The Relationship Between Violent Political Rhetoric, Murder Rate, Gun Ownership, and Police Deadly Encounters With Civilians

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Abstract: Police kill around 1,000 persons annually in the United States. This is a significant issue for social work because of the effects these killings have on individuals and communities. Recent research has shown a positive relationship between violent political rhetoric (VPR) and mass shootings. This study aimed to investigate if a relationship exists between VPR and police violence that results in the death of civilians. This was a secondary analysis of publicly available data on police killings of civilians. The dependent variable was a measure of the number of police violence killings of civilians. Three control variables were included in analyses: monthly gun ownership, monthly average temperature in the U.S., and the annual murder rate in the U.S. An auto-regressive distributed lag error correction time series analysis was used in data analyses, and as a sensitivity check a Poisson time series regression with robust standard errors was also employed. The results showed a positive relationship between VPR and police violence killings of civilians. The principal implication of these findings for social work is that social workers collaborate with professionals in other disciplines to find ways to reduce the use of VPR by politicians and others in the media.

Keywords: Police shootings of civilians; police killings of civilians; violent political rhetoric; police violence; deadly encounters

Throughout United States' history, police violence has been endemic. Historical evidence suggests this form of violence has roots, among other things, in Jim Crow laws and it has been argued that this violence has helped perpetuate white supremacy and racial control (Bailey et al., 2021; Edwards et al., 2019; University of Michigan Carceral State Project, 2021). This form of violence frequently ends in the death of one or more private citizens, persons henceforth referred to as civilians. This is an important issue for social work since police violence killings of civilians have significant deleterious effects on individual persons as well as communities (Ang, 2021; Bor et al., 2018; DeVylder et al., 2020; Edwards et al., 2019; Obasogie & Newman, 2017; Sewell, 2019). It is unclear exactly how many civilians have been and are killed by police violence. According to data from the Gun Violence Archive (2024), about 2,000 civilians have been shot, and 1,000 killed, annually by police violence. There are several online sites dedicated to counting the numbers of civilians killed by police violence, including Mapping Police Violence (2024b), The Gun Violence Archive (2024), Fatal Encounters (2024), and The Counted (The Guardian, 2024), among others. The data sets from these online sources give differing numbers of numbers of civilians killed. For example, between January 2014 and the end of September 2019, the time period covered by the current study, 9,946 civilians were killed by police violence according to the Fatal Encounters data, while according to the

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data at the Mapping Police Violence site 6,267 civilians were killed, a difference of 3,679 persons.

Prior Research

Numerous studies of police shootings and killings of civilians have been done in recent years, and much of this research has been guided by the speculation that police violence towards civilians has been at least to some extent racially motivated (Phillips & Kim, 2021). Edwards and colleagues (2019) concluded Black men have a 2.5 times greater lifetime likelihood of being killed by police violence than White men; Black women have a 1.4 times greater likelihood of being killed by police violence than White women; Native-American men have a 1.2 to 1.7 times greater likelihood of being killed by police violence than White men, and Native-American women a 1.1 to 2.1 times greater likelihood of being killed by police violence than White women. They further estimated Latino men have a 1.3 to 1.4 times greater likelihood of being killed by police than White men, and Latina women are 0.90 to 0.80 times less likely to be killed by police than White women; and the odds Asian/Pacific Islander men and women are killed by police are about 0.50 times as likely as White men and women. Mekawi and Bresin (2015) in a meta-analysis also found evidence of differential shooting rates by police against Black civilians. The Global Burden of Diseases (GBD) 2019 Police Violence US Subnational Collaborators (2021), Let et al. (2021), Schwartz and Jahn (2020), and Wertz et al. (2020), report similar findings.

A study by the GBD 2019 Police Violence US Subnational Collaborators (2021) made a sophisticated effort to quantify how many civilian deaths due to police violence in the U.S. are underestimated by the Center for Disease Control and Prevention's (CDC) National Vital Statistics System (NVSS). The results of this study suggested, "Across all races and states in the USA, we estimate 30,800 deaths (95% uncertainty interval [UI] 30,300–31,300) from police violence between 1980 and 2018; this represents 17,100 more deaths (16,600–17,600) than reported by the NVSS" (p. 1239). This represented an estimated 55.5% undercount of civilians killed by police violence between 1980 and 2018.

Other research has focused on situational factors and their association with police violence, especially police shootings of civilians. These studies have focused on such situational factors as whether the civilian was in possession of a weapon, whether the civilian attacked the police officer(s), and the type of call that sent the officers(s) to investigate the civilian (Jennings et al. 2019; Jetelina et al., 2020; Menifield et al., 2019; Nix & Shjarbak, 2021; Wheeler et al., 2018). For example, Jennings and colleagues (2019) found that police were more likely to shoot a civilian if they were in possession of a deadly weapon. Worrall and colleagues (2018) found police violence more likely when a civilian was behaving aggressively. Gun ownership has also been found to be associated with police shootings of civilians, with greater firearm prevalence associated with more police shootings of civilians (e.g., Hemenway et al., 2019; Nagin, 2020).

Other studies have investigated the link between police violence and shootings of civilians and the characteristics of where the shooting incident occurred. These have included such factors as the crime rate, poverty rate, and makeup of the population (e.g., Nicholson-Crotty et al., 2017; Wheeler et al., 2018). For example, research has suggested

police shootings of civilians may be more likely in contexts of high levels of gun violence and violent crime such as murder (Jacobs & Britt, 1979; Klinger et al., 2016; MacDonald et al., 2001; Phillips & Kim, 2021; Sorensen et al., 1993). Research has also found a relationship between temperature and gun violence (Lyons et al., 2022; Reeping & Hemenway, 2020). As temperature increases, gun violence tends to increase.

Police violence is a specific form of violence. Several variables have been found to be associated with violence in general. Hate speech has been found to be associated with violence (e.g., Ezeibe, 2021; Relia et al., 2019; Soral et al., 2018). It has been conjectured that violent, incendiary political rhetoric, arguably a specific form of hate speech (Murphy, 2021; Piazza, 2020), may be a causal factor for violence (Kalmoe, 2014; Kalmoe & Mason, 2018). Kalmoe's (2014) study offered support for a causal effect of incendiary political rhetoric on violence. Across three experiments, Kalmoe (2014) found violent metaphors increased support for violence, especially among young adults. Survey research has also found evidence suggestive of a relationship between VPR and violence. According to research by *The Washington Post* and the University of Maryland's Center for Democracy and Civic Engagement, polls in 2010 showed about 16% of US public condoned political violence; by 2015 this had risen to 23%; and between 2020 and 2022 this percentage had risen to 34–40% (The Washington Post, 2022). This increase in attitudes supportive of violence coincided with the increase in violent political rhetoric measured by Zeitzoff (2019).

Recent research has found a positive relationship between violent political rhetoric (VPR) and mass shootings, another prevalent and specific form of gun violence (Nugent et al., 2022; Nugent & Conway, 2021). This research found that as VPR increases, mass shootings increase, controlling for such variables as gun ownership and contagion or imitation effects. Income inequality has also been found to be associated with mass shootings (Cabrera & Kwon, 2018; Kwon & Cabrera, 2019). It has been speculated that income inequality may also be associated with police shootings of civilians (Leopold, 2014). The recent findings of a relationship between hate speech and violence, and a relationship between VPR and mass shootings, implied the possibility that VPR might be associated with police violence and killings of civilians. In the remainder of this article, police killings of civilians will be referred to as fatal civilian encounters with police, abbreviated as FCEWP.

Violent Political Rhetoric

Zeitzoff (2019) defined VPR as, "…any type of language that defames, dehumanizes, is derogatory, or threatens opponents" (p. 5). Zeitzoff identified two types of VPR, specifically name calling, for example referring to persons who are members of a targeted group, such as immigrants, as "corrupt" or "traitors"; and the second making explicit or implicit threats. An example of VPR via implicit threats was exemplified by Zeitzoff by means of the example of politicians using metaphors, frequently dehumanizing representations, to disparage groups or individuals. One example is of persons or groups depicted as an "infestation of cockroaches". By describing groups as an infestation, the implication is those so described need to be eliminated.

Zeitzoff (2019) measured the rates of VPR in the U.S. from before 1858 through September of 2019 (Figure 2, p. 15). The rates around the Civil War period were exceedingly high. The rates from about the 1880s to around 2016 were quite low, other than small occasional spikes. Around 2016 the rates of VPR rose very rapidly, and their 2019 Figure 3 (p. 17) gives a more detailed picture of the rise in VPR in the U.S from January 2011 through September 2019. It is possible the observed rapid increase that appears to begin in 2016 was associated with the 2016 Presidential campaign. While Zeitzoff (2019) did not report VPR rates between late 2019 and the present, given the current political context we speculate it is possible the rates of VPR have remained at 2019 levels or even increased. Their Figure 2 suggests VPR in 2024 may be at Civil War levels in the U.S. with the attendant possibility this may be a "new normal".

Zeitzoff (2019) elaborates on several reasons U.S. politicians use VPR. While evidence he cites supports the notion the use of VPR tends to punish the user, it simultaneously increases the attention they gain and their statements tend to be more memorable than those of their opponents. Despite negative responses to VPR, there are important reinforcers. Zeitzoff also reports the results of several empirical investigations of the phenomenon of VPR, including frequencies of various forms of name-calling, and frequencies of Tweeted VPR by prominent politicians and the ensuing rates of retweets of this VPR by persons on what was then called Twitter as a function of violent versus non-violent rhetoric. The reader is encouraged to read their recently published book (Zeitzoff, 2023), for a deeper understanding of the phenomenon of VPR in the U.S. as well as in Ukraine.

Methods

Institutional Review Board

This research was determined by the University of Tennessee Institutional Review Board to not involve human subjects.

Hypothesis

The current study augments research on police violence against, and killings of, civilians by focusing on variables not included in prior research, and augments research on the relationship between VPR and mass shootings by investigating the relationship between VPR and FCEWP, the first study to do so. The hypothesis tested was that VPR is positively associated with mean monthly daily rates of FCEWP, controlling for temperature, murder rate, and gun ownership. Given the recent findings (Cabrera & Kwon, 2018; Kwon & Cabrera, 2019) of a relationship between income inequality and mass shootings, it is important to note that the U.S. income inequality level remained constant across the 69-month time period covered in the current study, January 2014 through September 2019, changing for the first time since 2011 in 2021 (United States Census Bureau, 2022). This variable, income inequality, was therefore constant during the current study.

Research Design

This study was an ex post facto analysis of publicly available online accessible data.

Measures

Counts of Police Violence Killings. The dependent variable in this study was the mean monthly daily rate of FCEWP during such events as traffic stops, chases of persons suspected of criminal activity, and other interactions between police and civilians. Two raters independently counted the monthly numbers of police violence killings as reported at the online sites Fatal Encounters (2024) and Mapping Police Violence (MPV, 2024a). Fatal Encounters has a very broad case definition that includes all deaths during encounters with the police, with no requirement of police culpability. The MPV definition of police violence is any incident where a law enforcement officer (off-duty or on-duty) applies, to a civilian, lethal force resulting in the civilian being killed whether it is considered "justified" or "unjustified" by the U.S. criminal legal system. Data from these two sources were used given their use and evaluation in the Global Burden of Diseases (GBD) 2019 Police Violence U.S. Subnational Collaborators (2021) study. A recent study found evidence supporting a strong association between the data from these two sources (Comer & Ingram, 2023).

The weighted Kappa inter-rater agreement for the counts from Fatal Encounters was 1.0, $z = 13.64$, $p < 0.001$. The agreement between counts from the Mapping Police Violence data was 0.995, $z = 13.48$, $p < 0.001$, and the disagreements that reduced this Kappa were resolved, so the final Kappa was 1.0. The average across the raters' counts of monthly police violence killings from both data sources, divided by the number of days in the month, was used as the dependent variable. This averaging was done given the GBD 2019 Police Violence US Subnational Collaborators (2021) finding that the data in the Fatal Encounters database may be overestimates of the number of persons killed by police, while the data in the Mapping Police Violence database may be underestimates. The reliability, as estimated using Cronbach's coefficient alpha for this dependent variable, was 0.93.

Violent Political Rhetoric. Zeitzoff (2019) looked for news articles reporting VPR by politicians in eight national newspapers, *USA Today*, *The Washington Post*, *The New York Post*, *The Wall Street Journal*, *The Boston Globe*, *The San Francisco Chronicle*, *The Houston Chronicle*, and *The Chicago Tribune* using *ProQuest*. The numbers of articles found that reported VPR each month were counted and converted to a rate of VPR per 10,000 articles published per month from January 2014 through September 2019. The results of these counts are shown in Figure 3 of Zeitzoff (2019, p. 17). The VPR data for the current study were extracted, with permission, from this figure.

Temperature. As noted earlier, recent research has found temperature associated with gun violence (Lyons et al., 2022; Reeping & Hemenway, 2020). Monthly average U.S. temperatures were obtained from the National Centers for Environmental Information (2024).

Gun Ownership. Monthly gun ownership numbers were not available. A proxy variable was used to represent monthly gun ownership. The monthly numbers of background checks for obtaining a firearm were obtained from the Federal Bureau of Investigation (2024).

Homicide Rate. The annual homicide rate for the years 2014 through 2019 was used as an independent variable, given the previous findings that violent crime rates such as murder have been found to be related to FCEWP. These data were obtained from Macrotrends LLC (2024).

Income Inequality. As noted earlier, income inequality was constant during the time-period covered in this study.

Data Analysis

A time series methodology was used to analyze the data. Time series analyses assume stationarity of the time series. A unit root in a time series is a characteristic that causes problems with statistical analyses (Wooldridge, 2020). The Phillips-Perron test (Phillips & Perron, 1988) for unit roots was used to assess the plausibility of unit roots in each of the time series in this study. This test was for a unit root with or without a random drift. The biggest advantage of this test is that it is known to correct for autocorrelation and heteroskedasticity (Wooldridge, 2020). However, Wooldridge (2020) cautions that the results of tests for unit roots can be erroneous for a number of reasons. Given this possibility, an Auto-Regressive Distributed Lag-Error Correction (ARDL-EC) time series analysis was used to test for a long-run relationship between police violence killings of civilians and VPR. This method was used given that the ARDL-EC method is appropriate for data with or without unit roots (Kripfganz & Schneider, 2018, 2023).

Results

Unit Roots

The results of a Phillips-Perron test for a unit root in the monthly numbers of police violence killings of civilians' time series were consistent with the absence of a unit root, with a test of random walk with or without drift having statistically significant results rejecting the null hypothesis for a unit root, with test statistic of -8.55, $p = .0001$. The results for a test of unit root in the VPR time series were statistically significant, test statistic = -5.28, $p = .0001$, results consistent with absence of a unit root. The results of a Phillips-Perron test for a unit root in the average monthly temperature time series were statistically significant, with test statistic = -3.53, $p = .0362$, for random walk with or without drift. The results of a Phillips-Perron test for a unit root in the gun ownership time series were consistent with the absence of a unit root, with test statistic of -4.21, $p = .0044$. The results for a unit root in the murder rate time series were statistically nonsignificant, with test statistic = -1.43, $p = 0.85$, for random walk with or without drift. The null hypothesis of a unit root in the murder rate time series could not be rejected. These findings suggested an ARDL-EC analysis procedure was appropriate.

Rates of Fatal Civilian Encounters With Police

The monthly mean daily rate of FCEWP is shown in Figure 1. The solid curve shows the mean monthly daily rates of police violence killings of civilians, and the dotted line shows the statistically significant linear trend across time in these events. The dashed curve is discussed below. The results of a Shapiro-Francia test for normality of the distribution of rates of police violence killings of civilians were consistent with normality, z = -1.48, p = 0.93 (Wooldridge, 2020).

Figure 1. *Graph of rate of police killings of civilians across time from January 2014 through September 2019.*
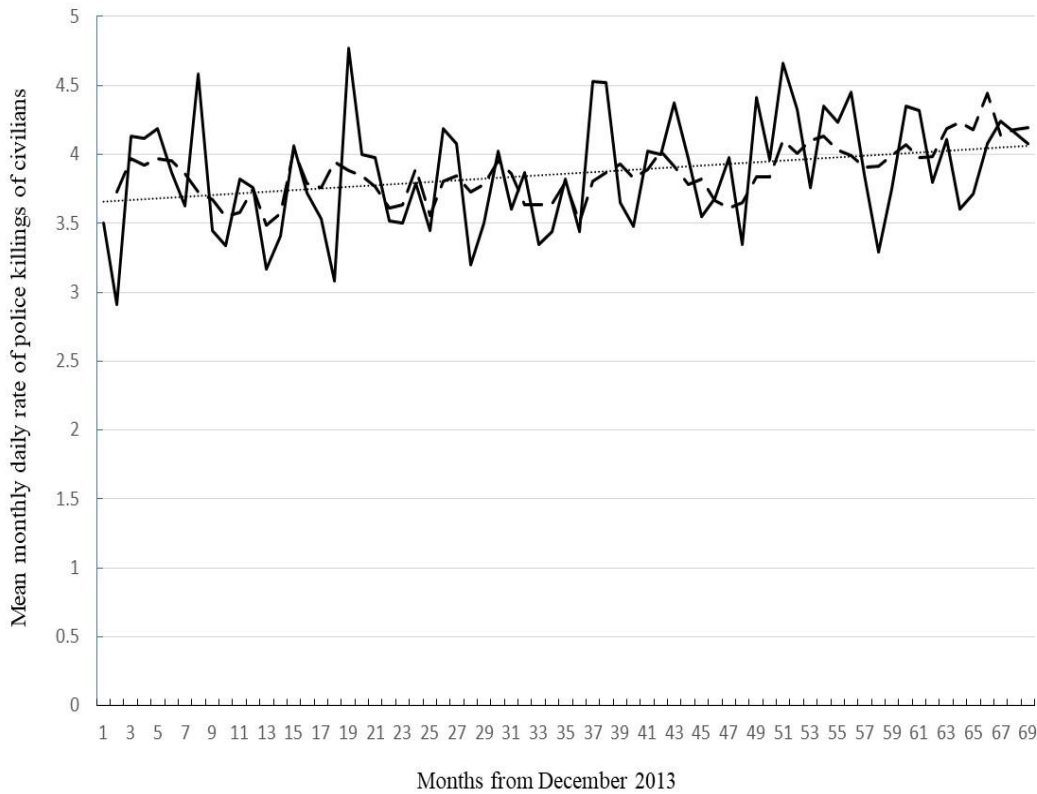
Note. *Graphic plot showing monthly mean daily rates of police violence killings of civilians (solid curve), and the model predicted monthly rates of fatal civilian encounters with police (FCEWP) (dashed curve). The dotted black line shows the statistically significant (p < 0.05) linear trend across the 69-month time period of the rate of FCEWP.*

Results of ARDL Analysis

The full results of the ARDL analysis are shown in Table 1. The results of a Pesaran et al. (2001) bounds test were, F = 14.86, p < .001, and t = -8.35, p < .001. Since both were statistically significant, these findings were consistent with a long run relationship between

police violence killings and at least one of the independent variables. The R-squared values were $R^2 = 0.56$, and adjusted $R^2 = 0.52$. As can be seen in Table 1, the evidence suggested a possible short-run relationship between increases in monthly mean temperatures and greater numbers of police violence killings, $t = 2.66$, $p = .01$. There was no evidence of long-run relationships between either gun ownership, murder/homicide rate, or mean monthly temperature and police violence killings. The results were consistent with a long-run relationship between VPR and FCEWP, $b = 0.006$, $t = 2.40$, $p = 0.02$. Controlling for other independent variables, as VPR increased the number of police violence killings increased. The error correction term, -1.00, $t = -8.31$, $p < .001$, indicated short term deviations from the long-term relationship between VPR and FCEWP dissipated within a one-month period (Kripfganz & Schneider, 2018, 2023).

Table 1. *Results of ARDL-EC Time Series Analysis*

Variable	B	Standard Error	t	p	95% CI
Error correction	-1.00	0.120	-8.35	< 0.001	-1.24, -0.76
Long run relationships					
Monthly average temperature	0.005	0.0038	0.18	0.18	-0.0025, 0.013
Gun purchases	0.269	0.172	1.55	0.127	-0.08, 0.61
VPR	0.006	0.0024	2.39	0.020	0.0009, 0.01
Murder/homicide rate	-0.301	0.189	-1.60	0.116	-0.68, 0.08
Short term relationships					
First difference monthly average temperature	0.016	0.006	2.66	0.010	0.004, 0.03
Constant	4.14	0.980	4.23	< 0.001	2.16, 6.09

These results are shown graphically in Figure 1 above. As already noted, the solid curve shows the monthly mean daily rates of police violence killings of civilians. The dashed curve shows the model predicted mean monthly daily rates. The lag-0 correlation between the actual and model predicted mean daily rates was +0.48, p < .001.

Tests of assumptions. The ARDL-EC analysis assumes normality of residuals, absence of heterogeneity and autocorrelation in residuals, and stability of model coefficients across time. The results of a test for skewness in the residuals were statistically non-significant, $\chi^2(6) = 6.83$, p = 0.34, as were the results for a test of kurtosis in the residuals, $\chi^2(1) = 0.03$, p = 0.86. The results of White's test for unrestricted heteroskedasticity were $\chi^2(27) = 31.9$, p = 0.24, results consistent with the absence of heteroskedasticity in the residuals. These results converged to suggest there were no significant violations of the assumption of normality of residuals, $\chi^2(34) = 38.8$, p = 0.26. The results of a Breusch-Godfrey test for autocorrelation in residuals at the 16 lags of 1 through 16 were statistically non-significant, results consistent with the absence of autocorrelation. The results of a recursive cumulative sum test for structural breaks were consistent with parameter stability across the 69- month time period (Wooldridge, 2020).

A final assumption is that there can be, at most, one cointegrating relationship involving the dependent variable, the monthly daily average rate of FCEWP (Kripfganz & Schneider, 2018, 2023). Results of tests of this assumption by fitting alternate ARDL-EC

models were consistent with the absence of other long-run relationships involving the dependent variable, as required. All these results of tests of assumptions came together to suggest the assumptions of the ARDL analysis were valid.

Alternate Analysis

It can be argued that there most likely is no unit root in the murder rate data given that the result of the unit root test was based on only six years of data, making this a very low power test, and given the results of the Cook and Cook (2011) study of unit roots in annual crime rate data. It can also be argued that the annual murder rate data is a different kind of variable than the other independent variables, which are all monthly data, and that the annual murder rate variable is a cluster variable representing a violent crime context for the year the data are from (Garson, 2020). In this case, the number, a count of civilians killed by police each month, can be analyzed in a Poisson time series regression with cluster robust standard errors (Abadie et al., 2022) with the number of days in each month as an exposure variable. The smallest monthly count was 82, the largest 148, and the mean 117. There were no cases near or at 0. With monthly counts such as these, the distribution of counts approached a symmetric bell shape.

The results of a test for clustering gave an estimated intra-class correlation of 0.00002, $\chi^2(1) = 0.65$, $p > 0.50$, results inconsistent with clustering, so a Poisson time series regression, with robust standard errors, was conducted as a sensitivity check on the ARDL-EC results to determine if the findings of a relationship between VPR and police violence killings of civilians was analysis method dependent. The model fitted in this Poisson analysis was parallel in form to that found in the ARDL-EC analysis.

The overall model Chi-square for this analysis was $\chi^2(5) = 26.39$, $p < 0.0001$. The full results are shown in Table 2. The relationship between VPR and FCEWP was statistically significant, regression coefficient = 0.0016, $\chi^2(1) = 8.36$, p < 0.004. Similar to the results from the ARDL-EC analysis, increases in monthly mean temperature were also associated with FCEWP, with the overall temperature variable statistically significant, $\chi^2(2) = 15.2$, $p = 0.0005$. The total temperature effect was 0.002.

Table 2. *Results of Poisson Time Series Regression With Robust Standard Errors*

Variable	B	Standard Error	$\chi^2(1)$	p	95% CI
Gun purchases	0.065	0.034	3.61	0.058	-0.002, 0.133
Temperature	0.0057	0.0014	15.2	0.0001	0.003, 0.009
First difference temp.	-0.004	0.0015	9.01	0.003	-0.007, -0.001
Murder rate	-0.064	0.041	2.48	0.11	-0.144, 0.016
VPR	0.0016	0.0006	8.36	<0.004	0.0005, 0.003
Constant	1.33	0.187	50.43	<0.001	0.963, 1.70

The fit of this model to the police killing of civilian data is shown in Figure 2. In this figure, the solid black curves show the actual monthly numbers of FCEWP, while the dashed black curves show the Poisson time series predicted monthly counts. The lag-0 correlation between the actual counts and the predicted counts was 0.57, $p < .001$. The

deviance goodness of fit for this model was, $\chi^2(62) = 68.5$, $p = 0.27$, and the Pearson goodness of fit was, $\chi^2(62) = 68.2$, $p = 0.27$. These results were consistent with good model fit. They were also consistent with the absence of over-dispersion in the Poisson regression model, as were the results of a Negative-Binomial analysis.

Figure 2. *Fit of Poisson model predicted rates of police killings of civilians with actual rates.*

Months from December 2013
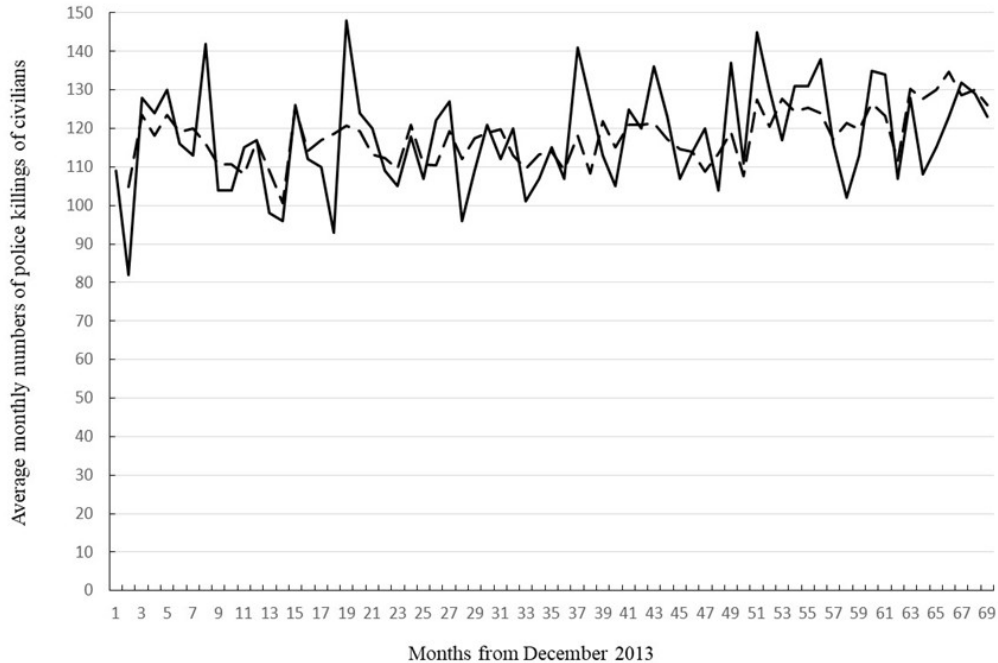
Note. *Graph showing monthly numbers of FCEWP (solid black curves) and Poisson model predicted monthly numbers of FCEWP (black dashed curves).*

Tests of assumptions. Poisson regression assumes independent observations. In a time-series, this is essentially the assumption of absence of autocorrelation. The results of this assumption using the Box-Ljung statistic in SPSS showed no evidence of autocorrelation through 16-time lags (Wooldridge, 2020).

Since this was a time series analysis, the results of a Shapiro-Francia Test for normality of residuals were, $z = -0.28$, $p = 0.61$, findings consistent with normality of residuals. The results of White's test for unrestricted heteroskedasticity of residuals were $\chi^2(2) = 0.41$, $p = 0.81$, results consistent with homoscedasticity of residuals. The results of a Breusch-Godfrey test for autocorrelation in residuals across 16 lags were $\chi^2(16) = 15.3$, $p = 0.50$, results consistent with the absence of autocorrelation in residuals. The results of a cumulative recursive sum of residuals test were consistent with parameter stability across time.

Strengths and Limitations

The ARDL-EC results and the above results from the Poisson time series regression were consistent with a positive relationship between VPR and police violence killings of civilians. These results need to be interpreted within the context of study limitations. The main limitation of this study was the relatively short time series, 69 months. Longer time series would enable short-term trends and patterns in the data to dissipate and more long-term trends and patterns to become more manifest. Future studies of the relationships between VPR and FCEWP should involve analyses of longer time series. A second limitation was the narrow measure of VPR, the numbers of news articles containing reports of VPR in the eight national newspapers. More comprehensive measures of VPR need to be developed and used in future research. These measures should include counts from news and opinion shows on television and radio, hate radio broadcasts, and social media, such as Facebook and Twitter. Another limitation is omitted variables. There are likely important variables not included in analyses, the inclusion of which could in principle have changed results.

The principal strengths of the study were the analysis methods used. The ARDL-EC approach is appropriate for time series with or without unit roots. The tests for unit roots are known to be fallible, being usually of low power and valid only if the lag-1 autoregressive parameter is 1.0 (Wooldridge, 2020). Should the results of the tests for unit roots in the current study have been erroneous, the results of the ARDL-EC analyses would remain correct since ARDL analyses can be conducted with or without unit roots (Kripfganz & Schneider, 2018, 2023). However, a Poisson time series regression was also done as a sensitivity check, treating the annual murder rate as a cluster variable and with cluster robust standard errors. The results of this analysis were consistent with the ARDL-EC analysis, an outcome consistent with the study results being consistent across data analysis methods.

A final strength of the current study is that it is, as far as the authors are aware, the first to investigate the relationship between VPR and police violence killings. The study thus addresses an important gap in the research on FCEWP. The current study also extends research on the relationship between VPR and mass shootings by focusing on the possible relationship between VPR and police violence killings of civilians.

Implications for Social Work

The results were consistent with a long-run relationship between VPR and FCEWP. The results suggested that as VPR increased the rate of FCEWP increased, controlling for murder rates, gun ownership, and temperature. Income inequality was constant during the time period studied; hence variation in income inequality could not have influenced rates of police violence killings of civilians. Thus, the results were consistent with increases in VPR being associated with increased FCEWP, holding constant income inequality as well.

This conclusion should not be interpreted to mean that VPR causes FCEWP. The correlational nature of the research design in this study precludes causal inference. Further research is needed to replicate the current study's findings and, secondly, further clarify the

relationship between VPR and FCEWP. Future research should employ longer time series to reveal further and clarify possible relationships between VPR and FCEWP. The results, however, do support the hypothesis that as VPR increases, so does FCEWP. This consistency suggests that VPR may facilitate creation of a social environment that increases and supports the use of deadly violence by police against civilians during police-civilian encounters. The results also support further research on this possibility.

A graph of the mean monthly temperature across the 69 months showed a sinusoidal pattern with sine and cosine periodicity values consistent with the periodicity in mass shooting events found in the Nugent et al. (2022) study. Thus, the possible relationship between FCEWP and the mean monthly temperature found in the current study may reflect an annual periodicity associated with changes in temperature due to the changing seasons. The statistically significant relationship between FCEWP of civilians and temperature increases may reflect the fact that during warmer months, there are more civilians out and about involved in numerous activities than during colder months and, consequently more police-civilian encounters. Future research should help clarify this relationship and whether higher temperature is responsible for any relationship between temperature and FCEWP, or whether it is a seasonality effect associated with persons engaging in more activities outside the home during warmer months.

Future research should also include variables not included in the current study. Multi-level studies could be especially informative, including individual-level variables associated with both police and civilian characteristics, including race and gender variables, and cluster variables such as regional variables representing strictness of gun ownership laws, levels and types of police training programs, and other legal and policy-related variables (Garson, 2020). These studies could help bring to light multilevel relationships and cross level interactions. Future research should also focus on developing more comprehensive measures of VPR in line with the taxonomy of hate speech developed by Kennedy and colleagues (Kennedy et al., 2018).

Neither the current study nor its findings should be interpreted in any way as passing or expressing any judgments on the legitimacy of the actions of the police officers involved in these events that were fatal for civilians. The purpose of this study was to test the hypothesis, arising from the recent findings of a positive relationship between VPR and mass shootings (Nugent et al., 2022; Nugent & Conway, 2021), that a relationship exists between VPR and FCEWP. The results of the current study add to our growing knowledge about factors associated with FCEWP by indicating the possible role that violent political rhetoric may play. This finding, in one sense, should not be surprising given the evidence that hate speech has been found to be associated with hate crimes and other forms of violence (Kennedy et al., 2018; Relia et al., 2019; Soral et al., 2018) and that violent political rhetoric can be conceptualized as a special case of hate speech (Murphy, 2021; Piazza, 2020).

Future research also needs to investigate the interplay between VPR, mass shootings, and police violence killings of civilians. Important questions for future research include:

(1) Are mass shootings and FCEWP related? As police killings of civilians increase, do mass shootings tend to increase, or vice versa?

(2) What role does VPR play in a possible relationship between FCEWP and mass shootings?

(3) What roles do variables such as gun ownership, temperature, crime rates, and income inequality play in relationships between FCEWP, mass shootings, and violent political rhetoric? and

(4) Do FCEWP and/or mass shootings influence gun ownership?

Inclusion of other relevant variables in these studies can further elucidate the interrelationships between FCEWP, mass shootings, and other important variables.

The results of this study have implications for social workers. First, certificate programs could be developed that train social workers to work with police, as is currently being done in some cities (Patterson, 2008). The education of social workers to be Police Social Workers should include training in how to help police officers develop de-escalation skills in dealing with confrontations with civilians that are fraught with the potential for violence. The goal of this training would be to reduce the probability of police use of deadly violence with civilians in a wide variety of confrontational situations. This suggestion dovetails with approaches to help reduce police violence towards civilians, most importantly towards persons of color, recommended by Justice in Public Safety Project: Framework for Public Safety (NAACP Legal Defense Fund and Educational Fund, 2024). These include the use of restorative justice approaches, increasing investments in community resources, and creation of groups of unarmed civilian responders. These civilian responders could include social workers trained in a variety of non-violent de-escalation techniques and who work collaboratively with police in a range of circumstances involving encounters between police and civilians.

While some may find the idea of social workers being a part of this trained group objectionable and distasteful, it is important to keep in mind the importance of social work skills such as active listening in the implementation of de-escalation (Oliva et al., 2010). Social workers can bring valuable knowledge and skills to bear in crisis confrontations between police and civilians. Social workers, and the social work profession, could play a critically important role in the training of, and actions of, a corps of unarmed civilian responders working collaboratively with police. We do not mean to underestimate the obstacles, challenges, or risks involved in implementing such a policy and approach; we do want to emphasize the potential benefits.

Another implication is for social workers to develop ways to reduce the use of violent political rhetoric not only by politicians, but others as well who have the opportunity to use various media outlets to spread information and messages. One possibility is collaborating with ethicists to develop ethical guidelines for those who use various media platforms for communication, in particular politicians and political candidates. The ethical guidelines would constrain the forms of speech used, most specifically forms of violent rhetoric and hate speech. Social workers could also advocate at local, state, and national levels for adopting these ethical guidelines by media, political parties, and other leaders. The goal would be the reduction of, if not the elimination of, the use of violent political rhetoric.

While we suggest social workers endeavor to find ways to influence politicians, media figures, and others to avoid use of VPR, we also recognize that such an endeavor has a low

probability of succeeding. The payoffs for using VPR are likely to be felt to be too great to be abandoned by many who use such rhetoric, especially during a high-stakes presidential election. The US population is currently in a highly polarized state, and Zeitzoff (2023) has noted how VPR increases as polarization increases. Consequently, it can be expected that as of the time this is being written there will be significant VPR for the foreseeable future. Thus, a more immediate course for social workers is to develop and implement programs designed to humanize the persons who might encounter police officers in their role as law enforcement, especially groups that have been marginalized and/or minoritized and are the current targets of VPR. One example would be empathy programs. Social workers might create such programs and then collaborate with various local, state-level, and national media to disseminate these programs. These programs could be a part of normal daily programming by local media to humanize and inculcate a sense of empathy for persons targeted by VPR and who encounter police who are engaged in their daily roles as law enforcement officers. Efforts by social workers to train police in use of de-escalation techniques, and even assisting police in de-escalating high risk encounters between civilians and police, might also be of value in preventing civilian deaths at the hands of police.

Conclusion

In conclusion, the results of the current study are consistent with a positive relationship between VPR and FCEWP, controlling for gun ownership, temperature, and murder rate. These results also appear to be uninfluenced by income inequality since it was essentially constant during the period of this study. The results also appear to be consistent across data analysis approaches. These findings suggest further research into the relationship between VPR and FCEWP is warranted. The findings also serve as a call to Social Work to engage in efforts to reduce the use of VPR, and develop policies and methods to reduce FCEWP by assisting police during civilian encounters with police using de-escalation techniques and other communication skills and methods.

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