DSC 640 – Week 11 & 12
Michael Ersevim

Notes:

This week, two of the charts for Python (Scatter plot and Bullet Graph) were embedded in the code section, and not separate like the Waterfall and Box plot.

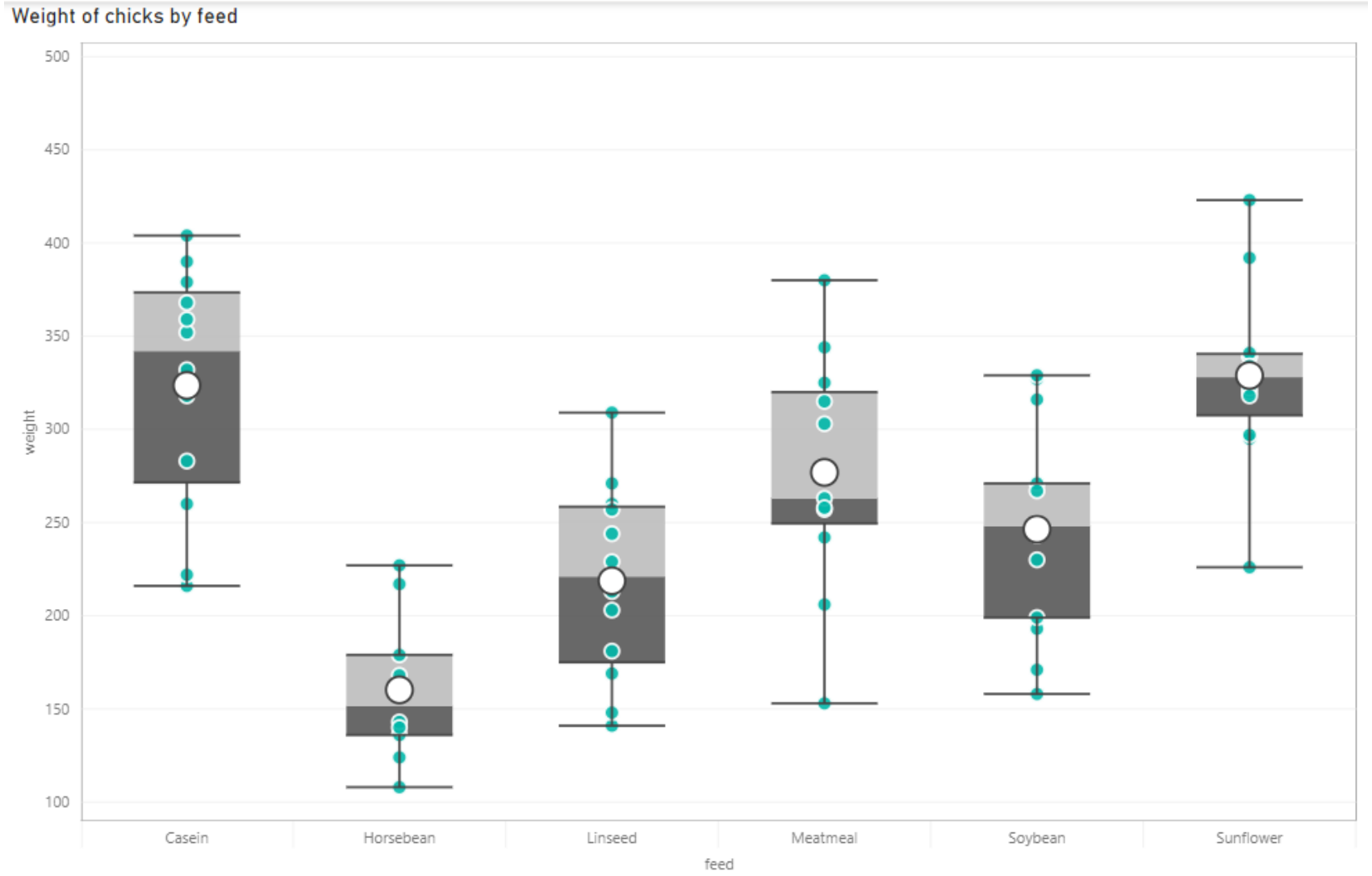
Also, the ‘made up’ data I used to create all the Waterfall graphs is shown within the Python code section.

Power BI: Waterfall chart

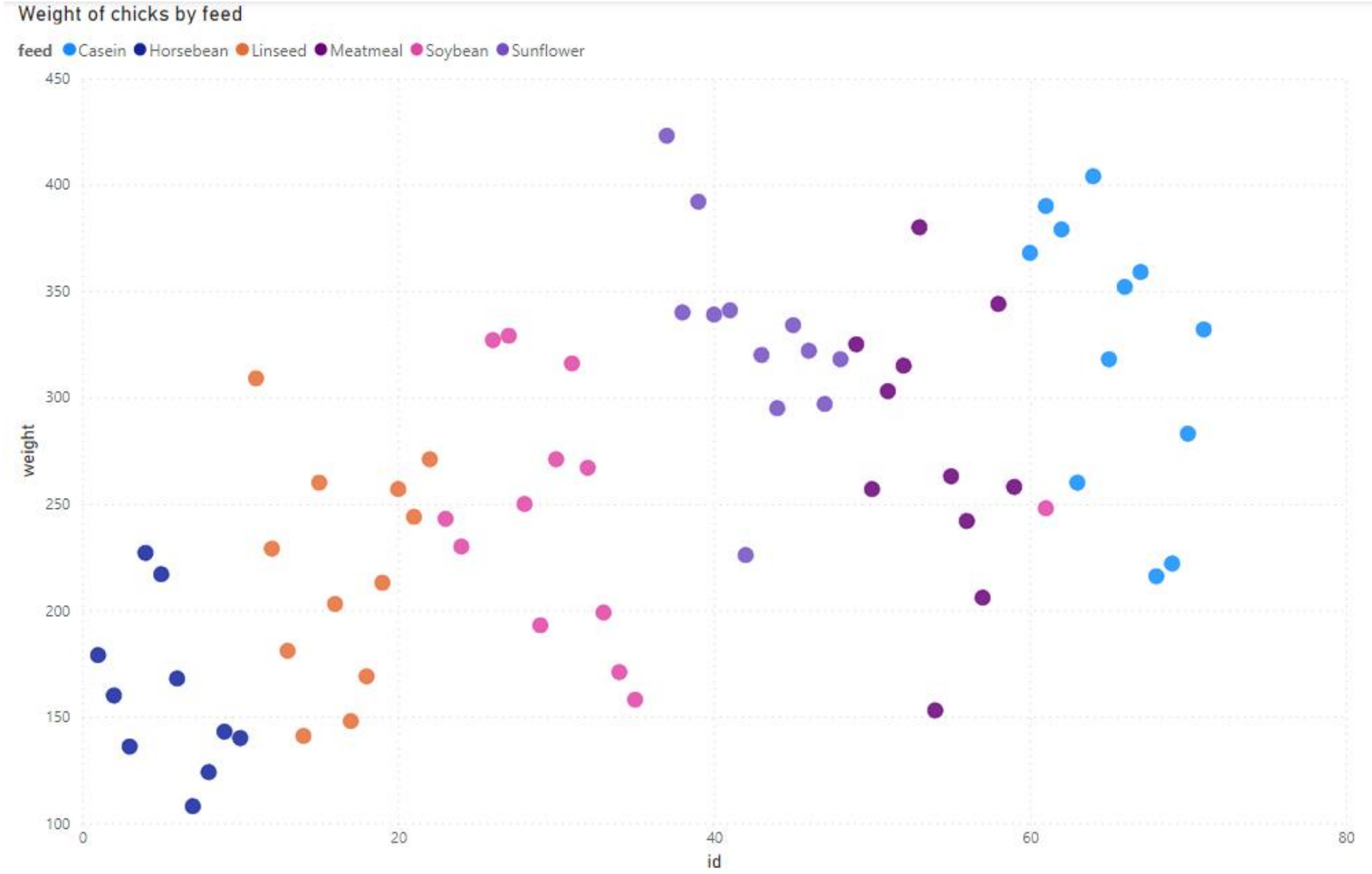
A Waterfall chart of causes of home price differential bought vs sold

Power BI: Box Plot

Box plot of weight (in grams) of different groups of chicks being fed a certain feed type



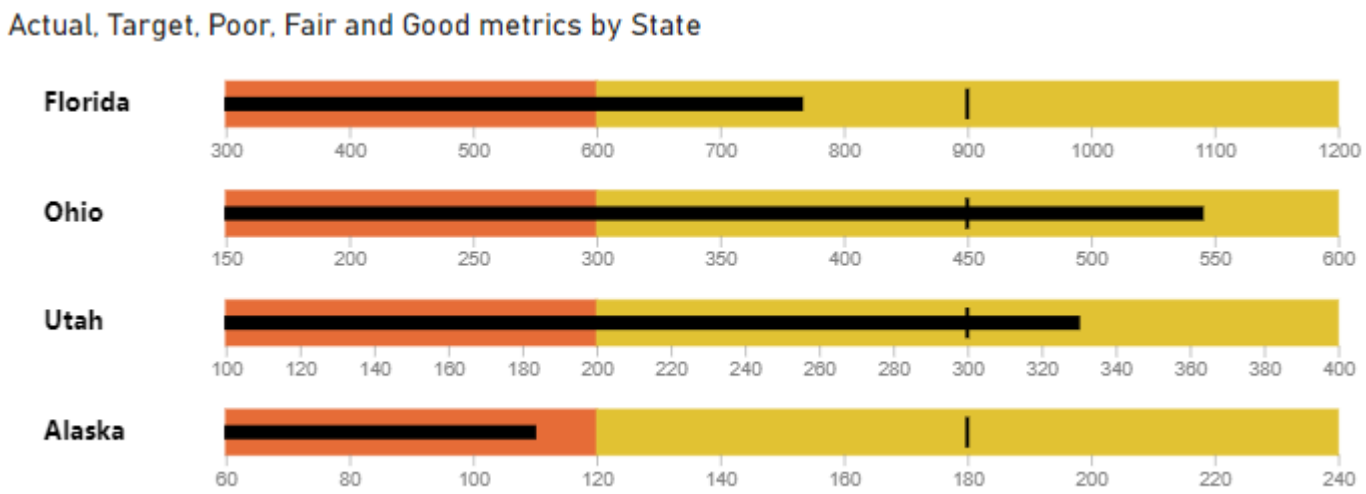
Power BI: Scatter Plot



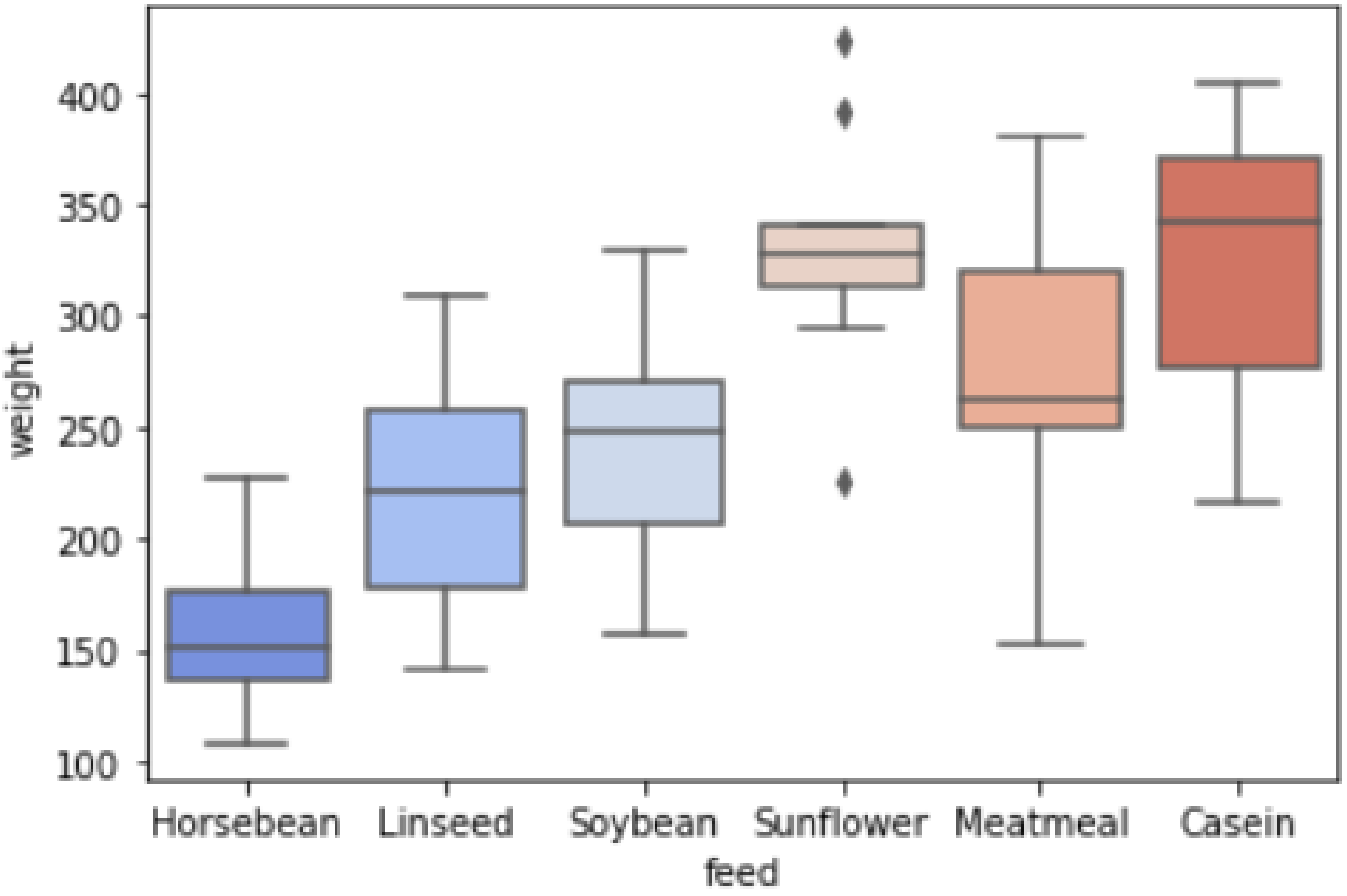
A scatterplot of chick weights by feed type (denoted by colors)

Power BI: Bullet Graph

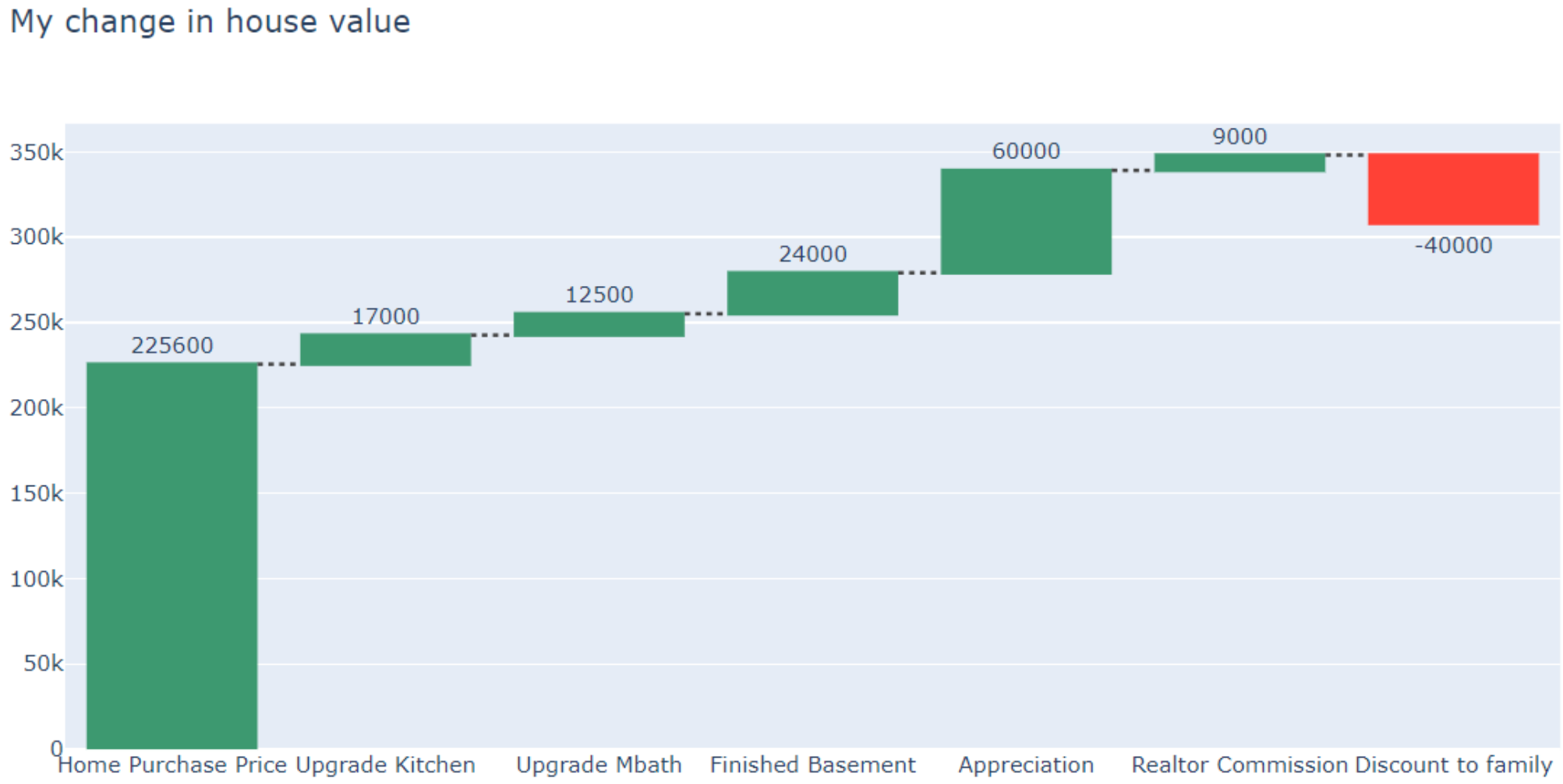
A Bullet Graph of target metrics by state



Python: Box Plot



Python: Waterfall Plot



Python: CODE for generating graphs

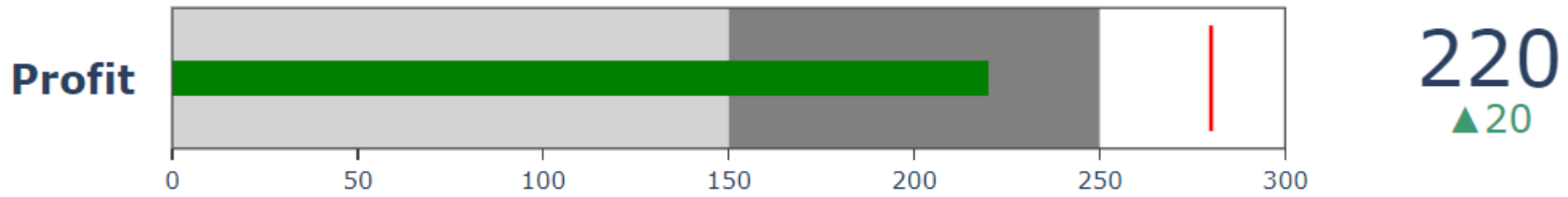
DSC 640 - Michael Ersevim - Weeks 11&12

In [1]:
```
# Call in libraries
import matplotlib.pyplot as plt
import seaborn as sns
import pandas as pd
import plotly.graph_objects as go
```

Using code from documentation to make a bullet chart

In [2]:
```
fig = go.Figure(go.Indicator(
    mode = "number+gauge+delta", value = 220,
    domain = {'x': [0.1, 1], 'y': [0, 1]},
    title = {'text' :"<b>Profit</b>"},
    delta = {'reference': 200},
    gauge = {
        'shape': "bullet",
        'axis': {'range': [None, 300]},
        'threshold': {
            'line': {'color': "red", 'width': 2},
            'thickness': 0.75,
            'value': 280},
        'steps': [
            {'range': [0, 150], 'color': "lightgray"},
            {'range': [150, 250], 'color': "gray"}]}))
fig.update_layout(height = 250)
fig.show()
```

Python: CODE for generating bullet graph



Using made up data to make a waterfall chart

In [10]:
```
df = pd.read_excel(r'C:\\Users\\Kate\\Documents\\Bellevue DS classes\\DSC640\\Waterfall data R.xlsx')
df.head(8)
```

Out[10]:

	x	y
0	Home Purchase Price	225600
1	Upgrade Kitchen	17000
2	Upgrade Mbath	12500
3	Finished Basement	24000
4	Appreciation	60000
5	Realtor Commission	9000
6	Discount to family	-40000

Python: CODE for generating graphs

In [5]:
```
fig = go.Figure()

fig.add_trace(go.Waterfall(x = df["x"],
                           y = df["y"],
                           base = 0,   #by default
                            connector = {"line":{"dash":"dot"}}, #get dotted line as connector
                            textposition = "outside",
                            text = df["y"].tolist(),
                            orientation = "v"  #by default
                           ))

fig.update_layout(title = "My change in house value")

fig.show()
```

Python: CODE for generating graphs

In [6]:
```
#Read in data
df = pd.read_csv(r'C:\\Users\\Kate\\Documents\\Bellevue DS classes\\DSC640\\chick_weights.csv')
df.head()
```

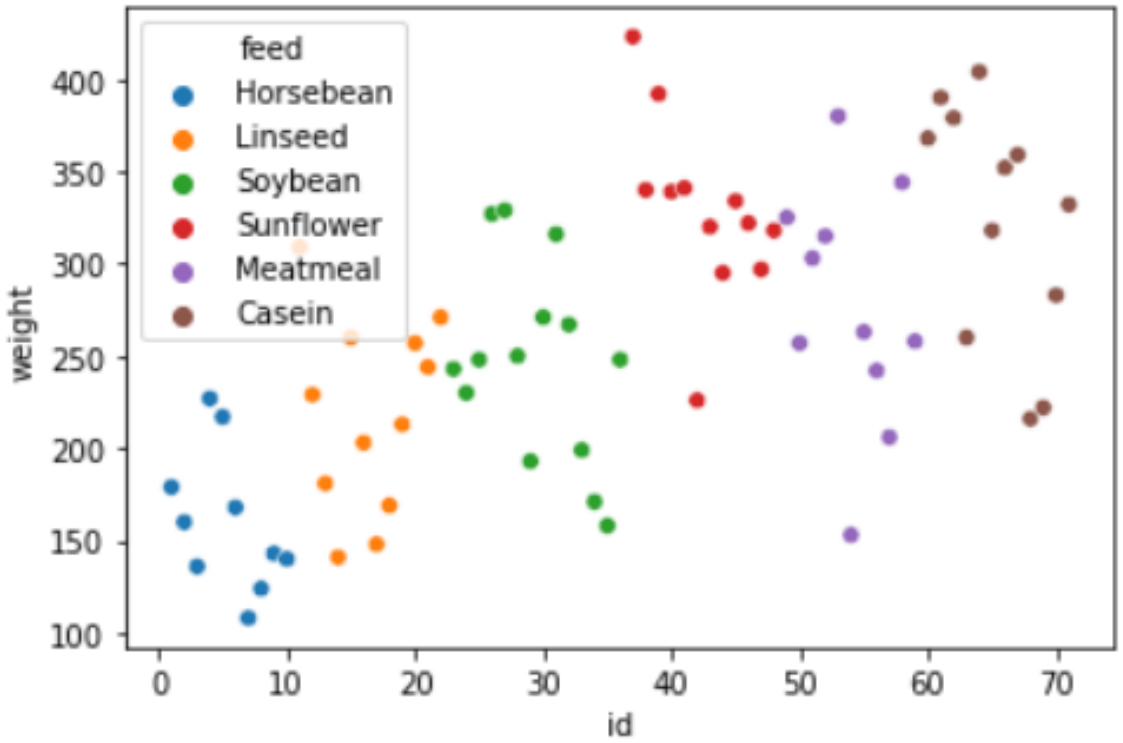
Out[6]:

	id	weight	sex	feed
0	1.0	179.0	male	Horsebean
1	2.0	160.0	male	Horsebean
2	3.0	136.0	female	Horsebean
3	4.0	227.0	male	Horsebean
4	5.0	217.0	female	Horsebean

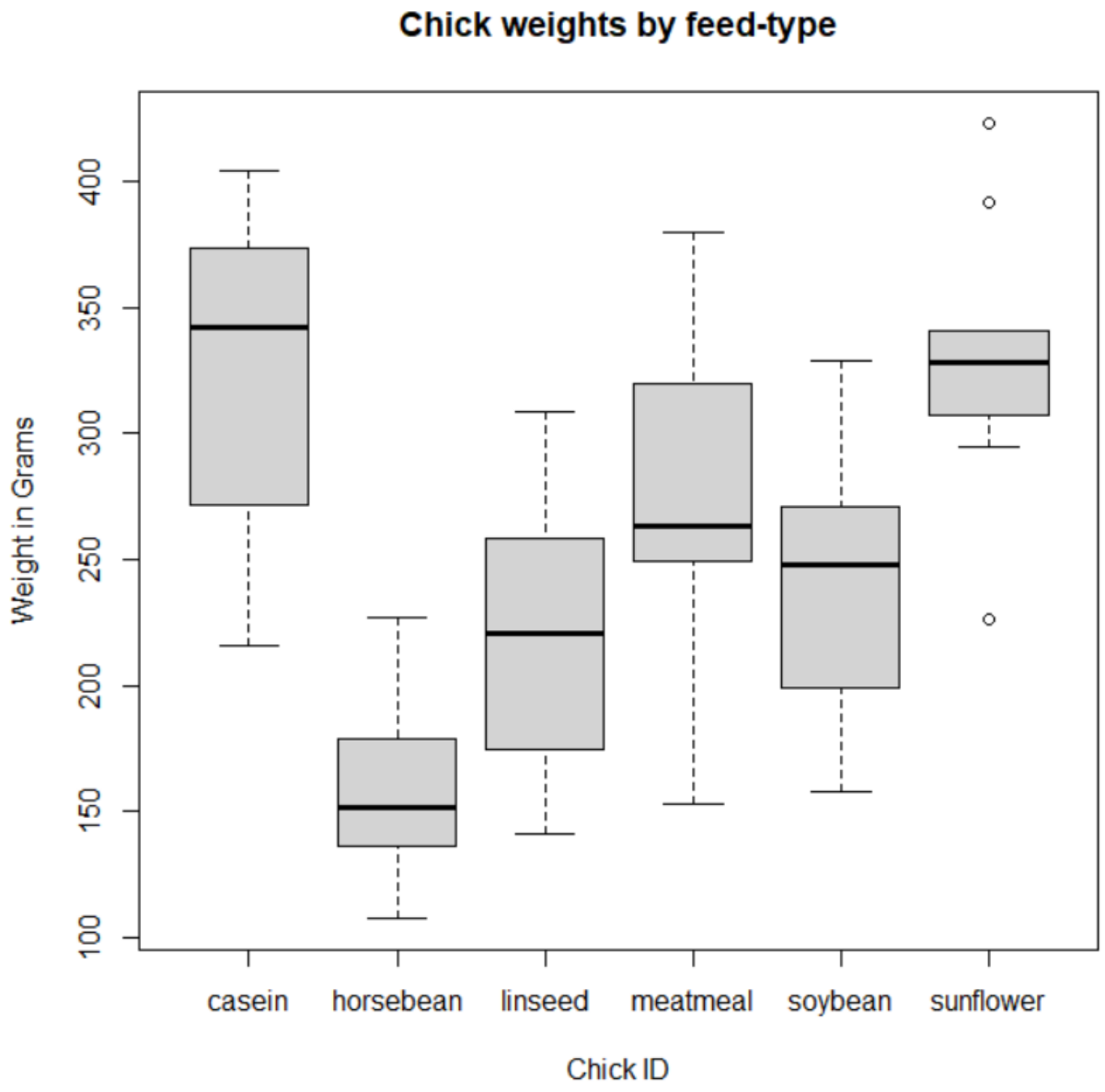
In [7]:
```
#Making box plot of weights of chick based of feedstock
Ax = sns.boxplot(x="feed", y="weight", data=df, palette="coolwarm")
```

Python: CODE for generating scatterplot graph

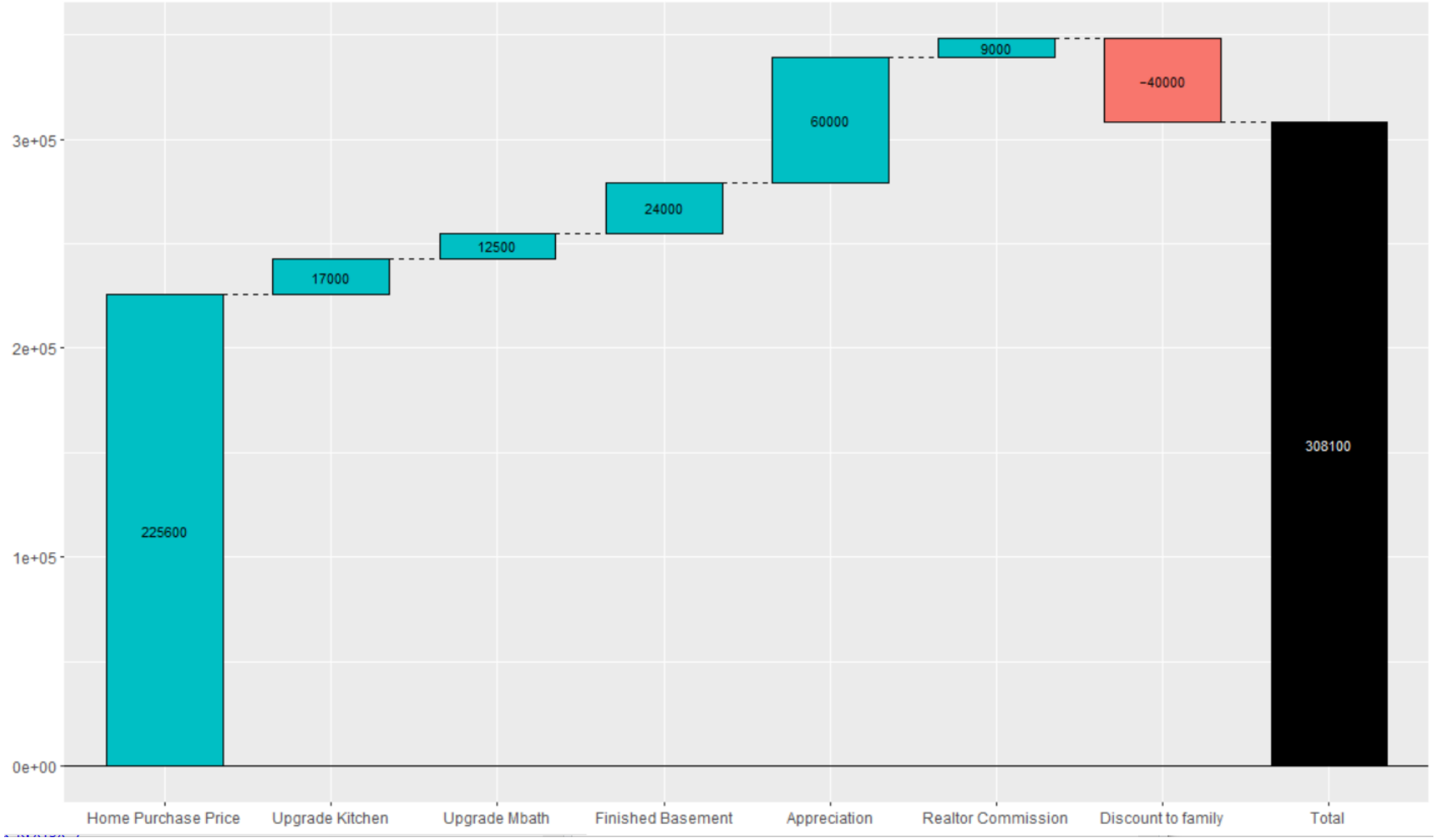
```
In [9]: #Read in data
        #Making scatter plot of weights of chick based of feedstock by color
        Ax = sns.scatterplot(x="id", y="weight", data=df, hue="feed")
```



R: Box Plot

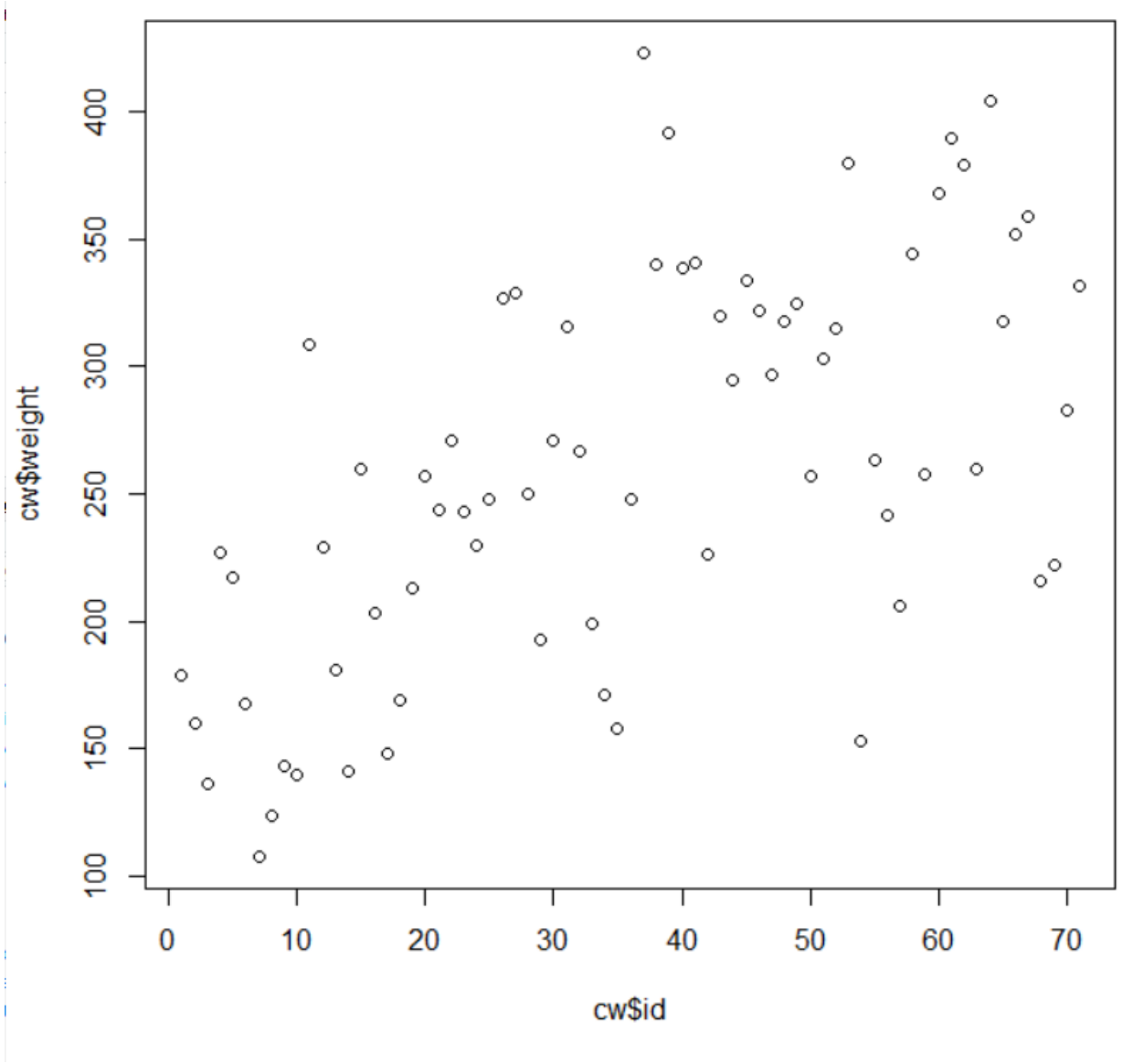

Chick weights by feed-type
Weight in Grams
100
150
200
250
300
350
400
casein
horsebean
linseed
meatmeal
soybean
sunflower
Chick ID

R: Waterfall Plot



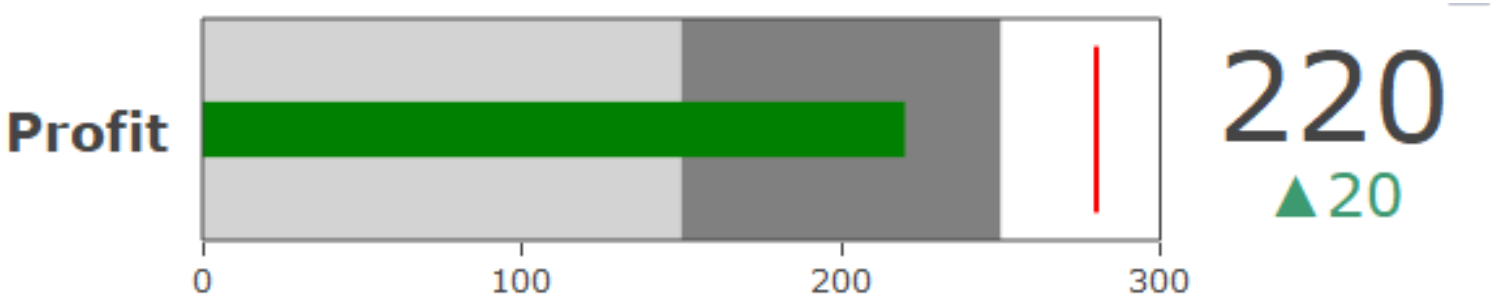
Plot tracking the amounts and pieces of price change of a house between purchase and eventual sale, typically for more.

R: Scatter Plot



Scatter plot of weights against Id number which has no real meaning except that the feed types are clustered together in groups. (Other plots had feed type denoted by color, like the previous Python scatter plot)

R: Bullet Chart



Bullet chart showing a simple example: Amount of profit is the black line, the amount is shown in text to the right. Differently shaded boxes can denote levels such as ‘poor’, ‘good’, ‘excellent’. Target lines drawn in red, and delta showing change since last measurement.

R: CODE for generating graphs

```r
library(waterfalls)
library(ggplot2)
library(readxl)
library(plotly)

setwd("C:/Users/Kate/Documents/Bellevue DS classes/DSC640")
chickwts <- chickwts
# Boxplot of Chick weights by feed-type
boxplot(weight~feed, data=chickwts, main="Chick weights by feed-type",
        xlab="Chick ID", ylab="Weight in Grams")

cw <- read.csv('chick_weights.csv')
#Scatterplot of weights
plot(cw$id, cw$weight)

# Load the data for making a Waterfall chart
wf <- read_excel('Waterfall data R.xlsx')
waterfall(wf, calc_total = TRUE)

```

R: CODE for generating graphs

```
#Making a bullet chart using code found online - very basic since difficult
#Source: https://plotly.com/r/bullet-charts/ (documentation)

fig <- plot_ly(
  type = "indicator",
  mode = "number+gauge+delta",
  value = 220,
  domain = list(x = c(0, 1), y= c(0, 1)),
  title = list(text = "<b>Profit</b>"),
  delta = list(reference = 200),
  gauge = list(
    shape = "bullet",
    axis = list(range = list(NULL, 300)),
    threshold = list(
      line = list(color = "red", width = 2),
      thickness = 0.75,
      value = 280),
    steps = list(
      list(range = c(0, 150), color = "lightgray"),
      list(range = c(150, 250), color = "gray"))),
  height = 150, width = 600)
fig <- fig %>%
  layout(margin = list(l= 100, r= 10))

fig
```