Objective: To determine the risk of motor vehicle occupant deaths per unit of travel for Hispanic, non-Hispanic black, and non-Hispanic white children (aged 5-12 years) and teenagers (aged 13-19 years).

Design: Comparison of 1989 to 1993 motor vehicle occupant death rates of children and teenagers by race, ethnicity, and sex by using data on mortality from the National Center for Health Statistics, travel data from the 1990 Nationwide Personal Transportation Survey, and 1990 US census data.

Results: Among children 5 to 12 years old, race/ethnicity differences per 100,000 persons were unremarkable, but per billion vehicle-miles of travel, the rates were 14 for non-Hispanic blacks, 8 for Hispanics, and 5 for non-Hispanic whites. Among teenagers aged 13 to 19, the rates per 100,000 persons were highest for non-Hispanic whites; however, the rates per billion vehicle-miles were 45 for Hispanics, 34 for non-Hispanic blacks, and 30 for non-Hispanic whites. Black and Hispanic male teenagers had substantially higher death rates per billion vehicle-miles of travel than either white male teenagers or female teenagers in any racial/ethnic group.

Conclusions: Black and Hispanic children and teenagers are at higher risk of dying in motor vehicle crashes when they travel. Greater public health attention is needed to address these increased risks.

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RESULTS

Among children younger than 4 years, blacks had the highest death rate per

Editor’s Note: This study is another example of Susan Baker’s rule of never taking things at face value. I had taken some comfort that our black and Hispanic teenaged boys had an area where they appeared to fare better. Poof!

Catherine D. DeAngelis, MD
SUBJECTS AND METHODS

Motor vehicle occupant death rates per 100,000 people were calculated for ages 0 to 4, 5 to 12, and 13 to 19 years by race/ethnicity for 1989 to 1993, using mortality data from the National Center for Health Statistics and 1990 census data. Traffic deaths having International Classification of Diseases, Ninth Revision (ICD-9)9 E-codes of 810 to 819 with a fourth digit of 0, 1, or 9 were considered motor vehicle occupant deaths.

Exposure-based rates were calculated, using as numerators the same mortality figures as for population-based rates. Estimates of vehicle-miles traveled and numbers of trips taken for Hispanic, white, and black subjects aged 5 to 19 years were derived from the 1990 Nationwide Personal Transportation Survey (NPTS).10 The NPTS is a national survey performed periodically by the US Department of Transportation that provides comprehensive data on the amount and nature of daily personal travel. The NPTS is the leading source of data on travel patterns in the United States. Any household within the United States that can be accessed by telephone has a chance of being selected for the survey. Telephones are present in lower percentages of black and Hispanic households (87%-88%) than white households (96%).11 Consequently, black and Hispanic households with the lowest incomes and lowest rates of car ownership may have been underrepresented in the survey. This would result in overestimates of travel exposure and underestimates of death rates per unit of travel among blacks and Hispanics.

Once a household was selected, information on all trips made by each household member aged 5 or older on a recent preassigned day was obtained through a telephone interview. The NPTS does not collect individual travel data for children younger than age 5. A trip is defined in NPTS as any 1-way travel from one place to another by car, bus, bicycle, foot, or some other means. If the travel involves more than 1 destination, each segment is counted as a separate trip if the travel time between the 2 destinations is more than 5 minutes or if the purposes for travel to these destinations are different. The overall participation rate was 73% among members of the households selected for the survey.12

A total of 3668 white, 419 black, and 283 Hispanic households provided vehicle travel data for children aged 5 to 19 to NPTS in 1990 (Table). The travel used for the death rates included only personal miles such as social visits and commuting to and from work. The racial group categorized as “other” that was of non-Hispanic origin was not analyzed because separate data were unavailable for the main components, Native Americans and Asians, whose motor vehicle occupant death rates differ greatly (12 vs 5 per 100,000, respectively, aged 0-19 years old, in 1991-1992).9 Although the numbers of surveyed black and Hispanic households with children were relatively small, the NPTS sampling and weighting strategy was such that travel findings were representative of these groups.

100,000 persons and Hispanics had the next highest rate (Figure 1).

Among children aged 5 to 12 years, race/ethnicity differences were negligible per 100,000 population (Figure 1 and Figure 2). However, death rates per unit of travel differed markedly by race and ethnicity. Blacks had the highest exposure-based death rates. The rate for Hispanics per billion vehicle-miles of travel (8) was 43% lower than the rate for blacks (14), but 72% greater than the rate for whites (5). Rates per 100 million vehicle-trips showed a similar pattern (8, 5, and 4 for blacks, Hispanics, and whites, respectively). Among teens aged 13 to 19 years, the population-based death rate for whites was almost twice that for blacks (Figure 1 and Figure 3), and Hispanics had an intermediate death rate. However, Hispanics had the highest occupant death rate per billion vehicle-miles of travel: 45, compared with 34 for blacks and 30 for whites. Per 100 million trips, rates were highest for Hispanics and slightly lower for blacks than for whites (32, 24, and 28, respectively), suggesting that the average trip is shorter for black teenagers.

Sex had little effect on mileage-based death rates among children aged 5 to 12 years (Figure 4). For ages 13 to 19 years, however, male rates were substantially higher than female rates per billion vehicle-miles of travel. Black male teenagers had the highest death rate per billion miles (66), followed by Hispanic male teenagers (61), and white male teenagers (37); however, black female teenagers had the lowest rate (14). Rates per 100 million trips showed similar sex differences.

Analysis (not shown) by type of crash (single vs multiple vehicle) revealed no substantial differences among the 3 racial/ethnic groups.

COMMENT

Until now, the very high occupant death rates per unit of travel for black and Hispanic male teenagers (aged 13-19 years) and black and Hispanic children (aged 5-12 years) have been obscured by lack of exposure-adjusted data. Although comparable travel data are unavailable from NPTS for the younger than-5-years group, the population-based death rates for black and Hispanic children for ages 0 to 3 years are higher than the rate for whites (Figure 1), a difference that probably would be even greater if adjusted for exposure.

The true population-based and exposure-based death rates for Hispanics may be even higher than reported in this article because Hispanic ethnicity is underreported on death certificates.13-15 Moreover, estimated racial/ethnic differences in risk probably would be even greater if adjusted for urban or rural residence, since occupant death rates are highest in rural areas.16,17 Rural residence is more common among whites.17

The reasons for the very high occupant death rates per unit of travel for black children aged 5 to 12 years and black and Hispanic male teenagers aged 13 to 19 years could not be explored with the databases used in the current study. Further research is needed to elucidate the factors contributing to these elevated death rates. However, racial/ethnic and sex differences in the use of safety
belts and child restraints could be a possible explanation. Several studies have reported lower rates of safety belt and child restraint use among Hispanic children and teenagers than among non-Hispanic whites.18-21 Low rates of safety belt and child restraint use also have been reported for black children and teenagers.20,21 In a California survey of high school students, Hispanic and black male teenagers reported lower safety belt use rates than white male teenagers; however, racial/ethnic differences in safety belt use were not reported among female teenagers.19

The extent to which differences in safety belt and child restraint use by race/ethnicity are attributable to cultural factors rather than socioeconomic status is unknown. Parental education and income are highly associated with the use of safety belts and child restraints,22 with a rate that is 3 times as high in the highest educational and income groups as in the lowest socioeconomic groups.21

Death rates among children may also reflect the driving behaviors, such as driving after drinking, of older family members.23 Many studies have reported that Hispanics and blacks are overrepresented in alcohol-related traffic crashes.24-29 The 1996 National Roadside Breath Alcohol Survey found that 7.5% of Hispanic drivers, 3.6% of black drivers, and 2.3% of white drivers had high blood alcohol concentrations.30

Motor vehicle occupant death rates also may reflect differences in the vehicles and roads used by His-
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Corresponding author: Susan P. Baker, MPH, The Johns Hopkins Center for Injury Research and Policy, 624 N Broadway, Baltimore, MD 21205.

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