Homework 2

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This homework is due on Jan. 24, 2023 at 11:00pm. Please submit as a pdf file on Canvas.
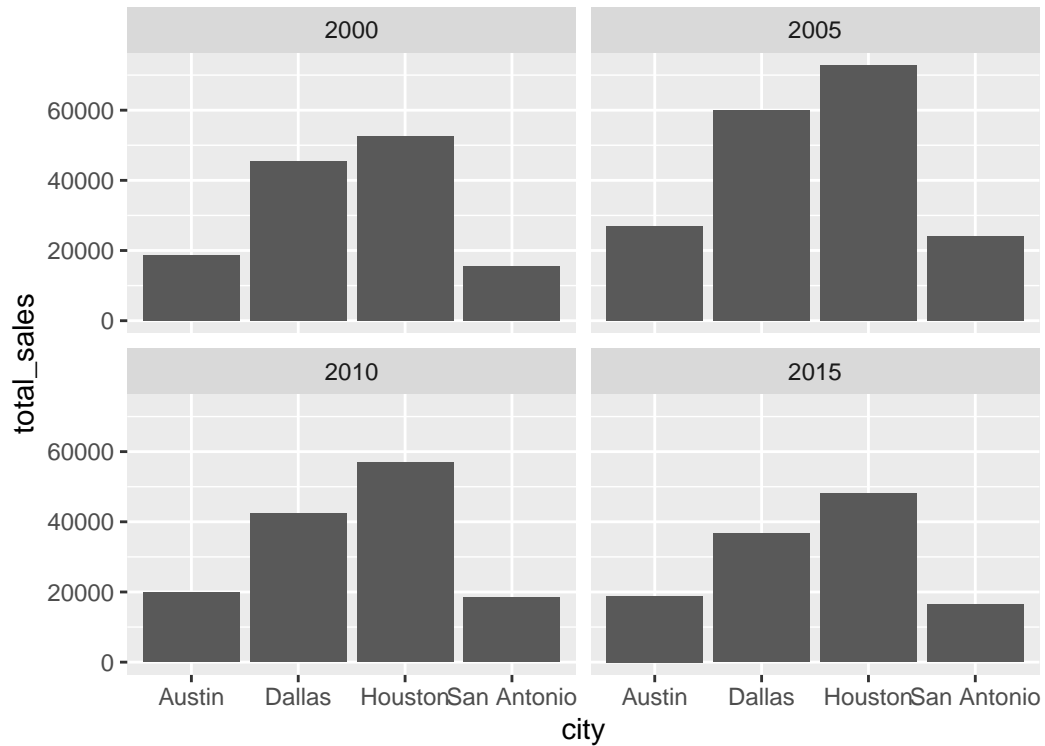
Problem 1: (3 pts) We will work with the dataset `txhouse` that has been derived from the `txhousing` dataset provided by **ggplot2**. See here for details of the original dataset: https://ggplot2.tidyverse.org/reference/txhousing.html. `txhouse` contains three columns: `city` (containing four Texas cities), `year` (containing four years between 2000 and 2015) and `total_sales` indicating the total number of sales for the specified year and city.

```
txhouse
```

```
## # A tibble: 16 x 3
## # Groups:   city [4]
##    city          year total_sales
##    <chr>        <int>       <dbl>
##  1 Austin        2000       18621
##  2 Austin        2005       26905
##  3 Austin        2010       19872
##  4 Austin        2015       18878
##  5 Dallas        2000       45446
##  6 Dallas        2005       59980
##  7 Dallas        2010       42383
##  8 Dallas        2015       36735
##  9 Houston       2000       52459
## 10 Houston       2005       72800
## 11 Houston       2010       56807
## 12 Houston       2015       48109
## 13 San Antonio   2000       15590
## 14 San Antonio   2005       24034
## 15 San Antonio   2010       18449
## 16 San Antonio   2015       16455
```

Use ggplot to make a bar plot of the total housing sales (column `total_sales`) for each `city` and show one panel per `year`. You do not have to worry about the order of the bars. Hint: Use `facet_wrap()`. See slides from Class 2.

```
ggplot(txhouse, aes(city, total_sales)) +
  facet_wrap(vars(year)) +
  geom_col()
```

Problem 2: (3 pts) Use ggplot to make a bar plot of the total housing sales (column `total_sales`) for each `year`. Color the bar borders with color `"gray20"` and assign a fill color based on the `city` column.

```
ggplot(txhouse, aes(year, total_sales, fill = city)) +
  geom_col(color = "gray20")
```

Problem 3: (4 pts) Modify the plot from Problem 2 by placing the bars for each city side-by-side rather than stacked. Next, reorder the bars for each `year` by `total_sales` in descending order. See slides from Class 4.

```
ggplot(txhouse, aes(year, total_sales, fill = fct_reorder(city, -total_sales))) +
  geom_col(position = "dodge", color = "gray20")
```