Hart Research Associates

1724 Connecticut Avenue, N.W.
Washington, D.C. 20009
202-234-5570
202-232-8134 FAX

M E M O R A N D U M

TO: All Interested Parties
FROM: Hart Research Associates
DATE: February 27, 2009
RE: Americans' Attitudes Toward Engineering And Engineering Challenges—National Survey Results

From January 22 to 25, 2009, Hart Research Associates conducted a telephone survey on behalf of Duke University's Pratt School of Engineering among a representative national sample of 808 American adults. The margin of error for this survey is ±3.5 percentage points at a 95% confidence level among all adults, and is larger among subgroups.

The poll finds that Americans largely take for granted U.S. supremacy in science and technology, having little understanding or appreciation of the role that engineers play. They do, however, recognize that many of the specific challenges confronting engineers are central to the problems of our times. Alerting Americans to engineers' involvement in these types of challenges leads to markedly higher appreciation of the profession.

Findings

1 Americans have high expectations of the 21st century's technological advancements and of America's leadership in meeting future technological challenges. Nearly three in four (72%) adults believe that the 21st century's technological advancements will be greater than those of the 20th century, and nearly nine in 10 (88%) feel that the 21st century's technological advancements will at least equal those of the 20th century. Mirroring the perceived dominance of the United States during the 20th century, half (49%) of Americans think that the United States will be the technological leader in the present century—ahead of Japan, China, Europe, India, and Russia.

- In judging America's leadership position, less-educated Americans are more optimistic than are better-educated Americans about the nation's relative position in the 21st century: 58% of adults with a high school education or less think that the United States will be the technological leader, versus 45% of adults with at least some college education.
- Similarly, less-educated Americans are more inclined to believe that the nation's ability to compete technologically has improved over the past generation (44% for adults with a high school education or less, versus 31% of adults with at least some college education).
- Adults who believe that America's ability to compete technologically has declined over the past generation most often attribute this to the education system.

2 Despite their high expectations for the future, most Americans are disengaged from the world of engineering and what it takes to advance technologically.

- American adults admit to having little familiarity with the realm of engineering, giving themselves an average grade of "C" for how much they know and understand about the world of engineers and what they do. This grade drops to a "C minus" for non-college-educated adults, while it rises slightly to a "C plus" for adults with at least a college degree. These grades are reinforced by the 21% of all adults who name science and engineering as the profession[1] receiving too little attention and credit for Americans' well-being—a proportion that drops to 12% among adults with a high school education or less.
- Most adults view engineering as less appealing to young people selecting a profession or career, compared with other professions, such as medicine, business, or law. Nearly three in five (58%) adults feel that engineering is losing out to these other professions. Reasons cited for engineering's relative lack of appeal relate both to education issues, such as a demanding curriculum, and to low pay, low prestige, and few job opportunities.

3 An alarming disparity exists between Americans' views of the challenges ahead and the role that engineers will play in addressing them. While most adults are impassive toward engineering as a profession, majorities characterize the five engineering challenges presented to them as either high priorities or absolute top priorities for the nation going forward. Challenges judged to be the most important deal with life's basics: fighting disease, providing clean water, and supplying clean and affordable energy. Securing cyberspace and restoring urban infrastructures rank as second-tier priorities.

Engineering Challenges
Proportion Who Say "High/Absolute Top Priority"

	All Adults %
Developing medicines to fight new and more virulent disease-causing agents	86
Finding ways to provide clean water around the world	85
Developing economical and environmentally friendly power sources	83
Securing cyberspace against viruses, identity theft, or other attacks	68
Restoring and improving deteriorating urban infrastructures	61

[1] The list of professions included teaching and education, medicine and health care, science and engineering, manufacturing, business and finance, law and the legal field, and entertainment.

4 The interest and importance Americans assign to engineering grows dramatically when they learn about the challenges engineers are addressing. Before hearing descriptions of the five engineering challenges, 40% of adults judge engineering issues and problems to be more interesting and important compared with those associated with medicine, business, and law. After hearing the descriptions, the proportion increases to 54%. Demographic groups exhibiting the greatest increases include women without a four-year college degree (+24 points), African Americans (+22 points), and 18- to 34-year-olds (+21 points).

Perceived Interest
And Importance Of Engineering Issues And Problems
Proportion Who Say "Much More/Somewhat More Interesting and Important Than Other Professions"

	BEFORE Learning About Issues %	AFTER Learning About Issues %	Differential ±
All adults	40	54	54
Men	46	58	58
Women	33	53	53
African Americans	37	59	59
Whites	39	56	56
Age 18 to 34	35	56	56
Age 35 to 49	42	55	55
Age 50 to 64	42	57	57
Age 65 and over	38	52	52
A/B grades for engineering knowledge	46	61	61
C grade for engineering knowledge	41	56	56
D/F grades for engineering knowledge	29	48	48
High school/less	41	59	59
Some college	37	55	55
College graduates	39	54	54
Postgraduates	38	51	51

5 Focusing on specific engineering challenges, Americans recognize that other countries rival the United States for technological ability. Compared with the 20th century, when America was seen as the technological leader, 49% feel that at least one other country is better able to succeed in meeting the types of engineering challenges identified by the National Academy of Engineering as key to our advancement in the 21st century. One in four (25%) believe that at least two other countries are better able to succeed than the United States in meeting these types of challenges.

6 The ability to regain our global competitiveness in engineering and technology starts in the classroom. Given a list of suggestions for how America could improve its global competitiveness in the areas of engineering and technology, Americans favor those that go directly to the issue of increased training and higher education standards. Less direct solutions—including tax breaks, visa and immigration reform, and lengthening the school year—garner less enthusiastic support.

Ideas For Improving America's Global Competitiveness In Engineering And Technology
Proportion Who Say "Would Help A Lot"

	%
Provide more training and retraining for workers to help them keep up with new technology and the skills of the future	71
Upgrade K-through-12 math and science teaching to foster higher student achievement	66
Increase the standards for teachers and students in public schools, including higher standards for graduation	62
Have the government devote more tax funding for research and development in basic research, especially in the physical sciences and engineering	41
Increase the regular school year by one month so American students can get more math and science education	37
Reform visa and immigration policies to enable the United States to attract and retain the best and brightest science, technology, math, and engineering students from around the world to study for advanced degrees and stay to work in the United States	34
Target tax breaks to encourage investment in key industries	33
Target tax breaks to businesses to encourage greater investment in research and development, even if this means some businesses will pay less in taxes	33