

Metropolitan Washington Council of Governments

Results of 2022 Annual Water/Wastewater Survey

Prepared

By

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Executive Summary

This is the 3rd consecutive year Dinsmore Research has conducted the survey on behalf of the Metropolitan Washington Council of Governments (COG). Highlights from this year's survey feature:

Many consistencies over 3 years

- Older respondents, Female respondents most environmentally-friendly
- African-Americans least trusting of tap water

Most ratings of 2022 survey fell between 2020 & 2021 ratings

- Suggests a general mood for this year vs. others

Where there's consistent movement over three years

- Positive Trend—Better reported disposal behaviors (though it conflicts with other data)
- Negative Trend—Opinion of/concern about water/wastewater infrastructure

Interesting new findings

- Home renters use Brita filters for tap water, Owners use refrigerators
- Brita users motivated by safety, Fridge drinkers by taste
- People trust information from utilities more than from other organizations

What follows are question-by-question analysis and a copy of the survey.

About the Author

John Dinsmore is a marketing consultant and Associate Professor of Marketing at Wright State University in Dayton, Ohio.

Professor Dinsmore has provided marketing consulting services to many early-stage companies as well as large organizations such as The John F. Kennedy Center for the Performing Arts, the US Department of Defense, The University of Virginia, and National Geographic. He is a member of the American Marketing Association and the Association for Consumer Research and has been featured in publications such as *Forbes*, *CIO*, *CBS Marketwatch*, *US News & World Report* for his market commentary.

At Wright State University, he teaches a variety of courses including Digital Marketing, Marketing Strategy, and Creativity & Problem-Solving, garnering multiple teaching awards. Dr. Dinsmore has provided executive training services to the United States Air Force and Speedway Corporation. His academic research primarily focuses on the monetization of mobile applications, having been published in academic journals including *Psychology & Marketing*, *Journal of Business Research*, and *International Journal of Research in Marketing*. He has also published business cases focusing on strategy and analytics which are taught in MBA programs around the world.

Dr. Dinsmore holds a BA in Political Science from James Madison University, an MBA in Marketing & Decision Support Systems from University of Georgia, and a PhD in Marketing from University of Cincinnati. He lives in Dayton, Ohio with his wife, two sons, and a gigantic rottweiler named "Fozzie." Additional information about him can be found online at www.DinsmoreResearch.com

Methodology

The survey instrument was completed in collaboration with, and at the direction of, Metropolitan Washington Council of Governments (COG) executives. It was loaded onto an online survey platform (Qualtrics). A copy of the final survey is included at the end of the document.

Respondents were recruited via Qualtrics in exchange for financial compensation. Recruits were expelled from the survey if:

- They reported using septic or well
- They missed an attention check within the survey indicating a lack of engagement
- If the quota for respondents from a particular jurisdiction (determined by zip code) had already been filled or if the respondent entered a home zip code that did not match any of the districts.

As in 2020 and 2021, supplementary recruiting via Dinsmore Research’s social media accounts was utilized to complete unfilled response quotas for districts. Those respondents were compensated with gift cards.

Any identifying information (in the case of those recruited via social media) was decoupled from responses to protect the anonymity of participants. Additionally, wherever possible and appropriate, order of answers was randomized to avoid “order effects” such as an item presented first being selected more than subsequent items.

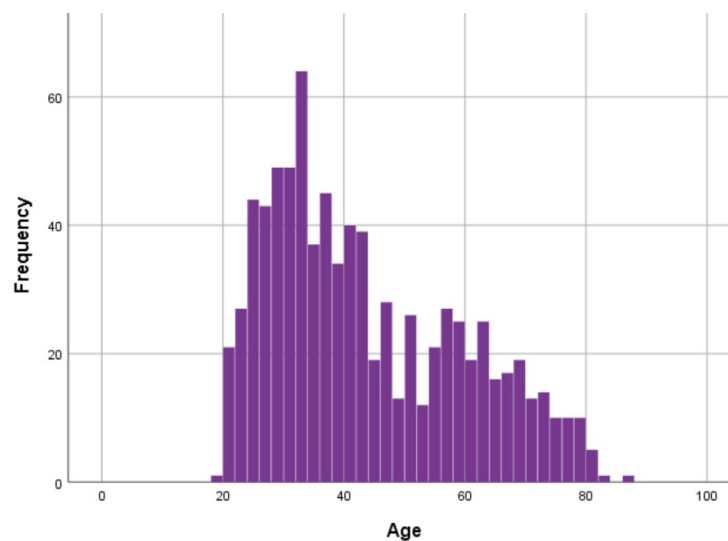
Analysis of data was conducted using IBM’s SPSS software.

Sample Description

This year’s survey had 824 complete responses. Different samples will naturally vary in terms of their demographic profile and this year was no different. Compared to 2021’s sample, this year’s has differences in terms of being slightly more female and affluent, while being less likely to own a home. In terms of ethnicity, the sample features a very similar number of white respondents but with a different distribution of non-white respondents—greater percentages of Asians and African-Americans and a lower number of Hispanic respondents.

Age

The age of respondents ranged from 19 to 86, with a mean of 43.17 (vs. 42.52 in 2021) and a standard deviation of 15.85. A frequency distribution of respondent ages is shown below.



Gender

57.2% of this year’s sample identified as female (versus 51.9% in 2021). This year, respondents identified their gender as follows:

	Frequency	Percent
Female	471	57.2
Male	339	41.1
Transgender Female	1	.1
Transgender Male	1	.1
Gender Variant/Non-conforming	6	.7
Other	1	.1
Prefer Not to Answer	5	.6
Total	824	100.0

Ethnicity

60.3% of respondents in this year's sample identified as White/Caucasian, very similar to 59.3% last year. The distribution of non-white respondents by category was different. This year's sample featured a higher percentage of African-Americans (22.2% this year, versus 17.3% in 2021) and Asians (7.6% vs. 5.1%) with a significantly lower percentage of Hispanics (6.3% this year vs. 14.5% in 2021). Respondents identified their ethnicity as follows:

	Frequency	Percent
African-American	183	22.2
Asian	63	7.6
Hispanic	52	6.3
Native American	3	.4
Pacific Islander	1	.1
White/Caucasian	497	60.3
Other	25	3.0
Total	824	100.0

Sample Size By Service Area

	Frequency	Percent
Alexandria	62	7.5
Arlington	70	8.5
Charles County	70	8.5
Fairfax	70	8.5
Frederick	69	8.4
Loudoun	68	8.3
Montgomery	68	8.3
Prince George County	69	8.4
Prince William County	66	8.0
Rockville	71	8.6
Vienna	65	7.9
Washington DC	76	9.2
Total	824	100.0

Respondent Income

57.6 % of respondents reported a household income of less than \$100,000 this year (versus 65.9% last year).

	Frequency	Percent
0-\$25,000	65	7.9
\$25,001-\$50,000	128	15.5
\$50,001-\$75,000	138	16.7
\$75,001-\$100,000	144	17.5
\$100,001-\$125,000	71	8.6
\$125,001-\$150,000	75	9.1
\$150,001-\$175,000	65	7.9
\$175,001-\$200,000	52	6.3
\$200,001-\$225,000	33	4.0
\$225,001-\$250,000	23	2.8
More than \$250,000	30	3.6
Total	824	100.0

Respondents Reporting Having Same or Different Utilities for Wastewater or Drinking Water

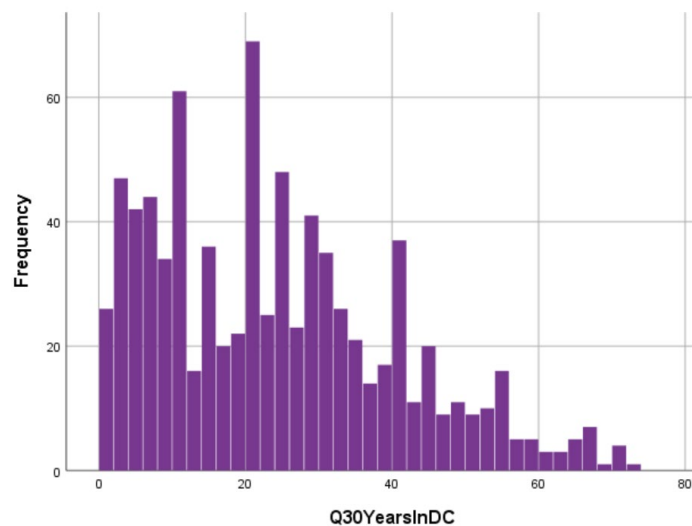
144, or 17.5% of this year’s respondents (versus 15.8% in 2021), reported not knowing if they the same or different utilities for water and wastewater services. Not surprisingly, whether or not the respondent was the bill payer was a significant factor. Of the 144 who reported not knowing, 82 (56.9%) were not the ones paying the water or wastewater bills in their households.

	2022	2021
Same Utility	589 (71.5%)	618 (66.0%)
Different Utilities	91 (11.0%)	171 (18.2%)
I Don't Know	144 (17.5%)	148 (15.8%)
Total	824 (100%)	937 (100%)

	NOT the bill payer	Bill Payer	Total
Same Utility	123	466	589
Different Utilities	20	71	91
I Don't Know	82	62	144
Total	225	599	824

Number of Years in DC Area

The number of years respondents reported having been in the DC area ranged from 1 to 72, with an average of 23.65 (vs. 21.74 in 2021). Below is a histogram of the distribution of the responses.



Did Respondents Rent or Own Their Homes?

61.4 % of respondents reported owning their homes, versus 66.5% of the 2021 sample.

	Frequency	Percent
Rent	318	38.6
Own	506	61.4
Total	824	100.0

Dwelling Type

43.9% of this year's sample reported living in a single-family home (vs. 37.9% in 2021).

	Frequency	Percent
Single family home	362	43.9
Townhome	160	19.4
Apartment/Condo	297	36.0
Other	5	.6
Total	824	100.0

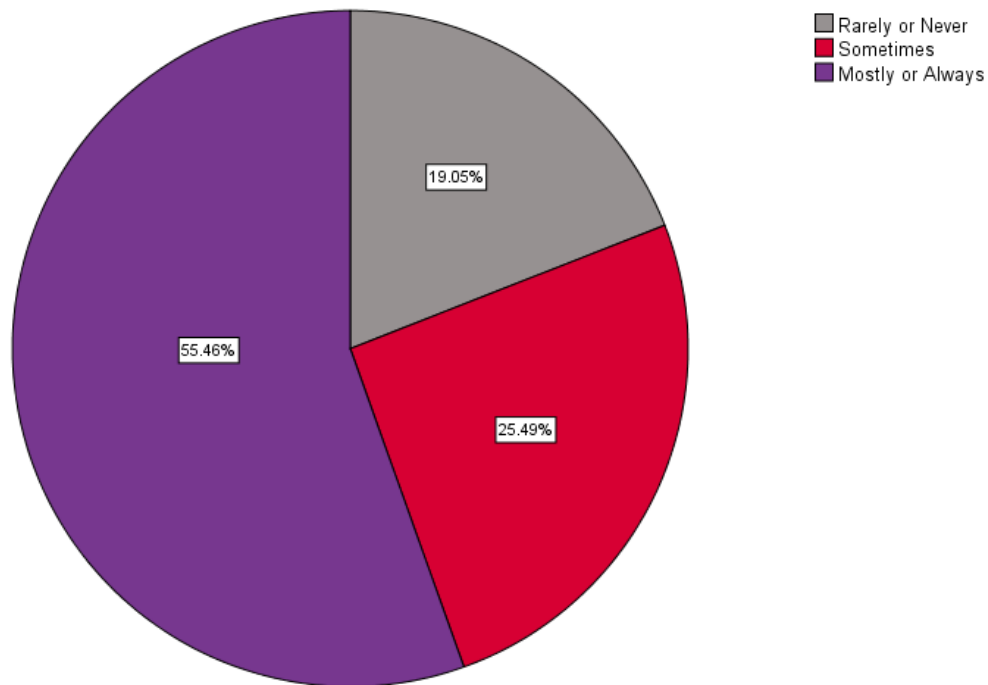
Question-By-Question Analysis

Q4. How often do you drink tap water?

Scale: 1-Rarely or Never, 2-Sometimes, 3-Mostly or Always

Overall Analysis

Mean Rating: 2.36 (*exact* same as in 2021)



	2022	2021
Rarely or Never	157 (19.1%)	173 (18.5%)
Sometimes	210 (25.5%)	252 (26.9%)
Mostly or Always	457 (55.5%)	512 (54.6%)
Total	824 (100%)	937 (100%)

***2020 used a different scale*

Ad-Hoc Analysis: Drivers of Tap Water Consumption

Ethnicity was factor in tap water consumption. While last year saw only African-Americans as significantly less likely to drink tap water, this year's results saw Asians and Hispanics as also being resistant. It should be noted that the small size of the samples for each group may be responsible for the volatility.

		Rarely/Never	Sometimes	Mostly/Always	Total
African-American	Count	61	47	75	183
	% within Q36Ethnicity	33.3%	25.7%	41.0%	100.0%
Asian	Count	19	7	37	63
	% within Q36Ethnicity	30.2%	11.1%	58.7%	100.0%
Hispanic	Count	17	11	24	52
	% within Q36Ethnicity	32.7%	21.2%	46.2%	100.0%
Native American	Count	1	1	1	3
	% within Q36Ethnicity	33.3%	33.3%	33.3%	100.0%
Pacific Islander	Count	0	1	0	1
	% within Q36Ethnicity	0.0%	100.0%	0.0%	100.0%
White/Caucasian	Count	53	133	311	497
	% within Q36Ethnicity	10.7%	26.8%	62.6%	100.0%
Other	Count	6	10	9	25
	% within Q36Ethnicity	24.0%	40.0%	36.0%	100.0%
Total	Count	157	210	457	824
	% within Q36Ethnicity	19.1%	25.5%	55.5%	100.0%

2021 Results

	African-American	Asian	Hispanic	Native American	Pacific Islander	White
Rarely/Never	60 (37.0%)	7 (14.6%)	12 (8.8%)	1 (12.5%)	0 (0%)	89 (16.0%)
Sometimes	43 (26.5%)	14 (29.2%)	37 (27.2%)	1 (12.5%)	5 (83.3%)	147 (26.4%)
Mostly/Always	59 (36.5%)	27 (56.2%)	87 (64%)	6 (75%)	1 (16.7%)	320 (57.6%)
TOTAL	162	48	136	8	6	556

Analysis By Jurisdiction

Mean Ratings By Jurisdiction

These ratings follow a similar pattern seen through many other scores: 2022 ratings landed in the middle of 2020 and 2021 ratings. Two districts showed consistent trends in tap water consumption over all three years, with Arlington trending negatively and Charles County trending positively.

Very similar ratings to 2021, with Prince George's County giving the lowest avg. rating over all three years. Year-over-year, the ratings by jurisdiction were consistent. The biggest change from 2021 to 2022 was Prince William County which went from an avg rating of 2.25 in 2021 to 2.44 in 2022 (an increase of .19).

Service Area	Avg. Tap Water Consumption	2021	2020
Alexandria	2.56	2.47	2.33
Arlington	2.53	2.55	2.66
Charles County	2.53	2.47	1.91
Fairfax	2.40	2.42	2.30
Frederick	2.38	2.50	2.04
Loudoun	2.22	2.30	2.07
Montgomery	2.34	2.39	2.26
Prince George County	1.99	2.08	1.83
Prince William County	2.44	2.25	1.87
Rockville	2.37	2.18	2.36
Vienna	2.46	2.47	2.46
Washington DC	2.20	2.24	2.10

Tap Water Consumption By Service Area, 2022

Similar to 2021, Ethnicity was a significant driver of tap water consumption, with Whites/Caucasians driving increased consumption and African-Americans decreasing it. In the next two tables, you can see districts reporting low consumption of tap water often corresponding with having a higher percentage of African-American respondents. Conversely, districts with a higher percentage of white respondents reported higher levels of tap water consumption.

		Rarely/Never	Sometimes	Mostly/Always	Total
Alexandria	Count	12	3	47	62
	% within jurisdiction	19.4%	4.8%	75.8%	100.0%
Arlington	Count	9	15	46	70
	% within jurisdiction	12.9%	21.4%	65.7%	100.0%
CharlesCounty	Count	9	15	46	70
	% within jurisdiction	12.9%	21.4%	65.7%	100.0%
Fairfax	Count	15	12	43	70
	% within jurisdiction	21.4%	17.1%	61.4%	100.0%
Frederick	Count	13	17	39	69
	% within jurisdiction	18.8%	24.6%	56.5%	100.0%
Loudoun	Count	18	17	33	68
	% within jurisdiction	26.5%	25.0%	48.5%	100.0%
Montgomery	Count	15	15	38	68
	% within jurisdiction	22.1%	22.1%	55.9%	100.0%
PrinceGeorgeCounty	Count	25	20	24	69
	% within jurisdiction	36.2%	29.0%	34.8%	100.0%
PrinceWilliamCounty	Count	12	13	41	66
	% within jurisdiction	18.2%	19.7%	62.1%	100.0%
Rockville	Count	4	37	30	71
	% within jurisdiction	5.6%	52.1%	42.3%	100.0%
Vienna	Count	5	25	35	65
	% within jurisdiction	7.7%	38.5%	53.8%	100.0%
WashingtonDC	Count	20	21	35	76
	% within jurisdiction	26.3%	27.6%	46.1%	100.0%
Total	Count	157	210	457	824
	% within jurisdiction	19.1%	25.5%	55.5%	100.0%

		African-American	Asian	Hispanic	Native American	Pacific Islander	White/Caucasian	Other	Total
Alexandria	Count	13	3	5	1	0	39	1	62
	% within jurisdiction	21.0%	4.8%	8.1%	1.6%	0.0%	62.9%	1.6%	100.0%
Arlington	Count	9	3	4	0	0	50	4	70
	% within jurisdiction	12.9%	4.3%	5.7%	0.0%	0.0%	71.4%	5.7%	100.0%
CharlesCounty	Count	26	1	4	0	0	39	0	70
	% within jurisdiction	37.1%	1.4%	5.7%	0.0%	0.0%	55.7%	0.0%	100.0%
Fairfax	Count	5	10	6	1	0	46	2	70
	% within jurisdiction	7.1%	14.3%	8.6%	1.4%	0.0%	65.7%	2.9%	100.0%
Frederick	Count	7	5	2	1	0	51	3	69
	% within jurisdiction	10.1%	7.2%	2.9%	1.4%	0.0%	73.9%	4.3%	100.0%
Loudoun	Count	7	8	1	0	0	51	1	68
	% within jurisdiction	10.3%	11.8%	1.5%	0.0%	0.0%	75.0%	1.5%	100.0%
Montgomery	Count	13	6	5	0	0	43	1	68
	% within jurisdiction	19.1%	8.8%	7.4%	0.0%	0.0%	63.2%	1.5%	100.0%
PrinceGeorgeCounty	Count	38	4	2	0	0	22	3	69
	% within jurisdiction	55.1%	5.8%	2.9%	0.0%	0.0%	31.9%	4.3%	100.0%
PrinceWilliamCounty	Count	12	4	9	0	1	39	1	66
	% within jurisdiction	18.2%	6.1%	13.6%	0.0%	1.5%	59.1%	1.5%	100.0%
Rockville	Count	10	5	2	0	0	53	1	71
	% within jurisdiction	14.1%	7.0%	2.8%	0.0%	0.0%	74.6%	1.4%	100.0%
Vienna	Count	16	11	5	0	0	27	6	65
	% within jurisdiction	24.6%	16.9%	7.7%	0.0%	0.0%	41.5%	9.2%	100.0%
WashingtonDC	Count	27	3	7	0	0	37	2	76
	% within jurisdiction	35.5%	3.9%	9.2%	0.0%	0.0%	48.7%	2.6%	100.0%
Total	Count	183	63	52	3	1	497	25	824
	% within jurisdiction	22.2%	7.6%	6.3%	0.4%	0.1%	60.3%	3.0%	100.0%

Tap Water Consumption By Service Area 2021

	Rarely/ Never	% w/in jurisdiction	Sometimes	% w/in jurisdiction	Mostly/Always	% w/in jurisdiction	TOTAL
Alex.	9	11.80%	22	28.90%	45	59.20%	76
Arl.	7	9.00%	21	26.90%	50	64.10%	78
DC	23	27.70%	17	20.50%	43	51.80%	83
Fairfax	14	17.70%	18	22.80%	47	59.50%	79
Frederick	12	16.70%	12	16.70%	48	66.70%	72
Loudoun	20	22.00%	24	26.40%	47	51.60%	91
Mont.	19	22.90%	13	15.70%	51	61.40%	83
PG County	23	30.30%	24	31.60%	29	38.20%	76
PW County	17	22.70%	22	29.30%	36	48.00%	75
Rockville	11	16.90%	31	47.70%	23	35.40%	65
Vienna	2	2.60%	36	47.40%	38	50.00%	76
Charles Cty	16	19.30%	12	14.50%	55	66.30%	83

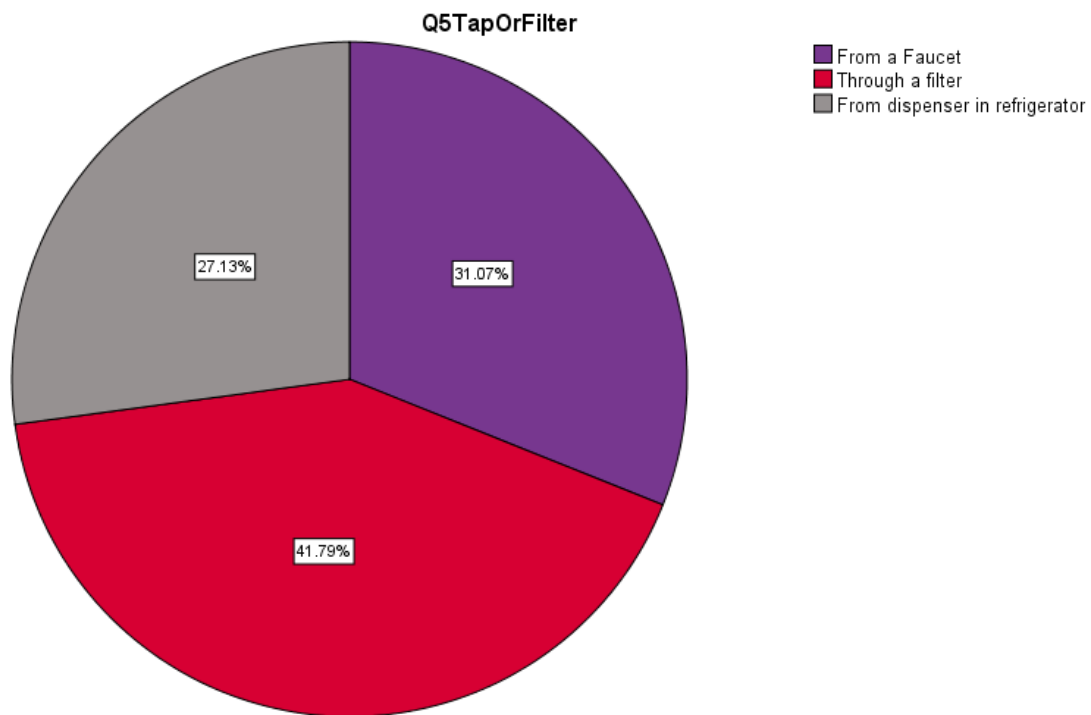
	African- American	Asian	Hispanic	Native American	Pacific Islander	White	Other
Alexandria	13.2%	1.3%	22.4%	5.3%	0.0%	56.6%	1.3%
Arlington	6.4%	5.1%	14.1%	1.3%	0.0%	70.5%	2.6%
DC	48.2%	3.6%	3.6%	1.2%	1.2%	39.8%	2.4%
Fairfax	5.1%	8.9%	6.3%	1.3%	0.0%	75.9%	2.5%
Frederick	6.9%	0.0%	36.1%	0.0%	0.0%	56.9%	0.0%
Loudoun	14.3%	9.9%	4.4%	0.0%	0.0%	68.1%	3.3%
Montgomery	15.7%	6.0%	8.4%	0.0%	0.0%	65.1%	4.8%
PG Cty	50.0%	3.9%	7.9%	0.0%	1.3%	32.9%	3.9%
PW Ct	13.3%	2.7%	9.3%	1.3%	0.0%	69.3%	4.0%
Rockville	4.6%	6.2%	3.1%	0.0%	0.0%	86.2%	0.0%
Vienna	6.6%	13.2%	6.6%	0.0%	5.3%	67.1%	1.3%
Charles Cty	19.3%	0.0%	51.8%	0.0%	0.0%	28.9%	0.0%

Q5. When I want to drink tap water, I drink it from. . .

This question was served to 457 respondents who said they “Mostly or Always” drank tap water when they drank water. This year, we added a third option, differentiating between water from a filter like a Brita™ pitcher, or getting it directly from a dispenser in the refrigerator. While comparing questions with different answer options is challenging, the percentage of people drinking from a faucet this year (31.1%) was consistent with last year (35.5%).

	2022	2021**
From a faucet	142 (31.1%)	182 (35.5%)
Through a filter	191 (41.8%)	330 (65.5%)
From dispenser in refrigerator	124 (27.1%)	NA
Total	457 (100%)	512 (100%)

***In 2021, the one alternative answer to “From a faucet” was “Through a filter or from a refrigerator”*



2021 Results

	Frequency	Pct.
From a Faucet	182	35.5%
Through a Filter or From a Refrigerator	330	64.5%
Total	512	100.0%

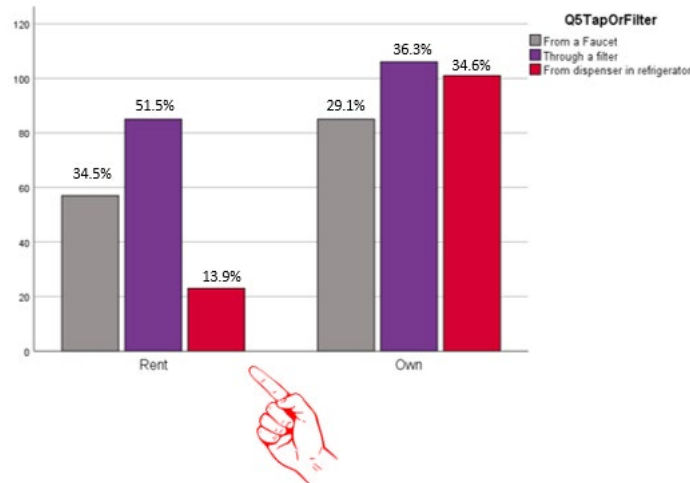
Q5 Ad-Hoc Analysis: Factors Driving Water Filter Use

Similar to last year, income ($R^2 = .154, p = .001$) and home ownership ($R^2 = .164, p = .000$) were significantly related to how respondents consumed their tap water. It should be noted that income and home ownership are—predictably—highly-related ($R^2 = .367, p = .000$) with wealthier people more likely to own their homes. Interestingly, the new breakout categories (filter vs. refrigerator) help paint a more vivid picture of consumption modes (see below). Renters are much less likely to consume from a dispenser in a refrigerator—probably because they do not get to choose their refrigerators, their landlords do.

Unlike last year, age was not a significant factor.

Breakdown of water consumption mode by home owners and renters.

		From a Faucet	Through a filter	From dispenser in refrigerator	Total
Rent	Count	57	85	23	165
	% within Q31OwnOrRent	34.5%	51.5%	13.9%	100.0%
Own	Count	85	106	101	292
	% within Q31OwnOrRent	29.1%	36.3%	34.6%	100.0%
Total	Count	142	191	124	457
	% within Q31OwnOrRent	31.1%	41.8%	27.1%	100.0%



Q6a & Q6b. Please rate the importance of the following benefits in your use of a filter or refrigerator. . .

This question was served to the 191 respondents who said they typically drank tap water using a filter and the 124 respondents who said they drink water from a dispenser in their refrigerator. Filter drinkers ranked “Safety” as their most important reason (in keeping with last year’s results), while those using a refrigerator reported that “Taste” was most important to them. See below.

Scale: 1-Not Important, 2-Somewhat Important, 3-Important, 4-Very Important

Avg. Ratings of Importance

	Filter Drinkers	Refrigerator Drinkers
Taste	3.36	3.21
Safety	3.42	3.17
Smell	3.27	2.92
Convenience	2.91	2.90

FILTER DRINKERS

	Taste	Safety	Smell	Convenience
Not Important	3 (1.6%)	3 (1.6%)	7 (3.7%)	13 (6.8%)
Somewhat Important	29 (15.2%)	23 (12.0%)	27 (14.1%)	48 (25.1%)
Important	56 (29.3%)	55 (28.8%)	64 (33.5%)	74 (38.7%)
Very Important	103 (53.9%)	110 (57.6%)	93 (48.7%)	56 (29.3%)
Total	191 (100%)	191 (100%)	191 (100%)	191 (100%)

FRIDGE DRINKERS

	Taste	Safety	Smell	Convenience
Not Important	4 (3.2%)	7 (5.6%)	8 (6.5%)	14 (11.3%)
Somewhat Important	19 (15.3%)	19 (15.3%)	32 (25.8%)	28 (22.6%)
Important	48 (38.7%)	44 (35.5%)	46 (47.1%)	39 (31.5%)
Very Important	53 (42.7%)	54 (43.5%)	38 (30.6%)	43 (34.7%)
Total	124 (100%)	124 (100%)	124 (100%)	124 (100%)

Q6 Ad-Hoc Analysis: Factors Driving Ratings

For those drinking from a filter, Gender was the only significant factor driving ratings of importance ($R^2 = .187$, $p = .01$). Among those drinking from a refrigerator, home ownership was the only significant factor ($R^2 = .183$, $p = .04$).

Last year, Ethnicity was the factor driving ratings. However, changing the response options from two categories to three may be responsible.

FILTER DRINKERS

Avg. Scores By Gender

	Gender	N	Mean
Taste	Female	110	3.49
	Male	77	3.18
Safety	Female	110	3.53
	Male	77	3.27
Smell	Female	110	3.35
	Male	77	3.21
Convenience	Female	110	2.99
	Male	77	2.82

Scores in red are significantly different, with female filter drinkers being more concerned about safety than men ($t(171) = 2.308$, $p = .02$) and men being more concerned about taste than women ($t(167) = 2.705$, $p = .02$).

REFRIGERATOR DRINKERS

Avg. Scores By Home Ownership

		N	Mean
Taste	Rent	23	3.52
	Own	101	3.14
Safety	Rent	23	3.30
	Own	101	3.14
Smell	Rent	23	3.30
	Own	101	2.83
Convenience	Rent	23	3.13
	Own	101	2.84

Scores in red are significantly different, with renting refrigerator drinkers being more concerned about taste ($t(122) = 2.087$, $p = .04$) and smell than owners ($t(122) = 2.294$, $p = .02$).

Q7. If you chose “Rarely or Never” in Q4, please indicate why (check all that apply). . .

This question was served only to those who answered “Rarely or Never” in Q4 (tap water consumption), rendering 157 Responses, allowing participants to check all factors that were applicable.

There was a slight change in rank order of reasoning from last year. Where safety was of chief concern in 2021, taste and safety tied as the most commonly cited this year. The difference is the number of those citing taste remained constant while those citing safety dropped by 9% year-over-year.

	<u>2022**</u>	<u>2021</u>
Taste:	99 (63.06%)	109 (63.37%)
Safety:	99 (63.06%)	124 (72.09%)
Odor:	24 (15.29%)	44 (25.58%)
Convenience:	15 (9.55%)	14 (8.14%)
Other:	13 (8.28%)	16 (9.30%)

***Since answer options for Q4 changed in 2021,
YoY analysis for 2020 is excluded.*

Analysis: Safety, followed by taste, were far and away the most popular reasons given for using a filter.

Analysis of “Other” Responses in Q7

Of the 16 who clicked “Other” in Q7, 8 offered an explanation that fell into two categories:

- 5 said they just prefer bottled water (without offering additional details)
- 3 said they don’t drink any kind of water.

Q8. For the 99 who answered “Safety” in Q7, please explain what is concerning you about the safety of your drinking water.

Scale: 1-Not Concerned, 2-Somewhat Concerned, 3-Concerned, 4-Very Concerned

Avg. Ratings of Concern

	N	Mean
Quality of Water Being Treated	99	3.22
Safety of Additives	99	3.18
Quality of Pipes	99	3.06
Security of Water Supply	99	2.76
Cybersecurity of Utilities	99	2.08
Other	99	1.91

Distribution of Answers

	Quality of Water Being Treated	Quality of Pipes	Security of Water Supply	Cybersecurity of Utilities	Safety of Additives	Other
Not Concerned	6 (6.1%)	8 (8.1%)	15 (15.2%)	35 (35.4%)	8 (8.1%)	60 (60.6%)
Somewhat Concerned	14 (14.1%)	23 (23.2%)	23 (23.2%)	35 (35.4%)	14 (14.1%)	7 (7.1%)
Concerned	31 (31.3%)	23 (23.2%)	32 (32.3%)	15 (15.2%)	29 (29.3%)	13 (13.1%)
Very Concerned	48 (30.6%)	45 (45.5%)	29 (18.5%)	14 (14.1%)	48 (48.5%)	19 (19.2%)
Total	99 (100%)	99 (100%)	99 (100%)	99 (100%)	99 (100%)	99 (100%)

Please note: answer options have changed slightly from 2021.

Q9. Understanding of Water Source

“The source of my drinking water is. . . (check all that apply).”

	2022	2021
I Don't Know	458 (55.58%)	403 (43.01%)
Potomac River	179 (21.72%)	102 (10.89%)
Occoquan Reservoir	97 (11.77%)	145 (15.47%)
Area Lakes and Streams	82 (9.95%)	123 (13.13%)
Patuxent River and Reservoirs	77 (9.34%)	94 (10.03%)
Chesapeake Bay	74 (8.98%)	129 (13.77%)
Atlantic Ocean	NA	89 (9.50%)

Analysis

Please note: “Atlantic Ocean” was removed as an option this year. 2020 results are not included because the “I don’t know” option was added in 2021 which, as you can see, is by far the most common answer. Consistent with the 2021 survey, there appears to be a very low base of knowledge on water sources.

Q10. Bottled Water Consumption

“How often do you drink bottled water?”

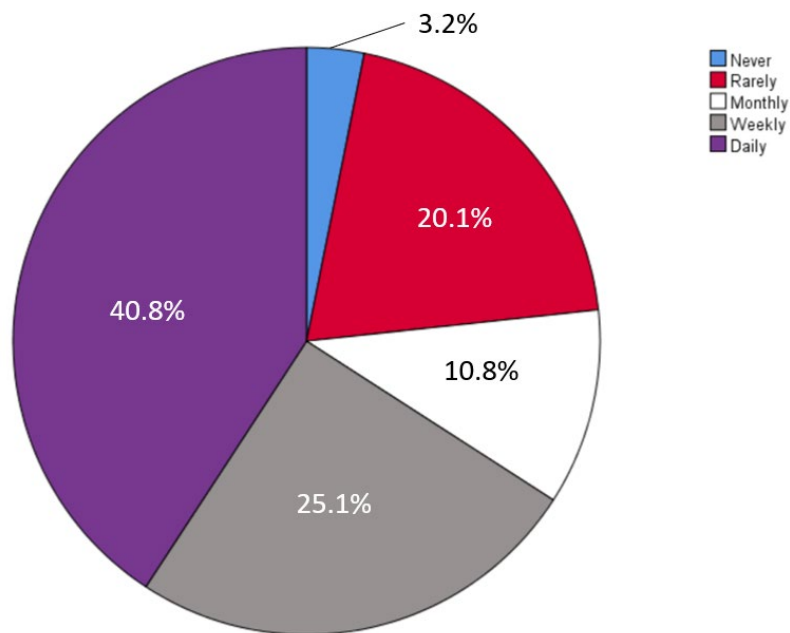
Scale: 0-Never, 1-Rarely, 2-Monthly, 3-Weekly, 4-Daily

Mean Rating 2022: 2.80

Mean Rating 2021: 2.86

Mean Rating 2020: 2.50

	2022	2021	2020
Never	26 (3.2%)	38 (4.10%)	49 (6.05%)
Rarely	166 (20.1%)	162 (17.30%)	221 (26.9%)
Monthly	89 (10.8%)	91 (9.70%)	86 (10.5%)
Weekly	207 (25.1%)	249 (26.60%)	204 (24.8%)
Daily	336 (40.8%)	397 (42.40%)	261 (31.8%)
Total	824 (100%)	937 (100%)	821 (100%)



Analysis

Reported frequency of bottled water consumption remained consistent with prior two years.

Bottled Water Consumption By jurisdiction

By jurisdiction, we see four counties showing a trend toward higher consumption of bottled water.

jurisdiction	2022	2021	2020
Alexandria	2.56	3.16	2.19
Arlington	2.23	2.58	1.90
Charles County	3.13	2.98	2.61
Fairfax	2.66	2.29	2.46
Frederick	2.52	3.15	2.43
Loudoun	2.87	2.92	2.57
Montgomery	2.56	2.67	2.41
Prince George County	3.30	3.41	2.74
Prince William County	2.59	2.83	2.69
Rockville	3.14	2.95	2.64
Vienna	2.92	2.78	2.77
Washington DC	3.08	2.66	2.59

Ad Hoc Analysis: Bottled Water Drinking By Age & Ethnicity

Consistent with last year's findings, there was a negative relationship between age ($R^2 = -.159$, $p = .000$) and ethnicity ($R^2 = -.212$, $p = .000$) on bottled water consumption.

Unlike last year, there was not an effect for income. Bottled water consumption by ethnic category is as follows:

		Never	Rarely	Monthly	Weekly	Daily	Total
African-American	Count	4	15	8	45	111	183
	% within Ethnicity	2.2%	8.2%	4.4%	24.6%	60.7%	100.0%
Asian	Count	5	12	11	13	22	63
	% within Ethnicity	7.9%	19.0%	17.5%	20.6%	34.9%	100.0%
Hispanic	Count	1	7	3	13	28	52
	% within Ethnicity	1.9%	13.5%	5.8%	25.0%	53.8%	100.0%
Native American	Count	0	0	1	1	1	3
	% within Ethnicity	0.0%	0.0%	33.3%	33.3%	33.3%	100.0%
Pacific Islander	Count	0	0	0	0	1	1
	% within Ethnicity	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
White/Caucasian	Count	16	125	62	131	163	497
	% within Ethnicity	3.2%	25.2%	12.5%	26.4%	32.8%	100.0%
Other	Count	0	7	4	4	10	25
	% within Ethnicity	0.0%	28.0%	16.0%	16.0%	40.0%	100.0%
Total	Count	26	166	89	207	336	824
	% within Ethnicity	3.2%	20.1%	10.8%	25.1%	40.8%	100.0%

2021 Results

	Never	Rarely	Monthly	Weekly	Daily
African-American	7 (4.32%)	14 (8.64%)	8 (4.94%)	32 (19.75%)	101 (62.35%)
Asian	1 (2.10%)	12 (25%)	4 (8.33%)	13 (27.08%)	18 (37.5%)
Hispanic	1 (.74%)	8 (5.88%)	21 (15.44%)	33 (24.26%)	73 (53.68%)
Native American	0	1 (12.5%)	1 (12.5%)	1 (12.5%)	5 (62.5%)
Pacific Islander	0	1 (16.67%)	1 (16.67%)	2 (33.33%)	2 (33.33%)
White	28 (5.04%)	118 (21.22%)	56 (10.07%)	165 (29.68%)	189 (33.99%)
Other	1 (4.76%)	8 (38.10%)	0	3 (14.29%)	9 (42.86%)
TOTAL	38	162	91	249	397

Q11 Perceived Safety of Disposing of Items Via Sink/Drain

How safe is it to dispose of the following down a drain or toilet?

Scale: 0=Not at all safe, 1=Somewhat unsafe, 2=Somewhat safe, 3=Completely safe

Overall Analysis

Consistent with prior two years though three items (indicated in red) potentially could be trending in a negative direction toward more permissive attitudes.

Avg. Rating of Perceived “Flushability”
(in descending order)

	2022	2021	2020
Toilet Paper	2.31	2.24	NA
Flushable Wipes	1.57	1.52	1.19
Facial Tissues	1.50	1.39	1.06
Dental Floss	0.87	0.72	0.66
Regular Wipes	0.85	1.11	0.62
Paper Towels	0.79	0.93	0.58
Medications	0.71	0.84	0.42
Cooking Grease	0.60	0.72	0.51

Ad Hoc Analysis: Demographics Affecting Perceived Disposal Safety

A number of factors are related to perception of how safe it is to dispose of certain items. The correlation table highlights significant effects in bold. Large, significant positive effects are highlighted in blue, and large, negative ones are in red. Of note:

- Bottled water consumption (an environmentally unfriendly behavior) is positively related to other environmentally unfriendly attitudes and behaviors.
- Age is positively related to a better understanding of which behaviors are safe/environmentally friendly. Older people rate the safety of materials more accurately than others.
- Gender was a factor where men rated facial tissues, cooking grease, and paper towels as more safe for disposal than women. This may be related to who is doing the cooking in the household. While more men cook than in prior generations, research shows (Tallie, 2018) that more women than men cook.
- Home ownership was only a significant factor for flushable wipes—where the people who were financially liable for plumbing repairs had a better understanding of that product’s effect on pipes.
- As ethnicity variables are categorical (vs. being on a continuum), that analysis follows this discussion.

		Meds	Regular Wipes	Flushable Wipes	Facial Tissues	Cooking Grease	Paper Towels	Dental Floss	Toilet Paper
Bottled Water Consumption	Correlation	.186**	.226**	.153**	.223**	.210**	.223**	.265**	-.082*
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
Ethnicity	Correlation	-.150**	-.074*	-.129**	-.166**	-0.008	-.099**	-.114**	-
	Sig. (2-tailed)	0.000	0.035	0.000	0.000	0.816	0.005	0.001	0.066
Age	Correlation	-.198**	-.242**	-.154**	-0.019	-.241**	-.265**	-.215**	.193**
	Sig. (2-tailed)	0.000	0.000	0.000	0.587	0.000	0.000	0.000	0.000
Income	Correlation	-.074*	-0.031	-0.021	-0.030	0.008	-0.043	-0.043	0.013
	Sig. (2-tailed)	0.034	0.375	0.538	0.390	0.827	0.213	0.214	0.715
Gender	Correlation	0.063	.084*	0.068	.108**	.142**	.132**	.092**	-.080*
	Sig. (2-tailed)	0.070	0.015	0.050	0.002	0.000	0.000	0.008	0.022
Home Owners	Correlation	-.069*	-0.061	-.107**	-0.043	-0.045	-0.056	-0.047	0.014
	Sig. (2-tailed)	0.047	0.081	0.002	0.221	0.193	0.110	0.177	0.698

2021 Results

		Meds	Regular Wipes	Flushable Wipes	Facial Tissues	Cooking Grease	Paper Towels	Dental Floss	Toilet Paper
Age	Corr.	-.255**	-.358**	-.150**	0.006	-.283**	-.323**	-.217**	.181**
	Sig.	0.000	0.000	0.000	0.845	0.000	0.000	0.000	0.000
Home Ownership	Corr.	-0.012	.114**	-.089**	0.031	0.018	0.005	-0.048	-.099**
	Sig.	0.724	0.000	0.007	0.351	0.583	0.883	0.142	0.003
Bill Payer	Corr.	0.050	.166**	-0.059	-0.014	0.033	.067*	0.049	-.079*
	Sig.	0.124	0.000	0.073	0.673	0.315	0.042	0.134	0.016
Tap Drink Freq.	Corr.	0.030	.083*	-0.012	0.044	0.017	.090**	-0.042	-0.007
	Sig.	0.363	0.011	0.704	0.181	0.606	0.006	0.199	0.839
Bottled Water Freq	Corr.	.187**	.197**	0.044	0.000	.128**	.085**	.149**	-.121**
	Sig.	0.000	0.000	0.177	1.000	0.000	0.009	0.000	0.000
Ethnicity	Corr.	-.107**	-0.052	-0.053	0.007	-0.029	-0.041	-.069*	-0.027
	Sig.	0.001	0.110	0.102	0.831	0.379	0.214	0.035	0.403
Income	Corr.	-.103**	-0.055	-0.058	-0.007	-0.062	-0.067*	-0.065*	0.045
	Sig.	0.002	0.092	0.074	0.830	0.057	0.040	0.048	0.165
Gender	Corr.	0.059	.111**	.085**	0.063	.089**	.089**	.089**	-0.062
	Sig.	0.070	0.001	0.009	0.055	0.006	0.006	0.006	0.056

Ad Hoc Analysis: Perceived Disposal Safety By Ethnicity

Excluding Native Americans and Pacific Islanders due to low representation in this survey (3 and 1 participants, respectively), we see African-Americans frequently logging the highest average safety ratings across all items, including toilet paper. When compared to responses from those identifying as White/Caucasian, African-Americans have significantly higher ratings on all items except cooking grease. This suggests an overly optimistic view of plumbing resiliency among these populations where additional messaging efforts could be beneficial.

	Meds	Reg Wipes	Flushable Wipes	Facial Tissues	Cooking Grease	Paper Towels	Dental Floss	Toilet Paper
African-American	0.96	1.00	1.83	1.91	0.63	0.93	1.15	2.44
Asian	0.70	0.84	1.65	1.30	0.46	0.86	0.70	2.27
Hispanic	0.96	0.90	1.50	1.48	0.77	0.94	0.90	2.19
Native American	0.00	0.67	2.00	1.67	0.33	0.67	0.33	2.67
Pacific Islander	0.00	1.00	2.00	2.00	0.00	2.00	2.00	2.00
White/Caucasian	0.61	0.80	1.46	1.38	0.60	0.74	0.78	2.29
Other	0.52	0.76	1.68	1.44	0.56	0.32	1.00	1.96

Q12 How often does your household dispose of the following via drain or toilet?

Scale: 0=Never, 1=Rarely, 2=Sometimes, 3=Most of the Time, 4=Always

Overall Analysis

Items finished in the same order as 2021 for this question. Except for almost identical scores for toilet paper, the rest of the non-safe materials were all lower than the previous year.

Comparing three years of scores, it is suggestive of improvement on the four items in bold and red (toilet paper was introduced to the survey in 2021), with a consistent trend of improvement.

Two of these items (dental floss & facial tissues) stand in contrast to the prior question on safety of disposal, where they appeared to be trending negatively. This seeming contradiction could be:

- “Noise” or randomness in the results
- Revealing that attitudes toward safety of disposal don’t necessarily translate to how they’re disposed
- Something else

In comparing 2022 and 2021 response frequencies, ALL harmful materials increased in ratings of “never” being disposed via drain or toilet (range of change over items 5-13%) and all but one (facial tissues) decreased in ratings of “always” (range 4-9%). There is also general improvement over 2020, though not a broad.

Frequency of Disposal via Sink/Drain
(in descending order)

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Toilet Paper	3.21	3.20	NA
Flushable Wipes	1.39	1.63	1.14
Facial Tissues	1.22	1.25	1.61
Regular Wipes	0.72	1.15	0.67
Paper Towels	0.62	0.92	1.14
Cooking Grease	0.62	0.90	1.11
Dental Floss	0.53	0.84	1.06
Meds	0.44	0.81	0.43

Responses Frequencies—Disposal Behaviors

	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Most of the Time</u>	<u>Always</u>	<u>TOTAL</u>
Medications	621 (75.4%)	100 (12.1%)	63 (7.6%)	24 (2.9%)	16 (1.9%)	824 (100%)
Regular Wipes	516 (62.6%)	125 (15.2%)	101 (12.3%)	58 (7.0%)	24 (2.9%)	824 (100%)
Flushable Wipes	316 (38.3%)	162 (19.7%)	148 (18.0%)	106 (12.9%)	92 (11.2%)	824 (100%)
Facial Tissues	319 (38.7%)	194 (23.5%)	180 (21.8%)	70 (8.5%)	61 (7.4%)	824 (100%)
Grease	534 (64.8%)	145 (17.6%)	82 (10.0%)	53 (6.4%)	10 (1.2%)	824 (100%)
Paper Towels	547 (66.4%)	133 (16.1%)	80 (9.7%)	37 (4.5%)	27 (3.3%)	824 (100%)
Dental Floss	590 (71.6%)	105 (12.7%)	75 (9.1%)	31 (3.8%)	23 (2.8%)	824 (100%)
Toilet Paper	51 (6.2%)	68 (8.3%)	65 (7.9%)	110 (13.3%)	530 (64.3%)	824 (100%)

Looking at the frequencies of responses by percentage in 2020 and 2021, you can see a broad shift in responses away from “Never”. Those never responses were pretty evenly distributed across the more permissive ratings.

	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Most of the Time</u>	<u>Always</u>
Medications	585 (62.4%)	130 (13.9%)	96 (10.2%)	68 (7.3%)	58 (6.2%)
Regular Wipes	506 (54%)	108 (11.5%)	112 (12.0%)	98 (10.5%)	113 (12.1%)
Flushable Wipes	310 (33.1%)	151 (16.1%)	200 (21.3%)	132 (14.1%)	144 (15.4%)
Facial Tissues	375 (40.0%)	194 (20.7%)	195 (20.8%)	108 (11.5%)	65 (6.9%)
Grease	538 (57.4%)	146 (15.6%)	118 (12.6%)	79 (8.4%)	56 (6.0%)
Paper Towels	546 (58.3%)	140 (14.9%)	99 (14.9%)	80 (8.5%)	72 (7.7%)
Dental Floss	578 (61.7%)	134 (14.3%)	99 (10.6%)	52 (5.5%)	74 (7.9%)
Toilet Paper	50 (5.3%)	82 (8.8%)	94 (10.0%)	120 (12.8%)	591 (63.1%)

Frequencies, 2020

	Never	Rarely	Sometimes	Most of The Time	Always	Total
Medications	630 (76.7%)	100 (12.2%)	43 (5.2%)	27 (3.3%)	21 (2.6%)	821
Regular Wipes	576 (70.2%)	80 (9.7%)	64 (7.8%)	60 (7.3%)	41 (5.0%)	821
Flushable Wipes	405 (49.3%)	127 (15.5%)	135 (16.4%)	79 (9.6%)	75 (9.1%)	821
Facial Tissues	450 (54.8%)	148 (18.0%)	130 (15.8%)	60 (7.3%)	33 (4.0%)	821
Cooking Grease	476 (58.0%)	155 (18.9%)	108 (13.2%)	54 (6.6%)	28 (3.4%)	821
Paper Towels	607 (73.9%)	69 (8.4%)	59 (7.2%)	46 (5.6%)	40 (4.9%)	821
Dental Floss	628 (76.5%)	70 (8.5%)	52 (6.3%)	39 (4.8%)	32 (3.9%)	821

Ad-Hoc Analysis: Factors Driving Disposal Behaviors

Again, we see:

- Environmentally undesirable behaviors and attitudes as being correlated.
- Older respondents and women demonstrating a better understanding of environmentally friendly behaviors

		Regular Wipes	Flushable Wipes	Facial Tissues	Cooking Grease	Paper Towel	Dental Floss	Toilet Paper
Bottle Water Consumption	Correlation Coefficient	.178**	.089**	.146**	.127**	.186**	.168**	-.099**
	Sig. (2-tailed)	0.000	0.002	0.000	0.000	0.000	0.000	0.001
Ethnicity	Correlation Coefficient	-.066*	-.097**	-.114**	0.007	-.070*	-0.032	-.077*
	Sig. (2-tailed)	0.034	0.001	0.000	0.816	0.025	0.305	0.013
Age	Correlation Coefficient	-.217**	-.110**	-0.030	-.176**	-.236**	-.181**	.208**
	Sig. (2-tailed)	0.000	0.000	0.261	0.000	0.000	0.000	0.000
Income	Correlation Coefficient	-0.003	0.004	-0.018	0.052	0.023	0.019	-.056*
	Sig. (2-tailed)	0.912	0.877	0.522	0.068	0.427	0.516	0.046
Gender	Correlation Coefficient	.197**	.090**	.073*	.083*	.168**	.148**	-.151**
	Sig. (2-tailed)	0.000	0.004	0.020	0.011	0.000	0.000	0.000
Home Ownership	Correlation Coefficient	-.072*	-.062*	-0.020	0.024	-0.008	-0.013	-0.051
	Sig. (2-tailed)	0.028	0.048	0.529	0.473	0.812	0.701	0.123

2021 Correlation Table

		Meds	Regular Wipes	Flushable Wipes	Facial Tissues	Grease	Paper Towels	Dental Floss	Toilet Paper
AGE	Corr.	-.264**	-.375**	-.248**	-.172**	-.287**	-.353**	-.264**	.269**
	Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Home Ownership	Corr.	.084*	.155**	-0.029	.114**	.073*	.075*	.097**	-.109**
	Sig.	0.010	0.000	0.374	0.000	0.025	0.022	0.003	0.001
Bill Payer	Corr.	.121**	.196**	.101**	.137**	.098**	.146**	.120**	-.120**
	Sig.	0.000	0.000	0.002	0.000	0.003	0.000	0.000	0.000
Drink Bottled Water	Corr.	.187**	.206**	.161**	.124**	.130**	.153**	.109**	-.169**
	Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
Ethnicity	Corr.	0.010	-0.036	-.076*	0.050	0.012	-0.026	-0.018	0.003
	Sig.	0.765	0.271	0.020	0.125	0.719	0.418	0.573	0.933
Income	Corr.	-.098**	-.070*	-.073*	-0.001	-.085**	-.094**	-0.045	0.043
	Sig.	0.003	0.032	0.025	0.983	0.009	0.004	0.167	0.193
Gender	Corr.	.109**	.149**	.083*	0.061	.097**	.109**	.116**	-.111**
	Sig.	0.001	0.000	0.011	0.062	0.003	0.001	0.000	0.001

Gender Differences in Disposal Behaviors

Across all items, Women exhibited significantly more desirable disposal behaviors than men across all materials. And, when compared to 2021 results, there was a trend of more responsible disposal behaviors in both genders across all unsafe materials.

		2022	2021
Meds	Female	.32	0.59
	Male	.61	1.04
Regular Wipes	Female	.55	0.81
	Male	.97	1.53
Flushable Wipes	Female	1.27	1.41
	Male	1.57	1.86
Facial Tissues	Female	1.13	1.04
	Male	1.38	1.49
Grease	Female	.54	0.73
	Male	.73	1.07
Paper Towels	Female	.49	0.68
	Male	.83	1.20
Dental Floss	Female	.44	0.61
	Male	.68	1.10
Toilet Paper	Female	3.37	3.38
	Male	2.99	3.01

Statistical Significance of Gender Differences (Significance, $p < .05$)

	t	df	p
Meds	-4.447	808	0.000
Regular Wipes	-5.363	808	0.002
Flushable Wipes	-3.010	808	0.003
Facial Tissues	-2.739	808	0.006
Grease	-2.685	808	0.007
Paper Towels	-4.596	808	0.000
Dental Floss	-3.330	808	0.001
Toilet Paper	4.190	808	0.000

Analysis by Jurisdiction

The year-over-year improvement seen in gender differences can also be seen across districts.

	Meds	Reg. Wipes	Flushable Wipes	Facial Tissues	Cooking Grease	Paper Towels	Dental Floss	Toilet Paper
Alexandria	0.56	0.94	1.35	1.13	0.61	0.71	0.63	3.00
Arlington	0.36	0.53	1.31	1.26	0.41	0.53	0.46	3.36
Charles County	0.76	1.07	1.83	1.19	0.87	0.80	0.73	2.67
Fairfax	0.40	0.53	1.30	0.99	0.49	0.34	0.51	3.73
Frederick	0.17	0.39	1.28	0.84	0.41	0.29	0.14	3.38
Loudoun	0.29	0.49	1.38	1.15	0.49	0.32	0.25	3.66
Montgomery	0.19	0.37	0.88	0.84	0.40	0.25	0.26	3.63
Prince George County	0.36	0.77	1.41	1.65	0.57	0.81	0.52	3.52
Prince William County	0.17	0.44	1.32	1.05	0.45	0.44	0.30	3.48
Rockville	0.69	1.20	1.54	1.41	1.03	1.04	0.89	2.18
Vienna	0.60	0.91	1.34	1.20	0.68	0.80	0.78	2.66
WashingtonDC	0.68	1.04	1.67	1.89	0.95	1.07	0.88	3.28

Mean Ratings By Jurisdiction, 2021

	Meds	Regular Wipes	Flushable Wipes	Facial Tissues	Grease	Paper Towels	Dental Floss	Toilet Paper
Alexandria	1.38	1.82	1.96	1.53	1.33	1.36	1.13	2.50
Arlington	0.91	1.50	1.71	1.37	1.04	1.14	0.79	2.87
Charles Cty	1.34	2.35	1.95	1.76	1.07	1.66	1.18	2.92
Fairfax	0.28	0.51	1.35	1.05	0.35	0.39	0.37	3.46
Frederick	1.03	1.74	1.86	1.36	0.93	1.17	0.94	3.18
Loudoun	0.24	0.30	1.34	0.68	0.45	0.33	0.53	3.56
Montgomery	0.30	0.46	1.04	1.00	0.41	0.29	0.29	3.70
PG Cty	0.50	0.74	1.50	1.12	0.58	0.57	0.59	3.59
PW Cty	0.47	0.59	1.44	1.00	0.59	0.51	0.40	3.72
Rockville	1.75	1.78	1.94	1.49	2.00	1.82	1.69	2.26
Vienna	1.42	1.79	2.26	1.79	1.80	1.62	1.75	2.59
Wash DC	0.40	0.55	1.33	0.96	0.57	0.54	0.61	3.72

Q13 How does your household dispose of unwanted medications (check all that apply)?

This question was served to the 621 respondents who said they “Never” dispose of medications via sink or drain in Q12. This year saw 2021’s “Put in trash or down drain/toilet” option broken in to one for just trash and another for just drain/toilet.

Year-over-year, the percentages were very similar except they year’s sample claimed “We always finish our prescriptions” in much larger numbers (22.71% in 2022 vs. 8.38% in 2021) and the “Other” option in much smaller numbers (1.93% in 2022 vs. 26.32% in 2021).

	2022 (N=621)	2021 (N=585)
Semi-annual drug take back day	114 (18.36%)	90 (15.38%)
Use permanent dropbox at health care facility such as pharmacy, clinic, or hospital	161 (25.93%)	114 (19.49%)
Use permanent dropbox at a police station, fire station, or other government facility	37 (5.96%)	32 (5.47%)
Throw them in the trash	254 (40.90%)	241 (41.20%)
Put down drain or toilet	9 (1.45%)	NA**
NA: I/We don't take any medications	40 (6.44%)	14 (2.39%)
NA: I/We always finish our prescriptions	141 (22.71%)	49 (8.38%)
Other:	12 (1.93%)	154 (26.32%)

***In 2021, the answer option was “Put in trash or down drain/toilet.”
In 2022, we broke that response into two separate responses.*

Text entry responses for those who said “Other”

Of the 12 who responded “Other” in Q13, eight offered explanations of that answer, which included:

- Bury in a forest
- Coffee grounds and trash...ie landfill
- Dissolve in coffee grounds
- I have a bag of them and no way to properly dispose
- Proper destruction and was removal
- Take them to my doctor for disposal
- We never throw anything away

Q14 Which of the following promotional images have you seen before? (check all that apply)

Recall Levels for Promotional Images

	2022	2021	2020
Grease	161 (19.5%)	268 (28.60%)	124 (15.10%)
Medicine	101 (12.3%)	209 (22.31%)	80 (9.74%)
Wipes	102 (12.4%)	214 (22.84%)	82 (9.99%)
Protect Your Pipes	196 (23.8%)	310 (33.08%)	131 (15.96%)
Frozen Pipes**	117 (14.2%)	NA	NA

***This was the first year we tested for recall on the frozen pipes character image.*

This year, 305 people (37.01%) reported having seen at least one of these promotions before. Last year, the increase significant percentage increase (almost double!) of image recall from 2020 to 2021 was met with skepticism. This year, we see that skepticism was at least somewhat appropriate. Recall level for images came in between the 2020 and 2021 levels.

Over the three years we do see some consistencies:

- “Protect Your Pipes” rates as the most recalled and “Grease” as the second.
- There is separation between recall levels of those images and the remaining ones.

The higher recall for “Grease” and “Protect Your Pipes” products has three likely explanations:

- The images themselves are more memorable
- Those images are used more often in COG promotions
- Even if never exposed to the image before, these icons could have a more familiar quality

Q15 If you recalled seeing a promo image, where did you see it? (check all that apply)

This question was dynamically served to the 305 people who said they recalled having seen at least one of MWCOCG’s promotional images.

Recall Levels for Promotional Images

	2022	2021	2020
Signs/Ads	166 (54.43%)	185 (41.14%)	116 (58.00%)
Utility Communications	113 (37.05%)	181 (41.14%)	65 (32.50%)
Social Media	117 (38.36%)	268 (60.91%)	117 (58.50%)
I Don’t Recall	58 (19.01%)	50 (11.36%)	36 (18.00%)
Other**	2 (0.66%)	NA	NA

***This was the first year we gave an “other” option for this question.
 Percentages given are of those who had been served this question, not the entire sample.*

Here are the text entries for the two “Other” responses to this question:

- TV
- Police department & pharmacy

Q16. How safe are the following materials for local waterways when they enter stormdrains or through runoff?

Scale: 0-Not Safe, 1-Somewhat Unsafe, 2-Likely Safe, 3-Completely Safe

	2022	2021	2020
Lawn Fertilizer	.57	0.76	0.43
Pet Waste	.74	0.93	0.53
Car Fluids	.37	0.53	0.22
Salt	1.05	1.18	0.97
Herbicide	.47	0.65	0.32

Comment: On each item, 2022 avg ratings fall in between 2020 and 2021. When looking at the frequency of responses, that mostly held with a few exceptions where this year featured either the most desirable ratings (in blue font) or least (in red) of the three years.

Frequency of Responses, 2022

	Not Safe	Somewhat Unsafe	Likely Safe	Completely Safe
Lawn Fertilizer	512 (62.1%)	185 (22.5%)	100 (12.1%)	27 (3.3%)
Pet Waste	433 (52.5%)	215 (26.1%)	131 (15.9%)	45 (15.9%)
Car Fluids	637 (77.3%)	100 (12.1%)	59 (7.2%)	28 (3.4%)
Salt	314 (38.1%)	244 (29.6%)	176 (21.4%)	90 (10.9%)
Herbicide	578 (70.1%)	134 (16.3%)	81 (9.8%)	31 (3.8%)

Frequency of Responses, 2021

	Not Safe	Somewhat Unsafe	Likely Safe	Completely Safe
Lawn Fertilizer	500 (53.4%)	227 (24.2%)	143 (15.3%)	67 (7.2%)
Pet Waste	409 (43.6%)	259 (27.6%)	190 (20.3%)	79 (8.4%)
Car Fluids	645 (68.8%)	146 (15.6%)	85 (9.1%)	61 (6.5%)
Salt	286 (30.5%)	286 (30.5%)	274 (29.2%)	91 (9.7%)
Herbicide	565 (60.3%)	196 (20.9%)	116 (12.4%)	60 (6.4%)

Frequency of Responses, 2020

	Not Safe	Somewhat Unsafe	Likely Safe	Completely Safe
Lawn Fertilizer	562 (68.45%)	179 (21.80%)	64 (7.80%)	16 (1.95%)
Pet Waste	513 (62.48%)	199 (24.24%)	90 (10.96%)	19 (2.31%)
Car Fluids	698 (85.02%)	78 (9.50%)	34 (4.14%)	11 (1.34%)
Salt	302 (36.78%)	298 (36.30%)	168 (20.46%)	53 (6.46%)
Herbicide	642 (78.20%)	120 (14.62%)	37 (4.51%)	22 (2.68%)

Ad Hoc Analysis: Drivers of Perception of Runoff

Results were similar to 2020 and 2021.

- Older respondents were more likely to understand the risks of these materials
- Women understood the risks better than men
- Those who paid bills were less likely to understand the risks
- Environmentally harmful attitudes and behaviors appear to be related as drinking bottled water was a predictor of a lack of understanding of the risks related to these materials.
- Ethnicity was related to attitudes toward fertilizer. Similar to 2021:
 - Hispanics showed the least understanding of the dangers of runoff.
 - “Other” (typically a designation for multi-racial identification) showed the greatest understanding, followed by Asians

2022

		Fertilizer	Pet Waste	Car Fluids	Salt	Herbicide
Age	Corr.	-.234**	-.231**	-.263**	-.301**	-.240**
	Sig.	0.000	0.000	0.000	0.000	0.000
Gender	Corr.	.071*	.098**	.091**	.115**	.105**
	Sig.	0.041	0.005	0.009	0.001	0.003
Income	Corr.	0.006	0.023	0.000	0.051	0.001
	Sig.	0.860	0.509	0.998	0.143	0.983
Ethnicity	Corr.	-.124**	-0.032	-0.039	-0.020	-.080*
	Sig.	0.000	0.364	0.258	0.571	0.021
Bill Payer	Corr.	.119**	.096**	.134**	.160**	.137**
	Sig.	0.001	0.006	0.000	0.000	0.000
Home Ownership	Corr.	-0.003	0.020	-0.024	0.035	0.013
	Sig.	0.920	0.575	0.484	0.317	0.719
Drink Bottled Water	Corr.	.155**	.116**	.141**	.205**	.147**
	Sig.	0.000	0.001	0.000	0.000	0.000

2021

		Fertilizer	Pet Waste	Car Fluids	Salt	Herbicide
Age	Corr.	-.266**	-.260**	-.294**	-.308**	-.287**
	Sig.	0.000	0.000	0.000	0.000	0.000
Bill Payer	Corr.	.080*	0.040	.088**	.075*	.066*
	Sig.	0.014	0.224	0.007	0.022	0.043
Drink Bottled Water	Corr.	.101**	0.042	.123**	.097**	.073*
	Sig.	0.002	0.199	0.000	0.003	0.026
Ethnicity	Corr.	-.112**	-0.007	-.113**	-.147**	-.082*
	Sig.	0.001	0.836	0.001	0.000	0.012
Gender	Corr.	.078*	.073*	.076*	.105**	.092**
	Sig.	0.017	0.026	0.020	0.001	0.005

Perception of Runoff By Ethnicity

2022

Hispanics show the highest permissiveness as it pertains to runoff from these materials.

		Fertilizer	Pet Waste	Car Fluids	Salt	Herbicide
African-American	Mean	0.70	0.77	0.42	1.10	0.55
	N	183	183	183	183	183
Asian	Mean	0.56	0.67	0.17	0.89	0.35
	N	63	63	63	63	63
Hispanic	Mean	0.92	1.04	0.71	1.19	0.98
	N	52	52	52	52	52
Native American	Mean	0.00	0.00	0.00	0.33	0.00
	N	3	3	3	3	3
Pacific Islander	Mean	0.00	0.00	0.00	1.00	0.00
	N	1	1	1	1	1
White/Caucasian	Mean	0.50	0.73	0.35	1.06	0.42
	N	497	497	497	497	497
Other	Mean	0.16	0.52	0.08	0.60	0.20
	N	25	25	25	25	25

2021

		Fertilizer	Pet Waste	Car Fluids	Salt	Herbicide
African-American	Mean	0.81	0.81	0.57	1.25	0.65
	N	162	162	162	162	162
Asian	Mean	0.75	0.85	0.40	1.44	0.60
	N	48	48	48	48	48
Hispanic	Mean	1.15	1.24	0.96	1.58	1.00
	N	136	136	136	136	136
Native American	Mean	1.63	0.75	1.50	1.75	1.13
	N	8	8	8	8	8
Pacific Islander	Mean	0.00	1.00	0.33	1.33	0.50
	N	6	6	6	6	6
White	Mean	0.65	0.92	0.42	1.04	0.56
	N	556	556	556	556	556
Other	Mean	0.76	0.67	0.38	1.10	0.62
	N	21	21	21	21	21

Analysis on Ethnicity & Runoff:

Educational materials should be targeted toward those exhibiting the lowest understanding of the effects of runoff, including:

- Younger
- Male
- Hispanic

Q17 During snowy and icy conditions, how often (if at all) does someone apply a deicer such as salt at your residence?

Scale: 0-Never, 1-Rarely, 2-Sometimes, 3-Most of the time, 4-Always

Overall Analysis

There was a slight wording change this year (addition of “if at all” and “a deicer such as”). Despite that change, results are very consistent with 2021’s survey. The downtick from 2021 to 2022 for “Always”, likely resulting from the lower number of homeowners in this year’s survey.

2022 Mean Rating: 2.31

2021 Mean Rating: 2.42

2020 Mean Rating: 2.23

	2022	2021	2020
Never	77 (9.3%)	86 (9.2%)	108 (13.2%)
Rarely	130 (15.8%)	109 (11.6%)	131 (16.0%)
Sometimes	215 (26.1%)	251 (26.8%)	206 (25.1%)
Most of the time	265 (32.2%)	308 (32.9%)	215 (26.2%)
Always	137 (16.6%)	183 (19.5%)	161 (19.6%)
Total	824 (100%)	937 (100%)	821 (100%)

Ad-Hoc Analysis: Drivers of Salting

Significant relationships are bolded below.

Similar to 2021, age, home ownership and dwelling type were predictive of salting frequency. Unlike last year, ethnicity and income were not related.

- Older respondents (again) exhibited more environmentally responsible behavior and salted/de-iced less.
- Home owners salted less than renters
- Those in single family homes salted/de-iced the least while those in apartments/condos did it the most—see below. (The issue here is likely that those in apartments and condos don't have to do the deicing work themselves.)

Additionally, I looked at bottled water consumption to see if it was related to this other environmentally undesirable behavior. It was.

		Age	Income	Ethnicity	Bill Payer	Home Ownership	Dwelling Type	Drink Bottled Water
Salt Freq.	Corr.	-.197**	-0.047	-0.010	-0.003	-.173**	.279	.200**
	Sig.	0.000	0.173	0.770	0.929	0.000	0.000	0.000

	2022
Apartment/Condo	2.74
Other	2.40
Townhome	2.25
Single family home	1.98
Total	2.31

2021

		Age	Dwelling Type	Home Owner	Drink Bottled	Ethnicity	Income
Salt Freq.	Corr.	-.279**	.166	-.139**	.199**	-.172**	-.116**
	Sig.	0.000	.000	0.000	0.000	0.000	0.000

Analysis By Jurisdiction

Mean Ratings By Jurisdiction

Following the pattern of other questions, 2022 ratings fell in between 2020 and 2021 numbers. Two districts (Arlington & Montgomery County) indicated a positive trend in salting across all three years, while one (Loudoun) had a negative trend.

	2022	2021	2020
Alexandria	2.52	2.62	2.45
Arlington	2.23	2.40	2.51
Charles County	2.24	2.59	2.07
Fairfax	2.00	2.08	1.83
Frederick	2.36	2.47	1.91
Loudoun	2.22	2.02	2.05
Montgomery	2.06	2.23	2.32
Prince George County	2.14	2.63	2.43
Prince William County	1.98	2.27	1.74
Rockville	2.83	2.65	2.51
Vienna	2.49	2.55	2.39
Washington DC	2.61	2.64	2.47

Q18 Rate water service on attributes.

Scale: 1—Poor, 2—Below Average, 3—Average, 4—Above Average, 5—Excellent, NA/I have no opinion

Overall Analysis

Avg. ratings for 2022 fell in between those of 2020 and 2021 across all attributes. Similar to 2021, the high number of “NA/I have no opinion” for ratings of customer service are likely indicative of people who have not interacted with CSRs.

Avg. Ratings of Service Attributes

	2022	2021	2020
Quality of Water	3.56	3.68	3.5
Taste of Water	3.42	3.58	3.33
Customer Service Responsiveness	3.58	3.68	3.41
Customer Service Friendliness	3.61	3.72	3.41
Value of Service	3.58	3.72	3.39

2022 Response Frequencies

	Quality of Water	Taste of Water	Customer Svc Responsiveness	Customer Svc Friendliness	Value of Service
Poor	23 (2.8%)	36 (4.4%)	13 (1.6%)	10 (1.2%)	16 (1.9%)
Below Average	42 (5.1%)	66 (8.0%)	34 (4.1%)	37 (4.5%)	32 (3.9%)
Average	339 (41.1%)	358 (43.3%)	283 (34.3%)	277 (33.6%)	353 (42.8%)
Above Average	266 (32.3%)	194 (23.5%)	184 (22.3%)	186 (22.6%)	205 (24.9%)
Excellent	137 (16.6%)	136 (16.5%)	123 (14.9%)	131 (15.9%)	146 (17.7%)
NA/I Have No Opinion	17 (2.1%)	34 (4.1%)	187 (22.7%)	183 (22.2%)	72 (8.7%)
TOTAL	824 (100%)	824 (100%)	824 (100%)	824 (100%)	824 (100%)

Frequency of Responses, 2021

	Quality of Water	Taste of Water	Customer Svc Responsiveness	Customer Svc Friendliness	Value of Service
Poor	17 (1.8%)	40 (4.3%)	18 (1.9%)	24 (2.6%)	13 (1.4%)
Below Average	72 (7.7%)	87 (9.3%)	44 (4.7%)	33 (3.5%)	52 (5.5%)
Average	318 (33.9%)	307 (32.8%)	292 (31.2%)	283 (30.2%)	313 (33.4%)
Above Average	225 (24.0%)	248 (26.5%)	219 (23.4%)	219 (23.4%)	265 (28.3%)
Excellent	225 (24.0%)	224 (23.9%)	191 (20.4%)	206 (22.0%)	214 (22.8%)
NA/I Have No Opinion	35 (3.7%)	31 (3.3%)	173 (18.5%)	172 (18.4%)	80 (8.5%)
TOTAL	937 (100%)	937 (100%)	937 (100%)	937 (100%)	937 (100%)

Ad Hoc Analysis: Effect of Home Ownership On Service Ratings

Similar to 2021:

- Bill payers rated the service higher across the board
- Home owners rated the service higher than renters

Unlike 2021:

- Men rated quality slightly higher
- Those with a higher income rated quality and taste slightly higher
- There was a small effect for dwelling type with single family homes giving the highest ratings (see below)
- There was an effect for ethnicity with Hispanics offering the highest ratings across 4 of the 5 attributes (see below)

Correlations Between Ratings and Other Factors

		Quality	Taste	Responsive	Friendly	Value
Age	Corr	0.065	0.042	-0.007	-0.023	-0.014
	Sig	0.065	0.241	0.853	0.565	0.705
Gender	Corr	.087*	0.033	0.040	0.049	0.063
	Sig	0.014	0.360	0.312	0.215	0.082
Income	Corr	.092**	.091*	0.017	0.009	0.050
	Sig	0.009	0.010	0.666	0.830	0.168
Ethnicity	Corr	.122**	.115**	0.077	0.037	.094**
	Sig	0.000	0.001	0.052	0.348	0.010
Bill Payer	Corr	.087*	.100**	.128**	.110**	.128**
	Sig	0.013	0.005	0.001	0.005	0.000
Home Ownership	Corr	.150**	.136**	0.018	.079*	0.023
	Sig	0.000	0.000	0.656	0.046	0.538
Dwelling Type	Corr	-0.066	-.077*	-0.001	-0.016	0.060
	Sig	0.062	0.030	0.978	0.689	0.098

Avg. Ratings By Dwelling Type

		Quality	Taste	Responsiveness	Friendliness	Value
Single family home	Mean	3.63	3.51	3.61	3.63	3.54
	N	357	349	285	286	340
Townhome	Mean	3.54	3.32	3.45	3.58	3.51
	N	156	148	131	132	152
Apartment/Condo	Mean	3.49	3.35	3.62	3.61	3.66
	N	291	290	218	220	257

		Quality	Taste	Responsiveness	Friendly	Value
African-American	Mean	3.35	3.18	3.51	3.60	3.46
	N	178	170	143	144	170
Asian	Mean	3.41	3.29	3.34	3.37	3.28
	N	61	58	56	57	61
Hispanic	Mean	3.72	3.56	3.58	3.73	3.78
	N	50	48	43	44	45
Native American	Mean	2.67	3.00	3.50	3.00	2.67
	N	3	3	2	2	3
Pacific Islander	Mean	5.00	5.00	5.00	5.00	5.00
	N	1	1	1	1	1
White/Caucasian	Mean	3.65	3.50	3.65	3.64	3.65
	N	489	485	374	375	448
Other	Mean	3.44	3.28	3.44	3.56	3.42
	N	25	25	18	18	24
Total	Mean	3.56	3.42	3.58	3.61	3.58
	N	807	790	637	641	752

2021

		Quality	Taste	Responsiveness	Friendliness	Value
Own or Rent	Corr	.182**	.252**	.204**	.139**	.192**
	Sig	0.000	0.000	0.000	0.000	0.000
Bill Payer	Corr	.169**	.171**	.137**	.148**	.090**
	Sig	0.000	0.000	0.000	0.000	0.008

Scores By Jurisdiction

	Quality	Taste	Responsiveness	Friendly	Value
Alexandria	3.62	3.41	3.76	3.80	3.78
Arlington	3.54	3.40	3.49	3.59	3.61
Charles County	3.54	3.41	3.64	3.60	3.54
Fairfax	3.66	3.60	3.57	3.58	3.68
Frederick	3.56	3.29	3.38	3.42	3.32
Loudoun	3.59	3.36	3.60	3.65	3.56
Montgomery	3.67	3.63	3.63	3.56	3.66
Prince George County	3.44	3.35	3.61	3.49	3.59
Prince William County	3.54	3.40	3.52	3.52	3.48
Rockville	3.61	3.53	3.68	3.73	3.67
Vienna	3.67	3.37	3.57	3.61	3.44
Washington DC	3.34	3.25	3.53	3.76	3.60

2021

	Quality	Taste	Responsive	Friendly	Value
Alexandria	3.59	3.76	3.74	3.90	3.81
Arlington	3.84	3.81	3.84	3.89	4.03
Charles Cty	4.31	4.17	4.48	4.43	4.34
Fairfax	3.94	3.68	3.62	3.75	3.90
Frederick	3.73	3.66	4.04	4.11	3.83
Loudoun	3.64	3.48	3.56	3.59	3.64
Montgomery	3.56	3.43	3.56	3.54	3.51
PG Cty	3.49	3.30	3.50	3.58	3.55
PW Cty	3.53	3.48	3.63	3.50	3.59
Rockville	3.45	3.42	3.40	3.47	3.59
Vienna	3.60	3.54	3.29	3.37	3.24
Washington DC	3.41	3.22	3.44	3.43	3.50

2020 Mean Ratings By Service Area						
Jurisdiction		Quality	Taste	Responsive	Friendly	Value
Alexandria City	Mean	3.51	3.32	3.22	3.22	3.33
	N	69	69	69	69	69
	Std. Deviation	.918	1.007	.764	.725	.869
Arlington	Mean	3.61	3.40	3.30	3.34	3.46
	N	70	70	70	70	70
	Std. Deviation	.889	.954	.688	.657	.793
Charles County	Mean	3.11	3.00	3.32	3.42	3.16
	N	57	57	57	57	57
	Std. Deviation	.994	1.102	.890	.885	1.049
Fairfax County	Mean	3.82	3.72	3.59	3.58	3.66
	N	71	71	71	71	71
	Std. Deviation	.915	1.017	.855	.856	.909
Frederick County	Mean	3.23	2.99	3.32	3.35	3.19
	N	69	69	68	68	69
	Std. Deviation	.860	.962	.679	.686	.827
Loudoun County	Mean	3.61	3.40	3.60	3.63	3.55
	N	75	75	75	75	75
	Std. Deviation	.820	.900	.838	.835	.874
Montgomery County	Mean	3.62	3.43	3.48	3.35	3.46
	N	69	69	69	69	69
	Std. Deviation	.859	.931	.815	.764	.815
Prince George's County	Mean	3.26	3.19	3.25	3.28	3.19
	N	69	69	69	69	69
	Std. Deviation	.995	1.115	.898	.838	.896
Prince William County	Mean	3.50	3.34	3.44	3.48	3.40
	N	62	62	62	62	62
	Std. Deviation	.882	.974	.880	.825	1.016
Rockville	Mean	3.67	3.51	3.50	3.38	3.53
	N	78	78	78	78	78
	Std. Deviation	.963	1.041	.922	.943	.950
Vienna	Mean	3.66	3.43	3.52	3.60	3.43
	N	61	61	60	60	61
	Std. Deviation	.892	.939	.911	.995	.921
Washington DC	Mean	3.26	3.12	3.30	3.36	3.29
	N	69	69	69	69	69
	Std. Deviation	1.171	1.145	.912	.907	.956

Q19 Rate WASTEWATER (for those with separate utilities)

Scale: 1—Poor, 2—Below Average, 3—Average, 4—Above Average, 5—Excellent

Question served to the 91 respondents, who indicated they had separate utilities for drinking water and wastewater, 86 of which offered answers.

Overall Analysis

2022 Ratings are in the middle of 2020 and 2021.

Avg. Ratings of Service Attributes

	2022	2021	2020
Customer Service Responsiveness	3.65	3.73	3.31
Customer Service Friendliness	3.61	3.78	3.48
Value of Service	3.76	3.89	3.40

Response Frequencies 2022

	Responsiveness	Friendliness	Value
Poor	0 (0%)	1 (1.2%)	0 (0%)
Below Average	3 (3.7%)	7 (8.5%)	3 (3.5%)
Average	34 (42.0%)	33 (40.2%)	35 (40.7%)
Above Average	32 (39.5%)	23 (28.0%)	28 (32.6%)
Excellent	12 (14.8%)	18 (22.0%)	20 (23.3%)
TOTAL	81 (100%)	82 (100%)	86 (100%)

Response Frequencies, 2021

	Responsiveness	Friendliness	Value
Poor	3 (1.9%)	5 (3.1%)	2 (1.2%)
Below Average	13 (8.0%)	3 (1.9%)	7 (4.2%)
Average	51 (31.5%)	57 (35.2%)	51 (30.5%)
Above Average	53 (32.7%)	55 (5.9%)	54 (32.3%)
Excellent	42 (25.9%)	42 (25.9%)	53 (31.7%)

Response Frequencies, 2020

	Responsiveness	Friendliness	Value
Poor	1 (1%)	1 (1%)	1 (1%)
Below Average	12 (12%)	7 (7%)	12 (12%)
Average	58 (58%)	56 (56%)	51 (51%)
Above Average	13 (13%)	15 (15%)	18 (18%)
Excellent	16 (16%)	21 (21%)	18 (18%)
TOTAL	100	100	100

Q20 What is the condition of water and wastewater infrastructure in your community?

Scale: -2—Needs Major Improvements, -1—Needs Minor Improvements, 0—Adequate, 1—Good, 2—Excellent

Overall Analysis

There is a consistent trend of viewing water and wastewater infrastructure as being in increasing need of repair. There was a significant increase in percentage of those answering “Needs Minor Improvements” and a significant drop in those saying “Excellent.”

Mean Score, 2022: .45

Mean Score, 2021: .56

Mean Score, 2020: .66

	2022	2021	2020
Needs Major Improvements	48 (5.8%)	92 (9.82%)	32 (3.90%)
Needs Minor Improvement	97 (11.8%)	40 (4.27%)	55 (6.70%)
Adequate	218 (26.5%)	238 (25.40%)	213 (25.94%)
Good	360 (43.7%)	384 (40.98%)	385 (46.89%)
Excellent	101 (12.3%)	183 (19.53%)	136 (16.57%)
TOTAL	824 (100%)	937 (100%)	821 (100%)

Ad-Hoc Analysis: Drivers of Perception of Infrastructure

To look at possible drivers of peoples’ perception of infrastructure, a correlation table between infrastructure perception and potential drivers was created. Here are the items significantly related to perception of infrastructure quality, which largely replicated the relationships found in 2020 (copied below in grey). The one exception was age, which was not a factor in last year’s survey but is in this year’s.

Interestingly, concerns about infrastructure were highly correlated to positive regard for utilities and tap water consumption. Those who use the service the most, rate it the highest, and have the most concern for infrastructure.

		Quality	Taste	Response	Friendly	Value	Tap Drink Frequency	Age	Home Owner	Bill Payer	Gender	Income
Infrastructure	Corr.	.410**	.442**	.378**	.406**	.349**	.119**	-.091**	.162**	.083*	0.067	.196**
	Sig.	0.000	0.000	0.000	0.000	0.000	0.001	0.009	0.000	0.017	0.055	0.000

2021

	Quality	Taste	Responsive	Friendly	Value	Tap Drink Freq.	Age	Own Home	Pay Bill
Corr.	.497**	.442**	.338**	.326**	.399**	.233	-.189**	.160**	.134**
Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

2020 Results

		Q16Quality	Q16 Taste	Q16 Responsive	Q16 Friendly	Q16 Value	Q4Tap Drink Freq	Q7 Drink Bottled
Q18 Infrastructure	Pearson Corr.	.399**	.326**	.399**	.410**	.417**	.119**	.133**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.001	0.000

Analysis By Jurisdiction

Those districts with scores highlighted in red show a consistent, downward pattern across all three years.

	2022	2021	2020
Alexandria	-.06	0.53	0.22
Arlington	.49	0.62	0.79
Charles County	.50	1.27	0.54
Fairfax	.60	0.67	1.00
Frederick	.29	0.85	0.62
Loudoun	.97	0.73	1.00
Montgomery	.10	0.33	0.62
Prince George County	.16	0.28	0.42
Prince William County	.53	0.40	0.79
Rockville	.85	0.48	0.69
Vienna	.60	0.67	0.80
Washington DC	.32	-0.08	0.33

Q21 How effective are the following for getting your questions answered by your water utility

Scale: 0-Not at all Effective, 1-Somewhat Effective, 2-Mostly Effective, 3-Completely Effective, Not Applicable/I Have No Opinion

Overall Analysis

Mean Ratings, 2021

	2022	2021	2020
Phone	1.95	2.00	1.71
Web	1.71	1.81	1.49
Email	1.71	1.81	1.49
Facebook	1.23	1.42	.81
Twitter	1.17	1.40	.79
In Person	2.02	2.15	1.69

Comment: Ratings are consistent YoY with some fluctuation between phone and in-person as being the most effective means of resolving issues.

2022 Frequency of Responses

The jump in “NA/No Opinion” for Facebook, Twitter, and In-Person is likely indicative of respondents not having tried those methods before.

	Not at all Effective	Somewhat Effective	Mostly Effective	Very Effective	NA/No Opinion
Phone	35 (4.2%)	162 (19.7%)	233 (28.3%)	199 (24.2%)	195 (23.7%)
Website	39 (4.7%)	214 (26.0%)	248 (30.1%)	115 (14.0%)	208 (25.2%)
Email	52 (6.3%)	178 (21.6%)	211 (25.6%)	118 (14.3%)	265 (32.2%)
Facebook	142 (17.2%)	153 (18.6%)	108 (13.1%)	72 (8.7%)	349 (42.4%)
Twitter	147 (17.8%)	138 (16.7%)	108 (13.1%)	59 (7.2%)	372 (45.1%)
In-Person	26 (3.2%)	131 (15.9%)	188 (22.8%)	192 (23.3%)	287 (43.8%)

Frequency of Responses, 2021

	Not at all Effective	Somewhat Effective	Mostly Effective	Completely Effective	NA/No Opinion
Phone	37 (3.9%)	188 (20.1%)	266 (28.4%)	264 (28.2%)	182 (19.4%)
Website	49 (5.2%)	232 (24.8%)	240 (25.6%)	192 (20.5%)	224 (23.9%)
Email	57 (6.1%)	211 (22.5%)	221 (23.6%)	193 (20.6%)	255 (27.2%)
Facebook	138 (14.7%)	180 (19.2%)	142 (15.2%)	120 (12.8%)	357 (38.1%)
Twitter	139 (14.8%)	169 (18.0%)	151 (16.1%)	107 (11.4%)	371 (39.6%)
In-Person	29 (3.1%)	116 (12.4%)	230 (24.5%)	274 (29.2%)	288 (30.7%)

Frequency of Responses, 2020

	Not at all Effective	Somewhat Effective	Mostly Effective	Completely Effective
Phone	51 (6.2%)	296 (36.1%)	310 (37.8%)	164 (20.0%)
Website	95 (11.6%)	341 (41.5%)	273 (33.3%)	112 (13.6%)
Email	85 (10.4%)	344 (41.9%)	298 (36.3%)	94 (11.4%)
Facebook	376 (45.8%)	278 (33.9%)	117 (14.3%)	50 (6.1%)
Twitter	381 (46.4%)	271 (33.0%)	127 (15.5%)	42 (5.1%)
In-Person	72 (8.8%)	282 (34.3%)	294 (35.8%)	173 (21.1%)

Age Effect on Communications Preferences

As with 2020 & 2021, there is an age has a negative effect on communications preference on email, Facebook, and Twitter. This is consistent with market data showing older populations preferring more traditional means of communications. This year's results did not replicate the small effect of age on intent to use a website.

2022 Correlations

		Phone	Web	Email	Facebook	Twitter	In Person
Age	Corr.	-0.029	0.026	0.037	-.190**	-.210**	-.095*
	Sig.	0.468	0.527	0.379	0.000	0.000	0.028

2021 Correlations

		Phone	Web	Email	Facebook	Twitter	In-Person
AGE	Pearson Correlation	-0.045	-0.024	-.078*	-.210**	-.184**	-.107**
	Sig.	0.215	0.525	0.040	0.000	0.000	0.006

2020 Correlations

		Phone	Web	Email	Facebook	Twitter	InPerson
AGE	Pearson Correlation	-.090*	-.113**	-.129**	-.244**	-.298**	-0.055
	Sig.	0.010	0.001	0.000	0.000	0.000	0.116

Q22 How effective are the following for getting your questions answered by your WASTEWATER utility

Scale: 0-Not at all Effective, 1-Somewhat Effective, 2-Mostly Effective, 3-Completely Effective, Not Applicable/I Have No Opinion

Overall Analysis

This questions was dynamically served to the 91 participants who indicated they had separate utilities for water and wastewater services, 81 offering ratings and 10 others saying they had no opinion.

Mean Ratings

	2022	2021
Phone	2.11	2.19
Web	1.76	1.89
Email	1.76	1.94
Facebook	1.35	1.73
Twitter	1.36	1.61
In-Person	2.12	2.07

Q23 What is your preferred means of communication with your utility?

Similar to previous years, email is #1 preferred medium across all categories of communication. In the case of emergency updates, there are significant showings for phone and text as well. For water quality reports, traditional mail had a significant showing. For rate increases, text and traditional mail had significant showings.

	<u>Email</u>	<u>Facebook</u>	<u>Phone</u>	<u>Twitter</u>	<u>Text</u>	<u>Mail</u>
Billing/Payment Updates	389 (47.2%)	18 (2.2%)	96 (11.7%)	19 (2.3%)	80 (9.7%)	222 (26.9%)
Non-Urgent Updates	382 (46.4%)	25 (3.0%)	105 (12.7%)	18 (2.2%)	115 (14.0%)	179 (21.7%)
Emergency Updates	266 (32.3%)	22 (2.7%)	192 (23.3%)	24 (2.9%)	249 (30.2%)	71 (8.6%)
Water Quality Reports	411 (49.9%)	25 (3.0%)	99 (12.0%)	17 (2.1%)	76 (9.2%)	196 (23.8%)
Rate Increase	362 (43.9%)	29 (3.5%)	96 (11.7%)	18 (2.2%)	234 (28.4%)	234 (28.4%)

2021 Responses

	<u>Email</u>	<u>Facebook</u>	<u>Phone</u>	<u>Twitter</u>	<u>Text</u>	<u>Mail</u>
Billing/Payment Updates	422 (45.0%)	37 (3.9%)	115 (12.3%)	31 (3.3%)	103 (11.0%)	229 (24.4%)
Non-Urgent Updates	402 (42.9%)	62 (6.6%)	131 (14.0%)	45 (4.8%)	108 (11.5%)	189 (20.2%)
Emergency Updates	263 (28.1%)	44 (4.7%)	259 (27.6%)	42 (4.5%)	243 (25.9%)	86 (9.2%)
Water Quality Reports	406 (43.3%)	43 (4.6%)	115 (12.3%)	64 (6.8%)	95 (10.1%)	214 (22.8%)
Rate Increase	374 (39.9%)	44 (4.7%)	148 (15.8%)	45 (4.8%)	78 (8.3%)	248 (26.5%)

2020 Responses

	<u>Email</u>	<u>Facebook</u>	<u>Phone</u>	<u>Twitter</u>	<u>Text</u>	<u>Mail</u>
Billing/Payment Updates	46.57%	1.72%	9.68%	2.45%	6.74%	32.84%
Non-Urgent Service Updates	49.39%	2.57%	9.17%	3.67%	9.90%	25.31%
Emergency Updates	32.68%	3.18%	24.60%	3.06%	28.27%	8.20%
Water Quality Reports	47.30%	2.94%	8.58%	3.43%	7.48%	30.27%
Rate Increase	44.12%	2.45%	8.70%	2.70%	6.25%	35.78%

Q24 When my water and/or wastewater utility raises rates, it's to enhance the quality of its service.

Scale: -2—Strongly Disagree, -1—Somewhat Disagree, 0—Neither Agree Nor Disagree, 1—Somewhat Agree, 2—Strongly Agree

Overall Analysis

As with many other results, the answers for 2022 fall in between 2020 and 2021.

2022 Mean Score: .19

2021 Mean Score: .40

2020 Mean Score: .13

Frequency of Responses

	2022	2021	2020
Strongly Disagree	70 (8.5%)	58 (6.2%)	63 (7.7%)
Somewhat Disagree	122 (14.8%)	131 (14.0%)	139 (16.9%)
Neither Agree Nor Disagree	304 (36.9%)	293 (31.3%)	326 (39.7%)
Somewhat Agree	241 (29.2%)	290 (30.9%)	215 (26.2%)
Strongly Agree	87 (10.6%)	165 (17.6%)	78 (9.5%)

Ad-Hoc Analysis: Drivers of Ratings

		Tap Water Drinking	Age	Home Ownership	Bill Payer	Gender	Income	Ethnicity	Dwelling Type
Raise Service Rates	Corr	.084*	-.125**	.069*	.105**	0.040	0.062	0.066	.083*
	Sig	0.016	0.000	0.047	0.002	0.257	0.077	0.059	0.017

A correlational analysis showed that, as in 2020 & 2021, age had a large, significant negative effect ($r^2 = -.125$, $p = .000$) on trust ratings such that the older respondents were likely to demonstrate less trust in the motivations for rate hikes.

As in 2021, those who identified as bill payers were significantly *more* likely ($r^2 = .105$, $p = .000$) to trust in the reason for rate hikes. There were small effects for tap water drinkers ($r^2 = .084$, $p = .016$) and home owners ($r^2 = .069$, $p = .047$) trusting more.

Analysis By Jurisdiction

It should be noted that when you look at score trends by jurisdiction, several (with scores highlighted in red) appear to be trending down (toward lower trust of rate hikes).

	2022	2021	2020
Alexandria	0.29	0.87	-0.14
Arlington	0.41	0.65	-0.07
Charles County	0.33	1.07	1.22
Fairfax	0.20	0.34	1.03
Frederick	0.03	0.54	0.94
Loudoun	-0.18	0.22	0.93
Montgomery	0.19	-0.07	1.03
PG Cty	0.04	0.07	0.97
PW Cty	-0.06	-0.05	0.92
Rockville	0.93	0.68	1.05
Vienna	-0.22	0.37	0.93
Washington DC	0.20	0.17	1.02

Q25 How often does your water and/or wastewater utility raise its rates?

Scale: 0-Never, 1-Rarely, 2-Occasionally, 3-Frequently, 4-I don't know

Overall Analysis

This year saw the addition of an "I don't know" option which makes year-over-year comparisons problematic. Even so, the score falls between 2020 and 2021.

2022 Mean Rating: 1.72

2021 Mean Rating: 1.65

2020 Mean Rating: 1.77

Frequency of Responses

	2022	2021	2020
Never	12 (1.5%)	33 (3.5%)	17 (2.1%)
Rarely	192 (23.3%)	351 (37.5%)	233 (28.4%)
Occasionally	328 (39.8%)	474 (50.6%)	492 (59.9%)
Frequently	52 (6.3%)	79 (8.4%)	79 (9.6%)
I don't know	240 (29.1%)	NA	NA
Total	824 (100%)	937 (100%)	821 (100%)

Ad-Hoc Analysis: Drivers Of Rate Hike Perceptions

2020's survey found age, income, being the bill payer, and home ownership significantly impacting perceptions of rate hike frequency. 2021 saw only one of those drivers in the results. In 2022, all of 2020's effects, plus ethnicity, reappear. At the jurisdiction level, three appear to be trending positively and three negatively.

		Income	Bill Payer	Ethnicity	Gender	Age	Home Ownership
Rate Frequency	Corr.	.174**	.088*	.151**	0.003	0.079	.121**
	Sig.	0.000	0.033	0.000	0.941	0.056	0.003

Ethnicity	Avg.	N
African-American	0.07	183
Asian	0.03	63
Hispanic	0.27	52
Native American	-1.00	3
Pacific Islander	1.00	1
White/Caucasian	0.27	497
Other	-0.32	25

Analysis By Jurisdiction

Some districts (scores in blue) appear to be trending positively toward perceiving fewer rate hikes, while another (in red) is trending toward perceiving more hikes.

	2022	2021	2020
Alexandria	1.71	1.71	1.91
Arlington	1.60	1.68	1.67
Charles County	1.50	1.53	1.81
Fairfax	1.64	1.65	1.80
Frederick	1.76	1.24	1.77
Loudoun	1.65	1.59	1.58
Montgomery	1.79	1.82	1.78
PG Cty	1.75	1.71	1.71
PW Cty	1.61	1.56	1.56
Rockville	2.06	1.80	1.95
Vienna	1.63	1.78	1.85
WashingtonDC	1.86	1.61	1.84

Q26 The sources I trust most for information about my *drinking water or wastewater service* are:

Scale: 0-Not Trusted, 1-Somewhat Trusted, 2-Mostly Trusted, 3-Completely Trusted

Overall Analysis

The ratings mostly follow the same rank order as 2020 and 2021, with scores from this year—once again—largely in between those two years.

Avg Ratings

	2022	2021	2020
PSAs	1.78	1.82	1.69
Water Utility	1.73	1.81	1.67
Waste Water Utility	1.73	1.73	1.62
Local News	1.63	1.69	1.54
Local Govt	1.62	1.74	1.53
Friends and Family	1.55	1.59	1.42
Social Media	.91	1.09	0.80

2022 Frequency of Responses

Numbers are very consistent year-over year. Compared to 2021, there was a shift from “Completely Trusted” to “Mostly Trusted” for Local News and Friends and Family as news sources.

	<u>Not Trusted</u>	<u>Somewhat Trusted</u>	<u>Mostly Trusted</u>	<u>Completely Trusted</u>
Water Utilities	46 (5.6%)	277 (33.6%)	357 (43.3%)	144 (17.5%)
Wastewater Utilities	45 (5.5%)	274 (33.3%)	362 (43.9%)	143 (17.4%)
Local Govt	66 (8.0%)	300 (36.4%)	342 (41.5%)	115 (14.1%)
Local News	60 (7.3%)	286 (34.7%)	380 (46.1%)	98 (11.9%)
Friends/Family	83 (10.1%)	320 (38.8%)	308 (37.4%)	113 (13.7%)
Social Media	309 (37.5%)	322 (39.1%)	148 (18.0%)	45 (5.5%)
PSAs	38 (4.6%)	242 (29.4%)	406 (49.3%)	138 (16.7%)

2021

	<u>Not Trusted</u>	<u>Somewhat Trusted</u>	<u>Mostly Trusted</u>	<u>Completely Trusted</u>
Water Utilities	55 (5.9%)	280 (29.9%)	390 (41.6%)	212 (22.6%)
Wastewater Utilities	58 (6.2%)	324 (34.6%)	367 (39.2%)	188 (20.1%)
Local Govt	72(7.7%)	308 (32.9%)	346 (36.9%)	211 (22.5%)
Local News	78 (8.3%)	313 (33.4%)	369 (39.4%)	177 (18.9%)
Friends/Family	84 (9.0%)	387 (41.3%)	295 (31.5%)	171 (18.2%)
Social Media	294 (31.4%)	363 (38.7%)	183 (19.5%)	97 (10.4%)
PSAs	39 (4.2%)	307 (32.8%)	375 (40.0%)	216 (23.1%)

2020

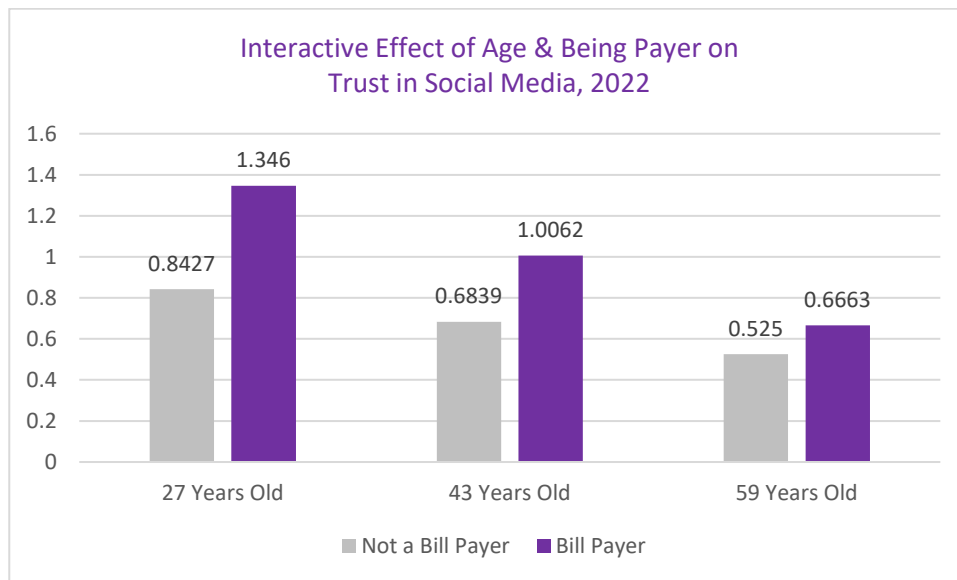
	<u>Not Trusted</u>	<u>Somewhat Trusted</u>	<u>Mostly Trusted</u>	<u>Completely Trusted</u>
Water Utilities	47 (5.7%)	303 (36.9%)	347 (42.3%)	124 (15.1%)
Wastewater Utilities	57 (6.9%)	311 (37.9%)	338 (41.2%)	115 (14.0%)
Local Govt	80 (9.7%)	330 (40.2%)	304 (37.0%)	107 (13.0%)
Local News	68 (8.3%)	332 (40.4%)	330 (40.2%)	91 (11.1%)
Friends/Family	106 (12.9%)	366 (44.6%)	250 (30.5%)	99 (12.1%)
Social Media	375 (45.7%)	289 (35.2%)	105 (12.8%)	52 (6.3%)

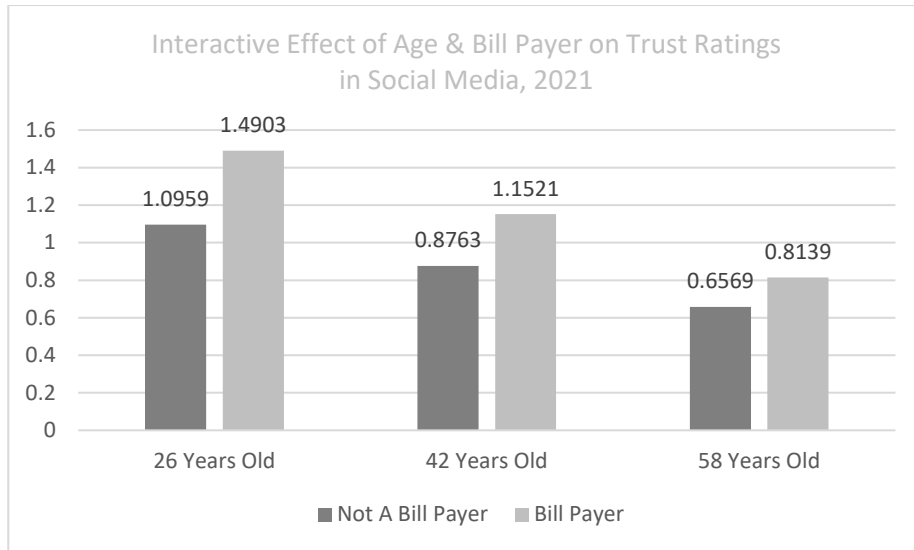
Ad-Hoc Analysis: Drivers of Information Source Trust

As in 2020 & 2012, age had a significant, negative relationships on trust in friends & family ($R^2 = -.137$, $p = .000$) and social media ($R^2 = -.321$, $p = .000$) where the older a respondent was the less likely they were to trust those sources of information.

Similar to 2021, significant, positive relationships between being the bill payer and trust in social media ($R^2 = .130$, $p = .000$), and friends & family ($R^2 = .107$, $p = .000$) was found where someone identifying as a bill payer was more likely to trust these sources of information. 2021 had found a significant effect of being the bill payer and trust in local news. That effect was marginally significant this year ($R^2 = .062$, $p = .075$). This year, bill payers were also more likely to trust local gov't as a source of information ($R^2 = .105$, $p = .003$).

As in 2021, there was a significant interactive effect of age and identifying as the bill payer on trust in social media was tested. The regression revealed significant main effects for being a bill payer ($b = .8153$, $p = .000$) and age ($b = -.0100$, $p = .003$) and an interactive effect ($b = -.0114$, $p = .004$). The chart below visualizes the interaction of the two variables on ratings of trust in social media as an information source. Significant differences exist between bill payers and non-bill payers in the two younger age groups, while there is no such difference on the oldest age group. This graph shows the dynamic and the one below it shows a similar one found in 2021.





Analysis By Jurisdiction

		Water Utilities	Wastewater Utilities	Local Govt	Local News	Friends/Family	Social Media	PSAs
Alexandria	2022	1.87	1.85	1.74	1.77	1.81	0.92	1.87
	2021	1.86	1.53	1.82	1.71	1.62	1.13	1.94
	2020	1.52	1.42	1.45	1.58	1.25	0.61	1.65
Arlington	2022	1.84	1.83	1.84	1.73	1.43	0.90	1.79
	2021	2.08	1.76	2.04	1.81	1.65	1.13	1.94
	2020	1.67	1.59	1.76	1.64	1.39	0.64	1.76
CharlesCounty	2022	1.63	1.79	1.44	1.67	1.49	1.24	1.66
	2021	2.13	2.06	2.19	2.08	1.92	1.76	2.27
	2020	1.51	1.56	1.32	1.37	1.54	0.88	1.67
Fairfax	2022	1.86	1.73	1.60	1.54	1.57	0.76	1.83
	2021	1.80	1.77	1.70	1.58	1.38	0.70	1.84
	2020	1.76	1.66	1.46	1.44	1.30	0.55	1.68
Frederick	2022	1.45	1.49	1.17	1.36	1.48	0.65	1.55
	2021	1.97	1.89	1.99	1.78	1.86	1.39	2.06
	2020	1.46	1.48	1.25	1.30	1.30	0.61	1.61
Loudoun	2022	1.82	1.84	1.56	1.57	1.56	0.74	1.79
	2021	1.84	1.85	1.58	1.45	1.51	0.81	1.77
	2020	1.83	1.75	1.42	1.45	1.32	0.64	1.64
Montgomery	2022	1.75	1.79	1.66	1.63	1.31	0.59	1.74
	2021	1.69	1.66	1.66	1.67	1.41	0.88	1.70
	2020	1.62	1.57	1.46	1.54	1.28	0.46	1.62
PrinceGeorgeCounty	2022	1.52	1.42	1.51	1.61	1.48	0.80	1.64
	2021	1.70	1.61	1.55	1.59	1.62	0.92	1.76
	2020	1.55	1.49	1.49	1.39	1.30	0.64	1.59
PrinceWilliamCounty	2022	1.70	1.73	1.55	1.48	1.50	0.62	1.79
	2021	1.67	1.63	1.52	1.49	1.56	0.79	1.49
	2020	1.71	1.61	1.29	1.47	1.45	0.77	1.73
Rockville	2022	1.83	1.85	1.79	1.72	1.70	1.38	1.80
	2021	1.63	1.60	1.55	1.75	1.42	1.35	1.82
	2020	1.74	1.73	1.85	1.87	1.76	1.51	1.82
Vienna	2022	1.69	1.63	1.78	1.66	1.60	1.29	2.08
	2021	1.57	1.50	1.58	1.55	1.70	1.12	1.51
	2020	1.98	1.97	2.07	1.79	1.87	1.52	1.87
WashingtonDC	2022	1.76	1.83	1.75	1.75	1.66	1.05	1.87
	2021	1.76	1.86	1.71	1.80	1.46	0.95	1.80
	2020	1.63	1.64	1.56	1.61	1.30	0.76	1.69

Q27 The sources I trust for news and information more generally are...

Scale: 0-Not Trusted, 1-Somewhat Trusted, 2-Mostly Trusted, 3-Completely Trusted

Overall Analysis

This is a new question designed to see if people's trust in information sources are the same for utility information vs. news generally. There were statistically significant results on two categories:

- Respondents trust utility news from their utility more than company news from a company more generally
- Respondents trust PSAs from their utilities more than PSAs from other groups more generally.

	2022	Comparable from Q26	Statistically Sig. Difference?
Direct from Organization	1.60	1.73 (Water Utility)	Yes
Local Gov't	1.64	1.62	No
Local News	1.66	1.63	No
Friends/Family	1.55	1.55	No
Social Media	.92	.91	No
PSAs	1.70	1.78	Yes

Paired Samples T-Test

					Lower	Upper	t	df	Sig.
Pair 1	Q26WaterUtil - Q27DirectFromOrg	0.126	0.910	0.032	0.064	0.188	3.983	823	0.000
Pair 2	Q26LocalGovt - Q27LocalGovt	-0.025	0.664	0.023	-0.071	0.020	-1.102	823	0.271
Pair 3	Q26LocalNews - Q27LocalNews	-0.038	0.697	0.024	-0.085	0.010	-1.549	823	0.122
Pair 4	Q26Friends/Family - Q27Friends/Family	-0.002	0.661	0.023	-0.048	0.043	-0.105	823	0.916
Pair 5	Q26SocialMedia - Q27SocialMedia	-0.004	0.659	0.023	-0.049	0.041	-0.159	823	0.874
Pair 6	Q26PSAs - Q27PSAs	0.080	0.728	0.025	0.030	0.130	3.156	823	0.002

Q28 How do you feel about federal programs to help low income households pay for their water and wastewater services?

Scale: -3 Strongly Oppose, -2 Oppose, -1 Slightly Oppose, 0=Neutral or No Opinion, 1 Slightly Support, 2 Support, 3 Strongly Support

This is a new question. People were generally supportive of such programs.

Mean: 1.30

	2022
Strongly Oppose	19 (2.3%)
Oppose	39 (4.7%)
Slightly Oppose	45 (5.5%)
Neutral or No Opinion	159 (19.3%)
Slightly Support	100 (12.1%)
Support	238 (28.9%)
Strongly Support	224 (27.2%)
Total	824 (100%)

Analysis By Jurisdiction

Jurisdiction	Mean
Alexandria	1.77
Arlington	1.57
Charles County	1.06
Fairfax	1.24
Frederick	0.93
Loudoun	1.01
Montgomery	1.44
Prince George County	1.32
Prince William County	1.32
Rockville	1.35
Vienna	0.83
Washington DC	1.68

Q29 Are you aware of utility relief programs available for your utility bill?

	2022	2021
No	492 (59.7%)	451 (48.1%)
Yes	332 (40.3%)	486 (51.9%)
Total	824 (100%)	937 (100%)

It flipped from slight majority aware in 2021 to large majority unaware in 2022. It could be that the lapsing of COVID-related programs (and publicity surrounding them) hurt awareness.

Analysis By Jurisdiction

	2022	2021
Alexandria	0.37	0.76
Arlington	0.23	0.58
Charles County	0.63	0.77
Fairfax	0.36	0.43
Frederick	0.33	0.64
Loudoun	0.22	0.27
Montgomery	0.32	0.46
Prince George County	0.38	0.49
Prince William County	0.24	0.40
Rockville	0.68	0.43
Vienna	0.49	0.58
Washington DC	0.55	0.45

Copy of Final Version of Survey

Metropolitan Washington Drinking Water and Wastewater Use Survey 2022

The Metropolitan Washington Council of Governments, on behalf of its member drinking water and wastewater utilities, is conducting this survey to help the utilities better communicate with you—their customers—on a number of topics. It should take you no more than 10 minutes to complete. Your answers are strictly anonymous.

Definitions of survey terms:

- “Drinking water utility” means the same as “water utility”.
- “Drinking water” means the same as “tap water” or water that comes either from a faucet or through a filter or from a refrigerator.
- “Wastewater,” or sewer water, is water that is used for flushing, washing, and industrial practices from homes and businesses that goes down toilets or drains and enters the sewer system.

Q1—SCREENING QUESTION. My drinking water service is provided by:

- A utility (Value=1)
- A private well (Value=0)

Q2—SCREENING QUESTION. My wastewater service is provided by:

- A utility (Value=1)
- Private septic system (Value=0)

NOTE: For those who report having private well and/or septic, the survey will end.

Q3. Does the same utility provide your household with both drinking water and wastewater service, or are they different for each?

- Same utility (Category=1)
- Different utilities for each (Category=2)
- I don’t know (Category=3)

Q4. When I want to drink water, I drink tap water (either from a faucet or through a filter or from a refrigerator):

- Mostly or Always (Value=3)
- Sometimes (Value=2)
- Rarely or Never (Value=1)

Q5. <<DISPLAY LOGIC: Only for those who answer “Mostly or Always” in Q4>> When I drink tap water, it’s typically:

- From a faucet (Value=0)
- Through a filter such as a Brita™ water pitcher (Value=1)
- From a water dispenser in my refrigerator (Value=2)

Q6a. <<DISPLAY LOGIC: Only for those who answer that they use a filter in Q5>>

Please rate the importance of the following benefits in choosing to use a filter for your tap water:

	Not Important	Somewhat Important	Important	Very Important
Improved Taste				
Improved Safety				
Improved Smell				
Improved Convenience				

Q6b. <<DISPLAY LOGIC: Only for those who answer that get their water from their refrigerator in Q5>>

Please rate the importance of the following benefits in choosing to use the dispenser in your refrigerator for your tap water:

	Not Important	Somewhat Important	Important	Very Important
Improved Taste				
Improved Safety				
Improved Smell				
Improved Convenience				

Q7. <<DISPLAY LOGIC: Only for those who answer “Rarely” or “Never” in Q4>> If you chose “rarely” or “never” in the previous question, please indicate why. (Check all that apply)

- Taste (Category=1)
- Odor (Category=2)
- Safety Concerns (Category=3)
- Convenience (Category=4)
- Other: _____ (Category=5)

Q8. <<DISPLAY LOGIC: Only for those who answer “Safety Concerns” in Q7>> What is concerning you about the safety of your drinking water?

	Not Concerned	Somewhat Concerned	Concerned	Very Concerned
Quality of the water being treated (delete space)				
Quality of the pipes				
Security of the water supply				
Cybersecurity of utilities (e.g., hacking)				
The quality of water after being treated by water utility (e.g., chemicals or additives used in the treatment process)				
Other _____				

Q9. The source of my drinking water is (check all that apply):

- Occoquan Reservoir (Category=1)
- Area Lakes and Streams (Category=2)
- Chesapeake Bay (Category=3)
- The Potomac River (Category=4)
- The Patuxent River and reservoirs (Category=5)
- I Don't Know (Category=6)

Q10. How often do you drink bottled water?

- Daily (Value=4)
- Weekly (Value=3)
- Monthly (Value=2)
- Rarely (Value=1)
- Never (Value=0)

Q11. How safe for your plumbing and/or the environment is it to dispose of the following down the drain or toilet?

	Not Safe	Somewhat Unsafe	Likely Safe	Completely Safe
Medications				
Regular Wipes				
Flushable Wipes				
Toilet Paper				
Tissues				
Cooking Grease				
Paper Towels				
Dental Floss				

Q12. How often does your household dispose of the following down the drain or toilet?

	Never	Rarely	Sometimes	Most of the Time	Always
Medications					
Regular Wipes					
Flushable Wipes					
Tissues					
Cooking Grease					
Paper Towels					
Dental Floss					
Toilet Paper					

Q13. <<DISPLAY LOGIC: Only for those who answer “Never” in Q12 about medications>> How does your household dispose of unwanted medications? (Check all that apply)

- Semi-annual drug take back day (Category=1)
- Use permanent dropbox at a health care facility such as a pharmacy, clinic or hospital (Category=2)
- Use permanent dropbox at a police station, fire station, or other government facility (Category=3)
- Throw them in the trash (Category=4)
- Put down drain or toilet (Category=5)
- Not Applicable: I/We don't take any medications. (Category=6)
- Not Applicable: I/We always finish our prescriptions (Category=7)
- Other _____ (Category=8)

Q14. Area water and wastewater utilities have launched a regional advertising campaign to help remind consumers how to protect their pipes from fats, oils and grease, wipes, and medication. Can you recall what the advertising campaign looked like? (Check any of the images you’ve seen before.)



I don't recall seeing any of these

Q15. <<For those who indicated having seen at least one of the images in Q14.>> Can you recall where you saw any of those images? Please check all that apply.

- Signs/Advertisements (Category=1)
- Utility communications (events/ /school outreach) (Category=2)
- Social media (Category=3)
- I don't recall (Category=4)
- Other _____ (Category=5)

Q16. Regarding activities outside the home: How safe are the following materials for local waterways when they enter storm drains or through runoff?

	Not Safe	Somewhat Unsafe	Likely Safe	Completely Safe
Lawn Fertilizer				
Pet Waste				
Car Fluids (oil, antifreeze, brake fluid)				
Salt (for de-icing walkways/driveways)				
Attention Check: Please click "Completely Safe"				
Herbicide/Weed Killer				

Q17. During snowy and icy conditions, how often (if at all) does someone apply a deicer such as salt at your residence?

- Always (Value=4)
- Most of the Time (Value=3)
- Sometimes (Value=2)
- Rarely (Value=1)
- Never (Value=0)

Q18. Please rate your water utility on the following:

	Poor	Below Average	Average	Above Average	Excellent	Not applicable or I have no opinion
Quality of Water						
Taste of Water						
Customer Service Responsiveness						
Customer Service Friendliness						
Value of Service						

Q19. <<Display logic: for those who answer that they have different utilities handle water and wastewater in Q3>> Please rate your wastewater utility on the following:

	Poor	Below Average	Average	Above Average	Excellent	Not applicable or I have no opinion
Customer Service Responsiveness						
Customer Service Friendliness						
Value of Service						

Q20. Do you believe the condition of your water and wastewater infrastructure (mains, pipes, water pumps, treatment facilities, etc.) in your community is:

- Excellent (Value = 2)
- Good (Value = 1)
- Adequate (Value = 0)
- Needs Minor Improvements (Value = -1)
- Needs Significant Improvements (Value= -2)

Q21. How effective are the following for getting your questions answered by your water utility:

	Not at all Effective	Somewhat Effective	Effective	Very Effective	Not applicable or I have no opinion
Phone					
Website					
Email					
Facebook					
Twitter					
In-Person					

Q22. <<DISPLAY LOGIC: Only for those who answered they have separate water and wastewater utilities in Q3>> How effective are the following for getting questions answered by your WASTEWATER utility:

	Not at all Effective	Somewhat Effective	Effective	Very Effective	Not applicable or I have no opinion
Phone					
Website					
Email					
Facebook					
Twitter					
In-Person					

Q23. Please indicate your SINGLE preferred method for your water utility to contact you about EACH of the following issues:

	Email	Facebook	Phone	Twitter	Text	Mail
Billing and payment updates						
Non-urgent service updates (routine maintenance, new service or payment options)						
Emergency updates (water quality advisories, disruptions in service)						
Water quality reports						
Rate increases						

Q24. When your water and/or wastewater utility raises rates, it's to enhance the quality of its service.

- Strongly Agree (Value = 2)
- Agree (Value = 1)
- Neutral (Value = 0)
- Disagree (Value = -1)
- Strongly Disagree (Value= -2)

Q25. How often does your water and/or wastewater utility raise its rates?

- Frequently (Value = 3)
- Occasionally (Value = 2)
- Rarely (Value = 1)
- Never (Value = 0)
- I don't know.

Q26. The sources I trust most for *information about my drinking water or wastewater service* are:

	Not Trusted	Somewhat Trusted	Mostly Trusted	Completely Trusted
Drinking Water Utility				
Wastewater Utility				
Local Government				
Local News				
Friends/Family				
Social Media				
Public Service Announcements				

Q27. The sources I trust most for *news and information generally* are:

	Not Trusted	Somewhat Trusted	Mostly Trusted	Completely Trusted
Direct from the Organization Making the News				
National News				
Local Government				
Local News				
Friends/Family				
Social Media				
Public Service Announcements				

Q28. How do you feel about federal programs to help low income households pay for their water and wastewater services?

- Strongly Oppose (Value= -3)
- Oppose (Value= -2)
- Slightly Oppose (Value= -1)
- Neutral or No Opinion (Value= 0)
- Slightly Support (Value= 1)
- Support (Value= 2)
- Strongly Support (Value= 3)

Q29. Are you aware of the long-term financial assistance programs offered by your utility to households struggling to pay their water/wastewater bill?

- Yes (Value=1)
- No (Value=0)

Q30. Please enter your home zip code: _____

Q31. How many years have you lived in the Metropolitan Washington area (Metropolitan Washington area means Washington, DC and the surrounding Maryland and northern Virginia cities and counties.)?

Q32. Do you rent or own your residence?

- Rent (Value=0)
- Own (Value=1)

Q33. Are you the person in the household who typically pays the bill for water and/or wastewater service?

- Yes (Value=1)
- No (Value=0)

Q34. Which of the following best describes your dwelling?

- Single family home (Category=1)
- Town home (Category=2)
- Condominium/Apartment (Category=3)
- Other: _____ (Category=4)

Q35. Is your household billed directly by the utility for its water and/or wastewater service, or is it included in another fee such as monthly rent, condo fees, or homeowner association fees?

- The household is billed directly by the utility (Value=1)
- Water and wastewater service are included in another fee such as rent or homeowner association fees (Value=0)
- N/A, I don't know (Value=NULL)

Q36. In what year were you born? _____

Q37. Which of the following best describes your ethnicity?

- African American/Black (Category=1)
- Asian (Category=2)
- Hispanic/Latino (Category=3)
- Native American (Category=4)
- Pacific Islander (Category=5)
- White/Caucasian (Category=6)
- Other: _____ (Category=7)

Q38. What is your household's average annual combined income?

- \$0-\$25,000 (Value=1)
- \$25,001-\$50,000 (Value=2)
- \$50,001-\$75,000 (Value=3)
- \$75,001-\$100,000 (Value=4)
- \$100,001-\$125,000 (Value=5)
- \$125,001-\$150,000 (Value=6)
- \$150,001-\$175,000 (Value=7)
- \$175,001-\$200,000 (Value=8)
- \$200,001-\$225,000 (Value=9)
- \$225,001-\$250,000 (Value=10)
- More than \$250,000 (Value=11)

Q39. In terms of gender, I identify as:

- Female (Category=1)
- Male (Category=2)
- Transgender Female (Category=3)
- Transgender Male (Category=4)
- Gender Variant/Non-Conforming (Category=5)
- Other _____ (Category=6)
- Prefer Not to Answer (Category=7)

Thank you for taking the survey.