EVALUATION OF THE 2012-2013 PIMA COUNTY CLEAN AIR CAMPAIGN AND BASELINE STORM WATER ISSUE AWARENESS SURVEY

(June, 2013)

Prepared for:

PIMA COUNTY DEPARTMENT OF
ENVIRONMENTAL QUALITY

Tucson, Arizona

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(June, 2013)

Introduction and Goals

This Campaign Effectiveness Travel Behavioral Study, conducted for the PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY, was designed to evaluate the specific effectiveness of the 2012-2013 Clean Air Campaign, as well as analyze the overall effectiveness of the air quality media campaign after 23 campaign sessions. New to the current study, the survey also measured baseline awareness/knowledge related to storm water and hazardous waste issues.

Areas of Investigation – The tracking survey was implemented and the results analyzed so as to determine the success of the Campaign in accomplishing its objectives, including:

1. Determining current travel behavior (commuting/ telecommuting/compressed work weeks) in Pima County and measuring changes from previous studies.

2. Increasing long-range awareness that motor vehicles are the primary source of air pollution and that effective long-term solutions to air quality problems will involve reducing single occupant motor vehicle trips.

3. Determining the present and potential use of alternate transportation modes, with specific emphasis on carpooling and employer encouragement of alternative modes. Estimating the number of daily commuter miles saved through alternative modes.

4. Assessing the awareness and perceptions of air quality problems in Tucson and what is known about air pollution. Learning whether children are talking about or bringing home materials from school about improving air quality. Determining the actions, if any, taken to help reduce air pollution.

5. Measuring the awareness of the Clean Air Program in Pima County and various clean air special events or activities.

6. Determining a baseline of awareness related to where storm water that flows into storm drains ends up. Measuring perceived seriousness of problem of polluting water entering storm drains – as well as the degree to which specific pollutants contribute to the problem of storm water pollution. Estimating the implementation of low impact development practices in homes and businesses.

7. Assessing baseline usage of methods of disposal of items such as household chemicals, automotive fluids and lawn & garden chemicals. Determining government entity most likely to be contacted in the event of witnessing the dumping of trash or chemicals into a storm drain or wash.

Methodology Overview – To accomplish the goals of this study, a random sampling of 500 men and women, 16 years of age and older, in the Pima County area was interviewed by telephone during early June 2013. The specific procedures used to select the sample are explained in detail in the Appendix of this report.

Details of the Findings

Profile of Respondents

Interview Language – Consistent with past studies, the vast majority of interviews were conducted in English (98%). Ten survey respondents (2% overall, unchanged since 2011) requested that their interview be conducted in Spanish by a bilingual interviewer. All ten Spanish-language interviews were conducted among self-identified Hispanics. There were four Spanish interviews each in the Central and South zip code zones, with the remaining two in the Northwest area. (Refer to Table 3 for zip code zone definitions.)

Table 1 Type of Interview

	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
English	98%	99%	96%	99%	99%	98%	**98%**
Spanish	2%	1%	4%	1%	1%	2%	**2%**
	N=500	N=502	N=502	N=503	N=402	N=403	**N=504**

Question: Would you feel most comfortable if this interview is conducted in Spanish, English or does it make no difference?

Self-Identified Ethnicity – Once again, there were sampling quotas with respect to ethnicity (based on household distributions for Pima County). As indicated in Table 2, and in line with sampling quotas, the 2013 sample is comprised of 71% Whites, 24% Hispanics and 6% non-Hispanic minorities (including African-Americans, Native Americans and Asian/Pacific Islanders). As we have found in past surveys, the highest percentage of non-Whites live in the South region zip codes (38% – including 35% Hispanics). Still, there is significant Hispanic representation in the other three zones: East (15%), Northwest (15%) and Central (25%).

Table 2 Racial Background of Respondents

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
White	76%	75%	76%	76%	77%	75%	76%	78%	74%	**71%**
Hispanic	18%	18%	16%	19%	19%	20%	19%	17%	20%	**24%**
African-American	3%	1%	3%	2%	2%	2%	2%	1%	2%	**3%**
Native American	2%	3%	2%	2%	2%	1%	2%	2%	4%	**2%**
Asian, Pacific Islander	1%	2%	2%	1%	1%	2%	2%	2%	1%	**1%**

Question: This survey is intended to reflect the attitudes of all segments of the population. To which of the following ethnic groups do you belong?

Area of Residence – Consistent with past studies, there were geographic sampling quotas based on population density within Pima County. All respondents were placed in one of four geographic zones based on their home zip code (as defined below): Northwest, Central, South or East. In line with the 2013 quotas, there are a few more in the Central region (30%) than the South (29%) or Northwest (27%) zips. The balance (14%) are East area residents. As we have found in past years, residents in the East region are *least* likely to perceive that Tucson has a "major" air quality problem (7% versus 22%-35% in the other zip code areas). (Refer to Table 18 for perceptions of air quality in Tucson.)

Table 3 Area of Residence

	06/01 total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Central 85710 85711 85712 85716 85718 85719	n/a	31%	32%	29%	26%	28%	27%	29%	28%	**30%**
South 85321 85614 85622 85629 85634 85641 85701 85706 85707 85708 85713 85714 85735 85736 85746 85756 85757 85341 85601 85633 85639	n/a	24%	22%	32%	32%	31%	27%	30%	28%	**29%**
Northwest 85653 85654 85658 85704 85705 85737 85739 85741 85742 85743 85745 85755 85652 85738	n/a	29%	25%	25%	28%	25%	29%	26%	28%	**27%**
East 85619 85715 85730 85747 85748 85749 85750	n/a	16%	19%	14%	15%	16%	17%	16%	16%	**14%**
		N=508	N=1006	N=500	N=502	N=502	N=503	N=402	N=403	**N=504**

	Air Quality Problem		
	Major	Moderate	Minor
Central 85710 85711 85712 85716 85718 85719	35%	28%	35%
South 85321 85614 85622 85629 85634 85641 85701 85706 85707 85708 85713 85714 85735 85736 85746 85756 85757 85341 85601 85633 85639	35%	26%	26%
Northwest 85653 85654 85658 85704 85705 85737 85739 85741 85742 85743 85745 85755 85652 85738	22%	30%	25%
East 85619 85715 85730 85747 85748 85749 85750	7%	17%	14%
	N=85	N=275	N=121

Gender – All Pima County residents randomly contacted to participate in this survey were further randomized within households by conducting the interview with "the male or female in your household who is 16 or older and most recently celebrated a birthday." Also consistent with prior studies, there was only one interview conducted per household. Similar to recent years, more respondents are women (55%) than men (45%).

Table 4 Gender of Respondents

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Men	50%	49%	41%	45%	46%	46%	44%	47%	44%	**45%**
Women	50%	51%	59%	55%	54%	54%	56%	53%	56%	**55%**

Question: For this survey, we need to speak with the male or female in your household who is sixteen years old or older and most recently celebrated a birthday. Are you that person?

Age Category – A slight majority of survey respondents (52%) are 26 to 55 years of age. This is somewhat younger than the 2011 study (where one-half were 36 to 65). Among the rest in the 2013 survey, 35% are 56 or older – while the remaining 13% are 16 to 25. The distribution of 26 to 55 year-olds is highest in the Northwest zips (69% versus 58%-59% in the East and Central regions). Those 66+ (21% of the sample) are more apt to reside in the South zips (42%).

Table 5 Age of Respondents

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
16 to 25	14%	17%	12%	15%	15%	13%	14%	10%	10%	**13%**
26 to 35	11%	15%	14%	13%	16%	18%	16%	17%	15%	**19%**
36 to 45	19%	20%	15%	16%	19%	17%	17%	20%	19%	**19%**
46 to 55	20%	20%	19%	14%	14%	13%	16%	17%	16%	**14%**
56 to 65	15%	12%	16%	16%	13%	13%	14%	14%	15%	**14%**
66 to 75	12%	8%	12%	16%	15%	16%	14%	15%	17%	**15%**
76 or over	9%	8%	11%	9%	8%	9%	8%	6%	8%	**6%**

Question: Please stop me when I read the age category you belong to. Are you...

Length of Residence – As indicated in Table 6, 62% of respondents have lived in Pima County for 11 or more years. This is down from 73% in 2011, but consistent with 2007-2008 findings (60%-65%). Long-term (11+ years) residents are more apt to live in the Northwest or Central zip codes.

Among the rest, 23% are 6-to-10 (14%) or 2-to-5 (9%) year residents – while 6% are "new" residents (for less than two years). "New" Pima County residents are represented in each of the zip code regions (with the highest concentration in the East area). The remaining 8% (more often South zone denizens) are part-year residents.

Table 6 Length of Residence in Pima County

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Part year	6%	4%	5%	6%	9%	5%	6%	2%	3%	**8%**
Less than 2 years	6%	7%	n/a	5%	9%	4%	6%	4%	2%	**6%**
2 to 5 years	15%	15%	n/a	10%	18%	10%	15%	16%	10%	**9%**
6 to 10 years	14%	12%	n/a	10%	14%	11%	13%	12%	12%	**14%**
11 or more years	57%	57%	n/a	69%	49%	70%	60%	65%	73%	**62%**

Question: Do you live in Pima County all year or are you a part-year resident?
Question: How many years have you lived in Pima County?

Household Member With a Breathing-Related Medical Condition – Overall, 37% of respondents indicate that someone in their household is impacted by a breathing-related medical condition. This is up from 2011 (33%), but highly consistent with 2007-2008 findings (37% each). Allowing for multiple mentions, 19% indicate that they themselves (that is the respondent interviewed) have a breathing-related condition – while 28% report that children (12%) or other household members (16%) are impacted.

There is a nearly equal distribution of households affected by a breathing-related medical condition across geographic region. Consistent with previous findings, there is a direct relationship between the incidence of a household being impacted by a breathing-related medical condition and the perception of a progressively more serious air quality problem in the Tucson area.

Table 7 Household Member With Breathing-Related Medical Condition

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Yes	43%	30%	n/a	36%	34%	40%	37%	37%	33%	**37%**
Respondent	(13%)	(13%)	n/a	(17%)	(16%)	(16%)	(15%)	(19%)	(14%)	**(19%)**
Children	(12%)	(10%)	n/a	(11%)	(11%)	(12%)	(14%)	(11%)	(12%)	**(12%)**
Other family member	(18%)	(12%)	n/a	(16%)	(14%)	(19%)	(19%)	(17%)	(15%)	**(16%)**
No	57%	70%	n/a	64%	65%	59%	62%	62%	66%	**62%**
Don't know/ Not sure	–	–	n/a	0%	1%	1%	1%	1%	1%	**1%**
	n/a	n/a	n/a	N=500	N=502	N=502	N=503	N=402	N=403	**N=504**

Question: Do you, your children or any other family member suffer from a breathing-related medical condition – such as asthma, emphysema, lung disease, etc.? If yes, who?

Number of Motor Vehicles Owned or Leased – Two-thirds of households surveyed have two or more vehicles owned or leased, down slightly from 70% in 2011. However, the decline is evident only among two-vehicle households (from 46% to 40%) – while 3+ vehicle households have increased slightly (from 24% to 27%). Another 28% are single-vehicle households (up from 25% in 2011). The balance (6%, consistent with 4%-6% in recent years) indicate that no one in their household owns or leases a motor vehicle. Those without any motor vehicle are more apt to live in the Central zips. Central or South region residents are more apt to have one motor vehicle, while Northwest or East denizens are more likely to be dual-vehicle households. The incidence of multi-vehicle (3+) households is lower only in the Central zips (18% versus 28%-34% elsewhere).

Table 8 Number of Motor Vehicles Owned or Leased

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
No working cars	4%	4%	n/a	7%	3%	2%	4%	6%	5%	**6%**
One	30%	30%	n/a	34%	28%	30%	27%	30%	25%	**28%**
Two	40%	40%	n/a	36%	42%	43%	44%	40%	46%	**40%**
Three or more	25%	22%	n/a	23%	27%	24%	26%	24%	24%	**27%**

Question: How many motor vehicles in working condition are owned or leased by members of your household?

Frequency of Checking Tire Pressure on Vehicle Driven Most Often – Six of ten households with at least one vehicle indicate that they check the tire pressure on the vehicle that they drive most often at least monthly (59%), including 18% who check it weekly. One of four check tire pressure 3 to 4 times a year (26%). Just 4% say they never check their tire pressure. Instead, 5% report checking tire pressure "only as needed" (3%) or when their car is serviced (2%).

Significantly, the incidence of checking tire pressure weekly is directly related to the perception of a more serious air quality problem in Tucson – and higher among those aware of the Pima County Clean Air program (22% versus 16% of those not aware). South region residents, men and multi-vehicle (3+) households are also more apt to check tire pressure on a weekly basis. Women are more than twice as likely as men to check tire pressure 3-to-4 times year (34% versus 16%, respectively).

Table 8a Frequency of Checking Tire Pressure on Vehicle Driven Most Often

	06/13 Total
Every week	**18%**
Every month	**41%**
3 to 4 times a year	**26%**
Once a year	**3%**
Never	**4%**
Only as needed/Before a trip	**3%**
Only when car is serviced	**2%**
Not sure/Don't know	**2%**
	N=472

Question: Thinking about the vehicle you drive most often, would you say that you check the tire pressure...

Education Level – Highly consistent with recent surveys, 71% of 2013 respondents have at least some college level education. This includes 29% who are college graduates (up slightly from 28% in 2011) and 14% with some graduate level work or an advanced degree (down from 18%). In line with 2011 findings, the balance (27%) are high school/trade school graduates (19%) or have less than a high school diploma (8%). Those with a college degree or higher tend to reside in the Northwest (46%) or East (52%) zip code areas.

Table 9 Education Level of Respondents

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Less than high school	11%	10%	5%	12%	5%	10%	8%	8%	9%	**8%**
Completed high school/ Trade school	42%	52%	20%	24%	18%	24%	19%	19%	18%	**19%**
Some college			29%	26%	28%	25%	25%	29%	26%	**28%**
College graduate	25%	19%	28%	24%	29%	23%	31%	27%	28%	**29%**
Some graduate work or graduate degree	20%	13%	19%	13%	20%	16%	16%	15%	18%	**14%**

Question: What was the last grade of school you completed?

Annual Household Income – As indicated in Table 10, 21% refused to divulge their broad annual household income category. This is down from 2011 levels (25% refusal rate), and more in line with 2007-2008 findings (18%-21%). Among those who did provide an income category, the median annual household income is $47,872. This is down from $54,713 in 2011 – due, primarily, to an increase in incomes of less than $25,000 (from 12% in 2011 to 18% now).

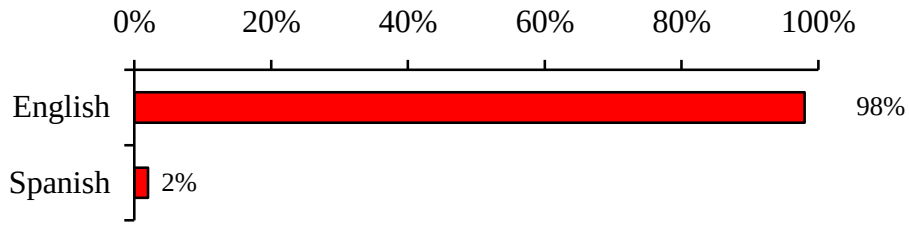
Table 10 Household Income

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Less than $15,000	9%	10%	9%	13%	8%	7%	5%	8%	5%	**9%**
$15,000 to $24,999	14%	15%	14%	14%	10%	12%	8%	9%	7%	**9%**
$25,000 to $39,999	19%	18%	22%	18%	18%	12%	15%	16%	15%	**16%**
$40,000 or more*	44%	41%	53%	32%	48%	49%	50%	49%	47%	**46%**
No answer/Refused	15%	16%	2%	23%	16%	20%	21%	18%	25%	**21%**
* $40,000 to $59,999	20%	19%	23%	14%	19%	20%	16%	19%	13%	**15%**
$60,000 to $79,999	11%	10%	13%	9%	10%	11%	12%	12%	12%	**10%**
$80,000 or more	13%	12%	17%	9%	19%	18%	22%	18%	22%	**21%**

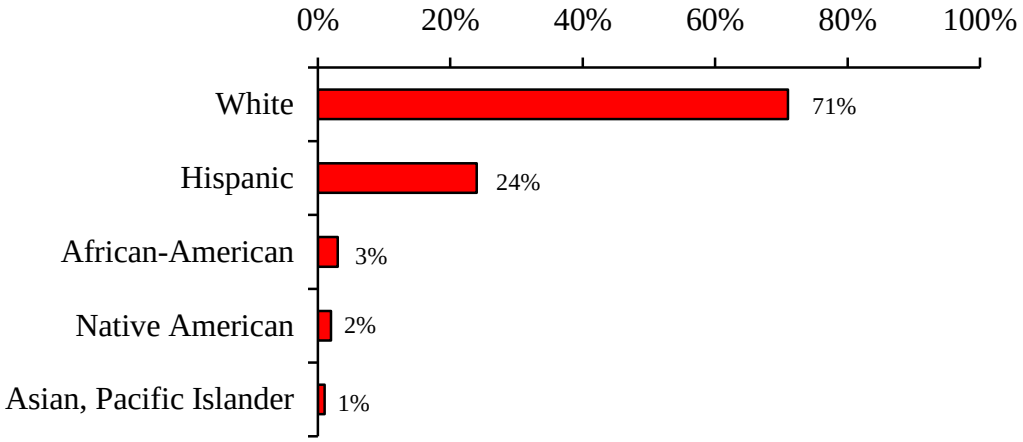
Question: As I read the following categories, please tell me into which group your total annual household income falls. We are not interested in your exact income, just your household income category...from all sources before taxes.

Display 1 **Demographic Profile of Respondents**
(Among the Total Sample)

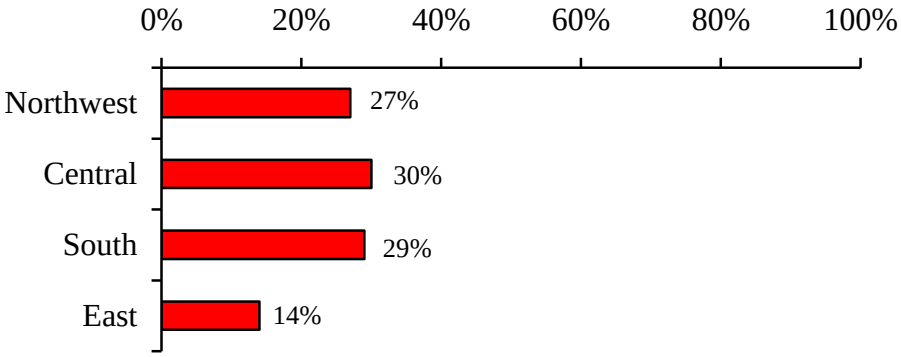
Type of Interview



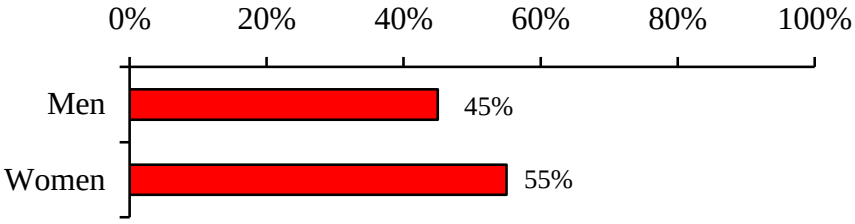
Ethnicity



Area of Residence

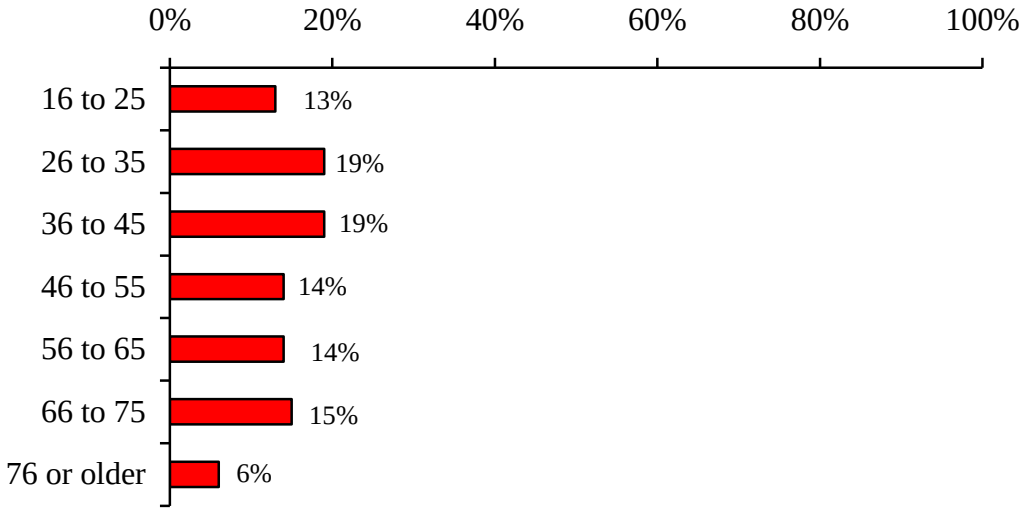


Sex

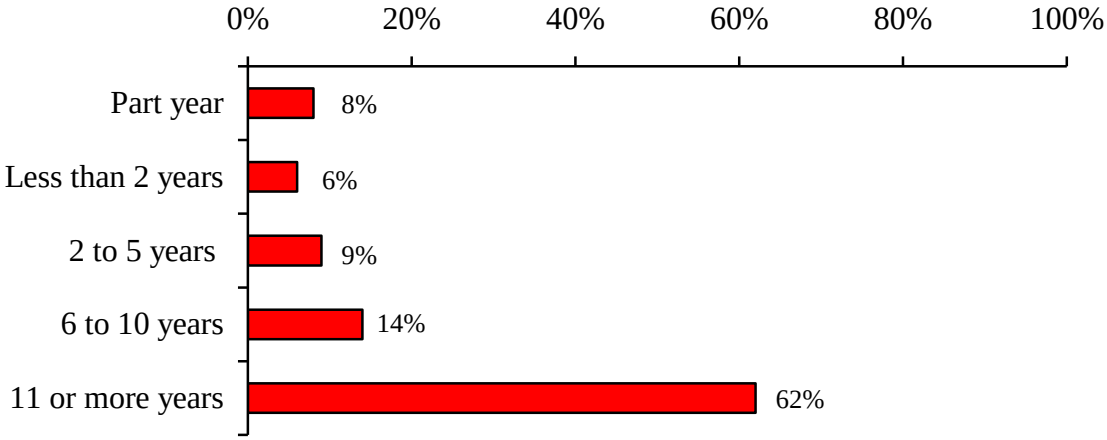


Display 1 (Cont'd) **Demographic Profile of Respondents**
(Among the Total Sample)

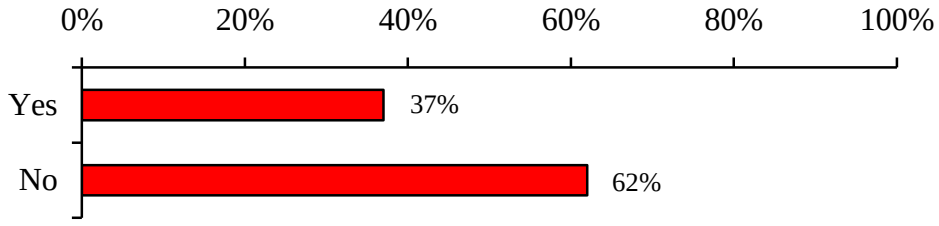
Age



Length of Pima County Residence

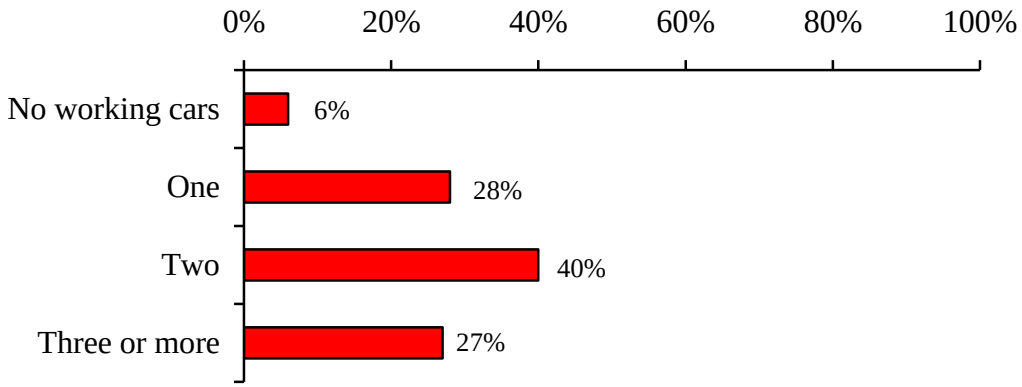


Household Member With Breathing-Related Medical Condition

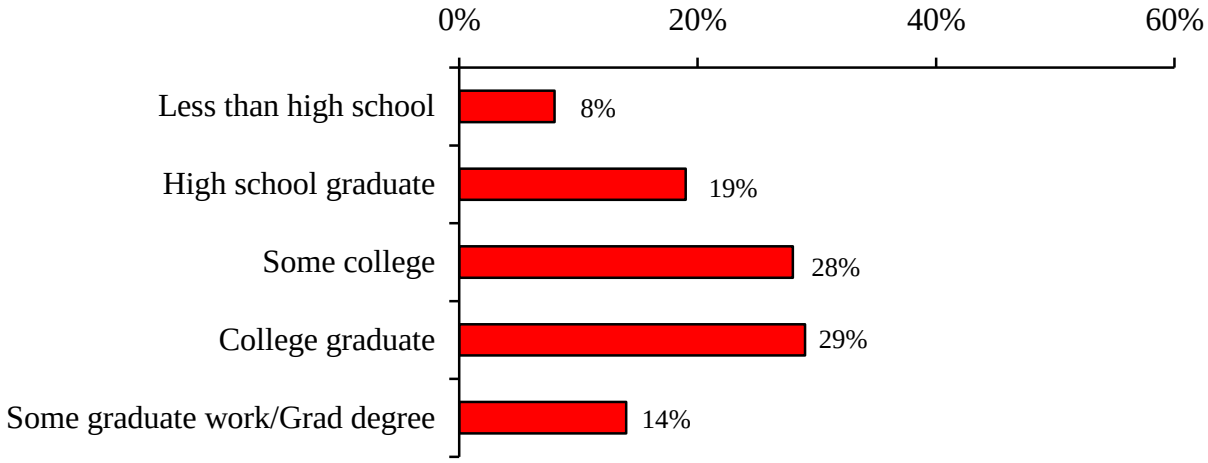


Display 1 (Cont'd) **Demographic Profile of Respondents**
(Among the Total Sample)

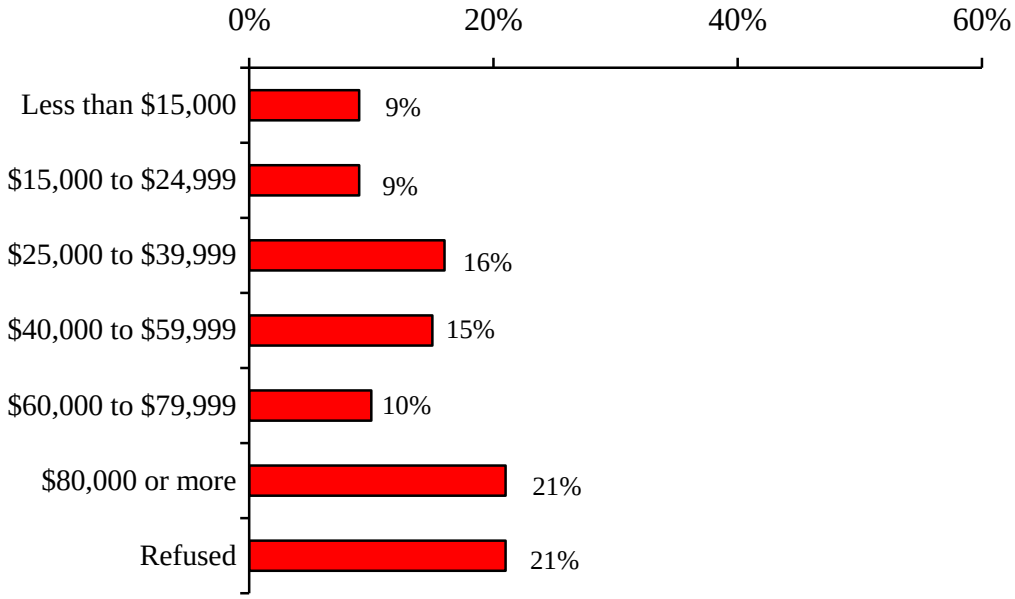
Number of Vehicles



Education Level



Household Income



Awareness of Information About Air Quality/Pollution

Awareness of the Pima County "Clean Air" Program – Overall, 43% are familiar with the Pima County "Clean Air" Program. This is significantly lower than we found in 2011 (52%), but is in line with the 2008 survey (46%). Program awareness is consistent among those who think that Tucson has a "major" (47%) or "moderate" (46%) air quality problem – compared to just 37% of those who perceive a "minor" problem. Geographically, awareness is somewhat lower only in the Northwest zips (39% versus 42%-47% elsewhere). Awareness is higher among women (46% versus 40% of men), 36 to 45 year-olds and Whites (46% versus 36% of non-Whites). Program awareness is marginally higher among the newest (for less than two years) Pima County residents as compared to the most long-term (11+ years) residents (54% versus 47%, respectively) – as well as among households with a progressively higher number of vehicles owned or leased.

Table 11 Awareness of the Pima County "Clean Air" Program

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Yes	55%	53%	43%	48%	53%	59%	59%	46%	52%	**43%**
No	45%	47%	57%	49%	41%	37%	36%	46%	43%	**52%**
Don't know	–	–	–	3%	6%	4%	5%	7%	5%	**5%**
	N=598	N=508	N=1006	N=500	N=502	N=502	N=503	N=402	N=403	**N=504**

	Area				Air Quality Problem		
	Northwest	Central	South	East	Major	Moderate	Minor
Yes	39%	47%	42%	44%	47%	46%	37%
No	58%	47%	54%	49%	48%	50%	60%
Don't know	3%	6%	4%	7%	5%	5%	3%
	N=136	N=150	N=145	N=73	N=85	N=275	N=121

Question: Have you ever heard of or are you aware of the Pima County "Clean Air" Program?

Awareness of Various Clean Air Events or Activities – While fewer indicate an awareness of the Pima County "Clean Air" Program (from 52% to 43% in Table 11), the familiarity of individual events or activities is generally unchanged to slightly lower.

Fully nine of ten are familiar with at least one program event or activity, up slightly from 88% in 2011. And, across-the-board, awareness of specific events continues to be significantly higher among respondents familiar with the "Clean Air" Program.

<u>One-half or more are familiar with three events</u>:

- **"Earth Day Festival and Parade"** (66% awareness, down just slightly from 68% in 2011. Awareness is similar regardless of geography, and elevated among women, non-Whites and the most formally educated [graduate work or an advanced degree]. Familiarity is directly related to the perceived seriousness of Tucson's air quality problem.)

- **"Bike to Work Day"** (54% awareness, down slightly from 57% in 2011. East residents [62% versus 50%-56% elsewhere], women, progressively more long-term residents and those with some college or a 4-year degree are most likely to recall this event.)

- **"Bike Fest"** (48% awareness, down from 53% in 2011. Geographically, recall is lower only in the Northwest zips [40% versus 49%-53% elsewhere]. It is elevated among those who perceive a "moderate" air quality problem and longer-term [6+ year] residents – with no difference in awareness between men and women.)

<u>Three other events elicit awareness of at least 22%, including</u>:

- **"Walk and Roll to School Day"** (36% awareness, up from 34% in 2011. East region residents, women, 36 to 55 year-olds and Hispanics indicate elevated awareness – with no difference between those who perceive a "major" or "moderate" air quality problem.)

- **"Green Living Fair"** (27% awareness, down from 32% in 2011. Awareness tends to be higher among South zip residents and respondents who think Tucson has a "major" or "moderate" air quality problem.)

- **"Bike to the Zoo Day"** (22% awareness, up from 20% in 2011. Familiarity is highest in the Central zips, as well as among 26 to 35 year-olds, Hispanics and those who consider Tucson to have a "moderate" or "major" air quality problem.)

The remaining two "Clean Air" events – **"Pedal the Pueblo"** (new to the current study with 13% recall) and **"Cyclovia"** (11%, down slightly from 13% in 2011) – are familiar to just over one of ten each. "Pedal the Pueblo" is familiar regardless of geographic area (slightly higher in the South zips), while Northwest residents are more apt to recall "Cyclovia."

Table 12 Awareness of Various Clean Air Events or Activities

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
"Earth Day Festival and Parade"	67%	68%	n/a	71%	70%	66%	74%	72%	68%	**66%**
"Bike to Work Day"	50%	45%	n/a	53%	50%	56%	55%	61%	57%	**54%**
"Bike Fest"	–	–	–	–	–	–	–	30%	53%	**48%**
"Walk and Roll to School Day"*	20%	19%	n/a	28%	29%	38%	22%	33%	34%	**36%**
"Green Living Fair"	–	–	–	–	–	–	–	–	32%	**27%**
"Bike to the Zoo Day"	14%	11%	n/a	9%	8%	5%	10%	11%	20%	**22%**
"Pedal the Pueblo"	–	–	–	–	–	–	–	–	–	**13%**
"Cyclovia"	–	–	–	–	–	–	–	–	13%	**11%**
None of these	13%	12%	n/a	13%	11%	12%	10%	7%	12%	**10%**
	N=598	N=508	n/a	N=500	N=502	N=502	N=503	N=402	N=403	**N=504**

	Area				Air Quality Problem		
	Northwest	Central	South	East	Major	Moderate	Minor
"Earth Day Festival and Parade"	64%	68%	65%	67%	74%	66%	63%
"Bike to Work Day"	52%	56%	50%	62%	59%	58%	46%
"Bike Fest"	40%	51%	53%	49%	42%	52%	44%
"Walk and Roll to School Day"*	37%	35%	34%	45%	40%	40%	29%
"Green Living Fair"	18%	28%	35%	26%	31%	28%	21%
"Bike to the Zoo Day"	21%	27%	19%	20%	25%	24%	17%
"Pedal the Pueblo"	14%	11%	16%	11%	18%	14%	7%
"Cyclovia"	18%	11%	7%	7%	7%	14%	7%
None of these	12%	8%	11%	11%	9%	8%	12%
	N=136	N=150	N=145	N=73	N=85	N=275	N=121

* Was "Walk Our Children to School Day" (6/01-5/06).

Question: I am now going to read you some events or activities that are used to promote clean air in the Tucson area. As I read each, simply tell me if you have seen or heard of the event.

Participation of Anyone in Household in a "Clean Air" Campaign Event – Among the nine of ten familiar with at least one "Clean Air" Program campaign event, 17% report that they (or someone in their household) participated in one or more of these activities. This is identical to the record participation level recorded in 2011. There is participation regardless of geography, gender, age or air quality problem perception – with the highest participation levels among Northwest or East region residents, 36 to 45 year-olds and those who perceive a "major" or "moderate" air quality problem. Hispanics, 2-to-5 year Pima County residents, the most formally educated respondents and households impacted by a breathing-related medical condition are also more apt to have participated in a "Clean Air" campaign event.

Table 12a Participation of Anyone in Household in a Clean Air Campaign Event
(Among Those Aware of at Least One Event)

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Yes	9%	8%	n/a	12%	10%	9%	11%	10%	17%	**17%**
No	91%	92%	n/a	86%	86%	88%	86%	88%	82%	**83%**
Don't know	–	–	n/a	2%	4%	4%	3%	2%	1%	**1%**
	n/a	n/a	n/a	N=434	N=447	N=444	N=455	N=374	N=354	**N=452**

	Area				Air Quality Problem		
	Northwest	Central	South	East	Major	Moderate	Minor
Yes	21%	12%	16%	20%	20%	19%	10%
No	79%	88%	82%	80%	80%	81%	90%
Don't know	0%	0%	2%	0%	0%	1%	0%
	N=120	N=138	N=129	N=65	N=77	N=252	N=107

Question: Did you or anyone in your household attend or participate in any of the clean air events in the past year?

Incidence of Changing Routines/Behaviors to Improve Air Quality After Participation in "Clean Air" Events – Among the record-tying 17% of respondents who indicate participation in a "Clean Air" event, three of four (76%) report that they have changed (or are considering actions to change) their daily routines or behaviors to help improve air quality. Among the total sample, this equates to a record topping 11% who indicate a behavior change due to their participation in a campaign event – up progressively from 9% in 2011 and 7% in 2008. Who is most likely to indicate a willingness to change behaviors? Central or South region residents, non-Whites and households impacted by a breathing-related medical condition.

Table 12b Incidence of Changing Routines/Behaviors to Improve Air Quality After Participating in Clean Air Events
(Among Those With a Household Member Who Participated)

	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**	Area			
					North-west	Central	South	East
Yes	65%	81%	57%	**76%**	68%	88%	80%	69%
No	27%	11%	41%	**23%**	32%	12%	15%	31%
Don't know	8%	8%	2%	**1%**	0%	0%	5%	0%
	N=52	N=36	N=61	**N=75**	N=25	N=17	N=20	N=13

	Air Quality Problem		
	Major	Moderate	Minor
Yes	87%	77%	64%
No	13%	21%	36%
Don't know	0%	2%	0%
	N=15	N=47	N=11

Question: After participating in a clean air event, did you or someone in your household take or consider any actions to change your daily routines or behaviors to help improve air quality?

Opinion of Activities/Events to Encourage Use of Other Modes of Transportation – Equaling the record positive mention in 2011, 85% of those aware of at least one "Clean Air" campaign event have a favorable opinion of "events that encourage to use other modes of transportation or work from home instead of driving alone." This includes 45% who are "very favorable" of such events – just shy of the record 46% highly favorable evaluation recorded back in 2008. In the current study, "very favorable" opinions are consistent across geography (somewhat lower only in the East zips) and highest among women (54% versus 34% of men), 56 to 65 year-olds, Hispanics, college graduates and those who perceive that Tucson has progressively more serious air quality problem. Just one of ten have a negative opinion of activities or events to encourage other modes of transportation, down from 13% in 2011.

Table 13

Opinion of Activities/Events to
Encourage Use of Other Modes of Transportation
(Among Those Aware of at Least One Event)

	06/02 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Very favorable	33%	31%	39%	43%	45%	46%	42%	**45%**
Somewhat favorable	45%	50%	39%	40%	39%	36%	44%	**40%**
Not very favorable	9%	9%	7%	4%	5%	5%	7%	**6%**
Not at all favorable	7%	5%	3%	3%	3%	3%	6%	**4%**
Don't know/No answer	6%	6%	11%	10%	8%	9%	1%	**5%**
	n/a	N=434	N=447	N=444	N=455	N=374	N=354	**N=452**

	Area				Air Quality Problem		
	Northwest	Central	South	East	Major	Moderate	Minor
Very favorable	46%	45%	48%	40%	61%	48%	27%
Somewhat favorable	40%	40%	35%	49%	27%	38%	53%
Not very favorable	1%	7%	7%	9%	8%	6%	4%
Not at all favorable	6%	5%	4%	2%	0%	4%	8%
Don't know/No answer	8%	3%	6%	0%	4%	3%	8%
	N=120	N=138	N=129	N=65	N=77	N=252	N=107

Question: Overall, what is your opinion of these events and activities that encourage people to use other modes of transportation or work from home instead of driving alone? Is your opinion of the various Clean Air Campaign events and activities very favorable, somewhat favorable, not very favorable or not at all favorable?

Steps Taken to Reduce Air Pollution – Last asked in 2007, respondents in the current survey were asked to describe (on an unaided basis) "what (if anything) they have been able to do to reduce air pollution in the Tucson area." As indicated in Table 14, the "top 3" steps taken include:

- **Generally reduced driving** (37%, down slightly from 39% in 2007. This is true regardless of geography [lower only in the Northwest zips], and is most prevalent among 36 to 55 year-olds, non-Whites and those aware of the Pima County "Clean Air" Program [40% versus 34% not aware] – as well as residents who perceive a progressively more serious air quality problem.)

- **Carpool/Less driving alone** (28%, down from 40% in 2007 [when it was the most popular step taken]. There are few differences based on geography or age. Instead, women [36% versus 18% of men], non-Hispanic minorities, respondents aware of the "Clean Air" Program [32% versus 23% not aware] and those who perceive that Tucson has a progressively more serious air quality problem are more apt to indicate carpooling to reduce air pollution.)

- **Keep car tuned** (12%, down from 28% in 2007. These tend to be Northwest or East residents, 36 to 45 year-olds and those who perceive a "minor" air quality problem.)

In lesser numbers, others have **bought bicycles** (8%, up from 5% in 2007), **kept their tires properly inflated** (7%, down from 14%), **bought a more fuel efficient car** (7%, down from 11%), **chosen one day a week not to drive** (5%, up slightly from 4%) and/or **planted trees** (5%, down from 12%).

Two of ten overall indicate that they have done **nothing** to reduce air pollution (up from 14% in 2007) – more often South region residents, 56 to 65 year-olds, those who perceive a "minor" air quality problem and respondents unaware of the "Clean Air" Program.

Table 14 Steps Taken to Reduce Air Pollution

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	**05/13 Total**
Generally reduced driving/Driven less	23%	25%	n/a	31%	33%	39%	39%	**37%**
Carpool/Less driving alone	15%	17%	n/a	28%	19%	32%	40%	**28%**
Keep car tuned	14%	13%	n/a	25%	20%	31%	28%	**12%**
Bought bicycles	5%	6%	n/a	6%	6%	8%	5%	**8%**
Keep tires properly inflated	–	1%	n/a	4%	5%	13%	14%	**7%**
Bought more fuel efficient car	3%	3%	n/a	6%	5%	8%	11%	**7%**
Chosen once a week not to drive	2%	1%	n/a	5%	3%	2%	4%	**5%**
Planted trees	1%	1%	n/a	4%	5%	10%	12%	**5%**
Avoid excessive idling	–	–	n/a	3%	4%	6%	6%	**4%**
Bought alternative-fueled car	–	–	–	–	–	2%	3%	**4%**
Adjusted vehicle's emission control equipment	5%	4%	n/a	10%	8%	12%	7%	**3%**
Using fireplace/Wood stove less	2%	6%	n/a	4%	2%	4%	6%	**3%**
Moved closer to work	1%	0%	n/a	2%	1%	4%	2%	**2%**
Walk/Bike more	6%	8%	n/a	3%	3%	3%	1%	**2%**
Advocated alternative to cars	–	–	n/a	2%	1%	1%	1%	**1%**
Using BBQ grill less	1%	1%	n/a	3%	1%	2%	6%	**1%**
Ride the bus	2%	3%	n/a	2%	1%	1%	0%	**1%**
Challenged friends/Co-workers to change	–	–	–	–	–	0%	3%	**1%**
Other	9%	9%	n/a	8%	8%	7%	5%	**7%**
Nothing	21%	23%	n/a	20%	29%	15%	14%	**21%**
	N=598	N=508	n/a	N=500	N=502	N=502	N=503	**N=504**

	Area				Air Quality Problem		
	Northwest	Central	South	East	Major	Moderate	Minor
Generally reduced driving/Driven less	27%	39%	43%	40%	54%	38%	24%
Carpool/Less driving alone	27%	29%	28%	27%	39%	28%	19%
Keep car tuned	19%	5%	10%	19%	11%	12%	16%
Bought bicycles	11%	7%	1%	14%	6%	8%	7%
Keep tires properly inflated	8%	9%	3%	11%	9%	9%	3%
Bought more fuel efficient car	9%	5%	6%	10%	8%	6%	9%
Chosen once a week not to drive	7%	7%	3%	4%	6%	6%	3%
Planted trees	6%	7%	1%	8%	12%	4%	4%
Avoid excessive idling	4%	3%	3%	7%	6%	2%	6%
Bought alternative-fueled car	2%	4%	3%	8%	6%	3%	4%
Adjusted vehicle's emission control equipment	7%	3%	1%	1%	4%	3%	2%
Using fireplace/Wood stove less	2%	4%	2%	4%	5%	2%	2%
Moved closer to work	1%	3%	3%	0%	2%	2%	2%
Walk/Bike more	1%	3%	0%	4%	0%	2%	2%
Advocated alternative to cars	1%	2%	1%	3%	6%	1%	0%
Using BBQ grill less	1%	3%	1%	0%	4%	1%	2%
Ride the bus	3%	1%	1%	0%	0%	2%	0%
Challenged friends/Co-workers to change	0%	1%	1%	1%	2%	0%	0%
Other	7%	7%	6%	10%	5%	9%	7%
Nothing	21%	15%	28%	16%	16%	18%	27%
	N=136	N=150	N=145	N=73	N=85	N=275	N=121

Question: What, if anything, have you been able to do to help reduce air pollution in the Tucson area?

Reasons for Not Taking Steps to Reduce Air Pollution – Up from 54% in 2007, nearly two-thirds of those who say they are doing "nothing" to reduce air pollution (21% of the 2013 total sample) do not offer a specific reason for their lack of action (65%). This is particularly true among South region residents and Hispanics. Among the rest, the following is a summary of reasons for doing "nothing" to reduce air pollution:

- **Lack of knowledge or education to take action** (10% [basically unchanged at 9% in 2007] – more often Northwest or Central residents.)

- **Not convenient to take action** (7% [down from 12%] – more often Central residents.)

- **Just moved here** (5% – as expected these tend to be new [for less than 2 years] or part year residents.)

- **Live too far/Not near anyone else** (5% [down from 9%] – exclusively South or Northwest residents.)

Table 14a Reasons for Not Taking Steps to Reduce Air Pollution
(Among Those Who Have Done "Nothing")

	06/01 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	**05/13 Total**
Lack of knowledge/Education/ Don't know how	n/a	13%	8%	16%	9%	**10%**
Not convenient	n/a	12%	8%	6%	12%	**7%**
Just moved here	–	–	–	–	–	**5%**
Lives too far/Not near anyone/Home is out of the way/Area/Location/Distance/Too far	n/a	6%	8%	9%	9%	**5%**
Elderly	n/a	10%	6%	13%	7%	**2%**
Don't go anywhere	n/a	4%	4%	5%	4%	**2%**
Lazy	n/a	4%	4%	–	4%	**1%**
Nothing/No reason	n/a	36%	36%	40%	38%	**51%**
Don't know/No answer	n/a	10%	14%	17%	16%	**14%**
	n/a	N=102	N=144	N=77	N=68	**N=104**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
Lack of knowledge/Education/ Don't know how	17%	14%	2%	8%	14%	8%	12%
Not convenient	7%	18%	2%	0%	0%	6%	12%
Just moved here	7%	0%	2%	17%	0%	2%	6%
Lives too far/Not near anyone/Home is out of the way/Area/Location/Distance/Too far	7%	0%	7%	0%	0%	4%	9%
Elderly	0%	0%	5%	0%	7%	0%	3%
Don't go anywhere	0%	4%	2%	0%	0%	4%	0%
Lazy	3%	0%	0%	0%	0%	2%	0%
Nothing/No reason	34%	50%	63%	50%	64%	51%	46%
Don't know/No answer	24%	4%	12%	8%	7%	16%	12%
	N=29	N=22	N=41	N=12	N=14	N=49	N=33

Question: What has prevented you from helping to reduce air pollution?

Presence of Children 5-18 in Household – One-third indicate that they have children aged 5 to 18 living in their household. This is up from 27%-30% in the last six studies. Northwest or East residents, 16 to 45 year-olds and Hispanics are especially apt to say they have young children living in their household.

Table 15 Presence of Children Ages 5-18 in Household

	06/01 Total*	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Yes	15%	31%	26%	29%	28%	30%	30%	30%	27%	**33%**
No	85%	69%	74%	71%	72%	70%	70%	70%	73%	**67%**
	N=598	N=508	N=1006	N=500	N=502	N=502	N=503	N=402	N=403	**N=504**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
Yes	48%	23%	25%	44%	39%	34%	31%
No	52%	77%	75%	56%	61%	66%	69%
	N=136	N=150	N=145	N=73	N=85	N=275	N=121

* Ages 6 to 12.

Question: Do children 5 to 18 years of age live in your household?

Incidence of Children Ages 5-18 Receiving Air Pollution Information From School – Four of ten households with young children (ages 5-18) indicate that these kids have "talked about or brought home materials from school about improving air quality." This is up from 36% in 2011 and 29% in 2008. Significantly, there is little difference in school material recall based on geography (with a slightly higher mention in the East zips). It is highest among women, 36 to 45 year-olds, those familiar with the "Clean Air" Program and respondents who perceive that Tucson has a progressively more severe air quality problem.

Table 15a

Incidence of Children Ages 5-18 Receiving Information From School About Air Pollution
(Among Households With Children Ages 5-18)

	06/01 Total*	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Yes	36%	37%	39%	32%	34%	36%	36%	29%	36%	**40%**
No	64%	63%	61%	62%	61%	59%	50%	64%	59%	**51%**
Don't know	–	–	–	6%	4%	5%	14%	7%	6%	**9%**
	n/a	n/a	n/a	N=143	N=139	N=149	N=153	N=119	N=109	**N=168**

	Area				Air Quality Problem		
	Northwest	Central	South	East	Major	Moderate	Minor
Yes	41%	35%	39%	47%	54%	38%	27%
No	50%	53%	61%	38%	39%	53%	60%
Don't know	9%	12%	0%	16%	6%	8%	14%
	N=66	N=34	N=36	N=32	N=33	N=94	N=37

* Ages 6 to 12.

Question: Have the children 5 to 18 years old in your home ever talked about or brought home materials from school about improving air quality – including school presentations or brochures?

Most Effective Means of Communicating Air Quality Alerts on Air Quality Action Days – In line with the 2011 (and allowing for multiple mentions), the most effective method for communicating information concerning Air Quality Action Days include the following:

- **Television alerts** (58% most effective, up from 51% in 2011. Mentioned across geographic region [somewhat lower only in the Northwest zips], television alerts are considered especially effective among those 46 or older and households impacted by a breathing-related medical condition.)

- **Radio announcements** (41% most effective, down only slightly from 43% in 2011. Only South region residents consider radio announcements to be less highly effective – with increased mentions among 26 to 35 year-olds.)

- **Television news reports** (35% most effective, down just slightly from 37% in 2011. Most effective in the Central zips, as well as among respondents 56 or older and households impacted by a medical-related breathing condition.)

- **Cell phone/Text messages** (21% most effective – reflective of growth since 2008 [8%] and 2011 [19%]. Effective regardless of geography, it is the youngest respondents [16 to 25] who are most receptive to this means of communication.)

- **Internet website postings** (16% most effective, basically unchanged since 2011 [17%]. Northwest residents and 16 to 25 year-olds are more apt to indicate that website postings are more highly effective.)

In line with 2011 findings, 8% report that **email** is the most effective method of communicating an air quality alert. These tend to be Northwest zip residents and 16 to 45 year-olds.

Table 16 Most Effective Means of Communicating
Air Quality Alerts on Air Quality Action Days

	5/08 Total	6/11 Total	**6/13 Total**	Area			
				North-west	Central	South	East
Television alerts	64%	51%	**58%**	46%	59%	63%	64%
Radio announcements	40%	43%	**41%**	44%	40%	35%	48%
Television news reports	41%	37%	**35%**	29%	43%	37%	27%
Cell phone/Text messages	8%	19%	**21%**	24%	19%	23%	18%
Internet website postings	6%	17%	**16%**	21%	15%	12%	15%
E-mail	5%	8%	**8%**	11%	7%	7%	6%
None/Can't think of any	9%	2%	**3%**	3%	4%	3%	3%
	N=402	N=403	**N=504**	N=136	N=150	N=145	N=73

	Air Quality Problem		
	Major	Moderate	Minor
Television alerts	62%	57%	59%
Radio announcements	39%	43%	36%
Television news reports	38%	34%	36%
Cell phone/Text messages	25%	19%	24%
Internet website postings	8%	19%	17%
E-mail	13%	6%	10%
None/Can't think of any	4%	2%	4%
	N=85	N=275	N=121

Question: At times, air pollution in the Tucson area increases to levels that affect people with breathing-related medical conditions. When an Air Quality Action Day occurs, which of the following methods, or others, would be most effective to communicate an air quality alert?

Agreement With Various Statements Regarding Air Pollution – As we have done in past years, all survey respondents were asked to agree or disagree with ten statements related to air pollution awareness, topics and knowledge.

PDEQ and Sun Rideshare Awareness –

- **You are aware of the Pima County Department of Environmental Quality** (64% agree, down slightly from the past two surveys [69%-70%]. Awareness is highest in the South zips and among those 46 or older – with few differences based on air quality problem perception. Fully 82% familiar with the "Clean Air" Program are aware of PDEQ [versus 48% of those unaware].)

- **You are aware of the services provided by Sun Rideshare** (45% agree, down only slightly from baseline 2011 levels [48%]. Most familiar with Sun Rideshare services are East region residents, 36 to 55 year-olds, non-Hispanic minorities and those aware of the "Clean Air" Program [60% versus 32% of respondents unfamiliar].)

Air Pollution/Gas Price Evaluations –

- **You are aware that air pollution causes health problems** (In line with past studies, nearly all are in agreement [99%].)

- **You understand what an air pollution advisory means** (89% agree, up slightly from 87% in 2011. There are few differences in agreement based on geography [somewhat lower only in the Northwest zips].)

- **You are aware that the majority of our air pollution comes from motor vehicle use** (81% agree, up from 79% in 2011 [the first time this statement was read]. Agreement is consistent across geography [highest in the Central zips]. Women, progressively younger respondents, non-Whites and those who perceive a "moderate" air quality problem are most apt to agree with this statement.)

- **You are aware of air pollution advisories in Tucson** (75% agreement, unchanged since 2011. Agreement is highest in the Central or East zips and among respondents who perceive a "moderate" air quality problem – as well as those familiar with the "Clean Air" Program [91% versus 61% unaware].)

- **You have seen or heard commercials on TV or radio regarding clean air or pollution** (68% agreement, down from 74% in 2011. Agreement is lower in only the Northwest zips, with few differences based on perceived air quality problem. Recall is highest among respondents 46 or older and those aware of the Pima County "Clean Air" Program [82% versus 53% unaware].)

- **Because of *higher gas prices*, you are generally driving less** (59% agreement, down from 62%-64% in recent years. Agreement is consistent regardless of geography [highest in the South zips]. Women, Hispanics and those who perceive a progressively more serious air quality problem in Tucson are most apt to agree. A majority aware [64%] or unaware [54%] of the "Clean Air" Program agree with the statement.)

- **Because you want to *reduce air pollution*, you are generally driving less** (53% agreement – up from 2011 [48%] and rebounding to 2008 levels [55%]. There are relatively few differences based on area of residence. Women, 36 to 45 year-olds, non-Whites and those who perceive a progressively more serious air quality problem are more apt to agree. Agreement is also higher among respondents aware of the "Clean Air" Program [57% versus 48% unaware].)

- **You have noticed a reduction in the amount of dust generated at construction sites or at other dust producing activities** (38% agree, down from the last two studies [44%-45%]. East region residents, non-Whites and those aware of the "Clean Air" Program are most apt agree [47% versus 29% unaware].)

Table 17 Agreement With Various Statements Regarding Air Pollution

	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
You are aware that air pollution causes health problems. (1)	–	–	–	–	98%	96%	98%	**99%**
You understand what an air pollution advisory means. (2)	84%	86%	88%	83%	83%	79%	87%	**89%**
You are aware that the majority of our air pollution comes from motor vehicle use.	–	–	–	–	–	–	79%	**81%**
You are aware of air pollution advisories in Tucson.	79%	78%	74%	70%	74%	79%	75%	**75%**
You have seen or heard commercials on TV or radio regarding clean air or air pollution.	–	–	74%	75%	76%	69%	74%	**68%**
You are aware of the Pima County Department of Environmental Quality (PDEQ). (3)	44%	48%	45%	48%	65%	70%	69%	**64%**
Because of *higher gas prices*, you are generally driving less	–	–	–	63%	64%	62%	64%	**59%**
Because you want to *reduce air pollution*, you are generally driving less	–	–	–	–	–	55%	48%	**53%**
You are aware of the services provided by Sun Rideshare.	–	–	–	–	–	–	48%	**45%**
You have noticed a reduction in the amount of dust generated at construction sites or at other dust producing activities.	–	–	33%	36%	42%	44%	45%	**38%**
	N=1006	N=500	N=502	N=502	N=503	N=402	N=403	**N=504**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
You are aware that air pollution causes health problems. (1)	99%	98%	98%	100%	99%	98%	99%
You understand what an air pollution advisory means. (2)	85%	91%	90%	90%	86%	90%	89%
You are aware that the majority of our air pollution comes from motor vehicle use.	79%	86%	78%	82%	73%	86%	75%
You are aware of air pollution advisories in Tucson.	68%	81%	70%	85%	69%	80%	73%
You have seen or heard commercials on TV or radio regarding clean air or air pollution.	62%	67%	74%	67%	68%	69%	68%
You are aware of the Pima County Department of Environmental Quality (PDEQ). (3)	57%	65%	72%	64%	62%	66%	65%
Because of *higher gas prices*, you are generally driving less	60%	55%	66%	55%	73%	60%	47%
Because you want to *reduce air pollution*, you are generally driving less	49%	55%	52%	56%	62%	58%	37%
You are aware of the services provided by Sun Rideshare.	48%	46%	32%	63%	31%	54%	40%
You have noticed a reduction in the amount of dust generated at construction sites or at other dust producing activities.	33%	31%	42%	51%	27%	42%	37%
	N=136	N=150	N=145	N=73	N=85	N=275	N=121

(1) Was "You are aware that airborne dust causes health problems" (5/07-5/08).
(2) Was ""You understand what an air pollution advisory means, issued as part of an Air Quality Action Day" (6/03-5/08).
(3) Was "You are **knowledgeable** about the Pima County Department of Environmental Quality (PDEQ)" (6/03-5/06).

Question: As I read the following statements, simply tell me if you agree or disagree.

Actions Taken to Drive Less Because of Higher Gas Prices – Respondents who are driving less as a result of higher gas prices (59% of the total sample) are again most apt to be **reducing or combining trips** (61%, down from 71% in 2008-2011). Who is most likely to be reducing or combining trips? Northwest or South residents, women, non-Hispanics, high income households and those who think that Tucson has a "major" air quality problem.

In response to higher gas prices, others are:

- **Carpooling/Vanpooling** (24%, up from 22% in 2011 and 14% in 2008. These are most apt to be East region residents and those who perceive a progressively more severe air quality problem.)

- **Walking for short trips or errands** (14%, up slightly from 2011 [13%]. These tend to be Central residents and women.)

- **Walking to work or school** (9%, up from 3%-5% in previous years. East or Central zip residents, 16 to 25 year-olds and those who perceive a "moderate" air quality problem are more apt to be walking to work or school.)

- **Riding the bus** (9%, up from 4% in 2011. Bus ridership is consistent across geography [somewhat higher in the Central zips], and elevated among non-Whites.)

In lesser numbers, others are **riding a bicycle for short trips or errands** (5%, basically unchanged from 4% in 2011), **working a compressed work week** (4%, up slightly from 3%), **riding a bicycle to work or school** (4%, up from 2%) and/or **telecommuting** (3%, basically unchanged from 4%).

Table 17a Actions Taken to Drive Less Because of Higher Gas Prices
(Among Those Driving Less)

	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Reducing/Combining trips	77%	76%	70%	71%	**61%**
Carpooling/Van pooling	21%	24%	14%	22%	**24%**
Walking for short trips or errands	16%	19%	14%	13%	**14%**
Walking to work or school	3%	4%	4%	5%	**9%**
Riding the bus	2%	9%	10%	4%	**9%**
Riding a bicycle for short trips/ Errands	5%	4%	10%	4%	**5%**
Compressed work week	4%	2%	2%	3%	**4%**
Riding a bicycle to work or school	2%	2%	3%	2%	**4%**
Telecommuting	2%	4%	4%	4%	**3%**
	N=318	N=320	N=251	N=258	**N=298**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
Reducing/Combining trips	65%	54%	66%	58%	69%	58%	58%
Carpooling/Van pooling	24%	22%	20%	35%	34%	24%	10%
Walking for short trips or errands	15%	21%	12%	8%	18%	15%	12%
Walking to work or school	6%	13%	4%	18%	2%	13%	9%
Riding the bus	6%	11%	10%	8%	11%	8%	9%
Riding a bicycle for short trips/ Errands	5%	6%	2%	8%	3%	6%	5%
Compressed work week	7%	5%	0%	8%	5%	5%	4%
Riding a bicycle to work or school	5%	5%	0%	8%	0%	5%	5%
Telecommuting	0%	5%	1%	12%	2%	3%	5%
	N=81	N=82	N=95	N=40	N=62	N=164	N=57

Question: What actions are you taking to drive less?

Perceived Seriousness of Air Quality Problem in Tucson Area – As indicated in Table 18, 17% think that there is a "serious" air quality problem in the Tucson area. This is down from 19% in 2011 and 25% in 2008. Instead, more a few more now indicate a "moderate problem" (from 53% in 2011 to 55% now) – while the percentage who rate air quality as a "minor problem" is unchanged at 24%.

Central or South region residents, women, non-Whites, lower income households and those impacted by a breathing-related medical condition are more apt to perceive that air quality is a "major" issue in Tucson. There are few differences based on "Clean Air" Program awareness.

Interestingly, those who think Tucson's storm water pollution problem is progressively more severe are also more likely to air quality is a "major" concern.

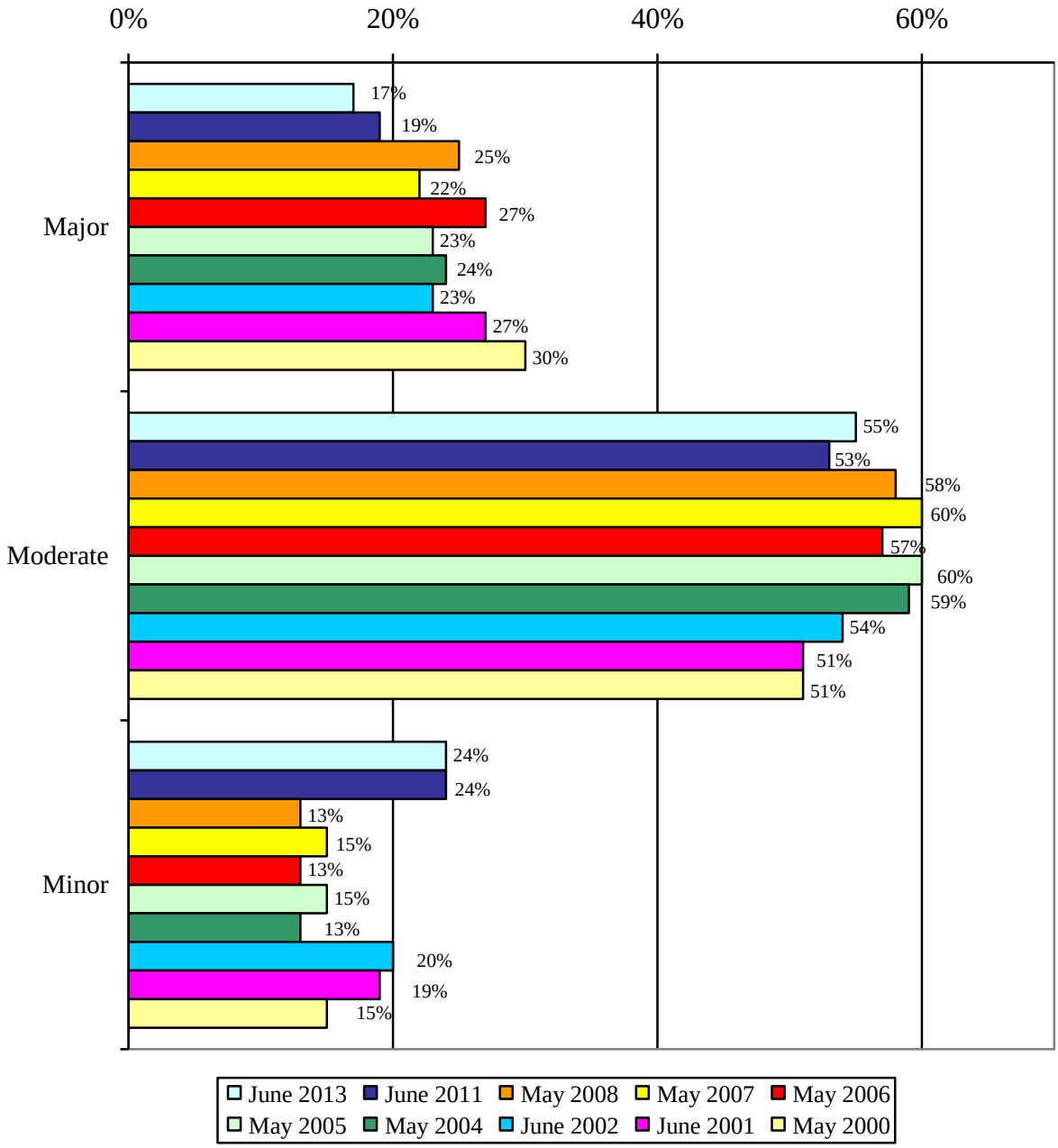
The perception of a "minor" problem is relatively consistent across geography (slightly higher in the Central zips). Men, the oldest respondents (76+), Whites and those with at least some graduate level education are most apt to perceive a "minor" air quality problem.

Table 18 Perceived Seriousness of Air Quality Problem in Tucson Area

	06/01 Total	06/02 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Major problem	27%	23%	24%	23%	27%	22%	25%	19%	**17%**
Moderate problem	51%	54%	59%	60%	57%	60%	58%	53%	**55%**
Minor problem	19%	20%	13%	15%	13%	15%	13%	24%	**24%**
Don't know	3%	3%	3%	2%	3%	2%	4%	4%	**5%**

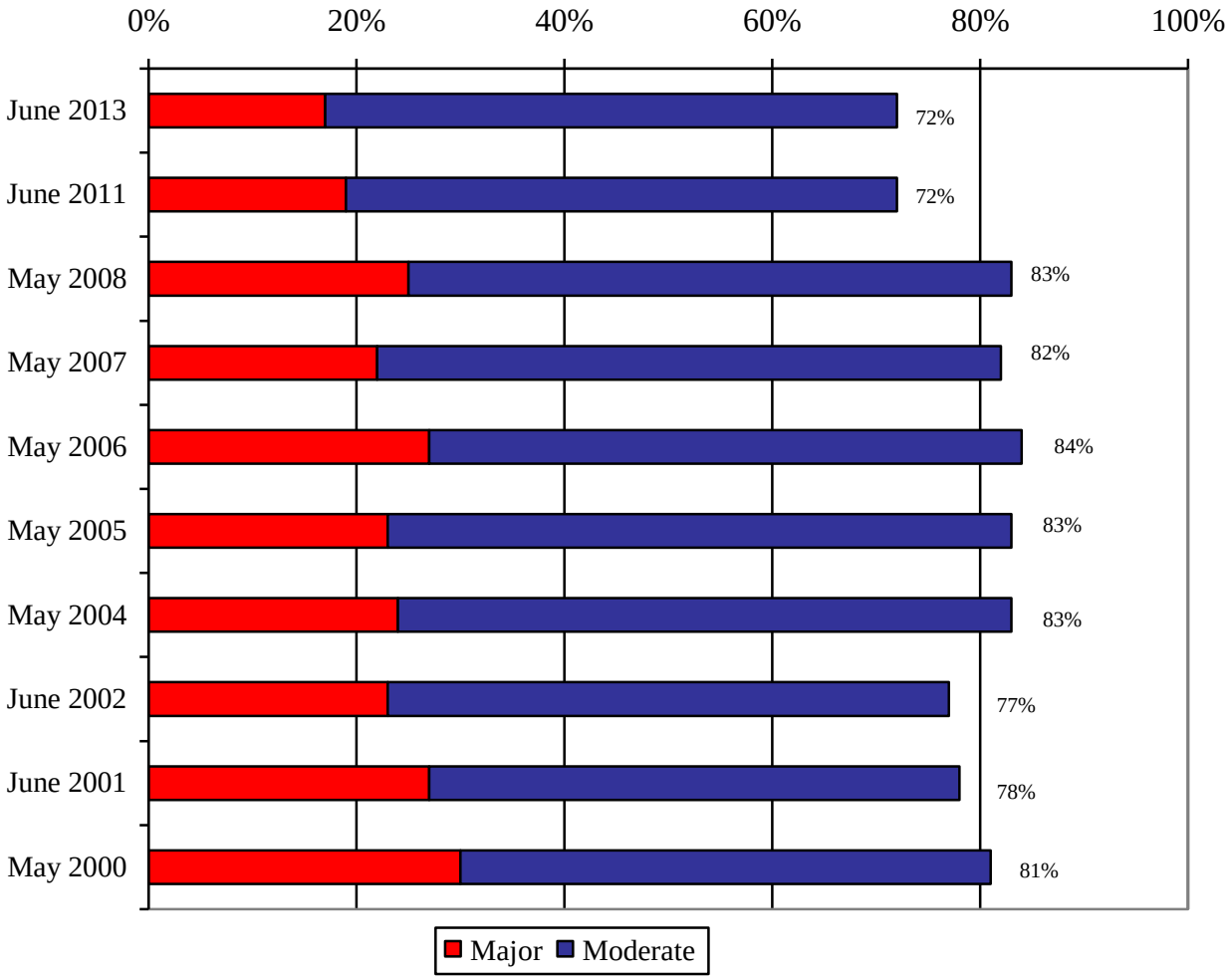
Question: How much of an air quality problem do you think exists in the Tucson area? Do you think this is a major problem, a moderate problem or a minor problem?

Display 18 Perceived Seriousness of Air Quality Problem in Tucson Area
(Among the Total Sample)



Display 18 Perceived Seriousness of Air Quality Problem in Tucson Area

Among the Total Sample – Sum of "Moderate" and "Major" Responses



Importance of Regional Campaign to Encourage People to Take Actions to Improve Air Quality – Fully 89% of survey respondents believe it is at least "somewhat important" to have a regional campaign that encourages people to improve air quality. This is up from 84% in 2011, and more in line with 2006-2008 totals. Nearly one-half (48%) think that a regional campaign is "very important" (up from 46% in 2011, but short of the 55% recorded in 2008). Meanwhile, just one of ten in the current study say that a regional air quality improvement campaign is "not very" or "not at all" important (down from 15% in 2011).

Once again, the high degree of importance placed on a regional campaign is directly related to the perception of the air quality problem in Tucson. This year, however, there are fewer differences in strong importance based on "Clean Air" Program awareness or incidence of a household medical-related breathing problem. Who places the highest degree of strong importance on a regional campaign? Women (57% versus 36% of men), 26 to 35 year-olds, Hispanics and lower income households – with no real difference based on geography.

Those few who place a low degree of importance on a regional campaign tend to be men and 6-to-10 year Pima County residents.

Table 19 Importance of Regional Campaign to Encourage People to Take Actions to Improve Air Quality

	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Very important	51%	50%	52%	54%	54%	60%	55%	46%	**48%**
Somewhat important	36%	36%	38%	34%	36%	29%	35%	38%	**41%**
Not very important	7%	7%	7%	5%	6%	7%	5%	8%	**5%**
Not at all important	5%	4%	2%	4%	3%	4%	4%	7%	**5%**
Don't know/No answer	1%	2%	2%	2%	1%	1%	1%	1%	**1%**
	N=508	N=1006	N=500	N=502	N=502	N=503	N=402	N=403	**N=504**

	Area				Air Quality Problem		
	Northwest	Central	South	East	Major	Moderate	Minor
Very important	47%	49%	49%	44%	73%	50%	25%
Somewhat important	43%	38%	39%	44%	21%	41%	55%
Not very important	4%	6%	6%	7%	2%	5%	8%
Not at all important	4%	5%	6%	6%	2%	3%	12%
Don't know/No answer	2%	1%	1%	0%	1%	1%	0%
	N=136	N=150	N=145	N=73	N=85	N=275	N=121

Question: How important do you think it is to have a regional campaign that encourages people to take actions to improve air quality, such as carpooling, riding the bus, biking, walking or working at home? Would you say it is very important, somewhat important, not very important or not at all important?

Work Commuting Behavior

Employment Status – Allowing for multiple responses, 27% in the 2013 survey indicate that they are employed on a full-time basis. This is down from 35% in 2011. Full-time employees are most apt to reside in the Northwest or East zips, and tend to be men (35% versus 22% of women), 26 to 45 year-olds and those with at least some graduate level coursework or an advanced degree. Another 11% work part-time, up from 8% in 2011. Those who work part-time are more likely to be East region residents and younger. One of ten overall report they are currently unemployed. This is the first "double digit" unemployment recorded since 2002. Unemployed respondents are more apt to reside in the Central zips.

Down from 35% in 2008, three of ten in the current study are retired – especially those 66 or older. South area residents are most likely to be retired. Unchanged since 2011, 9% (regardless of geography) are students. Compared to the last study, more are homemakers (from 9% to 13%). Homemakers tend to live in the Northwest or East zips.

Table 20

Employment Status
(Multiple Mentions Allowed)

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Employed full-time (30 hours or more each week)	44%	40%	37%	30%	28%	34%	35%	29%	35%	**27%**
Employed part- time (Less than 30 hours each week)	12%	10%	10%	9%	9%	11%	11%	12%	8%	**11%**
A student	8%	14%	6%	13%	15%	11%	10%	9%	9%	**9%**
Retired	29%	26%	33%	32%	33%	32%	31%	34%	35%	**31%**
A homemaker	8%	8%	7%	12%	13%	12%	10%	12%	9%	**13%**
Currently unemployed	6%	10%	7%	8%	6%	4%	4%	8%	6%	**10%**
	N=598	N=508	N=1006	N=500	N=502	N=502	N=503	N=402	N=403	**N=504**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
Employed full-time (30 hours or more each week)	39%	29%	11%	34%	13%	30%	32%
Employed part-time (Less than 30 hours each week)	12%	8%	8%	19%	6%	10%	16%
A student	9%	11%	9%	7%	13%	8%	9%
Retired	14%	31%	53%	16%	34%	28%	32%
A homemaker	16%	7%	12%	20%	19%	14%	6%
Currently unemployed	10%	15%	10%	3%	15%	12%	6%
	N=136	N=150	N=145	N=73	N=85	N=275	N=121

Question: Are you one or more of the following...

Location of Place of Employment – Compared to 2012, slightly fewer employed respondents employed (on a part or full time basis) work at a home-based business (from 18% to 16% now), either exclusively (from 15% to 12%) or in addition to another company (from 3% to 4%). Consequently, the percentage employed only outside the home has increased slightly: from 82% to 84%. Those who exclusively work outside the home are most apt to reside in the Northwest or East zip codes.

Table 21 Location of Place of Employment
(Among Those Employed)

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Home-based business	12%	12%	14%	12%	17%	18%	17%	15%	15%	**12%**
Another company	85%	84%	86%	86%	79%	78%	78%	82%	82%	**84%**
Both	2%	4%		2%	4%	4%	5%	4%	3%	**4%**
	N=336	N=253	n/a	N=195	N=190	N=227	N=233	N=163	N=170	**N=193**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
Home-based business	6%	20%	18%	8%	19%	11%	12%
Another company	90%	73%	82%	90%	81%	85%	83%
Both	4%	7%	0%	3%	0%	4%	5%
	N=70	N=56	N=28	N=39	N=16	N=112	N=59

Question: Do you operate a home-based business or are you an employee of another company?

Number of Full-Time Employees at Jobsite – As indicated in Table 22, 46% of those who work outside the home report that there are more than 100 employees at their primary place of work. This is down from one-half in the last two surveys. Instead, a few more now work at medium size jobsites with 50 to 100 employees (16%, up from 12% in 2011). The balance (34%, down slightly from 37%) work at small jobsites. Northwest or East region residents – as well as men and highly educated respondents – are more apt to work at large worksites. Workers at small jobsites tend to be Central or East zip residents and have less formal education.

Table 22 Number of Full-Time Employees at Jobsite
(Among Those Who Work Outside the Home)

	06/01 Total	06/02 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
More than 100	47%	53%	50%	54%	55%	53%	50%	50%	**46%**
Less than 100	53%	47%	49%	46%	44%	46%	48%	49%	**50%**
Between 50 and 100	(13%)	(14%)	(12%)	(11%)	(12%)	(10%)	(14%)	(12%)	**(16%)**
Less than 50	(40%)	(33%)	(37%)	(35%)	(32%)	(36%)	(34%)	(37%)	**(34%)**
Don't know	1%	0%	1%	–	1%	1%	2%	1%	**4%**

Question: Would you say that there are more than 100 employees, between 50 and 100 employees or less than 50 employees at your primary place of work?

Incidence of Telecommuting – Unchanged since 2011, 19% of workers employed outside the home report that they telecommute ("working from home as an alternative to going in to your office or place of business during regular business hours"). The incidence of telecommuting is consistent among workers who live in the Northwest, Central or East zips – including both small (less than 50 employees) and large (100+ employees) jobsites.

Table 23 Incidence of Telecommuting
(Among Those Who Work Outside the Home)

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Yes	7%	5%	6%	8%	8%	4%	14%	9%	19%	**19%**
No/Employer does not offer telecommuting/ Don't know/Not sure	93%	95%	94%	92%	92%	96%	86%	91%	81%	**81%**
	N=283	N=223	n/a	N=172	N=157	N=185	N=193	N=139	N=144	**N=170**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
Yes	21%	22%	4%	22%	15%	12%	35%
No/Employer does not offer telecommuting/ Don't know/Not sure	79%	78%	96%	78%	85%	88%	65%
	N=66	N=45	N=23	N=36	N=13	N=100	N=52

Question: Some employers offer the option of telecommuting – in other words, working from your home as an alternative to going in to your office or business location during regular business hours. Do you personally ever telecommute during regular business hours? This excludes working extra hours at home in your spare time – such as evenings or weekends.

Frequency of Telecommuting – Among telecommuters, a majority now indicate that they do so more than once a week (52%). This is about double the 2011 mention (26%). Among the rest, 12% telecommute about once a week – while 36% do so 2-3 times a month (21%) or once a month or less (15%).

Table 24 Frequency of Telecommuting
(Among Those Who Telecommute)

	06/01 Total	06/02 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
More than once a week	61%	42%	50%	46%	62%	52%	31%	26%	**52%**
About once a week	28%	32%	7%	23%	25%	15%	23%	33%	**12%**
2 to 3 times a month	6%	10%	21%	23%	12%	15%	31%	15%	**21%**
Once a month	6%	5%	21%	8%	0%	18%	15%	26%	**15%**
	N=18	N=19	N=14	N=13	N=8	N=27	N=13	N=27	**N=33**

Question: How often do you typically telecommute (or work at home instead of driving to the office) – excluding working extra hours at home in your spare time?

Availability of "Compressed Workweek" Programs – In line with the 2011 survey, one-third of workers employed outside the home have the option of compressed workweek programs. These tend to be South region residents who work at small (less than 50 employees) or large (100+ employees) jobsites.

Table 25 Availability of "Compressed Workweek" Programs
(Among Those Who Work Outside the Home)

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
Yes	23%	27%	27%	25%	31%	35%	31%	27%	33%	**32%**
No	77%	73%	73%	75%	69%	65%	69%	73%	67%	**68%**
	N=296	N=223	N=456	N=172	N=157	N=185	N=193	N=139	N=144	**N=170**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
Yes	32%	29%	48%	28%	38%	31%	35%
No	68%	71%	52%	72%	62%	69%	65%
	N=66	N=45	N=23	N=36	N=13	N=100	N=52

Question: Does your employer either require or offer any form of "COMPRESSED WORKWEEK"? For example, working four 10-hour days each week, rather than five 8-hour days.

Current Work Schedule – Two-thirds of full-time employees indicate that they work a "standard" work schedule (8 hour days, five days a week). This is down somewhat from 2011 levels (72%), but consistent with 2008 findings (64%). Among the rest, and similar to 2011, 9% work 10-hour days, 4 days per week. Fewer work different schedules, including 80 hours over 9 days with the 10th day off (3%) or 12-hour days 3 or 4 days a week (2%). However, more now indicate their work schedule varies or have some other work schedule variation (19%, up from 11% in 2011). Compressed workweek options are more likely to be utilized at large (100+ workers) jobsites.

Table 26 Current Work Schedule
(Among Those Employed Full-Time)

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
8 hour day, 5 days a week	59%	58%	49%	70%	68%	62%	68%	64%	72%	**67%**
10 hour day, 4 days a week	7%	4%	6%	5%	6%	6%	6%	11%	10%	**9%**
12 hour day, 3 or 4 days a week	2%	4%	6%	8%	2%	10%	7%	6%	5%	**2%**
80 hours over 9 days with the 10th day off	2%	2%	2%	8%	3%	1%	3%	3%	2%	**3%**
Varies/Other	30%	32%	38%	8%	21%	20%	17%	16%	11%	**19%**
	N=296	N=223	n/a	N=129	N=121	N=138	N=146	N=100	N=118	**N=125**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
8 hour day, 5 days a week	57%	73%	86%	70%	44%	72%	58%
10 hour day, 4 days a week	14%	0%	7%	13%	33%	5%	11%
12 hour day, 3 or 4 days a week	4%	0%	0%	0%	11%	1%	0%
80 hours over 9 days with the 10th day off	2%	5%	0%	4%	0%	0%	11%
Varies/Other	24%	22%	7%	13%	11%	21%	20%
	N=51	N=37	N=14	N=23	N=9	N=75	N=36

Question: Which of the following most closely describes your current work schedule?

Daily Usage of Transportation Methods for Traveling To and From Work or School – Consistent with prior years, survey respondents who work outside the home or go to school were read a list of different travel methods and asked to indicate the number of days they use each one to travel to and from work or school. A summary of the data from this question series (including tracking data) is included in Table 27-S, with detailed daily usage in Table 27-D.

Eight of ten use **single passenger commuting to work or school** (79%), down from 84% in 2011. The average frequency of use is identical to 2011 at 4.5 days. Central zip code residents are *least* apt to drive alone 5+ days a week (35% versus 48%-57% in other regions), as are those who perceive a "major" air quality problem.

Down slightly from 2011 (28%), 26% **carpool or vanpool** at least one day per week, with a minor downtick in average frequency (from 4.0 to 3.9 days). South zip code residents continue to be more apt to carpool/vanpool 5+ days per week (19% versus 10%-12% in other areas), with greater carpooling among those who perceive a "major" or "moderate" air quality problem.

Other commute travel methods measured by this survey include:

- **Work at home instead of driving to work** (Compared to 2011, more are telecommuting [from 9% to 15%], with an increase in frequency as well [from 3.3 to 3.5 days]. Residents of the Central zip code are most apt to telecommute [19%], while just 6% of South area residents do.)

- **Walk to work or school** (The percentage walking to work or school has decreased somewhat [from 15% to 12%], with lower average days as well [3.7 days, down from 4.0 in 2011 – but still higher than 3.4 days in 2008]. Only Northwest area residents are less apt to walk to work or school [8% versus 13%-15% elsewhere].)

- **Ride a bike to work or school** (A few more are riding bikes to work or school [from 7% to 9%], but are doing so less frequently [from 3.7 days to 2.1 days]. Central zip code residents are most apt to ride a bike to work or school.)

- **Ride the bus to work or school** (Bus ridership is up [from 5% to 9%], with an increase in average days as well [from 3.1 to 3.8]. More apt to take the bus to work or school are Central or South region residents.)

- **Ride a motorcycle to work or school** (More are riding a motorcycle to work or school [from 2% to 5%], with a slight downtick in frequency [from 2.7 days to 2.6].)

Table 27-S Summary of Usage of Transportation Methods for Traveling To and From Work or School
(Among Those Working Outside the Home or Going to School)

Travel Method	2001 Usage* (N=302)	2001 Average Frequency	2002 Usage* (N=260)	2002 Average Frequency	2004 Usage* (N=172)	2004 Average Frequency
Drive alone	83%	4.8 days	79%	4.6 days	84%	4.4 days
Carpool/Vanpool	20%	3.9 days	19%	3.5 days	17%	3.9 days
Walk	9%	3.3 days	12%	3.3 days	10%	4.1 days
Ride a bike	7%	3.6 days	7%	3.6 days	10%	3.6 days
Work at home instead of driving to work	–	–	–	–	7%	2.7 days
Take the bus	8%	3.6 days	6%	3.6 days	4%	3.8 days
Ride a motorcycle	3%	2.4 days	1%	2.7 days	3%	2.6 days

Travel Method	2005 Usage* (N=210)	2005 Average Frequency	2006 Usage* (N=219)	2006 Average Frequency	2007 Usage* (N=229)	2007 Average Frequency
Drive alone	77%	4.3 days	81%	4.4 days	78%	4.1 days
Carpool/Vanpool	24%	3.6 days	24%	4.4 days	30%	3.4 days
Walk	15%	3.9 days	9%	3.2 days	14%	3.6 days
Ride a bike	13%	3.3 days	6%	2.8 days	9%	2.8 days
Work at home instead of driving to work	8%	3.2 days	6%	3.5 days	10%	2.7 days
Take the bus	8%	4.0 days	6%	3.9 days	7%	3.8 days
Ride a motorcycle	3%	2.8 days	3%	4.2 days	2%	3.6 days

Travel Method	2008 Usage* (N=159)	2008 Average Frequency	2011 Usage* (N=171)	2011 Average Frequency	**2013 Usage* (N=205)**	**2013 Average Frequency**
Drive alone	74%	4.7 days	84%	4.5 days	**79%**	**4.5 days**
Carpool/Vanpool	22%	3.9 days	28%	4.0 days	**26%**	**3.9 days**
Walk	14%	3.4 days	15%	4.0 days	**12%**	**3.7 days**
Ride a bike	8%	3.5 days	7%	3.7 days	**9%**	**2.1 days**
Work at home instead of driving to work	12%	3.2 days	9%	3.3 days	**15%**	**3.5 days**
Take the bus	11%	3.7 days	5%	3.1 days	**9%**	**3.8 days**
Ride a motorcycle	1%	1.0 days	2%	2.7 days	**5%**	**2.6 days**

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

Table 27-D Detailed Daily Usage and Tracking of Transportation Methods for Traveling To and From Work or School
(Among Those Working Outside the Home or Going to School)

	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**	Area				Awareness of "Clean Air" Program	
							North-west	Central	South	East	Yes	No
Take the bus												
Not at all	92%	94%	93%	89%	95%	**91%**	92%	88%	90%	93%	98%	86%
1-4 days/week	3%	2%	4%	6%	4%	**5%**	7%	7%	3%	2%	2%	8%
5 days/week	4%	4%	3%	3%	2%	**2%**	1%	3%	6%	0%	0%	4%
6+ days/week	1%	0%	1%	2%	0%	**2%**	0%	2%	0%	5%	0%	1%
Ride a motorcycle												
Not at all	97%	97%	98%	99%	98%	**95%**	97%	92%	94%	98%	90%	99%
1-4 days/week	2%	2%	1%	1%	1%	**4%**	3%	5%	6%	2%	8%	1%
5 days/week	1%	1%	1%	0%	1%	**1%**	0%	3%	0%	0%	2%	0%
6+ days/week	1%	1%	0%	0%	0%	**0%**	0%	0%	0%	0%	0%	0%
Ride a bike												
Not at all	87%	94%	91%	92%	93%	**91%**	92%	86%	100%	90%	96%	86%
1-4 days/week	9%	5%	6%	5%	6%	**8%**	7%	14%	0%	7%	4%	12%
5 days/week	3%	1%	3%	2%	0%	**1%**	1%	0%	0%	2%	0%	2%
6+ days/week	1%	0%	0%	1%	1%	**0%**	0%	0%	0%	0%	0%	0%
Walk												
Not at all	85%	91%	86%	86%	85%	**88%**	92%	86%	87%	85%	92%	85%
1-4 days/week	7%	6%	11%	9%	9%	**7%**	8%	7%	6%	7%	6%	9%
5 days/week	4%	2%	0%	3%	1%	**3%**	0%	3%	6%	7%	2%	4%
6+ days/week	4%	1%	4%	2%	4%	**1%**	0%	3%	0%	0%	0%	2%
Work at home instead of driving to work												
Not at all	92%	94%	90%	88%	91%	**85%**	85%	81%	94%	85%	92%	79%
1-4 days/week	5%	4%	8%	8%	5%	**9%**	10%	10%	6%	10%	2%	15%
5 days/week	1%	1%	1%	2%	3%	**4%**	3%	8%	0%	5%	4%	5%
6+ days/week	2%	1%	0%	1%	1%	**1%**	3%	0%	0%	0%	2%	0%
	N=210	N=219	N=229	N=159	N=171	**N=205**	N=74	N=59	N=31	N=41	N=86	N=111

-Table 27-D continued on next page-

Table 27-D (Cont'd)

	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**	Area				Awareness of "Clean Air" Program	
							North-west	Central	South	East	Yes	No
Drive or ride with people age 16 or older in a carpool												
Not at all	76%	76%	70%	78%	72%	**74%**	82%	66%	58%	83%	78%	69%
1 day/week	4%	2%	4%	2%	2%	**1%**	0%	3%	0%	0%	0%	2%
2 days/week	3%	3%	7%	3%	4%	**4%**	1%	10%	3%	2%	2%	6%
3 days/week	6%	2%	4%	2%	3%	**4%**	0%	8%	6%	2%	0%	7%
4 days/week	2%	5%	6%	3%	5%	**5%**	7%	0%	13%	2%	9%	2%
5 days/week	6%	7%	9%	11%	12%	**10%**	7%	12%	19%	5%	9%	11%
6+ days/week	3%	6%	0%	1%	2%	**2%**	3%	0%	0%	5%	1%	3%
Drive alone												
Not at all	23%	19%	22%	26%	16%	**21%**	15%	25%	16%	29%	19%	22%
1 day/week	8%	6%	5%	2%	4%	**6%**	5%	12%	3%	0%	9%	4%
2 days/week	6%	6%	6%	4%	7%	**5%**	3%	8%	6%	2%	4%	6%
3 days/week	6%	8%	11%	8%	6%	**10%**	11%	8%	13%	7%	8%	12%
4 days/week	8%	10%	17%	12%	15%	**10%**	10%	10%	13%	7%	12%	7%
5 days/week	36%	39%	31%	38%	41%	**33%**	35%	20%	32%	49%	31%	34%
6+days/week	12%	12%	7%	11%	12%	**16%**	22%	15%	16%	5%	18%	14%
	N=210	N=219	N=229	N=159	N=171	**N=205**	N=74	N=59	N=31	N=41	N=86	N=111

Question: During a typical week, how many days do you typically use each of the following travel methods to get to and from work or school?

2013 Estimated Number of Daily Commuter Miles Saved Through Alternate Modes – Tables 27-T and 27-1 reflect the combination of results related to modes of commuter travel and distances traveled with employment estimates (Source: Department of Commerce) to provide an estimate of the number of vehicle miles saved daily through the use of alternative methods of transportation. The specific computations and data sources are described in the footnotes included with Table 27-1. As shown in Table 27-1's column "I" (on the far right), **we estimate that the reduction of single-occupant vehicles commuting through the use of alternative methods of travel saves 3,195,589 vehicle miles per day – or 32% of total miles driven/not driven. As summarized in the tracking display below, the percentage of miles saved has increased from 25% in 2011 to 32% in 2013 – which is more in line with 2007 and 2008 findings (30% each).**

While the percentage of miles saved through the use of alternate modes has increased to 32%, the actual number of vehicle miles saved daily has increased by just 17% (from 2,739,932 to 3,195,589) – due to a decrease in average single-passenger commuter distance (from 14.8 miles in 2011 to 11.6 now – a decrease of 22%) and fewer single-passenger commuters (from 84% to 79%). The 2007 levels of single-passenger commuting and average commute distance are more in line with the current study, but with a slightly smaller share of miles saved through alternative mode use (30%).

Table 27-T Tracking Summary of Estimated Number of Daily Commuter Miles Saved Through Alternate Modes

Year	Total Employed (Non-Home-Based)/ Students	% Who Single-Passenger Commute 1+ Days/Week	Average Single Occupant Auto Commute Distance	# of Commute Miles Driven/ Not Driven	# of Vehicle Miles Saved Daily	% of Miles Saved Through Alternate Mode Use
2013	**449,057**	**79%**	**11.6**	**9,977,822**	**3,195,589**	**32%**
2011	419,555	84%	14.8	10,915,750	2,739,932	25%
2008	439,394	74%	11.9	9,695,554	2,864,682	30%
2007	437,911	78%	11.4	9,162,668	2,796,391	30%
2006	423,986	81%	11.2	9,276,739	2,477,921	27%
2005	422,141	77%	13.3	9,448,097	2,317,878	25%
2004	429,532*	84%	14.9	11,560,391	2,483,773	21%

* Based on May, 2004 DES estimates to allow for direct year-to-year tracking.

Table 27-1 2013 Estimated Number of Daily Commuter Miles Saved Through Alternative Modes
(Among Employed Persons and Students)

	(A) # of Non-Home-Based Employed Persons/ Students	(B) # One-Way Commute Trips Per Week	(C) Estimated # of One-Way Trips Each Week	(D) Average Days/Week Commute Using Any Mode	(E) # of One-Way Commute Trips/Day	(F) Average Commute Distance	(G) Estimated # Commute Miles Driven/Not Driven	(H) Vehicle Miles Traveled Daily	(I) Vehicle Miles Saved Daily
Travel Mode									
Single Occupant (auto)	(79%) 354,755	4.51x2=9.02	3,199,890	6.3	507,919	11.6	5,891,860	5,891,860	-0-
Motorcycle	(5%) 22,453	2.60x2=5.20	116,756	6.3	18,533	14.9	276,142	276,142	-0-
Alternative Modes:									
Carpool	(26%) 116,755	3.92x2=7.84	915,359	6.3	145,295	10.8	1,569,186	603,533	965,653
Bus	(9%) 40,415	3.79x2=7.58	306,346	6.3	48,626	7.7	374,420	10,698	363,722
Bike	(9%) 40,415	2.11x2=4.22	170,551	6.3	27,072	8.4	227,405	-0-	227,405
Walk	(12%) 53,887	3.71x2=7.42	399,842	6.3	63,467	5.6	355,415	-0-	355,415
Telecommute	(15%) 67,359	3.47x2=6.94	467,471	6.3	74,202	15.1	1,120,450	-0-	1,120,450
Compressed workweek	(8%) 35,925	0.94x2=1.88	67,539	6.3	10,720	15.2	162,944	-0-	162,944
					895,834		9,977,822		3,195,589

(A) # employed persons in Pima County (est. @ 368,400 as of April, 2013 by Arizona Department of Commerce) x % non-home-based employees (88%)(Table 21) + # students 16+ (est. 124,865 in 2011 Census Bureau American Community Survey) x % of work/school commuters reported using each mode (Table 27).

(B) Average # of days/week mode used (Table 27) x 2 ways = estimate of average # of 1-way trips made each week per work/school commuter.

(C) (A) x (B)

(D) # of work/school commuters in survey x % using each mode x average # days/week mode used = Total days/week all modes ÷ # of work/school commuters in survey = average # days/week work/school commuters use any mode.

(E) (C) ÷ (D)

(F) From Table 27c. Reported commute miles ranged from 1 to 60 miles.

(G) (E) x (F)

(H) Vehicle miles/day:
Driving alone: Estimated # miles commuted
Bus: # miles/day ÷ average # rides/bus (peak hours) - (estimated at 35)
Carpool: # miles/day ÷ average # persons (2.6) in each carpool (Table 27b)
Bike/Walk/Telecommute/Compressed: -0- (no polluting vehicles used)

(I) (G) - (H)

Most Used Mode of Transportation for Work/School Commute – Two-thirds of respondents who work outside the home or attend school say that **single-passenger vehicle commuting** is their ***most-used*** method to commute between home and work or school. This represents improvement from 70%-71% in the last two surveys. Who is most likely to drive alone to work or school most often? Northwest residents (73%). This compares to just 56% of Central residents. Instead, 44% of Central area residents primarily use an alternative mode.

Carpooling is the most-used commute method of 12% (up from 10% in 2011), more often Central (15%) or South (13%) area residents. Compared to 2011, twice as many primarily **telecommute** (from 4% to 8%), especially respondents in the Northwest (11%) or East (10%) zip codes. More are also **taking the bus** most often for their commute (from 2% to 6%), most often South area residents (10%). Overall, slightly fewer say that their most used method of commuting is **walking** (from 8% to 5%). However, among Central area residents, walking (14%) is nearly as popular as carpooling (15%). Few commute primarily by **riding a bike** (from 4% to 1%) or a **motorcycle** (2%, up from 1%). Motorcyclists tend to be South area residents, while those who primarily ride a bike are in the East zip codes.

Table 27a Most Used Mode of Transportation for Work/School Commute
(Among Those Working Outside the Home or Going to School)

	5/05 Total	5/06 Total	5/07 Total	5/08 Total	6/11 Total	**6/13 Total**
Drive alone	64%	66%	66%	70%	71%	**66%**
Drive or ride in a carpool	14%	16%	17%	11%	10%	**12%**
Work at home instead of driving to work	2%	3%	3%	6%	4%	**8%**
Take the bus	7%	6%	4%	6%	2%	**6%**
Walk	7%	4%	5%	4%	8%	**5%**
Ride a motorcycle	1%	3%	2%	–	1%	**2%**
Ride a bike	5%	2%	4%	3%	4%	**1%**
	N=210	N=219	N=229	N=159	N=171	**N=205**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
Drive alone	73%	56%	68%	66%	71%	67%	61%
Drive or ride in a carpool	11%	15%	13%	10%	12%	15%	7%
Work at home instead of driving to work	11%	7%	3%	10%	0%	6%	16%
Take the bus	5%	5%	10%	7%	8%	4%	10%
Walk	0%	14%	0%	5%	8%	5%	3%
Ride a motorcycle	0%	3%	6%	0%	0%	2%	3%
Ride a bike	0%	0%	0%	2%	0%	1%	0%
	N=74	N=59	N=31	N=41	N=24	N=114	N=61

Question: During a typical week, how many days do you typically use each of the following travel methods to get to and from work or school? (Record most used mode based on number of days.)

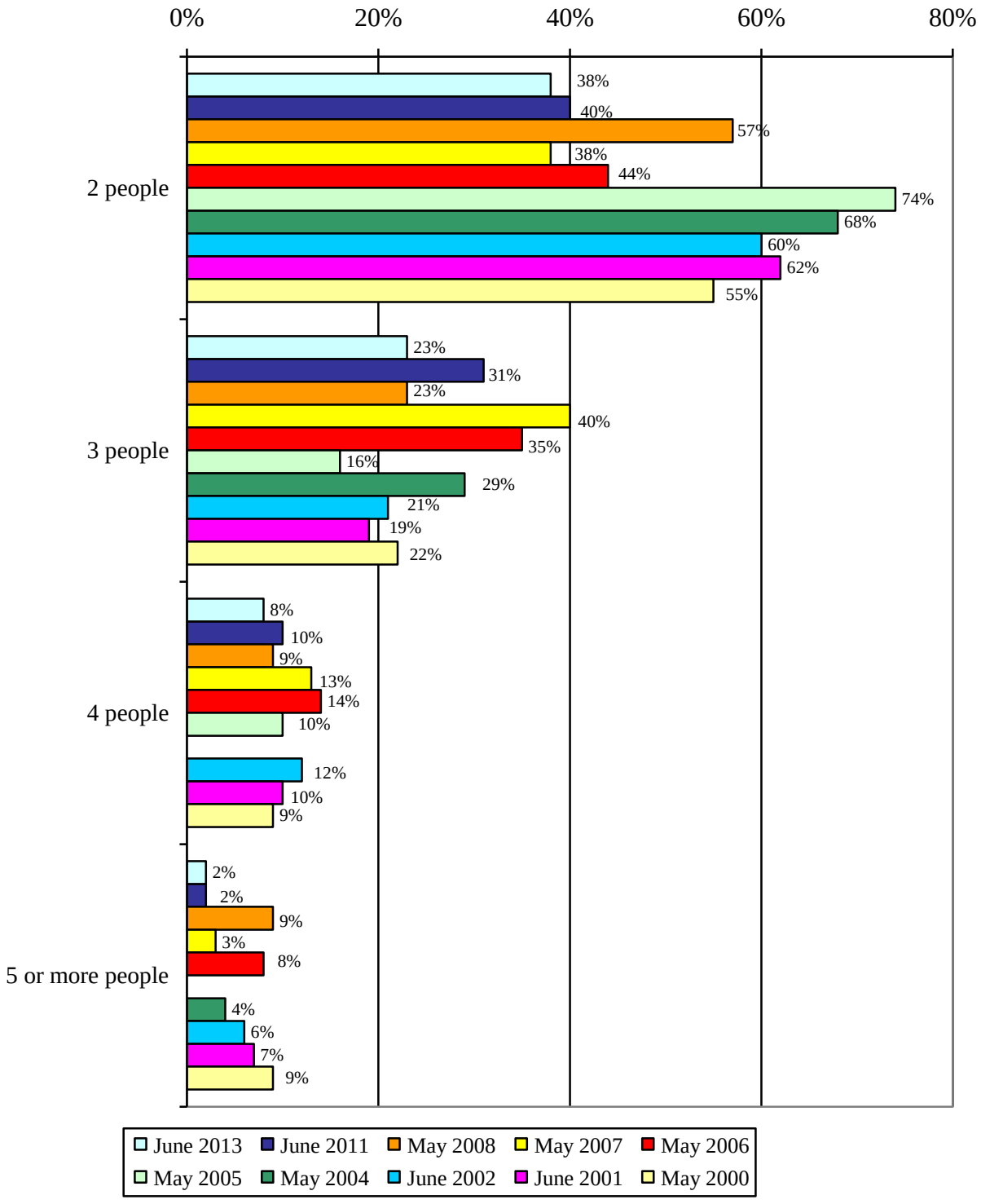
Size of Work or School Commute Carpool – As compared to 2011, the percentage who carpool to work or school in a two-person carpool has dipped slightly (from 40% to 38%), while one-third are in 3+ person carpools (down from 43%). Still, the average carpool size remains unchanged at 2.6 people. Meanwhile, the percentage who say the number in their carpool "varies" has increased significantly (from 17% to 30%).

Table 27b Size of Work or School Commute Carpool
(Among Those Who Carpool)

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
2 people	62%	60%	n/a	68%	74%	44%	38%	57%	40%	**38%**
3 people	19%	21%	n/a	29%	16%	35%	40%	23%	31%	**23%**
4 people	10%	12%	n/a	–	10%	14%	13%	9%	10%	**8%**
5 or more people	7%	6%	n/a	4%	–	8%	3%	9%	2%	**2%**
Varies	2%	1%	n/a	–	–	–	6%	3%	17%	**30%**
	N=60	N=52	n/a	N=28	N=51	N=52	N=68	N=35	N=48	**N=53**

Question: Including yourself, how many people are typically in your carpool?

Display 27b Size of Work or School Commute Carpool
(Among Those Who Carpool)



Miles Traveled to Work or School – Compared to 2011, work or school commute distances tend to be shorter. As indicated in Table 27c, six of ten (61%, up from 55% in 2011) report commutes of 5 miles or less (29%, up from 27%) or 6 to 10 miles (32%, up from 28%). Another one of ten (up from 6%) report traveling between 11 and 14 miles. Just 23% travel 15 or more miles (down from 38% in 2011, and nearly identical to 2008). Who has the longest commutes? Three of ten Northwest (28%) or East (30%) zip code residents commute 15 miles or more. On the other hand, four of ten Central residents travel 5 miles or less.

Table 27c Miles Traveled to Work or School
(Among Those Working Outside the Home or Going to School)

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	05/08 Total	06/11 Total	**06/13 Total**
5 miles or less	37%	40%	n/a	30%	33%	35%	36%	34%	27%	**29%**
6 to 10 miles	26%	23%	n/a	21%	20%	24%	25%	26%	28%	**32%**
11 to 14 miles	9%	9%	n/a	16%	3%	10%	5%	4%	6%	**10%**
15 or more miles	24%	24%	n/a	28%	32%	29%	28%	24%	38%	**23%**
Don't know/Not sure	5%	4%	n/a	5%	12%	4%	6%	11%	2%	**5%**
	N=322	N=269	n/a	N=172	N=210	N=219	N=229	N=159	N=169	**N=203**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
5 miles or less	25%	41%	32%	18%	33%	32%	23%
6 to 10 miles	32%	32%	32%	32%	25%	32%	31%
11 to 14 miles	11%	5%	19%	10%	29%	9%	6%
15 or more miles	28%	17%	16%	30%	13%	24%	26%
Don't know/Not sure	6%	5%	0%	10%	0%	3%	13%
	N=73	N=59	N=31	N=40	N=24	N=112	N=61

Question: Approximately how many miles do you travel one-way from your home to the place where you work or go to school?

Reasons for Driving Alone To and From Work or School – In line with 2007 findings (the last time this question was asked), **"convenience"** remains the top reason that single occupant vehicle commuters cite for driving alone to and from work or school (33%). This is particularly true in the East (41%) region. Men and those 45 or younger are also more apt to cite "convenience" as a primary reason for driving alone, with little difference based on perceived air quality problem. Also consistent with 2007 findings, one of four single-occupant vehicle commuters each indicate that they have **"irregular work hours"** (25%) and/or have **"no one to carpool with"** (24%). The most formally educated respondents are more apt to report irregular work hours, while a lack of people to carpool with is more common in the East zip codes and among workers at smaller (less than 50 employees) jobsites.

Overall, 12% of single-occupant vehicle commuters continue to say that they **"need their car for business"** (down slightly from 15% in 2007). These are more apt to be East zip residents, 46 to 55 year-olds and those who perceive a "major" or "moderate" air quality problem.

About one of ten simply say that they **"like to drive alone"** (9%, up from 7%) – more often East area residents and those who perceive a "major" air quality problem. Other single occupant vehicle commuters cite **"personal errands"** (unchanged at 7%), **"child drop off"** (6%, up from 4% in 2007) and/or **"no bus service in the area"** (4%, down from 8%) as reasons for driving along to and from work or school.

Table 27d Reasons For Driving Alone To and From Work or School
(Among Single-Car Commuters)

	06/01 Total	06/02 Total	06/03 Total	05/04 Total	05/05 Total	05/06 Total	05/07 Total	**06/13 Total**
Convenience	22%	19%	n/a	25%	32%	30%	32%	**33%**
Irregular work hours	20%	27%	n/a	31%	18%	19%	23%	**25%**
No one to carpool with	35%	39%	n/a	21%	27%	24%	24%	**24%**
Need car for business	14%	9%	n/a	12%	6%	15%	15%	**12%**
Like to drive alone	7%	4%	n/a	7%	5%	12%	7%	**9%**
Personal errands	3%	1%	n/a	3%	7%	3%	7%	**7%**
Child drop off	2%	3%	n/a	–	4%	1%	4%	**6%**
No bus service in area	4%	4%	n/a	6%	11%	6%	8%	**4%**
Other	4%	5%	n/a	11%	8%	7%	6%	**4%**
	N=258	N=210	n/a	N=145	N=161	N=177	N=178	**N=162**

	Area				Air Quality Problem		
	North-west	Central	South	East	Major	Moderate	Minor
Convenience	35%	27%	27%	41%	33%	35%	33%
Irregular work hours	29%	25%	31%	10%	19%	29%	20%
No one to carpool with	21%	20%	19%	38%	19%	27%	15%
Need car for business	13%	7%	12%	17%	14%	16%	4%
Like to drive alone	6%	9%	8%	17%	19%	4%	11%
Personal errands	11%	9%	0%	3%	14%	7%	6%
Child drop off	11%	2%	0%	7%	0%	7%	9%
No bus service in area	3%	9%	0%	0%	0%	2%	9%
Other	3%	4%	11%	0%	0%	6%	4%
	N=63	N=44	N=26	N=29	N=21	N=89	N=46

Question: What is the main reason you drive alone?

Storm Water Perceptions and Practices

New to the current study, respondents were asked a series of questions designed to collect baseline data regarding storm water perceptions/knowledge and hazardous waste issues.

Perception of Where Storm Water That Flows Into Tucson Storm Drains Ends Up – After being informed that streets in the Tucson area are equipped with storm drains, respondents were asked (to the best of their knowledge) where the water that flows into these drains end up.

As indicated in Table 28, and allowing for multiple responses, 44% indicate that the storm water that flows into storm drains ends up in a **river or wash**. This includes one-half of Central and East region residents – with no real difference based on the perceived seriousness of the storm water pollution problem in Tucson.

In lesser numbers, others think that storm water that flows into storm drains end up in:

- **Sewage plants** (12% – more often Central or East zip residents.)
- **Groundwater** (7% – regardless of geography [slightly lower only in the East region].)
- **Water plants** (6% – typically Northwest or East region denizens.)
- **Canals** (4% – with an increased mention in the East area.)

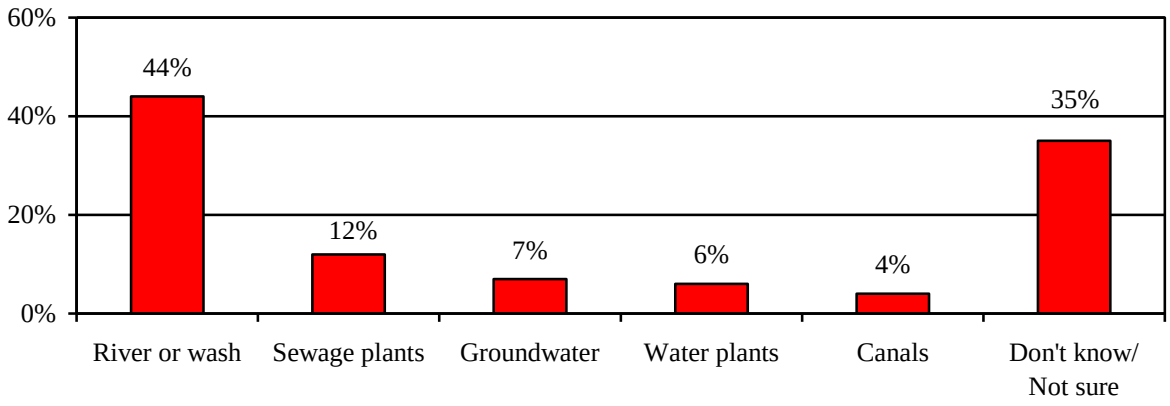
Overall, 35% **do not know** where storm water ends up. This includes one-half of South region residents, with few differences based on perceived seriousness of Tucson's storm water pollution problem.

Table 28 Perception of Where Storm Water That Flows Into Tucson Storm Drains Ends Up

	06/13 Total	Area				Storm Water Pollution Problem		
		North-west	Central	South	East	Not a Problem	Moderate Problem	Serious Problem
River or wash	**44%**	42%	51%	37%	49%	42%	46%	43%
Sewage plants	**12%**	10%	17%	7%	15%	8%	11%	14%
Groundwater	**7%**	7%	8%	7%	4%	11%	5%	7%
Water plants	**6%**	8%	3%	4%	10%	2%	6%	7%
Canals	**4%**	4%	4%	1%	10%	0%	4%	5%
Don't know/Not sure	**35%**	39%	24%	50%	22%	38%	37%	32%
	N=504	N=136	N=150	N=145	N=73	N=80	N=217	N=207

Question: Streets in the Tucson area are equipped with storm drains. To the best of your knowledge, where does the storm water that flows into these drains end up?

Display 28 Perception of Where Storm Water That Flows Into Tucson Storm Drains Ends Up



Low Impact Development Practices Implemented/Installed at Home or Business – The most often implemented low impact development practice at home or work is **landscaping with native plants**. Four of ten have landscaped with native plants – regardless of geography (slightly higher among Central zip residents). High income households and the most formally educated respondents are most apt to have landscaped with native plants.

Others have implemented or installed the following low impact development practices:

- **Landscaped depressions that collect storm water** (16% implementation. Northwest or East region residents and college graduates or better are more apt to have created landscaped depressions.)

- **Connecting runoff from a roof or paved surface to a basin or to water plants** (14% implementation. Usage is lower only in the South zips and higher among college graduates or better.)

- **Natural areas protected from clearing and grading** (12% implementation, regardless of geography. Women, 46 to 55 year-olds and those with at least some graduate school level education are more apt to have utilized natural areas.)

- **Water harvesting, using rain barrels or cisterns** (12% implementation. These tend to be Northwest zip residents, women and 46 to 75 year-olds.)

- **A trench that is filled with gravel to collect storm water** (11% implementation. Usage is elevated in the East zips and among women, 56 to 75 year-olds and the most formally educated.)

- **Porous pavements or bricks** (10% implementation. East residents, 66 to 75 year-olds, high income households and the most formally educated respondents are more likely to have installed porous pavements or bricks.)

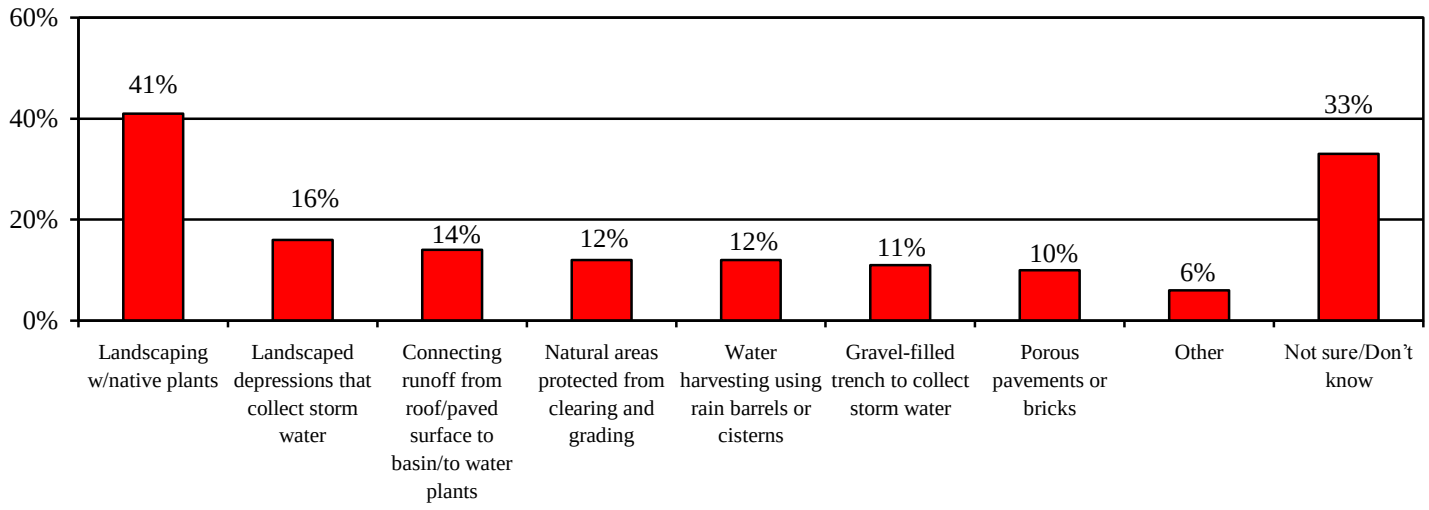
One-third overall indicate they have not implemented any low impact development practices (or are simply not sure). This is the case regardless of geography.

Table 29 Low Impact Development Practices
Implemented/Installed at Home or Business

	06/13 Total	Area				Storm Water Pollution Problem		
		North-west	Central	South	East	Not a Problem	Moderate Problem	Serious Problem
Landscaping with native plants	**41%**	38%	45%	40%	42%	31%	40%	47%
Landscaped depressions that collect storm water	**16%**	21%	11%	16%	19%	8%	19%	17%
Connecting runoff from a roof or paved surface to a basin or to water plants	**14%**	17%	14%	10%	19%	9%	13%	17%
Natural areas protected from clearing and grading	**12%**	14%	11%	12%	14%	11%	12%	13%
Water harvesting using rain barrels or cisterns	**12%**	16%	10%	11%	12%	14%	11%	14%
A trench that is filled with gravel to collect storm water	**11%**	10%	8%	12%	15%	6%	10%	13%
Porous pavements or bricks	**10%**	7%	8%	11%	18%	2%	10%	13%
Other	**6%**	5%	9%	1%	7%	5%	5%	6%
Not sure/Don't know	**33%**	35%	33%	32%	32%	46%	31%	30%
	N=504	N=136	N=150	N=145	N=73	N=80	N=217	N=207

Question: Which of the following, if any, has been implemented or installed at your home or business?

Display 29 Low Impact Development Practices Implemented/Installed at Home or Business



Perceived Seriousness of Storm Water Pollution Problem in Tucson Area – Using a "1-to-9" scale (where "1" means "not a problem" and "9" means "a serious problem"), fully 84% of respondents indicate that there is a "serious" (41%) or "moderate" (43%) problem "in the Tucson area with polluting materials entering storm drains." Just 16% believe it is "not a problem" – yielding a 5.7 average score on the "1-to-9" rating scale. The degree of perceived seriousness is highest in the East zips (6.1 versus 5.8 each in the Central and South regions). Meanwhile, just 31% of Northwest area residents consider storm water pollution to be a "serious problem" (5.3). Increased perception of a storm water pollution problem is elevated among women, 16 to 35 year-olds, Hispanics, progressively more long-term Pima County residents and those with some college education (but no degree). On the other hand, seven of ten "new" residents (for less than two years) consider the problem to be "moderate" (4.8).

Those who think that Tucson has a progressively more serious air quality problem are also more likely to think it has an increasingly more severe storm water pollution problem.

Table 30 Perceived Seriousness of Storm Water Pollution Problem in Tucson Area

		Area			
	06/13 Total	North-west	Central	South	East
Serious problem (7-9)	**41%**	31%	42%	44%	52%
Moderate problem (4-6)	**43%**	47%	43%	41%	40%
Not a problem (1-3)	**16%**	22%	15%	14%	8%
Average score on 1-9 scale	**5.7**	5.3	5.8	5.8	6.1
	N=504	N=136	N=150	N=145	N=73

Question: On a scale of "1-to-9" where "9" means "a serious problem" and "1" means "not a problem," how much of a problem do you think there is in the Tucson area with polluting materials entering storm drains? You can give me any number between "1" and "9."

Rating of Various Contributors to Storm Water Pollution Problem in the Tucson Area – Using the same "1-to-9" scale, respondents were asked to rate six different contributors to the storm water pollution problem in the Tucson area. Results are summarized in Table 31, ranked by average score.

About eight of ten overall rate five of the six factors evaluated to be a "moderate" or "serious" problem contributing to storm water pollution in the Tucson area, including:

- **Automotive fluids such as oil, gasoline and brake fluid** (45% rate as "serious," 79% combined "serious" plus "moderate" problem overall [5.8 average score on the "1-to-9" scale]. East region residents, 16 to 35 year-olds, non-Whites and those with progressively less formal education are more apt to perceive automotive fluids to be a "serious problem.")

- **Chemicals and materials from industrial facilities** (40% rate as "serious," 78% combined "serious" plus "moderate" problem overall [5.7 average score]. Less of a perceived problem only in the East zips [5.2 versus 5.6-5.8 elsewhere]. Women, 16 to 25 year-olds, Hispanics and lower income households are more likely to think that materials from industrial facilities are a "serious problem" contributing to storm water pollution.)

- **Chemicals and materials from construction sites** (39% rate as "serious," 81% combined "serious" plus "moderate" problem overall [5.6 average score]. Opinions are similar regardless of geography [slightly higher in the East zips]. More apt to think that construction site materials contribute to storm water pollution are women, 16 to 25 or 36 to 45 year-olds and non-Whites.)

- **Household products such as cleaning fluids, detergents, paints, degreasers and bleaches** (38% rate as "serious," 77% combined "serious" plus "moderate" problem overall [5.5 average score]. Perceived seriousness is slightly lower only in the Central zips [5.4 versus 5.6-5.7 elsewhere]. Women, 16 to 25 or 36 to 45 year-olds, Hispanics and lower income households are more likely to consider household products as a "serious" contributor to storm water pollution.)

- **Pesticides, fertilizers and debris from lawns and gardens** (37% rate as "serious," 79% combined "serious" plus "moderate" problem overall [5.5 average score]. Geographically, average scores are somewhat lower only in the Northwest region [5.3 versus 5.5-5.6 elsewhere]. Meanwhile, women, 36 to 45 year-olds, Hispanics and low-income households perceive the greatest problem.)

Four of ten say that **animal waste from household pets** is "not a problem" with respect to contributing to the storm water pollution problem in the Tucson area. Among the rest, only 23% rate animal waste as a "serious problem" (4.4 average score).

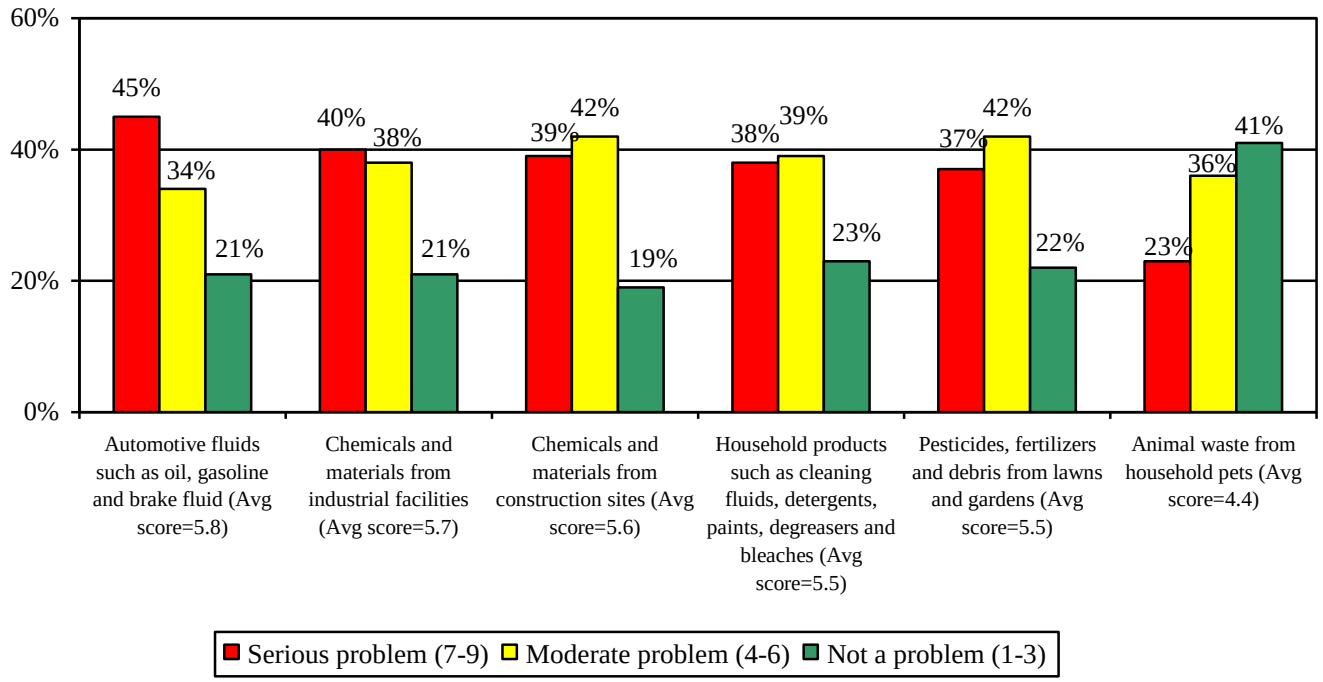
For all six factors tested, the seriousness of each as a contributor to the storm water pollution problem is directly related to the overall perceived degree of a storm water pollution problem in the Tucson area.

Table 31 Rating of Various Contributors to Storm Water Pollution Problem in Tucson Area

(6/13 N=504)	Serious Problem (7-9)	Moderate Problem (4-6)	Not a Problem (1-3)	Average Score on 1-9 Scale
Automotive fluids such as oil, gasoline and brake fluid	45%	34%	21%	5.8
Chemicals and materials from industrial facilities	40%	38%	21%	5.7
Chemicals and materials from construction sites	39%	42%	19%	5.6
Household products such as cleaning fluids, detergents, paints, degreasers and bleaches	38%	39%	23%	5.5
Pesticides, fertilizers and debris from lawns and gardens	37%	42%	22%	5.5
Animal waste from household pets	23%	36%	41%	4.4

Question: Using same "1-to-9" scale – where "9" means "a serious problem" and "1" means "not a problem" - how much do you think each of the following contributes to the problem of storm water pollution in the Tucson area? You can give me any number between "1" and "9."

Display 31 Rating of Various Contributors to Storm Water Pollution Problem in Tucson Area



Methods Used to Dispose of Various Types of Household Hazardous Waste – The three most utilized methods to dispose of household hazardous waste (including items such as household chemicals, automotive fluids and lawn & garden chemicals) include:

- **Hazardous waste collection site** (47% usage, particularly South region denizens, 56 to 75 year-olds, 6-to-10 year Pima County residents and the most formally educated respondents.)

- **Auto parts store** (46% usage. Similar usage across geography [slightly higher in the Northwest zips] or length of residence, and highest among men, 26 to 35 year-olds and higher income households [especially those with progressively more vehicles owned or leased].)

- **Put in the garbage** (30% usage. These are more apt to be Northwest or Central residents, 36 to 45 year-olds, newer [five years or less] Pima County residents, non-Whites and less formally educated respondents.)

Two of ten each dispose of household hazardous waste by taking it to a **service station** (21%) or **landfill** (19%). South region residents and 56 to 65 year-olds are more apt to take waste to a service station. Landfill usage is lower only in the East zips (12% versus 19%-21% elsewhere) and generally consistent among 26 to 65 year-olds – with increased usage among progressively less formally educated respondents.

Another 11% dispose of their household hazardous waste by **pouring it down the sink or drain** – more often East area residents, low-income households and the newest (for less than two years) Pima County residents.

Among those who think that Tucson has a "serious" storm water pollution problem, more dispose of household hazardous waste at an auto parts store (54%) than hazardous waste collection site (48%) – followed by the garbage can (37%) or service station (26%). Landfill usage is higher among those who consider Tucson to have a "moderate" or no problem with storm water pollution (20%-23% versus 14% among respondents who perceive a "serious" problem).

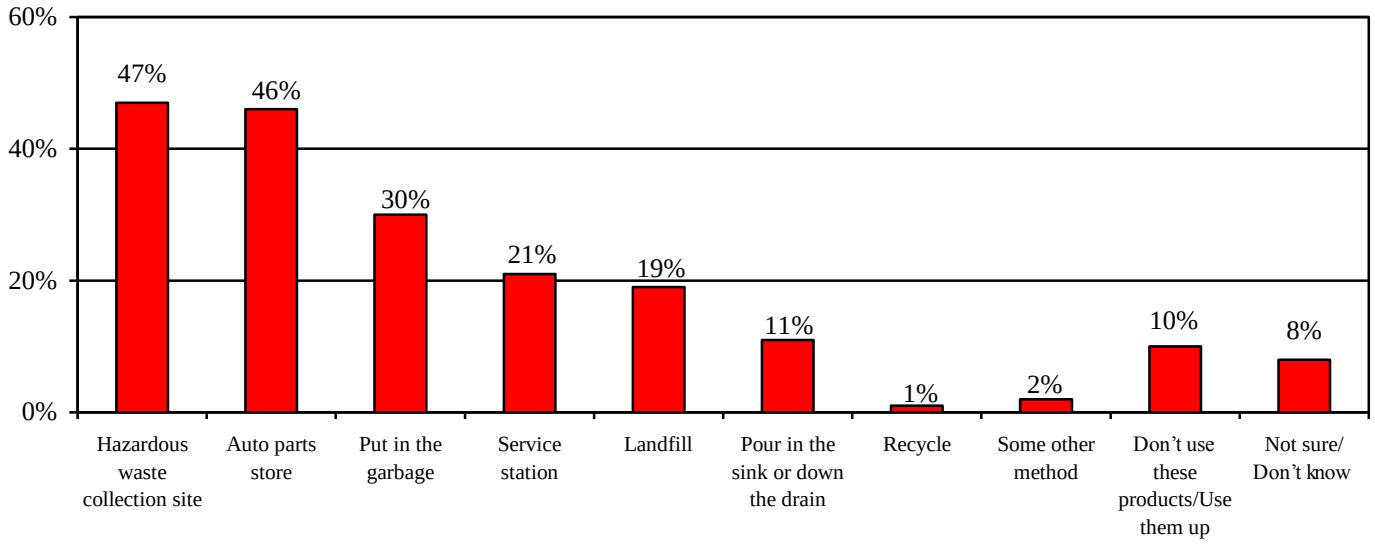
Overall, 8% are unsure how they dispose of hazardous household waste, more often the youngest respondents. One of ten claim to never use these types of products (or finish them all up when used).

Table 32 Methods Used to Dispose of Various Types of Household Hazardous Waste

	06/13 Total	Area				Storm Water Pollution Problem		
		North-west	Central	South	East	Not a Problem	Moderate Problem	Serious Problem
Hazardous waste collection site	**47%**	42%	45%	54%	44%	41%	47%	48%
Auto parts store	**46%**	50%	44%	44%	47%	44%	40%	54%
Put in the garbage	**30%**	32%	35%	25%	27%	30%	23%	37%
Service station	**21%**	15%	22%	27%	19%	20%	17%	26%
Landfill	**19%**	21%	21%	19%	12%	20%	23%	14%
Pour in the sink or down the drain	**11%**	12%	14%	3%	18%	9%	12%	11%
Recycle	**1%**	2%	1%	2%	0%	1%	2%	1%
Some other method	**2%**	2%	1%	1%	4%	0%	1%	3%
Don't use these products/Use them up	**10%**	15%	11%	3%	11%	9%	13%	7%
Not sure/Don't know	**8%**	10%	5%	10%	10%	6%	10%	7%
	N=504	N=136	N=150	N=145	N=73	N=80	N=217	N=207

Question: I am now going to read you a list of different methods that people use to dispose of items such as household chemicals, automotive fluids and lawn & garden chemicals. After each, simply tell me if you or someone in your household use this method to dispose of these items.

Display 32 Methods Used to Dispose of Various Types of Household Hazardous Waste



Government Entity to Call If Witness to Someone Dumping Trash or Chemicals in a Storm Drain – More than one-third (35%) are not sure who they would call if they witnessed someone dumping trash or chemicals into a storm drain or wash and wanted to report it. This is the case regardless of geographic area (particularly in the Central zips), gender or perception of Tucson's storm water pollution problem. The youngest respondents, Hispanics and 6+ year Pima County residents are most apt to be unsure of who to call.

Among the rest, 28% indicate they would call **911 or the police department** to report illegal dumping. These tend to be East zip residents, 26 to 45 year-olds, the newest (for less than two years) Pima County denizens and those who perceive that Tucson has a progressively more serious storm water pollution problem.

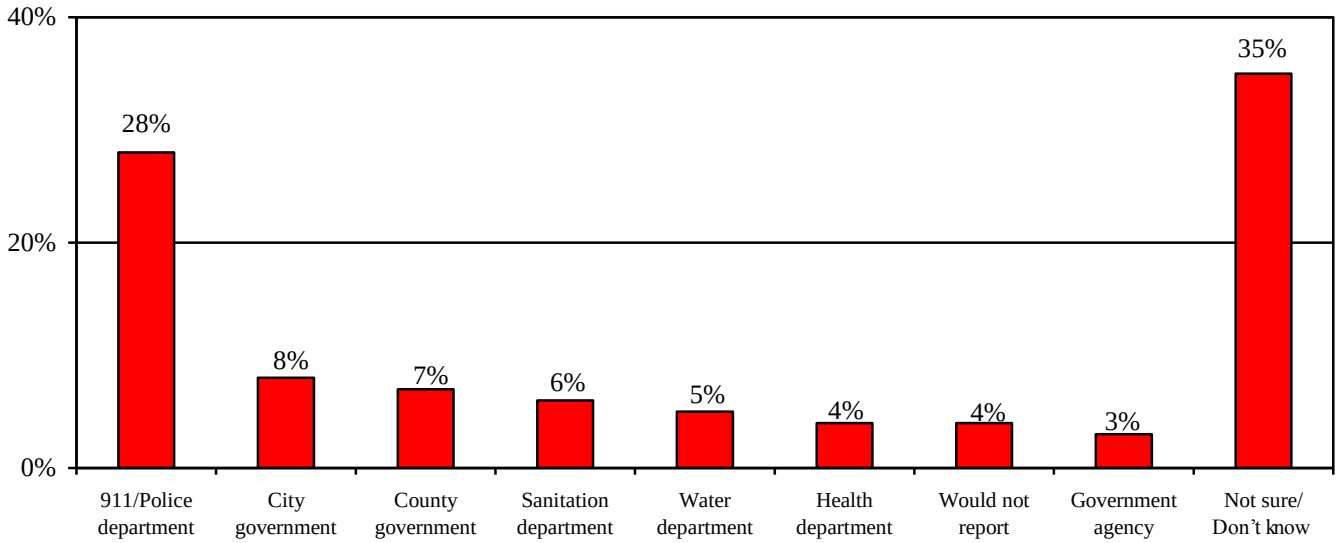
In lesser numbers, others would report illegal dumping into a storm drain or wash by calling **city government** (8%), **county government** (7%), **the sanitation department** (6%), **the water department** (5%) or **health department** (4%). Significantly, just 4% say they would *not* report illegal dumping.

Table 33 Government Entity to Call If Witness to Someone Dumping Trash or Chemicals in a Storm Drain

		Area				Storm Water Pollution Problem		
	06/13 Total	North-west	Central	South	East	Not a Problem	Moderate Problem	Serious Problem
911/Police department	**28%**	31%	22%	28%	38%	25%	28%	30%
City government	**8%**	8%	6%	8%	10%	1%	9%	9%
County government	**7%**	5%	7%	8%	8%	5%	9%	6%
Sanitation department	**6%**	4%	10%	5%	7%	10%	6%	6%
Water department	**5%**	6%	7%	3%	6%	5%	3%	8%
Health department	**4%**	5%	4%	5%	3%	4%	2%	7%
Would not report	**4%**	7%	3%	5%	1%	9%	5%	2%
Government agency	**3%**	3%	3%	5%	1%	1%	5%	2%
Not sure/Don't know	**35%**	32%	39%	36%	32%	38%	33%	36%
	N=504	N=136	N=150	N=145	N=73	N=80	N=217	N=207

Question: If you saw someone dumping trash or chemicals into a storm drain or a wash and wanted to report them, who would you call to report the incident?

Display 33 Government Entity to Call If Witness to Someone Dumping Trash or Chemicals in a Storm Drain



EVALUATION OF THE 2012-2013
PIMA COUNTY CLEAN AIR CAMPAIGN AND BASELINE
STORM WATER ISSUE AWARENESS SURVEY
(June, 2013)

Appendix

Survey Methodology and Sample Selection

This survey consists of a 504-person, randomly-selected and statistically-projectable sample of the 16 years and older male and female target audience in designated Pima County zip code areas. The interviews were distributed on the basis of geographic population density in the market – with specific steps taken to ensure a proportionate number of interviews in each survey "region." The sample distribution in each region was developed using recent population estimate projections. The final in-tab geographic proportions are reflective of these actual population estimates. A similar sampling plan (based on household distribution) was also developed to ensure the ethnic composition of the final sample was as close as possible to actual proportions in Pima County.

All interviews were conducted by telephone, during early June 2013. Respondents included in this survey were selected through a random sampling procedure that allows equal probability of selection. This technique ensures that area residents who are not yet listed in a telephone directory (or choose not to be listed) are still eligible for selection. Neither the interviewer nor the interviewee had any knowledge of the study sponsor. All interviews were conducted and validated by the FMR Field staff.

Where relevant, respondents were asked if they preferred the interview to be conducted in English or Spanish. A Spanish-language version of the questionnaire was developed by FMR Associates. A total of 148 non-White respondents were interviewed in the project, including 121 Hispanics. However, only 10 respondents (2%) requested that their interview be conducted in Spanish by a bilingual interviewer. This is consistent with the 2011 survey (2%). Each telephone interview lasted approximately 14 minutes.

Cell Phone Only Households – To address "cell phone only" households (households without a land line that utilize a cell phone exclusively), FMR interviewers manually dialed randomly-generated cell phone numbers (based on known cell phone exchanges) and attempted to interview these households. Potential respondents reached through manually dialing were

given three options: to proceed with the interview using their cell phone provider's calling plan minute allocations; allow for a call-back at a mutually arranged time on a land line; or to call the cell phone back when minutes are "free" (i.e., weekends, evenings, etc.).

Statistical Reliability

The statistics in this report are subject to a degree of variation that is determined by sample (or sub-sample) size. All research data are subject to a certain amount of variation for this reason. This does not mean that the figures represented in the various tables are wrong. It means that each percentage represents a possible "range" of response. This is because the random sampling process, as well as human behavior itself, can never be perfect. For this sample, at N=500 (rounded), the statistical variation is ±4.5% under the most extreme circumstances – with a 95% confidence level. That is, when the percentages shown in the tables are near 50% (the most conservative situation), the actual behavior or attitude may range from 45.5% to 54.5%. The 95% confidence level means that if the survey were repeated 100 times, in 95 cases the same range of response would result. Those percentages that occur at either extreme (for example, 10% or 90%) are subject to a smaller degree of statistical fluctuation (in this case, ±2.7%).

Sub-samples, such as age groups or sex, have a higher degree of statistical fluctuation due to the smaller number of respondents in those groupings.

Confidence Intervals for a Given Percent
(at the 95% confidence level)

N	**Reported Percentage**				
(Base for %)	**10 or 90%**	**20 or 80%**	**30 or 70%**	**40 or 60%**	**50%**
500	2.7%	3.6%	4.1%	4.4%	4.5%
400	2.9%	3.9%	4.5%	4.8%	4.9%
300	3.3%	4.5%	5.1%	5.5%	5.7%
200	4.2%	5.5%	6.4%	6.8%	6.9%
100	5.9%	7.8%	9.0%	9.6%	9.8%
50	8.3%	11.1%	12.7%	13.6%	13.9%
25	11.8%	15.7%	18.0%	19.2%	19.6%

Example: If the table shows that 20% of all respondents (when N=500) have a positive or negative attitude about a question category, the chances are 95 out of 100 that the true value is 20% ±3.6 percentage points; that is, the range of response would be 16.4% to 23.6%.

Significance of Difference Between Percentages
(at the 95% confidence level)

Average of the Bases of Percentages Being Compared	Reported Percentage				
	10 or 90%	20 or 80%	30 or 70%	40 or 60%	50%
400	4.4%	5.6%	6.5%	7.1%	7.2%
250	5.2%	7.1%	8.1%	8.6%	8.8%
200	5.9%	7.8%	8.9%	9.6%	9.8%
150	6.8%	9.1%	10.3%	11.0%	11.3%
100	8.3%	11.0%	12.7%	13.6%	13.9%
50	11.7%	15.7%	18.0%	19.2%	19.7%
25	16.7%	22.2%	25.5%	27.2%	27.7%

Example: (Within Survey)

If a table indicates that 34% of men have a positive attitude toward a category of response, and that 25% of women have the same attitude, the following procedure should be used to determine if this attitude is due to chance:

The average base is 250 for the reported percentages (225+279)/2=252. The average of the percentages is 30.0% – (34+25)/2=29.5%. The difference between the percentages is 9%. Since 9% is greater than 8.1% (the figure in the table for this base and this percentage), the chances are 95 out of 100 that the attitude is significantly different between men and women.

2013 PIMA AIR QUALITY/STORM WATER REGION DEFINITIONS

Northwest:	85653
	85654
	85658
	85704
	85705
	85737
	85739
	85741
	85742
	85743
	85745
	85755
	85652
	85738
Central:	85710
	85711
	85712
	85716
	85718
	85719
South:	85321
	85614
	85622
	85629
	85634
	85641
	85701
	85706
	85707
	85708
	85713
	85714
	85735
	85736
	85746
	85756
	85757
	85601
	85633
	85639
East:	85619
	85715
	85730
	85747
	85748
	85749
	85750