

Analyzing NCHS Drug Data

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

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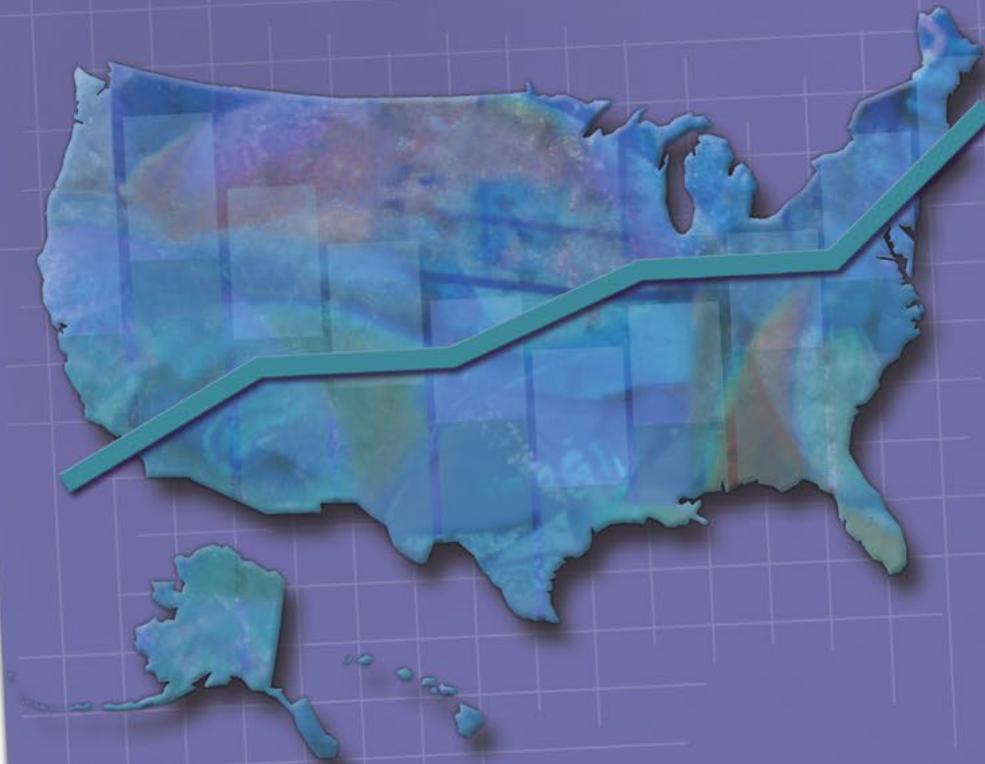


Topics

- *Health, United States* special feature on drugs—overview
- Description of drug databases
- Issues in drug analyses
- Lessons learned
- Future analyses using drug data

Health, United States, 2004

With Chartbook on Trends in the Health of Americans

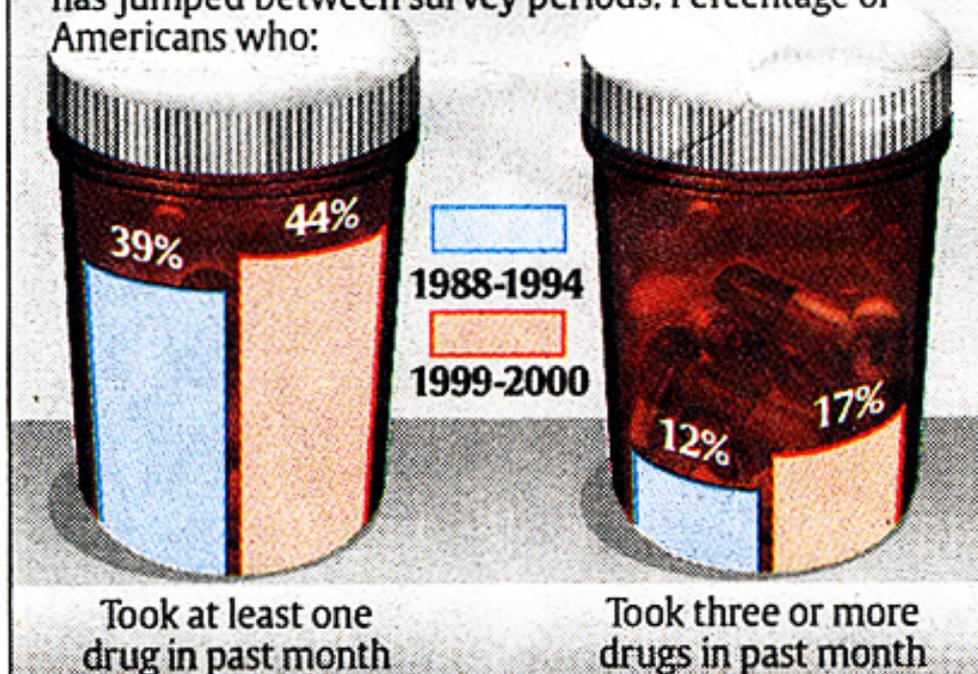


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USA TODAY Snapshots™

More prescriptions fill medicine cabinets

The proportion of Americans taking prescription drugs has jumped between survey periods. Percentage of Americans who:



Source: National Center for Health Statistics
(The National Health and Nutrition Examination Survey)

Health, United States, 2004

Special Feature

Charts on:

- Overall use
- Asthma drugs
- Antidepressants (and SSRIs in particular) prescribed for adults
- Antianxiety and antidepressant drugs prescribed for children
- Cholesterol-lowering drugs (and statins in particular)
- Nonsteroidal anti-inflammatory drugs (and COX-2 selective inhibitors in particular)



Health, United States, 2004 Chartbook Special Feature on Drugs

- **Collaboration with FDA's Center for Drug Evaluation Research (CDER)**
- **Data Sources**
 - NHANES (prescription drug use in past one month period)
 - N/HAMCS data on drugs prescribed, ordered, administered, provided or continued during physician office and hospital outpatient department visits



Definition of “Drug”

NHANES

- A drug is defined as a unique combination of generic ingredients.

N/HAMCS

- Recorded on visit record and abstracted verbatim

NHANES Drug Data

- All drugs used in the past month at time of survey interview
- Only prescription drugs are included, with a few exceptions
- Example:
 - penicillin
 - penicillin, clavulanate potassium
- ✓ **More closely approximates “prevalence” of use**

N/HAMCS Drug Data

- Up to six drugs recorded (until 2003)—possible biases for drugs that are not salient to the physician or patient (e.g., PRN drugs)
- Both prescription and non-prescription drugs are included
- No information is available on compliance or use
- ✓ **Approximates prescribing patterns of drugs associated with medical care visits**

Issues in Drug Utilization Analyses NHANES

Strengths:

- Nationally representative and population-based
- Examination, laboratory and questionnaire data on conditions, biochemical markers, nutrition, health status, and other items
- Respondent-reported sociodemographic data (e.g., race and ethnicity are collected from respondent)



Issues in Drug Utilization Analyses NHANES

Possible Limitations:

- Small sample size for less frequently prescribed drugs and small population subgroups
- No trade names that help to determine therapeutic use on public use file
- Respondents may not report use of some drugs

Issues in Drug Utilization Analyses N/HAMCS

Strengths:

- Nationally representative
- Physician/hospital characteristics
- Conditions (from medical record—but limited number)
- Selected procedures and tests
- Relatively large sample size of visits

Issues in Drug Utilization Analyses N/HAMCS

Possible Limitations:

- Limited sociodemographic data
- Race/ethnicity data are reported by provider, not patient
- Limited information on episodes or continuity of care
- No data on compliance or actual utilization
- Censoring of both drugs and diagnoses
- Drugs are recorded verbatim from visit records, with possible misspelling



Issues in Drug Utilization Analyses N/HAMCS

Factors influencing N/HAMCS counts of drugs:

- Person must have visited a physician or OPD
- The more visits made for a specific condition requiring a specific drug, the greater the count of that drug on the N/HAMCS

Coding Issues

- Only generic ingredients provided on NHANES public use file, and some N/HAMCS drugs are reported as generic drugs (e.g., “aspirin”)
- “Main reason for use” is collected and coded into ICD-9-CM classification
- Some drugs have the same ingredients but different strengths, or different routes of administration that help determine therapeutic use

Examples: Asthma drugs



Coding Issues Changes Over Time

- N/HAMCS 1980-2001: one NCD therapeutic class for each drug recorded
- N/HAMCS 2002-2006: up to three NCD therapeutic classes for each drug recorded
- NHANES 1988-94: three NDC therapeutic classes for each drug reported
- NHANES 1999-2000: six NDC therapeutic classes for each drug reported

Coding Issues

Changes Over Time

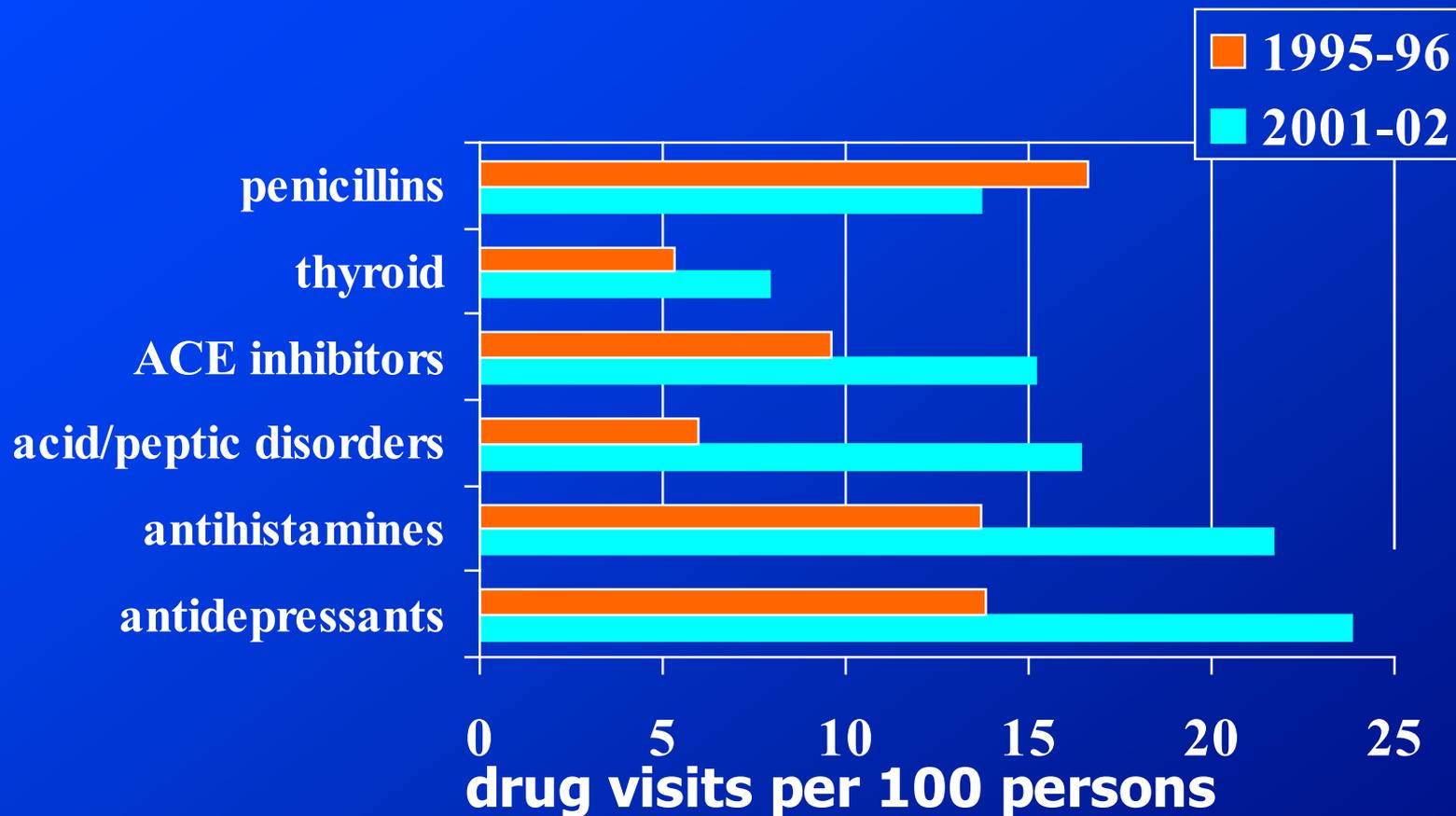
- Approved indications for drugs change over time (added or subtracted)
- “Major” uses for drugs with multiple therapeutic uses change over time
- Drugs may be replaced by other similar drugs
- Codes and categories are periodically revised
- Codes do not reflect “off-label” use



Coding Issues Changes Over Time

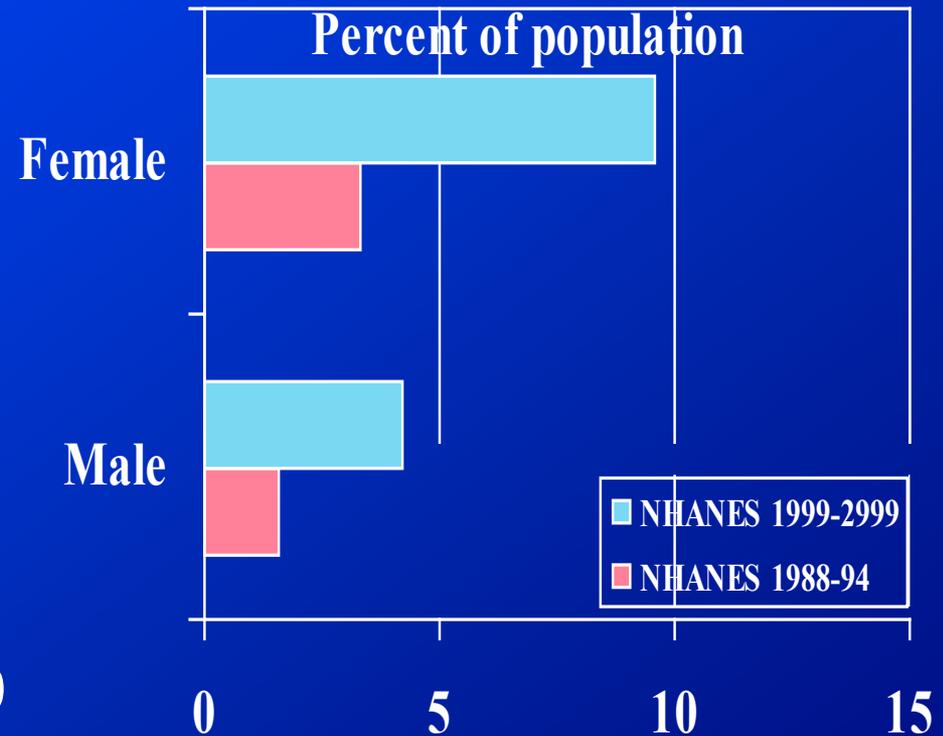
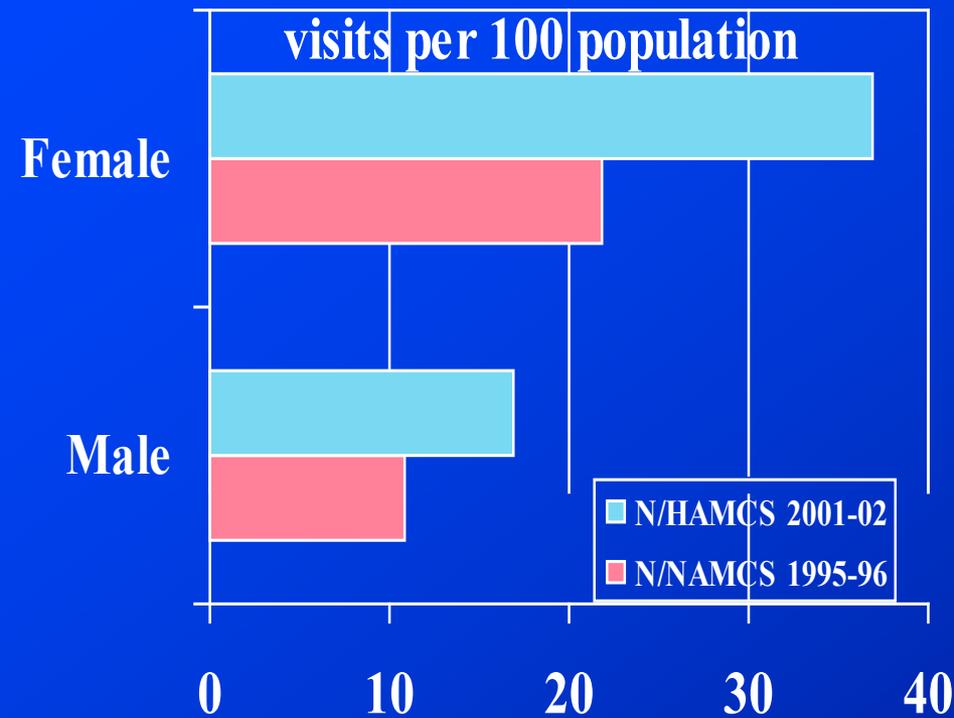
- Because therapeutic indications change over time
 - Analysts can merge the most current classifications to drug data from previous years
 - Otherwise drugs may be classified differently in different data years
- ✓ This is less of an issue when analyzing specific drugs

Drugs Prescribed, Administered or Provided During Physician Office or OPD Visits, by Therapeutic Drug Class, 1995-96 and 2001-02



SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics. Health, United States, 2004, table 87

Antidepressant Use by Adults in N/HAMCS and NHANES



Sources: National Health and Nutrition Examination Surveys, National Ambulatory Medical Care Surveys and National Hospital Ambulatory Medical Care Surveys

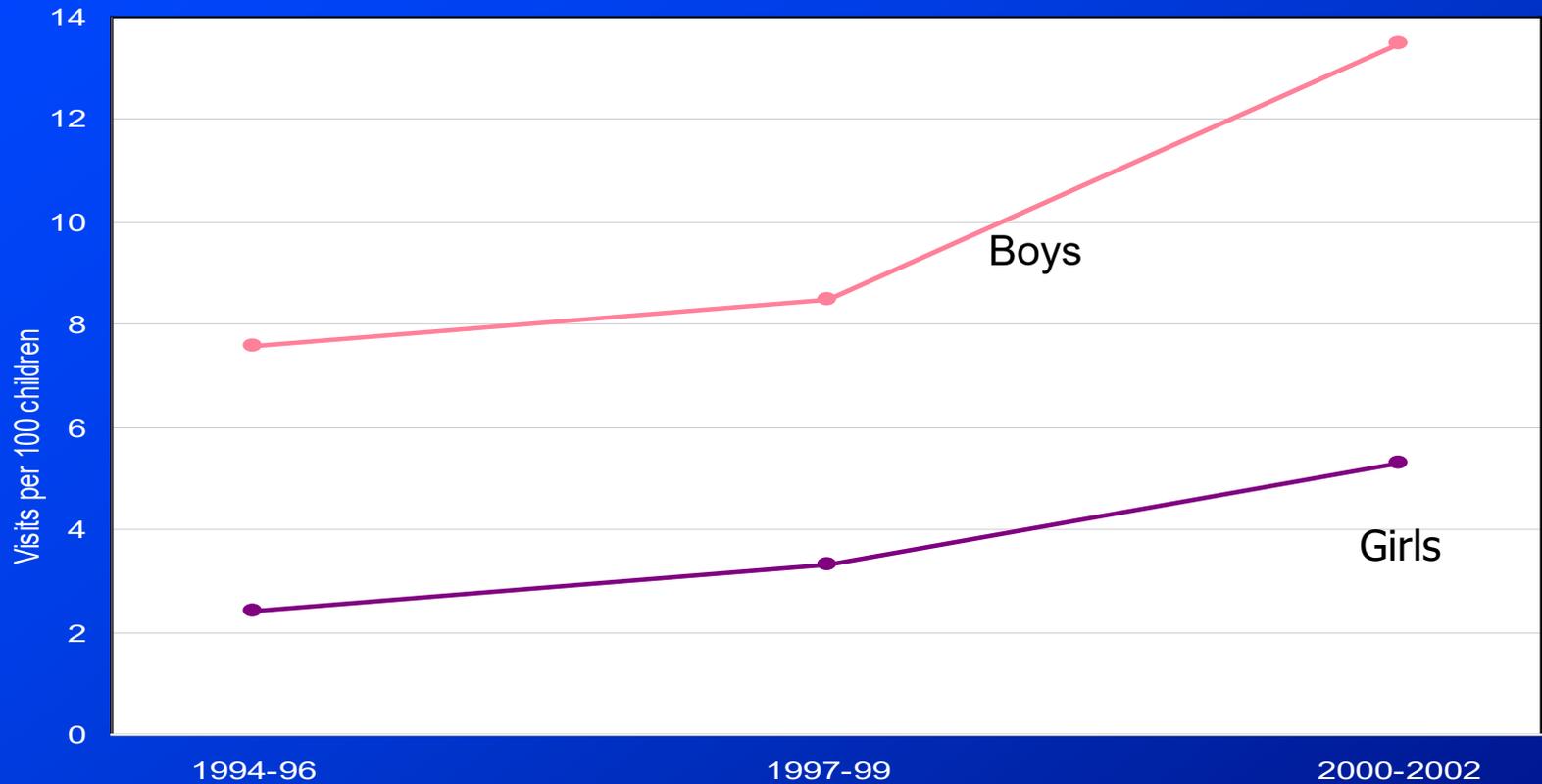
Use of Drugs in Past Month by Race/Ethnicity: United States, 1988-94 and 1999-2000

Persons age 18 and over with a prescription drug in the past month, by race and Hispanic origin, United States, 1988-94 and 1999-2000

	Crude Percent		Age-adjusted Percent	
	1988-94	1999-2000	1988-94	1999-2000
White, not Hispanic or Latino	41.4	48.2	41.1	47.4
Black, not Hispanic or Latino	31.2	34.6	36.9	40.1
Mexican	24.0	24.1	31.7	32.0

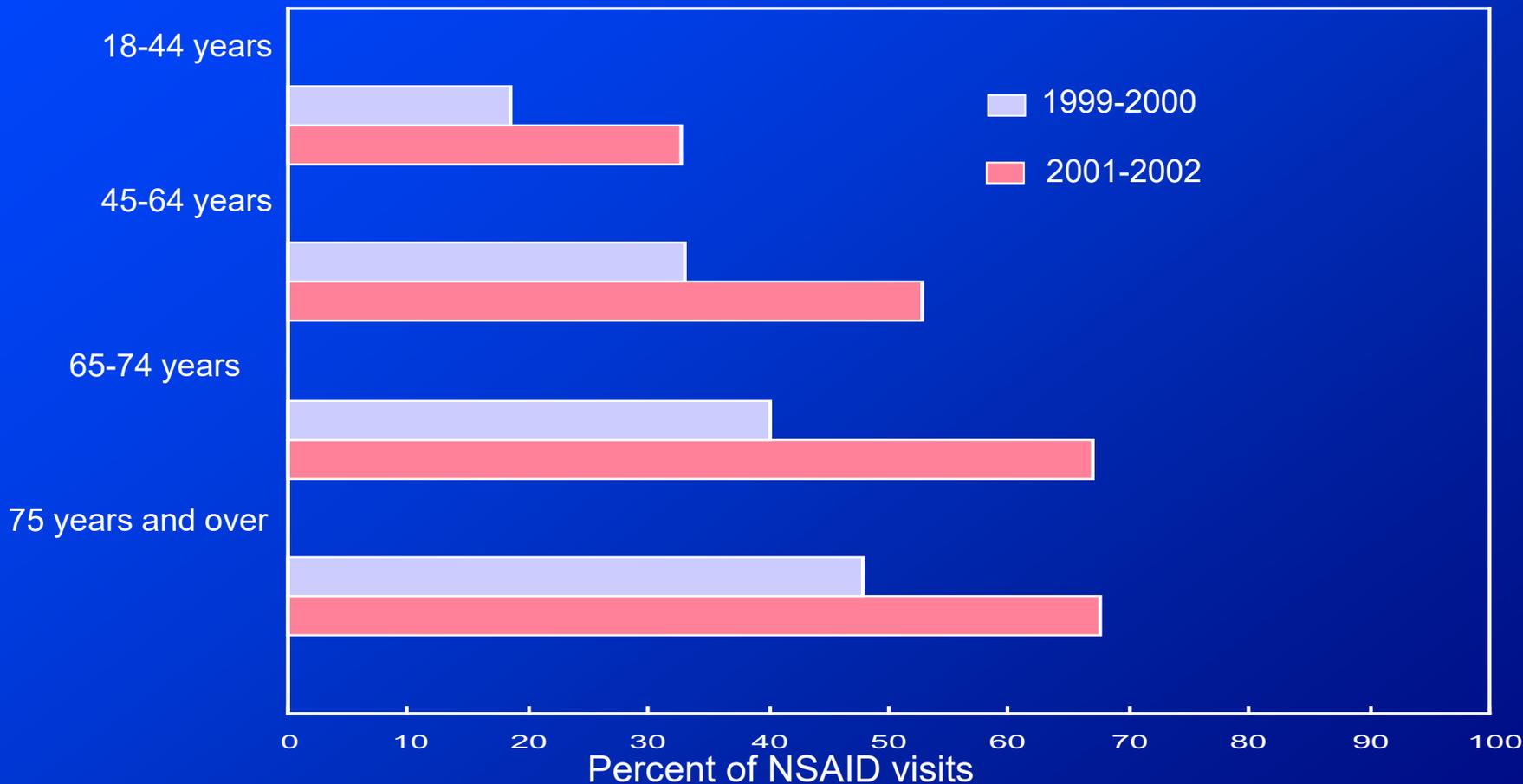
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Health, United States, 2004, table 86

Figure 33. Stimulant drug visits among children 5-17 years of age by sex: United States, 1994-2002



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Health, United States, 2004

Figure 36. Percent of nonsteroidal anti-inflammatory drug (NSAID) visits with COX-2 NSAIDs prescribed, ordered or provided among adults 18 years of age and over by sex: United States, 1999-2002



Centers for Disease Control and Prevention, National Center for Health Statistics. Health, United States, 2004



Lessons Learned From Health, United States, 2004 Drug Analyses

- Drug data are extremely complicated to analyze
- Each drug analysis is an entire study in and of itself, with different audiences, constituents, and language
- Simple statistics are the best received in the press (e.g., 44 percent of Americans taking at least one drug in the past month)
- Rates per population can be difficult to present effectively or to explain to reporters

Future Drug Analyses

- Trend tables showing percent of population with prescription drug use in past month (NHANES) and common therapeutic classes mentioned during ambulatory care visits (N/HAMCS) will be updated in HUS every year
- Several papers underway using both NHANES and N/HAMCS drug data (statins; antihypertensive drugs; antidepressants)
- New therapeutic coding systems are being investigated