ACCESSING CORRELATION USING JMP

DATA DESCRIPITION

Pre-cleaning---- This is a measure of the number of particulates pay you need area of the parts before cleaning. The higher this value, the dirtier the part.

Post-cleaning--- This is a measure of the number of particulates hey we need area on the part after cleaning. The higher this value, the dirtier the part.

Removal----Pre-cleaning-Post-Cleaning

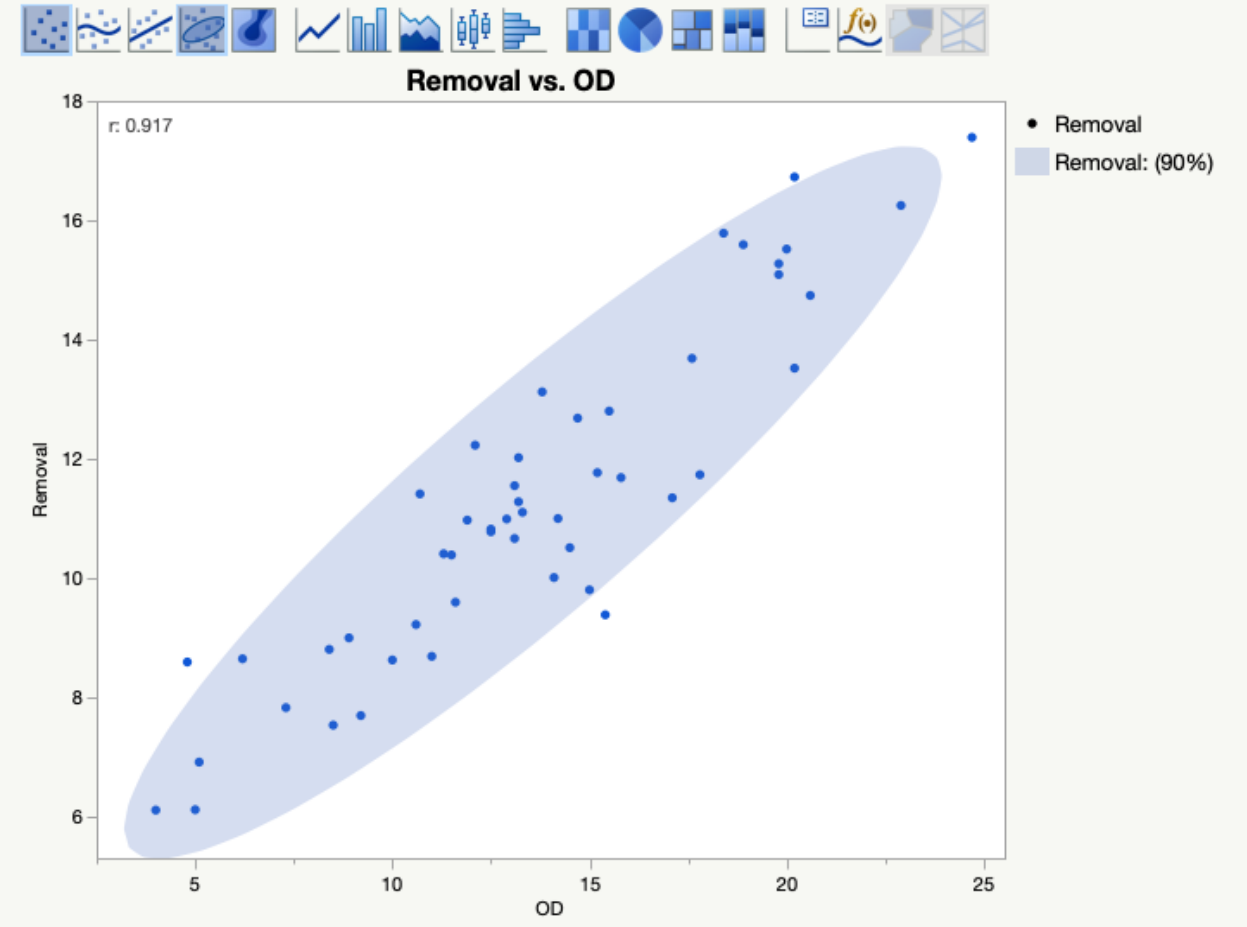
OD----- This is the outside diameter measure, in centimeters

ID----- This is the inside diameter measure, in centimeters

Width---This is the width, in centimeters

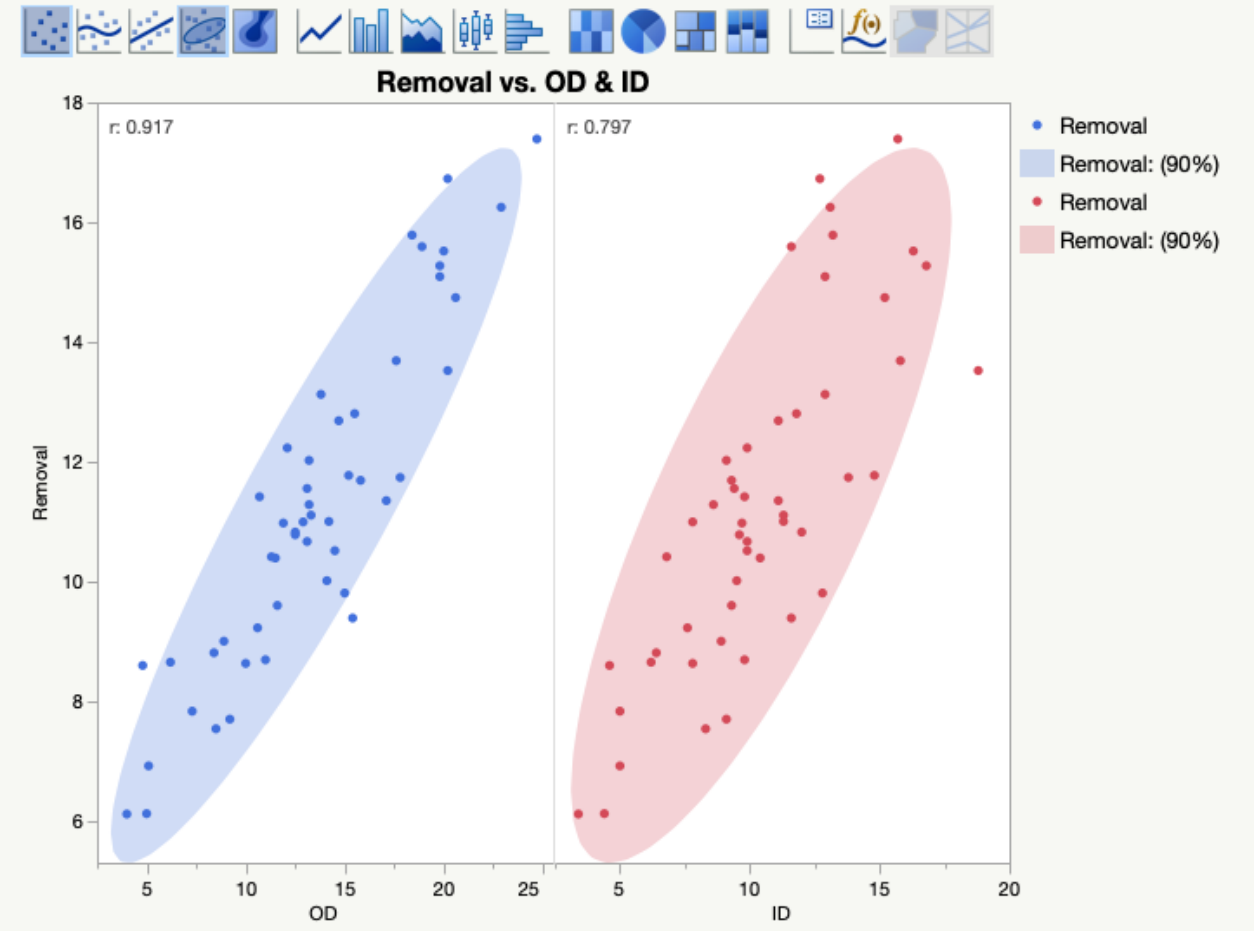
Container Type--- the parts are cleaned in three different type of containers, which we denote as A, B, C.

CALCULATION FOR REMOVAL AND OD



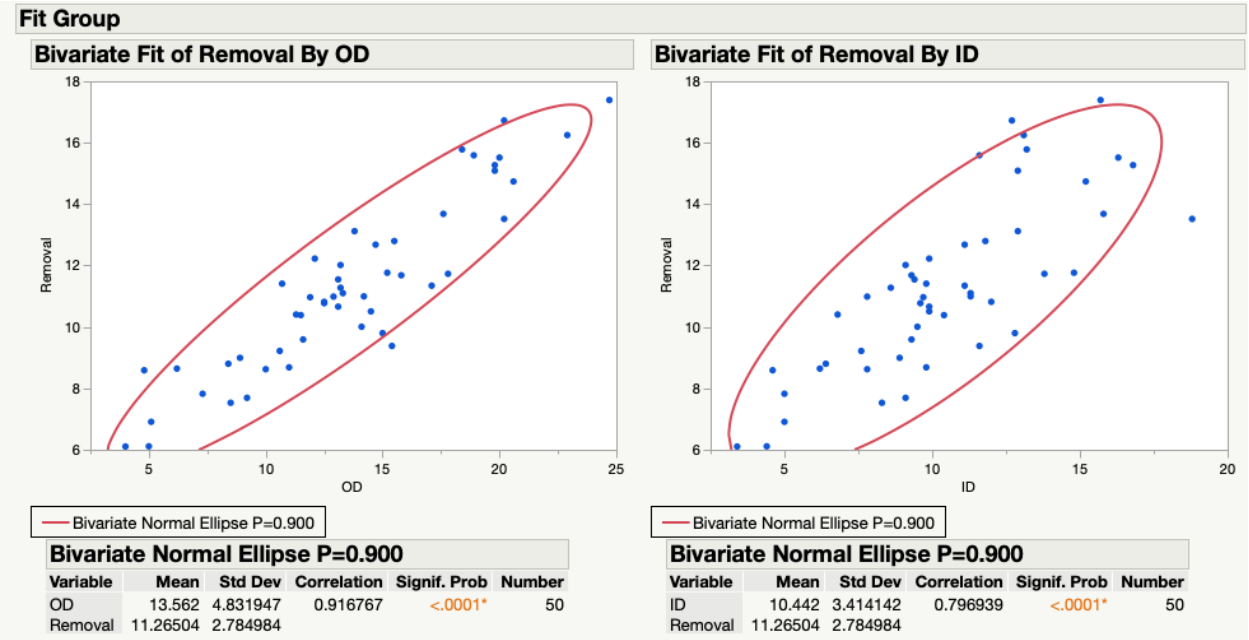
We expect 90% of the data values to fall. We can see that the relationship is positive and that it is relatively strong. The correlation between Removal and OD is 0.917

What is the correlation between removal and ID



The correlation between removal and ID is 0.797 it is also positive, but it is not as strong as OD

FOR REMOVAL BY OD AND ID FIT



Bivariate Normal Ellipse P=0.900

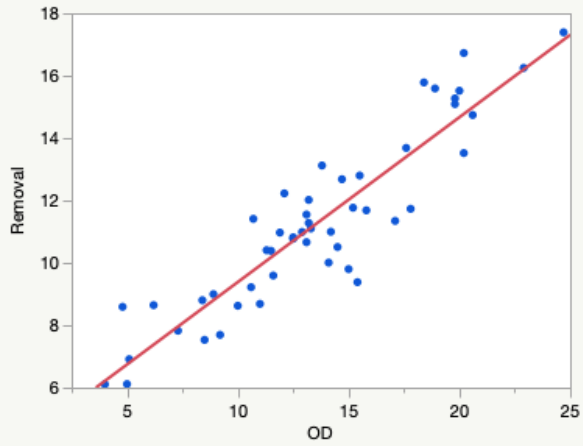
Variable	Mean	Std Dev	Correlation	Signif. Prob	Number
OD	13.562	4.831947	0.916767	<.0001*	50
Removal	11.26504	2.784984			

Bivariate Normal Ellipse P=0.900

Variable	Mean	Std Dev	Correlation	Signif. Prob	Number
ID	10.442	3.414142	0.796939	<.0001*	50
Removal	11.26504	2.784984			

Fit Group

Bivariate Fit of Removal By OD



Linear Fit

Linear Fit

Removal = 4.0989349 + 0.5283959*OD

Summary of Fit

RSquare	0.840461
RSquare Adj	0.837137
Root Mean Square Error	1.123915
Mean of Response	11.26504
Observations (or Sum Wgts)	50

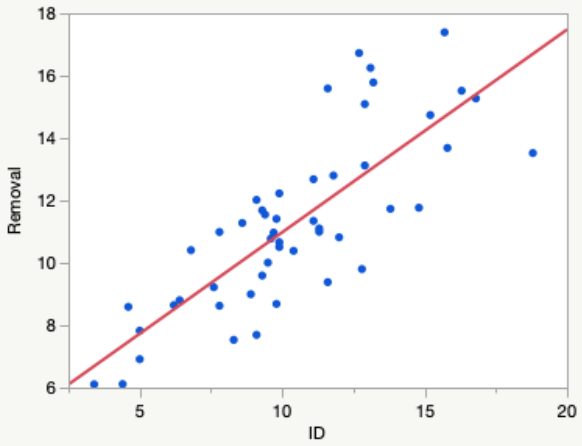
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	1	319.41789	319.418	252.8671
Error	48	60.63288	1.263	Prob > F
C. Total	49	380.05077		<.0001*

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|
Intercept	4.0989349	0.477857	8.58	<.0001*
OD	0.5283959	0.033229	15.90	<.0001*

Bivariate Fit of Removal By ID



Linear Fit

Linear Fit

Removal = 4.4769092 + 0.6500796*ID

Summary of Fit

RSquare	0.635112
RSquare Adj	0.627511
Root Mean Square Error	1.699729
Mean of Response	11.26504
Observations (or Sum Wgts)	50

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	1	241.37494	241.375	83.5473
Error	48	138.67583	2.889	Prob > F
C. Total	49	380.05077		<.0001*

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|
Intercept	4.4769092	0.780583	5.74	<.0001*
ID	0.6500796	0.071121	9.14	<.0001*

Both are significant.

CORRELATION BETWEEN PAIR USING THE MULTIVARIATE PLATFORMS

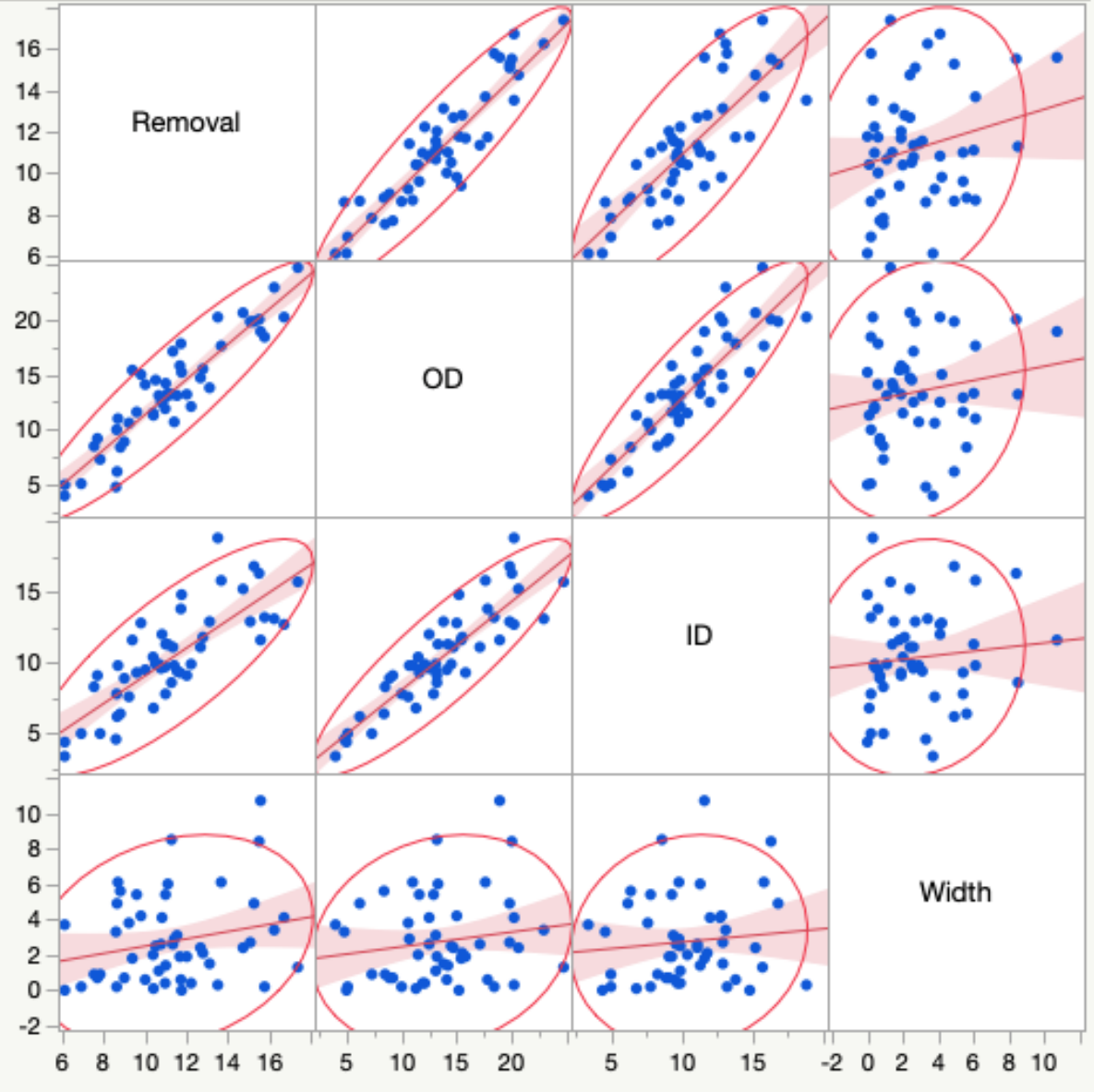
Multivariate

Correlations

	Removal	OD	ID	Width
Removal	1.0000	0.9168	0.7969	0.2322
OD	0.9168	1.0000	0.8836	0.1633
ID	0.7969	0.8836	1.0000	0.1040
Width	0.2322	0.1633	0.1040	1.0000

The correlations are estimated by Row-wise method.

Scatterplot Matrix



In the scatterplot matrix we can easily see that the variables OD and ID are both positively correlated with removal and that OD and ID are positively correlated.
We can also see that width is not strongly correlated with any of the other variables.