

Lab 3: Reducing Crime

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Stage 1: Draft Report

```
crime = read.csv('crime_v2.csv')
# Delete the 6 empty rows at the end
crime[92:100,]
```

```
##      county year crmrte prbarr prbconv prbpris avgsen polpc density taxpc
## 92      NA  NA      NA      NA      NA      NA      NA      NA      NA      NA
## 93      NA  NA      NA      NA      NA      NA      NA      NA      NA      NA
## 94      NA  NA      NA      NA      NA      NA      NA      NA      NA      NA
## 95      NA  NA      NA      NA      NA      NA      NA      NA      NA      NA
## 96      NA  NA      NA      NA      NA      NA      NA      NA      NA      NA
## 97      NA  NA      NA      NA      NA      NA      NA      NA      NA      NA
## NA      NA  NA      NA      NA      NA      NA      NA      NA      NA      NA
## NA.1    NA  NA      NA      NA      NA      NA      NA      NA      NA      NA
## NA.2    NA  NA      NA      NA      NA      NA      NA      NA      NA      NA
##      west central urban pctmin80 wcon wtuc wtrd wfir wser wmfg wfed wsta
## 92      NA      NA      NA      NA      NA      NA      NA      NA      NA      NA
## 93      NA      NA      NA      NA      NA      NA      NA      NA      NA      NA
## 94      NA      NA      NA      NA      NA      NA      NA      NA      NA      NA
## 95      NA      NA      NA      NA      NA      NA      NA      NA      NA      NA
## 96      NA      NA      NA      NA      NA      NA      NA      NA      NA      NA
## 97      NA      NA      NA      NA      NA      NA      NA      NA      NA      NA
## NA      NA      NA      NA      NA      NA      NA      NA      NA      NA      NA
## NA.1    NA      NA      NA      NA      NA      NA      NA      NA      NA      NA
## NA.2    NA      NA      NA      NA      NA      NA      NA      NA      NA      NA
##      wloc mix pctymle
## 92      NA  NA      NA
## 93      NA  NA      NA
## 94      NA  NA      NA
## 95      NA  NA      NA
## 96      NA  NA      NA
## 97      NA  NA      NA
## NA      NA  NA      NA
## NA.1    NA  NA      NA
## NA.2    NA  NA      NA
```

```
crime = crime[1:91, ]

# Convert columns to factors and logical.
crime$county = as.factor(crime$county)
crime$year = as.factor(crime$year)
crime$west = as.logical(crime$west)
crime$central = as.logical(crime$central)
crime$urban = as.logical(crime$urban)

# Fix prbconv, convert from factor to numeric
```

```
summary(crime$prbconv)
```

```
##          ~ 0.068376102 0.140350997 0.154451996 0.203724995
##          0          0          1          1          1          1
## 0.207830995 0.220339 0.226361006 0.229589999 0.248275995 0.259833008
##          1          1          1          1          1          1
## 0.267856985 0.271946996 0.28947401 0.300577998 0.308411002 0.314606994
##          1          1          1          1          1          1
## 0.322580993 0.325300992 0.327868998 0.328664005 0.334701002 0.340490997
##          1          1          1          1          1          1
## 0.343023002 0.347799987 0.352941006 0.36015299 0.364353001 0.371879011
##          1          1          1          1          1          1
## 0.381908 0.384236008 0.385495991 0.386925995 0.393413007 0.401198
##          1          1          1          1          1          1
## 0.403780013 0.406780005 0.410596013 0.412698001 0.426777989 0.436441004
##          1          1          1          1          1          1
## 0.438960999 0.443114012 0.443681002 0.449999988 0.450567007 0.452829987
##          1          1          1          1          1          1
## 0.457210004 0.459215999 0.468531013 0.476563007 0.477732986 0.492940009
##          1          1          1          1          1          1
## 0.493438005 0.495575011 0.50819701 0.515464008 0.520606995 0.520709991
##          1          1          1          1          1          1
## 0.522387981 0.525424004 0.527595997 0.528302014 0.548494995 0.549019992
##          1          1          1          1          1          1
## 0.559822977 0.571429014 0.573943973 0.588859022 0.589905024 0.595077991
##          1          1          1          2          1          1
## 0.62251699 0.722972989 0.736908972 0.739394009 0.763333023 0.769231021
##          1          1          1          1          1          1
## 0.781608999 0.793232977 0.909090996 0.972972989 1.015380025 1.068969965
##          1          1          1          1          1          1
## 1.182929993 1.225610018 1.234380007 1.358139992 1.481480002 1.5
##          1          1          1          1          1          1
## 1.670519948 2.121210098
##          1          1
```

```
crime$prbconv = as.numeric(crime$prbconv)
```

```
# county 193 is duplidated, remove one
crime[crime$county == 193, ]
```

```
##   county year   crmrte  prbarr prbconv  prbpris avgsen   polpc
## 88   193   87 0.0235277 0.266055    70 0.423423   5.86 0.00117887
## 89   193   87 0.0235277 0.266055    70 0.423423   5.86 0.00117887
##      density  taxpc west central urban pctmin80   wcon   wtuc
## 88 0.8138298 28.51783 TRUE  FALSE FALSE  5.93109 285.8289 480.1948
## 89 0.8138298 28.51783 TRUE  FALSE FALSE  5.93109 285.8289 480.1948
##      wtrd   wfir   wser  wmfgr wfed  wsta  wloc   mix
## 88 268.3836 365.0196 295.9352 295.63 468.26 337.88 348.74 0.1105016
## 89 268.3836 365.0196 295.9352 295.63 468.26 337.88 348.74 0.1105016
##      pctymle
## 88 0.07819394
## 89 0.07819394
```

```
crime = crime[-c(89), ]
```

```
summary(crime)
```

```
##      county  year      crmrte      prbarr      prbconv
##  1      : 1  87:90  Min.   :0.005533  Min.   :0.09277  Min.   : 3.00
##  3      : 1      1st Qu.:0.020604  1st Qu.:0.20495  1st Qu.:25.25
##  5      : 1      Median :0.030002  Median :0.27146  Median :47.50
##  7      : 1      Mean    :0.033510  Mean    :0.29524  Mean    :47.50
##  9      : 1      3rd Qu.:0.040249  3rd Qu.:0.34487  3rd Qu.:69.75
## 11      : 1      Max.    :0.098966  Max.    :1.09091  Max.    :92.00
## (Other):84
##      prbpris      avgsen      polpc      density
## Min.   :0.1500  Min.   : 5.380  Min.   :0.0007459  Min.   :0.00002
## 1st Qu.:0.3642  1st Qu.: 7.375  1st Qu.:0.0012378  1st Qu.:0.54718
## Median :0.4222  Median : 9.110  Median :0.0014897  Median :0.97925
## Mean    :0.4106  Mean    : 9.689  Mean    :0.0017080  Mean    :1.43567
## 3rd Qu.:0.4576  3rd Qu.:11.465  3rd Qu.:0.0018856  3rd Qu.:1.56926
## Max.    :0.6000  Max.    :20.700  Max.    :0.0090543  Max.    :8.82765
##
##      taxpc      west      central      urban
## Min.   : 25.69  Mode :logical  Mode :logical  Mode :logical
## 1st Qu.: 30.73  FALSE:68      FALSE:56      FALSE:82
## Median : 34.92  TRUE :22      TRUE :34      TRUE :8
## Mean    : 38.16
## 3rd Qu.: 41.01
## Max.    :119.76
##
##      pctmin80      wcon      wtuc      wtrd
## Min.   : 1.284  Min.   :193.6  Min.   :187.6  Min.   :154.2
## 1st Qu.:10.024  1st Qu.:250.8  1st Qu.:374.3  1st Qu.:190.7
## Median :24.852  Median :281.2  Median :404.8  Median :203.0
## Mean    :25.713  Mean    :285.4  Mean    :410.9  Mean    :210.9
## 3rd Qu.:38.183  3rd Qu.:315.0  3rd Qu.:440.7  3rd Qu.:224.3
## Max.    :64.348  Max.    :436.8  Max.    :613.2  Max.    :354.7
##
##      wfir      wser      wmfg      wfed
## Min.   :170.9  Min.   : 133.0  Min.   :157.4  Min.   :326.1
## 1st Qu.:285.6  1st Qu.: 229.3  1st Qu.:288.6  1st Qu.:398.8
## Median :317.1  Median : 253.1  Median :321.1  Median :448.9
## Mean    :321.6  Mean    : 275.3  Mean    :336.0  Mean    :442.6
## 3rd Qu.:342.6  3rd Qu.: 277.6  3rd Qu.:359.9  3rd Qu.:478.3
## Max.    :509.5  Max.    :2177.1  Max.    :646.9  Max.    :598.0
##
##      wsta      wloc      mix      pctymle
## Min.   :258.3  Min.   :239.2  Min.   :0.01961  Min.   :0.06216
## 1st Qu.:329.3  1st Qu.:297.2  1st Qu.:0.08060  1st Qu.:0.07437
## Median :358.4  Median :307.6  Median :0.10095  Median :0.07770
## Mean    :357.7  Mean    :312.3  Mean    :0.12905  Mean    :0.08403
## 3rd Qu.:383.2  3rd Qu.:328.8  3rd Qu.:0.15206  3rd Qu.:0.08352
## Max.    :499.6  Max.    :388.1  Max.    :0.46512  Max.    :0.24871
##
```