

**Supporting Statement for Collection of Information
Follow-up Activities for Product-Related Injuries
Part B**

B. Collection of Information Employing Statistical Methods

1. The potential respondent universe includes patients treated in statistically selected hospitals participating in the NEISS to report emergency department-treated, product-related injuries and other injuries.

On an annual basis, CPSC purchases a hospital frame from the American Hospital Association's (AHA) Annual Survey Database¹. This database is derived primarily from the AHA Annual Survey of Hospitals, which has been administered by AHA since 1946. The 2020 AHA frame purchased by CPSC is the frame that is being used to resample the NEISS hospitals. There are 4,723 eligible hospital emergency departments on the 2020 frame representing a total of 155,707,175 visits to the emergency department.

The new NEISS sample was drawn from the 2020 AHA as defined in the following table:

New NEISS Sample

Stratum	Annual ERVs	Total Number of Hospitals on Frame	Total Number of Hospitals in NEISS
Children's	N/A	65	8
Small	1 – 33,280	2,984	43
Medium	33,281 – 56,995	860	26
Large	56,996 – 92,195	528	12
Very Large	92,196 +	286	11
TOTAL		4,723	100

Basic NEISS Weights

The “basic” weight for each NEISS hospital reflects the sample design and is equal to the inverse of the NEISS hospital's probability of selection from the 2020 hospital frame. The probability of selection for each hospital in the 2020 hospital frame can be expressed as the following proportion:

$$p_{hi} = \frac{n_h}{N_h}$$

¹ See <https://www.ahadata.com/aha-annual-survey-database>

where:

p_{hi} = Probability that hospital i is selected in stratum h from the 2020 hospital frame

n_h = Number of hospitals in the 2020 hospital frame selected for the NEISS sample in stratum h

N_h = Number of hospitals assigned to stratum h in the 2020 hospital frame

By taking the inverse of the above proportion, the basic weight (W) of each NEISS hospital i in stratum h can be expressed as below:

$$W_{hi} = \frac{N_h}{n_h}$$

Ratio Adjustment Factor

In order to stabilize the NEISS estimates over time without taking a new NEISS sample and back-casting historical estimates, a ratio adjustment to the basic NEISS weight is calculated.

The hospital population does not remain static over time. Hospitals close, merge, and open as well as change in the volume of emergency department visits. A ratio adjustment takes advantage of knowledge about a highly correlated auxiliary variable, which is the total number of emergency department visits. The total number of emergency department visits is obtained by purchasing a complete hospital database on an annual or semiannual basis.

The ratio adjustment applied to the basic NEISS weight is the ratio of the known total number of emergency department visits in the population (from the frame) to the estimate of the total emergency department visits based on the sample of NEISS hospitals. For computing ratio adjustments, Westat has recommended combining the small and medium strata together and the large and very large strata together due to the relatively small number of NEISS hospitals in some of the larger strata.²

Within each combined stratum, the ratio-adjusted weights, w_{hi}^* , are computed as:

$$w_{hi}^* = w_{hi} \left(\frac{ERV_{yr,h^*}}{\sum_{h \in h^*} \sum_i w_{hi} erv_{yr,i}} \right) = w_{hi} * R_{h^*}$$

(Equation 1)

where:

² Marker, David; Lo, Annie; Brick, Mike; Davis, Bill; Westat Inc., "Comparison of National Estimates from Different Samples and Different Sampling Frames of the National Electronic Injury Surveillance System (NEISS)." January 25, 1999.

w_{hi} = NEISS basic weight
 ERV_{yr,h^*} = Total ERVs on 20YR (2021, 2022, etc.) file for combined stratum h^*
 $erv_{20,i}$ = Number of ERVs from the 20YR file for NEISS hospital i
 R_{h^*} = Ratio adjustment for combined stratum h^*

Adjustments for Non-Response

The NEISS adjusts for non-responding hospitals on a monthly basis if necessary. When a hospital stops participating or falls behind in reporting, the statistical weight for that hospital is assigned to zero and the statistical weight for the other hospitals in the same stratum are weighted up by dividing the number of in-scope NEISS hospitals in the sample for a given stratum and month, by the number of hospitals actually participating in that stratum for that particular month.

Recruitment of Replacement Hospitals

Although the NEISS adjusts the weights for non-responding hospitals, it is CPSC's goal and efforts are made to maintain the NEISS sample size and have full reporting. When a NEISS hospital drops off or chooses not to participate, CPSC staff recruit a replacement hospital. Replacement hospitals are selected based on size and proximity to the hospital that dropped. The closest hospital (based on geo-coordinates) in the same stratum is the primary target for recruitment. If this hospital declines participation, then the next closet hospital is recruited. This process is continued until a hospital agrees to join the NEISS.

Final NEISS Weights

The final NEISS weight calculated each month and used for national estimates can be written as:

$$NEISS_wt_{hi} = \frac{N_h}{n_h} * \frac{n'_h}{r_h} * R_{h^*} \quad (\text{Equation 2})$$

where

N_h = Number of hospitals in the 2020 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
 r_h = Number of NEISS hospitals participating in stratum h for the given month
 R_{h^*} = Ratio adjustment for combined stratum h^*

Confidence Intervals Around National Estimates

Because the NEISS is a statistical sample of emergency room visits, there are corresponding confidence intervals around the national estimates. Listed below

are national estimates and confidence intervals for a select group of consumer products from 2020 NEISS data:

2020 NEISS National Estimates³

Product	National Estimate	Number of Cases	CV*	95% CI Lower Bound	95% CI Upper Bound
Child Nursery Equipment & Supplies	73,783	3,192	0.16	49,726	97,841
General Household Appliances	143,068	3,771	0.09	117,237	168,898
Heating, Cooling, Ventilation Equipment	109,090	2,951	0.07	93,461	124,718
Home Communication, Entertainment & Hobby	215,162	5,696	0.09	177,587	252,737
Home Furnishings, Fixtures And Accessories	2,818,634	79,611	0.10	2,282,058	3,355,210
Home Maintenance	167,256	4,776	0.09	137,412	197,099
Home Structures & Construction Materials	3,717,272	101,271	0.09	3,078,802	4,355,742
Home Workshop Equipment	315,329	7,080	0.08	267,707	362,951
Housewares	670,888	17,369	0.08	567,936	773,841
Miscellaneous Products	241,500	7,369	0.07	206,777	276,224
Packaging & Containers, Household	373,989	10,079	0.08	312,034	435,943
Personal Use Items	664,434	19,679	0.09	546,450	782,417
Sports And Recreation Equipment	2,700,988	81,408	0.11	2,112,687	3,289,290
Toys	164,715	6,271	0.12	126,142	203,287
Yard And Garden	267,329	5,823	0.10	214,402	320,257

*CV – coefficient of variation

2. The affiliated NEISS hospitals will report about 1.2 million emergency department visits annually using existing information extracted from hospital records. Of those reported visits, about 470,000 will be consumer product-related cases. Since hospital record data are limited, further information is frequently necessary, and about 2,375 of these cases are selected for further investigation.

The potential respondent universe also includes individuals involved with incidents recorded in newspaper articles, consumer complaints, death certificates, coroner's reports and any other injury sources that may be reported to the CPSC. These other data sources contribute more than 116,000 cases annually, of which about 2,000 are selected for further investigation.

3. Cases associated with categories of interest are selected daily from the hundreds of incident reports received each day by the CPSC. CPSC investigators call to interview or to arrange to visit the victim or others to determine specific details

³ Consumer Product Safety Commission. National Electronic Injury Surveillance System 2001-2020 on NEISS Online Database, released April, 2021. Generated at <https://www.cpsc.gov/cgibin/NEISSQuery/home.aspx>.

about the accident sequence. Information collected from the victim, family member, witness, or others is reported on an investigation form designed for this purpose.

When less than 100 percent of the surveillance cases are selected for investigation, the universe of cases is stratified by relevant factors, such as type of injury or consumer product involved and a simple random sample of cases is selected.

4. About 57 percent of the victims involved in the selected incidents are successfully contacted. Of those contacted, about 82 percent agree to provide information voluntarily on the circumstances of the incident. For probability surveys, responses are weighted to account for non-responses. The results from probability surveys can be generalized to the universe studied.
5. No tests of procedures or methods will be undertaken.
6. Contact for collection and analysis of NEISS data:

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