

N=6,561 adult residents of the Chesapeake Bay Watershed, collected online and by phone; Jun 24-Nov 7, 2023

This document details the methods used to conduct this study of stewardship behaviors and attitudes among a random sample of Chesapeake Bay watershed residents. The current study updates the baseline measurement of stewardship conducted Baywide in 2017.

The study was designed and conducted by OpinionWorks LLC of Annapolis, Maryland for the Chesapeake Bay Program. OpinionWorks' principal, Steve Raabe, was the lead investigator, working under the direction of a steering group composed of social science and behavior change experts from the Bay Program and several of its partner organizations. For questions about survey methods or analysis, Steve can be reached at 410-271-3795 or steve@OpinionWorks.com.

Questionnaire Development

The steering group undertook a careful process to consider the inclusion and specific wording of questions for the 2023 survey.

Behavioral questions were included if the behavior met these criteria:

1. Involves individual, not collective or corporate, decision-making.
2. Is residential-scale, rather than agricultural or commercial.
3. Is repetitive and can be tracked over time.
4. Can be adopted by the general public, not just by experts, regardless of geography or socioeconomics.
5. Has an impact on watershed health.
6. Can engage the public, bring new audiences to the table, and/or promote equity.

Screening for these criteria led to the addition of several new behaviors in the 2023 survey.

In addition to the behavioral criteria, perceptions and attitudinal questions were included if they were known to be predictive of stewardship behavior, and/or if they advanced understanding of audience perceptions and motivations, especially audiences that have traditionally been underrepresented.

Attention was given to retaining question wording from the prior survey where possible, for the sake of longitudinal analysis. Some question wording was updated for clarity, such as a better description of rain gardens, and some was updated due to new understandings, such as a more inclusive sense of gender identity rather than a strictly binary understanding of gender.

To further tune the questionnaire, a battery of approximately 100 live test interviews were conducted, including self-administered online interviews with comment boxes, aided one-on-one interviews where the respondents narrated their thoughts and understandings of each question, and a series of test interviews conducted by telephone. Significant attention was given in the survey test to traditionally underrepresented audiences to help ensure that both the wording and the meaning of questions were responsive and accessible for all audiences.

An open-ended question was added to the survey to invite the audience's own thoughts about stewardship, to help capture actions that advocates may not have traditionally considered but which are important to the responding public.

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Sampling and Interviewing Method

The 2023 Stewardship Index survey includes a total of 6,561 interviews completed among adult residents of the Chesapeake Bay watershed between the dates of June 24 and November 7, 2023.

This was a mixed-mode study, with responses collected online and by telephone. This is a change from the prior study in 2017, when all the interviews were collected by telephone. A significant rise in telephone non-response has limited the reach and representativeness of telephone-based sampling, though it still plays a role in filling out the sampling frame with older and less-digitally connected respondents. Online sampling today, conducted carefully, does a much better job than telephone sampling has done in recent years of ensuring that younger and more mobile residents, People of Color, residents with lower incomes, and other traditionally underrepresented groups are able to participate in the survey. The result is a sample that better represents the full diversity of residents across the watershed than has been achieved in the past.

The online portion of the sample was collected from a consortium of research panels, which are large databases of people who have opted-in to take periodic surveys on a wide variety of topics. Many demographic, socio-economic, and geographic characteristics of individual respondents are known in advance, and the sample can be distributed randomly across these population segments during field interviewing to help ensure that the survey sample closely reflects the makeup of the communities being surveyed. Both machine-based controls and human review of the dataset ensure that respondents participate only once, and that no bots or automated responses are included in the dataset.

The telephone interviews were conducted by live interviewers, who were supervised, monitored, and coached in opinion research best practices. The calls originated from a market research call center in Knoxville, Tennessee, under OpinionWorks' direction. Both wireless and landline numbers were included in the sampling frame. Interviews were conducted on all days of the week, in various dayparts.

Regardless of interviewing mode, interviews were considered completed only if the respondent proceeded through the entire questionnaire, though respondents were able to decline to answer individual questions. Interviews where participants terminated prior to completing the survey were not included in the final dataset.

The watershed's boundaries often do not match jurisdictional boundaries, but counties and independent cities were included in the survey sample if the *preponderance* of their population lives within the Chesapeake Bay watershed. If a jurisdiction substantially crossed the watershed boundary (approximately 15% or more), the sampling in that area was based on zip code boundaries.

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Statistical Weighting

This was a stratified sample, with a statistically significant number of interviews conducted in each of the seven major jurisdictions within the Chesapeake Bay watershed, ensuring that state results could be analyzed with confidence. This method provided that no state jurisdiction, no matter how small the population, received fewer than 400 interviews. In addition, an oversample in Anne Arundel County, Maryland was conducted at the request of local partners and is included in this dataset.

(Note that this project is designed so that other communities can field a comparable sample in their local geography and append it to the Baywide dataset at any point in the future.)

Statistical weighting was used to adjust the stratified survey sample to produce a Baywide sample that is reflective of the distribution of the watershed's population. The individual state samples and population weights used to rebalance the Baywide dataset are shown in this table.

Geographic Distribution and Population Weighting of Baywide Sample					
	Sample Collected	Sample %	In-Watershed Population*	Population %	Population Weight
Delaware	418	6.4%	341,372	1.8%	0.28174094
District of Columbia	819	12.5%	683,154	3.6%	0.28776174
Anne Arundel County, MD	613	9.3%	584,064	3.1%	0.32869894
Maryland excluding Anne Arundel	1136	17.3%	5,521,482	29.0%	1.67677841
New York	489	7.5%	697,535	3.7%	0.49210241
Pennsylvania	1011	15.4%	3,828,686	20.1%	1.30646247
Virginia	1659	25.3%	7,083,845	37.2%	1.47306194
West Virginia	416	6.3%	278,162	1.5%	0.23067621
Totals	6561	100.0%	19,018,300	100.0%	

*Based on 2021 US Census American Survey 5-year estimates.

In addition, weights for five demographic and socio-economic characteristics were applied to each state sample to ensure that it was as reflective as possible of the makeup of the state's population. Weights were applied for gender, race or ethnicity, age, housing type, and household income.

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Sample Distribution

Following is the Baywide distribution of the survey sample for the five weighted parameters:

	Unweighted Sample Collected	Weighted Sampled Distribution
Male	2556	50%
Female	3786	48%
Non-binary	93	1%
Another gender category	14	*%
Prefer not to say	112	1%
African-American or Black	1525	19%
Asian or Pacific Islander	249	7%
Hispanic or Latino	383	8%
Middle Eastern or North African	71	1%
Mixed-race or Multi-racial	195	2%
Native American or Alaska Native	150	1%
White	4319	68%
Others	18	*%
Not sure or prefer not to say	150	2%
Less than 25	704	12%
25 to 34	1491	17%
35 to 44	1407	17%
45 to 54	1005	18%
55 to 64	872	16%
65 to 74	742	12%
75 or older	297	8%
Not sure or prefer not to say	43	1%
Single-family detached	3518	60%
Rowhouse/Townhouse/Duplex	1012	15%
Apartment or Condo	1507	19%
Mobile Home	280	3%
Other, not sure, or prefer not to say	244	3%
Less than \$25,000	1042	13%
25 to less than \$50,000	1411	15%
50 to less than \$75,000	1207	15%
75 to less than \$100,000	913	12%
100 to less than \$150,000	916	17%
\$150,000 or more	649	23%
Not sure or prefer not to say	423	6%