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Assignment: Exploratory analysis and presenting insights

2Market, a global supermarket, aims to optimise customer engagement by examining how demographics, product preferences, and advertising strategies influence purchasing behaviour. Applying a structured problem-solving framework - such as McKinsey's seven step problem-solving process (Appendix 1) - we begin by assessing key challenges: identifying demographic segments, determining advertising channel efficacy, and understanding product popularity variations. Through the use of analytical tools such as Excel and SQL as well as data visualisation tools such as Tableau, we focus on uncovering actionable insights such as segment-specific promotions and advertising channel prioritisation with the ultimate goal of improving sales performance.

To begin, I imported the marketing and ads data into Excel to examine the structure, identify anomalies, and ensure consistent formatting. Immediately, inconsistencies were spotted and had to be fixed. For example, the income field within the marketing data sheet initially appeared as text due to the "$" sign, so I removed extraneous characters and converted the column to a numeric data type. Next, I formatted date columns uniformly, confirming that entries followed a standard day-month-year structure - however, this was later changed to year-month-date in order to be successfully uploaded into PgAdmin. While cleaning, I used conditional formatting and pivot tables to spot outliers or missing values. One such outlier was that there were customers who were 120 years old. This was duly noted albeit not removed from the dataset as I did not want to omit any data.

Once data consistency and accuracy were established, I uploaded both datasets into SQL for deeper analysis. By joining the tables on a shared "ID," I was able to unify marketing campaign outcomes with corresponding demographic and transactional details. This approach allowed me to address key questions systematically. For instance, I calculated basic customer metrics - total customers, average income, and average age - directly from the joined tables. I also examined minimum and maximum age to uncover the broad span of 2Market's audience (Appendix 2.1.1). Distribution analyses of education, marital status, and country proved invaluable (Appendix 2.1.2 - 2.1.4), revealing how these factors correlated with purchase behaviour.

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Focusing on advertising channel effectiveness (Appendix 2.2), I counted the number of customers converted via each channel, combined with total spend by channel. Further SQL queries explored the average spend on products by customers converted through each channel, helping identify which promotions yielded the highest returns. These findings provided data-driven insight into channel prioritisation.

Lastly, I investigated best-selling products and demographic variances (Appendix 2.3). By ranking products by total sales, I found clear top performers across the dataset. Breaking these results down by marital status, education level, and number of children revealed unique spending patterns. Grouping ages into buckets and looking at purchase volumes uncovered which product categories resonated with particular generations, which will be critical for tailoring marketing strategies. Every step, from data cleaning to SQL-based queries, served to maintain data integrity, enable robust reporting, and deliver actionable insights that inform 2Market's strategic direction.

When designing the dashboard, I focused on telling a clear story in three stages: understanding audience demographics, assessing advertising channel effectiveness, and highlighting insights discovered through analysis. To achieve this, I utilised the "Story" feature in Tableau and separated the story into three distinct sections: "Who are our audiences?", "Advertising Channel Effectiveness" and finally "Data Analysis". This ensured that each stage logically flows into the next.

In the first section, I used bar charts and scatter plots to paint a picture of our customers. The second section concentrates on advertising channels, featuring bar charts to track how many conversions occurred by channel. Icons and colour coding distinguish channels like Twitter, Instagram, and bulk mail, making it easy to differentiate between channels. The interesting piece to note is the distinction between conversions by country versus the customer count by country. Spain had the most customer base by volume which may correlate to the highest conversions coming out of that country. However, looking at average spend per converted customer tells us that Spain may not be where the most profitable customers are.

The final segment compiles key insights revolving around product spend, including top-selling products broken down by various demographic segments. Here, I included interactive elements such as filters that allow users to customise the view, whether they need a breakdown by

number of kids, teens, country or age. Here, I tested contrast levels between colours to ensure viewers with visual impairments could navigate the dashboard comfortably.

Upon reviewing the data in greater detail, it became clear that Spain accounts for the largest portion of our overall customer base. While this might initially give the impression that Spain also generates the majority of advertising conversions and highest sales, these figures are heavily influenced by the sheer volume of Spanish customers. In reality, average spend per customer is a more reliable indicator. Canada and South Africa, for example, both record far fewer conversions yet surpass Spain in average expenditure (Appendix 2.3.9). Given these findings, it may be wise to redistribute some advertising budgets toward markets where each individual purchase carries a higher profit margin.

In terms of channel effectiveness, Twitter registers the highest number of conversions overall (Appendix 2.2.1). Yet Instagram users stand out with the greatest spend per converted customer (Appendix 2.2.2), making it a promising channel for raising average basket size. Facebook ranks closely behind, while Brochure marketing—though not as popular—still secures a cohort of higher-value shoppers (Appendix 2.2.2). Shifting additional marketing resources to Instagram could therefore prove beneficial, especially when combined with the reliable but lower-value conversions from Twitter and bulk mail.

The product breakdown underscores liquor as a significant revenue driver, most notably among customers aged 35 to 45 (Appendix 2.3.4), who also represent one of the highest-spending groups. Strengthening promotional deals in this category would likely boost sales in that demographic. At the same time, data suggests that households with children often allocate less money to liquor purchases (Appendix 2.3.6), although parents of teenagers appear less deterred than those with younger kids (Appendix 2.3.7). Still, caution is warranted when attempting to target people who have one or more children at home. In such cases, it might be more effective to concentrate on other strong-selling categories—like meat and commodities—which would be better aligned with family shopping needs.

Overall, these insights and recommendations underscore the importance of tailoring strategies to specific regions, age brackets, and family structures to maximise both conversion volume and per-customer revenue.

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Appendix

Appendix 1 - McKinsey's Seven Step Problem-Solving Process

Define the Problem:
 2Market wants to increase sales and improve customer engagement by understanding how various demographic segments respond to different advertising channels and product assortments.

Disaggregate Issues:
 Break the problem into distinct areas—e.g. demographic groups, marketing channel performance, product preferences, and purchase amount.

Prioritise and Form Hypotheses:
 Identify the most critical drivers. For instance, "Younger customers might be more responsive to social media ads" and "The number of children one has in their home affects product purchases."

Gather Data:
 Consolidate information from purchase data and marketing campaigns. Ensure data quality, cleanliness, and relevance.

Analyse the Data:
 Use SQL or Excel to link datasets and generate insights. Explore relationships between advertising spend, conversions, and demographic characteristics. Test hypotheses by segmenting and comparing channel performance. Visualise the data on Tableau.

Synthesise Findings:
 Summarise key insights: which segments respond best to specific channels, product categories most in demand, and potential growth opportunities.

Develop and Implement Recommendations:
 Recommend tailored marketing strategies (e.g. segmented email campaigns, regional promotions).

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Appendix 2 - Analysis and Insights using PostgreSQL

Appendix 2.1 - Basic customer details

Appendix 2.1.1 - Basic overall metrics about 2Market's customers

Syntax:

```
SELECT
    COUNT(*) AS total_customers,
    AVG(income) AS avg_income,
    AVG(customer_age) AS avg_age,
    MIN(customer_age) AS youngest_age,
    MAX(customer_age) AS oldest_age
FROM public.marketing_data;
```

	total_customers bigint	avg_income numeric	avg_age numeric	youngest_age integer	oldest_age integer
1	2216	52247.251353790614	43.2080324909747292	15	120

Appendix 2.1.2 - Distribution of customers by education

Syntax:

```
SELECT
    education,
    COUNT(*) AS total_customers
FROM public.marketing_data
GROUP BY education
ORDER BY total_customers DESC;
```

	education character varying (50)	total_customers bigint
1	Graduation	1116
2	PhD	481
3	Master	365
4	2n Cycle	200
5	Basic	54

Appendix 2.1.3 - Distribution of customers by marital status

Syntax:

```
SELECT
    marital_status,
    COUNT(*) AS total_customers
FROM public.marketing_data
GROUP BY marital_status
ORDER BY total_customers DESC;
```

	marital_status character varying (20) 🔒	total_customers bigint 🔒
1	Single	1051
2	Married	857
3	Divorced	232
4	Widow	76

Appendix 2.1.4 - Distribution of customers by country

Syntax:

```
SELECT
    country,
    COUNT(*) AS total_customers
FROM public.marketing_data
GROUP BY country
ORDER BY total_customers DESC;
```

	country character varying (50) 🔒	total_customers bigint 🔒
1	Spain	1093
2	South Africa	337
3	Canada	266
4	India	147
5	Australia	147
6	Germany	116
7	United States	107
8	Montenegro	3

Appendix 2.2 - Advertising Channel Effectiveness

Appendix 2.2.1 - How many customers converted with each channel?

Syntax:

```
SELECT
    SUM(CASE WHEN Bulkmail_ad = 1 THEN 1 ELSE 0 END) AS bulkmail_customers,
    SUM(CASE WHEN Twitter_ad  = 1 THEN 1 ELSE 0 END) AS twitter_customers,
    SUM(CASE WHEN Instagram_ad = 1 THEN 1 ELSE 0 END) AS instagram_customers,
    SUM(CASE WHEN Facebook_ad  = 1 THEN 1 ELSE 0 END) AS facebook_customers,
    SUM(CASE WHEN Brochure_ad  = 1 THEN 1 ELSE 0 END) AS brochure_customers
FROM public.ad_data;
```

	bulkmail_customers bigint 🔒	twitter_customers bigint 🔒	instagram_customers bigint 🔒	facebook_customers bigint 🔒	brochure_customers bigint 🔒
1	163	164	162	142	30

Appendix 2.2.2 - Total Spend from Converted Customers by Ad Channel

Syntax:

```
SELECT
    'Bulkmail' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    SUM(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS total_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Bulkmail_ad = 1
```

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```sql
UNION ALL

SELECT
    'Twitter' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    SUM(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS total_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Twitter_ad = 1

UNION ALL

SELECT
    'Instagram' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    SUM(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS total_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Instagram_ad = 1

UNION ALL

SELECT
    'Facebook' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    SUM(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS total_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Facebook_ad = 1

UNION ALL

SELECT
    'Brochure' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    SUM(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS total_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Brochure_ad = 1;
```

	ad_channel text 🔒	total_customers_exposed bigint 🔒	total_spent numeric 🔒
1	Bulkmail	163	117448.00
2	Twitter	164	186560.00
3	Instagram	162	261862.00
4	Facebook	142	210777.00
5	Brochure	30	39230.00

Appendix 2.2.3 - Average Spend of customers that have converted by ad channel

Syntax:

SELECT
    'Bulkmail' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    AVG(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates + md.AmtComm) AS avg_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Bulkmail_ad = 1

UNION ALL

SELECT
    'Twitter' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    AVG(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates + md.AmtComm) AS avg_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Twitter_ad = 1

UNION ALL

SELECT

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```
    'Instagram' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    AVG(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS avg_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Instagram_ad = 1

UNION ALL

SELECT
    'Facebook' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    AVG(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS avg_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Facebook_ad = 1

UNION ALL

SELECT
    'Brochure' AS ad_channel,
    COUNT(*) AS total_customers_exposed,
    AVG(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS avg_spent
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE ad.Brochure_ad = 1;
```

	ad_channel text	total_customers_exposed bigint	avg_spent numeric
1	Bulkmail	163	720.5398773006134969
2	Twitter	164	1137.5609756097560976
3	Instagram	162	1616.4320987654320988
4	Facebook	142	1484.3450704225352113
5	Brochure	30	1307.6666666666666667

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Appendix 2.3.4 - Total & Average Spend of Customers Who Converted via Ads (by Country)

Syntax:

```
SELECT
    md.Country,
    COUNT(*) AS total_converted_customers,
    SUM(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS total_spent,
    AVG(md.AmtLiq + md.AmtVege + md.AmtNonVeg + md.AmtPes + md.AmtChocolates +
md.AmtComm) AS avg_spent_per_customer
FROM public.marketing_data md
JOIN public.ad_data ad ON md.ID = ad.ID
WHERE md.Response = 1
  AND (
      ad.Bulkmail_ad = 1 OR
      ad.Twitter_ad = 1 OR
      ad.Instagram_ad = 1 OR
      ad.Facebook_ad = 1 OR
      ad.Brochure_ad = 1
     )
GROUP BY md.Country
ORDER BY total_spent DESC;
```

	country character varying (50)	total_converted_customers bigint	total_spent numeric	avg_spent_per_customer numeric
1	Spain	100	117146.00	1171.4600000000000000
2	South Africa	26	33555.00	1290.5769230769230769
3	Canada	23	31916.00	1387.6521739130434783
4	Australia	13	16134.00	1241.0769230769230769
5	Germany	11	13860.00	1260.0000000000000000
6	India	7	7632.00	1090.2857142857142857
7	United States	6	5224.00	870.6666666666666667
8	Montenegro	1	874.00	874.0000000000000000

Appendix 2.3 - Best Selling Products and Demographic Variations

Appendix 2.3.1 - Which Products Sell the Best Overall?

Syntax:

```
SELECT 'Liquor'     AS product, SUM(AmtLiq)      AS total_sales FROM
public.marketing_data
UNION ALL
SELECT 'Vegetarian'  AS product, SUM(AmtVege)     AS total_sales FROM
public.marketing_data
UNION ALL
SELECT 'NonVeg'     AS product, SUM(AmtNonVeg)    AS total_sales FROM
public.marketing_data
UNION ALL
SELECT 'Pescatarian'  AS product, SUM(AmtPes)      AS total_sales FROM
public.marketing_data
UNION ALL
SELECT 'Chocolates'   AS product, SUM(AmtChocolates) AS total_sales FROM
public.marketing_data
UNION ALL
SELECT 'Comm'       AS product, SUM(AmtComm)      AS total_sales FROM
public.marketing_data
ORDER BY total_sales DESC;
```

	product text	total_sales numeric
1	Liquor	676083.00
2	NonVeg	370063.00
3	Comm	97427.00
4	Pescatarian	83405.00
5	Chocolates	59896.00
6	Vegetarian	58405.00

Appendix 2.3.2 - Total Sales by Marital Status

Syntax:

```
SELECT
    marital_status,
    SUM(AmtLiq)        AS total_liq,
    SUM(AmtVege)       AS total_vege,
    SUM(AmtNonVeg)     AS total_nonveg,
    SUM(AmtPes)        AS total_pes,
    SUM(AmtChocolates) AS total_chocolates,
    SUM(AmtComm)       AS total_comm
FROM public.marketing_data
GROUP BY marital_status
ORDER BY marital_status;
```

	marital_status character varying (20)	total_liq numeric	total_vege numeric	total_nonveg numeric	total_pes numeric	total_chocolates numeric	total_comm numeric
1	Divorced	75364.00	6363.00	34848.00	8130.00	6222.00	10739.00
2	Married	256976.00	21981.00	137888.00	30395.00	22926.00	36719.00
3	Single	315841.00	27639.00	183242.00	41087.00	27870.00	45724.00
4	Widow	27902.00	2422.00	14085.00	3793.00	2878.00	4245.00

Appendix 2.3.3 - Total Sales by Level of Education

Syntax:

```
SELECT
    education,
    SUM(AmtLiq)        AS total_liq,
    SUM(AmtVege)       AS total_vege,
    SUM(AmtNonVeg)     AS total_nonveg,
    SUM(AmtPes)        AS total_pes,
    SUM(AmtChocolates) AS total_chocolates,
    SUM(AmtComm)       AS total_comm
FROM public.marketing_data
GROUP BY education
ORDER BY education;
```

	education character varying (50)	total_liq numeric	total_vege numeric	total_nonveg numeric	total_pes numeric	total_chocolates numeric	total_comm numeric
1	2n Cycle	40169.00	5872.00	27016.00	9608.00	6945.00	9376.00
2	Basic	391.00	600.00	618.00	921.00	654.00	1233.00
3	Graduation	318111.00	34441.00	201319.00	48453.00	34915.00	56563.00
4	Master	121538.00	7802.00	59466.00	11495.00	7595.00	14669.00
5	PhD	195874.00	9690.00	81644.00	12928.00	9787.00	15586.00

Appendix 2.3.4 - Total Sales by Age Buckets (5 year gap)

Syntax:

```
SELECT
    CONCAT(FLOOR(Customer_Age / 5) * 5, '-', FLOOR(Customer_Age / 5) * 5 + 4) AS age_group_5yr,
    COUNT(*) AS total_customers,
    SUM(AmtLiq) AS total_liq,
    SUM(AmtVege) AS total_vege,
    SUM(AmtNonVeg) AS total_nonveg,
    SUM(AmtPes) AS total_pes,
    SUM(AmtChocolates) AS total_chocolates,
    SUM(AmtComm) AS total_comm
FROM public.marketing_data
GROUP BY age_group_5yr
ORDER BY MIN(Customer_Age);
```

	age_group_5yr text	total_customers bigint	total_liq numeric	total_vege numeric	total_nonveg numeric	total_pes numeric	total_chocolates numeric	total_comm numeric
1	15-19	17	6126.00	464.00	6159.00	1354.00	618.00	1134.00
2	20-24	98	27992.00	3529.00	21594.00	4228.00	3243.00	4827.00
3	25-29	181	40282.00	4873.00	31260.00	6337.00	4985.00	7076.00
4	30-34	248	55417.00	6455.00	35990.00	9217.00	6579.00	10018.00
5	35-39	357	95089.00	7711.00	49867.00	11696.00	8395.00	13336.00
6	40-44	367	107745.00	9255.00	56319.00	12568.00	9257.00	15541.00
7	45-49	256	81026.00	6327.00	37141.00	7885.00	6323.00	11400.00
8	50-54	232	86278.00	7332.00	43173.00	9999.00	7066.00	11017.00
9	55-59	233	90337.00	5849.00	44006.00	10106.00	6760.00	11415.00
10	60-64	165	55018.00	3652.00	25586.00	6074.00	4117.00	8637.00
11	65-69	56	28083.00	2766.00	17079.00	3612.00	2485.00	2736.00
12	70-74	3	1912.00	42.00	1314.00	211.00	0.00	39.00
13	110-114	2	770.00	150.00	570.00	111.00	68.00	249.00
14	120-124	1	8.00	0.00	5.00	7.00	0.00	2.00

Appendix 2.3.5 - Average spend per customer with respects to number of kids

Syntax:

```
SELECT
    Kidhome,
    COUNT(*) AS total_customers,
    SUM(AmtLiq + AmtVege + AmtNonVeg + AmtPes + AmtChocolates + AmtComm) AS
total_spent,
    AVG(AmtLiq + AmtVege + AmtNonVeg + AmtPes + AmtChocolates + AmtComm) AS
avg_spent_per_customer
FROM public.marketing_data
GROUP BY Kidhome
ORDER BY Kidhome;
```

	kidhome integer	total_customers bigint	total_spent numeric	avg_spent_per_customer numeric
1	0	1283	1157202.00	901.9501169134840218
2	1	887	181832.00	204.9966178128523112
3	2	46	6245.00	135.7608695652173913

Appendix 2.3.6 - Average Spend per product with respects to number of kids

Syntax:

```
SELECT
    Kidhome,
    AVG(AmtLiq)      AS avg_liq,
    AVG(AmtVege)     AS avg_vege,
    AVG(AmtNonVeg)   AS avg_nonveg,
    AVG(AmtPes)      AS avg_pes,
    AVG(AmtChocolates) AS avg_chocolates,
    AVG(AmtComm)     AS avg_comm
FROM public.marketing_data
GROUP BY Kidhome
ORDER BY Kidhome;
```

	kidhome integer	avg_liq numeric	avg_vege numeric	avg_nonveg numeric	avg_pes numeric	avg_chocolates numeric	avg_comm numeric
1	0	452.2377240841777085	39.4006235385814497	253.4053000779423227	56.2704598597038192	40.5908028059236165	60.0452065471551052
2	1	104.3404735062006764	8.5411499436302142	49.1093573844419391	12.2818489289740699	8.6121758737316798	22.1116121758737317
3	2	72.0000000000000000	6.0434782608695652	30.0869565217391304	6.8695652173913043	3.8913043478260870	16.8695652173913043

Appendix 2.3.7 - Average spend per customer with respects to number of teens

Syntax:

```
SELECT
    Teenhome,
    COUNT(*) AS total_customers,
    SUM(AmtLiq + AmtVege + AmtNonVeg + AmtPes + AmtChocolates + AmtComm) AS
total_spent,
    AVG(AmtLiq + AmtVege + AmtNonVeg + AmtPes + AmtChocolates + AmtComm) AS
avg_spent_per_customer
FROM public.marketing_data
GROUP BY Teenhome
ORDER BY Teenhome;
```

	teenhome integer	total_customers bigint	total_spent numeric	avg_spent_per_customer numeric
1	0	1147	795336.00	693.4054054054054054
2	1	1018	520359.00	511.1581532416502947
3	2	51	29584.00	580.0784313725490196

Appendix 2.3.8 - Average Spend per product with respects to number of teens

Syntax:

```
SELECT
    Teenhome,
    AVG(AmtLiq)        AS avg_liq,
    AVG(AmtVege)       AS avg_vege,
```

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```
    AVG(AmtNonVeg)    AS avg_nonveg,
    AVG(AmtPes)       AS avg_pes,
    AVG(AmtChocolates) AS avg_chocolates,
    AVG(AmtComm)      AS avg_comm
FROM public.marketing_data
GROUP BY Teenhome
ORDER BY Teenhome;
```

	teenhome integer	avg_liq numeric	avg_vege numeric	avg_nonveg numeric	avg_pes numeric	avg_chocolates numeric	avg_comm numeric
1	0	305.9633827375762860	33.3443766346992153	226.6224934612031386	48.8116826503923278	33.5501307759372276	45.1133391455972101
2	1	301.6306483300589391	18.9273084479371316	101.9754420432220039	25.7632612966601179	20.2632612966601179	42.5982318271119843
3	2	354.5686274509803922	17.4705882352941176	123.8431372549019608	23.3529411764705882	15.4117647058823529	45.4313725490196078