

Communicating Park Science

A Second Century Stewardship Workshop

18-20 November
Asilomar

Approaches to communicating science.

Draw a picture of yourself in a typical scene of communicating science. No talking!

“Strategic communication”

- 1) has a specific audience (WHO);
- 2) has a desired outcome, a change in knowledge, attitude, or behavior of the audience (WHAT, WHY);
- 3) uses methods that are appropriate to the audience and the goal (WHEN, WHERE, HOW).

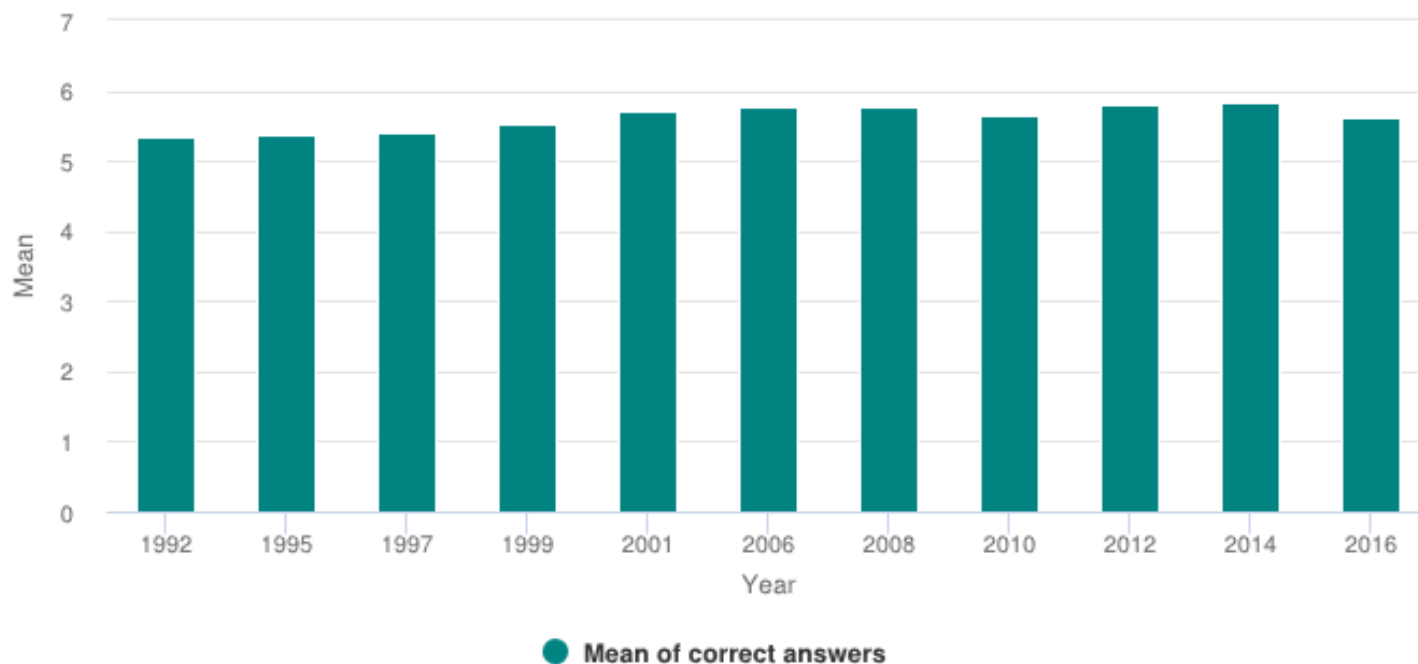
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Understanding your audience

Mean number of correct answers to questions asked by National Science Foundation as part of biennial *Science and Engineering Indicators*.



Note(s): Mean number of correct answers to nine questions included in trend factual knowledge of science scale; see Appendix Table 7-2 for explanation and list of questions. See Appendix Table 7-8 for percentage of questions answered correctly. See Appendix Tables 7-9 and 7-10 for responses to individual questions.

Understanding your audience

Correct answers to factual knowledge questions in physical and biological sciences, by respondent characteristic: 2016

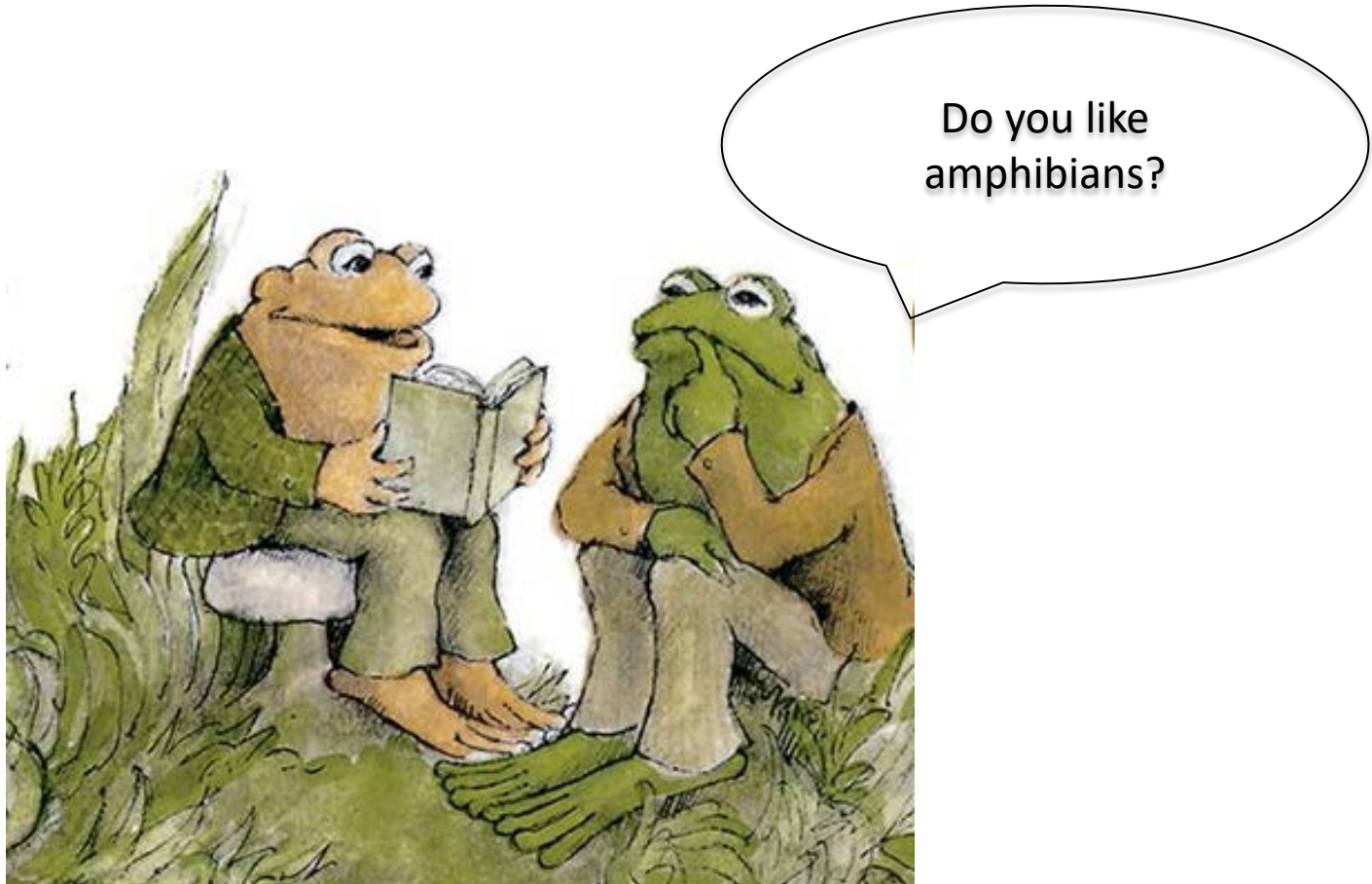
(Percent)

	Physical science								Biological science		
Characteristic	<i>The center of the Earth is very hot. (True)</i>	<i>The continents on which we live have been moving their locations for millions of years and will continue to move in the future. (True)</i>	<i>Does the Earth go around the Sun, or does the Sun go around the Earth? (Earth around Sun)</i>	<i>All radioactivity is man-made. (False)</i>	<i>How long does it take for the Earth to go around the Sun: one day, one month, or one year?^a (one year)</i>	<i>Electrons are smaller than atoms. (True)</i>	<i>Lasers work by focusing sound waves. (False)</i>	<i>The universe began with a huge explosion.^b (True)</i>	<i>It is the father's gene that decides whether the baby is a boy or a girl. (True)</i>	<i>Human beings, as we know them today, developed from earlier species of animals.^c (True)</i>	<i>Antibiotics kill viruses as well as bacteria. (False)</i>
All adults (n = 1,390)	85	81	73	70	51	48	45	39	59	52	51

Understanding your audience

~~“biodiversity”~~

“wildlife” or “plants and animals”



Arnold Lobel, *Frog and Toad are Friends*

Understanding your audience

~~“ecosystem”~~

“air, land, and water”



Photo by C. Daigle

Understanding your audience

“nature”



1980s: 3,000 salmon returning/year,
active sport, sustenance fishery
in- and on-the-water activity

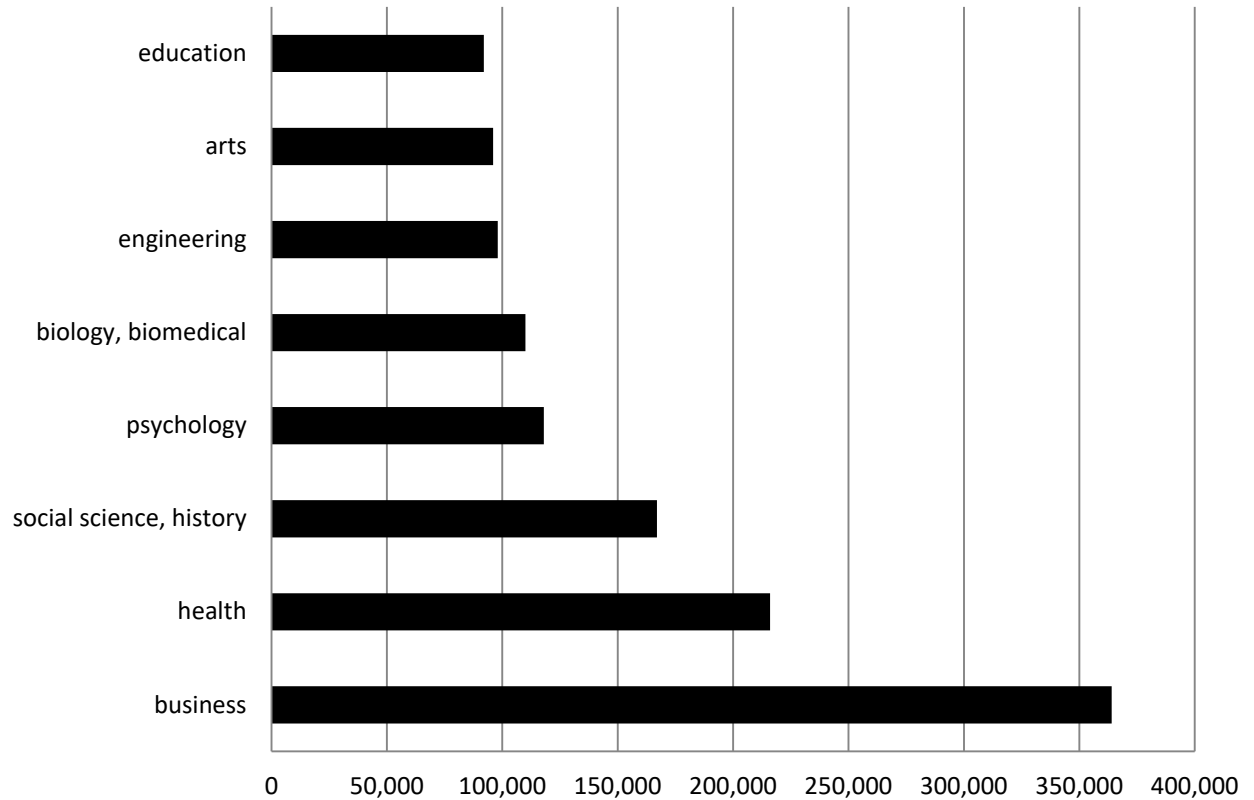
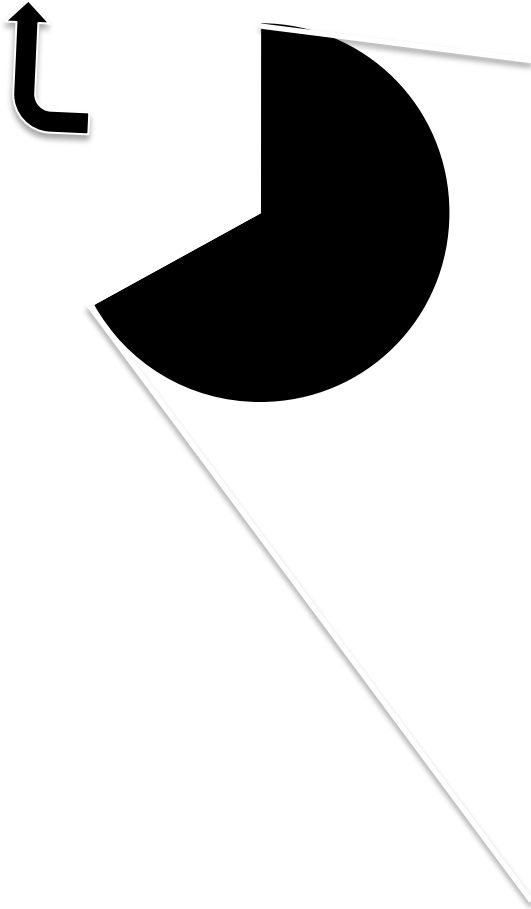


2000s: <1,000 salmon
returning/year, Endangered Species
Act listing
next-to-water activity

Understanding your audience

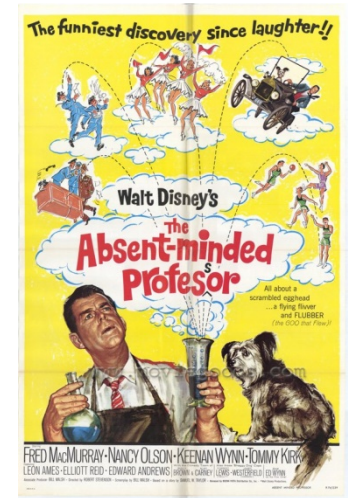
Bachelor's Degrees, 2014-2015

33% of high school graduates don't go on to college.



US Dept. of Education

Understanding your audience



“scientists are apt to be odd and peculiar people.”



researcher



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cartoon



clipart



animated



lab



student



science



male



computer



psychology



nurse



TED Talks
ted.com



Researchers | Victoria University ...
vu.edu.au



How to Become a Professional Res...
work.chron.com



Nine Habits of a Highly Productive ...
stemcell.com



A Researcher's Lifestyle – J-Gate
jgateplus.com

Understanding your audience



People care about the Earth.

A majority of voters say it is very important to protect drinking water quality (87%), protect oceans and fish (73%), and protect lakes, rivers, and streams (72%) (TNC 2018)

63 % of Americans worry a “great deal” about pollution of drinking water. (Gallup 2017)

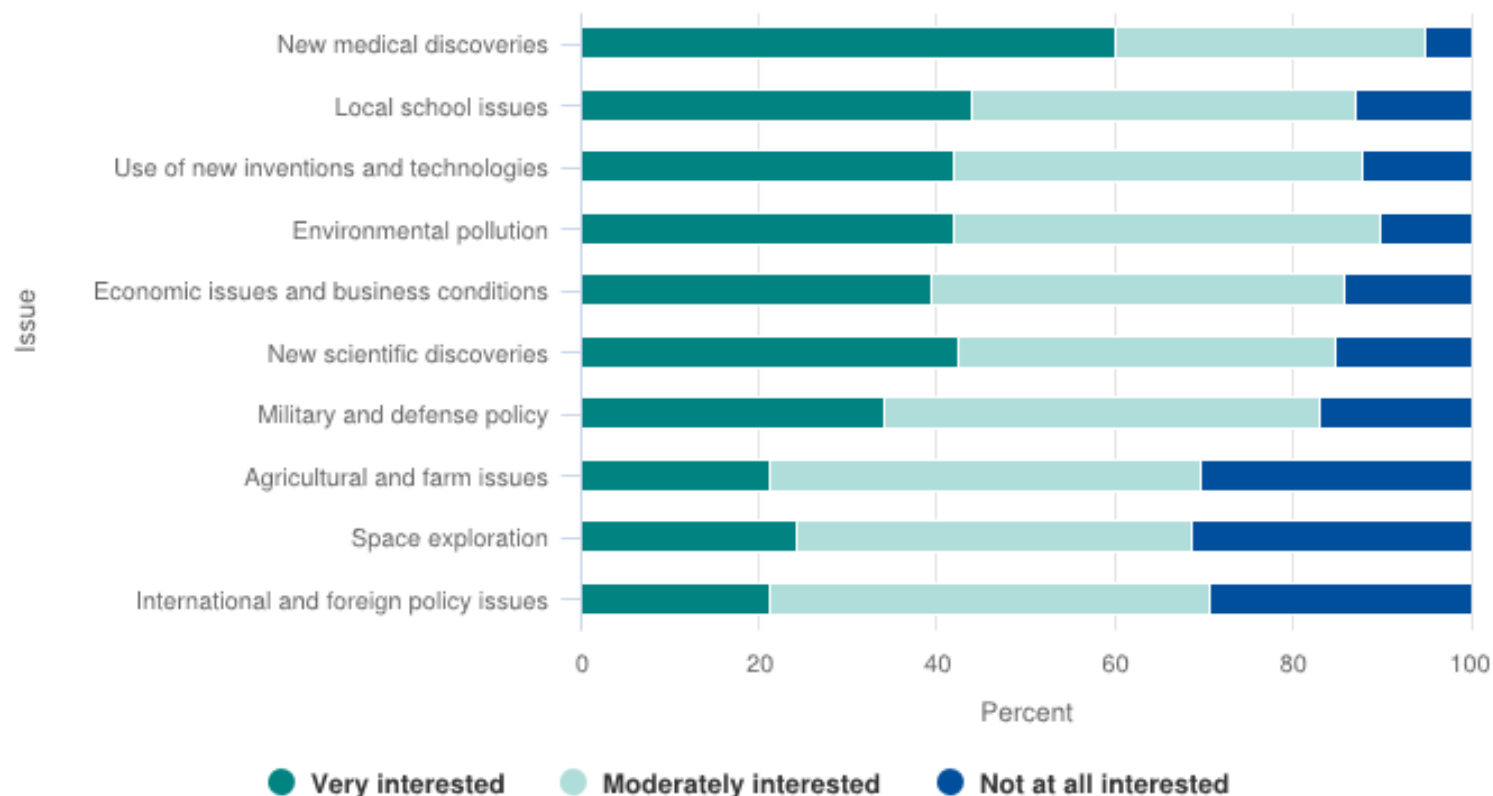
62 % of Americans think we spend too little on environmental problems. (NSF 2016)

59 % of Americans think environmental regulations are worth the cost. (Pew 2016)



Understanding your audience

People are interested in science.



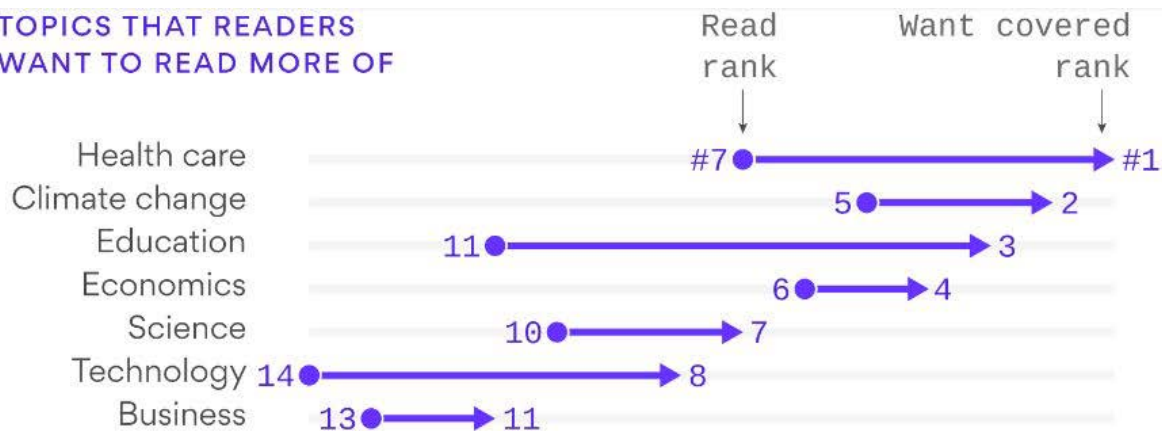
Note(s): Responses to the following: *There are a lot of issues in the news, and it is hard to keep up with every area. I'm going to read you a short list of issues, and for each one I would like you to tell me if you are very interested, moderately interested, or not at all interested.* Responses of "don't know" are not shown. Percentages may not add to 100% because of rounding.

Source(s): NORC at the University of Chicago, General Social Survey (2016). See Appendix Table 7-1.

Understanding your audience

People want more science stories!

TOPICS THAT READERS WANT TO READ MORE OF



TOPICS THAT READERS WANT TO READ LESS OF



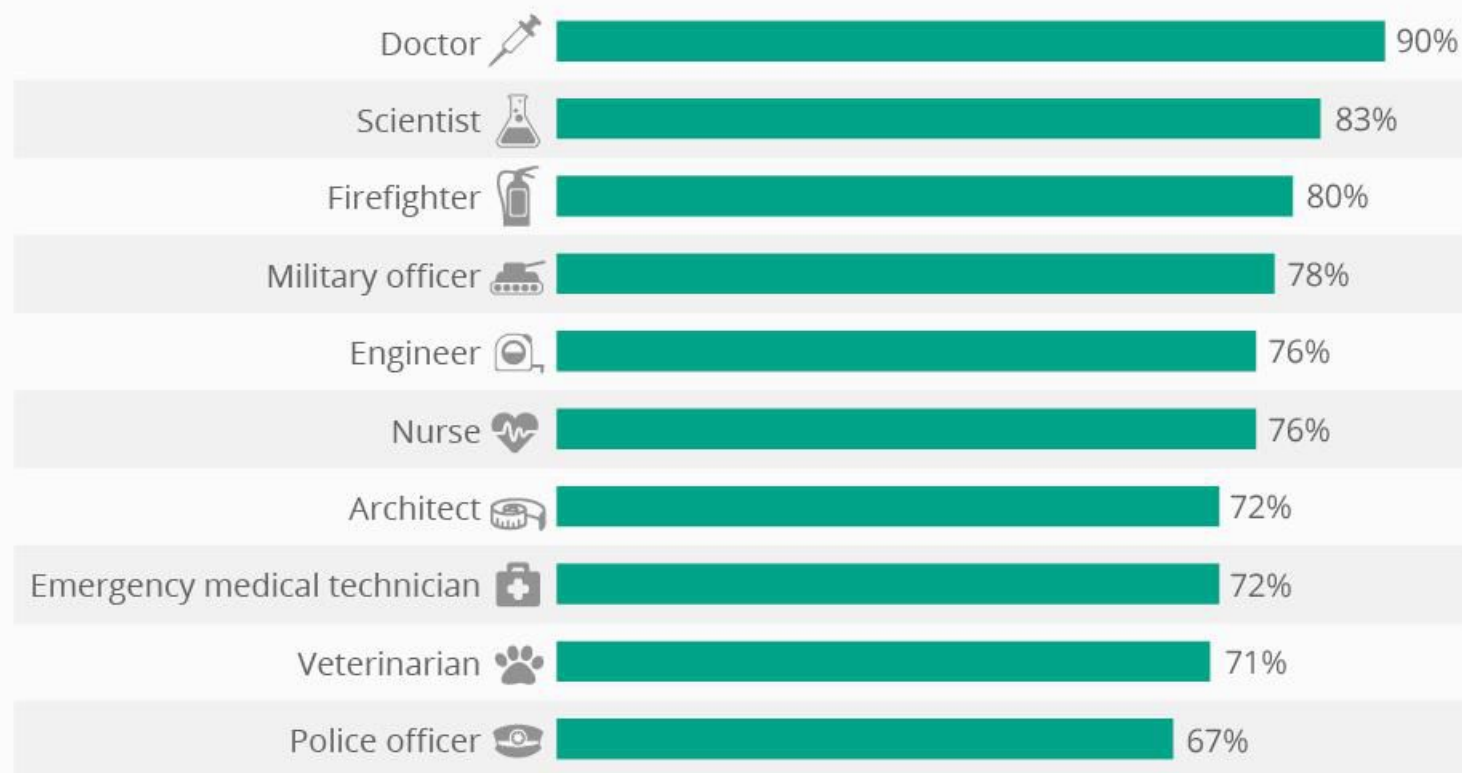
TOPICS READ THE SAME AMOUNT AS THEY WANT COVERED



People respect scientists.

The Most Prestigious Professions In America

% of people finding the following occupations prestigious in 2016



Understanding your audience

People trust scientists.

<i>Ranked by All Voters % Total Trust</i>	All Voters
	Total Trust
Firefighters	92%
Nurses and other health professionals	86%
Biologists	85%
Farmers and ranchers	84%
Scientists	83%
Your state department of natural resources	75%
Professors at a major research university	74%
Conservation organizations	74%
Hunters and fishermen	73%
Your local church or place of worship	71%

Understanding your audience

People trust NPS (some of them, anyway).

Table 4. Average trust ratings by agency and political ideology.

	Very liberal (A)			Moderate (B)			Very conservative (C)			Very conservative trust– Very liberal trust (C–A)	
	Rank	General science trust	Climate science trust	Rank	General science trust	Climate science trust	Rank	General science trust	Climate science trust	General science trust	Climate science trust
NASA	3rd	3.54	3.58	1st	3.38	3.20	1st	3.24	2.88	–0.30	–0.69
NOAA	1st	3.57	3.61	2nd	3.37	3.19	2nd	3.20	2.84	–0.38	–0.77
Smithsonian	2nd	3.57	3.61	3rd	3.24	3.06	8th	2.96	2.60	–0.62	–1.01
CDC	7th	3.41	3.45	4th	3.23	3.05	5th	3.07	2.72	–0.34	–0.73
NSF	6th	3.44	3.47	5th	3.19	3.01	7th	2.98	2.62	–0.46	–0.85
NPS	9th	3.28	3.31	6th	3.18	3.00	3rd	3.10	2.74	–0.18	–0.58
NIH	4th	3.46	3.50	7th	3.13	2.95	9th	2.85	2.49	–0.62	–1.01
USDA	8th	3.28	3.32	8th	3.12	2.94	6th	2.98	2.62	–0.30	–0.69
DOD	11th	2.98	3.01	9th	3.03	2.85	4th	3.08	2.72	0.10	–0.30
EPA	5th	3.45	3.49	10th	3.03	2.85	11th	2.67	2.31	–0.77	–1.17
DOE	10th	3.22	3.25	11th	2.97	2.79	10th	2.76	2.40	–0.46	–0.85
Average		3.38	3.42		3.17	2.99		2.99	2.63	–0.39	–0.79

NASA: National Aeronautics and Space Administration; NOAA: National Oceanic & Atmospheric Administration; CDC: Centers for Disease Control & Prevention; NSF: National Science Foundation; NPS: National Park Service; NIH: National Institutes of Health; USDA: Department of Agriculture; DOD: Department of Defense; EPA: Environmental Protection Agency; DOE: Department of Energy.

Agencies ordered by rank for respondents with moderate political ideologies; table entries are model-based means controlling for age, education, gender, income, race, and church attendance. Furthermore, entries are the average of trust scores between the two different orders of questions.

Understanding your audience



Audience Discussion Questions

Who is your target audience?

What are they most interested in?

What are the most popular topics/well attended programs at your park? How and where does current science fit?

What does your audience know, think, feel about your subject or (or science in general)?

How, where, when do you reach them?

