



Research in Brief

Forecasting the Federal In-custody Population

Recent forecasting of the Canadian national federal custody population has been accurate.

Why we did this study

Correctional Service of Canada (CSC) conducted a review of its forecasting methodology in 2011 with a view to bring its former projections in line with actual increases and anticipated future growth. Upon systematic review of various offender population forecasting methodologies, CSC's Transformation and Renewal Team developed a new model during the summer of 2011 and applied it in November 2011 to produce new population forecasts from the end of March 2012 to the year 2018. The following provides a status report on the population forecasting and projection exercise that was undertaken by CSC in November 2011 and incorporated into the *CSC Accommodation Plan 2013-18*. In addition, CSC's national population year-end calendar estimates were submitted to an international correctional forecasting contest hosted by Sweden.

What we did

A forecasting database of weekly snapshots of inmate counts from 1990/91 to 2010/11 was derived from the CSC Offender Management System. The database was used to develop alternative and provisional scenarios for men and women up to 2020. Three forecasting methodologies were applied to the inmate population counts: current federal incarceration rate; average yearly growth rate; and fitted trend. A systematic review of these forecasting approaches was undertaken and the "fitted trend" model was found to more closely approximate current trends and future forecasts.

Forecasts for men and women were conducted separately, as historical trends for these two groups differ significantly. SAS/ETS software was used for exploring and analyzing univariate time series data and to select the best-fitting model for each time series. For men, a statistical level of confidence (95%) was calculated for the forecasts to provide a

range of estimates. Computing estimates for each security level across the five administrative regions added precision by taking into account variations that occur over time with these sub-populations.

What we found

Population forecasts are taken to the last Tuesday midnight institutional count of the fiscal year. In 2011, the national in-custody population was forecasted to be 15,172 at fiscal year-end 2012-13. On 26 March 2013, the national actual "physically-in" count was reported to be 15,224, a difference of -52. Overall, there was found to be a forecast error of -00.34% (or <.5%). Finally, for CSC's submission to the forecasting contest the national forecast reported for December 31, 2013 was 15,291 whereas the actual count was found to be 15,238, a forecast difference of +40. Once again, a very narrow margin of error was obtained +00.26% (or <.5%) which won the contest for CSC.

What it means

Overall, it was found that the national actual count is reflective of the end-of-year national forecast estimates. At this time, it appears that the new approach to CSC population forecasting is methodologically sound.

For more information

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