

TVAQCA Third Annual Survey Report

Executive Summary

This third annual TVAQCA Survey was designed to focus on wildfires, and to continue tracking the change in responses to selected questions through time. Wildfire focus was to understand respondents' experiences with wildfire, either directly or through wildfire related smoke. Results of this survey show the following:

Persons included in survey responses (responses x persons per household) were estimated to be approximately 500, with an average of 4 persons per household.

In general, for tracked questions, similar patterns were seen in the responses, with indications of improved understanding and awareness of air quality issues. Concern over emissions & noise from Livermore Airport and lawn & garden equipment was again expressed. The *Suggestions* and *Comments* display a robust awareness of the need to convert to electric for transportation and appliances, including lawn & garden equipment, as well as general energy efficiency, and a desire for more public education. There is some increase seen in the use of electric and hybrid vehicles.

Most respondents have taken actions to fire-/smoke- proof themselves, their homes, and property; and, more than half of the respondents are signed up for one or more emergency alert services. Actual damage to persons and property from, as well as direct exposure to wildfires was essentially zero (0). Worth noting, is the fact that recent wildfire seasons have been milder than previous years.

Finally, results indicate that the message about O₃ and PM_{2.5} levels in the Tri-Valley is getting through, as knowledge of these has increased significantly. TVAQCA hopes that were part of that education.

Report on the Tri-Valley Air Quality Community Alliance (TVAQCA) Community Survey 3Q2022-2023

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Introduction

At the end of the fourth quarter of 2023, TVAQCA released a survey, the TVAQCA 3rd Annual Survey, into the Tri-Valley Area as both an outreach effort and to gather information regarding residents' and workers' understanding and experiences with outdoor air quality. We emailed the link to the online survey to our stakeholder contacts in Dublin, Pleasanton, Livermore, and San Ramon and Danville. This survey concentrated on air quality in relation to wildfires and includes some previous questions to track changes. Responses were slow, so TVAQCA left the survey open for many months into 2023.

There were approximately 150 households that responded with an average of 4 people per household, representing approximately 500 people.

Survey Methods

TVAQCA set the following goals of the survey:

- 1) To get a sense of how Tri-Valley residences' experience and knowledge about local air quality is changing through time,
- 2) To pass on some helpful information in case of a wildfire,
- 3) To identify populations sensitive to poor air quality (vulnerable populations),
- 4) To continue to try and identify any impactful, but yet-to-be-identified emission sources,
- 5) To understand household experiences with wildfires,
- 6) To continue to track questions from previous surveys,
- 7) To solicit ideas on how to improve local air quality, and
- 8) To not exceed 10 minutes to fill out the survey.

With these in mind, TVAQCA set about designing the third annual outreach survey. Here are some details on that process.

SURVEY TOOL – An account with Survey Monkey was established and used to create the survey.

SURVEY DESIGN – The survey contained 20 questions including a request for a Zip Code, and a proxy question for household income, highest education in the household. Questions were designed to cover the goals listed above. Average test times were within the 10-minute goal. Questions being tracked from the previous surveys were included; however, a few were combined for efficiencies.

REVIEW PROCESS – A set of questions were created and sent to TVAQCA Oversight and Science Committee Members and their families for preliminary testing. The findings were incorporated, and a final version was produced.

DISTRIBUTION AND PROMOTION – When the two versions were finalized, links to the survey was distributed via email, and at in-person outreach events, including in schools.

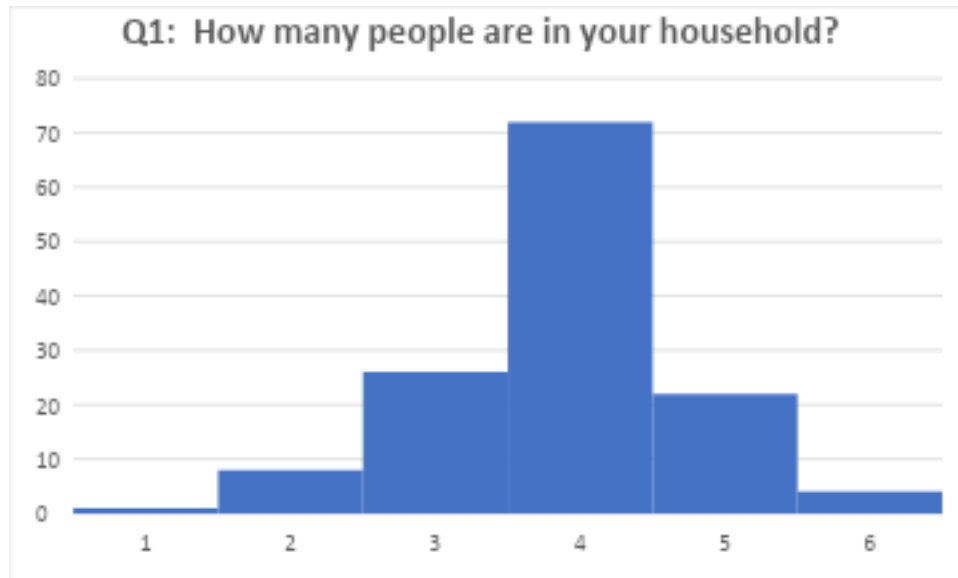
Response Statistics

Ultimately, 133 people responded to the survey. As the survey was designed to encompass the household, this represents many more individuals; using the survey-established average of 4 persons per household and rounding up, that is roughly 500 individuals captured in the responses.

The following are descriptions of the responses by question.

Question 1: How many people are in your household?

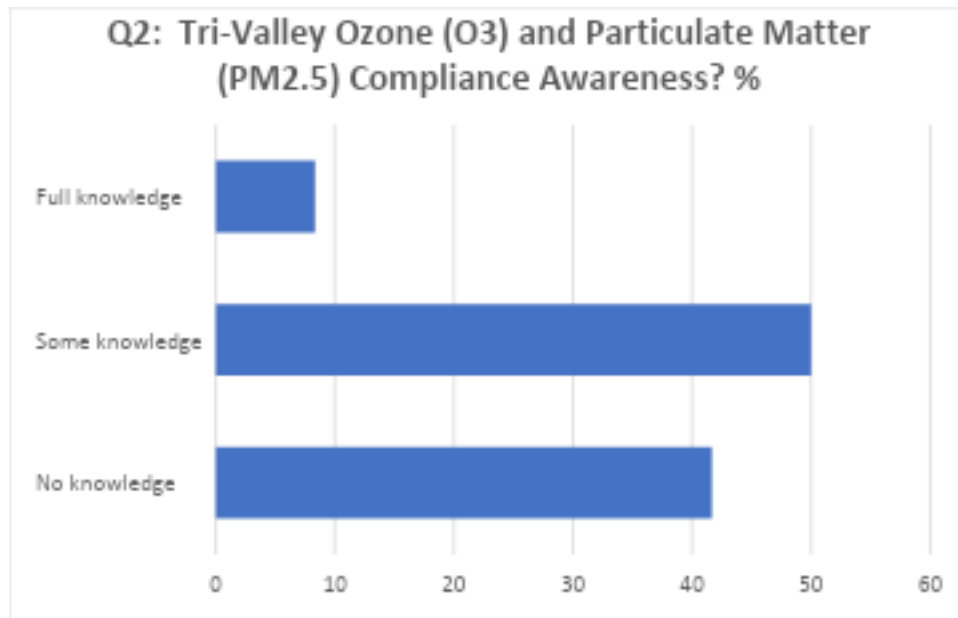
Both the mode and mean are 4 persons per household.



This average (arithmetic mean) is consistent with last year's survey.

Question 2: How aware are you of the Tri-Valley's Ozone (O3) and Particulate Matter (PM2.5) Non-compliance?

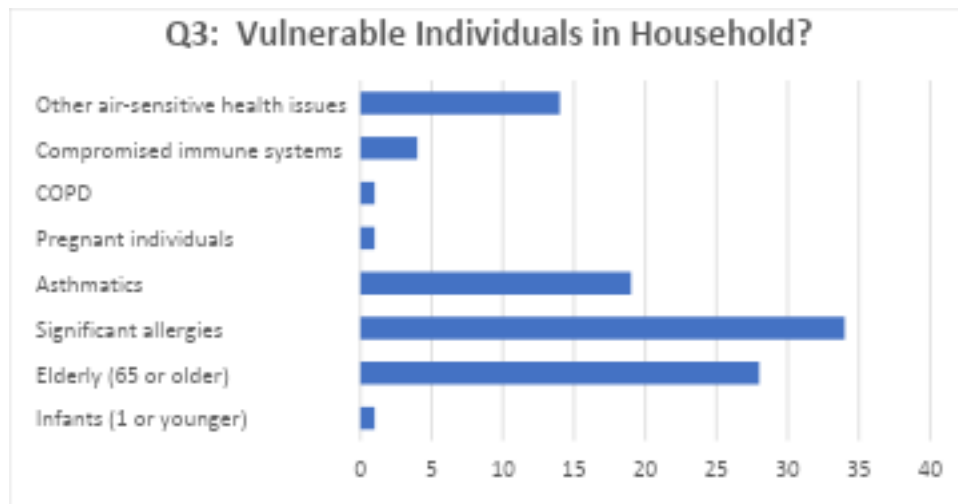
This is a tracking question.



Although similar, there is a slight increase from the last survey when combining the "Some" and "Full" "Knowledge" categories, again suggesting that TVAQCA's efforts to educate are having some success.

Question 3: Do you have vulnerable-population individuals in your household, and if so, how many?

This is a tracking question.



Significant allergies are a new category from previous survey suggestions and have the highest response. "Other" responses are significant. For the next survey we will attempt to get more details.

Question 4: Are there particular toxic air or noise emissions in your area that you are concerned about? If so, please describe (examples: nearby business/residence workshops that use paints with strong emissions, or local construction with unacceptable dust emissions).

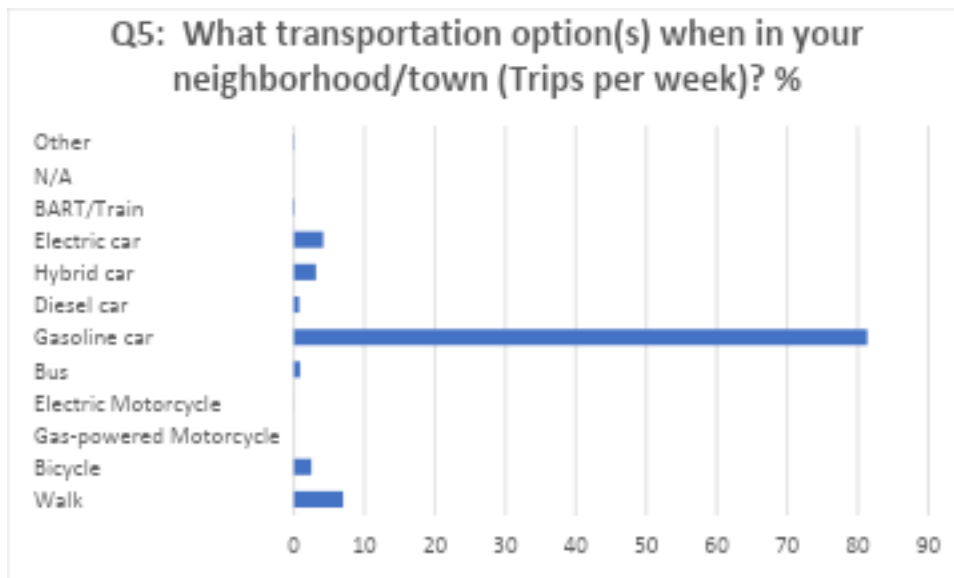
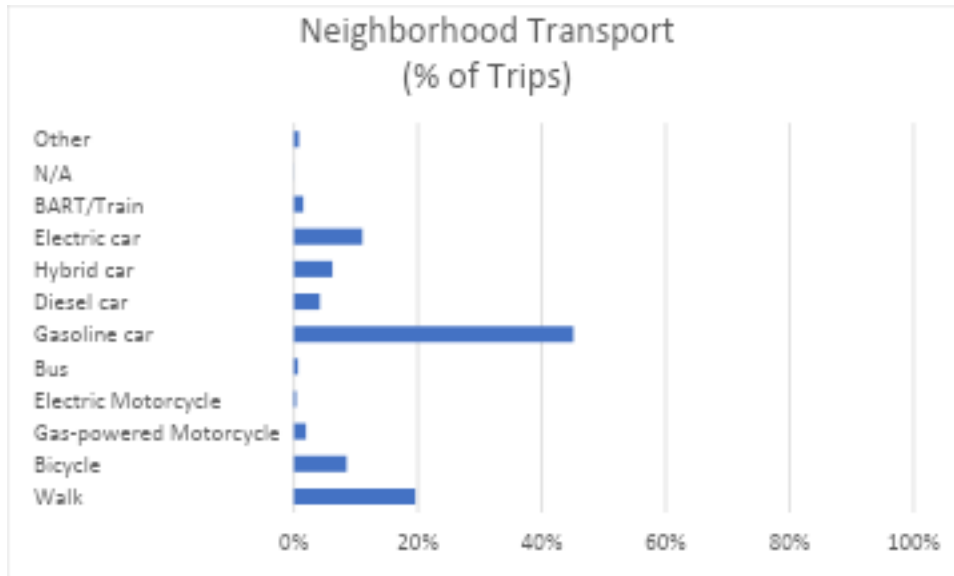
Below is an accounting of the responses other than N/A. The column on the right tallies the number of responses in this category.

SUMMARY CATAGORIES	Responses
Livermore Airport	5
Nearby construction	2
Gravel quarry/cement plant fugitive dust	4
Wastewater treatment plant	1
Residential emission, woodfire or smokingtrash burning, noise	5
Train emissions	2
Vineyard spraying	1
Traffic noise and emissions (dirt bikes mentioned)	7
Lawn & garden equipment (gas in particular) noise & emissions especially during non-noise hours	9
Wildfire smoke	5
Garbage services	1
Factory emissions	2

As with the last survey, there appears to be significant concern about lawn & garden equipment, noise & emissions from traffic and Livermore Airport (LVK), and wildfire/residential smoke.

Question 5: What transportation option(s) do you and your household members mostly use when in your neighborhood/town (this last year), and how often (total for all members)?

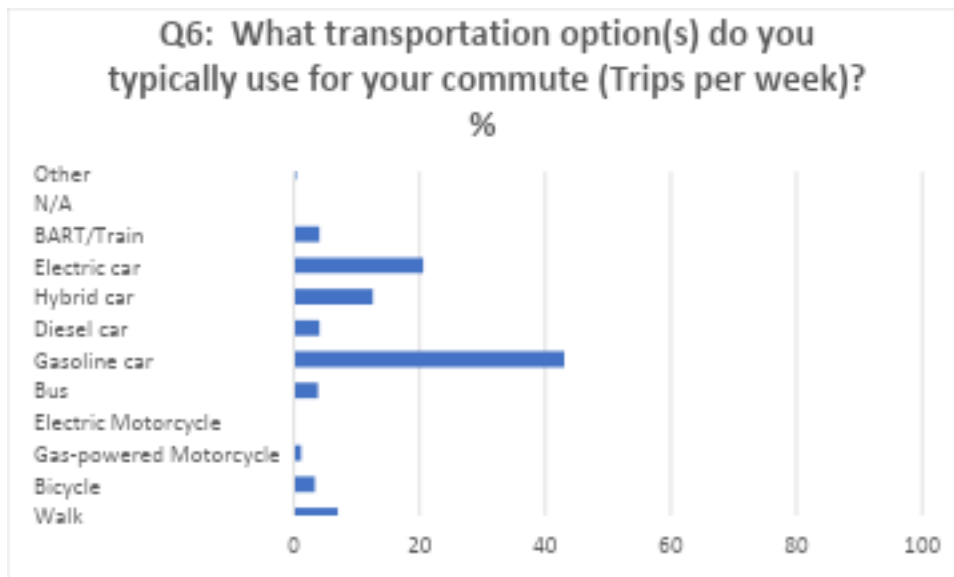
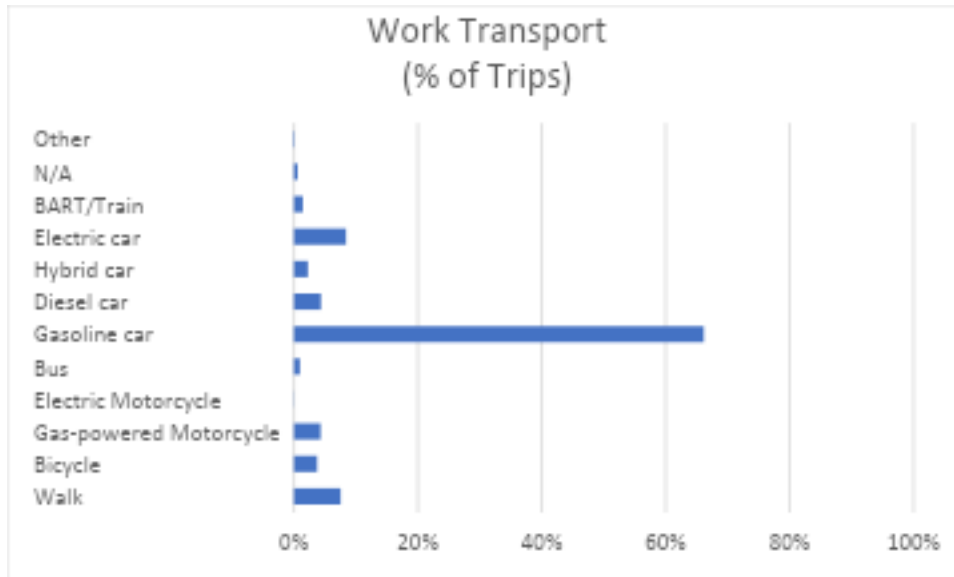
For comparison, the last survey's results for the same question are presented first.



Compared to the previous survey, there appears to be a similar pattern with gasoline cars increasing and other modes decreasing.

Question 6: How good/bad has the air quality been in your specific neighborhood particularly during recent wildfire events?

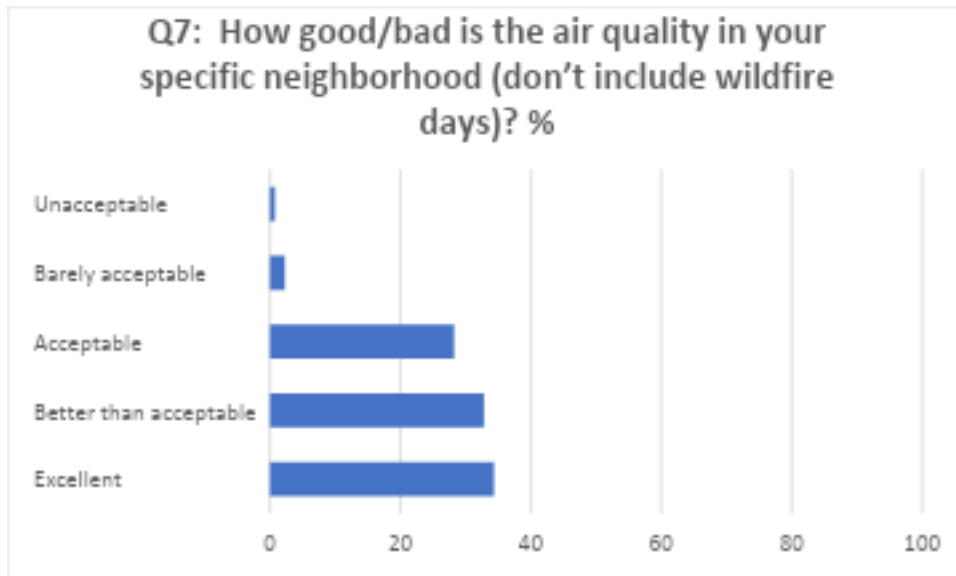
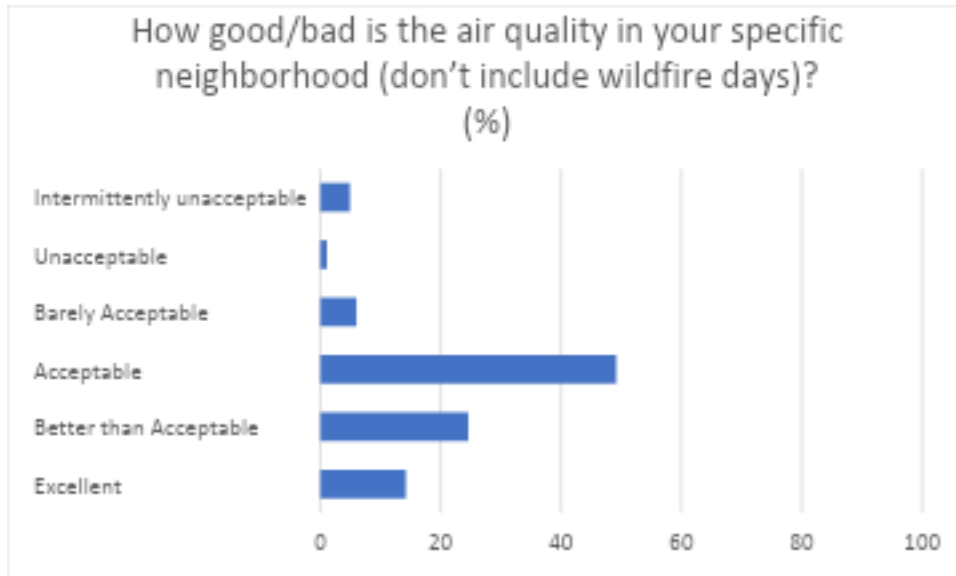
For comparison, the last survey's results for the same question are presented first.



Unlike the previous question, alternative transportation methods do appear to be increasing for work commutes while gasoline-powered cars are decreasing.

Question 7: How good/bad is the air quality in your specific neighborhood (don't include wildfire days)?

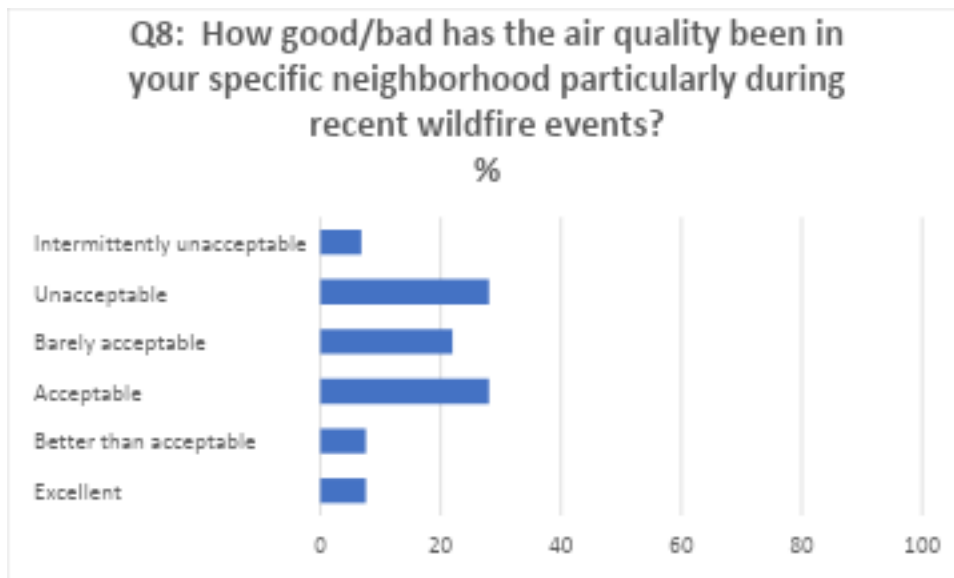
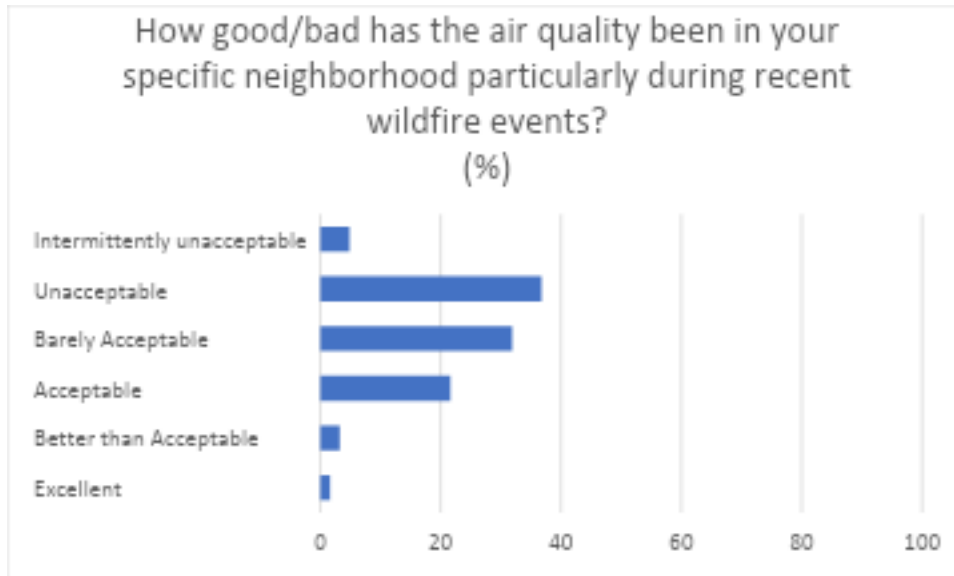
For comparison, the last survey's results for the same question are presented first.



There appears to be an increase in air quality.

Question 8: How good/bad has the air quality been in your specific neighborhood particularly during recent wildfire events?

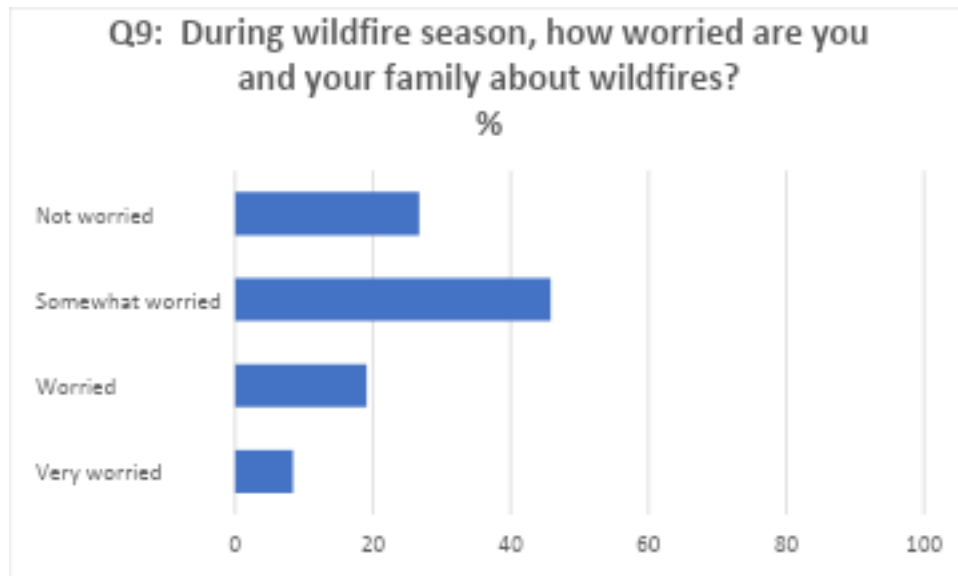
For comparison, the last survey's results for the same question are presented first.



There appears to be an increase in air quality here as well. This may be attributable to the wildfire season being less severe than the previous.

Question 9: During wildfire season, how worried are you and your family about wildfires?

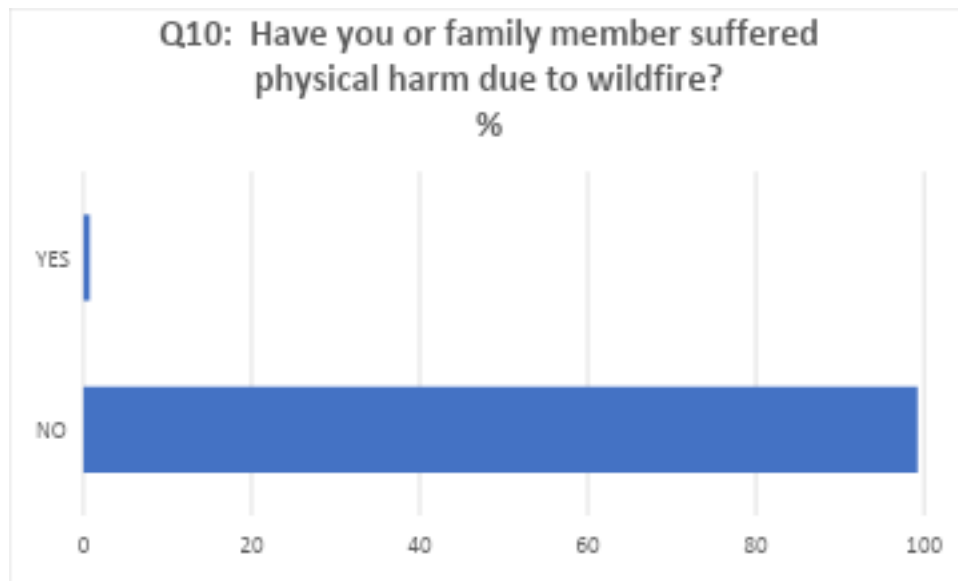
Survey results for subsequent years can be an interesting comparison, as this is the first time this question has been asked, yet wildfires are an ongoing seasonal issue.



Result suggest that respondents have worries about wildfires, as over 70% of responses are somewhat to very worried.

Question 10: Have you or a family member suffered physical harm due to wildfire?

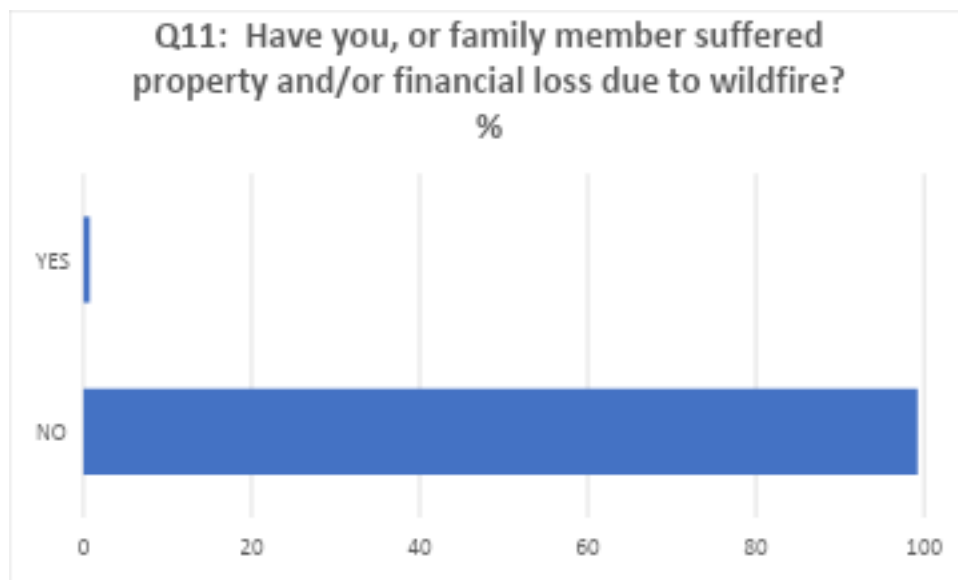
This is also a new question which might be asked in future surveys.



Happily, there is a huge negative response to this question.

Question 11: Have you, or family member suffered property and/or financial loss due to wildfire?

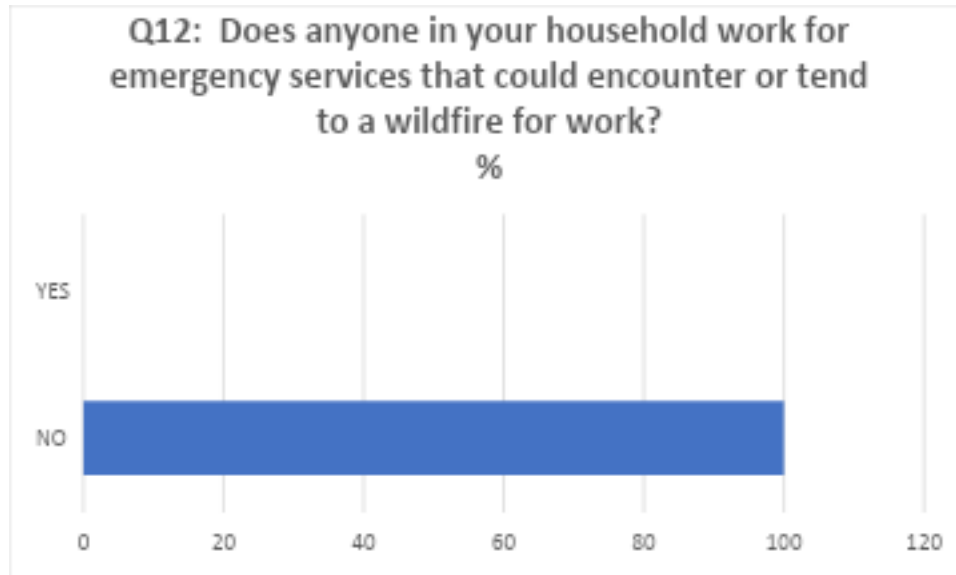
This is also a new question which might be asked in future surveys.



This is another welcomed highly negative response.

Question 12: Does anyone in your household work for emergency services that could encounter or tend to a wildfire for work?

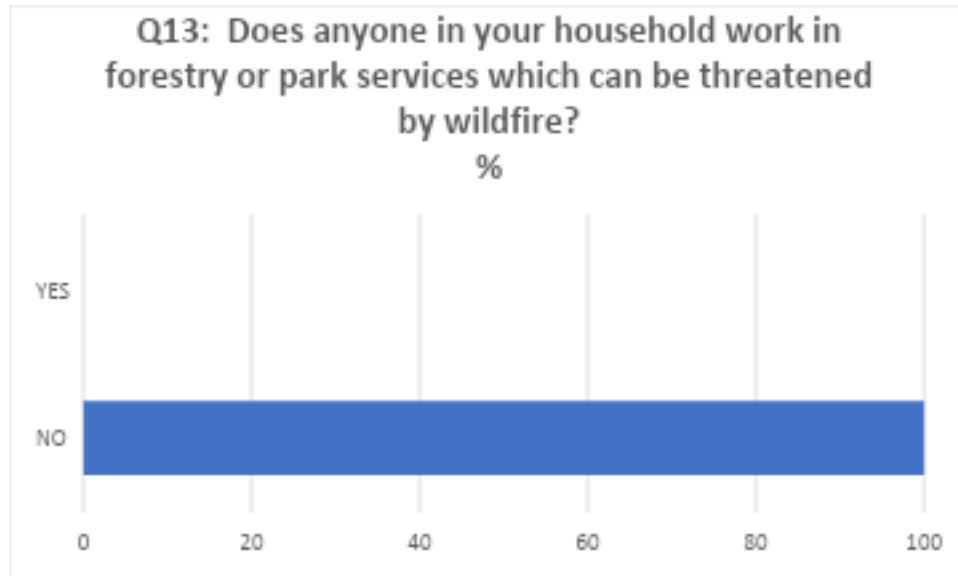
An effort should be made in the future to capture more respondents that can say yes to this question, as it bares on *Question 10* as well.



100% of responses were "NO".

Question 13: Does anyone in your household work in forestry or park services which can be threatened by wildfire?

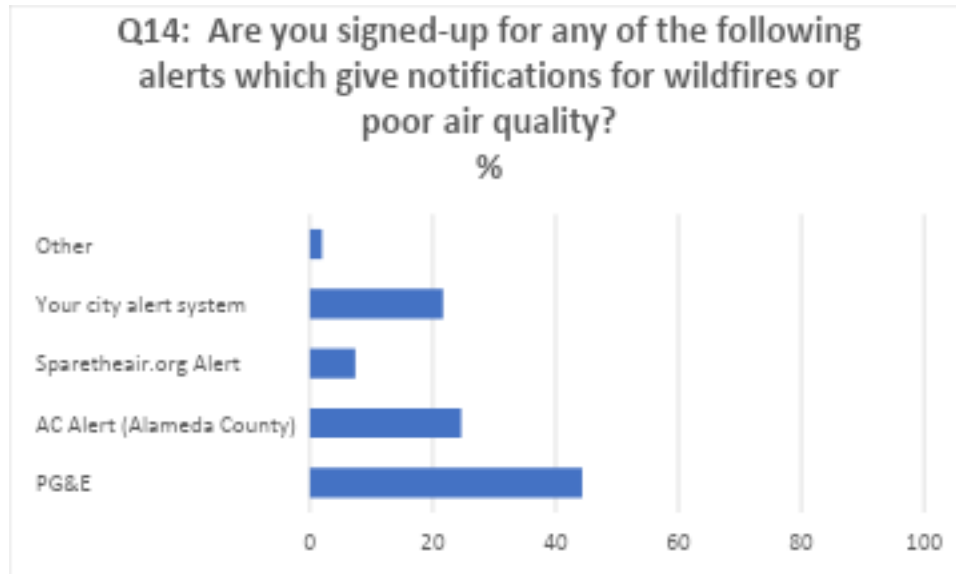
This question attempts to cast a wider net on possible direct wildfire exposure.



Again, 100% of responses are "NO".

Question 14: Are you signed-up for any of the following alerts which give notifications for wildfires or poor air quality?

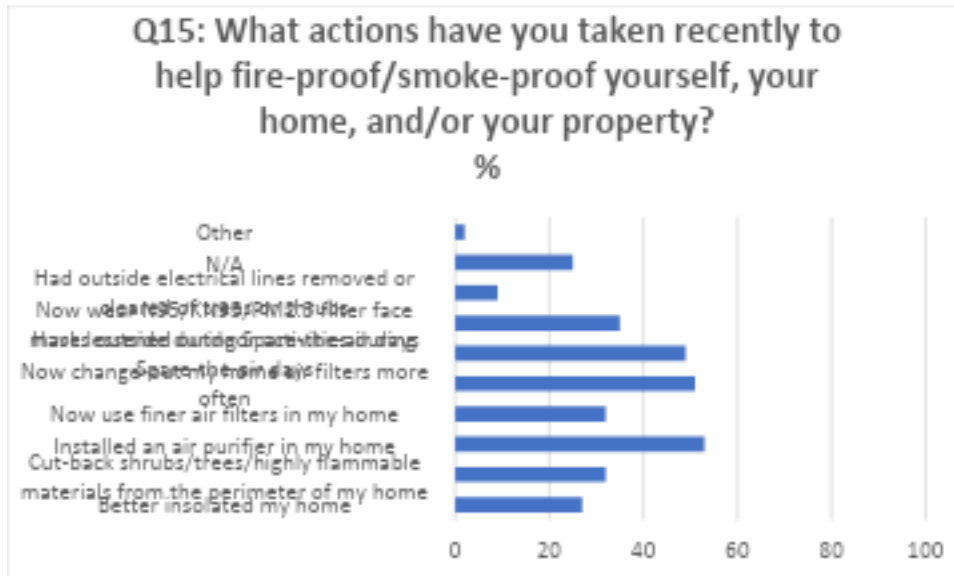
Others included WeatherBug, Purple air, and weather app.



Most respondents use some alert tool.

Question 15: What actions have you taken recently to help fire-proof/smoke-proof yourself, your home, and/or your property?

Note: A respondent could choose more than one answer, and many did.



Other included changing to an electric vehicle and monitoring air quality with an IQ Air Sensor.

Question 16: Do you have any suggestions on ways to address air or noise pollution in the Tri-Valley, or more specifically in/near your neighborhood?

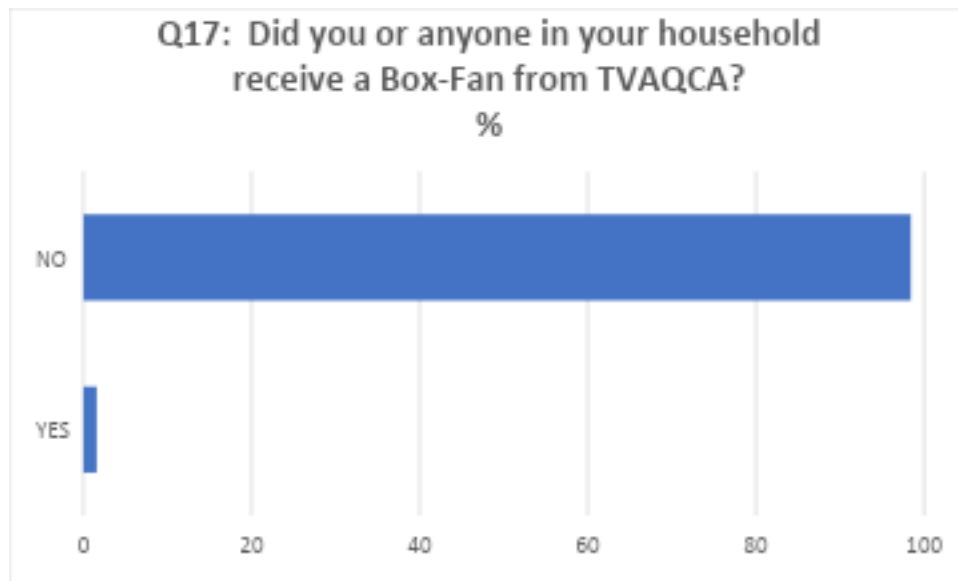
These open-ended responses have been grouped below for convenience.

Summary of Responses	
<p>Not really, except maybe use gardening equipment that is less noisy and better for the environment.</p> <p>Ease the transition and then Enforce ban on gas-powered landscaping equipment.</p> <p>City-wide, enforceable gas leaf blower bans. Wood burning/fire pit bans.</p> <p>Encourage landscapers to buy electric equipment.</p> <p>Ban gas powered leaf blowers ASAP</p> <p>Less gas-powered vehicles and landscape equipment,</p>	Lawn & garden equipment
<p>Unless necessary use ev's, biking , and walking for transportation</p> <p>Use less diesel trucks.</p> <p>Continue to move to non-internal combustion engines</p> <p>Incentivize residents to buy electric cars.</p> <p>Encourage city government to monitor traffic flow to minimize vehicle emissions.</p> <p>Add school buses for less carbon dioxide and other green gas products produced into the air.</p> <p>get cleaner cars</p> <p>Use more electric cars, carpool, and don't smoke.</p> <p>Time restrictions on train and other noise</p> <p>No gas cars.</p> <p>Provide more public transport</p> <p>WE SHOULD ENCOURGE RESIDENT NOT TO US GASOLINE CARS AND INCREASE TAX CREDITS FOR ELECTRIC CARS.</p> <p>Promote bike use for commuting around the tri-valley</p> <p>I would suggest to reduce unnecessary emissions that result in air pollution, electric buses are much quieter and cleaner too</p> <p>More incentives for buying electric cars and installing solar panels</p>	Transportation
<p>Being quieter inside your house could improve noise pollution</p> <p>Use headphones instead of speakers</p> <p>Time restrictions on train and other noise</p> <p>Get thicker windows to help block the noise</p> <p>and I suggest being aware of the noise pollution that people cause to cut down on it.</p> <p>Sound Wall along I-680</p>	Noise pollution
<p>Move the airport to somewhere else or limit the air plane fly height.</p> <p>Have Livermore include a representative on their Airport Commission</p> <p>Prohibition on leaded fuels at Livermore Airport.</p>	LVK
<p>Try to tell more people about the air and safety of the fire.</p> <p>Posters</p> <p>More communication.</p> <p>Officials need to take our complaints more seriously when we contact them. BAAQC and City of San Jose.</p> <p>Have more people know about this air quality problem</p> <p>Have a hotline for pollution complaints</p>	Communication/education
<p>wear a mask, besides blocking out viruses, they can still be used for other things such as this</p> <p>Offer air filtration units to low-income families.</p> <p>Plant more FEMALE (so less pollen) trees and work on more [aquifers] to collect rainfall</p> <p>more trees</p>	Filtration pollen/viruses
<p>limit smoking</p> <p>Be safe.</p> <p>Have the county audit people like my neighbor to make sure their heater complies with regulations.</p> <p>who defends the rights of those affected by the noise/air pollution[?]</p> <p>We need more sources for electrical generation. Nuclear is the only all-the-time, non-emission source available.</p> <p>be cleaner</p> <p>To lessen the amount of pollution factories can make</p> <p>Use more renewable energy</p>	Miscellaneous

There is a concentration of suggestions around lawn & garden equipment, air & noise emissions, with many common solutions mentioned. Note that many of these are recently being implemented by some cities in the Tri-Valley. Another concentration is on electrifying transportation or encouraging bicycle riding or walking. LVK (Livermore Airport) continues to be mentioned as in previous surveys both for noise and air pollution (lead in particular). More communication and education are desired, and suggestions included a pollution hotline, and more serious attention to complaints. There were also suggestions for more free air filtration devices (TVAQCA does help supply these), a sound wall on I-680, and planting more trees, especially female trees to lower pollen.

Question 17: Did you or anyone in your household receive a Box-Fan from TVAQCA?

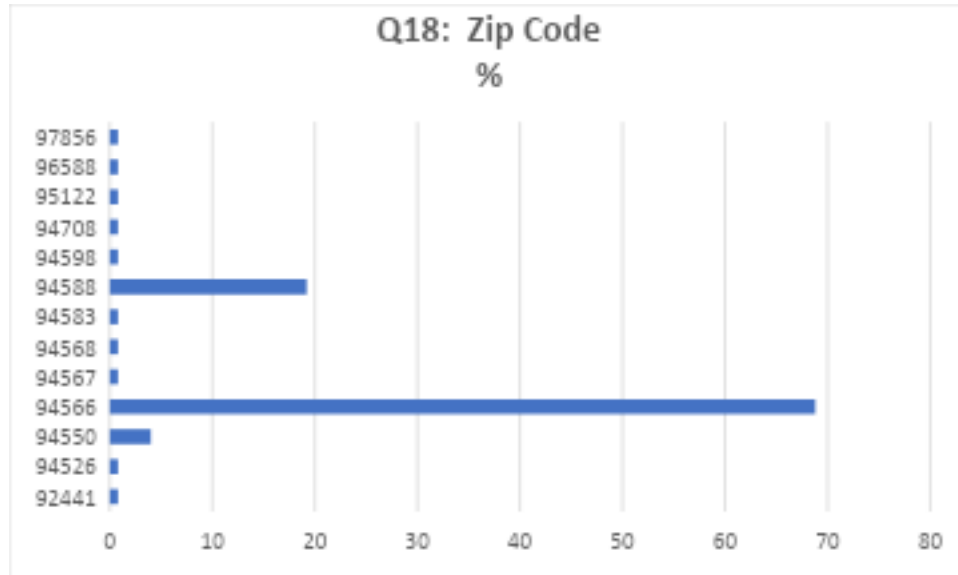
Below is a summary of the responses.



As mentioned in the previous question, there is a desire to continue this program.

Question 18: Please enter your 5-digit Zip Code

The following figure and table show the zip codes of respondents and their cities,



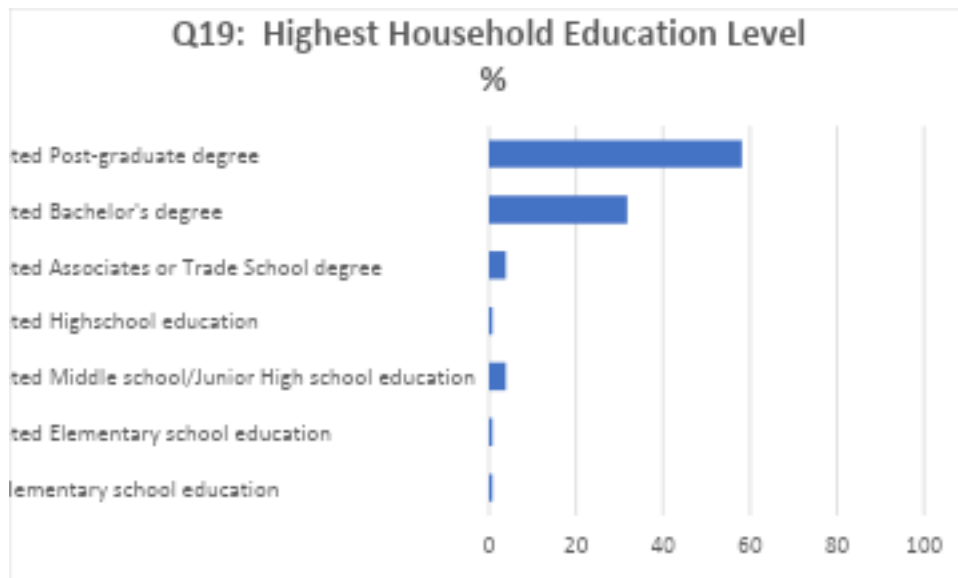
Pleasanton and Livermore are highly represented.

Zip Code	Associated Cities
92441	San Bernardino
94526	Danville
94550	Livermore
94566	Livermore
94567	Pleasanton
94568	Dublin
94583	Dublin
94588	Dublin
94598	Pleasanton
94708	Berkeley
95122	San Jose
96588	Pleasanton
97856	Eastern OR
	Non declared

Some cities from last year don't appear and some new ones do. There are a few out-of-area outliers.

Question 19: Please tell us the highest education in your household?

This question was a proxy question to establish household income.



Of those that responded, bachelors and post-graduate degrees are the large majority. Unlike the last survey, most respondents answered this question.

Question 20: Do you have any further comments for us? If so, please write them in the comment box below.

As in the last survey, the responses are thin and mostly some forms of thank you. The following are the few clear comments:

"I am looking forward to seeing results of this survey published in local newspapers."

"Very informative!"

"I ride my bike for exercise, daily. Everyday, I check PurpleAir and will not ride if it's above 100 (2.5). I tend to lose my voice and have a sore throat when I ride in air worse than 100."

There were several comments in the suggestion question, so there may not have been a need by most respondents to fill out this response.

Findings

The following are findings from the survey:

- 1) The average household of respondents has 4 people.
- 2) Knowledge of the Tri-Valley's O3 and PM2.5 levels/compliance appears to have increased. We hope that is due in part to TVAQCA's outreach efforts.
- 3) Many vulnerable individuals are acknowledged, as with previous surveys. "Significant allergies" is a new category from previous survey suggestions and has the highest response.
- 4) As with the last survey there appears to be significant concern about lawn & garden equipment, noise & emissions from traffic and Livermore Airport (LVK), and wildfire/residential smoke.
- 5) Neighborhood transport using gasoline-powered vehicles appears to have increased some, whereas work commute options are decreasing in the use of gasoline-powered vehicles.
- 6) There appears to be better air quality in general, as well as wildfire seasons.
- 7) Significant work exposure and personal effects of wildfire don't appear in responses, but many respondents also appear to have taken several steps to prepare for wildfire season.
- 8) There is a concentration of suggestions around lawn & garden equipment, air & noise emissions, with many common solutions mentioned. Note that many of these are recently being implemented by some cities in the Tri-Valley. Another concentration is on electrifying transportation or encouraging bicycle riding or walking. LVK (Livermore Airport) continues to be mentioned as in previous surveys both for noise and air pollution (lead in particular). More communication and education is desired, and suggestions included a pollution hotline, and more serious attention to complaints. There were also suggestions for more free air filtration devices (TVAQCA does help supply these), a sound wall on I-680, and planting more trees, especially female trees to lower pollen.
- 9) Pleasanton and Livermore residencies appear to dominate in responses.
- 10) Respondents appear to lean towards being highly educated and presumably mostly belong to the upper-middle professional class.
- 11) Some respondents felt that the survey was informative, which is one of TVAQCA's goals.

Future Surveys

It is expected that TVAQCA will conduct a similar survey on an annual basis. Lessons learned will be incorporated into future annual surveys.

The following will be considered when designing the next Survey.

- 1) To continue using tracking questions that are still relevant.
- 2) To get a sense of how Tri-Valley residences' experience and knowledge about local air quality is changing through time.
- 3) To pass on some helpful information in case a wildfire.

- 4) To identify populations sensitive to poor air quality (vulnerable populations), in particular this survey showed that there is a significant “other” category to be understood.
- 5) To continue to try and identify any impactful, but yet-to-be-identified emission sources.
- 6) To solicit ideas on how to improve local air quality.
- 7) To not exceed 10 minutes to fill out the survey.
- 8) To investigate transportation options more thoroughly.