

Mars Generation **National Opinion Poll**

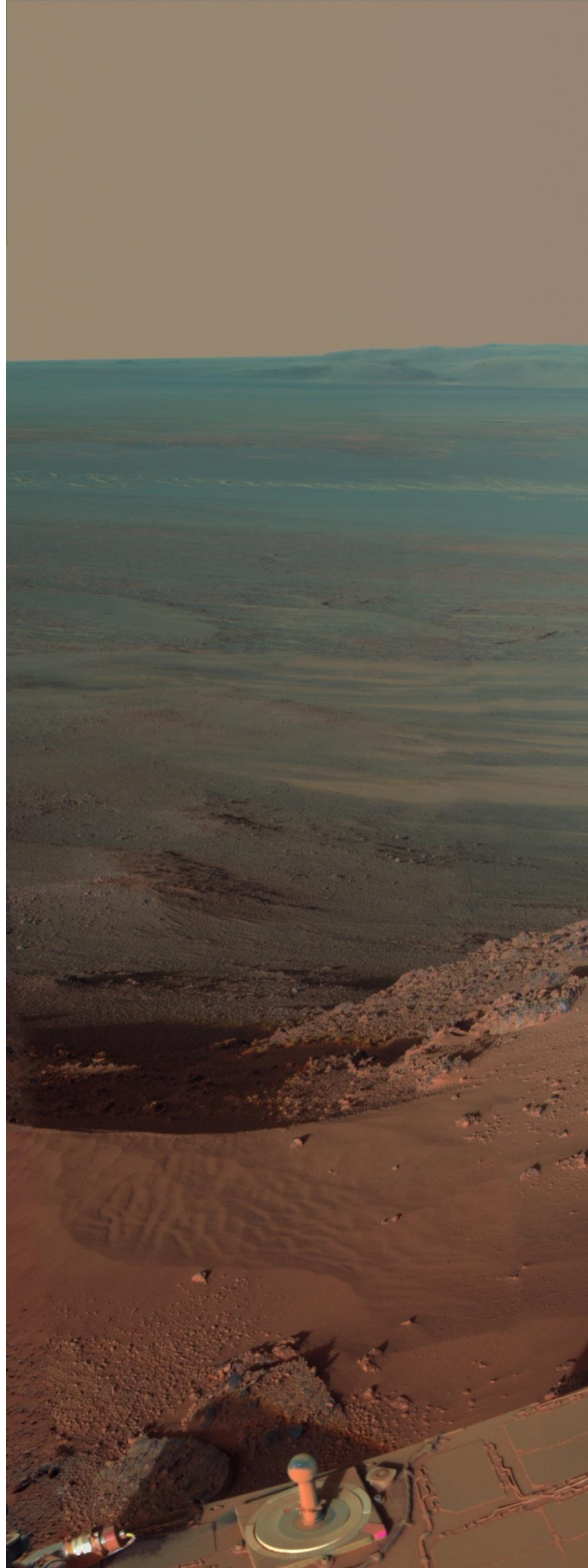
*Measuring U.S. Citizen
Support for the
Exploration of Mars*

Report by:
Explore Mars, Inc.

Survey conducted by:
Phillips & Company

Sponsored by:
The Boeing Company

March 7, 2013



*“**M**ay this survey be a call to action, a validation that the American public is still committed to doing great and noble things, ‘not because they are easy, but because they are hard.’ Americans are united in confidence and spirit that men and women will walk on Mars within their lifetime. Let us commit ourselves to this noble cause of the human spirit. ”*

*— Artemis Westenberg, President,
Director, and Co-Founder of Explore Mars*

Forward

The history of humanity is rooted in exploration. Those who had the courage to discover the new world did so for some of the same reasons we now seek to explore space. We choose to go to space not just to inspire a nation, we go to space because it exploration is critical for prosperity—economic, social and cultural. And Mars is the new, new world.

Americans are highly enthusiastic about space exploration—particularly to Mars. This is the clear conclusion of the Mars Generation poll that was commissioned by Explore Mars, Inc., and Boeing and conducted by Phillips & Company.

This should not be a surprise. Mars has always been a subject of fascination in our society. The most recent surge in interest in our neighboring planet came last August with the successful landing of the Curiosity rover. That event combined with previous successful missions over the past sixteen years, has elevated Mars exploration in the public consciousness.

The Mars Generation poll was the first poll of its kind. It was the right time to conduct a scientific national poll to gauge the extent of public support. However, positive results were not a foregone conclusion. Despite public fascination, the complicated budgetary and economic climate could temper public enthusiasm, but the American people once again proved to be resilient and optimistic.

Among the findings of this poll are that 71 percent of Americans believe we will land humans on Mars by the year 2033, and 75 percent believe that NASA's budget should be doubled to 1 percent of the federal budget to fund initiatives including a mission to Mars.

The most important lesson from this poll is that Americans are eager to embrace something bold, something exciting – something that will show that the United States is ready to lead the world leader in science and technology. A clear and bold human space flight program, one that lands humans on Mars by the early 2030s, is exactly what the nation needs and is clearly what Americans desire. We have the technology, the science and the engineering talent to do so.

Perhaps our greatest challenge is convincing our elected officials to embrace this goal and lead the way. We hope that this poll can serve a catalyst to reinforce what Americans already support and encourage our nation's leaders that this is not the time to retreat.

It is time to put humans on Mars. It is time to explore.

A handwritten signature in blue ink, appearing to read 'Chris Carberry'.

Chris Carberry
Executive Director, Explore Mars



The following survey was conducted between February 4, 2013, and February 6, 2013, targeting a random stratified sample of 1,101 respondents representing a 95% confidence level and margin of error of +/-3%. The survey was conducted by email and targeted a nationwide sample. All efforts were made to ensure a representative sample of the U.S. population 18 years and older given normal standards of statistical sampling.

The "Mars Generation" Survey was conducted by the independent market research team of **Phillips & Company** (www.phillipscompany.com) and sponsored by **Explore Mars, Inc.** (www.exploremars.org), a non-profit 501(c)(3) organization, **The Boeing Corporation**.



If in reading this report you find anything you think is reported inaccurately or find any anomalies in statements of findings, please contact Phillips & Company at mars@phillipscompany.com.

Table of Contents

Forward.....	3
Methodology	6
Demographics	7
Report Summary	9
Data by Demographic.....	13
1. Knowledge of Curiosity Mission	13
2. Perceptions of NASA Budget.....	15
3. Opinions on Funding for Mars Exploration	16
4. Reasons for Going to Mars	32
5. Perceived Barriers to Sending Humans to Mars	37
6. Perceived Value of U.S. Human Space Missions.....	47
7. Confidence in Human Space Exploration	48
8. Human vs. Robotic Exploration of Mars	60
9. U.S. Participation in an International Joint Mission to Mars	64
10. If the United States sends humans to Mars, what should be the goal?	67
Addendum A: Survey Questions and Text.....	68
"Mars Generation" Survey.....	68



Methodology

With the success of the Mars Curiosity rover landing in 2012, the "Mars Generation" survey was designed to measure attitudes and levels of support toward human and robotic exploration of Mars. The poll asked respondents to provide opinions about space exploration missions, the goal of human space exploration, NASA's budget, and the future of human space exploration.

The opinion poll was conducted between February 4, 2013, and February 6, 2013. The survey targeted a stratified random sample of 1,101 respondents representing a 95 percent confidence level and margin of error of +/-3 percent. All efforts were made to ensure a representative sample of the general U.S. population 18 years and older given normal standards of statistical sampling.

The Mars Generation survey was conducted by the independent marketing team of Phillips & Company (www.phillipscompany.com) and sponsored by Explore Mars, Inc. (www.exploremars.org), a non-profit 501(c)(3) organization and The Boeing Corporation.

To identify the target survey population, distribute the survey and collect the results, the research team used Qualtrics, a third-party survey platform and data analytics provider. The survey design team and sponsors were kept confidential and not disclosed to respondents.

Qualtrics uses the RiverSelect sampling method. RiverSelect sampling enables researchers to target hundreds of thousands of fresh survey respondents sourced from the web on any given day. Qualtrics currently utilizes a global panel of over 6.7 million active panelists. Therefore, a hybrid approach of guaranteed panelists and a river sample from those panelists was used.

The RiverSelect hybrid sampling method ensures:

- *Clarity.* By injecting speed traps and red-herring questions into pre-screeners, Qualtrics filters out bad respondents from the start of each survey engagement.
- *Control.* Through ISP blocking of hosting companies that are popularly used by scammers as cheap proxies, Qualtrics keeps the river clean and manageable.
- *Confidence.* Authentication is performed using digital fingerprinting, geo-IP validation and Captcha technologies.
- *Consistency.* Pre-profiling respondents helps to control who comes into the Qualtrics system, resulting in a better makeup of the river.

Phillips & Company designed the survey to ensure that the order of questions and language used were objective and not leading. Several tests were conducted to ensure that question order was not a factor on outcomes. The survey also collected demographic data. The last six questions asked participants to indicate their sex, race, age, income, education level and ZIP code in which they lived. "Prefer not to answer" was an option for every demographic question except for the free-response ZIP code question.

The first poll question was a general knowledge assessment question about the Curiosity rover, and the subsequent questions were opinion-based. After respondents selected their answer to the first question, we provided the answer. The second question asked respondents what they thought NASA's percentage of the federal budget is on a scale from 0 to 6 percent. After respondents selected a percentage in increments of one-half of 1 percent and proceeded to the next question, the survey provided the actual percentage on the next page. Because the survey provided the answer to two questions, respondents were not allowed to return to previous questions.

Phillips included context to a couple of questions in order for respondents to accurately provide an opinion. Phillips presented the questions in various forms, including Likert scales, multiple choice and ranking, in

order to represent varying answers and encompass a wide range of responses. Every question was a forced question except one free-response question and the demographic question capturing respondents' ZIP codes.

Final respondent data demonstrated that that the sample population disproportionately included Americans in urban populations, and the number of respondents do not precisely reflect rural and Midwest populations of the country. As an online poll that was distributed via email, respondents had to have Internet access. Though online surveys are the most efficient ways to survey a large number of the general population, the consequence is that citizens who cannot afford Internet access or do not have easy access to the Internet may have been unrepresented. However, given the proliferation of mobile phones and VoIP, it is unclear if a phone survey would have reduced this oversampling.

Phillips recommends that future surveys use stratified sampling techniques to ensure a greater distribution of respondents over rural and Midwest populations.

Demographics

Breakdown of respondents.

Sex

- 550 Female
- 541 Male
- 10 Prefer not to answer
- Total = 1,101

Age

- 167 18-24
- 267 25-34
- 241 35-44
- 215 45-54
- 177 55-64
- 28 65 or older
- 6 Prefer not to answer
- Total = 1,101

Race

- 876 White/Caucasian
- 72 African American
- 40 Hispanic
- 80 Asian
- 10 Native American
- 1 Pacific Islander
- 7 Other
- 15 Prefer not to answer
- Total = 1,101

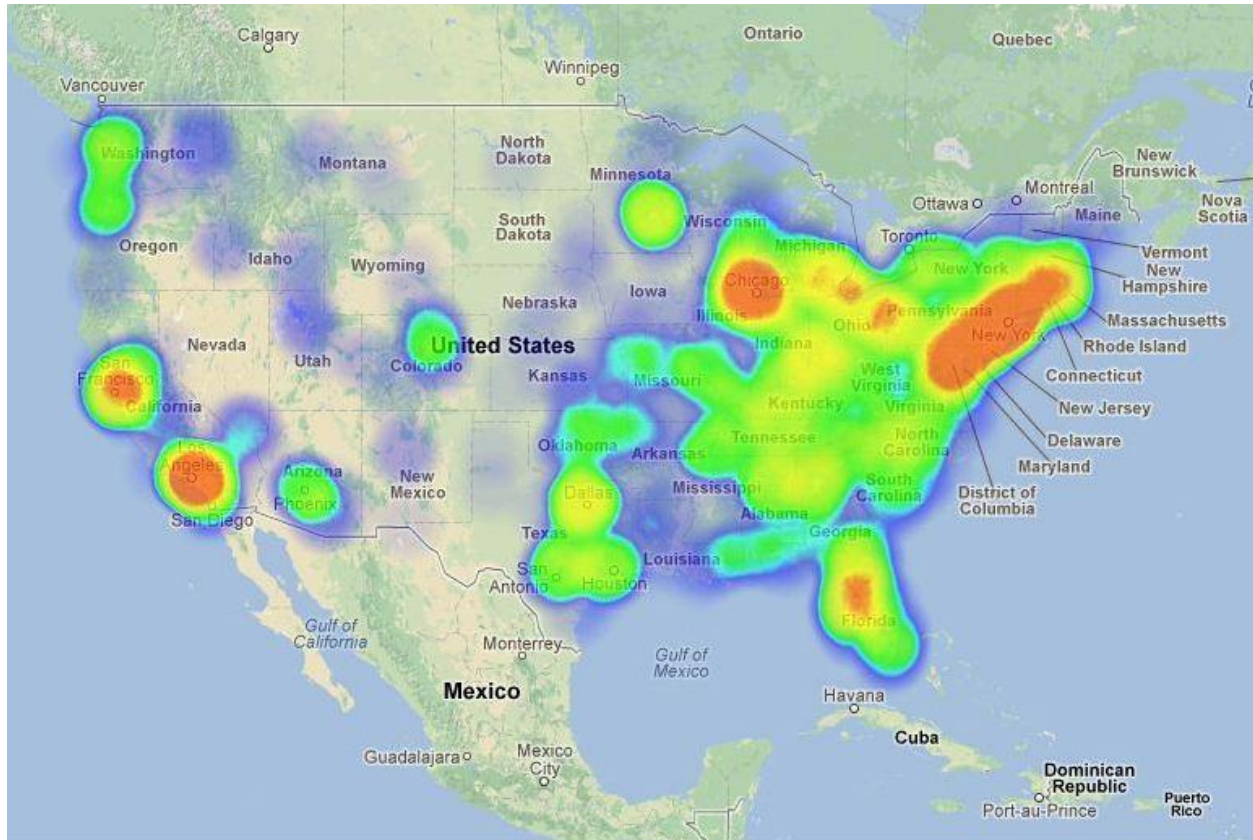
Annual Income

- 135 Below \$20,000
- 108 \$20,000-29,999
- 133 \$30,000-39,999
- 112 \$40,000-49,999
- 121 \$50,000-59,999
- 78 \$60,000-69,999
- 106 \$70,000-79,999
- 59 \$80,000-89,999
- 175 \$90,000 or more
- 74 Prefer not to answer
- Total = 1,101

Level of Education

- 32 Some high school, no diploma
- 213 High school diploma or equivalent
- 263 Some college credit
- 68 Trade/technical/vocational training
- 123 Associate degree
- 274 Bachelor's degree
- 79 Master's degree
- 24 Professional degree
- 16 Doctorate degree
- 9 Prefer not to answer
- Total = 1,101

The following graphic indicates geographic disparity and concentration of survey respondents, ranging from dense (red) to sparse (blue).



Report Summary

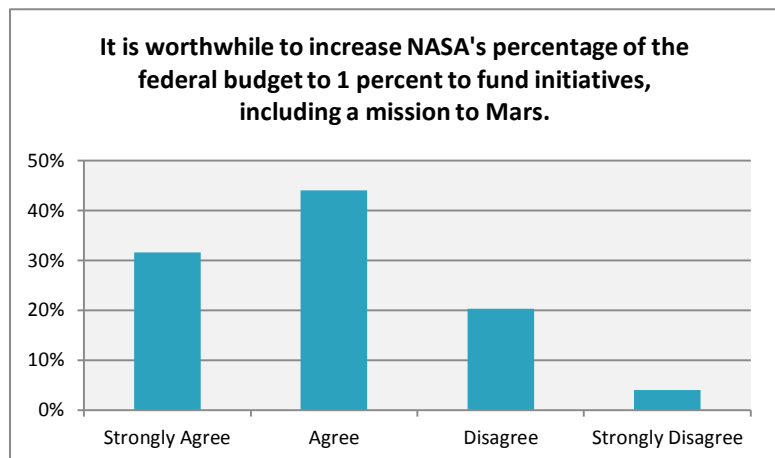
**What do you think is NASA's percentage of the overall federal budget?
 Use the scale of 0 to 6 percent to represent your answer.**

On average, Americans believe that NASA spending represents 2.43% of the federal budget with a standard deviation of 1.68%. Of respondents polled, 95% believe NASA spending falls within 0.75% and 4.11% of the federal budget. In reality, NASA's budget in FY2011 was \$18.4 billion representing 0.5% of the federal budget.

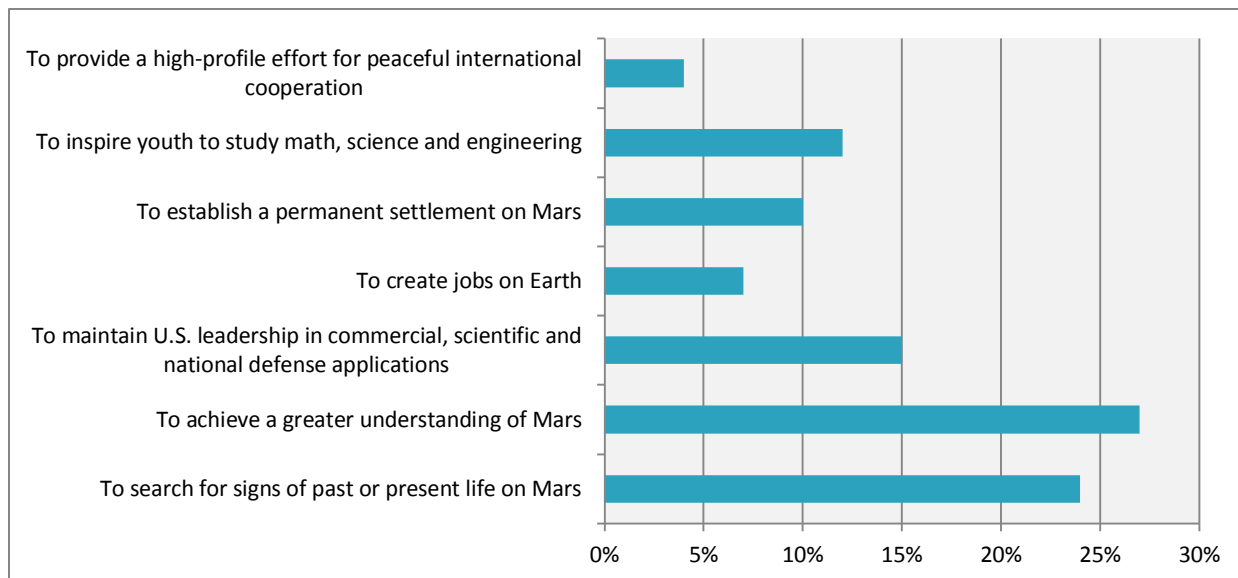
Indicate whether you "Strongly Agree," "Agree," "Disagree" or "Strongly Disagree" with the following statements:

#		Strongly Agree	Agree	Disagree	Strongly Disagree	# of Respondents	Mean
1	It is worthwhile to increase NASA's percentage of the federal budget to 1 percent to fund initiatives, including a mission to Mars.	31.61%	44.14%	20.25%	4.00%	1,101	1.97
2	The settlement of Mars should be left to privately-funded private sector efforts.	13.53%	32.15%	45.50%	8.81%	1,101	2.50
3	It is necessary for the Government to fund initial technologies to send humans to explore Mars.	23.07%	48.96%	23.43%	4.54%	1,101	2.09
4	If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding.	31.15%	53.13%	12.62%	3.09%	1,101	1.88
5	NASA should strengthen and expand partnerships with the private sector to send humans to explore Mars.	32.15%	51.23%	14.17%	2.45%	1,101	1.87

- 75% of Americans Strongly Agree or Agree that it is worthwhile to increase NASA's percentage of the federal budget to 1 percent to fund a mission to Mars.
- 54% of Americans believe that settlement of Mars should not be left to privately-funded private sector efforts and that there should be a strong NASA role.
- 84% of Americans support sending humans to Mars if Curiosity finds signs of past or present life.
- However, 83% of Americans believe that NASA should strengthen and expand partnerships with the private sector to send humans to Explore Mars.



Which one of the following reasons do you think best supports sending humans to Mars?



According to the majority of Americans, the top three reasons for human exploration of Mars are 1) to achieve a greater understanding of Mars, 2) to search for signs of life, and 3) to maintain U.S. leadership in commercial, scientific and national defense applications.

In regard to sending humans to Mars by 2033, rate how much of a barrier you think each issue is by selecting "Not a Barrier," "Slight Barrier," "Strong Barrier" or "Barrier That Cannot Be Overcome."

#		Not a Barrier	Slight Barrier	Strong Barrier	Barrier That Cannot Be Overcome	# of Respondents	Mean
1	Technology shortfalls	14.44%	52.86%	29.52%	3.18%	1,101	2.21
2	Affordability	4.63%	21.53%	65.49%	8.36%	1,101	2.78
3	Motivation	45.50%	32.06%	19.71%	2.72%	1,101	1.80
4	Politics	5.99%	26.16%	58.31%	9.54%	1,101	2.71

When asked to rank potential barriers to Mars exploration, 73% of Americans believe that the greatest barrier is affordability and 67% believe politics to be a limiting barrier. Technology and motivation are not seen as significant barriers by the majority of Americans.

Please rank the missions in order of value to our country from 1 to 4, with 1 being the most valuable and 4 being the least valuable. You may check each number only once.

#	Answer	1	2	3	4	Total	Mean
1	Sending humans directly to Mars to find evidence of past life and demonstrate whether humans can live on other planets	33.33%	25.25%	19.44%	21.98%	1,101	2.30
2	Sending humans to the Moon to test hardware that can be used for future missions and eventually establish a Lunar settlement	27.61%	32.97%	21.80%	17.62%	1,101	2.29
3	Sending robots to bring a small asteroid back to Lunar orbit for long-term human study closer to Earth	24.70%	19.07%	28.16%	28.07%	1,101	2.60
4	Sending humans to an asteroid to mine, or develop capabilities to divert its orbit	14.35%	22.71%	30.61%	32.33%	1,101	2.81

Americans ranked sending humans to Mars as the most important mission to our country.

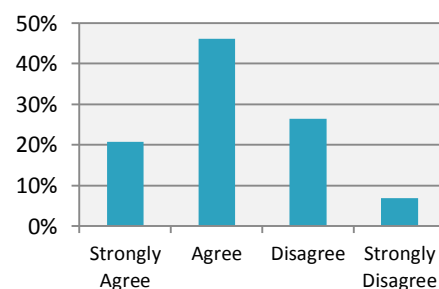
Americans also ranked the goal of sending humans to the Moon as a top priority with a combined 61% ranking this mission as having the highest or second highest value to our country.

Indicate whether you "Strongly Agree," "Agree," "Disagree" or "Strongly Disagree" with the following statements:

#		Strongly Agree	Agree	Disagree	Strongly Disagree	Total	Mean
1	Returning to the Moon is necessary before sending humans to explore Mars.	25.89%	41.05%	29.06%	4.00%	1,101	2.11
2	Human exploration of an asteroid would be worthwhile.	20.62%	59.31%	16.35%	3.72%	1,101	2.03
3	I am confident humans will go to Mars by 2033.	20.98%	50.14%	23.98%	4.90%	1,101	2.13
4	I am confident humans will go to Mars in my lifetime.	20.71%	46.14%	26.34%	6.81%	1,101	2.19




- Americans are confident that humans will walk on Mars.
- 71% of Americans are confident that humans will go to Mars by 2033; and both men and women agree with no distinguishable difference.
- Young people are more confident.
- 73% of Americans ages 18-24 are confident humans will go to Mars by 2033.

I am confident humans will go to Mars in my lifetime.







- This age group of 18-24 has the highest confidence percentage that humans will go to Mars by 2033 and in their lifetime.
- The majority of Americans ages 18-54 are confident humans will go to Mars in their lifetime.
- Americans from all diverse race groups support Mars exploration.
- 71% of both white and black Americans are confident humans will go to Mars by 2033.
- 79% of Asian Americans are confident humans will go to Mars by 2033, and 80% of Native Americans are confident of this.

There are currently two operational NASA rovers on Mars, including Curiosity. Of the statements below, which one do you most agree with?

#	Answer		Response	%
1	The United States should send both humans and robots to Mars.		742	67%
2	The United States should send only robots to Mars.		306	28%
3	The United States should not explore Mars.		53	5%
	Total		1,101	100%

- 67% of Americans agreed the U.S. should send both humans and robots to Mars.
- Only 5% of Americans believe we should not explore Mars.

If the international space community committed to a joint mission to Mars, the United States should:

#	Answer		Response	%
4	Join the committee regardless of the United States' position within the group		594	54%
3	Join the committee, but only if the United States takes the lead role		257	23%
2	Strive to be the first to explore the planet		189	17%
1	Decide not to participate		61	6%

When asked if the international space community committed to a joint mission to Mars, 54% of Americans said the U.S. should join regardless of its position within the group.

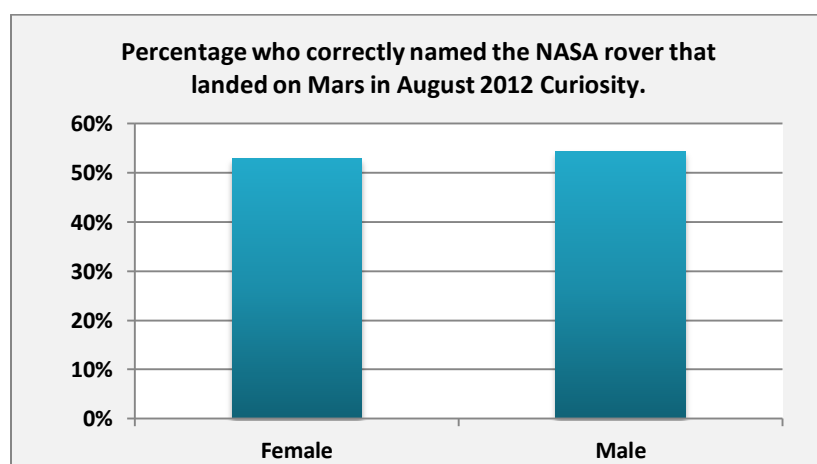
Data by Demographic

1. Knowledge of Curiosity Mission

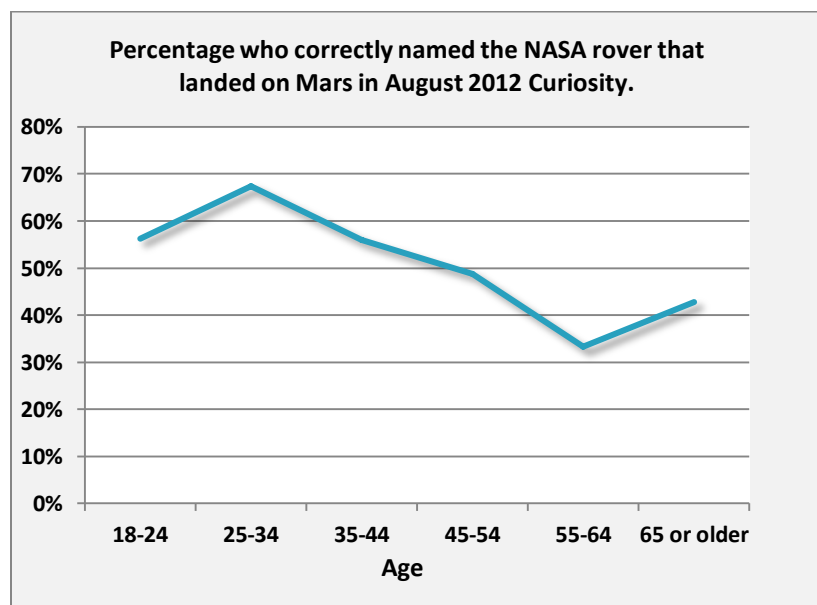
Respondents were asked: What is the name of the NASA rover that landed on Mars in August 2012? They were given four options to choose from:

- Spirit
- Curiosity
- Opportunity
- Viking I

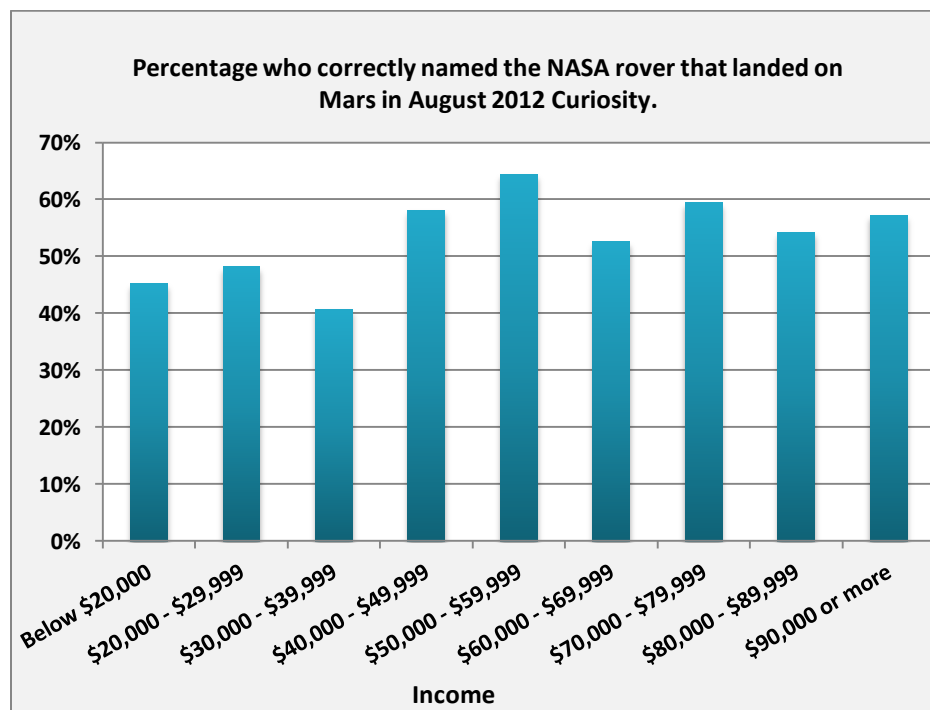
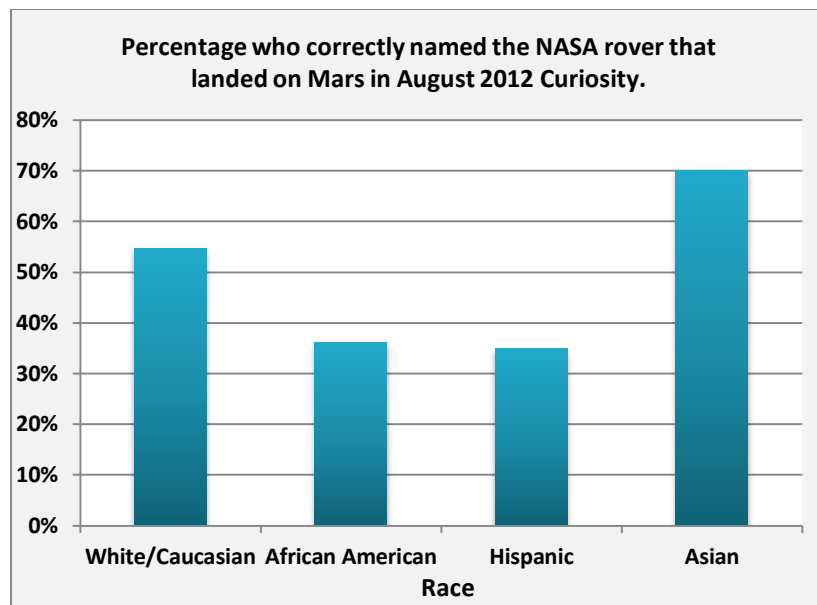
53.41 percent of respondents correctly identified Curiosity at the NASA rover that landed on Mars in August 2012.

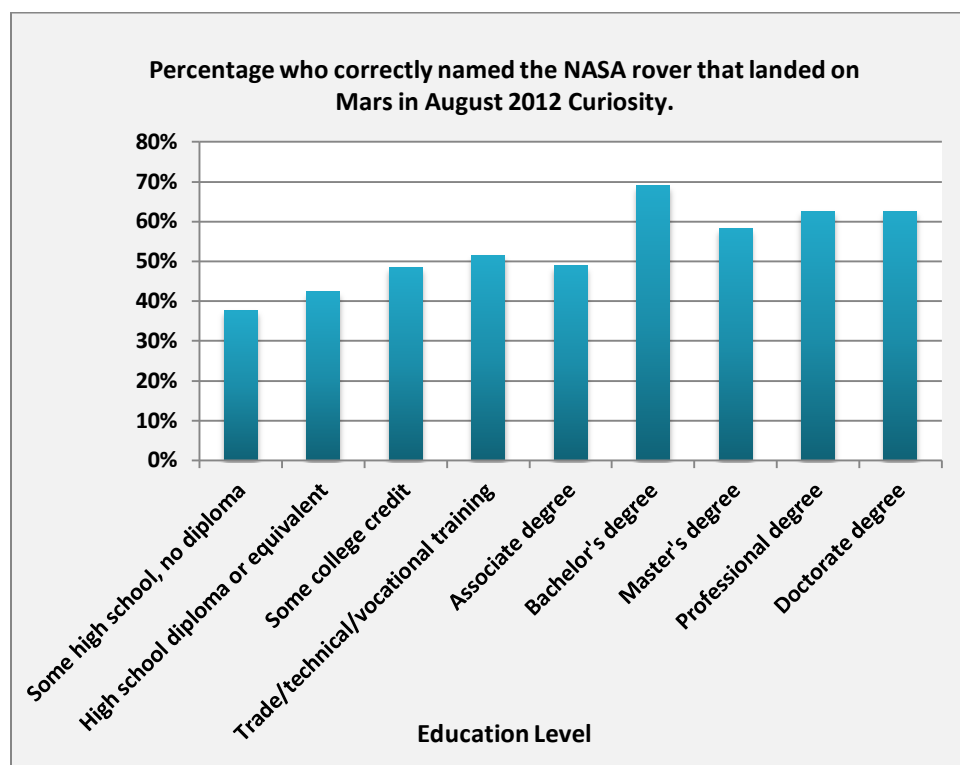


More men than woman correctly identified Curiosity, but the difference was minor at 1.43%.



The age group of 25-34 had the highest percentage of correctly naming Curiosity at more than 67%, more than 10 percent higher than any other age group.

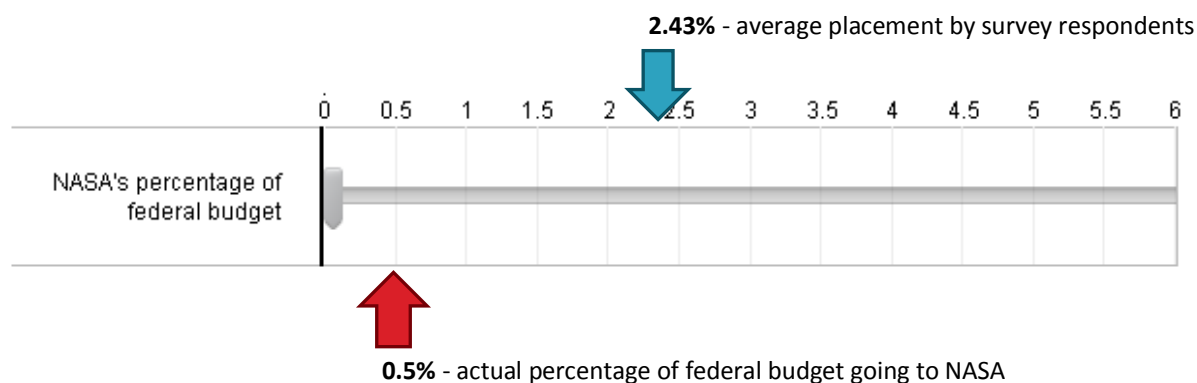




Knowledge of Curiosity trended upward with level of education, but peaked at 68.98 percent for those with Bachelor's degrees.

2. Perceptions of NASA Budget

Respondents were asked to use a sliding scale of 0 to 6 percent to represent what do they thought was NASA's percentage of the overall federal budget?.

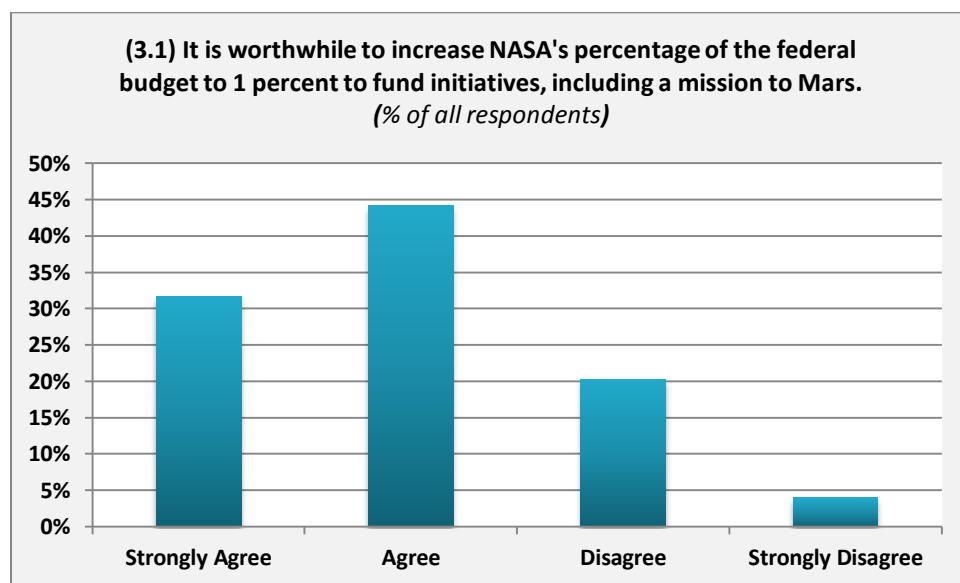


3. Opinions on Funding for Mars Exploration

Respondents were asked to: Indicate whether they "Strongly Agree," "Agree," "Disagree" or "Strongly Disagree" with the following statements:

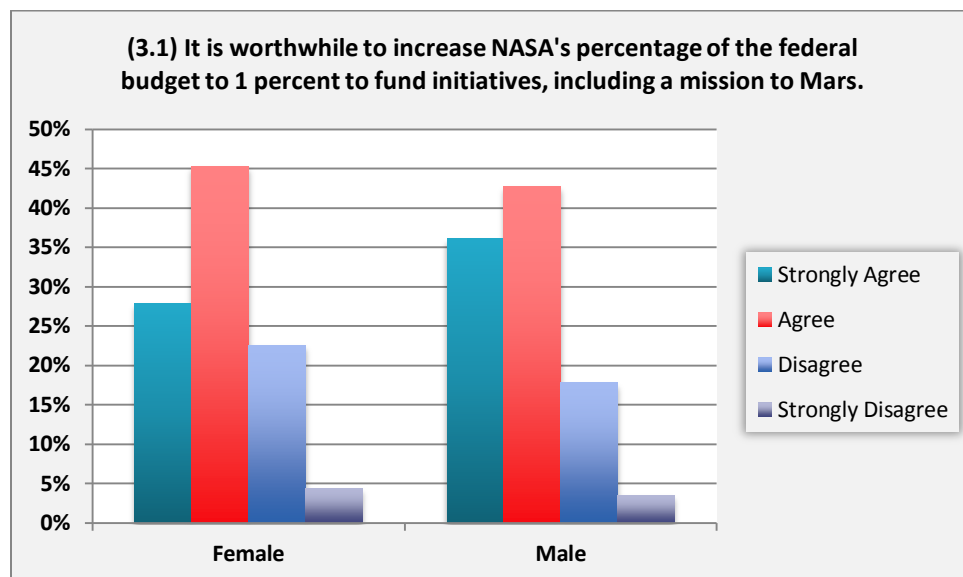
- 3.1 It is worthwhile to increase NASA's percentage of the federal budget to 1 percent to fund initiatives, including a mission to Mars.**
- 3.2 The settlement of Mars should be left to privately-funded private sector efforts.**
- 3.3 It is necessary for the Government to fund initial technologies to send humans to explore Mars.**
- 3.4 If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding.**
- 3.5 NASA should strengthen and expand partnerships partner with the private sector to send humans to explore Mars.**

(3.1) It is worthwhile to increase NASA's percentage of the federal budget to 1 percent to fund initiatives, including a mission to Mars.

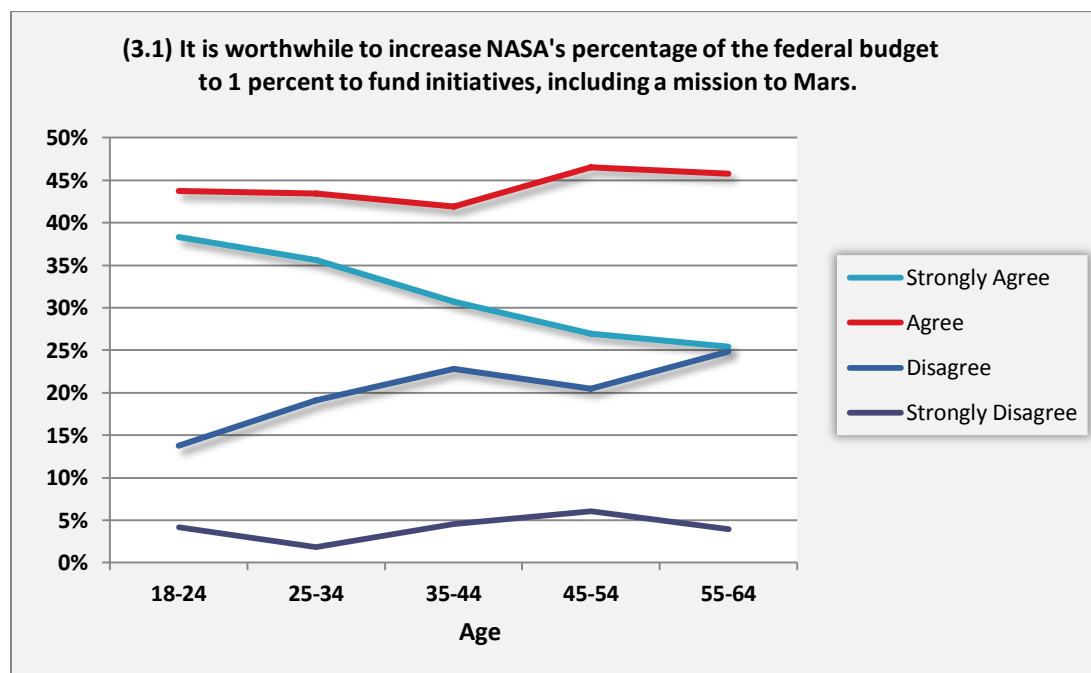


75.55% of respondents agree or strongly agree that it's worthwhile to increase NASA's percentage of the federal budget to 1 percent to fund initiatives, including a mission to Mars.

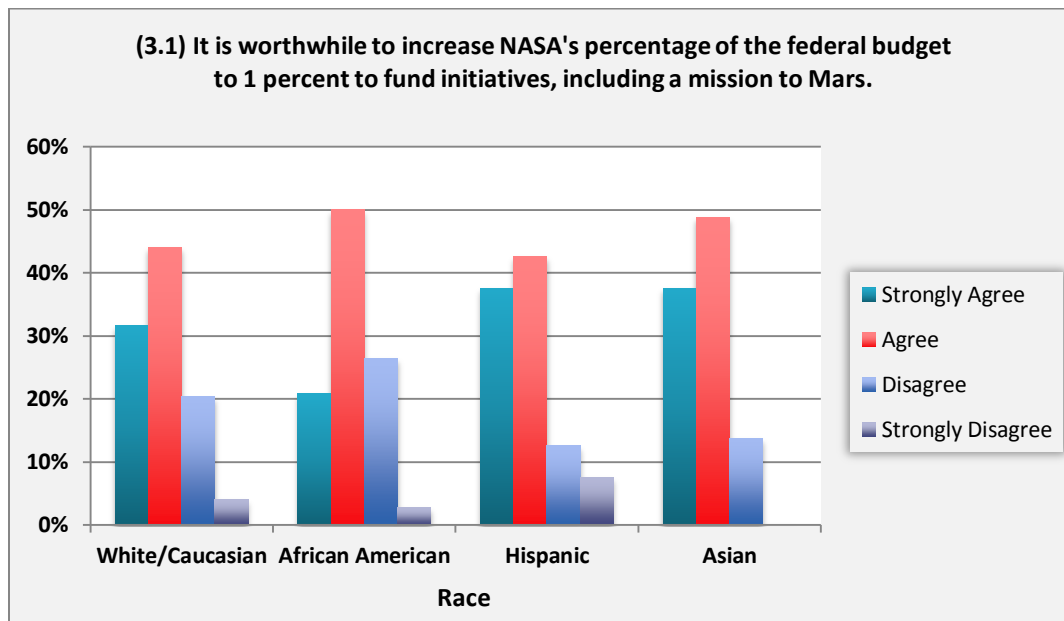
The following charts break down opinions from respondents by demographic affiliation.



The difference between the percentage of men and woman who agree or strongly agree that it is worthwhile to increase NASA's percentage of the federal budget to 1 percent is nearly 6 percentage points (78.74% to 73.09%).

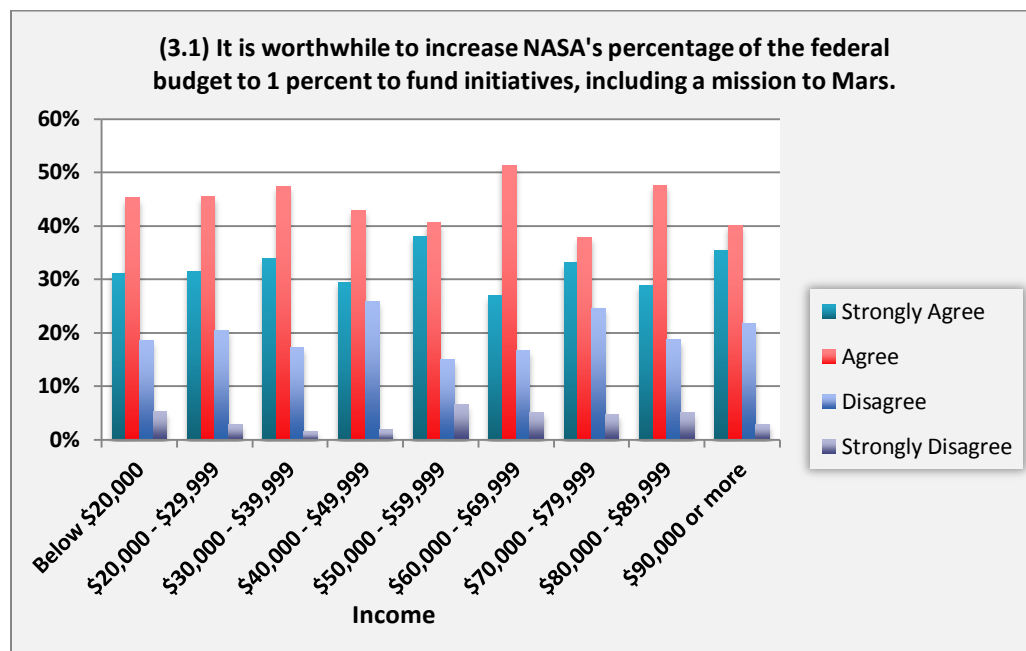


The youngest and oldest age groups were most in agreement with the worthwhileness of increasing NASA's budget to 1 percent to fund initiatives, including a mission to Mars (82.03% for the 18-24 range, and 89.29 for 65 and older).

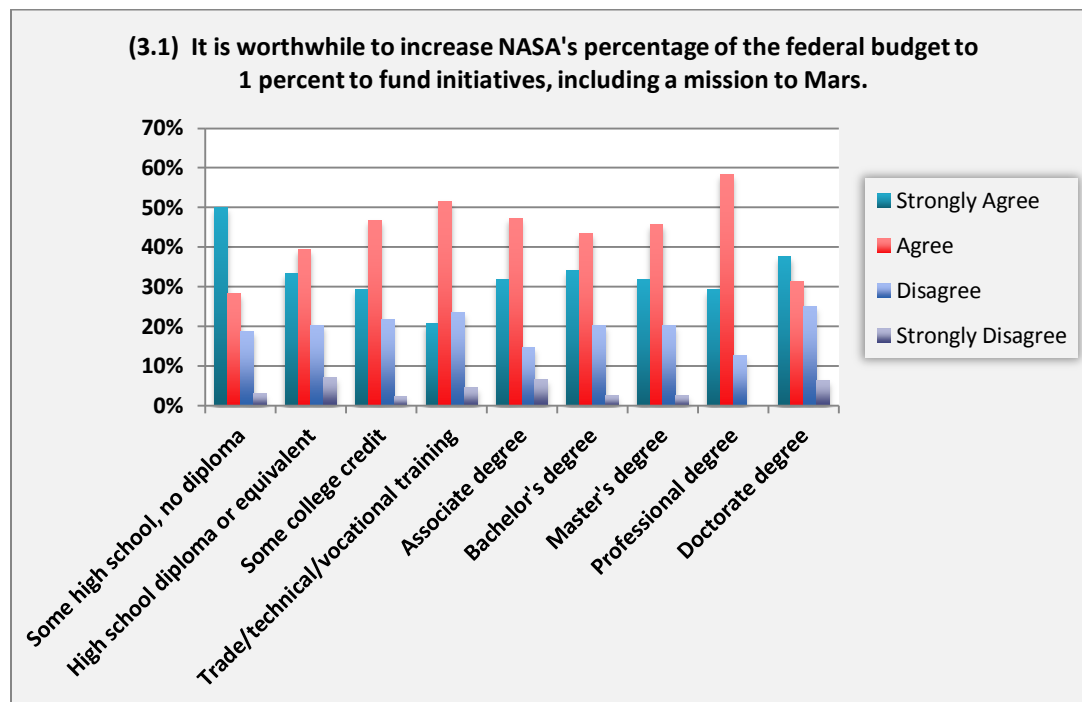


The majority of respondents in all race groups indicated they most agree with the statement "It is worthwhile to increase NASA's percentage of the federal budget to 1 percent to fund initiatives, including a mission to Mars."

*Native American, Pacific Islander and "Other" race categories are not included in this chart because there were a low number of respondents in these categories, and insufficient data to yield accurate results reflective of the population.



The majority of respondents in all income groups indicated they most agree with the statement "It is worthwhile to increase NASA's percentage of the federal budget to 1 percent to fund initiatives, including a mission to Mars." At least 71% of respondents from each annual income group agreed the most with the statement; there was not a trending correlation between annual income and level of agreement.

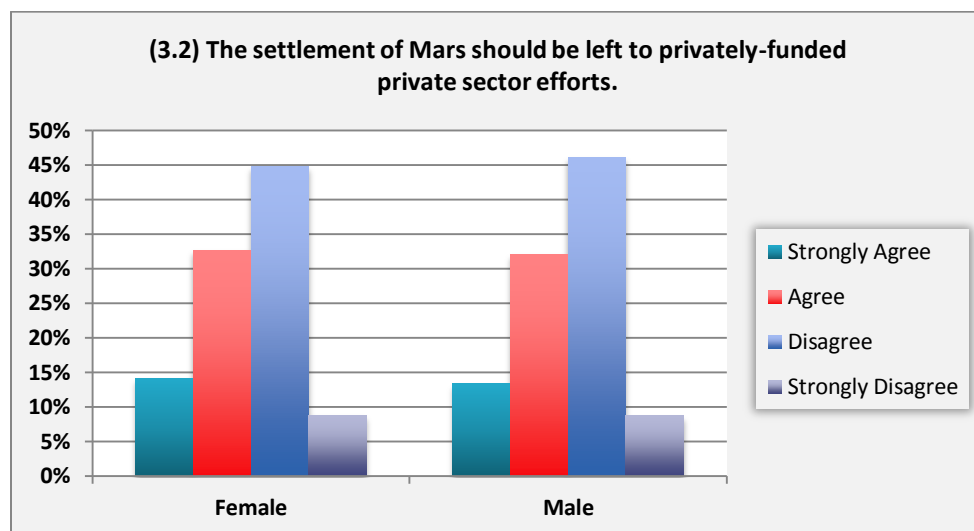
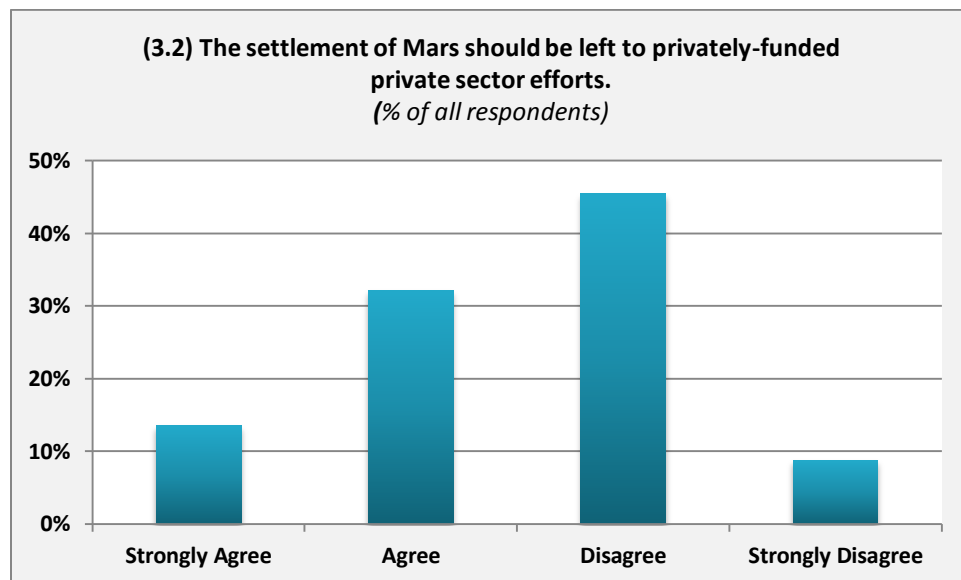


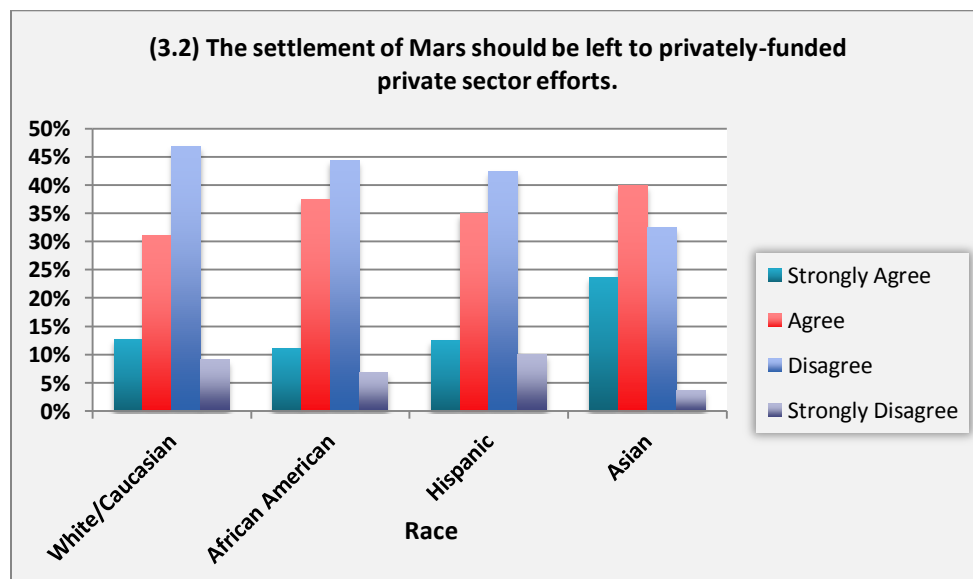
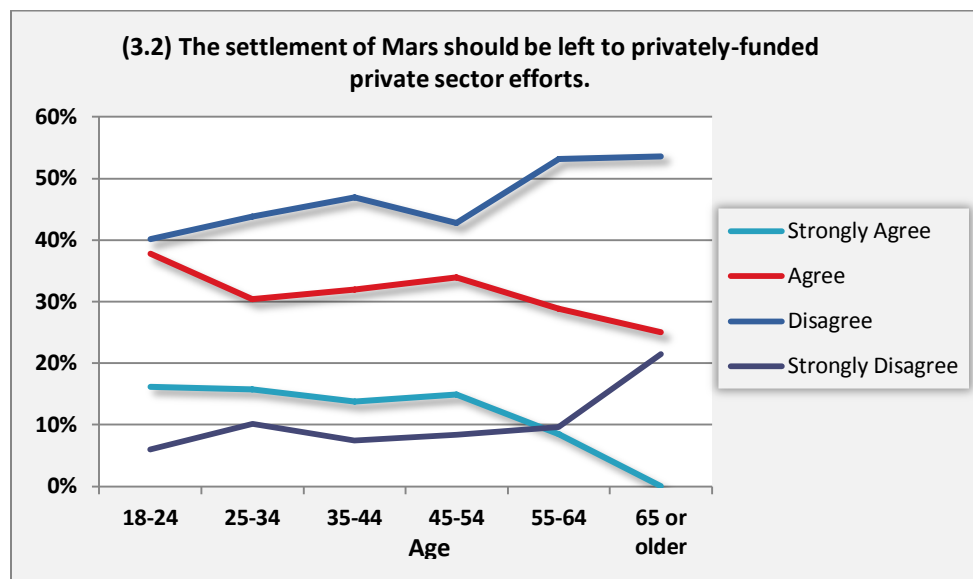
The majority of respondents in all education level groups indicated they most agree with the statement "It is worthwhile to increase NASA's percentage of the federal budget to 1 percent to fund initiatives, including a

mission to Mars." At least 69% of respondents from each group agreed the most with the statement; there was not a trending correlation between level of education and level of agreement.

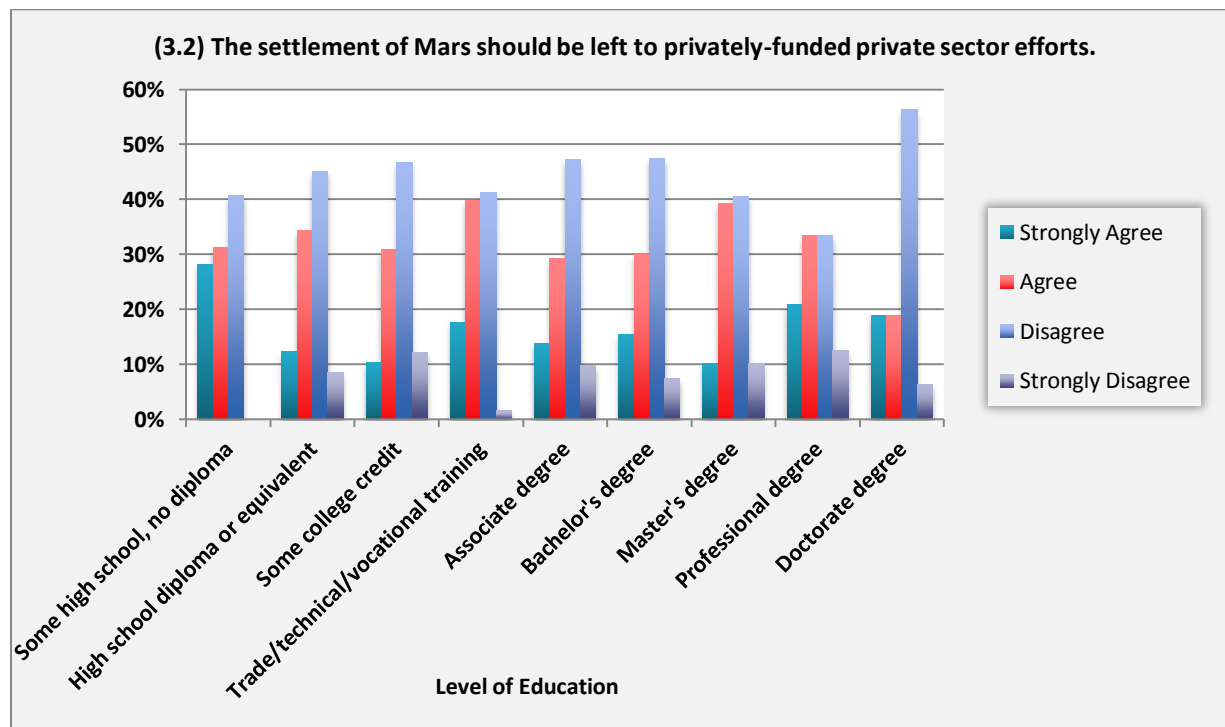
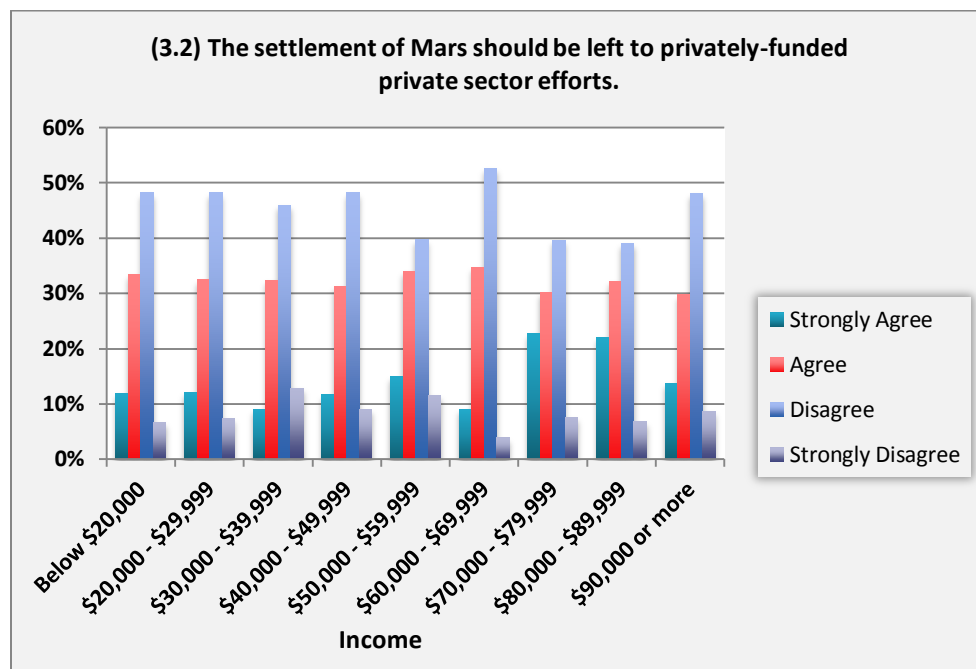
(3.2) The settlement of Mars should be left to privately-funded private sector efforts.

Across demographics, this question was not very conclusive. 46% of respondents strongly agreed or agreed with the statement "The settlement of Mars should be left to privately-funded private sector efforts." 54% disagreed or strongly disagreed with the statement.

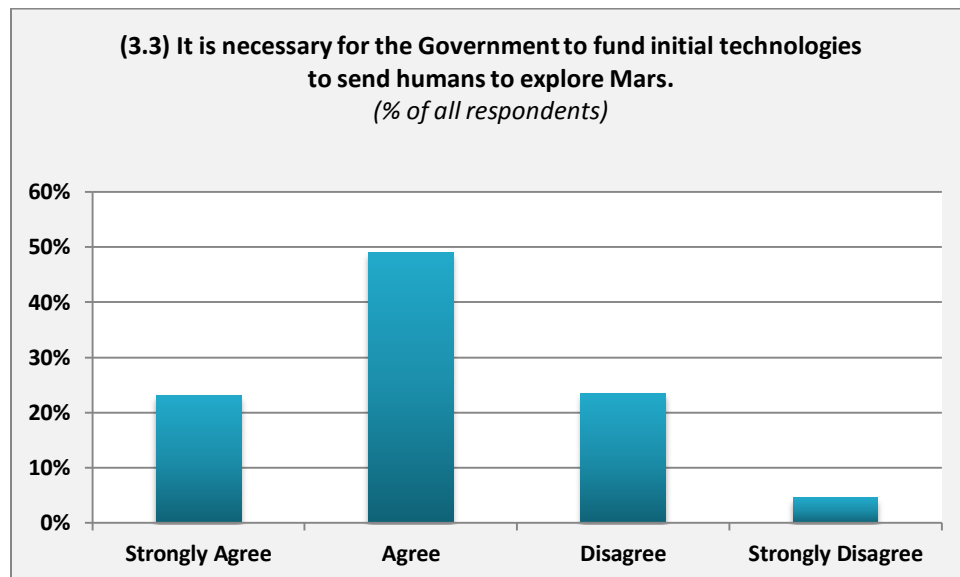




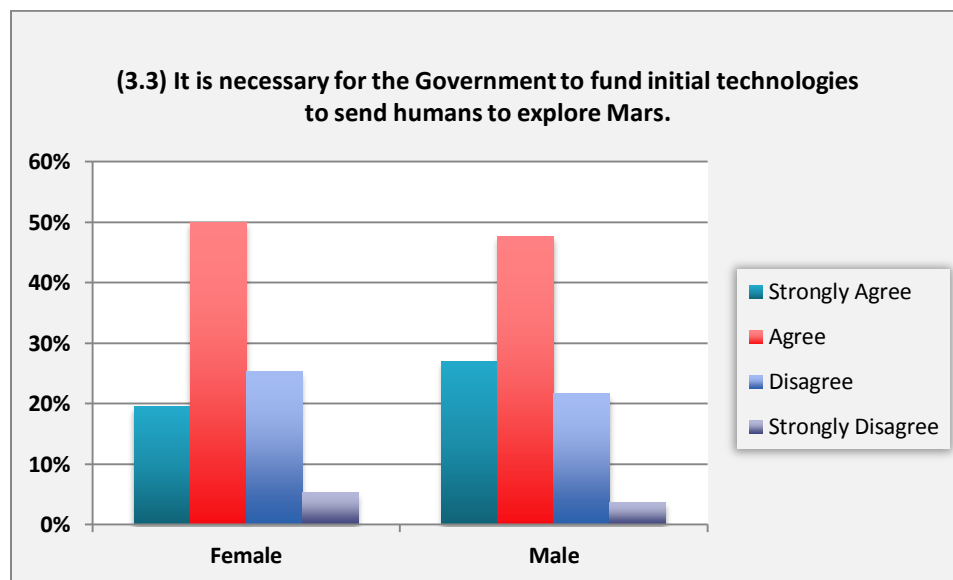
*Native American, Pacific Islander and "Other" race categories are not included in this chart because there were a low number of respondents in these categories, and insufficient data to yield accurate results reflective of the population.



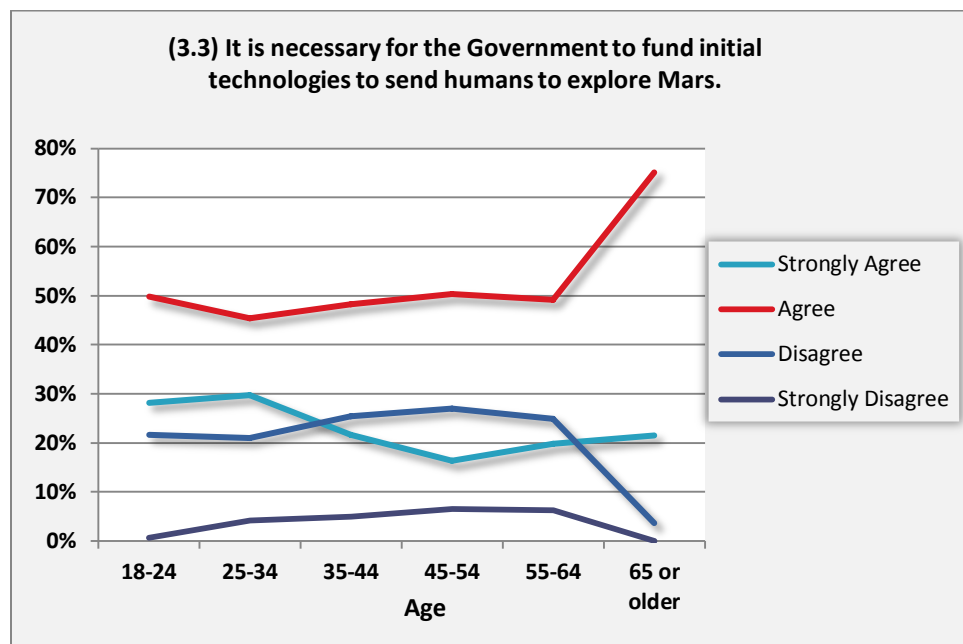
(3.3) It is necessary for the Government to fund initial technologies to send humans to explore Mars.



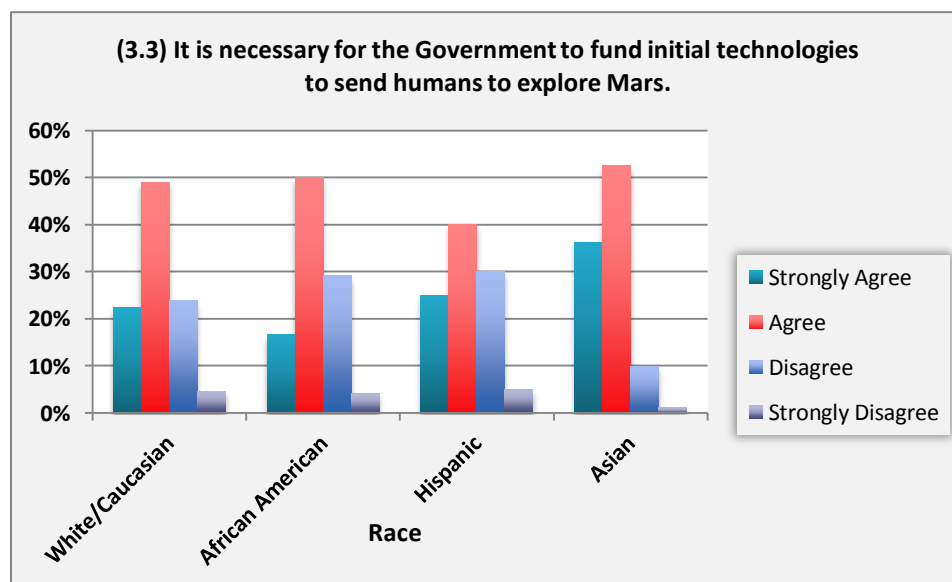
72.03% of survey recipients agreed or strongly agreed that it is necessary for the Government of fund initial technologies to send humans to explore Mars.



Similar to the previous statement (3.1) regarding increasing NASA's budget, with the statement "It is necessary for the Government to fund initial technologies to send humans to explore Mars," men had a greater level of agreement (approximately 5 percentage points) than women (74.68% and 69.45%).

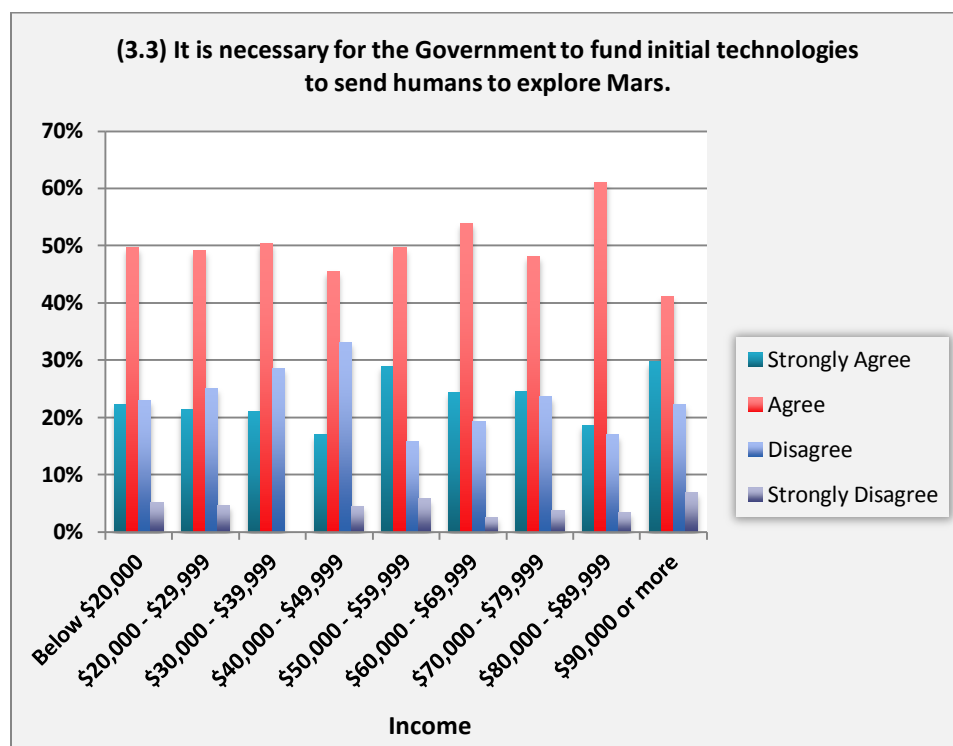


Also similar to the NASA budget statement, the oldest age group was in strong agreement on government funding of space initiatives, with 96.43% in agreement. The majority of respondents in all age groups indicated they agree with the statement.

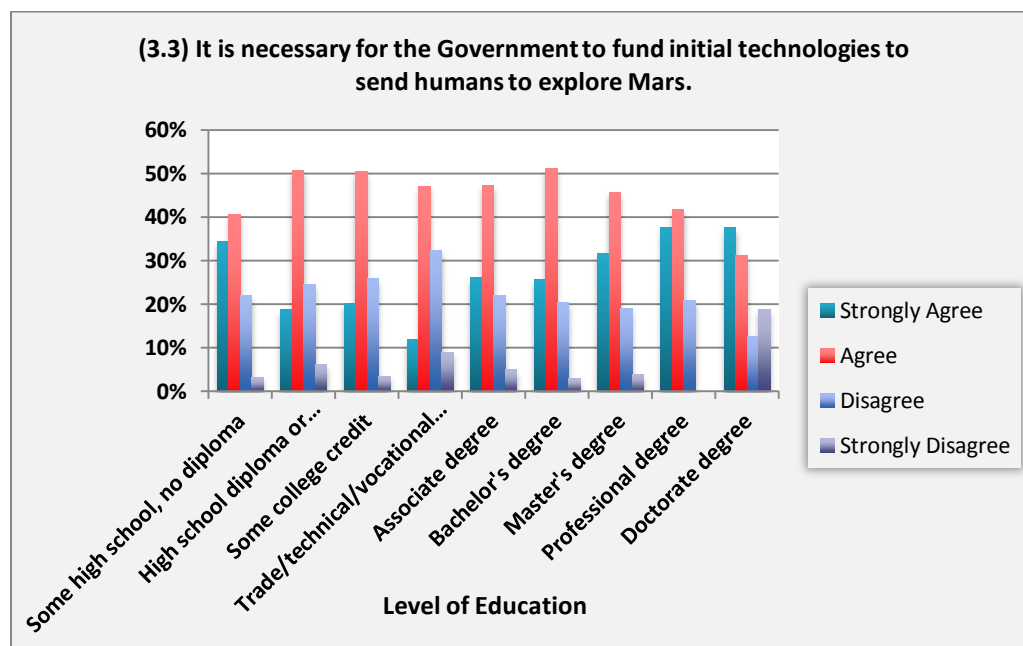


The majority of respondents from all race groups indicated they most agree with the statement "It is necessary for the Government to fund initial technologies to send humans to explore Mars."

*Native American, Pacific Islander and "Other" race categories are not included in this chart because there were a low number of respondents in these categories, and insufficient data to yield accurate results reflective of the population.

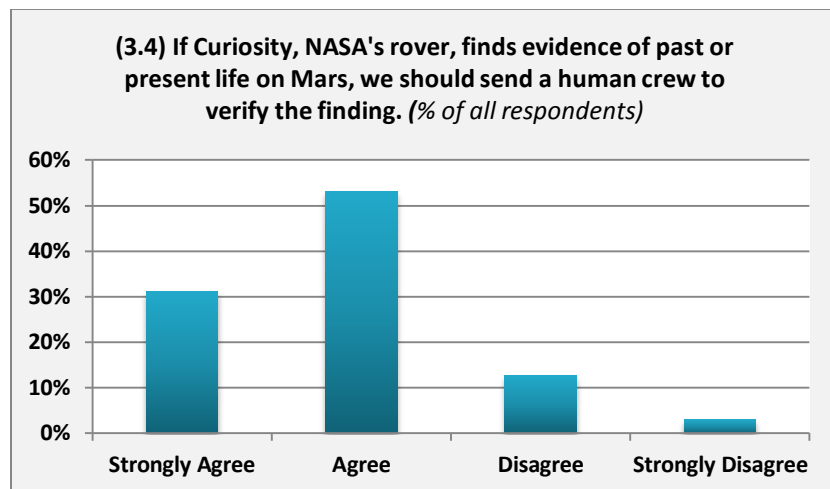


Agreement with the statement "It is necessary for the Government to fund initial technologies to send humans to explore Mars" looked at by income level trends higher in the middle brackets (\$50,000 to \$80,000 per year), and falls near 8% on the lower and higher ends. The majority of respondents in all income groups indicated they agree with the statement.

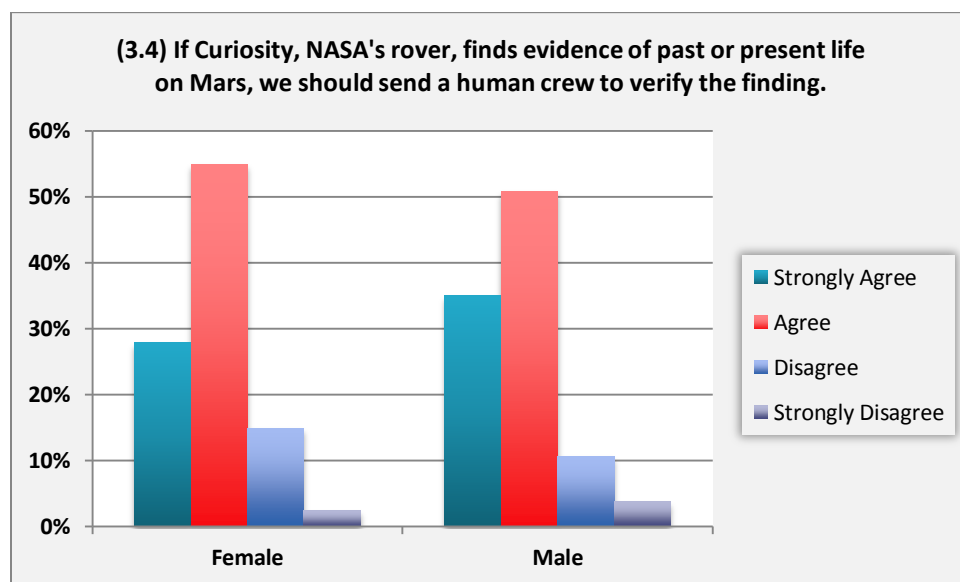


The majority of respondents from all education level groups indicated they most agree with the statement "It is necessary for the Government to fund initial technologies to send humans to explore Mars."

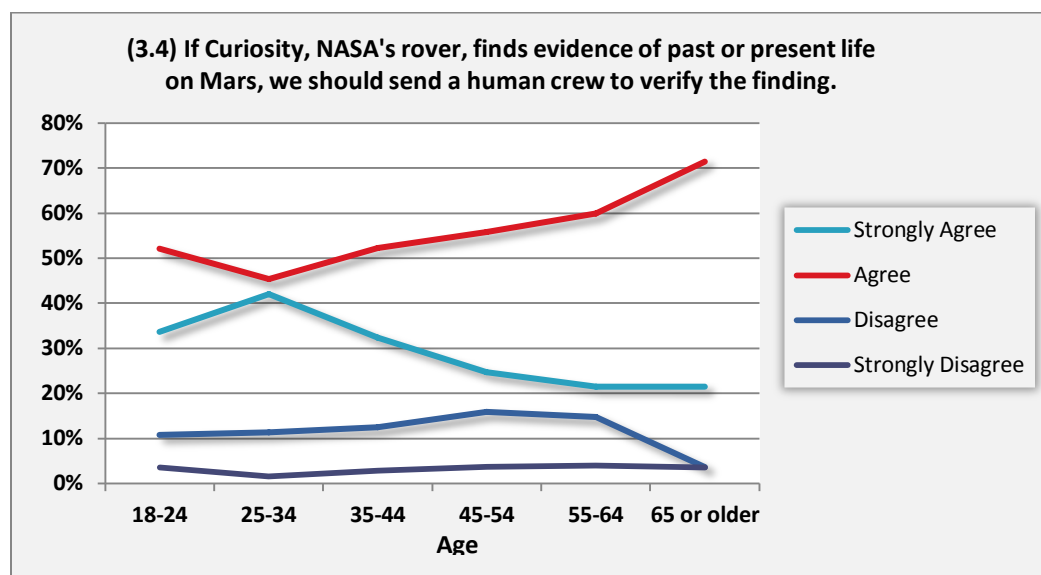
(3.4) If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding.



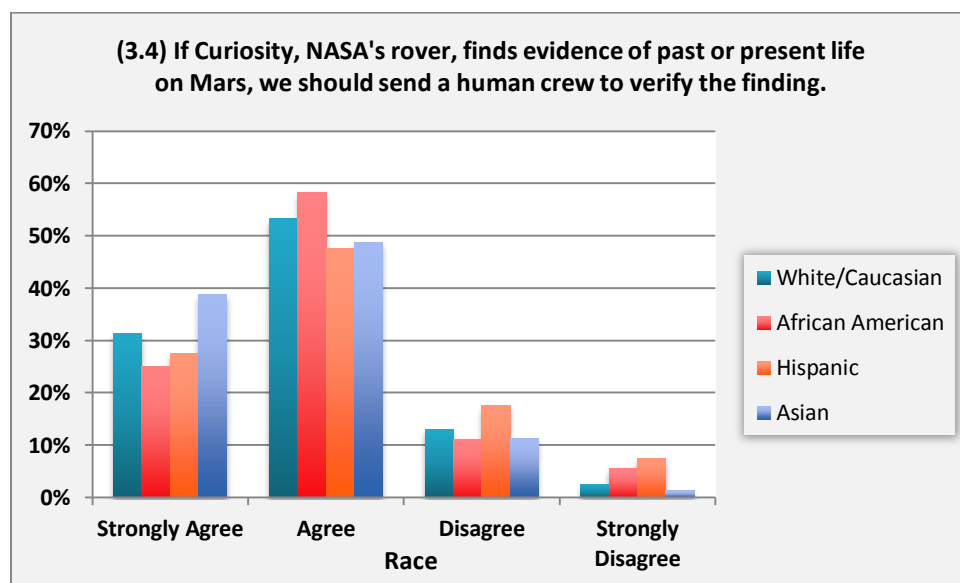
84.28% of survey recipients agreed or strongly agreed with the statement "If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding."



Similar to the previous statement (3.1) regarding increasing NASA's budget, with the statement "If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding," men had a greater level of agreement (approximately 3 percentage points) than women (85.77% and 82.73% respectively).

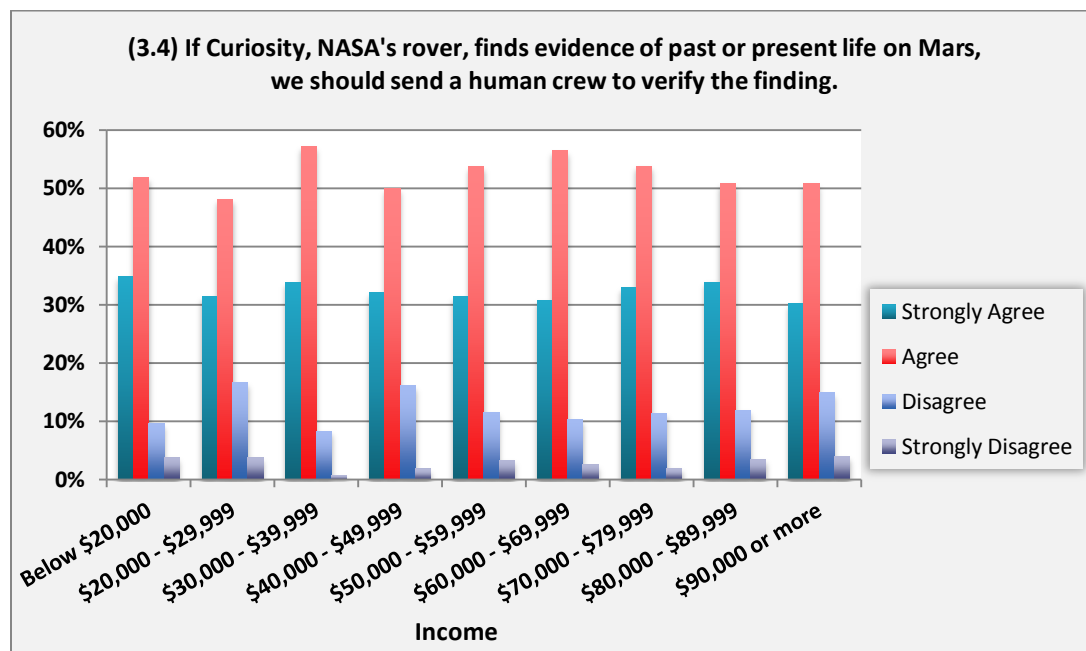


Also similar to the NASA budget statement, the oldest age group was in strong agreement with the statement "If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding," with 92.86% agreeing or strongly agreeing. The majority of respondents in all age groups indicated they agree with the statement.

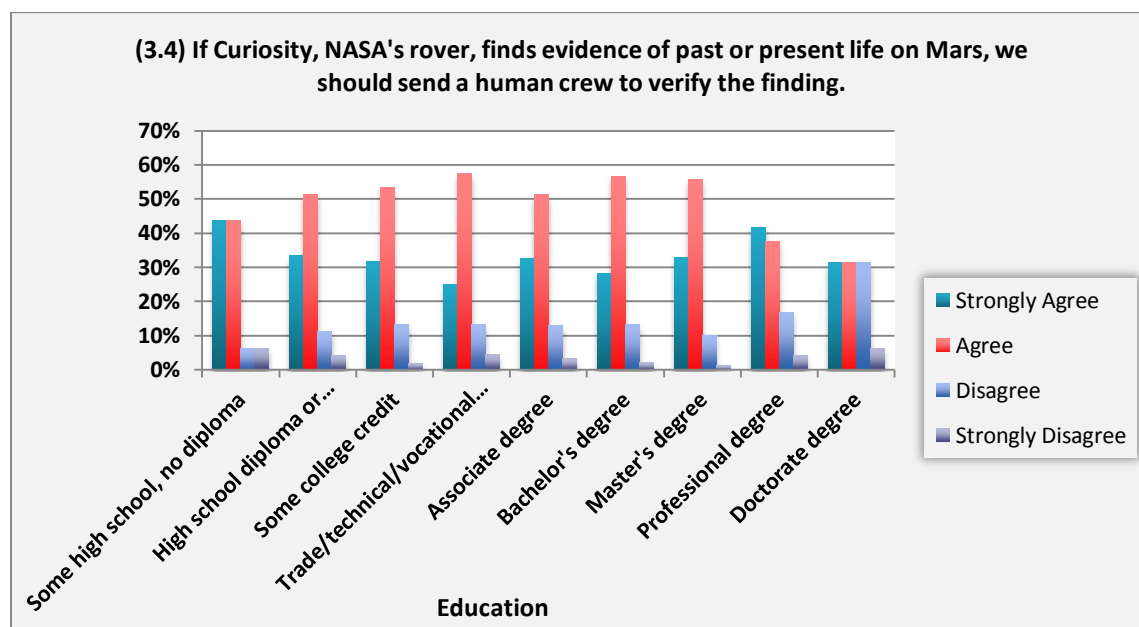


The majority of respondents from all race groups indicated they most agree with the statement "If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding."

*Native American, Pacific Islander and "Other" race categories are not included in this chart because there were a low number of respondents in these categories, and insufficient data to yield accurate results reflective of the population.

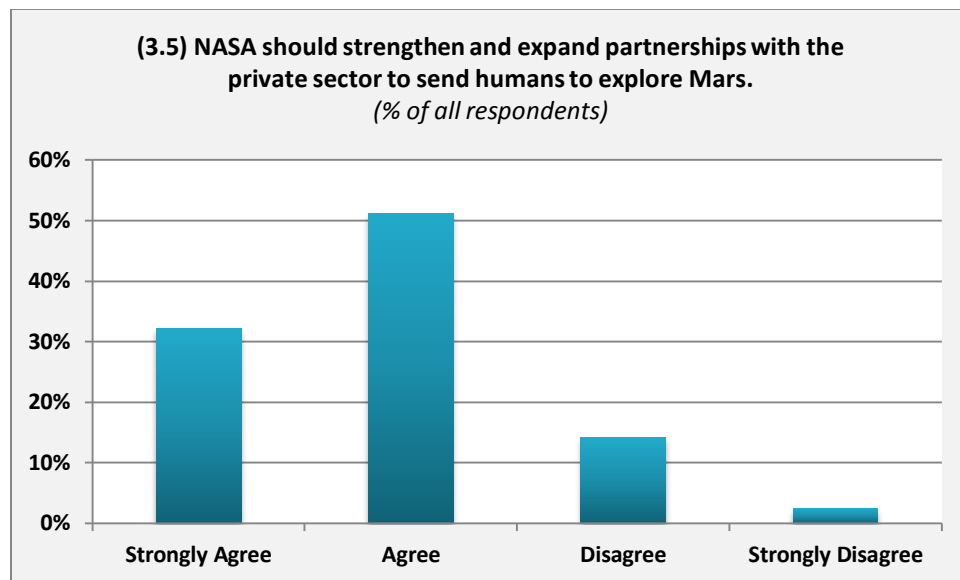


The majority of respondents in all income groups indicated they agree with the statement "If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding."

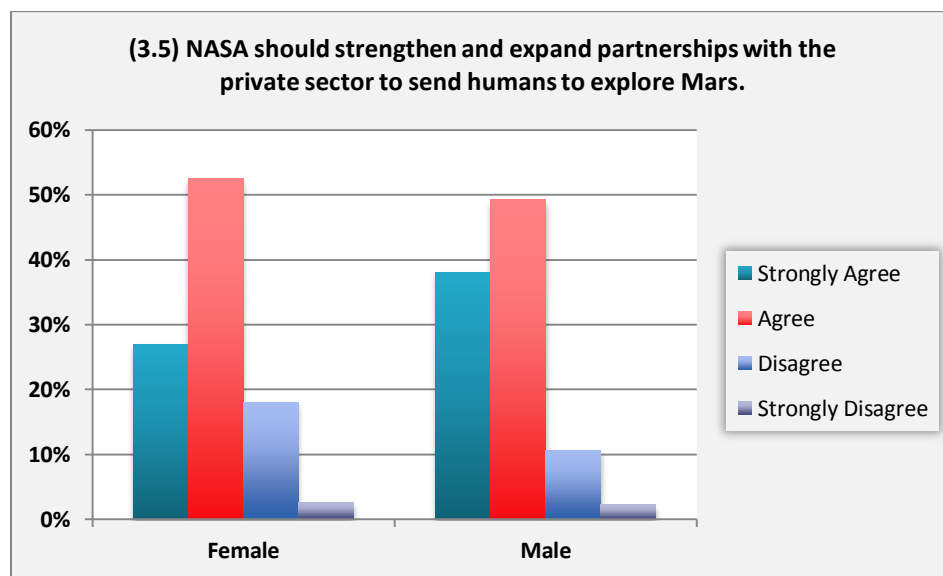


The majority of respondents in all education level groups indicated they agree with the statement "If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding."

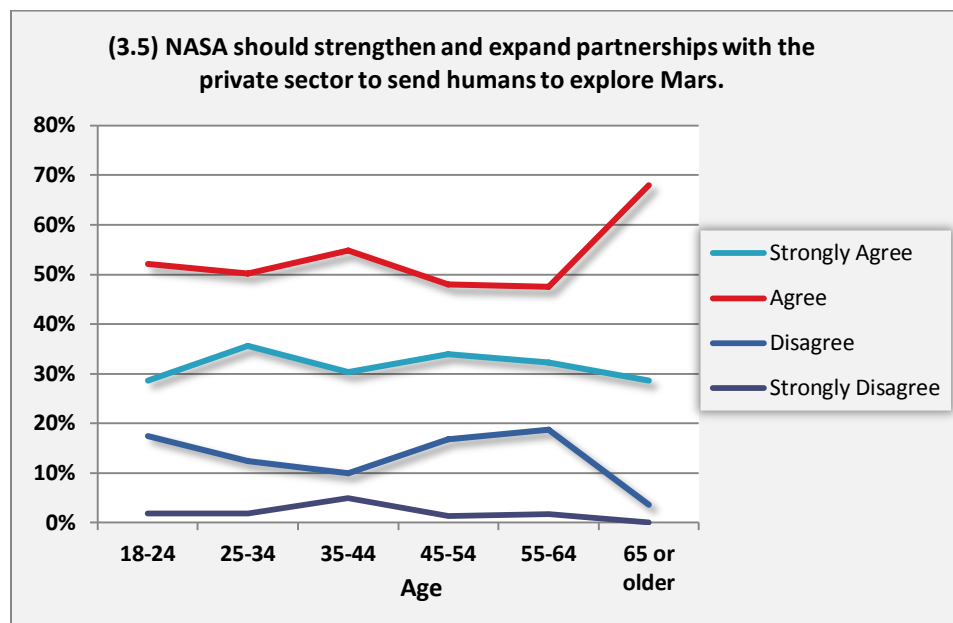
(3.5) NASA should strengthen and expand partnerships with the private sector to send humans to explore Mars.



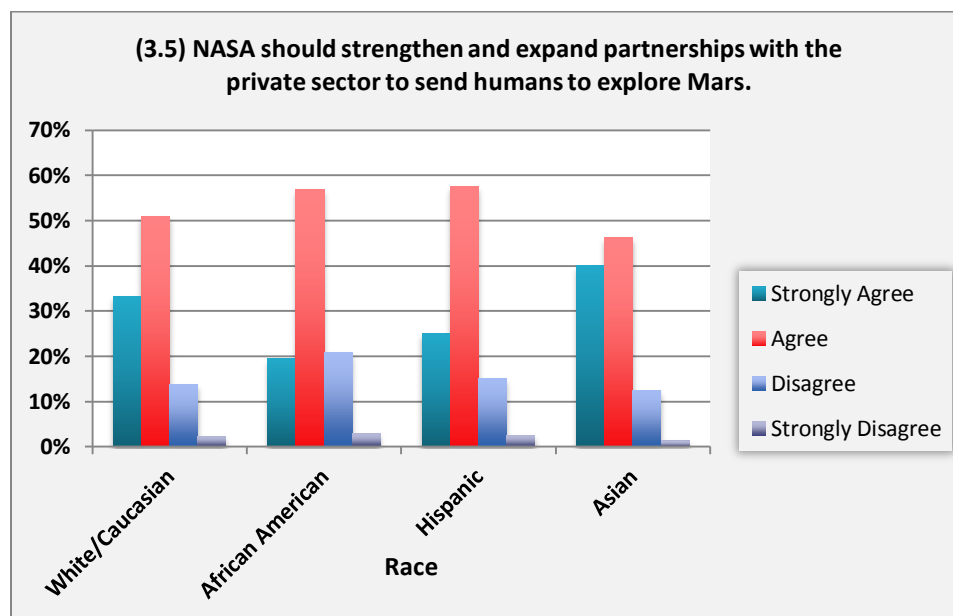
83.38% of survey recipients agreed or strongly agreed with the statement "NASA should strengthen and expand partnerships with the private sector to send humans to explore Mars."



Similar to the previous statement (3.1) regarding increasing NASA's budget, men had a greater level of agreement (approximately 8 percent) than women (87.25 percent and 79.25 percent respectively).

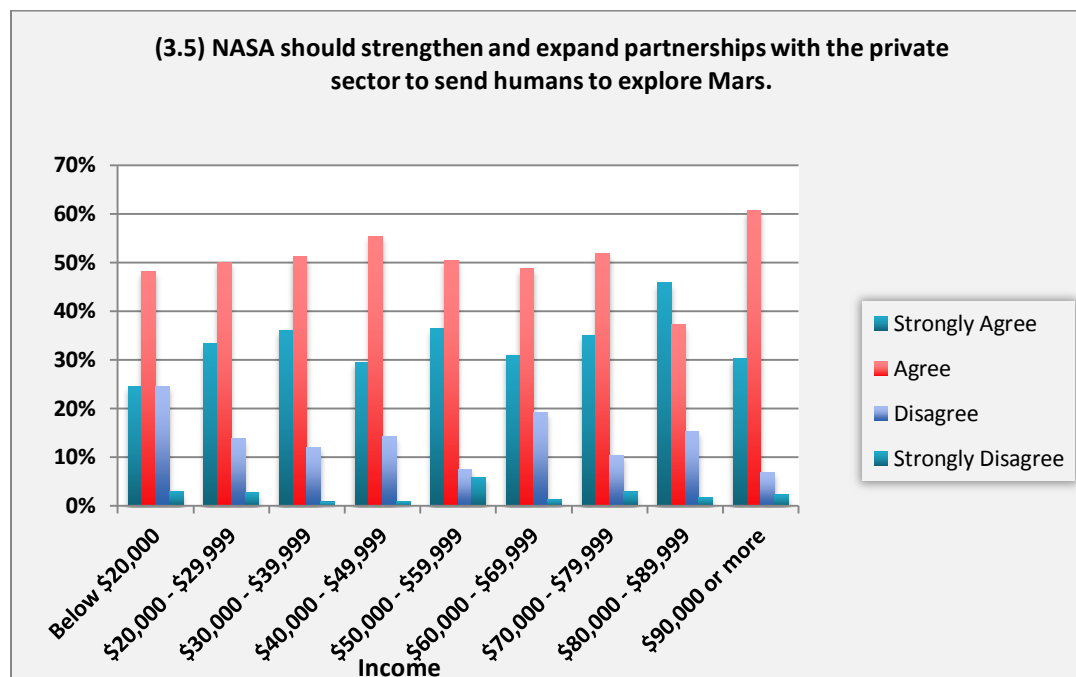


Also similar to the NASA budget statement, the oldest age group was in strong agreement with the statement "NASA should strengthen and expand partnerships with the private sector to send humans to explore Mars," with 96.43% agreeing or strongly agreeing. The majority of respondents in all age groups indicated they agree with the statement.

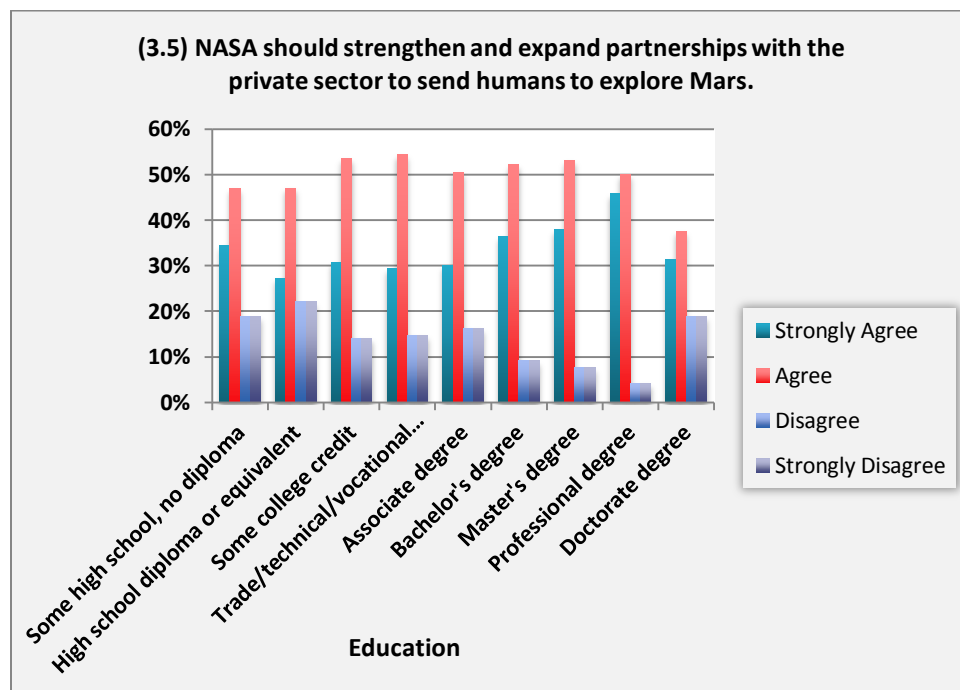


The majority of respondents from all race groups indicated they most agree with the statement "NASA should strengthen and expand partnerships with the private sector to send humans to explore Mars."

*Native American, Pacific Islander and "Other" race categories are not included in this chart because there were a low number of respondents in these categories, and insufficient data to yield accurate results reflective of the population.



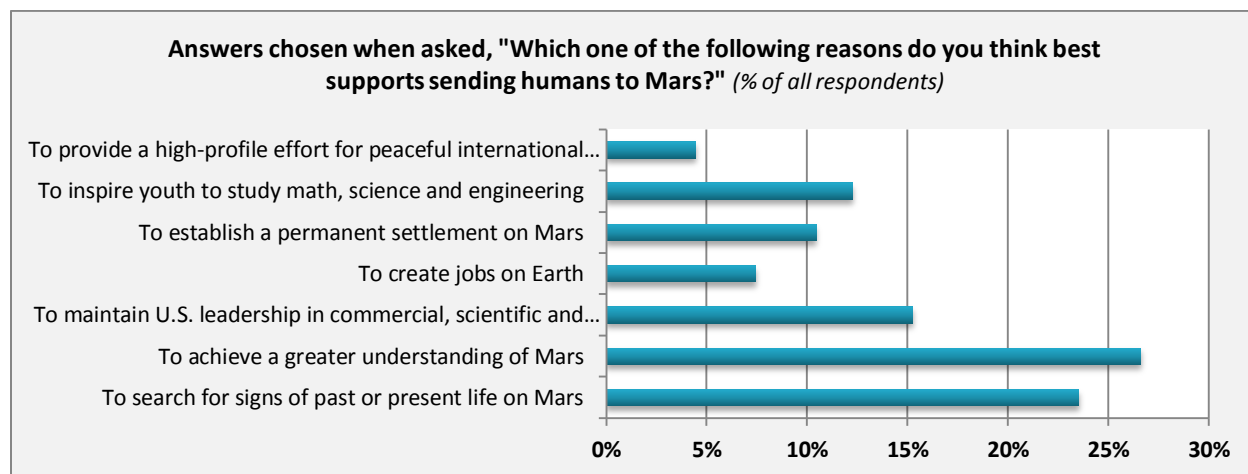
The majority of respondents from all income groups indicated they most agree with the statement "NASA should strengthen and expand partnerships with the private sector to send humans to explore Mars." The bracket of \$90,000 or more per year had the highest level of agreement at 90.86% choosing strongly agree or agree.



The majority of respondents from all race groups indicated they most agree with the statement "NASA should strengthen and expand partnerships with the private sector to send humans to explore Mars."

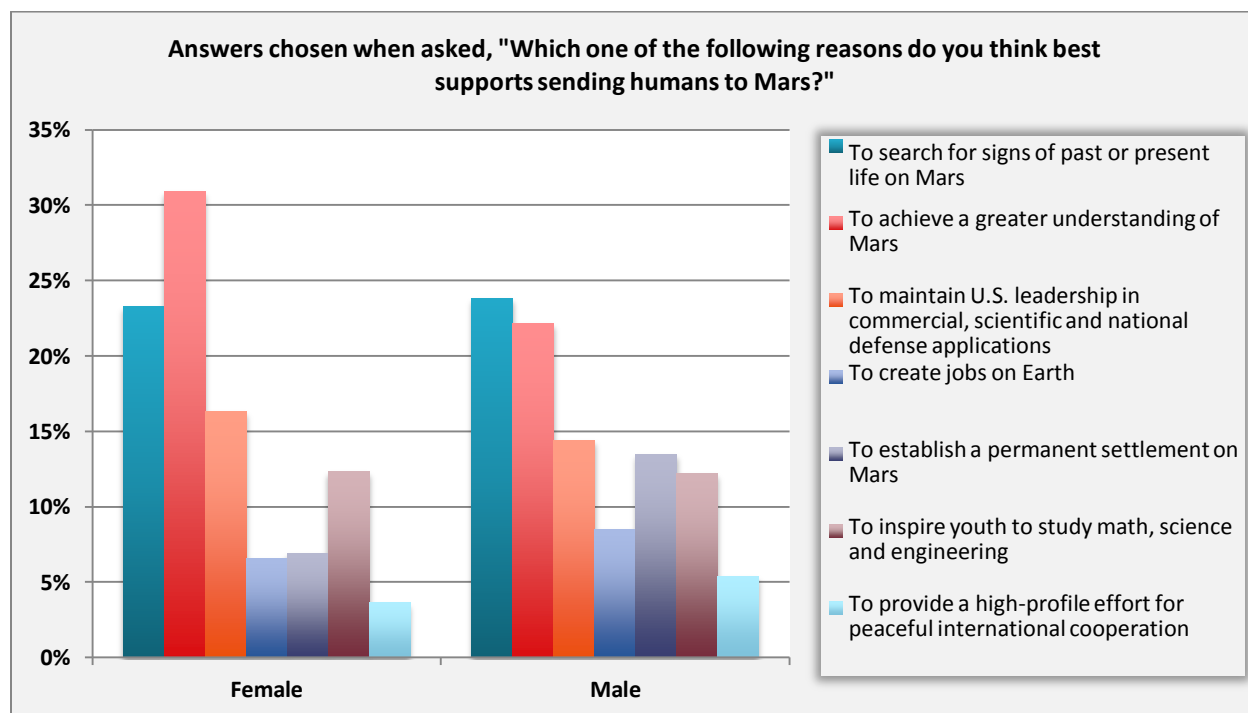
4. Reasons for Going to Mars

Respondents were asked which one of the following reasons they think best supports sending humans to Mars.

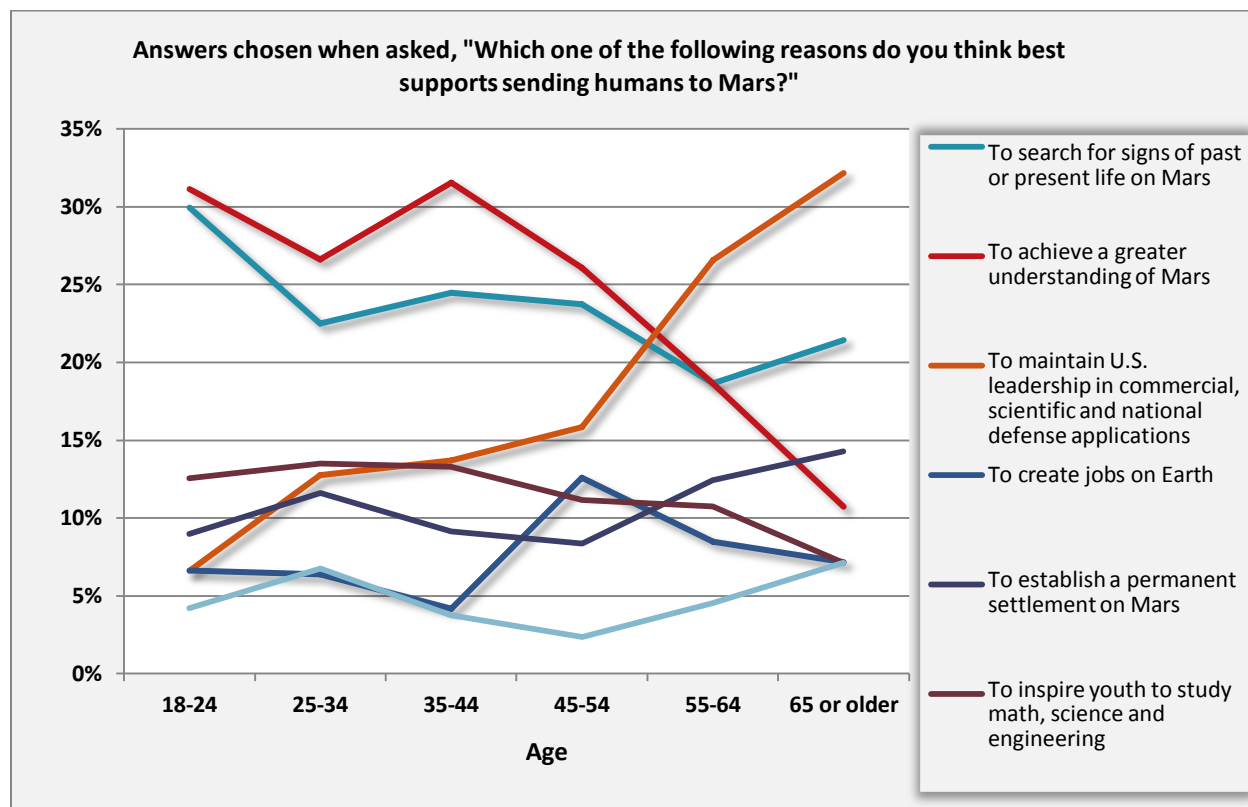


According to survey respondents, Americans' top three reasons for human exploration of Mars are 1) to achieve a greater understanding of Mars (27%), 2) to search for signs of life (24%), and 3) to maintain U.S. leadership in commercial, scientific and national defense applications (15%).

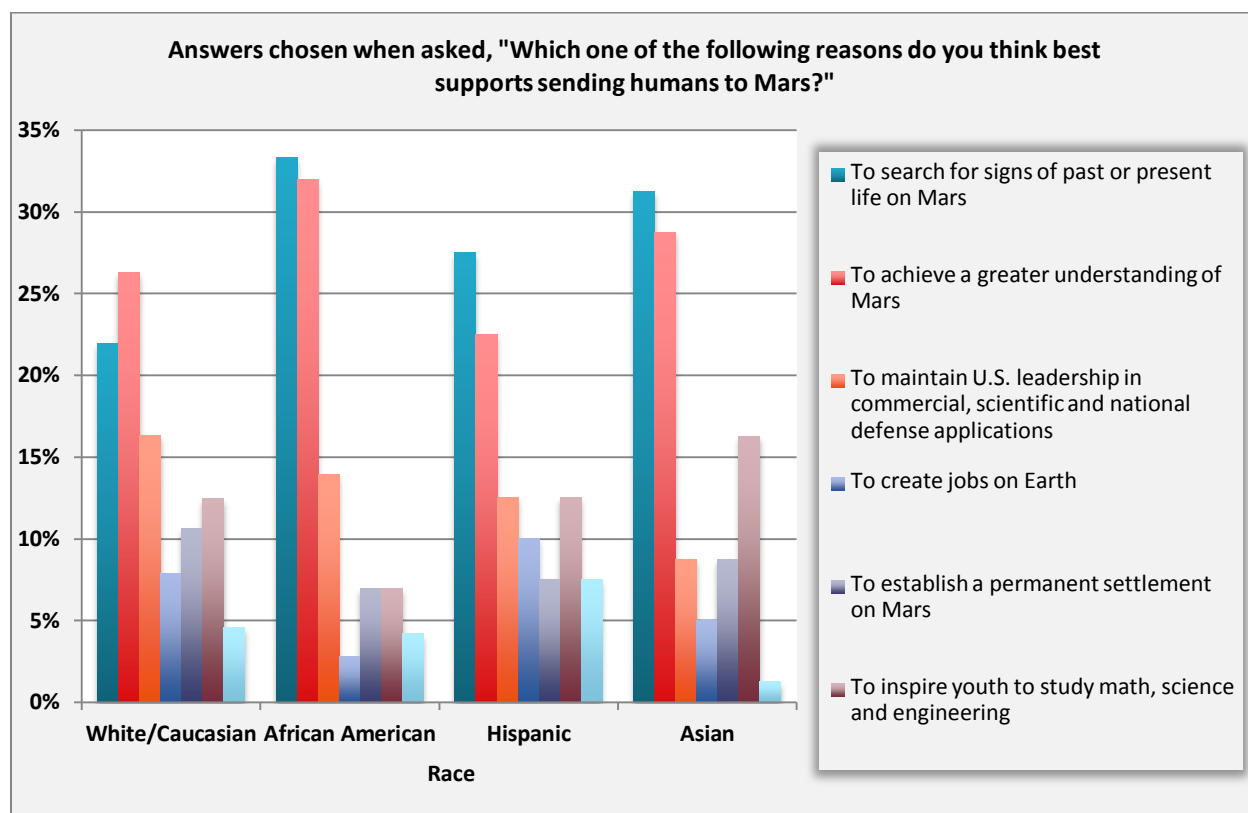
The following charts break down opinions from respondents by demographic affiliation.



Both sexes had the same top three choices as the population, although more women had their number one and number two choices swapped, placing "To search for signs of past or present life" as first, and "To achieve a greater understanding of Mars" as second.

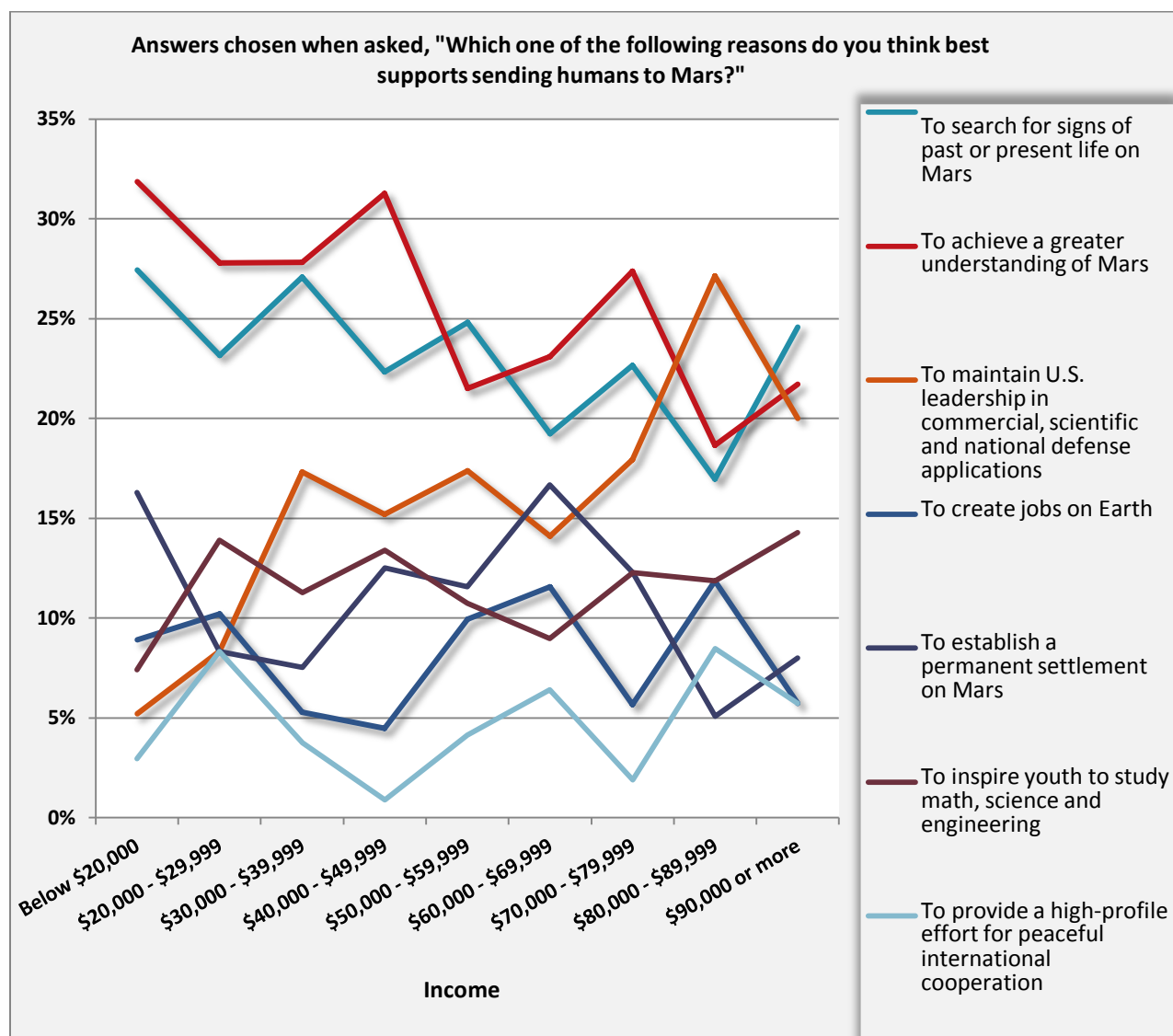


The prevalence of the reason "to maintain U.S. leadership in commercial, scientific and national defense applications" given trended upward with age, with more than 32% of the 65+ age group selecting it as the best support for sending humans to Mars. Less than 7% of those in the 18-24 age group selected that option as the best support. "To achieve a greater understanding of Mars" has a nearly inverse appearance, selected as the best reason by 32% of 18-24 year olds, and only 11% of those in the 65+ group.

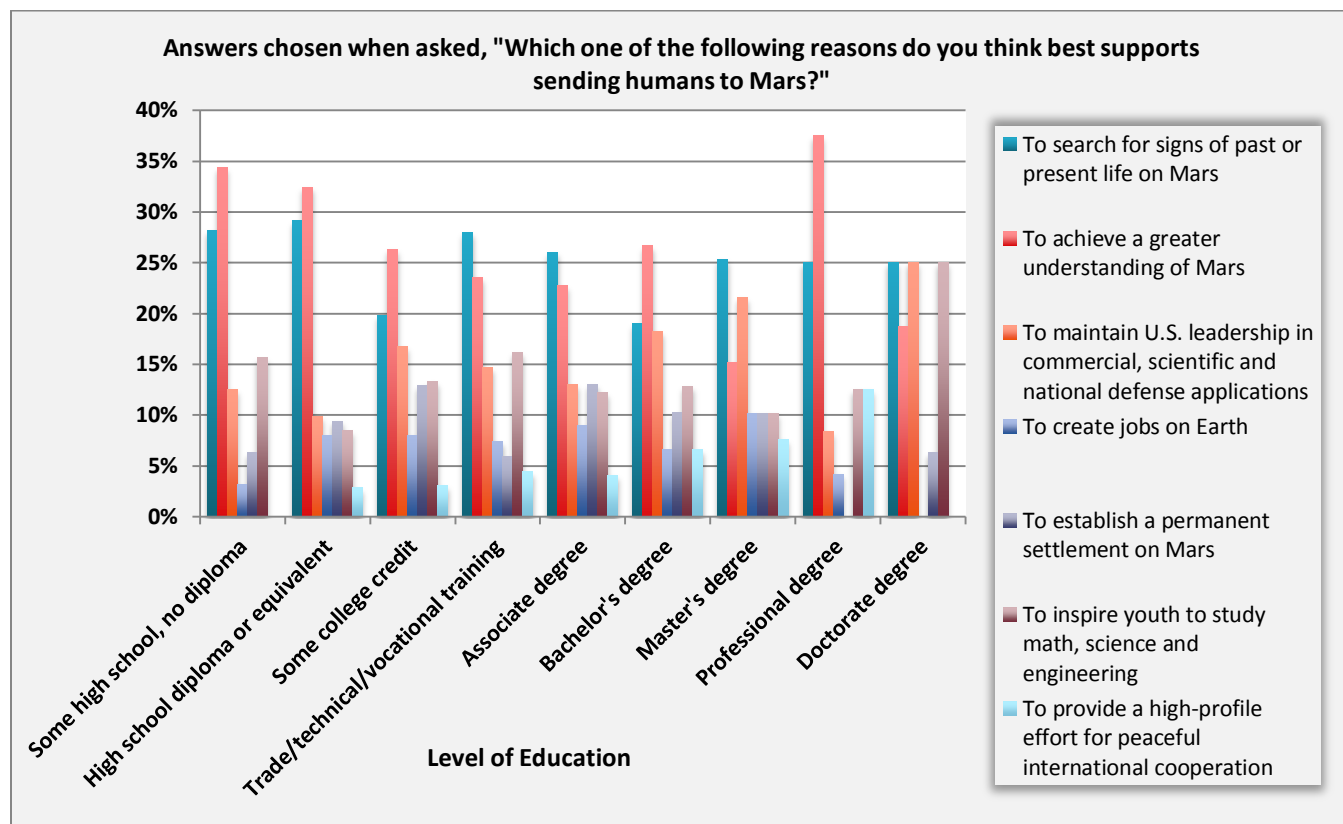


Those who identified as White/Caucasian, African American, and Hispanic all possessed the same top three reasons supporting sending humans to Mars as the general population. Asians, though, selected "To search for signs of past or present life on Mars," then "To achieve a great understanding of Mars" followed by the reason that didn't make it to other groups top choices, at 16%, "To inspire youth to study math, science and engineering."

*Native American, Pacific Islander and "Other" race categories are not included in this chart because there was a low number of respondents in these categories, and insufficient data to yield accurate results reflective of the population.



Similar to the age breakdown for this question, likelihood to choose "To maintain U.S. leadership in commercial, scientific and national defense applications" as the reason best supporting sending humans to Mars trended upward with income. The selection of "To achieve a greater understanding of Mars" trended downward with income.



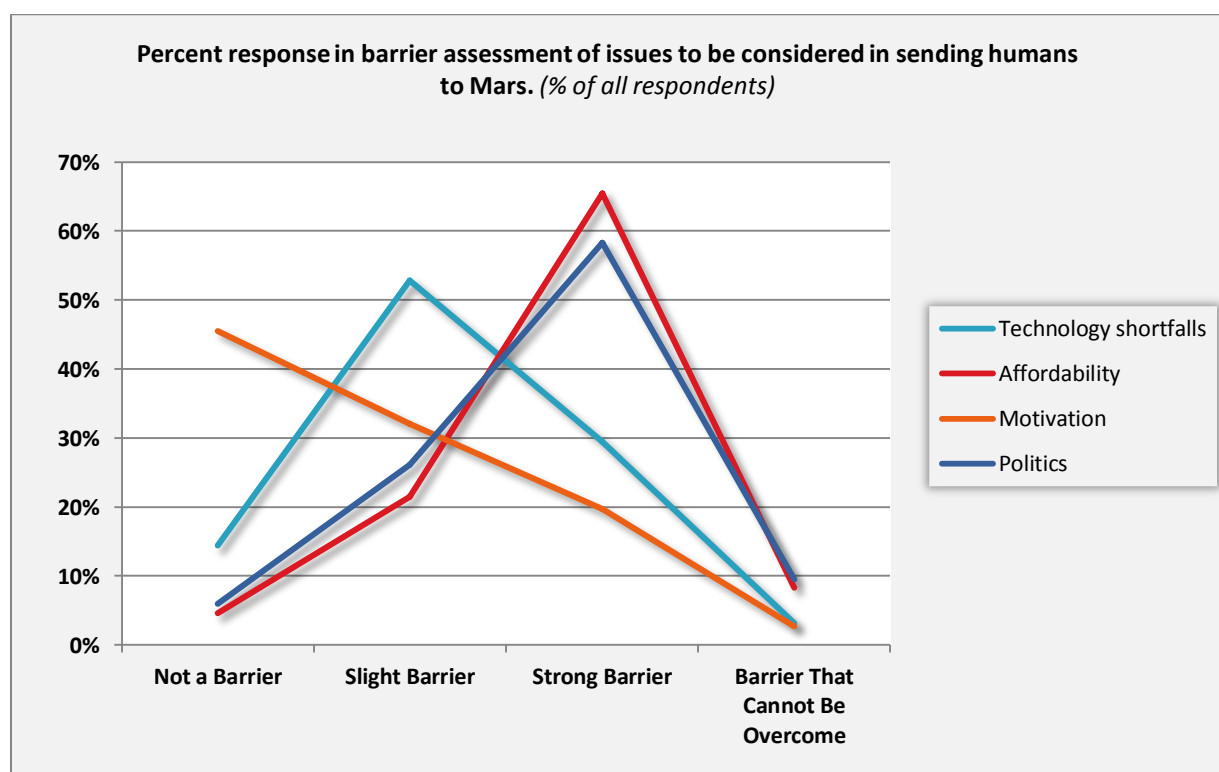
When broken down by level education, there are no visible trends. Top one and two persist to be "To achieve a greater understanding of Mars" or "To search for signs of life. The third choice reason listed for supporting sending humans to Mars was either given as "To maintain U.S. leadership in commercial, scientific and national defense applications" or "To inspire youth to study math, science and engineering" and "To provide a high-profile effort for peaceful international cooperation."

5. Perceived Barriers to Sending Humans to Mars

In regards to sending humans to Mars by 2033, respondents were asked to rate how much of a barrier they thought each of the following issues is by selecting "Not a Barrier," "Slight Barrier," "Strong Barrier" or "Barrier That Cannot Be Overcome."

- **Technology shortfalls**
- **Affordability**
- **Motivation**
- **Politics**

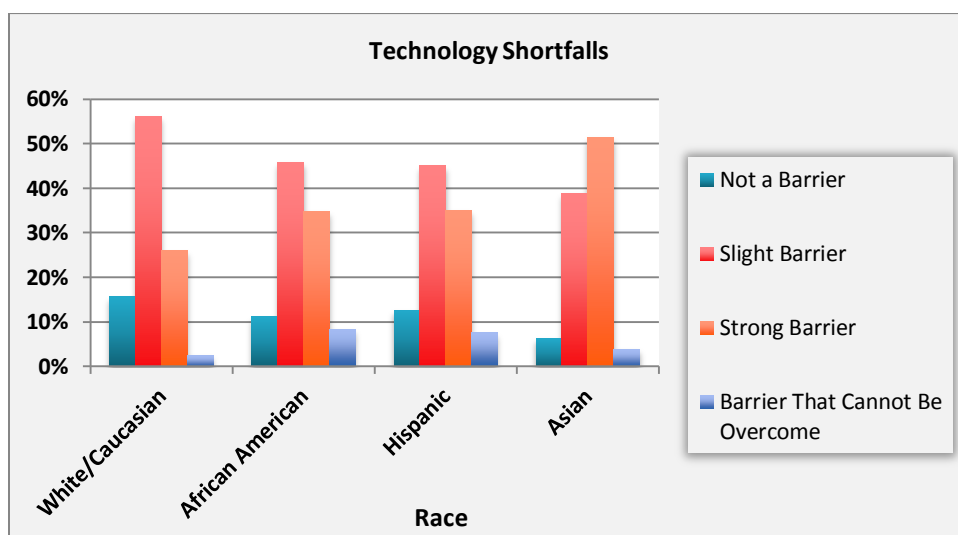
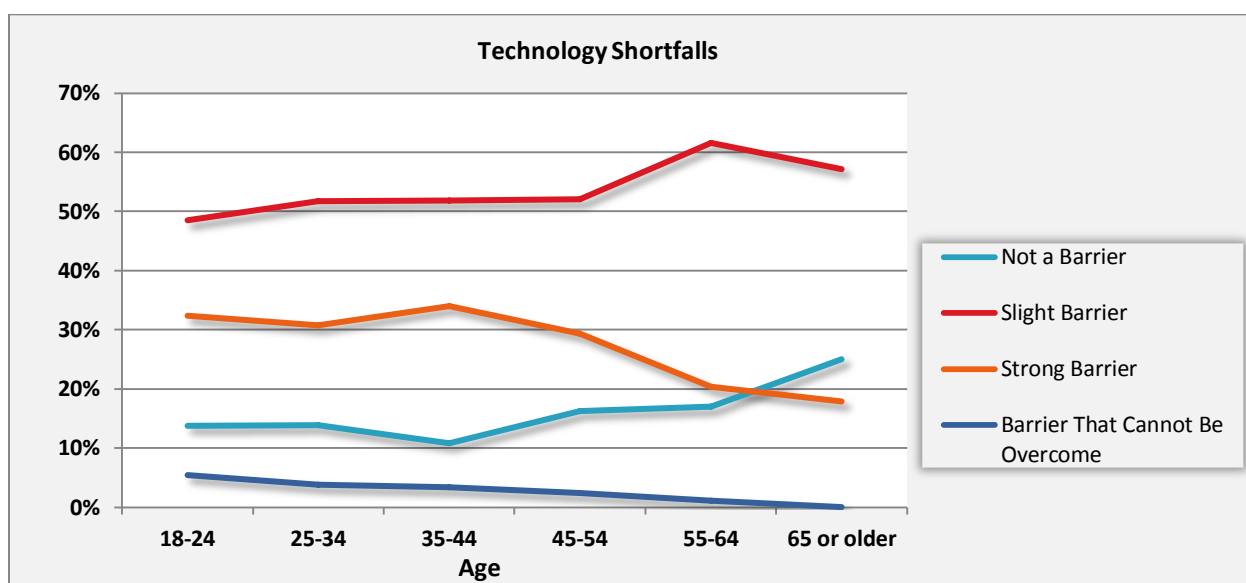
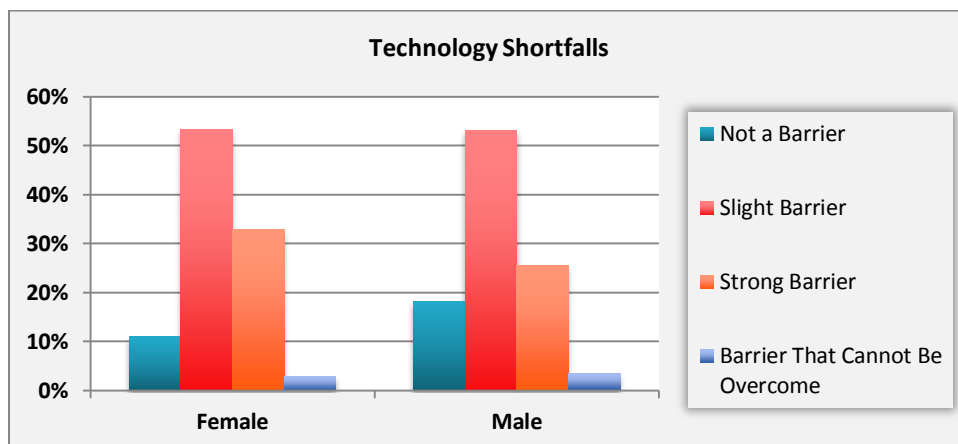
Survey respondents overwhelmingly believed affordability and politics were the two greatest barriers to sending humans to Mars.

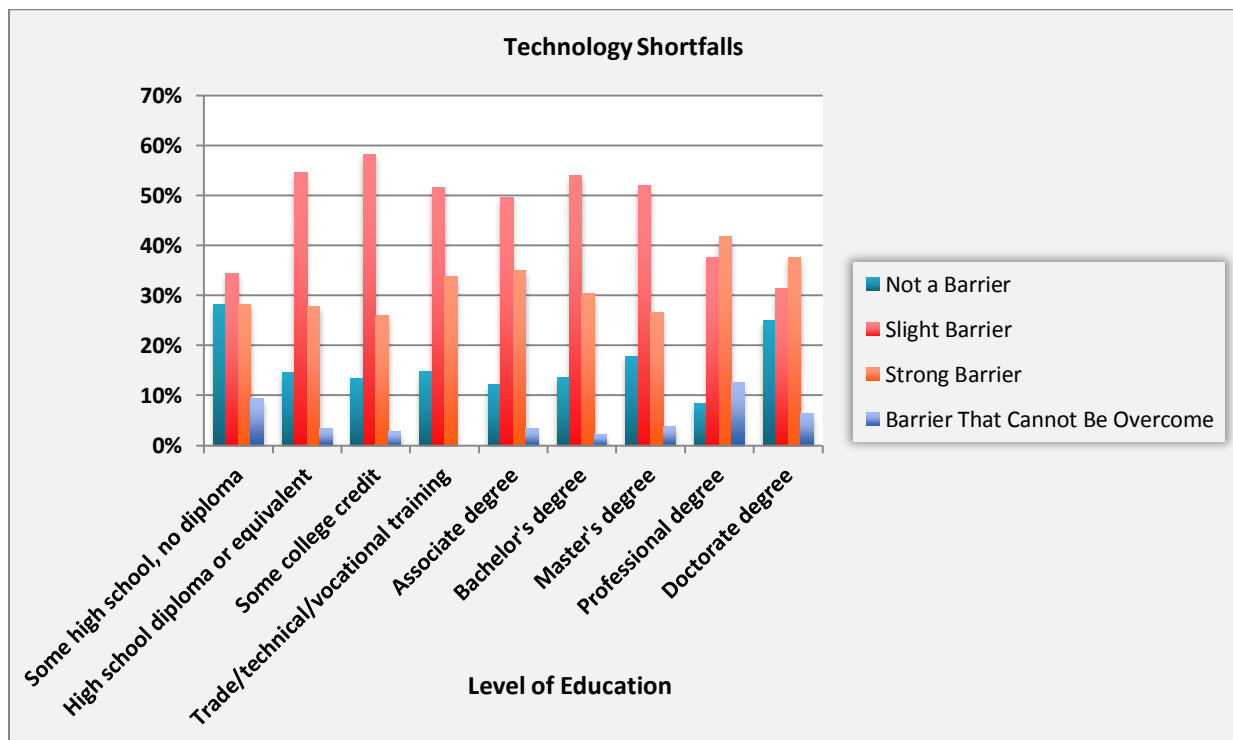
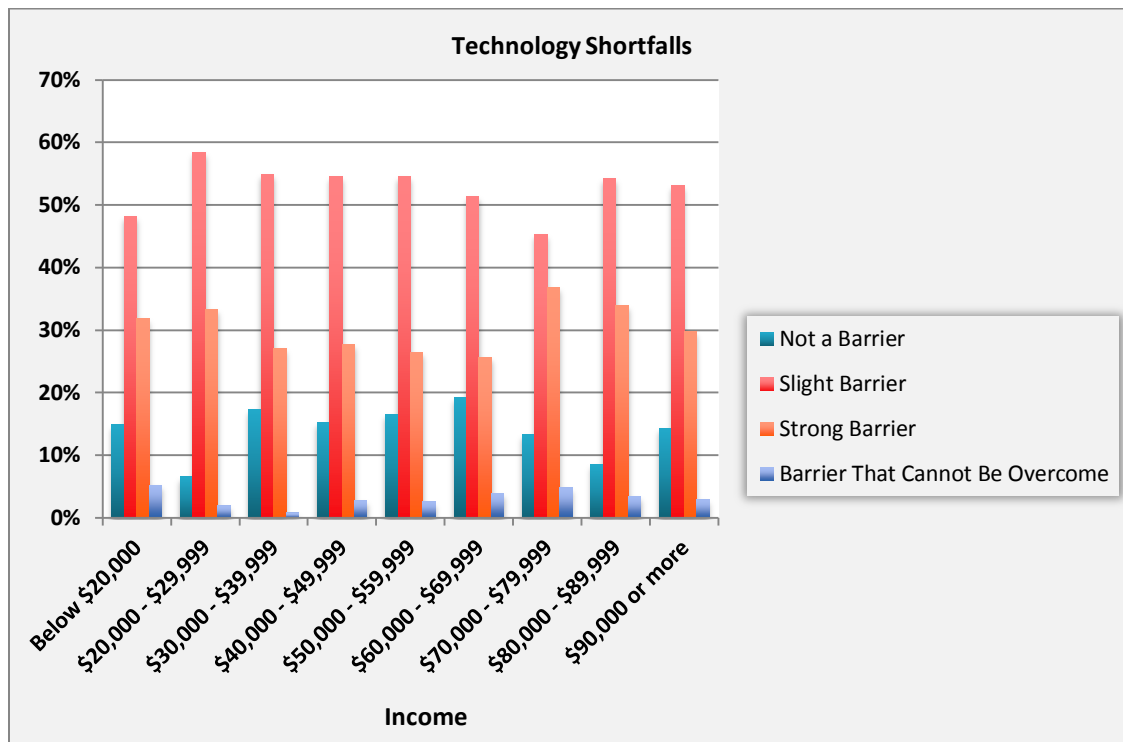


The following charts break down opinions from respondents by demographic affiliation.

Technology Shortfalls

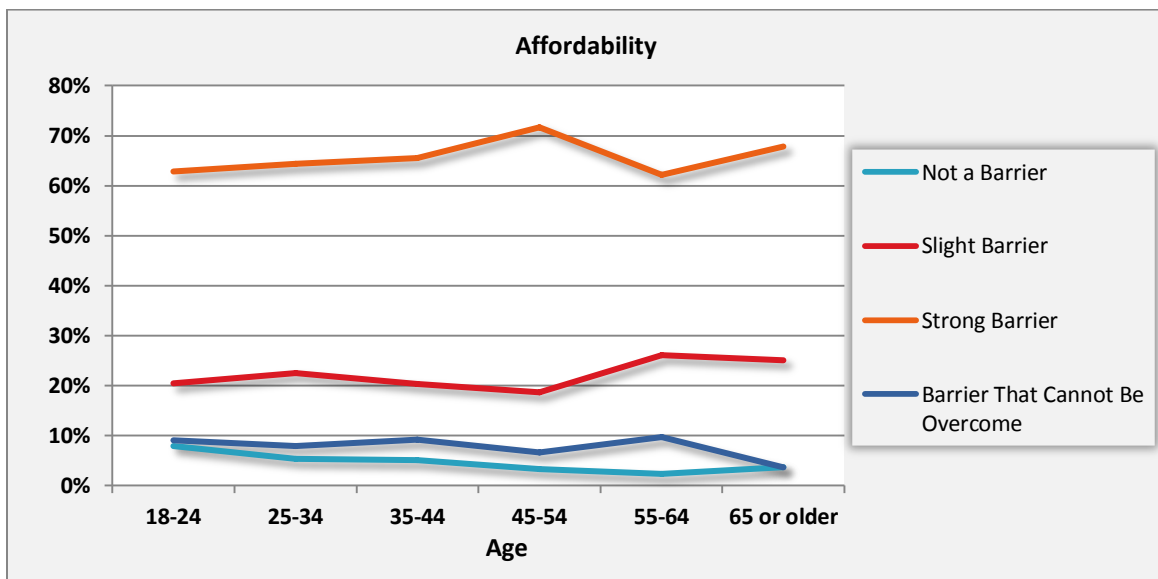
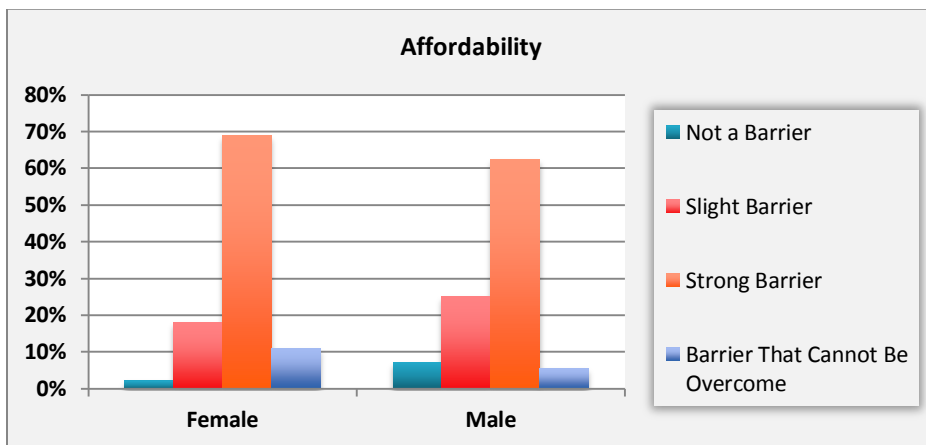
Technology is not seen as significant barriers by the majority of Americans. 71% of males rate technology shortfalls as either not a barrier or a slight barrier, while 64% of women give technology shortfalls that assessment. Not viewing technology shortfalls as a significant barrier trended upward with age; 62% of 18-24 year olds rated the issue as not a barrier or a slight barrier, while 82% of the 65+ group gave that same assessment. Asians did rate technology shortfalls as a significant barrier (strong barrier + barrier that cannot be overcome) The majority of all breakdowns by income and level of education rated technology short falls as not a significant barrier, with the exception of the professional degree group. There were not strong correlations or trends within those demographic categories.

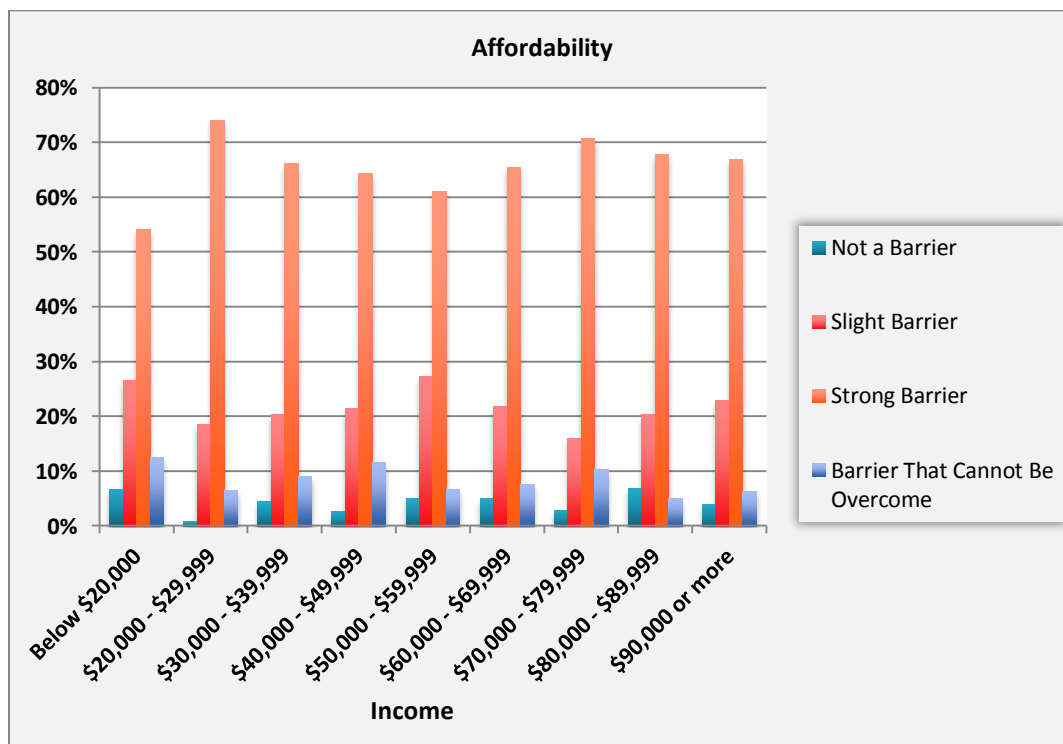
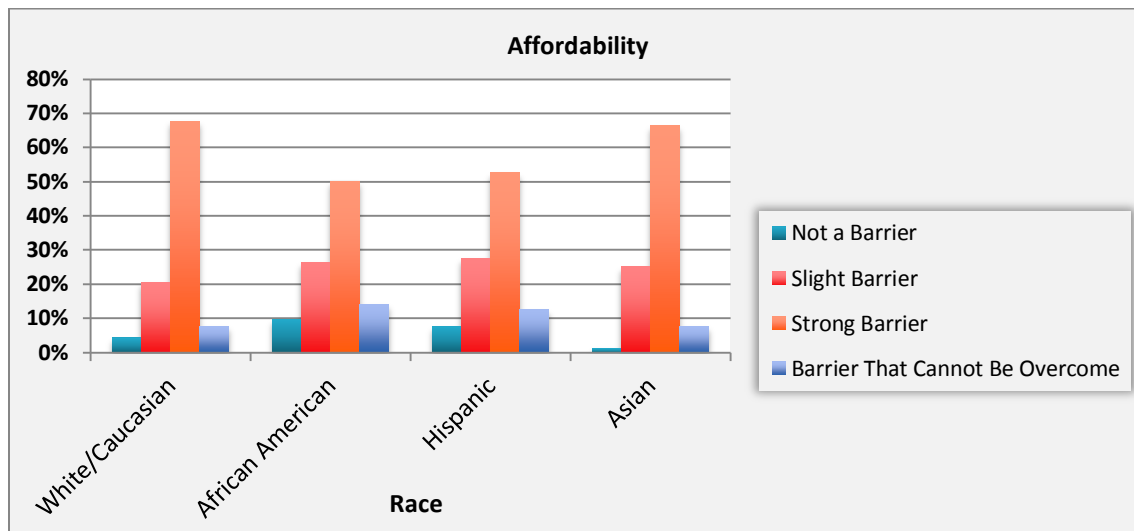


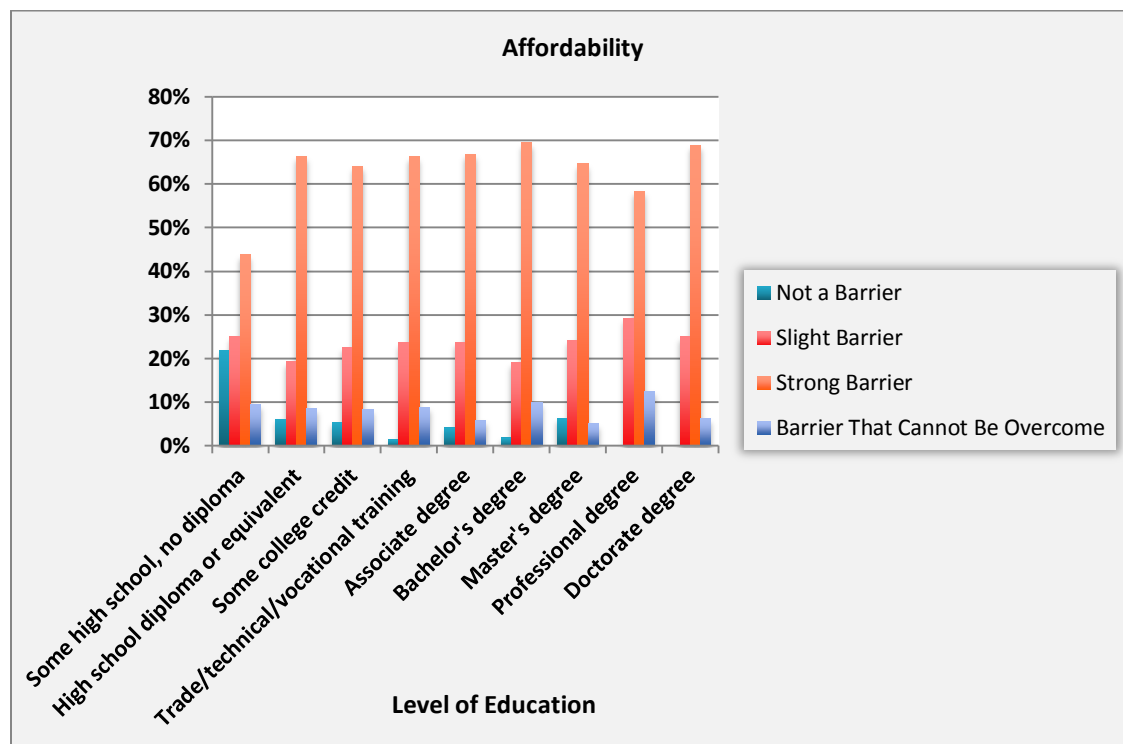


Affordability

73% of Americans believe affordability to be a limiting barrier (strong barrier + barrier that cannot be overcome). 80% of females consider affordability to be a limiting barrier compared to 67 percent of males. The majority of all breakdowns by age, race, income and level of education rated politics as a limiting barrier. There were not strong correlations or trends within those demographic categories. Those with some high school and no diploma did appear as an outlier, with only 53% of the group rating affordability as a limiting factor.

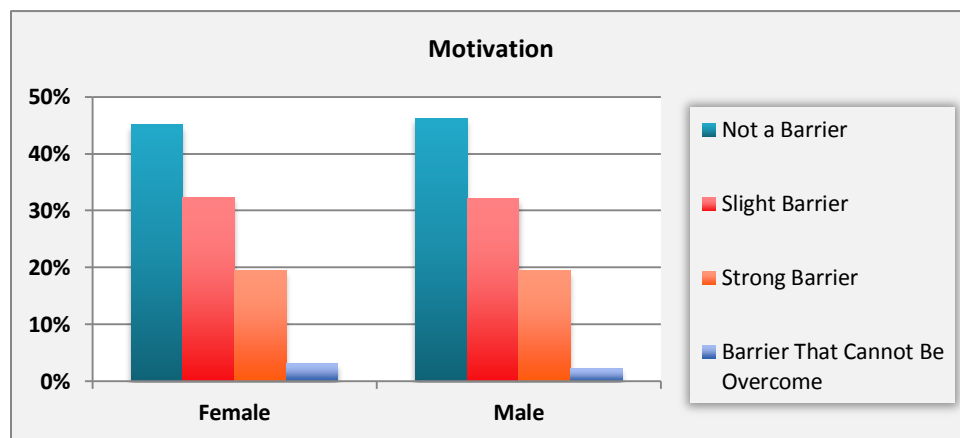


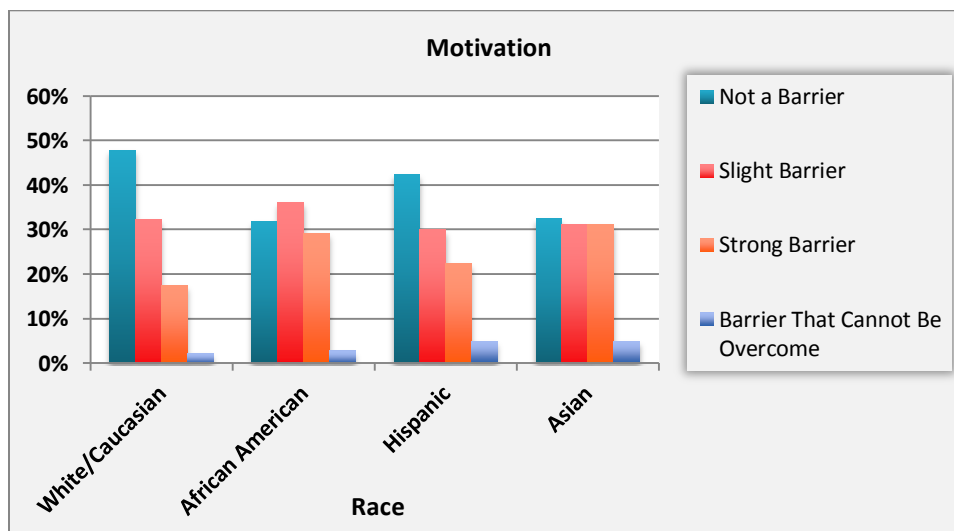
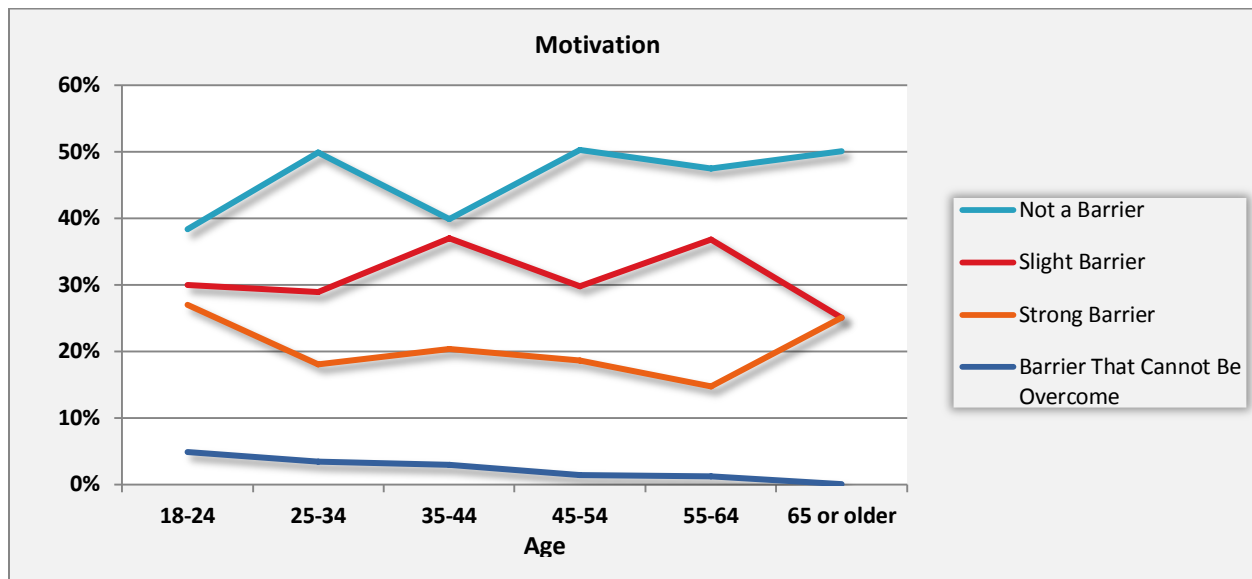


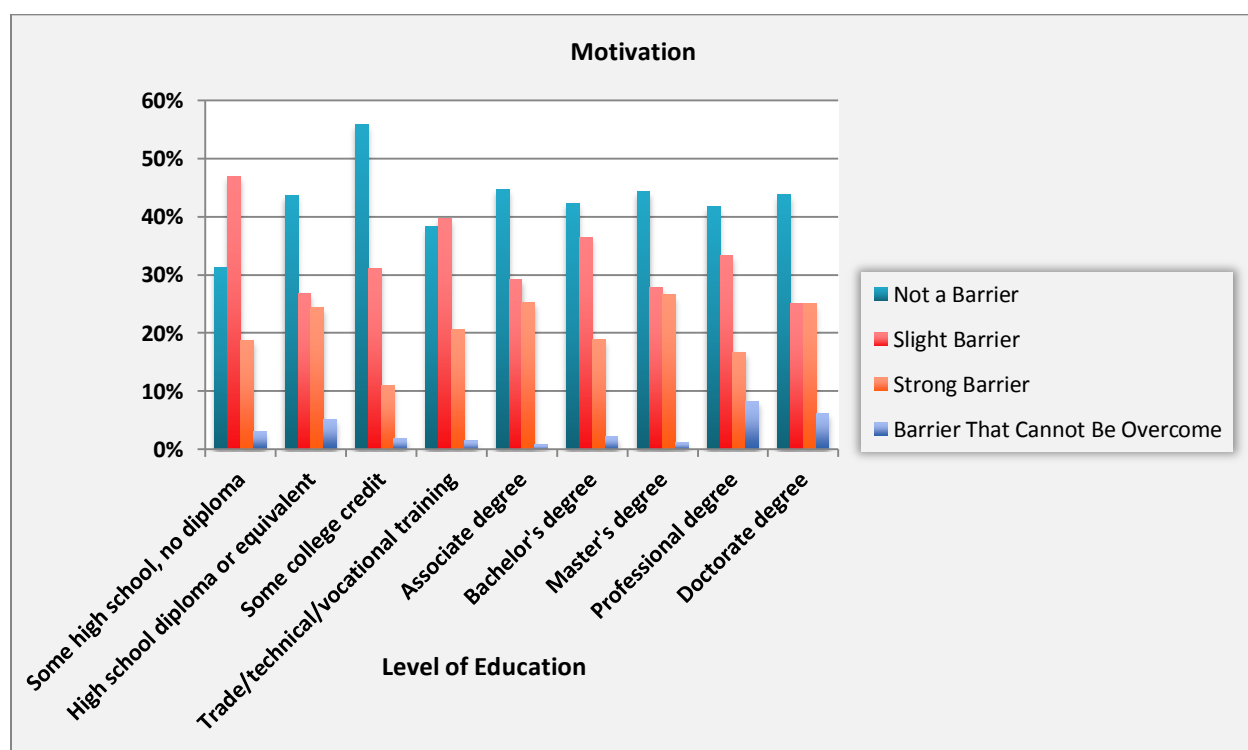
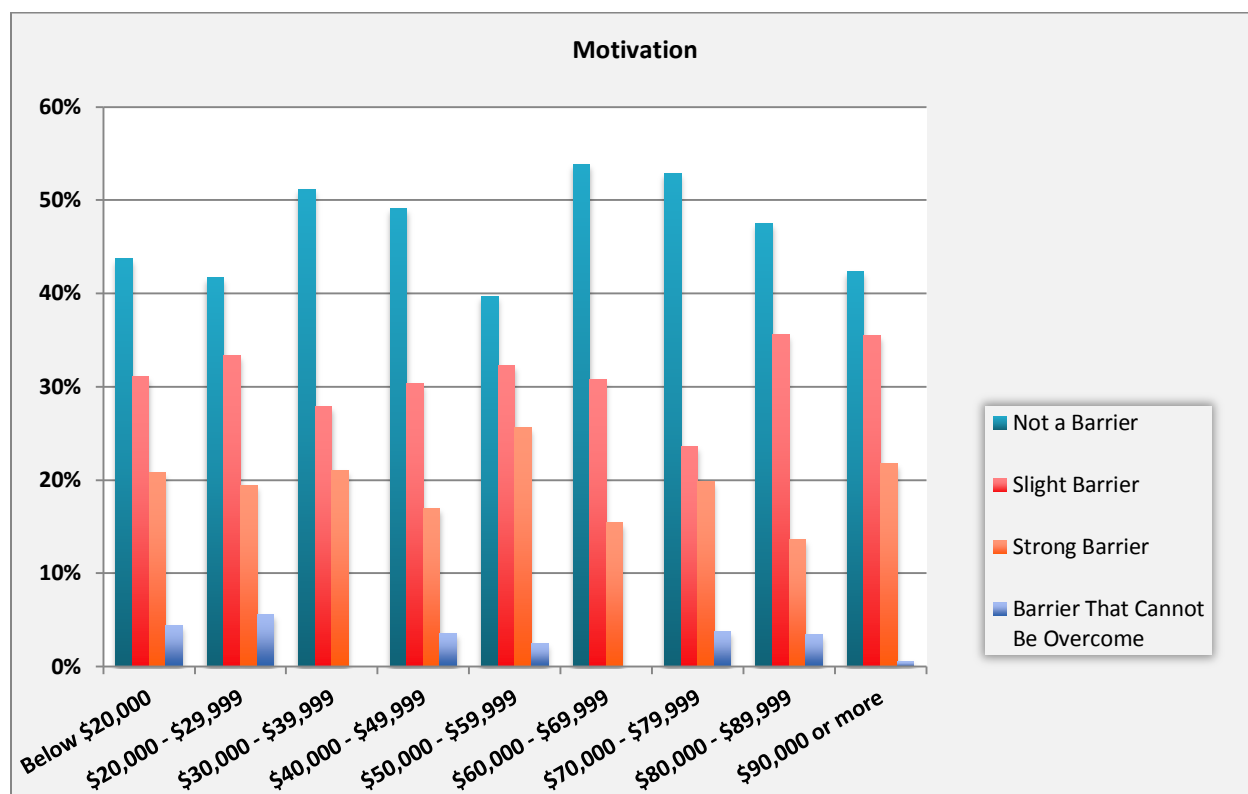


Motivation

77% of Americans believe that the Motivation is not a significant barrier. Overwhelmingly across demographics the majority of respondents rated motivation as either not a barrier or a slight barrier.

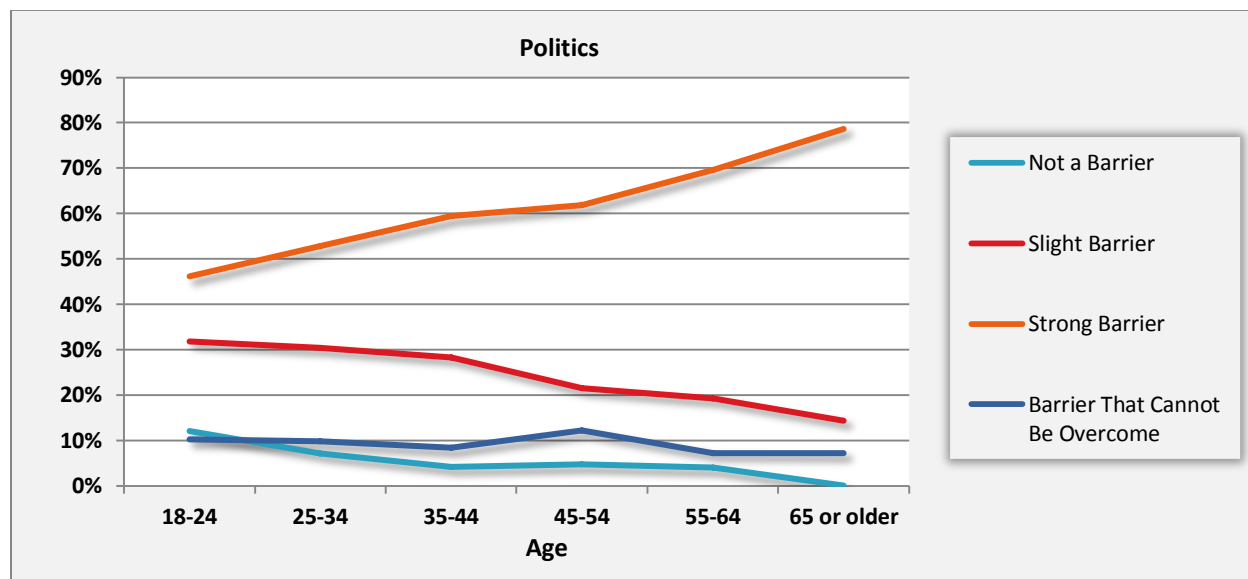
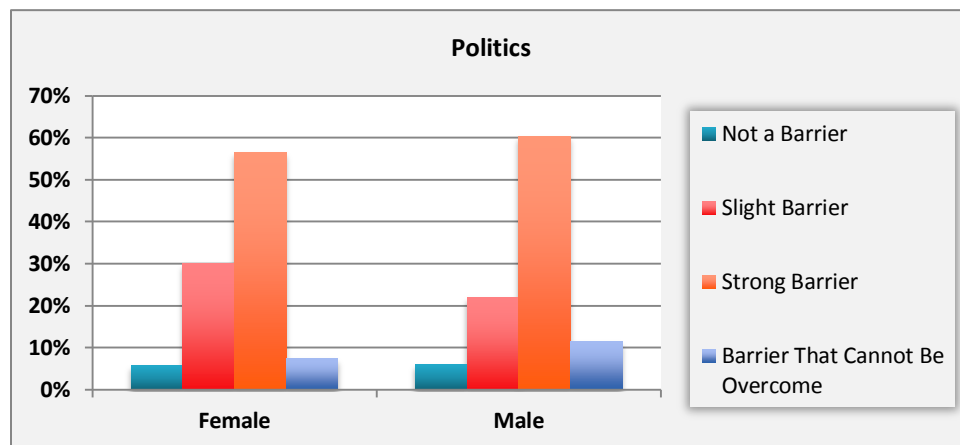


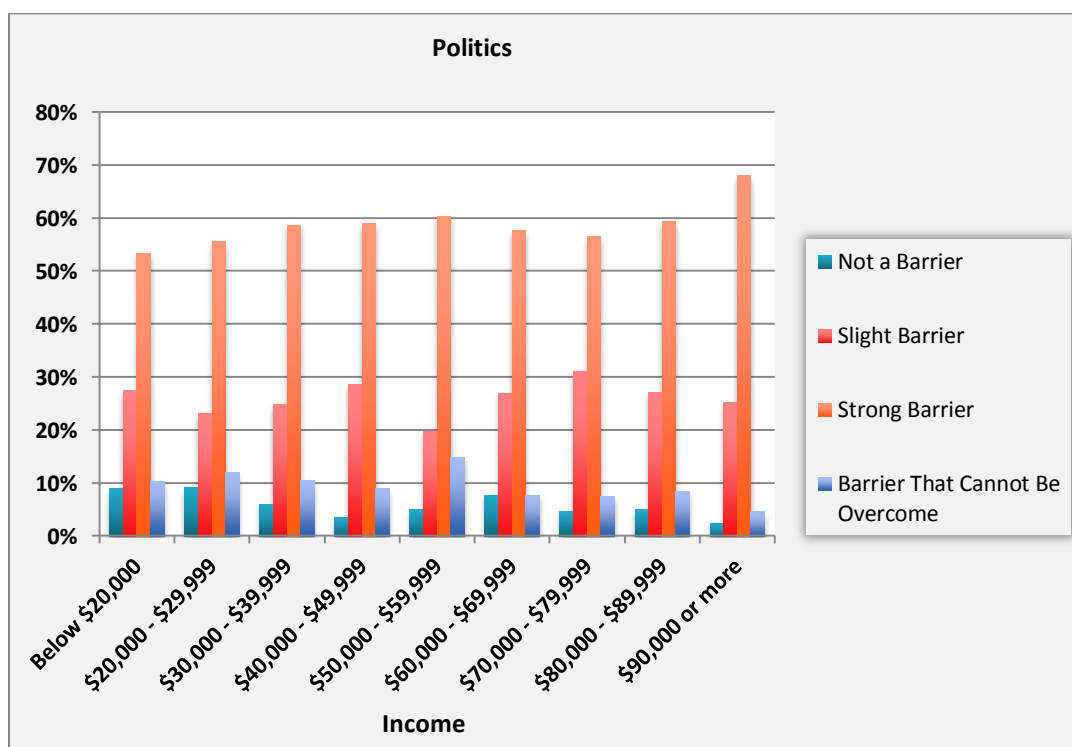
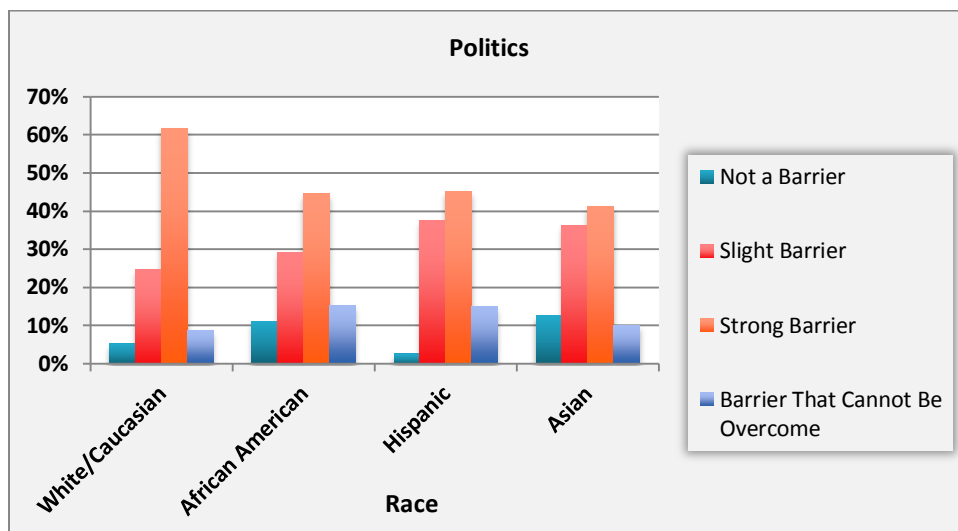




Politics

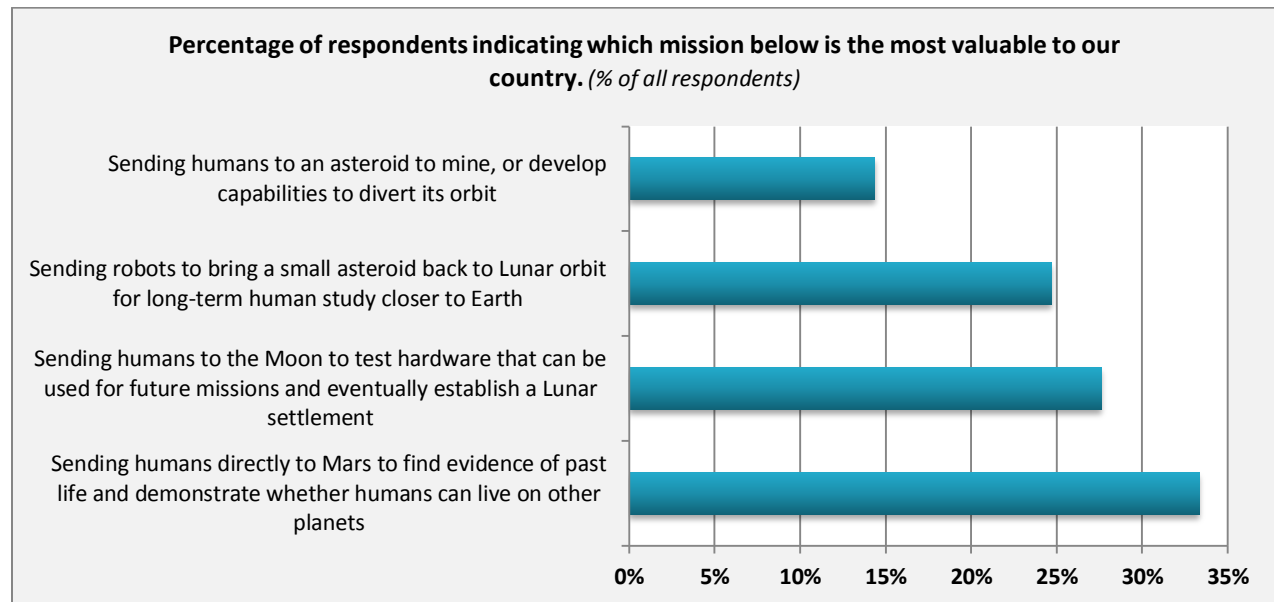
67% of Americans believe politics to be a limiting barrier (strong barrier + barrier that cannot be overcome). Men consider politics to be a greater barrier than women do, with 72% of men and 64% of women rating the issue as a strong barrier or one that cannot be overcome. The issue of politics trends stronger as a barrier with age, with 46% of those in the 18-24 group giving a strong barrier assessment, and 79% of those in the 65+ group giving the same rating. The majority of all breakdowns by race, income and level of education rated politics as a limiting barrier. There were not strong correlations or trends within those demographic categories.





6. Perceived Value of U.S. Human Space Missions

Human exploration of Mars would be a multi-year deep space mission. The four missions below will increase our understanding of living and working in deep space. Please rank the missions in order of value to our country from 1 to 4, with 1 being the most valuable and 4 being the least valuable. You may check each number only once.

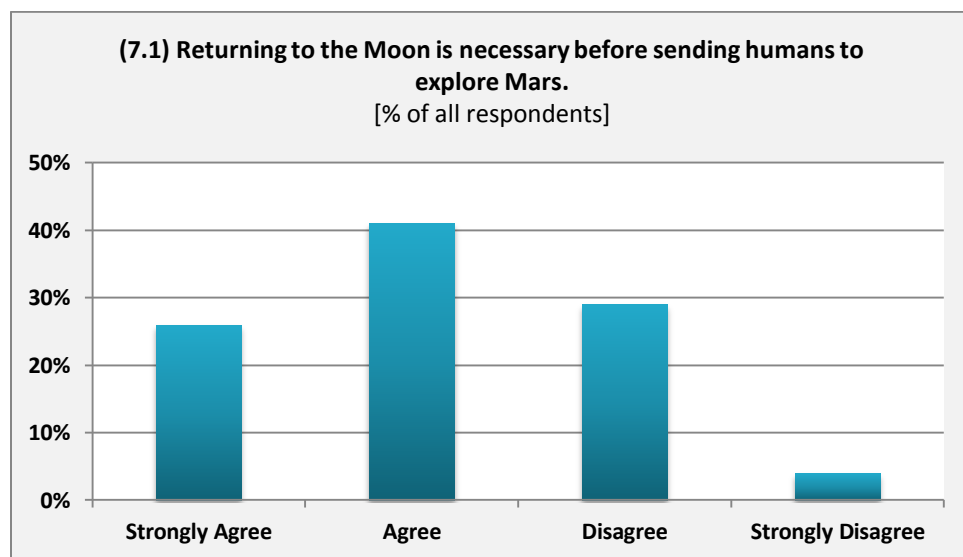


7. Confidence in Human Space Exploration

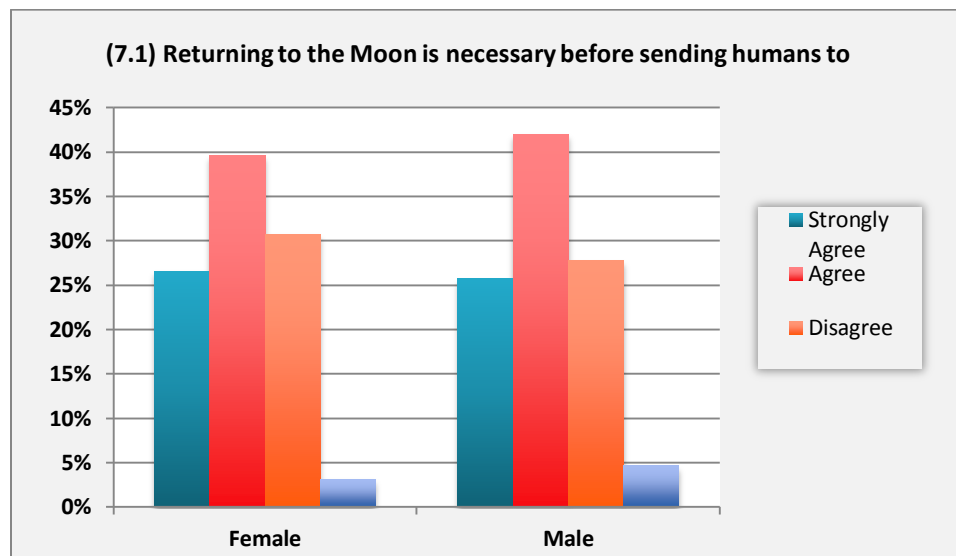
Respondents were asked to: Indicate whether they "Strongly Agree," "Agree," "Disagree" or "Strongly Disagree" with the following statements:

- 7.1 Returning to the Moon is necessary before sending humans to explore Mars.
- 7.2 Human exploration of an asteroid would be worthwhile.
- 7.3 I am confident humans will go to Mars by 2033.
- 7.4 I am confident humans will go to Mars in my lifetime.

(7.1) Returning to the Moon is necessary before sending humans to explore Mars.



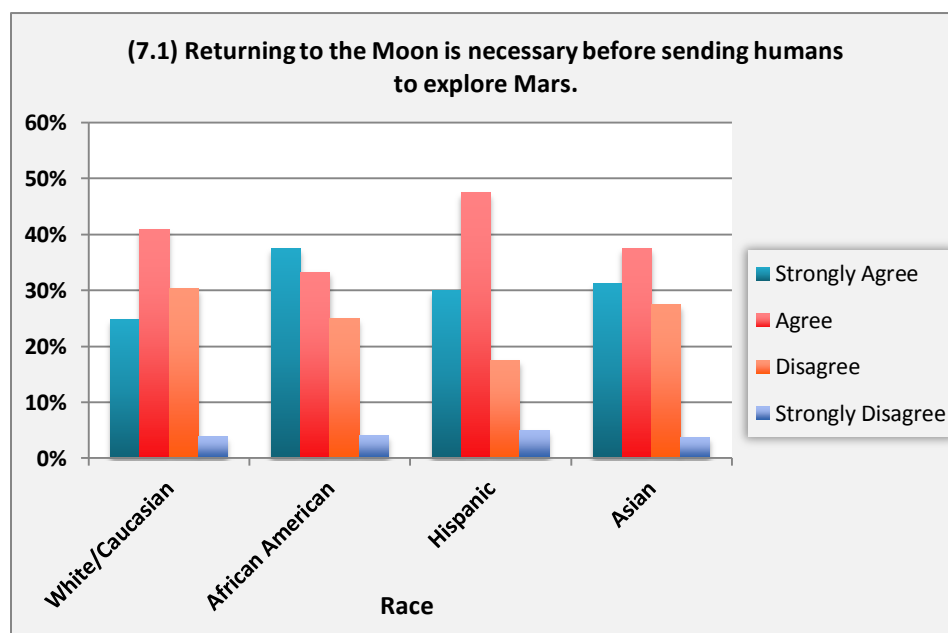
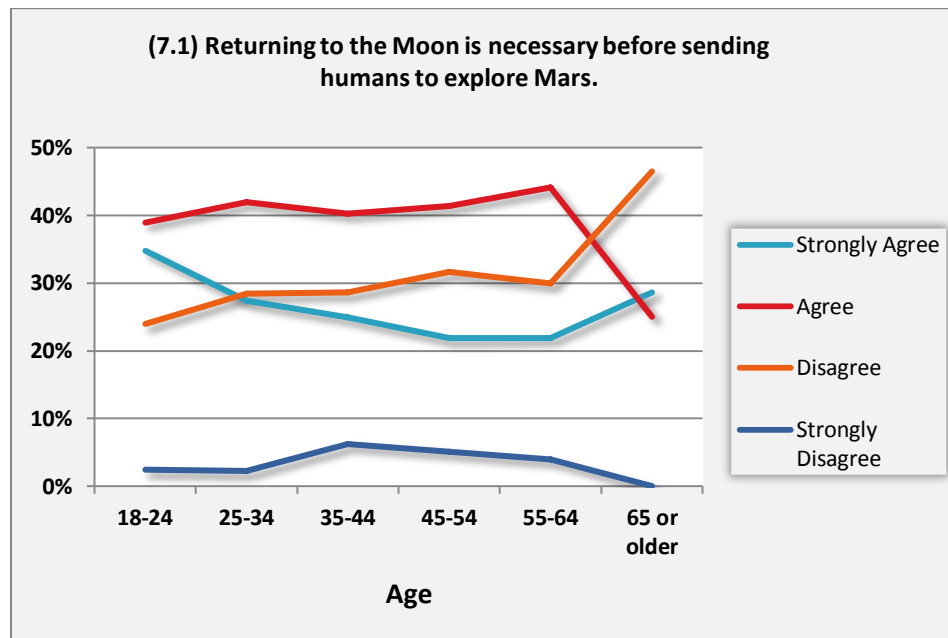
The following charts break down opinions from respondents by demographic affiliation.

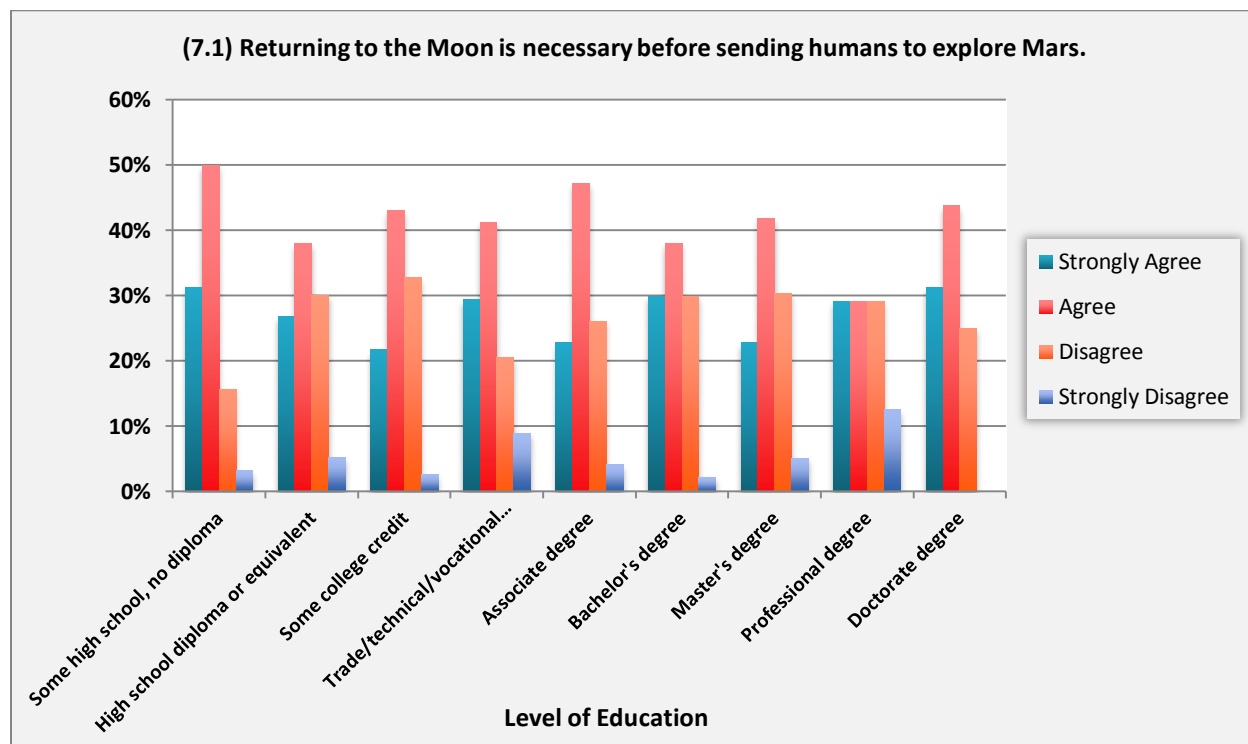
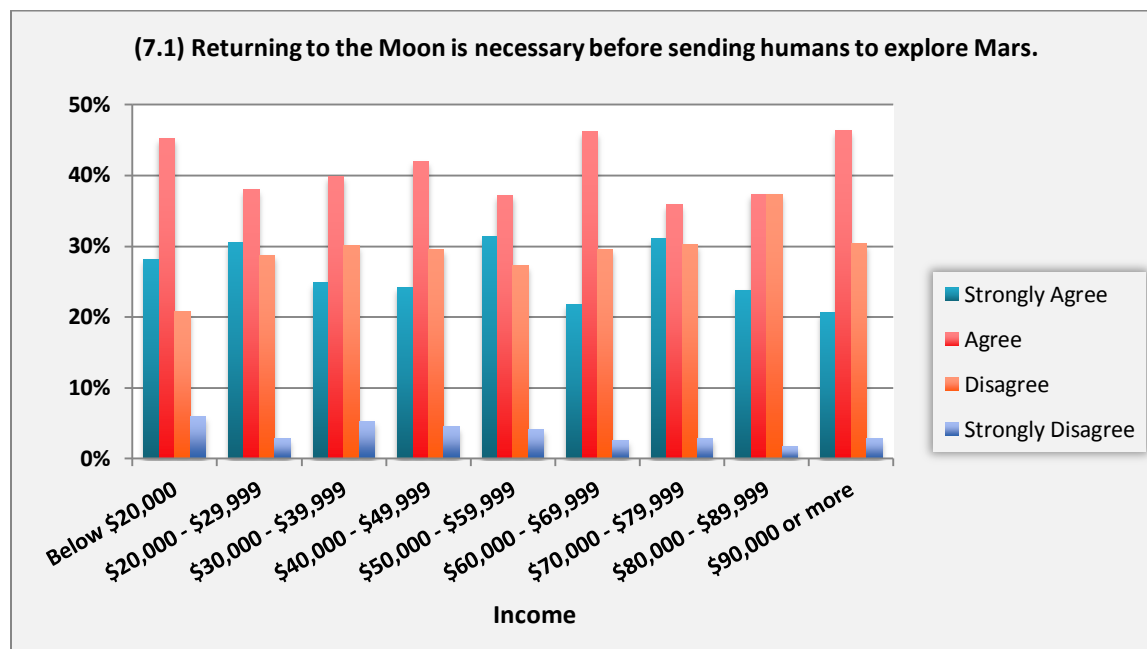


With this question, there were not any significant differences in opinion between male and female respondents. About 70 percent of both males and females indicated they "Strongly Agree" or "Agree" to the four statements.

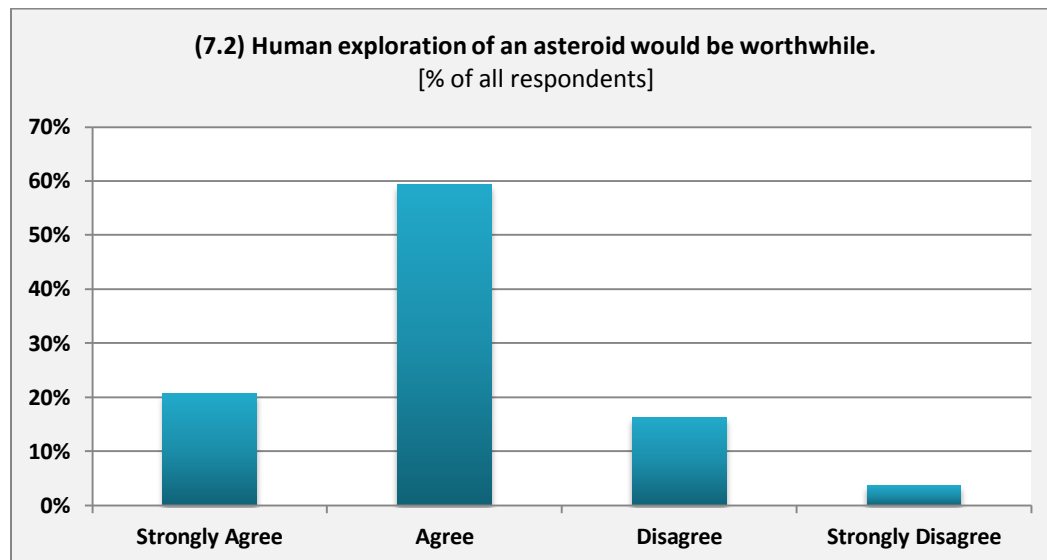
Approximately the same percentage of males (68%) and females (67%) strongly agreed or agreed that it is necessary to send humans to the Moon before sending humans to Mars.

At 46%, the highest percentage of the respondents to select disagree were in the 65 and older demographic group.

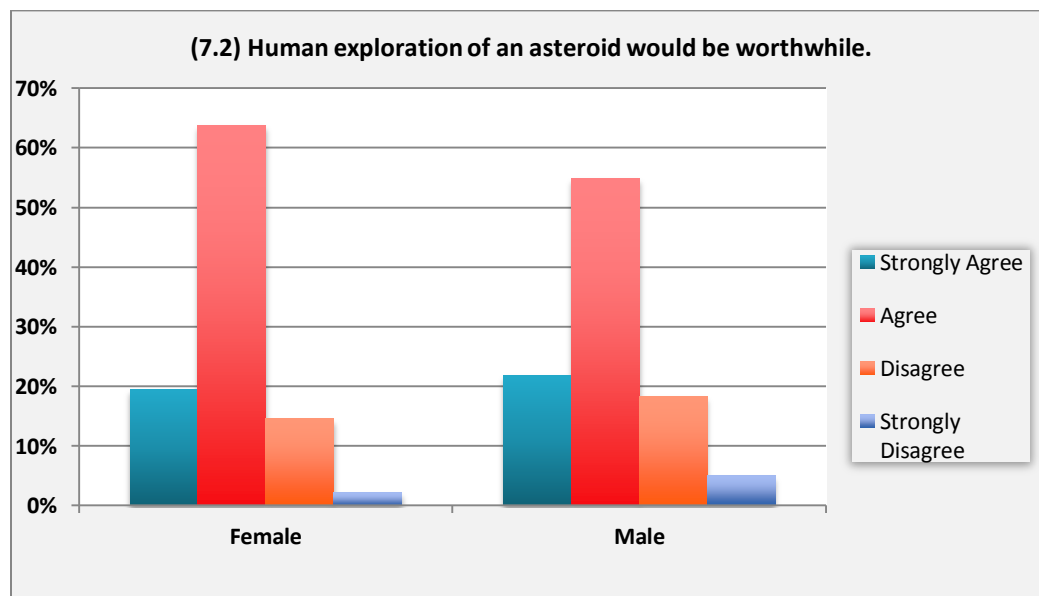




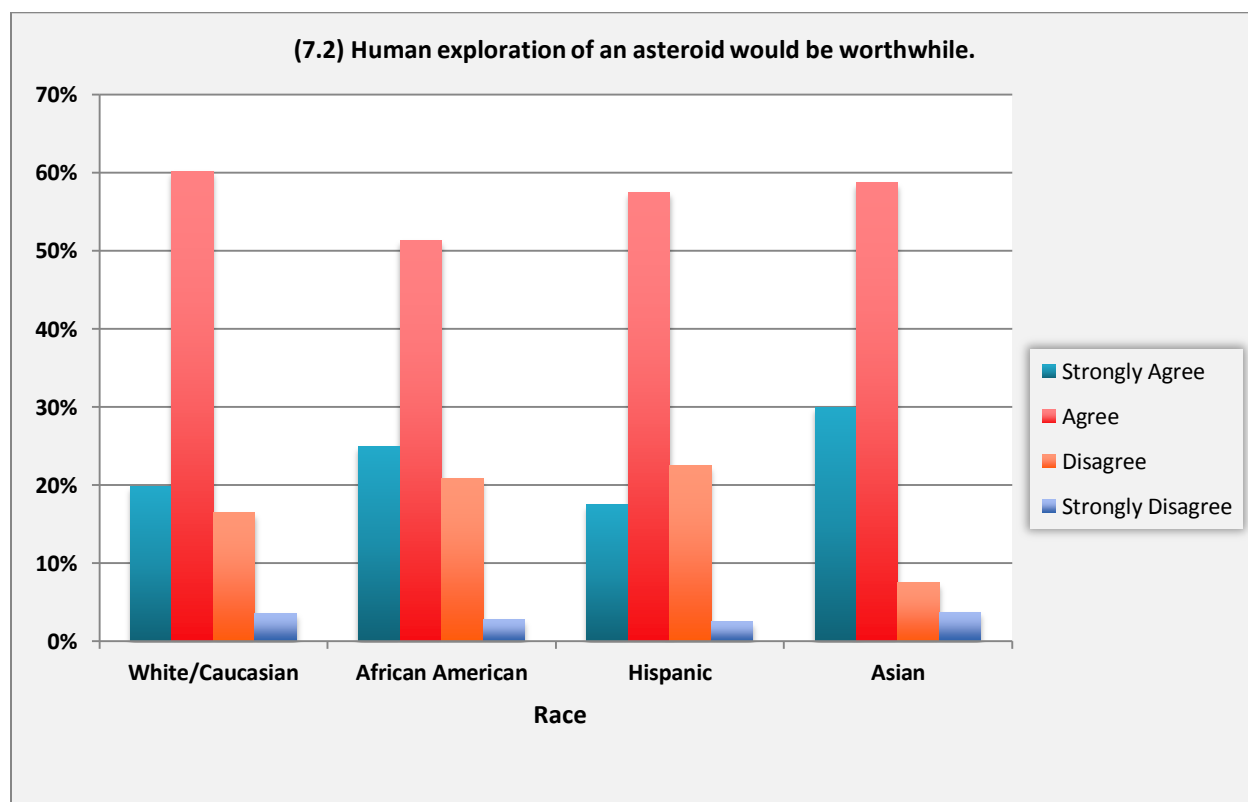
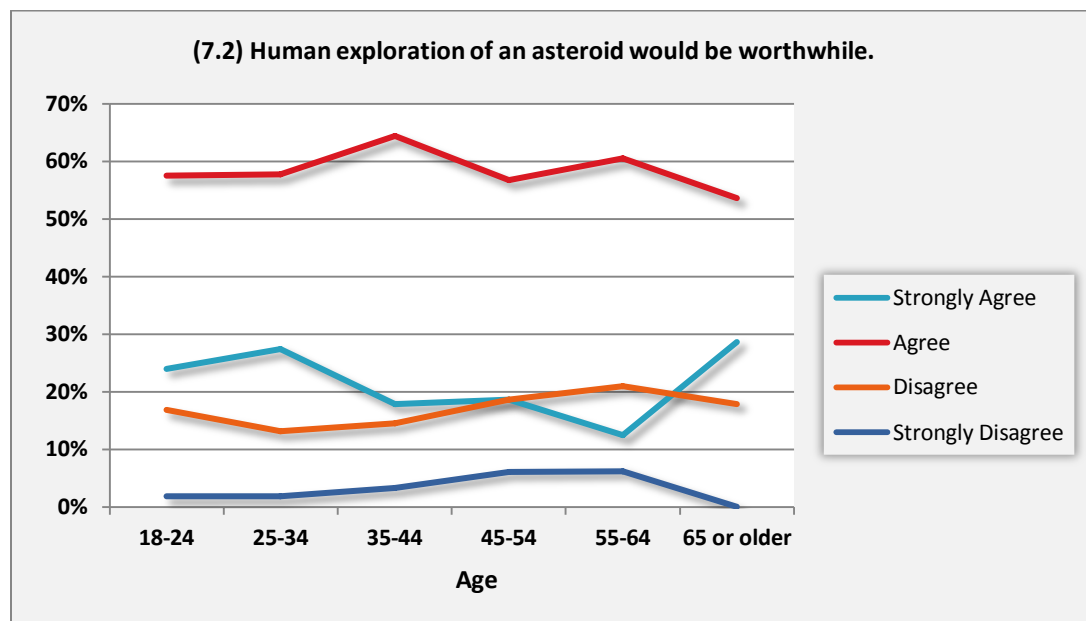
(7.2) Human exploration of an asteroid would be worthwhile.

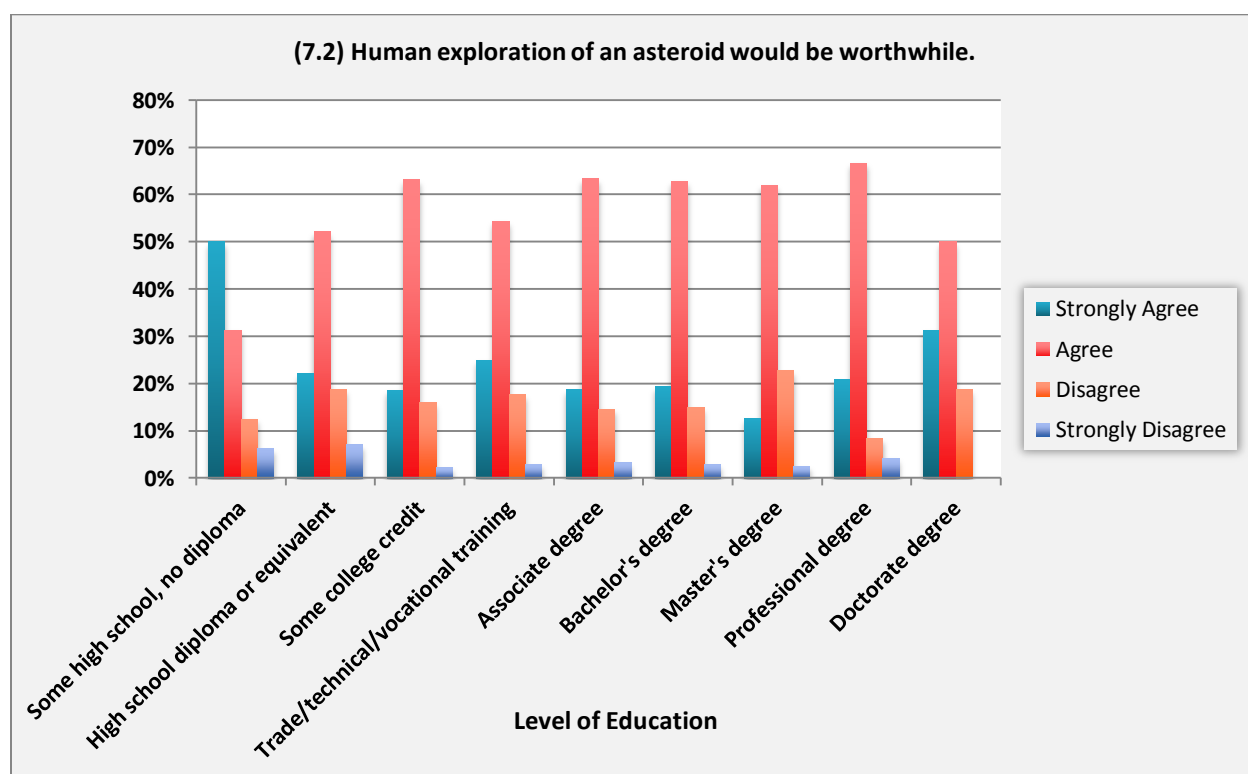
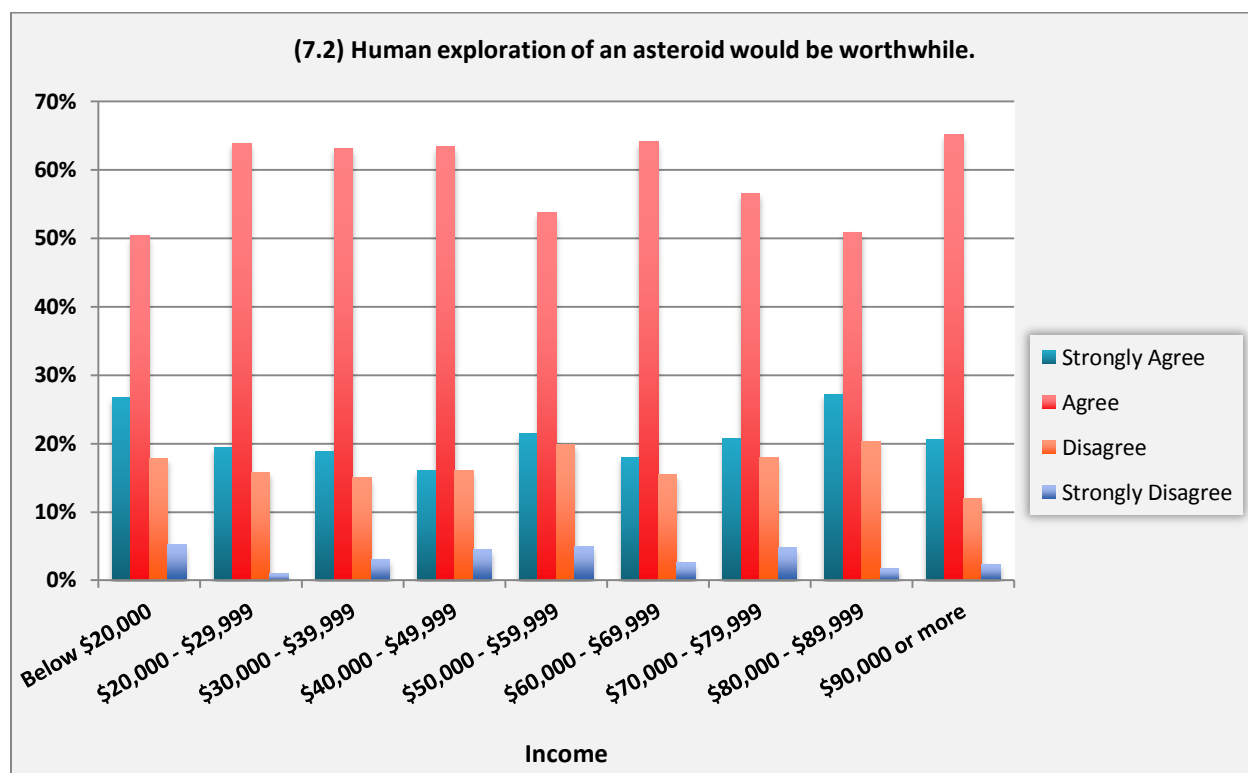


The following charts break down opinions from respondents by demographic affiliation.

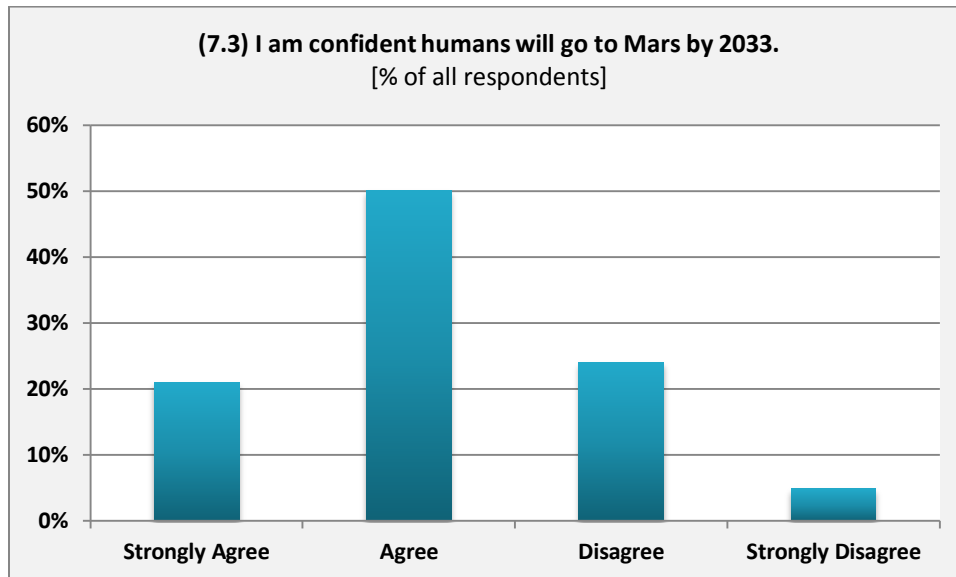


The majority of female and male respondents indicated they strongly agree or agree that it would be worthwhile for humans to explore an asteroid. A higher percentage of females (83%) strongly agreed or agreed than males (77%). 85% of the age group of 25-34 indicated they strongly agree or agree that human exploration of an asteroid would be worthwhile – which was the highest percentage of any age group. The highest percentage racial group to strongly agree or agree that it would be worthwhile to explore an asteroid was the Asian respondent group at 89%. The majority of respondents of all education levels strongly agreed or agreed that it would be worthwhile for a human to explore an asteroid. There were not any noticeable patterns

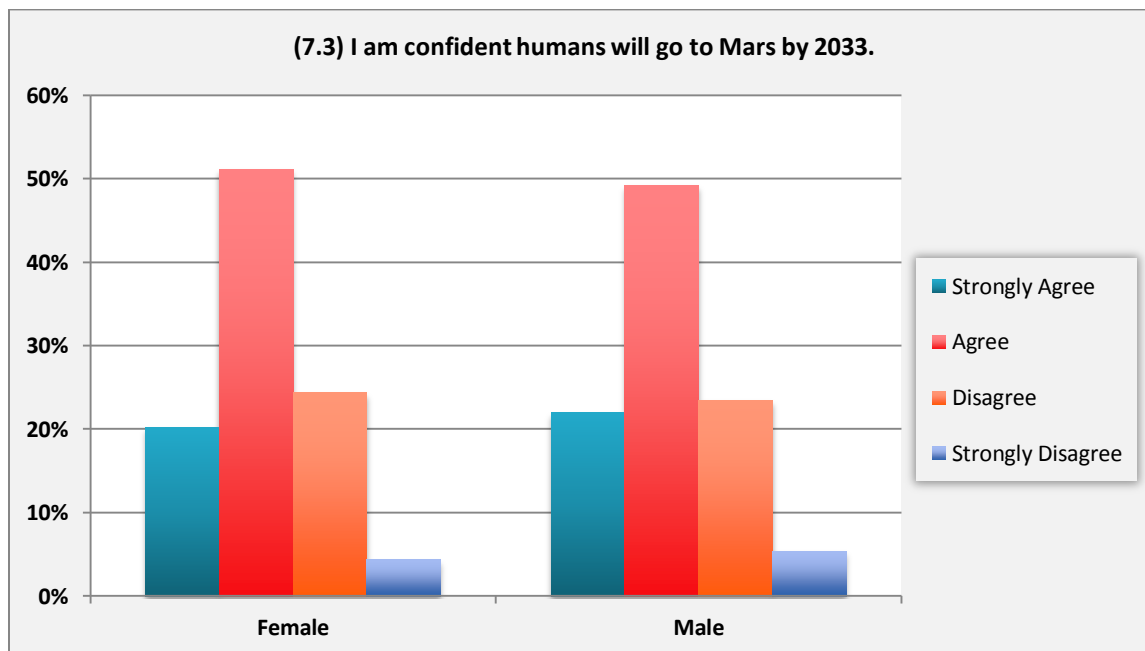




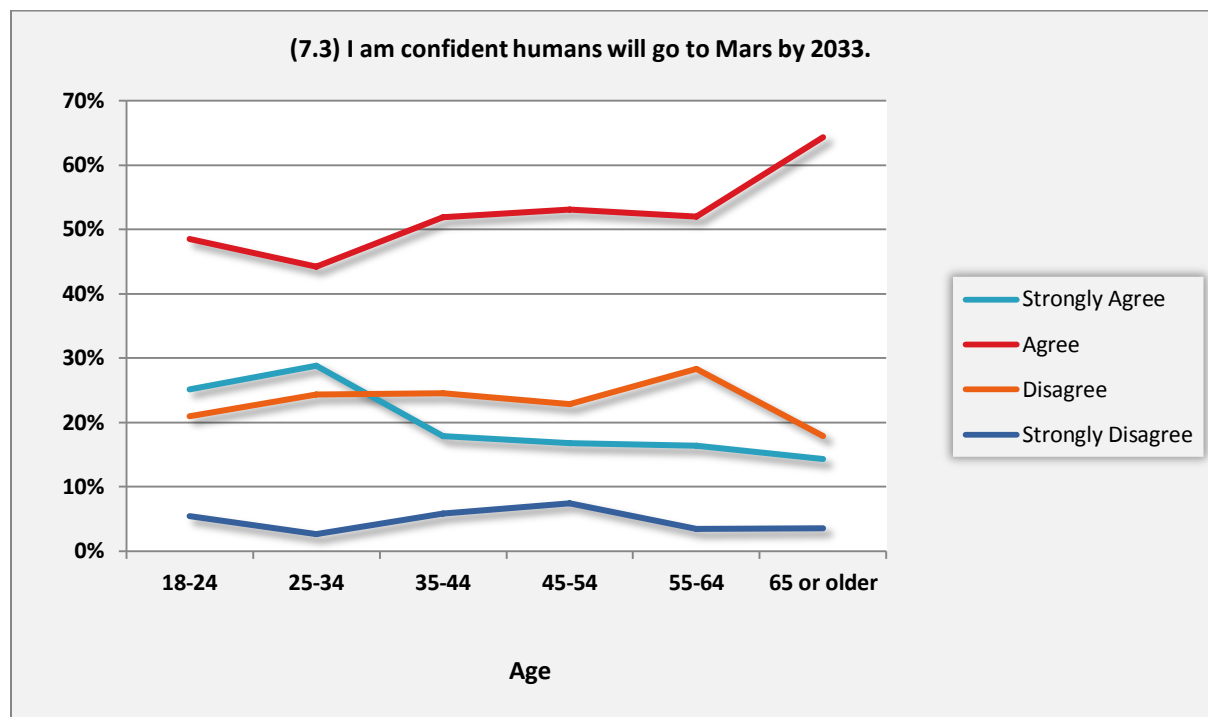
(7.3) I am confident humans will go to Mars by 2033.



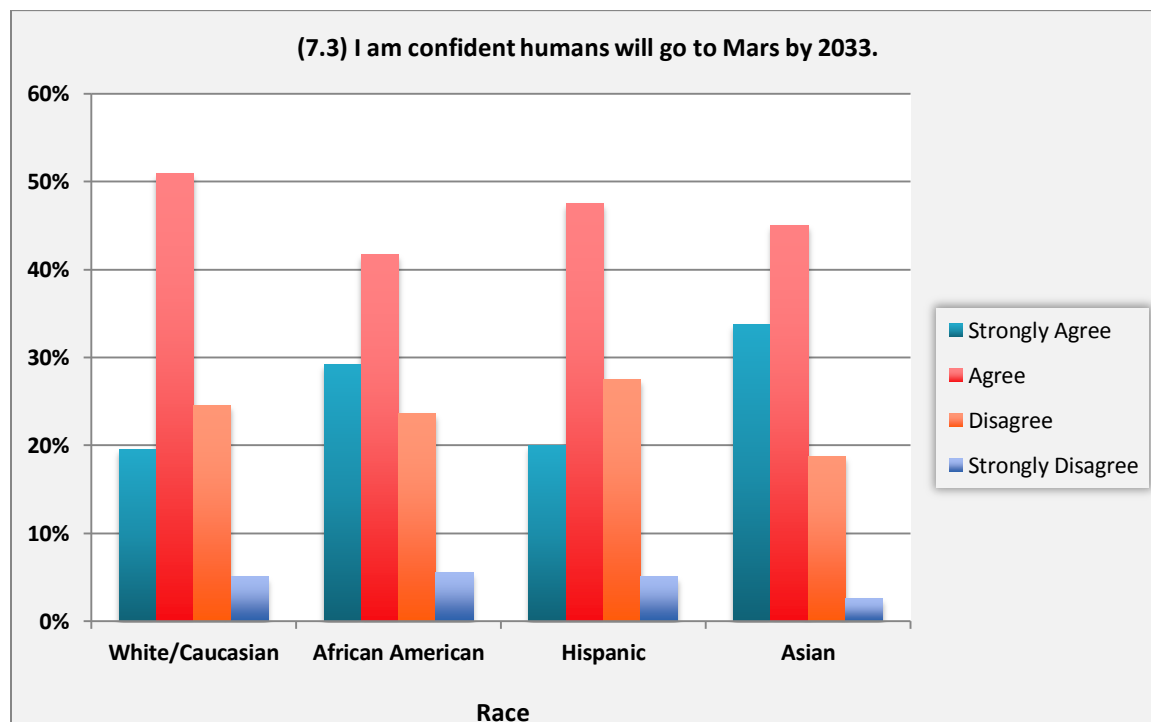
The following charts break down opinions from respondents by demographic affiliation.

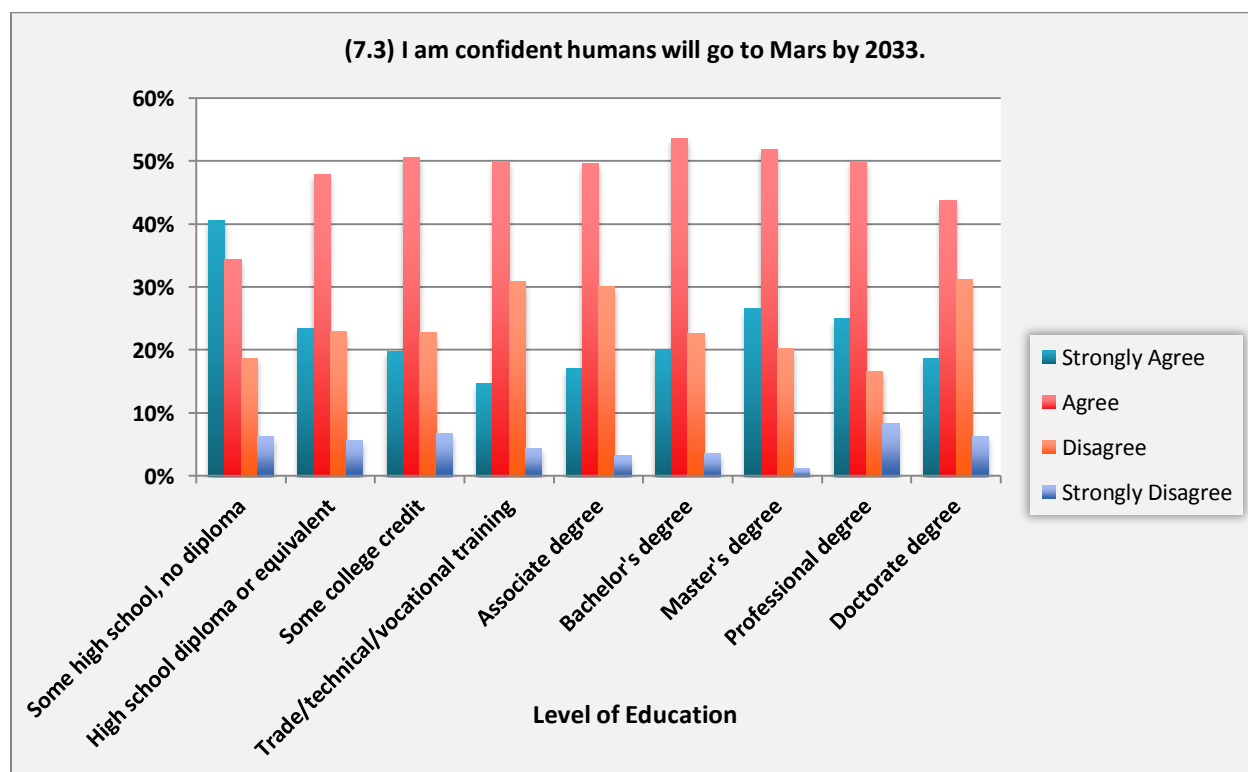
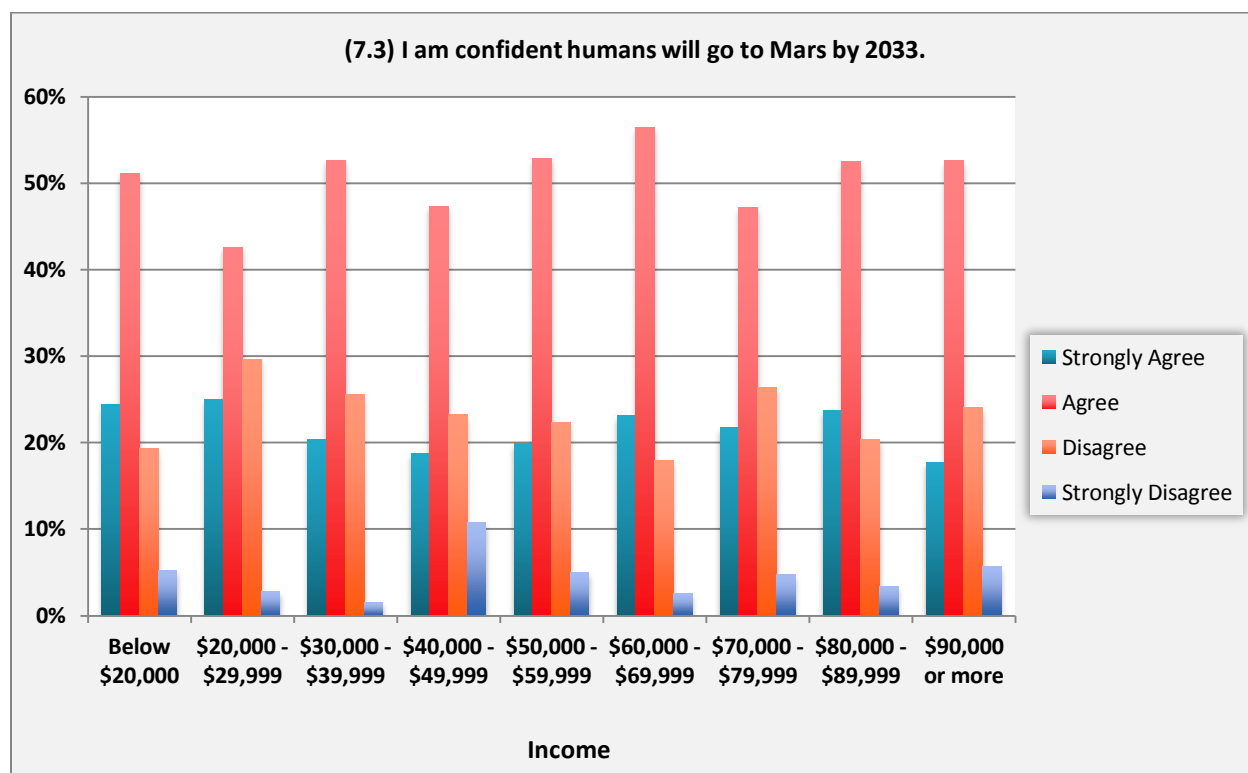


Both at 71%, an equal percentage of male and female respondents strongly agree or agree that they are confident humans will go to Mars by 2033.

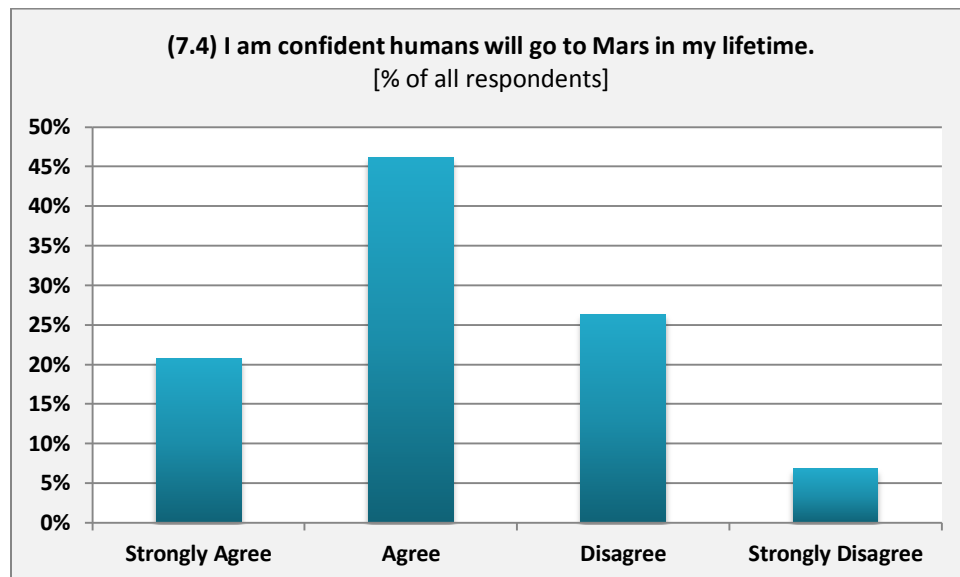


For all the age groups, more than 50 percent of respondents selected they "Strongly Agree" or "Agree" that returning to the Moon is necessary before sending humans to Mars; human exploration of an asteroid would be worthwhile; and they have confidence humans will go to Mars by 2033.

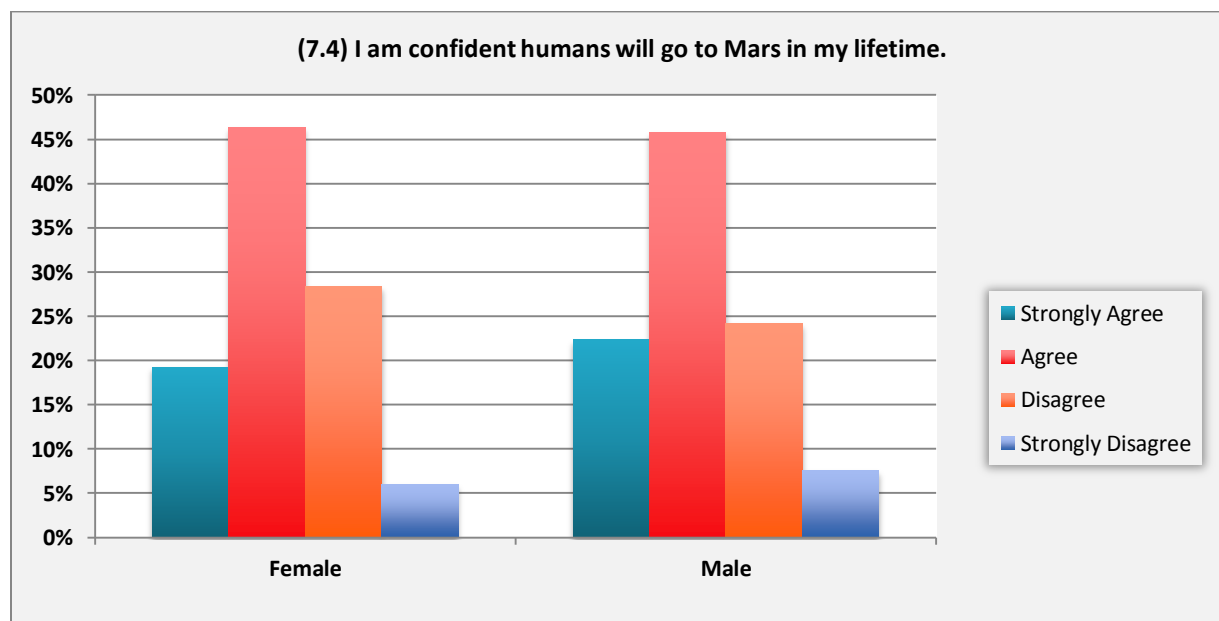




(7.4) I am confident humans will go to Mars in my lifetime.

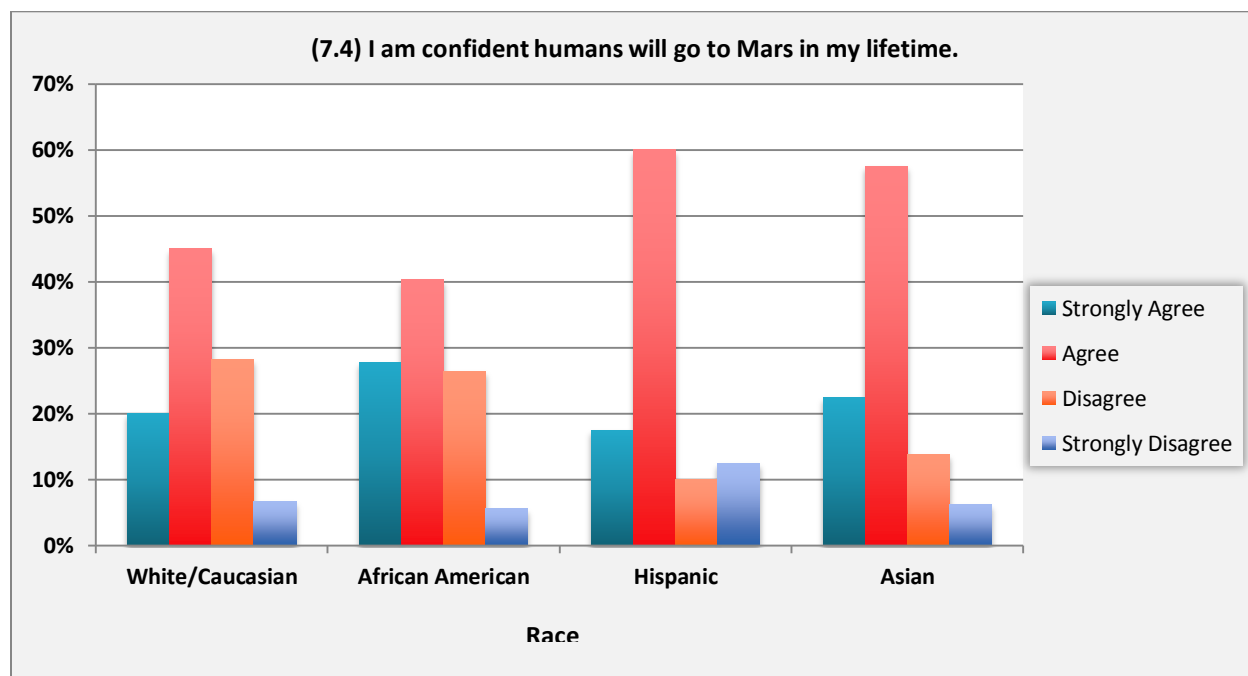
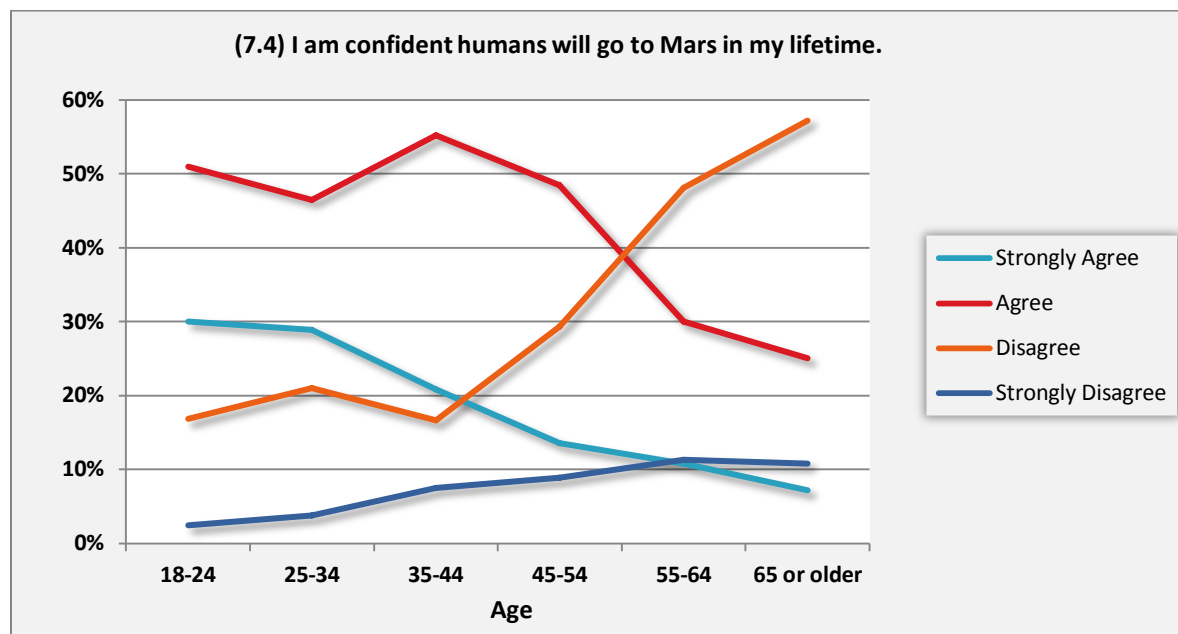


The following charts break down opinions from respondents by demographic affiliation.



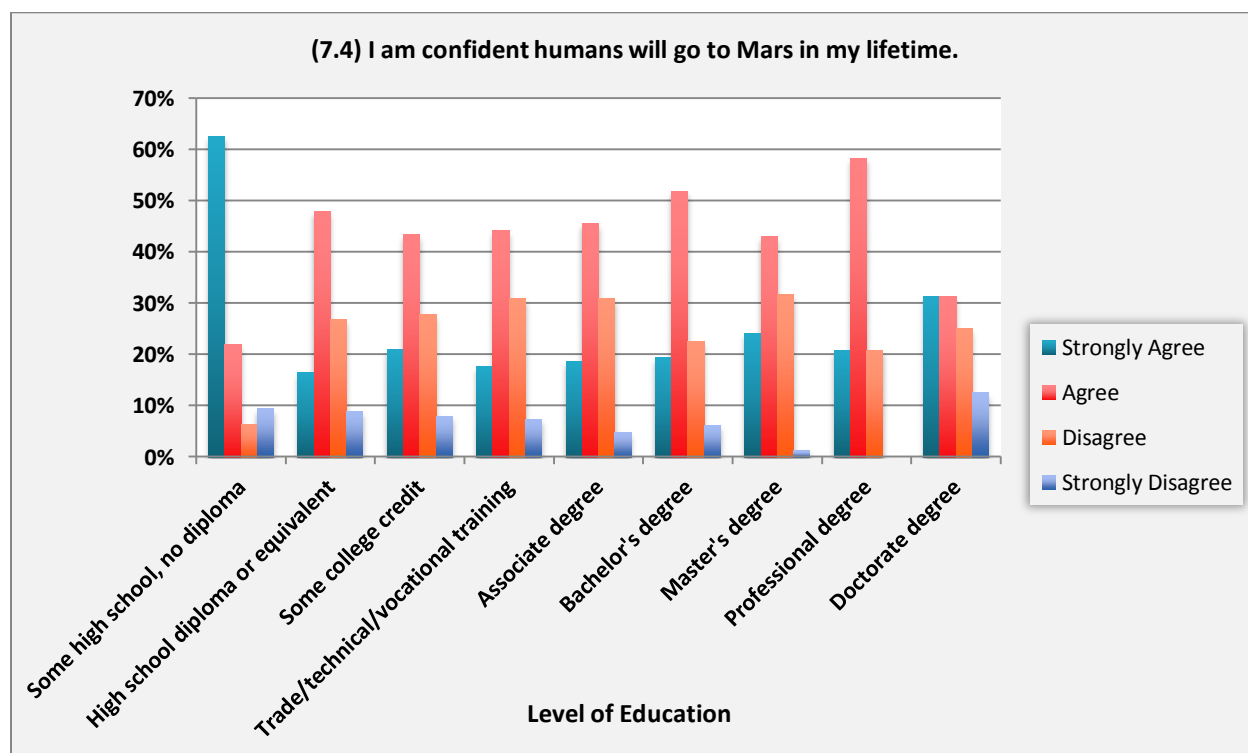
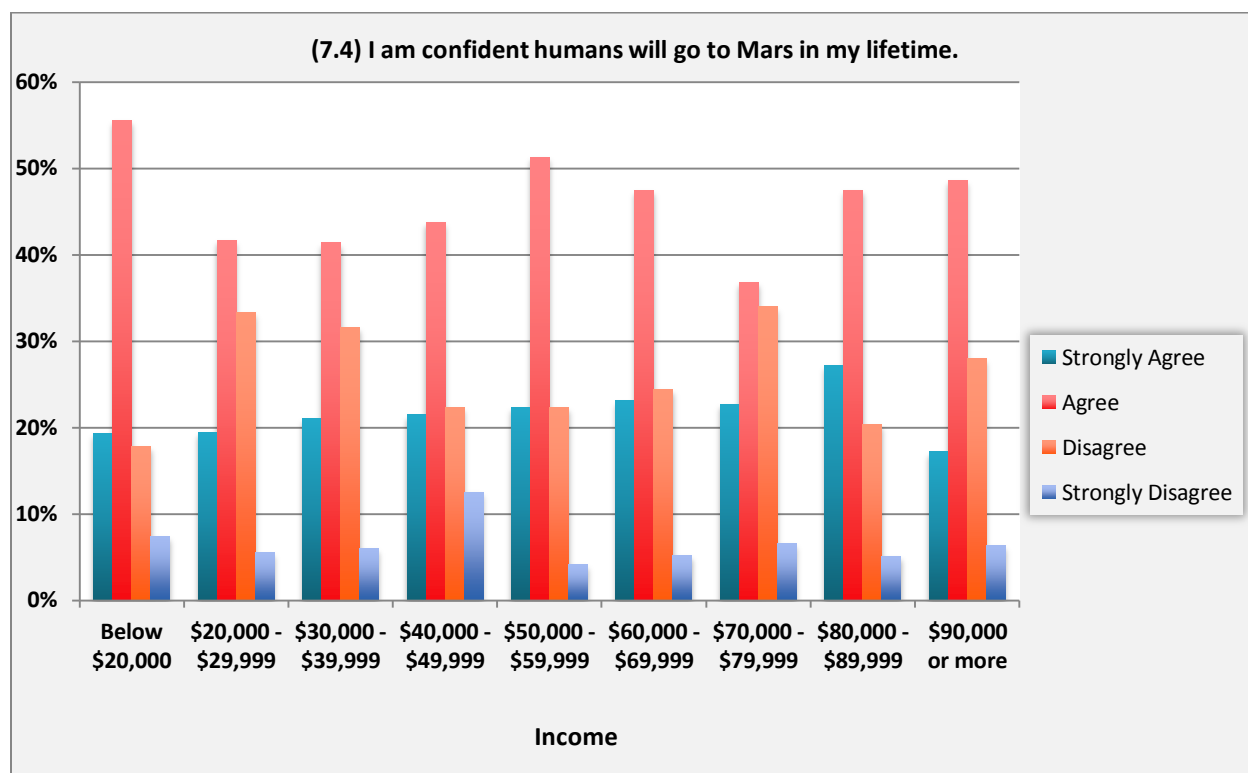
68% of men strongly agree or agree that they are confident humans will go to Mars in their lifetime, and 65% of women strongly agree or agree with this statement.

The age group of 18-24 have the highest confidence level that humans will go to Mars in their lifetime. The age group of 35-44 is the second most confident and the group of 25-34 are the third most confident. The results indicated that as the age group increased, the less confident the respondents are that humans will go to Mars in their lifetime. The majority of respondents age 55 and older indicated that they "Disagree" or "Strongly Disagree" to the statement.



Asian respondents have the highest confidence level that humans will go to Mars in their lifetime over any other racial group. With 76% strongly agreeing or agreeing, Hispanic respondents were the second most confident; 68% of African American respondents strongly agreed or agreed with this statement; and 65% of White/Caucasian respondents strongly agreed or agreed.

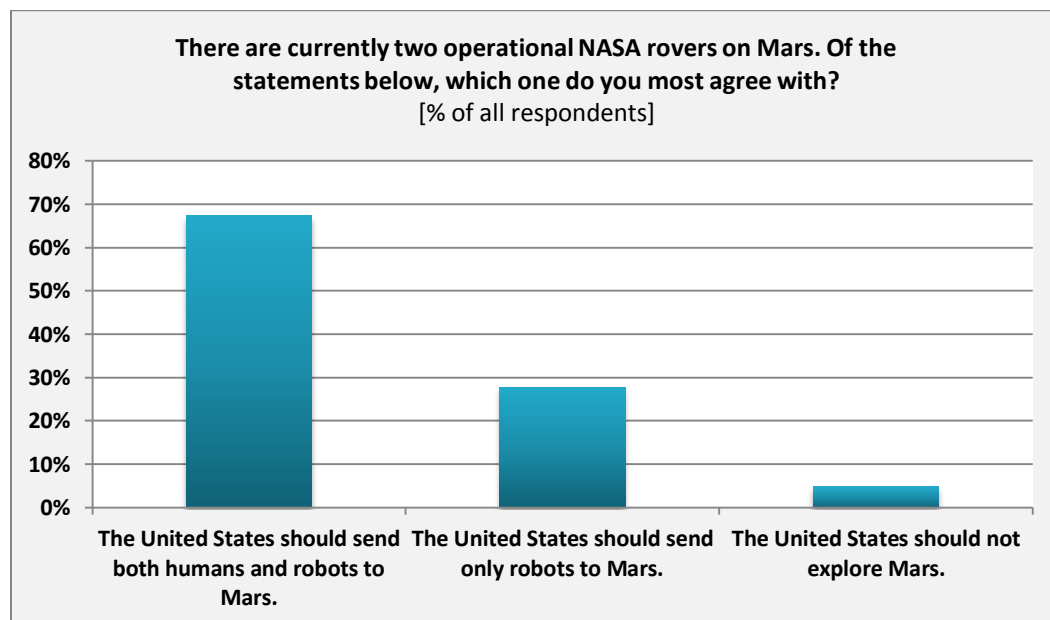
The majority of all respondents across income groups strongly agreed or agreed that they are confident humans will go to Mars in their lifetime. Americans earning an annual income of \$20,000 or below had the highest level of confidence that humans will go to Mars in their lifetime with 75% strongly agreeing or agreeing to this.



8. Human vs. Robotic Exploration of Mars

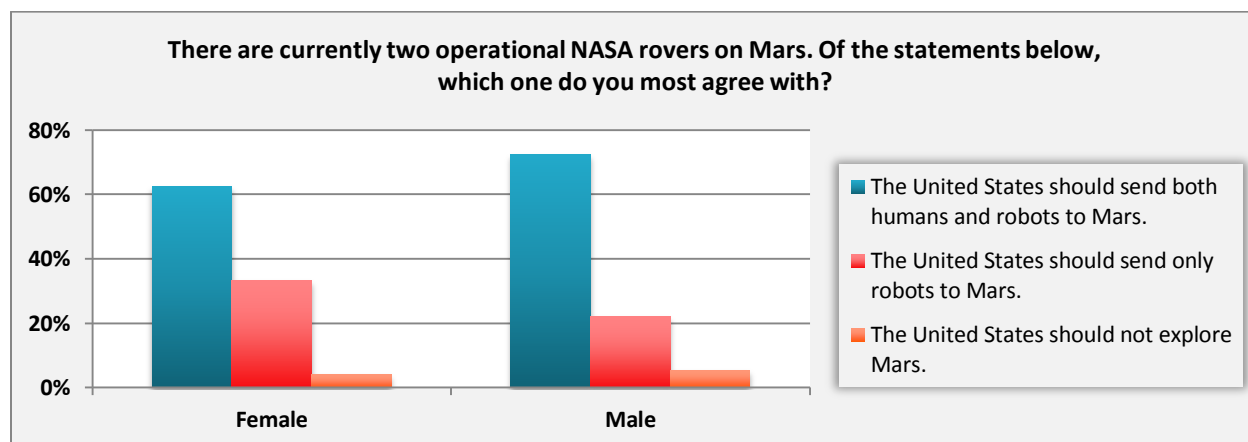
There are currently two operational NASA rovers on Mars. Of the statements below, respondents were asked which one do they most agree with?

- The United States should send both humans and robots to Mars.
- The United States should send only robots to Mars.
- The United States should not explore Mars.

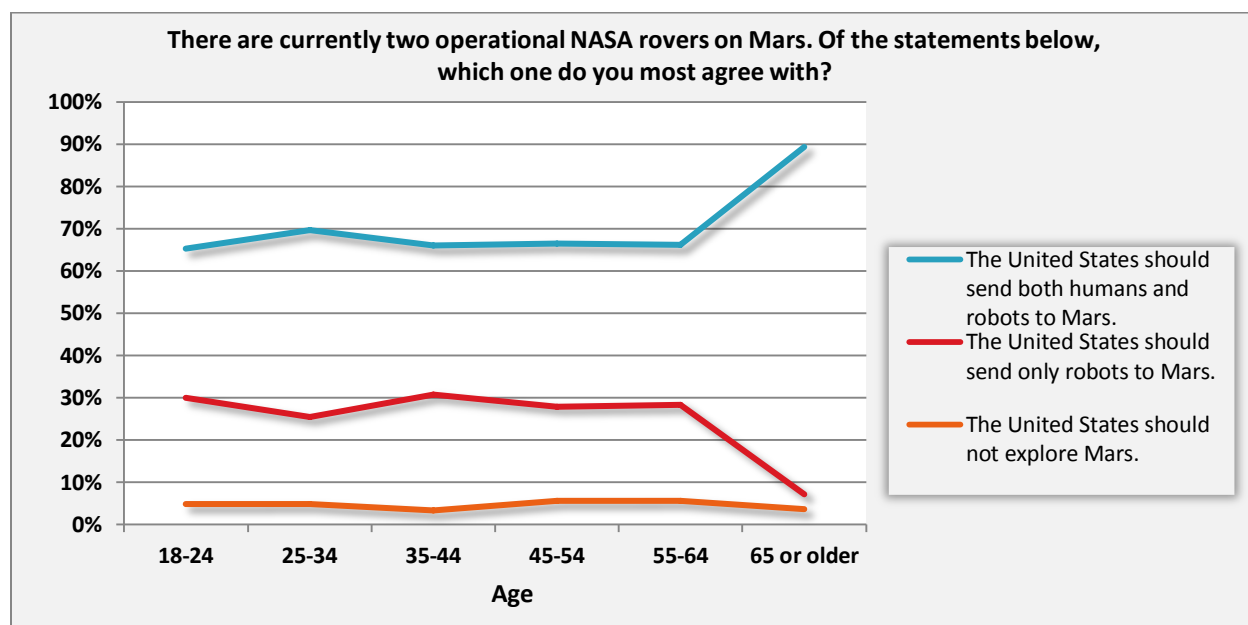


Survey responses indicate that support for sending both humans and robots to Mars was overwhelming across all demographic categories.

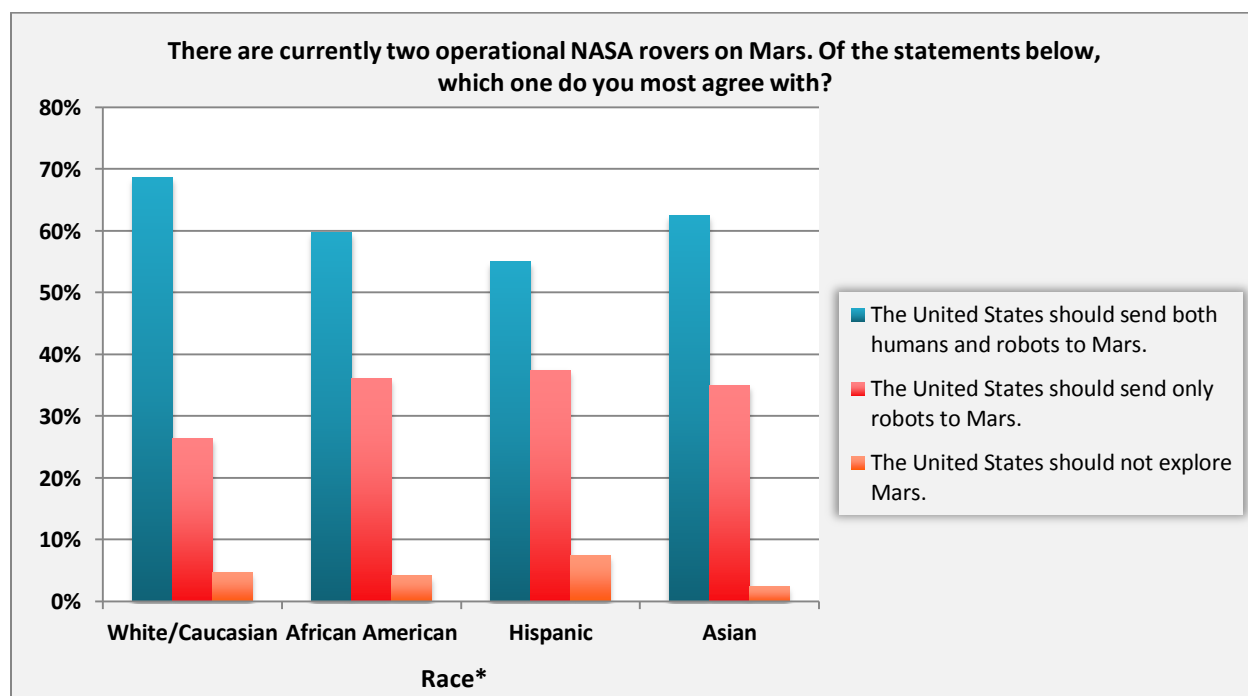
The following charts break down opinions from respondents by demographic affiliation.



The majority of both male and female respondents indicated they most agree with the statement "The United States should send both humans and robots to Mars." At 72 percent, more men selected this statement compared to 63 percent of women.

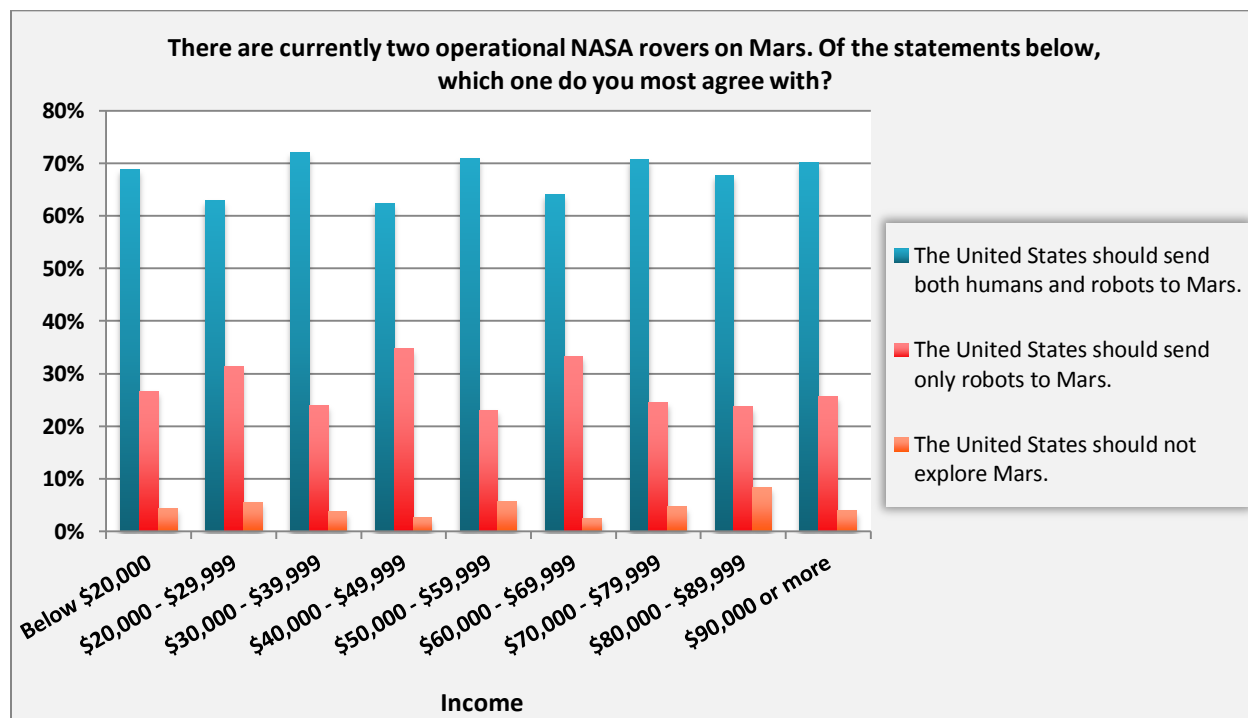


All age groups overwhelmingly think that the United States should send both humans and robots to Mars. The same percentage of age groups from age 18 to 64 selected this statement. With 89 percent selecting this statement, the age group of 65 and older showed much greater support for sending both humans and robots to Mars than all other age groups.

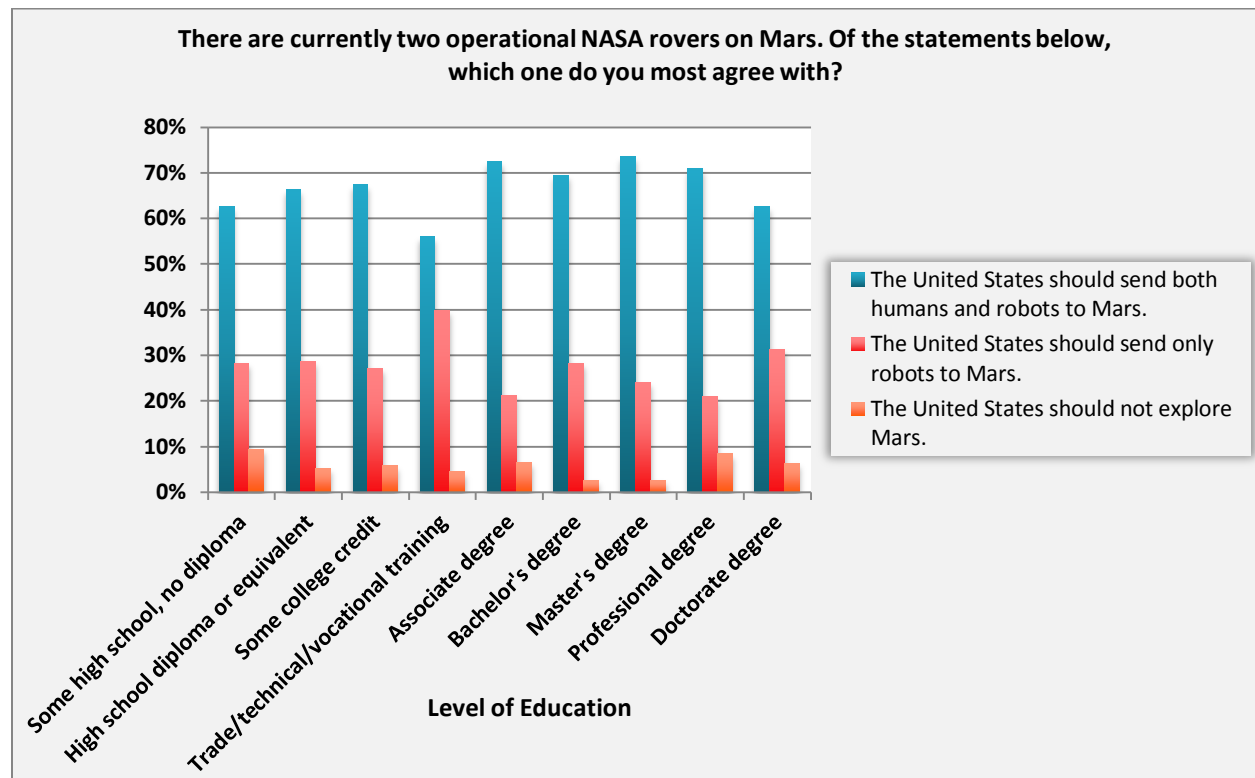


The majority of respondents in all race groups indicated they most agree with the statement "The United States should send both humans and robots to Mars."

*Native American, Pacific Islander and "Other" race categories are not included in this chart because there was a low number of respondents in these categories, and insufficient data to yield accurate results reflective of the population.



At least 63% of respondents of each annual income group agreed the most with the statement "The United States should send both humans and robots to explore Mars." There was not a trending correlation between annual income and the statement that received the majority of support.

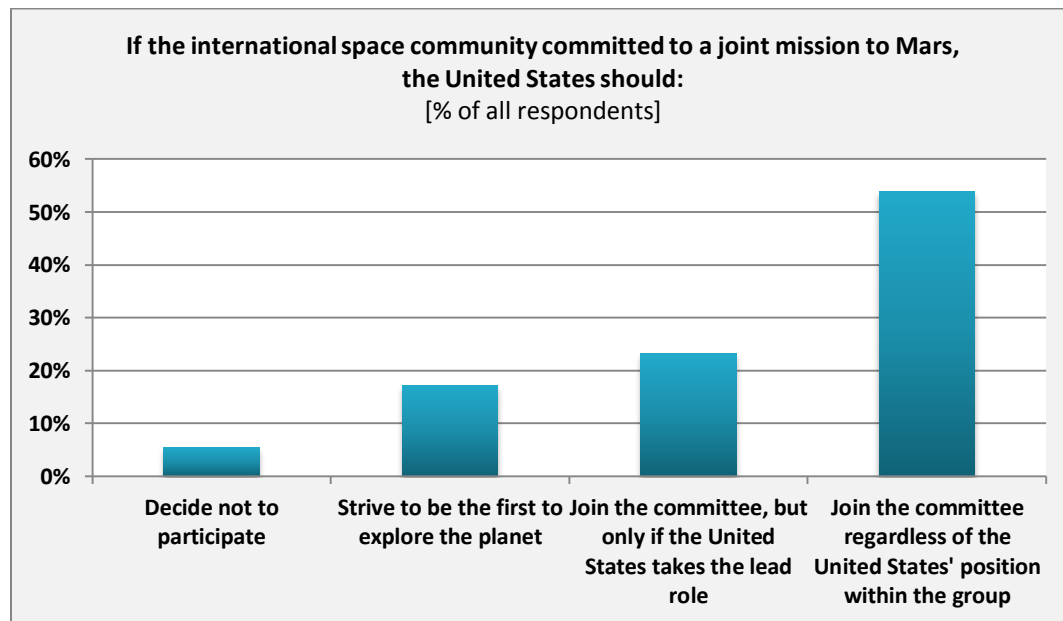


- At least 55% of each group agreed that the United States should send both humans and robots to Mars.
- With 73%, the Master's degree group had the highest percentage of respondents that agreed the United States should send both humans and robots to Mars.
- The trade/technical/vocational training group had the lowest percentage of 55 % that agreed the United States should send both humans and robots.

9. U.S. Participation in an International Joint Mission to Mars

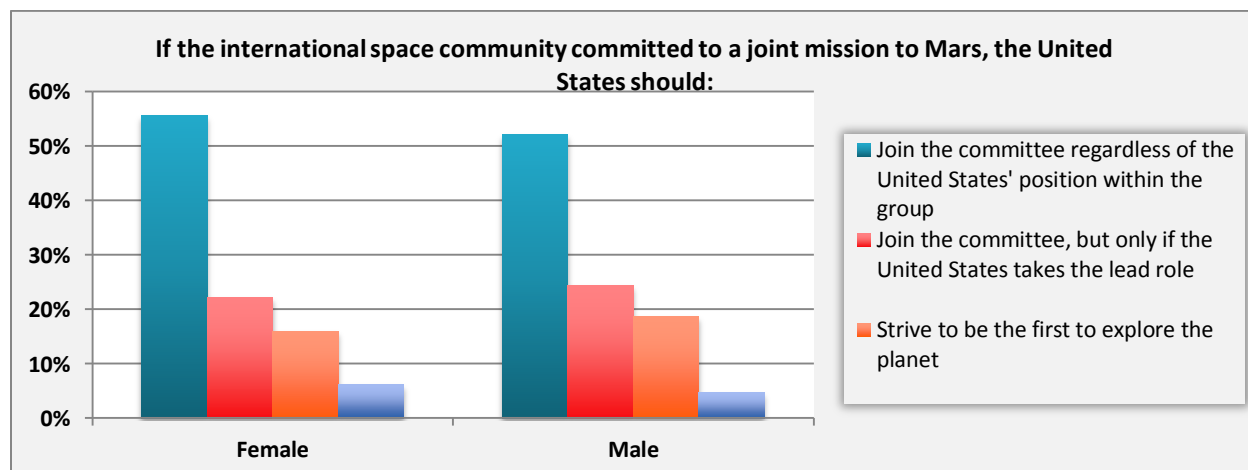
If the international space community committed to a joint mission to Mars, respondents were asked which of the following the United States should do:

- **Decide not to participate**
- **Strive to be the first to explore the planet**
- **Join the committee, but only if the United States takes the lead role**
- **Join the committee regardless of the United States' position within the group**

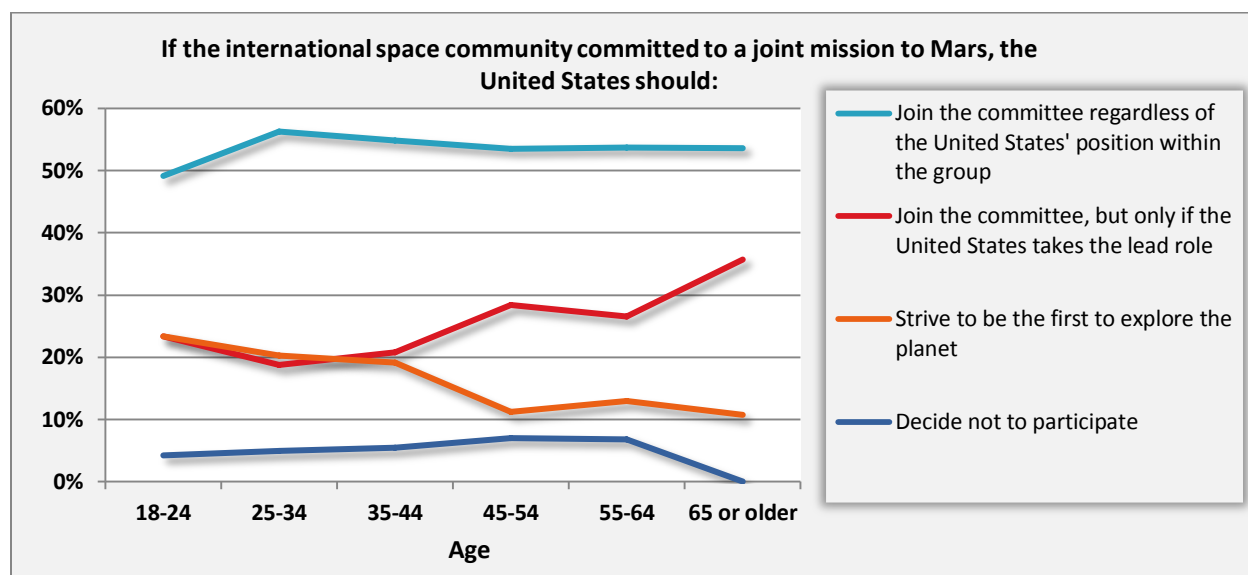


The highest percentage of respondents in all demographic groups agreed the United States should join the committee regardless of its position within the group.

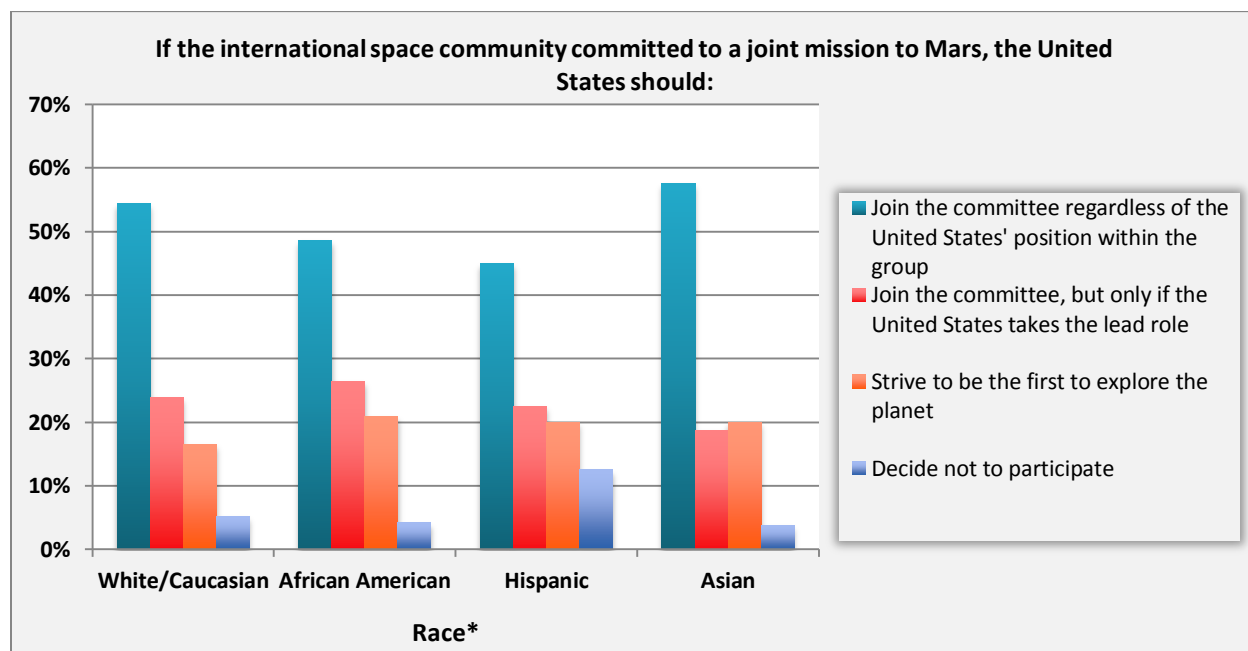
The following charts break down opinions from respondents by demographic affiliation.



More than 50% of women and men think the United States should join the committee regardless of its position within the group.

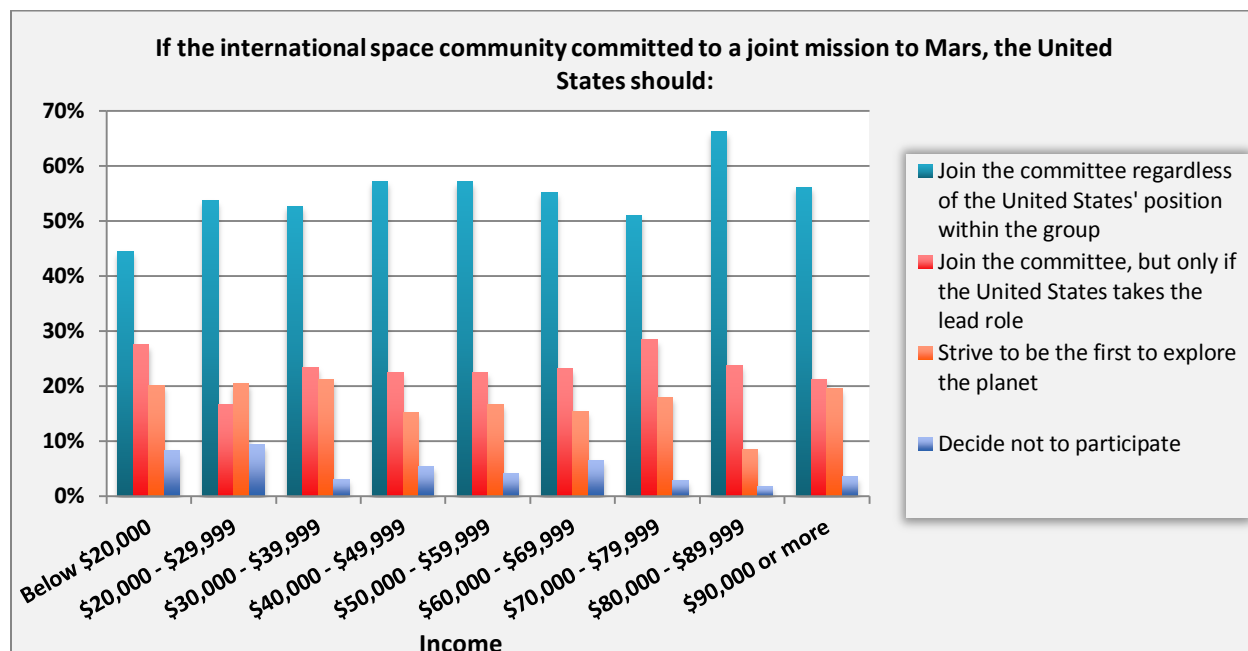


The highest percentage of respondents in each age group thought the United States should join the committee regardless of its position within the group. The exact percentage for that response did not vary significantly among the groups.

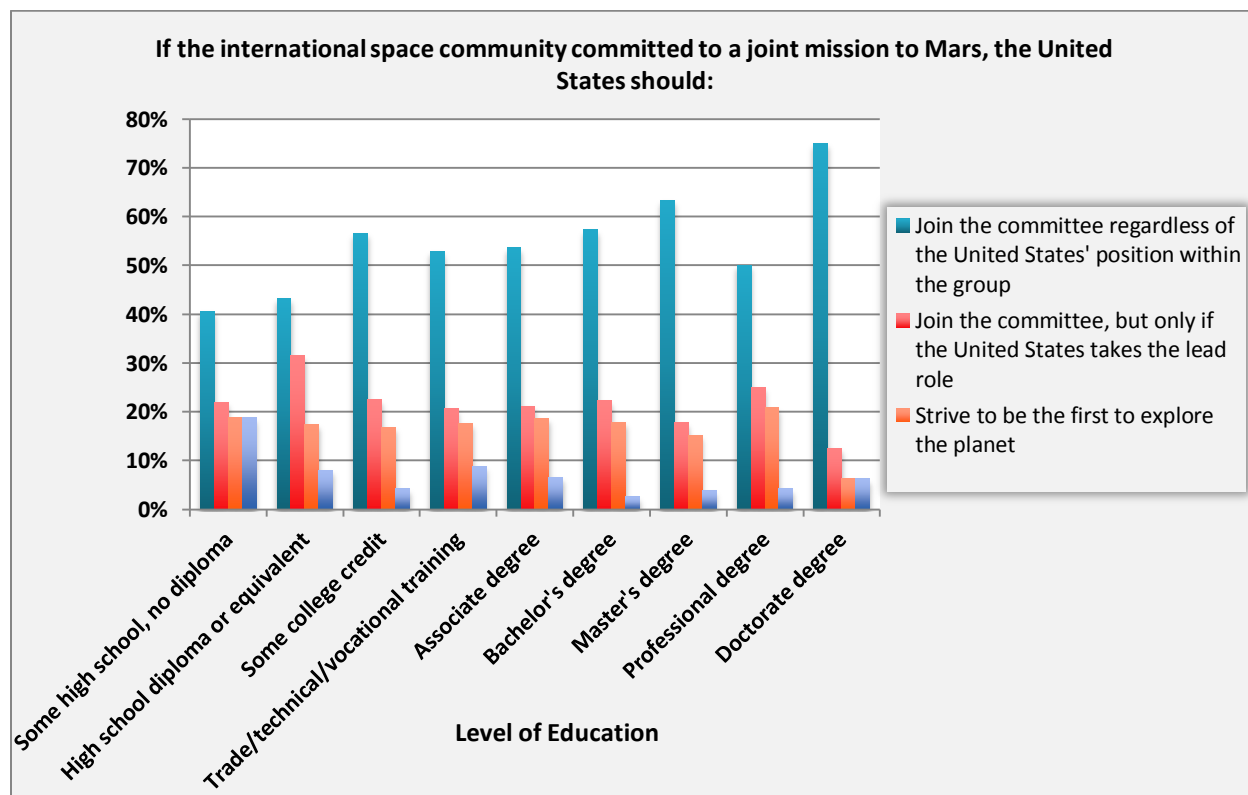


The first statement in the graph legend was selected by the highest percentage of respondents in all race groups. The group with the highest percentage was Asian, then White/Caucasian, next African American and lastly Hispanic.

*Native American, Pacific Islander and "Other" race categories are not included in this chart because there was a low number of respondents and insufficient amount of data that would yield accurate results reflective of the population.



Though it is evident the first statement was chosen the most among the annual income groups, there is not a clear correlation between income and that statement.



As shown with the other demographic data, the first statement was selected by the highest percentage of participants at any education level. There is a slight and subtle trend upward with increased education.

10. If the United States sends humans to Mars, what should be the goal?

[illegible]

Addendum A: Survey Questions and Text

The following text provides verbatim content and context of questions presented in the online survey.

"Mars Generation" Survey

Thank you for participating in this nationwide survey of citizens focused on measuring attitudes toward human and robotic exploration of Mars. Sending humans to Mars is one of NASA's goals. Many scientists agree that 2033 is the ideal year to send humans to explore Mars. In 2033, the travel conditions will allow for the trip to Mars to be the shortest and most efficient, therefore, lowering the mission's risk and making it more cost-effective. Some think we should have been to Mars already, some think now is the right time to try, and some think we should never go. We want your opinion.

"If the human race is to continue for another million years, we have to boldly go where no one has gone before." — *Stephen Hawking*



Mars as seen from space. (Courtesy of NASA)

This survey should take 5 to 10 minutes to complete. Please answer honestly and accurately. Your answers will be kept confidential and will not identify who you are. Thank you for your time and participation. Click the Next button below to begin.

[Page break in survey]

1. What is the name of the NASA rover that landed on Mars in August 2012?

- ☐ Spirit
- ☐ Curiosity
- ☐ Opportunity
- ☐ Viking I

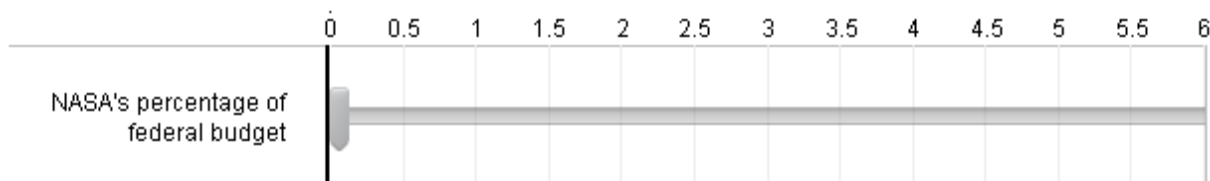
[Page break in survey]

ANSWER: Launched November 26, 2011, NASA's Curiosity Mars Science Laboratory landed successfully on Gale Crater at 05:31 UTC on August 6, 2012. The rover's objectives include searching for evidence of conditions favorable to life, studying the Martian climate, studying Martian geology, and collecting data for a future manned mission to Mars. There have been 7 successful U.S. robotic missions that have landed on the

Martian surface since the 1970s. This does not include the many vehicles that have done fly-bys or orbited Mars.

[Page break in survey]

2. What do you think is NASA's percentage of the overall federal budget? Use the scale of 0 to 6 percent to represent your answer.



[Page break in survey]

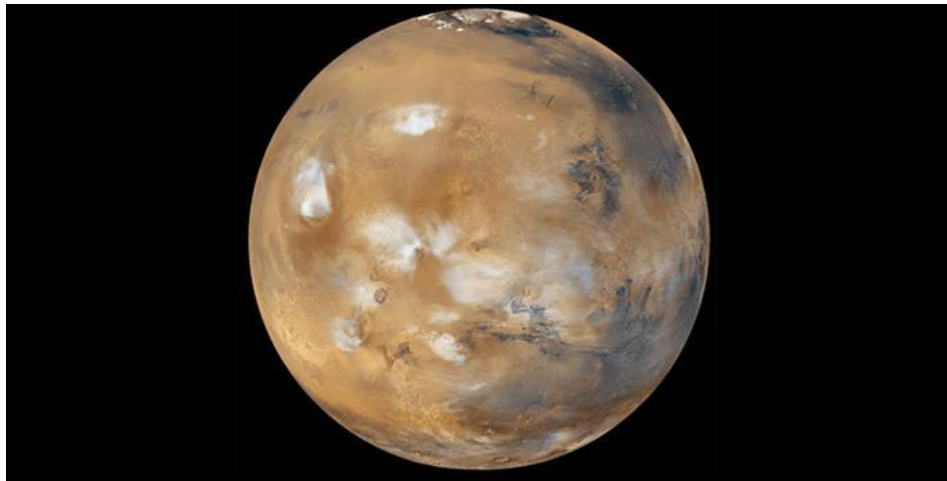
ANSWER: NASA's current budget is slightly less than 0.5 percent of the overall federal budget. The following questions do not have correct answers. They instead ask for your opinion.

[Page break in survey]

3. Indicate whether you "Strongly Agree," "Agree," "Disagree" or "Strongly Disagree" with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
It is worthwhile to increase NASA's percentage of the federal budget to 1 percent to fund initiatives, including a mission to Mars.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The settlement of Mars should be left to privately-funded private sector efforts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is necessary for the Government to fund initial technologies to send humans to explore Mars.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If Curiosity, NASA's rover, finds evidence of past or present life on Mars, we should send a human crew to verify the finding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
NASA should strengthen and expand partnerships partner with the private sector to send humans to explore Mars.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Page break in survey]



(Courtesy of NASA)

4. Which one of the following reasons do you think best supports sending humans to Mars?

- ☐ To search for signs of past or present life on Mars
- ☐ To achieve a greater understanding of Mars
- ☐ To maintain U.S. leadership in commercial, scientific and national defense applications
- ☐ To create jobs on Earth
- ☐ To establish a permanent settlement on Mars
- ☐ To inspire youth to study math, science and engineering
- ☐ To provide a high-profile effort for peaceful international cooperation

[Page break in survey]

5. In regard to sending humans to Mars by 2033, rate how much of a barrier you think each issue is by selecting "Not a Barrier," "Slight Barrier," "Strong Barrier" or "Barrier That Cannot Be Overcome."

	Not a Barrier	Slight Barrier	Strong Barrier	Barrier That Cannot Be Overcome
Technology shortfalls	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Affordability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Politics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Page break in survey]

6. Human exploration of Mars would be a multi-year deep space mission. The four missions below will increase our understanding of living and working in deep space. Please rank the missions in order of

value to our country from 1 to 4, with 1 being the most valuable and 4 being the least valuable. You may check each number only once.

____ Sending humans directly to Mars to find evidence of past life and demonstrate whether humans can live on other planets

____ Sending humans to the Moon to test hardware that can be used for future missions and eventually establish a Lunar settlement

____ Sending robots to bring a small asteroid back to Lunar orbit for long-term human study closer to Earth

____ Sending humans to an asteroid to mine, or develop capabilities to divert its orbit

[Page break in survey]

7. Indicate whether you "Strongly Agree," "Agree," "Disagree" or "Strongly Disagree" with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
Returning to the Moon is necessary before sending humans to explore Mars.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Human exploration of an asteroid would be worthwhile.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident humans will go to Mars by 2033.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident humans will go to Mars in my lifetime.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Page break in survey]

8. There are currently two operational NASA rovers on Mars, including Curiosity, which is shown below.



(Courtesy of NASA)

Of the statements below, which one do you most agree with?

- ☐ The United States should send both humans and robots to Mars.
- ☐ The United States should send only robots to Mars.
- ☐ The United States should not explore Mars.

[Page break in survey]

9. If the international space community committed to a joint mission to Mars, the United States should:

- ☐ Decide not to participate
- ☐ Strive to be the first to explore the planet
- ☐ Join the committee, but only if the United States takes the lead role
- ☐ Join the committee regardless of the United States' position within the group

[Page break in survey]

10. If the United States sends humans to Mars, what should be the goal? (Free response)

[Page break in survey]

11. What is your sex?

- ☐ Female
- ☐ Male
- ☐ Prefer not to answer

12. What is your age?

- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65 or older
- ☐ Prefer not to answer

13. What is your race?

- ☐ White/Caucasian
- ☐ African American
- ☐ Hispanic
- ☐ Asian
- ☐ Native American
- ☐ Pacific Islander
- ☐ Other
- ☐ Prefer not to answer

14. What is your annual income range?

- ☐ Below \$20,000
- ☐ \$20,000 - \$29,999
- ☐ \$30,000 - \$39,999
- ☐ \$40,000 - \$49,999
- ☐ \$50,000 - \$59,999
- ☐ \$60,000 - \$69,999
- ☐ \$70,000 - \$79,999
- ☐ \$80,000 - \$89,999
- ☐ \$90,000 or more
- ☐ Prefer not to answer

15. What is the highest level of education you have completed?

- ☐ Some high school, no diploma
- ☐ High school diploma or equivalent
- ☐ Some college credit
- ☐ Trade/technical/vocational training
- ☐ Associate degree
- ☐ Bachelor's degree
- ☐ Master's degree
- ☐ Professional degree
- ☐ Doctorate degree
- ☐ Prefer not to answer

16. What ZIP code do you live in? (free response) _____

[Page break in survey]

Thank you for taking our survey. This survey is funded by Explore Mar. Some fleeting thoughts for you, from the late Neil Armstrong, astronaut and first person to walk on the moon:

"I fully expected that, by the end of the century, we would have achieved substantially more than we actually did. Apollo was looked upon at the time to be a starting point. It was proved that Man could achieve what many considered impossible, and we set our sights on greatness. Everyone fully expected that we would soon be off to Mars. The colonization was a near certainty, probably by the end of the century. Yet more than 40 years later, little of what was expected has been achieved."

Please click the Next button to submit your answers.