Price Sensitivity Model

```r
# Load packages
library(tidyverse)
```

```
## Warning: package 'tidyverse' was built under R version 4.1.2
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.6     v dplyr   1.0.7
## v tidyr   1.1.4     v stringr 1.4.0
## v readr   2.0.0     v forcats 0.5.1
```

```
## Warning: package 'tibble' was built under R version 4.1.2
```

```
## Warning: package 'tidyr' was built under R version 4.1.2
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```r
library(here)
```

```
## here() starts at C:/Users/rmunn/OneDrive/MEDS/Almond_Modeling
```

```r
library(purrr)
```

```r
source(here("almond_price_fluctuation_revised.R"))

#Number of random samples we want to produce.
n_samples = 300

anomaly = rnorm(mean = 0, sd = 1, n = n_samples)
# According to Google, the mean price per ton on almonds is 3676. As such, we chose 15% +/- that price
mean_price = runif(min = 3125,
                   max = 4227,
                   n = n_samples)
# Append our calculated values to a dataframe.
price_df = cbind.data.frame(anomaly, mean_price)
```

```
# For loop to create 300 random profits based on anomalies of almond yields and net average price of al
for (i in 1:n_samples) {
  profit = almond_price_flucutation_revised(yield_anomaly = price_df$anomaly[i],
                                            mean_almond_price = price_df$mean_price[i],
                                            # Change based on number of acres
                                            num_of_acres = 1,
                                            # Change based on average yield of almonds per acre
                                            base_yield = 1)
  price_df$profit[i] = profit
}
```

```
almond_price_chart = ggplot(data = price_df, aes(x = anomaly, y = profit, color = profit)) + geom_point
  scale_color_continuous(low="red", high="blue") +
    theme_minimal() +
  labs(title = "Estimated Profit Variance Based on Almond Yield Anomaly",
       x = "Anomaly",
       y = "Profit Variance",
       caption = "Variance is based on the number of acres provided and price per average ton of almonds
```

```
almond_price_chart
```


Estimated Profit Variance Based on Almond Yield Anomaly
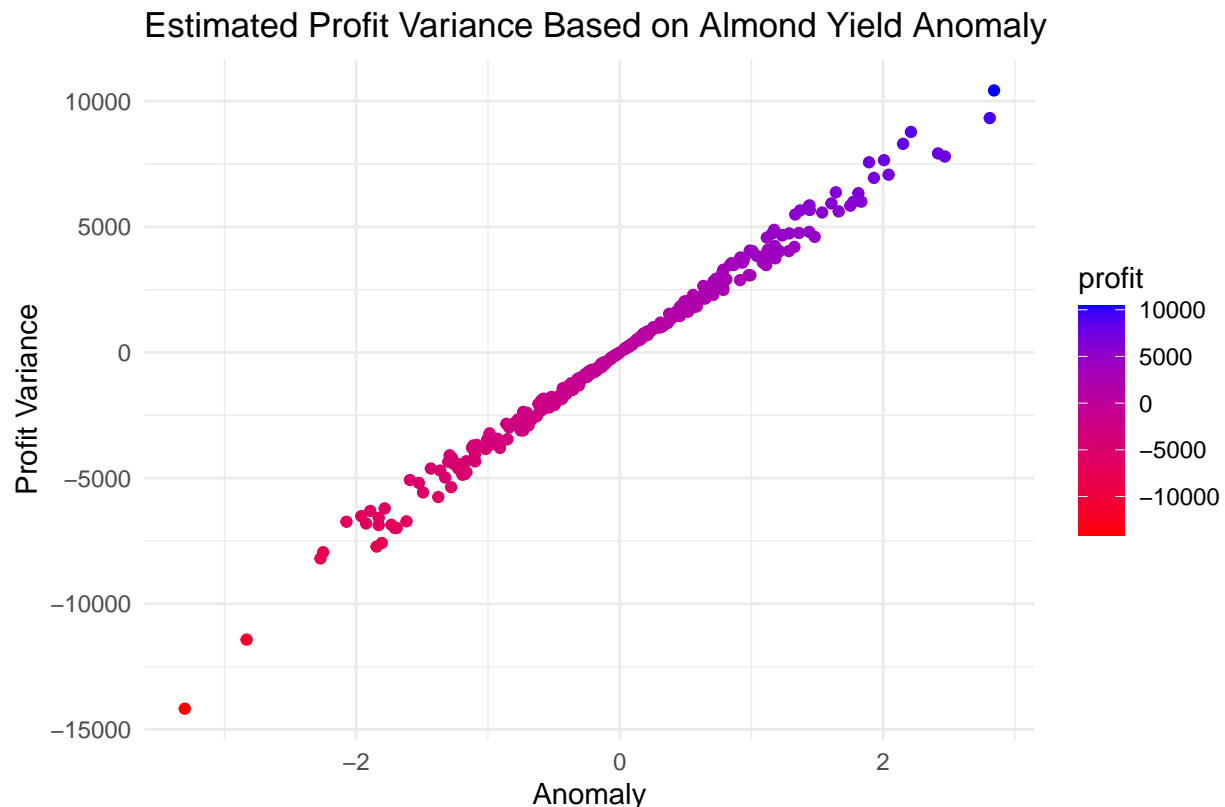
Variance is based on the number of acres provided and price per average ton of almonds.

```
ggsave("almond_price_sensitivity.png", almond_price_chart)
```

```
## Saving 6.5 x 4.5 in image
```