ECOLOGICAL CORRELATES OF PEDIATRIC INJURIES
MULTNOMAH COUNTY, OREGON: 1996-1997

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A THESIS

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Abstract

Injuries to children represent a significant public health concern. In analyzing injuries, it is important to understand the local area characteristics associated with increased incidence. This study investigated the relationship between socioeconomic indicators and population demographics at the local level in Multnomah County, OR.

In Oregon, trauma surveillance is part of a tiered statewide system of trauma care. Using this data for the years 1996 through 1997, compared to sociodemographic data collected by the Census Bureau, correlates between pediatric injury location were investigated. The census tract where an injury occurred was the unit of analysis.

Multnomah County has an annual incidence rate of 111.8 per 100,000 children age 14 years meeting criteria for entry into the trauma system and reported to the Oregon Health Division Trauma Registry. Incidence rates of pediatric injury varied markedly by race, with African American children having the highest incidence rate. There was also appriximately a 2:1 ratio of injuries in male versus female children.

In regression analysis, several sociodemographic measures were associated with increased frequency of injury per square mile. Many socioeconomic factors were highly correlated so Principal Component Analysis (PCA) was utilized to construct a single latent variable measuring total socioeconomic status of a census tract. In multivariate analysis, the most important predictors of injury frequency were population density and the latent socioeconomic variables identified using PCA. These three variables accounted for 31.5% of the variance in injury frequency per square mile.

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Background

With the decline in infectious and other diseases, pediatric trauma has emerged as a prominent cause of childhood mortality and morbidity. In the past 40 years, rates of injury deaths in children have declined only 25% while deaths due to other diseases have decreased by 56%.[1] Childhood mortality attributable to injury is almost 40% between the ages of 1 to 4 years and almost 70% between the ages of 5 to 19 years.[1] Further, injuries to children between the ages of 0 to 19 causes as many years of premature life lost as congenital anomalies and prematurity combined.[1]

However, childhood fatalities due to trauma are just the tip of the iceberg. For every fatality, reports estimate that there are 45 hospital admissions and up to 1,200 emergency room visits.[2] Data from the Child Health Supplement to the 1988 National Health Interview Survey (NHIS) conclude that at least 25% of children annually will experience a medically attended injury.[3] This is consistent with previous reports' estimates ranging from 20%[4] to 25%.[5, 6] From 1985 estimates, this translates to almost 16 million children visiting the emergency room, 600,000 childhood hospitalizations, and 30,000 children suffering permanent disabilities from injuries in the U.S. each year.[7] For pedestrian injuries alone, more than 50,000 children less than 20 years old are injured annually in the U.S., with 1,800 fatally injured and 18,000 requiring hospitalization.[8] Of those not fatally injured, it is estimated that 5,000 will have significant long-term sequelae.[8] Further, 20% of all childhood hospitalizations and 21% of all hospital days, more than any other disease, are the result of injuries.[7]

The resultant costs, both financially and emotionally, due to childhood trauma are staggering. In 1982, it was estimated that direct and indirect costs for injuries to children

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less than 20 years old were $7.5 billion. This was a conservative estimate, as indirect costs did not include the cost of long-term care, insurance, litigation or costs due to injuries designated as suicide/self-inflicted or homicide/assault.[7] Injuries also cause the highest proportion of discharges to long-term care facilities, and result in the highest rate of children requiring home health care following hospital discharge.[1] Among children in the U.S., injuries cause more than 44 million days of restricted activity each year and cause children to spend more than 10 million days in bed.[1]

The recognition of this pediatric public health problem and its amenability to intervention strategies is reflected in the importance the Center for Disease Control (CDC) has placed on childhood injury research. The CDC recommended increased childhood injury surveillance data documenting incidence and research into the settings where childhood injuries occur among their program priorities.[1] In 1990, the CDC spent approximately $21 million in injury control research and community intervention demonstration projects.

Injuries occur in patterns and are controllable, in much the same way as other diseases.[1,9] A study of injury mortality data and estimates of the effectiveness of currently available prevention strategies for the years 1978 and 1991, indicated that 6,640 lives could be saved annually in the U.S. for 0 to 19 year olds. This corresponds to a 31% decrease in injury deaths for this age group.[10] International comparisons also support the potential impact of childhood injury prevention. For example, although childhood deaths due to disease are similar between the U.S. and other industrialized nations, the U.S. leads these nations in intentional and unintentional childhood deaths in all but the 5-9 year age group. This disparity between childhood death due to disease

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versus injury between the U.S. and other industrialized nations suggests that the U.S. should be able to reduce childhood mortality rates through prevention efforts to be more consistent with injury rates observed in other industrialized nations.[1]

Locating areas with increased risk of injury and understanding the characteristics of that area are necessary for injury prevention. Injury prevention strategies usually involve a combination of behavior modification, achieved through education or regulation, and changes to a product or environment which provide passive protection. Children are more dependent upon society to mitigate their exposure to harm, therefore, modification of the agents or environments associated with pediatric injuries appears to be the most successful tactic to reduce childhood injuries.[11] Other researchers agree that, when appropriate, passive safety measures that modify the environment or vehicle of injury are highly effective.[11, 12, 13]

Introduction

Several studies have found associations between socioeconomic and demographic variables and increased risk of pediatric injuries. These have been predominantly examined by comparing injury incidence rates for patients from various socioeconomic or racial backgrounds. Variables found associated with increased injury incidence include poverty,[1, 3, 14, 15, 16, 17] race/ethnicity,[1, 16, 17, 18, 19] gender,[3, 13] employment status,[15] number of persons in a household,[16] single parent households,[15, 16, 17] ability to speak English,[20] educational attainment,[3, 15] median household income,[3, 15, 17] and number of persons per room.[15, 17, 19]

Injury rates and type of injury vary when analyzed by both large and small geographic regions. This may be attributable to differences in regional characteristics or population. Geographic variability by large region is evidenced by urban versus rural differences in incidence rates or state and national comparisons. Urban versus rural differences in pediatric trauma incidence and mechanism of injury have been observed. For example, data from Vermont, considered a rural state, revealed elevated injury incidence when compared to national statistics. This was especially evident in older children.[21] In addition, fewer penetrating injuries and more poisonings and drownings were reported. This is further supported by comparisons of New York City (NYC) to the rest of New York State where analysis involved the types of injuries. Hospitalization rates in NYC were four times higher for assault-related injuries and half for motor vehicle injuries. Pedestrian, burn, and unintentional firearm injuries were two to three times more common in NYC.[2] Lastly, a study of motor vehicle accidents (MVA) in Quebec used locations of severe and non-severe injuries for all age groups and found less

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geographic dispersion for severe injuries compared to non-severe injuries. Further, the likelihood of being involved in a severe MVA was significantly higher in rural areas than in urban areas.[22]

Geographic differences by small region have been observed in comparisons of zip codes or neighborhoods. Small scale geographic variability was evident in a study of pediatric neurological trauma data from the Northern Manhattan Injury Surveillance System for the years 1983 to 1992. When zip code areas were classified on the basis of median household income, the ratio of incidence of neurological injuries in low-income neighborhoods compared to other neighborhoods was 1.71 (95% CI: 1.54, 1.89).[14]

A second study analyzed small area variation by comparing hospital discharge records on the basis of patients' home residence zip code in 58 neighborhoods in New York City (NYC) for all age groups. Marked geographic variation was observed with rates in some neighborhoods two to three times higher than other neighborhoods.[2] For larger regions within NYC (i.e., the Bronx vs. Queens), injury rates varied up to 40%. This study also noted clustering of specific types of injuries by neighborhoods, which the investigators attributed to higher concentrations of low-income or minority populations in these areas.[2]

A study in the Houston, TX municipal region observed geographic variation in the number of emergency medical services (EMS) calls across the city by comparing frequencies of EMS calls between 4 mile by 3.5 mile "quadrats". A "bulls-eye" pattern emerged, with higher numbers of EMS calls observed in the center of the study area. The researchers attributed this to population density, which also follows this bulls-eye pattern. The researchers hypothesize that population density drives EMS response usage, although

no empirical comparison of call volume between quadrats or population density to call volume was conducted.[23]

Many theorize that the increased risks of injury to vulnerable populations, such as children in low income families, can be partially attributed to environmental factors such as increased housing density, inadequate recreational space, and hazardous traffic patterns such as increased speeds and higher traffic volume.[11] A case-control study of childhood pedestrian injuries and environmental factors in New Zealand found significantly elevated odds ratios associated with traffic volume, average vehicle speed, and percent of the curb obscured by parked cars.[12] For cases of pedestrian injury that occurred within 500 meters of home, the risk of injury to children living in neighborhoods with the highest traffic volume was 13 times greater than the risk to children living in the least busy neighborhoods. In a study of pedestrian injuries to children ages 0 through 14 years, speed limits, roadway traffic conditions, and number of lanes, were all significantly associated with the likelihood of a midblock or intersection injury.[24]

The development of Geographical Information Systems (GIS) has greatly facilitated the ability to analyze health data by geographic region. This is accomplished through capabilities for storing, editing, analyzing, querying, and cartographically displaying location or attribute information of georeferenced data. By the late 1980s, GIS systems had progressed from programming language based applications to more "user-friendly" windows based applications. As this has occurred, these systems have become increasingly utilized in studies of health related data, such as disease incidence patterns, resource allocation, and optimal response vehicle routing.

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A GIS also automates the process of assigning a geographic location through a process termed geocoding. In this process, a reference theme of streets and regions, with their map coordinates, is used to determine the location of an event. By comparing the location information in the database being geocoded to the reference theme, the location of the event can be assigned explicit map coordinates. When using ArcView commercial GIS software and a reference theme of streets, the house number corresponding to the beginning of the street segment is designated the "from-node" and the house number at the end of the street segment as the "to-node". By comparing street names, house numbers, and zip codes in the database being geocoded, the GIS determines the correct street, then interpolates between the from- and to-nodes on the street segment to assign coordinates where the house address would occur. The user is alerted if an address is unresolvable and if an address can be mapped to more than one location.

When analyzing local area variations in health data by geographic region, it is important to select a unit of analysis that will preserve small area variations. As data is aggregated over larger regions, small area variation can become obscured. The census tract level is commonly used for such analysis for several reasons. First, census tracts are designed to contain approximately 4,000 residents so are smaller than other regions of analysis, such as zip codes. Second, the perimeter of a census tracts is constant; when a census tract is redrawn, it is divided into sections leaving the outside perimeter intact. This approach provides consistency when examining data longitudinally. Lastly, other sources of data are aggregated at the census tract level, such as data from the United States Census Bureau, which can be used in subsequent analysis.

Few studies have examined geographic variation in pediatric injury rates and sociodemographic characteristics by a small region of analysis, such as the census tract. These have been conducted by either the location where the injury occurred or the patients' census tract of residence. A study of injury incidence rates in children less than 17 years of age based on patients' home residence used multiple regression techniques to explain the variability in injury incidence rates between census tracts and socioeconomic indicators derived from the 1990 census. Poverty, defined as the number of households living below the poverty level, was the strongest predictor of injury incidence.[15]

A second study using the location of pedestrian injuries reported to police occurring to children age 0 to 14 in Memphis, TN used injury frequencies at the census tract level and data from the biennial census. To control for variation in census tract size, this study converted frequencies of injury to a density measurement, frequency per square acre. This technique is used often when analyzing spatial data and prevents variation in census tract size from altering the observed estimates of regression or correlation coefficients. The variable that best predicted injury rates by census tract was the number of households per acre with 1.01 or more persons per room.[19] It was thought that household crowding may result in more time spent outside and increased exposure to environmental hazards in densely populated areas.

A third study involving motor vehicle collisions and pedestrians under age 15 reported to police in 1986 to 1987 was conducted in Hartford, CN. This study used one-way ANOVA techniques to analyze census tracts by frequency of collision after categorizing tracts as high, moderate, or low injury frequency per acre. Percent of households below poverty was statistically different across all frequency categories ($p <$

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.01). High-frequency tracts also had a significantly higher percentage of households with more than one person per room and a greater number of children per acre than either the moderate or low frequency tract ($p < .01$).[17]

These studies demonstrate that variance in injury incidence can be explained by socioeconomic and demographic features at the census tract level. However, socioeconomic variables tend to be highly correlated indicating that the overall socioeconomic status of an area may be better characterized by a combination of variables rather than a single socioeconomic measure. Further, using highly correlated predictor variables in a multiple regression model will artificially inflate the estimated regression coefficients.

Principal Component Analysis (PCA) is a statistical technique that linearly transforms the original set of variables into a substantially smaller set of uncorrelated variables, called factors, that represents most of the information in the original dataset. Because these factors are uncorrelated, problems due to multicollinearity in a regression model can be avoided. Using PCA, several socioeconomic variables can be reduced to a smaller number of uncorrelated factors representing the socioeconomic status of an area.

Component score coefficients are used to construct weighted latent factors. These coefficients are analogous to regression coefficients but the latent factor is treated as the dependent variable and the original variables are used as predictors of the latent factor. The latent factors are constructed by multiplying standardized scores of the original variables by the component score coefficient for that variable and summing across the variables in a factor. Because these latent variables are uncorrelated, they may then be used together in multiple regression analysis.

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<u>Objective</u>

Pediatric injuries represent a significant public health problem. In analyzing injury data, it is important to understand local area injury patterns and characteristics of an area that may be contributing to increased risk. Previous research has uncovered correlations with socioeconomic measures and injury frequency in pediatric populations. This has been examined both by the area where the injury occurred and by characteristics of the patients' home residence. However, socioeconomic variables tend to be highly correlated with one another and previous research has not utilized Principal Component Analysis to construct latent factors for socioeconomic characteristics of an area.

Principal Component Analysis linearly transforms a matrix of several correlated variables into uncorrelated latent factors by rotating the axes of the original variables. The total amount of variance in the original dataset is preserved in the latent factors, however, the axes are rotated so that the factors are uncorrelated and the largest amount of variance in the original dataset is represented by the first factors. The number of variables for analysis can be reduced by selecting only factors that represent a large portion of the variance. This process results in a smaller number of uncorrelated factors that represents the most of the variability of the original data. These factors can then be used in multiple regression analysis.

The aim of this study was to analyze the extent to which the variability of non-fatal pediatric injuries was explained by variations in socioeconomic characteristics at the census tract level. It was thought that the variation in injury frequency would be positively associated with measures of socioeconomic disadvantage, such as poverty and

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unemployment. Because socioeconomic variables tend to be highly correlated, PCA was utilized to construct latent factors for socioeconomic variables. It was hypothesized that more variance in pediatric injury frequency would be explained by using these latent variables in multiple regression analysis.

Introduction

<u>Methods</u>

The study area was Multnomah County, OR. This area contains 611,040 people, with 119,012 between the ages of 0 and 14 years. The population of this area is rapidly increasing, with almost 24% of residents over age five moving into the county within the last five years. This area is predominantly Caucasian non-Hispanic with 81.4% of people of the race/ethnicity.

In Oregon, emergency medical care operates under a statewide trauma system of operating trauma centers. Under the legal authority of the State Health Division, ers are categorized, from Level I to Level IV, on the basis of available resources and y to provide optimal care for various levels of injury. The criteria for categorizing ta centers are presented in Appendix A. The two Level I trauma centers for the state ah located in Portland, OR.

Source-Injuries

The Oregon Health Division (OHD) Emergency Medical Services and Systems Dent maintains a Trauma Registry for cases that, according to predefined triage co enter the trauma system, receive care at a Level I trauma center, and are rep OHD. These patients can be designated to enter the trauma system and rec at a Level I trauma center at three points. The first is by field triage criteria ass, emergency medical technicians (EMTs) at the scene of the injury and patients are o be transported to a Level I trauma center. These field triage criteria are divi categories: physiologic criteria of the patients' vital signs and level of cons, the anatomy of injury; the mechanism of injury; and co-morbid factors

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used at the discretion of EMTs (Table 1). The second point is by transfer of the patient from a non-Level I center to a Level I center. Inter-hospital transfer criteria are based upon the area of injury and the type of injury (Table 2). Lastly, cases that present directly to the emergency room of a Level I trauma center can be designated by emergency room personnel by the same criteria used by EMTs in the field. Table 3 contains the frequencies of the three designation points for patients 0 to 14 years old injured in Multnomah County from 1996 through 1997 that were reported to OHD. Although all cases that enter the trauma system in the state are archived, only cases that received care at a Level I trauma center and were reported to OHD include the location where the injury occurred. These cases had sufficient information to geocode the location of injury to explicit map coordinates and were available for geographic analysis.

Cases can be designated to enter the trauma system in the field, in the Emergency Department, or by transfer to a Level I trauma center. These cases should be reported to the OHD Trauma Registry. This database includes injuries with International Classification of Diseases (ICD-9) E-codes 800 to 999 which includes all trauma, poisonings, and burns resulting from unintentional, intentional, and undetermined causes. Further, this database excludes cases where the patient died at the scene or during transport. Location where an injury occurred has been routinely collected since 1996.

Data Source—Sociodemographic Measures

Sociodemographic data used in this analysis was collected during the same years as the injury data. Multnomah County was selected as one of four pilot sites for the United States Census Bureau's American Community Survey (ACS) demonstration period from 1996 to 1998. The ACS has been devised as a continuous measurement

system to augment the decennial census and to provide more timely and accurate data on a region's rapidly changing population and housing status. In 1996, the ACS used a 15% probability sample of housing units, as identified by the Master Address File (MAF) developed by the Census Bureau from the 1990 Census Address Control File and the United States Postal Service 1995 Delivery Sequence File, as the sampling unit. Compliance with this survey was mandatory and data were collected using a tiered system of an initial mail phase, a Computer Assisted Telephone Interviewing (CATI) for surveys not received after five weeks of the initial mailing, and Computer Assisted Personal Interviewing (CAPI) in which personnel followed up on a 1 in 3 subsample of delinquent surveys.

Subjects

Study subject included all patients reported to OHD between the ages of 0 and 14 that entered the trauma system and received care at a Level I trauma center for the years 1996-1997. Age ranges for analysis of trauma data are routinely divided into ranges based upon cognitive and developmental stages. These stages are: preschool (0 to 4 years), early school (5 to 9 years), preadolescence and early adolescence (10 to 14 years), and late adolescence (15 to 19 years).[1] Nationally, injury patterns by age show a marked increase in homicides, suicides, and motor vehicle occupant injuries at the late adolescence years.[1] Incidence rates for the 0 to 14 year age ranges are more uniform and were selected for analysis.

Sociodemographic Measures

The content of the 1996 ACS survey is similar to the 1990 decennial census survey and provides comparable socioeconomic and demographic variables for analysis

as those used by other researchers (Appendix B). Socioeconomic factors previously associated with pediatric injury rates in published literature were selected as independent variables. In addition, some have theorized that disadvantaged neighborhoods have more vacant buildings creating a more hazardous environment or that housing units that are in apartments leads children to play in more dangerous areas. The variables, proportion of housing units that were vacant and proportion of housing units that were not a single detached structure will be used to test these theories.

Variables used in analysis were derived from items on the 1996 ACS survey. When available, data measured at the household level was used to more completely characterize a census tract. There are three categories of variables selected for analysis: density measurements; socioeconomic measurements; and housing characteristics. Socioeconomic variables and housing characteristics were expressed as the proportion of the population with that trait residing in a census tract. Density measurements were expressed as the number of people or housing units per square mile. Variables included for analysis were:

- Population density: the number of people residing in a census tract per square mile (density).

- Population density 0 to 14: the number of children 0 to 14 years old residing in a census tract per square mile (density).

- Housing density: the number of housing units in a census tract per square mile (density).

- Employment status: the proportion of unemployed workers in the labor force (socioeconomic).

- Minority population: calculated using the Hispanic origin by race variable and calculated as the percent of the total census tract population that is of Hispanic origin or other ethnicity versus Caucasian non-Hispanic (socioeconomic).

- Persons in household: the proportions of households with 5 or more persons (socioeconomic).

- Single mother households: the proportion of total households with a female householder with related children without a spouse living in the home (socioeconomic).

- Inability to speak English: the proportion of persons 5 years and older that speak a language other than English and speak English "not well" or "not at all" (socioeconomic).

- Educational attainment: the proportion of persons 25 years and older that do not have a high school diploma in a census tract (socioeconomic).

- Median household income: the median income of households in a census tract (socioeconomic).

- Poverty status: the proportion of families in a census tract living below the poverty limit (socioeconomic).

- Crowding: the number of occupied housing units within a census tract with more than 1 persons per room (socioeconomic).

- Percent vacant: the proportion of housing units within a census tract that are vacant (housing characteristic).

- Percent attached: the proportion of housing units in a census tract that are not a single family detached dwelling (housing characteristic).

The characteristics of Multnomah county for these variables are summarized in Table 4.

Mapping

The injury location of pediatric trauma cases reported to OHD were georeferenced to explicit map coordinates for Multnomah County using the Regional Land Information System (RLIS) street files available from the METRO Data Resource Center and ArcView v3.0 GIS commercial software. Trauma cases were aggregated to census tracts, the smallest geographic level with stable estimates of socioeconomic variables, to calculate incidence rates. The frequencies of injury by census tract were converted to injuries per square mile to control for the differences in census tract size.

Additionally, many trauma events occur at major road intersections, which are frequently used for census tract boundaries. Therefore, cases occurring at census tract boundaries were equally divided and apportioned into the census tracts sharing these boundaries. For example, if an injury occurred on the border of census tracts numbers 8.01 and 8.02, each tract would receive 0.5 of that injury. The unit of analysis was the census tract and the dependent variable was number of injuries occurring to 0 to 14 year olds per square mile in Multnomah County as reported to OHD.

Statistical Methods

Principal Component Analysis was conducted using the Statistical Package for the Social Sciences v9.0 (SPSS). This method was used to construct latent factors, measuring socioeconomic characteristics, at the census tract level. All nine measures of socioeconomic status were included in PCA analysis. Principal Component Analysis linearly transforms correlated variables into uncorrelated latent factors by rotating the axes of the original variables. In this analysis, an orthogonal varimax rotation was used which maximizes the variance of the squared loadings for each factor. These uncorrelated factors were then used in multiple regression analysis.

The first step in PCA involved analysis of the correlation matrix. Bartlett's test of Sphericity yields a chi-square statistics and tests that the correlation matrix differs significantly from an identity matrix. An identity matrix has no correlation among the variables, with correlations of 1 along the diagonal and 0 for all the off-diagonal terms.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) is based on the squared partial correlations. This procedure assesses the overall adequacy of the correlation matrix and tests that variation in the original variables is represented by the resulting factors. If the individual KMO score is low, the variability of that term is not being captured by the factors. The rule-of-thumb proposed by Kaiser is that values in the .90's are marvelous, in the .80's are meritorious, in the .70's are middling, in the .60's are mediocre, in the .50's are miserable, and below .50 is unacceptable.[25] A criteria of 0.6 or greater for the individual KMO score was required for variables to remain in PCA analysis.

Communalities, based upon squared multiple correlations, were also evaluated to assess the relationships between the variables. The variance of each standardized term is

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divided into two parts with the communality representing the amount of variance due to the common factors and the specificity representing the amount of variance due to the original variable. Communalities should be near 0.60 or greater to indicate that a variable is adequately related to and can be predicted from the remaining variables. Variables that did not meet this criteria were discarded from PCA analysis.

To determine on which factor a variable loads, a 1% significance test was performed. Because of the number of test involved a 1% level of significance is recommended.[26] This value was then doubled because the standard errors of factor loading are up to twice those of ordinary correlations. The formula for this test is: Critical Value = $5.152/\sqrt{(N-2)}$. Using this formula, a critical value of 0.411 was required for a variable to load significantly on a factor. Only variables that loaded significantly on a factor were retained.

A Cattell's Scree Test was used to determine how many factors to retain for regression analysis. Using standardized scores for the original variables, the total amount of variance in the dataset equals the number of original variables. Each latent variable expresses a portion of that variance which is called the eigenvalue of that factor. If a factor has an eigenvalue less than one, that factor is expressing less variance than the original variable. By plotting the eigenvalues against the factors, the resulting curve will display how much of the total variance is explained by each factor. When this curve levels off, there is only a small amount of variance explained by the remaining factors. Cattell's Scree Test involves examining this plot and retaining the factors that explain a larger proportion of the variance for further analysis.

Component score coefficients were used to construct latent factor scores for socioeconomic variables. Factor scores were calculated using regression methods by treating the factor as the dependent variable and using the original variables as independent predictor variables. Using this technique, the component score coefficients are analogous to regression coefficients. Factor scores were calculated by multiplying the standardized score of the original variable by its component score coefficient and summing across all variables.

Regression analysis was performed using JMP v3.1.5 commercial statistical software. The outcome variable was the number of injuries per square mile in a census tract. The distribution of the outcome variable was examined. Transformation of this variable may improve the linear relationships with the independent variables. Because many census tracts have no injuries, a transformation of the dependent variable requires that a constant be added to the number of injuries per square.

Simple linear regression analysis was conducted using each of the independent variables as well as the latent variable measuring overall socioeconomic status. The results of this analysis provide the basis for building a multivariate regression model. In multiple regression analysis, models were developed using the latent factors rather than the original variables. Variables were entered using a stepwise approach, starting with the variables that explained the greatest amount of variance based upon the coefficient of determination from simple linear regression analysis. The second variable entered into the regression model was selected to maximize the square of the multiple correlation coefficients. This is equivalent to maximizing the partial correlation with the dependent variable after removing the linear effects of variables already in the model. This also

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minimizes the amount of variance not explained by the model represented by the residual sum of squares.

An application of the generalized linear hypothesis test, or general F test, was used to determine which variables remained in the multiple regression model. This test evaluates whether the residual sum of squares produced by a regression model would be significantly reduced with the addition of a variable. The results are evaluated using significance levels from the F distribution. The F-to-enter is used to specify a critical value for the F statistic where including an additional variable in the regression model significantly reduces the residual sum of squares. Conversely, the F-to-remove evaluates whether retaining a variable in the regression model significantly reduces the residual sum of squares.

A stepwise approach to entering variables in a multiple regression model will evaluate the F-to-enter and the F-to-remove as each variable is entered or removed from the model. The first step will enter the variable with the highest F-to-enter value. The second step will enter the variable with the second highest F-to-enter value. Then, the F-to-remove is calculated for both variables entered in the model. If either of those is less than the specified F-to-remove, that variable will be eliminated from the regression model. If both variables meet criteria to remain in the model, the variable with the third highest F-to-enter is included in the model. Evaluation of the F-to-enter and the F-to-remove continues at each step until no more variables can be entered or removed from the model. This technique controls for effects of variable entered in the model and allows

each variable an opportunity to be included in the model. In this analysis, the probability for F-to-enter is $\alpha = 0.15$ and the probability for F-to-remove is $\alpha = 0.30$.

The results of the model developed using stepwise regression techniques will be evaluated. Residuals were analyzed to confirm that they were normally distributed using Shapiro-Wilk W test. Constancy of error variance will be assessed using a Breusch-Pagan test.

Some variables in the ACS were measured in interval units. For example, number of people per household was measured in increments of one person starting with one person per household and increasing to seven or more people per household. For such variables, it was necessary to decide which intervals to include when calculating proportions by census tract. First, the variable was expressed as the proportion at each interval including all higher intervals. For persons per household, the proportions tested would be households with 2 or more people, with 3 or more, four or more, up to 7 or more people. These intervals were then plotted against the outcome variable and a least squares linear regression line was fitted to the data. The interval used for subsequent analysis was the interval that was most positively associated with the number of injuries per square mile.

<u>Results</u>

There were 268 cases of injury in 0 to 14 year olds that were reported to OHD and received care at a Level I trauma center from 1996 to 1997. After geocoding, six cases were found to be outside the Multnomah County borders. Additionally, two cases designated in Clackamas county and two cases designated in Washington county were found to be inside the Multnomah County borders. In all, there were 266 cases available for analysis. Of these, 217 contained sufficient geographic information to permit geocoding to the census tract level and were available for geographic analysis. This results in a match rate of 81.6% . Twenty-four cases had no geographic location, 17 cases had insufficient geographic locators, and 8 cases had incorrect geographic locators, such as occurring at the intersection of two streets that in actuality run parallel. Match scores for each case represent the reliability of the geocoded location. After locations were edited to contain complete prefix and suffix information, the average match score was 98.5% representing high reliability that cases were correctly assigned to locations.

The population of children age 0 to 14 was used to calculate incidence rates by census tract. Injury frequencies per square mile and incidence rates are presented in Table 5. Incidence rates were also calculated by gender and race and are presented in Table 6. The annual overall incidence rate (IR) was 111.8 per 100,000. Males had an incidence rate almost double the incidence rate observed in females (141.3 vs. 80.8 per 100,000 respectively). This ratio is consistent with other published findings.[3, 13] Because the Census Bureau collects data on race and Hispanic origin independently, incidence rates could only be calculated for Asians, Blacks, and White non-Hispanics. Blacks had an incidence rate almost double that of Asians or White non-Hispanics (IR: 169.7 vs. 74.4

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vs. 94.8 per 100,000 respectively). Injury frequency by type of injury is reported in Table 7.

Analysis of the outcome variable revealed a negative logarithmic distribution so this variable was transformed. After adding a constant to the outcome variable, a natural log transformation increased the linear relationship between this variable and the independent variables. The dependent variable for all future analysis was the natural log of injuries per square mile. The dependent variable was divided into quartiles and is presented in Figure 1. A reference map of Multnomah County with major arterial streets is provided as Figure 2.

Principal component analysis (PCA) was performed using the nine variables associated with socioeconomic status. Correlations among these variables were high indicating that use of PCA was warranted (Table 8). This correlation matrix differed significantly from an identity matrix (Bartlett's Test of Sphericity, $p \leq .001$) and had an overall Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) score of 0.771. However, proportion of the labor force that was unemployed had a low communality score of 0.442 and was discarded from PCA analysis. Additionally, proportion of households with five or more residents had a low individual KMO score of 0.476 and was also discarded.

Seven variables remained in the PCA analysis. The resulting correlation matrix differed significantly from an identity matrix (Bartlett's Test of Sphericity: $p \leq .001$). The overall KMO score was 0.825 and KMO scores for individual variables were 0.771 or greater.

A scree plot of the eigenvalues was evaluated to determine the number of factors to retain for multiple regression analysis (Figure 3). The first two components extracted explained 67.2% of the variance in the dataset. The remaining factors had eigenvalues less than one where the plotted curve had leveled off.

These two factors were used to construct latent factors using component score coefficients from the rotated components. All individual variables loaded above the 1% critical value. Four variables loaded predominantly on Factor 1. These variables are: household income; proportion of families below the poverty level; proportion of people that are not Caucasian non-Hispanic; and proportion of families headed by a single mother. Three variables loaded predominantly on Factor 2. These variables are: proportion of household with more than one person per room; proportion of people who spoke English poorly or not at all; and proportion of people without a high school diploma. The component score coefficients and the equations to calculate factor scores are presented in Table 9.

Simple linear regression was performed for each independent variable and Factor 1 and Factor 2. These results are presented in Table 10. In a simple linear regression model, twelve variables are significant at $p \leq 0.05$. However, none of these variables taken individually explain more than 24% of the variance in injury frequency and several of these variables measured some aspect of socioeconomic status and were correlated with one another. The latent variables, Factor 1 and Factor 2, individually explained 23.6% and 4.4% of the variance respectively.

Multivariate regression analysis was performed to explain the variance in number

of injuries by census tract using the two latent variables and variables not included in the

latent factors. These variables were: the three density measures; proportion of the labor

force that was unemployed; proportion of households with five or more people;

proportion of vacant housing units, proportion of housing units that were not detached;

Factor 1; and Factor 2. Using the stepwise technique to enter variables resulted in a

multiple regression model including the two latent variables, Factor 1 and Factor 2, and

total population per square mile. This model explains 31.5% of the variance in number of

injuries per census tract (R^2_{adj}: = 0.315, $p < .001$). Results of multiple regression analysis

are presented in Table 11. Residual diagnostics concluded that this model satisfied the

assumption of a normal distribution and constant error variance of the residuals (Shapiro-

Wilk W = .73, X^2_{BP}: $p > .05$). Interaction effects were investigated, specifically using the

density measurements in combination with other variables, however, these did not

improve regression coefficients.

The results of multiple regression analysis using latent factors were compared to

results using all 14 original variables without the latent factors using a stepwise approach.

The resulting multiple regression model included the variables household income,

proportion of families headed by a single mother, and population of children age 0 to 14

per square mile. This model explained 31% of the variance in injury frequency (R^2_{adj}: =

0.309, $p < .001$). However, residual diagnostics revealed that the residuals did not have

constant error variance (X^2_{BP}: $p < .05$). When total population per square mile was

substituted for number of children age 0 to 14 per square mile, residuals met both criteria.

This model explained 31% of the variance in injury frequency (R^2_{adj}: = 0.306, $p < .001$) and residual met diagnostic criteria.

A cloropleth map categorizes a variable into ranges and uses gradations of color to cartographically display areas with different range values. The three independent variables from the multiple regression model were cloropleth mapped using quartiles of the predictor variables and intersected with the frequency of injuries in the fourth quartile. These results graphically display census tracts where the predictor and outcome variable are both in the fourth quartile. These results are presented in Figures 4, Figure 5, and Figure 6.

Discussion

Injuries to children are a significant public health concern. Higher incidence of injury has been observed in children from particular socioeconomic backgrounds or areas. Therefore, the variance in injury frequency may be explained in part by sociodemographic characteristics of an area. Further, several socioeconomic variables associated with injury frequency have been reported. Principal Component Analysis, which transforms a large number of correlated variables into a smaller number of uncorrelated latent factors, may explain a larger percent of the variance in injury frequency than models using fewer socioeconomic variables. Improving the ability to identify areas with higher injury frequencies and the characteristics of these areas may be used to more effectively target injury prevention resources.

These data indicate that sociodemographic characteristics of a census tract and total population can explain a portion of the variance in number of injuries to children in a census tract. However, only 31.5% of the variance in injury frequencies was explained by these variables and there was only a slight improvement, in terms of the amount of variance explained, when using latent variables as opposed to the original variables. This may be due to assumptions used in developing the regression model or due to the affect of aggregating data by census tracts. This study revealed a lower incidence rate than other studies which may be explained by limitations in injury reporting to OHD. This may have also affected the ability to explain the variation in injury frequency using sociodemographic indicators. Further, bias in transporting patients based upon distance from a Level I trauma center may also affect regression coefficients.

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In a multivariate regression model, the variables that best explained the variability in injury frequency were total population density and the latent variables from PCA analysis ($R^2_{adj} = .315, p < .001$). These results can be compared to those of other researchers, where low income[15] ($R^2 = .325, p < .001$) and number of household per acre with more than one person per room[19] ($R^2_{adj} = .66, p < .001$) were more predictive in regression models. The first study used injury incidence rates as the outcome variable and was basing analysis on the patients' residence census tracts. The study area was also found to be more economically disadvantaged than New York City as a whole based upon percent of households living below poverty (34% vs. 19% respectively) which may explain these results. The second study used number of pedestrian injuries per acre that were reported to police as the dependent variable. It is possible that areas with a higher density of people are more patrolled than areas with a less dense population leading to more injuries being reported in high density areas. The study reported here produced results comparable to the New York study in terms of percent of variance explained by regression analysis. This may be due to the similar definition of injury used in these studies. The New York study was based upon patients hospitalized due to injury and this study was based upon patients requiring treatment at a Level I trauma center.

Although the multiple regression model that best explained the variance in injuries per square mile contained the population density variable and the two latent factors, this model was only slightly better than the model containing the population density measure, median household income, and the proportion of families that were headed by a single mother. It is possible that single mothers live in areas characterized by the other socioeconomic variables used in this analysis. For example, single mothers

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may live in areas that also have a higher number of minorities or a higher number of people without a high school diploma. If this is the case, the proportion of families headed by a single mother may act as a surrogate for the other socioeconomic measures.

It is also possible that data aggregated at the census tract level in not indicative of the characteristics where the injury occurred, as assumed in this analysis. This may not be the case, especially in larger census tracts or in tracts with high variability on measures included in this analysis. Census tracts in Multnomah County range in size from less than one square mile to 191 square miles. Unfortunately, this could not be analyzed because data from the ACS is aggregated by census tract.

This analysis also assumed that indicators of lower socioeconomic status would explain the variance in injury frequency. No measures of high socioeconomic status were explicitly included, excluding the median household income variable. The 1988 Child Health Supplement (CHS) to the National Health Interview Survey (NHIS) has been used in several studies examining injury rates by socioeconomic variables. One study revealed that higher self-reported injury rates were associated with higher levels of maternal education, family income, and health care coverage.[3] The CHS study also observed more bicycle and sports injuries in families with incomes over $25,000. These positive associations may be explained by the definition of injury used in this study. This survey relies upon self-reported descriptions of physician contacts and other health care utilization to determine injury rates and assign ICD-9 codes and includes all instances of accident, injury, or poisoning that required any medical attention. It has been reported that medically attended injury rates are 30 to 40% lower for children without access to medical coverage, either health insurance or Medicaid, than for children with such

coverage.[27] When data from the CHS are adjusted for access to health care, having only one adult in the home is associated with a 21% increase in injury risk (RR: 1.21 CI: 1.07 to 1.37) when compared to families with two adults in the home.[16] No measure of maternal education was available from the ACS survey and the trauma data, as maintained by OHD, does not include any measure of patients' family income.

Data transformations may have also influenced results of this study. The decision to divide cases occurring at census tract boundaries may have caused underestimates of correlation coefficients if these cases were divided between census tracts that varied greatly in terms sociodemographic measures. A second method of treating cases occurring at boundaries would be to randomly allocate the entire case to either of the census tracts. This was tested using the number of injuries per square mile when cases occurring at census tract boundaries were randomly allocated to one of the census tracts. The multiple regression model developed included the same variables as the model developed by dividing cases occurring at census tract boundaries. The amount of variance explained by these models differed by less than 1%. Also, the method of selecting the intervals to sum across for number of people per household and number of people per room were selected on the basis of correlation with the dependent variable. This technique excludes any protective effects of having fewer people per household or fewer people per room.

The decision to use sociodemographic data collected during the same study period as the injury data limited the region of analysis to Multnomah County. This county is only one of the tri-county metropolitan region for Portland, OR. Although number of children in the age range for analysis differed significantly between data collected in the

1990 decennial census and the 1996 ACS, it is possible that the distributions of sociodemographic indicators did not change appreciably. Correlations between the 1990 decennial census and estimates from the 1996 ACS on the variables number of people per square mile, number of people age 0 to 14 years per square mile, and percent of people in the census tract that are not Caucasian non-Hispanic are all 0.9 or greater for all of Multnomah County. If the distribution in proportion of sociodemographic indicators is not varying across census tract, expanding analysis to the tri-county region or state is warranted.

The overall incidence rate for children age 0 to 14 was 111.8 per 100,000. Although no direct comparison was available, other studies provided incidence rates for pediatric injury. Two studies involved pedestrian injuries to children age 0 to 14 that were reported to police. In Hartford, CN an incidence rate of 310 per 100,000[17] was reported and in Memphis, TN a rate of 138 per 100,000[19] was reported. A study conducted in Northern Manhattan reported an incidence rate of 725 per 100,000[15] for injuries occurring to children less than 17 years old that resulted in hospitalization. A second study of injury data reported to the Statewide Planing and Research Cooperative System (SPARCS) for 1989 covering all of New York State reported an annual incidence rate of 465 per 100,000 children age 0 to 14 that were hospitalized due to traumatic injury.[28]

Data used in this analysis were collected as part of a statewide trauma reporting system. However, only cases that entered the trauma system, received care at a Level I trauma center, and were reported to OHD were available for analysis which limits the population in this study. This reporting system may only capture a subset of injuries in

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the pediatric population, as indicated by the low annual incidence rate when compared to other published studies. The likelihood that a case is reported to OHD may be affected by the point at which a patient enters the trauma system. Further, this reporting system is limited to patients treated at certain locations and does not include fatalities or cases treated by primary care physicians or other health personnel. Lastly, injury location has only been reliably included in this database since 1996, limiting analysis to two years of data. Prior to 1996, less than 50% of cases had any geographic location recorded and many of these were incomplete.

One limitation of this dataset is selection bias in the number of patients reported to OHD that have been designated to enter the trauma system in the field, by Emergency Department personnel, or by transfer. It is likely that patients presenting directly to the emergency room are being under-reported in the OHD trauma registry. In a study of brain injured children age 0 to 19 in San Diego County, 46% of patients were transported to the emergency department by private vehicle. Further, an age gradient was observed with younger children more likely to be transported by private vehicle which the investigators attribute to increasing difficulty moving a larger person without professional assistance. The percent of age ranges transported by private vehicle were 80% for children less than one, 65% for children between 1 and 4 years, 59% for children 5 to 9 years, 58% for children 10 to 14 years, and 24% for children 15 to 19 years.[29] Age ranges by designation indicate that cases not transported by ambulance are under-represented in this database (Table 3). This could potentially inflate the association between measures of socioeconomic disadvantage and injury frequency if patients from more advantaged

areas are more likely to be from a family that owns a vehicle and present directly to the ED.

A second limitation of this database is that children that were dead at the scene or died during transport to a Level I trauma center are excluded. Excluding fatalities may have underestimated the risk of injury associated with demographic or socioeconomic measures at the location of injury. For example, homicide is the second leading cause of injury deaths among children and homicide rates are almost five times as high for black children than rates for white children.[1] Socioeconomic differences in the areas where children of these backgrounds reside may contribute to this difference in homicide rates. Including fatalities may improve the amount of variation in injury frequency explained by socioeconomic measures. However, it should be noted that the epidemiology of fatal injuries differs from and cannot be extrapolated from the epidemiology of non-fatal injuries.[15]

One source of bias that was investigated involved EMTs' decision to initiate transport to a Level I trauma. If the distance from the site of injury to a Level I trauma center is influencing this decision, with patients injured closer to these hospitals more likely to be entered into the trauma system, regression coefficients would be overestimated. This would occur because the two Level I trauma centers are located near densely populated areas and areas with high scores on the latent factors of socioeconomic status.

If this was biasing results to find an association with these measurements, more patients with low ISS scores would be injured closer to the Level I trauma centers and higher ISS scores would be over-represented farther away from the Level I trauma center.

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This can be evaluated by using cases designated for trauma system entry by field paramedics and calculating frequencies of ISS scores at increasing distances from the receiving hospital. First, ISS scores were categorized as low (less than 9), medium (9-15), and high (greater than 15). Second, distance to receiving hospital was divided into three mile intervals. Last, the percent of patients with low, medium, and high ISS scores was calculated at each three mile interval. The percent of low ISS cases remained consistent across all distances from the receiving hospital indicating that bias of field paramedics did not affect these results (Table 12).

This study explained 31.5% of the variance in pediatric injuries using socioeconomic and density measures. Latent variables constructed using PCA analysis improved regression models, although not to the extent anticipated. Increasing the area of analysis to the entire Portland METRO region and using more years of geocoded injury data could improve results. Principal Component Analysis is a promising technique allowing a greater number of socioeconomic variable to be included in regression analysis.

GIS methodology is an important and rapidly emerging tool for public health research. It is vital that public health data consistently incorporates a geographic reference. The type of geographic locator also affects the type of analysis that can be conducted. Analysis by region can be used to more efficiently target prevention resources. This analysis revealed that sociodemographic characteristics of a census tract can be used to explain the variability in injury frequency. This study also indicated possible limitations in data reporting to OHD.

The use of Principal Component Analysis slightly improved the amount of variance explained by this analysis. One limitation of this study was the lack of consistent recording of injury location before 1996 resulting in only two years of data available for analysis. Additional years of data geocoded by the location where the injury occurred would benefit this analysis. Also, the reliability that cases presenting directly to the Emergency Department are reported to OHD needs to be investigated. With these limitations resolved, it is likely that expanding the region of analysis to the entire tri-county METRO region would improve the association between socioeconomic measures and injury frequency.

As methods for assigning a geographic reference become more routinized, a reliable geographic locator would be the address of the incident or home address of the patient. Methods to analyze geographic data are rapidly being developed and will shortly be incorporated with commercial statistical software. Environmental Systems Research Institute (ESRI) is cultivating a close relationship with the developers of SPlus statistical

software. This will permit more sophisticated analysis within the GIS package as well as increased portability of files into SPlus for more rigorous analysis.

As the analysis of geographic data becomes more accessible, the reliance upon data aggregated by area unit will decrease. Many powerful methods for analysis of point data, which maintains the continuous spread of data across a surface, will be available shortly. Further, when aggregating to an area unit, it is important to use the smallest unit feasible. As data is aggregated across a larger region, small area variances will disappear. Caution also needs to be taken when using zip code of the mailing address as the geographic locator. In rural areas, where residents may receive mail at a centralized PO box rather than delivered to the home, this can cause characteristics to be incorrectly assigned to location. Further caution needs to be taken when using a zip code plus four digit locator. The four digit extensions change frequently and there is not a reliable method for updating these changes in geographic boundary files.

Care also needs to be taken when analyzing health events that can occur at boundaries of the chosen area unit. This study chose to divide cases that occurred at census tract boundaries and apportioned equal fractions of the case into each census tract. This was only possible by geocoding the cases to the exact location, then determining if this location was a boundary. In many public health databases, the only geographic locator that is incorporated is the zip code. It is impossible to resolve cases occurring at boundaries when data is collected in this manner. Further, for this dataset, 22.6% of the zip codes were incorrect. This figure is not corrected for cases where the injury occurred at a zip code boundary.

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Researchers also need to be aware of the full potential of the Federal Information and Processing Standard (FIPS) code that is frequently used as a geographic locator. A complete FIPS code can be used as a geographic locator to resolve location down to the block group level. A complete FIPS code contains 13 digits. The first two digits record the state, the second three digits record the county, the following six digits record the census tract, and the last two digits represent the block group.

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Table 1: Triage Criteria

<u>**Vital Signs and Level of Consciousness**</u>
      Systolic blood pressure < 90 mmHg; or
      Respiratory difficulty with rate <10; or
      Airway management required; or
      Glasgow Coma Scale <13

<u>**Assessment of Anatomy of Injury**</u>
      Penetrating injury of the head, neck, torso, groin; or
      Amputation above wrist or ankle; or
      Spinal cord injury with limb paralysis; or
      Flail chest; or
      Two or more fractures of the femur or humerus

<u>**Assessment of Mechanism of Injury**</u>
      Death of same-car occupant; or
      Ejection of patient from enclosed vehicle; or
      Extrication time >20 minutes

Situations where trauma system activation is at EMT's discretion
<u>**High Energy Transfer Situations**</u>
      Fall > 20 feet; or
      Pedestrian hit at >20 mph or thrown >15 feet; or
      Rollover; or
      Motorcycle, ATV, or bicycle crash; or
      Significant intrusion into occupant space of vehicle

<u>**Co-Morbid Factors**</u>
      Extremes of age: <12 and >60 years of age
      Hostile environment (extremes of heat or cold)
      Medical illness (COPD, CHF, renal failure, etc.)
      Presence of intoxicants
      Pregnancy

TABLE 2: Inter-Hospital Transfer Criteria

Area of Injury	Type of Injury
Central Nervous System	Head injury
	Penetrating injury
	Depressed skull fracture
	Open injury
	CSF leak
	GCS of 12 or less
	Deterioration in GCS of 2 or more
	Lateralizing signs
	Spinal cord injury
Chest	Wide superior mediastinum
	Major chest wall injury
	Cardiac injury
	Patients who may require protracted ventilation
Pelvis	Pelvic ring disruption with shock, more than 5 units blood transfusion
	Evidence of continued hemorrhage, and compound (open) pelvic injury or pelvic visceral injury
Multiple System Injury	Severe face injury with head injury
	Chest injury with head injury
	Abdominal or pelvic injury with head injury
	burns with head injury
Secondary Deterioration or Trauma Patients (Late Sequelae)	Patients requiring mechanical ventilation
	Sepsis
	Single or multiple organ system failure (deterioration in CNN, cardiac, pulmonary, hepatic, renal, or coagulation system
	Osteomyelitis

TABLE 3: Patients' Age by Designation into the OHD Trauma Registry
Multnomah County: 1996-1997

	Designation							
Age (years)	Field		Transfer		Emergency Dept.		Unknown	
	Number	%	Number	%	Number	%	Number	%
0-1	11	73.3%	1	6.7%	3	20.0%	0	0.0%
1-4	58	73.4%	15	19.0%	5	6.3%	1	1.3%
5-9	56	75.7%	5	6.8%	13	17.6%	0	0.0%
10-14	79	80.6%	10	10.2%	9	9.2%	0	0.0%

TABLE 4: Socioeconomic and Demographic Characteristics
of Multnomah County, OR: 1996

		Range in Census Tracts	
	County	Minimum	Maximum
Area in square miles	464.6	0.13	191.7
Total population	611, 040	71	8530
Number of children age 0-14 years	119,012	0	1962
Number of housing units	272,285	23	3502
Number of children age 0-14 years per square mile	256.2	0	3586.6
Total population per square mile	5571.1	17	20311.7
Housing units per square mile	586	6.53	16555.9
Median household income	$32,716	$8,423	$100,037
Percent of households with one or more persons per room	3.10%	0%	8.90%
Percent of households with five or more people	7.30%	0%	17.60%
Percent of people age 16 or older in the labor force who are unemployed	4.20%	0%	14%
Percent of families living below poverty	10%	0%	100%
Percent of people age 5 years or older who speak English poorly or not at all	3.60%	0%	16%
Percent of people age 25 or older without a high school diploma	13.80%	0.60%	38.10%
Percent of the population who are not Caucasian non-Hispanic	18.60%	0%	78.60%
Percent of families headed by a single mother living with related children and no spouse	13.20%	0%	44.30%
Percent of housing units that are vacant	4.20%	0%	20.50%
Percent of housing units that are not a single detached unit	36.60%	0%	100%

* Data from the 1996 ACS

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TABLE 5: Injury Frequency for 1996-97, Number of Injuries per Square Mile
and Annual Incidence Rate per 100,000 Children Age 0 to 14 Years

Census Tract	Injury Frequency 1996-97	Number of Injuries per Square Mile	Number Age 0 to 14	Annual Incidence Rate (per 100,000)
1.00	0	0	756	0
2.00	0	0	873	0
3.01	1.50	1.70	307	4.89
3.02	0	0	1169	0
4.01	0.50	0.95	511	0.98
4.02	0	0	654	0
5.01	1.00	2.28	756	1.32
5.02	0.92	1.66	1106	0.83
6.01	2.08	2.66	1172	1.78
6.02	2.67	4.16	1453	1.83
7.01	2.33	4.35	612	3.81
7.02	1.08	1.98	1181	0.92
8.01	1.50	2.52	938	1.60
8.02	4.00	7.75	895	4.47
9.01	2.00	4.57	683	2.93
9.02	2.00	5.22	757	2.64
10.00	1.50	1.41	798	1.88
11.01	2.00	4.34	65	30.77
11.02	0	0	142	0
12.01	3.00	8.42	420	7.14
12.02	0	0	592	0
13.01	1.00	3.53	388	2.58
13.02	0	0	356	0
14.00	0	0	598	0
15.00	0	0	597	0
16.01	2.50	2.19	1171	2.13
16.02	1.00	1.53	739	1.35
17.01	0	0	1170	0
17.02	0	0	679	0
18.01	0	0	502	0
18.02	2.00	4.74	476	4.20
19.00	0.33	0.49	866	0.38
20.00	4.00	7.23	549	7.29
21.00	2.00	2.96	108	18.52
22.01	1.00	3.92	84	11.90
22.02	0	0	0	0

Census Tract	Injury Frequency 1996-97	Number of Injuries per Square Mile	Number Age 0 to 14	Annual Incidence Rate (per 100,000)
23.01	1.00	3.63	350	2.86
23.02	0	0	115	0
24.01	0	0	452	0
24.02	4.00	11.06	236	16.95
25.01	1.50	2.90	1144	1.31
25.02	0.50	1.15	540	0.93
26.00	1.83	4.63	399	4.59
27.01	0	0	544	0
27.02	0.33	0.97	199	1.67
28.01	1.00	2.81	471	2.12
28.02	0	0	588	0
29.01	0	0	1081	0
29.02	1.00	1.01	1027	0.97
29.03	1.00	0.85	835	1.20
30.00	0.50	0.80	1035	0.48
31.00	0.50	1.01	865	0.58
32.00	2.00	4.52	935	2.14
33.01	4.33	15.17	695	6.23
33.02	2.00	7.38	493	4.06
34.01	2.50	6.86	845	2.96
34.02	2.50	8.40	1067	2.34
35.01	1.50	3.09	606	2.48
35.02	1.00	2.35	620	1.61
36.01	2.33	3.69	1079	2.16
36.02	1.83	2.13	1426	1.29
36.03	0.50	1.40	394	1.27
37.01	2.00	3.51	832	2.40
37.02	0	0	582	0
38.01	2.00	4.40	394	5.08
38.02	3.00	7.42	655	4.58
38.03	3.50	7.29	907	3.86
39.01	1.00	1.03	1559	0.64
39.02	1.50	3.29	325	4.62
40.01	3.00	3.95	1540	1.95
40.02	0	0	528	0
41.01	5.00	1.69	1528	3.27
41.02	3.00	3.64	984	3.05
42.00	0	0	467	0
43.00	3.50	0.32	209	16.75

Census Tract	Injury Frequency 1996-97	Number of Injuries per Square Mile	Number Age 0 to 14	Annual Incidence Rate (per 100,000)
44.00	0.50	0.22	20	25.00
45.00	0	0	290	0
46.01	0	0	461	0
46.02	1.00	1.90	457	2.19
47.00	0	0	235	0
48.00	0.50	3.83	40	12.50
49.00	0.50	2.52	103	4.85
50.00	2.00	7.02	33	60.61
51.00	1.00	1.93	13	76.92
52.00	1.00	3.96	13	76.92
53.00	1.00	4.55	0	--
54.00	1.00	4.32	0	--
55.00	0	0	59	0
56.00	0	0	73	0
57.00	0	0	87	0
58.00	1.00	0.67	535	1.87
59.00	1.00	0.90	431	2.32
60.01	0	0	167	0
60.02	0	0	220	0
61.00	0	0	212	0
62.00	1.00	1.51	379	2.64
63.00	1.00	0.30	700	1.43
64.01	3.00	1.68	1309	2.29
64.02	0	0	1538	0
65.01	1.00	0.70	1004	1.00
65.02	0.50	0.67	759	0.66
66.01	1.00	1.65	350	2.86
66.02	1.50	1.53	863	1.74
67.01	1.00	1.39	458	2.18
67.02	0	0	318	0
68.01	0	0	419	0
68.02	0	0	913	0
69.00	0	0	483	0
70.00	1.50	0.11	777	1.93
71.00	1.00	0.02	647	1.55
72.01	0	0	135	0
72.02	1.00	0.08	377	2.65
73.00	1.00	0.08	47	21.28
74.00	1.00	1.77	843	1.19

Census Tract	Injury Frequency 1996-97	Number of Injuries per Square Mile	Number Age 0 to 14	Annual Incidence Rate (per 100,000)
75.00	2.50	3.00	910	2.75
76.00	1.00	1.63	936	1.07
77.00	1.00	2.36	334	2.99
78.00	2.00	4.67	315	6.35
79.00	1.50	1.85	796	1.88
80.01	0	0	492	0
80.02	0	0	493	0
81.00	1.50	1.38	1116	1.34
82.01	0.50	0.61	482	1.04
82.02	3.50	3.81	962	3.64
83.01	1.58	2.48	492	3.22
83.02	0.00	0.00	843	0
84.00	1.50	3.01	528	2.84
85.00	1.00	1.18	687	1.46
86.00	2.08	4.15	828	2.52
87.00	2.00	3.06	801	2.50
88.00	0	0	698	0
89.00	3.75	0.76	1771	2.12
90.00	5.50	5.11	1838	2.99
91.00	7.00	2.65	1803	3.88
92.01	3.00	2.91	1337	2.24
92.02	0.50	0.81	873	0.57
93.00	4.50	2.63	1235	3.64
94.00	0.50	0.35	904	0.55
95.00	3.50	2.59	1618	2.16
96.01	4.00	2.69	1962	2.04
96.02	3.50	2.30	1736	2.02
97.01	3.50	5.03	1033	3.39
97.02	0.83	0.82	1464	0.57
98.01	1.83	1.81	951	1.93
98.02	4.83	2.83	1632	2.96
99.01	0	0	1426	0
99.02	1.50	0.30	1859	0.81
99.03	0.50	0.18	1029	0.49
100.00	2.50	1.33	1425	1.75
101.00	2.50	1.25	1507	1.66
102.00	2.00	0.12	643	3.11
103.01	3.33	1.16	1513	2.20
103.02	0	0	1843	0

Census Tract	Injury Frequency 1996-97	Number of Injuries per Square Mile	Number Age 0 to 14	Annual Incidence Rate (per 100,000)
104.02	1.00	0.07	1307	0.77
104.04	2.50	0.75	1884	1.33
104.05	1.83	2.23	1019	1.80
104.06	0.33	0.29	1100	0.30
104.07	0	0	1386	0
105.00	1.00	0.01	759	1.32

TABLE 6: Annual Incidence Rate per 100,000 Children
Age 0 to 14 Years
Multnomah County 1996-1997

		Number of Injuries	Population 1996	Annual Incidence Rate Per 100,000
Total		266	119012	111.8
Race	Asian	13	8741	74.4
	African American	39	11491	169.7
	Caucasian non-Hispanic	179	94410	94.8
Gender	Males	172	60861	141.3
	Females	94	58151	80.8

TABLE 7: Pediatric Injuries as Reported to the Oregon
Health Division by Age Ranges: Multnomah County 1996-1997

	Age Range (years)			Total
	0-4	5-9	10-14	
Cut/Pierce	1	1	3	5
Drowning/submersion	1	0	0	1
Fall	42	13	14	69
Fire/Burn	0	0	0	0
Firearm	0	3	5	8
Machinery	0	1	0	1
Motor Vehicle Traffic	0	0	0	0
Occupant	17	18	19	54
Motorcyclist	0	0	0	0
Pedal cyclist	1	8	8	17
Pedestrian	14	18	25	57
Unspecified	0	0	0	0
Natural/Environmental	0	0	3	3
Pedal cyclist, other	2	6	8	16
Pedestrian, other	1	0	1	2
Transport, other	1	2	1	4
Natural/Environmental	1	0	0	1
Bites/Stings	1	0	0	1
Overexertion	0	0	0	0
Poisoning	0	0	0	0
Struck by, against	5	3	7	15
Suffocation	1	0	2	3
Other, specified, classifiable	5	1	2	8
Other, specified, not classifiable	0	0	0	0
Unspecified	1	0	0	1

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TABLE 8: Correlation Matrix of Socioeconomic Variables

	Income	1 or more per room	5 or more people	Unemployed	Below poverty	Language	No diploma	Minority	Single mother
Income	1	-0.400	0.139	-0.359	-0.502	-0.316	-0.582	-0.474	-0.471
1 or more per room	-0.400	1	0.487	0.351	0.353	0.528	0.531	0.302	0.319
Five or more people	0.139	0.487	1	0.250	0.051	0.332	0.303	0.233	0.266
Unemployed	-0.359	0.351	0.250	1	0.244	0.306	0.363	0.438	0.386
Below poverty	-0.502	0.353	0.051	0.244	1	0.252	0.478	0.487	0.474
Language	-0.316	0.528	0.332	0.306	0.252	1	0.503	0.296	0.272
No high school diplom	-0.582	0.531	0.303	0.363	0.478	0.503	1	0.504	0.396
Minority	-0.474	0.302	0.233	0.438	0.487	0.296	0.504	1	0.688
Single mother	-0.471	0.319	0.266	0.386	0.474	0.272	0.396	0.688	1

TABLE 9: Component Score Coefficients from Principal
Component Analysis and Regression Equations for Latent Factors

Component Score Coefficients		
	Factor 1	Factor 2
Household income	-0.218	-0.061
1 or more person per room	-0.150	0.484
Families below poverty	0.298	-0.600
Language	-0.212	0.533
No high school diploma	0.048	0.294
Minority	0.396	-0.162
Single mothers	0.409	-0.191

Factor 1 = (-.218 * Income) + (-.150 * 1 or more persons per room)
   + (.296 * Below poverty) + (-.212 * Language) +(.048 * no high school diploma)
   + (0.396 * Minority) + (0.409 * Single mothers)

Factor 1 = (-.061 * Income) + (.484 * 1 or more persons per room)
   + (-.060 * Below poverty) + (.553 * Language) +(.294 * no high school diploma)
   + (-0.162 * Minority) + (-0.191 * Single mothers)

TABLE 10: Simple Linear Regression Results

for Frequency of Pediatric Injury per Square Mile

	p	R^2	β
Household income	<.001	0.186	-0.4311
Percent of households with one or more persons per room	<.001	0.077	0.2769
Percent of households with five or more people	>.05	0.023	0.1508
Percent of people age 16 or older in the labor force who are unemployed	<.001	0.135	0.3670
Percent of families living below poverty	<.001	0.134	0.3667
Percent of people age 5 years or older who speak English poorly or not at all	<.001	0.094	0.3061
Percent of people age 25 or older without a high school diploma	<.001	0.094	0.3060
Percent of the population who are not Caucasian non-Hispanic	<.001	0.204	0.4518
Percent of families headed by a single mother living with related children and no spouse	<.001	0.241	0.4907
Number of housing units per mile^2	<.002	0.06	0.2451
Number of children age 0-14 years per mile^2	<.001	0.156	0.3952
Total population per mile^2	<.001	0.118	0.3434
Percent of housing units that are vacant	>.05	0.004	0.0660
Percent of housing units that are not a single detached structure	<.05	0.026	0.1622
Factor 1	<.001	0.236	0.4911
Factor 2	<.005	0.044	0.2239

TABLE 11: Multiple Regression Results

R^2	0.328
R^2_{adj}	0.315
Root Mean Square Error	0.598

Parameters	Estimate	p	β
intercept	0.5912	<0.0001	
Total population per sq. mi.	0.00004	0.004	0.2011
Factor 1	0.3105	<0.0001	0.4296
Factor 2	0.1544	0.0015	0.2137

TABLE 12: Distance from Receiving Hospital and Injury Severity Score (ISS)
for Patients Designated to Enter the Trauma System by EMTs
Multnomah County 1996-1997

ISS Scores	Distance from Injury Location to Receiving Hospital									
	0-3 miles		3-6 miles		6-9 miles		9-12 miles		> 12 miles	
	Numbe	%	Number	%	Number	%	Number	%	Number	%
0-8	36	58%	33	63%	20	57%	13	68%	7	54%
9-15	12	19%	12	23%	7	20%	4	21%	6	46%
15+	14	23%	7	13%	8	23%	2	11%	0	0%
Total	62	100%	52	100%	35	100%	19	100%	13	100%

Figure 1

Quartiles for Injuries Reported to the Oregon Health Division per Square Mile: Children Age 0 to 14 Years
Multnomah County, OR -- 1996 to 1997

Inset Map

Legend

☐ 0 injuries per square mile

☐ 1st quartile: > 0 to 1.01 injuries per square mile

☐ 3rd quartile: > 2.25 to 3.89 injuries per square mile

☐ 2nd quartile: >1.01 to 2.25 injuries per square mile

☐ 4th quartile: > 3.89 injuries per square mile

〜 Census Tract Boundary

* OHD Trauma Registry 1996-1997

58
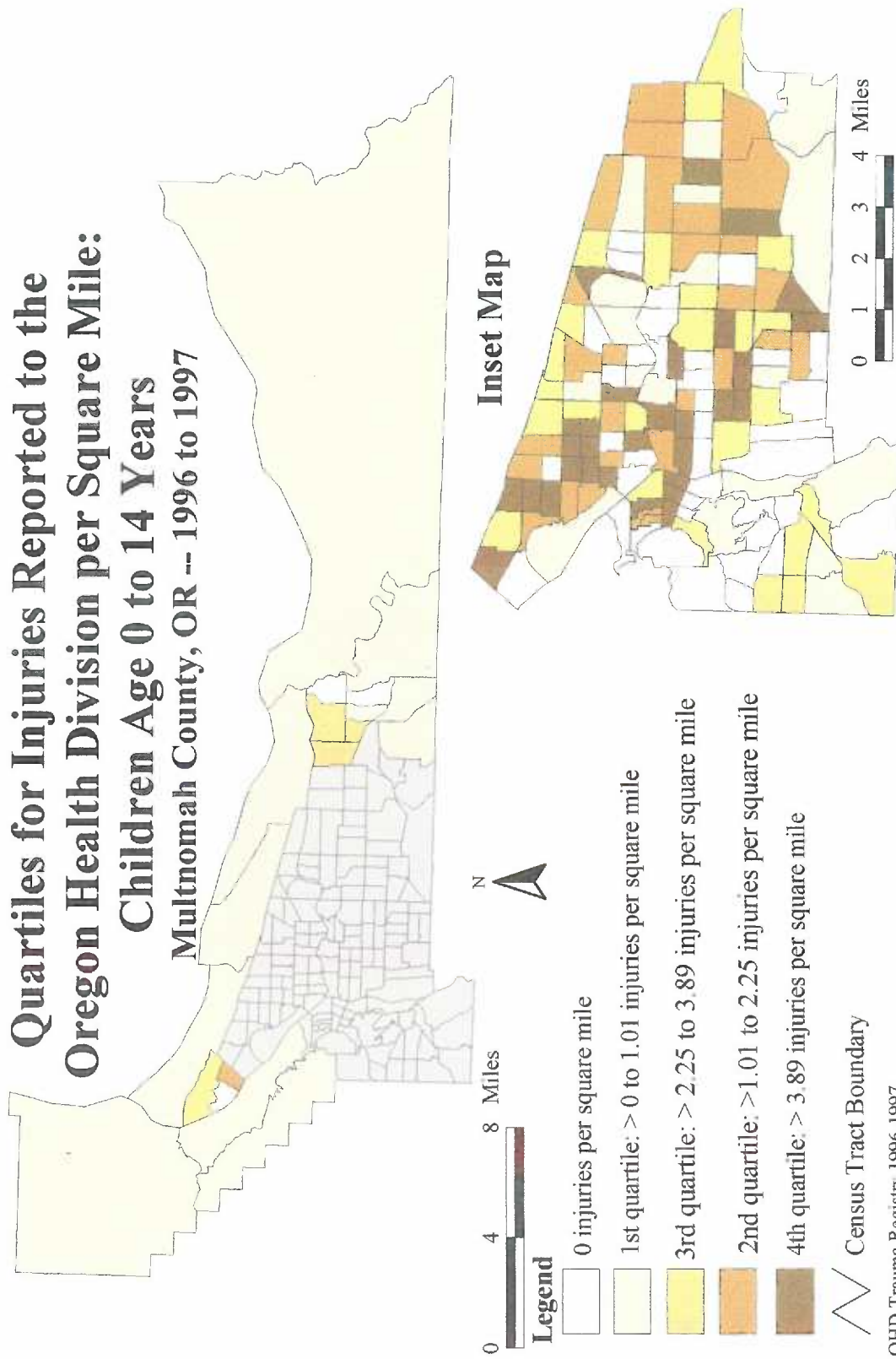
Figure 2

Multnomah County, OR

Inset Map

N

Legend

Census Tract Boundary

Major Roads

0   4   8   Miles

0   1   2   3   4   Miles

59
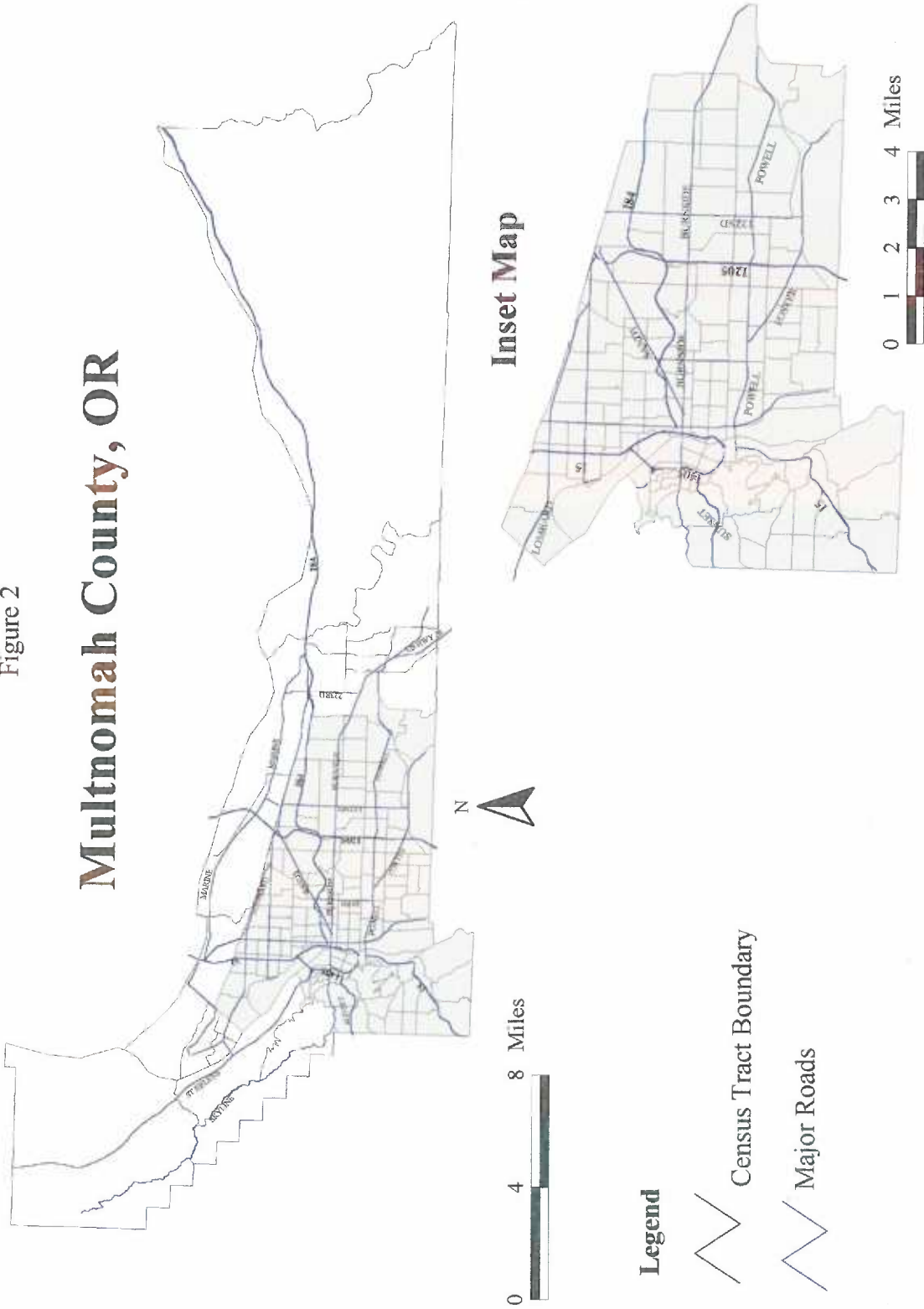
Figure 3: Cattell's Scree Plot of Eigenvalues
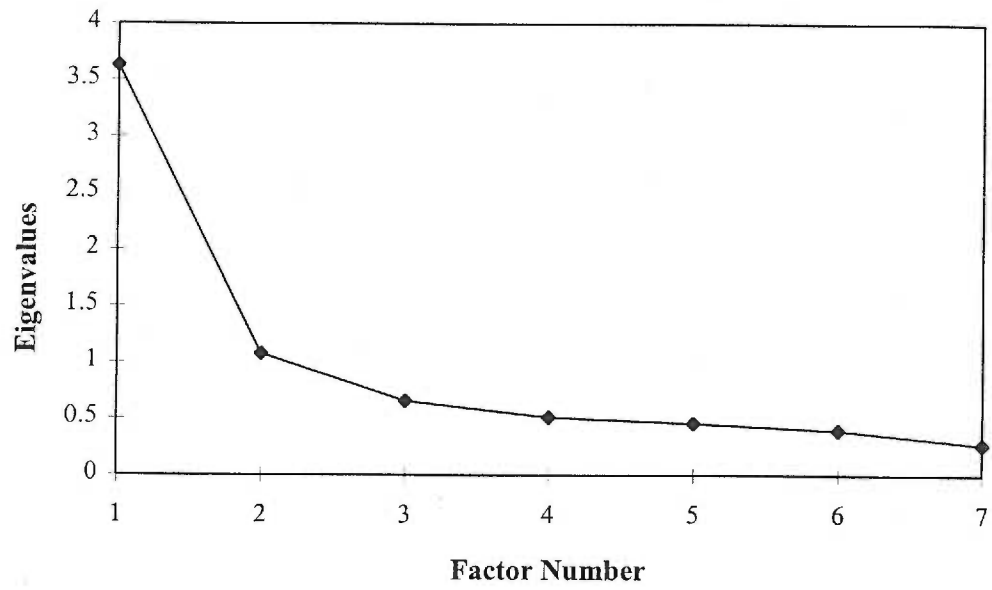
Figure 4

Quartiles for Total Population per Square Mile
Multnomah County, OR -- 1996

Inset Map

Legend

- 1st quartile; < 3449 people per square mile
- 2nd quartile: 3449 to 5466 people per square mile
- 3rd quartile: 5467 to 7667 people per square mile
- 4th quartile; > than 7667 people per square mile
- Greater than 7666 people per square mile and more than 3.89 injuries per square mile
- Census Tract Boundary
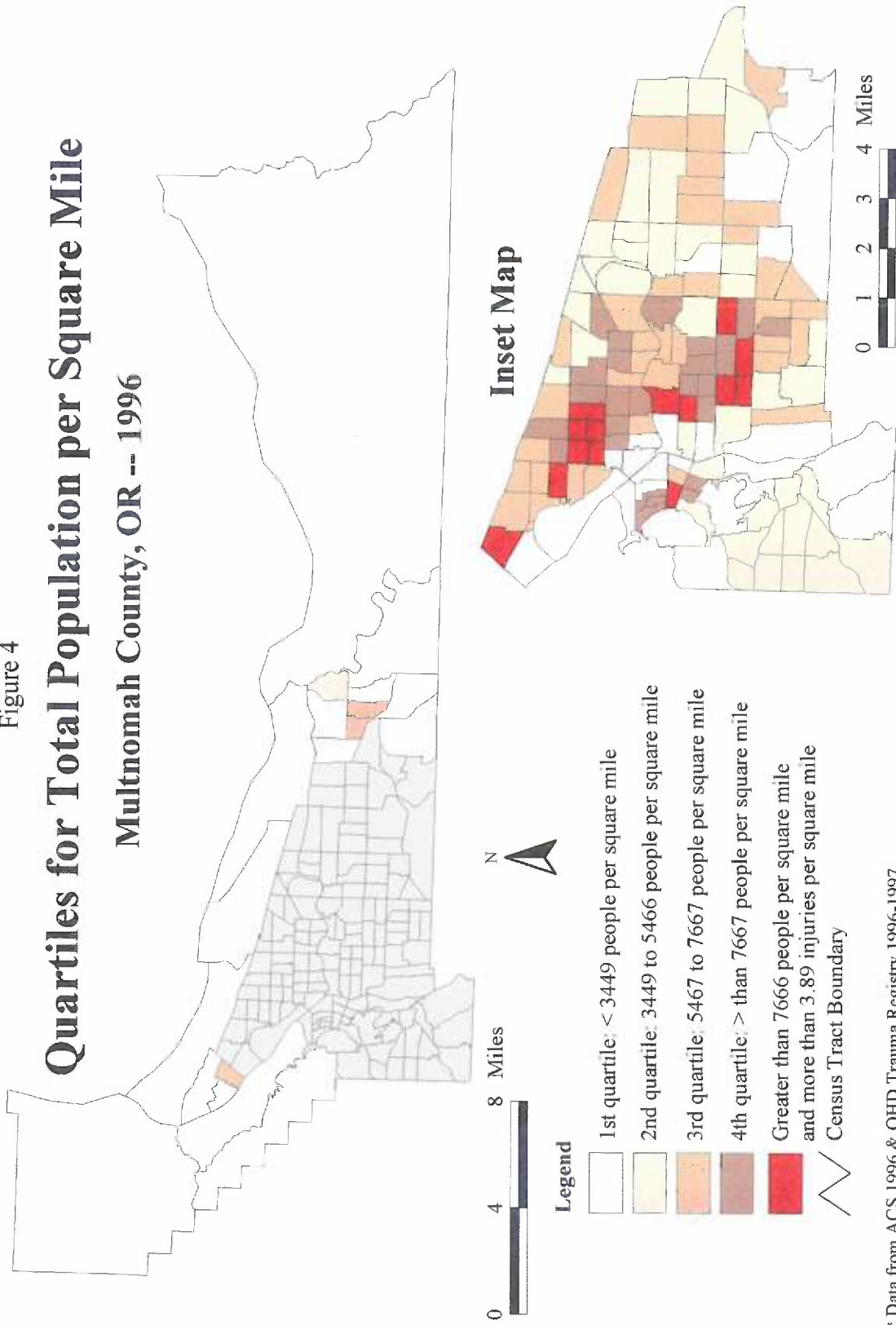
* Data from ACS 1996 & OHD Trauma Registry 1996-1997

Figure 5

Quartiles for Latent Factor 1

Multnomah County, OR -- 1996

Inset Map

N

0   1   2   3   4   Miles

Legend

1st quartile (highest SES)

2nd quartile

3rd quartile

4th quartile (lowest SES)

Factor 1 in 4th quartile and more than 3.89 injuries per square mile

Census Tract Boundary

0   4   8   Miles
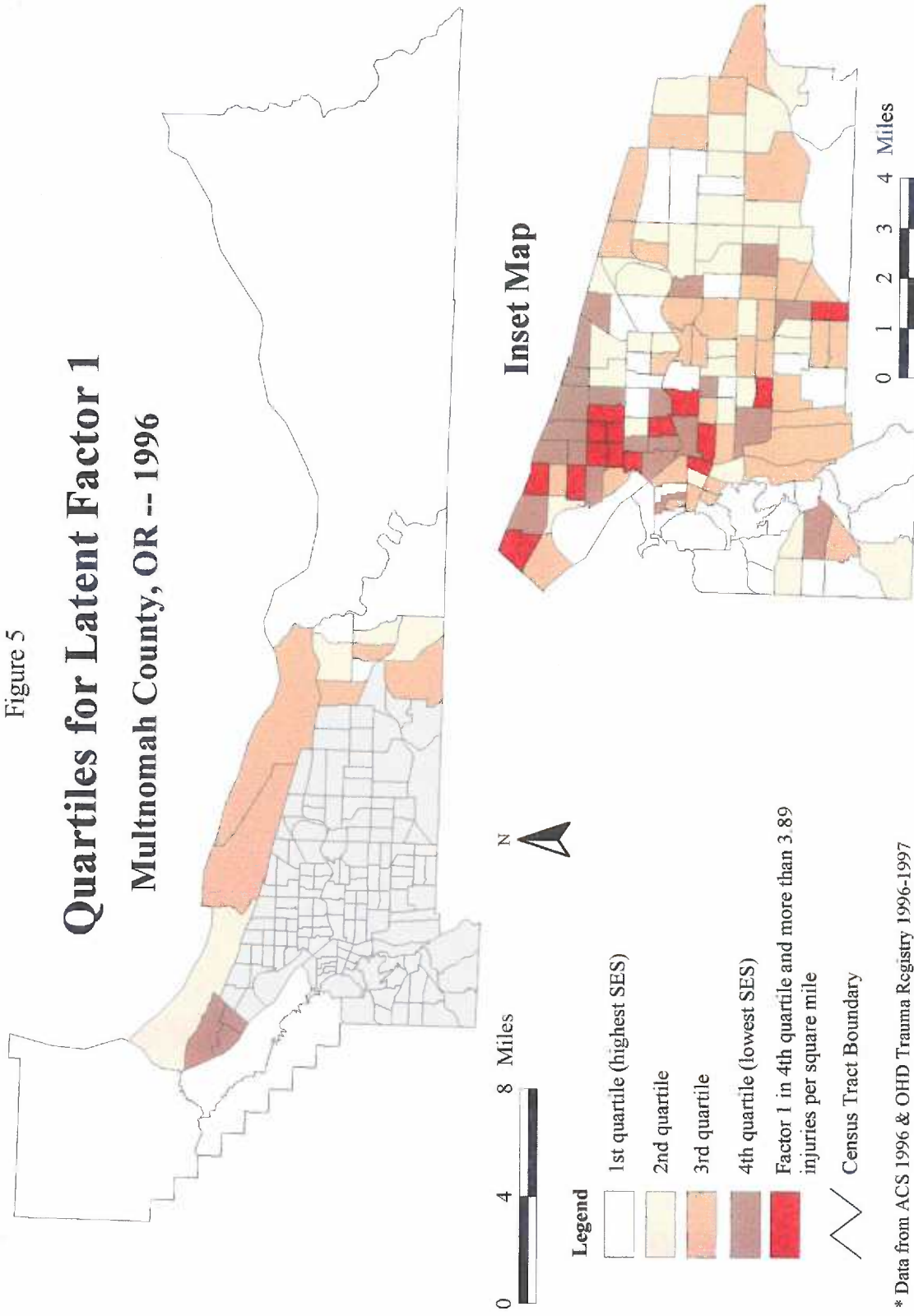
* Data from ACS 1996 & OHD Trauma Registry 1996-1997

Figure 6

Quartiles for Latent Factor 2

Multnomah County, OR -- 1996

Inset Map

0 1 2 3 4 Miles

N

0 4 8 Miles

Legend

1st quartile (highest SES)

2nd quartile

3rd quartile

4th quartile (lowest SES)

Factor 2 in 4th quartile and more than 3.89 injuries per square mile

Census Tract Boundary
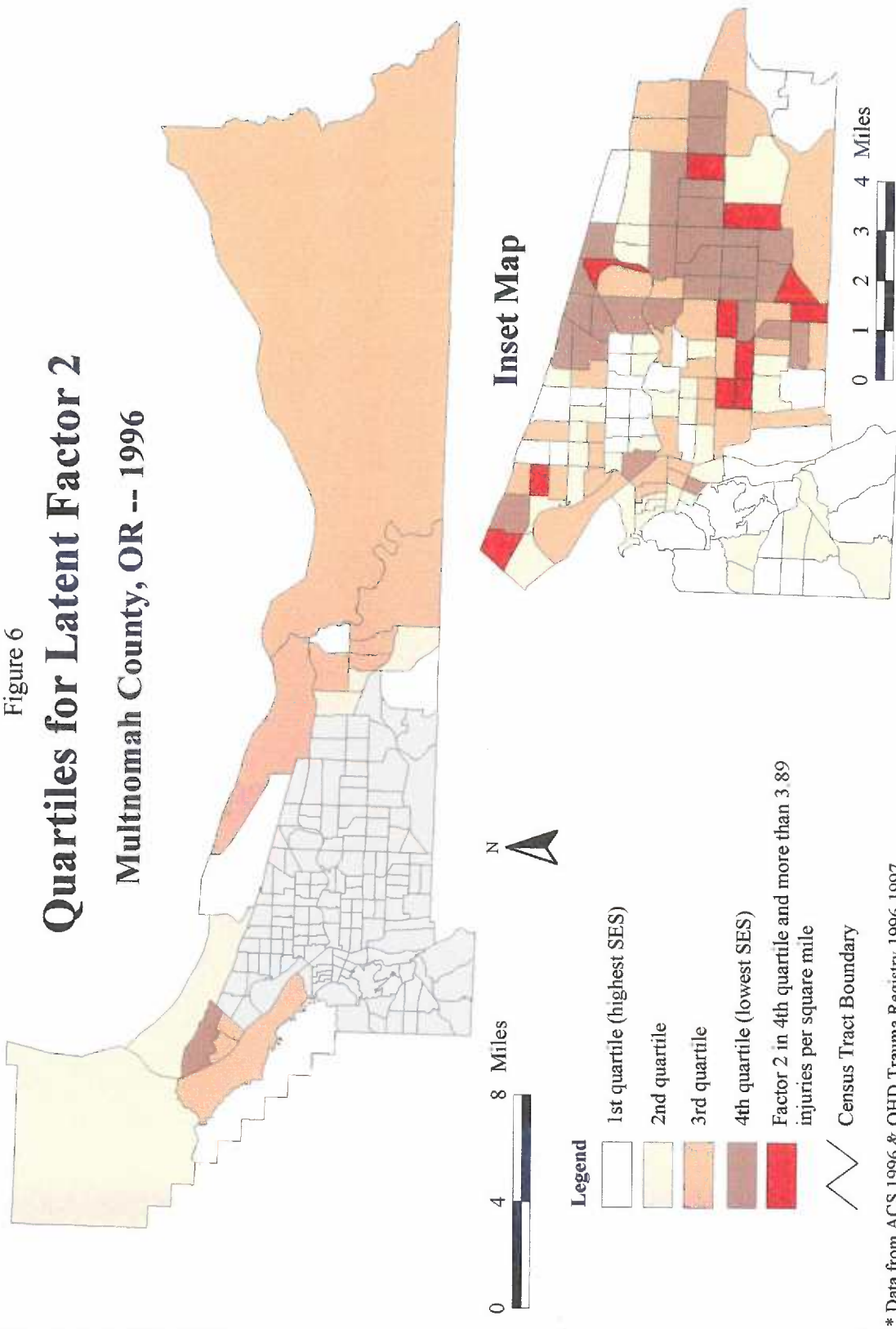
* Data from ACS 1996 & OHD Trauma Registry 1996-1997

Appendix A

Oregon Health Division
Emergency Medical Services & Trauma Section
Trauma Hospital Resource Standards
OAR 333-200-0080

The following table shows levels of categorization and their essential "E" or desirable"D" characteristics

			LEVELS			
			Comm IV	Local III	Area II	Regional I
1)		HOSPITAL ORGANIZATION	E	E	E	E
	a	Trauma Service				
		A Specific delineation of privileges for the Trauma Service must occur by the medical staff Credentialing Committee	E	E	E	E
		B Trauma Team -- organized and directed by a general surgeon verified in ATLS and committed to the care of the injured; all adult and pediatric patients with multiple system or major injury or who meet trauma system triage criteria must be initially evaluated by the trauma team; and the surgeon who shall be responsible for overall care of a patient (the team leader) identified. A team approach is required for optimal care of patients with multiple-system injuries.	D	E	E	E
		C Trauma Team -- organized and directed by an emergency physician in ATLS and committed to the care of the injured; all adult and pediatric patients with multiple system or major injury or who meet trauma system triage criteria must be initially evaluated by the trauma team; and the physician who shall be responsible for overall care of a patient (the team leader) identified. A team approach is required for optimal care of patients with multiple-system injuries.	E			
	b	Surgery Departments/Divisions/Services/Sections (each staffed by qualified specialists as determined by he Chief of the Trauma Service):				
		A Cardiothoracic Surgery;			D	E
		B General Surgery;	D	E	E	E
		C Neurologic Surgery;			E	E
		D Obstetrics-Gynecologic Surgery			E	E
		E Ophthalmic Surgery;			D	E
		F Oral Surgery -- Dental;			D	E
		G Orthopaedic Surgery;			E	E
		H Otorhinolaryngologic Surgery			D	E
		I Pediatric Surgery;			D	E
		J Plastic and Maxillofacial Surgery; and			D	E
		K Urologic Surgery.			D	E
	c	Emergency Department/Division/Service/Section (staffed by qualified specialists):				

		Col1	Col2	Col3	Col4
A	Emergency department staffing shall ensure immediate care of the trauma patient based on principles established by the American College of Surgeons, Committee on Trauma	E	E	E	E
B	The emergency department physician shall function as a designated member of the trauma team.	E	E	E	E
C	The relationship between emergency department physicians and other participants of the trauma team must be established on a local level, consistent with resources but adhering to these standards and ensuring optimal care.	E	E	E	E

d Surgical Specialty Capability Availability:

		Col1	Col2	Col3	Col4
A	**General Surgery;** Board Certified (may be a surgeon who is a graduate of an A.C.G.M.E. approved residency and who is less than five years out of training. If the surgeon fails to obtain board certification within five years, s/he is no longer eligible, even though s/he has obtained ATLS course completion).	D	D	E	E
	Full, unrestricted general surgery privileges.	D	E	E	E
	ATLS (Initial ATLS verification followed by either ATLS re-verification or 17 hours of trauma-related AMA CMA Category 1 education every four years).	E	E	E	E
	On-call and promptly available. 1		E		
	On-call and immediately available to patient on arrival in emergency department. 2			E	
	In-house and immediately available to patient on arrival in emergency department. 3				E
B	**Neurologic Surgery;** Full, unrestricted neuro-surgery privileges. On-call and promptly available. 1		D	E	E
	Physician with special competency, as judged by the Chief of Neurosurgery, in the care of patients with neural trauma, and who is capable of initiating measures directed toward stabilizing the patient and initiating diagnostic procedures. In-house and immediately available. 3			E	E
C	Cardiac Surgery (on-call and promptly available);			D	E
D	Microsurgery Capabilities (promptly available);			D	E
E	Gynecologic Surgery (on-call and promptly available);			E	E
F	Hand Surgery (on call and promptly available);			D	E
G	Ophthalmic Surgery (on-call and promptly available);		D	E	E

		Col1	Col2	Col3	Col4
H	Oral Surgery -- Dental (on call and promptly available);			D	E
I	Orthapaedic Surgery (on-call and promptly available);	D	D	E	E
J	Otorhinolaryngologic Surgery (on call and promptly available);		D	E	E
K	Pediatric Surgery (on-call and promptly available);			D	E
L	Plastic and Maxillofacial Surgery (on-call and promptly available);		D	E	E
M	Thoracic Surgery (on-call and promptly available); and		D	E	E
N	Urologic Surgery (on-call and promptly available).		D	E	E

e Non-Surgical Specialty Capability Availability:

		Col1	Col2	Col3	Col4
A	Anesthesiology;				
	Anesthesiologist (full, unrestricted anesthesiology privileges).			E	E
	ATLS (Initial ATLS verification followed by either ATLS reverification or 17 hours of trauma-related AMA CME Category I education every four years).			D	D
	Anesthesiologist -- In-house and immediately available to patient on arrival in emergency department. 3				E
	Anesthesiologist -- On-call and immediately available to patient on arrival in operating room. 3			E	
	Anesthesiologist (full, unrestricted anesthesiology privileges) or Certified Registered Nurse Anesthetist (current national certification essential).	E	E		
	ATLS (Initial ATLS verification followed by either ATLS reverification of 17 hours of trauma related AMA CME Category I education every four years); or trauma life support course	D	D		
	On-call and promptly available anesthesiologist or on-call and promptly available Certified Nurse Anesthetist. 1	E	E		
B	Cardiology (on-call and promptly available);		D	E	E
C	Chest Medicine (on-call and promptly available);			D	E
D	Gastroenterology (on-call and promptly available);			D	E
E	Hematology (on-call and promptly available);		D	E	E
F	Infectious Disease (on-call and promptly available);			D	E
G	Internal Medicine (on-call and promptly available);		E	E	E
H	Nephrology (on-call and promptly available);		D	E	E
I	Neuroradiology (on-call and promptly available);				E
J	Pathology (on-call and promptly available);		D	E	E
K	Pediatrics (on-call and promptly available);	D	E	E	E
L	Psychiatry (on-call and promptly available);			D	E
M	Radiology (on-call and promptly available).	D	D	E	E

2.	SPECIAL FACILITIES/RESOURCES/CAPABILITIES					
a	Emergency Department:					
	A Personnel:					
	I	Designated Physician Director;	D	E	E	E
	II	Emergency Physician;				
		Full-time emergency medicine practitioner with special competence in care of the critically injured adult and pediatric patients	D	D	E	E
		Physicians who are qualified and experienced in caring for patients with traumatic injuries and who can initiate resuscitative measures	E	E		
		ATLS (Initial ATLS verification followed by either ATLS reverification or 17 hours of trauma-related AMA CME Category I education every four years).	E	E	E	E
		In-house and immediately available in emergency department.	D	E	E	E
		On-call and promptly available.	E			
	III	Emergency Department Registered Nurse;				
		Initial 16 hour Health Division approved trauma life support course followed by either recertification or 16 hours of trauma related CEUs every four years.	E	E	E	E
		In Emergency Department and immediately available.	D	E	E	E
		In-house and immediately available.	E			
	B	Equipment for resuscitation and to provide life support for the critically or seriously injured adult and pediatric patients shall include but not be limited to:				
	I	Airway control and ventilation equipment including larygoscope and endotrachael tubes of all sizes, bag-mask resuscitator, sources of oxygen, pulse oximeter, co2 monitoring and mechanical ventilator;	E	E	E	E
	II	Suction devices;	E	E	E	E
	III	Electrocardiograph-oscilloscope-defibrillator with infant and pediatric paddles;	E	E	E	E

	IV	Apparatus to establish central venous pressure monitoring;	E	E	E	E
	V	All standard intravenous fluids and administration devices, including intravenous catheters and intraosseous needles;	E	E	E	E
	VI	Intravenous fluid and blood warmers, including high volume infusers;	D	D	E	E
	VII	Sterile surgical sets for procedures standard for ED such as thoracostomy, cutdown, etc.;	E	E	E	E
	VIII	Gastric lavage equipment;	E	E	E	E
	IX	Drugs and supplies necessary for emergency care of adult and pediatric patients;	E	E	E	E
	X	X-ray equipment;	E	E	E	E
		1. X-ray capability 24 hour coverage by in-house technicians.	D	D	E	E
		2. Technician on-call and promptly available to patient on arrival in emergency department.	E	E		
	XI	Two-way radio linked with vehicles of emergency transport system;	E	E	E	E
	XII	Skeletal Traction device for cervical injuries (Hard collar cervical immobilization may be used as an alternative) and	E	E	E	E
	XIII	Special equipment needed for pediatric patients, readily available.	E	E	E	E
b	Intensive Car Units (ICU) for Adult and Pediatric Trauma Patients (ICUs may be separate specialty units):					
A	Designated Medical Director;			E	E	E
B	Physician on duty in ICU 24 hours-a-day or immediately available;			D	E	E
C	Registered Nurse-patient minimum ratio of 1:2 on shift;			E	E	E
D	Immediate access to clinical laboratory services;			E	E	E
E	Equipment					
	I	Airway control and ventilation devices;		E	E	E
	II	Oxygen source with concentration controls;		E	E	E
	III	Cardiac emergency cart;		E	E	E
	IV	Temporary transvenous pacemaker;		E	E	E
	V	Electrocardiograph-oscilloscope-defibrillator;		E	E	E
	VI	Cardiac output monitoring;		D	E	E
	VII	Electronic pressure monitoring;		E	E	E
	VIII	Mechanical ventilator-respirators;		E	E	E
	IX	Patient weighing devices;		E	E	E
	X	Pulmonary function measuring devices;		E	E	E

	Col1	Col2	Col3	Col4
XI Temperature control devices;		E	E	E
XII Drugs, intravenous fluids and supplies; and		E	E	E
XIII Intracranial pressure monitoring devices.		D	E	E
c Postanesthetic Recovery Room (PAR) (surgical intensive care unit is acceptable):				
A Registered nurses and other essential personnel 24 hours-a-day; and	D	E	E	E
B Appropriate monitoring and resuscitation equipment for adult and pediatric patients.	D	E	E	E
d Acute Hemodialysis Capability (or transfer agreement).		D	D	E
e Organized Burn Care:	E	E	E	E
A Physician-directed burn center unit shall be staffed by nursing personnel trained in burn care and equipped properly for care of the extensively burned patients; OR				
B Transfer agreement with nearby burn center or hospital with a burn unit.				
f Acute Spinal Cord/Head Injury Management Capability:	E	E	E	E
A In circumstances where a designated spinal cord injury rehabilitation center exists in the region, early transfer should be considered; transfer agreements should be in effect. OR				
B In circumstances where a head injury center exists in the region, transfer should be considered in selected patients; transfer agreements should be in effect.				
g Radiological Special Capabilities:				
A Angiography of all types		D	E	E
B Sonography;		D	E	E
C Nuclear scanning;			D	E
D In-house computerized tomography;		D	E	E
I Technician in-house; and			D	E
II Technician on-call and promptly available.		D	E	
h Rehabilitation Medicine:	E	E	E	E
A Physician-directed Rehabilitation Service staffed by nursing personnel trained in rehabilitation care and equipped properly for care of the critically injured adult and pediatric patient, and verified by the Joint Commission for the Accreditation of Rehabilitation Organization. OR				
B Transfer agreement when medically feasible to a nearby rehabilitation service.				
i Pediatric Service	D	D	E	E
A Pediatric designated ICU and general floor (beds) staffed by nursing personnel trained in pediatric care and equipped to care for pediatric patients. OR				

		Col1	Col2	Col3	Col4
B	Transfer agreement with hospital staffed and equipped for care of pediatric patients.				
j	Operating Suite Personnel, Equipment and Instrucentation Requirements:				
A	Personnel:				
I.	In-house staff and operating room immediately available to patient on arrival in emergency department (assumes five minute prehospital notification);				E
II.	Immediately available to patient on arrival in Operating Room or when requested by surgeon. (May be satisfied by one RN in-house and immediately available to the Operating Suite with the remainder of the crew on-call and promptly available); and			E	
III.	Operating Room staffed and equipped for trauma care (promptly available).	E	E		
B	Cardiopulmonary bypass capability;			D	E
C	Operating microscope;			D	E
D	Thermal control equipment;				
I	for patient; and	E	E	E	E
II	for blood.	E	E	E	E
E	X-ray capability;	E	E	E	E
F	Endoscopes;	D	E	E	E
G	Craniotome; and	D	D	E	E
H	Monitoring equipment.	E	E	E	E
k	Clinical Laboratories services available 24 hours-a-day:				
A	Standard analyses of blood, urine and other body fluids;	E	E	E	E
B	Blood typing and cross-matching	E	E	E	E
C	Coagulation studies;	E	E	E	E
D	Comprehensive blood bank or access to a community central blood bank and Red Cross approved hospital storage facilities;	E	E	E	E
E	Blood gases and pH determination;	E	E	E	E
F	Microbiology;	E	E	E	E
G	Serum alcohol determination; and	E	E	E	E
H	Drug screening.	E	E	E	E
3.	QUALITY ASSURANCE				
a	Organized Quality Assurance Program for Trauma System Patients.	E	E	E	E
b	Special audit for all trauma deaths and other cases specified by the trauma committee.	E	E	E	E
c	Morbidity and mortality review.	E	E	E	E
d	Trauma conference, multi-disciplinary	E	E	E	E
	Regular and periodic multi-disciplinary trauma conferences that include all members of the trauma team. This conference shall be for the purpose of quality assurance through critiques of individual cases.				
e	Medical nursing audit, utilization review, tissue review	E	E	E	E
f	Trauma registry:				

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	A	Trauma registry review;	E	E	E	E
	B	Full participation in the Oregon Trauma Registry and quality assurance activities as prescribed in the area plan; and	E	E	E	E
	C	Designated Trauma Registry Coordinator	E	E	E	E
	g	Review of prehospital and regional systems of trauma care as indicated by the ATAB Quality Assurance Plan.	E	E	E	E
4.	**OUTREACH PROGRAM** Telephone and on-site consultations with physicians of the community and outlying areas.		D	D	E	E
5.	**PUBLIC EDUCATION** Promote trauma awareness and provide injury prevention programs.		D	D	E	E
6.	**TRAUMA RESEARCH PROGRAM**				D	E
7.	**TRAINING PROGRAM** a Formal continuing education program provided by the hospital for:					
	A	Staff physicians;	D	E	E	E
	B	Nurses;	D	E	E	E
	C	Allied health personnel	D	E	E	E
	D	Community physicians; and	D	E	E	E
	b	Accredited general surgery residency program				D

1. "Promptly Available" means available to patients within 30 minutes of the patient's arrival to the hospital providing 15 minutes prehospital notification of Level III and IV hospitals has been received.
2. "Immediately Available" means available to patients within 30 minutes of the patient's arrival to the hospital providing 15 minutes prehospital notification of Level II hospitals has been received.
3. "Immediately Available" means available to patients within 30 minutes of the patient's arrival to the hospital providing five minutes prehospital notification of Level I hospitals has been received.

Bureau of the Census

THE
American
Community
Survey

An area's people are its most important resource.
Information about people and their housing is very
important to local communities as well as to the Nation,
and is used for planning and funding programs at all
levels. The Census Bureau is conducting the American
Community Survey to collect information on subjects
like education, employment, income, and housing –
information usually collected only once every ten years
during the census. The Census Bureau's American
Community Survey will provide this vital information
on a continual basis.

Please review the form before you begin filling it out.
You will notice that it is divided into three parts . . .

- basic information about the people who live or are
  staying at the address on the mailing label,

- specific information about the house or apartment,
  and

- detailed information about each person living or
  staying here.

Additional instructions inside will help you accurately
complete the form.

Please insert your completed survey form into the return
envelope so that the barcode shows through the window.

Step 1

Please PRINT the name of the person who is filling this
form, a telephone number where someone in this
household can be reached, and the date the form was
filled.

| Last name | First name | Middle initial |

| Area code | Telephone number | Date |

Step 2

How many people are living or staying at this address?

Number of persons

IF YOU NEED HELP OR HAVE QUESTIONS ABOUT HOW TO COMPLETE YOUR FORM OR WHOM
TO INCLUDE ON YOUR FORM, CALL **1–800–354–7271**. THE TELEPHONE CALL IS FREE.

Telephone Device for the Deaf (TDD) – Call 1–800–582–8330. The telephone call is free.

¿NECESITA AYUDA? Si usted habla español y necesita ayuda para completar su cuestionario, llame sin
cargo alguno al 1–800–354–7271.

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

FORM **ACS-1**
(8-5-96)

OMB No. 0607-0810
Approval Expires 09/30/98

Step 3 WHOM TO INCLUDE ON THE FORM

Please fill this form for ALL people who are living here, and ALL people who are staying here for more than two months. PRINT the names of these people in the List of Residents column. Begin with the name of the household member in whose name this place is owned or rented. Put this person's name in the PERSON 1 box.

Be sure to list all family members, as well as roommates, foster children, boarders, and live-in employees. Remember to include yourself on the list.

If there are people who live here but are currently staying somewhere else for more than two months, like a college student who is now away at school, DO NOT include him/her on the List of Residents.

If a person is staying here for two months or less and usually lives somewhere else, DO NOT include him/her on the List of Residents.

If EVERYONE staying here is here only temporarily for two months or less and usually lives somewhere else, DO NOT list any names on the List of Residents. However, please answer the questions on pages 4 and 5. Information about short-term visitors is not needed for this survey, but information about the house or apartment is.

If you are not sure whom to include, call 1-800-354-7271.

If there are more than five people who should be listed, use the spaces at the bottom of pages 2 and 3 for their names. We will contact you by telephone to obtain the information for them.

Step 4 HOW TO FILL THE FORM

The questions on pages 2 and 3 are printed at the top of the columns. Please answer each question for every person whose name appears on the List of Residents. Enter these names in the detailed information sections of the form that begin on page 6, after you complete the questions on pages 4 and 5.

List of Residents	Question 1	Question 2	Question 3
Print the last name, first name, and middle initial for each person who should be included in the list.	What is this person's sex?	What is this person's date of birth and what is this person's age?	How is this person related to Person 1?
PERSON 1 Last name First name Middle initial	☐ Male ☐ Female	Month Day Year of birth Age (in years)	Person 1 is the person living or staying here who owns or rents this unit; that is, the person whose name is on the deed or the lease. If there is no such person, start with the name of any adult household member.
PERSON 2 Last name First name Middle initial	☐ Male ☐ Female	Month Day Year of birth Age (in years)	Relationship of Person 2 to Person 1 ☐ Husband or wife ☐ Other relative ☐ Son or daughter ☐ Roomer or boarder ☐ Brother or sister ☐ Housemate or roommate ☐ Father or mother ☐ Unmarried partner ☐ Grandchild ☐ Foster child ☐ In-law ☐ Other nonrelative
PERSON 3 Last name First name Middle initial	☐ Male ☐ Female	Month Day Year of birth Age (in years)	Relationship of Person 3 to Person 1 ☐ Husband or wife ☐ Other relative ☐ Son or daughter ☐ Roomer or boarder ☐ Brother or sister ☐ Housemate or roommate ☐ Father or mother ☐ Unmarried partner ☐ Grandchild ☐ Foster child ☐ In-law ☐ Other nonrelative
PERSON 4 Last name First name Middle initial	☐ Male ☐ Female	Month Day Year of birth Age (in years)	Relationship of Person 4 to Person 1 ☐ Husband or wife ☐ Other relative ☐ Son or daughter ☐ Roomer or boarder ☐ Brother or sister ☐ Housemate or roommate ☐ Father or mother ☐ Unmarried partner ☐ Grandchild ☐ Foster child ☐ In-law ☐ Other nonrelative
PERSON 5 Last name First name Middle initial	☐ Male ☐ Female	Month Day Year of birth Age (in years)	Relationship of Person 5 to Person 1 ☐ Husband or wife ☐ Other relative ☐ Son or daughter ☐ Roomer or boarder ☐ Brother or sister ☐ Housemate or roommate ☐ Father or mother ☐ Unmarried partner ☐ Grandchild ☐ Foster child ☐ In-law ☐ Other nonrelative

	Last name	First name	Middle initial
PERSON 6			
PERSON 7			
PERSON 8			
PERSON 9			

Page 2

FORM ACS-1 (8-9-96)

Question 4	Question 5	Question 6			
What is this person's current marital status?	**Is this person Spanish/Hispanic/Latino?**	**What is this person's race?** Mark ☒ one box for the race that the person considers himself/herself to be.			
☐ Now married ☐ Widowed ☐ Divorced ☐ Separated ☐ Never married	☐ **No**, not Spanish/Hispanic/Latino ☐ Yes, Mexican, Mexican-Am., Chicano ☐ Yes, Puerto Rican ☐ Yes, Cuban ☐ Yes, other Spanish/Hispanic/Latino – *Print group* ↗	☐ White ☐ Black, African Am. ☐ Eskimo ☐ Aleut ☐ Indian (Amer.) *Print the name of the enrolled or principal tribe* →	☐ Chinese ☐ Filipino ☐ Hawaiian ☐ Korean ☐ Asian Indian	☐ Vietnamese ☐ Japanese ☐ Samoan ☐ Guamanian ☐ Other Asian/Pacific Islander – *Print group* ↗	☐ Some other race ☐ Multiracial *Print the race(s) or group below*
☐ Now married ☐ Widowed ☐ Divorced ☐ Separated ☐ Never married	☐ **No**, not Spanish/Hispanic/Latino ☐ Yes, Mexican, Mexican-Am., Chicano ☐ Yes, Puerto Rican ☐ Yes, Cuban ☐ Yes, other Spanish/Hispanic/Latino – *Print group* ↗	☐ White ☐ Black, African Am. ☐ Eskimo ☐ Aleut ☐ Indian (Amer.) *Print the name of the enrolled or principal tribe* →	☐ Chinese ☐ Filipino ☐ Hawaiian ☐ Korean ☐ Asian Indian	☐ Vietnamese ☐ Japanese ☐ Samoan ☐ Guamanian ☐ Other Asian/Pacific Islander – *Print group* ↗	☐ Some other race ☐ Multiracial *Print the race(s) or group below*
☐ Now married ☐ Widowed ☐ Divorced ☐ Separated ☐ Never married	☐ No, not Spanish/Hispanic/Latino ☐ Yes, Mexican, Mexican-Am., Chicano ☐ Yes, Puerto Rican ☐ Yes, Cuban ☐ Yes, other Spanish/Hispanic/Latino – *Print group* ↗	☐ White ☐ Black, African Am. ☐ Eskimo ☐ Aleut ☐ Indian (Amer.) *Print the name of the enrolled or principal tribe* →	☐ Chinese ☐ Filipino ☐ Hawaiian ☐ Korean ☐ Asian Indian	☐ Vietnamese ☐ Japanese ☐ Samoan ☐ Guamanian ☐ Other Asian/Pacific Islander – *Print group* ↗	☐ Some other race ☐ Multiracial *Print the race(s) or group below*
☐ Now married ☐ Widowed ☐ Divorced ☐ Separated ☐ Never married	☐ No, not Spanish/Hispanic/Latino ☐ Yes, Mexican, Mexican-Am., Chicano ☐ Yes, Puerto Rican ☐ Yes, Cuban ☐ Yes, other Spanish/Hispanic/Latino – *Print group* ↗	☐ White ☐ Black, African Am. ☐ Eskimo ☐ Aleut ☐ Indian (Amer.) *Print the name of the enrolled or principal tribe* →	☐ Chinese ☐ Filipino ☐ Hawaiian ☐ Korean ☐ Asian Indian	☐ Vietnamese ☐ Japanese ☐ Samoan ☐ Guamanian ☐ Other Asian/Pacific Islander – *Print group* ↗	☐ Some other race ☐ Multiracial *Print the race(s) or group below*
☐ Now married ☐ Widowed ☐ Divorced ☐ Separated ☐ Never married	☐ **No**, not Spanish/Hispanic/Latino ☐ Yes, Mexican, Mexican-Am., Chicano ☐ Yes, Puerto Rican ☐ Yes, Cuban ☐ Yes, other Spanish/Hispanic/Latino – *Print group* ↗	☐ White ☐ Black, African Am. ☐ Eskimo ☐ Aleut ☐ Indian (Amer.) *Print the name of the enrolled or principal tribe* →	☐ Chinese ☐ Filipino ☐ Hawaiian ☐ Korean ☐ Asian Indian	☐ Vietnamese ☐ Japanese ☐ Samoan ☐ Guamanian ☐ Other Asian/Pacific Islander – *Print group* ↗	☐ Some other race ☐ Multiracial *Print the race(s) or group below*

Last name	First name	Middle initial
PERSON 10		
PERSON 11		
PERSON 12		

FORM ACS-1 (8-9-96) Please turn to page 4 and answer the housing questions for the address on the mailing label. Page 3

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Please answer questions H1 through H37 for the address on the mailing label.

H1. Which best describes this building? Include all apartments, flats, etc., even if vacant.

- ☐ A mobile home or trailer
- ☐ A one-family house detached from any other house
- ☐ A one-family house attached to one or more houses
- ☐ A building with 2 apartments
- ☐ A building with 3 or 4 apartments
- ☐ A building with 5 to 9 apartments
- ☐ A building with 10 to 19 apartments
- ☐ A building with 20 to 49 apartments
- ☐ A building with 50 or more apartments
- ☐ Boat, RV, van, etc.

H2. About when was this building first built? If you do not know the exact year, give your best estimate.

_____
(Year)

H3. When did PERSON 1 (listed in the List of Residents on page 2) move into this house or apartment?

_____   _____
(Month)   (Year)

H4a. Do all persons staying in this house or apartment usually spend more than two consecutive months of the year at another residence?

- ☐ No
- ☐ Yes

b. Where is that residence located? ▽

_____
(U.S. State/foreign country)

c. How long does this household usually spend at that residence?

_____
Months each year

NOTE: If you marked **"Yes"** in H4a, please note that the remaining questions on pages 4 and 5 of this form are asking for information about the house or apartment at the address on the label on the front of this form.

If this unit is in a building that has two or more apartments, SKIP to question H8. Otherwise, continue with H5.

H5. Is this house or mobile home on –

- ☐ Less than 1 acre? – *SKIP to question H7*
- ☐ 1 to less than 10 acres?
- ☐ 10 or more acres?

H6. IN THE PAST 12 MONTHS, were the sales of all agricultural products from this property $1,000 or more?

- ☐ Yes
- ☐ No

H7. Is there a business such as a store or barber shop or a medical office on this property?

- ☐ Yes
- ☐ No

H8. How many rooms are in this house or apartment? Do NOT count bathrooms, porches, balconies, foyers, halls, half-rooms, or utility rooms.

_____
Room(s)

H9. How many bedrooms are in this house or apartment? Count the number of bedrooms that you would list if this house or apartment were for sale or for rent.

_____
Bedroom(s)
OR
- ☐ None

H10. Does this house or apartment have complete plumbing facilities; that is, 1) hot and cold piped water, 2) a flush toilet, and 3) a bathtub or shower?

- ☐ Yes, has all three facilities
- ☐ No

H11. Does this house or apartment have complete kitchen facilities; that is, 1) a sink with piped water, 2) a stove or range, and 3) a refrigerator?

- ☐ Yes, has all three facilities
- ☐ No

H12. Does this house or apartment building get water from –

- ☐ A public system such as a city water department or private company?
- ☐ An individual drilled well?
- ☐ An individual dug well?
- ☐ Some other source, such as a spring, creek, river, cistern, etc.?

H13. Is this house or apartment building connected to a public sewer?

- ☐ Yes, connected to a public sewer
- ☐ No, connected to septic tank or cesspool
- ☐ No, uses other means

H14. Does this house or apartment have air conditioning?

- ☐ Yes, a central air conditioning system
- ☐ Yes, one or more individual room units
- ☐ No

H15. Does this house or apartment have a central heating system; that is, one system that heats all or most of the rooms?

- ☐ Yes
- ☐ No

H16. Is there a telephone in this house or apartment?

- ☐ Yes
- ☐ No

H17. How many automobiles, vans, and trucks of one-ton capacity or less are kept at home for use by members of this household?

_____
Vehicle(s)
OR
- ☐ None

H18. Which FUEL is used MOST for heating this house or apartment?

- ☐ Gas: from underground pipes serving the neighborhood
- ☐ Gas: bottled, tank, or LP
- ☐ Electricity
- ☐ Fuel oil, kerosene, etc.
- ☐ Coal or coke
- ☐ Wood
- ☐ Solar energy
- ☐ Other fuel
- ☐ No fuel used

H19a. LAST MONTH, what was the cost of electricity for this house or apartment?

$ _____ .00 (Last month)
OR
- ☐ Included in rent or in condominium fee
- ☐ No charge or electricity not used

b. LAST MONTH, what was the cost of gas for this house or apartment?

$ _____ .00 (Last month)
OR
- ☐ Included in rent or in condominium fee
- ☐ No charge or gas not used

c. IN THE PAST 12 MONTHS, what was the cost of water and sewer for this house or apartment? If you have lived here less than 12 months, estimate the cost.

$ _____ .00 (Past 12 months)
OR
- ☐ Included in rent or in condominium fee
- ☐ No charge

d. IN THE PAST 12 MONTHS, what was the cost of fuel oil, wood, kerosene, coal, etc, for this house or apartment? If you have lived here less than 12 months, estimate the cost.

$ _____ .00 (Past 12 months)
OR
- ☐ Included in rent or in condominium fee
- ☐ No charge or these fuels not used

FORM ACS-1 (8-9-96)

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H20. At any time DURING THE PAST 12 MONTHS, were you or any member of this household enrolled in or receiving benefits from:

a. free or reduced-price meals at school through the Federal School Lunch Program or the Federal School Breakfast Program?

☐ Yes
☐ No

b. the Federal home heating and cooling assistance program?

☐ Yes
☐ No

H21. At any time DURING THE PAST 12 MONTHS, did anyone in this household receive Food Stamps?

☐ Yes → What was the value of the food stamps?

$ _____ .00

(12-month amount)

☐ No

H22. Is this house or apartment part of a condominium?

☐ Yes → What is the monthly condominium fee?

$ _____ .00 (Monthly)

OR

☐ None

☐ No

H23. Is this house or apartment –

☐ Owned by you or someone in this household with a mortgage or loan?
☐ Owned by you or someone in this household free and clear (without a mortgage)?
☐ Rented for cash rent?
☐ Occupied without payment of cash rent? – *SKIP to question H27*

H24. What is the monthly rent for this house or apartment?

$ _____ .00 (Monthly)

H25. Does the monthly rent include any meals?

☐ Yes
☐ No

H26. Is the rent on this house or apartment reduced because the Federal, state, or local government is paying part of the cost?

☐ Yes
☐ No

H27. Is this house or apartment in a public housing project; that is, is it part of a government housing project for persons with low income?

☐ Yes
☐ No

H28. What is the value of this property; that is, how much would this house or mobile home and lot, or condominium unit sell for if it were for sale?

$ _____ .00 (Value)

H29. What are the annual real estate taxes on this property?

$ _____ .00 (Annual)

OR

☐ None

H30. What is the annual payment for fire, hazard, and flood insurance on this property?

$ _____ .00 (Annual)

OR

☐ None

H31. Do you or any member of this household have a mortgage, deed of trust, contract to purchase, or similar debt on this property?

☐ Yes, mortgage, deed of trust, or similar debt
☐ Yes, contract to purchase
☐ No – SKIP to question H35

H32. How much is the regular monthly mortgage payment on this property? Include payments only on FIRST mortgage or contract to purchase

$ _____ .00 (Monthly)

OR

☐ No regular payment required – *SKIP to question H35*

H33. Does the regular monthly mortgage payment include payments for real estate taxes on this property?

☐ Yes, taxes included in payment
☐ No, taxes paid separately or taxes not required

H34. Does the regular monthly mortgage payment include payments for fire, hazard, or flood insurance on this property?

☐ Yes, insurance included in payment
☐ No, insurance paid separately or no insurance

H35. Do you or any member of this household have a second mortgage or a home equity loan on this property?

☐ Yes, home equity loan
☐ Yes, second mortgage
☐ Yes, second mortgage and home equity loan
☐ No – *SKIP to question H37*

H36. How much is the regular monthly payment on ALL second and third mortgages and home equity loans?

$ _____ .00 (Monthly)

OR

☐ No regular payment required

H37. What are the total annual costs for personal property taxes, site rent, registration fees, and license fees on this mobile home and its site? Do NOT include real estate taxes

$ _____ .00 (Annual)

Please continue with the questions for PERSON 1 on page 6.

Print the name of PERSON 1 from page 2 and answer these questions for Person 1.

PERSON 1

Last name	First name	MI

Print name

7. In what U.S. State, territory, commonwealth or foreign country was this person born? ⬚

8. Is this person a CITIZEN of the United States?
- [ ] Yes, born in the United States – *SKIP to question 10*
- [ ] Yes, born in Puerto Rico, Guam, the U.S. Virgin Islands, or the Northern Marianas
- [ ] Yes, born abroad of American parent(s)
- [ ] Yes, U.S. citizen by naturalization
- [ ] No, not a citizen of the United States

9. When did this person come to live in the United States?

(Year)

10. At any time IN THE PAST 3 MONTHS, was this person attending a school or college? Include nursery or preschool, kindergarten, elementary school, and schooling that leads to a high school diploma, college degree, or vocational certificate.
- [ ] Yes, public school or public college
- [ ] Yes, private school or private college
- [ ] Yes, vocational, technical, or business school
- [ ] No, has not attended in the last 3 months

11. What is the highest degree or level of school this person has COMPLETED? Mark ☒ ONE box for the highest grade completed or degree received.
- [ ] None, no schooling completed
- [ ] Nursery or preschool
- [ ] Kindergarten
- [ ] Grade _____ (Write grade 1–11)
- [ ] 12th grade, NO DIPLOMA
- [ ] HIGH SCHOOL GRADUATE - high school DIPLOMA or the equivalent (GED)
- [ ] Some college but no degree
- [ ] Vocational, technical, or business school degree
- [ ] Associate degree in college
- [ ] Bachelor's degree (BA, AB, BS)
- [ ] Master's degree (MA, MS, MEng, MEd, MSW, MBA)
- [ ] Professional school degree (MD, DDS, DVM, LLB, JD)
- [ ] Doctorate degree (PhD, EdD)

12. What is this person's ancestry? For example: Italian, African Am., Cape Verdean, Ecuadorian, Haitian, Irish, Jamaican, Korean, Lebanese, Mexican, Nigerian, Polish, Taiwanese, Ukrainian, or any other ancestry. ⬚

If this person is UNDER 5 years of age, SKIP to the questions for the next person on page 2; otherwise, continue.

13a. Did this person live in this house or apartment 5 years ago?
- [ ] Yes – *SKIP to question 14a*
- [ ] No

13b. Where did this person live 5 years ago?
(1) Name of U.S. State, territory, commonwealth or foreign country ⬚

If outside U.S., print answer above and SKIP to question 14a

(2) Name of city or town ⬚

(3) Name of county ⬚   (4) ZIP Code ⬚

c. Did this person live inside the city or town limits?
- [ ] Yes
- [ ] No, lived outside city/town limits

14a. Does this person speak a language other than English at home?
- [ ] Yes
- [ ] No, only English – *SKIP to question 15*

b. What is this language? For example: Korean, Italian, Spanish, Vietnamese ⬚

c. How well does this person speak English?
- [ ] Very well
- [ ] Well
- [ ] Not well
- [ ] Not at all

15. If this person has difficulty seeing, hearing, or walking, mark ☒ the appropriate boxes. If this person has no difficulty with these activities, mark "None of the above."
- [ ] Difficulty seeing (even with glasses)
- [ ] Difficulty hearing (even with a hearing aid)
- [ ] Difficulty walking, or
- [ ] None of the above

If this person is UNDER 15 years of age, SKIP to the questions for the next person on page 2; otherwise, continue with question 16.

16. Does this person have a long-lasting physical or mental condition that –

a. Makes it difficult to go outside the home alone, for example, to shop or visit a doctor's office?
- [ ] Yes
- [ ] No

b. Prevents this person from working at a job or business?
- [ ] Yes
- [ ] No

If this person is female, answer question 17; otherwise, continue with question 18.

17. How many babies has this person ever had, not counting stillbirths?

Babies   [ ] None

18. Has this person ever served on ACTIVE DUTY in the U.S. Armed Forces, military Reserves, or National Guard? Include activation during Operation Desert Shield/Storm and service in the Merchant Marine during World War II. Do NOT include training for the Reserves or National Guard.
- [ ] Yes, now on active duty
- [ ] Yes, on active duty in past, but not now
- [ ] No active duty service – *SKIP to question 21*

19. When did this person serve on active duty in the U.S. Armed Forces? Mark ☒ a box for EACH period in which this person served.
- [ ] August 1990 or later (including Persian Gulf War)
- [ ] September 1980 to July 1990
- [ ] May 1975 to August 1980
- [ ] Vietnam era (August 1964 to April 1975)
- [ ] February 1955 to July 1964
- [ ] Korean conflict (June 1950 to January 1955)
- [ ] World War II (September 1940 to July 1947)
- [ ] Some other time

20. In total, how much time has this person spent on active duty in the U.S. Armed Forces?

Years and   Months

21. LAST WEEK, did this person do ANY work for pay or profit?
- [ ] Yes
- [ ] No – *SKIP to question 28a*

22. LAST WEEK, how many hours did this person ACTUALLY work at all jobs? Subtract any time off; add overtime or extra hours worked.

Actual hours worked LAST WEEK

23. LAST WEEK, at what address or location did this person work? If this person worked at more than one address or location, print where he or she worked most last week.

a. Address (Number and street) ⬚

If the exact address is unknown, give a description of the location such as the building name or the nearest street or intersection. For example: Town Center Mall, 1st National Bank Building, Reno Airport, 2nd Ave. and 4th St.

b. Name of city, town, or post office ⬚

c. Is the work location inside the limits of the city or town?
- [ ] Yes
- [ ] No

d. Name of county ⬚

e. Name of state ⬚   **f. ZIP Code** ⬚

FORM ACS-1 (6-9-96)

PERSON 1 – Continued

24. LAST WEEK, how did this person usually get to work? If more than one method was used during the trip, mark ☒ the box for the one used for most of the distance.

☐ Car, truck, or van ☐ Bicycle
☐ Public transportation ☐ Walked
   (bus, trolley, subway, ☐ Worked at home –
   or railroad) *SKIP to question 32*
☐ Taxicab ☐ Other method
☐ Motorcycle

25. LAST WEEK, how many people, including this person, usually rode to work in the car, truck, or van?

Person(s)

26. LAST WEEK, what time did this person usually leave home to go to work?

           ☐ a.m.
           ☐ p.m.
Hour   Minute

27. LAST WEEK, how many minutes did it usually take this person to get from home to work?

Minutes – *SKIP to question 32*

28a. LAST WEEK, was this person on layoff from a job?

☐ Yes, on temporary layoff from most recent job –
   SKIP to question 30
☐ Yes, permanently laid off from most recent job –
   SKIP to question 29
☐ No

b. LAST WEEK, was this person TEMPORARILY absent from a job or business?

☐ Yes, on vacation, temporary illness, labor
   dispute, etc. – *SKIP to question 31*
☐ No

29. Has this person been looking for work during the last 4 weeks?

☐ Yes
☐ No – *SKIP to question 31*

30. LAST WEEK, could this person have gone to work?

☐ Yes, if a job had been offered
☐ Yes, if recalled from layoff
☐ No, because of own temporary illness
☐ No, because of all other reasons (in school, etc.)

31. When did this person last work, even for a few days?

☐ Within the past 12 months
☐ Between 1 to 5 years ago – *SKIP to question 34*
☐ Over 5 years ago or never worked – *SKIP to question 40*

---

32. During the PAST 12 MONTHS, in how many WEEKS did this person work, even for a few hours? Include paid vacation, paid sick leave, and military service in the total.

Weeks (including paid vacation, paid sick leave, and military service)

33. During the PAST 12 MONTHS, in the WEEKS WORKED, how many hours did this person usually work each WEEK?

Usual hours worked per week

34-39. CURRENT OR MOST RECENT JOB ACTIVITY.
Describe clearly this person's chief job activity or business. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give information for his/her last job.

34. Was this person -

☐ An employee of a PRIVATE FOR PROFIT company
   or business, or of an individual, for wages, salary,
   or commissions?
☐ An employee of a PRIVATE NOT- FOR- PROFIT,
   tax-exempt, or charitable organization?
☐ A local GOVERNMENT employee (city, county, etc.)?
☐ A state GOVERNMENT employee?
☐ An active duty U.S. Armed Forces member?
☐ A Federal GOVERNMENT employee (excluding
   active duty military)?
☐ SELF-EMPLOYED in own NOT INCORPORATED
   business, professional practice, or farm?
☐ SELF-EMPLOYED in own INCORPORATED business,
   professional practice, or farm?
☐ Working WITHOUT PAY in family business or farm?

35. For whom did this person work? ☞

Name of company, business, branch of the Armed Forces or other employer

36. What kind of business or industry was this?
Describe the activity at the location where employed. For example: hospital, newspaper publishing, public high school ☞

37. Is this mainly –

☐ Manufacturing? ☐ Retail trade?
☐ Wholesale trade? ☐ Other (agriculture,
                  construction, service,
                  government, etc.)?

38. What kind of work was this person doing?
For example: registered nurse, personnel manager, high school teacher ☞

39. What were this person's most important activities or duties? For example: patient care, directing hiring policies, teaching 9th grade biology ☞

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40. INCOME IN THE PAST 12 MONTHS.
Indicate the types of income this person received during the PAST 12 MONTHS and enter the amounts received. If you do not know the exact amount, please give an estimate. For income received jointly, report if possible, the appropriate share for each person. Otherwise, report the whole amount for only one person and mark the "No" box for the other person. If net income was a loss, mark the "LOSS" box to the right of the dollar amount.

In the PAST 12 MONTHS, did this person receive –

a. wages or salary? Report commissions, bonuses, or tips from all jobs BEFORE DEDUCTIONS FOR TAXES, BONDS, DUES, OR OTHER ITEMS.

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

b. self-employment income from own business (farm or non-farm) including proprietorship and partnership? Report NET income after business expenses.

☐ Yes → $ .00 ☐ Loss
☐ No   (Past 12 months – Dollars)

c. interest, dividends, net rental income, royalty income, or income from estates and trusts? Report even small amounts credited to an account.

☐ Yes → $ .00 ☐ Loss
☐ No   (Past 12 months – Dollars)

d. Social Security or Railroad Retirement?

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

e. retirement, survivor, or disability pensions? Do NOT include Social Security.

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

f. Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), or other public assistance or public welfare payments?

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

g. other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support or alimony, etc? Do NOT include lump sum payments such as money from an inheritance or the sale of a home.

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

41. What was this person's total income during the PAST 12 MONTHS? Add entries 40a – g; subtract any losses.

$ .00 ☐ None
(Past 12 months – Dollars) ☐ Loss

FORM ACS-1 (8-9-96)

If only 1 person is listed in the List of Residents, skip to page 16 for mailing instructions; otherwise, continue with the questions for Person 2 on page 8.

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Print the name of PERSON 2 from page 2 and answer these questions for Person 2.

PERSON 2

Last name	First name	MI

Print name

7. In what U.S. State, territory, commonwealth or foreign country was this person born?

8. Is this person a CITIZEN of the United States?

☐ Yes, born in the United States –
SKIP to question 10

☐ Yes, born in Puerto Rico, Guam, the U.S. Virgin Islands, or the Northern Marianas

☐ Yes, born abroad of American parent(s)

☐ Yes, U.S. citizen by naturalization

☐ No, not a citizen of the United States

9. When did this person come to live in the United States?

(Year)

10. At any time IN THE PAST 3 MONTHS, was this person attending a school or college? Include nursery or preschool, kindergarten, elementary school, and schooling that leads to a high school diploma, college degree, or vocational certificate.

☐ Yes, public school or public college

☐ Yes, private school or private college

☐ Yes, vocational, technical, or business school

☐ No, has not attended in the last 3 months

11. What is the highest degree or level of school this person has COMPLETED? Mark ☒ ONE box for the highest grade completed or degree received.

☐ None, no schooling completed

☐ Nursery or preschool

☐ Kindergarten

☐ Grade _____ (Write grade 1–11)

☐ 12th grade, NO DIPLOMA

☐ HIGH SCHOOL GRADUATE - high school DIPLOMA or the equivalent (GED)

☐ Some college but no degree

☐ Vocational, technical, or business school degree

☐ Associate degree in college

☐ Bachelor's degree (BA, AB, BS)

☐ Master's degree (MA, MS, MEng, MEd, MSW, MBA)

☐ Professional school degree (MD, DDS, DVM, LLB, JD)

☐ Doctorate degree (PhD, EdD)

12. What is this person's ancestry? For example: Italian, African Am., Cape Verdean, Ecuadorian, Haitian, Irish, Jamaican, Korean, Lebanese, Mexican, Nigerian, Polish, Taiwanese, Ukrainian, or any other ancestry.

If this person is UNDER 5 years of age, SKIP to the questions for the next person on page 10. Otherwise, continue.

13a. Did this person live in this house or apartment 5 years ago?

☐ Yes – SKIP to question 14a

☐ No

13b. Where did this person live 5 years ago?

(1) Name of U.S. State, territory, commonwealth or foreign country

If outside U.S., print answer above and SKIP to question 14a

(2) Name of city or town

(3) Name of county   (4) ZIP Code

c. Did this person live inside the city or town limits?

☐ Yes   ☐ No, lived outside city/town limits

14a. Does this person speak a language other than English at home?

☐ Yes   ☐ No, only English – SKIP to question 15

b. What is this language? For example: Korean, Italian, Spanish, Vietnamese

c. How well does this person speak English?

☐ Very well   ☐ Not well
☐ Well   ☐ Not at all

15. If this person has difficulty seeing, hearing, or walking, mark ☒ the appropriate boxes. If this person has no difficulty with these activities, mark "None of the above."

☐ Difficulty seeing (even with glasses)

☐ Difficulty hearing (even with a hearing aid)

☐ Difficulty walking, or

☐ None of the above

If this person is UNDER 15 years of age, SKIP to the questions for the next person on page 10. Otherwise, continue with question 16.

16. Does this person have a long-lasting physical or mental condition that –

a. Makes it difficult to go outside the home alone, for example, to shop or visit a doctor's office?

☐ Yes   ☐ No

b. Prevents this person from working at a job or business?

☐ Yes   ☐ No

If this person is female, answer question 17. Otherwise, continue with question 18.

17. How many babies has this person ever had, not counting stillbirths?

Babies ☐ None

18. Has this person ever served on ACTIVE DUTY in the U.S. Armed Forces, military Reserves, or National Guard? Include activation during Operation Desert Shield/Storm and service in the Merchant Marine during World War II. Do NOT include training for the Reserves or National Guard.

☐ Yes, now on active duty

☐ Yes, on active duty in past, but not now

☐ No active duty service – SKIP to question 21

19. When did this person serve on active duty in the U.S. Armed Forces? Mark ☒ a box for EACH period in which this person served.

☐ August 1990 or later (including Persian Gulf War)

☐ September 1980 to July 1990

☐ May 1975 to August 1980

☐ Vietnam era (August 1964 to April 1975)

☐ February 1955 to July 1964

☐ Korean conflict (June 1950 to January 1955)

☐ World War II (September 1940 to July 1947)

☐ Some other time

20. In total, how much time has this person spent on active duty in the U.S. Armed Forces?

Years and   Months

21. LAST WEEK, did this person do ANY work for pay or profit?

☐ Yes   ☐ No – SKIP to question 28a

22. LAST WEEK, how many hours did this person ACTUALLY work at all jobs? Subtract any time off; add overtime or extra hours worked.

Actual hours worked LAST WEEK

23. LAST WEEK, at what address or location did this person work? If this person worked at more than one address or location, print where he or she worked most last week.

a. Address (Number and street)

If the exact address is unknown, give a description of the location such as the building name or the nearest street or intersection. For example: Town Center Mall, 1st National Bank Building, Reno Airport, 2nd Ave. and 4th St.

b. Name of city, town, or post office

c. Is the work location inside the limits of the city or town?

☐ Yes   ☐ No

d. Name of county

e. Name of state   **f. ZIP Code**

FORM ACS-1 (8-9-98)

PERSON 2 – Continued

24. LAST WEEK, how did this person usually get to work? If more than one method was used during the trip, mark ☒ the box for the one used for most of the distance.

- ☐ Car, truck, or van
- ☐ Public transportation (bus, trolley, subway, or railroad)
- ☐ Taxicab
- ☐ Motorcycle
- ☐ Bicycle
- ☐ Walked
- ☐ Worked at home – *SKIP to question 32*
- ☐ Other method

25. LAST WEEK, how many people, including this person, usually rode to work in the car, truck, or van?

Person(s)

26. LAST WEEK, what time did this person usually leave home to go to work?

- ☐ a.m.
- ☐ p.m.

Hour   Minute

27. LAST WEEK, how many minutes did it usually take this person to get from home to work?

Minutes – *SKIP to question 32*

28a. LAST WEEK, was this person on layoff from a job?

- ☐ Yes, on temporary layoff from most recent job – *SKIP to question 30*
- ☐ Yes, permanently laid off from most recent job – *SKIP to question 29*
- ☐ No

b. LAST WEEK, was this person TEMPORARILY absent from a job or business?

- ☐ Yes, on vacation, temporary illness, labor dispute, etc. – *SKIP to question 31*
- ☐ No

29. Has this person been looking for work during the last 4 weeks?

- ☐ Yes
- ☐ No – *SKIP to question 31*

30. LAST WEEK, could this person have gone to work?

- ☐ Yes, if a job had been offered
- ☐ Yes, if recalled from layoff
- ☐ No, because of own temporary illness
- ☐ No, because of all other reasons (in school, etc.)

31. When did this person last work, even for a few days?

- ☐ Within the past 12 months
- ☐ Between 1 to 5 years ago – *SKIP to question 34*
- ☐ Over 5 years ago or never worked – *SKIP to question 40*

32. During the PAST 12 MONTHS, in how many WEEKS did this person work, even for a few hours? Include paid vacation, paid sick leave, and military service in the total.

Weeks (Including paid vacation, paid sick leave, and military service)

33. During the PAST 12 MONTHS, in the WEEKS WORKED, how many hours did this person usually work each WEEK?

Usual hours worked per week

34-39. CURRENT OR MOST RECENT JOB ACTIVITY. Describe clearly this person's chief job activity or business. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give information for his/her last job.

34. Was this person –

- ☐ An employee of a PRIVATE FOR PROFIT company or business, or of an individual, for wages, salary, or commissions?
- ☐ An employee of a PRIVATE NOT- FOR- PROFIT, tax-exempt, or charitable organization?
- ☐ A local GOVERNMENT employee (city, county, etc.)?
- ☐ A state GOVERNMENT employee?
- ☐ An active duty U.S. Armed Forces member?
- ☐ A Federal GOVERNMENT employee (excluding active duty military)?
- ☐ SELF-EMPLOYED in own NOT INCORPORATED business, professional practice, or farm?
- ☐ SELF-EMPLOYED in own INCORPORATED business, professional practice, or farm?
- ☐ Working WITHOUT PAY in family business or farm?

35. For whom did this person work?

Name of company, business, branch of the Armed Forces or other employer

36. What kind of business or industry was this? Describe the activity at the location where employed. For example: hospital, newspaper publishing, public high school

37. Is this mainly –

- ☐ Manufacturing?
- ☐ Wholesale trade?
- ☐ Retail trade?
- ☐ Other (agriculture, construction, service, government, etc.)?

38. What kind of work was this person doing? For example: registered nurse, personnel manager, high school teacher

39. What were this person's most important activities or duties? For example: patient care, directing hiring policies, teaching 9th grade biology

40. INCOME IN THE PAST 12 MONTHS.

Indicate the types of income this person received during the PAST 12 MONTHS and enter the amounts received. If you do not know the exact amount, please give an estimate. For income received jointly, report if possible, the appropriate share for each person. Otherwise, report the whole amount for only one person and mark the "No" box for the other person. If net income was a loss, mark the "LOSS" box to the right of the dollar amount.

In the PAST 12 MONTHS, did this person receive –

a. wages or salary? Report commissions, bonuses, or tips from all jobs BEFORE DEDUCTIONS FOR TAXES, BONDS, DUES, OR OTHER ITEMS.

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

b. self-employment income from own business (farm or non-farm) including proprietorship and partnership? Report NET income after business expenses.

- ☐ Yes → $ _____ .00   ☐ Loss
- ☐ No   (Past 12 months – Dollars)

c. interest, dividends, net rental income, royalty income, or income from estates and trusts? Report even small amounts credited to an account.

- ☐ Yes → $ _____ .00   ☐ Loss
- ☐ No   (Past 12 months – Dollars)

d. Social Security or Railroad Retirement?

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

e. retirement, survivor, or disability pensions? Do NOT include Social Security.

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

f. Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), or other public assistance or public welfare payments?

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

g. other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support or alimony, etc? Do NOT include lump sum payments such as money from an inheritance or the sale of a home.

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

41. What was this person's total income during the PAST 12 MONTHS? Add entries 40a – g; subtract any losses.

$ _____ .00   ☐ None
(Past 12 months – Dollars)   ☐ Loss

If only 2 persons are listed in the List of Residents, skip to page 16 for mailing instructions; otherwise, continue with the questions for Person 3 on page 10.

Print the name of PERSON 3 from page 2 and answer these questions for Person 3.

PERSON 3

Last name	First name	MI

Print name

7. In what U.S. State, territory, commonwealth or foreign country was this person born? ⟋

8. Is this person a CITIZEN of the United States?

☐ Yes, born in the United States – *SKIP to question 10*

☐ Yes, born in Puerto Rico, Guam, the U.S. Virgin Islands, or the Northern Marianas

☐ Yes, born abroad of American parent(s)

☐ Yes, U.S. citizen by naturalization

☐ No, not a citizen of the United States

9. When did this person come to live in the United States?

(Year)

10. At any time IN THE PAST 3 MONTHS, was this person attending a school or college? Include nursery or preschool, kindergarten, elementary school, and schooling that leads to a high school diploma, college degree, or vocational certificate.

☐ Yes, public school or public college

☐ Yes, private school or private college

☐ Yes, vocational, technical, or business school

☐ No, has not attended in the last 3 months

11. What is the highest degree or level of school this person has COMPLETED? Mark ☒ ONE box for the highest grade completed or degree received.

☐ None, no schooling completed

☐ Nursery or preschool

☐ Kindergarten

☐ Grade _____ (Write grade 1–11)

☐ 12th grade, NO DIPLOMA

☐ HIGH SCHOOL GRADUATE - high school DIPLOMA or the equivalent (GED)

☐ Some college but no degree

☐ Vocational, technical, or business school degree

☐ Associate degree in college

☐ Bachelor's degree (BA, AB, BS)

☐ Master's degree (MA, MS, MEng, MEd, MSW, MBA)

☐ Professional school degree (MD, DDS, DVM, LLB, JD)

☐ Doctorate degree (PhD, EdD)

12. What is this person's ancestry? For example: Italian, African Am., Cape Verdean, Ecuadorian, Haitian, Irish, Jamaican, Korean, Lebanese, Mexican, Nigerian, Polish, Taiwanese, Ukrainian, or any other ancestry. ⟋

If this person is UNDER 5 years of age, SKIP to the questions for the next person on page 12; otherwise, continue

13a. Did this person live in this house or apartment 5 years ago?

☐ Yes – *SKIP to question 14a*

☐ No

13b. Where did this person live 5 years ago?

(1) Name of U.S. State, territory, commonwealth or foreign country ⟋

If outside U.S., print answer above and SKIP to question 14a

(2) Name of city or town ⟋

(3) Name of county ⟋   (4) ZIP Code ⟋

c. Did this person live inside the city or town limits?

☐ Yes   ☐ No, lived outside city/town limits

14a. Does this person speak a language other than English at home?

☐ Yes   ☐ No, only English – *SKIP to question 15*

b. What is this language? For example: Korean, Italian, Spanish, Vietnamese ⟋

c. How well does this person speak English?

☐ Very well   ☐ Not well

☐ Well   ☐ Not at all

15. If this person has difficulty seeing, hearing, or walking, mark ☒ the appropriate boxes. If this person has no difficulty with these activities, mark "None of the above."

☐ Difficulty seeing (even with glasses)

☐ Difficulty hearing (even with a hearing aid)

☐ Difficulty walking, or

☐ None of the above

If this person is UNDER 15 years of age, SKIP to the questions for the next person on page 12; otherwise, continue with question 16.

16. Does this person have a long-lasting physical or mental condition that –

a. Makes it difficult to go outside the home alone, for example, to shop or visit a doctor's office?

☐ Yes   ☐ No

b. Prevents this person from working at a job or business?

☐ Yes   ☐ No

If this person is female, answer question 17; otherwise, continue with question 18.

17. How many babies has this person ever had, not counting stillbirths?

Babies   ☐ None

18. Has this person ever served on ACTIVE DUTY in the U.S. Armed Forces, military Reserves, or National Guard? Include activation during Operation Desert Shield/Storm and service in the Merchant Marine during World War II. Do NOT include training for the Reserves or National Guard.

☐ Yes, now on active duty

☐ Yes, on active duty in past, but not now

☐ No active duty service – *SKIP to question 21*

19. When did this person serve on active duty in the U.S. Armed Forces? Mark ☒ a box for EACH period in which this person served.

☐ August 1990 or later (including Persian Gulf War)

☐ September 1980 to July 1990

☐ May 1975 to August 1980

☐ Vietnam era (August 1964 to April 1975)

☐ February 1955 to July 1964

☐ Korean conflict (June 1950 to January 1955)

☐ World War II (September 1940 to July 1947)

☐ Some other time

20. In total, how much time has this person spent on active duty in the U.S. Armed Forces?

Years and   Months

21. LAST WEEK, did this person do ANY work for pay or profit?

☐ Yes   ☐ No – *SKIP to question 28a*

22. LAST WEEK, how many hours did this person ACTUALLY work at all jobs? Subtract any time off; add overtime or extra hours worked.

Actual hours worked LAST WEEK

23. LAST WEEK, at what address or location did this person work? If this person worked at more than one address or location, print where he or she worked most last week.

a. Address (Number and street) ⟋

If the exact address is unknown, give a description of the location such as the building name or the nearest street or intersection. For example: Town Center Mall, 1st National Bank Building, Reno Airport, 2nd Ave. and 4th St.

b. Name of city, town, or post office ⟋

c. Is the work location inside the limits of the city or town?

☐ Yes   ☐ No

d. Name of county ⟋

e. Name of state ⟋   **f.** ZIP Code ⟋

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PERSON 3 – Continued

24. LAST WEEK, how did this person usually get to work? If more than one method was used during the trip, mark ☒ the box for the one used for most of the distance.

☐ Car, truck, or van
☐ Public transportation (bus, trolley, subway, or railroad)
☐ Taxicab
☐ Motorcycle
☐ Bicycle
☐ Walked
☐ Worked at home – *SKIP to question 32*
☐ Other method

25. LAST WEEK, how many people, including this person, usually rode to work in the car, truck, or van?

_____ Person(s)

26. LAST WEEK, what time did this person usually leave home to go to work?

☐ a.m.
☐ p.m.
Hour   Minute

27. LAST WEEK, how many minutes did it usually take this person to get from home to work?

_____ Minutes – *SKIP to question 32*

28a. LAST WEEK, was this person on layoff from a job?

☐ Yes, on temporary layoff from most recent job – *SKIP to question 30*
☐ Yes, permanently laid off from most recent job – *SKIP to question 29*
☐ No

b. LAST WEEK, was this person TEMPORARILY absent from a job or business?

☐ Yes, on vacation, temporary illness, labor dispute, etc. – *SKIP to question 31*
☐ No

29. Has this person been looking for work during the last 4 weeks?

☐ Yes
☐ No – *SKIP to question 31*

30. LAST WEEK, could this person have gone to work?

☐ Yes, if a job had been offered
☐ Yes, if recalled from layoff
☐ No, because of own temporary illness
☐ No, because of all other reasons (in school, etc.)

31. When did this person last work, even for a few days?

☐ Within the past 12 months
☐ Between 1 to 5 years ago – *SKIP to question 34*
☐ Over 5 years ago or never worked – *SKIP to question 40*

32. During the PAST 12 MONTHS, in how many WEEKS did this person work, even for a few hours? Include paid vacation, paid sick leave, and military service in the total.

_____ Weeks (including paid vacation, paid sick leave, and military service)

33. During the PAST 12 MONTHS, in the WEEKS WORKED, how many hours did this person usually work each WEEK?

_____ Usual hours worked per week

34-39. CURRENT OR MOST RECENT JOB ACTIVITY. Describe clearly this person's chief job activity or business. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give information for his/her last job.

34. Was this person –

☐ An employee of a PRIVATE FOR PROFIT company or business, or of an individual, for wages, salary, or commissions?
☐ An employee of a PRIVATE NOT-FOR-PROFIT, tax-exempt, or charitable organization?
☐ A local GOVERNMENT employee (city, county, etc.)?
☐ A state GOVERNMENT employee?
☐ An active duty U.S. Armed Forces member?
☐ A Federal GOVERNMENT employee (excluding active duty military)?
☐ SELF-EMPLOYED in own NOT INCORPORATED business, professional practice, or farm?
☐ SELF-EMPLOYED in own INCORPORATED business, professional practice, or farm?
☐ Working WITHOUT PAY in family business or farm?

35. For whom did this person work? ⬈

_____
Name of company, business, branch of the Armed Forces or other employer

36. What kind of business or industry was this? Describe the activity at the location where employed. For example: hospital, newspaper publishing, public high school ⬈

37. Is this mainly –

☐ Manufacturing?
☐ Wholesale trade?
☐ Retail trade?
☐ Other (agriculture, construction, service, government, etc.)?

38. What kind of work was this person doing? For example: registered nurse, personnel manager, high school teacher ⬈

39. What were this person's most important activities or duties? For example: patient care, directing hiring policies, teaching 9th grade biology ⬈

40. INCOME IN THE PAST 12 MONTHS.

Indicate the types of income this person received during the PAST 12 MONTHS and enter the amounts received. If you do not know the exact amount, please give an estimate. For income received jointly, report if possible, the appropriate share for each person. Otherwise, report the whole amount for only one person and mark the "No" box for the other person. If net income was a loss, mark the "LOSS" box to the right of the dollar amount.

In the PAST 12 MONTHS, did this person receive –

a. wages or salary? Report commissions, bonuses, or tips from all jobs BEFORE DEDUCTIONS FOR TAXES, BONDS, DUES, OR OTHER ITEMS.

☐ Yes ⟶ $ _____ .00
☐ No   (Past 12 months – Dollars)

b. self-employment income from own business (farm or non-farm) including proprietorship and partnership? Report NET income after business expenses.

☐ Yes ⟶ $ _____ .00 ☐ Loss
☐ No   (Past 12 months – Dollars)

c. interest, dividends, net rental income, royalty income, or income from estates and trusts? Report even small amounts credited to an account.

☐ Yes ⟶ $ _____ .00 ☐ Loss
☐ No   (Past 12 months – Dollars)

d. Social Security or Railroad Retirement?

☐ Yes ⟶ $ _____ .00
☐ No   (Past 12 months – Dollars)

e. retirement, survivor, or disability pensions? Do NOT include Social Security.

☐ Yes ⟶ $ _____ .00
☐ No   (Past 12 months – Dollars)

f. Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), or other public assistance or public welfare payments?

☐ Yes ⟶ $ _____ .00
☐ No   (Past 12 months – Dollars)

g. other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support or alimony, etc? Do NOT include lump sum payments such as money from an inheritance or the sale of a home.

☐ Yes ⟶ $ _____ .00
☐ No   (Past 12 months – Dollars)

41. What was this person's total income during the PAST 12 MONTHS? Add entries 40a – g; subtract any losses.

$ _____ .00 ☐ None
(Past 12 months – Dollars) ☐ Loss

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If only 3 persons are listed in the List of Residents, skip to page 16 for mailing instructions; otherwise, continue with the questions for Person 4 on page 12.

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Print the name of PERSON 4 from page 2 and answer these questions for Person 4.

PERSON 4

| Last name | First name | MI |

Print name

7. In what U.S. State, territory, commonwealth or foreign country was this person born?

8. Is this person a CITIZEN of the United States?

☐ Yes, born in the United States – *SKIP to question 10*

☐ Yes, born in Puerto Rico, Guam, the U.S. Virgin Islands, or the Northern Marianas

☐ Yes, born abroad of American parent(s)

☐ Yes, U.S. citizen by naturalization

☐ No, not a citizen of the United States

9. When did this person come to live in the United States?

(Year)

10. At any time IN THE PAST 3 MONTHS, was this person attending a school or college? Include nursery or preschool, kindergarten, elementary school, and schooling that leads to a high school diploma, college degree, or vocational certificate.

☐ Yes, public school or public college

☐ Yes, private school or private college

☐ Yes, vocational, technical, or business school

☐ No, has not attended in the last 3 months

11. What is the highest degree or level of school this person has COMPLETED? Mark ☒ ONE box for the highest grade completed or degree received.

☐ None, no schooling completed

☐ Nursery or preschool

☐ Kindergarten

☐ Grade _____ (Write grade 1–11)

☐ 12th grade, NO DIPLOMA

☐ HIGH SCHOOL GRADUATE - high school DIPLOMA or the equivalent (GED)

☐ Some college but no degree

☐ Vocational, technical, or business school degree

☐ Associate degree in college

☐ Bachelor's degree (BA, AB, BS)

☐ Master's degree (MA, MS, MEng, MEd, MSW, MBA)

☐ Professional school degree (MD, DDS, DVM, LLB, JD)

☐ Doctorate degree (PhD, EdD)

12. What is this person's ancestry? For example: Italian, African Am., Cape Verdean, Ecuadorian, Haitian, Irish, Jamaican, Korean, Lebanese, Mexican, Nigerian, Polish, Taiwanese, Ukrainian, or any other ancestry.

If this person is UNDER 5 years of age, SKIP to the questions for the next person on page 14; otherwise, continue.

13a. Did this person live in this house or apartment 5 years ago?

☐ Yes – *SKIP to question 14a*

☐ No

13b. Where did this person live 5 years ago?

(1) Name of U.S. State, territory, commonwealth or foreign country

If outside U.S., print answer above and SKIP to question 14a

(2) Name of city or town

(3) Name of county   (4) ZIP Code

c. Did this person live inside the city or town limits?

☐ Yes   ☐ No, lived outside city/town limits

14a. Does this person speak a language other than English at home?

☐ Yes   ☐ No, only English – *SKIP to question 15*

b. What is this language? For example: Korean, Italian, Spanish, Vietnamese

c. How well does this person speak English?

☐ Very well   ☐ Not well

☐ Well   ☐ Not at all

15. If this person has difficulty seeing, hearing, or walking, mark ☒ the appropriate boxes. If this person has no difficulty with these activities, mark "None of the above."

☐ Difficulty seeing (even with glasses)

☐ Difficulty hearing (even with a hearing aid)

☐ Difficulty walking, or

☐ None of the above

If this person is UNDER 15 years of age, SKIP to the questions for the next person on page 14; otherwise, continue with question 16.

16. Does this person have a long-lasting physical or mental condition that –

a. Makes it difficult to go outside the home alone, for example, to shop or visit a doctor's office?

☐ Yes   ☐ No

b. Prevents this person from working at a job or business?

☐ Yes   ☐ No

If this person is female, answer question 17; otherwise, continue with question 18.

17. How many babies has this person ever had, not counting stillbirths?

Babies   ☐ None

18. Has this person ever served on ACTIVE DUTY in the U.S. Armed Forces, military Reserves, or National Guard? Include activation during Operation Desert Shield/Storm and service in the Merchant Marine during World War II. Do NOT include training for the Reserves or National Guard.

☐ Yes, now on active duty

☐ Yes, on active duty in past, but not now

☐ No active duty service – *SKIP to question 21*

19. When did this person serve on active duty in the U.S. Armed Forces? Mark ☒ a box for EACH period in which this person served.

☐ August 1990 or later (including Persian Gulf War)

☐ September 1980 to July 1990

☐ May 1975 to August 1980

☐ Vietnam era (August 1964 to April 1975)

☐ February 1955 to July 1964

☐ Korean conflict (June 1950 to January 1955)

☐ World War II (September 1940 to July 1947)

☐ Some other time

20. In total, how much time has this person spent on active duty in the U.S. Armed Forces?

Years and   Months

21. LAST WEEK, did this person do ANY work for pay or profit?

☐ Yes   ☐ No – *SKIP to question 28a*

22. LAST WEEK, how many hours did this person ACTUALLY work at all jobs? Subtract any time off; add overtime or extra hours worked.

Actual hours worked LAST WEEK

23. LAST WEEK, at what address or location did this person work? If this person worked at more than one address or location, print where he or she worked most last week.

a. Address (Number and street)

If the exact address is unknown, give a description of the location such as the building name or the nearest street or intersection. For example: Town Center Mall, 1st National Bank Building, Reno Airport, 2nd Ave. and 4th St.

b. Name of city, town, or post office

c. Is the work location inside the limits of the city or town?

☐ Yes   ☐ No

d. Name of county

e. Name of state   **f. ZIP Code**

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PERSON 4 – Continued

24. LAST WEEK, how did this person usually get to work? If more than one method was used during the trip, mark ☒ the box for the one used for most of the distance.

☐ Car, truck, or van   ☐ Bicycle
☐ Public transportation (bus, trolley, subway, or railroad)
☐ Walked
☐ Worked at home – *SKIP to question 32*
☐ Taxicab   ☐ Other method
☐ Motorcycle

If you marked "Car, truck, or van" continue with question 25; otherwise, SKIP to question 26.

25. LAST WEEK, how many people, including this person, usually rode to work in the car, truck, or van?

Person(s)

26. LAST WEEK, what time did this person usually leave home to go to work?

☐ a.m.
☐ p.m.
Hour   Minute

27. LAST WEEK, how many minutes did it usually take this person to get from home to work?

Minutes – *SKIP to question 32*

Answer questions 28a – 31 only if this person did not work last week.

28a. LAST WEEK, was this person on layoff from a job?

☐ Yes, on temporary layoff from most recent job – *SKIP to question 30*
☐ Yes, permanently laid off from most recent job – *SKIP to question 29*
☐ No

b. LAST WEEK, was this person TEMPORARILY absent from a job or business?

☐ Yes, on vacation, temporary illness, labor dispute, etc. – *SKIP to question 31*
☐ No

29. Has this person been looking for work during the last 4 weeks?

☐ Yes
☐ No – *SKIP to question 31*

30. LAST WEEK, could this person have gone to work?

☐ Yes, if a job had been offered
☐ Yes, if recalled from layoff
☐ No, because of own temporary illness
☐ No, because of all other reasons (in school, etc.)

31. When did this person last work, even for a few days?

☐ Within the past 12 months
☐ Between 1 to 5 years ago – *SKIP to question 34*
☐ Over 5 years ago or never worked – *SKIP to question 40*

32. During the PAST 12 MONTHS, in how many WEEKS did this person work, even for a few hours? Include paid vacation, paid sick leave, and military service in the total.

Weeks (Including paid vacation, paid sick leave, and military service)

33. During the PAST 12 MONTHS, in the WEEKS WORKED, how many hours did this person usually work each WEEK?

Usual hours worked per week

Answer questions 34–39 if this person worked in the past 5 years.

34-39. CURRENT OR MOST RECENT JOB ACTIVITY. Describe clearly this person's chief job activity or business. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give information for his/her last job.

34. Was this person –

☐ An employee of a PRIVATE FOR PROFIT company or business, or of an individual, for wages, salary, or commissions?
☐ An employee of a PRIVATE NOT- FOR- PROFIT, tax-exempt, or charitable organization?
☐ A local GOVERNMENT employee (city, county, etc.)?
☐ A state GOVERNMENT employee?
☐ An active duty U.S. Armed Forces member?
☐ A Federal GOVERNMENT employee (excluding active duty military)?
☐ SELF-EMPLOYED in own NOT INCORPORATED business, professional practice, or farm?
☐ SELF-EMPLOYED in own INCORPORATED business, professional practice, or farm?
☐ Working WITHOUT PAY in family business or farm?

35. For whom did this person work? ▱

Name of company, business, branch of the Armed Forces or other employer

36. What kind of business or industry was this? Describe the activity at the location where employed. For example: hospital, newspaper publishing, public high school ▱

37. Is this mainly –

☐ Manufacturing?   ☐ Retail trade?
☐ Wholesale trade?   ☐ Other (agriculture, construction, service, government, etc.)?

38. What kind of work was this person doing? For example: registered nurse, personnel manager, high school teacher ▱

39. What were this person's most important activities or duties? For example: patient care, directing hiring policies, teaching 9th grade biology ▱

Answer questions 40 and 41 if this person is 15 years or older.

40. INCOME IN THE PAST 12 MONTHS.

Indicate the types of income this person received during the PAST 12 MONTHS and enter the amounts received. If you do not know the exact amount, please give an estimate. For income received jointly, report if possible, the appropriate share for each person. Otherwise, report the whole amount for only one person and mark the "No" box for the other person. If net income was a loss, mark the "LOSS" box to the right of the dollar amount.

In the PAST 12 MONTHS, did this person receive –

a. wages or salary? Report commissions, bonuses, or tips from all jobs BEFORE DEDUCTIONS FOR TAXES, BONDS, DUES, OR OTHER ITEMS.

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

b. self-employment income from own business (farm or non-farm) including proprietorship and partnership? Report NET income after business expenses.

☐ Yes → $ .00   ☐ Loss
☐ No   (Past 12 months – Dollars)

c. interest, dividends, net rental income, royalty income, or income from estates and trusts? Report even small amounts credited to an account.

☐ Yes → $ .00   ☐ Loss
☐ No   (Past 12 months – Dollars)

d. Social Security or Railroad Retirement?

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

e. retirement, survivor, or disability pensions? Do NOT include Social Security.

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

f. Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), or other public assistance or public welfare payments?

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

g. other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support or alimony, etc? Do NOT include lump sum payments such as money from an inheritance or the sale of a home.

☐ Yes → $ .00
☐ No   (Past 12 months – Dollars)

41. What was this person's total income during the PAST 12 MONTHS? Add entries 40a – g; subtract any losses.

$ .00   ☐ None
(Past 12 months – Dollars)   ☐ Loss

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If only 4 persons are listed in the List of Residents, skip to page 16 for mailing instructions; otherwise, continue with the questions for Person 5 on page 14.

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Print the name of PERSON 5 from page 2 and answer these questions for Person 5.

PERSON 5	Last name	First name	MI

Print name

7. In what U.S. State, territory, commonwealth or foreign country was this person born?

8. Is this person a CITIZEN of the United States?
- [ ] Yes, born in the United States – *SKIP to question 10*
- [ ] Yes, born in Puerto Rico, Guam, the U.S. Virgin Islands, or the Northern Marianas
- [ ] Yes, born abroad of American parent(s)
- [ ] Yes, U.S. citizen by naturalization
- [ ] No, not a citizen of the United States

9. When did this person come to live in the United States?

(Year)

10. At any time IN THE PAST 3 MONTHS, was this person attending a school or college? Include nursery or preschool, kindergarten, elementary school, and schooling that leads to a high school diploma, college degree, or vocational certificate.
- [ ] Yes, public school or public college
- [ ] Yes, private school or private college
- [ ] Yes, vocational, technical, or business school
- [ ] No, has not attended in the last 3 months

11. What is the highest degree or level of school this person has COMPLETED? Mark ☒ ONE box for the highest grade completed or degree received.
- [ ] None, no schooling completed
- [ ] Nursery or preschool
- [ ] Kindergarten
- [ ] Grade _____ (Write grade 1–11)
- [ ] 12th grade, NO DIPLOMA
- [ ] HIGH SCHOOL GRADUATE - high school DIPLOMA or the equivalent (GED)
- [ ] Some college but no degree
- [ ] Vocational, technical, or business school degree
- [ ] Associate degree in college
- [ ] Bachelor's degree (BA, AB, BS)
- [ ] Master's degree (MA, MS, MEng, MEd, MSW, MBA)
- [ ] Professional school degree (MD, DDS, DVM, LLB, JD)
- [ ] Doctorate degree (PhD, EdD)

12. What is this person's ancestry? For example: Italian, African Am., Cape Verdean, Ecuadorian, Haitian, Irish, Jamaican, Korean, Lebanese, Mexican, Nigerian, Polish, Taiwanese, Ukrainian, or any other ancestry.

If this person is UNDER 5 years of age, SKIP to page 16 for mailing instructions, otherwise, continue.

13a. Did this person live in this house or apartment 5 years ago?
- [ ] Yes – *SKIP to question 14a*
- [ ] No

13b. Where did this person live 5 years ago?

(1) **Name of U.S. State, territory, commonwealth or foreign country**

If outside U.S., print answer above and SKIP to question 14a

(2) **Name of city or town**

(3) **Name of county**   (4) **ZIP Code**

c. Did this person live inside the city or town limits?
- [ ] Yes   [ ] No, lived outside city/town limits

14a. Does this person speak a language other than English at home?
- [ ] Yes   [ ] No, only English – *SKIP to question 15*

b. What is this language? For example: Korean, Italian, Spanish, Vietnamese

c. How well does this person speak English?
- [ ] Very well   [ ] Not well
- [ ] Well   [ ] Not at all

15. If this person has difficulty seeing, hearing, or walking, mark ☒ the appropriate boxes. If this person has no difficulty with these activities, mark "None of the above."
- [ ] Difficulty seeing (even with glasses)
- [ ] Difficulty hearing (even with a hearing aid)
- [ ] Difficulty walking, or
- [ ] None of the above

If this person is UNDER 15 years of age, SKIP to page 16 for mailing instructions, otherwise, continue with question 16.

16. Does this person have a long-lasting physical or mental condition that –

a. Makes it difficult to go outside the home alone, for example, to shop or visit a doctor's office?
- [ ] Yes   [ ] No

b. Prevents this person from working at a job or business?
- [ ] Yes   [ ] No

If this person is female, answer question 17; otherwise, continue with question 18.

17. How many babies has this person ever had, not counting stillbirths?

Babies   [ ] None

18. Has this person ever served on ACTIVE DUTY in the U.S. Armed Forces, military Reserves, or National Guard? Include activation during Operation Desert Shield/Storm and service in the Merchant Marine during World War II. Do NOT include training for the Reserves or National Guard.
- [ ] Yes, now on active duty
- [ ] Yes, on active duty in past, but not now
- [ ] No active duty service – *SKIP to question 21*

19. When did this person serve on active duty in the U.S. Armed Forces? Mark ☒ a box for EACH period in which this person served.
- [ ] August 1990 or later (including Persian Gulf War)
- [ ] September 1980 to July 1990
- [ ] May 1975 to August 1980
- [ ] Vietnam era (August 1964 to April 1975)
- [ ] February 1955 to July 1964
- [ ] Korean conflict (June 1950 to January 1955)
- [ ] World War II (September 1940 to July 1947)
- [ ] Some other time

20. In total, how much time has this person spent on active duty in the U.S. Armed Forces?

Years and   Months

21. LAST WEEK, did this person do ANY work for pay or profit?
- [ ] Yes   [ ] No – *SKIP to question 28a*

22. LAST WEEK, how many hours did this person ACTUALLY work at all jobs? Subtract any time off; add overtime or extra hours worked.

Actual hours worked LAST WEEK

23. LAST WEEK, at what address or location did this person work? If this person worked at more than one address or location, print where he or she worked most last week.

a. Address (Number and street)

If the exact address is unknown, give a description of the location such as the building name or the nearest street or intersection. For example: Town Center Mall, 1st National Bank Building, Reno Airport, 2nd Ave. and 4th St.

b. Name of city, town, or post office

c. Is the work location inside the limits of the city or town?
- [ ] Yes   [ ] No

d. Name of county

e. Name of state   **f. ZIP Code**

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PERSON 5 – Continued

24. LAST WEEK, how did this person usually get to work? If more than one method was used during the trip, mark ☒ the box for the one used for most of the distance.

- ☐ Car, truck, or van
- ☐ Public transportation (bus, trolley, subway, or railroad)
- ☐ Taxicab
- ☐ Motorcycle
- ☐ Bicycle
- ☐ Walked
- ☐ Worked at home – *SKIP to question 32*
- ☐ Other method

25. LAST WEEK, how many people, including this person, usually rode to work in the car, truck, or van?

_____ Person(s)

26. LAST WEEK, what time did this person usually leave home to go to work?

Hour : Minute   ☐ a.m.   ☐ p.m.

27. LAST WEEK, how many minutes did it usually take this person to get from home to work?

_____ Minutes – *SKIP to question 32*

28a. LAST WEEK, was this person on layoff from a job?

- ☐ Yes, on temporary layoff from most recent job – *SKIP to question 30*
- ☐ Yes, permanently laid off from most recent job – *SKIP to question 29*
- ☐ No

b. LAST WEEK, was this person TEMPORARILY absent from a job or business?

- ☐ Yes, on vacation, temporary illness, labor dispute, etc. – *SKIP to question 31*
- ☐ No

29. Has this person been looking for work during the last 4 weeks?

- ☐ Yes
- ☐ No – *SKIP to question 31*

30. LAST WEEK, could this person have gone to work?

- ☐ Yes, if a job had been offered
- ☐ Yes, if recalled from layoff
- ☐ No, because of own temporary illness
- ☐ No, because of all other reasons (in school, etc.)

31. When did this person last work, even for a few days?

- ☐ Within the past 12 months
- ☐ Between 1 to 5 years ago – *SKIP to question 34*
- ☐ Over 5 years ago or never worked – *SKIP to question 40*

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32. During the PAST 12 MONTHS, in how many WEEKS did this person work, even for a few hours? Include paid vacation, paid sick leave, and military service in the total.

_____ Weeks (Including paid vacation, paid sick leave, and military service)

33. During the PAST 12 MONTHS, in the WEEKS WORKED, how many hours did this person usually work each WEEK?

_____ Usual hours worked per week

34-39. CURRENT OR MOST RECENT JOB ACTIVITY. Describe clearly this person's chief job activity or business. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give information for his/her last job.

34. Was this person -

- ☐ An employee of a PRIVATE FOR PROFIT company or business, or of an individual, for wages, salary, or commissions?
- ☐ An employee of a PRIVATE NOT- FOR- PROFIT, tax-exempt, or charitable organization?
- ☐ A local GOVERNMENT employee (city, county, etc.)?
- ☐ A state GOVERNMENT employee?
- ☐ An active duty U.S. Armed Forces member?
- ☐ A Federal GOVERNMENT employee (excluding active duty military)?
- ☐ SELF-EMPLOYED in own NOT INCORPORATED business, professional practice, or farm?
- ☐ SELF-EMPLOYED in own INCORPORATED business, professional practice, or farm?
- ☐ Working WITHOUT PAY in family business or farm?

35. For whom did this person work? ⟍

_____

Name of company, business, branch of the Armed Forces or other employer

36. What kind of business or industry was this? Describe the activity at the location where employed. For example: hospital, newspaper publishing, public high school ⟍

37. Is this mainly –

- ☐ Manufacturing?
- ☐ Wholesale trade?
- ☐ Retail trade?
- ☐ Other (agriculture, construction, service, government, etc.)?

38. What kind of work was this person doing? For example: registered nurse, personnel manager, high school teacher ⟍

39. What were this person's most important activities or duties? For example: patient care, directing hiring policies, teaching 9th grade biology ⟍

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40. INCOME IN THE PAST 12 MONTHS.

Indicate the types of income this person received during the PAST 12 MONTHS and enter the amounts received. If you do not know the exact amount, please give an estimate. For income received jointly, report if possible, the appropriate share for each person. Otherwise, report the whole amount for only one person and mark the "No" box for the other person. If net income was a loss, mark the "LOSS" box to the right of the dollar amount.

In the PAST 12 MONTHS, did this person receive –

a. wages or salary? Report commissions, bonuses, or tips from all jobs BEFORE DEDUCTIONS FOR TAXES, BONDS, DUES, OR OTHER ITEMS.

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

b. self-employment income from own business (farm or non-farm) including proprietorship and partnership? Report NET income after business expenses.

- ☐ Yes → $ _____ .00   ☐ Loss
- ☐ No   (Past 12 months – Dollars)

c. interest, dividends, net rental income, royalty income, or income from estates and trusts? Report even small amounts credited to an account.

- ☐ Yes → $ _____ .00   ☐ Loss
- ☐ No   (Past 12 months – Dollars)

d. Social Security or Railroad Retirement?

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

e. retirement, survivor, or disability pensions? Do NOT include Social Security.

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

f. Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), or other public assistance or public welfare payments?

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

g. other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support or alimony, etc? Do NOT include lump sum payments such as money from an inheritance or the sale of a home.

- ☐ Yes → $ _____ .00
- ☐ No   (Past 12 months – Dollars)

41. What was this person's total income during the PAST 12 MONTHS? Add entries 40a – g; subtract any losses.

$ _____ .00   ☐ None   ☐ Loss
(Past 12 months – Dollars)

Step 5 **Please make sure you have . . .**

1. FILLED the form completely.

2. ANSWERED questions 1 through 6 on pages 2 and 3 for each person on the List of Residents on page 2.

3. ANSWERED questions H1 through H37 on pages 4 and 5.

4. ANSWERED the questions on pages 6 through 15 for each person on the List of Residents on page 2.

Then . . .

5. Insert your completed questionnaire into the postage-paid return envelope. The address on this envelope is for the Bureau of the Census Processing Center in Jeffersonville, Indiana.

6. Before sealing the envelope, please make sure that the barcode above the address on your questionnaire is visible through the window of the return envelope.

Thank you very much for your participation.

The Census Bureau estimates that, for the average household, this form will take 30 minutes to complete, including the time for reviewing the instructions and answers. Comments about the estimate should be directed to the Associate Director for Administration, Bureau of the Census, Room 3104, FB 3, Washington, DC 20233, Attn: 0607-0810. Please DO NOT RETURN your questionnaire to this address. Use the enclosed preaddressed envelope to return your completed questionnaire.

Respondents are not required to respond to any information collection unless it displays a valid approval number from the Office of Management and Budget. This 8-digit number appears in the bottom right corner on the front cover of this form.

FOR CENSUS BUREAU USE

POP [ ]   EDIT [ ]   PHONE [ ]   JIC1 [ ]   JIC2 [ ]

ID [ ]-[ ]-[ ]-[ ]   JIC3 [ ]   JIC4 [ ]

EDIT CLERK [ ]   TELEPHONE CLERK [ ]

FORM ACS 1 (8-9-96)

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Methods

Introduction

The study area was Multnomah County, OR. This area contains 611,040 people, with 119,012 between the ages of 0 and 14 years. The population of this area is rapidly increasing, with almost 24% of residents over age five moving into the county within the last five years. This area is predominantly Caucasian non-Hispanic with 81.4% of people of this race/ethnicity.

In Oregon, emergency medical care operates under a statewide trauma system of cooperating trauma centers. Under the legal authority of the State Health Division, centers are categorized, from Level I to Level IV, on the basis of available resources and ability to provide optimal care for various levels of injury. The criteria for categorizing trauma centers are presented in Appendix A. The two Level I trauma centers for the state are both located in Portland, OR.

Data Source-Injuries

The Oregon Health Division (OHD) Emergency Medical Services and Systems Department maintains a Trauma Registry for cases that, according to predefined triage conditions enter the trauma system, receive care at a Level I trauma center, and are reported to OHD. These patients can be designated to enter the trauma system and receive care at a Level I trauma center at three points. The first is by field triage criteria assessed by emergency medical technicians (EMTs) at the scene of the injury and patients are required to be transported to a Level I trauma center. These field triage criteria are divided in four categories: physiologic criteria of the patients' vital signs and level of consciousness; the anatomy of injury; the mechanism of injury; and co-morbid factors

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