



NICOA's
Interactive Atlas of
American Indian and
Alaska Native Health

Funded by the Indian Health Service Elder Health Care Initiative grant, this five-year project is designed to develop an interactive Geographic Information System (GIS) -based Atlas of Indian Elder Health. The Atlas will expand and enhance the value of IHS data as a national health care resource. While targeting Indian elders, the expanded data will apply to IHS clients of all ages. Utilizing and expanding the IHS data system, the Atlas will track the ten most prevalent diseases affecting Indian elders-portraying them on national, state, and zip-code levels. The cross-referencing of environmental, socio-economic, geological, health care, and health care cost indices through the use of spatial keys (addresses, zip codes, counties, states, etc.) will result in a valuable national health care resource for Indian Country.

The National Indian Council on Aging

The project has identified and acquired – together with IHS databases (aggregate data for 1997 and Diabetes Audit data for 1997) – additional databases from:

- The Environmental Protection Agency (chemical/nuclear facilities and toxic waste spillages);
- The National Center for Health Statistics (NCHS-mortality information);
- The Health Care Financing Administration (HCFA-Medicare and Medicaid for 1995);
- Bureau of the Census Summary Tapes 1 and 3;
- U.S. Geological Survey (USGS)
- The Bureau of Indian Affairs (BIA-Reservation boundaries); and,
- Environmental Protection Agency data (EPA-toxic sites)

Through development of the Interactive Atlas application, the project has combined these data sources in a computerized Geographic Information System.

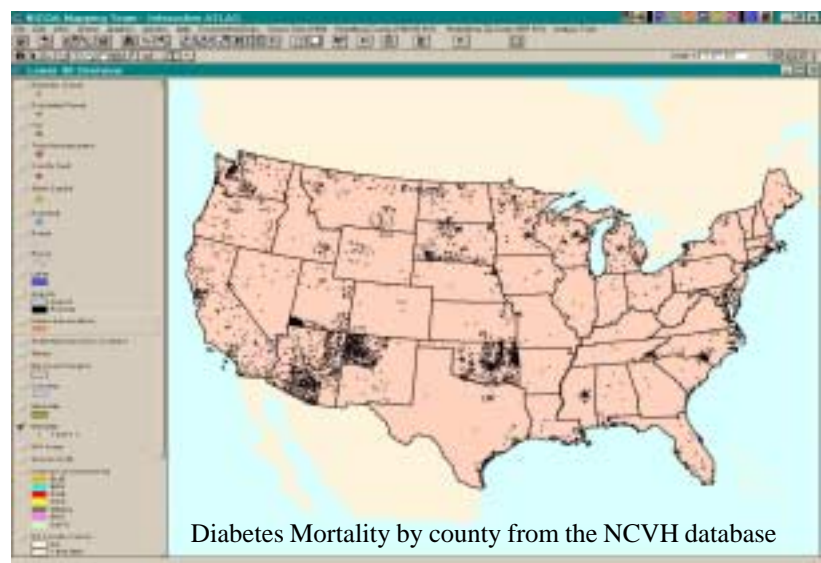
The application currently offers an interactive beta version on compact disk with selected data from:

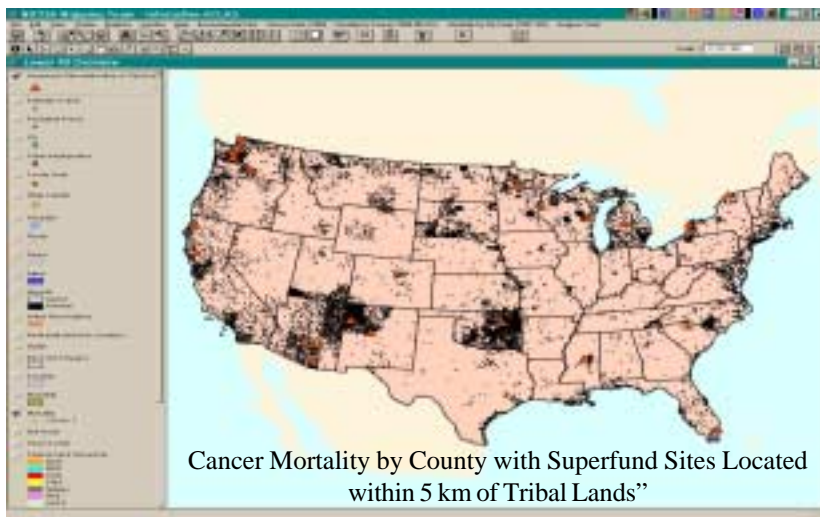
- IHS patient records (morbidity) for 1997;
- National Center for Vital and Health Statistics (mortality) for 1984-1996;
- Environmental Protection Agency (environmental factors) most recent;
- Bureau of Indian Affairs (tribal lands);
- Census 1990 (demographic); and
- Geographic data from a variety of sources.

Capabilities Overview

This application is designed to specifically address American Indian and Alaska Native (AI/AN) health issues. It utilizes a GIS interface that makes it easier for a broad user population to access detailed information about the status of AI/ANs.

The application utilizes two rows of point-and-click drop-down commands. One across the top of the screen allows the user to select from a variety of databases, while a second set of commands, running down the left side of the screen, allows for specific coverages and analyses to be portrayed.



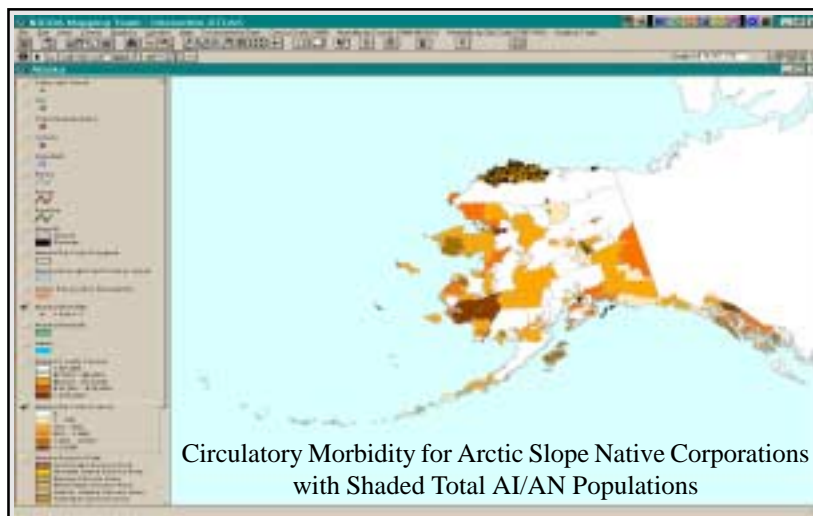


The Atlas provides, for the first time, a comprehensive collation of national databases specifically arrayed to address American Indian and Alaska Native issues. This application portrays a wealth of information in a way never before possible. The National Indian Council on Aging Mapping Team believes that this tool breaks new ground in the translation of AI/AN health data to information. This tool can portray understandable information to a wide audience of Indian health clients, their

providers, legislators, and federal agencies. Increasing the health care system’s knowledge of the current status of American Indians has been an elusive objective. This application enhances data use by providing accurate, timely and easily accessible graphic information.

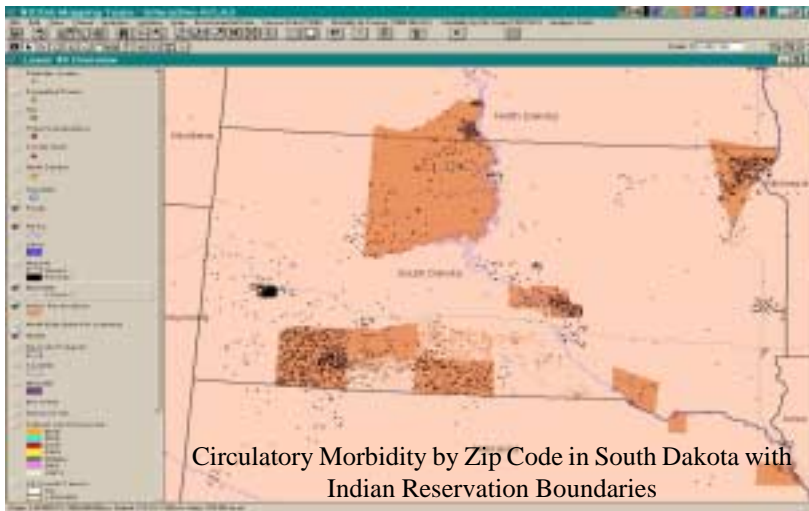
NICOA’s Map Team—by working with IHS specialists to identify current health issues and then by utilizing its extensive data resources, Geographic Information Systems expertise, and its dissemination experience—has assembled a tool that can directly help American Indian tribes and their health care delivery system gather appropriate health information.

Regional Focus



The portrayal of databases in a graphic medium is growing in popularity. Specialists might know a subject well, yet not have time to summarize their thoughts, translate technical concepts to layman’s terms, or access to data to substantiate their assumptions. NICOA’s Map Team is now able to help close this information loop by providing pertinent and appropriate information for Indian users in a form that is attractive, informative and substantive.

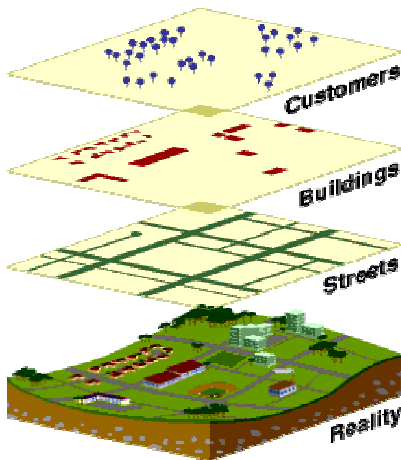
The Interactive Atlas represents more than merely a tool. Historically, information developed by researchers, anthropologists, and federal agencies was rarely relayed back to providers in the Indian health care delivery system. This application provides a means to help bridge this information gap. It can help respond to the expectation by American Indians and Alaska Natives that they should be the primary recipients of information that affects them.



The interactive atlas offers users the ability to focus on a specific disease (selecting from any ICD-9 code, both from the morbidity and mortality databases) and portray data for a specific county, zip code, or Indian Reservation. It also allows for new local data to be added and analyzed.

The ability to upgrade data within the application ensures that this system remains viable for the foreseeable future.

Summary of Interactivity



The Interactive Atlas represents a first concrete step toward translating national health and demographic data to information that American Indians and Alaska Natives can use. But this is only the first step. Data is developed and refined only by use. As information receives more exposure, questions become more specific. The process results in the evolution of more sophisticated information systems. Our ambition is to collaborate with federal agencies in order to be at the forefront of this new information exchange.

The Interactive Atlas is a software application stored on a compact disk that allows for a number of databases to be combined in a Geographic Information System (GIS) environment. The GIS tool used in the application is ArcView 3.2, part of the ESRI (Environmental Systems Research Institute) GIS off-the-shelf software package. The ESRI software, installed on the users computer, enables the performance of interactive functions.

The following description is provided to show some of the interactive functions of the application in its beta state before it is tested in the field. Each frame is a screen dump, where the image as it is viewed on the monitor is shown. The drop-down menus at the top of the window are some of the choices that the user is able to make with this application. The menus on the left (themes) allow for some of the coverages (layers) to be switched on or off to allow for layering of results of analyses. The application itself can grow to reflect the interest of the user.

The interactivity of this application can best be seen when two or more layers are combined. For example, if we select those patients that suffer from a type of cancer and relate this to some particular environmental degradation and the level of poverty within that geographic area, it could help to understand whether associations exist in the data. It must be stressed that at this stage the application cannot make causal inferences, but is designed to help **summarize** data and provide a graphic output.

Theme Menu Features

“left theme menu”
graphic

- Diabetes Grants
○
- Populated Places
○
- ITU
○

- etc.

- etc.

Menu Options

The menu to the left of the application allows for canned results to be layered. These layers (coverages) are accessible at any time. These include IHS Diabetes Program sites, population figures from the 1990 Census (places with more than 5,000 people), and location of Indian Health Service/ Tribal/ Urban clinics and health facilities.

Other more generic information can also be accessed. County seats and state capitals are located, as well as HCFA-identified hospitals. In addition to health-related facilities, the menu allows the user to map rivers, roads, lakes, and airports (particularly important in Alaska).

The Interactive Atlas has made it possible to map Indian reservations as well as zip code, county, state, and IHS regional outlines. The application makes point and click identification of IHS Service units possible. Type of land ownership and basic county census information is also available.

Drop-Down Menu Features

FILE

The first choice is a drop-down menu that allows the user to close the file, save a project, open different extensions, print or export the analysis (image), manage the data source or exit the program.

“file” map example here

EDIT

This drop-down graphic tools menu allows users to cut themes and utilize other graphic tools.

“edit” map example here

VIEW

The third option makes it possible to add themes, change the layout, and to zoom in and out. This tool is similar to a magnifying glass in that small geographic areas of the analysis can be highlighted.

“view” map example here

“theme” map example here

THEME

This editing menu provides the capacity to convert the image to a shapefile used by other ESRI software, edit the legends, add or delete labels, insert a look-up table, query the database, create buffers and clear selected features.

“graphics” map example here

GRAPHICS

This menu allows the user manipulate text and labels, change size and alignment, move layers to the front or to the back, attach or detach graphics and group or ungroup a set of images.

“window” map example here

WINDOW

With this option, users can manipulate the window to have multiple windows presented in different preset formats, to arrange icons, and to show the symbol directory.

HELP

This help menu shows the user how to get help and some information about ArcView.

“help” map example here

ENVIRONMENTAL DATA

Users have the option to add nuclear power plants, Mines, no-attainment Areas for Criteria Pollutants (Air Quality), Superfund Sites, Safe Drinking Water Information System and Monitored Release Sites (all from EPA).

“environmental data” map example here

CENSUS DATA

This function allows analysis by AI/AN population, poverty level, and per capita income. It also allows for U.S. population analysis by total, percentage in poverty, and median household income. All analysis is possible by Zip and County.

“census data” map example here

“mortality by county” map example here

MORTALITY BY COUNTY

This menu allows the user to query by ICD9 code, Age, and Gender. Users can also view ICD9 aggregate code descriptions.

“morbidity by zip” map example here

MORBIDITY BY ZIP

This drop-down menu provides the user with the capacity to query by ICD9 code, Age, Gender, Tribal code, and Medicare/Medicaid/Veteran status. Users can also view ICD9 aggregate code descriptions.

“analysis tool” map example here

ANALYSIS TOOL

This drop-down menu allows users to buffer a theme - for example to portray an area covered by 25 miles around each Indian health facility.

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