Lab 03

due January 28th by 11:59 PM

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01/24

```
library(tidyverse)
```

Exercise 1

```
midwest %>%
  group_by(state) %>%
  summarize(popperstate = sum(poptotal)) %>%
  arrange(popperstate)
```

```
## # A tibble: 5 x 2
##   state popperstate
##   <chr>       <int>
## 1 WI        4891769
## 2 IN        5544159
## 3 MI        9295297
## 4 OH       10847115
## 5 IL       11430602
```

Answer: The state with the greatest population is Illinois

Exercise 2

```
midwest %>%
  filter(state=="WI") %>%
  arrange(desc(poptotal)) %>%
  select(county, poptotal) %>%
  slice(1:3)
```

```
## # A tibble: 3 x 2
##   county    poptotal
##   <chr>        <int>
## 1 MILWAUKEE   959275
## 2 DANE        367085
## 3 WAUKESHA    304715
```

Answer: Milwaukee, Dane, and Waukesha are the three most populated ones

Exercise 3

```
midwest %>%
  mutate(isMetro = if_else(inmetro == 1, "In Metro", "Not in Metro")) %>%
  group_by(isMetro) %>%
  summarise(meanpopdensity = mean(popdensity), count = n())
```

```
## # A tibble: 2 x 3
##   isMetro      meanpopdensity count
##   <chr>                 <dbl> <int>
## 1 In Metro              7205.   150
## 2 Not in Metro           951.   287
```

Answer: The mean population density in metros is 7205 compared to 951 in non-metros. The number of counties in metro is 150, and 287 are not

Exercise 4

```
midwest %>%
  select(county, state, percollege) %>%
  arrange(desc(percollege)) %>%
  slice(1:5)
```

```
## # A tibble: 5 x 3
##   county    state percollege
##   <chr>     <chr>      <dbl>
## 1 WASHTENAW MI          48.1
## 2 DANE      WI          43.6
## 3 DU PAGE   IL          42.8
## 4 HAMILTON  IN          42.1
## 5 CHAMPAIGN IL          41.3
```

Answer: The counties with the highest proportion of people with at least a college degree are Washtenaw, Dane, Du Page, Hamilton, and Champaign. One thing these counties have in common is that they all either have or are close to many colleges

Exercise 5

```
midwest %>%
  group_by(county) %>%
  summarize(count = n()) %>%
  filter(count == 5)
```

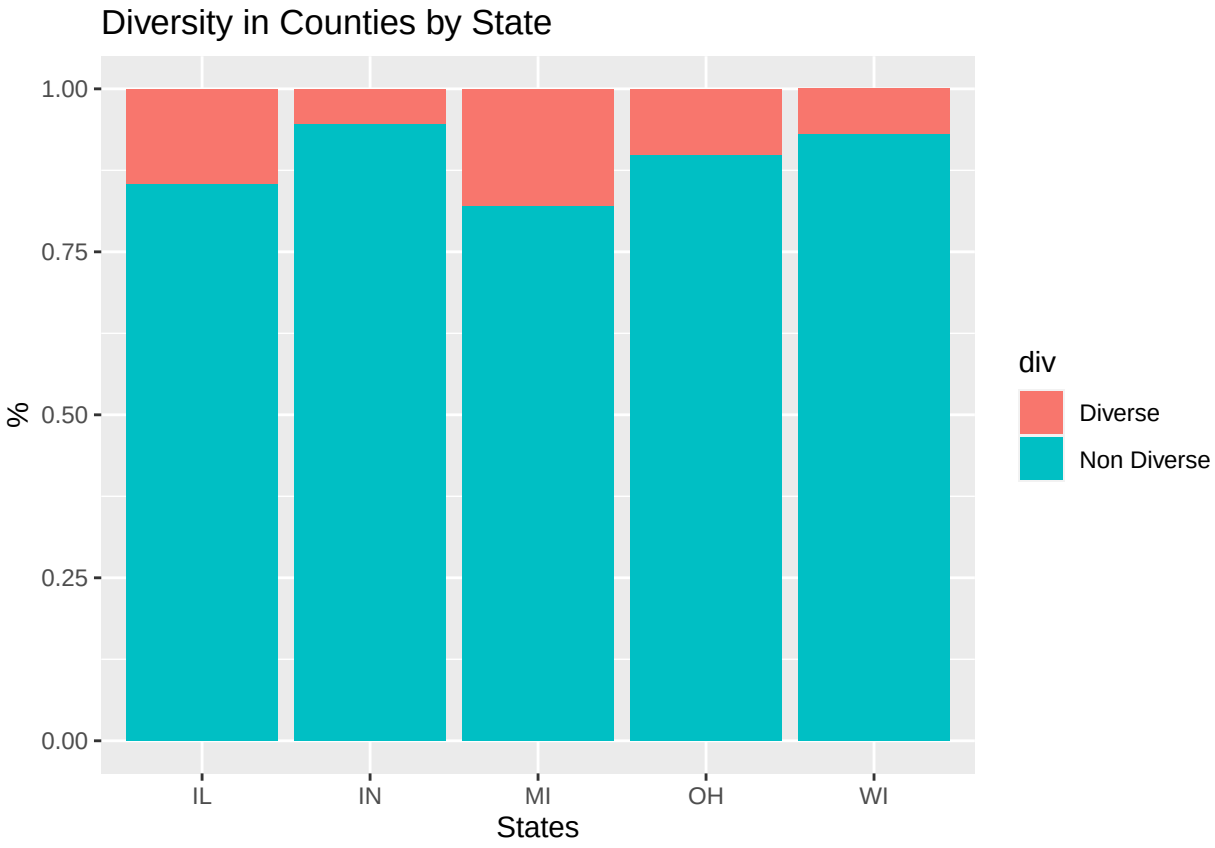
```
## # A tibble: 3 x 2
##   county   count
```

```
##   <chr>    <int>
## 1 CRAWFORD     5
## 2 JACKSON      5
## 3 MONROE       5
```

Answer: Yes, Crawford, Jackson, and Monroe occur in all 5 states

Exercise 6

```
midwest %>%
  mutate(div = if_else(percwhite <= 90, "Diverse", "Non Diverse")) %>%
ggplot(aes(x = state, fill = div)) +
 geom_bar(position = "fill") +
  labs(title = "Diversity in Counties by State", x = "States", y = "%")
```



Answer: The graph above shows the proportion of diverse and not diverse counties per state. Michigan has the most diversity while Indiana has the least.