Won't You Be My Neighbor?: Child Abuse in a Community Context

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Won’t You Be My Neighbor?

Child Abuse in a Community Context

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Abstract

This project quantitatively and spatially examines child abuse reports in a neighborhood context based on the analysis of Allegheny County in Southwestern Pennsylvania that is divided into 98 zip codes. Based on data on child abuse reports obtained from ChildLine from 1994 to 2004, this research tests a relationship between variables traditionally associated with child abuse rates and reporting rates. Next, neighborhood assets are compared to determine their relevance. They include grocery stores, parks, libraries, hospitals, schools and religious institutions. Results include significant relationships between reporting rates and unemployment, vacancy rates, marital status, the elderly population, and the location of universities and hospitals. The last section on policy implications considers developing programs to increase community involvement and develop powerful and dedicated infrastructures.
I. Introduction

Child abuse is a dangerous part of our society. Reporting this abuse relies on people who feel a responsibility to their community and their neighbors as well as persons mandated by law to report this information. If more people took a healthy interest in their communities perhaps we could stop these dangerous situations before they start.

The system in place is not as successful as it could be. We need to improve the system so our children can survive and thrive. According to the National Clearinghouse on Child Abuse and Neglect Information there were an estimated 1400 child fatalities as a result of abuse or neglect in 2002 (Child Abuse and Neglect Fatalities: Statistics and Interventions). Over 1400 innocents lost to the system that was supposed to work for them. Many researchers believe that child abuse and neglect are underreported. One must wonder about the true state of our nation’s families.

Consider the statistics from Ohio and Pennsylvania. The 2004 Statistical Abstract of the United States indicated that for the state of Ohio there were 68,236 abuse incident reports made, 110,496 children were the subjects of investigation and 50,141 victims were confirmed. In Pennsylvania there were 24,330 reports made, all 24,330 were investigated and 5,057 children were considered to be victims of abuse (205). For Ohio there were 2,879,927 persons under the age of eighteen in 2002. For Pennsylvania that population was 2,863,452, a difference of 16, 475. For two states with such similar child populations the difference in the number of reports (43,906) and also the founded cases of child abuse (19,273) seems severe. What factors account for the reporting differences? This research project will explore on a regional level differences in abuse reporting and the characteristics that may affect those reports.
More than just statistics it is vital to remember the humanity in each situation. These are not just numbers they are people, someone’s mother, brother, cousin, grandchild or neighbor. Considering this situation I wonder what other things relate to abuse reporting. Are there characteristics of the community that make reporting easier? Do these same characteristics carry over to the actual places where abuse is found and substantiated? Is there a spatial relationship between the variables?

My study investigates those correlates that have become associated with child abuse and reporting and considers if those relationships exist significantly in Allegheny County. The results may suggest to government agencies areas where they can concentrate their efforts.

II. Literature Review

Definitions of Abuse

Beginning with the Child Abuse Prevention and Treatment Act (CAPTA) in 1974, the federal government began to outline a legal definition of abuse. The term child abuse and neglect “means, at a minimum, any recent act or failure to act on the part of a parent or caretaker, which results in death, serious physical or emotional harm, sexual abuse or exploitation, or an act or failure to act which presents an imminent risk of serious harm” (42 U.S.C.A. § 5106). The interpretation is purposefully vague to allow states to adapt it to their specific needs. Pennsylvania has four defining components to its law. In Pennsylvania, child abuse is as any of the following committed against a person under the age of 18:

1. Any recent act or failure to act which causes non-accidental serious physical injury.
2. An act or failure to act which causes non-accidental serious mental injury or sexual abuse or sexual exploitation.
3. Any recent act, failure to act or series of such acts or failures to act which creates an imminent risk of serious physical injury, sexual abuse or sexual exploitation.
4. Serious physical neglect which endangers a child’s life or development or impairs a child’s functioning. (23 Pa. C.S. § 63).

The Department of Public Welfare in Pennsylvania has a reporting agency, ChildLine. ChildLine is the central clearinghouse for all investigated reports (Pennsylvania Department of Public Welfare 2005). In addition to this statewide agency, each county has their own department of Children, Youth, and Families. It is to the local agencies that ChildLine reports suspected cases of abuse for investigation (Pennsylvania Department of Public Welfare 2004).

Present Types of Abuse and Major Perpetrators

On a national level, most states recognize four types of abuse, neglect, physical abuse, sexual abuse, and emotional abuse (National Clearinghouse on Child Abuse and Neglect Information 2005). In Pennsylvania, there are five identified types of abuse. Physical abuse is, “a recent act (within the past two years) or failure to act, which causes a non-accidental serious physical injury that causes the child severe pain or significantly impairs the child’s functioning, either temporarily or permanently” (Pennsylvania Department of Public Welfare 2004). Sexual Abuse is

an act or failure to act that results in the employment, use, persuasion, inducement, enticement or coercion of a child to engage in or assist any other person to engage in any sexually explicit conduct or any simulation of any explicit conduct for the purpose of producing any visual depiction, including photographing, videotaping, computer depicting or filming, of any sexually explicit conduct or the rape, sexual assault, involuntary deviate sexual intercourse, aggravated indecent assault, molestation, incest indecent exposure, prostitution, statutory sexual assault or other form of sexual exploitation of children. (Pennsylvania Department of Public Welfare 2004)

The third classification is mental abuse. Mental abuse is,
an act or failure to act that results in a psychological condition, as diagnosed by a
physician or licensed psychologist, including the refusal of appropriate treatment that:
renders a child chronically and severely anxious, agitated, depressed socially
withdrawn, psychotic, or in reasonable fear that the child’s life or safety is threatened;
or seriously interferes with the child’s ability to accomplish age-appropriate
developmental and social tasks. (Pennsylvania Department of Public Welfare 2004)

Serious physical neglect is “A prolonged or repeated lack of supervision or the failure to
provide the essentials of life including adequate medical care, which endangers a child’s life
or development or impairs the child’s functioning. Other essentials include food, shelter,
clothing, dental care, personal care, protection from physical injury and supervision.”
(Pennsylvania Department of Public Welfare 2004). The final classification is imminent risk.
Imminent risk is “an act or recent act or failure to act or series of such which creates an
imminent risk of serious physical injury to or sexual abuse or sexual exploitation to a child”
(Pennsylvania Department of Public Welfare 2004). These categories align closely with
those listed by the National Clearinghouse. A slight difference between them is the
clarification of mental abuse versus emotional abuse. There is no different in meaning, only
in word choice. The fifth category in Pennsylvania is a preemptive classification because the
abuse has not yet occurred.

The Child Abuse Annual Report maintains that of the 23,618 reported abuse cases in
2004, 19.6% of them, or 4,628 were substantiated, or determined to have merit (Pennsylvania
Department of Public Welfare 2005: 5). Of the instances were abuse was determined, about
30% were physical abuse, mental abuse accounted for less than 1%, Sexual abuse was 63%,
serious physical neglect injuries were 3%, and imminent risk cases were 4% (Pennsylvania
Department of Public Welfare 2005: 11). A breakdown of the reported cases by type of
abuse is not available. Nationally, 26.4% of the 1,590,905 reported cases were later
substantiated (U.S. Department of Health & Human Services 2005: 16). Of the 419,998 cases about 20% of the victims of child abuse were physically abused, 10 percent were sexually abused, 60% were victims of neglect, 5% were emotionally abused, and 17% were “associated with ‘other’ types of maltreatment based on specific State laws and policies” (U.S. Department of Health & Human Services 2005: xiv).

The Annual Report from the Pennsylvania Department of Public Welfare also discusses the perpetrators of the confirmed abuse instances. In 2004:

twenty-two percent of perpetrators were mothers, twenty-two percent of perpetrators were fathers, and twelve percent of perpetrators were babysitters. A majority (60 percent) of abusers had a parental relationship to the victim child with an additional 13 percent of the perpetrators related to the victim child. Twenty-seven percent of the perpetrators were not related to the child. (Pennsylvania Department of Public Welfare 2005: 14)

These perpetrators agree with national statistics where the mother is the most frequent alleged abuser (58%). Parents account for 80% of national perpetrators (U.S. Department of Health & Human Services 2005: xviii).

Factors of Abuse

Traditionally, although “child abuse and neglect are committed by mothers, fathers, and non-parental figures, and occurs in all socioeconomic groups, research efforts have almost exclusively examined mothers from low SES backgrounds” (Ammerman and Hersen 1990: 11). The focus of research has grown over the years to include traditional factors such as poor parenting skills and unrealistic expectations as well as societal characteristics such as residential satisfaction and housing tenure (Ammerman and Hersen 1990: 11, Coulton et al. 1995: 1263).
In Pennsylvania, 3,711 of the 4,628 substantiated cases listed factors that contributed to abuse. These factors follow along the lines of traditional maltreatment factors, the most frequent are: “vulnerability of child (7%), marginal parenting skills or knowledge (11%), impaired judgment of perpetrator (20%), stress (32%), substance abuse (4%), insufficient social/family support (4%), abuse between parent figures (7%), sexual deviancy of perpetrator (11%), [and] perpetrator abused as a child (3%)” (Pennsylvania Department of Public Welfare 2005: 31).

In academic publications, there is a shift towards including community factors. Coulton et al. consider such variables as the unemployment rate, vacant housing, percent black, housing tenure, the male to female ratio, and the elderly population (Coulton et al. 1995: 1267). In their 1978 article, Garbarino and Crouter, pioneers in the child maltreatment field looked at 12 factors of abuse:

Percent of families with incomes less than $8,000 a year, percent of families with incomes more than $15,000 a year, percent of families headed by females, percent of married women (with children under 6 years old) in the work force outside the home, percent of families living in current residence less than 1 year, percent who feel good neighbors are important, percent who feel day care is important and necessary, percent who rate their neighborhood as very desirable, percent who rate their neighborhood as not desirable, stability of neighborhood score (a scale 1 [growing] to 5 [deteriorating]), percent of single-family housing, and percent of vacant housing. (Garbarino and Crouter 1978: 609)

Drake and Pandey report that “neighborhood poverty is positively associated with all three forms of child maltreatment (sexual abuse, physical abuse, and neglect), but to different degrees. Of the three types of child maltreatment, “child neglect is most powerfully associated with neighborhood poverty status” (Drake and Pandey 1996: 1003). This study considers both reports cases and substantiated cases. Drake and Pandey consider factors similar to other research in the area including occupied units, owner occupied units,
population white, average family income, and two-parent families (Drake and Pandey 1996: 1009).

Much emphasis is placed on income, suggesting that child abuse is more of a problem in areas of lower income (Garbarino, 1972; Kolko, 1998; Saunders 1993). Whether this is true or not, the majority of the studies are done with families who are generally of a low socioeconomic status (Earls, 1994; Faulkner, 2004; Korbin, 2000; Saunders, 1993). Because the studies only look at the lower income families, it is not possible to obtain an idea of what the statistics would look like for middle or upper class families. This is an area of research that is severely lacking and an area that if studied may provide a more accurate look at the extent of child abuse in this country. It is not possible to think these problems only exist in families with a low socioeconomic status.

Weissman, Jogerst, and Dawson, did not find economic correlates in their research. Rather, “rates of single-parent families, divorce and elder abuse were significantly associated with reported and substantiated child abuse” (Weissman et al. 2003: 1145). Derek Paulson analyzes spatial patterns of abuse in Charlotte, North Carolina. In his results, he found the “greatest concentration of incidents near the center areas of Charlotte” (Paulsen 2003: 72). Spatial analysis can provide insight to social processes and at-risk locations within a city area.

**Issues on Reporting**

There is no national system in place to handle child abuse reporting (National Clearinghouse on Child Abuse and Neglect Information 2005). Each state is responsible for receiving reports from mandated reporters and concerned citizens alike. In national reports,
over half of the reports of suspected abuse were made by professionals who come in contact with the children in of their careers; 43.2% of the reports were made by friends, family and neighbors, this includes anonymous reports (U.S. Department of Health & Human Services 2005: xv). In Pennsylvania in 2004, 73% of reports came from mandated reporters (Pennsylvania Department of Public Welfare 2005: 9). Mandated reporters are “individuals whose occupation or profession brings them into contact with children” (Pennsylvania Department of Public Welfare 2005: 9). These occupations include doctors, psychologists, teachers, ministers, and day care workers to name a few (Pennsylvania Department of Public Welfare 2005: 9). Initially, 61% of the reports were filtered through ChildLine and the remaining 39% were reported directly to county agencies (Pennsylvania Department of Public Welfare 2005: 31).

Garbarino and Crouter consider who is doing the reporting. They suggest that reports will vary by source depending on other ecological characteristics,

Areas experiencing economic stress are areas where distant sources—such as hospitals, schools, agencies, and law-enforcement groups—are more likely to report child maltreatment. Conversely, in higher-income areas, reporting is more likely to be carried out by close sources such as family members, neighbors, and friends. (Garbarino and Crouter 1978: 610)

In Drake and Pandey, high poverty neighborhoods had the most reported and substantiated cases and low poverty areas had the least (1996: 1011). Because most research considers characteristics of reporting alongside substantiated cases, “whether these characteristics principally affect child maltreatment incidence rates or merely reporting rates remains unclear” (Weissman et. Al. 2003: 1145, Coulton et al., 1999; Garbarino & Crouter, 1978).

Reported cases of neglect and abuse are often biased towards the lower classes and problems
existed with reporting because each report is based on a person’s opinion that they have observed an abusive situation (Korbin, 1994).

Research has grown expansive in recent decades. The shift of the views of child abuse as a strictly personal problem to a societal epidemic is important for the future because it will lead to a better understand of how to shape policy and community programs. To review, each state has their own definition of abuse. Although there are four general types of abuse (physical, emotional, sexual, and neglect), most states include other categories as well. Factors of maltreatment have expanded from the more intimate characteristics to include societal dynamics. In addition, while reporting is mandatory for professional groups, private reporters make up a good portion of reports. Although “each of these provides a partial explanation of the etiology of maltreatment, and therefore suggests appropriate markers for risk, no one variable is sufficiently sensitive or specific to be used in the reliable identification of high-risk groups” (Ammerman and Hersen 1990: 13).

III. Conceptual Framework

The conceptual framework is derived from the history of research in the field. The wide range of characteristics associated with reported cases and substantiated cases of child abuse vary with each study. The multi-dimensional models that created previously do not withstand the test of research (Ammerman and Hersen 1990: 13). I set out to create my own model. Rather than choosing from the variables used before, all of those available are replicated to derive the best model of the sample.

In this research, the dependent variable is the reported cases of child abuse. The cases are used as a whole and subdivided into substantiated cases. Different types of abuses
are not distinguished; the numbers simply reflect the number of cases reported from calls made to the ChildLine agency. The independent variables are the characteristics of the locations in which the children involved in the reported case live. Socioeconomic characteristics of the communities, divided by zip code, and are gathered from U.S. Census data. This study will compare the amount of reported cases of child abuse to the lifestyle and resources of the neighborhood involved.

It is a reasonable inference that the factors that were previously found to correlate with abuse would also correlate to reporting abuse. This assumption is made because more cases are found where more cases have been reported. Therefore, similar significant characteristics with the literature and theories should be found. There are a wide variety of variables included in this research to make the most of a multi-effect situation.

IV. Research Design

Hypothesis

I expect that the reports of abuse are higher in areas with less stable circumstances. These circumstances could be anything from rates of divorce to housing tenure. Areas with high rates of divorce or low housing tenure imply a lot of mobility with the community and frequent turnover of neighbors. In areas that are less stable, people do not stay for long, they do not purchase houses or put down roots. I also expected that areas with more geographic assets will have higher incidences of reporting because the social places allow access points between the neighborhood and families. Access points would allow for a higher chance that either abusive behavior is witnessed or abused children are seen by non-family members. Also, many of the access points, the schools, hospitals, and police stations are also locations
of mandated reporters. Geographically, the literature also suggests that higher reporting rates will be in located closer to the city of Pittsburgh limits. I also think that more of the substantiated cases will be found closer to the city as well.

_Description of Data_

The reported instances of child abuse are obtained from ChildLine. ChildLine is the Pennsylvania agency which runs the child abuse hotline. It is a division of the Department of Public Welfare for the state. The hotline is available twenty-four hours a day and seven days a week for parties to call and report suspected abuse. The agency distinguishes between neglect, physical, sexual, and emotional abuse, and imminent danger. The agency will differentiate between cases that may have been investigated and then determined to be _unfounded_ instances and those cases with _substantiated_ abuse. There are two types of substantiated abuse according to ChildLine, _founded_ and _indicated_. _Founded_ abuse is when “there is a judicial adjudication that the child was abused,” _indicated_ is when the “county agency or regional staff find abuse has occurred based on medical evidence, the child protective service investigation or an admission by the perpetrator.” _Unfounded_ abuse refers to a “lack of evidence that the child was abused” (Department of Public Welfare 2004: 7). Resulting actions to the reports will not be considered. Pennsylvania state law does not allow the collection of data by race (U.S. Department of Health & Human Services 2005: 138). In addition, the agency records the resulting actions to the reports. Unfounded case details are deleted after one year.

There will be several groups of independent variables. The independent variables are classified into the following groups: demographic variables, economic variables, social
variables, social service variables, and geographic variables. All variables will be segregated by zip code. The neighborhoods will be considered from Allegheny County in Southwestern Pennsylvania. There are 98 zip codes in this area. The zip codes are generally larger than the designated city neighborhoods, but for the purpose of this project, the terms neighborhood and community are used interchangeably to refer to a zip code area. The zip codes range in population from 154 (15028) to 42,597 (15237). Figure 1 is a map of the sample area.

The purpose of the research is explanatory and descriptive. The research will examine the relationship between the volume of child abuse reports and the community characteristics. It will set out to describe and explain behavior that already exists, not change or alter that behavior. The populace involved in this research will be residents of communities in Allegheny County. The number of reports made alleging child abuse to ChildLine in the abovementioned county were obtained and measured. Also, population levels, income and location statistics, and descriptive neighborhood assets were be gathered. The data was limited to the ten year span of 1994 to 2004, from the Department of Public Welfare. U. S. Census data from 2000 was used to determine population numbers. Neighborhood asset data about the particular zip codes, was gathered by the researcher.

The child abuse reporting data are obtained by contacting ChildLine and seeking the proper reports. In addition, most of the independent variables are electronically available on the internet. Demographic, Economic, and Social characteristics are gathered from Census 2000 data. The data of the project is secondary data. Once the data are collected it was entered into the Statistical Package for the Social Sciences (SPSS) and ArcView 9.1 for easier handling of variables for statistical analysis. Because the agencies from which the data
will be collected are governmental agencies, they are expected to produce fairly reliable and valid results. However, a certain margin of error must be considered for all of the variables.
V. Data Analysis

Descriptive Analysis

Dependent Variables

In Allegheny County, there are 98 separate residential zip code areas and for these areas the total number of reported abuse cases is 3,409. Table 1 shows the descriptive statistics for the dependent and independent variables. All variables are projected by zip code. The variables have been standardized to produce a rate or percentage for each. This rate will allow for better interpretation and comparability. The dependent variable is a standardization of the reported cases of child abuse from 1994 to 2004. The variable was calculated by dividing the total number of reported cases in an area by the total population under 18 for that same area. Abuse rate has a minimum of 0.0000 and a maximum of 0.0943. The rate of abuse has an overall average of 0.0130 with a standard deviation of 0.0117. The variable is negatively skewed but a possible explanation is the inclusion of all neighborhoods in Allegheny County, most of which have a low reporting rate. In previous research on the subject, analysis has been limited to low socioeconomic areas which have extreme rates of reporting.

Independent Variables

This study considers a total of 48 independent variables which are divided into five different categories: Demographic, Economic, Social, Social Service, and Geographic. Demographic variables include the population of elderly, the male to female ratio, the median age, the minority population, the number of persons in groups households, the types of households (couple-headed, female-headed, individual households), the number of rental properties, and the homeowner and rental vacancy rates. Economic variables are the rate of
unemployment, the median incomes of families and households, and the rate of single
female-headed households. Social variables consist of educational attainment, marital status,
the involvement of grandparents, and housing tenure. Social service characteristics contain
the classifications from ChildLine pertaining to the cases including the relationship of the
accused perpetrator to the child and the subsequent cataloging of the case as substantiated,
unsubstantiated, or pending. Finally, the Geographic characteristics were gathered by the
researcher and reflect the relevant spaces in a neighborhood where families interact with each
other and their behavior can be witnessed. For all of the variables the number of valid cases
is 98, there are no missing cases in the dataset.

Demographic Variables (14 variables)

Demographic variables include the population of elderly, the male to female ratio, the
median age, the minority population, the number of persons in groups households, the types
of households (couple-headed, female-headed, individual households), the number of rental
properties, and the homeowner and rental vacancy rates. In Demographic Variables the first
variables is the ratio of males to females in a community. The variables considers a gender
relationship in the neighborhood. This variable represents the number of males divided by
the population of females in a zip code. The minimum is 0.7923 and the maximum is
1.9285. The mean is 0.9147 with a standard deviation of 0.1197. The next three independent
variables pertain to age.

For median age, not subdivided by gender, the minimum is 22.00 and the maximum
is 47.20. The mean is 39.97 with a standard deviation of 3.42. The Total Population Under
18 Rate variable considers the population under 18 divided by the total population. The
population under 18 was obtained by subtracted the population of those 18 and over (a Census 2000 variable not used in analysis) from the total population. Under18Rate has a minimum of 0.0265 and a maximum of 0.3109. The mean is 0.2152 with a standard deviation of 0.0460. For the Population 65 and Over Rate, obtained by dividing the Population 65 and over from the total population, the minimum is 0.0642 the maximum is 0.2556, the mean is 0.1795 with a standard deviation of 0.0406.

All of the race categories other than Caucasian available in the Census 2000 data, including African American, Native American or Alaskan Native, Asian American, Pacific Islander or Hawaiian Native, Other Race, and Multiple Races, were combined into a new variable, Population Minority. For this variable, the minimum is 0.0000 and the maximum is 0.7771. The mean of Population Minority is 0.1212 with a standard deviation of 0.1670.

The next sub-grouping of variables relate to household type.

Census 2000 considers the population living in households and those that live in group quarters such as hospitals, prisons, and dormitories. For the rate of persons living in group quarters, the minimum is 0.0000 and the maximum is 0.4742. The average rate of persons living in group quarters in a zip code is 0.0283 with a standard deviation of 0.0732.

The types of households are another demographic variable. Family households are any households where the inhabitants are related by birth, marriage, or adoption. The rate of Couple Households is based on a sub-division of family households where the family is headed by a man and a women. The couple households were divided by the total households to create the rate. The minimum for this variable is 0.1361 and the maximum is 0.7530. The average rate of couple households in a zip code is 0.4638 with a standard deviation of 0.1349. The next classification of households is another division of the family households,
single female-headed households. These households are those that do not have a couple or male-headed family and are particularly significant in most of the literature about factors of abuse. The variable *SingleFemale-HeadedHouseholds* was created, as the previous variables were, by dividing the number of Single Female-Headed Households by the total number of households. The variable has a minimum of 0.0247 and a maximum of 0.2976. The average rate of single female-headed households is 0.1221 with a standard deviation of 0.0544. The final type of householder is the Non-Family or Individual, persons in these houses are not related and there are no children. The rate was created by dividing the number of non-family households by the total number of households in a zip code. The minimum rate is 0.1788 and the maximum is 0.8101. The average rate of non-family households in a zip code is 0.3769 with a standard deviation of 0.1092.

Two variables consider the size of the household. Average household size has a minimum value of 1.3000 and a maximum value of 2.8600. The mean for this variable (or average average household size) is 2.3089 with a standard deviation of 0.2307. The average family size considers only those households that are considered “family” households. The minimum value for average family size is 2.2000 and the maximum is 3.3500. The average average family size is 2.9371 with a standard deviation of 0.1490.

The next variable considers the housing units in which the households reside. The variable in this group considers the rate of rented units in a zip code and was produced by dividing the number of rental units by the total number of housing units. The smallest rate is 0.0591 and the largest rate of rental units is 0.6965. The average rate of rental units is 0.2857 with a standard deviation of 0.1255.
The final two demographic variables correspond to vacancy rates. The first is the vacancy rate for homeowners. The minimum rate for this variable is 0.0000 and the maximum rate is 0.0970. The average vacancy rate is 0.0226 with a standard deviation of 0.0150. The last variable is the vacancy rate of rental units. The area with the fewest vacancies has 0.0000 and the largest has a maximum rate of 0.3330. The average rental vacancy rate is 0.0909 with a standard deviation of 0.0481. The next variables consider economic factors.

*Economic Variables (4 variables)*

Economic variables are the rate of unemployment, the median incomes of families and households, and the rate of single female-headed households. The variable *UnemploymentRate* considers the portion of the population of an area that does not have a job. The minimum rate of this variable is 0.0000 and the maximum is 0.3590. The average rate of unemployment is 0.0609 with a standard deviation of 0.0513.

The final standardized variable of this group is the rate of single female-headed households below the poverty line. This rate was determined by dividing the number of single female-headed households below the poverty line by the total number of family households below the poverty line. The minimum rate of female families below poverty is 0.0000 and the maximum is 1.0000. The average rate of single female-headed households below poverty is 0.4810 with a standard deviation of 0.2404.

There are two unstandardized economic variables. The first is the median income for a zip code. The minimum median income is 14,399 and the maximum is 93,114. The average median income for the 98 zip codes is 38,796.50 with a standard deviation of
15,475.40. The last variable in this group is the median family income. For this variable, the smallest value is 19,167 and the largest is 102,408. On average, the median family income for the Allegheny County zip codes is 49,201.61 with a standard deviation of 16,948.07. The next variables are standardized social characteristics.

Social Variables (11 variables)

Social variables consist of educational attainment, marital status, the involvement of grandparents, and housing tenure. The social variables chosen consider the educational attainment of persons over 25, the marital status of persons over 15, housing tenure variables, and, because Pennsylvania has one of the highest aging populations in the United States, a few variables about grandparents have been included as well (Hobbs 2001).

The first variable PerHS considers the population that completed a high school degree and above. The minimum rate for this variable is 0.5850 and the maximum rate is 0.9870. The average rate of population with the educational attainment of a high school degree and above is 0.8459 with a standard deviation of 0.0733. The next variable PerBA considers the population that completed a Bachelors degree and above. The minimum rate for this variable is 0.0200 and the maximum rate is 0.6900. The average rate of population with the educational attainment of a Bachelors degree and above is 0.2401 with a standard deviation of 0.1547.

The next social variables consider marital status. For the variable NeverMarriedRate, which considers the rate created when the population that has never been married divided by the total population over age 15 for a given zip code, the smallest rate is 0.1290 and the largest is 0.6199. The average rate of persons that have not been married in an Allegheny
County zip code is 0.2796 with a standard deviation of 0.0854. For *MarriedRate*, the variable was created by dividing the population of married persons by the total population of persons age 15 and over. This rate represents the portion of people who are married in each zip code. The rates of married persons have a minimum rate of 0.2623 and a maximum of 0.7518. The average rate of married persons is 0.5166 with a standard deviation of 0.1115. The next variable, *SeparatedRate*, illustrates the portion of persons that are married but are currently separated from their spouses. This rate was created by dividing the persons married by the population of persons age 15 and over. The smallest rate for this variable is 0.0000 and the largest is 0.0629. The average rate of separated persons in a given area is 0.0207 with a standard deviation of 0.0107. *WidowedRate* is the rate variable that was created by dividing the widowed persons by the population age 15 and over. For this variable the minimum rate is 0.0230 and the maximum is 0.1974. The average rate of widowed persons is 0.0981 with a standard deviation of 0.0301. The final marital status variable is the rate of divorced persons in a zip code. The variable was created by dividing the number of divorced persons by the total number of persons age 15 and over. The smallest rate of divorced persons is 0.0000 and the largest is 0.1628. The average rate of divorced persons is 0.0862 with a standard deviation of 0.0274.

The housing tenure variable is the portion of persons who lived in the same house in 1995, or five years before Census 2000. This rate variable was created by dividing the number of persons living in the same house that they did in 1995 by the total population of persons are 5 and over. The smallest rate for this variable is 0.3106 and the largest is 0.9173. The average rate of persons living in the same house that they did in 1995 is 0.6546 with a standard deviation of 0.0920.
Pennsylvania has the second largest Aging Population in the United States (Hobbs 2001). Because of this unique population characteristic, the relationship of grandparents to the reported child abuse cases will be considered. Three variables were created from census data to test for a relationship. The variable \textit{GrandparentsRate} illustrates the rate of family households that have grandparents living in them. The variables was created by dividing the households with grandparents by the total number of family households for a given zip code. The minimum rate for this variable is 0.0000 and the maximum is 0.1284. The average rate of family households with grandparents is 0.0347 with a standard deviation of 0.0213. The next variable is reflective of the portion of grandparents that are responsible for children in a family household. This variable was derived by dividing the population of responsible grandparents by the total number of family households. The smallest rate of responsible grandparents is 0.0000 and the largest is 0.0467. The average rate of responsible grandparent households is 0.0130 with a standard deviation of 0.0113. The final social characteristic variable is the percent of responsible grandparents. This variable, \textit{GrandparentsRespPer}, was created by dividing the number of responsible grandparent households by the number of family households with residing grandparents. The minimum rate for this variable is 0.0000 and the maximum is 1.0000. The average percentage of responsible grandparents is 0.3670 with a standard deviation of 0.2415. The next classification of variables is geographic.

\textit{Social Service Variables} (6 variables)

Social Service variables are based on data obtained from ChildLine dealing with the perpetrators and the case findings. The variables \textit{Substantiated} reflects the portion of reported abuse cases that were determined to be substantiated cases of abuse, or found cases.
The area with the fewest substantiated cases had 0.0000 and the area with the most had 1.000. The average rate of substantiated cases is 0.4983 with a standard deviation of 0.2552.

The data obtained from Childline had 26 different classifications for the perpetrators of abuse they included: Mother, Father, Sibling, Stepmother, Stepfather, Paramour of Parent, Foster Parent, Residential Facility Staff, Day Care Staff, Legal Guardian, Babysitter, Household Member, Grandparent, Other Relative, Other, Unknown, Agency, Aunt, Uncle, Cousin, Other Person Responsible, Ex-Parent, Teacher, Principal, Guidance Counselor, Other School Staff. When a call is made to ChildLine the perpetrators of the alleged crime are recorded, there are perpetrators on recod for all of the reports made to the agency. Only the top five were chosen to test for significance in the dataset. The top five, in order, are Mother, Father, Babysitter, Paramour of Parent, and Stepfather. The unstandardized variables formed rates by dividing the perpetrator variables by the total number of abuse cases in the same area.

For the rate of mothers as the accused perpetrators, the smallest rate is 0.0000 and the largest is 1.0000. The average rate of mothers as perpetrators for a given zip code is 0.2481 with a standard deviation of 0.1857. For the rate of fathers as the accused perpetrators, the smallest rate is 0.0000 and the largest is 1.0000. The average rate of fathers as perpetrators for a given zip code is 0.2646 with a standard deviation of 0.2039. For the rate of babysitters as the accused perpetrators, the smallest rate is 0.0000 and the largest is 1.0000. The average rate of babysitters as perpetrators for a given zip code is 0.0841 with a standard deviation of 0.1590. For the rate of paramours of parents as the accused perpetrators, the smallest rate is 0.0000 and the largest is 0.6667. The average rate of paramours of parents as perpetrators for a given zip code is 0.0805 with a standard deviation of 0.0957. Finally, for the rate of
Stepfathers as the accused perpetrators, the smallest rate is 0.0000 and the largest is 1.0000. The average rate of stepfathers as perpetrators for a given zip code is 0.0615 with a standard deviation of 0.1170.

Geographic Variables (12 variables)

The Geographic characteristics were gathered by the researcher and reflect the relevant spaces in a neighborhood where families interact with each other and their behavior may be observed. There are two geographic variables that illustrate educational institutions; the first is the number of schools in an area. The smallest number of schools in a given area is 0 and the largest is 21. The average number of schools in a given zip code is 5.6939 with a standard deviation of 5.2650. The variable Colleges represents the number of colleges or universities in a particular zip code. The minimum number of higher education institutions in an area is 0 and the maximum is 7. The average number of colleges per zip code is 0.3265 with a standard deviation of 0.9056.

The variable of religious institutions considers the total number of various religious headquarters in a zip code. The tally includes, but is not limited to catholic, orthodox, Christian, Jewish, Buddhist and Muslim meeting places. Religious Institutions has a minimum of 0 and a maximum of 38. The average number of religious institutions in an area is 9.5510 with a standard deviation of 7.1639.

The next group of geographic variables consider recreational spaces. The number of parks in an area is represented by the variable parks. The smallest number of parks in an area is 0 and the largest number is 21. The average number of green spaces in a zip code is 1.5612 with a standard deviation of 2.5039. Of the 98 zip codes areas, the one with the
fewest number of museums has 0 and the one with the most has 4. The average number of museums in an area is 0.2347 with a standard deviation of 0.6705. The next recreational variable is Entertainment and Sports and counts the various stadiums and theaters in each area. The area with the fewest Sports and Entertainment facilities has 0 and the area with the most has 8. The average number of sports and entertainment facilities is 0.4898 with a standard deviation of 1.3641. The final recreational variable is Libraries which considers the count of libraries in each zip code community. The area with the fewest has 0 libraries and the area with the most has 3 libraries. The average number of libraries per zip code area is 0.6633 with a standard deviation of 0.7725.

The next group of geographic variables considers public institutions where mandated reporters work. There are two variables in this group, the location of police stations and the location of hospitals. For LawEnforcement, the minimum number of police stations in a zip code is 0 and the maximum is 4. The average number of police stations in a zip code is 0.8776 with a standard deviation of 0.9872. For Hospitals, the fewest hospitals per zip code is 0 and the most is 5. The average number of hospitals in an area is 0.2959 with a standard deviation of 0.6918.

The final geographic variables are in a miscellaneous category. The first of these variables is PostOffices, the number of post offices in an area. For this variable, the area with the fewest post offices has 0 and the area with the most has 3. On average, there are 1.0408 post offices in a zip code area with a standard deviation of 0.6246. The next variable is the number of shopping centers in an area. The minimum for this variable is 0 and the maximum is 3. The average number of shopping centers is 0.1735 with a standard deviation of 0.4768. The final variable of this dataset is the number of grocery stores in an area. This variable is
particularly interesting because of the long-standing controversy of the “bad neighborhoods” in the City of Pittsburgh that do not have grocery stores of their own, particularly the Hill District. The area with the fewest grocer stores has 0 and the area with the most has 5 stores. 15235, 15202, and 15122 are areas with the most grocery stores (4, 4, and 5 respectively) these areas are all located outside of the city of Pittsburgh. Fifty of the ninety-eight zip code areas do not have a single grocery store. In the 98 zip codes areas, the average number of stores is 0.8469 with a standard deviation of 1.1155.
Table 1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported Abuse Rate</td>
<td>98</td>
<td>0.0000</td>
<td>0.0943</td>
<td>0.0130</td>
<td>0.0117</td>
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</table>

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
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</thead>
<tbody>
<tr>
<td><strong>Demographic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male to Female Ratio</td>
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<td>0.7923</td>
<td>1.9285</td>
<td>0.9147</td>
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<td>Median Age</td>
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<td>47.2000</td>
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<tr>
<td>65 and Over Rate</td>
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<td>Caucasian Rate</td>
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<td>Minority Rate</td>
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<td>0.7771</td>
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<td>In Group Living Quarters Rate</td>
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<tr>
<td>Couple Households Rate</td>
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<td>0.1361</td>
<td>0.7530</td>
<td>0.4638</td>
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<tr>
<td>Single Female-Headed Households Rate</td>
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<td>0.0247</td>
<td>0.2976</td>
<td>0.1221</td>
<td>0.0544</td>
</tr>
<tr>
<td>Non-Family Households</td>
<td>98</td>
<td>0.1788</td>
<td>0.8101</td>
<td>0.3769</td>
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<tr>
<td>Average Household Size</td>
<td>98</td>
<td>1.3000</td>
<td>2.8600</td>
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<tr>
<td>Average Family Size</td>
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<td>2.2000</td>
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<tr>
<td>Rented Units Rate</td>
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<td>0.6965</td>
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<tr>
<td>Homeowner Vacancy Rate</td>
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<td>0.0970</td>
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<tr>
<td>Rental Vacancy Rate</td>
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<td>0.0481</td>
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<tr>
<td><strong>Economic</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment Rate</td>
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<td>0.3590</td>
<td>0.0609</td>
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<tr>
<td>Single Female Households Below Poverty Rate</td>
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<td>0.0000</td>
<td>1.0000</td>
<td>0.4810</td>
<td>0.2404</td>
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<tr>
<td>Median Income</td>
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<td>14,399</td>
<td>93,114</td>
<td>38,796.50</td>
<td>15,475.40</td>
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<td>Median Family Income</td>
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<td>19,167</td>
<td>102,408</td>
<td>49,201.61</td>
<td>16,948.07</td>
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<tr>
<td><strong>Social</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent HS Degree and above</td>
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<td>0.0000</td>
<td>0.2217</td>
<td>0.0460</td>
<td>0.0334</td>
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<tr>
<td>Percent BA and above</td>
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<td>0.3138</td>
<td>0.1081</td>
<td>0.0498</td>
</tr>
<tr>
<td>Never Married Rate</td>
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<td>0.1290</td>
<td>0.6199</td>
<td>0.2796</td>
<td>0.0854</td>
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<tr>
<td>Married Rate</td>
<td>98</td>
<td>0.2623</td>
<td>0.7518</td>
<td>0.5166</td>
<td>0.1115</td>
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<tr>
<td>Separated Rate</td>
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<td>0.0000</td>
<td>0.0629</td>
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<tr>
<td>Widowed Rate</td>
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<td>0.0230</td>
<td>0.1974</td>
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<td>Divorced Rate</td>
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<td>0.1628</td>
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<td>0.0274</td>
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<tr>
<td>Same House in 1995 Rate</td>
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<td>0.3106</td>
<td>0.9173</td>
<td>0.6546</td>
<td>0.0920</td>
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<tr>
<td>Households with Grandparents Rate</td>
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<td>0.0000</td>
<td>0.1284</td>
<td>0.0347</td>
<td>0.0213</td>
</tr>
<tr>
<td>Responsible Grandparents Rate</td>
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<td>0.0000</td>
<td>0.0467</td>
<td>0.0130</td>
<td>0.0113</td>
</tr>
<tr>
<td>Percent of Responsible Grandparents</td>
<td>98</td>
<td>0.0000</td>
<td>1.0000</td>
<td>0.3670</td>
<td>0.2415</td>
</tr>
</tbody>
</table>
### Social Service

<table>
<thead>
<tr>
<th>Case Type</th>
<th>Substantiated Cases Rate</th>
<th>Mother as Perpetrator Rate</th>
<th>Father as Perpetrator Rate</th>
<th>Babysitter Perpetrator Rate</th>
<th>Paramour Perpetrator Rate</th>
<th>Stepfather Perpetrator Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>98</td>
<td>0.0000</td>
<td>1.0000</td>
<td>0.4983</td>
<td>0.2552</td>
<td>0.1946</td>
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</table>

### Geographic

<table>
<thead>
<tr>
<th>Location</th>
<th>Cases</th>
<th>0</th>
<th>21</th>
<th>5.6939</th>
<th>5.2650</th>
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</thead>
<tbody>
<tr>
<td>Schools</td>
<td>98</td>
<td>0</td>
<td>21</td>
<td>5.6939</td>
<td>5.2650</td>
</tr>
<tr>
<td>Colleges and Universities</td>
<td>98</td>
<td>0</td>
<td>7</td>
<td>0.3265</td>
<td>0.9056</td>
</tr>
<tr>
<td>Religious Institutions</td>
<td>98</td>
<td>0</td>
<td>38</td>
<td>9.5510</td>
<td>7.1639</td>
</tr>
<tr>
<td>Parks</td>
<td>98</td>
<td>0</td>
<td>21</td>
<td>1.5612</td>
<td>2.5039</td>
</tr>
<tr>
<td>Museums</td>
<td>98</td>
<td>0</td>
<td>4</td>
<td>0.2347</td>
<td>0.6705</td>
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<tr>
<td>Entertainment and Sports</td>
<td>98</td>
<td>0</td>
<td>8</td>
<td>0.4898</td>
<td>1.3641</td>
</tr>
<tr>
<td>Libraries</td>
<td>98</td>
<td>0</td>
<td>3</td>
<td>0.6633</td>
<td>0.7725</td>
</tr>
<tr>
<td>Law Enforcement</td>
<td>98</td>
<td>0</td>
<td>4</td>
<td>0.8776</td>
<td>0.9872</td>
</tr>
<tr>
<td>Hospitals</td>
<td>98</td>
<td>0</td>
<td>5</td>
<td>0.2959</td>
<td>0.6918</td>
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<tr>
<td>Post Offices</td>
<td>98</td>
<td>0</td>
<td>3</td>
<td>1.0408</td>
<td>0.6246</td>
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<td>Shopping Centers</td>
<td>98</td>
<td>0</td>
<td>3</td>
<td>0.1735</td>
<td>0.4768</td>
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<tr>
<td>Grocery Stores</td>
<td>98</td>
<td>0</td>
<td>5</td>
<td>0.8469</td>
<td>1.1155</td>
</tr>
</tbody>
</table>
**Bivariate Analysis**

A correlation matrix is a necessary step in quantitative analysis because it shows a relationship between a dependent variable and a single independent variable (Vito and Blankenship 2002: 134). When the regression equation is completed, there may be variables that did not show significance en masse, but did on an individual level. For each correlation, there is a null hypothesis. The null hypothesis states that there is no relationship between the two variables, in this case, between the rate of reported child abuse and each independent variable. These relationships are described in Table 2. Because all the variables are considered ratio-level variables (numbers are on a scale with a true zero), the appropriate statistic is the Pearson correlation value and the corresponding two-tailed significance (Vito and Blankenship 2002: 56). This particular statistic shows the degree of strength of the association and assumes a linear relationship (Vito and Blankenship 2002: 143). A relationship is considered statistically significant or important if it has a two-tailed significance that is less than or equal to 0.05 or 5%. Five percent is the convention for statistical significance (Vito and Blankenship 2002: 101).

**Demographic Variables**

For the variable MalesFemales, the null hypothesis is that there is no relationship between the ratio of males and females and the rate of reported abuse cases. The Pearson Correlation is 0.087 and the statistical significance is 0.395. We cannot reject the null hypothesis that no relationship exists between these variables because the significance is greater than 5%.
The next variable is median age of a person living in a zip code, not distinguished by gender. The null hypothesis is that there is no relationship between the rate of reported child abuse and the median age of the population of the given area. The Pearson Correlation is -0.185 and this has a statistical significance of 0.068. Because the 6.8% significance is greater than 5%, we cannot reject the null hypothesis and conclude that no relationship exists between these two variables in this sample.

The other age related variable in this grouping is the rate of persons age 65 and over for a zip code. The null hypothesis is that there is no relationship between \textit{Age65andOverRate} and \textit{AbuseRate}. The Pearson Correlation is 0.077 with a significance of 0.451. Because there is no significance at the 0.05 level the null hypothesis is not rejected. A relationship does not exist between the rate of reported abuse cases and the rate of senior citizens in an area.

The race variable is a combination of the minority races (all races but White). The null hypothesis is that there is no relationship between \textit{MinorityRate} and \textit{AbuseRate}. The Pearson Correlation is 0.486 with a significance of 0.000. Because there is significance at the 0.05 level the null hypothesis is rejected. This means the reported rate of child abuse is significantly higher in areas with high rates of minorities.

The next set of standardized variables deals with the households in a zip code area. \textit{InGroupQuartersRate}, represents the total population of persons living in group quarters such as hospital, dormitories, or prisons. The null hypothesis is that there is no relationship between the rate of persons living in group quarters and the rate of reported abuse cases. The Pearson Correlation is 0.557 with a statistical significance is 0.000. Because the significance is less than 0.05, we can reject the null hypothesis and must conclude that a relationship
exists between these two variables. This means the reported rate of child abuse is significantly higher in areas with higher rates of persons living in group quarters.

For the variable \textit{CoupleHouseholdsRate}, which represents the rate of family households that are headed by a couple in a given zip code, the null hypothesis is that there is no relationship between the rate of couple-headed households and the rate of reported abuse cases. The Pearson Correlation is -0.632 and the statistical significance is 0.000. We can reject the null hypothesis that no relationship exists between these variables because the significance is less than 0.05. This means that as the reported rate of child abuse increases the rate of couple-headed households decreases.

The variable \textit{SingleFemaleHouseholdsRate} has a null hypothesis that there is no relationship between the rate of single-female headed families and the rate of reported abuse cases. The Pearson Correlation is 0.410 and the statistical significance is 0.000. We can reject the null hypothesis that no relationship exists between these variables because the significance is less than 5%. There is a positive relationship between these variables. This significance agrees with the literature that deems single-mothers more likely to be abusive than other household types. This means the reported rate of child abuse is significantly higher in areas with high rates of single female-headed households.

Non-family households are also considered Individual Households. These households may have multiple members but do not include minor parties. The null hypothesis is that there is no relationship between \textit{NonFamilyHouseholdsRate} and \textit{AbuseRate}. The Pearson Correlation is 0.551 with a significance of 0.000. Because there is significance at the 0.05 level the null hypothesis is rejected. A relationship exists between the rate of reported abuse cases and the rate of individual households in an area for this
sample. This means the reported rate of child abuse is significantly higher in areas with high rates of individual households.

The next two variables consider the size of a household. For average households size the null hypothesis is that there is no relationship between the average number of persons in the households and the rate of reported abuse. The Pearson Correlation is -0.527 with a significance of 0.000. Because there is significance at the 0.05 level the null hypothesis is rejected. The sign of the correlation is negative meaning the rate of reported abuse cases is higher in areas with smaller average household size. For the average family size the null hypothesis is that, there is no relationship between the average family size and the rate of reported child abuse. The Pearson Correlation is -0.415 with a significance of 0.000. Because there is significance at the 0.05 level the null hypothesis is rejected. A negative relationship exists between the rate of reported abuse cases and the average family size for this sample. The rate of reported cases is higher in areas with smaller average family size.

The next variable is the rate of rented housing units in a zip code. The null hypothesis is that there is no relationship between the reported child abuse rate and the rate of rented units. The Pearson Correlation is 0.458 and this has a statistical significance of 0.000. Because the significance is less than 5%, we can reject the null hypothesis and must conclude that some type of relationship exists between these variables in the analysis. This means the reported rate of child abuse is significantly higher in areas with high rates of rented households.

For HomewonerVacancyRate the null hypothesis is that there is no relationship between the rate of reported child abuse and homeowner vacancy rate of the given area. The Pearson Correlation is 0.430 and this has a statistical significance of 0.000. Because the
significance is less than 5%, we can reject the null hypothesis and conclude that a positive relationship exists between these two variables. This means the reported rate of child abuse is significantly higher in areas with high rates of homeowner vacancy.

For the final housing variable, *RentalVacancyRate*, the null hypothesis is that there is no relationship between the rate of rental vacancies and the rate of reported abuse cases. The Pearson Correlation is 0.250 and the statistical significance is 0.013. We can reject the null hypothesis that no relationship exists between these variables because the significance is less than 0.05. This means the reported rate of child abuse is significantly higher in areas with high rates of rental vacancy rates.

The variables significant in the demographic group are: Minority Rate, In Group Living Quarters Rate, Couple Households Rate, Single Female Headed Households Rate, Non-Family Households Rate, Average Household Size, Average Family Size, Rented Units Rate, Homeowner Vacancy Rate, and Rental Vacancy Rate. The next group of variables are related to economic characteristics.

**Economic Variables**

For the variable *UnemploymentRate*, which represents the percent of unemployed persons in a given zip code, the null hypothesis is that there is no relationship between rate of unemployment and the rate of reported number of abuse cases. The Pearson Correlation is 0.697 and the statistical significance is 0.000. We can reject the null hypothesis that no relationship exists between these variables because the significance is less that 0.05. This means the reported rate of child abuse is significantly higher in areas with high rates of unemployment.
The next variable is the rate of single-female family households in a zip code that are below the poverty line. The null hypothesis is that there is no relationship between the rate of reported child abuse and the rate of single female-headed families living below poverty. The Pearson Correlation is 0.086 with a statistical significance of 0.401. Because the significance is greater than 5%, we cannot reject the null hypothesis and must conclude that for this sample a relationship does not exist between these two variables. This relationship does not concur with the literature.

The variable MedianIncome has a null hypothesis that there is no relationship between the median income of a zip code and the rate of reported number of abuse cases. The Pearson Correlation is -0.506 and the statistical significance is 0.000. We can reject the null hypothesis that no relationship exists between these variables because the significance is less than 5%. A negative relationship exists between these variables meaning that as income increases the rate of reported cases decreases.

The final work-related variable in this grouping is MedianFamilyincome. The null hypothesis is that there is no relationship between the family’s income and the rate of reported child abuse cases. The Pearson Correlation is -0.216 with a statistical significance is 0.032. We can reject the null hypothesis because the significance is less than 5%. For this sample, there is a negative relationship between the rate of reported child abuse cases and the median family income. This correlation shows agreement with the literature, which suggests that more abuse occurs in lower income areas.

The variables significant in the economic group are Unemployment Rate, Median Income, and Median Family Income. The next group of demographic variables is related to social characteristics.
Social Variables

The next variable is the rate of persons with a high school diploma or higher in a zip code. The null hypothesis is that there is no relationship between the rate of reported child abuse and the rate of persons with the educational attainment of a high school degree or higher. The Pearson Correlation is -0.372 and this has a statistical significance of 0.000. Because the significance is less than 5%, we can reject the null hypothesis and conclude that a relationship exists between these two variables. In this correlation, as the educational attainment of a neighborhood gets lower, the reporting rate of child abuse gets higher.

The next variable is the rate of persons with a Bachelors degree or higher in a zip code. The null hypothesis is that there is no relationship between the rate of reported child abuse and the rate of persons with the educational attainment of a Bachelors degree or higher. The Pearson Correlation is -0.287 and this has a statistical significance of 0.004. Because the significance is less than 5%, we can reject the null hypothesis and conclude that a relationship exists between these two variables. As with the previous correlation, as the educational attainment of a neighborhood gets higher, the reporting rate of child abuse gets lower.

The next set of standardized variables deals with the marital status of persons in a zip code area. The first variable considers the rate of persons who were never married. The null hypothesis is that there is no relationship between rate of reported child abuse and the rate of never married persons of the given area. The Pearson Correlation is 0.435 and this has a statistical significance of 0.000. Because the significance is less than 0.05, we can reject the null hypothesis and must conclude that a relationship exists between these two variables.
This means the reported rate of child abuse is significantly higher in areas with high rates of persons who were never married.

The next variable, *MarriedRate*, represents the total population of persons that are married. The null hypothesis is that there is no relationship between the rate of married persons and the rate of reported abuse cases. The Pearson Correlation is -0.573 with a statistical significance is 0.000. Because the significance is less than 0.05, we can reject the null hypothesis and must conclude that a relationship exists between these two variables. The sign of the correlation is negative meaning the rate of reported abuse cases is higher in areas with smaller rates of married persons.

The next variable is the rate of separated persons in a zip code. The null hypothesis is that there is no relationship between the rate of reported child abuse and the rate of separated individuals of the given area. The Pearson Correlation is 0.667 and this has a statistical significance of 0.000. Because the significance is less than 5%, we can reject the null hypothesis and conclude that a relationship exists between these two variables the reported rate of child abuse is significantly higher in areas with high rates of separation of married couples.

For the variable *WidowedRate*, which represents the rate of widowed persons in a given zip code, the null hypothesis is that there is no relationship between the rate of widowed individuals and the rate of reported abuse cases. The Pearson Correlation is 0.210 and the statistical significance is 0.038. We can reject the null hypothesis that no relationship exists between these variables because the significance is less than 0.05. This means the reported rate of child abuse is significantly higher in areas with high rates of widowed persons.
The variable $\text{DivorcedRate}$ has a null hypothesis that there is no relationship between the rate of divorced persons and the rate of reported abuse cases. The Pearson Correlation is 0.454 and the statistical significance is 0.000. We can reject the null hypothesis that no relationship exists between these variables because the significance is less than 5%. There is a positive relationship between these variables. This means the reported rate of child abuse is significantly higher in areas with high rates of divorce.

For housing tenure variable, $\text{SameHouse95Rate}$, the null hypothesis that there is no relationship between the rate of persons who live in the same house they did in 1995 and the rate of reported abuse cases. The Pearson Correlation is -0.405 and the statistical significance is 0.000. We can reject the null hypothesis that no relationship exists between these variables because the significance is less than 5%. The sign of the correlation is negative meaning the rate of reported abuse cases is higher in areas with lower rates of housing tenure.

The next variable, $\text{GrandparentRate}$, represents the portion of households that have grandparents in them. The null hypothesis is that there is no relationship between the rate of grandparents and the rate of reported abuse cases. The Pearson Correlation is 0.105 with a statistical significance is 0.302. Because the significance is greater than 0.05, we cannot reject the null hypothesis and must conclude that no significant relationship exists between these two variables in this sample.

The next variable is the rate of grandparents that are responsible for minor children in a zip code. The null hypothesis is that there is no relationship between the rate of reported child abuse and the rate of responsible grandparents of the given area. The Pearson Correlation is 0.293 and this has a statistical significance of 0.003. Because the significance
is less than 5%, we can reject the null hypothesis and conclude that a relationship exists between these two variables. This means the reported rate of child abuse is significantly higher in areas with high rates of responsible grandparents.

For the variable \textit{GrandparentsRespPer}, which represents the percent of responsible grandparents in a given zip code, the null hypothesis is that there is no relationship between the percent of responsible grandparents and the rate of reported abuse cases. The Pearson Correlation is 0.436 and the statistical significance is 0.000. We can reject the null hypothesis that no relationship exists between these variables because the significance is less than 0.05. This means the reported rate of child abuse is significantly higher in areas with high percentages of grandparents in care giving roles.

The variables significant in the economic group are the Percent HS Degree and Above, Percent BA and Above, Never Married Rate, Married Rate, Separated Rate, Widowed Rate, Divorced Rate, Same House in 1995 Rate, Responsible Grandparents Rate, and Percent Responsible Grandparents. The next group of variables is from the social service records.

\textit{Social Service Variables}

The variable \textit{SubstantiatedRate} has a null hypothesis that there is no relationship between the rate of substantiated abuse cases and the rate of reported abuse cases. The Pearson Correlation is 0.369 and the statistical significance is 0.000. We can reject the null hypothesis that no relationship exists between these variables because the significance is less than 5%. There is a positive relationship between these variables. This means the reported rate of child abuse is significantly higher in areas with high rates of substantiated cases. This makes sense because you would more cases of substantiation in areas with more reports.
The next variable is the rate of cases with the mother as the suspected perpetrator in a zip code. The null hypothesis is that there is no relationship between the rate of reported child abuse and the rate of mother as perpetrator. The Pearson Correlation is 0.077 and this has a statistical significance of 0.451. Because the 45.1% significance is greater than 5%, we cannot reject the null hypothesis and conclude that no relationship exists between these two variables in this sample.

The next variable in this grouping is the rate of cases with the father as the suspected perpetrator for a zip code. The null hypothesis is that there is no relationship between \textit{FatherRate} and \textit{AbuseRate}. The Pearson Correlation is 0.056 with a significance of 0.585. Because there is no significance at the 0.05 level the null hypothesis is not rejected. A relationship does not exist between the rate of reported abuse cases and the rate of fathers as perpetrators.

The next variable is the rate of cases with the babysitter as the suspected perpetrator in a zip code. The null hypothesis is that there is no relationship between the rate of reported child abuse and the rate of babysitter as perpetrator. The Pearson Correlation is 0.124 and this has a statistical significance of 0.224. Because the 22.4% significance is greater than 5%, we cannot reject the null hypothesis and conclude that no relationship exists between these two variables in this sample.

The next variable in this grouping is the rate of cases with the paramour of the parent as the suspected perpetrator for a zip code. The null hypothesis is that there is no relationship between \textit{ParamourRate} and \textit{AbuseRate}. The Pearson Correlation is 0.100 with a significance of 0.326. Because there is no significance at the 0.05 level the null hypothesis is not rejected.
A relationship does not exist between the rate of reported abuse cases and the rate of parent’s paramours as perpetrators.

The next variable is the rate of cases with the stepfather as the suspected perpetrator in a zip code. The null hypothesis is that there is no relationship between the rate of reported child abuse and the rate of stepfather as perpetrator. The Pearson Correlation is -0.084 and this has a statistical significance of 0.412. Because the 41.2% significance is greater than 5%, we cannot reject the null hypothesis and conclude that no relationship exists between these two variables in this sample.

The only variable that was found significant in the social service group is the Rate of Substantiated Cases. The next group of variables is related to geographic resources.

**Geographic Variables**

There are two educational geographic variables. First, consider Elementary and high schools. For total schools in a zip code the null hypothesis is that there is no relationship between the number of schools in an area and the rate of reported child abuse. The Pearson Correlation is 0.012 and this has a statistical significance of 0.904. Because the significance is greater than 0.05, we cannot reject the null hypothesis and must conclude that a significant relationship does not exists between these two variables in this sample.

The next variable considers the location of higher educational centers. For the variable *Colleges*, which represents the number of colleges and universities in a given zip code, the null hypothesis is that there is no relationship between the number of higher education locations and the rate of reported of abuse cases. The Pearson Correlation is 0.599 and the statistical significance is 0.000. We can reject the null hypothesis that no relationship
exists between these variables because the significance is less than 5%. There is a positive relationship between these two variables within this sample. This means the reported rate of child abuse is significantly higher in areas with more colleges and universities.

The religious-related variable in this grouping is a combination of all the religious institutions. The null hypothesis is that there is no relationship between ReligiousInstRate and ReportedAbuseRate. The Pearson Correlation is 0.067 with a significance of 0.514. Because there is no significance at the 0.05 level the null hypothesis is not rejected. There is not a significant relationship between the number of religious institutions and the rate of reported abuse cases for this sample.

The first recreational variable is the number of parks or green spaces in a zip code. The null hypothesis is that there is no relationship between the rate of reported child abuse and the availability of one or more parks. The Pearson Correlation is -0.024 with a statistical significance of 0.812. Because the significance is greater than 5%, we cannot reject the null hypothesis and conclude that no relationship exists between these two variables in this sample.

For the next variables, Museums, the null hypothesis is that there is no relationship between the rate of reported child abuse cases and the number of museums in an area. The Pearson correlation is 0.316. The significance for this combination of variables is 0.002, because the significance is less than 5% we can reject the null hypothesis and conclude that a positive relationship exists between the rate of reported abuse cases and the number of museums. This means the reported rate of child abuse is significantly higher in areas with more museums.
The variable *EntertainmentSports* has a null hypothesis that there is no relationship between the number of entertainment and sports related facilities and the rate of reported number of abuse cases. The Pearson Correlation is 0.475 and the statistical significance is 0.000. We can reject the null hypothesis because the significance is less than 5%. In this sample, there is a significant positive relationship between the theatrical and sports related locations and the rate of reported abuse cases in an area. This means the reported rate of child abuse is significantly higher in areas with more sports and entertainment facilities.

The variable *Libraries* has a null hypothesis that there is no relationship between the number of libraries and the rate of reported number of abuse cases. The Pearson Correlation is 0.072 and the statistical significance is 0.479. We cannot reject the null hypothesis that no relationship exists between these variables, in this sample, because the significance is greater than 5%.

The variable *LawEnforcement* has a null hypothesis that there is no relationship between the number of police headquarters in an area and the rate of reported number of abuse cases. The Pearson Correlation is -0.050 and the statistical significance is 0.624. We cannot reject the null hypothesis that no relationship exists between these variables because the significance is greater than 5%. Therefore, for this sample there is no significant relationship between the availability of law enforcement and the rate of reported abuse cases. This variable surprised me because I expected some form of relationship.

The next variable, *Hospitals*, represents the availability of a hospital in the area. The null hypothesis is that there is no relationship between the number of hospitals and the rate of reported number of abuse cases. The Pearson Correlation is 0.104 with a statistical significance is 0.306. We cannot reject the null hypothesis because the significance is greater
than 5%. For this sample, there is no significant relationship between the rate of reported child abuse cases and the frequency of hospitals.

The location of a neighborhood post office is the next variable. The null hypothesis is that there is no relationship between $PostOffices$ and $ReportedAbuseRate$. The Pearson Correlation is 0.183 with a significance of 0.072. Because there is no significance at the 0.05 level the null hypothesis is not rejected. A relationship does not exist between the rate of reported abuse cases and the number of post offices in an area for this sample.

For the variable $ShoppingCenters$, which represents the quantity of shopping centers in a given zip code, the null hypothesis is that there is no relationship between number of shopping and the rate of reported number of abuse cases. The Pearson Correlation is -0.118 and the statistical significance is 0.246. We cannot reject the null hypothesis and must conclude that there is no relationship between the variables for this sample because the significance is 24.6%.

The variable $GroceryStores$ has a null hypothesis that there is no relationship between the number of grocery stores in a zip code and the rate of reported child abuse cases. The Pearson Correlation is -0.110 and the statistical significance is 0.283. We cannot reject the null hypothesis that no relationship exists between these variables because there is no significance at the 0.05 level. There is no significant relationship between the availability of one or more grocery stores in a neighborhood and abuse reporting rates.

The variables significant in the geographic group are Colleges and Universities, Museums, and Sports and Entertainment Facilities.
Table 2: Correlation Statistics

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male to Female Ratio</td>
<td>0.071</td>
<td>0.485</td>
<td>98</td>
</tr>
<tr>
<td>Median Age Rate</td>
<td>-0.185</td>
<td>0.068</td>
<td>98</td>
</tr>
<tr>
<td>Age 65 and Over Rate</td>
<td>0.077</td>
<td>0.451</td>
<td>98</td>
</tr>
<tr>
<td>Minority Rate</td>
<td>0.486 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>In Group Living Quarters Rate</td>
<td>0.557 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Couple Households Rate</td>
<td>-0.632 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Single Female Headed Households Rate</td>
<td>0.410 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Non-Family Households Rate</td>
<td>0.551 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Average Household Size</td>
<td>-0.527 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Average Family Size</td>
<td>-0.415 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Rented Units Rate</td>
<td>0.458 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Homeowner Vacancy Rate</td>
<td>0.430 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Rental Vacancy Rate</td>
<td>0.250 *</td>
<td>0.013</td>
<td>98</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economic Variables</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Civilian Unemployed</td>
<td>0.697 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Single Female Households Below Poverty Rate</td>
<td>0.086</td>
<td>0.401</td>
<td>98</td>
</tr>
<tr>
<td>Median Income</td>
<td>-0.506 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Median Family Income</td>
<td>-0.216 *</td>
<td>0.032</td>
<td>98</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Variables</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent HS Degree and Above</td>
<td>-0.372 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Percent BA and Above</td>
<td>-0.287 *</td>
<td>0.004</td>
<td>98</td>
</tr>
<tr>
<td>Never Married Rate</td>
<td>0.435 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Married Rate</td>
<td>-0.573 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Separated Rate</td>
<td>0.667 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Widowed Rate</td>
<td>0.210 *</td>
<td>0.038</td>
<td>98</td>
</tr>
<tr>
<td>Divorced Rate</td>
<td>0.454 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Same House in 1995 Rate</td>
<td>-0.405 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Households with Grandparents Rate</td>
<td>0.105</td>
<td>0.302</td>
<td>98</td>
</tr>
<tr>
<td>Responsible Grandparents Rate</td>
<td>0.293 **</td>
<td>0.003</td>
<td>98</td>
</tr>
<tr>
<td>Percent Responsible Grandparents</td>
<td>0.436 **</td>
<td>0.000</td>
<td>98</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Service Variables</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substantiated Cases Rate</td>
<td>0.369 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Mother Perpetrator Rate</td>
<td>0.077</td>
<td>0.451</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
<td>Significance</td>
<td>N</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------</td>
<td>--------------</td>
<td>----</td>
</tr>
<tr>
<td>Father Perpetrator Rate</td>
<td>0.056</td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>Babysitter Perpetrator Rate</td>
<td>0.124</td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>Paramour Perpetrator Rate</td>
<td>0.100</td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>Stepfather Perpetrator Rate</td>
<td>-0.084</td>
<td></td>
<td>98</td>
</tr>
</tbody>
</table>

**Geographic Variables**

<table>
<thead>
<tr>
<th></th>
<th>Correlation</th>
<th>Significance</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>0.012</td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>Colleges and Universities</td>
<td>0.599 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Religious Institutions</td>
<td>0.067</td>
<td>0.514</td>
<td>98</td>
</tr>
<tr>
<td>Parks</td>
<td>-0.024</td>
<td>0.812</td>
<td>98</td>
</tr>
<tr>
<td>Museums</td>
<td>0.316 **</td>
<td>0.002</td>
<td>98</td>
</tr>
<tr>
<td>Entertainment and Sports</td>
<td>0.475 **</td>
<td>0.000</td>
<td>98</td>
</tr>
<tr>
<td>Libraries</td>
<td>0.072</td>
<td>0.479</td>
<td>98</td>
</tr>
<tr>
<td>Law Enforcement</td>
<td>-0.050</td>
<td>0.624</td>
<td>98</td>
</tr>
<tr>
<td>Hospitals</td>
<td>0.104</td>
<td>0.306</td>
<td>98</td>
</tr>
<tr>
<td>Post Offices</td>
<td>0.183</td>
<td>0.072</td>
<td>98</td>
</tr>
<tr>
<td>Shopping Centers</td>
<td>-0.118</td>
<td>0.246</td>
<td>98</td>
</tr>
<tr>
<td>Grocery Stores</td>
<td>-0.110</td>
<td>0.283</td>
<td>98</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
**Multivariate Analysis**

To find the best model for abuse reporting, the researcher turned to multivariate techniques. Because all variables to be considered are at the ratio level, the appropriate technique is linear regression, which assumes a normal distribution among the variables. The statistics of particular importance for research significance are the F ratio, $R^2$, ands corresponding significance for the entire model and the $b$, $t$, and their corresponding significance for the individual variables. The F value is the ratio of the two variances, within groups and between groups; a high F Ratio indicates a significant equation. R square indicates the amount of variance between the variables that is explained by the variable grouping. The $b$ value is the slope for that variable in the regression for the prediction equation. The $t$ statistic indicates the strength and direction of that relationship and is a test of the significance of the $b$ value. All of the variables were entered into the regression equation in the Stepwise procedure, which removes variables that are not significant. The variables were put into the equation in intervals of five. The significant variables were recorded. This process continued until the variables developed into a final list. Once a list of significant variables was achieved, this formula was reentered with the regression function in the Enter procedure to make the model more effective. The Stepwise model will be called the “Overall Model” and he Enter model will be referred to as the “Final Model.”

The null hypothesis of this research is that the population regression coefficient is zero. For the overall model, you want to examine the F statistic and its corresponding significance. The F Ratio for this grouping is 42.609. The probability of reaching results this different or more if the null hypothesis is true is less than 1%. Because this significance is less than 5%, we can reject the null hypothesis. We can conclude that some type of linear
relationship exists between the reported child abuse rate and the community variables. The $R^2$ value, which is associated with the goodness of fit for the whole model, is 0.813. This means that the variables in the model account for 81.3% of the variability within the dependent variable $AbuseRate$. To make the model more effective I removed non-statistically significant variables to create the Final Model. This procedure did not cause a change in the F Ratio or $R^2$ value. Once put into the Final Model the variables were tested with regard to the collinearity all of the variables. The two statistics to watch are Tolerance and VIF. For tolerance, the variables all remain with 0 and 1.0 with the smallest being 0.446 and the largest being 0.892. The VIF or Variance Inflation Factors range from 1.121 to 2.241. The individual variables will be analyzed from the model by category.

**Demographic**

The first variable combination we will examine is $AbuseRate$ and $Age65andOverRate$. The null hypothesis is that there is no linear relationship between the reported cases of child abuse and persons age 65 and over. Because you have two ratio level variables you will use the regression technique and solve for $b$, $t$, and the corresponding significance. The slope for this grouping is 0.042 and the $t$ value is 2.943. The standard error is 0.002. The probability of reaching results this different or more if the null hypothesis is true is 0.004. Because the significance is greater than 5%, we can reject the null hypothesis that there is no linear relationship between the rate of reported child abuse and the senior citizen population. For every one unit change in the rate of senior citizens there is a 0.042 unit increase in the reported abuse rate.
The next variable in the model is *HomeownerVacancyRate*. The null hypothesis is that there is no linear relationship between the rate of reported child abuse and homeowner vacancy rate. Because you have two ratio level variables you will use the regression technique and solve for b, t, and the corresponding significance. The slope for this grouping is 0.002 and the t value is 4.391. The standard error is 0.000. The probability of reaching results this different or more if the null hypothesis is true is 0.000. Because the significance is less than 5%, we can reject the null hypothesis and assume that there is a linear relationship between the homeowner vacancy rate and the rate of reported abuse. For every one-unit change in homeowner vacancy there is a 0.002 unit increase in the reported abuse rate.

The final significant demographic variable is rental vacancy rate. The null hypothesis is that there is no linear relationship between the rate of reported child abuse and rental vacancy rate. Because you have two ratio level variables you will use the regression technique and solve for b, t, and the corresponding significance. The slope for this grouping is 0.0003 and the t value is 2.374. The standard error is 0.000. The probability of reaching results this different or more if the null hypothesis is true is 2.0%. Because the significance is less than 5%, we can reject the null hypothesis and conclude that there is a linear relationship between these two variables. For every one-unit change in the rental vacancy rate there is a 0.0003 unit increase in the reported abuse rate.

### Economic

The only significant economic variable is the percent of civilians that are unemployed. The null hypothesis is that there is no linear relationship between the rate of
reported abuse cases and the percent of the population that is unemployed. Because you have
two ratio level variables you will use the regression technique and solve for b, t, and the
corresponding significance. The slope for this grouping is 0.001 and the t value is 5.801.
The standard error is 0.000. The probability of reaching results this different or more if the
null hypothesis is true is less than 0.000. Because the significance is less than 5%, we can
reject the null hypothesis that there is no linear relationship between the rate of reported
abuse and the unemployment rate. For every one unit change in the unemployment there is a
0.001 unit increase in the reported abuse rate.

**Social**

The first social variable in the model is *SeparatedRate*. The null hypothesis is that
there is no linear relationship between rate of reported abuse and the rate of persons whose
marital status is separated. Because you have two ratio level variables you will use the
regression technique and solve for b, t, and the corresponding significance. The slope for this
grouping is 0.180 and the t value is 2.512. The standard error is 0.072. The probability of
reaching results this different or more if the null hypothesis is true is 1.4%. Because the
significance is less than 5%, we can reject the null hypothesis that there is no linear
relationship between the reported abuse rate and separated individuals. For every one unit
change in the rate of separated individuals there is a 0.180 unit increase in the reported abuse
rate.

The final social variable in the model is *DivorcedRate*. The null hypothesis is that
there is no linear relationship between rate of reported abuse and the rate of persons whose
marital status is divorced. Because you have two ratio level variables you will use the
regression technique and solve for b, t, and the corresponding significance. The slope for this grouping is 0.052 and the t value is 2.113. The standard error is 0.025. The probability of reaching results this different or more if the null hypothesis is true is 3.7%. Because the significance is less than 5%, we can reject the null hypothesis that there is no linear relationship between the reported abuse rate and divorced individuals. For every one unit change in the rate of divorced individuals there is a 0.052 unit increase in the reported abuse rate.

**Social Service**

The only significant social service variable in the model is *SubstantiatedRate*. The null hypothesis is that there is no linear relationship between rate of reported abuse and the rate of cases that were substantiated. Because you have two ratio level variables you will use the regression technique and solve for b, t, and the corresponding significance. The slope for this grouping is 0.007 and the t value is 2.775. The standard error is 0.002. The probability of reaching results this different or more if the null hypothesis is true is 0.7%. Because the significance is less than 5%, we can reject the null hypothesis and conclude that there is a linear relationship between the reported abuse rate and substantiated cases. For every one unit change in the rate of substantiated cases there is a 0.007 unit increase in the reported abuse rate.

**Geographic**

There were two significant geographic variables, the location of colleges or universities and the location of hospitals. For the variable *Colleges* the null hypothesis is that
there is no linear relationship between rate of reported abuse and the location of colleges or universities. Because you have two ratio level variables you will use the regression technique and solve for b, t, and the corresponding significance. The slope for this grouping is 0.004 and the t value is 4.816. The standard error is 0.001. The probability of reaching results this different or more if the null hypothesis is true is less than 0.05%. Because the significance is less than 5%, we can reject the null hypothesis that there is no linear relationship between the reported abuse rate and the location of higher education institutions. For every one-unit change in the number of colleges or universities in an area, there is a 0.004 unit increase in the reported abuse rate.

The final significant variable in the model is Hospitals. The null hypothesis is that there is no linear relationship between rate of reported abuse and the number of hospitals in the area. Because you have two ratio level variables you will use the regression technique and solve for b, t, and the corresponding significance. The slope for this grouping is -0.004 and the t value is -3.973. The standard error is 0.001. The probability of reaching results this different or more if the null hypothesis is true is less than 0.05%. Because the significance is less than 5%, we can reject the null hypothesis that there is no linear relationship between the reported abuse rate and the location of hospitals. For every one unit increase in the number of hospitals there is a -0.004 unit decrease in the reported abuse rate.
Table 3: Regression

Model Summary

<table>
<thead>
<tr>
<th>R Square</th>
<th>Adj. R Square</th>
<th>Std. Error of Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.813</td>
<td>0.794</td>
<td>0.005</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>df</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>97</td>
<td>42.609</td>
<td>0.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.019</td>
<td>-5.929</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Individual Variables

Demographic

<table>
<thead>
<tr>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 and Over Rate</td>
<td>0.042</td>
<td>2.943</td>
<td>0.004</td>
</tr>
<tr>
<td>Homeowner Vacancy Rate</td>
<td>0.002</td>
<td>4.391</td>
<td>0.000</td>
</tr>
<tr>
<td>Rental Vacancy Rate</td>
<td>0.000</td>
<td>2.374</td>
<td>0.020</td>
</tr>
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</table>

Economic

<table>
<thead>
<tr>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Civilian Unemployed</td>
<td>0.001</td>
<td>5.801</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Social

<table>
<thead>
<tr>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separated Rate</td>
<td>0.180</td>
<td>2.512</td>
<td>0.014</td>
</tr>
<tr>
<td>Divorced Rate</td>
<td>0.052</td>
<td>2.113</td>
<td>0.037</td>
</tr>
</tbody>
</table>

Social Service

<table>
<thead>
<tr>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substantiated Cases Rate</td>
<td>0.007</td>
<td>2.775</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Geographic

<table>
<thead>
<tr>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colleges and Universities</td>
<td>0.004</td>
<td>4.816</td>
<td>0.000</td>
</tr>
<tr>
<td>Hospitals</td>
<td>-0.004</td>
<td>-3.973</td>
<td>0.000</td>
</tr>
</tbody>
</table>

I then investigated whether these significant variables had any relationship with the rate of substantiated cases. I removed substantiated from the Final Model of the regression and made it the dependent variable. I inputted the remaining eight variables into a new
regression equation. Because all variables to be considered are at the ratio level, the appropriate technique is linear regression, which assumes a normal distribution among the variables. The statistics of particular importance for research significance are the F ratio, $R^2$, ands corresponding significance for the entire model and the $b$, $t$, and their corresponding significance for the individual variables. The F value is the ratio of the two variances, within groups and between groups; a high F Ratio indicates a significant equation. $R$ square indicates the amount of variance between the variables that is explained by the variable grouping. The $b$ value is the slope for that variable in the regression for the prediction equation. The $t$ statistic indicates the strength and direction of that relationship and is a test of the significance of the $b$ value. All of the variables were entered into the regression equation in the Stepwise procedure, which removes variables that are not significant. Once a list of significant variables was achieved, this formula was reentered with the regression function in the Enter procedure to make the model more effective. The Stepwise model will be called the “Overall Model” and he Enter model will be referred to as the “Final Model.”

The null hypothesis of this research is that the population regression coefficient is zero. For the overall model, you want to examine the F statistic and its corresponding significance. The F Ratio for this grouping is 9.507. The probability of reaching results this different or more if the null hypothesis is true is less than 1%. Because this significance is less than 5%, we can reject the null hypothesis. We can conclude that some type of linear relationship exists between the reported child abuse rate and the community variables. The $R^2$ value, which is associated with the goodness of fit for the whole model, is 0.167. This means that the variables in the model account for 16.7% of the variability within the dependent variable $SubstantiatedRate$. To make the model more effective I removed non-
statistically significant variables to create the Final Model. This procedure did not cause a change in the F Ratio or $R^2$ value. Once put into the Final Model the variables were tested with regard to the collinearity all of the variables. The two statistics to watch are Tolerance and VIF. For tolerance, the variables all remain with 0 and 1.0 with values on 0.969. The VIF or Variance Inflation Factors are 1.032 for both variables. The individual variables will be analyzed from the model by category.

**Demographic**

The first variable in the model is *HomeownerVacancyRate*. The null hypothesis is that there is no linear relationship between the rate of substantiated abuse cases and homeowner vacancy rate. Because you have two ratio level variables you will use the regression technique and solve for $b$, $t$, and the corresponding significance. The slope for this grouping is 0.055 and the $t$ value is 3.396. The standard error is 0.016. The probability of reaching results this different or more if the null hypothesis is true is 0.001. Because the significance is less than 5%, we can reject the null hypothesis and assume that there is a linear relationship between the homeowner vacancy rate and the rate of substantiated cases. For every one-unit change in homeowner vacancy there is a 0.055 unit increase in the reported abuse rate.

**Social**

The final variable in the model is *DivorcedRate*. The null hypothesis is that there is no linear relationship between rate of substantiated cases and the rate of persons whose marital status is divorced. Because you have two ratio level variables you will use the
regression technique and solve for b, t, and the corresponding significance. The slope for this grouping is 1.860 and the t value is 2.096. The standard error is 0.887. The probability of reaching results this different or more if the null hypothesis is true is 3.9%. Because the significance is less than 5%, we can reject the null hypothesis that there is no linear relationship between the reported abuse rate and divorced individuals. For every one unit change in the rate of divorced individuals there is a 1.860 unit increase in the reported abuse rate.

**Table 4: Regression of Substantiated Case Rate**

**Model Summary**

<table>
<thead>
<tr>
<th>R Square</th>
<th>Adj. R. Square</th>
<th>Std. Error of Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.167</td>
<td>0.149</td>
<td>0.235</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>df</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>97</td>
<td>9.507</td>
<td>0.000 **</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intercept</th>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.214</td>
<td>0.887</td>
<td>2.096</td>
<td>0.011 *</td>
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</table>

**Individual Variables**

**Demographic**

<table>
<thead>
<tr>
<th>Homeowner Vacancy Rate</th>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.055</td>
<td>0.016</td>
<td>2.096</td>
<td>0.039 *</td>
</tr>
</tbody>
</table>

**Social**

<table>
<thead>
<tr>
<th>Divorced Rate</th>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.860</td>
<td>0.887</td>
<td>2.096</td>
<td>0.039 *</td>
</tr>
</tbody>
</table>
VI. Results

The results show that the independent variable with the most significant relationship to reported cases is the Unemployment Rate. This variable was significant in the literature as well. Thinking more critically about this relationship, the rate of child abuse reporting may be higher in areas with high unemployment because persons who are unemployed do not have a job to go to and would therefore be home more often. An explanation for the significance of this variable could be the people in their communities more have more opportunities to witness reportable behavior because they do not have the responsibilities and time constraints of a job. This same logic applies to the variable about the elderly population, which is also significant.

The unemployment rate also represents instability in the community. Also significant and indicative of flux are the vacancy rates of both homeowners and renters, and the rates of divorce and marital separation.

The geographic variables have relationships in two different directions. Colleges and Universities are positively related to the reported abuse rate. More reports are found in areas with more colleges. Speculating, maybe persons with a more liberal attitude, gained while pursuing a higher education, understand the importance of community responsibility and take action by making a call. Hospitals are negatively related to the reporting rate. This is surprising because hospitals are locations with mandated reporters, since most of the reports come from mandated reporters a positive relationship was expected. I cannot think of any reason as to why this variable would share a negative relationship with the dependent variable, more research in this area may reveal a reason for this association.
The only social service variable that was significant was the rate of substantiated cases. This association agrees with the literature that suggests more substantiated cases will be found in areas with more instances of reporting (Drake and Pandey 1996: 1011).

In the model where the substantiated rate was used as the dependent variable, only two variables were significant. By running the regression first with the reported cases and then with the substantiated cases as a dependent variable it will reveal associations that are important for both the reporting cases and found cases. Homeowner vacancy rate, a demographic variable, was the more significant of the two variables that remain in the second model. The variable describes an area with a large portion of empty home, on an opposite side there could be areas of large renting populations. In Neighborhood Life Cycle theory, high numbers of rental properties and fewer homeowners correspond to a declining community. When the community is in decline all rates of crime are higher. The final significant variable is the divorce rate. Also significant in the literature, this social variable could be linked to higher stress, insignificant support, or child vulnerability, which Pennsylvania considers as significant factors (Pennsylvania Department of Public Welfare 2005: 31). The analysis given for the regression models are speculation because causality is difficult to prove. Relationships do exist between the variables but the exact associations and the reasons for them are not consistently clear.

VII. Geographic Analysis

According to human ecology, it is fundamental “that the starting point for serious analysis is mapping” (Garbarino and Crouter 1978: 604). Geographic analysis expands the research to include another level, showing spatial relationships which also relate to the
variables. Paulsen asserts that “[communities] that suffer from high levels of economic disadvantage and residential instability are more likely not to develop solid social networks; this condition increases the risks of child maltreatment within their boundaries” (Paulsen 2003: 66). The maps that follow highlight problem areas in Allegheny County. The first map presents the reported child abuse rate and the rate of substantiated cases. The second map displays variables that were significant in the regression to see if those relationships continue spatially. Finally, the third map shows variables that were often found in the literature but not significant in my analysis. As mentioned before, I expect to find high concentrations of the reporting rate near the center of the city while the suburbs will have lower reporting rates. I expect the concentration of characteristics to carry over to all of the other variables finding pockets of unstable neighborhoods in the city of Pittsburgh.

Figure 2, a depiction of reporting rates and substantiated case rates agrees with the literature. The color ramp of the map is the reporting rates of the zip code areas, ranging from green (lowest reporting rates) to red (highest reporting rates). The substantiated cases are brown graduated circles, with smaller circles representing smaller proportions of substantiated cases and larger ones representing larger proportions of the variable.

The colors show that there is a higher concentration of reporting in the city of Pittsburgh. There is very little green (low reporting rates) near the city center. Other than a few high outliers, the substantiated cases are also intense in this area.

The second map of the set, figure three, considers the unemployment rate, those communities with 45% or more renters (as opposed to homeowners), and the reporting rate of child abuse. The unemployment rate is the color ramp level of the map. Ranging from low rates in green to high rates in red, this layer shows a concentration of unemployment in
the center of the county, in the city of Pittsburgh. There is also a zone of unemployment near the Monongahela River where the old steel mills were located. This area is one that was once thriving but now need a new job market. This finding would agree with the concentric zone theory. Just outside of the industrial layer of the city is the “zone in transition” or the ghetto, this area is one where people do not chose to live but are forced by their circumstances because their lifestyle will not permit them to live anywhere else (Irwin February 2006). The zip codes areas with 45% of more renters, outlined in a think black line, follow the Ohio and Allegheny rivers in a curved shape. According to Neighborhood Life Cycle theory, these areas are in decline with such high rental populations (Irwin March 2006). Areas in decline have increased crime and delinquency including child abuse. The white diamonds show the rates of reporting for the communities in graduated symbols.

Figure 4, the final map, displays variables found to be significant in the literature. The cloropleth level, or color ramp, represent that median family income. The lowest families’ incomes are red and the highest are green, shades of orange and yellow represent middle layers. The rate of single female headed-households below poverty is outlined in black. The outlined areas are those with a rate of single female-headed households below poverty of 50% or above. This means that of the total families below poverty in the zip code area, 50% or more of them are headed by a single female. These variables, like the others considered in the analysis follow a pattern with the rivers as well. There is also a concentration of the city proper. The child abuse reporting rate is depicted by graduated white diamonds.

Generally, these patterns agree with Drake and Pandey and Derek Paulsen and their analyses of spatial situations. It also follows the patterns laid out by the Neighborhood Life
Cycle theory and the Concentric Zones theory of Park and Burgess. The geographic analysis confirmed some significant relationship and revealed others. The variables in figure 4 were not significant in the regression models but a clear spatial association does exist.
Figure 2: Child Abuse Reporting Rates and Substantiated Cases
Figure 3: Unemployment, Rental Units, and Rates of Reporting

Unemployment, Rental Units, and Rates of Reporting
Allegheny County, PA

Legend

Unemployment Rate
rateca.PERCENTCIV
- 0.0000 - 0.0033
- 0.0034 - 0.0133
- 0.0134 - 0.0222
- 0.0223 - 0.0345
- 0.0346 - 0.0943

Reporting Rate
rateca.ABUSERATE
- 0.0000 - 0.0003
- 0.0004 - 0.0133
- 0.0134 - 0.0222
- 0.0223 - 0.0345
- 0.0346 - 0.0943

- Rented Units 45% and above
Figure 4: Median Family Income, Rate of Female Headed Households Below Poverty, and Reporting Rates

Family Income, Single Female-Headed Households Below Poverty, and Child Abuse Reporting Rates
Allegheny County, PA

Legend

<table>
<thead>
<tr>
<th>Family Median Income</th>
<th>Reporting Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>rateca.MEDIANFAMI</td>
<td>rateca.ABUSERATE</td>
</tr>
<tr>
<td>18,167 - 32,500</td>
<td>0.000 - 0.005</td>
</tr>
<tr>
<td>32,501 - 42,297</td>
<td>0.006 - 0.013</td>
</tr>
<tr>
<td>42,298 - 63,890</td>
<td>0.014 - 0.022</td>
</tr>
<tr>
<td>53,891 - 76,510</td>
<td>0.023 - 0.034</td>
</tr>
<tr>
<td>76,511 - 102,400</td>
<td></td>
</tr>
<tr>
<td>0.751 - 1.000</td>
<td>0.005 - 0.0094</td>
</tr>
</tbody>
</table>

0 13,500 27,000 54,000 Feet
VIII. Conclusions, Limitations, and Policy Implications

The findings suggest that the most significant relationship is shared between the reporting rate of child abuse and unemployment. The independent variables group with the most significant variables is the demographic group. Of the 48 independent variables, only 9 were significant in the regression model. In the second regression model, only 2 of the 8 independent variables were significantly related to substantiated rates of child abuse. Overall, the findings agree with the hypotheses. Unstable areas do have higher rates of reporting and there are concentrations in the city center. As far as geographic assets, of the two significant ones, one is positive and the other is negative. The number of colleges and universities is positively significant but the number of hospitals is negatively significant.

As far as policy implications, I would like to see changes beginning at the national level. National guidelines for intake and recording would make data across the nation consistent and allow for an analysis of the whole United States. There should also be changes to how ChildLine logs the reports, certain information such as personal information about the reporter of abuse, is removed from the saved records. Race is not legally allowed to be recorded. If these things were changed a more comprehensive view of the significant factors of abuse and reporting would be available. In general, I would like to see more interaction on a community level and a better sense of community responsibility. Prevention relies on good information and responsible reporters. Persons invested in their communities will be more aware of negative situations and maybe more likely to try to stop harmful occurrences.

For the specific significant variables, I would want to encourage small business growth, job market expansion, job training opportunities and volunteerism to combat
unemployment. Homeowner vacancy, significant in both models, should be reversed. Encouraging homeowners to buy in deteriorating areas will bring new life to the communities. For marital status, consider group therapy and couples or family therapy to vent the harmful emotions that may exist and allow a stronger social support network for families that need them.

This study has several limitations. The calls reported do not accurately reflect the number of abuse cases in an area. Oftentimes cases go unreported. Furthermore, a case may be reported but then found to be unsubstantiated. In addition, because the sample size is only 98 zip codes of one county, a larger sample would make the results more valid and reliable. The condition of the initial dataset could have been better. Of the 30,000 received cases, many were missing the geographic indicator of zip code; they had to be removed along with the cases that fell outside of Allegheny County. Zip codes that crossed the boundaries of the county were only used if 50% or more of the area was within the selected county.
Appendix A: Dependent Variable

The dependent variable, Reported Child Abuse Cases was compiled directly from data obtained from the ChildLine reporting agency. When the data was received, each case corresponded to one report. This information was recoded so that each zip code has a corresponding number of cases. The zip code will be considered the case identifier. The list of zip codes for Allegheny County was obtained by cross-referencing the United States Postal Service’s *National 5-Digit ZIP Code and Post Office Directory* with available Census 2000 data. Zip codes that did not appear in the original data set did not have any reported cases. The number zero was inputted in these instances. Zip codes that crossed county borders were eliminated if less than 50% was located in Allegheny County. Of the original 30,728 cases, most were removed from the sample because they lacked a zip code or were not in Allegheny County. The total sum of abuse reports is 3,409.

The Pennsylvania Department of Public Welfare says of ChildLine:

The Mission of ChildLine is to accept calls from the public and professional sources 24 hours per day, seven days per week. Cultural sensitivity and courteous demeanor will be displayed at all times to all callers. ChildLine will provide information, counseling, and referral services for families and children to ensure the safety and well being of the children of Pennsylvania.

The Intake Unit is available 24 hours to receive reports of suspected child abuse. Professionals who come into contact with children are required to report when they have reasonable cause to suspect that a child coming before them in their professional capacity is an abused child. In addition, any person may report suspected abuse, even if the individual wishes to remain anonymous.

Each call is answered by a trained intake specialist who will interview the caller to determine the most appropriate course of action. Actions include forwarding a report to a county agency for investigation as child abuse or general protective services, forwarding a report directly to law enforcement officials or refer the caller to local social services (such as counseling, financial aid. And legal services). (Pennsylvania Department of Public Welfare)
Appendix B: Independent Variables

**Demographic**


**Number of Males** – Derived from Sex. Sex. The data on sex were derived from answers to a question that was asked of all people. Individuals were asked to mark either "male" or "female" to indicate their sex. For most cases in which sex was not reported, it was determined by the appropriate entry from the person’s given (i.e., first) name and household relationship. Otherwise, sex was imputed according to the relationship to the householder and the age of the person.

**Number of Females** – See **Number of Males**

**Median Age** - Median age. This measure divides the age distribution into two equal parts: one-half of the cases falling below the median value and one-half above the value. Median age is computed on the basis of a single year of age distribution.

**Population Under 18** – Researcher created variable, Age18andOver subtracted from Population.

**Population 18 and Over** – Total population 18 years and over, Census 2000.

**Population 65 and Over** – Total population 65 years and over, Census 2000.

**Population African American** - **Black or African American**. A person having origins in any of the Black racial groups of Africa. It includes people who indicate their race as "Black, African Am., or Negro," or provide written entries such as African American, Afro American, Kenyan, Nigerian, or Haitian.

**Population Am. Indian or Alaskan Native** - **American Indian or Alaska Native**. A person having origins in any of the original peoples of North and South America (including Central America) and who maintain tribal affiliation or community attachment. It includes people who classified themselves as described below.

**American Indian**. Includes people who indicated their race as “American Indian,” entered the name of an Indian tribe, or reported such entries as Canadian Indian, French American Indian, or Spanish-American Indian.

**American Indian tribe.** Respondents who identified themselves as American Indian were asked to report their enrolled or principal tribe. Therefore, tribal data in tabulations reflect the written entries reported on the questionnaires. Some of the entries (for example, Iroquois, Sioux, Colorado River, and Flathead) represent nations or reservations. The information on tribe is based on self identification and therefore does not reflect any designation of federally or state-recognized tribe. Information on American Indian tribes is presented in summary files. The information for Census 2000 is derived from the American Indian Tribal Classification List for the 1990 census that was updated based on a December 1997 Federal Register Notice, entitled “Indian Entities Recognized and Eligible to Receive Service From the United States Bureau of Indian Affairs,” Department of the Interior, Bureau of Indian Affairs, issued by the Office of Management and Budget.

**Alaska Native**. Includes written responses of Eskimos, Aleuts, and Alaska Indians as well as entries such as Arctic Slope, Inupiat, Yupik, Alutiq, Egegik, and Pribilovian. The Alaska tribes are the Alaskan Athabascan, Tingit, and Haida. The information for Census 2000 is based on the American Indian Tribal Classification List for the 1990 census, which was expanded to list the individual Alaska Native Villages when provided as a written response for race.

**Population Asian** - **Asian**. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam. It includes “Asian Indian,” “Chinese,” “Filipino,” “Korean,” “Japanese,” “Vietnamese,” and “Other Asian.”

**Asian Indian**. Includes people who indicated their race as “Asian Indian” or identified themselves as Bengalese, Bharat, Dravidian, East Indian, or Goanese.

**Chinese**. Includes people who indicate their race as “Chinese” or who identify themselves as Cantonese, Chinese American. In some census tabulations, written entries of Taiwanese are included with Chinese while in others they are shown separately.

**Filipino.** Includes people who indicate their race as “Filipino” or who report entries such as Philippine, Philippine, or Filipino American.

**Japanese.** Includes people who indicate their race as “Japanese” or who report entries such as Nipponese or Japanese American.

**Korean.** Includes people who indicate their race as “Korean” or who provide a response of Korean American.
Vietnamese. Includes people who indicate their race as “Vietnamese” or who provide a response of Vietnamese American.

Cambodian. Includes people who provide a response such as Cambodian or Cambodia.

Hmong. Includes people who provide a response such as Hmong, Laohmong, or Mong.

Laotian. Includes people who provide a response such as Laotian, Laos, or Lao.

Thai. Includes people who provide a response such as Thai, Thailand, or Siamese.

Other Asian. Includes people who provide a response such as Bangladeshi; Bhutanese; Burmese; Indochinese; Indonesian; Iwo Jima; Madagascar; Malaysian; Maldivian; Nepalese; Okinawan; Pakistani; Singaporean; Sri Lankan; or Other Asian, specified and Other Asian, not specified.

Population Pacific Islander - Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. It includes people who indicate their race as “Native Hawaiian,” “Guamanian or Chamorro,” “Samoan,” and “Other Pacific Islander.”

Native Hawaiian. Includes people who indicate their race as “Native Hawaiian” or who identify themselves as “Part Hawaiian” or “Hawaiian.”

Guamanian or Chamorro. Includes people who indicate their race as such, including written entries of Chamorro or Guam.

Samoan. Includes people who indicate their race as “Samoan” or who identify themselves as American Samoan or Western Samoan.

Other Pacific Islander. Includes people who provide a write-in response of a Pacific Islander group, such as Carolinian, Chuukese (Trukese), Fijian, Kosraean, Melanesian, Micronesian, Northern Mariana Islander, Palauan, Papua New Guinean, Pohnpeian, Polynesian, Solomon Islander, Tahitian, Tokelauan, Tongan, Yapese, or Pacific Islander, not specified.

Population Other Race - Some other race. Includes all other responses not included in the “White,” “Black or African American,” “American Indian or Alaska Native,” “Asian,” and “Native Hawaiian or Other Pacific Islander” race categories described above. Respondents providing write-in entries such as multiracial, mixed, interracial, or a Hispanic/Latino group (for example, Mexican, Puerto Rican, or Cuban) in the “Some other race” write-in space are included in this category.

Population Multi-Racial - Two or more races. People may have chosen to provide two or more races either by checking two or more race response check boxes, by providing multiple write-in responses, or by some combination of check boxes and write-in responses. The race response categories shown on the questionnaire are collapsed into the five minimum race groups identified by the OMB, and the Census Bureau “Some other race” category. For data product purposes, “Two or more races” refers to combinations of two or more of the following race categories:

1. White
2. Black or African American
3. American Indian and Alaska Native
4. Asian
5. Native Hawaiian and Other Pacific Islander
6. Some other race

Population Total Minority – Adding together the variables AfricanAm, AmIndianAlaskan, Asian, PacificIslander, OtherRace, MultiRacial

Population in Group Quarters - All people not living in housing units are classified by the Census Bureau as living in group quarters. Two general categories of people in group quarters are recognized: (1) institutionalized population and (2) noninstitutionalized population.

Total Households - A household includes all of the people who occupy a housing unit. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room occupied (or if vacant, intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live separately from any other people in the building and that have direct access from the outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated people who share living quarters. In 100-percent tabulations, the count of households or householders always equals the count of occupied housing units. In sample tabulations, the numbers may differ as a result of the weighting process.

Family Households - Family Type. A family includes a householder and one or more other people living in the same household who are related to the householder by birth, marriage, or adoption. All people in a household who are related to the householder are regarded as members of his or her family. A household can contain only one family for purposes of census tabulations. Not all households contain families since a household may be a group of unrelated people or one person living alone. Families are
classified by type as either a “married-couple family” or an “other family” according to the presence of a spouse. “Other family” is further broken out according to the sex of the householder. The data on family type are based on answers to questions on sex and relationship that were asked on a 100-percent basis.

Couple Households - Married-couple family. A family in which the householder and his or her spouse are enumerated as members of the same household.

Single Female Households - Female householder, no husband present. A family with a female householder and no spouse of the householder present.

NonFamily Households - Nonfamily household. A householder living alone or with nonrelatives only.

Average Household Size - Average household size. A measure obtained by dividing the number of people in households by the number of households (or householders). In cases where household members are tabulated by race or Hispanic origin, household members are classified by the race or Hispanic origin of the householder rather than the race or Hispanic origin of each individual.

Average Family Size - Average family size. A measure obtained by dividing the number of people in families by the total number of families (or family householders). In cases where this measure is tabulated by race or Hispanic origin, the race or Hispanic origin refers to that of the householder rather than to the race or Hispanic origin of each individual.

Total Housing Units - Housing unit. A housing unit may be a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or, if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live separately from any other individuals in the building and that have direct access from outside the building or through a common hall. For vacant units, the criteria of separateness and direct access are applied to the intended occupants whenever possible. If that information cannot be obtained, the criteria are applied to the previous occupants. Both occupied and vacant housing units are included in the housing unit inventory. Boats, recreational vehicles (RVs), vans, tents, and the like are housing units only if they are occupied as someone’s usual place of residence. Vacant mobile homes on dealers’ lots, at the factory, or in storage yards are excluded from the housing inventory. Also excluded from the housing inventory are quarters being used entirely for nonresidential purposes, such as a store or an office, or quarters used for the storage of business supplies or inventory, machinery, or agricultural products.

Homeowner Vacancy Rate - Homeowner vacancy rate. The proportion of the homeowner housing inventory that is vacant for sale. It is computed by dividing the number of vacant units for sale only by the sum of the owner-occupied units and vacant units that are for sale only, and then multiplying by 100.

Rental Vacancy Rate - Rental vacancy rate. The proportion of the rental inventory that is vacant for rent. It is computed by dividing the number of vacant units for rent by the sum of the renter-occupied units and the number of vacant units for rent, and then multiplying by 100.

Total Rented Units - Renter-occupied. All occupied housing units that are not owner occupied, whether they are rented for cash rent or occupied without payment of cash rent, are classified as renter occupied. “No cash rent” units are separately identified in the rent tabulations. Such units are generally provided free by friends or relatives or in exchange for services, such as resident manager, caretaker, minister, or tenant farmer. Housing units on military bases also are classified in the “No cash rent” category. “Rented for cash rent” includes units in continuing care, sometimes called life care arrangements. These arrangements usually involve a contract between one or more individuals and a service provider guaranteeing the individual shelter, usually a house or apartment, and services, such as meals or transportation to shopping or recreation.

Economic


Percent Civilian Unemployed – Unemployed as a Ratio of Employed. Unemployed. All civilians 16 years old and over were classified as unemployed if they were neither “at work” nor “with a job but not at work” during the reference week, were looking for work during the last 4 weeks, and were available to start a job. Also included as unemployed were civilians 16 years old and over who: did not work at all during the reference week, were on temporary layoff from a job, had been informed that they would be recalled to work within the next 6 months or had been given a date to return to work, and were available to return to work during the reference week, except for temporary illness. Examples of job seeking activities were: • Registering at a public or private employment office • Meeting with prospective employers • Investigating possibilities for starting a professional practice or opening a business • Placing or answering advertisements • Writing letters of application • Being on a union or professional register
Median Income - Income of households. This includes the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not. Because many households consist of only one person, average household income is usually less than average family income. Although the household income statistics cover calendar year 1999, the characteristics of individuals and the composition of households refer to the time of enumeration (April 1, 2000). Thus, the income of the household does not include amounts received by individuals who were members of the household during all or part of calendar year 1999 if these individuals no longer resided in the household at the time of enumeration. Similarly, income amounts reported by individuals who did not reside in the household during 1999 but who were members of the household at the time of enumeration are included. However, the composition of most households was the same during 1999 as at the time of enumeration.

Median Family Income - Income of families. In compiling statistics on family income, the incomes of all members 15 years old and over related to the householder are summed and treated as a single amount. Although the family income statistics cover calendar year 1999, the characteristics of individuals and the composition of families refer to the time of enumeration (April 1, 2000). Thus, the income of the family does not include amounts received by individuals who were members of the family during all or part of calendar year 1999 if these individuals no longer resided with the family at the time of enumeration. Similarly, income amounts reported by individuals who did not reside with the family during 1999 but who were members of the family at the time of enumeration are included. However, the composition of most families was the same during 1999 as at the time of enumeration.

Families Below Poverty - The poverty status of families and unrelated individuals in 1999 was determined using 48 thresholds (income cutoffs) arranged in a two dimensional matrix. The matrix consists of family size (from 1 person to 9 or more people) cross-classified by presence and number of family members under 18 years old (from no children present to 8 or more children present). Unrelated individuals and 2-person families were further differentiated by the age of the reference person (RP) (under 65 years old and 65 years old and over). To determine a person’s poverty status, one compares the person’s total family income with the poverty threshold appropriate for that person’s family size and composition (see table below). If the total income of that person’s family is less than the threshold appropriate for that family, then the person is considered poor, together with every member of his or her family. If a person is not living with anyone related by birth, marriage, or adoption, then the person’s own income is compared with his or her poverty threshold.

Female Families Below Poverty – see Families Below Poverty

Social
Percent HS Degree and above – Portion of persons with the educational attainment of a High School degree and higher, Census 2000.
Percent BS Degree and above – Portion of persons with the educational attainment of a Bachelors degree and higher, Census 2000.
MARITAL STATUS - The data on marital status were derived from answers to long-form questionnaire Item 7, “What is this person’s marital status,” which was asked of a sample of the population. The marital status classification refers to the status at the time of enumeration. Data on marital status are tabulated only for the population 15 years old and over. Each person was asked whether they were “Now married,” “Widowed,” “Divorced,” “Separated,” or “Never married.” Couples who live together (for example, people in common-law marriages) were able to report the marital status they considered to be the most appropriate.

Never married. Never married includes all people who have never been married, including people whose only marriage(s) was annulled.

Now married, except separated. Now married, except separated includes people whose current marriage has not ended through widowhood or divorce; or who are not currently separated. The category also may include people in common-law marriages if they consider this category the most appropriate. In certain tabulations, currently married people are further classified as “spouse present” or “spouse absent.”

Separated. Separated includes people with legal separations, people living apart with intentions of obtaining a divorce, and people who are permanently or temporarily separated because of marital discord.

Widowed. This category includes widows and widowers who have not remarried.

Divorced. This category includes people who are legally divorced and who have not remarried.

Grandparents, Responsible Grandparents - GRANDPARENTS AS CAREGIVERS - The data on grandparents as caregivers were derived from answers to long-form questionnaire Item 19, which was
asked of a sample of the population 15 years old and over. Data were collected on whether a grandchild lives in the household, whether the grandparent has responsibility for the basic needs of the grandchild, and the duration of that responsibility. Because of the very low number of people under 30 years old who are grandparents, data are only shown for people 30 years old and over.

**Existence of a grandchild in the household.** This was determined by a “Yes” answer to the sample question, “Does this person have any of his/her own grandchildren under the age of 18 living in this house or apartment?”

**Responsibility for basic needs.** This question determines if the grandparent is financially responsible for food, shelter, clothing, day care, etc., for any or all grandchildren living in the household.

**Social Service**
- **Substantiated** – Compiled from ChildLine data.
- **Mother as Perpetrator** - Compiled from ChildLine data.
- **Father as Perpetrator** - Compiled from ChildLine data.
- **Babysitter as Perpetrator** - Compiled from ChildLine data.
- **Paramour of Parent as Perpetrator** - Compiled from ChildLine data.
- **Stepfather as Perpetrator** - Compiled from ChildLine data.

**Geographic**
- **Schools** – gathered from *Pittsburgh Street Guide*, 7th edition.
- **Colleges and Universities** – gathered from *Pittsburgh Street Guide*, 7th edition.
- **Religious Institutions** – gathered from *Yearbook of American and Canadian Churches* and www.yellowbook.com
Appendix C: Identifiers

**County** – The political boundary of Allegheny County including the City of Pittsburgh and the surrounding municipalities.

**Zip Code** - A ZIP Code® tabulation area (ZCTA™) is a statistical geographic entity that approximates the delivery area for a U.S. Postal Service five-digit or three-digit ZIP Code. ZCTAs are aggregations of census blocks that have the same predominant ZIP Code associated with the residential mailing addresses in the U.S. Census Bureau’s Master Address File. Three-digit ZCTA codes are applied to large contiguous areas for which the U.S. Census Bureau does not have five-digit ZIP Code information in its Master Address File. ZCTAs do not precisely depict ZIP Code delivery areas, and do not include all ZIP Codes used for mail delivery. The U.S. Census Bureau has established ZCTAs as a new geographic entity similar to, but replacing, data tabulations for ZIP Codes undertaken in conjunction with the 1990 and earlier censuses.
Bibliography

23 Pa. C.S. § 63

42 U.S.C.A. § 5106


