Yeanie Lamin

{Data Analytics Portfolio}

Table of Contents

Hi, I’m Yeanie.

I am a recent Medical Physiology graduate, with experience in R code and GraphPad Prism. I find that R is commonly used in scientific research, but less so in other industries.

I joined the Cambridge Sparks Skills Bootcamp to improve my use of Microsoft Excel and widen my knowledge of commonly used programs such as Python and SQL.

www.linkedin.com/in/yeanie-lamin-404206162 yeaniel30@gmail.com

The value of data for organisations

Data can be defined as information that is stored or used by a computer. Data can be numerical, text-based, date and time-based, or Boolean.

Data follows 7 principles, known as the “7 Vs”. Today, there is a large *volume* of data that can be gathered quicker than ever at high *velocity*. Data can be present in a *variety* of formats, from a wide range of sources including websites, financial reports, social media, government polls, healthcare, and bank statements. Data is also *variable* and can have different distribution patterns or frequencies. Data has flexible *veracity*, which means that it can differ in accuracy, precision, and trustworthiness. Data can also be *visualised* to communicate information about what data means. Finally, data has *value*, as different types of data are important to different types of organisations.

Organisations gather data to better understand trends. In doing so, organisations can market products or services more effectively and increase their revenue or impact in an industry. A pharmaceutical company like GSK would find scientific research highly valuable to create products to treat specific disorders. Whereas a social media company such as Meta would find the type of content people post and the way people interact with content valuable to increase the number of users of its platforms. A financial services provider such as JP Morgan would find financial transactions valuable to determine the best stocks and bonds to buy and sell.

The value of data has increased with the wide availability of data, allowing organisations to respond to trends more accurately. Therefore, organisations can increase their revenue, and significance in a specific industry.

Yeanie Lamin

Can α-ketoglutarate improve the activity levels of *Nasonia vitripennis*?

Background

This project is based on my university research experiment, which investigated the effects of alpha-ketoglutarate (AKG) on the movement of *Nasonia vitripennis*. The aim of the study was to determine if AKG could increase the healthspan of *N. vitripennis*. AKG is a naturally occurring compound in our bodies, that forms part of the Krebs cycle. Various studies have shown that dietary AKG can be associated with an increase in healthspan.

My study became of interest due to the human ageing process, where ageing can be defined as a gradual decline in physiological function, eventually leading to death. In our modern world, the life expectancy of individuals in many countries is increasing although many of individuals are not leading healthier lives. This is associated with a variety of factors such as being female, being from a lower socioeconomic background or obesity.

Yeanie Lamin

The Background

The Effect of *Alpha-ketoglutarate* on *Nasonia vitripennis*

Problems with an ageing population

Many countries around the world have an ageing population, due to an increase in life expectancy and low birth rates. Although in many industrialised nations, people are not living healthier lives despite living longer. Studies have shown that approximately 16 – 20% of later life is spent in ill health. Additionally, these studies have found that those who are female, from a lower socioeconomic background or obese are at risk of ill health in the latter stages of life.

Nasonia vitripennis

Nasonia vitripennis is a parasitic wasp that uses the larvae of Blowflies and similar species as a host. *N. vitripennis* was used as an animal model due to the species experiencing DNA methylation at specific motifs in their cytosine residues. DNA methylation is the transfer of a methyl group from S-adenyl methionine to a DNA sequence. This process typically occurs at specific points in DNA including cytosine and adenosine residues. DNA methylation is thought to be an epigenetic cause of ageing in humans and some other multicellular organisms. Unlike *N. vitripennis*, other distantly related species such as bees and ants do not experience this type of DNA methylation.

Sample

My study had two groups of male and female *N. vitripennis*. The experimental group were fed AKG and sucrose solution. Whilst the control group was just fed sucrose solution.

Experimental Design

My study measured five aspects of activity in the wasps. This included the percentage of time spent moving and the number of:

- Jumps
- Hops – defined by a distance of less than 2cm.
- Short flights – defined by a distance of 2 – 4cm.
- Long flights – defined by a distance oy more than 4cm.

Yeanie Lamin

Analysing My Data

The Effect of *Alpha-ketoglutarate* on *Nasonia vitripennis*

Tools

R Studio (R code)

 # Sourcing my data

```
library(readxl)
jumps <- read_excel("~/Data Analyst Portfolio/AKG on Activity
Levels/jumps.xlsx")
## New names:
## • `` -> `...2`
```

Wrangling Data

 # Rename columns in the table

```
names(jumps)[2] <- "sex"
names(jumps)[3] <- "treatment"
names(jumps)[4] <- "jumps.no"
names(jumps)[5] <- "short.flight"
names(jumps)[6] <- "long.flight"
```

 # Changing the format of the vector - POSIXct to character in minutes and seconds

```
jumps$`Moving Time` <-as.character(jumps$`Moving Time`, format="%M:%S")
jumps$`Stopped Time` <-as.character(jumps$`Stopped Time`,
format="%M:%S")
```

 # Creating a new column in the table - time in seconds

```
library(lubridate)
##
## Attaching package: 'lubridate'
## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
jumps$Moving.Time <-as.numeric(ms(jumps$`Moving Time`))
jumps$Stopped.Time <-as.numeric(ms(jumps$`Stopped Time`))
```

 # Creating a new column in the table - percentage of time spent moving

```
jumps$percent <- (jumps$Moving.Time/
                    (jumps$Stopped.Time+jumps$Moving.Time))*100
```

Visualising my data

```
library(ggplot2)
```

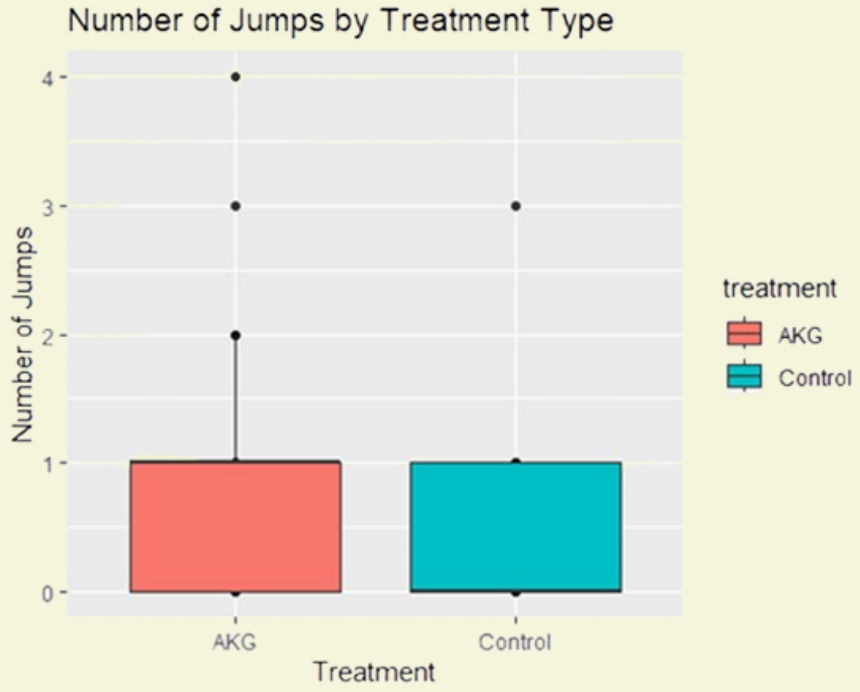

Yeanie Lamin

The Results

The Effect of *Alpha-ketoglutarate* on *Nasonia vitripennis*

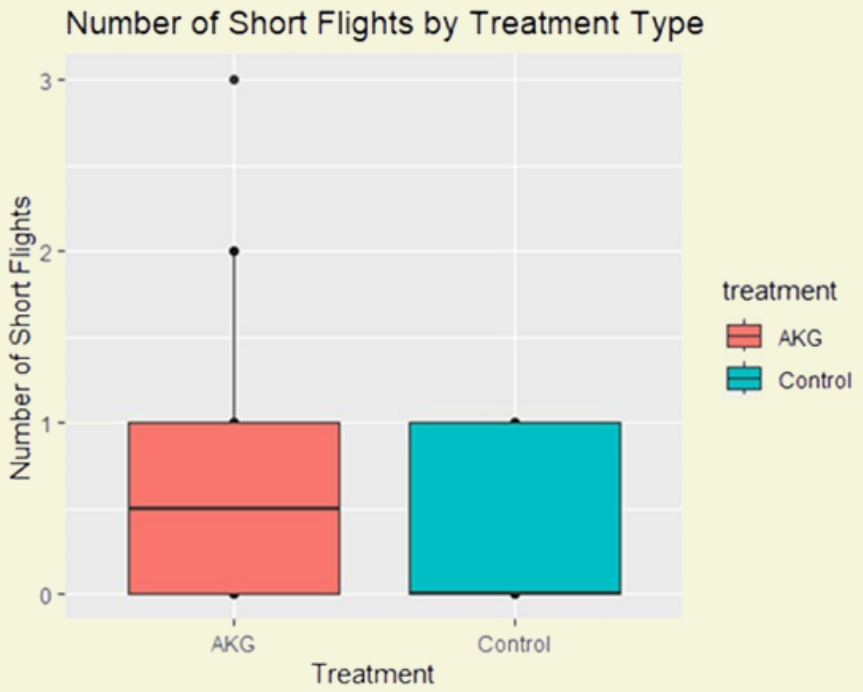
 # Boxplot for the number of jumps

```
ggplot(jumps, aes(x=treatment, y=jumps.no, fill=treatment)) +
  geom_point() + geom_boxplot() +
  xlab("Treatment") +
  ylab("Number of Jumps") +
  ggtitle("Number of Jumps by Treatment Type")
```



 # Boxplot for the number of short flights

```
ggplot(jumps, aes(x=treatment, y=short.flight, fill=treatment)) +
  geom_point() + geom_boxplot() +
  xlab("Treatment") +
  ylab("Number of Short Flights") +
  ggtitle("Number of Short Flights by Treatment Type")
```

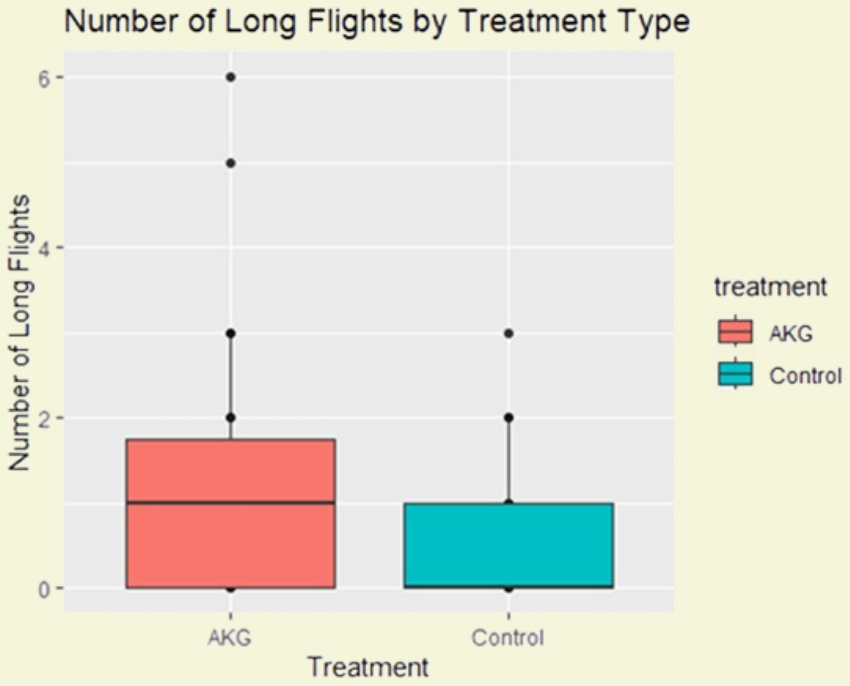


The Results

The Effect of *Alpha-ketoglutarate* on *Nasonia vitripennis*

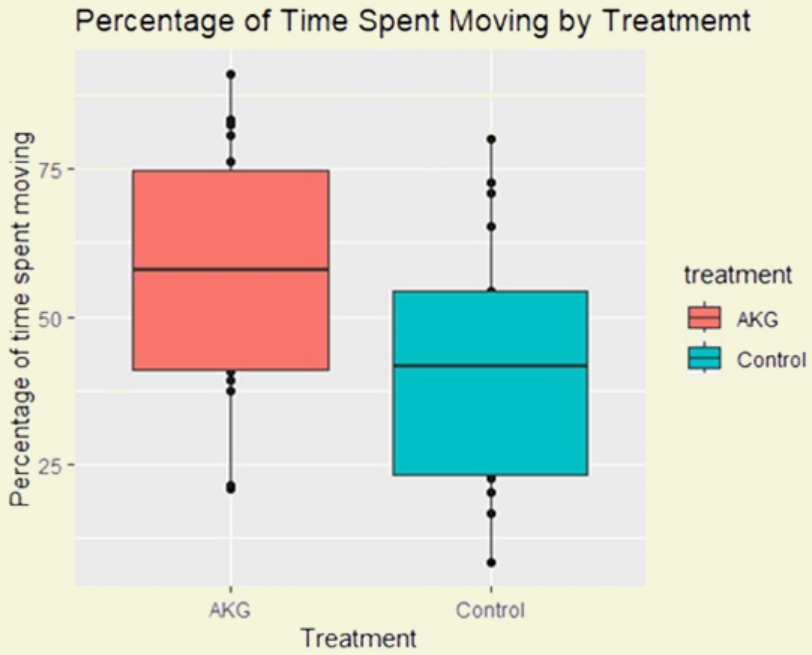
 # Boxplot for the number of long flights

```
ggplot(jumps, aes(x=treatment, y=long.flight, fill=treatment)) +
  geom_point() + geom_boxplot() +
  xlab("Treatment") +
  ylab("Number of Long Flights") +
  ggtitle("Number of Long Flights by Treatment Type")
```



 # Boxplot for the percentage of time spent moving

```
ggplot(jumps, aes(x=treatment, y=percent, fill=treatment)) +
  geom_point() + geom_boxplot() +
  xlab("Treatment") +
  ylab("Percentage of time spent moving") +
  ggtitle("Percentage of Time Spent Moving by Treatment")
```



Statistics

The Effect of *Alpha-ketoglutarate* on *Nasonia vitripennis*

Statistical tests

Wilcoxon tests for the number of jumps, short flights, and long flights

```
wilcox.test(formula = jumps.no ~ treatment, data = jumps, exact=FALSE)
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  jumps.no by treatment
## W = 239.5, p-value = 0.09922
## alternative hypothesis: true location shift is not equal to 0
```

```
wilcox.test(formula = short.flight ~ treatment, data = jumps,
exact=FALSE)
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  short.flight by treatment
## W = 223.5, p-value = 0.2467
## alternative hypothesis: true location shift is not equal to 0
```

```
wilcox.test(formula = long.flight ~ treatment, data = jumps,
exact=FALSE)
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  long.flight by treatment
## W = 246.5, p-value = 0.07075
## alternative hypothesis: true location shift is not equal to 0
```

Statistics

The Effect of *Alpha-ketoglutarate* on *Nasonia vitripennis*

#Poisson regression

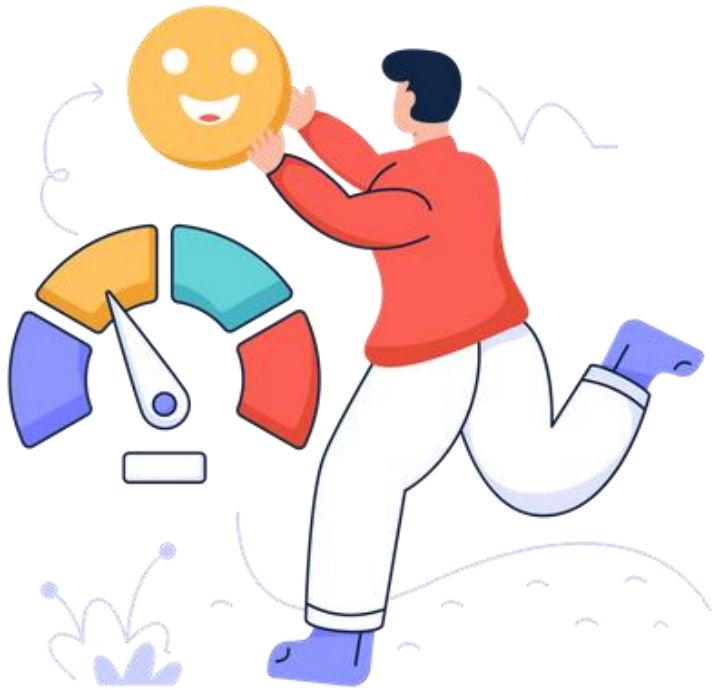
```
Poisson_model <- glm(jumps.no + short.flight + long.flight +
                       percent ~ treatment,
                     data = jumps, family = poisson(link= "log"))

## Warning in dpois(y, mu, log = TRUE): non-integer x = 37.500000

## Warning in dpois(y, mu, log = TRUE): non-integer x = 74.333333

## Warning in dpois(y, mu, log = TRUE): non-integer x = 72.166667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 44.762063

## Warning in dpois(y, mu, log = TRUE): non-integer x = 71.833333

## Warning in dpois(y, mu, log = TRUE): non-integer x = 45.666667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 72.166667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 23.666667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 48.666667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 41.166667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 67.666667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 21.333333

## Warning in dpois(y, mu, log = TRUE): non-integer x = 44.500000

## Warning in dpois(y, mu, log = TRUE): non-integer x = 8.500000

## Warning in dpois(y, mu, log = TRUE): non-integer x = 24.666667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 58.333333

## Warning in dpois(y, mu, log = TRUE): non-integer x = 31.833333

## Warning in dpois(y, mu, log = TRUE): non-integer x = 66.166667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 23.333333
```

```
## Warning in dpois(y, mu, log = TRUE): non-integer x = 41.666667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 41.500000

## Warning in dpois(y, mu, log = TRUE): non-integer x = 56.217391

## Warning in dpois(y, mu, log = TRUE): non-integer x = 88.794702

## Warning in dpois(y, mu, log = TRUE): non-integer x = 51.666667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 44.529750

## Warning in dpois(y, mu, log = TRUE): non-integer x = 37.628866

## Warning in dpois(y, mu, log = TRUE): non-integer x = 79.333333

## Warning in dpois(y, mu, log = TRUE): non-integer x = 84.392027

## Warning in dpois(y, mu, log = TRUE): non-integer x = 87.695507

## Warning in dpois(y, mu, log = TRUE): non-integer x = 83.333333

## Warning in dpois(y, mu, log = TRUE): non-integer x = 99.014975

## Warning in dpois(y, mu, log = TRUE): non-integer x = 74.787980

## Warning in dpois(y, mu, log = TRUE): non-integer x = 80.033278

## Warning in dpois(y, mu, log = TRUE): non-integer x = 16.666667

## Warning in dpois(y, mu, log = TRUE): non-integer x = 52.059308
```

Printing my Poisson regression model

```
##
## Call:  glm(formula = jumps.no + short.flight + long.flight +
percent ~
##     treatment, family = poisson(link = "log"), data = jumps)
##
## Coefficients:
##      (Intercept)  treatmentControl
##           4.1065           -0.3407
##
## Degrees of Freedom: 38 Total (i.e. Null);  37 Residual
## Null Deviance:       419.8
## Residual Deviance: 363.2     AIC: Inf
```

The Customer Satisfaction Project



Tools

Microsoft
Power BI

About The Data

A dataset based on customer reviews on Google Maps of a group of restaurants in Turkey.

The dataset contains:

- Restaurant names
- Author names
  - Text
  - Photos
  - Rating
  - Rating category – considers *taste, menu, and indoor and outdoor atmosphere*.

Source: *Deniz Bilgin*. Google Maps Restaurant Reviews (kaggle.com)

Yeanie Lamin

Cleaning Process

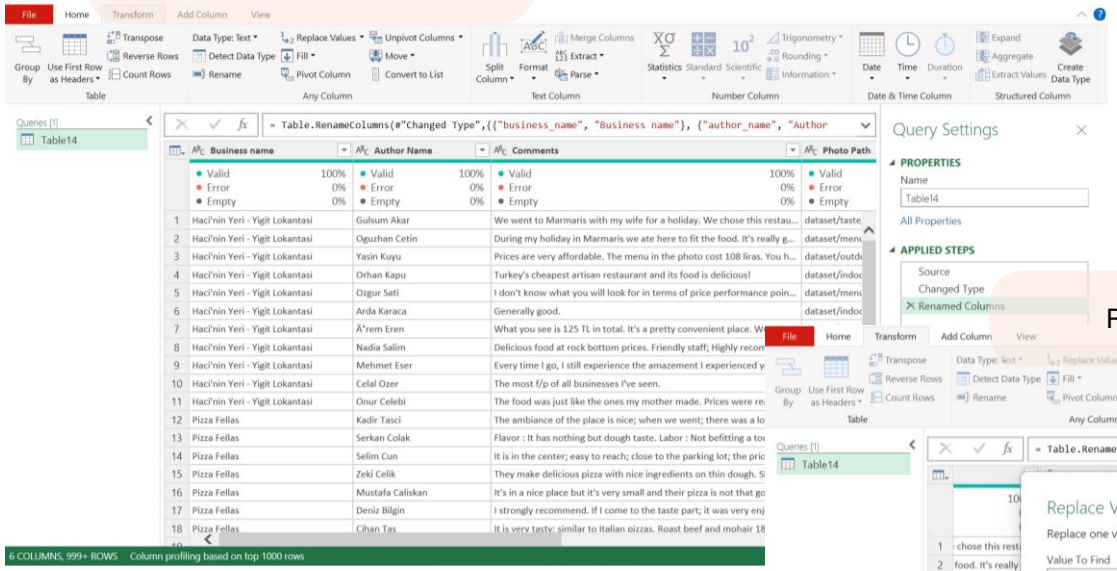
The Customer Satisfaction Project

- Imported data into Power Query
- Renamed columns
- Replaced values

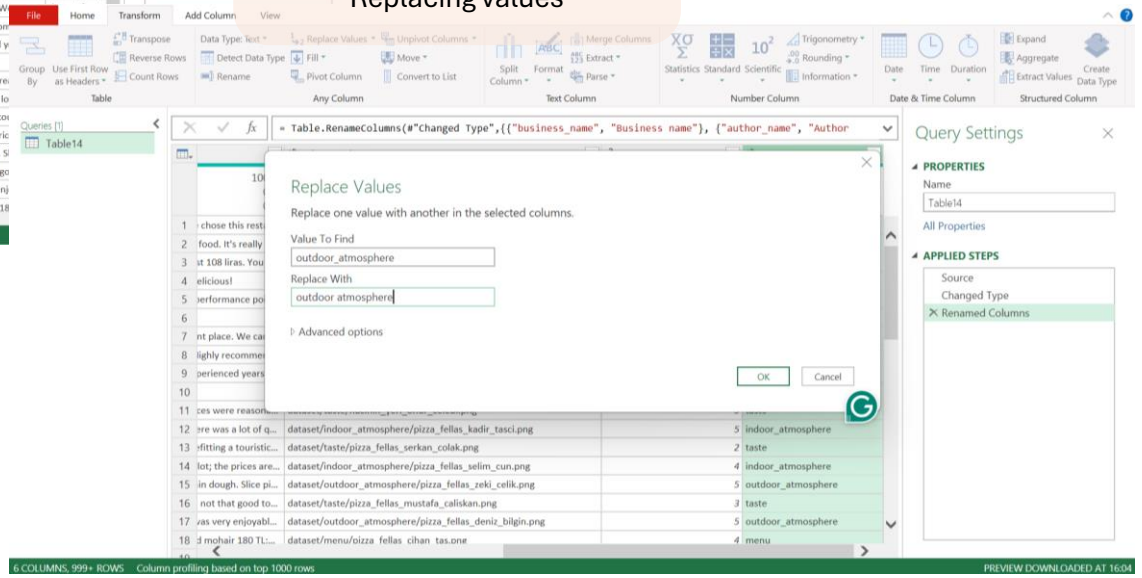
e.g.

outdoor_atmosphere → outdoor atmosphere

Renaming columns



Replacing values



Cleaning Process

The Customer Satisfaction Project

- Added a conditional column

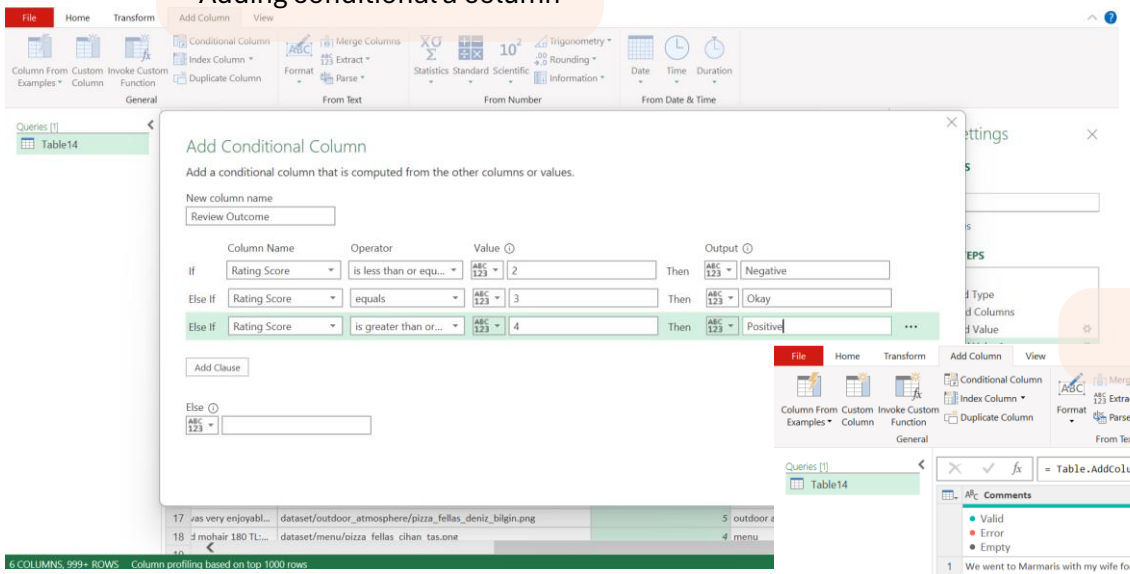
Review outcomes to suggest if comments were overall:

- Positive
- Negative
- Okay

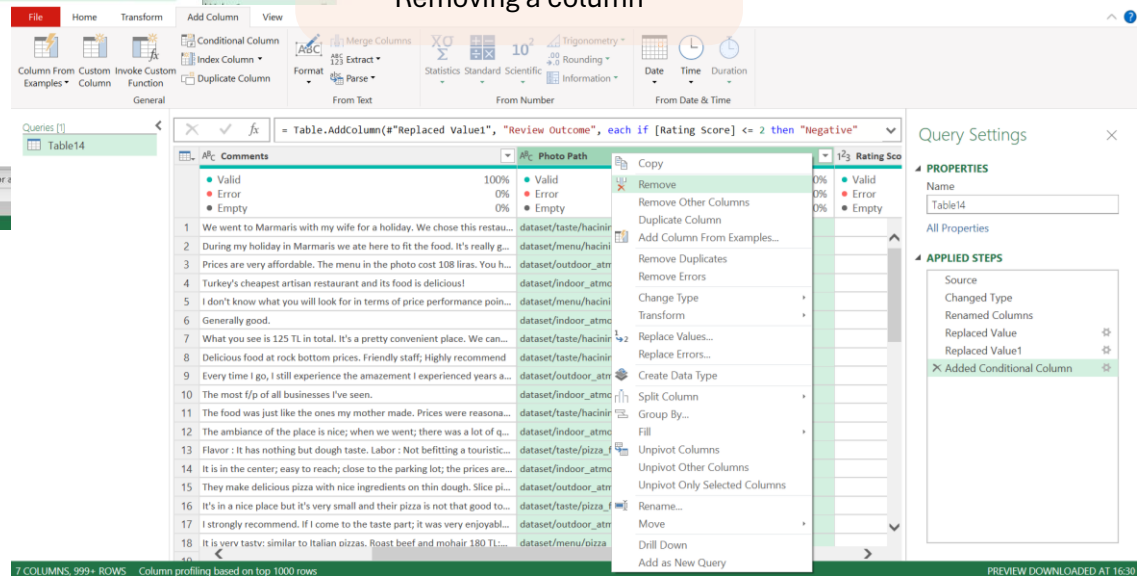
- Removed columns

Removed a photo path column.

Adding conditional a column

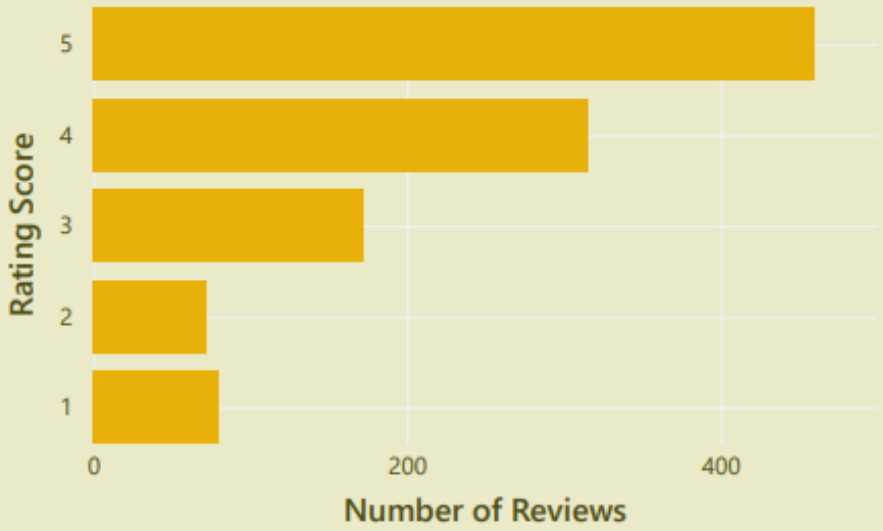


Removing a column



Yeanie Lamin

Rating Score by Number of Reviews

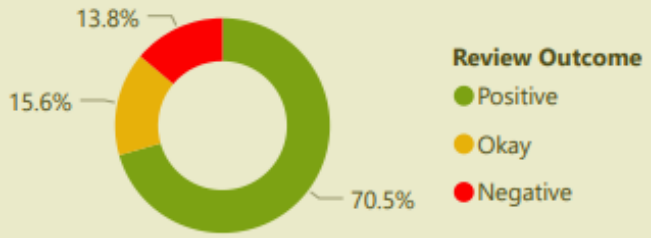


Restaurants

Abidin Tantuni

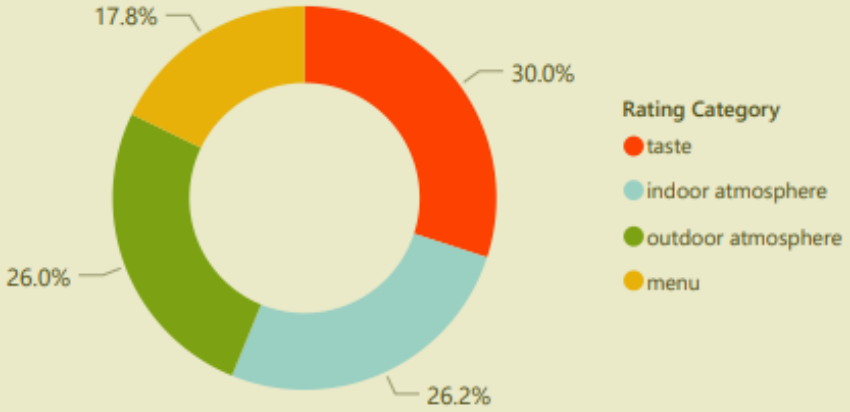
Ahsap Iskender

Customer Satisfaction



Average Score

Percentage of Reviews by Rating Category



Business name	Comments
Zula	Burgers are great hot dogs do. It is very interesting that french fries are 114 TL.
Zula	Burgers are super. I've eaten hamburgers in many places; but I've never come across anything like t meal with friendly service in a small but cozy place. I strongly recommend.
Zula	Hamburger is really delicious. The fries are normal.
Zula	In general; I was satisfied; since the hamburger is a little small; it will be more satisfying if the one w grammage is chosen.
Zula	It is delicious in everything with its sauce and bread.
Zula	It was one of the best burgers I've ever eaten. The only downside is that the portion is a little small. it is definitely a place to experience.
Zula	Surprised location; but nice clean venue. The employees are friendly; I don't want to comment on th were too high..
Zula	The best hamburger restaurant in Istanbul. Cooking and sauce is very good.

The Brewery Operations Project

Tools

Microsoft Excel

About the data

A dataset on craft beer production of a company in Bangalore, India which consists of sales, beer quality, and brewing operations parameters.

Source

Ankur Napa. Brewery Operations and Market Analysis Dataset (kaggle.com)

Yeanie Lamin

The Sales Problem

The Brewery Operations Project

A craft brewery company in India saw sales decrease in January by **$30 million** a day.

The craft brewery company wanted to increase its sales in February back up to $70 million a day minimum.

The craft brewery company wanted to increase sales by improving the efficiency of its brewery operations.

Yeanie Lamin

Sales Breakdown

The Brewery Operations Project

Highest sales
Jayanagar, Bangalore
$107 million

Lowest sales
Electronic City, Bangalore
$102 million

Most sold beverage
Stout
$132.2 million

Least sold beverage
Wheat Beer
$129.8 million

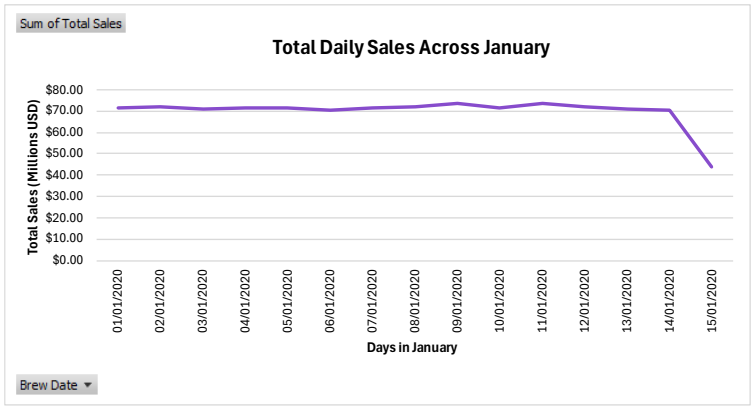
Most sold stock keeping unit
Cans
$264.0 million

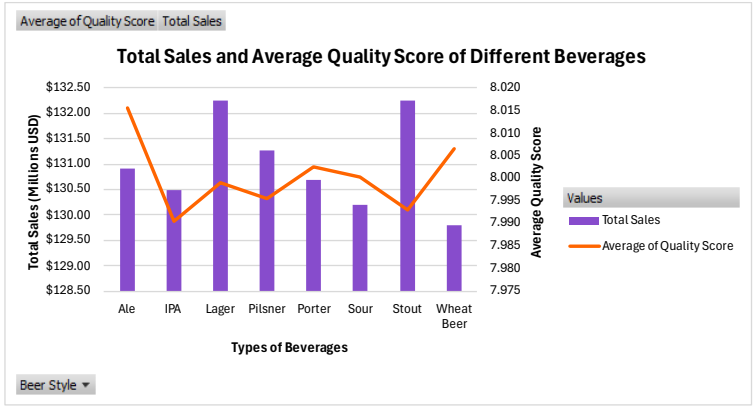
Least sold stock keeping unit
Kegs
$259.8 million

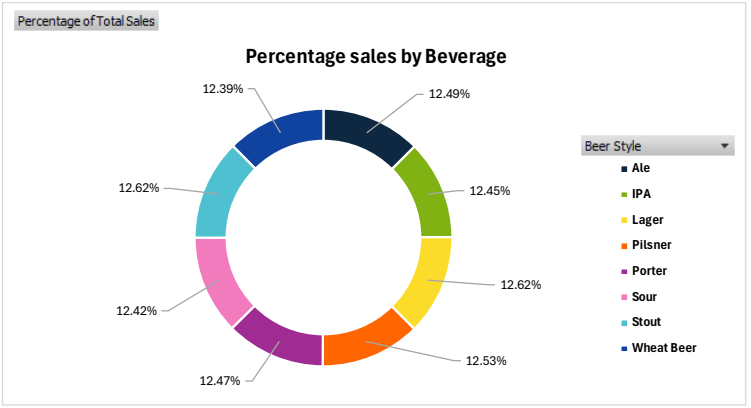
Yeanie Lamin

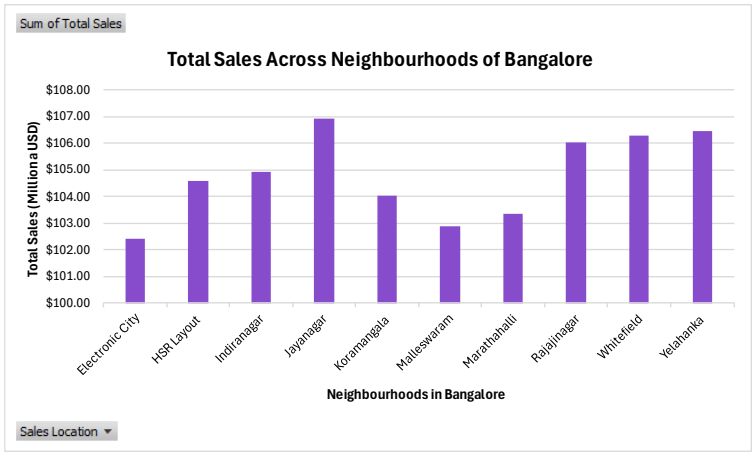
Sales Breakdown

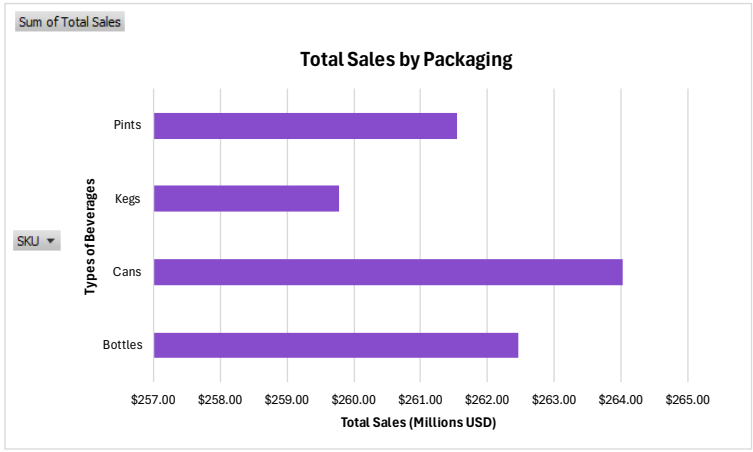
The Brewery Operations Project

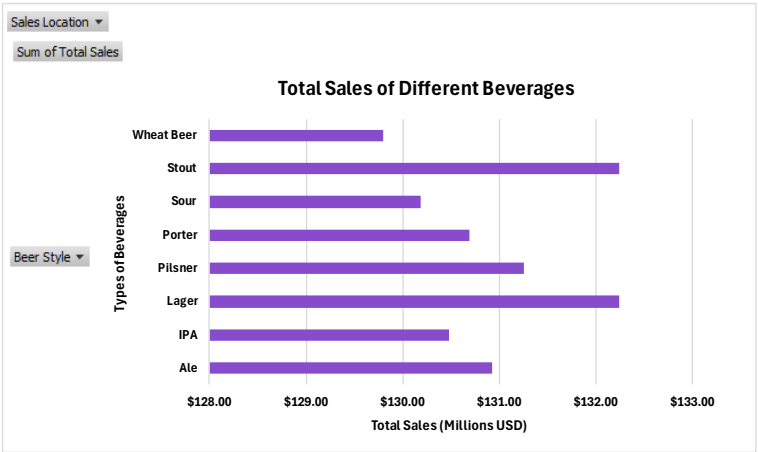


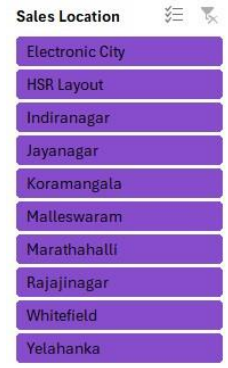












Yeanie Lamin

Operations Breakdown

The Brewery Operations Project

SKU With The Highest Quality Score
Bottles
8.0099/10.0000

SKU With The Lowest Quality Score
Pints
7.9910/10.0000
*Cans – close second

Beverage With The Highest Quality Score
Ale
8.0150/10.0000

Beverage With The Lowest Quality Score
IPA
7.9905/10.0000
*Stout – close second

Most produced SKU
Cans
69.4 million litres
*Kegs – close second

Least produced SKU
Pints
68.3 million litres

Ingredients ratio
All beverages
Similar ratio of water: grain: hops

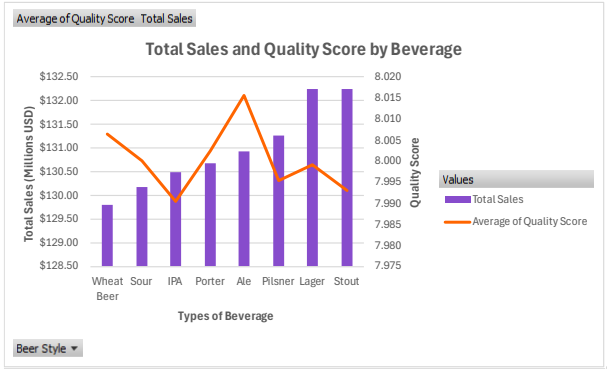
Beverage With The Most Wastage
Stout & Larger
Highest volume loss during fermentation, brewing and bottling & kegging

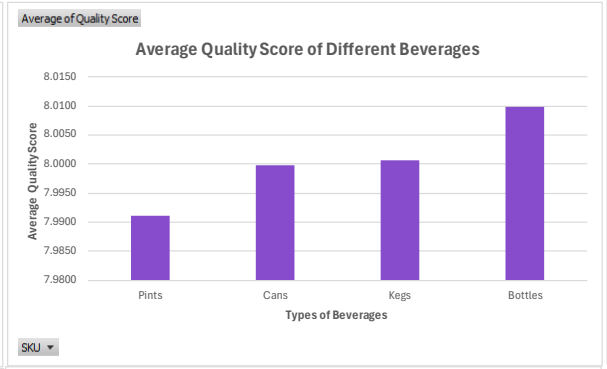
Beverage With The Least Wastage
Sour
Lowest volume loss during fermentation, brewing and bottling & kegging

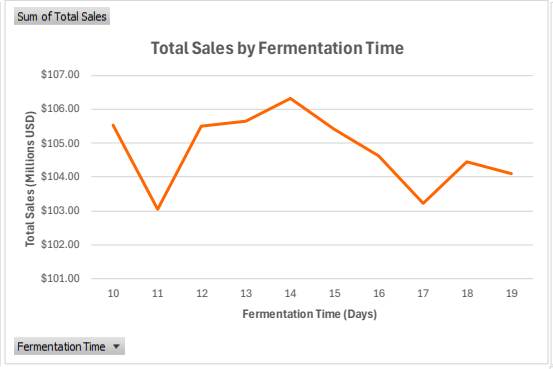
Yeanie Lamin

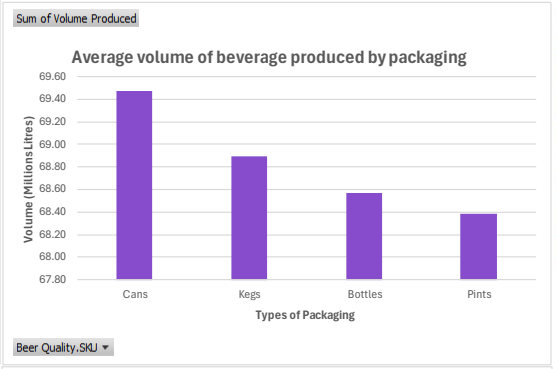
Operations Breakdown

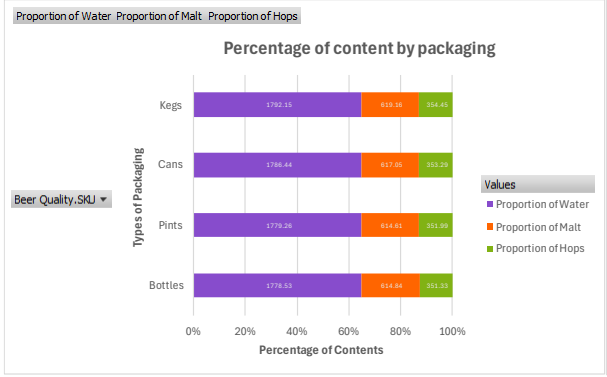
The Brewery Operations Project

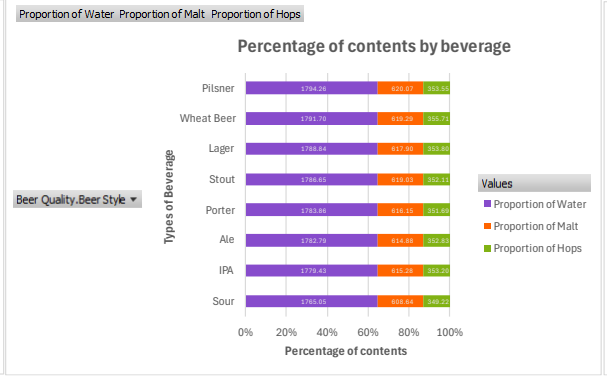


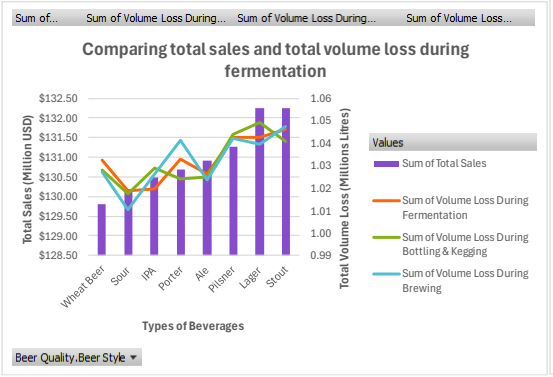


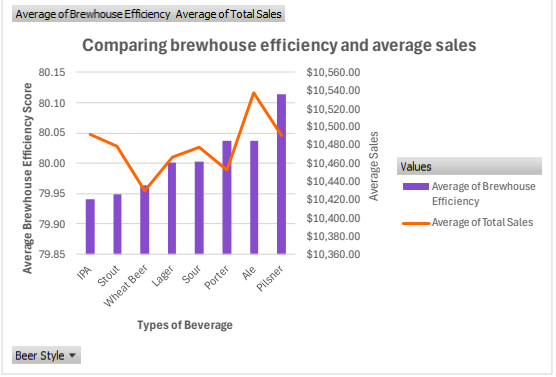












Conclusion

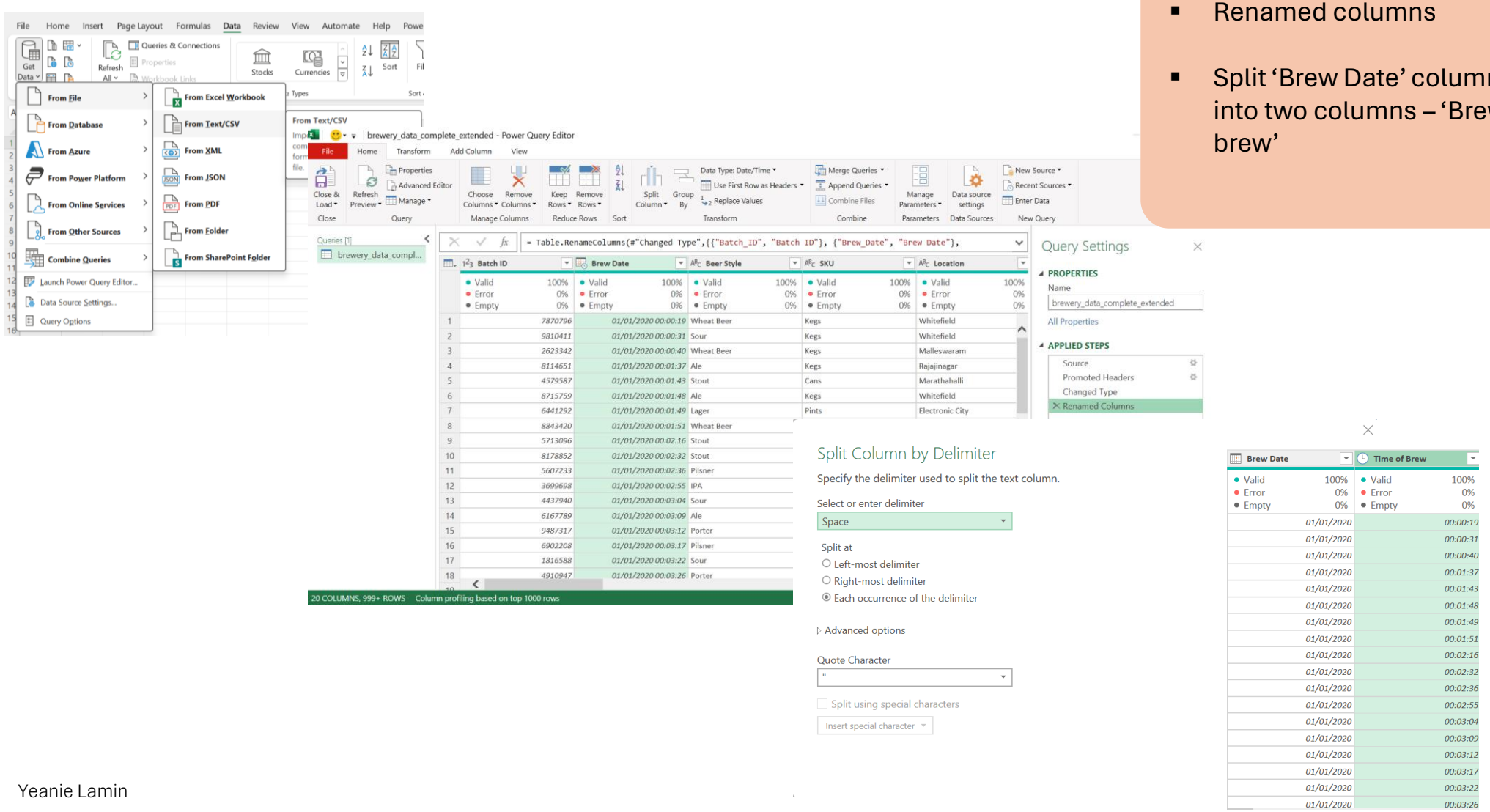
Beer quality is not the main factor that drives sales.
Produce less kegs.
Produce less wheat beer, to save costs.

Yeanie Lamin

The Cleaning Process

The Brewery Operations Project

- Imported the data into Power Query
- Renamed columns
- Split ‘Brew Date’ column by a space delimiter into two columns – ‘Brew date’ ana ‘Time of brew’

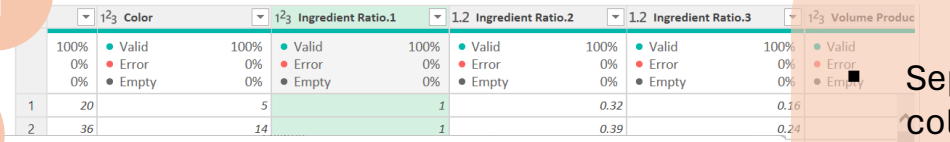


Yeanie Lamin

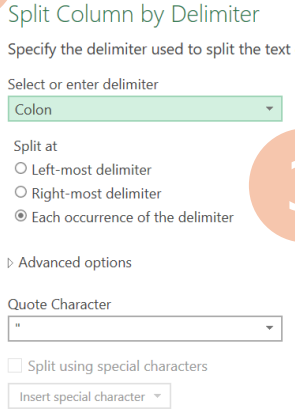
The Cleaning Process

The Brewery Operations Project

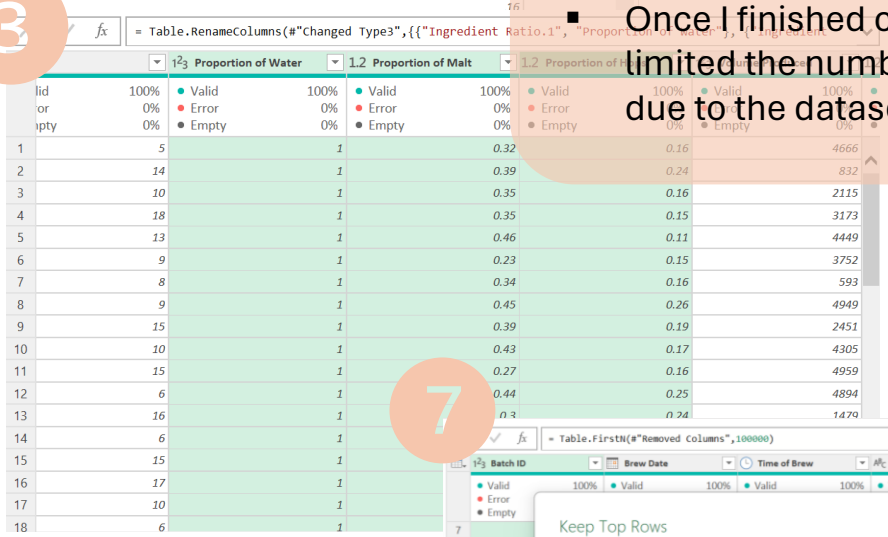
1



2

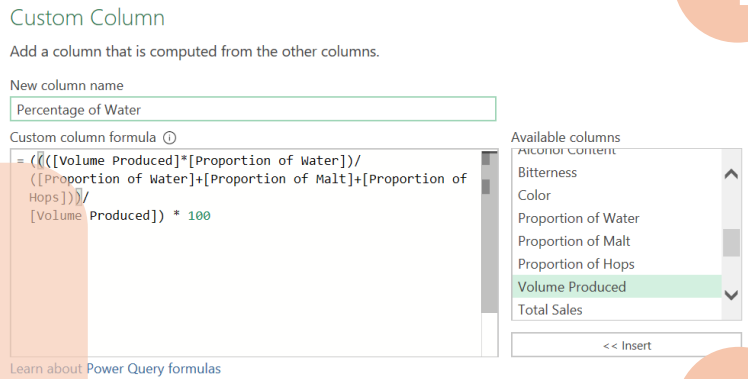


3

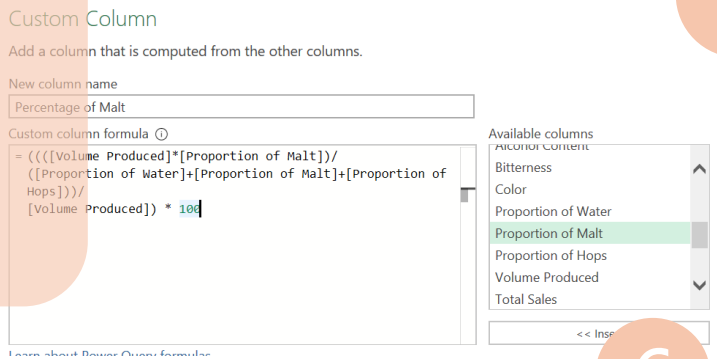


- Separated the 'ingredients ratio' by a colon delimiter into three columns.
- Renamed the tree columns and converted them into a percentage.
- Once I finished cleaning the data, I limited the number of rows to 100,000 due to the dataset being voluminous.

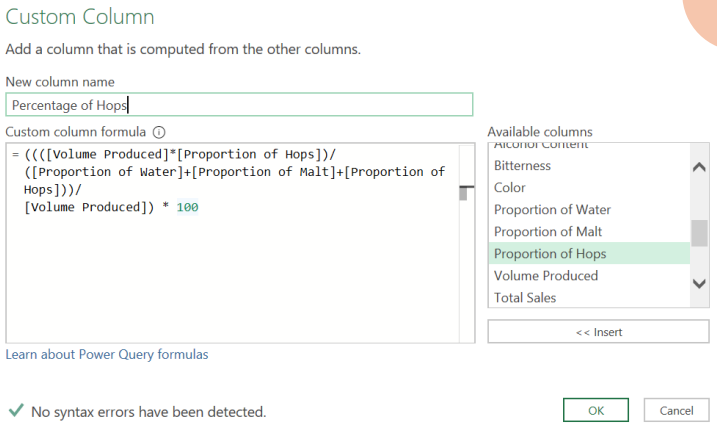
4



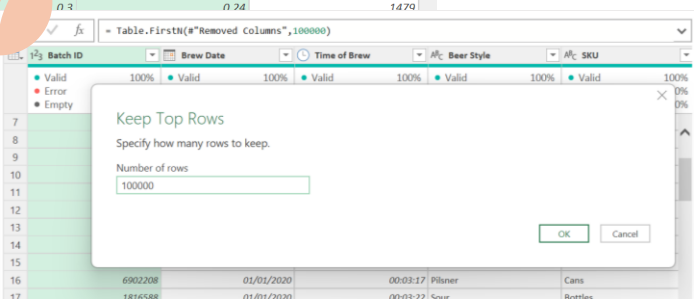
5



6



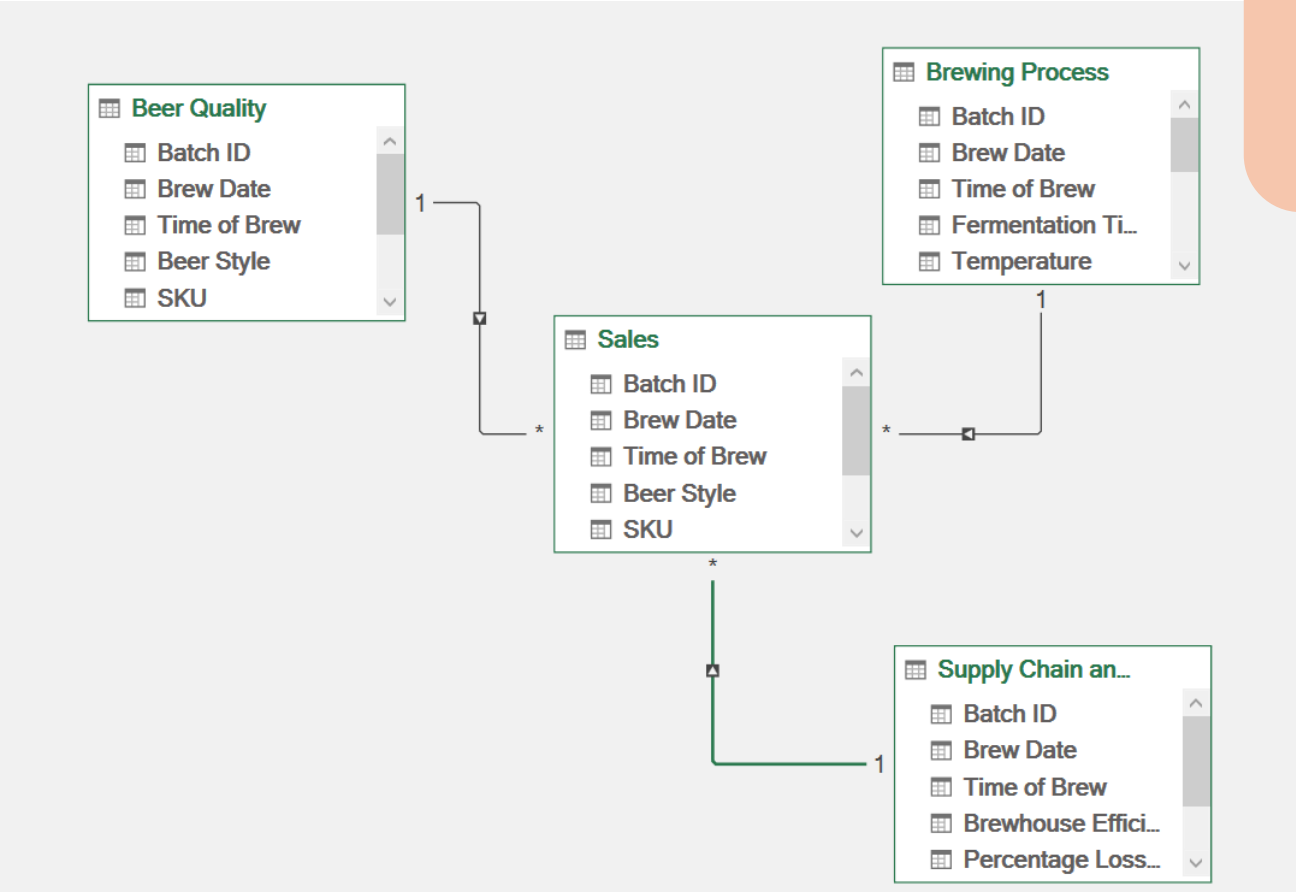
7



Yeanie Lamin

The Data Model

The Brewery Operations Project

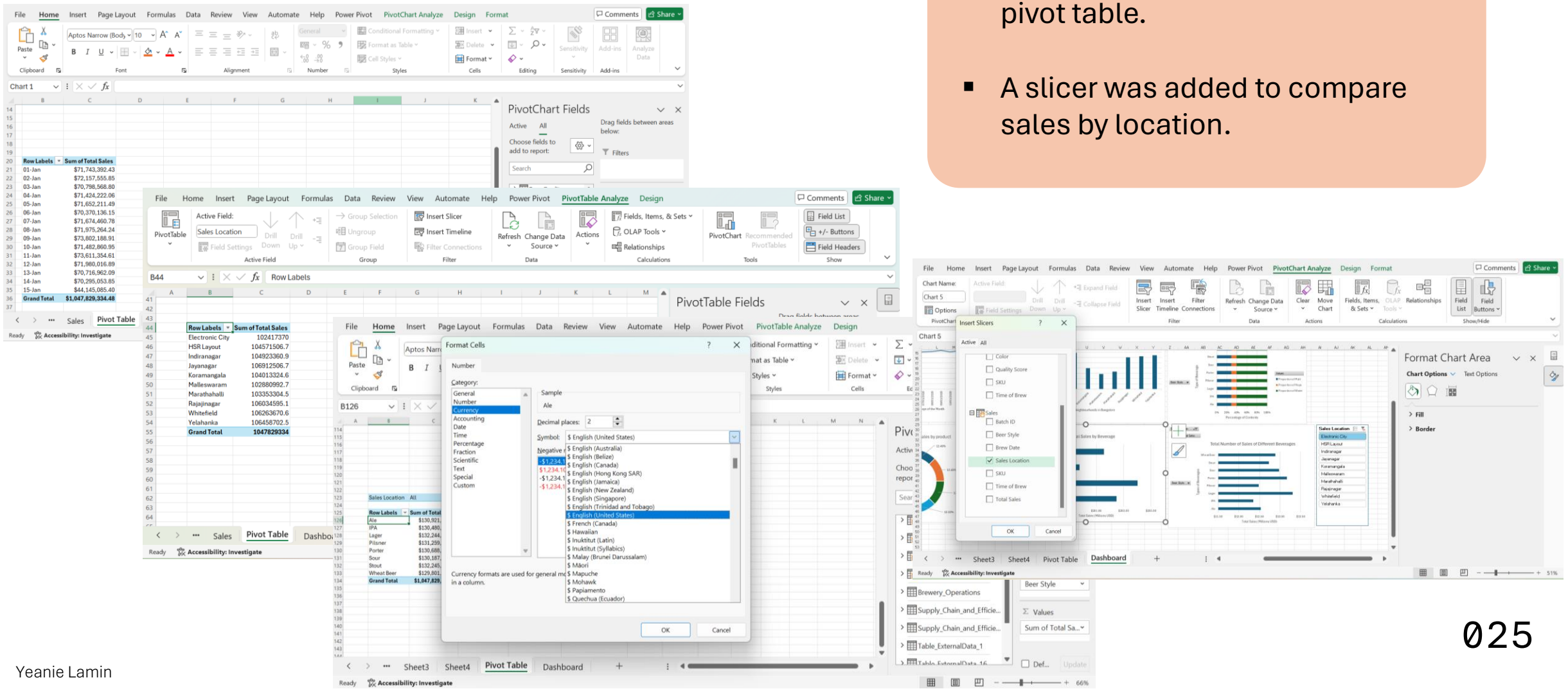


- Due to the large number of columns in the dataset, I broke the dataset down into 4 smaller datasets.
- I then created a data model.

Yeanie Lamin

Analysing the Data

The Brewery Operations Project



- Each graph was created using a pivot table.
- A slicer was added to compare sales by location.

Yeanie Lamin

Thank You!

Yeanie Lamin

www.linkedin.com/in/yeanie-lamin-404206162

yeaniel30@gmail.com