TREND ANALYSIS OF COUNTY CORONER’S DATA ON SUICIDE

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December 2012

submitted in partial fulfillment of the requirements for the degree

MASTER OF SCIENCE IN NURSING

at

CLEVELAND STATE UNIVERSITY

October 2015
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Cheryl Delgado, Chairperson

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Department & Date

November 13, 2015

Student’s Date of Defense
TREND ANALYSIS OF COUNTY CORONER’S DATA ON SUICIDE

Alisha Rene’ Slither

ABSTRACT

Suicide or intentional self-harm was the tenth leading cause of death in the United States in 2013. Information available from the Centers for Disease Control and Prevention show this ranking has remained consistent since the year 2008. One hundred and twelve suicides occurred each day in the year 2013. Yet, motivating factors of these suicides remain unexplored. This paper addresses the proposal for statistical analysis of existing suicide data from Clearfield County over a seven year period from January 1, 2008 to July 1, 2015. This study aids in determining if trends for suicide deaths in Clearfield County, Pennsylvania exist. A brief history and review of the literature will be presented regarding factors for suicide followed by the study methodology, design, and statistical analysis. Results from the study were limited due to missing information however some trends were still identified. Further research recommendations are also included for the future.

Keywords: suicide, mortality, trend analysis, adult, adolescent, ICD-10
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CHAPTER I
INTRODUCTION

The topic of suicide is considered taboo, although that was not always the case. There have been a wide range of reactions to suicide throughout history including dismissal, bafflement, sympathy, heroic glorification, moral or religious condemnation, and anger (Cholbi, 2012). Whatever the reaction may be it is never uncontroversial (Cholbi, 2012). History shows that suicide has always been a very real issue as far back as the time of Plato (Cholbi, 2012).

Suicide is defined by Lynch and Duval (2011) as - “an intentional death inflicted by one’s own action” (p. 189). In 2010, within the United States alone, suicide was the tenth leading cause of death with 38,364 suicides, an average of 105 per day (CDC, 2012). In 2013, suicide remained the tenth leading cause of death. In the U.S. there were 41,149 suicides, on average 112 per day. Moreover, these statistics reveal an increase in the suicide rate to 13 deaths per 100,000 people in 2013 (CDC, 2015). Every 12.8 minutes someone in the United States died by suicide in the year 2013 (AFSP, 2015). At
this time the Centers for Disease Control and Prevention (CDC) does not have updated figures for death by suicide for the year 2014.

Other interesting statistics found include that although females are more likely to have suicidal thoughts, the rate of suicide for males is four times higher than females (AFSP, 2015; CDC, 2012; Coleman, Kaplan, & Casey, 2011). Out of adults 18 years and older in the U.S. throughout 2014, approximately 9.4 million had suicidal thoughts, out of those 9.4 million approximately 2.7 million had made a suicidal plan, and approximately 1.1 million had made an attempt (SAMHSA, 2015). The American Association of Suicidology estimates that in the youth population there are 25 suicide attempts for every death by suicide and in the elderly the ratio is 4:1 (McIntosh & Drapeau, 2014).

There are many theories concerning suicide, but most assume that suicide was the direct result of depression or mental illness. The National Organization for Victim Assistance ([NOVA], 2009) provides a list of the different motivators of suicide which is as follows: desperation (this is linked to powerlessness, loneliness, hopelessness, and despair); revenge suicides (often completed with the explicit purpose of hurting others); “Romeo and Juliet” suicides (most common among adolescents, completed because they feel there is no safe place for their love in this world and believe they will live together in eternity); suicide pacts (victims make a combined decision to commit suicide collectively to avoid the continued pain of living); mass suicides; protest suicides (associated with political protests, ex: hunger strikes); “weapons of war” suicides (human sacrifice, e.g.: 9/11); and mercy suicides (those that are suffering or have a decreasing quality of life).

For the purpose of this proposal all motivators of suicides will be examined in order to determine any specific trends.
1.1 Literature Review

A literature review was completed by conducting a literature search of the following databases: CINAHL, Medline, PsychINFO. Forty-five articles were identified using keywords suicide causes and United States. A search in CINAHL using the key words suicide, trends, and demographics produced one result. A search using the keywords suicide attempts, ideation, and planning produced 40 results in PsychINFO and four results in CINAHL. A search in CINAHL and PsychINFO using key words suicide and rationality produced six results, one relevant result was used. A Google search was performed in order to find U.S. statistics for suicide in 2013, producing 9,480,000 results. Out of this large number of results only four sites were current and relevant to this study. A Google search was also performed using the keyword suicide which produced 216,000,000 results. Out of the top nine results only four were found to be relevant to this study. In addition, the Centers for Disease Control and Prevention website was reviewed for relevant information on suicide and included. Seminal works that were used include Townsend, NOVA, Lynch and Duval, Green and Kreuter, and Grove, Burns, and Gray. The findings from this review of literature helped to define suicide.

1.1.1 Suicide Definition

The definitions of a completed suicide and a suicide attempt are very different. With a completed suicide the individual has completed the act of taking one’s own life and is no longer living. A suicide attempt is when an individual has a failed attempt to complete an act of suicide (University of Manitoba, 2013).
1.1.2 Medication and Mental Health

Many suicide victims are found to have a psychiatric disorder in their past medical history and are most likely on a prescribed medication regimen. In 2013, nonfatal injuries, specifically unintentional poisonings, consisted of 3.7% or 1,055,960 (CDC, 2013). Individuals can have an adverse reaction to medication especially psychotropics. Some persons taking these drugs or drugs in combination with other medications may experience an idiosyncratic reaction in which the medication produces the complete opposite of the desired therapeutic effect.

According to the National Drug Control Strategy in 2011, collected data showed approximately 6.1 million Americans had reported using prescription medications non-medically; out of the 6.1 million Americans, 2.3 million Americans 12 years or older reported using prescription medications non-medically for their first time and 1.9 million started with pain relievers such as Oxycontin, hydrocodone, codeine, and methadone (ONDCP Staff, 2013). More than 30% of prescription painkiller deaths involve methadone (National Conference of State Legislatures, 2014). In 2012, 35.3% of adults used prescription medications of any type (SAMSHA, 2013). It is important to know what prescribed medications and street drugs could contribute to the number of individuals who have suicidal thoughts, behaviors, and actions.

The American Foundation for Suicide Prevention (2014) states that 90% of suicide victims have a mental disorder at the time of death. An analysis of data compiled during 2003-2007 that included female victims of suicide aged 15-54 years from 17 states within the U.S. found the most common method of suicide in women was poisoning (Gold, Singh, Marcus, & Palladino, 2012). Depression has been associated with an increased
number of suicide attempts (Sowa-Kucma et al., 2013). Antidepressants can also be used for treatment other than a psychiatric disorder, such as chronic pain, headache prevention, tobacco cessation, and insomnia (Gold et al., 2012) therefore it should not be assumed that the patient has a psychiatric disorder if these medications are found in their history.

Other drugs that may be found in this population include benzodiazepines, opioids, lithium, divalproex, and gabapentin. Benzodiazepines are used to relieve anxiety and have a sedative effect. Long-term use of this medication can cause dependence which is a side effect. If the patient has a history of addiction, drug abuse, depression, or is suicidal caution should be taken when using these drugs as it can exacerbate symptoms (Townsend, 2008).

1.1.3 Trauma

Lack of rationality, lack of mental capacity, and mental illness are assumed to be the reason for many suicides although this is not necessarily true (Ho, 2014). Trauma, stress, and negative life events can play a role in suicidal ideation as well (Krysinka, Lester, & Martin, 2009). According to Wong and Mellor (2014) intimate partner violence (IPV) also increases suicidal behaviors putting individuals at increased risk for attempted suicide. There is a strong association between mental health problems and post-traumatic stress disorder in victims of IPV. Women that have experienced IPV have been found to have significantly higher rates of suicide than women who have not experienced IPV (Wong & Mellor, 2014). Research on the primary focus for suicide risk factors has focused on affective disorders, leaving the relationship among “trauma, its psychosocial sequelae, and suicide risk” less clear (Krysinska et al., 2009). Depression is a predominant risk factor for suicide late in life (Fiske, O’Riley, & Widoe, 2008).
The American Journal of Preventative Medicine reported results from a ten year study that included 17,337 participants and showed a difficult childhood could reduce the life expectancy by as much as twenty years, however, the study did not specify if the deaths were natural or due to suicide (Storrs, 2009). This study used adverse childhood events (ACEs) that included physical, emotional, sexual abuse, and the following household dysfunctions: separated or divorced parents, domestic violence against the mother, a household member who abused drugs, was mentally ill or in prison. Participants who experienced six or more ACEs were 54% more likely to die during this study compared to the control group, however, not specifically to suicide (Storrs, 2009).

1.1.4 Gender

Single events rarely lead to an act of suicide. There are personal characteristics that are associated with an increased risk of an attempt or completion. An individual’s ability to cope with problems during the course of their lifetime can indicate if the individual is emotionally predisposed to suicide (AOASPC, 2012). Looking at gender differences, it has been found that suicide is one of the leading causes of male mortality. In the United States men are more than four times as likely as women to complete suicide especially on a first attempt. Interestingly not all successful male suicides fit the stereotypical depressed individual who made previous attempts. Some males show no predictive signs or risk factors and will complete suicide in their first attempt (Coleman et al., 2011).

The individuals who have a successful suicide attempt are different from those who have a failed attempt. The population that is most likely to attempt suicide is female and the attempt is usually by an overdose of medication. The population that completes suicide tends to be male and they use a more lethal means such as firearms; in 2012
50.9% of suicides were by firearm (McIntosh & Drapeau, 2014). In 2013, seventy percent of all suicides were white males (AFSP, 2015). Generally, the act of suicide represents a solution to a problem or perhaps a life circumstance that the victim fears will not get any better, only worse which leads the victim to believe that the only option is death (NY State Dept. of Health, 2011).

In a study of lifelong prevalence of suicidal ideation, planning, and attempts among men and women, Gal, Levav, and Gross (2012) found that in a sample of 1,938 women, 4.7% who had not been exposed to abuse had suicidal ideation, 1.6% had a plan; and 1% had made an attempt. The men (n=1,906) who had not been exposed showed 3.9% had suicidal ideations; 1.4% had made a plan; and 0.5% had made an attempt (Gal et al., 2012).

1.1.5 Forecasting Model

Previous trend analyses of Center for Disease Control (CDC) data shows that suicide is a very real problem. During 1980 – 2000 there was a decrease in the number of successful suicide attempts however, from 2000 – 2012 there was a gradual increase (McIntosh & Drapeau, 2014). Chang and Lee (2012) attempted to predict the number of suicides using the experience curve forecasting model. Using this model they predicted the American suicide rate would be 8.7 per 100,000 in 2020 and the estimated total number of suicides would be approximately 29,701. Although the projected suicide rate would decrease to 8.1 per 100,000 in the year 2030 the estimated total number of suicides would increase to 30,254. The increase in suicides even with a lower rate in 2030 would be due to an increase in the overall population (Chang & Lee, 2012).
CHAPTER II

METHODOLOGY

2.1 Research Question and Hypotheses

The broad research question driving this study was: Does data collected over a seven year period show any distinctive trends in suicide? This leads to two study hypotheses:

1) Suicide trends will be evident in an examination of the official records for Clearfield County, Pennsylvania in a population of adolescents 14-17 years old.

2) Suicide trends will be evident in an examination of the official records for Clearfield County, Pennsylvania for adults 18 years and older.

In the state of Pennsylvania the definition of an adult is: an individual that is eighteen years of age or older (231 Pa. Code Rule 76.)

2.2 Purpose

The purpose of this study was to explore trends in longitudinal data collected over a seven year period by officials of Clearfield County in Pennsylvania. This information is
available as public records, so as to inform the public, healthcare planners and officials of likely future needs. The ability to predict suicide events can permit planners and educators to predict and possibly allot resources where most needed and effective.

2.3 Theoretical Framework

An epidemiological framework was used to address several questions for this research. This framework was data driven and will provide the researcher with an unbiased and systematic approach to the collection, analysis, and data interpretation (SAMHSA, n.d.). Epidemiology is defined by Green and Kreuter (2005) as “the study of the distribution and determinants of health related conditions or events in defined populations and the application of this study to control health problems” (p. 86). The researcher examined the data to identify trends or patterns in the findings.

2.4 Variables and Definitions

The conceptual definition of suicide is: “an intentional death inflicted by one’s own action” (Lynch & Duval, 2011). The operational definition of suicide for this study will be any death labeled a suicide on the official death certificate. For this study an adolescent was defined as a person between the ages of 14 and 17 years of age; and an adult was defined as a person of 18 years or more. In the state of Pennsylvania the definition of an adult is: an individual that is eighteen years of age or older (231 Pa. Code Rule 76.)

2.5 Analysis

The data collected was at the nominal level of measurement. This allowed for examination of the descriptive categories and correlations among the multiple factors in order to reveal any factors that demonstrated predictive value. The connections between
factors such as gender, the time of year, employment status, marital status, race/ethnicity, history of alcohol abuse and/or drugs, highest level of education, recent mental health treatment, previous suicide attempts, and urban or rural residence were of special interest. Statistical analyses included frequencies and percentages.
CHAPTER III

DESIGN

A quantitative, descriptive, cross-sectional study design was used to examine any trends in the data regarding events that have already occurred. There can be no attempt to manipulate or control this type of study (Grove, Burns, & Gray, 2013). The examination of descriptive demographic data allowed the opportunity to determine the frequency of suicide and commonalities in associated factors (Grove et al., 2013). The setting of this study was the Clearfield County, Pennsylvania coroner’s office where the data was gathered and reviewed, also in the researchers’ home while working on the study.

3.1 Sample

The participants for this study were selected using the following criteria: adolescents aged 14-17 and adults 18 years and older and, any cause of death ruled a suicide was included as long as the age of the deceased was 14 years or older. All races/ethnicities were included as long as the cause of death was suicide. Information on gender and marital status was also collected in order to determine trends. Exclusionary criteria were
any death not recorded as a suicide between January 1, 2008 and July 1, 2015 and children under the age of 14.

3.2 Data Collection

The data collected came from previous case files in Clearfield County, Pennsylvania from the year 2008 to July 1, 2015. This data was provided in a redacted form from the coroner in order to protect the identity of the deceased. Clearfield County consists of approximately 81,174 residents; all suicide cases during 2008 through July 1, 2015 will be included.

3.3 Measurement & Instruments

Information collected included the following: year of suicide; gender; marital status; employment; income; education level; religion; race/ethnicity; whether individual was an inmate; residence; if the individual have a recent mental health stay; history of alcohol abuse; was there a previous suicide attempt; manner of death; was a suicide note left; if body was found in an area other than in the residence; the time of year; any medications the individual was taking prescribed or not prescribed; and any other available relevant medical history. These factors were then measured by determining the percentages of each that were found in completed suicides

Suicide was operationally defined by using the International Classification of Diseases (ICD-10) codes (Appendix A). This allows for numerical counting of deaths and the mechanism of injury (WHO, 2014). The sum of each ICD-10 code for deaths was collected.

Medical history was measured using the DSM-IV-TR multi-axial evaluation system (Townsend, 2008). Axis I includes all mental disorders including anxiety and depression.
Axis II includes personality disorders such as obsessive compulsive disorder (OCD) and mental retardation. Axis III includes any current general medical condition. Axis IV includes psychosocial and environmental problems such as being unemployed, recently divorced, etc. Axis V is the individuals overall functioning rating on the Global Assessment of Functioning (GAF) Scale, measuring the individual’s social, psychological, and occupational functioning.

3.4 Data Management

After obtaining Institutional Review Board (IRB) approval from Cleveland State University, the researcher contacted the Clearfield County Coroner’s office to obtain the redacted information from the coroner’s investigation case files. The files were reviewed and data entered into the data collection sheet. Since the case files being reviewed are of deceased individuals and death records are publicly accessible information an informed consent was not possible or necessary and the study examined previously collected existing data. However, the identity of the deceased was protected by coding all case entries with a study specific identification number and eliminating any other personal identifiers such as name or addresses. General descriptive identifiers such as age and gender were retained in the data used for analysis.

The collected data was stored on a password protected flash drive and not permanently loaded onto any computer hard drive. The flash drive containing the database will be stored in a lock box when not in use in a locked office located at the coroner’s office for a period not to exceed three years after completion of the study at which time the data will be purged. As it is not anticipated that any data in the database will contain personal
identifiers for the case subjects, it is deemed unnecessary to physically destroy the flash drive.

A created data collection form (Appendix B) was used to record raw information that included demographic factors such as income, employment, marital status, gender, race/ethnicity, age, religion, prison inmate, recent mental health stay, rural or urban residence, place of death, cause of death, time of death, time of year death occurred, was a note left, previous attempt, was body found in a different location other than residence, manner of death, and any available medical history such as alcohol abuse and prescribed medication use as well as other drugs. A study specific unique case code number was assigned to each form.
CHAPTER IV

RESULTS

Once the data collection was completed this researcher found that only seventy-five cases were the result of suicide within Clearfield County during the time study time frame. Two of these cases were individuals that had committed the act of suicide in another county and died across the county line during transport to the hospital, thereby becoming a Clearfield County case. Ninety-seven point three percent of the suicides were from the white population with only 1.3% falling in the unknown category and 1.3% in the Hispanic category. Seventy-six percent of the cases were males and twenty-four percent were female. Ages in suicides ranged from 17 – 88 years old.

Frequency distribution of years and the time of year were run to determine the years with the most suicides as well as the months that most suicides were completed. The years with the largest number of deaths by suicide were 2008 - 20%; 2011 - 17.3%; and 2014 - 14.7%. Most suicides took place during the summer (n = 23) and winter (n = 23)
months, spring months had 19 suicides and fall had 10.

Frequency of the number of cases that involved service men/women were run to determine if there was a link between serving in the military and committing suicide. It was difficult to find any trends that linked serving in the armed forces to acts of suicide due to missing information. Only 10.7% of the cases had served in the armed forces, 26.7% had not, and 62.7% of the cases it was unknown if the decedent had served or not.

It was also difficult to have an accurate determination on frequency to help identify any trend that linked previous suicide attempts to a successful suicide attempt. Of the information that was available 17.3% had a previous attempt but 48% had not. However, 34.7% of the cases it was unknown if there had been a previous suicide attempt or not.
The frequency of suicides by unemployed individuals was 20% however, 49.3% of the cases employment status was unknown. Marital status results were 24% unknown, 28% married, 2.7% separated, 18.7% divorced, 5.3% widowed, 1.3% living with a partner of the opposite sex, and 20% was single.

The cases that involved an individual who had received recent mental health treatment was 12%, 30.7% was unknown, and 57.3% had not had any recent mental
health treatment. The frequency of those that left a note were 48%, 17.3% of the cases it was unknown if a note was left, and in 34.7% of the cases no note was left behind.

The highest education level completed showed the majority of cases (64%) this information was unknown. For the cases that did provide information on education status 1.3% had a sixth grade education, 2.7% had an eighth grade education, 5.3% had a tenth grade education, 1.3% had an eleventh grade education, 20% had a twelfth grade education, and 1.3% had some college but no degree, an associate’s degree, a bachelors degree, or a masters degree.

<table>
<thead>
<tr>
<th>Highest_Education_Achieved</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
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<td>48</td>
<td>64.0</td>
<td>64.0</td>
<td>64.0</td>
</tr>
<tr>
<td>6th Grade</td>
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<td>1.3</td>
<td>65.3</td>
</tr>
<tr>
<td>8th Grade</td>
<td>2</td>
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<td>2.7</td>
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<td>1.3</td>
<td>74.7</td>
</tr>
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<td>12th Grade</td>
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<td>94.7</td>
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<tr>
<td>Some College no Degree</td>
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<td>Masters Degree</td>
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<td>Total</td>
<td>75</td>
<td>100.0</td>
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</table>

Out of these seventy-five cases 65.4% of the suicides were the direct result of a firearm, 16% were due to hangings, and 16% were intentional poisonings. The data was then run to check gender against the ICD-10 Codes to see if there were any noticeable trends. It was found that there were more men (n = 39) that used lethal means and surprisingly more men that died by intentional poisonings (n = 10) or overdoses than
women. Men and women were equal on the number of hangings (n = 6), and one male died as the result of jumping from a high place.

<table>
<thead>
<tr>
<th>Cause_of_Death</th>
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<td>ICD-10 CODE X62</td>
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<td>26.7</td>
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<td>76.0</td>
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<td>20.0</td>
<td>96.0</td>
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<td></td>
<td>ICD-10 CODE X80</td>
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<td>1.3</td>
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<tr>
<td></td>
<td>ICD-10 CODE X83</td>
<td>1</td>
<td>1.3</td>
<td>98.7</td>
</tr>
<tr>
<td></td>
<td>ICD-10 CODE X60 &amp; ICD-10 CODE X65</td>
<td>1</td>
<td>1.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>100.0</td>
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<td></td>
</tr>
</tbody>
</table>

Looking at the ICD – 10 Codes for suicides and the different ages produced the following results. There were only two suicides within the adolescent age range and both committed suicide by hanging. The 18 – 25 age range consisted of one hanging, one poisoning, and one firearm suicide. Twenty-six to thirty-five age ranges consisted of four hangings and ten firearm suicides. The 46 – 55 age range had two hangings, four poisonings, and thirteen firearm suicides. The 56 – 65 age range one hanging, four poisonings, and eight firearm suicides. The 66 – 75 age range consisted of one hanging, one poisoning, and seven firearm suicides. The 76 – 85 age range had one poisoning and three firearm suicides; and the 86 – 95 age range consisted of only one firearm suicide.
CHAPTER V
DISCUSSION

A major barrier in conducting this study was the low number of cases in this county. When the study was originally designed the researcher believed the number of cases would be far greater for the past seven years than what was actually the case. After reading each redacted case file it became evident that missing information would also be a barrier during this study.

The data shows that there is in fact a trend using lethal means and being of the male gender. The data also suggests that there are in fact times of the year that is more common for suicides to take place. From 2000 to 2007 the number of licenses issued to carry a firearm went from 990 to 2,210, increasing 1,220 over the course of seven years (PAFOA, 2015). Information from 2008 to the present was unavailable although one can speculate that the number has continued to increase over the years. Also, it is vital to realize that not all firearms purchased require a license to carry. The number of suicides
by firearm was the highest during the 46 – 55 age range and then decreased, however, firearm deaths continued to be majority cause of death from 56-95 years of age.

Although socioeconomic status was only briefly mentioned in the beginning this researcher feels that after the data collection it was important to review the demographics for Clearfield County from the U.S. Census Bureau. Clearfield County, Pennsylvania is a county that is completely rural. As mentioned earlier Clearfield County is made up of approximately 81,174 residents. Of these residents 95.3% are white, 3% African American, and 2.9% Latino or Hispanic. As the results showed 97.3% of suicides were out of the white population. The median household income in 2014 was $41,030, and 14.5% were living below the poverty level (U.S. Census Bureau, 2015). Although this researcher attempted to include income this information was unavailable or missing.

It should come as no surprise that any individual may be at risk for suicide regardless of education level, income, or employment status. However, the risks of suicide are lowered the higher the individual’s socioeconomic status is (Denney et al., 2009). According to Denney, Rogers, Krueger, and Wadsworth (2009) evidence has shown that male suicide risk increases due to unemployment but females do not. The unemployment rate in Clearfield County during 2010 was at its highest in the past eight years reaching 12.4% (Federal Reserve Bank of St. Louis, 2015). The rate had dropped to 6.4% in July 2015 leaving 2,300 individuals still unemployed within the county (Center for Workforce Information & Analysis, 2015). Figure 1.1 shows the fluctuation in the unemployment rate over the past eight years.
According to the frequency of suicides within the county there was a decrease in the number of suicides after 2008 but this number increased to 17.3% in 2011. Once again the frequency results of suicide and unemployment made it difficult to determine trends due to missing information. The information that was available did not appear that unemployment was a trend in suicide within Clearfield County.

Medications were considered due to the possibility of some side effects causing suicidal thoughts, ideations, or attempts. Some medications that are used to treat mental health disorders found on Axis I can actually have the opposite of a therapeutic effect. Medications used to treat general medical conditions such as high cholesterol have been linked to mood disorders and an increase in anxiety/depression. Studies have shown that some individuals taking statins have reported adverse effects such as irritability, personality changes, as well as anxiety and depression (Kaplan, 2010). The results of the Kaplan study showed 64.6% of the cases individuals were on a combination of mood stabilizers, antidepressants, antipsychotics, opioids, analgesics, benzodiazepines, statins,
or sedative hypnotics. Although there were very few suicides by intentional poisonings it is possible that the medications had an effect on suicidal behaviors.

After the deadline of July 1, 2015 for data collection had passed there were twelve suicides in Clearfield County, two of which were hangings. There was also a self inflicted gunshot wound to the head by a fifteen year old male making this the youngest suicide to date that this researcher had found. Although, this data was not used in this study it does raise concern for the reasons behind the high number of suicides so far this year.
CHAPTER VI

LIMITATIONS

There is no established reliability or validity to the data collection instrument as it is study specific and has not been used previously nor will it be used again. This is not deemed a severe limitation. The possibility of collecting data on a death mislabeled as suicide when it was not, or missing a suicide case which was not labeled as such is possible, but not likely and out of the control of the researcher. It is recognized that only limited data was available for some cases. As the data was taken from existing sources, this cannot be remedied by the researcher. Some calculations were not possible due to the amount and form of data available, this included income and religion. Other factors such as whether the individual served in the armed forces, highest education level completed, and employment were able to be collected but a majority of the data sheets did not have this information making accurate calculations difficult. A more serious concern is that the results of this study might be applied to an area outside of the county examined. It is the purpose to examine the data from this county for use by persons
within the county and unlikely that the data produced would be useful, although interesting to others.
CHAPTER VII

CONCLUSION

In conclusion, it is clear that the stigma of suicide still remains and until society is educated on this topic along with how to recognize warning signs and help prevent suicide; the numbers of individuals that take their lives will continue to grow.

The limited amount of information that was provided during this study made determining trends somewhat difficult. An attempt at finding existing trends was made but difficult to completely rely on due to missing information. Due to the number of deputies that answer calls when the coroner is unavailable there is inconsistency with how paperwork is filled out. Depending on who is filling out the case file information may not be asked or included if the individual feels it is not pertinent to the case. Another factor was the change in the elected coroner. Three years ago a new coroner was elected but the previous coroner’s deputies continued to work under the new coroner. Changes have been implemented but staff has found it difficult to change their ways of doing
things. A recommendation for training on how to properly fill out case files may be beneficial as well as removing all outdated or unused forms.

Studies including more socioeconomic factors such as income and more completed information listed within the case files would be beneficial in determining trends within suicide. This researcher believes that further studies on the reasons why individuals commit suicide would be beneficial in all counties within the nation in order to better understand what motivates the act of taking one’s life as well as ways to stop further suicides.


CDC. (2013). 10 leading causes of nonfatal unintentional injuries, United States. Centers for Disease Control and Prevention. Retrieved from http://webappa.cdc.gov/cgi-bin/broker.exe?_service=v8prod_server=app-v-ehip-wisq.cdc.gov&_port=5082&_sessionid=qX01k98zN52&_program=wisqnf.dd_nfi_percents.sas&_service=v8prod&age1=.&age2=.&agetext=AllAges&intent=1&_debug=0


SAMHSA. (n.d.). Data-based planning for effective prevention: State epidemiological outcomes workgroups. Substance Abuse and Mental Health Services


Appendix A

International Classification of Disease (ICD) is used to monitor both the incidence as well as prevalence of diseases and is considered the standard diagnostic tool for health management, clinical purposes, and epidemiology (WHO, 2015). This tool allows identification of national mortality and morbidity within countries and populations (WHO, 2015). The following ICD codes are used to identify suicide from the "cause of death" field in the Vital Statistics Mortality data, also included are accidental poisonings (University of Manitoba, 2013; ICDdata.com, 2015; WHO, 2015):

- accidental poisoning: ICD-9 codes E850-E854, E858, E862, E868; ICD-10 codes X40-X42, X46, X47
- poisoning with undetermined intent: ICD-10 codes Y10-Y12, Y16, Y17
- self-inflicted poisoning: ICD-9 codes E950-E952, ICD-10 codes X60-X69
  - X60 – intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics including: 4-aminophenol derivatives; nonsteroidal anti-inflammatory drugs [NSAID]; pyrazolone derivatives; salicylates
  - X61 – intentional self-poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified including: antidepressants; barbiturates; hydantoin derivatives; iminostilbenes; methaqualone compounds; neuroleptics; psychostimulants; succinimides and oxazolidinediones; tranquilizers
- X62 – intentional self-poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified including: cannabis (derivatives); cocaine; codeine; heroin; lysergide [LSD]; mescaline; morphine; opium (alkaloids)

- X63 – intentional self-poisoning by and exposure to other drugs acting on the autonomic nervous system including:
  (parasympatholytics [anticholingerics and antimuscarnics] and spasmyloytics; parasympathomimetics [cholinergics]; sympatholytics [antiadrenergics]; sympathomimetics [adrenergics])

- X64 – intentional self-poisoning by and exposure to other and unspecified drugs, medicaments and biological substances including: agents primarily acting on smooth and skeletal muscles and the respiratory system; anaesthetics (general) (local); drugs affecting the: cardiovascular system and gastrointestinal system; hormones and synthetic substitutes; systemic haematological agents; systemic antibiotics and other anti-infectives; therapeutic gases; topical preparations; vaccines; water-balance agents and drugs affecting mineral and uric acid metabolism

- X65 – intentional self-poisoning by and exposure to alcohol including: alcohol – NOS, butyl [1-butanol], ethyl [ethanol], isopropyl [2-propanol], methyl [methanol], propyl [1-propanol]; fusel oil
o X66 – intentional self-poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours including: benzene and homologues; carbon tetrachloride [tetrachlormethane]; chlorofluorocarbons; petroleum (derivatives)

o X67 – intentional self-poisoning by and exposure to other gases and vapours including: carbon monoxide; lacrimogenic gas [tear gas]; motor (vehicle) exhaust gas; nitrogen oxides; sulfur dioxide; utility gas

o X68 – intentional self-poisoning by and exposure to pesticides including: fumigants; fungicides; herbicides; insecticides; rodenticides; wood preservatives

o X69 – intentional self-poisoning by and exposure to other and unspecified chemicals and noxious substances including: corrosive aromatics, acids and caustic alkalis; glues and adhesives; metals including fumes and vapours; paints and dyes; plant foods and fertilizers; poisonous foodstuffs and poisonous plants; soaps and detergents

- self-inflicted injury by hanging, strangulation and suffocation: ICD-9 code E953, ICD-10 code X70
- self-inflicted injury by drowning: ICD-9 code E954, ICD-10 code X71
- self-inflicted injury by firearms and explosives: ICD-9 code E955, ICD-10 codes X72-X75
  o X72 – intentional self-harm by handgun discharge
- X73 – intentional self-harm by rifle, shotgun and larger firearm discharge
- X74 – intentional self-harm by other and unspecified firearm and gun discharge
- X-75 – intentional self-harm by explosive material

- self-inflicted injury by smoke, fire, flames, steam, hot vapours and hot objects: ICD-9 codes E958.1, E958.2; ICD-10 codes X76, X77
  - X76 – intentional self-harm by smoke, fire and flames
  - X77 – intentional self-harm by steam, hot vapors and hot objects

- self-inflicted injury by cutting and piecing instruments: ICD-9 code E956; ICD-10 codes X78, X79
  - X78 – intentional self-harm by sharp object
  - X79 – intentional self-harm by blunt object

- self-inflicted injury by jumping from high places: ICD-9 code E957, ICD-10 code X80

- self-inflicted injury by jumping or lying before a moving object: ICD-9 code E958.0, ICD-10 code X81

- self-inflicted injury by crashing of motor vehicle includes intentional collision with: motor vehicle; train; tram (streetcar) ICD-9 code E958.5, ICD-10-CA code X82

- self-inflicted injury by other and unspecified means: ICD-9 codes E958.3, E958.4, E958.6-E958.9; ICD-10 codes X83, X84
- X83 – intentional self-harm by: caustic substances, except poisoning; crashing of aircraft; electrocution
- X84 – intentional self-harm by unspecified means

- late effects of self-inflicted injury: ICD-9 code E959
- ICD codes that do not include accidental poisonings are as follows:
  - Intentional self-harm: ICD-10 codes X60-X84;
  - Late effects of intentional self-harm: ICD-10-CA code Y87.0
  - Poisoning of undetermined intent: ICD-10 codes Y10-Y19
  - Other events of undetermined intent: ICD-10 codes Y20-Y34
## Appendix B

### Suicide Data Collection Form

<table>
<thead>
<tr>
<th>Case #</th>
<th>Date of Death:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender: M/F</td>
<td>Age in years:</td>
</tr>
<tr>
<td>Marital Status:</td>
<td>Average Yearly Income:</td>
</tr>
<tr>
<td>(Married, Separated, Divorced, Widow(er, Living w Partner (same sex), Living w Partner (opposite sex))</td>
<td>Religion:</td>
</tr>
<tr>
<td><strong>Served in Armed Forces:</strong> Y/N</td>
<td>Incarcerated/ Institution name and location:</td>
</tr>
<tr>
<td>Highest Education Achieved:</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity:</td>
<td>Recent Mental Health Treatment: Y/N</td>
</tr>
<tr>
<td>Home Residence:</td>
<td></td>
</tr>
<tr>
<td>Hx of Alcohol Abuse: Y/N</td>
<td>Previous Suicide Attempt: Y/N</td>
</tr>
<tr>
<td>Employed: Y/N</td>
<td>Manner of Death: SUICIDE</td>
</tr>
<tr>
<td>Cause of Death:</td>
<td></td>
</tr>
<tr>
<td>Left Note: Y/N</td>
<td>Time of Death:</td>
</tr>
<tr>
<td>Location Body Found/Was it Different From Residence?:</td>
<td></td>
</tr>
<tr>
<td>Time of Year: SPRING / SUMMER / FALL / WINTER</td>
<td></td>
</tr>
</tbody>
</table>

40
Medications
Prescribed:  

Medications Found at
Scene:  

Relevant Medical History:  