

MICHIGAN



OFFICE OF CRIMINAL JUSTICE
DEPARTMENT OF MANAGEMENT AND BUDGET

EVALUATION
OF
P.A. 416
SECONDARY ROAD PATROL PROGRAM

Michigan Office of
Criminal Justice

EVALUATION of P.A. 416 Secondary Road Patrol Program

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Michigan Sheriffs Association

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Allegan County
Benzie County
Branch County
Cheboygan County
Clare County
Delta County
Ingham County
Iron County
Macomb County
Monroe County
Montcalm County
Montmorency County
Tuscola County

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EXECUTIVE SUMMARY

- . Act No. 94 Public Acts of 1981, mandated that the secondary road patrol program be evaluated and a report submitted to the legislature April 1, 1982. The program was created by Act No. 416 Public Acts of 1978. The program is a state grant program for providing road patrol and reducing accidents on the county primary and local roads outside the corporate limits of villages and cities.
- . Prior to the secondary road patrol program only basic services--taking of crime and accident reports--could be provided on secondary roads. Sheriffs of some smaller counties reported having no regular road patrol prior to the program. All sheriffs felt the secondary road patrol program is essential to accident reduction on the county primary and local roads.
- . In The first year 78 counties participated in the program which officially began October 1, 1978, however, most counties did not actually begin until the second or third quarter of the fiscal year. Five counties did not enter the program until the 79/80 fiscal year.
- . The evaluation used statewide data when available, otherwise it used a sample consisting of data for thirteen randomly selected counties. The evaluation covers the first two calendar years of the program, 1979 and 1980. 1980 was essentially the first year most counties had a full year of program activity.

- . The fiscal and program data for the regular road patrol indicated that most counties had maintained or exceeded their 1978 level of county expenditures and activities. Some smaller counties, primarily in the 0-30,000 population range, did not maintain their 1978 level of traffic activity and some in the 30,000-100,000 population range did not maintain their patrol vehicle mileage but did maintain the number of citations issued.
- . The secondary road patrol deputies out-produced the regular road patrol in the number of citations per officer, accidents investigated, crime reports taken and criminal arrests. They also made a larger percentage of arrests for driving under the influence. They represented 14 percent of the deputies but 32 percent of the arrests in 1980.
- . In addition to road patrol, counties have implemented other accident prevention programs with secondary road patrol funds. Vehicle inspection programs were conducted in 56 counties, deputies were sent to training programs, and 57 counties held traffic safety education in classrooms and public meetings.
- . The act recognizes the sheriff's department as the primary law enforcement agency on the county primary and local roads. The data indicate sheriffs investigated the largest percentage of the accidents and crime on the secondary roads and rural trunklines.
- . Sheriffs reported the number of citizen calls increased following the presence of secondary road patrol. They also indicated that citizens were expressing appreciation and saying their confidence in law enforcement was increasing. The data show a possible connection

but do not conclusively prove whether this is actually an established trend relationship or a chance fluctuation.

- . There is no evidence at this time that the secondary road patrol program had any impact on accidents or crime. Secondary road accidents decreased between 1978 and 1980, but so did the state average and accidents on the trunklines. The secondary road reduction appeared to be part of a general trend rather than the result of the program.
- . Data indicate the program is cost effective. Where data were available to make comparisons, the secondary road patrol activity per officer exceeded that of the regular county road patrol deputy.
- . The current funding formula does not support the intent of the Act. This factor could handicap sheriffs in their efforts to reduce secondary road accidents, and could contribute to making the program less effective. Some of the sheriffs in smaller counties have used secondary patrol officers for non-secondary road patrol activities because sometimes there is not enough activity on the secondary roads to keep the deputies busy. The present formula distributes funds in the same proportion that the counties receive road repair funds under Act No. 51 Public Acts of 1951. The funding formula should be modified to distribute funds in proportion to the accident and crime rates.
- . Secondary road patrol funds provide an accident prevention effort that is over and above that of the regular county road patrol. While the program has not shown an impact on secondary road

accidents, this evaluation is too early in the program to realistically assess its impact. Available data indicate the program is cost effective when secondary road patrol citations and other activities are compared with those of the regular road patrol. The cost effectiveness and impact capability could probably be increased if the funding formula distributed the funds in proportion to the problem.

SECONDARY ROAD PATROL EVALUATION

This evaluation is submitted by the Office of Criminal Justice (hereafter OCJ) pursuant to Act No. 94, Public Acts of 1981. The act states that "... the Office of Criminal Justice shall conduct an impact and cost effectiveness study which will review state, county, and local road patrol and accident prevention efforts." The Act is commonly referred to as the PA 416 Secondary Road Patrol program.

The primary focus of the evaluation is an analysis and comparison of the activities of the sheriffs' secondary road patrol program which has been funded by the state since October 1, 1978. The program has been funded for three fiscal years and is in the second quarter of the fourth year.

This evaluation was limited to reviewing the activities and results of the program through December 31, 1980. While funding is based on fiscal years, the data were based on the calendar year. Consequently, the evaluation reflects less than two years experience with the program. Most counties did not get started in the program until the second or third quarter of the first fiscal year. Five counties did not participate the first year and, therefore, had completed only one year in the program by 1980. Federal funding experience of the OCJ shows that most programs do not begin to show their full potential until about the third year of operation.

This mandated evaluation can help identify program weaknesses, determine if the OCJ monitoring can be strengthened, allow the legislature to see what was achieved, provide data for evaluating the current funding and distribution formula and its relationship to the traffic accident problem.

PROGRAM BACKGROUND

The secondary road patrol program is based on Section 77, Act No. 416 Public Acts of 1978. Technically the secondary roads are identified in Act 51 Public Acts of 1951 as the county primary and local roads. The Act was passed to strengthen accident prevention on these roads.

The Act provided for the following:

1. Section 76

a. "The sheriff's department shall be the law enforcement agency primarily responsible for providing certain described services on county primary and local roads in his county, except for those sections of these roads within the boundaries of cities or villages. He will also provide the services on any portion of any other highway or road within the boundaries of a county park."

b. The services the sheriff's department is to provide are:

- (1) Patrolling and monitoring traffic violations,
- (2) Enforcing the criminal laws of the state, violations of which are observed by or brought to the attention of the sheriff's department while providing the patrolling and monitoring required by the Act.
- (3) Investigating accidents involving motor vehicles,
- (4) Provide emergency assistance to persons on or near a highway or road patrolled and monitored as required in the Act,
- (5) And, the sheriff can provide these services on secondary roads within a city or village if the legislative body of the local unit of government passes a resolution requesting the service.

2. Section 77

This section specifies how the funds can be spent to implement the services specified in Section 76, and the formula that will be used for allocating the funds to the counties.

The funds can be spent on the following:

- (1) employing additional personnel,
- (2) purchasing additional equipment,
- (3) enforcing laws in state and county parks, within the county,
- (4) and, providing traffic safety information and education programs that are in addition to those programs provided before the effective date of the program, October 1, 1978.

The formula used to determine the amount each county will receive is based on the road maintenance funds counties receive under Section 12 of P. A. 51. Each county receives the same proportion of the total secondary road patrol funds as they receive of the road maintenance funds (less the funds distributed for snow removal and engineers.)

Section 77 also specifies that counties will enter into a contract with the Department of Management and Budget for the funds and specifies the reports that are to be submitted to the legislature.

Several other important provisions were also included in this section:

1. A county cannot reduce the level of services it was providing prior to the enactment of this bill unless, due to economic conditions, the county is required to reduce general services. If reduction became necessary it was required that the county obtain a concurrent resolution adopted by

majority vote by the Senate and House of Representatives. This provision is commonly referred to as a "maintenance of fiscal effort" or "non-supplanting" clause.

2. The appropriation of secondary road patrol funds cannot cause the funds appropriated to the Department of State Police to be reduced.

Paragraph (4) "The appropriation made to the department of state police shall not be decreased in any fiscal year as a result of an appropriation for secondary road patrol . . ."

3. The services specified in Section 76 are required only to the extent state funds are available to pay for them.

Paragraph (3) "The sheriff's department of a county is required to provide the expanded services described in Section 76 only to the extent that state funds are provided."

The Act states that certain information is to be reported to the legislature each year. Factors that will be included in this report are:

1. The total number of sworn (certified) officers assigned to road safety programs.
2. The accident and fatality data for incorporated and unincorporated areas of the county during the preceeding calendar year.
3. A description of the role alcohol played in the incidence of personal injury traffic accidents and traffic fatalities in the county.
4. The crime statistics for the incorporated and unincorporated areas of the county during the preceeding calendar year.

The legislation included a sunset clause requiring that Section 77 expire on September 30, 1981, however, paragraph (5) specifying the method

of allocating funds expired September 30, 1979.

Section 77 has been amended four times by the following legislation:

Act No. 103 of the Public Acts of 1979.

The major provisions of this amendment were:

1. Extension of the allocation formula used in Act No. 416 of the Public Acts of 1978, to September 30, 1981.
2. Addition of "providing selective motor vehicle inspection programs," to the list of purposes for which the funds may be used.

The Act eliminated the condition requiring maintenance of fiscal effort (the county would maintain the same level of road patrol services provided September 30, 1978, unless due to economic conditions the general services of the county are reduced).

Act No. 70 of the Public Acts of 1980

This act was primarily passed to reinstitute the maintenance of fiscal effort requirement.

Another significant provision of this amendment required the counties to enter into contracts directly with the Office of Criminal Justice (Department of Management and Budget).

Act 349 of the Public Acts of 1980

The life of Section 77 (and the Secondary Road Patrol Program) was extended to September 30, 1983. The Office of Criminal Justice was also required to submit an impact and cost effectiveness study to the Senate and House Appropriations Committees annually by April 1 of each year.

Act 94 of the Public Acts of 1981

The primary change made is Act 349 of the Public Acts of 1980 was amended and Section 77 now expires on September 30, 1982.

The secondary road patrol program received the following appropriations during the four fiscal years it has been in existence:

	<u>APPROPRIATION</u>	<u>AVAILABLE TO COUNTIES</u>	<u>EXPENDED² BY COUNTIES</u>
78-79	8,700,000	8,700,000	7,400,299 ³
79-80	8,700,000	8,613,000 ¹	7,865,792
80-81	6,400,000	6,336,000 ¹	5,786,781 ⁴
81-82	6,775,000	6,707,250 ¹	N/A ⁵
	Total	30,356,250	

¹ Less 1% for Administration of Program

² Amount as of March 1, 1982 (Reported by Counties)

³ Five Counties did not Apply

⁴ All Final Expenditure Reports have not been received - Final amount will vary from amount shown

⁵ Figure not available because funding year not complete

Sheriffs interviewed during the evaluation stated the Secondary Road Patrol program provided the resources to patrol secondary roads. Prior to the program only basic services--taking of crime and accident reports--could be provided on the secondary roads. Sheriffs of some smaller counties reported having no regular road patrol prior to the program. All sheriffs felt the secondary road patrol program is essential to accident reduction on the county primary and local roads.

EVALUATION METHODOLOGY

The evaluation was conducted on two levels: a sample of thirteen counties for detailed activity data and statewide for the overall impact data.

A. SAMPLE

A fifteen percent sample (13 counties) was used for the more detailed study of the secondary road patrol program. It was impossible to

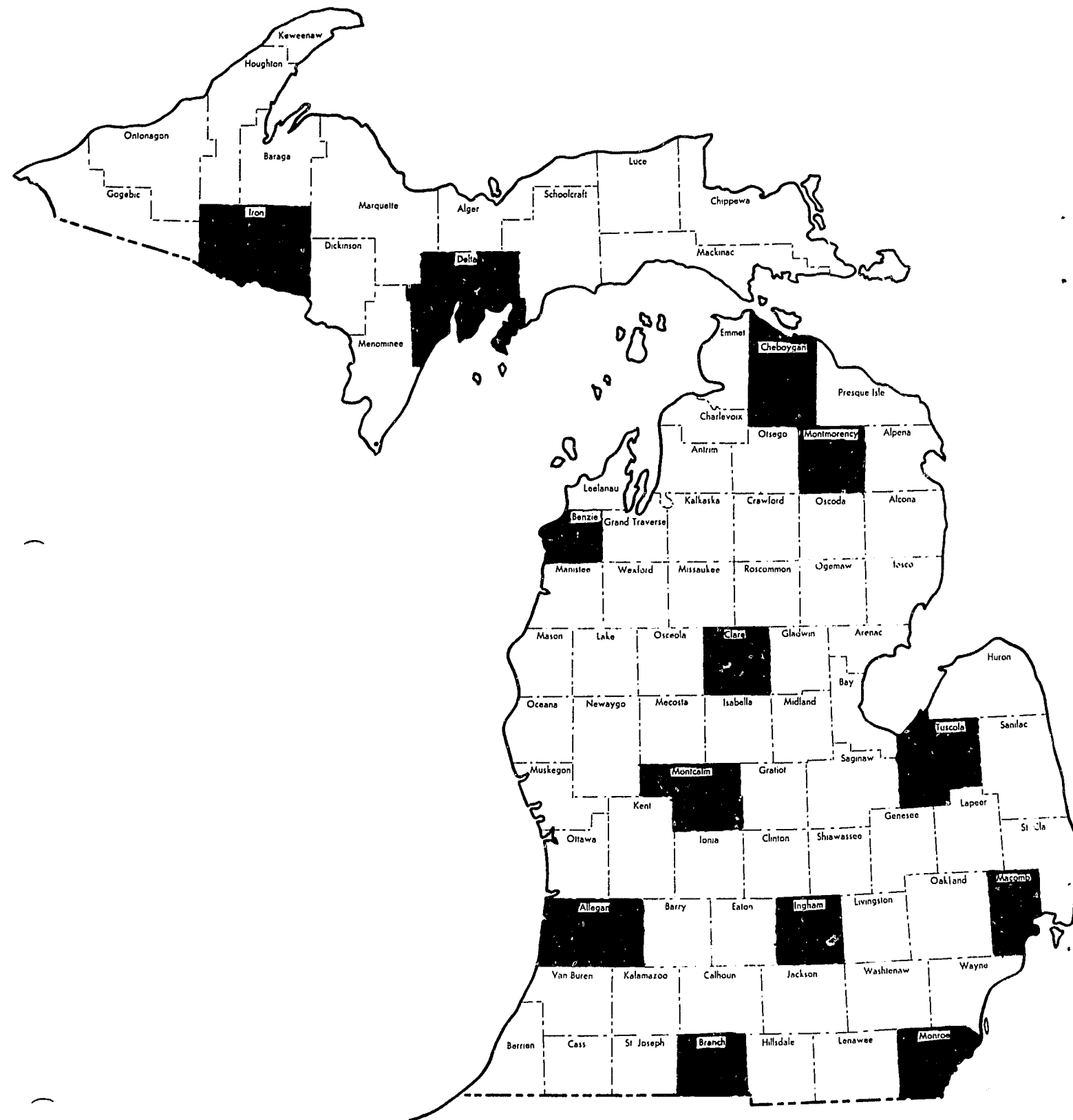
examine all 83 counties because of time, resources, and available data. The sample was randomly selected and stratified by size. The random process allowed for replacement. Duplicates were replaced with another random number using the same methodology. During the site visits it was found that one county could not provide the information or records required for the study. The previous sheriff, voted out of office in 1980, removed the daily activity log sheets of the secondary road patrol personnel. To select another county in the same population group, the same random process was used. The counties sampled appear to be representative of the state. They represent 15.7 percent of the total number of counties and 15.6 of the total state population. Table 1 is a listing of the sample counties, population and percent of the total population, and a map, Figure 1, shows the geographic location of each sample county.

The sample has limitations which must be recognized. The number of counties had to be limited due to time and resources available, thus the sample was constructed to be primarily representative of the state--all counties as a total--and secondarily the various population categories. The population categories are used for comparing the relative differences between size groupings.

B. TOTAL STATE

Crime and accident data are collected annually for all counties by the Michigan State Police. This data is used to examine accidents and crime over a five-year period, three pre and two secondary road patrol program years.

EVALUATION
SAMPLE COUNTIES



11a

Table 1

SAMPLE COUNTIES
Population and Allocation Data

Population Categories and Counties	Number of Counties			^a Population			^b Funds Allocation	
	Sample	State	Sample % Total	Sample	State	Sample % Total	Sample	Sample % Total
<u>0 - 30,000</u>	5	38	13	76,803	600,338	13		
Benzie				11,205			30,752	
Cheboygan				20,649			48,979	
Clare				23,822			46,170	
Iron				13,635			33,820	
Montmorency				7,492			30,583	
<u>30,000 - 100,000</u>	5	27	19	265,206	1,469,074	18		
Allegan				81,555			105,833	
Branch				40,188			65,031	
Delta				38,947			60,529	
Montcalm				47,555			72,709	
Tuscola				56,961			84,091	
<u>100,000 - 300,000</u>	2	13	15	410,179	2,253,427	18		
Ingham				275,520			200,945	
Monroe				134,659			150,805	
<u>300,000 - Over</u>	1	5	20	694,600	4,939,239	14		
Macomb				694,600			450,017	
Total	13	83	16%	1,446,788	9,262,078	16%	1,380,264	16%
Total State Funds							8,700,000	

Sample Represents - 17% of Total Secondary Road Accidents.

^a - U.S. Census Bureau - 1980 Census of Michigan Population, September 21, 1981 revision.

^b - Fiscal Year 78-79 - The percent for each county is the same for all years of funding.

11b

DATA COLLECTION AND DEFINITIONS

Data Collection

The activity data was collected by two OCJ staff members at the sheriffs' offices in the thirteen sample counties. Data collection occurred from October through December, 1981. Information was obtained directly from official documents including the daily activity records for the secondary road patrol deputies. Data collection was complicated by the diversity of data formats and related definitions (Also see Auditor General's Study).^{*} In several counties, a full year of activity records were not available, and estimates were made based on quarterly reports filed by the sheriff's department. Some estimating was done to make the data more complete, but the exclusion of these estimates would not significantly change the statistical outcome of the evaluation.

Final data relative to expenditures for the regular road patrol and the secondary road patrol program were obtained from the county clerk and/or the person responsible for the financial accounting system.

Data Definitions

Following are definitions for the variables used in this report and sources if other than the sheriff's department:

Citations - All violations of either a state law or local ordinance, i.e., moving violations, improperly maintained safety equipment, improper drivers license or lack of registration and/or proof of insurance, and alcohol related offenses. This includes tickets issued to drivers of automobiles, trucks or motorcycles.

Arrests - Criminal arrests, either felony or misdemeanor.

Accident Investigation - Response to reported accidents, initial

^{*}Law Enforcement- Special Study, Outline of Survey Conducted by the Office of the Auditor General, Albert Lee, CPA, Auditor General

investigation and evidence collection.

Criminal Complaint Responses - The response to any situation where a citizen reports that a crime (felony or misdemeanor) was committed or is in progress, the initial investigation and the discovery of crime.

Law Enforcement Assistance - Assisting a law enforcement officer of a different department (state and local) or of the same department. This includes Department of Natural Resources Officers, Liquor Control Commission personnel and Public Service Commission personnel, etc.

Motorist Assistance - Assisting citizens who need help. This is primarily where an automobile becomes inoperative and the citizen is stranded.

Crime - Felony and misdemeanor crimes that have been reported to the Michigan State Police Uniform Crime Reporting System by state, county, and city as substantiated crimes.

Accidents - Motor vehicle accidents that have been reported to the Michigan State Police by state, county and local law enforcement.

Vehicle Miles Traveled - The estimated number of miles traveled for all vehicles using a specified road system as reported by the Michigan Department of Transportation. This figure takes into consideration the estimated number of vehicles and the estimated miles each travels.

Alcohol Related Accidents - One or more of the drivers involved in the accident had been drinking. Information obtained from the accident data reported to the Michigan State Police.

Vehicle Registrations - The number of registered vehicles reported by the Michigan Secretary of State. This includes automobiles, trucks and motorcycles.

EVALUATION FORMAT

The evaluation reviewed the following basic issues:

1. Secondary Road Patrol Program

Was there a distinct secondary road patrol program or were the funds used to support some of the activities and responsibilities previously paid for by the county?

2. Secondary Road Patrol Impact

What impact has the Secondary Road Patrol program had?

3. Secondary Road Patrol Program Cost Effectiveness

What did the state get for its money?

SECONDARY ROAD PATROL PROGRAM

The secondary road patrol program did not start in all counties at the same time. Normally before sheriffs could receive and spend their allocations the county Board of Commissioners had to approve participation and enter into a contract with the OCJ. Some county boards were concerned about county pick-up if the state withdrew funding. When the contract with the state was awarded and funds assured, equipment had to be purchased, deputies hired and, in many counties, trained. Table 2 lists of the sample counties and the date when they entered the program. Within the sample only two counties started the program during the first quarter of fiscal year 1979, eight counties during the second quarter and two counties later in the fiscal year. One county did not enter the program until the second quarter of fiscal year 1980. The sample is representative of the 83 counties. During fiscal year 1979, 78 counties entered the program and five counties entered in fiscal year 1980.

Two issues will be discussed in this section. Did the funds actually support new services on the secondary roads, and if so, what were they?

A. MAINTENANCE OF COUNTY EXPENDITURES AND ROAD PATROL LEVEL

When the secondary road patrol program was being considered by

Table 2

SECONDARY ROAD PATROL PROGRAM
Beginning Dates for Counties Included in the Evaluation Sample

County	Beginning Date
Allegan	November 20, 1978
Benzie	March 12, 1979
Branch	January 1, 1979
Cheboygan	January 1, 1979
Clare	March 1, 1980
Delta	January 1, 1979
Ingham	August 1, 1979
Iron	December 1, 1979
Macomb	May 1, 1979
Monroe	January 1, 1979
Montmorency	March, 1979
Tuscola	January 1, 1979
Montcalm	January 1, 1979

the legislature, there was concern that counties would merely use the money to replace (supplant) regular patrol. To prevent this, the legislature built a precaution in Sec. 77, except in Act No. 103, of the Public Acts of 1979. (The provision was not applicable between October 1, 1979 and April 3 of 1980.) The supplanting restriction reads as follows: Act No. 94 Public Acts of 1981, Sec. 77, Paragraph (1) "...An agreement entered into under this section shall be void if the county reduces its expenditures or level of road patrol below that which the county was expending or providing immediately before October 1, 1978, unless the county is required to reduce general services because of economic conditions and is not merely reducing law enforcement services."

The factors the evaluation used to test for compliance with this portion of the legislation are expenditures, number of regular road patrol deputies, patrol vehicle mileage, and the number of traffic citations issued. Expenditures and personnel relate to fiscal maintenance and patrol vehicle mileage and citations issued determine program maintenance. These program activities, when compared with those of secondary road patrol would show a decrease if a county decreased its regular patrol.

Table 3 compares the number of regular personnel, patrol mileage, and citations issued for 1978 and 1980. Table 4 compares county expenditures. The mileage and citation data were adjusted to remove the activities of CETA and other grant funded deputies. The data were adjusted by computing the average mileage and citations issued using the total number of deputies reported on road patrol and multiplying the average by the number of county supported road patrol deputies. Most non-county supported road patrol deputies (CETA, etc.) were employed during 1978 and 1979, but in 1980, with

Table 3

COUNTY SUPPORTED ROAD PATROL EFFORT
(Does Not Include Secondary Road Patrol)

Based on County Supported Road Patrol Deputies and Total Patrol Mileage as Reported
By Sheriffs and Citations as Determined by Evaluation Personnel

County Size Category N = 13	County Supported Deputies		Road Patrol Mileage				Citations			
			Total Miles*		County Supported**		Total Citations		County Supported**	
	1978	1980	1978	1980	1978	1980	1978	1980	1978	1980
0 - 30,000 N = 5	25	28.5	799,500	991,900	634,024	836,887	4087	4031	2935	3442
30,000 - 100,000 N = 5	78	82	2,017,700	1,568,100	1,556,007	1,451,604	5366	8108	3940	7208
100,000 - 300,000 N = 2	48	79	1,329,400	1,412,400	931,131	1,412,400	6912	6747	4173	6747
300,000 - Over N = 1	66	68	1,252,500	1,571,500	1,252,500	1,571,500	3997	5097	3997	5097
Total Sample	217	257.5	5,399,100	5,543,900	4,373,662	5,272,391	20,362	23,984	15,045	22,494

* Includes CETA and Other Non-County Supported Road Patrol Deputies Activities.

** Adjusted to Reflect Only County Supported Road Patrol Activities.

Table 4
COUNTY ROAD PATROL EXPENDITURES
N - 13 Counties

	1978	1980
0 - 30,000 N = 5	638,452	942,844
30,000 - 100,000 N = 5	1,766,223	2,112,977
100,000 - 300,000 N = 2	1,993,813	3,031,630
300,000 - Over N = 1	2,176,005	2,840,967
Total	6,574,493	8,928,418

several exceptions, the regular road patrol became primarily county supported.

Table 3 and 4 indicate the total number of regular road patrol deputies and total expenditures increased. All size categories increased. While the total number of road patrol miles increased in three population categories there was a 3.5 percent decrease in the 30,000 to 100,000 category. This reflected some departments' efforts to conserve gasoline with stationary patrols and selective enforcement. This tends to be substantiated by the fact that the same group of counties had an 87.5 percent increase in citations. Four out of the five counties in this category showed decreases in annual mileage from 1978 to 1980 ranging from 5 percent to 18 percent with a mean of 13 percent.

Table 5 indicates the average annual mileage. It will be noted that again the 30,000 - 100,000 population category is the only one showing a decrease in annual miles per officer.

All counties in the sample maintained or increased the number of regular road patrol officers and expenditures since fiscal year 1978. However, statewide monitoring by the OCJ found 6 counties which may not have maintained the level of personnel and 3 counties which may not have maintained the level of expenditures. It must be remembered that the evaluation data deals with the period of January 1, 1979 through December 31, 1980. Near mid-1980, Genesee County appealed to the legislature for permission to drastically reduce its road patrol due to economic conditions and the need to cut back all county expenditures; the legislature granted their request. In 1981 and 1982, several additional counties appealed to the OCJ for reductions in the county supported road patrol due to economic conditions.

A review of the adjusted citation data show all counties in the

Table 5

AVERAGE ANNUAL MILEAGE PER COUNTY SUPPORTED ROAD PATROL DEPUTY

Population Category	1978 Group Average	1980 Group Average	Percent Change
0 - 30,000	22,790	27,684	+ 21%
30,000 - 100,000	19,608	17,282	- 12%
100,000 - 300,000	16,070	17,111	+ 6%
300,000 and Over	18,977	23,110	+ 22%
Sample Average	20,239	21,705	+ 7%

Table 6

COMPARISON OF POPULATION INCREASES 1970 - 1980

13 County Sample

Population Category	1970	1980	Percent Change
0 - 30,000 (N=5)	60,921	76,803	+ 26%
30,000 - 100,000 (N=5)	228,668	265,206	+ 16%
100,000 - 300,000 (N=2)	380,254	407,096	+ 7%
300,000 - Over (N=1)	625,309	694,600	+ 11%
Sample Total	1,295,152	1,443,705	+ 11% +12%

sample have increased the number of citations written by regular road patrol 50 percent between 1978 and 1980. Each population category has also shown an increase. However, an analysis of individual counties shows that 2 counties of the five in the 0-30,000 sample category and one of the five in the 30,000-100,000 category show a significant decrease since 1978. Projecting this to the 83 counties, we could expect about 23 percent of the counties, primarily in the 0-100,000 population range, to show a decrease in county supported road patrol citations. The average decrease for the three sample counties is 29 percent. Most counties through fiscal year 1980, maintained their level of fiscal support and personnel for the sheriff's departments, but cutbacks in many departments caused a change in priorities for other activities. The population data for 1970 and 1980 show the sample counties in the 0-100,000 range are those with the highest percentage of population increase. Table 6 compares the 1970 and 1980 sample population categories. It is possible the increases in expenditures for these counties have not been sufficient to stay abreast with the increased demand for services provided by the sheriff's department.

Evaluation data revealed that some counties used secondary road patrol personnel for activities other than those specified in the legislation. This was most prevalent in counties of population from 0-30,000 and diminished with an increase in population. Reasons given for this were:

1. Some labor contracts do not permit assigning personnel to specialized functions. All road patrol deputies must engage in the same activities.

2. Other personnel are not always available to handle situations which arise; when only secondary road patrol personnel are available, they are

used.

The secondary road patrol has the legislated primary responsibility of traffic enforcement and accident prevention. Some departments did not adhere rigidly to this and have used secondary road patrol officers to serve warrants, transport prisoners, handle crime complaints, and other tasks; however, the data indicate that most counties consider traffic enforcement as the priority activity.

Evidence of this practice was discovered in two counties in the 0-30,000 population category but the amount of time for unauthorized activities there did not exceed 10 percent of the time available. Aside from these two counties, the practice was occasional and only used when the department encountered overriding circumstances. If the data were projected to all 83 counties we would expect to find between 11 and 13 counties similar to the two cited, primarily in the 0-30,000 population category.

The majority of counties maintained or increased the fiscal and program level of their regular road patrol. Exceptions represent no more than 15 percent of the smaller counties and only 9 percent of the secondary road patrol personnel. Despite the unauthorized use of secondary road patrol deputies, only one of the counties failed to meet the 1978 level of citations. Statewide, three counties failed to meet the 1978 level of citations, and the shortage amounted to only 2 percent of the total citations in 1980.

With few exceptions, the activities of the secondary road patrol exceed those which otherwise would have been performed. The secondary road patrol funds provided additional resources and accident prevention efforts and were not used to replace existing resources.

B. SECONDARY ROAD PATROL SERVICES

This section describes the services that have been created and/or expanded by the secondary road patrol funds. The services described are only those that are considered major efforts in terms of time and activities.

1. Road Patrol

Deputies - The largest single expenditure of funds was for deputies. Below are the number of full-time deputies employed by the funds statewide:

<u>FISCAL YEAR</u>	<u>PROGRAM YEAR</u>	<u>NUMBER OF DEPUTIES</u>
78/79	1st	287
79/80	2nd	291.3
80/81	3rd	214.4

Some of the smaller counties did not receive sufficient allocations to hire a full-time deputy so they implemented the secondary road patrol program by paying overtime to their regular road patrol deputies. These departments usually employ not more than 2 or 3 deputies, with one working part-time. The number of counties in this category statewide are:

78/79	3 counties
79/80	1 county
80/81	2 counties

A few counties had funds left over and used the excess to hire part-time and/or pay overtime. The number statewide are as follows:

78/79	2 counties
79/80	4 counties
80/81	4 counties

Six counties did not have a road patrol prior to the secondary road patrol program. The sheriff and his wife normally tended the jail; the sheriff responded to a few calls for service, funding did not allow for a scheduled patrol car on the roads. Normally the State Police patrol the roads and respond to most of the accidents and crime complaints in these rural counties.

The number of deputies employed with secondary road patrol funds represents the number by which sheriff's departments expanded their services. Counties were not permitted to use the funds to pay existing personnel. Experienced deputies were usually assigned to the program but a deputy had to be hired to replace the one assigned.

Equipment - Following is a list of major items purchased for the program statewide:

211 vehicles were initially purchased and equipped with the normal equipment such as light bars, radios, etc.

223 radar units

139 portable hand-held radio units

3 breathalyzers

74 cameras for accident investigation

22 motorcycles with radar and radios

uniforms and other equipment required to equip new deputies

46 vests, protective

Some support equipment was also procured including: measuring equipment for accident investigations, emergency medical equipment, power wrenches/jaws of life, and other miscellaneous equipment.

1. PROGRAMS - Road patrol was not the only effort implemented. The

following were also implemented in the number of counties indicated:

a. Vehicle Inspection - 56 counties

This program operated for the first year but had to be discontinued because changes in the new Act required additional personnel and equipment. This program set up stop lanes where older automobiles were inspected for the operating condition of necessary safety equipment.

b. Deputy Training - 67 counties

Deputies were sent to various traffic related training programs.

c. Traffic Safety - 57 counties

Public meetings were held, school classrooms visited with information given concerning traffic laws and safer driving practices.

Approximately 85 percent of the counties were involved in one or more programs in addition to road patrol.

2. ACTIVITIES

The following data show the volume of specific secondary road patrol functions. These functions were selected as being of greatest importance. Productivity comparisons between the secondary and regular county road patrol cannot be made with all variables because of insufficient data for the regular road patrol. Primary emphasis was placed on the issuance of citations because of general consensus among law enforcement officials that this is effective in preventing accidents.

Table 7 reflects the number of regular county and secondary road patrol deputies for the three year period who actually did road patrol work. Ranks from lieutenant and up are not included. The secondary road patrol personnel data were adjusted to reflect full year equivalence so comparisons could be made with the regular road patrol. The secondary road patrol operated for a varying number of months in the various counties in 1979 and October 1, 1980;

TABLE 7

ROAD PATROL PERSONNEL

Data Used to Compare Activities and Personnel
 (Doesn't include Lieutenants and Above)
 Includes CETA and Other Non-County Supported Deputies
 But Not State Funded Snowmobile and Water Safety Deputies

POPULATION CATEGORY	REGULAR COUNTY PATROL			SECONDARY ROAD PATROL	
	1978	1979	1980	1979	1980
0-30,000	37	33	36	5.9	7.6
30,000-100,000	98	92	83	13.9	13.5
100,000-300,000	79	72	75	7.1	10.6
300,000 & Over	61	69	63	7.3	9.5
TOTAL DEPUTIES	275	266	257	34.2	41.2
NUMBER OF COUNTIES INCLUDED	13	12*	13	12*	13

*One county in the sample did not enter the program until 1980.

some counties increased or decreased the number of personnel because of budget changes at the beginning of the 1980/1981 fiscal year.

c. CITATIONS

Table 8 shows the number of citations issued by both the regular county road patrol and the secondary road patrol for each population group in the sample counties and Table 9 an analysis of the average number of citations issued per deputy in the sample counties. The range of citations per deputy for the regular county road patrol in 1978 was from 55 to 110 and in 1980 from 81 to 112. Note that in 1978 the two population categories that had the largest number of citations per deputy were the 0-30,000 and 100,000-300,000. The 1979 data show that all population categories except one (30,000-100,000) had decreases in their level of enforcement by regular patrol, but in 1980 there were increases in all categories which brought all categories above the 1978 level. The two population categories with the lowest enforcement level in 1978 had the largest increases in 1980.

The lower enforcement level by regular patrol in three of the four population categories in 1979, the first year of the secondary road patrol, is a normal occurrence. When a special unit is created within a department with specific limited activities, the efforts of the regular patrol in those areas will decrease. During the collection of data this was discussed with the command officers in the various departments. They had recognized this was occurring and most departments took corrective actions which brought increases in 1980.

An analysis of data shows secondary road patrol officers individually wrote significantly more citations than the regular patrol.

TABLE 8
TRAFFIC CITATIONS ISSUED
by
Regular County and Secondary Road Patrols

Type Road Patrol & Year	NUMBER OF COUNTIES	POPULATION CATEGORY				TOTAL SAMPLE
		0- 30,000	30,000- 100,000	100,000- 300,000	300,000- Over	
1978 Regular Road Patrol	13	4,087	5,366	6,912	3,997	20,362
1979 Regular Road Patrol	12	2,855	7,315	5,883	4,133	20,186
Secondary Road Patrol		1,255	2,663	2,310	5,244	11,472
TOTAL		4,110	9,978	8,193	9,377	31,658
1980 Regular Road Patrol	13	4,031	8,108	6,747	5,097	23,983
Secondary Road Patrol		1,184	2,890	2,134	7,525	13,733
TOTAL		5,215	10,998	8,881	12,622	37,716

TABLE 9
CITATIONS PER DEPUTY

TYPE ROAD PATROL & YEAR	NUMBER OF COUNTIES	POPULATION CATEGORY				TOTAL SAMPLE
		0- 30,000	30,000- 100,000	100,000- 300,000	300,000- Over	
1978 Regular Road Patrol	13	110	55	87	66	74
1979 Regular Road Patrol	12	87	80	82	60	76
Secondary Road Patrol		213	192	325	718	335
1980 Regular Road Patrol	13	112	98	90	81	93
Secondary Road Patrol		156	214	201	792	333
Percent Change 1978-80 Regular Road Patrol		+2%	+78%	+3%	+23%	+26%

This, however, does not mean that the regular patrol worked less hard. The key is the total workload. Sheriff's deputies have a larger variety of required services than police officers in townships, villages, or cities. They must serve civil court papers, transport county jail prisoners, serve bench warrants and criminal warrants and provide assistance to other police departments in addition to the normal duties of road patrol.

Citations issued are not indicative of the total number of automobiles stopped. Based on the limited data sample available, about one-third of the stops resulted in verbal warnings and two-thirds resulted in citations.

In our sample the range of citations per secondary road patrol officer in 1979 was from 213 to 718 and in 1980 156 to 792. If data were projected to all the counties, 97 percent of the counties would be within those ranges. The range for secondary road patrol is much greater than that of the regular patrol. In 1979, no county averaged under 100 citations per officer. In two of them, the secondary road patrol was below the number of citations per officer for the regular patrol. When the OCJ, in monitoring, found time of secondary road patrol officers used for unauthorized activities, the county was generally asked to reimburse that portion of unauthorized expenditures.

b. OTHER ROAD PATROL ACTIVITIES

Tables 10 and 11 show the additional major activities handled by the secondary road patrol, the number of occurrences per deputy and, where data were available, the percentage of the total number handled by the departments. Table 10 also shows the percent of total personnel represented by secondary road patrol deputies.

TABLE 10

ACCIDENTS ON SECONDARY (COUNTY LOCAL AND PRIMARY) ROADS
Investigated By
Secondary Road Patrol Deputies

ACTIVITY AND ANALYSIS	NUMBER OF COUNTIES	POPULATION CATEGORY				TOTAL SAMPLE
		0- 30,000	30,000- 100,000	100,000- 300,000	300,000- Over	
Accidents Investigated						
1979	^b ₁₁	456	937	254	1,463	3,110
1980	^c ₁₂	436	724	207	1,795	3,162
Accidents Per Officer						
1979		77	67	64	200	100
1980		57	54	54	189	92
Percent of Secondary Road Accidents Investigated by Sheriff handled by PA 416						
1980		45%	28%	15%	over 100%	52%
PA 416 Deputies percent of Total Personnel						
1979	^a ₁₂	15%	13%	9%	10%	11%
1980	13	17%	14%	12%	13%	14%

^aClare County not included-entered program in 1980

^bClare County not included (see a) Ingham County data not available

^cIngham County not included (see b)

TABLE 11

PA 416 SECONDARY ROAD PATROL
Non-Traffic Related Activities
(Other than Traffic Enforcement)

Activity & Analysis	NUMBER OF COUNTIES	POPULATION CATEGORY				TOTAL SAMPLE
		0- 30,000	30,000- 100,000	100,000- 300,000	300,000- Over	
Criminal Complaint Responses (Felony & Misdemeanor)						
1979	^b ₁₁	398	2,587	580	143	3,708
1980	13	831	2,961	1,692	257	5,741
Complaints Per Officer						
1979		67	186	145	20	119
1980		109	219	160	27	139
Percent of Complaints Reported to Sheriffs handled by PA 416 Deputies						
1979		14%	35%	10%	2%	15%
1980		15%	44%	17%	3%	18%
Criminal Arrests (Felony & Misdemeanor)						
1979	^a ₁₂	197	358	183	217	955
1980	13	248	436	142	301	1,127
Arrests Per Officer						
1979		33	26	26	30	28
1980		33	32	13	32	27
Percent of Total Arrests (Felony & Misdemeanor) made by the Sheriffs						
1979		68%	40%	7%	27%	20%
1980		29%	46%	6%	32%	23%
Law Enforcement Assists (Assisting other Law Enforcement Officers)						
1979	^b ₁₁	161	523	32	270	986
1980	^c ₁₂	212	649	34	168	1,063
Law Enforcement Assists per Officer						
1979		27	38	8	37	32
1980		28	48	9	18	31
Motorist Assistance						
1979	^d ₁₁	129	414	44	336	923
1980	^e ₁₂	267	223	557	369	1,416
Assists Per Officer						
1979		22	42	4	46	31
1980		35	23	57	39	38

^aClare County not included-entered program in 1980

^bClare County not included (see a). Ingham County data not available

^cIngham County not included (see b)

^dClare County not included (see a) Allegan County data not available

^eAllegan County not included (see d)

Graph 1 shows the percent of the traffic and non-traffic related activities secondary road patrol handled in 1980 in the sample compared with their percentage of total personnel. It can be seen from Graph 1 the secondary road patrol proportionately handled more of the listed activities than their share of total deputies. If the workload were evenly distributed then 14 percent of the total personnel would handle 14 percent of the total workload.

The activities where secondary road patrol has the highest proportionate showing in the total sample and most population categories is in the accident related, and this is as it should be. It will be noted that highest percentage in the non-accident related activities is criminal arrests.

c. ALCOHOL RELATED ARRESTS

This activity is shown separately because of the concern in the legislation about alcohol related accidents. Table 12 shows the number of driving under the influence (DUIL) arrests made by the secondary road patrol in 1979 and 1980, and the total arrests reported to the Uniform Crime Reporting (UCR) system by the sheriffs 1978 through 1980. It will be noted that the sample counties in the 100,000-300,000 population category had the lowest results for both total arrests and arrests for the secondary road patrol. Their arrests had declined 30 percent from 1978 to 1980 while the other counties had very large increases. A review of the individual county data also reveals that both counties in this sample category had decreases in arrests although there was an increase of 34 percent for the sample as a whole from 1978 to 1980. In 1980, secondary road patrol accounted for 32 percent of all arrests in the sample. If the secondary road patrol arrests are subtracted from the total 1980 arrests and compared with 1978, there is actually a 9 percent decrease.

Graph 1

SECONDARY ROAD PATROL PERSONNEL & ACTIVITIES
AS A PERCENT OF SHERIFFS PERSONNEL & ACTIVITIES
(1980)

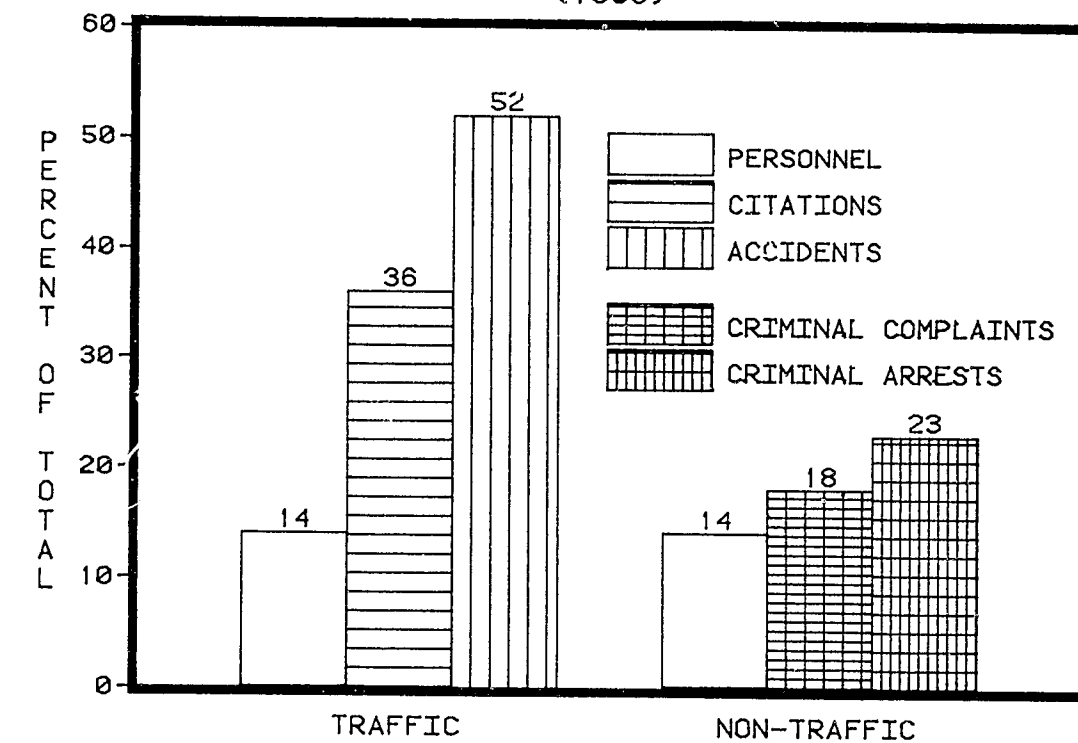


TABLE 12

ALCOHOL RELATED ARRESTS
DRIVING UNDER THE INFLUENCE ARRESTS
Sample Counties
1978 - 1980
Sheriffs' Regular Patrol and Secondary Road Patrol

POPULATION CATEGORY YEAR	TOTAL* ARRESTS DUI	TOTAL** SECONDARY ROAD PATROL	% CHANGE PREVIOUS YEAR	% OF TOTAL	% CHANGE 1978-80
0-30,000 (N=5)					
1978	68				
1979	96		+ 41%		
Secondary Road Patrol 1980	191	12	+ 99%	13%	+181%
Secondary Road Patrol		51	+325%	27%	
30,000-100,000 (N=5)					
1978	259				
1979	365		+ 41%		
Secondary Road Patrol 1980	448	141	+ 23%	39%	+ 73%
Secondary Road Patrol		175	+ 24%	39%	
100,000-300,000 (N=2)					
1978	463				
1979	455		- 17%		
Secondary Road Patrol 1980	322	86	- 29%	19%	- 30%
Secondary Road Patrol		38	- 56%	12%	
300,000 & Over (N=1)					
1978	493				
1979	593		+ 20%		
Secondary Road Patrol 1980	753	43	+ 27%	7%	+ 53%
Secondary Road Patrol		279	+549%	37%	
TOTAL SAMPLE (N=13)					
1978	1,283				
1979	1,509		+ 18%		
Secondary Road Patrol 1980	1,714	282	+ 14%	19%	+ 34%
Secondary Road Patrol		543	+ 93%	32%	

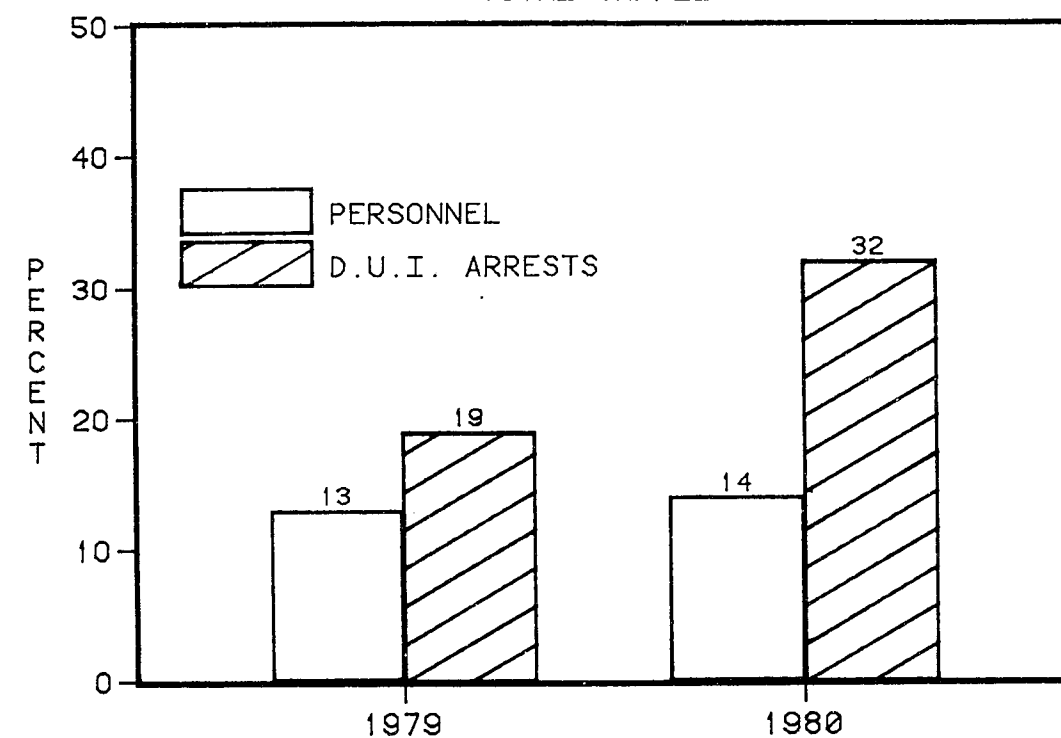
*Reported to Uniform Crime Reporting System
**Reported by Sheriffs in Quarterly Reports

Graph 2 is a comparison of the percent of total road patrol personnel secondary road patrol deputies represent and their percent of total arrests for driving under the influence in 1979 and 1980. The secondary road patrol deputies made a larger percentage of the arrests than regular personnel in both years, but particularly in 1980. In 1979, they represented 13 percent of the total road patrol deputies and 19 percent of the arrests and in 1980, 14 percent of the deputies but 32 percent of the arrests. It appears again that secondary road patrol made a special effort to remove drinking drivers from the roads.

d. METHOD OF DEPLOYING ROAD PATROL DEPUTIES

The method by which deputies are deployed is a very important consideration. While many police managers feel that increasing patrols on the roads deter accidents, studies have not supported this. Research by Dr. Noel Bufe, former Director of the Office of Highway Safety Planning, suggested that accident locations and causes had to be identified and officers deployed at those places where accidents occur most frequently. This is called "selective enforcement." The legislation refers to selective enforcement and OCJ has encouraged such deployment from the inception of the program. Sheriffs were encouraged to study accidents and determine the days, times, and places where preventable accidents occur and assign their patrols accordingly. Monitoring determined that while 68 counties (82 percent) are doing the analyses, 59 counties (71 percent) use them to deploy patrol. All counties stressed that the secondary road patrol work days and shifts were determined by the days and hours when most accidents occur. Selective enforcement is more difficult when traffic and accidents are low, as in the case of the smaller counties. Several sheriffs, during certain months, assigned secondary road patrol deputies to other duties during parts of their shift because of

COMPARISON OF SECONDARY ROAD PATROL
PERCENT OF PERSONNEL AND OF D.U.I. ARRESTS
TOTAL SAMPLE



low activity on the secondary roads.

PARK PATROLLING

All counties in the sample routinely patrolled the county and state parks each day. Secondary road patrol deputies patrolled them as did the regular patrol. Several counties reported that because of the greater frequency in patrol, problems in parks have been reduced and families have begun to return for picnics and weekend outings. Spot checks of daily log sheets verified that parks were being routinely patrolled.

SERVICE PATTERNS ON COUNTY PRIMARY AND LOCAL (SECONDARY) ROADS.

The Act requires patrol only on the county primary and local roads outside the boundaries of an incorporated city or village. Such services include patrolling and monitoring traffic violations, enforcing criminal laws of the state, investigating accidents involving motor vehicles and providing emergency assistance to persons on or near a highway or road which is patrolled or monitored. This does not decrease the statutory or common law powers or duties of any other state, county, city, village or township law enforcement agency in this state.

The services of investigating accidents involving motor vehicles and enforcing criminal laws of this state were selected for review, partly because these are the only two data sets collected for the whole state. The data were obtained from the Michigan State Police Traffic Services Division and the UCR system.

Table 13 shows the percentage of reported rural crimes handled by the state police and sheriffs. These crimes are in areas where the sheriffs and state police are the only police agencies.

TABLE 13
REPORTED CRIME

Total Crimes Reported to State Police and Sheriffs
(Rural Area Polices by MSP and Sheriffs)
Includes All Crimes - Felony and Misdemeanor
1978 - 1980

(State Total - 83 Counties)

Police Agency	1978	1979	% change	1980	% change	% change 78 - 80
Total - Rural Area	256,299	293,206	+14.4%	297,685	+ 1.5%	+ 16.1%
Percent of Total Reported to:						
State Police	40.3%	40.0%	- .7%	38.6%	- 3.5%	- 4.2%
Sheriffs	59.7%	60.0%	+ .5%	61.4%	+ 2.3%	+ 2.8%
TOTAL MICHIGAN CRIME	1,084,770	1,195,535	+ 10.2	1,243,169	+ 4.0%	+ 14.6

RATES TOTAL STATE

Rates Per 1000 Population Based on UCR Service Population Figures*	1978	1979	% change	1980	% change	% change 78 - 80
Michigan - Total Crime	119.0	131.1	+ 10.2%	134.2	+ 2.4%	+ 12.8
Rural Area	115.1	131.7	14. %	116.5	- 11.5%	+ .9%
Comparison with State Rates						
Rural Area	- 3.3%	+0.5%		-13.2%		

Sheriffs and State Police Service population as Determined by UCR.
1978 and 1979 Based on 1975 U.S. Census estimates
1980 Based on 1980 U.S. Census

Table 13 shows that sheriffs have generally handled 60 percent and the state police 40 percent of rural crimes. In both 1979 and 1980 there were modest increases in the sheriffs' percentage, the overall percentage of increase from 1978 to 1980 being 2.8 percent.

Graph 3 displays accidents investigated by the sheriffs, state police, and township police on the secondary roads. The sheriff handled 57 percent, township police 22 percent and state police 21 percent of the accidents in 1980. The percent of increase for the sheriffs from 1978 to 1980 was about 2.9 percent.

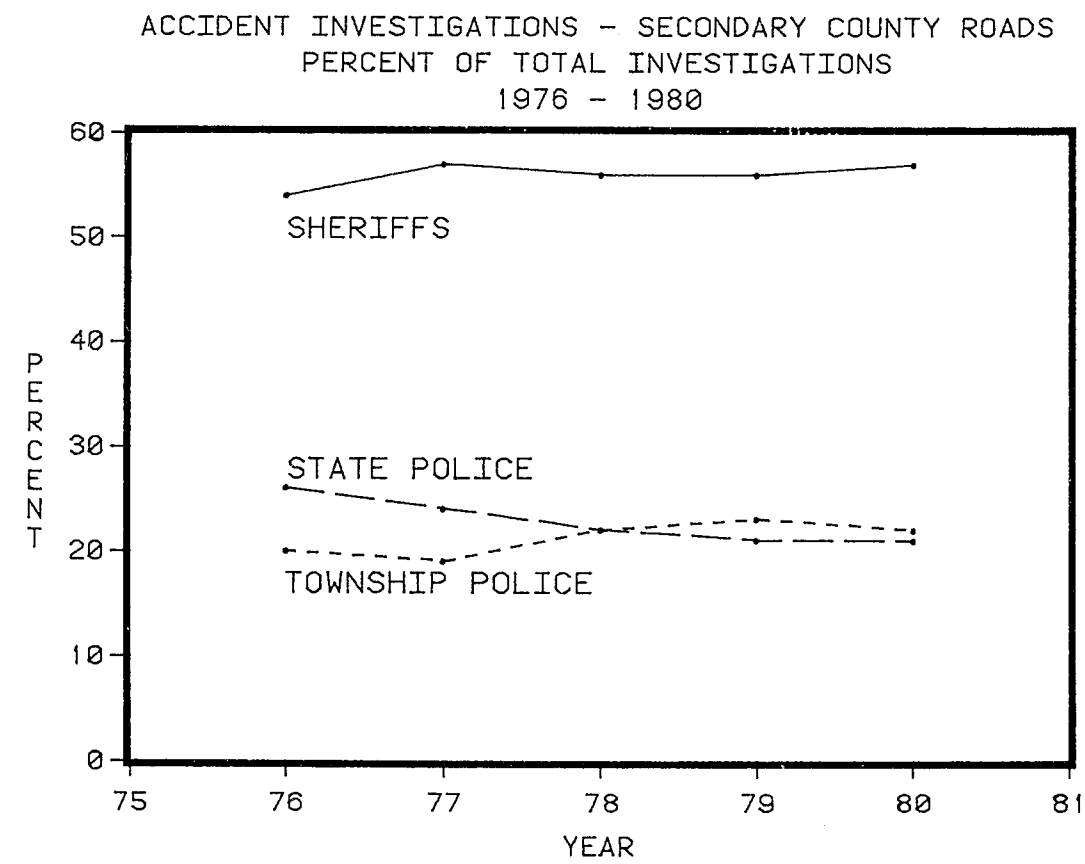
Graph 4 shows the rural segment of the trunkline system. This is the segment of trunkline that is in the same area as secondary roads or that segment where state police, sheriffs and township police are the only law enforcement agencies.

The state police investigated 38 percent of the accidents, sheriffs 43 percent and townships 19 percent in 1980. On the trunklines, where state police are the primary enforcement agency, the sheriffs handled more of the accident investigations. Thus sheriffs are the primary police agency on the secondary roads and the rural trunklines.

ACCIDENTS AND CRIME ON THE SECONDARY ROADS

The impact of the secondary road program on accidents and crime is discussed in this section. The primary concern is accidents and the secondary interest is in crime. It is possible that increased sheriff's patrols in the secondary road areas may increase citizen confidence and stimulate greater crime reporting. If police presence influences criminal behavior, this could have an impact on crime.

Graph 3



Graph 4

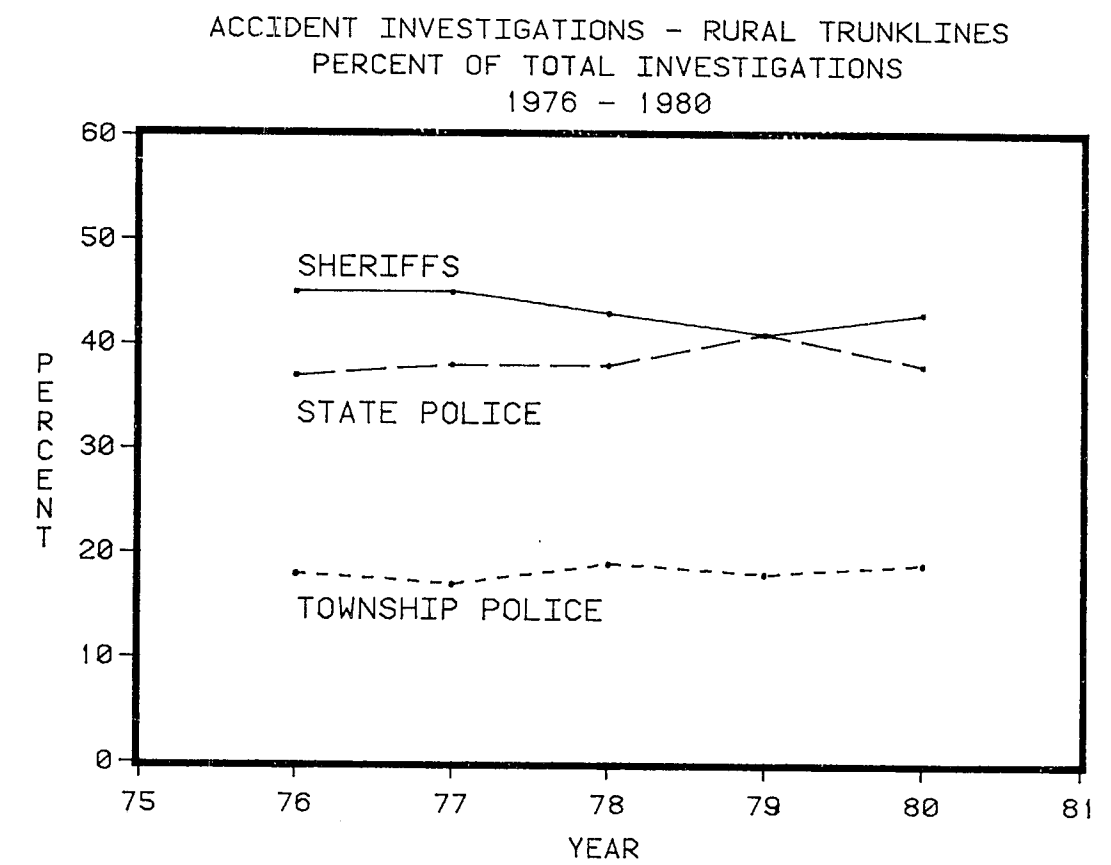


Table 13 shows that the number of crimes reported to sheriffs increased from 59.7 percent in 1978 to 61.4 percent in 1980. It is possible to attribute this in part to the secondary road patrol program because of the greater visibility. However, it cannot be proven statistically whether this increase is based on patrol enhancement, a change in reporting patterns, or mere coincidence.

The area defined as rural is the area the UCR system defines as the state police and sheriffs' service population area; the populations data used to calculate crime rates are taken from the UCR. The population in rural areas increased nearly 15 percent between 1975 and 1980 while the total state population increased less than 2 percent. The number of crimes in rural areas increased 16 percent between 1978 and 1980. When crime figures are adjusted for population (number of crimes per thousand people), the rural area was 3.3 percent below the state rate in 1978, 0.5 percent above it in 1979, and 13.2 percent below it in 1980.

In 1979 there was a large increase in the number of reported crimes and a lesser increase in 1980. This suggests that in 1979 something stimulated reporting of crime. Studies have shown that crime is never fully reported, sometimes because of a lack of confidence that anything can be done about it. New police programs providing greater police presence and concern may stimulate increased reporting.

Sheriffs reported the number of citizen calls increased following the presence of secondary road patrol. They also indicated that citizens were expressing appreciation and saying their confidence in law enforcement was increasing. The data show a possible connection but do not conclusively prove whether this is actually an established trend relationship or a chance

fluctuation.

ACCIDENTS

Accident increases or reductions on a particular segment of the road system have to be compared to experience on all roads and the trends on other types of roads. This analysis includes the total state accident trends, those on rural trunklines, the total trunkline system, and secondary county primary and local roads.

The analysis was frustrated by the fact that the miles traveled on secondary roads are not separately estimated each year. The Department of Transportation estimates the trunkline mileage separately each year but not estimates for the balance of the roads and streets by county, city, and village. Large charter township roads and streets are considered a part of the county road system. The vehicle mileage travelled is important because it reflects the exposure rate of drivers to accident potential.

The most recent estimate of vehicle miles travelled on county primary and local roads was in 1976. An analysis of the data determined there was a correlation coefficient of $r=.99$ between the vehicle miles travelled and county vehicle registrations. A correlation of trunkline vehicles miles travelled and vehicle registrations shows only a correlation coefficient of $r=.83$, high but less than that for county primary and local roads. This lesser correlation probably reflects that while trunklines are travelled heavily by non-residents, secondary roads are used primarily by residents of farms and subdivisions outside the cities and villages. It is estimated in 1980 28 percent of the population lived in rural secondary roads areas. A factor, based on the number of vehicle miles travelled on county primary and local roads for each registered vehicle, was calculated for 1976 and used to

calculate estimated vehicle miles travelled for 1977 through 1980. The estimated vehicle miles traveled on county primary and local roads were decreased 2% in both 1979 and 1980, to reflect reduced mileage trends on the other roads. A federal study* showed that drivers living in SMSA's outside the central cities, and those living outside SMSA's in areas with a population of less than 5,000 drove more miles per year than those living in central cities. Logic suggests that people who live along the county primary and local roads must drive more "essential" miles for work, shopping, etc. than others. The number of miles they can reduce is more limited than city dwellers can reduce. Transportation planners who calculate vehicle miles travelled agreed the methodology and logic seemed reasonable. The actual mileage in 1979 and 1980 did not reduce by very much but this is because vehicle registrations increased.

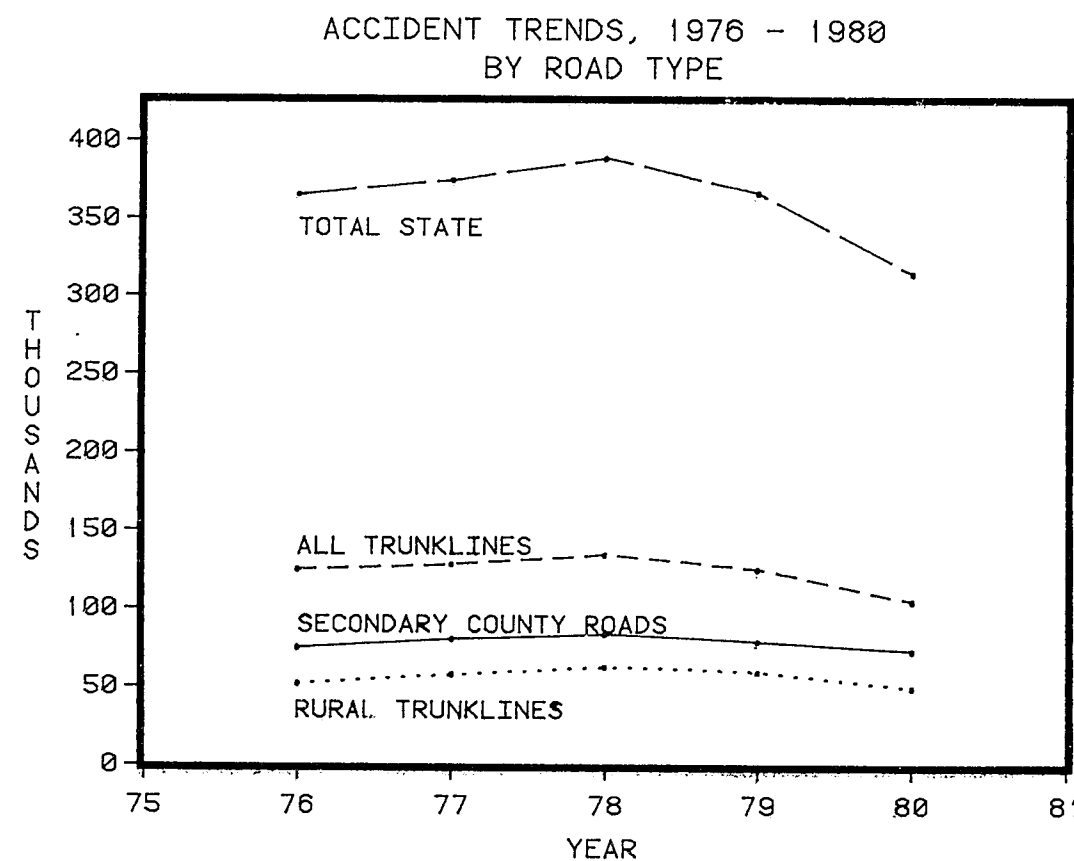
Table 14 shows fatal, personal injury and property damage accidents for the trunklines and secondary county roads by population category. The largest decrease in secondary road accidents was in the counties of 100,000 and over and this was also true of rural trunklines. Comparing accidents on secondary roads and rural trunklines, trunklines had the greatest decrease in total number. Trunkline accidents decreased 21 percent between 1978 and 1980, and secondary roads only 13 percent. Graph 5 gives a 5-year comparison of total state accidents, total trunkline system, rural trunklines and secondary roads. The decline is less on the secondary roads than on the other three road systems. However, the number of accidents is not the whole picture. Accidents must be compared with the volume of traffic, i.e., the

*Office of Highway Safety Planning, U.S. Department of Transportation, Federal Highway Administration, Characteristics of 1977 Licensed Drivers and Their Travel, October, 1980.

TABLE 14
ACCIDENTS
Rural Trunklines and Secondary County Roads
Comparison of Accidents
1978 and 1980

POPULATION CATEGORY and ROAD TYPE & YEAR	Total Accidents	% Change 78-80	Fatal	% Change 78-80	Personal Injury	% Change 78-80	Property Damage	% Change 78-80
0 - 30,000 (N=38) Secondary Roads 1978 1980	9,919 9,213	+ 7%	75 80	+ 7%	2,749 2,587	- 6%	7,095 6,546	- 8%
Trunklines - Rural 1978 1980	9,727 8,060	-17%	112 76	-32%	2,360 2,037	-14%	7,255 5,947	-18%
30,000 - 100,000(N=) Secondary Roads 1978 1980	21,569 19,661	- 9%	204 155	-24%	6,593 5,956	-10%	14,772 13,550	- 8%
Trunklines - Rural 1978 1980	14,812 11,981	-19%	155 137	-12%	4,257 3,263	-23%	10,400 8,581	-13%
100,000 - 300,000 Secondary Roads 1978 1980	28,723 24,392	-15%	202 182	-10%	8,856 7,987	-10%	19,665 16,223	-18%
Trunklines - Rural 1978 1980	17,831 13,940	-22%	165 131	-21%	5,487 4,270	- 22%	12,179 9,539	-22%
300,000 and Over Secondary Roads 1978 1980	23,465 19,826	-16%	162 144	-11%	7,608 7,012	- 8%	15,695 12,670	-19%
Trunklines - Rural 1978 1980	20,173 15,402	-24%	132 116	-12%	7,387 6,039	-18%	12,654 9,247	-27%
STATE TOTAL Secondary Roads 1978 1980	83,676 73,092	-13%	643 561	-13%	25,806 23,542	- 9%	57,227 48,989	-14%
Trunklines 1978 1980	62,543 49,383	-21%	564 460	-18%	19,491 15,609	-20%	42,488 33,314	-22%

Graph 5



number of accidents per million vehicle miles travelled. Table 15 shows that secondary road accidents declined 1 percent more than the state as a whole but had a 3 percent smaller decline than rural trunklines.

Graph 6 shows a comparison of the percentage of total state accidents on secondary roads and rural trunklines. The chart illustrates that both roads had the same rate of increase for the years 1976-1978, however, from 1978-1980 rural trunklines' percentage leveled out while secondary roads increased their percentage of total accidents by one percent in 1979 and one percent in 1980. While the secondary road trend is one of increasing its share of total accidents, the increase in population would have some bearing. The percentage of total Michigan population in rural areas increased from 24 percent in 1975 to 28 percent in 1980, an increase of 328,445 people.

From the analyses that were performed, the secondary road system is seen as one having an accident rate 26 percent higher than the rural trunklines and equal to the state trunkline system. Table 16 compares the state trunklines with secondary roads regarding the percentage of fatal, personal injury and property damage accidents. Secondary roads had a higher ratio of fatalities for the five-year period and the ratio of personal injury accidents was higher. The probability of a fatal or personal injury accident is higher on secondary roads than on the trunklines.

While there is no evidence that the secondary road patrol program had any impact on secondary road accidents during its first two years, we stated earlier it would be surprising if it did.

Table 17 and Graph 7 show one of the contributing factors to the high accident and injury accident rate. Alcohol related accidents represent a higher ratio of the accidents on secondary roads than on the trunkline system

TABLE 15

ACCIDENT RATES

PER MILLION VEHICLE MILES TRAVELED

Graph 6

Comparison
 Whole State - All Trunklines - Rural Trunklines - Secondary County Roads
 1978 - 1980

TYPE ROAD	VEHICLE MILES TRAVELED (In Thousands) Estimated		TOTAL ACCIDENTS		ACCIDENT RATE (Per Million VMT)		% CHANGE 78-80 VMT,
	1978	1980	1978	1980	1978	1980	
All Michigan Roads*	67,638,000.0	61,190,000.0	389,193	314,594	5.8	5.1	- 12%
All State Trunklines	32,751,609.0	31,140,119.0	134,527	104,731	4.1	3.4	- 17%
Rural Trunklines	19,599,771.0	18,423,309.0	62,543	49,383	3.2	2.7	-16%
Secondary Roads	21,338,900.0	21,298,150.0	83,676	73,092	3.9	3.4	- 13%

* Includes city streets, which are not shown as a sub-set.

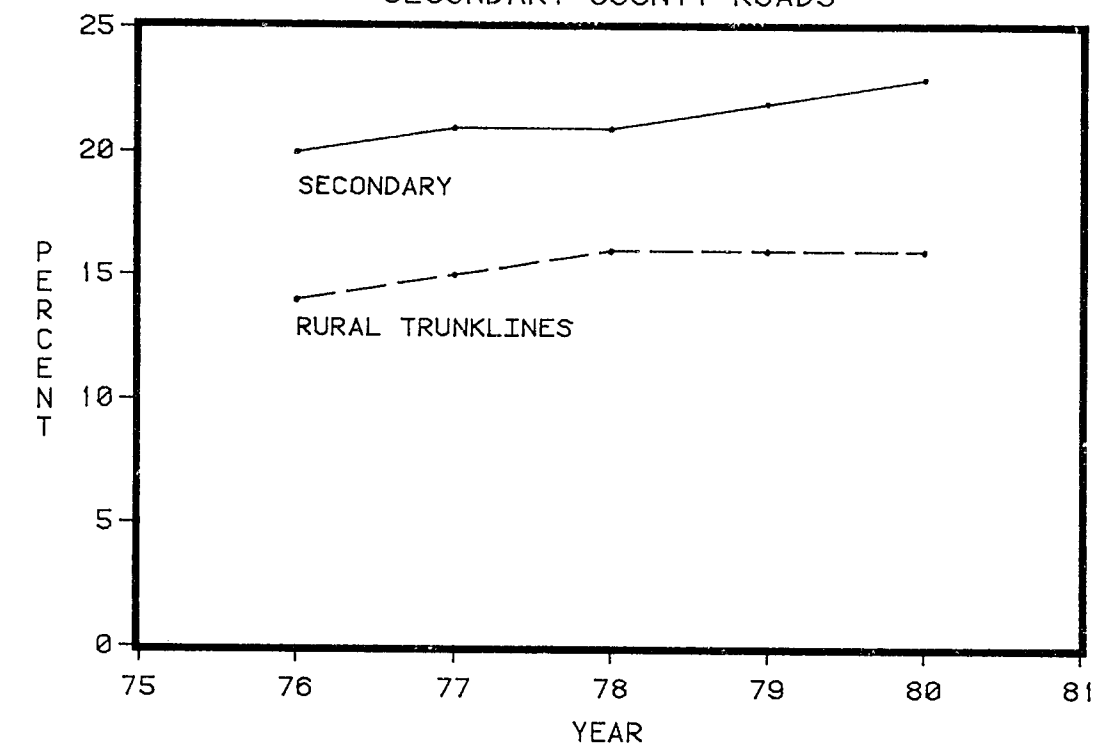
COMPARISON OF PERCENT OF ACCIDENTS
ON RURAL TRUNKLINES AND
SECONDARY COUNTY ROADS

TABLE 16

ACCIDENTS

State Trunklines and Secondary County Roads
Comparisons of Fatal - Personal Injury - Property Damage Accidents

1976 - 1980

(Total State - 83 Counties)

Year and Analysis	Trunklines				Rural County Secondary			
	Total Accidents	Fatal	Personal Injury	Property Damage	Total Accidents	Fatal	Personal Injury	Property Damage
1976	125,111	718	37,435	86,958	74,846	584	23,732	50,530
Percent of Total Accidents	100%	.6%	29.9%	69.5%	100%	.8%	31.7%	67.5%
1977	128,315	736	38,281	89,298	80,391	614	25,065	54,712
Percent of Total Accidents	100%	.6%	29.8%	69.6%	100%	.8%	31.2%	68.1%
1978	134,527	767	40,137	93,623	83,676	643	25,806	57,227
Percent of Total Accidents	100%	.6%	29.8%	69.6%	100%	.8%	30.8%	68.4%
1979	124,968	676	37,904	86,388	78,919	596	25,044	53,279
Percent of Total Accidents	100%	.5%	30.3%	69.1%	100%	.8%	31.7%	67.5%
1980	104,731	644	32,941	71,146	73,092	651	23,542	48,989
Percent of total Accidents	100%	.6	31.5%	67.9%	100%	.8%	32.2%	67.0%

TABLE 17

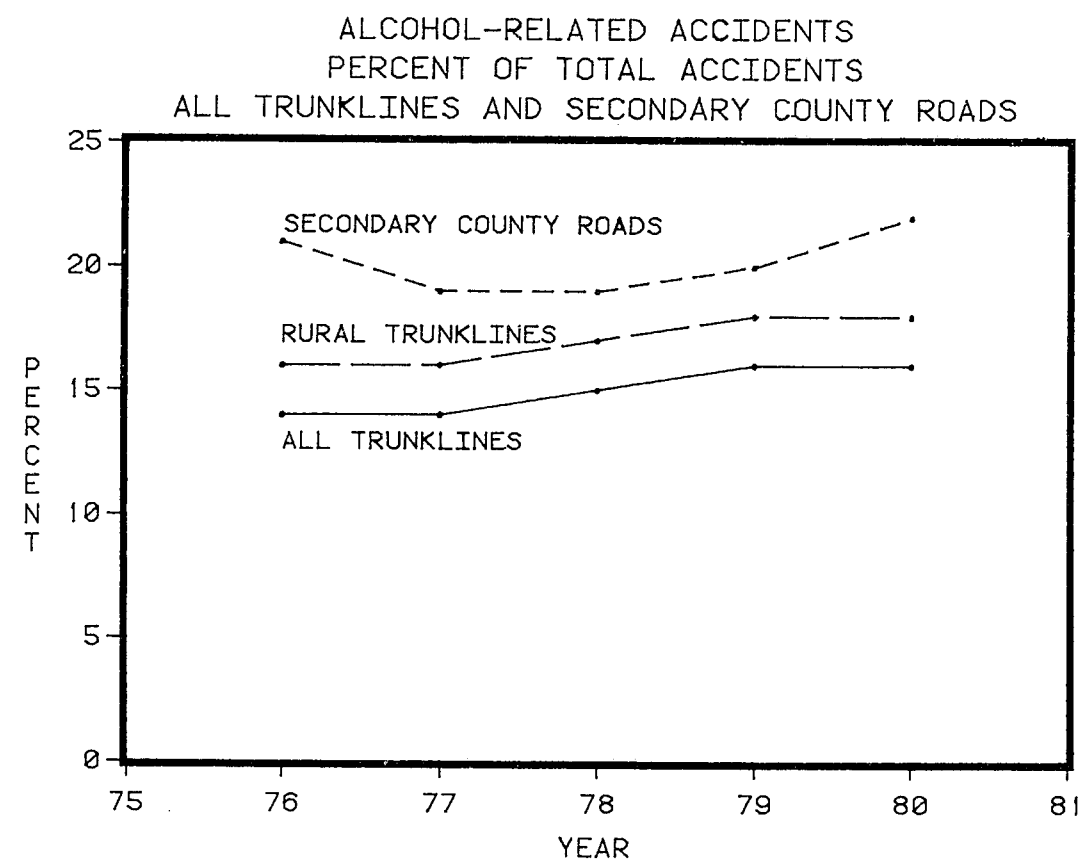
ALCOHOL RELATED ACCIDENTS

All trunklines and Secondary County Roads
By Population Category

1976 - 1980

Population Category & Road Type Type Analyses	1976	1978	% Change 76-78	1980	% Change 76-80
Total State (N=83) Trunklines					
Total Accidents	17,866	20,026	12.1	17,082	- 14.7
Percent of total Accidents	14.3%	14.9%		16.3%	
Secondary County Roads					
Total Accidents	15,392	16,071	4.4	16,041	- .2
Percent of total Accident	20.6%	19.2%		21.9%	
0 - 30,000 (N=38) Trunklines					
Total Accidents	1,931	2,146	11.1	1,750	- 18.4
Percent of Total Accidents	15.1%	16.4%		16.1%	
Secondary County Roads					
Total Accidents	2,072	2,049	- 1.1	2,100	2.5
Percent of Total Accidents	21.5%	20.7%		22.8%	
30,000 - 100,000 (N=13) Trunklines					
Total Accidents	3,030	3,569	17.8	3,032	- 15.0
Percent of Total Accidents	14.1%	14.6%		15.5%	
Secondary County Roads					
Total Accidents	4,058	4,427	9.1	4,416	- .2
Percent of Total Accidents	21.9%	20.5%		22.5%	
100,000 - 300,000 (N=13) Trunklines					
Total Accidents	4,458	4,966	11.4	4,165	- 16.1
Percent of Total Accidents	13.7%	14.2%		15.5%	
Secondary County Roads					
Total Accidents	5,268	5,311	.8	5,353	.8
Percent of Total Accidents	20.4%	17.3%		21.9%	
300,000 - Over Trunklines					
Total Accidents	8,447	9,345	10.6	8,135	- 12.9
Percent of Total Accidents	14.5%	15.1%		17.2%	
Secondary County Roads					
Total Accidents	3,994	4,284	7.3	4,172	- 2.6
Percent of Total Accidents	19.2%	18.3%		21.0%	

Graph 7



or that segment of trunklines referred to as rural trunklines. Twenty-two percent of the secondary road accidents in 1980 were alcohol related.

COST-EFFECTIVENESS

Cost-effectiveness analysis requires comparison of expenses, activities and results. This segment of the report is limited to a comparison of activities; analysis of financial data requires a review of more complete records and more time than this evaluation could allot. Financial data were obtained from the county clerk and/or accounting officers reflecting a variety of ways of handling sheriffs' expenditures. Some counties separate the costs of the regular road patrol from jail costs and others do not. Also, regular road patrol officers frequently transport prisoners and accept other special assignments and many sheriffs do not separate these costs. This makes it difficult to consistently isolate patrol costs. The same problems were experienced by the Auditor General's staff when they attempted to do a cost effectiveness comparison of local law enforcement, sheriffs and state police.*

Secondary road patrol personnel, in a large majority of the counties, had higher traffic related activity levels than regular county road patrol in the base year, 1978. The average number of citations per officer was much higher than for the regular road patrol. In addition, secondary road patrol deputies handled a large number of other activities such as assisting other law enforcement agencies/officers, assisting motorists, handling crime complaints, and making criminal arrests. The activities indicate the state funding resulted in an adequate productivity level for the money invested through 1980. The number of citations written by secondary road patrol

*Albert Lee, CPA, Auditor General, Law Enforcement - Special Study-Outline of Survey Conducted by the Office of the Auditor General, December 10, 1981

deputies represented effort over and above that which was done by the regular patrol. There is further evidence the presence of secondary road patrol program helped stimulate higher productivity from the regular deputies.

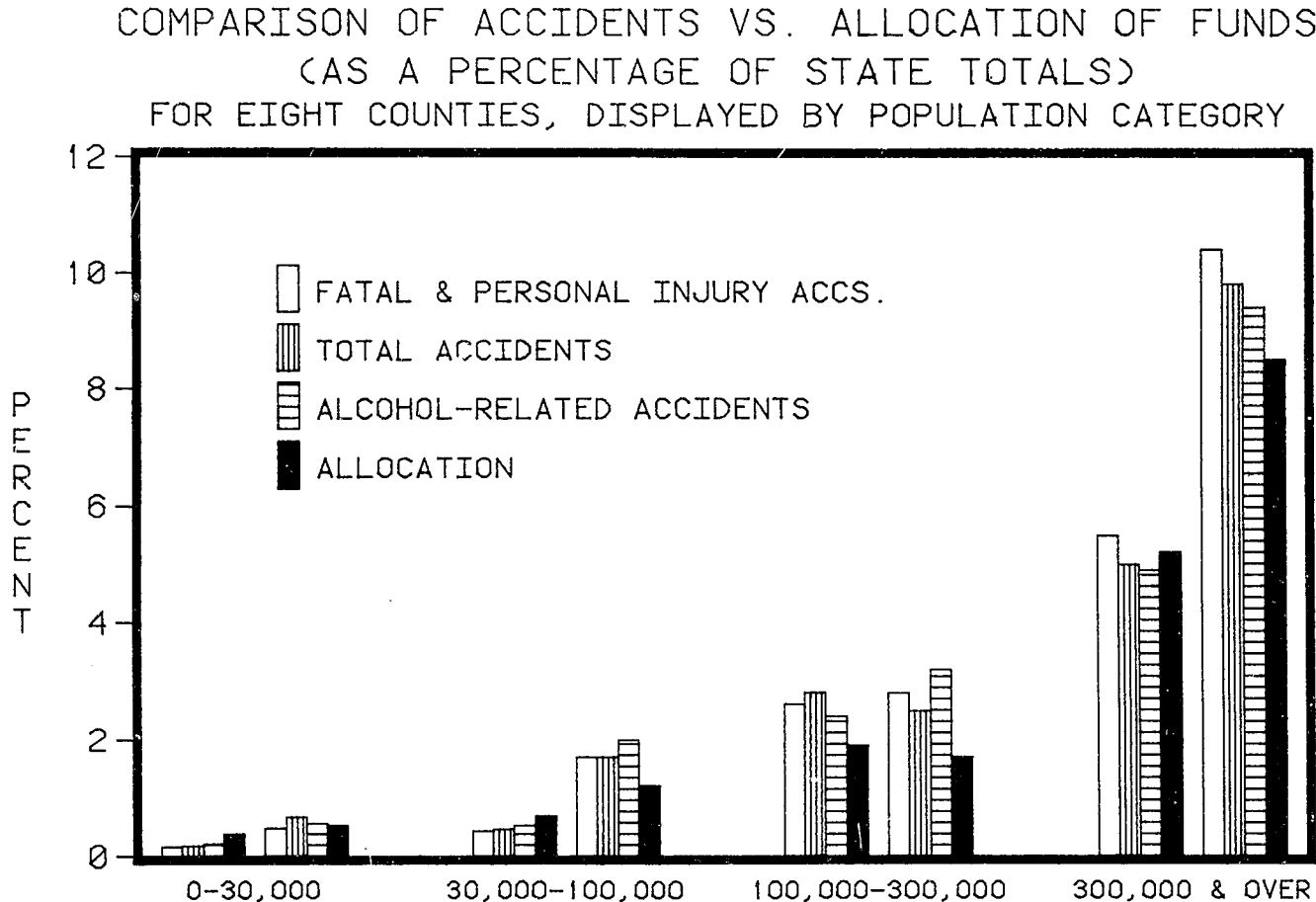
One factor which needs to be addressed is the funding formula. The formula used for allocating secondary road patrol funds is based on the money received by the county under Public Act No. 51 Public Acts of 1951. This Act is the one under which road repair funds are allocated to counties. The secondary road patrol funds are given to counties based on road repair needs rather than accident prevention needs. This means the funds are not distributed on the basis of accident volume and patrol needs.

Secondary road accidents are not evenly distributed in all counties, partly due to differing traffic levels. A cost-effectiveness problem arises if officers have little to do. While some sheriffs stated they used secondary road patrol officers for other duties because of insufficient activity on the secondary roads, others reported the number of secondary road patrol officers is not sufficient to handle the volume of work. This indication of a cost-effectiveness problem is not the fault of the sheriffs or deputies.

A shift in formula could increase the impact potential of the program. Secondary deputies numbering only 291 in 1980, or an average of less than 3 per county, must be distributed according to the problem to be most effective.

Graph 8 Shows eight counties selected to represent different size categories. Each size category has two counties. Not all the counties used are a part of the thirteen county sample. The variables selected represent the severity of the traffic problem as well as size.

Graph 8



The graph shows that in some cases the formula is almost on target; in others the allocation exceeds the problem and in yet others the allocation is considerably less than the problem. This suggests a more appropriate distribution of funds could be devised.

CONCLUSION

A large majority of the counties is maintaining the fiscal and program efforts of their regular road patrol. The activities of the secondary road patrol deputies represent an effort beyond what the county was doing in 1978 before the program began. There are a number of counties where the county supported program has expanded.

The majority of sheriffs is intent on making the program a success. The secondary road patrol officers, themselves, see the necessity for the program; they are writing more citations per officer than the regular road patrol deputies partly due to their assignment. In 1979, in a few counties, the regular road patrol reacted as expected when a special unit is instituted. The tendency was to lay back and let the special unit handle the problem. However, by 1980, the county supported units accepted the challenge and their citations per officer increased to a higher level than in 1978.

Secondary road accident trends gave no evidence of a reduction due to the secondary road patrol program during the evaluation period (1979 and 1980), but the program had only one full year of operation during that period. Counties started the program at various times. Five counties did not enter the program until 1980. Although secondary county road accidents were down in 1979 and 1980, there was a general downward trend on rural trunklines and all trunklines.

Secondary county roads, county primary and local roads, had a higher accident rate per million vehicle miles travelled than the rural trunklines in 1980. The secondary roads had a higher percentage of fatal and injury accidents than the trunkline system, and a higher ratio of alcohol related accidents.

Administratively, the secondary road program is cost-effective. Personnel have a higher per officer citation rate than the regular patrol, handle a large number of crime reports and other law enforcement activities in the secondary road areas. Some counties have used their own funds to supplement the state money to pay personnel overtime and cover operational expenses such as gasoline.

The formula used to distribute secondary road patrol funds to counties gives counties the same percentage they receive of Transportation funds under Public Act 51 of 1951, for road repairs. The program may not achieve maximum impact or full cost-effectiveness unless a new formula, based closer to the accident problem, is adopted. This disparity has resulted in some counties using deputies for duties unrelated to secondary road patrol just to keep them busy.

The secondary road patrol program is, in most counties, an identifiable program and is targeted toward reducing accidents. The few program abuses uncovered are being corrected. Deciding if the program can demonstrably reduce secondary road accidents cannot be done until the program has had more experience. Success will require that both the state and the counties recognize that the county primary and local roads are high accident roads, and that they then concentrate the resources where the problems are greatest.

0-30,000 POPULATION GROUP

Pop. 600,338

TOTAL STATE ACCIDENTS
SECONDARY ROADS AND RURAL TRUNKLINES
BY
POPULATION CATEGORY
INCLUDES ALCOHOL-RELATED ACCIDENTS

-----ALL ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	9,659	9,935	9,919	9,344	9,213	-7.1%
Fatal	78	85	75	79	80	+6.7%
Personal Injury	2,737	2,753	2,749	2,695	2,587	-5.9%
Property Damage	6,844	7,097	7,095	6,570	6,546	-7.7%
Policed by MSP	3,776	3,537	3,349	3,071	2,776	-17.1%
Policed by Sheriff	5,572	6,162	6,241	5,944	6,170	-1.1%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	9,577	9,592	9,727	8,889	8,060	-17.1%
Fatal	106	111	112	93	76	-32.1%
Personal Injury	2,446	2,350	2,360	2,248	2,037	-13.7%
Property Damage	7,025	7,131	7,255	6,548	5,947	-18.0%
Policed by MSP	4,657	4,233	4,108	3,857	3,262	-20.6%
Policed by Sheriff	4,653	5,101	5,408	4,847	4,595	-15.0%

-----ALCOHOL-RELATED ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	2,072	2,096	2,049	2,012	2,100	+2.5%
Fatal	41	53	48	46	42	-12.5%
Personal Injury	956	942	895	926	979	+9.4%
Property Damage	1,075	1,101	1,106	1,040	1,079	-2.4%
Policed by MSP	947	830	770	742	748	-2.9%
Policed by Sheriff	1,065	1,210	1,207	1,197	1,280	+6.0%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	1,512	1,565	1,663	1,520	1,354	-18.6%
Fatal	51	50	60	50	41	-31.7%
Personal Injury	644	651	696	680	605	-13.1%
Property Damage	817	864	907	790	708	-21.9%
Policed by MSP	797	737	705	663	563	-20.1%
Policed by Sheriff	673	786	913	825	758	-17.0%

30,000-100,000 POPULATION GROUP

Pop. 1,469,074

-----ALL ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	18,591	20,529	21,569	20,314	19,661	-8.8%
Fatal	161	184	204	177	155	-24.0%
Personal Injury	5,832	6,296	6,593	6,247	5,956	-9.7%
Property Damage	12,598	14,049	14,772	13,890	13,550	-8.3%
Policed by MSP	6,485	6,618	6,639	6,218	5,623	-15.3%
Policed by Sheriff	11,487	13,131	14,181	13,458	13,430	-5.3%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	13,247	14,019	14,812	13,586	11,981	-19.1%
Fatal	132	158	155	162	137	-11.6%
Personal Injury	3,767	4,047	4,257	3,907	3,263	-23.3%
Property Damage	9,348	9,814	10,400	9,517	8,581	-17.5%
Policed by MSP	5,737	5,557	5,713	5,417	4,500	-21.2%
Policed by Sheriff	7,071	7,910	8,594	7,725	7,113	-17.2%

-----ALCOHOL-RELATED ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	4,058	4,288	4,427	4,287	4,416	-0.2%
Fatal	86	93	109	109	101	-7.3%
Personal Injury	1,908	1,940	2,057	2,072	2,094	+1.8%
Property Damage	2,064	2,255	2,261	2,106	2,221	-1.8%
Policed by MSP	1,626	1,568	1,490	1,462	1,346	-9.7%
Policed by Sheriff	2,276	2,521	2,781	2,685	2,937	+5.6%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	2,146	2,233	2,485	2,267	2,070	-16.7%
Fatal	63	71	81	85	81	0.0%
Personal Injury	955	1,018	1,081	1,086	969	-10.4%
Property Damage	1,128	1,144	1,323	1,096	1,020	-22.9%
Policed by MSP	963	911	968	906	758	-21.7%
Policed by Sheriff	1,103	1,227	1,428	1,287	1,241	-13.1%

100,000-300,000 POPULATION GROUP

Pop. 2,253,427

-----ALL ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	25,819	28,226	28,723	26,970	24,392	-15.1%
Fatal	185	205	202	202	182	-9.9%
Personal Injury	8,104	8,828	8,856	8,420	7,987	-9.8%
Property Damage	17,530	19,193	19,665	18,348	16,223	-17.5%
Policed by MSP	6,086	6,325	5,831	5,375	4,488	-23.0%
Policed by Sheriff	15,241	17,056	16,077	15,115	13,689	-14.9%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	15,857	17,107	17,831	16,563	13,940	-21.8%
Fatal	151	142	165	137	131	-20.6%
Personal Injury	4,704	5,099	5,487	5,128	4,270	-22.2%
Property Damage	11,002	11,866	12,179	11,298	9,539	-21.7%
Policed by MSP	5,294	5,373	5,724	5,452	4,271	-25.4%
Policed by Sheriff	7,544	8,411	7,741	6,802	5,954	-23.1%

-----ALCOHOL-RELATED ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	5,268	5,317	5,311	5,185	5,353	+0.8%
Fatal	97	108	109	125	115	+5.5%
Personal Injury	2,395	2,457	2,418	2,378	2,535	+4.8%
Property Damage	2,776	2,752	2,784	2,682	2,703	-2.9%
Policed by MSP	1,489	1,418	1,219	1,247	1,183	-3.0%
Policed by Sheriff	3,127	3,192	3,063	2,974	3,017	-1.5%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	2,538	2,682	2,867	2,882	2,439	-14.9%
Fatal	77	76	80	81	73	-8.8%
Personal Injury	1,086	1,178	1,334	1,313	1,080	-19.0%
Property Damage	1,375	1,428	1,453	1,488	1,286	-11.5%
Policed by MSP	931	930	941	965	745	-20.8%
Policed by Sheriff	1,204	1,282	1,308	1,255	1,085	-17.0%

300,000 & OVER POPULATION GROUP

Pop. 4,939,239

-----ALL ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	20,777	21,701	23,465	22,291	19,826	-15.5%
Fatal	160	140	162	138	144	-11.1%
Personal Injury	7,059	7,188	7,608	7,682	7,012	-7.8%
Property Damage	13,558	14,373	15,695	14,471	12,670	-19.3%
Policed by MSP	3,147	2,546	2,480	2,261	2,101	-15.3%
Policed by Sheriff	7,826	9,138	10,140	10,067	8,599	-15.2%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	13,068	16,974	20,173	20,240	15,402	-23.7%
Fatal	85	100	132	118	116	-12.1%
Personal Injury	4,618	6,277	7,387	7,496	6,039	-18.2%
Property Damage	8,365	10,597	12,654	12,626	9,247	-26.9%
Policed by MSP	3,613	6,526	8,408	9,561	6,736	-19.9%
Policed by Sheriff	4,082	4,682	5,077	4,810	3,748	-26.2%

-----ALCOHOL-RELATED ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	3,994	3,933	4,284	4,257	4,172	-2.6%
Fatal	91	59	78	69	70	-10.3%
Personal Injury	1,813	1,779	1,912	2,027	1,934	+1.2%
Property Damage	2,090	2,095	2,294	2,161	2,168	-5.5%
Policed by MSP	705	537	517	536	572	+10.6%
Policed by Sheriff	1,613	1,760	1,990	2,031	1,892	-4.9%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	2,253	2,891	3,496	3,801	3,163	-9.5%
Fatal	47	50	69	69	69	0.0%
Personal Injury	1,039	1,390	1,725	1,866	1,662	-3.7%
Property Damage	1,167	1,451	1,702	1,866	1,432	-15.9%
Policed by MSP	689	1,168	1,457	1,921	1,473	+1.1%
Policed by Sheriff	712	827	923	908	805	-12.8%

STATE

Pop. 9,262,078

-----ALL ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	74,846	80,391	83,676	78,919	73,092	-12.6%
Fatal	584	614	643	596	561	-12.8%
Personal Injury	23,732	25,065	25,806	25,044	23,542	-8.8%
Property Damage	50,530	54,712	57,227	53,279	48,989	-14.4%
Policed by MSP	19,494	19,026	18,299	16,925	14,988	-18.1%
Policed by Sheriff	40,126	45,487	46,639	44,584	41,888	-10.2%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	51,749	57,692	62,543	59,278	49,383	-21.0%
Fatal	474	511	564	510	460	-18.4%
Personal Injury	15,535	17,773	19,491	18,779	15,609	-19.9%
Property Damage	35,740	39,408	42,488	39,989	33,314	-21.6%
Policed by MSP	19,301	21,689	23,953	24,287	18,769	-21.6%
Policed by Sheriff	23,350	26,104	26,820	24,184	21,410	-20.2%

-----ALCOHOL-RELATED ACCIDENTS-----

Secondary Roads	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	15,392	15,634	16,071	15,741	16,041	-0.2%
Fatal	315	313	344	349	328	-4.7%
Personal Injury	7,072	7,118	7,282	7,403	7,542	+3.6%
Property Damage	8,005	8,203	8,445	7,989	8,171	-3.2%
Policed by MSP	4,767	4,353	3,996	3,987	3,849	-3.7%
Policed by Sheriff	8,081	8,683	9,041	8,887	9,126	+0.9%

Trunklines (I,US,M)	1976	1977	1978	1979	1980	% Change 78-80
TOTAL	8,449	9,371	10,511	10,470	9,026	-14.1%
Fatal	238	247	290	285	264	-9.0%
Personal Injury	3,724	4,237	4,836	4,945	4,316	-10.8%
Property Damage	4,487	4,887	5,385	5,240	4,446	-17.4%
Policed by MSP	3,380	3,746	4,071	4,455	3,539	-13.1%
Policed by Sheriff	3,692	4,122	4,572	4,275	3,889	-14.9%

ACCIDENTS BY COUNTY WITHIN POPULATION CATEGORY

	1976	1977	1978	1979	1980	% Change 78-80
0-30,000 POPULATION GROUP TOTAL						
Total Secondary Road	9,659	9,935	9,919	9,344	9,213	-7.1%
Total Rural Trunkline	9,577	9,592	9,727	8,889	8,060	-17.1%
ALCONA COUNTY						
Total Secondary Road	218	210	243	214	185	-23.9%
Total Rural Trunkline	147	169	160	128	119	-25.6%
ALGER COUNTY						
Total Secondary Road	95	103	109	111	95	-12.8%
Total Rural Trunkline	223	180	175	143	136	-22.3%
ANTRIM COUNTY						
Total Secondary Road	283	299	285	291	294	+3.2%
Total Rural Trunkline	221	202	235	195	176	-25.1%
ARENAC COUNTY						
Total Secondary Road	295	297	357	289	298	-16.5%
Total Rural Trunkline	337	368	407	317	343	-15.7%
BARAGA COUNTY						
Total Secondary Road	101	99	101	100	90	-10.9%
Total Rural Trunkline	148	145	148	123	108	-27.0%
BENZIE COUNTY						
Total Secondary Road	208	210	214	236	193	-9.8%
Total Rural Trunkline	216	220	235	199	189	-19.6%
CHARLEVOIX COUNTY						
Total Secondary Road	256	233	236	205	219	-7.2%
Total Rural Trunkline	211	254	230	244	182	-20.9%
CHEBOYGAN COUNTY						
Total Secondary Road	266	296	291	297	302	+3.8%
Total Rural Trunkline	283	281	281	264	221	-21.4%
CHIPPEWA COUNTY						
Total Secondary Road	333	271	237	243	220	-7.2%
Total Rural Trunkline	260	255	212	188	159	-25.0%
CLARE COUNTY						
Total Secondary Road	481	604	573	487	484	-15.5%
Total Rural Trunkline	374	423	441	375	329	-25.4%
CRAWFORD COUNTY						
Total Secondary Road	200	196	189	146	152	-19.6%
Total Rural Trunkline	257	246	275	235	223	-18.9%
DICKINSON COUNTY						
Total Secondary Road	219	293	240	268	214	-10.8%
Total Rural Trunkline	192	197	230	227	174	-24.3%

ACCIDENTS BY COUNTY WITHIN POPULATION CATEGORY

	1976	1977	1978	1979	1980	% Change 78-80
EMMETT COUNTY						
Total Secondary Road	302	334	314	347	301	-4.1%
Total Rural Trunkline	344	322	376	373	330	-12.2%
GLADWIN COUNTY						
Total Secondary Road	285	304	340	302	341	+0.3%
Total Rural Trunkline	219	217	291	245	234	-19.6%
GOGEBIC COUNTY						
Total Secondary Road	168	167	157	122	129	-17.8%
Total Rural Trunkline	108	104	111	104	106	-4.5%
IOSCO COUNTY						
Total Secondary Road	528	494	563	520	488	-13.3%
Total Rural Trunkline	551	571	659	529	490	-25.6%
IRON COUNTY						
Total Secondary Road	145	166	113	122	134	+18.6%
Total Rural Trunkline	171	165	157	173	166	+5.7%
KALKASKA COUNTY						
Total Secondary Road	272	281	267	217	237	-11.2%
Total Rural Trunkline	214	214	195	164	195	0.0%
KEWEENAW COUNTY						
Total Secondary Road	37	45	19	29	19	0.0%
Total Rural Trunkline	41	55	55	57	44	-20.0%
LAKE COUNTY						
Total Secondary Road	260	258	269	221	253	-5.9%
Total Rural Trunkline	200	225	181	170	147	-18.8%
LEELANAU COUNTY						
Total Secondary Road	229	292	171	230	223	+30.4%
Total Rural Trunkline	277	307	215	243	221	+2.8%
LUCE COUNTY						
Total Secondary Road	119	97	94	87	83	-11.7%
Total Rural Trunkline	144	129	112	94	99	-11.6%
MACKINAC COUNTY						
Total Secondary Road	150	141	118	122	146	+23.7%
Total Rural Trunkline	321	312	271	317	217	-19.9%
MANISTEE COUNTY						
Total Secondary Road	334	346	305	299	276	-9.5%
Total Rural Trunkline	300	285	265	233	250	-5.7%
MASON COUNTY						
Total Secondary Road	413	473	511	447	446	-12.7%
Total Rural Trunkline	327	384	401	348	306	-23.7%

ACCIDENTS BY COUNTY WITHIN POPULATION CATEGORY

	1976	1977	1978	1979	1980	% Change 78-80
MENOMINEE COUNTY						
Total Secondary Road	468	479	563	423	449	-20.2%
Total Rural Trunkline	326	363	236	331	296	+25.4%
MISSAUKEE COUNTY						
Total Secondary Road	160	139	204	170	201	-1.5%
Total Rural Trunkline	138	141	165	166	176	+6.7%
MONTMORENCY COUNTY						
Total Secondary Road	200	204	211	188	194	-8.1%
Total Rural Trunkline	165	149	174	150	116	-33.3%
OCEANA COUNTY						
Total Secondary Road	351	446	428	412	415	-3.0%
Total Rural Trunkline	167	199	203	184	159	-21.7%
OGEMAW COUNTY						
Total Secondary Road	382	357	415	397	383	-7.7%
Total Rural Trunkline	252	252	335	310	265	-20.9%
ONTONAGON COUNTY						
Total Secondary Road	79	85	58	80	92	+58.6%
Total Rural Trunkline	211	181	191	174	165	-13.6%
OSCEOLA COUNTY						
Total Secondary Road	369	341	362	393	381	+5.2%
Total Rural Trunkline	423	357	369	372	330	-10.6%
OSCODA COUNTY						
Total Secondary Road	190	200	202	191	205	+1.5%
Total Rural Trunkline	203	208	197	187	189	-4.1%
OTSEGO COUNTY						
Total Secondary Road	307	254	296	312	245	-17.2%
Total Rural Trunkline	200	166	188	159	153	-18.6%
PRESQUE ISLE COUNTY						
Total Secondary Road	216	186	204	207	199	-2.5%
Total Rural Trunkline	228	187	199	176	165	-17.1%
ROSCOMMON COUNTY						
Total Secondary Road	396	374	331	287	311	-6.0%
Total Rural Trunkline	502	505	481	438	366	-23.9%
SCHOOLCRAFT COUNTY						
Total Secondary Road	120	105	105	75	75	-28.6%
Total Rural Trunkline	231	217	203	154	145	-28.6%
WEXFORD COUNTY						
Total Secondary Road	224	256	224	257	241	+7.6%
Total Rural Trunkline	445	437	468	400	371	-20.7%

ACCIDENTS BY COUNTY WITHIN POPULATION CATEGORY

	1976	1977	1978	1979	1980	% Change 78-80
30,000-100,000 POPULATION GROUP TOTAL						
Total Secondary Road	18,591	20,529	21,569	20,314	19,661	-8.8%
Total Rural Trunkline	13,247	14,019	14,812	13,586	11,981	-19.1%
ALLEGAN COUNTY						
Total Secondary Road	1,193	1,302	1,347	1,247	1,235	-8.3%
Total Rural Trunkline	569	633	630	602	560	-11.1%
ALPENA COUNTY						
Total Secondary Road	279	321	318	314	299	-6.0%
Total Rural Trunkline	314	327	328	324	247	-24.7%
BARRY COUNTY						
Total Secondary Road	707	813	838	897	899	+7.3%
Total Rural Trunkline	332	447	358	371	415	+15.9%
BRANCH COUNTY						
Total Secondary Road	631	722	701	622	597	-14.8%
Total Rural Trunkline	297	352	334	349	267	-20.1%
CASS COUNTY						
Total Secondary Road	787	906	820	739	786	-4.1%
Total Rural Trunkline	651	666	585	508	468	-20.0%
CLINTON COUNTY						
Total Secondary Road	771	842	916	870	902	-1.5%
Total Rural Trunkline	516	560	623	574	497	-20.2%
DELTA COUNTY						
Total Secondary Road	334	354	415	362	344	-17.1%
Total Rural Trunkline	362	379	388	374	299	-22.9%
EATON COUNTY						
Total Secondary Road	1,013	1,053	1,175	1,066	1,036	-11.8%
Total Rural Trunkline	1,261	1,137	1,227	1,213	1,030	-16.1%
GRAND TRAVERSE COUNTY						
Total Secondary Road	734	868	971	972	940	-3.2%
Total Rural Trunkline	515	631	705	559	507	-28.1%
GRATIOT COUNTY						
Total Secondary Road	529	601	559	597	552	-1.3%
Total Rural Trunkline	380	408	458	391	325	-29.0%
HILLSDALE COUNTY						
Total Secondary Road	652	688	828	678	683	-17.5%
Total Rural Trunkline	328	335	380	379	338	-11.1%
HOUGHTON COUNTY						
Total Secondary Road	275	242	244	288	228	-6.6%
Total Rural Trunkline	379	343	369	350	314	-14.9%

ACCIDENTS BY COUNTY WITHIN POPULATION CATEGORY

	1976	1977	1978	1979	1980	% Change 78-80
HURON COUNTY						
Total Secondary Road	397	421	497	444	548	+10.3%
Total Rural Trunkline	337	407	413	405	411	-0.5%
IONIA COUNTY						
Total Secondary Road	863	903	893	918	899	+0.7%
Total Rural Trunkline	536	565	513	575	484	-5.7%
ISABELLA COUNTY						
Total Secondary Road	703	769	821	759	670	-18.4%
Total Rural Trunkline	345	344	393	330	285	-27.5%
LAPEER COUNTY						
Total Secondary Road	887	1,020	1,138	1,065	1,018	-10.5%
Total Rural Trunkline	511	566	641	606	494	-22.9%
LENAWEE COUNTY						
Total Secondary Road	1,150	1,290	1,378	1,203	1,012	-26.6%
Total Rural Trunkline	748	869	955	803	686	-28.2%
MARQUETTE COUNTY						
Total Secondary Road	688	742	634	614	493	-22.2%
Total Rural Trunkline	555	559	662	458	390	-41.1%
MECOSTA COUNTY						
Total Secondary Road	686	750	674	720	700	+3.9%
Total Rural Trunkline	506	524	504	493	441	-12.5%
MIDLAND COUNTY						
Total Secondary Road	774	837	912	788	742	-18.6%
Total Rural Trunkline	276	313	368	290	271	-26.4%
MONTCALM COUNTY						
Total Secondary Road	798	861	825	809	832	+0.8%
Total Rural Trunkline	598	622	734	772	615	-16.2%
NEWAYGO COUNTY						
Total Secondary Road	619	797	812	707	705	-13.2%
Total Rural Trunkline	387	388	440	334	391	-11.1%
ST. JOSEPH COUNTY						
Total Secondary Road	610	633	812	617	635	-21.8%
Total Rural Trunkline	602	621	678	513	504	-25.7%
SANILAC COUNTY						
Total Secondary Road	374	435	468	498	525	+12.2%
Total Rural Trunkline	428	451	462	422	381	-17.5%
SHIAWASSEE COUNTY						
Total Secondary Road	529	608	688	738	695	+1.0%
Total Rural Trunkline	469	525	579	556	438	-24.4%

ACCIDENTS BY COUNTY WITHIN POPULATION CATEGORY

	1976	1977	1978	1979	1980	% Change 78-80
TUSCOLA COUNTY						
Total Secondary Road	736	765	847	844	752	-11.2%
Total Rural Trunkline	403	394	463	432	389	-16.0%
VAN BUREN COUNTY						
Total Secondary Road	872	986	1,038	938	934	-10.0%
Total Rural Trunkline	642	653	622	603	534	-14.1%
100,000-300,000 POPULATION GROUP TOTAL						
Total Secondary Road	25,819	28,226	28,723	26,970	24,392	-15.1%
Total Rural Trunkline	15,857	17,107	17,831	16,563	13,940	-21.8%
BAY COUNTY						
Total Secondary Road	1,438	1,490	1,537	1,373	1,215	-20.9%
Total Rural Trunkline	1,186	1,208	1,462	1,375	1,070	-26.8%
BERRIEN COUNTY						
Total Secondary Road	2,570	2,903	2,818	2,662	2,304	-18.2%
Total Rural Trunkline	1,786	1,825	2,068	1,731	1,467	-29.1%
CALHOUN COUNTY						
Total Secondary Road	2,169	2,299	2,368	2,332	2,028	-14.4%
Total Rural Trunkline	743	827	1,036	899	924	-10.8%
INGHAM COUNTY						
Total Secondary Road	1,757	2,015	2,264	2,093	2,026	-10.5%
Total Rural Trunkline	1,136	1,217	1,267	1,294	1,091	-13.9%
JACKSON COUNTY						
Total Secondary Road	2,449	2,564	2,682	2,355	2,276	-15.1%
Total Rural Trunkline	1,172	1,256	1,321	1,328	1,078	-18.4%
KALAMAZOO COUNTY						
Total Secondary Road	1,631	1,905	1,880	1,780	1,766	-6.1%
Total Rural Trunkline	1,139	1,157	1,043	1,001	926	-11.2%
LIVINGSTON COUNTY						
Total Secondary Road	1,419	1,646	1,719	1,565	1,359	-20.9%
Total Rural Trunkline	725	908	907	895	774	-14.7%
MONROE COUNTY						
Total Secondary Road	2,362	2,536	2,379	2,017	1,837	-22.8%
Total Rural Trunkline	1,606	1,644	1,702	1,376	1,183	-30.5%
MUSKEGON COUNTY						
Total Secondary Road	1,221	1,291	1,267	1,224	1,079	-14.8%
Total Rural Trunkline	715	697	729	751	601	-17.6%
OTTAWA COUNTY						
Total Secondary Road	1,916	2,208	2,174	2,449	1,920	-11.7%
Total Rural Trunkline	648	789	733	730	583	-20.5%

ACCIDENTS BY COUNTY WITHIN POPULATION CATEGORY

	1976	1977	1978	1979	1980	% Change 78-80
SAGINAW COUNTY						
Total Secondary Road	2,697	2,793	2,977	2,903	2,665	-10.5%
Total Rural Trunkline	2,111	2,391	2,365	2,289	1,870	-20.9%
ST. CLAIR COUNTY						
Total Secondary Road	1,565	1,543	1,581	1,428	1,339	-15.3%
Total Rural Trunkline	1,001	1,164	1,109	1,019	845	-23.8%
WASHTENAW COUNTY						
Total Secondary Road	2,625	3,033	3,077	2,789	2,578	-16.2%
Total Rural Trunkline	1,889	2,024	2,089	1,875	1,528	-26.9%
300,000 & OVER POPULATION GROUP TOTAL						
Total Secondary Road	20,777	21,701	23,465	22,291	19,826	-15.5%
Total Rural Trunkline	13,068	16,974	20,173	20,240	15,402	-23.7%
GENESEE COUNTY						
Total Secondary Road	3,749	3,783	4,044	3,700	3,253	-19.6%
Total Rural Trunkline	1,972	2,039	2,300	2,396	1,758	-23.6%
KENT COUNTY						
Total Secondary Road	2,531	2,957	3,125	3,004	2,830	-9.4%
Total Rural Trunkline	1,214	1,336	1,457	1,779	1,452	-0.3%
MACOMB COUNTY						
Total Secondary Road	3,645	3,731	4,086	3,921	3,647	-10.7%
Total Rural Trunkline	2,099	2,221	2,872	2,666	1,985	-30.9%
OAKLAND COUNTY						
Total Secondary Road	7,134	7,484	8,481	7,999	7,189	-15.2%
Total Rural Trunkline	4,133	4,368	5,305	6,139	4,038	-23.9%
WAYNE COUNTY						
Total Secondary Road	3,718	3,746	3,729	3,667	2,907	-22.0%
Total Rural Trunkline	3,650	7,010	8,239	7,260	6,169	-25.1%
STATE						
Total Secondary Road	74,846	80,391	83,676	78,919	73,092	-12.6%
Total Rural Trunkline	51,749	57,692	62,543	59,278	49,383	-21.0%

END