

**West Michigan Residents and Clean Air Action: The experiences and  
Opinions of Kent, Muskegon, and Ottawa County Residents (2021)**

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## **Introduction**

In August 2021, the Grand Valley Metropolitan Council contracted with the Center for Applied Research Studies (CARRS) at Central Michigan University to survey the residents of Kent, Muskegon, and Ottawa counties. The project's main goal is to assess residents' awareness of and compliance with the counties' Clean Air Action Days. At issue is the extent to which residents in the three counties are aware of air pollutants and their problems. Particular attention is given to measuring whether they are knowledgeable about and actively engaged in Clean Air Action Days and related activities. A subsidiary goal is to determine the extent to which subgroups of the population (e.g., senior citizens) are aware of air pollution problems and are especially involved or uninvolved in remediation efforts.

CARRS itself was created through a Michigan Research Excellence Fund grant in 1995. The function of CARRS is to utilize the resources and academic expertise of Central Michigan University to assist social agencies, non-profit organizations, and governmental units in addressing social, economic, environmental, and community development concerns. CARRS completed a similar project for the Grand Valley Metropolitan Council in 2011 and 2016, and this report follows the same format as the earlier one to facilitate comparisons over time.

## **Instrument Design and the Sample**

CARRS developed the survey instrument for this project in 2016 in consultation with Grand Valley Metropolitan Council staff. Two questions were revised based on the responses received in 2016, and one question was included to capture any changes in action due to the COVID-19 pandemic. We included one open-ended question at the end of the survey to replace the three open-ended questions from 2016. The survey was formatted as a four-page print booklet, designed to be delivered to residents through U.S. mail. The first page of the booklet includes a short letter that encourages respondents to complete the questionnaire, guarantees their confidentiality, and informs

them that 10 respondents who complete the questionnaire will receive \$20 gift certificates from Meijer. A copy of the survey booklet can be found in Appendix A. In 2021, the survey was also offered in an online format, and the survey questions were offered via the Qualtrics online survey platform.

The Census Bureau estimates the 2019 populations of Kent, Ottawa, and Muskegon counties to be 656,955, 291,830, 173,566, respectively. There are slightly more than 2.5 individuals per household in each county, resulting in 262,782 households in Kent, 116,732 in Ottawa, and 69,426 in Muskegon County. The sample used for this project is a sample of households, with the assumption that any individual 18 years or over in the household could report on household characteristics. The preferred margin of error for population surveys of this size is plus or minus five percentage points, requiring a sample of approximately 400. The sample size obtained at the end of the survey distribution was 225 households, which implied that we have a plus or minus six percentage points margin of error and are working with a 94 percent confidence interval. One can be 94 percent confident that the actual characteristics in these counties fall within plus or minus five percentage points from the statistics derived from the sample.

The GENESYS sampling unit with the Marketing Systems Groups of Horsham, Pennsylvania, maintains an address-based list of households in the United States. They estimate that their list provides close to 100 percent coverage of the 135 million households in the United States (<http://www.m-s-g.com/web/genesys/index.aspx>). We purchased a random sample of 4,000 households from the three relevant counties.

Survey packets, including the four-page questionnaire booklet and a postage-paid return envelope, were mailed to 800 residences between September 15<sup>th</sup> - 20<sup>th</sup>, 2021. Postcards featuring online links to the survey were also mailed at the same time to 3200 households. The response rate from the postcards was very low, with less than 1% (30) of the responses received by the first week

of October. One-half (1,600) of the households who had received an initial postcard were then sent a paper survey between October 8<sup>th</sup> - 12<sup>th</sup> 2021 with a return envelope. An additional Qualtrics Survey link was sent to Grand Valley Metro Council to be distributed via their communication channels; 34 responses were received through this snowball sample. The views of the snowball sample were not significantly different from the views of the random sample, so all the responses are collated, and the views of all the 25 final respondents are included in this report.

### **The Demographics of the Sample of Residents**

Respondents were asked a variety of questions about themselves and their households. As one would expect, given the sampling frame, the sample of completed questionnaires is diverse. The demographics of respondents and their households are summarized with the percentage distributions found in Table 1.

**Table 1: Demographics of the Sample: Percentage Distributions**

	<b>Percent of Total Sample</b>
<b>County</b>	
Kent	56.9
Muskegon	17.8
Ottawa	25.3
<b>Years in West Michigan</b>	
0-5 years	9.8
6-15 years	7.8
16-25 years	8.8
26-45 years	24.9
46 or more years	48.7
<b>Biological Sex</b>	
Female	47.4
Male	52.2
Prefer not to answer	0.4

	<b>Percent of Total Sample</b>
<b>Race/Ethnicity (based on N=204)</b>	
African American/Black	3.5
American Indian/Native American	0.0
Asian American	1.0
Latino/Hispanic	0.0
Other	2.4
White	92.1
<b>Age (based on N=193)</b>	
66 years or older	36.8
56-65 years old	30.6
46-55 years old	13.0
36-45 years old	12.4
35 years or less	7.2
<b>Highest level of education</b>	
Less than high school	1.9
High school or GED	12.9
Some college or technical school	23.4
College degree	29.7
Some graduate work	5.3
Graduate degree	26.8
<b>Household income (based on N=192)</b>	
Under \$25,000	12.0
\$25,000 up to \$50,000	18.8
\$50,000 up to \$75,000	17.7
\$75,000 up to \$100,000	18.2
\$100,000 or more	33.3

As one would expect, more than one-half of the sample lives in Kent County, more than one-quarter residing in Ottawa County, and slightly less than one-fifth in Muskegon County. Slightly less than 10 percent of respondents have lived in West Michigan for five years or less, and 42 percent have been West Michigan residents for more than 45 years. The average number of years respondents have lived in the area is almost 39 years. There were slightly more male respondents

than female respondents. Ninety-two of the respondents identified as White, with the rest of the respondents identifying as Black, Asian, or "Other". None of the respondents identified as Hispanic/Latino or American Indian/Native American.

Over one-third of the sample is 66 or older, and less than eight percent are 35 or younger. The sample is diverse in terms of both educational attainment and income. Slightly more than one-half of the sample (52%) has at least a college degree, while about 20 percent have a high school education or less. Sizeable numbers of respondents are found in each income category presented to respondents, with 33 percent of the sample reporting a yearly household income of more than \$100,000 and 12 percent indicating that their household income is under \$25,000.

When compared to Census data, we find that the sample over-represents older people, white people, people with higher education, and people in the highest income group. The sample of these counties from 2011 and 2016 shows the same under-representation of, for example, the youngest adults and those with the least amount of schooling. Studies of response rates from national samples show a decline in survey response rates over time and the difficulty of securing responses from the younger and lower educated adults.

Additional questions were designed to determine whether household members were especially at risk for the negative health consequences of air pollution. Children and senior citizens face unique health challenges, as do individuals with heart disease or respiratory problems. Percentage distributions are used in Table 2 to summarize responses to these questions about at-risk populations.

**Table 2: At-Risk Households: Percentage Distributions**

	<b>Percent of Total Sample</b>
Number of senior citizens—65 years or older—in household	
None	49.0
One	23.7
Two	24.2
Three or more	3.1
Number of children under the age of 18 in household	
None	71.8
One	10.3
Two	12.3
Three or more	5.6
Anyone in the household suffers from heart disease or respiratory issues	
Yes	27.5
No	72.5
Exercise outdoors during the summer.	
Every day	14.4
Most days	38.1
Some days	34.2
Rarely	10.9
Never	2.5

Fifty-one percent of respondents live in a household with at least one senior citizen—65 years and over—and slightly less than one-third live in households with children less than 18 years of age. More than 27 percent of respondents report that someone in their household suffers from heart disease or respiratory issues. Over 86 percent of the sample reports spending some days or more exercising outdoors in the summer.



## **Findings**

The findings from the survey are organized into five main sections. We begin with (1) a discussion of residents' general views about air pollution and environmental issues. This discussion sets the stage for presenting specific data on (2) residents' awareness of Clean Air Action Days and (3) residents' compliance with Clean Air Action Days. Next, we highlight (4) the ways in which residents learn about Clean Air Action Days. Finally, we explore (5) the socio-demographic factors related to high levels of awareness of and compliance with the Clean Air Action Day program.

### **General Views about Air Pollution and Environmental Issues**

Five questions were designed to gauge residents' general concerns about air quality and environmental issues. These questions establish the context for understanding respondents' views about and compliance with Clean Air Action Days. Compliance with the specifics of Clean Air Action Days is less likely for individuals who do not perceive a problem or think that environmental issues are not important.

In particular, respondents were asked: "How much of a problem do you think air pollution is in your community?" Parallel questions asked about the extent to which respondents believe that "ground level ozone" and "fine particulate matter" are also community issues. ("Fine particulate matter was defined in the question as "small particles of dirt or soot in the air.") Response options presented to respondents were "major problem," "minor problem," "not a problem," or "don't know." In addition, they were asked: "Generally speaking, how important are environmental issues within your community to you?" Four response options ranged from "very important" to "not at all important." Finally, respondents were asked whether they believed that "air quality in West Michigan has been improving, declining, or staying about the same" "in the last five years." Table 3 summarizes responses to these questions using percentage distributions. Percentages are calculated

both for the total sample and for those respondents who did have an opinion on the issues—that is, they provided a response other than "don't know."

**Table 3: General Views about Air Pollution Problems and the Importance of Environmental Issues: Percentage Distributions**

	Percent of Total Sample	Percent of Sample with Opinion (N=190-204)
The extent to which air pollution is a problem		
Major problem	26.2	28.9
Minor problem	38.7	42.7
Not a problem	25.8	28.4
Don't know	9.3	--
The extent to which ground level ozone is a problem		
Major problem	13.3	15.7
Minor problem	27.6	32.5
Not a problem	44.0	51.8
Don't know	15.1	--
The extent to which particulate matter is a problem		
Major problem	15.1	17.4
Minor problem	36.9	42.6
Not a problem	34.7	40.0
Don't know	13.3	--
Importance of environmental issues in your community		
Very important	63.7	--
Somewhat important	28.9	--
Not too important	5.1	--
Not at all important	2.3	--
Change in air quality levels in the last five years		
Improving	18.2	21.2
Staying the same	46.2	53.9
Declining	21.3	24.9
Don't know	14.2	--

The table shows that relatively small numbers of respondents report that air quality issues are a "major problem." In each of the three cases, the most common (or modal) response for those with an opinion (far right column) is to indicate that air pollution, ground level ozone, or particulate matter is a "minor problem" or "not a problem." Only about 16 percent of respondents with an opinion report that particulate matter is a "major problem," only 17 percent see ground level ozone as a "major problem." Twenty-eight percent indicate that air pollution is a "major problem." However, when one looks at the total sample, one finds that reasonably high numbers of respondents indicate that they "don't know." That is, nine percent of respondents report that they "don't know" whether air pollution is a problem, 13 percent "don't know" whether particulate matter is a problem, and 15 percent of the sample does not know whether ground level ozone is a problem.

Over 46 percent of the total respondents have seen no change in air quality during the last five years, while slightly more than 18 percent of the sample believes that air quality has been improving, and 21 percent of respondents see a decline. Fourteen percent of respondents indicate that they "don't know" how air quality has changed in the region over the last five years. Nonetheless, over 63 percent of respondents report that "environmental issues within your community" are "very important," and 29 percent see environmental issues as "somewhat important." These data suggest that environmental issues other than air pollution may have greater salience for respondents, making compliance with Clean Air Action Days a more "difficult sell." Alternatively, the importance of environmental issues question is broader in scope, allowing respondents to consider a wide range of environmental issues when crafting their response to the question.

## Awareness of Clean Air Action Days

A key question for the survey is the extent to which respondents are aware of Clean Air Action Days. They were asked this directly, having been reminded that sometimes these days are called Air Quality Alert Days or formerly Ozone Action Days. Three response options were provided: "very aware," "somewhat aware," and "not at all aware." "Not at all aware" respondents were instructed to skip the questions on the next two pages of the questionnaire booklet, given that these questions assumed familiarity with Clean Air Action Days. Finally, in this series of questions, respondents were told that "the West Michigan Clean Air Coalition suggests a number of voluntary actions citizens can take on Clean Air Action Days." They were then asked to indicate the actions with which they were familiar. Response options were "very familiar," "somewhat familiar," and "not at all familiar."

Table 4 provides the percentage distributions that summarize responses to these questions. Two distributions are presented: the first provides the percentages of "very aware," "somewhat aware," or "not at all aware" respondents for the total sample. The subsequent discussion focuses only on these respondents who express some level of awareness of Clean Air Action Days.

**Table 4: Awareness of Clean Air Action Days: Percentage Distributions**

	<b>Percent of Total Sample</b>
Degree of awareness of Clean Air Action Days	
Very aware	57.7
Somewhat aware	33.8
Not at all aware	8.5

	<b>Percent of Aware Respondents (N=200-204)</b>		
Familiarity with actions citizens can take on Clean Air Action Days	<b>Very familiar</b>	<b>Somewhat familiar</b>	<b>Not at all familiar</b>
Don't mow/mow after 6:00 p.m.	63.2	24.0	12.8
Don't refuel/refuel after 6:00 p.m.	57.8	25.0	17.2
Carpool	69.5	21.5	9.0
Don't top off gas tank/don't overfill	66.5	18.5	15.0
Take a bus	60.0	20.0	20.0
Reduce use of fuels	63.1	25.1	11.8
Don't idle vehicle	58.8	26.0	15.2
Don't burn trash or yard waste	67.7	22.4	9.9
Free bus rides in Grand Rapids and Holland/Zeeland	27.9	17.7	54.4
Telecommuting/Working from home	46.3	31.5	22.2

Table 24 shows that the vast majority of respondents are at least somewhat aware of Clean Air Action Days, with about 57 percent reporting a high degree of awareness (i.e., they are "very aware"), and another 34 percent saying that they are "somewhat aware." Throughout the remainder of this report, these respondents will be termed "aware respondents."

The table also demonstrates that majorities of respondents report being "very familiar" with eight of the nine actions presented in the questionnaire that citizens may take. For these eight actions, the percent "not at all familiar" never exceeds 20 percent. The only item suggesting a lack of familiarity focused on the free bus rides available in Grand Rapids and Holland; here, only 28 percent expressed high familiarity, and more than one-half of the sample indicated that they are "not at all familiar" with this action. It is instructive to note that respondents living in Kent county are more likely to be familiar with this free ride service than respondents in Muskegon and Ottawa Counties. More than two-thirds of Ottawa County residents (70%) and one-half of Muskegon County residents (54%) report being "not at all familiar" with the bus rides, compared to 48 percent of Kent County residents.

## Compliance with Clean Air Action Days

Respondents who were aware of Clean Air Action Days were asked to consider "all Clean Air Action Days this year." They were then asked, "how frequently did you voluntarily change your behavior in ways suggested by the Clean Air Action Days program?" The four response options ranged from "all or almost all of the days" to "none or almost none of the days." Respondents were also asked if their participation in Clean Air Action days changed as a result of the COVID-19 pandemic. Table 5 summarizes responses to these two questions using percentage distributions. They were then asked to "indicate whether each of the following is a major reason, moderate reason, minor reason, or not a reason for taking action"; the responses are summarized in Table 6.

**Table 5: Compliance with Clean Air Action Days: Percentage Distributions for Aware Respondents**

	Percent of Aware Respondents
Frequency of changing behavior on Clean Air Action Days	
All or almost all days	15.2
Most of the days	34.8
Some of the days	26.0
None or almost none of the days	24.0
Participation changed as a result of the COVID-19 pandemic	
Yes, I participated more often	23.8
Yes, I participated less often	1.0
My participation stayed the same.	75.2

**Table 6: Reasons for taking action on Clean Air Action Days**

	Percent of Aware Respondents (N=390-95)			
	Major reason	Moderate reason	Minor reason	Not a reason
Environmental-related issues	61.9	22.3	9.9	5.9
General health reasons	45.5	30.2	12.9	11.4
Respiratory/breathing health	44.1	22.3	17.8	15.8
Concern for the health of children	48.7	28.1	11.3	11.8
Concern for the elderly	47.8	28.6	12.8	10.8

Table 5 shows that the sample of aware respondents is split approximately 50/50 between those who report engaging in voluntary actions on Clean Air Action Days on most, almost all, or all of the days and those who report taking action on none, almost none, or only some of the days. It is worth noting that only 15 percent of these aware respondents report changing their behavior on all or almost all of the days, while almost one-quarter report changing behavior on none or almost none of the days. In terms of participation during the COVID-19 pandemic, an overwhelming majority (75%) reported not changing their participation in the Clean Air action Days, with a quarter reporting participating more often. Only 1% of the aware respondents indicated participating less.

As shown in Table 6, majorities of aware respondents indicate that issues related to the environment constitute the major reasons that citizens take action on Clean Air Action Days, with 62 percent indicating it as the primary reason.

### **Sources and Timing of Information on Clean Air Action Days**

Aware respondents were asked a number of questions about the information they received. In particular, they were asked: "What are the main ways you get information about Clean Air Action Days?" In addition, they were asked: "When a Clean Air Action Day has been called, what are the ways that you learn that it has been called?" Respondents were asked to indicate up to three ways they secure information (rather than on every possible way that they may have learned something about the Clean Air Action Day program). Aware respondents were also asked the timing of the first hearing that a specific day has been designated a Clean Air Action Day and whether the message is clearly relayed. Table 7 provides the percentage distributions summarizing responses to these questions.

**Table 5: Sources and Timing of Information about Clean Air Action Days:  
Percentage Distributions for Aware Respondents**

	<b>Percent of Aware Respondents</b>
Sources of information (up to three requested) about Clean Air Action Days	
Local television news report or weather forecast	78.7
Television or streaming service advertisements	16.3
Local radio personality	24.3
Local radio advertisements	21.8
Festival or community event	1.0
Word of mouth	10.4
Online news sources	23.3
Internet (other than online news sources)	16.3
Social media	16.3
Other	11.9
Ways of learning when a Clean Air Action Day has been called (up to three requested)	
Local television news	69.3
Local radio	45.0
Online news sources	22.3
Internet (other than online news sources)	14.9
Word of mouth	10.4
Enviroflash (email or text message)	2.5
Social media	14.9
Billboards	8.4
Other	8.9
Respondents who indicated other provided these alternate sources of information (N=23)	
Weather Apps	43.5
Billboards	17.4
Family Members	8.7
Don't hear about it	8.7
Rapid Bus service	8.7
DTE or consumers energy	4.3
Email Notifications	4.3
Work	4.3



	<b>Percent of Aware Respondents</b>
<b>Timing of learning that it is a Clean Air Action Day</b>	
Day before	35.3
Morning of the day	56.7
Afternoon of the day	6.5
Evening of the day	1.5
<b>The message is clearly relayed when you hear or read about Clean Air Action Day</b>	
Strongly agree	45.5
Somewhat agree	46.0
Somewhat disagree	6.0
Strongly disagree	2.5

Aware respondents report that they are most likely to receive information about Clean Air Action Days and are most likely to learn that a day has been called through local television news and the radio. Online news sources, the Internet, and social media are other sources of information about Clean Air Action Days and to learn that a day has been called this way. For the respondents who chose other sources of information, weather apps were the other sources of information, followed by Billboards.

More than one-half of respondents learn about a Clean Air Action Day on the morning of the day itself, and about one-third learn of the day before. About 8 percent of respondents report learning that a day has been called on the "afternoon of" or evening of" the day when the day—by definition—is almost over. Over 91 percent of the respondents agree that the messages about the Clean Air Action Days are effectively conveyed.

## Factors related to Clean Air Action Awareness and Compliance

Understanding the factors that encourage awareness about Clean Air Action and compliance with the program is useful in evaluating the success of past educational campaigns and in structuring future endeavors. This section of the report highlights the socio-demographic factors that are associated with both the degree of Awareness of Clean Air Action Days and the frequency of Engaging in Actions suggested by the program. Table 7 presents those factors that have a statistically significant relationship with Awareness (at the  $p \leq .05$  level), and Table 8 presents the factors that have such a relationship with Frequency of Engaging in Voluntary Actions (also at the  $p \leq .05$  level). Recall that only aware respondents were asked this latter question.

**Table 7: Awareness of Clean Air Action Days by Factors**

	Very Aware	Somewhat Aware	Not at all aware
Age (based on N=193)			
66 years or older	63.4	28.2	8.4
56-65 years old	55.9	40.7	3.4
46-55 years old	72.0	28.0	0.0
36-45 years old	54.1	41.7	4.2
35 years or less	35.7	35.7	28.6
Years in West Michigan			
0-5 years	57.9	36.8	5.3
6-15 years	20.0	53.3	26.7
16-25 years	64.7	35.3	0.0
26-45 years	58.3	35.4	6.3
46 or more years	64.9	29.8	5.3
Importance of environmental issues in your community			
Very important	64.0	57.1	12.5
Somewhat important	30.9	41.3	31.3
Not too/Not at all important	5.1	1.6	56.3

First, it is important to note that there are no differences in awareness by county. That is, respondents of no one county stand out as especially aware or not aware of Clean Air Action Days. Men and women also do not differ in their levels of awareness. Similarly, ethnic minority respondents are just as aware as white respondents. Lower educated respondents are not at a disadvantage in terms of awareness, nor are low-income respondents. These, of course, are positive findings since knowledge of Clean Air Action Days is not differentiated across the counties and the discussed demographic groups.

Table 7 does indicate, however, that younger people (35 years or younger) are much less likely to be "very aware" of Clean Air Action Days; only 35 percent express high awareness compared to more than 55 percent of the other age groups listed. In addition, respondents who have lived in West Michigan between 6-15 years are especially likely to report that they are "not at all aware" of action days; however, newer residents, those that have lived in West Michigan less than five years, are similarly as aware as those who have been for over 15 years.

Interestingly, awareness is not affected by household composition. That is, respondents in households with children, with seniors, or with individuals with heart disease or respiratory challenges are not more likely than others to be aware of Clean Air Action Days. Respondents who view environmental issues as "very important" are more likely than those who view environmental issues as "not at all important" to be very aware of Clean Air Action Days. Sixty-four percent of those who see environmental problems as very important are very aware of the action days, while only 33 percent of those who view environmental issues as not too or not at all important report being very aware of the action days.

**Table 8: Engaging in Voluntary Actions by Factor**

	All or almost all of the days	Most of the days	Some of the days	None or almost none of the days
Importance of environmental issues in your community				
Very important	17.1	38.1	26.9	17.9
Somewhat important	11.5	29.5	24.6	34.4
Not too/Not at all important	0.0	14.3	28.6	57.1
Views about environment (Air pollution, ground level ozone, particulate matter)				
Major Problem (Scale 3-5)	19.6	45.1	25.5	11.8
Minor Problem (Scale 6-7)	22.0	28.0	30.0	20.0
Not a Problem (Scale 8-9)	7.6	22.7	30.3	39.4

Table 8 shows that aware respondents who view environmental issues as "very important" are more likely than those who view environmental issues as not too or not at all important to frequently engage in voluntary actions in support of Clean Air Action Days. More than 57 percent of those who see environmental issues as "not at all" or "not too important" are found in the lowest category of voluntary action engagement, taking action on none or almost none of the Clean Air Action Days, compared to fewer than 18 percent of the those who see environmental issues as "very important."

The frequency of participation in Clean Air Action Days is not affected by the standard demographic variables under analysis here. That is, gender, ethnicity, age, years in West Michigan, education, and income do not affect the number of days in which respondents report changing their behavior in ways suggested by the Clean Air Action Days program. Similarly, respondents in households with children and with seniors are no more likely than those without to participate in Clean Air Action Days. Respondents who report a household member with heart disease or respiratory issues are not more likely than other respondents to report frequent involvement in the action day program.

The three questions asking about the extent to which air pollution, ground level ozone, and particulate matter are problems correlate well with one another and can appropriately be combined into a scale (Cronbach's alpha = .90). The scale ranges from 3 for respondents who see all three types of pollution (that is, "air pollution," ground-level ozone, and particulate matter) as major problems to 9 for respondents who view all three as not a problem. Note that the scale was constructed only for respondents who expressed an opinion other than "don't know" on each of these three questions about air pollution. Given the number of "don't know" responses, the N for the scale is much smaller than for the total sample. Respondents' scale score didn't relate to their awareness of action days but was related to their engagement in voluntary actions. Respondents who expressed major problems with air pollution were more likely to engage in actions most days or more.

## Conclusions

This report summarizes data from 225 respondents from Kent, Ottawa, and Muskegon counties in West Michigan, who completed print and online questionnaires focused on Clean Air Action Days and air pollution issues. Data were gathered by the Center for Applied Research Studies of Central Michigan University between September and November 2021. Key findings include:

- More respondents see air quality issues as a "minor problem" or as "not a problem" rather than as a major problem. About 15 to 29 percent of respondents see air quality issues as a "major problem," with more respondents not seeing ground level ozone or particulate matter as a problem
- The largest number of respondents sees no change in air quality during the last five years, while more than 20 percent of the sample believes that air quality has been improving.

- A lot more respondents (over 93 percent) report that "environmental issues within your community" are "very important" and "somewhat important" (rather than "not too" or "not at all important").
- Fifty-eight percent of respondents report that they are "very aware," and 34 percent say that they are "somewhat aware" of Clean Air Action Days.
- Majorities of aware respondents are "very familiar" with eight of the nine "actions citizens can take" on Clean Air Action Days. By contrast, only 28 percent of respondents are "very familiar" with the free bus rides available in Grand Rapids and Holland.
- Half of the aware respondents change their behavior on all, almost all, or most Clean Air Action Days. Almost one-quarter of the sample reports making such changes on none or almost none of the days.
- The COVID-19 pandemic did not affect most of the respondents' participation in voluntary activities on Clean Air Action Days.
- Aware respondents are most likely to receive information about Clean Air Action Days and are most likely to learn that a day has been called through local television news or local radio.
- Fifty-seven percent of respondents learn about a Clean Air Action Day on the morning of the day itself, and 35 percent learn of an action day on the previous day. One-quarter of aware respondents indicate that they have been aware of Clean Air Action Days for more than ten years.
- Awareness of Clean Air Action Days is highest among older respondents and those who have lived in West Michigan the longest.
- The frequency of engagement in Clean Air Action Day voluntary actions is lowest among respondents who view environmental issues as not especially important and those who are not concerned with air quality issues.

## Recommendations

While awareness of Clean Air Action Days in West Michigan counties is reasonably high, the data presented above suggest that additional educational efforts should focus on some specific groups.

- In particular, the messages about groups especially at risk for health-related problems associated with air pollution are not prompting members of those groups to be especially active in the Clean Air initiative. It might be well advised to target educational campaigns to parents, to seniors, and to those facing specific health challenges.
- Newer residents appear to be getting the message around Clean Air Action Days, but the residents who have lived in the area between 6-15 years appear to have missed the message and will be a good group to target.
- Local television and local radio appear to be the best way for respondents to receive the information. In addition, while electronic media are not relied upon heavily by the total sample of respondents for information about West Michigan, the youngest respondents are most likely to express a preference for learning about West Michigan through these sources. Weather apps are becoming a growing source of information and need to be emphasized more for the younger group.
- Finally, it is clear that people who believe that environmental issues are important to their community are more likely than others to be aware of and compliant with Clean Air Action Days. Coalitions between environmental groups to spread specific messages about air quality along with more general messages about sustainability might enhance both the quality of life and the quality of health for residents of Kent, Ottawa, and Muskegon counties. It is also clear that reasonably high numbers of respondents would benefit from additional education about the problems associated with ozone and particulate matter. Respondents are more

likely to have an opinion about "air pollution," generally, than to be able to articulate an opinion about the specifics of particulate matter or ozone in the air



## **APPENDIX A: Open-Ended Comments**

**Feel free to add any additional comments about the environment in your community.**

**Comments about the environment (N=16)**

*I get wood out of business dumpsters and online Craigslist. Wood is discarded and not recycled. I've made several things from reclaimed wood. recycling should include wood and metal. we need a cart for these things and not just a recycle cart for plastics, paper... etc.*

*There is concern about ozone as well as particle pollution.*

*Better now- most manufactories is gone. Some clean-up done.*

*Pretty sure the reason our air is better and Muskegon Lake is so clean now is because we have lost most of the industry on the lake.*

*to promote more recycling and less material going to landfill, recycling centers should have receptacles available for metal, plastic, cardboard, paper and glass -- less carbon footprints. And too -- Michigan returnable bottle bill only includes carbonated type containers and products -- 10 cent deposits. It should be expanded to all beverage containers- juices, water, non-carbonated products - exact same containers. This would recycle tons of materials going to landfills.*

*Water shortage is more of an issue for us. Too much build up in our county and our very large pond is drying up.*

*Power plant burning coal used to leave coal ash washing ashore along Lake Michigan. Holland BPW converted to natural gas, I no long see that near Holland. It would be a big step forward for the Port Sheldon power plant would stop burning coal for power.*

*More concerned about water pollution. Also concerned about the cost of environmental projects, it is the poor who end up paying the most as a percentage of income.*

*I don't feel the need to worry in U.S.A. So many other countries are not doing their part!*

*Let's get the biggest polluters first.... All the cargo ships on the oceans, then the planes in the air.*

*I wish for myself that more "no smoking areas" were exactly that -- no smoking but smoker's smoke anyway*

*Dust for roads*

*Now that the Automotive Industry is basically gone here, air quality has improved. Been in the came house 50 years.*

*There has been issues with PFAs in my area. I also have been recycling since the 80s to witch my daughter has also. I wish soon all school buses would be electric. Lower prices for all to use electric cars Thanks :)*

*Why don't (Wisconsin) fix their pollution? Which comes across the LK and gives us problems.*

*I have lived in greater Holland (MI) since 1978. I have severe allergies & asthma that makes me very sensitive to air quality. Since closure of HBPW coal burning power plant, I have experienced significant reduction in asthma attacks due to poor air quality.*

### **Specific suggestion about Clean Air Days or survey (N=14)**

*I feel if we don't advocate for some of these very important issues, our health (and others) will be in jeopardy.*

*would be great to hear about it the day before if possible.*

*I only see clean air action alerts if i actively check my weather app, the alerts do not come as notifications.*

*I think about env. issues everyday. If we have 5 or 55 "action" days, does that mean we have 360 or 310 "inaction days" -maybe that's the problem.*

*It would be great to receive an alert when one is scheduled.*

*We live on a dirt road in country. Don't have a radio. We are 80 and 90 years old every day should be a clean air action day if our environment is in this much danger.*

*I am interested in getting info. Email would be best. Don't have a tv or newspapers*

*more billboards on roads to alert community, because people driving are a main source of pollution until we all wake up to electric or solar powered cars.*

*we have few large industries that cause air pollution that are close to me. I drive an electric car, I think clean air days are important and should be encouraged more.*

*We need our dirt roads piled more to keep down the dust. It's really bad during drought days of summer.*

*I have decided not to burn wood despite having a fireplace--candles are just as pleasant and a lot less dirty. I also think the popularity of backyard fire pits is a problem.*

*You do not owe me anything. In G. Rapids area, on a O zone day, a person cutting grass or using a product to cause fumes in the air can be given a city official warning. A potential citation possibly, or a ticket with a fine. Depending on the level of the infraction. In this town all city officials with their authority are pretty much all square business. No fooling around.*

*A service to directly notify my phone (text, app, facebook notification, etc.) if there is an ozone action day might be helpful. I tend not to hear the live local TV or Radio news much anymore.*

### **General statement about Clean Air Days or survey (N=10)**

*We moved to west Michigan in December 2020. We don't listen to local news or radio on a regular basis. We are not aware of any Clean Action Days since we moved here. We have been working from home, so our behavior would not have changed much if we had been aware.*

*I care about the environment a lot. I'm more concerned about water pollution in MI than I am air pollution. If I thought air pollution was a bigger problem in MI, I would probably pay more attention to C.A.A.D.S.*

*Being retired now and living in a condo downtown, it is very easy to comply with the Clean Air Action days.*

*I walk 2-3 miles with my husky every day (5,000 miles and counting) and I've come to appreciate the fresh spring air, the warm summer sun, the changing fall landscape, the beautiful winter snow. I love the environment in my community I must admit however, that I don't get too worked up about Clean Air Action Days.*

*we try to make environmentally friendly choices everyday, but do not use CAD as a lever to do so.*

*I think clean air action days are a load of crap especially when other industrialized nations such as China, refuse to do their part and the United States is the one bending over backwards to clean their stuff up.*

*How come a NGO can dictate how I live my life?*

*I live by a private lake in the country so pollution is not a problem like in the cities, but I am very aware of when people burn leaves or mow, esp if it is a clean air action day.*

*Thank you so much for your effort*

*I have not heard as much news about clean air days recently, and understood that the free bus (MAX) ride program had stopped.*

**Other topic (N=1)**

*I have no faith in our governments ability to govern for the greater good. To me you are nothing but a waste of tax payer funds.*

## **APPENDIX B: Print Questionnaire**