

Approved 2/11/86  
Date

MINUTES OF THE SENATE COMMITTEE ON FEDERAL AND STATE AFFAIRS

The meeting was called to order by Senator Edward F. Reilly, Jr. at  
Chairperson

11:00 a.m. ~~xxx~~ on February 6, 1986 in room 254-E of the Capitol.

All members were present ~~except~~

Committee staff present:

Emalene Correll, Legislative Research  
Mary Torrence, Assistant Revisor of Statutes  
June Windscheffel, Committee Secretary

Conferees appearing before the committee:

Ellyn Rullestad, Legislative Post-Audit  
Colonel Bert Campbell, Superintendent, Kansas Highway Patrol  
Chief John Foster, Lenexa Police Department

The Chairman introduced the first conferee, Ms. Ellyn Rullestad, from Legislative Post-Audit. She summarized the Performance Audit Report of Highway Patrol Staff Resources, dated November 1985. (Attachment 1) The audit addresses three primary questions: 1. What level of patrol coverage and other services is the Highway Patrol able to provide across the State with current staffing resources? 2. What is the Highway Patrol's jurisdictional relationship with other law enforcement agencies in Kansas? and 3. What options exist for providing patrol coverage of Kansas highways more efficiently or effectively? Following Ms. Rullestad's overview of the audit she answered questions from the Committee.

Colonel Bert Cantwell, Superintendent of the Kansas Highway Patrol, was the next conferee. Copies of the Kansas Highway Patrol Manpower Allocation Model for Field Trooper Positions, dated December 1985, were distributed. (Attachment 2) Colonel Cantwell said that in response to the Legislative Post-Audit report the Highway Patrol developed the Model. The handout also includes the Legislative Post Audit Report as well as the Model put together by the Highway Patrol.

The Report points out concerning manpower needs that a total of 362 field troopers is needed to provide 24 hour coverage on urban and rural interstates, and rural State and Federal Highways. This represents an increase of 119 additional troopers or a 48.9% increase over present staffing. Additional first line supervisors (sergeants) would also be necessary to maintain the current ratio of one sergeant for every seven troopers. This amounts to an additional 17 sergeants, bringing the total number of additional personnel to 136, a 32.9% increase overall.

Colonel Cantwell said that Lt. W. A. Jacobs and Sgt. R. E. Giffen, who had assisted in preparing the Manpower Allocation Model, were also present to assist in answering any questions. Colonel Cantwell said he thought the Committee would perhaps want to study the material in the handout, following which he would be available again for questions and discussion.

There was some discussion concerning the cooperation between the local law enforcement officials and the Kansas Highway Patrol. The feeling is that it is quite good.

A Committee Member asked if there were optimum applications of qualified personnel to come into the Patrol training program. Colonel Cantwell explained the process for hiring and stated that they are happy with it. He said that they hire once a year. The initial test was taken by 833 people the last time.

CONTINUATION SHEET

MINUTES OF THE SENATE COMMITTEE ON FEDERAL AND STATE AFFAIRS  
room 254-E, Statehouse, at 11:00 a.m./~~p.m.~~ on February 6, 1986.

Colonel Cantwell said that Kansas is third in the nation in the number of highway miles. The Highway Patrol proposed it be responsible for the state, federal and rural highways outside of city limits; and primarily responsible for all interstate, both urban and rural.

Someone asked what arrangement the Highway Patrol has with the Kansas Turnpike Authority. It was stated that the troopers are provided the Kansas Turnpike Authority through a contract. The Authority totally reimburses the Highway Patrol for all the troopers.

Various matters were discussed by the Committee and the conferees.

The next participant to testify was Chief John Foster, of the Lenexa Police Department. He said that he has been in Topeka to support the Kansas Highway Patrol in receiving a manpower increase, particularly in Johnson County. He said that 24-hour patrol service is very important and is non-existent except on the turnpike.

Chief Foster said that in Lenexa and other cities in that area that they will still be increasing their manpower because of the interstate system. They are not requesting the patrol to service state highways within the corporate limits other than interstate. They feel they can handle designated state highways. He also pointed out that as the interstates are finished the feeder problem from those interstates is also going to have to be addressed. Chief Foster said at the present time they cannot depend on the Patrol to service the interstate areas because of the lack of personnel. He said that there is a segment of criminality on the interstate--not every day--that cause serious problems that create manpower problems for the local police. The local police will assume that responsibility as they have done in the past, but they will still be assisted by the Highway Patrol relative to the interstate.

He said that he and his peers have supported this manpower allocation for some years. In his judgment at this time the traffic and service needs relating to the state are not being addressed. In answer to a question Chief Foster said there is a formal association in Johnson County of the Johnson County Police Chiefs. They have a form of mutual aid agreement between Wyandotte and Johnson Counties.

The Chairman thanked the conferees for appearing. He then directed the Committee's attention to SB526, concerning the capitol area security patrol and powers thereof. Colonel Cantwell had asked that this legislation be introduced. (See Minutes of this Committee of January 29, 1986.) Senator Morris moved that SB526 be recommended to pass. Seconded by Senator Martin. Motion carried.

Senator Morris moved that the Minutes of January 22, 1986, be approved. Seconded by Senator Daniels. Motion carried.

The meeting was adjourned.

KANSAS HIGHWAY PATROL  
MANPOWER ALLOCATION MODEL  
FOR  
FIELD TROOPER POSITIONS

DECEMBER 1985

Sen. Fed. & State Affairs  
2/6/86 Attachment 1



MANPOWER ALLOCATION MODEL

FOR

FIELD TROOPER POSITIONS

DECEMBER 1985

PREPARED BY

BUREAU OF PLANNING AND PROGRAMS

CAPT. D. L. PICKERT

LT. W. A. JACOBS

SGT. R. E. GIFFIN

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## INTRODUCTION

In response to a 1985 audit of Patrol Staff resources by the Division of Legislative Post Audit (Appendix D), the Kansas Highway Patrol has developed a manpower allocation model which addresses the following concerns:

- What highways will the Patrol take responsibility for?
- What level of coverage will the Patrol provide?
- When should the coverage be provided?
- What criteria should be used to determine the level of coverage the Patrol will provide?
- How many field troopers are needed to provide the desired level of coverage?

This report presents the Kansas Highway Patrol's recommended procedure for allocating field trooper positions in order to provide a level of coverage that will ensure reasonable protection on the interstate, U.S., and state highway system.

THE PATROL FUNCTION

Created in 1937, the Kansas Highway Patrol is responsible for the enforcement of traffic and other laws of the State of Kansas relating to highways, vehicles and drivers of vehicles.<sup>1</sup> As the Patrol nears its 50th anniversary, its responsibilities have grown. Kansas is ranked third in the nation with a total of 10,692<sup>2</sup> highway miles. Metropolitan police departments in the Kansas City area have recently stopped the regular patrolling of interstate highways, leaving the Patrol with that responsibility.

SPECIAL PROGRAMS: In addition to the traditional areas of traffic enforcement, service and education, the Patrol is involved in many specialized programs which contribute significantly to the overall traffic safety mission. The specialized programs which utilize full time trooper positions are:

- Vehicle Identification Number (VIN) Program, 8 troopers
- Motor Carrier Safety Assistance Program, 8 troopers
- Safety Education and Training, 2 troopers
- Aircraft Enforcement, 14 troopers
- Governor's Security, 3 troopers
- Gas Chromatograph (Breath Alcohol Testing Equipment), 7 troopers
- Court Liaison, 2 troopers
- Administration, 1 trooper

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<sup>1</sup>K.S.A. 74-2105

<sup>2</sup>Mileage and Travel Tables, Kansas Department of Transportation, December 31, 1984

In all, 45 troopers are involved in special programs. While it may be argued that civilian personnel could be utilized for less cost in some of these positions, they would not, however, provide the same quality and expertise as provided by sworn personnel. The Gas Chromatograph Program, for example, requires not only extensive training in the field of breath alcohol analysis, but considerable experience in court testimony, various aspects of field DWI investigations, and a close interdepartmental working relationship with local departments. Court liaison troopers are utilized in the Wichita and Kansas City areas to assist in effectively scheduling court dates for field personnel, filing cases, maintaining current disposition lists and answering inquiries from court officers. The two troopers in Safety Education and Training perform counseling, instructional, and other related duties at the Training Academy.

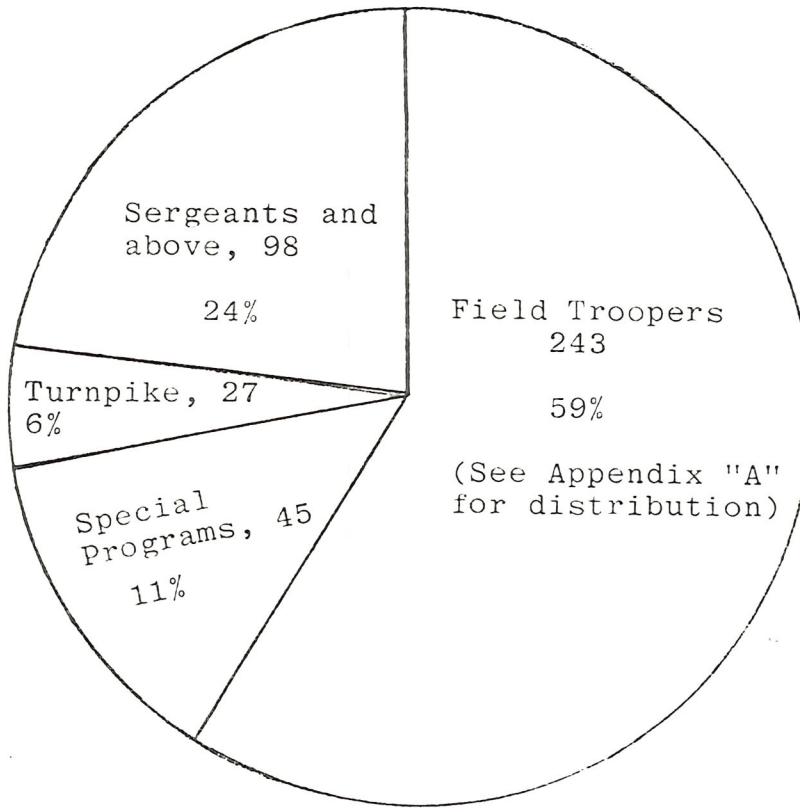
Thirty-five of these positions actually require the power of arrest, and thus, sworn personnel to perform the task.

These specialized trooper positions account for only 10.8% of the Patrol's current authorized strength. However, the loss of these positions would be detrimental to the Patrol's overall traffic safety responsibilities.



UNIFORMED MEMBERS

FY 1986



THE KANSAS TURNPIKE: The Highway Patrol has a contractual agreement with the Kansas Turnpike Authority (KTA) to provide police services for motorists on the turnpike. Patrol personnel assigned to the turnpike are actually employed and paid by the KTA. These 27 troopers are not included in this model as field troopers because of their turnpike patrol obligations. Coverage needs of the turnpike are determined by the KTA.

THE ALLOCATION MODEL

The Kansas Highway Patrol manpower allocation model is fashioned, in part, after the Arizona Highway Patrol model. Two models, Virginia and Arizona, were studied and compared. Virginia's model was rejected because that state, unlike Kansas and Arizona, deploys a State Police agency with responsibilities drastically different from that of a Highway Patrol agency.

The Arizona model focused on officer productivity as a primary basis for determining coverage needs; however, the Kansas Highway Patrol chose not to employ productivity as a criteria for several reasons. Geographically, Kansas is vastly different from Arizona. Climate has a large impact on officer productivity. Trooper personalities and work habits vary, making productivity an unstable reflection of an area's true manpower needs.

ALLOCATION FORMULA ELEMENTS: In its report the Legislative Division of Post Audit listed three elements<sup>5</sup> which can be used to establish coverage needs;

1. Daily Vehicle Miles Travelled (DVMT)
2. Highway Miles
3. Population

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<sup>5</sup>"Highway Patrol Staff Resources", Legislative Division of Post Audit, 1985, p. 12

COVERAGE RESPONSIBILITIES: Previously mentioned commitments to special programs and the Kansas Turnpike leaves 243 field troopers actually available to provide service across the state. Given current budgetary constraints, it would not be feasible for the Patrol to provide coverage for all 10,692<sup>3</sup> miles of highway in the state. Additionally, 24 hour coverage for all highways cannot be justified given the drastic decrease in traffic volume during the early morning hours on all highways except the interstate system.

This model proposes that the Patrol provide first and second<sup>4</sup> shift coverage on all rural Federal (US) and State (K) highways and a third shift (24 hours) on all (urban and rural) interstate highways. The foregoing would make the Patrol responsible for 8,623 highway miles during the times when coverage is most critical with respect to urban and rural needs.

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<sup>3</sup>Of the total 10,692 miles of highway in Kansas, 2,069 consist of urban freeways, expressways, urban and secondary connecting links, and the Kansas Turnpike for which coverage is provided for by local police agencies and contractual agreement.

<sup>4</sup>Approximately 6:00 AM to 12:00 PM, adjustable according to need, manpower availability, etc.

Highway Miles: Highway miles<sup>9</sup> are recorded for all highways for which the Patrol will provide coverage, with a distinction made between interstate miles and all other highways. Both are based on an average of .7<sup>10</sup> troopers for each 25 miles of highway.

Formula: Highway Miles ÷ 25 x .7 = Number of Troopers  
to cover highway miles

Population: The average number of troopers per 5,000 population in the seven states examined by the Division of Post Audit was .7. In incorporating this average, each county's population was recorded<sup>11</sup> to arrive at the number of field troopers needed to provide average coverage.

Formula: Population ÷ 5,000 x .7 = Number of Troopers  
needed based on population

In each of the three elements used to determine coverage needs and how manpower should be allocated, it is important to note that an average, not an optimum, is used, thus providing a realistic picture of manpower needs.

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<sup>9</sup> Mileage and Travel Tables. "Kansas Interstate System", Kansas Department of Transportation, 1984.

<sup>10</sup> "Highway Patrol Staff Resources", Legislative Division of Post Audit, 1985, p. 12

<sup>11</sup> U.S. Bureau of the Census, Current Population Reports, p. 26, No. 82-16-SC, September, 1984. Compiled by the Division of the Budget and certified to the Secretary of State, July, 1985.

This model uses all three to determine manpower needs in achieving average coverage. Research has indicated that each element is a viable and predictable statistic which can be easily applied when determining future needs. In this application each is given equal weight, thus providing equal coverage for both rural and urban areas.

The FY1986 "Kansas Safety Plan"<sup>6</sup> identified and ranked each county in Kansas according to traffic problems (see Appendix A). Using the formula described herein for determining manpower needs, a distinct comparison can be made between those counties with high traffic problems and high manpower needs.

Daily Vehicle Miles Travelled (DVMT): DVMT indicates the flow of traffic in a county over a 24 hour period. This model uses an average of 1.3 troopers<sup>7</sup> for each 100,000 DVMT. DVMT<sup>8</sup> was recorded for each county, divided by 100,000, and multiplied by the average of 1.3 to arrive at the number of troopers needed for coverage - based only on DVMT.

Formula:  $DVMT \div 100,000 \times 1.3 = \text{Number of Troopers}$   
to cover traffic flow

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<sup>6</sup>Office of Traffic Safety, Kansas Department of Transportation

<sup>7</sup>Average based on a seven state comparison, including Kansas, as reported by the Legislative Division of Post Audit's "Highway Patrol Staff Resources", 1985, p. 12. Kansas was ranked seventh with an average of 1.0.

<sup>8</sup>Mileage and Travel Tables, Kansas Department of Transportation, December 31, 1984

Once the number of field troopers needed were calculated for each element, they were added and divided by three to give each equal weight. Following is the final formula used to determine manpower needs for each county (see Appendix B & C).

Formula:  $DVMT + Highway\ Miles + Population \div 3 = \text{Number of Troopers}$

INTERSTATE PATROL: Manpower allocations for State and Federal highways (Appendix B) were figured separate from Interstate highways (Appendix C) because three shift coverage is desired for interstate patrol. In urban areas where policing of the interstates has been turned over to the Patrol, 24 hour coverage is a necessity. Rural areas of interstate should also have around-the-clock coverage because of the high DVMT of which approximately 80% is transient traffic.

The elements of DVMT, highway miles, and population<sup>12</sup> are also used in the formula to determine coverage needs on the interstate:

Formula:  $DVMT + Highway\ Miles + Population \div 3 = \text{Number of Troopers needed for two shifts} \div 2 = \text{Number of Troopers needed for third shift.}$

Relief Factor =  $\text{Number of Troopers needed for three shifts} \div 3 \times 5$

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<sup>12</sup>Population does have a significant impact on interstate travel in each county. To allow for this, a constant factor of 20.2% of the counties' total population was used, which is the average across the state of local populus that uses the interstate on a regular basis.

(Total Population of Counties Traversed by Interstate Highways  $\div$  Total Interstate DVMT of Those Counties)

To maintain 24 hour continuous coverage on all 637 miles of interstate highways, a total of 121 road troopers would be required (see Appendix C).

MANPOWER NEEDS: A total of 362 field troopers (see Appendix A) is needed to provide 24 hour coverage on urban and rural interstates, and rural State and Federal highways. This represents an increase of 119 additional troopers or a 48.9% increase over present staffing.

Additional first line supervisors (sergeants) would also be necessary to maintain the current ratio of one sergeant for every seven troopers. This amounts to an additional 17 sergeants, bringing the total number of additional personnel to 136, a 32.9% increase overall.

IMPLEMENTATION: Physical constraints ranging from the budget to the Training Center appear to make it impossible to implement such an increase in manpower at this time. The Patrol recommends a short range goal of five years, adding 27 field troopers in each of the first four years and 28 in the fifth year to reach a level of 362 field troopers.

CONCLUSION

The Patrol currently has 243 field troopers available to cover 8,623 miles of highway. At the present level, 33% of Kansas highways remain without average coverage.

With the addition of personnel identified in this model, the Patrol can better meet its responsibilities and provide a level of service that is sure to enhance traffic safety across the state. This model is versatile and easily adaptable to meet the needs of both urban and rural areas.

The Patrol is committed to allocating personnel in accordance with this model. Some reassignment of personnel may be necessary; however, the majority of those assignments identified in this study could be accomplished through attrition.





APPENDIX "A"

TOTAL STATEWIDE TROOPER ALLOCATION

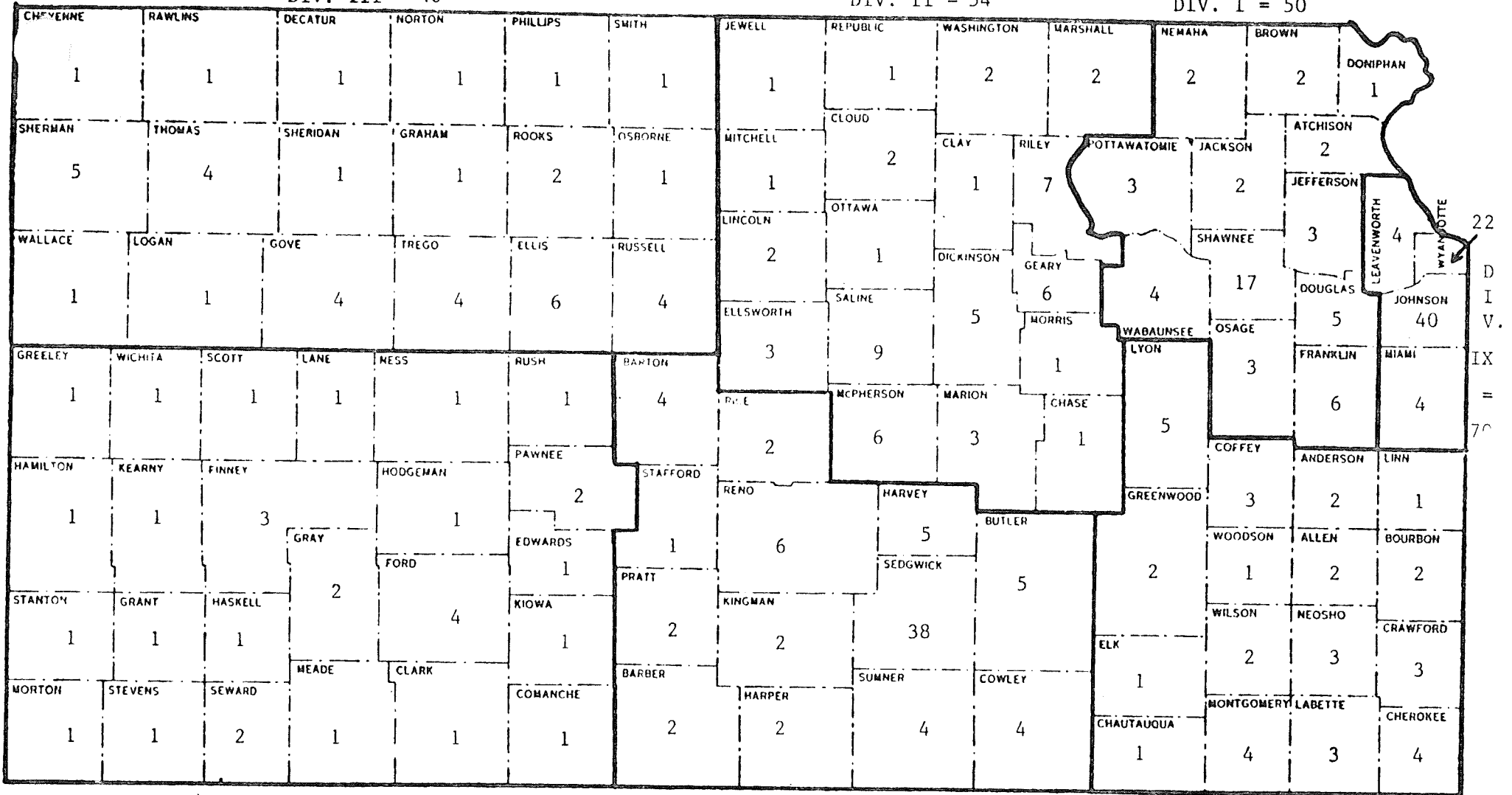
- Map of Trooper Allocation
  
- Counties Ranked by Traffic Problems
  
- Listing of Trooper Allocation by County

# KANSAS

DIV. III = 40

DIV. II = 54

DIV. I = 50



DIV. VI = 32

DIV. V = 77

DIV. IV = 39



SCALE

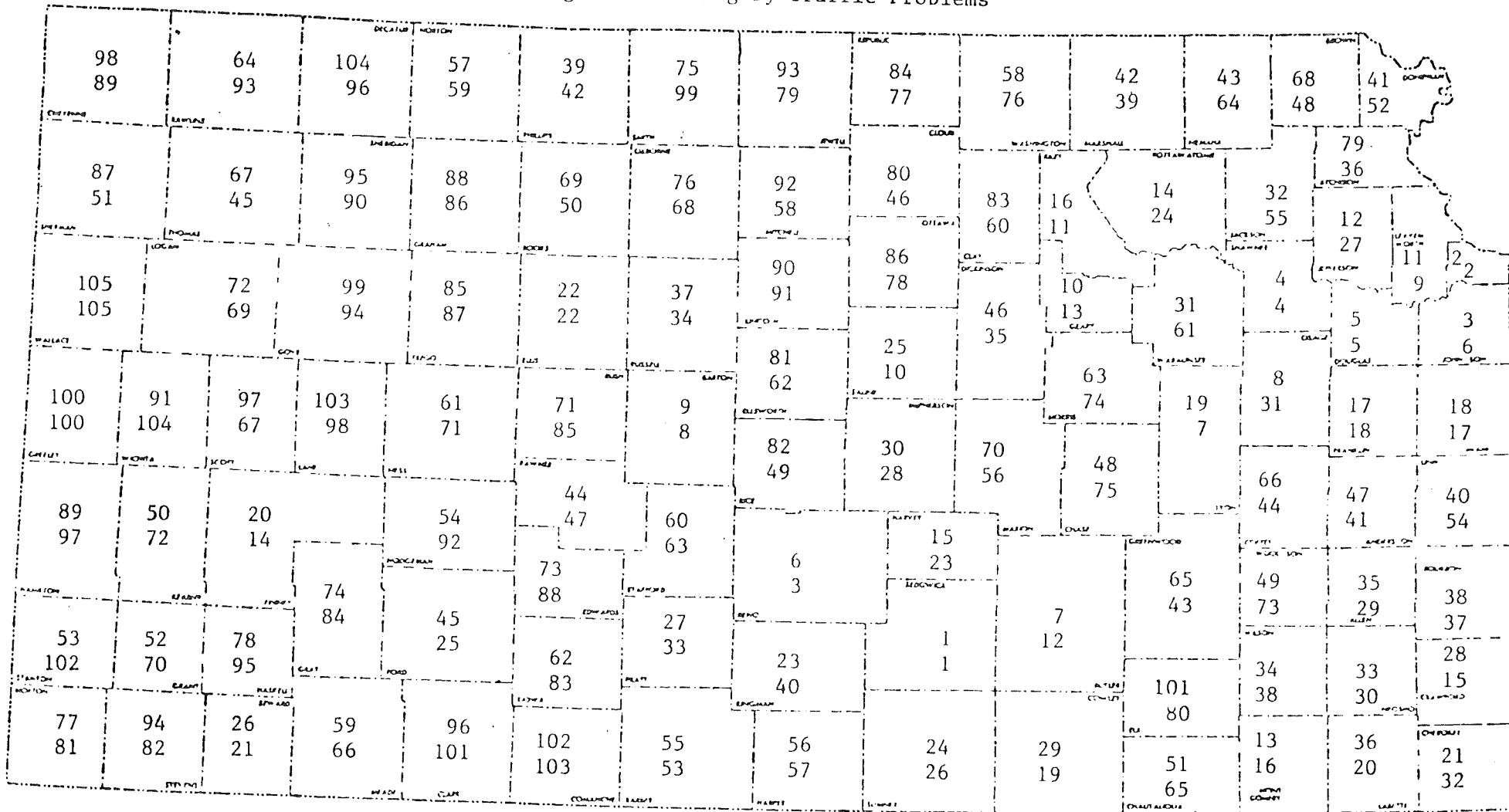


TOTAL = 362

COUNTIES RANKED BY TRAFFIC PROBLEMS  
AND ALCOHOL RELATED ACCIDENTS

(1979 - 1983)

Top Figure: Ranking by Alcohol Related Fatal Accidents  
Bottom Figure: Ranking by Traffic Problems



SOURCE: KANSAS SAFETY PLAN (FILED FOR FEDERAL FISCAL YEAR 1986)

Number of Troopers Required  
By County

Number of Troopers Required  
(Using .5 Break)

	Number of Troopers Required By County		Number of Troopers Required (Using .5 Break)		
	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>Total Per County</u>
Allen	2.080		2		2
Anderson	1.574		2		2
Atchison	1.976		2		2
Barber	1.584		2		2
Barton	3.790		4		4
Bourbon	2.052		2		2
Brown	2.153		2		2
Butler	5.123		5		5
Chase	1.046		1		1
Chautauqua	1.064		1		1
Cherokee	3.770		4		4
Cheyenne	0.995		1		1
Clark	1.096		1		1
Clay	1.466		1		1
Cloud	1.941		2		2
Coffey	1.478	1.818	1	2	3
Commanche	0.790		1		1
Cowley	3.980		4		4
Crawford	3.006		3		3
Decatur	1.331		1		1
Dickinson	2.087	3.075	2	3	5
Doniphan	1.289		1		1
Douglas	4.910		5		5
Edwards	1.075		1		1
Elk	0.901		1		1
Ellis	2.008	3.738	2	4	6

Number of Troopers Required  
By County

Number of Troopers Required  
(Using .5 Break)

	Number of Troopers Required By County		Number of Troopers Required (Using .5 Break)		
	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>Total Per County</u>
Ellsworth	1.421	2.245	1	2	3
Finney	3.452		3		3
Ford	3.650		4		4
Franklin	1.961	4.095	2	4	6
Geary	2.187	3.795	2	4	6
Gove	0.516	3.070	1	3	4
Graham	1.107		1		1
Grant	1.090		1		1
Gray	1.748		2		2
Greeley	0.764		1		1
Greenwood	2.357		2		2
Hamilton	1.037		1		1
Harper	1.519		2		2
Harvey	2.448	3.370	2	3	5
Haskell	1.245		1		1
Hodgeman	0.919		1		1
Jackson	1.996		2		2
Jefferson	2.830		3		3
Jewell	1.055		1		1
Johnson	16.337	24.325	16	24	40
Kearny	1.151		1		1
Kingman	2.054		2		2
Kiowa	1.344		1		1
Labette	2.947		3		3
Lane	0.815		1		1
Leavenworth	4.116		4		4

Number of Troopers Required  
By County

Number of Troopers Required  
(Using .5 Break)

	Number of Troopers Required By County		Number of Troopers Required (Using .5 Break)		
	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>Total Per County</u>
Lincoln	0.924	0.823	1	1	2
Linn	1.282		1		1
Logan	1.495	0.143	1	0	1
Lyon	3.485	2.300	3	2	5
Marion	3.219		3		3
Marshall	2.363		2		2
McPherson	1.822	3.530	2	4	6
Meade	1.238		1		1
Miami	2.856	0.888	3	1	4
Mitchell	1.398		1		1
Montgomery	4.290		4		4
Morris	1.280		1		1
Morton	0.857		1		1
Nemaha	1.667		2		2
Neosho	2.511		3		3
Ness	1.143		1		1
Norton	1.472		1		1
Osage	2.688		3		3
Osborne	1.206		1		1
Ottawa	1.253		1		1
Pawnee	1.846		2		2
Phillips	1.483		1		1
Pottawatomie	2.926		3		3
Pratt	1.996		2		2
Rawlins	0.850		1		1
Reno	5.771		6		6

	Number of Troopers Required By County		Number of Troopers Required (Using .5 Break)		
	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>Total Per County</u>
Republic	1.308		1		1
Rice	1.926		2		2
Riley	4.680	2.193	5	2	7
Rooks	1.746		2		2
Rush	1.294		1		1
Russell	1.241	2.930	1	3	4
Saline	3.045	6.435	3	6	9
Scott	1.237		1		1
Sedgwick	20.460	18.193	20	18	38
Seward	2.144		2		2
Shawnee	9.080	7.973	9	8	17
Sheridan	1.168		1		1
Sherman	1.792	2.840	2	3	5
Smith	1.495		1		1
Stafford	1.355		1		1
Stanton	0.583		1		1
Stevens	1.121		1		1
Sumner	3.717		4		4
Thomas	1.482	3.275	1	3	4
Trego	0.588	2.850	1	3	4
Wabaunsee	0.898	3.195	1	3	4
Wallace	0.860		1		1
Washington	1.510		2		2
Wichita	0.860		1		1
Wilson	2.210		2		2



Number of Troopers Required  
By County

Number of Troopers Required  
(Using .5 Break)

	Number of Troopers Required By County		Number of Troopers Required (Using .5 Break)		
	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>U.S. &amp; State Highways</u>	<u>Interstate System</u>	<u>Total Per County</u>
Woodson	1.080		1		1
Wyandotte	8.650	15.133	7	15	22
TOTAL			241	121	362

APPENDIX "B"

TROOPER ALLOCATION FOR THE FEDERAL  
AND STATE HIGHWAY SYSTEM

- Map of Trooper Allocation
- Listing of Trooper Allocation by County



## KHP MANPOWER ALLOCATION, FEDERAL AND STATE HIGHWAY COVERAGE

<u>County</u>	<u>Troopers Per 100,000 DVMT</u>	<u>Troopers Per 25 Highway Miles</u>	<u>Troopers Per 5,000 Population</u>	<u>Troopers Per County</u>
Allen	2.126	1.863	2.25	2.080
Anderson	1.552	1.929	1.24	1.574
Atchison	1.444	1.964	2.52	1.976
Barber	1.143	2.609	1.00	1.584
Barton	3.559	3.180	4.63	3.790
Bourbon	1.943	1.922	2.22	2.052
Brown	2.220	2.608	1.63	2.153
Butler	5.351	3.428	6.59	5.123
Chase	1.336	1.344	0.46	1.046
Chautauqua	0.945	1.546	0.70	1.064
Cherokee	4.633	3.556	3.12	3.770
Cheyenne	0.658	1.816	0.51	0.995
Clark	0.873	2.045	0.37	1.096
Clay	1.106	1.952	1.34	1.466
Cloud	1.683	2.451	1.69	1.941
Coffey	1.560	1.474	1.40	1.478
Commanche	0.431	1.578	0.36	0.790
Cowley	3.329	3.391	5.22	3.980
Crawford	2.063	1.636	5.32	3.006
Decatur	0.967	2.386	0.64	1.331
Dickinson	0.972	2.490	2.80	2.087
Doniphan	1.433	1.165	1.27	1.289
Douglas	3.201	1.770	9.77	4.91
Edwards	0.978	1.677	0.57	1.075
Elk	0.626	1.568	0.51	0.901
Ellis	1.186	0.868	3.97	2.008

<u>County</u>	<u>Troopers Per 100,000 DVMT</u>	<u>Troopers Per 25 Highway Miles</u>	<u>Troopers Per 5,000 Population</u>	<u>Troopers Per County</u>
Ellsworth	1.123	2.250	0.89	1.421
Finney	3.129	3.198	4.03	3.452
Ford	3.738	3.553	3.66	3.650
Franklin	1.499	1.264	3.12	1.961
Geary	1.127	1.325	4.11	2.187
Gove	0.177	0.863	0.51	0.516
Graham	0.867	1.873	0.58	1.107
Grant	0.953	1.367	0.95	1.090
Gray	1.901	2.603	0.74	1.748
Greeley	0.439	1.593	0.26	0.764
Greenwood	2.624	3.237	1.21	2.357
Hamilton	0.948	1.814	0.35	1.037
Harper	1.366	2.102	1.09	1.519
Harvey	1.742	1.264	4.34	2.448
Haskell	1.143	2.053	0.54	1.245
Hodgeman	0.679	1.759	0.32	0.919
Jackson	2.336	2.042	1.61	1.996
Jefferson	2.970	3.301	2.22	2.830
Jewell	0.751	1.714	0.70	1.055
Johnson	5.868	1.653	41.49	16.337
Kearny	1.120	1.803	0.53	1.151
Kingman	2.471	2.420	1.27	2.054
Kiowa	1.765	1.707	0.56	1.344
Labette	2.636	2.615	3.59	2.947
Lane	0.519	1.577	0.35	0.815
Leavenworth	2.361	1.848	8.14	4.116
Lincoln	0.510	1.723	0.54	0.924

<u>County</u>	<u>Troopers Per 100,000 DVMT</u>	<u>Troopers Per 25 Highway Miles</u>	<u>Troopers Per 5,000 Population</u>	<u>Troopers Per County</u>
Linn	1.240	1.445	1.16	1.282
Logan	0.956	3.039	0.49	1.495
Lyon	2.481	2.704	5.27	3.485
Marion	2.451	3.347	3.86	3.219
Marshall	2.104	3.115	1.87	2.363
McPherson	1.818	1.820	1.83	1.822
Meade	1.309	1.755	0.65	1.238
Miami	3.284	2.185	3.10	2.856
Mitchell	1.150	1.944	1.10	1.398
Montgomery	3.710	3.262	5.92	4.290
Morris	1.136	1.852	0.88	1.28
Morton	0.513	1.568	0.49	0.857
Nemaha	1.191	2.252	1.56	1.667
Neosho	2.266	2.539	2.73	2.511
Ness	0.915	1.865	0.65	1.143
Norton	1.095	2.402	0.92	1.472
Osage	3.153	2.663	2.25	2.688
Osborne	0.811	2.018	0.79	1.206
Ottawa	1.364	1.576	0.82	1.253
Pawnee	1.636	2.744	1.16	1.846
Phillips	1.222	2.209	1.02	1.483
Pottawatomie	2.774	3.814	2.19	2.926
Pratt	2.513	1.926	1.55	1.996
Rawlins	0.495	1.495	0.56	0.850
Reno	3.985	4.248	9.08	5.771
Republic	1.386	1.540	1.00	1.308
Rice	1.876	2.273	1.63	1.926

<u>County</u>	<u>Troopers Per 100,000 DVMT</u>	<u>Troopers Per 25 Highway Miles</u>	<u>Troopers Per 5,000 Population</u>	<u>Troopers Per County</u>
Riley	2.686	2.494	8.86	4.680
Rooks	1.530	2.728	0.98	1.746
Rush	1.311	1.941	0.63	1.294
Russell	0.666	1.757	1.30	1.241
Saline	0.896	1.219	7.02	3.045
Scott	1.356	1.536	0.82	1.237
Sedgwick	5.798	2.174	53.41	20.460
Seward	1.918	1.985	2.53	2.144
Shawnee	3.529	1.451	22.26	9.08
Sheridan	0.753	2.263	0.49	1.168
Sherman	2.536	1.792	1.05	1.792
Smith	1.042	2.654	0.79	1.495
Stafford	1.307	1.938	0.82	1.355
Stanton	0.383	1.037	0.33	0.583
Stevens	0.937	1.757	0.67	1.121
Sumner	3.279	4.323	3.55	3.717
Thomas	0.924	2.262	1.26	1.482
Trego	0.305	0.849	0.61	0.588
Wabaunsee	0.526	1.218	0.95	0.898
Wallace	0.553	1.757	0.29	0.860
Washington	1.137	2.288	1.12	1.510
Wichita	0.580	1.634	0.39	0.860
Wilson	2.196	2.803	1.65	2.210
Woodson	1.257	1.343	0.64	1.080
Wyandotte	1.510	0.328	24.13	8.65

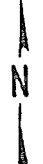
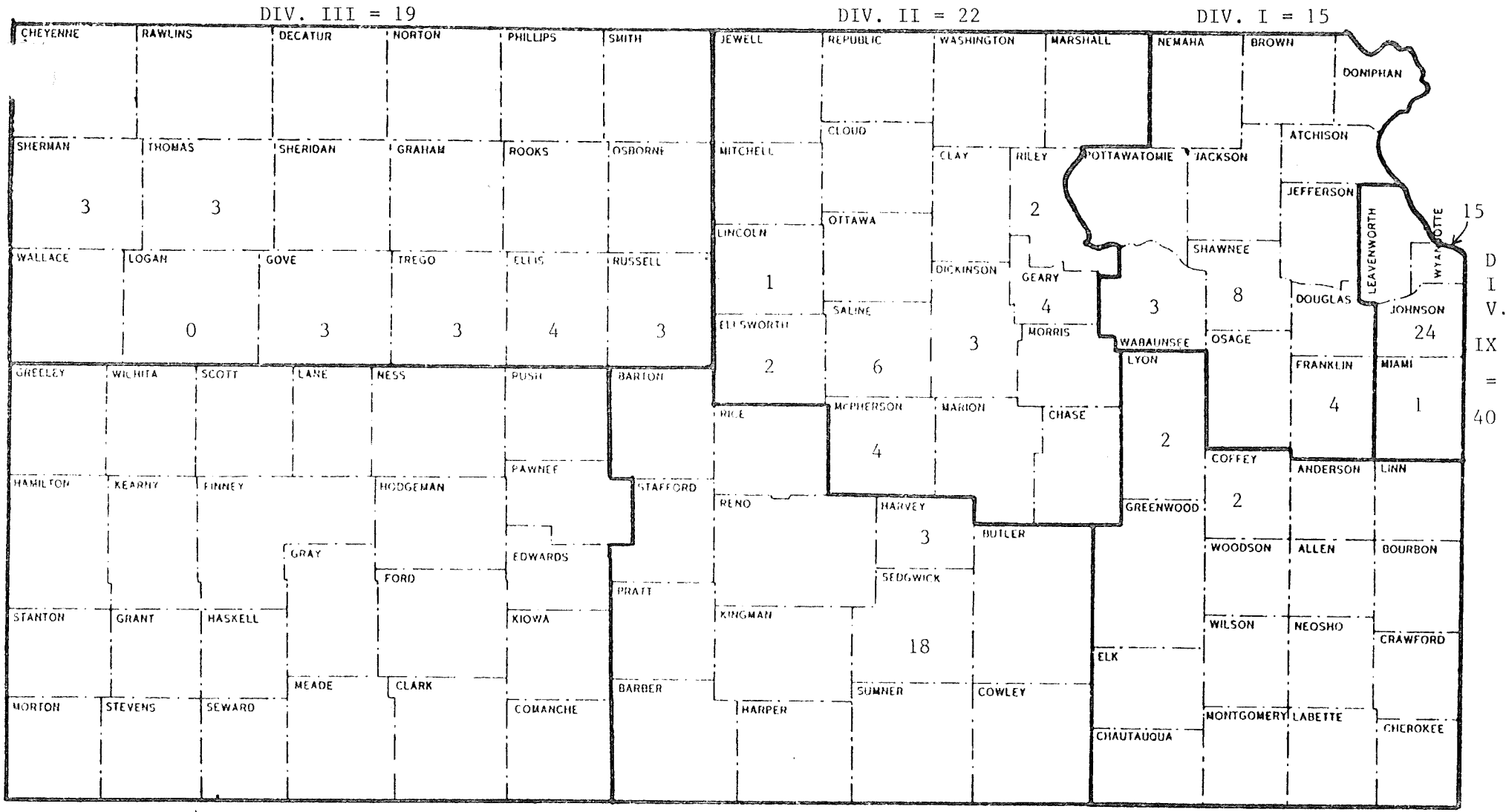
APPENDIX "C"

TROOPER ALLOCATION FOR THE INTERSTATE SYSTEM

- Map of Counties Requiring Interstate Coverage
  
- Map of the Kansas Interstate System
  
- Listing of Trooper Allocation by County



# KANSAS



SCALE



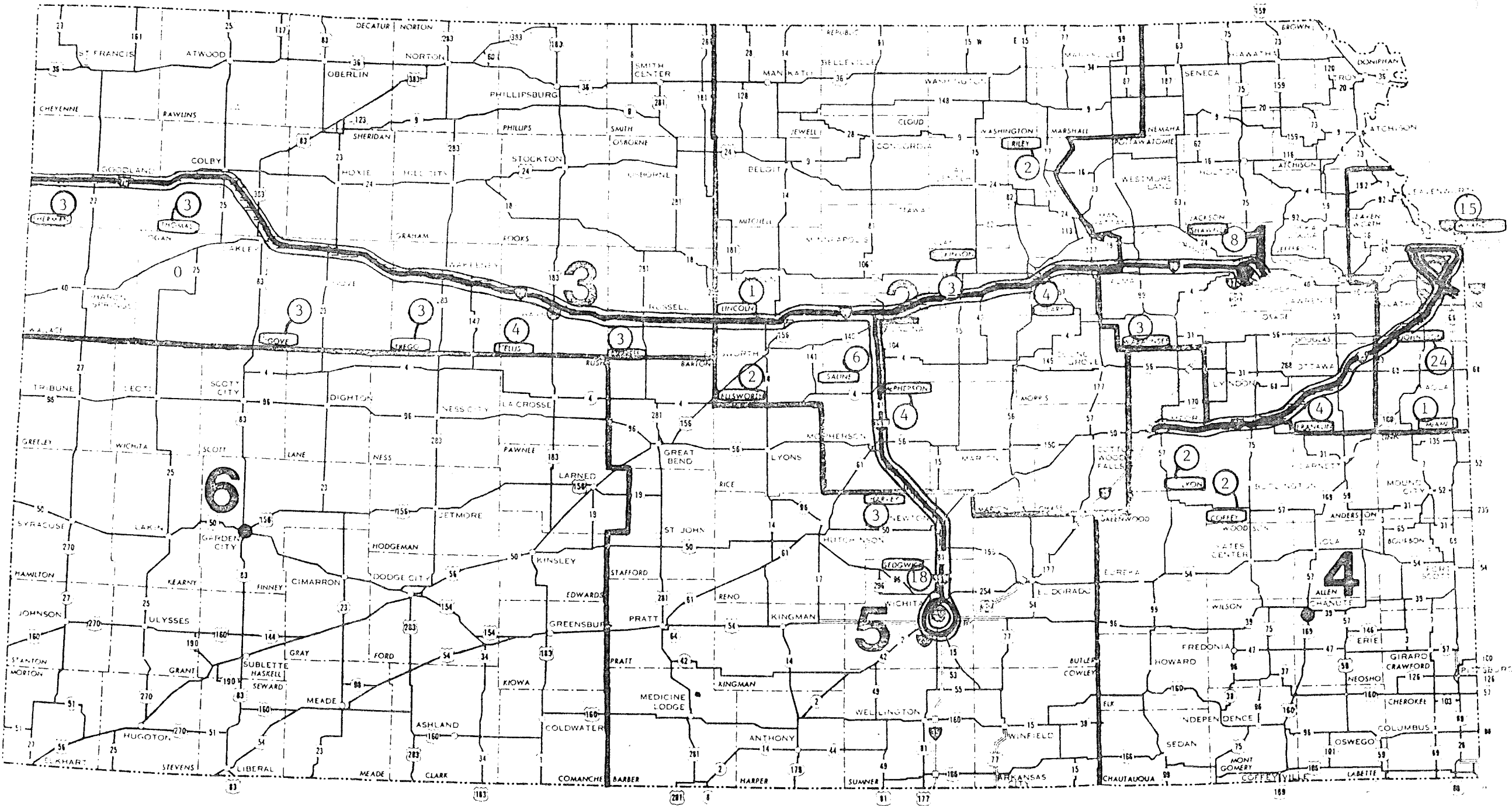
DIV. V = 21

DIV. IV = 4

TOTAL = 121

D I V. IX = 40

# KANSAS



<u>Interstate System</u>	<u>Troopers Per 25 Miles Inter.</u>	<u>Troopers Per 100,000 DVMT Inter.</u>	<u>Troopers Per 20.2% Estimated Population For Inter.</u>	<u>Miles + DVMT + Est. Popul. + 3 = (Troopers Req. For 2 Shifts)</u>	<u>1/2 of Troopers Req. for 2 Shifts (For Third Shift)</u>	<u>Total for 3 Shifts</u>	<u>Grand Total with 5/3 Relief Formula</u>
Coffey	0.374	1.525	0.283	0.727	0.364	1.091	1.818
Dickinson	0.657	2.468	0.566	1.230	0.615	1.845	3.075
Ellis	0.874	2.809	0.803	1.495	0.748	2.243	3.738
Ellsworth	0.651	1.862	0.181	0.898	0.449	1.347	2.245
Franklin	0.870	3.412	0.631	1.638	0.819	2.457	4.095
Geary	0.743	2.979	0.831	1.518	0.759	2.277	3.795
Gove	1.050	2.530	0.105	1.228	0.614	1.842	3.070
Harvey	0.583	2.585	0.877	1.348	0.674	2.022	3.370
Johnson	1.567	19.241	8.382	9.730	4.865	14.595	24.325
Lincoln	0.203	0.674	0.110	0.329	0.165	0.494	0.823
Logan	0.023	0.048	0.099	0.057	0.029	0.086	0.143
Lyon	0.454	1.239	1.066	0.920	0.460	1.380	2.300
McPherson	0.948	2.881	0.370	1.412	0.706	2.118	3.530
Miami	0.079	0.357	0.628	0.355	0.178	0.533	0.888
Riley	0.167	0.674	1.790	0.877	0.439	1.316	2.193
Russell	0.841	2.411	0.263	1.172	0.586	1.758	2.930
Saline	1.381	4.920	1.420	2.574	1.287	3.861	6.435
Sedgwick	1.086	9.955	10.789	7.277	3.639	10.916	18.193

<u>Interstate System</u>	<u>Troopers Per 25 Miles Inter.</u>	<u>Troopers Per 100,000 DVMT Inter.</u>	<u>Troopers Per 20.2% Estimated Population For Inter.</u>	<u>Miles + DVMT + Est. Popul. ÷ 3 = (Troopers Req. For 2 Shifts)</u>	<u>½ of Troopers Req. for 2 Shifts (For Third Shift)</u>	<u>Total for 3 Shifts</u>	<u>Grand Total with 5/3 Relief Formula</u>
Shawnee	0.742	4.328	4.497	3.189	1.595	4.784	7.973
Sherman	0.988	2.207	0.212	1.136	0.568	1.704	2.840
Thomas	1.108	2.568	0.255	1.310	0.655	1.965	3.275
Trego	0.857	2.437	0.125	1.140	0.570	1.710	2.850
Wabaunsee	0.672	2.970	0.192	1.278	0.639	1.917	3.195
Wyandotte	0.927	12.358	4.875	6.053	3.027	9.080	15.133

APPENDIX "D"

"HIGHWAY PATROL STAFF RESOURCES"

Division of Legislative Post Audit

November, 1985

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# DRAFT

PERFORMANCE AUDIT REPORT

Highway Patrol Staff Resources

NOT FOR RELEASE

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#### OBTAINING AUDIT INFORMATION

This audit was conducted by Ellyn Rullestad, Senior Auditor, and Tom Vittitow, Auditor, of the Division's staff. If you need any additional information about the audit's findings, please contact Ms. Rullestad at the Division's offices.

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## HIGHWAY PATROL STAFF RESOURCES

### Summary of Legislative Post Audit's Findings

This audit was conducted to address recent Legislative concerns about the distribution of Highway Patrol troopers across the State, the potential need for additional staff, and the Patrol's jurisdictional relationships with other law enforcement agencies.

**What level of patrol coverage and other services is the Highway Patrol able to provide across the State with current staffing resources?** Seven field divisions carry out the traffic enforcement function. The auditors compared the level of patrol coverage provided in each of these divisions using commonly accepted measures of patrol coverage, including the number of daily vehicle miles, population, and highway miles. They also compared the level of patrol coverage using per-trooper productivity measures, including the number of hours spent on general enforcement activity, the number of miles patrolled annually, and the number of arrests. The level of coverage provided varies somewhat among the divisions because of different geographic and demographic features. The Patrol is beginning to redistribute positions when vacancies occur on the basis of some of the measures described above.

**What is the Highway Patrol's jurisdictional relationship with other law enforcement agencies in Kansas?** Although the Highway Patrol is primarily responsible for enforcing traffic laws on the State highway system, it provides considerable law enforcement assistance to other law enforcement agencies. Informal agreements exist between the Patrol and local law enforcement agencies concerning areas of enforcement responsibility. The level of coverage provided by the Patrol in the four major urban areas of the State is not consistent. In some cities, the Patrol takes the responsibility for covering the city interstates and highways, while in other cities, this function is carried out by the local police departments. Some cities are cutting back on the level of coverage they provide on city interstates and highways and requesting the Patrol to take over the coverage of these highways.

**What options exist for providing patrol coverage of Kansas highways more efficiently or effectively?** No national standards exist that define an "optimal" level of patrol coverage. However, the level of coverage provided in Kansas has declined since 1980 and is lower than the level of coverage provided in several other states. Kansas has no systematic method of determining the number of troopers it needs, but several other states have identified specific objectives that their level of patrol coverage should meet. For example, Arizona has adopted levels of coverage needed for specific highway segments, while Virginia has adopted minimum standards of coverage for counties. Before the Highway Patrol can determine the appropriate number of road troopers for Kansas highways, it must first identify the patrol coverage objectives that will be met. Identifying these objectives will involve a consideration of what highways should be covered, what level of coverage should be provided, and when the coverage should be provided.



## HIGHWAY PATROL STAFF RESOURCES

At its May 15, 1985, meeting, the Legislative Post Audit Committee directed the Legislative Division of Post Audit to conduct an audit of patrol staff resources at the Kansas Highway Patrol. Legislative concerns had been raised about the distribution of Highway Patrol troopers across the State, the potential need for additional staffing, and the Patrol's jurisdictional relationships with localities and other law enforcement agencies.

The audit addresses three primary questions.

1. What level of patrol coverage and other services is the Highway Patrol able to provide across the State with current staffing resources?
2. What is the Highway Patrol's jurisdictional relationship with other law enforcement agencies in Kansas?
3. What options exist for providing patrol coverage of Kansas highways more efficiently or effectively?

To answer these questions, the auditors collected information from the Kansas Highway Patrol, the Kansas Department of Transportation, and the Federal Highway Administration. They interviewed the captains of each Highway Patrol division and the staff at the headquarters. They also reviewed other states' patrol staff resources and coverage and interviewed officials of Highway Patrol departments in several states.

The auditors determined that patrol coverage varies across the State along a number of different measures. They also found that informal agreements on patrol coverage and assistance exist between the Highway Patrol and local units of government, but that these jurisdictional relationships with other law enforcement agencies in Kansas are not consistent throughout the State.

The auditors found no specific standards that could be used to define the appropriate number of patrol troopers in Kansas. However, the level of coverage provided in Kansas has declined since 1980 and is lower than in other states. The Highway Patrol has not identified a specific set of objectives relating to patrol coverage that it wants to meet, as some other states have done. Without such objectives, the Patrol is not able to systematically determine the number of troopers it needs and how to distribute them across the State.

Following a brief description of the Highway Patrol, the remainder of this audit addresses the three primary questions posed above.

## Background on the Kansas Highway Patrol

Created in 1937, the Highway Patrol's principal function is enforcing traffic and other laws relating to Kansas highways, vehicles, and drivers. In total, the Highway Patrol is responsible for about 10,692 highway miles. Of these, 9,651 miles are on rural highways, 808 highway miles are within city limits, and 233 miles are on the Kansas Turnpike.

The Superintendent of the Highway Patrol is appointed by the Governor. All other personnel are members of the classified civil service system. The Patrol's Headquarters is located in Topeka. Seven divisional headquarters are located at Chanute, Garden City, Hays, Olathe, Salina, Topeka, and Wichita. The Highway Patrol also operates a training center at Salina, and the Turnpike Division is headquartered in Wichita.

### In Addition to Enforcing Traffic Laws, the Highway Patrol is Responsible for a Number of Other Programs

In 1955, a separate Highway Patrol division was assigned to patrol the Kansas Turnpike. In 1976, the Patrol became responsible for supervising the Capitol Area Security Patrol. In 1974, the Legislature created a motor vehicle inspection program that was administered by the Highway Patrol. This program, which was designed to ensure that all vehicles met certain safety standards, was later abolished by the 1984 Legislature. The 1984 Legislature also enacted the vehicle identification number inspection program. This program, designed to reduce stolen vehicles, is administered by the Highway Patrol, but is often carried out by designated county sheriff departments or private contractors because of the volume of inspections. A Bureau of Emergency Medical Services was added in 1984. The Patrol provides budgeting, purchasing, and related management support to this Bureau.

The Highway Patrol is currently in the third year of the motor carrier safety assistance program. This program is 80 percent federally funded and is designed to develop motor carrier inspection expertise in Kansas. In 1985, the Highway Patrol established a new division, Division O, that is responsible for this program. This Division also operates the motor vehicle enforcement program, which is intended to reduce stolen vehicles in Kansas.

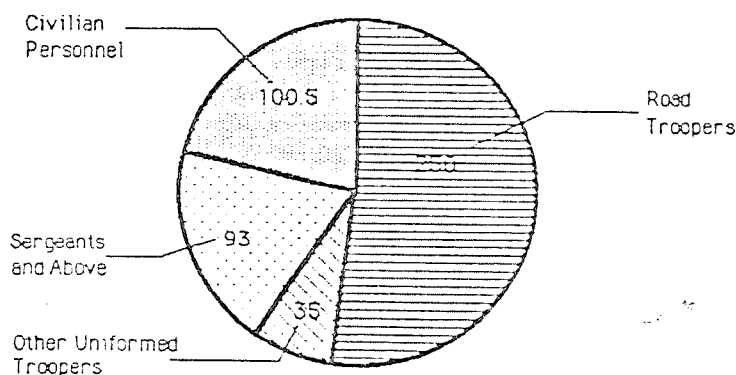
In addition to enforcing the State's traffic laws, Patrol officers also enforce the laws, rules, and regulations of the Kansas Corporation Commission relating to motor carriers. The Patrol also provides driver education training, road and weather information, emergency medical treatment, and assistance to disabled motorists.

### Sources and Uses of Funds and Staffing Information

In fiscal year 1985, the Highway Patrol Department had \$21,092,775 available to spend. Of this total, \$18,338,916 was appropriated from the State General Fund, and \$1,733,953 came from other revenue sources, including the Turnpike Authority. Expenditures in fiscal year 1985 were \$20,324,573, of which \$15,732,247 was for salaries and wages. Total expenditures increased 29.2 percent between fiscal year 1981 and 1985.

For fiscal year 1986, the Patrol is authorized to have 596.5 full-time equivalent positions. This staffing level represents an increase of 27.5 positions since fiscal year 1981. Of the total, 478.5 people are employed by Highway Patrol operations, the program primarily responsible for traffic law enforcement. As the following chart indicates, 250 of these employees are primarily road troopers, 93 hold supervisory positions with a rank of sergeant or above, and 35 are other uniformed positions, including pilots, Governor's security, and motor vehicle enforcement troopers. The remaining 100.5 civilian employees provide administrative and other support services.

**HIGHWAY PATROL OPERATIONS**  
**Authorized Staff Fiscal Year 1986**



The Highway Patrol also provides patrol staff for the Kansas Turnpike Authority. These officers are members of the Highway Patrol, but they are actually employed and paid for by the Kansas Turnpike Authority through a written contractual agreement. Because these employees represent a separate function of the Highway Patrol, they will not be treated as Highway Patrol officers for the purposes of this audit. Rather, this audit will focus on the 250 uniformed road troopers discussed above.

**What Level of Patrol Coverage and Other Services**  
**Is the Highway Patrol Able to Provide Across**  
**the State With Current Staffing Resources?**

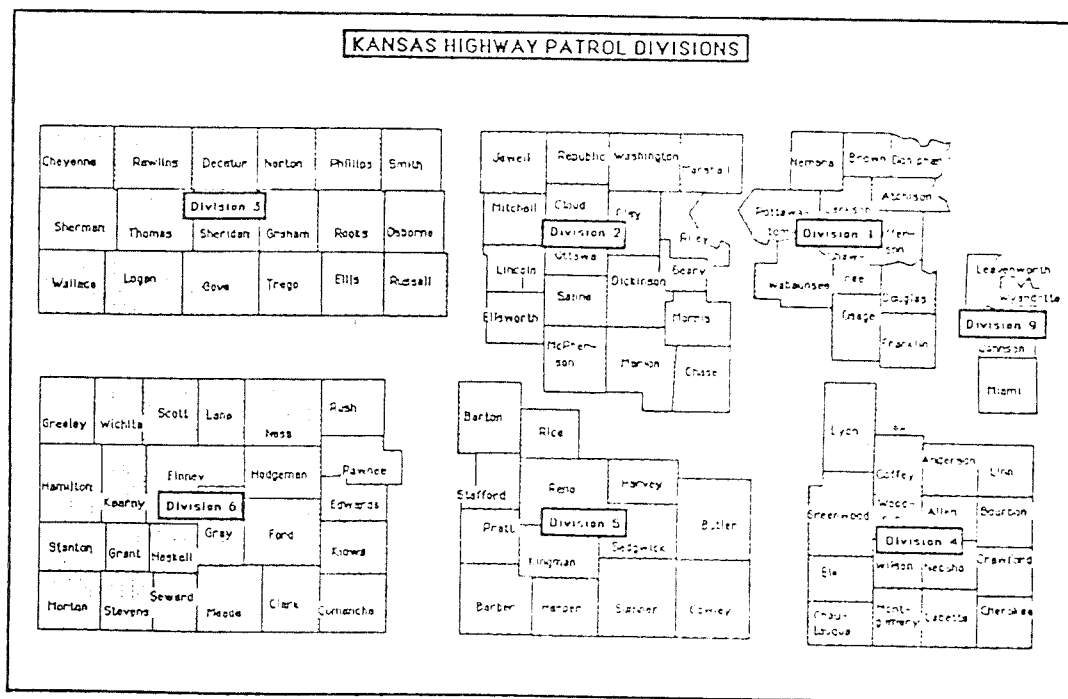
To answer this question, the auditors focused on road troopers in each of the seven field divisions. They interviewed captains from each division. They also reviewed the available literature. Generally accepted measures of patrol coverage were considered, and from these measures, the auditors were able to provide some information about the level of patrol coverage in Kansas.

In general, the auditors found that troopers are assigned to the divisions by the headquarters staff primarily on the basis of historical allocations. They learned that each division has unique demographic and geographic features. As a result, the level of patrol coverage and services provided in each division vary

somewhat. In addition, the scope of coverage provided is not consistent among the divisions. These findings are discussed in the following sections.

### Seven Field Divisions Are Responsible for Carrying Out the Traffic Enforcement Function

Each division is supervised by a captain who is assisted by one or more lieutenants and sergeants. The following map shows the various field divisions and their boundaries.



### The Level of Patrol Coverage Provided By the 250 Road Troopers Can Be Determined Using Several Different Measures

The auditors examined the level of patrol coverage using several commonly accepted measures. Some measures, such as the number of daily vehicle miles, population, and highway miles, describe patrol coverage in terms of what the Patrol is responsible for. Other measures, such as the number of hours spent on general enforcement activity, the number of arrests, and the number of miles patrolled, describe the level of patrol coverage in productivity terms. These measures are discussed and defined in the following sections.

The table on the next page examines the patrol coverage using the first set of measures, which generally define what the Patrol is responsible for.

Patrol Coverage Based on Measures of Daily Vehicle Miles  
Traveled, Population, and Highway Miles  
Calendar Year 1984 (a)

Division	Troopers	Daily Vehicle Miles Traveled Per Trooper	Population Per Trooper	Highway Miles Per Trooper
1 - Topeka	40	93,821	9,122	32.1
2 - Salina	47	77,633	6,213	41.1
3 - Hays	30	82,044	3,936	55.2
4 - Chanute	36	95,181	7,747	44.7
5 - Wichita	44	120,983	15,308	35.6
6 - G. City	27	97,112	5,655	72.1
9 - Olathe	26	213,111	20,547	17.7
	<u>250</u>			
Average		107,102	9,752	41.8

(a) Both rural and urban highway miles are included in the chart. In some of the urban counties, the Patrol is responsible for only some of the city highway miles. However, it was not possible to separate out those city miles that the Patrol covers and those that a city police department covers. Consequently, all city highway miles are used in the report.

**On average, each road trooper is responsible for 107,102 daily vehicle miles traveled.** Daily vehicle miles traveled is a statistic that indicates the volume and density of traffic. The Kansas Department of Transportation computes this statistic by rural and urban highways in each county.

As the table shows, with just a few exceptions, the number of daily vehicle miles traveled per trooper does not vary tremendously by division. Divisions 5 and 9 have the largest daily vehicle miles traveled per trooper. Division 5 includes the Wichita-Sedgwick County area and Division 9 covers the urban counties in eastern Kansas--Wyandotte, Johnson, Miami, and Leavenworth. Traffic is much more dense in these urban divisions than it is in the rural divisions. As a result, the number of vehicle miles traveled per trooper is relatively higher in the urban divisions than in the other divisions, where most of the traffic volume is on the rural highways.

**On average, there is one trooper for every 9,752 people.** The population per trooper varies in much the same manner as the daily vehicle miles traveled per trooper varies. As might be expected, the number of people in the more urbanized divisions is higher than the number of people in the more sparsely populated rural areas. Consequently, the urban areas have more people per trooper than the rural areas. The population per trooper ranges from 20,547 in Division 9, the Johnson-Wyandotte Counties area, to 3,936 in Division 3, which covers counties in northwest Kansas.

**On average, troopers are responsible for 41.8 miles of highway.** As the table on page 5 shows, the number of highway miles per trooper ranges from a low of 17.7 in Division 9 (the Johnson-Wyandotte Counties area) to 72.1 in Division 6 (counties in southwest Kansas). In the divisions with relatively low

populations, such as Divisions 3 and 6, each trooper is responsible for more miles. Similarly, in the urbanized counties in Divisions 1, 5, and 9, each trooper has relatively fewer miles to cover, but more traffic volume.

The following table examines patrol coverage using the second set of measures described earlier--hours, arrests, and miles patrolled. These measures are generally based on trooper productivity. The information was gathered from division time sheets.

**Patrol Coverage Based on Regular Enforcements Hours,  
Miles Patrolled, and Arrests  
Calendar Year 1984**

<u>Division</u>	<u>Troopers</u>	<u>Regular Enforcement Hours Per Trooper</u>	<u>Miles Patrolled Per Trooper</u>	<u>Arrests Per Trooper</u>
1 - Topeka	40	1,172	33,022	438
2 - Salina	47	1,341	35,253	682
3 - Hays	30	1,356	37,389	657
4 - Chanute	36	1,308	35,084	641
5 - Wichita	44	1,175	32,159	626
6 - G. City	27	1,276	34,195	629
9 - Olathe	26	1,201	32,095	542
	<u>250</u>			
Average		1,260	34,141	604

Troopers average about 1,260 hours per year in general enforcement activity. General enforcement activity is basically the time that a trooper spends in a car on road patrol. It represents about half of a trooper's total

time. The rest of the time is spent on special assignments, accidents investigations, training, and the like. Little variation exists by division in the number of average hours a trooper spends on general enforcement. Troopers in urbanized divisions appear to spend slightly less time on this activity than those in the more rural divisions, but the differences are relatively slight.

#### TYPICAL ROAD TROOPER

The typical road trooper is assigned 171 hours duty during each 28-day work cycle. Nearly half of that time, or 80 hours, is spent in the patrol vehicle. Radar enforcement takes another 5.5 hours. Accidents and other investigations take about 8.8 hours. About 3.5 hours is spent providing services to motorists, and another 3.5 hours is used on special assignments. The typical trooper receives an average of about 13 hours of training. The trooper spends 21 hours eating, and spends the remaining 36 hours on such miscellaneous duties as office duty, court time, drivers license checks, and inspections.

Troopers patrol 34,141 miles of highway per year, on average. The table indicates that troopers may patrol as many as 37,000 miles a year or as few as 32,000. The troopers in the urbanized divisions

cover the fewest number of miles annually. This is probably because the density of traffic is so much greater in those divisions than in the rural divisions.

**Arrests per trooper vary the most by division, but average 604 per trooper annually.** Arrests per trooper, which also includes the number of traffic tickets issued, range from a low of 438 in Division 1 in Topeka, to a high of 682 in Division 2, located in Salina. There is no particular explanation for these variances. The auditors tried to compare the average number of arrests with the rural or urban nature of the divisions, but found no meaningful relationships.

#### **The Patrol Has Begun to Redistribute Its Staff On the Basis of Some of These Same Measures**

The distribution of road troopers primarily has been based on historical patterns. However, using the current level of staffing, the Patrol has begun to redistribute positions when vacancies occur on the basis of such measures as vehicle miles traveled, population, and highway miles. Thus, it is likely that the existing variations in coverage in the different divisions across the State will decline over time.

#### **What is the Highway Patrol's Jurisdictional Relationship With Other Law Enforcement Agencies in Kansas?**

The auditors relied primarily on their interviews with the seven Highway Patrol field division captains to determine how coverage responsibilities are shared with other jurisdictions. Although the Kansas Highway Patrol is primarily responsible for enforcing traffic laws on the State highway system, it provides considerable law enforcement assistance to other law enforcement agencies in Kansas. The auditors found that informal and verbal agreements exist between Highway Patrol divisions and local law enforcement agencies concerning areas of enforcement responsibility.

Auditors also found that patrol coverage of highways varies by jurisdiction. In some cases, the Highway Patrol takes primary responsibility for patrolling highways within city limits. In other cases, responsibility for city highways rests with the local police department. These inconsistencies have developed historically. In addition, the Highway Patrol has informal arrangements with local units of government to provide other types of law enforcement assistance. Finally, the auditors found that some cities are cutting back on their coverage of highways within cities and requesting the Highway Patrol to take over the patrol of them. These findings are discussed in the following sections.

#### **Informal Agreements On Enforcement Responsibility Exist Between the Highway Patrol and Local Jurisdictions**

The Highway Patrol has statutory responsibility for the entire State highway system, but the auditors found that its coverage of the highway system varies by division. Generally, the Patrol leaves traffic enforcement within city limits up to the local police departments. However, troopers will react to any

traffic violation they see on a city highway. Similarly, troopers will respond to any police department's request for assistance.

In some jurisdictions, the Highway Patrol has assumed the primary responsibility for covering highways within city limits. In other cases, the responsibility for city highways rests with the local police departments. These variations relating to which agency is responsible for coverage have developed over time, and are usually supported only by informal and verbal agreements between the agencies.

Larger urban areas provide the most striking inconsistencies in their patrol coverage. The auditors learned that, within the Wichita city limits, the Highway Patrol has been responsible for traffic enforcement and accident investigations on all interstate highways and on most State and federal highways. On the other hand, the Topeka Police Department enforces traffic laws and investigates accidents on the interstate and on the other highways that pass through Topeka. In Johnson and Wyandotte Counties, traffic enforcement and accident investigations have historically been a shared effort among local law enforcement agencies and the Highway Patrol. However, the local law enforcement agencies in these jurisdictions have acted to reduce their patrol coverage of interstates and highways within city limits.

Cities are beginning to request more Highway Patrol coverage of their highways. Traffic control and enforcement within city limits is usually provided by city police. But the auditors found that some cities are interpreting State statutes to require the Highway Patrol to be responsible for providing coverage on all State and federal highways with no effective boundaries. The following table lists the number of city miles in the four largest urban counties.

Large Urban Counties' City Highway Miles  
Compared to Total Miles

<u>County</u>	<u>City Interstate Miles</u>	<u>Other City Highway Miles</u>	<u>Total City Miles</u>	<u>Total Miles</u>	<u>% of Total</u>
Sedgwick	45.7	10.3	56.0	172.4	32.5
Shawnee	22.8	13.5	36.3	101.2	35.9
Johnson	34.2	51.8	86.0	160.5	53.6
Wyandotte	31.3	64.7	96.0	105.3	91.2

As the table indicates, the number of city highway miles is large both in absolute numbers of miles and as a percentage of total county highway miles.

Cities in some of these counties are looking to cut back on the coverage they provide and to turn over some or all of that responsibility to the Highway Patrol. The primary example of this occurred recently with the Kansas City, Kansas, Police Department.

In November 1984, the Kansas City Police Department notified the Highway Patrol that it would be reducing its traffic and accident investigation efforts on interstates and on other State and federal highways. The reason given was that more police officers were needed to cover citizen calls for



service, provide increased crime prevention, and combat drugs. The Kansas City Police Chief told the auditors that, because of this change, the Department has been able to reduce its traffic force by 12 officers. The result of this change on the Patrol, according to the captain of Division 9, has been that troopers in Wyandotte County are now concentrating on the interstates and their coverage has been mostly limited to motorist assistance and accident investigations. The captain said that very little preventive traffic enforcement is being done at this time.

Since the Kansas City Police Department reduced its highway coverage, several police departments in Johnson County have expressed an interest in having the Highway Patrol provide additional coverage within their jurisdictions. The cities of Lenexa, Merriam, Mission, and Olathe have all suggested that the Highway Patrol should be responsible for providing coverage for traffic enforcement and accident investigations on the portions of the interstates that pass through those communities.

The Patrol requested 30 new troopers over a three-year period during the 1985 legislative session to allow it to provide the coverage that had previously been provided by the Kansas City Police Department and to begin to provide more coverage for city interstates in Johnson County. No additional troopers were authorized for this purpose.

Highway Patrol coverage in counties also varies by jurisdiction. According to division captains, some county sheriffs will investigate traffic accidents on their own, while others routinely call the Highway Patrol to work them. Which counties request Highway Patrol assistance depends on the sheriff in office. Because the sheriff is an elected official, the assistance needed in a particular jurisdiction may change with each election.

The Highway Patrol will also respond when requested by county deputies to assist with accident investigations or other emergencies. As highly trained law enforcement officers, Highway Patrol troopers are often expected to provide technical assistance and expertise to the local departments. This is especially true in the rural counties. Because of limited resources at both the State and local levels, the Patrol troopers and law enforcement officers in rural counties have informally agreed to share the responsibilities for enforcement and for traffic investigations on all types of roads and highways.

The Highway Patrol also provides other services to local units of government. Through informal agreements, the Highway Patrol assists local agencies

**Patrol Coverage is Inconsistent  
In the Large Urban Areas**

Road troopers provide different levels of coverage in the State's major urban areas:

**Wichita** - The Highway Patrol covers all interstates and most State and federal highways within the city limits.

**Topeka** - The Patrol does not cover the city interstates and highways. Coverage on these roads is provided by the city police department.

**Kansas City** - The Patrol has recently taken responsibility for covering nearly all interstates and highways. The Kansas City Police Department had previously covered these routes, but has since reduced its coverage of them.

**Johnson County** - The Patrol shares responsibility for city interstates with the local police departments, although there is a desire on the part of the departments to turn over some of the coverage responsibility to the Highway Patrol.

by providing crowd and traffic control services for special events. For example, the Highway Patrol provides traffic control for university ball games and other events that may draw large crowds. The Patrol is responsible for crowd control at the Kansas State Fair each year. It provides assistance for air shows, county fairs, and other special events. The Highway Patrol has been called on to assist with farm sales and to provide security for courts. The Patrol is often requested to assist when a law enforcement agency suspects that a motor vehicle may be stolen. The division captains generally agreed that the Patrol will respond whenever assistance is required by any law enforcement agency.

**The Fair Labor Standards Act ruling could have some effect on the level of Patrol coverage required by local units of government.** A Supreme Court ruling on the Fair Labor Standards Act in February 1985 required that law enforcement officers be paid overtime after working 171 hours in a 28-day period. Although the ruling has not yet had a great impact, several captains indicated that many local police and sheriff departments may eventually have inadequate budgets to pay overtime to their employees. If this happens, these law enforcement agencies may have to reduce patrol coverage to comply with the ruling. The Highway Patrol may subsequently have to increase its patrol coverage to compensate for these potential reductions.

#### **What Options Exist for Providing Patrol Coverage of Kansas Highways More Efficiently or Effectively?**

To answer this question, the auditors looked for some standard or level of patrol coverage against which the Highway Patrol's current coverage could be compared. They looked for national standards that might indicate how many road troopers were needed in Kansas. However, no national standards exist. It is nonetheless possible to look at the patrol coverage provided in Kansas and compare the current level of coverage with the level that was provided in 1980 and with the level of coverage provided in other states.

#### **Kansas Patrol Coverage Has Declined Since 1980**

The auditors compared the level of coverage provided in 1980 with that provided in 1984 and found that the Patrol's road coverage had declined. The following table summarizes these changes.

<u>Measures of Coverage</u>	<u>1980</u>	<u>1984</u>	<u>Percent Change</u>
Troopers per 100,000 daily vehicle miles traveled	1.10	.93	-15.5%
Troopers per 5,000 population	.56	.51	-8.9
Troopers per 25 highway miles	.63	.60	-4.8
Hours of enforcement activity per trooper	1,342	1,260	-6.1
Number of arrests per trooper	708	604	-14.7
Number of miles patrolled per trooper	35,025	34,141	-2.5

As the table shows, when coverage is measured by any of the commonly accepted factors, the level of coverage declined between 1980 and 1984. According to the table, the number of troopers per 100,000 daily vehicle miles traveled declined 15.5 percent since 1980. What this means is that, because there is more traffic on Kansas roads, each trooper is responsible for a greater number of daily vehicle miles.

Similarly, the numbers of troopers per 5,000 population and per 25 highway miles also declined since 1980. Both population and the number of highway miles increased between 1980 and 1984. Therefore, every trooper is responsible for more of each. The level of coverage based on population dropped 8.9 percent since 1980, while the level of coverage based on the number of highway miles declined by 4.8 percent.

The level of coverage measured by trooper activity also declined since 1980. The number of hours each trooper spends on general patrol dropped by 6.1 percent, and the total number of miles each trooper patrols dropped 2.5 percent. Finally, the number of arrests per trooper dropped nearly 15 percent since 1980.

#### **There Are Several Reasons for the Decline in Patrol Coverage**

In interviews with division captains and other Highway Patrol staff, the auditors determined that there are several reasons for the decline in Patrol coverage.

The number of troopers dedicated to road patrol dropped 5.7 percent between 1980 and 1984. Although overall staffing has remained relatively constant, there have been changes in the mix of staffing. In particular, the number of road troopers declined from 265 in 1980 to 250 in 1984. This decline occurred primarily because 13 road patrol troopers were reassigned to aircraft duty, training, or supervisory positions. However, two positions were eliminated in the process of eliminating the motor vehicle inspection program and creating the motor vehicle enforcement program.

New responsibilities given to the Highway Patrol have caused some shifts in uniformed personnel. The vehicle inspection number program, which was enacted in 1984, was initially operated by field road troopers. In some divisions, however, the volume of vehicles needing inspections far exceeded the initial expectations, and division staff had to devote considerable time to this program. Because no additional staff were provided to the divisions, the general enforcement hours per trooper and other productivity measures declined. The motor carrier safety program began operating in fiscal year 1985. Certain troopers are designated as motor vehicle enforcement assistants in each division. These troopers are used to provide back-up assistance as needed to Division O, which is responsible for the program. The time spent in these programs further reduces the time available for traffic enforcement activities.

**Measures of patrol coverage have increased since 1980.** The number of daily vehicle miles traveled increased 10.9 percent between 1980 and 1984. Thus, even with a constant level of staffing, a trooper would have been responsible for an average of 10.9 percent more daily vehicle miles traveled.

Similarly, population increased by 3.1 percent between 1980 and 1984, and State highway miles increased from 10,431 to 10,457. In reality, road trooper staff actually declined during the period. Consequently, the effect of these increases on patrol coverage is even greater.

A recent federal court ruling is having some effect on patrol coverage. The court ruling on the Fair Labor Standards Act in February 1985 regarding overtime payments also reduced the effective number of road troopers. Under the new schedule, each trooper works about 2,223 hours per year, a decrease of 76 hours a year or about 8.4 days per trooper. With 250 road troopers, the loss in personnel caused by the Fair Labor Standards Act ruling is about 19,000 hours, or about 8.5 road troopers.

Cities and counties are requesting more Patrol coverage, which changes the distribution of the coverage provided. As discussed under question two, Kansas City requested the Patrol to begin patrolling all interstates and most State and federal highway within its city limits. Sedgwick County troopers already patrol all of the Wichita interstates. Using the coverage provided in Sedgwick County as a base, the auditors estimated that at least 24 additional troopers would be needed to provide patrol coverage on all the city highways and interstates in the four large urban counties.

Troopers no longer have to meet any minimum monthly standards relating to arrests, warnings, and the like. Interviews with the Division captains suggest that part of the reason such productivity measures declined on a per-trooper basis is that, in 1984, road troopers organized themselves into an association. The contract signed as a result of this association eliminated these minimum standards.

#### Kansas Patrol Coverage is Generally Lower Than in Other States

The auditors also surveyed officials in several states with comparable Highway Patrol Departments and found that, on all of the measures that bear some relationship to trooper need, Kansas ranks low in comparison with the other states. The following table shows the comparisons based on daily vehicle miles traveled, highway miles, and population.

Highway Patrol Staffing - Kansas and Other States

State	Troopers	Number of Troopers Per					
		100,000 Daily Vehicle Miles	25 Highway Miles	5,000 Population			
Oklahoma	444	Arizona	1.9	Arizona	1.7	Wyoming	1.4
Arizona	443	Wyoming	1.5	Colorado	1.1	South Dakota	.9
Iowa	410	Iowa	1.3	Iowa	1.0	Arizona	.8
Colorado	387	Oklahoma	1.3	Oklahoma	1.0	Colorado	.7
Kansas	250	Colorado	1.2	Kansas	.6	Iowa	.7
Wyoming	131	South Dakota	1.1	Wyoming	.5	Oklahoma	.7
South Dakota	119	Kansas	1.0	South Dakota	.4	Kansas	.5
Average			1.3		.7		.7

The table indicates that Kansas has far fewer troopers in relation to the other states. It has the fewest number of troopers per 100,000 daily vehicle

miles. It has fewer troopers per 25 highway miles than most of the other states and has fewer troopers per 5,000 population than all of the other states. No national standards exist to help identify an "optimal" level of coverage. However, the above analysis does show that Kansas is staffed at a level lower than other states.

#### **The Kansas Highway Patrol Has No Systematic Method to Determine How Many Troopers It Needs**

The Highway Patrol provides a certain level of coverage, as described in question one of the audit. As indicated above, this level does not compare well with either earlier levels of coverage in Kansas or with other states' current coverage. In fact, the level of coverage provided has generally depended on historical staffing levels and distributions of staff, rather than on any attempt to meet some specified objectives for coverage. In general, the Patrol has no systematic methods of determining whether it has an appropriate number of troopers.

The Patrol has developed two models in the past to determine a level of trooper need, but because no specific objectives were identified, the models have been more useful as a guide to reallocate troopers. One model based need for troopers on the time spent investigating accidents. The model determined the number of staff required to investigate accidents and computed the total number of staff required based on the overall percent of time spent on accident investigations. Because accidents represent only a small percentage of a trooper's total time, the model tends to significantly overstate the number of troopers needed.

The second model the Patrol developed did use measures of population, vehicle miles traveled, and square miles to try to determine the number of troopers needed in each county. The model was based on staffing levels in three divisions. Given those staffing levels, the Patrol computed the level of coverage being provided in those counties, then tried to apply these factors to all other counties. The model did not attempt to define the level of staffing needed to provide a certain amount of coverage. The resulting allocation, therefore, does not indicate the number of troopers Kansas should have. However, it does provide a guide to reassigning new and vacant positions and has been used in this manner.

The Highway Patrol has recently developed a model to distribute road troopers across the State, but this model also provides no indication of how many troopers Kansas needs. The Highway Patrol developed a model in February 1985 that is based on recognized measures of trooper need--population, vehicle miles traveled, highway miles, and land area. This model uses the current number of troopers available Statewide and allocates them to the various counties on the basis of the measures described above. The model does not specify what objectives the Patrol would like to meet or what level of patrol coverage it wants to provide, and so does not provide any rationale for the need for more troopers. However, this model is being used to guide the placement of troopers across the State.

## Other States Have Developed Models For Determining Trooper Strength Based on Various Objectives

Although Kansas has not identified a set of objectives that would help it determine the number of troopers required to provide a certain level of coverage, other states have done so. The auditors reviewed two models that are currently being used in other states. One model was developed by the Arizona Highway Patrol and the other was developed by the Virginia Highway Patrol. These models specify certain patrol objectives and indicate the numbers of troopers that are required to meet these objectives. The models also indicate where the troopers should be located.

**Arizona bases patrol coverage using a concept of service expressed in hours of need.** The Highway Patrol Department in Arizona developed a model in 1979 that it uses to determine its staffing levels. This model addresses a number of objectives, as described below:

- The number of hours required to provide regular patrol coverage is the base number of hours needed.
- Additional hours are added to the base to account for time spent investigating accidents, making DUI arrests, and assisting motorists.
- Troopers are assigned to cover a specific segment of highway.
- Divisions will generally have two shifts, but in some cases a night shift can be justified by the number of accidents occurring at night.
- Trooper strength standards for regular patrol coverage are specified for various combinations of highway type, rural/urban highway, shift, and vehicles per mile. For example, the model establishes standards of coverage for a day shift on a rural highway segment that range from one trooper for every 30 miles (if there are 5,000 or more vehicles per mile), to one trooper for every 100 miles (if there are fewer than 2,500 vehicles per mile).
- The Patrol has decided it will not cover about 37.7 percent of Arizona's highways because of budgetary constraints.

The results of the model suggest that the Arizona Highway Patrol should have 515 troopers. It actually has 443 road troopers, or 72 fewer. In the fiscal year 1985-86 budget, the Arizona legislature authorized an additional 30 road trooper positions. The model was used to help place these positions in areas where they were most needed to provide the level of coverage specified.

**The Virginia model develops standards for interstate and non-interstate patrol coverage.** The Virginia model was developed in 1984 at the request of the Virginia General Assembly. These objectives are explicitly addressed in the model:

- Patrol strength is determined on a county basis.
- Interstates are patrolled on the basis of density. Four levels of density are specified. For example, high density interstates are staffed at eight troopers for every 20 miles.
- Interstates are patrolled 24 hours a day.
- Patrol in non-interstate counties will be carried out by troopers allocated on the basis of proportional number of vehicle miles.

- If the number of troopers allocated to a non-interstate county is lower than a specific standard, troopers will be added to reach the standard.
- The standard of coverage for counties with a population under 10,000 is four troopers. This provides coverage on two shifts every day.
- The standard of coverage for counties with a population greater than 10,000 is five troopers. This provides coverage on three shifts.

To fully implement the staffing levels suggested by its model, Virginia would need 941 troopers, an increase of 13.6 percent over the current staff of 811 road troopers. Last year, the Virginia Assembly added 38 troopers to the Patrol as a result of the study. In addition, the Department has requested an additional 88 trooper positions in this year's budget. The Department is using the model as a guide and rationale for requesting and locating new trooper positions.

### Deciding What Level of Coverage Will Be Provided Has Implications For the Highway Patrol Staffing Levels

The auditors examined the implications for the Kansas Highway Patrol if it were staffed to provide certain levels of coverage, such as staffing at the level of coverage provided in 1980, staffing at the level of other states, providing coverage for all city highways, and setting minimum trooper standards for either highway segments or counties, as Virginia and Arizona have. The following table shows estimates of Kansas trooper strength if a number of objectives were adopted.

If Kansas were to . . .	trooper strength would . . .
. . . provide coverage based on the 1980 level of vehicle miles traveled and account for the impact of the Fair Labor Standards Act	be 302 road troopers, an increase of 52 troopers, or 21 percent.
. . . provide coverage based on the level provided in other states	range from 307 to 384 road troopers, an increase of 57 to 134 troopers, or 23 percent to 54 percent.
. . . provide the level of coverage suggested in the Arizona model	be 450 road troopers, an increase of 200 troopers, or 80 percent.
. . . provide the level of coverage suggested in the Virginia model	be 538 road troopers, an increase of 283 troopers, or 116 percent.
. . . provide coverage for all city highways	be 274 road troopers, an increase of 24 troopers, or 9.6 percent.

As the table indicates, the level of staffing required to provide the levels of coverage under the different objectives would range from 274 to 538 road troopers, increases of 24 to 283 troopers over the current level of 250 troopers.

### Conclusion

Kansas patrol coverage has declined in recent years and is lower than in other states. The Highway Patrol has developed a number of models that allow it to allocate existing staff, but these models do not specify what levels of coverage ought to be provided and the number of troopers needed to provide that level of coverage. Although no standards exist which would indicate the number of road troopers any state should have, other states have specifically identified a desired level of coverage, and from that have developed models for determining required staffing levels.

Until the Highway Patrol determines what level of coverage it wants to provide and what objectives it wants to meet, it cannot specify the number of troopers Kansas should have and why. The literature and the experience of other states provide a number of objectives that patrol coverage can be designed to meet. For example, the level of patrol coverage needed could be defined as a certain number of troopers per highway miles, per population, or per county. Once it has identified and adopted specific coverage objectives, the Patrol can determine the implications of those objectives on its staffing needs.

### Recommendation

The Kansas Highway Patrol should identify specific objectives regarding the level of patrol coverage to be provided in Kansas. At a minimum, these objectives should take the following into account:

- What highways will the Highway Patrol take responsibility for? To answer this question, the Patrol would need to decide whether it will cover only rural highways and interstates or whether it will also cover some or all city highways and interstates.
- What level of coverage will the Patrol provide? The Highway Patrol will need to consider measures that specify a desired level of coverage. The Patrol may need to consider establishing minimum standards of coverage or establishing benchmarks of coverage, such as a certain number of troopers for each 100,000 daily vehicle miles or for each 25 highway miles.
- When should the coverage be provided? The Highway Patrol must decide when it will provide coverage for two shifts, and when or whether it will provide 24-hour coverage on three shifts.

After these objectives and levels of coverage are identified, the Patrol will be in a position to determine the level of staffing needed to provide the desired level of coverage.



APPENDIX A  
Agency Response

# KANSAS HIGHWAY PATROL

*Service—Courtesy—Protection*

John Carlin  
Governor



Col. Bert Cantwell  
Superintendent

November 13, 1985

Mr. Meredith Williams  
Legislative Post Auditor  
Legislative Division of Post Audit  
Mills Building  
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Topeka, Kansas 66612-1285



Dear Mr. Williams

This is in response to your request for comments, corrections or clarifications we might desire to make relative to the recently completed study, Highway Patrol Staff Resources, by your agency.

Initially I would state that this agency is in general agreement with the report and the conclusions and recommendations contained therein. As you can well imagine, a topic of this scope does not lend itself to a simple solution, considering the many variables applicable.

It is anticipated that following an in-depth, deliberate review of the issues identified by the study, we will recommend that the Patrol assume primary traffic enforcement and service functions on all miles of rural state and federal highways and all miles of the interstate system within the state.

Having made this decision, and pending further guidance from the legislature, we will develop a staffing allocation model for presentation to the Legislative Post Audit Committee at such time as we are summoned to discuss the issue. You will, of course, be furnished a copy and other materials we might present at that time for prior review.

The efforts of your agency in this regard are sincerely appreciated.

Very truly yours

  
BERT CANTWELL  
Superintendent

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