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Application of Information Systems and Secondary Data

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Section A

Secondary Data

Application of Secondary Data Sources to HSRE

- Pre-existing or pre-collected data is considered “secondary” as opposed to data collected specifically for a project which is considered “primary”
- There are a wide variety of secondary data sources

Secondary Data for HSRE: Several Major Categories

- Archival data or record systems
- Ongoing “monitoring” systems/special repetitive “surveys”
- Management information systems (MIS)
- Billing transaction systems or other limited MIS
- Special “one-shot” databases developed by other researchers

Advantages of Secondary Data

- Cheaper
- Available quickly
- Usually available for long time periods, therefore useful in time series analyses
- Many are quite reliable and valid
- Often can be used to target primary data collection

Disadvantages of Secondary Data

- Available data are rarely perfect for your research needs
- Reliability and validity problems may be present
- Risk of breach of confidentiality exists

Archival Data Systems and Record Systems

- Major goal is to provide an archival historical documentation of health-related occurrences or activities
- Responsibilities of those collecting the data usually stop after the database has been developed
- These systems often have legal implications or satisfy some reporting requirements
- Many problems exist with regard to uniformity

Examples of Archival Data Systems

- Vital records (birth, death)
- HSCRC hospital discharge files
- State-mandated “incident” reports
- Medical records

Use of Medical Records in Research

- Patient/client treatment records are the most ubiquitous data system in health care organizations
- Provides the most detailed account of treatment process and patient clinical and demographic characteristics

Disadvantages of Use of Medical Records in Research

- Record quality is inconsistent
- Often impossible to read
- Information not uniformly reported
- Difficult to retrieve compared to automated records

Definition

- A systematic method used to collect, process, store, retrieve, and transmit selected data on patients/clients, clinical activities, and financial transactions that provides some organizational personnel with information required to carry out a specific management function

Management Information Systems

- Usually conceived with a specific organization or program
 - Hence, mostly applicable to HSE
- There are as many non-functional MIS's as there are functional ones
- An MIS is not necessarily automated
- Unless information is used consistently, validity and reliability issues almost always exist
- MIS data are usually timely (often “real time”)
- If evaluation is objective from beginning, HSE can theoretically be fully integrated into MIS

Examples of MIS

- Total hospital information system
- Encounter reporting system
- Hospital financial reporting systems
- Some medical record systems
 - Nursing home minimum data set

Billing/Transaction Data Systems

- Limited for the most part to financial data (very little clinically significant data)
- Often only data available in machine-readable form on majority of health care transactions
- Can be used for large scale analyses
- Fairly reliable, both payor and payee are interested in accurate data
- Often difficult to gain access

Examples of Billing Data Systems

- Blue Cross records
- Medicare files
 - National Claims History files
 - 5% files
- Medicaid files
- Hospital billing systems



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Section B

National Surveys of Importance to HSR

Features of National Surveys

- Sample drawn to be representative of large group (usually national population)
- Questions validated
- Data collection methods highly reliable
- Often panel survey, though some cohort surveys
- With panel surveys, replacements added

Secondary Data Sources for HSRE: On-Going National Surveys

- National Health Interview Survey
- National Hospital Discharge Survey
- National Ambulatory Medical Care Survey
- NHANES
- Medical Expenditure Panel Survey
- Medicare Current Beneficiary Survey

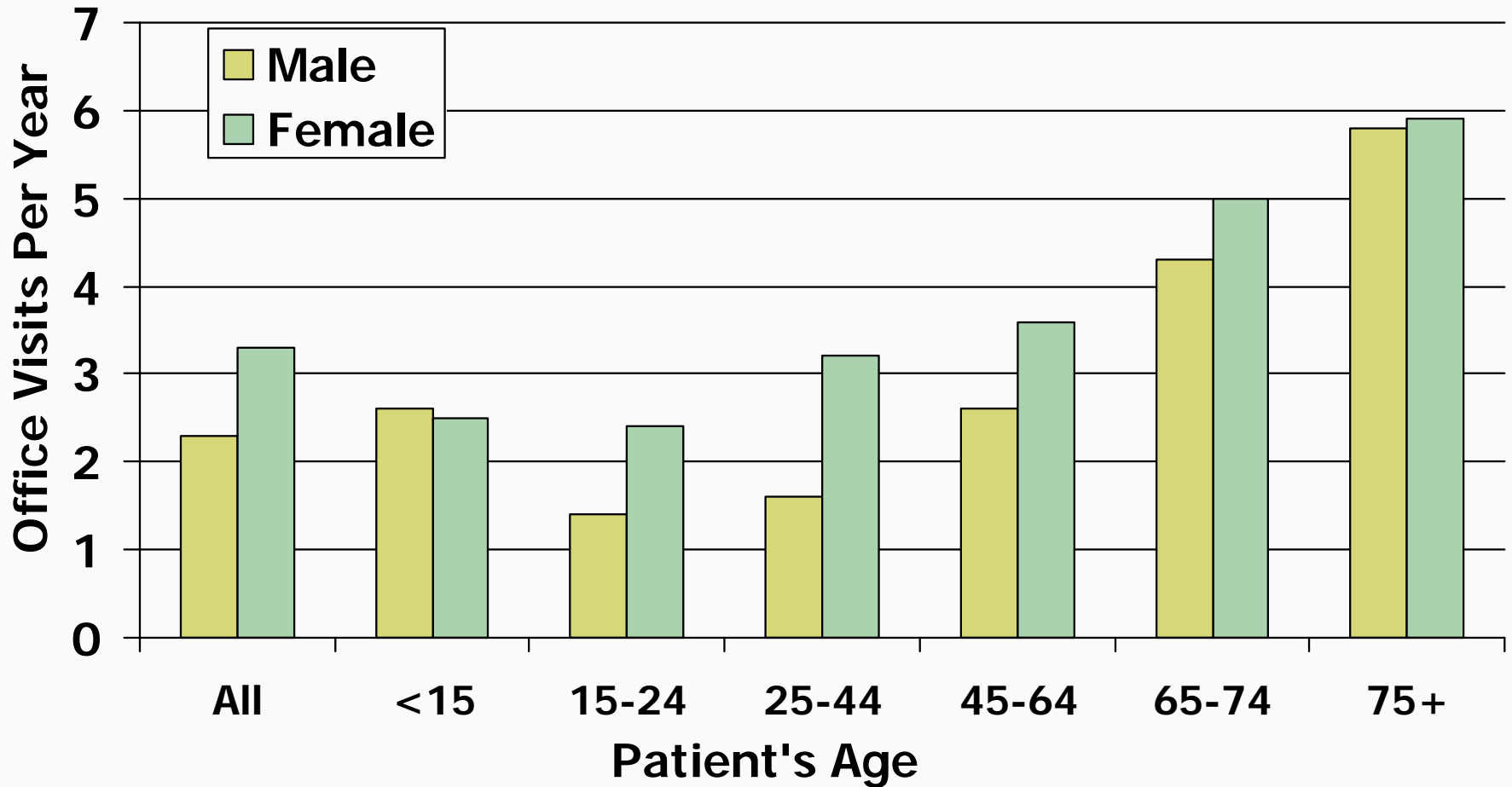
National Health Interview Survey

- Principal source of information on health for U.S. population
- Continuing survey with special studies added
- Household interviews
- Non-institutionalized, civilian population
- Probability sample representative of the target population

National Health Interview Survey: Purpose

- Provide national data on ...
 - Incidence of acute illness and accidental injuries
 - Prevalence of chronic conditions and impairments
 - Extent of disability
 - Utilization of health care services
 - Other health-related topics

Office Visits Per Year By Patient's Age



Percentage of Adults Who Were Overweight* by Selected Characteristics: U.S., 1997–1998

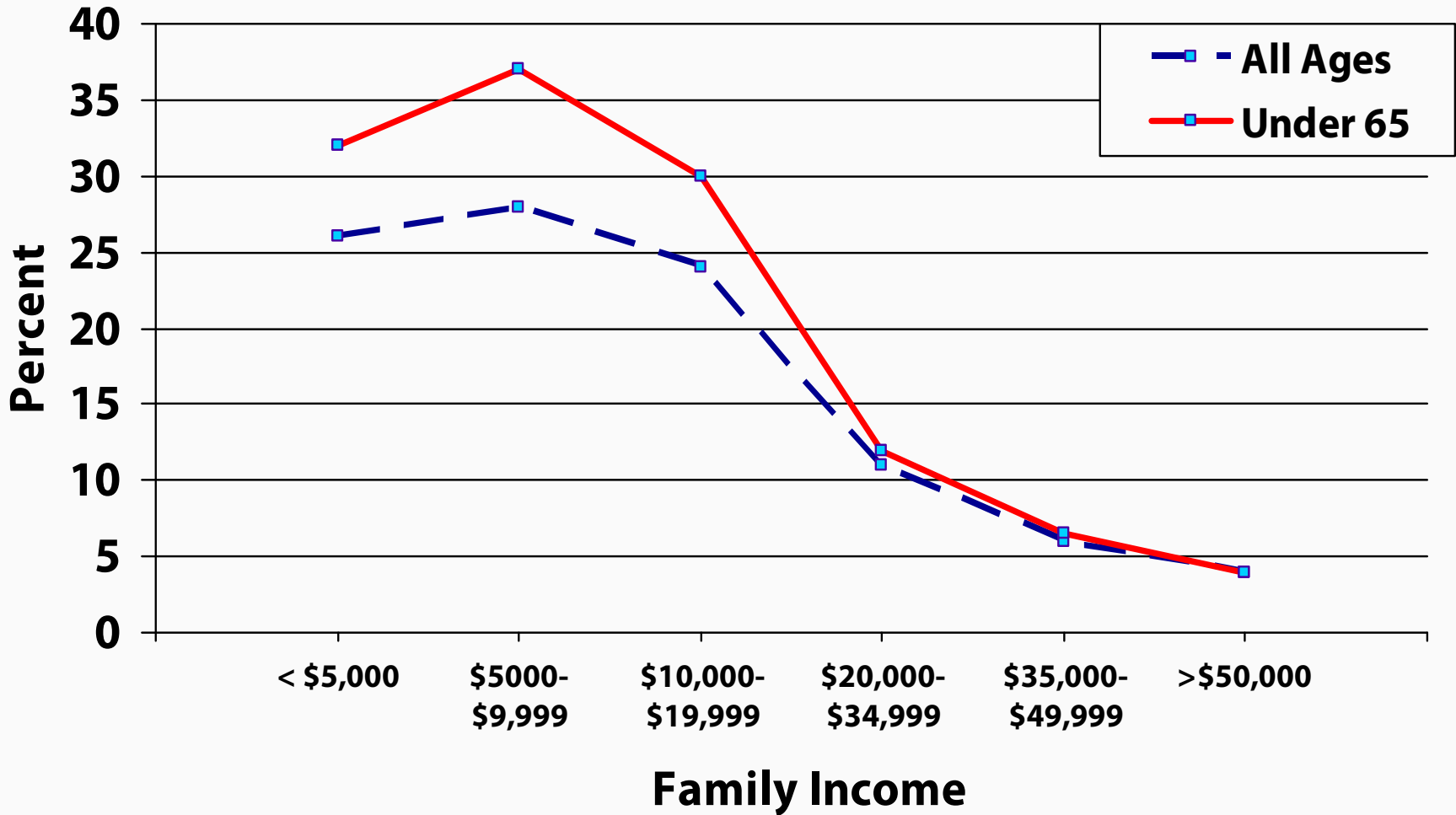
*Overweight = BMI of 25 or more

Percent of adults (standard error)

Selected Characteristic	Both Sexes	Male	Female
Age			
18-24 years	37.5 (0.72)	42.5 (1.06)	32.3(0.95)
25-44	53.7(0.36)	64.3(0.48)	43.2(0.47)
45-64	63.5(0.43)	71.5(0.61)	43.2(0.47)
65-74	61.1(0.67)	67.0(0.93)	56.2(0.91)
75 years and over	47.2(0.75)	50.0(1.31)	45.3(0.88)
Education			
Less than high school graduate	60.4(0.52)	62.0(0.75)	58.7(0.75)
High school graduate	56.8(0.44)	64.7(0.65)	49.7(0.55)
Bachelor of Arts,Science degree	47.5(0.60)	59.0(0.89)	35.7(0.85)
Master 's,doctorate,medical degree	42.4(0.99)	53.7(1.73)	29.2(0.96)
Poverty status			
Below poverty level	56.9(0.66)	57.0(1.10)	56.6(0.83)
1.00 –1.99 times poverty level	58.7(0.60)	62.4(0.84)	55.4(0.78)
2.00 –3.99 times poverty level	56.7(0.43)	63.5(0.65)	49.7(0.58)

Notes Available

Family Income by Age



National Hospital Discharge Survey

- Data abstracted from medical records of discharges from short-stay, non-federal hospitals
- Coded using ICD9-CM categories
- Number, rate, and average length of stay, by age, geographic region, and gender
- Number of discharges by first listed DX

Number of Discharges from Short-Stay Hospitals by Selected Characteristics (United States, 2000)

Selected Characteristic	Both Sexes	Male	Female
<i>Number In Thousands</i>			
Total.....	31,706	12,514	19,192
Age			
Under 15 Years.....	2,383	1,333	1,050
15-44 Years.....	9,969	2,680	7,289
45-64 Years.....	6,958	3,424	3,534
65 Years and Over.....	12,396	5,077	7,319
Region			
Northeast.....	7,103	2,979	4,123
Midwest.....	7,207	2,857	4,351
South.....	12,016	4,621	7,395
West.....	5,380	2,057	3,323

Rate of Discharges from Short-Stay Hospitals by Selected Characteristics (United States, 2000)

Selected Characteristic	Both Sexes	Male	Female
<i>Number Per 1,000 Population</i>			
Total.....	114.0	92.0	135.1
Age			
Under 15 Years.....	39.4	43.1	35.5
15-44 Years.....	81.6	43.9	119.3
45-64 Years.....	114.2	115.8	112.6
65 Years and Over.....	359.6	352.8	364.4
Region			
Northeast.....	135.5	117.4	152.5
Midwest.....	112.8	91.5	133.2
South.....	121.6	96.4	145.4
West.....	85.4	65.4	105.3

National Ambulatory Medical Care Survey

- Describes ambulatory care visits made to physician offices within the U.S.
 - By physician practice characteristics
 - By patient age, gender, race
 - By payment type and expected source of insurance for this visit
 - By patient's principal reason for visit

Percentage Distribution of Office Visits: U.S., 2000

Physician Practice Characteristic	Number of Visits in thousand	Percent Distribution
All visits	823,542	100
General and family practice	198,578	24.1
Internal medicine	125,556	15.2
Pediatrics	103,734	12.6
OB/GYN....	65,135	7.9
Orthopedic surgery....	46,155	5.6
<i>Professional Identity</i>		
Doctor of Medicine	756,813	91.9
Doctor of Osteopathy	66,729	8.1
Geographic Region		
Northeast	183,029	22.2
Midwest	206,727	25.1
South	251,300	30.5
West	182,485	22.2

National Health and Nutrition Examination Survey (NHANES)

- Population-based
- Designed to assess the health and nutritional status of adults and children in the U.S. through interviews and direct physical examinations
- Medical and dental examinations, physiological measurements, laboratory tests

Medical Expenditure Panel Survey (MEPS)

- Provides policy makers with up-to-date, highly detailed information on how Americans as a whole and different segments of the population use and pay for health care
- Documents insurance coverage and other access issues

Example of Findings: MEPS, 2001

- In the first half of 1999, 15.8% of all Americans were uninsured
- Among Americans under 65, 36% of Hispanics and 21% of blacks were uninsured during the first half of 1999, compared with only 14% of whites
- Even though Hispanics represented only 13% of the non-elderly U.S. population, they accounted for a fourth (25%) of the entire uninsured population

Example of Findings: MEPS, 2001

- Young adults ages 19–24 were more at risk of being uninsured than any other age group (almost a third (32%) of young adults were uninsured)
- During the first half of 1999, among people under age 65, those who were separated from their spouse were more likely to be uninsured (33%) than people of any other marital status

Medicare Current Beneficiary Survey

- Interviews with about 10,000 Medicare beneficiaries
- Nationally representative sample
- Data collected include:
 - Self-reported health and functional status
 - Access to care
 - Satisfaction with care
- Survey data can be linked to claims data