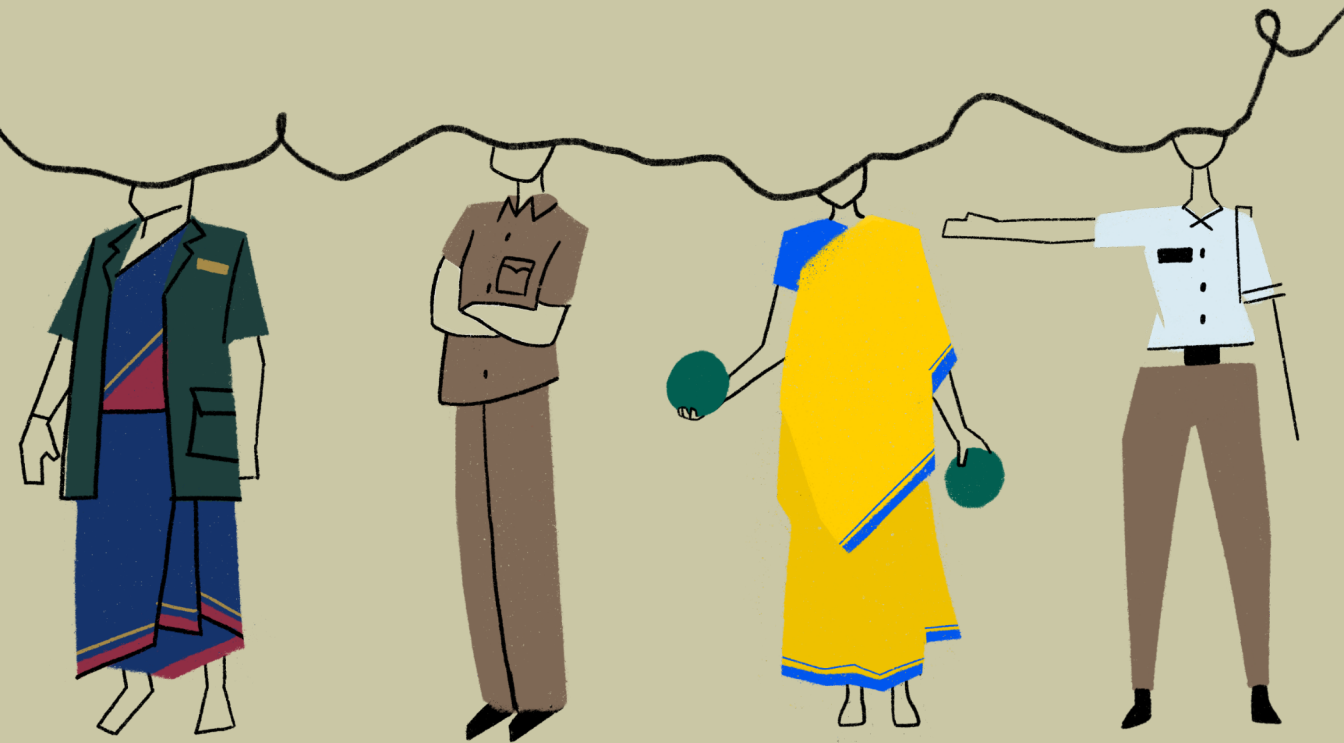


Air Quality

PERCEPTION AMONGST
MULTIPLE STAKEHOLDERS



**Air Quality perception amongst
multiple stakeholders**

Report 2021

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The health impact of air pollution is reaching a new high across the world. The Global Burden of Disease Study¹ 2019 has some very telling figures. Air pollution is now considered to be the world's largest environmental health threat, accounting for 7 million deaths around the world every year. In 2019, 1.67 million deaths were attributable to air pollution in India alone, accounting for 17.8% of the total deaths in the country. The majority of these deaths were from ambient particulate matter (PM) pollution and household air pollution. Although the death rate due to household air pollution decreased by 64.2% from 1990 to 2019, that due to ambient particulate matter pollution increased by 115.3%. Losses incurred from premature deaths and morbidity attributable to air pollution accounted for economic losses of US\$ 28.8 billion and \$8.0 billion respectively, in India in 2019. This total loss of \$36.8 billion was 1.36% of India's gross domestic product (GDP). The study has concluded that high burden of death and disease due to air pollution and its associated substantial adverse economic impact from loss of output could impede India's aspiration to be a \$5 trillion economy by 2024. It reiterates that successful reduction of air pollution in India through state-specific strategies would lead to substantial benefits for both the health of the population and the economy.

The National Clean Air Programme² (NCAP) launched by the Ministry of Environment and

¹ <http://www.healthdata.org/gbd/2019>

² http://moef.gov.in/wp-content/uploads/2019/05/NCAP_Report.pdf



Forests and Climate Change (MoEF&CC) in January 2019 aims to reduce pollution by 20-30% by 2024. The Central Pollution Control Board (CPCB) has prescribed the National Ambient Air Quality Standards (NAAQS) in 2009 under the Air (Prevention and Control of Pollution) Act. Cities that consistently violate these standards with respect to the air quality are termed as non-attainment cities. These cities have been identified based on the ambient air quality data(2011-2015) obtained under the National Ambient Air Quality Monitoring Programme (NAMP). Out of the 124 cities identified across India, Maharashtra has 18 non-attainment cities, including Pune. The programme has mandated the 124 non-attainable cities to formulate a clean air action plan which chalks out mitigation measures to help meet the targets set for 2024.

The major pollutants affecting health are: nitrogen oxides (NOx), sulphur oxides (SOx), ozone and particulate matter, especially particulate matter below 2.5 microns (PM 2.5) being of greatest concern, as these tiny particles penetrate deep into the lungs, affecting both the respiratory and vascular systems. Particulate matter has been classified as carcinogenic to humans by the International Agency for Research on Cancer. Studies have also revealed direct connections between air pollution and serious diseases like diabetes, neurodevelopment, liver, and kidney disorders, and even underdevelopment of fetuses.

Exposure to air pollution is an important risk factor for major non-communicable diseases than

previously thought. Hence while it can be said that all human beings are affected by air quality, populations with higher exposure to air pollution are rendered more vulnerable. However, based on a survey³ that Parisar did in 2019 along with the Centre for Environment Education (CEE) with citizens across all categories, we realised that overall awareness of the issue was very low. There was very little knowledge about what air pollution is, how it is caused, the impacts it has on health and the steps on its mitigation, at individual as well as state level. Unless there is an informed, responsive, and engaged public demanding for clean air, it proves very challenging to bring about the required interventions.

In this context, Parisar conducted an air quality perception study in Pune among 4 categories whose exposure level to ambient air pollution is relatively higher, namely the traffic police, waste pickers, street hawkers and vendors, and autorickshaw drivers. Along with these groups there were also other citizens from mixed occupations who participated in the survey. This report presents the findings from the survey and draws inferences for future work on enhancing public understanding about air pollution and air quality management.

3 <https://parisarpune.org/what-we-do/air-quality/reports-documents/survey-reveals-50-citizens-unaware-that-pune-does-not-meet-the-national-standards-for-air-qualit>

Methodology

The questions on the survey form were based on the questionnaire used in the earlier perception survey done in 2019. They were designed to gain the respondent’s perception on the air quality of Pune, and their awareness on the different aspects of air pollution like its components, sources of emissions, air quality monitoring, health impacts, mitigation measures, policy matters related to air quality, among others. The questions were a mix of objective and subjective types. A few questions were added keeping the specific vulnerable groups in mind.

The survey was conducted in person as well as online. Questionnaires were printed out for in person respondents, and a Google form was circulated online. A total of 522 responses were garnered, out of which 113 responses were received online, and 409 were filled in person with the help of volunteers.

Of the 4 categories that were selected for the survey, 100 responses were collected from traffic police, 104 from waste pickers,100 from vendors and hawkers, and 105 from autorickshaw drivers. The remaining 113 constituted other lay citizens.

The respondents were contacted through various organisations and unions like Rickshaw Panchayat, Pune, Pimpri and Chinchwad, Janeev Haathgaadi Pheri Pathaari Stalldharak

Sanghatana, and Swachh Pune Seva Sahakari Sanstha Maryadit. The Deputy Commissioner of Police, Pune Traffic allotted various divisions across Pune wherein the traffic police personnel participated in the survey.

The areas covered for the survey including all the categories spanned across Kothrud, Karvenagar-Warje, Sinhagad Road, Dhayari, Kondhwa, Khadki, Maharshi nagar and Chaturshringi area.

While the survey was intended to be completed by August 2020, the lockdown disrupted the timeline as the in-person surveys had to be rescheduled. Hence, it took a year to get this survey done.

Once the responses were collected, they were analysed category-wise, which then formed the basis of a comparative study. Observations from this comparative study were drawn out as learnings.



Gender

	Women	Men
Traffic Police	21 	79
Wastepickers	66 	38
Auto Rickshaw Drivers		100
Hawkers	33 	67
General	74 	39

Age

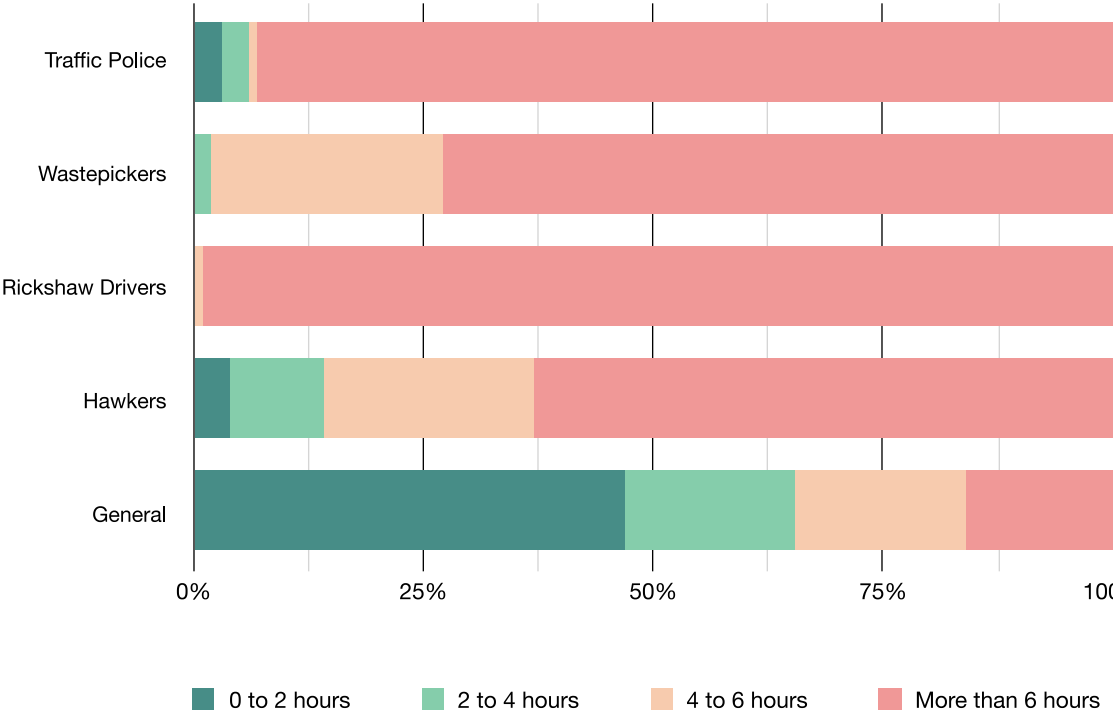
	20-30	31-40	41-50	51-60	61-70	Above 70
Traffic Police	19 	45 	22 	14 		
Wastepickers	17 	39 	18 	26 	4 	
Auto Rickshaw Drivers	7 	22 	33 	32 	10 	1
Hawkers	29 	29 	24 	12 	4 	2
General	29 	34 	22 	8 	8 	

Education

	Below 10th Std	10th Pass	12th Pass	Graduate	Post Graduate	Illiterate
Traffic Police	1 .	3 ...	44	37	15	
Wastepickers	46	2 ..				56
Auto Rickshaw Drivers	29	43	26	2 ..		
Hawkers	35	33	9	2 ..		21
General	15	8	10	17	41	22

Q

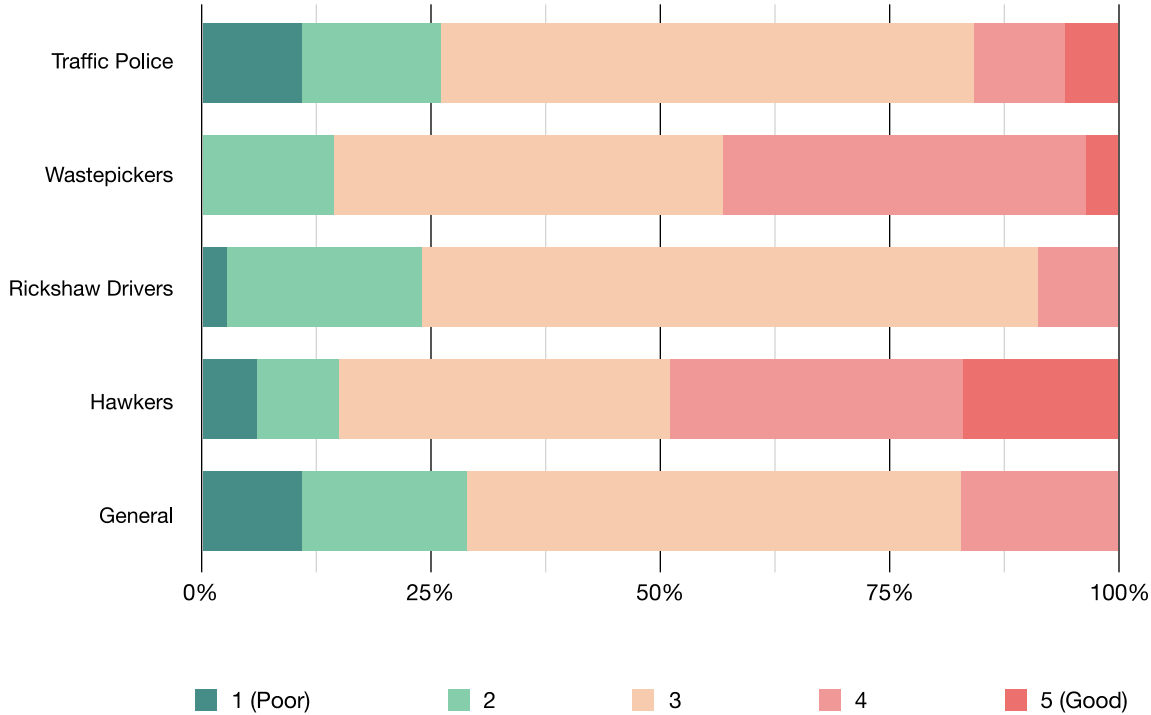
How much time of a day do you spend outdoors (in traffic, roads, footpaths, playgrounds)?



Exposure levels exceeded over 6 hours for all the 4 categories. Majority of the autorickshaw drivers and traffic police spent longer hours than others.

Q

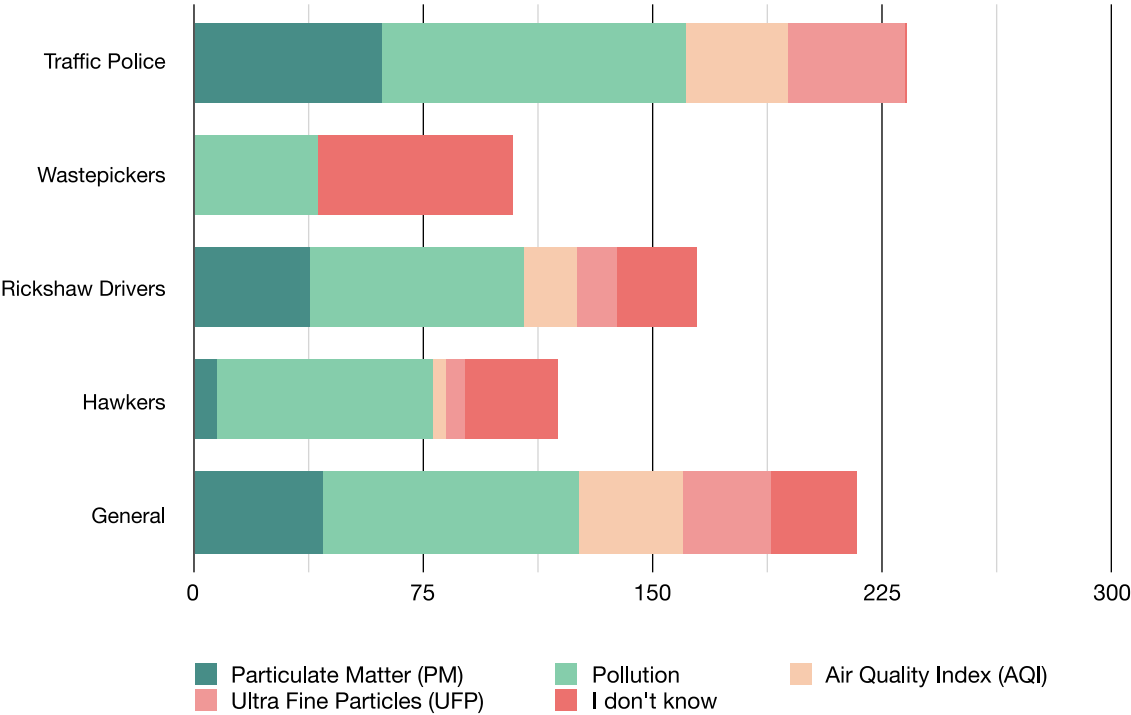
What do you think is the general quality of air in Pune through the year?



This question had a scale from 1 to 5, 1 being poorest air quality and 5 being very good. The air quality of Pune was largely perceived as being satisfactory by all categories. Out of all the categories the maximum number of auto drivers, followed by the general citizens and the Traffic police opted for satisfactory. However, the waste pickers' opinion was divided mostly between satisfactory and bad. Also, through conversations with the respondents at the time of survey, it can be inferred that it was more the climate and weather of Pune that was being alluded to while answering this question, rather than the pollution aspect.

Q

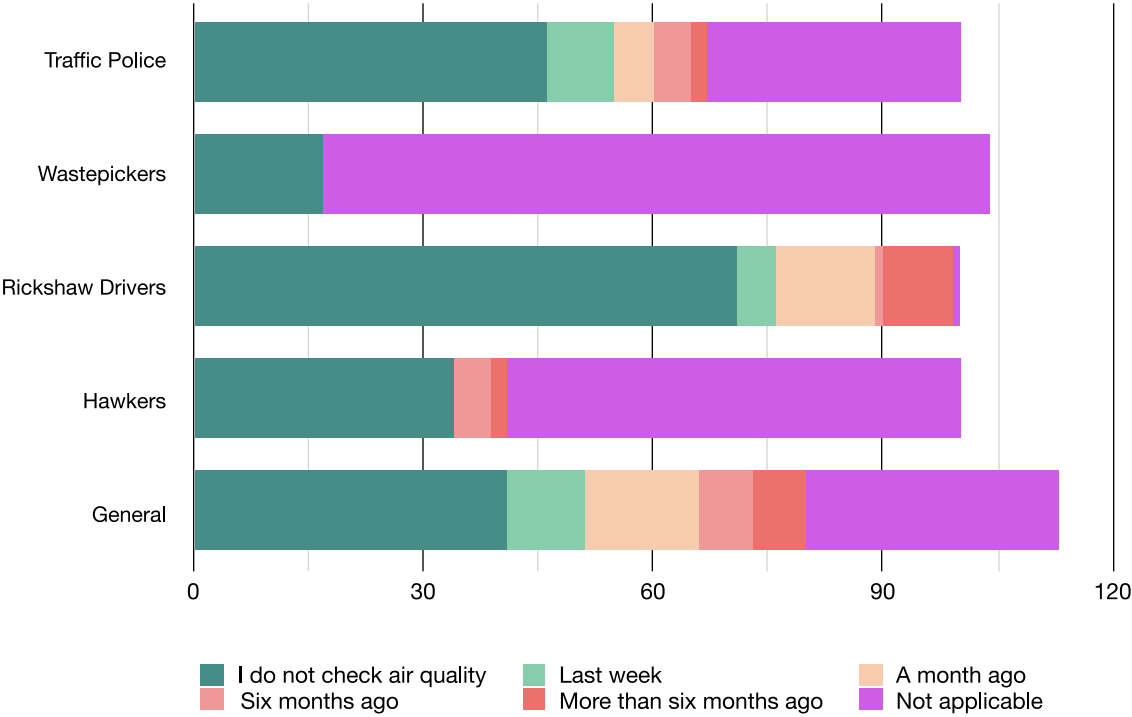
Which of these terms do you know the meaning of?



Most respondents felt they understood what air pollution is.

Q

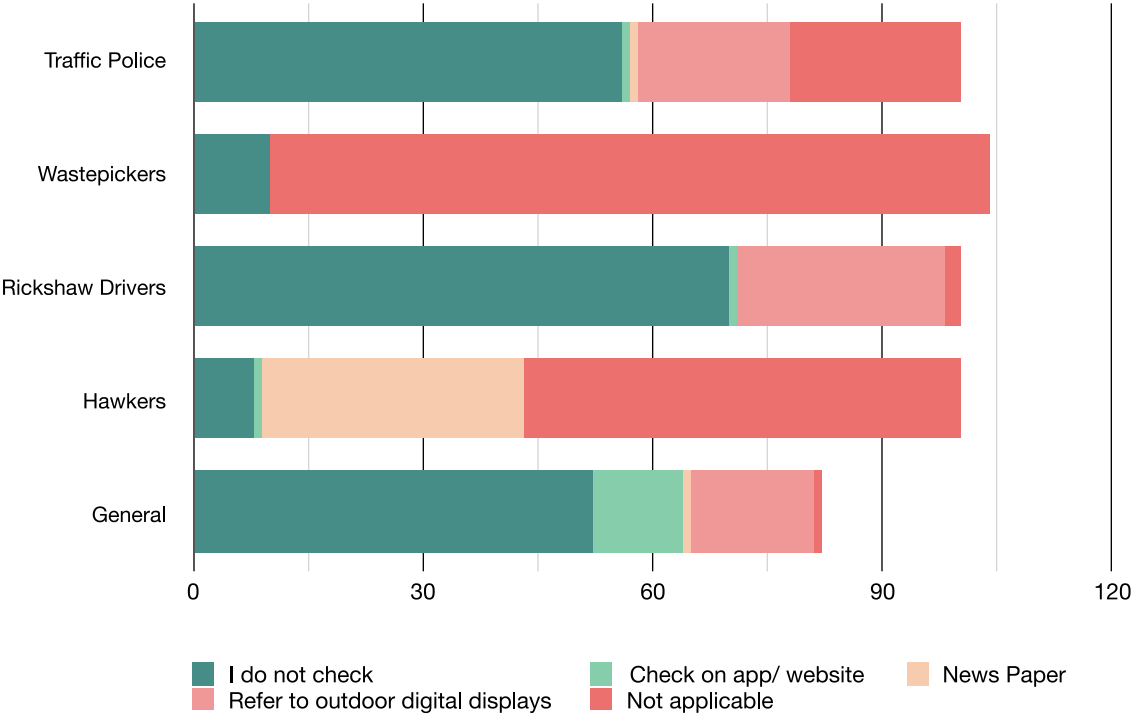
When was the last time you checked air quality?



The response to this question clearly brings out the attention given to air quality data. Since several respondents from these categories could not read, the question renders itself as not applicable. But from the ones who do read, most replied as saying that they did not check air quality readings.

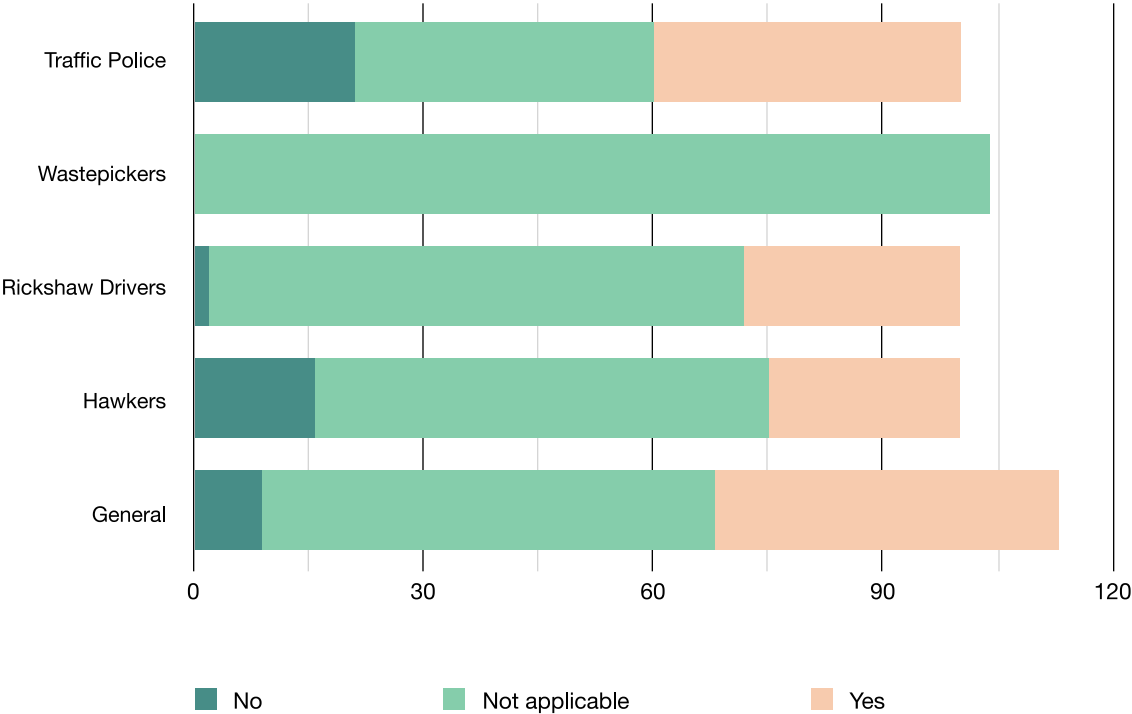
Q

How did you check the air quality?



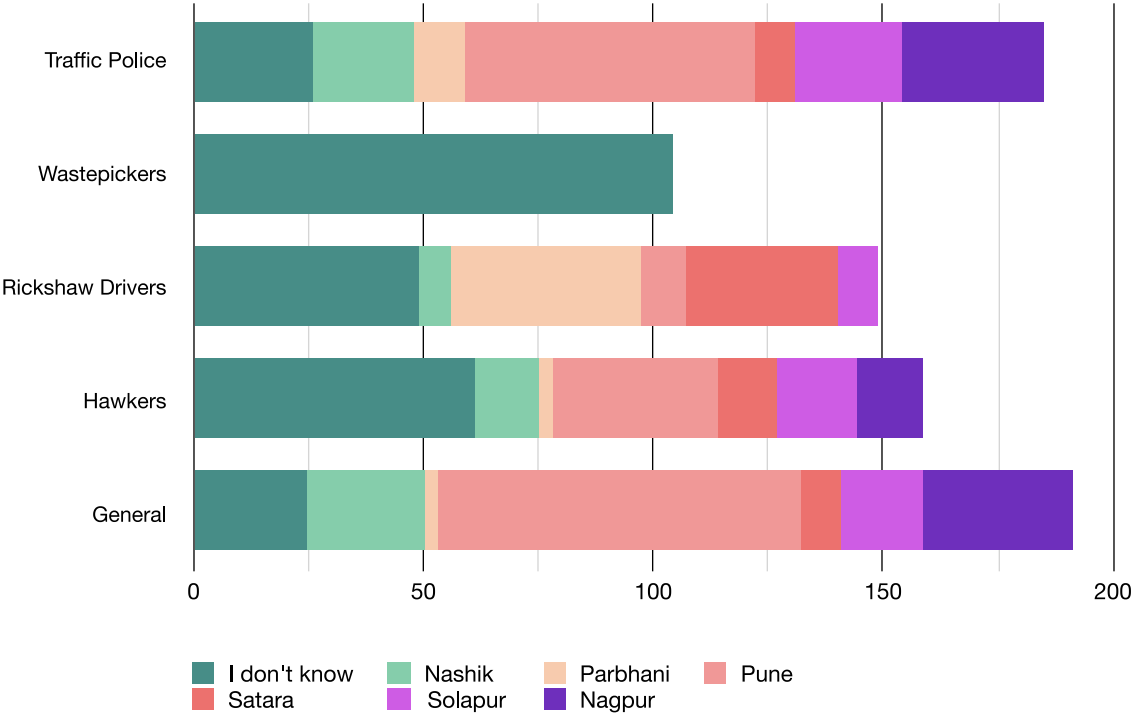
Keeping aside the respondents who cannot read, or do not check air quality, the traffic police and autorickshaw drivers seemed to be more aware of air quality from all the categories. It was a significant observation that they referred to the outdoor digital display, and there was not a single response which indicated checking air quality on any app or website. It was also interesting to see that a substantial number of hawkers said that they looked at newspapers to check air quality status.

Q Did you understand the information?



This question was only for those who answered affirmatively for the previous question. Since many of the respondents have never checked air quality information, major responses to this are not applicable. From those that have checked it, it is evident that traffic police and general citizens agree to have understood the information.

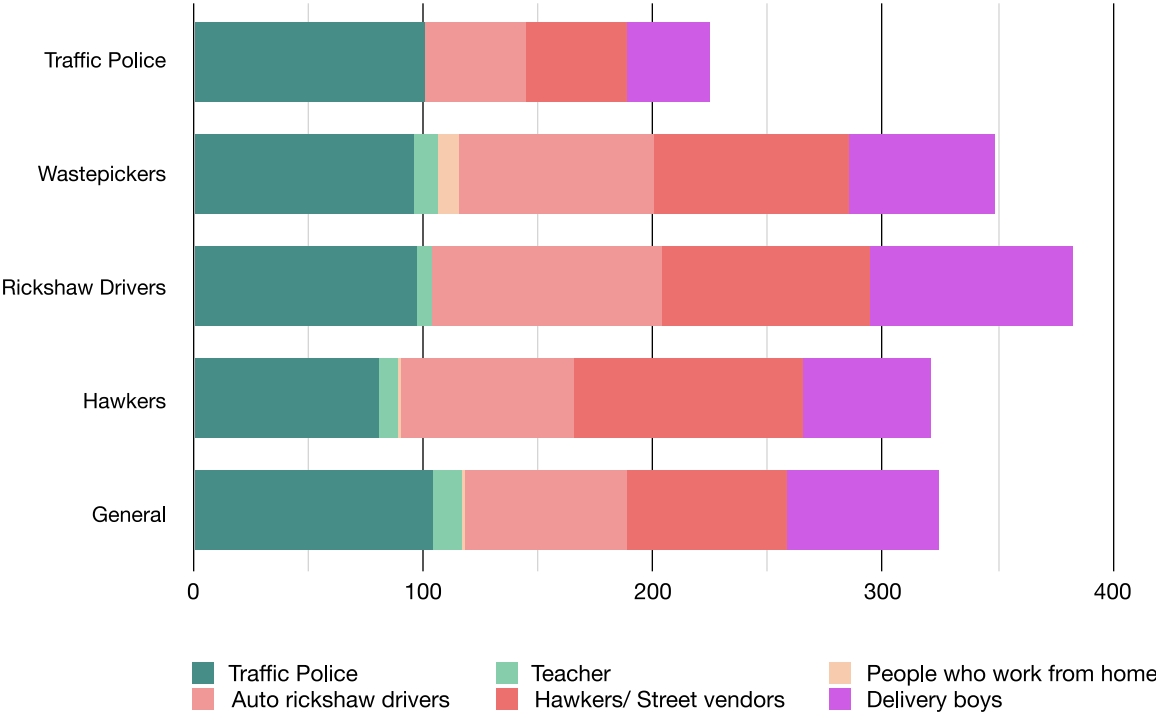
Q The Central Pollution Control Board (CPCB) has identified 122 cities in which the prescribed National Standards for air quality are violated. Which of these do you think are those cities?



Majority of the respondents admitted not knowing about this, followed by maximum votes for Pune. Satara and Parbhani were perceived to not be nonattainment cities.

Q

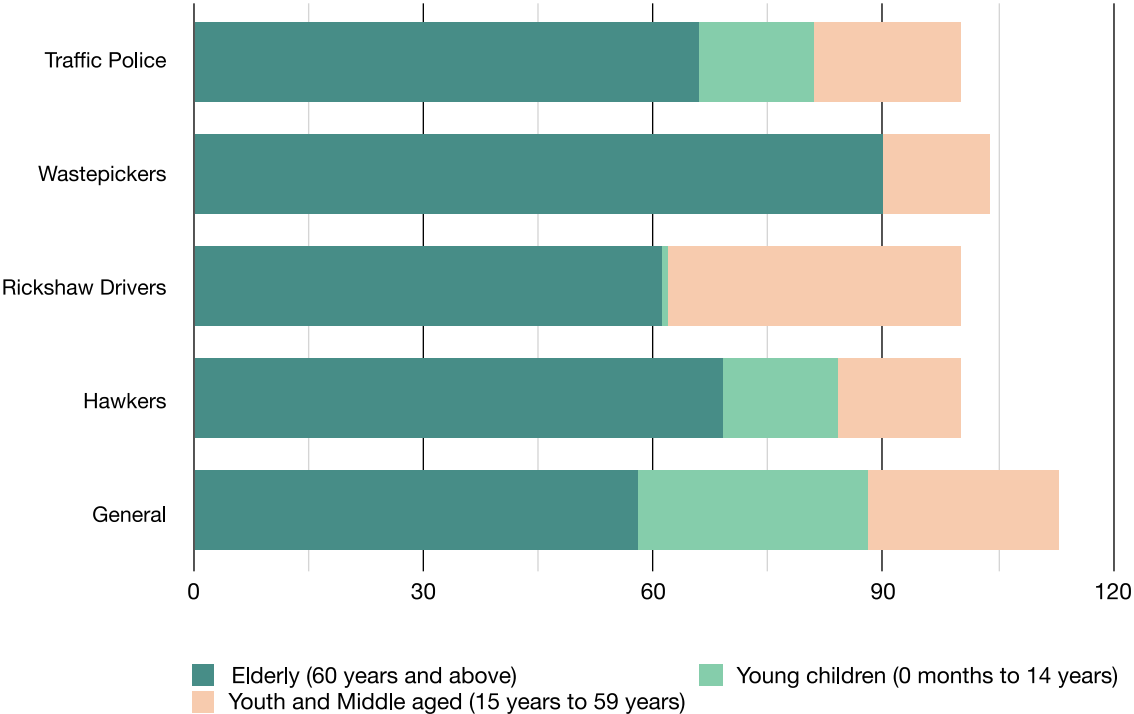
Which category out of these do you think are vulnerable when air quality deteriorates?



The hawkers, the traffic police and the autorickshaw drivers, each of these categories could identify themselves as vulnerable. When asked to identify other vulnerable groups, respondents from all the categories felt that traffic cops were most vulnerable.

Q

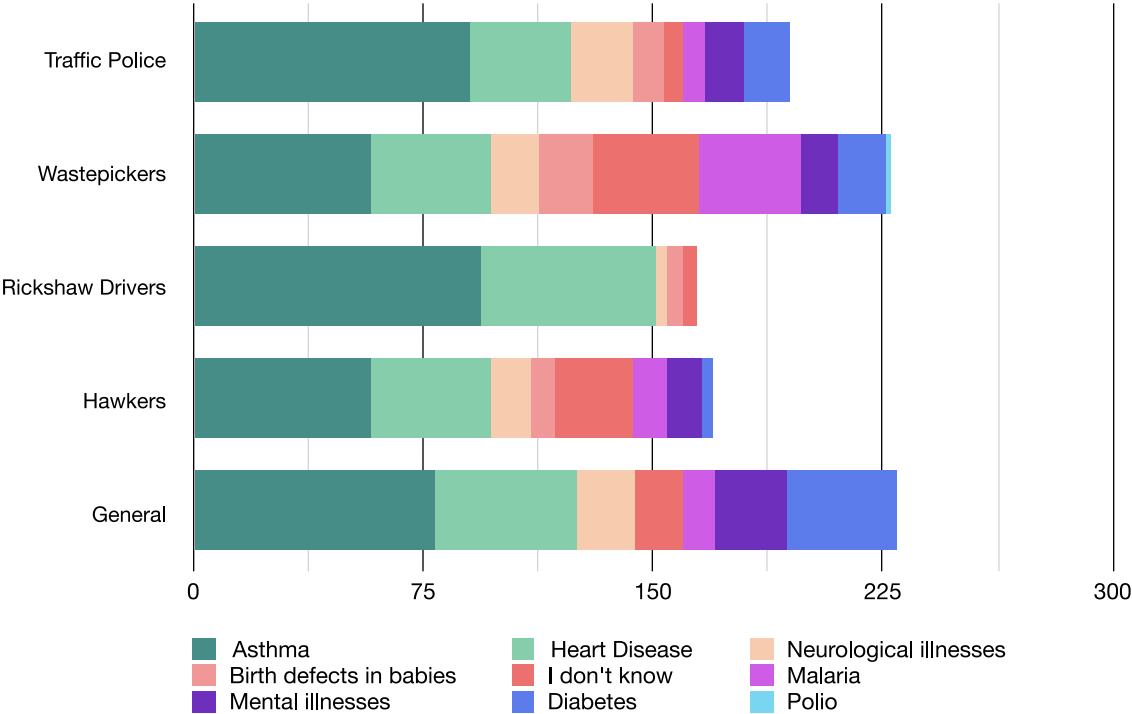
Who among the following is likely to suffer the most from the ill effects of air pollution?



Studies show that air pollution affects populations across age groups, but children are most affected by it, to the extent of substantially impacting infant mortality. The survey revealed that the majority of the respondents perceived the elderly to be most vulnerable.

Q

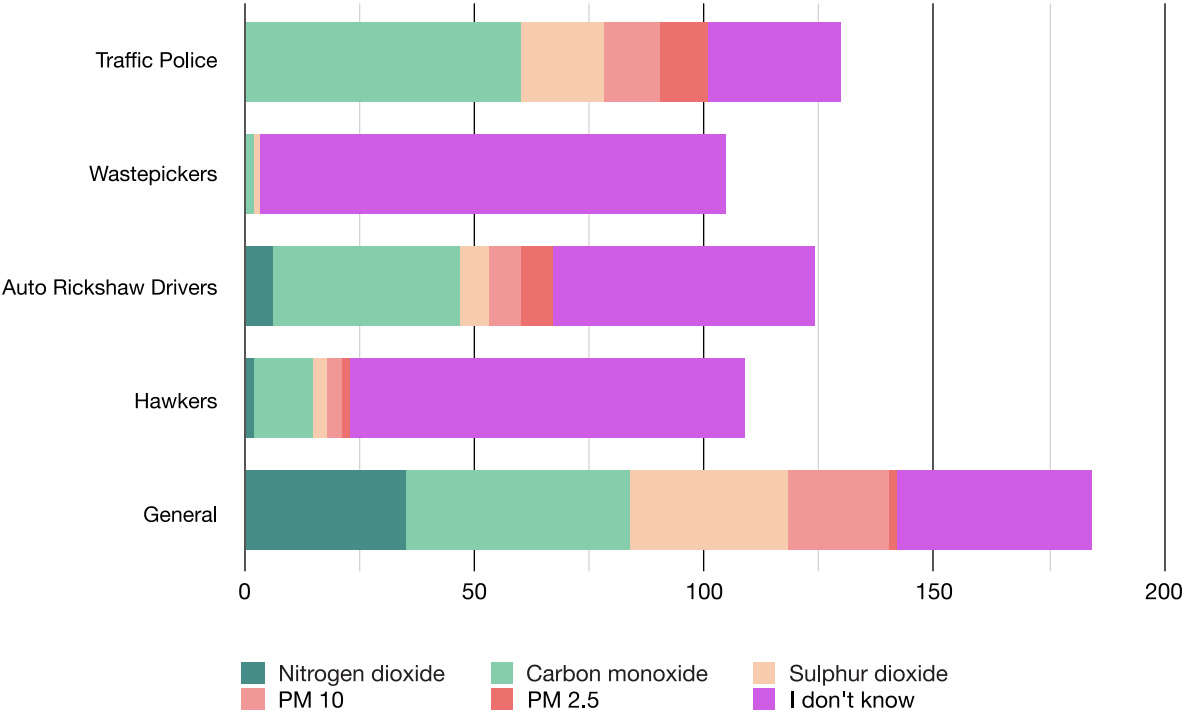
Air pollution impacts our health in various ways. Which of the disorders do you think are linked to air pollution?



Asthma was the only disorder which all categories could connect with air pollution unanimously followed by heart disease. When many of the waste pickers related malaria to air pollution, their perception of clean air was not pollutant-free air, but more hygienic surroundings in which mosquitoes do not breed, and thus the reasoning that when the air gets polluted, people contract malaria.

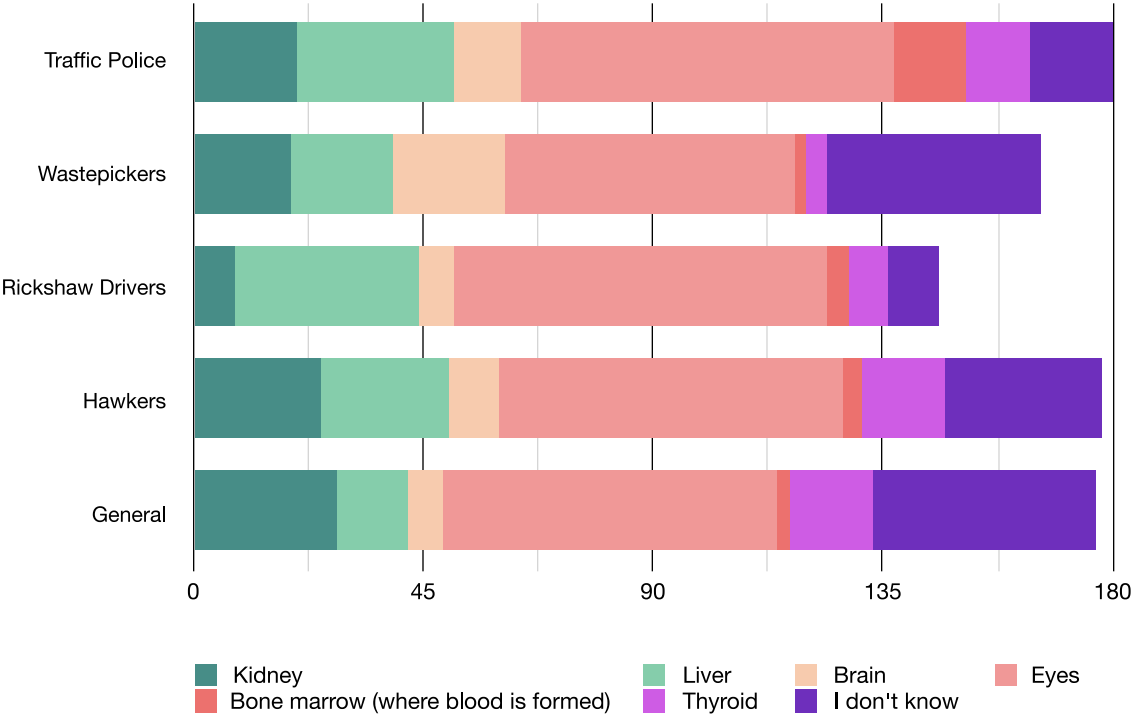
Q

Some of the air pollutants are very hazardous to human health and can cause premature deaths. Which component/s is / are this / these?



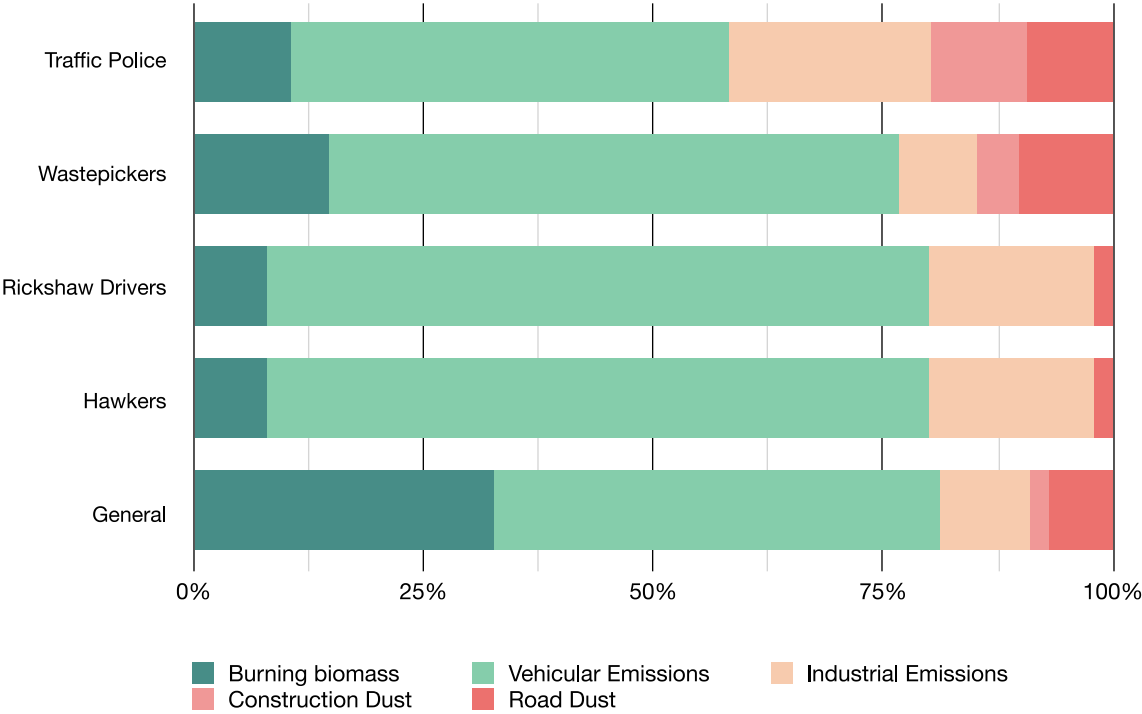
The maximum number of respondents who did not attempt this question were from the least educated categories, which were the waste pickers and hawkers. Out of the ones who attempted, seemed to be most familiar with Carbon monoxide. Most of them had studied about Carbon monoxide in school, but a very small number knew about other hazardous and deadly pollutants like Particulate Matter.

Q After inhalation, some of the air pollutants can move from the lungs to deep inside the body causing extensive health damage in different body parts. In your opinion which part/s of our body is/are vulnerable to such attacks from airborne pollutants?



The liver, followed by the kidney, is the most affected organ by air pollution. But since the impact on the eyes creates a more visible and tactile impression like itching or burning, it was easier for the respondents to link it to health damage to organs.

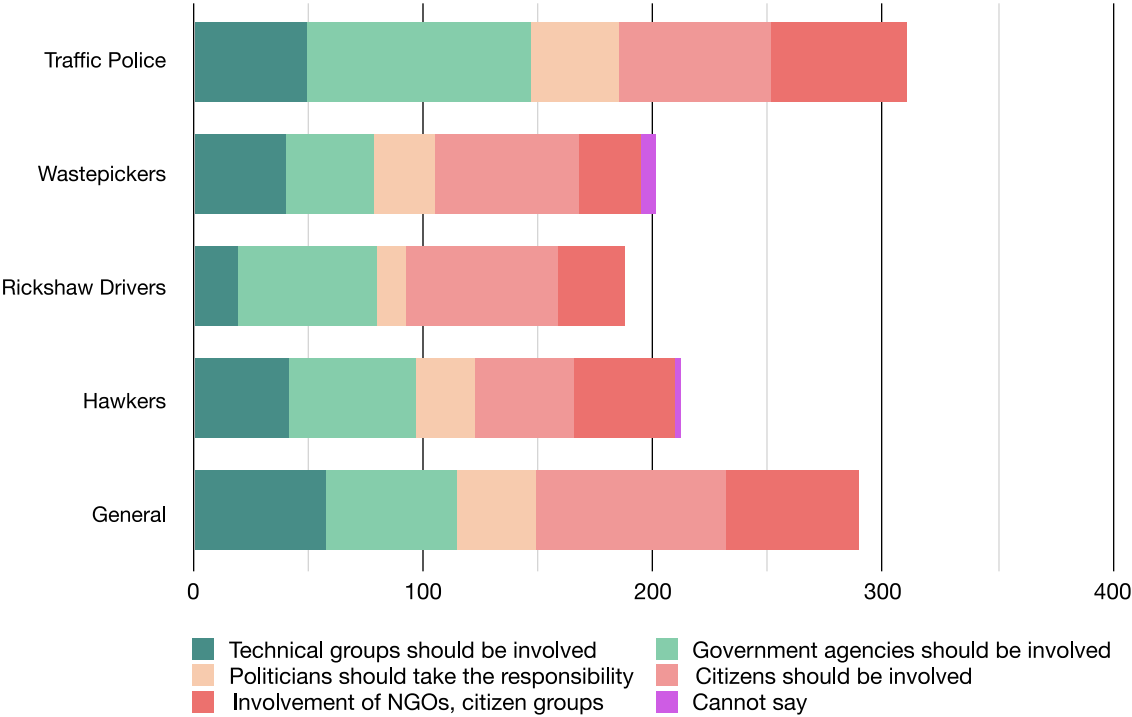
Q Which is the most polluting among the sources?



While perception on other sources varied amongst all the stakeholder groups, they largely tended to rate vehicular emissions as most polluting.

Q

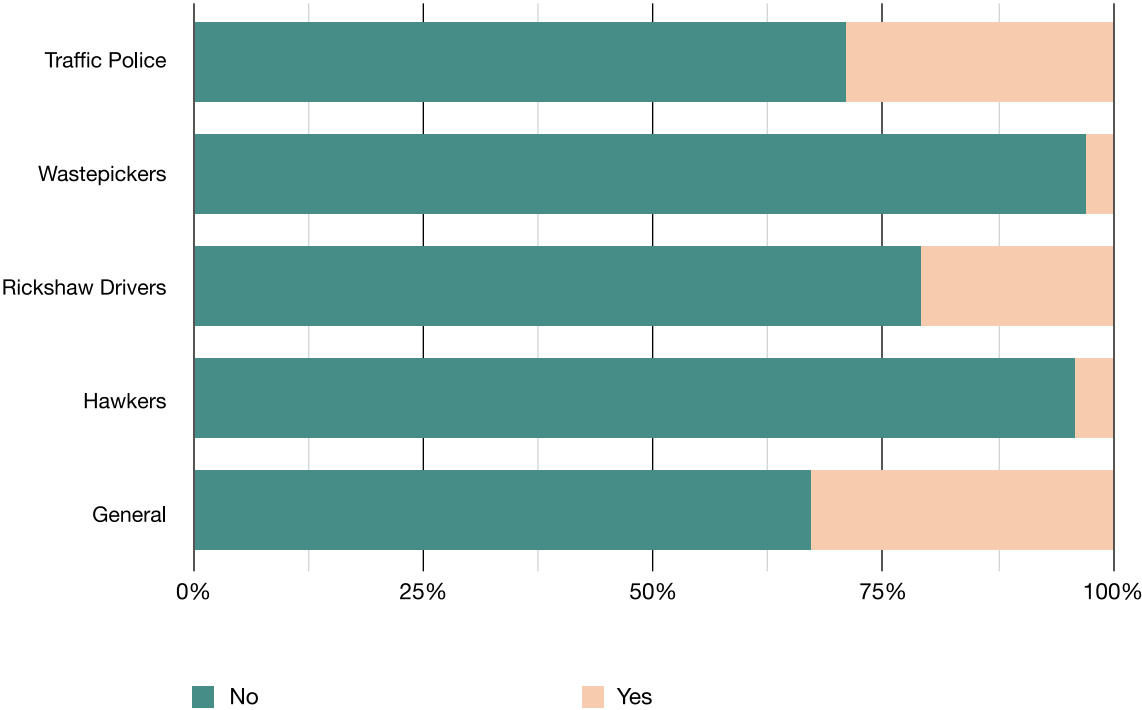
If a city has an Air Action Plan, what according to you is the best way to ensure its execution?



All respondents felt that different stakeholders needed to participate for an effective execution of an air action plan if a city has one, and government agencies and citizens’ involvement received maximum weightage.

Q

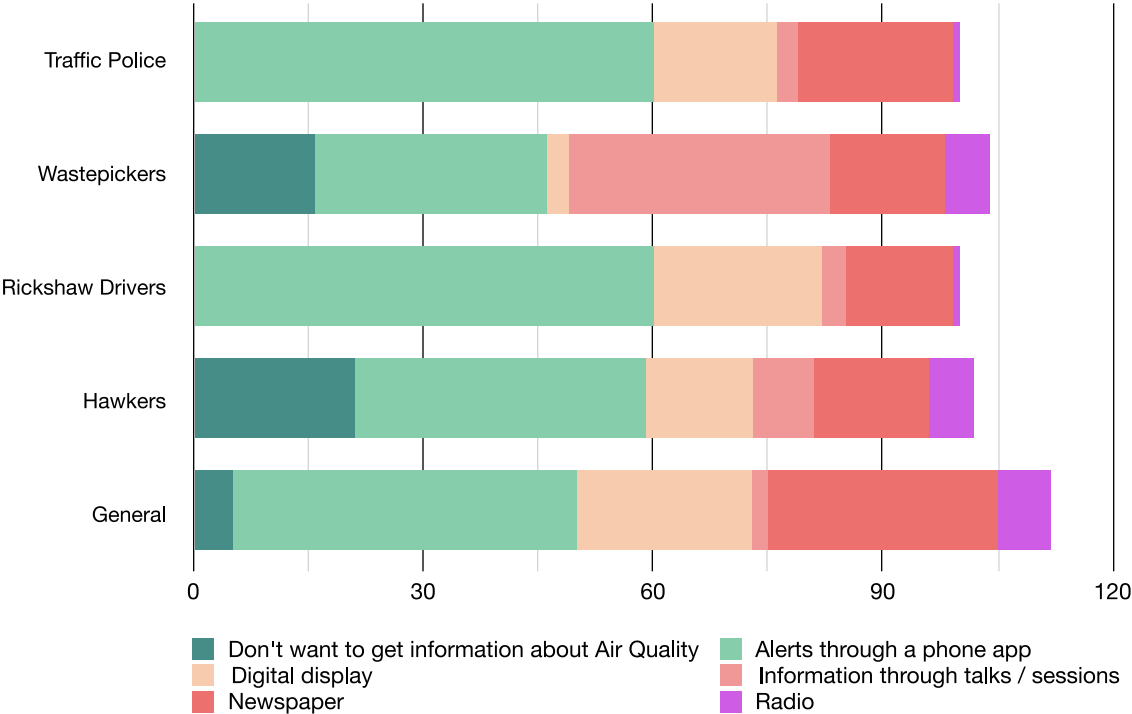
Are you aware if Pune has a formal Air Action Plan to address air pollution?



Most respondents were not aware that an air action plan exists for Pune

Q

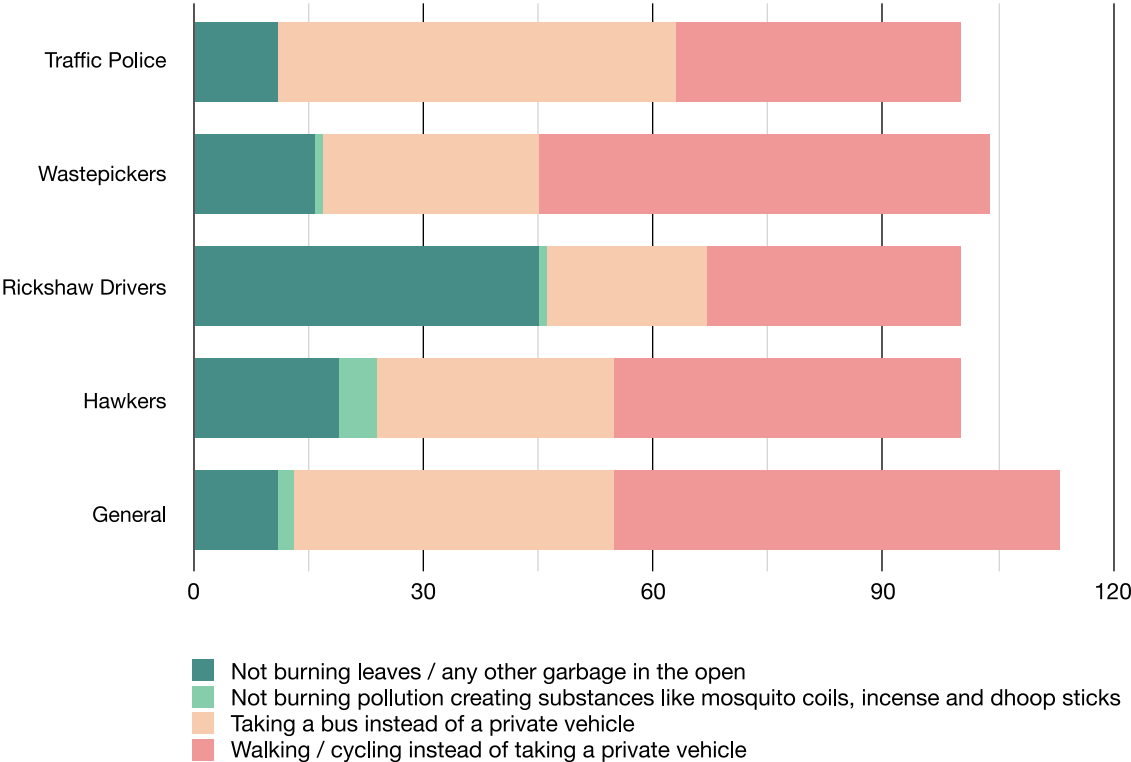
How are you most likely to check air quality information?



The most preferred medium to get air quality information was through phone alerts. A large number of waste pickers opted for information through talks and sessions. But while the question was intended to ask how they would like to know about the current status of air, the response from waste pickers was more aligned to seeking information on the different aspects of air pollution, mainly its impacts and mitigation. It was pointed out by some participants that the option of receiving information on air quality over television was missing in the questionnaire.

Q

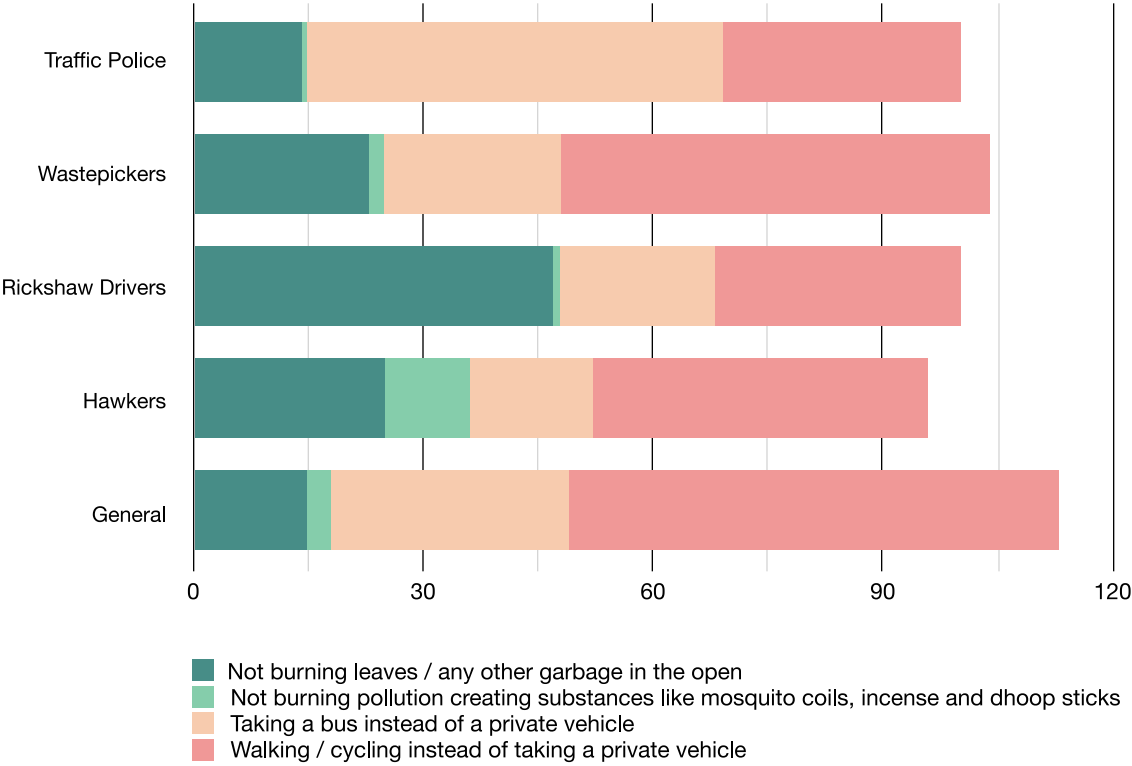
Which of the following steps will help reduce air pollution the most?



Most respondents perceived a greater reduction of pollution by switching from a private vehicle to other modes and hence it can be concluded that they made a connection between vehicular emissions and air pollution more than the other two options.

Q

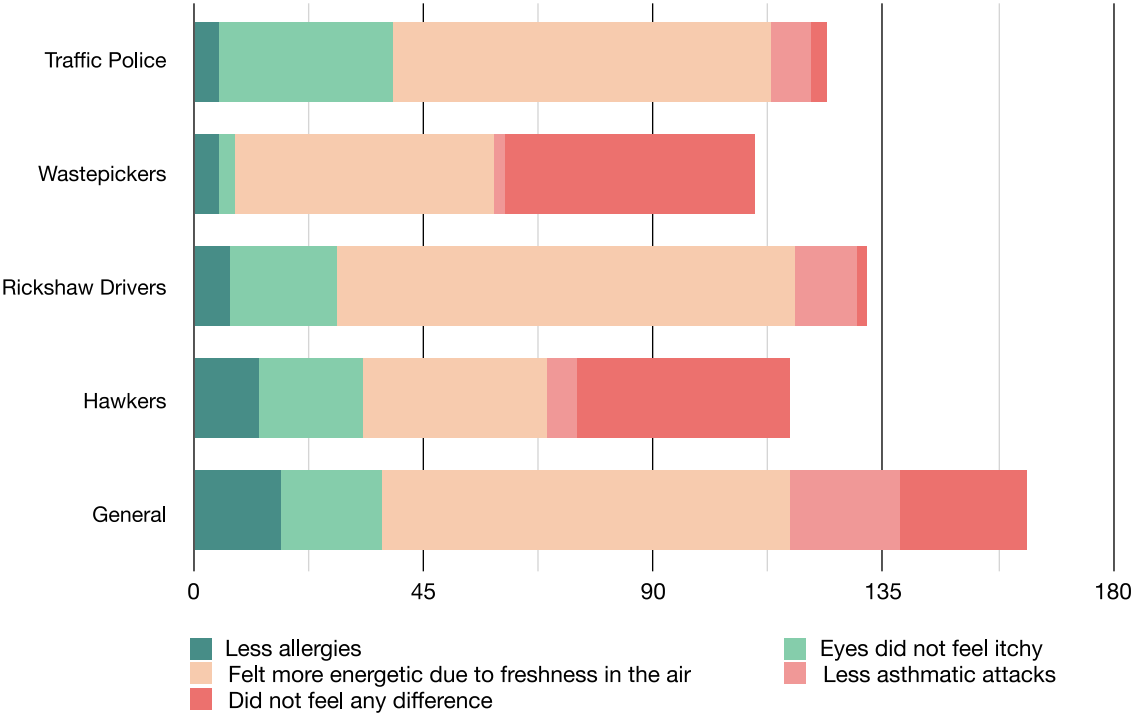
Which step would you be able to adopt the soonest to reduce air pollution?



Overall a higher weightage was given to the option of switching to walking or cycling instead of taking a private vehicle. It was observed here that respondents had two reasons for not shifting away from private vehicles in the current scenario, those being – that buses were invariably late, packed and plied with less frequency, and that walking and cycling were not an option when their workplaces were situated far from their homes.

Q

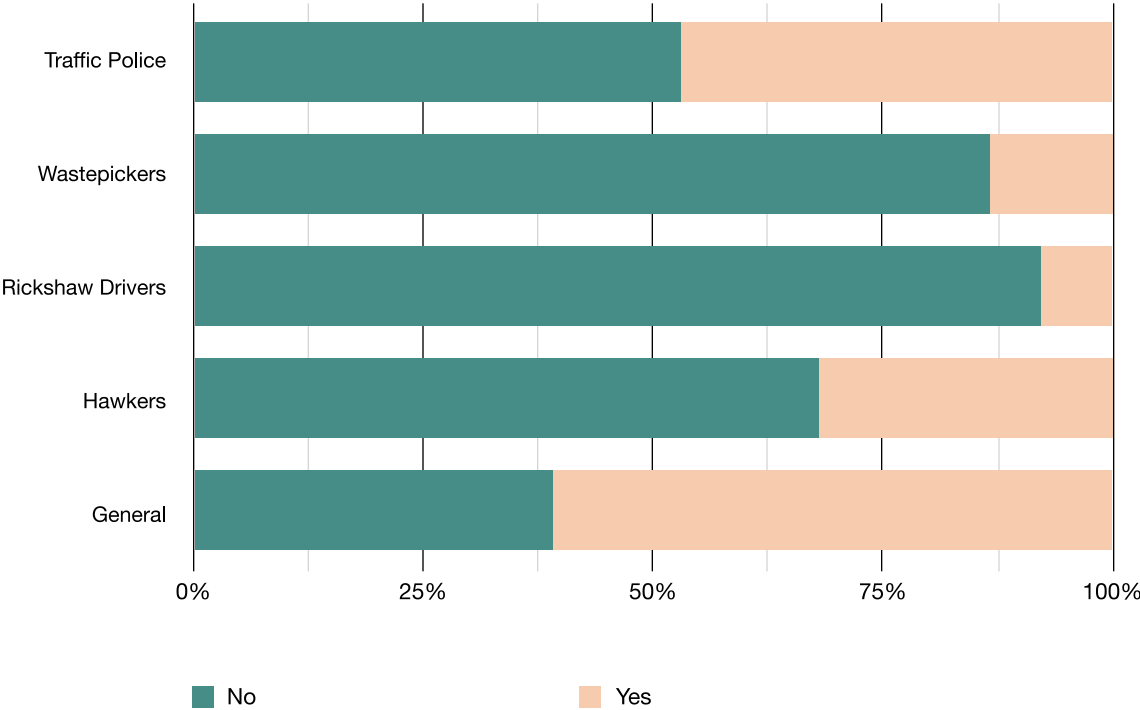
During the complete lockdown in the month of April 2020, did you feel any different in relation to the outdoor air quality?



Majority of respondents in all stakeholder groups admitted that they felt more energetic due to freshness in the air during the lockdown. A substantial number of respondents from the hawkers and waste picker category, however, felt no difference in air quality during the lockdown.

Q

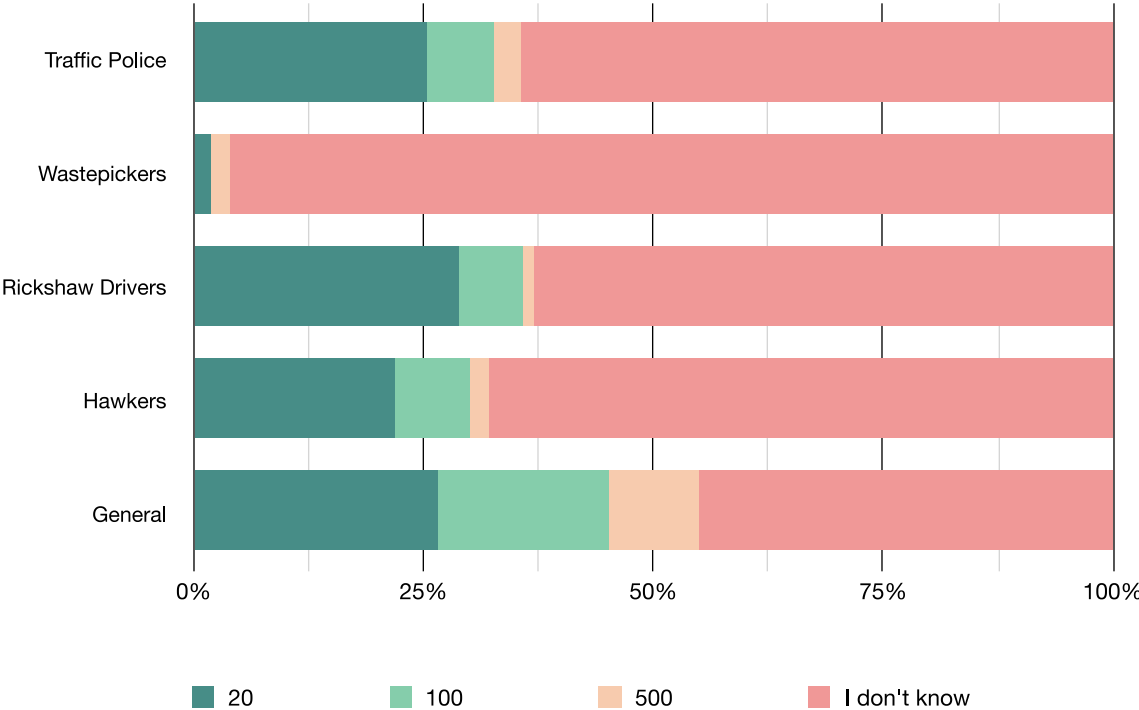
Do you think there is any connection between the air quality and Covid-19?



Majority of respondents in the categories of waste pickers, auto rickshaw drivers and hawkers felt that there is no connection between air quality and COVID-19. The inverse is observed in the general citizens category, where the majority perceive a connection between the two.

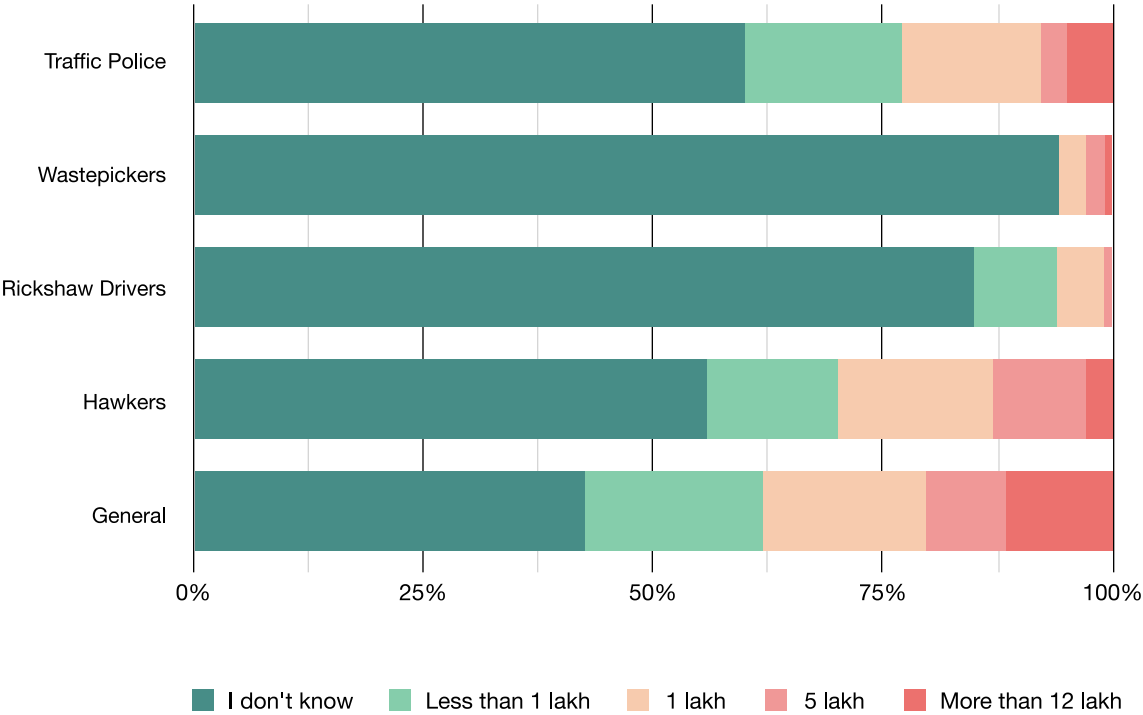
Q

How much pollution do you think is created when we burn one dhoop stick indoors? It causes pollution equivalent to pollution caused by burning _____ cigarettes



Most respondents found it challenging to attempt this question. From the ones who did, most selected the option with the least count. Many of the respondents felt that even 20, which was the least number, was way too high. The right answer is 500 cigarettes.

Around 2.55 lakh people lost their lives due to diabetes, and 1.47 Lakh people died in road accidents in India in 2017. How many lives do you think were lost due to air pollution in the same year?



Both the above questions were asked to understand people’s perception or judgement about the harm that air pollution causes by providing comparatives. A majority responded as not knowing the answer, and those who attempted with their judgement mostly opted for options which did not reflect the real harm that air pollution does.

Findings

The following patterns emerged from the survey analysis:

Understanding of air quality and air pollution

The concept of ‘air quality’ was alien to many respondents, especially from the category of street vendors, hawkers and waste pickers. Many of them understood it as weather and climatic conditions, and hence the role of pollutants in determining the air quality of a place needed to be explained. It was also observed that many respondents could not perceive the air quality of Pune in its entirety and their response was limited to a localised area around their homes or work areas.

It came as a big surprise that a substantial number of waste pickers had not even heard of the term air pollution. Neither had a single one ever heard of Particulate Matter, Air Quality Index and Ultra Fine Particles.

Since a majority of the waste pickers did not read or write the question on how they checked air quality was not applicable to them. But many hawkers responded with an option of checking the air quality through newspapers, when that option was not even mentioned in the form. An inference can be made that they were referring to the weather / temperature.

Knowledge of health impact

Majority of these group respondents constituting traffic police, waste pickers, vendors and hawkers and autorickshaw drivers had high exposure to ambient air since they spent over 6 hours outdoors on average in fairly crowded areas. While these groups are most vulnerable to the impacts of air pollution, there is minimal awareness of it. Most respondents could relate to organs affected or diseases caused which manifest visually, like eyes itching, or breathlessness due to asthma. But there was a high level of unawareness of the innumerable other disorders that air pollution causes to human health. This shows the need to enhance awareness that it is not only the eyes and lungs that may be impacted, and that certain air pollutants can move from the lungs to deep inside the body causing extensive health damage to different parts of the body. Majority of the respondents perceived the health impact to be most on the elderly population. Studies reveal that children are in fact even more vulnerable and over 100,000 infants in India died within a month after their birth due to exposure to severe air pollution in 2019. Vulnerability of infants and young children to air pollution needs to be communicated widely.



Photo Credit : Ravindra Sinha

Sources of air pollution

Vehicular emissions were perceived as the major source of air pollution, followed by biomass / garbage burning. There are several ongoing source apportionment studies in the city but updated inventories are still unavailable. However, there is enough evidence through the media as well as citizens' groups on the rapidly growing trend of waste burning and increasing number of vehicles as a source of air pollution.

Perceived solutions and actions

Most respondents across all categories felt that to execute an air action plan of a city, maximum participation should be from government agencies and citizens amongst the different stakeholders. Politicians got the least votes, and many were vociferous in saying that politicians should be kept out of any city planning aspects.

Many of the respondents felt that vehicular emissions were a major source of air pollution and that if there is a good and reliable network of public transport, they were willing to switch to it from private vehicles. From the category of waste pickers and hawkers and vendors many were already cycling or walking to work. But it was observed through conversations that there were also aspirations to own a private vehicle because it reduced travel time, effort, was more comfortable, and a symbol of bettering one's standard of living. The only deterrent in owning a vehicle was the lack of affordability of buying and maintaining it. It was interesting to note that they had not related to the fact that a bus can carry many people at a time, while a two-wheeler could carry a maximum of two persons only. They felt that a certain number of people travelling, whether by bus, or by private vehicles would result in the same volume of emissions. When asked what they felt about the majority of citizens shifting to public transport if it became very efficient, some hawkers felt that there would be a loss of livelihoods for the autorickshaw and cab drivers.



Some sharings and pressing concerns apart from Air Quality

There are several unaddressed and immediate issues that were felt more strongly by the various categories. Some sharings during the survey:

A woman waste picker: " This air pollution survey is fine, but you should ask authorities to provide toilets for us. We deliberately limit our water intake so that we do not need to relieve ourselves, but sometimes if we do need to use the loo we ask societies' watchmen to allow us to use the society toilet. Some allow us, some don't. Also if our younger women are menstruating, it gets difficult for them to maintain the required hygiene."

A traffic police officer: "How long will it take to answer the questions? We have a target to collect fines for each day and I want to get to that task soon."

A waste picker when asked if they noticed any change in air quality during lockdown: "I did not notice anything. We had to report every single day and we were very scared to be out of our homes as COVID-19 was spreading so rapidly. But what choice do we have? We had to collect garbage everyday. In fact, if residents from societies' passed us, just because we collect garbage they would behave like we have COVID-19 and would run away from us."

A fruit vendor when asked what he thought of public transport / non-motorised transport to commute instead of using private vehicles: "What public transport are you talking about? Nowadays even to visit the loo, people need a bike!"

From our findings of the survey as well as engagement with the Pune Municipal Corporation on this issue, we can conclude that awareness has to be done using a target oriented approach - within the government departments, and with lay citizens. There needs to be a zeroing in on the specific issues on which public awareness is needed and what messages are to be conveyed, why they need to be conveyed or what would be the outcomes of this kind of awareness, who the target audience is, and how the awareness is to be carried out.

When there is a need for public awareness of an issue, it is the relevant government department or agency which needs to take it up. But air pollution being a multi-departmental issue, we realise that its knowledge as well as gravity is very superficial even amongst the officials. So it will be necessary to have discussions and workshops with the officials to enable a proactive response for any mitigation steps that need to be taken by the departments. The State Pollution Control Board can hold training programmes with different departments.

Pune has an approved Air Action Plan mandated under the NCAP which lists out several actionable items which are supposed to mitigate air pollution in the city. It is recommended that the plan is widely publicised and inputs are sought from citizens from various categories to make the plan more robust and effective.

Awareness campaigns on health

impacts need to be carried out keeping citizens from different socio-economic backgrounds and literacy levels in mind. The NCAP funds which have been disbursed to corporations have a budget to build awareness among citizens. This budget can be used to create simple material which explains how health is severely compromised by polluted air as well as the other aspects of air pollution.

Last year COVID-19 had an immediate response from authorities as well as the public due to its very visible impact. Air pollution on the other hand, due to its very nature of being a silent killer has been affecting health for years on end without catching much attention, except perhaps in Delhi and surrounding regions for the past few years. This is because of the thick smog that envelops it especially in winters due to which a direct correlation can be made with the instances of people falling sick and air pollution. The kind of awareness of COVID-19 and the intensity and the urgency with which it was carried out by the government is clearly lacking when it comes to air pollution.

Different levels and kinds of engagement like creating banners, posters, short clips shown over television and in theatres, organising talks, group discussions with various groups and other such activities can be taken up by PMC. The scope of public awareness efforts may include health risk communications, mitigation efforts and about the aims, components and progress of the Pune Air Action Plan.

Air Quality Perception Survey 2020

पुण्यातील हवेची गुणवत्ता सर्वेक्षण 2020

Surveyor name

Date

Location of survey

Observations / Comments of surveyor

Primary details of the respondent

Age/ वय

Gender/ लिंग

Education qualification

☐ 12th Pass/ 12वी पास

☐ Graduate/ पदवीधारक

☐ Postgraduate/ पदव्युत्तर शिक्षण

Occupation

Email

Respondents to fill

1. Which of these terms do you know the meaning of? / खालीलपैकी कोणकोणत्या शब्दांचे अर्थ तुम्हाला माहिती आहेत?

☐ हवा प्रदूषण - Air Pollution

☐ सूक्ष्म धूलिकण - Particulate Matter (PM)

☐ हवा गुणवत्ता निर्देशांक - Air Quality Index (AQI)

☐ अतिसूक्ष्म धूलिकण - Ultra Fine Particles (UFP)

☐ मला माहित नाही – I don't know

2. How much time of a day do you spend outdoors (in traffic, roads, footpaths, playgrounds)? तुम्ही दिवसभरात साधारण किती वेळ घराबाहेरील वातावरणात (गर्दी/ रहदारीचे रस्ते, मैदान , फुटपाथ ,इत्यादी) असता?

☐ 0 to 2 hours - ० ते २ तास	☐ 2 to 4 hours - २ ते ४ तास
☐ 4 to 6 hours - ४ ते ६ तास	☐ More than 6 hours - ६ पेक्षा जास्त तास

3. What do you think is the general quality of air in Pune through the year? / पुण्यातील हवेचा दर्जा वर्षभरात कसा होता असे तुम्हाला वाटते?

☐ 1 very poor/ अत्यंत वाईट	☐ 2 poor/ वाईट
☐ 3 average/ साधारण	☐ 4 good/ चांगली
☐ 5 very good/ खूप चांगली	

4. When was the last time you checked air quality? / याआधी शेवटची हवेची गुणवत्ता कधी तपासली होती?

☐ Last week - मागील आठवड्यात	☐ Six months ago - सहा महिन्यांपूर्वी
☐ A month ago - एका महिन्यापूर्वी	☐ I do not check air quality - हवेची गुणवत्ता तपासत नाही
☐ More than six months ago - सहा महिन्यांच्याही पूर्वी	☐ Not applicable - लागू नाही

5. How did you check the air quality? / तुम्ही हवेची गुणवत्ता कशी तपासली?

☐ Refer to outdoor digital displays - डिजिटल बोर्डावरील माहिती पाहून	☐ Check on app/ website - एप/वेबसाईटच्या सहाय्याने
☐ 4 to 6 hours - ४ ते ६ तास	☐ Other
☐ I do not check - मी तपासलेली नाही	☐ Not applicable - लागू नाही

6. Did you understand the information? / ती माहिती तुम्हाला समजली का?

☐ Yes – होय	☐ No- नाही	☐ Not applicable - लागू नाही
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7. The Central Pollution Control Board (CPCB) has identified 122 cities in which the prescribed National Standards for air quality are violated. Which of these do you think are those cities? / भारतात 122 शहरांची हवा गुणवत्ता राष्ट्रीय मापदंडांपेक्षा कमी आढळते. खालीलपैकी कोणकोणती शहरे या यादीत असतील असे तुम्हाला वाटते?

☐ Satara - सातारा	☐ Parbhani - परभणी
☐ Pune - पुणे	☐ Nagpur - नागपूर
☐ Solapur - सोलापूर	☐ Nashik - नाशिक
☐ I don't know - मला माहिती नाही	

8. Which category out of these do you think are vulnerable when air quality deteriorates? / हवेची गुणवत्ता बिघडल्यावर खालीलपैकी कोणाला सर्वाधिक शारीरिक/ मानसिक त्रास होऊ शकेल असे तुम्हाला वाटते?

☐ Traffic Police - वाहतूक पोलिस	☐ Teacher – शिक्षक
☐ People who work from home - घरून काम करणारे लोक	☐ Auto rickshaw drivers - रिक्शा चालक
☐ Hawkers/ Street vendors - फिरते विक्रेते/ हातगाडीवाले	☐ Delivery boys/ डिलिव्हरी बॉईज

9. Who among the following is likely to suffer the most from the ill effects of air pollution? / हवेची गुणवत्ता खालावते तेव्हा त्याचे दुष्परिणाम खालीलपैकी कोणत्या वयोगटाला अधिक सहन करावे लागतात असे तुम्हाला वाटते?

☐ Youth and Middle aged (15 years to 59 years) - तरुण आणि मध्यमवयीन (15 वर्षे ते 59 वर्षे)
☐ Elderly (60 years and above) - वयस्कर (60 वर्षे व त्यापेक्षा अधिक)
☐ Young children (0 months to 14 years) - बालके व किशोरवयीन (0 महिने ते 14 वर्षे)

10. Air pollution impacts our health in various ways. Which of the disorders do you think are linked to air pollution? / हवा प्रदूषणाचे आपल्या आरोग्यावर अनेक परिणाम होतात. खालीलपैकी कोणकोणते आजार हवा प्रदूषणाशी निगडित आहेत असे तुम्हाला वाटते?

☐ Malaria – मलेरिया	☐ Heart Disease – हृदयविकार
☐ Neurological illnesses - मेंदूशी संबंधित आजार	☐ Diabetes – मधुमेह
☐ Birth defects in babies - बाळांमध्ये	☐ Asthma - दमा / अस्थमा
☐ Polio – पोलिओ	☐ I don't know - माहिती नाही

11. Some of the air pollutants are very hazardous to human health and can cause premature deaths. Which component/s is / are this / these? / हवेतील काही प्रदूषके मानवी आरोग्यासाठी अत्यंत घातक आहेत आणि त्यामुळे व्यक्तीचा अकाली मृत्यू होऊ शकतो. ही प्रदूषके कोणती आहेत?

☐ Nitrogen dioxide - नायट्रोजन डायॉक्साईड	☐ Carbon monoxide - कार्बन मोनॉक्साईड
☐ Sulphur dioxide - सल्फर डायॉक्साईड	☐ PM 10 - सूक्ष्म धूलिकण 10 मैक्रोन ह्या आकाराचे
☐ PM 2.5 - सूक्ष्म धूलिकण 2.5 मैक्रोन ह्या आकाराचे	☐ I don't know - माहिती नाही

12. After inhalation, some of the air pollutants can move from the lungs to deep inside the body causing extensive health damage in different body parts. In your opinion which part/s of our body is/are vulnerable to such attacks from airborne pollutants? / श्वासावाटे धूलिकण शरीरात शिरतात तेव्हा ते फुफ्फुसातून / शरीराच्या अंतर्भागातही जाऊन विविध अवयवांचे नुकसान करू शकतात. हवेतील प्रदूषकांचा सर्वाधिक धोका आपल्या शरीरातील कोणकोणत्या अवयवांना आहे, असे तुम्हाला वाटते?

☐ Kidney – मूत्राशय(किडनी)	☐ Liver – यकृत(लिव्हर)
☐ Brain – मेंदू	☐ Bone marrow (where blood is formed)- अस्थिमज्जा (जेथे रक्त तयार होते)
☐ Eyes – डोळे	☐ Thyroid – थायरॉईड
☐ I don't know - माहिती नाही	

13. What according to you are the sources of air pollution for Pune city? Rate them in ascending order by selecting 1 for most polluting source to 5 for the least polluting source. / पुण्यातील हवेच्या प्रदूषणाचे विविध स्रोत खालीलप्रमाणे असून त्यांचा चढता क्रम लावावा, म्हणजेच सर्वाधिक प्रभावी प्रदूषण स्रोत 1 क्रमांकावर आणि सर्वात कमी प्रभावी स्रोत 5 याप्रमाणे.

1 (सर्वाधिक प्रभावी प्रदूषक) - 5 (सर्वात कमी प्रभावी प्रदूषक)

Burning biomass - कचरा जाळणे
Vehicular emissions - वाहनांचा धूर
Industrial emissions - औद्योगिक प्रदूषण
Construction dust - बांधकामाचा धुरळा
Road dust - रस्त्यांवरील धूळ

14. If a city has an Air Action Plan, what according to you is the best way to ensure its execution? / जर एखाद्या शहराने हवा प्रदूषण कमी करण्याची योजना तयार केली तर कोणकोणत्या समूहांनी सहभागी झाले पाहिजे?

☐ Technical groups should be involved - तंत्रज्ञ समूहांचा सहभाग घेतला पाहिजे
☐ Government agencies should be involved - सरकारी यंत्रणेचा सहभाग घेतला पाहिजे
☐ Politicians should take the responsibility - राजकीय नेत्यांनी जबाबदारी घेतली पाहिजे
☐ Citizens should be involved - नागरिक सहभागी झाले पाहिजेत
☐ Involvement of NGOs, citizen groups - स्वयंसेवी संस्था, नागरिक समूहांचा सहभाग असला पाहिजे

15. Are you aware if Pune has a formal air plan to address air pollution? / हवा प्रदूषणाची समस्या सोडवण्यासाठी पुणे शहराने 'हवा प्रदूषण कमी करण्याची योजना' तयार केली आहे, हे तुम्हाला माहिती आहे काय?

☐ Yes – होय	☐ No – नाही
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16. How are you most likely to check air quality information? / हवेच्या गुणवत्तेची माहिती हवी असल्यास, खालीलपैकी कोणते माध्यम तुम्हाला सोयीस्कर वाटते?

- ☐ Alerts through a phone app - मोबाईल फोन ऐपचे अलर्ट
- ☐ Digital display - डिजिटल माहितीफलक
- ☐ Newspaper - वर्तमानपत्रे
- ☐ Don't want to get information about Air Quality - हवेच्या गुणवत्तेची माहिती नको आहे
- ☐ Radio - रेडिओ
- ☐ Through talks/ sessions - चर्चा सत्रांच्या माध्यमातून

17. What are your top 3 suggestions for concerned authorities to improve the air quality in Pune? / पुण्यातील हवेचा दर्जा / गुणवत्ता सुधारावी यासाठी संबंधित यंत्रणेला तुम्ही कोणत्या सूचना कराल? सर्वाधिक महत्त्वाच्या 3 सूचना खाली लिहा.

18. Which of the following steps will help reduce air pollution the most?/ खालीलपैकी कोणत्या उपायांमुळे हवेचे प्रदूषण सर्वाधिक कमी होऊ शकेल?

- ☐ Taking a bus instead of a private vehicle - खाजगी वाहने वापरण्याऐवजी बसने प्रवास करणे
- ☐ Walking / cycling instead of taking a private vehicle - खाजगी वाहन न वापरता सायकल/पायी चालणे हे पर्याय निवडणे
- ☐ Not burning leaves / any other garbage in the open - पालापाचोळा, बागेतील कचरा उघड्यावर न जाळणे
- ☐ Not burning pollution creating substances like mosquito coils, incense and dhoop sticks - डासांची कोंईल, धूपकांडी व यासारख्या प्रदूषण पसरवणाऱ्या वस्तू न वापरणे

19. Which step would you be able to adopt the soonest to reduce air pollution? / प्रदूषण कमी करण्यासाठी तुम्ही तातडीने कोणते पाऊल उचलू शकता?

- ☐ Taking a bus instead of a private vehicle - खाजगी वाहने वापरण्याऐवजी बसने प्रवास करणे
- ☐ Walking / cycling instead of taking a private vehicle - खाजगी वाहन न वापरता सायकल/पायी चालणे हे पर्याय निवडणे
- ☐ Not burning leaves / any other garbage in the open - पालापाचोळा, बागेतील कचरा उघड्यावर न जाळणे
- ☐ Not burning pollution creating substances like mosquito coils, incense and dhoop sticks - डासांची कोंईल, धूपकांडी व यासारख्या प्रदूषण पसरवणाऱ्या वस्तू न वापरणे
- ☐ Other - इतर

20. During the complete lockdown in the month of April 2020, did you feel any different in relation to the outdoor air quality? / एप्रिल 2020 मध्ये महिनाभर लॉकडाऊन लागू असताना बाहेरच्या वातावरणात, हवेत काही फरक तुम्हाला जाणवला का?

- ☐ Less allergies - एलर्जीचा त्रास कमी झाला
- ☐ eyes did not feel itchy - डोळ्यांची आग, जळजळ कमी झाली
- ☐ felt more energetic due to freshness in the air - स्वच्छ हवेमुळे अधिक उत्साही, ताजेतवाने वाटले
- ☐ fewer asthmatic attacks - दम्याचा विकार कमी जाणवला
- ☐ Did not feel any difference - कोणताही फरक जाणवला नाही

21. Do you think there is any connection between the air quality and Covid-19? / हवेची गुणवत्ता आणि कोविड-19 यांचा काहीतरी परस्परसंबंध आहे, असे तुम्हाला वाटते का?

- ☐ Yes – होय
- ☐ No – नाही

22. How much pollution do you think is created when we burn one dhoop stick indoors? It causes pollution equivalent to pollution caused by burning _____ cigarettes/ एक धूपकांडी खोलीमध्ये जाळल्यावर हवा किती प्रदूषण होते असे तुम्हाला वाटते? — — सिगारेटी ओढल्यामुळे जितके प्रदूषण होते, तितके एका धूपकांडीच्या जाळल्यामुळे होते.

☐

20

☐

100

☐

500

☐

I don't know - मला माहित नाही

23. Around 2.55 lakh people lost their lives due to diabetes, and 1.47 Lakh people died in road accidents in India in 2017. How many lives do you think were lost due to air pollution in the same year?/ सन 2017 मध्ये 2.55 लाख लोकांचा मधुमेहामुळे तर 1.47 लाख लोकांचा रस्ते अपघातात मृत्यू झाला. याच काळात हवेच्या प्रदूषणामुळे किती जणांचा मृत्यू झाला असेल असे तुम्हाला वाटते?

☐

Less than 1 lakh - 1 लाख पेक्षा कमी

☐

1 lakh - 1 लाख

☐

5 lakh - 5 लाख

☐

More than 12 lakh - 12 लाखाहून जास्त

☐

I don't know - मला माहित नाही



Air Quality perception amongst multiple stakeholders

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