



BUSINESS ANALYSIS INSIGHT REPORT

Leveraging Data for Strategic Enhancements


PRESENTED BY



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LSE CAREER ACCELERATOR

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A photograph of a city skyline at dusk, featuring several tall skyscrapers. A dark blue banner is overlaid across the middle of the image, containing the word "CONTENT" in white, bold, uppercase letters.

CONTENT

- 1** Background and context
- 2** Dashboard design
- 3** Patterns, trends and insights
- 4** Recommendations

ABOUT THE 2MARKET PROJECT

The analysis project aimed to understand customer demographics, purchase behaviour, product popularity and marketing channel effectiveness to enhance marketing strategies and increase sales.





PROJECT TIMELINE

Project Initiation



Data cleaning



**Statistical Analysis
MsExcel and SQL**



Dashboard design



**Presentation and
Sharing**



DATA CLEANING

Details in the PDF Report Appendix 3 and 4.

Purpose

Ensure data accuracy, completeness, consistency, and readiness for analysis.

Steps

- Missing Values Check
- Duplicate Data Check
- Standardization of Formats and name labels
- Outlier Detection and Treatment
- Data Accuracy and Validity

Assumptions

- All customers have unique IDs.
- Potential duplicates assumed to be system-generated rather than manual entry errors.
- Salary entries below \$20,000 assumed to be annual salary
- Customer ages displayed as of 2024



Summary



Filters



Export



Info



INFORMATION

Key demographics, sales and marketing insights were analysed using the available datasets. Information was available on customers age, income, marital status, geographic location, the number of children/teens at home, purchase information for various product categories, such as alcoholic beverages, vegetables, meat items, fish products, chocolates, commodities. For marketing insights data was available for Bulk mail, Twitter, Instagram, Facebook and Brochures, as well as discounts, number of purchases from website or instore.

Dashboard use:

- Apply the interactive filters to achieve a more specific view
- Use the export functions to download the dashboard in other formats

Data cleaning considerations:

Category names adjusted:

- Education – (2n Cycle replaced with Second-cycle, Graduation replaced with Undergraduate, Master - replaced with Masters) – Second-cycle could either account for masters level or high-school education depending on location.
- Marital status - YOLO, absurd, Alone was changed to Single, Together changed to In a relationship, widow changed to Widowed.

Data excluded from analysis:

- Customers year of birth ≥ 1920 or age < 104
- Income outliers were identified with IQR lower and upper limits. Data above Salaries > 117820 were excluded as outliers from the visualisations as these will skew the results. The maximum salary was \$666,666.
- For sales insights, data was analysed in pgAdmin excluding the outliers with identifying IQR lower and upper limits for all product types, however key insights as, which are the most popular products in for the different demographics were not affected, therefore the total values are displayed in the visualisations. 0 value at purchase, meant there was no purchase made for that product type. For total sales there was no 0 amount, therefore every customer has bought at least one product.

Assumptions made:

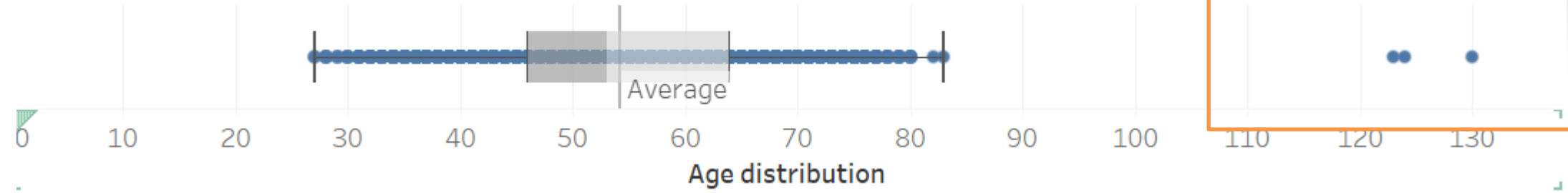
- All customers had a unique ID and with regards to that there were no duplicates.
- On manual inspection of the data, there was data rows that appeared the same except for ID and there was data that appeared the same for except ID and Country. As there was no further information available, as to how the data was collected, they were assumed to be not manually entered and system generated when customers enter a store/online, therefore all data was included in the visualisations. However, you can use the duplicate filter to exclude the potential duplicate values from your view.
- Salary ranges below $< \$20,000$ were assumed to be yearly salaries and not monthly salaries entered by mistake as a yearly salary.
- Age of customers are displayed as they are in 2024, the year of analysis. However, customers age demographics were different at the point of purchase. This is between 10-12 years, as the data is from between 2012 and 2014. As no preference of stakeholders was available, the current age is displayed.
- Both number of web and in-store purchase cannot be 0, in this case, in-store purchase was changed to 1.

Ethical considerations:

The data displayed is over 10 years old, which has current GDPR implications as the data may have been stored longer than necessary. Consent from customers to use this historical data was assumed. Whilst sexual orientation and childrens details are considered sensitive data, this was not included in the dataset. None of the dataset is considered sensitive data under GDPR.

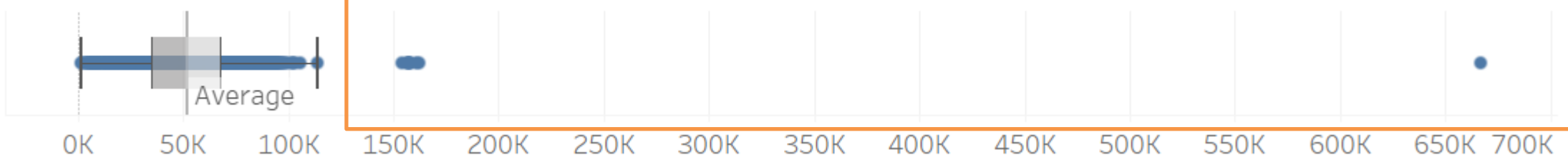
Outlier values

Age distribution

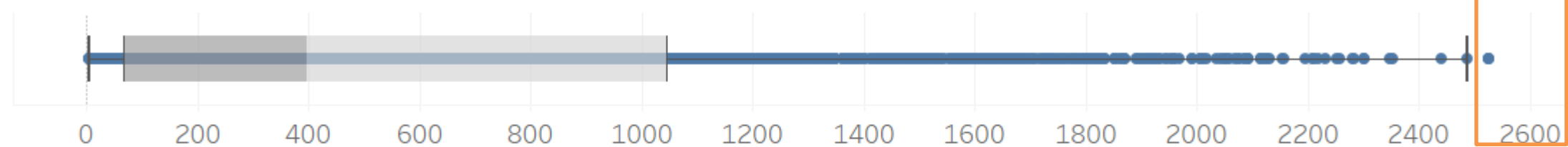


Excluded in Tableau

Income distribution

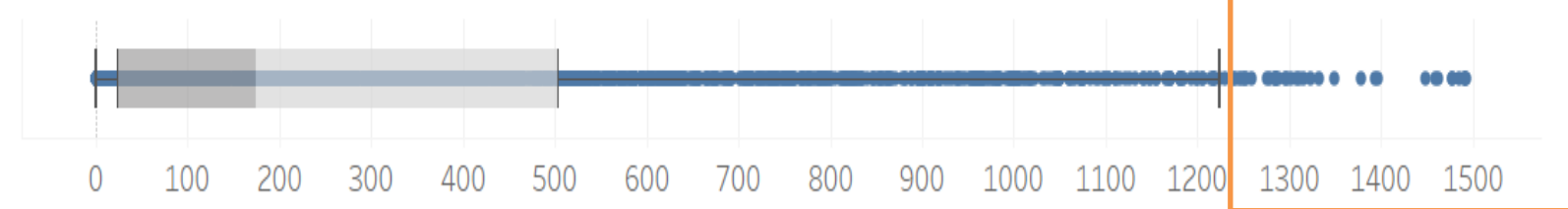


Sales Total distribution

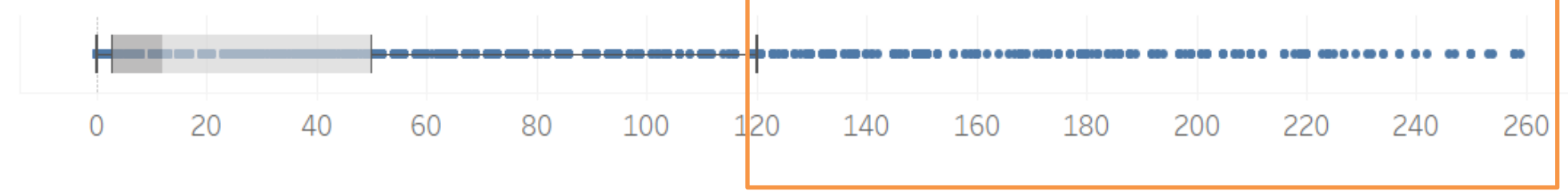


Sales and Product type outliers are included in Tableau

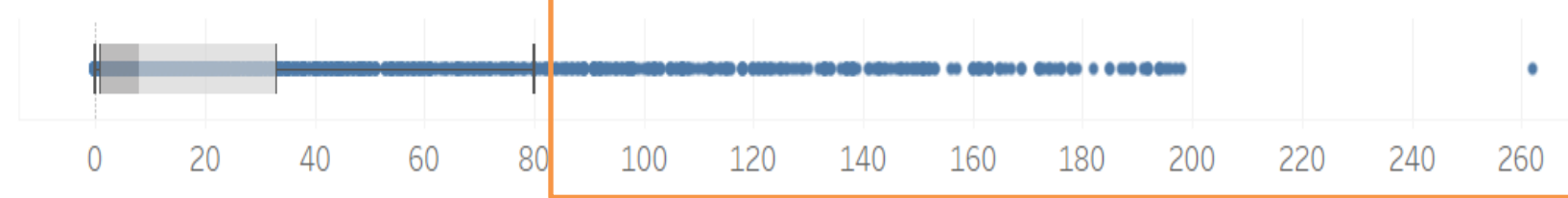
Alcohol distribution



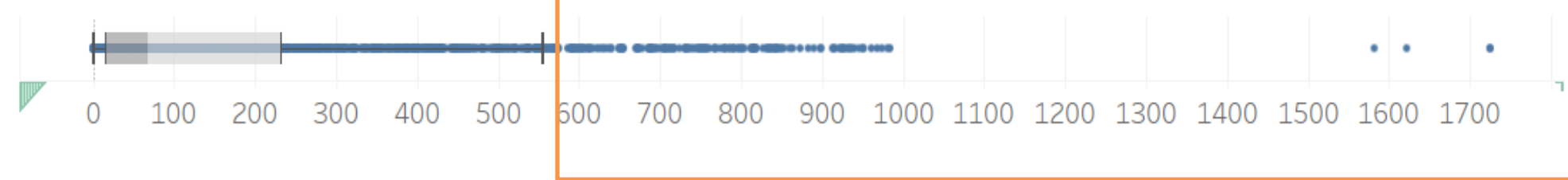
Fish distribution



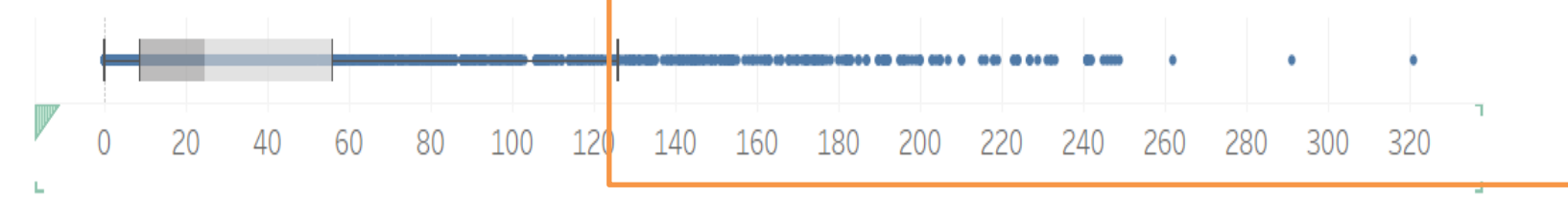
Chocolates distribution



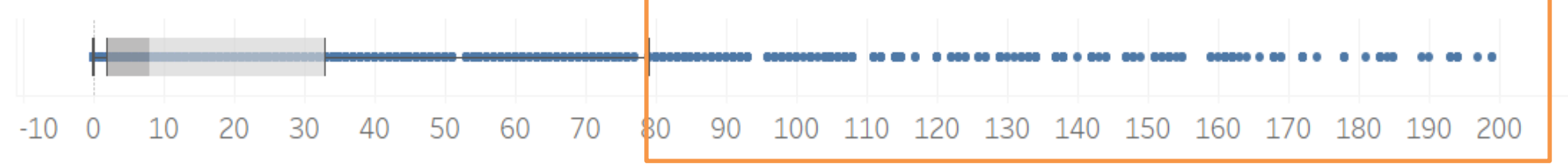
Meat distribution



Commodities distribution



Vegetables distribution



DASHBOARD DESIGN

1

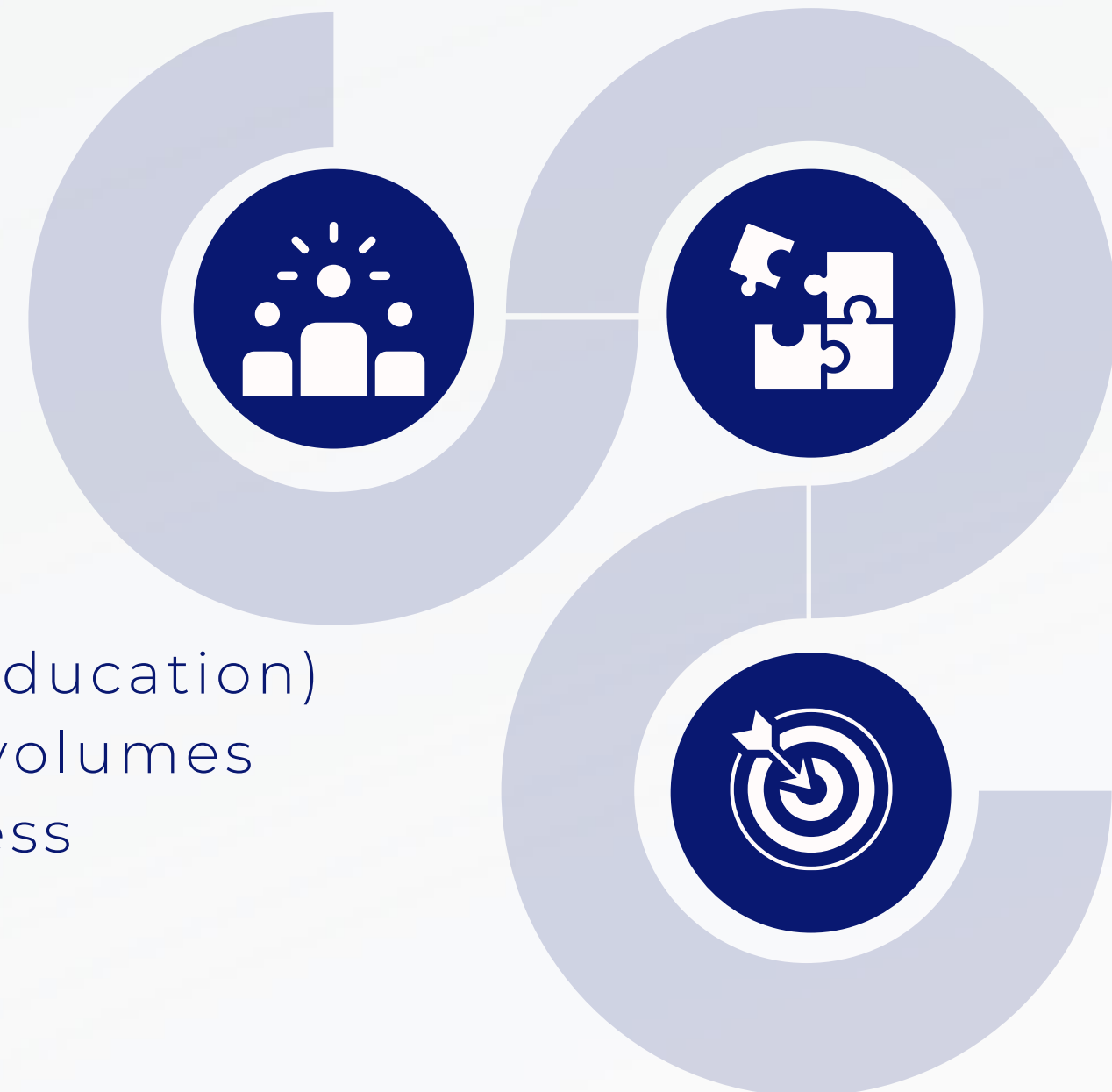
Intended Audience:

- Marketing executives
- Product managers
- Senior management.

2

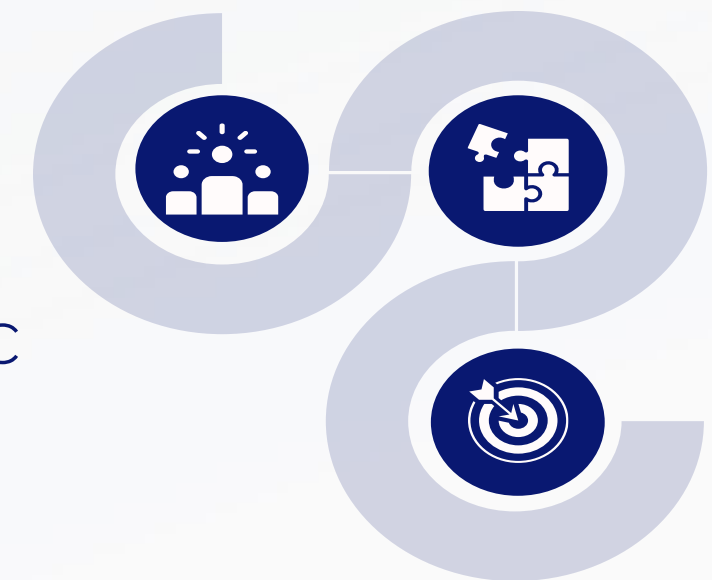
Metrics chosen:

- Customer demographics (age, income, marital status, education)
- Product categories and sales volumes
- Marketing channel effectiveness (Twitter, Instagram, etc.)



DASHBOARD LAYOUT

- **Control Panel:**
 - Located on the left side it includes accessibility info, a summary, filters, export options and an information button
- **Navigation Panel:**
 - Located on the top right side for switching between demographics, sales, and marketing insights.
- **Key Metrics Displayed:**
 - Sales trends, product popularity, demographic distributions, and marketing channel performance.



Accessibility Information

Title and greeting of user

Score cards

Date of the data timeline

Navigation panel – navigate between the required insights

2Market Analysis Dashboard
WELCOME BEATA\beata!

30/07/2012 - 29/06/2014

Demographics | Sales | Marketing

Total Sales \$ 1,343,393	Total number of customers 2,216	Average Income \$ 51,860	Average Age 54	Total Instore Purchase 12,860	Total Website Purchase 9,050
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Summary
Filters
Export
Info

World map (highlighted in yellow)

Education level demographics

PhD	21.64%
Second-Cycle	9.04%
Masters	16.49%
Undergraduate	50.38%

Marital Status demographics

Divorced	10.48%
Single	21.60%
Married	38.68%
In a relationship	25.80%

Income and average age

Income	No. of custom..	Avg. Age
0K	~50	~45
20K	~100	~48
40K	~350	~50
60K	~300	~52
80K	~250	~55
100K	~100	~60

Focusing on the \$90-100K

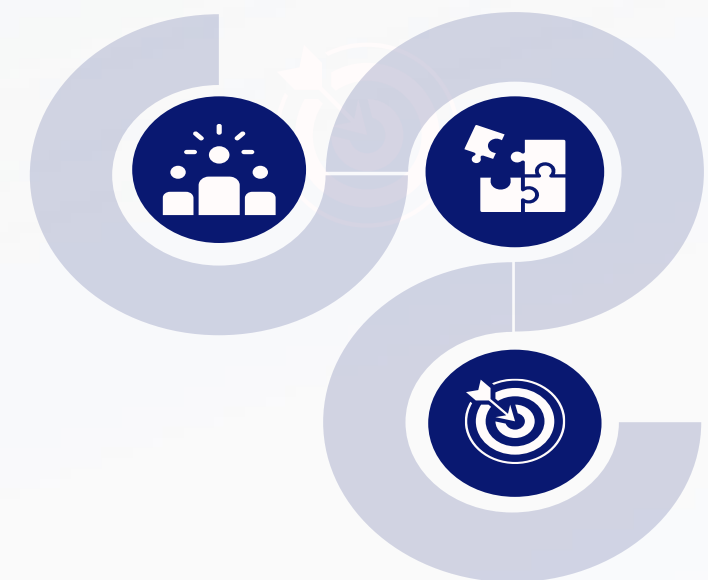
Income 90-100K	Number of cus..	Avg. Age
90K	~10	~45
91K	~6	~48
92K	~8	~50
93K	~2	~55
94K	~5	~58
95K	~1	~55
96K	~2	~50
97K	~1	~45
98K	~1	~40
99K	~1	~35

Control panel – click on icons to navigate. X to close the pop up view

Geographic location filter- filters all other visualisations on the dashboard based on the selected country. Double click to reset view to all.

DASHBOARD INTERACTIVITY

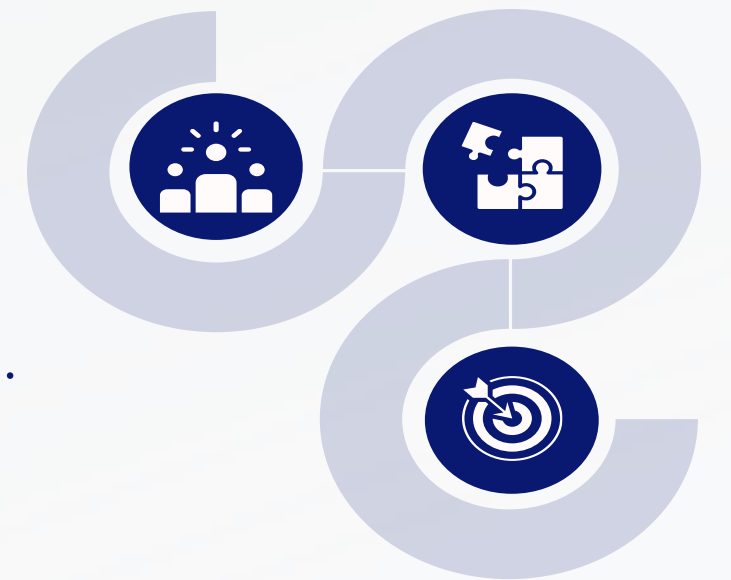
- **Filters and highlights:**
 - Located on the control panel
 - Changes the visualisation views by selecting different periods, product categories, and geographic locations and more.
- **Drill-down Capabilities:**
 - The map functions as a location drill of the other visualisations on the dashboard.
- **Tooltips:**
 - Hover over data points for additional context and details.



DASHBOARD ACCESSIBILITY

WEB CONTENT ACCESSIBILITY GUIDELINES (WCAG) 2.1.

- **High-Contrast Colors:**
 - Ensures readability and accessibility for users with visual impairments.
- **Visualisation description:**
 - Activate using ctrl+E
- **Text Alternatives:**
 - Descriptions and alt text for visual elements.
- **Keyboard Navigation:**
 - Supports users who navigate via keyboard.
- **Screen Reader Compatibility:**
 - Ensures the dashboard can be used effectively by individuals with disabilities. Activate using ctrl+window sign+enter





Summary



Filters



Export



Info



2Market Analysis Dashboard



30/07/2012 - 29/06/2014

Accessibility

Control Panel - Click on the control panel summary icon to access the summary/ key insights. The filters will open once clicking on the filter icon. Once selecting the required filters, click on the X icon to see the updated dashboard. To change or remove the filters, simply repeat the above step. You can export your dashboard by clicking on one of the export icons, PDF, PowerPoint and Image options as available. The information icon provides additional information regarding the dashboard and the data. To close this again click on the X icon.

Navigation - There are three tabs available to navigate to other dashboard views. The lighter blue highlights the current dashboard and the other two to open other insights.

Description - The displayed visualisations have a short description, and this same information is available in the alt text. If you require further information navigate to the individual sheet, which contains captions and press CTRL+E for full description. CTRL+E will also work by clicking on the individual visualisations within the dashboard for full description of that sheet.

Further filter - The map visualisation also functions as a filter, by clicking on a desired country the rest of the visualisations will update, if you no longer wish the filter to be used, double click on the highlighted country, then all data will be visible on the other visualisations.

If you require any other additional adaptations to make the dashboard easier to access, please leave a comment.

PATTERNS, TRENDS, INSIGHTS



DEMOGRAPHICS

39%

of customers are married

50%

**of customers have
undergraduate level of
education**



**Spain has the highest
customer volume**



2Market Analysis Dashboard



30/07/2012 - 29/06/2014

WELCOME BEATA\beata!

Demographics

Sales

Marketing

Total Sales

\$ 1,339,982

Total number of customers

2,216

Average Income

\$ 51,622

Average Age

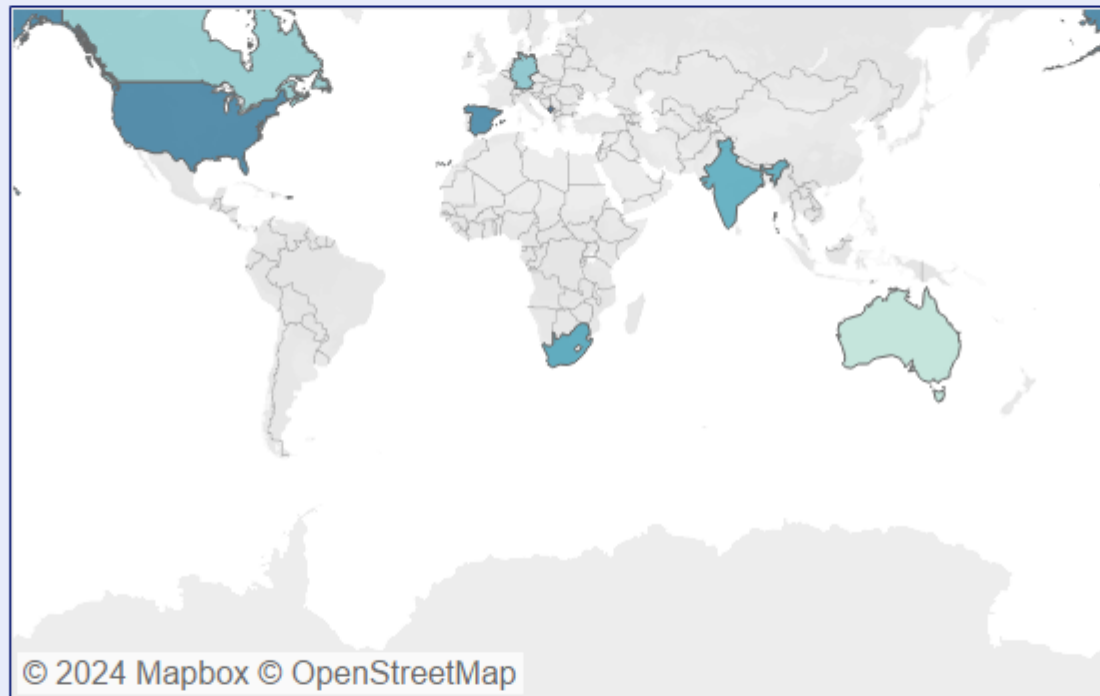
54

Total Instore Purchase

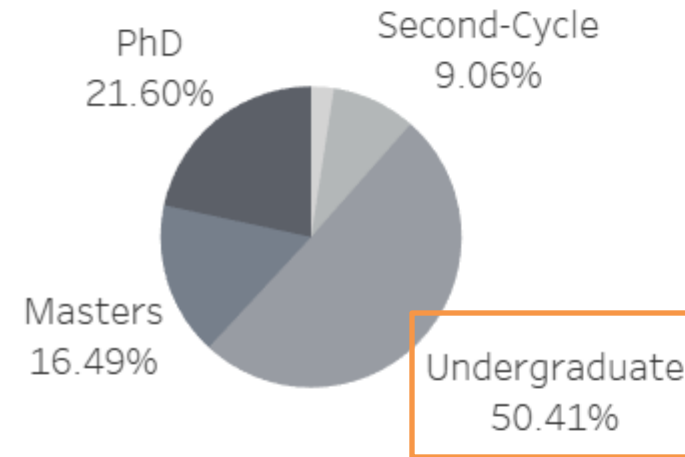
12,855

Total Website Purchase

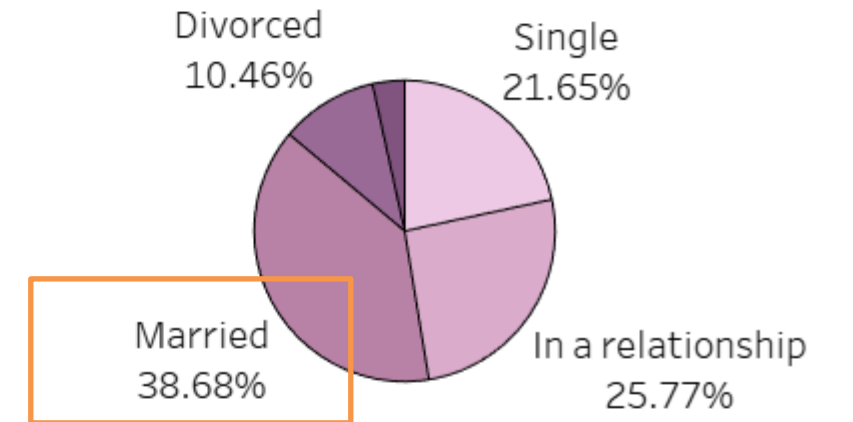
9,049



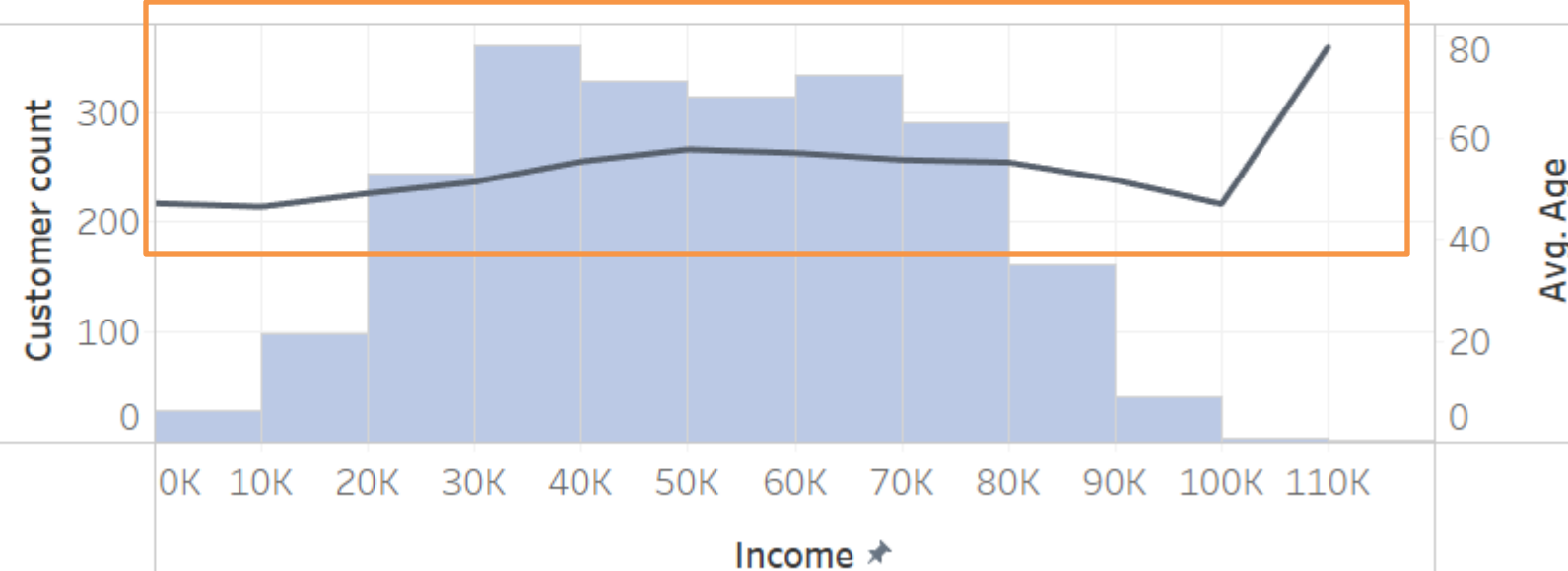
Education level demographics



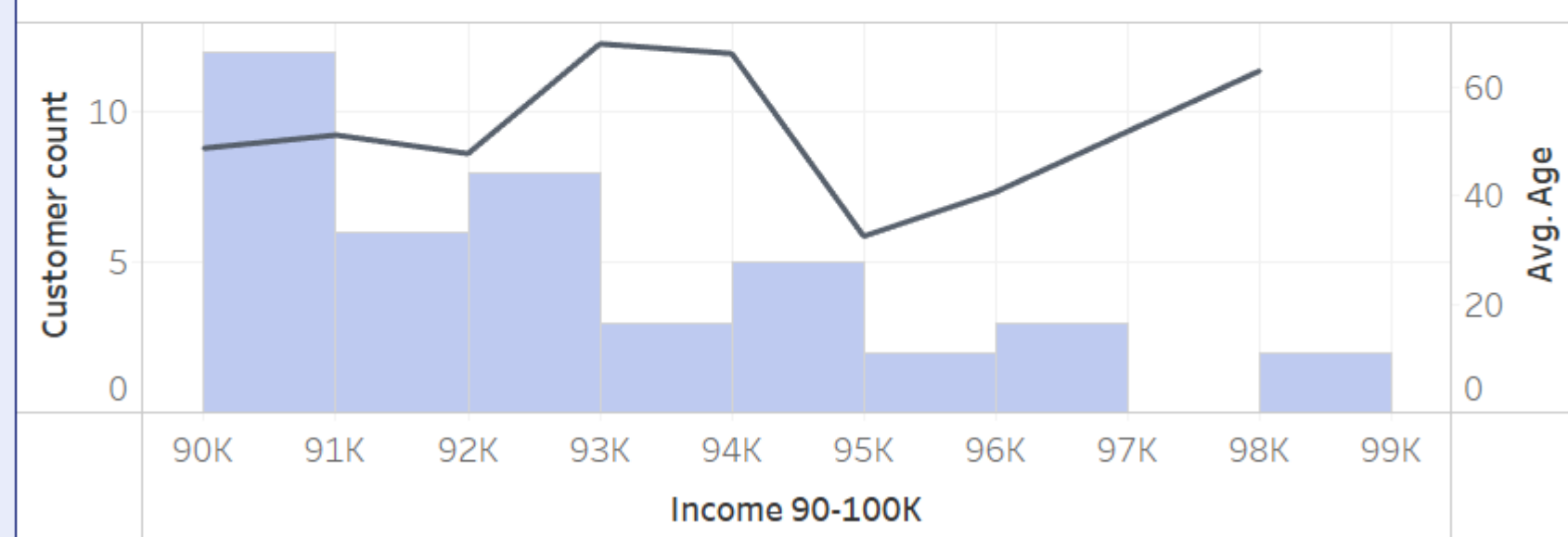
Marital Status demographics



Income and average age



Focusing on the \$90-100K



Summary



Filters



Export

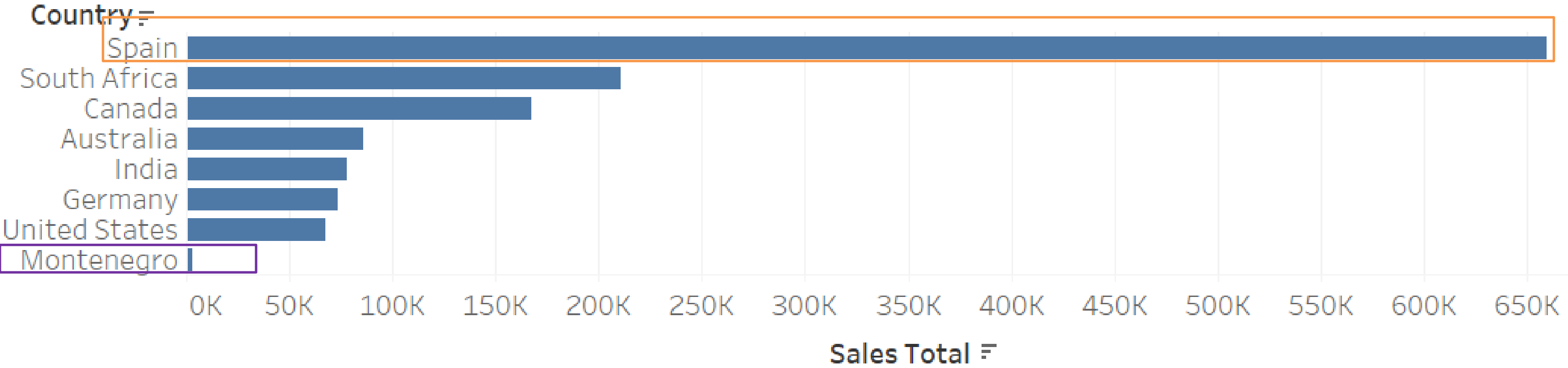
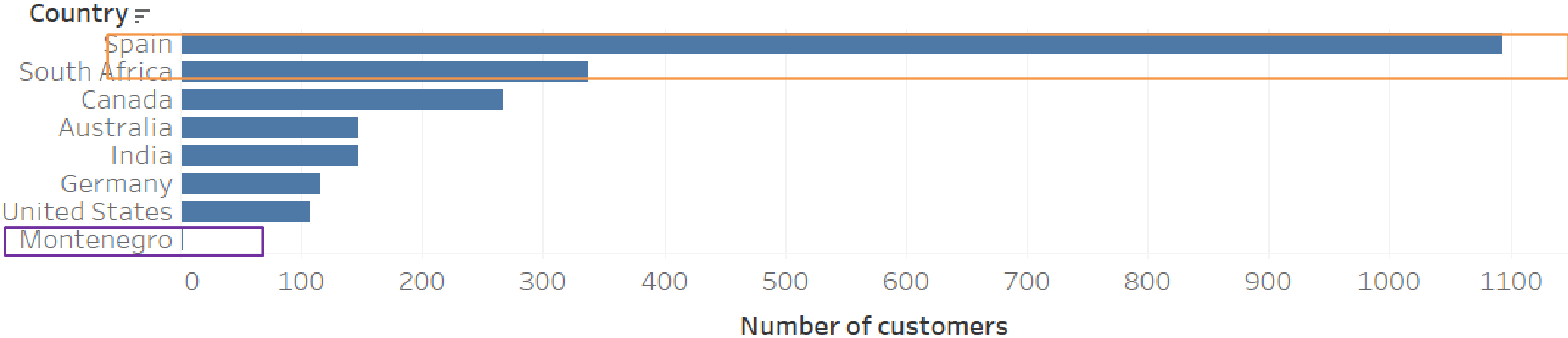


Info



Sales and customer numbers per geographic location

Location



Focus on Spain

2Market Analysis Dashboard



30/07/2012 - 29/06/2014

WELCOME BEATA\beata!

Demographics

Sales

Marketing

Total Sales

\$ 659,385

Total number of customers

1,093

Average Income

\$ 51,242

Average Age

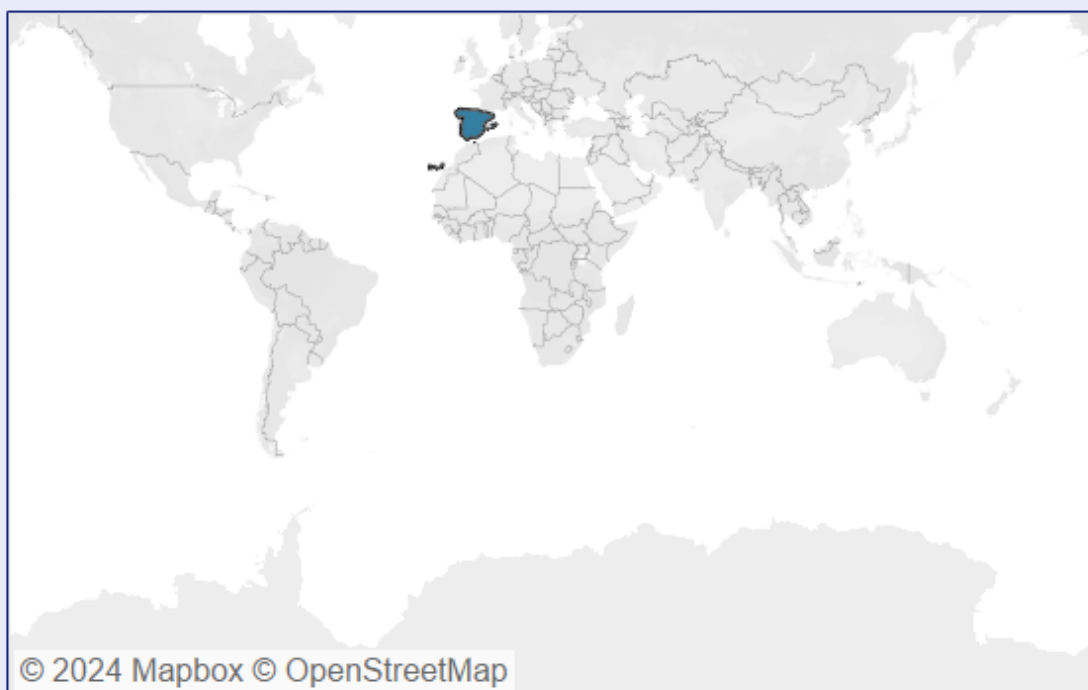
54

Total Instore Purchase

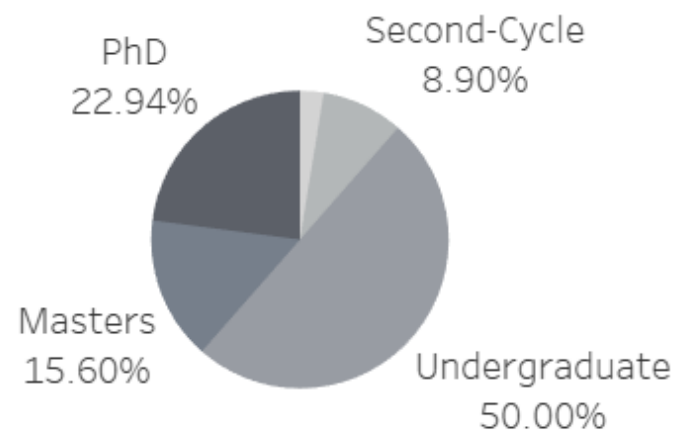
6,331

Total Website Purchase

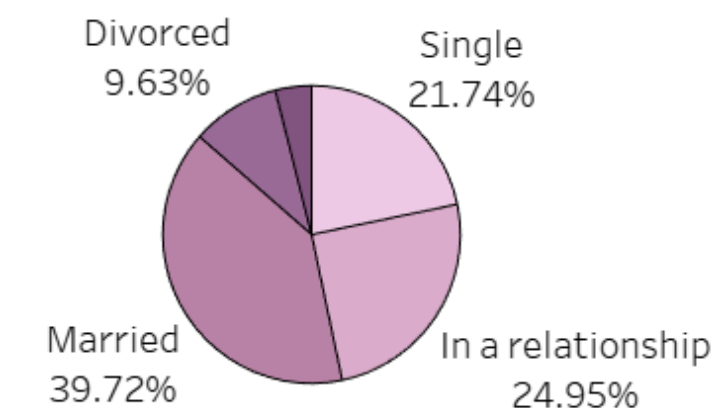
4,373



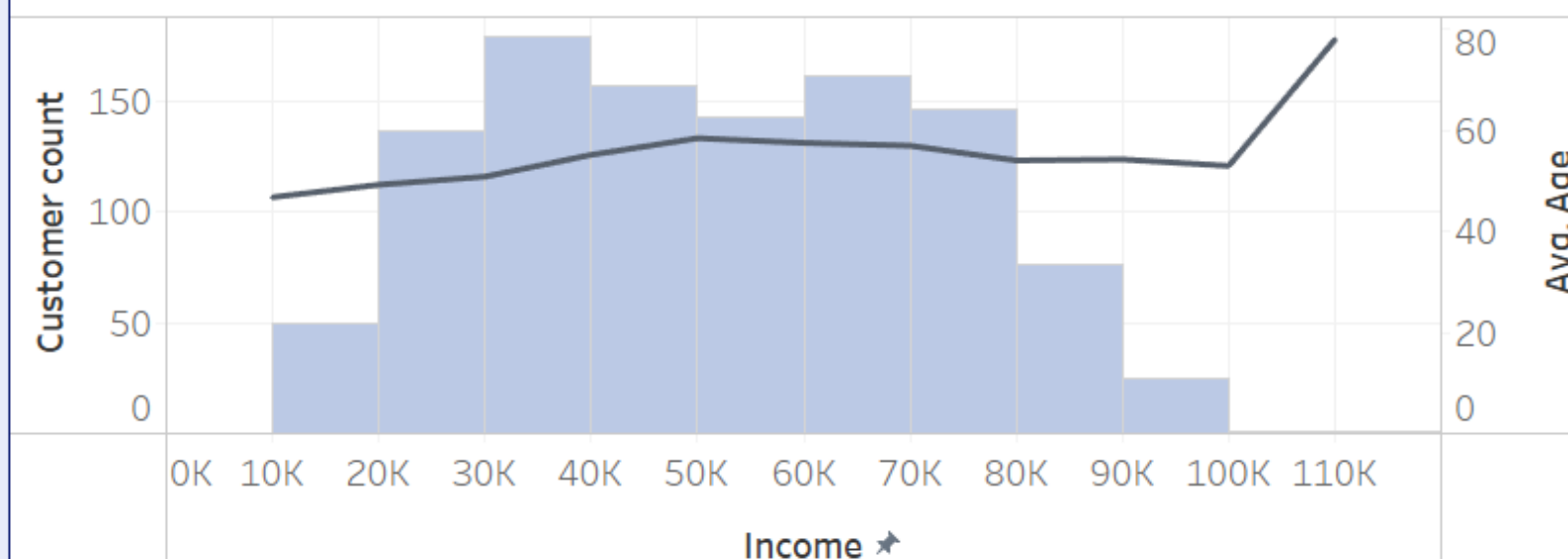
Education level demographics



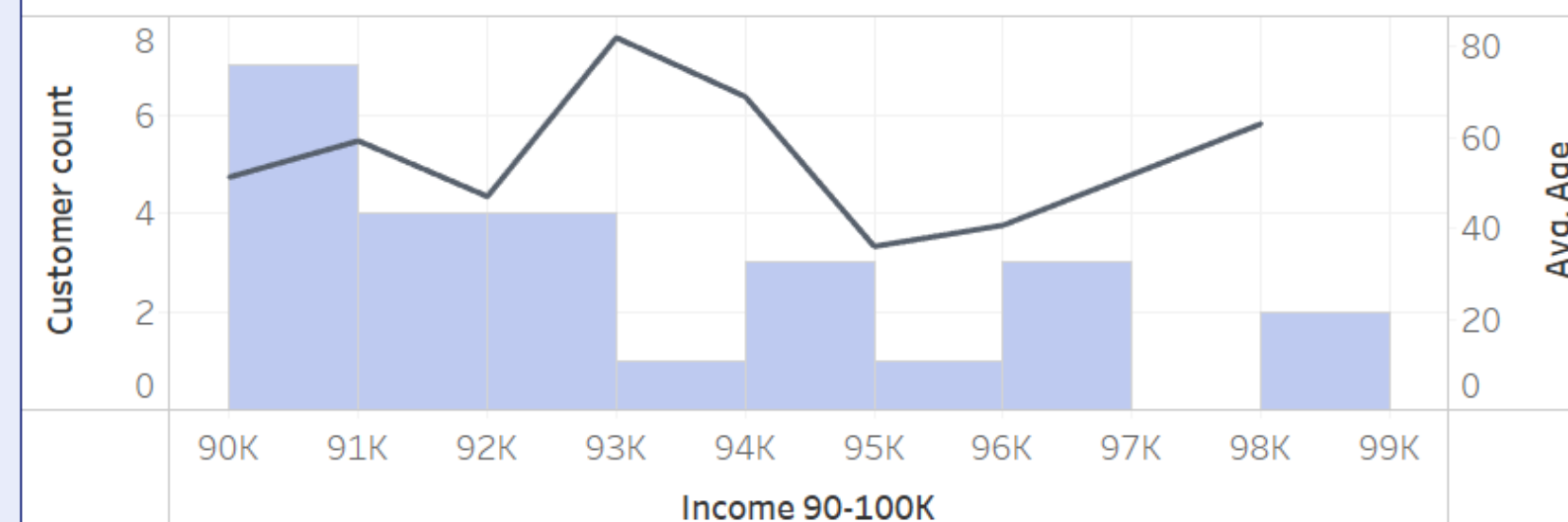
Marital Status demographics



Income and average age



Focusing on the \$90-100K



Summary



Filters



Export



Info



PATTERNS, TRENDS, INSIGHTS



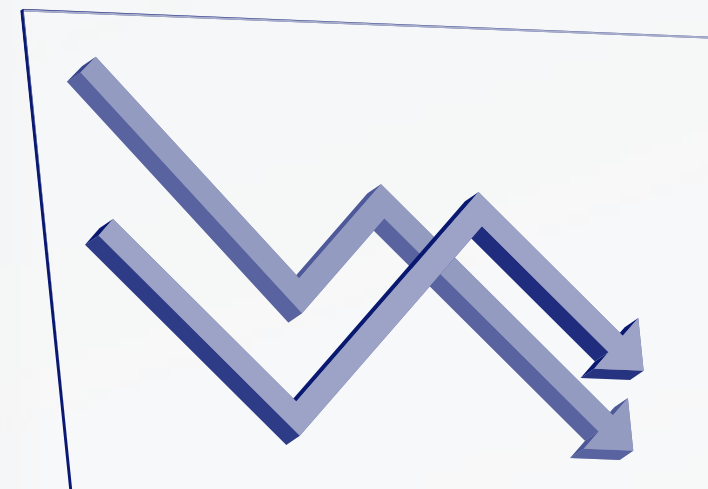
SALES

38%

Sales come from married customers

51%

Sales come from customers with undergraduate level of education



Sales trends are declining



2Market Analysis Dashboard



30/07/2012 - 29/06/2014

WELCOME BEATA\beata!

Demographics

Sales

Marketing

Total Sales

\$ 1,339,982

Total Sales Trend for current month



Compound growth rate

2012	2013	2014
0.0%	93.1%	-13.6%

Total number of customers

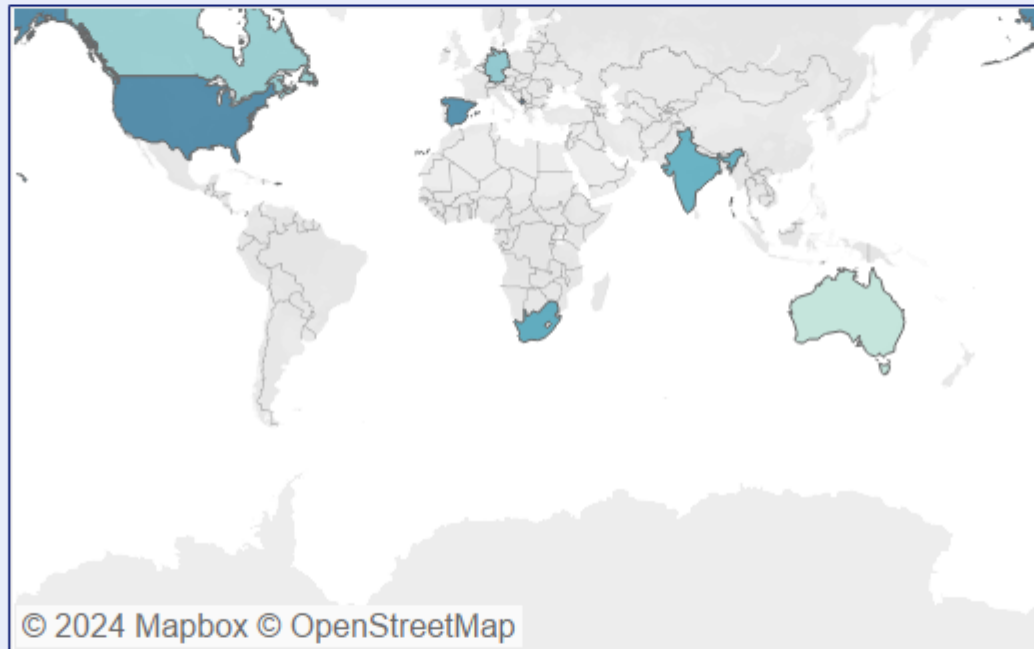
2,216

Total Instore Purchase

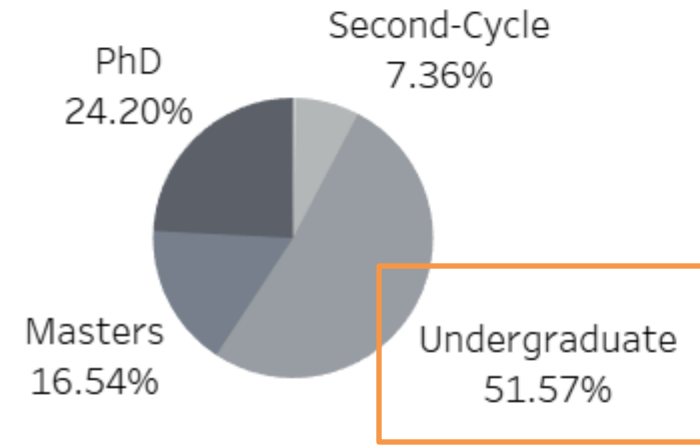
12,855

Total Website Purchase

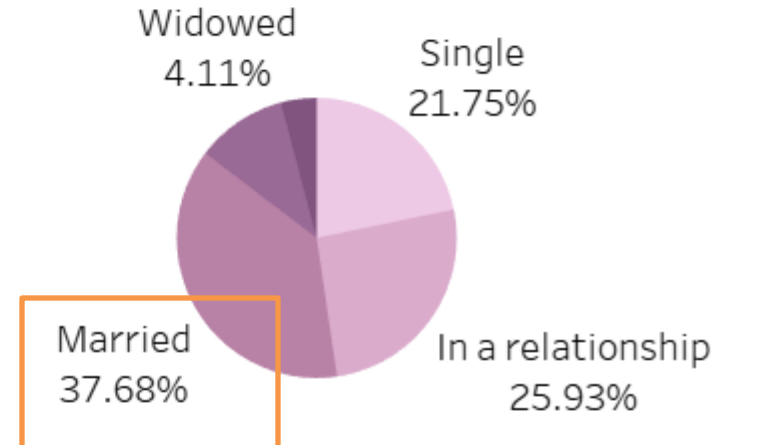
9,049



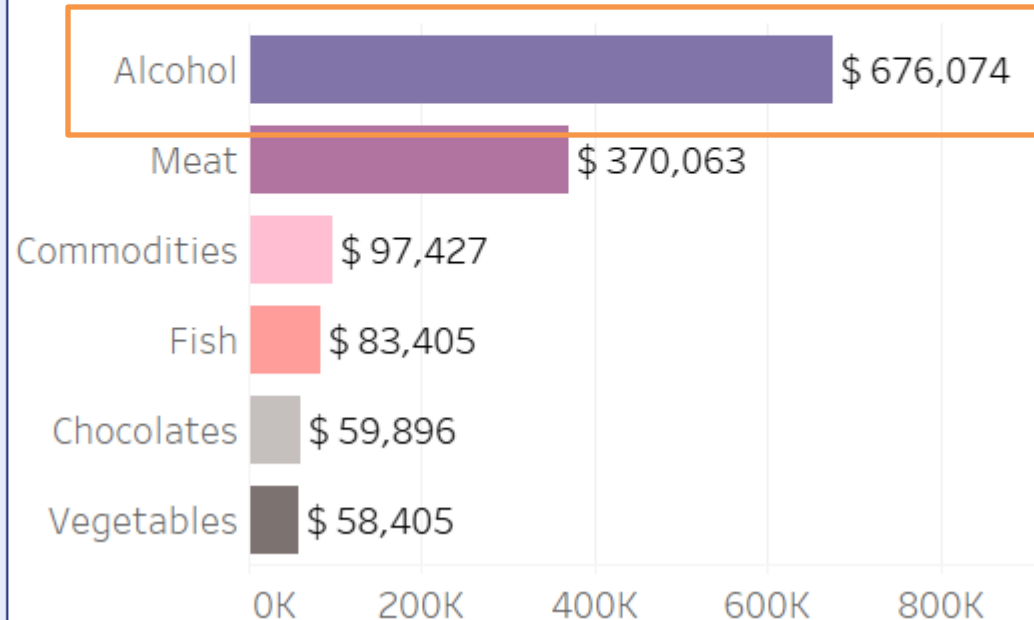
Total Sales per education level



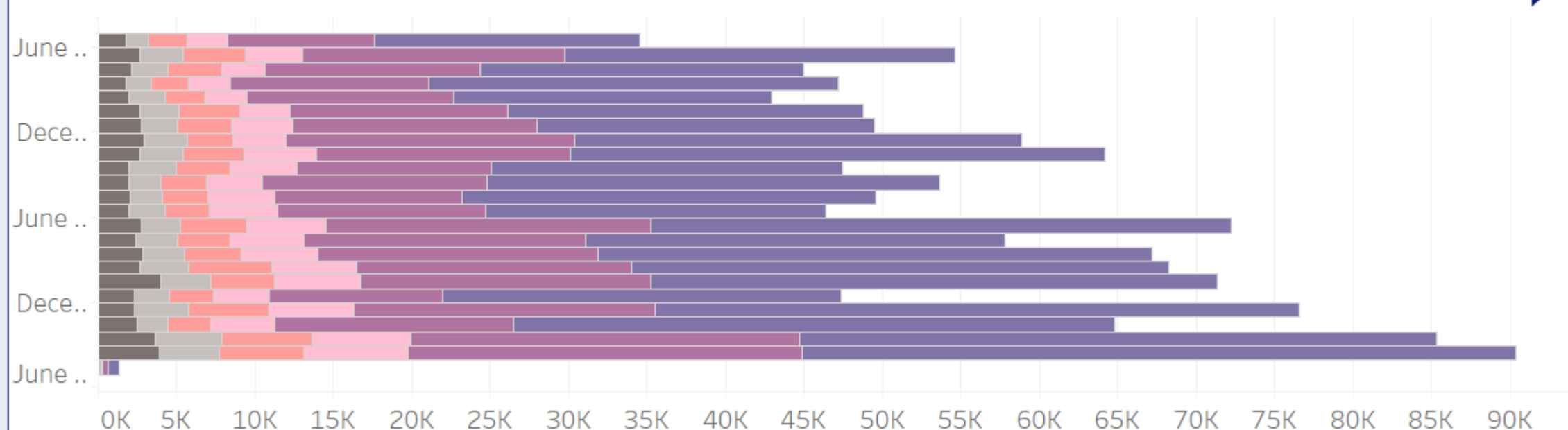
Total Sales per marital status



Sales per products



Sales Trends for products



Summary



Filters



Export



Info





2Market Analysis Dashboard

Focus on 2014



01/01/2014 - 29/06/2014

WELCOME BEATA\beata!

Demographics

Sales

Marketing

Total Sales

\$ 271,475

Total Sales Trend for current month



Compound growth rate

2014

0%

Total number of customers

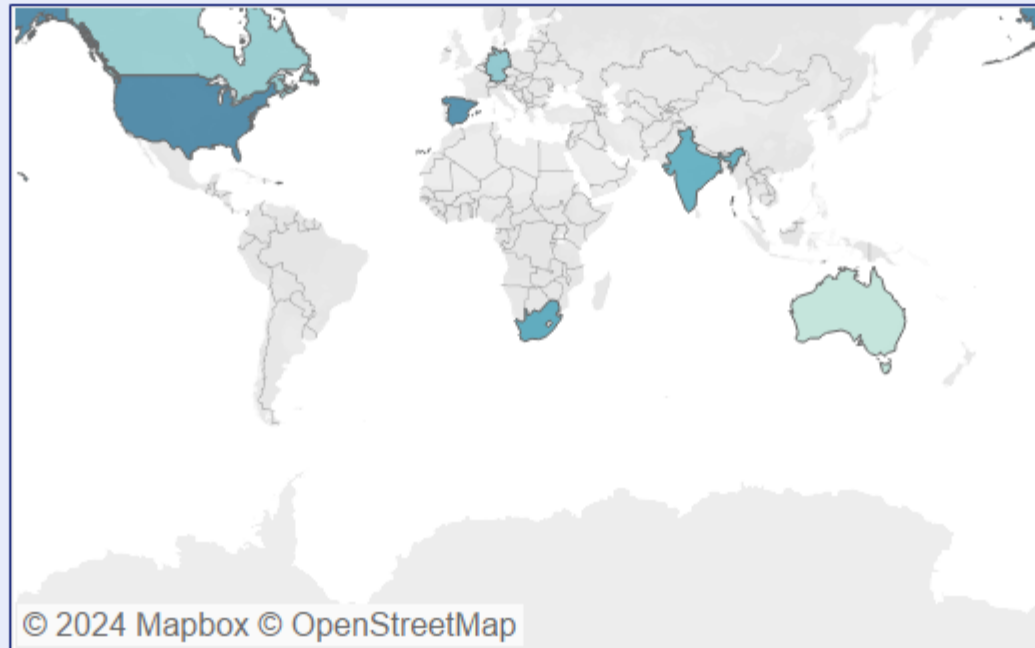
553

Total Instore Purchase

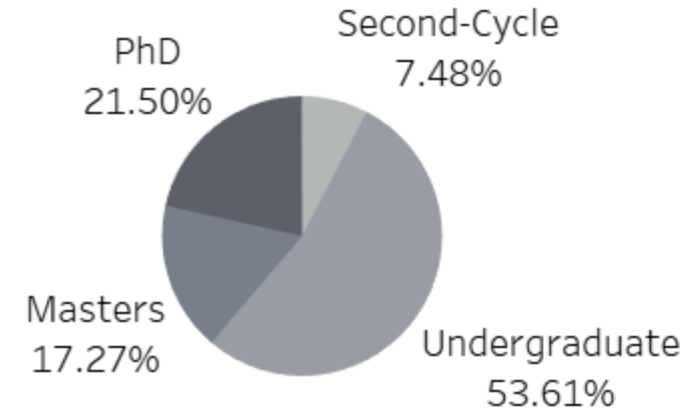
2,921

Total Website Purchase

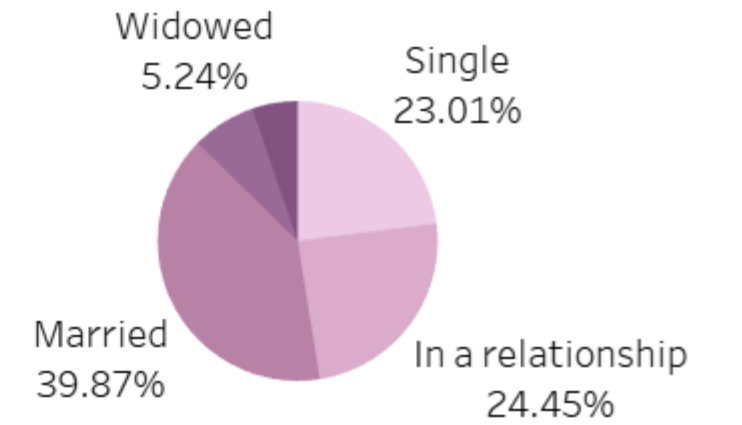
1,874



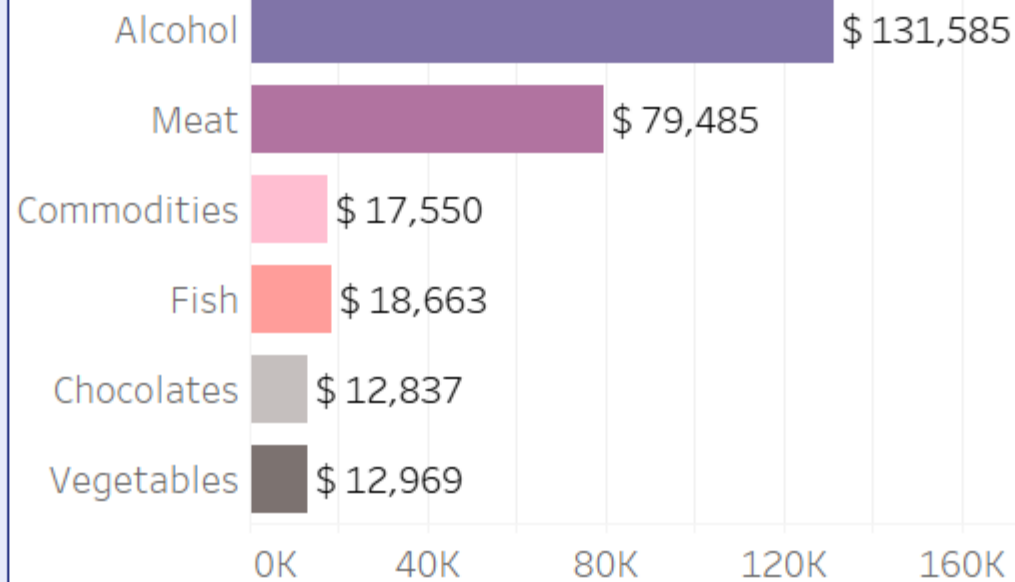
Total Sales per education level



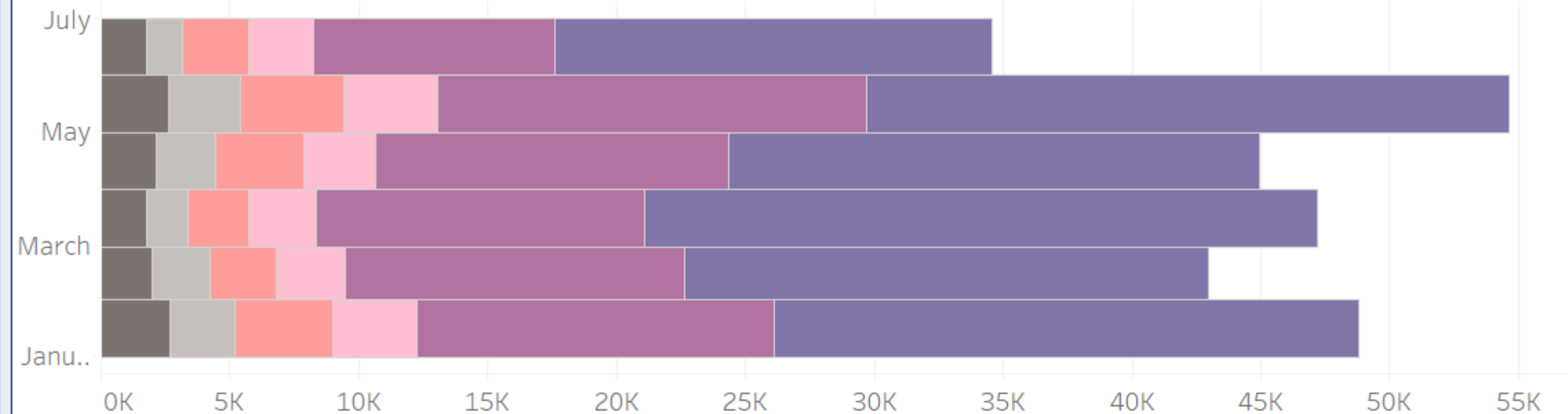
Total Sales per marital status



Sales per products



Sales Trends for products



Summary



Filters



Export



Info





Summary



Filters



Export



Info



2Market Analysis Dashboard

Focus on Spain



30/07/2012 - 29/06/2014

WELCOME BEATA\beata!

Demographics

Sales

Marketing

Total Sales

\$ 659,385

Total Sales Trend for current month



Compound growth rate

2012	2013	2014
0.0%	104.4%	-12.5%

Total number of customers

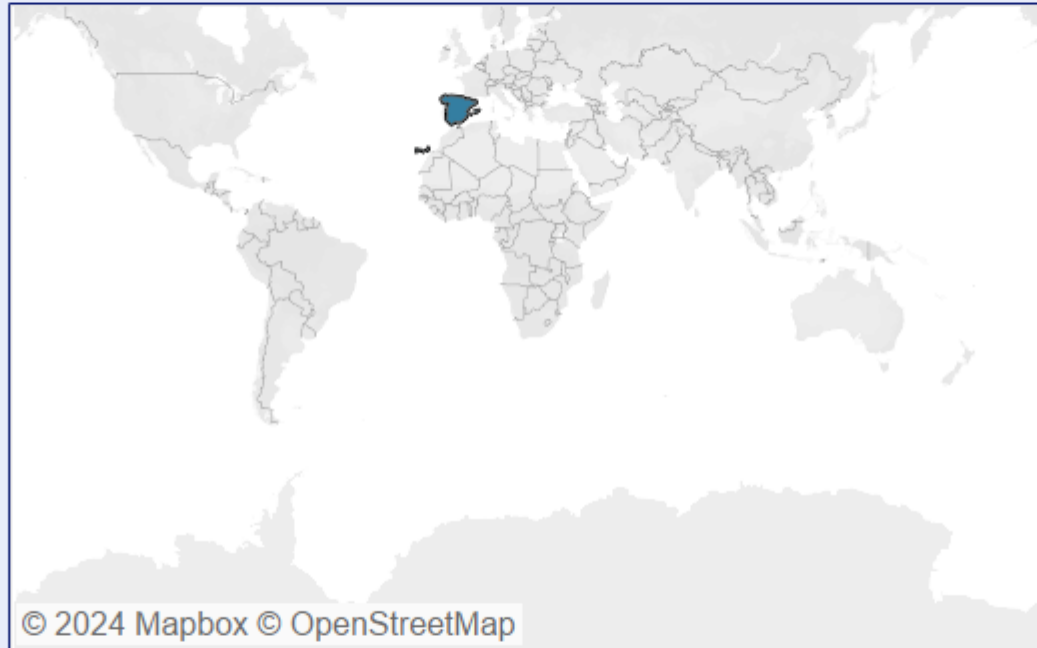
1,093

Total Instore Purchase

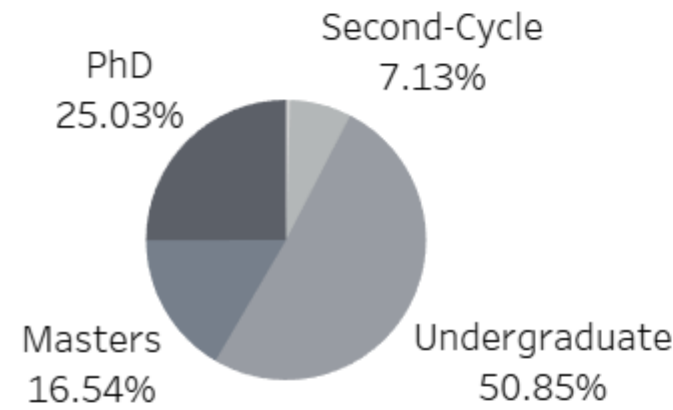
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Total Website Purchase

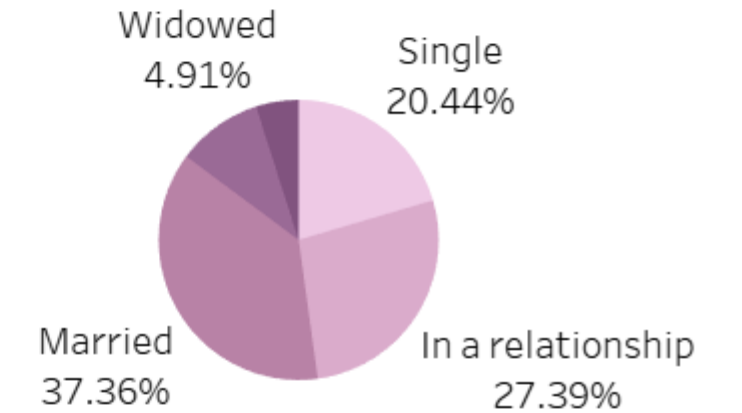
4,373



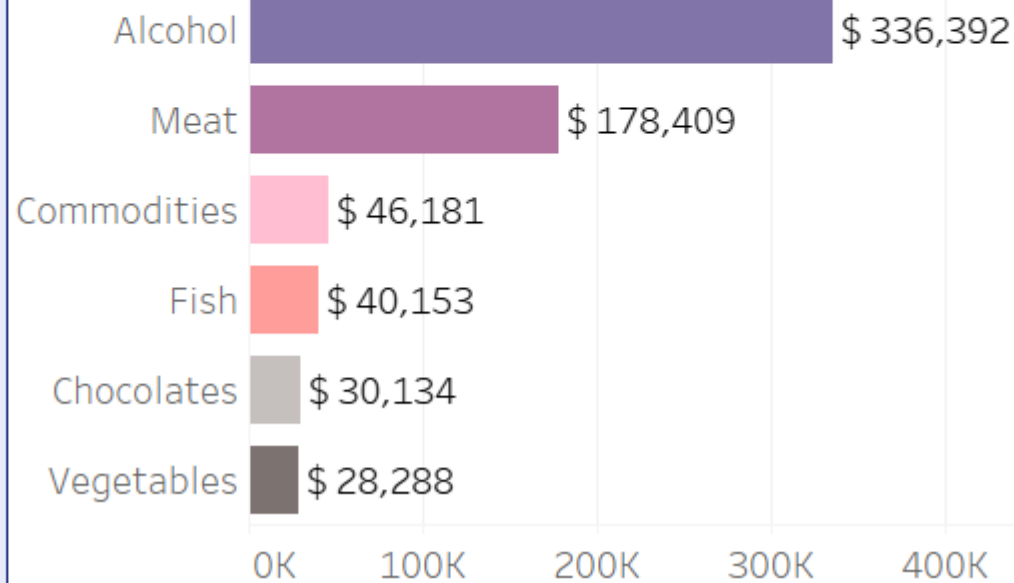
Total Sales per education level



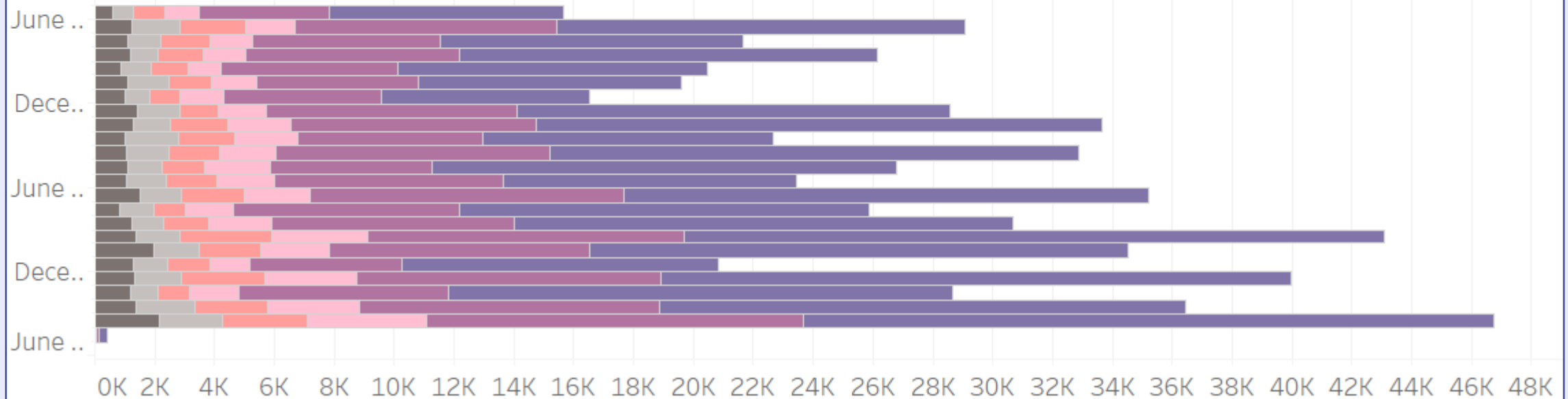
Total Sales per marital status



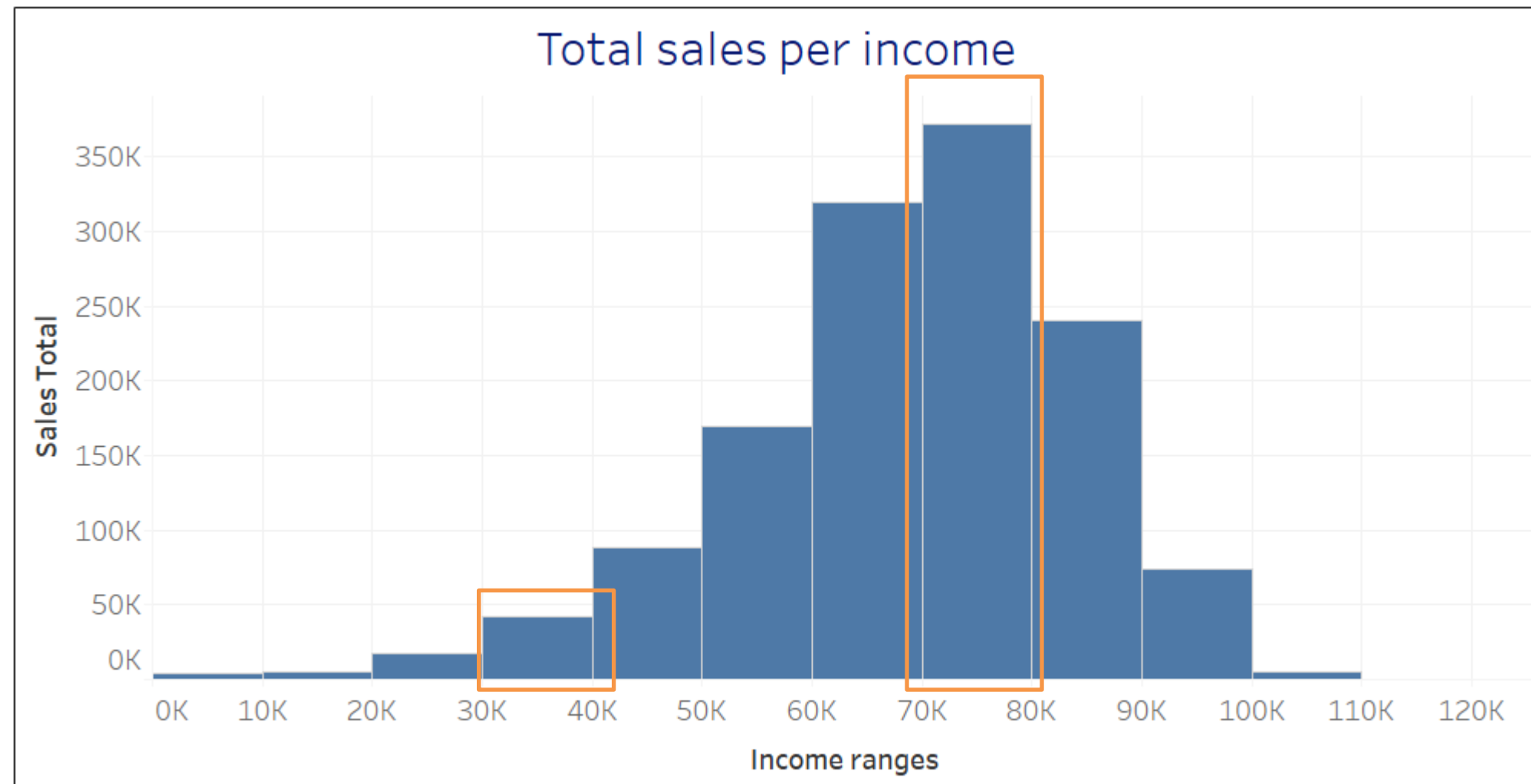
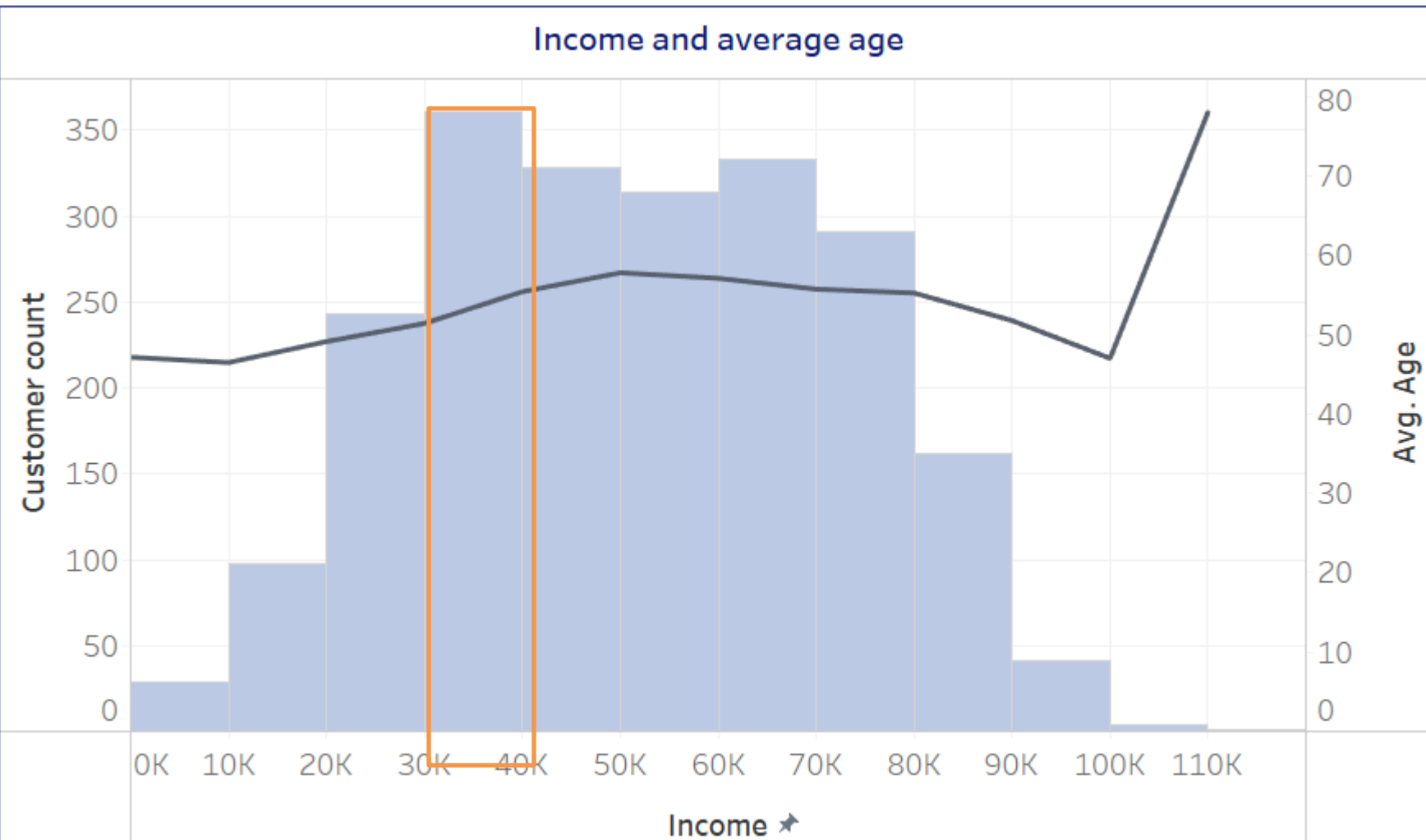
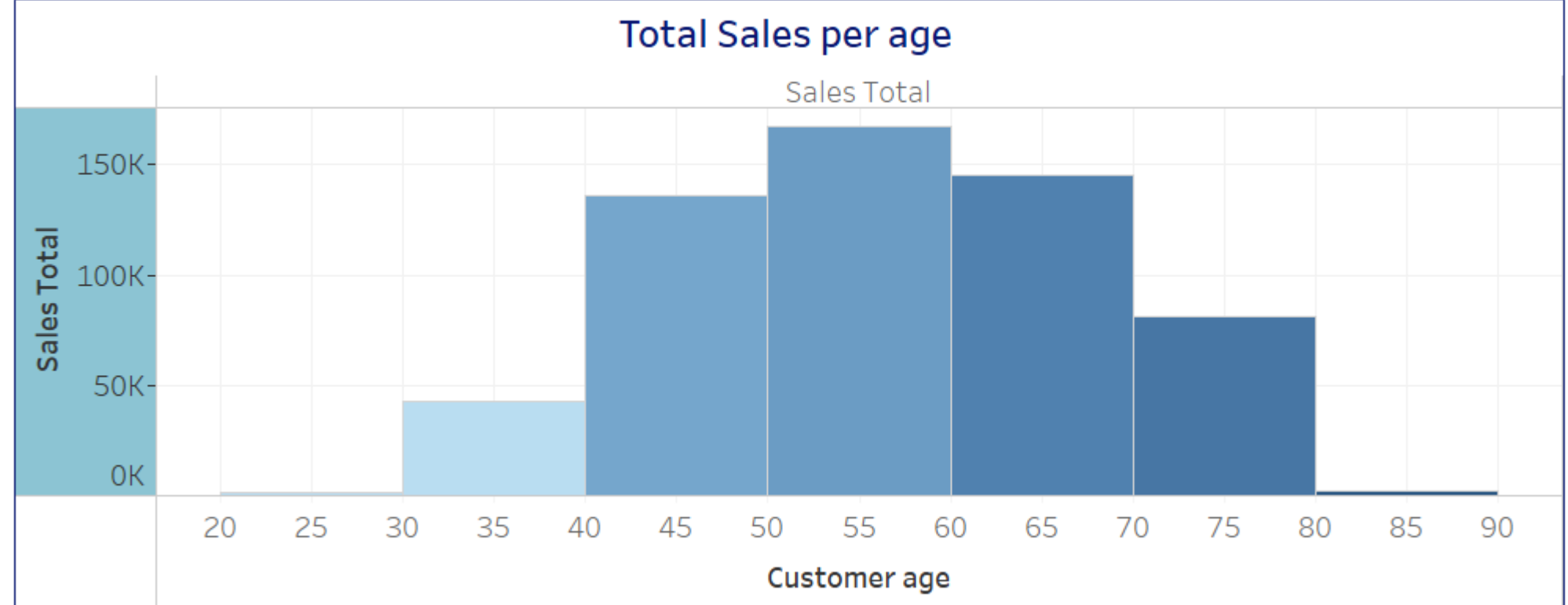
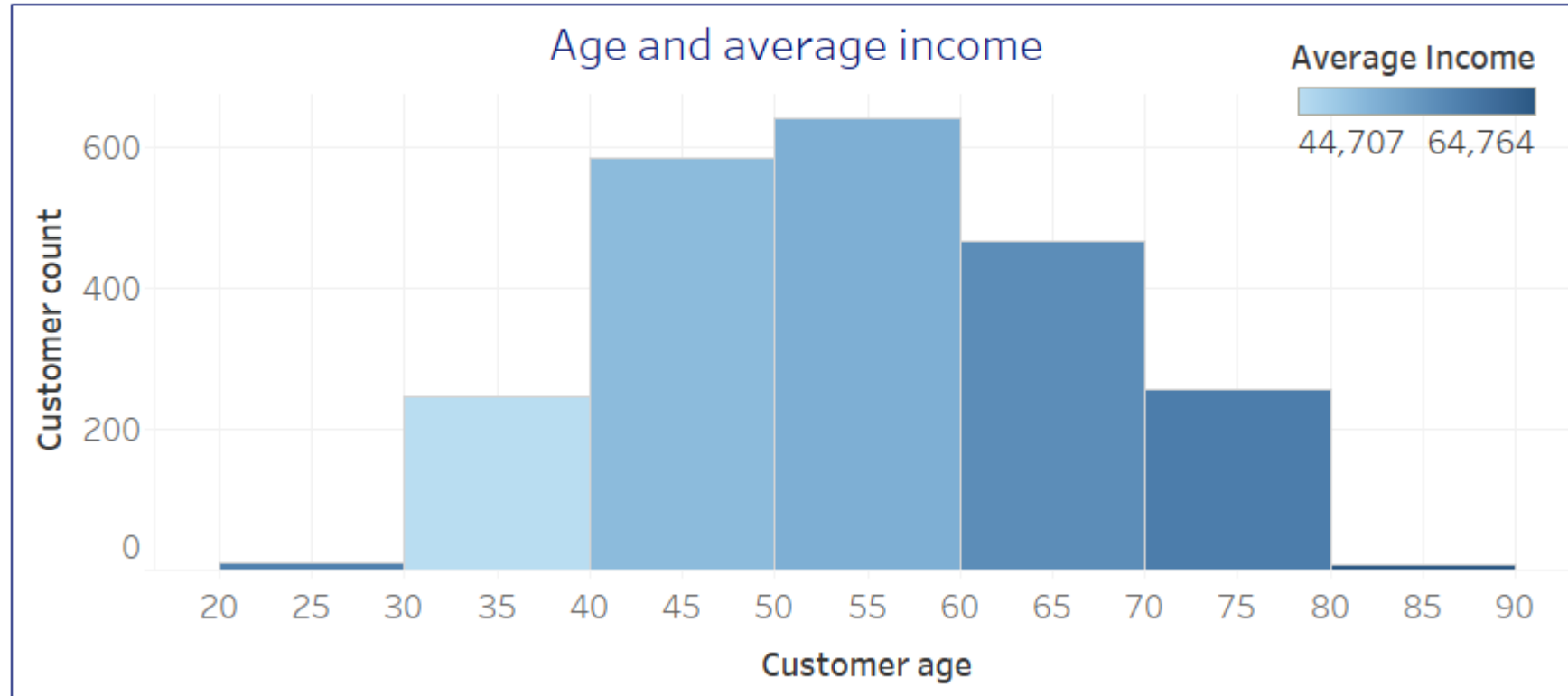
Sales per products



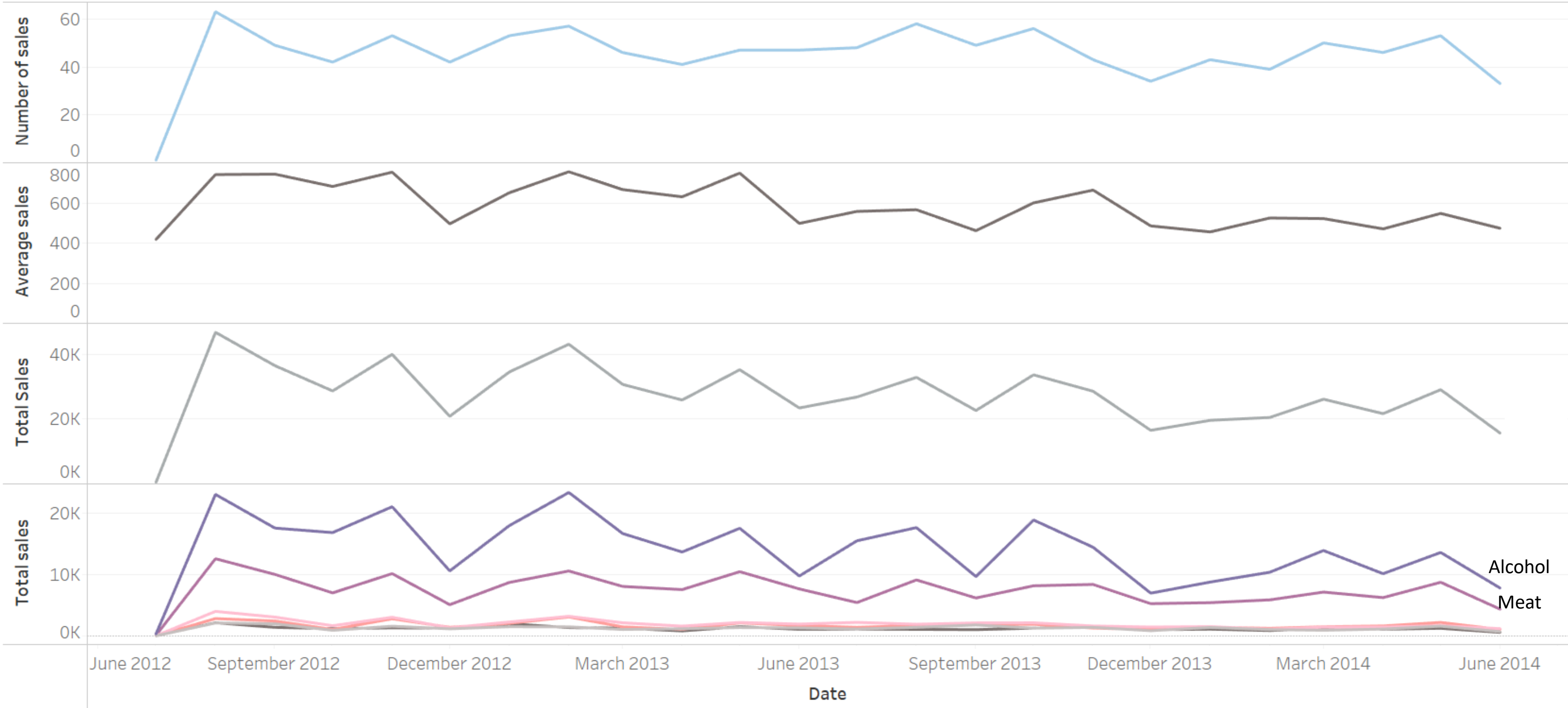
Sales Trends for products



Age and income insights



Sales trends



PATTERNS, TRENDS, INSIGHTS



MARKETING

Twitter has the highest number of conversions

Every advert channel leads to increased average sales

On average, returning customers show higher average sales both in-store and online



2Market Analysis Dashboard



30/07/2012 - 29/06/2014

WELCOME BEATA\beata!

Demographics

Sales

Marketing

Total Sales

\$ 1,339,982

Total number of customers

2,216

Average Income

\$ 51,622

Average Age

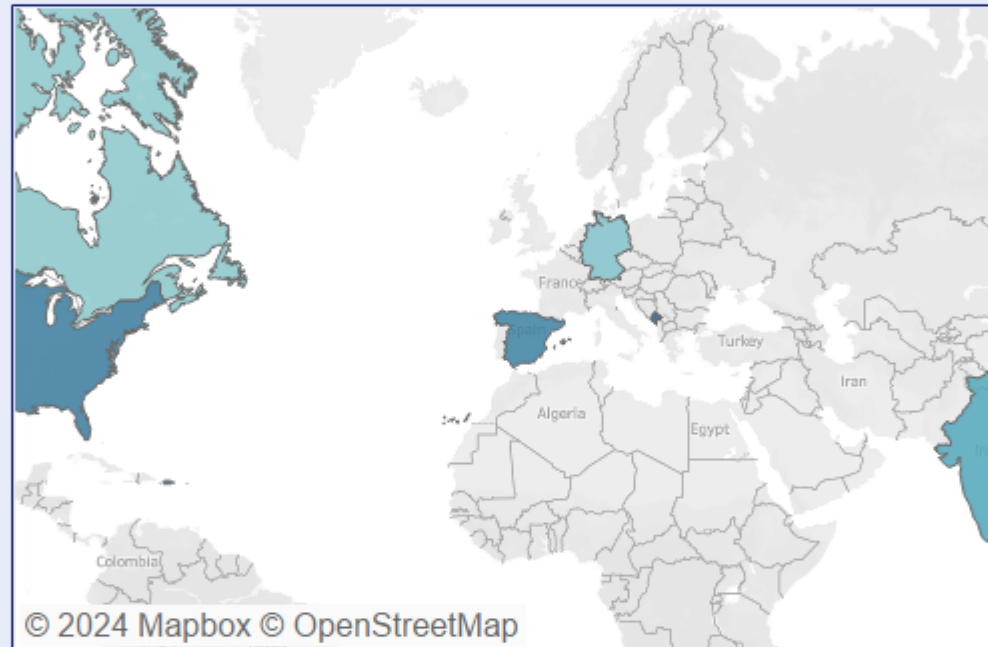
54

Total Instore Purchase

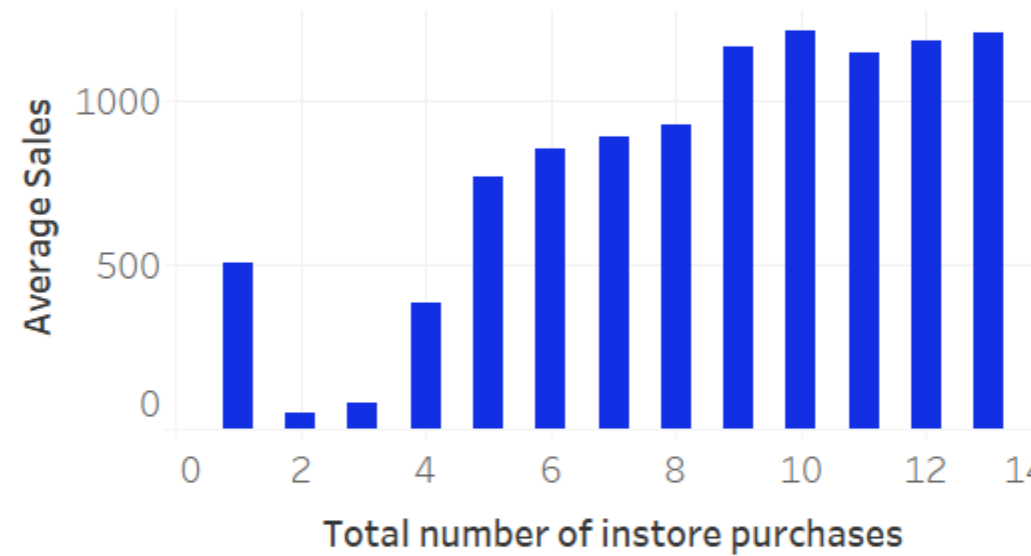
12,855

Total Website Purchase

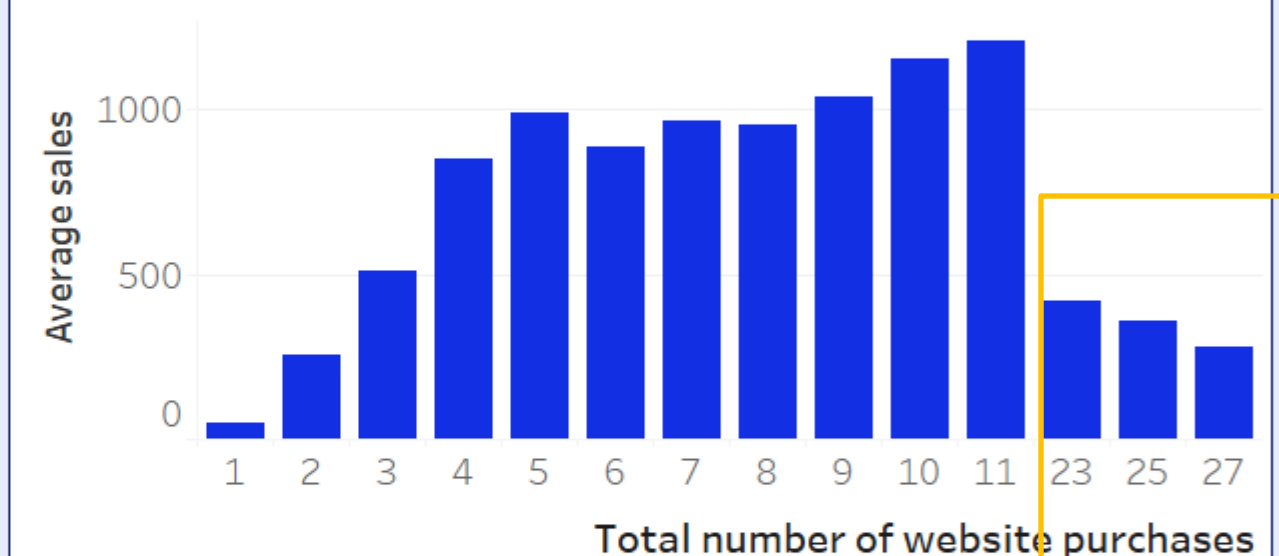
9,049



Average Sales from In-store purchases



Average Sales from website purchases



Summary



Filters



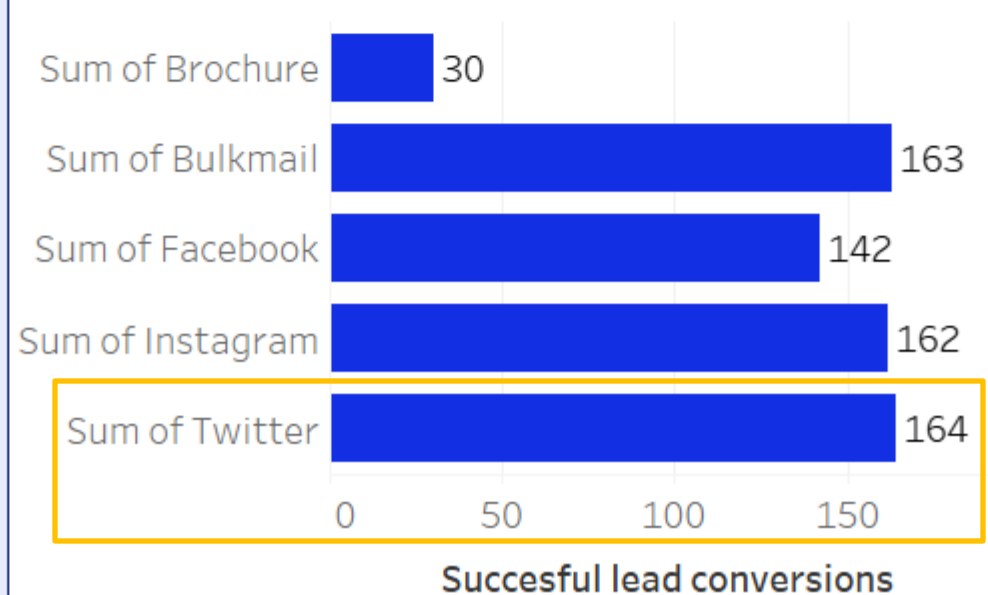
Export



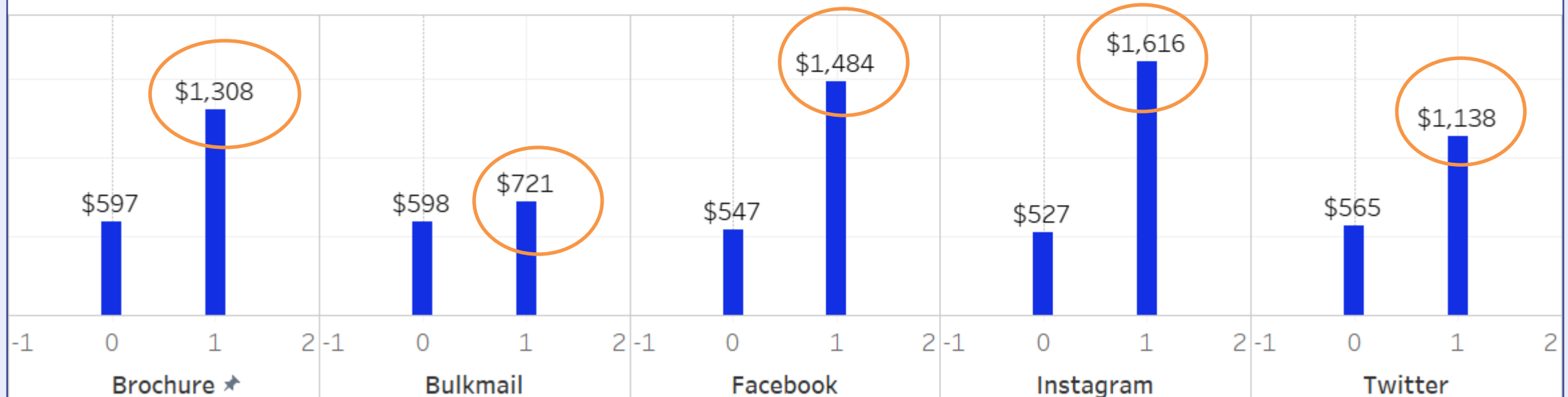
Info



Marketing channels



Average sales per unsuccessful (0) or successful (1) lead conversions



Focus on Discount above 10

2Market Analysis Dashboard



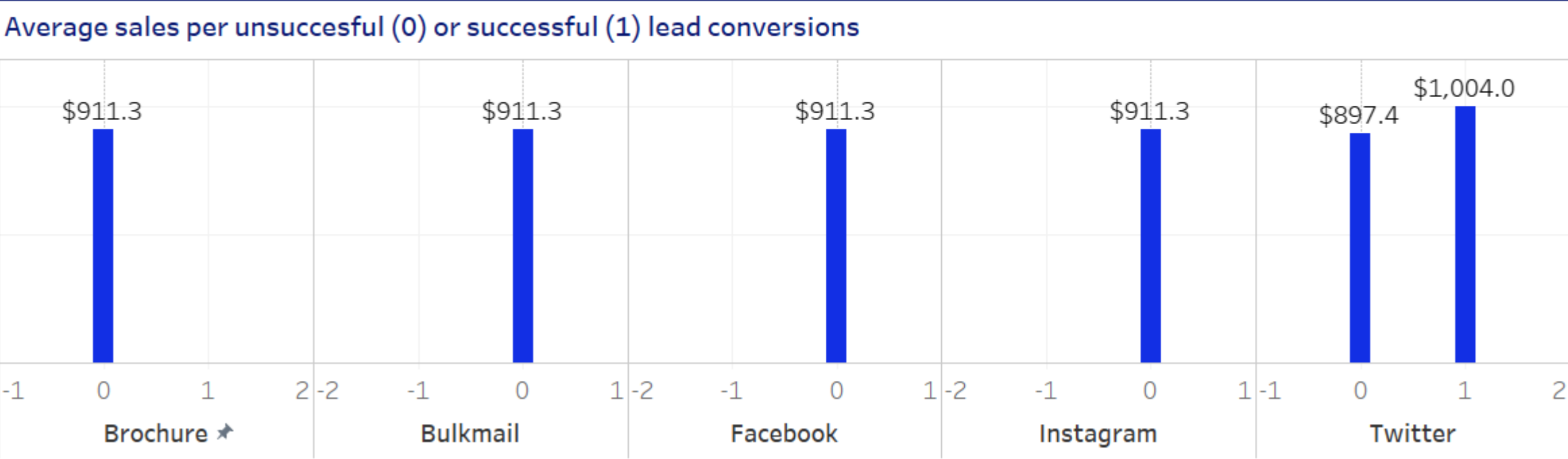
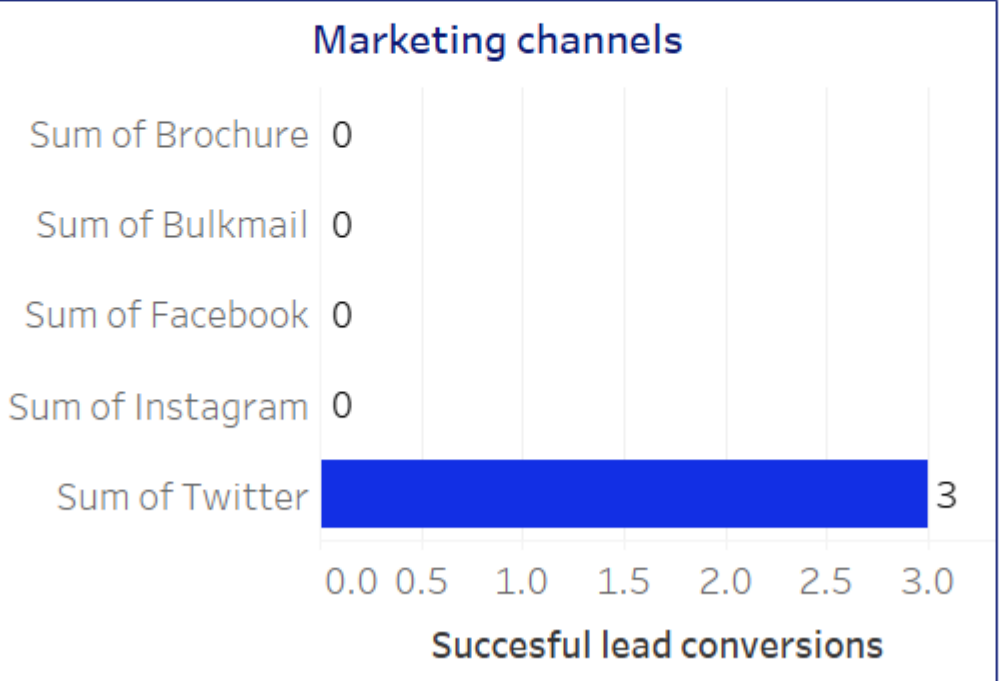
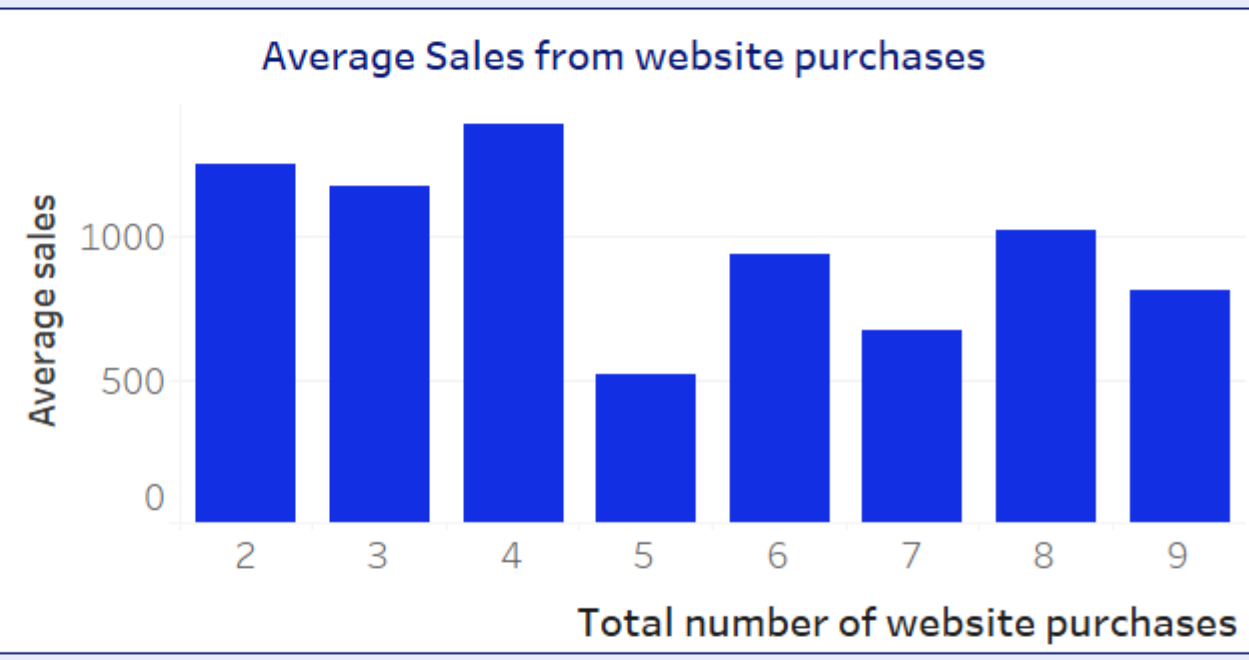
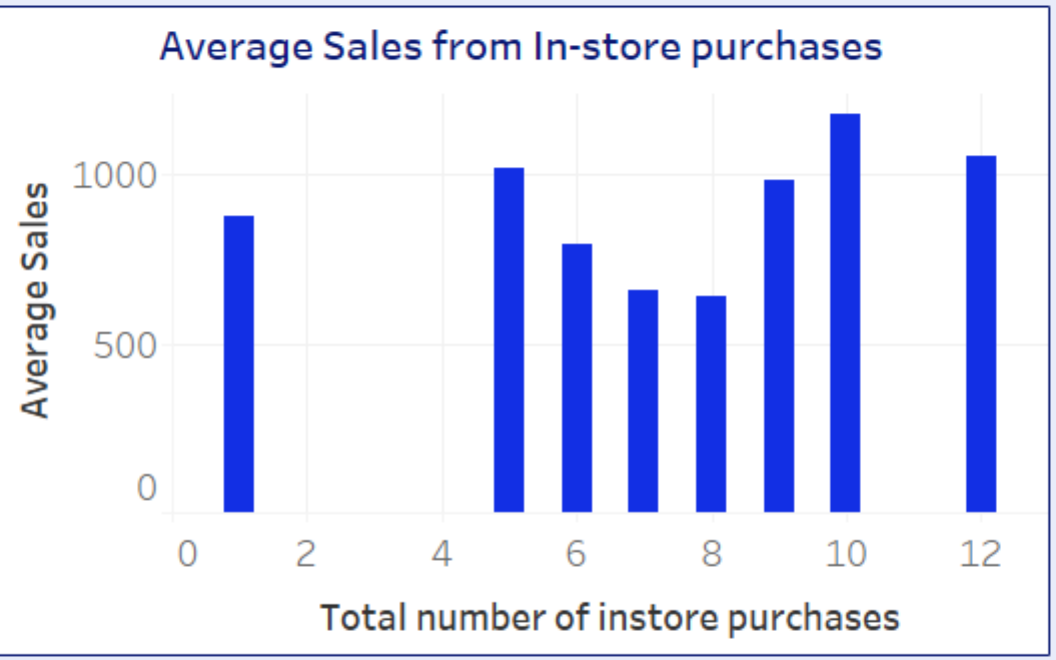
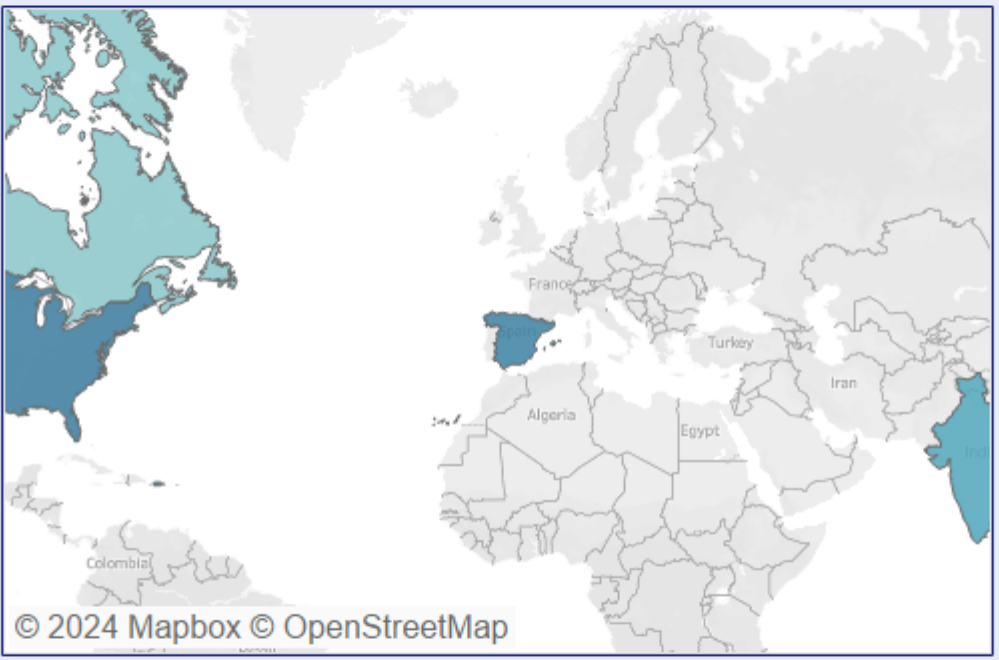
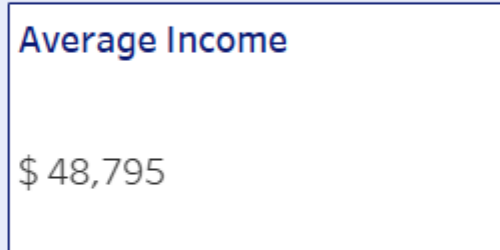
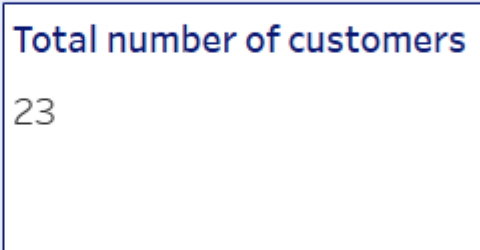
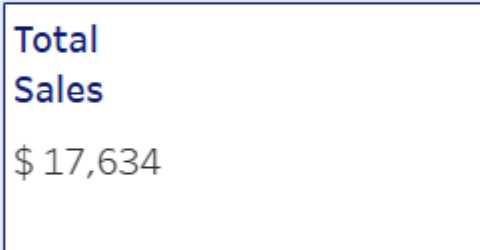
28/08/2012 - 23/06/2014

WELCOME BEATA\beata!

Demographics

Sales

Marketing



Summary



Filters



Export



Info





Demographics

Sales

Marketing



Summary



Filters



Export



Info



KEY INSIGHTS

Based on all available data the following insights were gained: (These may be different if filtered by year)

Customer demographics:

- There was data available for 2216 customer purchases
- Average age of customers: 54 years
- Average income of customers: \$ 52,247
- Highest customer numbers are from Spain
- 39% of customers are married
- 50% of customers have undergraduate level of education

Sales Insights

- Average of Total sales: \$ 607
- 49% of the total sales is from Spain
- 52% of the total sales is from customers who have undergraduate level of education
- 38% of the total sales is from customers who are married
- In relation to age, customers who are between 50-60 account for the highest sales
- In relation to income, customers with incomes between 70-80K account for the highest sales
- Most popular product type is alcohol for every customer demographic, this is followed by meat and commodities.
- Highest total sale was in 2012 Q4

Marketing Insights:

- Overall Twitter adverts results the most successful lead conversion. Advertising lead to higher average sales.
- The most effective lead conversion varies per demographics
- The higher number of in-store or website purchases means higher average sales, however, web purchases over 20 does not lead to higher sales average.

RECOMMENDATIONS

Appendix 10 in PDF report

01

Targeted
Marketing
Campaigns

02

Enhanced
Advertising
Strategy

03

Product Line
Optimization

04

Customer
Retention
Programs

05

Data-Driven
Decision
Making



