

“The Impact of Institutional Change on Forecast Accuracy: A Case Study of Budget Forecasting in Washington State,” *International Journal of Forecasting* (in press)

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This paper explores the relationship between organizational change and forecast accuracy by analyzing the budget forecasting process in the state of Washington. Principles were tested on 180 budget forecasts produced before and after the creation of the independent agency. The creation of an independent forecasting agency and technical workgroups improved forecast accuracy, as did increased forecast revisions and structured domain knowledge. The numbers pertain to the Forecasting Audit (see *Principles of Forecasting* by Armstrong, or go to <http://jscottarmstrong.com> to the researchers page and see “What is Known”).

1.3: Make forecasts independent of organizational politics.

Using OLS regression analysis and a longitudinal pre-post design, it was determined that forecast accuracy decreased by 22% (from a MAPE of 6.8% to 5.3%) after an independent forecasting agency was established.

9.5: Update models frequently.

A cross-sectional OLS regression analysis, using a dummy variable to indicate whether or not a forecast had been revised from one forecast cycle to the next, revealed that revised forecasts were significantly more accurate. The revisions produced a 25% reduction in forecast error (from a MAPE of 5.3% to 4.0% over a 12-month forecast horizon).

11.2: Use structured judgment as inputs to models.

Using technical workgroup journal notes, we distinguished between anecdotal and quantitative judgmental inputs to the forecast. Using dummy variables to indicate the presence of quantitative or anecdotal judgment in addition to statistical models, we found that judgmental adjustments reduced forecast error more than anecdotal inputs (56% compared to 22%), showing the importance of structured judgment in the forecasting process.