AUDIOLOGY SURVEY 2006

# Survey Methodology, Respondent Demographics, and Glossary

Jeanette Janota
Surveys and Information Team

American Speech-Language-Hearing Association
10801 Rockville Pike
Rockville, MD 20852
800-498-2071, ext. 4175
jjanota@asha.org

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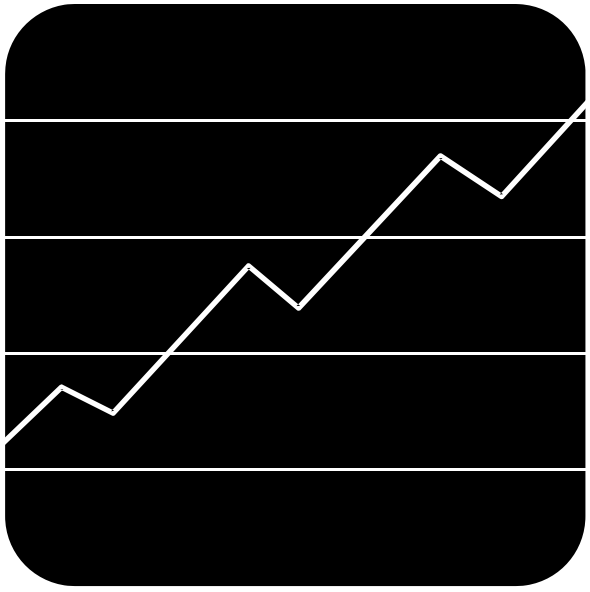


# Executive Summary

In the fall of 2006, the American Speech-Language-Hearing Association (ASHA) conducted a survey of audiologists. The survey was designed to provide information about service delivery and salaries and to update and expand information gathered during previous Omnibus and Audiology Surveys.

*Overall Findings:*

- 59% response rate
- 26% employed in hospitals and private physicians' offices
- 75% worked full-time
- 73% received an annual salary
- 82% were clinical service providers
- 25% had an AuD as highest degree
- 49% worked in urban areas
- 81% were female
- Average age: 42
- Median number of years of experience: 15
- 1% were Hispanic/Latino

# Survey Methodology

## Sample Design

The survey was mailed on September 8, 2006, to a random sample of 4,000 ASHA-certified audiologists working in the United States. Individuals who returned their surveys were removed from second (October 6) and third (November 3) mailings. Each mailing consisted of a personalized cover letter, a numbered survey, and a #10 postage-paid business return envelope inserted into a #11 window envelope with an ASHA return address. Metered postage was at the full, first-class rate. In addition, a reminder postcard was mailed to all sample members on September 21.

## Response Rate

Of the original 4,000 audiologists in the sample, 5 were retired, 7 were no longer working in the field, and 3 were ineligible for other reasons. The number of respondents was 2,354, resulting in a **59.1%** response rate (see Table 1).

**Table 1. Calculation of Response Rate**

| Disposition | Number |
|---|---|
| Original (gross) sample size | 4,000 |
| No longer employed in the field | 7 |
| Retired | 5 |
| Ineligible for other reasons | 3 |
| Net sample size | 3,985 |
| Number of respondents | 2,354 |
| 2,354 / 3,985 = 59.1% | |

## Experimental Design

All surveys had 40 questions on 25.5" x 11" paper folded to 8.5" x 11" and printed two columns per page. Font was Arial 11. The final page contained tables of employment functions and facilities to use in answering two survey questions, as well as a thank you note and contact information should respondents have questions. A methodological experiment was designed into the survey to test whether response order had an effect on answers. Specifically, for a randomly selected half of the sample (the control group) the opt out selections such as "I do not do..." or "Don't know" were in **last** place, and for the other half (the experimental group), they were in **first** place. In addition, the responses for the first question (i.e., "In your opinion, what kind of job is the Association doing in serving its members?") were ordered Excellent, Good, Fair, and Poor for the control group and reversed for the experimental group.

Table 2 shows that the opt out response was consistently selected more often when it was the first answer than when it was the last, but that few of these differences were statistically significant (Qs. 13, 24, and 26).

Excellent and good were selected more often when at the beginning of the response list than when at the end (59.5% vs. 53.7%, respectively).

**Table 2. Methodological Experiments**

| Q. # | Question Wording | Response | Order | | *p* |
|---|---|---|---|---|---|
| | | | First | Last | |
| 13 | Which one of the following best describes your involvement in a private practice? | I do not work in private practice. | 57.1 | 47.6 | .000 |
| 17 | Do you provide professional services for CI recipients? | No (SKIP to Q. 19.) | 72.7 | 71.8 | .622 |
| 18 | Do you provide programming of the devices? | No | 17.2 | 15.9 | .388 |
| 19 | Which of the following AR services do you provide? | I do not provide AR services. (SKIP to Q. 23.) | 11.1 | 9.2 | .140 |
| 22 | Do you provide AR following CI? | No | 55.8 | 54.8 | .619 |
| 23 | Which of the following do you dispense? | I do not dispense any of the {above} items {below}. | 17.6 | 16.8 | .596 |
| 24 | What percentage of your practice reimbursement for professional services (excluding devices) comes from each source below? *Total must equal 100%.* | Don't know | *n* = 497 | *n* = 373 | .000 |
| 25 | What methods do you use to promote your services during Better Hearing and Speech Month (BHSM)? | I do not do this. | 58.7 | 56.7 | .326 |
| 26 | Have you heard about ASHA's PR campaign to educate the public on the dangers of noise induced hearing loss (NIHL) and personal stereo systems? | No (SKIP to Q. 28.) | 46.1 | 41.4 | .024 |
| 35 | Which one of the following best describes where you work? | Not employed (SKIP to Q. 37.) | 3.2 | 2.2 | .110 |
| 39 | Which one of the following best describes your ethnicity? | Not Hispanic or Latino | 98.9 | 98.3 | .194 |

| Table 2. Methodological Experiments (Cont'd.) | | | | |
|---|---|---|---|---|
| **Q. #** | **Question Wording** | **Response** | **Order** | *p* |
| 1 | In your opinion, what kind of job is the Association doing in serving its members? | Excellent | 6.6 | |
| | | Good | 52.6 | |
| | | Fair | 36.5 | |
| | | Poor | 4.3 | |
| | | | | .001 |
| | | Poor | 6.2 | |
| | | Fair | 40.3 | |
| | | Good | 49.0 | |
| | | Excellent | 4.5 | |

*Data Entry*

In order to ensure the highest quality data reasonably possible, each of the 2,354 completed surveys was checked, and erroneous responses were corrected or deleted by the ASHA staff member with primary responsibility for the survey. The forms were then sent to an outside firm for two-pass (key and verify) data entry. This process was completed by December 7.

## Demo-graphics

Not only is it typically the case that some individuals who receive a survey do not complete it (unit nonresponse), it is likewise true that some who return theirs do not answer every question (item nonresponse) and thus do not qualify for inclusion in portions of a report. They may be excluded from analyses because they did not answer a question at all or because their answer disqualified them (such as stating that they were employed part-time when a particular analysis was limited to full-time employees). For example, among the 2,354 respondents, only 2,229 were included in reporting on their primary employment facility because they

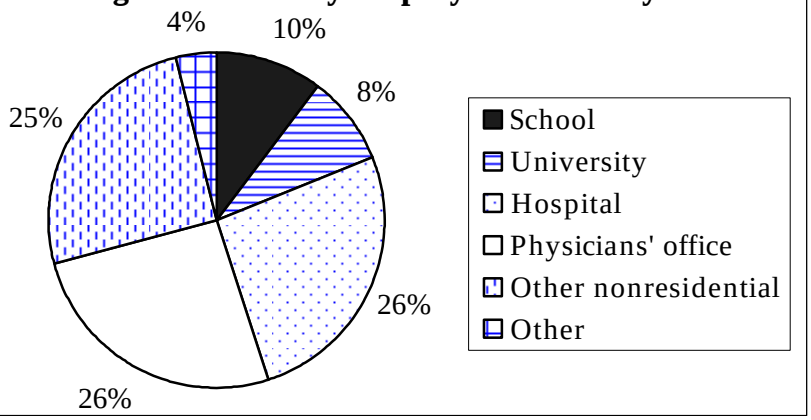
- indicated that they had ASHA certification in audiology (CCC-A);
- indicated that they were employed full-time or part-time;
- identified the type of employment facility where they were employed.

As is our practice, we do not report data for cells with fewer than 25 respondents. This both protects respondent confidentiality and increases stability of the data.

*Primary Employment Facility*

Approximately one quarter each of the respondents were employed in hospitals, private physicians' offices, and other nonresidential health care facilities (see Figure 1).

**Figure 1. Primary Employment Facility**




*n* = 2,229

*Excluding "Other"*

The 84 individuals who worked in an "other" type of facility have been included in the 2006 Audiology Survey Reports only where "totals" are reported, not as a separate category of facility because of the ambiguous nature of this small group of individuals. Also included in the "total" is the group of 27 respondents who did not answer the question about their type of facility.

*Employment Situation*

Three fourths (76%) of the respondents said that they were **salaried** employees. Of the remaining, 15% were **owners**, 5% were **contract** employees, and the employment situation of the remaining 5% was identified as **other**.

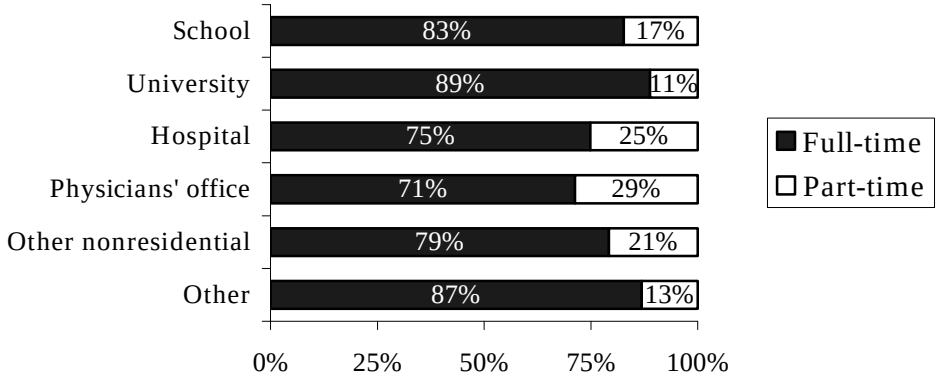
The **salaried employee** category was selected most often in colleges and universities (96%) and least often in other nonresidential health care facilities (47%). On the other hand, **owner** was chosen more often in other nonresidential health care facilities (46%) than in other types. The choice of **contract** employee was highest in other facilities (11%), and the **other** employment situation was selected in private physicians' offices (10%) more than in other facilities. (Total *n* = 2,213.)

*Employment Status*

Three fourths (75%) of the respondents were employed full-time, and 22% were employed part-time. Slightly over 1% were either on leave of absence or not employed and not seeking employment, while slightly under 1% were retired or not employed but actively seeking employment.

A closer look at the audiologists who were employed shows that full-time and part-time status varied significantly by the type of facility where they worked. **Full-time** employees were most likely to work in **universities** (89%), whereas **part-time** audiologists were more likely to be found working in **private physicians' offices** (29%) than in other types of facilities (see Figure 2).

**Figure 2. Facility of Full-Time and Part-Time Audiologists**




$n$ = 2,229; $X^2$ = 37.4, $df$ = 5, $p$ = .000

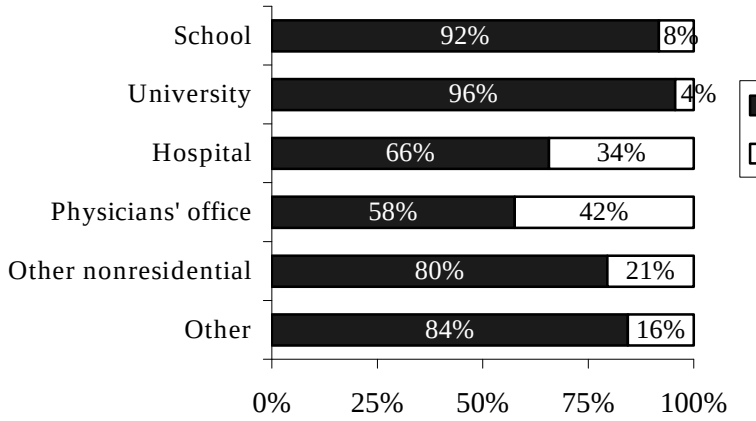
The mean and median number of hours worked by **full-time** employees was **40**. Means ranged from a low of 38 weekly hours in schools to a high of nearly 40.5 hours in other nonresidential health care facilities ($p$ = .000).

The **mean** number of weekly hours worked by **part-time** audiologists was **21**, and the **median** was **22**. Differences between facilities were not significant.

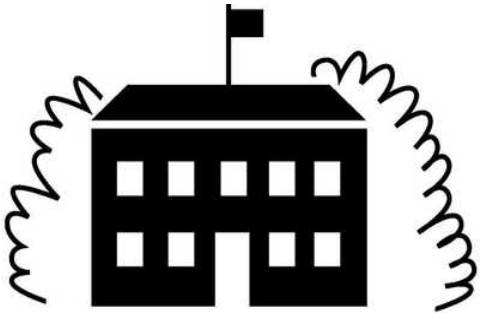
*Salary Basis*

Nearly three fourths (73%) of the employed audiologists received an annual salary, with the remaining paid hourly. Again, there were significant differences in salary basis that depended upon the type of facility where they were employed. Audiologists in **universities** (96%) and **schools** (92%) were more likely than those in other facilities to be paid **annually**. Audiologists in **physicians' offices** (42%) and in **hospitals** (34%) were more likely than those in other facilities to be paid **hourly** (see Figure 3).

**Figure 3. Salary Basis**



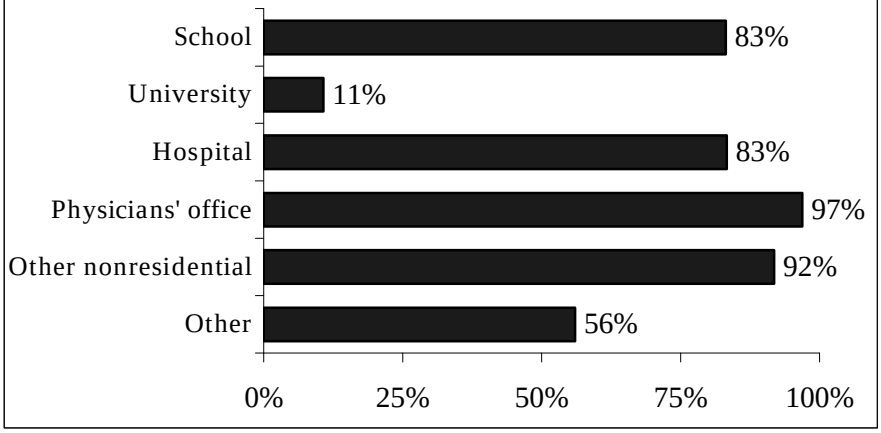

$n$ = 2,164; $X^2$ = 188.2, $df$ = 5, $p$ = .000



*Primary Employment Function*

The vast majority of respondents were clinical service providers (82%). Most of the providers worked in physicians' offices (97%), and the fewest were in universities (11%; see Figure 4). Hospitals (13%) and universities (10%) had a greater percentage of administrators or supervisors than did the other facilities (not shown in any figure). Faculty was the most common function within colleges and universities (72%).

**Figure 4. Clinical Service Provider as Primary Employment Function**

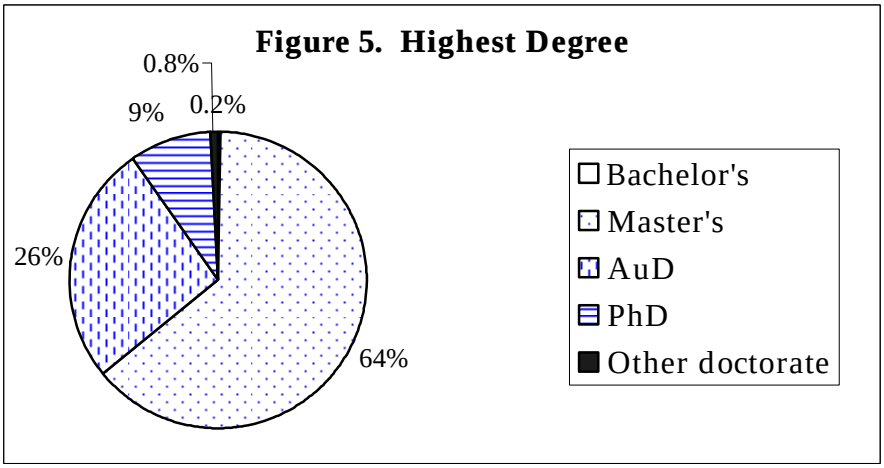



$n$ = 1,825; $X^2$ = 801.8, $df$ = 5, $p$ = .000

*Highest Degree*

Most respondents (64%) had a master's degree; more than one quarter (26%) had an AuD, and 9% had a PhD degree. Fewer than 1% ($n$ = 18) held another type of doctorate, and fewer than 1% ($n$ = 5) reported having a bachelor's as their highest degree (see Figure 5).

**Figure 5. Highest Degree**

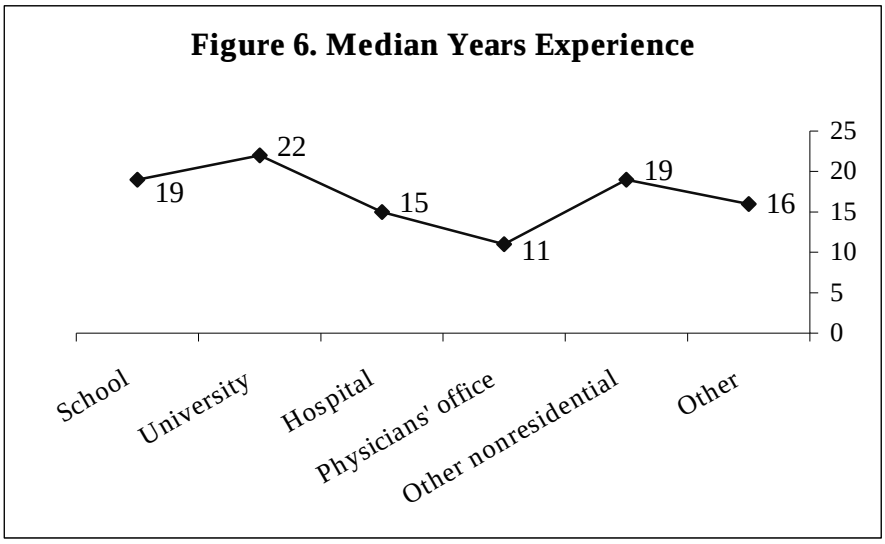



$n$ = 2,354

*Years of Experience*

The average (median) number of years of experience was **15**. It was lowest in physicians' offices (11 years) and highest in colleges and universities (22 years; see Figure 6).

**Figure 6. Median Years Experience**

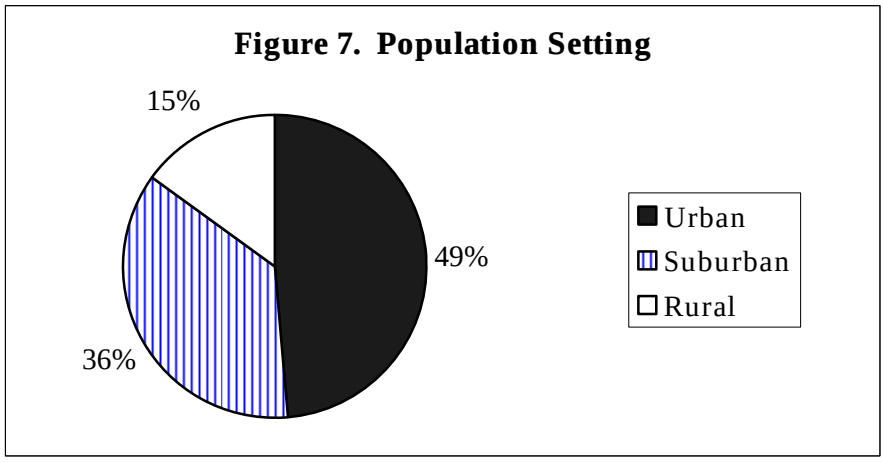



*n* = 2,222

*Population Setting*

Nearly half of the audiologists who were employed either full-time or part-time worked in a metropolitan / urban area (see Figure 7). More audiologists who worked in **metropolitan/urban** areas were employed in hospitals (67%) than in other types of facilities. The lowest percentage was in other nonresidential health care facilities (39%). The range in **suburban** areas was from 20% of audiologists in colleges to 49% of those in private physicians' offices, and the range in **rural** settings was from 10% of audiologists in hospitals to 23% in schools.

**Figure 7. Population Setting**

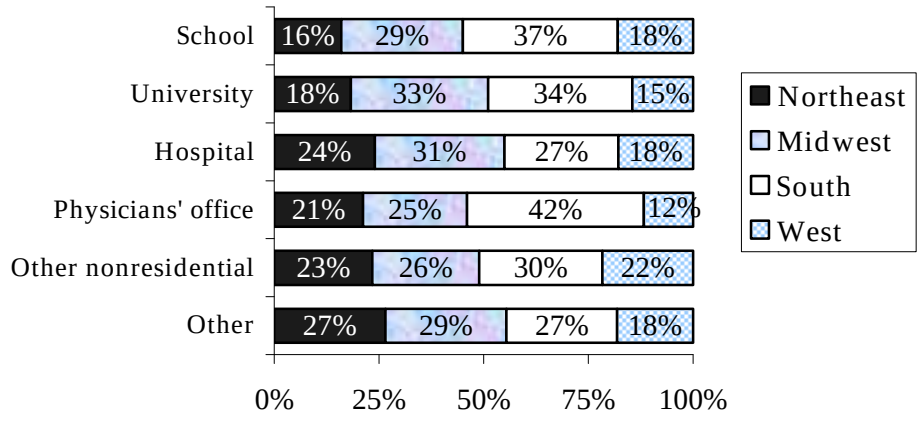



*n* = 2,227

*Geographic Distribution*

Fewer audiologists worked in the **West** than in other regions of the country. In schools (37%), universities (34%), physicians' offices (42%), and other nonresidential health care facilities (30%), more audiologists were located in the **South** than in other regions, but in hospitals (31%) and other facilities (29%), a plurality worked in the **Midwest** (see Figure 8).

**Figure 8. Region of the Country**

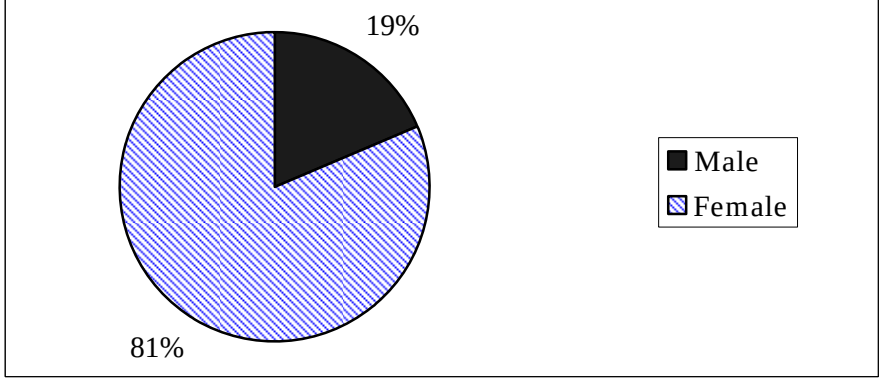



$n$ = 2,221; $X^2$ = 56.4, $df$ = 15, $p$ = .000

*Sex*

Nearly 20% of the respondents to the survey were male (see Figure 9). Of those who worked in schools, 90% were females, and of those in private physicians' offices, 89% were female. **Males** were more likely to work in colleges (29%), other nonresidential health care facilities (29%), and other facilities (33%) than in schools (10%), private physicians' offices (11%), or hospitals (14%; $p$ = .000).

**Figure 9. Sex**




$n$ = 2,347

*Age*

Mean and median ages of the audiologists who participated in the survey were 42. There was a significant difference in mean age that varied by facility: the **youngest** audiologists were in **private physicians' offices** (mean age **39**) and the **oldest** in **universities** (age **47**; see Table 3). The mode (the most frequent response) was highly variable, averaging 28 but ranging from the 20s in hospitals, physicians' offices, and other facilities to the 50s in schools, universities, and other nonresidential health care facilities.

**Table 3. Age**

| Facility | Mean | Std. Dev. | Median | Mode | *n* |
|---|---|---|---|---|---|
| School | 44.9 | 10.0 | 47 | 50 | 228 |
| College / university | 46.9 | 10.3 | 48 | 53 | 183 |
| Hospital | 40.6 | 10.1 | 40 | 29 | 580 |
| Physicians' office | 38.8 | 10.1 | 36 | 29 | 572 |
| Other nonresidential | 44.7 | 10.9 | 46 | 51 | 552 |
| Other | 44.1 | 11.2 | 46 | 28 | 83 |
| Total | **42.3** | 10.9 | **42** | 28 | 2,321 |

$F = 33.4$, $df = 2192$ and 5, $p = .000$

*Ethnicity and Race*

A total of 33 (1.4%) audiologists identified themselves as Hispanics / Latinos, a number too small to break down by facility.

Most of the respondents (94.7%) were White; a few (1.2%) were multiracial. Of the remainder,

- 1.9% were Asian
- 1.7% were Black or African American
- 0.4% were American Indian or Alaska Native
- 0.1% were Native Hawaiian or Other Pacific Islander.

*Sample's Similarity to the Population*

As a rule of thumb, the closer a sample approximates the characteristics of the population from which it is drawn—and which it is designed to represent—the greater the external validity or ability to generalize to that population. The population for this survey consisted of ASHA-certified audiologists whose primary employment facility was a school, college / university, hospital, private physician's office, or other nonresidential health care facility. Below are comparisons of characteristics of the survey respondents with the database population from which they came.

**Facility**

- Small groups (such as schools) were oversampled in order to ensure sufficient respondents from that facility for reporting purposes. Likewise, large groups (such as hospitals ) were undersampled. Therefore, where totals are reported, either in text or tables, they have been weighted to reflect the actual distribution of ASHA-certified audiologists in each type of facility. The number of respondents (*n*) shown in figures and tables is the weighted number who responded to the question.
- Because of stratification, comparing the distribution of the sample's facility to that of the population's is pointless.

**Employment Status (Full-Time and Part-Time Only)**

- Sample: 78% full-time, 22% part-time
- Population: 80% full-time, 20% part-time

**Function**

- Sample: 82% clinical service provider, 6% faculty, 7% administrator, 5% other
- Population: 84% clinical service provider, 5% faculty, 7% administrator, 4% other

**Highest Degree**

- Sample: <1% bachelor's, 64% master's, 26% AuD, 9% PhD, 1% other doctorate
- Population: 1% bachelor's, 79% master's, 11% AuD, 8% PhD, 1% other doctorate

**Years Experience**

- Sample: 17 years mean and 15 years median experience
- Population: 11 years mean and 10 years median

**State**

- Sample: 22% Northeast, 28% Midwest, 33% South, 17% West
- Population: 20% Northeast, 27% Midwest, 33% South, 20% West

**Sex**

- Sample: 81% female, 19% male
- Population: 82% female, 18% male

**Age**

- Sample: 42 years mean and 42 years median age
- Population: 45 years mean and 45 years median age

**Ethnicity**

- Sample: 1% Hispanic/Latino
- Population: 2% Hispanic/Latino

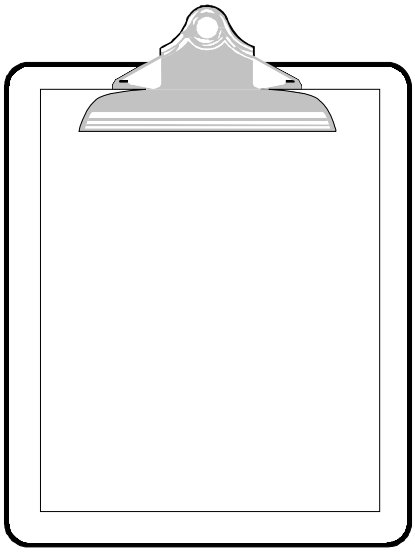
**Race**

- Sample: 95% White, 1% multiracial
- Population: 93% White, 3% multiracial

**Employment situation**, **employment basis**, and **population setting** are variables that are only available for the sample, not for the population, so comparisons cannot be made.

In conclusion, there was virtually no difference between the sample and the population from which it was drawn with regard to status, function, state, sex, ethnicity, or race.

However, the sample reported fewer AuDs and more master's as highest degrees, was slightly younger, and had more experience than the population from which it was drawn.



# Glossary

Terms used in the 2006 Audiology Survey Reports:

*Types of Facilities*

School:
- Special day / residential
- Pre-elementary (preschool)
- Elementary
- Secondary
- Combined schools
- Other

College / university

Hospital:
- General medical hospital
- Psychiatric hospital
- Rehabilitation hospital
- Pediatric hospital
- University hospital
- VA hospital / medical center
- Any other hospital

Private physician's office

Other nonresidential health care facility:
- Home health agency or client's home
- SLP's or audiologist's office
- Speech and hearing center or clinic
- Outpatient rehabilitation center
- Any other nonresidential facility

*Random Sample*

A sample of 4,000 ASHA-certified audiologists was randomly selected to participate in this survey. A random sample is a probabilistic sample in which each person has an equal chance of being selected. This is a requirement for generalizing responses from a sample to the broader population from which the members were selected.

*Response Rate*

The response rate was calculated using the following equation:

$$RR = \frac{(C + P)}{S - (Ret + I)}$$

where
- RR = Response rate
- C = Number of completed surveys
- P = Number of partial surveys
- S = Sample size
- Ret = Ineligible because of retirement
- I = Ineligible for other reasons (e.g., does not work in a school, no longer in the field, on leave of absence)

$$RR = \frac{2354}{4{,}000 - (5 + 10)} = 59.1\%$$

*Types of Averages*

**Mean**: Add the total of all the values and divide by *n* (the number of items).

**Median:** Arrange the values in order, from lowest to highest. Select the value in the middle position.

**Mode:** The value that occurs more often than any other value

**Example:** Sample data set

1, 1, 7, 34, 88

Mean: (1 + 1 + 7 + 34 + 88) / 5 = **26.2**

Median: **7**

Mode: **1**

Median statistics are more stable and less sensitive to extreme values than are means.

*Regions of the Country*

Northeast

- Middle Atlantic
  - New Jersey
  - New York
  - Pennsylvania
- New England
  - Connecticut
  - Maine
  - Massachusetts
  - New Hampshire
  - Rhode Island
  - Vermont

South

- East South Central
  - Alabama
  - Kentucky
  - Mississippi
  - Tennessee
- South Atlantic
  - Delaware
  - District of Columbia
  - Florida
  - Georgia
  - Maryland
  - North Carolina
  - South Carolina
  - Virginia
  - West Virginia
- West South Central
  - Arkansas
  - Louisiana
  - Oklahoma
  - Texas

Midwest

- East North Central
  - Illinois
  - Indiana
  - Michigan
  - Ohio
  - Wisconsin
- West North Central
  - Iowa
  - Kansas
  - Minnesota
  - Missouri
  - Nebraska
  - North Dakota
  - South Dakota

West

- Mountain
  - Arizona
  - Colorado
  - Idaho
  - Montana
  - Nevada
  - New Mexico
  - Utah
  - Wyoming
- Pacific
  - Alaska
  - California
  - Hawaii
  - Oregon
  - Washington

## Other Reports

Results from the 2006 Audiology Survey are presented in a series of reports:

- Annual Salaries
- Hourly Salaries
- Clinical Focus Patterns
- Private Practice
- Frequency Report
- Survey Methodology, Respondent Demographics, and Glossary

## Suggested Citation

American Speech-Language-Hearing Association. (2006). *2006 Audiology Survey report: Survey methodology, respondent demographics, and glossary*. Rockville, MD: Author.

## Supplemental Sources

Agresti, A., & Finlay, B. (1986). *Statistical methods for the social sciences* (2nd ed.). San Francisco: Dellen.

Dillman, D. A. (2000). *Mail and Internet surveys: The tailored design method* (2nd ed.). New York: Wiley.

## Electronic Copy

An electronic copy of this report will be available for a limited time on the ASHA Web site at http://www.asha.org/about/membership-certification/member-data/member-counts.htm and for members at http://www.asha.org/members/aud/Audsur.

## Additional Information

For additional information regarding the 2006 Audiology Survey, please contact Pam Mason, Director of ASHA's Audiology Professional Practices, at 301-897-5700, ext. 4135, pmason@asha.org. To learn more about how the Association is working on behalf of ASHA-certified audiologists, members may visit ASHA's Web site at http://www.asha.org/members/aud/default.