



A Summary of Methodology and Data Used for K-12 Population Projections in the 2008 Comprehensive Regional Growth Plan (CRGP)

The K-12 population forecasts for the Category-1 counties¹ in the BRAC Regional Task Force (BRAC-RTF) are a combination of normal growth, direct growth and induced growth. The normal growth is the K-12 growth by counties' population without BRAC's influence. The direct growth is directly attributed to BRAC and non-BRAC mission growth (military, civilian, and contractor personnel). The induced growth is the expected growth in the region due to the BRAC and non-BRAC induced economic activity.

Jeff Tsai, Director of Operations Research / Education Laboratory for the Institute for Transportation Research and Education at NC State University was on the team who developed the Education Section of the CRGP. According to Tsai, normal growth as contemplated in the CRGP was "driven by historical school enrollment,² resident live birth data,³ and the Land Use Studies.⁴ Fused with knowledge gained from the Land Use Studies and the historical growth history, appropriate forecast was developed for the normal growth."

Tsai continues that, "the direct growth component is driven by detailed BRAC and non-BRAC migration schedule⁵ and base housing inventory.⁶ The BRAC and non-BRAC migration schedule outlines gains and losses by military, civilian, and contractor personnel. The school-age-child-generating potential of military and civilian personnel is based on the Army Formula (U.S. Army 2005 Education Summit). The Army Formula estimates each soldier generates 0.484 school-age children and each civilian generates 0.9 school-age children." The calculations "assumed that all the available housing on the base will be occupied before military personnel will live off-base. The net differences between the available housing and the incoming military growth were allocated to the Category-1 counties. Allocating projected population growth to each of the Category-1 counties is accomplished using five weighted data layers.⁷ The layers along with their respective weighting schemes form two distributions of incoming populations: Military and Civilian."

Regarding the induced growth component of the K-12 population, Tsai explains that it was "derived from the Economic Migrants forecast of the population increase due to the region's growth induced by the BRAC migration activities. The Economic Migrants forecast was performed using the REMI⁸ model. The application of projected K-12 growth and the distribution to the Category-One counties is identical to the civilian population sector in the Direct Growth forecast."

As specified in the CRGP, the data was used to compile enrollment projections for all schools in the region. Subsequent analysis determined cohort survival ratios, defined as the proportion of students enrolled in one grade in a specific school year relative to the number of students enrolled in the next grade level and school year. These ratios, in turn, were used to develop system-wide enrollment forecasts which resulted in the military-related numbers in the CRGP. These numbers were then compared with current estimates of school capacity so as to project facilities capacity shortfalls into the 2013 timeframe.

¹ The BRAC-RTF Category-1 counties are Cumberland, Harnett, Hoke, Lee, Moore, Richmond, and Robeson.

² The historical school enrollment was collected through the North Carolina Department of Public Instruction.

³ The resident live birth data was collected through the North Carolina Department of Health and Human Services.

⁴ The Land Use Studies was performed through stakeholder interviews and GIS analyses of the Category-1 counties. The Land Use Studies provided information on residential growth potential throughout the region using data from planning departments, surveyors, town/county managers and other stakeholders. The Land Use Studies also included GIS parcel-level data on available subdivision lots and planned developments.

⁵ While the migration schedule provided by the base is "detailed," we know that all units on base are not included.

⁶ The on-base housing estimates (including Linden Oaks) were provided by the base.

⁷ The five data layers are school enrollment growth, NC State Demographics, existing subdivision, planned/approved subdivision, and the number of students in counties receiving FIA due to military related services.

⁸ REMI stands for Regional Economic Models, Inc. The REMI model is one of the most comprehensive and expensive econometric modeling products on the market.