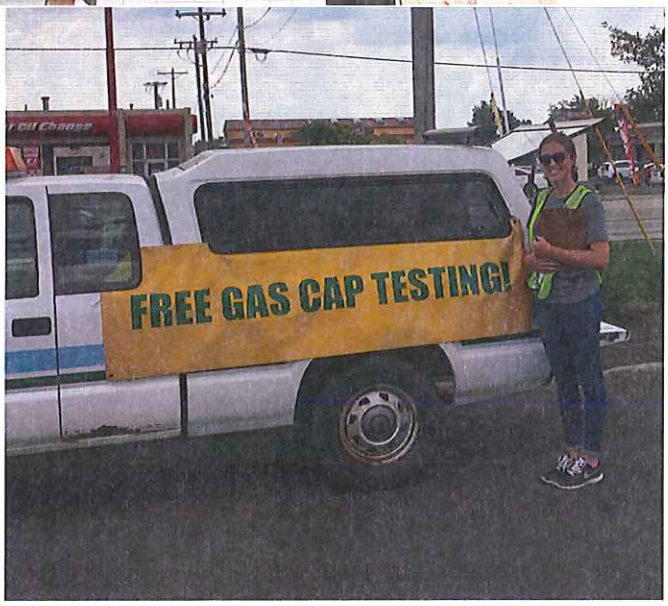
2017 Gas Cap Summary Report

City of Toledo
Division of
Environmental
Services



Toledo
Metropolitan
Area Council of
Governments

2017 Gas Cap Testing and Replacement Program Summary Report

Introduction

The Toledo Metropolitan Area Council of Governments (TMACOG) partnered with the City of Toledo Division of Environmental Services to continue the Gas Cap Testing and Replacement Program for the seventeenth consecutive year in 2017. This program served to educate the general public on the importance of a properly functioning gas cap and its impact on preventing ground level ozone pollution, commonly referred to as "smog." Residents of Northwest Ohio – which includes the cities of Toledo, Bowling Green, Holland, Maumee, Northwood, Oregon, Perrysburg, Rossford, Sylvania, Waterville, and Whitehouse, as well as Lambertville, Michigan – were invited to participate in the program by having their gas caps tested for leaks at local gas stations. This year's program tested 688 gas caps altogether. Along with the physical testing of gas caps, the program provided motorists with information on the importance of replacing faulty gas caps and what they can do to reduce air pollution.

Background

Gas cap testing and replacement programs were first implemented in areas of the country where ozone levels were not in compliance with the Environmental Protection Agency's (EPA) standards. Within these regions, gas cap testing is included as one part of a series of tests known as emissions testing. Emissions testing, commonly known as the E-Check, consists of a series of tests that vehicles must pass in order to help reduce emissions from vehicle exhaust. These programs focus particularly on those emissions that contribute to ozone pollution. The overall goal of emissions testing is to improve the air quality of that particular region. In northwest Ohio and southeast Michigan, motorists do not have to undergo mandatory E-Checks. However, the Gas Cap Testing and Replacement Program provides a simple, quick, and free way for motorists to potentially cut back on their emissions without difficulties.

At testing sites, the Gas Cap Testing and Replacement Program:

- Informs the participants of the negative impact that ground-level ozone pollution and high emission levels have on our health and the environment.
- Reduces the total amount of pollution emitted into our air by motorists through the replacement of faulty, broken, or missing gas caps.
- Educates the public on steps that can be taken to prevent air pollution, such as using public transit, carpooling and trip chaining, refueling at cooler hours of the day, not topping off the tank, and performing proper vehicle maintenance.

Sponsors

The 2017 sponsors were integral to the success of the Gas Cap Testing and Replacement Program. Without the support of each sponsor, it would be impossible to effectively run the program. Each sponsor is to be commended for assisting the efforts to help reduce ozone emissions.

Site Sponsors: Throughout the summer, gas caps were tested at various locations in Wood and Lucas counties in Ohio, and Monroe County in Michigan. There were four companies that allowed the program to conduct testing at their various locations: Kroger, Shell, Barney's and Circle K gas stations. At these sites the interns were able to post signs, disseminate informational materials, test and replace gas caps, and discuss the importance of clean air with the public.

Marketing

In order to effectively communicate to the public the existence and importance of the 2017 Gas Cap Testing and Replacement Program, the Division of Environmental Services and TMACOG employed a combination of various marketing tools. These tools enabled communication with the public while promoting the testing events. Program participants were able to learn about the program through various media outlets which include local news broadcasts, radio programs, and print media. The Gas Cap Testing and Replacement Program was effectively advertised on the TMACOG and City of Toledo websites where a schedule of testing events as well as information about the importance of this program was posted.

Radio: Like previous years, radio was used to reach out to citizens of Northwest Ohio and Southeast Michigan to attract motorists to the designated testing events. The Gas Cap Testing and Replacement Program teamed with K100 and 101.5 The River to hold a live remote radio broadcast at two different testing sites. In order to entice citizens further, these stations offered a variety of prizes and gifts for those who participated. They included t-shirts, tire gauges, and other small items with the Ozone Action insignia. By attending these events participants were able to get their gas caps tested, learn about the program, and discover the impact ground level ozone can have on air quality and public health.

Print: In order to expand the reach of the program's message, TMACOG sent press releases to different weekly and daily print outlets in the area. These releases contained a schedule of testing sites and information about the program, which included contact information.

Television: Several local news stations covered multiple gas cap events. The news stations promoted the events Tuesday through Thursday. The news stations provided information on the site location and the time of the event, as well as the importance of getting your gas cap tested.

Testing Information

The purpose of the Gas Cap Testing and Replacement Program is to reduce evaporative emissions from light-duty, gasoline-powered vehicles. This year, at 26 local testing events the program helped to prevent approximately 12,338 pounds of pollution from entering the atmosphere by replacing 62 missing or faulty gas caps. With 688 tests conducted, program representatives worked to educate the region's residents on the dangers of ground level ozone.

Testing Results

At each testing event a program representative records the year, make, and model of each vehicle being tested. This information is compiled according to the date of testing and the location of the testing site. This data is analyzed at the end of the season. This summer's average failure rate was 9.01% compared to a failure rate of 11.73% from 2016.

After analyzing all of the data collected, it became apparent that there was one vehicular characteristic that increases the probability of a car having a damaged gas cap: the age of the vehicle. There is a relationship between the year of a car and the condition of the gas cap, which is similar to the concluding remarks from years prior. While there are clear outliers and contradictory data points when taking the entire set into account, the most verifiable conclusion that can be drawn from our analysis is that "newer" cars – those produced in the past four to five years – are much less likely to have faulty gas caps than older vehicles. However, no sweeping claims can be made from this finding, and it is advised that everyone should have their gas cap checked regardless of the vehicle's year.

The following graphs were created in order to depict the potential relationships between various vehicular variables, and the final conclusions of the testers:

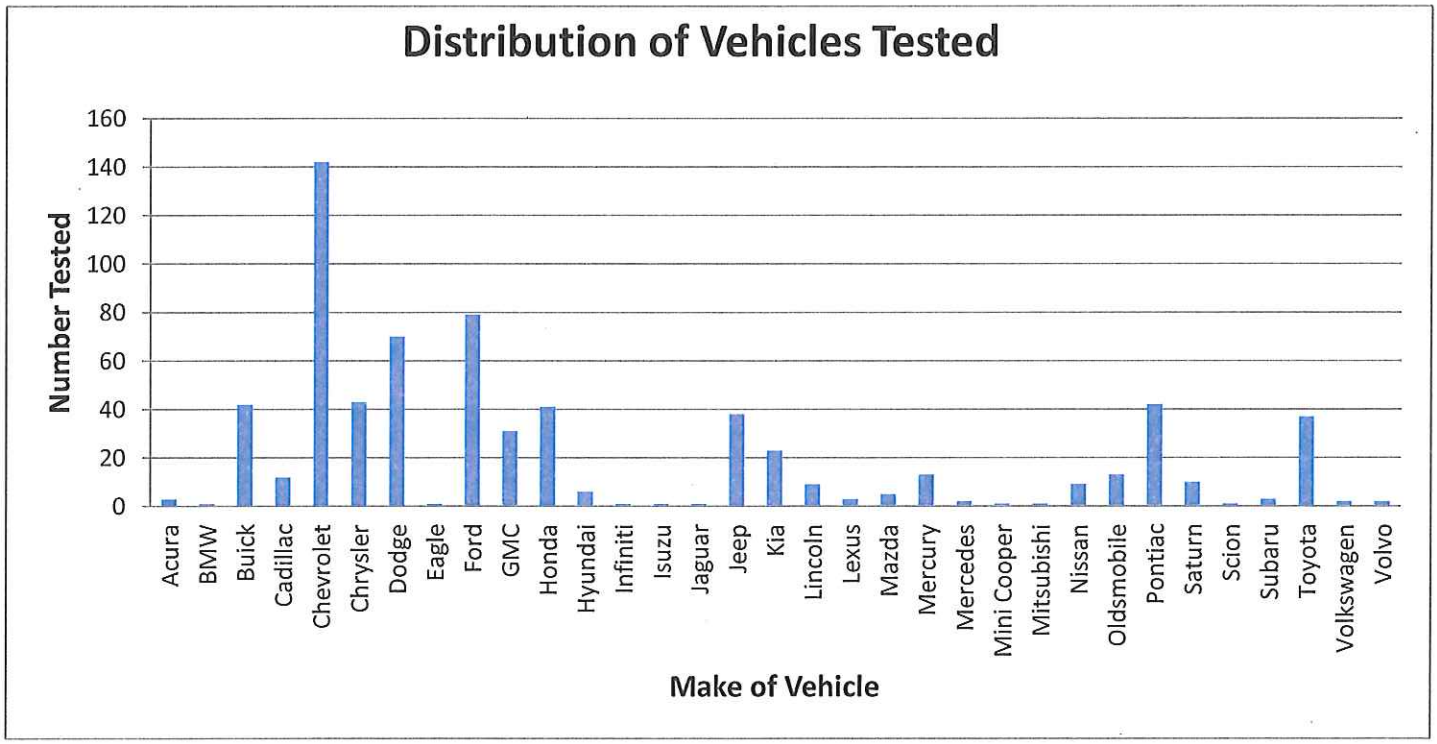


Chart 1 – This graph details each make that was tested over the course of the summer and how many were tested.

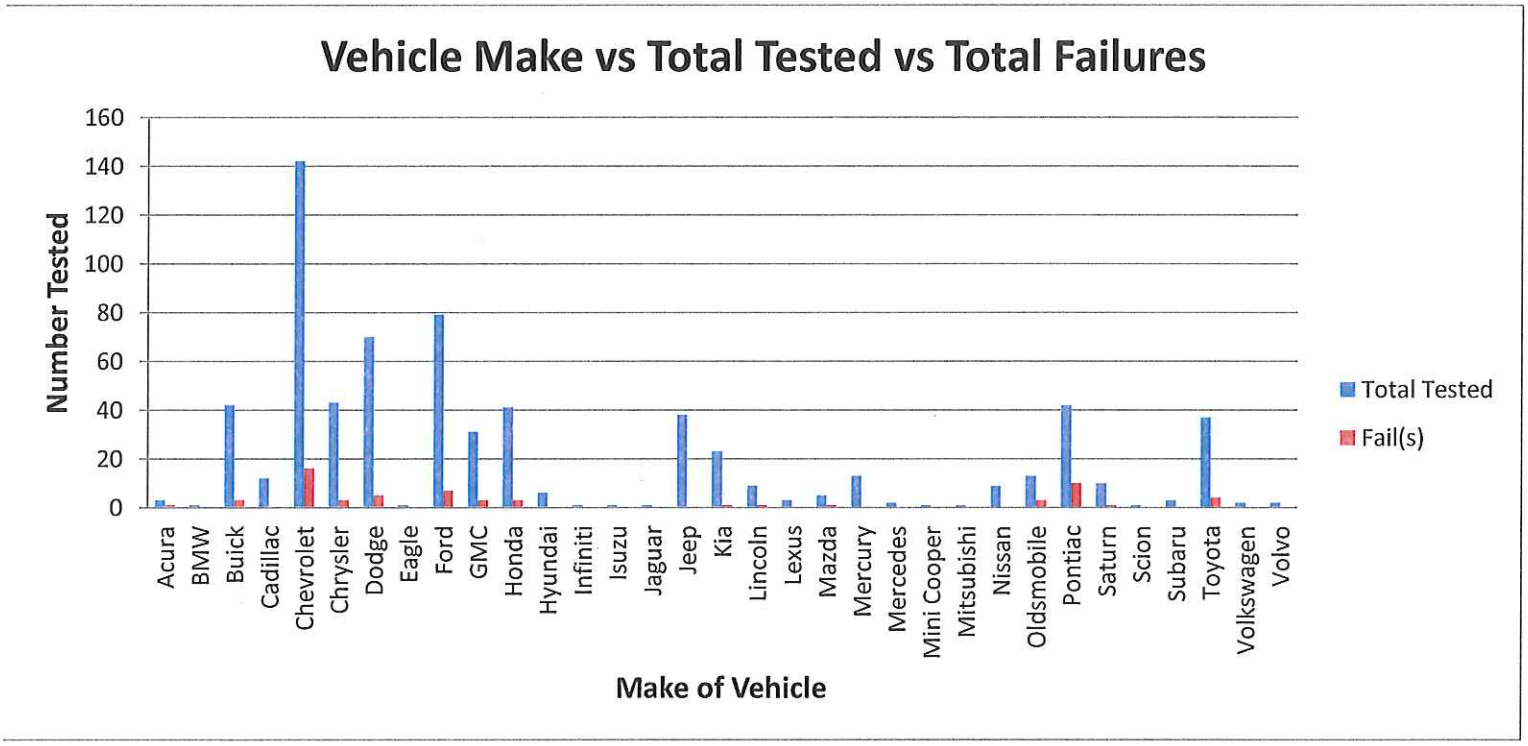


Chart 2 - This graph depicts the various makes of the vehicles tested, and how many failed. Along the horizontal axis is the make of the vehicle tested. The vertical axis depicts the total number tested for each make in blue and the total fails for each make in red.

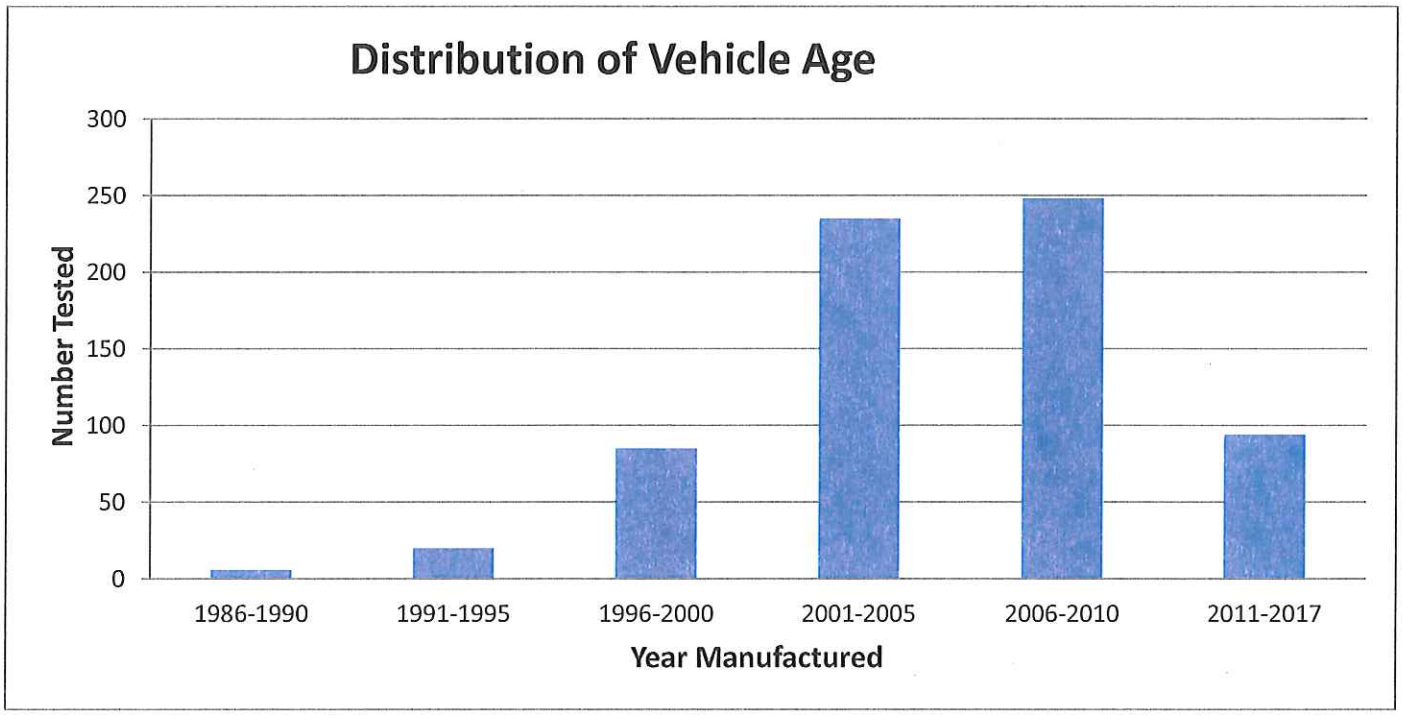


Chart 3 – This chart represents the total number of vehicles tested for a specific set of years.

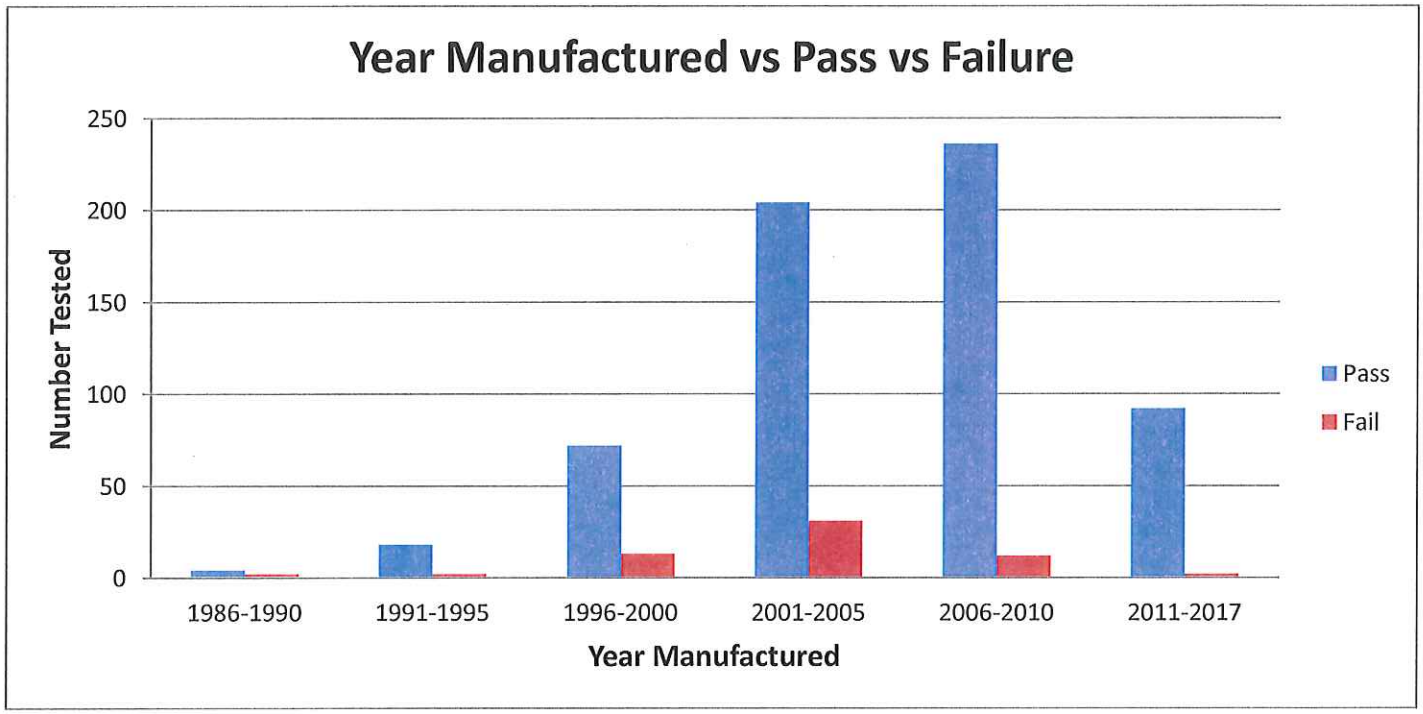


Chart 4 –On this chart, the blue bar depicts the number of vehicles with gas caps that passed, while the red bar indicates the number of gas caps that failed for each respective annual set.

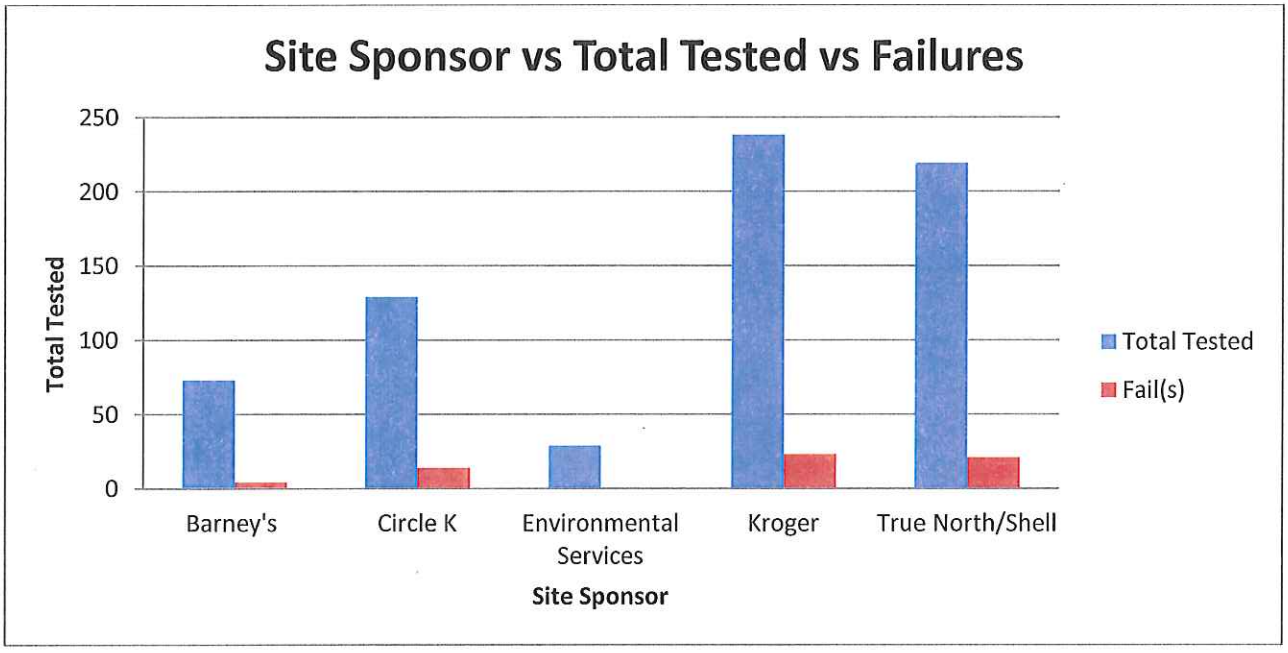


Chart 5 – This chart depicts the total vehicles tested at each respective site sponsor, along with the total failures. Tests were conducted at 8 True North stations, 7 Kroger fuel stations, 5 Circle K stations, and 4 Barney's stations, along with the City of Toledo Division of Environmental Services.

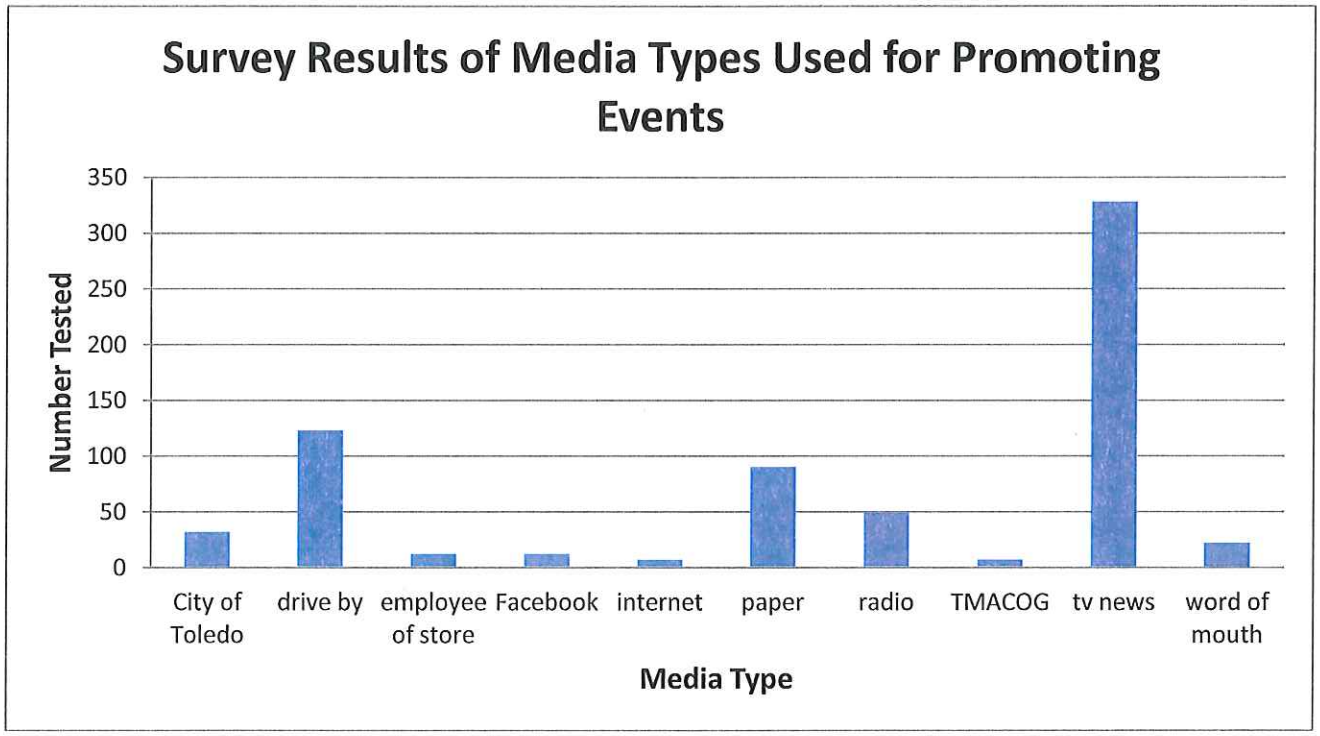


Chart 6 – At testing sites, participants were asked how they heard about the Gas Cap Testing Program. This graph depicts the outlets identified and their results.

Testing Figures

In 2017, the Gas Cap Testing and Replacement Program helped educate the public on the importance of clean air care and its affect on ground level ozone pollution. By testing the gas caps of light-duty, gasoline-powered vehicles, we were able to reduce evaporative emissions in the Toledo metropolitan area. The following are detailed figures for all of the results from each respective location during the 2017 testing season.

2017 Gas Cap Replacement Program Testing Results

6/6/2017: True North/Shell – 822 Monroe Street, Toledo, OH

Tested: 60
Failed: 8
Percent Failure: 13.33%

6/7/2017: Barney's 1670 E Wooster, Bowling Green, OH

Tested: 18
Failed: 1
Percent Failure: 5.56%

6/8/2017: Circle K- 103 Anthony Wayne Trail, Waterville, OH

Tested: 18
Failed: 5
Percent Failure: 27.78%

6/13/2017: Kroger- 3301 Navarre Ave, Oregon, OH

Tested: 27
Failed: 3
Percent Failure: 11.11%

6/14/2017: True North/Shell – 4310 Central Ave, Toledo, OH

Tested: 10
Failed: 0
Percent Failure: 0.00%

6/15/2017: Circle K- 8154 Airport Hwy, Holland, OH

Tested: 10
Failed: 1
Percent Failure: 10.00%

6/16/2017: TDOES Fleet- 348 S Erie St, Toledo, OH

Tested: 17
Failed: 0
Percent Failure: 0.00%

6/20/2017: True North/ Shell- 5473 Monroe St, Toledo, OH

Tested: 25
Failed: 1
Percent Failure: 4.00%

6/21/2017: Kroger- 2257 N Holland Sylvania Rd, Toledo, OH

Tested: 25
Failed: 3
Percent Failure: 12.00%

6/22/2017: Circle K- 6775 Dorr St, Toledo, OH

Tested: 42
Failed: 3
Percent Failure: 7.14%

6/23/2017: TDOES Employees

Tested: 12
Failed: 0
Percent Failure: 0.00%

6/27/17: Kroger –7545 W Sylvania Ave, Toledo, OH
Tested: 55
Failed: 4
Percent Failure: 7.27%

6/28/17: True North/ Shell- 5855 Weckerly Rd, Whitehouse, OH
Tested: 47
Failed: 3
Percent Failure: 6.38%

6/29/17: Barney's– 5821 N Detroit Ave, Toledo, OH
Tested: 24
Failed: 1
Percent Failure: 4.17%

7/11/17: Kroger- 27386 Carronade Dr, Perrysburg, OH
Tested: 41
Failed: 6
Percent Failure: 14.63%

7/12/17: True North/ Shell- 1000 Buck Rd, Rossford, OH
Tested: 8
Failed: 2
Percent Failure: 25.00%

7/13/17: Circle K – 4562 Woodville Road, Northwood, OH
Tested: 14
Failed: 0
Percent Failure: 0.00%

7/18/17: Barney's- 10730 Fremont Pike, Perrysburg, OH
Tested: 12
Failed: 2
Percent Failure: 16.67%

7/19/17: Kroger- 3462 W Sterns Rd, Lambertville, MI
Tested: 37
Failed: 2
Percent Failure: 5.41%

7/20/17: True North/ Shell- 1031 S Reynolds Rd, Toledo, OH
Tested: 20
Failed: 1
Percent Failure: 5.00%

7/25/17: Kroger - 6235 Monroe St, Sylvania, OH
Tested: 15
Failed: 0
Percent Failure: 0.00%

7/26/17: True North/ Shell - 298 W Dussel Dr, Maumee, OH
Tested: 25
Failed: 4
Percent Failure: 16.00%

7/27/17: Barney's- 3126 Secor Rd, Toledo, OH
Tested: 19
Failed: 0
Percent Failure: 0.00%

8/1/17: Kroger- 4633 Suder Ave, Toledo, OH
Tested: 38
Failed: 5
Percent Failure: 13.16%

8/2/17: True North/ Shell- 6903 Angola Rd, Holland, OH
Tested: 24
Failed: 2
Percent Failure: 8.33%

8/3/17: Circle K – 1235 N Holland Sylvania Ave, Toledo, OH
Tested: 45
Failed: 5
Percent Failure: 11.11%

Total Tested: 688
Total Replaced: 62