

## Homework 2

*Enter your name and EID here*

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**This homework is due on Jan. 31, 2022 at 11:00am. Please submit as a pdf file on Canvas.**

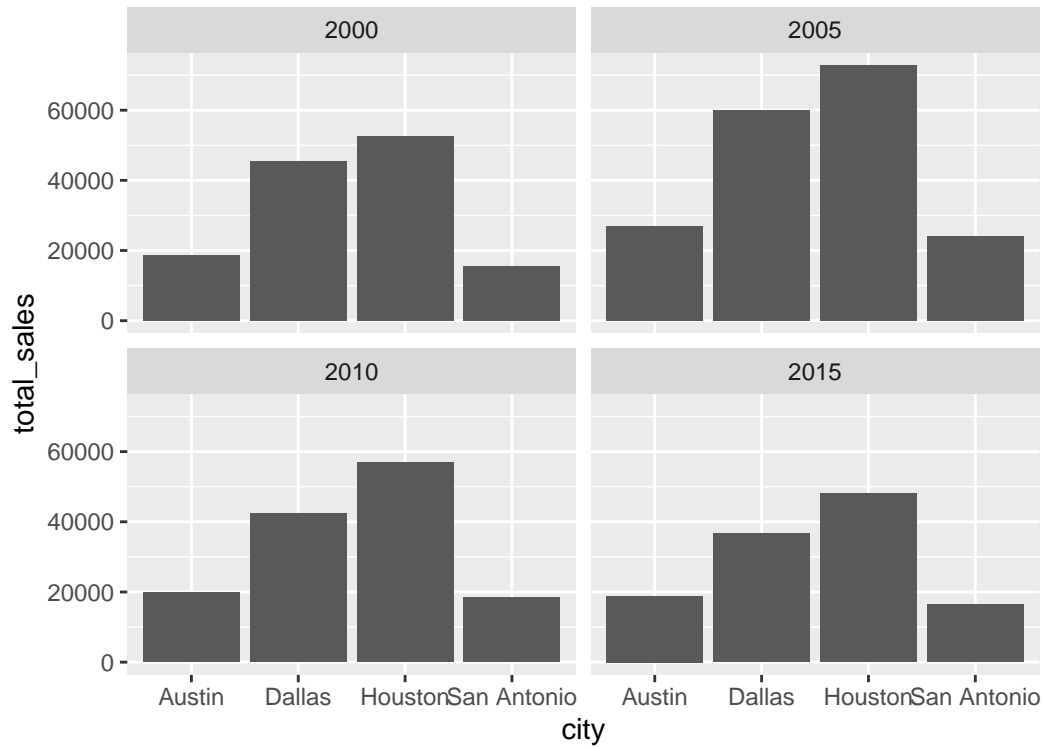
**Problem 1: (3 pts)** We will work with the dataset `txhouse` that has been derived from the `txhousing` dataset provided by `ggplot2`. See here for details of the original dataset: <https://ggplot2.tidyverse.org/reference/txhousing.html>. `txhouse` contains three columns: `city` (containing four Texas 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. Hint: Use `facet_wrap()`. See slides from Class 2.

```
ggplot(data = txhouse, aes(x = city, y = total_sales)) +
  geom_col() +
  facet_wrap(vars(year))
```



**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 “gray34”, and fill the bars by city.

```
ggplot(data = txhouse, aes(x = year, y = total_sales, fill = city)) +  
  geom_col(color = "gray34")
```



**Problem 3: (4 pts)** Modify the plot from Problem 2 by placing `city` bars 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(data = txhouse, aes(x = year, y = total_sales, fill = fct_reorder(city, -total_sales))) +
  geom_col(position = "dodge", color = "gray34")
```

