



Americans' Attitudes Toward Automation

A Study by Ipsos Public Affairs and
Center for Business Analytics in the
McIntire School of Commerce at
the University of Virginia

Survey Findings

October 2017

Automation Applications: **KEY FINDINGS**

Automation Applications: Familiarity, Usage, and Favorability

- **Know It, Use It, Love It!**
 - Familiarity with, usage of, and favorability toward automation application are all strongly related
- **For Your Shopping Convenience**
 - Automation applications most commonly used are those that facilitate commercial transactions and communications: online shopping and banking, self-check-out/ordering kiosks, automated voice menus, customer service online chat boxes, and voice recognition assistance
- **The New Generation Gap**
 - The applications showing the widest difference in adoption across age groups are wearable electronics and of internet-connect devices with a gap of about 50 percentage points between usage among 18-24 year-olds and those aged 65+

Automation Applications: Consumers' Feelings and Opinions

- **Yay!**: Consumers most commonly describe how they feel about using online shopping/banking, kiosks, customer service chat boxes, wearables, and voice recognition assistance as being “comfortable” and, to a lesser extent, “excited” and/or “happy”
- **Hmmm...** For self-driving cars, artificial intelligence, robots, internet-connected medical devices, and drones, the feelings cited most are “hesitant” and to a lesser extent, “worried”
- **Split!** Consumers are almost equally likely to be “comfortable” and “hesitant” with internet connected-connected appliances and home devices
- **Arghh...** The most common feeling about using automated voice menus is “irritated”
- **It's complicated...** U.S. consumers are ambivalent about automation:
 - Large majorities worry about data security when using automated devices, think automation isolates people more than it brings them together, and think it destroys more jobs than it create, but...
 - Majorities also think that automation has: made products and services more accessible, easier to use, and improved their quality; made life easier or more interesting; and improved the shopping experience

Automation Applications: Impact of Automation in the Workplace

- **Confident as Consumers**

- As consumers, majorities of Americans are optimistic about the impact on people's lives brought upon by increased automation in most sectors of the economy – especially information, transportation, and manufacturing

- **Worried as Workers**

- One third of all workers worry about losing their job because of automation, including majorities of those employed in the transport/warehousing and the arts/sports/recreation sectors
- Four in ten expect that most of what they do today will be done by machines in 20 years

- **Easier, Better, More Interesting, Less Friendly:**

- More than half of all workers feel that automation has made their current job totally different from what it was 20 years ago, especially those working in the media/publishing/telecom/data processing, administrative/support services, and financial services industries
- While a majority of workers feel that automation has made the workplace less social and friendly, between half and one third of them say that it's made their job easier, less stressful, and more interesting, it's made them more productive, and it has improved the quality of their work

Americans' Attitudes Toward Automation

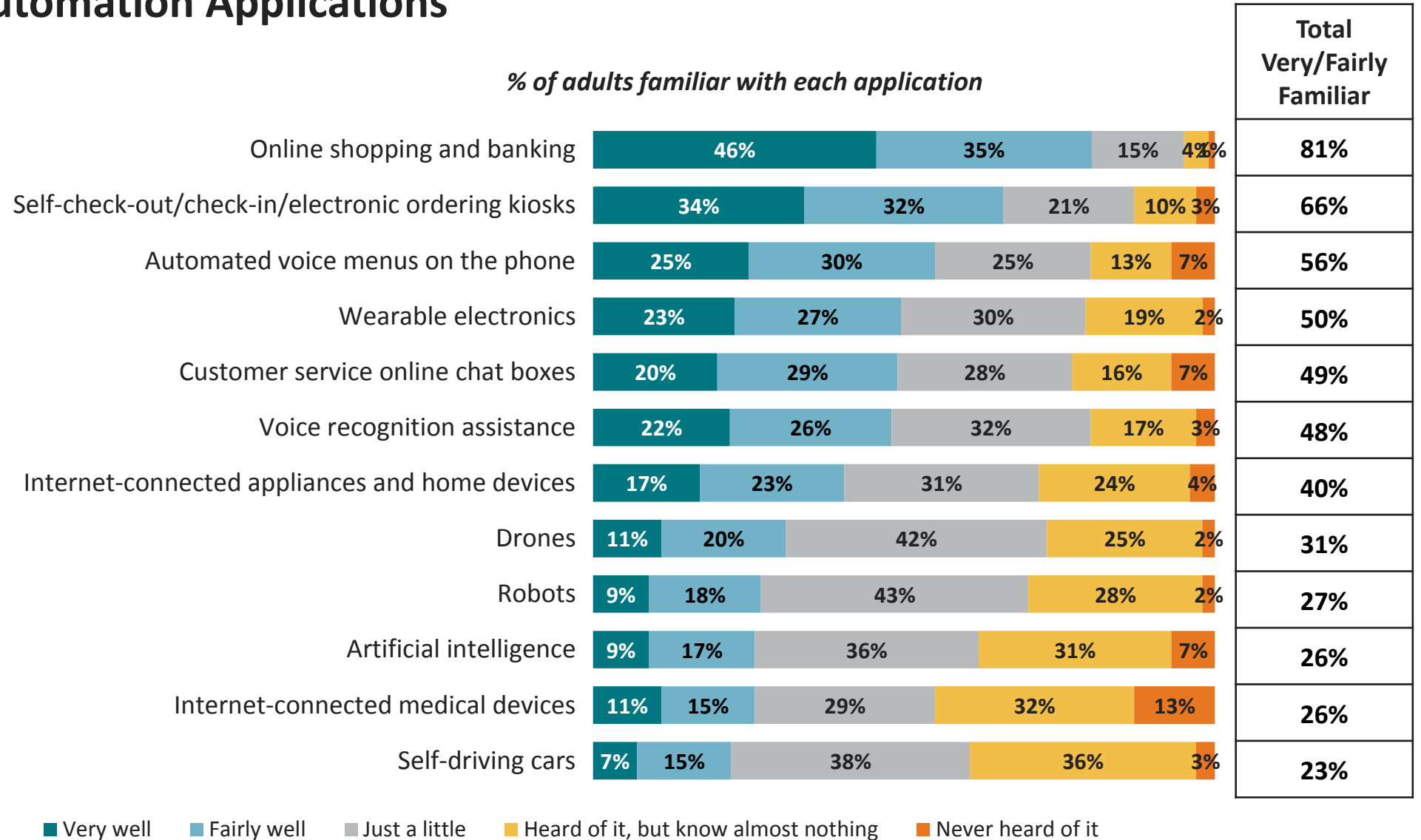
Methodology from two Ipsos surveys conducted between May 24 and July 3, 2017

- In partnership with the Center for Business Analytics in the McIntire School of Commerce at the University of Virginia, Ipsos conducted a short, two-question online survey on May 24-25, 2017 with a national sample of 1,008 adults aged 18+ and a longer, 13-question online survey between June 29 and July 3, 2017 with a national sample of 2,982 adults aged 18+.
- For each survey, the sample was randomly drawn from Ipsos's online panel (see link below for more info on "Access Panels and Recruitment"), partner online panel sources, and "river" sampling (see link below for more info on the Ipsos "Ampario Overview" sample method).
 - This method does not rely on a population frame in the traditional sense. Ipsos uses fixed sample targets, unique to each study, in drawing the sample. After a sample has been obtained from the Ipsos panel, Ipsos calibrates respondent characteristics to be representative of the general U.S. population using standard procedures such as raking-ratio adjustments.
 - The source of these population targets is the U.S. Census 2013 American Community Survey data. The sample drawn for this study reflects fixed sample targets on demographics. Post-hoc weights were made to the population characteristics on gender, age, race/ethnicity, region, and education.
- Statistical margins of error are not applicable to online polls. All sample surveys and polls may be subject to other sources of error, including, but not limited to coverage error and measurement error. Where figures do not sum to 100, this is due to the effects of rounding.
- The precision of Ipsos online polls is measured using a credibility interval. For the first and shorter poll, reported on slides 8 and 16-18, the credibility interval around percentages for all respondents is +/- 3.5 points. For the second and longer poll, reported on all other slides, the credibility interval around percentages for all respondents is +/- 2.0 points.

Automation Applications:
**FAMILIARITY, USAGE,
AND FAVORABILITY**

Familiarity with Automation Applications

- Familiarity with applications tested ranged from very high to very low.
- Familiarity is highest for applications related to commercial transactions.



Q. How familiar are you with each of the following? Base (total): 2,982 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Familiarity with Automation Applications across Demographics (1 of 2)

- Familiarity with almost every application is more prevalent among younger, affluent and male consumers
- Chasm between younger and older adults (especially under 35 vs. 65+)

% of adults who reportedly know each application very or fairly well

	Total	Gender		Age					Household Income			Region			
		Male	Female	18-24	25-34	35-49	50-64	65+	Under \$35K	\$35K-\$74K	\$75K+	North east	Midwest	South	West
Online shopping and banking	81%	79%	83%	85%	90%	83%	76%	74%	76%	80%	87%	81%	81%	80%	82%
Self-check-out/check-in/electronic ordering kiosks	66%	66%	66%	85%	84%	70%	58%	41%	61%	65%	72%	67%	62%	66%	68%
Automated voice menus on the phone	56%	59%	53%	68%	67%	57%	52%	41%	55%	51%	62%	58%	57%	54%	55%
Wearable electronics	50%	50%	49%	74%	71%	54%	38%	24%	43%	50%	57%	53%	47%	49%	51%
Customer service online chat boxes	49%	49%	49%	52%	67%	54%	42%	31%	44%	48%	55%	50%	46%	50%	48%
Voice recognition assistance	48%	51%	46%	72%	68%	51%	38%	23%	43%	47%	56%	51%	45%	47%	52%
Internet-connected appliances and home devices	40%	44%	37%	70%	62%	43%	27%	15%	39%	38%	44%	44%	35%	41%	42%
Drones	31%	39%	23%	48%	43%	32%	23%	16%	26%	31%	35%	30%	25%	32%	33%
Robots	27%	34%	20%	46%	38%	27%	21%	12%	25%	26%	29%	27%	24%	27%	28%
Artificial intelligence	26%	34%	18%	39%	38%	27%	20%	12%	23%	23%	32%	29%	22%	26%	27%
Internet-connected medical devices	26%	30%	22%	43%	41%	28%	16%	11%	25%	23%	30%	29%	20%	28%	25%
Self-driving cars	23%	32%	14%	35%	34%	24%	16%	11%	18%	22%	30%	25%	18%	21%	27%

Q. How familiar are you with each of the following? Base (total): 2,982 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Familiarity with Automation Applications across Demographics (2 of 2)

- Familiarity with almost every application increases greatly with education
- Other demographic differences (e.g., parenthood, employment status and race/ethnicity) mostly reflect age differences

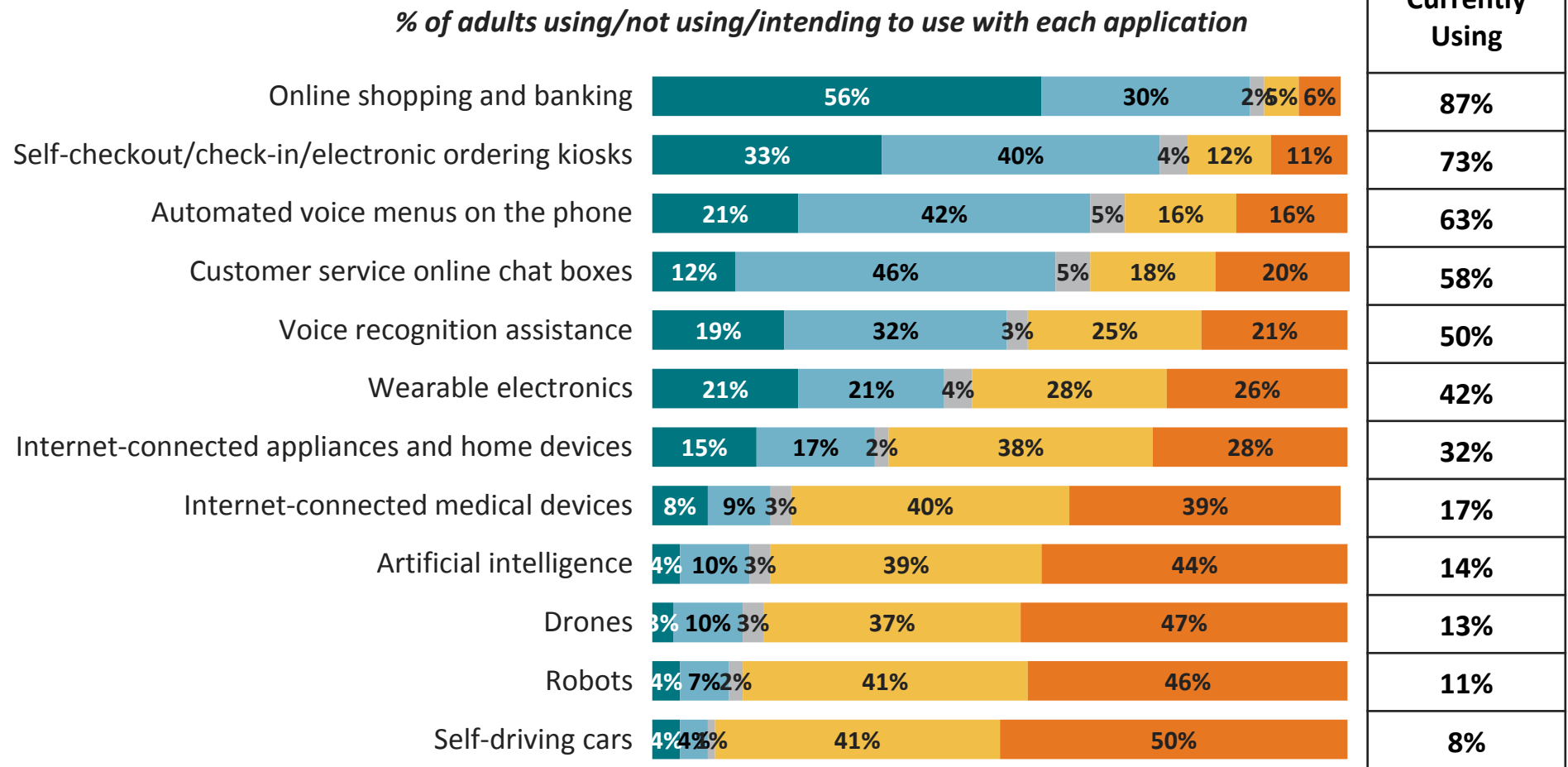
% of adults who reportedly know each application very or fairly well

	Total	Children in Household		Education				Employment Status				Marital Status		Race				
		Yes	No	High school or less	Some college	4-year college	Postgraduate	Full Time	Part Time	Not Emp.	Retired	Married	Other	White (Non-Hispanic)	Black (Non-Hispanic)	Hispanic	Asian/ or Pacific Islander (Non-Hispanic)	Other
Online shopping and banking	81%	86%	79%	75%	81%	88%	89%	85%	82%	77%	76%	81%	81%	79%	82%	88%	82%	79%
Self-check-out/check-in/electronic ordering kiosks	66%	80%	60%	61%	62%	75%	77%	75%	70%	68%	44%	64%	67%	62%	67%	79%	71%	70%
Automated voice menus on the phone	56%	65%	52%	50%	56%	60%	69%	61%	58%	55%	44%	55%	56%	53%	57%	66%	48%	57%
Wearable electronics	50%	65%	44%	46%	46%	55%	61%	59%	58%	52%	26%	49%	50%	44%	58%	65%	56%	54%
Customer service online chat boxes	49%	60%	44%	39%	48%	60%	63%	57%	52%	46%	33%	49%	49%	45%	48%	60%	58%	59%
Voice recognition assistance	48%	61%	43%	44%	47%	52%	60%	56%	60%	48%	27%	46%	50%	43%	57%	60%	53%	56%
Internet-connected appliances and home devices	40%	55%	35%	38%	37%	43%	51%	48%	49%	43%	17%	36%	44%	34%	54%	53%	51%	46%
Drones	31%	40%	27%	29%	26%	32%	44%	35%	38%	31%	18%	31%	30%	25%	40%	41%	45%	35%
Robots	27%	33%	25%	27%	23%	26%	37%	31%	36%	26%	16%	24%	29%	20%	36%	41%	31%	43%
Artificial intelligence	26%	33%	23%	22%	22%	29%	41%	33%	33%	23%	13%	24%	27%	21%	31%	36%	29%	38%
Internet-connected medical devices	26%	37%	22%	23%	23%	27%	41%	32%	28%	27%	12%	25%	27%	20%	31%	39%	34%	39%
Self-driving cars	23%	30%	20%	20%	18%	25%	37%	29%	30%	19%	12%	22%	23%	18%	28%	34%	29%	27%

Q. How familiar are you with each of the following? Base (total): 2,982 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Current and Intended Usage of Automation Applications

- Applications for commercial transactions used by large majorities of consumers.
- Personal and home device applications used by one third to one half.
- Non-negligible reported usage of self-driving cars (8%) likely reflection of aspiration more than actual behavior.



■ Use frequently ■ Use occasionally ■ Stopped using ■ Never used, but likely to use it in the future ■ Never used and unlikely to use in the future

Q. Describe your usage experience or likelihood for each of the following. Base (total): 2,982 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Current Usage of Automation Applications across Demographics (1 of 2)

- Usage of all applications is highest among those under 35 and the more affluent
- Generation gap widest on internet-connected appliances/home devices and wearables

% of adults frequently or occasionally using each application

	Total	Gender		Age					Household Income			Region			
		Male	Female	18-24	25-34	35-49	50-64	65+	Under \$35K	\$35K-\$74K	\$75K+	North east	Midwest	South	West
Online shopping and banking	87%	83%	90%	83%	92%	88%	85%	83%	81%	87%	92%	88%	87%	85%	87%
Self-check-out/check-in/electronic ordering kiosks	73%	71%	76%	84%	86%	78%	70%	53%	67%	74%	80%	75%	69%	73%	77%
Automated voice menus on the phone	63%	65%	60%	62%	71%	67%	63%	51%	56%	62%	71%	65%	64%	61%	63%
Customer service online chat boxes	58%	55%	60%	56%	72%	63%	54%	43%	52%	56%	67%	58%	52%	58%	61%
Voice recognition assistance	50%	52%	49%	72%	71%	53%	40%	28%	45%	48%	59%	52%	47%	51%	51%
Wearable electronics	42%	42%	42%	67%	65%	47%	28%	19%	39%	41%	48%	40%	39%	42%	46%
Internet-connected appliances and home devices	32%	35%	30%	61%	56%	35%	19%	9%	31%	29%	39%	38%	26%	31%	36%
Internet-connected medical devices	17%	22%	13%	27%	32%	19%	10%	5%	16%	16%	21%	21%	12%	18%	19%
Artificial intelligence	14%	21%	8%	28%	24%	16%	7%	5%	12%	11%	20%	19%	11%	14%	15%
Drones	13%	19%	7%	22%	24%	17%	5%	2%	10%	11%	18%	14%	11%	12%	14%
Robots	11%	16%	6%	18%	23%	13%	5%	2%	10%	9%	15%	14%	8%	11%	12%
Self-driving cars	8%	11%	5%	12%	17%	11%	3%	0%	6%	5%	13%	9%	5%	8%	10%

Q. Describe your usage experience or likelihood for each of the following. Base (total): 2,982 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Current Usage of Automation Applications across Demographics (2 of 2)

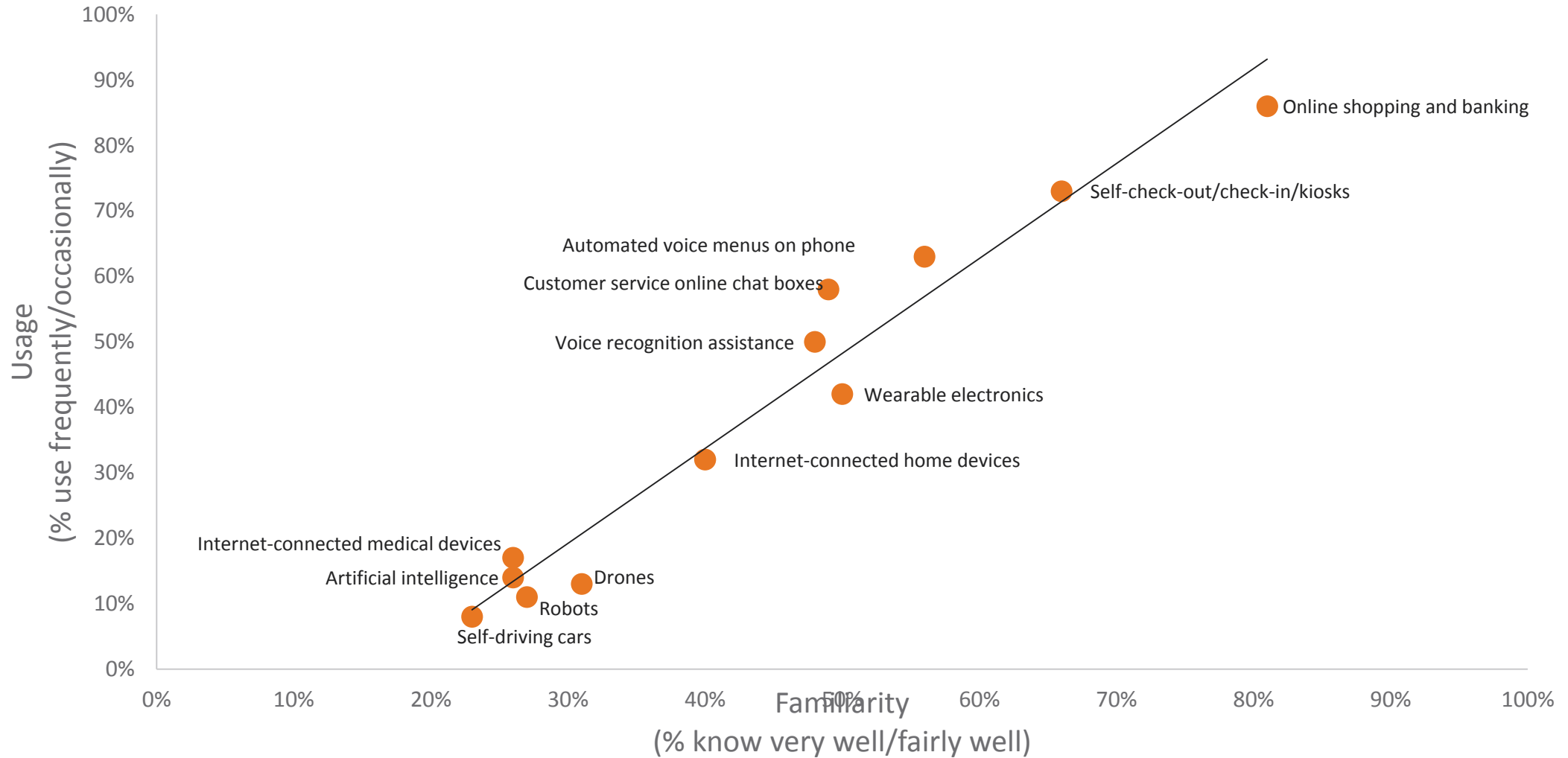
- Usage with every application significantly higher among most highly educated, but may reflect aspirational bias
- Other demographic differences (parenthood, employment status and race/ethnicity) mostly reflect age differences

% of adults frequently or occasionally using each application

	Total	Children in Household		Education				Employment Status				Marital Status		Race				
		Yes	No	High school or less	Some college	4-year college	Postgraduate	Full Time	Part Time	Not Emp.	Retired	Married	Other	White (Non-Hispanic)	Black (Non-Hispanic)	Hispanic	Asian/ or Pacific Islander (Non-Hispanic)	Other
Online shopping and banking	87%	91%	85%	82%	85%	93%	93%	90%	83%	84%	84%	88%	85%	87%	81%	90%	87%	77%
Self-check-out/check-in/electronic ordering kiosks	73%	83%	70%	68%	73%	81%	81%	82%	76%	73%	56%	75%	72%	72%	71%	81%	72%	76%
Automated voice menus on the phone	63%	72%	59%	56%	63%	68%	77%	70%	68%	57%	54%	65%	61%	62%	60%	72%	54%	60%
Customer service online chat boxes	58%	69%	53%	47%	59%	68%	72%	65%	57%	55%	47%	60%	55%	57%	51%	61%	69%	66%
Voice recognition assistance	50%	66%	44%	47%	49%	52%	64%	60%	56%	49%	30%	49%	51%	45%	56%	64%	46%	62%
Wearable electronics	42%	61%	35%	38%	40%	48%	52%	52%	47%	42%	20%	42%	42%	37%	48%	60%	44%	47%
Internet-connected appliances and home devices	32%	49%	26%	31%	28%	34%	44%	42%	38%	33%	11%	31%	34%	26%	38%	49%	44%	42%
Internet-connected medical devices	17%	29%	13%	16%	14%	17%	31%	23%	20%	15%	8%	18%	17%	12%	26%	28%	16%	34%
Artificial intelligence	14%	20%	12%	13%	11%	13%	28%	19%	18%	13%	5%	14%	15%	11%	22%	16%	19%	25%
Drones	13%	22%	9%	12%	10%	13%	23%	18%	20%	11%	2%	13%	12%	10%	19%	17%	16%	21%
Robots	11%	18%	8%	10%	8%	11%	22%	15%	14%	11%	3%	11%	11%	8%	18%	16%	18%	18%
Self-driving cars	8%	15%	5%	7%	4%	6%	21%	11%	13%	6%	1%	9%	7%	6%	13%	12%	6%	9%

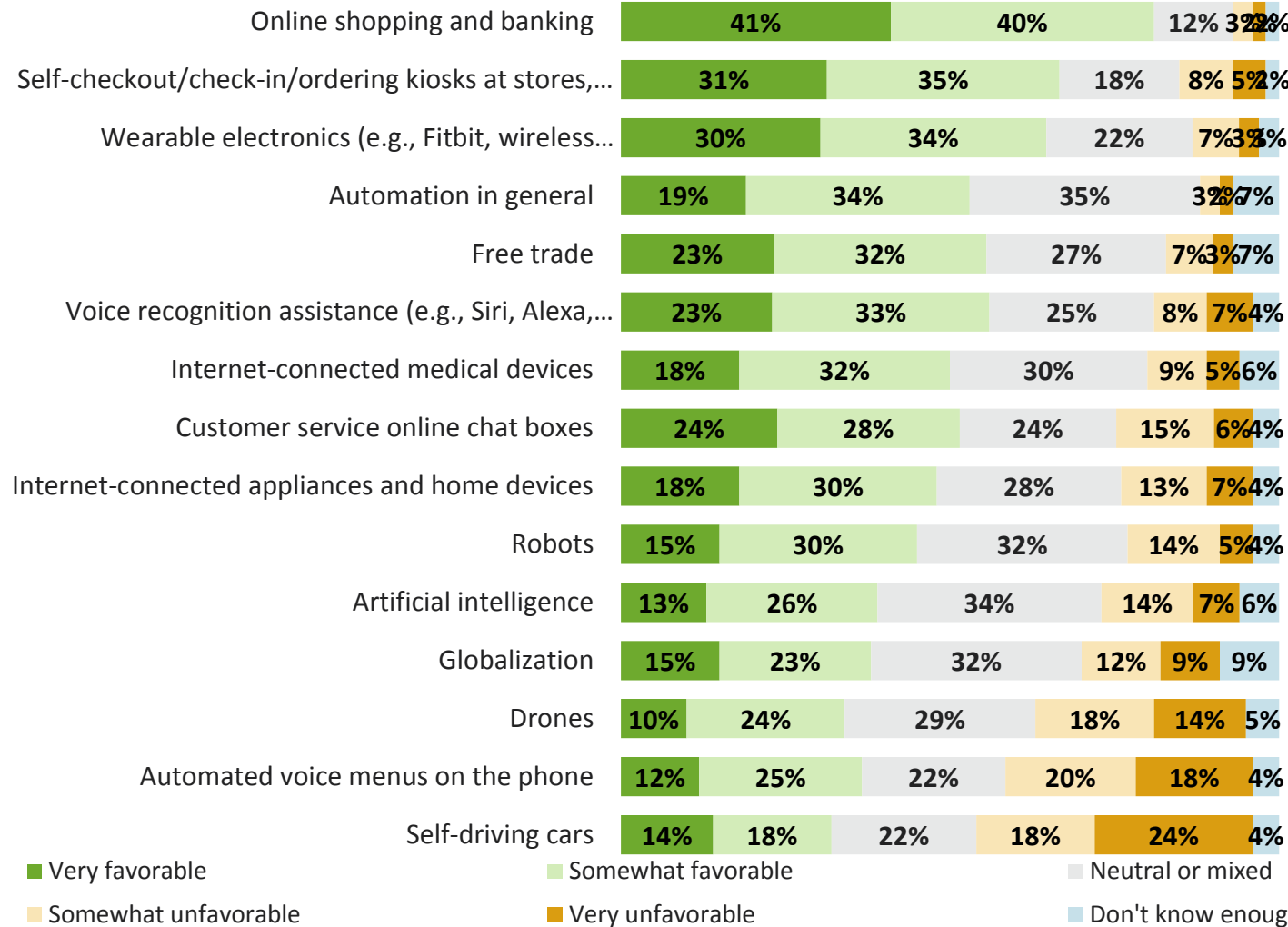
Q. Describe your usage experience or likelihood for each of the following. Base (total): 2,982 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Familiarity and Usage Go Hand in Hand



Opinion of Automation-Related Offerings and Concepts (1 of 3)

- A majority of Americans have a favorable view of automation.
- Except for self-driving cars, automated voice menus and drones, all applications tested receive significantly more favorable than unfavorable opinions.
- Most popular applications are online shopping/banking, self-checkout/ordering and wearable electronics

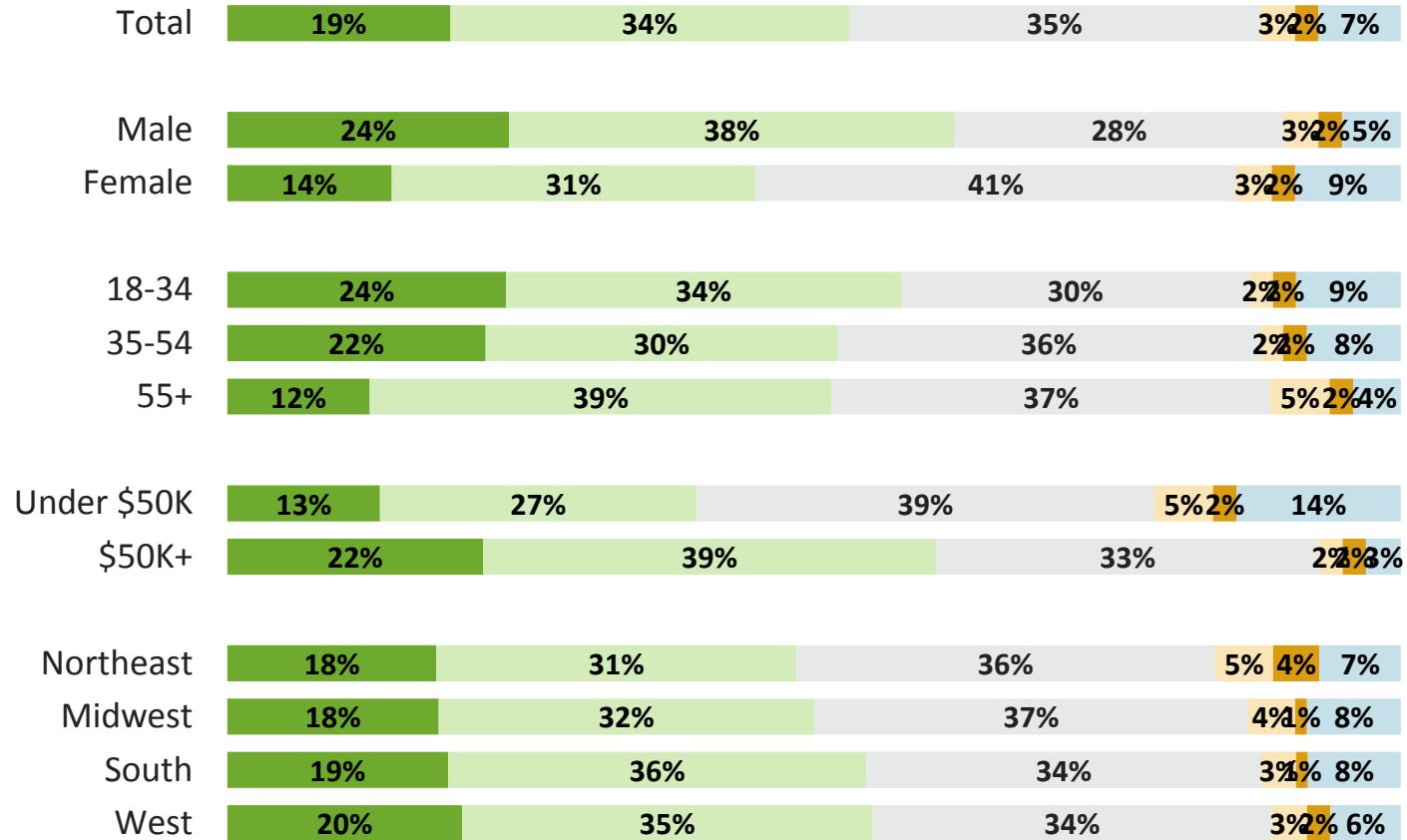


Total Favorable	Total Unfavorable	NET Fav. minus Unfav.
81%	5%	76%
67%	13%	54%
64%	11%	53%
53%	5%	48%
55%	10%	45%
56%	15%	41%
50%	14%	36%
51%	21%	30%
48%	21%	27%
45%	19%	26%
39%	21%	18%
38%	21%	17%
35%	31%	4%
37%	37%	0%
32%	42%	-10%

Q. Generally speaking, how much of a favorable or unfavorable opinion do you have of the following? Base: 1008 U.S. adults aged 18-64; May 24-25, 2017 © 2017 Ipsos

Opinion of Automation-Related Offerings and Concepts (2 of 3)

- Levels of favorability toward the concept of automation vary widely across demographic groups.
- Male, younger and more affluent consumer have the most positive views.
- Over half of low-income earners are neutral, mixed or unsure.



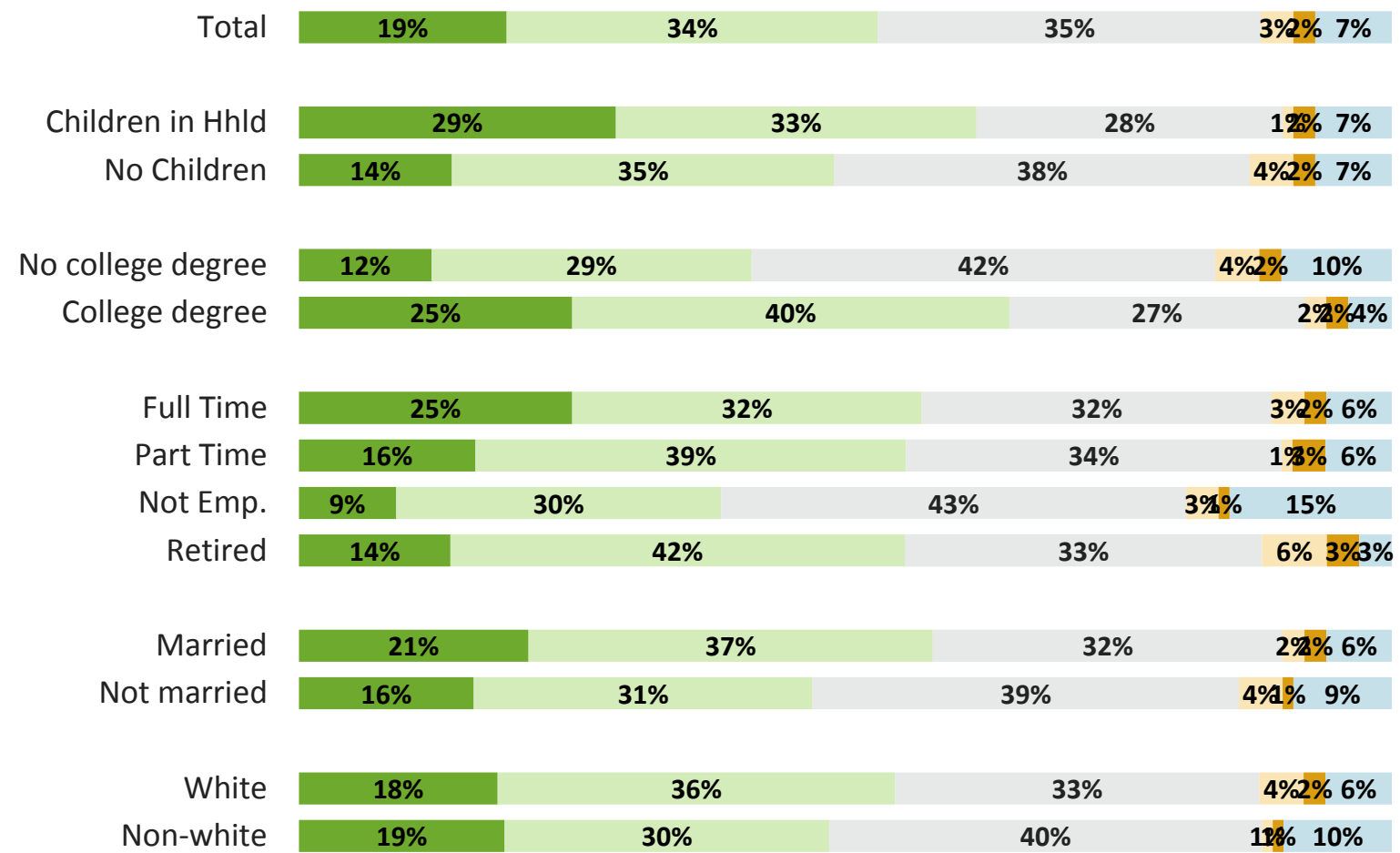
Total Favorable	Total Unfavorable	NET Fav. minus Unfav.
53%	5%	48%
62%	5%	57%
45%	5%	40%
57%	3%	54%
51%	4%	47%
51%	7%	44%
40%	8%	32%
61%	4%	57%
49%	8%	41%
50%	5%	45%
55%	4%	51%
55%	5%	50%

■ Very favorable ■ Somewhat favorable ■ Neutral or mixed
■ Somewhat unfavorable ■ Very unfavorable ■ Don't know enough to have an opinion

Opinion of Automation-Related Offerings and Concepts (3 of 3)

• Favorability toward automation is particularly high among college-educated and parents.

• However, nearly three in five non-employed are neutral, mixed or unsure.

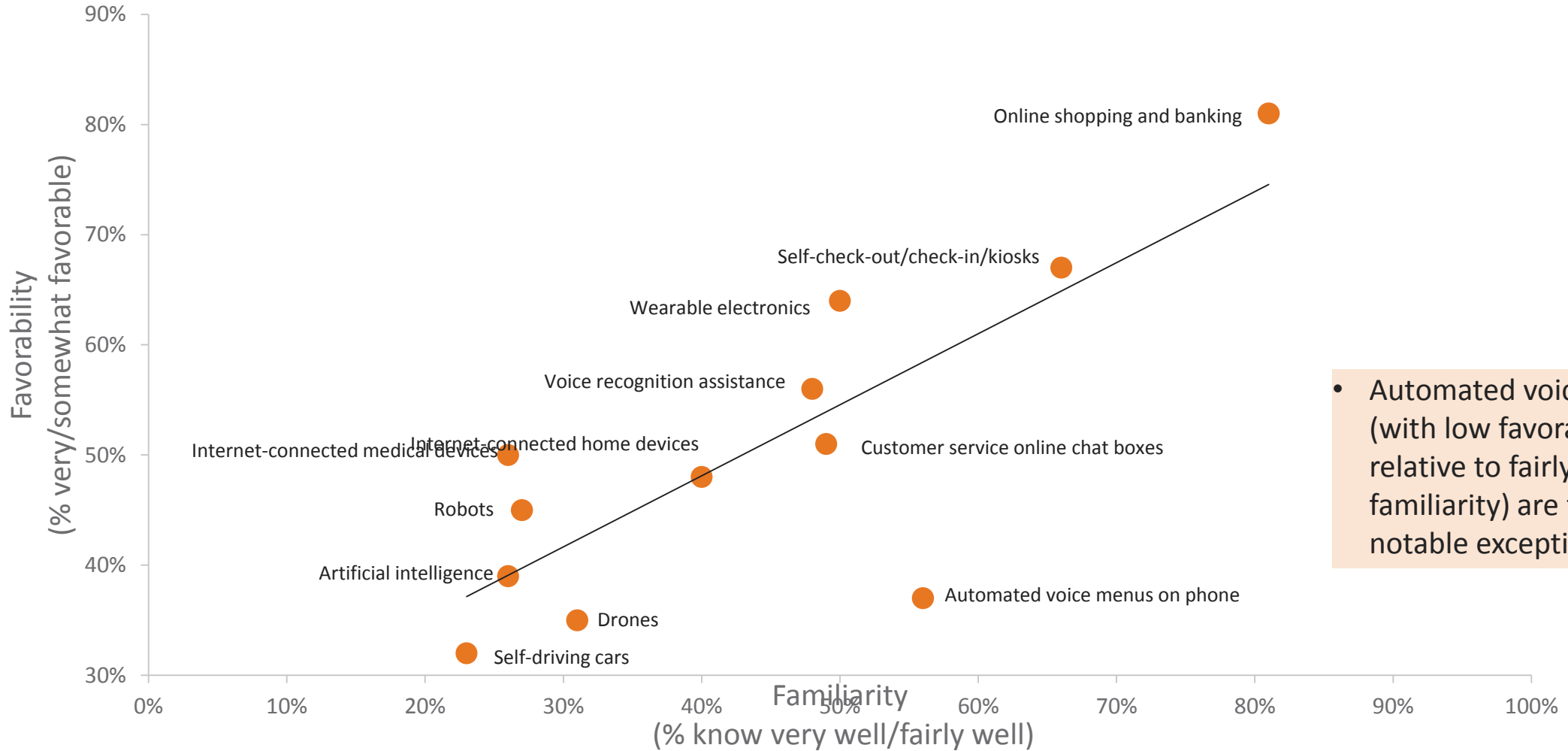


Total Favorable	Total Unfavorable	NET Fav. minus Unfav.
53%	5%	48%
62%	3%	59%
48%	6%	42%
42%	6%	36%
65%	4%	61%
57%	5%	52%
55%	4%	51%
39%	4%	35%
56%	8%	48%
58%	5%	53%
47%	5%	42%
54%	6%	48%
49%	2%	47%

■ Very favorable
 ■ Somewhat favorable
 ■ Neutral or mixed
■ Somewhat unfavorable
 ■ Very unfavorable
 ■ Don't know enough to have an opinion

Q. Generally speaking, how much of a favorable or unfavorable opinion do you have of the following? Base: 1008 U.S. adults aged 18-64; May 24-25, 2017

Favorability Largely Reflects Familiarity



• Automated voice menus (with low favorability relative to fairly high familiarity) are the only notable exception

Automation Applications:
**CONSUMERS' FEELINGS
AND OPINIONS**

Feelings about Automation Applications

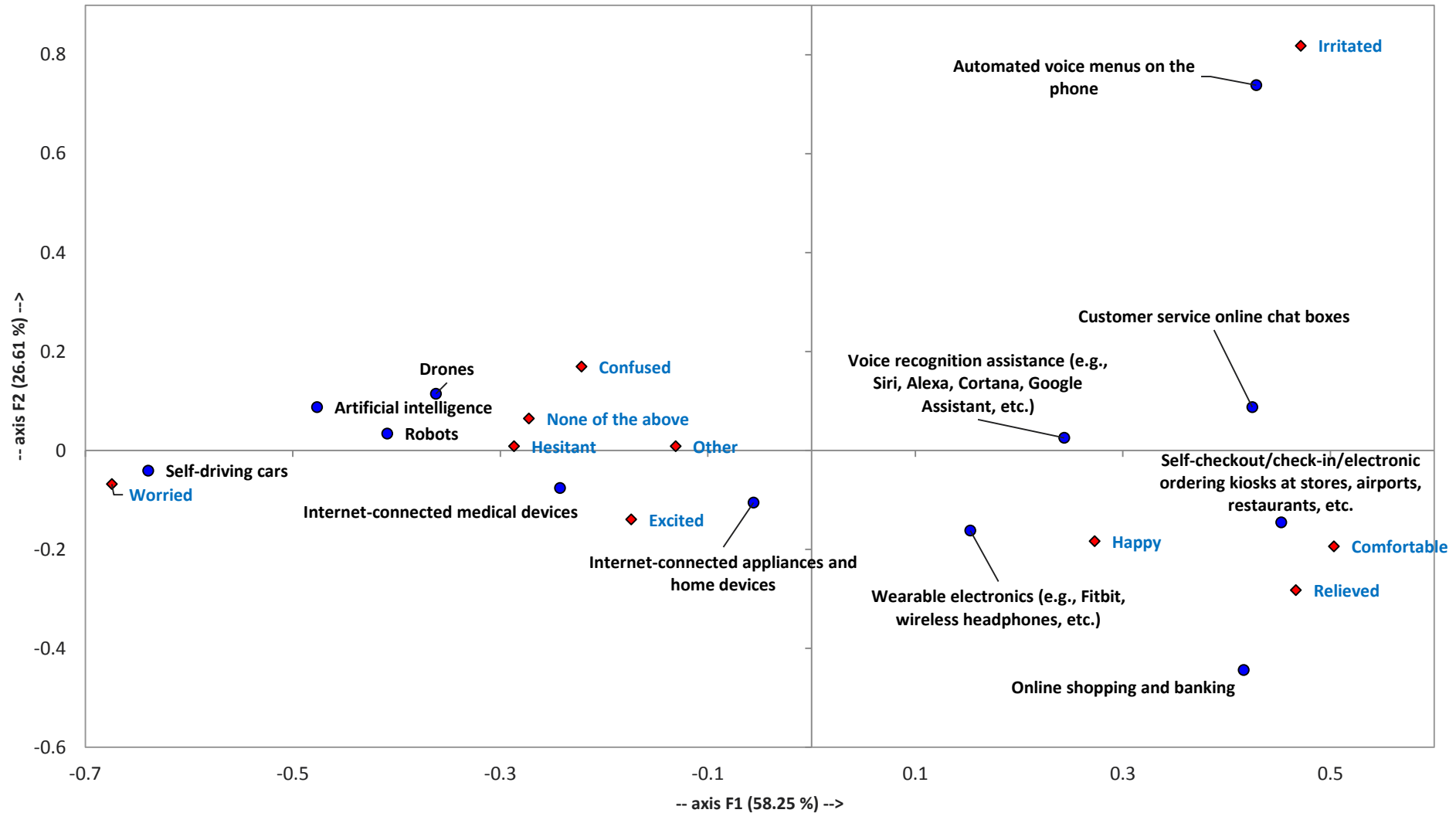
- Majorities choose “comfortable” to describe their feelings about the two most used applications (online shopping/banking and kiosks)
- “Comfortable” is also the most common feeling for customer service chat boxes, wearables, and voice recognition assistance
- Many applications make about one in five consumers “excited” and/or “happy,” and a few make one in five consumers feel “relieved”
- “Hesitant” is the most common feeling for self-driving cars, AI, robots, internet-connected medical devices, and drones
- Two in five are “worried” about self-driving cars and about one in five about AI, robots, drones, and smart medical devices
- “Irritated” is the most common feeling about automated voice menus

% of adults describing their feeling about each application as...

	Online shopping and banking	Self-check-out/ check-in/ electronic ordering kiosks	Wearable electronics	Voice recognition assistance	Internet-connected medical devices	Customer service online chat boxes	Internet-connected appliances and home devices	Robots	Artificial intelligence	Drones	Automated voice menus on the phone	Self-driving cars
Comfortable	65%	51%	40%	38%	24%	42%	30%	14%	13%	13%	31%	9%
Confused	4%	10%	11%	10%	16%	10%	14%	18%	21%	12%	14%	15%
Excited	22%	12%	23%	19%	15%	7%	19%	18%	17%	21%	8%	19%
Happy	31%	23%	26%	22%	14%	17%	20%	10%	9%	13%	15%	11%
Hesitant	18%	24%	19%	22%	30%	20%	28%	35%	37%	29%	19%	47%
Irritated	4%	14%	7%	16%	5%	18%	6%	6%	9%	13%	41%	6%
Relieved	19%	20%	7%	9%	9%	17%	9%	4%	3%	4%	6%	5%
Worried	13%	8%	6%	6%	18%	4%	12%	21%	25%	20%	6%	43%
Other	3%	3%	3%	3%	3%	3%	2%	3%	4%	3%	3%	4%
None of the above	7%	6%	21%	14%	26%	14%	20%	25%	24%	25%	12%	14%

Q. Which of the following best describes how you feel about using [ITEM]. Select up to three words. Base (total) for each item: ca. 990 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Correspondence Analysis: Feelings about Automation Applications

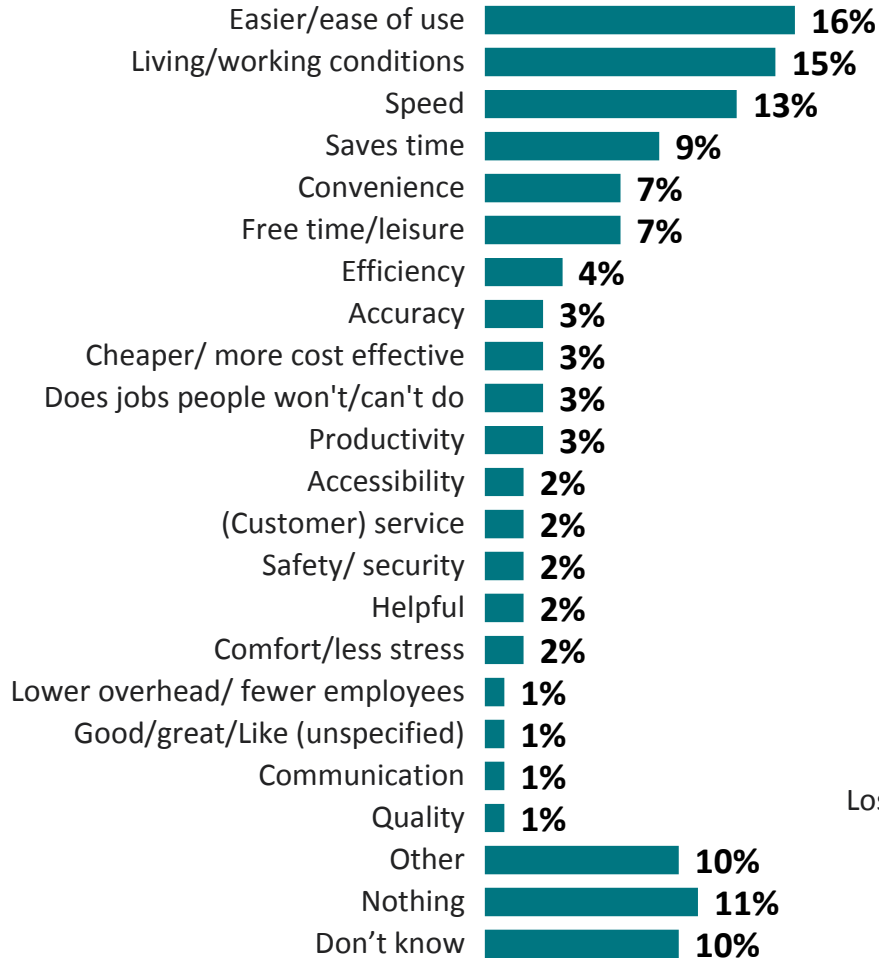


Q. Which of the following best describes how you feel about using [ITEM]. Select up to three words. Base (total) for each item: ca. 990 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

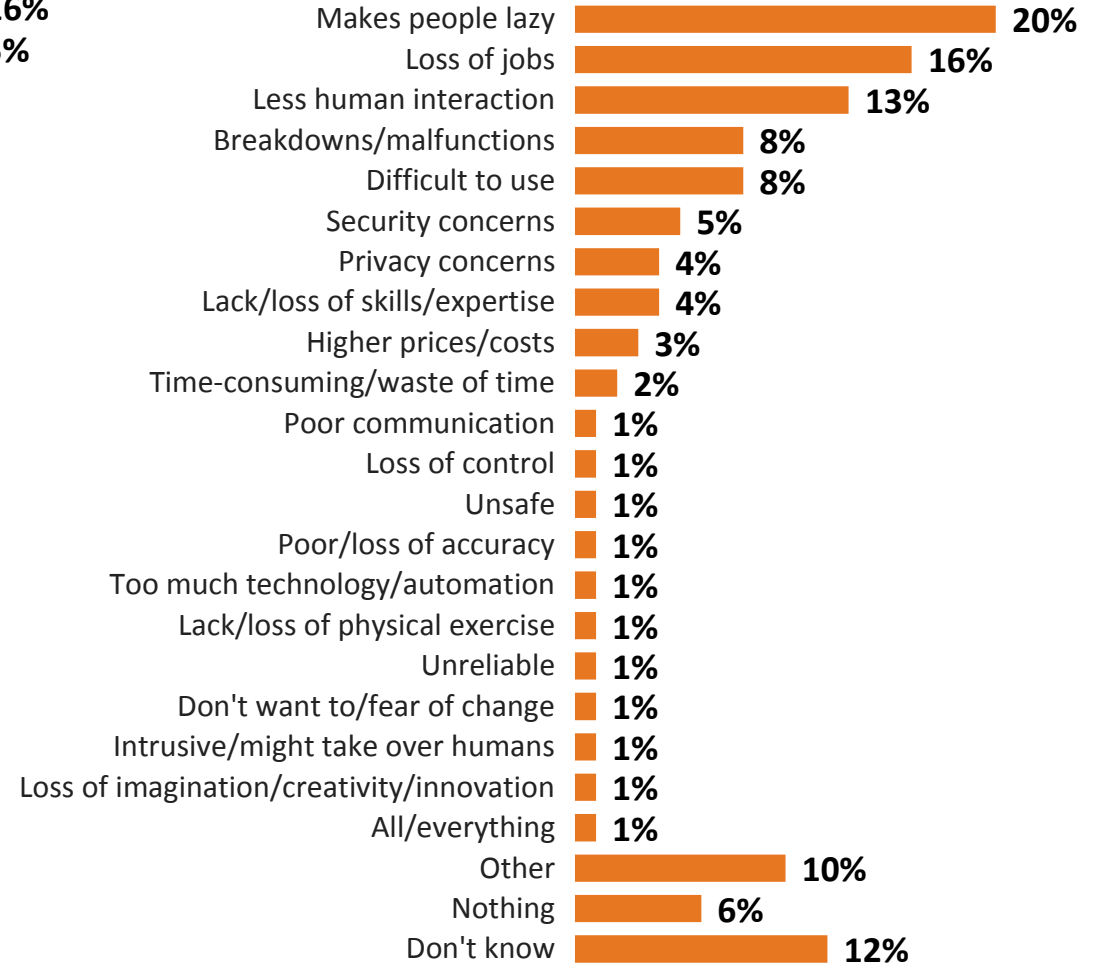
Perceived Benefits and Drawbacks of Increased Automation in People's Lives

- Key perceived benefits pertain to increased ease, comfort, convenience, speed/time savings and efficiency.
- Most negative effects are seen to be loss of diligence and skills, jobs, and human interaction as well as malfunction, difficulty to use, and security/privacy concerns.

% of adults saying benefits are:



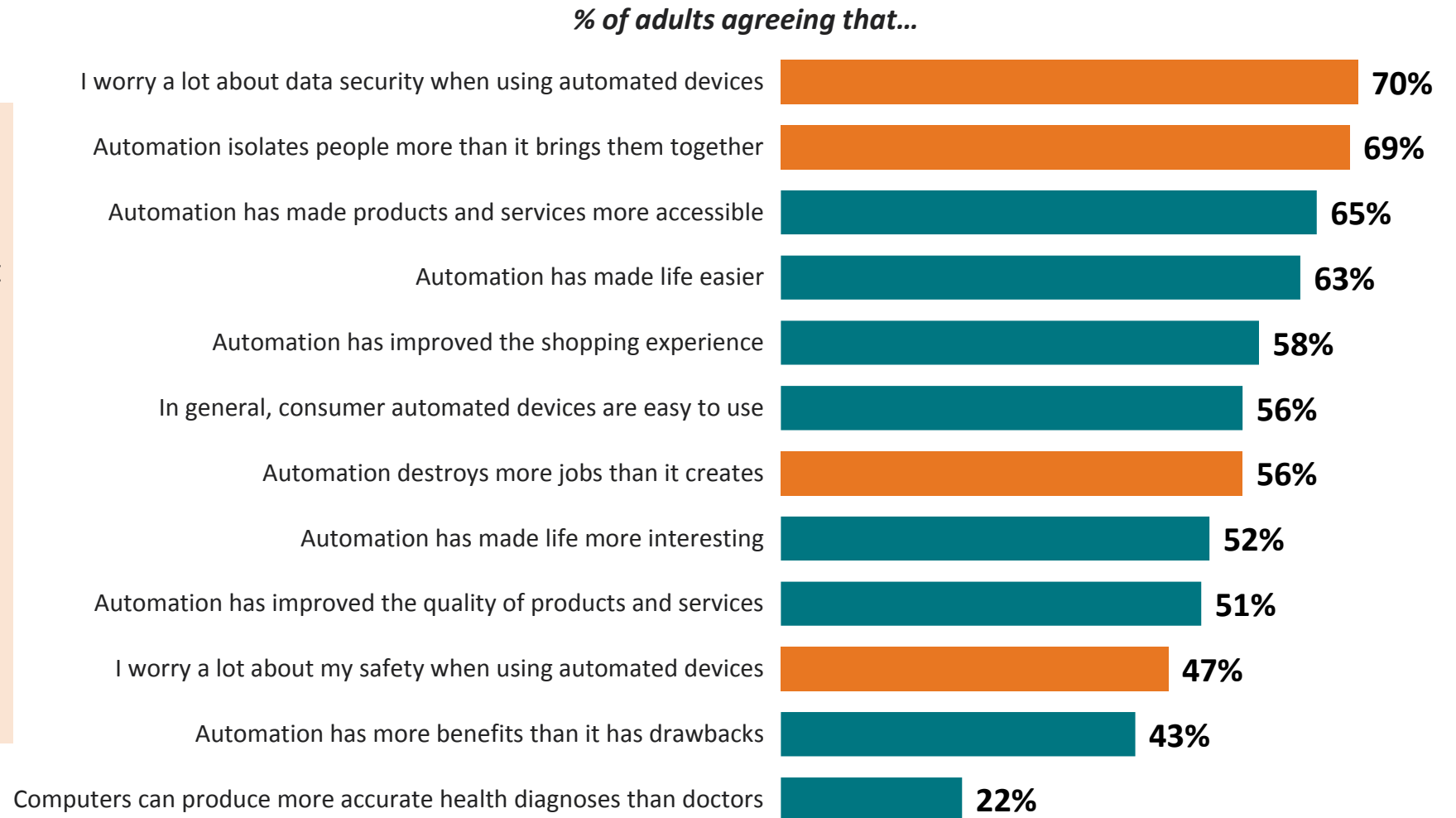
% of adults saying drawbacks are:



Q. What are the main benefits of increased automation in people's lives? Q. What are the main drawbacks of increased automation in people's lives?
 Base (total): 2,982 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Views about Automation

- U.S. consumers are ambivalent about automation.
- On the **negative side**, large majorities are concerned about data security, alienation, and job destructions brought about by automation.
- On the **positive side**, majorities associate automation with products and services being more accessible, easier to buy and use and of a higher quality, and with making life easier and more interesting convenience.

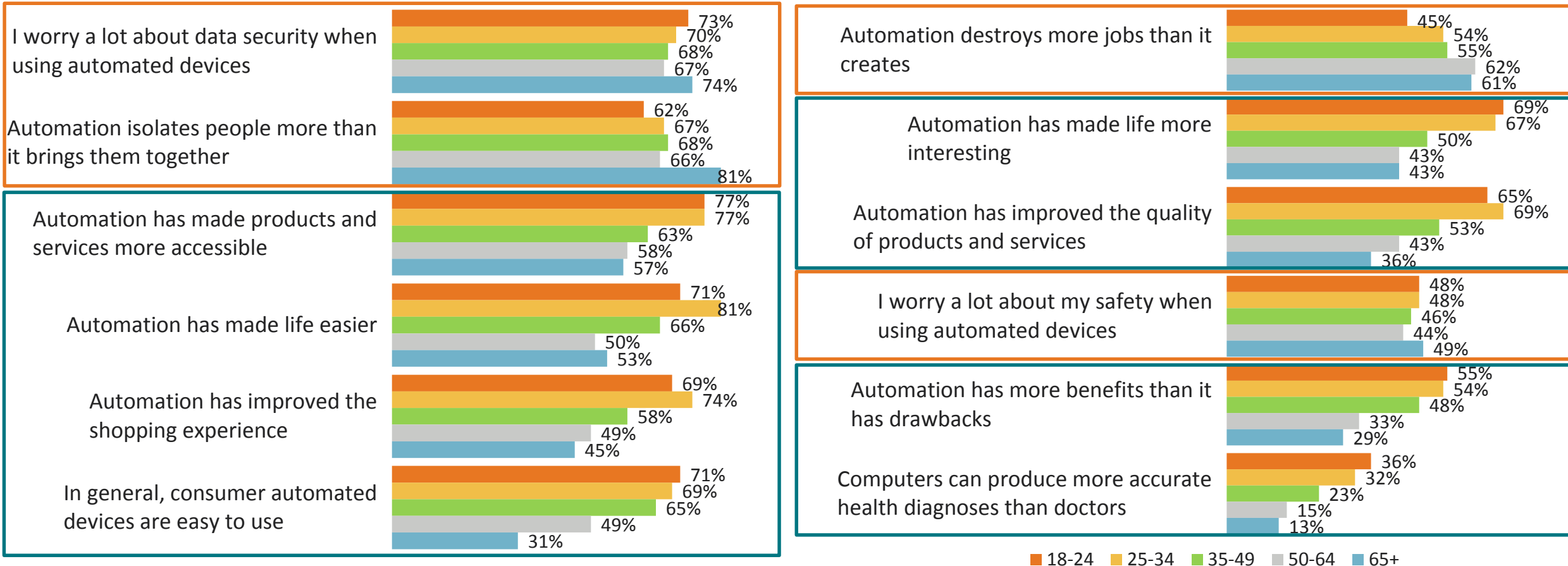


Q. How much do you agree or disagree with each of the following? Base (total) for each statement: ca. 1,490 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Views about Automation across Age Groups

- Under 35 much more likely to praise automation for making life more interesting and easier and for improving accessibility and quality of products and services and shopping experience

% of adults agreeing that...



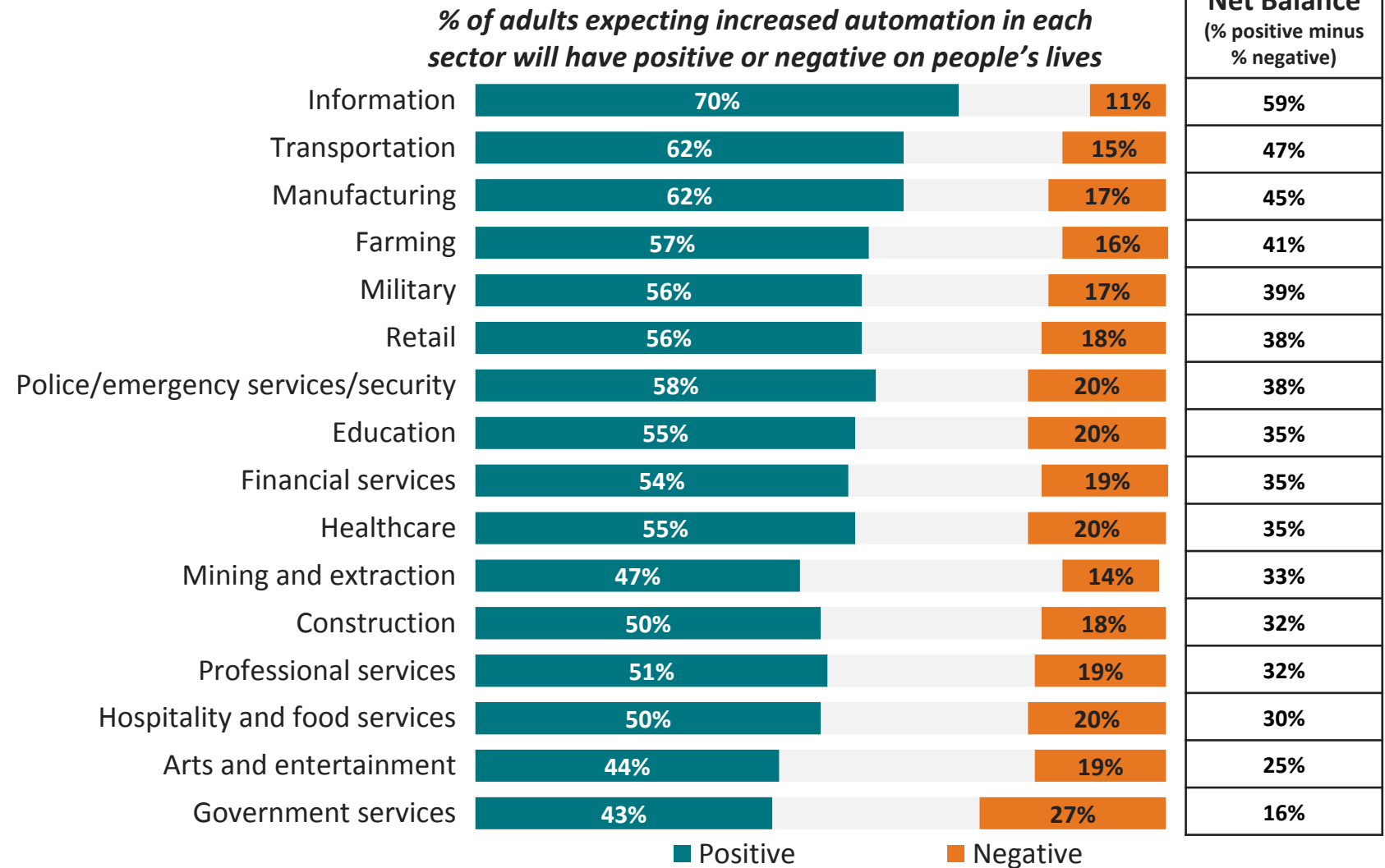
18-24 25-34 35-49 50-64 65+

Q. How much do you agree or disagree with each of the following? Base (total) for each statement: ca. 1,490 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Automation Applications:
**IMPACT OF
AUTOMATION IN THE
WORKPLACE**

Expected Impact of Increased Automation on Economic Sectors

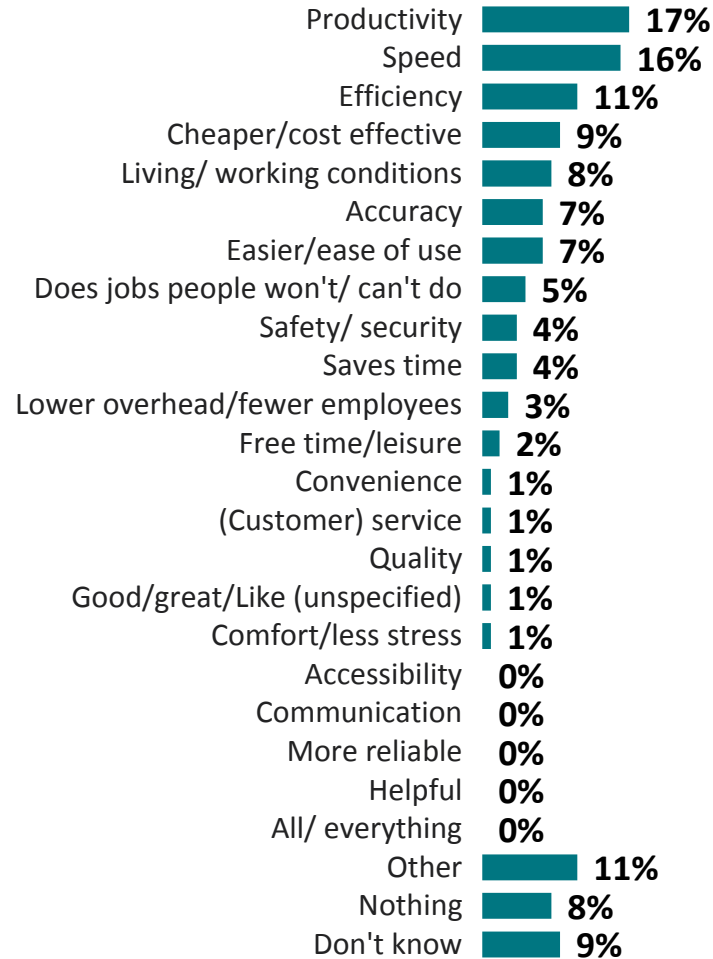
- Americans tend to see increase automation in every economic sector has having more of a positive than negative on people's lives.
- Automation is viewed as having a positive social impact by a majority for every sector except arts/entertainment and government services
- Government services is the only area for which more than one in four view increased automation negatively
- Information is the sector where the net balance is most positive, following by transportation, manufacturing, and farming



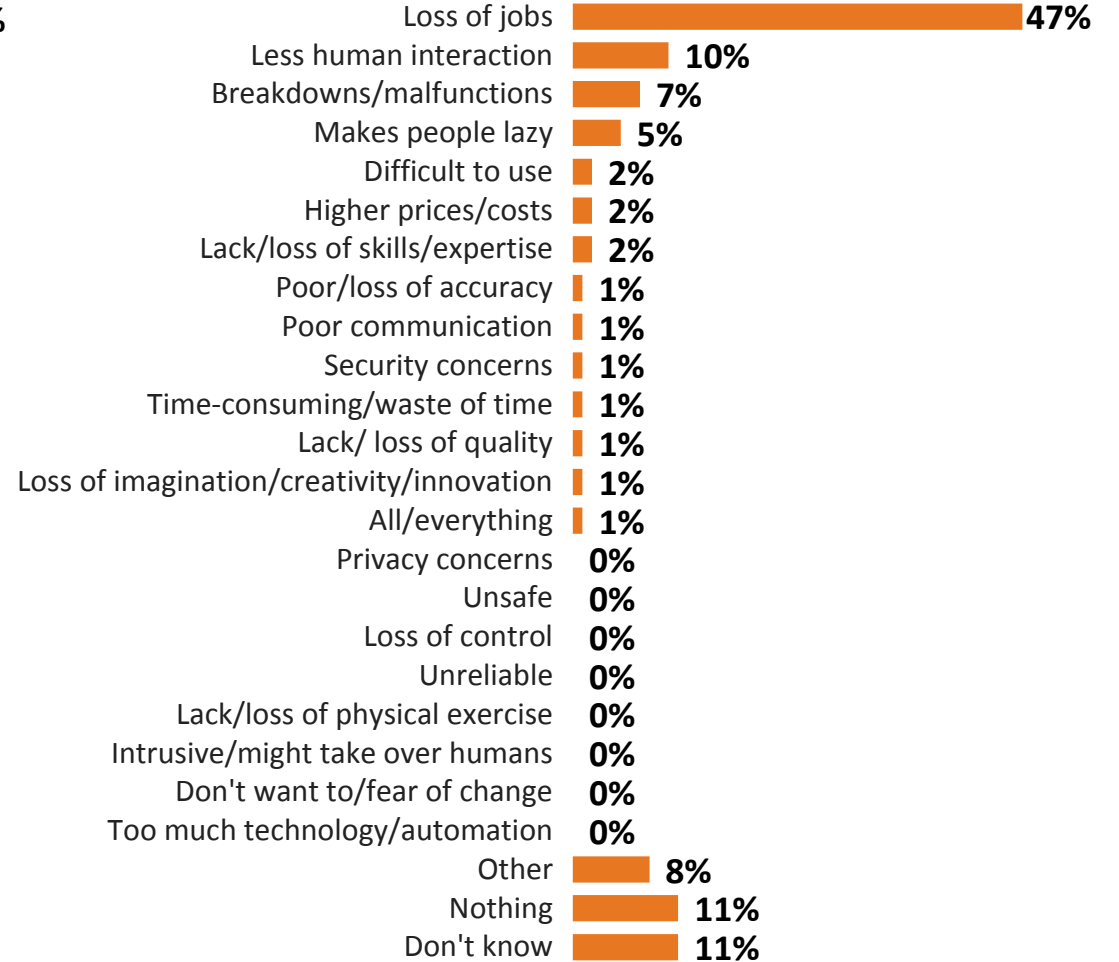
Q. To what extent do you think that increased automation in each of the following sectors will have a positive or a negative impact on people's lives?
 Base (total) for each statement: average of 1,491 U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Perceived Benefits and Drawbacks of Increased Automation in the Workplace

% of employed adults saying benefits in the workplace are:



% of employed adults saying drawbacks in the workplace are:



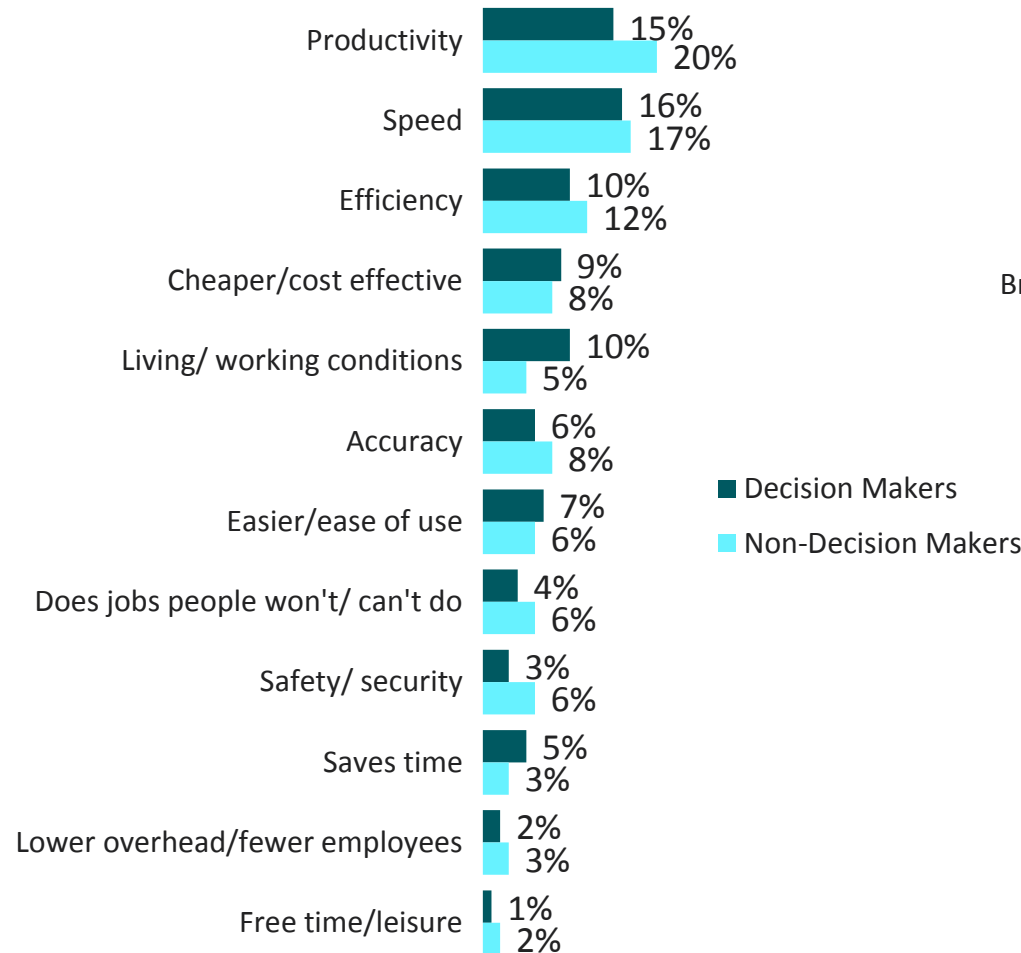
- Key perceived benefits in the workplace are increased productivity, efficiency, speed, comfort, and accuracy as well as lower costs
- Top of mind, half of employed adults asked about main drawbacks cite the loss of jobs

Q. What are the main benefits of increased automation in the workplace? Q. What are the main drawbacks of increased automation in the workplace?
 Base (total): 1,676 employed U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

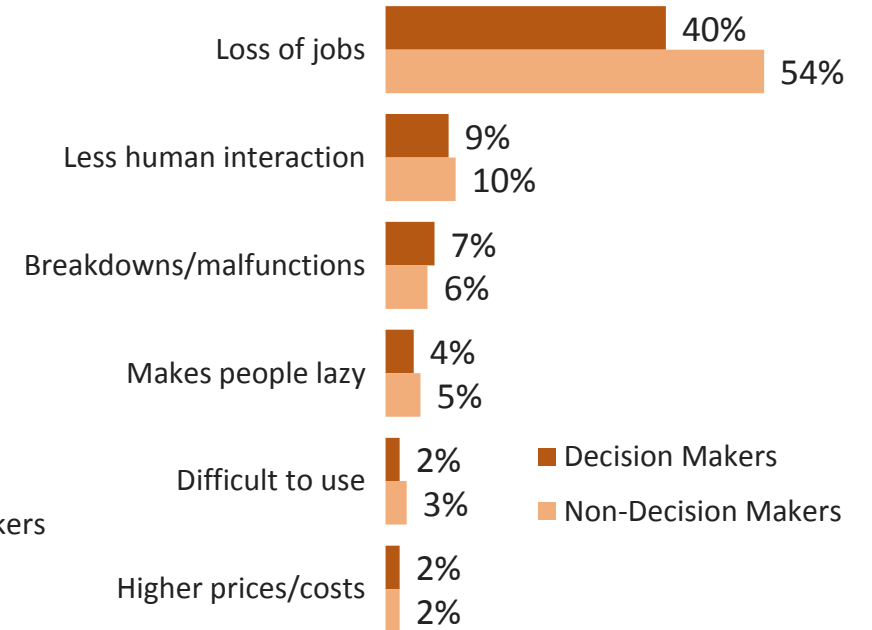
Perceptions of Automation in the Workplace Depending on Decision-Making Authority

- Perceptions of workplace decision makers and non-decision makers vary only slightly.
- Decision makers are more likely to mention improved living and working conditions as a benefits.
- Non-decision makers are more likely to cite loss of jobs as a downside and productivity gains as an upside.

% of employed adults saying benefits in the workplace are:



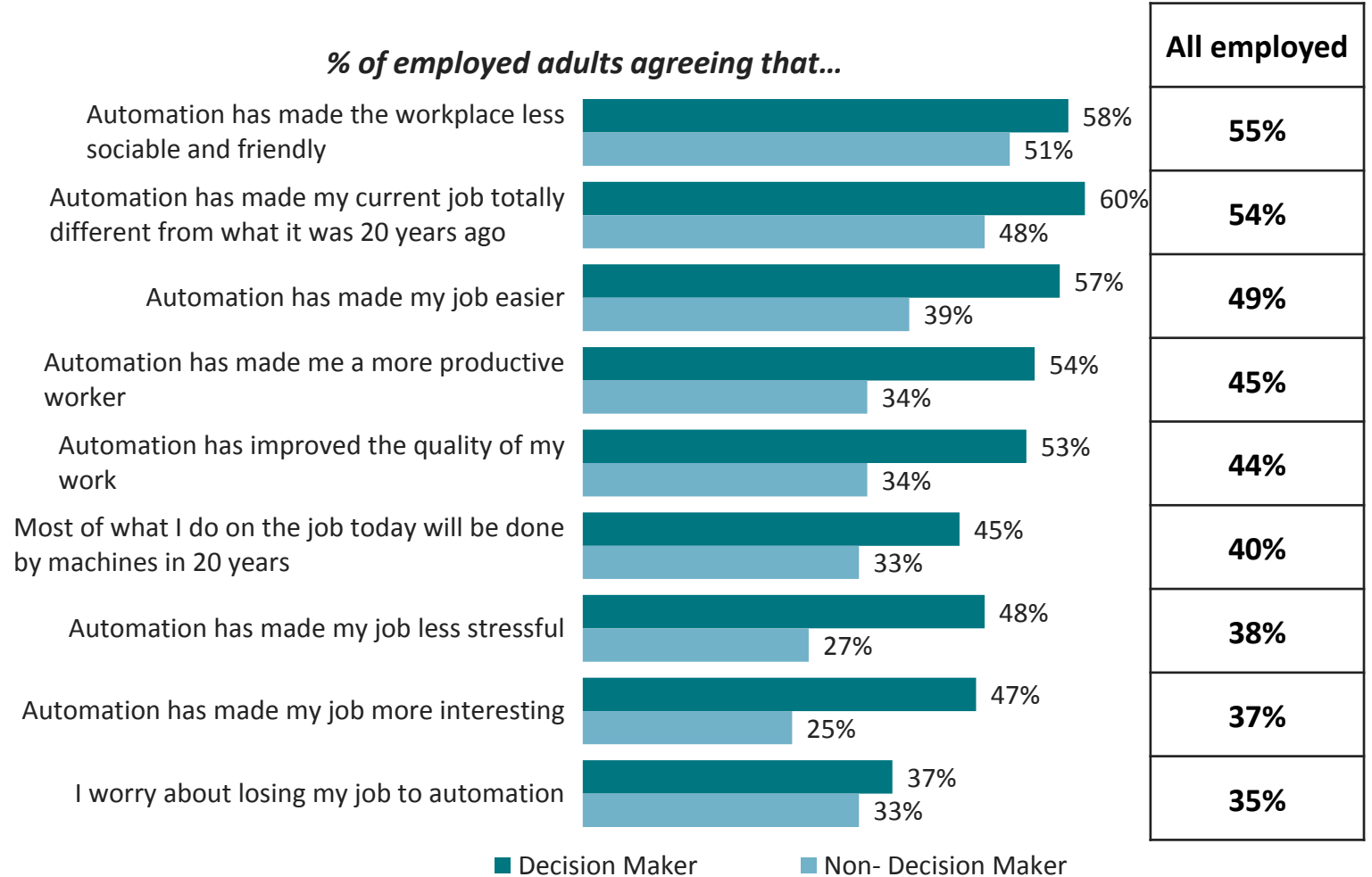
% of employed adults saying drawbacks in the workplace are:



Q. What are the main benefits of increased automation in the workplace? Q. What are the main drawbacks of increased automation in the workplace?
 Base (total): 1,676 employed U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Views about Automation in the Workplace

- Among those employed, 54% say automation has made their current job totally different from what it was 20 years ago and 40% say that most of what they do today will be done by machines in 20 years.
- 35% worry about losing their job to automation.
- Over half (55%) deplore that automation has made the workplace less social and friendly, but many say it's made their job easier (49%), made them more productive (45%), improved the quality of their work (44%), made their job less stressful (38%) and made their job more interesting (37%).
- Decision makers in the workplace are much more likely than non-decision makers to agree that automation has had a beneficial impact on their job.



Q. To what extent do you agree or disagree with each of the following? Base (total): 1,676 employed U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Views about Automation in the Workplace by Sector

- The sectors where employees most report experiencing drastic changes in the past 20 years are media/publishing/telecom/data processing, administrative/support services, and financial services.
- Media/publishing/telecom/data processing and financial services workers are also those who are most likely to say automation has made their job less stressful and has improved the quality of their work.
- Hospitality/food service workers tend to be less likely than those employed in other sectors to say automation has made their job totally different from what it was 20 years ago, and had an impact in terms of greater productivity, interest, or quality or lesser sociability.
- Those most worried about losing their job to automation and are most likely to expect the job they do today will be done by machines in 20 years are transport/warehousing, arts/sports/recreation workers, and extraction/utilities/construction workers.
- Transportation/warehousing workers are also those least likely to say automation has made their job more interesting or easier.
- Those least worried about being expandable are healthcare/social services, government services, and education workers.

% of employed adults agreeing that...

	Total	Farming Forestry Fishing	Mining Extraction Utilities Construct.	Manufact.	Wholesale Retail Trade	Transport Wareh's'g	Media Publishing Telecom Data process.	Financial Insurance Real Estate Services	Profess'l Scientific Technical Services	Admin. Support Services	Education	Healthcare Social Services	Arts Sports Recreat'n	Hospitality Food Services	Gov't Services (excl. Police Emerg. Military)	Military Police Emergency Services Security
Base: Employed adults	1676	11 **	124	80	101	62 *	47 *	99 *	142	177	191	161	58 *	73 *	73 *	22 **
Automation has made the workplace less sociable and friendly	55%		62%	61%	49%	65%	67%	50%	57%	53%	61%	51%	53%	42%	58%	
Automation has made my current job totally different from what it was 20 years ago	54%		53%	50%	53%	54%	83%	62%	58%	68%	49%	52%	49%	41%	57%	
Automation has made my job easier	49%		56%	58%	46%	33%	61%	57%	53%	61%	43%	49%	47%	37%	52%	
Automation has made me a more productive worker	45%	Base too small to report	55%	38%	40%	34%	45%	57%	52%	50%	41%	42%	52%	36%	47%	Base too small to report
Automation has improved the quality of my work	44%		51%	48%	38%	32%	58%	57%	50%	44%	36%	43%	53%	39%	37%	
Most of what I do on the job today will be done by machines in 20 years	40%		56%	36%	44%	52%	48%	38%	39%	44%	30%	23%	54%	50%	14%	
Automation has made my job less stressful	38%		51%	31%	38%	28%	48%	55%	39%	38%	41%	38%	32%	33%	25%	
Automation has made my job more interesting	37%		48%	43%	38%	19%	40%	41%	41%	40%	33%	36%	39%	27%	31%	
I worry about losing my job to automation	35%		45%	36%	40%	56%	40%	38%	35%	41%	26%	15%	53%	36%	19%	

* Caution: small base; ** Base too small to report

Q. To what extent do you agree or disagree with each of the following? Base (total): 1,676 employed U.S. adults aged 18+ interviewed online June 29 - July 3, 2017

Americans' Attitudes Toward Automation

QUESTIONNAIRE

Americans' Attitudes Toward Automation

May 24-25 Survey Questions

Q1. What are all the things that the word “automation” makes you think of? PROBE: What else do you associate with the word “automation”? [OPEN-ENDED]

Q2. Generally speaking, how much of a favorable or unfavorable opinion do you have of the following? [RANDOMIZE LIST]

1. Automation in general
2. Artificial intelligence
3. Automated voice menus on the phone
4. Customer service online chat boxes
5. Drones
6. Online shopping and banking
7. Robots
8. Self-checkout/check-in/ordering kiosks at stores, airports, restaurants, etc.
9. Self-driving cars
10. Internet-connected appliances and home devices
11. Internet-connected medical devices
12. Voice recognition assistance (e.g., Siri, Alexa, Cortana, Google Assistant, etc.)
13. Wearable electronics (e.g., Fitbit, wireless headphones, etc.)
14. Globalization
15. Free trade

SCALE

Very favorable

Somewhat favorable

Neutral or mixed

Somewhat unfavorable

Very unfavorable

Don't know enough to have an opinion

Americans' Attitudes Toward Automation

June 29-July 3 Survey Questions (1 to 3)

ASK ALL

Q1. How familiar are you with each of the following:

[RANDOMIZE LIST]

1. Online shopping and banking
2. Self-checkout/check-in/electronic ordering kiosks at stores, airports, restaurants, etc.
3. Wearable electronics (e.g., Fitbit, wireless headphones, etc.)
4. Voice recognition assistance (e.g., Siri, Alexa, Cortana, Google Assistant, etc.)
5. Internet-connected medical devices
6. Customer service online chat boxes
7. Internet-connected appliances and home devices
8. Robots
9. Artificial intelligence
10. Drones
11. Automated voice menus on the phone
12. Self-driving cars

SCALE

- Very well
- Fairly well
- Just a little
- Heard of it, but know almost nothing
- Never heard of it

Q2. Describe your usage experience or likelihood for each of the following:

[RANDOMIZE LIST]

1. Online shopping and banking
2. Self-checkout/check-in/electronic ordering kiosks at stores, airports, restaurants, etc.
3. Wearable electronics (e.g., Fitbit, wireless headphones, etc.)
4. Voice recognition assistance (e.g., Siri, Alexa, Cortana, Google Assistant, etc.)
5. Internet-connected medical devices
6. Customer service online chat boxes
7. Internet-connected appliances and home devices
8. Robots
9. Artificial intelligence
10. Drones
11. Automated voice menus on the phone
12. Self-driving cars

SCALE

- Use frequently [DO NOT LIST IF "NEVER HEARD OF IT" AND FOR "SELF-DRIVING CARS"]
- Use occasionally [DO NOT LIST IF "NEVER HEARD OF IT" AND FOR "SELF-DRIVING CARS"]
- Stopped using [DO NOT LIST IF "NEVER HEARD OF IT" AND FOR "SELF-DRIVING CARS"]
- Never used, but likely to use it in the future
- Never used and unlikely to use in the future

Q3 a-h. Which of the following best describes how you feel about using [ITEM]. Select up to three words.

ASK FOR 4 RANDOMLY SELECTED APPLICATIONS AMONG THE 12 ASKED IN Q1, EXCLUDING THOSE THAT RESPONDENT HAS NEVER HEARD OF

[RANDOMIZE LIST]

- a. Comfortable
- b. Confused
- c. Excited
- d. Happy
- e. Hesitant
- f. Irritated
- g. Relieved
- h. Worried
- i. Other (SPECIFY: _____)
- j. None of the above (DO NOT ALLOW ANY OTHER ANSWER)

Americans' Attitudes Toward Automation

Questions (2 to 7)

Let's now consider automation in general. By automation, we refer to all the types of applications and automated devices mentioned earlier.

Q4. What are the main benefits of increased automation in people's lives? [OPEN-ENDED]

Q5. What are the main drawbacks of increased automation in people's lives? [OPEN-ENDED]

Q6. How much do you agree or disagree with each of the following:

ASK FOR 6 RANDOMLY SELECTED STATEMENTS AMONG THE 12 LISTED BELOW
[RANDOMIZE LIST]

1. In general, consumer automated devices are easy to use
2. Computers can produce more accurate health diagnoses than doctors
3. I worry a lot about my safety when using automated devices
4. I worry a lot about data security when using automated devices
5. Automation destroys more jobs than it creates
6. Automation has more benefits than it has drawbacks
7. Automation has improved the quality of products and services
8. Automation has improved the shopping experience
9. Automation has made life more interesting
10. Automation isolates people more than it brings them together
11. Automation has made life easier
12. Automation has made products and services more accessible

SCALE

Strongly agree

Somewhat agree

Neither agree nor disagree

Somewhat disagree

Strongly disagree

Q7. To what extent do you think that increased automation in each of the following sectors will have a positive or a negative impact on people's lives:

ASK FOR 6 RANDOMLY SELECTED STATEMENTS AMONG THOSE LISTED BELOW
[RANDOMIZE]

1. Administrative and support services
2. Arts, sports and recreation
3. Construction
4. Education
5. Farming, forestry and fishing
6. Financial, insurance and real estate services
7. Government services
8. Healthcare and social services
9. Hospitality and food services
10. Manufacturing
11. Media, publishing, telecommunications and data processing
12. Military
13. Mining and extraction
14. Police and emergency services, security
15. Professional, scientific and technical services
16. Transportation and warehousing
17. Utilities
18. Wholesale and retail trade

SCALE

Very positive

Somewhat positive

Neither positive nor negative

Somewhat negative

Strongly negative

Americans' Attitudes Toward Automation

Questions (8 to 13)

ASK ONLY OF THOSE WHO ARE CURRENTLY EMPLOYED [ANSWERED 1.FULL-TIME, 2. PART-TIME, 3. SELF-EMPLOYED, OR 9.MILITARY IN SCREENER Q.EMP01]; IF NOT CURRENTLY EMPLOYED , GO TO NEXT TOPIC OR DEMOS

Q8. What are the main benefits of increased automation in the workplace? [OPEN-ENDED]

Q9, What are the main drawbacks of increased automation in the workplace? [OPEN-ENDED]

Q10. To what extent do you agree or disagree with each of the following:

[RANDOMIZE]

I worry about losing my job to automation

Most of what I do on the job today will be done by machines in 20 years

Automation has made the workplace less sociable and friendly

Automation has made my job easier

Automation has made me a more productive worker

Automation has made my current job totally different from what it was 20 years ago

Automation has made my job more interesting

Automation has made my job less stressful interesting

Automation has improved the quality of my work

SCALE

Strongly agree

Somewhat agree

Neither agree nor disagree

Somewhat disagree

Strongly disagree

Q11. Which of the following best describes or is closest to your sector of activity? [ONE RESPONSE ONLY]

1. Administrative and support services
2. Arts, sports and recreation
3. Construction
4. Education
5. Farming, forestry and fishing
6. Financial, insurance and real estate services
7. Government services
8. Healthcare and social services
9. Hospitality and food services
10. Manufacturing
11. Media, publishing, telecommunications and data processing
12. Military
13. Mining and extraction
14. Police and emergency services, security
15. Professional, scientific and technical services
16. Transportation and warehousing
17. Utilities
18. Wholesale and retail trade
19. Other (Specify: _____)

Q12. At work, do you have significant decision-making authority for... [ONE RESPONSE ONLY]

1. Your organization as a whole
2. One or several departments or divisions
3. A team within your department or division
4. None of these, I do not have decision-making authority over anyone

Q13. In the past 12 months, how many times have you been involved in decisions pertaining to automating processes within your organization or for other organizations?

1. Many times
2. A few times
3. Once or twice
4. Never

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GAME CHANGERS

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