

Shinkansen		DATA - INDEPENDENT VARIABLE	RESULTANT CALCULATION	
		Miles	$S(t) = K/[1+\exp(-b(t-t_0))]$	
Year	carried (thousands)		Predicted Miles (thousands)	
1960		1230469		1262681
1970		1658421		1624218
1980		2072692		1971785
1990		2254822		2270957
1994		2342179		2372655
1995		2378268		2396385
1996		2380650		2419436
1997		2409935		2441813
1998		2420344		2463518
1999		2451426		2484557
2000		2501716		2504937
2001		2523479		2524666
2002		2577693		2543751
2003		2612069		2562203
2004		2577963		2580032
2005		2601490		2597249
2006		2629638		2613866
2007		2635471		2629895
		variable value	3000000	SLOPE
		b 0.048511		INTERCEPT
		tnought 1966.578		Tnought

X = A4:A28

See Results on Page "Regression Results"

Illustration:

Value

- 5
- 6
- 7

CALCULATION FOR REGRESSION - DEPENDENT VARIABLE

$Y = \ln(\text{miles}/(\text{K}-\text{miles}))$

K=

3000000
-0.363319
0.212019
0.804318
1.107203
1.269904
1.341619
1.346458
1.407122
1.42923
1.497103
1.613562
1.666882
1.808918
1.90707
1.809662
1.876107
1.960121
1.978211

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0.048511
-95.40092
1966.578

LN(Value)	LN(1/Value)
1.609438	-1.609438
1.791759	-1.791759
1.94591	-1.94591

SUMMARY OUTPUT

K=290000

<i>Regression Statistics</i>	
Multiple R	0.9328439
R Square	0.8701977
Adjusted R Square	0.8645541
Standard Error	0.3226165
Observations	25

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	16.048577	16.048577	154.19257	1.114E-11
Residual	23	2.3938719	0.1040814		
Total	24	18.442449			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-219.9182	17.689861	-12.431878	1.088E-11	-256.51242	-183.32398
b	0.1111083	0.0089478	12.41743	1.114E-11	0.0925985	0.1296182

Intercept = bt0

tnought (inflection year)

t0=Intercept/-b

1979.3135

<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
-256.51242	-183.32398
0.0925985	0.1296182