Sales Methods Analysis

By: Abraham Saenz Sigala

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Data Validation:

The dataset contains **15000 rows and 8 columns** before cleaning and validation. I have validated all the columns against the criteria in the dataset table:

- week: Week sale was made, counted as weeks since product launch. Numeric, 6 different weeks total. No missing values. No cleaning needed.

- sales_method: Character, which of the three sales methods were used for that customer. 5 sales methods in dataset, clean for consistency. 3 unique values after cleaning. No missing values.

- customer_id: Character, unique identifier for the customer. No missing values or duplicates. No cleaning needed.

- nb_sold: Numeric, number of new products sold. No missing values. No cleaning needed.

- revenue: Numeric, rounded to 2 decimal places. 1,074 missing values. Fill NaN with the average revenue grouped by sales method and items sold. Cleaned, No missing values.

- years_as_customer: Numeric, number of years customer has been buying from us (company founded in 1984). Assuming data is from 2023, there are 2 values that exceeds company's founding date (< 39 years). Drop these two rows as we do not know the true years as customer.

- nb_site_visits: Numeric, number of times the customer has visited our website in the last 6 months. No missing values. No cleaning needed.

- state: Character, location of the customer i.e. where orders are shipped. 50 unique values (50 states). No missing values, No cleaning needed.

After the data validation and cleaning, the dataset contains **14998 rows and 9 columns** without missing values or duplicates.

How many customers were there for each approach?

We have three primary sales methods which are Email, Call, and a combined Email + Call approach. Currently, we engage the largest number of customers through Email, followed by Calls, while the combined Email + Call strategy receives comparatively less focus. Its also important to note the Call only method takes around 30 min on average. The Call in Email + Call combination takes around 10 minutes on average. We also are only working with 6 weeks worth of data as that was provided.

Customer Count per Sales Method
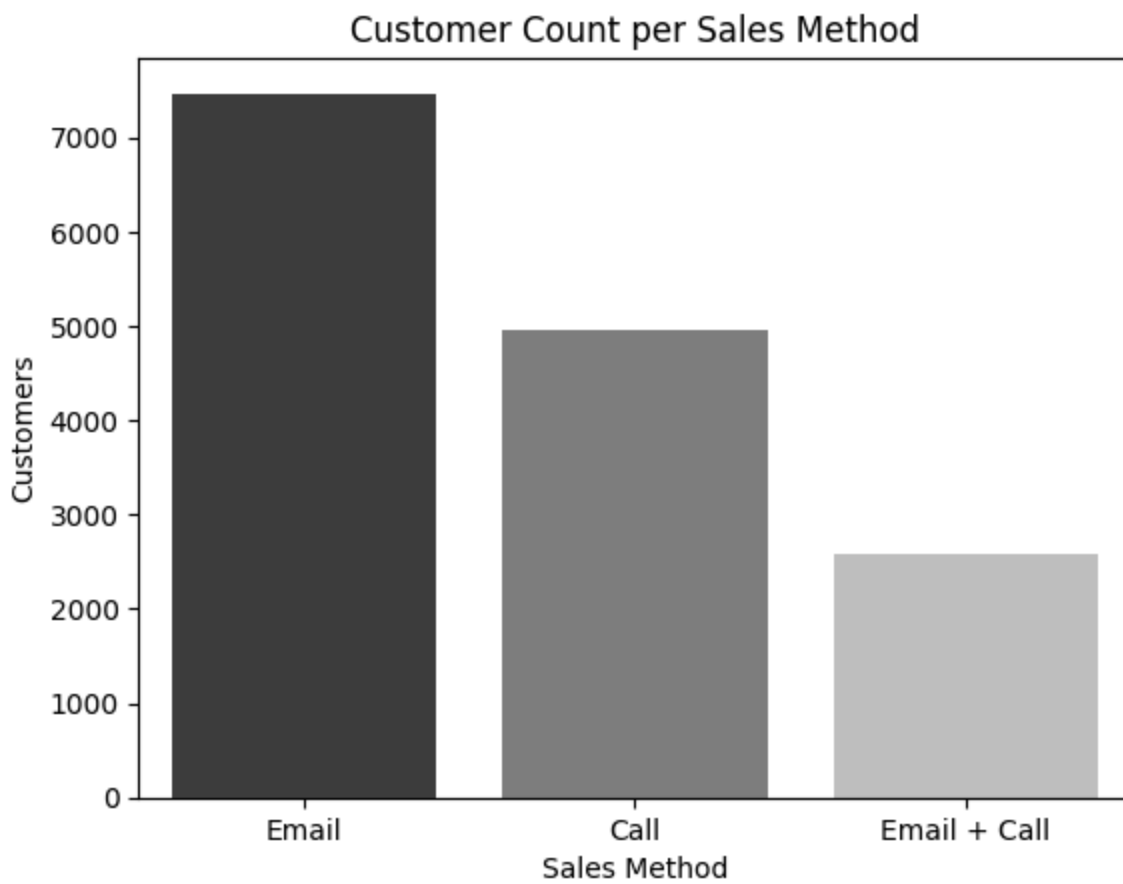
What does the spread of the revenue look like overall?

This box plot shows us our overall revenue typically ranges from $52 to 108$ Dollars, with $32 as the lowest and$ 192 as the highest. On average, we make $95 per sale. However, 617 transactions are unusually high compared to the rest (outliers).

Overall Revenue Spread
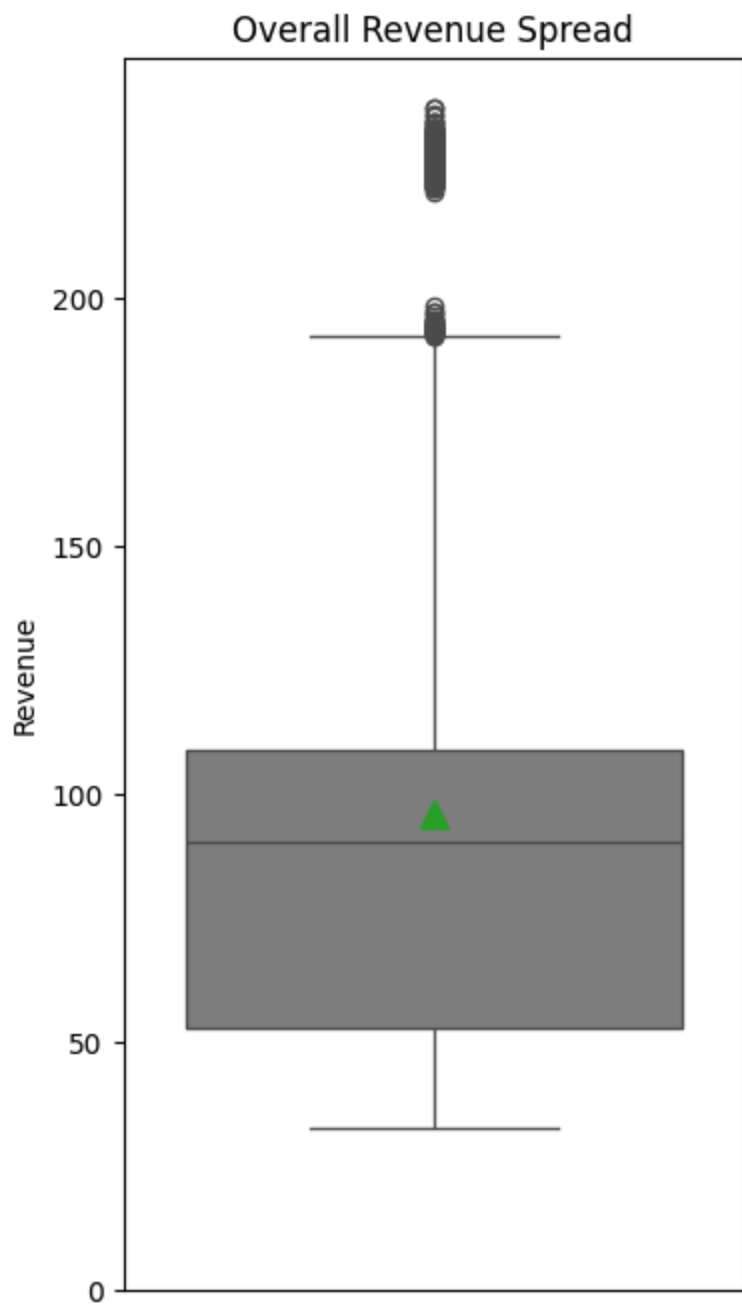
This histogram provides a view of our overall revenue distribution. The highest number of products sold falls in the $90 range. We also see that a significant portion of our sales falls within the lower revenue range. We can also see a lack of sales in the higher revenue range indicating a potential area of growth.

Overall Revenue Distribution
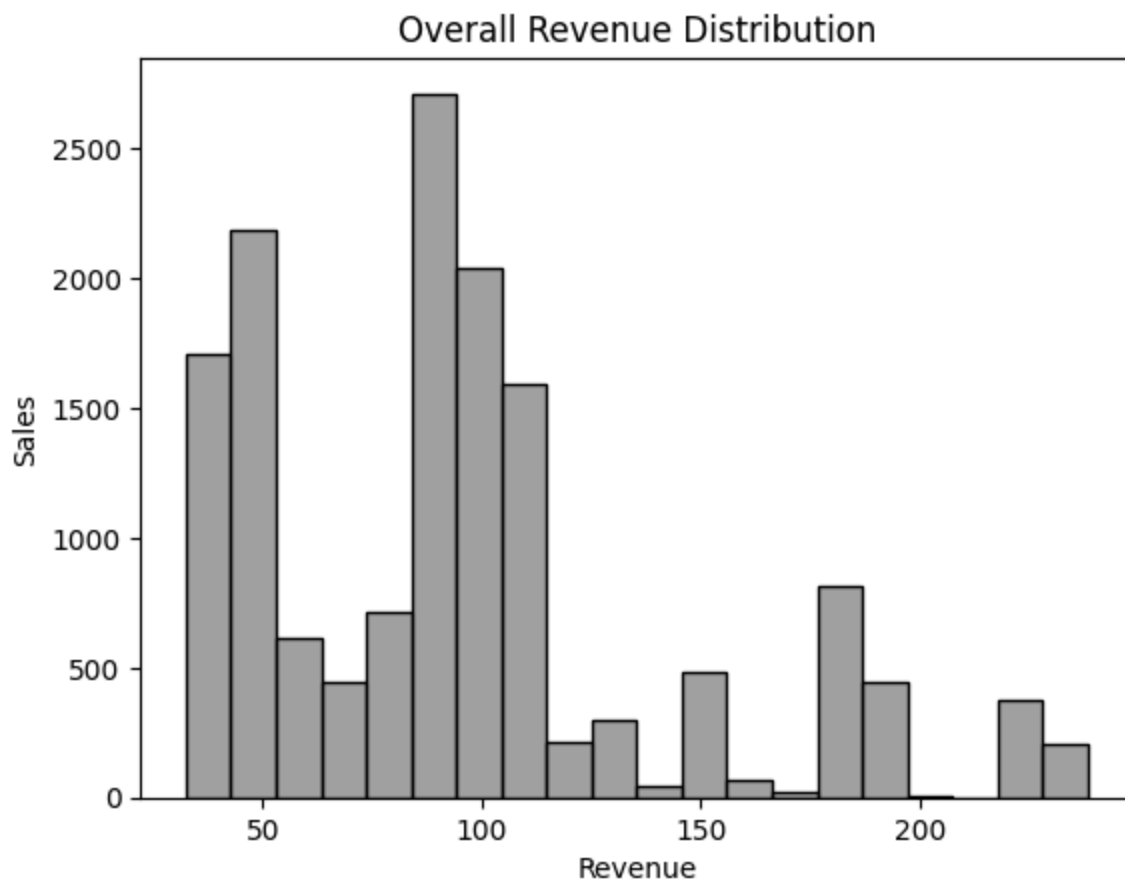
What does the spread of the revenue look like for each method?

Here we see how our revenue spread varies depending on the sales method. Email + Call brings in the most money, between $160 and 190 (Avg: $184). $Email$ $salone$ $make$ $less$, $around$ 90 to 110 (Avg :97). Calls bring in the least, at around just $40 to 50$ (Avg: $48).
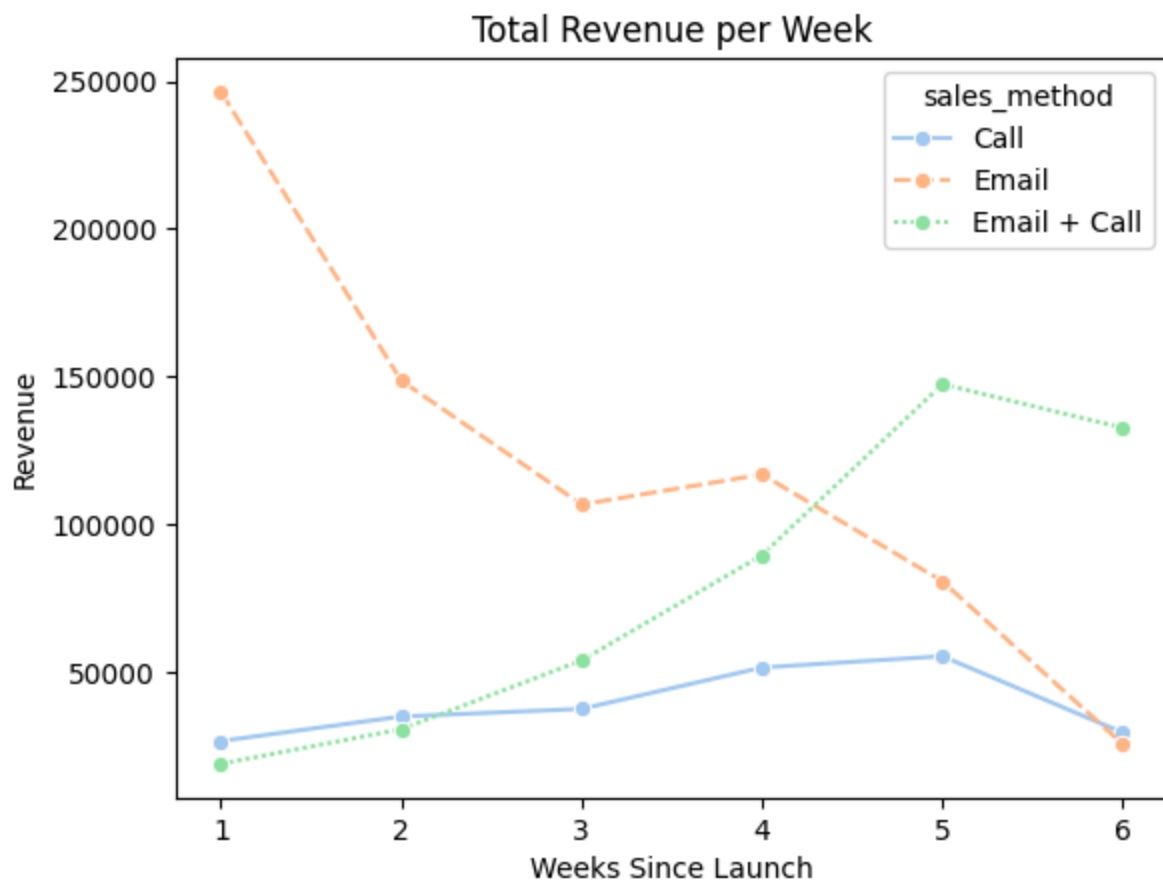
Revenue Spread per Sales Method
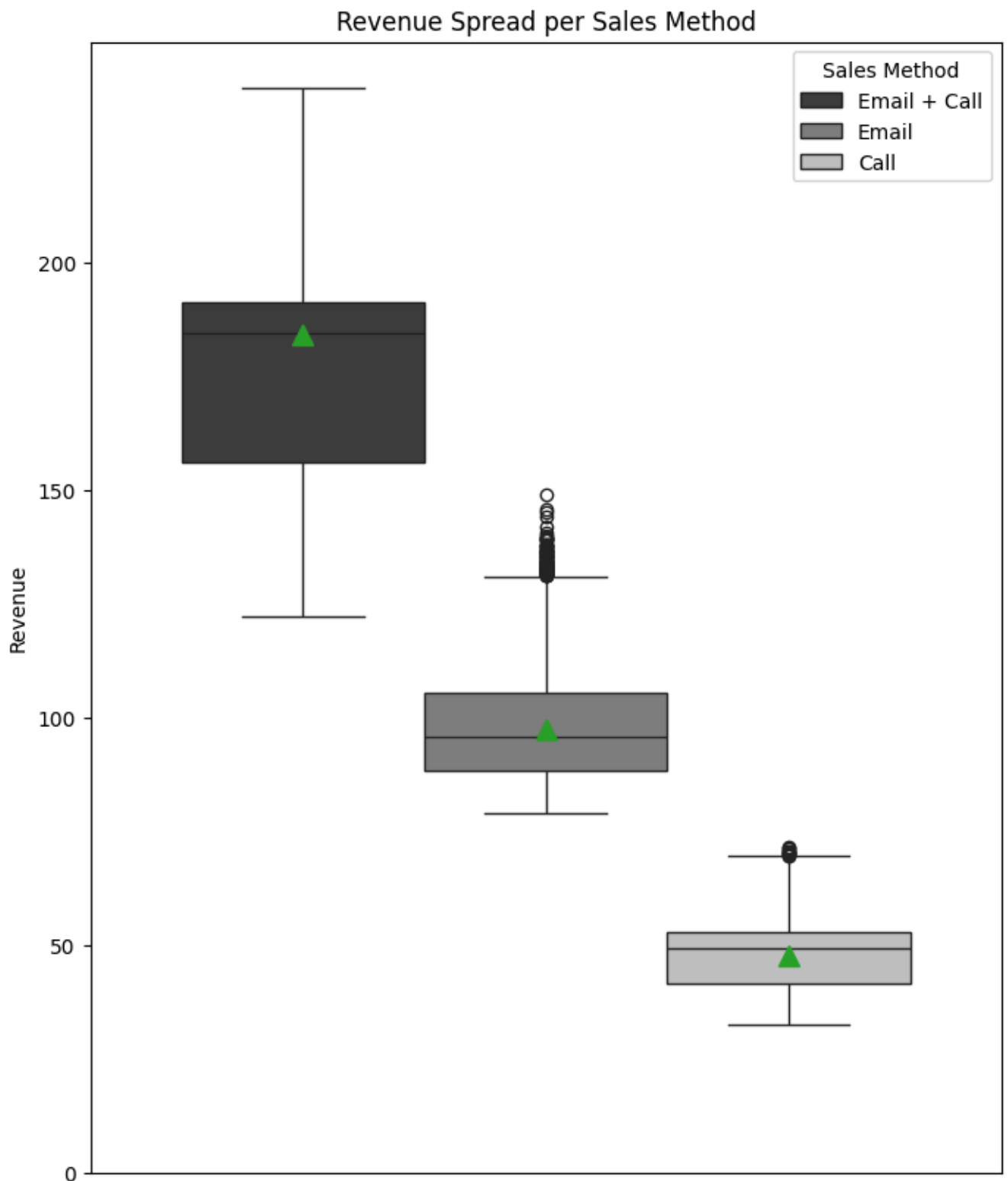
What sales method brings in the highest revenue?

Although not necessarily a question that was asked, I think its important to see the amount of revenue each method brought in. The Email sales method brings in the most revenue, over $700,000. Email + Call comes second, generating about $480,000$. Finally, Call brings in the least, around $230,000, which is roughly a third of what Email only makes and less than half of what the Email + Call combination brings in despite it being the second most used method.

Revenue per Sales Method
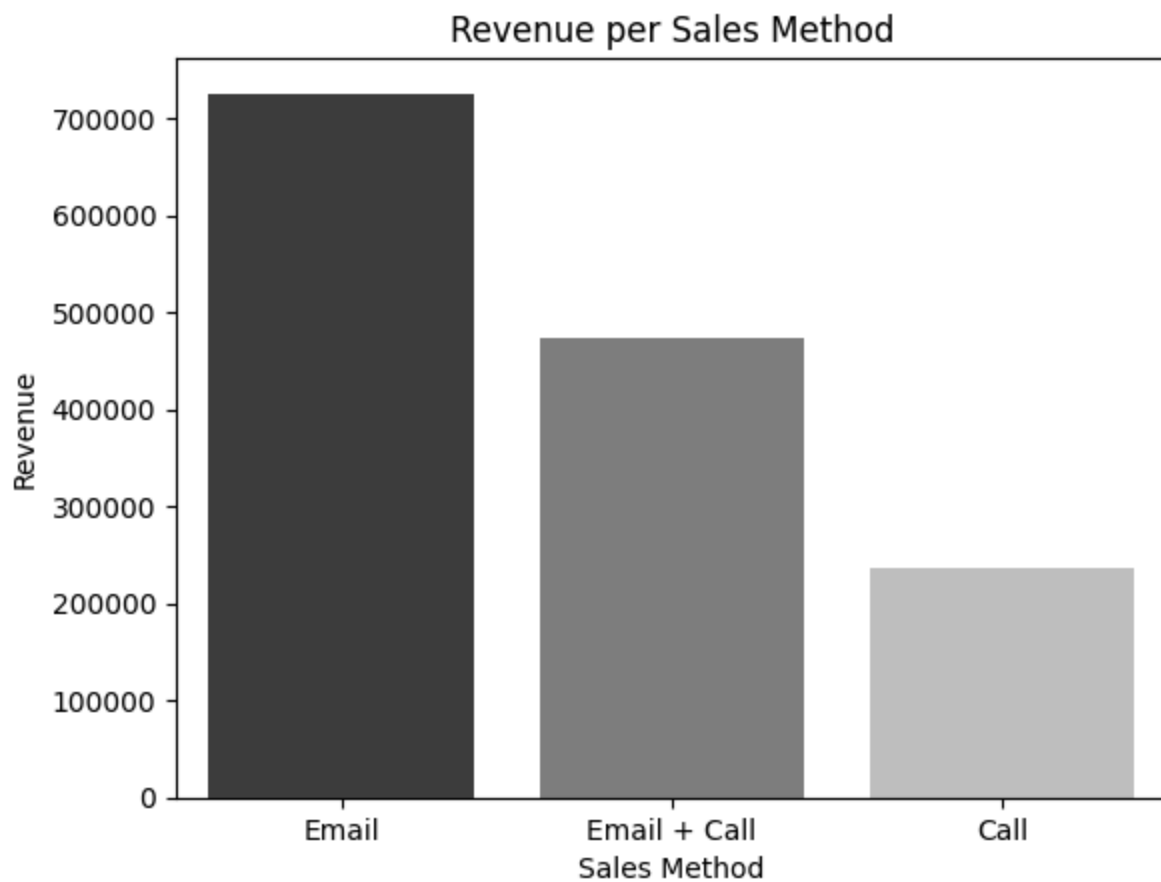
Was there any difference in revenue over time for each of the methods?

This line plot shows that Email sales method drops significantly at 85.7%, but its effective in bringing the most revenue overall due to how much we use it. Email + Call takes a little time to get going but passes the Call only sales method shortly after week 2. It is effective in bringing in the highest revenue per sale and the second highest revenue overall despite it being the least used sales method. Call significantly underperforms, producing the least revenue almost every week and overall.

Business Metrics:

I recommend focusing on two key metrics to evaluate the effectiveness of our analysis for the new line of products: **Number of customers reached per sales method** and **Increase in Weekly Revenue**.

A rise in customer reach through Email + Call, along with a decline for Call, confirms we are prioritizing the best sales method.

- Example: 5% increase in Email + Call reach, resulted in 373 additional customers, directly contributing to higher revenue.

An increase in weekly revenue for Email and Email + Call specifically, by a certain percentage, would indicate we're prioritizing methods with the best returns.

- Example: A 10% rise in weekly revenue each week for Email + Call would indicate positive progress toward our goals.

Recommendations:

Over the next six weeks, I would recommend:

- Eliminate the Call-Only Sales Method:

  - Decent success rate (due to amount used), generates least revenue and consumes more time. Although in the future I recommend not dropping it all together.
- Prioritize the Call + Email Approach:

- Consistently delivers highest revenue per sale, prioritize to maximize returns and improve its rough start.
- Optimize Email-Only Sales Method:

  - While effective in success and revenue, aim to avoid such a drastic drop in weekly revenue overtime.
- Reduce Call Duration in Call + Email Approach:

  - Lower the average call time from 10 minutes to save time and money. Complete optimization when combining Email + Call to enhance efficiency.
- Perform Further Analysis:

  - Regional Suitability: Identify if sales methods perform differently across states.
  - Customer Preferences: Align strategies to match customer preferences. Consider customers that prefer certain methods. Ask for email if Call preferred.
- Enhance Data Quality:

  - Include customer demographic details such as age.
  - Track sales duration to better evaluate time-efficiency for each method.
  - Record time of day to identify the optimal periods for each sales approach.