Using the Illinois Report Card Data to Teach Statistics

MMC Conference of Workshops

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Contents

1 Variables and Data Files

The ISBE raw data file contains xxxx variables. They have been grouped below and the variable definitions are in the Excel file RC17_layout.xlsx.

School information (13 variables)
Student demographics (396)
ACT (44)
Instructional setting (92)
Teacher and admin statistics (78)
District financial (67)
Region and legislative (3)
National Assmnt. of Educ. Progress (NAEP) (184)
College and Career readiness (16)
CTE (4)
Advanced coursework (12)
AP courses (168)
IB courses (168)
Dual credit (168)
AP exams (36)
Post secondary remediation (4)
Response rate (5E survey) (4)
Health and wellness (3)

Fifty-nine of these variables are imported into an R dataframe named rc17. All xxxx schools in Illinois have been included. A second data file named xxxxx contains the same 59 variables but only for the Chicago six county region.

1.1 How to import

2 Descriptive Statistics via State Demographics

2.1 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
```

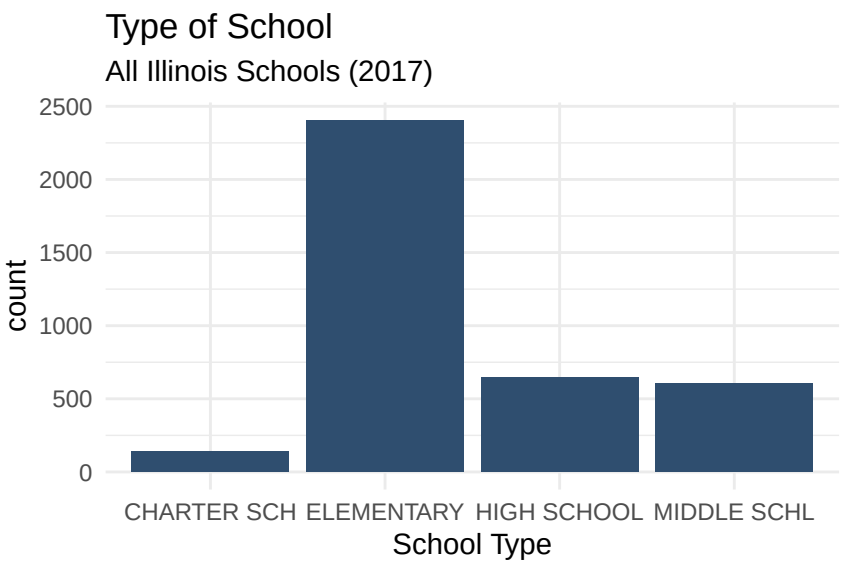
2.2 Categorical Count (Formatted)

```
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

2.3 Categorical Plot

```
ggplot(rc17, aes(x=factor(SCHOOL_TYPE_NAME)))+
  geom_bar(fill="#2F4E6F")+
  labs(title = "Type of School", x = "School Type", subtitle = "All Illinois Schools (2017)") +
  theme_minimal()
```



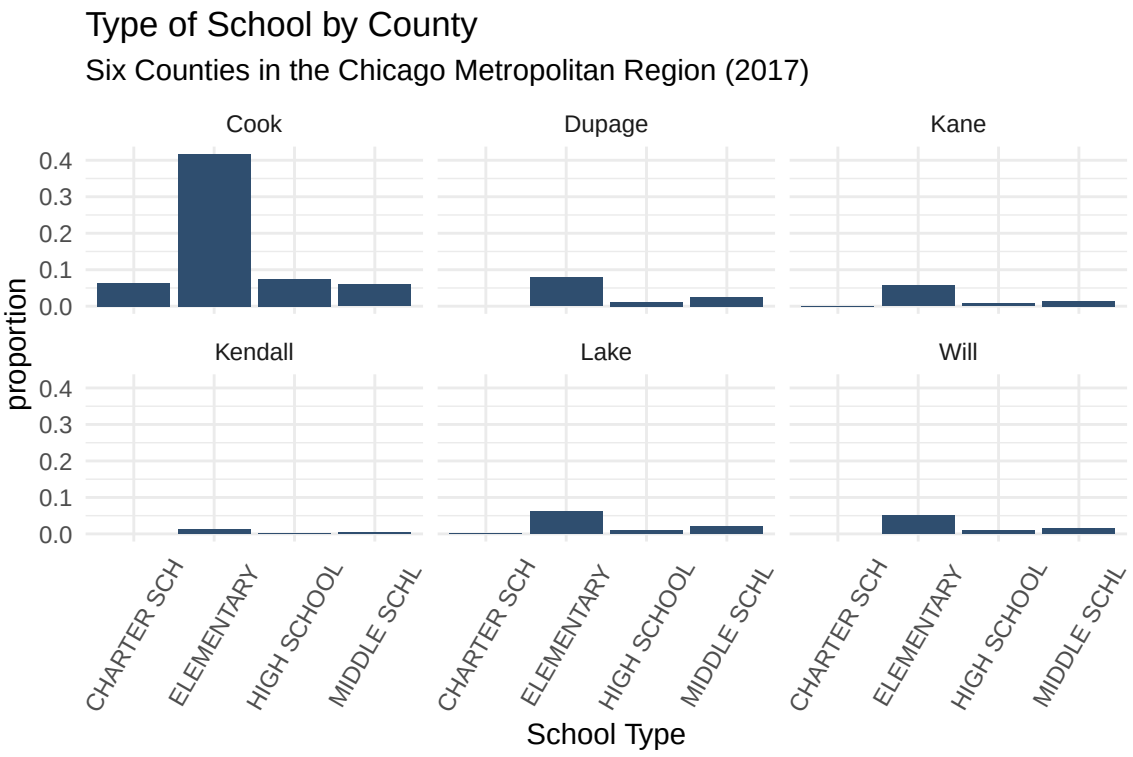
2.4 Categorical Analysis I

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

2.5 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
ggplot(aes(x=factor(SCHOOL_TYPE_NAME), y = (..count..)/sum(..count..))) +
  geom_bar(fill="#2F4E6F")+
  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))
```



3 Data Import

3.1 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

4 Original Material

4.1 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.

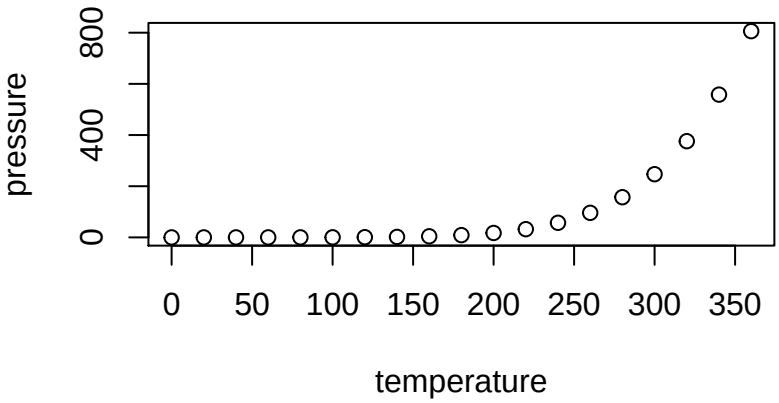
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
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
```

4.2 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.