

Introduction to National Immunization Survey and Public-Use Data Files

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Outline

❖ *National Immunization Survey (NIS)*

❖ *Goals of the NIS*

❖ *Data collection*

❖ *Public Use Data Files (PUF)*

❖ *Summary*



National Immunization Survey (NIS)

- ❖ *Large ongoing RDD survey, conducted by CDC since 1994*
- ❖ *Measures vaccination coverage among children aged 19-35 months at National, State, and urban area levels*
- ❖ *Monitors Healthy People 2000 and 2010 goals of immunization coverage*
 - ◆ *≥90% Coverage: 4DTP, 3Polio, 1MMR, 3HepB, 3Hib, and 4:3:1:3 series*
- ❖ *Monitors introduction of new vaccines (e.g., Varicella and Pneumococcal)*
- ❖ *<4% of households in the U.S. contain child of age 19-35 months*



Goals of the NIS

- ❖ *Nation's primary tool for assessing and monitoring vaccination coverage in pre-school (19-35 month old) children*
- ❖ *'Earliest warning system' for changes in vaccination coverage*
- ❖ *Vaccination coverage by antigen, vaccine, and series, for:*
 - ◆ *The nation*
 - ◆ *The states (50)*
 - ◆ *Selected urban areas (28)*
 - ◆ *Selected socio-demographic groups (by race/ethnicity, urbanicity, household income, poverty status, etc.)*
- ❖ *Comparison of vaccination coverage across 78 IAP areas*
- ❖ *Evaluation of age-appropriate immunizations*



Goals of the NIS (cont...)

- ❖ *Trends in immunization coverage*
- ❖ *Factors contributing to under-immunization*
- ❖ *Identify areas and populations with low immunization coverage*
- ❖ *Evaluate extent of extra-immunization and late or delayed vaccinations*



NIS is More Than One Survey..

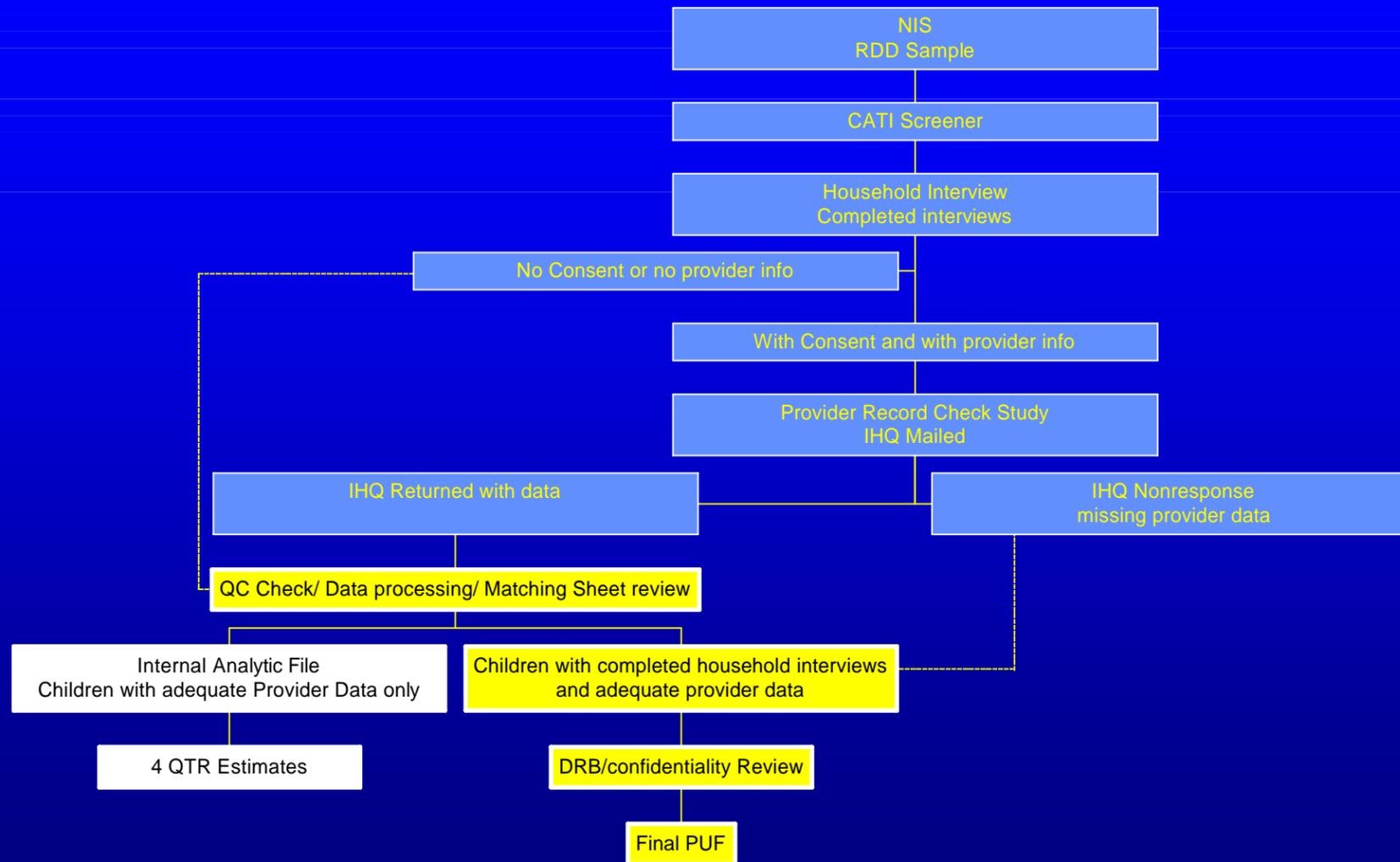


Sample Design

- ❖ 78 simultaneous and independent quarterly surveys to collect vaccination histories in 78 IAP areas consisting of 50 States, Washington, D.C., and 27 large urban areas*
- ❖ 1.2 million telephone numbers called to screen eligible households*
- ❖ Computer Assisted Telephone Interview (CATI) of 33,000 households containing 35,000 eligible children*
- ❖ Mail survey of children's provider to obtain immunization histories for 23,000 children*
- ❖ Compute 4-quarter moving averages as estimates of vaccination coverage among 78 IAP areas*



NIS Operations



NIS Data Collection

❖ *Household CATI Screener and Interview*

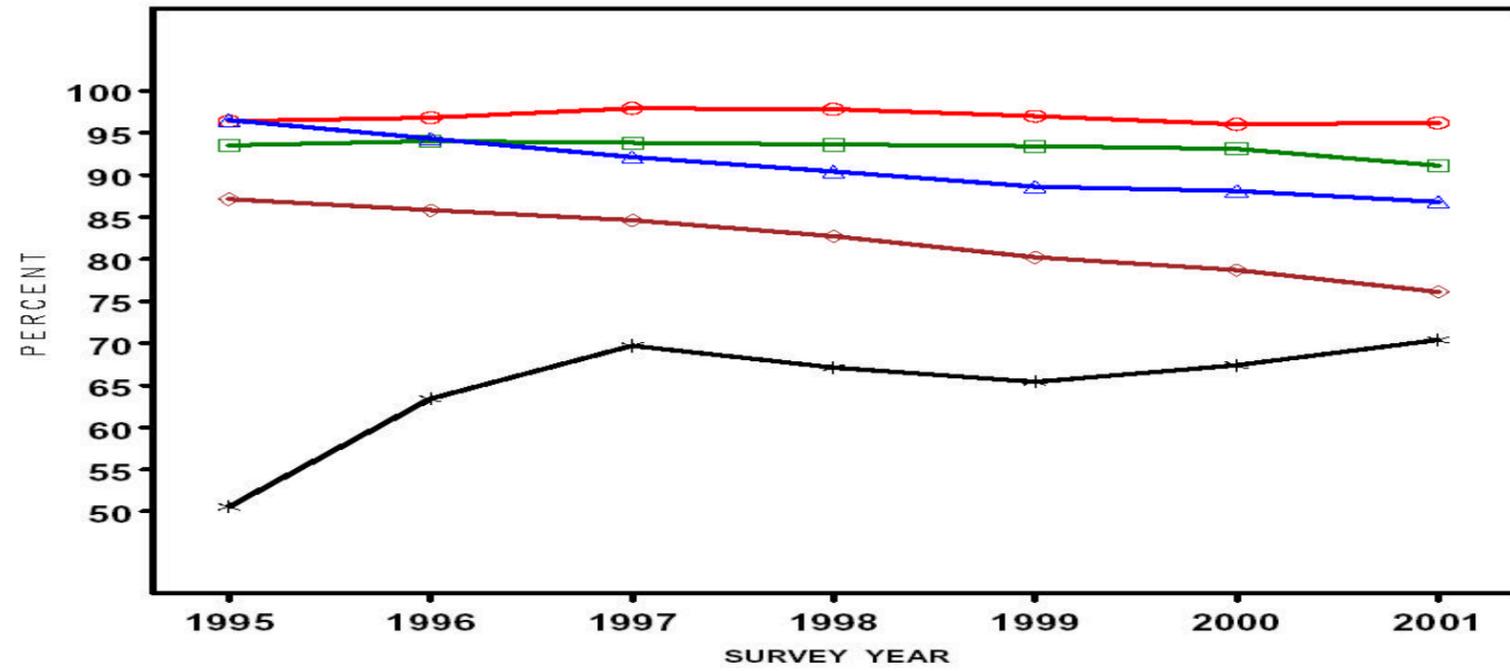
- ◆ **Parent/Guardian (most knowledgeable person)**
- ◆ **Socio-demographic information: mother and child**
- ◆ **Vaccination history from shot card or memory recall**
- ◆ **Vaccination dates (shot card only)**
- ◆ **Provider's contact information with consent**

❖ *Provider Record Check Study (mailed IHQ)*

- ◆ **Provider's office (e.g., staff, nurse, manager)**
- ◆ **Mail, Fax, Telephone**
- ◆ **Completed IHQ or copy of medical records**
- ◆ **Matched on DOB, Gender, Name**
- ◆ **Vaccination history (including vaccination dates)**
- ◆ **Provider's information**



FIGURE 1. TRENDS IN KEY INDICATORS FROM HOUSEHOLD AND PROVIDER DATA COLLECTION, NATIONAL IMMUNIZATION SURVEY, 1995-2001



Key Indicator —○— Screening Completion Rate
—□— Interview Completion Rate
—△— Resolution Rate
—◇— Casro Response Rate
—×— Percentage of Children with Adequate Provider Data

Source: See Table 1 and NIS Data User's Guides for Definition of Key Indicators



Quality Control in the NIS

- ❖ *Continuous quality improvement program*
- ❖ *Evaluate and improve quality of the information collected*
 - ◆ **Extensive monitoring of data collection and processing**
- ❖ *Reduce/eliminate discrepancies*
 - ◆ **Extensive QC review**
 - ◆ **Automated data editing**
 - ◆ **Manual matching sheet reviews**
- ❖ *Improve quality of the estimates*
 - ◆ **Enhanced weighting procedure using latest statistical methods**
- ❖ *Reduce potential bias in official estimates of vaccination coverage rates*



Observed Discrepancies in Dates

❖ *DOB*

- ◆ **Between household (HH) and provider(s)**
- ◆ **Between multiple providers for a child**

❖ *Vaccination dates*

- ◆ **Between HH and provider(s)**
- ◆ **Within a single provider**
- ◆ **Between multiple providers for a child**



NIS 2001 Sample

- ❖ 35,985 households with eligible children 19-35 months*
- ❖ 32,796 (91.1%) of eligible households with completed interviews*
- ❖ 33,437 age-eligible children with completed interviews*
- ❖ 23,531 (70.4%) children with completed interviews and 'adequate' provider data*



Sources of Immunization Histories, 2001 NIS

| <i>Source</i> | <i>Household data from Shot Card</i> | | | | | |
|---------------------------------|--------------------------------------|--------------|---------------|--------------|---------------|--------------|
| | <i>Yes</i> | | <i>NO</i> | | <i>Total</i> | |
| | <i>n</i> | <i>%</i> | <i>n</i> | <i>%</i> | <i>n</i> | <i>%</i> |
| <i>'Adequate' Provider data</i> | | | | | | |
| <i>Yes</i> | 11,595 | 75.6 | 11,936 | 65.9 | 23,531 | 70.4 |
| <i>No</i> | 3,743 | 24.4 | 6,163 | 34.1 | 9,906 | 29.6 |
| <i>Total</i> | 15,338 | 45.9* | 18,099 | 54.1* | 33,437 | 100.0 |



**row percents*

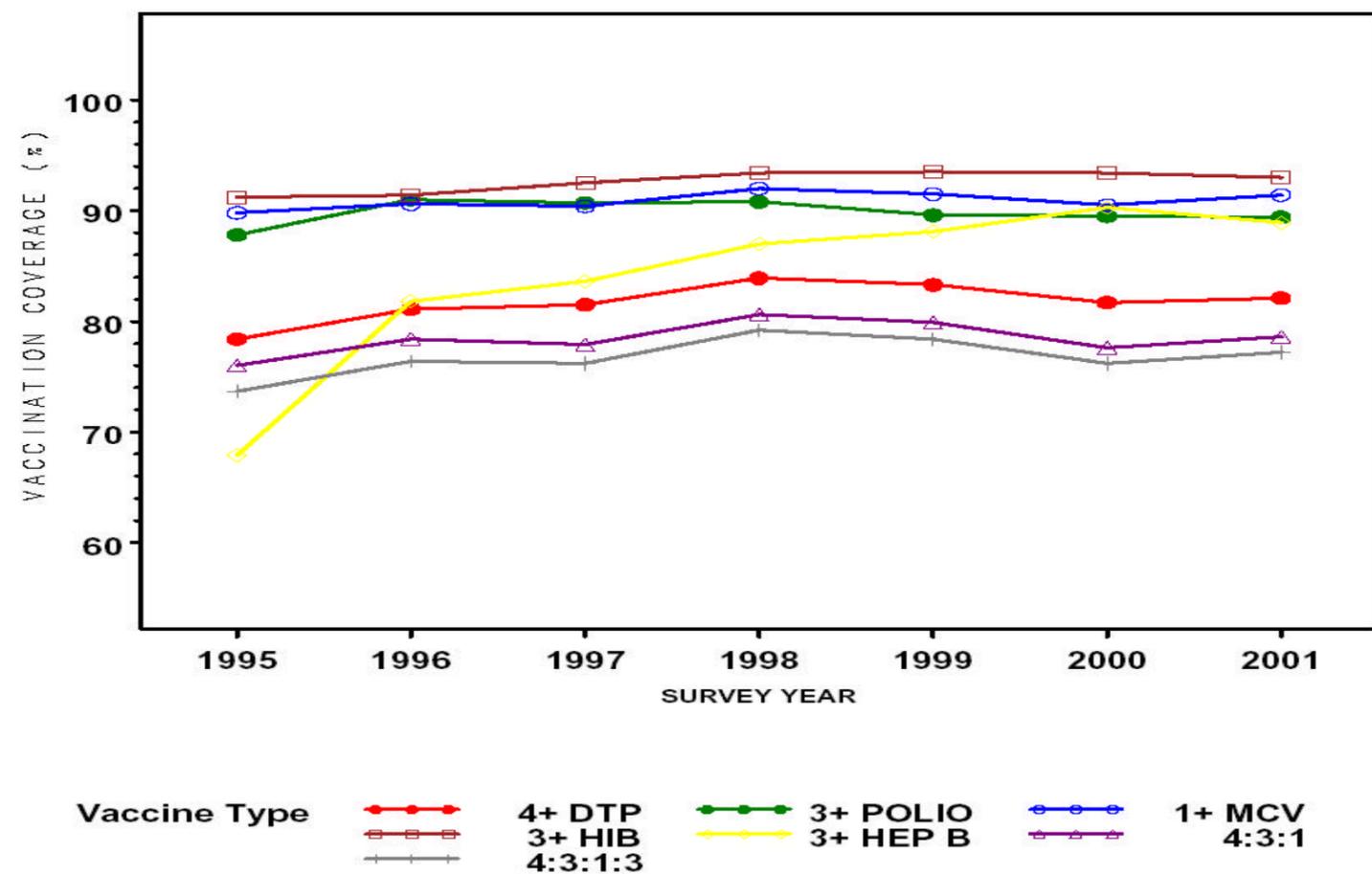


NIS Data Files and Estimates

- ❖ *In-house internal analytic files*
- ❖ *Public-use data files (PUF)*
- ❖ *National, State, and Urban area level estimates of vaccination coverage*
 - ◆ **Internet: www.cdc.gov/nip/coverage**
 - ◆ **MMWR**
 - ◆ **Journal Articles**
 - ◆ **Articles in Proceedings**
 - ◆ **Presentations at National and State Conferences**
 - ◆ **Publications are listed on NIS Web site**



FIGURE 2. TRENDS IN VACCINE-SPECIFIC COVERAGE (EXCEPT VARICELLA) AMONG CHILDREN AGED 19-35 MONTHS IN THE U.S., NATIONAL IMMUNIZATION SURVEY, 1995-2001



Note: 4:3:1 (4 DTP, 3 POLIO and 1 MCV). 4:3:1:3 (4 DTP, 3 POLIO, 1 MCV and 3 Hib)



The NIS PUF

- ❖ *Requires clearance from the NCHS Disclosure Review Board*
- ❖ *Public-use data files (1995-2001): child-level records with region, state, and 78 IAP area identifiers*
- ❖ *Approximately 35,000 age-eligible children with household interview data*
- ❖ *Approximately 23,000 children with household interview and 'adequate' provider data*
- ❖ *PUFs are released on the Internet and CD-ROMs*
 - ◆ **Internet : www.cdc.gov/nis**
 - ◆ **CD_ROMs No 1-7**



Contents of NIS PUF

❖ *Variables are grouped into 9 Categories in the PUF*

❖ *Household Interview data items*

- ◆ **New sequence ID, Age at interview (months), gender, race/ethnicity, ...**
- ◆ **Mother's age group, education, marital status, ...**
- ◆ **WIC participation, income, poverty status,...**
- ◆ **Vaccine specific immunization history (#doses, up-to-date status)**
- ◆ **IAP area and State identifiers, Census Region**

❖ *Provider data items*

- ◆ **Vaccine-specific Immunization History:**
 - *age at vaccination(days/months),*
 - *number of doses, up-to-date status (UTD)*
- ◆ **Providers' information (e.g., number of providers, facility type, participation in immunization registry and VFC;)**



Contents of NIS PUF (cont.)

- ❖ *Composite variables with vaccine-specific and vaccine series flags and up-to-date status*
- ❖ *An alphabetical list of key variables that are changed during 1995-2001 is included with the 2001 NIS PUF*
- ❖ *Sampling weights and key analytic variables*
 - ◆ **Sampling weights:**
 - Children with household interview (HY_WGT)
 - Children with Provider data(W0)
 - ◆ **Stratum + PSU identification variables**



Summary

- ❖ *NIS is a critical evaluation tool for national and state immunization programs*
- ❖ *Complicated Childhood Immunization Schedule; no single source is 100% complete or accurate*
- ❖ *<1% children were observed with discrepancies in household and/or provider reported data; number of discrepancies increased if more than one immunization provider per child was identified*
- ❖ *Some discrepancies which could not be verified from other sources remained after edits*
- ❖ *Some information could not be released in the PUF to reduce risk of disclosure*



Summary

- ❖ *Substantial underreporting in vaccination coverage rates from the household reports*
- ❖ *Strongly supports the use of provider-reported immunization histories in computing vaccination coverage estimates*
- ❖ *Official estimates from provider reports may slightly over or under estimate IAP area specific vaccination coverage due to missing provider data; however, provider data produced comparable estimates across IAP areas*
- ❖ *NIS estimates have helped states to develop and monitor changes in the immunization programs*



Future Enhancements

- ❖ *Enhanced weighting procedure to account for noncoverage of households without telephone*
- ❖ *Research on improving sampling methods to identify telephone households with young children*
- ❖ *Research on methods to reduce nonresponse and increase participation among healthcare providers and household respondents*
- ❖ *Imputation of incomplete or missing immunization histories from providers*
- ❖ *Flexibility for adding new 'Topical Modules'*
- ❖ *Assess impact of increasing use of cell phones and blocked RDD calls on the NIS*



Visit the NIS Web Sites

Navigation Menu:

- Events
- Surveys and Data
- Collection Systems
 - NHANES
 - NHCS
 - NHIS
 - NIS
 - NSFG
 - SLAITS
 - Vital Statistics
- Initiatives
 - Aging
 - Disease Classification
 - Healthy People
 - SETS
- Research and Development
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- Publications and Information Products
- Listservs
- Other Sites
- Download:

Public-Use Data Files

2001 National Immunization Survey

- [Readme File](#) 16 KB
- [Data User's Guide](#) 455 KB
- [Data Documentation, Codebook and Frequencies](#) 262 KB
- [Dataset](#) 22 MB
- [SAS Input Statements](#) 45 KB

2000 National Immunization Survey

- [Readme File](#) 15 KB
- [Data User's Guide](#) 588 KB
- [Data Documentation, Codebook and Frequencies](#) 242 KB
- [Dataset](#) 20 MB
- [SAS Input Statements](#) 44 KB

1999 National Immunization Survey

- [Readme File](#) 15 KB
- [Data User's Guide](#) 789 KB
- [Data Documentation, Codebook and Frequencies](#) 841 KB

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