
## 3120   7,164,228
## 3147   7,164,228
## 3165   7,164,228
## 3194   7,164,228
## 3196   7,164,228
## 3207   7,164,228
## 3213   7,164,228
## 3230   7,164,228
## 3237   7,164,228
## 3276   7,164,228
## 3278   7,164,228
## 3427   7,164,228
## 3478   7,164,228
## 3505   7,164,228
## 3522   7,164,228
## 3534   7,164,228
## 3535   7,164,228
## 3551   7,164,228
## 3569   7,164,228
## 3571   7,164,228
## 3592   7,164,228
## 3616   7,164,228
```

```
## 3634   7,164,228
## 3635   7,164,228
## 3666   7,164,228
## 3690   7,164,228
## 3738   7,164,228
## 3776   7,164,228
## 3814   7,164,228
## 3892   7,164,228
## 3913   7,164,228
## 3920   7,164,228
## 3964   7,291,843
## 3981   7,291,843
## 3997   7,291,843
## 4001   7,291,843
## 4003   7,291,843
## 4019   7,291,843
## 4023   7,291,843
## 4118   7,291,843
## 4134   7,291,843
## 4177   7,291,843
## 4210   7,291,843
## 4245   7,291,843
## 4262   7,291,843
## 4264   7,291,843
## 4271   7,291,843
## 4292   7,291,843
## 4375   7,291,843
## 4569   7,291,843
## 4599   7,291,843
## 4682   7,291,843
## 4684   7,291,843
## 4751   7,291,843
## 4753   7,291,843
## 4787   7,291,843
## 4862   7,291,843
## 4884   7,291,843
## 4894   7,291,843
## 4920   7,291,843
## 4944   7,179,943
## 4979   7,179,943
## 4986   7,179,943
## 4999   7,179,943
## 5003   7,179,943
## 5004   7,179,943
## 5085   7,179,943
## 5113   7,179,943
## 5128   7,179,943
## 5176   7,179,943
## 5187   7,179,943
## 5200   7,179,943
## 5256   7,179,943
## 5331   7,179,943
## 5341   7,179,943
## 5409   7,179,943
```

```
## 5455   7,179,943
## 5459   7,179,943
## 5555   7,179,943
## 5575   7,179,943
## 5593   7,179,943
## 5659   7,179,943
## 5723   7,179,943
## 5727   7,179,943
## 5731   7,179,943
## 5747   7,179,943
## 5756   7,179,943
## 5853   7,179,943
## 5861   7,179,943
## 5866   7,179,943
## 5915   7,179,943
## 5921   7,179,943
## 5932   7,179,943
## 5948   7,264,877
## 5953   7,264,877
## 5970   7,264,877
## 5982   7,264,877
## 6001   7,264,877
## 6020   7,264,877
## 6025   7,264,877
## 6050   7,264,877
## 6172   7,264,877
## 6220   7,264,877
## 6267   7,264,877
## 6284   7,264,877
## 6302   7,264,877
## 6316   7,264,877
## 6334   7,264,877
## 6360   7,264,877
## 6374   7,264,877
## 6389   7,264,877
## 6413   7,264,877
## 6506   7,264,877
## 6530   7,264,877
## 6536   7,264,877
## 6736   7,264,877
## 6838   7,264,877
## 6901   7,264,877
## 6980   7,264,877
## 6998   7,359,197
## 7000   7,359,197
## 7044   7,359,197
## 7085   7,359,197
## 7087   7,359,197
## 7089   7,359,197
## 7125   7,359,197
## 7178   7,359,197
## 7192   7,359,197
## 7194   7,359,197
## 7242   7,359,197
```

```
## 7247   7,359,197
## 7297   7,359,197
## 7311   7,359,197
## 7374   7,359,197
## 7392   7,359,197
## 7413   7,359,197
## 7433   7,359,197
## 7552   7,359,197
## 7590   7,359,197
## 7678   7,359,197
## 7696   7,359,197
## 7737   7,359,197
## 7769   7,359,197
## 7798   7,359,197
## 7889   7,359,197
## 7907   7,359,197
## 7939   7,359,197
## 7974   7,359,197
```

```
arizona_pop
```

```
##   Year Population Growth.Rate
## 1 2022  7,359,197       1.30%
## 2 2021  7,264,877       1.18%
## 3 2020  7,179,943      -1.53%
## 4 2019  7,291,843       1.78%
## 5 2018  7,164,228       1.65%
## 6 2017  7,048,088       1.49%
## 7 2016  6,944,767       1.64%
## 8 2015  6,832,810       1.48%
```

```
value_counts <- table(arizona_shootings_cleaned$year)
arizona_pop$shooting_count <- value_counts
arizona_pop$Population <- as.numeric(gsub(",", "", arizona_pop$Population))
arizona_pop
```

```
##   Year Population Growth.Rate shooting_count
## 1 2022   7359197       1.30%             37
## 2 2021   7264877       1.18%             35
## 3 2020   7179943      -1.53%             36
## 4 2019   7291843       1.78%             42
## 5 2018   7164228       1.65%             28
## 6 2017   7048088       1.49%             33
## 7 2016   6944767       1.64%             26
## 8 2015   6832810       1.48%             29
```

```
rate <- c(arizona_pop$Population / arizona_pop$shooting_count)
rate
```

```
## [1] 198897.2 207567.9 199442.9 173615.3 255865.3 213578.4 267106.4 235614.1
```

```r
#city_counts.df <- table(arizona_shootings_cleaned$city)
#city_counts

ggplot(arizona_shootings_cleaned, aes(x = city)) +
  geom_bar(fill = 'skyblue') +
  labs(title = "Shootings by City in Arizona",
       x = "City",
       y = "Count") +
  theme(axis.text.x = element_text(angle = 90, hjust = 0.5))
```

Shootings by City in Arizona
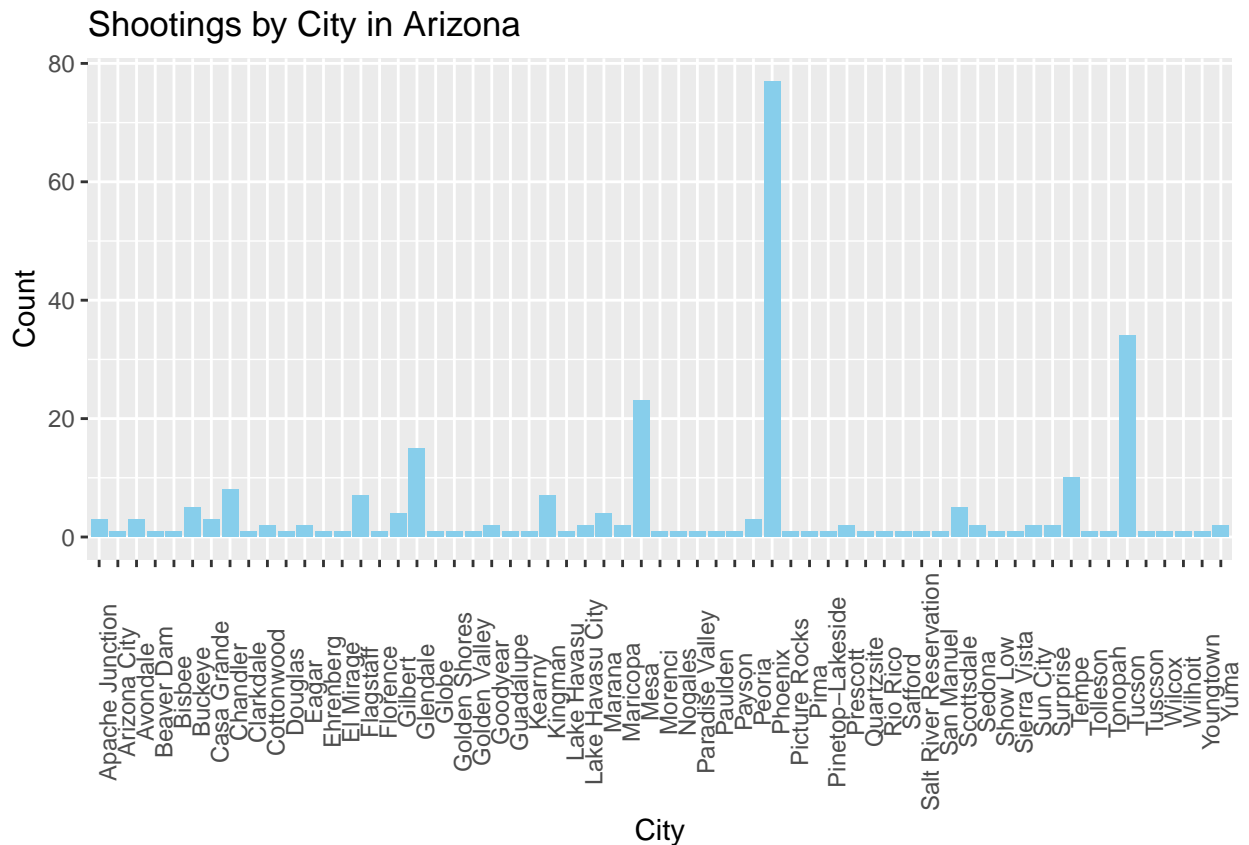

```r
print(arizona_shootings_cleaned %>%
  count(city))
```

```
##                 city  n
## 1     Apache Junction  3
## 2        Arizona City  1
## 3            Avondale  3
## 4          Beaver Dam  1
## 5              Bisbee  1
## 6             Buckeye  5
## 7         Casa Grande  3
## 8            Chandler  8
## 9           Clarkdale  1
## 10         Cottonwood  2
## 11            Douglas  1
```

```
## 12              Eagar  2
## 13          Ehrenberg  1
## 14           El Mirage  1
## 15            Flagstaff  7
## 16            Florence  1
## 17             Gilbert  4
## 18            Glendale 15
## 19               Globe  1
## 20       Golden Shores  1
## 21       Golden Valley  1
## 22            Goodyear  2
## 23           Guadalupe  1
## 24              Kearny  1
## 25             Kingman  7
## 26          Lake Havasu  1
## 27     Lake Havasu City  2
## 28              Marana  4
## 29            Maricopa  2
## 30                Mesa 23
## 31             Morenci  1
## 32             Nogales  1
## 33      Paradise Valley  1
## 34             Paulden  1
## 35              Payson  1
## 36              Peoria  3
## 37             Phoenix 77
## 38       Picture Rocks  1
## 39                Pima  1
## 40     Pinetop-Lakeside  1
## 41            Prescott  2
## 42           Quartzsite  1
## 43            Rio Rico  1
## 44             Safford  1
## 45 Salt River Reservation  1
## 46           San Manuel  1
## 47           Scottsdale  5
## 48              Sedona  2
## 49            Show Low  1
## 50         Sierra Vista  1
## 51            Sun City  2
## 52            Surprise  2
## 53               Tempe 10
## 54            Tolleson  1
## 55             Tonopah  1
## 56              Tucson 34
## 57             Tuscson  1
## 58              Wilcox  1
## 59             Wilhoit  1
## 60           Youngtown  1
## 61                Yuma  2
```

```r
top_4 <- arizona_shootings_cleaned %>%
  count(city) %>%
  filter(n >= 15)
```

```
ggplot(top_4, aes(x = reorder(city, -n), y = n)) +
  geom_bar(stat = "identity", fill = "skyblue") +
  labs(x = "City", y = "Number of Shootings") +
  ggtitle("Top 4 Cities in Arizona with Shootings")
```
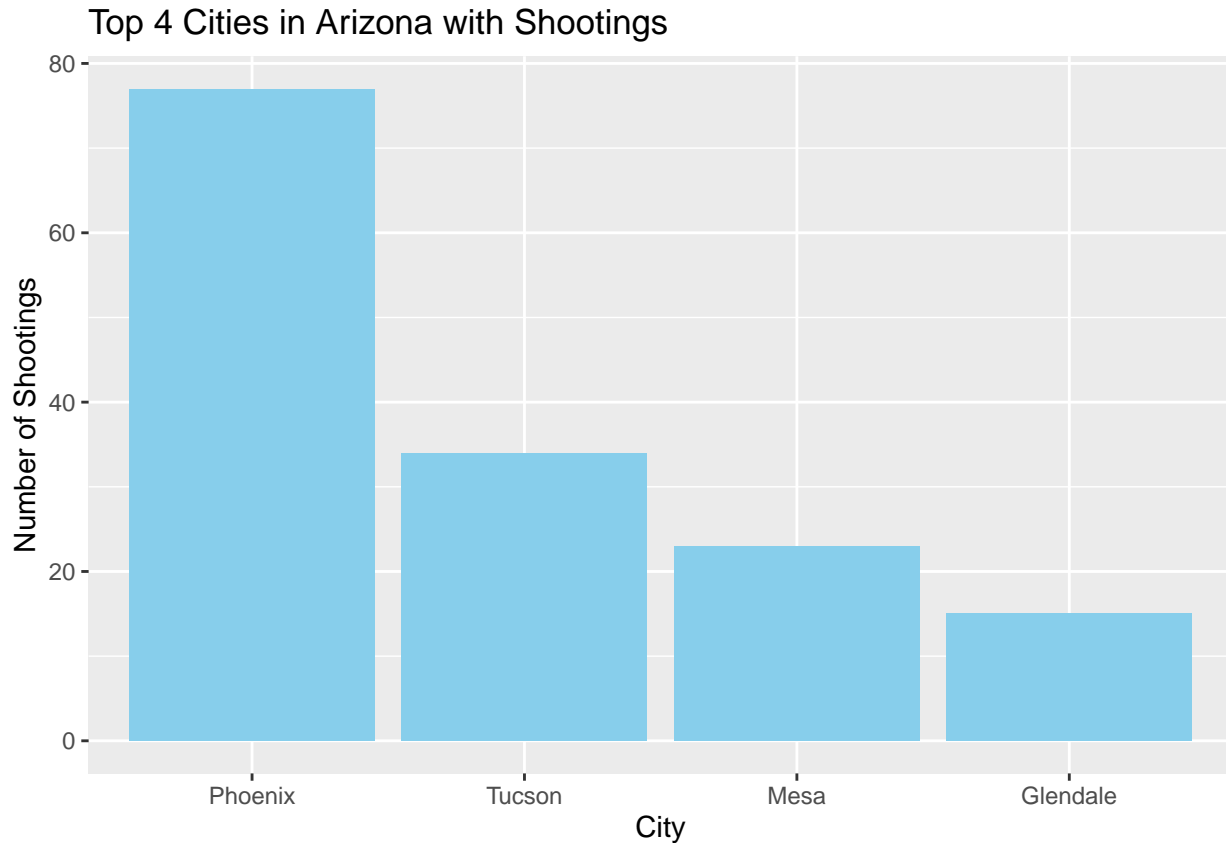

Top 4 Cities in Arizona with Shootings

```
# Assuming your dataframe is called 'arizona_shootings', and you have a 'year' column representing the
# Filter for shootings from 2016 to 2021 and select the top 4 cities
filtered_data <- arizona_shootings_cleaned %>%
  filter(year >= 2016 & year <= 2022 & city %in% c("Phoenix", "Tucson", "Mesa", "Glendale")) %>%
  group_by(city, year) %>%
  summarize(count = n())
```

```
## 'summarise()' has grouped output by 'city'. You can override using the
## '.groups' argument.
```

```
# Create a line plot
ggplot(filtered_data, aes(x = year, y = count, color = city, group = city)) +
  geom_line() +
  labs(x = "Year", y = "Number of Shootings") +
  ggtitle("Trend of Shootings in Top 4 Cities in Arizona (2016-2021)") +
  scale_color_brewer(palette = "Set1") +  # Choose a color palette
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))  # Rotate x-axis labels for better readabili
```

Trend of Shootings in Top 4 Cities in Arizona (2016–2021)
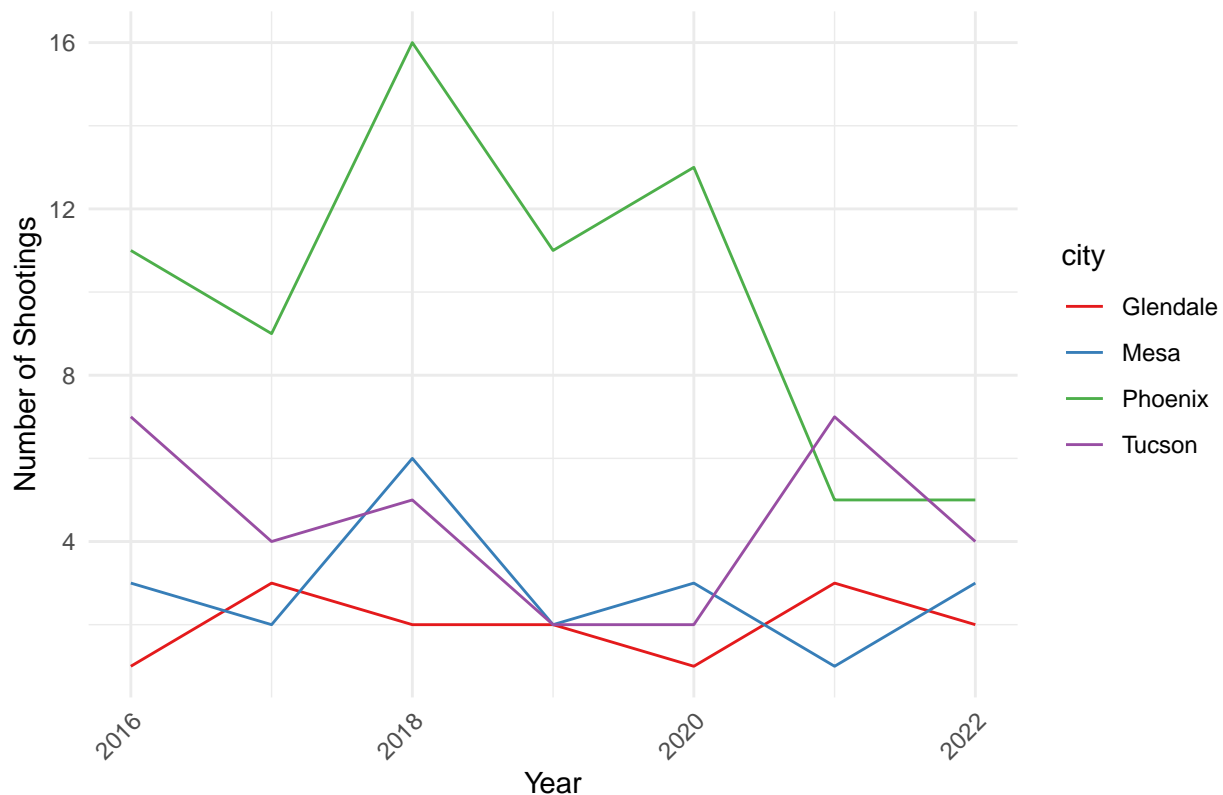

```
# Assuming your dataframe is called 'arizona_shootings' and you have a 'year' column representing the y
# Filter for shootings in the top 4 cities
filtered_data <- arizona_shootings_cleaned %>%
  filter(city %in% c("Phoenix", "Tucson", "Mesa", "Glendale")) %>%
  group_by(city, race) %>%
  summarize(count = n())
```

```
## `summarise()` has grouped output by 'city'. You can override using the
## `.groups` argument.
```

```
# Create a bar plot
ggplot(filtered_data, aes(x = city, y = count, fill = race)) +
  geom_bar(stat = "identity") +
  labs(x = "City", y = "Number of Shootings") +
  ggtitle("Number of Shootings by Race in Top 4 Cities in Arizona") +
  scale_fill_brewer(palette = "Set3") +   # Choose a color palette
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))  # Rotate x-axis labels for better readabili
```

Number of Shootings by Race in Top 4 Cities in Arizona
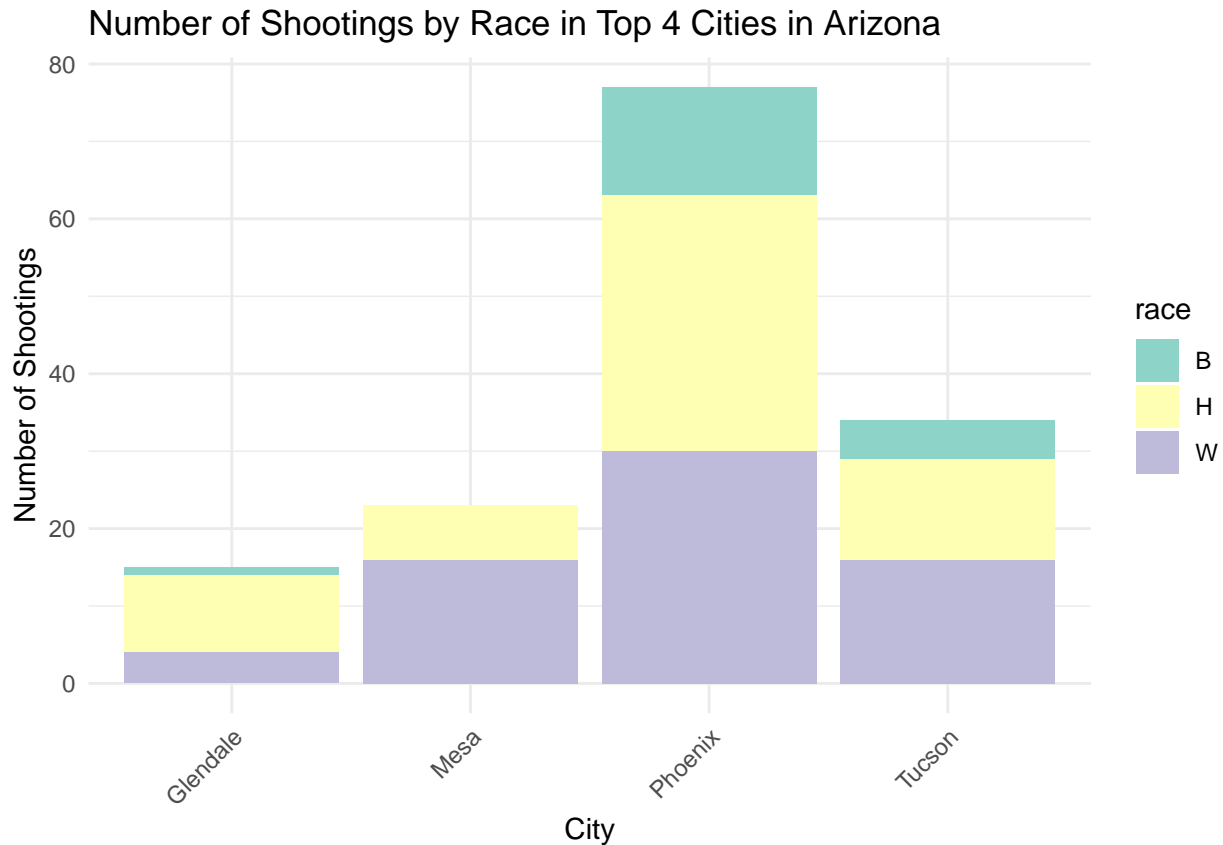

```r
phoenix_data <- arizona_shootings_cleaned %>%
  filter(year >= 2016 & year <= 2022 & city == "Phoenix") %>%
  group_by(year, race) %>%
  summarize(count = n())
```

```
## 'summarise()' has grouped output by 'year'. You can override using the
## '.groups' argument.
```

```r
median_income <- c("","","","","","","","", 50757,50757,50757, 54907,54907,54907, 58308,58308,58308, ""
phoenix_data$median_income <- median_income
phoenix_data$shooting_count <- phoenix_data$count
phoenix_data$count <- NULL


arrests.df <-read.csv("~/Documents/Stats Seminar/arrests_adult-arrests-details_arrestdetail.csv", header

arrests_simple.df <- arrests.df[, c("YEAR", "SIMPLE_SUBJ_RE_GRP", "P2DRUG_CHARGES")]
arrests_simple.df <- arrests_simple.df %>%
  filter(SIMPLE_SUBJ_RE_GRP %in% c("Hispanic", "Black", "White") & YEAR != 2023 )

arrests_simple.df$P2DRUG_CHARGES <- arrests_simple.df$P2DRUG_CHARGES >0
arrests_clean.df <- arrests_simple.df %>%
  group_by(YEAR, SIMPLE_SUBJ_RE_GRP, P2DRUG_CHARGES) %>%
  summarize(count = n())
```

```
## 'summarise()' has grouped output by 'YEAR', 'SIMPLE_SUBJ_RE_GRP'. You can
```

```
## override using the '.groups' argument.

arrests_clean.df$race <- arrests_clean.df$SIMPLE_SUBJ_RE_GRP
arrests_clean.df$SIMPLE_SUBJ_RE_GRP <- NULL
arrests_clean.df
```

```
## # A tibble: 30 x 4
## # Groups:   YEAR [5]
##      YEAR P2DRUG_CHARGES count race
##     <int> <lgl>         <int> <chr>
##  1  2018 FALSE          7093 Black
##  2  2018 TRUE           1610 Black
##  3  2018 FALSE         11889 Hispanic
##  4  2018 TRUE           3110 Hispanic
##  5  2018 FALSE         13640 White
##  6  2018 TRUE           3318 White
##  7  2019 FALSE          7024 Black
##  8  2019 TRUE           1759 Black
##  9  2019 FALSE         12197 Hispanic
## 10  2019 TRUE           3562 Hispanic
## # i 20 more rows
```

```
total_counts <- arrests_simple.df %>%
  group_by(YEAR, SIMPLE_SUBJ_RE_GRP) %>%
  summarize(count = n())
```

```
## 'summarise()' has grouped output by 'YEAR'. You can override using the
## '.groups' argument.
```

```
total_counts$race <- total_counts$SIMPLE_SUBJ_RE_GRP
total_counts$SIMPLE_SUBJ_RE_GRP <- NULL

# Assuming your dataframe is called 'your_dataframe'
total_counts <- total_counts %>%
  mutate(race0 = case_when(
    race == "Black" ~ "B",
    race == "Hispanic" ~ "H",
    race == "White" ~ "W",
    TRUE ~ race  # If none of the above conditions match, keep the original value
  ))
total_counts$race <- NULL
total_counts$race <- total_counts$race0
total_counts$race0 <- NULL
total_counts$arrest_count <- total_counts$count
total_counts$count <- NULL
total_counts$year <- total_counts$YEAR
total_counts$YEAR <- NULL
total_counts
```

```
## # A tibble: 15 x 3
##    race  arrest_count  year
##    <chr>        <int> <int>
```

```
##  1 B               8703  2018
##  2 H              14999  2018
##  3 W              16958  2018
##  4 B               8783  2019
##  5 H              15759  2019
##  6 W              16285  2019
##  7 B               7334  2020
##  8 H              13559  2020
##  9 W              12017  2020
## 10 B               6050  2021
## 11 H              10875  2021
## 12 W               9989  2021
## 13 B               5500  2022
## 14 H               9132  2022
## 15 W               7759  2022
```

```r
phoenix_data
```

```
## # A tibble: 20 x 4
## # Groups:   year [7]
##     year race  median_income shooting_count
##    <dbl> <chr> <chr>                  <int>
##  1  2016 H     ""                         7
##  2  2016 W     ""                         4
##  3  2017 B     ""                         2
##  4  2017 H     ""                         4
##  5  2017 W     ""                         3
##  6  2018 B     ""                         3
##  7  2018 H     ""                         6
##  8  2018 W     ""                         7
##  9  2019 B     "50757"                    2
## 10  2019 H     "50757"                    6
## 11  2019 W     "50757"                    3
## 12  2020 B     "54907"                    4
## 13  2020 H     "54907"                    5
## 14  2020 W     "54907"                    4
## 15  2021 B     "58308"                    1
## 16  2021 H     "58308"                    3
## 17  2021 W     "58308"                    1
## 18  2022 B     ""                         2
## 19  2022 H     ""                         1
## 20  2022 W     ""                         2
```

```r
# Perform a full join
combined_df <- full_join(total_counts, phoenix_data, by = c("year", "race"))

# Fill missing values with 0
combined_df[is.na(combined_df)] <- 0
combined_df
```

```
A tibble: 20 x 5
race arrest_count year median_income shooting_count
<chr>   <int> <dbl> <chr>   <int>
```

```
##  1 B             8703  2018 ""                    3
##  2 H            14999  2018 ""                    6
##  3 W            16958  2018 ""                    7
##  4 B             8783  2019 "50757"               2
##  5 H            15759  2019 "50757"               6
##  6 W            16285  2019 "50757"               3
##  7 B             7334  2020 "54907"               4
##  8 H            13559  2020 "54907"               5
##  9 W            12017  2020 "54907"               4
## 10 B             6050  2021 "58308"               1
## 11 H            10875  2021 "58308"               3
## 12 W             9989  2021 "58308"               1
## 13 B             5500  2022 ""                    2
## 14 H             9132  2022 ""                    1
## 15 W             7759  2022 ""                    2
## 16 H                0  2016 ""                    7
## 17 W                0  2016 ""                    4
## 18 B                0  2017 ""                    2
## 19 H                0  2017 ""                    4
## 20 W                0  2017 ""                    3
```

```r
#rearrange columns with year as first column and in order
combined_df <- combined_df %>%
  select(year, everything())
combined_df <- combined_df %>%
  arrange(year)
combined_df_clean <- combined_df %>%
  filter(year >= 2018 & year <= 2022)
combined_df_clean
```

```
## # A tibble: 15 x 5
##     year race  arrest_count median_income shooting_count
##    <dbl> <chr>        <int> <chr>                  <int>
##  1  2018 B             8703 ""                         3
##  2  2018 H            14999 ""                         6
##  3  2018 W            16958 ""                         7
##  4  2019 B             8783 "50757"                    2
##  5  2019 H            15759 "50757"                    6
##  6  2019 W            16285 "50757"                    3
##  7  2020 B             7334 "54907"                    4
##  8  2020 H            13559 "54907"                    5
##  9  2020 W            12017 "54907"                    4
## 10  2021 B             6050 "58308"                    1
## 11  2021 H            10875 "58308"                    3
## 12  2021 W             9989 "58308"                    1
## 13  2022 B             5500 ""                         2
## 14  2022 H             9132 ""                         1
## 15  2022 W             7759 ""                         2
```

```r
ggplot(data = combined_df_clean,aes(x = year, y = (shooting_count/arrest_count) *100)) +
  geom_line(stat = "identity", position = "stack") +
  aes(colour = race) +
  labs(
```

```
    title = "Percentage of Shootings by Race as a Proportion of Arrests (2018-2022)",
    x = "Year",
    y = "Arrest Count"
) +
scale_fill_manual(values = c("red", "blue", "green")) +
theme_minimal()
```

## Percentage of Shootings by Race as a Proportion of Arrests (2018–2022)
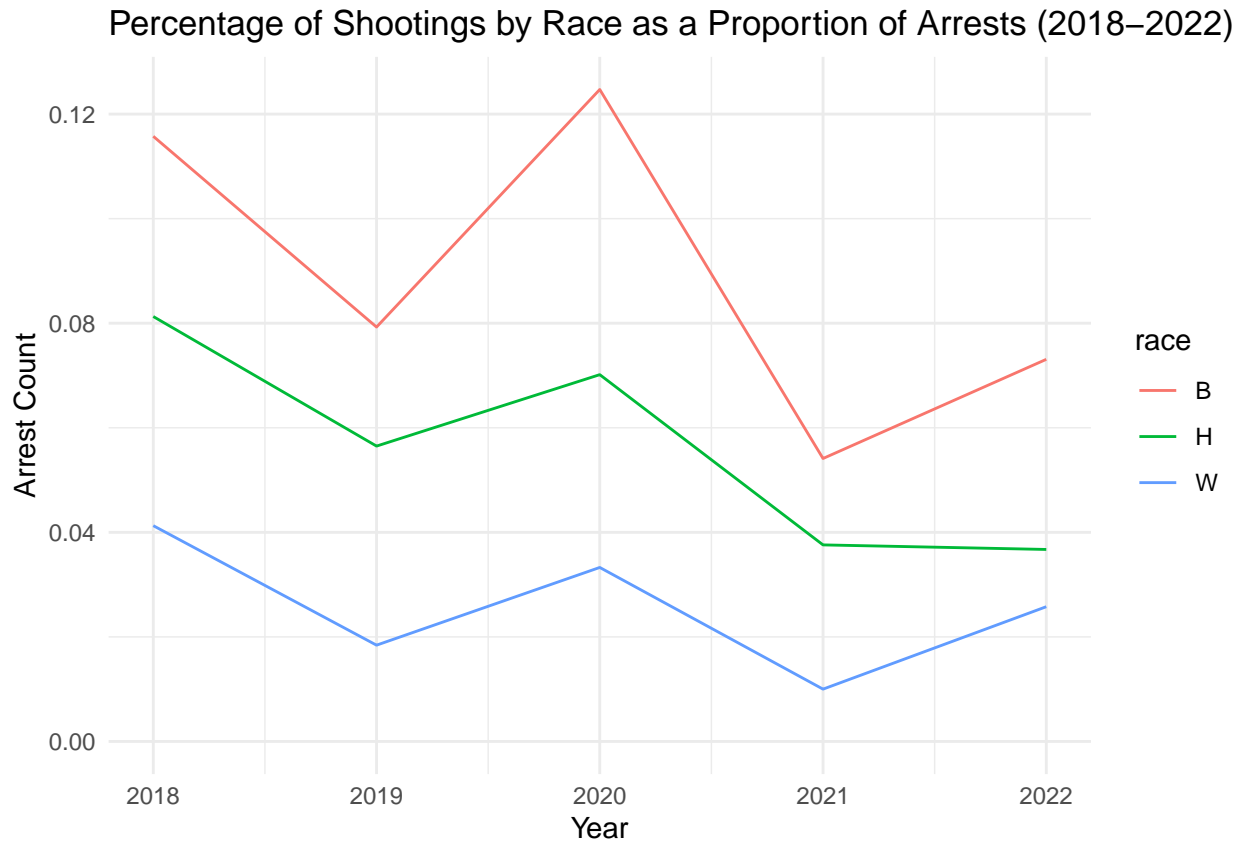

```
# Create a bar plot
ggplot(arrests_clean.df, aes(x = race, y = count, fill = P2DRUG_CHARGES)) +
  geom_bar(stat = "identity", position = "dodge") +
  labs(x = "Race", y = "Count") +
  ggtitle("Counts of Charges by Race (Drug-Related vs. Non-Drug-Related)") +
  scale_fill_discrete(name = "Drug Related") +
  theme_minimal() +
  facet_wrap(~YEAR, scales = "free_x")
```

Counts of Charges by Race (Drug−Related vs. Non−Drug−Related)
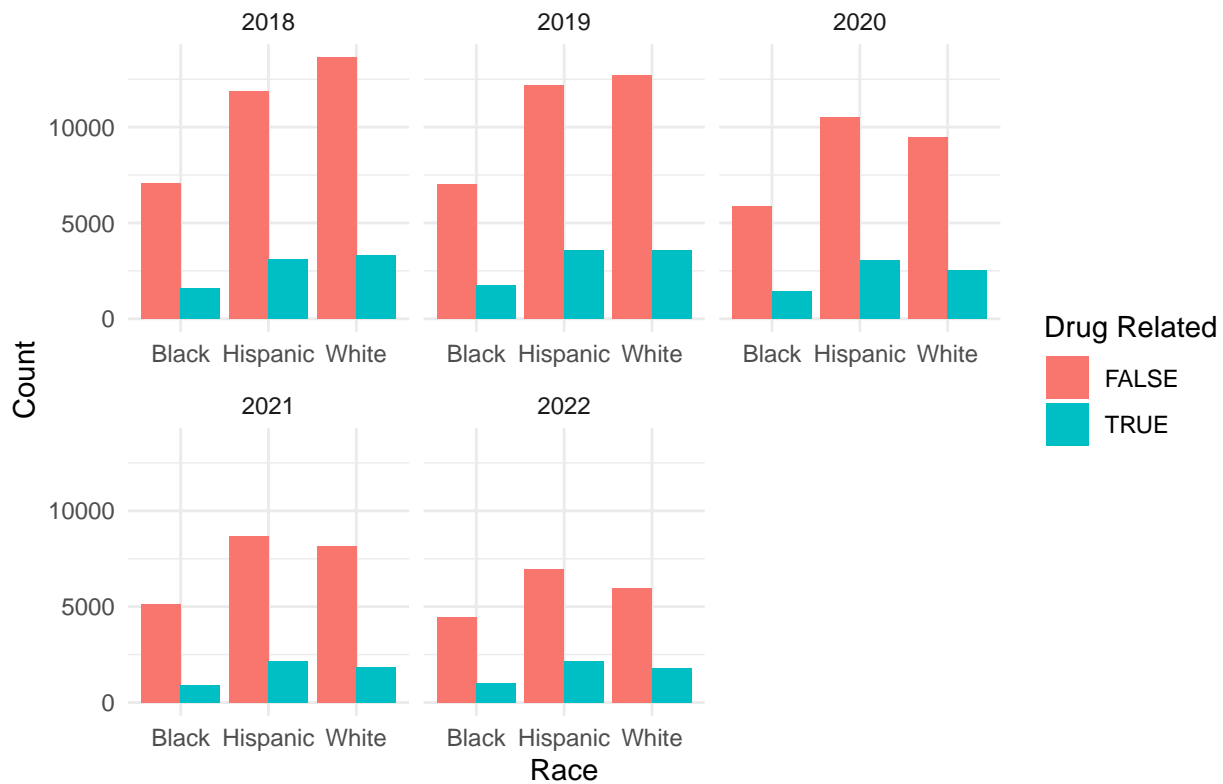

```r
# Create the top_5 dataframe
top_5 <- data.frame(
  cities = c("Los Angeles", "Miami", "Atlanta", "Houston", "Phoenix"),
  per_capita_income_ranked = c(19, 21, 77, 62, 126),
  state_drug_crime_rating = c("D-", "D+", "D", "D-", "F"),
  city_drug_crime_rating = c("D-", "D+", "F", "C-", "D+"),
  city_overall_crime_rating = c("D-", "F", "C-", "C-", "F"),
  state_overall_crime_rating = c("D-", "C", "C+", "C", "F")
)

# Print the dataframe
print(top_5)
```

```
##        cities per_capita_income_ranked state_drug_crime_rating
## 1 Los Angeles                       19                      D-
## 2       Miami                       21                      D+
## 3     Atlanta                       77                       D
## 4     Houston                       62                      D-
## 5     Phoenix                      126                       F
##   city_drug_crime_rating city_overall_crime_rating state_overall_crime_rating
## 1                     D-                        D-                         D-
## 2                     D+                         F                          C
## 3                      F                        C-                         C+
## 4                     C-                        C-                          C
## 5                     D+                         F                          F
```
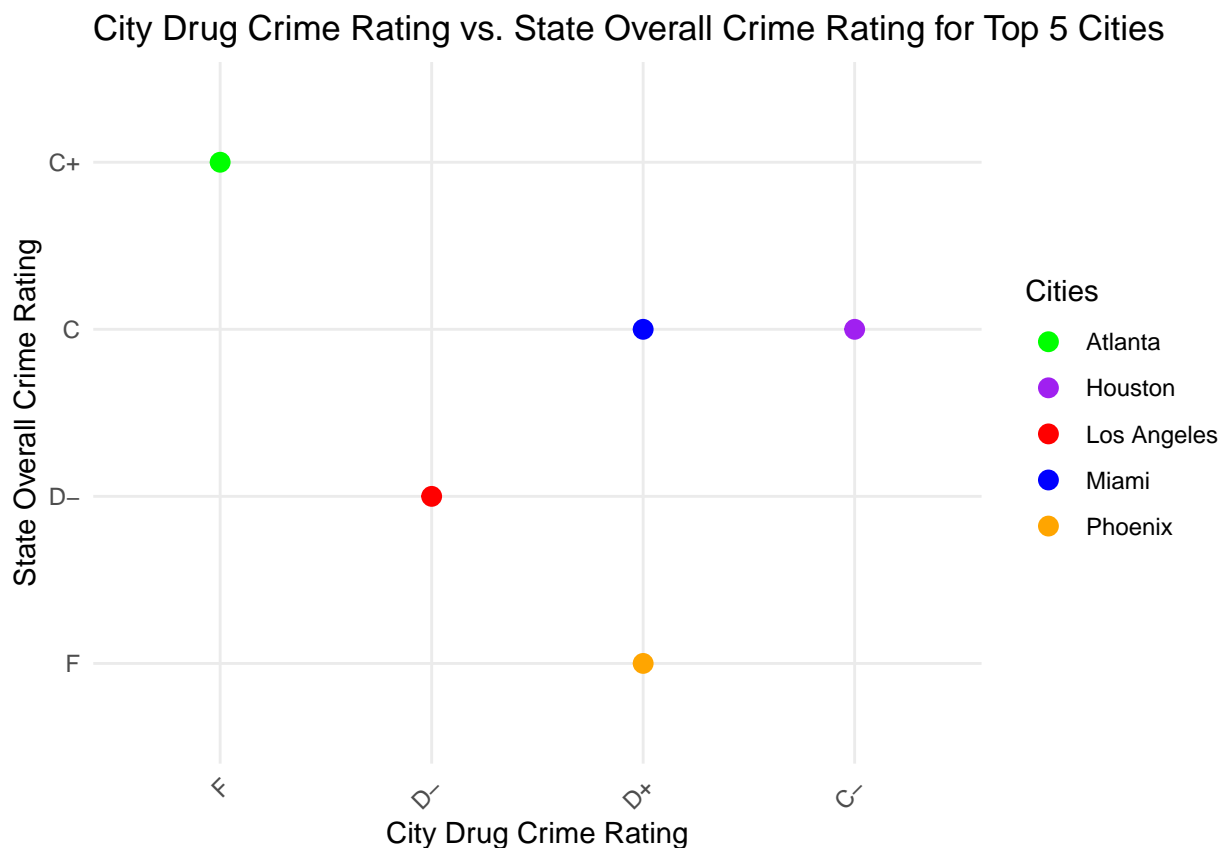
```
# Assuming your dataframe is named top_5
# Define the levels for city_drug_crime_rating in reverse order
possible_grades <- c("F", "D-", "D", "D+", "C-", "C", "C+", "B-", "B", "B+", "A-", "A", "A+")
top_5$city_drug_crime_rating <- factor(top_5$city_drug_crime_rating, levels = rev(possible_grades))

# Define the levels for state_overall_crime_rating in reverse order
state_overall_grades <- c("F", "D-", "D", "D+", "C-", "C", "C+", "B-", "B", "B+", "A-", "A", "A+")
top_5$state_overall_crime_rating <- factor(top_5$state_overall_crime_rating, levels = state_overall_grad

# Create a scatterplot
ggplot(top_5, aes(x = reorder(city_drug_crime_rating, -as.numeric(city_drug_crime_rating)), y = state_ov
  geom_point(size = 3) +
  labs(x = "City Drug Crime Rating", y = "State Overall Crime Rating", color = "Cities") +
  scale_color_manual(values = c("Los Angeles" = "red", "Miami" = "blue", "Atlanta" = "green", "Houston"
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
  ggtitle("City Drug Crime Rating vs. State Overall Crime Rating for Top 5 Cities")
```


City Drug Crime Rating vs. State Overall Crime Rating for Top 5 Cities

```
# Assuming your dataframe is named top_5
# Define the levels for city_drug_crime_rating in reverse order
possible_grades <- c("F", "D-", "D", "D+", "C-", "C", "C+", "B-", "B", "B+", "A-", "A", "A+")
top_5$city_drug_crime_rating <- factor(top_5$city_drug_crime_rating, levels = rev(possible_grades))

# Define the levels for state_overall_crime_rating in reverse order
state_overall_grades <- c("F", "D-", "D", "D+", "C-", "C", "C+", "B-", "B", "B+", "A-", "A", "A+")
top_5$state_overall_crime_rating <- factor(top_5$state_overall_crime_rating, levels = state_overall_grad
```

```
# Create a scatterplot
ggplot(top_5, aes(x = reorder(city_drug_crime_rating, -as.numeric(city_drug_crime_rating)), y = per_cap
  geom_point(size = 3) +
  labs(x = "City Drug Crime Rating", y = "Per Capita Income Ranking", color = "Cities") +
  scale_color_manual(values = c("Los Angeles" = "red", "Miami" = "blue", "Atlanta" = "green", "Houston"
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
  ggtitle("City Drug Crime Rating vs. Per Capita Income Ranking")
```


City Drug Crime Rating vs. Per Capita Income Ranking