

Using the Illinois Report Card Data to Teach Statistics

MMC Conference of Workshops

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Contents

1 Variables	1
2 Descriptive Statistics via State Demographics	2
2.1 Categorical Count (Raw)	2
2.2 Categorical Count (Formatted)	2
2.3 Categorical Plot	2
2.4 Categorical Analysis I	2
2.5 Categorical Analysis II	3
3 Data Import	3
3.1 Data Files	3
4 Original Material	4
4.1 R Markdown	4
4.2 Including Plots	4

1 Variables

The ISBE raw data file *rx17.txt* contains 1,471 variables. The variable definitions are in the Excel file *RC17_layout.xlsx* and have been categorized into the groups shown below. The first number represents available variables in each group while the second is the number actually imported into the processed data file. The import script produces 316 variables from 20 of the 21 categories for all 3,796 Illinois public schools. (None of the NAEP variables were imported.) Usable files will be discussed in section 3.

School information (13 variables;12 imported)	AP courses (168;42)
Student demographics (396;71)	IB courses (168;42)
ACT (44;11)	Dual credit (168;42)
Instructional setting (92;2)	AP exams (36;12)
Teacher and admin statistics (78;26)	Post secondary remediation (4;1)
District financial (67;40)	Response rate (5E survey) (4;2)
Region and legislative (3;2)	Health and wellness (3;1)
National Assmnt. of Educ. Progress (NAEP) (184;0)	Teacher Attendance (4;1)
College and Career readiness (16;3) CTE (4;1)	Teacher Evaluation (2;1)
Advanced coursework (12;3)	School District Count (3;1)

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
```

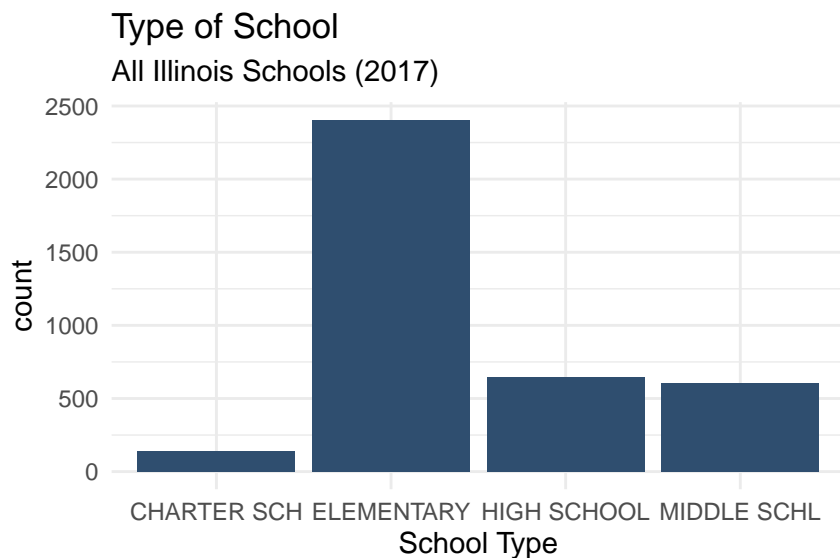
2.2 Categorical Count (Formatted)

```
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()
```



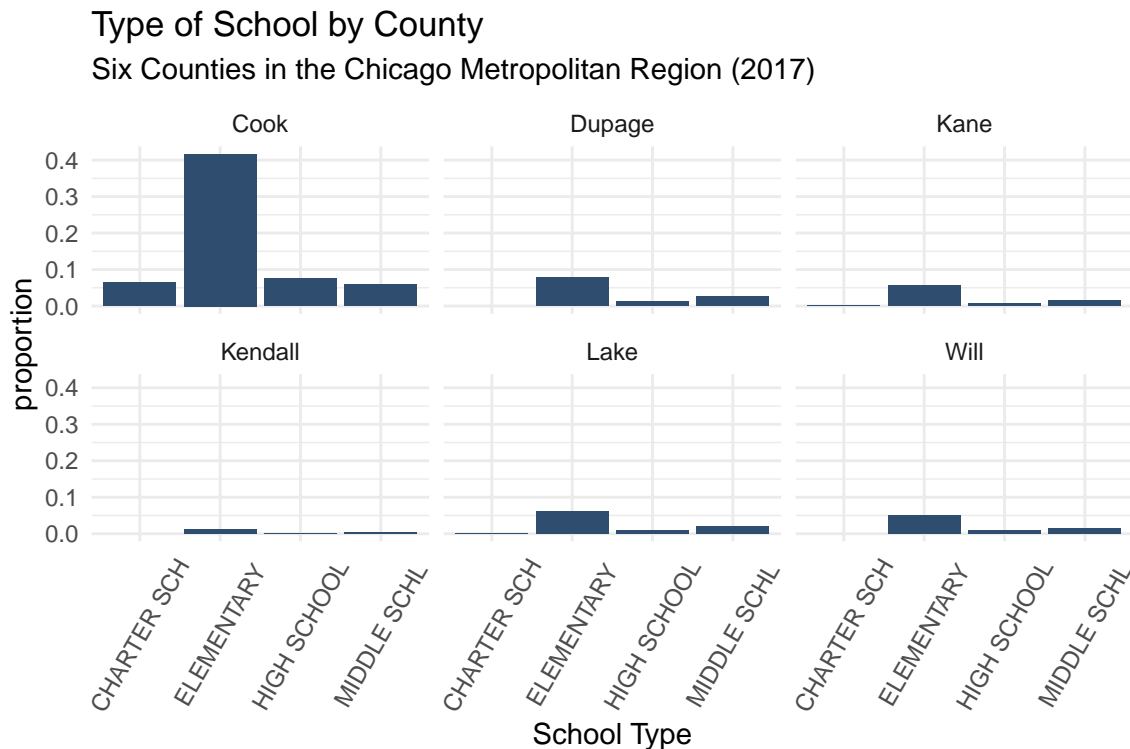
2.4 Categorical Analysis I

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 == "Cook" |
         COUNTY == "Kendall") %>%
  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>.

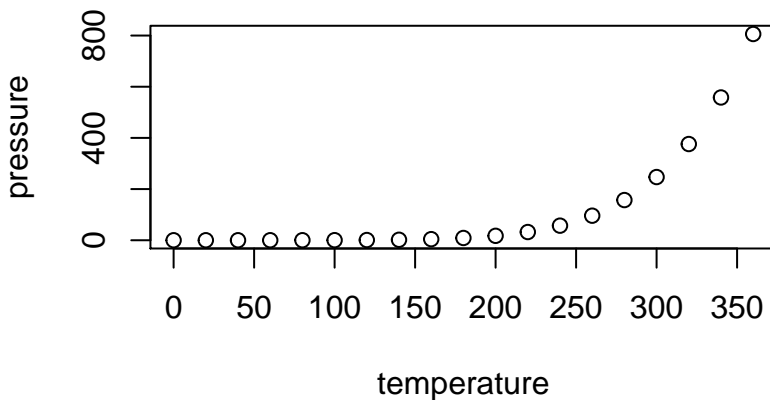
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
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.