OGIC Document Number XX

Draft -
GIS and Confidentiality

Join Task Forces from the:
Administrative Boundaries &
Oregon Cultural and Demographics
Framework Implementation Teams

December, 2002

Oregon Geographic Framework Implementation Teams

Established by an inter-agency agreements between several State, Federal, local and private organizations, Oregon's Geographic Framework Implementation Teams promotes the coordinated development, use, sharing, and dissemination of geographic data.

In the fall of 2000, a diverse group of individuals and organizations from the Oregon Geographic Information System (GIS) Community participated in a forum on GIS issues in Salem, Oregon. This effort initially defined the major framework teams and there elements in Oregon.

For more information about the Teams, or to be added to the framework mailing list, please contact:

Oregon
c/o Oregon Geospatial Data Clearinghouse
955 Center St. NE, Room 470
Salem, Oregon 97301-2556

Telephone: (503) 378-6066
Facsimile: (503) 378-5200
Internet (electronic mail): cy.smith@state.or.us
World Wide Web: http://www.sscgis.state.or.us

CONTENTS

Confidential Data 2
Geographic Information Systems 2
Components of Confidentiality 3
Scale 3
Statistics/Tabulation 5
Data Categorization 5
Mapping Methods 5
Spatial Aggregation Mapping Methods 5
Current Data Sharing Strategies 6
Other Data Sources 7
Federal Laws 8
Oregon State Laws and Agency Policies 8
Case Studies 8
Employment 8
Agriculture 9
Possible Future Direction 10
References 10

Confidential Data

Confidentiality is important related to many state data collection activities. This can profoundly impact the release and potential analyses related to many data sets. Federal and state agencies in particular need to protect confidentiality, in census and surveys data, but are simultaneously obliged to report data to the public (Karr, et al 2001). This creates a complex problem for the data steward. The primary key is to balance (CMRC, 2000):

- Right to know versus right to privacy
- Technological developments for disseminating information
- Specific spatial issues related to scale

Spatial issues related to confidentiality are more complex due to recent developments with Geographic Information Systems (GIS).

Geographic Information Systems

GIS allow the display and manipulation of spatial data to be easily completed. Many of the potential data sets that can be used in a GIS may have confidential data. In some cases, mapping this data, or cross tabulating it by unique administrative or jurisdictional boundaries, is important for resource planning and management. Therefore it is important to be able to use, display and document data while not violating individual's rights and privacy. A large amount of confidential data currently exists in state agencies in Oregon. Some is related to specific human activities such as employment, taxes, mental health, welfare programs, and other social programs. Having access to this data is becoming more critical to making effective data driven decisions and reducing costs in governmental organizations. These costs are associated with building and maintaining databases, replicating efforts, and using objective information to make quick and defendable decisions. GIS in addition to being a mapping tool, has a powerful set of tools for manipulating data. For instance, through a simple process of overlaying data, one attribute can be transferred to another database. Examples of GIS analysis for human resource agencies include adding legislative and senate districts to data files for statistical summaries, determining distances and areal extents of resources, and modeling future growth. Other human related data includes demographic and cultural data (i.e. regarding some aspect of human activity). This is also, in many instances confidential data such as historical information (cemeteries, anthropological sites, historic sites, etc). Maintaining the confidentiality of the data is critical so that culturally important feature is not disturbed. However it is important to know the location of the features for planning purposes. Examples include using archeological information in the design and planning of roads. There is also a large amount of confidential data related to the physical environment including locations of threatened and endangered species, mineral resources, pesticide applications, etc. For example the location of nesting site for endangered species is important for preservation of the species. Many critical facilities and infrastructure databases are also partially confidential for safety reasons.

Two major sets of laws exist nationally and in Oregon related to dispersing data. One is to maintain confidentiality and protect an individual's rights. The second is the public dispersal of information. In many cases, there is no clear cut dividing line between thee opposing mandates (i.e. in the case of public safety an individual's rights may be negated). GIS methods have been historically used extensively for analyzing and displaying extremely sensitive data that are by regulated by rigorous federal laws such as the Endangered Species Act. Other databases, in Oregon, currently have public web based GIS/mapping interfaces for data retrievals. These include individual property values and taxes, public and domestic wells, irrigation locations and water rights, water quality sampling sites, toxic waste and hazardous chemicals. The relationship between protecting confidentiality in GIS is also difficult because GIS can use a map to display information, and in many cases a map violate the intent of statues that were legislated to protect individual rights.

Recently the concept of confidentiality with respect to GIS has been best documented by work done in the field of criminal justice/crime mapping and public health. Over the last few years the National Institute of

Justice Crime Mapping Research Center (1999) has worked on establishing protocols and documentation with respect to data confidentiality. The data related to crimes is critical in evaluating and planning resource allocation. Some components of this data are confidential whereas others are required to be released to the public. One example of publicly available data is the location of sex offenders which is public information based on Meagan's Law. This data is typically addressed based data which can be geo-coded using street addresses and build point location GIS data bases. Similar GIS activities are being used extensively in the public health arena for assessing potential health care planning/outcomes (Armstrong et al), epidemiology, etc.

Technological advances in GIS have made mapping confidential data more readily available. The first has been recent advances in geo-coding methodologies which allows address based data to be mapped. Other data sets such as detailed address based road coverages, detailed zip+4 extension centroids, allow large historical databases to be mapped with a high amount of geographic precision. Additional advances in Global Position Systems (GPS) also allows higher resolution data collection and geographic data to be mapped.

Components of Confidentiality

There are several major components of confidentiality with respect to GIS data. This includes the process and reasons for protecting identities and methods that are used to meet this goal, the method of summarizing and aggregating spatial data, and potential methods for data sharing.

One of the primary goal of confidentiality is to protect privacy by not allow an individual observation (employer, employee, archeological site, spotted owl, etc) to be identifiable. Maps, specifically point maps, defined unique locations, that maybe identifiable. Therefore, it is critical to determine and/or define what is *identifiable*. The Webster's dictionary definition of identify is:

- To establish the identity of.
- To ascertain the origin, nature, or definitive characteristics of.
- *Biology.* To determine the taxonomic classification of (an organism).
- To consider as identical or united; equate.
- To associate or affiliate (oneself) closely with a person or group.

Based on this definition, identification is based on a person's knowledge, experience and a host of other factors such as exposure (time), scale (distance), physical abilities (vision), etc. GIS data is not usually based on specific individuals but rather unique geographic locations such as addresses, latitude/longitude, Public Land Survey (township, range and sections), zip codes and/or watershed. Most all of this data is publicly available from local sources. For instance, the addresses are available from several potential sources including the county planning department, phone books, private marketing organizations and local county tax assessors. Database attributes used in a GIS are expected to have various levels of confidentiality. For instance the location of the recipient of a state program (such as welfare) is less likely to be sensitive than the amount of the program received. Correspondingly the location of an individual's house and property tax (currently public record), is less sensitive than the individual's personal income and taxes.

Scale

One of the most important components of a map and/or GIS databases is the scale of the data display. This is a expressed as a fraction of the map distance to the real world distance. A map scale of 1:63,560 means that one inch on the map represents 63,560 inches (or 1 mile) on the ground. As the ratio get smaller (>1:250,000), the map covers a larger areal extent. Large-scale maps (such as 1:24,000) usually have a smaller geographic area represented.

When is an individual identifiable or recognizable is directly dependent on the map scale. When large areal extents are mapped (i.e. small-scale maps), it is difficult to identify an object without prior knowledge and/or auxiliary information. A corollary example of this can be demonstrated from the situation.

Person A is standing in front of the Capitol Building and Person B is at the north end of the Capitol Mall. Can Person B identify Person A? This corresponds to a scale of 1:300. If Person A is only ½ a block away, is the person identifiable? This corresponds to a scale of 1:50. If we know that Person A, was wearing a bright pink suit (with a yellow sombrero) was entering the building at 9:00 am, can we identify them? The above example relates scale and an individual's knowledge base. Figure 1 presents a conceptual diagram of the relationship between scale and user's knowledge.

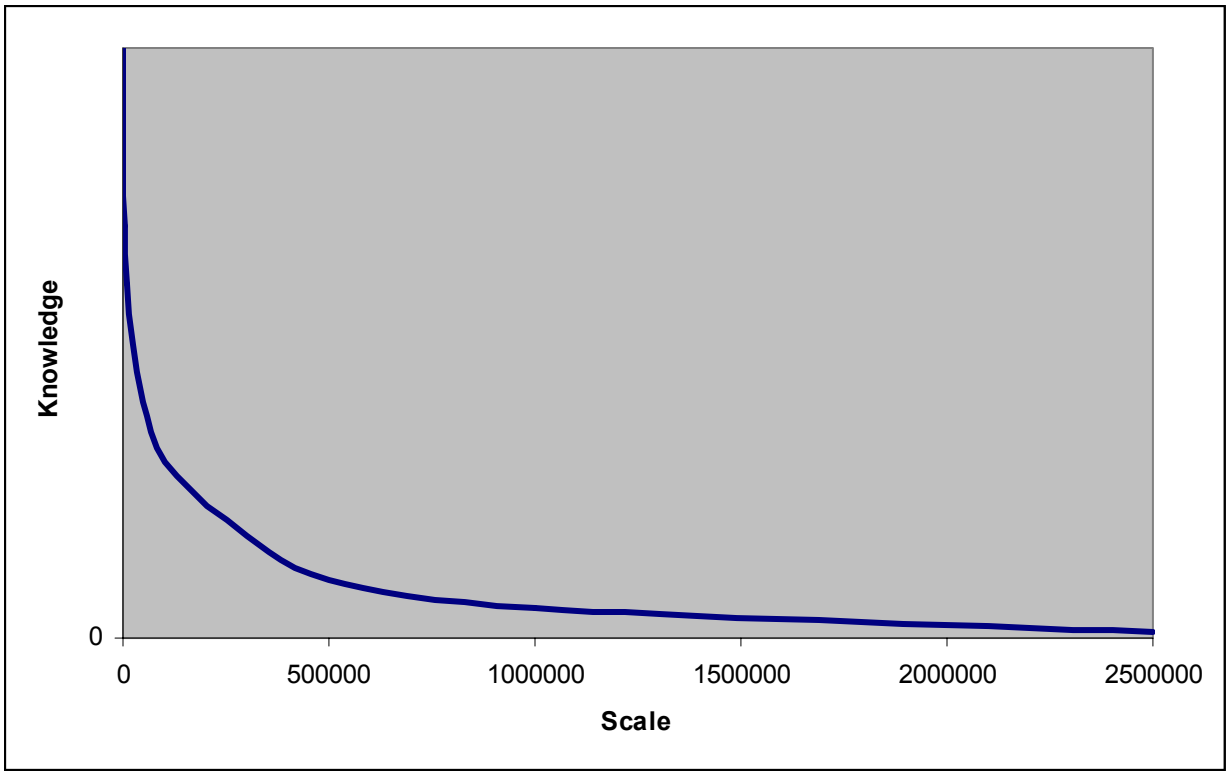

Figure 1. Knowledge and Scale as a function in identification.

Cartographic research indicates that typically only a limited numbers of categories can be identified from a map (5 to 7 gray tones), but that a larger number can be discriminated. Using color the map users ability to discriminate and identify features increases. Mapped data is typically categorized to communication as much information regarding the spatial distribution. This mapping requires specific cartographic principles such as generalization, map symbolization, data categorization and classification, and scale. Data resolution is also important component of a database. The resolution is the degree to which closely related activities can be discriminated. This is directly related to the data density or the amount of information in a unique geographic area.

All mapped data is a representation of data at a lower spatial resolutions. In some cases, point data, such as spotted owl breeding areas are mapped at a larger area (for example one square mile, or larger) as to not reveal the specific location of the critical resource. The map symbol is also impacted by the scale. On small-scale maps, points correspond to large geographic area, whereas on large scale detailed maps, points defined more precise locations. Table 1 presents the map scale and the real world size of a fine line and small point symbol. This table demonstrates that on an 8 ½" x 11" map of Oregon a point is plus/minus 2 miles in geographic precision. Many times, maps are use to display thematic characteristics.

Table 1. Map scale and map symbol size.

Scale	Example (8.5 x 11)	Line	Symbol
1:2,500	Tax Map/Plat	3	12 feet
1:24,000	Topographic map	33 feet	120 feet
1:250,000	County/City map	330 feet	1200 feet
1:2,500,00	State map	3300 Feet	12000 feet

Statistics/Tabulation

In many cases, the mapped data is data summaries and is not presented as a unique enumeration or point value associated with an individual. This data corresponds to a statistics of a distribution. A statistic, by nature, does not reveal specific information related to an individual. The statistics that are often mapped included categorizing quantitative data. Quantitative data (ratio and interval) is typically classed into equal interval (Percentiles), standard deviations, natural breaks and other methods for partitioning data. This is, in essence, another method for classify and aggregating data. When data is classed and mapped, the actual values can not be determined (only potential ranges).

Data Categorization

Data categorization methods are typically used in/with GIS technology for analyzing, synthesizing and integrating data. This is done by data categorization, and manipulating scales and symbols.
Data can be categorized based on scale, on tabulating statistics by unique geographic boundaries, and by the mapping methods (i.e. choroplethic, dasymetric, isarithmic, etc). There are two primary reasons for data categorization: 1) for easier interpretation and, 2) to protect specific disclosure. Armstrong (et al) discusses categorization methods to protect disclosure for research, using geographic masks to keep data confidential (related to health records). Other statistical methods, such as parametric and nonparametric methods can be used for data categorization.

Mapping Methods

There are numerous methods that can be used to map data. The three most common types of data mapped are points, lines or polygons. Point mapping almost always presents a unique geographic location. However it should be noted that scale will impact this. At some scales (i.e. large geographic extents) points actually become areas. Line mapping can represent unique features such as a road but can also represent magnitudes of a quantitative distribution (isarithisms). Polygon mapping is typically involves aggregating data into administrative or jurisdictional boundaries and/or identifying unique (i.e. soils).

It is common to aggregate data to administrative boundaries (city limits, counties, neighborhoods, zip codes, etc) and to map and tabulate the data. This approach has advantages and disadvantages. The major advantage is that runs can be created and applied between databases. Several disadvantages are also associated with aggregating data. One is that the rules can be difficult to apply. Another is that many administrative boundaries change.

Spatial Aggregation Mapping Methods

Several methodologies can be implemented in a GIS that allows mapping of n-level data. Figure 2 presents a methodology by which data can be aggregated into to cells that do not violated confidentiality by ensuring a minimum sample size. The aggregation unit (in this example represented by the box) can increase in areal extent in order to always maintain a minimum sample size (n=> 3). This hierarchal method will allow the distribution to be mapped and released while not violoating confidentiality.

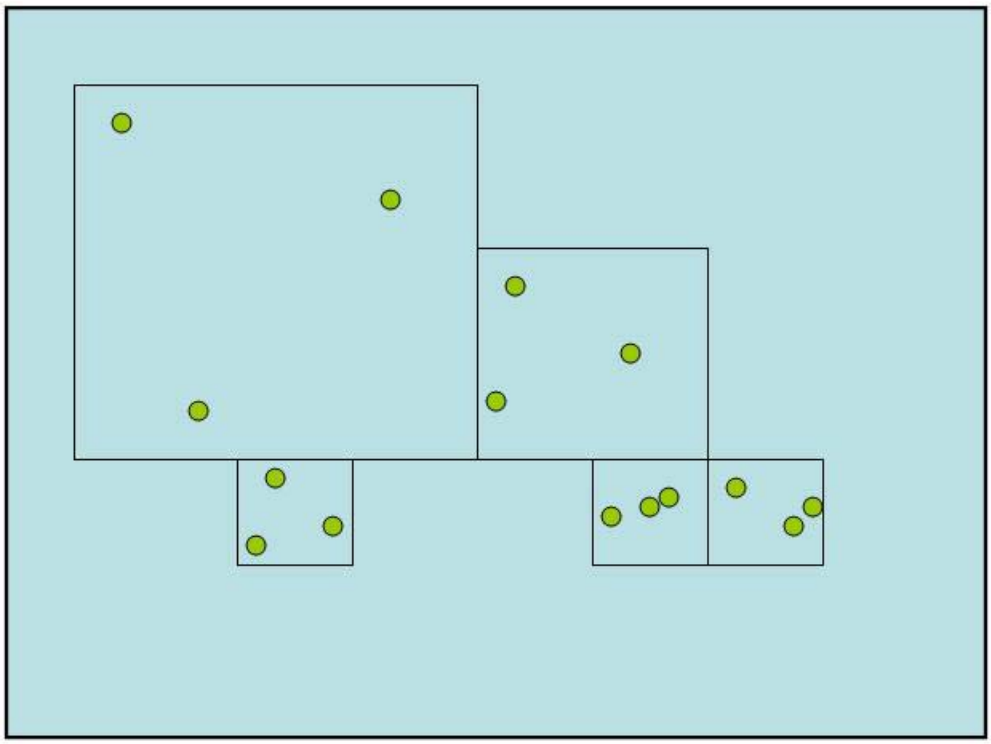

Figure 2. Spatial aggregation of point data in nested boxes.

Other methods can also be used to aggregate spatial data. Multivariate statistical methods such as Cluster Analysis, Princple Component Analysis and Factor Analysis are commonly used to reduce dimensionalty of complex data. Mapping data in this manner is common for complex databases and has been used extensively in ecological mapping. Interpolation methods are also used to extrapolated site specific data to larger areal extents. Other neighborhood based GIS functions (nearest neighbor, buffers, thiessen polygons, etc) can also do similar analyses.

Current Data Sharing Strategies

Wartell and McEwen (2001) have noted that data sharing issues are mostly not technical problems but rather due to politics and personalities. Setting up strong, logical methods for cooperative data exchanges is critical to this endeavor. Other states, such as Rhode Island, have set up data cooperative sharing arrangements specifically related to GIS activities in order to minimize costs among and between state programs and to ensure high quality data that is transferable between applications.

Currently in Oregon State Government, there are three primary models of data sharing. One is to publicly share and distribute most data. This is typically done through Internet based interfaces. Agencies which extensively use this approach are outlined in Table 2. The second is to share limited amount of data based on specific request and applications (Employment Department is an example of this approach). The third is not to share any data with other organizations. The pesticide reporting application is an example of this approach.

Table 2. Oregon Web based GIS applications.

Data Theme	GIS	Agency	Web Address
Stream Flow[1]	Yes	DEQ/USGS	
Industrial Permit Facilities[1]	Yes	DEQ	
Water Quality Sampling[1]	Yes	DEQ	
Toxic Clean Up[1]	Yes	DEQ	
Hazardous Waste[1]	Yes	DEQ	
Tax Maps	Yes	OGDC/ORMAP	
Water Rights/Irrigation/Wells	Yes	OWRD	
Hazards Chemicals[2]	No	OSFM	
GIS Data Library (numerous themes)	No	OGDC	
Fisheries[1]		ODF&W	
Crime Mapping (Portland)	Yes	City	
Demographics	No	Census	
Add additional information			

[1] several of these sites and not functioning due to no GIS staff currently in the Agency
[2] Not a GIS based application but can be easily input into GIS system

An Oregon State Statute related to specifically sharing confidential data is the Shared Information System (SIS). SIS allows interagency data exchange for informed decision making and creating cost effectiveness between agencies and is regulated by ORS 329.965, OAR 471-012-005, and SB 400A. ORS 329.965 establishes SIS "for the purpose of collecting, analyzing and sharing information for the development of statistical and demographic data to facilitate the creation of strategies for the purpose of improving the education, training and programs related to enhancing Oregon's workforce system. The system shall share aggregate information with a participating state agency and/or organization to allow the agency and/or organization to develop policy, evaluate policy, plan and measure performance for the purpose of improving the education, training and employment programs related to enhancing Oregon's workforce system." This involves collaboration between Bureau of Labor and Industries, Department of Community Colleges and Workforce Development, Department of Consumer and Business Services, Department of Corrections, DHS: Children, Adult and Families, DHS: Office of Vocational Rehabilitation, Oregon Employment Department, Department of Education, Oregon Health Plan Policy & Research, and Oregon University System.

Some States, such as Rhode Island have data sharing strategies between agencies (such as Employment, Transportation, Human Services, etc). Maryland also has an established interagency sharing agreements that specifically outline data flow to specifically promote fast and effective geo-coding between agencies. Several agencies (Human Resources Justice, etc) share building a master database and thereby reducing costs between programs.

Other Data Sources

In many instances, there are numerous other alternative data sources, which can be displayed or have been mapped instead of using confidential data. For social and cultural databases, this includes the Atlas of Oregon, InfoUSA (provides geo-coded GIS data with estimates of employment, sales and type industries) and/or digital data from the telephone book. Other privately obtainable data can be purchased for commercial vendors which provides data similar agency based data sources. These data are typical available at a fee and represent estimates of the state collected data. Similar potential database are being prepared for environmental data (Willamette River Initiative) by academic and nonprofit organizations.

Federal Laws

There are two primary federal laws that are related to the topic of confidentiality. One is the Freedom of Information Act of 1966 (USC 5 USC Sec. 552) which ensures public access to government collected data. The second is the Privacy Act of 1974 (USC 5 Sec. 552a) which was established to protect the rights of the individual. These two laws serve as a check and balance system on being able to provide data and information to the public while still preserving critical confidential data.

Oregon State Laws and Agency Policies

There are numerous state regulations in Oregon protecting the individual's confidentiality with respect to public records. This include statues related to adoption (O.R.S. 432.230(1)(a)), insurance complaints (O.R.S. 731.264), rights of residents in foster care (O.A.R. 411/DCBS 443.739/O.R.S. 677.655), tax/revenue related information (ORS 118.525, 119.515, 192.500, 308.290(5), 308.413 and 314.835) and other programs. Many of these statues are dependent on the agency and use of the data. Table 3 presents some of the major data themes that have confidentiality statues directly impacting potential GIS data.

Table 3. GIS themes currently under confidentiality statues.

GIS Data Themes	Agencies	Statues
Endangered Species	ODF, ODF&W and USFS	ORS 496
Historical Sites	SHPO, ODOT and OR&RD	ORS 390
Pesticide Application	Agricultural	ORS 634
Employment Data	Employment	ORS 657
Social Services	DHS (CAF, SSDS, Health, etc)	2 B filled In
Taxes/Income	Revenue	ORS 314
Workman's Compensation	DCDBS	ORS 697
Criminal Justice Data	Corrections	ORS 192

Case Studies

To review confidentiality and GIS data in Oregon, we have initially reviewed two agencies for case studies. These topics are also applicable to other state and federal agencies.

Employment

Oregon Employment Department collects and maintains data related to employment, uninsurance and childcare data. All of this data is address based locational information which is geo-coded by street address matching. All of OED data is currently confidential in nature. There are several state statues related to confidentiality at the OED. The primary statue related confidentiality for the OED is ORS 657.665. ORS 657.665 (3) specifically states that Employment Department data:

> *"shall not be released ……in any manner that would be identifiable as to individuals, claimants, employees or employing units".*

There are currently provisions for releasing data, for planning purposes, to appropriate entities. However, the party that receives the data is bound to the OED confidentiality rules. OED has typical used two criteria for aggregating and releasing Employment data. Currently, these rules are: 1) not to release data where 3 or less individuals are aggregated together, and 2) not to release data where one unit comprises more than 80 percent of the aggregation unit. Recently, OED Research staff have specifically examined several issues related to GIS data display and confidentiality including:

- What is personal information?
- When is an individual identifiable?
- How is scale related to identification/confidentiality?
- What mechanisms exist for data sharing?
- Potential cost saving?
- What databases are critical and are there alternatives?

The concensus of the GIS Confidentiality Research review group that based on a current interpretation of the existing ORS, no maps of any point data at any scale can be made with agency data that can be released to the public. Since all most all of OED data is address based geo-coding, this means no maps can be made of raw data sources. However several aggregation and statistical methods have promise.

It is extremely important that data is available to policy and management in allocated resources. In many cases this may involve combining data from several sources. GIS software allows us to merge data bases on unique geographies and link databases. Building GIS databases is typically time consuming and doing GIS projects in a vacuum leads to poor allocation of resources by repeating efforts. A recent example at OED that has been reviewed is the Employer database information of covered wages (commonly called the ES-202 program). The ES-202 program, was recently compared to the Fire Marshal hazardous materials/storage, and Oregon DEQ Hazardous waste/Cleanup databases. All of these databases have similar field for address and major type of company. Each of these agencies inputted the same data for addresses and other attributes. In addition to the costs incurred by the State for the data entry, the more important consideration is that these database are not comparable and do not correspondingly to one another. To be able to get these to communicate to answer specific question will require additional data management and programming. How many other state agencies are also inputting this same data? Revenue, Human Services, Division of Consumer Business, Transportation?

Currently other states are examining issues related to geo-coding employment. This was a discussion at the Bureau of Labor Statistics Workshop on geo-coding ES-202 (coveraged salary and wage) data held November, 20002 in Washington, DC. In December 2002, the Washington State Geographic Information Commission is also scheduled to discuss GIS/Geo-coding employment related data.

Agriculture

Agricultural data is collected and maintained by the Oregon Department of Agriculture (ODA). Some of this data is publicly available and in GIS format. Confined Animal Feedlot Operations (CAFOs) are an example of an ODA GIS dataset that is commonly shared between agencies and organizations. This sharing of information feeds into better decision making, resource allocation and reduced costs in not replicating efforts. However, some data, collected and maintained by ODA is confidential in nature.

Pesticide Reporting

The Pesticide Use Reporting Law requires all pesticide users (except households) to report their use of insecticides, herbicides, fungicides, rodenticides, and other pesticides to the Oregon Department of Agriculture (ODA). The information collected on each pesticide use report is as follows:

1. Date of pesticide use
2. Site Category and Specific Site (to indicate crop, or target area)
3. Whether the application took place on public or private property
4. The geographic location (including TRS, GPS, Address or ZIP Code)
5. Quantity and identity of pesticide products
6. Purpose for pesticide use

Pesticide users enter business and contact information and file use reports into the Pesticide Use Reporting System (PURS) database via a secure website interface. While under ODA control, the data is maintained such that only specific ODA employees and contractors who sign a confidentiality agreement may access it. The Pesticide Use Reporting System (PURS) was established under ORS 634 and OAR 603-057. ORS 634 is the State Pesticide Control Act. Section 634.042 deals with issues of confidentiality.

The pesticide use reporting law requires that ODA prepare an annual report of pesticide use summarized to state, county and 4th field HUC geographic areas. While doing so, ODA must keep information confidential that may identify the pesticide use of any one particular entity (except on applications made to public buildings, roads, or other public property).

The Law also allows for universities, state and federal agencies, and research institutions to request more specific information from PURS. In order to obtain this information, the interested party must submit a written request with specific information as detailed under Oregon Administrative Rule. The request must include an ODA-prepared confidentiality agreement and the entity's plan to protect the confidentiality of individual reporters. Breaching confidentiality of information from the pesticide use reporting information system could result in a civil penalty of up to $10,000.00.

Other Pesticide Related Activities

Nationally several states already summarize pesticide use and application data by county. Nationally the Census of Agriculture on a five year cycle and provides summary information on major agrichemicals applied with acreages and number of farms on a county level. Some states, such as New York, have already implemented statewide pesticide reporting programs. This is used as input to water quality modeling and evaluating environmental risks. Other states, such as California, have detailed downloadable breakouts by county and commody type (application amounts, areas and chemical type).

Wisconsin is also in the process of developing (in the current legislature) a pesticide reporting system. This will tentatively have a GIS interface for visualizing where pesticides are applied. This interface will be available to the public. More information on this is available at:
http://www.wsn.org/pesticides/PDS_Components.shtml

The National Institute of Statistical Sciences (NISS) has also evaluated methodologies for agricultural statistics (information is available at www.niss,org/dg). NISS promotes using one of two rule based systems:
1. N-rule (minimum of 3 observation in any geographic or aggregation units)
2. P rule (minimum percent [p= 60 % of total acreage of all farms in unit])

NISS has noted that at a county level over 50% of the data statewide are not releasable and/or disclosable. These methods are similar to rules currently used in other state agencies such as the Oregon Employment Department.

Possible Future Direction

There are numerous decisions that can impact the future of how GIS and confidential data are treated in the State of Oregon. A few of these include:

- Develop GIS Roles and Responsibility related to confidentiality
- Seek GIS Data sharing and exchange policies (inter and intra-agency) input
- Develop written policy and guidelines for disclosure
- Continued review and endorsement by
    - Geographic Project Leads
    - Policy Advisory Committee
    - Oregon Geographic Information Council
    - Attorney General review and endorsement

References

Armstrong, M.P., G. Rushton and D.L. Zimmerman , Geographically masking health data to preserve confidentiality, Statistics in Medicine, volume 18:5, pp 497-525.

Arnoff, S., 1989. Geographic Information Systems: A Management Perspective, WDL publications.

Burrough, P.A. (1986) Principles of Geographic Information Systems for Land Resource Assessment. Monographs on Soil and Resources Survey No. 12, Oxford Science Publications, New York.

Crime Mapping Research center, 2000. Privacy, confidentiality and data display, presentation at CMRC Conference, December 9, 2000.

Federal Committee on Statistical Methodology, 1994. Report on statistical disclosure limitation methodology.

GIS and Public Health, http://www.cdc.gov/nchs/gis.htm, Center for Disease Control.

Ingerson, A.E. and R.E Cook, Public access to & participation GIS, Institute for Cultural Landscape Studies, Harvard University.

Karr, A.F., J. Lee, A. Sanil, J. Hernandez, S. Karimi and K. Litwin, 2001. Disseminating Information but Protecting Confidentiality, White Paper by National Institute of Statistical Sciences, RTP, NC

National Institute of Justice, July 8, 1999, Crime mapping and data confidentiality Roundtable overview document.

Statistics Canada, 1997. Using GIS to assure data confidentiality, working paper no 15

Wartell, J. and J.T. McEwen, 2001. Privacy in the Information Age: A guide for Sharing Crime Maps and Spatial Data, U.S. Department of Justice, Crime Mapping Research Center.

Web based notes on Legal issues related to GIS.
http://www.geog.ubc.ca/courses/klink/gis.notes/ncgia/u70.html#SEC70.3

Willenborg and de Waal, xxxx, Statistical Disclosure,