

Trash Wheel Collection Data

Group I: Vo Diep Nhu, Vo Phi Son, Nguyen Minh Tuan

Supervisor: Prof. Le Duy Dung

COMP5120 Data Visualization

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Trash wheel dataset

- From the Mr. Trash Wheel Baltimore Healthy Harbor
- Data collection involves manual counting of items on conveyor paddles during dumpster filling
- Contains diverse data attributes: trash weight, volume
- Contains specific item counts: plastic bottles and cigarette butts
- Offers an invaluable opportunity to explore environmental issues through data visualization

Data Dimensions of the Dataset



variable	class	description
ID	character	Short name for the Trash Wheel
Name	character	Name of the Trash Wheel
Dumpster	double	Dumpster number
Month	character	Month
Year	double	Year
Date	character	Date
Weight	double	Weight in tons
Volume	double	Volume in cubic yards
PlasticBottles	double	Number of plastic bottles
Polystyrene	double	Number of polystyrene items
CigaretteButts	double	Number of cigarette butts
GlassBottles	double	Number of glass bottles
PlasticBags	double	Number of plastic bags
Wrappers	double	Number of wrappers
SportsBalls	double	Number of sports balls
HomesPowered	double	One ton of trash generates 500 kWh of electricity. A household uses 30 kWh per day.

Why we should choose this dataset for Project 1 ?

- Real-world Impact
- Multifaceted Data
- Temporal Analysis
- Comparative Analysis
- Environmental Awareness
- Energy Conversion
- Learning Opportunity

Our Approach

- Apply different plots to analyze waste composition and trends.
- Preprocess data to add columns relevant to our study.
- Use line and bar charts to show waste trends over time.
- Using charts:
 - Line chart: annual waste trends (weight, volume)
 - Stacked area: monthly waste composition
 - Color-mapped bars: waste type percentages
 - Line + bar (2018): detailed monthly analysis



Question 1:

How does the volume and weight of collected waste vary seasonally?

Fig 1. Weight and Volume of collected waste by Year

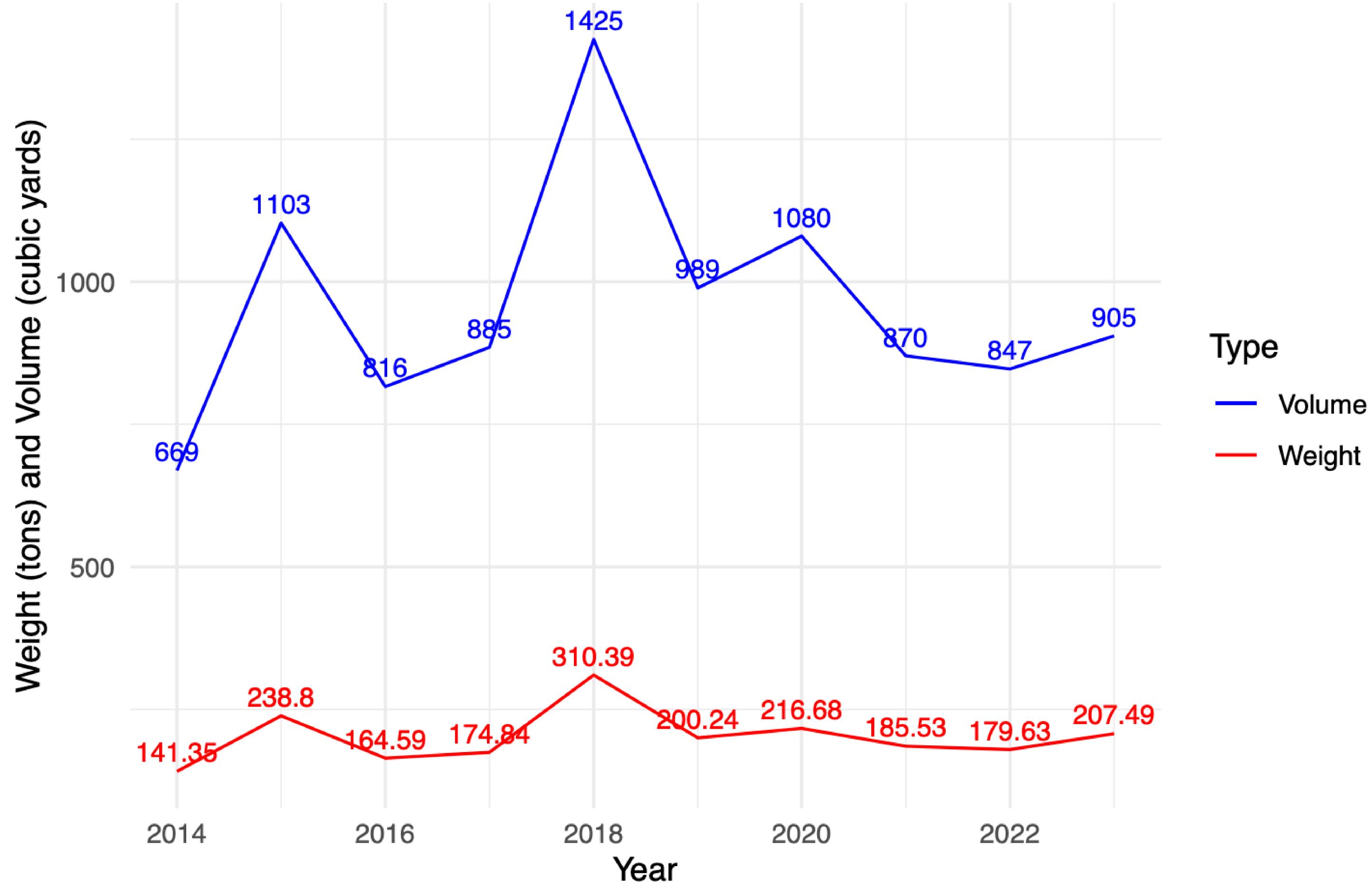


Fig 2. The trend of type of the collected waste across different years

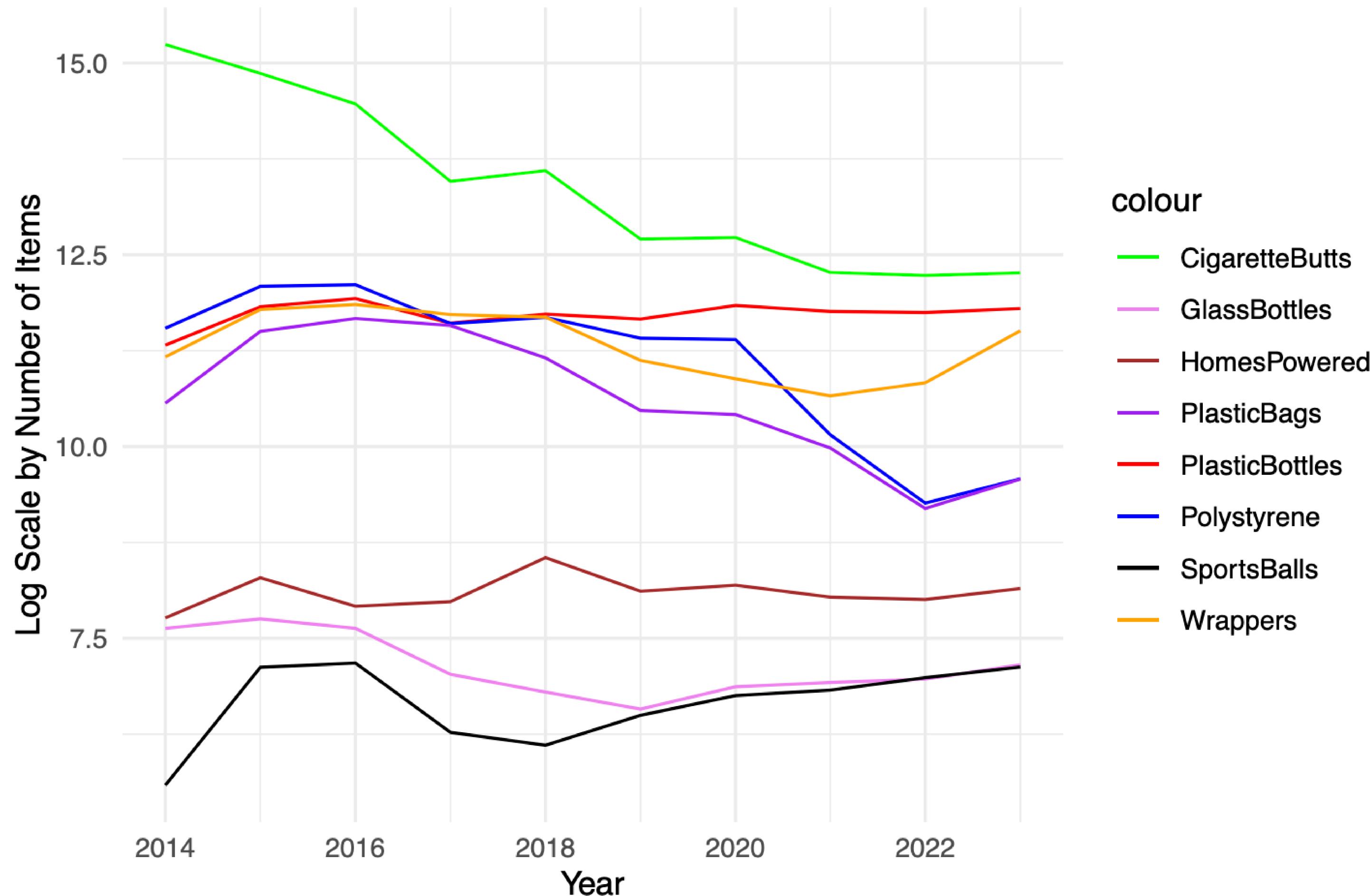


Fig 3. Relative Frequency Bar Chart of Waste Types by Month

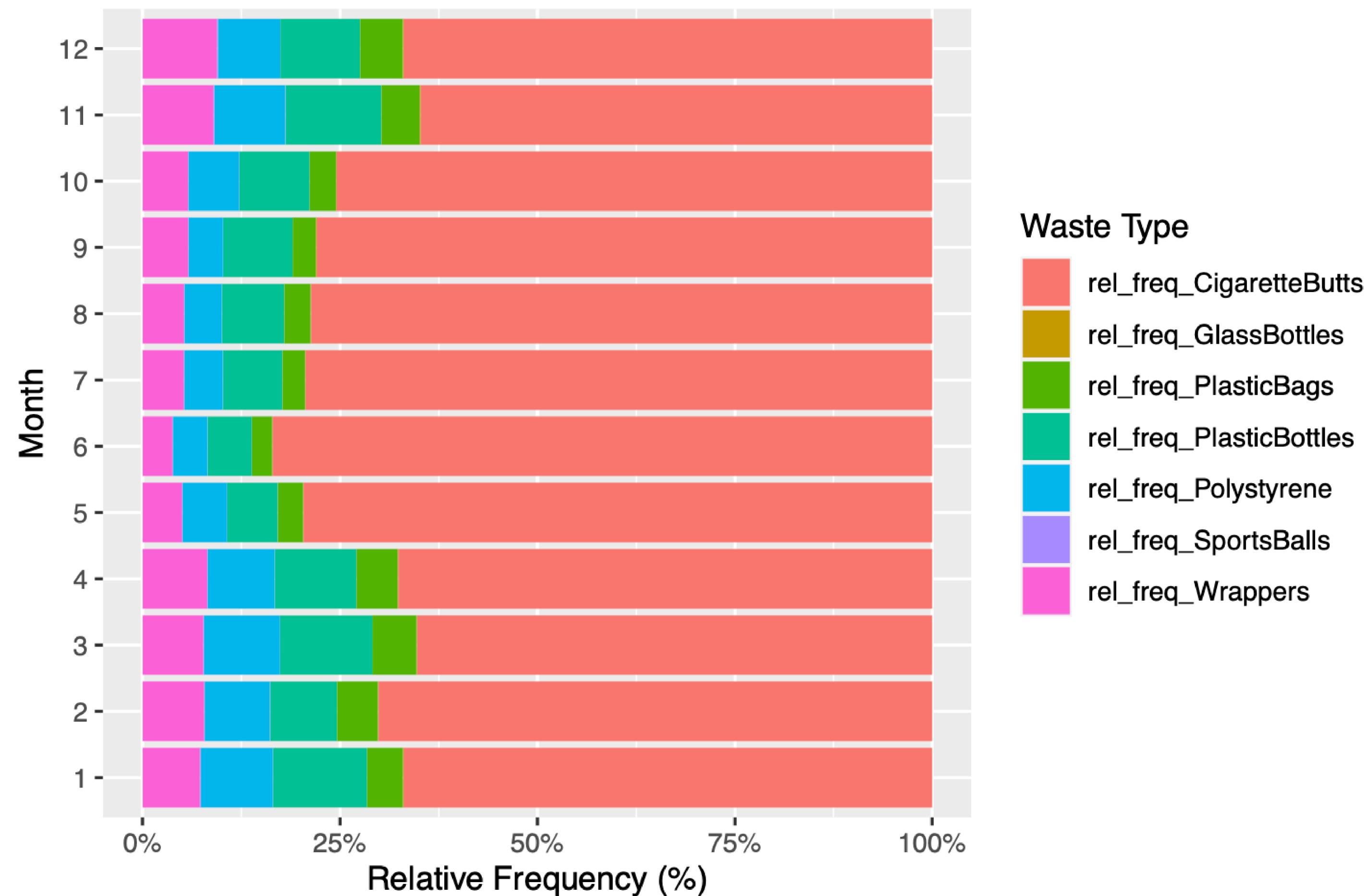
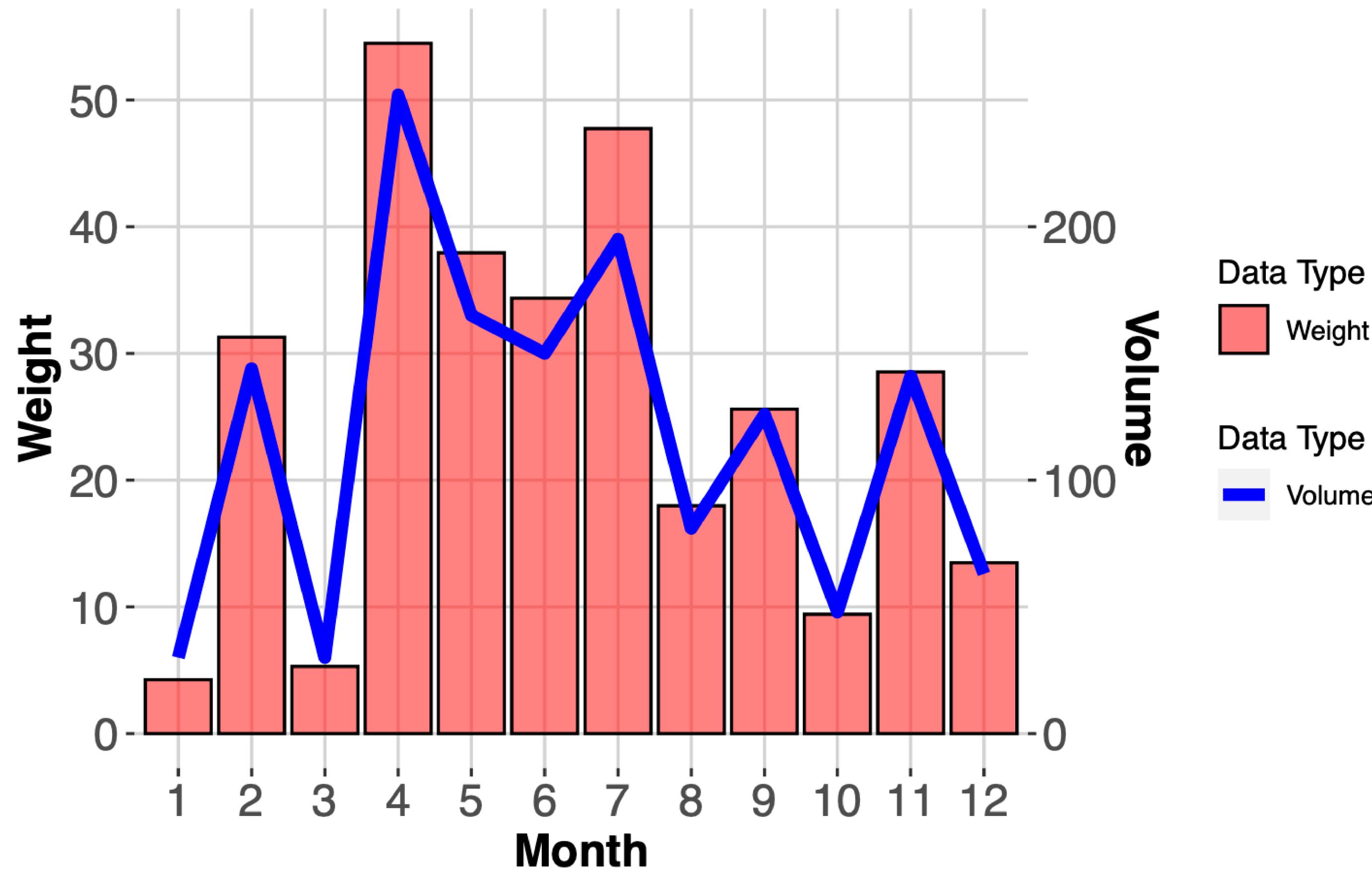


Fig 4. Weight and Volume by Month in 2018



Question 2:

How does the seasonal pattern of trash accumulation vary for different types of trash ?



Fig 5. Plastic Bottles by Year and Quarter

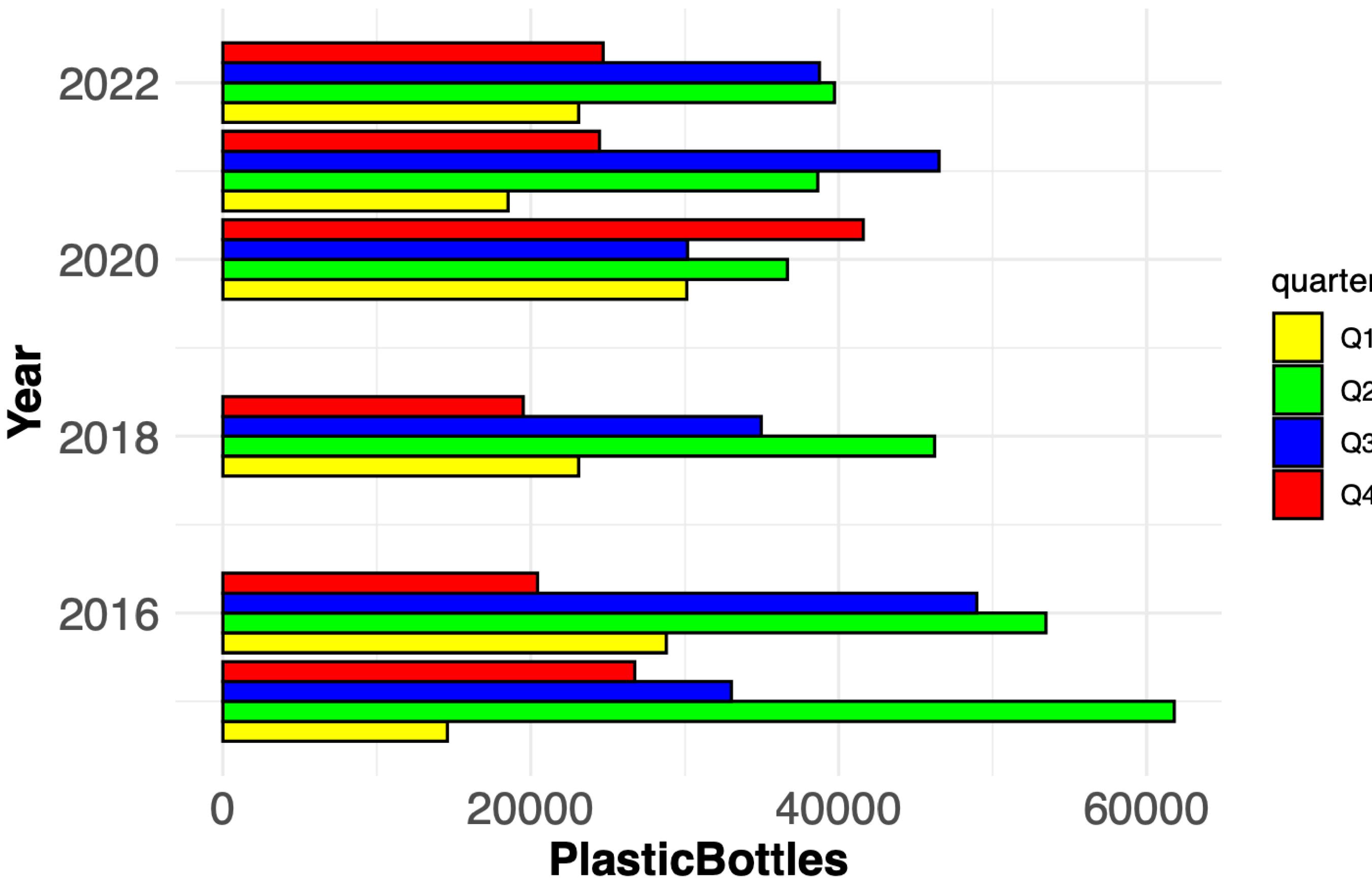
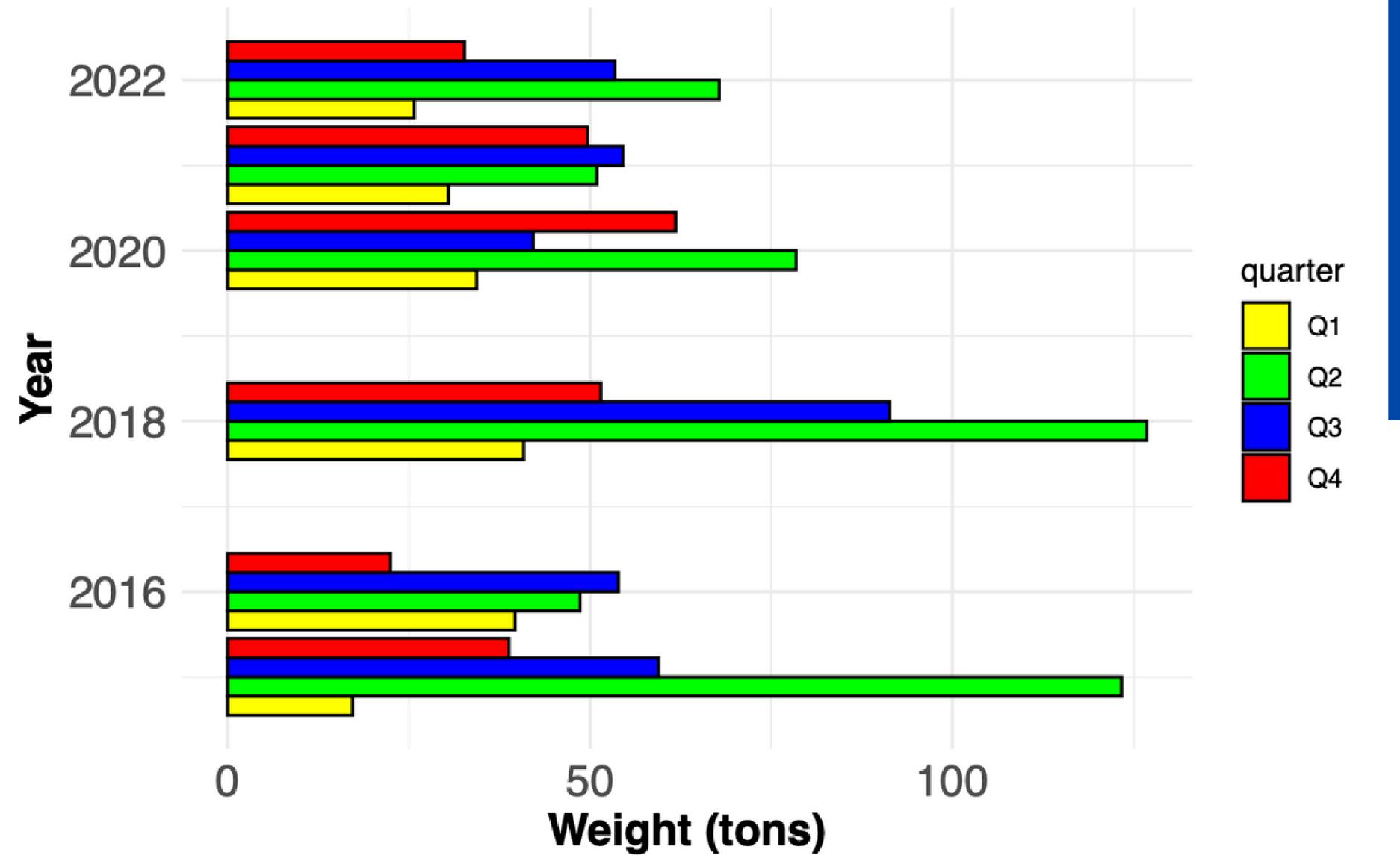


Fig 6. Weight by Year and Quarter



quarter
Q1
Q2
Q3
Q4

Fig 7. Volume by Year and Quarter

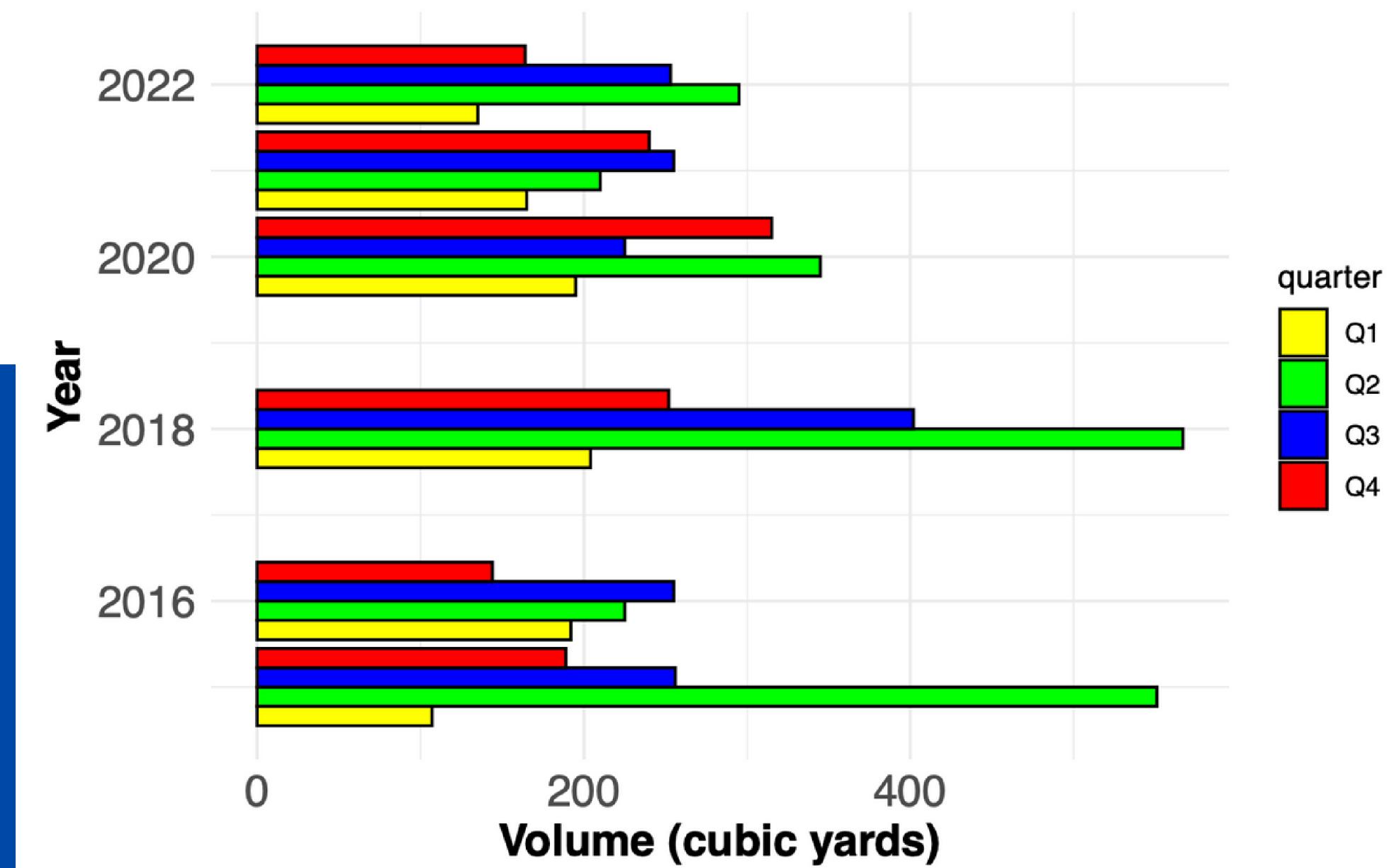


Fig 8. Heatmap of Different Types of Trash by Year and Quarter (2015)

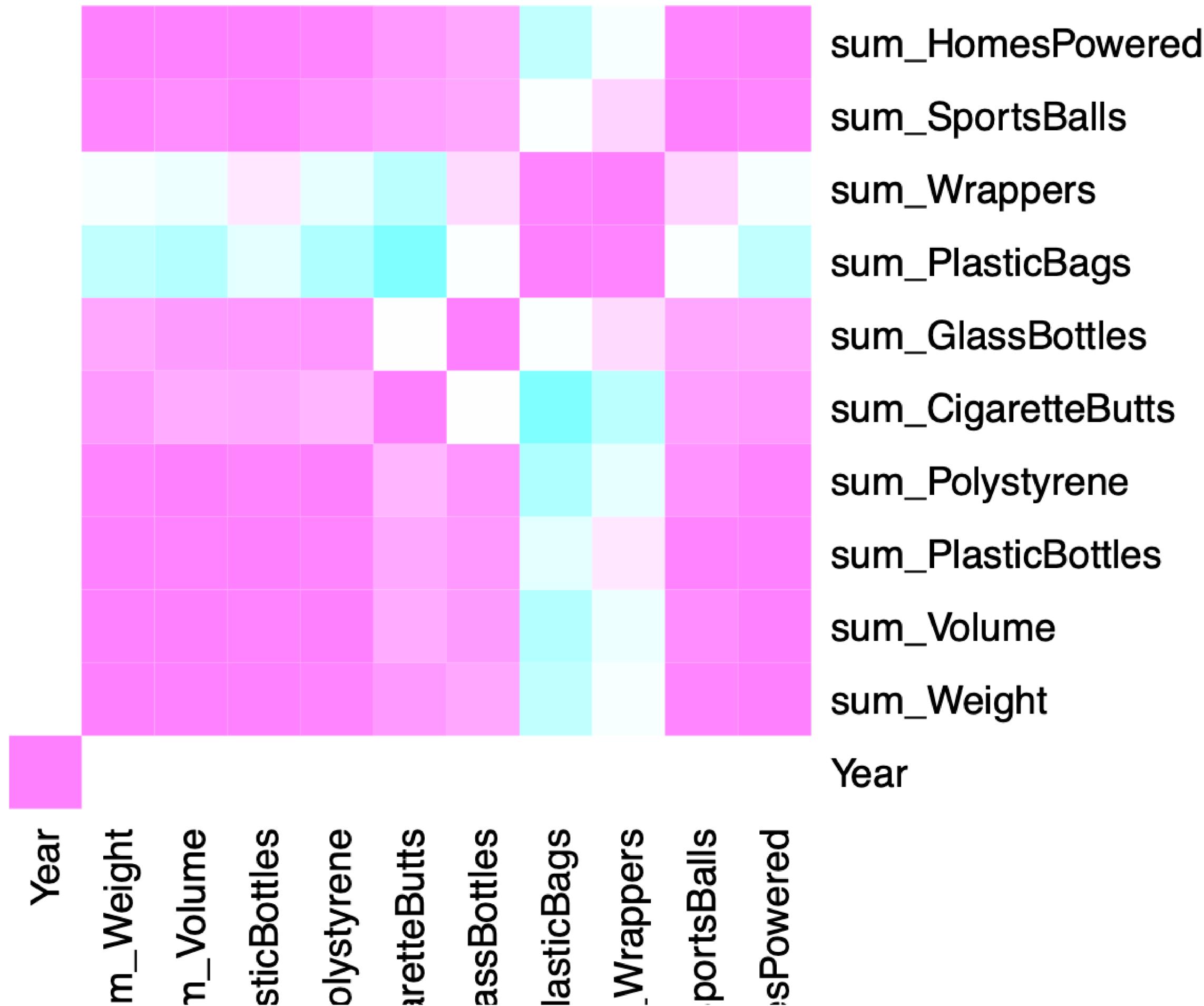


Fig 9. Distribution of Weight by Quarter

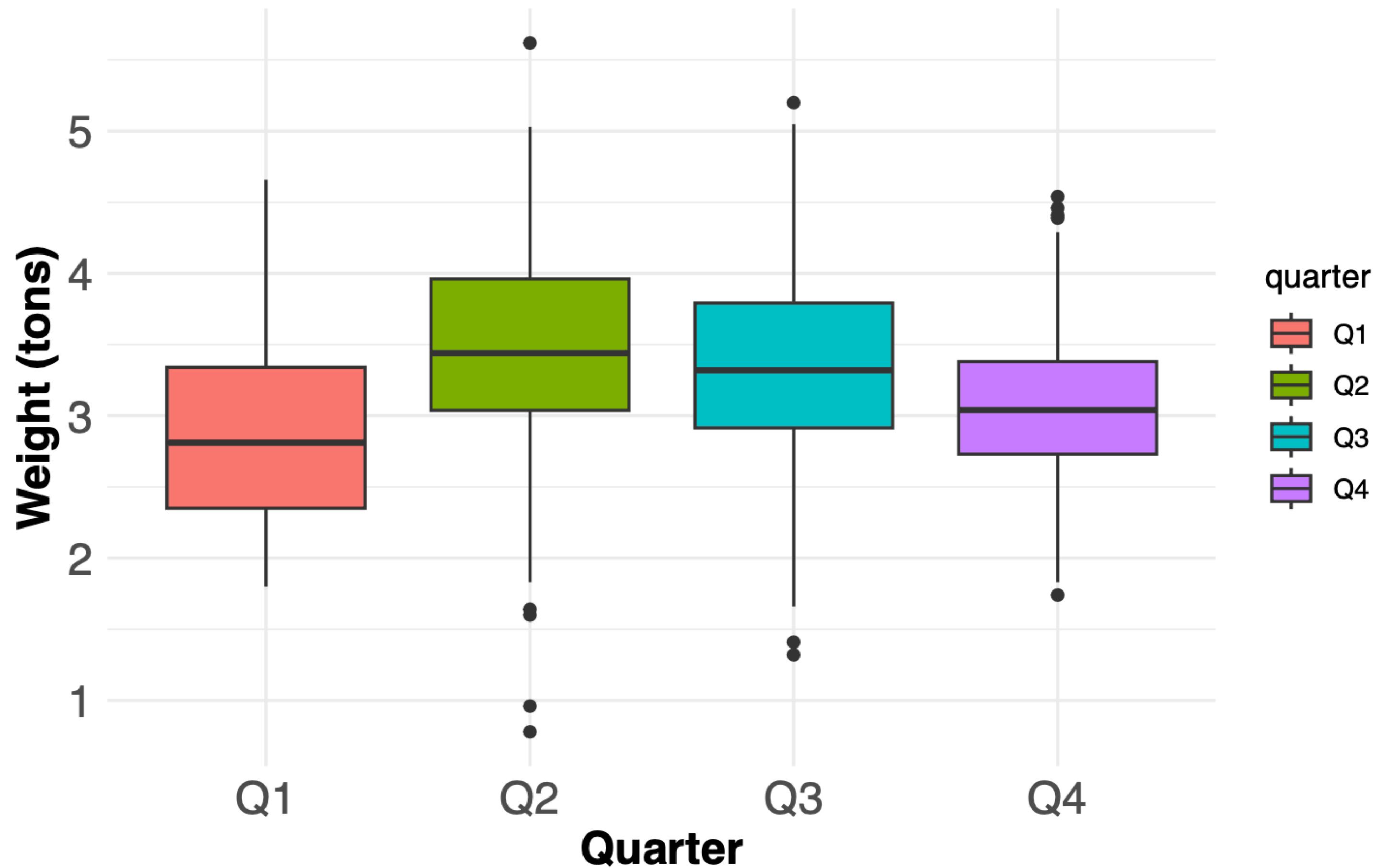
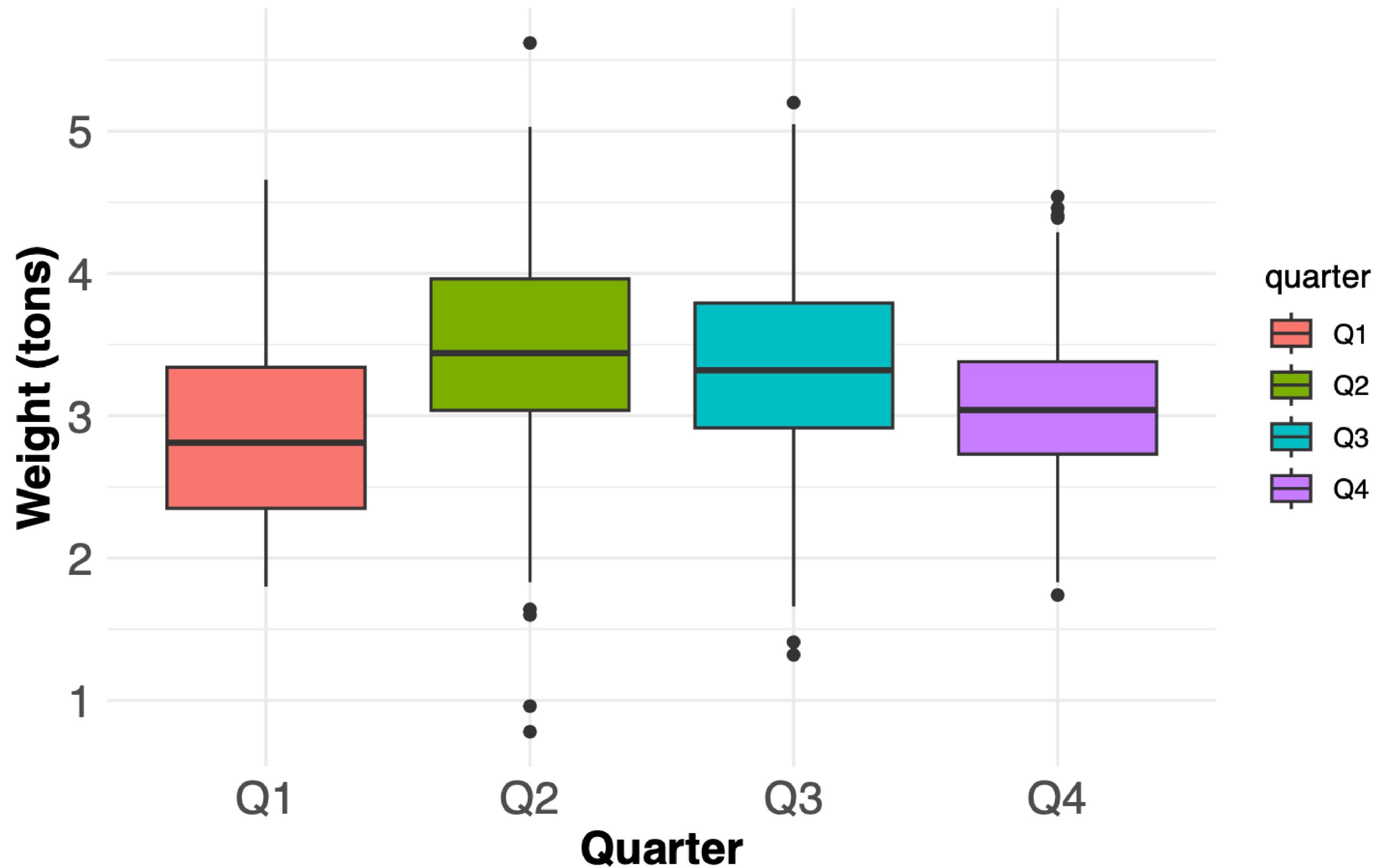


Fig 9. Distribution of Weight by Quarter



Conclusion

- **Trash Composition Insights:** Visualizations reveal variation in plastic bottles, polystyrene, glass over months/years.
- **Seasonal Fluctuations:** Seasonal trends in weight, volume, plastic bags documented.
- **Waste Dynamics:** Differences in trash accumulation among Trash Wheels observed.
- **Environmental Strategy:** Data informs waste management, optimizing collection, sustainability efforts.
- **Correlation Analysis:** Heatmaps show waste type correlations, guiding management strategies.

THANK YOU