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Evaluating the Linkage Between Lake Erie Water Quality and Public Health for Ohio Residents

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Ohio Lake Erie Commission
111 E. Shoreline Drive
Sandusky, Ohio 44870

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Abstract

Background. Lake Erie is an invaluable resource to Ohio residents and surrounding populations. The Lake provides enumerable life sustaining ecosystem services in addition to being an economic engine for the region. To address a priority of the Lake Erie Protection Fund to “Develop a strategy for enhancing Great Lakes image to support Great Lakes Regional Collaboration goals and objectives” we sought to evaluate the importance of Lake Erie water quality to the health and welfare of Ohio residents against a backdrop of threats to this resource from climate change and agricultural and urban runoff.

Methods. To achieve this goal, we identified existing data on Lake Erie’s human health-related ecosystem services including provisioning for drinking water and waste water. We also developed and implemented surveys to evaluate Ohio residences’ recreational contact with Lake Erie (and Ohio surface waters more generally) and their perceptions of the value of Lake Erie and its condition. The first survey was developed in collaboration with the Ohio Department of Health (ODH) and has been implemented within the state through the CDC’s population-based representative phone-based 2012 Behavioral Risk Factors Surveillance System (BRFSS) (n=1663). The second survey was developed and implemented through OSU’s Center for Clinical & Translational Science Research Match (n=504) as a pilot effort.

Results. We obtained information from the Ohio EPA documenting 83 different public water systems that rely on Lake Erie source water serving a total population of 2.95 million Ohio residents. At the same time, among the 11 Ohio counties within the Lake Erie watershed, there are 511 waste water treatment plants that discharge. Preliminary unweighted BRFSS survey results indicate that 41 percent of Ohio residents came into contact with Ohio surface waters for work or recreation within the last year with the dominant form of contact being swimming (58%) followed by fishing (54%). Among those coming into contact with Ohio surface waters in the last year, 44 percent reported that it usually occurred on Lake Erie. Thirty-one percent of respondents reported having eaten fish from Lake Erie within the last year; 3.6% of those reported eating fish 1 or

more times per week. The survey of Ohio resident's perceptions of Lake Erie value and condition indicated that 83 percent of respondents considered the Lake to either be "very" or "critically" valuable. Respondents living in zip codes closer to the lake were more likely to find the lake valuable than those living farther away ($p=0.005$). At the same time, the majority indicated concern (either agree or strongly agree) over the safety of Lake Erie for: 1) drinking water (62%), 2) fish consumption (61%); and 3) swimming (47%). The greatest threat to Lake Erie is perceived to be "industrial water pollution" (42%) and 56% of respondents indicated a willingness to pay additional taxes to protect Lake Erie.

Conclusions. This study and effort has resulted in the development of two survey instruments. The first has been designed to evaluate Ohio residents contact with Ohio surface waters and Lake Erie as a potential risk factor for exposure to and risk from water contaminants. This survey has been implemented through the Ohio BRFSS with preliminary results indicating a high prevalence (41%) of contact with Ohio surface waters. The second survey provides a means for evaluating the nature and extent with which Ohio residents value Lake Erie. Although the survey was conducted within a non-representative sample, it provides an indication of the value and concern that Ohio residents hold for Lake Erie.

Introduction

Lake Erie is an invaluable resource to Ohio residents and surrounding populations. The Lake provides enumerable life sustaining ecosystem services in addition to being an economic engine for the region.¹ However, as the shallowest, most southern, and most impacted by agricultural run-off, Lake Erie is the most vulnerable of the Great Lakes and is being threatened by a combination of global (e.g. climate change) and local stressors (e.g. agricultural and urban runoff).² Accordingly, Lake Erie can be viewed as the “canary in the coal mine” for all of the Great Lakes. The current proposal has been developed to address a strategic data gap that highlights the importance of Lake Erie water quality to the health and welfare of Ohio residents. By so doing, the proposed research will serve to heighten public awareness of Lake Erie as a life-sustaining resource that is to be valued and protected. This will enhance the image of Lake Erie in a way that can serve as a model for all of the Great Lakes. The resources provided by Lake Erie for the benefit of humans are known as ecosystem services. This report encompasses the subset of ecosystem services that relate to human health. In addition to being relevant to multiple local, state, and federal agencies, these data will serve as a basis for leveraging collaborative interdisciplinary research proposals.

Accordingly, the current study has been conducted to develop, test, and implement two survey instruments. The first informs the nature and extent of exposure and risk among Ohio residents from contact with Ohio surface waters. The second evaluates perceptions of the value of Lake Erie and its condition. Together these surveys provide a basis for evaluating strategies for both protecting Lake Erie and the public’s health that are inextricably linked to the condition of the Lake.

Methods

Two different surveys were developed and implemented under this effort. The first was designed for implementation under Ohio’s 2012 Behavioral Risk Factors Surveillance System (BRFSS). In the context of this survey, the questions were intended to evaluate Ohio residents’ contact with Ohio surface waters as a risk factor for exposure and disease related to chemical (e.g. mercury, atrazine, nitrate) and biological (e.g. E. coli., microcystin) contaminants. The survey questions were developed in collaboration with the Ohio Department of Health with input also provided by the Cuyahoga Department of Environmental Health. The survey instrument is provided in its entirety in Appendix A, with the questionnaire domains outlined in Table 1. This survey was delivered to the Ohio Department of Health for implementation in Ohio’s 2012 BRFSS survey. The survey is administered over the 2012 calendar year. For the purposes of this report, data are available for January to March 2012 and are unweighted and therefore considered preliminary. Complete, weighted, representative survey results are expected in March of 2013.

Table 1. General Content Domains of BRFSS Recreational Water and Fish Consumption Survey. All questions provide a one-year time reference.	
Do you come into contact with Ohio surface waters?	
If Yes→	Nature of contact (e.g. swimming, wading, boating, fishing)
	Frequency of contact activity
	Where does activity usually occur (e.g. Lake Erie, Ohio River, reservoirs)
Have you been in contact with Lake Erie?	
Have you consumed any fish from Ohio waters?	
If Yes→	What is the usual source? (e.g. Lake Erie, Ohio River, reservoirs)
Have you eaten fish from Lake Erie?	

The second survey, Survey of Lake Erie as an Ohio Natural Resource (SLEONR), was designed, developed, and implemented to evaluate Ohio residents’ perceptions of the value of Lake Erie and its condition. Again, these questions were developed with assistance and input from the Ohio Department of Health and the Cuyahoga Department of Environmental Health. The goal for this survey was different than for the BRFSS instrument described above in that we sought to provide pilot testing to establish the

appropriateness of the survey questions and gain an indication of response variability. An outline of the survey instrument content is provided in Table 2 with the entire instrument provided in Appendix B.

<p>Table 2. General content domain of Survey of Lake Erie as an Ohio Natural Resource (SLEONR).</p>
<ul style="list-style-type: none">• Value of Lake Erie as a natural resource• Nature of Lake Erie's value (e.g. food, recreation, drinking water)• Concerns over safety (e.g. drinking water, fish consumption, swimming)• Perception of Lake Erie's quality (current and future)• Climate change as a threat to Lake Erie• Perceptions of threats to Lake Erie• Willingness to take action to protect Lake Erie (e.g. change behavior, pay taxes)• Open-ended questions regarding clarity and completeness of survey questions

We included one question as a “negative control”. Question 7 was “Lake Erie is valuable for the production of Zebra Mussels” intended to provide a negative control for the positive influences of the Lake such as tourism, shipping, etc.

Because our goal was oriented toward survey development, we conducted this survey among a non-representative sample of individuals available through ResearchMatch, a registry developed by OSU’s Center for Clinical Translational Science (CCTS)³. Study data were collected and managed using REDCap electronic data capture tools hosted at Ohio State University. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies, providing: 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources. The registry is comprised of a database of individuals that includes demographics and medical history that is designed for NIH health research. Registrant data is only released to investigators once the registrant agrees to the study. The registry contains approximately 22,000 individuals from across the U.S. We limited our invitation list to

those who are a resident of Ohio and 18 years or older. The survey was conducted over 1 month with the first group of invites being sent out on February 9, 2012 and the last group on March 5, 2012. Those who accepted the invitation to participate were sent an additional email that contained a link to the survey. The survey was administered on-line through Research Electronic Data Capture (REDCap) tools hosted at Ohio State University⁴. We used REDCap, a secure web-based application designed to manage research study data, to build the survey collect responses, and manage the results.

The procedures for conducting the survey including the language of the ResearchMatch invitation and consent were approved as an exempt human studies protocol (see Appendix C). The survey requested zip code information from respondents to allow spatial analysis of response data, (e.g. do persons living in close proximity to Lake Erie perceive its value and condition differently from those distant). Email addresses were also requested for eligibility to be entered in a drawing of six \$50 amazon gift cards as an incentive for participating in the survey. The survey data was exported from REDCap to Stata for analysis including response frequency distributions and nonparametric analysis of variance.

Results

Preliminary unweighted results are available from BRFSS survey conducted during Jan-Mar 2012. During this time, 1663 individuals responded, however, the survey will not be complete until the end of 2012 calendar year. Frequency results for each of the questions are provided in Tables 3 -10.

Table 3. BRFSS question 1: “During the past year have you visited any Ohio lakes, ponds, reservoirs, rivers, streams or creeks for work or recreation? For instance: swimming, boating, fishing, tubing, water skiing, canoeing, or kayaking?”

Response	Percent (n)
Yes	40.8 (678)
No	59.1 (983)
Don't know	0.1 (1)
Refused	0.1 (1)
Total	100 (1663)

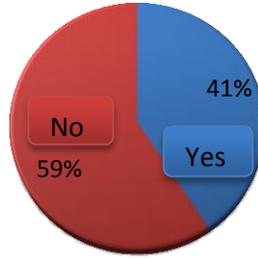
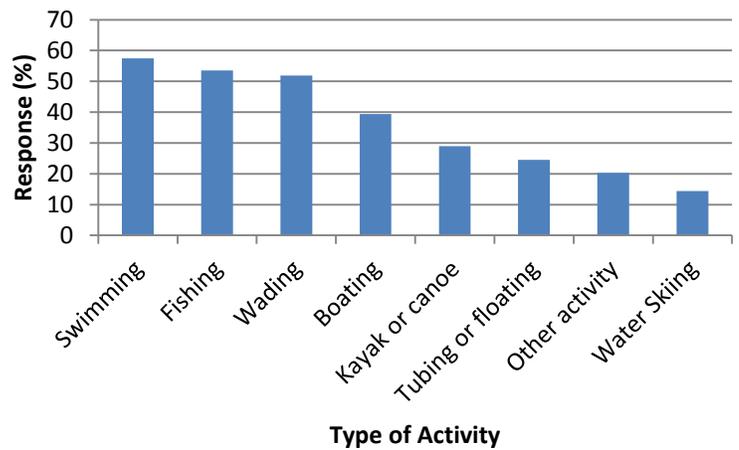


Table 4. BRFSS question 2*: “What is the nature of your recreational activity?”

Response	Percent (n)
Swimming	57.5 (391)
Fishing	53.5 (353)
Wading	51.9 (268)
Boating	39.4 (98)
Kayak or canoe	29.0 (197)
Tubing or floating	24.6 (167)
Other activity	20.3 (138)
Water Skiing	14.4 (98)
Total	100 (680)



* Of those responding “yes” to question 1 (n=680),

Table 5. BRFSS question 3*: “During the past year, considering all your activities that result, in contact with Ohio water, how frequency did they occur?”

Response	Percent (n)
Very often	10.4 (71)
1-2 times/week	13.2 (90)
1-3 times/month	29.1 (198)
Seldom	44.9 (305)
Never	1.9 (13)
Don't know	0.1 (1)
Refused	0.2 (2)
Total	100 (680)

* Of those responding “yes” to question 1 (n=680)

Table 6. BRFSS question 4*: “During the past year, where did your Ohio water-related recreational activity USUALLY occur?”

Response	Percent (n)
Lake Erie	31.2 (212)
Reservoirs other than Lake Erie	36.5 (248)
Ohio River	5.0 (34)
Reservoirs other than Ohio River	16.9 (115)
Other/none of the above	9.9 (67)
Don't know	0.3 (2)
Refused	0.3 (2)
Total	100 (680)

* Of those responding “yes” to question 1 (n=680)

Table 7. BRFSS question 5*: “In the past year, has your Ohio water related recreational activity ever occurred on Lake Erie?”

Response	Percent (n)
Yes*	43.7 (55+212)
No	56.1 (343)
Don't know	0.3 (1)
Total	100 (611)

A pie chart with two segments: a blue segment representing 'Yes' at 44% and a red segment representing 'No' at 56%. A legend at the bottom indicates blue for 'Yes' and red for 'No'.

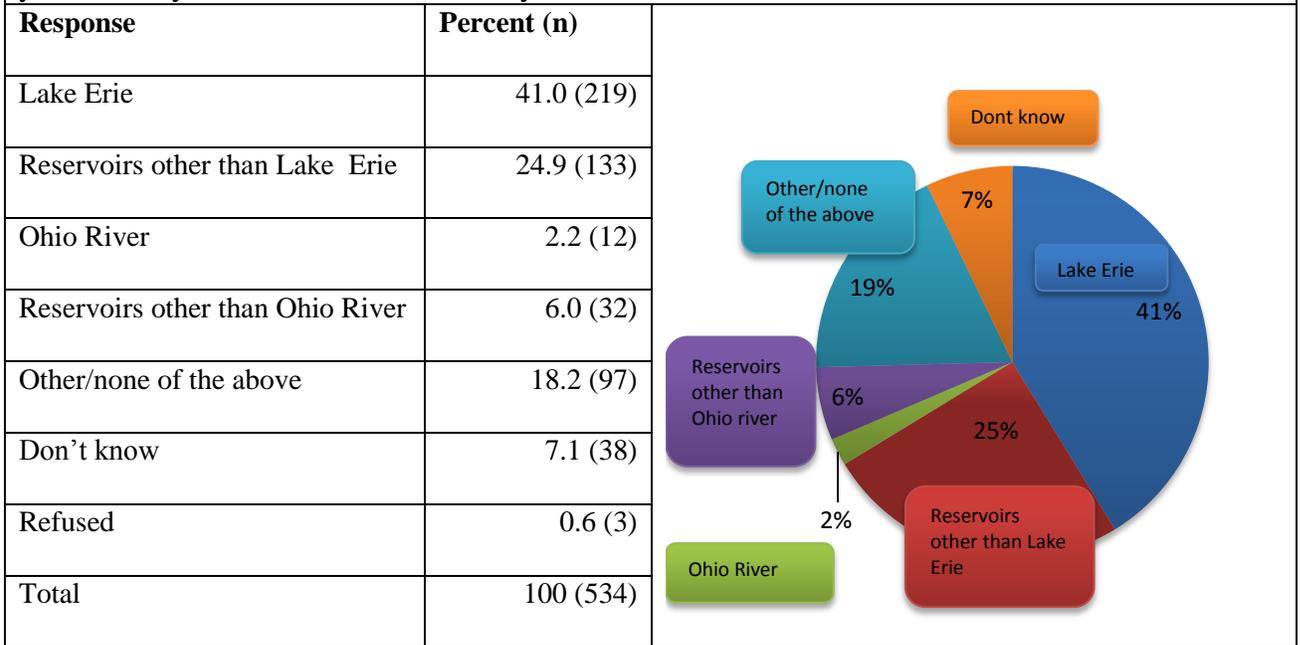
* Including those who indicated “Lake Erie” in question 4 above (n=212)

Table 8. BRFSS question 6. “During the past year, how often have you eaten fish caught by you, a family member, or a friend, from Ohio water?”

Response	Percent (n)
Very often	1.4 (24)
1-2 times/week	2.2 (36)
1-3 times/month	6.7 (111)
Seldom	20.7 (344)
Never	67.9 (1129)
Don't know	1.0 (17)
Refused	0.1 (2)
Total	100 (1663)

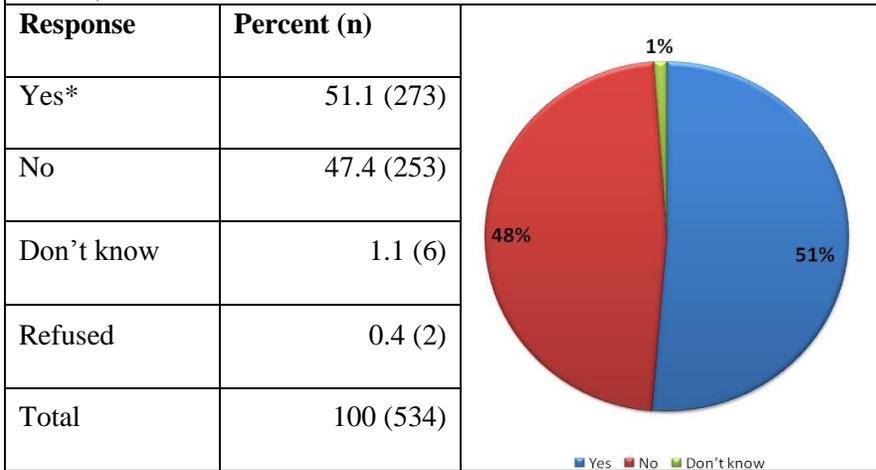
A pie chart with seven segments representing different frequencies: Never (68%), Seldom (21%), 1-3 times/month (7%), 1-2 times/month (2%), Very Often (1%), Don't know (1%), and Refused (0.1%). Each segment is labeled with its category and percentage. Callout boxes provide additional labels for some segments: 'Very Often' (1%), '1-2 times/month' (2%), '1-3 times/month' (7%), and 'Seldom' (21%).

Table 9. BRFSS question 7*: “During the past year, what is the **usual** source of the fish caught by you, a family member, or a friend, that you have eaten from Ohio waters?”



*Includes those who indicated eating fish from Ohio waters in question 6 above (n=515).

Table 10. BRFSS question 8*: “During the past year, have you ever eaten fish that was caught by you, a family member, or a friend, from Lake Erie?”



*Includes those who indicated “Lake Erie” as the usual source for fish eaten in Q7 above (n=219).

The SLEONR was conducted during March 2012. A total of 3070 individuals were invited to participate. Of those, 798 responded that they would like to receive the survey. Of those receiving the survey link, 523 actually completed the survey for an overall response rate of 17%. Respondents represented a broad age range with the highest frequency (27%) and response rate (15%) occurring within the age range 26 to 33 years (Figure 1).

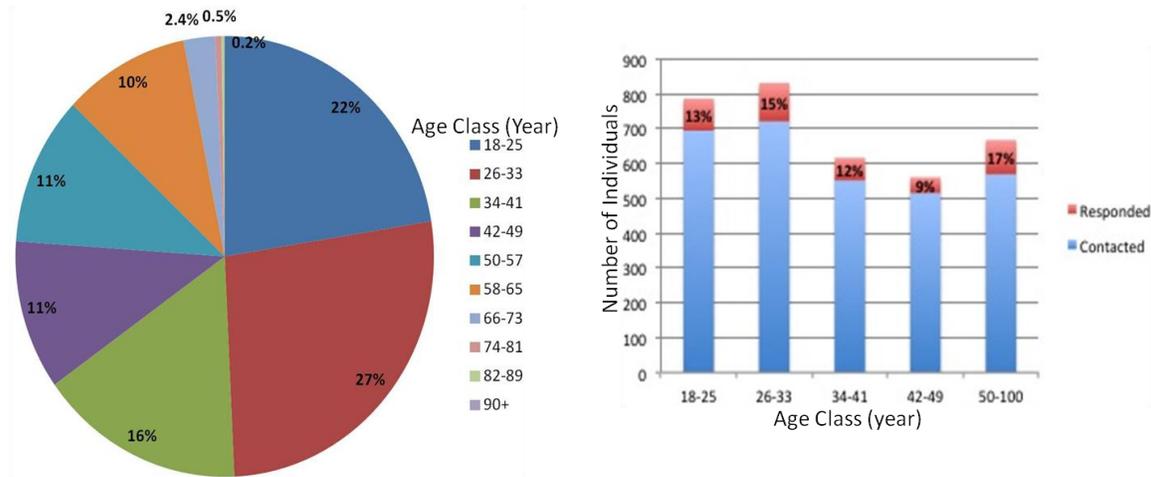


Figure 1. Distribution of respondent ages (left panel) and number of persons contacted and responding to survey invitation by age (right panel)

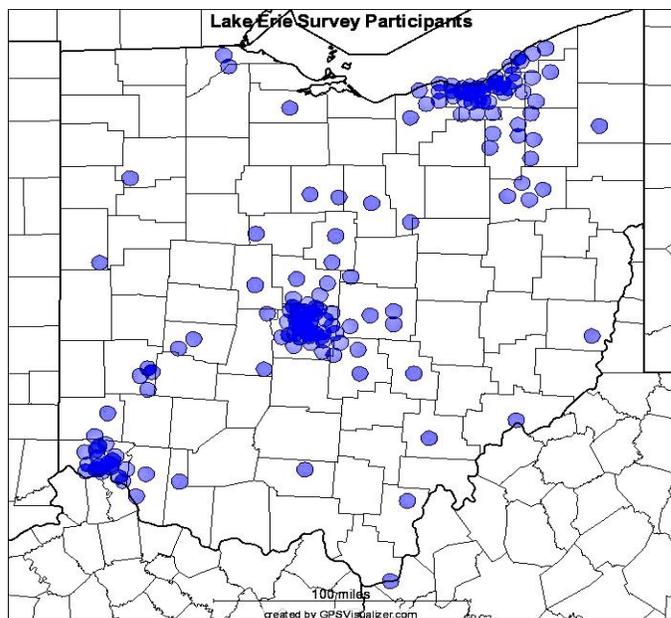
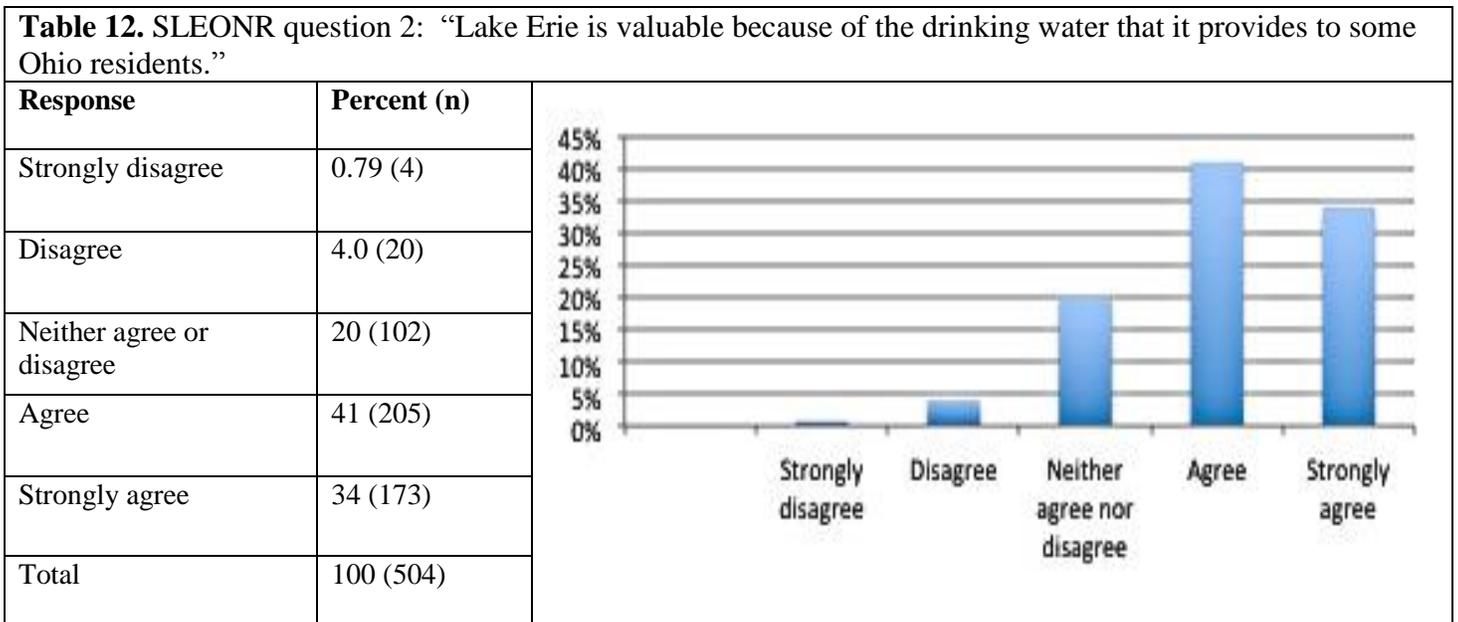
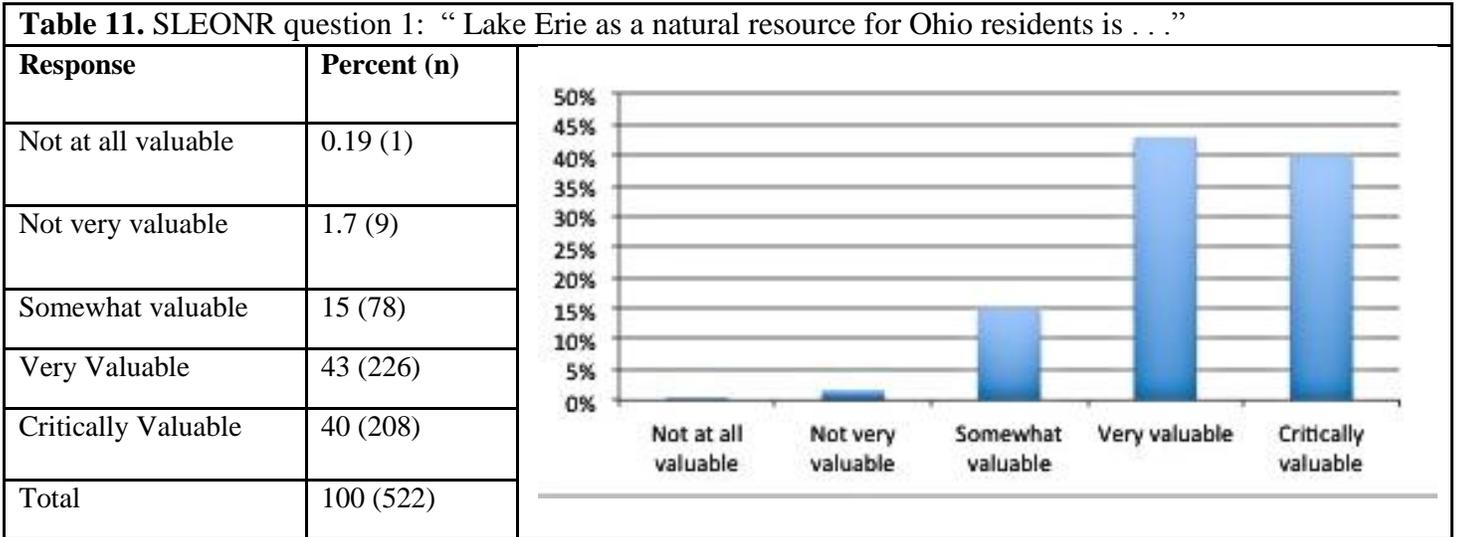
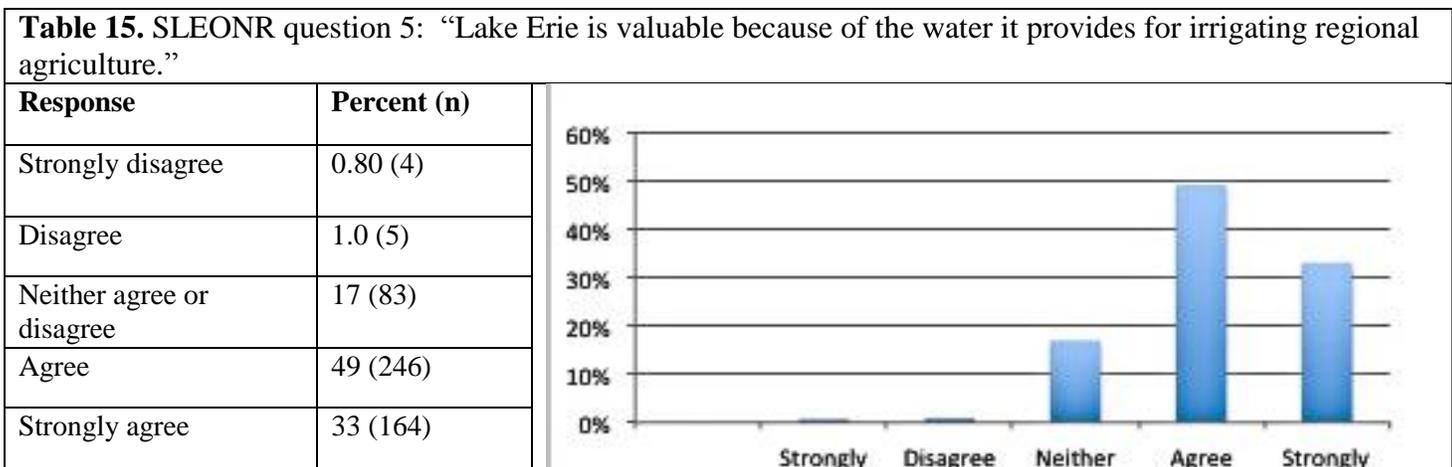
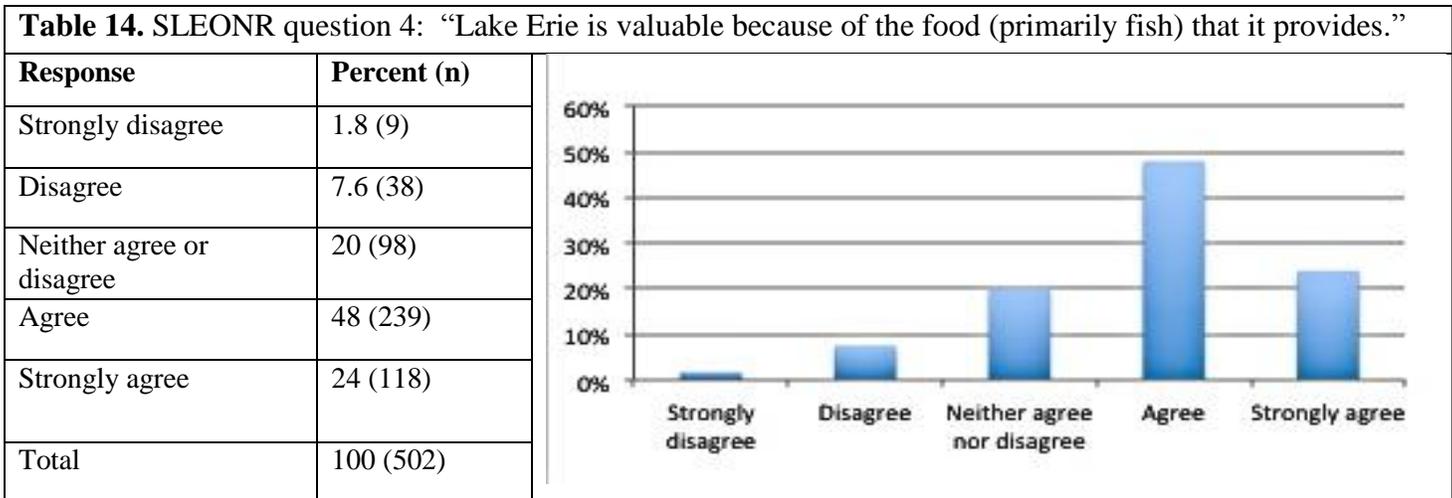
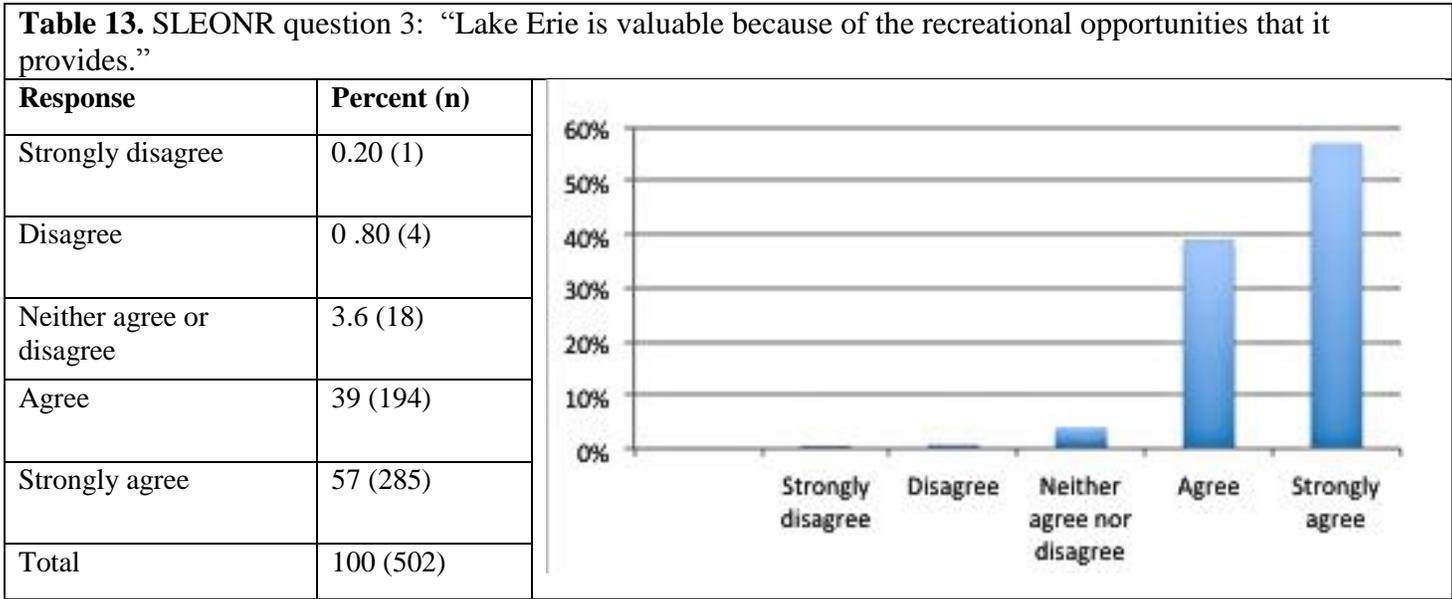


Figure 2. Spatial distribution of SLEONR respondents by self-reported zip code. Darker blue indicates a higher density of response.

The variability in respondent zip codes indicated broad spatial participation with the bulk of respondents from the Cleveland, Columbus, and Cincinnati metropolitan regions (Figure 2).

Tables 11-30 provide the results of survey responses.





Total	100 (502)
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Table 16. SLEONR question 6: “Lake Erie is valuable because of the shipping corridor it provides.”

Response	Percent (n)
Strongly disagree	0.80 (4)
Disagree	2.2 (11)
Neither agree or disagree	18 (90)
Agree	40 (200)
Strongly agree	39 (194)
Total	100 (499)

Table 17. SLEONR question 7: “Lake Erie is valuable for the production of Zebra Mussels.”

Response	Percent (n)
Strongly disagree	23 (117)
Disagree	14 (73)
Neither agree or disagree	46 (233)
Agree	12 (58)
Strongly agree	4.6 (23)
Total	100 (504)

Table 18. SLEONR question 8: “Lake Erie is valuable because of the tourism opportunities it provides.”

Response	Percent (n)
Strongly disagree	0.20 (1)
Disagree	3.2 (16)
Neither agree or disagree	6.0 (30)
Agree	43 (214)
Strongly agree	48 (239)
Total	100 (500)

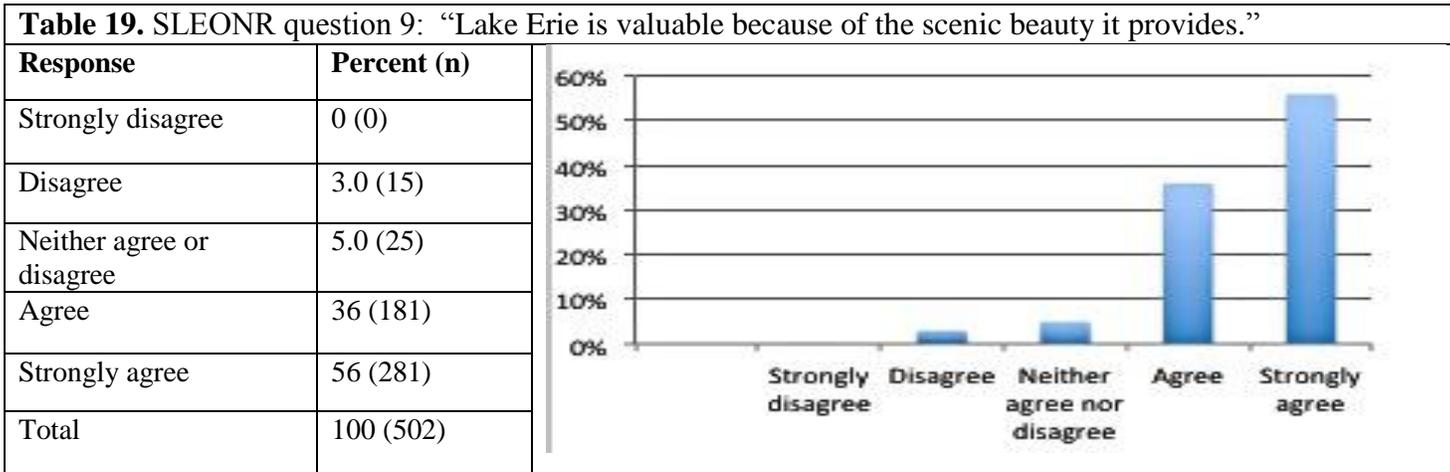


Table 20. SLEONR question 10: “I am concerned about the safety of drinking water that comes from Lake Erie.”

Response	Percent (n)
Strongly disagree	1.2 (6)
Disagree	11 (56)
Neither agree or disagree	25 (125)
Agree	41 (202)
Strongly agree	22 (108)
Total	100 (497)

Table 21. SLEONR question 11: “I am concerned about the safety of eating fish that come from Lake Erie.”

Response	Percent (n)
Strongly disagree	1.4 (7)
Disagree	17 (86)
Neither agree or disagree	20 (101)
Agree	38 (189)
Strongly agree	24 (120)
Total	100 (503)

Table 22. SLEONR question 12: “I am concerned that swimming in Lake Erie is unhealthy.”

Response	Percent (n)
Strongly disagree	5.2 (26)
Disagree	24 (122)
Neither agree or disagree	24 (121)
Agree	31 (157)
Strongly agree	15 (73)
Total	100 (499)

Table 23. SLEONR question 13. The current quality of Lake Erie as a natural resource is:

Response	Percent (n)
Poor	5.0 (25)
Fair	27 (133)
Good	33 (163)
Very good	14 (70)
Excellent	4.4 (22)
Don't know	17 (87)
Total	100 (500)

Table 24. SLEONR question 14: “The future quality of Lake Erie as a natural resource is . . .”

Response	Percent (n)
Highly threatened	15 (75)
Somewhat threatened	28 (143)
Uncertain	44 (219)
Somewhat protected	12 (62)
Highly protected	0.60 (3)
Total	100 (502)

Table 25. SLEONR question 15: “Climate change is harming Lake Erie as a natural resource. (“Climate change” is also sometimes known as “global warming”).”

Response	Percent (n)
Strongly disagree	2.4 (12)
Disagree	7.2 (36)
Neither agree or disagree	30 (150)
Agree	31 (156)
Strongly agree	7.8 (39)
Don't know	22 (109)
Total	100 (502)

Table 26. SLEONR question16a: “What do you believe is the greatest threat to Lake Erie as a natural resource?”

Response	Percent (n)
Agriculture	6.0 (30)
Climate Change	5.8 (29)
Combined sewer overflows (sewage mixed with storm water)	20 (100)
Industrial water pollution	42 (209)
Industrial air pollution	0.99 (5)
Commercial shipping	0.60 (3)
Recreational boating	0.40 (2)
Urban storm water run-off	2.8 (14)
Commercial fishing	0.40 (2)
Invasive species of plants or animals	20 (102)
Other	1.6 (8)
Total	100 (504)

Threat	Percent
Agriculture	6.0%
Climate change	5.8%
Combined sewer	20.0%
Industrial water	42.0%
Industrial air	0.99%
Commercial shipping	0.60%
Recreational boating	0.40%
Urban storm water	2.8%
Commercial fishing	0.40%
Invasive species of	20.0%
Other	1.6%

Table 27. SLEONR question 16b: “What do you believe is the second greatest threat to Lake Erie as a natural resource?”

Response	Percent (n)
Agriculture	6.6 (33)
Climate Change	5.8 (29)
Combined sewer overflows (sewage mixed with storm water)	30 (153)
Industrial water pollution	28 (141)
Industrial air pollution	4.2 (21)
Commercial shipping	0.99 (5)
Recreational boating	0.60 (3)
Urban storm water run-off	4.8 (24)
Commercial fishing	0.60 (3)
Invasive species of plants or animals	18 (90)
Other	0.40 (2)
Total	100 (504)

Threat	Percent
Agriculture	6.6%
Climate change	5.8%
Combined sewer overflows	30.0%
Industrial water pollution	28.0%
Industrial air pollution	4.2%
Commercial shipping	0.99%
Recreational boating	0.60%
Urban storm water run-off	4.8%
Commercial fishing	0.60%
Invasive species of plants or	18.0%
Other	0.40%

Table 28. SLEONR question 16c: “What do you believe is the third greatest threat to Lake Erie as a natural resource?”

Response	Percent (n)
Agriculture	9.8 (49)
Climate Change	12 (59)
Combined sewer overflows (sewage mixed with storm water)	18 (89)
Industrial water pollution	12 (62)
Industrial air pollution	9.0 (45)
Commercial shipping	3.2 (16)
Recreational boating	2.4 (12)
Urban storm water run-off	8.6 (43)
Commercial fishing	3.4 (17)
Invasive species of plants or animals	20 (98)
Other	2.2 (11)
Total	100 (501)

Threat	Percent
Agriculture	9.8%
Climate change	12%
Combined sewer overflows	18%
Industrial water pollution	12%
Industrial air pollution	9.0%
Commercial shipping	3.2%
Recreational boating	2.4%
Urban storm water run-off	8.6%
Commercial fishing	3.4%
Invasive species of plants or animals	20%
Other	2.2%

Table 29. SLEONR question 17: “I would be willing to pay additional taxes or fees to protect Lake Erie as a natural resource.”

Response	Percent (n)
Strongly disagree	3.8 (19)
Disagree	10 (50)
Neither agree or disagree	30 (151)
Agree	47 (234)
Strongly agree	8.7 (43)
Total	100 (497)

Response	Percent
Strongly disagree	3.8%
Disagree	10%
Neither agree nor disagree	30%
Agree	47%
Strongly agree	8.7%

Table 30. SLEONR question 18: “I would be willing to change my behavior to protect Lake Erie as a natural resource. (A couple of examples of behavior changes are water conservation and reducing fertilizer use.)”

Response	Percent (n)
Strongly disagree	1.2 (6)
Disagree	0.80 (4)
Neither agree or disagree	7.2 (36)
Agree	58 (392)
Strongly agree	33 (165)
Total	100 (503)

Response	Percent
Strongly disagree	1.2%
Disagree	0.8%
Neither agree nor disagree	7.2%
Agree	58%
Strongly agree	33%

These results generally show that Lake Erie is highly valued (83% indicating either “very or critically valuable”) with the most frequent value (96% indicating either “agree” or “strongly agree”) indicated for “recreational opportunities.” The control question about the value of Lake Erie for Zebra Mussel production was not entirely successful with 17% of respondents indicating they either “agreed” or “strongly agreed.” It became clear in the feedback provided in questions 21-25 that some people did not know what Zebra Mussels were. Results from these open ended questions designed for feedback about the survey questions themselves (e.g. clarity and completeness) are provided in Appendix D.

Responses to question 1 concerning “The value of Lake Erie as a natural resource” were evaluated as a function of distance from Lake Erie. Nonparametric analysis of variance indicated a strong bias in favor of valuing Lake Erie with closer proximity ($p=0.0053$). Moreover, there was a “dose-response” relationship between distance and strength of

valuation as shown in Figure 3.

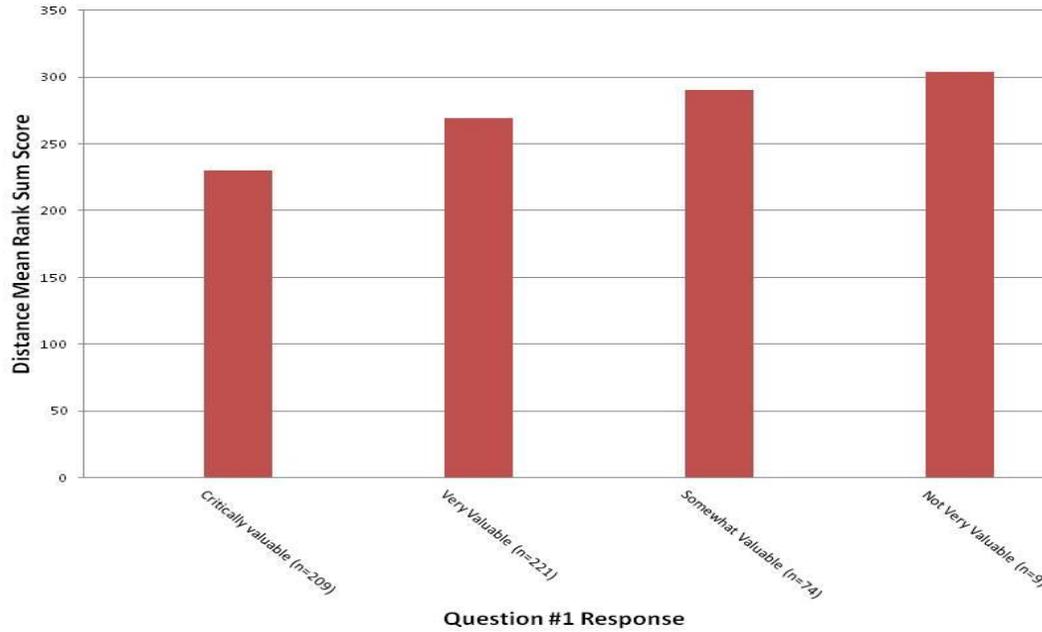


Figure 3. Response to SLEONR Question #1 as a function of mean rank sum score of zip code distance from Lake Erie.

There are 83 different public water systems that rely on Lake Erie source water serving a total population of 2.95 million Ohio residents. The location of drinking water source intakes are shown in Figure 4 below.

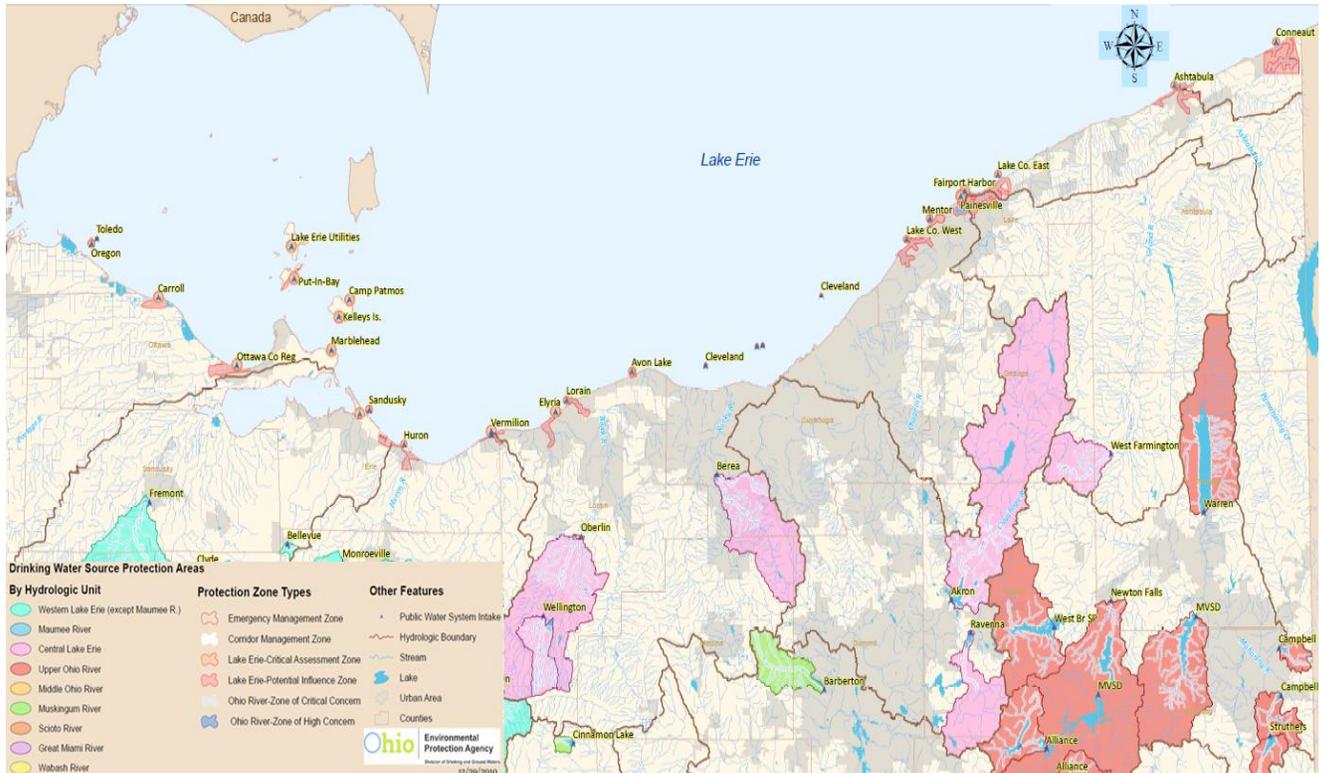


Figure 1. Map showing Lake Erie source water for Ohio public water systems.

Conclusions

This study and effort has resulted in the development of two survey instruments. The first has been designed to evaluate Ohio residents contact with Ohio surface waters and Lake Erie as a potential risk factor for exposure to and risk from water contaminants. This survey has been implemented through the Ohio BRFSS, and therefore is population-based. Preliminary results indicate a high prevalence (41%) of contact with Ohio surface waters. The second survey provides a means for evaluating the nature and extent with which Ohio residents value Lake Erie. This survey indicated that Ohio residents value Lake Erie and are concerned over its condition. Eighty-three percent of respondents considered the Lake to either be “very” or “critically” valuable. At the same time, the majority indicated concern (either agree or strongly agree) over the safety of Lake Erie for: 1) drinking water (62%), 2) fish consumption (61%); and 3) swimming (47%). The greatest threat to Lake Erie is perceived to be “industrial water pollution” (42%) and 56% of respondents indicated a willingness to pay additional taxes to protect Lake Erie. Although the survey was conducted within a non-representative sample, it provides an

indication of the value and concern that Ohio residents hold for Lake Erie. These survey results are the subject of an abstract accepted for oral presentation entitled “Lake Erie's public health-related ecosystem services: vulnerability and value for Ohioans” for presentation at the 4th International Ecosummit conference to be held in Columbus this summer (see Appendix E for abstract).

References

Krantzberg, G., de Boer, C. (2006) A Valuation of Ecological Services in the Great Lakes Basin Ecosystem to Sustain Healthy Communities and a Dynamic Economy. Available online: <http://www.eng.mcmaster.ca/civil/facultypages/krantz2.pdf>

² U.S. Environmental Protection Agency. www.epa.gov/greatlakes/index.html

³ <http://ccts.osu.edu/community-participation/researchmatch>

⁴ Paul A. Harris, Robert Taylor, Robert Thielke, Jonathon Payne, Nathaniel Gonzalez, Jose G. Conde, Research electronic data capture (REDCap) - A metadata-driven methodology and workflow process for providing translational research informatics support, *J Biomed Inform.* 2009 Apr;42(2):377-81.

Appendix A: Recreational Water & Fish Consumption Survey Questions included in the 2012 Ohio Behavioral Risk Factors Surveillance System.

State-Added 7: Recreational Water Contact and Fish Consumption [Split 1]			
1		OH7_1 During the past year have you visited any Ohio lakes, ponds, reservoirs, rivers, streams or creeks for work or recreation? (For instance: swimming, boating, fishing, tubing, water skiing, canoeing, or kayaking)	1 Yes 2 No [Go to QOH7_6] 7 Don't know/Not sure 9 Refused
1		OH7_2 During the past year, which Ohio water activities were you involved in.... OH7_2a Swimming?	1 Yes 2 No 7 Don't know/Not sure 9 Refused
1		OH7_2b Wading?	1 Yes 2 No 7 Don't know/Not sure 9 Refused
1		OH7_2c Boating, large craft; for example a powerboat or sailboat?	1 Yes 2 No 7 Don't know/Not sure 9 Refused
1		OH7_2d Waterskiing or tubing behind a powerboat?	1 Yes 2 No 7 Don't know/Not sure 9 Refused
1		OH7_2e Boating, self-powered; for example a kayak or canoe?	1 Yes 2 No 7 Don't know/Not sure 9 Refused
1		OH7_2f Tubing or floating?	1 Yes 2 No 7 Don't know/Not sure 9 Refused
1		OH7_2g Fishing?	1 Yes 2 No 7 Don't know/Not sure 9 Refused
1		OH7_2h Other?	1 Yes 2 No 7 Don't know/Not sure 9 Refused

1		OH7_3 During the past year, considering all of your activities that result in contact with Ohio water, how frequently did they occur?	1 Very Often, more than 2 times per week 2 Often, 1 to 2 times per week 3 Sometimes, 1 to 3 times per month 4 Seldom, less than 1 time per month 5 Never 7 Don't know/Not sure 9 Refused
1		OH7_4 During the past year, where did your Ohio water-related recreational activity usually occur?	1 Lake Erie [Go to QOH7_6] 2 A lake, pond, or a reservoir other than Lake Erie 3 A river, stream, or creek 4 Other/none of the above 7 Don't know/Not sure 9 Refused
1		(IF QOH7_4 = 2, 3, 4, or 7 continue; else go to QOH7_6 OH7_5 In the past year, has your Ohio water-related recreational activity ever occurred on Lake Erie?	1 Yes 2 No 7 Don't know/Not sure 9 Refused
1		OH7_6 During the past year, how often have you eaten fish caught by you, a family member, or a friend, from Ohio waters?	1 Very often (> 2 times/week) 2 Often (1-2 times per week) 3 Sometimes (1-3 times per month) 4 Seldom (<1 time per month) 5 Never [Go to next module or complete interview] 7 Don't know/Not sure 9 Refused
1		OH7_7 During the past year, what is the usual source for the fish caught by you, a family member, or a friend, that you have eaten from Ohio waters? Was it caught in....	Please read: 1 Lake Erie [Go to next module or complete interview] 2 A lake, pond, or reservoir other than Lake Erie 3 A river, stream, or creek 4 Other/None of the above Do not read: 7 Don't know/Not sure 9 Refused
1		OH7_8 During the past year, have you ever eaten fish that was caught by you, a family member, or a friend, from Lake Erie?	1 Yes 2 No 7 Don't know/Not sure 9 Refused

MODULE: Recreational Water Contact

For questions within this module, if the respondent inquires as to why we are interested in recreational water contact within a "Health Questionnaire" we suggest the following response.

“Recreational water contact can result in exposure to chemical or biological contaminants within the water that can make persons ill. To help us evaluate the population-level risk of illness, we need information about both the quality of the water as well as the extent of population exposure. The intent of these questions is to help us better understand population exposure. We are particularly interested in Lake Erie because of its size and significance for water recreation.”

MODULE: Fish Consumption

For questions within this module, if the respondent inquires as to why we are interested in fish consumption within a “Health Questionnaire” we suggest the following response.

“Fish can become contaminated with chemical and biological agents that when eaten, can make you sick. To help us evaluate the population-level risk of illness, we need information about both the levels of fish contamination as well as the extent of fish consumption. The intent of these questions is to help us better understand population-level fish consumption. We are particularly interested in Lake Erie because of its size and significance for fish production.”

Appendix B: Survey questions included as a part of Survey of Lake Erie as an Ohio Natural Resource (SLEONR)

Lake Erie is a natural resource for Ohio residents. We are interested in your opinions on the value of this resource and its condition. We ask that you answer the following questions based on your understanding of the broader role of Lake Erie for all Ohioans rather than your own personal experience. For example, you might recognize the value of Lake Erie as an important resource for drinking water even if it is not where you get your drinking water.

1. Lake Erie as a natural resource for Ohio residents is
 - Critically valuable
 - Very valuable
 - Somewhat valuable
 - Not very valuable
 - Not at all valuable [Skip to #10]

2. Lake Erie is valuable because of the drinking water that it provides to some Ohio residents.
 - Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree

3. Lake Erie is valuable because of the recreational opportunities that it provides.
 - Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree

4. Lake Erie is valuable because of the food (primarily fish) that it provides.
 - Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree

5. Lake Erie is valuable because of the water it provides for irrigating regional agriculture.
 - Strongly agree

- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

6. Lake Erie is valuable because of the shipping corridor it provides.
- Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree
7. Lake Erie is valuable for the production of Zebra Mussels.
- Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree
8. Lake Erie is valuable because of the tourism opportunities it provides.
- Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree
9. Lake Erie is valuable because of the scenic beauty that it provides.
- Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree
10. I am concerned about the safety of drinking water that comes from Lake Erie.
- Strongly agree
 - Agree
 - Neither agree nor disagree
 - Disagree
 - Strongly disagree
11. I am concerned about the safety of eating fish that come from Lake Erie.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

12. I am concerned that swimming in Lake Erie is unhealthy.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

13. The current quality of Lake Erie as a natural resource is

- Excellent
- Very good
- Good
- Fair
- Poor
- Don't know

14. The future quality of Lake Erie as a natural resource is

- Highly protected
- Somewhat protected
- Uncertain
- Somewhat threatened
- Highly threatened

15. Climate change is harming Lake Erie as a natural resource. ("Climate change" is also sometimes known as "global warming").

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Don't know

The following three questions ask you to select what you believe to be the 3 greatest threats to Lake Erie as a natural resource. You will choose the greatest threat, the second greatest, and the third greatest.

16a. What do you believe is the greatest threat to Lake Erie as a natural resource?

- Agriculture
- Climate change
- Combined sewer overflows (sewage mixed with storm water)
- Industrial water pollution
- Industrial air pollution
- Commercial shipping
- Recreational boating
- Urban storm water run-off
- Commercial fishing
- Invasive species of plants or animals
- Other (please specify in space provided next)

16b. What do you believe is the second greatest threat to Lake Erie as a natural resource?

- Agriculture
- Climate change
- Combined sewer overflows (sewage mixed with storm water)
- Industrial water pollution
- Industrial air pollution
- Commercial shipping
- Recreational boating
- Urban storm water run-off
- Commercial fishing
- Invasive species of plants or animals
- Other (please specify in space provided next)

16c. What do you believe is the third greatest threat to Lake Erie as a natural resource?

- Agriculture
- Climate change
- Combined sewer overflows (sewage mixed with storm water)
- Industrial water pollution
- Industrial air pollution
- Commercial shipping
- Recreational boating
- Urban storm water run-off
- Commercial fishing
- Invasive species of plants or animals
- Other (please specify in space provided next)

17. I would be willing to pay additional taxes or fees to protect Lake Erie as a natural resource.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

18. I would be willing to change my behavior to protect Lake Erie as a natural resource. (A couple of examples of behavior changes are water conservation and reducing fertilizer use)

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

19. What is your zip code?

20. If you would like to be eligible for the Amazon.com gift code drawing, please include your preferred email address below. If you are selected as a winner from the random drawing, you will receive your gift code via email message to this address.

Feedback on Survey Questions

You have now completed the main portion of the survey. Thank you.

Please take a couple of extra minutes to answer the remaining questions. We are in the pilot-testing phase for this study, and your additional feedback would be very helpful as we refine the survey questions for future participants.

Please refer back to the full survey, visible using the link below, in answering these questions. Your responses will help us revise our survey to be as clear and complete as possible.

[Attachment: "SLEONR_fullsurvey.pdf"]

1. Were there any questions that you found confusing? If so, please write the question number and describe your confusion or understanding of the question below.

2. Were there any questions that you found difficult to answer? If so, please write the question number and describe the difficulty as best you can below.

3. Did you come across any terms that were unfamiliar to you? If so, what was the word and which question(s) was it in?

4. Are there questions related to Lake Erie as a natural resource that you would ask that were not a part of this survey? If so, what are they, and why are they important to you?

5. Do you have any other comments or opinions related to this survey?

Appendix C. Approved Human Studies Protocol



Office of Research
Office of Responsible Research Practices

Protocol Title: EVALUATING THE LINKAGE BETWEEN LAKE ERIE WATER QUALITY AND PUBLIC HEALTH FOR OHIO RESIDENTS: SURVEY OF LAKE ERIE AS AN OHIO NATURAL RESOURCE
Protocol Number: 2012E0038
Principal Investigator: Timothy Buckley
Date of Determination: 01/30/2012
Qualifying Category: 02
Attachments: None

Dear Investigators,

The Office of Responsible Research Practices has determined the above referenced project **exempt from IRB review**.

Please note the following:

- Retain a copy of this correspondence for your records.
- Only the OSU staff and students named on the application are approved as OSU investigators and/or key personnel for this study.
- No changes may be made to exempt research (e.g., personnel, recruitment procedures, advertisements, instruments, etc.). If changes are needed, a new application for exemption must be submitted for review and approval prior to implementing the changes.
- Per university requirements, all research-related records (e.g., application materials, letters of support, signed consent forms, etc.) must be retained and available for audit for a period of at least three years after the research has ended.
- It is the responsibility of the investigators to promptly report events that may represent unanticipated problems involving risks to subjects or others.

This determination is issued under The Ohio State University's OHRP Federalwide Assurance #00006378. All forms and procedures can be found on the ORRP website: www.orrp.osu.edu.

Please feel free to contact the Office of Responsible Research Practices with any questions or concerns.

Thanks,
Cheri

Cheri Pettey
Sr. Protocol Analyst | Office of Responsible Research Practices | The Ohio State University

T: 614.688.0389 F: 614.688.0366 E: pettev.6@osu.edu W: www.orrp.osu.edu



Application for Exemption:

Evaluating the Linkage Between Lake Erie Water Quality and Public Health for Ohio Residents: Survey of Lake Erie as an Ohio Natural Resource

Dr. Tim Buckley, Environmental Health Sciences, OSU College of Public Health

Submitted: January 18, 2012

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APPLICATION FOR EXEMPTION

Office of Responsible Research Practices (ORRP)
 300 Research Administration Building, 1960 Kenny Road, Columbus, OH 43210
 Phone: (614) 688-8457 Fax: (614) 688-0366 www.orrp.osu.edu

OFFICE USE	DATE RECEIVED:	DATE VERIFIED COMPLETE:	OSU PROTOCOL NUMBER:
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1. PROJECT TITLE
 Evaluating the Linkage Between Lake Erie Water Quality and Public Health for Ohio Residents: Survey of Lake Erie as an Ohio Natural Resource

2. PRINCIPAL INVESTIGATOR (or Advisor) - see Qualifications for service as a PI

Name (Last, First, MI):	Buckley, Timothy	Degree(s):	PhD, MHS, BS
University Academic Title:	Associate Professor	College (TIU):	College of Public Health
Department Name (TIU):	Division of Environmental Health Sciences	Department # (TIU):	25051
Campus Mailing Address:	402 Cunz Hall 1841 Neil Avenue Columbus, OH 43210	OSU ID Number:	05151492
E-mail:	tbuckley@cph.osu.edu	Fax:	(614) 292-4053
Phone:	(614) 292-2590	Emergency phone:	(614) 330-4653

3. CO-INVESTIGATOR(S)

Are there any OSU Co-Investigators on this protocol? Yes → Complete Appendix A1
 No

Signatures of Co-Investigator(s) are required on Appendix A1.

4. KEY PERSONNEL

Are there any OSU key personnel on this protocol? Yes → Complete Appendix A1
 No

Key personnel are defined as individuals who participate in the design, conduct, or reporting of human subjects research. At a minimum, include individuals who recruit participants, obtain consent, or who collect study data.

5. EXTERNAL CO-INVESTIGATOR(S) & KEY PERSONNEL

Are any external (non-OSU) investigators or key personnel engaged in the OSU research? Yes → Complete Appendix A2
 No → Go to Question #6

"Engaged" individuals are those who intervene or interact with participants in the context of the research or who will obtain individually identifiable private information for research funded, supervised, or coordinated by OSU. See OHRP Engagement Guidance or contact ORRP for more information.

External (non-OSU) personnel may be subject to their own institutional review and/or local oversight requirements. Investigators are responsible for determining if other requirements apply and are encouraged to maintain documentation of any additional approvals/determinations for this study.

6. ADDITIONAL CONTACT(S)

If further information about this application is needed, specify the contact person(s) if other than the PI (e.g., study or regulatory coordinator, research assistant, etc.). N/A

Name (Last, First, MI): _____ Phone: _____

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E-mail: _____ Fax: _____
Name (Last, First, MI): _____ Phone: _____
E-mail: _____ Fax: _____

All OSU individuals listed on this protocol will have access to information about protocol actions and the completion status of each individual's administrative and training requirements (CITI, COI disclosure). Personal financial information provided in COI disclosures is not included.

7. EDUCATION

Educational requirements (initial and continuing) must be satisfied prior to submitting the application for review. See [CITI Training](#) or contact ORRP for more information.

Have all OSU investigators and key personnel completed the required web-based course (CITI) in the protection of human research subjects? Yes
 No

8. FINANCIAL CONFLICT OF INTEREST

All OSU investigators and key personnel must have a current COI disclosure (updated as necessary for the proposed research) review. Examples of financial interests that must be disclosed include (but are not limited to) consulting fees or honoraria; stocks, stock options or other ownership interests; and patents, copyrights and royalties from such rights. For more information, see Office of Research Compliance [COI Overview](#) and [eCOI](#).

- a. Have all OSU investigators and key personnel completed the required COI disclosure? Yes
 No
- b. Does any OSU investigator (including principal or co-investigator), key personnel, or their immediate family members have a financial interest (including salary or other payments for services, equity interests, or intellectual property rights) that would reasonably appear to be affected by the research, or a financial interest in any entity whose financial interest would reasonably appear to be affected by the research? Yes
 No

9. FUNDING OR OTHER SUPPORT

a. Is the research funded or has funding been requested? Yes
 No

If Yes → Specify sponsor: Lake Erie Protection Fund

Provide a copy of the grant application or funding proposal. The University is required to verify that all funding proposals and grants (new or renewals) have been reviewed before funds are awarded.

b. Is any support other than monetary (e.g., materials, equipment, etc.) being provided for the study? Yes
 No

If Yes → Specify support and provider: _____

10. SCREENING QUESTIONS

- a. Will the research expose participants to discomfort or distress beyond that normally encountered in daily life? Yes
 No
- b. Could disclosure of participants' responses outside the research reasonably place participants at risk of criminal or civil liability or be damaging to participants' financial standing, employability, or reputation? Yes
 No
- c. Does any part of the research require deception or incomplete disclosure of information to participants? Yes
 No
- d. Will prisoners (or their data and/or specimens) be participants in the research? Yes
 No
- e. For research proposed under category 1, will the research be conducted outside of commonly accepted Yes
 No

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- educational settings or deviate from normal educational practices? No or N/A
- f. For research proposed under category 2, will the research involve surveys or interview procedures with children? Yes
 No or N/A
- g. For research proposed under category 2, will the research involve observations of the public behavior of children, during which an investigator participates in the activities being observed? Yes
 No or N/A
- h. For research proposed under category 4, will any of the data, documents, records, or biological specimens be collected or created after the date of this application for exemption? Yes
 No or N/A
- i. For research proposed under category 4, will any of the information obtained from private sources of data, documents, records, or biological specimens be recorded by the investigator in such a manner that participants could be identified directly or through identifiers linked to the participants? Yes
 No or N/A
- j. For research proposed under categories 1-5, is the research subject to FDA regulations? Yes
 No or N/A

If you checked YES to ANY of the questions above, your research is NOT EXEMPT. Do not complete this application. Submit an IRB Application for Initial Review of Human Subjects Research. For more information on exempt research, see OSU HRP policy Exempt Research.

11. EXEMPT CATEGORY

Please check the categories of exemption for which you are applying. You may check 1 2 3 4 5 6 more than one box.

See IRB Exemption Categories for the list of categories and their descriptions.

12. LOCATION OF THE RESEARCH

Research to be conducted at locations other than approved performance sites may require a letter of support or another institution's approval if personnel are engaged. See OHRP Engagement Guidance or contact ORRP for more information.

- a. List the specific site(s) at which the research will be conducted (include both domestic and international locations).

Location Name (or description)	Address (street, city and state, or country)
The Ohio State University - College of Public Health	Division of Environmental Health Sciences 402 Cunz Hall 1841 Nell Avenue Columbus, OH 43210

- b. Are all the sites named above on the OSU list of approved research performance sites? Yes
 No

If No → Domestic sites
 International sites → Complete **Appendix U**

Investigators are responsible for obtaining and maintaining documentation of any additional approvals, letters of support, or other site agreements. Contact ORRP for more information.

13. SUMMARY OF THE RESEARCH

- a. Briefly summarize the purpose and procedures of the proposed research using *non-technical* language that can be readily understood by someone outside the discipline. *Use complete sentences (limit 300 words). Attach a copy of the research protocol. See Guidelines for writing a research protocol for more information.*

The goal of the current project is to develop a means to evaluate the public's awareness of Lake Erie as a natural resource for the health and welfare of Ohio residents. We have developed a survey instrument for this purpose. To further its development, we propose to administer it to at least 100 individuals to evaluate participants' ease of responding to the questions, identify potential problems, and acquire preliminary data on response variability.

A tested and validated survey instrument will provide a valuable tool that can be used to evaluate the extent to which Ohioans value the ecosystem services of Lake Erie. Advocates for the protection of Lake Erie can use the survey to develop and/or test targeted education programs. The survey will be web-administered using the online survey tool REDCapSurvey.

- b. Describe how the proposed research meets the criteria for exemption. Reference the exemption category or categories (see question #10 above) and the category's corresponding requirements.

This research meets the criteria for exemption under Category #2. This research involves the use of survey procedures where the disclosure of the human subjects' responses outside the research would NOT reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation. The only personal information collected on the survey itself will be zip code of residence and email address. For a short time we will also have access to name, age, gender and a few other pieces of information available through the participants' Research Match profiles, if they grant us access to that information through the recruitment process. However, no health-related or sensitive information will be linked to the survey responses, and all of the survey questions are of a non-sensitive, zero-risk nature.

- c. Provide the estimated beginning and end dates of the project.

The survey pilot-test will begin immediately following IRB exemption/approval. The project is set to run from January - March 2012.

14. RESEARCH METHODS & ACTIVITIES

Check all research activities that apply. *Attach a copy of materials to be used (e.g., interview/focus group questions, instruments, data collection forms, etc.).*

- | | |
|--|---|
| <input type="checkbox"/> Audio, video, digital, or image recordings | <input type="checkbox"/> Record review (which may include PHI) |
| <input type="checkbox"/> Existing data, not publicly available | <input type="checkbox"/> Specimen research (must be existing at time of application) |
| <input type="checkbox"/> Existing data, publicly available | <input checked="" type="checkbox"/> Surveys, questionnaires, or interviews (one-on-one) |
| <input type="checkbox"/> Focus groups | <input type="checkbox"/> Surveys, questionnaires, or interviews (group) |
| <input checked="" type="checkbox"/> Internet or e-mail data collection | <input type="checkbox"/> Taste-testing |
| <input type="checkbox"/> Observation of participants (including field notes) | <input type="checkbox"/> Other (specify): |
| <input type="checkbox"/> Oral history (does not include medical history) | |

15. PARTICIPANT POPULATION

- a. Specify the age(s) of the individuals who may participate in the research:

Age(s): 18 or older

- b. Specify the participant population(s) to be included (check all that apply):

- | | |
|---|---|
| <input checked="" type="checkbox"/> Adults | <input type="checkbox"/> Non-English speaking |
| <input type="checkbox"/> Children (< 18 years) | <input type="checkbox"/> Unknown (e.g., research using secondary data/specimens, non-targeted surveys, program protocols) |
| <input type="checkbox"/> Student research pools (e.g., psychology, linguistics) | <input type="checkbox"/> Other |
| Specify: | Specify: |

- c. Provide the total number of participants (or number of participant records, specimens, etc.) for whom you are seeking OSU approval. *The number of participants is defined as the number of individuals who agree to participate (i.e., those who provide consent or whose records are accessed, etc.) even if all do not prove eligible or complete the study.*

3,500 -
 ResearchMatch
 currently has about
 2,900 adults
 registered in Ohio,
 but approximately
 100-200 volunteers
 are added in Ohio

each month, so we anticipate the upper bound for contacting potential participants for this study to be 3,500.

- d. Describe the characteristics of the population(s). *If requesting exemption under category 4 (see question #10 above), include the date range of records/specimens to be accessed (e.g., patients admitted to the hospital between 01/01/2005 and 01/01/2009).*

All adults (age 18+) registered in Ohio through Research Match will be eligible for recruitment and participation. We will not exclude anyone on the basis of gender, race, health status or any other criteria.

16. PARTICIPANT IDENTIFICATION, RECRUITMENT, & SELECTION

- a. Describe how potential participants will be identified (e.g., advertising, individuals known to investigator, record review, etc.). Explain how investigator(s) will gain access to this population, as applicable.

We will use ResearchMatch.org for subject recruitment on this protocol. ResearchMatch is a national electronic, web-based recruitment tool that was created through the Clinical & Translational Science Awards Consortium in 2009 and is maintained at Vanderbilt University. Please see the attached *General Description of Research Match*.

- b. Describe the recruitment process, including the setting in which recruitment will take place. Explain how the process respects potential participants' privacy. *Provide copies of proposed recruitment materials (e.g., ads, flyers, website postings, recruitment letters, and oral/written scripts).*

Recruitment will take place online through ResearchMatch.org. Please see the attached *Recruitment Message* which will be sent out through ResearchMatch to potentially eligible volunteers (adults registered in Ohio). The recruitment message is distributed through ResearchMatch.org without giving researchers any access to identifying information. Volunteers who may be interested in participating then have the option of releasing their contact information and profile to the research team for us to send them the link to the web-based survey directly. Potential volunteers must click "yes" twice following receipt of the invitation recruitment message in order for any identifying information to be released to the research team.

17. INCENTIVES TO PARTICIPATE

Will participants receive compensation or other incentives (e.g., free services, cash payments, gift certificates, parking, classroom credit, travel reimbursement) to participate in the research study? Yes No
Compensation plans should be pro-rated (not contingent upon study completion) and should consider participation withdrawals, as applicable.

If Yes → Describe the incentive, including the amount and timing of all payments.

Each participant who completes the survey will be entered into a random drawing for one of six Amazon.com gift card codes in the amount of \$50. Awardees will receive their gift card codes by email at the conclusion of the survey administration and data collection phase of the project.

18. INFORMED CONSENT PROCESS

- a. Indicate the consent process(es) and document(s) to be used in the study. Check all that apply. *Provide copies of documents, as applicable. See Informed Consent Guidance - Exempt Research for instructions or contact ORRP for more information.*

- | | |
|--|--|
| <input type="checkbox"/> Informed Consent – Form | <input type="checkbox"/> Parental Permission – Form |
| <input checked="" type="checkbox"/> Informed Consent – Verbal Script/Online/Unsigned | <input type="checkbox"/> Parental Permission – Verbal Script/Online/Unsigned |
| <input type="checkbox"/> Assent – Form | <input type="checkbox"/> Translated Consent/Assent – Form(s), Script(s), etc. (provide only English version) |
| <input type="checkbox"/> Assent – Verbal/Online/Unsigned | <input type="checkbox"/> Other (Specify): |
| <input type="checkbox"/> Not Applicable (existing data or specimens) | |

- b. Describe the consent process. Explain when and where consent will be obtained and how subjects and/or their legally N/A

authorized representatives will be provided sufficient opportunity (e.g., waiting period, if any) to consider participation.

By clicking "yes" in the recruitment invitation email, participants are consenting to have their contact information released to the research team. Participants will be informed through the subsequent contact that their completion of the online survey implies informed consent, but no further documentation of consent will be collected.

19. PRIVACY OF PARTICIPANTS

a. Describe the provisions to protect the privacy interests of the participants. *Consider the circumstances and nature of information to be obtained, taking into account factors (e.g., age, gender, ethnicity, education level, etc.) that may influence participants' expectations of privacy.*

Once survey administration/data collection is complete and incentives have been disbursed, all of the data will be de-identified (names and email addresses removed) for analysis and storage. Data will be stored in password-protected files.

b. Does the research require access to personally identifiable private information? Yes
 No

If Yes → Describe the personally identifiable private information involved in the research. List the information source(s) (e.g., educational records, surveys, medical records, etc.).

The only personally identifiable private information that will be recorded on the survey is participant-supplied email address. Once the incentives have been disbursed, email addresses will be removed from the datasets prior to analysis. During the course of recruitment through Research Match, we will temporarily have access to some personally identifiable information that has been provided by the potential volunteers in their ResearchMatch.org profile, and which they have released as part of their consent to the Stage 1 recruitment message, and covered by the Vanderbilt IRB approval (see attached letter). The only information that will be retained and linked to the survey dataset is participants' age and gender. All health information and names will never be linked to the survey responses. Also, email addresses obtained through ResearchMatch.org will only be retained and used during the recruitment and incentive process, including the two reminder emails to initial non-respondents. Once survey administration and incentive disbursement is complete, these email addresses will not be linked to the survey responses.

20. CONFIDENTIALITY OF DATA

a. Explain how information is handled, including storage, security measures (as necessary), and who will have access to the information. Include both electronic and hard copy records.

Primary data collection will occur electronically through the Internet. All electronic records will be stored in password-protected files on secure server drives or individual computers that are only accessible to the study team (Dr. Buckley and Ms. Seryak). Any hard copies of records will be de-identified, and all electronic records will also be de-identified once the survey has been closed and data collection and incentive disbursement completed.

b. Indicate what will happen to the identifiable data at the end of the study. *Research-related records should be retained for a period of at least three years after the research has been discontinued (i.e., no further data collection, long term follow-up, re-contact, or analysis of identifiable/coded data.)*

- Identifiers permanently removed from the data and destroyed (de-identified)
- Identifiable/coded (linked) data are retained
- Identifiable data not collected

21. HIPAA RESEARCH AUTHORIZATION

Will individually identifiable Protected Health Information (PHI) subject to the HIPAA Privacy Rule requirements be accessed, used, or disclosed in the research study?

- No
- Yes → Check all that apply:
 - Written Authorization → *Provide a copy of the Authorization Form*
 - Partial Waiver (recruitment purposes only) → Complete Appendix N

The Ohio State University – APPLICATION FOR EXEMPTION

- Full Waiver (entire research study) → Complete Appendix N
- Alteration (written documentation) → Complete Appendix N

22. APPLICATION CONTENTS

Indicate the documents being submitted for this research project. Check all appropriate boxes.

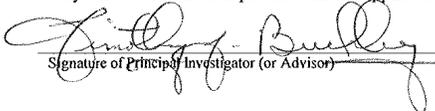
- Application for Exemption
- Appendix A1: OSU Co-Investigators & Key Personnel (questions 3 & 4)
- Appendix A2: External Co-Investigator(s) & Key Personnel (question 5)
- Appendix N: Waiver or Alteration of HIPAA Research Authorization (question 21)
- Appendix U: Research in International Settings (question 12)
- Consent form(s), Assent Form(s), Permission Form(s), and Verbal Script(s) (question 18)
- Data Collection Form(s) involving protected health information (question 14)
- Recruitment Materials (e.g., ads, flyers, telephone or other oral script, radio/TV scripts, internet solicitations) (question 16b)
- Script(s), Instructions, or Information Sheet(s) (question 14)
- Instruments (e.g., questionnaires or surveys to be completed by participants) (question 14)
- Other Committee Approvals/Letters of Support (questions 12)
- Research Protocol
- Complete Grant Application or Funding Proposal (question 9)
- Other supporting documentation and/or materials

23. ASSURANCE: PRINCIPAL INVESTIGATOR (or Advisor)

I agree to follow all applicable policies and procedures of The Ohio State University and federal, state, and local laws and guidance regarding the protection of human subjects in research, as well as professional practice standards and generally accepted good research practice guidelines for investigators, including, but not limited to, the following:

- Perform the research as approved under the direction of the Principal Investigator (or Advisor) by appropriately trained and qualified personnel with adequate resources;
- Initiate the research after written determination of exemption has been received;
- Obtain and document (unless waived) informed consent and HIPAA research authorization from human subjects (or their legally authorized representatives) prior to their involvement in the research using the final version of the consent form(s) and process submitted for determination;
- Promptly report to ORRP events that may represent unanticipated problems involving risks to subjects or others;
- Provide significant new findings that may relate to the subjects willingness to continue to participate;
- Inform ORRP of any proposed changes in the research or informed consent process (via a new Exempt Application) before changes are implemented, and agree that no changes will be made until an exempt determination is made by ORRP (except where necessary to eliminate apparent immediate hazards to participants);
- Maintain research-related records (and source documents) in a manner that documents the validity of the research and integrity of the data collected, while protecting the confidentiality of the data and privacy of participants;
- Retain research-related records for audit for a period of at least three years after the research has ended (or longer, according to sponsor or publication requirements) even if I leave the University;
- Contact ORRP for assistance in amending (to request a change in Principal Investigator) or terminating the research if I leave the University or am unavailable to conduct or supervise the research personally (e.g., sabbatical or extended leave); and
- Inform all Co-Investigators, research staff, employees, and students assisting in the conduct of the research of their obligations in meeting the above commitments.

I verify that the information provided in this application is accurate and complete.


Signature of Principal Investigator (or Advisor)

1/18/2012
Date

The Ohio State University – APPLICATION FOR EXEMPTION

Timothy J. Buckley, PhD
Printed name of Principal Investigator (or Advisor)

APPENDIX A1
OSU Co-Investigators & Key Personnel

Complete this form to list OSU Co-Investigators and key personnel on the research study. Signatures are required of all OSU Co-Investigators. Use Appendix A2 to list external (non-OSU) Co-Investigators and key personnel. Researchers should only be listed in one category (e.g., PI, Co-Investigator, or Key Personnel).

Key personnel are defined as individuals who participate in the design, conduct, or reporting of human subjects research. At a minimum, include individuals who recruit participants, obtain consent, or who collect study data.

All OSU individuals listed on this protocol will have access to information about IRB actions and the completion status of each individual's administrative and training requirements (CITI, COI disclosure). Note: Personal financial information provided in COI disclosures is not included.

PI Name: Buckley, Timothy J.

OSU CO-INVESTIGATORS

As Co-Investigator, I agree to comply with all policies and procedures of The Ohio State University and federal, state, and local laws and guidance regarding the protection of human subjects in research, as well as with professional practice standards and generally accepted good research practice guidelines for investigators.

Name (Last, First, MI):	Degree(s):
University Academic Title:	College (TIU):
Department Name (TIU):	Phone:
Department # (TIU):	E-mail:
Research role/activities performed for study (e.g., obtain consent):	OSU ID Number:

Signature of Co-Investigator

Date

Printed name of Co-Investigator

Name (Last, First, MI):	Degree(s):
University Academic Title:	College (TIU):
Department Name (TIU):	Phone:
Department # (TIU):	E-mail:
Research role/activities performed for study (e.g., obtain consent):	OSU ID Number:

Signature of Co-Investigator

Date

Printed name of Co-Investigator

Name (Last, First, MI):	Degree(s):
University Academic Title:	College (TIU):
Department Name (TIU):	Phone:
Department # (TIU):	E-mail:
Research role/activities performed for study (e.g., obtain consent):	OSU ID Number:

Signature of Co-Investigator Date

Printed name of Co-Investigator

Name (Last, First, MI):	Degree(s):
University Academic Title:	College (TIU):
Department Name (TIU):	Phone:
Department # (TIU):	E-mail:
Research role/activities performed for study (e.g., obtain consent):	OSU ID Number:

Signature of Co-Investigator Date

Printed name of Co-Investigator

Name (Last, First, MI):	Degree(s):
University Academic Title:	College (TIU):
Department Name (TIU):	Phone:
Department # (TIU):	E-mail:
Research role/activities performed for study (e.g., obtain consent):	OSU ID Number:

Signature of Co-Investigator Date

Printed name of Co-Investigator

Name (Last, First, MI):	Degree(s):
University Academic Title:	College (TIU):
Department Name (TIU):	Phone:
Department # (TIU):	E-mail:
Research role/activities performed for study (e.g., obtain consent):	OSU ID Number:

Signature of Co-Investigator Date

Printed name of Co-Investigator

OSU KEY PERSONNEL			
Name (Last, First, MI):	Seryak, Liesel M.	University Title:	Graduate Research Associate
Department Name:	Environmental Health Sciences	OSU ID Number:	07176483
E-mail:	lseryak@cph.osu.edu	Phone:	(937) 474-5191
Research role/activities performed for study (e.g., data collection):	IRB application materials, survey creation and administration, recruitment		
Name (Last, First, MI):		University Title:	
Department Name:		OSU ID Number:	
E-mail:		Phone:	
Research role/activities performed for study (e.g., data collection):			
Name (Last, First, MI):		University Title:	
Department Name:		OSU ID Number:	
E-mail:		Phone:	
Research role/activities performed for study (e.g., data collection):			
Name (Last, First, MI):		University Title:	
Department Name:		OSU ID Number:	
E-mail:		Phone:	
Research role/activities performed for study (e.g., data collection):			
Name (Last, First, MI):		University Title:	
Department Name:		OSU ID Number:	
E-mail:		Phone:	
Research role/activities performed for study (e.g., data collection):			
Name (Last, First, MI):		University Title:	
Department Name:		OSU ID Number:	
E-mail:		Phone:	
Research role/activities performed for study (e.g., data collection):			
Name (Last, First, MI):		University Title:	
Department Name:		OSU ID Number:	
E-mail:		Phone:	
Research role/activities performed for study (e.g., data collection):			
Name (Last, First, MI):		University Title:	
Department Name:		OSU ID Number:	

E-mail: Research role/activities performed for study (e.g., data collection):	Phone:
<hr/>	
Name (Last, First, MI): Department Name: E-mail: Research role/activities performed for study (e.g., data collection):	University Title: OSU ID Number: Phone:



ResearchMatch.org General Description/Overview

Summary:

- This document is a general description/overview of ResearchMatch.org. This description will be attached to any application for use of ResearchMatch for recruitment purposes.

Basic information regarding this tool:

- ResearchMatch.org is a national electronic, web-based recruitment tool that was created through the Clinical & Translational Science Awards Consortium in 2009 and is maintained at Vanderbilt University. There is no cost for researchers at participating institutions in the ResearchMatch Network to use ResearchMatch for the purposes of feasibility analysis or recruitment. The Vanderbilt IRB provides oversight for ResearchMatch as a recruitment tool and this has been documented within the ResearchMatch IRB Letter of Understanding and "Vanderbilt's IRB approval letter for RM" (both of these are also included in attached documents).

Registration:

- Term Definition: ResearchMatch Researcher
 - A researcher according to ResearchMatch may be a protocol's Principal Investigator (PI) and/or the PI's recruitment proxy (e.g. key study personnel or another appropriate individual authorized to recruit for studies in accordance to IRB of Record policy). Proxy researchers undergo PI approval prior to being routed to Institutional Liaison approval.
- This recruitment tool may be utilized once the researcher registers for recruitment access through ResearchMatch.org. After registration of basic contact information and details regarding this study, the request will be forwarded to this institution's ResearchMatch Institutional Liaison for approval. In the process of registering this study in ResearchMatch, the researcher will upload the most current IRB approval letter or exemption determination for this protocol. The approval letter or exemption determination shall list the use of ResearchMatch as one of the recruitment tools for the study.
- The ResearchMatch Institutional Liaison will review study information and evidence of IRB approval and will set the ResearchMatch expiration date to mirror that of the IRB approval – as is stated on the IRB approval letter specific to this study.

Search Capability:

- After being granted recruitment access, researchers will be able to search for appropriate matches amongst the non-identifiable ResearchMatch Volunteer profiles in the system. Researchers may enter study inclusion/exclusion criteria in the ResearchMatch Search Builder which will yield a list of potential matches to such criteria.

Contacting ResearchMatch Volunteers:

- Researchers will send out IRB-approved content in the initial recruitment message to these potential matches (ResearchMatch Volunteers) through ResearchMatch. This study's recruitment content will be inserted into the standard ResearchMatch electronic notification

that informs possible matched Volunteers that a researcher has identified them as a potential match for their study. The secure ResearchMatch clearinghouse will route this standard notification that includes this specific study content (i.e. similar to the content available on a flyer or poster) to each of these potential ResearchMatch Volunteer matches and they will have the option of replying yes, no, or not respond through a set of quick links available in this notification. **THIS MESSAGE WILL NOT INCLUDE THE STUDY'S DIRECT CONTACT INFORMATION** (e.g. EMAIL, PHONE) AS RESEARCHMATCH WILL MEASURE THE RESPONSE RATE THROUGH THE CLEARINGHOUSE'S QUICK LINKS MADE AVAILABLE IN THIS ELECTRONIC MESSAGE. These response rate metrics will be made available to researchers through their ResearchMatch dashboard as well as the Institutional Liaison dashboards. By responding yes, the Volunteer has authorized ResearchMatch to release their contact information to the researcher(s) responsible for that study. This information will be made available on the researcher's ResearchMatch study dashboard. The researcher will be responsible for managing this contact information as called for by their IRB-approved study protocol.

Managing a Study:

- ResearchMatch will also be collecting aggregate data regarding the status of ResearchMatch volunteers within the study. ResearchMatch Volunteers consent to this within the ResearchMatch Volunteer Agreement. The ResearchMatch enrollment continuum will allow researchers to indicate where the Volunteer currently stands within the recruitment process and thus helps researchers monitor the utility and effectiveness of using this resource.

Access Expiration:

- A researcher's access to recruit via ResearchMatch will last only as long as their IRB-study approval or determination. The expiration date of ResearchMatch access will mirror the expiration date of the IRB-approved study. Researchers will be able to submit current IRB-approval letters for the lifetime of the study and thus provide evidence of successful continuing review applications. If an unintentional lapse in time occurs and the researcher is not able to submit this continuing review evidence via ResearchMatch, their ResearchMatch data will not be deleted but they will not have access to searching the registry for recruitment purposes or contacting new volunteers until they have uploaded a current IRB-approval letter which is once again routed for Institutional Liaison review.

Questions?

ResearchMatch Institutional Liaison for The Ohio State University
Rose Kegler Hallam
OSU Center for Clinical and Translational Science
Clinical Trials Recruitment Program Director
Phone: 614-293-4198
Prior Health Science Library
376 W. 10th Ave. Suite 205
Columbus OH 43210
rose.hallam@osumc.edu





Office of Research
Institutional Review Board

September 15, 2009

Dear Institutional Review Board,

This Letter of Understanding has been made available to you as your Board is associated with an institution that has signed the ResearchMatch Master Institutional Registry Agreement (MIRA) and therefore may eventually make available ResearchMatch as a complementary recruitment tool to its researchers.

The purpose of this Letter of Understanding is to promote awareness of ResearchMatch, also known as the National Recruitment Registry, to your Institutional Review Board (IRB) so that you are familiar with the project and its potential availability to your researchers. Furthermore, this letter communicates IRB responsibilities for this national initiative.

The Vanderbilt University's IRB, in compliance with its Federalwide Assurance, FWA#00005756, has approved and will provide ongoing regulatory oversight for ResearchMatch. While each participating site may assist in communicating the availability of ResearchMatch.org in its local regions, the participating site will be considered **not engaged** in research for purposes of the registry.

The individual participating site's designated IRB under its FWA shall be responsible for the approval of any research proposal under its jurisdiction that proposes the use of the registry as a recruitment tool in connection with an individual research study. An Institutional Liaison will be appointed to serve as the point of contact for the participating site and its designated IRB(s) and Vanderbilt University. This Institutional Liaison will serve as a gatekeeper to ensure that the integrity of researcher access is upheld and limited to only those researchers that have active studies approved by the researcher's designated IRB.

In the case you have further questions; you may contact the ResearchMatch Program Coordinator at info@researchmatch.org or our office directly at (615) 322-2918. We are available for any regulatory assistance/questions regarding this unique national initiative.

Sincerely,



Denise A. Roe, MSM, RAC, CCRP, CIP
Director, Institutional Review Board
Vanderbilt University

504 Oxford House
Nashville, Tennessee 37232-4315
tel 615.322.2918
fax 615.343.2648
www.mc.vanderbilt.edu/irb



Vanderbilt University

Institutional Review Board

504 Oxford House Nashville, Tennessee 37232-4315
(615) 322-2918 Fax: (615) 343-2648
www.mc.vanderbilt.edu/irb

December 29, 2011

Paul A. Harris, Ph.D.
Biomedical Engineering
A3101 MCN 37232

Laurie A Lebo, Ph.D.
Research Support Services - Infectious Diseases
2525 West End Ave. 6th Floor 37204

RE: IRB# 090207 "National Recruitment Registry Project" (NIH CTSA Grant)

Dear Paul A. Harris, Ph.D.:

A sub-committee of the Institutional Review Board reviewed the Application for Continuing Review for the research study identified above. The sub-committee determined the study poses minimal risk to participants. This study meets 45 CFR 46.110 (F) category (9) for Expedited Review. Approval is extended for the Application for Continuing Review dated December 29, 2011, the Application for Specimen/Data Repository dated May 20, 2010, the Volunteer Agreement, and the Privacy Statement dated January 24, 2011, the Coordinating Center Supplemental Form, and the Request for Waiver or Alteration of Consent, Authorization, and/or Documentation of Consent dated August 20, 2009, and the Supplemental Grant entitled "Development of a National Web Portal for Research Volunteers" for Principal Investigator Gordon R. Bernard, M.D.

Documentation of informed consent is waived in accordance with 45 CFR 46.117 (c)(2).

As the Principal Investigator, you are responsible for the accurate documentation, investigation and follow-up of all possible study-related adverse events and unanticipated problems involving risks to participants or others. The IRB Adverse Event reporting policy III.G is located on the IRB website at <http://www.mc.vanderbilt.edu/irb/>.

Please note that approval is for a 12-month period. Any changes to the research study must be presented to the IRB for approval prior to implementation.

DATE OF IRB APPROVAL: December 29, 2011
December 28, 2012

DATE OF IRB EXPIRATION:

Sincerely,

Timothy D. Girard, M.D., M.S.C.I., Vice-Chair
Institutional Review Board
Health Sciences Committee #2

Harris, Paul A. IRB # 090207

1

01/09/2012

**RESEARCHMATCH
PRIVACY STATEMENT**

Last Updated: 01/24/2011

This Privacy Statement explains how ResearchMatch aims to protect and respect your privacy. Please check this page on a regular basis for any updates to the Privacy Statement.

- **Web Security**
 - ResearchMatch is a secure, central database that stores information about individuals who may want to volunteer in research, now or in the future. All ResearchMatch data that is sent between the web server and browsers will be coded (encrypted) using Secure Sockets Layer (SSL) protection.

- **Collected Data**
 - ResearchMatch may look at some of the data items below so ResearchMatch can be improved for you and other users:
 - **Web Data**
 - ResearchMatch may collect nameless information that tracks how visitors use this website, the date and time of a visit, the pages accessed on the site, and the web address that led them to ResearchMatch.
 - **ResearchMatch Volunteer Data**
 - Any information that you may enter when filling out the web form to join ResearchMatch as a Volunteer will be used only for the ways stated in the Volunteer Agreement.
 - Any Volunteer Data that a Volunteer has authorized ResearchMatch to release to any researchers or studies is no longer in the control of ResearchMatch.
 - ResearchMatch hopes to learn how well this tool connects volunteers with research studies. Because of this, ResearchMatch may collect information from researchers about your status in studies that you are matched with through ResearchMatch. ResearchMatch will only use this information in a non-identifiable way.
 - Research studies may be done on the ResearchMatch registry. If this type of research is done, ResearchMatch Volunteers will not be able to be identified. ResearchMatch will try and post any known findings from studies that may involve ResearchMatch on the website.

- **Information Sharing**
 - Any information on your ResearchMatch Volunteer profile will be used only for the ways described in the Volunteer Agreement.
 - If you allow the release of your contact information to a specific researcher, ResearchMatch is no longer responsible for monitoring how your contact information is being used with that specific researcher.

Date of IRB Approval: December 29, 2011

Date of IRB Expiration: December 28, 2012



Version Date: 1.24.11
VANDERBILT UNIVERSITY
Institutional Review Board

- Your profile information may also be reviewed in order to meet federal or state laws. Those who review this information may be staff from the United States Office for Human Research Protections and the Institutional Review Boards at participating institutions. These persons or groups may not be legally required to follow the rules listed here and in the Volunteer Agreement and may release your information. All reasonable efforts will be made to keep your personal information private and secure.
 - The information you enter may be kept and used in the future unless you choose to delete your profile from ResearchMatch. If you delete your profile, all of your identifiable information will be removed from the ResearchMatch registry.
 - ResearchMatch will not sell, lease or rent any of your information to others.
- **Oversight**
 - ResearchMatch as a recruitment tool is overseen by the Vanderbilt University Institutional Review Board. Any questions about this process may be sent to the ResearchMatch at info@researchmatch.org or by contacting ResearchMatch through the Contact Page.

Thank you for reading the ResearchMatch Privacy Statement.



ResearchMatch Recruitment Message for This Protocol

PLEASE NOTE: The message that is sent must be under 2000 characters. We encourage you to ask for assistance rose.hallarn@osumc.edu with writing the message for your protocol prior to submission to IRB. The message must be under 2000 characters.

The message placed in the text box on next page and under the email greeting that says: "A research team with The Ohio State University in Columbus, OH, believes you might be good match for the following study" is the message that the volunteers will receive about this protocol. *This initial email will be routed to those ResearchMatch volunteers who fit your inclusion criteria; ResearchMatch will provide hyperlinks at the close of the message that will allow volunteers to respond yes or no to the invitation to release their contact information to this study.* The recruitment language the research team enters into this form **SHOULD NOT** include identifiable contact information such as email address or phone numbers. This will help ensure that volunteers respond through the ResearchMatch quick links provided in the email message they receive regarding this study.

Volunteers will see the message. They are asked to click "yes" or "no" in response to the recruitment message. A "yes" response will release their contact information to the researcher. If volunteers click "yes" they are reminded again that their contact information will be released. If the volunteer clicks "no" or ignores the message, the researcher will not receive any information about the potential volunteer.

Sender: do-not-reply@researchmatch.org

Message Subject: ResearchMatch – you may be a good match for this research study!

SEE NEXT PAGE: Insert the message in the text box on the next page for which you are asking IRB approval to use as your ResearchMatch recruitment message.

This window contains the contents of the email that you will be sending out to your selected volunteers. Please proofread and confirm the information you are sending is valid and correct. If you need to make changes, simply click on 'close preview'. If you want to submit this email message, click on 'contact volunteers'.

Note to Researcher: Remember your message can be **NO LONGER THAN 2000 CHARACTERS**

A research team with The Ohio State University in Columbus, OH, believes you might be good match for the following study:

Researchers at The Ohio State University are interested in how Ohio residents view the importance of Lake Erie as a natural resource. The information gained from this study will help design public education efforts aimed at protecting Lake Erie as a natural resource for Ohio.

You may be eligible for this study if:

1. You are at least 18 years of age.
2. You live in Ohio.
3. You are able to read and respond to questions in English.

In appreciation of time spent and participation in the study, those that complete the online survey will be entered into a random drawing for the chance to win one of six \$50 Amazon.com gift card codes. The odds of winning will depend on how many people choose to participate, but we estimate it will range from 6 in 100 to 6 in 1,000.

If you are interested in hearing more about this study and possibly participating in the online survey, please click yes so the research team at OSU can identify themselves, answer any questions you may have, and contact you to send you a link to the survey.

If you are interested in this study and having the research team contact you directly, please select the "Yes, I'm interested" link below. By clicking the "Yes, I'm interested" link, your contact information will be released to the research team. If you select the "No, thanks." link or do not respond to this study message, your contact information will not be released to the research team.

[Yes, I'm interested!](#) [No, thanks.](#)

You are receiving this email message since you have registered in the ResearchMatch registry. Should you wish to edit your profile or remove your contact information from this registry, please login [here](#).

ResearchMatch Disclaimer

ResearchMatch is a free and secure tool that helps match willing volunteers with eligible researchers and their studies at institutions across the country. ResearchMatch is only providing a tool that allows you to be contacted by researchers about their studies. ResearchMatch therefore does not endorse any research, research institution, or study. Any recruitment message that you may receive about a study does not mean that ResearchMatch has reviewed the study or recommends that you consider participating in this study.

CLOSE PREVIEW

Recruitment Email Messages - Stage 2

Evaluating the Linkage Between Lake Erie Water Quality and Public Health for Ohio Residents: Survey of Lake Erie as an Ohio Natural Resource

The following email message will be sent to potential volunteers who click "Yes" on the Stage 1 message administered through the ResearchMatch.org system, releasing their contact information to us. Potential volunteers will receive this message within 2 business days of responding to the ResearchMatch.org invitation.

~~~~~  
Thank you for your interest in this study! Dr. Tim Buckley at The Ohio State University College of Public Health is pilot-testing a survey to investigate Ohioan's opinions about Lake Erie as a natural resource. The information gained from this study will help design public education efforts aimed at protecting Lake Erie as a natural resource for Ohio.

If you choose to participate, you will follow the link below to complete an online survey consisting of 25 questions. We estimate that it will take you 10-15 minutes to complete the survey. No personal information except zip code and email address are requested, and your responses will be kept confidential. The questions are NOT of a sensitive nature, and your participation does not pose any potential risks.

In appreciation of time spent and participation in the study, those that complete the online survey will be entered into a raffle for the chance to win one of six \$50 Amazon.com gift card codes. The odds of winning will depend on how many people choose to participate, but we estimate it will range from 6 in 100 to 6 in 1,000.

To begin the survey, please click on the following link: *[REDCapSurvey URL hyperlink here]*. Your completion of the survey implies your informed consent to participate in this research.

Please contact Dr. Tim Buckley (tbuckley@cph.osu.edu, 614-292-2590) if you have any questions or concerns about this study or your participation.

Thank you again for your interest!

Sincerely,

Dr. Tim Buckley  
(and Ms. Liesel Seryak, research assistant)

~~~~~

The following email message will be sent to potential volunteers who click "Yes" on the Stage 1 message after the survey has been closed. Individuals will receive this message within 2 business days of responding to the ResearchMatch.org invitation.

Thank you for your interest in this study! Dr. Tim Buckley at The Ohio State University College of Public Health is pilot-testing a survey to investigate Ohioan's opinions about Lake Erie as a natural resource. The information gained from this study will help design public education efforts aimed at protecting Lake Erie as a natural resource for Ohio.

Unfortunately, at this time the survey has been closed, and we are no longer able to accept new participants. We very much appreciate your interest.

Please contact Dr. Tim Buckley (tbuckley@cph.osu.edu, 614-292-2590) if you have any questions.

Thank you again for your willingness to participate in research!

Sincerely,

Dr. Tim Buckley
(and Ms. Liesel Seryak, research assistant)

The following email message will be sent to potential volunteers who click "Yes" on the Stage 1 message, but do not initially (after a period of a few days to a week) complete the survey. This reminder will be emailed a maximum of 2 times during the survey period.

Hello! You recently responded to a ResearchMatch.org invitation involving a study at The Ohio State University. We sent you a follow-up message with some more information and a link to the online survey, but our records show that you haven't yet responded. Would you be willing to take a few minutes today to fill out our online survey?

The original information, including the link, is below:

[Full stage 2 recruitment message repeated here]

Sincerely,

Dr. Tim Buckley
(and Ms. Liesel Seryak, research assistant)

Appendix D. Responses to open-ended SLEONR questions designed to solicit feedback on the survey.

Q21. Were there any questions that you found confusing? If so, please write the question number and describe your confusion or understanding of the question below.

The ones that asked what is the greatest risk to Lake Erie. Maybe more background information would be helpful.

No questions were confusing, however, I did not have the knowledge to know about the predictions on the future condition of the lake simply due to lack of knowledge of this subject.

Zip code, I'm a student at CWRU... but am living in Columbus. Wasn't sure which one to put.

No questions were confusing, but it may be helpful to have some sort of explanation of what all of the risks mean in the question where you have to rank the risk in order from greatest to third greatest.

I think that the first set of questions about how valuable Lake Erie is would be better if they were asked in this format (or something similar to this): 'without consideration for the current conditions of the lake or what you have heard about the lake, how valuable do you think it is for agriculture? Scenic beauty? Etc.

I did not find anything confusing.

Question 7- I have never heard of Zebra Mussels, only Zebra Fish.

The only confusion I had was with questions involving topics I'm unfamiliar with. I didn't really know for example what a Zebra Mussel is, so I simply chose the neutral answer.

Pay additional taxes or fees could have been better explained as to how or an example of how this would apply. A one time small fee - yes. A % of my paycheck - no.

I was a little confused on what you meant by climate change affecting the lake... acid rain? It might help to give an example

I know a lot about lake Erie, but some questions were confusing just due to not enough

background knowledge.

16, the parenthetical part of 'Combined sewer overflow' was cut off (I'm using Internet Explorer)

7. Lake Erie is valuable for the production of Zebra Mussels- I don't know what zebra mussels are. Therefore, I do not know if it is important that we have them. I could not accurately answer.

No. The only thing I noticed was most of the questions assumed I had a basic understanding of the resources Lake Erie provides (water, irrigation, etc.).

You could define the terms you use in the series of questions about the greatest threat posed to lake Erie.

Not confusing, but knew nothing about like the zebra mussel question

No they were very straightforward and extremely relevant to the problems at hand.

Nothing was confusing, however there should be a not applicable or unsure (uncertain) option added to certain questions instead of forcing a response to a question that may not apply to someone

I think a map of Ohio's relation to Lake Erie would be useful. I know it, but a visual might provide some additional awareness.

Question 7: 'production of zebra mussels' - not sure what you mean by this. I always thought they were invasive pests introduced to clean the water. While I probably don't know enough about this topic, I thought the term 'production' was a little ironic based on my understanding of the zebra mussels.

I didn't find any questions confusing but know very little about how the water from Lake Erie is used. So I answered each question based on what knowledge I do have, as well as gut instinct.

Questions were clear. However, the Likert response scale does not allow for 'don't know' responses. For instance, I assume that Lake Erie is used for fishing, swimming, agriculture, drinking water, etc. but I am not entirely sure. I answered based on my knowledge of lakes in general and not based on any specific knowledge about Lake Erie. So what you ended up measuring, as a construct was my more general conservationist, environmentalist tendencies rather than any specific knowledge/feelings about Lake Erie.

No. But perhaps for some put am not sure. I know of the news I hear.

The question about the value of Zebra Mussels (which I believe are an invasive species

was confusing) if I strongly agree am I saying that the zebra mussel is valuable or that Lake Erie's value is threatened by the zebra mussel?

Not confusing but I think that asking about global climate change before asking what the biggest threats were made me more likely to select climate change as an answer.

The zebra mussel question was - I believe they are an invasive species but the way the question was worded made me unsure how to answer.

Not confusing - but I was not intimately familiar with Zebra Mussels.

7 It is my understanding that zebra mussels are an invasive, exotic species. There were some things discussed that I am not knowledgeable about, so I answered 'neither agree or disagree', which is different than 'I don't know'

Question 7 was confusing - Lake Erie is valuable for the production of Zebra Mussels??? Of course ZM's are a very significant issue as pertains to Lake Erie, but they are not 'produced' (as for harvest or a commercial use) like one might say of perch or walleye.

6. Shipping corridor. I've never thought of Lake Erie as a shipping corridor before.

No. Although the questions did give pause for thought in seeing Lake Erie in a different light, instead of somewhere to see a sunset, boat or fish for sport. I think it is taken for granted a lot and mentioning the industry, agricultural and recreation makes you think on what we use Lake Erie for and what we can use it for.

No, all of the questions were very straightforward and easy to understand.

Not confusing regarding the questions. I am aware much of our water resources are being damaged and are at risk of being unusable. I had some confusion about how Lake Erie is currently being used. I only drive by it on my way to visit family.

Not really, although some users may need more of the choices defined a bit more

16c - made the assumption was a threat because of run-off but wasn't clear on the intent of this question

#7 seemed interesting b/c zebra mussels are an invasive species, aren't they?

#7 I thought the zebra mussels in Lake Erie are were a bad thing -- so how should I answer 'am valuable for the production of Zebra Mussels'? Also, I am a vegetarian and don't eat any meat/meat products, including fish. Thus it was harder for me to answer the questions about fishing. Finally, I'm not sure how air pollution affects the water.

Unsure what zebra mussels are.

Question #7 about Zebra Mussels is confusing because although the zebra mussels were an invasive species that displaced the native species and could be considered harmful, they were eventually credited with cleaning up the pollution along the shore, and in this way they were beneficial. Does that mean Lake Erie is valuable as a breeding ground for pollution-eating mussels? Or are you trying to trick people into thinking commercial fishermen bringing in a catch of delicious zebra mussels?

The mention of Zebra Mussels, which are invasive; provide a benefit of improved water clarity. Is there a problem created by their presence??

I would have liked a 'Don't Know' option for some of the

7. I am not aware of the lake as a source of mussels.

The questions were well/properly worded and easy to understand. However I did sense a bit of bias. I am not too up to speed on any issues with Lake Erie or too many current events/issue except for what I'm EXTREMELY interested in.

Lake Erie is valuable because of the production of Zebra Mussels...it is a significant problem not a valuable resource

I did not find any questions confusing; I am just not as informed on this topic as I would like to be.

#14 - regarding the future quality of Lake Erie as a natural resource -- the choice of 'uncertain' in unclear. I chose that b/c I don't know what the future quality is (I'm uncertain), as opposed to the future of Lake Erie actually is uncertain. When asking about the main threats, I'm surprised you didn't mention the possibility of the water being taken for the American Southwest

7. Zebra mussels-valuable-use of this word is confusing because I don't really know what zebra mussels are or if they are valuable

#7 Zebra Mussels kind of threw me because it seemed worded as a trick question, where everything else was straightforward. I think it's an important issue, but I selected 'strongly disagree' because we don't want to produce them.

7 - Is it assumed that producing zebra mussels is good, and the question is related to the importance of lake Erie for their production, or is it the question more related to whether zebra mussels are good or bad? The other questions used the phrase 'Lake Erie is valuable because of...' and this question was phrased differently.

Q. 7: it looks like you're considering the invasive Zebra Mussels as a natural resource. Was this just a trick question to be sure people are paying attention?

#7 because I have no idea if zebra mussels are produced in Lake Erie. The question about Lake Erie being a valuable resource for Zebra mussels confused me. Aren't those the invasive species that are causing so much trouble in the lake?

Concerning zebra mussels are they an invasive organism?

Question 7 Production value versus nuisance value?

I'm not sure what Zebra Mussels are and if they are important to Lake Erie or a threat.

16 a, b, c: I can't figure out what it means to have one threat greater than another. I have no information to know what degree of threat or the definition of threat - economic threat, threat to the fish that live in it, threat of the water being taken by another state? 7. Aren't zebra mussels a bad thing?

Since I live in Columbus and only visit Lake Erie once a year on vacation, changing my behavior would have little if any impact on Lake Erie.

#7 - I didn't know what Zebra Mussels were

#7. I thought zebra mussels were harmful so I was confused about being asked if LE was valuable because of their production. I wasn't quite sure how to answer that question.

Q22. Were there any questions that you found difficult to answer? If so, please write the question number and describe the difficulty as best you can below.

I have only lived in Ohio a short number of years. As such, I don't necessarily have an informed opinion on all topics.

The only one that was difficult was regarding the greatest threats, as I was not sure how much of a threat an invasive species (such as Asian Carp) was to Lake Erie.

All of them to an extent as I haven't thought about Lake Erie much.

I know lake Erie has been severely polluted in the past. I am unsure of the extent of recovery thus far.

16a- I have no knowledge of what threatens lake Erie so I had difficulty deciding what might be the highest threats

I am a vegetarian, so while I am concerned about overfishing I am not concerned about the personal risk to myself of eating Lake Erie fish. That is, if they are unhealthy due to pollution.

There were several I didn't know, such as the questions about drinking water. I don't really know what water use is like in the Northern part of the state.

#17: give examples of additional fees/taxes: statewide increase to tax, or use fee for certain areas/activities. My opinion depends on the details of the program.

I really don't know much about Lake Erie and have seldom seen it, so all of the questions were a bit hard.

I don't know much about what lake eerie is used for. But as a natural resource I think it's important.

There were a few I was admittedly lacking knowledge in; typically I went for a neutral or best guess answer in such a scenario.

No. The only difficulty I had was because of my lack of knowledge about the issue of Lake Erie and preserving it.

Question 15: Regarding climate change I have not read nor heard much on how global changes to the environment will impact Lake Erie, so I felt uninformed in addressing the question. Perhaps a short summary or a url link to written articles on the matter would allow those unfamiliar to the specific impacts of climate change to Lake Erie to become better informed, thereby providing you with more accurate responses. Many were difficult for me to answer, but only because I realized I don't know much about the status of Lake Erie at all.

I only felt that some questions were difficult to answer due to my lack of knowledge of Lake Erie and its real threats as opposed to my perceived threats.

16 - simply because of lack of knowledge, which I guess is what this is supposed to elucidate.

I felt that the questions were a bit hard for me to answer at time because I am not a native Ohioan. I also have never really thought about the resources Lake Erie can offer, but I am interested in conservation.

The most difficulty I had was explaining why I chose what I chose. It was hard for me to pinpoint exactly what I was worried about polluting Lake Erie, since we tend to lump pollution into one big category rather than individualizing particular causes.

7 - I was under the impression that these polluted the water with something they emit to protect themselves or something like that

Question 7- I have never heard of Zebra Mussels. 16- Greatest Threats; I don't know what the biggest sources of pollution of Lake Erie are. The biggest sources that are polluting Lake Erie are what are obviously its greatest threats.

I think the only difficulty came from my own lack of knowledge about Lake Erie. For example, I have no idea what a Zebra mussel is or that you can harvest them from the Lake.

Production of zebra mussels. - Not sure what they are and how they relate.

The question involving the three most important threats facing Lake Erie could have used a 'falling water level' choice. I guess this may have been assumed in the commercial farming category but I used other as my choice because none of the categories quite fit what I wanted to say. I recall reading an article recently that discussed potential falling water levels in Lake Ontario and thought the issue might pertain to Lake Erie as well.

Just the ones I did not know of the answers for. The survey was not at fault. It would probably be better to have some sort of choice indicating 'I didn't know that lake Erie provided X resource.' I live in southwest Ohio and know little about Lake Erie's contribution to tourism, Ohio water, fish as a food source, etc.

Many of them were somewhat difficult to answer just because I do not know much about Lake Erie in general. I have been an Ohio Resident for my whole life, but I have always lived in the Columbus area. I chose 'neither agree or disagree' for question 17, but what I really meant is that I would need to have a much better understanding of why lake Erie needs to be protected before I could make that decision.

#8 should possibly include examples of tourism that Lake Erie brings to the area. I, for one, took a little longer to come up with some possibly tourist events that it brings. Even then, I only came up with party boats, which may not be the most optimal association.

The questions that asked about why Lake Erie was valuable (#2-9) talked about issues that I was previously unfamiliar with. For example, I didn't realize that it was an important shipping corridor, but since the survey told me that it is used for that, I suppose it is important. Also, I didn't know that mussels came from Lake Erie, but since the survey told me they do, then I guess it is important. For the questions where I had to rank the top three threats, I have absolutely no idea which of these threats is more imminent or most damaging, so I really just had to choose the ones that sounded the worst to me.

Some of the questions were difficult to have a specific opinion on because I don't know that much about Lake Erie except for tourist type stuff.

Just the zebra mussel question.

I have only lived in Ohio for about 4 years and do not live near Lake Erie, so I don't know much about it. I think I would have to do research on Lake Erie to be able to give more informed answers. Perhaps to accommodate this you could offer more 'I don't know' options. This applies to questions 1-12.

7. Lake Erie is valuable for the production of Zebra Mussels. I was unaware that Zebra Mussels were being harvested in lake Erie.

I'm not familiar with the current state of Lake Erie, so I just chose answers based on what I believe to be true (regarding sources of pollution, etc.).

Some of them I wasn't sure, if the lake was affected by certain conditions. It makes me realize I should be more aware.

I'm not sure that I knew enough about the threats to Lake Erie to answer the three questions about them.

I wasn't exactly sure how commercial boating could hurt the lake

Question 12. Are you asking if the lake itself is unhealthy or it's unhealthy for those of us who use it?

The one about the taxes, because I would have to know how much more in taxes before agreeing to this.

Question 7, I was not familiar with Zebra Mussels and had to Google them.

I don't remember the question number, but you asked about zebra mussels. I'm not sure

if zebra mussels are a good thing or a bad. Thought I heard they're like a parasite? Or that there are too many of them?

I would be willing to pay additional taxes or fees to protect Lake Erie as a natural resource: I live in Columbus so I don't feel this question was applicable to me. Only due to lack of knowledge, but not question phrasing.

I found some of the questions difficult only because I am not very familiar with this issue.

In general the questions are very abstract and hard to relate to

I understand the significance of global warming on Lake Erie, but others may not; a brief explanation would be helpful.

I found many of the questions difficult to answer in terms of all Ohioans. I am very environmentally aware and an active sailor - Lake Erie's health & well-being are at the forefront of my attention. Some in Cleveland are of this mindset, but not being native to Ohio I have no good feel for the rest of the state's opinion. In addition, the recent challenges to the Sewer District authority to overturn rate hikes for infrastructure improvements to decrease raw sewage discharged to Lake Erie undermine my opinion that Ohioans are of similar mindset as me.

No... but I spent a bit of time really thinking about what I thought the greatest threats to Lake Erie are. They all seemed like big threats!

Questions #2,5,6,7 I am not sure how much drinking it provides for residents, whether Zebra mussels exist there, etc.

The biggest threat to Lake Erie is... I don't think it should be listed as a menu. Can you make it eligible to be ranked? I found more than three threats.

I think the only difficulty was my unfamiliarity with some of the issues.

I felt that all the suggested things were valuable aspects of Lake Erie

Some questions I did not have an answer to and even though I selected 'neither agree/disagree' it could also be taken to mean I am indifferent to the topic. Having an 'I don't know' option would have been useful.

I found question 7 to be a little hard to answer because I've always been under the impression that the Zebra Mussels are a nuisance and are destroying the ecosystem of Lake Erie, and that question made their production sound like a positive thing. Maybe I'm just misremembering what I learned in 8th grade on a trip to Stone Lab.

Question 16a - I have very little concept of the different types of pollution that effect

the lake...imp the biggest threat is pollution, period. It was confusing to pick one or 2 types of pollution.

I'm not very knowledgeable about this but my assumption is that you are looking for what the average person with no expertise would think so that is how I answered.

I don't know about zebra mussels.

I am ignorant of Lake Erie's shipping volume, so it was hard to know how to answer the questions relating to shipping.

16a. Some of the answers are related (i.e. commercial shipping is a major contributor of invasive species)

Raising taxes. It would be difficult to answer without knowing how much we are being taxed now and how much it would be raised.

Yes, because I'm not very well informed of the issues with Lake Erie.

Most of them. Since I don't live near the lake to know more of the current issues, it made it challenging to respond.

I don't really know much about Lake Erie as a shipping corridor and can't answer any questions about it.

I wasn't sure if the zebra mussels were the invasive organisms that were destroying the plant and animal life. I have seen a show about the overgrowth of a non-native species.

Uncertain of the quality of drinking water from Lake Erie - I have impressions about the quality, but have not research actual facts on this issue.

#7, I know nothing about zebra mussels, so I can't answer the question. #16a, I believe golf courses and the chemicals used to keep them 'beautiful' are a major contributor to water pollution, but not sure which category that would be under.

Yes, I don't know anything about the mussels in Lake Erie.

Yes. I don't know as much as I could about how protected Lake Erie is, climate change and Lake Erie, and possible threats to Lake Erie.

16a,b, c-I feel that I don't know enough about Lake Erie to answer these accurately. The question concerning 'zebra mussels' was misleading a bit. I felt the question was trying to measure the respondents familiarity with Lake Erie by implying they were a benefit, when in actuality, I think they are bad for the water as an invasive species? I could also be way wrong.

The top three greatest threats to lake Erie, in general all sorts of pollution are a threat, in my opinion. I do not think there is much difference between water and air pollution or water overflow/run off. I do think agriculture is a threat to lake Erie but was not able to choose it because pollution was subspecialized.

The dangers from global warming, I fear water being piped to other states as much as I fear evaporation.

Just the climate change because I am unaware of its effect on the lake

2,4 and 5 because I do not know enough about Lake Erie being used for these things. Maybe would be good to have an option about not knowing that Lake Erie is used for these things. This could increase education about Lake Erie and ultimately teach others about the importance of preserving the quality of Lake Erie

How can you discern some one who believes in climate changes, but thinks the effect is negligible on Lake Erie from someone who just doesn't believe in climate change at all?

I wasn't sure about what actually is a threat to lake aerie but did pick what I thought might be

I had difficulty answering the question about global warming affect the lake only because I haven't really heard anything about that topic, not the way the question was worded.

15. Climate change. I have never heard on the news about climate change hurting Lake Erie so I wasn't sure about this one.

The only question that seemed a little 'off' to me was #18, which asked whether I was willing to change my behavior to protect Lake Erie. Since I don't live anywhere near Lake Erie I thought it was a little strange to ask me this question. You may want to reword it somehow so that it suits both people who live near the lake and those who don't.

Question 16a- There were four items I wanted to rank but I was only allowed to choose 3 so I had trouble deciding which one to omit.

7. Regarding zebra mussels. While there has been some benefit to the lake I thought general opinion was that we'd still rather they hadn't arrived.

Only because I am obviously less informed about the issues than I should be.

No - as in above, it gives pause for thought about Lake Erie and its use.

Not difficult to understand, but not living closer to Lake Erie, I found the questions

pertaining to the biggest threats to the lake to be harder for me to answer, as I do not see what goes on around the lake on a daily basis.

Zebra mussels - not sure if they are harmful or helpful. Seems they are a nuisance.

#13 and #15 - I am not familiar enough with Lake Erie to know what the quality of the lake is or how climate change is affecting the lake.

Source of pollution - answers were so specific - I don't know!

Greatest threats to Lake Erie

#6- not sure of what or how much is shipped. #15- very broad question and challenging for a lay person to have such knowledge

I had a hard time choosing which threats I thought were the worst in Questions 16 a - c.

16 a, b & c I am not really sure what is the biggest threat to the lake

#2 and #10 concerned drinking water from Lake Erie. I don't know if or how much water from Lake Erie is used for drinking so I didn't know how to answer this question.

There was no 'don't know' choice and/or no information on the issue.

I haven't heard about anything that is a threat to Lake Erie so it was difficult to answer questions related to that.

No, but there was a question that I did not have enough knowledge to answer. However, 'I don't know' was an optional reply.

Questions 16a thru 16c had too few choices and too much emphasis on runoff/sewer

No, I feel strongly about Lake Erie - I spend every summer there.

The difficulty was only because I didn't know the answer, not because of the question itself.

The questions relating to threats to the lake. All of the above would have been the appropriate choice.

Related to my answer above - I had difficulty with these questions because I'm not knowledgeable enough to answer them: questions # 2, 5, 10 (for example). Don't know to what extent Lake Erie provides water/irrigation to local residents. It makes sense that it would - but don't have first hand knowledge or experience.

I honestly don't know enough about several of the topics to have an opinion. For example, I don't know how much agricultural interests depend on water from Lake Erie

(5), or whether the fish are generally considered safe to eat (11), or whether the water is generally considered safe to swim in (12).

2. I'm not sure if Lake Erie is used for drinking water so I could not agree or disagree. If I knew it was used for drinking water I would agree. 5. Same as above. Not sure if used for irrigation. If so I would agree.

I do not know if zebra mussels are invasive or native.

Didn't have enough information to answer #17 with any authority, although I think rather than tax the populace, there should be controls of industry and agriculture, and those who use the lake for anything, to keep them from polluting the water.

16. I don't know what is the 'greatest' threat, just that a number of things are likely threats.

16a. Difficult because I'm not knowledgeable about the current status of Lake Erie. I have only been up there twice as an adult and it did seem to be a little 'less clean' than I care for. Consequently, it was difficult to rank which factors play the biggest role in why the lake is at risk.

I was unsure if drinking water actually came from Lake Erie. Sounds a little gross to me...

Yes. 7 - I don't know very much about zebra mussels.

#13, #14 - I have no idea what the current quality of Lake Erie is at this time.

16. Greatest threat to Lake Erie. I do not have much knowledge about the rank of importance regarding pollution/climate change.

Question 16 was tough, because I thought many of the options were great threats but I could only pick three

7- I was unaware of the Zebra Mussels in Lake Erie.

Am uninformed about Zebra mussels. Just had to think about prioritizing the biggest threats.

The 3 greatest threats to Lake Erie, I guess I'm not as well read, as I should be.

Use of the word valuable in 6,7 and in 13-15 I is not sure how Lake Erie is being affected, if the quality is in question, I don't know enough about it.

No, but on some topics I did not have the knowledge to form an opinion

10 and 11, - just because I am concerned about something does not mean it is

necessarily bad, but that I'd want to be apprised of the condition. If the question is intended to evaluate my perception of the quality of Lake Erie's water and fish, the phrasing might need to be more straightforward, such as 'I think the safety of Lake Erie's water is questionable.' The questions where I was asked to rank the three greatest threats to Lake Erie was also difficult to answer as I know very little about some of the options, and because I am not aware of the current conditions at the lake.

16a. I have no idea what the threats are to lake Erie and I certainly am not qualified to say what the biggest threat is.

No difficult questions, just chooses. Some of the questions contained too many possibilities.

Difficult only in the fact that I do not live near Lake Erie. I find most of it beautiful so preserving it is very important.

16 a, b, c Required the most thought Is #7 a trick question?? I thought Zebra Mussels were bad?!

Perhaps #68 - you have a lot of choices and although combined sewer overflows, industrial water pollution, urban storm water run-off are similar you don't really qualify 'agriculture' - agriculture as in what?

18. Change my behavior is too broad of a question. The example is simple, less fertilizer, but the reality may be much harder than that. 6. Shipping lanes, I have no idea what ships on Lake Erie. I only thought of closed steel mills.

#7 I am not sure if zebra mussels are a good or bad thing for Lake Erie. I know that some mussels are an invasive species but I am not sure about the zebra mussels.

Didn't find any difficult but #7 I thought the zebra mussels were a problem in the lake. #11 - I'd say yes safety of the fish to eat in the lake is a major concern even though I don't eat any seafood other people and look for the safety for all. #13 - The quality of the lake is a concern for all mentioned, fish, swimming, drinking, etc... #17 - Hate to feel we are taxed to death on everything and hard enough to make it with more taxes but if needed I guess we would pay.

I am not that knowledgeable about the environmental health of Lake Erie. I have certainly improved over the 32 years that I have been vacationing there. There does seem to be more soil erosion over the last 15 to 20 years at the camp that I have been attending. The camp has studied this since they are losing acres of camp land. This is not the information you were requesting.

I grew up in Southwest Ohio live in Central Ohio, far away from the Lake and therefore I have limited first hand knowledge of some of the topics being surveyed.

Just not aware of quality of water and it's use for drinking

Zebra Mussels - I heard something about them on the news a while ago - I thought they were harmful - attaching themselves to ship's hulls - must be something else I'm thinking of. Really don't know the pros and cons of them.

Not really. Well maybe the ones regarding the ranking of the problems associated with Lake Erie.

Listing the 3 greatest threats to Lake Erie - #16

The threat to natural resources, as I do not know the most significant threats -- I'm sure many of the choices were valid.

10. I wasn't actually sure if Lake Erie is a source of drinking water in that area.

Q23. Did you come across any terms that were unfamiliar to you? If so, what was the word and which question(s) was it in?

I don't know anything about zebra mussels but I can infer from the context what they are and why they might be important.

Question 7: 'Zebra Mussels' I had to look up what zebra mussels were exactly so that I could properly answer the question. I have not heard much reporting done on the value of zebra mussels to Lake Erie.

Mussels question

Zebra Mussels

Zebra mussels and invasive species of plants/animals (would need an example)

Just climate change

Zebra muscles

Again, zebra mussels.

7. Lake Erie is valuable for the production of Zebra Mussels. I was unaware that Zebra Mussels were being harvested in lake Erie.

Zebra Mussels.

Zebra mussel

Question 7, Zebra Mussels

Not knowledgeable regarding Zebra mussels.

I remember hearing something about the Zebra Mussels but I don't remember the specifics.

Combined sewer overflows, but there was the definition right behind it

Zebra Mussels

Zebra mussels

Zebra Mussels...I thought I remembered hearing somewhere that they were invasive but I can't remember.

I don't know what zebra mussels are or why they would be important.

#7, unfamiliar with zebra mussels.

I was unsure of the Zebra mussel question, since I wasn't familiar to that species. Had I know their importance I may have answered differently.

Zebra mussels

I didn't know anything about the Zebra Mussels!

I would not have known what 'Combined Sewer Overflows' referred to without the additional description provided in the parentheses.

Question 7, I am not familiar with Zebra Mussels, maybe some clarification as to whether or not they are endangered or indigenous to that area.

Don't know what Zebra Mussels are.

Yes. I am not sure if there is much problem to lake Erie caused by family and commercial farms.

No, but I have never heard of a Zebra Mussel. :-)

7. Zebra mussels

Sewer overflow is that supposed to go in Lake Erie or not?

Yes, I need to become more familiar with Lake Erie in general. I was not familiar with Lake Erie while answering these questions and I was answering these questions based on what I thought was important about Lake Erie as a whole. I love the Great Lakes and want to preserve them as much as possible.

Q24. Are there questions related to Lake Erie as a natural resource that you would ask that were not a part of this survey?

I would be curious about the differences in perception of people who live closer to lake Erie than people who do not. I grew up in Cleveland but now live in Columbus so my views are different

Perhaps I would ask participants what their usage/interaction with Lake Erie consists of (recreation, fishing, none, etc.) and how frequently. It may be relevant in how they respond. Also, basic demographic data could be relevant.

Maybe asking about the person's relationship with Lake Erie, if they live there, vacation there, have never been there? I have a summer home up there so I have a very personal connection to that area and the lake as a natural resource, but others may have a different view depending on their personal experiences.

I would ask how often each individual in the survey uses Lake Erie as a natural resource (in some capacity or another).

Perhaps asking how often the person taking the survey utilizes Lake Erie (as a water resource, as a recreational resource, etc.).

Ask how familiar I am with lake Erie as a natural resource to gauge my previous experience or knowledge

Maybe more information about how much Lake Erie benefits all of Ohio prior to asking a question. I am located in Columbus, so I do not have direct use of the resource.

I would include a question that might be able to gauge how much someone knows about Lake Erie and its environmental concerns that might affect their responses. Also whether or not someone lives or lived near Lake Erie might be important to the outcome of the survey.

Maybe a question related to its beaches because that is a tourist attraction, but also a place that many locals like to spend time at.

Have you ever spent time on or near lake Erie? Do you or did you ever live near lake Erie? Have you engaged in any water activities on lake Erie (i.e. boating, jet skis, fishing, swimming)

I would also ask about the importance of Lake Erie in biodiversity. I just think that addressing issues with the ecosystem in total would also be appropriate.

How do you think Lake Erie can be used to provide renewable energy? 1.

Hydroelectric 2. Wind Farm It is important for our country to move to renewable energy sources and be less dependent on foreign and domestic oil

Is mining for salt in Lake Erie disrupting the health of the lake? Important because if

it is indeed affecting the lake in a harmful way we need to stop doing so.

No, I think they were all well covered. I was worried the recreational and natural beauty side of the Lake wouldn't be covered, but I was pleasantly surprised.

Have you ever lived in other cities on or near Lake Erie? What city or cities? How much time per year do you spend near/in/on Lake Erie? -- I grew up in Buffalo until I moved to Cleveland 5 years ago at age 18. We spent a lot of time at the Lake growing up, but I know that there are a lot of people who spend ALL summer at cottages on the lake. Maybe these people are more susceptible for suffering ill effects of Lake Erie and its polluted waters. I think it is also interesting to look at cancer rates in Cleveland/Buffalo/Lake Erie region. It seems like they are unnaturally high. Maybe this is environmental; having something to do with the Lake, the Love Canal in Buffalo perhaps, but I think it is something worth looking into and studying.

I was surprised that there wasn't anything about harmful algal blooms. They've been making quite a comeback the past few years, and they have a large effect on tourism among other things.

I was curious why there wasn't any mention about unsustainable use of Lake Erie water by the industry.

Not questions, but information about how it's changed for the better/worse over the course of a few years as compared to other Great Lakes or natural resources would be nice.

I would ask how much direct contact the participant is knowledgeable that s/he has had with Lake Erie, just as a gauge in whether the protection of the lake as a resource should be targeted first on a regional or on a state-wide level.

I would ask about the zip code where one was raised. I live in Columbus now (as indicated by my current zip code), but I grew up in Cleveland and spent a good deal of time by the lake, so I'm sure that influences my opinion.

Will Ohio take more steps to protect nature and Lake Erie? I feel that Ohio values business growth and expansion over keeping or natural resources available.

Maybe a question about lake Erie in the broader context of the region/country.

You might consider controlling for previous experience with Lake Erie. I've never been there before, and I imagine my responses would differ from someone who is especially familiar with the area. Also, regarding zip code: I put in my current zip code, but it is different from where I grew up. Someone might have grown up right on the lake but currently live elsewhere, so you might consider specifying what information you want about zip code (for instance, you could ask how long the individual has lived at the zip code/in Ohio, etc.).

? Do you think that the industries that put off the polluted air and gas and the waste should have to pay an extra tax? YES

A good question might be whether a participant has accessed Lake Erie for recreation, water, or fish

Ask if people know what they can do to protect the lake?

Maybe the last time they accessed Lake Erie? Or maybe a favorite memory? That may get people to think more about the importance of the Lake and what it means to them personally, even if they don't live in close vicinity.

We sold our boat last week, which was docked at Port Clinton due to Green Algae. We are concerned that because of this we can't fish, we can't swim, and we can't go to the beach.

Cleanliness of the beaches surrounding the lake, I love the fact that we have a beach here in Ohio and would like to keep it clean.

The toxic algae was never mentioned, this may have been intentional or just not relevant but the toxic algae is a concern for many Ohio residents especially since it's been found in many other lakes, especially Lake Saint Mary's.

Are communities along Lake Erie doing enough to showcase this natural resource? I think most of the communities that are lucky enough to be on the shoreline do not do enough to care for the beaches or encourage appropriate development so that more people are drawn to the lake to enjoy it. I think that this lack of development turns Lake Erie into a forgotten resource, and so it does not get cared for in a way that would eliminate concerns about water safety for consuming fish or swimming.

#NAME?

I think asking questions to determine the knowledge of the average Ohioan regarding how many people rely on Lake Erie for their own drinking water, irrigation, etc. I think LE is an underestimated resource that people don't even understand has an impact on them even if they live a distance from the lake

Perhaps asking how often the person surveyed visits Lake Erie (if they have only been once 20 years ago, their opinions might be less affected by sentimentality).

The sewage issue was only covered in the threat section. I think a question by itself regarding the issue of dumping raw sewage into the lake would be quite insightful.

'Where did you grow up,' 'How have you personally experienced Lake Erie (fishing/boating/vacation/work/etc.)' Although I know live in Columbus, I grew up on the Lake and believe that's why I find it to be such an important resource!

I would imagine that people who have been around Lake Erie might have different responses than others who have not. You could ask, 'have you been to Lake Erie before?' or rate 'how familiar are you with Lake Erie and surrounding areas?' in order to control for any bias.

What about adding a question regarding native species/habitats/wetlands?

How often if at all do you use Lake Erie's natural resources yearly?

Maybe screen out recent transplants - I've only been here for about a year and a half and though I plan to get up to lake Erie, I haven't made it yet. Perhaps native or more long-term residents know more about the Lake. Also suggest some situating questions - For instance you may want to ask a question or two to ensure the respondent know where Lake Erie is, that it borders Ohio...

What do you use the lake for? Some examples might be swimming, fishing; boating, work for an industry that utilizes the lake. Or a person that owns a business that relies heavily on tourism. This would explain for some of the why someone might be following or why they should. We use it for so many reasons in my house and when bacteria levels are high we cannot swim. Only being able to eat lake fish so often also puts a damper on things.

Surprised that there re not questions about the risk invasive plant and animal species pose to the lake.

I would ask if people are aware of the recreational opportunities available on the lake, opportunities for alternative energy through the lake (i.e. wind), etc. I think it would be interesting to see which zip code throughout the state that people have the most-least awareness about lake erie

Is there a viable way to integrate conservation and functionality as a source of income for the state?

How much pollution is going into Lake Erie? What are the results of most recent water quality tests?

I would ask, 'How important is it for other states that use the Great Lakes as well as Canada to adopt uniform standards to protect the Great Lakes as a whole?'

The sale of our lake water to other states was a big issue in the past this study makes no mention of it

Have you ever been to Lake Erie? I think it's more important to people who have visited or live in the area.

Would you be for or against piping water to other states/

The question that asks why Lake Erie is valuable has zebra mussel production as an answer. Is that true? I thought they were invasive specie, like barnacles on ships.

I read a year or two ago that there is potential for Lake Erie/all Great Lakes to be used as a water source for landlocked states, and because no single state has full 'rights' to the lake, it would be difficult to prevent sale of the water, which could lead to depleting the reserves. I think this is a critical issue.

Do you feel that the lake is cleaner 1? Near Toledo 2. Near Sandusky 3. Cleveland

Do you use Lake Erie for drinking water, recreation, food, etc.? If a person is using this resource their answers may not be objective.

I've often felt that only Cleveland could take lakefront property and have the neighborhoods be LESS desirable than other areas.

Another important issue is the value of Lake Erie as wildlife habitat (i.e. migrating birds) and the potential harm the siting of wind turbines could cause.

There has been rumors floating around that they would pump Great Lakes' water to more arid areas of the country (i.e. Arizona) Has anyone heard of that and is it a concern of theirs?

If you feel agree or strongly agree about protecting lake Erie as a natural resource would you be likely to volunteer for occasional clean up events?

I would like to see a question relating to how Lake Erie affects our environment, specifically precipitation, inland temps and weather patterns.

Nuclear Power was not mentioned. It is a resource for cooling and it is also at risk if there is a contamination from the facilities.

How clean is the water there and is it influencing the Ohio river any because I live and fish along the river

I would like to see some suggestions as to what is being done to secure Lake Erie's future.

I guess questions that may test the awareness of regulations, agricultural, industrial and commercial use.

Is the problem of 'dead zones' A) critically bad B) Bad C) Neither good nor bad D) Good E) Critically Good These zones are relatively underreported, and folks need to know more about them

Have I been to Lake Erie? Grow up near the lake? Native to Ohio?

How often the participant makes use of Lake Erie's as a resource for water, recreation, etc. to see how often they rely on Lake Erie for daily living and/or quality of life.

I am concerned about Lake as a natural resource as it relates to the protection, maintenance, and health of native animals and plants that inhabit the lake and surrounding area.

Ask about personal experience with Lake Erie, i.e. recreation and opinion of that experience. I lived in Cleveland area for many years and spent much time in and around the lake.

Perhaps include a question such as 'Rank your personal level of knowledge about Lake Erie as a natural resource' or 'Rank your personal experience with Lake Erie as a natural resource.'

How close do you live to Lake Erie? How often do you visit Lake Erie? Would you visit Lake Erie more if it were accessible, healthy, etc.? Can you tell I live in the Cleveland area where access to Lake Erie is horrible and the water unsafe?

I would probably ask how often the person responding uses Lake Erie and how they use Lake Erie.

How does the placing of wind turbines affect any of lake Erie's natural resources?
What harm the zebra mussels present

Why do I enjoy spending recreational time at the Lake?

No additional questions, but possibly an example or two of invasive plants/animals.

I'm a birder and want the bird migration corridors across Lake Erie to remain protected (e.g. from windmills). Related to this would be water quality also for the migrating birds - as they feed along Magee Marsh, the boardwalk, etc.

How often do you or your family use Lake Erie? In what ways? What could be done to have you use Lake Erie more often?

An item that establishes the extent of connection with Lake Erie. Could it be that only NE and NW Ohioans care about the lake?

Again, not knowledgeable enough. However, a thought just did occur to me but I don't know if it's a problem or not. I know that 'Put-In-Bay' and Campgrounds surrounding

the area tend to be pretty populated during nice weather but I don't know if litter is an issue or not. If it were, you probably would have asked.

Do you know where Lake Erie is? Just kidding.

I don't know how I would frame the question, but I'm concerned about the movement of Lake Erie water to irrigate other parts of the country.

Is it not a source for salt [from under the bottom- not the water itself- or that is long past?

Lake Erie is valuable as a resource for future generations. (Or something that deals with preserving a resource for the future - for people not born yet. That is something that is very important to me.

I am lumping swimming in with my scuba diving activities. People from various scuba diving clubs get together once a year to help clean up the trash on the floor. Maybe add 'surrounding beaches'

The diversion of Lake Erie water for industrial purposes (planned diversion in excess of what has been allowed in the past and without appropriate permit/review).

Broadly opening up the lakefront for public use. It's for ALL of us and ought not to be used by a select few

Why isn't agriculture regulated more closely (to control runoff)? If authorities would 'work with speeders' the way they 'work with farmers' nobody would ever get a speeding ticket. Maybe ask the percentage each problem (agriculture, fishing, air pollution, etc.) is contributing to the whole.

I might ask about its importance for the survival of wildlife/ as a stopover for migrating birds. That doesn't really fall under recreation.

The recent court decision re: high water mark and private ownership of the beach. I'm still not clear how this impacts the public -- does this mean we can't walk on the beach that may be part of someone's beachfront property? I know areas on Kelley's Island are walled and fenced off from the public for what I assume is exactly this reason -- is that same thing going to happen to the bulk of Lake Erie shoreline?

I'm concerned about the vanishing supplies of fresh water on the Earth, and I believe that the Great Lakes (including Lake Erie, of course) hold the largest reserves of this previous resource. I don't know if the drinking water that comes from Lake Erie is only available to northern Ohio residents or if people in other areas of Ohio benefit.

Might be interesting to know when the responder last participated in any/some of the activities listed.

More places such as campgrounds should be added to connect people with the lake would be awesome

How important is Lake Erie for the economy of the state of Ohio

Yes, natural resource protection is key to the future of lake Erie

I am concerned about over use of this resource draining the lake of too much water

What role is Canada playing in the maintenance of Lake Erie's quality? Since Canada has more mile of shoreline than Ohio, they have an important impact on the quality of the Lake.

Urban sprawl, natural habitat, and the like, I think, are just as important to the lake's health

Ask how familiar people are with Lake Erie, ask if they have ever visited Lake Erie in the past, and ask if they plan to visit Lake Erie in the future.

Should a wind farm be built in Lake Erie to generate electricity?

I am familiar with some of the reasons why, for instance, agriculture is a threat to the lake, but some people may not understand or realize how certain things can affect the lake. If it is possible to provide this information without biasing the person taking the survey, a basic primer may be useful.

Yes, I would like to know at what percent is there commercial shipping, any waste water act?

You did not mention the white carp. I think this is a major political and environmental problem based on what I know about it.

If I had utilized lake Erie as a tourism location in the past.

Is it important to provide education in late elementary or early middle school about the Lake Erie ecosystem?

Protection of the beachfront is also important to keeping Lake Erie a natural resource.

I am concerned the water temperature is rising, which forces colder-water fish further north or causes them to die out. Cold-water fish usually contain more omega-3 fatty acids, giving them a healthier nutrient profile.

What is currently being done to protect Lake Erie from pollution sources?

Q25. Do you have any other comments or opinions related to this survey?

I'd be curious to see a follow up survey after facts about the current ecological state of the lake, as well as the reasons for such, were provided to participants

Grew up on lake Erie- I don't think people realize how valuable it is!

Being a Cincinnati-born Columbus resident, there was a lot of educated guessing going on when I took this survey. Good luck!

Thank you!

'For example, you might recognize the value of Lake Erie as an important resource for drinking water even if it is not where you get your drinking water.' I felt that the example above, from the introduction, to the may have persuaded me to give more favorable responses concerning the value of Lake Erie.

No - easy to follow and understand.

No - very clear and concise.

I think I would definitely add an open comment box to the main portion for additional thoughts. The survey seems a bit brief to me, but if you gave people more of an outlet to share opinions, I think it would appeal to your subjects (even if it would be underused).

I would like some findings on this topic if possible and be notified for future surveys/research on this topic.

I hope you guys can help Lake Erie!

I think that you should include I Don't Knows in the second part of the test I felt like there were certain questions that I just didn't really know

I think this is a good survey and is something worth studying.

Possibly before the survey have a quick fact sheet about Lake Erie to inform participants of the subject of the study.

This survey made me want to learn more about the Lake, it would be nice to have a link or PDF following the survey with Lake Erie facts and information.

It's a great topic. Causing me to now seek more research on it, and bring it up in conversation with others.

I am not that familiar with the particulars of lake eerie, but now I will have to look into them

I was unsure of the current state of Lake Erie, so it made some questions difficult to answer.

I love Lake Erie!!

Thank you for actually keeping it as short as advertised

I thought it was well written.

It was a short but well questioned survey. I didn't get bored answering the questions and had genuine interest.

Good luck with everything!

Save Lake Erie!

No thanks, good job helping to raise awareness!

Including articles with information regarding the topics in this survey would be helpful.

Maybe add I don't know to questions in case people are not sure all of the things lake Erie is used for.

I hope that we can use lake eerie as a resource for many years to come

I know nothing about Lake Erie as a natural resource, but I'm not really curious to learn about it!

I don't have a lot of knowledge surrounding the benefits of and risk to Lake Erie outside of personal experience.

Straight forward and well thought out. Thank you

I feel like my opinion might not be as valuable because I do not live near Lake Eerie,

have never been there, and all of my knowledge of it is secondhand/hearsay.

I hope I have helped make a difference!

Easy and fast!

Not except for those stated in question 21

It was great--easy to understand and quick to complete! (Thanks!)

Thanks for including climate change as an issue.

If the survey is administered via the web it may be useful to let respondents know whether you prefer to answer based on their knowledge only or whether they can use the internet as a resource. Thank you for the opportunity to participate.

Would love to know the findings that result from the survey. Also, are you surveying Michigan residents? My in laws live in Michigan but on lake Erie

Any fresh water lake will become the golden currency of the future.

Thank you for letting me voice my opinion

It would be great if you could include information or links, perhaps after the survey, to participants that would like to learn more.

None. Thank You.

I think that the survey was a good length, with concise questions that were easy to understand.

Nice, quick, easy, and to the point survey.

I hope this survey is insightful to the researchers involved in this study. I hope it will provide education to people all over Ohio and how to keep lake Erie beautiful.

I think my answers are somewhat biased in that I don't feel like I have a great understanding of all that Lake Erie is used for--for example, I don't actually know anything about its use for fishing or as a shipping corridor, or to how much pollution it is subjected (like sewer or industrial). I based my answers on supposition.

I think more talk or discussion needs to be out there about our wonderful lake! You really don't see any advertisements or hear much about it from different parts of the

Ohio State.

I would be happy for anyone to take pride and do work on Lake Erie. I grew up on the lake and visit Sandusky, Cedar Point, Cleveland and Vermillion. I believe it has gotten better, but would love to see it continue to be cleaned up.

I'm hopefully we can get this fixed. Lake Erie is a beautiful area and the one time we went there on vacation. We couldn't swim in the lake due to it being unsafe. How horrible that we have ruined our waters so much that we couldn't swim. Makes it scary to think people may eat fish from there and drink the water

Do you need to know how people use the lake? I don't live near Lake Erie now, but was raised in Port Clinton, Ohio right across the street from the lake. I use the lake as recreation now, but it was a big part of our family's economic success when I was growing up. My family that still lives in the area depends on the tourism and fishing. The way people use the lake may influence their answers.

I liked your question about whether Lake Erie was important in the production of zebra mussels. Very funny

No, that's about it, but feel free to contact me again about this issue, if you like--no biggie.

I thought this was a good survey.

Great topic, I think we take Lake Erie for granted and don't realize all that it is use for, how it is protected and what the future may hold for its use.

I hope that this will help with your research, and thank you for allowing me to participate.

Sorry to say I have very little knowledge about Lake Erie. I looked up some topics on the internet to help answer some of the questions.

Thanks

Thanks.

Not really. This was brief and to the point, easy to answer. I would participate in any survey like this again

Good luck, and how will we be able to learn of the survey results?

I don't personally feel completely knowledgeable about the issues facing Lake Erie but would completely support preventing anything detrimental to the future of the lake.

I am happy to see that research is being done in regards to Lake Erie as a natural resource for Ohio.

The length was good. Not too long.

I am not sure if my background would be helpful, but I have been to Stone Lab a few times with students and grew up in Buffalo, so the impact of the lake is greater to me than maybe some other Central Ohioans who have not visited as often.

The survey was not difficult to understand. I found it very user friendly.

I hope the lake is cleaned up I remember going swimming in the lake and enjoying the beach at Cedar Point.

I just really happy someone is doing this survey

Due to my education and work experience (Public Health Sanitarian) the survey was quite clear to me. However if someone were not familiar with the issues of Lake Erie I might have had difficulty completing the questions.

You might want to define 'natural resource.'

It might make a difference in responses if you indicated in #17 what sort of additional tax amount you are talking about.

I believe that protecting the Great Lakes as a natural resource is imperative to the US ecosystem.

I think you should ask questions along the line of: Where did you live now? Have you ever lived near lake Erie or its primary tributaries?

Yes, but I'm at the library on the computer and time is up!

Thank you for conducting this survey! There is hope that someone cares about our Lake. On a slow news day in Columbus we could use more Lake Erie stories, consider contacting the local media with your results, or about other issues endangering Lake Erie.

Is it possible to reply to me and provide the benefits and harms to the ecological balance of the lake involving the mussels and any other occupant? I do not feel the question of extra fees or costs is appropriate. The government already consists of the management and enforcement means by which to insure to me that this Democracy survives and I continue to exist. Does that not include fresh air and water to enjoy while I have this democracy provided freedom? When I last checked, I realized I have been paying, should I now realize my payments have been misdirected? I plan to contact you if I do not receive a reply. Thank you, Bill Bernardin 614 745-7449

Survey questions were easy to answer and were not slanted so that no matter what the answer, it favored whoever put together the survey. I thought it a good unbiased survey.

I don't want to pay more taxes - unless the taxes were directly related to access or services for those who spend time at Lake Erie. Perhaps there need to be fund raising efforts among the more 'wealthy' who live on & near the water.

Easy survey, well designed and appropriate in length. Thank you.

I didn't necessarily find the survey difficult or confusing but I'm not very familiar with Lake Erie ecology and it's use as a natural resource. If possible, it might be helpful to have some sort of basic, non-biased overview of how the lake is used by Ohio residents and issues surrounding its condition.

No, I hope this survey works and more people realize what a great resource Lake Erie is and how fortunate we are to have it in our backyard.

Any large body of fresh water is important to keep as pure as possible- for drinking, irrigation especially.

Item 7 would unnecessarily confuse the uninformed

YES!!!! I had to complete the survey TWICE. I hit a wrong key and it erased everything!! Yikes. You might be served to know my feeling about Lake Erie and WHY I felt the way I do. I have spent over 20 summers on Kelly and Pelee Island and love the beauty and nature I find there. You didn't mention the butterfly habitat found on Kelly Island, I feel as loving toward the islands as I do my own home. Returning to my response in question 21 regarding bias, I did get the sense that there was a very specific purpose to this study (as opposed to an opinion study about media, or something that would use questions like 'I love the media' or 'The media is full of propaganda and I refuse to be subjected to it', just to get a broad sense of the types of people who enjoy versus dislike media. I almost got the sense that this study is going to be to present data to be utilized to address certain issues in Lake Erie. For instance, you instructed the respondent to answer the questions 'even if you don't' live near or utilize the resources. That being said, the respondent either has to disagree or agree, (no one will want to give an undesirable response) or NEITHER agree or disagree. If your objective is to present overwhelming survey data with the goal of gaining funding or support to clean up Lake Erie, you'll surely get it. If your goal is to obtain subjective and unbiased informed opinions (or random opinions from both informed and uninformed) I would suggest you include additional options for answers such as 'I am not aware of such an issue' and maybe even an 'N/A' to gauge an individuals knowledge regarding any issues with Lake Erie. Sorry if I was off on this, but that's just the sense I got from it. Hope you got something from it! :-)

I would love to see the results when they are published!

Well crafted; but I am not certain the utility of the first zebra mussel question, unless in there as a 'ringer.'

I think Lake Erie is a wonderful natural resource for us and we should do everything we can to protect it.

Where can I get more information?

I would like to know more about the filtering systems and water-borne pathogens. I work in a hospital and we know instruct our patients not to shower/bathe if they have an invasive device (using tap water) due to water borne pathogens. Do these originate in Lake Erie or along the way!

Note that I was not able to flip backwards. To answer #21, I couldn't remember the number or the specific question so when I back arrowed, it shot me out of the system. I had to log on again.

The layout was very user friendly

Thanks for taking action to preserve this great natural resource!

Good luck

Thanks for doing this.

Glad you are studying Lake Erie

I've always enjoyed Walleye & Perch fishing in Lake Erie and would like to see that resource protected. I also have several friends who make multiple trips to the islands during the summer.

Easy survey

My husband and I are very concerned with the fishing industry and the invasive species that have or could invade the Lake: Asian carp, zebra mussels, etc....

Hope that the information helps and we need to protect lakes and rivers

Thank you for the opportunity to provide answers.

Question 16 (?) One of the choices for greatest threats to Lake Erie- sewage mixed or combined or something- end is cut off on that choice. Also, I was afraid to refer back to survey because I didn't want to have to start over- I had to when I went back part way through. Had to do it on line- questions too long & print too tiny on my phone- but it's not a smart phone. That's fine- very cool idea & survey & drawing. Although I'm

further away now, I'm orig. from Parma (Cleve. area) so am more concerned & connected than some- although not well informed. Are Zebra mussels invasive? Trick question? Good luck.

Just that I would like to see it cleaned up.

None. Thank you.

I think Lake Erie and the other lakes are a wonderful natural resource and should be respected.

I believe climate change is a natural occurrence and is not within the scope of issues we can have an effect on by our behavior

No. Simple and straightforward.

No thank you

An excellent survey. Easy to navigate and the questions were self-explanatory. Very clear and concise.

I think the general population doesn't know what the water quality is of Lake Erie. I would like to see that information frequently published, what the causes are, and what are we doing to improve it.

Appendix E: Abstract Accepted for Oral Presentation at the 4th International Ecosummit



Lake Erie's public health-related ecosystem services: vulnerability and value for Ohioans

Seryak, LM & Buckley, TJ. Division of Environmental Health Sciences, The Ohio State University College of Public Health

Abstract: (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text/diagrams into it.)

Lake Erie provides innumerable life sustaining ecosystem services for Ohio residents in addition to being an economic engine for the region. However, as the shallowest, most southern, and most impacted by agricultural run-off, Lake Erie is the most vulnerable of the Great Lakes and is being threatened by a combination of global (e.g. climate change) and local stressors (e.g. agricultural and urban runoff). In the current study, we sought to evaluate the vulnerability of Ohioan's public health due to degraded Lake Erie water quality and public appreciation of the ecosystem services provided. To achieve this, we assembled extant data to map and quantify the Ohio population served by Lake Erie as a drinking water source. Further, we relied on literature reports of fish consumption and contamination, and Ohio Division of Wildlife Angler Survey results to estimate the potential exposure and health risk from fish consumption. To further inform the exposure and risk from fish consumption and to provide a basis for assessing the exposure and risk from recreational water contact, we developed a set of relevant questions that have been included for the first time in the statewide 2012 Behavioral Risk Factor Surveillance System (BRFSS) survey. The BRFSS survey results will complement a second survey that we developed to evaluate Ohioans' awareness and appreciation for the ecosystem services provided by Lake Erie. Taken together, this work will provide the means for assessing the public's awareness and health vulnerability associated with Lake Erie's ecosystem services. This information can help to guide educational strategies and provide the basis for quantifying the public health benefits of protecting Lake Erie as a model for all the Great Lakes.

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