

2022 Type and Severity Summary of Identified Cases of Deaf or Hard of Hearing

Data Source: 2022 CDC Early Hearing Detection and Intervention (EHDI) Hearing Screening & Follow-up Survey (HSFS)

Background: CDC's National Center on Birth Defects and Developmental Disabilities promotes the health of babies, children, and adults, with a focus on preventing birth defects and developmental disabilities and optimizing the health outcomes of people with disabilities. As part of these efforts, the center is actively involved in addressing the early identification of infants who are deaf or hard of hearing (D/HH).

Between 1 and 2 per 1,000 infants in the United States are D/HH; when left undetected, being D/HH can delay a child's speech, language, social, and emotional development.¹ To ensure infants who are D/HH are identified as soon after birth as possible, states and territories have implemented Early Hearing Detection and Intervention (EHDI) programs. These EHDI programs work to ensure all infants

- Have hearing screened, ideally before 1 month of age.
- Receive diagnostic, audiologic evaluation (for those not passing the screening), ideally before 3 months of age.
- Are enrolled in early intervention (for those identified as D/HH), ideally before 6 months of age.²

The Hearing Screening and Follow-up Survey (HSFS) is a voluntary survey sent out annually by CDC to each jurisdictional EHDI program. It requests aggregated hearing information on infants born in a specified calendar year (e.g., 2022). The survey helps assess the progress of EHDI efforts to identify infants who are D/HH across the United States. This summary of the 2022 HSFS highlights EHDI-related information for babies born between January 1, 2022 and December 31, 2022.

Terminology in this document and subsequent 2022 HSFS summaries are based on current recommendations^{2,3}:

- **Typical Hearing:** Hearing thresholds recorded within the normal range of hearing (-10 to 15 dB HL for children and -10 to 25 dB HL for adults) on an audiogram. Formerly, in previous HSFS summaries, CDC used "normal hearing".
- **Deaf or Hard of Hearing:** reduced hearing/decreased hearing thresholds at birth obtained outside of the typical range of hearing. Formerly, in previous HSFS summaries, CDC used "permanent hearing loss".

This summary highlights type, severity, and laterality of reduced hearing for babies born between January 1, 2022 and December 31, 2022. Categories are based on the American Speech-Language-Hearing Association (ASHA) classification system for reduced hearing. The ASHA categories are as follows:

Level of Reduced Hearing	ASHA Hearing Loss Range (dB HL)
Normal	-10 to 15
Slight	16 to 25
Mild	26 to 40
Moderate	41 to 55
Moderately severe	56 to 70
Severe	71 to 90
Profound	91+

August 2024

Number of Survey Respondents Who Provided Type and Severity Data: 55^a (49 states, 5 territories, 1 district) AK, American Samoa, AZ, AR, CA, CO, Commonwealth of the Northern Mariana Islands, CT, DE, District of Columbia, FL, GA, Guam, HI, ID, IL, IN, IA, KS, KY, LA, ME, MD, MA, MI, MN, MS, MO, MT, NE, NV, NH, NJ, NM, NY, NC, ND, OH, OK, OR, Palau, PA, Puerto Rico, RI, SC, SD, TN, TX, UT, VT, VA, WA, WV, WI, WY

		Total Number of Reported Infants who are D/HH, 2022 CDC EHDI HSFS							6,272 Children
		BILATERAL (by Ear)				UNILATERAL (by Ear)			LATERALITY UNKNOWN <i>(i.e., unknown if case is a unilateral or bilateral)</i>
		RIGHT EAR	LEFT EAR	UNKNOWN EAR <i>(level of reduced hearing for each ear)</i>		RIGHT EAR	LEFT EAR	UNKNOWN EAR	
Sensorineural	Slight	44	39	0	0	8	8	0	0
	Mild	566	559	2	2	82	96	0	2
	Moderate	573	567	1	1	82	91	0	3
	Moderately Severe	293	292	0	0	40	56	0	0
	Severe	237	259	0	0	73	73	0	1
	Profound	567	557	0	0	141	148	0	1
	Unknown Severity	58	54	0	0	6	11	0	0
Conductive	Slight	6	7	0	0	2	0	0	0
	Mild	69	56	0	0	38	14	0	0
	Moderate	65	76	0	0	98	39	0	1
	Moderately Severe	72	73	0	0	163	107	0	0
	Severe	31	29	0	0	44	17	0	2
	Unknown Severity	48	44	0	0	63	51	0	2
Mixed	Slight	1	2	0	0	2	1	0	0
	Mild	39	42	0	0	7	4	0	0
	Moderate	81	93	0	0	27	25	0	0
	Moderately Severe	83	73	0	0	24	22	0	0
	Severe	57	53	0	0	16	18	0	0
	Profound	42	50	0	0	9	8	0	0
	Unknown Severity	21	12	0	0	6	4	0	0
Type Unknown	Slight	12	19	0	0	5	5	0	1
	Mild	100	78	0	0	15	14	0	7
	Moderate	61	79	1	1	11	14	0	10
	Moderately Severe	35	35	0	0	17	17	0	4
	Severe	19	28	0	0	13	12	0	2
	Profound	35	36	0	0	11	14	0	3
	Unknown Severity	151	149	2	2	43	36	10	363
Auditory Neuropathy	Slight	0	0	0	0	0	0	0	0
	Mild	0	1	0	0	1	0	0	0
	Moderate	5	4	0	0	2	0	0	0
	Moderately Severe	4	4	0	0	0	2	0	0
	Severe	3	4	0	0	1	3	0	0
	Profound	22	23	0	0	17	15	0	0
	Unknown Severity	118	113	0	0	48	54	0	0
Totals by Ear		3,518	3,510	6	6	1,115	979	10	402
Totals by Child		3,514		6		1,115	979	10	402
Laterality Totals (by Child)		3,520 Bilateral Cases*				2,104 Unilateral Cases			
		Total all Types and Severity (by Child)							6,026
		Cases Resolved (i.e., hearing loss to no hearing loss)							246
		Overall Total (by Child)							6,272

*Type and severity may be different for each ear; it is not necessarily the same for both ears. We have type and severity reported for 3,518 right ears and 3,510 left ears. If we want to translate ears to children, we take the average of both ears and get 3,514 children. We have 6 in unknown ear 1 and 6 in unknown ear 2

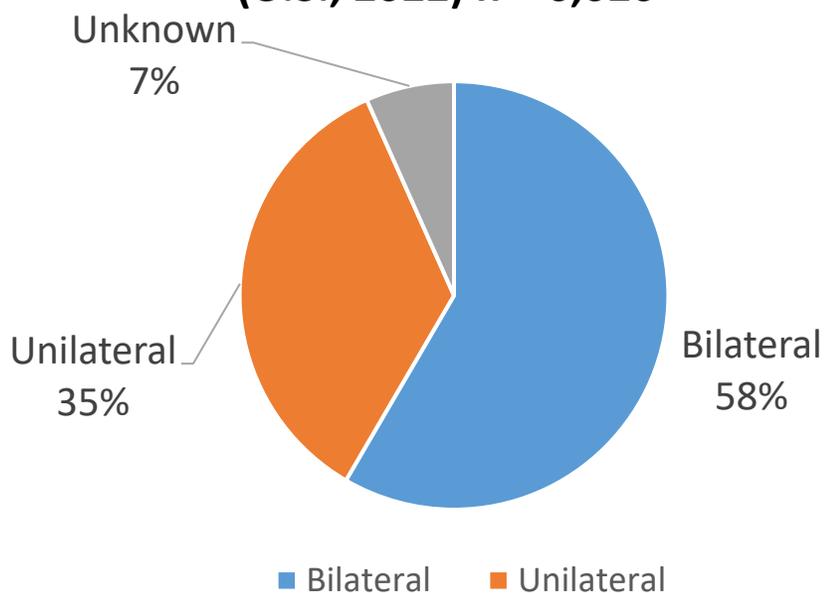
and to translate that to children, we take the average of both and get 6. Therefore, we add 3,514 and 6 and get 3,520 children (e.g., bilateral cases).

Table Explained:

From Part I Diagnostic Data section, we have 6,272 children who are D/HH reported for 2022, so this section reports type and severity of reduced hearing for those children. This table shows that we have 3,520 bilateral cases, 2,104 unilateral cases, and 402 unknown laterality cases which brings total of 6,026 children. Part I Diagnostic Data section reports initial diagnosis and sometimes D/HH diagnosis is later determined to be typical hearing and that had occurred for 246 children (“Cases Resolved”). Therefore, no type and severity information were reported for those 246 children. That brings us to the total of 6,272.

Laterality of Reduced Hearing

(U.S., 2022) n = 6,026*

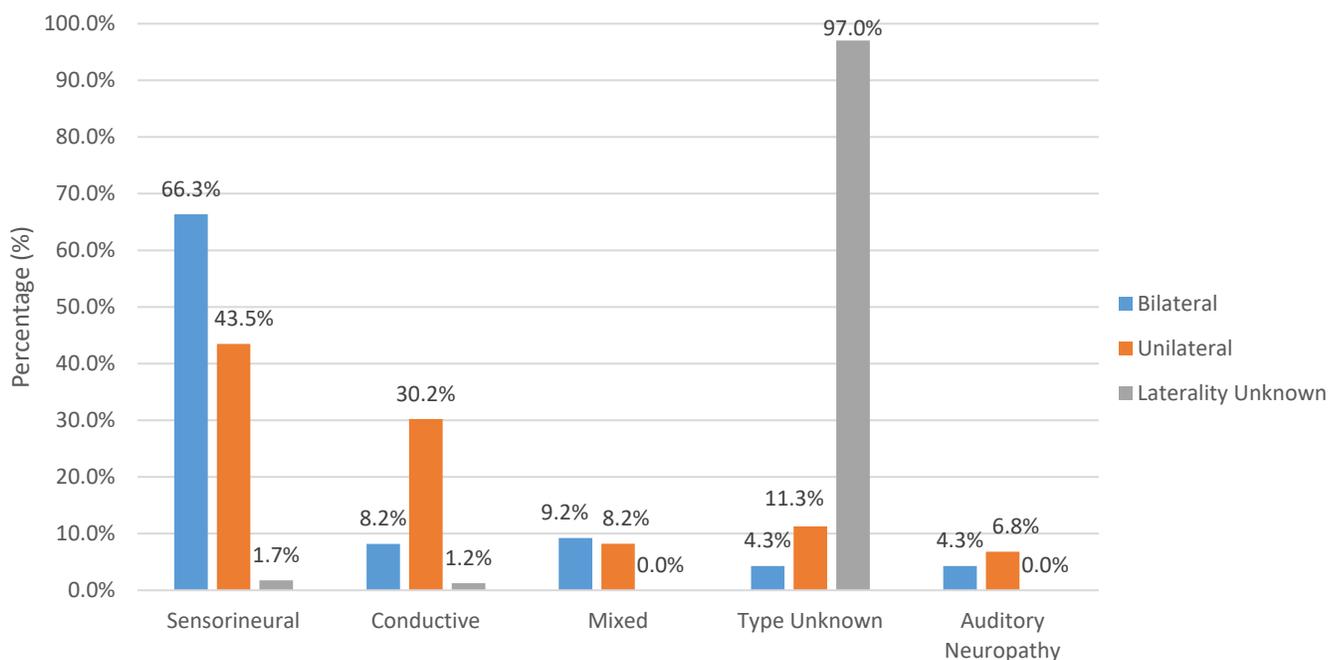


*In 2022, 6,272 infants were diagnosed as D/HH among 55 jurisdictions. However, 246 infants were later determined to have typical hearing.

	Numerator	Denominator	Percentage
Bilateral	3,408	6,026	58%
Unilateral	2,050	6,026	35%
Unknown	402	6,026	7%

Type and Severity of Reduced Hearing,

(U.S., 2022) n = 6,026*



*In 2022, 6,272 infants were diagnosed as D/HH among 55 jurisdictions. However, 246 infants were later determined to have typical hearing.

	Numerator	Denominator	Percentage
Sensorineural			
Bilateral	2,336	3,520	66.3%
Unilateral	915	2,104	43.5%
Unknown	7	402	1.7%
Conductive			
Bilateral	288	3,520	8.2%
Unilateral	636	2,104	30.2%
Unknown	5	402	1.2%
Mixed			
Bilateral	324.5	3,520	9.2%
Unilateral	173	2,104	8.2%
Unknown	0	402	0.0%
Type Unknown			
Bilateral	150.5	3,520	4.3%
Unilateral	237	2,104	11.3%
Unknown	390	402	97.0%
Auditory Neuropathy			
Bilateral	150.5	3,520	4.3%
Unilateral	143	2,104	6.8%
Unknown	0	402	0.0%

References:

¹American Speech-Language-Hearing Association (ASHA). Effects of hearing loss on development. Available at: <https://www.asha.org/public/hearing/effects-of-hearing-loss-on-development>.

Accessed April 8, 2022

²Year 2019 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs (2019). *Journal of Early Hearing Detection and Intervention*, 4(2), 1-44.

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