2016 Maintenance Customer Survey

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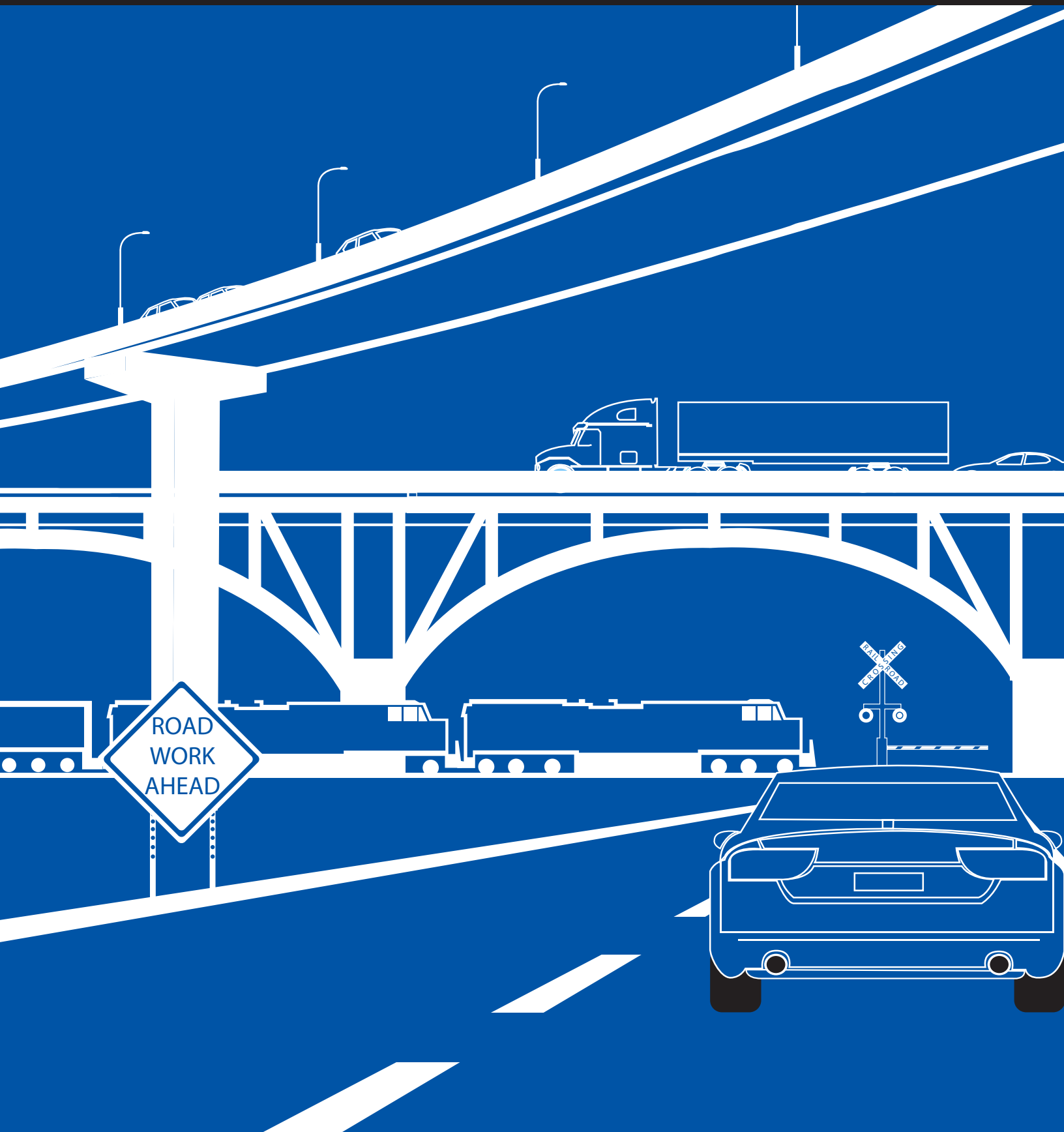

Kentucky Transportation Center
College of Engineering, University of Kentucky, Lexington, Kentucky

in cooperation with
Kentucky Transportation Cabinet
Commonwealth of Kentucky

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Research Report
KTC-16-10/SPR16-530-1F

2016 Maintenance Customer Survey

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Commonwealth of Kentucky

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16. Abstract

The Kentucky Transportation Center, with the assistance of the University of Kentucky's Survey Research Center, administered a telephone survey to 1,221 licensed drivers throughout the state to gauge their opinion of the Kentucky Transportation Cabinet's (KYTC) maintenance activities. Survey respondents were distributed throughout KYTC's 12 highway districts. The survey focused on five areas of highway maintenance: roadside features, pavement surfaces, shoulders, drainage and signs/markings. Respondents indicated they were most satisfied with the current maintenance of signs, guardrail, and striping. Pavement surfaces and potholes, and shoulders and roadway drainage, received the lowest rankings — given that the driving public is very attuned to the smoothness of roadways and readily detects problems, this result was expected. The survey also asked respondents about to specify what level of maintenance they desired for each category. Results for these questions were practically identical across the entire state, with respondents expressing a desire that roads and road features be maintained in very good to excellent condition. There were no differences between items relating to pavement surfaces or safety items. Researchers compared the 2016 survey results to the findings of a 2010 survey. There were few differences between the surveys, and in general the results mirrored each other very closely. New questions added in 2016 asked drivers about their primary sources of travel information. Drivers reported using smartphone apps to obtain travel directions and road conditions, but that traditional media outlets (e.g., television, radio) remain critical sources of information.

17. Key Words maintenance, survey, maintenance rating		**18. Distribution Statement** Unlimited with approval of the Kentucky Transportation Cabinet	
19. Security Classification (report) Unclassified	**20. Security Classification (this page)** Unclassified	**21. No. of Pages** 34	**19. Security Classification (report)**

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Executive Summary

To evaluate the public's perception of the Kentucky Transportation Cabinet's maintenance activities, the Survey Research Center at the University of Kentucky (commissioned by the Kentucky Transportation Center) conducted a telephone survey of 1,221 licensed drivers spread across the Cabinet's 12 Highway Districts. This survey focused on five general areas of highway maintenance — *Roadside Features, Pavement Surfaces, Shoulders, Drainage and Signs/ Markings*. Each respondent was asked to rate the existing level of maintenance for each item, as well as their desired level of maintenance, from unacceptable (1) to excellent (5). They were also asked to provide feedback on future spending priorities, rating each item on a scale of 1 (low priority) to 5 (high priority).

For current level of maintenance, *guardrail, and striping* garnered the highest ratings. This suggests that the public is reasonably satisfied with these areas. Areas that received the lowest ratings for current maintenance levels were *pavement surfaces and potholes*; this was followed up by *shoulders and roadway drainage*. This result was not unexpected given that the driving public is very attentive to the smoothness and rideability of roadway surfaces.

For desired level of maintenance, all of the items surveyed received nearly identical scores across the entire state. There were no differences among items relating to pavement surfaces or safety items.

However, questions about spending priorities revealed a slightly different picture. Respondents place the highest priority on *pavement surfaces*. Given that respondents were most dissatisfied with their level of current maintenance, this is unsurprising. Forty percent of the respondents also commented that *pavement surfaces* and *potholes* required improvement. The second-ranked spending priority was *signs and markings*, which is an interesting finding because this area was one of the highest ranked for its current level of maintenance.

Researchers compared the results of 2016 survey with the 2010 customer survey. Public opinion about current levels of maintenance have not changed significantly over this period. To understand where drivers acquire travel information from, the 2016 survey asked respondents to identify traveler information services they rely most frequently. Smartphone apps and traditional media outlets (e.g., television, radio) are most commonly used by drivers to learn about traffic conditions.

Introduction

To evaluate the traveling public's perception of the Kentucky Transportation Cabinet's (KYTC) maintenance activities, the University of Kentucky Survey Research Center conducted a telephone survey from February 4 to March 14, 2016 to follow up on a previous survey that was administered in of 2010. Results of the 2010 survey are reported in Research Report No. KTC-11-03/UI56-09-1F. This report compares the 2010 and 2016 survey results. The 2016 survey consisted of phone interviews with 1,221 licensed drivers, who were randomly selected from KYTC's 12 highway districts. A total of 2,585 surveys were attempted. In total, 1,118 people declined to participate, 246 were not eligible to participate (had not driven recently or unable to drive). This yielded 1,221 valid surveys — a response rate of 52.2%. Sample sizes for each highway district ranged from 73 to 93.

This survey focused on the following five general areas of highway maintenance

- Roadside Features (overall appearance, visual obstructions, fencing, guardrail)
- Pavement Surfaces
- Shoulders
- Drainage
- Signs/Markings (signs and striping)

In each area the participants were asked to rate the existing and desired levels of maintenance on the following scale:

1 – Unacceptable
2
3
4
5 – Excellent

They were asked to rank the spending priorities for these features on the following scale:

1 – Low Priority
2
3
4
5 – High Priority

As with the 2010 survey, the margin of error for this sample size, on a statewide basis, is +/- 2.8% at the 95% confidence level. For each highway district, the margin of error is +/- 9.8% at the 95% confidence level.

Using 2010 statewide survey results arithmetic averages for each survey item were calculated for each item across the highway districts. Weighted averages were also calculated based on district population. Those results showed that the results of the weighted and the arithmetic averages were almost identical. As such, statewide analysis for 2010 was conducted using the arithmetic averages obtained across the districts. For that reason, the 2016 data were analyzed using only the arithmetic averages.

Roadside Features

Questions pertaining to roadside features asked respondents to rate items such as overall appearance, visual obstructions, fencing, and guardrail. Figure 1 compares results from 2010 and 2016. Respondents expressed comparable levels of satisfaction with each feature's level of maintenance. When asked about the desired level of service and spending priorities, *roadside features* were treated collectively, not on an individual basis. The differences between 2010 and 2016 results are not significant.

Figure 2 presents the statewide responses collected during the 2016 survey. Approximately 58 percent of the respondents rated the existing level of maintenance for roadside features as a 4 or 5 (indicating excellent maintenance). Approximately 91 percent of respondents stated that their desired level of maintenance was a 4 or 5.

Figures 3-6 illustrate the variability in the responses across each district for 2010 and 2016. Perceived level of maintenance for overall appearance and fencing changed very little over this period. Opinions were fairly uniform across districts. However, opinions regarding visual obstructions and guardrails varied significantly among districts over this period. Figure 7 captures the desired level of maintenance for all roadside features across each district. Opinions were not very uniform between districts and between years. The number of respondents desiring better maintenance of roadside features rose sharply in Districts 5, 6, 9.

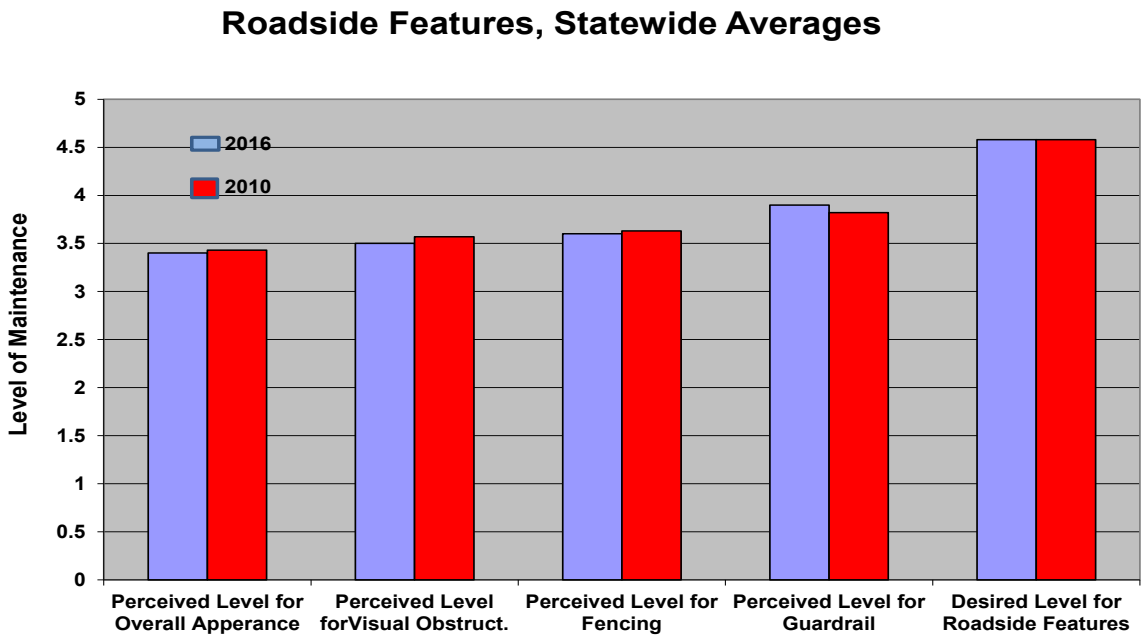

Figure 1 Summary of Statewide Roadside Features

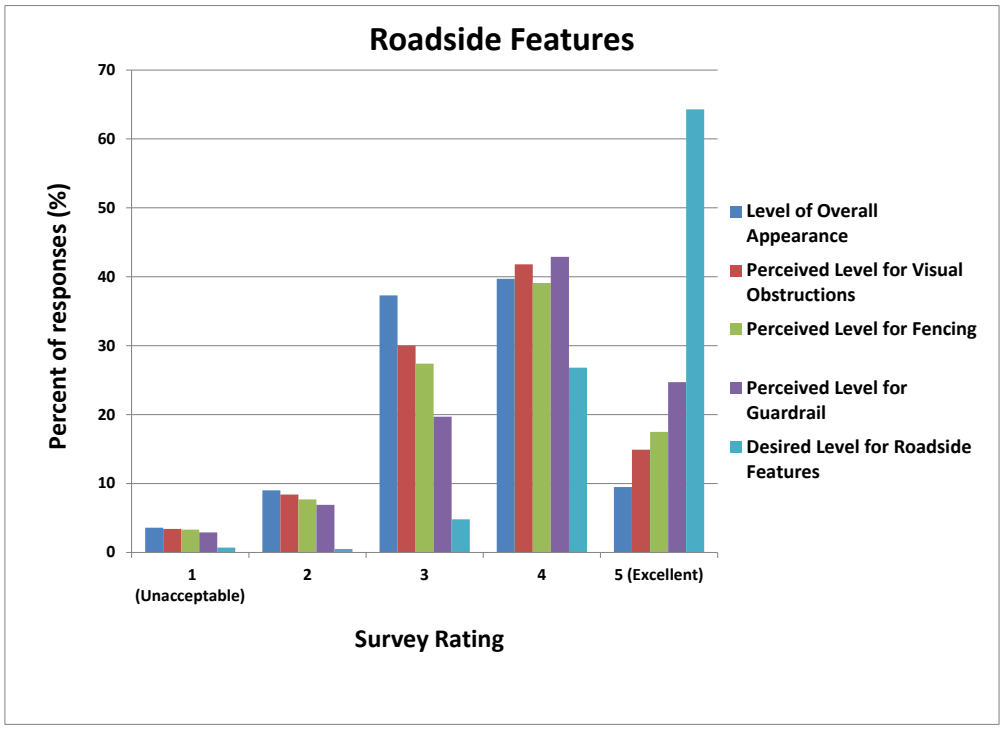

Figure 2 Statewide Distribution of Roadside Features

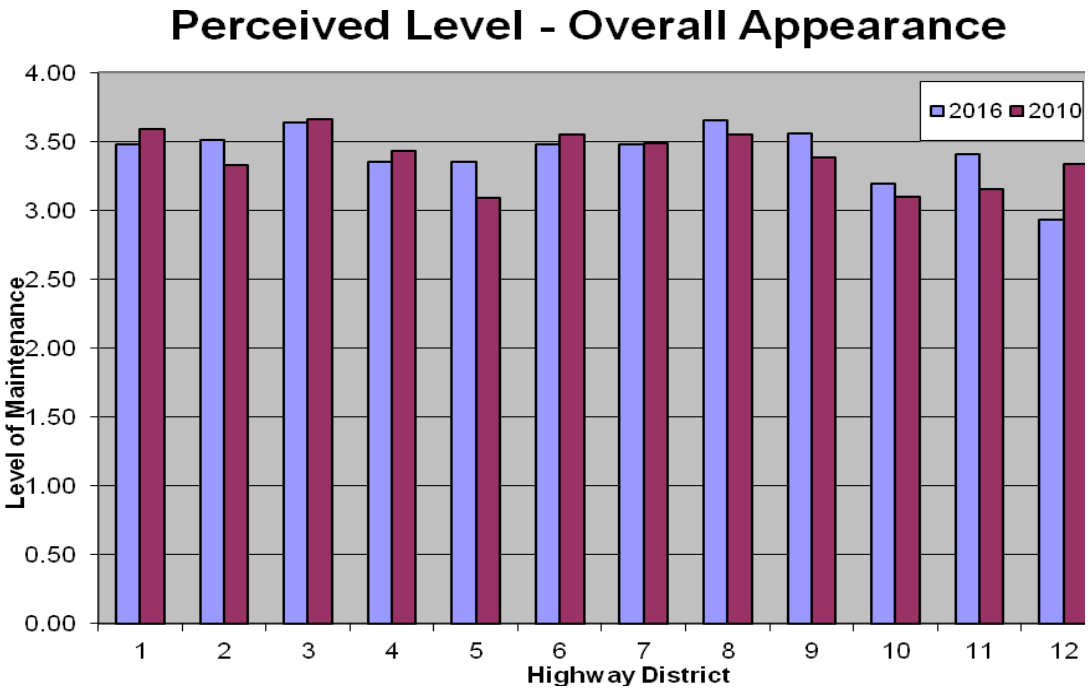

Figure 3 District-Level Scores for Overall Appearance

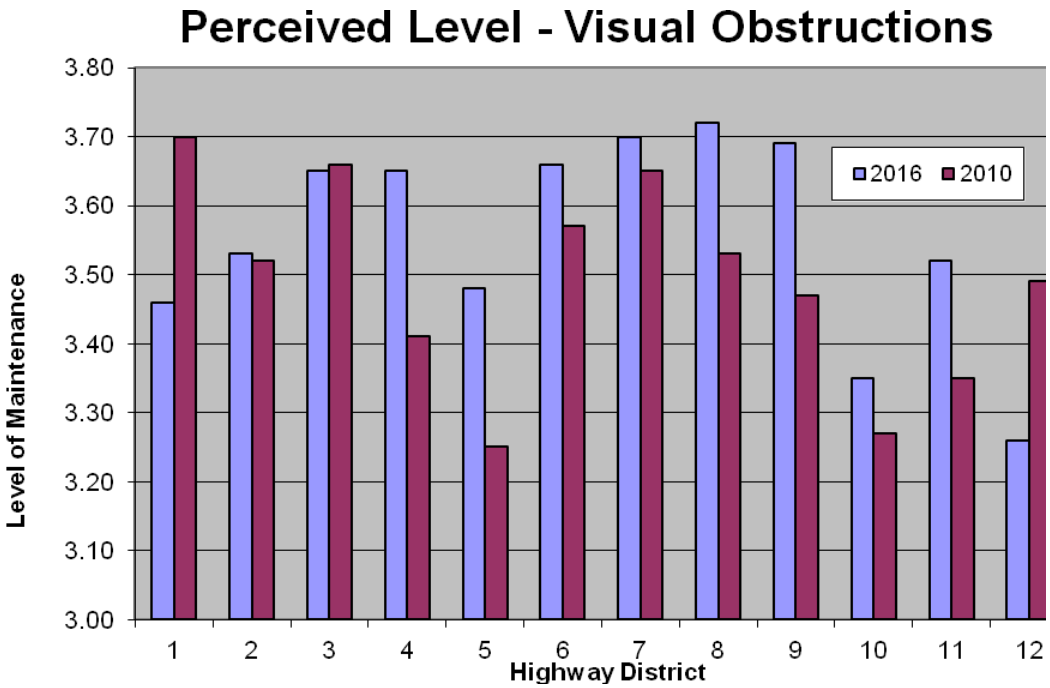

Figure 4 District-Level Visual Obstruction

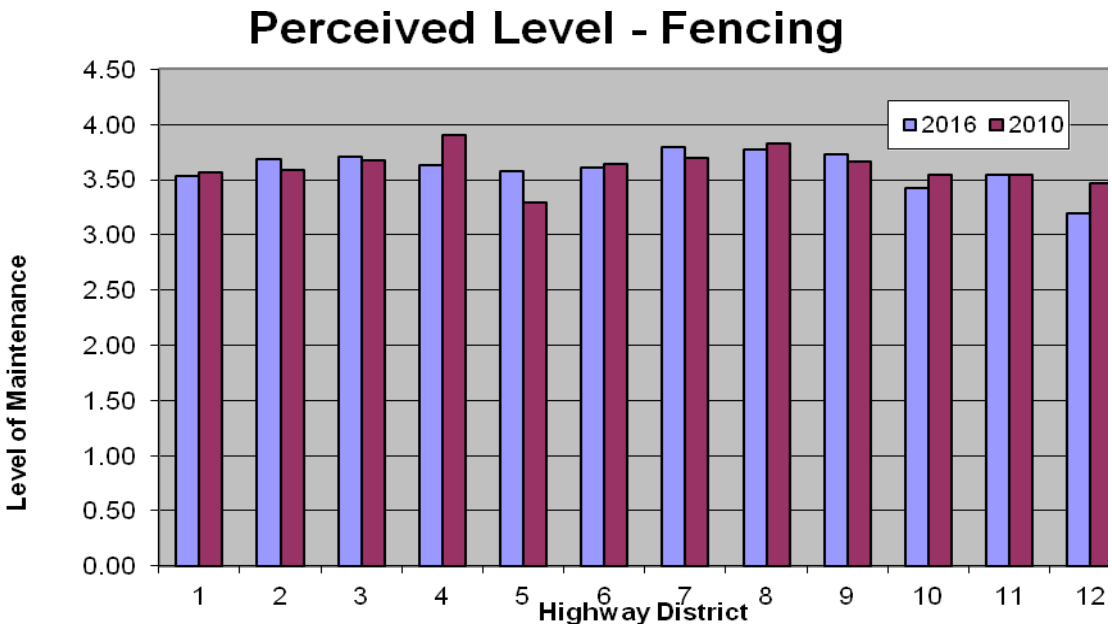

Figure 5 District Level — Fencing

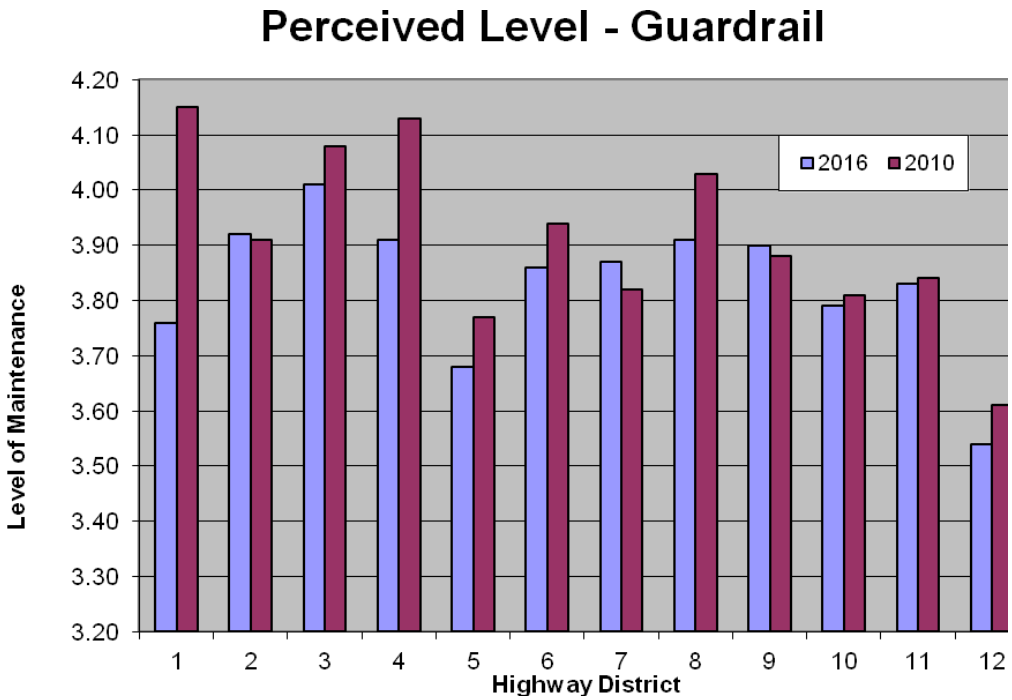

Figure 6 District Level — Guardrail

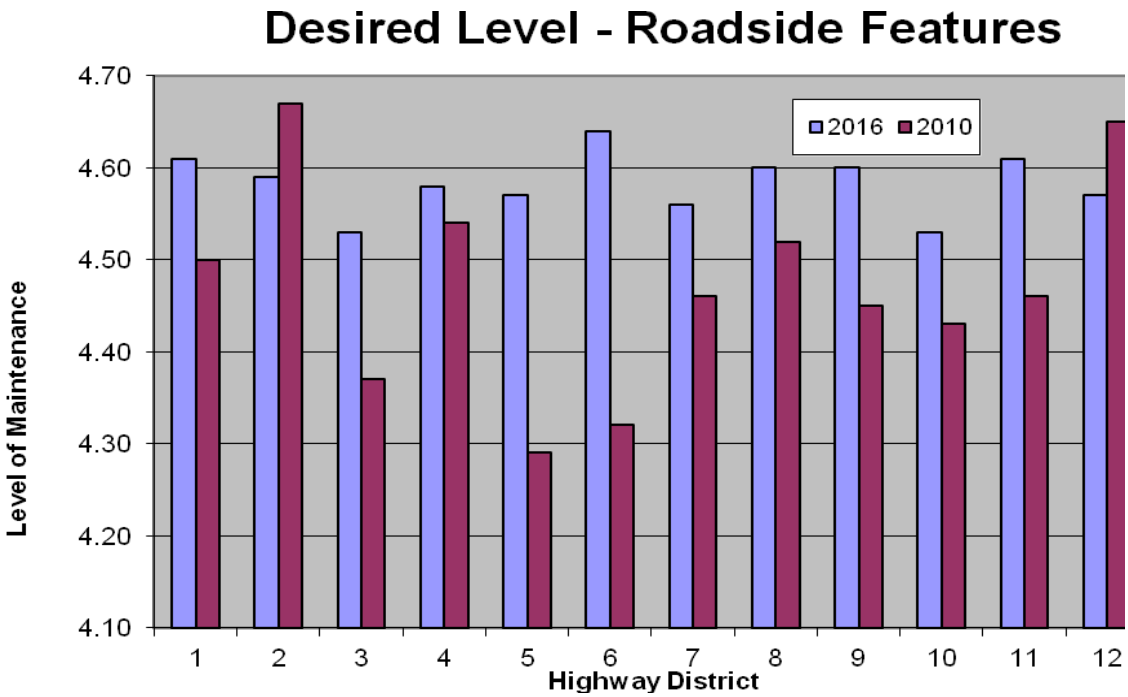

Figure 7 Desired-Level for Roadside Features by District

Pavement Surface and Potholes

The survey included one question about the current level of maintenance for pavement surfaces and potholes. Statewide, respondents rated the maintenance level of pavement surfaces at 3.0 — the desired rating was 4.5. Thus, current levels of maintenance are significantly lower than what the public would like to see (Figure 8).

Figure 9 compares the 2010 and 2016 responses. In 2010, 27 percent of respondents rated the existing level of maintenance as a 4 or 5, while 94 percent of respondents said their desired level of maintenance for these features was 4 or 5. During the 2016 survey, 33 percent of respondents rated pavement surfaces as a 4 or 5. Mirroring the 2010 findings 93 percent of respondents in the 2016 survey said their desired level of maintenance was 4 or 5. In 2010, 87 percent of respondents indicated that future spending should attempt to bring the level of maintenance up to a 4 or 5. This number essentially remained fixed in 2016 at 86 percent.

Figure 10 presents the variability of the responses across districts. The expectations for level of maintenance and spending priority are relatively similar across the state and by year. More variability is apparent in the responses about existing maintenance levels across districts, with several at or very near the rating of 2.5 in 2010 and 2016.

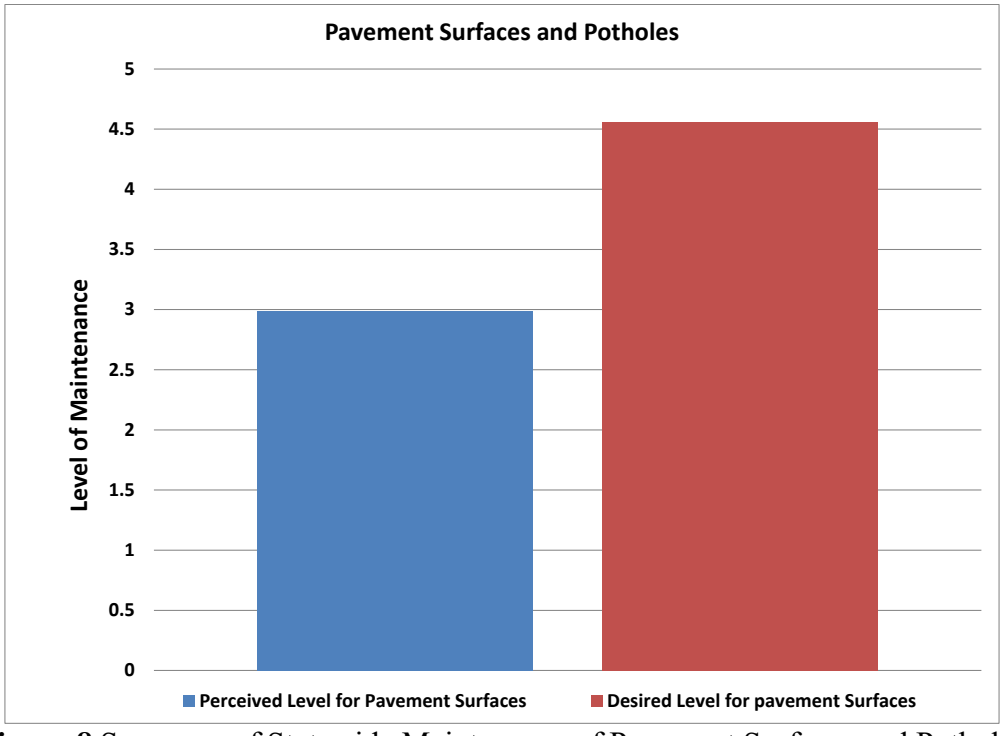

Figure 8 Summary of Statewide Maintenance of Pavement Surfaces and Potholes

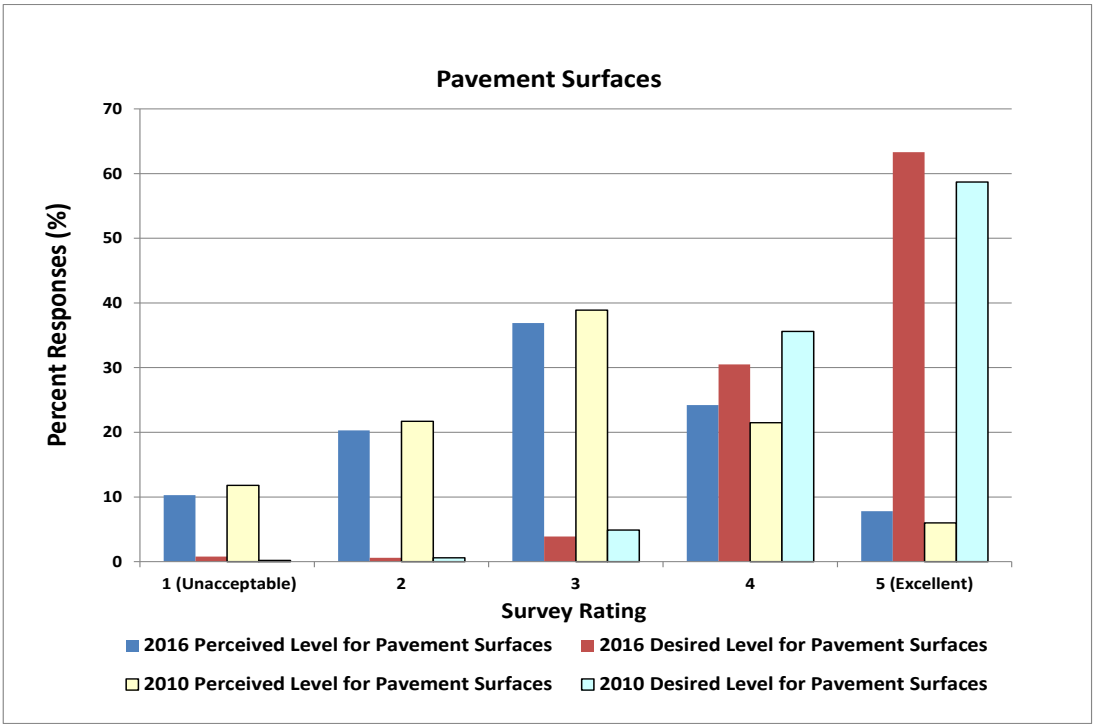

Figure 9 Statewide Distribution Maintenance of Pavement Surfaces and Potholes

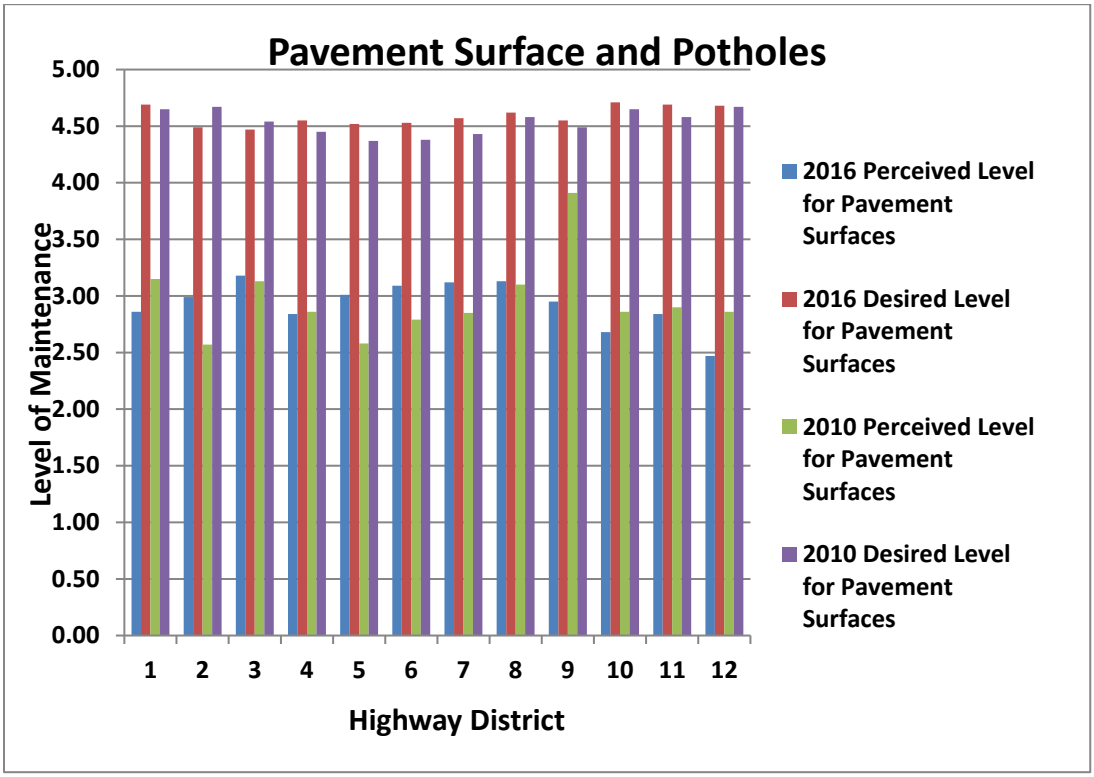

Figure 10 District Level Maintenance of Pavement Surfaces and Potholes

Highway Shoulders

The survey posed one question about the maintenance of highway shoulders. It asked respondents whether they perceived shoulders as smooth and level places to pull off of roads. In 2016 at the statewide level, respondents rated the current maintenance level at approximately 3.45. The desired rating was 4.35, indicating a gap between the current level of maintenance and what drivers want to see.

As Figure 12 illustrates, the distribution of the statewide responses were almost identical in 2010 and 2016. Forty-seven percent of the respondents rated the existing level of maintenance for shoulders as a 4 or 5 (Excellent) in both 2010 and 2016, while percentage of respondents who desired a level of maintenance of 4 or 5 was 88 percent in 2010 and 86 percent in 2016. Another interesting note is that the number of respondents who observed that spending should be in the highest two categories rose from 47 percent in 2010 to 65 percent in 2016.

Figure 13 illustrates how responses varied across districts. Respondents across the state expressed comparable expectations for level of maintenance and spending priority in 2010 and 2016. Opinions about the existing level of maintenance, however, exhibited slightly more variability among districts.

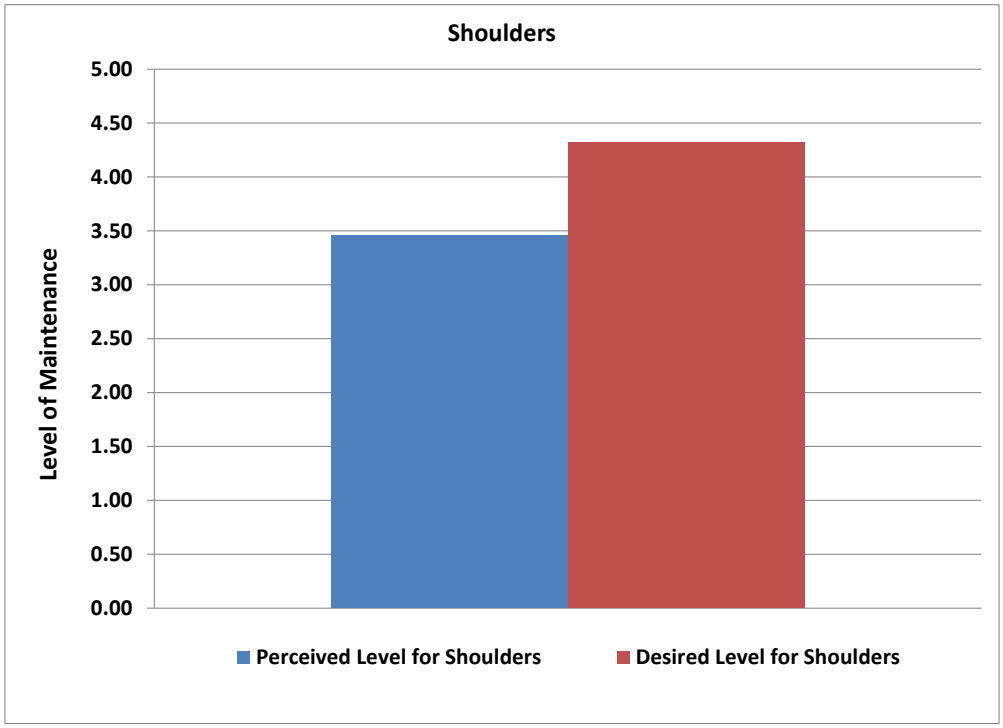

Figure 11 Summary of Statewide Shoulder Maintenance

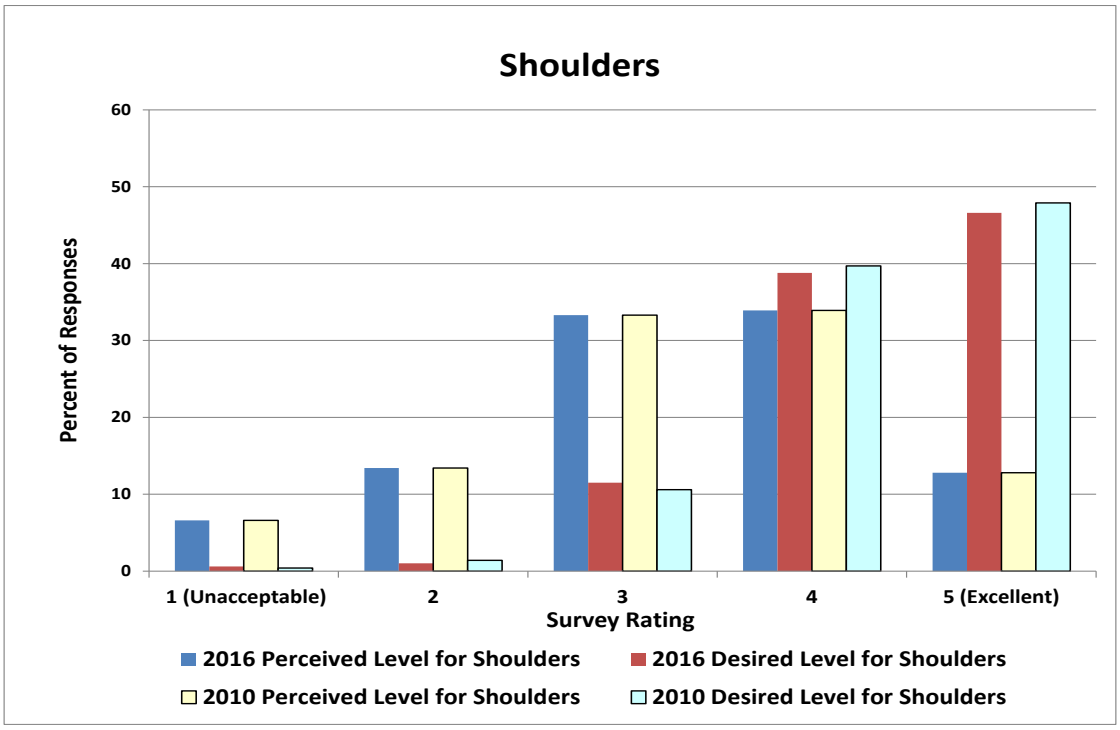

Figure 12 Statewide Distribution of Shoulder Maintenance

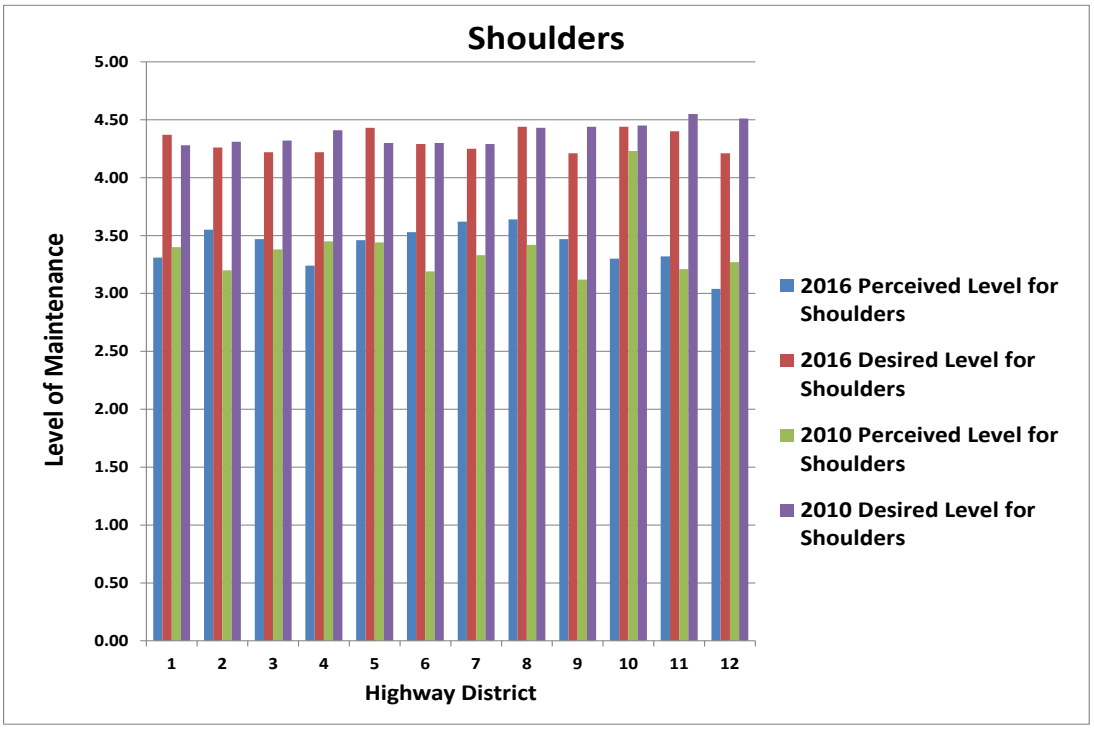

Figure 13 District-Level Shoulder Maintenance

Highway Drainage

The survey included one question about the maintenance of roadside drainage. Statewide in 2016, respondents rated current maintenance levels at 3.4, while their desired rating was 4.45. Again, this indicates that the current level of maintenance is somewhat lower than is desired.

Figure 15 illustrates the distribution of the statewide responses. In 2010, 50 percent of respondents said the existing level of maintenance of drainage rated as a 4 or 5. In 2016, this number increased to 58 percent. The percentage of respondents who stated their desired level of maintenance was a 4 or 5 was essentially unchanged between 2010 and 2016 — 88 percent in 2010 and 87 percent in 2016. Further, in 2010, 82 percent of respondents indicated that spending should be in the highest two categories; this fell to 73 percent in 2016.

Figure 16 illustrates the inter-district variability in responses for 2010 and 2016. In both surveys, expectations for level of maintenance and spending priority had relatively similar patterns across the state.

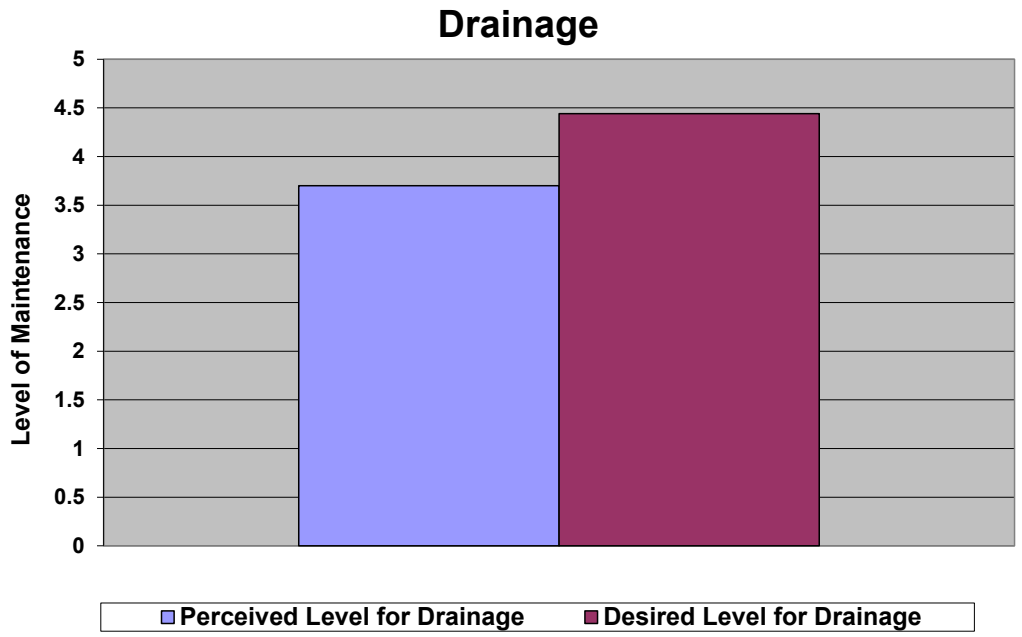

Figure 14 Summary of Statewide Drainage Maintenance

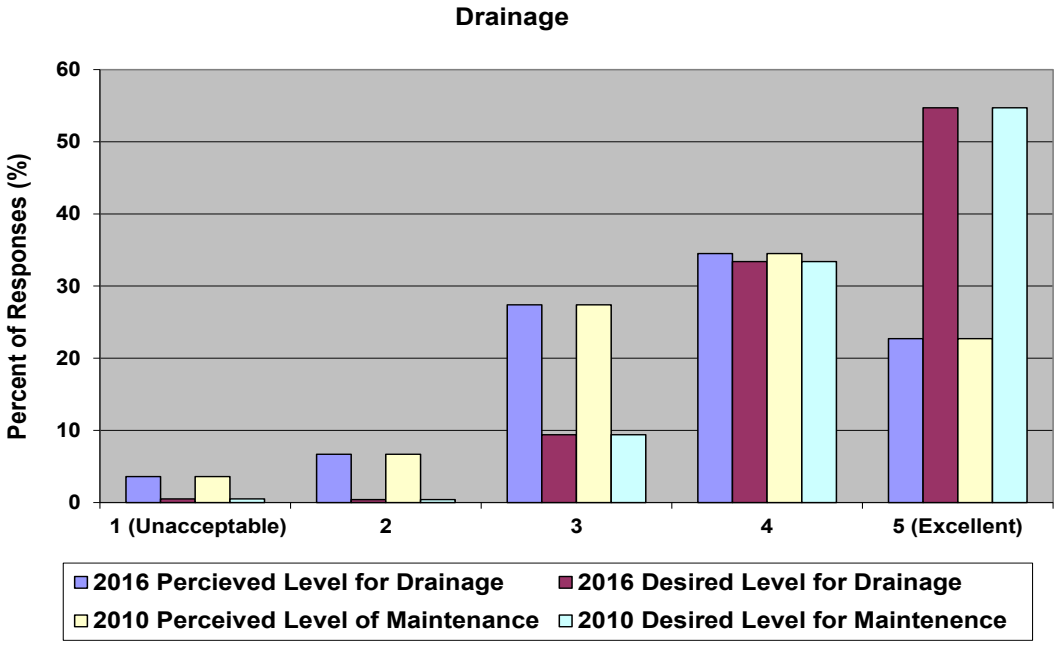

Figure 15 Distribution of Statewide Drainage Maintenance

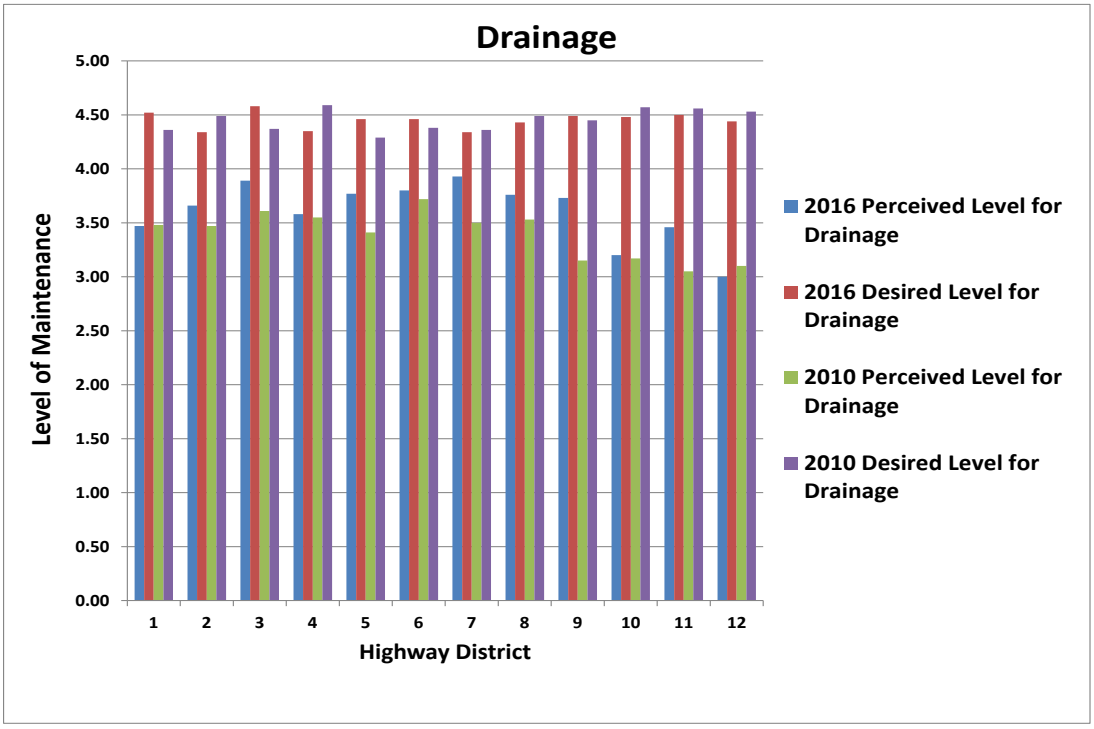

Figure 16 District Level Drainage Maintenance

Signs and Markings

The survey contained two questions pertaining to signs and markings. One question was about signs, another about roadway markings. In 2016 and 2010, the current level of maintenance for signs and markings were 4.07 and 3.88, respectively. The desired rating was approximately 4.49, in 2016, indicating the current level of maintenance less than what the public desires.

Figure 18 illustrates the distribution of the statewide responses. All told in 2010, 79 percent of respondents scored the existing level of maintenance at either 4 or 5 for signs; 64 percent rated markings as a 4 or 5. In 2010, 74 percent of respondents assigned a score of 4 or 5 to signs while 64 percent said the same about markings. In 2016 the rating for spending priority for signs and markings was 78 percent of the respondents, which indicated spending should be in the highest two categories.

Figure 19 captures the inter-district variability of responses in 2010 and 2016. There is slight variation among districts in ratings for perceived and desired level of maintenance.

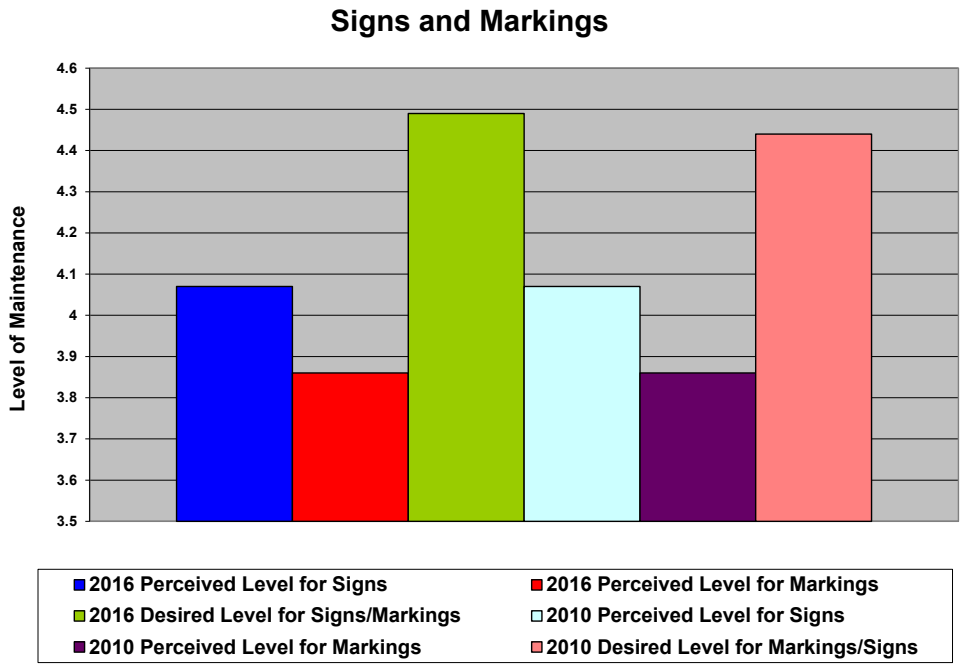

Figure 17 Statewide Summary of Maintenance for Signs and Markings

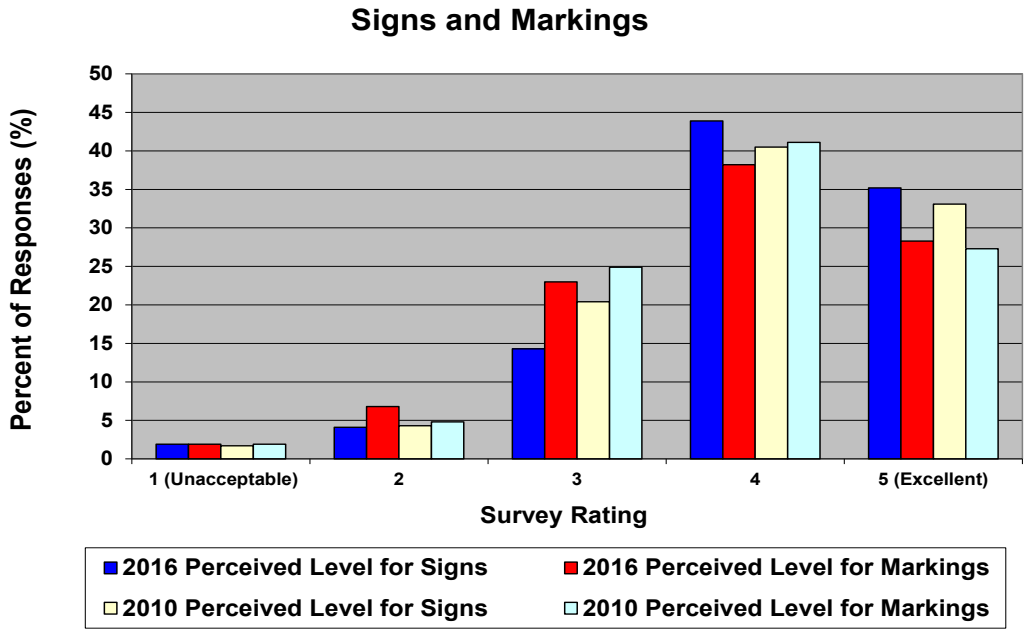

Figure 18 Distribution of Maintenance for Signs and Markings

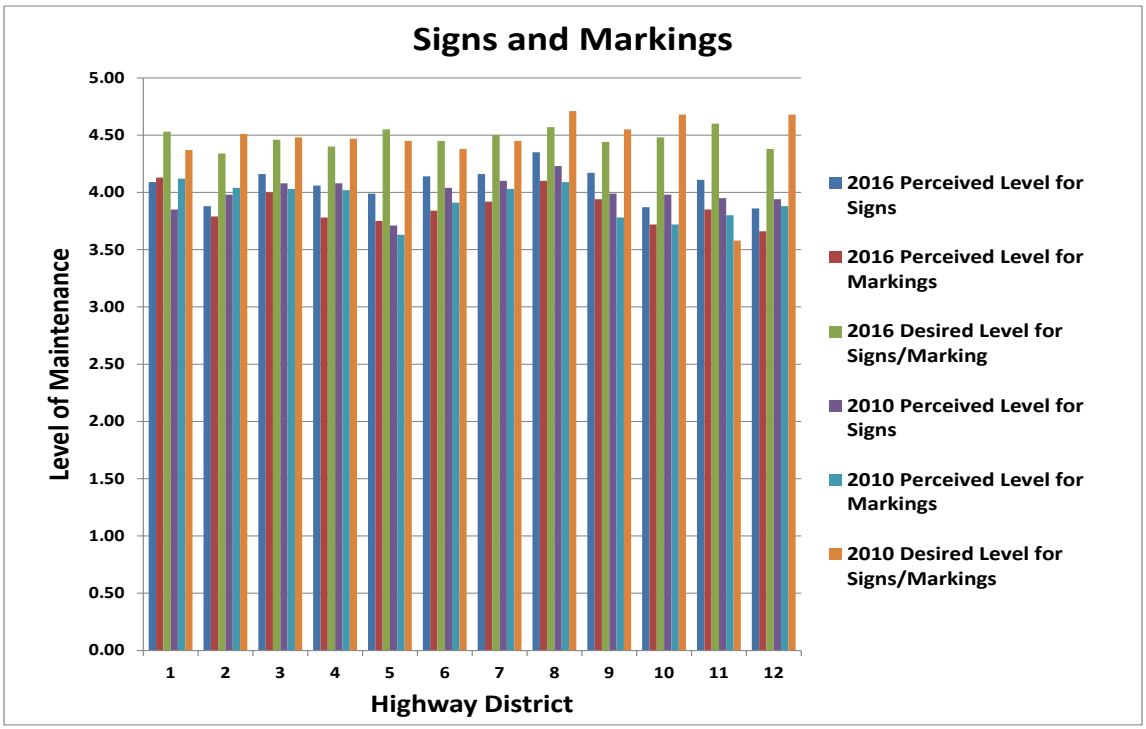

Figure 19 District Level Maintenance for Signs and Markings

Overall Maintenance Summary

The survey included two additional questions about the overall maintenance of Kentucky's roadways. The first question asked respondents to rate the current overall maintenance of the state's roadways. In 2010, 55 percent of respondents said overall road maintenance rated as a 4 or 5. This number rose slightly in 2016 to 58 percent. Figure 21 illustrates inter-district variability in ratings of overall maintenance level. Perceived level of maintenance varied widely across the districts in both 2010 and 2016.

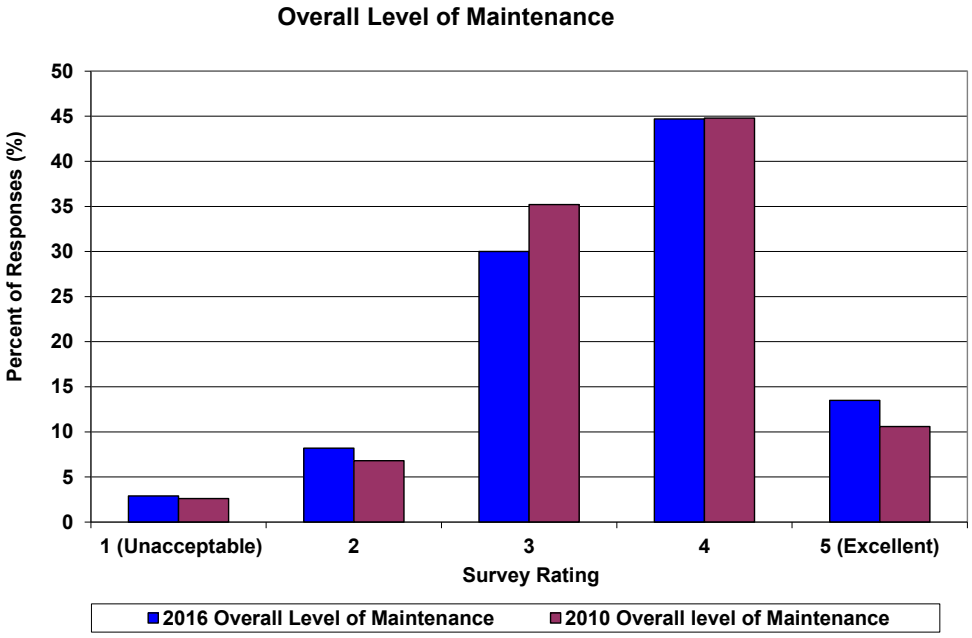

Figure 20 Distribution of Overall Maintenance Scores

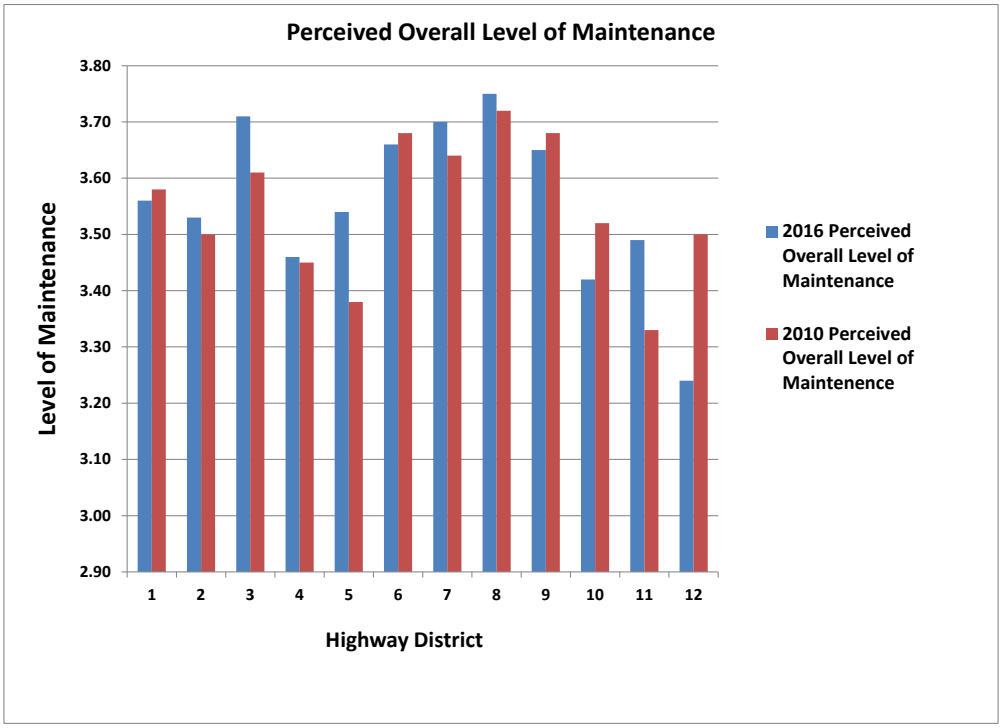

Figure 21 Summary of District-Level Overall Maintenance Rating

The second question asked respondents to identify areas which demand improvement. Figure 22 summarizes the results to this question. In 2010, 40 percent of respondents indicated that surfaces and potholes were in greatest need of improvement, while 30 percent said there was no particular area requiring improvement. In 2016, the percentage of respondents who felt pavements needed improvements climbed dramatically — to 53 percent. Conversely, just 18 percent of respondents said that no specific area required improvement. Scores for other areas went virtually unchanged between 2010 and 2016.

Figure 23 compares perceived versus desired level of maintenance for each category. The desired level of maintenance was consistent across all categories, however, satisfaction with current maintenance levels varied significantly. Scores for each category fluctuated very little from 2010 to 2016.

Figure 24 compares the distributions of the desired level of maintenance for 2016. As would be expected, the vast majority of the respondents wanted a level of 4 or 5. Figures 25 and 26 capture the percentage of respondents who said that current levels of maintenance were excellent or unacceptable, respectively.

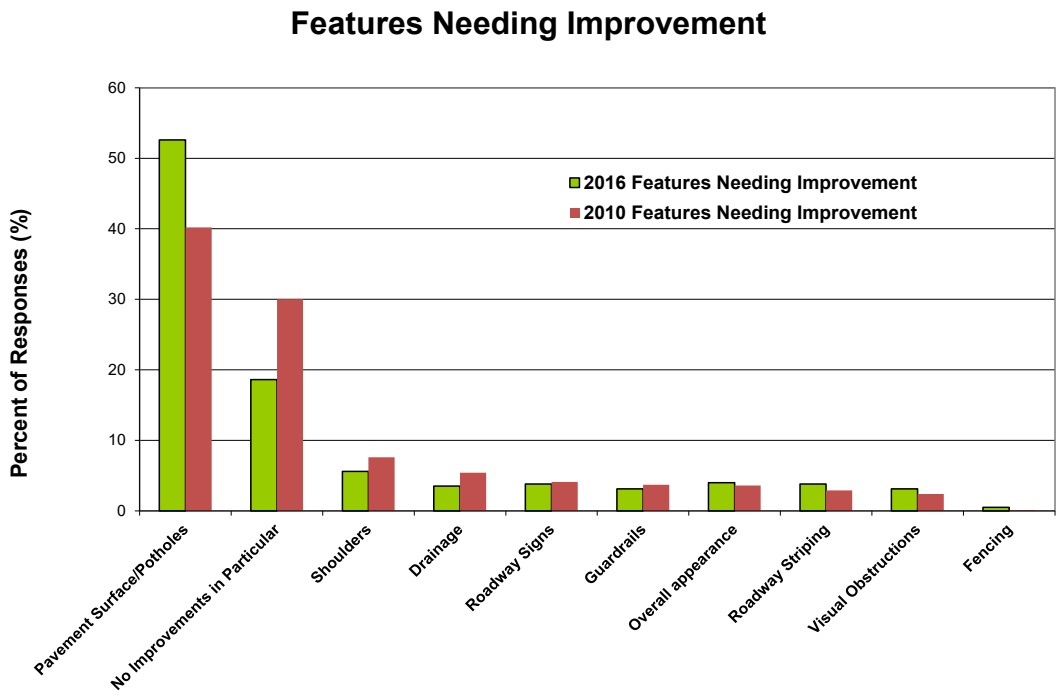

Figure 22 Summary of Features Needing Improvement

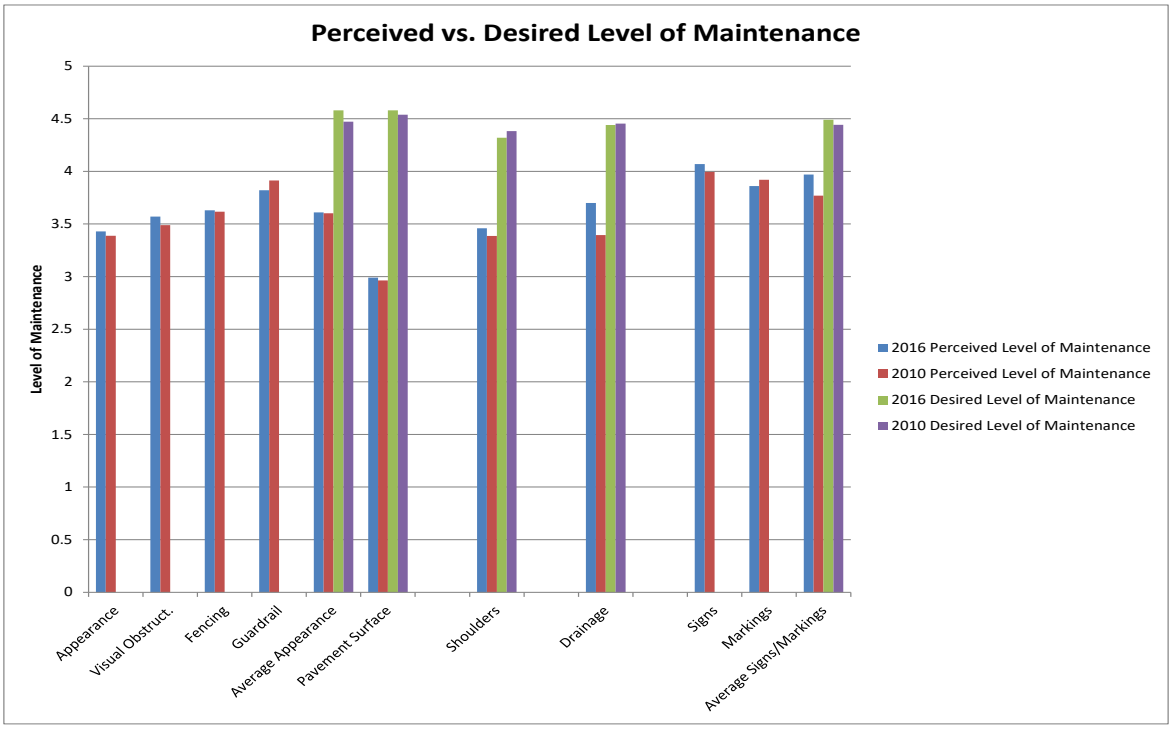

Figure 23 Comparison of Perceived and Desired Level of Maintenance

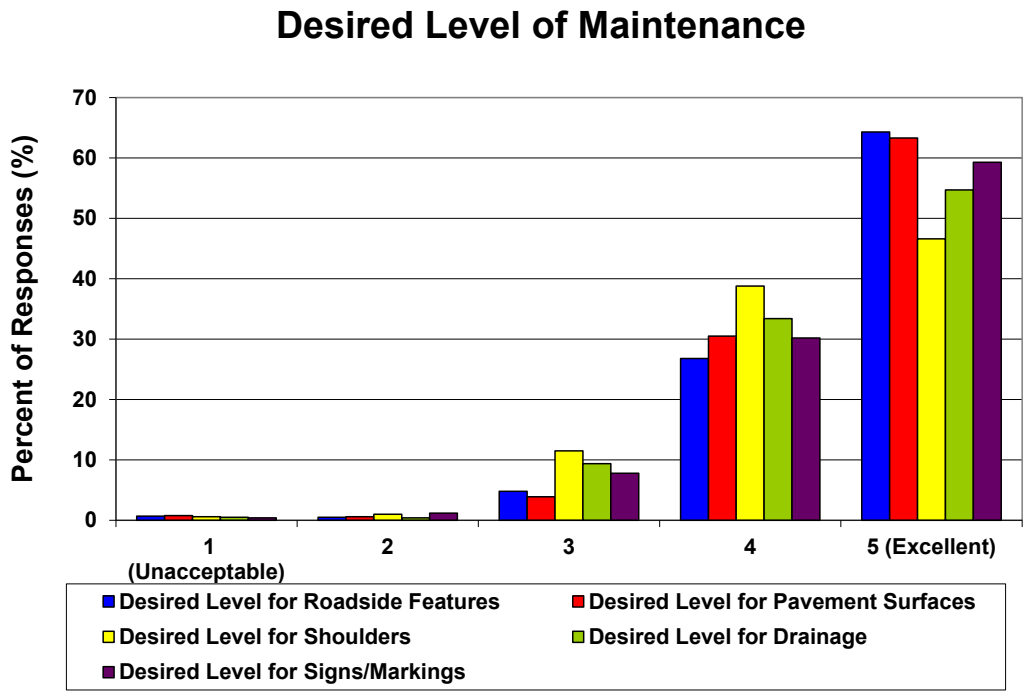

Figure 24 Distribution of Desired Level of Maintenance

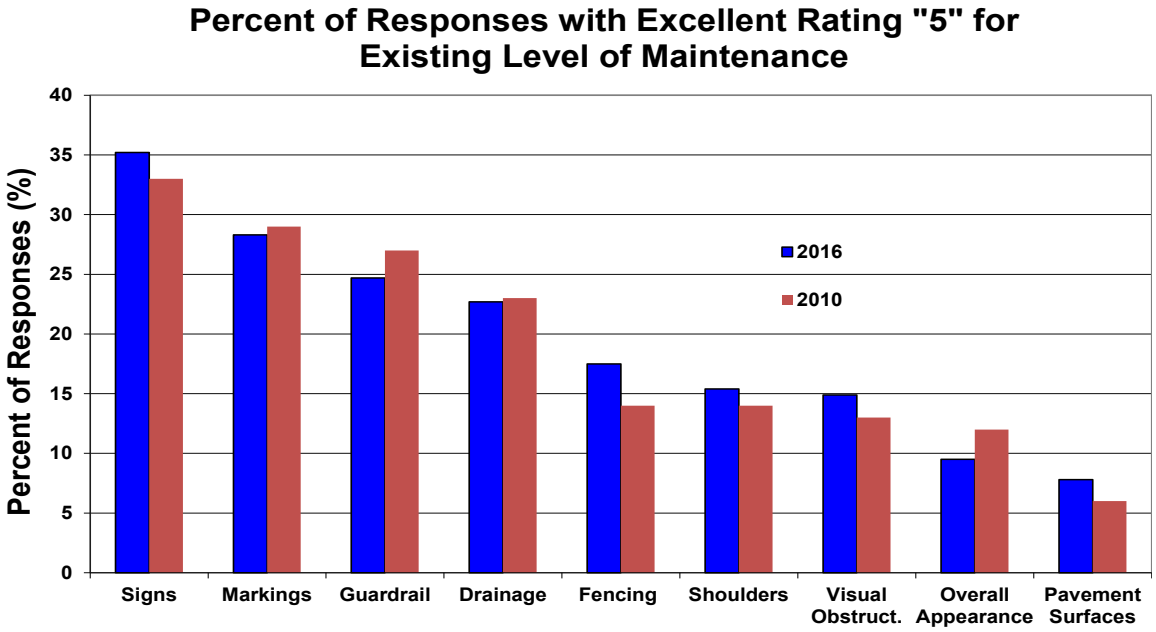

Figure 25 Percentage of Responses with Excellent Rating for Existing Level of Maintenance

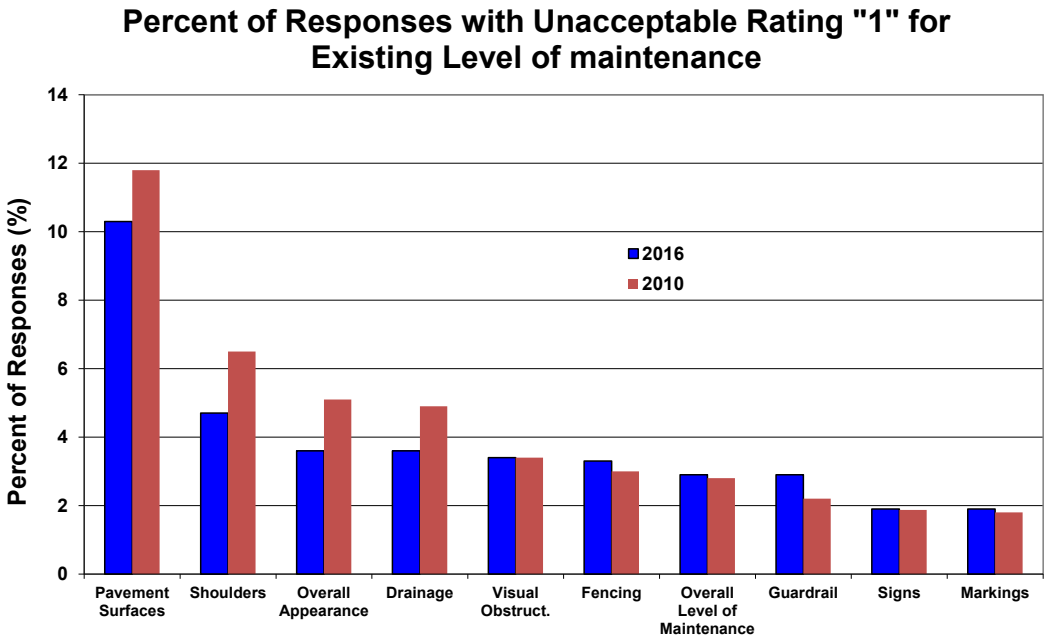

Figure 26 Percentage of Responses with an Unacceptable Rating for Existing Level of Maintenance

Spending Priorities Summary

Figure 27 illustrates distribution of spending priority for all the features. Figure 28 shows the percentage of respondents who assigned high priority (i.e., a score of 5) to particular categories, in both 2010 and 2016. Respondents tended to prioritize spending money to maintain pavement surfaces and signs and markings. Overall, however, spending priorities changed little between 2010 and 2016. Pavements continue to rank highest on the list of priorities.

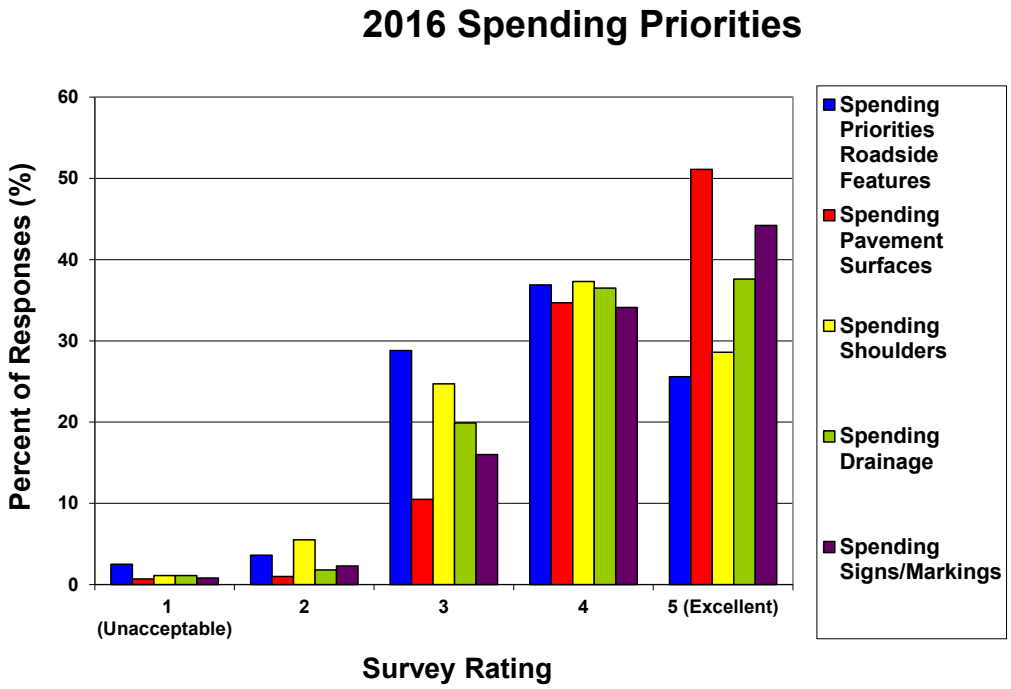

Figure 27 Distribution of Desired Level of Spending

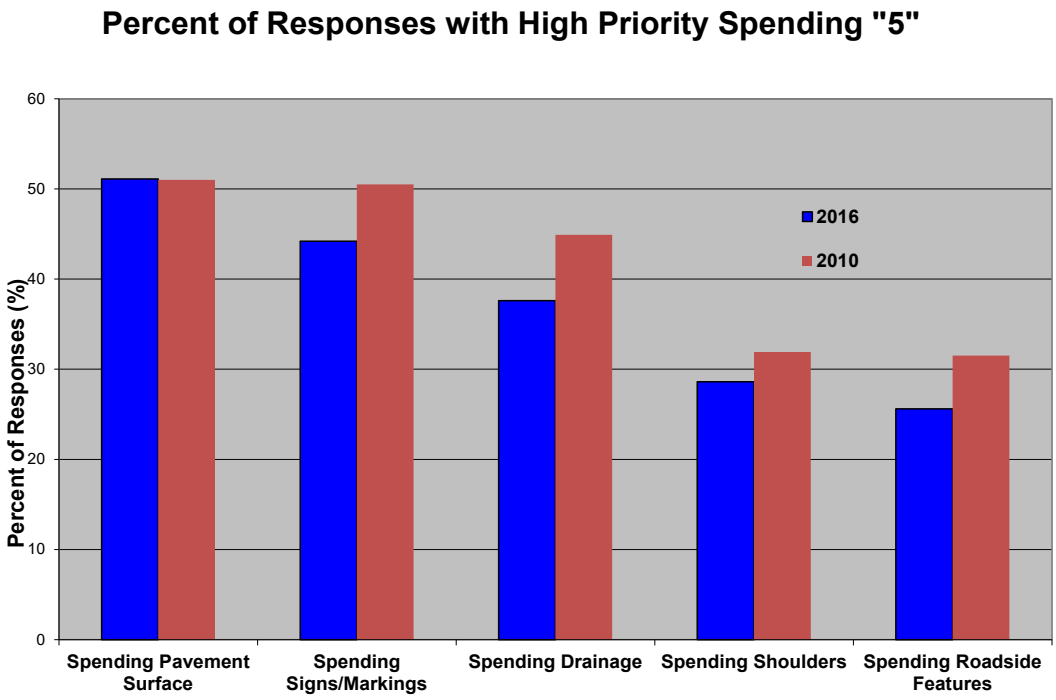

Figure 28 Summary of High Priority Spending "5"

Summary of Results on How the Public Obtains Travel Information - Statewide

Respondents were asked several questions about how they obtain information on travel conditions (e.g., weather, traffic congestion, traffic control situations and directions). Figures 29 –34 summarize their answers on a statewide basis.

The first of these questions asked respondents to identify their preferred method of getting travel directions. As, Figure 29 indicates, 30 percent of respondents prefer to use smartphone apps, followed by web browser and traditional GPS units in second and third place, respectively. The second question asked respondents if they had ever used directions for travel conditions. Approximately 62 percent of respondents had (Figure 30).

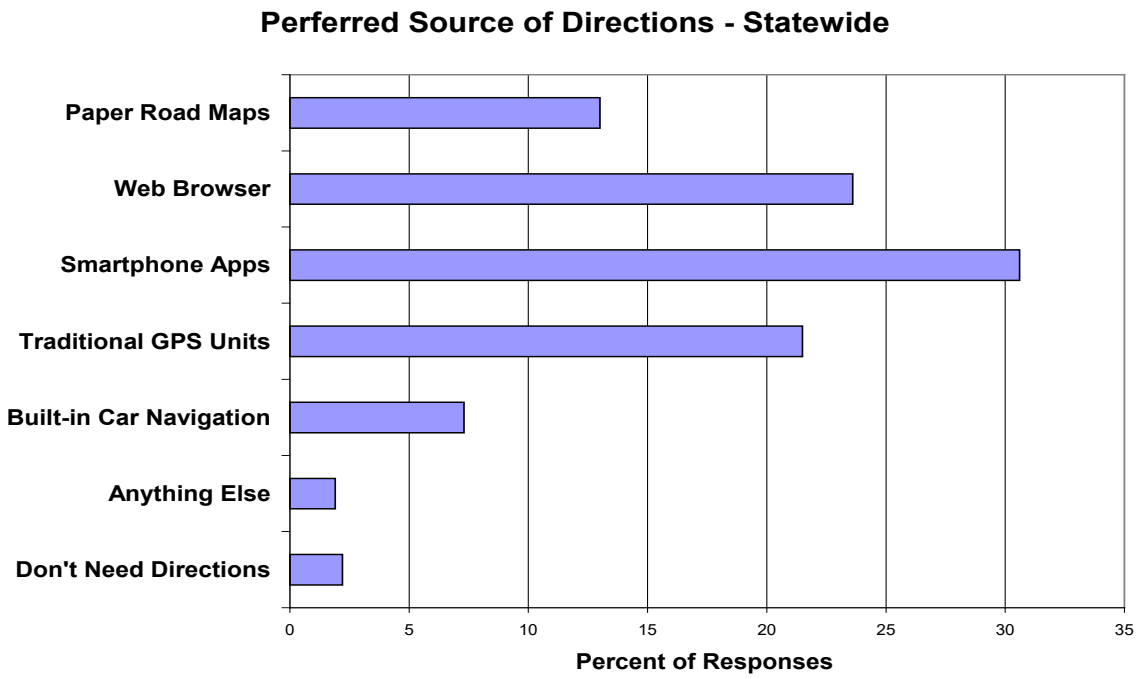

Figure 29 Summary of Preferred Sources of Directions – Statewide

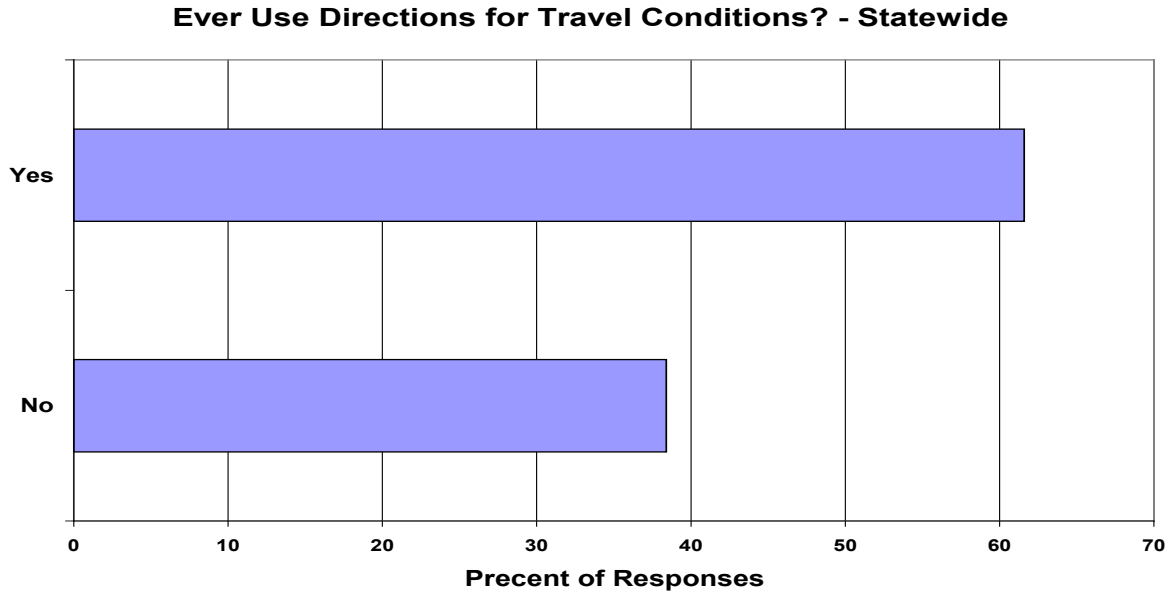

Figure 30 Summary of Question for the Use of Directions for Travel Conditions – Statewide

Next, respondents were asked how often they use travel directions provided by their preferred information sources. Most people use directions when they take long trips (over 40 percent), but very few rely on directions when stuck in traffic (approximately 4 percent).

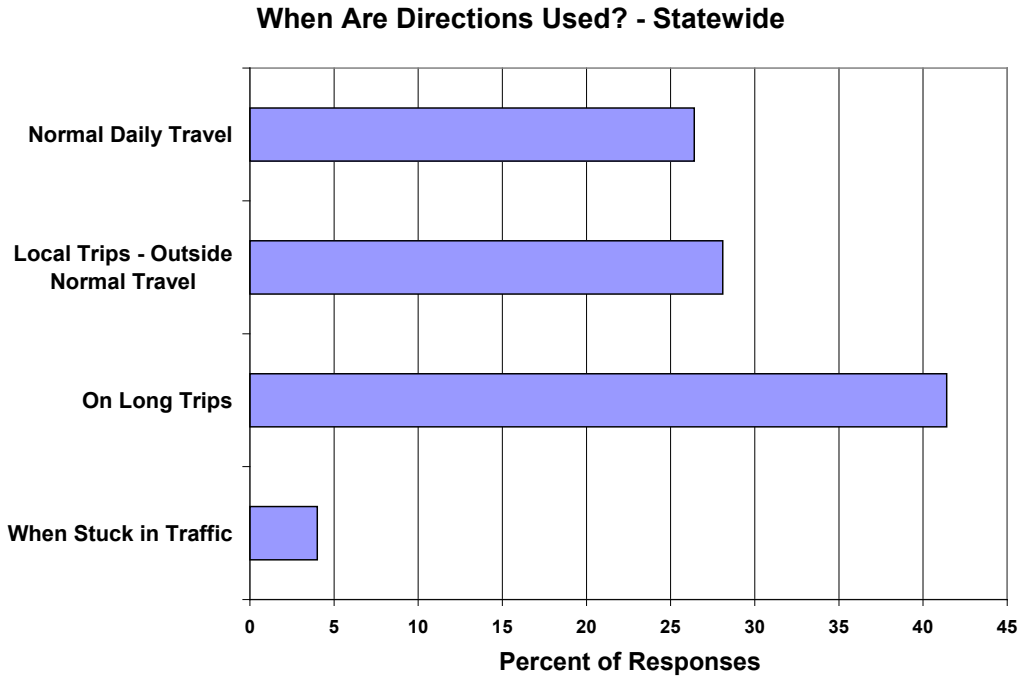

Figure 31 Summary of When Travel Directions Are Used – Statewide

The fourth question asked respondents to identify what sources they trusted most for timely traffic information. As per Figure 32, 44 percent of respondents said they most trusted the media (e.g.,

television or radio). Online services (e.g., Google, Waze) were the second most trusted source, with 27 percent of respondents citing them. The remaining sources each garnered less than 13 percent.

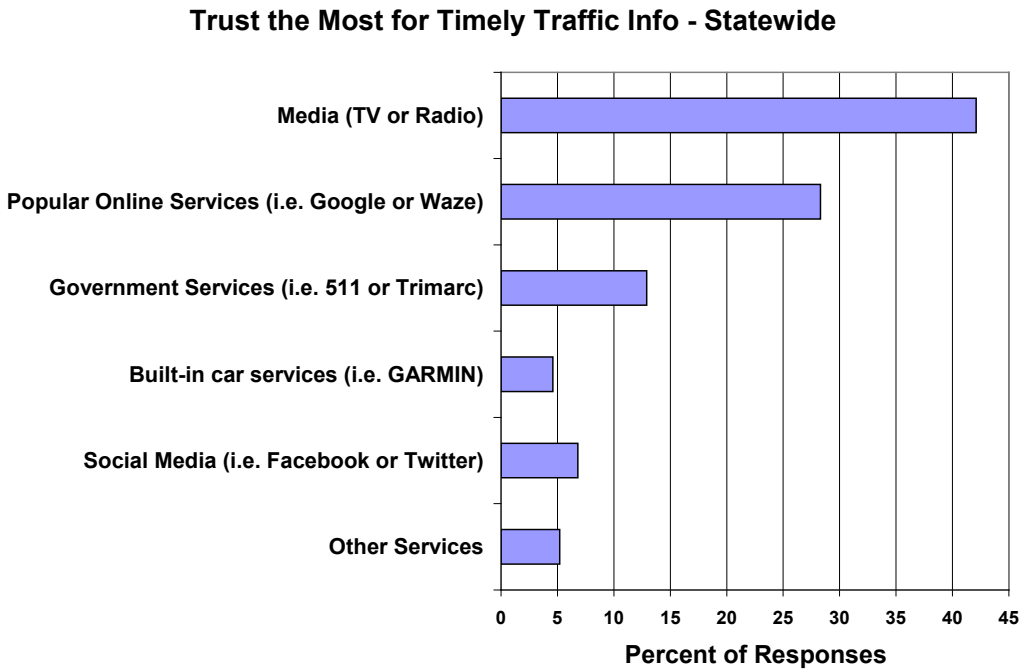

Figure 32 Summary for Most Trusted Source for Timely Traffic Information – Statewide

The fifth question asked respondents about their preferred way to acquire traffic control information. Smartphones, overwhelmingly, were the most preferred method (Figure 33). The second and third choices — media and roadside message signs — garnered 27 percent and 13 percent, respectively. Remaining sources came in under 7 percent. The final question focused on information sources for road weather conditions. The majority of respondents said that media (e.g., television, radio) was their go-to source (52 percent; Figure 34). Fifteen percent cited popular online services (e.g., Google, Waze), while each of the remaining information sources were at 14 percent or less.

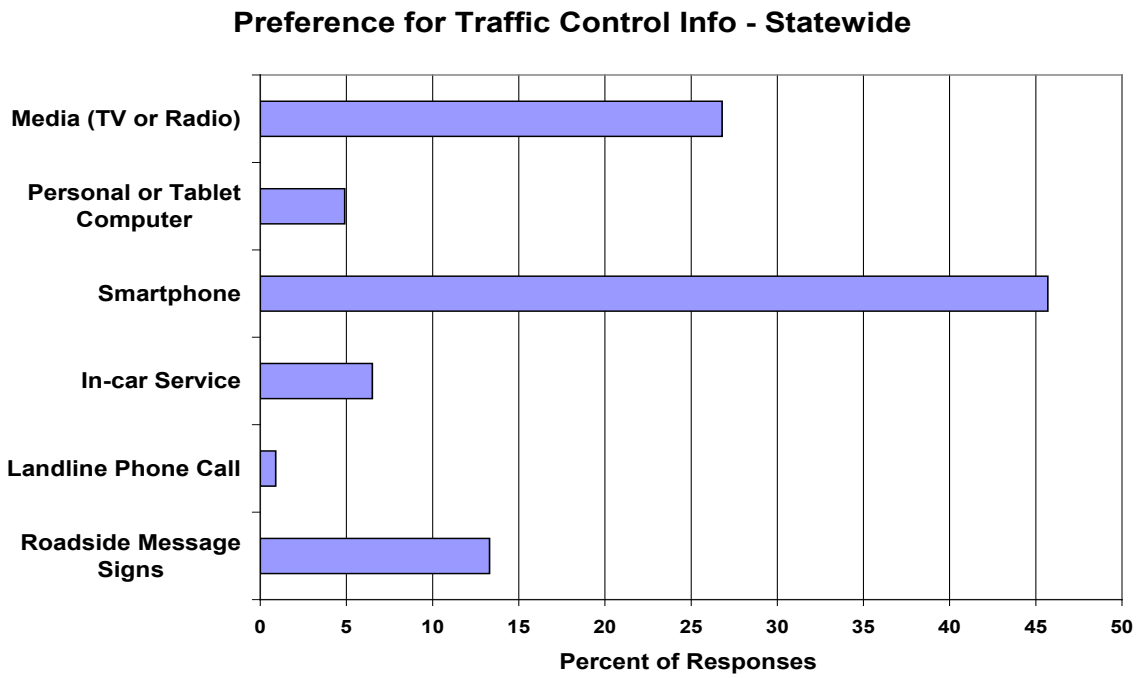

Figure 33 Summary of Preferences for Traffic Control Information – Statewide

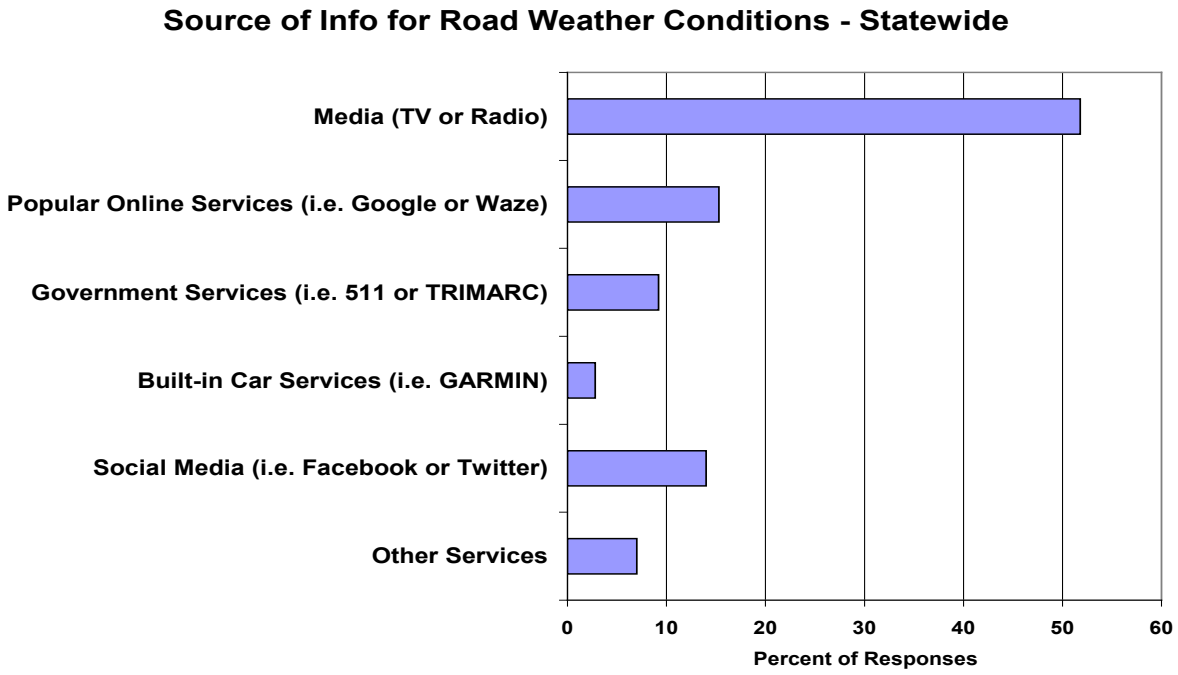

Figure 34 Summary of Preferences for Information for Road Weather Conditions — Statewide

Summary by District of How the Public Obtains Travel Information

The ensuing figures provide finer-grained analysis of questions pertaining to travel information by looking at responses on a district-by-district basis. Figure 35 summarizes results on the preferred method of obtaining travel directions. While there are considerable similarities across KYTC districts, drivers in Districts 1 and 7 reported using smartphone apps at a slightly higher rate than drivers in the state's other districts. As Figure 36 reveals, drivers across the state use travel directions most often on long trips; drivers in Districts 3 and 12 appeared to rely on them at a slightly higher rate.

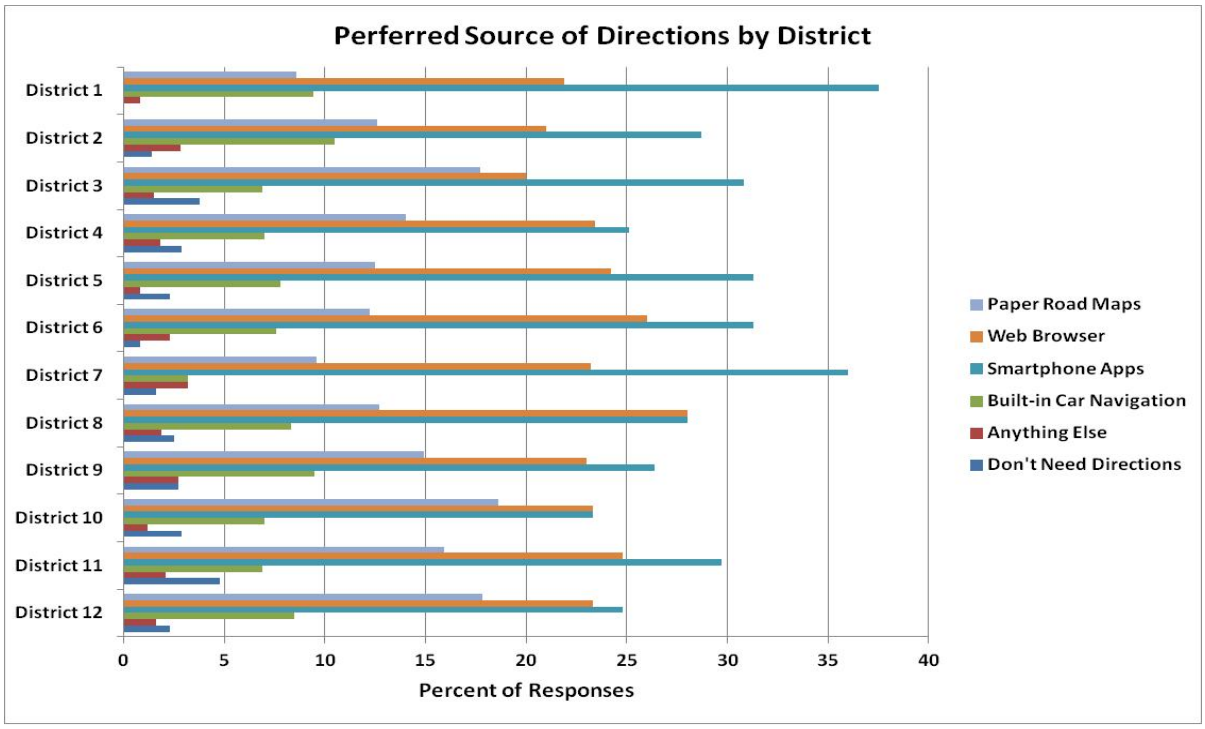

Figure 35 Summary of Preferred Sources of Directions by District

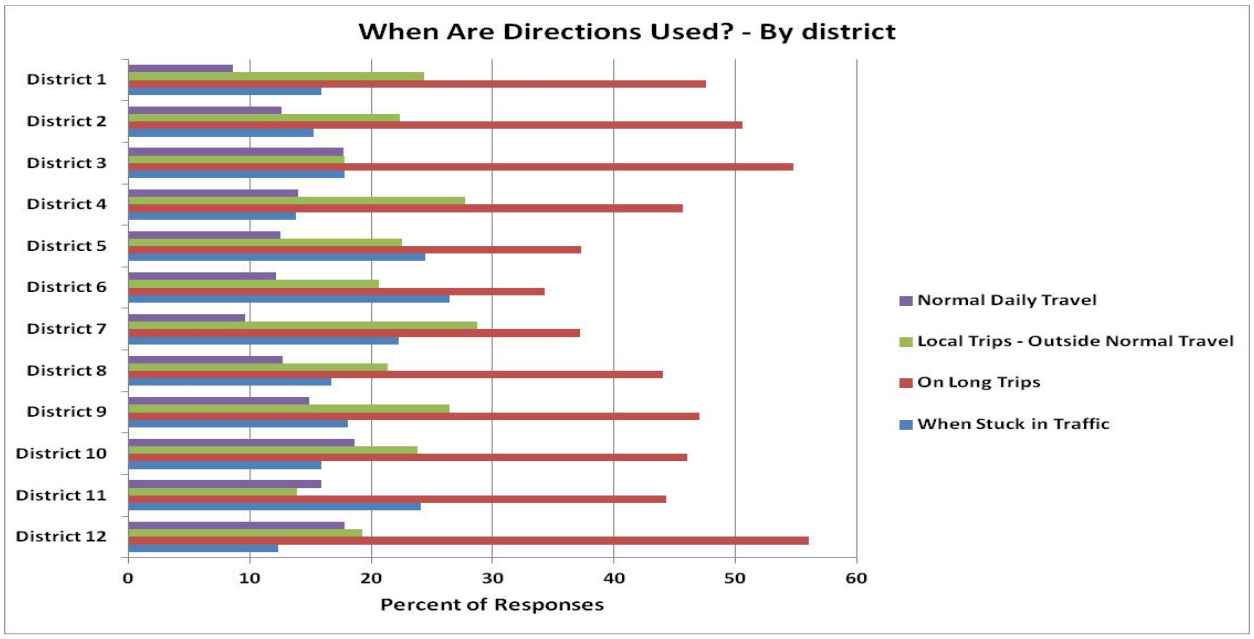

Figure 36 Summary of Preferred Sources of Directions by District

As Figure 37 shows, there was relatively little variability among districts on the question of whether respondents ever used directions for travel conditions.

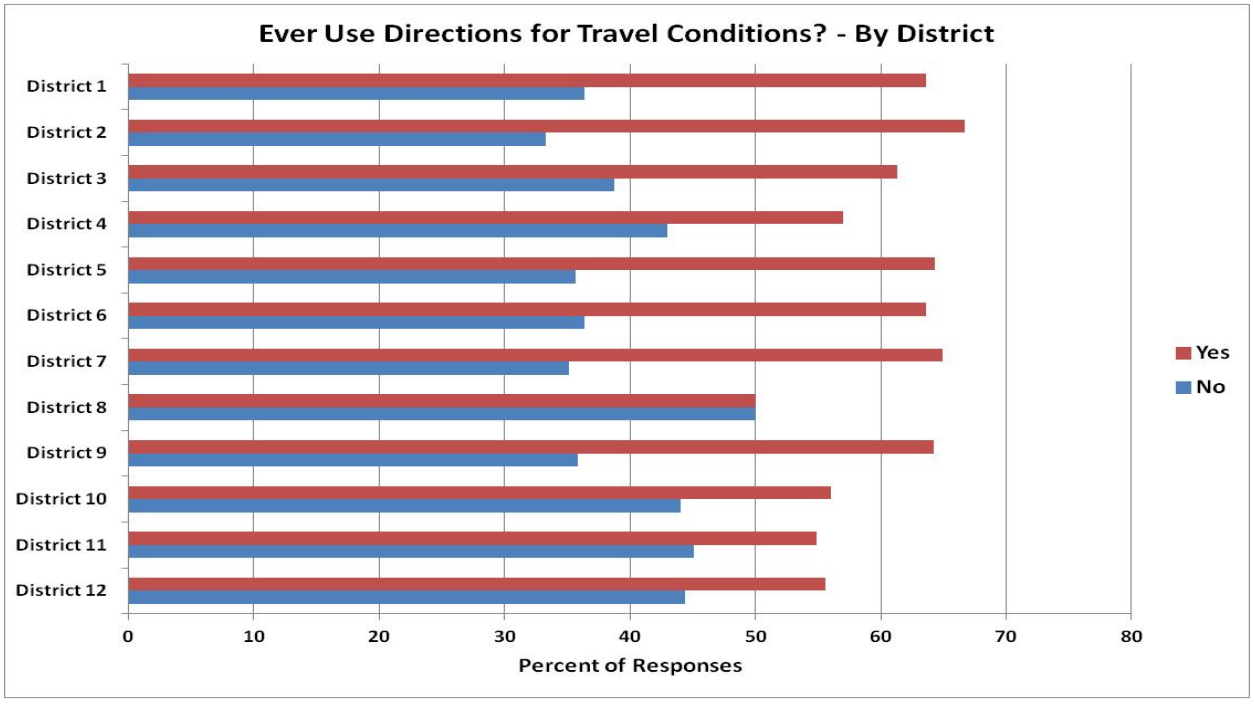

Figure 37 Summary for the Use of Directions for Travel Conditions by District

As Figure 38 illustrates, there was considerable variability among districts for the sources most trusted for traffic information. With the exception of District 5, media outlets most. The popular online services (e.g., Google or Waze) were the most popular in that district.

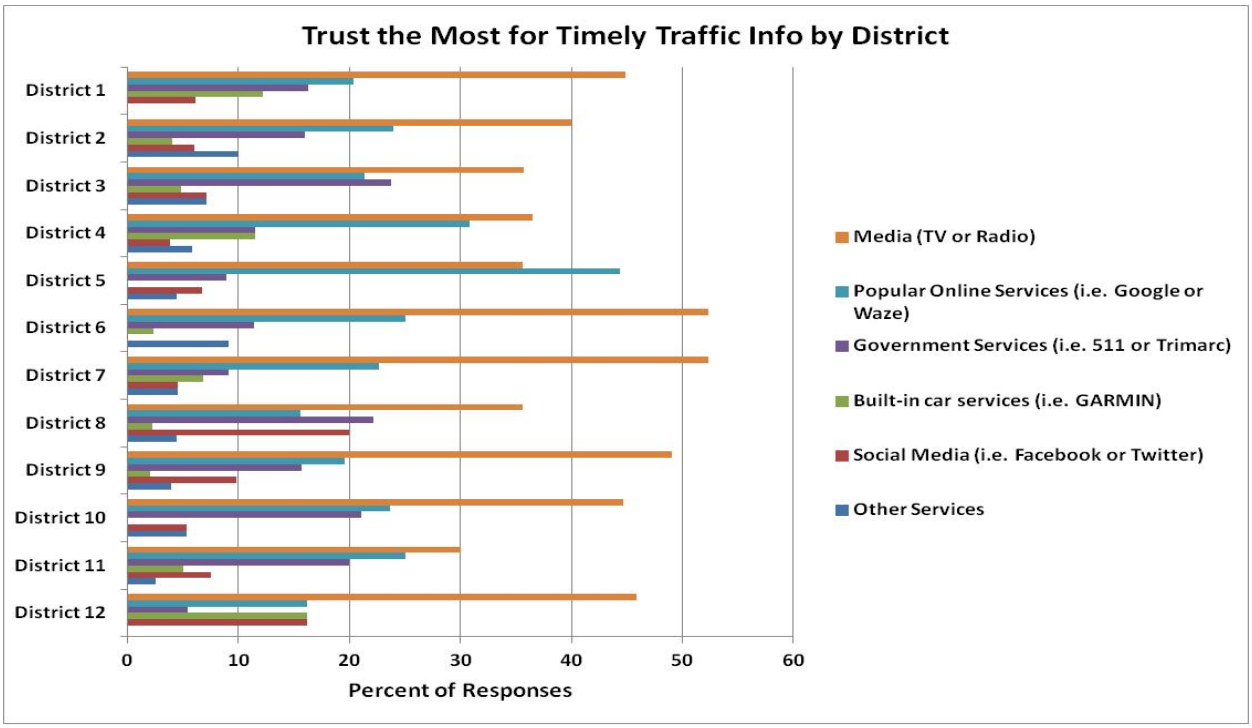

Figure 38 Summary for Most Trusted Source for Timely Traffic Information by District

Figures 39 and 40 illustrate variability among districts on the questions related to preferred sources for traffic control information and sources for information on how weather is impacting road conditions, respectively. Most respondents preferred media outlets for traffic control information, however, in Districts 10 and 12, smartphone apps rated a close second. Similarly, drivers felt most comfortable acquiring information on weather impacts from traditional media outlets.

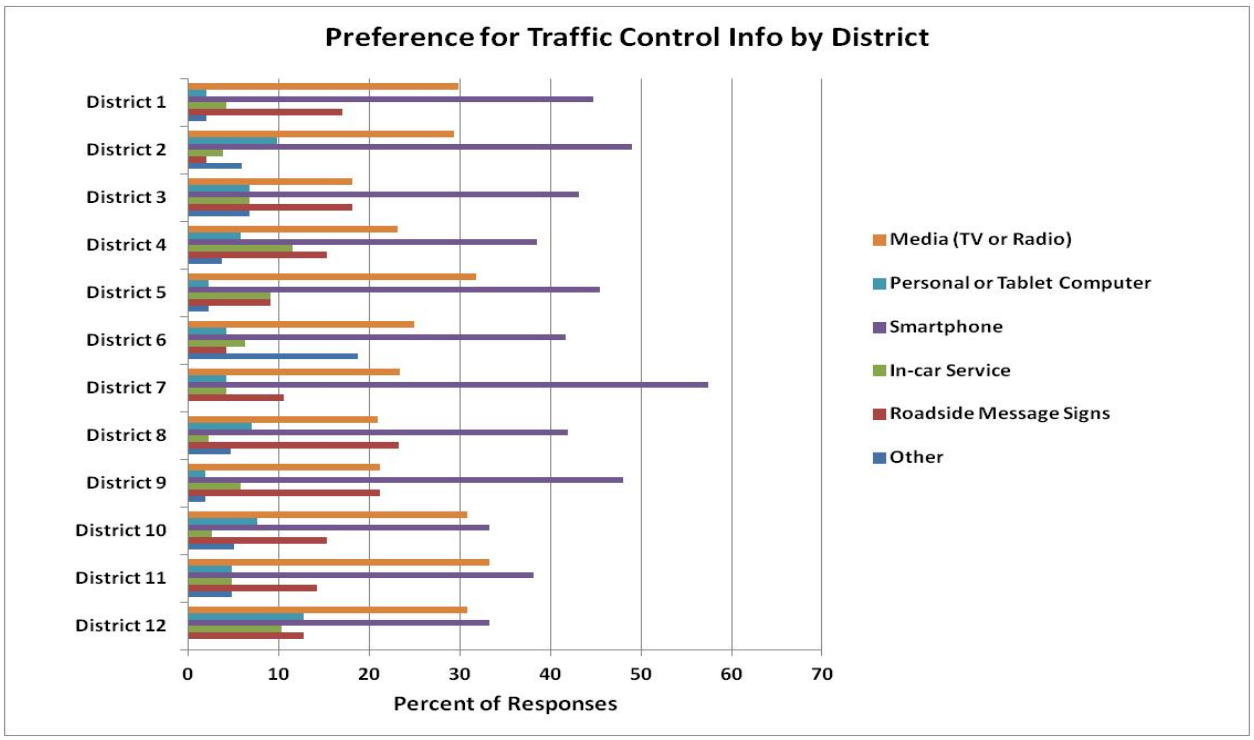

Figure 39 Summary of Preferences for Traffic Control Information by District

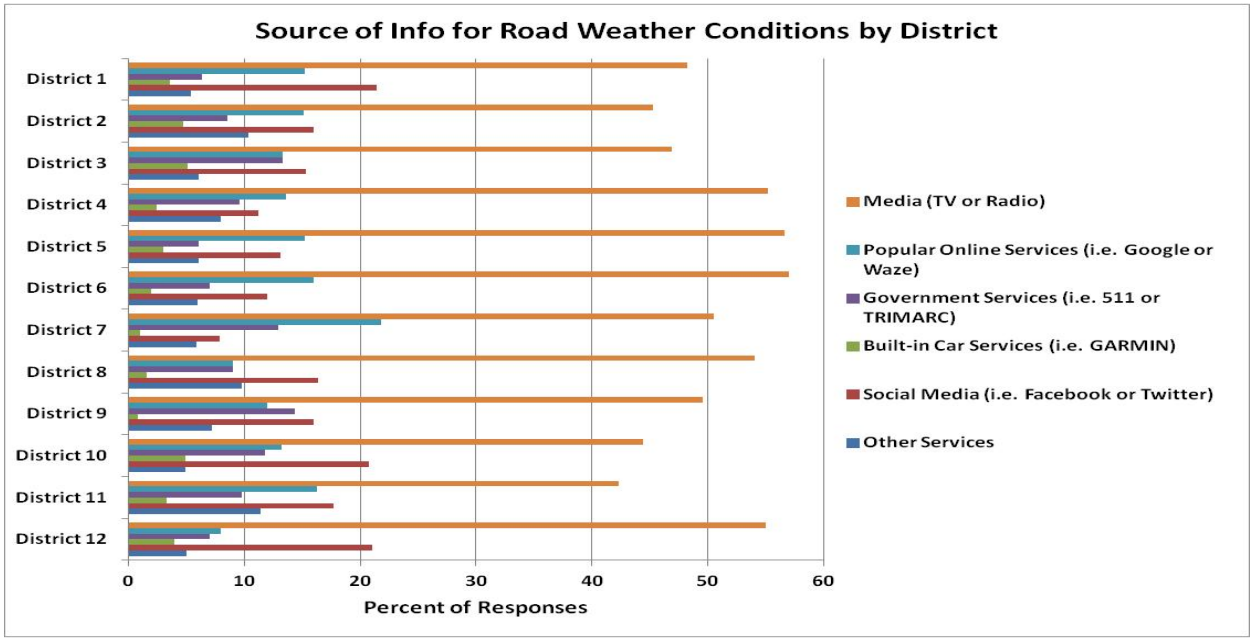

Figure 40 Summary of Preferences for Information for Road Weather Conditions by District

General Conclusions

Based on the 2016 survey results, and comparisons of the 2010 and 2016 survey, we have reached the following conclusions:

1. The 2016 survey results are generally similar to the 2010 survey findings.
2. Results did not vary significantly among districts.
3. Although drivers are increasingly reliant on smartphone apps and other online services to obtain traffic and weather data, traditional media outlets remain a critical source of information.