Foundation Training Program on "Semiconductor Fabrication and Characterization"

Project Report

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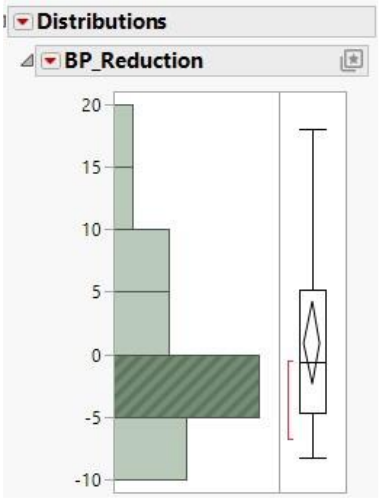
Title of the Project: JMP Project No. 1 : Analysis of Effectiveness of different medicines for BP measurement
Objective / Purpose (150-200 words): The primary objective of this project is to evaluate the effectiveness of medicines A and B in reducing blood pressure compared to Control and Placebo groups. Using a comparative analysis, we leverage data from subjects who received different doses, with BP measurements taken at various times over three days. Our focus is on the reduction in BP from Monday to Friday at 6 PM. Utilizing JMP software, we compute BP reductions and perform ANOVA to test for significant differences among the groups. The goal is to determine if medicines A and B significantly lower BP. Insights from this study aim to inform medical professionals and demonstrate JMP's analytical capabilities.
Procedure: Data Import and Preparation: • Import BP data into JMP. • Clean and organize data for analysis. Calculate BP Reduction: • Compute BP reduction: BP Reduction=BPMonday 6 PM−BPFriday 6 PM Descriptive Statistics: • Calculate mean and standard deviation of BP reduction. Statistical Analysis: • Perform ANOVA to test for significant differences in BP reduction among groups (A, B). Interpret Results: • Analyze ANOVA results (F-ratio and p-value). • Determine if medicines A and B significantly reduce BP.

Data: Images / Tables / Graphs (*include all applicable results*):

Σ	Subject	Dose	BP 8M	BP 12M	BP 6M	BP 8W	BP 12W	BP 6W	BP 8F	BP 12F	BP 6F	BP_Reduction
1	1	A	183	174	180	174	178	181	171	178	171	9.6017466115
2	2	A	173	181	181	170	179	176	175	185	188	-6.685531568
3	3	A	181	189	177	188	175	182	183	183	180	-2.736940605
4	4	A	181	177	182	176	173	184	183	187	183	-0.549559806
5	5	A	184	180	176	172	175	176	170	190	183	-6.417760903
6	1	B	171	181	180	183	176	174	185	182	184	-4.651925896
7	2	B	175	180	180	183	180	173	184	185	180	-0.180982512
8	3	B	179	173	183	188	193	170	179	185	170	12.501414113
9	4	B	178	192	177	185	172	179	187	184	177	-0.642038527
10	5	B	181	187	182	182	177	177	184	183	184	-2.776281399
11	1	Control	182	186	178	177	177	177	183	191	175	3.2223824653
12	2	Control	178	184	187	174	175	176	180	181	184	2.5050388466
13	3	Control	186	180	181	171	173	181	179	181	189	-8.252905563
14	4	Control	175	180	177	185	171	182	176	185	170	7.7178379826
15	5	Control	181	175	181	179	185	184	184	173	185	-4.575627194
16	1	Placebo	181	178	179	178	182	179	188	183	173	5.6686541904
17	2	Placebo	179	175	189	191	178	177	182	188	171	18.045700291
18	3	Placebo	177	187	172	180	183	178	183	190	178	-5.36946333
19	4	Placebo	176	178	182	177	178	177	176	184	184	-1.216345463
20	5	Placebo	184	171	182	181	186	183	184	172	179	3.5605743409

Results: Images / Tables / Graphs

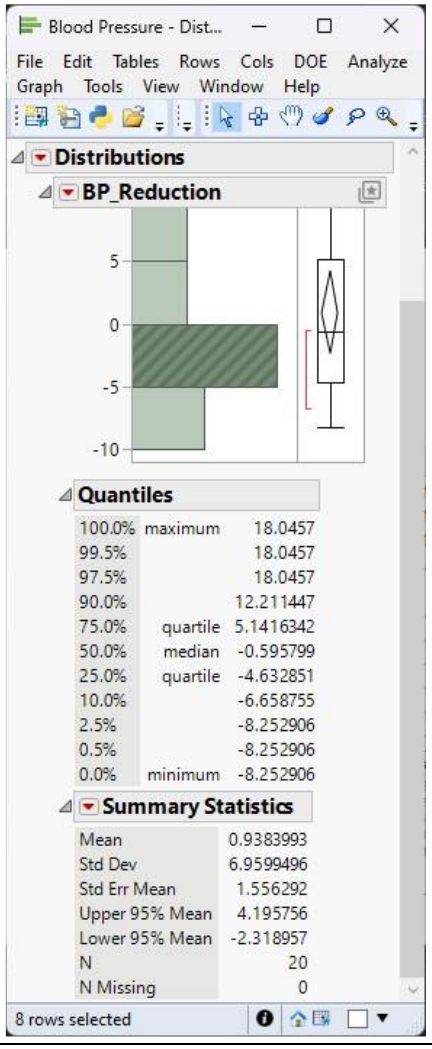
Result of part -1



Quantiles		
100.0%	maximum	18.0457
99.5%		18.0457
97.5%		18.0457
90.0%		12.211447
75.0%	quartile	5.1416342
50.0%	median	-0.595799
25.0%	quartile	-4.632851
10.0%		-6.658755
2.5%		-8.252906
0.5%		-8.252906
0.0%	minimum	-8.252906

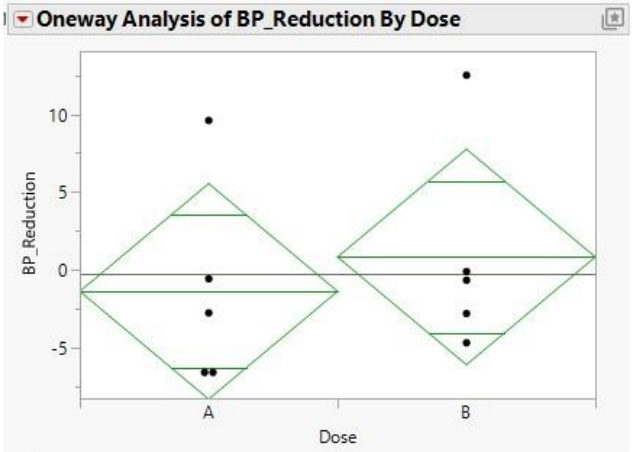
Summary Statistics	
Mean	0.9383993
Std Dev	6.9599496
Std Err Mean	1.556292
Upper 95% Mean	4.195756
Lower 95% Mean	-2.318957
N	20
N Missing	0

Mean : 0.9383
Standard Deviation : 6.9599



Results: Images / Tables / Graphs

Result of part -2



Oneway Anova

Summary of Fit

Rsquare	0.032815
Adj Rsquare	-0.08808
Root Mean Square Error	6.700005
Mean of Response	-0.25379
Observations (or Sum Wgts)	10

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Dose	1	12.18426	12.1843	0.2714	0.6165
Error	8	359.12053	44.8901		
C. Total	9	371.30479			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
A	5	-1.3576	2.9963	-8.267	5.5519
B	5	0.8500	2.9963	-6.060	7.7596

Std Error uses a pooled estimate of error variance

Excluded Rows 10

Project Highlight (in Bullet Points):

- Successfully analyzed BP measurement and conducted ANOVA to compare BP BP reduction across groups using JMP software.
- No significant difference in BP reduction among medicines A,B, Control and Placebo (p-value = 0.6165)
- Since P-value = 0.6165 > 0.05 we fail to reject the NULL hypothesis this means Medicines 'A' and 'B' did not make a statistically significant improvement in BP reduction.

Issues / Challenges:

- The need for extra material or tutorials on using JMP software to ease the learning curve.
- Balancing this project with other academic and extracurricular commitments.
- Ensuring the assumptions of ANOVA were met for valid results.

Feedback:

- Appreciated the well-designed topic coverage, which provided bright insights into the effectiveness of medicines A and B.
- Visualizations were noted for their effectiveness in conveying findings.
- Initially struggled with the use of JMP software but overcame this challenge.
- It would be helpful to have extra material or tutorials on using JMP software to ease the learning curve.

Conclusion / Future Work:

- Summary: Medicines A and B did not significantly reduce BP compared to Control and Placebo groups.
- Implications: The results suggest no substantial benefit of medicines A and B over placebo.
- Extended Studies: Conduct studies with larger sample sizes.