

**RISK FACTORS FOR ELDER ABUSE MAPPED ACROSS PENNSYLVANIA  
COUNTIES: CAN WE DETERMINE AREAS OF NEED?**

by

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## **ABSTRACT**

Elder abuse is projected to become a topic of public health significance, however, research is limited. In the United States, elder abuse is estimated to affect 10% of community-dwelling older adults annually. The economic cost is hypothesized to be over a billion dollars each year. The projected increase in the number of older adults is believed to indicate an increase in elder abuse. Interventions and resources for victims of elder abuse will be needed across the country, however, elder abuse is examined at an individual level and not across communities. This can make it difficult for organizations, such as the Pennsylvania Department of Aging, to determine the proper allocation of resources and funding.

The purpose of this paper is to determine if individual risk factors for elder abuse and the rate of elder abuse can be mapped across the state of Pennsylvania to establish geospatial patterns of elder abuse and identify possible areas where resources and funding could best be utilized. Maps comparing the percentage of rural residents, percentage of older adults living alone, and number of liquor licenses per square mile to the rate of elder abuse were created using QGIS software. GeoDa software was used to examine the spatial autocorrelation of these variables.

None of the three risk factors correlated to the rate of elder abuse across Pennsylvania Counties. This might be due to the small sample size or the fact that substantiated reports were used and elder abuse is often underreported. It is possible that other data sources might have

shown different results. For example, emergency department reports of suspected physical elder abuse could have been used but information on other types of abuse would have needed to be found elsewhere.

There is still much to learn about elder abuse. There are currently few longitudinal studies in the United States to inform researchers and policy makers about the issue. Future research looking into the utilization of validated screening tools and indexes examining the risk of elder abuse across different cultures, demographics and abuse types would be beneficial in gaining insight into this public health problem.

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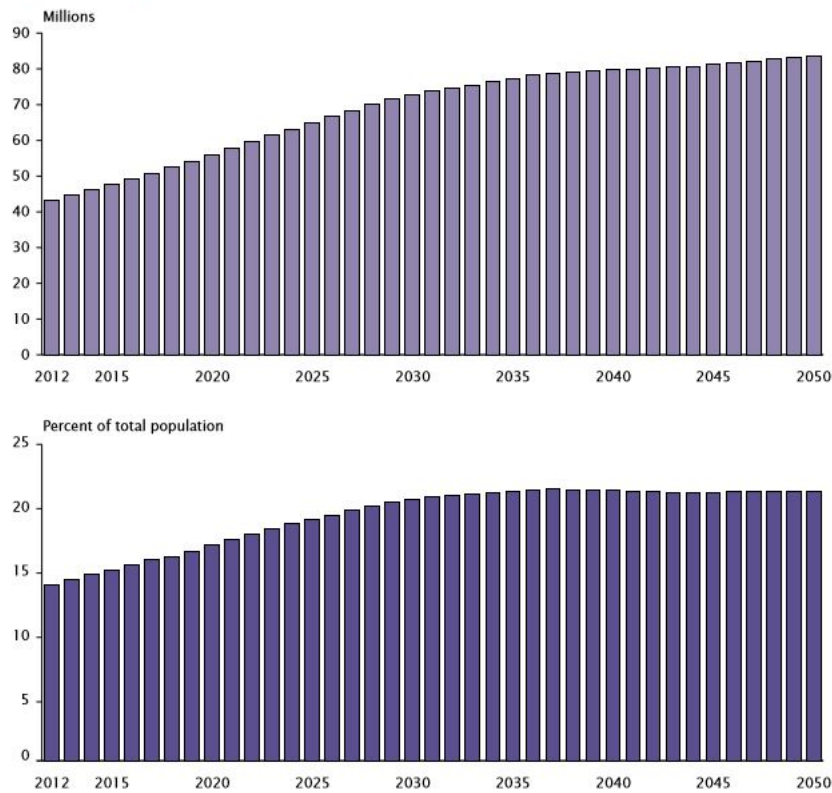
## **1.0 INTRODUCTION**

There is a rapid increase projected in the number of older adults in the United States until the year 2030 (Administration on Aging, 2014). Many areas of public life will be affected by the aging of the baby boomers. Policy concerns regarding this change include the fact that the proportion of older adults in the total population is substantial (13%), the number of elderly individuals and the rate of aging are both expected to increase steeply with an increase in the number requiring special services, and the implications our aging society has on a range of social institutions. There are nearly 12.1 million people living in the state of Pennsylvania (Administration on Aging, 2012). Almost 4.6 million (35.9%) Pennsylvania residents are over the age of 50, 2.7 million (21.3%) are over the age of 60, more than 1.4 million (11.1%) are over the age of 70, and 617,000 (4.9%) are over the age of 80. With older adults already making up a substantial proportion of Pennsylvania's population and the numbers projected to increase, there are multiple implications on the type and rigor of services the state will need to provide its elderly population. Elder abuse is a public health problem that is projected to increase with the number of older adults (National Council on Aging, 2010). Research into targeted interventions and identification of areas of need will assist policy makers and the Pennsylvania Department of Aging in determining the proper allocation of resources and funding for elder abuse.

## **2.0 AGING IN AMERICA**

After World War II, between 1946 and 1964, the world's population grew by approximately 400 million people (Olshansky, Goldman, Zheng, & Rowe, 2009). Those born during that time period have been given the name "baby boomers" and they, along with the generations following them, have altered the age structure across the globe. The aging of the baby boomers is largely responsible for the hypothesized growth of the older population in the United States (Ortman, Velkoff, & Hogan, 2014). One in seven, or 14.5%, of the population is an older American (Administration on Aging, 2016). It has been projected that between 2012 and 2050 the United States will experience a considerable growth in its older population, from 43.1 million in 2012 to 83.7 million in 2050 (Ortman et al., 2014) (figure 1).

**Population Aged 65 and Over for the United States: 2012 to 2050**



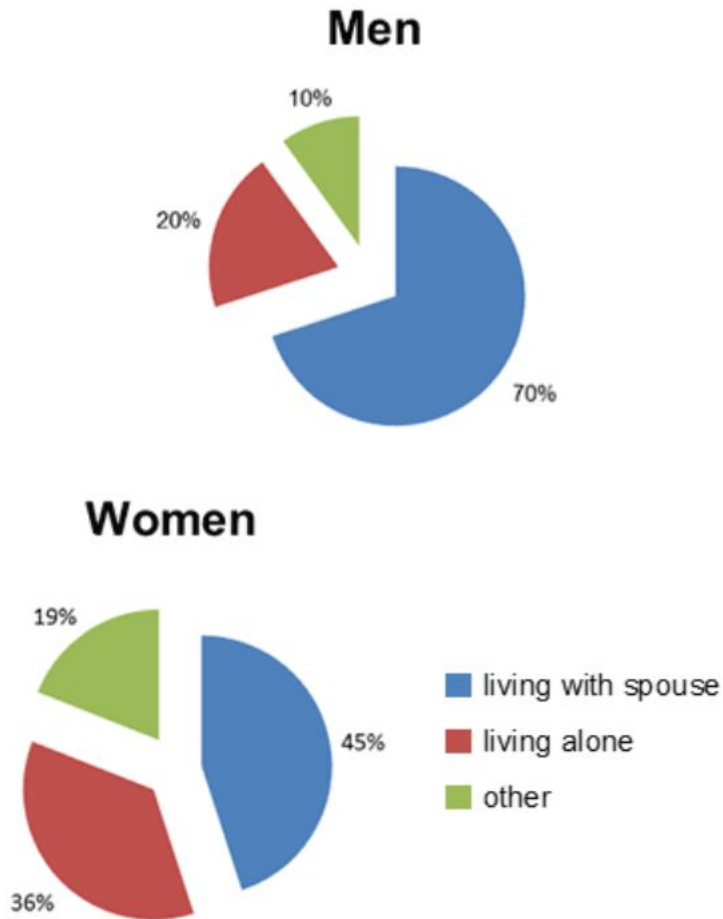
Source: U.S. Census Bureau, 2012 Population Estimates and 2012 National Projections.

**Figure 1 Growth of the aging population in the United States (Ortman, Velkoff, & Hoggan, 2014).**

By 2030, it is projected that more than 20% of U.S residents will be 65 or older, compared to 13% in 2010 and 9.8% in 1970 (Ortman et al., 2014). According to the Administration on Aging (AOA) (2016), the number of Americans who will reach old age, 65 years or older, over the next two decades and are currently between the ages of 45 and 64 increased by 17.8% between 2004 and 2014. Racial and ethnic minorities have also increased from 6.5 million in 2004 (18% of the older adult population) to 10 million in 2014 (22% of the older adult population)(Administration on Aging, 2016). In 2014, 22% of residents 65 and older were members of a racial or ethnic minority; 9% were African Americans (non-Hispanic), 4% were Asian or Pacific Islander (non-Hispanic), 0.5% were Native American (non-Hispanic), 0.1% were Native Hawaiian/Pacific

Islander (non-Hispanic), and 0.7% identified as multiracial. People of Hispanic origin, who may be of any race, represented 8% of the older adult population. Between 2014 and 2030, the non-Hispanic white population 65 and older is projected to increase 46%. Other racial and ethnic minority groups are projected to increase 110%. Hispanic older adults are projected to increase by 137%, African American older adults by 90%, American Indian and Native Alaskans (non-Hispanic) by 93%, and Asian (non-Hispanic) by 104%.

Older men were more likely to be married (70%) than older women (45%) in 2015 (Administration on Aging, 2016). 34% of all older women were widows in 2015 with more than three times as many widows (8.8 million) than widowers (2.4 million). More than half (56%) of noninstitutionalized older adults lived with a spouse in 2015 with approximately 14.3 (70%) older men and 11.5 million (45%) of older women living with a spouse. This number decreases with age, especially for older women; 32% of women 75 or older lived with a spouse. The number of divorced or separated older adults increased between 1980 (5.3%) and 2015 (15%). Approximately 13.3 million (29%) of all noninstitutionalized older adults lived alone in 2015 with 9.2 million women and 4.1 million men living alone. Around half (46%) of women 75 and older lived alone (figure 2).

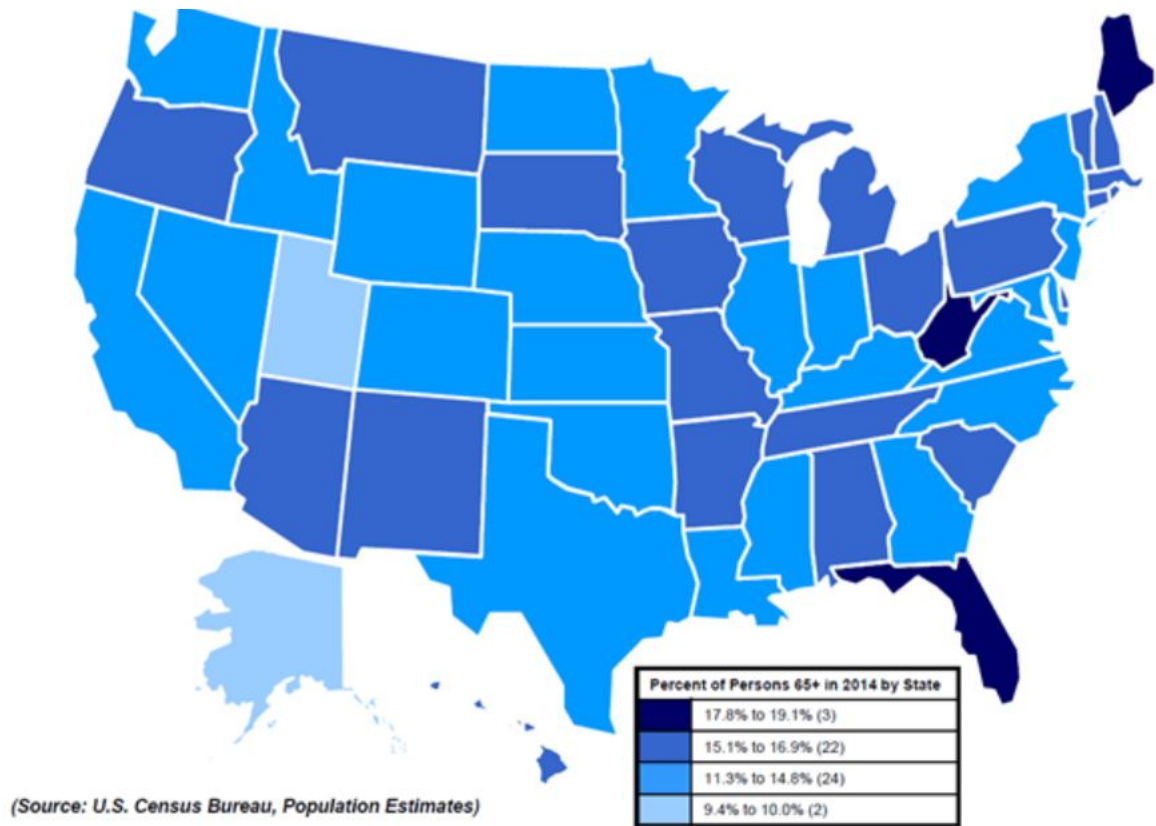


Source: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement.

**Figure 2 Living arrangements for individuals 65 and older in 2015 (Administration on Aging, 2016a)**

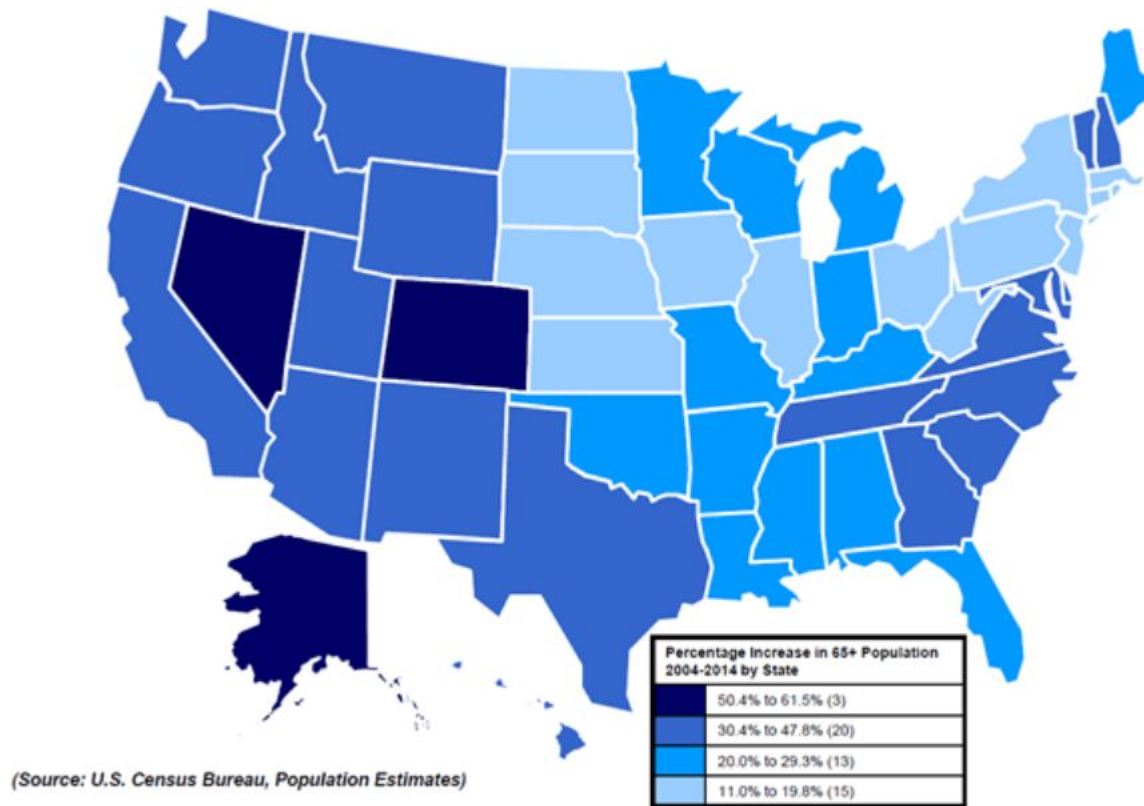
A smaller number of older adults (1.5 million, 3.2%) lived in institutional settings in 2014. Among those in institutions, 1.2 million lived in nursing homes with the percentage dramatically increasing with age. In 2014, 1% of individuals 65-74 lived in nursing homes while 10% of individuals 85 and older were nursing home residents.

The number of older adults varies across states with some states having a higher number of residents 65 or older (figure 3)(Administration on Aging, 2016).



**Figure 3 Percentage of total population 65 and older in 2014  
(Administration on Aging, 2016c)**

Certain states have also seen a greater increase in older adults over the past ten years (figure 4).



**Figure 4 Percent increase in population 65 and older between 2004 and 2014 (Administration on Aging, 2016b).**

In 2014, most older adults lived in metropolitan areas (80%) (Administration on Aging, 2016). Of those living in metropolitan areas, 53% lived outside principle cities and 27% lived inside principle cities. Around 20% of older adults in the United States lived outside of metropolitan areas in 2014. Older adults are also less likely to change residence than other age groups. For example, between 2014 and 2015, only 4% of older adults moved compared to the 13% younger than 65. Older adults who moved in 2014 stayed in the same county (60%) and 21% stayed in the same state. A smaller number (20%) moved out-of-state or abroad in 2014.

In 2013 there were 26.8 million households headed by older adults (Administration on Aging, 2016). 81% of older adults owned their home and 19% were renters. The median household income in 2014 for older adult males was \$31,169 and \$17,375 for females. Between



2013 and 2014, the median household income decreased by 2.7% after adjusting for inflation. This decline, however, was not statistically significant. Households with families headed by an individual 65 or older reported a median income of \$54,838 in 2014. Non-Hispanic white families headed by an older adult reported a median income of \$58,316, Hispanic families reported a median income of \$38,735, African American families reported a median income of \$41,656, and Asian families reported a median income of \$54,012. In 2013, the major sources of income for older adults included Social Security (84%), income from assets (51%), earnings (28%), private pensions (27%), and government employee pensions (14%).

Over 4.5 million (10%) of people 65 and older were below the poverty level in 2014 (Administration on Aging, 2016). 2.4 million older adults were classified as “near-poor” or with income between the poverty level and 125% of this level. About 2.8 million older non-Hispanic white adults were under the poverty line compared to 19.2% of older African Americans, 14.7% older Asians, and 18.1% older Hispanic adults. Poverty rates were higher for older adults inside principle cities (13.7%) and in the South (11.2%) in 2014. Older women had higher poverty rates than men (12.1% compared to 7.4%). Individuals living alone were more likely to be poor (17.3%) than those living with their families (6.5%). The highest poverty rates in 2014 were seen among older Hispanic women who lived alone (35.6%).

The aging population has wide-ranging implications for the United States especially the health care system. Many older adults have one or more chronic conditions. The most frequently cited chronic conditions between 2012-2014 include diagnosed arthritis (49%), all types of heart disease (30%), cancers (24%), diagnosed diabetes (21% between 2009 and 2012), and hypertension (71% between 2009 and 2012) (Administration on Aging, 2016). Between 2012 and 2014, 44% of noninstitutionalized older adults assessed their healthcare as very good

compared to the 55% of people between the ages of 45 and 64. There was little difference in assessment of healthcare between men and women but 27% of older African Americans (non-Hispanic), 28% older Native American/Alaska Natives, 34% older Asians, and 31% older Hispanics were less likely to rate their health as excellent or very good compared older non-Hispanic white (48%). In 2014 older adults paid an average of \$5,849 in out-of-pocket health care expenditures an increase of 50% since 2004. The general population spent considerably less in out-of-pocket expenses averaging \$4,290. Older adults spent 13.4% of their total expenditures on health while the rest of the population only spent 8%. The health care cost for older adults The average health costs incurred by older adults in 2014 consisted of \$3,951 (68%) for insurance, \$954 (16%) for medical services, 721 (12%) for drugs, and \$223 (4%) for medical supplies.

The changes in the demographics of older adults living in the United States will have consequences across multiple dimensions. One problem that has had little attention paid to it until the latter half of the twentieth century is elder abuse. Changes in demographics around the world are believed to predict an increase in the potential for elder abuse (Hurme, n.d.). The literature indicates that the shifting demographics in the United States are likely to affect elder abuse but few have gone into detail regarding what changes are expected. One study examining factors that make older adults vulnerable to exploitation or abuse found that the most vulnerable individuals are older, less educated, ethnic minorities, and often live in rural areas (Kim & Geistfeld, 2008). Demographic trends predict an increase in the number of older adults who are members of an ethnic minority, which may indicate an increased potential for abuse. Poor physical health and functional impairment have been found to be associated with a greater risk for abuse among older adults (National Center for Elder Abuse, n.d.-b). With many older adults

developing multiple comorbid conditions and rating their overall health as poor, this indicates another potential risk for abuse among the aging population. In the United States, the number of older adults is projected to increase. As the aging population increases, the problem of elder abuse is believed to increase as well (National Council on Aging, 2010). Adult Protective Services (APS) has found that reports of elder abuse have increased by 16% between 2000 and 2004. As the demographics of the aging population in the United States change, including the number of older adults, those belonging to ethnic minorities, those with poor health, as well as other demographics, it is likely that the rate of elder abuse will change as well. Experts indicate the need for interventions and resources for victims of elder abuse will increase due to these changes.

### **3.0 ELDER ABUSE**

Elder abuse is a human rights violation and a major public health problem (Yon, Mikton, Gassoumis, & Wilber, 2017). National data on the prevalence of elder abuse is limited to only a few studies that indicate approximately 10% of community-dwelling older adults in the United States are victims of some form of elder abuse each year (Rosay & Mulford, 2017). Victims of elder abuse are at risk for increased morbidity, mortality, institutionalization, and admission to the hospital. In the United States, community-dwelling older adults who experience abuse or neglect have approximately 200-400% greater odds of mortality compared to those who do not experience abuse or neglect (Reingle Gonzalez, Cannell, Jetelina, & Radpour, 2016). Elder abuse has also been found to have a negative effect on families and society (Yon et al., 2017). Although the economic cost of elder abuse has not been quantified, it has been estimated to cost over a billion dollars each year (Reingle Gonzalez et al., 2016).

Elder abuse is defined as the “intentional actions that cause harm or create a serious risk of harm (whether or not the harm is intended), to a vulnerable elder by a caregiver or other person who stands in a trust relationship to the elder, or failure by a caregiver to satisfy the elder’s basic needs or to protect the elder from harm.” (Lachs & Pillemer, 2004). This definition was created in a panel convened by the US National Academy of Sciences and encompasses two key ideas concerning elder abuse: the older adult has suffered injury, deprivation, or unnecessary

danger, and a specific individual or individuals are responsible for causing or failing to prevent it.

### **3.1 TYPES OF ELDER ABUSE**

The National Center on Elder Abuse distinguishes between seven different types of elder abuse (American Psychological Association, n.d.). Physical abuse is defined as the use of physical force that may result in bodily injury, physical pain, or impairment. Sexual abuse is defined as non-consensual sexual contact of any kind with an older adult. Emotional abuse is defined as the infliction of anguish, pain, or distress through verbal or non-verbal acts. Financial or material exploitation is defined as the illegal or improper use of an older adult's funds, property, or assets. Neglect is defined as the refusal, or failure, to fulfill any part of a person's obligations to an older adult. Self-neglect is defined as behaviors exhibited by an older adult that threaten their health and safety. Abandonment is defined as the desertion of an older adult by an individual who has physical custody of the older adult or who has assumed responsibility for providing care to the older adult.

The National Elder Mistreatment Study (NEMS) is one of the largest nationally representative elder abuse prevalence study (Rosay & Mulford, 2017). It found that out of 5,777 participants 11% reported experiencing at least one form of mistreatment, including physical, emotional, sexual or potential neglect, in the last year. In addition to this, 5% of the participants reported financial exploitation from a family member. Emotional and physical abuse were specifically reported at 4.6% and 1.6% respectively. Rosay and Mulford (2017) conducted a study to examine the national prevalence and correlates of elder physical and psychological

abuse using self-report data from 2,184 respondents 70 and older in the National Intimate Partner and Sexual Violence Survey (NISVS) from 2010. In this study physical abuse included physical violence and sexual violence. Psychological abuse included expressive aggression and coercive control. The study found that more than one in ten older adults (14% or 4.4 million), 70 or older, experienced some form of abuse in the past year. More than one in nine (12.1%) experienced psychological abuse with 5.6% experiencing expressive aggression and 9.1% experiencing coercive control. It was found that physical abuse was significantly less prevalent than psychological abuse ( $p < 0.05$ ) with 1.7% of older adults experiencing it within the last year with 1.1% experiencing physical violence and 0.7% experiencing sexual violence. The NISVS study found that 23% of elderly victims were assaulted by an intimate partner (22.2% of the victims from psychological abuse and 27.4% of the victims from physical abuse. The remaining victims (77%) were abused by non-intimate partners (77.7% of the victims were psychologically abused and 72.6% of the victims were physically abused).

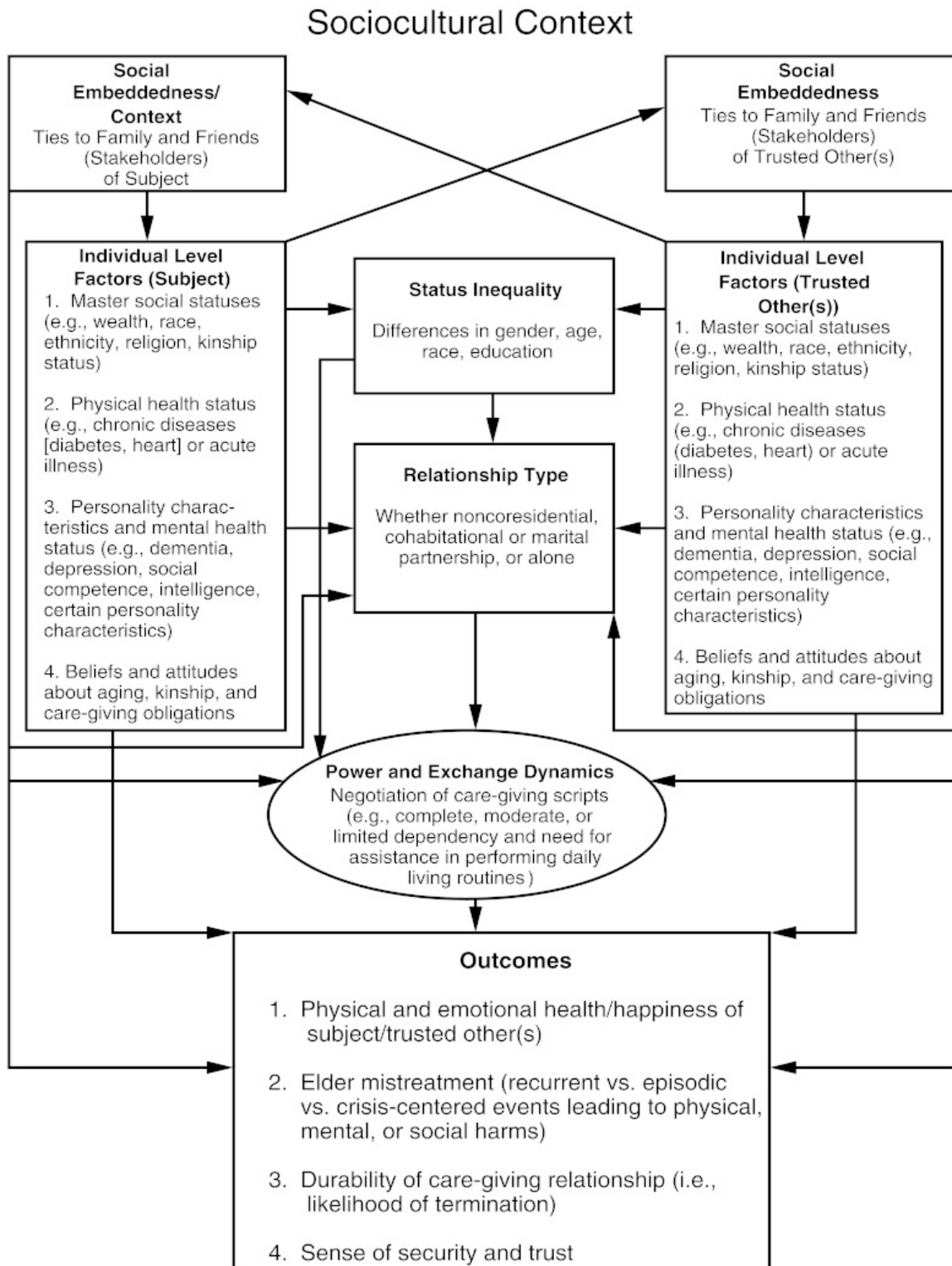
### **3.2 THEORETICAL MODEL FOR ELDER ABUSE**

Research on elder abuse lacks an overarching framework (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). A framework would serve as a guide for data collection efforts and permit a more effective assessment of the differential prevalence of elder abuse and mistreatment by significant social attributes and the causal sequences leading to enhanced risk of elder abuse or mistreatment. The National Resource Council Panel to review Risk and Prevalence of Elder Abuse and Neglect created a draft of a theoretical model for the study of elder abuse and mistreatment with the hope that it would assist

in codifying previous research findings and provide a framework within which to organize future studies. The model examines the

“transactional process unfolding over time among the elder person, his or her trusted other, and other interested parties (stakeholders) concerned with his or her well-being in the context of changes in the physical, psychological, and social circumstances of the several parties as the result of the elder person’s aging process and life course” (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003).

The authors go on to state that the model is embedded in an enviroing sociocultural context including the region of the country, the institutional or organizational locus, and race or ethnic group of the elder associated with different levels of risk for abuse and mistreatment. Using this model, the risk of elder abuse or mistreatment can be conceptualized as the varying likelihood of an event or a set of events causing harm to an elder. The risk is a function of various sets of variables outlined in the model (figure 5).



**Figure 5 Theoretical model for elder abuse and mistreatment (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003b).**



The left side of the model includes social, physical, and psychological attributes of the individual at risk of elder abuse and mistreatment (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). The right side of the model lists the pertinent attributes of the trusted individual who may become the perpetrator. The middle of the model represents the interactions between the possible victim and possible abuser that define the level of social or economic dependence, type of social relationship in which the interaction between the elder and the possible perpetrator happens, with differences in the normative expectations held by different stakeholders and the power dynamics in negotiating caregiving.

### **3.3 RISK FACTORS FOR ELDER ABUSE**

Answers to questions regarding why someone would abuse an elder or what puts someone at risk are difficult to find. Some of the difficulties that researchers face are methodological since obtaining information on this topic is difficult due to its hidden nature and its perception as shameful (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). Elder abuse and mistreatment is a complex issue that does not have a straightforward causation. For elder abuse, risk factors must be examined in the elderly person, the perpetrator of the abuse, and the environment.

#### **3.3.1 Limitations to previous research in elder abuse**

Previous research into the risk factors of elder abuse had multiple limitations (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). Many

early studies did not differentiate between the types of abuse being studied. This is a limitation due to the fact that it is likely that different forms of abuse possess different risk factors. Researchers did not use the same criteria to determine the population at risk. Some studies included individuals 60 or older, while others chose 65 or older as the age cutoff. Others have restricted studies to only include caregivers of older adults while other have included those sharing a residence with the elder. Some have included all categories of elderly people in their research. These differences make it difficult to compare results between studies. Previous research utilized different sampling methods, such as random sample surveys, interviews with patients in medical practices or caregivers in support groups, and review of agency records (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). Comparison between these different methods is difficult. Control groups were also not included in the design of studies regarding elder abuse. This makes assessing the validity of the associations between elder abuse and mistreatment and risk factors difficult. Even studies that did utilize a control group failed to ascertain that the controls were free of elder abuse or mistreatment. Many of the studies did not use reliable and valid measurements to find indicators of risk. Prospective studies on elder abuse are often not undertaken. Retrospective research designs introduce several forms of bias including recall bias and information bias. Many studies also fail to take into account the timing and duration of events and their progression over time. Due to these limitations it is difficult to create a clear framework of risk factors for elder abuse and mistreatment. However, there are a few studies that utilize acceptable research designs to find risk factors associated with elder abuse and mistreatment.

### **3.3.2 Risk factors validated by substantial evidence in the literature**

The living arrangement of an older adult has been found to be a risk factor for elder abuse (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). Research has found that a shared living situation is a major risk factor for elder mistreatment; older adults living alone are at the lowest risk. Shared living environments increase the opportunities for contact, conflict and mistreatment. It is also believed that situations which could be relieved by simply leaving the immediate vicinity can escalate into mistreatment when leaving is not an option. Further research examining the role of living arrangement and its relationship to the type of elder abuse needs to be done. For example, financial exploitation may occur even when the abuser and the victim do not share a living space.

Social isolation is an issue that affects older adults whether they are the victims of abuse or not. It is also a characteristic that has been found in families where other forms of domestic violence occur (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). Social isolation is believed to be a risk factor for elder abuse due to the belief that behaviors that are considered to be illegal, illegitimate, or are stigmatized tend to be hidden, therefore, it is hypothesized that it is easier to abuse a socially isolated older adult because there are fewer opportunities for detection. Older adults and families that are surrounded by strong social networks are believed to experience less instances of elder abuse. This belief has been supported in the literature. A prospective, community-based study of risk factors for elder abuse found that having a poor social network significantly increased the risk of mistreatment. Another study found that low levels of social support was associated with verbal and physical abuse by caregivers. Caregivers and care recipients who were more socially isolated were found in families where abuse occurred.

Dementia is another risk factor that has been examined and supported in the literature. Several studies estimating the prevalence rates of elder mistreatment in samples of dementia caregivers compared to rates in the general population found that between 5% and 14% of dementia caregivers reported committing physical abuse compared to the 1-3% in the general population (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). There is contradictory evidence that has found cognitive impairment and dementia are not associated with elder mistreatment. One explanation commonly cited in the literature is the fact that Alzheimer's caregiver's violence was strongly related to the experience of violence from the care recipient. It has also been found that behavior problems, which occur in Alzheimer's disease and other dementias, are related to both verbal and physical abuse. Due to this information some researchers believe that dementia might not be a risk factor for abuse, but that behavioral problems resulting from dementia are. This would explain previous findings showing associations between dementia and abuse as well as research finding disruptive behaviors due to Alzheimer's disease to be a strong cause of caregiver stress.

Several characteristics of abusers have been examined in association with elder abuse including mental illness, personality characteristics, and drug and alcohol abuse (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). It has been found that caregivers' mental health and behavioral problems are strong predictors of elder abuse. Several studies have found depression to be a characteristic of perpetrators of elder abuse and mistreatment. Studies looking at Alzheimer's caregivers found that abusive caregivers were more depressed than non-abusive caregivers (Homer & Gilleard, 1990). One study found that physical abusers scored significantly higher on a depression scale than perpetrators of neglect (Reay & Browne, 2001). Another study examining Alzheimer's caregivers found that

emotional and/or physically abusive caregivers scored higher on a hostility scale (Quayhagen et al., 1997).

Several more studies in the literature have suggested that alcohol abuse on the part of the perpetrator was relatively common in cases of elder mistreatment. One study reviewing 204 substantiated cases of elder abuse found 44% of the identified perpetrators had an alcohol or drug problem (Greenberg, McKibben, & Raymond, 1990). Multiple case-control studies have found perpetrators of elder mistreatment were disproportionately more likely to be identified as having an alcohol use problem (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). In a study funded by the National Institute on Aging, 23 adult children identified by agencies as perpetrators of domestic violence against an elderly parent were compared to 39 nonviolent caregiving children (Anetzberger, Korbin, & Austin, 1994). Alcohol use and abuse were more common among perpetrators of elder abuse than nonviolent caregivers; it was found that daily alcohol consumption was more than twice as likely to occur among perpetrators. Alcohol abuse was also more likely to occur in physical abuse cases, seven out of nine, compared to neglect cases (Reay & Browne, 2001).

Another factor of perpetrators of elder abuse and mistreatment is dependence on the abuse victim (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). A survey of community agencies in Massachusetts found a “web of mutual dependency” between abuser and abused (Wolf, Strugnell, & Godkin, 1982). Perpetrators reported being financially dependent on the victim in two-thirds of the cases. Previous studies, without control groups, found that a substantial percentage of abusers were financially dependent on their victims (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003).

### **3.3.3 Possible risk factors found in the literature**

Gender is thought to be a possible risk factor for elder abuse (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). Reports from Adult protective services and other agency samples find that the majority of victims are female. It is unclear whether this is due to higher risk for victimization or the fact that there tends to be a greater number of women in the older adult population. One survey suggested that this finding is due to the higher number of women in the older adult population (Pillemer & Finkelhor, 1988). In the study the victimization rate for men, 5.1%, was greater than that of women, 2.5%. The authors attributed the difference to the fact that elderly women are more likely to live alone, reducing their risk of victimization. However, it was found that women tended to sustain more serious abuse and to suffer greater physical and emotional harm from mistreatment. This was hypothesized to explain the greater representation of women in abuse reports.

Certain personality traits of elderly persons increased their risk of becoming a victim of abuse (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). In a community survey conducted in the Netherland, the relationship between hostility and coping style was examined in relation to being the victim of chronic verbal aggression, physical aggression, and financial mistreatment (Comijs, Pot, & Smit, 1998). Victims of chronic verbal aggression had lower scores on a locus of control scale and higher on one indicator of hostility than non-abused participants. Victims of chronic verbal aggression, physical aggression, and financial mistreatment were found to have higher levels of aggression measured by hostility scales and were found to be more likely to use passive and avoidant ways of coping, rather than active problem-solving strategies. The authors state that because the study used a cross-sectional design, it is impossible to determine whether the observed characteristics

were risk factors for or consequences of abuse, but the findings merit further research of personality factors in longitudinal studies.

One other possible risk factors of elder abuse include the relationship of the victim and perpetrator (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). Many have suggested adult children are the most likely perpetrators of elder abuse, however, a survey-based study looking into the relationship between victim and perpetrator found that spouses were more likely to be abusers (Pillemer & Finkelhor, 1988). Within the literature, there appears to be insufficient data to determine which specific relationship between victim and perpetrator is the greatest risk factor.

#### **3.3.4 Contested risk factors found in the literature**

One risk factor that is contested in the literature is the role of victim health and functional status (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). The authors state that some degree of physical vulnerability is a necessary component in the definition of elder abuse and mistreatment; mistreatment implies a weaker individual who is mistreated by a stronger one. The idea behind this risk factor is that greater impairment diminishes an individual's ability to defend themselves or to escape the situation. Because of this many find it reasonable to consider physical health problems as a risk factor for elder abuse and mistreatment that increases with presence of other risk factors. However, research has failed to fully support this view. Multiple case-control studies did not find a direct relationship between elder abuse and mistreatment and functional impairment and poor health. Research has not taken into account abuse type and its relationship to physical impairment. One study found that victims of elder neglect were more

likely to be impaired than victims of either physical or psychological abuse (Wolf & Pillemer, 1989). There still remains a lack of research to support the relationship between elder abuse and mistreatment and physical impairment.

Victim dependence and caregiver stress are other contested risk factors (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). The idea behind these risk factors is the “traditional” view that elderly people become frail, difficult to care for, and demanding. This causes stress for the caregivers and as a result, caregivers become abusive or negligent towards the elder. The authors state that this view indicates that elder abuse and mistreatment is seen as an outgrowth of the aging process. While much of the early research into elder abuse emphasized the dependence of elderly people and the resulting caregiver stress as either the predominant or sole cause of elder abuse, there is a lack of evidence to support this in the literature. It is clear from the gerontological and geriatric literature that there is a substantial number of elderly people who depend on relatives for some degree of care but findings about the prevalence of elder abuse and mistreatment indicate that only a small portion of the elderly are abused and mistreated. Because abuse only appears to occur in a small proportion of instances, no direct correlation can be assumed between dependence of an elder and abuse. Case-comparison studies have also been unable to find either higher rates of elder dependence or greater rates of caregiver stress in elder abuse situations. The only exception to this finding was a study examining callers of a help line which found that the callers who reported committing abuse had been providing care for a longer period of time, for more hours a day, and had higher burden scores than non-abusers (Coyne, Reichman, & Berbig, 1993).

Intergenerational transmission is contested within elder abuse research. Social learning theory hypothesizes that when individuals experience violent behaviors from parents or role



models during their childhood, they tend to revert to using these learned behaviors when provoked as adults (National Resource Council (US) Panel to Review Risk and Prevalence of Elder Abuse and Neglect, 2003). While evidence has been found indicating that experiencing violence from parents or witnessing violence between parents in childhood is strongly related to perpetrating child or intimate partner abuse, the same has not been found for elder abuse. Studies have not found any evidence to suggest that intergenerational transmission of physical violence against elderly relatives is a risk factor for elder abuse. The authors mention that the importance of childhood experience of aggression as a risk factor for other forms of interpersonal violence is worth further study. The association between early childhood experiences of perpetrators as risk factors for elder abuse and mistreatment other than physical abuse should be examined.

#### **4.0 MEDICAL PROFESSIONALS AND ELDER ABUSE**

Elder abuse is thought to be under-reported and strategies to enhance detection are needed to enhance detection are necessary to reduce the burden of abuse and neglect among older adults (Reingle Gonzalez et al., 2016). Mandatory reporting laws for health care professionals exist within 44 states and the District of Columbia (Schmeidel, Daly, Rosenbaum, Schmuck, & Jogerst, 2013). The American Medical Association has noted that physicians may be the only person outside of an older adults' family that they may see on a regular basis. Because of this, physicians are in a key position to report elder abuse. While this may make intuitive sense, many healthcare professionals have attested to viewing cases of suspected elder abuse and failing to report them. One study found that physicians only report 2% of suspected cases. The same study found that social workers and mental health professionals reported 25% of cases and nurses reported 26%, both professionals report a substantially larger number of cases than physicians.

Multiple barriers have been examined in the literature regarding issues of reporting. Community health care providers believe that reasons for lack of reporting include clinicians' reluctance to acknowledge abuse, lack of protocol to identify abuse, fear of liability and limited number of services available to implement for abuse. Studies have found that some of the reasons for lack of case detection decisions by healthcare professionals include a lack of knowledge about elder abuse, its prevalence, signs and symptoms, risk factors, and information about perpetrators. Another study stated that elder abuse cases went unreported due to a lack of

trust in the reporting system, difficulty in detecting abuse, and lack of time. Over 90% of emergency physicians have reported feeling that their state lacked the resources to meet the needs of the victims of elder abuse and mistreatment. Even though laws are in place that require reporting of abuse regardless of mitigating circumstances, most healthcare professionals consider the broader context of the patient before they make a decision to report. Some contextual factors include patient autonomy and rights, patient-physician confidentiality, quality of life, and future patient-healthcare professional relationship. A study found that many physicians report facing three key realities when making the decision to report: they worry about future physician patient rapport and trust, patient quality of life, and physician control.

A study done by Schmeidel and colleagues (2013) used a convenience and purposive sample of nurses, physicians and social workers to explore healthcare professionals' perspectives on elder abuse through in-depth interviews. The purpose of the study was to achieve a greater understanding of problems in detection and reporting elder abuse that can inform future ideas for improving the process. Each of the three types of healthcare professionals described elder abuse in different ways. Nurses tended to describe the abuse instead of labeling it, such as describing a patient with a suspicious injury instead of labeling physical abuse. Physicians were more likely to succinctly label abuse types, such as physical, emotional and financial abuse. All social workers participating in the study focused on self-neglect. Five major categories were found in the analysis of the data. This included professional orientation, assessment, interpretation, systems, and knowledge and education. The level of emphasis between the five categories varied between each of the health care professions that were interviewed.

Differences in professional orientation were observed (Schmeidel et al., 2013). Nurses, physicians and social workers each approached elder abuse in different ways due to the values

that they developed over years of practice in their respective fields. Nurses tended to express passion about caring for patients and preventing and detecting elder abuse. Many reported wanting to find other explanations besides elder abuse to explain why their patients were not doing well. Nurses stated that they felt uncomfortable asking about abuse. They said they were more task-oriented at getting things done quickly, such as taking vital signs and getting the medical record ready for the physician. Many nurses expressed looking to others to deal with abuse believing they would be more likely to see it than they would. It was believed that physicians and supervisors should be the ones dealing with suspected abuse and that they should direct any of their concerns to them. Most nurses believed they should rarely or never report directly to the state Department of Human Services, the regulatory agency for receiving reports of elder abuse. Nurses were unwilling to accuse people unless they had very strong suspicions, and stated they believed the investigation should be left to physicians or social workers.

Physicians stated that elder abuse was an important issue that they did not encounter enough in their practices (Schmeidel et al., 2013). The way physicians prioritize their time and attention was another barrier that created difficulty in detecting elder abuse. Physicians stated that they tended to prioritize conditions such as heart disease, high blood pressure or cancer that kill thousands of people a year instead of elder abuse which does not possess a reliable prevalence rate. Physicians also thought that other physicians or healthcare workers were more likely to see abused and neglected older adults than they were. If a physician did see what they suspected to be elder abuse or neglect, they wanted to let social workers investigate the problem and deal with it since they were deemed the “experts.” Physicians were also hesitant to upset patients by labeling something as abuse, were reluctant to be incorrect, and wanted to have “enough information” before reporting on their suspicions.

Social workers, for their part, were hesitant to discuss abuse with patients fearing they would alienate caregivers and patients or bring retaliation onto the patient (Schmeidel et al., 2013). Much like nurses and physicians, social workers felt they needed sufficient evidence before reporting suspected elder abuse or mistreatment for fear of identifying the wrong perpetrator and the need to have a strong enough case to be accepted. If they felt that there was not enough evidence to substantiate their suspicions, social workers would try to gather more information before making a report or choosing not to do so at all and attempting to improve the possible abusive situation themselves. Some social workers stated they would attempt to manage the situation themselves instead of referring the case to the state Department of Human Services if the negligent caregiver was amenable to additional services.

Assessment of elder abuse was a major barrier found in interviews across healthcare professions (Schmeidel et al., 2013). A lack of time was cited as a commonly mentioned problem. Nurses and physicians felt they had so many other tasks that needed their attention that there was not enough time to address elder abuse. Both healthcare professions stated that they had to prioritize what they could fit into the limited amount of time they had with each patient. Often abuse did not fall into this category. Physicians also stated that elder abuse is not something that can be easily and cleanly ameliorated. Physicians used the term “schedule buster” to describe elder abuse and stated that if they suspected a case, they did not have enough time to delve into the subject and gather enough evidence to support a report. All three healthcare professionals stated it was difficult to find a private place to ask the older adult questions. It is difficult to identify elder abuse since it is often well hidden. Several nurses pointed out that it is almost impossible to identify abuse in a single interaction unless the signs were obvious.

The interpretation and implementation of what constitutes elder abuse is difficult for many healthcare providers (Schmeidel et al., 2013). One social worker explained that there is not a universal agreement on what abuse and violence is. Many individuals tended not to draw on personal values when defining abuse but based their definition on what the system will accept and substantiate. Nurses site being concerned with discerning whether what they are observing constitutes as abuse or poor care decisions by caregivers. Healthcare providers tend to believe that the patient and their family need more resources instead of opening a case of elder abuse.

Two systems were discussed during interviews (Schmeidel et al., 2013). These included the internal system of the clinic or hospital and the external system of reporting to the state Department of Human Services. Most nurses seemed unaware of the exact protocols for reporting elder abuse in their clinic. Many were unaware of how to deal with the reporting system outside of their clinic or hospital. Nurses believed that physicians or social workers should take charge of reporting abuse cases. Physicians wished that the internal reporting system was easier to navigate and preferred to have a social worker take over and tell them how to proceed. Some physicians acknowledged that this wish to hand off responsibility is due in part to the lack of payment or compensation for the extensive time requirements necessary for reporting. Most of the knowledge that physicians possessed came from hear say stating that the external system of reporting with the state Department of Human Services was frustrating. Social workers were more likely to navigate both the internal and external reporting systems. Many social workers felt the need to do something more for the victim than report a case of abuse. Reports were often not substantiated even when social workers documented the occurrence of abuse or neglect. Some believe this is due to the fact that the law is unclear and lead to differences in interpretations between the social workers and the state Department of Human Services.

The study found that social workers were the most informed healthcare professional in terms of detection and reporting of elder abuse (Schmeidel et al., 2013). Nurses and physicians were not as comfortable as interviewed social workers in their knowledge of elder abuse. Most found the training that they received inadequate and unpractical for approaching an older adult they suspected was being abused. Many of the physicians wished for more case-based pragmatic training.

A study in the United Kingdom examined the barriers medical students face when making a diagnosis of elder abuse in simulated practice with the goal of refining teaching methods and informing future teaching sessions (Fisher, Rudd, Walker, & Stewart, 2016). Students were tasked with evaluating a simulated patient with dementia who had been admitted to the hospital from a community nursing care facility after being found on the floor. A clinical teacher controlled the simulation mannequin's physiological responses. Students were given a brief case vignette in the form of a referral letter. Photographs of suspicious injuries were given to students when they inspected relevant areas of the mannequin. These included widespread bruising across the chest, forearm cigarette burn, and a slap-mark on the buttock. In this simulation, the cognitive impairment of the patient meant that they could not remember the event.

Many students stated that they did not consider elder abuse as a possibility before participating in this simulation (Fisher et al., 2016). Many sought to generate explanations for the widespread bruising they found using a medical paradigm that was plausible given the available evidence. Students went on to state that they believed another professional would have identified the abuse and were surprised that the issue was not raised in the referral letter. Students reported feelings of intimidation and lack of confidence in their convictions. They were concerned that

making an accusation would require considerable evidence. Many students cited identification of the handprint as the turning point which led them to the recognition of elder abuse because they were unable to find alternative explanations for the pathognomonic sign. The vocabulary of elder abuse varied between students. Students were not certain whether they used the correct words to describe the abuse that they were seeing.

Emergency medical technicians (EMTs) are other healthcare professionals who may come in contact with elder abuse in their field. Older adults are four times more likely to use in-home emergency medical services than younger adults (Reingle Gonzalez et al., 2016). Because of this it is believed that EMTs are uniquely situated to identify potential abuse or neglectful situations. EMTs can identify indicators such as family interactions, home upkeep, medication availability, safety concerns, and sanitation. This type of information is not as easily accessible to other healthcare providers such as social workers and physicians. However, much like other healthcare professionals, EMTs face barriers to identifying and reporting elder abuse and neglect.

A study done by Reingle Gonzalez and colleagues (2016) examined the primary barriers to reporting suspected cases of elder abuse by conducting semi-structured focus groups with EMTs and Adult Protective Services (APS) caseworkers in North Texas. EMTs indicated five barriers in their ability to detect and/or report elder abuse or neglect. The first barrier they listed was that some older adults elected or preferred to live in environments that EMTs perceived as intrinsically neglectful. This reduced the EMTs confidence in making a decision to report suspected abuse or neglect. EMTs perceive the living conditions to be normal for the older adults and believe they might prefer to stay where they are than be placed in a nursing home. EMTs also must grapple with the moral burden of “wrecking someone’s life” based on “gut” instincts should they report a suspected case. Several EMTs suggested that training or the use of a



checklist to guide their reporting decision would help to alleviate some of the emotional burden they associated with reporting to Adult Protective Services (APS). Time restrictions were another barrier to reporting that EMTs cited. Due to the nature of their jobs, EMTs are dispatched immediately from one call to another and have little time to locate a phone and call APS with their suspicions and give a detailed report. Some EMTs stated that because of this time limit a situation needs to be pretty outstanding for it to be reported. The process of reporting to APS can be frustrating, time consuming, and burdensome. APS caseworkers noted that telephone conversations were difficult for EMTs due to the time restraints of their profession and systematic modifications to enhance communication between APS and EMTs were necessary. Many EMTs also mentioned having trouble with recall at the end of a 12-hour shift. It was difficult to remember sufficient information about a patient when they were finally able to find the time to call APS. The data given to APS may not be accurate and result in an unfounded investigation. Finally, the volume of patients seen by EMTs during a single shift inhibits their ability to contact and provide APS with sufficient details about suspected abuse or neglect. Many supported the use of an automated reporting program, such as a checklist or screening tool to assist them in reporting cases. Participants in the focus groups stated that this would increase their confidence in reporting potential cases of elder abuse and neglect.

There appear to be similar barriers to reporting elder abuse and neglect across healthcare professions. Interviews and focus groups of physicians, nurses, social workers, med students, and EMTs all indicate a lack of confidence in having substantial evidence to report a suspected case, lack of time to ascertain whether a patient is being abused or neglected, lack of time to report a suspected case due to the burdensome reporting process, and the need for training for medical professionals.

## **5.0 LAWS REGARDING ELDER ABUSE**

Recognition of elder abuse and neglect as a significant social and public health problem led to an array of legislative responses (Jogerst et al., 2003). Every state had instituted some form of adult protection program by 1985. As of 1993 all states enacted laws addressing elder abuse in domestic and institutional settings. There is a great deal of diversity in state laws regarding elder abuse. Some of the differences can be seen in the definitions of who is protected, who must report suspected abuse or neglect, what constitutes reportable behavior, requirements for investigations of reports, penalties, and guardianship.

### **5.1 NATIONAL LAWS**

There are several federal laws focusing on justice for older adults. The Older Americans Act (OAA) was originally enacted in 1965 to support a range of home and community-based services to help seniors stay as independent as possible in their homes and communities (National Council on Aging, 2016). The OAA authorizes the Administration on Aging Secretary to designate a person to have responsibility for elder abuse prevention and services such as development of objectives, priorities, and long-term plans for elder justice (Colello & Stoeso, 2010). The Administration on Aging Assistant Secretary is required to establish and operate the National Center on Elder Abuse through grants. The National Center on Elder Abuse is tasked

with compiling research and providing a clearinghouse for information on elder abuse, training materials and technical assistance to state agencies, and other organizations. Research is conducted by the National Center on Elder Abuse. Under the OAA support is given to states for elder abuse prevention activities as well as research, data collection, and information dissemination related to elder abuse. Multiple other pieces of legislation that deal with the prevention and authorization of services are funded under the OAA.

Another piece of legislation put into place specifically for prevention of elder abuse was the Elder Justice Act. It was enacted as part of the Patient Protection and Affordable Care Act (PPACA) on March 23, 2010 (National Center for Elder Abuse, n.d.-a). The Elder Justice Act was the first piece of federal legislation that authorized a specific source of federal funds to address elder abuse, neglect and exploitation. The Elder Justice Act establishes national leadership in the Office of the Secretary of Health and Human Services in the form of an Elder Justice Coordinating Counsel and Advisory Board, authorizes grants to support improvements in Adult Protective Services and Long-Term Care Ombudsman programs, and state survey agencies for Medicare and Medicaid-certified long-term care facilities, authorizes grants for training for APS, Ombudsman, federal and state surveyors of nursing homes, authorizes grants for forensic centers to develop expertise on elder abuse, neglect and exploitation, and enhances long-term care staffing, data exchange in facilities, mandatory reporting of crimes against older adults living in federally-funded facilities, promulgation of guidelines to assist researchers, and authorizes a study on a national nurse aid registry (National Center for Elder Abuse, n.d.-a).

## 5.2 PENNSYLVANIA LAWS

Each state has its own laws pertaining to elder abuse and neglect. In Pennsylvania, Chapter 15. Protective Services for Older Adults governs the administration and provision of older adult protective services, mandatory reporting of abuse of recipients of care and required criminal history information for applicants, employees and administrators of facilities ("Chapter 15. Protective Services for Older Adults," n.d.). As previously stated, there are often varying definitions for elder abuse and neglect. In Pennsylvania, abuse is defined as the occurrence of one or more of the following: the infliction of injury, unreasonable confinement, intimidations or punishment with resulting physical harm, pain or mental anguish, the willful deprivation by a caretaker of goods or services which are necessary to maintain physical or mental health, sexual harassment, rape or abuse, as defined in 23 Pa.C.S. Chapter 61. Exploitation is defined as an act or course of conduct by a caregiver or other person against an older adult or their resources, without the informed consent of the older adult or with consent obtained through misrepresentation, coercion or threats of force, that results in monetary, personal or other benefit, gain or profit to the perpetrator or monetary or personal loss to the older adult. Neglect is the failure to provide for oneself or the failure of a caregiver to provide goods or services essential for an older adult to avoid serious threats to physical or mental health. The state makes a point of clarifying that an older adult will not be found to be abused based solely on the grounds of environmental factors which are beyond the control of the older adult or caretaker, such as inadequate housing, furnishings, income, clothing or medical care.

## **6.0 OLDER ADULT PROTECTIVE SERVICES**

Legislation in Pennsylvania focuses on protective services. The Pennsylvania Department of Aging is responsible for the oversight and implementation of the Older Adults Protective Services Act (OAPSA) (Pennsylvania Department of Aging, 2017c). The definition of an older adult in need of protective services under OAPSA is “an incapacitated person in the commonwealth over the age of 60 who is unable to obtain or perform services necessary to maintain physical or mental health, for whom there is no responsible caretaker and who is at imminent risk of danger to his person or property.” (“The Older Adult Protective Services Annual Report,” n.d.). Under OAPSA, providers are tasked with providing access to services necessary to protect the health, safety and welfare of older adults in Pennsylvania who lack the capacity to protect themselves and are at imminent risk of abuse, neglect, exploitation and abandonment, safeguard older adults’ rights while providing necessary protective services, provide for detection, reduction, correction or elimination of abuse, neglect, exploitation and abandonment, establish a program of protective services for older adults and educate the public about the availability of services and create awareness of the problem of elder abuse. Funding for Older Adult Protective Services is the responsibility of the commonwealth of Pennsylvania and its counties (“Unconsolidated Pennsylvania Statutes Health and Safety (Title 35),” n.d.)

Mandatory abuse reporting is required under the 1997 amendment to OAPSA (Pennsylvania Department of Aging, 2017c). Employees and administrators of a facility who

suspect abuse is mandated to report it. All reports should be sent to the local Area Agency on Aging and licensing agencies (Pennsylvania Department of Aging, 2017b). An employee or administrator who has suspects elder abuse with reasonable cause must immediately make an oral report to their employer or the agency("Unconsolidated Pennsylvania Statutes Health and Safety (Title 35)," n.d.). Within 48 hours of making an oral report, the employer or agency must make a written report to the local Area Agency on Aging. The Area Agency on Aging will notify the administrator that a report has been received. The employee may request that the administrator make or assist them in making the required oral and written reports. Additional reporting to the Department of Aging and local law enforcement is required if the suspected abuse is sexual abuse, has caused serious physical injury, serious bodily injury, or suspicious death(Pennsylvania Department of Aging, 2017b). Employees or administrators must contact law enforcement officials to make another oral report before contacting the local Area Agency on Aging ("Unconsolidated Pennsylvania Statutes Health and Safety (Title 35)," n.d.). The process of reporting to police is similar to that of the Area Agency on Aging. A written report must be made within 48 hours of the oral report. Employees may ask for administrators to make or assist them in making the oral and written reports. Law enforcement must notify the administrator that a report has been made. Certain facilities require their employees and administrators to mandatorily report suspected cases of abuse. These include adult daily living centers, personal care homes, assisted living residences, birth centers, community homes for individuals with mental retardation, community residential rehabilitation services, Department of Public Welfare (DPW) nursing facilities, DPW-licensed and DPW operated residential facilities, domiciliary care homes, family living homes, home care registry, home health care organizations or agencies, hospices, intermediate care facilities for the mentally retarded (private and state), long

term care nursing facilities, long term structured residences, personal care homes and state mental hospitals(Pennsylvania Department of Aging, 2017b).

Specific facilities also require applicants for employment to submit criminal history record information under OAPSA (Pennsylvania Department of Aging, 2017a). Before applying for a position, applicants must obtain a criminal history record check from the Pennsylvania State Police. If the applicant has not been a resident of the Commonwealth of Pennsylvania for two consecutive years before applying or currently lives out of state, they will also need to obtain a Federal Criminal History Record Check.

## **7.0 INDIVIDUAL RISK FACTORS MAPPED ACROSS COMMUNITIES**

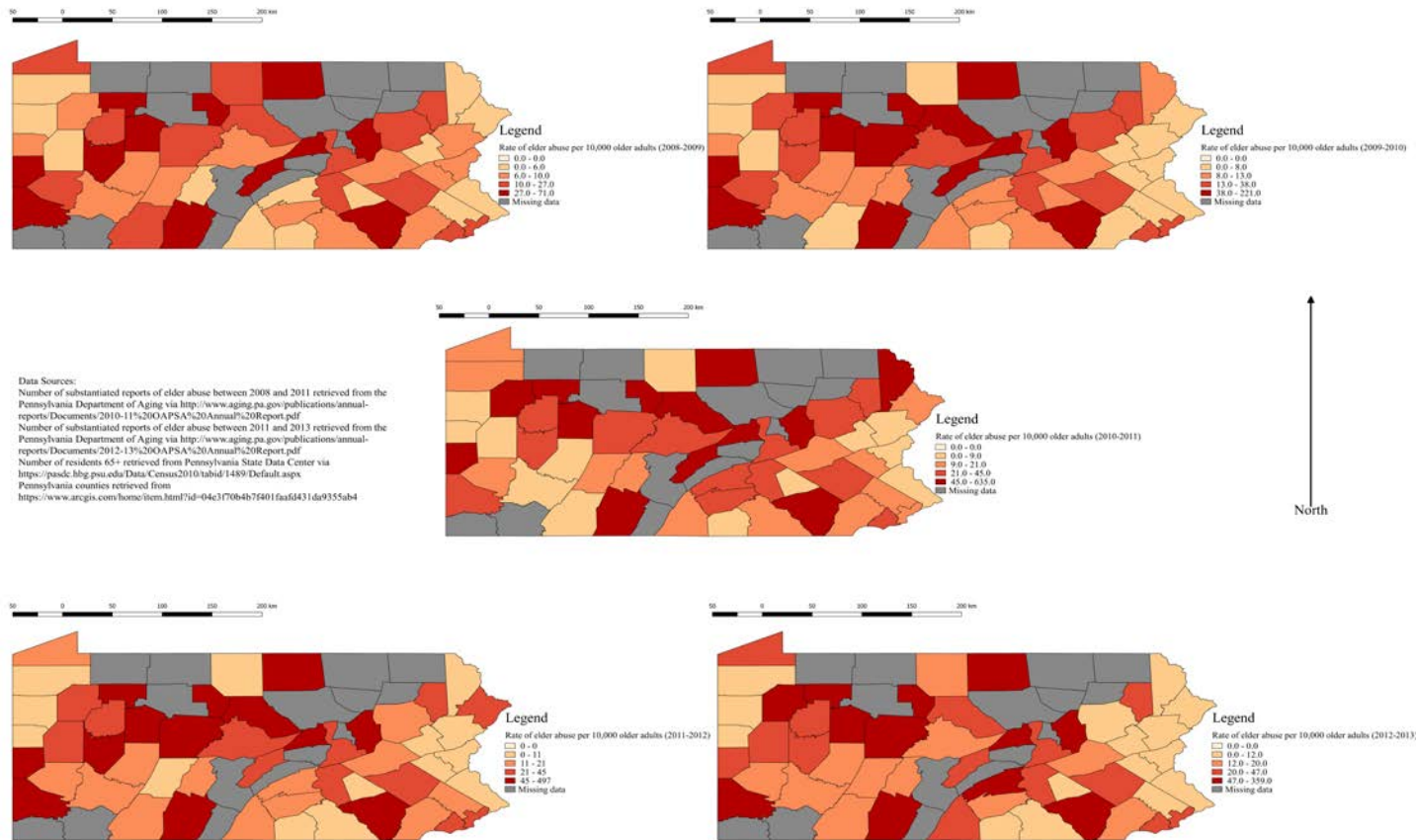
Elder abuse is multifaceted and complex. With the projected increase in the number of older adults in the United States the possible increase in elder abuse victims is a public health problem. Increases in elder abuse and mistreatment leads to increased costs for both individuals and communities (Conrad, Liu, & Iris, 2016). Many cases of elder abuse and mistreatment go unreported due to multiple barriers. Finding effective ways in detecting and preventing elder abuse is a public health issue. Information regarding elder abuse is only presented at an individual level and information regarding its effect on communities is not available.

The commonwealth of Pennsylvania and individual counties are responsible for funding, detection and services for victims of elder abuse. A report given by Adults Protective Services found that the total number of cases received, investigated and substantiated have been increasing over the past several years in the state of Pennsylvania (Pennsylvania Department of Aging, n.d.). This increase has been attributed to an increase in training, enhanced collaboration with other state agencies and community partners, improvements in data collection methods, and through the Pennsylvania Department of Aging's monitoring of local protective services programs. Mapping of the rate of elder abuse, calculated as the number of substantiated reports per 10,000 older adults, using QGIS software shows the changes that occurred over a five year period (figure 6).



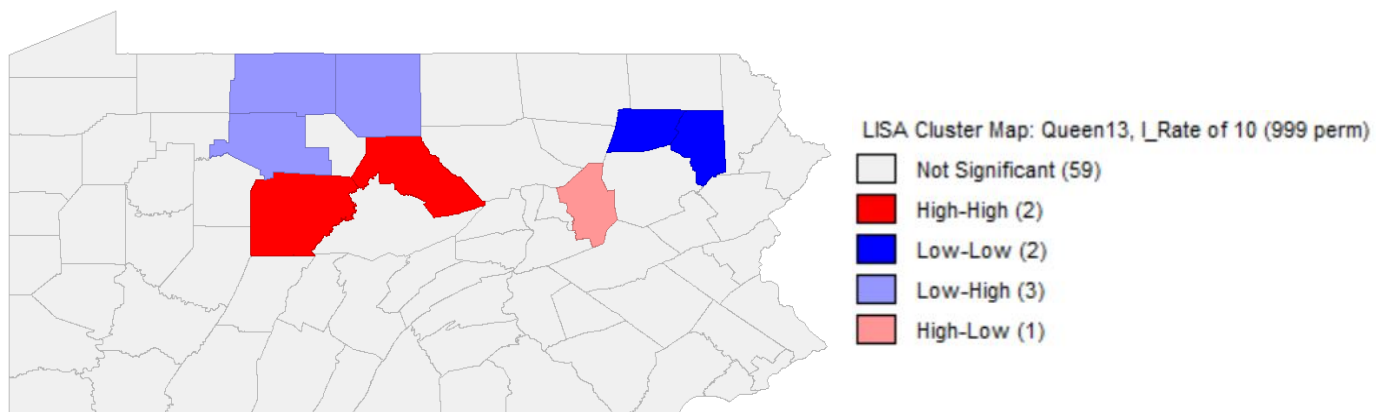
## Rate of elder abuse per 10,000 older adults in Pennsylvania Counties between 2008 and 2013

map created by Abigail Baines



**Figure 6 Rate of elder abuse across Pennsylvania counties between 2008 and 2013.**

A Moran's I test was done to inform us about the nature of the general geographic distribution of the rate of substantiated elder abuse. A value close to  $\pm 1$  indicates a greater correlation between a location and its neighbors. The Moran's I value for the rate of elder abuse was -0.0295085 which is close to zero indicating little correlation between a location and its neighbors. The calculated pseudo p-value was 0.452000, which is not statistically significant. Both the Moran's I value and pseudo p-value indicate that there is little correlation between a location and its neighbor in regards to the rate of elder abuse. A Local Indicators of Spatial Autocorrelation (LISA) was done to assess whether there were clusters of areas in the state of Pennsylvania with either high or low rates of elder abuse using GeoDa software (figure 7).



**Figure 7 LISA map indicating clusters of high and low rates of elder abuse across Pennsylvania counties**

The map indicates that two counties, Clearfield and Clinton, have high rates of elder abuse with neighboring counties also possessing high rates of elder abuse. Two counties, Wyoming and Lackawanna, have low rates of elder abuse with neighboring counties also possessing low rates. Three counties, Elk, Mckean and Potter, all possess low rates of elder abuse but have

neighboring counties with high rates of elder abuse. Columbia County is the only county with a high rate of elder abuse with neighboring counties that possess a low rate of elder abuse. The rest of the counties show no significance in the clustering of the rates of elder abuse.

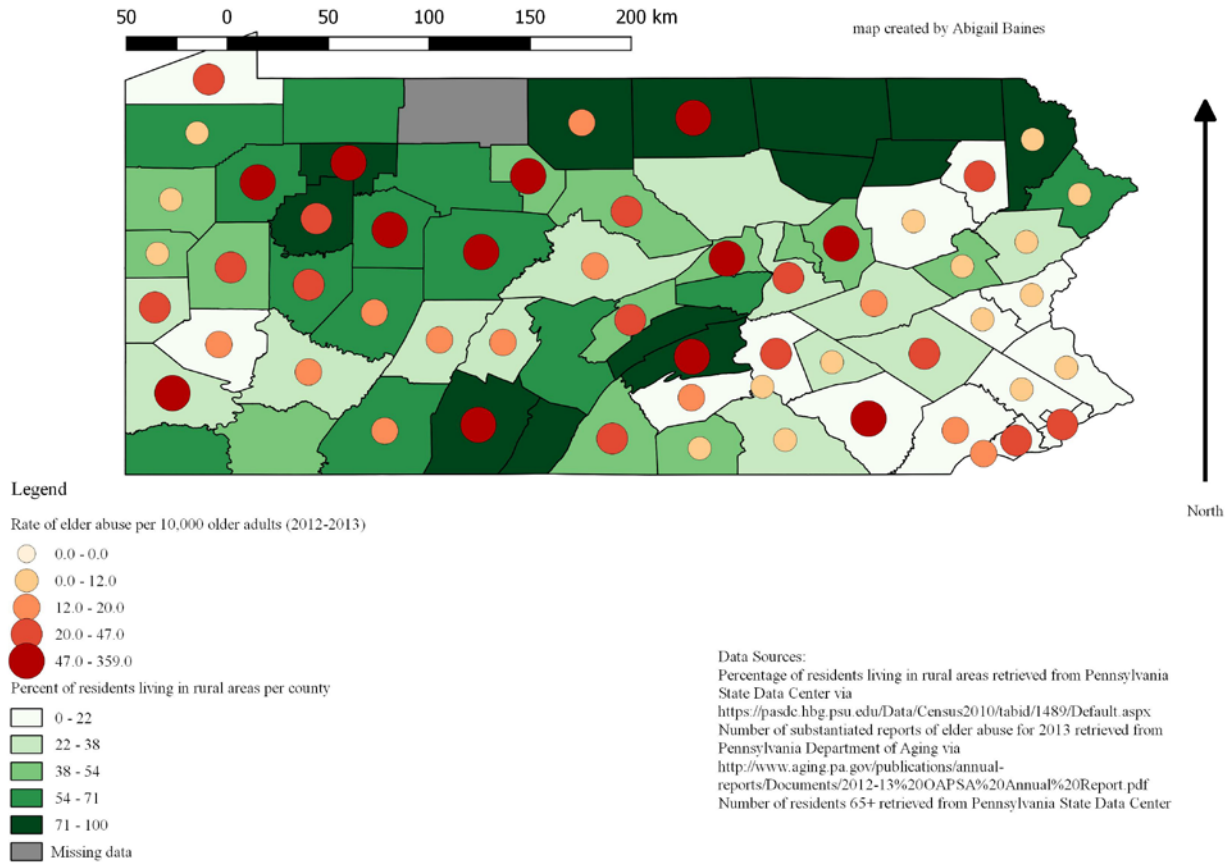
The LISA map indicates that there are a few counties in the state of Pennsylvania where different rates of elder abuse cluster together. Information regarding what areas of the state have a higher burden due to elder abuse and what factors might cause this would assist in both creating prevention measures and deciding where funds would best be utilized. Utilizing QGIS software information regarding three individual-level risk factors for elder abuse were mapped across Pennsylvania counties and compared to the latest rate of elder abuse using substantiated reports from the Pennsylvania Department of Aging. Elder abuse rate was calculated by dividing the number of substantiated reports in each county for the year of 2013 by the number of older adults, age 65 and older, living in the county according to the 2010 U.S. Census. A rate of elder abuse per 10,000 older adults was calculated using this number. GeoDa software was used to examine basic spatial autocorrelation between the individual risk factors and elder abuse rates.

## **7.1 ELDER ABUSE AMONG RURAL RESIDENTS OF PENNSYLVANIA**

Studies regarding differences in elder abuse between rural and urban areas have taken place outside of the United States. A comparative study looking at the perceptions of abuse and social neglect among rural and urban older adults in India found that perceived psychological abuse (59%) and social neglect (59%), financial abuse (25%) and physical abuse (25%) were more common among elderly residents residing in rural areas (Kaur, Kaur, & Sujata, 2015). A study examining elder abuse in rural Australia listed the fact that non-metropolitan areas may be

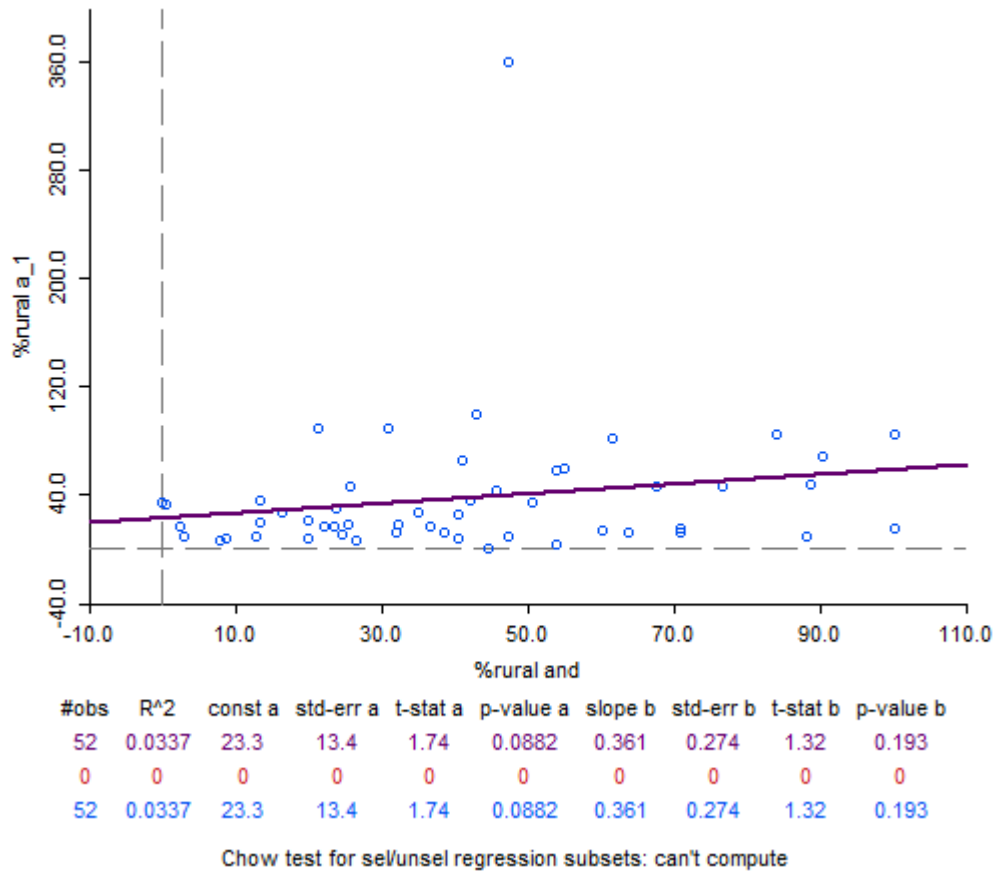
geographically isolated and have limited services as reasons for differences in elder abuse detection (Cupitt, 1997). One study in the United States found that older adults that live in rural areas are more vulnerable to exploitation and abuse (Kim & Geistfeld, 2008). Pennsylvania has a population density of 284 persons per square mile (The Center for Rural Pennsylvania, n.d.). Pennsylvania has 48 rural counties and 19 urban counties. Differences between rural and urban areas in Pennsylvania in regards to elder abuse would be useful to help decide where funding or improvement in services are needed. Mapping percentage of rural residents and the rate of elder abuse across counties does not visually yield any hints into whether rural areas in Pennsylvania have greater incidences of elder abuse due to geographic isolation and limited services (Figure 8).

Percentage of Residents Living in Rural Areas Compared to the Rate of Elder Abuse per 10,000 Older Adults (2012-2013) in Pennsylvania Counties



**Figure 8 Comparison of the rate of elder abuse and the percentage of residents living in rural areas in Pennsylvania counties**

Spatial analysis examining the relationship between the percentage of residents living in rural areas and rate of elder abuse similarly does not show a relationship between rural geography and incidence of elder abuse (figure 9).



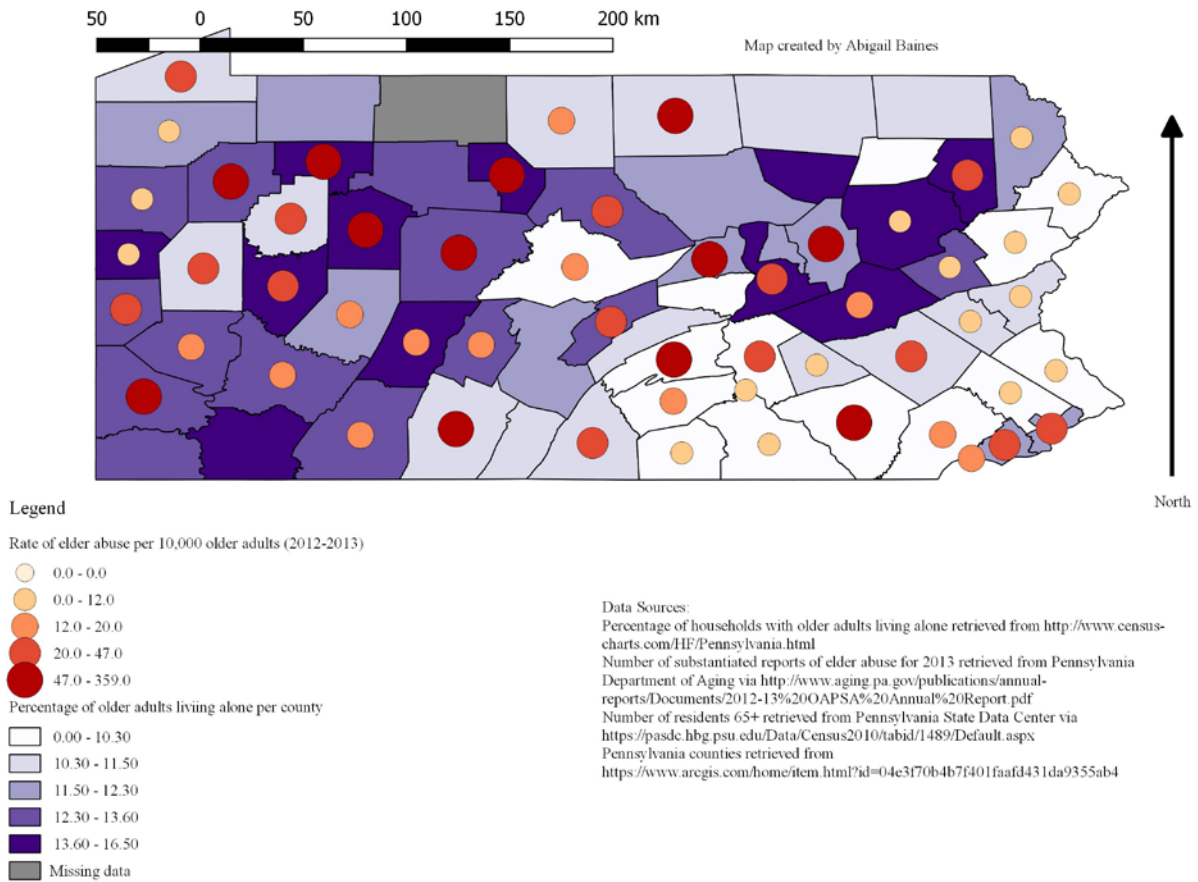
**Figure 9 Spatial autocorrelation between rate of elder abuse and percentage of residents living in rural areas in Pennsylvania counties**

The slope of the graph is small, 0.361, and not statistically significant (p-value=0.193) indicating little change in the rate of elder abuse as the percentage of residents living in rural areas increases.

## **7.2 ELDER ABUSE AMONG SOCIALLY ISOLATED OLDER ADULTS IN PENNSYLVANIA**

Multiple studies have suggested that social isolation and a lack of social support are important risk factors for elder abuse (Lachs & Pellimer, 2015). Victims of elder abuse are more likely to be isolated from friends and family than those who are not abused. Some believe that there is a causal link between living alone, being socially isolated and feeling lonely (Klinenberg, 2016). In Pennsylvania, the 2000 census indicated the percentage of households headed by residents 65 and older living alone. Findings suggesting that social isolation, measured as the number of older adults living alone, has a relationship with incidence of elder abuse in Pennsylvania would be useful for funders to identify which areas in the state have a higher number of isolated older adults and where efforts can be made to increase knowledge of the issue, such educating the public on the risk that is present in their community, and allot appropriate funds. Mapping the percentage of residents headed by older adults living alone and the rate of elder abuse does not visually indicate a relationship between the two variables (figure 10).

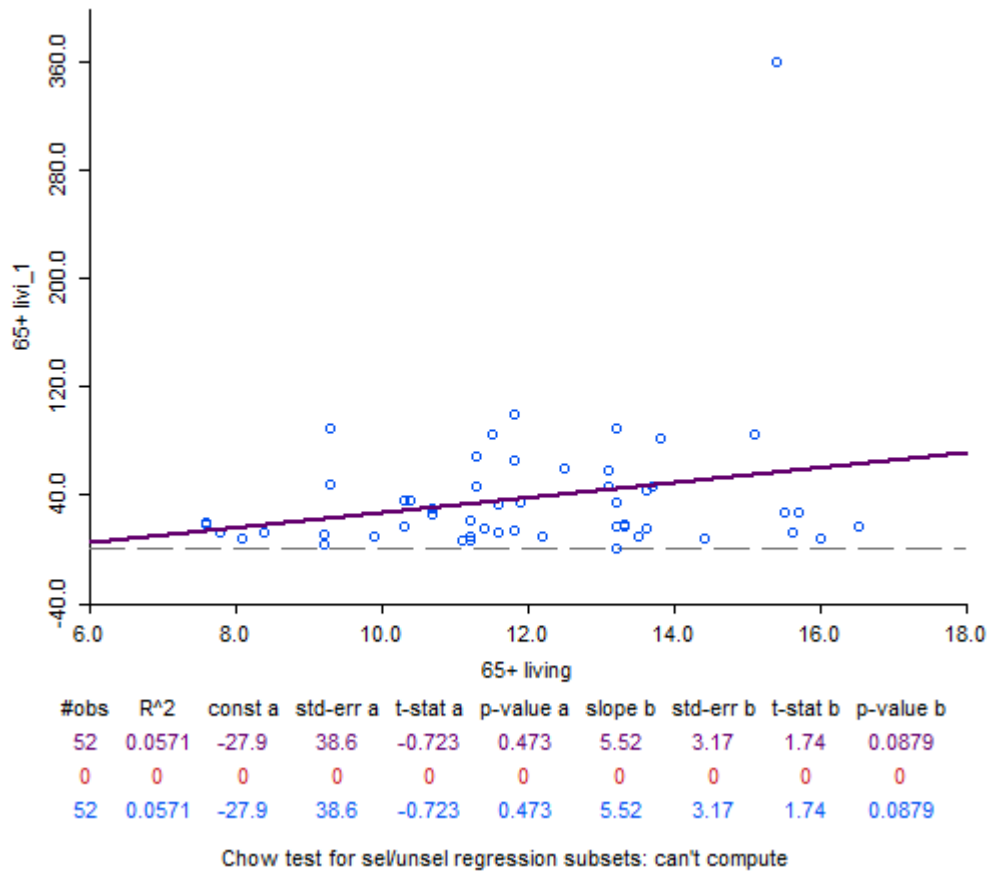
Percentage of Older Adults Living Alone Compared to the Rate of Elder Abuse per 10,000 Older Adults (2012-2013) in Pennsylvania Counties



**Figure 10 Comparison of the rate of elder abuse and the percentage of older adults living alone in Pennsylvania counties**

Spatial analysis examining the relationship between the percentage of households headed by older adults living alone and the rate of elder abuse does not indicate a relationship between the two variables (figure 11).





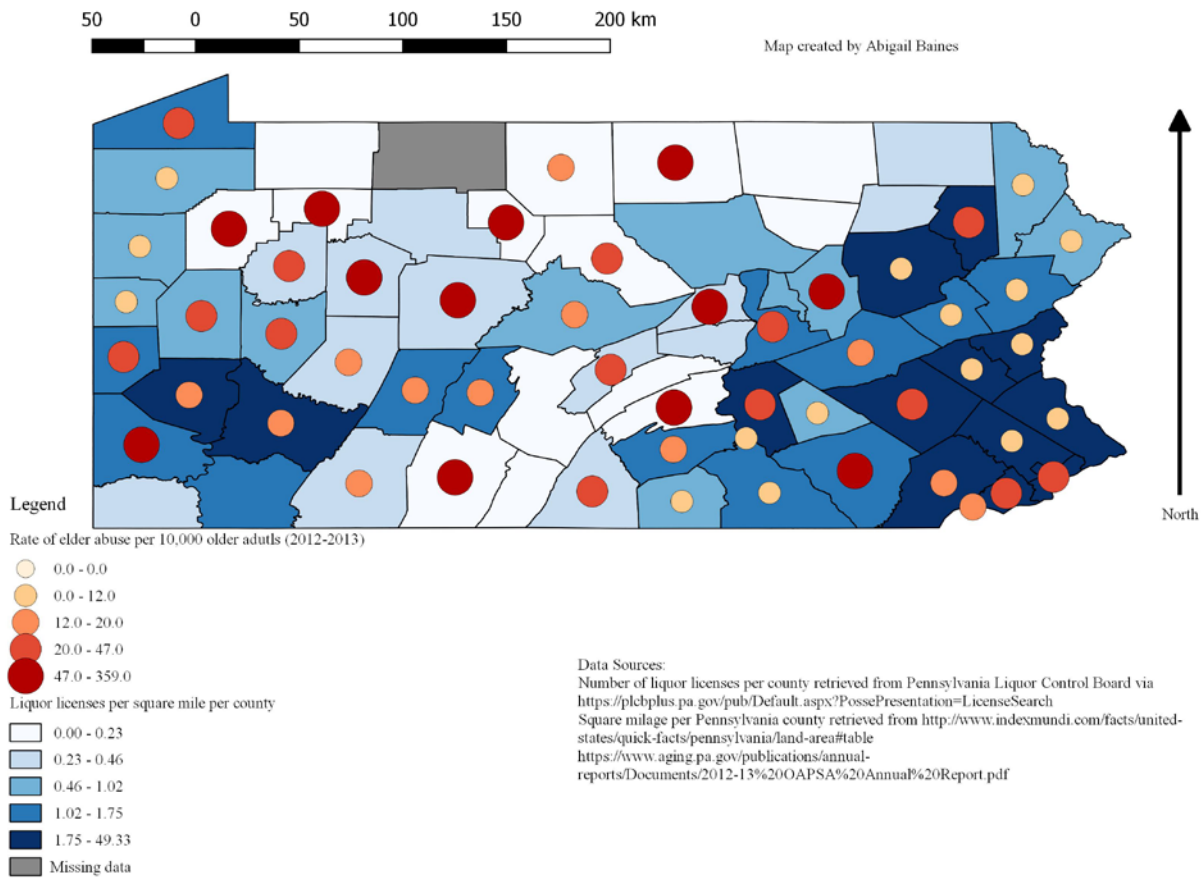
**Figure 11 Spatial autocorrelation between the rate of elder abuse and the percentage of older adults living alone in Pennsylvania counties**

While the slope of the graph is 5.52 is greater than that for percentage of residents living in rural areas, it is still not statistically significant (p-value=0.0879) indicating that as the number of households headed by older adults living alone increases there is little to no change in the incidence of elder abuse across counties.

### **7.3 ELDER ABUSE AND ALCOHOL CONSUMPTION OF PERPETRATORS IN PENNSYLVANIA**

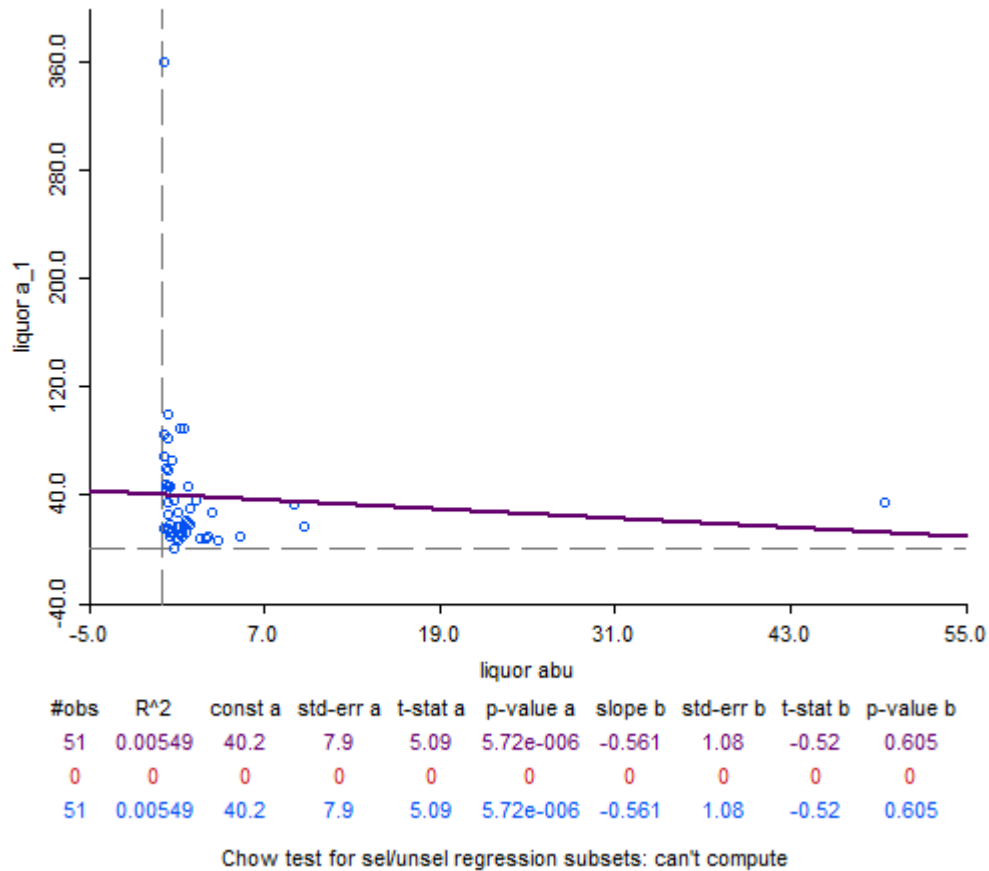
Substance abuse by perpetrators has long been identified as a risk factor for elder abuse (Conrad et al., 2016). Alcohol misuse by perpetrators of elder abuse appears to be a significant risk factor (Lachs & Pellimer, 2015). Many studies have found indication that alcohol operates as a situational factor, increasing the likelihood of violence by reducing inhibitions, clouding judgment, and impairing an individuals' ability to interpret cues (Rusac, 2015). A study examining the association between access to alcohol outlets, alcohol consumption and mental health found marginal support (p-value=0.054) for an association between the number of standard drinks of alcohol consumed per day and the number of liquor stores within the service area (Pereira, Wood, Foster, & Hagggar, 2013). A stronger association (p-value=0.006) was found for harmful consumption of alcohol in the past four weeks, with harmful alcohol consumption increasing by 6% for every additional liquor store within the 1600-meter neighborhood. Information regarding the number of liquor licenses given per county was divided by the square mileage of the county to find the density of liquor licenses per square mile. Information regarding whether a large density of liquor licenses is associated with higher rates of elder abuse would be useful for funders and local Area Agencies on Aging for preventive and educational services. Mapping the density of liquor licenses (alcohol outlets) and the rate of elder abuse did not yield a visual representation of a relationship between the two variables (figure 12).

Liquor Licenses per Square Mile Compared to Rate of Elder Abuse per 10,000 Older Adults (2012-2013) in Pennsylvania Counties



**Figure 12 Comparison between the rate of elder abuse and the number of liquor licenses in Pennsylvania counties**

Spatial analysis examining the relationship between the density of liquor licenses and the rate of elder abuse did not indicate a relationship between the two variables (figure 13).



**Figure 13 Spatial Autocorrelation between the rate of elder abuse and the number of liquor licenses in Pennsylvania counties**

The slope of the graph was -0.561 and is not statistically significant (p-value=0.605). The density of liquor licenses per county, used to indicate the alcohol outlets and consumption, does not appear to have a relationship with the rate of elder abuse.

## 8.0 DISCUSSION

Risk factors of elder abuse do not translate across Pennsylvania counties. There are multiple reasons why this might be the case. First, the available data regarding elder abuse numbers in the state of Pennsylvania was provided for 52 out of 67 counties. This is a very small sample size and was likely not enough data to find any significant relationship between the rate of elder abuse and the three risk factors. Second, the literature only cites individual risk factors. These factors might not translate onto a county wide scale. Third, elder abuse is complex issue. Only one risk factor is unlikely to contribute to elder abuse. It is likely that the different risk factors thought to contribute to elder abuse interact with one another to result in victimization. Fourth, the variables used may not indicate the risk factor being examined. The measure used for social isolation, percent of households headed by older adults living alone, has been contested in the literature. While it is reasonable to believe that living alone is an appropriate proxy for measuring social isolation, recent studies have suggested that living alone is not necessarily indicative of social isolation (Perissinotto & Covinsky, 2014).

The data for rate of elder abuse was calculated using the number of substantiated reports of elder abuse between 2012 and 2013 from the Pennsylvania Department of Aging. Because elder abuse is underreported, it is possible that the data used in this study do not truly indicate the prevalence of elder abuse across the state of Pennsylvania and another variable might have been better at accessing geospatial patterns of abuse compared to individual risk factors across

counties. For example, Emergency Department reports could be used to examine elder abuse across the state of Pennsylvania. Emergency departments are important locations in identifying elder abuse since victims are likely to utilize their services and it is also likely one of the few places where abused older adults might interact with people. A study examining the injury patterns and physical findings for elder abuse victims in emergency department visits found that bruising in the upper extremities likely due to grabbing during physical altercations, injuries on the face and neck, and an initial report of the victim “falling” were found to be associated with elder abuse (Rosen et al., 2016). This study furthers knowledge regarding the identification of elder abuse in emergency room departments, however, the use of this information will only help researchers learn about physical abuse associated with elder abuse. Other forms of elder abuse including emotional, financial, neglect, self-neglect and abandonment cannot easily be examined using emergency department data and would need to be identified from other sources.

## **9.0 FUTURE RESEARCH**

There are many gaps in the literature that need to be addressed in the future to gain a better understanding of elder abuse. As previously stated, research into elder abuse is limited due to the use of different sampling methods which make comparison between studies difficult. Methods for screening elder abuse in community dwelling older adults include random sample surveys of victims, targeted surveys of victims, targeted surveys of caregivers, direct perpetrator surveys, health care screenings from physicians, emergency departments, and hospitals, community “sentinels”, social service providers, forensic analysis, and APS/official reports (McMullen, Schwartz, Yaffe, & Beach, 2014). Control groups are often not used in research which calls the findings into question since there is no group to act as a baseline for comparison. Future research needs to use comparable measures across multiple communities to gain a better understanding of elder abuse across the United States.

Another problem within the existing literature of elder abuse is the lack of consistent use of reliable and valid measurements. Elder abuse is often a hidden problem and it is difficult to identify its risk or occurrence. Indexes for elder abuse are available for use but are mostly tailored for physicians and are not often used in research settings. The Elder Abuse Suspicion Index (EASI) was created and validated for family physicians to identify elder abuse (McMullen et al., 2014). The EASI has shown constant validity in seven diverse countries and has eight versions in English, French, German, Hebrew, Italian, Japanese, Portuguese and Spanish. Even

though this tool has been found to be valid across multiple settings, there is no data examining the use of the tool by professionals. Health care professionals approach elder abuse differently and studies need to be done to explore the use of EASI in different groups of health care professionals (McMullen et al., 2014). Another issue with this validated measure is the fact that it is meant for physicians, not researchers. Future research needs to be done examining a validated measure of elder abuse identification that researchers can use.

While there are indexes to identify the presence of elder abuse, there is little information regarding indexes to identify the risk of elder abuse across populations. A population-based study in Chicago examining a vulnerability index for elder abuse has been found to have some value (Dong & Simon, 2014). Information from a subset of participants in the Chicago Health and Aging Project (CHAP), a community-based study of risk factors for Alzheimer's disease, who were reported to social services agencies for elder abuse was used. The vulnerability index created by researchers used multiple measures to assess elder abuse. Demographic variables included age, sex, race, and income. Self-reported medical conditions were gathered including information on hypertension, diabetes mellitus, stroke, coronary artery disease, hip fracture, and cancer all of which have been associated with an increased risk for elder abuse. The CHAP study had information regarding cognitive functioning using the Mini-Mental State Examination (MMSE), the East Boston Memory Test and the Symbol Digit Modalities Test. Physical function for the CHAP study was measured using the Katz Index of Activities of Daily Living and an index of mobility based off of previous work done by Rosow and Breslau. Psychosocial factors were measured using a modified version of the Center for Epidemiological Studies of Depression Scale (CES-D) to measure depression. Social networks were measured by summarizing the total number of children, relatives, and friends participants saw on a monthly basis. Multivariable



logistic regression models were used to examine the relationship between the 9-item vulnerability index and substantiated reports of elder abuse in participants. Researchers found that for every one-point increase in the vulnerability index, there was a two-fold increase in the risk for both reported and confirmed elder abuse (OR, 2.19 (2.00-2.40) and OR, 2.28 (2.01-2.57) respectively). As the number of risk factors indexes increased, the risk of elder abuse increased as well. A Receiver Operating Characteristics (ROC) curve was used to test the accuracy of the vulnerability index. The area under the ROC model for reported elder abuse was 0.77. The areas under the ROC curves for each individual vulnerability factor item defined categorically and continuously were 0.79 and 0.84 respectively. The index used in this study was found to be accurate in identifying the occurrence of elder abuse. The authors point out the possible use of this index in future prevention and intervention strategies to identify high-risk older adults who may be at a greater risk of victimization. While this tool is used to identify vulnerable older adults not screen for the presence of elder abuse, this information may be useful for health care providers to screen for potential abuse victims and help in the creation of interventions to prevent adverse health outcomes. This index will need to be tested in other communities to see if its application is possible across different circumstances.

For future intervention and prevention efforts to be effective against elder abuse, greater information needs to be gathered regarding the topic. Elder abuse is still underreported and longitudinal data is difficult to find. Research examining the prevalence of elder abuse as well as the differences between cultural, demographic and abuse types is needed to gain a better understanding of the ways in which older adults can be affected by elder abuse. Validated screening tools and indexes are also necessary to expand knowledge in the field of elder abuse.

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