

**BODi: The Beachbody Company, Inc.**

**Simple price forecasting using linear regression**

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## **Introduction**

The Beachbody Company (NYSE: BODI) is a “market-leading health and wellness enterprise built on rejecting the legacy fitness and diet industry norms and creating the category of Health Esteem...[offering] a wide variety of expert-led workouts and positive mindset master classes with comprehensive nutrition guides, calendars, and supplements...constantly developing new content, introducing new products, and enabling a network of support (Company Overview, n.d.).” The Beachbody Company opened for public trading in 2021. This report uses historical stock pricing data from Nasdaq to forecast stock pricing through linear regression.

## **History of BODi**

Beachbody started as a privately held company that engaged in direct-to-consumer sales of its fitness DVDs and nutrition products. As online streaming gained in popularity, Beachbody created its subscription based online platform Beachbody on Demand (BOD) that allowed its members to stream its fitness DVD library. In 2020, it rebranded as The Beachbody Company, Inc. after its merger with Myx Fitness and Forest Road Acquisition Inc. and went public in January 2021. As its digital platform grew, Beachbody started creating new fitness content exclusive to its digital platform, further diversifying its library content. In March 2023, Beachbody rebranded again as BODi (Beachbody On Demand Interactive) to reflect its mission of inclusivity and holistic fitness, nutrition, and mindset health interactive experience. Since it opened for public trading in 2021, BODi has experienced a decline in its revenue affecting its overall financial performance. This report examines BODi’s financial performance through its historical stock price using data from 2021 to present.

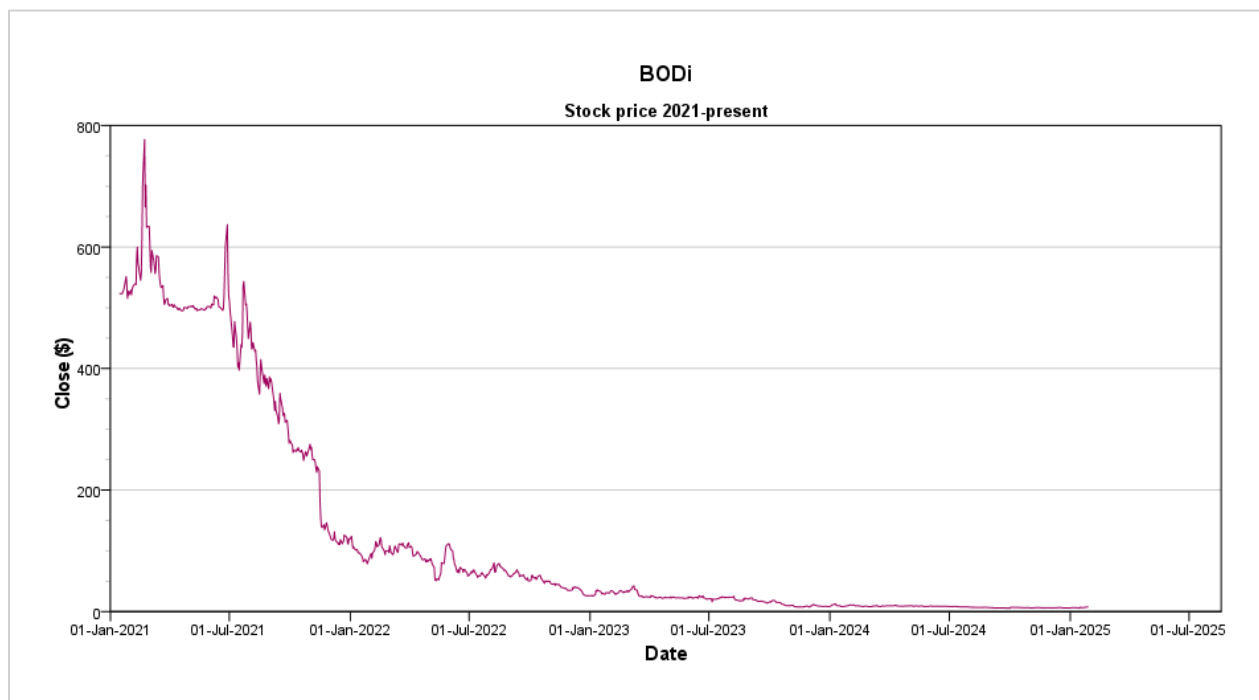
## **Methods of Analysis**

Historical stock price data was taken from Nasdaq with data beginning on January 15, 2021, its opening trading day, through January 28, 2025, when the data was extracted. This report uses SPSS for analysis which includes exploratory data analysis, correlation analysis, and regression analysis. The data was imported into SPSS clean without any missing values.

## Exploratory Data Analysis

Exploratory data analysis is done for the entire dataset 2021-present where *2021* begins on January 15, 2021, the first day of trading, and *present* is January 28, 2025, when the data was extracted.

BODi has been experiencing a financial decline since its stock opened for public trading. On its first day of trading, the closing price was \$523. It peaked in February 2021 with a closing price of \$777. By the end of 2021, the adjusted closing price fell to nearly \$100 and continues to decline. (The Beachbody Company, Inc. (BODI) Stock Price, News, Quote & History - Yahoo Finance, 2025) The present closing price was \$7.70, a 99.1% decline from its initial offering.



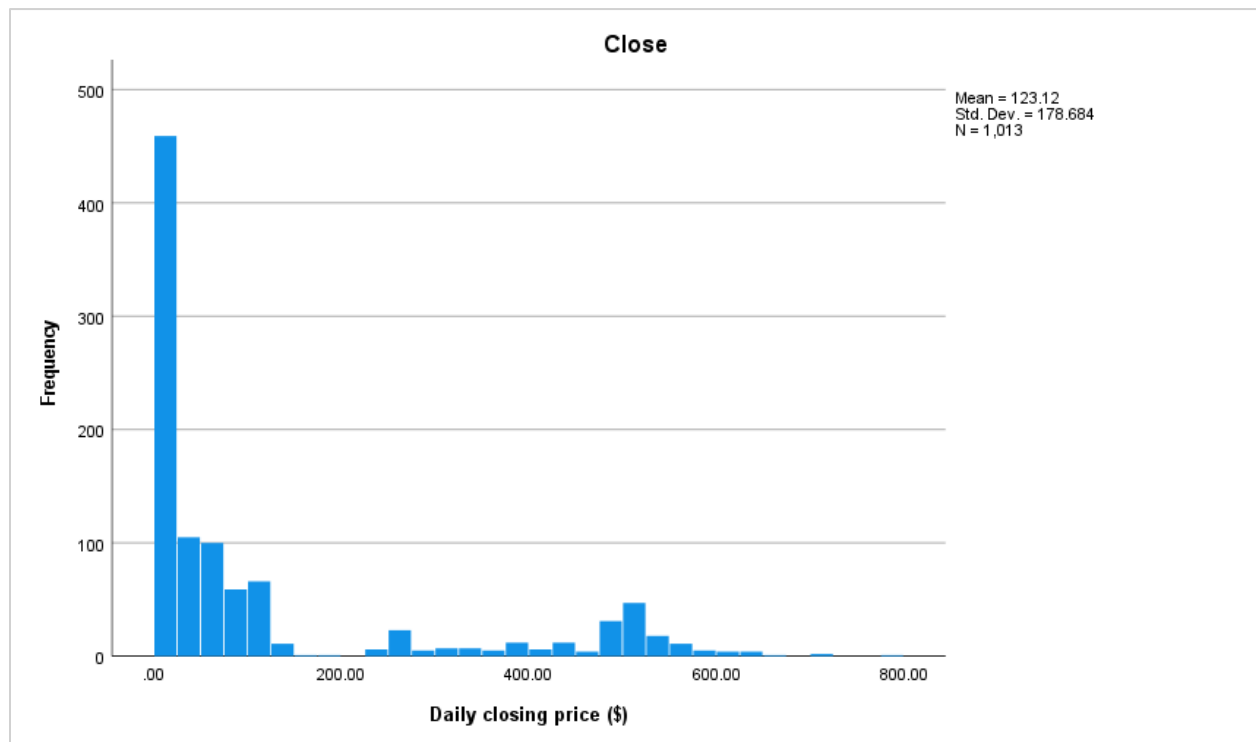
Descriptive statistics show that the dataset has five variables: *Date*, *Close*, *Volume*, *Open*, *High*, and *Low* where *Date* is the date of trading, *Close* is the daily closing price, *Volume* is the daily trading volume, *Open* is the daily opening price, *High* is the daily high price, and *Low* is the daily low price. The dataset has N=1013 observations. For each variable, the mean is greater than the median which is greater than the mode. The quartiles show the range of data distribution for each variable. For *Close*, *Open*, *High*, and *Low*, 75% of the data falls below \$111, \$111, \$114.50, and \$107, respectively. *Volume* has a large range in values which could suggest that BODi's stock is volatile.

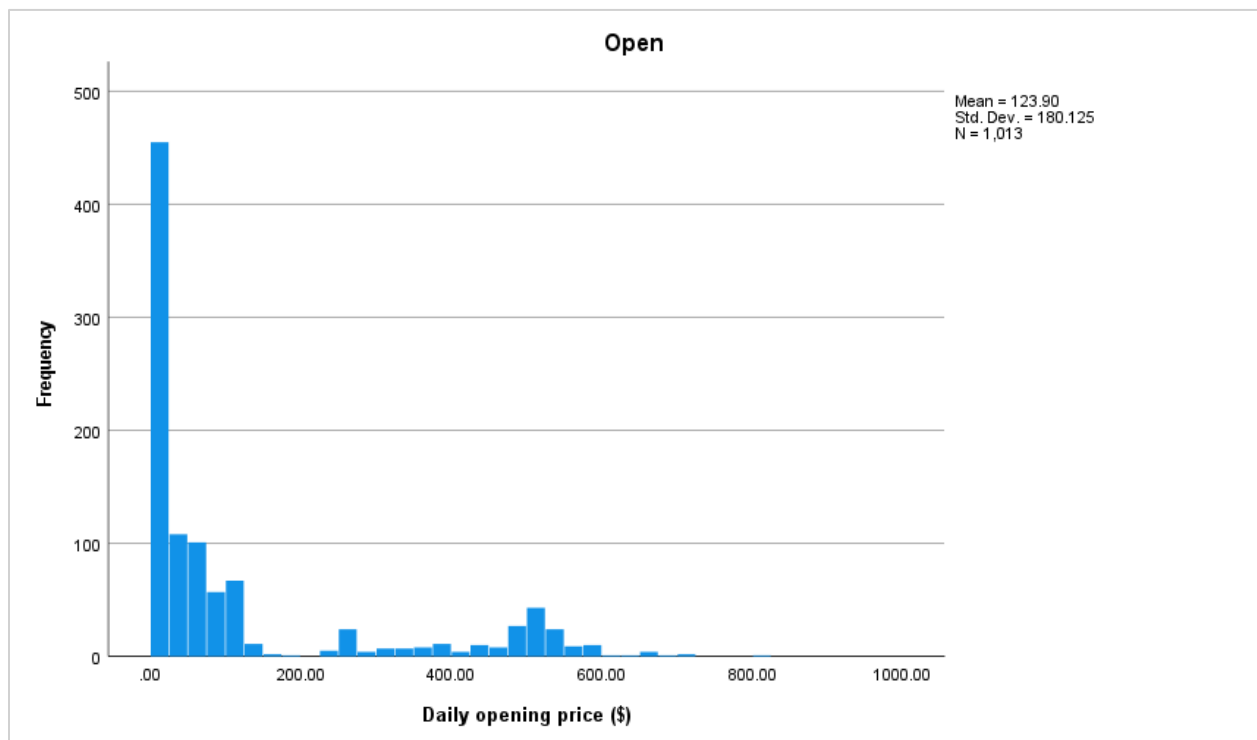
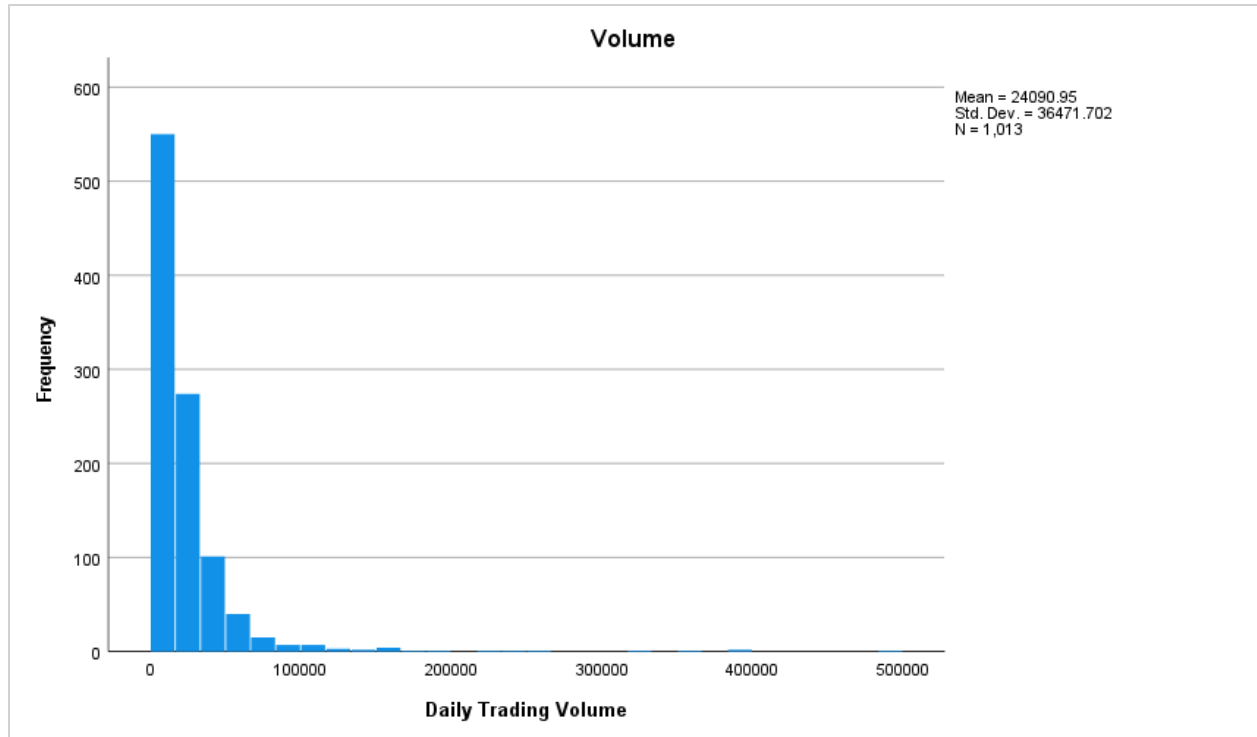
### Statistics

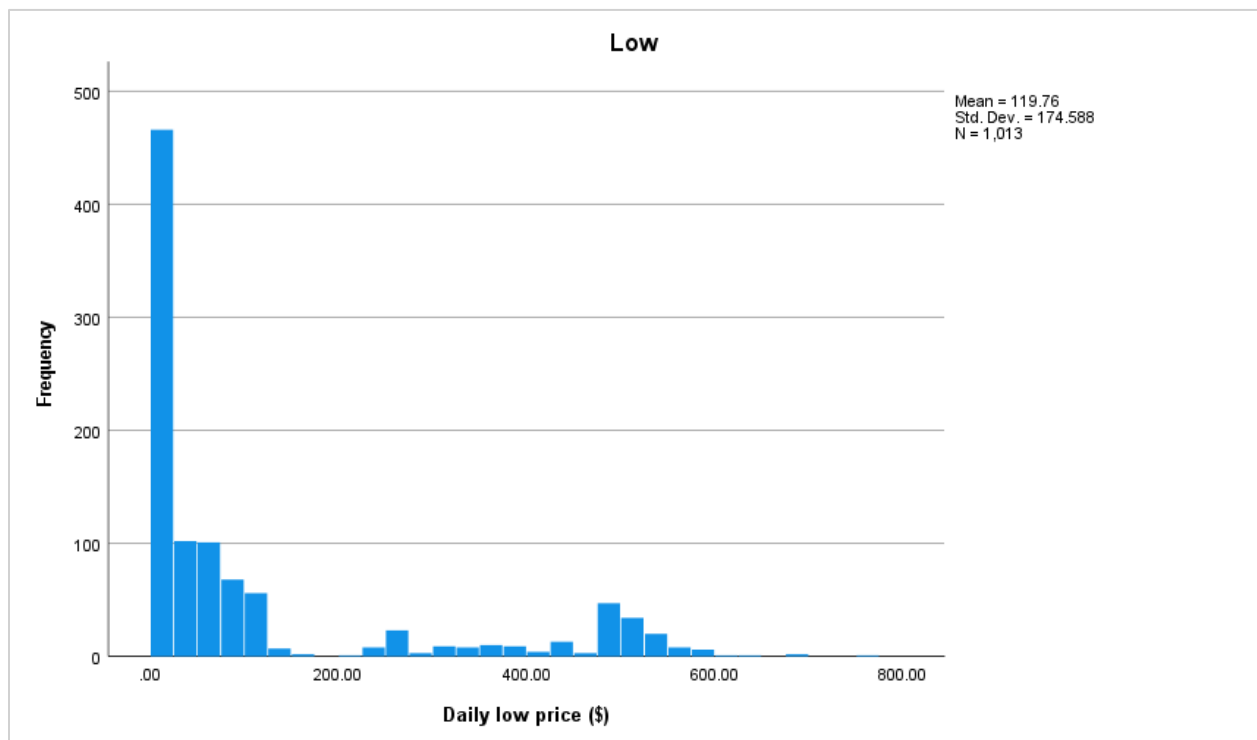
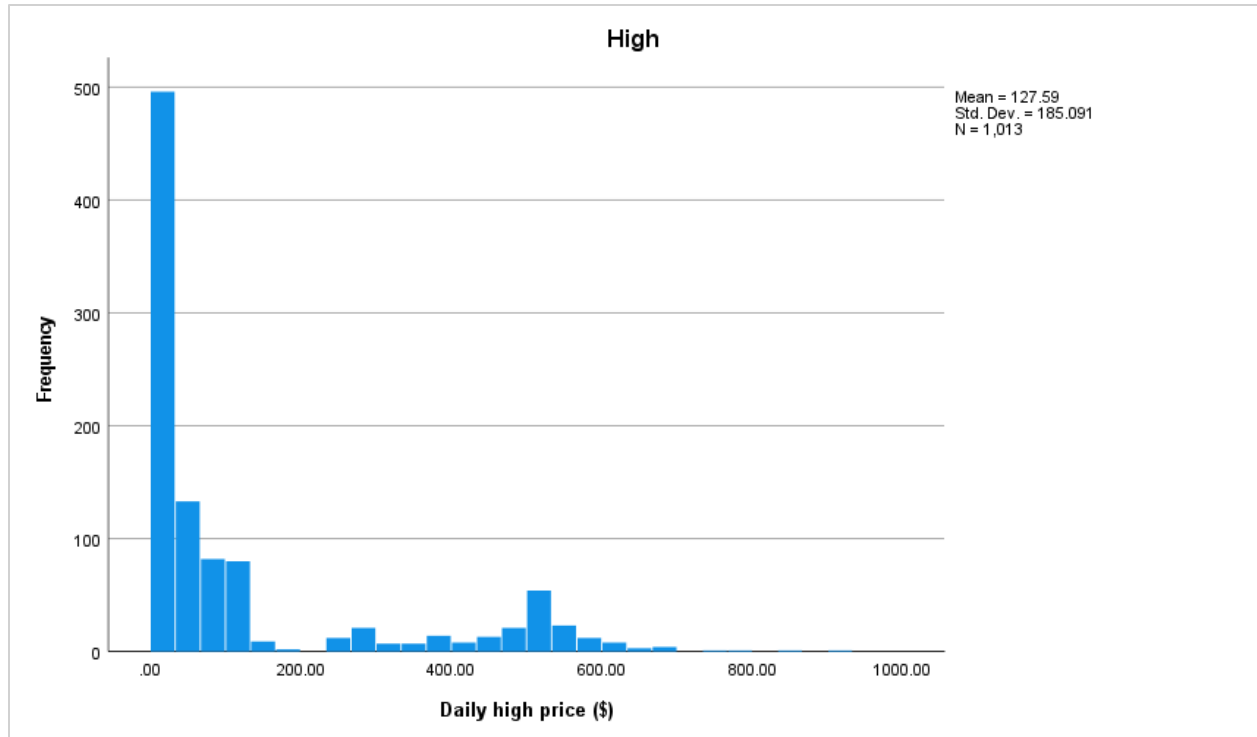
		Close	Volume	Open	High	Low
N	Valid	1013	1013	1013	1013	1013
	Missing	0	0	0	0	0
Mean		123.1231	24090.95	123.8994	127.5867	119.7623
Median		33.1100	14833.00	33.0000	35.0000	32.0000
Mode		60.00	1202 <sup>a</sup>	22.50	9.50	6.08
Range		771.60	488611	794.45	904.15	752.86
Minimum		5.40	873	5.55	5.85	5.14
Maximum		777.00	489484	800.00	910.00	758.00
Percentiles	25	9.3950	7685.00	9.2700	9.7500	8.9250
	50	33.1100	14833.00	33.0000	35.0000	32.0000
	75	111.0000	27758.50	111.0000	114.5000	107.0000

a. Multiple modes exist. The smallest value is shown

Histograms for each variable show a right-skewed distribution with most of the data for each variable to the left at the lower values.







## Correlation

A correlation analysis shows *Close* has a very strong positive relationship with *Open*, *High*, and *Low* with correlation coefficients 0.999 for all, but a lesser (weak) positive relationship with *Volume* with a correlation coefficient of 0.283. (A correlation coefficient of 0 means no correlation.)

		Correlations				
		Close	Volume	Open	High	Low
Close	Pearson Correlation	1	.2825**	.9990**	.9988**	.9993**
	Sig. (1-tailed)		<.001	.000	.000	.000
	N	1013	1013	1013	1013	1013
Volume	Pearson Correlation	.2825**	1	.2837**	.3008**	.2733**
	Sig. (1-tailed)	<.001		<.001	<.001	<.001
	N	1013	1013	1013	1013	1013
Open	Pearson Correlation	.9990**	.2837**	1	.9989**	.9990**
	Sig. (1-tailed)	.000	<.001		.000	.000
	N	1013	1013	1013	1013	1013
High	Pearson Correlation	.9988**	.3008**	.9989**	1	.9979**
	Sig. (1-tailed)	.000	<.001	.000		.000
	N	1013	1013	1013	1013	1013
Low	Pearson Correlation	.9993**	.2733**	.9990**	.9979**	1
	Sig. (1-tailed)	.000	<.001	.000	.000	
	N	1013	1013	1013	1013	1013

\*\* . Correlation is significant at the 0.01 level (1-tailed).

A linear regression can be used to further examine the relationship between the variables and to determine if a single variable within the relationship is affected by the other variables in the same relationship.

## The Closing Price

The correlation analysis shows that the closing price is influenced by the daily changes in stock price and volume. The ability to forecast price gives investors insight into a stock to allow them to make informed decisions on managing the stock, such as whether to buy, sell, or hold. The closing price may be able to be predicted from its opening price, daily high and low, and daily trading volume. Linear regression can be used to test the validity of forecasting price using these variables by defining *Close* as the dependent variable and the other variables as independent variables.

### Hypothesis Statement

*single independent variable (Low)*

$H_0$ : The daily closing price *has no relationship* with the daily low price.

$H_a$ : The daily closing price *has a relationship* with the daily low price.

### Simple Linear Regression

To test the hypothesis, *Close* is tested against a single variable *Low*, which was shown to have a strong correlation. The statistical significance level for the regression is assumed to be 0.05. The regression summary shows  $R^2=0.9986$  which means that 99.86% of the variance can be explained by the linear regression model suggesting that the model is nearly a perfect fit. ( $R^2=1$  indicates a perfect fit.) The independent variable *Low* has a  $p$ -value  $< 0.05$  ( $p=0$ ) which means that it is statistically significant to the linear model and the null hypothesis  $H_0$  can be rejected.

#### Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.9993 <sup>a</sup>	.9986	.9986	6.73588

a. Predictors: (Constant), Low

b. Dependent Variable: Close

#### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.638	.257		2.486	.013	.134	1.142
	Low	1.023	.001	.999	843.284	.000	1.020	1.025

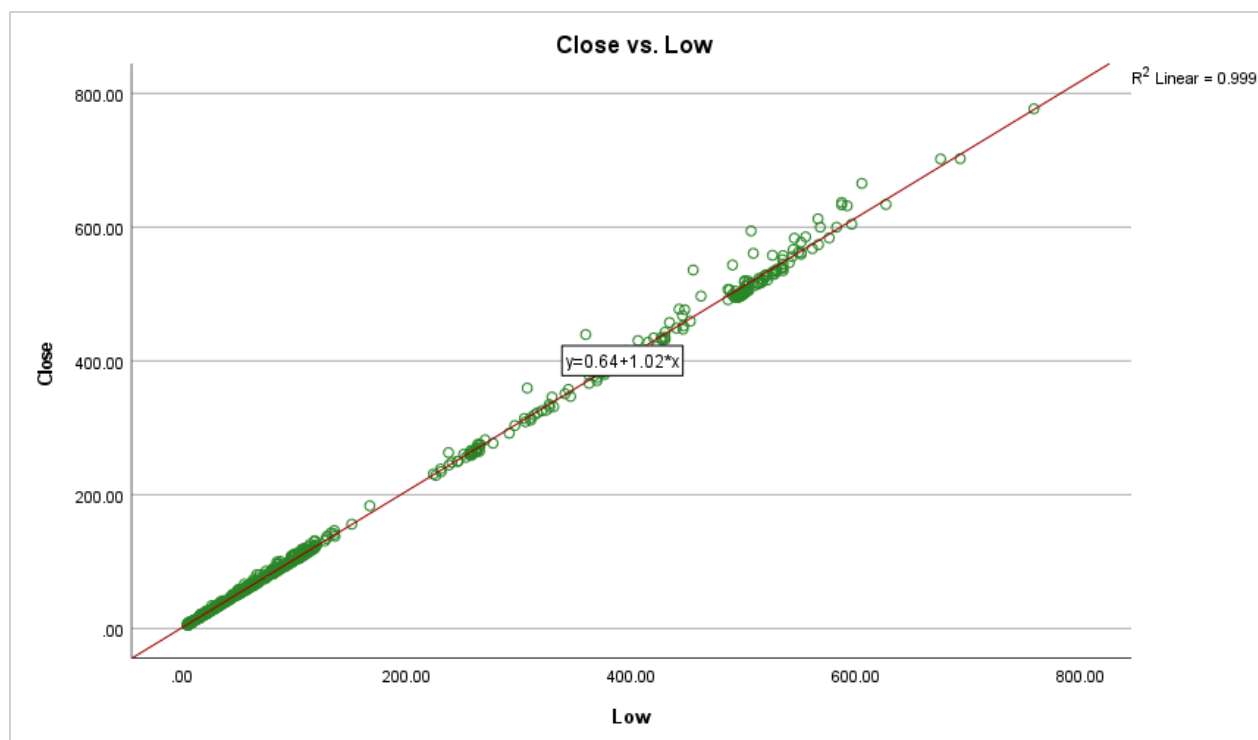
a. Dependent Variable: Close

The linear regression model can be written mathematically as

$$y = 0.638 + 1.023X$$

where  $y$  is the predicted *Close* and  $X$  is the independent variable *Low*. A graph of the linear model with *Close* vs. *Low* shows how closely it fits the data with little variance in most of the data points.





Given that *Low* is statistically significant to predict *Close*, could *Open* and *High* also be used as predictor variables since they also have a very strong correlation with *Close*?

### Hypothesis Statement

*multiple independent variables (Open, High, Low)*

$H_0$ : The daily closing price *does not have a relationship* with the daily opening price, daily high price, and daily low price.

$H_a$ : The daily closing price *does have a relationship* with the daily opening price, daily high price and daily low price.

### Multilinear Regression

The regression was rerun to include all three independent variables *Open*, *High*, and *Low*. The statistical significance level for the regression is assumed to be 0.05. The regression summary shows  $R^2=0.9992$  which means that 99.92% of the variance can be explained by the linear regression model, again, suggesting that the model is nearly a perfect fit. All independent variables have a  $p\text{-value} < 0.05$  ( $p < 0.001$ ) which means that they are statistically significant to the linear model and the null hypothesis  $H_0$  can be rejected.

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000 <sup>a</sup>	.9992	.9992	5.11965

a. Predictors: (Constant), Low, High, Open

b. Dependent Variable: Close

**Coefficients<sup>a</sup>**

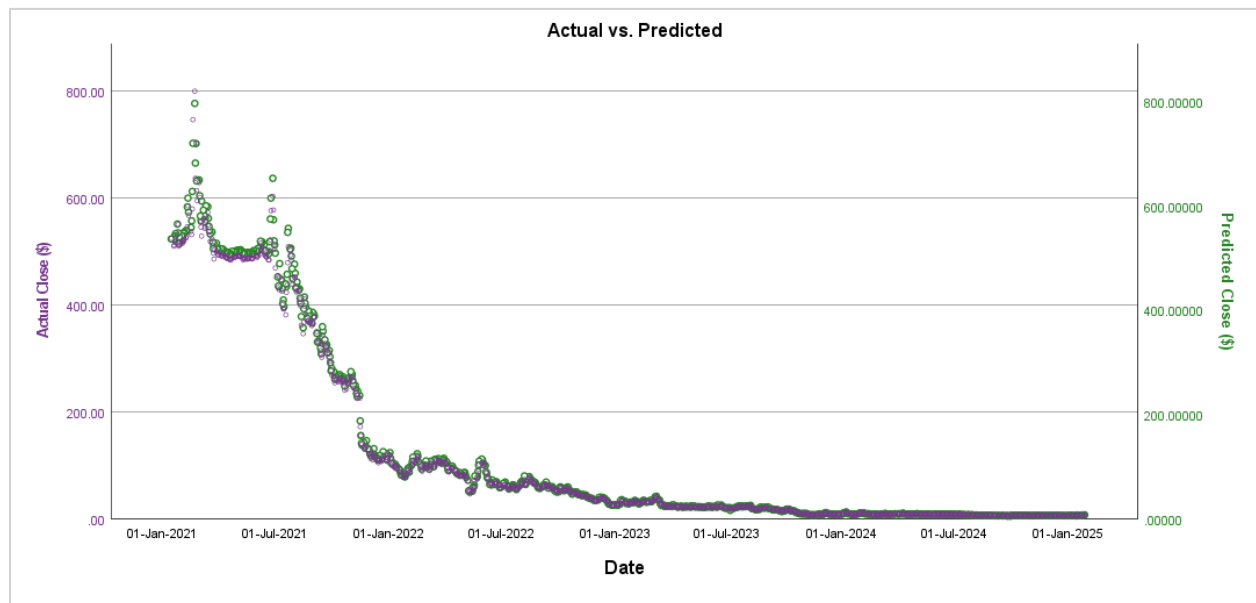
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.3226	.195		1.650	.099	-.061	.706
	Open	-.1133	.028	-.114	-4.014	<.001	-.169	-.058
	High	.4168	.019	.432	22.302	<.001	.380	.453
	Low	.6985	.021	.683	33.056	<.001	.657	.740

a. Dependent Variable: Close

The multilinear regression model can be written mathematically as

$$y = 0.3226 - 0.113X_1 + 0.4168X_2 + 0.6985X_3$$

where  $y$  is the predicted *Close* and  $X_{i-1,2,3}$  is the independent variable where  $X_1$  is *Open*,  $X_2$  is *High*, and  $X_3$  is *Low*. The chart below plots both the actual closing price (purple) and the predicted closing price (green) showing a greater variance at the higher stock prices in 2021 compared to its recent prices where the variance is hardly detectable.



## Discussion

The linear regression shows that the daily closing price can be predicted by daily price changes. *Volume* was not considered as an independent variable in the regression because its correlation to *Close* was significantly weaker than the other three variables. While the linear model was shown to be valid, the regression analysis could include more elements for a more thorough analysis:

- Include *Volume* to determine its statistical significance in the regression.
- Split the dataset into two sets: train and test. The training dataset would be used to create the model. The testing dataset would determine its predictive quality on a new set of data.
- Evaluate the residual data to ensure the data is appropriate for regression.

## Conclusion

The linear model in this report is a simplistic predictive measure and does not reflect the realistic complexities of stock pricing including market changes, economic factors, company news, and industry trends. BODi's declining financial performance is attributed to weak quarterly reports, declining revenue, and production failures (McKenna, 2021). While their stock price has had slight improvements, it continues to be affected by setbacks in revenue and company performance.

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