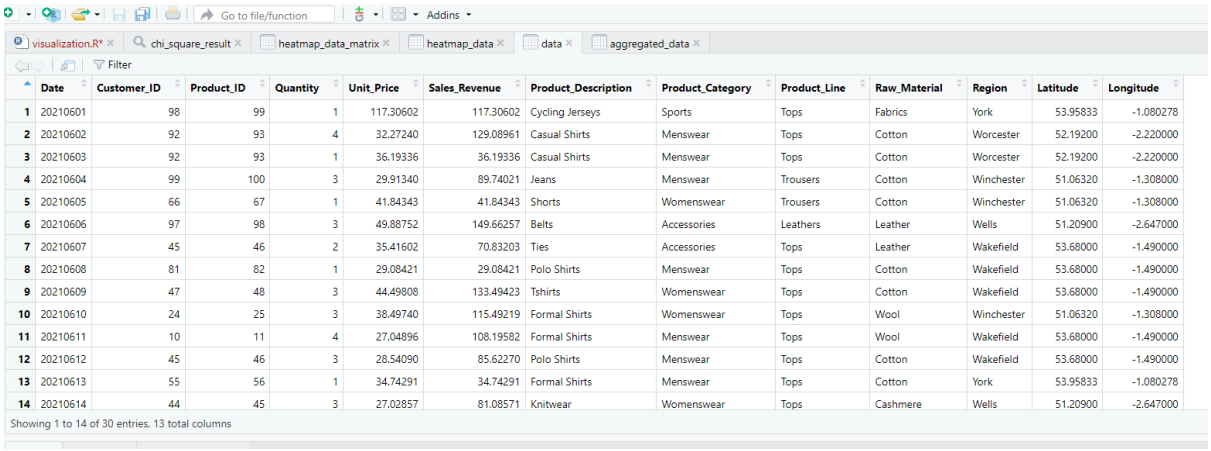
# Visualization

## Clothes and Accessories:Sales_Product_Details.csv

## DatasetId:DS279

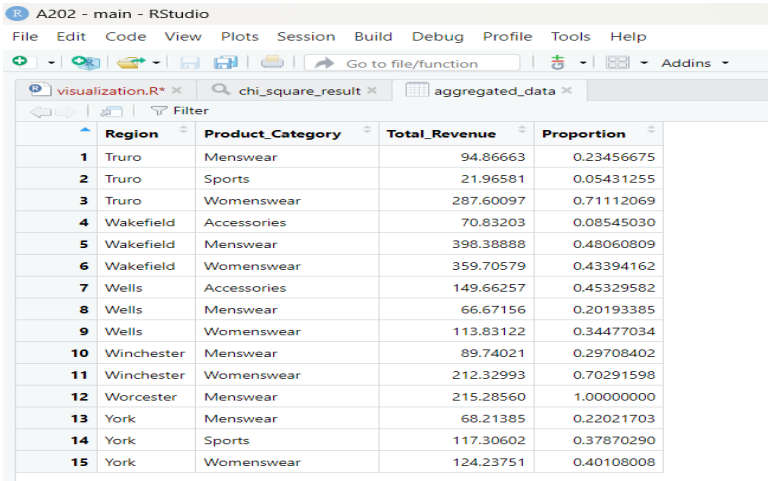


| | Date | Customer_ID | Product_ID | Quantity | Unit_Price | Sales_Revenue | Product_Description | Product_Category | Product_Line | Raw_Material | Region | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20210601 | 98 | 99 | 1 | 117.30602 | 117.30602 | Cycling Jerseys | Sports | Tops | Fabrics | York | 53.95833 | -1.080278 |
| 2 | 20210602 | 92 | 93 | 4 | 32.27240 | 129.08961 | Casual Shirts | Menswear | Tops | Cotton | Worcester | 52.19200 | -2.220000 |
| 3 | 20210603 | 92 | 93 | 1 | 36.19336 | 36.19336 | Casual Shirts | Menswear | Tops | Cotton | Worcester | 52.19200 | -2.220000 |
| 4 | 20210604 | 99 | 100 | 3 | 29.91340 | 89.74021 | Jeans | Menswear | Trousers | Cotton | Winchester | 51.06320 | -1.308000 |
| 5 | 20210605 | 66 | 67 | 1 | 41.84343 | 41.84343 | Shorts | Womenswear | Trousers | Cotton | Winchester | 51.06320 | -1.308000 |
| 6 | 20210606 | 97 | 98 | 3 | 49.88752 | 149.66257 | Belts | Accessories | Leathers | Leather | Wells | 51.20900 | -2.647000 |
| 7 | 20210607 | 45 | 46 | 2 | 35.41602 | 70.83203 | Ties | Accessories | Tops | Leather | Wakefield | 53.68000 | -1.490000 |
| 8 | 20210608 | 81 | 82 | 1 | 29.08421 | 29.08421 | Polo Shirts | Menswear | Tops | Cotton | Wakefield | 53.68000 | -1.490000 |
| 9 | 20210609 | 47 | 48 | 3 | 44.49808 | 133.49423 | Tshirts | Womenswear | Tops | Cotton | Wakefield | 53.68000 | -1.490000 |
| 10 | 20210610 | 24 | 25 | 3 | 38.49740 | 115.49219 | Formal Shirts | Womenswear | Tops | Wool | Winchester | 51.06320 | -1.308000 |
| 11 | 20210611 | 10 | 11 | 4 | 27.04896 | 108.19582 | Formal Shirts | Menswear | Tops | Wool | Wakefield | 53.68000 | -1.490000 |
| 12 | 20210612 | 45 | 46 | 3 | 28.54090 | 85.62270 | Polo Shirts | Menswear | Tops | Cotton | Wakefield | 53.68000 | -1.490000 |
| 13 | 20210613 | 55 | 56 | 1 | 34.74291 | 34.74291 | Formal Shirts | Menswear | Tops | Cotton | York | 53.95833 | -1.080278 |
| 14 | 20210614 | 44 | 45 | 3 | 27.02857 | 81.08571 | Knitwear | Womenswear | Tops | Cashmere | Wells | 51.20900 | -2.647000 |

Showing 1 to 14 of 30 entries, 13 total columns

## Research question:

Is there a difference in the proportions of sales revenue across different product categories in various region?



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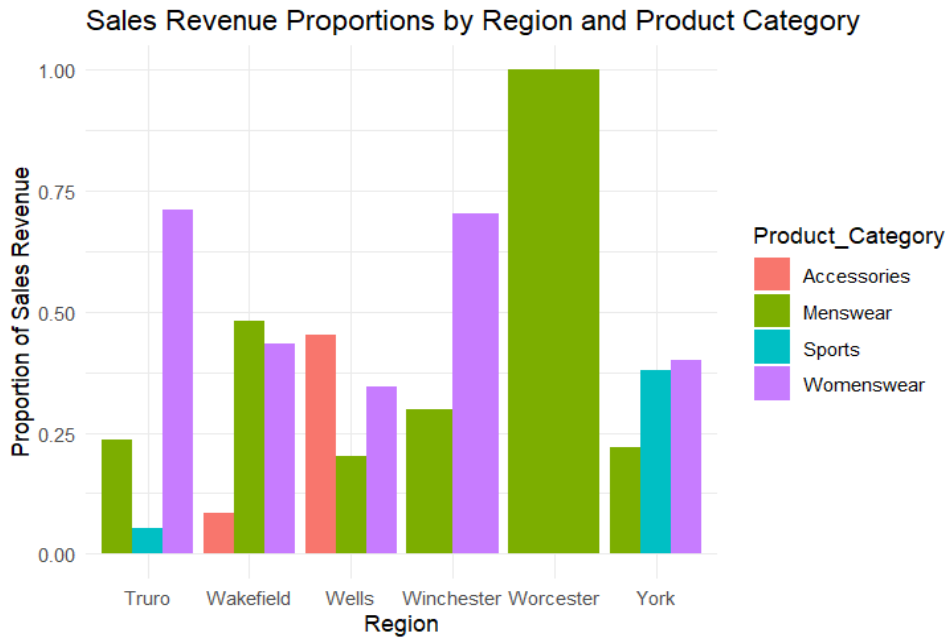
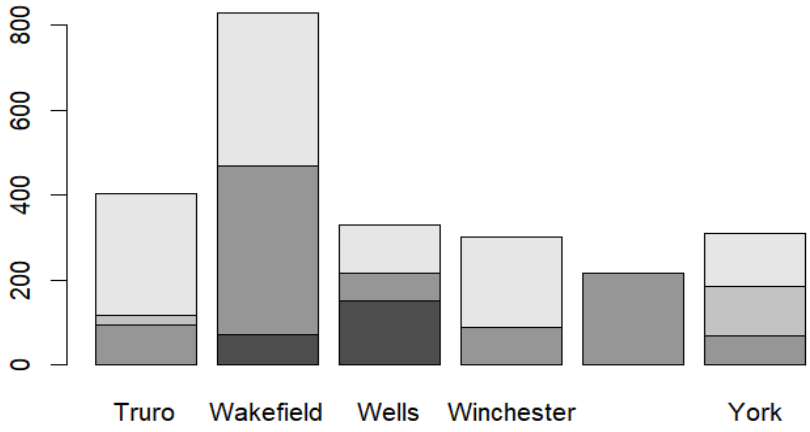
| | Region | Product_Category | Total_Revenue | Proportion |
|---|---|---|---|---|
| 1 | Truro | Menswear | 94.86663 | 0.23456675 |
| 2 | Truro | Sports | 21.96581 | 0.05431255 |
| 3 | Truro | Womenswear | 287.60097 | 0.71112069 |
| 4 | Wakefield | Accessories | 70.83203 | 0.08545030 |
| 5 | Wakefield | Menswear | 398.38888 | 0.48060809 |
| 6 | Wakefield | Womenswear | 359.70579 | 0.43394162 |
| 7 | Wells | Accessories | 149.66257 | 0.45329582 |
| 8 | Wells | Menswear | 66.67156 | 0.20193385 |
| 9 | Wells | Womenswear | 113.83122 | 0.34477034 |
| 10 | Winchester | Menswear | 89.74021 | 0.29708402 |
| 11 | Winchester | Womenswear | 212.32993 | 0.70291598 |
| 12 | Worcester | Menswear | 215.28560 | 1.00000000 |
| 13 | York | Menswear | 68.21385 | 0.22021703 |
| 14 | York | Sports | 117.30602 | 0.37870290 |
| 15 | York | Womenswear | 124.23751 | 0.40108008 |

# Stacked Barplots



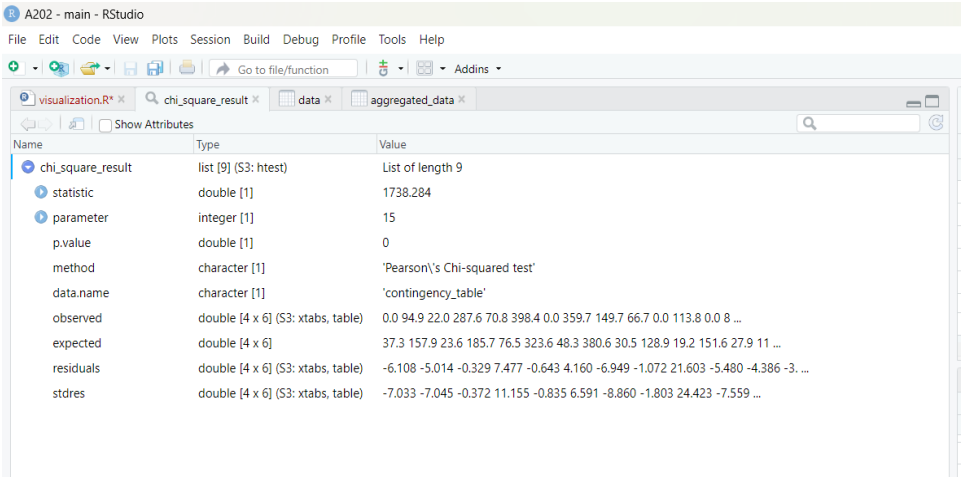



# Chi_square_Test

```
> contingency_table <- xtabs(Total_Revenue ~ Product_Category + Region, data = aggregated_data)
> contingency_table
                Region
Product_Category     Truro Wakefield     Wells Winchester Worcester      York
     Accessories   0.00000  70.83203 149.66257    0.00000   0.00000   0.00000
     Menswear     94.86663 398.38888  66.67156   89.74021 215.28560  68.21385
     Sports       21.96581   0.00000   0.00000    0.00000   0.00000 117.30602
     Womenswear  287.60097 359.70579 113.83122  212.32993   0.00000 124.23751
> chi_square_result <- chisq.test(contingency_table)
> chi_square_result

        Pearson's Chi-squared test

data:  contingency_table
X-squared = 1738.3, df = 15, p-value < 2.2e-16
```




# Heat Map Data Matrix

Filter

| | Region | Accessories | Menswear | Sports | Womenswear |
|---|---|---|---|---|---|
| 1 | Truro | 0.0000000 | 0.2345668 | 0.05431255 | 0.7111207 |
| 2 | Wakefield | 0.0854503 | 0.4806081 | 0.00000000 | 0.4339416 |
| 3 | Wells | 0.4532958 | 0.2019338 | 0.00000000 | 0.3447703 |
| 4 | Winchester | 0.0000000 | 0.2970840 | 0.00000000 | 0.7029160 |
| 5 | Worcester | 0.0000000 | 1.0000000 | 0.00000000 | 0.0000000 |
| 6 | York | 0.0000000 | 0.2202170 | 0.37870290 | 0.4010801 |