National Electronic Injury Surveillance System

National

Electronic

Injury

Surveillance

System

U.S. Consumer Product Safety Commission

Presentation Outline

- Overview / History
- Operations
- Children's poisoning
  - Examples
  - 2nd screen
- Statistical foundation
- Support to CPSC

Overview

- National sample of 98 hospitals from all U.S. hospitals with at least 6 beds and 24-hour emergency service

- Each hospital reports information on emergency treatments to CPSC.

- Hospital coder enters data in local PC and CPSC PC polls local PCs each night.

- System collects ~ 350,000 product-related injury reports each year.
  - (~ 300,000 non-CPSC injury reports each year).

- Multi-level system.

- Supports CPSC and other agencies.

Why Emergency Room Data

- Large numbers of injuries are treated there.
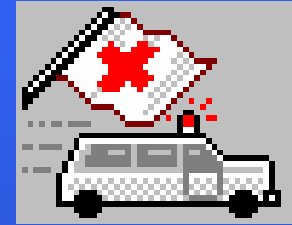
- Data are already being captured in ER record on these cases.
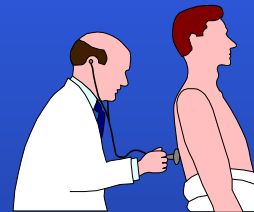
- Hospitals have been very cooperative in supporting CPSC data collection activities.

- The information is timely

History of NEISS

- **HERIRS**
  - 1969 Study of National Commission on Product Safety
  - 14 hospitals in Tennessee and Washington, DC area
  - Voluntary reporting of product-related ER injuries
  - Touch-tone telephone system

- **NISS**
  - 1969-1970 FDA
  - 130 voluntary hospital participants
  - Hospital coders mailed in forms

History of NEISS

- **NEISS I**
  - **1971 FDA/CPSC**
  - **Statistical Sample of 119 hospitals**
  - **Hospitals paid to report**
  - **Data reported through paper tape teletypes**
- **NEISS II**
  - **Extra variables including mandatory comment and optional 2nd product**
  - **Data reported through local terminals to mainframe;later from hospitals PCs to CPSC PC**
  - **Sample updated to 65 hospitals in 1990;**
  - **to 91 hospitals in 1991;**
  - **to 102 hospitals in 1997 (101 in-scope);**
  - **currently at 98 in-scope hospitals**

- **NEISS-AIP**
  - **All Injury Program**
  - **Pilot study done in 1997**
  - **Cooperation with Center's for Disease Control and Prevention**
    - » **National Center for Injury Prevention and Control (NCIPC)**
    - » **National Institute for Occupational Safety and Health (NIOSH)**
  - **2/3 sub-sample of full NEISS sample**
  - **Implemented July 1, 2000**

U.S. Consumer Product Safety Commission NEISS Hospitals

CHILDREN'S HOSPITALS
VERY LARGE HOSPITALS
LARGE HOSPITALS
MEDIUM HOSPITALS
SMALL HOSPITALS

SAN JUAN
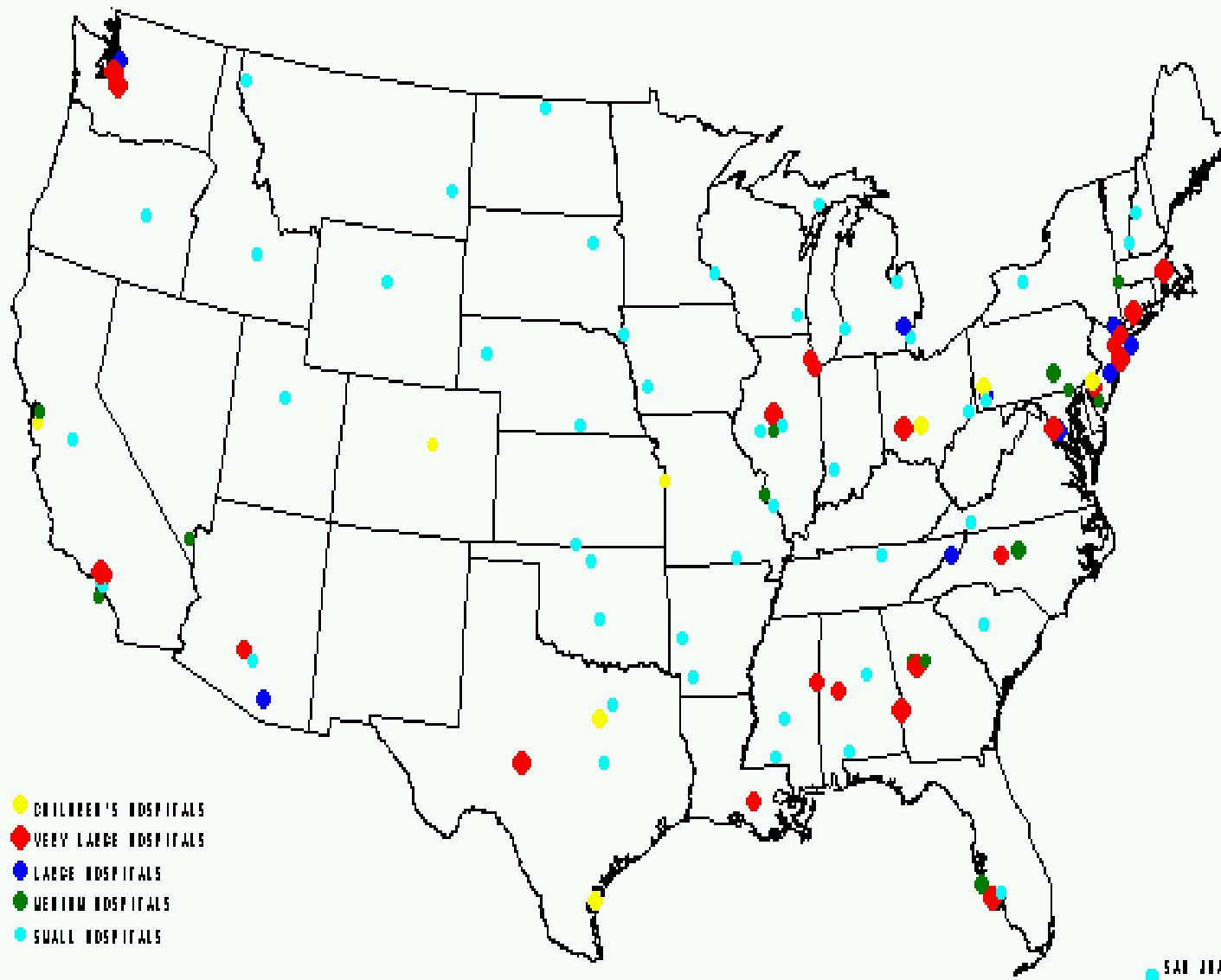
Hospital/CPSC Activities

Duties of NEISS Coordinator (in each hospital)

- Conducts orientation for ER staff
- Reviews all ER records
- Codes reportable cases
- Enters data in PC
- Provides support for all special studies

CPSC Responsibilities

- Payment for reported cases and time spent
- Personal computer
- Training
- Quality control

NEISS Surveillance Variables

- Treatment date
- Case number
- Age (DOB - 2002)
- Sex
- Injury Diagnosis (Other - 2002)
- Body Part Injured

- Disposition from ER
- Products involved (2)
- Locale
- Type/work
- Fire involvement
- Intent
- Race / ethnicity
- Narrative (2 lines)

PC NEISS For Non-Trauma Hospital

Exit   NEISS Case   Messages   ERV   Accounting   Password   Log   Window   Help

Case Detail - (New)

NEISS Case

Treatment Date:	03/24/2004	**Case #:** 12345678	**Collection Date:** 03/15/2004

Date of Birth: 03/24/2002

Age: 2

Sex: 1 MALE

Diagnosis: 68 POISONING

Diagnosis other:

Body part: 85 ALL OF BODY

Disposition: 1 TR/REL

Product 1: 0945 - PINE OIL CLEANING AND DISINFEC

Product 2: 0000 - NO SECOND PRODUCT INVOLVEMI

Intent: 0 UNINTENTIONAL OR NOT STATED

Location: 1 HOME

Fire: 0 NO FIRE INVOLVEMENT

Work Related: 2 INJURY NOT OCCUPATIONAL OR WORK-

Race: 1 WHITE

Race other:

Comment: PATIENT INGESTED UNKNOWN AMOUNT OF *****, VOMITING

Save

Delete

Close

Product Help

Clear

Exit NEISS Case Messages ERV Accounting Password Log Window Help

Case Detail - (New)

NEISS Case

Treatment Date: 03/24/2004   **Case #:** 12345678   **Collection Date:** 03/15/2004

Date of Birth: 01/24/2003   **Product 1:** 1931 - TABLET OR CAPSULE DRUGS

Age: 214   **Product 2:** 0000 - NO SECOND PRODUCT INVOLVEMI

Sex: 1 MALE   **Intent:** 0 UNINTENTIONAL OR NOT STATED

Diagnosis: 68 POISONING   **Location:** 1 HOME

Diagnosis other: **Fire:** 0 NO FIRE INVOLVEMENT

Body part: 85 ALL OF BODY   **Work Related:** 2 INJURY NOT OCCUPATIONAL OR WORK-

Disposition: 5 OBS   **Race:** 3 OTHER

Race other: HISPANIC

Comment: ACCIDENTLY TOOK 4 TABLETS OF GRANDPA'S MEDS; 40 MG ****; ADMITTED FOR O
BSERVATION

Save

Delete

Close

Product
Help

Clear

PC NEISS For Non-Trauma Hospital

Exit   NEISS Case   Messages   ERV   Accounting   Password   Log   Window   Help

Case Detail - (New)

NEISS Case

Treatment Date: 03/24/2004	**Case #:** 12345678	**Collection Date:** 03/15/2004

Date of Birth: 01/24/2003

Age: 214

Sex: 1 MALE

Diagnosis: 68 POISONING

Diagnosis other:

Body part: 85 ALL OF BODY

Disposition: 4 HOSP

Product 1: 1928 - ANTIHISTAMINES

Product 2: 0000 - NO SECOND PRODUCT INVOLVEMI

Intent: 0 UNINTENTIONAL OR NOT STATED

Location: 0 UNKNOWN

Fire: 0 NO FIRE INVOLVEMENT

Work Related: 2 INJURY NOT OCCUPATIONAL OR WORK-

Race: 2 BLACK

Race other:

Comment: 2 YOM POSSIBLE MEDICATION INGESTION: 2-4 TBS ***

Save
Delete
Close
Product Help
Clear

2002 Children's Poisoning Cases

- 2nd Screen invoked:
  - Diagnosis = 68 (poisoning)
  - Diagnosis = 49 (chemical burn)
  - Age <= 4

Case Detail - (New)

NEISS Case   **Children's Poisoning**

Save

Delete

Close

Product Help

Clear

Children's Poisoning Study (Ages 0-4)

	Yes	No	Not Stated		Yes	No	Not Stated

Was Poison Control Center contacted:

prior to the ED visit? ○ Y ○ N ○ NS **during the ED visit?** ○ Y ○ N ○ NS

Prior to ED visit was any other medical person or facility contacted? ○ Y ○ N ○ NS **Specify:** [_____]

Any Symptom(s)? ○ Y ○ N ○ NS **Nausea/Vomiting?** ○ Y ○ N ○ NS
Dizziness? ○ Y ○ N ○ NS **Drowsiness?** ○ Y ○ N ○ NS
Difficulty Breathing? ○ Y ○ N ○ NS **Headaches?** ○ Y ○ N ○ NS
Abdominal Pains? ○ Y ○ N ○ NS
Other Symptoms? ○ Y ○ N ○ NS **Specify:** [_____]

Any ED Treatment(s)? ○ Y ○ N ○ NS -No = observation only
Vomiting Induced? ○ Y ○ N ○ NS **Stomach Pump?** ○ Y ○ N ○ NS
Char. Admn? ○ Y ○ N ○ NS **Art. Respiration?** ○ Y ○ N ○ NS
Blood Transfusion? ○ Y ○ N ○ NS **Other Treatment?** ○ Y ○ N ○ NS
Specify: [_____]

What happened to the container? ○ 1-Thrown away ○ 3-Not in any container
○ 2-Kept by family/returned ○ 0-Not stated

CRC Present? ○ Y ○ N ○ NS

2002 NEISS

- 361,000 cases
  - National Estimate = 12.8 million
  - 95% treated and released
- 57,000 cases ages 0-4
  - National Estimate = 1.5 million
  - 97% treated and released
- 3,000 children's poisoning
  - National Estimate = 78,000
 - 89% treated and released

Multi-level Data Collection Capability

- Routine Emergency Room Data
- Emergency Room Special Study - "2nd screens"
- Telephone Investigations
- On-site Investigations

Statistical Basis

- Stratified random sample of U.S. hospitals with ERs
  - by hospital size and
  - by geographic location

- Provides national estimates and statistical confidence intervals
  - Generalized estimates of relative sampling errors are asymptotically about 6 % of estimate

- Follow-back investigations can be conducted within the statistical framework.
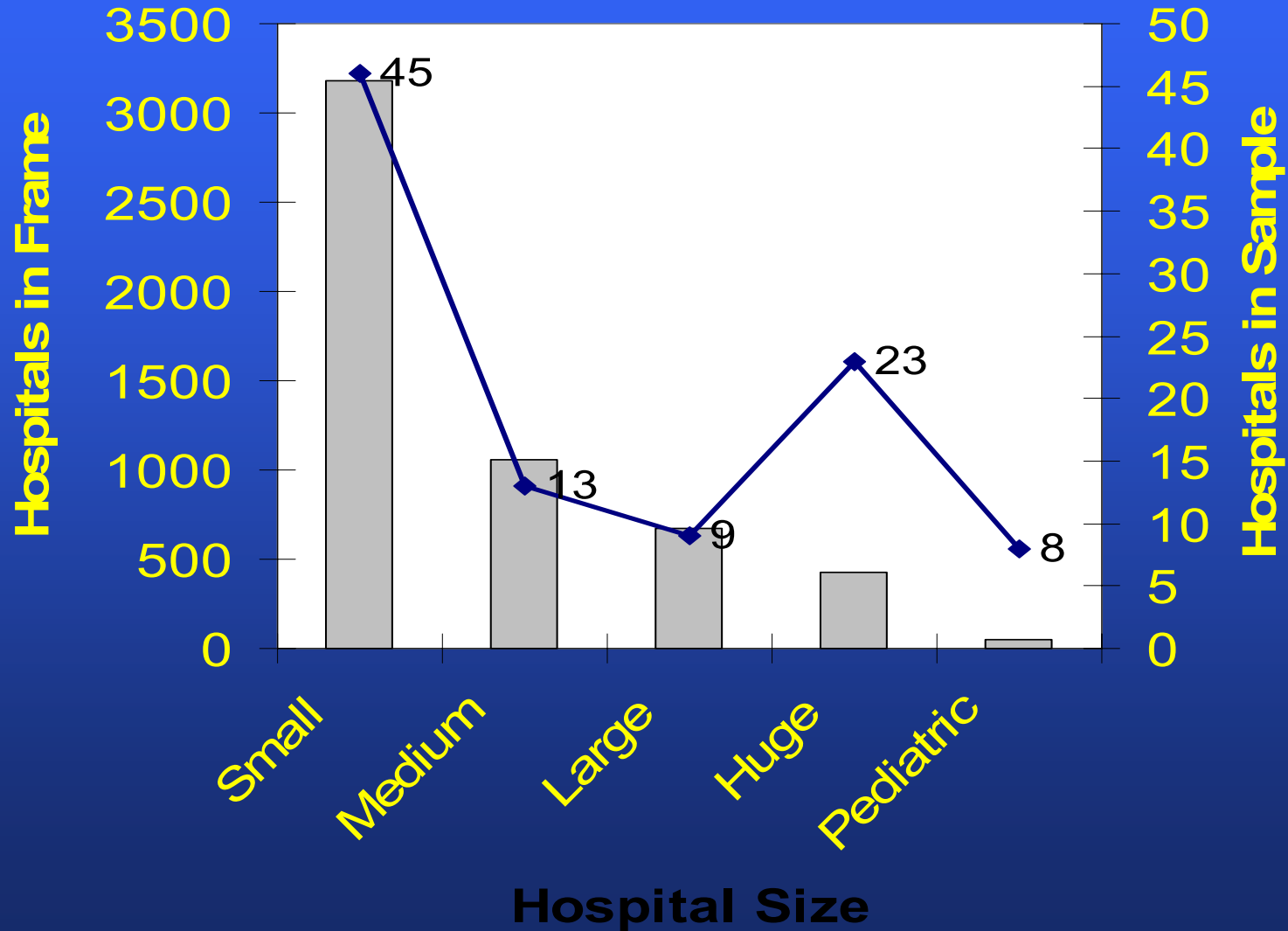
NEISS Analysis Weight

$$NEISS_{wt} = \frac{N_h}{n_h} \frac{n_h'}{r_h} R_h$$

where :

N_h = Number of hospitals in 1995 sampling frame for stratum h

n_h = Numer of hospitals selected for the NEISS sample for stratum h

n_h' = Number of in-scope hospitals in the NEISS sample for stratum h

r_h = Number of NEISS hospitals participat ing in stratum h for a given month

R_h = Ratio adjustment for stratum h

NEISS Variance

$$\sigma^2 = \sum_{h=1}^{m} \frac{r_h}{r_h - 1} \sum_{i=1}^{r_h} \left(\frac{N_h}{n_h} \frac{n'_h}{r_h} R_h \right)^2 (x_{hi} - \bar{x}_h)^2 = \sum_{h=1}^{m} \frac{r_h}{r_h - 1} \sum_{i=1}^{r_h} \left(wgt_{hi} x_{hi} - wgt\bar{x}_{hi} \right)^2$$

where :

m = Number of strata in the NEISS sample for the time period

r_h = Number of NEISS hospitals participating in stratum h for a given month

N_h = Number of hospitals in 1995 sampling frame for stratum h

n_h = Number of hospitals selected for the NEISS sample for stratum h

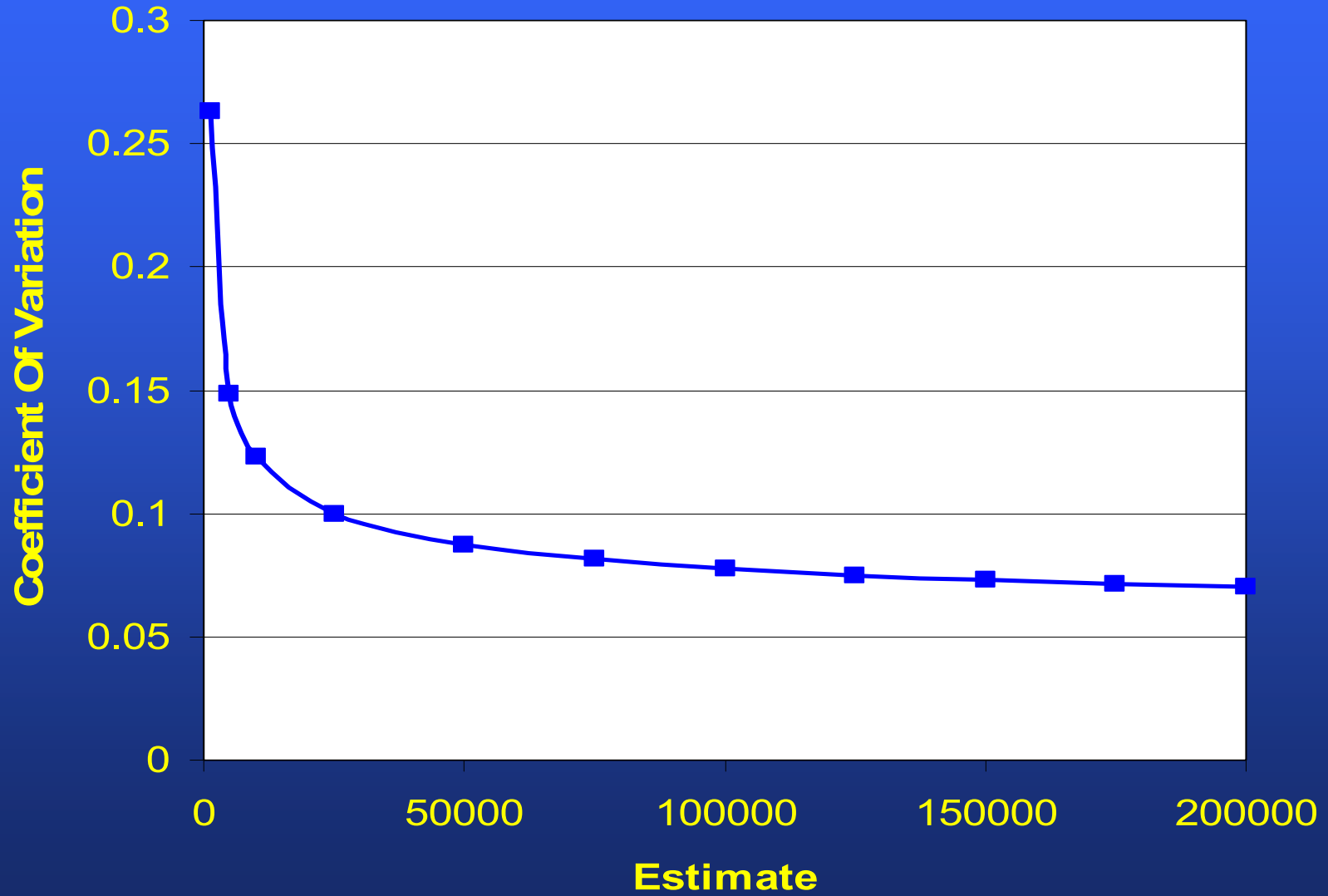n'_h = Number of in - scope hospitals in the NEISS sample for stratum h

x_{hi} = Number of injuries reported for the time period in the i - th hospital in stratum h

wgt_{hi} = NEISS weight of hospital i in stratum h for the time period

R_h = Ratio adjustment for stratum h

$$\bar{x}_h = \sum_{i=1}^{r_h} \frac{x_{hi}}{r_i} \qquad \text{and} \qquad wgt\bar{x}_h = \sum_{i=1}^{r_h} \frac{wgt_{hi} x_{hi}}{r_h}$$
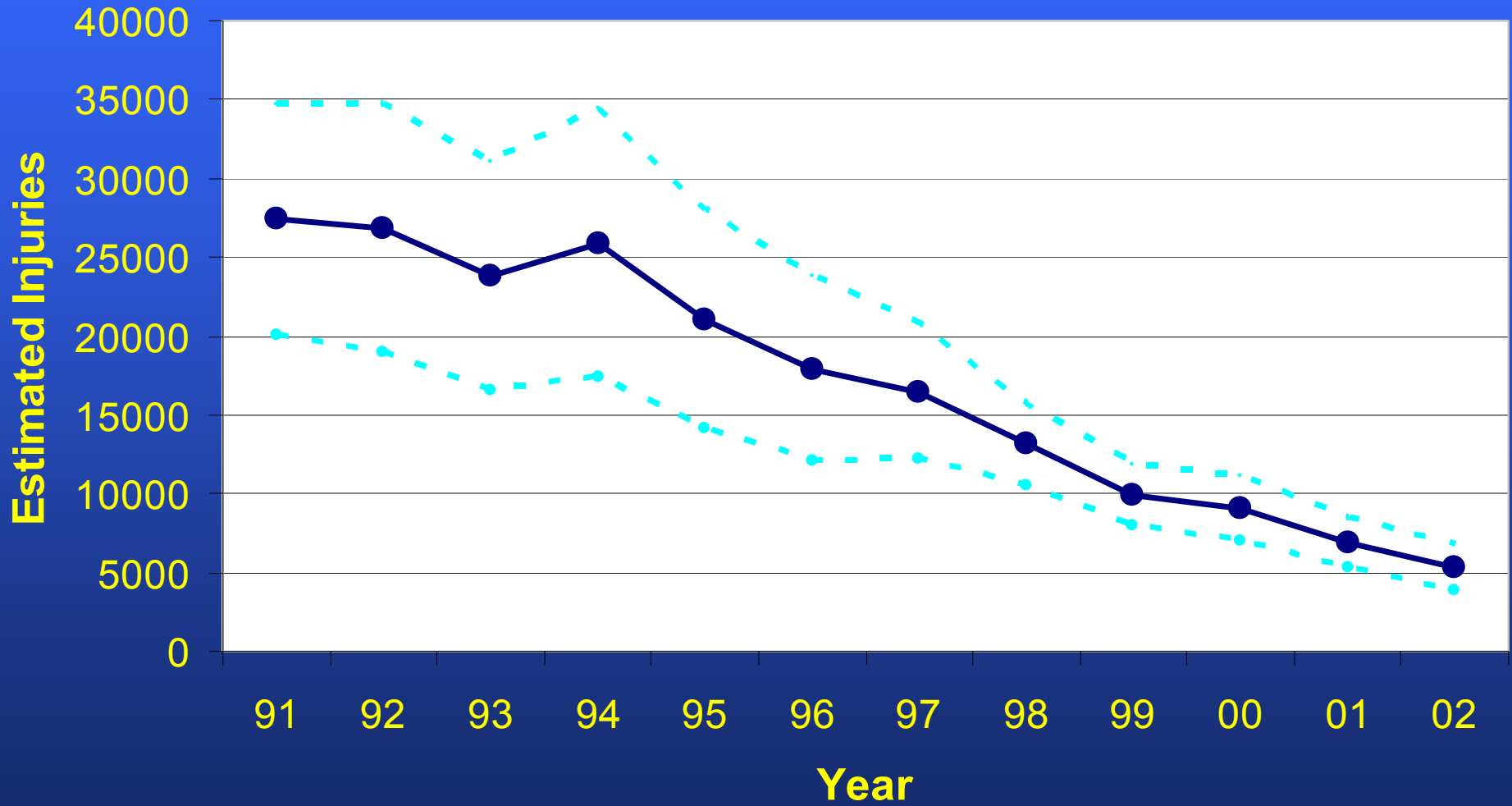
CPSC Need
for Injury Data

- Set Priorities (GPRA goals)

- Support Ban or Recall of Hazardous Products

- Convince Industry of Need for Product Standard

- Support Development of Product Standards

- Evaluate the Effectiveness of Product Standards

- Develop Information and Education Campaigns to Raise Public Awareness of Product Safety

Baby Walkers and Jumpers (1508)

Other Agencies Use of NEISS

- NIOSH (current)
  - Work-related injuries 2nd screen
- NCIPC (current)
  - Firearm injuries 2nd screen
- FDA/NCIPC (current)
  - Adverse Drug Effects 2nd screen
- NHTSA
- HHS
- BJS

NEISS Data

- Available through FOI request
  - Clearinghouse
- CPSC Website
  - On-line estimate
    - www.cpsc.gov/library/neiss.html
  - Download data (coming soon)