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# AUDIOLOGY SURVEY 2010

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## **Survey Methodology, Respondent Demographics, and Glossary**

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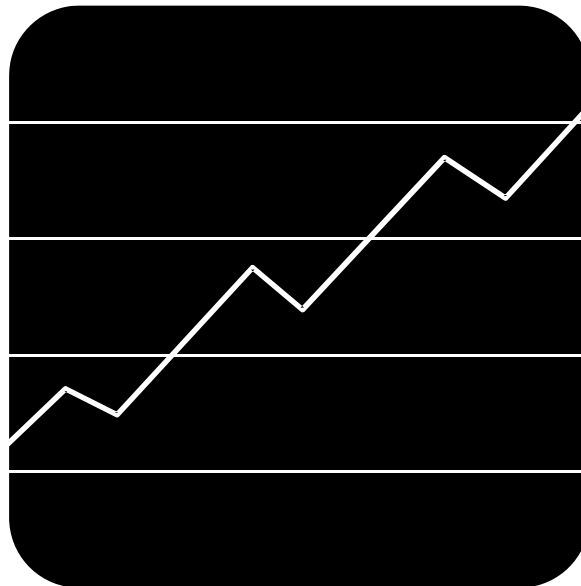
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## Executive Summary

In the fall of 2010, the American Speech-Language-Hearing Association (ASHA) conducted a survey of audiologists. This survey was designed to provide information about salaries, working conditions, and service delivery as well as to update and expand information gathered from previous Audiology and Omnibus Surveys.

### *Overall Findings:*

- ◆ Respondents were *similar* to the population of audiologists from which they were drawn with regard to employment status, function, state, sex, and age but *dissimilar* with regard to highest degree.
- ◆ 52% response rate.
- ◆ 50% of respondents were employed in nonresidential health care facilities.
- ◆ 76% worked full-time.
- ◆ 74% received an annual salary.
- ◆ 85% were clinical service providers.
- ◆ 51% had an AuD as highest degree.
- ◆ Median number of years of experience: 17.
- ◆ 50% worked in urban areas.
- ◆ 19% worked in the West.
- ◆ 82% were female.
- ◆ Mean age: 45.

## Survey Methodology

A stratified random sample was used to select 4,000 ASHA-certified audiologists for this survey from a population of 8,899 audiologists. They were stratified on the basis of type of facility and private practice.

### Sample Design

The survey was mailed on September 3, 2010, to 4,000 ASHA-certified audiologists working in the United States. Individuals who returned their surveys were removed from second (September 29) and third (October 20) 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 was e-mailed to half of the sample members on September 14.

### Weighting

Because facilities with fewer audiologists (such as schools) were oversampled and those with many (e.g., hospitals) were undersampled, *weighting* was used when presenting data to restore all groups to their actual proportion in the population of ASHA audiologists.

### Response Rate

Of the original 4,000 audiologists in the sample, 13 had undeliverable addresses, 1 was deceased, and 8 were ineligible for other reasons, leaving 3,978 possible respondents. The actual number of respondents was 2,072, resulting in a 52.1% response rate (see Table 1).

**Table 1. Calculation of Response Rate, Unweighted**

<b>Disposition</b>	<b>Number</b>
Original (gross) sample size	4,000
Undeliverable addresses	13
Deceased	1
Retired	1
No longer employed in the field	2
Ineligible for other reasons	5
Net sample size	3,978
Number of respondents	2,072
$2,072 / 3,978 = 52.1\%$	

***Experimental Design***

All surveys had 37 questions on 25.5-in. × 11-in. paper folded to 8.5- in. × 11-in. and printed two columns per page. Font was Arial 11. The final page contained a thank-you note and contact information should respondents have questions.

A methodological experiment was designed into the survey to test whether electronic reminders would be an effective and inexpensive alternative to postcard reminders. Specifically, a randomly selected half of the sample for whom e-mail addresses were on file at ASHA received an e-mail reminder, and the rest did not.

- 1,890 Control group; e-mail address on file but did not receive a reminder
- 1,921 Experimental group; e-mail address on file and received an electronic reminder
- 189 No e-mail address on file; did not receive a reminder

Table 2 shows that there was a slight (2.1%) *decrease* in the unit response rate when e-mail reminders were sent compared to when they were not. Note that although there were 2,072 completed surveys, six respondents had removed their identification number, making it possible to account for the methodological experiment for only 2,066 of the returned surveys.

**Table 2. Response Rate by Experimental Design**

<b>Disposition</b>	<b>Control: E-mail not sent</b>	<b>Exper.: E-mail sent</b>	<b>E-mail not on file</b>
Original (gross) sample size	1,890	1,921	189
Undeliverable addresses	6	6	1
Deceased	0	0	1
Retired	0	0	1
No longer employed in the field	2	0	0
Ineligible for other reasons	2	3	0
Net sample size	1,880	1,912	186
Number of respondents	1,002	978	86
Response rate	53.3%	51.2%	46.2%

### *Data Entry*

To ensure the highest quality data reasonably possible, each of the 2,072 completed surveys was checked, and erroneous responses were corrected or deleted by the ASHA staff member with primary responsibility for the project. The forms were then sent to an outside firm for two-pass (key and verify) data entry. This process was completed by November 6.



### *Nonresponse*

Not only is it typically the case that some individuals who receive a survey do not complete it (unit nonresponse), but it is likewise true that some who return their surveys 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 2,072 audiologists who responded, only 1,986 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. Note, too, that some percentages total 99% or 101% because of rounding.

**Respondents  
Versus  
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, nonresidential health care facility, or industry. 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 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 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 would not have been worthwhile and was not performed.

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

- Sample: 76% full-time, 22% part-time
- Population: 76% full-time, 20% part-time

**Function**

- Sample: 83% clinical service provider, 6% faculty, 6% administrator, 5% other
- Population: 83% clinical service provider, 5% faculty, 8% administrator, 5% other

**Highest Degree**

- Sample: 40% master’s, 50% doctor of audiology (AuD), 9% PhD, 1% other doctorate
- Population: 71% master’s, 20% AuD, 8% PhD, 1% other doctorate

**State**

- Sample: 20% Northeast, 27% Midwest, 34% South, 19% West
- Population: 20% Northeast, 26% Midwest, 34% South, 20% West

**Sex**

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

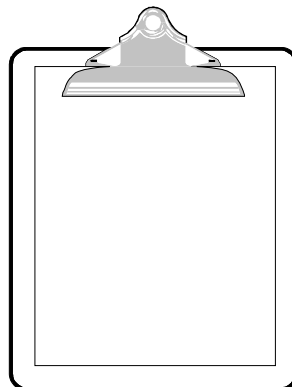
**Age**

- Sample: 45 years mean and 44 years median
- Population: 46 years mean and 46 years median

**Years of experience, employment basis, and population setting** are variables that are available only 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, or age.

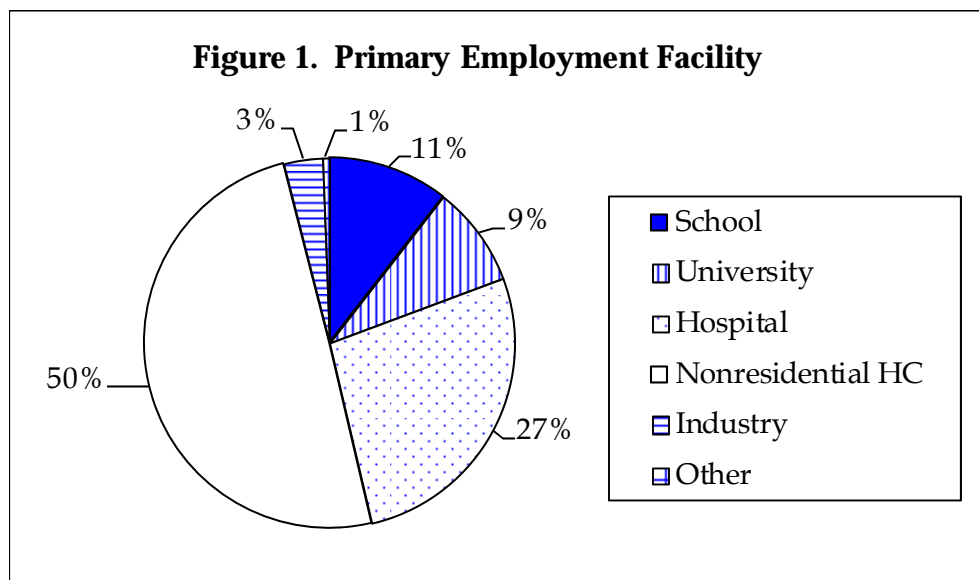
However, the sample reported fewer master's and more AuDs as highest degrees than the population from which it was drawn. This may be because of a recent influx of audiologists attaining AuD degrees. The Council on Academic Accreditation in Audiology and Speech-Language Pathology stopped accrediting master's programs in audiology several years ago. At the same time, a number of academic institutions offered AuD degrees via distance learning to already practicing audiologists. As a result, the number of ASHA-certified audiologists with an AuD degree increased, as is reflected by the survey's demographics. However, if members have not informed ASHA that they received an AuD, their membership record would still indicate a master's as their highest degree, and any apparent disparity could be due to record keeping rather than to actual differences in degrees attained.



## Demo- graphics

### Primary Employment Facility

Half of the respondents who were employed either full- or part-time worked in *nonresidential health care* facilities, and approximately one quarter worked in hospitals (see Figure 1).



*n* = 1,986

### Excluding “Other”

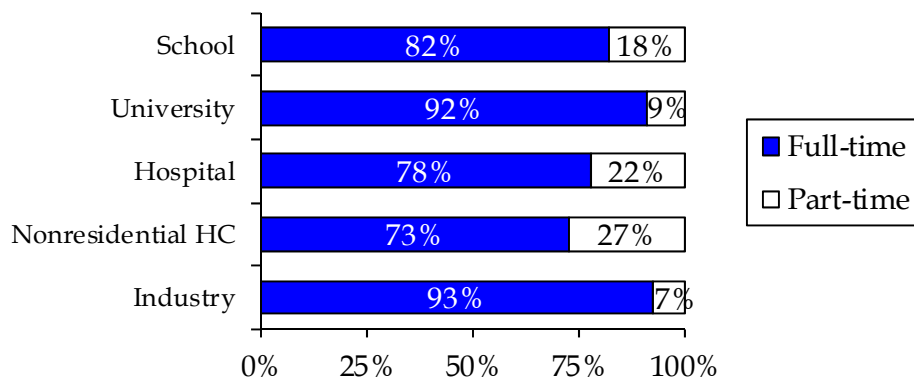
The 13 individuals who worked in an “other” type of facility, either full- or part-time, have been included in the 2010 Audiology Survey Reports only where “totals” are reported, not as a separate category of facility because of the ambiguous nature of this small group of individuals. Also included in the “total” is the group of 18 respondents who were employed full- or part-time but did not answer the question about their type of facility.

### Employment Status

Three fourths (76%) of the respondents were employed full-time, and 22% were employed part-time. The rest were on leave of absence, not employed, or retired.

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* or *industry*, whereas *part-time* audiologists were more likely to be found working in *nonresidential health care facilities*, *hospitals*, or *schools* than in other types of facilities (see Figure 2).

**Figure 2. Employment Status**

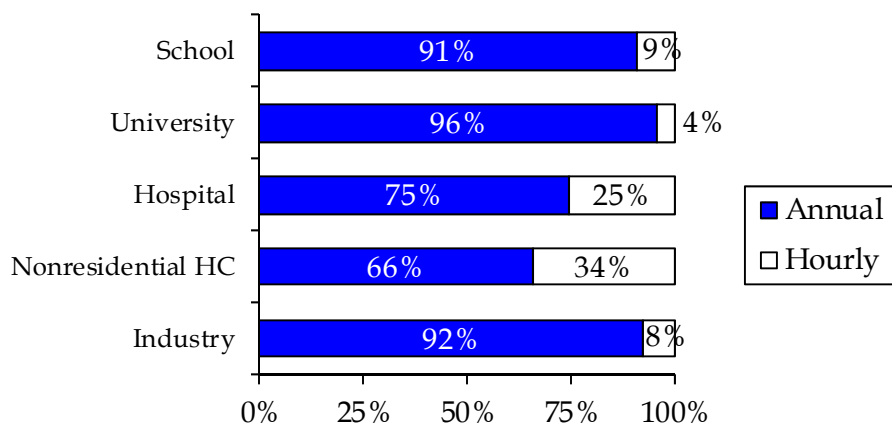


$n = 1,974; \chi^2(4) = 43.1, p = .000$

**Salary Basis**

Nearly three fourths (74%) of the employed audiologists received an annual salary, with the remaining paid hourly. In each type of facility, more audiologists were paid an annual salary than an hourly wage, and the percentages varied significantly. Audiologists in *universities, schools, and industry* were more likely than those in other facilities to be paid *annually*. Audiologists in *hospitals and nonresidential health care facilities* were more likely than those in other types of facilities to be paid *hourly* (see Figure 3).

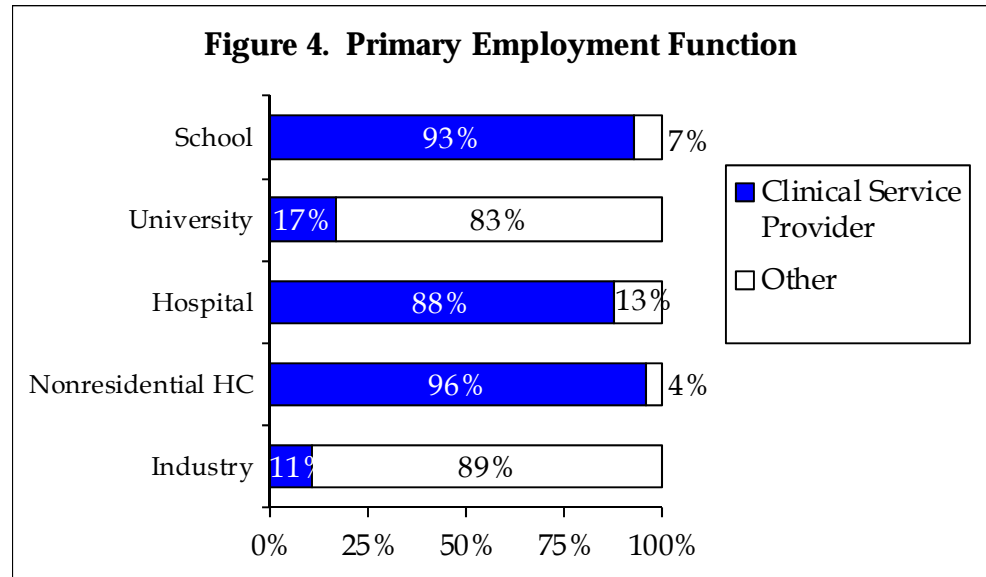
**Figure 3. Salary Basis**



$n = 1,928; \chi^2(4) = 121.9, p = .000$

**Primary Employment Function**

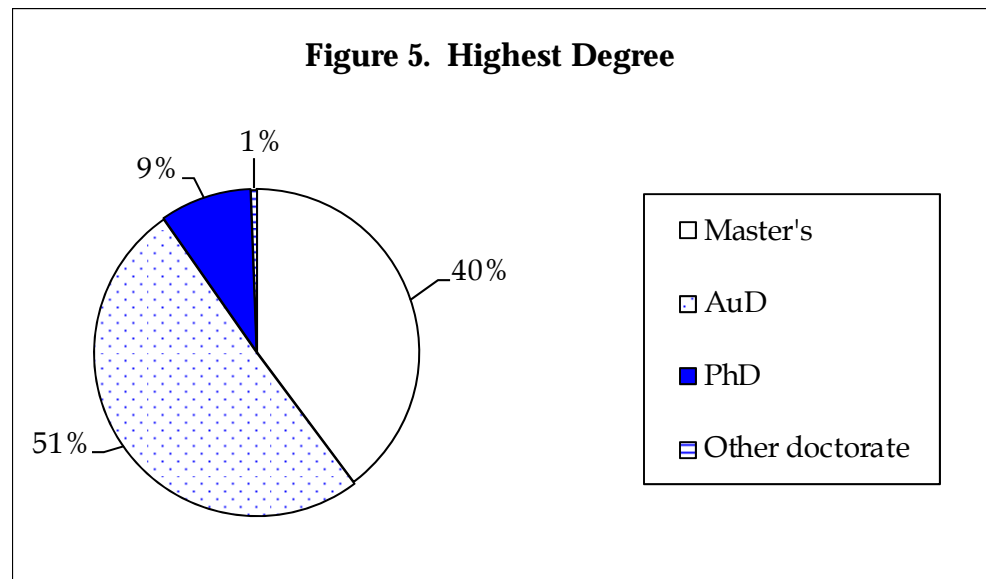
The vast majority of respondents were *clinical service providers* (85%). Clinicians were more likely to be employed in schools, hospitals, and nonresidential health care facilities than in colleges and universities or industry (see Figure 4).



$n = 1,959; \chi^2(4) = 921.0, p = .000$

**Highest Degree**

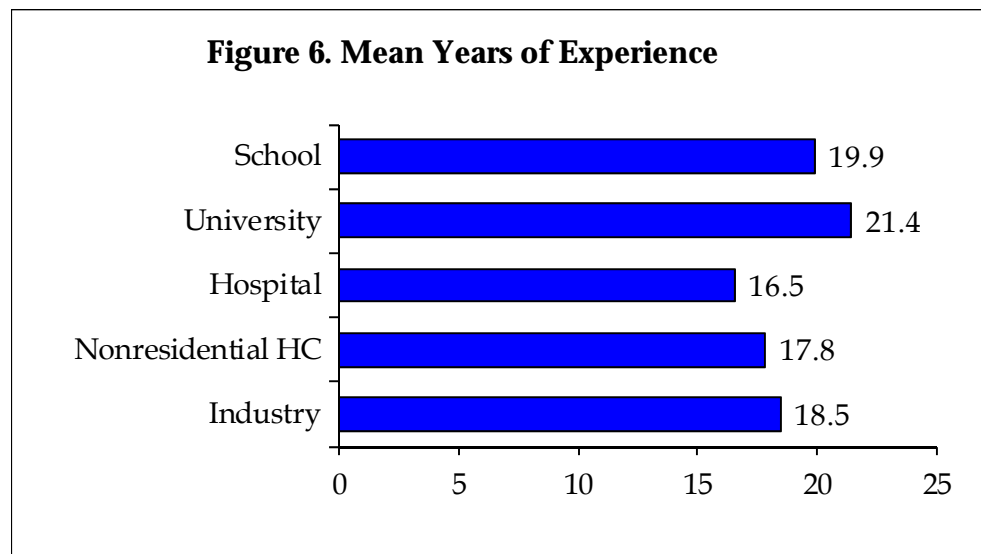
More respondents (51%) had an AuD degree than all other degrees combined. There were more than five times as many with *AuD*s as with *PhDs* (see Figure 5).



$n = 2,067$

**Years of Experience**

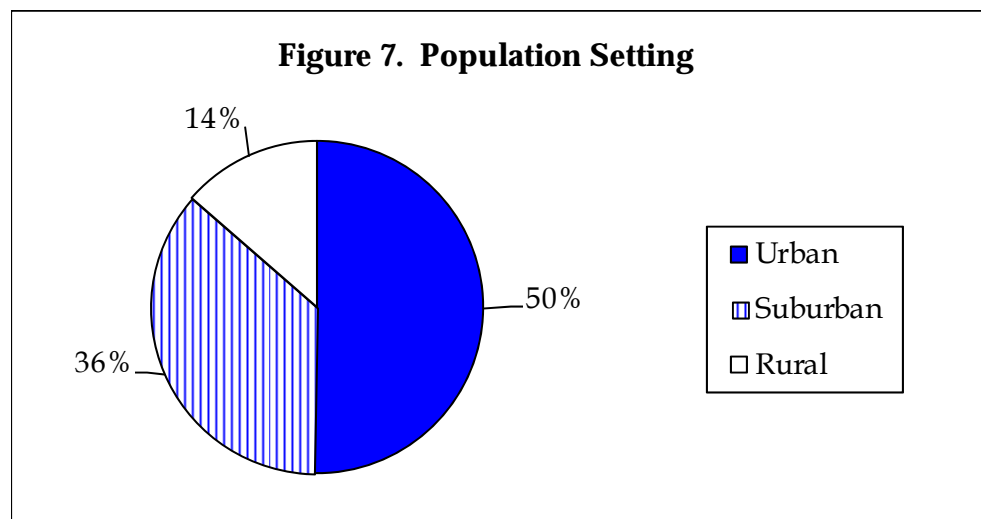
The median number of years of experience was 17. It was lowest in hospitals and nonresidential health care facilities (15 years) and highest in colleges and universities (22 years). The mean number of years of experience varied slightly from the median (see Figure 6).



$n = 1,973; F(4, 1973) = 8.7, p = .000$

**Population Setting**

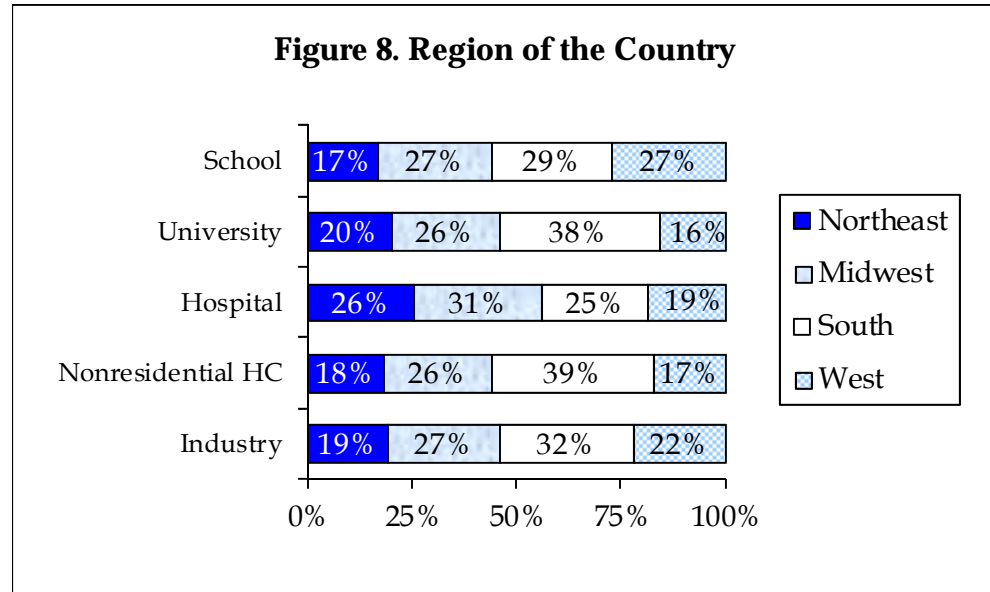
Half of the audiologists who were employed either full-time or part-time worked in a *metropolitan/urban* area (see Figure 7). Schools were more evenly distributed across population settings than were other facilities (42% urban, 35% suburban, and 23% rural). Industry (70%), hospitals (66%), and universities (61%) were much more likely to be in urban than other settings, whereas nonresidential health care facilities were most likely to be in suburban areas (45%;  $p = .000$ ; not shown in any figure).



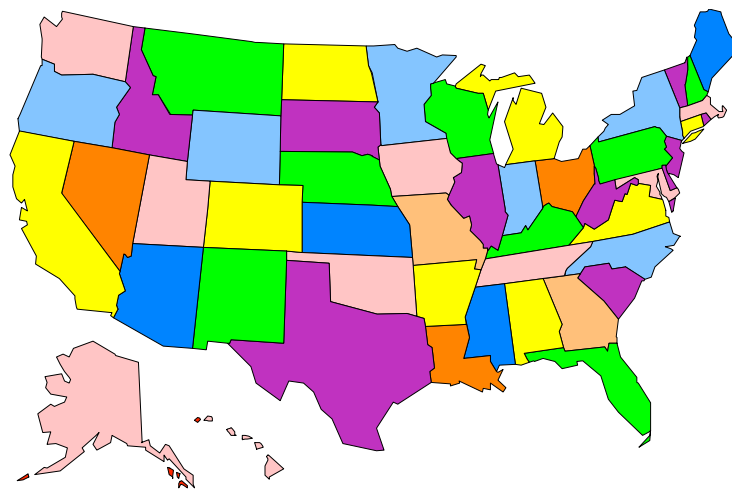
$n = 1,982$

**Geographic Distribution**

Overall, fewer audiologists worked in the *West* (19%) than in other regions of the country. In schools (29%), universities (38%), nonresidential health care facilities (39%), and industry (32%), more audiologists were located in the *South* than in other regions, but in hospitals (31%), more worked in the *Midwest* than in other regions (see Figure 8).

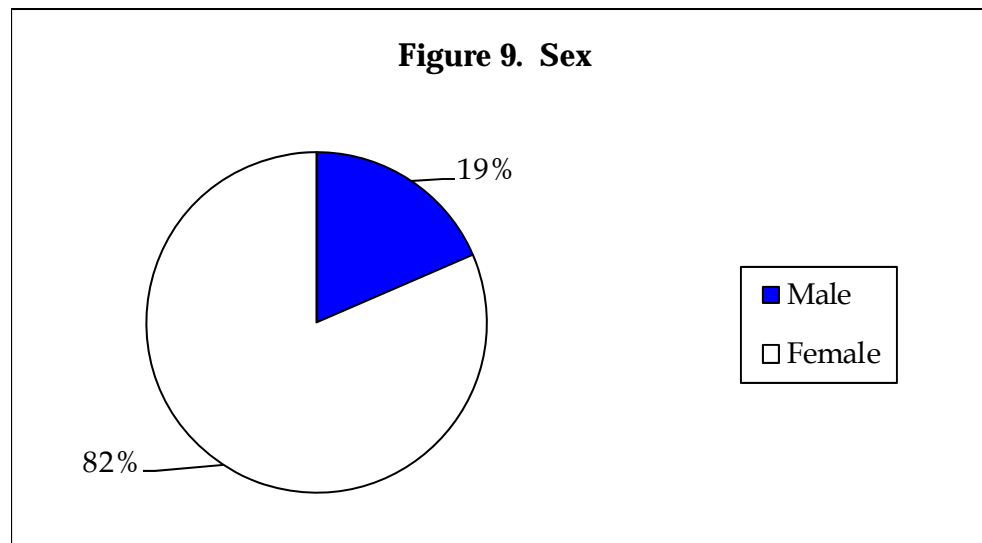


$n = 1,953; \chi^2(12) = 45.2, p = .000$



**Sex**

Nearly one fifth of the respondents to the survey were *male* (see Figure 9). Men were a higher percentage of audiologists in colleges and universities (28%) and industry (22%) than in schools (11%), hospitals (16%), or nonresidential health care facilities (19%;  $p = .000$ ; not shown in any figure).



$n = 2,065$

**Age**

Mean and median ages of the audiologists who participated in the survey were 45 and 44, respectively. There was a significant difference in mean age that varied by facility: the *youngest* audiologists worked in *hospitals* and the *oldest* in *universities* (see Table 3). The mode (the most frequent response) was highly variable, ranging from 30 in hospitals and nonresidential health care facilities to 56 in schools and colleges and universities.

Facility	Mean	Standard Deviation	Median	Mode	<i>n</i>
School	47.7	9.5	49	56	205
College/university	48.8	11.1	50	56	172
Hospital	42.7	11.0	43	30	527
Nonresidential HC	44.0	11.2	43	30	974
Industry	44.8	11.8	45	54	66
Total	44.6	11.2	44	30	2,038

$F(4, 1938) = 14.8, p = .000$

## Glossary

### *Types of Facilities*

Terms used in the 2010 Audiology Survey Reports:

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

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

Industry

### *Random Sample*

A stratified random sample was used to select 4,000 ASHA-certified audiologists for this survey from a population of 8,899 audiologists. They were stratified on the basis of type of facility and private practice. 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 = Number ineligible because of retirement
  - I = Number ineligible for other reasons (e.g., does not work in a school, no longer in the field, or on leave of absence)

$$RR = \frac{2,072}{4,000 - (1 + 21)} = 52.1\%$$

**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 2010 Audiology Survey are presented in a series of reports:

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

## Suggested Citation

American Speech-Language-Hearing Association. (2010). *2010 Audiology Survey report: Survey methodology, respondent demographics, and glossary*. Available from [www.asha.org](http://www.asha.org).

## Supplemental Sources

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

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

## Electronic Copy

An electronic copy of this report will be available on the ASHA website at [www.asha.org/research/memberdata/AudiologySurvey.htm](http://www.asha.org/research/memberdata/AudiologySurvey.htm).

## Thank You

ASHA would like to thank the audiologists who received the 2010 Audiology Survey and completed it. Reports like this one are only possible because people like *you* participated. If you find this information valuable, please accept the invitation to participate in other ASHA-sponsored surveys and focus groups. You are the experts, and we rely on you to provide data to share with your fellow members.

## Additional Information

For additional information regarding the 2010 Audiology Survey, please contact Pam Mason, Director of ASHA's Audiology Professional Practices, at 301-296-5790; e-mail: [pmason@asha.org](mailto:pmason@asha.org). To learn more about how the Association is working on behalf of ASHA-certified audiologists, visit ASHA's website at [www.asha.org/aud/](http://www.asha.org/aud/).