

Evaluation of the 2018-2019 Pima County Clean Air Program Campaign and Clean Water Program Campaign Survey

(May 2019)

Prepared for:

Pima County Department of
Environmental Quality
Tucson, Arizona



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Project Goals

- Evaluate awareness and effectiveness of the 2018-2019 Clean Air Program Campaign.
- Analyze the overall effectiveness of the air quality campaign after 29 campaign sessions. Are there differences in attitudes or behavior among those familiar with the Program compared to those who are not aware?
- Determine current commute travel behavior and current/potential use of alternative transportation modes. Estimate daily commuter miles saved through alternative modes.
- Track issues related to stormwater destinations, perceptions and land/wash use behaviors for for PDEQ's Clean Water Program. The Clean Water Program Campaign is the 7th annual installment of the effort to raise awareness to keep stormwater clean.

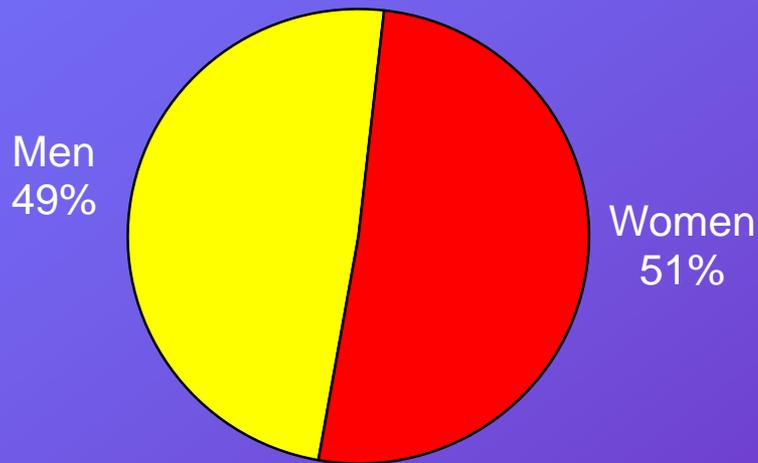
Survey Sample Overview

- ✓ Similar to last four years, sample based on 500 respondents, half over the Telephone and half via Internet, with an identical survey instrument. Prior to 2015, surveys in this tracking study series were all conducted via telephone.
- ✓ Telephone sampling plan identical to previous surveys.
- ✓ 32% non-Whites, including 26% Hispanic. This is nearly identical to 2018 and 2017 (32% non-White and 25% Hispanic for each).
- ✓ Telephone sample is again older (50.7 years median age), while the Internet sample remains younger (41.7 years).
- ✓ Percentage of “snowbirds” is nearly the same as last year (6%).
- ✓ Similar to the last four years, the telephone portion of this survey was 15 minutes. Internet surveys lasted approximately 11 minutes.

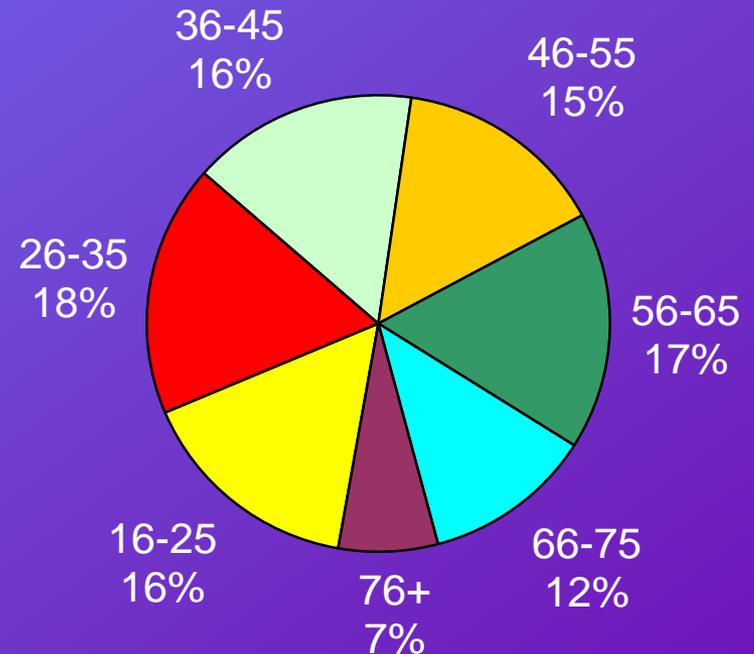
The Sample

500 telephone and Internet surveys completed during May among **randomly-selected men and women** age 16 or older in Pima County. There was a slight female skew (51% versus 49% men). The median age was 45.8 years. This is highly consistent with Pima County Census data (51% female; 47.8 median age [16+].)

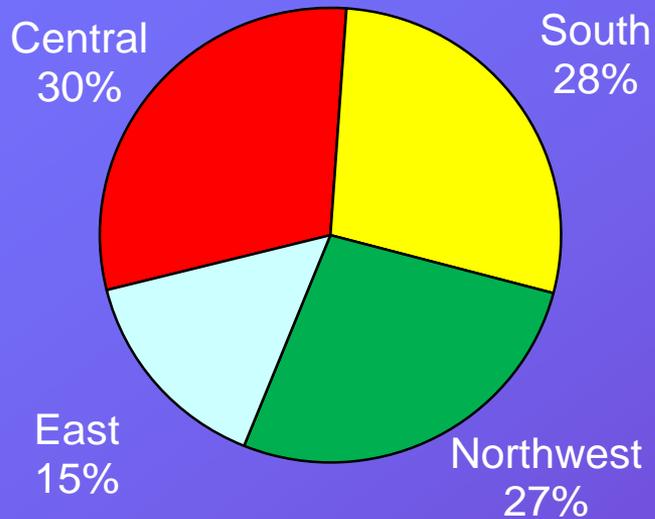
Gender



Age

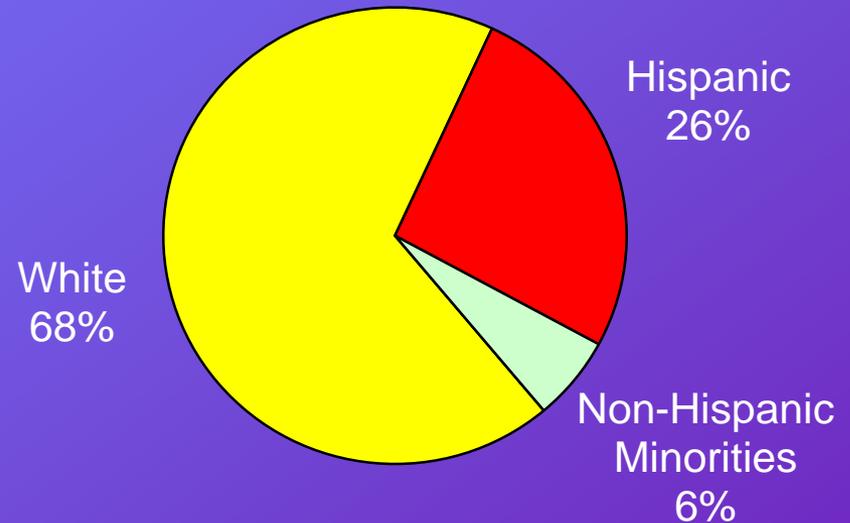


Area



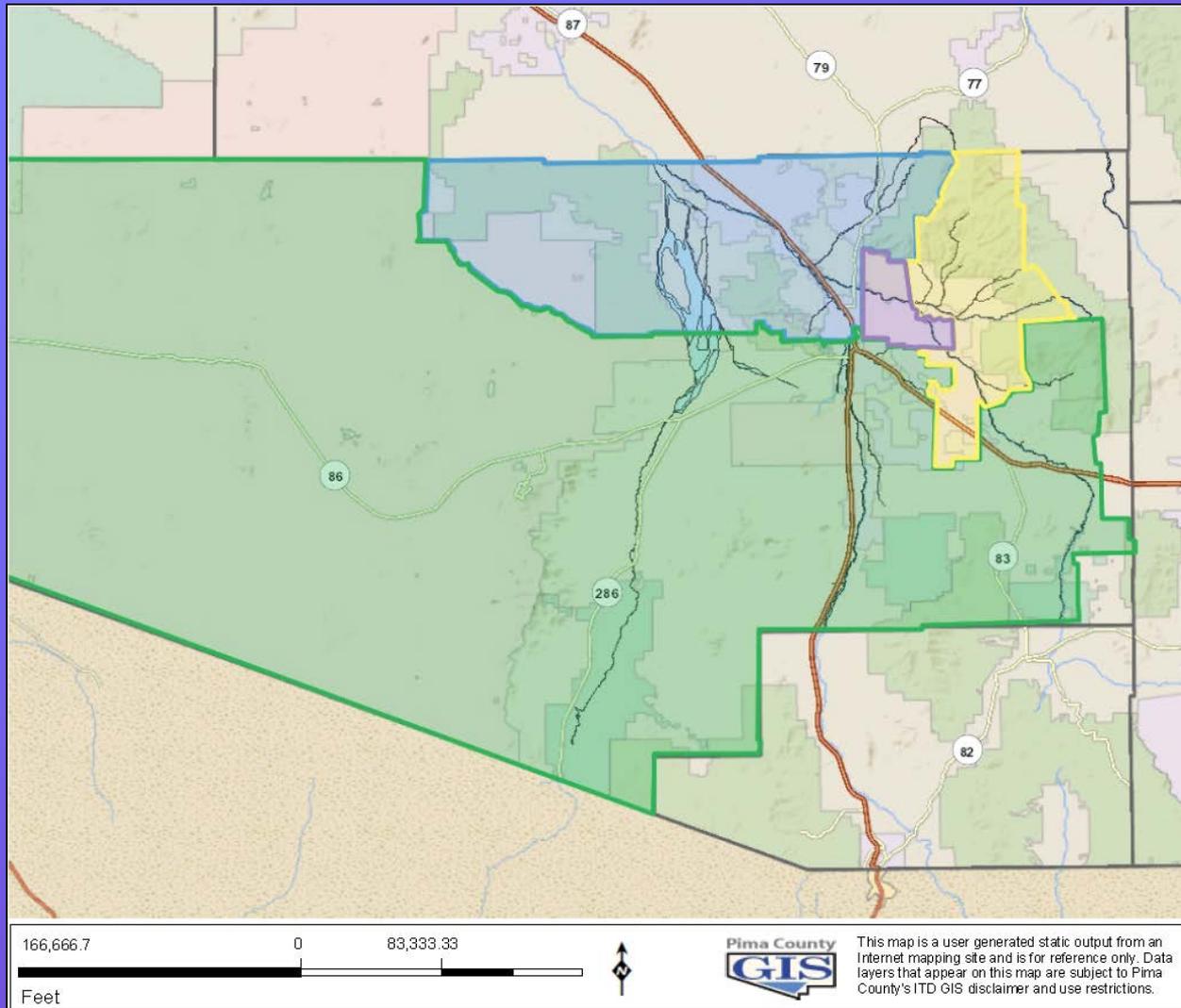
Quotas set for each zone in the Telephone sample are representative of population distributions within Pima County.

Ethnicity



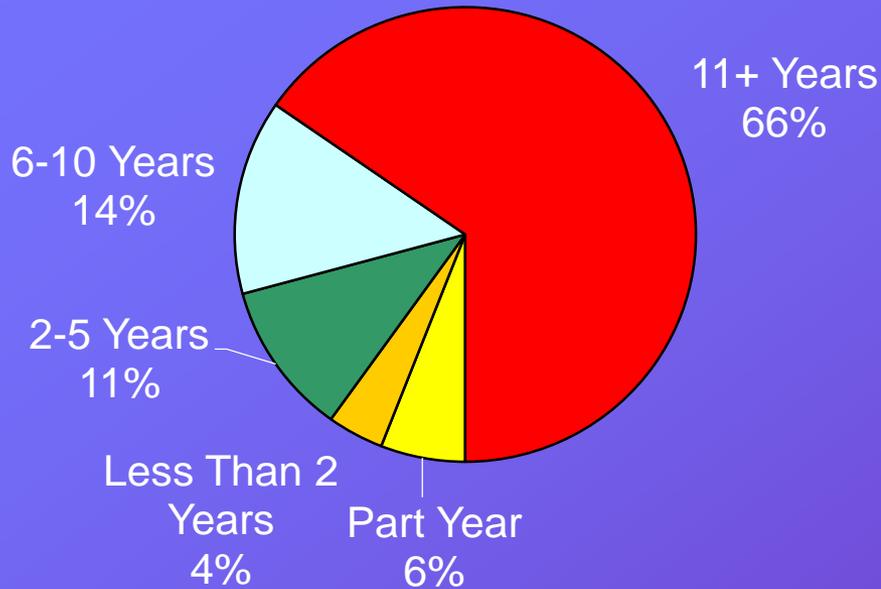
Quotas set on household distribution for the Telephone sample.

2019 Pima Clean Air/Clean Water Region Definitions – Map

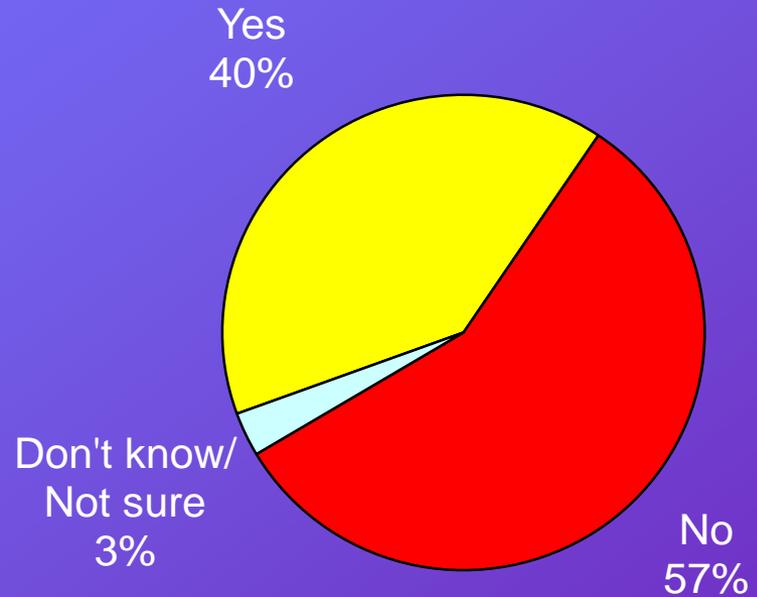


Blue = Northwest Purple = Central Yellow = East Green = South

Length of Residence



Household Member With Breathing-Related Medical Condition



11+ year residents (66%) similar to 2018 (68%) but higher than in 2017 (61%).

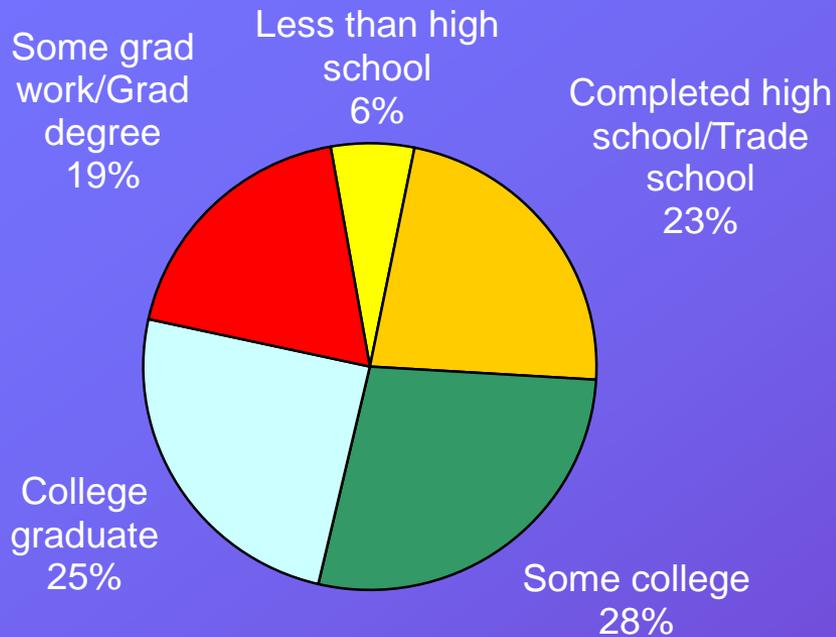
Yes responses (40%) down slightly from 2018 (43%) and 2017 (42%).

Respondent: 24% (up from 21%)

Children: 11% (down from 13%)

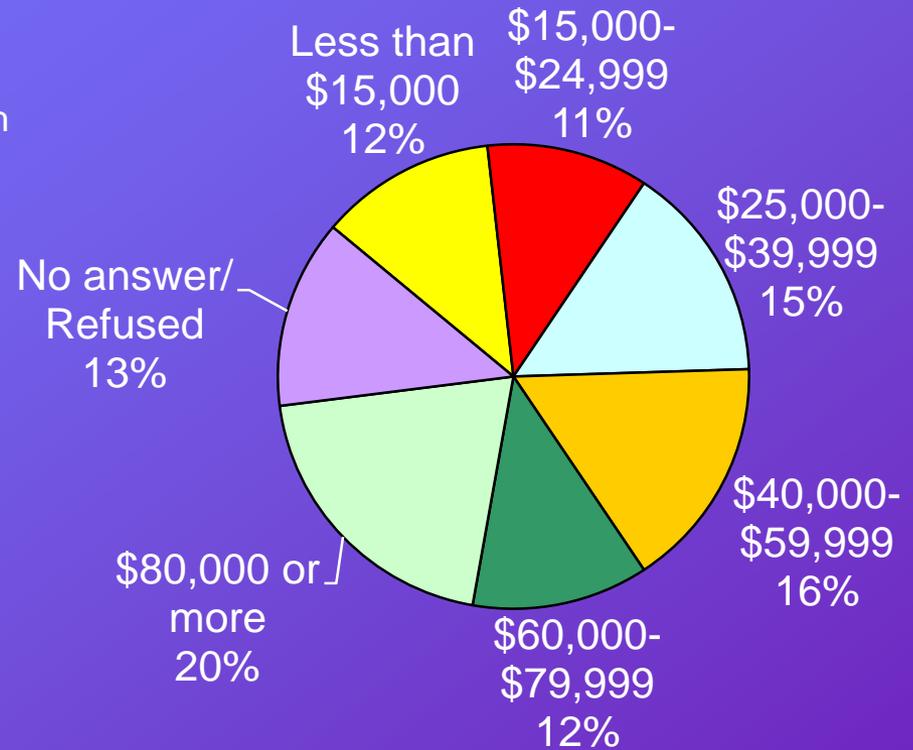
Other: 19% (down from 21%)

Education Level



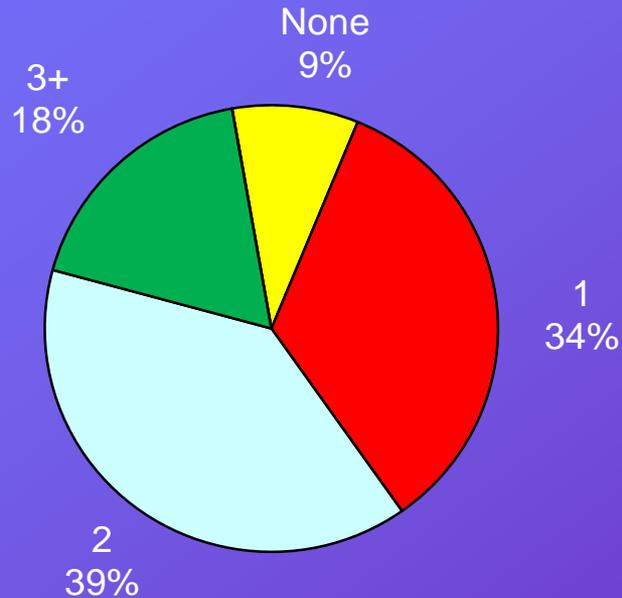
Fewer are college graduates (from 31% to 25%), while those with grad work/degree is identical to last year (19%).

Household Income



Median Household Income = \$46,378
 Telephone median: \$57,403
 Internet median: \$40,288
 Pima County median: \$48,676

Number of Motor Vehicles Owned/Leased



Overall, 9% have no working vehicle (up incrementally from 6% in 2016). The share of single-vehicle households has decreased (from 37% to 34%), while the share of 3+ vehicle owners is about the same as 2018 (18%).

Final Air Quality Campaign Observations

Awareness of the Pima County “Clean Air” Program has decreased from 46% in 2018 to 43% this year. Similarly, slightly fewer are familiar with at least one “Clean Air” event (from 84% to 81%).

As we have found in past surveys, there continues to be a significant difference in key attitudes and behaviors related to air quality among those aware of the “Clean Air” Program and those unaware (43% and 49%, respectively). This relationship is again readily apparent, as summarized in the following displays.

“Clean Air” Program

Some key differences:

Difference

Aware
(43%)

Unaware
(49%)

Air Quality Event Awareness

Travel Reduction Program

2019

+250%

35%

10%

Bike Fest

2019

+83%

55%

30%

2018

+64%

64%

39%

Cyclovia

2019

+82%

40%

22%

2018

+48%

31%

21%

Walk and Bike to School Day

2019

+71%

60%

35%

2018

+110%

42%

20%

Bike to Work Day

2019

+62%

68%

42%

2018

+56%

70%

45%

Earth Day Festival & Parade

2019

+52%

73%

48%

2018

+55%

73%

47%

	<u>Difference</u>	<u>“Clean Air” Program</u>	
		<u>Aware</u> (43%)	<u>Unaware</u> (49%)
<u>Participation in a “Clean Air” event</u>			
2019	+144%	22%	9%
2018	+108%	25%	12%

- ✓ On average, there is an 106% higher awareness and/or participation in “Clean Air” events or programs among those familiar with the “Clean Air” Program (compared to 80% in 2018).

“Clean Air” Program

Difference

Aware
(43%)

Unaware
(49%)

PDEQ and Sun Rideshare Awareness & Usage

• Aware of PDEQ

2019

83%

44%

2018

85%

46%

+89%

+85%

• Aware of Sun Rideshare services

2019

64%

45%

2018

71%

42%

+42%

+69%

- ✓ On average, there is a 66% greater awareness of PDEQ and Sun Rideshare services among those aware of the “Clean Air” Program (compared to 77% in 2018).

“Clean Air” Program

Difference

Aware
(43%)

Unaware
(49%)

PDEQ Activity Understanding

- Seen or heard information regarding clean air or air pollution

2019

+21%

92%

76%

2018

+16%

86%

74%

- Seen or heard information that vehicle engine idling causes air pollution

2019

+21%

85%

70%

2018

+10%

92%

84%

- Aware majority of air pollution comes from motor vehicle use

2019

+17%

84%

72%

2018

+16%

88%

76%

	<u>Difference</u>	<u>“Clean Air” Program</u>	
		<u>Aware</u> (43%)	<u>Unaware</u> (49%)
• <u>Seen or heard information about the importance of keeping tires properly inflated</u>			
2019	+10%	88%	80%
2018	+12%	93%	83%

- ✓ **On average, there is a 17% higher understanding of PDEQ activities among those aware of the “Clean Air” Program (compared to 25% in 2018).**

Once again, we conclude that these survey findings and tracking results again suggest that the “Clean Air” Program increases awareness, belief and actions related to improving air quality. As a result, targeting those unaware of the program continues to be a key recommendation of this project.

Those unfamiliar with (or unsure of) the “Clean Air” Program tend to be Central or South area residents, 16 to 35 year-olds, low income households (below \$15,000 annually) and part-year or the newest (for less than two years) Pima County residents.

As a result, promotional, communication and awareness-building efforts should be targeted towards these groups. The profile of those unfamiliar (younger, lower income and newer residents) is consistent with higher levels of social media consumption. Consequently, we recommend increased development and usage of social media (such as Facebook or Twitter ads, postings, links, etc.) to reach them.

Tire Inflation Education Campaign – Compared to last year, somewhat fewer say they “have seen or heard information about the importance of keeping your tires properly inflated” (from 88% to 82%). Despite this dip in general awareness, a record four of ten report that they are keeping their tires properly inflated to help reduce air pollution in the Tucson (up from 34%).

What is the direct impact of this action taken to keep tires properly inflated? There are an estimated 670,667 working vehicles (automobiles, vans and trucks of one-ton capacity or less for household use) in Pima County (source: 2017 American Community Survey). According to PDEQ, a vehicle will save 144 gallons of gasoline per year with properly inflated tires..

If 40% are keeping their tires properly inflated, this yields an annual reduction of 38,630,419 gallons of gasoline not purchased (along with the pollutants this gasoline would release).

Final Clean Water Program Campaign Observations

Four of ten Pima County residents (41%) surveyed are aware of the “Clean Water Starts With Me” campaign. This represents progressive decline from 2018 (50%) and 2017 (55%) levels. However, as we have found in past surveys, there continues to be significant positive differences between those aware of the “Clean Water Starts With Me” campaign (41%) and those who are not (59%) with respect to key perceptions and actions related to stormwater pollution.

As we have found previously, residents familiar with the “Clean Water Starts With Me” campaign remain far more likely to perceive that Tucson has a “serious” stormwater pollution problem (50% versus 39% of those unfamiliar, 28% higher).

In terms of resident perceptions of where stormwater that flows into Tucson storm drains end up, there are few differences (again) in the ordinal ranking of survey responses. The largest share (regardless of campaign awareness) continue to think that stormwater flows in a river or wash (49% overall). About half as many say they “don’t know” where stormwater ends up (25%), with few differences between those aware (24%) or unaware (27%) of the “Clean Water Starts With Me” campaign.

What about the possible uses for areas near washes and their potential risks to the community? On average, there are few differences based on campaign awareness – although residents familiar with “Clean Water Start With Me” indicate some increased value in using the area near a wash for active recreation, like walking or biking (55% versus 49% among those unfamiliar).

As indicated in the following displays, there are key differences related to the perceived factors that contribute to the stormwater pollution problem and the implementation/installation of Green Infrastructures at home or business.

“Clean Water
Starts With Me”

Some key differences:

Difference

Aware
(41%)

Unaware
(59%)

“Serious” Contributors to Stormwater Pollution

- Copper from copper brake pads

2019

+85%

24%

13%

2018

+87%

28%

15%

- Construction site chemicals/materials

2019

+31%

46%

35%

2018

+29%

49%

38%

- Household products

2019

+25%

45%

36%

2018

+23%

48%

39%

- Animal waste from household pets

2019

+22%

22%

18%

2018

+48%

31%

21%

- Household trash and bulky items

2019

+19%

43%

36%

2018

+30%

48%

37%

		<u>“Clean Water Starts With Me”</u>		
		<u>Difference</u>	<u>Aware</u> (41%)	<u>Unaware</u> (59%)
•	<u>Industrial facility chemicals/materials</u>			
	2019	+17%	42%	36%
	2018	+19%	50%	42%
•	<u>Pesticides/Fertilizers/Lawn & garden debris</u>			
	2019	+12%	45%	40%
	2018	+15%	39%	34%
•	<u>Automotive fluids</u>			
	2019	+10%	44%	40%
	2018	+9%	47%	43%

- ✓ **There is a 28% higher rating/awareness of “serious” contributors to the stormwater pollution problem in the Tucson area among those aware of the “Clean Water Starts With Me” campaign (compared to 32% last year).**

“Clean Water Starts With Me”

Difference

Aware
(41%)

Unaware
(59%)

***Green Infrastructures Implemented/
Installed at Home or Business***

	<u>Difference</u>	<u>Aware</u> (41%)	<u>Unaware</u> (59%)
• <u>Natural areas protected from clearing and grading</u>			
2019	+68%	32%	19%
2018	0%	20%	20%
• <u>Water harvesting using rain barrels or cisterns</u>			
2019	+60%	24%	15%
2018	44%	26%	18%
• <u>Landscaped depressions that collect stormwater</u>			
2019	+28%	32%	25%
2018	+3%	30%	29%
• <u>Porous pavements or bricks</u>			
2019	+23%	37%	30%
2018	+13%	26%	23%

	<u>Difference</u>	<u>“Clean Water Starts With Me”</u>	
		<u>Aware</u> (41%)	<u>Unaware</u> (59%)
• <u>A trench filled with gravel to collect stormwater</u>			
2019	+21%	23%	19%
2018	+19%	19%	16%
• <u>Connecting runoff from a roof or paved surface</u>			
2019	+17%	34%	29%
2018	14%	25%	22%

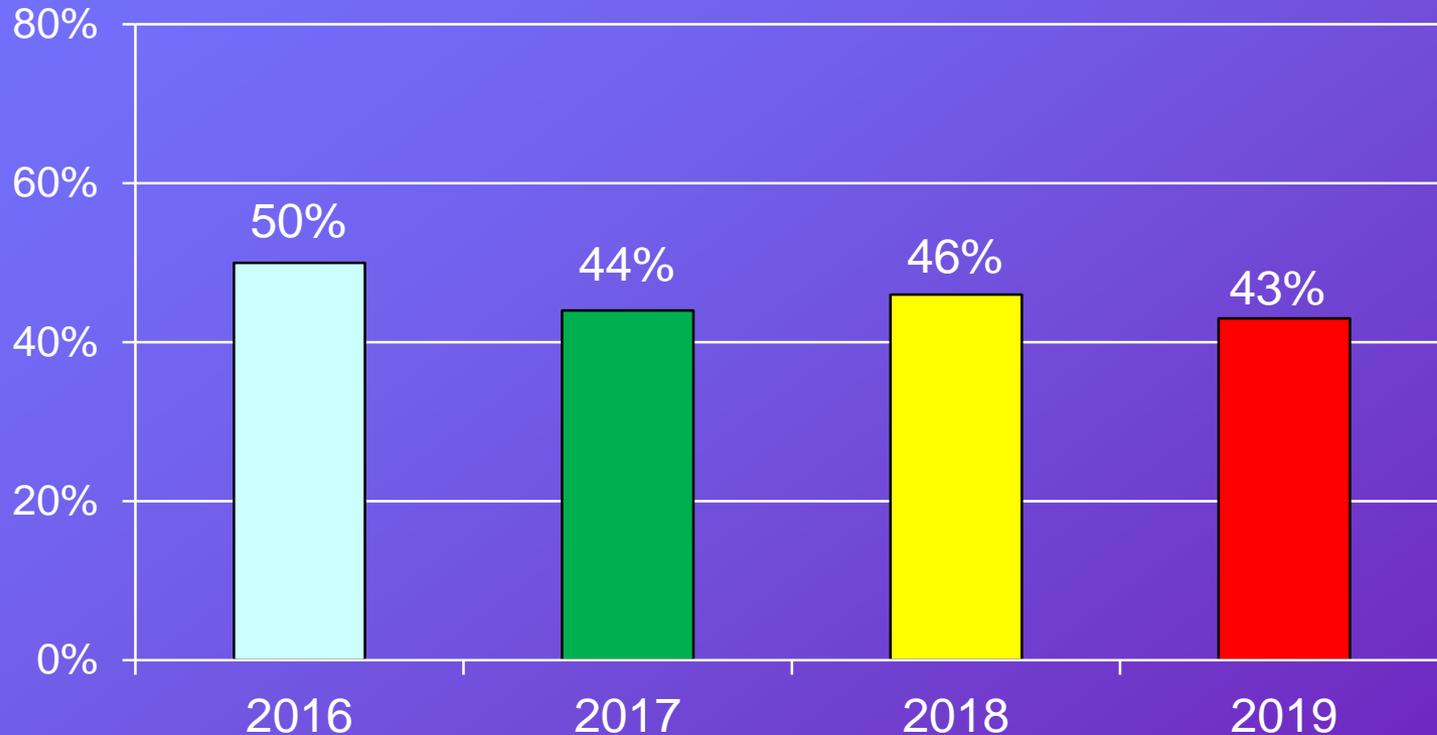
- ✓ **There is a 36% higher incidence of Green Infrastructures implemented or installed at home of business among those aware of the “Clean Water Starts With Me” campaign (up from 16% last year). Regardless of campaign awareness, a record number are landscaping with native plants (65% versus 52%-55% in past years).**

These findings suggest that “Clean Water Starts With Me” campaign awareness does have a positive impact on the perceptions of and willingness to implement Green Infrastructures to reduce the stormwater pollution problem in Tucson.

As a result, we suggest targeting those not currently aware of the “Clean Water Starts With Me” campaign for future outreach/education efforts – including Central area residents, men and 46 to 65 year-olds. At the same time, Northwest denizens, 36 to 45 year-olds and the newest Pima County residents (for less than two years) are most likely to say they are “not sure” who they would call to report someone dumping trash or chemicals into a storm drain or wash.

Awareness of Pima County “Clean Air” Program

Awareness of the Pima County “Clean Air” Program has decreased from last year (from 46% to 43%), but similar to 2017 (44%).



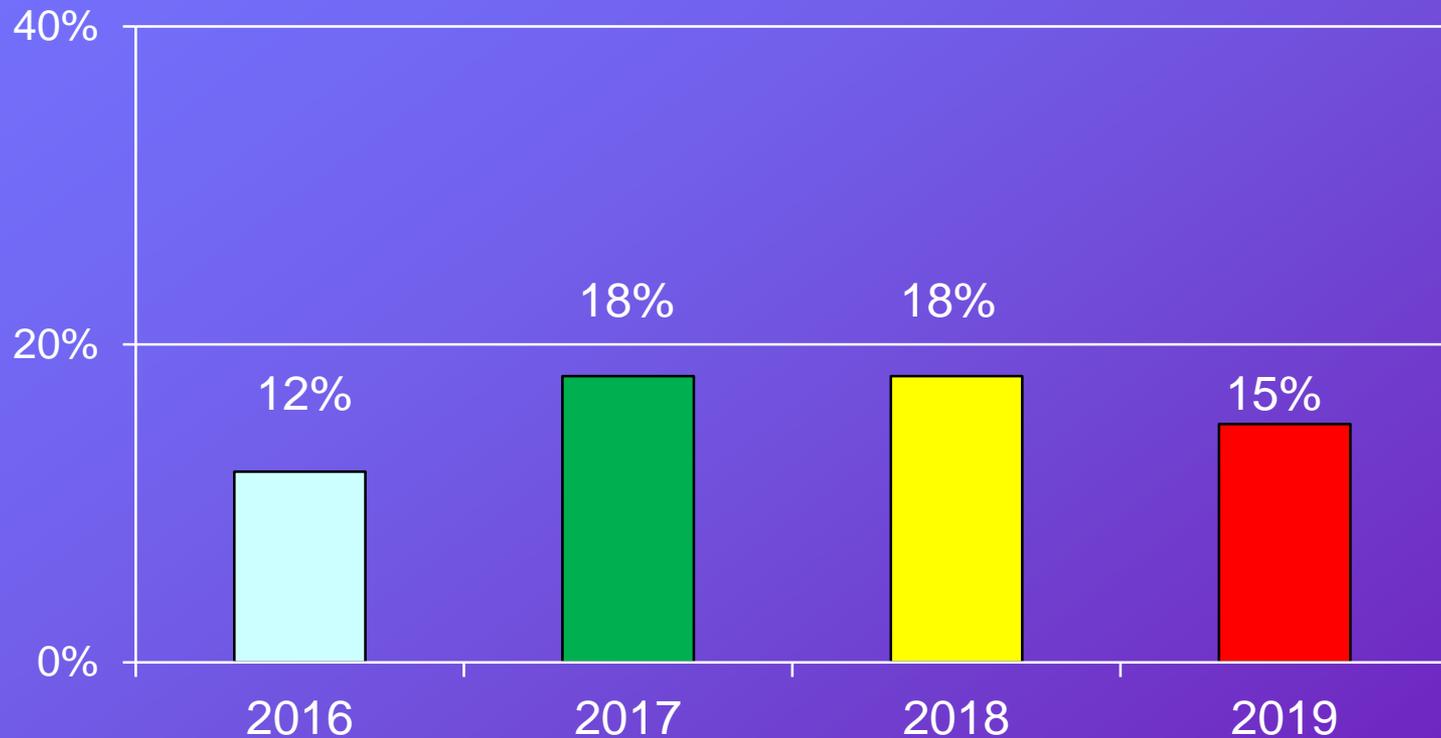
Awareness is balanced across geography or ethnicity, and is highest among women and those 46 or older.

Specific “Clean Air” event recall is still **strong** and significantly higher among those aware of the “Clean Air” program.

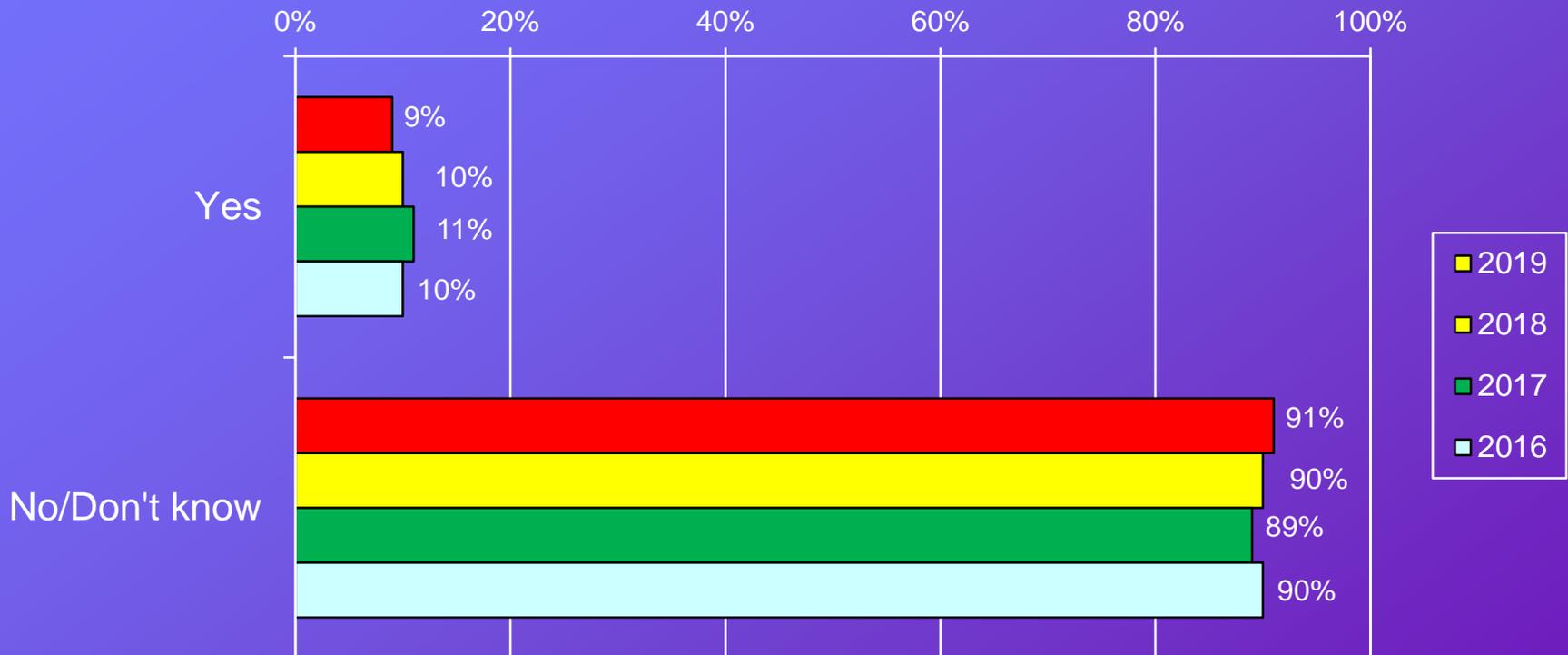
	<u>5/16</u>	<u>5/17</u>	<u>4/18</u>	<u>5/19</u>
“Earth Day Festival and Parade”	55%	62%	58%	57%
“Bike to Work Day”	60%	53%	56%	52%
“Walk and Bike to School Day”	32%	31%	31%	46%
“Bike Fest”	51%	47%	50%	41%
“Cyclovia”	24%	23%	25%	29%
“Travel Reduction Program”	--	--	--	21%
None of these	17%	14%	16%	19%

81% are familiar with at least one program event or activity (down incrementally from 84% in 2018 and 86% in 2017).

Household participation in a “Clean Air” campaign event is down from 2018 (from 18% to 15%).



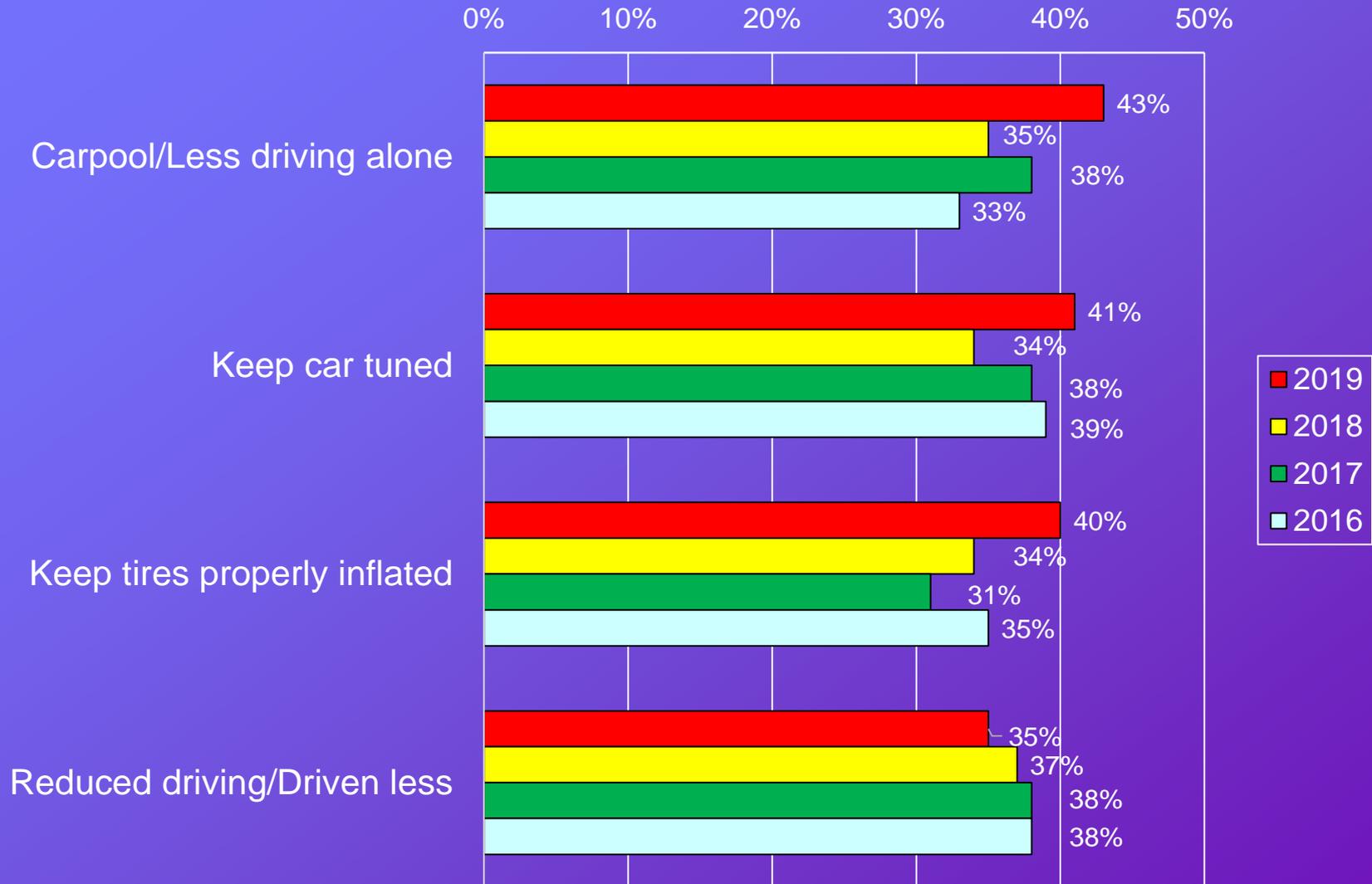
Among event participants, fully three of four have changed their daily routines or behaviors to help improve air quality, up from 64% last year. **This equates to 9% of the total sample – down just slightly from last year (10%).**



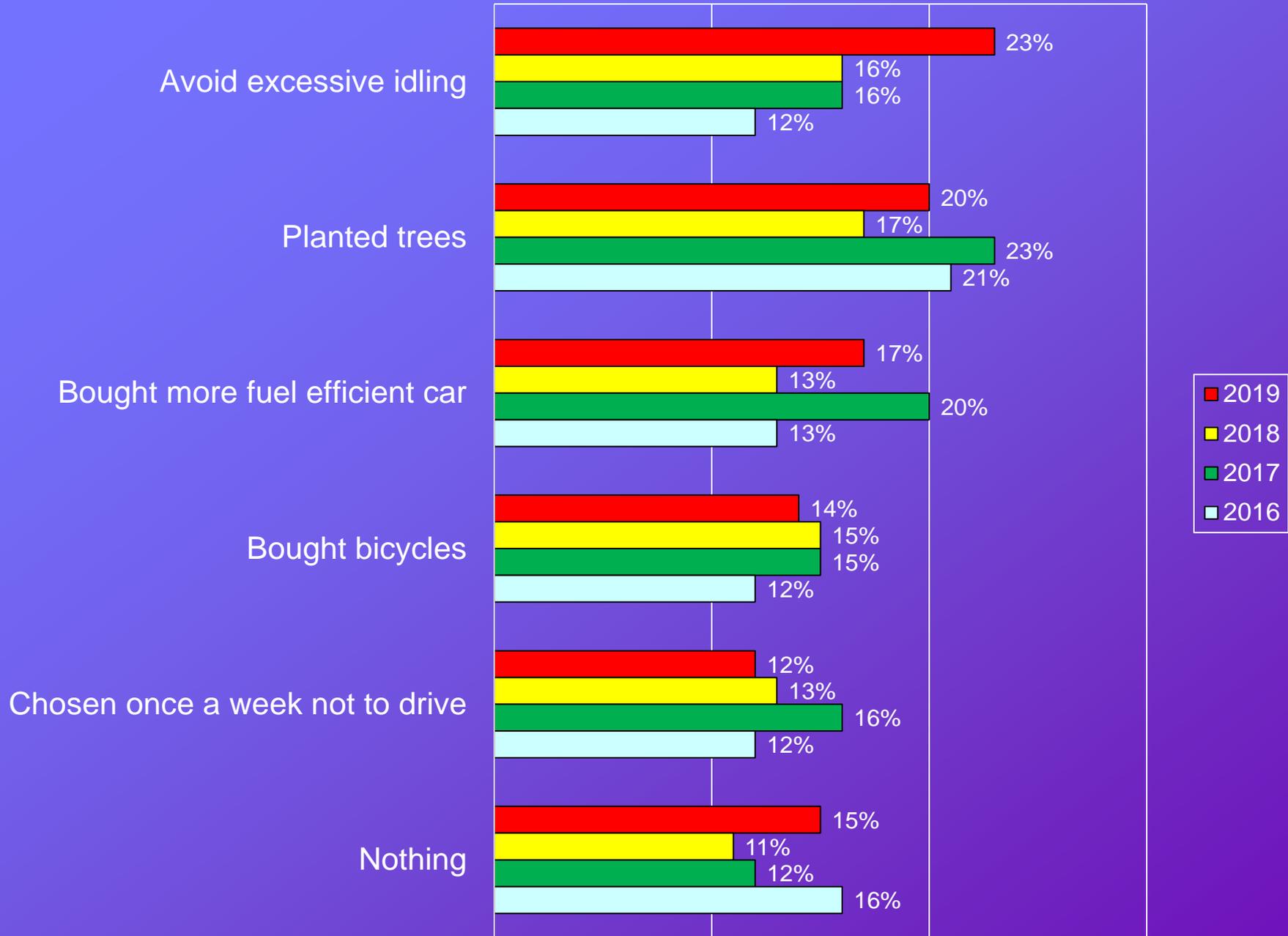
Those aware of “Clean Air” events continue to have a more highly favorable opinion of these activities. Overall, 47% are “very favorable”– down just slightly 49% last year.



Most say carpooling, keeping their car tuned, keeping tires properly inflated and driving less are the steps they've taken to reduce air pollution.

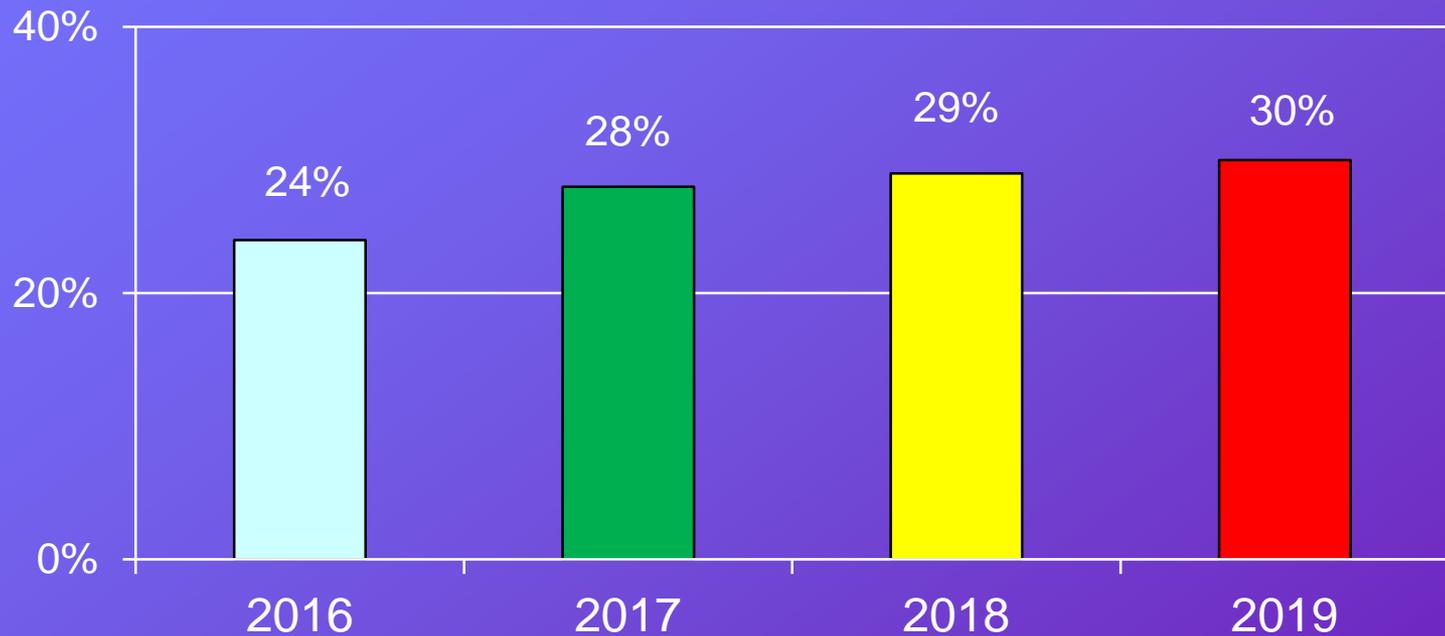


0% 10% 20% 30%

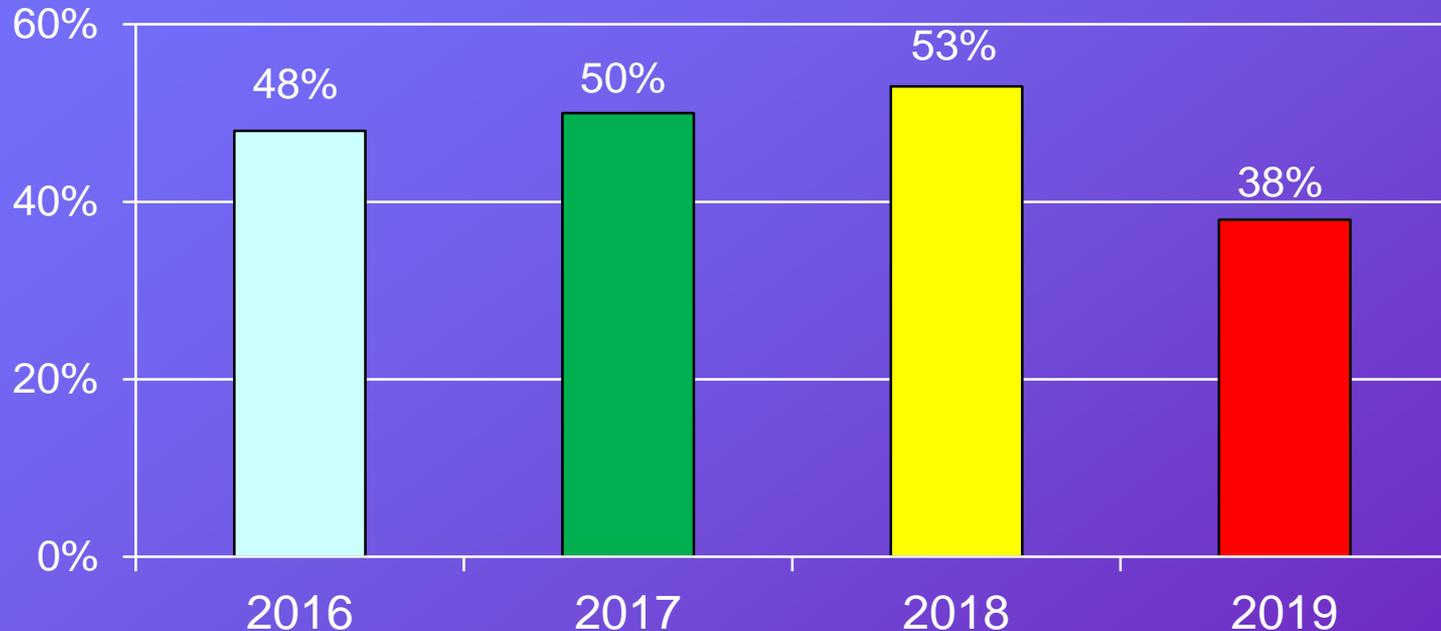


From Table 14

Households with children 5-18 are more likely to be South region residents and non-Whites.



38% of children brought home information or are talking about school air pollution projects. This is down from 50%-53% in 2017-2018.



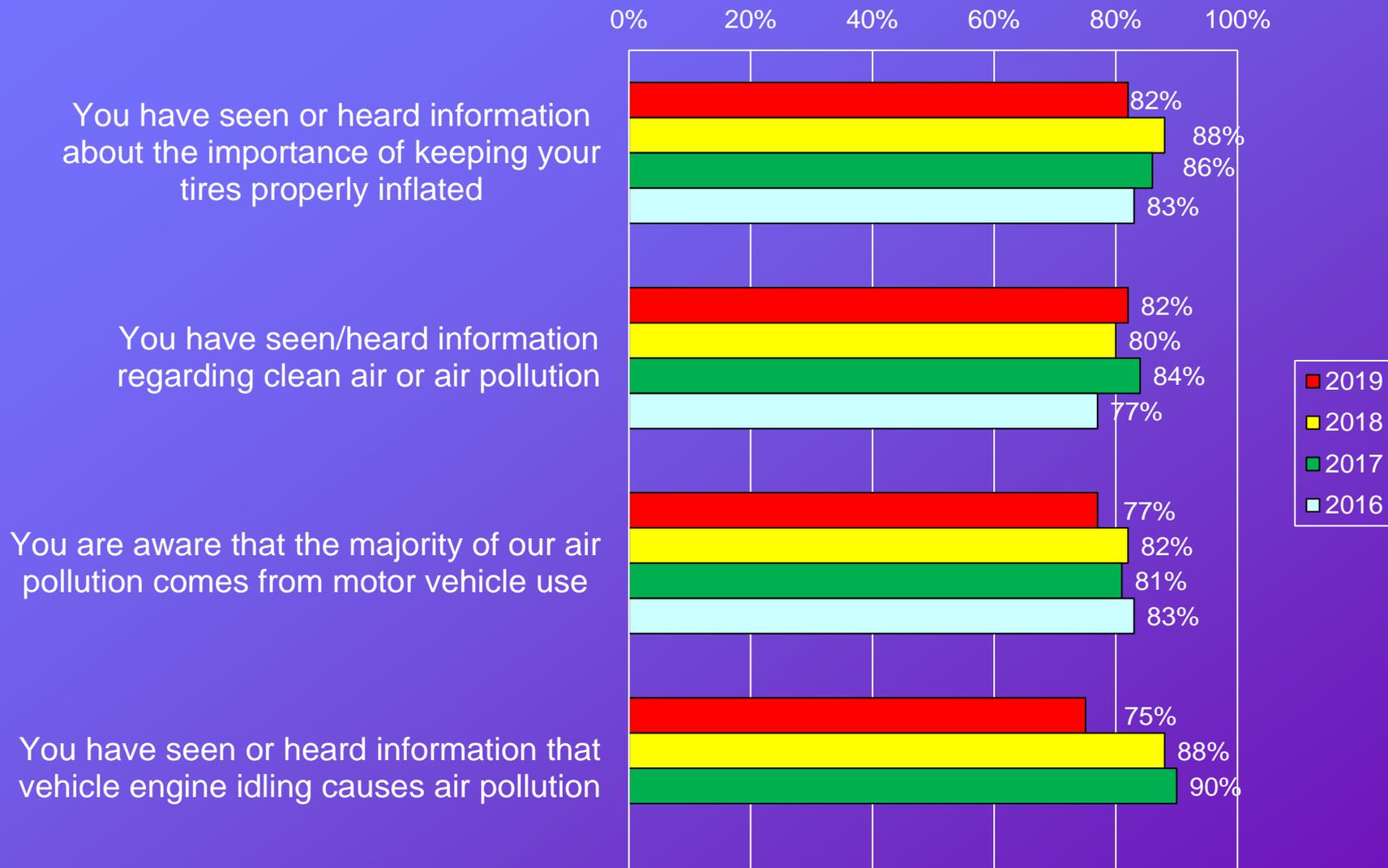
School material recall is greater among those aware (43%) than unaware (37%) of the “Clean Air” Program.

Gasoline-Powered Lawn Mower Usage

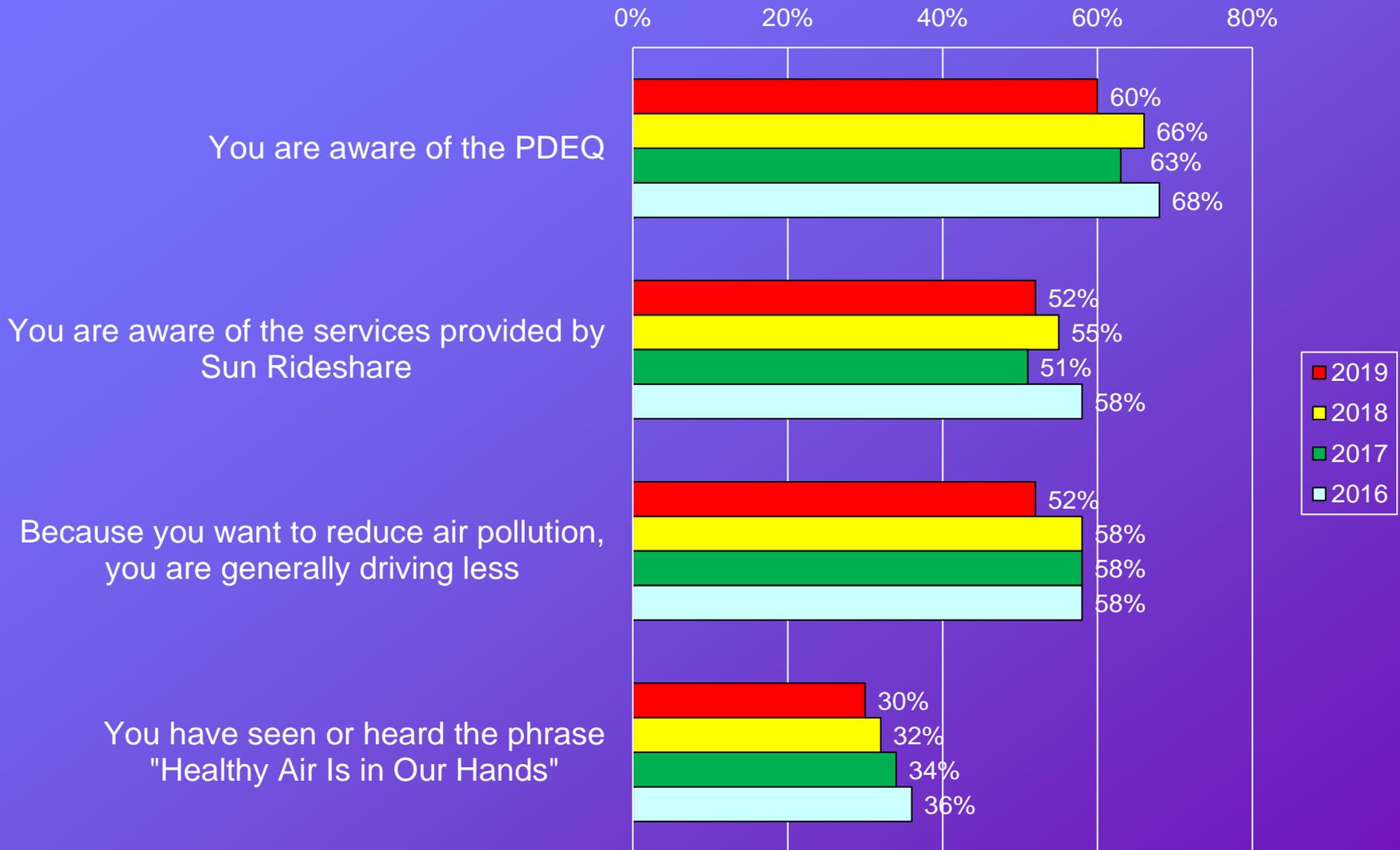
	Usage (Total <u>Sample</u>)	2-Stroke Engine (<u>Among Users</u>)	Avg. Monthly Usage (<u>Among Users</u>)
2019	7%	40%	34 minutes
2018	6%	72%	32 minutes
2017	6%	37%	37 minutes
2016	8%	38%	38 minutes

Usage is slightly lower in the Northwest zips.

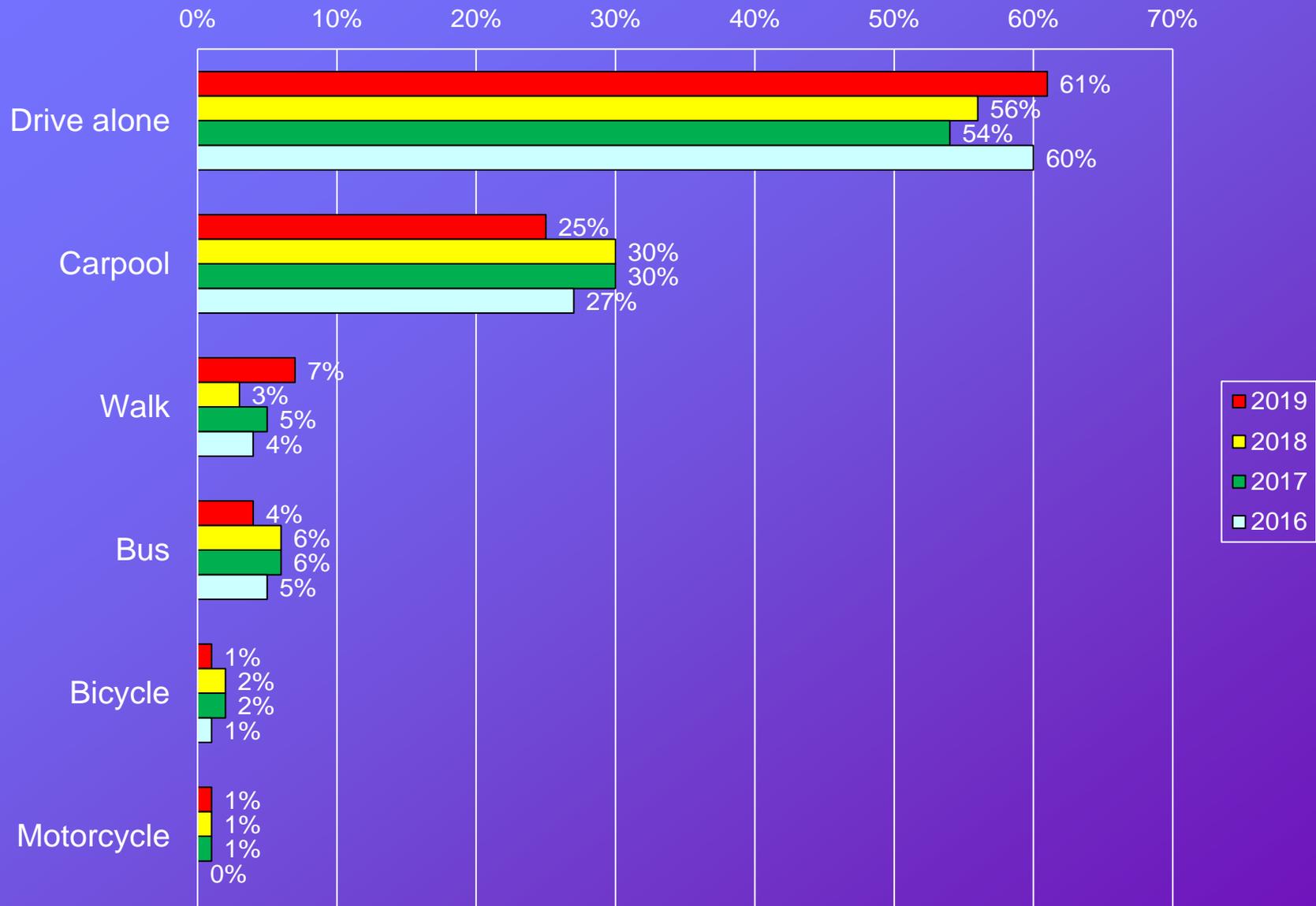
Despite lower totals, the vast majority recall information about the importance of proper tire inflation & engine idling causing air pollution.



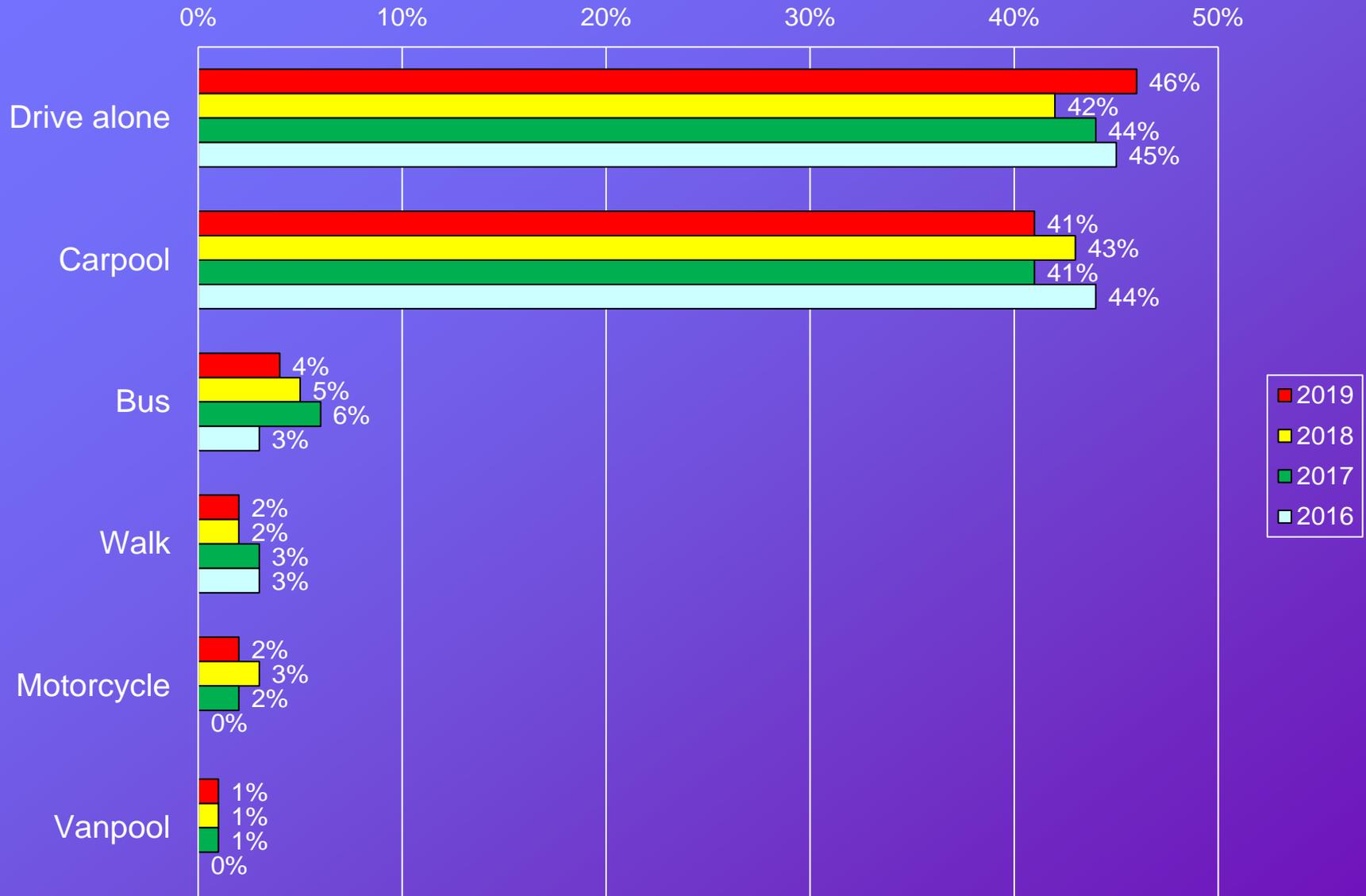
PDEQ and Sun Rideshare services awareness is lower. Driving less to reduce air pollution has dipped. "Healthy Air Is in Our Hands" recall is declining incrementally.



Compared to last year, more are driving alone for shopping purposes (from 56% to 61%).

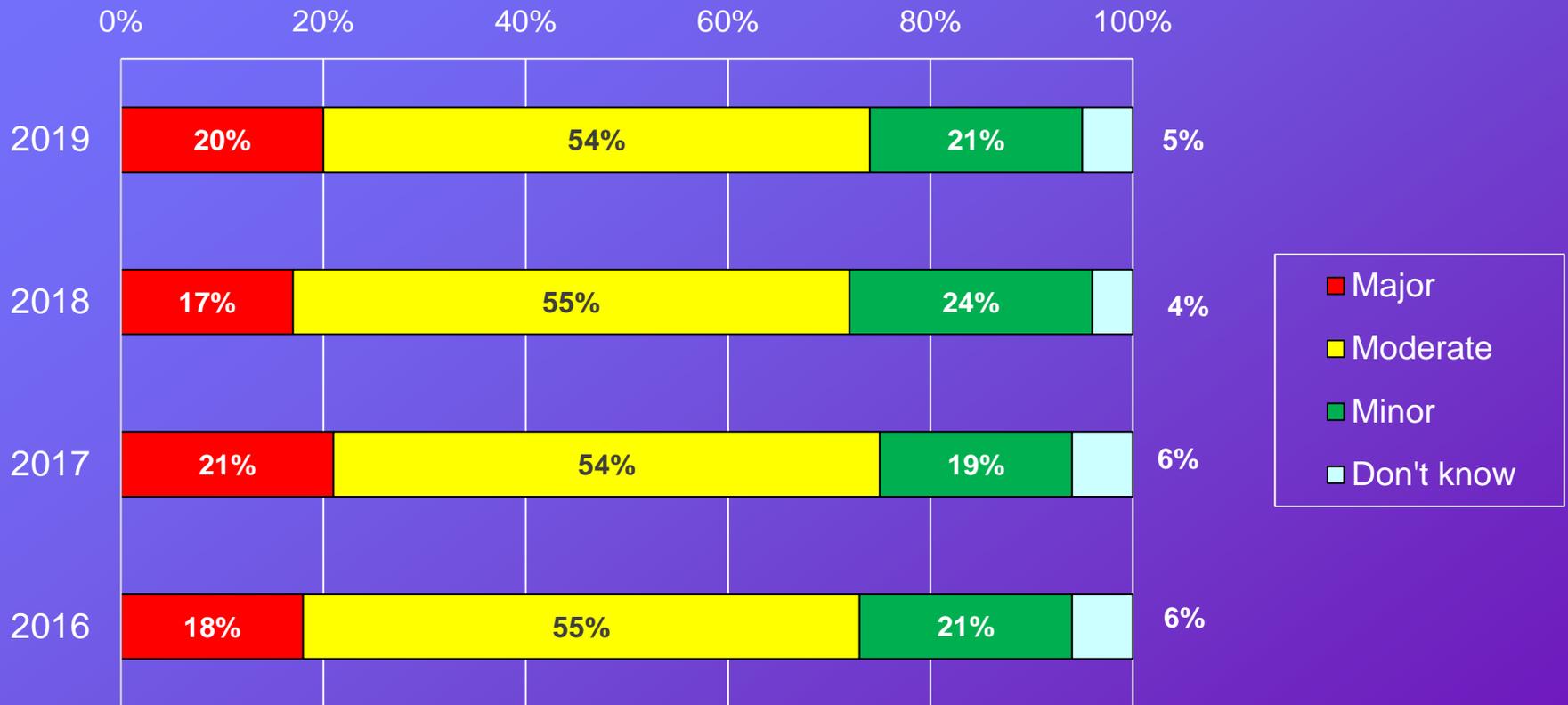


For leisure purposes, more now drive alone (46%) than carpool (41%).



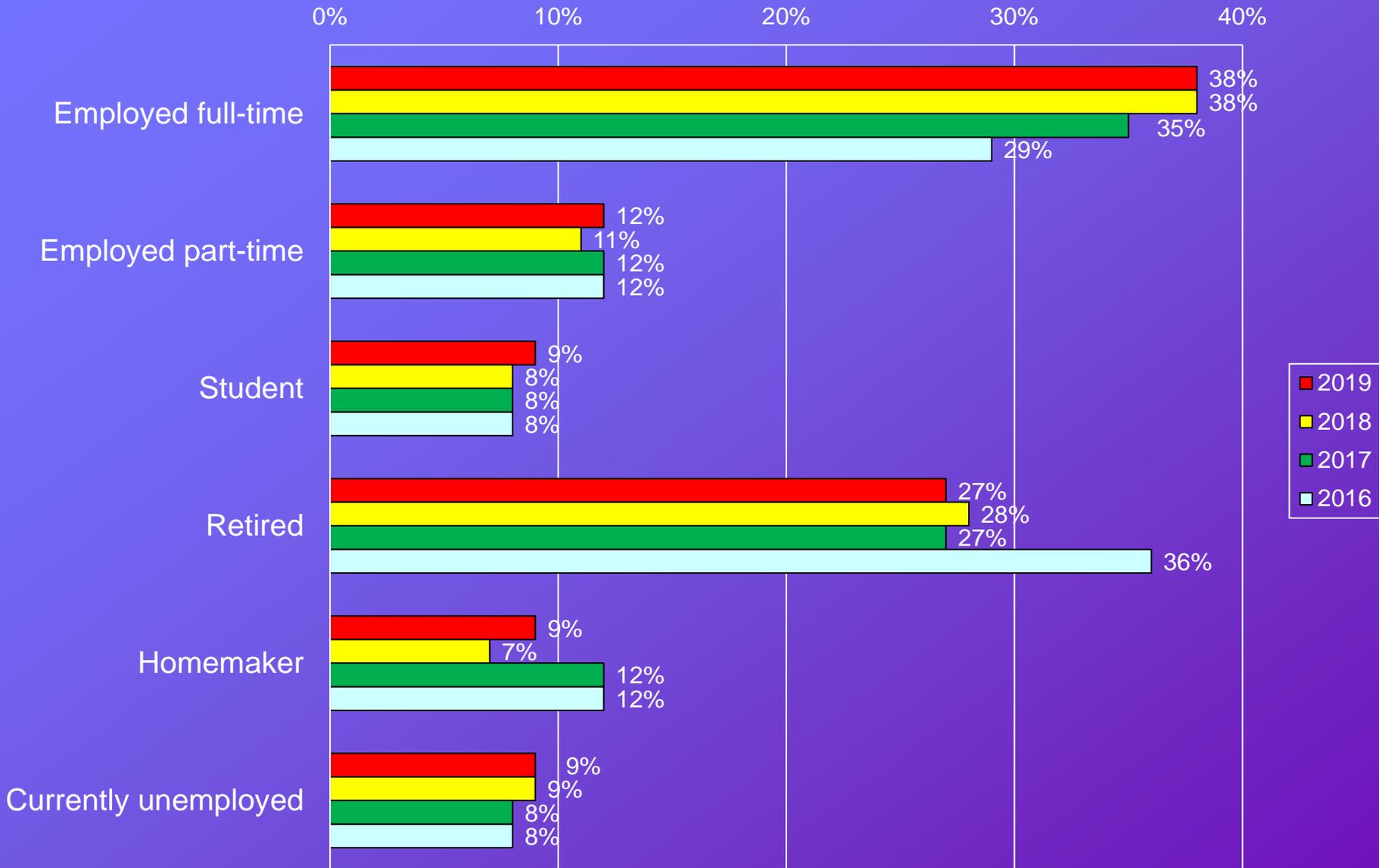
Two of ten perceive a “serious” air quality problem in the Tucson area, up from 17% last year. Fewer perceive a “minor” issue (21%, down from 24%). Instead, most perceive a “moderate” problem (54%).

(% of Perceived Air Quality Problem in Tucson)

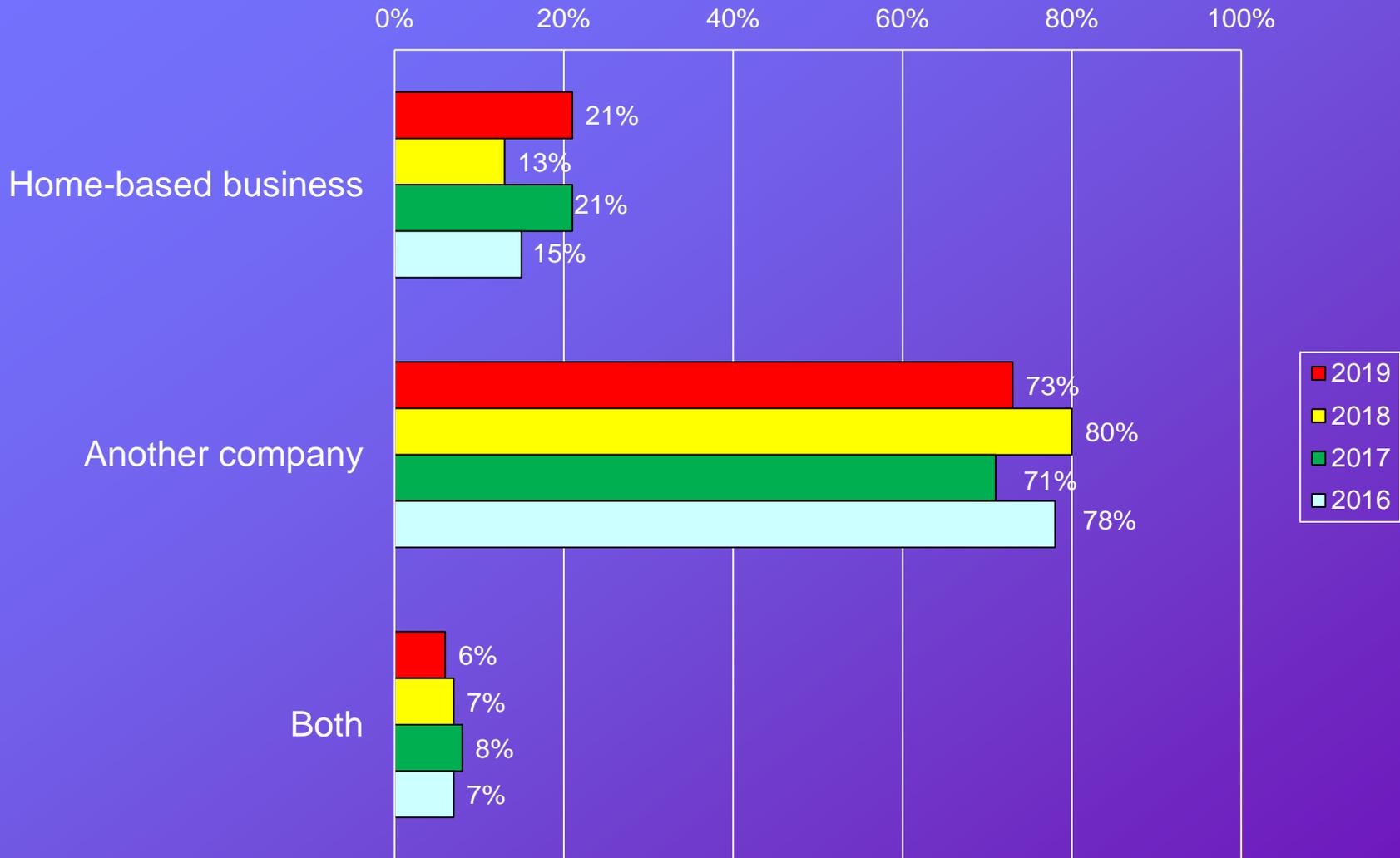


Work Commuting Behavior

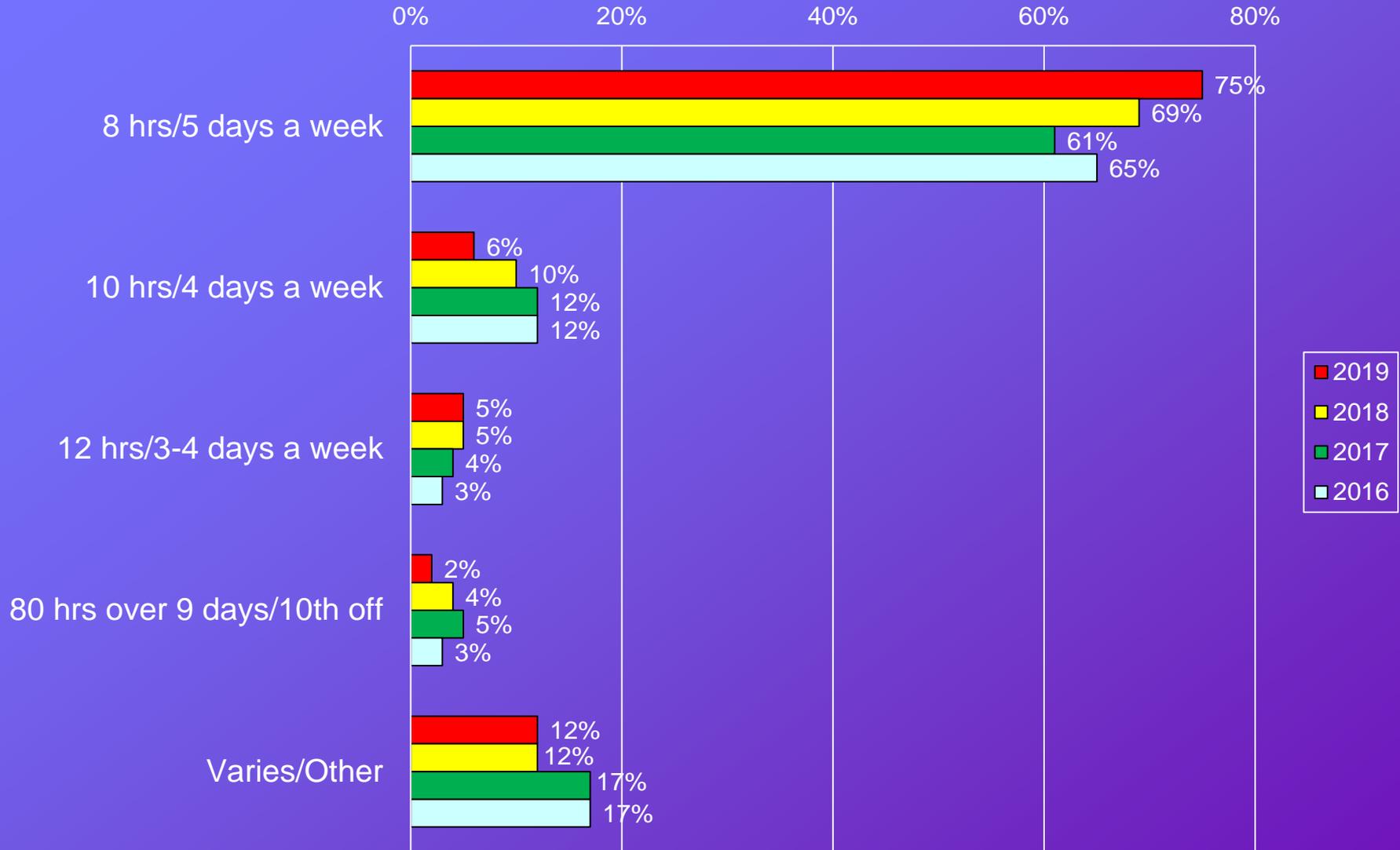
Full- and part-time employment is in line with 2018 totals.



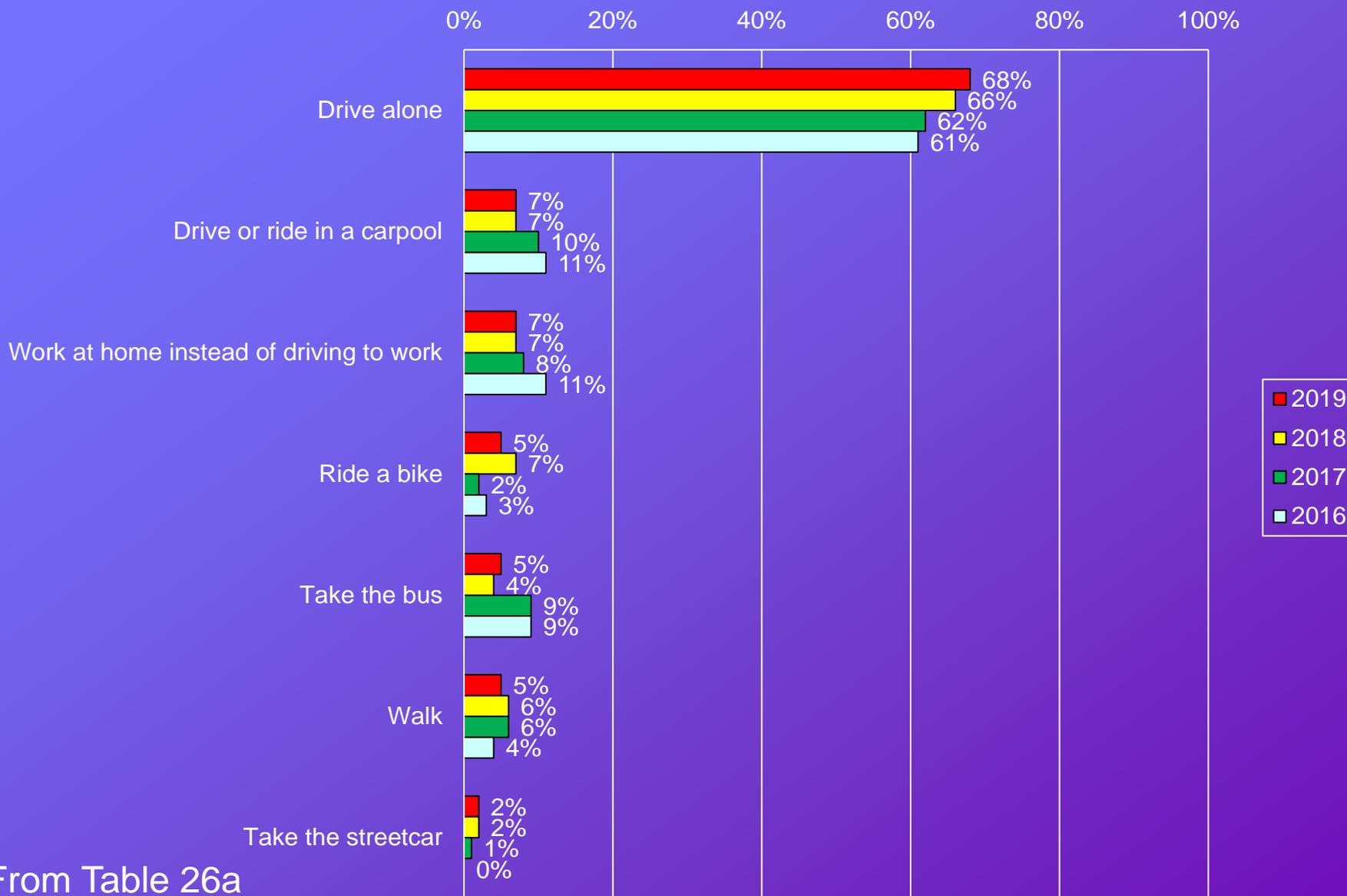
The percentage of those who work only at home has rebounded to 2017 levels (21%), up from 13% last year.



Up from prior years, 75% of full-time employees are working traditional (8 hours/5 days a week) work weeks.



Two-thirds drive alone to and from work or school most often; 7% each are carpooling or telecommuting (consistent with last year).



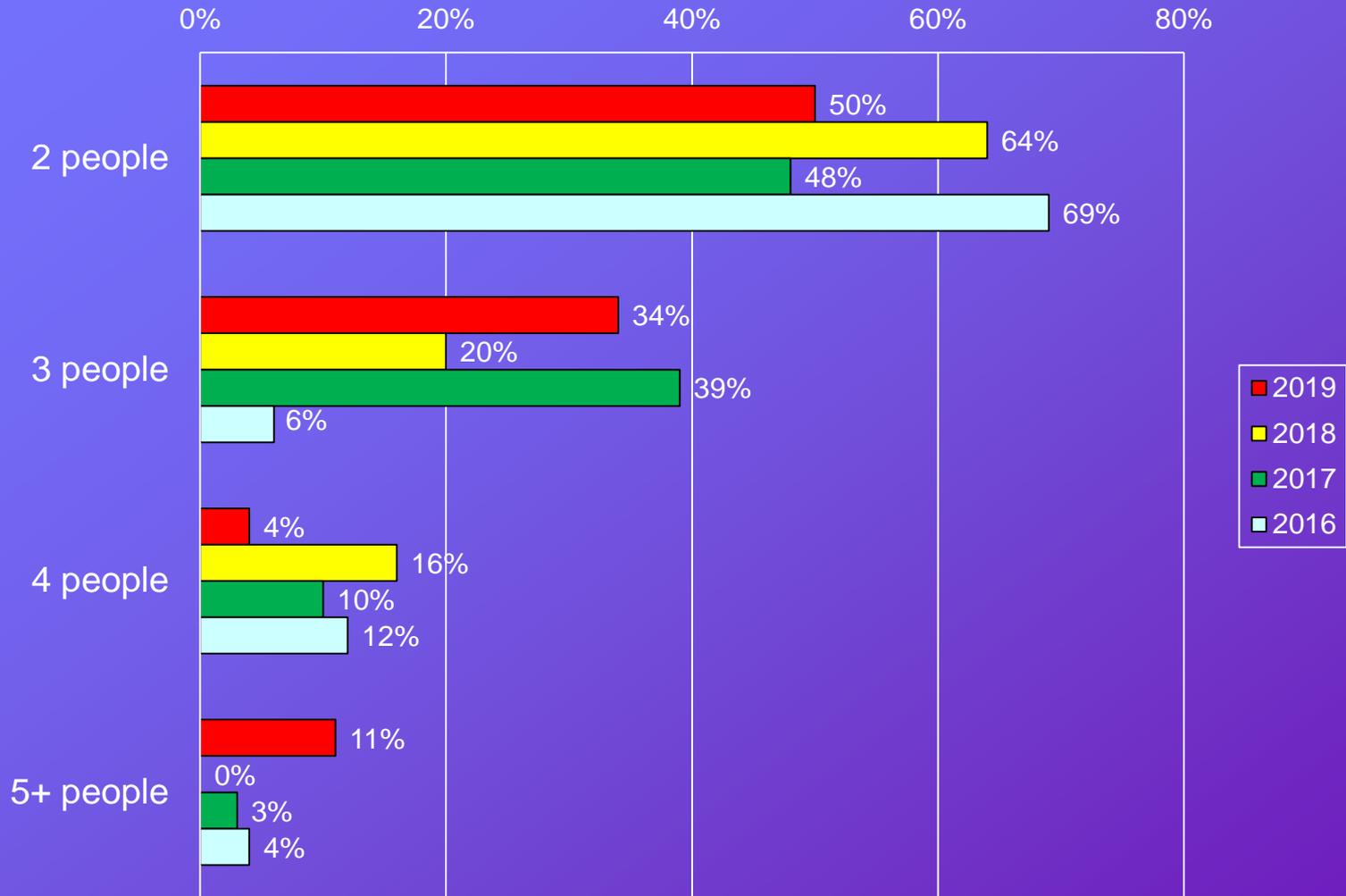
From Table 26a

Driving alone (at least one day/week) is consistent with last year at 80%. The share who carpool/vanpool has decreased (from 23% to 19%), while those who work at home has remained steady (20%).

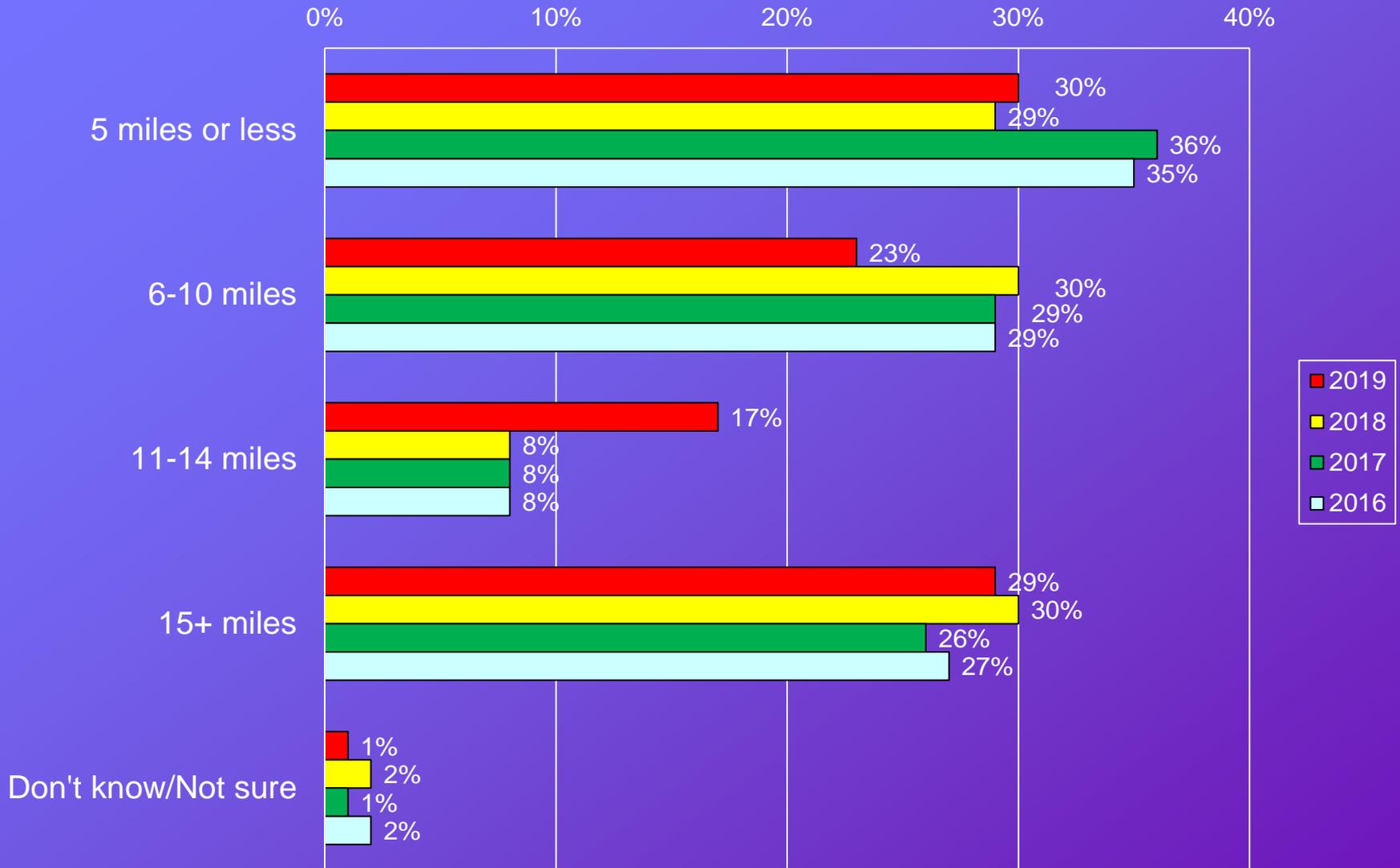
	2018 Usage* (N=240)	2018 Avg Days/ Week	2019 Usage* (N=230)	2019 Avg Days/ Week
Drive alone	81%	4.2 days	80%	4.6 days
Carpool/Vanpool	23%	2.6 days	19%	3.1 days
Walk	21%	2.8 days	20%	2.4 days
Work at home instead of driving to work	19%	3.0 days	20%	2.8 days
Take the bus	14%	2.6 days	12%	2.6 days
Ride a bike	17%	2.9 days	13%	2.5 days
Take the streetcar	11%	2.4 days	4%	3.2 days
Ride a motorcycle	5%	1.5 days	4%	2.9 days

* % who use each mode at least one day/week.

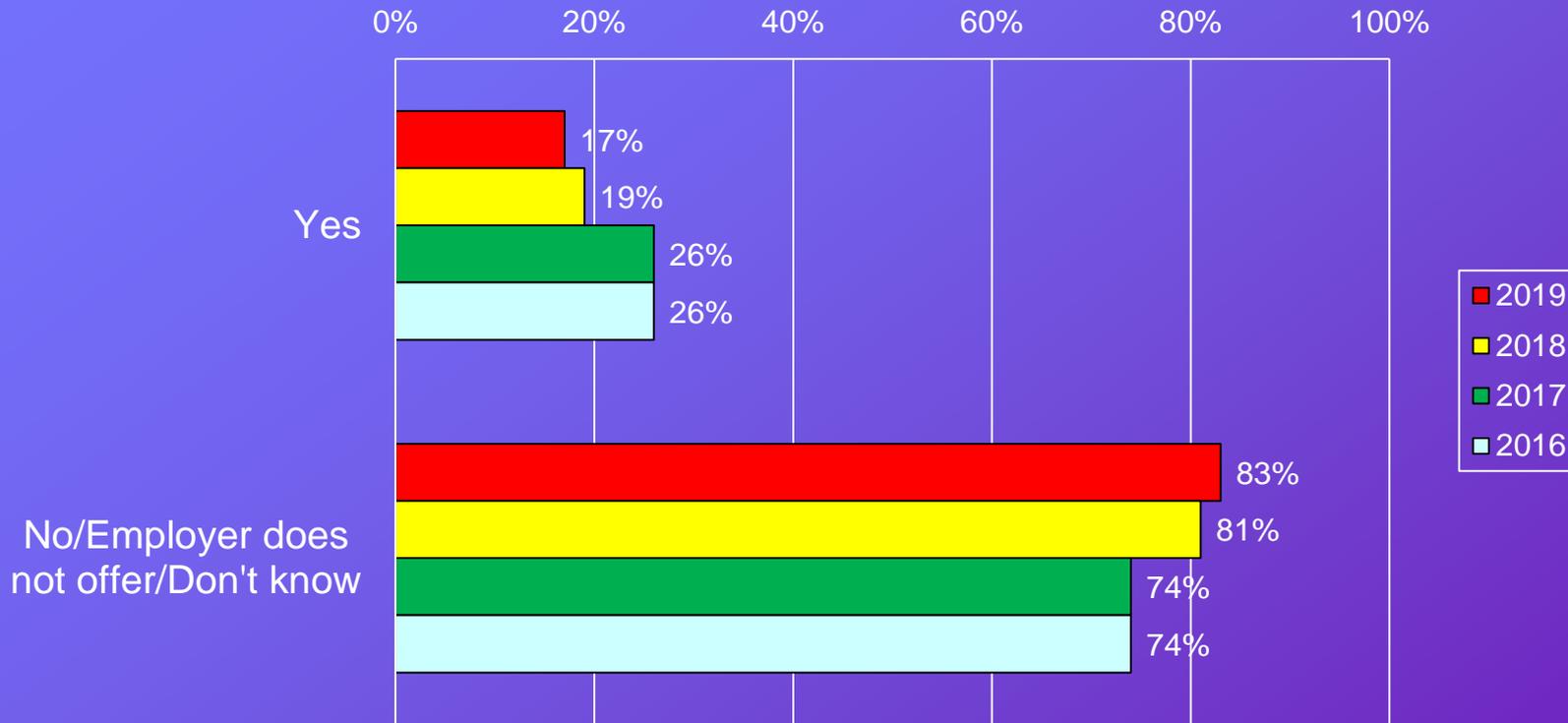
The average carpool size is 2.8 persons, up from 2.5 in 2018.



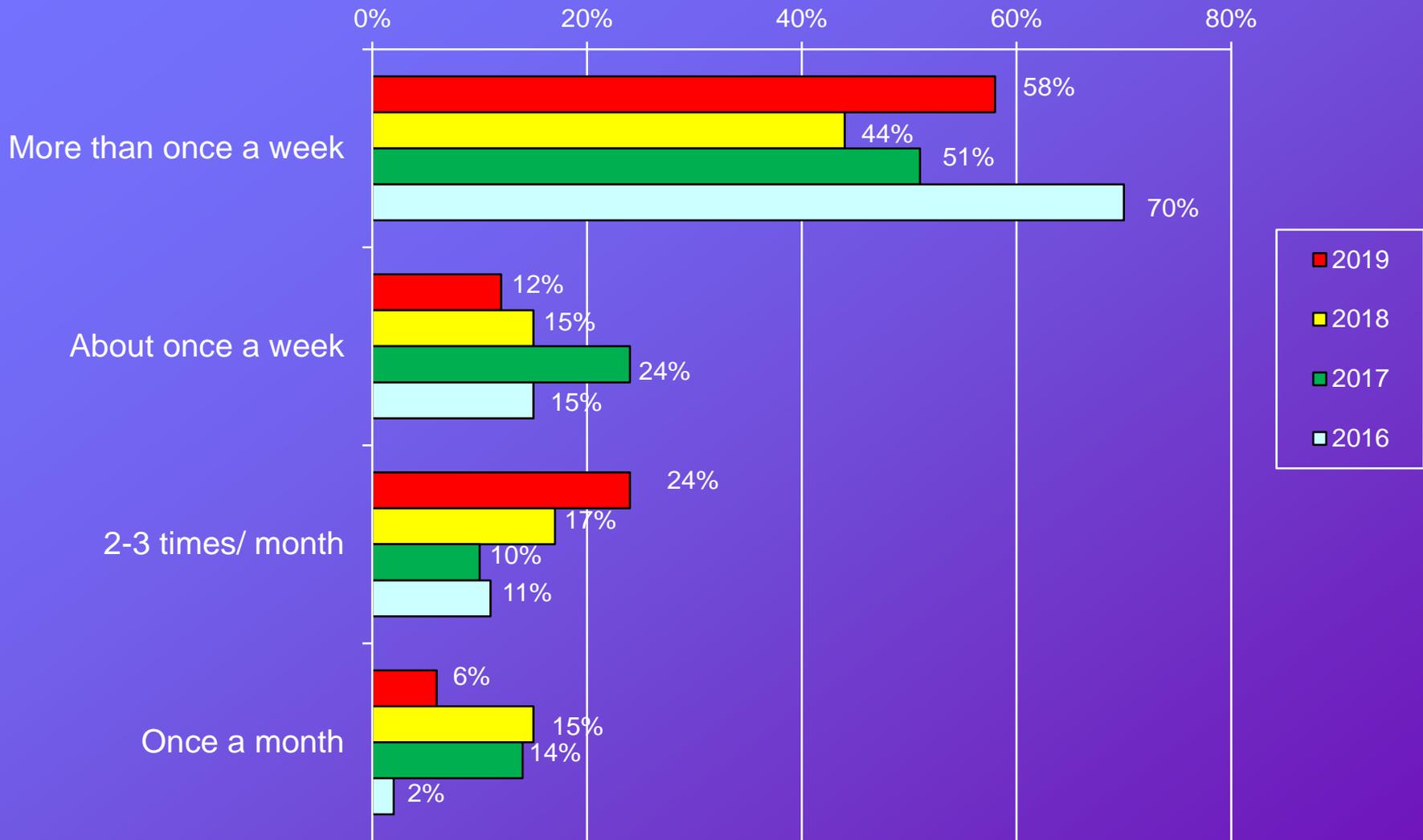
Average commute (regardless of mode used): 11.8 miles – down from 12.6 in 2018.



The incidence of telecommuting is 17%, down slightly from last year (19%).



Among those who do, 70% telecommute at least once a week, including 58% who do so more than once a week.



Tracking Summary of Estimated Number of Daily Commuter Miles
Saved Through Alternate Modes

<u>Year</u>	<u>Total Employed (Non-Home- Based)/ Students</u>	<u>% Single- Occupant Vehicle Commute 1+ Days/ Week</u>	<u>Average Single- Occupant Auto Commute Distance</u>	<u># of Commute Miles Driven/ Not Driven</u>	<u># of Vehicle Miles Saved Daily</u>	<u>% of Miles Saved Through Alternate Mode Use</u>
2019	430,438	80%	12.5	9,691,879	2,877,389	30%
2018	455,682	81%	12.4	10,809,324	4,141,734	38%
2017	420,190	76%	14.5	10,276,836	3,569,409	35%

The decrease in the percentage of miles saved is due to a combination of the lower share of those who report working outside the home (79%) and reductions in use (both overall and average days) of some alternative modes. Overall, 10.3% fewer miles are being traveled – in part because of the decrease in non-home-based employees (which results in fewer employed persons who have commute miles to calculate).

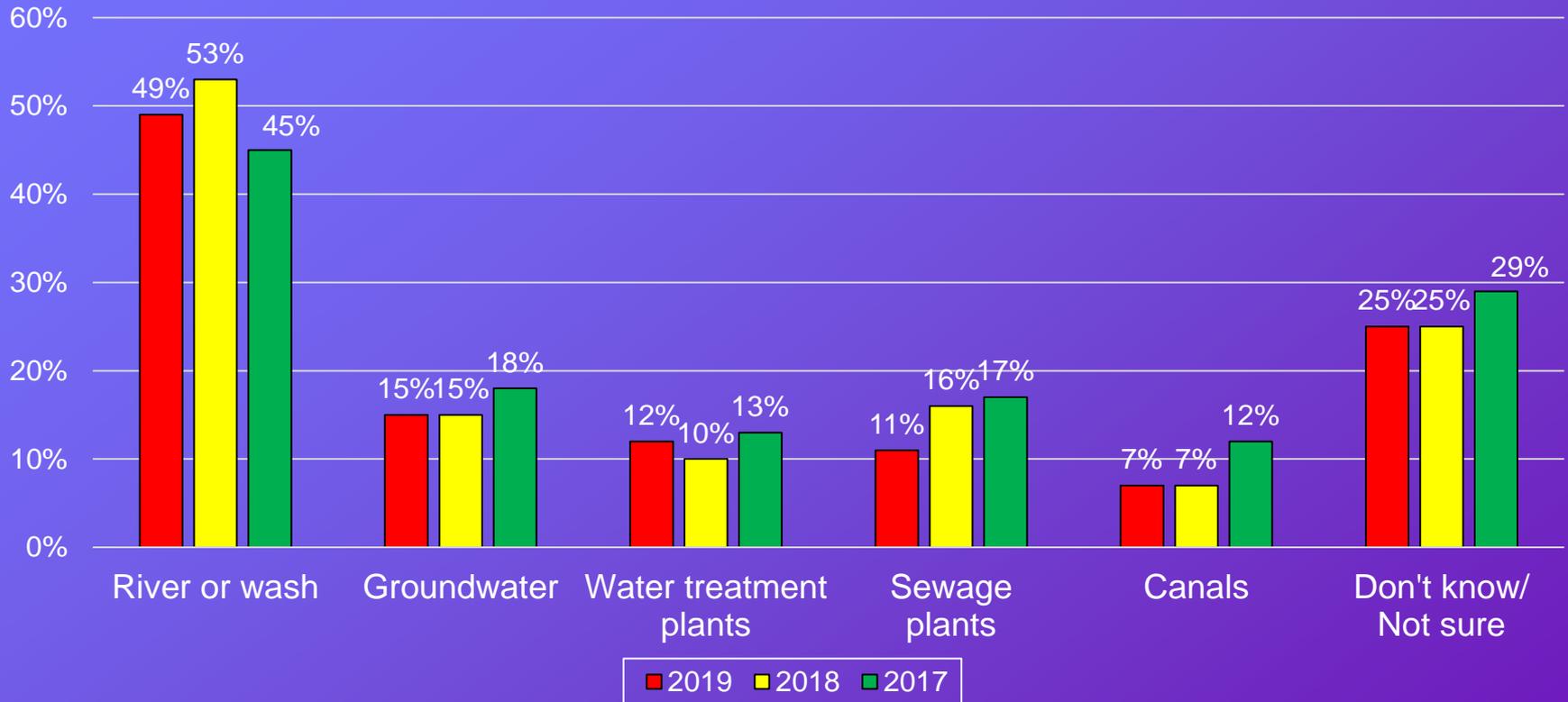
2019 Estimated Number of Shopping/Leisure Miles
Saved Through Alternative Modes

	<u># Daily Trips</u>	<u>Average Miles</u>	<u>Total Miles Traveled</u>	<u>Miles Saved</u>	<u>% Miles Saved Through Alternate Mode Use</u>
Shopping	398,487	5.00	1,976,496	571,259	29%
Leisure	1,518,736	5.78	8,550,058	2,979,102	35%

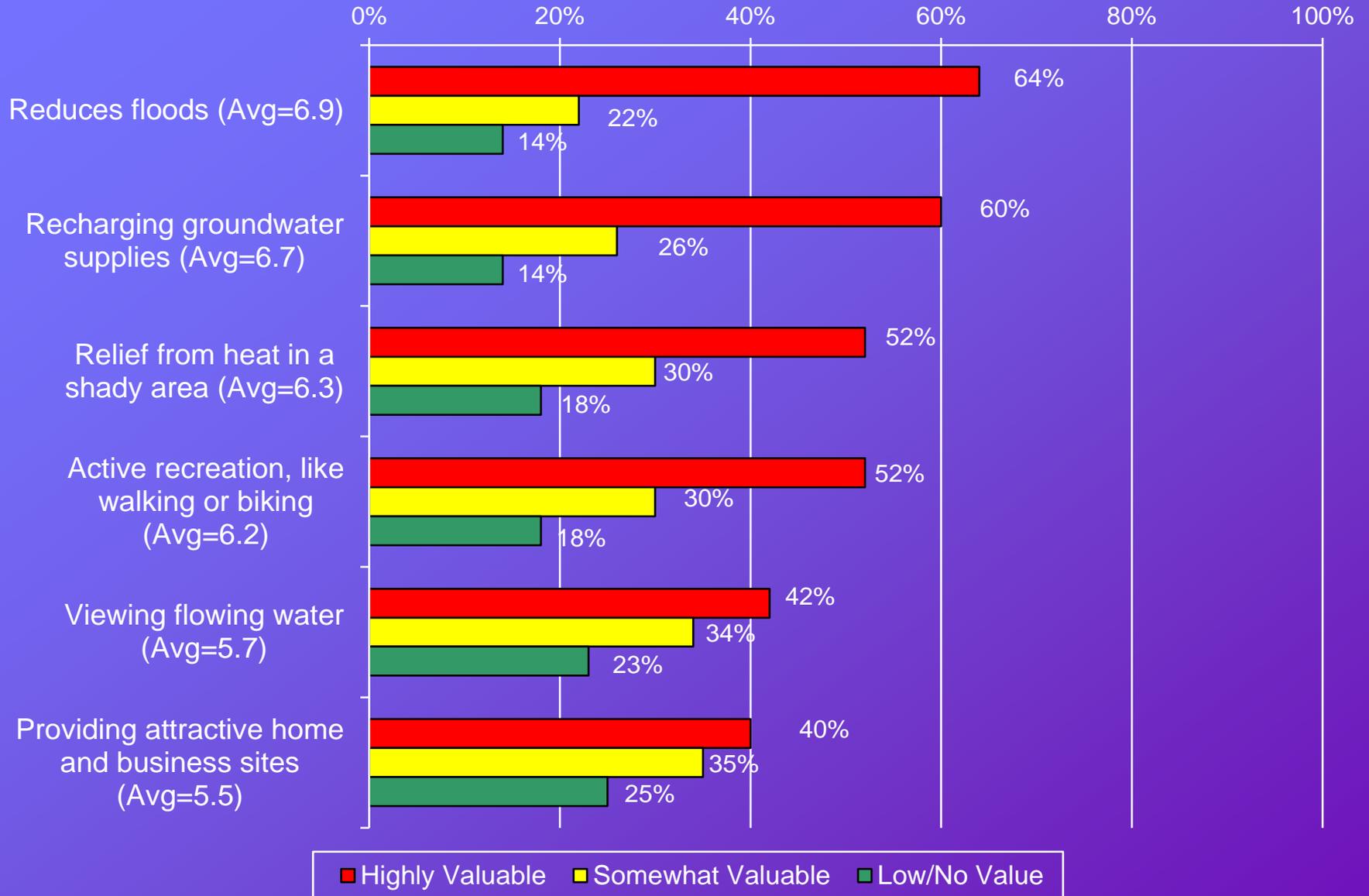
We estimate that the reduction of single-occupant vehicles commuting through the use of alternative methods of travel for **shopping** saves 571,259 vehicle miles per day, or 29% of total miles driven/not driven (down from 30% in 2018, due primarily to increased levels of single passenger vehicle travel). The number of **leisure** travel miles saved daily is 2,979,102 – 35% of total miles driven/not driven (down from 37% last year). These compare to a savings of 2,877,389 vehicle miles per day in **travel to work or school** (or 30% of total miles driven/not driven).

Stormwater Perceptions and Practices

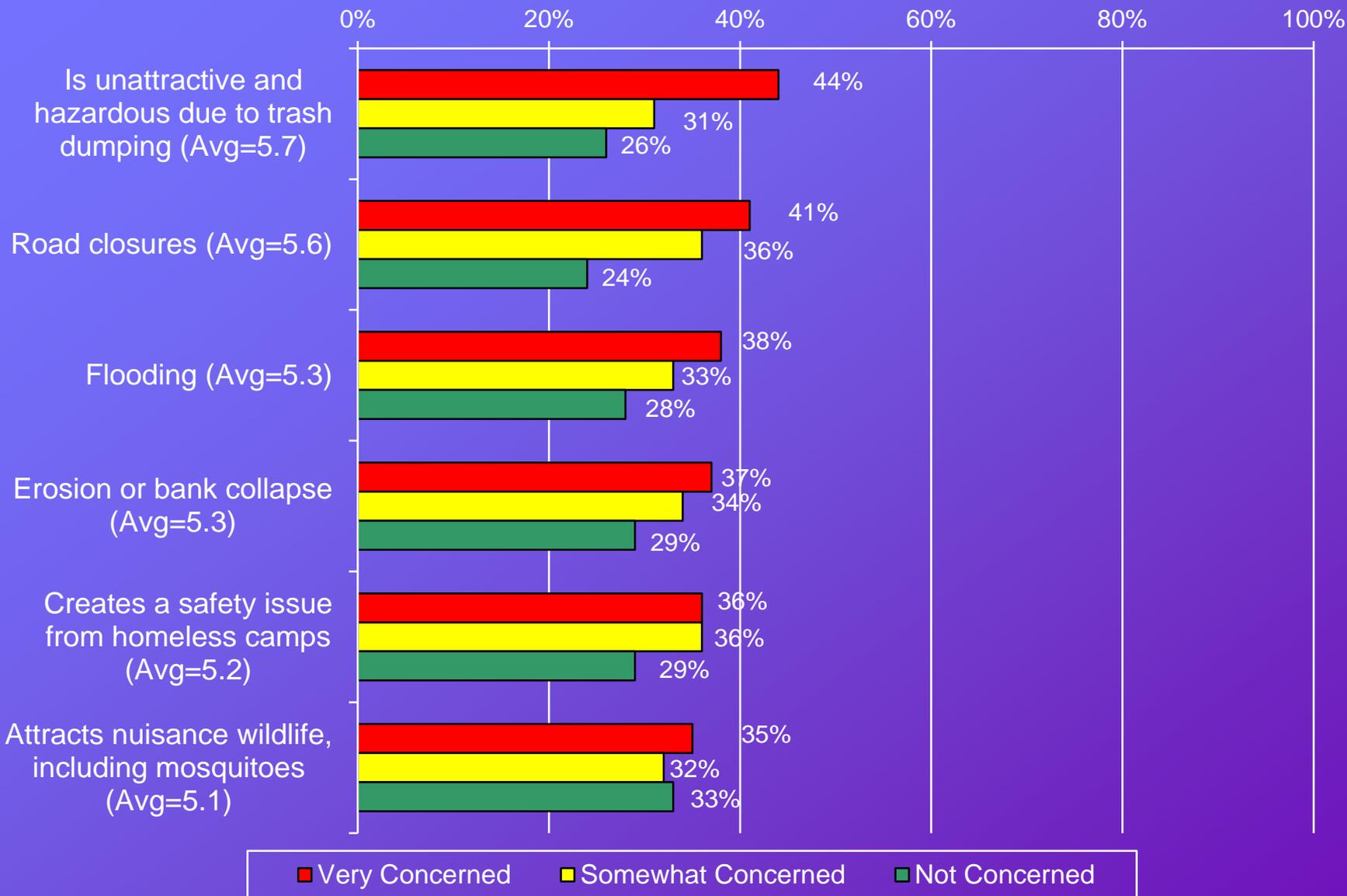
Once again, the largest share (49%) think that the stormwater that goes into storm drains ends up in a river or wash. Consistent with last year, one of four do not know where stormwater goes.



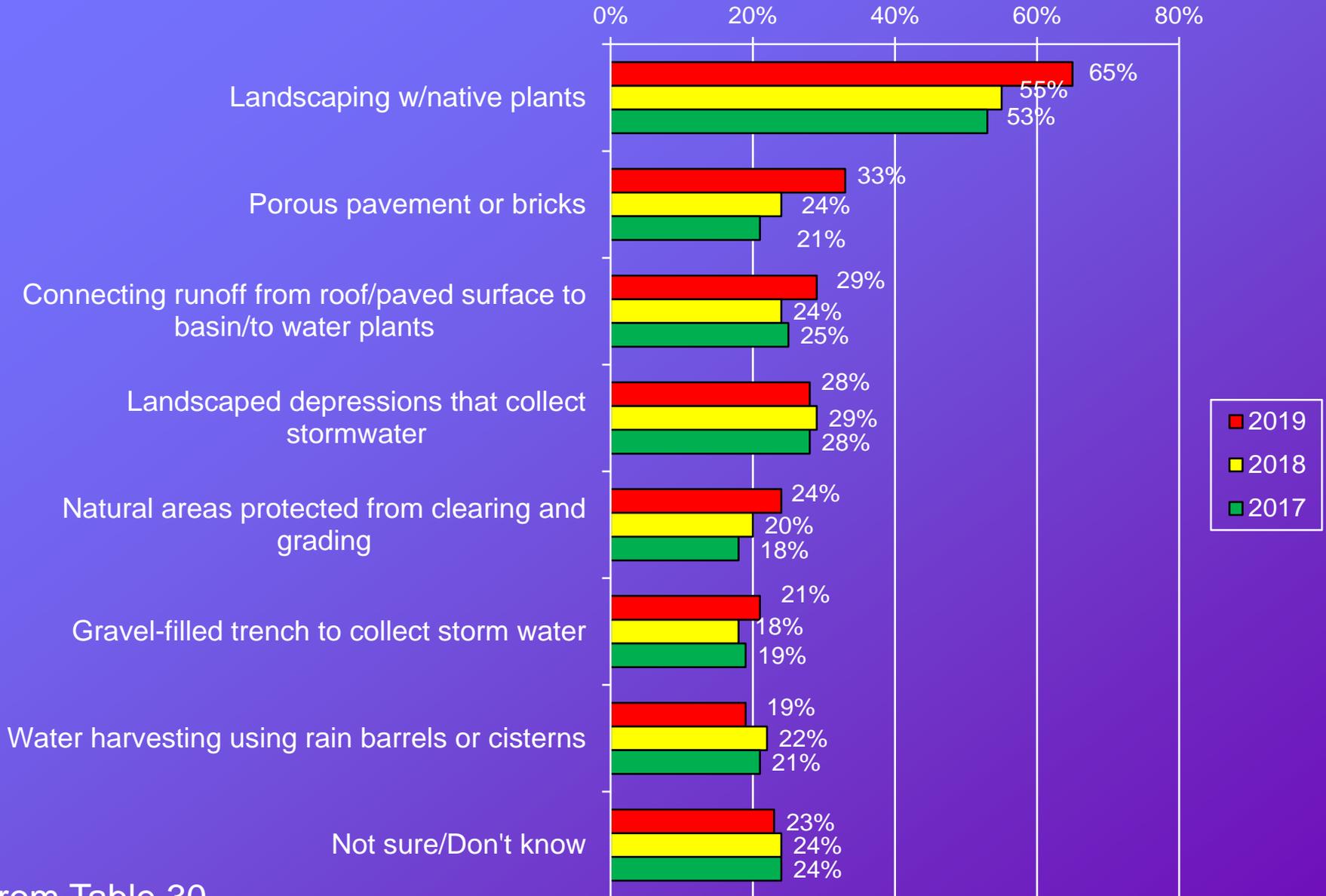
Six of ten or more say that reducing floods or recharging groundwater supplies are the most valuable uses for areas near a wash.



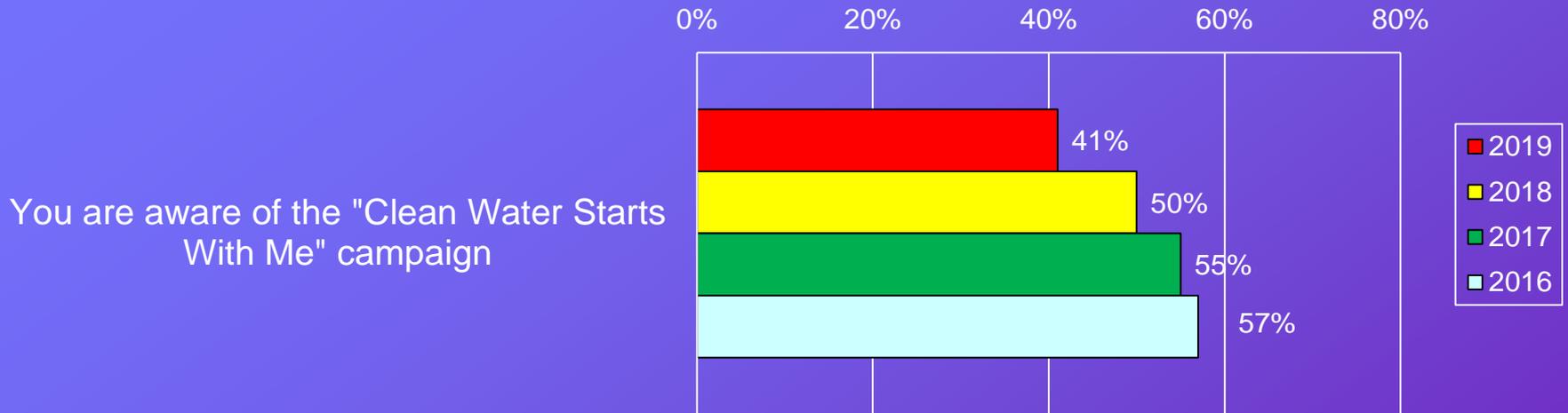
The potential risks of areas near a wash of greatest concern are unattractive/hazardous trash dumping and road closures.



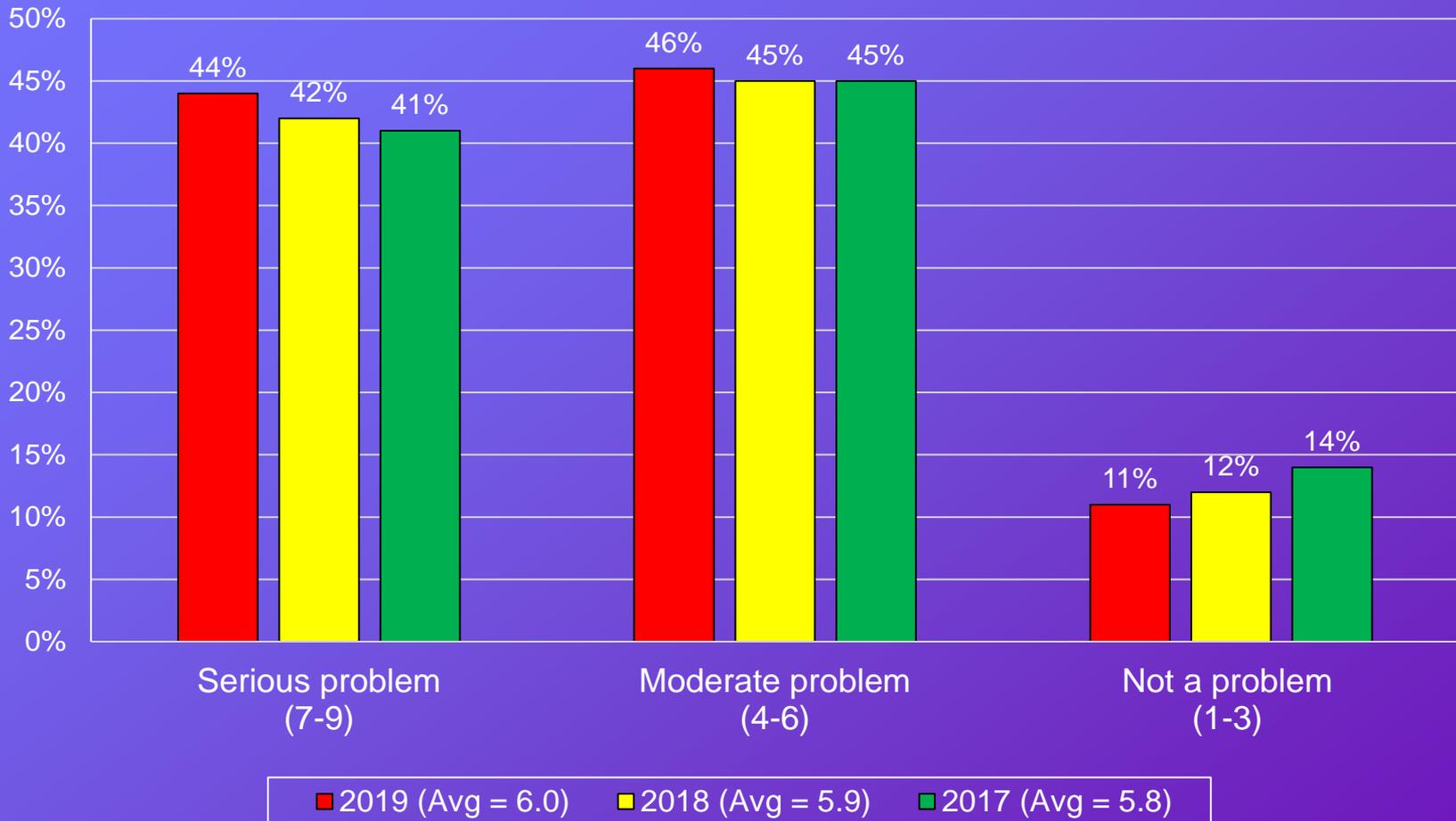
By far, the most common Green Infrastructures in homes/businesses continues to be landscaping with native plants (65%).



Awareness of the “Clean Water” campaign/slogan is progressively lower from previous years.



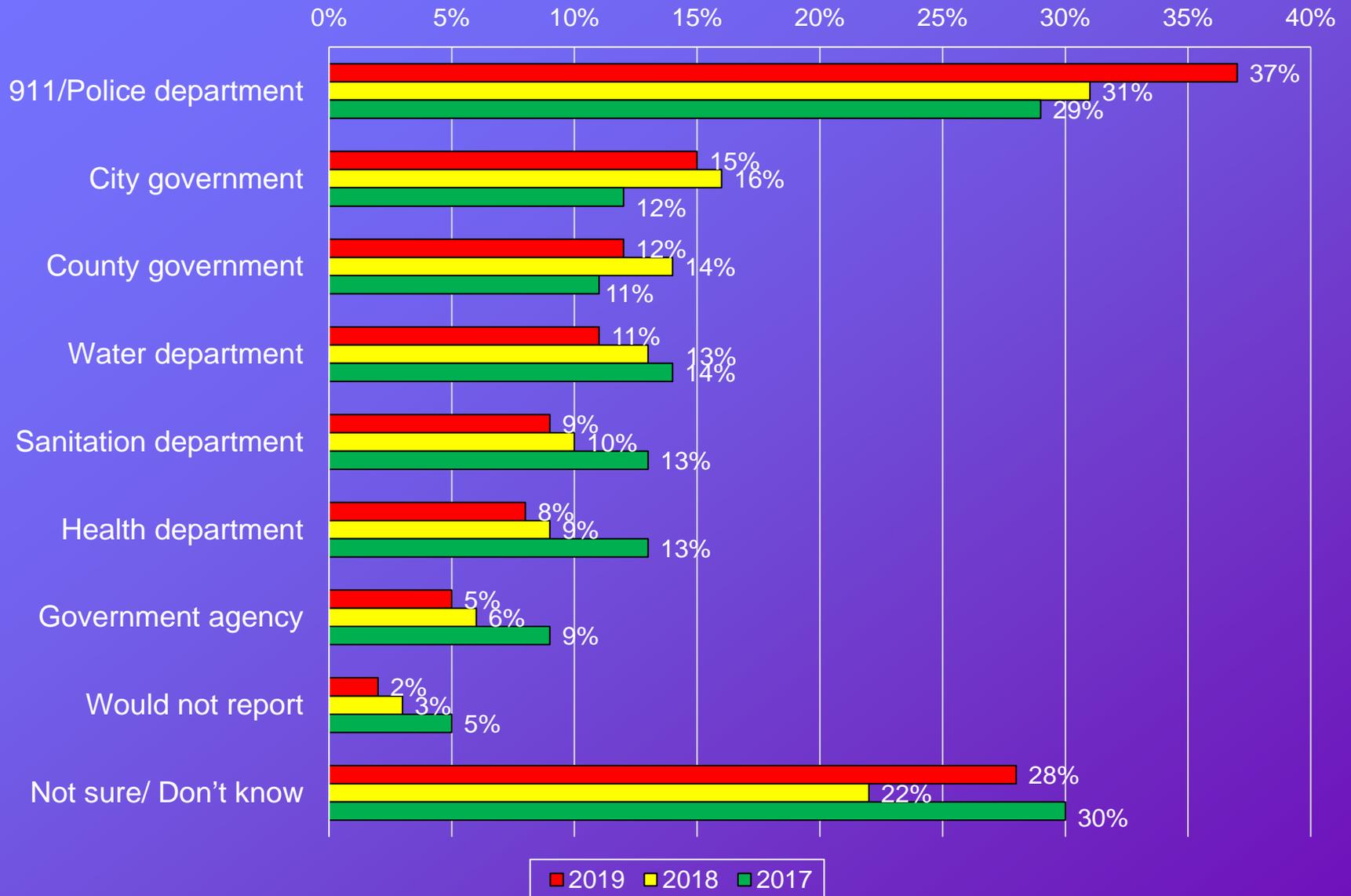
Similar to recent surveys, fully 90% of respondents indicate that there is a “serious” (44%) or “moderate” (46%) problem “in the Tucson area with polluting materials entering storm drains.”



As in prior surveys, the seriousness of each factor as a contributor to the stormwater pollution problem is directly related to the overall perceived degree of a stormwater pollution problem in the Tucson area.



Seven of ten would contact an agency if they witnessed someone dumping trash or chemicals into a storm drain or wash and wanted to report it. Most of the rest (28%) are unsure of who to contact.



Tracking Stormwater Perceptions

- ✓ 49% know stormwater goes to washes, down just 4% from last year's record high (53%).
- ✓ 19% believe stormwater goes to water treatment plants or canals, up 2% from last year (17%).
- ✓ 25% do not know where stormwater runs (these tend to be 36 to 45 or 66+ year-olds, as well as 6-to-10 year residents).
- ✓ The two uses of areas near a wash with the highest perceived value are "reduces floods" (64% "highly valuable") and "recharging groundwater supplies" (60% "highly valuable").

Tracking Stormwater Perceptions

- ✓ The two greatest concerns about areas near a wash are being "unattractive and hazardous due to trash dumping" (44% "very concerned") and potential road closures (41% "very concerned").
- ✓ More than ever are landscaping with native plants (65% versus 52%-55% in past years).
- ✓ Four of ten believe animal waste is not a problem.
- ✓ 28% are unsure of the government entity to call, compared to 22% last year. These tend to live in the Northwest area.

Questions?