PEDESTRIAN ACCIDENTS IN KENTUCKY

by

C. V. Zegeer and R. C. Deen

ABSTRACT

Pedestrian accident data in Kentucky were analyzed for 1972 and 1973 on a rural, urban, and statewide basis. Results showed that about 1500 pedestrian accidents occur in Kentucky each year. About 30 percent of the pedestrian accidents in rural areas and four percent in urban areas are fatal. Although about 78 percent of Kentucky's pedestrian accidents occur in urban areas, over 62 percent of the pedestrian fatalities occur in rural areas. Specific characteristics of pedestrian accidents were identified and related to human, environmental, and time factors. Highway and street improvements and safety measures generally considered to be effective in minimizing pedestrian accidents are summarized.

Research Report
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by

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INTRODUCTION

When a pedestrian is hit by a motor vehicle, he is usually injured or killed; there is no protective cushion to absorb the impact. The high concentration of pedestrians in urban areas, coupled with heavy vehicle traffic, often results in large numbers of pedestrian accidents. In rural areas, there are considerably fewer pedestrians but traffic speeds are higher and, therefore, accidents are more often fatal.

Pedestrain fatalities have increased in the United States from about 7,800 in 1960 to approximately 10,500 in 1973 *(1)*. There are 120,000 pedestrian accidents each year. Total traffic accidents in the US number about 17 million annually with about 56,000 fatalities. Thus, pedestrian accidents account for less than one percent of the total traffic accidents nationwide but over 18 percent of all traffic fatalities. Total accident costs from pedestrian accidents amount to over $1.2 billion annually (using $3,400 per injury and $82,000 per fatality)*(2)*.

This report presents in-depth information on pedestrian accidents and fatalities which occurred in Kentucky during 1972 and 1973. A comparison of urban and rural pedestrian accidents and an analysis of urban accidents in nine of the largest cities in Kentucky is also presented.

PROCEDURE

To obtain information on rural pedestrian accidents, files of state-police-reported rural accidents for 1972 and 1973 were searched. There were about 340 pedestrian accidents each year. To study pedestrian accidents in urban areas, data were obtained directly from local police departments of cities -- Louisville, Lexington, Covington, Owensboro, Bowling Green, Paducah, Ashland, Newport, and Frankfort. The populations of these cities range from about 362,000 (Louisville) to about 22,000 (Frankfort). The accident information was analyzed to determine major causes and patterns of pedestrian accidents.

FATAL PEDESTRIAN ACCIDENTS

In 1973, there were an estimated 1500 pedestrian accidents in Kentucky in which 167 pedestrians died. This is a pedestrian death rate of 5.2 deaths per 100,000 population compared to the national rate of 5.0 *(1)*. The pedestrian death rate in Kentucky has exceeded the national rate in nine of the last 14 years since 1960. The number of pedestrian deaths in Kentucky has varied between 129 and 167 annually since 1960 *(3)*. Total costs for pedestrian accidents in Kentucky amounted to over $18 million in 1973.

An in-depth study of fatal pedestrian accidents in Kentucky necessitated the inspection of each accident report completed by the investigating police officers. Because of data storage restrictions in

the Kentucky State Police Office of Accident Records, only two years of fatal accident report forms were readily available for analysis. The number of pedestrian fatalities in Kentucky was 154 in 1972 and 167 in 1973. This sample was assumed to be representative of past pedestrian fatalities in Kentucky.

Effects of Time

The relationships between time of day and the percentage of pedestrian fatalities and percentage of all motor vehicle fatalities in Kentucky show a reasonable similarity. Both relationships show a maximum of occurrences at approximately 4:00 p.m. and a minimum at 4:00 a.m. However, there is a large increase in pedestrian fatalities between 7:00 and 8:00 p.m., corresponding either to dusk or early nighttime hours when the pedestrian is particularly hard to discern. Much of the pedestrian activity normally subsides after 10:00 p.m.

The relationship between day of the week and the percentage of pedestrian fatalities shows a broad peak from Wesnesday through Saturday. Occurrences of all motor vehicle fatalities peaks very sharply on Saturdays with high percentages of fatalities also occurring on Fridays and Sundays. Pedestrian fatalities are more evenly distributed through the week; the exposure of school children to motor vehicles before and after school on weekdays, combined with weekday pedestrian shopping trips, tends to smooth the curve of pedestrian fatalities over the week. Mondays and Tuesdays have the lowest percentages of pedestrian and total traffic fatalities.

Fatalities by months of the year are shown in Figure 1. The curves for pedestrian and total traffic fatalities agree closely from January to June. There is considerable variation between the curves from July to December; in September, total traffic fatalities exceeded pedestrian fatalities by about three percent. This difference could possibly be a result of nationwide campaigning every September by local school officials (and the American Automobile Association) to watch for school children.

Environmental Conditions

Environmental conditions associated with fatal pedestrian accidents are of particular importance because they give the engineer information that may be helpful in deciding what physical characteristics of the roadway may contribute to pedestrian fatalities. Particular environmental conditions considered herein are road defects, road character, weather and light conditions, type and class of road, and area or county where pedestrian fatalities are most prevelant.

Of the 321 pedestrian fatal reports examined, only 12 indicated any road defect which could have contributed to the accident. Of the 12 road defects, five were defective shoulders and two were road construction zones. One defect was indicated as holes, ruts, or bumps in the roadway. Other defects included a dirt road and mud, sand, and other loose material on the road surface.

The most common characteristic of pedestrian fatality locations was a straight, level roadway (41

percent). Other types with appreciable fatalities were intersections (20 percent), straight roads on a grade (14 percent), and alleys and driveways (13 percent). The remaining fatalities occurred on curves (8 percent), in parking lots (2 percent), and at interchanges and bridges (1 percent each).

A summary of weather and light conditions showed that most (52 percent) pedestrian fatalities occurred during daylight hours (46 percent on dry pavements and 6 percent on wet pavements). Lighted streets accounted for only 12 percent (7 percent on dry and 5 percent on wet pavements) and dark street conditions existed during 36 percent (28 percent on dry and 8 percent on wet pavements) of the pedestrian fatalities. Dry highway surfaces were reported in 81 percent of these accidents.

The percentage of fatalities by location type (rural, small urban, and large urban) and number of lanes is shown in Table 1. Two-lane roads accounted for 75 percent of these fatalities, and about 61 percent of them were in rural areas. Interstates and parkways accounted for 9 percent even though pedestrians are prohibited on these facilities.

The 120 Kentucky counties were grouped by nine population groups. The number of fatalities per county, the average population of the counties in each group, and fatality rates for each of the groupings were computed. The data are shown plotted in Figures 2 and 3. The pedestrian fatality rate decreases with increasing population because of the high percentage of deaths in predominately rural counties. The higher vehicle speeds in pedestrian-related accidents on rural roads present a greater likelihood of a fatality. Because of the large number of pedestrian accidents in urban areas, combined with a high risk of any pedestrian accident resulting in a fatality, the pedestrian death rate rose to nearly 6 (Figure 2) in the most highly populated Jefferson County.

In the larger cities there are large numbers of accidents due to congestion. There were over 20,000 traffic accidents within the city limits of Louisville in 1973 compared to about 30,000 accidents reported over the entire rural highway system in Kentucky by state police in 1973. There were 476 pedestrian accidents in Louisville in 1973 compared to 342 over the statewide rural highway system. The average annual number of pedestrian fatalities increased from about 0.5 in sparsely populated counties to about 40 in Jefferson County with a population of over 600,000 (Figure 3).

Human Factors

Many traffic accidents result from errors in human judgment. Past research indicates that about two out of every three pedestrians killed in traffic accidents violated a traffic law or committed an unsafe act *(4)*. Thus, a reasonable approach to reducing traffic accidents of any kind is to analyze the nature and possible causes of human error and seek to remedy them. The human factors considered were the effect of the ages of the pedestrian and the driver, pedestrian action preceding the accident, and the cause of the accident.

The age of pedestrians killed in traffic accidents was plotted against percentage of occurrence. This curve was compared to the ages of people killed in all Kentucky vehicle fatalities in 1972 and 1973 (Figure 4). Pedestrian fatalities were highest for ages under 9 and over 64. Most people killed in all statewide traffic accidents are between the ages of 15 and 44, which corresponds to the age range of the vast majority of drivers *(5)*. The large percentage of deaths of very young pedestrians results from their lack of understanding of traffic dangers. The high percentage of fatalities within the elderly pedestrian group results from reduced mobility and failing eyesight or hearing. Also, elderly people often are not in the best of health and are usually more fragile. A plot of annual fatality rate for various ages of pedestrians in Figure 5 illustrates this quite clearly.

The major pedestrian action preceeding the fatal accidents involved crossing the street (69 percent). As expected, walking with traffic causes three times as many pedestrian fatalities as walking against traffic (15 to 5 percent). Standing, lying, or playing in the roadway was associated with 11 percent of the pedestrian fatalities.

Most pedestrian fatalities (Table 2) were the fault of the pedestrian (69 percent). A large percentage of fatalities (25 percent) involved children under 10 playing in or running across the street. Although a national study *(4)* indicated about 23 percent of all pedestrians killed in accidents had been drinking, only 5 percent were identified as such in Kentucky. It may be important to also note that, although 20 percent of all pedestrian fatalities occur at intersections, only 3 percent of them resulted from an illegal intersection crossing. The major driver fault was speeding or reckless driving (12 percent). Inattentiveness was a factor in 9 percent of the cases, and drinking caused 4 percent of the fatalities. Alcoholic affectation, therefore, was responsible for about 9 percent of the pedestrian fatalities compared to about 17 percent of all traffic fatalities.

URBAN VERSUS RURAL PEDESTRIAN ACCIDENTS

Kentucky is predominanatly a rural state. Since 1960, most pedestrian fatalities have occurred in rural areas. However, only 342 pedestrian accidents have occurred annually on the rural state-maintained highway system out of an estimated 1500 pedestrian accidents in Kentucky in 1973. Nearly 30 percent of all rural pedestrian accidents are fatalities whereas only 4 percent were fatalities in urban areas. (There were virtually no property-damage-only pedestrian accidents reported.)

A comparison of several factors was made for rural and urban accidents to determine major pedestrian accident causes. The rural pedestrian accidents used were the 682 reported by the state police in 1972 and 1973. The urban pedestrian accidents included 1650 which occurred in the nine largest Kentucky cities in 1972 and 1973. Therefore, about 2300 pedestrian accidents were used for this analysis. Again,

the major factors considered were time factors, environmental factors, and human factors.

Time Factors

The pedestrian accident trends throughout the average day were similar for urban and rural locations. The urban accidents, however, were about 4 percent higher between 4:00 and 5:00 p.m. due to the afternoon rush hour in the cities. This could be due, in part, to the increase in accidents involving intoxication of the driver or pedestrian during late afternoon, evening, and nighttime hours. Of 76 rural pedestrian accidents in Kentucky in which drunk driving or public drunkenness (of the pedestrian) was a contributing cause, over two-thirds of these accidents occurred between 4:00 p.m. and 1:00 a.m.(about one-third of the day). Most of these accidents (about 60 percent) involved pedestrian rather than driver intoxication.

The percent of daily pedestrian accidents peaks on Saturdays in rural areas (19 percent) after a gradual increase from a minimum (10 percent) on Mondays. Fridays claimed the highest percentage of urban pedestrian accidents (19 percent) with the lowest percentage (9 percent) on Sundays. Mondays had a high percentage of urban pedestrian accidents (17 percent). Store closings on Sundays probably accounted for most of that day's decline in urban pedestrian accidents.

When the trends in urban and rural pedestrian accidents were compared by month of year, no conclusions could be made. There were slight variations from month to month, but no definite trends were discernable.

Environmental Factors

One important environmental factor is the light condition at the time of the accident. All of the nine urban areas have overhead lighting which may be a factor in reducing nighttime accidents. There is virtually no lighting of rural highways in Kentucky, except at some interstate interchanges. About 24 percent of all urban pedestrian accidents occurred at dawn, dusk, or night. About 45 percent of all rural accidents occurred during these times (Table 3). This indicates that nighttime lighting may be important in reducing pedestrian accidents.

The percentages of pedestrian accidents occurring on wet, dry, and icy roads show a great similarity between urban and rural areas. About 13 percent of the accidents occurred on wet rural roads compared to 17 percent on wet urban roads (Table 3). Snowy and icy roads accounted for only 2 percent on rural roads and 1 percent on urban roads.

The comparison between the number of pedestrian accidents at intersections and midblock locations is also shown in Table 3. About 9 percent of the rural pedestrian accidents occurred at intersections whereas nearly 38 percent of the urban pedestrian accidents were at intersections. The difference results from the low number of rural intersections per square mile (square kilometer) in contrast to the urban

areas. The remaining large percentage of urban midblock pedestrian accidents (62 percent) indicated the danger in crossing at non-intersection locations.

Human Factors

The human factors considered were driver violation and pedestrian action. Drivers were at fault in only 24 percent of all urban pedestrian accidents compared to 32 percent in rural pedestrian accidents (Table 4). This probably results from pedestrian impatience in areas due to crowded urban conditions. Drivers do not necessarily drive better in urban areas than rural areas, but pedestrians probably make more impulsive and unsafe movements in urban areas than rural areas. Inattentiveness leads the driver violations in rural areas (11 percent), and failure to yield to pedestrians causes 8 percent of all urban pedestrian mishaps.

Crossing the street at midblock was the most common pedestrian action in rural (47 percent) and urban (56 percent) areas (Table 4). Crossing at an intersection was responsible for 27 percent of the urban accidents and only 4 percent of the rural accidents. Walking with traffic (8 percent) and against traffic (4 percent) involved over 12 percent of pedestrian accidents in rural areas. Pushing or working on their vehicle was involved in about 5 percent of the rural pedestrian accidents. Crossing the street accounted for about 83 percent of all urban pedestrian accidents (Table 5).

Urban Population Considerations

The annual number of pedestrian accidents is shown in Figure 6 as a function of city population. The plot shows a uniform increase in pedestrian accidents as population rises from 22,000 to 360,000. As can be seen, a straight line closely represents six of the nine cities. Covington and Newport lie considerably above this line, and Paducah lies below the line. Covington and Newport, therefore, have a more serious pedestrian accident problem than the other cities. Paducah, on the other hand, has less of a pedestrian accident problem.

The annual occurrence rates for pedestrian accidents (per 100,000 population) were plotted versus city populations in Figure 7. The rates of 208 in Newport and 169 in Covington are high relative to the other cities. Paducah shows a slightly lower pedestrian accident rate for its population.

PEDESTRIAN ACCIDENT REDUCTION

Some measures which have been used effectively in reducing pedestrian accidents in urban and rural areas include:

1. vehicle parking prohibition,
2. designation of one-way streets,
3. improvements in overhead street lighting,

4. crosswalk usage,
5. installation of pedestrian signals,
6. use of pedestrian barriers,
7. pedestrian prohibition (on interstates),
8. driver regulations,
9. installation of pedestrian refuge islands,
10. reflectorized apparel for pedestrians,
11. special pedestrian signing and markings,
12. shoulder widening (rural areas),
13. sidewalk installation,
14. grade-separated crossings,
15. construction of pedestrian malls,
16. playgrounds built in urban areas,
17. pedestrian education programs, and
18. increased enforcement of pedestrian and driver regulations.

Statewide Pedestrian Accident Countermeasures

The high percentage of pedestrian accidents which occurred near dusk (7:00 to 8:00 p.m.) and during dark hours (particularly until 2:00 a.m.) suggests a need for improved pedestrian visibility. One practical solution to this problem is the use of retro-reflective materials by pedestrians at night. These materials return headlight beams directly back to the driver and may be worn in several forms. Reflective clothing, shoes, and jackets may be easily and cheaply made. Reflective tape can easily be applied to outer clothing and is very effective. Special reflectorized patches and emblems for children are inexpensive and may be desirable since a high percentage of pedestrian accidents involve children *(6)*. Mandatory use of reflectorized materials on jackets or other clothing (especially for children) would be very helpful in reducing nighttime pedestrian accidents.

The percentage of pedestrian fatalities on interstates (nine percent) is surprising inasmuch as pedestrians are not allowed on those roads. In many cases, vehicle breakdowns cause drivers to become pedestrians or roadside mechanics. At night, traffic volumes reduce and driver apprehensiveness minimizes the likelihood of a stranded motorist receiving help. Therefore, darkness, high vehicle speeds, and long distances to service areas increase the likelihood of a pedestrian fatality. One possible solution to this dilemma is increased police surveillance on interstates, especially during night hours. Also, strict enforcement of hitch-hiker prohibition laws on interstates might be helpful.

The high occurrence of pedestrian fatalities among children under 9 years old plus the fact that

85 percent of these fatal accidents are the pedestrian's fault are significant. There are a number of elementary school teaching programs currently in use to improve the skills of crossing the street safely. The American Automobile Association has programs aimed at all elementary schools to help educate children in pedestrian safety habits *(7)*. Pedestrian safety teaching aids are distributed by the North Carolina Department of Motor Vehicles to school superintendents throughout the state. This consists of a two-week classroom safety education program *(8)*. Some form of effective classroom safety education program should be stressed in all elementary schools and supported by state and local safety agencies.

Injuries to older pedestrians are usually more serious than to younger pedestrians. Death results in one out of every five older adults struck in traffic compared to one death per 37 school-age children. Several engineering improvements may assist in reducing pedestrian accidents involving older people. At intersections, feasible improvements include installation or retiming of pedestrian signals, the installation of refuge islands on multilane streets, lowering curbs, and the prohibition of vehicle turning movements. Non-engineering alternatives include increased enforcement of driver and pedestrian regulations and safety courses or lectures to various civic organizations.

Driver experience is important in avoiding traffic accidents. Mandatory driver training for all would be a desirable prerequisite for driver licensing. Driver training programs are already taught in many high schools in Kentucky as an elective course. The improvement of facilities and the increased hiring of qualified driver training instructors could result if additional funds were available. Mandatory driver training could have a favorable long-term effect in reducing traffic accidents.

Rural Pedestrian Accident Countermeasures

Inadequate or non-existent roadway shoulders along two-lane roads often force the pedestrian to walk in the road, and occassionally he is not noticed by the oncoming driver. The simplest solution to this problem would be to widen narrow shoulders along roads where considerable pedestrian activity exists. A better but more expensive alternative is to construct sidewalks along such roads. Rural locations where sidewalk construction is most desirable include areas of community activity such as schools, meeting halls, churches, local businesses, and industrial plants.

The installation of overhead lighting at some built-up rural locations may be of benefit for increased nighttime safety. School-zone flashing beacons are helpful in protecting children during morning and afternoon hours. The flashing beacons should be maintained to fuction properly throughout the year and installed only where warranted.

Urban Pedestrian Accident Countermeasures

Possible accident countermeasures at intersections include modification and use of pedestrian signals, prohibition of turning movements, prohibition of parking near intersections, and installation of crosswalks.

Pedestrian signals are used by over 90 percent of the cities with over 25,000 population *(9)* and have been shown to reduce pedestrian-vehicle conflicts and hazards *(10)* as well as pedestrian accidents. Vehicle turning prohibitions may be desirable in areas where pedestrian signals exist and pedestrians ignore turning vehicles. Parking prohibition within 100 to 200 feet (30 to 60 meters) of an intersection increases pedestrian visibility to motorists. The use of painted crosswalks at pedestrian-signalized intersections is often preferred, but studies have shown that indiscriminantly painting crosswalks at intersections will sometines increase pedestrian accidents *(11)*. This is due largely to the pedestrian's lack of caution when using the marked crosswalk *(11)*.

Midblock-crossing pedestrian accidents are generally more of a problem and harder to prevent than intersection pedestrian accidents. The offending pedestrian or jaywalker is nearly always at fault. Some of the measures used for reducing such accidents are one-way street designations, installation of pedestrian refuge islands, use of sidewalk railings, midblock-crossing designations, and grade-separated crossings.

Although two-way streets are converted to one-way primarily for improved traffic flow, pedestrian accidents often decrease as a result of the conversion. Studies in Sacramento, California, and Hamilton, Ontario, have shown decreases in pedestrian accidents of 62 percent and 66 percent, respectively, after conversion from two-way to one-way streets *(12)*. The total effect of one-way conversion should be studied, however, before such a change is made. Other traffic accident problems may be created if the situation is not carefully studied.

Pedestrian refuge islands are used for pedestrians who cannot safely cross the entire street at one time because of a wide street and high traffic volumes. Refuge islands may include nonmountable curbs, posts or guardrails, or warning signs at the approach end of the island.

Sidewalk railings and other pedestrian barriers are often effective on major streets at points where pedestrian crossing would result in exceptional hazard or vehicle delay. Barriers are generally used to channelize pedestrians into midblock crosswalks or intersection crossings. Barriers should be installed only after careful analysis of pedestrian movements and traffic; on-street parking must be prohibited where these barriers are installed. Various types of pedestrian barriers are also used on pedestrian overpasses and underpasses *(13)*.

Midblock crossings are often very dangerous at locations where only painted crosswalks and overhead **YIELD TO PEDESTRIAN** signing is installed. Midblock crossings are most effective on unusually long blocks where vehicle speeds are low (10-25 mph (4.5-11.2 m/s)) and pedestrian-actuated traffic signals are used.

Pedestrian tunnels and overpasses may be warranted for high pedestrian and vehicular volumes at locations such as factories, schools, and sports arenas where multilane or freeway crossing is necessary.

Overpasses are usually less expensive and safer (from criminal attack) than tunnels and require no forced ventilation or special drainage facilities. Tunnels, however, require less vertical space and provide protection from outdoor elements. The high cost of pedestrian tunnels and overpasses limits their use, but both provide excellent pedestrian protection *(13)*.

Substandard nighttime lighting is a possible contributing factor to pedestrian accidents. Whereas the intensity of highway lighting should depend partially on the pedestrian and vehicular volumes of a particular location, urban streets should be lighted to uniform standards. Past research has shown that improved street lighting can be effective in reducing nighttime pedestrian accidents, although the degree of accident reduction varies *(13)*.

The availability of playgrounds throughout an urban area has been shown to result in considerably fewer accidents to children 5 to 9 years old than locations where no playgrounds exist *(14)*. Special pedestrian signing and markings may be helpful at many high-pedestrian urban areas. Local traffic laws and ordinances should recognize pedestrian needs and responsibilities but adequately and practically regulate pedestrian movement.

Pedestrian malls are now being used increasingly in cities across the United States to revitalize central business districts and reduce vehicle-pedestrian conflicts and accidents. Variations of pedestrian malls include modified sidewalks, transitways, plazas (interrupted malls), continuous malls, concourses, and multilevel traffic separation *(15)*. Louisville's River City Mall is the third largest full pedestrian mall in the United States, and Louisville is the nation's largest city that has built a true pedestrian mall. The half-mile (0.8-kilometer) three-block mall was built in 1972 in a previous four-lane traffic corridor. Frankfort has recently completed construction of a pedestrian mall, transforming St. Clair Street into a pedestrian walkway. Studies should be made to determine the effectiveness of these two malls in reducing pedestrian accidents in the area and improving business revenue along the mall.

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TABLE 1. PEDESTRIAN FATALITIES BY LOCATION TYPE

HIGHWAY TYPE	PERCENT OF PEDESTRIAN FATALITIES: RURAL AREAS UNDER 2,500 PEOPLE	SMALL CITIES 2,500-22,000 PEOPLE	LARGE CITIES OVER 22,000 PEOPLE	TOTALS
Two-lane	49	11	15	75
Three-lane	1	0	0	1
Four-lane Undivided	3	2	5	10
Four-lane Divided	2	1	2	5
Interstate and Parkway	6	0	3	9
Totals	61	14	25	100

TABLE 2. PEDESTRIAN FATAL ACCIDENTS BY CAUSE

CAUSE	PERCENT OF FATALITIES
Playing, Running, or Walking in Front of Car	
Age 0-5	11
Age 6-10	14
Older than 10	26
Intoxicated or Had Been Drinking	5
Crossed Illegally at Intersection	3
Lying in Roadway (Hurt, Drugged, Unconscious)	3
Standing in Roadway	2
Walking in Road	2
Getting into or out of Vehicle	1
School Just Out -- Crossing Illegally	1
Pedestrian Sick or Handicapped	1
Subtotal	69
Drinking or Drunk Driving	4
Speeding or Reckless Driving	12
Inattentive	9
Other Driving Error	4
Vehicle Brake Failure	1
Passed Stopped School Bus	1
Subtotal	31

TABLE 3. ENVIRONMENTAL CONDITIONS AT TIME OF PEDESTRIAN ACCIDENTS

CONDITION	PERCENT OF ACCIDENTS	
	RURAL ACCIDENTS	URBAN ACCIDENTS
Day	55	76
Dawn or Dusk	6	3
Night	39	21
Dry	85	82
Wet	13	17
Snow or Ice	2	1
Intersections	9	38
Midblocks	91	62

TABLE 4. DRIVER VIOLATIONS IN PEDESTRIAN ACCIDENTS

VIOLATION	PERCENT OF ACCIDENTS	
	RURAL ACCIDENTS	URBAN ACCIDENTS
Speeding or Reckless Driving	9	3
Inattentive	11	3
Hit-and-Run	5	8
Driving while Intoxicated	2	1
Failure to Yield to Pedestrian	2	8
Other Driver Violation	3	1
No Driver Violation	68	76
Totals	100	100

TABLE 5. PEDESTRIAN ACTIONS IN PEDESTRIAN ACCIDENTS

ACTION	PERCENT OF ACCIDENTS	
	RURAL ACCIDENTS	URBAN ACCIDENTS
Crossing or Entering at an Intersection	4	27
Crossing or Entering Not at an Intersection	47	56
Getting into or out of Vehicle	2	1
Walking with Traffic	8	1
Walking against Traffic	4	1
Standing	8	3
Pushing or Working on Vehicle	5	1
Other Working (Construction)	2	1
Playing	3	2
Other	6	5
Not in Roadway	11	2
Totals	100	100

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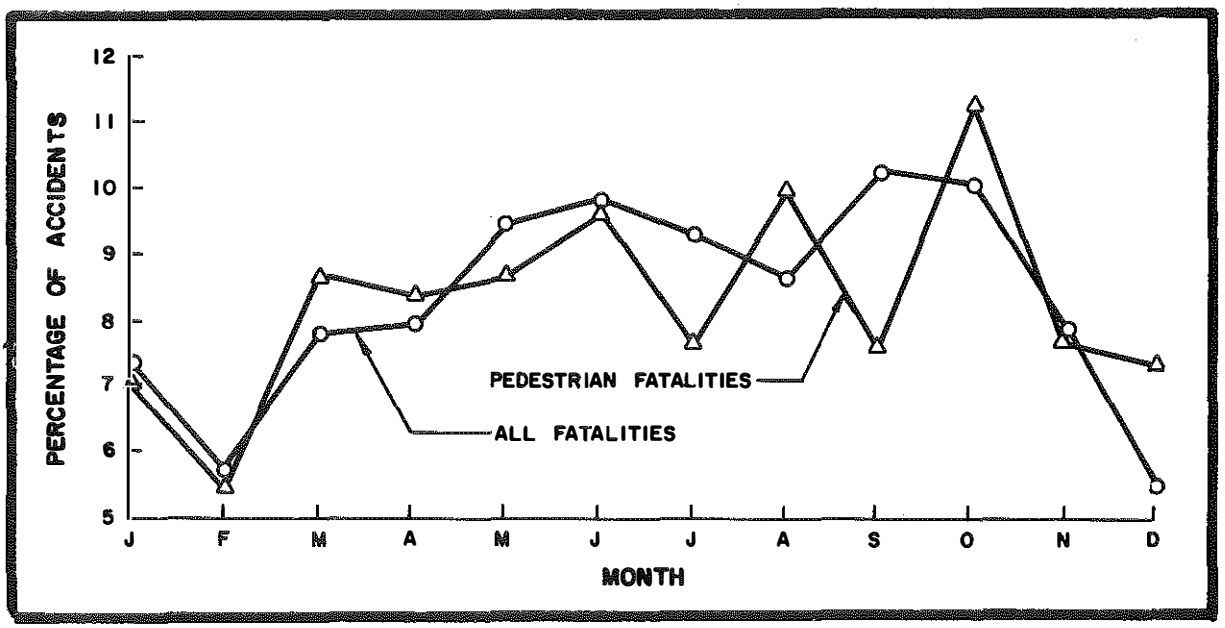

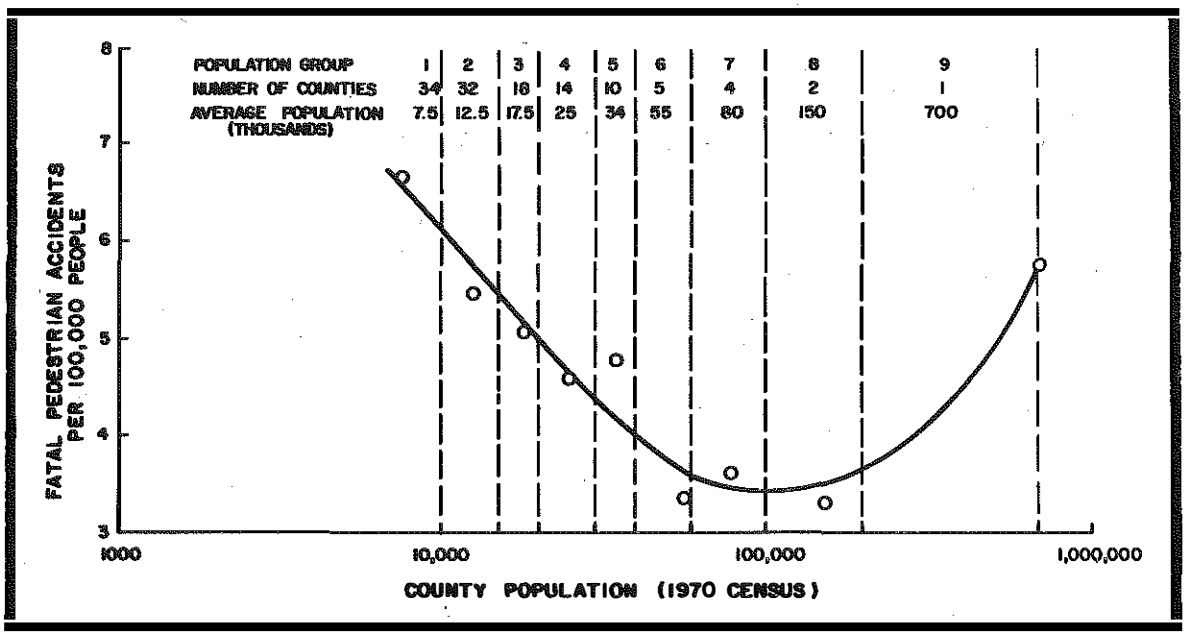
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FATAL PEDESTRIAN ACCIDENTS PER 100,000 PEOPLE
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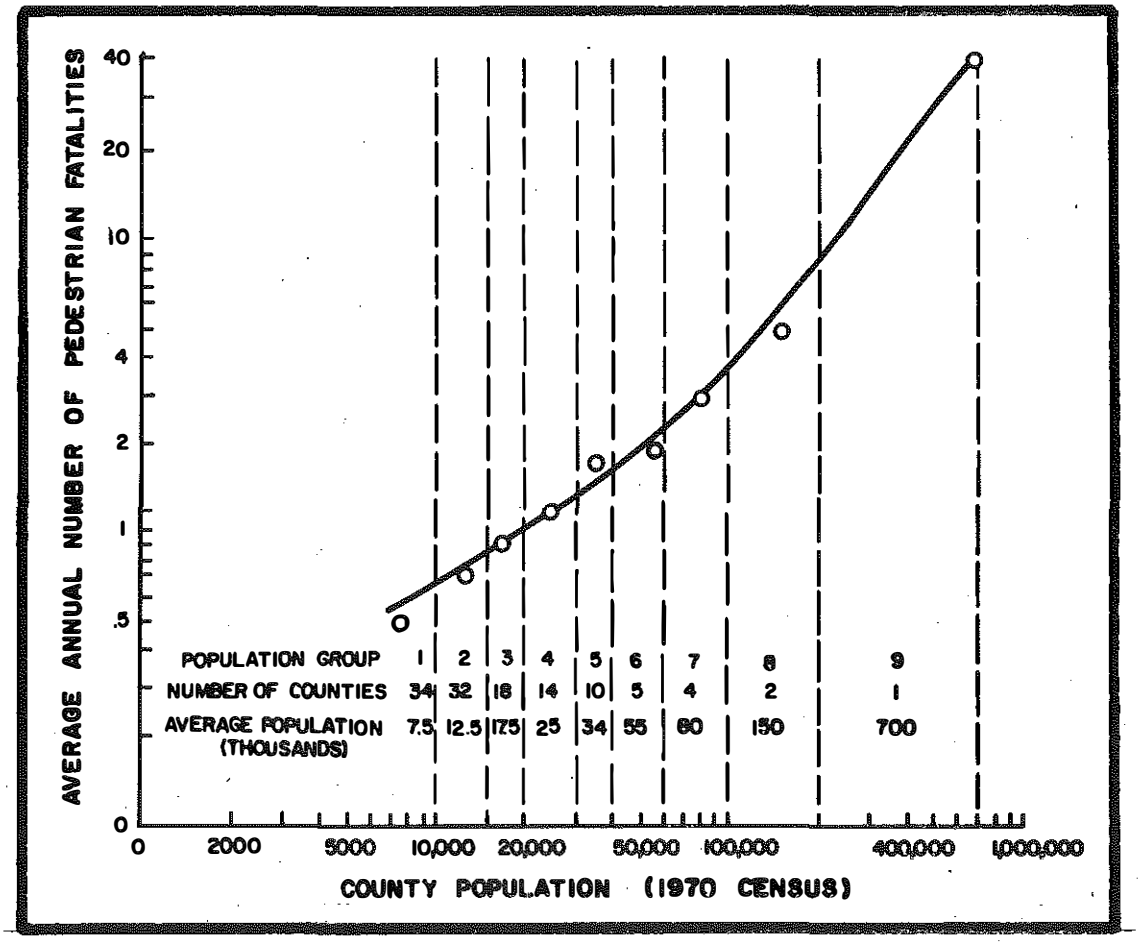
7
6
5
4
3
1000
10,000
100,000
1,000,000
COUNTY POPULATION (1970 CENSUS)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4
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1
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AVERAGE POPULATION (THOUSANDS) 7.5 12.5 17.5 25 34 55 80 150 700
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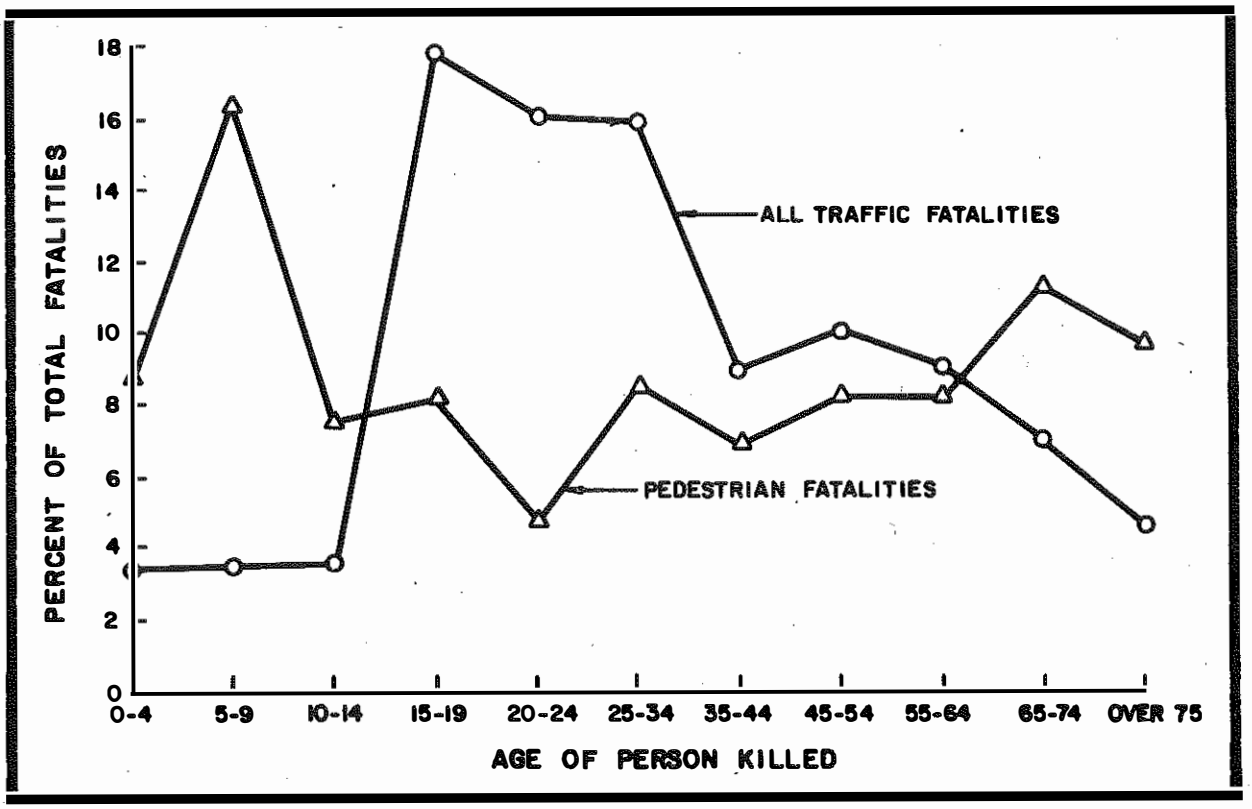
COUNTY POPULATION (1970 CENSUS)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16
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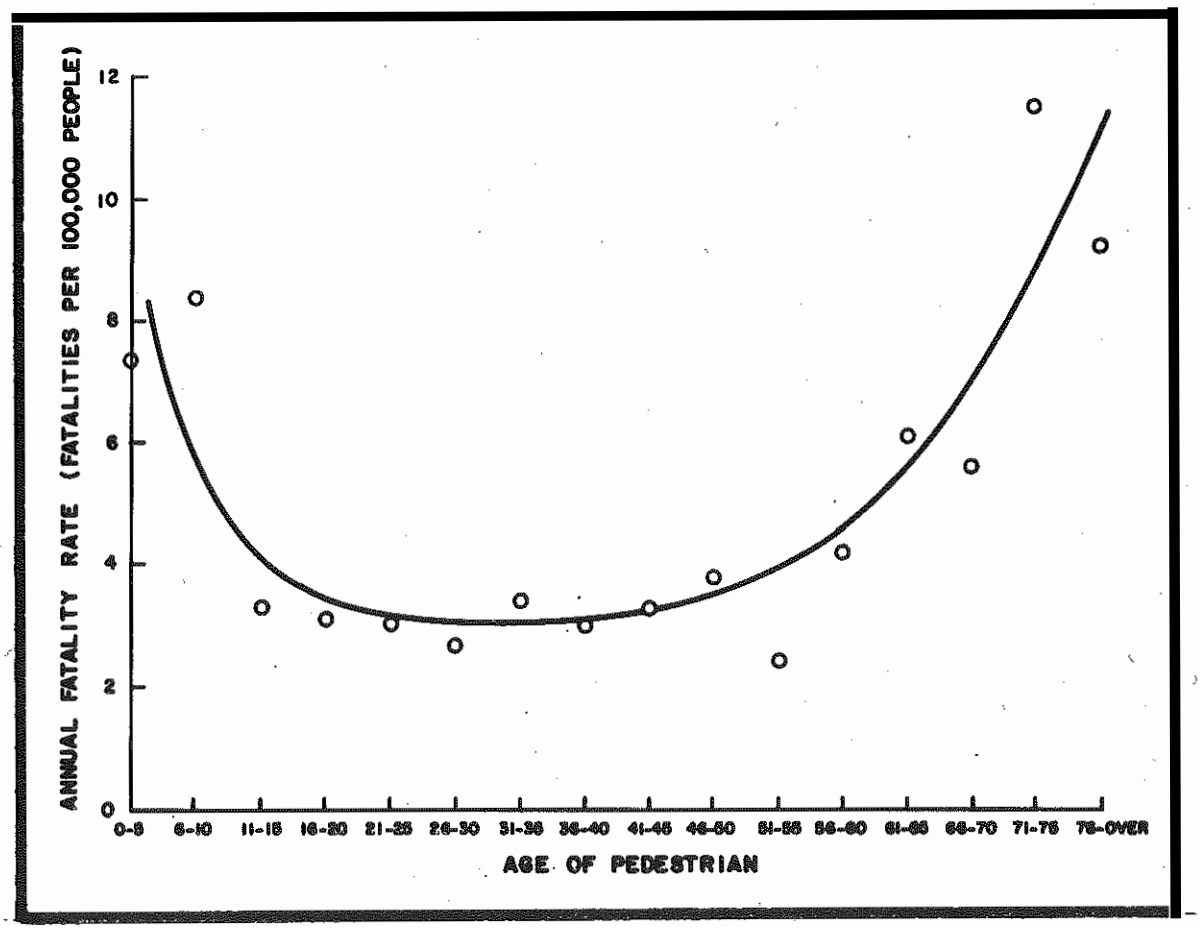
12
10
8
6
4
2
0
ALL TRAFFIC FATALITIES
PEDESTRIAN FATALITIES
0-4
5-9
10-14
15-19
20-24
25-34
35-44
45-54
55-64
65-74
OVER 75
AGE OF PERSON KILLED


ANNUAL FATALITY RATE (FATALITIES PER 100,000 PEOPLE)
12
10
8
6
4
2
0
0-5
6-10
11-15
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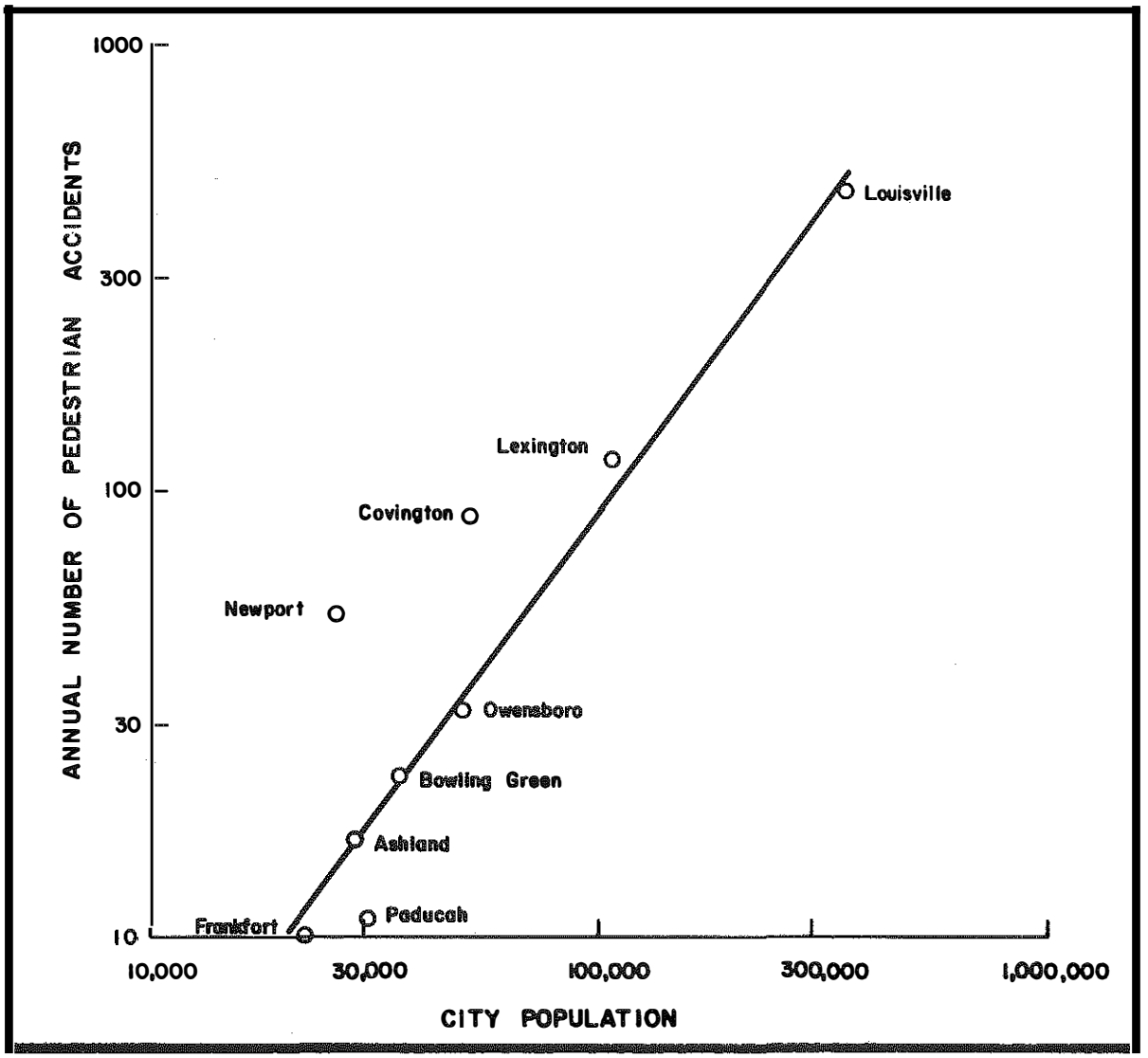
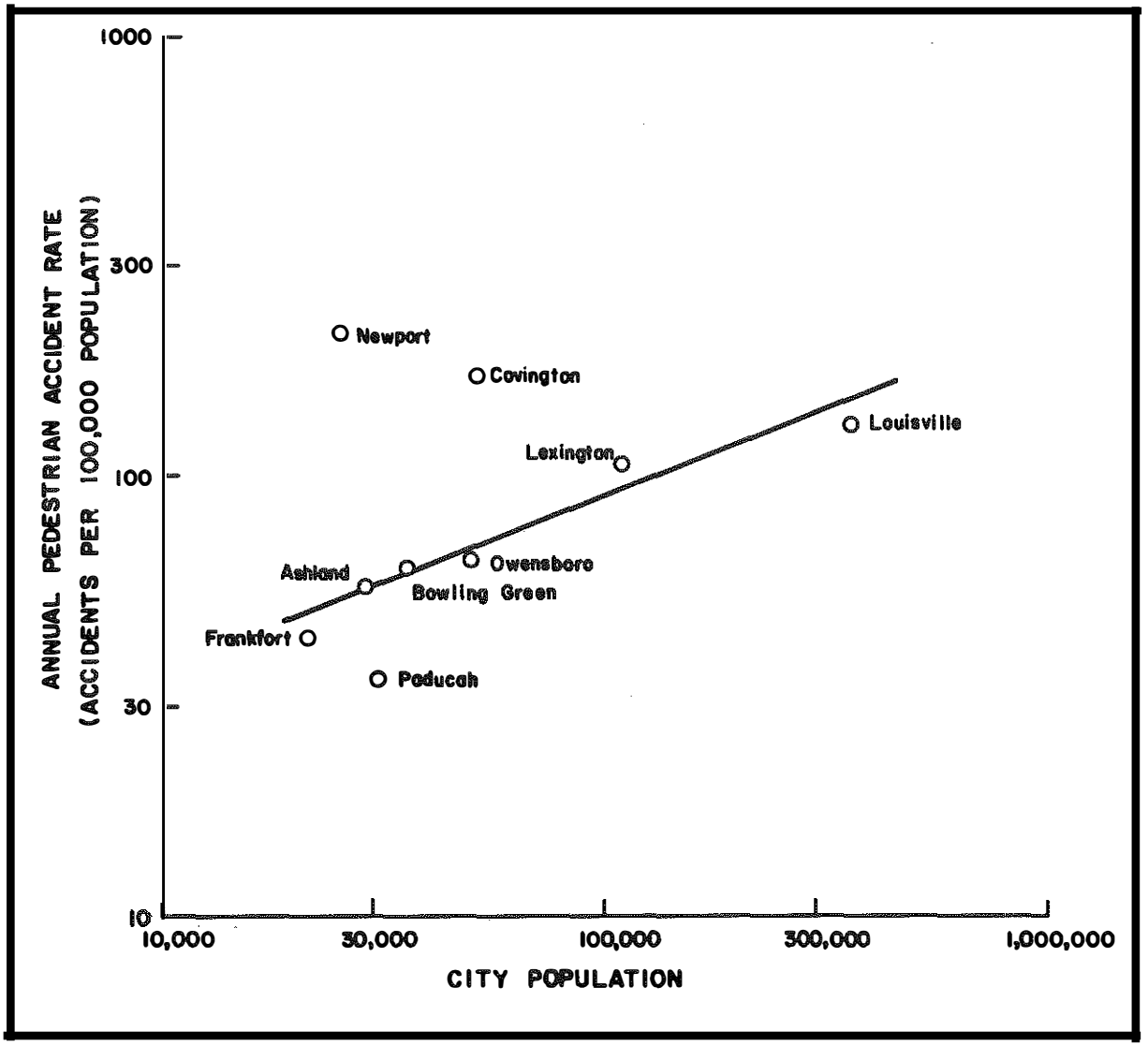
21-25
26-30
31-35
36-40
41-45
46-50
51-55
56-60
61-65
66-70
71-75
75-OVER
AGE OF PEDESTRIAN


1000
300
100
30
10
ANNUAL NUMBER OF PEDESTRIAN ACCIDENTS
Louisville
Lexington
Covington
Newport
Owensboro
Bowling Green
Ashland
Paducah
Frankfort
10,000
30,000
100,000
300,000
1,000,000
CITY POPULATION


1000
300
100
30
10
ANNUAL PEDESTRIAN ACCIDENT RATE
(ACCIDENTS PER 100,000 POPULATION)
Newport
Covington
Louisville
Lexington
Ashland
Owensboro
Bowling Green
Frankfort
Paducah
10,000
30,000
100,000
300,000
1,000,000
CITY POPULATION