

# Using the Illinois Report Card Data to Teach Statistics

MMC Conference of Workshops 2020

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*2/1/2020*

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## 1 Descriptive Statistics via State Demographics

### 1.1 Categorical Count (Raw)

```
school_type <- rc17 %>%  
  count(SCHOOL_TYPE_NAME, sort = TRUE) %>%  
  mutate(rel_freq = n/sum(n))  
school_type
```

```
## # A tibble: 4 x 3  
##   SCHOOL_TYPE_NAME      n rel_freq  
##   <chr>          <int>   <dbl>  
## 1 ELEMENTARY      2406   0.634  
## 2 HIGH SCHOOL      644   0.170  
## 3 MIDDLE SCHL      604   0.159  
## 4 CHARTER SCH     142   0.0374
```

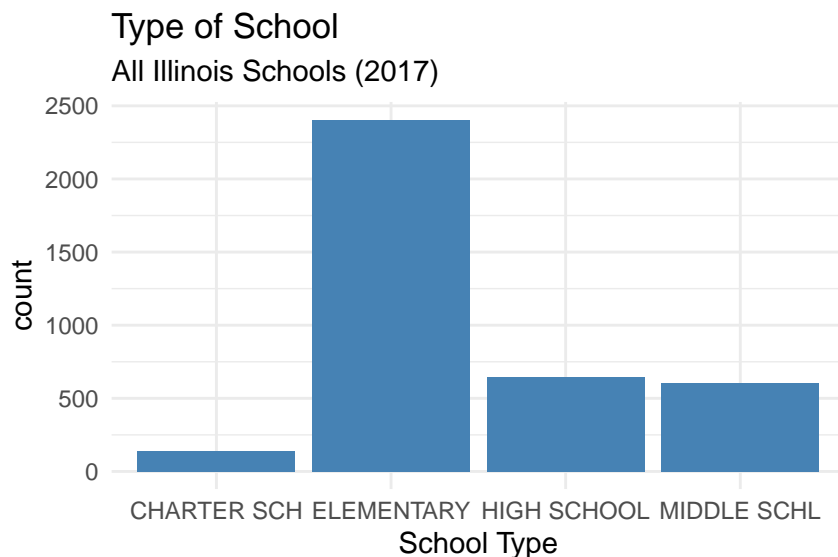
### 1.2 Categorical Count (Formatted)

```
kable(school_type) %>%  
  kable_styling(bootstrap_options = "striped", full_width = F)
```

SCHOOL_TYPE_NAME	n	rel_freq
ELEMENTARY	2406	0.6338251
HIGH SCHOOL	644	0.1696523
MIDDLE SCHL	604	0.1591149
CHARTER SCH	142	0.0374078

### 1.3 Categorical Plot

```
ggplot(rc17, aes(x=factor(SCHOOL_TYPE_NAME)))+  
  geom_bar(fill="steelblue")+  
  labs(title = "Type of School", x = "School Type", subtitle = "All Illinois Schools (2017)") +  
  theme_minimal()
```



### 1.4 Categorical Analysis I

Write a short analysis for the types of schools in the state of Illinois.

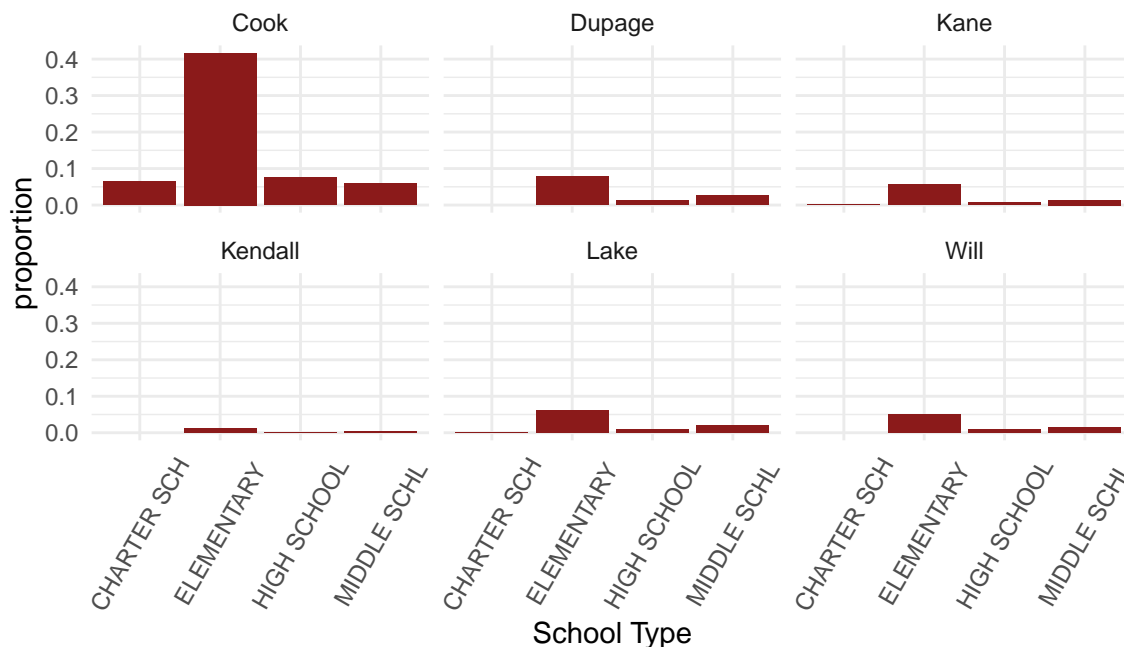
### 1.5 Categorical Analysis II

Write a short analysis for the types of schools in the six county region.

```
rc17 %>%  
  filter(COUNTY == "Dupage" | COUNTY == "Will" | COUNTY == "Kane" | COUNTY == "Lake" | COUNTY == "Will" | COUNTY == "Cook") +  
  ggplot(aes(x=factor(SCHOOL_TYPE_NAME), y = (..count../sum(..count..))) +  
    geom_bar(fill="firebrick4")+  
    facet_wrap(~COUNTY, nrow = 2) +  
    labs(title = "Type of School by County",  
      x = "School Type",  
      y = "proportion",  
      subtitle = "Six Counties in the Chicago Metropolitan Region (2017)") +  
    theme_minimal() +  
    theme(axis.text.x = element_text(angle = 60, vjust = 0.5))
```

## Type of School by County

Six Counties in the Chicago Metropolitan Region (2017)



## 2 Data Import

### 2.1 Data Files

- ISBE Report Card Data Library [<https://www.isbe.net/Pages/Illinois-State-Report-Card-Data.aspx>]
- rc17.txt
- six\_county
- Import script
- define variables
- fix issues i.e. “\$” and “,”
- load libraries
- available here

## 3 Original Material

### 3.1 R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

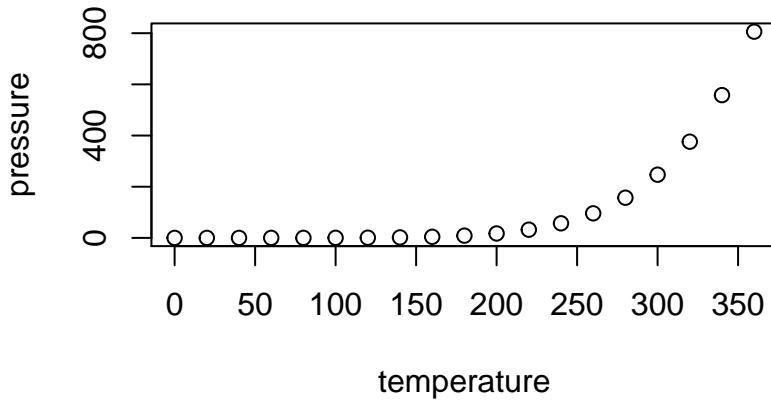
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   : 2.00
##  1st Qu.:12.0    1st Qu.: 26.00
##  Median :15.0    Median : 36.00
##  Mean   :15.4    Mean   : 42.98
##  3rd Qu.:19.0    3rd Qu.: 56.00
##  Max.   :25.0    Max.   :120.00
```

## 3.2 Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.