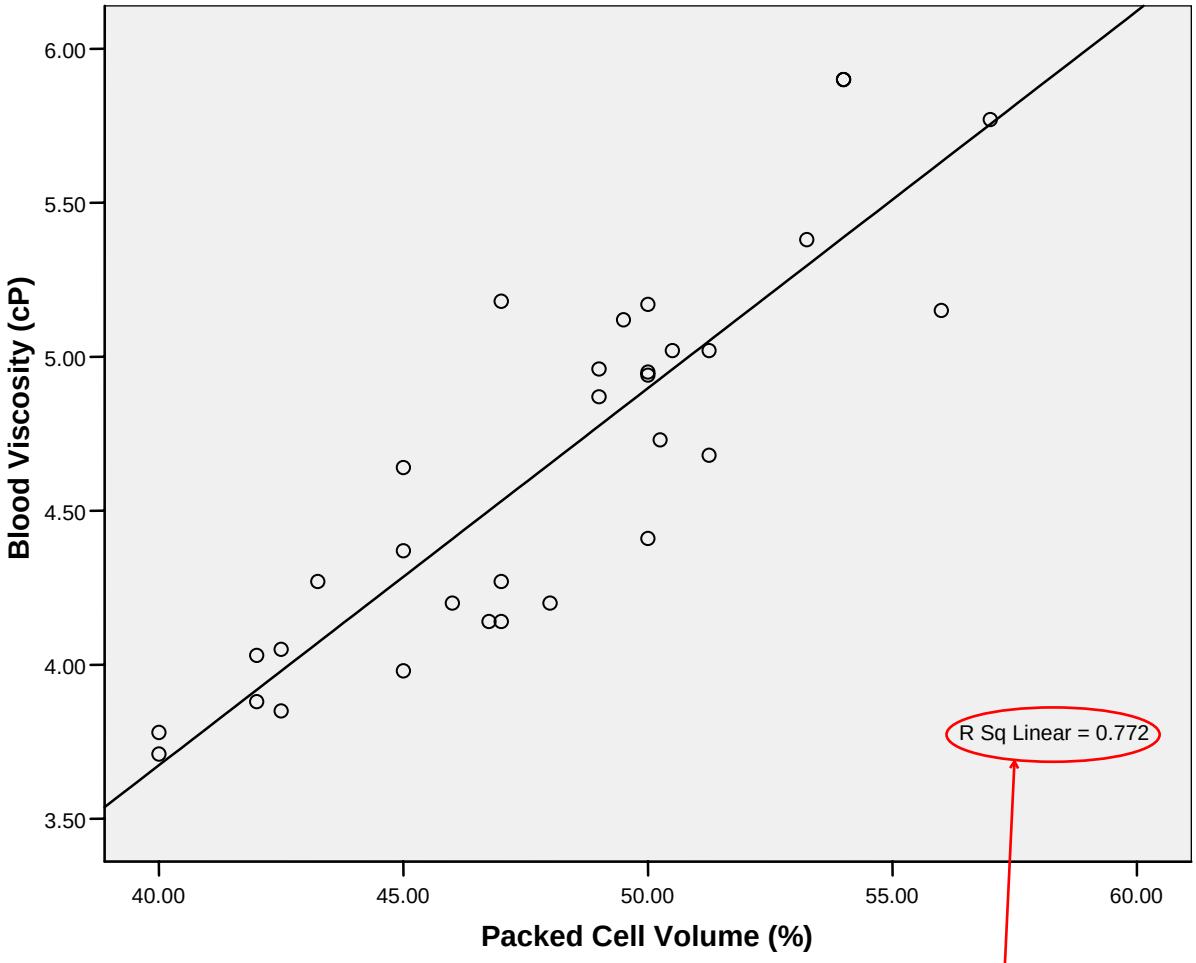
MATH 204 – PRINCIPLES OF STATISTICS 2
VISCOSITY vs PCV Regression Analysis



R-squared statistic = 0.772

Descriptive Statistics

	Mean	Std. Deviation	N
Blood Viscosity (cP)	4.6456	.62088	32
Packed Cell Volume (%)	47.9375	4.45678	32

Correlations

		Blood Viscosity (cP)	Packed Cell Volume (%)
Pearson Correlation	Blood Viscosity (cP)	1.000	.879
	Packed Cell Volume (%)	.879	1.000
Sig. (1-tailed)	Blood Viscosity (cP)	.	000
	Packed Cell Volume (%)	.000	.
N	Blood Viscosity (cP)	32	32
	Packed Cell Volume (%)	32	32

Correlation coefficient r=0.879

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.879	.772	.765	.30116

Summary of Model Fit

ANOVA table testing
H0: No influence of x on y
Ha: x systematically influences y

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.230	1	9.230	101.764	.000
	Residual	2.721	30	.091		
	Total	11.950	31			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-1.223	.584		-2.094	.045	-2.416	-.030
	PCV (%)	.122	.012	.879	10.088	.000	.098	.147

Parameter estimates and standard errors:
(Constant) corresponds to the estimate of intercept beta0
PCV (%) corresponds to the slope beta1

Test statistics:

t = beta/s.e.(beta)

for estimated beta0 and beta1

P-values in the test of

H0: beta is 0
Ha: beta is not zero

for both beta0 (row 1) and beta1 (row 2).

The ANOVA test is a global test of the regression model; specifically it tests whether the covariate x is an influential variable that is associated with a systematic change in response y.

The F statistic is still of the form

F=MSR/MSE

but now MSR is the Mean Square for Regression. If x not is associated with changing y, then

F ~ Fisher(1,n-2)

which is of precisely the same form as the null distribution in ANOVA - Fisher(k-1,n-k) - where

k = number of parameters estimated = 2