

# Project 1: Sales Data Analysis

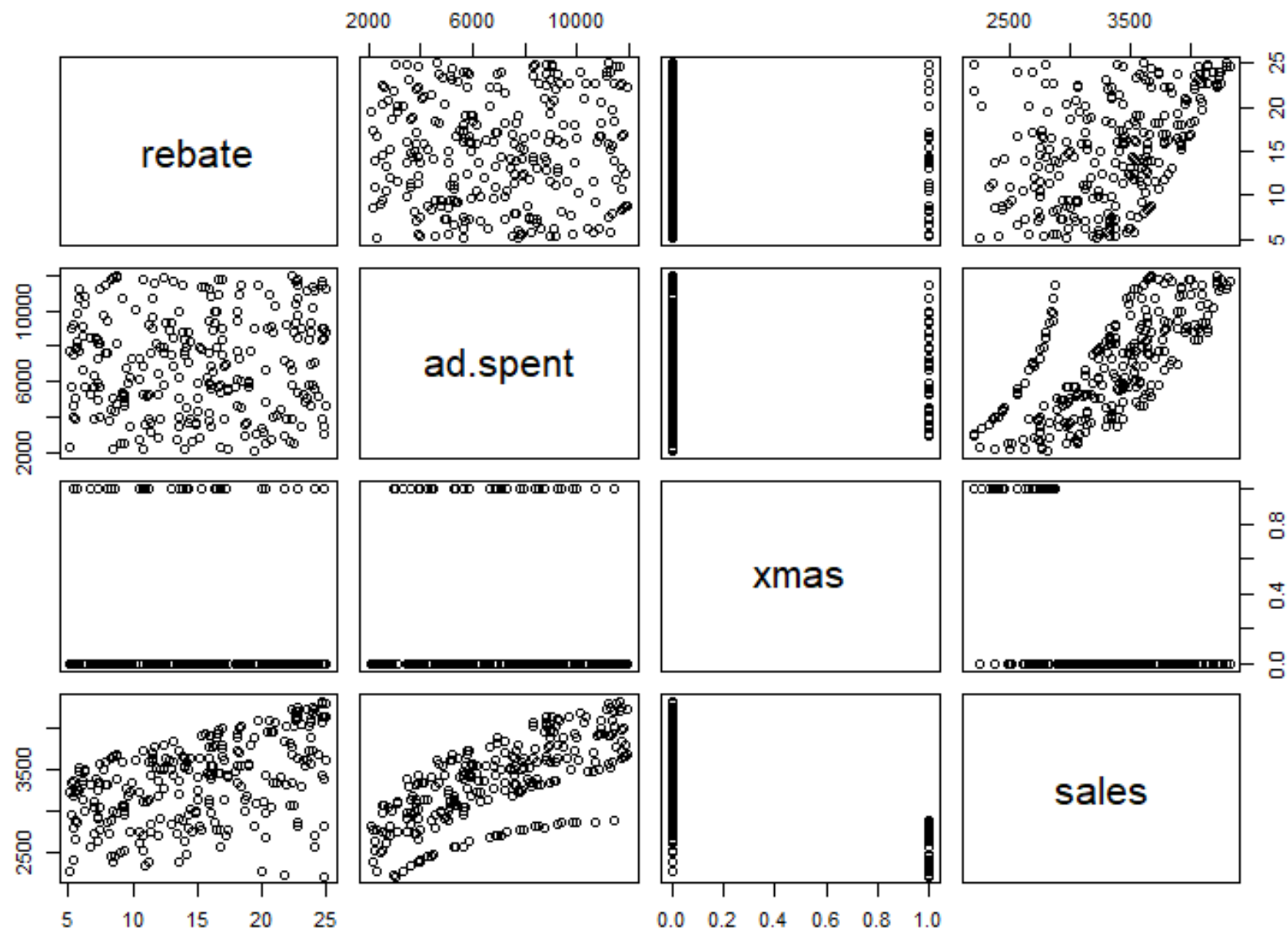
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# Data Description

- Dataset: Project1.11.csv
- Data Summary:

	rebate	adspent	xmas	sales
Mean	14.91703067	6979.162715	0.115384615	3353.470949
Standard Error	0.368950475	173.3791934	0.019851865	30.74370314
Median	15.03909658	6910.07593	0	3381.706773
Mode	#N/A	#N/A	0	#N/A
Standard Deviation	5.949147656	2795.655491	0.320101706	495.7273178
Sample Variance	35.39235784	7815689.625	0.102465102	245745.5736
Kurtosis	-1.175953703	-1.082276165	3.89458361	-0.658853757
Skewness	0.05531345	0.107333205	2.421710921	-0.162447772
Range	19.87103173	9908.357831	1	2131.168999
Minimum	5.113706412	2067.766819	0	2196.033321
Maximum	24.98473814	11976.12465	1	4327.202319
Sum	3878.427974	1814582.306	30	871902.4468
Count	260	260	260	260



# Beta & P Values

- Bootstrapped: 1000

B0 (Intercept)	B1 (rebate)	B2 (adspend)	B3 (xmas)	B4 (rebate*adspend)	B5 (adspend*xmas)	B6 (rebate*xmas)	r1	r2
312.1931	-13.4404	43.1998	-113.0556	0.0069	-0.0223	-35.8796	0.02091	0.01673
0.04	0.02	0	0.01	0.45	0	0.1	0	0

# Full Model

$$\begin{aligned} \text{sales} = & 312.1931 - 13.44039 * ((1 - e^{-0.02091 * \text{rebate}}) / 0.02091) \\ & + 43.1998 * ((1 - e^{-0.01673 * \text{adspent}}) / 0.01673) - 113.0556 * \text{dxmas} \\ & + 0.0069 * \text{rebate} * \text{adspent} - 0.0223 * \text{adspent} * \text{dxmas} \\ & - 35.8796 * \text{rebate} * \text{xmas} \end{aligned}$$

## Selected Model

$$\begin{aligned} \text{sales} = & 312.1931 - 13.44039 * ((1 - e^{-0.02091 * \text{rebate}}) / 0.02091) \\ & + 43.1998 * ((1 - e^{-0.01673 * \text{adspent}}) / 0.01673) - 113.0556 * \text{dxmas} \\ & - 0.0223 * \text{adspent} * \text{dxmas} \end{aligned}$$

# Interpretation

- ▶ We are having a 43.2 dollars for every dollar we invest in advertising.
- ▶ The sales is lower by 0.0223 for every dollar we invest in ad during xmas. But over all we have a positive sales.
- ▶ Xmas days is negatively affecting or sales ie. The sales in not as high as the non-Xmas days

# Insights

- ▶ Investment in rebate is not yield a positive return as it negatively affecting the sales so we can reduce the investment in the rebate
- ▶ We are having higher sales when its not a special day. This could be investigated further.
- ▶ Consider having a different strategy during for xmas.