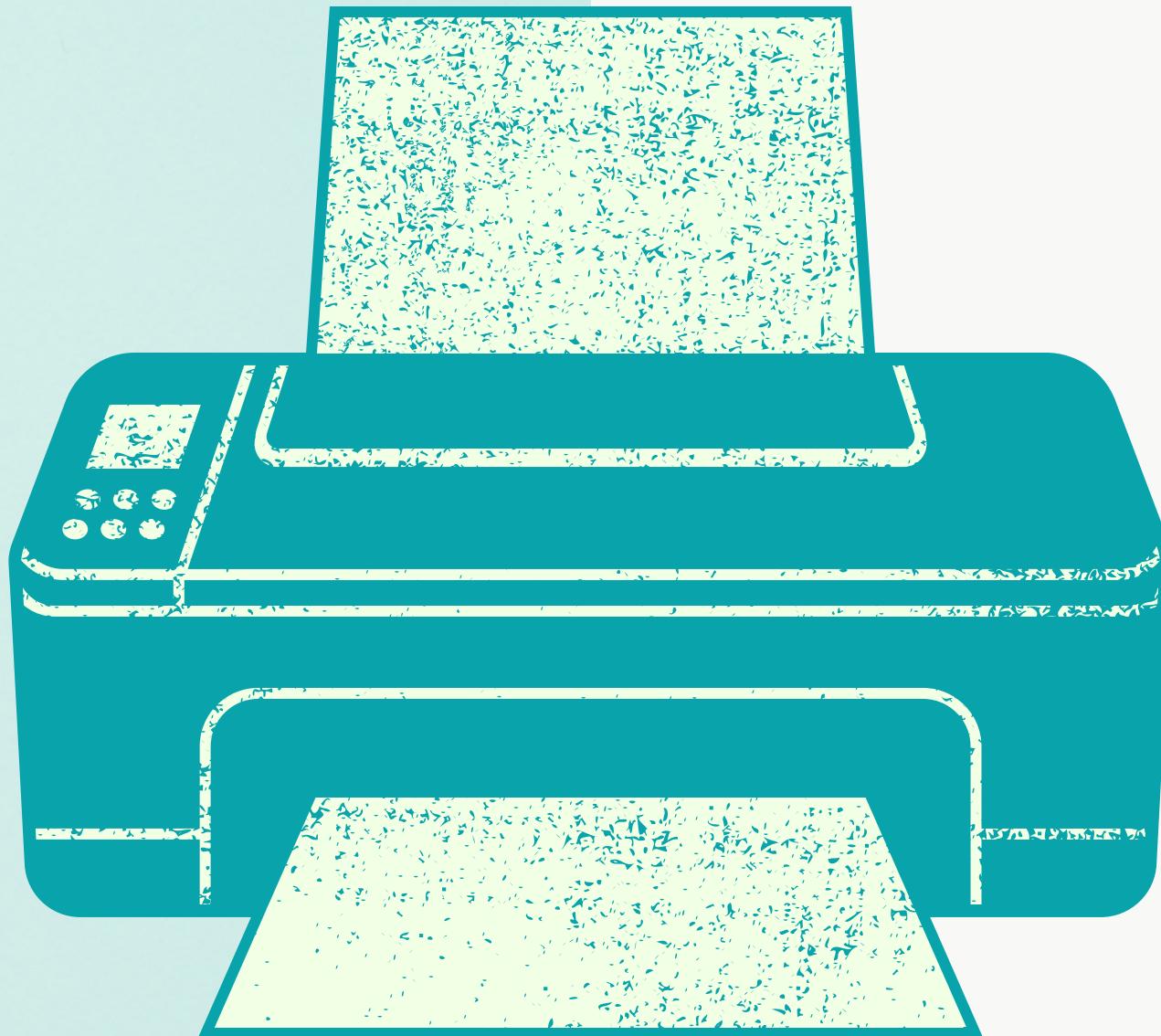


01



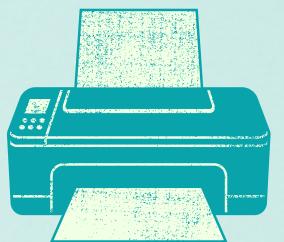
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Professional Data Analyst Practical Exam Presentation

Pens and Printers Sales Method Analysis

by Cemil Altay

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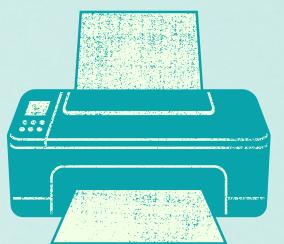
For each of the methods,
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Case: New sales approaches

questions that need to be answered to determine

03

We need to know:

1. How many customers were there for each approach?
2. What does the spread of the revenue look like overall? And for each method?
3. Was there any difference in revenue over time for each of the methods?
4. Based on the data, which method would you recommend we continue to use?

Some of these methods take more time from the team so they may not be the best for us to use if the results are similar.

Six weeks ago we launched a new line of office stationery. Despite the world becoming increasingly digital, there is still demand for notebooks, pens and sticky notes. Our focus has been on selling products to enable our customers to be more creative, focused on tools for brainstorming. We have tested three different sales strategies for this, targeted email and phone calls, as well as combining the two.

Email: Customers in this group received an email when the product line was launched, and a further email three weeks later. This required very little work for the team.

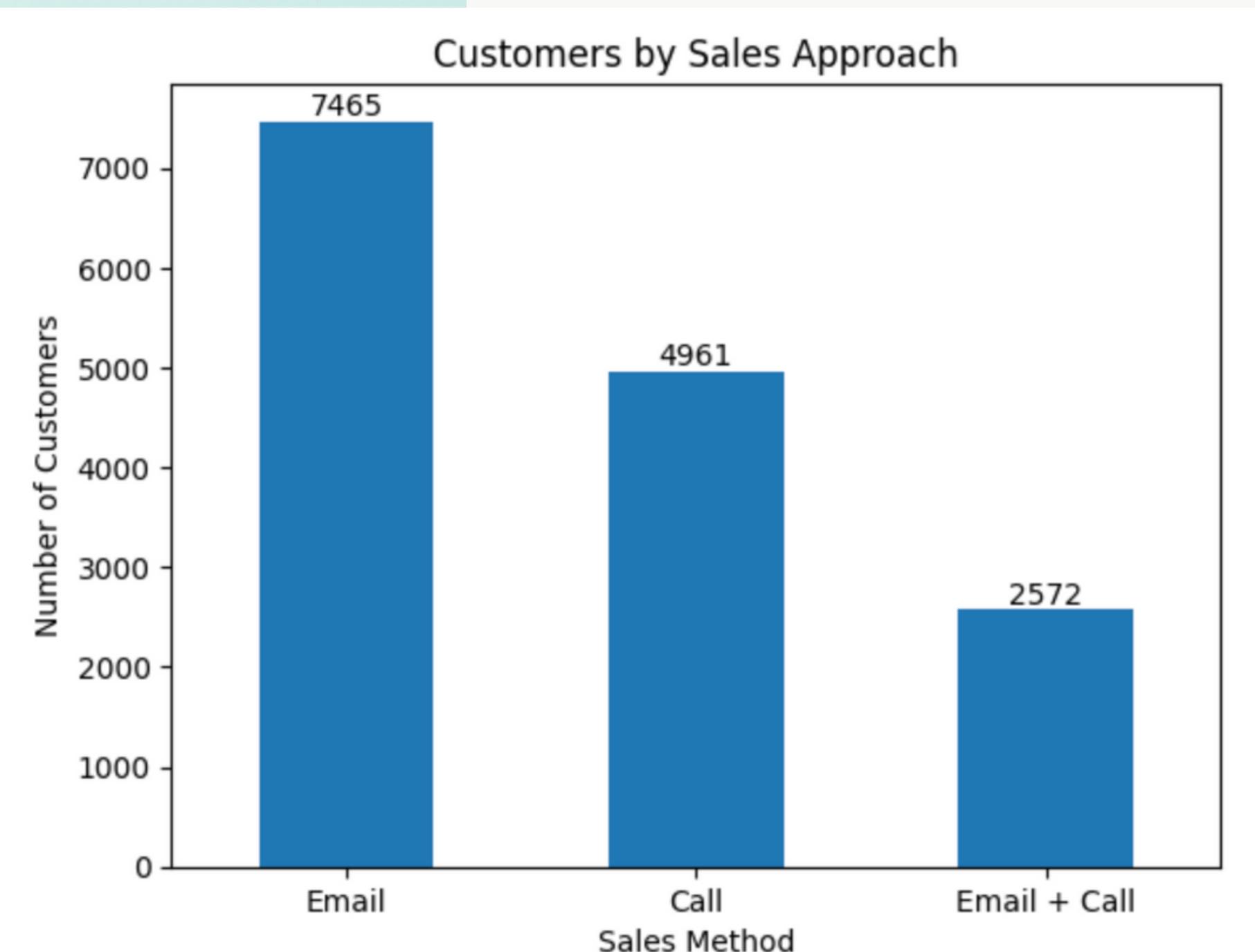
Call: Customers in this group were called by a member of the sales team. On average members of the team were on the phone for around thirty minutes per customer.

Email + call: Customers in this group were first sent the product information email, then called a week later by the sales team to talk about their needs and how this new product may support their work. The email required little work from the team, the call was around ten minutes per customer.



Q1 : How many customers were there for each approach?

04

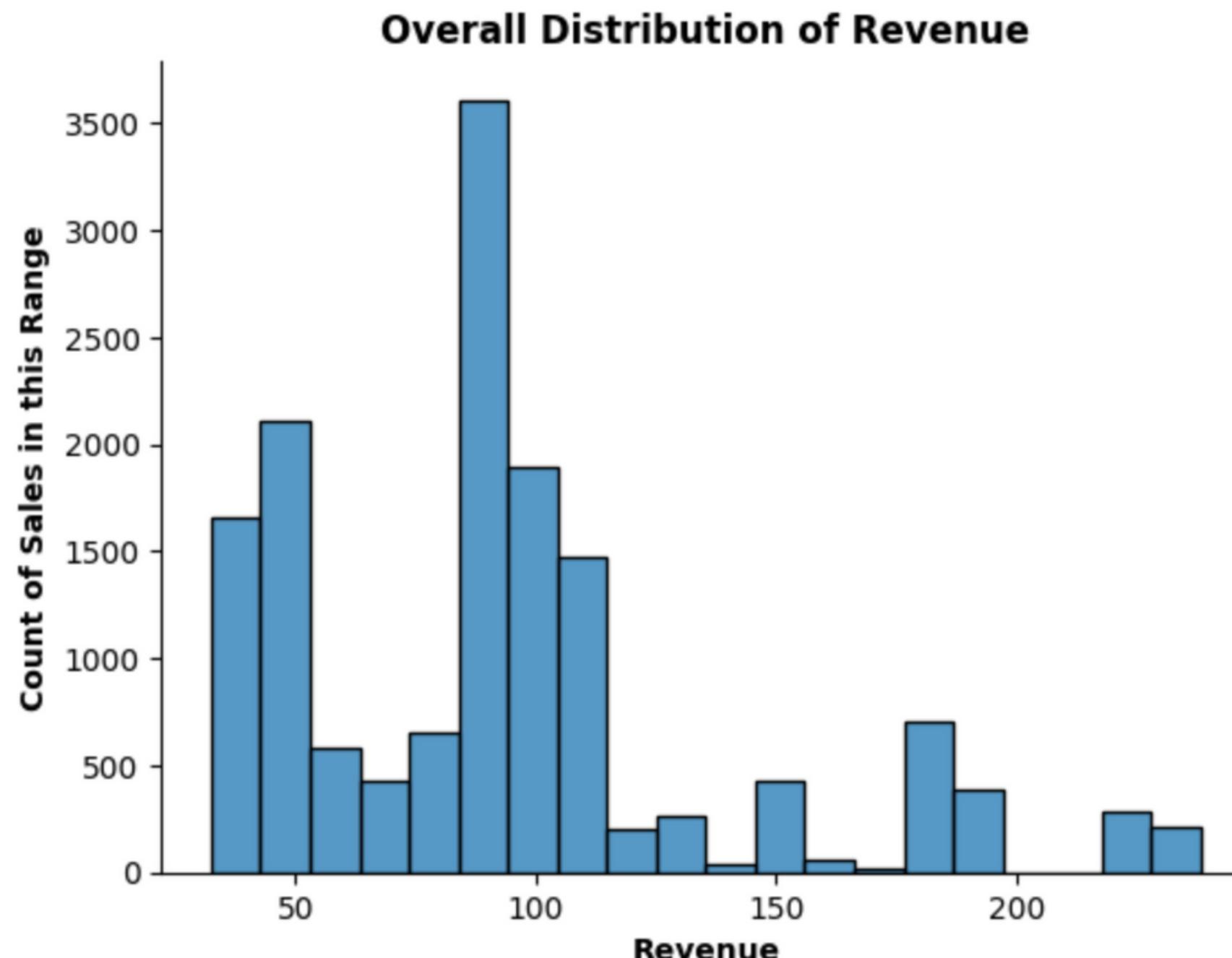


- When 3 sales methods are examined, E-mail leads the way with **7.465** customers.
- This is followed by the Call Method with approximately **5000** customers.
- The last one was the Email + Call method. The number of customers contacted by this method is **2.572**.



Q2 : What does the spread of the revenue look like overall?

05

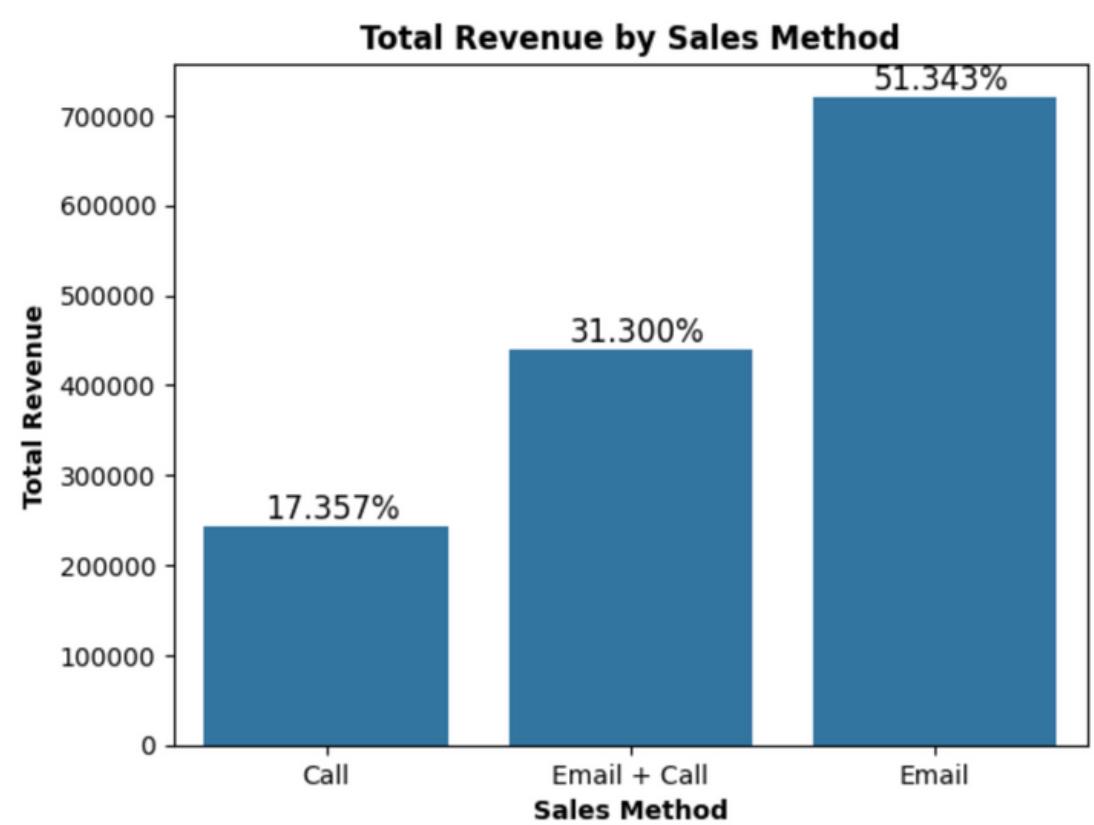


- We can see that most of the sales are in the 50-90 range and the distribution is particularly concentrated in the 60-90 range.
- If we compare the distribution of revenues greater than 100 with the part less than 100, there is a noticeable difference.

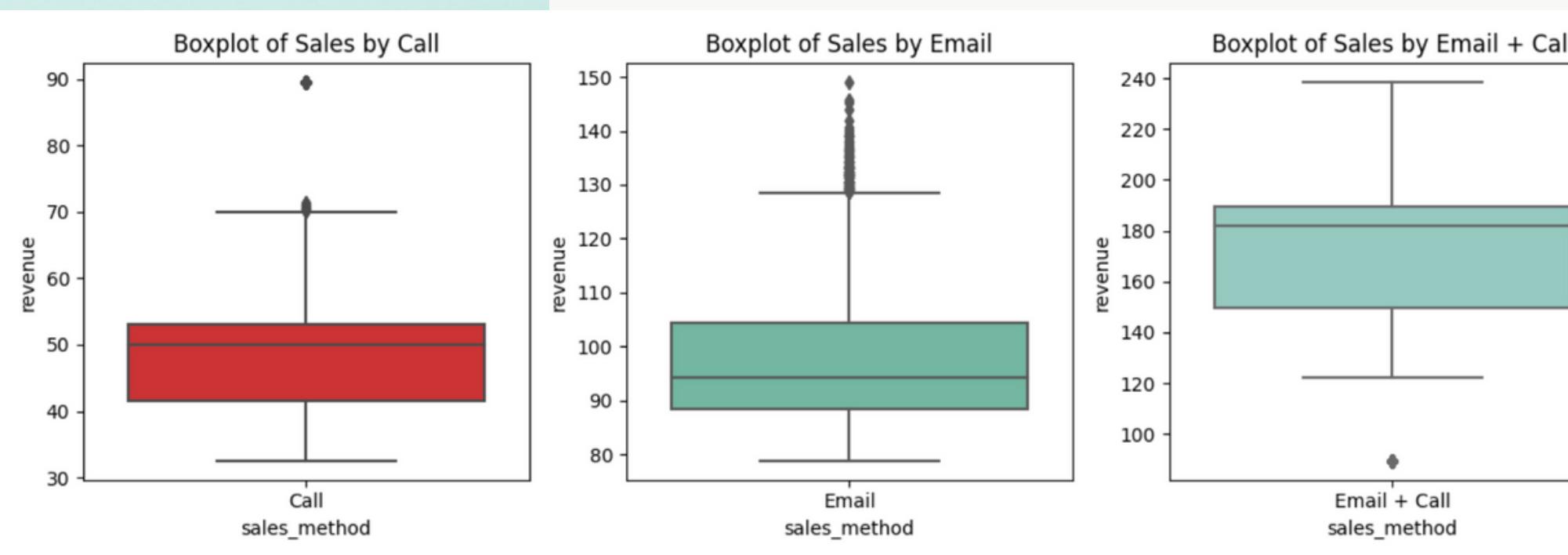


Q2 : What does the spread of the revenue look like overall?

06



- We can clearly see why the call method is responsible for such a small percentage of the total revenue. While the Call method is 18%, the Call+Email method is 31%, the Email method is at the top with 51%. However, it is a remarkable finding for the Email method that it is more than the sum of the other two methods.

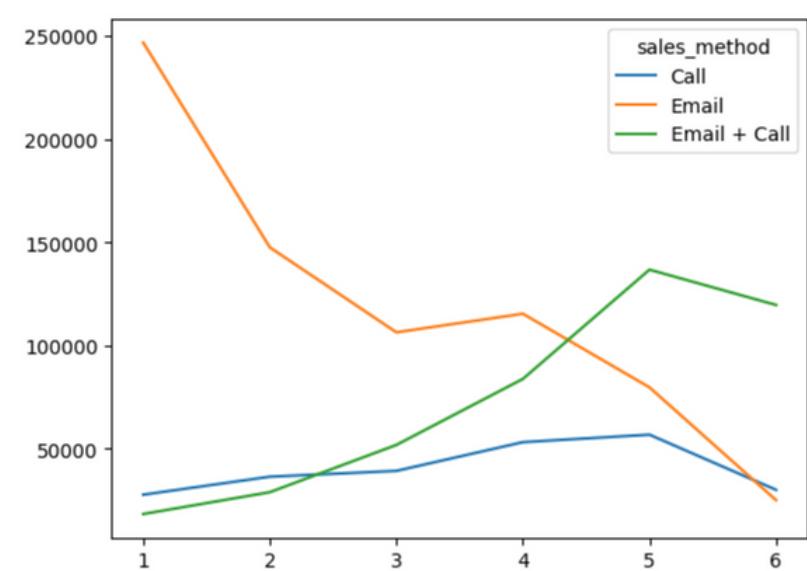


- From these side-by-side box plots, looking at the range of revenue amounts for the "Call" sales method, we can say that this method is the least productive. It is only between 35-70 and this is much lower than other sales.

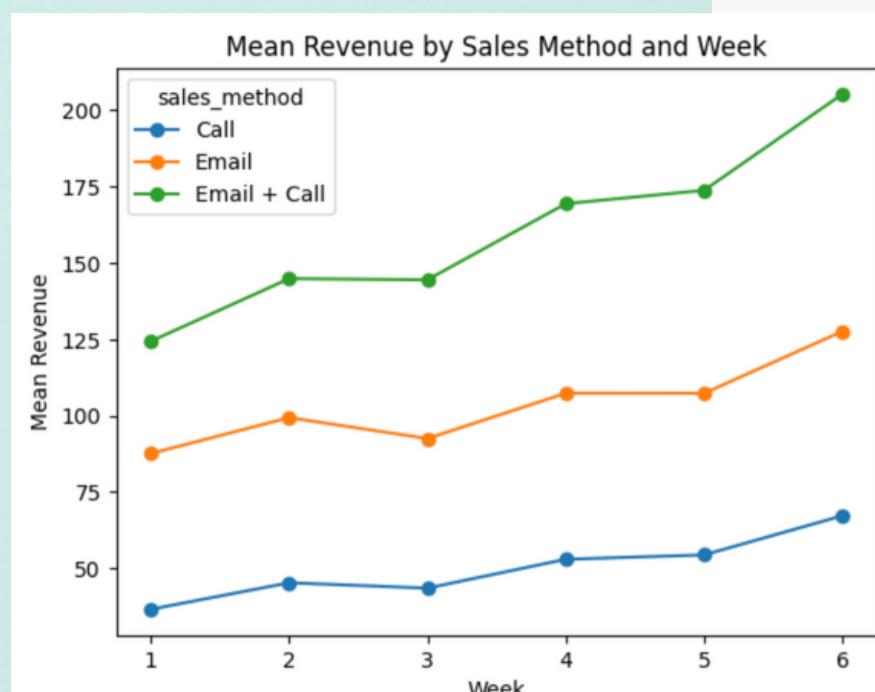


Q3 : Was there any difference in revenue over time for each of the methods?

07

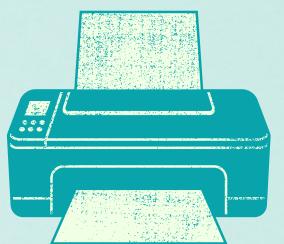


	revenue
Call	49.1256843378
Email	96.5718164769
Email + Call	170.8756570762



- By plotting the data on a line chart, we can see that the Email sales method produced the highest revenue in first week, where it started at 246.681 USD and only decreased as the weeks passed. Over the next 2 weeks, revenue from the email approach was down more than 50% to 106.399 USD. We can also see that E-mail + Call started much lower than the pure e-mail approach, while closing the period higher than all of them, reaching the top at the end of the series. Based on this increasing trend, this approach appears to be the most successful.

- When we look at the graph in which we moan the revenue averages according to the sales methods, all sales methods create an increasing trend. However, in revenue averages, the best sales method differs from the others as email+call. This method supports the similar pattern in total sales, making it clear that it is consistent. Email+call method, with an average value of 170, does not lose its first place in the sales total to the others here either.



Q3 : Was there any difference in revenue over time for each of the methods?

08

sales_method	mean			median		
	Call	Email	Email + Call	Call	Email	Email + Call
week						
1	36.636121	87.630924	124.370473	35.230000	86.880000	128.145000
2	45.313068	99.360168	144.858650	43.520000	98.830000	153.625000
3	43.559058	92.521426	144.483677	41.545000	91.485000	149.670000
4	53.001016	107.344995	169.384242	51.340000	107.630000	180.080000
5	54.434492	107.326312	173.753774	53.040000	107.610000	186.680000
6	67.259866	127.607868	205.239400	66.070000	129.870000	226.790000

	week	nb_sold	revenue	nb_site_visits
week	1.000000	0.936026	0.528864	0.458056
nb_sold	0.936026	1.000000	0.552262	0.472189
revenue	0.528864	0.552262	1.000000	0.265242
nb_site_visits	0.458056	0.472189	0.265242	1.000000

	week	nb_sold	revenue	nb_site_visits
week	1.000000	0.909476	0.684904	0.479485
nb_sold	0.909476	1.000000	0.725895	0.515548
revenue	0.684904	0.725895	1.000000	0.372631
nb_site_visits	0.479485	0.515548	0.372631	1.000000

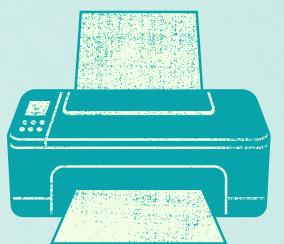
	week	nb_sold	revenue	nb_site_visits
week	1.000000	0.779338	0.757046	0.320753
nb_sold	0.779338	1.000000	0.913485	0.374184
revenue	0.757046	0.913485	1.000000	0.355184
nb_site_visits	0.320753	0.374184	0.355184	1.000000

- As the company focuses on increasing revenue and profits by selling more products, we can focus on the average weekly revenue metric from each method as the main performance indicator. When we look at the correlation between the other parameters that will optimize this metric and the sales method, we reach the following results.

- Email+Call method, there is a very strong positive relationship between the number of new products sold and the weeks.

- In Call method, there is a strong positive relationship between the number of new products sold and weeks.

- At the final Email method, too, there is a strong positive relationship between the number of new products sold and revenue.



Number of customers visit to site

mean			
sales_method	Call	Email	Email + Call
week			
1	21.490765	23.563055	23.479730
2	23.848447	25.167677	24.995000
3	22.929047	24.341739	24.704735
4	25.467131	26.124651	26.707071
5	25.873563	26.267833	27.304956
6	27.707589	27.888325	28.823328

Number of sold new product

mean			
sales_method	Call	Email	Email + Call
week			
1	7.079156	8.729307	8.655405
2	8.804969	10.061953	10.080000
3	8.266075	9.285217	10.011142
4	10.208167	10.917209	12.040404
5	10.659962	10.924630	12.473952
6	13.145089	13.111675	15.053173

Revenue

mean			
sales_method	Call	Email	Email + Call
week			
1	36.636121	87.630924	124.370473
2	45.313068	99.360168	144.858650
3	43.559058	92.521426	144.483677
4	53.001016	107.344995	169.384242
5	54.434492	107.326312	173.753774
6	67.259866	127.607868	205.239400

Q4 : Based on the data, which method would you recommend we continue to use?

09

- I can say that there are more serious differences in the average sales values when compared to the average weekly site visits and average new product sales of the customers. And I think this metric would be the best metric to consider because it can be measured over time and is regularly reviewed on a weekly basis. It can be analyzed, and optimized when supplemented with other parameters.

- As can be seen from the bottom left table, "Average weekly revenue generated from each method" is the metric we should center on.

mean				median		
sales_method	Call	Email	Email + Call	Call	Email	Email + Call
week						
1	36.636121	87.630924	124.370473	35.230000	86.880000	128.145000
2	45.313068	99.360168	144.858650	43.520000	98.830000	153.625000
3	43.559058	92.521426	144.483677	41.545000	91.485000	149.670000
4	53.001016	107.344995	169.384242	51.340000	107.630000	180.080000
5	54.434492	107.326312	173.753774	53.040000	107.610000	186.680000
6	67.259866	127.607868	205.239400	66.070000	129.870000	226.790000

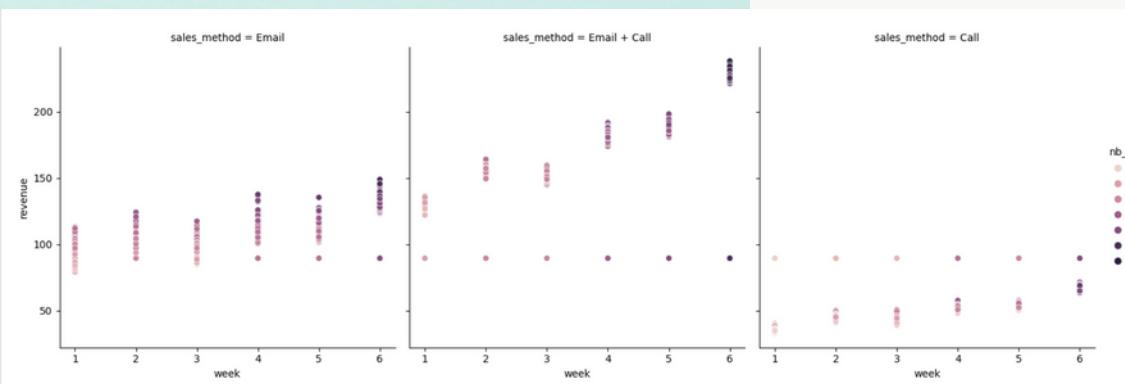
- We can make our sales method sustainable by supporting this metric with parameters of site visits and new products sold.



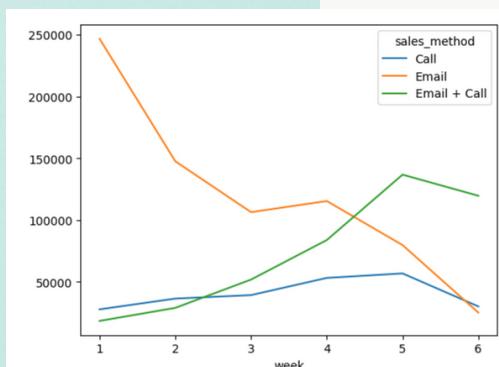
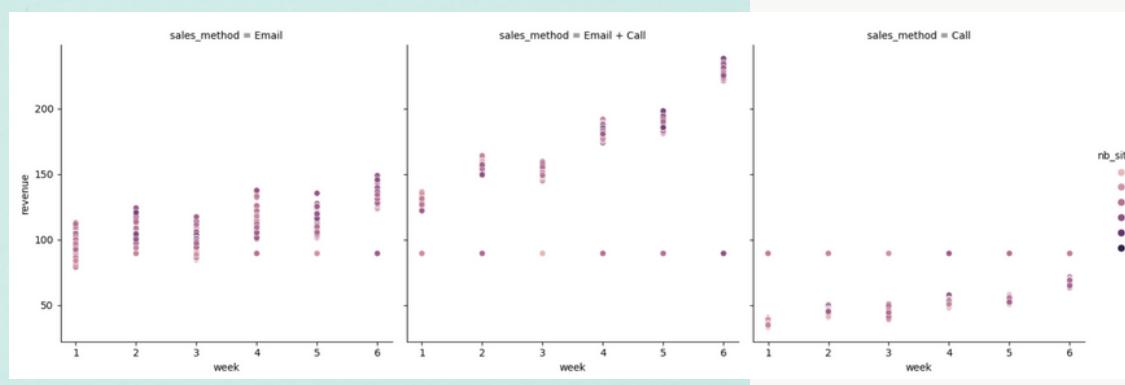
Q4 : Based on the data, which method would you recommend we continue to use?

10

New product sold and revenue graph for each sales method by week



Customer site visits and revenue graph for each sales method by week



- When we examine the graphic at the bottom left, we can interpret the new product sales in detail by separating the weekly sales with three different methods. This visualization allows us to examine in more detail the comments we made on the previous charts. Accordingly, the email method and the email+call method are obviously much better than the call method. In fact, e-mail + call method has reached high values both in turnover and newly sold products in recent weeks.
- When we look at the graph at the bottom right, we can analyze the weekly sales in three different ways, and this time we can interpret them in detail according to the site visits. While only the e-mail method received revenue values between 80-150 in both new product sales and site visits, the e-mail+call method reached the highest values (100-250) in both new product sales and site visits, especially towards the last weeks. From this, it can be deduced that the customer visits the site more by e-mail method. But we're seeing customer actions drive higher turnover and new product sales with both email and call.
- In the line chart on the left, we should consider the trend breaks, especially in the 4th week.



Final Summary & Recommendations

11

To summarize what we did:

I deleted two values over 39 years from the data in years_as_customer. And I filled 1074 blank values in the income section with the median value. I replaced the initially given "Email + Call" and "Email" values with "em + call" and "email" values, respectively. After doing that, there are now only 3 options ('Call + Email', 'Call' and 'Email') that align with the description given in sales_method.

In the data, we first examined the time-based turnover values according to each sales method. We then validated the comments we made on the first chart, detailing this with the number of new products sold and the customer's site visits.

By comparing our interpretations of these interpretations in both the correlation and pivot tables with the strength of the interrelationships and the mean values, we found the most striking measure: Average Revenue Per Sales Method Per Week

1. I recommend that the company focus on the '**Email + Call**' method due to its success in total average revenue per sale (\$170/sales) and steady growth most weeks.
2. I recommend **updating the e-mail contents every 4 weeks to make it more interesting**. Because we can say that the metrics in the e-mail method cut off the interest of the customers, especially after the 4th week. **If the reason for this detail is determined and the "Email+Call" method is optimized with this, I think that it will be more efficient for both the company and its employees, and the customer's interest will be supported by sales.** This will contribute positively to sustainable success.