E-Learning Module on Institutional data collection and Limitations and uses of demographic studies

Learning Objectives

At the end of this session, you will be able to know:

- Institutional data management in a decentralized environment
- Challenges of decentralization
- Efforts towards data integration
- Establishment of Data Gateway
- Policy on Institutional data collection involving Human Subjects
- Uses of demographic study
- Limitations of demographic study.

Introduction

The objective of the institutional data collection stage is to gather factual information about a university's activities, from faculty and enrolment statistics to research income. This data can be combined with other data sources to create new indicators of performance and more complete institutional profiles. To facilitate deeper insights into worldwide university knowledge exchange, one needs to expand traditional data parameters.

- One can design and built a web-based data tool to facilitate the easy collection and validation of data by the institutions themselves. The primary objectives are to keep the institution's reporting burden to a minimum and reduce the number of mistakes.
- The collection, dissemination, and use of Institutional Research data in decision-making are critical to improving educational effectiveness.

The management of institutional data is decentralized at Berkeley. This permits decision-makers to use data effectively in their planning processes, but also creates a number of challenges. For example, the campus has not explored in depth the possible development of a campus-wide strategy for assessing student learning outcomes. This essay discusses the challenges posed by decentralization and efforts underway to integrate institutional data systems, and proposes some ways to address the need to assess comprehensively student learning outcomes.

Institutional Data Management in a Decentralized Environment

Institutional research and planning at Berkeley take place in a variety of venues and not simply, as at many other universities, in a centralized institutional research office. Decentralization of institutional data ensures that decision makers throughout the campus have efficient and reliable access to the data and the analyses that they require.

Six offices provide most of the institutional data to the Berkeley campus: Planning and Analysis, Student Research, Admissions and Enrollment, Graduate Division, Space Management and Capital Projects, and Sponsored Projects. Several of the larger colleges and schools also employ analytical staff. Managers and analysts from the institutional units that provide data also serve on standing or ad hoc campus committees. Their primary function is to provide appropriate data to support committee decisions. Their participation ensures that committee members fully understand complex statistical information and allows campus-wide as well as departmental decisions to be "data driven."

For example, in the past year the Strategic Planning Committee (SPC) and Near Term Planning Subcommittee requested from the Office of Planning and Analysis a number of special data analyses to identify departments where faculty workload and student demand for a major were highest. Similarly, a special report prepared by Admissions and Enrollment on the academic success of athletes at Berkeley for the Admissions, Enrollment, and Preparatory Education Committee and the Undergraduate Admissions Coordination Board will lead to a more systematic review of athletic admissions by faculty, especially in the admission of high risk athletes. At the request of the Affordability Steering Committee, the OSR conducted surveys to evaluate the impact of a variety of costs of attending Berkeley on freshmen and transfer student populations. In many cases, data provided for a single committee's use may be shared with other decision-makers or committees as appropriate.

Challenges of Decentralization

Having multiple campus units perform institutional research functions creates a number of challenges, including content and technical issues, integration of systems and data, and issues of access and ownership. Some of the pitfalls of decentralization are that

(a) institutional data are at times not shared effectively with planners and decision-makers, with the result that planning efforts are not fully informed;

(b) institutional data elements are not fully shared among data providers or analysts across campus;

(c) efforts may be duplicated as several units collect and analyze similar data; and

(d) data generated for reports to departments or campus committees are often provided on a piecemeal basis, designed to answer a specific question or set of questions rather than being part of a broader evaluation or research agenda.

As are most large institutions nationally, the campus is now engaged in the transition to relational database and web-based technologies which, in effect, combine the advantages of the centralized and distributed models of computing. This transition requires significant changes in business policies and practices that ultimately will increase efficiency and accountability by minimizing redundancy and improving data quality. Among the many technical and policy issues raised by the new technologies, two seem particularly germane to the evolving organization of institutional data collection and analysis at Berkeley:

(a) how to make data accessible while ensuring security and confidentiality, and

(b) (b) whether the present quantity and configuration of analytical and technical staff remain optimal.

Both issues are the subjects of continuing discussion and evaluation.

Efforts Toward Data Integration

Recognizing that data integration is an important requisite for improving the campus's organizational and operational effectiveness, the Chancellor launched a Data Integration Initiative to standardize data and data access policies across campus, and to improve access to campus information through the use of Web-enabled technologies and on-line analytical processing tools. The Working Group's May 2002 report on data integration included five major recommendations

1. Create a permanent Data Stewardship Council to provide a forum for resolving data integration issues such as inter-system communication, data definition, and integrity;
2. Analyze shadow systems in use across the campus;
3. Direct the Data Stewardship Council to create a mechanism by which a campus-wide report will be produced that articulates a vision for a logical data architecture for the campus;
4. Recognize that the work associated with the goals of the Data Integration Initiative and the recommendations of the Data Stewardship Council will require dedicated attention to progress and staff support;

5. Recognize the Office of Planning and Analysis as the repository of official campus-wide aggregate and institutional data.

The Data Stewardship Council will also address technical and systems issues including the development of policies related to data access and security, a student data warehouse, and campus data dictionaries.

Establishment of a Data Gateway

- The Institutional Data Gateway, established in Spring 2002, provides the campus community with instantaneous access to basic institutional data and links to UC system and national data. The following five campus databases are included in the Data Gateway:
- Cal Profiles, established in November 1998, is a comprehensive, longitudinal view of more than 400 data elements for all campus units, which can be viewed at any level from the campus down to a specific unit. The Office of Planning and Analysis provides hands-on training and an on-line guide for campus staff.

- Cal Profiles Plus, created in November 2001, accesses the same database as Cal Profiles, but provides more detail and allows the user to drill down and create charts.
- The Performance Metrics web site, on line since September 2001, provides trend data on campus metrics used to assess the degree to which organizational goals are being met. It also provides a one-year snapshot comparing Berkeley to a group of 12 peer institutions—5 privates, 5 publics, and 2 UC campuses. Comparative data is available on a series of measures.

- The Common Data Set (CDS) is a collaborative effort between publishers and educational institutions to standardize the set of annual data elements requested for educational publications. The campus web site was launched in August 2000.
- The Student Data site maintained by the OSR allows users to select and view summary data on applicants, registered undergraduate students, and undergraduate degree granted.

Student Learning Outcomes

Building on the Data Integration Initiative, as part of its Educational Effectiveness Review, the campus will explore the possible development of a campus-wide strategy for assessing student learning outcomes. The following steps have been identified as ways the campus can improve assessment of student learning:

- Establish protocols by which student data sources may be identified and shared across campus. This has been accomplished in some venues (data distributed by Student Information Systems), but needs to be campus-wide. Expansion of the Institutional Data Gateway is another solution for assuring that key data are shared.

- Encourage committees that supervise broad areas of the institution, such as admissions, enrollment planning, undergraduate education, or graduate education to develop plans for evaluating their processes. This will allow data analysts to collect data for more than ad hoc queries and provide time for in depth analysis.
- Develop a centralized plan for identifying and collecting undergraduate student learning outcome data. Give the responsibility for collecting these data to a single unit. It is also important to create a structure for reviewing and evaluating learning outcome data. There should be some common measures that all departments are assessed on, and some specific to their individual needs.

Course evaluations, assessments of student work, an assessment of the student learning experience (in the new SERU-21 Survey), and measures of alumni success, may form a backbone for the "common data" collected in this process. Review and evaluation of learning outcome data should start at a central level, but there also must be a formal method of communicating findings at the college and departmental level.

Policy on Institutional Data Collection Involving Human Subjects

This policy establishes the basic principles for all data collection activities involving human subjects that are conducted at Northwestern Health Sciences University. Northwestern Health Sciences University has a Federal-wide Assurance of Protection for Human Subjects file with the US Department of Health and Human Services, Office for Human Research Protections. Northwestern is responsible for maintaining a unified system of protections applicable to all human subjects research covered under the Assurance and implementing appropriate oversight mechanisms to ensure compliance with the policies of the IRB.

NWHSU relies on data collection at several levels, including data collection activities that involve gathering information from human subjects. Recognizing this, and consistent with its commitment to valuing and protecting its human resources, NWHSU recognizes the need to ensure that participants involved in all data collection activities are treated with respect. This policy identifies three types of institutional data collection involving human subjects:

1. Institutional data collection for non-research purposes
2. Institutional data collection for research purposes
3. Student data collection activities

1. Institutional Data Collection for Non-Research Purposes: Institutional data collection for non-research purposes is the gathering of data from or about university students, faculty, staff, or alumni members by university departments or organizations, with the intent of using the data solely for internal informational or quality assurance purposes or for required data collection purposes. That is, data collected will NOT be accessible (e.g., the Internet) or presented outside the University (e.g., professional meeting) or published (e.g., professional journal).

Examples

· Data collection to improve educational or other services or procedures at the university

· Data collection to ascertain the opinions, experiences, or preferences of the university community

· Data collection to characterize the university community

Often, such data is collected via:

- Student evaluations/surveys
- Alumni surveys
- Curriculum focus groups
- Employee satisfaction surveys/focus groups

Requirements

- Unless potentially sensitive information is collected, Institutional data collection for non-research purposes does NOT require IRB approval. However, an Institutional Data Collection Form must be submitted to the IRB to be kept for their records.
- If information on sensitive topics is being elicited, or if any unanticipated disclosure of responses outside the context of the data collection activity could place the subject at risk of criminal or civil liability or be damaging to the subject's reputation, employability, or financial standing, prior IRB approval is required. Examples would include collecting information on subjects' drug use, alcohol use, sexual behavior, health status, or illegal conduct.

2. Institutional Data Collection for Research Purposes

Institutional data collection for research purposes is the gathering of data from or about university students, faculty, or staff members by university departments or organizations, with the intention of contributing to generalizable knowledge. That is, data collected will be accessible or presented outside the University.

Examples

- Data collection through questionnaires, interviews, or focus groups with an intention to present the findings (e.g., professional meetings) or to publish the findings (e.g., professional journals/publications).· Collaborative (multi-site) data collection activities planned and carried out on-campus with the intention of contributing to generalizable knowledge
- Research projects initiated elsewhere but involving Northwestern employees or students

Requirements

- Institutional data collection for research purposes DOES require prior approval by the IRB. An IRB application must be submitted to the IRB. No part of the research involving human subjects (including recruitment efforts) may begin before IRB approval has been granted.

3. Student Data Collection Activities

- Student data collection activities involving human subjects may range from activities taking place entirely within the classroom or clinical setting to independent research and honors projects. Faculty members who assign or supervise data collection activities by students are responsible for ensuring that such activities are conducted in accordance with University policies and that students are qualified to safeguard the well-being of the subjects.

Requirements

- The informal collection of information by students from respondents—for example, interviewing friends or relatives for purposes of class discussion or assignments—has no IRB requirement.
- Student projects designed to provide hands-on experience or research training to students have no IRB requirement. Projects in this category are expected to be confined to the specific class and end at the termination of that class.
- Student projects designed to add to generalizable knowledge through dissemination of results in publications or presentations beyond the classroom/clinical setting DOES require prior approval by the IRB. An IRB application must be submitted to the IRB.

Uses of demographic study

Demographic study is used in almost all the spheres of human activity. We have some of the important uses of demographic studies

1. Study of Population trend

The study of births (fertility and deaths (mortality) gives us an idea of the population trend of any region, community or country.

If Birth Rate > Death Rate, there is an increasing trend

If Birth Rate < Death Rate, there is a decreasing trend

- The division of the population of different regions (or races) by birth and death rates enables us to form some idea about the population trend of the regions or countries and the general standard of living and virility of races.
- In underdeveloped countries, the birth rate is fairly high but the same time it is accompanied by high infant mortality rate showing thereby the lack of medical facilities, poor hygienic conditions, malnutrition and low standard of living.

2. Use in Public administration: The study of population movement, that is, population estimation, population projections and other allied studies together with birth and death statistics according to age and sex distributions provides any administration with fundamental tools which are indispensable for the overall planning and evaluation of economic and social development programmes

3.Mortality and natality statistics also provide guide spots for use by the researchers in medical and pharmaceutical profession.

4. Use to operating Agencies: The facts and figures relating to births, deaths and marriages are of extreme importance to various official agencies for a variety of administrative purposes. Mortality statistics serve as guide to the health authorities fir sanitary improvements, improved medical facilities and public cleanliness. The data on the incidence of diseases, together with the number of deaths by age and nature of diseases are of paramount importance to health authorities in taking appropriate remedial action to prevent or control the spread of the disease. For example, to control the spread of an epidemic, arrangements can be made for inoculation or vaccination through municipal and district local board agencies.

5. The whole of actuarial science, including life insurance is based on the mortality or life tables. The vital records concerning all possible factors contributing to deaths in various ages are indispensable tool in numerous life insurance schemes. These are used by demographer to devise measures such as ‘Net Reproduction Rate’ to study the rate of growth of population. They also been used in projection of population by age and sex.

Limitations

- Some developing countries do not have the resources to acquire very much data on demographic events such as deaths; if they did have the available resources; it is not known what kind of information they might collect.
- Apart from biases, users of quantitative data on deaths need to be aware of a number of limitations. A large limitation, globally, is simply lack of information. Many statistics are estimates only. Another limitation concerns lack of knowledge regarding how statistics are calculated, which can lead to misinterpretations.