2. John Tukey (1977). Exploratory Data Analysis.

This book has been hugely influential and is a fun read that can be digested in one sitting. Traditionally, data visualization and exploration were considered low-grade aspects of practical statistics; the glamour was in fitting models, proving theorems, and developing the theoretical properties of statistical procedures under various mathematical assumptions or constraints. Tukey flipped this notion on its head. He wrote about statistical tools not for confirming what we already knew (or thought we knew), and not for rejecting hypotheses that we never, or should never have, believed, but for discovering new and unexpected insights from data. His work motivated advances in network analysis, software, and theoretical perspectives that integrate confirmation, criticism, and discovery.

3. Grace Wahba (1978). Improper Priors, Spline Smoothing and the Problem of Guarding Against Model Errors in Regression. Journal of the Royal Statistical Society.

Spline smoothing is an approach for fitting nonparametric

curves. Another of Wahba's papers from this period is called "An automatic French curve," referring to a class of algorithms that can fit arbitrary smooth curves through data without overfitting to noise, or outliers. The idea may seem obvious now, but it was a major step forward in an era when the starting points for curve fitting were polynomials, exponentials, and other fixed forms. In addition to the direct applicability of splines, this paper was important theoretically. It served as a foundation for later work in nonparametric Bayesian inference by unifying ideas of regularization of high-dimensional models.

4. Bradley Efron (1979). Bootstrap Methods: Another Look at the Jackknife. Annals of Statistics.

Bootstrapping is a method for performing statistical inference without assumptions. The data pull themselves up by their bootstraps, as it were. But you can't make inference without assumptions; what made the bootstrap so useful and influential is that the assumptions came implicitly with the computational procedure: the audaciously simple idea of resampling the data. Each time you repeat the statistical