A Regression Analysis of Kodak's Rochester Employment

John Minter

May 20, 2016

1 Introduction

Kodak's Rochester Employment has been decreasing for many years. I decided to investigate the linearity of the decline and the consequences of that linearity.

2 Data

Most of the data was published in the Rochester Democrat and Chronicle at various times. I found other sources for data. All points are attributed in the accompanying data file.

3 Analysis

The regression analysis was performed using the Open Source statistical software package, R. The analysis was performed using a "no-web" file and the R package Sweave processed the the file, analyzing the R code "chunks" and preparing a LaTeX output file which was subsequently processed with pdflatex from the TeXLive 2015 distribution. All of this was controlled with a batch file.

The regression produced the parameters shown in

Call: lm(formula = y x) Residuals: Min 1Q Median 3Q Max -3748 -1375 -64 892 4147 Coefficients: Estimate Std. Error t value Pr(>|t|) (Intercept) 3523587.4 78541.2 44.9 <2e-16 *** x -1748.5 39.3 -44.5 <2e-16 *** — Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 Residual standard error: 2090 on 29 degrees of freedom Multiple R-squared: 0.986, Adjusted R-squared: 0.985 F-statistic: 1.98e+03 on 1 and 29 DF, p-value: <2e-16

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	3523587.4124	78541.2169	44.86	0.0000
x	-1748.5299	39.3017	-44.49	0.0000

Table 1: Summary statistics for the regression model

The regression had an adjusted $R^2 = 0.9851$ and a y-intercept (date of zero employment) of 2-1-2015. A plot of the regression with the 95 % confidence intervals for the regression is shown in Figure 1 below.

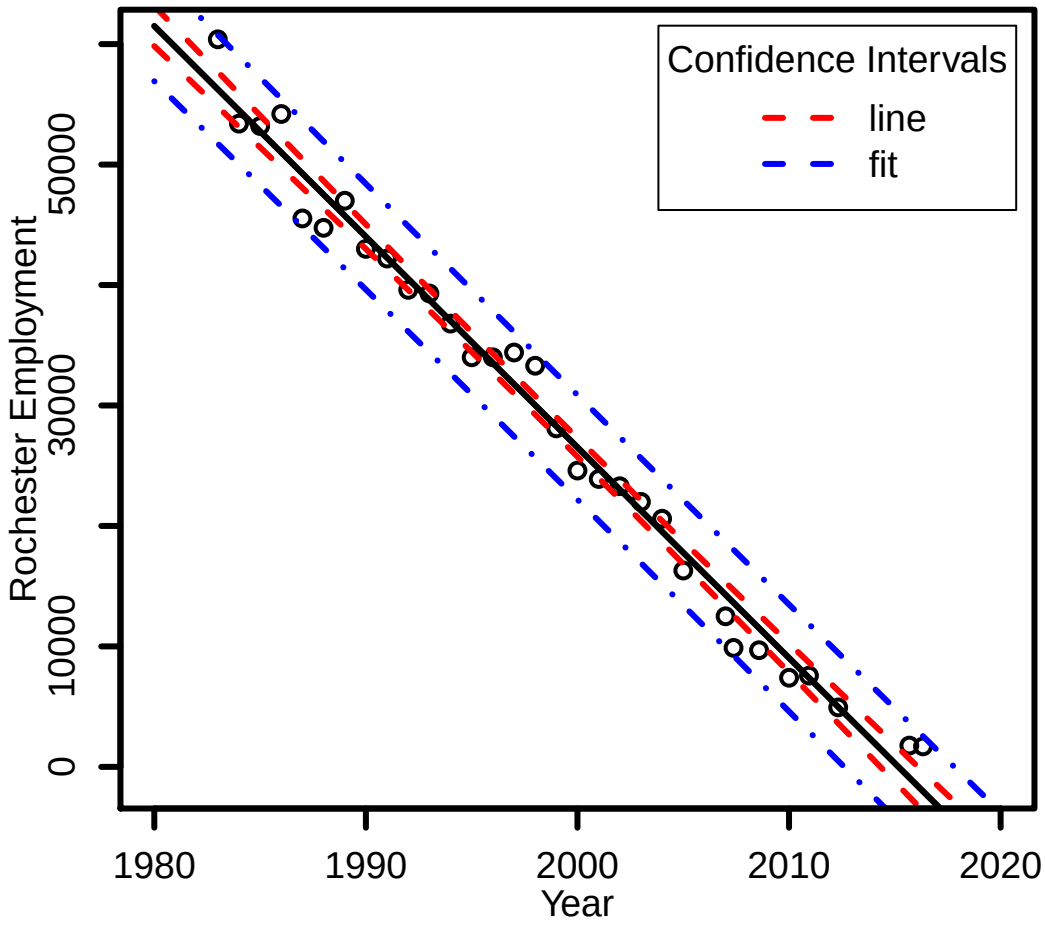

Figure 1: Kodak Rochester employment plot. The y-intercept (date of zero employment) is 2-1-2015. The confidence interval for the line is shown in red; the prediction interval in blue.