

A MULTIVARIATE ANALYSIS OF  
FOUR CONCEPTS OF THE  
OKLAHOMA DEPARTMENT  
OF TRANSPORTATION

By

WILLIAM KEITH GARTON

Bachelor of Science

Oklahoma State University

Stillwater, Oklahoma

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Thesis Approved:

*W. J. Ward*

Thesis Adviser

*W. R. Heng*

*R. L. Barnes*

*Norman N. Durham*

Dean of Graduate College

1042954

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## CHAPTER I

### PROBLEM DEFINITION

#### Introduction

Public opinion, when properly utilized, has a profound effect upon both political and "real" goals of various government agencies. Information gained from public opinion polls or attitude studies are helpful in planning and designing effective programs, campaigns and policies.

For the Oklahoma Department of Transportation, attitude studies and empirical data could provide a definitive profile of public attitudes toward highways on which to design effective campaigns supportive of the transportation department's goals and policies.

The first step of any campaign is to know the attitudes of the public toward whom such an activity is aimed. Never before has a comprehensive, reliable and valid study of the Oklahoma public's attitudes toward the state's highway or transportation system been done.

A study utilizing newspaper, man-on-the-street interviews and other "accidental sampling" systems is neither valid nor reliable. It was with this history in mind that an empirical study of public opinion was undertaken.

## The Problem

For the first time in the state's history, it was decided a study of the Oklahoma public's opinion toward the state highway system was needed. The state highway system includes all designated state highways, U.S. highways and interstates. Although the Oklahoma Department of Transportation is involved in the planning and construction of city streets and county roads, these are not maintained by the state, but rather become the responsibility of the city or county.

Many assumptions have been made as to what public opinion is toward highway maintenance and road construction, but never before has an empirical study been done to determine the accuracy of the assumptions.

The purpose of this study was to determine if the public in Oklahoma is willing to increase funding for highway programs. Are they willing to provide the increased funds through higher fuel taxes or by some other means?

Where is the sentiment for increased funding the strongest and is that sentiment related to highway condition in that part of the state?

Other questions considered in the planning stages of this study were whether the Department of Transportation should lower its standards on road construction and design in order to cut expenses.



Is the image of the department itself related to either the condition of the roads or the efficiency of highway maintenance crews or possibly both? And does a person's attitude toward the department affect his attitude toward increased funding for highway programs? All of these questions were used in formulating the survey instrument.

It was not the intent of this study to determine all of the problems with the state's road system. The technical problems are known by the highway department. The author's purpose was to determine what aspects of a highway program affect public opinion about other aspects of the highway department.

The value in this study will be its applicability in developing more efficient and acceptable highway programs in such a way that both the Oklahoma road user as well as the Department of Transportation benefit.

The findings of this study also are to be used by the transportation department and the Oklahoma Good Roads and Streets Association in preparing requests for additional funds from the state legislature for highway programs. This will be the first empirical study the ODOT has had in formulating its requests and justification for its requests.

## About the Department of Transportation

In 1890, 17 years before statehood, the first laws were made concerning roads and the first formal program of road-building was initiated in Oklahoma. However, it wasn't until 1907 that the Constitution of the State of Oklahoma established a Department of Highways and gave the new department authority to create improvement districts and provide for building and maintaining public roads.

Until 1915, the activities of the department's four employees were confined largely to the promotion of good roads. Now there are 12,500 miles of paved roads on the state highway system, 9,000 miles of city streets and 95,000 miles of county roads.<sup>1</sup> All 116,500 miles of these roads were built and designed by the state Department of Transportation, but the department is responsible for maintaining only the highways in the state system.

Today the department employs 3,000 persons located in every county in the state. It maintains eight division headquarters for maintenance, with each division employing approximately 300 persons.

The "board of directors" for the highway department is the Oklahoma Transportation Commission (OTC), made up of eight representatives from various parts of the state. The commissioners' districts roughly equal the maintenance districts, although there are variations.

The director of the highway department is Richard A. Ward of Stillwater. He was appointed director in December 1971.

J. C. Kennedy, chairman of the OTC, has said that the highway system in 1978 may have been in the worst financial crisis in recent years. Kennedy said that all additional money received for transportation in 1978 had to be spent on work other than new construction.<sup>2</sup>

In 1972, Oklahoma had 4,207 miles of inadequate highway, and planners estimated it would take \$1.5 billion to improve them. In 1978 there were 4,355 miles of inadequate road plus 135 miles of needed new routes, with an estimated cost of \$2.3 billion.

Oklahoma uses a scientific road-inventory and needs-study to give guidelines for road improvement. The road-inventory lists each mile of road, its adequacy rating, and the estimated cost to improve the road if necessary. The study also contains data on estimated future revenue of the ODOT, state population and travel growth.

#### Rating Procedures

In rating sections of highways or bridges, the Oklahoma Department of Transportation uses a detailed study called a "sufficiency rating." The study uses a standard rating procedure that measures the road's ability to handle existing traffic.

This rating procedure was established in 1964. The needs study is updated every two years to reflect the construction or improvement of some roads and the deterioration of others. A needs study was prepared in the fall of 1978.

The study considers such things as bridge width, load limit and length. On the road itself, the width, surface, drainage, alignment, steepness of hills, curves, shoulder width, passing opportunity and sight distance all are included.

The present condition of road surface is the most observable characteristic to motorists, so the engineers also check for potholes, slickness and ripples in the surface plus cracking or wear on the shoulders and foundation areas.

The average amount of daily traffic (ADT) is considered, as well as the accident history of the particular stretch of road. An ADT count is taken on each segment of road or bridge every two years.

All the elements of a bridge or road section are compared to an approved standard and rated accordingly. For example, if the standard surface width for a two-lane rural highway is 22 feet and a section of highway being rated is only 19 feet wide, this section would receive a surface width rating of 10 points out of a possible 16 points.

A perfect total of the ratings for all the elements of a road section is 100 points and anything rated below 70 points is considered inadequate and unsafe. A rating from 100 to 80 points is adequate, a rating from 79 to 70 points indicates the road is tolerable, from 69 to 60 points is an inadequate rating and anything below 59 points indicates the road section is critically inadequate.

The accident rate on inadequate roads is 65 percent higher than on roads rated adequate.<sup>3</sup> Currently, more than one-third of Oklahoma's roads are inadequate. In 1976, there were 84 accidents per hundred million vehicle miles of travel on adequate roads compared to 120 accidents per hundred million vehicle miles of travel on inadequate roads.

### Funding

Federal funds, for the most part, are derived from the four-cent-per-gallon federal gas tax. The money goes into the Federal Highway Trust Fund and is doled out to state in different proportions as federal aid to highways. Historically, only two-thirds of the money Oklahoma pays into the fund is being returned to finance Oklahoma's roads.

Currently, federal funds cannot be used for maintenance purposes, and there is sentiment among Congressional leaders to earmark part of the funds for public

transportation. The federal funds are reserved for new construction now.

In Oklahoma, state highways are supported two ways. First, by general fund appropriation from the legislature annually and second, with earmarked revenues that come automatically from a portion of the highway user taxes.

Of all the state highway user taxes, the Department of Transportation receives less than one third, with the majority going to schools and county roads. For example, all the money from oversize truck permits goes into the general fund of the state budget, and revenue from the sale of car tags goes to common schools.

Highway user taxes are derived primarily from the 6½ cents-per-gallon state fuel tax. Fifty-five percent of this gasoline tax goes to state highways.

Only two states have a lower state gasoline tax than Oklahoma, and Oklahoma's tax has not been raised since 1953.

In 1977, the state legislature appropriated \$39-million from the general fund for the ODOT. In 1976 the appropriation was \$36.8 million. For 1978, the ODOT requested a \$40 million increase.<sup>4</sup>

State dollars are necessary for continual maintenance and construction, as well as providing the funds necessary to match the federal funds that come to Oklahoma.

Federal money for new construction is available only as long as the state can provide matching funds.

Money available to the ODOT has not kept pace with the rise in costs due to inflation. According to Ward, ODOT director, the deterioration of Oklahoma's highways has occurred at three times the rate of the increase in funds available. In 1967 it took an average of \$200,631 to improve a typical mile of inadequate two-lane road in Oklahoma. In 1977 it cost \$520,000.

From 1967 to 1977 the price of asphalt rose 150 percent; the cost of labor rose 92 percent, and excavation costs were up 538 percent. The Federal Highway Administration estimates that Oklahoma's highway system is wearing out 50 percent faster than it is being replaced.<sup>5</sup>

Highway improvement programs also are hurt by an increase in mandated expenditures by the state legislature, according to Kennedy. Kennedy said projects off the state highway system, such as lake roads and county bridge programs, take funding from highway construction, even though counties get as much highway-user funds as the state does.

To fight rising costs and loss of buying power, the ODOT engineers are considering changes in management techniques and technology. The engineers are looking at the possibility of reducing shoulder width on highways

and allowing steeper hills, as well as other cutbacks in construction and design standards. The department also is considering a change in philosophy to emphasize improvement of existing roads rather than construction of new highways on new alignments.

### Statements for Analysis

To search more closely into public opinion of Oklahoma's road system, several statements were formulated based on four different aspects:

1. Condition: Respondents from all parts of the state will be highly critical of the condition of the state highways and roads.
2. Image of the Department of Transportation generally will be negative.
3. Standards: There will be a significant difference between respondents' acceptance of present design standards in areas of the state where condition is rated low, compared to areas where road condition is rated high.
4. Funding: Respondents' attitudes toward increased funding for the highway department will be directly related to their (the respondents') image of the department.

Richard J. Agnello learned in his studies that investments in improved highway systems generally introduce



new travel options which substantially lower the costs for some travellers.<sup>6</sup> These benefits to highway users are a crucial factor in evaluating the feasibility of highway projects.

Once a new highway program is approved, whether it be a new route or the improvement of an existing route, the essence of sound economy should be taken into consideration.

Forty percent of the state's roads and highways currently are rated inadequate because they do not meet the standards set down by the ODOT.

However, many of the decisions which resulted in upgrading of the standards of state highways were made in connection with the Federal Interstate Program.<sup>7</sup> On interstates, the Federal government dictates standards and pays most of the bill. However, states showed a strong tendency to apply the same standards to state highway projects, even though the money may not have been available.

Although inappropriately high standards cannot be justified in terms of cost benefit and responsible expenditure of funds, inappropriately low standards are poor investments and can cost the program more in the long run than it saves in immediate costs.

More than 25 percent of ODOT's funds come from the state general budget. Unlike the funds which come from

road user taxes, these funds increase or decrease each year according to the state legislature.

In Oklahoma, the lion's share of the state's money goes to education, partially based on cost-benefit analysis.

Cost-benefit analysis, however, is more suitable for comparing courses of action designed to attain the same ends. As explained by Hill, given two diverse projects such as a school and a road, each costing the same amount, and a budget only sufficient for one of them, cost-benefit analysis can give no guidance in the choice.<sup>8</sup> There exists no common scale to compare the benefits of a new school and a new road.

James A. Moe concludes that the over-all evaluation of the effectiveness of a highway program is not based on how good any one road is, but rather on how much improved public service has been achieved for the dollars spent.<sup>9</sup>

#### Limitations of the Study

This study dealt with four aspects of the Oklahoma highway system. They are the image of the transportation department, construction and design standards, funding and condition of present roads.

Thirty counties were selected at random from which participants were drawn for the sample. The sampling technique will be discussed in greater length in Chapter III.

The survey instrument was localized for each county with the first item on each survey listing all the state-maintained highways in each particular county. This was done primarily to give the respondent a frame of reference for completing the survey. The author wanted to insure that the respondent answered the survey with state highways in mind rather than county roads or city streets.

The findings of this study will be generalized only to highway systems as a whole rather than individual stretches of road.

#### Significance of the Study

The Daily Oklahoman, in an editorial September 28, 1978, expressed the concern that highway maintenance and replacement costs exceed the money that is available in Oklahoma.<sup>10</sup>

As the editorial in The Daily Oklahoman stated:

. . . the motoring public must be prepared to face the fact that under present conditions enough funds do not exist to give us modern, well-kept and safe highways today.<sup>11</sup>

The editorial suggests several alternatives such as an increase in the state gasoline tax, reclaiming all road user taxes for highways and more efficient use of the Federal Highway Trust Fund.

It is hoped the findings of this study will give the state highway officials specific data to use in planning future highway improvement programs and budget requests from the state legislature.

This study is undertaken with a public relations aspect in mind. Hopefully, the Department of Transportation will be able to use these findings in reaching the Oklahoma public most effectively to determine their wants.

#### Review of Selected Literature

Countless studies, surveys and reports have been written on highway problems. Each year state polls are taken to determine how legislators should appropriate revenue for highway building programs.

In Oklahoma, state senators and representatives use highway and road improvement as bait to attract voters, yet once elected seldom agree to increase funds for highway improvement anywhere but in their own districts.

Little is known, especially in Oklahoma, of how the citizens feel about the state highway system in their own counties, or how road users feel about the transportation department receiving more money. Many decisions made by the transportation department officials are based on political pressure from powerful legislators.

The ODOT is one of the largest employers in Oklahoma, yet virtually nothing is known about how citizens view the department's image.

Many aspects of a highway improvement program cannot be changed regardless of public opinion. But where alternatives do exist, officials in the Department of Transportation make decisions without benefit of empirical data. The result is a highway improvement program that is unacceptable to the highway users in many areas of the state and to many legislators.

Decisions based on political bargaining result in particular areas of the state receiving the lion's share of new construction while other areas with a weaker political structure suffer year after year with inadequate roads.

#### Other Related Studies

No other study has ever been conducted statewide in Oklahoma on the attitudes of the public toward the state Department of Transportation or the state highway system.

Most studies conducted in other parts of the country dealt with the engineering and technical aspects of highways. However, in his study on the economics of highway benefits, Agnello related his findings to public opinion.

Agnello found in his study that the willingness to pay for one highway's improvement is related to the price of related roads.<sup>12</sup> The price consumers pay for highway use includes length of the route, surface condition, wear

and tear on automobiles and accessibility to services and destination. If existing related roads are in an acceptable shape, then consumers are less willing to pay for construction of a new highway.

Agnello's study showed that the demands for travel along highways which are substitutes or complements are clearly interrelated.<sup>13</sup> Thus, more or less traffic on one highway may have an impact on traffic for another facility. A new highway may divert traffic from an existing highway and, in addition, cause the consumers who would continue to use the old highway to be less willing to pay for the new one.

This study will attempt to determine the percentages of Oklahoma road users who would be most willing to pay for and use new highways and those who would rather keep existing highways.

FOOTNOTES

<sup>1</sup>Joanne S. Orr, "Mapping the Road," Oklahoma Highwayman, Vol. 6 (November 1971), p. 11.

<sup>2</sup>Richard A. Ward, Press Release #060, Oklahoma Department of Transportation (May 4, 1978), p. 1.

<sup>3</sup>"Your Highways in Crisis," Oklahoma - the Road Ahead (1977), p. 2.

<sup>4</sup>Ibid., p. 17.

<sup>5</sup>Ibid., p. 3.

<sup>6</sup>Richard J. Agnello, "Economic Evaluation of Highway System Benefits," Transportation Research, Vol. 11 (1977), p. 365.

<sup>7</sup>Ibid., p. 367.

<sup>8</sup>Morris Hill, "Cost-Benefit Analysis and the Evaluation of Alternative Courses of Action," Planning for Multiple Objectives, Number Five (1973), pp. 14-15.

<sup>9</sup>James A. Moe, "Adjusting to the Spiraling Cost Environment," Committee Meeting Papers (1971), p. 4.

<sup>10</sup>Jim Standard, "Road Wolf at the Door," The Daily Oklahoman (September 28, 1978), p. 18.

<sup>11</sup>Ibid.

<sup>12</sup>Agnello, p. 366.

<sup>13</sup>Ibid.

## CHAPTER II

### METHODOLOGY, DESIGN AND ANALYSIS

#### Introduction

The primary concerns of this survey are upon public attitude in Oklahoma toward four concepts of the Oklahoma Department of Transportation and the state's highways.

The four concepts measured were standards, condition, image and funding. They were represented by 18 statements (see Appendix C). Respondents were asked to mark their degrees of agreement or disagreement with the statements about the standards the department uses in highway construction, the condition of highways, increased funding for highways and the image of the department.

These attitudes were quantified on five-point scales running from strongly agree to strongly disagree. For a statement worded positively toward the concept it represents, the scale was assigned values of five points for strongly agree to one point for strongly disagree. For negatively worded statements, the scale values were assigned from one point for strongly agree to five points for strongly disagree.

The attitude scores recorded by the respondents were broken down by the county and county-group the respondent



lived in. The independent variables in this study, then, comprised the 18 statements and the four concepts they represented, the 30 counties and the county-groups.

This design permits the determination of how the respondents in different counties, or groups of counties, were similar or different in their attitudes toward the four concepts of standards, image, funding and highway condition.

### Sampling Procedure

Questionnaires were sent to a sample of 762 Oklahoma residents three days after those people received an introductory letter (see Appendix A). The sample was drawn from current telephone subscribers in various cities and towns in Oklahoma.

A random and proportionate sampling plan was used. First, 30 counties were randomly chosen from which survey participants were drawn. The 30 counties were distributed in all areas of the state. The counties represented both rural and urban areas and 1,125,352 residents or 44 percent of Oklahoma's population. The proportion of the total sample drawn taken from each county was equal to the proportion of that county's population to the total state population represented. This is shown in Table I.

TABLE I  
SOURCE OF OKLAHOMA RESIDENTS SAMPLED

COUNTY	COUNTY POP.	PERCENTAGE OF TOTAL	NO. RESIDENTS SAMPLED
Logan	19,645	.02	15
McCurtain	28,642	.025	19
Washita	12,141	.01	8
Tillman	12,901	.01	8
Mayes	23,302	.02	15
Rogers	28,425	.025	19
Creek	45,532	.04	32
Wagoner	22,163	.02	16
Pittsburg	37,521	.03	25
Custer	22,665	.02	15
Blaine	11,794	.01	8
Beaver	6,282	.005	4
Atoka	10,972	.009	7
Tulsa	401,663	.357	275
Marshall	7,682	.007	5
Hughes	13,228	.012	8
McClain	14,157	.012	8
LeFlore	32,137	.029	23
Ottawa	29,800	.026	20
Dewey	5,656	.005	4
Major	7,529	.006	5

TABLE I (Continued)

COUNTY	COUNTY POP.	PERCENTAGE OF TOTAL	NO. RESIDENTS SAMPLED
Murray	10,669	.009	7
Garfield	55,365	.049	37
Bryan	22,552	.02	15
Grady	29,354	.026	20
Muskogee	59,542	.053	40
Greer	7,979	.007	5
Pontotoc	27,867	.025	19
Noble	10,043	.009	7
Comanche	<u>108,144</u>	<u>.096</u>	<u>73</u>
Totals	1,125,352	100.0	762

The participants from each county were drawn from all towns and cities on state highway systems in that county. This enabled the researcher to get a representation of the highway systems in the county.

In an effort to confine the respondents' attitudes to the highways in their county, rather than in the state as a whole, statement 1 in the survey instrument asked the respondent to circle which of the highways listed he was most familiar with. The highways listed were only the highways located in the respondent's home county.

This procedure also enabled the researcher to pinpoint attitudes toward individual highway systems as well as aiding in recording the origin of the survey when it was returned.

### Design and Analysis

In the first analysis, a two-factor analysis of variance with repeated measures on one factor was employed.<sup>1</sup> The data came from attitude scores toward four categories of statements and were categorized by one of five county-groups.

This Type I analysis of variance combines a randomized factorial design with a treatments-by-subjects design. This enables the researcher to compare differences in the over-all attitudes of respondents in different county-groups, as well as the mean differences between the four concepts. Further, the researcher could determine any interactive effects which the various county-groups may have had on the attitude expressed.

In other words, this Type I analysis compared the differences between the different areas of the state with the attitudes toward increased funding, highway standards and condition and the image of the transportation department.

The second analysis, also a Type I design, involved measuring the attitudes for each of the 18 statements

rather than the composite of four concepts. The respondents were categorized by the same five groups of counties.

This analysis also enabled the researcher to compare differences between county-groups on attitudes toward each question individually.

The third two-factor variance analysis with repeated measures on one factor contained data from attitudes recorded toward the four concepts while categorizing the responses by new county-groups. The eight new county-groups consist of counties that are more consistent in the highway systems they share.

The final analysis is an elaboration of the total data by partials.<sup>2</sup> Attitudes recorded toward the four concepts are compared for each of the original five county-groups against the attitudes recorded from the total sample.

This analysis takes apart the total attitude data proportionately by county-group, and enables the researcher to compare and contrast the data recorded for each group and each of the concepts measured.

FOOTNOTES

<sup>1</sup>Fred N. Kerlinger, Foundations of Behavioral Research (1973), p. 277, 281.

<sup>2</sup>Claire Seltiz, "Statistical Analysis of Data," Research Methods in Social Relations (1959), p. 410.

## CHAPTER III

### PRESENTATION AND ANALYSIS OF THE DATA

#### Data Collection

Since the Department of Transportation maintains and builds highways in every Oklahoma county, a random sample of 30 counties was selected from which participants were to be drawn. Of the 762 questionnaires sent out to residents in these 30 counties, 15 were not delivered because the addressee was either unknown or had moved and left no forwarding address. Of the remaining 747 questionnaires, 279 (37 percent) were completed and returned.

#### Analysis

The analysis dealt with two issues, the attitude of respondents to the four concepts of highways and roads and the differences in attitudes between counties.

In this thesis, the increased funding, construction standards, department image and highway condition were considered as concepts of highway programming and were used as independent variables. Since the agreement scores were scaled to statements about the concepts, the

dependent response was treated as an "attitude" toward the concepts.

Of the 18 scaled items on the survey, five statements dealt with each of the concepts of standards and image and four statements dealt with each of the concepts of funding and condition.

Of the five items dealing with standards, four were usable:

1. The highway department should build new highways rather than restore old highways.
2. The smoothness of a road is not important as long as it is wide enough.
3. I'd rather go out of the way to travel on a four-lane highway than use a more direct two-lane highway.
4. The Department of Transportation should cut down on its expenses by reducing its standards on surface materials and reducing the width of highway shoulders.

All four of the items dealing with funding were usable:

1. The state legislature should cut back funding in other areas and increase funding for Oklahoma highways.
2. The state legislature definitely should not increase the amount of money it gives the state's highways.
3. It's about time for a  $\frac{1}{2}$  to 1 cent increase in the state gasoline tax to support highway construction.
4. Our roads are okay the way they are. Building new roads is a waste of the taxpayer's money.



Three usable items dealt with highway condition:

1. Highway safety is in the hands of the motorist and has nothing to do with the condition of the highway.
2. Over-all, our highways are in excellent condition.
3. The big cities get all the money for new expressways and bypasses while the rural highways fall apart.

Of the five items dealing with image, only four were usable:

1. For the amount of work there is to do in our county, we never seem to get our share of the highway money.
2. Oklahoma has done a terrible job designing highways for moving farm vehicles and machinery.
3. The highway department spends too much time fixing cracks and potholes rather than widening the heavily travelled roads.
4. The highway maintenance crews do an excellent job of keeping our highways driveable all year.

Each item was accompanied by a five-point scale, running from strongly agree (five points) to strongly disagree (one point). Values on negative items were reversed so that strongly agree had a value of one point and strongly disagree had a value of five points. Items discarded in the analyses will be discussed later.

### Part I

Analysis of the data dealt with respondents' mean agreement with statements about highway standards of the

transportation department, the image of the department, funding for Oklahoma highway programs and condition of the highways.

In this analysis, the independent variables were the four categories dealing with standards, image, funding and condition. There were four usable questions dealing with each of the categories of standards, image and funding and three usable statements dealing with condition.

The agreement scores were scaled to statements about the four categories, so the dependent response was treated as "attitude" toward those categories.

A two-factor analysis of variance with repeated measures on one factor indicated that significant differences did not exist between the county-groups.

However, the mean attitude toward the four categories measured did differ significantly ( $p < .01$ ,  $df=3$ ). As shown in Table II, the group of questions dealing with standards achieved a mean agreement of 3.95 and those dealing with funding had a mean agreement of 3.61. The statements dealing with image and condition registered more negative attitudes with a mean agreement of 2.72 and 2.67, respectively.

In this analysis, using counties and categories of statements, the over-all opinion by different areas of the state did not differ. The opinion elicited by the different categories did differ significantly. The

probability that these differences may have occurred by chance - or accident - is less than one in one hundred. Apparently from this data the differences are real.

And apparently the opinions toward the four categories do not depend on what area of the state one lives in since interaction was not significant. In other words, the more negative attitude toward highway condition and image of the department were the same in all areas of the state. Also every area of the state registered more positive attitudes toward highway standards and increased funding for highways.

The greatest variation in the mean of any of these groups was in the mean agreement scores toward image for the group V counties. As shown in Table II (page 30), the mean image agreement score for the group V counties is 2.96. However, the mean for Noble County was the lowest mean agreement score for any category at 2.0. (Tillman County in group IV also had a mean agreement score of 2.0 for image). This indicates a strong negative attitude toward the image of the Department of Transportation in Noble County. This compares with a 4.2 mean agreement toward image for Washita County, also in group V. This indicates a strong positive attitude toward the department's image in Washita County.

The group of statements dealing with standards has a larger number of the most positive mean scores (see Table II).

TABLE II

MEAN AGREEMENT TO POSITIVELY-MEASURED  
STATEMENTS ABOUT THE FOUR CONCEPTS

	COUNTY	STDS	FUND	IMAGE	COND
1	Creek	3.6	3.75	2.19	2.82
	Tulsa	4.01	3.7	2.66	3.04
	Muskogee	3.82	4.0	2.68	2.98
	Wagoner	3.67	3.8	2.17	2.3
	Rogers	3.97	3.66	2.535	2.775
	Mayes	4.09	3.8	2.41	2.6
	Ottawa	3.85	4.0	2.45	2.87
	means	3.85	3.82	2.44	2.77
2	Marshall	3.25	4.0	2.585	2.5
	Bryan	4.06	2.38	3.125	2.75
	Atoka	3.875	4.13	2.25	2.08
	Pittsburg	4.21	3.5	2.97	2.84
	Hughes	4.42	3.91	2.375	2.11
	Pontotoc	3.87	3.54	3.25	2.79
	Murray	4.25	3.25	2.5	3.17
	means	3.98	3.53	2.72	2.6
3	McCurtain	4.125	3.88	2.625	3.0
	LeFlore	4.15	3.44	2.83	2.97
	means	4.14	3.66	2.725	2.99
4	Comanche	4.0	3.85	2.38	2.705
	Tillman	4.25	4.0	2.0	2.33
	Grady	3.975	3.56	2.61	2.63
	McClain	4.42	3.42	3.1	3.0
	Greer	3.875	3.75	3.25	3.16
	means	4.1	3.72	2.67	2.765
5	Beaver	4.08	3.83	2.58	2.3
	Logan	3.75	3.2	3.68	2.28
	Noble	3.75	3.25	2.0	2.33
	Garfield	3.77	3.9	2.4	2.7
	Major	3.375	2.88	3.375	2.5
	Blaine	3.875	2.81	2.69	2.78
	Dewey	4.0	4.75	2.5	2.33
	Custer	3.84	2.99	3.21	3.16
	Washita	4.25	3.38	4.25	2.5
means	3.85	3.44	2.96	2.54	
Total Means		3.95	3.61	2.72	2.67

The standard category registered mean attitude scores of 4.0 or higher in 16 counties. While the group dealing with funding received mean attitude scores of 4.0 or higher in only six counties, the over-all mean attitude score for standards (3.95) was only slightly (not significantly) more positive than for funding (3.61).

## Part II

The second analysis involved the same groups of counties, however, the independent variables were the 15 usable statements rather than the four categories of statements.

Here the dependent variable is the attitude toward the 15 statements individually rather than the mean attitude toward the statements in categories.

A two-way analysis of variance with repeated measures on the 15 statements showed that significant differences do exist between the county groups ( $p < .05$ ,  $df=4$ ). The differences in attitude toward the statements between the five county groups are large enough that they could have occurred by chance less than five percent of the time (see Table III, page 32).

Also, the mean attitudes toward the 15 statements differed significantly ( $p < .01$ ,  $df=14$ ). Here the differences among the statements were large enough to have occurred by chance alone less than one time in one hundred.

TABLE III  
 MEAN ATTITUDE SCORES OF FIVE COUNTY-GROUPS  
 TO 15 USABLE STATEMENTS

	2	3	4	5	6	7	8	9	11	12	13	15	16	17	18	means
I	3.33	3.81	4.11	3.43	1.97	2.29	4.60	4.56	4.20	1.70	2.76	2.97	2.54	4.48	2.06	3.15
II	3.49	3.18	4.34	3.69	2.27	2.08	4.40	4.30	4.50	1.50	2.06	3.30	3.25	4.40	2.01	3.165
III	3.00	3.67	4.55	4.20	2.00	2.54	4.80	4.67	4.21	1.88	2.21	3.63	2.75	4.55	2.42	3.30
IV	3.54	4.03	4.55	3.39	2.33	2.20	4.90	4.67	4.27	1.60	1.94	3.20	2.94	4.61	2.03	3.26
V	4.34	3.38	4.23	2.31	2.10	3.09	4.50	4.17	4.11	1.84	2.34	3.77	2.89	3.94	1.63	3.09
means	3.46	3.65	4.31	3.50	2.12	2.43	4.60	4.37	4.18	1.78	2.53	3.30	2.85	4.33	2.38	

This analysis shows that there are significant differences between the over-all mean attitudes of the county-groups. There are also significant differences between the over-all mean attitudes toward the statements. These main effects are important, but it must be pointed out that interaction is not significant, therefore, opinions about the statements are not related to the county-groups. Again, opinion toward the statements is the same in all areas of the state.

### Part III

In this part of the analysis the groups of counties were altered slightly so that each group would comprise counties that shared the same highway systems.

The previous county-groups I, II and III remain the same in this part of the analysis. The previous group IV is now divided into two groups of counties. This was done because Grady and McClain counties share highway systems entirely separate from those highways running through Comanche, Tillman and Greer counties.

The previous group V is now divided into three county-groups for the above-mentioned reasons. These three new groups of counties are made up of three north-central counties in one group, five western and north-western counties in another group and a third group comprising only Beaver County in the Panhandle. It

was decided to use Beaver County alone in one county-group because of its isolation from the other blocks of counties and because there is no consistency in the highway systems between Beaver and the other county-groups.

Figure 1 shows the breakdown of the new county-groups used in this part of the analysis.

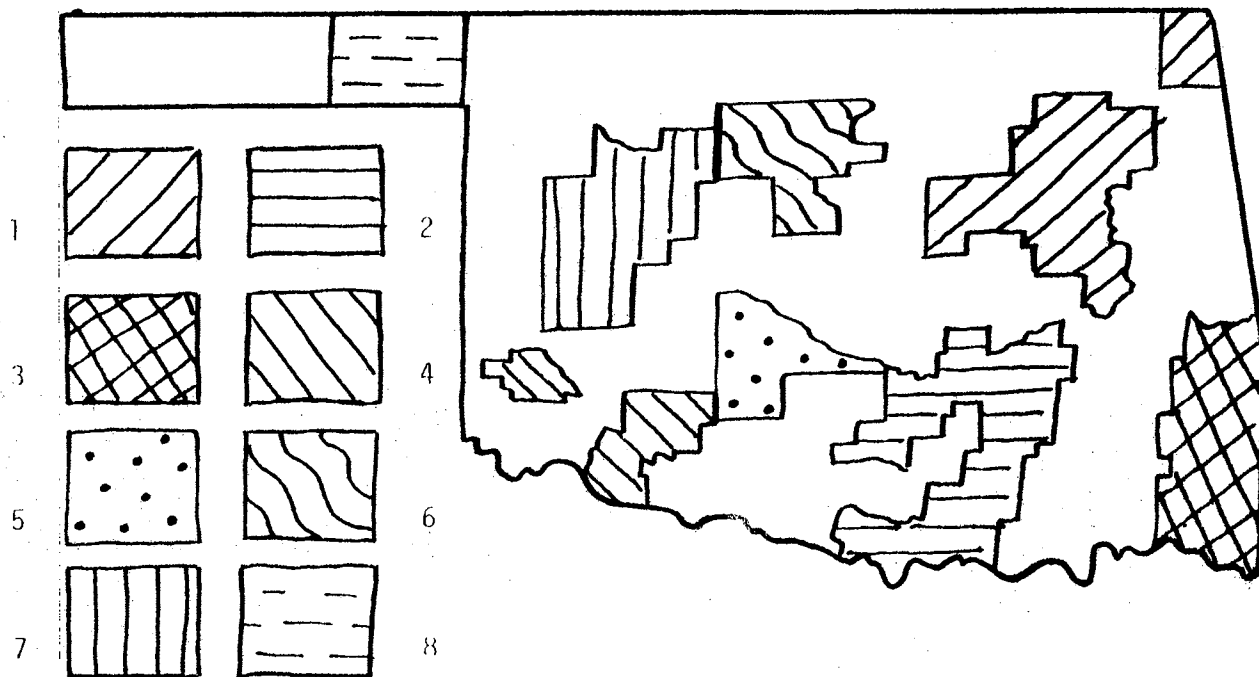


Figure 1. Distribution of Counties in the Eight County-Groups

A study of Table IV shows where the differences leading to the main effects occur. Here, the differences between the mean attitude scores of the statement categories are compared for each county-group individually. This is called testing for critical differences.



TABLE IV  
MEAN AGREEMENT TO POSITIVELY-MEASURED  
STATEMENTS FOR EIGHT COUNTY-GROUPS

	STDS	FUND	IMAGE	COND
Group I	3.64	3.82	2.54	2.62
Group II	3.67	3.53	2.81	2.62
Group III	3.86	3.66	2.75	2.82
Group IV	3.77	3.87	2.66	2.61
Group V	3.94	3.49	2.9	2.89
Group VI	3.39	3.45	2.62	2.32
Group VII	3.51	3.36	3.14	2.69
Group VIII	3.46	3.83	2.6	2.25
means	3.66	3.63	2.75	2.6

For the differences to be due to chance less than five percent of the time, the difference between any two mean attitude scores had to be greater than .7475. Where the difference is smaller, it may be assumed that public opinion on the two categories is the same.

Table IV shows that for each of the eight county-groups the opinions toward each of the four concepts is basically the same, that is not significantly different. But public opinion on maintaining or improving standards of highway construction and on increasing funding for Oklahoma's highways is significantly different from

the attitude toward the condition of the highways and the image of the Department of Transportation.

The analysis also reinforces the findings that there are no differences for any of the eight groups of counties in opinion about the department's standards and increased funding. Also there are no differences in any of the eight groups between the image of the highway department and public opinion on the condition of the highways.

#### Part IV

The final analysis is an elaboration on the attitude scores registered for the four categories of statements. In Part II, it was shown that differences do exist between the county-groups, as well as between the statements.

By using an elaboration of the total population's attitude scores, and introducing the sub-groups of counties, data shows that the county-group does account for association between attitude and topic in some cases. Table V (page 37) may be used as a reference in the following discussion on elaboration.

TABLE V  
 NUMBER AND PERCENT OF ATTITUDE SCORES MARKED  
 FOR FOUR CONCEPTS FOR TOTAL POPULATION  
 AND FIVE COUNTY-GROUPS

Total Pop.	1	2	3	4	5	Total
Standards	210	134	113	218	634	/ 1309
Funding	182	66	123	208	453	/ 1032
Image	389	182	327	197	190	/ 1285
Condition	364	184	105	121	260	/ 1034
	1145	566	668	744	1537	

	1	2	3	4	5	
% Standards	16.0	10.2	8.6	16.7	48.4	/ 100%
% Funding	17.6	6.4	12.0	20.2	44.0	/ 100%
% Image	30.3	14.2	25.4	15.3	14.8	/ 100%
% Condition	35.2	17.8	10.2	11.7	25.1	/ 100%

Group I	1	2	3	4	5	
Standards	100	80	57	131	318	/ 686
Funding	79	38	66	121	241	/ 545
Image	200	104	189	105	75	/ 673
Condition	180	107	54	72	134	/ 547
	559	329	366	429	768	

	1	2	3	4	5	
% Standards	14.6	11.7	8.3	19.1	46.4	/ 100%
% Funding	14.5	7.0	12.1	22.2	44.2	/ 100%
% Image	29.7	15.5	28.0	15.6	11.1	/ 100%
% Condition	33.0	19.6	9.9	13.2	24.5	/ 100%

TABLE V (Continued)

Group II		1	2	3	4	5		
	Standards	31	15	14	16	95	/	171
	Funding	33	8	13	13	58	/	125
	Image	50	18	33	28	36	/	165
	Condition	57	12	14	12	33	/	128
		<hr/>	<hr/>	<hr/>	<hr/>	<hr/>		
		171	53	74	69	222		
		<hr/>	<hr/>	<hr/>	<hr/>	<hr/>		
		1	2	3	4	5		
%	Standards	18.1	8.7	8.2	9.3	55.5	/	100%
	Funding	26.4	6.4	10.4	10.4	46.4	/	100%
	Image	30.3	10.9	20.0	17.0	21.8	/	100%
	Condition	44.5	9.4	10.9	9.4	25.8	/	100%
Group III		1	2	3	4	5		
	Standards	11	2	6	15	36	/	70
	Funding	13	2	8	10	23	/	56
	Image	23	5	17	9	16	/	70
	Condition	17	8	9	8	14	/	56
		<hr/>	<hr/>	<hr/>	<hr/>	<hr/>		
		64	17	40	42	89		
		<hr/>	<hr/>	<hr/>	<hr/>	<hr/>		
		1	2	3	4	5		
%	Standards	15.7	3.0	8.6	21.4	51.4	/	100%
	Funding	23.2	3.6	14.3	17.8	41.1	/	100%
	Image	33.0	7.1	24.3	12.9	22.9	/	100%
	Condition	30.4	14.3	16.1	14.3	25.0	/	100%

TABLE V (Continued)

Group IV	1	2	3	4	5		
Standards	32	15	17	27	108	/	199
Funding	29	9	16	40	62	/	156
Image	69	29	45	23	28	/	194
Condition	62	26	13	16	40	/	157
	192	79	91	106	238		
	1	2	3	4	5		
% Standards	16.1	7.5	8.5	13.6	54.3	/	100%
% Funding	18.6	5.7	10.3	25.6	39.7	/	100%
% Image	35.5	15.0	23.2	12.0	14.4	/	100%
% Condition	39.5	16.6	8.3	10.2	25.5	/	100%
Group V	1	2	3	4	5		
Standards	36	22	19	29	78	/	184
Funding	31	11	19	27	57	/	145
Image	47	26	43	32	34	/	182
Condition	48	31	15	13	36	/	143
	162	90	96	101	205		
	1	2	3	4	5		
% Standards	19.6	11.9	10.3	15.7	42.4	/	100%
% Funding	21.4	7.6	13.1	18.6	39.3	/	100%
% Image	26.0	14.3	23.6	17.6	18.7	/	100%
% Condition	33.6	21.7	10.5	9.1	25.2	/	100%

For the group I counties in the northeast part of Oklahoma, the respondents registered the same scores as the total population. The percent of those marking positive or negative scores from group I was equal to the percent from the total population that registered the same scores.

The group II counties in the south-central part of the state did differ from the total population on the questions dealing with funding. On funding, group II has significantly fewer 4s and 5s than the total, and more 1s and 2s. For group II, 32.8 percent of the funding attitude scores were 1s or 2s from strongly disagree to disagree. This compares with only 24 percent of the funding scores being negative for the total population.

In the total population, 64.2 percent of the funding scores were positive (agree to strongly agree), while in group II only 56.8 percent of the scores were positive toward funding increases.

Public opinion in the group II counties on increased funding for Oklahoma highways is significantly more negative than for the total population.

These counties, however, have a slightly more positive image of the Department of Transportation than the total population, though the difference isn't large enough to be significant.

The two counties in the southeast corner of the state, group III, have a higher opinion of the department's standards for highway construction than the total population.

The public opinion toward funding is slightly lower here than for the total, and the attitude toward image is slightly higher. These differences are slight and not significant. They are not really large enough to matter.

In the group IV counties of southwest and central Oklahoma, there are no significant differences from the total population for any of the four concepts.

The final group of counties, group V, in the northwest and central areas, have lower attitudes about highway standards. Here it may be inferred that respondents in these counties are more satisfied with standards the department sets for highway construction and design.

However, here the attitude toward increasing funding is more negative than for the total population. The differences are not large, however. In group V, 29 percent responded with 1s or 2s while for the total, 24 percent marked the more negative responses. Fifty-eight percent of group V responses were agree to strongly agree (4-5) compared to 64.2 percent of the total population's responses being 4 or 5 on funding.

In every group of counties, the public's opinion on the condition of the highways in their area was the same.

In every area, the attitude toward condition was significantly more negative than positive, with 64.5 percent of all the responses toward condition being negative.



## CHAPTER IV

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### Summary

The mail survey of Oklahoma residents sought to determine three things:

1. The attitude of the Oklahoma public toward four concepts of the Oklahoma transportation department and highway system: image, funding, condition and standards, as contained in 18 statements of a questionnaire.
2. Whether attitude toward the concepts differed between different areas of the state.
3. Whether attitude toward one concept was affected by attitude toward any of the other concepts.

Data were gathered using a survey instrument with one demographic question and 18 scaled statements. The scaled items were measured on five-point scales with the higher scale values indicating more favorable attitudes toward the concept being measured. The one demographic question, #1, was used to determine origin of returned surveys and to localize the survey to the state-maintained highways in the respondent's home county.

Of the 762 questionnaires mailed, 279 were returned. For analysis, 261 of the 279 returns were usable.

## Findings

In Part I and Part II the counties from which participants were drawn were grouped geographically into five county-groups. This was done so that an over-all mean attitude for groups of counties in the same area of the state could be measured.

Respondents in these five groups of counties did not differ in their over-all attitude about the highway department's standards, image, increased funding or highway condition. In all five county-groups, standards and increased funding were rated more positively than image and road condition, as shown in Table II (page 30).

When one considers the counties individually, variations appear. As a whole, the attitude toward increased funding was slightly positive ( $>3.0$ ) in all but three western counties in group V (Blaine 2.81, Major 2.88 and Custer 2.99) and one southern county in group II (Bryan 2.38).

The group V counties in Western Oklahoma had a neutral attitude, over-all, toward the department's image, with a mean attitude of 2.96 out of a possible 5.0. However, as Table II (page 30) shows, that group comprises the two extreme mean attitudes toward the department. Noble County, with a mean attitude of 2.0, is negative, while Washita County, with a mean attitude of 4.25, is strongly positive toward ODOT's image.

Table II (page 30), indicates that the attitudes toward the four concepts were not significantly related to geographic location but rather to conditions existing among the individual counties.

Although the five groups of counties do not differ in over-all attitude toward the four concepts, differences do occur when individual aspects of the concepts are taken into account. Apparently, as shown in Table III (page 32), there are some individual aspects of the four concepts that are more controversial.

A look at the mean attitude scores of group IV for the four aspects of funding shows a range from very positive (4.61) on statement 17 to very negative (1.94) on statement 13. In other words, in the group IV counties, respondents feel that building new highways is a good use of taxpayers' money (statement 17), yet these same respondents are not in favor of increasing the tax to build new roads (statement 13).

When looking at individual aspects of funding, as represented by statements 3, 11, 13 and 17, differences also occur from county to county. In five counties (Noble, Murray, Custer, Bryan and Blaine), there was a negative attitude ( $< 3.0$ ) toward the legislature cutting back funds in other areas to increase highway funding (statement 3), while the opinion in five other counties (Dewey, Garfield, Muskogee, Tillman and Hughes) toward this aspect of increased funding was very positive ( $> 4.5$ ).

If one looks at another aspect of funding, the gasoline tax increase (statement 13), the opinion from county to county again differs. In three counties (Dewey 4.0, Washita 4.5 and Ottawa 3.4), the attitude is positive for increasing the gas tax while in three other counties (Rogers 3.25, Atoka 3.25 and Beaver 3.3), the opinion is slightly positive to this tax increase. In all other counties the gas tax increase got a neutral to strongly negative rating.

Also, in nearly every county there was a very strong opinion that building new highways is not a waste of the taxpayers' money (statement 17).

These results show that while most people feel that building new highways is not a waste of money, they would rather the money come from funds now going to other areas than from a gas tax increase.

If one looks at the statements dealing with image (6, 7, 15 and 16), it appears in most counties the image of the highway department is not related to its most observable employees. Statement 16 dealing with maintenance crews was rated negatively in counties where the other aspects of image were rated positively and they were rated positively in areas where other aspects were rated negatively. These results indicate that maintenance crew work does not have a direct effect on the image of the department itself.

In Greer, Logan, Marshall and Garfield counties, the mean image of the department is low while attitude toward maintenance crew work in those counties is very positive. This also works in reverse, as in Tillman, Blaine and Ottawa counties, where over-all image is more positive than attitude toward the maintenance crews.

Part III grouped counties that shared major highway systems. This yielded eight groups rather than five. The findings here (Table IV, page 35), were comparable to the previous findings using five groups of counties. Respondents in the eight county-groups did not differ in their over-all attitude about ODOT's standards, image, increased funding or highway condition. In all eight county-groups, standards and funding were rated higher than image and condition. These results indicate that from what the respondents see of the state highway system and the department, more money is needed to maintain good highway standards and improve the condition of the highways.

The last analysis, Part IV, was an elaboration of the previous analyses showing where association between county location and attitude did exist, as compared to the total sample rather than to each county-group.

Results here show that respondents in the northeast counties did not differ from respondents at large on any of the four concepts.

The south-central counties of group II, however, differed from total respondents on increased funding. The respondents from this area of the state were more negative (3.53) to increased funding than were the total respondents (3.61).

The southeast counties of group III had a more positive opinion of the department's standards (4.14) than did the total population (3.95).

There were no differences in the mean attitude of group IV counties of the south-central part of the state and the total respondents.

In the group V counties of northwest and north-central Oklahoma, mean attitude toward highway standards (3.85) was lower than that of all respondents (3.95).

Attitude toward condition was significantly more negative than positive in every group of counties.

Nearly one-third of the returned surveys had comments included, either written directly in the margins or attached separately. The comments were very similar to the findings of the survey in that most comments were negative toward condition of the highways and image of the department.

Many of the comments were added as attitude qualifiers for the choices made on particular statements. The most common form of qualifying statements were those dealing with positive attitudes toward funding. Respondents

wanted to indicate their approval of certain aspects of increased funding, yet said their approval depended on certain conditions.

The over-whelming majority of added comments were negative and dealt with local "sore spots" in the highway system. Another common element in the added comments was that when Tulsa, Rogers or Mayes County respondents added comments, they nearly always included complaints about State Highway 33 running east out of Tulsa to Springdale, Arkansas. This was the only highway continually singled out by respondents.

#### Conclusions

It is easy to ask such questions as "Do you own a car?" or "Do you travel on Oklahoma's highways?" Even though it is said that everyone has an opinion about the highways, the majority of the people's attitudes may be largely latent. To give an opinion may require more thought than the respondent is willing to give.

Also, there is no one correct answer to a survey question as there is on car ownership. The answer the respondent actually gives will depend on the aspect of the issue that is uppermost in his mind. On any given subject, some people feel strongly; some are indifferent; and others may be highly changeable or very consistent in their attitudes.

Unfortunately, the findings involving individual counties and the county-groups may be questioned since they were based on uneven and sometimes small numbers of responses. In group I the number of responses ranged from five from Ottawa County to 95 from Tulsa County. Group V, with nine counties, was compared with group III comprising two counties.

The reliability and validity of this survey will be discussed at greater length in the "Recommendations" section of this chapter. To the extent this study's findings are reliable and valid, the following may be concluded:

Highway users in every county seem to hold a favorable attitude toward the design and construction standards used by ODOT. However, regarding the preference of four-lane bypasses over more direct two-lane highways, every Western Oklahoma county, except Garfield in group V, responded negatively. This appears to indicate that where population is less dense and distance between towns is greater, the more direct route is preferred even if it is a two-lane rather than four-lane highway.

Regarding increased funding, ODOT fared positively over-all in all but three Western Oklahoma counties (Major, Blaine and Custer) and one southern county (Bryan).

Although respondents in every county agreed ODOT needs more money for highway construction and improvement, the reassigning of funds by the legislature, or a gasoline



tax increase, rated less favorably in various counties. It is clear the sentiment is for the highway program to receive more funding; however, the public does not appear to be united on the source of such funding.

The urban areas, however, overwhelmingly support the legislature cutting back funds and redistributing them to ODOT, in lieu of a gas tax increase. ODOT would have a difficult time promoting a gas tax increase, since public opinion is negative. However, the author suggests that ODOT conduct a further study to determine where money currently existing might be redistributed to the Department of Transportation.

Highway users' attitudes toward the department itself appears to be tied to the condition of the roads rather than to the work of the maintenance crews.

It may be concluded that even though the image of ODOT may be low across the state, most road users feel the department should receive more revenue for a highway improvement program. Public opinion seems to indicate that the department's construction standards are acceptable and should not be cut, but that the present condition of the roads is not acceptable.

#### Recommendations

When beginning any sort of study, no problem seem unsurmountable. Yet, in retrospect, this study contained several obstacles that the author did not overcome.

One of the problems in any mail survey is getting a representative sample of the population under study. The 37 percent return of mailed questionnaires in this survey was low enough to cast doubt on the representativeness of response. Compounding this problem was the low percentage of returns from several larger counties and the high return from several smaller counties. Because of these doubts, all findings and conclusions can be accepted only to the extent that these groups were representative of the population of such respondents among Oklahoma road users.

The author may have improved the percentage of returns, had he gained prior commitments by telephone from persons to be sampled.

A followup wave of questionnaires may also have increased returns. The author, however, relied solely on a letter of reminder to all survey participants. This method did not take care of those persons who never received their survey previously.

#### Item Construction Drawbacks

The author chose to limit the questionnaire to a one-page instrument with items listed on the front and back. This procedure was selected so that participants would not have a lot of paper to handle and, thus, more likely would cooperate. One drawback of many mail surveys is the lengthiness of survey instruments.

However, the method used here with statements on two sides of the paper had its drawbacks, too. Thirty-two surveys were returned with only the items listed on the front page of the survey answered. The 32 respondents represented by these surveys apparently did not follow the directions to complete items listed on the back page.

Several questionnaire items were left out of the analysis for various reasons. For example, item #10 called for a degree of agreement to a statement about the Department of Transportation's image:

10. The Department of Transportation always hires the same construction companies for road work even though their past work has been terrible.

In this item, the respondent would have to know a great deal about the hiring practices of ODOT. The item is not definitely favorable or unfavorable to the highway department. In short, this item does not yield useful data since most respondents chose to remain neutral on this item.

The remaining two discarded items had serious errors in wording:

14. The highway department should concentrate on getting their repairs done quickly instead of building all these unneeded new highways.
19. There's nothing I hate more than Oklahoma's rough and bumpy highways.

Both of these statements are biased in their wording. In statement #14 the phrase "these unneeded new highways" causes respondents to assume the statement does not deal

with new highways that are "needed." The author was inadvertantly putting words in the respondent's mouth. The participant is more likely to respond to the phrase in question rather than to the statement as a whole.

Statement #19 is useless for the same reasons. The wording biases the respondents' thinking to those highways in his own mind that are rough and bumpy. The author's purpose for the statement was to determine if respondents did think Oklahoma's highways were rough and bumpy. Obviously the statement yields no useful information.

Other shortcomings in the research include the inability to match respondents' attitudes for the highways in their area with the state department's sufficiency ratings for those highways.

Sufficiency ratings are given for individual stretches of road from fractions of a mile to several miles in length, but no average can be determined for a particular highway through an entire county.

Hopefully this study may be used by ODOT in preparing future budget requests from the state legislature for highway improvement programs.

It is also recommended that ODOT look closely at the results of the survey concerning the department's image in areas of the state where construction is currently under-way and where district headquarters are located.

As for funding, results of the survey indicate that a gasoline tax increase would not be accepted on a state-wide basis. It is recommended that ODOT begin a public relations program to inform the motorists of Oklahoma what the monetary needs are for the future of good roads in the state.

There is a generally positive feeling statewide for an increase in funding for highway improvement, and ODOT should capitalize on this positive attitude in preparing budget requests from the state legislature and in planning a public relations program.

It should be noted that, due to previously mentioned limits to the survey, the results of the analyses should not be taken to represent attitude toward a particular highway. Results from a particular county also should not be taken to represent public attitude toward construction under-way at the time of the survey.

The final recommendation would be that ODOT continue to monitor public opinion on a regular basis to determine if the highway programs being developed are actually in the best interests of the people of Oklahoma and to have available empirical data rather than political pressure to support budget requirements.

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APPENDIXES

APPENDIX A

INTRODUCTORY LETTER



OKLAHOMA GOOD ROADS AND STREETS  
ASSOCIATION

117 NORTH BROADWAY  
POST OFFICE BOX 1968  
ADA, OKLAHOMA 74820  
TELEPHONE (405) 332-1606

Dear Oklahoma Road User:

Over the years you've driven or travelled over many of Oklahoma's roads and highways, and you probably have a lot to say about them.

Now you have the chance. Your name was randomly selected to participate in a statewide survey to get the public's opinion on Oklahoma's state highway system. All we are asking for is your opinion, but because this is a randomly drawn survey, your opinion represents over 3000 other Oklahomans. So you can see how important your participation is.

The survey is being done for the Oklahoma Good Roads and Streets Association by an independent researcher and is in no way connected with any political candidate.

Within a few days you will receive the 19-item survey with instructions and a postage-paid envelope in which you may return the survey when completed.

The survey is short and simple. It should take about 5 minutes to complete. But in those 5 minutes you will be able to participate in the first public opinion poll ever conducted about our state's highways.

Thank you for your participation. You may expect the survey through the mail in several days.

Sincerely,

Oklahoma Good Roads and Streets  
J.A. Richardson, President

APPENDIX B  
COVER LETTER FOR QUESTIONNAIRE

Dear Oklahoma Road User:

You probably have received a letter of introduction by now informing you that you were scientifically chosen to participate in the first public opinion poll on Oklahoma's roads and highways.

Accompanying this letter is the survey. Please read each statement and rate each one on the scale to reflect your feelings as closely as possible. The scale has five blanks representing a range of Strongly Agree, Agree, Neutral or Undecided, Disagree and Strongly Disagree.

If you strongly disagree with the statement, place your check mark in the last blank, the one farthest to the right on the scale.

Agree                                                Disagree

If you slightly disagree with the statement, then place your check mark in the fourth blank as follows.

Agree                                                Disagree

A statement you strongly agree with would be marked as follows:

Agree                                                Disagree

A mark on the middle blank means you are undecided or choose to remain neutral to that statement.

Agree                                                Disagree

Once you have completed the survey, please enclose it in the postage-paid envelope and return it through the mail by Wednesday, July 26.

Also remember that any comments you wish to include may prove very valuable.

Thank you.

APPENDIX C  
QUESTIONNAIRE

1. Please circle which of the highways listed below you are most familiar with.
 

a) US 69 Muskogee north/south	d) SH 10 Braggs north/south
b) SH 72 Boynton north/south	e) US 62 Muskogee east/west
c) SH 2/US 64 Muskogee-Porum	f) US 64 Haskell north/south
  
2. The highway department should build new highways rather than restoring old highways.
 

Agree    \_\_\_    \_\_\_    \_\_\_    \_\_\_    \_\_\_    Disagree
  
3. The state legislature should cut back funding in other areas and increase funding for Oklahoma highways.
 

Agree    \_\_\_    \_\_\_    \_\_\_    \_\_\_    \_\_\_    Disagree
  
4. The smoothness of a road is not important as long as it is wide enough.
 

Agree    \_\_\_    \_\_\_    \_\_\_    \_\_\_    \_\_\_    Disagree
  
5. I'd rather go out of the way to travel on a four-lane highway than use a more direct two-lane highway.
 

Agree    \_\_\_    \_\_\_    \_\_\_    \_\_\_    \_\_\_    Disagree
  
6. For the amount of work there is to do in our county, we never seem to get our share of the highway money.
 

Agree    \_\_\_    \_\_\_    \_\_\_    \_\_\_    \_\_\_    Disagree
  
7. Oklahoma has done a terrible job designing highways for moving farm vehicles and machinery.
 

Agree    \_\_\_    \_\_\_    \_\_\_    \_\_\_    \_\_\_    Disagree
  
8. The Department of Transportation should cut down on their expenses by reducing their standards on surface materials and reducing the width of highway shoulders.
 

Agree    \_\_\_    \_\_\_    \_\_\_    \_\_\_    \_\_\_    Disagree
  
9. Highway safety is in the hands of the motorist and has nothing to do with the condition of the highway.
 

Agree    \_\_\_    \_\_\_    \_\_\_    \_\_\_    \_\_\_    Disagree
  
10. The Department of Transportation always hires the same construction companies for road work even though their past work has been terrible.
 

Agree    \_\_\_    \_\_\_    \_\_\_    \_\_\_    \_\_\_    Disagree

11. The state legislature definitely should not increase the amount of money it gives the state's highways.

Agree \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Disagree

12. Overall, our highways are in excellent condition.

Agree \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Disagree

13. It's about time for a 1/2 to 1 cent increase in the state gasoline tax to support highway construction.

Agree \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Disagree

14. The highway department should concentrate on getting their repairs done quickly instead of building all these unneeded new highways.

Agree \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Disagree

15. The highway department spends too much time fixing cracks and potholes rather than widening the heavily travelled roads.

Agree \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Disagree

16. The highway maintenance crews do an excellent job of keeping our highways driveable all year.

Agree \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Disagree

17. Our roads are okay the way they are. Building new roads is a waste of the taxpayer's money.

Agree \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Disagree

18. The big cities get all the money for new expressways and bypasses while the rural highways fall apart.

Agree \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Disagree

19. There's nothing I hate more than Oklahoma's rough and bumpy highways.

Agree \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ Disagree

APPENDIX D

COMMENTS FROM RESPONDENTS

## COMMENTS

From Tulsa Co.: I have traveled U.S. 75 North-South twice (at least) a week since my birth. It is my opinion that we need both new highways and old highways restored. It is also my opinion that we should cut back on legislation funding and increase funding for Oklahoma highways. There shouldn't be as much money going up near Norman and OKC and more to Tulsa and surrounding areas.

This survey does nothing to get at the bottom of our Highway problems and that is Large Trucks. Every one knows maximum gross weights allowed are destroying our highways. Truckers are allowed to move large loads over our highways without penalty or a very small fine.

The maintenance workers need more money high as every thing is as many hours they put in & better supervision.

There are enough gasoline tax collected to have better roads in Oklahoma. Also the grass & weeds need to be mowed on the highways we do have.

Dear Sir, I just wish the state could get Highway 33 fixed real soon.

Direct more heavy Material over the Railroads thereby reducing the wear and tear of highways, cut down pollution, reduce fuel consumption.

Away with semi-trailor trucks & freight on our highways. They cause more death and destructuon than their taxes pay. Give us comfortable rest stops with facilities. Almost any direction you go out of Oklahoma you find nice clean comfortable rest stops with facilities & places to eat. Oklahoma's is a disgrace. P.S. No more raise in gasoline prices.

They should just pass the liquor by the drink law and then they wouldn't wonder where to get all the money.

You seldom see full crews working on highways. Why can't Oklahoma complete highway projects. The Broken Arrow expressway was started 22 years ago!

Too much money is spent in Oklahoma City where the senators have nice expressways to drive on. Why can't they treat Tulsa the same way and give us some finished highways to drive to work on?



## COMMENTS CONTINUED

From Rogers Co.: I'm afraid you have made a poor selection for your survey as I have driven approximately 13,000 miles in the last six years and 90 percent of that in city limits. But I will make these comments. #1 - I am not in favor of any additional taxes on gasoline. #2 - Highways cannot stand up under pounding of mammoth trucks, but with present specifications. #3 - As long as cars are sold capable of speeds of 100 mph plus, fatalities will increase regardless of highway conditions.

From Garfield Co.: I highly recommend that we do not start a highway improvement unless we first have the money available. More tax payers money is wasted when we start an improvement on strips of highway then stop due to lack of funds and the partial development washes away only to be done over again. May be stopped for months or years.

From Creek Co.: The federal government is eventually going to make us an immobile society. Why build more super highways if we are not going to be able to drive as we do now? Just get and keep the roads we have now in good shape.

From Atoka Co.: Comments,

1. Some of my neutral answers were necessitated because I don't have the information I need to answer yes or no.
2. Having had quite a bit of experience in highway & road construction in the past, I think the biggest step in obtaining the kind of good, safe highways we all need is to place knowledgeable, experienced people in key positions with the highway department. I have built roads & bridges under the supervision of state highway inspectors who had little or no knowledge of what we were doing.
3. Taxes, if their must be an increase in order to maintain & update our highways, it should be done. Thank you for allowing me to submit my opinion on this very important matter.

James D. Johnson Route #1 Caney, Okla. 74533

From LeFlore Co.: I don't think our state and county roads are wide enough. Highway 59 is far too narrow and crooked. Most state highways are.

## COMMENTS CONTINUED

From Beaver Co.: I appreciate you being concerned enough to sen out questionnaires. I don't know how Texas builds their highways, but I've been impressed. When you do build a highway make them good & thick to last. These construction companies that lay surface are doing a sorry job. The highways are in worse shape in two months than they were before.

From Custer Co.: Roads are not built properly initially - primarily in the road bed preparation area.

We need more nice rest stops with facilities such as are found through Missouri. If they can afford them so can we. Our highways are worse in this respect than any I have traveled.

From Bryan Co.: Hwy 69 from Durant to McAlestar is a death trap! Hwy 70 from Durant to Ardmore is worse. Where in the hell are Bryan County politicians when the Hwy money is allocated?

On #6: (str. disagree) Inefficiency in using what we get in the right ways.

On #16: (disagree) Men are to be commended. Hwy Dept. is not!

On #19: (str. agree) Absolutely. Take a hint from your Texas neighbors and Tex. residents pay less for their auto tags.

Farm machinery could be kept off public roads since their tags cost less & they don't have to pay as much for gas. The gas taxes are too high now considering this is an oil-producing state. The roads in this state are quite good. You should travel in the East to appreciate what smooth roads you have in Oklahoma.

From Ottawa Co.: Build NO more turnpikes in Oklahoma!

We are not suffering as far as highways. I am proud of our roads. I do think rural roads need some attention.

## COMMENTS CONTINUED

From Pontotoc Co.: I feel we could widen and straighten many of our present roads. US 75 from Atoka to Henreyetta is a disgrace to the state of Oklahoma. Southeastern Okla. has the worst roads in the state.  
J.K. Sampson Ada

Use better managment and better road inspectors, to improve road base. New roads are needed.

From Wagoner Co.: Why can't the Highway Dept. use the manpower it has and the equipment to do more of the work instead of hiring it done outside? Our Wagoner area maintenance crew does a good job.

Why build a wide road if it is not smooth & will not hold up. All highways could be made safer but it would take a lot of money & most people only want their own road fixed. The highway could be a lot rougher. Try not repairing for a year or so.

From Dewey Co.: On #19: Ridiculous statement for any individual. Ultra-ridiculous to put in questionnaire. Basic opinion concerning highway construction: 1st step - upgrade secondary highways while maintaining primary. 2nd step - Once all roads are brought up to basic standards, upgrade all equally.

From Comanche Co.: Increase of money is ok if it's used for old roads. The old roads need to be wider for passing. All need a shoulder wide enough for farm machinery, and so trucks can pass over on pass lane on hills. All highways should have good maintenance.

August 1, 1978  
Tulsa, Okla.

Mr. Keith Garton  
Stillwater, OK

Dear Sir:

In answer to your questionnaire you sent my sister, I would like to add my own comments.

I have just taken a vacation and have travelled over five thousand miles. I have not had to pay toll on any road after I left Oklahoma, and have not seen any roads half as poor as these in Oklahoa. In other states they have beautiful rest stops with rest rooms, water and information, some they even have vending machines of foodstuffs, like cookies, candies, food for the kiddies as well as Mom and Dad, which makes it nice. I drove from Tulsa to Tacoma, Washington adistance of over two thousand miles on excellent divided highways, without paying one cent in toll fares. As for higher gasoline taxes, we pay too much already. We pay more taxes than any other state I've been in, and have the poorest roads. I, prsonally think, that millionaire that is sticking our tax money in his own pocket would put it where it belongs, we would have good roads here. I may sound a little "hot" I am. I have torn up five new cars on these roads. and when I have to pay 11 1/2¢ tax per gallon gas for my driving privelege, then have to pay toll, it goes against the grain with me. I will not drive on them unless I have to, I go out of my way to get to my destination rather than pay toll.

Sincerely,

R.L.Wennerholm  
4301 W. 61st Street  
Tulsa, Oklahoma 74107

2658 S. Winston  
Tulsa, Okla. 74114  
July 26, 1978

Mr. Keith Garton  
723 S. Jefferson  
Stillwater, Okla. 74074

Dear Mr. Garton:

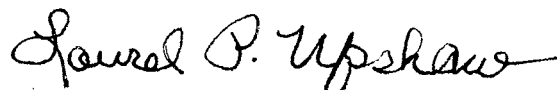
This answer to your survey is delayed for the purpose of commenting. Having just returned from eastern Iowa, across Missouri, I am even more appalled at Tulsa's streets.

Iowa 136 (and probably others in Iowa) was build in the early 1920's or, possibly, as early as 1910. It is winding, narrow, and has a curb along the edge - far harder to drive than almost any of Oklahoma's highways, but the surface is in far superior condition. I would far rather drive it on a rainy day than any of Oklahoma's asphalt-surfaced roads. Eastern Iowa's roads were laid on very hilly clay soil which freezes deeply and solidly all winter, has a high shrink-swell ability, and high erodibility. Yet these concrete roads are smooth, even where occasional patches occur (these are also concrete).

Iowa's engineers must have considered the above factors when specifications were drawn up for road-bed and surfacing. Why does Oklahoma continue to waste dollars and time repairing roads and streets, over and over, with thin layers of asphalt that never lasts over 2 years, is slippery when wet, and buckles at every change of the weather? Even the Broken Arrow expressway already has been "retreated" with asphalt - before one end is even finished.

Who draws up the specifications for roads and streets? Who passes on these specifications, before final bids are let, and just how qualified are they to do so? Who inspects the materials and the road-building, and how qualified are they? We could do a lot for Oklahoma's roads and Tulsa's streets, if we could stop wasting time, money, men, and materials.

Very truly yours,



Laurel P. Upshaw

po box 117  
Arkoma, OK 74901

Mr. Keith Garton  
723 S. Jefferson  
Stillwater, OK 74074

Dear Mr. Garton:

Your letter was addressed to my father, Henry Robbins, who has been deceased since 1976. However, I will voice my opinion since I also drive many of Oklahoma's roads.

I lived in Lawton for 16 years and I did a lot of traveling between there and here, which has been my home since 1930. The condition of some of the roads was simply terrible. I also traveled from Lawton to Johnston County, in southeast Oklahoma and on State 7 most of the time. Since my writing to the highway department and Carl Albert as well as the governor, the road has been resurfaced but there is still no shoulders. People do still have flats and blowouts even though most tires are belted. I find the state roads, mostly, are too narrow and during the summer when my sisters children come to visit, I travel State 31 to McAlester, US 270 to Calvin, State 1 into Ada and on th Roff then State 12 to Mill Creek, where my sister lives. I am happy to say that Pittsburg County is doing a good job from Arpelar almost to Stuart but they should do some work on other highways in their county. Other parts of US 270 need to be repaired and resurfaced as well as what they are now doing.

Now, let me tell of the roads in my part of the state, Le-Flore County. I don't know who decided that State Line Road between Arkoma and Fort Smith should be Arkoma's responsibility but Arkoma is so poor, as a city, it can't even keep its city streets up let alone the Stete Line Road and it is just almost impossible to drive on, in places. Arkoma doesn't have any way of getting any extra revenue since we are really just a suburb of Fort Smith and some people seem to think Arkansas helps us. Well, whoever thought up that little thing, just didn't know what they were talking about. Fort Smith thinks we are "dirt under their feet" when it comes to financial help, although most of us go to Fort Smith for the necessities of life, such as food, clothing and gasoline. We even make our living in Fort Smith except those of us who are retired and have retirement salaries or are on welfare.

Also in the Oklahoma City area, the streets are in sad shape. I get off I-40 at Tinker's main gate and go down 29th to Agnew then to Exchange and South Youngs. Twenty-ninth street has always been a worn out street. It looks like instead

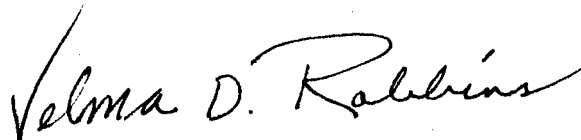
of making new by-passes around the city, you would profit by reapaing what is there instead of making new roads. My uncle and aunt live on South Youngs just off Agnew and Exchange.

What is the holdup on the Richardson bypass in Ada? You can almost get through Ada going down Main Street and out by the cement plant going to Mill Creek or south on State 1 to Roff, while your are going on this north side bypass. Pontotoc County always has good roads but if they could get this bypass completed it would shorten the route from McAlester to Mill Creek, as far as I go on State 12.

Now, about the bad bridges in our state. I know the one on State 9a at Arkoma is listed as the worst bridge in the state on a state highway, but there is another one on State 7 north of Tishomingo, that, in my opinion, is jsut as bad. Will the State 9a Highway fromits intersection with US 271 between Arkoma and Spiro be resurfaced and widened when the new bridge is made over the Poteau River at Arkoma? There is a lot of traffic on it in the morning and afternoon when the factory traffic from Fort Smith is traveling to and from wrok. Also, why is State 7 just partly blacktopped? I rtraveled it from Atoka to Mill Creek and part of it is still just a dirt road. I know the State 7 Highway has been relocated south of Mill Creek and made new to Regan but it should be blacktopped all the way to State 99 then it would be a good road and proabably more people would travel it and visit Platt National Park.

I hopw this has helped in answering the questionnaire. I have filled out the survey and will send it back with this letter, even though it was sent to my dead father.

Yours truly



Velma D. Robbins

VITA<sup>2</sup>

William Keith Garton

Candidate for the Degree of  
Master of Science

Thesis: A MULTIVARIATE ANALYSIS OF FOUR CONCEPTS OF THE  
OKLAHOMA DEPARTMENT OF TRANSPORTATION

Major Field: Mass Communications

Biographical:

Personal Data: Born in Oklahoma City, Oklahoma,  
September 10, 1954, the son of Mr. and Mrs. William  
R. (Bill) Garton.

Education: Graduated from Duncan Senior High School,  
Duncan, Oklahoma, in May, 1972; received Bachelor  
of Science degree in Advertising and Public  
Relations from Oklahoma State University in 1976;  
completed requirements for the Master of Science  
degree at Oklahoma State University in December,  
1979.

Professional Experience: Advertising director, Con-  
struction News of Oklahoma, 1978; member, Oklahoma  
City Advertising Club, 1978-1979; Editor and public  
information officer, Oklahoma Association for  
Retarded Citizens, 1979.