

**FUNDING VIOLENCE:
QUANTITATIVE ANALYSIS OF ANTI-NARCOTIC AND
LAW ENFORCEMENT PROGRAMS ON HOMICIDES**

by
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Abstract

The growing pattern of violence and increasing number of transnational criminal organizations has not been satisfactorily addressed by policy research. Current qualitative and historical analysis suggests a strong, positive relationship between funding for anti-narcotic and law enforcement (ANLE) programs and violence, but there is little quantitative analysis on the topic. This paper uses Bivariate analysis to provide statistical evidence on the impact of these ANLE programs. Although this study failed to demonstrate a relationship between funding for these programs and homicides, this quantitative research contradicts previous studies that suggest there is a significant relationship between the two. Policy researchers should continue to use alternative and additional sources of quantitative analysis to further investigate the relationship between the ANLE programs and homicides.

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INTRODUCTION

Violence in Mexico has been growing over the past thirty years. Since 1990, the number of homicides has more than doubled to its current level of 36,579 for the year 2020.¹ The criminal groups involved in perpetrating the violence are commonly referred to as drug cartels, and the conflict against them as a War on Drugs, a term coined by President Nixon. These groups are now more than just drug cartels moving drugs into the United States. Instead, these groups are involved in all sorts of criminal operations including human smuggling, gun running, oil theft, money laundering, and even the oxygen trade for COVID patients on ventilators.²

Violence and crime have always gone together, but the escalation of violence regarding the Mexican Transnational Criminal Organizations, TCOs, is growing despite international attention and intervention. These TCOs started with four primary drug cartels but as of 2020, there are an estimated nine primary TCOs, 20 major TCOs, and more than 200 smaller supporting criminal organizations.³ Unfortunately, while these groups have been increasing in number, so has the violence within Mexico. Perhaps the only aspect of TCOs on which all scholars and politicians agree is that the violence over the past decades has been growing. The root cause for the escalation in violence, however, varies depending on the analysis.

Some scholars, such as Edward Hunt, provide a qualitative approach to analyzing the violence occurring in Mexico. Others, such as William Marcy, provide historical analyses on the

¹ INEGI. 2021. *Indicator Bank*. Accessed September 2021.
<http://en.www.inegi.org.mx/app/indicadores/#divFV6300000264>.

² The Associated Press. 2021. "In Mexico amid Covid pandemic, oxygen demand has led to crime." *NCB News*, January 27. Accessed September 2021. <https://www.nbcnews.com/news/latino/mexico-amid-covid-pandemic-oxygen-demand-has-led-crime-n1255838>.

³ Beittel, June S. 2020. "Mexico: Organized Crime and Drug Trafficking." Congressional Research Reports, 1-34.

policies used to combat violence in Mexico. This study will look to provide a quantitative analysis to complement previous studies. Violence is operationalized as the number of homicides occurring within Mexico per year. Annual homicides in Mexico were located using a UN dataset on homicides in Mexico and INEGI, another publicly available database containing various datasets. ANLE program growth was operationalized as funding for ANLE programs based on U.S. State Department data. Bivariate analysis will be used to analyze the relationship between the dependent variable, homicides, and the independent variable, funding. This study hypothesizes that there is a significant, linear, and positive relationship between ANLE funding and the number of homicides per year in Mexico. The null hypothesis is that there is no significant relationship between the two. Analysis on publicly available source data from both INEGI and the UN dataset, provided no statistically significant relationship between the two variables after running Bivariate regression and only a slight, but statistically insignificant, positive relationship between funding and homicides. While there failed to be a significant relationship between the two, this result contradicts most previous studies that argue there is a direct relationship between ANLE programs and homicides in Mexico.

LITERATURE REVIEW

Policing Crime

A less invasive method of controlling crime is by using domestic police instead of foreign military forces. Academic writing has included both international and domestic policing studies, and the results are mixed. Some authors suggest a weak relationship between deploying police and a decrease in crime, whereas others suggest police deployment only pushes crime into surrounding areas.

Taylor et. al used police data from Jacksonville, Florida to compare the effectiveness of police deployments in hotspot crime reduction. His study found a 33% decrease in street violence and a negative, but statistically insignificant, decrease in property crime during the deployment of domestic police.⁴ The study by Braga and Weisburd on police presence as deterrence found a statistically significant decrease in crime, but their study also suggested that other variables impacted the decrease in crime.⁵ These other yet unknown co-variables may be so impactful that even with their significant results, more analyses like theirs should be completed to better understand what factors impact deterrence.⁶

Baudains et. al. describe how police presence at violent events may have the opposite of the desired effect; police deployment in areas of violence may contribute to street violence. After completing a multivariate analysis on uprisings in India, Baudains et. al. concludes that police presence “at violent events exacerbated the conflict, leading to more events than would have otherwise occurred, at least in the short term.”⁷ His conclusions are not only in contrast with Woods and Braga and Weisburd, but also may be more relevant to the study of counterinsurgencies.

While police action was studied in all three of the above analyses, the studies on hotspots were primarily focused on domestic street crime. Baudain et. al.’s study focused on violence stemming from insurgent activities and the outcome of a police response. The transnational aspect of Mexican TCOs and the extreme nature of the violence used by these groups may add

⁴ Taylor, Bruce, Christopher Koper, and Daniel Woods. 2011. "A randomized controlled trial of different policing strategies at hot spots of violent crime." *Journal of Experimental Criminology* 7: 149-181.

⁵ Braga, Anthony, and David Weisburd. 2012. "The Effects of Focused Deterrence Strategies on Crime: A Systematic Review and Meta-Analysis of the Empirical Evidence." *Journal of Research in Crime and Delinquency* 49 (3): 323-358.

⁶ Braga & Weisburd, "The Effects of Focused Deterrence," 324.

⁷ Baudains, Peter, Jyoti Belur, Alex Braithwaite, Elio Marchione, and Shane Johnson. 2019. "The exacerbating effect of police presence: A multivariate point process analysis of the Naxal conflict." *Political Geography* 68: 12-22.

other variables not included in the earlier studies that demonstrated police presence decreases violence. While these studies were completed in the US and not in Mexico, they could provide insight into the application of domestic military force and law enforcement officials to control the Mexican TCOs.

Both the Merida Initiative and Plan Colombia emphasize the “hard-side” approach to combatting crime. Both programs utilize law enforcement and military efforts in an effort to decrease crime. Plan Colombia existed in the form of a \$6.1 billion fund for counterdrug operations and an increase in military and police capabilities.⁸ The Merida Initiative years later initiated similar “hard-side” efforts again with military and police training and equipment, along with anti-poppy cultivation programs.⁹

Plan Colombia

Historical examples of the Merida Initiative have occurred elsewhere in the Americas that also attempted to control transnational criminal organizations. Plan Colombia was a U.S. initiative that was used to combat the Colombian-based transnational criminal organizations as well as the Revolutionary Armed Forces of Colombia – People’s Army, or FARC. Under U.S. Presidents Clinton and Bush, more than 7 billion dollars were spent on counterinsurgency and counternarcotic programs under the control of contractors, civilian officials, and the military.¹⁰ The use of law enforcement and the military are very similar to those of the Merida Initiative. Both used military funding to disrupt transnational criminal organizations and the violence surrounding the operations of these groups. Within limited frameworks, some groups even consider Plan Colombia a successful predecessor to the Merida Initiative since the U.S. provided

⁸ Oehme, Chester. 2010. "Plan Colombia." *Democracy and Security* 6 (3): 221-236.

⁹ Ocampomi. 2021. *The Merida Initiative*. March 22. Accessed August 2021. <https://mx.usembassy.gov/the-merida-initiative/>.

¹⁰ Brands, Hal. 2009. *Mexico's Narco-insurgency and US Counterdrug Policy*. US Army War College, 1-61.

funding and anti-narcotic training and eventually decreased the influence of Colombian cartels. In its tactics and strategies, Plan Colombia was very similar to the Merida Initiative. While there are similarities, the overall outcomes between the two programs are slightly different. Increasing pressure against the Colombian TCOs weakened the groups, but strengthened FARC, and at the minimum; continued the political violence.¹¹ However, the difference in actors on either side is worth mentioning. Plan Colombia had a larger scope in that U.S. contractors and military forces were able to operate within Colombia. This type of direct U.S. military intervention is not occurring in Mexico at the time of this paper, nor are there any solely political insurgents operating in Mexico alongside the TCOs.

Like studies on the Merida Initiative, many of the studies on Plan Colombia are qualitative. Rochlin completed a policy review of Revolution in Military Affairs (RMA) and the impact its implementation in Colombia had on violence. Rochlin concluded that while the insurgents became fragmented, “they were by no means broken. Violent conflict in the country will continue into the foreseeable future.”¹² Other qualitative studies, such as the one by Aviles, claimed the program was never truly meant to combat transnational organized crime or insurgents. Instead, by completing a policy review, he suggests Plan Colombia was operated and directed by corporations, politicians, and lobbyists to ensure economic stability that favored the U.S.¹³

¹¹ Peceny, Mark, and Michael Durnan. 2006. "The FARC's Best Friend: U.S. Antidrug Policies and the Deepening of Colombia's Civil War in the 1990s." *Latin American Politics and Society* 48 (2): 95-116.

¹² Rochlin, Jim. 2011. "Plan Colombia and the revolution in military affairs: the demise of the FARC." *Review of International Studies* 37 (2): 715-740.

¹³ Aviles, William. 2008. "US Intervention in Colombia: The Role of Transnational Relations." *Bulletin of Latin American Research*, 27 (3): 410-429.

Quantitative studies on Plan Colombia do exist but are focused less directly on violence and more on the variables of drug production. Dion and Russler completed a quantitative analysis on the impact of Plan Colombia, but their study was focused on coca production and eradication. In order to analyze the impact of eradication statistically, Dion and Russler used Prais-Winsten regression models and found aerial eradication only had a small impact on overall Colombian coca cultivation.¹⁴ Oehme's policy review used some quantitative data, but like Dion, the focus was on coca eradication. Oehme concluded that while eradication was occurring on a large physical scale, its impact on cocaine production may have been limited.¹⁵ However, and important to this study, the violence spillover associated with eradication programs was occurring following the eradication. Oehme claims these eradication programs displaced civilians, increased overall violence, and caused corruption in law enforcement and government institutions.¹⁶ Oehme did not unfortunately complete quantitative analysis on these claims of violence or displacements.

Specifically related to violence, Ceballos completed a historical analysis of Plan Colombia and its impact on violence. Ceballos concluded violence, specifically homicides, were highest in municipalities where government pressure against narco-traffickers and insurgents disrupted the criminal status quo.¹⁷ Hylton argues a similar conclusion, but that this outcome was framed as a success by U.S. policymakers. Hylton uses a historical review of declassified documents to argue that despite the increasing violence, Plan Colombia was paraded as a success

¹⁴ Dion, Michelle, and Catherine Russler. 2008. "Eradication Efforts, the State, Displacement and Poverty: Explaining Coca Cultivation in Colombia during Plan Colombia." *Journal of Latin American Studies* 40 (3): 399-421.

¹⁵ Oehme, "Plan Colombia," 231.

¹⁶ Oehme, "Plan Colombia," 222.

¹⁷ Ceballos, Miguel, and Gerard Martin. 2001. "Colombia: Between Terror and Reform." *Georgetown Journal of International Affairs* 2 (2): 87-96.

since it dismantled the Medellín and Cali cartels. He warns however, that politicians highlight the decrease in homicides and kidnappings, but these were only temporary and in some cases were reversed.¹⁸ Similar to Dion, Peceny's analysis on Plan Colombia concluded that military and law enforcement efforts had little impact on cocaine production but were successful at eliminating criminal groups. The program created tactical successes at the expense of strategic failures. Peceny claims the tactical successes of removing the Cali and Medellín cartels directly allowed FARC to increase their political and criminal power.¹⁹

Most of the analyses on Plan Colombia were historical and political reviews. The few quantitative studies that do exist only dealt with violence indirectly or mentioned the growth of violence as an unsupported afterthought. They instead focused on specific aspects of Plan Colombia such as eradication. Most studies highlight the success that ANLE efforts had in dismantling criminal organizations, but this success came at a cost of increasing violence. While differences exist between Plan Colombia and the Merida Initiative, the core aspects of using the military and police to disrupt criminal organizations were, and are, used in both programs. Based on the qualitative and few quantitative studies that occurred on both topics, it seems that military and law enforcement programs to control TCO groups may be successful at dismantling the groups, but produce more violence in the societies where they operate.

Merida Initiative

In 2007, the United States further pursued force-based anti-criminal policies that affected areas outside the United States as a way to decrease the amount of drugs entering the country. In

¹⁸ Hylton, Forrest. 2010. "Plan Colombia: The Measure of Success." *The Brown Journal of World Affairs* 17 (1): 99-115.

¹⁹ Peceny, Mark, and Michael Durnan. 2006. "The FARC's Best Friend: U.S. Antidrug Policies and the Deepening of Colombia's Civil War in the 1990s." *Latin American Politics and Society* 48 (2): 95-116.

2008, the Merida Initiative was officially signed as a Letter of Agreement between the United States and Mexico. This agreement built the foundation for a cooperated approach at stopping the flow of drugs and crime that was coming out of Mexico and into the United States. This program had four objectives aimed at fighting organized crime and violence. The goals were to disrupt organized crime, build the rule of law, develop border security, and finally, build stronger communities.²⁰

The academic writing on this topic also includes mixed results regarding whether the Merida Initiative yielded positive outcomes. Many also lack statistically backed claims. Most of the academic articles once again used qualitative or historical analysis to describe the outcomes of the Merida Initiative. While historical claims are useful, quoting quantitative figures and comparing them to historical or political outcomes without any testing does not provide an adequate statistical correlation.

The best example of statistical analysis on the Merida Initiative was Melissa Dell's 2015 study on drug-related violence related to voting outcomes. Dell uses regression analysis to demonstrate the relationship between drug-related violence after changes in political parties in local mayoral elections. Specifically, she theorizes that the change in political party disrupts established criminal groups, and the vacuum that is created as a result produces violence as new groups fight for control.²¹ While her analysis is helpful in explaining smaller scale pockets of violence, the larger significance is unknown. A perhaps oversimplified solution to the problem would be to simply not hold elections. Additionally, the study is now six years old, during which

²⁰ Ocampomi. "*The Merida Initiative.*"

²¹ Dell, Melissa. 2015. "Trafficking Networks and the Mexican Drug War." *American Economic Review* 105 (6): 1738-1779.

time Mexican transnational criminal organizations have been rapidly changing in existence, operation, and structure.

Edward Hunt completed a 2019 study evaluating the Merida Initiative, although his study too is already outdated. Hunt used quantitative data, the number of homicides, but then overlaid events during the years 2007 to 2017. Hunt concludes that violence declined following the Mexican government-led modification to the Merida Initiative in 2012.²² Shortly thereafter, the changes were revoked, and violence levels returned to the premodification levels.²³ While there could be a relationship between the change in violence and the modification of the Merida Initiative, many other variables could be responsible for these changes in violence as well. At least some sort of statistical test should have been used before making that conclusion. Hunt also makes the claim that funding for counternarcotics assistance given by the United States to Mexico also had a direct relationship with violence, but he did not provide a statistical test, nor even the amount of funding provided for that time period.²⁴

Other studies use qualitative, historical, and policy-oriented analysis to critique the Merida Initiative. Ogbonna used the United States' prohibition policies of the 1930s to build a comparison to the current policy on drugs coming from Mexico. Ogbonna used a survey taken from 2006 to 2007 targeted toward educators and policy advocates at a local conference. Ogbonna's study concluded that conference attendees believed that the current methods of control were not working, and that more of a health approach, including legalization for some drugs, should be promoted in legislation.²⁵

²² Hunt, Edward. 2019. "Staying the course in Mexico: the role of the US in the drug war, 2006–present." *Third World Quarterly* 40 (6): 1184-1205.

²³ Hunt, 1184.

²⁴ Hunt, 1184.

²⁵ Ogbonna, Chinyere. 2012. "Rethinking USA Drug Policy." *Journal of Global Intelligence & Policy* 5 (9): 107-125.

Ami Carpenter also completed another non-quantitative analysis on the outcomes of the policies against drugs. Carpenter argues through some comparison to the Central American Regional Security Initiative (CARSI) that the actions within Mexico should be referred to not as a War on Drugs, but instead as a problem that requires building instead of destroying.²⁶ As with Ogbonna's analysis, the goals of the policy analysis are well intentioned, but it is difficult to link alternative solutions when few quantitative results on violence have been completed on the topic.

Mercille argues with another policy review study that the Merida policy is being used as a way to ensure the continuation and security of NAFTA interests, instead of decreasing the use and violence around drugs.²⁷ He boldly concludes that the Merida Initiative, like the War on Terror, serves as a way to deepen military relations with foreign countries while using an external security threat, in this case violence around drugs, as a reason to invalidate domestic opposition to the program.²⁸ While his ideas on Merida relate to violence, his focus on violence is secondary to his global economic conclusions.

While Ogbonna, Carpenter, and Mercille referenced policies within their studies, the conclusions lack true support. Ogbonna's and Carpenter's conclusions provide little in terms of ways to improve the violence other than suggesting violence should stop and more of a legislation-based approach should be taken. In both of these cases, the conclusions almost seem irrelevant since the Merida Initiative is an outcome of legislation and continues to be funded by Congress since its creation. Mercille's study implies the Merida Initiative is guided from the

²⁶ Carpenter, Ami C. 2013. "Changing Lenses: Conflict Analysis and Mexico's "Drug War"." *Latin American Politics and Society* 55 (3): 139-160.

²⁷ Mercille, Julien. 2011. "Violent Narco-Cartels or US Hegemony? The political economy of the 'war on drugs' in Mexico." *Third World Quarterly* 32 (9): 1637-1653.

²⁸ Mercille, "Violent Narco-Cartels," 1644.

executive branch of the U.S. government, although he does not directly say this.²⁹ While the intentions of past U.S. presidents could be aligned with Mercille's conclusion of building U.S. hegemony, it seems unlikely that politicians or other powerful primary actors would admit that the use of force is being used to continue hegemonic control of NAFTA.

Another trend common in Merida Initiative writing is the balloon effect, the idea that attempting to control crime and violence in one area simply pushes it to another. William Marcy completed a historical analysis in 2014 that reviewed South and Central American drug eradication programs. The histories of Columbia, Honduras, and Mexico were reviewed, as well as gang-related violence and its causes. Marcy provided analysis on the Merida Initiative and the impact of CARSI. He proposed a concept called "root fire effect" in which he argued that pressure from CARSI pushed crime out of the area of attention and into Mexico, the Caribbean, and elsewhere in Central America.³⁰ This idea is consistent with some of the findings on policing, as well as mayoral elections within Mexico. Brands comes to a similar conclusion with a policy review of the Merida Initiative. He argues that the program has failed, and that pressure from both the U.S. and Mexican governments are best described as transitory since the violence continued and the cost of drugs has only slightly increased while supply has remained near constant.³¹

Ferreira builds on this idea with his policy review that considers both Plan Colombia and the Merida Initiative. He concludes that the intense focus on a military and law enforcement approach to dealing with narco-trafficking results in "narrow tactical achievements [that] hide

²⁹ Mercille, "Violent Narco-Cartels," 1644.

³⁰ Marcy, William. 2014. "The End of Civil War, the Rise of Narcotrafficking and the Implementation of the Merida Initiative in Central America." *International Social Science Review* 89 (1): 1-36.

³¹ Brands, *Mexico's Narco-insurgency*, 14.

broader strategic and tactical failures, which blocks governmental learning and change in U.S. drug policy.”³²

Scholarship on the use of policing and military tactics to control drugs is mixed. Some smaller-level analyses show some correlation between police deployment and crime, yet others at the larger policy level show a potential indirect relationship between the police deployment and political violence. Crime within Mexico is primarily related to personal financial gain but impacts politics with corruption or when these groups occasionally become involved in politics themselves.³³ As such, while a similar program occurred in Colombia, the political influence is not nearly as significant in Mexico. This upcoming study will be similar to Hunt’s analysis on the impact of counternarcotics on violence but will be a quantitative study. Instead of matching a timeline of events over the number of homicides, the independent variable economic cost of the Merida Initiative will be compared to the number of homicides occurring per year within Mexico. If Hunt’s argument is correct, there should be a direct statistical relationship between counternarcotic program funding and the number of homicides.

HYPOTHESIS AND METHODS

Almost all academic authors begin with the concept that homicides within Mexico have been gradually increasing. Figure 1 depicts the number of homicides starting in 1990 through 2020. Overall, from 1990 until about 2006 the number of homicides had been decreasing in Mexico. Then in 2007, there is a sharp rise in homicides. The Merida Initiative, a major political

³² Ferreira, Rodrigo H. 2015. "The War on Drug Addiction: The Role of Misinformation in the Persistence of US Drug Policy." *Revue européenne des sciences sociales* 53 (1): 265-291.

³³ Martinez-Fernandez, Andres. 2021. *Money Laundering and Corruption in Mexico*. American Enterprise Institute, 1-31.

change, began in 2007. Some authors, including Hunt, suggest that this was the reason for the sudden increase in the number of homicides per year.³⁴

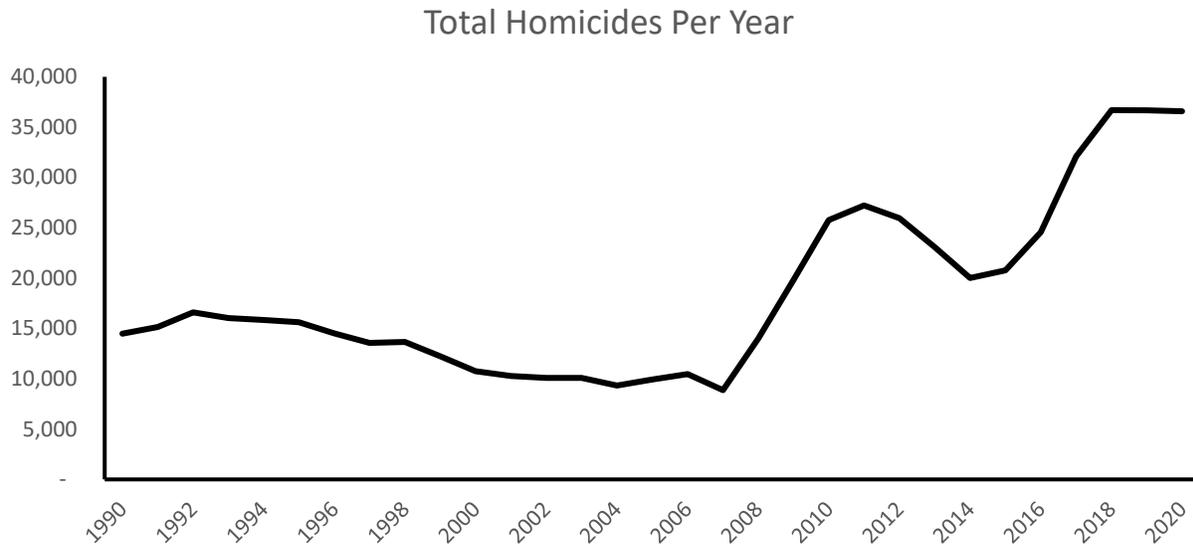


Figure 1. Number of homicides per year within Mexico.³⁵

Hunt completed a hybrid qualitative-quantitative analysis in which anti-narcotic and law enforcement historical events were overlaid on a similar graph as Figure 1 above. After graphing the number of homicides and funding for the Merida Initiative separately, Hunt concluded that, “After years of declining drug-related violence, the trend quickly reversed” following an increase in the number of ANLE programs.³⁶ This study looks to build on Hunt’s study and quantify both violence and anti-narcotic and law enforcement activities and then test the relationship statistically.

This study, by providing a fully quantitative approach instead of a hybrid approach, could help policymakers create programs with statistical foundations instead of creating new programs

³⁴ Hunt, “Staying the Course,” 1196.

³⁵ INEGI, “Indicator Bank,” <https://en.www.inegi.org.mx/app/indicadores/>

³⁶ Hunt, “Staying the Course,” 1195.

based on historical data trends. One problem with Hunt's analysis is that politics seemed to lead his findings and conclusion. Most of Hunt's conclusion was a critical historical recounting of U.S. President Trump's personal interest in expanding and deepening the Merida Initiative.³⁷ While there are benefits to political analysis, drawing conclusions from such analysis has a potential for personal bias.

Removing political bias is important for building evidence-based policy. As such, both policy and violence will be converted into numerical variables and then quantitatively analyzed. Instead of overlaying policy over trends in violence, violence will be quantitatively analyzed by studying the number of reported homicides occurring per year within Mexico. The number of homicides per year will be sourced from the National Institute of Statistics, Geography and Informatics, a Mexican institute created in 1983 by presidential decree to track information about territory, populations, and the economy.³⁸ A second source for homicides in Mexico will come from the United Nations Office of Drug and Crime. The amount of funding for anti-narcotics and law enforcement programs will come from the United States State Department budget dataset. Other datasets such as the Global Health Data Exchange managed by the University of Washington or the Managing Low Intensity Conflict dataset managed by Uppsala Universitet provide alternative sources for primary data, but their collection process as well as presentation qualifications are either not provided or not explained. These sources were therefore not used for this analysis.

³⁷ Hunt, "Staying the Course," 1198.

³⁸ INEGI. 2021. *About Us*. Accessed September 2021. https://www.inegi.org.mx/inegi/quienes_somos.html.

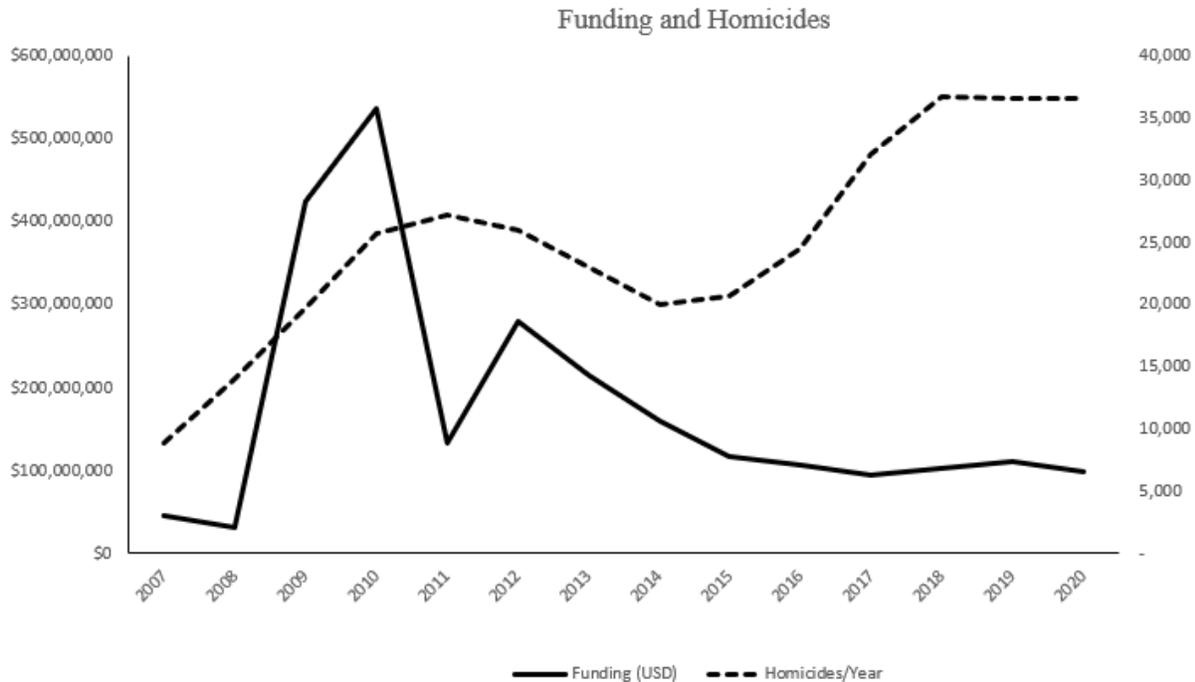


Figure 2. Funding and Homicide breakdown per year.^{39 40}

Figure 2 shows the relationship between funding for anti-narcotics and law enforcement programs and the number of homicides occurring within Mexico throughout the existence of the Merida Initiative. The solid line represents the amount of funding for ANLE efforts; the values are reflected on the left vertical axis. The dotted line depicts the number of homicides occurring within Mexico per year with the values reflect on the right vertical axis. If Hunt’s conclusion is true, then there should be a direct relationship between anti-narcotics and law enforcement programs and homicides. If correct, the solid and dotted lines would follow the same trend on the graph. From the years 2007 until 2014, there does appear to be a relationship between the two variables, although there seems to be a slight delay. Both variables mirror each other through the increase in funding in 2010 and then subsequently both decrease. Following 2014, the two

³⁹ Funding data from: U.S. Agency for International Development. 2021. *Budget Dataset*. U.S. Department of State. July 26. Accessed September 2021. <https://foreignassistance.gov/data>.

⁴⁰ Homicide data from: INEGI. 2021. Indicator Bank

variables diverge as homicides increase again, yet funding for ANLE continues to steadily decrease.

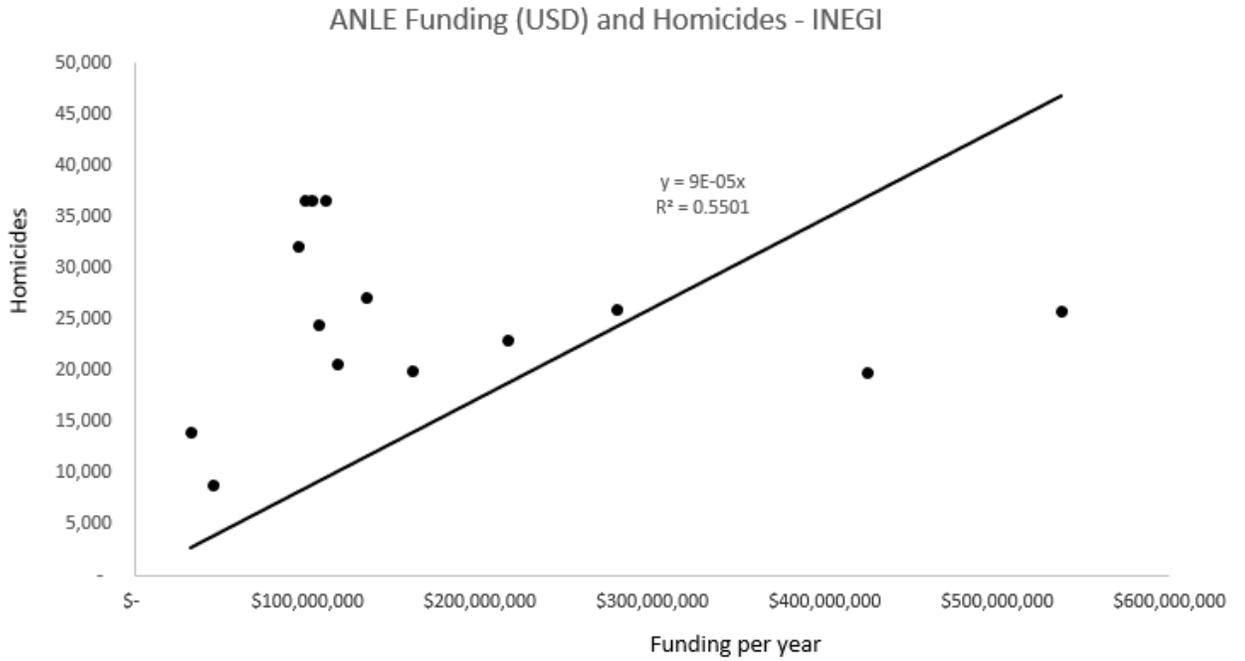


Figure 3. U.S. funding for Anti-Narcotic/Law Enforcement programs and the number of homicides occurring within Mexico using INEGI Data.^{41 42}

⁴¹ Funding data from: U.S. Agency for International Development.

⁴² Homicide data from: INEGI. 2021. Indicator Bank

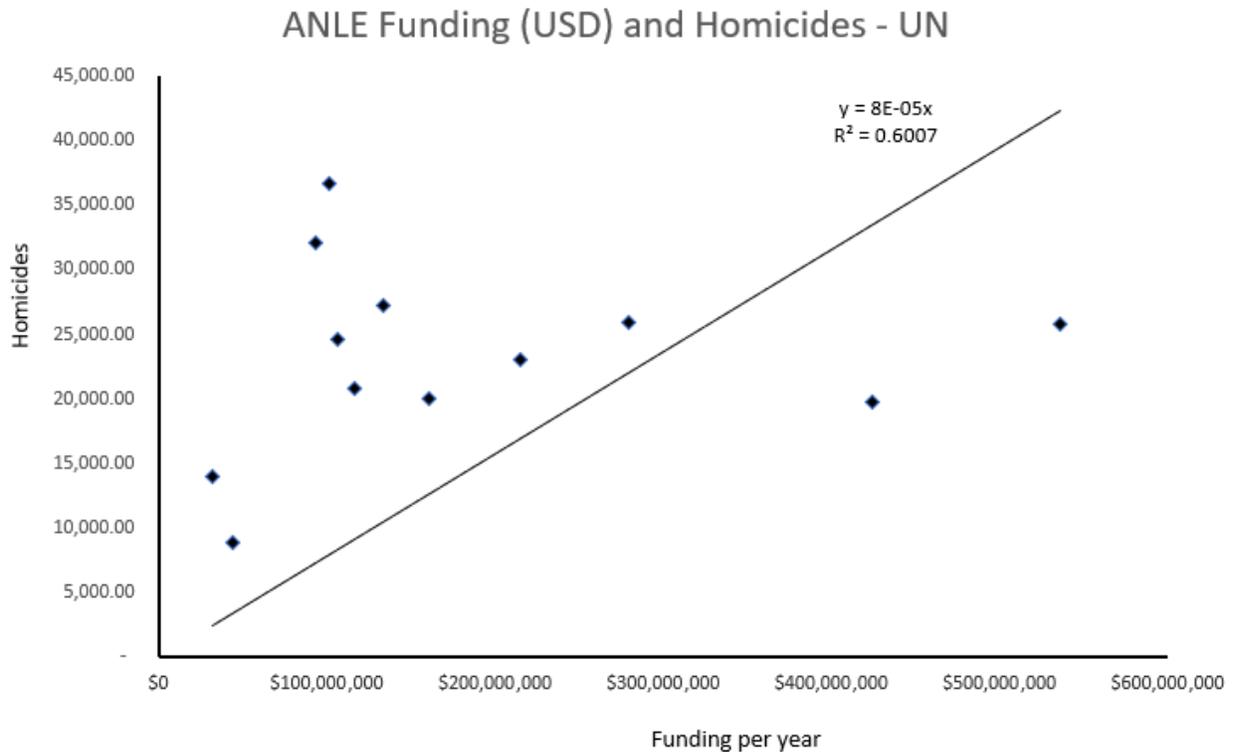


Figure 4. U.S. funding for Anti-Narcotic/Law Enforcement programs and the number of homicides occurring within Mexico using UN Data.^{43 44}

Figures 3 and 4 show the relationship when funding is graphed as increasing along the X axis and the correlated number of homicides are placed along the Y axis. The variables funding and homicides were sourced from primary datasets from the U.S. State Department and INEGI data and then again with State Department data and the UN dataset in Figure 4. Removing time as a variable allows for a direct comparison between funding and homicides. By using funding as the independent variable and homicides as the dependent variable, the data can be analyzed even though funding was not consistent throughout the years of 2007 to 2020. Presenting the data in

⁴³ Funding data from: U.S. Agency for International Development.

⁴⁴ United Nations Office on Drugs and Crime. 2018. "Victims of Intentional Homicide." Data UNODC. Accessed October 29, 2021. <https://dataunodc.un.org/content/homicide-rate-option-2>.

this way also removes any inferences that could be made based on time. If there is a true relationship between an increase in funding and an increase in homicides, the graph should have a positive, linear slope.

When using the INEGI dataset, a line of best fit results in an R^2 value of 0.55 and a modest, but positive relationship between funding for ANLE and homicides. At this level of analysis, there seems to be a direct relationship between funding and homicides. The same process was used on the UN dataset with a similar result. There again appears to be a slight positive relationship between ANLE funding and homicides. The R^2 value, however, was different at a modest value of 0.60. Both the slope equation and R^2 values for both graphs should be the same since they would ideally be capturing the true number of homicides. Since the true amount of homicides are difficult to know, the variation for this study was accepted and thus why the same analysis was done on two different homicide datasets.

These analyses would quantitatively support the ideas proposed by Marcy and Hunt that these programs fuel violence. The relationship was not as strong as other authors suggested but because the overall pattern was true further statistical investigation is required.

This study will contribute to existing studies by determining the strength of the relationship between anti-narcotic/law enforcement programs, ANLE, funding and homicides using Bivariate analysis. The independent variable will be the amount of funding per year for anti-narcotics and law enforcement and the dependent variable will be the violence occurring in Mexico, quantified as the number of homicides occurring in Mexico per year. This study hypothesizes there is a statistically significant, direct relationship between anti-narcotic and law enforcement program funding and the number of homicides occurring in Mexico per year. The null hypothesis is that there is no relationship between funding for ANLE and homicides per year

in Mexico. If there is a relationship between ANLE funding and homicides, then there should be a large, positive R^2 value with a small P value. This testing will provide statistically backed insight into whether the two variables are related to each other.

DATA

The data for this study was obtained via public databases created by both the United States and Mexican governments as well as the United Nations. Funding for anti-narcotics and law enforcement programs was obtained from the Foreign Assistance data downloads section of the U.S. State Department's website. The dataset used for this study was the "Budget Dataset" and the data was then filtered for anti-narcotic and law enforcement programs within Mexico. Additionally, only the "allocation" funding was used and not the President's Budget Requested amount. While President's Budget Requested amount may provide insight into the political direction of the time period, it was not relevant to the actual funding provided to ANLE programs, thus it was not used. The number of homicides in Mexico was obtained by using the "Deaths by Homicides (deaths), 2020" dataset from INEGI. This dataset contains the number of homicides per year from the year 1990 until 2020. This dataset is available publicly through the INEGI dataset homepage.

To verify and check for consistency, the same process was completed using a United Nations public dataset. Once again, the "Budget Dataset" from the U.S. State Department was used to provide the yearly allocated funding for ANLE programs. The number of homicides per year was then obtained through the United Nations Office on Drugs and Crime dataset called "Victims of Intentional Homicide" and the raw dataset was used via the "Bulk Data download" link. The dataset was then filtered to "Territory Mexico" and the Indicator was set to "Homicide count" and the years 2007 through 2018 were used. Unfortunately, the dataset at the time of this

report did not include any data for the years 2019 - 2021. Both the funding and homicide datasets were selected from government-backed and international sources because they provided the most transparency while also providing a complete dataset. Ideally by selecting datasets published by governments and international groups, any potential individual actor who has political bias would be controlled.

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.008749442
R Square	7.65527E-05
Adjusted R Square	-0.083250401
Standard Error	8745.035443
Observations	14

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	70258.41251	70258.4125	0.0009187	0.976318009
Residual	12	917707738.8	76475644.9		
Total	13	917777997.2			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	25232.21918	3742.003531	6.74297044	2.0646E-05	17079.09388	33385.3445	17079.09388	33385.3445
Funding (USD)	-5.05446E-07	1.66758E-05	-0.03031012	0.97631801	-3.68389E-05	3.5828E-05	-3.6839E-05	3.5828E-05

Figure 5: Bivariate Regression (IV: Funding in USD, DV: Number of Homicides per Year in Mexico using INEGI dataset)

Figure 5 shows the Bivariate regression that was completed for the two variables, number of homicides and funding. Unfortunately, the P value for the regression coefficient was rather large; there is a good chance that this relationship is due to randomness. Specific to this study, the relationship between funding and homicides is not systematic and other variables may be causing the increase of homicides. The R^2 value was very small at 0.007%, so when trying to explain the number of homicides based on funding, the relationship is weak and only slightly positive.

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.139459757
R Square	0.019449024
Adjusted R Square	-0.078606074
Standard Error	7736.833994
Observations	12

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	11872828.36	11872828.36	0.198347912	0.665543825
Residual	10	598586002.6	59858600.26		
Total	11	610458830.9			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	21973.97722	3599.096735	6.105414451	0.00011487	13954.68995	29993.26449	13954.68995	29993.26449
Funding (USD)	6.71755E-06	1.50833E-05	0.445362674	0.665543825	-2.68902E-05	4.03253E-05	-2.689E-05	4.03253E-05

Figure 6: Bivariate Regression (IV: Funding in USD, DV: Number of Homicides per Year in Mexico using UNODC dataset)

Figure 6 shows Bivariate regression when using the UN dataset on number of homicides. This dataset provided similar results to the INEGI dataset. This R² value was also small, suggesting that funding alone poorly explains the independent variable of number of homicides. The P-value was again large, at .67, suggesting there is an insignificant relationship between funding and the number of homicides. As with the INEGI analysis, there was a slight positive trend, but a weak relationship between funding and homicides.

DISCUSSION

This study, while originally suggesting that there is a relationship between funding and the number of homicides occurring in Mexico, fails to reject the null hypothesis. After running Bivariate analysis there is a statistically insignificant relationship between funding for anti-narcotics and law enforcement programs and the number of homicides occurring within Mexico. Two possibilities explain the statistically insignificant relationship: the first is that there are other variables impacting the number of homicides, or that there is indeed no relationship between funding for anti-narcotics and law enforcement programs and the number of homicides.

Part of this relationship's lack of strength is a result of the relatively low number of data points regardless of what dataset was used. Since funding occurs once per year, there were only 15 data points to use and only 13 in the UN dataset. A sample size this small made itself evident with the Adjusted R^2 value during Bivariate analysis. The Adjusted R^2 flipped to negative in both samples, although both values were close to zero, again suggesting no relation between the two. The lower number of data points minimizes the statistical strength of the conclusions. As time goes on, it would be helpful to continue this study in order to build more meaningful results.

One source for additional investigation would be to change the source of data. Private datasets that include more extensive information are available. These datasets could improve the number of datapoints, but at the risk of including bias or poor data collection practices that might skew that data and thus conclusions. One way to balance the risk of relying on one dataset for outcomes was by using the second UN dataset. Unlike the privately collected datasets from universities, the government and international datasets provided clear explanations on what criteria was used during collection and presentation. For example, the UN dataset included killings related to law enforcement and state officials, murder, death from terrorist activities and excluded deaths due to legal interventions, suicide, and involuntary manslaughter.⁴⁵ The privately collected datasets had no such listing of what was considered homicides or how data was collected.

Parallel studies could be completed by running similar tests using other international-created datasets. The same process could be completed using the World Health Organization's

⁴⁵ United Nations Office on Drugs and Crime. 2018. "Victims of Intentional Homicide." Data UNODC. Accessed October 29, 2021. <https://dataunodc.un.org/content/homicide-rate-option-2>.

Homicide Estimates by Country dataset. This dataset is available for public download and is provided by another recognized, international organization. Completing the same analysis with these new datasets could provide additional insight into the value of anti-narcotic and law enforcement programs on violence. Unfortunately, during the time of writing this study, the tool used to present the WHO raw dataset was either not available or broken.

A known flaw within any of these datasets would be in accuracies of the reported number of homicides. Since homicide is illegal, accurately measuring and quantifying the violence through homicides will never be perfect. Medical examiner error, corruption, or murdered and missing individuals could skew the data. Transnational criminal organizations do not provide their own sources of primary data so regardless of which dataset is selected there will be at least some margin of error from the true number of homicides that occur within Mexico. In order to account for this margin of error, studies using more of the datasets could be completed.

Even if homicides could be quantified perfectly accurately, there will still be some inherent error in using homicides as a measure for TCO violence. Not all homicides are related to TCO activity. It would be difficult to filter out those murders that may not be related to TCOs, particularly because not all murders can be solved or explained.

Another alternative would be to operationalize violence in another way, such as using reports to police of violent crimes. These reports could be filtered by areas in which TCOs are prevalent to generally exclude non-TCO-related violent crimes. ANLE program growth also could be operationalized in another way. This study was only able to monitor U.S. contributions to ANLE program efforts, not the Mexican contributions. ANLE efforts could be operationalized differently if the amount of police or internally deployed Mexican military units could be analyzed. While some values could be found, the true values were either inconsistent, lacking,

classified, or some combination of the three. Since there are no publicly known foreign direct interventions occurring as part of the Merida Initiative, this operationalization could provide a truer scope of ANLE program growth.

Ideally, complete datasets would be used to further analyze the impact of homicides. Data collection and then analysis was beyond the scope of this research study, but future studies could start building new datasets to be used with a clear explanation of how the data was collected and what criteria was used during the process. All datasets referenced in this study could use more explanation as to how they were compiled. Additionally, all datasets provided both funding and homicides as yearly totals. Providing the data as monthly totals would provide more datapoints that could further increase the strength of statistical analysis. Monthly data points would allow short term as well as long term analysis to be completed and could be used to examine policy outcomes more rapidly.

This study challenges previous ideas that there is a strong and direct relationship between anti-narcotic and law enforcement programs and an associated increase in the number of homicides. It also does not support the idea that these programs decrease the number of homicides. While the alternative hypothesis was not supported, this study hopefully demonstrates the need for further quantitative investigation on the topic.

CONCLUSION

Figure 2, the depiction of funding for ANLE programs and homicides in Mexico during the Merida Initiative, shows similar trends between the two variables. Especially between the years of 2006 to 2014, the two mirrored each other and even increased and decreased during the same years. Statistically, however, there is no significant relationship between funding for ANLE

programs and homicides when using two similar datasets. Further investigation on other variables could provide insight as to why funding may have an impact on the number of homicides.

While this study failed to reject the null hypothesis, future anti-narcotics and law enforcement programs can still glean some meaningful conclusions from this study. This study directly challenged the idea proposed by others who took a qualitative approach and concluded that there was a direct, strong, and positive relationship between anti-narcotics and law enforcement programs and homicides. Additional quantitative studies could provide different results or reinforce those found within this study.

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CV

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