

Isha Kedia  
Bivariate Project  
November 22, 2021

### **With Outliers**

\$345.00	\$62.00
\$313.63	\$55.06
\$250.00	\$35.00
\$450.00	\$50.00
\$176.38	\$21.54
\$343.69	\$4.31
\$300.00	\$80.00
\$350.00	\$43.85
\$350.00	\$268.00
\$325.00	\$90.00
\$200.00	\$70.00
\$180.00	\$80.00
\$160.00	\$56.00
\$50.00	\$5.00
\$350.00	\$50.00
\$90.00	\$50.00
\$270.00	\$105.00
\$320.00	\$50.00
\$400.00	\$10.00
\$380.00	\$20.00
\$206.20	\$30.63
\$130.00	\$46.57
\$70.00	\$22.43
\$195.00	\$192.87
\$300.00	\$91.62
\$160.00	\$55.00
\$287.00	\$48.79
\$50.00	\$42.50
\$348.00	\$37.61
\$210.00	\$79.36

## Regression Equation

$$\text{Last Shopping Bill} = 47.3 + 0.0575 \text{ Paycheck}$$

## Coefficients

<u>Term</u>	<u>Coef</u>	<u>SE Coef</u>	<u>T-Value</u>	<u>P-Value</u>	<u>VIF</u>
<u>Constan</u>	<u>47.3</u>	<u>25.1</u>	<u>1.88</u>	<u>0.070</u>	
<u>t</u>					
<u>Paychec</u>	<u>0.057</u>	<u>0.0916</u>	<u>0.63</u>	<u>0.536</u>	<u>1.00</u>
<u>k</u>	<u>5</u>				

## Model Summary

<u>S</u>	<u>R-sq</u>	<u>R-sq(adj)</u>	<u>R-sq(pred)</u>
<u>53.894</u>	<u>1.38</u>	<u>0.00%</u>	<u>0.00%</u>
<u>8</u>	<u>%</u>		

## Analysis of Variance

<u>Source</u>	<u>DF</u>	<u>Adj SS</u>	<u>Adj MS</u>	<u>F-Value</u>	<u>P-Value</u>
<u>Regression</u>	<u>1</u>	<u>1142</u>	<u>1142</u>	<u>0.39</u>	<u>0.536</u>
<u>Paycheck</u>	<u>1</u>	<u>1142</u>	<u>1142</u>	<u>0.39</u>	<u>0.536</u>
<u>Error</u>	<u>28</u>	<u>81330</u>	<u>2905</u>		
	<u>23</u>	<u>47957</u>	<u>2085</u>	<u>0.31</u>	<u>0.976</u>
<u>Lack-of-Fit</u>					
<u>Pure Error</u>	<u>5</u>	<u>33373</u>	<u>6675</u>		
<u>Total</u>	<u>29</u>	<u>82472</u>			

## Fits and Diagnostics for Unusual Observations

<u>Obs</u>	<u>Last Shopping Bill</u>	<u>Fit</u>	<u>Resid</u>	<u>Std Resid</u>
<u>9</u>	<u>268.0</u>	<u>67.</u>	<u>200.6</u>	<u>3.84 R</u>
		<u>4</u>		
<u>24</u>	<u>192.9</u>	<u>58.</u>	<u>134.4</u>	<u>2.55 R</u>
		<u>5</u>		

*R Large residual*

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## Statistics

<u>Variable</u>	<u>N</u>	<u>N</u> <u>*</u>	<u>Mea</u> <u>n</u>	<u>SE</u> <u>Mean</u>	<u>StDev</u>	<u>Minimu</u> <u>m</u>	<u>Q1</u>	<u>Median</u>	<u>Q3</u>	<u>Maximu</u> <u>m</u>
<u>Paycheck</u>	<u>3</u>	<u>0</u>	<u>252.</u>	<u>19.9</u>	<u>109.2</u>	<u>50.0</u>	<u>172.</u>	<u>278.5</u>	<u>345.</u>	<u>450.0</u>
	<u>0</u>		<u>0</u>				<u>3</u>		<u>8</u>	
<u>Last Shopping</u>	<u>3</u>	<u>0</u>	<u>61.7</u>	<u>9.74</u>	<u>53.33</u>	<u>4.31</u>	<u>33.9</u>	<u>50.00</u>	<u>79.5</u>	<u>268.00</u>
<u>Bill</u>	<u>0</u>		<u>7</u>				<u>1</u>		<u>2</u>	

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\$380.00	\$20.00
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### Regression Equation

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Last Shopping Bill = 44.7 + 0.0200 Paycheck

### Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	44.7	12.6	3.54	0.002	
Paycheck	0.0200	0.0463	0.43	0.670	1.00

### Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
26.7170	0.71%	0.00%	0.00%

### Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	132.6	132.6	0.19	0.670
Paycheck	1	132.6	132.6	0.19	0.670
Error	26	18558.8	713.8		
Lack-of-Fit	22	17768.7	807.7	4.09	0.090
Pure Error	4	790.0	197.5		
Total	27	18691.4			

### Fits and Diagnostics for Unusual Observations

Obs	Last Shopping Bill	Fit	Resid	Std Resid
16	105.00	50.1	54.89	2.09 R

R Large residual

## Statistics

Variable	N	N *	Mean	SE		Minimum	Q1	Median	Q3	Maximum
				Mean	StDev					
Paycheck	2	0	250.5	21.0	111.1	50.0	164.	278.5	344.	450.0
	8						1		7	
Last Shopping	2	0	49.72	4.97	26.31	4.31	31.7	50.00	68.0	105.00
Bill	8						2		0	

The purpose of this project was to see if there is a correlation between the amount of money seniors make and how much they spend on clothes. The data was collected by me going around to seniors at North Olmsted High School and asking if they had a job and how much they make every 2 weeks and how much they last spent on clothes. I had asked students with different jobs, males and females, and different age ranges to avoid sample bias. The sample is the 30 seniors at NOHS with jobs and the population is every senior at NOHS that has a job.