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IDENTIFICATION OF HAZARDOUS LOCATIONS ON CITY STREETS

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ABSTRACT

The purpose of this study was to develop an effective method for identifying hazardous locations in Kentucky cities (over 2,500 population). Methods used in 45 other states were reviewed. Accident information for 69 of the 97 cities over 2,500 population was used to develop criteria for an identification method.

A Number Method was selected for initial identification of midblocks and intersections on arterial-collector streets and on urban freeways. A Rate-Quality Control Method was included in the form of a critical rate factor computed for each location. A set of critical rate curves was constructed for easy determination of hazardous locations. A computer program ranks sites according to the criteria proposed.

Volume 9 of the Highway Safety Manual provides guidance for identification and surveillance of hazardous locations on state and local levels *(1)*. A new program is currently being implemented by the Kentucky Bureau of Highways to identify hazardous locations on rural highways. It involves consideration of accident severity (using the Equivalent Property Damage Only Method), a Rate-Quality Control Method, and a Number of Accidents criterion for spots and sections. Also, state police input, citizen complaints, and a traffic fatality are considered to warrant a thorough office evaluation, and possibly a field inspection *(2)*.

The study described herein was recommended to the Kentucky Bureau of Highways for identifying hazardous locations on city streets. The criteria for identifying hazardous locations in urban areas should not necessarily be similar to rural criteria. City streets have different vehicle speeds and patterns, and urban accidents are generally less severe and more numerous than rural accidents. For example, there were about 20,000 traffic accidents within the city limits of Louisville in 1974 compared to about 23,000 state police reports on all rural, state-maintained highways in Kentucky that year. About 38 percent of the accidents in rural areas involved injuries or fatalities. Urban accidents resulted in injuries or deaths in about 15 percent of the cases.

The number of accidents per capita per year in Kentucky's urban areas is fairly constant at about 0.05. Although the overall risks of involvement are about the same for all populations, greater traffic volumes tend to compound the number of accidents in the larger cities. Therefore, the accident criteria employed in identifying hazardous sites should depend on the size of the city.

IDENTIFICATION METHODS IN OTHER STATES

State officials were asked to specify the methods they used to identify hazardous urban locations. Resposes to inquiries were received from 43 of 49 states. Several methods now used by state transportation agencies for identifying hazardous urban locations include:

1. number of accidents method,
2. accident rate method,
3. severity methods, including the number of equivalent property damage only accidents (EPDO) method,
4. EPDO rate method,
5. rate-quality control method,
6. intersection congestion, and

7. combinations of two or more of the above methods.

The application of particular methods varies from state to state depending on traffic volumes, city sizes, highway facilities, and accident problems. To use any of the methods, a critical accident indicator is defined and all locations with accident histories above that value are considered for investigation. Each state sets its own critical value depending on the number of locations that can be handled. The initial value is affected by money, time, and manpower available for investigation and improvement of locations. The descriptions of these methods used in other states pertains to urban areas only and often differs for rural areas.

The number of accidents method utilizes a listing of hazardous locations ranked by the numbers of accidents occurring during a given period of time. It is the simplest and most common method and is used by 25 states, usually in combination with other methods (see Table 1). In many states, the number method is used to identify an initial group of locations which are later ranked by priority using another method. Number criteria vary from 3 accidents per year in Utah to 30 accidents per year in densely populated areas in Michigan. Other number criteria include 10 per year in South Dakota, 5 per year in New Jersey and Wisconsin, and 7 per year in Alabama. These numbers vary in many states depending on highway system, type of location (intersection, midblock, railroad crossing, etc.), and city population.

Locations may be compared by their accident rates, a quantity incorporating not only accident experience but also traffic exposure. Rates are expressed in accidents per million (or hundred million) vehicles for intersections and other spot locations. The rate method is used in 16 states, usually in conjunction with number or severity methods. Twice the statewide average rate is the criteria for identifying hazardous sites in West Virginia, Maryland, and Louisiana. In Arizona, the top 100 intersections and the top 40 midblocks are identified based on accident rates. The critical accident rate varies in Arkansas, Montana, and Oregon depending on highway system, region of the state, or city size.

Nine states identify locations in urban areas based at least partly on the severities of accidents. One such method is the equivalent property damage only (EPDO) method which is being implemented for rural Kentucky highways. The following formula was developed based on Kentucky accident distributions and costs *(3)*:

$$EPDO = 9.5\ (F + A) + 3.5\ (B + C) + PDO$$

where	EPDO	=	number of equivalent property damage only accidents,
	F	=	number of fatal accidents,
	A	=	number of A-type injury accidents,
	B	=	number of B-type injury accidents,
	C	=	number of C-type injury accidents, and
	PDO	=	number of property damage only accidents.

A slight variation in this formula is used in North Carolina for computing EPDO, and it is divided by traffic volume to give EPDO rate. Priorities are assigned to urban and rural locations based on EPDO rate *(4)*. Oklahoma assigns a severity number of two for each PDO accident and a number of four to each fatal or injury accident and uses a "severity index" of eight or greater as the criteria for identifying a location as hazardous *(5)*. A severity index in Delaware is computed for locations incorporating ADT (average daily traffic), accident costs, and numbers of fatal, injury, and PDO accidents.

Many states have revised their methods in recent years to include the Rate-Quality Control Method. This method utilizes a statistical test to determine whether the accident rate of a location is abnormally high compared to locations of similar characteristics. The formula is based on the commonly accepted assumption that accident occurrences are approximated by the Poisson distribution. The formula is usually expressed as

$$CR = \lambda + k\sqrt{\lambda/m} + 1/2m$$

where	CR	=	critical rate for a particular location (in accidents per million vehicles),
	λ	=	overall average accident rate for locations of like characteristics (in accidents per million vehicles),
	m	=	number of vehicles traversing the location (expressed in millions), and
	k	=	a probability factor determined by the level of statistical significance desired for the equation.

The k value is determined by the level of probability, P, that an accident rate above λ is abnormal, that is, sufficiently large such that the high accident rate cannot be reasonably attributed to random occurrences. The prime determinant of the constant, k, is the number of hazardous locations that can be handled by a particular spot-improvement program. Selected values of k are:

P	0.995	0.975	0.950	0.925	0.900
k	2.576	1.960	1.645	1.440	1.282

The Rate-Quality Control Method indicates whether a particular location is "critical", but priority ranking of locations is not easily achieved without altering the method. Maine and Florida use a Critical Rate Factor for ranking locations by degree of hazard. It is calculated by dividing the accident rate of a location by the critical rate as determined from the Rate-Quality Control Method. Thus, a location which barely qualifies as critical has a critical rate factor of 1.0. Locations can then be compared in a manner more desirable than by just a pure accident rate in order of priority. There are currently 12 states which use the Rate-Quality Control Method for identifying hazardous sites in urban areas.

Combinations of two or more methods are used by 20 states. The number-rate method is used by seven states and is usually applied by selecting a number as the initial criterion and then ranking the resulting locations in order by accident rate. States which use the number method with the Rate-Quality Control Method are Illinois, New York, Missouri, and Utah. Rhode Island uses accident numbers, rates, and intersection congestion to identify hazardous urban sites. Combinations of numbers, rates, and severities are used in four states, while two states leave the identification of urban sites to local authorities. Routine field inspections are conducted at all fatal-accident locations in several states.

DEVELOPMENT OF METHODS FOR KENTUCKY CITIES

The simplest, most widely used method of identifying hazardous locations is the Number Method. It allows quick testing of midblocks and intersections by comparing the number of accidents with some set criterion to determine whether further study of the location is warranted. The Number Method is recommended as one method for identifying hazardous intersections and midblocks in Kentucky cities.

Accident rates have been shown to be valuable in comparing accident experience relative to traffic volumes. However, pure accident rates may be misleading. In many cases, the highest rates exist at locations with the lowest traffic volumes, even though only one or two accidents have occurred during the previous year. The Rate-Quality Control Method eliminates this problem by requiring higher accident rates for low-volume roads. If statewide average accident rates can be calculated for roads with similar characteristics, the Rate-Quality Control Method can be used in urban areas. It is recommended for Kentucky cities along with the Number Method.

Classification of Cities and Locations

Cities over 2,500 population in Kentucky are considered urban. Local police agencies investigate accidents and maintain accident information files. There are 97 such cities ranging from Lakeside Park with 2,511 people to Louisville with a population of about 362,000 *(6)*. If locations in every city were considered under the same criteria, virtually no locations in the small and medium cities would be identified as hazardous and few or no improvements would be made in a majority of Kentucky's cities. To overcome this problem, intersections and midblocks should be compared for cities of roughly equal populations. The 97 cities were grouped as shown in Table II.

Classification of locations is necessary for proper application of the Rate-Quality Control formula, since the value for λ represents the average accident rate for streets of like characteristics. The roadway classifications recommended are local streets, arterial-collector routes, and urban freeway. Since few, if any, of the most hazardous locations occur on local streets, they need not be evaluated by the recommended methods. This study will be concerned only with arterial-collector routes and urban freeways. These two urban street classifications will be easier to use when applying the Rate-Quality Control formula. Arterial-collector locations will be classified as intersection or midblock.

Compilation of Accident Records

To determine the critical number of accidents for hazardous locations, accident information in Kentucky's cities was obtained for 1973 and 1974. The total accidents per city in 1974 ranged from 172 in Group 6 (cities from 2,500 to 5,000 population) to about 20,000 in the only Group 1 city (Louisville). Injury and fatal accidents also showed significantly larger numbers for larger cities. Figure 1 shows the relationship between city population and accidents.

The next step in determining accident criteria was to calculate the average number of accidents for midblocks and intersections. Since the average number of accidents was known for each city group, the percent of each accident type had to be determined. Accidents in parking lots, private driveways, and local streets were eliminated. Only accidents on arterial-collector streets and freeways were included. For Groups 1 and 2, the number of accidents on freeways and arterial-collector streets was determined. Although some interstates passed within the limits of several smaller cities, no interstates in other city groups were used for intra-city travel, because only one interchange was provided for access to each of these smaller cities. Table III gives a summary of accidents in Kentucky cities for 1974.

Number of Accidents Criteria

To derive the criteria for the number of accidents, the average accidents per location were computed. The number of midblock and intersection accidents on arterial-collector routes was used along with the number of locations in each city (counted from city maps) to obtain average accidents per location. Average accidents per mile of freeway were also computed. Identification of hazardous locations on freeways differs from arterial-collector routes because no midblocks or intersections were used. While accidents on any length of freeway may be studied, a sliding 0.5-mile (0.81-km) section is recommended. The 0.5-mile (0.81-km) segment is long enough to include the influence of most horizontal curves and interchanges. However, longer section lengths can be used where desirable.

To choose a critical number of accidents (A_c) based on the Poisson distribution, the Rate-Quality Control formula was again used. The average statewide traffic volume was found for each type of location, and a new form of the equation was utilized. For average traffic volume conditions, the equation becomes

$$A_c = A_A + k\sqrt{A_A} + 1/2$$

where A_A = average number of accidents for a highway type.

Because of the desirability of high confidence in a method, the 0.995-probability level (k = 2.576) is recommended for identifying hazardous urban locations. It may be altered if the identification of more or fewer locations is desired in the future. Critical annual numbers of accidents on arterial-collector midblocks are 11, 10, 7, 5, 4, and 4 for Groups 1 through 6, respectively. Intersection criteria are 19, 14, 10, 7, 6, and 4 accidents for the six groups. Accident criteria for freeways increase from 10 to 439 on segments of 0.1 mile (0.16 km) to 10 miles (16 km) in Group 1 and from 8 to 342 accidents in Group 2 as given in Table IV.

Rate-Quality Control

To apply the Rate-Quality Control Method to arterial-collector streets and urban freeways, the average accident rates on these facilities were determined. The average rates for intersections and midblocks are shown for arterial-collector routes in Table V. Average daily traffic volumes at midblock locations ranged from 4,002 in Group 6 cities to 11,781 in Group 1 (Louisville). About 6,000 volume counts were used in determing these volumes. Midblock accident rates ranged from 0.55 to 1.25 accidents per million vehicles. Intersection rates were similar for some groups and ranged from 0.41 to 1.19 as city population increased (Table V).

Accident rates on city freeways were computed in terms of accidents per million vehicle miles (1.6 million vehicle kilometers). This was accomplished using the number of freeway accidents in city Groups 1 and 2 along with freeway AADT (average annual daily traffic) and the number of freeway miles (kilometers) in each group. Average freeway accident rates for Groups 1 and 2 were 1.97 and 3.18, respectively. The average number of accidents per mile (1.6 kilometers) was 38.8 and 29.7 in the two groups, and daily freeway volumes averaged 54,091 (Group 1) and 25,589 (Group 2).

Using the average, statewide accident rates for arterial-collector streets and freeways, the Rate-Quality Control formula was applied to each of the six city groups. The values of average accident rates (λ) and k were used in the formula with various annual traffic volumes (m) to yield a set of critical rate curves for midblocks and intersections on arterial-collector streets. These intersection curves are given in Figure 2.

The critical curves for arterial-collector routes are used by entering the x-axis with the appropriate AADT of a particular location. Proceed vertically upward to the curve for the city group. Move horizontally to the left and read the accident rate on the y-axis. If the actual accident rate for a location equals or exceeds this critical rate during a 1-year period, the location has a critical accident rate (with 99.5-percent probability). If it does not exceed the critical rate, then the rate is not critical.

Since freeway traffic was expressed in terms of million vehicle miles (vehicle kilometers) instead of million vehicles, the values of m in the formula must include the units of highway length. For example, an AADT of 20,000 on a 0.5-mile (0.81-km) section corresponds to 7.3 million vehicles per year, which is equal to 3.65 million vehicle miles (5.88 million vehicle kilometers). Since various lengths of freeway may be studied, a set of critical rate curves was constructed for various lengths of freeway for Groups 1 (Figure 3) and 2. To use these curves, the appropriate freeway volume is found on the x-axis. A vertical line upward crosses the appropriate curve for section length. A horizontal line indicates the critical accident rate on the left side of the graph. This critical rate is then compared with the actual accident rate of the freeway section. Curves for other highway lengths can be constructed, or interpolation can be applied between curves if necessary.

Critical Rate Factor

The Rate-Quality Control Method shows if a location has a critical accident rate, but a priority listing of hazardous locations is desired. Several states divide the accident rate at a location by its critical rate to give a critical rate factor. The degree of hazard of midblocks in one city could then be compared with intersections in another city. The critical rate factors can show which locations are most deserving of improvement based on the Rate-Quality Control Method. The critical rate factor can be used for urban freeways as well as arterial-collector streets.

Combined Methods

Combining the Number Method and the Critical Rate Factor, a final priority listing of locations can be obtained. Locations in such a priority listing could include one city, a group of cities, or all cities. Locations included should be first ranked in order by number of accidents. For n locations, priority numbers may be assigned from 1 to n for locations with the highest to lowest number of accidents, respectively. All locations (even locations with critical rate factors below 1.0) could be assigned priority numbers from 1 to n based on critical rate factors (with the highest value assigned a 1). The two priority numbers for each location could then be added and the final listing will give the highest priority to the location with the least ranking number. For example, a location having the highest number of accidents and the highest critical rate factor will have a value of 1 + 1 = 2 and would be rated as the most hazardous.

This priority method does not necessarily present engineers with a list of locations which should be improved. It does indicate which locations deserve field investigations. More locations should be investigated than can be improved. Improvement costs can then be compared to expected road-user benefits (from projected accident reductions) by benefit-cost or dynamic programming techniques *(7)*. Available funds for urban street improvements can then be spent in an optimal manner.

RECOMMENDATIONS AND APPLICATION OF METHODS

A Number Method is recommended for initial identification of midblocks and intersections on arterial-collector streets and on urban freeways. Rate-Quality Control Methods are also recommended in the form of a critical rate factor for each location. A set of curves was constructed for easy determination of critical locations, and a computer program was written to accomplish all necessary steps in the ranking process.

Implementation requires that (1) the population group of each city must be known and (2) accident reports received from the cities be coded and put on master tapes. A sorting program should be written to print out all arterial-collector locations -- both midblocks and intersections -- which have a critical number of accidents for cities in each group. For urban freeways, all 0.5-mile (0.81-km) sections exceeding the 31 or 25 criteria (for Groups 1 and 2, respectively) should also be identified, if desired. These freeway and arterial-collector locations comprise the sample of locations to be analyzed further. Traffic volumes for those locations should be obtained from the urban traffic volume file, which should be updated annually.

Each location to be processed through the ranking program requires the following inputs:

1. city,
2. county,
3. location name,
4. intersection or midblock,
5. group number (1 through 6),
6. number of accidents, and
7. average daily traffic.

A computer program was written to give a priority listing for cities individually or collectively in terms of their respective accident criteria. All locations which meet the number criteria will be included in this priority listing even if the critical rate factor is below 1.0. A flow chart of the recommended procedure is given in Figure 4.

METHOD TESTING

The methods proposed were applied to 1974 accident data from several small cities to determine whether or not the criteria would yield a reasonable sample of hazardous locations. Fort Wright, a Group 6 city, produced seven hazardous locations based on the criterion for number of accidents. The 1974 daily traffic volumes of these locations were obtained and accident rates were determined for each location. Critical rates were then calculated using the Rate-Quality Control formula, and critical rate factors were determined for each location. The intersection of Dixie Highway and Kyles Lane had a critical rate factor of 1.62, the highest among the seven locations. The locations were ranked first by number of accidents and then by critical rate factor. The final priority showed two intersections which were considered to be equally hazardous. In such a case, the location with the most accidents would be assigned the higher priority. Details of the priority listing in Fort Wright are given in Table VI.

A similar priority listing of locations was made in 20 other Kentucky cities. A plot was made of the average number of intersections which had various numbers of accidents annually (Figure 5). For example, the average city in Group 3 had 20 intersections meeting the criterion of ten or more accidents per year. Group 2 cities had 34 hazardous intersections (14 or more accidents) per city. There were 116 locations in Louisville exceeding the criteria of 19 accidents per year (in 1974) and 72 intersections and 28 or more accidents.

Because the accident criteria for midblocks and intersections were chosen based on average values, the number of midblocks chosen as hazardous for all Kentucky cities is approximately equal to the number of hazardous intersections. The total number of locations which will be identified as hazardous by the Number Method was calculated to be about 1,400 annually, excluding urban freeways. This corresponds to an average of about 14 locations per city. Using priority ratings by the recommended methods, the locations most worthy of investigation can be selected.

The primary determinant of accident criteria for these methods in the future is the number of locations which can be investigated each year. Estimates should be made concerning the manpower and money available for making field investigations and street improvements in urban areas. The accident criteria for hazardous locations should be revised when necessary so that a manageable number of hazardous locations will be identified annually. These recommended methods are currently being implemented by the Traffic Division of the Kentucky Bureau of Highways.

FOOTNOTES

1. *Identification and Surveillance of Accident Locations - Volume 9*, **Highway Safety Program Manual**, FHWA, Washington, D.C., February 1974.
2. Charles V. Zegeer, *Identification of Hazardous Locations on Rural Highways in Kentucky*, Research Report 392, Kentucky Bureau of Highways, June 1974.
3. Kenneth R. Agent, *Evaluation of the High-Accident Location Spot-Improvement Program in Kentucky*, Research Report 357, Kentucky Bureau of Highways, February 1973.
4. *Urban Highway Safety Program - 1972,* Volume I, North Carolina State Highway Commission, 1972.
5. **Procedure Manual: Highway Safety Improvement Program**, Oklahoma Department of Highways, December 1972.
6. **Kentucky Deskbook of Economic Statistics**, Kentucky Department of Commerce, 1972.
7. Jerry G., Pigman, Kenneth R. Agent, Jesse G. Mayes, and Charles V. Zegeer, *Optimal Highway Safety Improvement Investments by Dynamic Programming*, Research Report 398, Kentucky Bureau of Highways, August 1974.

BIOGRAPHICAL SKETCHES

Mr. Zegeer is a research engineer for the Kentucky Bureau of Highways. He received his B.S.C.E. from Virginia Polytechnic Institute and State University and his M.S.C.E. from the University of Kentucky. He is a registered professional civil engineer, an associate member of the Institute of Transportation Engineers, and a member of the Pedestrian Committee on the Transportation Research Board. He has been involved in research on traffic noise, highway planning, evaluation of traffic control devices, and analysis of accident records.

Dr. Deen is Assistant Director of Research for the Kentucky Bureau of Highways and Associate Professor (Adjunct) of Civil Engineering at the University of Kentucky. He received his B.S.C.E. and M.S.C.E. from the University of Kentucky and a Ph.D. from Purdue University. He is a registered professional civil engineer and land surveyor. He is a member of the Institute of Transportation Engineers, the American Society of Civil Engineers, the American Society for Testing and Materials, the Transportation Research Board, and the National Society of Professional Engineers. He has been involved in research on soil mechanics, pavement design, and traffic safety and operations.

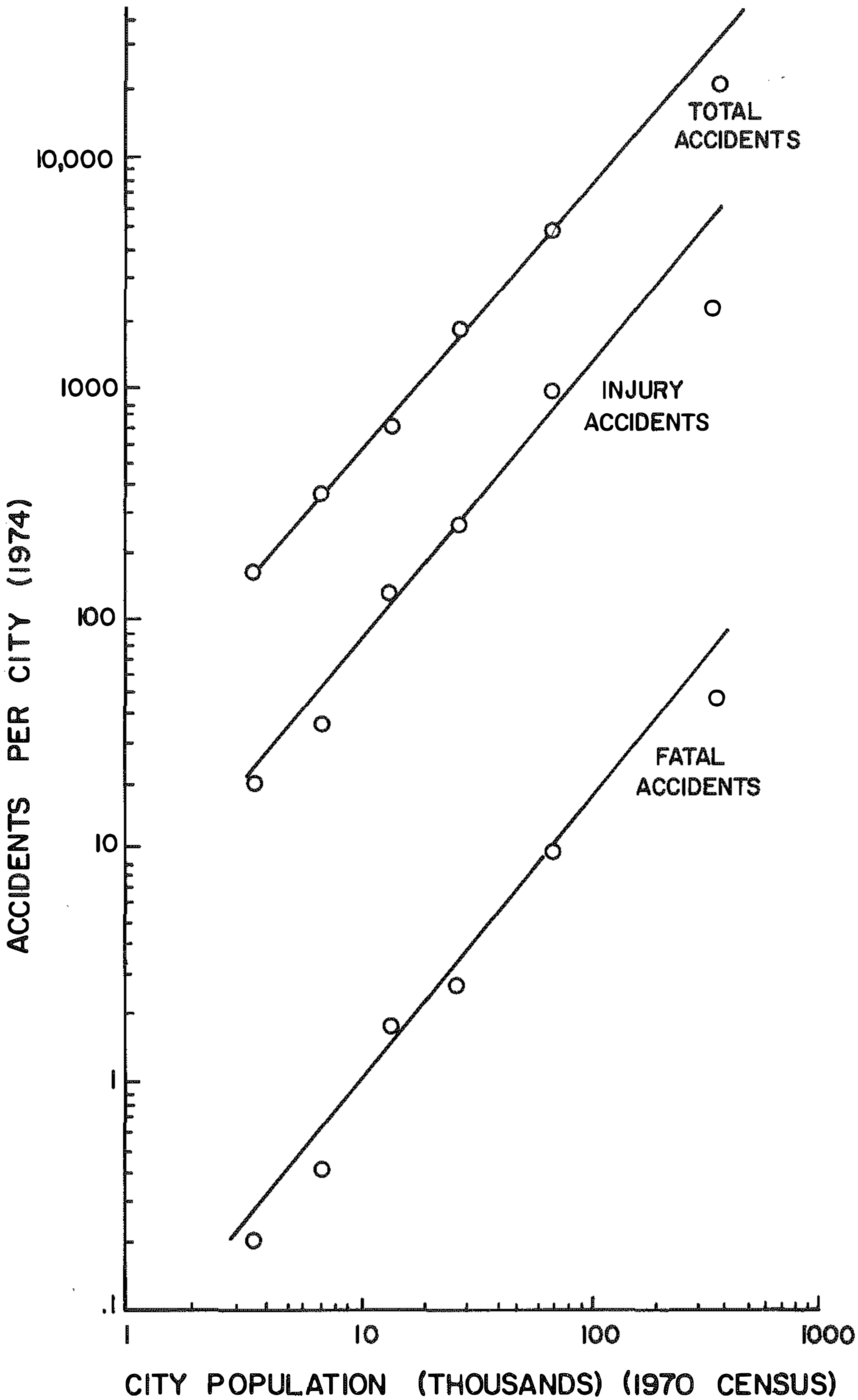


Figure 1. Relationship between City Population and Accidents.

Figure 2. Critical Curves for City Intersections on Arterial-Collector Streets (P = 0.995).

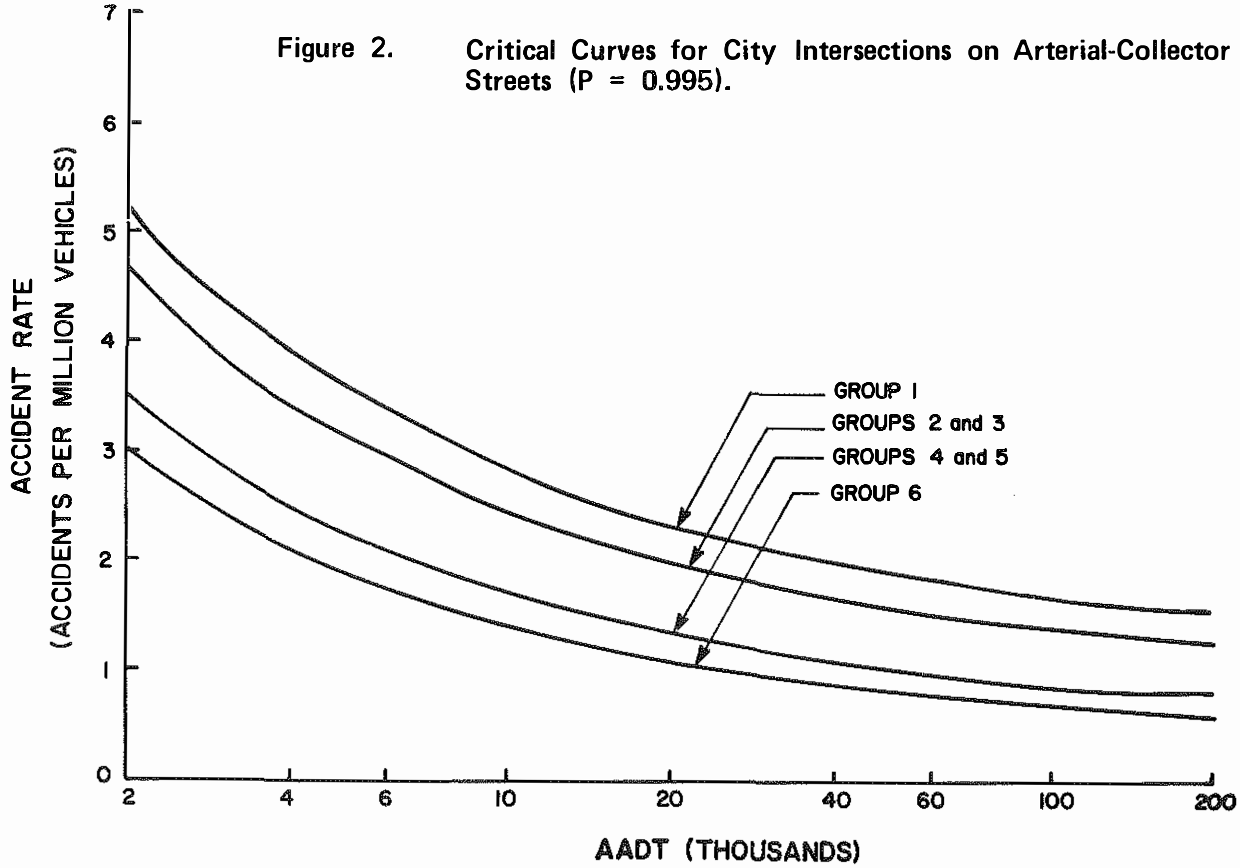
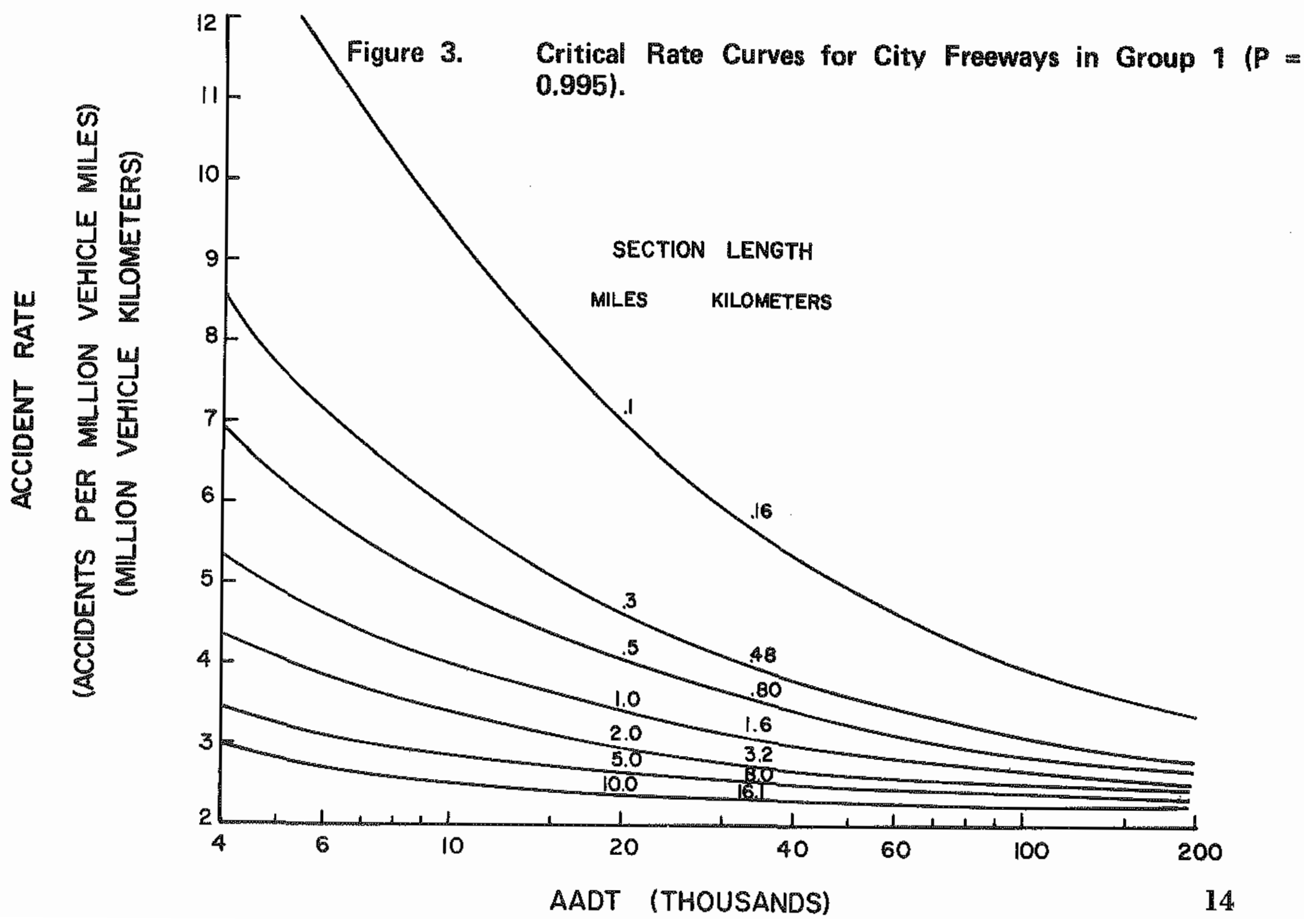


Figure 3. Critical Rate Curves for City Freeways in Group 1 (P = 0.995).



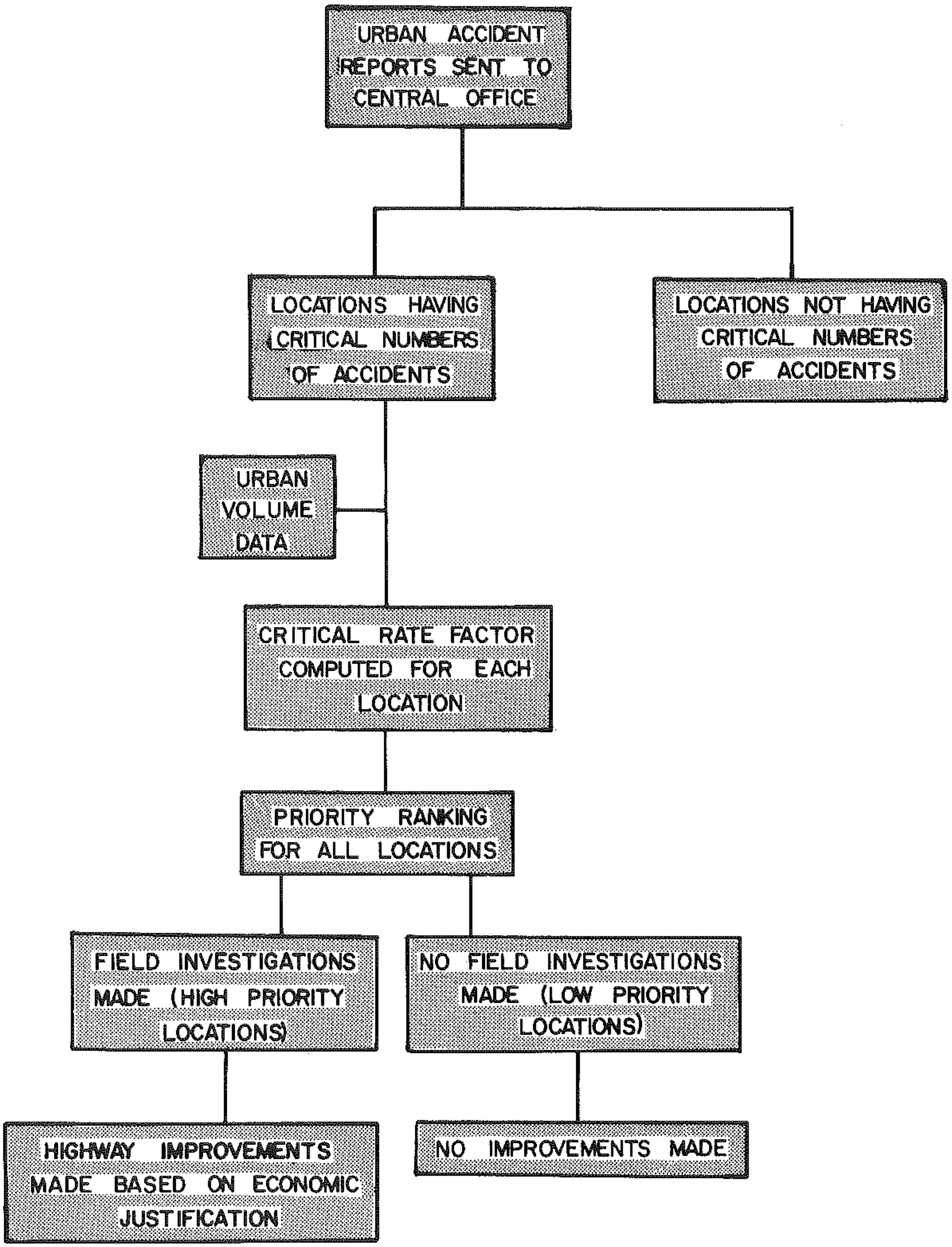


Figure 4. Flow Chart of Recommended Procedure.

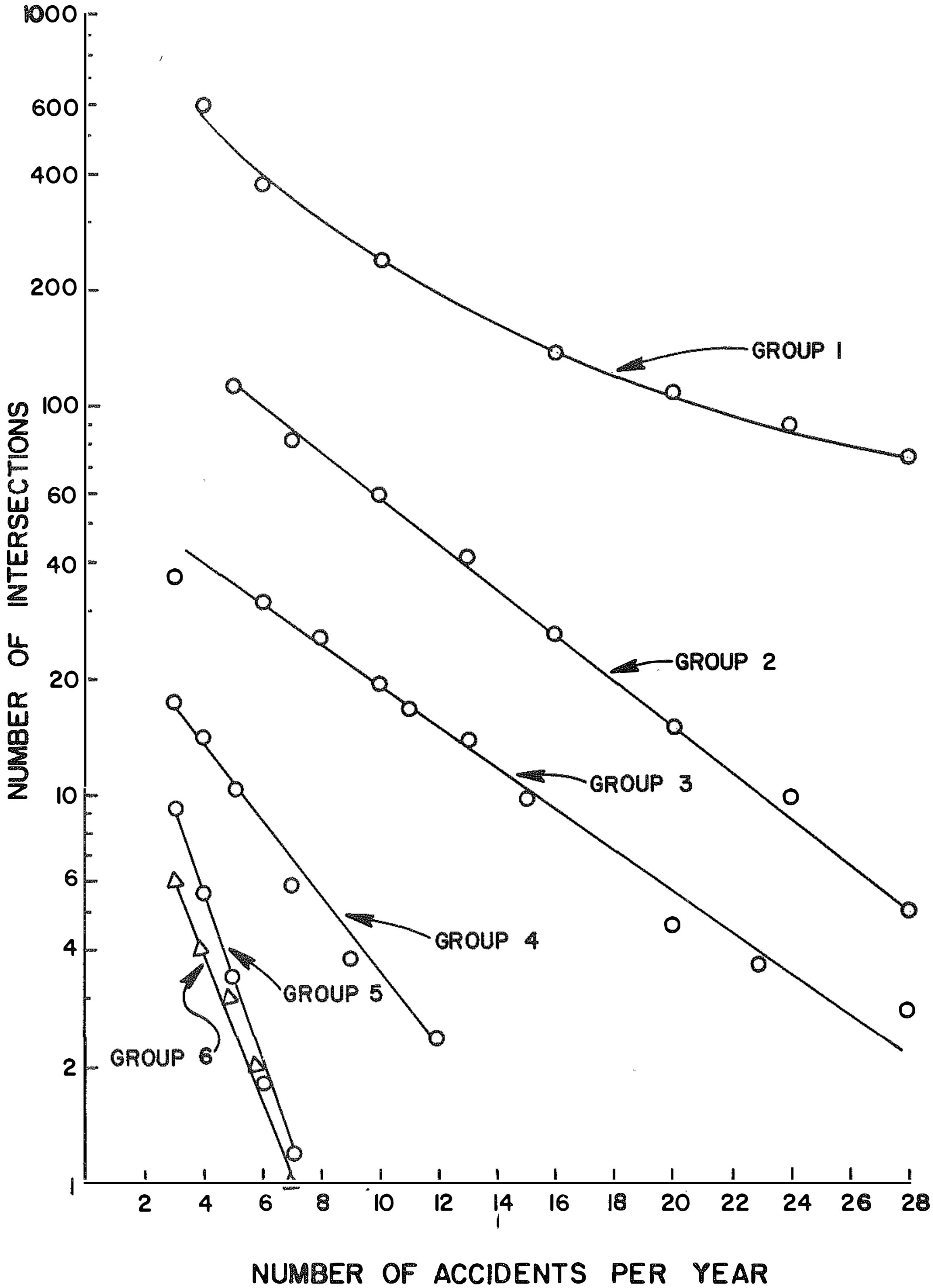


Figure 5. Effect of Number Criteria on Intersections.

TABLE I. METHODS USED BY STATE HIGHWAY AGENCIES TO IDENTIFY HAZARDOUS SITES IN URBAN AREAS

METHOD	NUMBER OF STATES
Number Method	7
Rate Method	4
Severity Method	1
Rate-Quality Control Method	7
Number and Severity Method	2
Number and Rate Method	7
Rate and Severity Method	1
Number and Rate-Quality Control Method	4
Number, Rate, and Severity Method	4
EPDO Rate Method	1
Severity and Rate-Quality Control Method	1
Congestion, Rate, and Number Method	1
Identified by Each Locality	2
Method under Development	2
Not Stated	6
Total	50

TABLE II. POPULATION GROUPS OF CITIES

POPULATION GROUP	POPULATION	NUMBER OF CITIES
1	Over 200,000	1
2	50,000 to 200,000	3
3	20,000 to 50,000	7
4	10,000 to 20,000	15
5	5,000 to 10,000	28
6	2,500 to 5,000	43

TABLE III. NUMBER OF URBAN ACCIDENTS PER CITY

POPULATION GROUP	FREEWAY ACCIDENTS	ARTERIAL-COLLECTOR ACCIDENTS INTERSECTION	ARTERIAL-COLLECTOR ACCIDENTS MIDBLOCK	LOCAL STREET AND PARKING LOT ACCIDENTS	ALL ACCIDENTS
1	1,716	10,195	5,018	3,022	19,991
2	261	2,323	1,436	766	4,786
3	0	897	538	359	1,794
4	0	296	186	207	689
5	0	149	76	122	347
6	0	74	38	60	172

TABLE IV. AVERAGE AND CRITICAL ACCIDENTS ON URBAN FREEWAYS

SECTION LENGTH (MILES)	SECTION LENGTH (km)	AVERAGE NUMBER OF ACCIDENTS GROUP 1	AVERAGE NUMBER OF ACCIDENTS GROUP 2	CRITICAL NUMBER OF ACCIDENTS[a] GROUP 1	CRITICAL NUMBER OF ACCIDENTS[a] GROUP 2
0.1	0.16	3.9	3.0	10	8
0.2	0.32	7.8	5.9	16	13
0.3	0.48	11.6	8.9	21	17
0.4	0.64	15.5	11.9	26	21
0.5	0.81	19.4	14.9	31	25
1	1.6	38.8	29.7	55	44
2	3.2	77.6	59.4	101	80
3	4.8	116.4	89.1	145	114
4	6.4	155.2	118.8	188	147
5	8.1	194.0	148.5	230	180
6	9.7	232.8	178.2	273	213
7	11.3	271.6	207.9	315	246
8	12.9	310.4	237.6	356	278
9	14.5	349.2	267.3	398	310
10	16.1	388.0	297.0	439	342

[a]Calculated from $A_c = A_a + 2.576 \sqrt{A_a} + 1/2$

TABLE V. ACCIDENT RATES FOR ARTERIAL-COLLECTOR LOCATIONS

POPULATION GROUP	AVERAGE ANNUAL DAILY TRAFFIC MIDBLOCKS	AVERAGE ANNUAL DAILY TRAFFIC INTERSECTIONS	ACCIDENTS PER LOCATION MIDBLOCKS	ACCIDENTS PER LOCATION INTERSECTIONS	ACCIDENT RATE (ACCIDENTS PER MILLION VEHICLES) MIDBLOCKS	ACCIDENT RATE (ACCIDENTS PER MILLION VEHICLES) INTERSECTIONS
1	11,781	23,562	5.0	10.2	1.16	1.19
2	8,990	17,980	4.1	6.6	1.25	1.01
3	6,520	13,040	2.7	4.5	1.13	0.95
4	5,800	11,600	1.5	2.4	0.71	0.57
5	4,811	9,622	1.0	1.9	0.57	0.54
6	4,002	8,004	0.8	1.2	0.55	0.41

TABLE VI. PRIORITY RANKING OF HAZARDOUS LOCATIONS IN FORT WRIGHT (1974)

LOCATION	INTERSECTION OR MIDBLOCK	NUMBER OF ACCIDENTS	ADT	ACCIDENT RATE[a]	CRITICAL RATE[a]	CRITICAL RATE FACTOR (C.R.F.)	PRIORITY NUMBER BY ACCIDENT NUMBER	PRIORITY NUMBER BY C.R.F.	PRIORITY NUMBER TOTAL OF TWO COLUMNS	FINAL PRIORITY
Dixie Highway at Kyles Lane	I	15	30,324	1.36	0.95	1.43	1	2	3	1
Dixie Highway at Ashwood Court	I	12	18,005	1.83	1.13	1.62	2	1	3	2
Dixie Highway between St. Johns Rd. and Fortside Drive	M	8	18,413	1.19	1.36	0.87	3	4	7	3
Highland Park at Kyles Lane	I	7	14,842	1.29	1.21	1.07	4	3	7	4
Kyles Lane at Henry Clay Ave.	I	5	16,821	0.81	1.16	0.70	5	5	10	5
Sleepy Hollow Road at Dixie Highway	I	5	21,538	0.64	1.06	0.60	5	6	11	6
Dixie Highway between Sleepy Hollow Road and Kyles Lane	M	4	18,413	0.60	1.36	0.44	7	7	14	7

[a]Accidents per million vehicles