

Revision of SAFIS Estimates in NIMS 4.0

The national FIA design incorporates three types of sampling – Phase 1 (P1), Phase 2 (P2), and Phase 3 (P3). The goal of the P1 sample is to independently stratify the total area and assign each P2 and P3 plot to a stratum. The P2 sample refers to FIA’s network of permanent forest mensuration field plots. The intensity of P2 is about one plot per 6,000 acres of total area. The P3 sample is a subset of the P2 sample that has additional forest health attributes collected. The estimate of forestland area is derived from the P1 and P2 observations.

The merger of the Southeast and Mid-South FIA units in the mid-1990’s resulted in the Southern Annual Forest Inventory System (SAFIS). SAFIS used double sampling for area to determine the estimate of forest land for each State. The chosen P1 source was manual interpretation of a 5 x 5 cluster of photopoints centered in the quadrat of the aerial photo that contained a Phase 2 ground plot. The P2 plot center was also photointerpreted manually. The P1 and P2 samples were initially processed in a flat file Fortran™ based system (MR) and then later in the Oracle™ based Southern Research Station Compilation System (SRSCS). A few years after SAFIS began, the national annual inventory program was adopted in the South. However, the initial data was still compiled in SRSCS while the national compilation system was being developed and tested.

Beginning in 2005, SRS FIA implemented the National Information Management System (NIMS). The national area estimation method in NIMS is stratification. The standard national Phase 1 stratification medium is the National Landcover Dataset (NLCD). The P2 stratum assignment is done by spatial overlay of the plot locations.

In order to make the MR and SRSCS data compatible and comparable to the NIMS-derived estimates, the original data were recompiled in NIMS 4.0 using post-stratification. In some cases, the revised area estimate differed significantly from the original, indicating that there may have been bias introduced into the estimation procedure. Statistical tests were conducted and results indicated evidence of bias in the P1 sample used in the SAFIS estimate for Tennessee 1999. Similar results were found when these statistical tests were applied to the P1 sample used to derive the North Carolina 2002 SAFIS area estimates. Statistical tests on the NLCD stratification did not indicate a bias.

The decision was made to revise all SAFIS estimates and repost the data to FIADB website. Beginning with Georgia 1997, the area and volume estimates that were derived in MR and SRSCS have been replaced in FIADB with revised estimates from NIMS 4.0 (see below). The growth, removal, and mortality SAFIS estimates derived from the remeasured periodic prism plots remain unchanged. The SRS-FIA area and volume estimates derived from the annual plot design processed in the SAFIS system now meet the current national standard as closely as possible.

Southern FIA states with revised estimates

State	Report Year	SAFIS Forestland Estimate (acres)	NIMS 4.0 Forestland Estimate (acres)	Date NIMS 4.0 Revisions Posted to FIADB
Alabama	2000	22,987,178	22,734,237	October 8, 2010
Georgia	1997	24,414,232	24,846,861	October 26, 2010
Kentucky	2004	12,010,415	12,283,433	October 27, 2010
North Carolina	2002	18,313,466	18,822,389	February 7, 2011
South Carolina	2001	12,416,750	12,772,198	October 12, 2010
Tennessee	1999	14,402,818	13,712,179	October 8, 2010
Texas	2003	12,129,818	11,864,481	June 15, 2010
Virginia	2001	15,852,465	15,909,493	January 28, 2011