ARTICLE / INVESTIGACIÓN

Comparison of firearm deaths from the forensic medicine service with what was published in digital media during 2022

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Abstract: Honduras has a unique situation regarding violence-related deaths, especially those caused by firearms. The data used in this article comes from the Forensic Medicine Service and Mobile Morgue of the Public Ministry in Honduras and from scraping results from the Duckduckgo search engine accessed through the application programming interface (API). The data taken is just from 2022; in the case of search parameters, we only took the results of Honduran digital media sites filtered using the keyword "balazo". We wanted to measure if there was a difference between the number of deaths from firearms officially reported by the Public Ministry when comparing them with those published in Honduran digital media obtained through web scraping during the year of study. This study followed a typical descriptive design by determining the sample variables' frequencies, distributions, and qualitative characteristics. The results show that the number of deaths from firearms reported by digital media is higher than the official number. Using the number of deaths per thousand inhabitants, the tabloids, when they refer to less populated regions, the differences compared to the values published by the Public Ministry turn out to be up to twenty times greater; as far as urban centers are concerned, it is reduced to the level that digital media report up to twice as many deaths per thousand inhabitants.

Key words: Firearms deaths, digital media, sensationalism, scraping, text analysis, forensic science.

Introduction

Deaths by firearm refer to deaths caused directly by shots from any device that uses projectiles combined with some element of ignition or propulsion. These deaths can be both intentional and accidental. Counting firearm deaths is generally based on official records in each country and, in other cases, on statistics provided by health and safety organizations[1,2].

The Pan American Health Organization (PAHO), International Amnesty, Insight Crime, and other international institutions use this data to analyze and monitor armed violence, promote prevention measures, and control weapons. Up-to-date statistics on firearm deaths are usually available in annual reports or databases of official agencies and reliable public health sources. In the case of Honduras, this is the responsibility of the Public Ministry through its different offices[3-6].

Honduras is a country that has experienced high levels of gun violence and gun-related homicides in recent decades. According to the 2015 Global Burden of Armed Violence report, the firearm homicide rate in Honduras was approximately 45.6 per 100,000 inhabitants. This figure is significantly higher than the global average and reflects the country's serious problem of armed violence. Likewise, about 80% of all homicides in this country involve firearms[5-7].

Gun-related violence in Honduras is linked to several factors, including drug trafficking, gangs, and a lack of control over access to and circulation of firearms. These factors contribute to the proliferation of illegal weapons and an environment conducive to the use of gun violence[8].

Notably, the government of Honduras has implemented various measures and policies to address armed violence and reduce homicides. These efforts include disarmament initiatives, crime and violence prevention programs, and improvements in the capacity of the security forces. However, the situation remains challenging and requires sustained long-term efforts to significantly decrease firearm deaths in the country, especially to avoid being the most violent peacetime country in the world[9].

The phenomenon of sensationalism in the media can affect the way homicides and gun deaths are reported. Sensationalism is characterized by a sensationalist exaggeration of facts, manipulation of information, and searching for shocking headlines to capture the public's attention. All attempts to regulate information and how it reaches viewers, their time slots, and data verification have failed. This content influences the public as it generates an additional psychiatric burden[10,11].

Considering only reported deaths from firearms, official data was compared to what is reported in digital media. These have been preferred since reproducible techniques can obtain them from what is published and stored in Honduran domains on the Internet. This is to know if the number of deaths reported is like the official number or if, instead, the media aggravates the perception of insecurity among citizens. Therefore, our objective is to measure if there is a difference between the number of deaths from firearms officially reported by the Public Ministry when comparing them with what was published in Honduran digital media obtained through web scraping during 2022.

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The differences between the number of deaths by firearms will be established by comparing and relating the statistical values of the central tendency of the population, official deaths, and deaths obtained via scraping. Finding the differences between departments through the value of the proportion of deaths per thousand inhabitants, determining if the data obtained have a normal distribution using the Kolmogorov-Smirnov test. Measure the variance between means of the data using the Mann-Whitney U test to carry out a principal component graphic analysis (PCA) to find differences in scale and the number of deaths reported in the different departments during the study period.

We hypothesized that the number of firearms-related deaths reported in digital media is higher than the official values. The media use the red note to attract readers avid for this type of content; references to this kind of news are frequent on websites. Finding if the number of those is by what is officially reported represents a parameter that can determine, among other things, the quality and veracity of online news, the psychological burden suffered by users of digital media, the public image perception of the country and specifically of that specific geographical regions.

Materials and methods

The data used in this article comes from the Forensic Medicine Service and Mobile Morgue of the Public Ministry in Honduras for the year 2022. This sample comprises 1293 autopsies of corpses that were entered for firearms-related deaths. All nationwide registrations have been considered; all have been retained. The population data by the department were obtained from the projection services available online from the National Institute of Statistics (INE), based on population and housing surveys carried out regularly[12].

This study follows a typical descriptive design by determining the sample variables' frequencies, distributions, and qualitative characteristics. The data has been obtained through direct consultation of a primary source such as the one reported by the Public Ministry and others through the technique described as web scraping. The values obtained are subjected to statistical and normality tests. The results are interpreted by comparing the correlation and variance between them[13].

To obtain information from Honduran digital media, the Duckduckgo search engine has been used in its HTML version, accessed through an API. Search parameters have been placed that indicate that they show the results for 2022 on digital media sites using the keyword "balazo"[14].

The technique for downloading SERP (Search Engine Results Page) information is known as web scraping, also called web harvesting, a data mining technique to extract data from the web in an automated way. It consists of writing programs or using tools that navigate web pages, analyze their structure, and extract the relevant data. The process involves sending HTTP requests to web pages, downloading the HTML content, and parsing it to extract the desired information. The data extracted by web scraping can be text, images, tables, links, user comments, news, etc. This data can be used for various purposes, including research, monitoring, and event tracking. Performing web scraping may be subject to conditions and prohibitions; on many sites, it is considered an abusive use of the services offered through the Internet by users[15-17].

Web scraping can be done using programming languages or specialized programs. For this study, we used the Python 3.10 64-bit language and the Beautiful Soup 4.12.2 library to facilitate the process, all running on the Microsoft Windows 10 64-bit operating system. Beautiful Soup is a Python library used to parse and extract data from HTML and XML documents using methods and functions that allow you to navigate and search for elements in the document structure. The search uses tags, classes, keys, content, or other attributes. It also allows you to access the characteristics of the elements and go through the structure of the document in a hierarchical way[18,19]. The source code used is shown in Table 1.

With the data returned by scraping, we use an analysis and evaluation method applied to unstructured texts containing qualitative data. Its objective is to quantify the qualitative information in these texts using patterns that group words and roots. Each expression or root within the target text is examined with this method, assigning a unit value to each match, which is successively added to each pattern. As many patterns as necessary can be created, and weight can be assigned to weigh the importance of the analysis if required. The hits are subjected to predefined arithmetic operations, which for this study are the frequency of repetition of the search terms[20].

For statistical analysis, MedCalc version 19.7.1 (64bit) has been used, combined with scripts developed in the Python programming language stated before. Microsoft Excel 365 was used to create maps showing the differences between variables in this study; this tool has access to different geographic data banks adapted for our purposes[21,22].

Results

A fundamental statistical analysis of the frequencies of geographically organized violent deaths reported by Forensic Medicine was performed. Data were reported for all departments of the Republic of Honduras for a sample (n) of 18 departments. The arithmetic means of 88.72 and a median of 30.5 was calculated; this represents the central measure of the distribution, located between 28 and 33 reported firearm deaths. A value repeated more frequently was not found since several numbers presented the same number of occurrences; therefore, no mode was found. The range of values was 454, indicating a wide dispersion between the minimum (0) and maximum (454). The standard deviation yielded a value of 15.81, indicating that the values in the list have a moderate dispersion around the mean. These statistical results provide a quantitative view of reported firearm deaths' distribution and numerical characteristics.

The population of Honduras in 2022 is approximately 9,589,930 inhabitants. It will have a statistical behavior by the department of an arithmetic mean of 568,354.39 inhabitants. A median of 483,403 and no mode was found. The range of the list was 1,808,810 inhabitants, which reveals a wide dispersion of values between the minimum value (107,863) and the maximum value (1,916,739). The standard deviation was 601,732.72, indicating a significant dispersion between the values concerning the mean.

As for the results obtained by scraping, they had a statistical behavior with an arithmetic mean of 109.11 deaths in digital media and a median of 9.5, located between values 9 and 12. These data presented a mode of 2, the value of repeated violent deaths in more than one department. The range was 829, indicating a wide dispersion of values

Title 1

```
############################
## scraping.py
############################
'''
Este script realizar web harvesting de los resultados de ejecutar una busqueda
en el sitio DuckDuckGo, usando los parametros siguientes:

    Balazo :  Termino de busqueda en los sitios
     +2022 :  Es el año de nuestro estudio, el + sirve para que vaya unido
              con el termino de busqueda
   site:hn :  Solo buscar en sitios .hn, que corresponden Honduras
  !safeoff :  Mostrar todos los sitios, quitar control parental

Todo lo anterior, se ingreso en el campo de busqueda del sitio, y se copio el URL
de la parte superior del navegador y se coloco como URL del scraping.
'''
#Librerias a utilizar
import requests
from bs4 import BeautifulSoup

#Establecer el agente para acceseder el servicio, esto para evitar bloqueo por uso abusivo
#Se establece un navegador, version, sistema operativo y plataforma
headers = {
    "User-Agent": "Mozilla/5.0 (Macintosh; Intel Mac OS X 10.15; rv:84.0) Gecko/20100101 Firefox/84.0",
}

#URL de busqueda
page = requests.get('https://duckduckgo.com/html/?q=balazos+%2B2022+site%3Ahn&kp=-2', headers=headers).text
soup = BeautifulSoup(page, 'html.parser').find_all("a", class_="result__snippet", href=True)

#Muestra los resultados
for soup in soup:
    print(soup.text, "\n")
```

Table 1. Source code in Python of the web scraping we did.

between minimum (1) and maximum (830). The standard deviation obtained was 243.69, indicating that the values in the list present a significant dispersion around the mean. The data with which the statistical operations have been carried out are shown in Table 2.

By conducting a comparative analysis of departmental data, specifically examining population figures and comparing them with firearm-related death statistics, and merging findings from web scraping, distinct patterns within the data were identified. Comparatively, in the number of deaths by firearms, it is observed that the Department of Cortes registered the highest figure, with 454 deaths. It is followed by Francisco Morazán and Atlántida, with 299 and 135 deaths, respectively. On the other hand, the departments of Gracias a Dios and Valle reported no deaths from firearms in 2022. Regarding the deaths found through web scraping, Cortes also tops the list with 830 deaths. Francisco Morazán follows it with 670 deaths, followed by Santa Bárbara and Copán with 23 deaths each. All other departments reported shallow values.

To perform a test of normality of the population, the deaths reported by the Public Ministry and the number of deaths found by web scraping, the Kolmogorov-Smirnov normality test was used since it will allow us to evaluate if the data follow a normal distribution. When applying this test to the population data, the value p=0.07369 and the statistical test value D=0.29252 were obtained. The p-value is more significant than the commonly used significance level of 0.05; therefore, it can be considered that the population in the departments of Honduras follows a normal distribution.

Regarding firearm deaths reported by the Public Ministry, the Kolmogorov-Smirnov test yielded a statistical test

#	Department	Population	Firearms deaths (Fd)	Scraping deaths (Sd)	Fd/1000 Persons	Sd/1000 Persons
1	Atlántida	500754	135	14	0.270	0.028
2	Choluteca	487766	5	7	0.010	0.014
3	Colon	355551	88	9	0.248	0.025
4	Comayagua	580814	12	12	0.021	0.021
5	Copan	425058	58	23	0.136	0.054
6	Cortes	1845739	454	830	0.246	0.450
7	El Paraiso	510293	7	15	0.014	0.029
8	Francisco Morazán	1724787	299	670	0.173	0.388
9	Gracias a Dios	107863	0	1	0.000	0.009
10	Intibucá	273665	1	1	0.004	0.004
11	Bay Island	77929	33	2	0.423	0.026
12	La Paz	231555	1	1	0.004	0.004
13	Lempira	375439	34	5	0.091	0.013
14	Ocotepeque	170875	20	2	0.117	0.012
15	Olancho	595527	6	7	0.010	0.012
16	Santa Barbara	483403	28	23	0.058	0.048
17	Valle	194721	0	2	0.000	0.010
18	Yoro	648190	112	4	0.173	0.006
Total		**9589930**	**1293**	**1628**	**0.135**	**0.170**

Table 2. Population, official deaths by firearms, deaths found through scraping and deaths per thousand inhabitants for each department during 2022.

value of D=0.29301 and a p=0.07288 value. The p-value is greater than the statistical test value of 0.05, but since it is close to this value, we can say that its distribution is weakly normal. This test returned a value p = 0.000161 for deaths obtained by web scraping, with a test value D = 0.50192. Because the p-value is less than 0.05, we can consider that the data of deaths obtained by web scraping do not follow a normal distribution. Because the p-value of the test performed on the deaths reported by the Public Ministry is very close to the significance value, we will reject its normality by the evaluators' decision for this specific study. The graphical behavior and test results can be visualized in Figure 2.

The Mann-Whitney U test was used, as samples from deaths do not follow the same distribution. This test is based on comparing the medians of the two samples of deaths. Then it evaluates whether there is sufficient evidence to infer significant differences between them so that the two independent samples (deaths by firearms reported by the Public Ministry and the number of deaths found through web scraping) were compared about the departments where they are indicated to occur. The results revealed that the difference between the medians is statistically significant, with a value of U = 127, a Z-Score=1.09153, a p = 0.27572, and a reference value of p<0.05.

Using a principal component analysis (PCA) graph, in which each point represents an element of the sample, these data have been placed in a new coordinate system, where the axes are defined by the main components resulting from the data analysis. Principal components are linear combinations of the original variables that capture the most significant variability of the data, from highest to lowest. Points close on the graph are similar in structure or characteristics, while far away points can have significant differences. Figure 3 shows a PCA graph; note that the behavior of deaths is disproportionate between the departments with the two most populated urban centers.

When making a statistical comparison between the population and deaths in the departments of Honduras, Pearson's correlation coefficient was used since it will allow us to evaluate the linear relationship between people and deaths to determine if there is a significant association between them and the strength of this. A Pearson correlation coefficient of r=0.765 was obtained, indicating a moderately positive correlation between the population and the total number of department deaths. The corresponding hypothesis test for the correlation coefficient is p<0.001, indicating a significant association between people and deaths. The dispersion of these data is shown in Figure 4.

Discussion

The value of deaths by firearms reported per hundred thousand inhabitants in the case of the Public Ministry is 13.48 and, through scraping of 17, on average, 15.24. These values are half of what UNODC reported in 30 deaths. That's the same lower proportion as reported in the University of Sydney's International Firearm Injury Prevention and Policy[23,24].

The methodology may be a critical factor in determining whether the values reported and found by this study differ from what is known in other media. We have gone to an official primary source, and on the other hand, we have

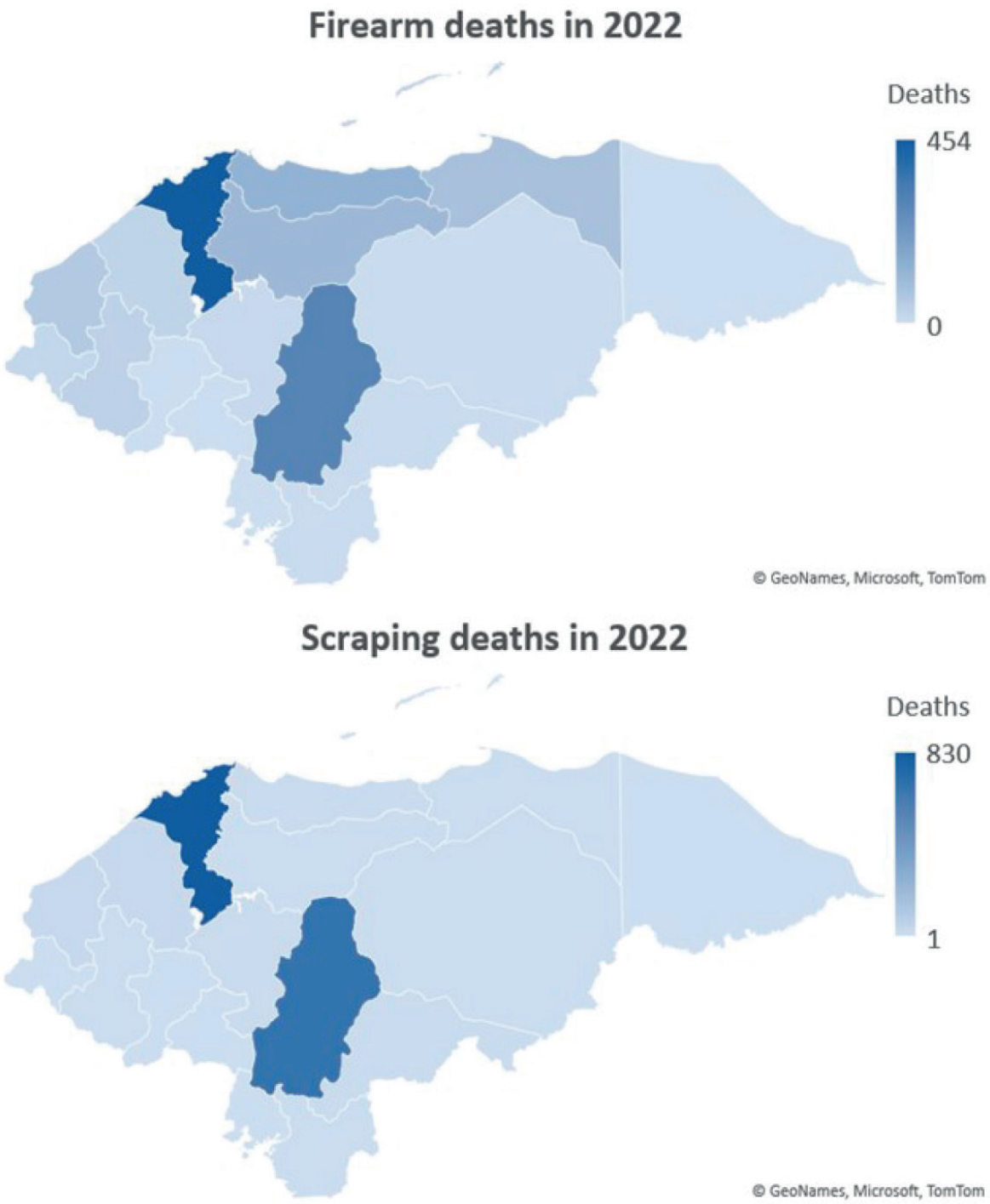

Figure 1. The concentration of firearms death. The notable difference between official information and scraping. There is a concentration on urban areas. Map source: own creation.

obtained it through scraping, with the code used to get the data. A standard methodology must be available for these differences to be less than nil, significantly to reduce underreporting and sensationalism. It is suggested to use the methodology proposed by the Geneva Declaration Secretariat[25].

The values obtained by scraping are statistically different from the officially reported data. There are no recent publications to compare the sample obtained from the deaths of Francisco Morazán y Cortes. If we do not consider the two urban centers, the behavior to report would be similar to the value of multiple neighboring countries in Honduras. Urban centers' behavior differs from the rest of the country, operating on a different scale, proportion, and magnitude[1-8].

The difference in the data that has been used compared to what was previously published may result from the phenomenon of organized crime, which may generate underreporting. Sensationalism may be the reason why the media publish more deaths by firearms since sometimes there may be media that obtain information and reports from the population; this is the same as published by Dowler *et al.*[26].

From the standpoint of forensic psychiatry, sensationalism related to gun deaths can cause anxiety and fear. Sensationalist media causes overexposure to negative news, increasing stress levels and hurting emotional well-being[25].

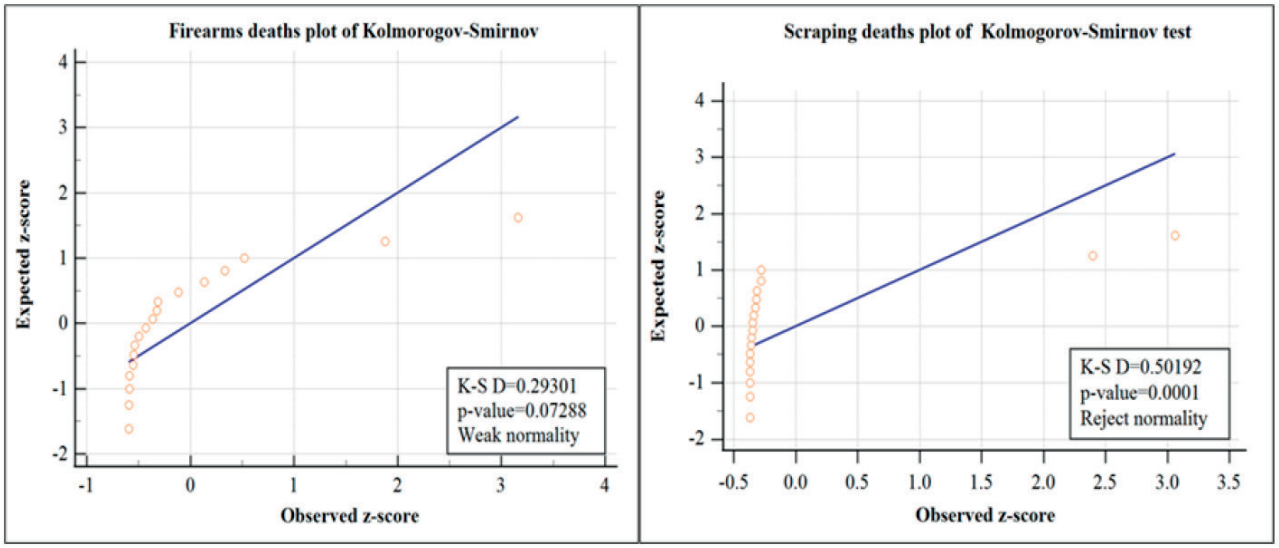

Figure 2. Normality test graph.

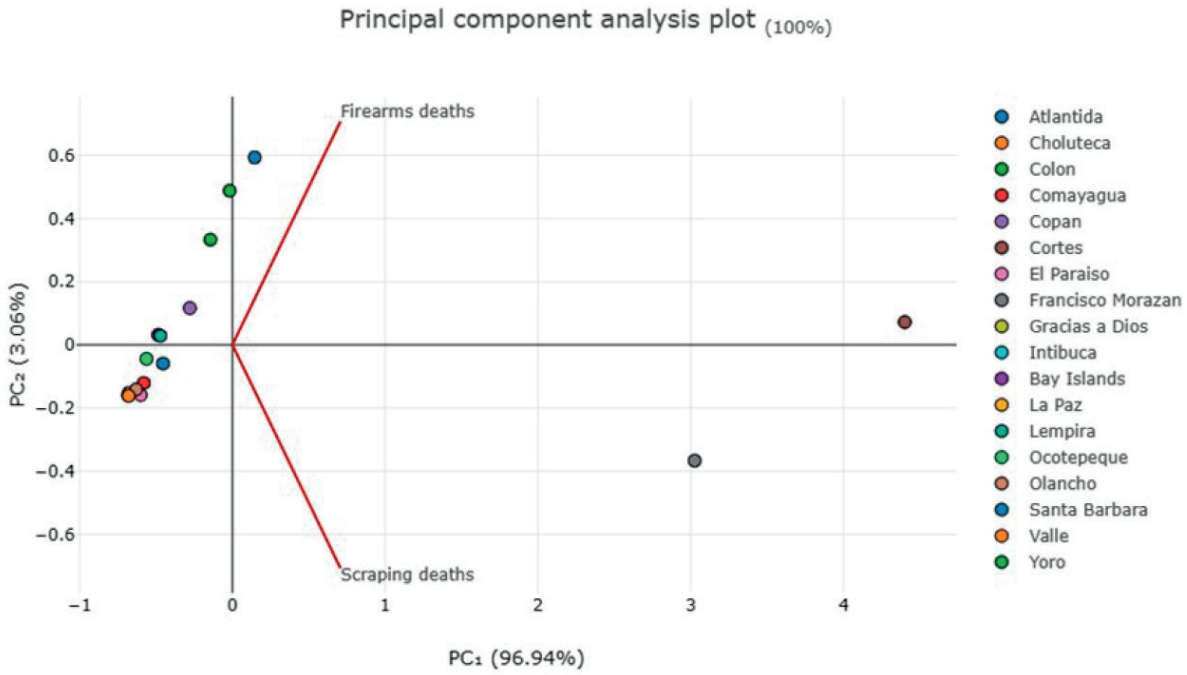

Figure 3. PCA plot, see the distance of Cortes and Francisco Morazán and other departments.

On the other hand, exaggerating the indicators and conditions in which gun deaths occur generates a confirmation bias. In this case, people tend to look for content that confirms their pre-existing beliefs. So, tabloid media exploits this bias by presenting information in a selective and manipulated way to satisfy the expectations and prejudices of their audience. This leads to a polarization of opinions and a distorted view of reality[28,29]. This behavior is standard in all scraping data, which agrees with what has been published and accepted in forensic psychiatry.

Conclusions

A direct proportion exists between population and deaths, as observed in the two departments with the most significant number of people (Francisco Morazán and Cortés). However, it is essential to note that these results do not imply causation and may be influenced by other factors, such as crime rates and the reliability of digital media sources. Pearson's correlation test suggests that as a department's population increases, there tends to be an increase in the total number of deaths reported by forensics and digital media. However, it is essential to note that correlation does not imply causation and other factors may be involved.

There are differences in which the reports of deaths by firearms reported by the Public Ministry exceed those found through scraping; this happens in the departments of Copan, Colon, Bay Islands, Ocotepeque, Yoro, and Colon. These values are up to twenty times higher on a scale of a thousand inhabitants. On the other hand, in the departments of Francisco Morazán and Cortes, scraping reports twice as much as the official in the same density. In the different departments, there are no significant differences.

There is a possibility that not all firearm deaths will be handled by the Public Ministry because, for the relatives of the victims, it can incur greater complexity in the process

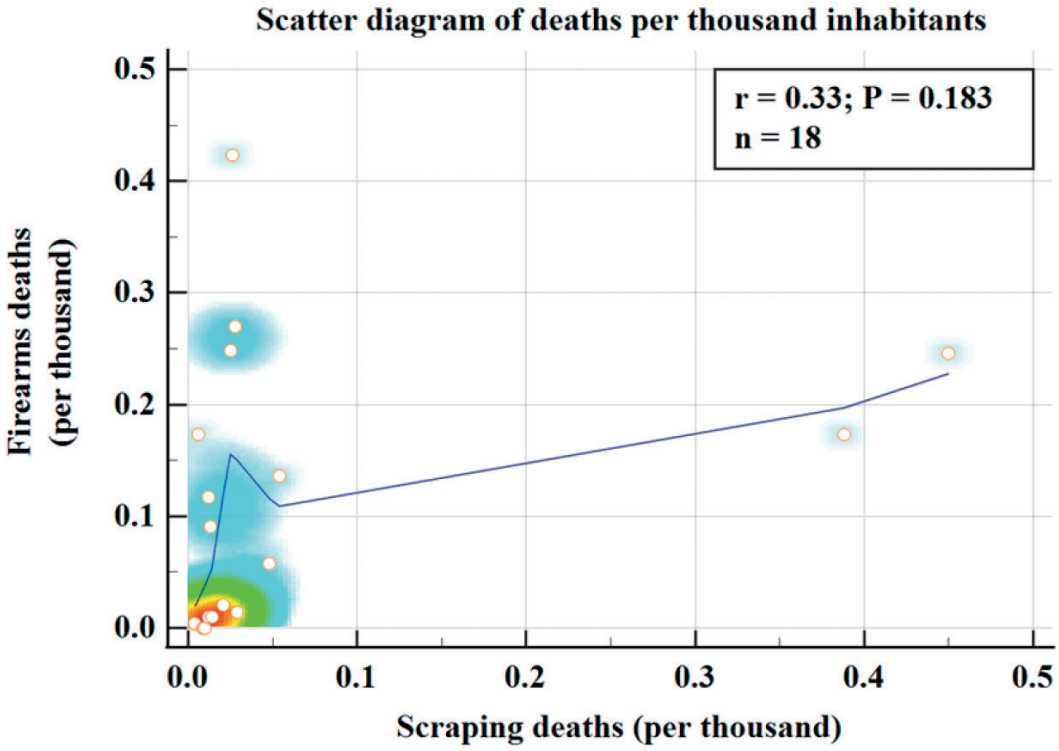

Figure 4. Scatter plot of deaths by thousand habitants.

of giving eternal rest to the remains of the victim. Although illegal, it appears to be a practice that occurs mainly in rural areas and is associated with organized crime.

There is a difference in the number of deaths found by scraping and the official ones reported, but the change is more pronounced in urban centers. It can be concluded that if there is an action of reporting different figures in the digital media, in less populated areas, they have a behavior like that reported by the Public Ministry; this is observed in the PCA graph.

Author Contributions

Conceptualization, methodology, Carlos Agudelo-Santos; Validation, Jose Isaac Zablah; formal analysis, investigation, data curation, Carlos Agudelo-Santos; writing—original draft preparation, writing—review and editing, Carlos Agudelo-Santos; supervision, Jose Isaac Zablah; All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

Bibliographic references

1. TSchwab-Reese LM, Peek-Asa C. Factors contributing to homicide-suicide: differences between the firearm and non-firearm deaths. J Behav Med. 2019, 42(4):681–90.
2. Steenkamp M, Frazier L, Lipskiy N, DeBerry M, Thomas S, Barker L, et al. The National Violent Death Reporting System: an exciting new tool for public health surveillance. Inj Prev. 2006, 12(suppl_2):ii3–5.
3. Pan American Health Organization / World Health Organization. OPS/OMS | Países en desarrollo de América Latina y el Caribe tienen las tasas de homicidio más altas del mundo, según informe de la OMS. Available online: https://www3.paho.org/hq/index.php?option=com_content&view=article&id=10270:2014-developing-countries-latin-america-caribbean-worlds-highest-homicide-rates&Itemid=0&lang=es#gsc.tab=0 (accessed on June 06 2023).
4. Amnistía Internacional. Las personas deben tener prioridad sobre las armas. Available online: https://www.amnesty.org/es/what-we-do/arms-control/gun-violence/ (accessed on June 06 2023).
5. InSight Crime. 80% of Homicides in Honduras Result from Gun Violence. Available online: https://insightcrime.org/news/brief/80-of-homicides-in-honduras-result-of-gun-violence-report/ (accessed on June 06 2023).
6. Ministerio Publico. Medicina Forense [Internet]. https://www.mp.hn/. Available online: https://www.mp.hn/ (accessed on June 06 2023).
7. Secretariat GD. Global Burden of Armed Violence 2015: Every Body Counts. Cambridge University Press; 2015. (EBL-Schweitzer). Available online: https://books.google.hn/books?id=HsnSCQAAQBAJ (accessed on June 06 2023).
8. United Nations Development Programme (UNDP). Analisis sobre la situacion de la violencia y seguridad ciudadana en Honduras 2022. Available online: https://www.undp.org/sites/g/files/zskgke326/files/2023-01/pnud-hn-analisis-violencia-seguridad-ciudadana-2022.pdf (accessed on 06 Jun 2023).
9. United States Institute of Peace. Honduras progresa en controlar la violencia, ¿es posible hacerlo de forma sostenible? Available online: https://www.usip.org/publications/2023/01/honduras-progresa-en-controlar-la-violencia-es-posible-hacerlo-de-forma (accessed on 06 Jun 2023).
10. Markey PM, Males MA, French JE, Markey CN. Lessons From Markey et al. (2015) and Bushman et al. (2015): Sensationalism and Integrity in Media Research. Hum Commun Res. 2015, 41(2):184–203.

11. Majeed MH, Sudak DM, Beresin E. Mass Shootings and the News Media: What Can Psychiatrists Do? Acad Psych. 2019 43(4):442–6.
12. INE. Encuesta de Hogares. Tegucigalpa; 2010. Available online: http://www.ine.gob.hn (accessed on June 06 2023).
13. Grimes DA, Schulz KF. Descriptive studies: what they can and cannot do. Lancet. 2002, 359(9301):145–9. DOI:10.1016/S0140-6736(02)07373-7
14. DuckDuckGo Company. DuckDuckGo - La privacidad, simplificada. Available online: https://www.duckduckgo.com (accessed on June 06 2023).
15. Diouf R, Sarr EN, Sall O, Birregah B, Bousso M, Mbaye SN. Web Scraping: State-of-the-Art and Areas of Application. In: 2019 IEEE International Conference on Big Data (Big Data). IEEE; 2019. p. 6040–2.
16. Glez-Peña D, Lourenço A, López-Fernández H, Reboiro-Jato M, Fdez-Riverola F. Web scraping technologies in an API world. Brief Bioinform. 2014, 15(5):788–97.
17. Malik SK, Rizvi S. Information Extraction Using Web Usage Mining, Web Scrapping, and Semantic Annotation. In: 2011 International Conference on Computational Intelligence and Communication Networks. IEEE; 2011. p. 465–9.
18. Leonard Richardson. BeautifulSoup. Available online: https://www.crummy.com/software/BeautifulSoup/ (accessed on June 06 2023).
19. Foundation PS. Python. Python Software Foundation; 2017. Available online: https://www.python.org/ (accessed on June 06 2023).
20. Zablah JI, Corrales IX, Aguilar JM, Garcia A, Gomez F, Medina MT. Performance limitations of a text search application running in cloud instances. IEEE Lat. Am. Trans. 2016;14(3).
21. MedCalc. Available online: https://www.medcalc.org (accessed on May 20 2023)
22. Microsoft Excel. Available online: https://www.microsoft.com/en-us/microsoft-365/excel (accessed on May 20 2023)
23. United Nations Office on Drugs and Crime. Data UNODC. Available online: https://dataunodc.un.org/crime (accessed on June 06 2023).
24. University of Sydney. Guns in Honduras - Firearms, gun and law and gun control. Available online: https://www.gunpolicy.org/firearms/region/honduras (accessed on June 06 2023).
25. Gilgen E, Tracey L. Contributing evidence to programming: armed violence monitoring systems. Geneva Declaration Secretariat Geneva; 2011.
26. Instituto Ingarape. ¿Cuál es la relacion del crimen organizado y el homicidio en America Latina? Available online: https://igarape.org.br/wp-content/uploads/2016/06/Homicide-Dispatch_3_ESP_07-06.pdf (accessed on June 06 2023).
27. Dowler K. Sex, lies, and videotape: The presentation of a sex crime in local television news. J Crim Justice. 2006, 34(4):383–92.
28. McLeod DM, Wise D, Perryman M. Thinking about the media: A review of theory and research on media perceptions, media effects perceptions, and their consequences. Rev Comm Res. 2017, 5:35–83.
29. Bartol AM, Bartol CR. Current perspectives in forensic psychology and criminal behavior. 3rd ed. Bartol AM, Bartol CR, editors. Thousand Oaks, CA, USA: SAGE Publications; 2011.