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# Anti-Transgender Hate Speech and Hate Crime: A Ten-Year Analysis of the Relationship Between Local Attitudes and Violent Hate Crime

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*While writing this thesis, I have not witnessed any wrongdoing, nor have I personally violated any conditions of the Skidmore College Honor Code.*

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**Abstract**

Anti-Transgender hate crimes have been on the rise in recent years, but the reasons for this are unclear. The main question this thesis works to answer is: How do state-by-state variations in hate speech, as measured by Google searches for derogatory transgender terminology, relate to hate crimes in that state, as measured by reported hate-motivated murders of transgender people, in the United States from 2008-2017? This analysis utilizes data of reported hate crimes against transgender people, taking into account the identity of that individual, along with the economic, social, and political climate of the state in the year the victim died. Overall, the findings are inconclusive and point to a need for further research. However, discrimination against the transgender community is still well-documented and, combined with this analysis, leads to the need to research more. Moving forward, data collection on transgender people needs to become more robust to help with further analyses and to further reinforce the need for legal protection of transgender people. Finally, this thesis provides potential areas of further research as well as policy recommendations to protect the transgender community in the United States.

## I. Introduction

In September of 2017 Ally Lee Steinfeld, a seventeen-year-old transgender girl, was reported missing by her family in Missouri. By the end of the month, her brutally mangled corpse was found, and despite the targeted nature of the murder, the prosecutors determined the crime not to be a hate crime, on the insistence that first-degree murder and hate crime are inseparable (Lyons, 2017).

Defining and counting hate crimes against minority populations has been an increasing priority in the United States as these brutal crimes have become more visible. But have hate crimes become more common and how are they linked to hate speech? For this analysis, my research question is: How do state-by-state variations in hate speech, as measured by Google searches for derogatory transgender terminology, relate to hate crimes in that state, as measured by reported hate-motivated murders of transgender people, in the United States from 2008-2017? Understanding the situations that lead to hate crimes can help victims find justice, help legislators enact explicit protections of minority groups, and potentially reduce the incidences of hate crimes, and their associated costs for the victims themselves, their families, the minority population, and the country as a whole.

The literature on this subject is wide and varied, but I focus on hate speech/crime literature, transgender-specific literature, and literature utilizing my analytical method. Literature on transgender people primarily stems from a 2011 survey of the transgender population in the United States. This survey, conducted by the National Center for Transgender Equality (Grant et al., 2011) found pervasive disenfranchisement and discrimination against transgender individuals in all facets of life in the United States, and further research has reinforced their findings. Hate speech and hate crime literature focuses on defining and identifying their sources and repercussions. Both hate speech and hate crime are difficult to define and to discourage, but private companies have taken the lead in reducing hate speech, while local governments have been the main force in identifying and reducing hate crimes. Finally, Google Trends research has shown the groundbreaking potential of using this new tool in assessing public opinion and actions. The preeminent paper utilizing Google Trends found a large improvement in previous analyses of Barack Obama's 2008 election and the effects of racism (Stephens-Davidowitz, 2014).

This thesis sets out to investigate the relationship between trends in Google searches of derogatory terminology against transgender people and murders of transgender people in the United States over a ten-year period. Using key terminology geographically and over time, this paper will analyze the relationship between online searches of anti-transgender specific terminology and murders of transgender people. This analysis builds on previous literature on the relationship between hate speech and hate crime by applying it to the transgender population. Additionally, it takes advantage of the constantly improving Google Trends website and the advantages this method has over others, such as survey data.

The contributions of this work are the application of Google Trends methodology to a relatively new topic, hate speech and hate crime, and an underrepresented population, transgender people. Historically, transgender people have been left out of academic research due to the relatively small population and lack of accurate data (Herman, 2014). While the visibility of a minority group may shift, there is little evidence to show that the size of a population shifts as dramatically (Grant et al., 2011). Thus, there remains a need to study this vulnerable population as a means of understanding the motivations for the ongoing transphobia around the world, especially in the United States. Hate speech and hate crime are inextricably intertwined, making the link difficult to assess. To investigate this relationship, I use Google Trends, an increasingly robust data source on public opinion, to create an image of transphobic opinion, and then compare that with reported anti-transgender, hate-motivated murders.

In the past few decades, LGBTQ rights have grown dramatically around the world, particularly for gay and lesbian individuals as social acceptance and legal protections have increased worldwide and in the United States (National Coalition of Anti-Violence Programs, 2017). Transgender rights have also expanded, but at a slower pace and with many regressions. Yet, despite the growing awareness of transgender identities, transgender Americans face a uniquely complicated legal system and a lack of social acceptance. In particular, there is evidence recently that hate crimes against transgender people in the United States have been on the rise, bolstered by a conservative government and its regressive policies regarding transgender rights (Human Rights Campaign, 2017).

Discrimination has historically been a difficult area to address in any society, but especially in the United States. The United States has a difficult past with regards to hate, starting off with the pilgrims who came to the unformed United States in 1620escape religious oppression and quickly began oppressing the population that already resided in the United States – the Native Americans (Seabrook & Wyatt-Nichol, 2016). This trend of oppression has continued today, but the methodology has shifted depending on the times. Currently, the transgender population experiences oppression in the form of anti-transgender legislation backed by “so-called facts” and “religious freedom.” The effects of this oppression and discrimination are hard to substantiate due to much of the effects being psychological and on a non-quantifiable human level (Meyer, 2003). However, like everything, we can assign a monetary value to human life and estimate the costs of discrimination and hate. While that is not the main focus of this investigation, it is important to keep in mind the costs of the various forms of oppression – hate speech, hate crime, discrimination, etc. – on the victim, the targeted population, and the larger society.

Contrary to the hypothesis, my analysis did not reveal a link between hate speech and hate crime against transgender people, as I measured them–though there does appear to be a relationship between hate crime and other local factors, such as the crime rates in the area and the economic conditions of the state. Despite not detecting a relationship between hate speech and hate crime, the analysis points to the value of further investigation to find new ways to collect a dataset and analyze a relationship through other measures than Google Trends. Overall, these analyses underscore the need for better data and for new ways to assess public opinion and hate.

This paper is structured to examine many of the facets of hate speech and crime to proposes ways to reduce the incidences of violent hate crime and strategies for assisting the transgender community. Section II, the literature review, is split into three major sections: transgender literature, hate speech and hate crime literature, and Google Trends literature. Following the literature review, in Section III, I discuss the process of creating a model and collecting data for an empirical analysis of hate speech and hate crime against transgender Americans. Next, in Section IV, I discuss the model and then lead into the analysis in Section V. Finally, I discuss the limitations of my analysis in Section VI for areas of further research and then apply my findings to potential policy implications in Section VII.

## II. Literature Review

Research on the relationship between hate speech and hate crime is somewhat sparse, but there is a pertinent body of research that examines discrimination with regards to race and sexual orientation. The relationship between hate speech and hate crime, while apparently simple, is more complex in considering the entangled nature of crime and hate. For this study, I am covering a variety of topics and thus the literature review is divided into three major sections: transgender literature, hate speech and hate crime literature, and literature utilizing Google Trends. Then, I tie these areas of research together to create a model of online-based hate speech and hate-motivated murders of transgender Americans.

Research on the transgender population is growing slowly, with the landmark study being the National Center of Transgender Equality's survey of transgender Americans in 2011. Due to the small body of research on transgender people, we can also look at the LGBT population as a whole to find trends in this minority population. Understanding the current and historical demographic information on the transgender community creates context for the rise in reported hate crimes against transgender people.

Google Trends is my main source of hate speech data due to its private nature and the subsequent reduced bias. Since the search engine began making its search data public in 2004, Google Trends research is a relatively new research technique. However, the use of Google Trends in research has become more and more popular since 2004 as a tool to investigate what types of information people are seeking out in their free time.

Finally, understanding crime will help ensure the validity of my research. Gaining insight into the trends in crime, causes, and legal issues can influence the social climate that encourages or discourages hate crime. In all, the intersection of hate, transgender identity, and the political climate on the United States influences the direction of this research paper.

### a. **Literature on Transgender Population**

Discrimination against the transgender population is widespread and hotly debated, while data remains lackluster. Protections vary largely state to state, similarly to the gay rights movement, which began in liberal hotspots and spread to more-and-more conservative areas. However, the transgender population experiences clear discrimination that has a potentially substantial impact on the overall economy. Transgender people account for a small portion of the population – about 0.5% – but their representation in society and the media does not reflect this (Nownes, 2010). Transgender people have become a symbol of "moral panic" in recent years. Moral panic is "when the official reaction to a person, groups of person or series of events is out of all proportion to the actual threat offered…" (Hall et al., 1978). This has led to transgender people being the target of fear-based and specifically anti-transgender policies as well as being hidden in survey data. These factors, the lack of accurate data and the victimization and lack of protection of transgender people's basic human rights, necessitate further research on the transgender population. For this reason, I chose to make transgender people my minority group to study the factors and impacts of hate speech and hate crime.

In a landmark survey of 6,450 transgender and gender non-conforming Americans, the National Center for Transgender Equality along with the National Gay and Lesbian Task Force found evidence of pervasive discrimination and disenfranchisement among the surveyed populations (Grant et al., 2011). Of those surveyed, nearly all (97%) reported harassment or mistreatment at work, and half (47%) experienced not being hired, being fired, or denied a promotion, despite non-discrimination laws (Grant et al., 2011). Often, transgender people cannot protect themselves from discrimination due to its unspoken nature and general lack of opportunity to defend themselves (due to transgender-specific issues such as mismatching documents being flagged in background checks on new hires) (Grant et al., 2011).

Consistent with these indicators of workplace discrimination, we also see that the poverty rates among transgender people are twice as large as the general population, with 15% of the general transgender population experiencing poverty compared to 7% of the total U.S. population (Grant et al., 2011). However, rates of poverty, as well as most other factors, differ substantially within the transgender population. For instance, 35% of black transgender people surveyed lived in poverty compared to 14.5% of the general U.S. population (Grant et al., 2011). This staggering figure indicates that some level of discrimination must be occurring to so greatly disenfranchise the population. Overall, transwomen of color experience very high rates of discrimination as well as making up most of the hate crime victims in this country, consistently making up more than 80% of the transgender hate crime victims (Human Rights Campaign, 2017).

While the United States has a history of mistreatment of minority groups in the past, evidence of outright bigotry has decreased in recent years. The foundation of the United States on the oppression and enslavement of minority populations, such as Native American and enslaved Africans, has given way to more covert forms of racism and disenfranchisement: reducing discussions of race and avoiding any racial taboos in favor of more watered-down "acceptance" of minority groups (Bonilla-Silva, 2013, p. 272). Legal protections have made overt discrimination illegal, and the United States has become seemingly more accepting of minority groups when considering the history of institutional disenfranchisement.

However, there still exists a divide that has led to numerous vicious battles over basic civil rights issues and people being oppressed without legal recourse due to the ambiguous nature of micro-discrimination. Of the populations that have experienced a large growth in representation, the transgender community still struggles with access basic rights and acceptance. While acceptance of transgender people has improved globally, most of the world still has unequal protection of transgender people. Despite having such harsh discrimination and uneven protection by state, the United States has become one of the most progressive, though protections vary by state. The most recent example of overt discrimination against transgender people in the United States are the ongoing "bathroom bill" fights that involve banning transgender people from public restroom facilities. This type of discrimination is reminiscent of Jim Crow policies, but without any separate facility being offered.

As the National Transgender Discrimination Survey (2011) suggests, the size of the transgender community is difficult to ascertain for a variety of reasons. The transgender community is unique in that it is not familially or spatially based; it is identity based. This makes counting the population difficult as it is self-identified, and many transgender people do not publicly identify as transgender. The population is thus often at risk and in search of community and support, especially in the event of oppression or wrong-doing and a lack of legal protection. Public misunderstanding and lack of acceptance permeates every facet of the transgender experience, but many people live highly supported lives and never have issues. Therefore, estimating the population size is difficult, but estimates have been created. In one study, Flores and colleagues (2016) found a varying percentage of each state identifying as transgender, but overall estimated the population to be 0.5% of the general population. Another study corroborates this, estimating the transgender population to be about 0.5% of the general population as well (Nownes, 2010).

The economic impact of discrimination stems from employment discrimination. Transgender Americans, while a small minority statistically, still make up a substantial number of individuals by population. In an analysis of the cost of employment discrimination of transgender people in Massachusetts, Herman (2011) laid out the issues that arise from employment discrimination, in the form of being fired, not hired, or refused a promotion due solely to the individual's gender identity. In the National Transgender Discrimination Survey (2011), 20% of transgender people in Massachusetts reported losing a job due to being transgender, 39% being not hired, and 17% denied promotions. In total this accounts for account for approximately $2 million in lost income tax, and $3 million in public welfare expenditures. Transgender people on average are more educated than the general population, and pure discrimination hurts everyone, not just those directly affected. Similarly, in Florida, Herman (2015) found a similar situation despite slightly different circumstances. Though there remains a divide in the United States between the northern and southern states, Herman's analyses (2011, 2015) show that despite these social and political differences, the outcomes for transgender people across states is similar.

The findings of both studies demonstrate that approximate proportions of the population who identify as transgender may change from place to place, but not drastically. This suggests that the transgender population is relatively consistent and does not depend on the location or environment. Even though the transgender community is a small in population, that small number accounts for millions of people around the world, and they have been commonly hidden in research. In a report, the Gender Identity in U.S. Surveillance group lays out guidelines for including measures of gender identity to gain better data on the transgender population. Simply including a question for an individual to self-identify may not capture all transgender individuals due to differing terminology preferences and the importance of privacy (GenIUSS, 2014). However, simply including transgender people in surveys through an additional question will lead to more information about this particular population and the potential for more substantiated evidence to use when advocating for policy protections for transgender people.

b. **Literature on Hate Crime and Speech**

To discuss hate speech and hate crime, we must first define each. Former FBI Director James Comey describes hate crimes as "different from other crimes. They strike at the heart of one's identity […] our sense of self, our sense of belonging. The end result is loss: loss of trust, loss of dignity and, in the worst case, loss of life" (Comey, 2014). What sets hate crimes apart from non-hate crimes is the dual nature of hate crimes: They are both assaults on individuals and assaults on a community as an act of punishment (Perry, 2014). Those who qualify as victims of hate crimes must belong to a minority group whose history reflects systemic, identity-based discrimination, which further exacerbates their ongoing victimization (Perry, 2014). The difficulty with this is that more data needs to be collected for a hate crime than a non-hate crime due to the contextual nature of hate crime (Schwencke and Fresques, 2017). Hate crimes, thus, often go unreported as hate crimes because the personal beliefs of the perpetrator are not assessed and motivations for violent crimes are already often ambiguous.

A major issue with hate speech is how to define it and how to detect it. Hate speech is protected in the United States under the first amendment. The broad scope of the First Amendment only prohibits so-called "fighting words," following the U.S. Supreme Court case *Chaplinsky v. New Hampshire* in 1942. These "fighting words" are any words intended to cause a physical reaction, such as hate speech that is intended to cause others to become physically violent. However, the court does not lay out any guidelines for what constitutes “fighting words” while also disregarding the impact of speech alone.

Warner and Hirschberg (2012) discuss the process of creating a new algorithm to detect hate speech and the intricacies of identifying hate speech. Although federal and state governments effectively have no policing power regarding hate speech, private companies can police speech and behavior. Many companies do not allow hate speech, such as Twitter and Facebook, where hate speech is a violation of terms of use. Warner and Hirschberg (2012) note that most hate speech is focused on a few specific derogatory key terms for a minority group. However, these words can have negative and positive uses. For instance, the discussion of the term could be mistaken for hate speech, but the discussion is purely educational and not derogatory. Specific words out of context may or may not constitute hate speech.

In another direction, Warner and Hirschberg (2012) do not count mentioning, praising, sympathizing with, or supporting a hate group, such as the KKK, as hate speech. Despite this, they would categorize hateful modifications as hate speech (i.e. unnecessary mentioning of race using derogatory terminology). Clearly, this is a fine distinction, and often subjective. Warner and Hirschberg (2012) agree with Stephens-Davidowitz (2014) in the group solidarity difference in terminology, specifically surrounding the “N” word being spelled with an “er” ending among hate groups and academics, and with an “a” ending among African Americans in solidarity.

Since the United States legally allows hate speech, defining it for legal and private-use purposes is more complicated. It is important to set parameters when researching instances of hate speech and crime. For this paper, I am investigating derogatory terminology and its relationship to reported hate crimes. This simplifies the definition in a way as it is any type of general negative words directed at the population. For this research, hate speech will be primarily defined by hateful terminology. The primary derogatory terminology against transgender people is "tranny." This is similar to the N-word when directed at people of color from a white person. And similarly, some transgender people are attempting to reclaim it as a positive term, but this is not a widespread desire. As discussed further in the methodology section, the derogatory term for transgender people is commonly agreed upon; GLAAD (2016) recommends never using "tranny" in any circumstance, Facebook has on numerous times banned its use, and its association with sex work has not lessened since it began being used by gay men in the mid-1980's (Williams, 2012).

Since the literature on transgender-specific hate speech and hate crime is limited, an obvious population to look at to gain insight into hate speech and hate crime is the LGBTQ population generally. Gays and lesbians have gained more visibility, public support, and political protections in recent years. This population is better studied than the transgender population, but both populations share a common experience and are commonly grouped under the umbrella terms queer[1] and LGBTQ. Similar to the transgender population, lesbians and gays still face tremendous discrimination and hate crime. However, the lesbian and gay population is much larger than the transgender population and, therefore, often more visible (Nownes, 2010).

Another aspect of hate crime and hate speech is the effect either has on both an individual and group level. The economic impact of discrimination, as previously discussed, has a major effect on both the overall economy and the economic health of an individual. On another level, hate crime has a clear impact on a person's well-being, with physical violence having associated costs and clear ramifications. However, the impact of hate speech is less obvious. In an experimental survey, Leets (2002) analyzes how people experience and respond to hate speech.

[1] "An adjective used by some people, particularly younger people, whose sexual orientation is not exclusively heterosexual" (GLAAD, 2016).

By interviewing college-aged individuals of two minority groups – Jewish and homosexual – Leets (2002) looked at the differences in perception of the motivation of hate speech, responses to hate speech, and reaching out for support. The reason for the two separate minority populations is the difference in acceptance of both groups, Jews have a long-standing and complicated history of oppression but are much more accepted than homosexuals who have been engaged in a more recent battle for legal and social rights. Overall, Leets (2002) found that hate speech elicited a strong negative reaction from those it was aimed at, but that the less established minority populations, homosexual men in this study, would rarely respond out of fear of physical violence. Additionally, the more oppressed and less organized the population, the more the population banded together in support groups. This suggests that hate speech has a negative psychological effect on individuals and has the additional impact of causing fear for one's own physical health.

Analyzing trends in hate crime, we can look for its relationship to public opinion and acceptance of hate speech. The FBI publishes hate crime data annually, since 1992 when they were mandated to do so, and has analyzed trends in hate crimes (Federal Bureau of Investigation, 2014). While hate crimes have fallen overall in the previous years, there has been a recent increase in anti-Muslim hate crimes during the rise in popularity of Donald Trump and his subsequent presidency (CAIR-NY, 2018).

Although these FBI statistics are useful, they are most likely well under-representative and biased (Schwencke and Fresques, 2017). Evidence suggests that hate crimes are largely underreported, with states like Hawaii not reporting any hate crimes, possibly because there are none, but that seems highly unlikely (Schwencke and Fresques, 2017). For this reason, it is important to keep in mind that while any analysis of this data will be limited, the data that is available can still be analyzed for general trends and relationships. This point shows the importance of hate crime reporting. We cannot accurately research and conclude how hate crimes and hate speech work if we do not have data.

The genocide that occurred in Rwanda in 1994 and its relationship with the "hate radio" that broadcasted statements encouraging acts of genocide offers a distinct case study of the complex relationship between hate speech and hate crime. In 2003, the United Nations found three journalists guilty of inciting genocide in Rwanda through hateful broadcasts over the Radio-Télecision Libbre des Milles Collines (RTLM) and other news outlets, beginning in the summer of 1993 (Straus, 2007). In an analysis of the role these radio transmissions had on the genocide, researcher Straus (2007) found a secondary relationship between the radio transmissions and acts of violence. He used radio ownership rates (an important factor in a poor country more than 20 years ago when radio would have been less available) and radio coverage (important in the hilly and rural country of Rwanda) to map the likelihood that groups of people in specific areas would hear the radio transmissions that have been cited as the cause of the genocide. The genocide occurred over the course of a few weeks but not simultaneously across the country, suggesting that the radio transmissions could not be a sole cause.

Despite the claims, the researcher had difficulty finding a consistent or strong link between the genocide timing and radio air times. Additionally, in surveys, those who participated in the genocide only attributed their actions to the radio a small amount of the time (15%), but he did find that those who did say they were influenced by the radio had the highest rates of violence and killings than those who did not. Overall, Straus (2007) cites radio as a secondary source of violence motivation, radio conveyed information, while local meetings and direct mobilization incited the violence. His findings point to the difficulty in linking broad messages with specific crimes. However, this analysis provides an interesting way to investigate the relationship between hate speech and hate crime in the use of broadcasted messages, a potentially useful methodology discussed further in Section VI (Further Research).

### c. Literature using Google Trends

Historically, surveys have been used to gain insight into public attitudes and behaviors. However, a new methodology is emerging utilizing Google search data to gain non-survey-based information on private opinion and thought. The benefits of this are clear: People are in the privacy of their own homes and free from the public's gaze, so they are more open in their searches than they would be otherwise. In his landmark paper, Seth Stephens-Davidowitz (2014) uses Google Trends to increase the robustness of research in racism and its effects on Barack Obama's 2008 and 2012 elections. Compared to previous survey-based literature, Stephens-Davidowitz finds a larger effect of racism on the election results, due to the anonymity of Google search. In testing many variations of searches, Stephens-Davidowitz fine-tunes his model to control for non-derogatory terminology. This shows the importance of the specification of searches since his research is primarily based on one single word. Overall, Stephens-Davidowitz provides a clear reason to use Google searches and the importance of being mindful with these searches.

Similarly, Safiya Noble (2018) finds that the Google search algorithm itself is a reflection of prejudice in society. Default searches, generated by popular searches and presented by the Google API, reinforce stereotypes of minority groups, reinforcing these stereotypes and causing negative psychological effects on those within the minority group. Nobel questions whether Google is responsible to moderate these searches since those who tend to work for these companies are in the majority, white men. Overall, Nobel provides a strong argument against the "default" and the implications of complete free speech. Google search has repeatedly proven to be more effective than survey-based methods of collecting opinions.

In another paper, Judge and Hand (2011) find that by using Google search results, they could better predict United Kingdom cinema attendance than any other previous model. By using a simple month-by-month search volume across the United Kingdom for a variety of searches, including "cinema" and "movie," they found the strongest predictor of attendance to be the combination of a variety of terms. The simplicity of their methodology shows how much more there is that Google search results can be used for, but the simple methodology reinforces the strength of the search engine in gaining insight into the public. A strong consideration offered by Judge and Hand (2011) is the importance of choosing terminology due to the selective nature of this research methodology.

Unlike other methods, Google Trends research relies on a very specific measure of attitudes: the frequency of a search term being searched in a set geography. Judge and Hand (2011) allude to the limiting nature of this and the importance of the role of the researcher in understanding the specific linguistics of what information they want to get out. It is unclear why some movie-specific terms would yield stronger results, but what Judge and Hand's (2011) analysis show is the importance of linguistics in hate speech and the detection of bias.

In a more complicated analysis, Dergiades, Milas, and Panagiotidis (2015) use a combination of Tweets and Google Trends to see how the information from public sites influence financial markets. Accounting for other financial variables, the information on Greek-German government bond yields were significantly influenced by the short-run information provided by Twitter and Google. This shows the strong relationship people have with these online services and the influence they have on real-world systems. Additionally, the speed at which information can travel through these digital streams makes the connection between cause and effect stronger and clearer.

Overall, Google searches continue to prove to be an interesting and forward-looking research methodology that, as Google continues to refine their research-side services, will continue to be an important tool to understanding the state of prejudice and opinion around the world. However, Google is only used in a limited capacity, both in who can and will access it and what they use Google for. Not everyone who feels negatively towards a minority group will access Google and search that specific term. Even if there are no confounding factors in the term search, such as different connotations of the word, the term searches will not be all inclusive as Google is often an information engine, not a forum on which users share beliefs. Despite the limitations, Google can give us an idea of what information people are seeking out in their own private time, something that is impossible to get honest data about otherwise.

### d. Summary

Bringing these three areas together, I construct a model and understanding of how the transgender community in the United States is affected by hate speech and hate crime by utilizing the methodology provided by Google Trends.

The purpose of this literature review is to examine the current confluence of crime, transgender rights, hate speech and hate crime, and methodologies utilizing Google Trends. Acceptance and visibility of transgender Americans may be greatly improved from the past, but the current research shows how a lack of clear legal protection and a slow culture of acceptance affects the transgender people living in the United States today. The literature reveals the importance of context for every transgender person, additional factors such as race, gender, and location matter greatly due to differing social attitudes and legal protection among different areas of the country. For this reason, I will include a variety of variables to account for the additional factors that may be related to hate crime. The dependent variable of "being murdered" will be primarily dependent on the term search. After that, I will include socioeconomic factors that, according to the literature, may have an additional impact on an individual.

To start, victims tend to identify as women, so I will include a gender variable to correspond with the victim's gender identity. Second, race appears to have a major impact on discrimination, with transgender people of color experiencing higher rates of discrimination and disenfranchisement than their white counterparts (Dharmapala, 2005). Location will be a major factor in my analysis as Google search volumes are based on locational data, so city and state will be important considerations. Additionally, macroeconomic data will be important in my analysis. Other factors that could affect hate crimes are inequality (Kang, 2016), school enrollment (Gale, 2002), crime rates (Federal Bureau of Investigation, 2014), political climate (Perry, 2014), poverty rates (Fajnzylber, Lederman, and Loayza, 2000), and unemployment (Fajnzylber, Lederman, and Loayza, 2000). Bringing all facets of the literature together, I will investigate the link between hate speech and hate crime against transgender people in the United States. An understanding of transgender people and the economic and social issues they face, combined with a historical and empirical analysis of hate and crime, will allow me to create a model to use the unique data provided by Google Trends to better understand how the transgender community interacts with hate and crime in the United States.

## III. Methodology: Discussion of Variables and Data

In considering the factors that contribute to the specific type of crime that is anti-transgender hate crime, I compiled data from a variety of sources to cover individual demographic and socioeconomic factors that could be related to the incidence of hate crime. This model is composed of data from the ten-year period of 2008-2017, as limited by accurate data availability. The main components of the model are the individually reported crime data from a compiled list of anti-transgender hate crimes (Transgender Europe, 2017). The economic data comes from data compiled into the online data source, DataPlanet. Finally, hate speech data is collected from Google searches. In this model, I am measuring hate crime as the number of transgender people reported as murdered, according to the most reliable police reports, as a hate-motivated crime in each state in each year.

Building a model comparing the incidences of violent hate crime as a function of hate speech requires defining both. Definitions of hate speech are not set and there is no consensus in research or public policy on the matter. Local and era-based ideas heavily influence how hate speech is defined, who can be a victim of hate speech, and how we police hate speech. Hate speech is "usually thought to include communications of animosity or disparagement of an individual or a group on account of a group characteristic such as race, color, national origin, sex, disability, religion, or sexual orientation" (Nockleby pp. 1277-1279, Cited by: Levy, Karst, & Winkler, 2000). Hate speech itself is not useful or constructive in any way; its use is the communication of hate toward a group. Thus, it is more complicated to define hate speech, as it is based on the perpetrator's intent and own identity. The main distinction between hate speech and hate crime being the physicality of crime, with both being similar in motivation or intent: to spread hate to the group not to the individual per se. The complication with hate speech is that it protected by the First Amendment, except in cases of "fighting words" (*Chaplinsky v. New*

*Hampshire*, 2015). For this reason, hate speech can only be measured by what the target group personally agree to be offensive or defamatory, making the definition of hate speech difficult and case by case. However, this investigation focuses on whether there is a clear link between hate speech, as measured through searches of inflammatory language, and hate crime, as measured through murders of the target group.

Thus, for the purposes of these analyses, hate speech is constrained to the utilization of a specific slur ("tranny"), which has not been reclaimed to the extent that other slurs have been reclaimed. Although like all slurs, a minority of the transgender population is reclaiming the slur, the general consensus is that the slur is offensive for any non-transgender person to use, and often also offensive for any person to use (as compared to the slur against black people which has been reclaimed in popular public art/music/society as a celebration of black-ness). To ensure that this word isolates offensive searches, without any educational benefit, I did an additional check into the related searches and found that all of the related searches for this term were derogatory. I found no evidence that a positive use of the word is pervasive enough to give any validity to the word not being anything except derogatory.

Second, we need to define hate crime. Hate crime, generally is simply a "criminal offense against a person or property motivated in whole or in part by an offender's bias against a race, religion, disability, sexual orientation, ethnicity, gender, or gender identity" (FBI, 2016). An important distinction to make when defining hate crime is that the victim does not have to identify with the specific group for which they are being targeted. For instance, there are many cases involving a cisgender man who is perceived to be a transgender woman based on how he is dressed and is murdered in anti-transgender hate even though the victim himself does not identify as transgender.

Another important consideration in hate crime is whether the victims knowing their assailants allows the crimes to still be counted as hate crimes. For the purposes of this analysis, intimate partner violence, as well as familial violence, will be counted as hate crime. Although this complication can sometimes disqualify a crime as hate-motivated, I included the murders committed by family members and partners where there appears to be a link between the victim's transgender identity and their murder. In the end, my definition of classifying each murder as hate-motivated or not is somewhat subjective based on the difficulty of classification. However, all of the victims included were murdered either out of explicit anti-transgender sentiment, unclear motivation, or for difficult to parse reasons, with those murdered for clear unrelated reasons removed.

Classifying each murder as hate crime is sometimes difficult, especially in cases where there is no information about the murder, victim, or murderer. However, in most cases we can infer if the murder is a hate crime, based on specific trends in how the victim is murdered. Often, in hate crimes of transgender people, there is a clear link to the motivation for the murder being related to anti-transgender sentiment, through the viciousness of the murder itself or through the specific actions, often involving nudity, without rape, of the victim, or mutilation of the victim's genitals (Human Rights Campaign, 2017).

Motivations for hate speech and hate crime are simple: the action is directed at the group to which the individual is believed to belong to. In order to gain insight into personal beliefs, I use Google search – an emerging research tool to collect data on the information being accessed by the public. Google search data has been made anonymous, categorized by topic, and then aggregated to give overall trends for an area. This makes Google a particularly valuable measure of human opinion and queries, as self-reported measures (such as surveys and polls) are much less likely to capture opinions or beliefs that people see as embarrassing or outside of social constraints, thus masking prejudice or fetishes. Google Trends collects and reports search data on a weighted and relative way, meaning that since each state has a different population they adjust for the population, and then rank starting at 100 for the state with relatively the most volume of searches for that term in that year, and then going down based on relativity.

In considering the validity of this search term data, I analyzed the related searches. The related searches give context to the search term and potential motive and intention behind the search. Analyzing the related searches, we can see that all of the top reported 25 searches are related to pornography ("tranny porn" "tranny tube" "shemale" etc.) and are thus derogatory. Fetishization is a type of prejudice based on the foreignness of the fetish (meaning that people don't see transgender people as similar to themselves). While other literature controls for positive searches, there does not appear to be any substantial positive uses of the search term, so I will not be using any controls for the search. Additionally, because of the nature of Google, I can gain insight into an endless variety of research topics because Google is open to use by all who have internet access, limited only by the desire and effort of the individual utilizing the Google Search engine. This is important for this research as transgender people are often left out of surveys and other research due to the population being relatively small (Herman, 2014). For these reasons, I am using Google as my primary tool to assess public opinion.

Hate crimes were the other key variable in these analyses. These data were collected from compiled lists published by the cooperation of Transgender Europe (TGEU) and the magazine *Liminals* in their Transgender Murder Monitoring Project (TMM) (Transgender Europe, 2017). This list is published every year on the Transgender Day of Remembrance in November and contains the names and demographic information of as many reported transgender hate crime victims as they can substantiate. Besides this list, I double-checked the data on a variety of other sites, including obituaries and news reports, to fill in any missing demographic information and to verify the status of the numerous ongoing legal cases. The important factor that I had to check on was if the murder was a hate crime or not, and how to count hate crimes.

## IV. Models/Methodology

To analyze the relationship between hate speech and hate crime in the transgender community in the United States, I am utilizing Google searches through the Google Trends tool. As discussed in the literature review, Google searches provide a new and less biased form of assessing beliefs than other survey-based methods. Although Google differs from other survey-based data as it measures information-seeking behaviors, it can still provide useful information on how terminology is being used. Additionally, the literature suggests a link between derogatory searches and actions (Stephens-Davidowitz, 2014), as well as informative searches and actions (Judge & Hand, 2011)

To start, model 1 simply shows the relationship between the number of murders that occur in a state (murderspermil), based on individual murder data, the relative frequency of Google searches of the derogatory term “tranny” (term1), and the relative frequency of Google searches of the non-derogatory term “transgender” (term2). Theoretically, the derogatory search term (term1) should have a positive relationship with the number of murders, as higher levels of hate speech, as measured through derogatory searches, correlate with higher levels of hate crime, as measured through murders of trans people (Transgender Europe, 2017). Conversely, the non-derogatory search term has a more uncertain relationship with hate crime, as either the awareness could increase backlash or increase acceptance (Stephens-Davidowitz, 2014):

$$murderspermil_{it} = \beta_0 + \beta_1 term1_{it} + \beta_2 term2_{it} + \varepsilon_{it}$$

The two terms were chosen based on current guidelines on terminology and robustness checks in the related searches of the terms. Term 1, "tranny," is well documented as a derogatory term for transgender people, with only feeble attempts of individuals to reclaim the term (Williams, 2014). In Google, all of the top-25 related searches to "tranny" are derogatory and no sources from those searches had any positive connotations towards the transgender community. The searches for term 1 are focused on othering and fetishizing transgender people. The second term "transgender" is a more neutral term, with it skewing more positive than negative, where something like "transgendered" would skew more negative.

For model 2, I added data on the policy environment (policyGEN), from a group who aggregate state policy data into a number, a lagged murder variable to track how murder rates trend over time ($murderspermil_{t-1}$), and a variable describing if the victim was white or not (race), with 1 being a person of color, and 0 being a white person. For the race variable, I chose to group them into by race since most of the victims were non-white, with 98 out of the 115 being black. With this model, I expect that higher ratings on gender policy will have a negative effect on the murder rate, as the policy scale is a 1-4 scale of all policies that affect the health and well-being of transgender people in each state, with 1 being the least progressive policy states, up to 4 being the most progressive policy states (Movement Advancement Project, 2017). I would expend that the lagged murder variable would be positive, indicating consistency over time with murders in each state. Finally, I expect that being black will have a higher incidence of murders, according to the literature (Grant et al., 2011).

$$murderspermil_{it} = \beta_0 + \beta_1 term1_{it} + \beta_2 term2_{it} + \beta_3 policyGEN_{it} + \beta_4 murderspermil_{it-1} + \beta_5 black_{it} + \varepsilon_{it}$$

This second model builds on the first by including the political situation of the state where that individual was murdered. The relationship between public policy and public opinion and viewpoints is a difficult relationship to parse – but they are mutually informative (Wlezien, 2016). Public officials are elected and are thus subject to their constituents. However, there is an informative feedback that policy that is passed is the literal “law of the land” and will often be understood as a sign that that is what is popular and considered correct. Areas with more inclusive gender identity policies are both areas where the population may be more oppressive to those outside of norm with regards to gender, but also are areas of higher legalization of oppression, meaning that violence against transgender people is easier to get away with and is more socially accepted. The data for the policy variable is a scale of 1-4, with 1 being a state with negative policies and 4 being a state with excellent policies surrounding gender identity protection. These policies include the ability of individuals to change their identification documents; be legally protected from discrimination in housing and employment or be excluded from public spaces, such as restrooms and locker rooms. This variable acts as an aggregate source for policy inclusion by state regarding gender identity protection. The factors that go into this variable are scaled on a negative to positive rating. The main components of gender identity legislation are explicit protection in schools, medical care inclusion, ability to change name and gender identity markers on identification, protection from unfair firing, eviction, and refusal to be in public spaces. All of these policy factors influence the health and well-being of transgender people, as well as their ability to be successful and productive members of society (Movement Advancement Project, 2017). The race variable was an important addition as there is evidence to suggest that race is a major component of hate crime, and the United States continues to struggle with integration and ongoing racist opinions that have a major impact on the state of the country (Stephens-Davidowitz, 2014).

Then, building on model 2, I added for model 3 variables describing urbanization, gender, unemployment, and crime:

$$\begin{aligned} murderspermil_{it} &= \beta_0 + \beta_1 term1_{it} + \beta_2 term2_{it} + \beta_3 policyGEN_{it} + \beta_4 murderspermil_{it-1} \\ &+ \beta_5 black_{it} + \beta_6 unemp_{it} + \beta_7 vCrime_{it} + \beta_8 pCrime_{it} + \beta_9 female_{it} + \varepsilon_{it} \end{aligned}$$

The importance of these variables is the relationship between environment and crime. I want to account for other geographic factors that may be related to localized hate-related murder rates of transgender individuals. The obvious relation between hate crime and location is the overall levels of crime in that area to account for a shift in hate crime as a result of a shift in overall crime or something else, like hate generally. For this reason, I have included a violent crime variable and property crime variable from the FBI (Federal Bureau of Investigation, 2014). The limitation of these variables is that the FBI's most current data is 2014 while my data continues until 2017. This lag in data ability led me to create a trend for these two crimes and approximate the 2015-2017 crime rates. To do so, I found a linear trend of crime and then trended it past the available data for an approximate crime rate. This is an obvious limit of this study and should be considered further in the future.

## V. Analysis

As we can see, the models increase in explanatory power, the $R^2$ measure, with increasing variables as we would expect. Contrary to my hypothesis, the term 1 variable, the derogatory search term, is negative and is generally insignificant in this model, with other variables being more descriptive. This suggests either that the search term is not a significant enough measure of hate speech and attitudes, or that other things such as local climate are more influential in dictating hateful actions. For instance, violent crime rates appear to have a significant impact on describing a murder, with an increase of 1 violent crime in a state having a 0.0003 increase in hate crime in that state, 1/100,000. In other words, if there is 1 violent crime per 10 residents in a state in a year, there will be 3 more transgender-specific murders in that state in that year. Following that line of logic, we can see that the factors that appear to have the strongest relationship with the number of transgender murders per million residents are local and urban economic factors; unemployment rate and urbanization, as measured through the proportion of the state's population living in urban areas. Although this analysis focuses on hate crime as a function of hate speech, it is interesting to note that environmental stressors may be more important in explaining the occurrences of hate crimes. As discussed in the literature review, factors such as a high unemployment rate can lead to general economic stress and subsequent crime (Fajnzylber, Lederman, and Loayza, 2000). However, there remains the question of what the benefit of hate crime is since there is no economic or social benefit that we can measure from committing a hate crime, as opposed to an economically motivated crime such as burglary.

All of this analysis points to the need for further research into the concerns of the transgender population as well as minority violence generally. Google searches, while an improvement over survey-based methods, are not perfect measures of general population attitudes or hate speech generally. Finding and utilizing more types of measures of hateful attitudes would greatly improve analyses, such as how local news or school curriculum represent transgender populations. Additionally, as this analysis revealed, other local issues of stress may be related to hate crime and this warrants further research. Finally, this analysis is limited in scope, especially as it focuses on the United States. Although transgender people experience discrimination and violence across the world, acceptance and prosecution of hatred vary widely country by country. Expanding this analysis to investigate other countries, and to find more measures of anti-transgender hate speech and attitudes, will allow for a better understanding of the ways to best protect this minority population.

Finally, one concern in my model is the existence of multicollinearity due to the numerous identities of the murder victims and commonalities between murders. Multicollinearity occurs when two or more independent variables are related and predict each other, instead of predicting the variable of interest. In my basic models, I control this simply by creating dummy variables, such as my gender and race variables, and then ran a multicollinearity test and did not find any Variance Inflation Factors (VIFs) close to 5, suggesting that there is no multicollinearity to worry about in my model. To verify the validity of my results, I ran the regression as a fixed-effects model. By using the fixed effects model, we can control for year since the dataset is a panel (multiple years for multiple states), allowing us to eliminate unobservable differences between these states and focus solely on the variables at hand, not the unknown. This model is limited in scope due to the transgender population being both small and under-represented, meaning that there may be a significant amount of information left out of my model, leaving lots of potential for omitted variable bias as well as room for further analysis. Between that model and the non-fixed effects model there was significant shift in the R-squared value, as well as in the coefficients and p-values. Throughout my regressions, I tested different sets of variables and found that some were more robust and better for my analysis, so the original models had collinearity between the variables. In the final model (Model 3) I ran it both as a fixed effects model, for robustness, and as an uncontrolled model to compare the results. As we can see in the results table, running my model as a fixed effects model greatly increases the predictive nature of the model.

## VI. Further Research

Since this research concludes in uncertainty, I propose a few new avenues to assess the relationship between hate speech and hate crime against transgender people. For one, due to the population size being small and a lack of accurate data, expanding this study to a larger minority group, such as the LGBT community overall, Jews, Muslims, or even all hate crimes, could yield better results. However, there still remains the issue of measuring hate speech and hate crime, which were the biggest roadblocks in my research.

While the literature suggests a relationship between an idea, such as consumer searches for movies, and an action, such as consumers going to the movies (Judge and Hand, 2011), this may not be applicable to hate-based violent crimes. Instead, a potentially fruitful research method would be to analyze news reporting and headlines. Designated Market Areas (DMAs) divide the United States into 210 regions where a local television or radio station is the majority of local viewing time (Nielsen, 2017). Using media coverage areas as a measure of bias or opinion could be potentially more useful than assessing public opinion through other measures such as polling, survey, or Google Trends. Using news sources as a measure of hate speech flips the means of exposure from a of what people consume, through news, rather than what they themselves publish or state, through Google Trends or a survey.

In one study, for example, researchers used a longitudinal survey of youth to see the effects of fast-food advertising on television and rates of obesity. For advertising data, the researchers used the Competitive Media Reporting (CMR) groups tracking of fast-food advertising and created a variable of the number hours per week of fast food advertising. They found that increasing exposure to fast-food advertising increases the probability of a child being overweight, estimating that banning all fast food advertising would lead to an 18% decline in obesity for children aged 3-11 (Chou et al., 2008). This analysis showed the potential of using broadcasting as a measure of social influence. Extending this to my study of hate speech and hate crime, one could look at the news reporting on transgender issues, such as policy and public figures, and assessing the positive or negative reporting of the issue. Additionally, public policy itself could be interesting measure of social acceptance, with anti-transgender policy being an indicator to the public that oppressing this minority population is acceptable.

Another issue that could lend itself both to further research and to policy is the difficulties I encountered surrounding available and accurate data on the transgender population. Data collection is also an issue with current research because due to a lack of accurate data on hate crimes, as well as on public perception. For one, more robust policing and reporting of incidents would greatly improve my research. Local authorities need to have a standard of categorizing hate crime and reporting it to the federal government. This involves having clear guidelines for classifying something as a hate crime, and the various data that should be provided to the authorities. The current issue with this is that small precincts may not have the financial and personnel capabilities to do this extra work, which is why most of the reports to the FBI come from cities where they have a larger task force.

For instance, in a study of incidences of rape on college campuses, researchers found that more liberal colleges had higher rates of rapes, which was contrary to what the researchers believed it would be, however on a second glance, it turns out that these colleges were where the rapes were being reported (Torphy, Halnon, and Meehan, 2016). For instance, a large university in a conservative area that makes the process of reporting a rape difficult and uncomfortable will have lower rates of reporting. In effect, promoting a culture of positive data collection is important for accurate and representative data. This study points to the issue of data reporting – we only hear from those who are willing to report it, and often those who do not report data are areas where there is a greater need for this data.

Another potential research method involves the use of social media to see how public opinions work on a more local level. This would involve an analysis of "hashtags" used or the language used in publicly available social media, such as Twitter. The advantage of this research method is that it would allow us to get a more fine-tuned idea of what people believe. The main issues involved are the logistics of collecting and processing that data and potential limitations of what people talk about. In this public space of Twitter, people may not be as open about their hate speech as they would on more private avenues of communication. However, social media is one of the most pervasive ways information and opinions spread today, leading to its use in social movements and its potential use in hateful riots, such as by KKK leaders (Ring, 2013).

One could see how those who are more willing to be public in their hate would also be the ones most likely to act on their hate, either directly in their own actions or through organizing hate speech or hate crimes. This could suggest that hateful Google searches are less salient, in that fewer people who express hate privately will act on that or encourage others to act upon hate, compared with those who are willing to be public in their hate.

## VII. Policy Implications

When analyzing the causes of hate crime, it is important to keep in mind the costs of hate and crime, and how they work in tandem. Looking at the final model, we can see that states with better gender identity inclusive policy have lower rates of transgender murders, suggesting a relationship between public policy and individual actions. This does not imply a causation, but there could be a feedback relationship where if a state passes anti-transgender legislation, that could signal to the population that transgender people are less than, and conversely if the public considers transgender people as less than, the policy may reflect that. The exact relationship is impossible to parse. However, as discussed in the literature review, discrimination and hate crimes have a real impact on the victim, their family, and the state, in both the financial cost of discrimination and in how discrimination undermines society and suppresses minorities from fully participating in society. This is something that I addressed in the literature, but additional considerations are important when thinking about how to combat the negative outcomes of discrimination and hate crime.

Policing hate speech is difficult or impossible, depending on local legislation and first amendment protections. However, private companies and spaces can prohibit speech or behavior deemed hateful or inappropriate. This is important to keep in mind when thinking about how to protect minorities from discrimination or oppression. Limiting free speech is not the goal of policing hate speech, instead the focus should be on limiting the platform that ill-informed hateful speech can access and increasing legal protection of minority groups and prosecution of hateful behavior. The history of legal prosecution of anti-LGBT hate crimes has been tumultuous, with hate crimes being justified with the “gay panic defense” and other protections of free speech (American Bar Association, 2013). Although the exact defenses for hate speech and hate crime have changed over time, the legal system still often does not find fault in individuals acting violently out of personal beliefs.

Overall, protecting minority populations needs to be a priority that offers no real threat to majority populations. If the United States federal government were to enact widespread protection of transgender people, the country as a whole would benefit economically from a reduction in discrimination and anti-transgender lawsuits, such as individuals who use the first amendment as an excuse to deny services to transgender people. Although the transgender population is small, their economic impact is substantial and discrimination benefits no one. Federal protection of transgender people should include: non-discrimination in housing and employment, inclusion in health care, the ability to serve in the armed forces, the ability to change identification documents, and protection to use public areas and services.

## VIII. Conclusion

The link between hate speech and hate crime is difficult to parse, and the factors that lead to hate crime are complex and locally impacted. Although the term searches did not yield strong results, the other variables in my models suggest some relationship between hate crime and the local environment. The local environment, both politically and socioeconomically, has the largest impact on individuals' lives. We can see this in the literature as outlined previously, where individuals are more affected by local ordinances and practices than nationwide laws and decisions. When we look at hate crime as a product of the environment, it is difficult to identify the relationship between public opinion and beliefs that are more hidden. Previous analyses of hate speech against racial and ethnic groups have returned robust positive relationships, and although this analysis did not reveal a strong relationship, that doesn't mean that one does not exist.

The difficulty is in the relationship between speech and action as most of those who speak, or express hateful thoughts or intentions do not act on them, but they can influence other around them. Through Google search we cannot determine if these thoughts (as translated into Google searches) are expressed in a fashion that beliefs would spread throughout society. We can see how beliefs in an area trend, but not spread. It seems that the search term is not an appropriate measure of hateful thought or behavior that leads to hateful action. Instead, future research should focus on different methods of assessing public opinion, as discussed in the further research portion. Finally, the importance of accurate and representative data should be further implemented in future data collection, such as the U.S. Census, as this data and its subsequent analyses will give a voice to the transgender community.

How we classify hate speech and hate crime serves one primary purpose: giving the affected communities the ability to seek legal recourse and explicit protection under the law. Moving forward, advocating for the victims and their families can be assisted by a better empirical understanding of the transgender community and encourage thoughtful legal and political actions on their behalf.

# IX. Tables

## a. Summary of Variables

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| **State** | 0 | | | | |
| **Year** | 115 | 2012.96 | 2.99 | 2008 | 2017 |
| **City** | 0 | | | | |
| **Code** | 0 | | | | |
| **Murderspermil** | 115 | 0.23 | 0.21 | 0.02 | 1.14 |
| **Population** | 115 | 12,100,000 | 10,000,000 | 869666 | 39,500,000 |
| **Density** | 115 | 235.09 | 199.53 | 11.46 | 1201.74 |
| **Murder** | 115 | 1.64 | 0.99 | 1 | 6 |
| **Black** | 98 | 1.40 | 0.65 | 1 | 3 |
| **Latinx** | 9 | 1.33 | 0.5 | 1 | 2 |
| **Other** | 6 | 1 | 0 | 1 | 1 |
| **White** | 20 | 1.05 | 0.22 | 1 | 2 |
| **Male** | 10 | 1.2 | 0.42 | 1 | 2 |
| **Female** | 98 | 1.47 | 0.72 | 1 | 4 |
| **Nonbinary** | 12 | 1 | 0 | 1 | 1 |
| **Crossdressing** | 8 | 1.12 | 0.35 | 1 | 2 |
| **Murderspermil$_{t-1}$** | 115 | 0.78 | 1.11 | 0 | 6 |
| **Totalmurders** | 115 | 9.46 | 8.02 | 1 | 27 |
| **Term1** | 115 | 74.35 | 11.80 | 43 | 100 |
| **Term2** | 115 | 70.97 | 10.31 | 49 | 94 |
| **PolicyAll** | 115 | 1.88 | 1.08 | 1 | 4 |
| **PolicySexuality** | 115 | 2.18 | 1.17 | 1 | 4 |
| **PolicyGender** | 115 | 1.79 | 0.97 | 1 | 4 |
| **UrbanPct** | 115 | 78.24 | 12.08 | 12.08 | 95 |
| **UnempRt** | 115 | 6.54 | 2.04 | 3.4 | 13.7 |
| **ViolentCr** | 115 | 400.68 | 116.20 | 127.8 | 731 |
| **PropetyCr** | 115 | 2819.28 | 623.59 | 1718.2 | 4240.1 |

### b. Results

Dependent Variable: MurdersPerMillion

| | Model (1, FE) | Model (2, FE) | Model (3, FE) | Model (3) |
|---|---|---|---|---|
| ***term1*** | -0.006*** (0.002) | -0.004** (0.002) | -0.002 (0.002) | -0.004*** (0.002) |
| ***term2*** | 0.005** (0.003) | 0.006** (0.002) | 0.004* (0.002) | 0.004* (0.002) |
| ***policygen*** | X | -0.034*** (0.017) | 0.025 (0.018) | 0.011 (0.019) |
| ***murderspermil***$_{t-1}$ | X | -0.029*** (0.017) | -0.020 (0.014) | -0.028* (0.014) |
| ***black*** | X | 0.101* (0.028) | 0.066* (0.037) | 0.059 (0.041) |
| ***female*** | X | X | 0.055 (0.033) | 0.055 (0.033) |
| ***urbanpct*** | X | X | -0.008*** (0.001) | -0.008 (0.002) |
| ***Unemp*** | X | X | -0.059*** (0.014) | -0.059*** (0.014) |
| ***vCrime*** | X | X | 0.0004* (0.0002) | 0.0004* (0.0002) |
| ***pCrime*** | X | X | 0.00004 (0.00003) | 0.00004 (0.00003) |
| ***Cons*** | 0.27 (0.23) | 0.027 (0.21) | 0.018** (0.033) | 0.59 (0.25) |
| ***N*** | 115 | 98 | 90 | 90 |
| $\overline{R}^2$ ***(within)*** | 11.43% | 27.39% | 60.35% | 47.63% |

**(Standard errors are in parentheses.) *** significant at 1% level, ** significant at 5% level, * significant at 10% level**

### c. Robustness Checks – Multicollinearity

| Variable | VIF |
|---|---|
| **black** | 3.26 |
| **female** | 3.11 |
| **pcrime** | 2.27 |
| **urbanpct** | 2.13 |
| **vcrime** | 2.12 |
| **policygen** | 1.71 |
| **term2** | 1.39 |
| **unemp** | 1.31 |
| **term1** | 1.21 |
| **prevyr** | 1.2 |
| **Mean VIF** | 1.97 |

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