

Geographic Location and Type of Family and Intimate Partner Homicide in Virginia 1999 – 2008

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Published February, 2012*

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The Family and Intimate Violence Surveillance Project has produced a body of literature documenting the characteristics and circumstances surrounding those killed as a result of family or intimate partner discord. This project, the first of its kind in Virginia, has collected data that have helped public health practitioners “peel away the layers” for a more detailed understanding of family and intimate partner homicide in Virginia.

The purpose of this brief article is to continue the process of peeling the layers by providing information on family and intimate partner homicide in Virginia. Past reports published by the Office of the Chief Medical Examiner (OCME) have examined special populations which were impacted by family and intimate partner discord. This article will focus on understanding where the different types of family and intimate partner homicide occur. Specifically, it will examine the types of family and intimate partner homicide and determine whether certain types of homicides were more or less likely to occur in differing geographic areas of Virginia.

Studying the geographic distribution of family and intimate partner homicide is important to the overall violence prevention effort. Current research on homicide reveals that, along with factors such as socioeconomic status and urbanization, geographic location is an important determinant of homicide.^{1,2,3} Specifically, studies have uncovered patterns in geographic location that are helpful in identifying where public health officials should focus violence prevention efforts.

Family and intimate partner homicide cases are a unique subset of homicide cases. Do these cases cluster in identifiable patterns based on location of injury? This knowledge is an important first step in public safety and will help Virginia public health officials and leaders decipher the reasons for these variations and then provide targeted interventions.

Methodology

Data analyzed are from the Family and Intimate Partner Homicide Surveillance Project. As mentioned above, this statewide project identifies and collects information on all family and intimate partner homicides in Virginia. Data are gathered during a review of published articles and death records, including police and autopsy reports, and then entered into a computer database for analysis.

¹Cubbin, C., Pickle, L., & Fingerhut, L. (2000). Social Context and Geographic Patterns of Homicide Among US Black and White Males. *American Journal of Public Health*, 90(4), 579-587. Retrieved from EBSCOhost.

²Rogers, R. G., Rosenblatt, R., Hummer, R. A., & Krueger, P. M. (2001). Black-White Differentials in Adult Homicide Mortality in the United States. *Social Science Quarterly (Blackwell Publishing Limited)*, 82(3), 435. Retrieved from EBSCOhost.

³Kegler, S. R., Annest, J. L., Kresnow, M., & Mercy, J. A. (2011). Violence-Related Firearm Deaths Among Residents of Metropolitan Areas and Cities--United States, 2006-2007. *JAMA: Journal of the American Medical Association*, 306(5), 482-484. Retrieved from EBSCOhost.

In this article, the term *homicide* is defined by the Virginia Office of the Chief Medical Examiner (OCME) as an intentional act of fatally injuring a person. Consequently, a family and intimate partner homicide (FIPH) occurs when a decedent is killed by a family member (e.g., sister, mother, parent, etc.) or a current or former intimate partner (e.g., spouse or boyfriend/girlfriend).

Family and Intimate Partner Homicide Categories

Family and intimate partner homicide is divided into six categories. These categories are defined and described in Table 1.

Table 1: Family and Intimate Partner Homicide Classification System

Type of Family and Intimate Partner Homicide	Description of Cases
Intimate Partner Homicide (IPH)	A homicide in which a victim was killed by one of the following: spouse (married or separated), former spouse, current or former boyfriend, girlfriend or same-sex partner, or dating partner. This group could include homicides in which only one of the parties had pursued a relationship or perceived a relationship with the other and/or where at least one of the following was historically noted: rejection, threats, harassment, stalking, possessiveness, or issuance of a protective order.
Intimate Partner Associated Homicide (IPA)	A homicide in which a victim was killed as a result of violence stemming from an intimate partner relationship. Victims could include alleged abusers killed by law enforcement or persons caught in the crossfire of intimate partner violence such as friends, co-workers, neighbors, relatives, new intimate partners, or bystanders.
Child Homicide by Caregiver (CHC)	A homicide in which a victim was a child under the age of 18 killed by a caregiver.
Elder Homicide by Caregiver (EHC)	A homicide in which a victim was an adult 55 years or older who was killed by a caregiver.
Other Family Homicide (OFH)	A homicide in which a victim was killed by an individual related to them biologically or by marriage (e.g. grandparent, [step]parent, [step]sibling, cousin, in-laws) and who does not meet the criteria for one of the four groups above.
Other Family Associated Homicide (OFA)	A homicide in which a victim was killed as a result of violence stemming from a familial relationship. Victims could include persons killed by law enforcement during a familial conflict or persons caught in the crossfire, such as friends, co-workers, neighbors, relatives, or bystanders.

In order to accurately analyze data, some data were removed and these six data categories were recoded into three categories. First, because this analysis investigated the specific Virginia geographic locations for homicide, the out-of-state cases ($n = 12$) and the unknown location cases ($n = 9$) were removed. Out-of-state cases were those cases in which the fatal injury occurred outside of the Commonwealth of Virginia. Unknown location cases were those cases in which the location of fatal injury could not be determined.

Next, due to a small number of cases, elder homicide by caregiver cases ($n = 10$) were also removed. Finally, the remaining cases were recoded. Intimate partner and intimate partner associated homicides were combined and other family and family associated homicides were combined. Child homicide by caregiver cases were not combined with any other type of case.

The final data set contained 1,350 cases distributed among three categories. Table 2 shows the final categories and their respective numbers.

Table 2: Recoded Family and Intimate Partner Homicide Categories, 1999-2008 (N=1,350)

Recoded Category	Cases	% of Total Cases
Intimate Partner (IPH) and Intimate Partner Associated (IPA) Homicide	924	68.4
Child Homicide By Caregiver (CHC)	199	14.7
Other Family (OFA) and Family Associated (FAH) Homicide	227	16.8

Geographic Regions

The Commonwealth of Virginia divides the state into five regions known as Health Planning Regions. These regions are: Central, Northern, Eastern, Northwest, and Southwest. Each of these regions is distinct and contributes to the diversity of the state. The specific localities that comprise each of the Health Planning Regions are available from the Virginia Department of Health.⁴ Table 3 lists the 2008 population estimates for all of the Health Planning Regions, including the population and percentage of those less than 18 years of age.

Table 3: Health Planning Region Population Estimates and Percentage of Persons Under 18, 2008

Health Planning Region	Population Under 18	Total Health Planning Region Population	% of Health Planning Region Under 18
Central	306,923	1,331,169	23.1
Northern	530,029	2,105,422	25.2
Eastern	440,960	1,801,466	24.5
Northwest	277,527	1,202,922	23.1
Southwest	267,762	1,328,110	20.2
Entire State	1,823,201	7,769,089	23.5

* Population Estimates are from the U.S. Bureau of the Census for 2008.

The OCME collects information on decedents’ localities of residence, injury, and death based on the OCME District and Health Planning Region. In this article, homicide victims are listed by Health Planning Region of their fatal injury. This method of identification is important in public health because it allows policy and program planners to understand *where* violence takes place.

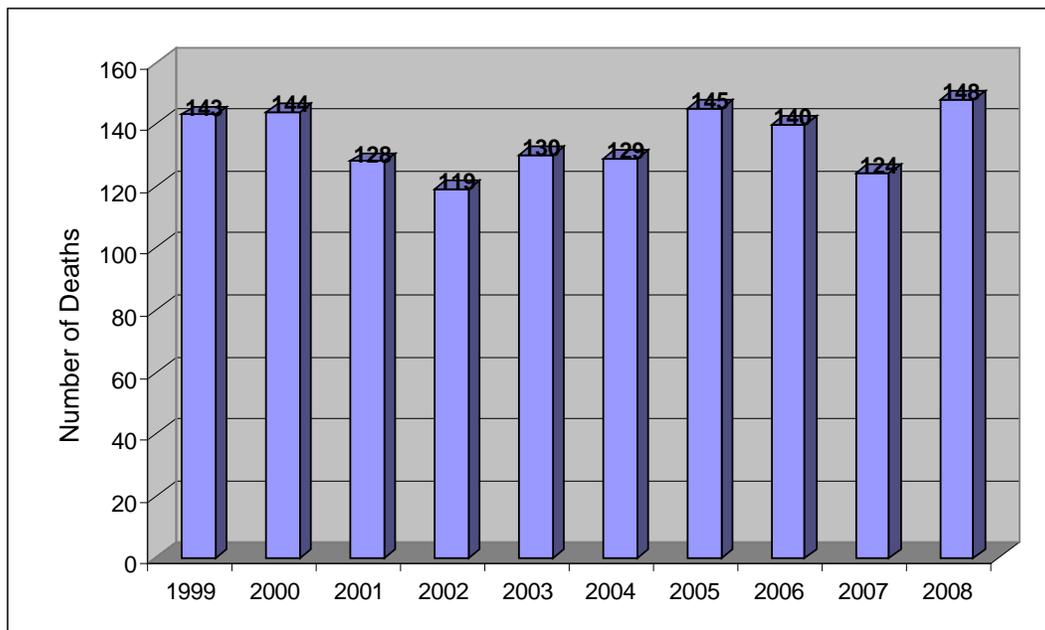
Overview

As identified in Table 2, the final sample contained 1,350 family and intimate partner homicide victims who were injured in Virginia. These cases represent approximately one in three of all

⁴ <http://www.vdh.virginia.gov/healthstats/documents/2010/pdfs/HDMMap.pdf>

homicide victims. The number of deaths ranged from a high of 148 in 2008 to a low of 119 in 2002. Figure 1 shows the distribution of cases by year.

Figure 1: Distribution of Family and Intimate Partner Homicide in Virginia by Year, 1999 – 2008 (N = 1,350)



Victims ranged in age from infant to 97 years with the average victim being 33.5 years ($SD = 20.16$). Half of the selected population was 34 years of age or older. Males were younger than females, 32.9 years ($SD = 19.82$) and 34.1 years ($SD = 20.48$); however, this was not statistically significant. Thus, the difference in ages between males and females was probably due to chance.⁵

With respect to gender, decedents were almost evenly divided with females ($n = 693$) representing 51.3% of the decedents, and males ($n = 657$) representing 48.7% of the decedents. A firearm was the most frequently used fatal agent ($n = 757$, 56.1%), followed by a sharp instrument ($n = 237$, 17.6%) and a personal weapon such as a hand or foot used to strike or shake the victim ($n = 124$, 9.2%).⁶ Most victims were fatally injured while in their residence ($n = 1,077$, 82.8%).⁷

Geographic Area of Injury and Type of Case

This study investigated three broad types of cases, those in which the fatal injury was inflicted (a) as a result of an intimate partner relationship (IPH/IPA), (b) by a child's caregiver (CHC),

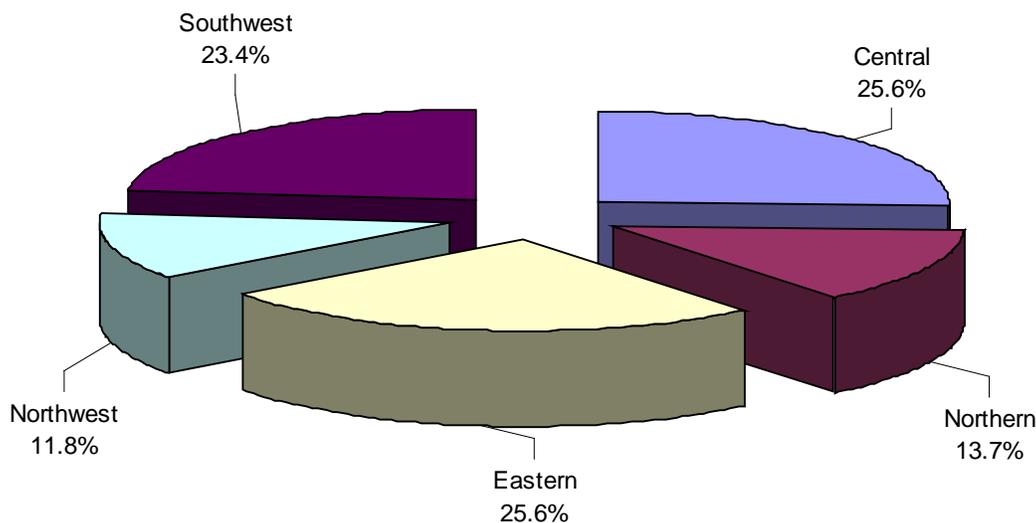
⁵ Student's *t*-test failed to indicate a statistically significant difference between males and females on age [$t(1348) = -1.125$, $p = .261$].

⁶ The fatal agency was not able to be determined in six cases.

⁷ Premise of injury was known for 1,301 cases.

and (c) those inflicted as a result of family discord (OFH/FAH). During the study years, most injuries leading to family and intimate partner deaths occurred in the Central ($n = 345$, 25.6%) and Eastern ($n = 345$, 25.6%) Health Planning Regions. Figure 2 illustrates the percentage of family and intimate partner homicide cases for each region.

Figure 2: Geographic Distribution of Family and Intimate Partner Homicide in Virginia, 1999 – 2008 ($N = 1,350$)



As indicated above, when examining the *number* of cases, the Central and Eastern Health Planning Regions had the greatest number of family and intimate partner homicide cases.⁸ These two Regions also contain the two localities with the greatest number of *homicide* cases for 2008, the Cities of Richmond and Norfolk (Virginia Department of Health, 2009). However, when the population of each Health Planning Region was considered, the Central and Southwestern Regions emerged as having the greatest discrepancy between the percent of the Virginia population that they represented during the study period and the percentage of family and intimate partner homicide cases that they represented for the study period. Specifically, during the study period, the Central Health Planning Region accounted for 17.9% of Virginia's population but 25.6% of the family and intimate partner homicides. The Southwest Planning Region accounted for 17.8% of Virginia's population but 23.4% of the family and intimate partner homicide deaths. Additionally, when looking at the 2008 top ten localities for overall homicide, eight of the ten localities were in either the Central or Southwestern Health Planning Regions. Table 4 shows the percentage of the population and the percentage of family and intimate partner homicide deaths for each Health Planning Region in Virginia for 1999 – 2008.

It is important to mention that calculating rates for family and intimate partner homicide for these areas would take into account the population and yield a better understanding of risk. However, due to the manner in which data are collected, this task is not possible at this time.

Table 4: Virginia Health Planning Region by Percent of Population and Family and Intimate Partner Homicides, 1999 – 2008 (N = 1,350)

	Ten-Year Average Health Planning Region Population*		Family and Intimate Partner Homicides 1999 - 2008	
	<i>n</i>	% population	<i>n</i>	% of FIPH
Central	1,267,788	17.89	345	25.56
Northern	1,961,294	27.68	185	13.7
Eastern	1,549,645	21.87	345	25.56
Northwest	1,049,788	14.81	159	11.78
Southwest	1,257,979	17.75	316	23.41
Total	7,086,494	100	1350	100

*The population averages were computed for each Health Planning Region by adding each Health Planning Region's population numbers or population estimates for the ten year period and then dividing by 10. Population estimates are from the U.S. Bureau of the Census for the respective year.⁹

Table 5: Type of Family and Intimate Partner Homicide by Health Planning Region of Injury in Virginia, 1999 – 2008 (N = 1,350)

Health Planning Region	Intimate Partner (IPH and IPA)		Child's Caregiver (CHC)		Family (OFH and FAH)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Central	242	26.2	40	20.1	63	27.8
Northern	125	13.5	31	15.6	29	12.8
Eastern	216	23.4	81	40.7	48	21.1
Northwest	114	12.3	20	10.1	25	11.0
Southwest	227	24.6	27	13.6	62	27.3
Total	924	100.0	199	100.0	227	100.0

Regarding the specific type of family and intimate partner homicide, 26.2% of the total intimate partner cases (IPH and IPA) occurred in the Central Health Planning Region, followed by 24.6% in the Southwest Region, and 23.4% in the Eastern Region. In addition, 40.7% of all child caregiver cases (CHC) occurred in the Eastern Region, followed by 20.1% in the Central Region. Finally, for family cases (OFH and FAH), 27.8% of cases occurred in the Central Region and 27.3% occurred in the Southwestern Region. These results were statistically significant which means that there was a relationship between the geographic location of injury and the type of family and intimate partner homicide.¹⁰ Table 5 shows the distribution of cases by Health

⁹ <http://www.census.gov/popest/estimates.html>

¹⁰ Chi Square analysis revealed a statistically significant relationship between the geographic location and type of family and intimate partner homicide [$X^2(8) = 35.98, p < .001$].

Planning Region. Figures 3, 4, and 5 further illustrate the distribution of cases by Health Planning Region.

Figure 3: Distribution of IPH/IPA by Virginia Health Planning Region, 1999 – 2008 (n = 924)

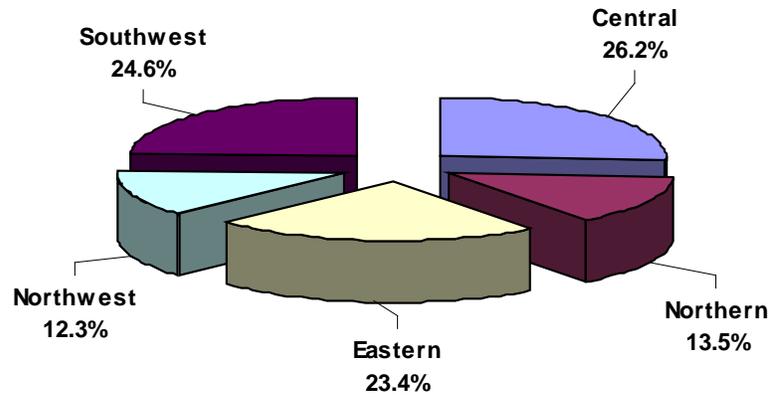


Figure 4: Distribution of CHC by Virginia Health Planning Region, 1999 – 2008 (n = 199)

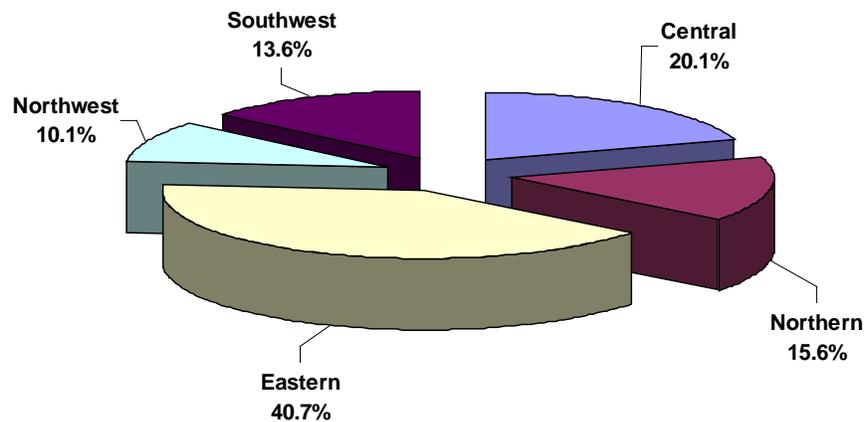
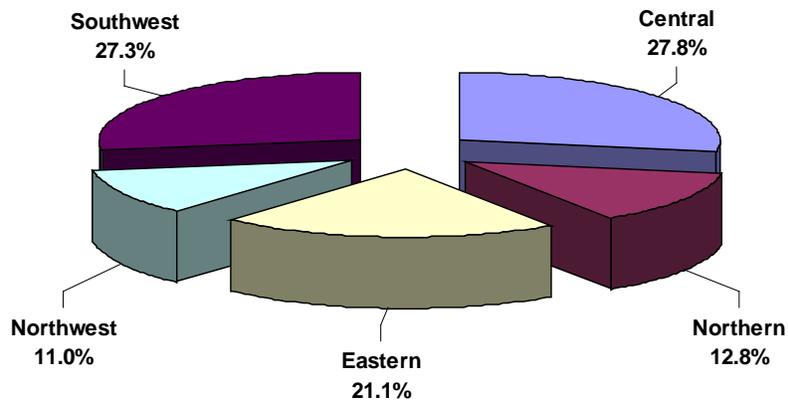


Figure 5: Distribution of OFH/FAH by Virginia Health Planning Region, 1999 – 2008 (n = 227)



Another way to examine the magnitude of family and intimate partner homicide is to examine the rates of occurrence for these incidences. Rates are standardized and take into account the population of a region. In this paper, rates are calculated per 100,000 people.

Table 6 shows the rates for the ten-year period. The findings listed in this table are similar to findings identified when examining the above pie charts. Specifically, the highest rates of IPH/IPA homicides were found in the Central Region (1.92) followed by the Southwest Region (1.73). The highest rate of CHC was found in the Eastern Region (1.79) and the highest rates of OFH/FAH were found in the Central (.50) and Southwest (.47) Regions.

Table 6: Family and Intimate Partner Homicide Ten-Year Rate by Health Planning Region of Injury in Virginia, 1999 – 2008 (N = 1,350)

Health Planning Region	Intimate Partner (IPH and IPA)		Child’s Caregiver (CHC)		Family (OFH and FAH)	
	<i>n</i>	<i>rate</i>	<i>n</i>	<i>rate</i>	<i>n</i>	<i>rate</i>
Central	242	1.92	40	1.33	63	0.50
Northern	125	0.64	31	0.63	29	0.15
Eastern	216	1.22	81	1.79	48	0.27
Northwest	114	1.03	20	0.76	25	0.23
Southwest	227	1.73	27	0.98	62	0.47
Total	924	1.25	199	1.12	227	0.31

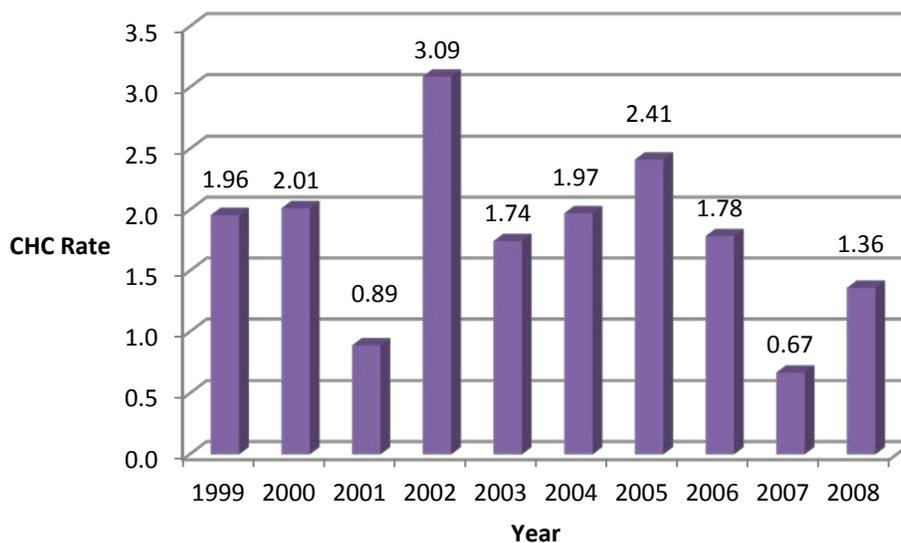
Ten-year rates were calculated for each Health Planning Region using population estimates from the U.S. Bureau of the Census for the ten-year period.¹¹

Child Homicide Deaths

¹¹ <http://www.census.gov/popest/estimates.html>

Family and Intimate Partner homicide deaths occurred in every Health Planning Region. However, the most striking statistic observed was that 41% of child homicide by caregiver deaths occurred in the Eastern Health Planning Region. This area also has the highest rate of CHC. Figure 6 provides a ten-year summary of CHC rates for the Eastern Health Planning Region.

Figure 6: Ten-Year CHC Rate for the Eastern Health Planning Region in Virginia, 1999 – 2008 (n = 81)



An important question is—is it possible to identify a characteristic or group of characteristics that increased the probability of CHC for this area? Among Health Planning Regions, the Eastern and Central Regions appear to have the most similarities. They are both urban areas with a higher than average number of homicides.¹² Also, during the study period, both areas had an identical number of family and intimate partner homicides. Finally, both areas have a military presence, although the Eastern Region has a greater number of military installations than the Central Region. The Central Health Planning Region is home to Fort Lee and the Eastern Health Planning Region is home to many major military installations such as Langley Air Force Base, Fort Eustis, and Little Creek Amphibious Base. The Eastern Health Planning Region is also home to the Norfolk Naval Shipyard.¹³

¹² <http://www.vdh.state.va.us/medExam/documents/2011/pdfs/AnnualReport09.pdf>

¹³ For a review of homicides, please review the most current OCME Annual Report available at: <http://militarybases.com/virginia/>

Military Affiliation and Family and Intimate Partner Homicide in the Eastern Region

Persons affiliated with the military are those persons who are on active duty or veterans (discharged or retired). Additional affiliated persons include those designated as dependents including those who are either spouses or children of those who are active duty or veterans.

As previously mentioned, 142 of the 1,350 decedents were affiliated with the military. Many of these cases ($n = 80$, 56.3%) were IPH/IPA cases and 43.3% of these occurred in the Eastern Health Planning Region. However, an examination of CHC cases reveals that 71.4% of the military affiliated cases occurred in the Eastern area. Additionally, it appears that the Eastern Health Planning Region has a disproportionate number of CHC cases and military-affiliated cases.

It is important to mention that the number of military-affiliated decedents represents a small percentage of the total family and intimate partner homicide victims; thus, interpreting these results is difficult without further study. Nevertheless, the data presented here suggest the need for additional information regarding the Eastern Health Planning Region and the reasons for the disproportionate number of CHC homicides. The following table shows the type of homicide by Health Planning Region for *military-affiliated decedents only*.

Table 6: Type of Family and Intimate Partner Decedents by Health Planning Region for Military-Affiliated Decedents in Virginia (1999 - 2008)*

	IPH/IPA ($n = 80$)	CHC ($n = 14$)	OFA/FAH ($n = 38$)
Central	15.6	7.1	28.9
Northern	14.4	14.3	7.9
Eastern	43.3	71.4	36.8
Northwest	10.0	7.1	18.4
Southwest	16.7	0.0	7.9

**Values reflect percentages for each type of case*

Discussion

The current study sought to examine whether there was a greater probability of certain family and intimate partner homicides occurring in differing geographic areas of Virginia. Statistical analysis revealed a relationship between area and type of family and intimate partner homicide; however, it is important to question what these results mean and how these findings can be used to strengthen the Commonwealth's response to these homicides.

First, for family and intimate partner homicide cases, it appears that Health Planning Regions with high numbers of overall homicides also had high numbers of intimate partner homicides.

There may be factors within those areas that facilitate violence, whether family, intimate partner, stranger, or other.

Additionally, 41% of child homicide by caregiver deaths occurred in the Eastern Health Planning Region. Two-thousand and eight population estimates were examined to determine if the Eastern Health Planning Region had a higher percentage of children which would explain the increased chance of child homicide by caregiver deaths. However, the percent of children for each Health Planning Region varied from 20.2 to 25.2, indicating that the percentage of children in the Eastern Health Planning Region was similar to the percentage of children in other Health Planning Regions in Virginia.

Another area for consideration is the decedent's military affiliation. While being affiliated with the military is not likely the cause of family or intimate partner violence, it is important to acknowledge this similarity between cases and then conduct further study to understand why this similarity exists.

During the time period reported in this article, every Region had homicides which were motivated by family or intimate partner discord. Population risk for homicidal violence does indeed vary by type and region of the Commonwealth. Public health messages on child safety should be a priority in the Eastern area of the state, while intimate partner violence prevention is critical in the Central and Southwestern communities.

Suggested Citation: Lee, N. (2011). Geographic Location and Type of Family and Intimate Partner Homicide in Virginia, 1999-2008, Richmond, VA: Office of the Chief Medical Examiner, Virginia Department of Health. Retrieved [date of retrieval], from <http://www.vdh.virginia.gov/medExam/violence.htm>.