

ITEA/Gallup Poll Reveals What Americans Think About Technology

A Report of the Survey Conducted by the Gallup Organization for the International Technology Education Association

The International Technology Education Association (ITEA) commissioned the Gallup Organization in the spring of 2001 to research American citizens' knowledge of and attitudes about technological literacy. ITEA has just completed a National Science Foundation (NSF) and National Aeronautics and Space Administration (NASA) funded project that used the nation's experts to identify the content in the study of technology. This content is presented in the publication titled, *Standards for Technological Literacy: Content for the Study of Technology (Standards for Technological Literacy)*. One objective of this ITEA/Gallup Poll was to determine if the public's perception of what technology is and what should be taught is congruent with the opinions of national experts in the fields of technology, engineering, and science. The content established in *Standards for Technological Literacy* provides the foundational basis for the questions used in this survey.

The results of the survey are very positive in terms of the public's acceptance of technological literacy as an important need in everyone's life. Technological literacy is viewed in the context of this study as "one's ability to use, manage, assess, and understand technology." The public's attitude towards factors relating to technology was also positive. On the questions dealing with technology and education, the public strongly supported the inclusion of the study of technology as a means of develop-

ing technological literacy in the school curriculum.

There were three major conclusions that can be drawn from the data in this study. They are:

- The American public is virtually unanimous in regarding the development of technological literacy as an important goal for people at all levels.
- Many Americans view technology narrowly as mostly being computers and the Internet.
- There is near total consensus in the public sampled that schools should include the study of technology in the curriculum.

by Lowell C. Rose and
William E. Dugger, Jr., DTE

Further elaboration of these major conclusions as well as others will be provided in the following pages. The report then ends with a summary and conclusions section designed to synthesize the findings and point to directions that might be most productive in pursuing the goal of technological literacy. Before starting the report of data, it is important to note that an opinion survey is not about fact. An opinion survey measures how the public feels, the information that it has, and how it reacts to particular events, ideas, or proposals. It is, in effect, a snapshot of public beliefs and thoughts at

a given point in time. Public opinion changes regularly in a process that is constant and ongoing. One reason for finding what the public believes is to support planning designed to change and shape those beliefs. Given the speed with which a technological world has burst upon us and the pace at which change is occurring, opinions in this area can be expected to be extremely fluid.

Understanding of Technology

The first five questions in the survey (found in Tables 1-5) focused on the public's understanding of technology. A brief summary of the major findings in this section are:

- The American public is nearly unanimous in regarding the development of technological literacy as an important goal for people at all levels.
- When hearing the word "technology," approximately two-thirds think of only computers and matters related to the Internet while the remaining one-third of the respondents embrace the broader concept of technology as the means of "changing the natural world to satisfy our needs."
- When asked about the term "design" in relation to technology, over half of the public (59%) viewed it in more of a traditional perspective of blueprints and drawings rather than in the contemporary perspective of being a creative process for solving problems.
- Three-fourths of Americans consider themselves, to at least some extent, able to use and understand technology.

Specific data supporting these findings follow:

The first question posed involved the importance placed on technological literacy

or, specifically, on having some ability to understand and use technology. The responses are provided in Table 1. The “very and somewhat important” responses total 99%, indicating a consensus on this issue. This finding takes on added significance in the fact that the consensus extends across each of the demographic groups included in the survey.

The strong support of the need for what we will call technological literacy must, of course, be interpreted in the context in which people are responding. The responses reported in Table 2 suggest that the concept of technological literacy is a somewhat narrow context in which technology is most likely to be related to computers. It is not surprising that computers come immediately to mind for 67% of the public when the word “technology” is mentioned. This tendency to equate technology and computers is most common among those in the younger age brackets. Some 78% of 18-29 year-olds think of computers first as compared to 57% of those age 50 and older.

The narrow context in which technology is viewed seems to place the public at odds with the definition favored by experts in the field, that being that technology embraces the “changing of the natural world to satisfy our needs.” This possibility having been anticipated, the next question in the poll sought to determine the public’s reaction to a broader definition of technology. The public was asked to choose between the broader definition and one defining technology as “computers and the Internet.” The results are reported in Table 3.

The findings support the more narrow view of technology. Sixty-three percent see technology in the context of computers and the Internet. However, those supporting a broader definition will be heartened by the fact that it is embraced by over one-third (36%) of the respondents. The age factor again comes into play with those in the 18-29 year age group significantly more likely to accept the broader definition. This finding should be considered in terms of the same group’s earlier linkage of the word

Table 1. Just your opinion, how important is it for people at all levels to develop some ability to understand and use technology? Would you say it is:

	TOTAL	MALE	FEMALE	18-29 YEARS OLD	AGE 50 AND OLDER
IMPORTANCE	%	%	%	%	%
Very important	76	74	77	77	75
Somewhat important	23	26	21	22	22
Not very important	1	—	1	1	2
Not at all important	—	—	1	—	1
Don't know/refused	—	—	—	—	—

Note: The 18-29 and age 50 and older categories are reported because they show the greatest contrast.

Table 2. When you hear the word “technology,” what first comes to mind?

	TOTAL GROUP	18-29 YEAR OLDS	AGE 50 AND OLDER
LIST OF MENTIONS	%	%	%
Computers	67	78	57
Electronics	4	4	4
Education	2	3	4
New Inventions	2	2	2
Internet	1	2	2
Science	1	—	2
Space	1	—	1
Job/work	1	—	2

Note: Numerous other responses were received; however, no others were mentioned by more than 1%.

Table 3. I want to give you two definitions and ask you to tell me which more closely fits what you think of when you hear the word, “technology.” Do you think of “computers and the Internet,” or do you think of “changing the natural world to satisfy our needs?”

	TOTAL GROUP	18-29 YEAR OLDS	AGE 50 AND OLDER
DEFINITION	%	%	%
Computers and the Internet	63	56	67
Changing the natural world to satisfy our needs	36	44	32
Don't know/refused	1	—	1

“technology” with computers.

Continuing with the understanding of technology, the respondents were asked what they think of when they hear the word “design.” This is a term that, as presented in *Standards for Technological Literacy*, is associated with a creative process for solving problems. The responses are reported in Table 4. The seeming disconnect between the public and experts in the field is repeated. Fifty-nine percent associate the word “design” with blueprints and drawings from which you construct something, compared

to 41% who think of it in relation to the creative process for solving problems.

College graduates at 54% and those self-identified as knowing a great deal about technology at 54% are most likely to see design as a creative process.

Part of the rationale advanced for the need for technological literacy is that it is necessary for the effective use of technology. Considered in this context, it seemed important to determine the extent to which the public already sees itself as capable of understanding and using technology. The results

reported in Table 5 indicate that the public gives itself high marks in this area. Seventy-five percent see themselves as able to understand and use technology to either “a great extent or some extent.” The public’s belief in its competency in this area is even higher among 18-29 year-olds and college graduates.

Table 4. When you hear the word “design” in relation to technology, which one are you more likely to think of – “a creative process for solving problems” or “blueprints and drawings from which you construct something?”

SELECTION	TOTAL	% SELECTING	
		COLLEGE GRADS	TECHNOLOGY EXPERTS
A creative process for solving problems	41	54	54
Blueprints and drawings from which you construct something	59	45	46
Don't know/refused	—	1	—

Table 5. Now, what about you? To what extent do you consider yourself to be able to understand and use technology? Would you say a great extent, to some extent, to a limited extent, or not at all?

EXTENT	TOTAL GROUP	18-29 YEAR OLDS	AGE 50 AND OLDER	COLLEGE GRADUATES	HIGH SCHOOL GRADUATES
	%	%	%	%	%
A great extent	28	39	18	42	15
Some extent	47	51	39	44	48
Limited extent	20	8	31	12	29
Not at all	5	2	12	2	8
Don't know/refused	—	—	—	—	—

In summarizing this section, the public’s view of technology, as researched in the Gallup Poll, reflected a strong support of technological literacy, an outcome the significance of which is tempered somewhat by the relatively narrow view of what technology actually is today. This provides both opportunities and challenges for the educational community.

Attitude Toward Technology

There were six questions relating to the public’s attitude toward technology. A summary of the major findings in this section follows:

- The public has a strong desire to know something about how various forms of technology work, which affect their everyday lives.
- In addition to placing great importance on technological literacy, 59% disagree with the statement that technology is a small factor in their everyday lives.
- There is near consensus (95%) on the part of the public that technology is a major factor in the innovations developed within a country, and about the same percentage believe that the results of the use of technology can be good or bad.

- The public sees both engineering and science as the same as technology.
- The public views technology as having a greater effect on society than on either the individual or our environment.
- People have a strong desire to be involved in making decisions on technological matters such as locating roads, developing genetically modified foods, development of fuel-efficient cars, and the designation of community centers.
- More people believe they are able to explain how a flashlight works and how to use a credit card to get money out of an ATM than believe they can explain how a telephone call gets from point A to point B, how a home heating system works, or how energy is transferred into electrical power.

- The public generally understands that a car works on a series of explosions; is divided on its understanding of the dangers of a portable phone in the bathtub; and does not generally understand the heating processes of a microwave or the static free nature of FM radios.

Details for each of these summary findings related to the public’s attitudes toward technology follow:

A corollary to the extent to which the public sees itself able to understand and use technology is the value it places on this ability. This issue was explored in a question in which the public was asked to choose between two different attitudes. The data in Table 6 indicate that 75% of the public wants to know something about the way

Table 6. Which of the following statements best describes your attitude toward the various forms of technology you use in your everyday lives.

ATTITUDE	TOTAL GROUP	18-29 YEAR OLDS	AGE 50 AND OLDER
	%	%	%
You don't care how it works as long as it works.	24	16	31
You would like to know something about how it works.	75	84	68
Don't know/refused	1	—	1

Table 7. Now, tell me whether you strongly agree, mostly agree, mostly disagree, or strongly disagree with each of the following statements.

STATEMENT	SA + MA	SA STRONGLY	MA MOSTLY	MOSTLY	STRONGLY	DON'T KNOW/
	%	AGREE	AGREE	DISAGREE	DISAGREE	REFUSED
Technology is a major factor in the innovations developed within a country.	95	61	34	2	1	2
The results of the use of technology can be good or bad.	94	59	35	3	2	1
Engineering and technology are basically one and the same thing.	61	21	40	27	9	3
Science and technology are basically one and the same thing.	59	20	39	27	12	2
Technology is a small factor in your everyday life.	41	17	24	25	34	—

technology works. This compares to 24% that simply doesn't care as long as it works. Here again, age becomes a factor with 84% of those in the 18-29 year-olds wanting to be informed as compared to 68% of those 50 and older. While this difference is interesting, the fact is that the desire to be informed is strong across all groups.

Delving further into attitudes, respondents were asked to indicate the extent to which they agreed or disagreed with selected statements regarding technology. The results are reported in Table 7, with the statements and responses presented in the order of the strength of agreement. That technology is a major factor in innovations and that its results can be either good or bad are ideas that bring virtual consensus among the public. The public tends to regard engineering, technology, and science as one and the same thing. This is of interest because those in these fields indicate a close relationship between engineering and technology but tend to see science and technology as related

but somewhat different. That 41% agree that technology is a small factor in their everyday lives may or may not be surprising given the overall importance assigned to technology.

The choice regarding the importance of technology in our everyday lives led logically into the next question asking whether technology is of the most importance and has the greatest effect on either the individual, our society, or our environment. The results are reported in Table 8. The public, in a finding that is reasonably consistent across all groups, sees technology as having the

greatest effect on our society. Given the strong link the public makes between computers and technology, and the extent to which individuals use computers, one might have expected the impact of technology on the individual to rank higher; however, it comes in third with only 17% seeing it as the area of greatest impact.

The next three questions in the poll were designed to go further into attitudes with the first dealing with the amount of input people want in decisions that involve technology, the second the extent to which they feel prepared to explain simple technological processes, and the third to actually test their understanding of four such processes. Table 9 reports on four decisions and the degree of input people want in those decisions. The two decisions closest to the community, those involving neighborhood centers and roads, draw slightly higher numbers; however, the positive fact is that most people believe they should have a say in all four decisions. Since informed input in

Table 8. To which of the following do you feel technology is of the most importance and has the greatest effect?

SELECTIONS	% SELECTING
Our society	62
Our environment	20
The individual	17
Don't know/refused	1

Table 9. Tell me, how much input do you think you should have in decisions in each of the following areas – a great deal, some, not very much, or none at all? How about:

DECISIONS	GREAT +	GREAT	SOME	NOT VERY	NONE	DON'T KNOW/
	SOME	DEAL	%	MUCH	AT ALL	REFUSED
Designation of neighborhood community centers.	87	43	47	6	3	1
Where to locate roads in your community.	88	44	44	8	3	1
Development of fuel-efficient cars.	81	37	44	10	8	1
Development of genetically modified foods.	78	41	37	10	11	1

such areas requires some knowledge of technology, this finding would seem to support the need for technological literacy.

The second question in this attitudinal series tested, not actual knowledge, but the extent to which the public felt it could explain four processes that are reasonably common in our everyday lives. The findings are reported in Table 10. Once again, the public expresses a high degree of confidence in its knowledge of technology. Percentages of 90, 89, 65, and 70, respectively, believe they could explain how a flashlight works, how to use a credit card with an ATM, how a telephone call gets from A to B, and how a home heating system works. A smaller percentage (53%), but still a majority, believe they could explain how energy is transferred.

Interesting differences surface among the demographic groups. Women are significantly less likely to see themselves as able to explain the transfer of electrical power, telephone transmission, and how home heating systems work. The areas where women see themselves almost equal to men is in the ability to explain how to get money out of the ATM machine and in the ability to explain how a flashlight works. Those who describe themselves as having a great understanding of technology and those who work in fields related to technology and computers also see themselves as far above average in the ability to explain these processes. For example, 69% of those describing themselves as knowing a great deal about technology believe they could explain the transfer of energy into electrical power and the same is true for 71% of those who work with computers or technology.

The third question in this series related to attitudes actually tested the knowledge of respondents by asking them to label each of four statements as true or false. The results are reported in Table 11. Eighty-two percent of respondents know that a car operates through a series of explosions, 62% know that the statement that a microwave heats food from the outside to the inside is false, and 51% believe correctly, that using a portable phone in the bathtub does not

Table 10. Let me ask you if you could explain each of the following to a friend; just answer “yes” or “no.” Could you explain:

EXPLANATION REQUESTED	YES RESPONSE		
	% TOTAL	% MEN	% WOMEN
How a flashlight works.	90	96	83
How to use a credit card to get money out of an ATM.	89	92	86
How a telephone call gets from point A to point B.	65	76	54
How a home heating system works.	70	86	55
How energy is transferred into electrical power.	53	72	36

create the possibility of being electrocuted. But 72% incorrectly associate static with FM radios.

Public attitudes toward technology, as revealed in this study, are positive. The data is valuable in providing a glimpse of how we feel about technology.

Technology and Education

The next series of six questions used in the ITEA/Gallup Poll focus on the study of technology and technological literacy as part of the school curriculum. A summary of these questions is presented as follows:

- When asked to choose between filling shortages in the technology field by bringing in people from other countries versus increasing the domestic supply, the public strongly indicates (92%) that steps should be taken through our schools to increase the number of technologically literate people in this country.
- There is near consensus of the respondents (97%) that schools should include the study of technology in the curriculum.

- Of those who stated that schools should include the study of technology in the curriculum, over half (51%) said that they thought that the study of technology should be required as a subject.
- Additionally, approximately two-thirds of the public expressed the belief that the study of technology should be integrated into other subjects.
- The need for students to be prepared in matters related to technology, including design; knowing the relationship between technology, science, and mathematics; the ability to select and use products; and advances and innovations in technology; is supported by the findings in the study.
- The public believes evaluation of technological literacy should be a part of high school graduation requirements.

A more detailed analysis of these summaries is presented in Tables 12-17.

In a question that began to touch on the need for increasing technological literacy, the poll sought to determine the solution that people would support if a personnel

Table 11. Tell me if each of the following statements is true or false. How about:

EXPLANATION REQUESTED	TRUE	FALSE	DK/REFUSED
	%	%	%
Using a portable phone while in the bathtub creates the possibility of being electrocuted.	46	51	3
FM radios operate free of static.	26	72	2
A car operates through a series of explosions.	82	15	3
A microwave heats food from the outside to the inside.	37	62	1

shortage were to develop in a particular area of technology. The choice offered was between bringing in technologically literate people from other countries and taking steps to increase the number of technologically literate people in this country. The results are reported in Table 12. The public is overwhelmingly in favor of taking steps in our schools to increase the number of technologically literate people in the United States. This preference is uniform among all groups. It should be noted, however, that the question sought a preference. The response should not be taken as opposition to importing talent in this area.

The remaining questions all dealt with matters related directly to technology and education. The first of these sought to determine whether technology, as defined by technology educators, should be included in the school curriculum. A follow-up question asked of those saying "yes" whether it should appear as a part of other subjects or as a separate subject. And, in the third question, those responding "a separate subject" were asked whether the subject should be required or optional.

The results of the first question are reported in Table 13. Given the definition of technology as "modifying our natural world to meet human needs," an extremely strong percentage of respondents (97%) believe it should be included in the curriculum.

The clear preference in response to the second question is that the teaching of

Table 12. When a national shortage of qualified people occurs in a particular area of technology, which of the following solutions would you feel is the most appropriate course of action for the U.S. to take?

SELECTIONS	% SELECTING
Bring in technologically literate people from other countries.	6
Take steps through our schools to increase the number of technologically literate people in this country.	93
Don't know/refused	1

Table 13. Using a broad definition of technology as "modifying our natural world to meet human needs," do you believe the study of technology should be included in the school curriculum, or not?

CHOICE	% SELECTING
Yes, should be included.	97
No, should not be included.	3
Don't know/refused.	—

Table 14. (Asked of those saying it should be included in the curriculum.) Should the study of technology be made a part of other subjects like science, math, and social studies, or should it be taught as a separate subject?

PREFERENCE	% SELECTING
Teach as part of other subjects.	63
Teach as separate subject.	36
Don't know/refused.	1

Table 15. (Asked of those saying "separate subject.") Should the subject be required or optional?

PREFERENCE	% SELECTING
Required	51
Optional	49
Don't know/refused	—

technology should be carried out as a part of other subjects. (See Table 14.) Sixty-three percent selected this option. The one group most likely to view technology as desirable as a separate subject are 18-29 year-olds. Forty-

four percent chose this option.

And, among that approximate one-third of the group that believes technology should be a separate subject, there is an almost even

Table 16. Tell me how important it is for schools to prepare students in the following areas. Would you say it is very important, fairly important, not very important, or not important at all?

DECISIONS	VI + FI	VI - VERY	FI - FAIRLY	NOT VERY	NOT IMPORTANT	DON'T KNOW/
	%	IMPORTANT	IMPORTANT	IMPORTANT	AT ALL	REFUSED
The relationship between technology, mathematics and science.	98	79	19	2	—	—
The role of people in the development and use of technology.	96	72	24	3	1	—
Knowing something about how products are designed.	86	41	45	12	2	—
The ability to select and use products.	93	66	27	5	2	—
An understanding of the advances and innovations in technology.	96	66	30	4	—	—

split as to whether the subject should be required or optional. (See Table 15.)

Technology educators are, of course, interested in knowing how important it is to prepare students in particular areas. The five options offered in the next question all deal with areas thought to be important to the understanding of technology. The results are reported in Table 16. The public believes each of the areas is very important. The area thought to be of greatest importance is the relationship between technology, mathematics, and science. This is interesting in that, in responding to an earlier question, the public indicated it tended to equate these three areas. It is also interesting to note that the area the public regards as least important is knowing something about how products are designed. The respondents had earlier indicated a lack of a clear understanding of “design” as the word is used in the technology field.

And, finally, the public was asked whether evaluation for technological literacy should be a part of requirements for high school graduation. The results are reported in Table 17. Given the importance the public seems to place on the understanding of technology, it is somewhat surprising that only 61% responded in the affirmative on this question. Among the least supportive groups are the 18-29 year-olds at 50%. It may be that the question of graduation requirements is an issue in its own right, and that concerns having little to do with technology are impinging on the answers to this question.

From the data presented in this section (Tables 12-17), America’s public is overwhelmingly supportive of the study of technology in the schools.

Summary and Conclusions

The major purpose of this survey was to determine how the public views technological literacy and the importance of technology in their lives. As stated earlier, another purpose of this study was to determine the public’s perceptions of technology and how

Table 17. Should students be evaluated for technological literacy as part of the high school graduation requirements?

CHOICE	% SELECTING
Yes, should be.	61
No, should not be.	38
Don’t know/refused.	1

this is congruent with the opinions of national experts in the fields of technology, engineering, and science. The findings support three major conclusions. The first is that the public views developing technological literacy as a matter of great importance and considers technology to be an extremely important factor in everyday life. The second is that the public’s definition of technology is a narrow one that is likely to encompass mostly computers and the Internet. This narrow definition is a factor that may be influencing other responses in the poll. The definitional difference may, in fact, be important because of the opportunity for change it offers to those in the field. The third major conclusion is the overwhelming agreement that schools should be including the study of technology in the curriculum.

The importance the public places on technology and technological literacy is reflected in a number of findings. There is virtual consensus that technological literacy is an important goal for people at all levels. There is near consensus in the belief that technology is a major factor in the innovations developed within a country. The public sees technology as having a great effect on our society, greater even than its effect on the individual or the environment. There is near consensus that schools should include the study of technology in the curriculum. The public believes technological literacy should be evaluated in high school graduation requirements. And, possibly most important of all, the public has a strong desire to be involved in decisions that affect their lives, decisions that require a high degree of technological literacy.

The survey findings offer challenges and opportunities. That the public seems to regard itself as having some degree of technological literacy is good news, if accurate; if not accurate, it suggests that a needs-awareness component is important to

any program designed to increase technological literacy. That women regard themselves as less technologically literate is a matter that needs to be addressed. Assuming the distinctions between technology, engineering, and science are important, a planned effort to distinguish these areas in the public’s mind is needed. The public’s preference for promoting technological literacy within the schools through integration into existing courses should be anticipated and addressed whenever proposals for separate courses to build technological literacy are considered.

It remains, however, that the overriding conclusion of this study is on the lack of a common understanding of what technology is and how it relates to other fields such as science, mathematics, and engineering. Clearly, establishing the difference between the narrow definition of technology held by the public and the broader definition used by those in the field may be the most important contribution of this survey. This difference is a problem in that it creates a need to be constantly aware, in planning and carrying out programs, that the definitional base must be accommodated. Programs promising an increase in technological literacy must start with a specific definition of what being technologically literate means in terms of the program. Those in the field of education can, however, take comfort in the knowledge that the public fully understands the importance of technology in our society and the universal need to be prepared to deal with technology in our daily lives.

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Gallup Survey Methodology

A sample of telephone households was selected from all telephone owning households in the continental United States. Random digit dialing techniques were used to ensure the inclusion of both listed and unlisted telephone numbers. Within each qualified household one person, eighteen years of age or older, was interviewed. Interviewing was conducted from March 21 through June 25, 2001. A total of 1,000 interviews were completed. Results based on the entire sample have a margin of error of plus or minus 4 percentage points at the 95% confidence level. In addition to sampling error, question wording and practical difficulties in conducting surveys can introduce error or bias into the findings of opinion polls.

Reprints

For persons who would like reprints of this ITEA/Gallup Poll Report, the price is \$15.00 for 25 copies. Additional copies are 50 cents each. This price includes postage at the library rate. (Institutional purchase orders, checks, Master Card, Visa, or Discover number required.) Address orders to ITEA, 1914 Association Drive, Reston, Virginia 20191, (703) 860-2100, fax: (703) 860-0353.

Replicating this Research

ITEA encourages additional research based on this ITEA/Gallup Poll. The complete set of data tables, which were generated from this survey, are available on the association's website, www.itea.com. The seventeen questions used in the survey are also available on ITEA's website.

ITEA/Gallup Poll Survey Committee

In February 2001, ITEA organized a committee to formulate the initial questions which were used for the ITEA/Gallup Poll Survey on Technological Literacy. Listed below are the members of this committee. All members were very helpful in not only creating the questions, but also in reviewing the first draft of this report.

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Sample Composition	
	TOTAL %
GENDER	
Male	47.9
Female	<u>52.1</u>
	100.0
AGE	
18-29	20.7
30-49	43.5
50 or older	34.7
Undesignated	<u>1.1</u>
	100.0
EDUCATION	
Less than H.S. grad.	9.5
High school grad.	26.0
Trade/technical/ vocational training	7.8
Some college	26.4
College grad.	18.1
Post Graduate work/degree	11.8
Undesignated	<u>0.4</u>
	100.0
RACE	
White	83.0
African American/Black	9.5
All others	6.9
Undesignated	<u>0.6</u>
	100.0
REGION	
East	22.8
Midwest	23.6
South	31.2
West	<u>22.4</u>
	100.0

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