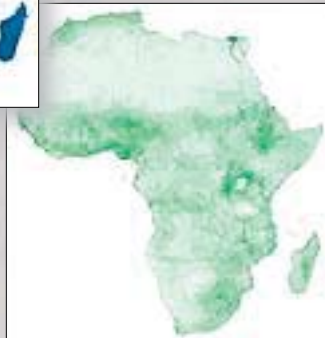
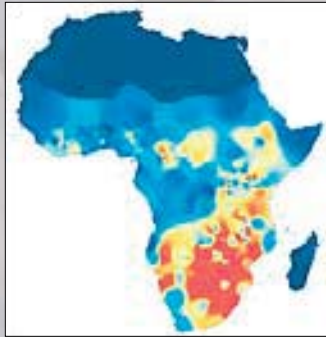


Africa: Applying GIS to the AIDS Pandemic

Central Intelligence Agency, Office of Transnational Issues



The U.S. Central Intelligence Agency wanted a product that would enable analysts at the Office of Transnational Issues to better understand the distribution of HIV cases across Africa. Most representations of HIV prevalence in Africa were done based on national infection rates. Such analysis highlights countries that are suffering greatest in proportion to their own populations but does not clearly indicate actual numbers of infected people because population density is not considered.

This map product calculates HIV prevalence for all of Africa using U.S. Census Bureau and Joint United Nations Programme on HIV/AIDS data. It multiplies the interpolated figure by the number of people listed in the LandScan 2000 distributed population database, modified for each country's target population cohort. The result is a grid of one-square-kilometer cells that represents the HIV-positive population while accounting for the dynamics of population density and complex HIV prevalence distribution.

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To create the final product showing the number of HIV cases per square kilometer, the cell values of the interpolated HIV prevalence map were divided by 100 and multiplied by the values in the modified population database. The extent was set the same as the buffer, the cell size was set for 0.0833 decimal degrees, and the coverages were multiplied using ArcGrid™. The result is a map that shows approximately how many HIV cases exist in each square kilometer on the African continent.

Results indicate that several sub-Saharan countries have significantly infected populations that have gone largely unnoticed in traditional analytical studies. This new method of mapping the disease enables various government offices and nongovernment organizations to reexamine issues, such as resource allocation, regional stability, fiscal aid, and prevention efforts, across the continent.