



International University of La Rioja
School of Engineering and Technology

Master's Degree in Computer Security

Predictive software based on "Opinion Currents" for decision making in acts of Violence and Terrorism for the Peru

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Date:	02/06/2022

Resume

(Máximo 150 palabras)

The objective of this Master's thesis is the creation of GIS maps for decision making in acts of violence and terrorism in Peru, for the realization of this we propose to develop a platform that receives information considered as conditioning and triggering factors, giving priority in the analysis of the information obtained through Opinion Currents, information which is obtained through social networks but specifically in this research the social network "Twitter" will be used, this information will be obtained through a crawler using the api allowed by Twitter called Tweepy and an additional one called snscreape.

With this proposal we propose to improve decision making based on interactive geographic maps, these maps will be obtained through a filter of information collection using the matrices of pair comparison, so that the final results for decision making can achieve better results through the expertise of the professionals involved.

Palabras clave: SIG, Factores Condicionantes y Desencadenantes, Corrientes de Opinion, Crawlers, Web Scraping

Abstract

(Máximo 150 palabras)

The objective of this Master's thesis is the creation of GIS maps for decision making in acts of violence and terrorism in Peru, for the realization of this we propose to develop a platform that receives information considered as conditioning and triggering factors, giving priority in the analysis of the information obtained through Opinion Currents, information which is obtained through social networks but specifically in this research we will use the social network "Twitter", this information will be obtained through a crawler itself using the api allowed by Twitter called Tweepy and an additional one called snscreape.

With this proposal we propose to make an improvement in decision making based on interactive geographic maps, these maps will be obtained through a filter of information collection using the matrices of pair comparison, so that the final results for decision making can achieve better results through the expertise of the professionals involved.

Keywords: GIS, Conditioning and Triggering factors, Opinion Currents, Crawlers, Web Scraping

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1. Introduction

This project proposes the creation of a predictive software that allows decision making but this should be supported by the currents of opinion, since at present the use of a valuable resource such as social networks allows access to important information in real time, Even being able to obtain this information much earlier than in conventional media, information generated in these media can not necessarily be considered true because there are many people who try to misinform public opinion with fake news generating chaos and alertness in the population to achieve their personal goals. In recent years, the term "Opinion Currents" is referred to as all those opinions expressed in social networks by people of any kind, being these generators of events in a physical way, crossing what is considered as a digital barrier, This usually occurs when a prolonged discontent or some kind of inadequate action is generated by governments or specific movements, for this reason these currents are considered as a conditioning factor in a pre-dictive software for decision making, since even many times the generation of these events can have an aggressive purpose without knowing the cause for which it was generated.

The predictive software will be designed on a GIS platform (Geographic Information System), these platforms allow to create information maps with characteristics and specifications based on maps with geometric calculations in 2D and 3D, for this research a powerful tool called ARCGIS will be used, since it allows to create polygons in a simpler way and to register them in information tables to be rescued later. The aforementioned tool will be used with values considered as conditioning factors (these factors are relevant characteristics of the area such as vegetation cover, slope, previous incidences, etc.) and in conjunction with the data from opinion currents (which will sometimes use the alias of Triggering Factor) for the creation of "Hazard" maps, these maps will allow the analysis. For decision making in acts of violence or terrorism, information will be obtained from opinion streams using the twitter API called "Tweepy" which acts as a crawler that allows specific searches for information and show the general geographic location of the publication.

1.1. Justification

For the considerations within the topic of justification by the security field, in general for the ordinary population that is not involved in acts of violence, violence is a latent concern, because this population does not want to be involved in acts of violence in general, whether these acts come from organized groups, terrorist groups or civilians who commit crimes in a reiterative way; For this reason, the government has the obligation to watch over the welfare of the community. For this reason, due to a personal-ethical issue, this research is carried out with the premise of being able to collaborate and provide a system that could perhaps be improved and used in the future in a topic as relevant as acts of violence. Therefore, it is not superfluous to skimp on the creation of tools that can provide security to each and every one of the inhabitants of the country in the best possible way, since the objective is that these results may perhaps lead to more efficient methodologies or actions and/or changes at the constitutional level that would have an impact on more efficient models of action, thus achieving a state of well-being and security for the population.

The greatest impact that can be generated from the project is in the area of spatial management and decision making according to the conditioning factors (consideration criteria); Unfortunately in Peru, the information of each and every one of the processes that entities such as the army have is not exposed (in programming this can be considered black boxes, but even if the process itself is not shown, reports could be generated which provide transparency of the entity, but this model is not yet fully adapted), I am not sure if this type of technology is already being applied in other areas such as in municipalities on issues of citizen security, but even so the objective of this project is the use of such a valuable resource as the weighting matrices, using them in the ArcGis tool for decision making from the maps obtained.

For this reason the viable option for the realization of this project can be achieved by using GIS technology with polygons created by currents of opinion, within the considerations is to take as a conditioning factor to verify past events as incidents to bring to the fore recurring events and failures that had the state entities, without detracting from these, that perhaps with other actions or with the use of tools to measure these irreparable damage would not have resulted in the same way.

1.2. Problem Statement

To begin with the section of the problem, it seems pertinent to give a brief review about me (the researcher of the project), even though it is not mandatory, because I see it as relevant for the planning of the problem. Being a Bachelor in Systems Engineering who likes to explore different fields of knowledge, as fate would have it, I ended up supporting a doctoral thesis called "The Political Economy of Violence and Development in Latin America" (Edwar E. Escalante, Edwar E. Escalante, 2001). (Edwar E. Escalante, 2019) see Annexes

1 y 2.

At the same time the researcher's mother Ing. Geologist Magali V. Garcia Mujica worked developing the project "Risk Assessment for the Quellouno Basin", in which the researcher participated collaborating in the ARCGIS Tool for hazard mapping.

Acts of violence are always a concern for any country, above all it is sought that the inhabitants can have a peaceful life so they can carry out their activities in the most normal way possible, but what happens when this becomes uncontrollable and becomes a regular concern. This happened between 1980 and 2000's in Peru as follows.

"The internal armed conflict experienced by Peru between 1980 and 2000 has been the longest lasting, the one with the most extensive impact on the national territory and the one with the highest human and economic costs in our republican history. The number of deaths caused by this confrontation far exceeds the number of human losses suffered in the war of independence and the war with Chile -the largest conflicts in which the nation has been involved. Although the CVR has received reports of 23,969 Peruvians dead or missing, calculations and statistical estimates allow us to affirm that the total number of fatal victims of the internal armed conflict would be 2.9 times that number. Applying a methodology called Multiple Systems Estimation, the CVR has estimated that the total number of Peruvians who may have died in the internal armed conflict is 69,280 people. Using this statistical methodology, the CVR has estimated that 26,259 people died or disappeared as a result of the internal armed conflict in the department of Ayacucho between 1980 and 2000. If the proportion of victims estimated for Ayacucho with respect to its population in 1993 were the same for the whole country, the internal armed conflict would have caused close to 1.2 million fatalities throughout Peru, of which approximately 340,000 would have occurred in the city of Metropolitan Lima, equivalent to the 2000 projection of the total population of the Lima districts of San Isidro, Miraflores, San Borja and

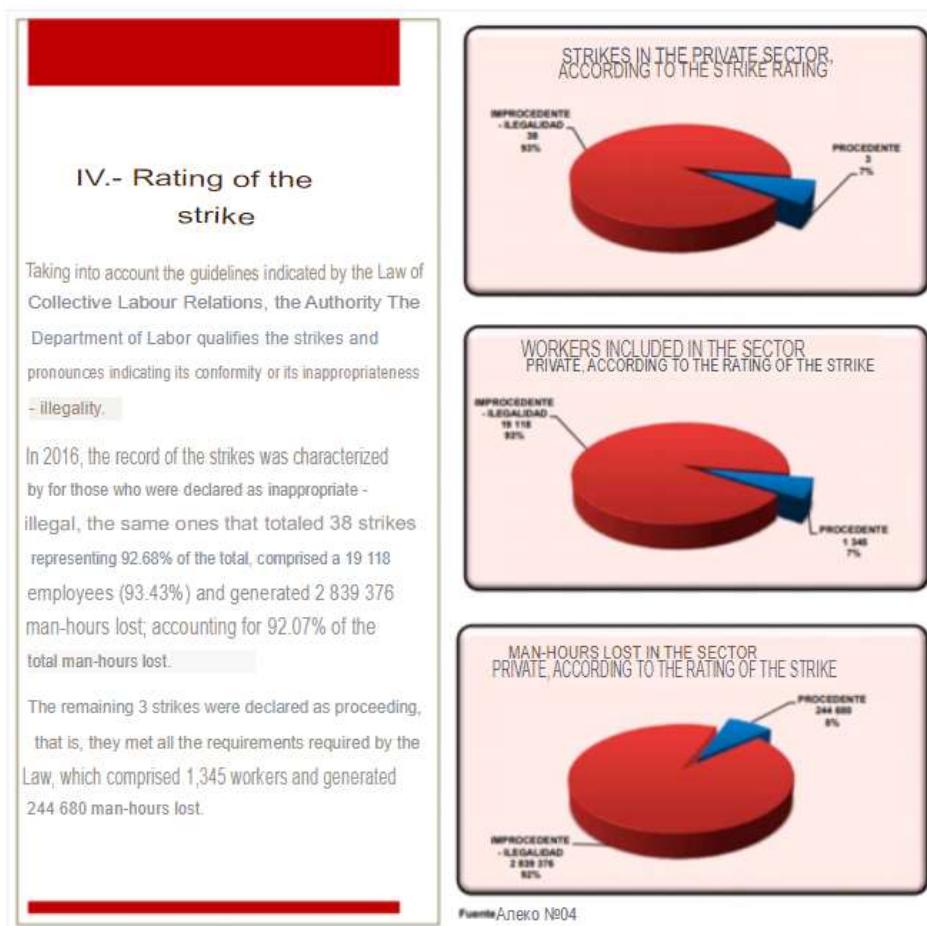
La Molina. Thus, together with the socio-economic gaps, the process of violence revealed the seriousness of the ethno-cultural inequalities that still prevail in the country. The violence had an unequal impact on different geographical areas and different strata of the population. A human tragedy of these proportions may seem implausible, but it is the one that in a 95% confidence interval whose lower and upper limits are 61,007 and 77,552 people respectively. Estimate of the total number of fatal victims of the internal armed conflict between 1980 and 2000. The population of rural, Andean and jungle, Quechua and Ashanin-Ka, peasant, poor and poorly educated Peru suffered, without the rest of the country feeling it and assuming it as their own.

THE CONFLICT CONTEXT

The immediate and fundamental cause of the unleashing of the internal armed conflict was the decision of the PCP-SL to initiate a people's war against the Peruvian State. In our country there is no repetition of the classic Latin American pattern of State agents as almost exclusive perpetrators confronting subversive groups with a restricted use of violence and, above all, unarmed civilians. On the one hand, armed violence against the civilian population is initiated by the main subversive group, the PCP Sendero Luminoso, using systematic and massive methods of extreme violence and terror with no respect for basic norms of war and human rights. On the other hand, this sub-versive violence was directed against the representatives and supporters of the "old order" in the initial areas of the armed conflict (Ayacucho, Apurimac), so that most of the victims of Shining Path actions were peasants or small local authorities and not members of the political or economic elites of the country. Since then, it was responsible for the systematic and massive use of methods of extreme violence and terror without respect for the basic norms of war and human rights, to the point of accumulating 53.68% of the dead and disappeared reported to the CVR, thus becoming the first perpetrator. Faced with the war unleashed by the PCP-SL, the State had the right and duty to defend itself, always guaranteeing the defense and enforcement of the fundamental rights of its citizens. However, the Commission notes that, paradoxically, the harshest stages of the conflict in terms of human rights violations took place during democracy. The greatest number of victims, deaths and forced disappearances, including the three peaks of 1984, 1989 and 1990, occurred when the country had democratic governments, arising from free elections, without exclusion of parties or electoral fraud, at least before the self-coup of April 5, 1992. Likewise, between 1980 and 1990,

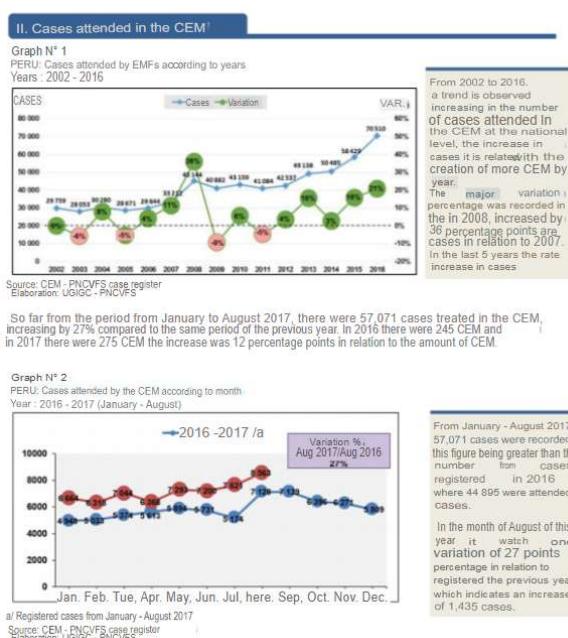
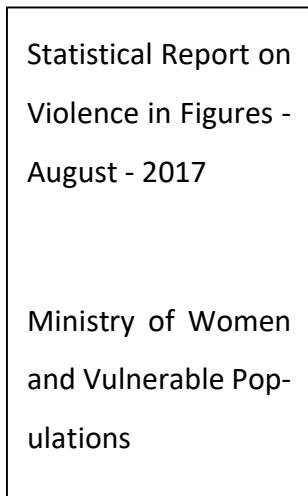
there was one of the highest number of democratic electoral processes at the national, regional and municipal levels in the history of the republic, with the specific exception of the areas directly affected by the violence, which went through particular circumstances. The State did not have the capacity to contain the advance of armed subversion, which spread in a few years to almost the entire country. For a detailed analysis of this point and the different types of causes (historical, institutional, circumstantial) of the conflict, see the corresponding chapter. 3 The CVR has received testimonies of deaths and disappearances as a result of the internal armed conflict in all departments except Moquegua and Madre de Dios. Only in Tacna (1) and Tumbes (4) is the number of victims reported to the TRC in single digits. 54 giving up their privileges and prerogatives to leave the leadership of the counter-subversive struggle in the hands of the Armed Forces (Armed Forces of the Armed Forces). On this point, the governments elaborated mistaken hypotheses about the subversive organizations and proceeded to give a fundamentally military response that ended up aggravating the conflict, favoring its escalation, as the PCP-SL had sought. Although, given the seriousness of the events, it was inevitable that the State would use its armed forces to confront it, declaring states of exception, the governments did so without taking the necessary precautions to prevent violations of the fundamental rights of the population. Worse still, in addition to the abdication of the civilian authority in the conduct of the counter-subversive state response, there was the disregard for the denunciations of human rights violations and even, in several cases, the guarantee of impunity provided to those responsible for them. According to the cases reported to the CVR, State agents, Self-Defense Committees and paramilitaries are responsible for 37.26% of the deaths and disappearances." (USIP, 2001)

The violence of terrorism ravaged Peru during one of the worst periods that the country has experienced; currently there are still remnants of the same faction and sympathizers of the same ideas, so that from time-to-time new groups appear that, although they do not act in the same bloody manner or with the same frequency, they create occasions where they manage to generate violence from the discontent of the people. In this way they generate acts of violence of different kinds and types, stirring up the population from different types of fronts:

Figure 1. Grievance rating.

(Oficina General de Estadística y Tecnologías de la Información y Comunicaciones, 2017)

Figure 2. Statistical Report Violence in Numbers - August - 2017



(Ministerio de la Mujer y Poblaciones Vulnerables, 2017)

Therefore, the best option is intelligent decision making, not only against terrorism but also against any kind of violence. But the only way to achieve this is with a characteristic expertise of people experienced in the subject and the use of technological tools; which allow to have the information processed so as not to require exhaustive unprocessed research, unnecessary physical history and tedious processes of reading books (taking into account that there are some documents that can be overlooked, being so that perhaps these would have meant a more accurate decision).

1.3. Memory structure

This research has the following structure, according to the approaches provided by the UNIR. Chapter 1 consists of the introduction of the Master's Thesis, this chapter aims to provide relevant information to understand the justification, purpose and how the research will be developed; it should be noted that at this point the primary information of the research is provided. Chapter 2 is the Context and State of the Art, this chapter has the objective of providing relevant information through reliable sources and/or organizations which allow to formally justify the development of the research taking into account the considerations provided by these sources. Chapter 3 consists of presenting the objective of the research in a concise manner and the work methodology. Chapter 4 is a compilation of the realization of the system pilot to effectively develop the steps that were followed during the research to

obtain the work per se. Chapter 5 consists of the Conclusions and Recommendations for future work, with the aim of using this research as a reference for future approaches, whether scientific or practical. Finally, the References section provides the sources used for the development of the research, which would give validity to the same. Additionally, at the end of the report there will be a section for the annexes considered necessary.

2. CONTEXT & ART STATUS

2.1. Context

2.1.1. Project Background

2.1.1.1. Project Background National:

- a) **Special Report: PREVENTION AND MANAGEMENT OF SOCIAL CONFLICTS IN THE CONTEXT OF THE COVID-19 PANDEMIC Series Special Reports No. 026-2020-DP**

"2.1. Cases under observation

As noted, since the approval of the social confinement, SIMCO recorded a significant decrease in new cases of social conflicts. In the months of March and April no new cases were registered, and in the month of May only one new communal conflict was reported. Likewise, the meetings of the dialogue roundtables were suspended, as well as other proceedings related to them. However, although this scenario limited new cases from having a sufficiently persistent public exposure to be registered as a conflict, there were situations that could lead to social conflict and that should be addressed by the competent entities. These situations were considered as cases under observation in the monthly conflict reports.

These situations were considered as cases under observation in the monthly reports on social conflicts.

Between the months of March and May 2020, 54 new cases under observation were reported which, in turn, were presented as early warnings for the State and the companies to act within the framework of their competencies and responsibilities. Of these cases, 43% correspond to national government issues. This is followed by labor cases, with 39%; socio-environmental cases, with 13%; and local government issues, with 6%. Most of the cases are linked to problems arising from the COVID-19 pandemic. The demands are aimed at preventing the spread of the virus, while the actors making the demands are mainly health professionals, inmates of penitentiary establishments, population living near places where extractive activities are developed, among others.

2.2. Social tensions and demands: Four pandemic-related scenarios. We are living through events of unprecedented characteristics. Demands and social tensions directly or indirectly linked to the pandemic have arisen. The Office for the Prevention of Social Conflicts and

Governance saw the need to prepare special reports on these tense situations in four scenarios: public health services (demands made by public health personnel), public health

(demands raised by public health personnel), mining activity (demands raised by mine workers and communities), penitentiary establishments (demands raised by inmates and prison personnel), and humanitarian transfers and displacement of persons (demands raised by individuals and families invoking their right to return and move to places of greater protection).

The first special report recorded 201 cases nationwide during the period from March 16 to May 8. Of the total, 51.7% (104) of the cases corresponded to returnees, followed by claims filed by health professionals, with 24.9% (50), cases linked to mining activity, with 12.9% (26), and claims by inmates in penitentiary establishments, with 10.4% (21). In June, the second special report was published, which reported 125 cases registered between May 9 and 31. Most of these were related to claims filed by health professionals, with 48.0% (60 cases). This was followed by cases involving returnees, with 40.0% (50), claims related to mining activity, with 8.0% (10), and cases related to penitentiary establishments, with 4.0% (5)." (Pueblo,

PREVENCIÓN Y GESTIÓN DE CONFLICTOS SOCIALES EN EL CONTEXTO DE LA PANDEMIA POR EL COVID-19, 2020)

Tabla 1. Number of cases per scenario

Reporte	Total	Retorno		Salud		Minería		Penales	
		Nro.	%	Nro.	%	Nro.	%	Nro.	%
Reporte 1	201	104	51.7%	50	24.9%	26	12.9%	21	10.4%
Reporte 2	125	50	40.0%	60	48.0%	10	8.0%	5	4.0%

(Pueblo, PREVENCIÓN Y GESTIÓN DE CONFLICTOS SOCIALES EN EL CONTEXTO DE LA PANDEMIA POR EL COVID-19, 2020)

The pandemic is testing ways of understanding politics, public policy designs, public management mechanisms, forms of communication with society, and so on. Likewise, it poses challenges to the way of understanding new realities, or old problems ignored for years; and, of course, the way of monitoring and managing social conflicts.

This background demonstrates that even during the pandemic era, social conflicts exist and will exist, so in each case one must know how to respond. Social tensions can start as an early

warning that in the long term, if the state itself does not take action, can lead to acts of violence and in the worst case scenario can turn into armed conflict. The key lies in the analysis of the environment and correctly documented information. Although there are classifications of incidents, this does not necessarily imply that there is a real conception of the subjects involved.

b) b) Regular Report: SOCIAL CONFLICTS REPORT No. 187 Monthly Social Conflicts Report No. 187 - September 2019

"JUSTIFICATION FOR OMBUDSMAN INTERVENTION IN SOCIAL CONFLICTS

- People's rights are at risk or violated.
- Violent confrontation affects local, regional and national governance.
- The conditions for development are undermined.
- A culture of dialogue and peace is discouraged.

The Ombudsman's Office, through the Office for the Prevention of Social Conflicts and Governance, and in coordination with the Ombudsman's Offices and Ombudsman's Attention Modules throughout the country, guides the Ombudsman's intervention to protect fundamental rights and legitimize democratic procedures based on legality and dialogue.

In the face of social conflicts, the Ombudsman's Office deploys its powers of defense and supervision to prevent and mediate in order to avoid situations that may threaten or violate fundamental rights, as well as to open the way to dialogue processes that help solve a social conflict.

Figure 3. STATUS OF SOCIAL CONFLICTS - SEPTEMBER 2019



(Pueblo, REPORTE DE CONFLICTOS SOCIALES N.º 187, 2019)

1.6 EARLY WARNINGS

The Ombudsman's Office considers that there are facts whose early knowledge may allow for the peaceful management of a conflict. The following are the cases and/or situations that merit priority intervention by the relevant authorities:" (Pueblo, REPORTE DE CONFLICTOS SOCIALES N.º 187, 2019)

Figure 4. EARLY ALERTS

N. ^o	Place	Case	Situation
1.	Ancash Macate District, Province of Santa.	VILLAGE OF QUICHAUAY- Mining activity Socio-environmental type	Case under observation. It can become an a new social conflict.
2.	AREQUIPA Province of Islay.	ISLA y - AUNT Maria Socio-environmental type	Case active. Social organizations and residents of the Tambo Valley restarted the indefinite strike in rejection of the mining project Aunt Maria since August 22nd.
3.	ayacucho Vinchos district, province of Who-hoo.	VINCHOS - TGP Socio-environmental type	Active case. The peasant community of Vinchos maintains that the TGP company would be delaying their actions in front of the agreed, so that he has decided to suspend the dialogue that keep up with this company.
4.	CUSCO Province of Chumbivilcas.	CHUMBILCAS - MMG LAS BAMBAS Socio-environmental type	Active case. The last meeting on October 10th in The Populated Center of Muyo Orco is he suspended. The blockade of the Road Corridor in the province of Chumbivilcas continues.
5.	ICA District and province of Ica.	UNIVERSITY OF SAN LUIS GONZAGA DEICA Type other matters	Case under observation. It can become an a new social conflict.
6.	JUNIN Quilcas district, province of Huancayo.	QUILCAS - COMACSA Socio-environmental type	New case.
7.	THE FREEDOM Marmont District, province of Chimu.	SEPTEN - AGROINDUSTRIAL PARAISO SAC Socio-environmental type	Case under observation. It can become an a new social conflict.
8.	THE FREEDOM District of Huarmachucu, province from Sánchez Carrón.	Mining in Cerro el Toro Socio-environmental type	Case under observation. It can become an a new social conflict.
9.	LIMA San Antonio District, province of Huarochiri, and district of San Juan de Lurigancho, Metropolitan Lima.	SAN ANTONIO-SIL DEMARCACTION Type by territorial demarcation	Case under observation. It can become an a new social conflict.
10.	METROPOLITAN LIMA District of San Isidro.	INCA GARCILASO UNIVERSITY OF LA VEGA Type other matters	Case under observation. It can become an a new social conflict.
11.	MOQUEGUA Mariscal Nieto Province.	MARISCAL NIETO - ANGLO AMERICAN QUELLAVECO Socio-environmental type	Active case. Through targeted communications to the Presidency of the Council of Ministers, the Ministry of Energy and Mines and the Ministry of Environment, the civil society of Tumilaca carries out comments to the resolution that formed the Working Group of Tumilaca demanding its modification and that the delivery of documents as agreed in the minutes.
12.	PASCO San Francisco de Asís District of Yarusyacán, Pasco province.	SAN JUAN DE MILPO - NEXA RESOURCES Socio-environmental type	Active case. On October 10th there was a confrontation between community members of San Juan de Milpo and the PNP, the product of which six police they were injured.

(Pueblo, REPORTE DE CONFLICTOS SOCIALES N.º 187, 2019)

This background shows a pre-pandemic reality in Peru where there are a number of social conflicts registered by the institution called "Defensoría del Pueblo", which is using classifications by department, the situation of the problem (to be more specific Early Alert, Active Case and Case under Observation) and even takes into consideration the type of case. Active cases are those that are currently being effective. Cases under observation are much more curious because they can start in a peaceful way and due to the degree of complexity reach dangerous

levels, being observed, qualitative social factors such as context and progressive behavior are taken into account; but technically this remains on paper and there is no exhaustive analysis with relevant supporting material from data..

- c) **Report: Alluvial risk assessment in the city of Huaraz, districts of Huaraz and Independencia, province of Huaraz, department of Ancash. National Institute for Research on Glaciers and Mountain Ecosystems (INAIGEM). INAIGEMM**

"2.1.1. Weighting Methodology

According to the National Center for Disaster Risk Estimation, Prevention and Reduction (CENEPRED, 2014), the Hierarchical Analysis Process was used to weight the criteria, sub-criteria and descriptors, which is a multi-criteria method that allows incorporating quantitative criteria (exposed infrastructure, human and economic losses, etc.) and qualitative criteria (training programs, creation and/or application of regulations, etc.) that are considered in Disaster Risk Management. The matrix formed is a square matrix, i.e. the same number of rows and columns.

This method was developed by the mathematician Thomas L. Saaty (1980), a technique that allows the resolution of multi-criteria, multi-environment and multi-factor problems, incorporating in the model the tangible and intangible aspects, as well as the subjectivism and uncertainty inherent in the decision-making process. In this sense, the Analytical Hierarchical Process is a general theory of judgments and valuations that, based on scales of reason, makes it possible to combine the scientific and rational with the intangible.

to combine the scientific and rational with the intangible to help synthesize human nature with the concreteness of our experiences captured through science. (Mo-reno, 2002).

To estimate the value of the relative importance of each of the indicators, a methodology of pairwise comparison is used, the scale being as follows:

Tabla 2. Table for weighting of parameters and descriptors developed by Saaty

ESC. NUMERICA	VERBAL SCALE	EXPLANATION
9	Absolutely or very much most important or preferred that ... ,	When comparing one element with the other, the first it is considered absolutely or much more important than the second.
7	Much more important or preferred that ... ,	When comparing one element with the other, the first is considered to be much more important or preferred to the second.
5	Most important or preferred that ... ,	When comparing one element with the other, the first is considered more important or preferred than the second .
3	Slightly more important or preferred that ... ,	When comparing one element with the other, the first is considered more important or preferable than the second .
1	The same or different to ... ,	When comparing one element with another, there are indifference between them.
1/3	Slightly less important or preferable that ... ,	When comparing one element with the other, the first is considered to be slightly less important or preferable to the second.
1/5	Less important or it is preferable that ... ,	When comparing one element with the other, the first it is considered less important or preferable than the second one.
1/7	Much less important or it is preferable that... ,	When comparing one element with the other, the first is considered to be much less important or preferable to the second.
1/9	Absolutely or very much less important or it is preferable that... ,	When comparing one element with the other, the first it is considered absolutely or very less important or preferable than the
2, 4, 6,8	Intermediate values between two adjacent judgments, which are used when it is a middle ground between two of the above intensities is necessary	

(Instituto Nacional de Investigación en Glaciares y Ecosistemas de Montaña INAIGEM, 2020)

2.2. IDENTIFICATION OF HAZARDS

For this risk study, alluvium has been identified as a hazard originated by external geodynamic phenomena, which we will characterize and identify below:

Alluvium: Heterogeneous clastic sediments, in terms of size, shape and composition, deposited by rivers or streams.

composition, deposited by rivers or glaciers. The loose materials

located on the margins of valleys or glaciers are uprooted by water or ice and deposited in slope changes or ejection cones (Dávila, 2011). The granulometric and mineralogical composition, as well as the structural-textural characteristics vary widely depending on the regime

of the rivers, the resistance of the rocks to erosion, the hydrographic basin and the general geomorphological conditions (Lugo, 2011), Catastrophic release of water from a reservoir that has been formed next to, in front of, inside, below or on the surface of a glacier. The structures of the dike or dam structures that contain the reservoir water may be composed primarily of glacial ice, Quaternary material, or bedrock." (Instituto Nacional de Investigación en Glaciares y Ecosistemas de Montaña INAIGEM, 2020)

This background is an example of the elaboration of risk management evaluations carried out according to the format of the National Center for Estimation, Prevention and Reduction of Disaster Risk (CENEPRED), which is the body in charge of coordinating, supervising and facilitating the implementation of National Policies and Risk and Disaster Management. This body established a work methodology based on the Saaty matrix model, hazard identification, vulnerability analysis and data processing by the ARCGIS tool.

2.1.1.2. Background at the International Level:

1. Doctorate Thesis: TESTING A GEOSPATIAL PREDICTIVE POLICING STRATEGY.

AMIRI, SOLMAZ (2014)

"2.3. Classic Theories of Place-Based Crime Prevention

Schneider and Kitchen (2007) discussed the seminal literature on crime prevention under the term "classic theories of place-based crime prevention" (p. 15). I chose Schneider and Kitchen's term to discuss environmental criminology, crime prevention through environmental design (CPTED), and situational crime prevention as the core concepts of classical theories of place-based crime prevention. Classical place-based crime prevention theories, which emphasize the spatio-temporal aspects of crime, have their roots in the fields of criminology, geography, planning, psychology, and sociology, among others.

2.3.1 Environmental criminology

Environmental criminology differs from other traditional criminological theories in that, rather than deliberating on the root causes of crime and reasons for becoming offenders, the emphasis is on the spatial and temporal patterns of offenders and delinquents (Boba, 2009; Bottoms & Wiles, 2002; Chai-ney & Ratcliffe, 2005; Siegel, 2001; Townsley,

Tompson, & Sidebottom, 2008). The tripod of environmental criminology is constituted by: (a) routine activities theory, (b) rational choice theory and (c) crime patterns theory. Rational choice theory sheds light on the behavioral patterns of offenders and victims at the individual level. Crime pattern theory clarifies crime patterns at the societal level, and routine activity theory analyzes those patterns at the societal level (Boba, 2009). Each of the legs of this tripod is analyzed below.

2.3.1.1 Routine activities theory

In devising the routine activities theory, L. E. Cohen and Felson (1979) explained the changes in crime rates caused by alterations in the patterns of routine activities. For L. E. Cohen and Felson, routine activities constitute an important part of human activities if they occur on a regular basis as part of everyday life.

Moreover, illegal activities are based on the rhythm, tempo, and timing of the legal daily routine activities of average people in societies. Thus, daily routines are related to the risk and threat of criminal activity and victimization. According to routine activity theory, changes in employment (e.g., the entry of women into the workforce), wealth (e.g., the relative increase in wealth), and manufacturing (e.g., the mass production of electronics) have led to the creation of more criminal opportunities for potential offenders and increased crime rates. Therefore, according to L. E. Cohen and Felson, predatory crime should not only be seen as a sign of social disintegration, but also as a by-product of freedom and wealth, since any feature that opens an avenue for the enjoyment of life can simultaneously increase the chances of predatory offending.

According to L. E. Cohen and Felson (1979), predatory direct-contact violations depend on the spatiotemporal convergence of three elements: (a) motivated offenders, (b) suitable targets, and (c) absence of guardians (p. 589). Not all offenders can be considered motivated. Offenders specialize in certain types of criminal activities and avoid attacking all available targets. Suitable targets can be both human beings and material assets. And the guardians may be police officers, security guards, merchants or CCT systems.

Later, Clarke and Eck (2003) expanded the minimal elements of the concept of direct-contact predatory relationships (devised by L. E. Cohen and Felson, 1979) and included manipulators, gatekeepers, and managers as facilitators or preventers of crime (see Figure 1). Manipulators (i.e., family members, teachers, etc.) are people who know offenders

and can influence or filter their behavior. However, handlers do not necessarily inform law enforcement of offenders' criminal behaviors. The roles of guardians can be compared to those of handlers in the sense that, while handlers may have some influence over potential offenders, guardians can monitor individuals and steer them away from crime-prone environments. Formal or informal guardianship can be reinforced by police officers and reinforced through acquaintance or friendship. Finally, place managers (i.e., street stall owners, bus drivers or ticket takers, etc.) have some responsibility or control over the use of the place, even if they are not formally or fully in charge. (AMIRI, 2014)

Figure 5. The crime triangle



(AMIRI, 2014)

This background focuses on describing a qualitative criminal analysis from different compilation volumes in which it tries to give an overview of how to act in criminal acts taking into account different factors, a great example of this is the aforementioned Crime Prevention and the Built Environment (2007), in which in chapter 7 great emphasis is placed on the fact that terrorism seeks strategic places to carry out their acts and long-term repercussion (reference to the twin towers on 9/11). Even within the same book mentioned above, four main counter-terrorism theories and orientations related to urban planning and design are described, including "target reduction", "dispersion gun", "Let cities be cities" and "target hardening" approaches." (AMIRI, 2014)

It is a great documentary material that allows a criminal analysis to be taken into account. In addition to the research project, it consists in the support of the ARCGIS tool for criminal analysis.

2.2. STATE OF THE ART

2.2.1. Theoretical - Scientific Basis

2.2.1.1. GIS

Currently, most of the information with which we have contact is referenced, this is because it has a specific position in space and also has related information, for this reason technological tools were created to use the information and exploit it.

Geographic information systems, also known as GIS (Geographical Information System), are software that allow the processing of large amounts of geographically referenced data, thus facilitating interaction and views for subsequent analysis by the end user.

The 5 main pillars of information systems are data, technology, analysis, visualization and the organizational factor. Each of these has a fundamental value within GIS systems.

GIS systems are used for the following points:

- Reading, modifying, storing and managing spatial data
- The analysis applied to this data can range from simple queries to the creation of complex queries.
- Reporting, final results are displayed as maps, detailed reports, graphs, reports, etc.

The greatest importance of GIS is the detailed analysis and the amount of territory that can be shown from different types of views as previously mentioned.

These systems facilitate the visualization of spatial data on a map with the objective of reflecting and relating geographical phenomena, ranging from road maps, geotechnical, geodynamic, ecosystems, cadastre, etc. In addition, they facilitate the consultation and representation of the results in a fluid and intuitive way, to be able to solve complex planning and management problems, being these valuable tools in the decision making process.

Currently, the use of GIS tools is distributed in different areas, from business where all kinds of projects, planning, marketing, management, etc. are required. Or in governmental

institutions that opt for the same solution from different points of view, being these, as mentioned in one of the antecedents, from the identification of dangers, development and planning of works, crime maps (in police cases), etc.

Many advantages and possibilities are obtained when using GIS systems, as it has already been mentioned, and, although it sounds repetitive, the decision making in front of a referential knowledge is one of the greatest benefits that we can achieve nowadays and thanks to these tools. (Data, 2017)

2.2.1.2. Creating points from an ArcGis table

"Data of a spatial nature are not always stored in a spatial data format. For example, street addresses and latitude-longitude coordinates identify geographic locations, but are often stored in spreadsheets, databases or text files. If you have geographic information stored as a table, Ar-cGIS Pro can display it on a map and convert it into spatial data."

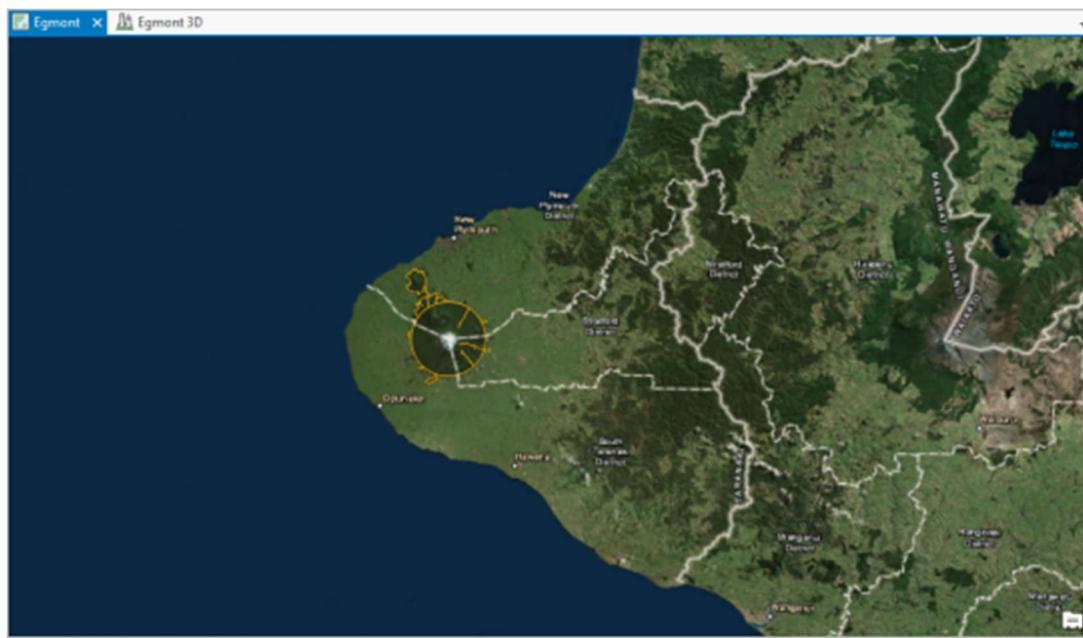
Opening the project

Your study area is Egmont National Park, located in the Taranaki region of New Zealand.

- 1. Open ArcGIS Pro and log in if necessary.*
- 2. On the home page, under recent projects, click Open another project.3. In the Open Project dialog box, under Portal, click ArcGIS Online.*
- 4. At the top of the dialog box, in the Search box, type Tutorial Create points from a table and press the Enter key.*
- 5. In the list of search results, click Create points from a table to select the project package.*
- 6. Click OK.*

The project opens showing the Taranaki region of the North Island of New Zealand. The boundary of Egmont National Park is drawn with an orange outline. Mount Tara-naki is in the center of the park. The active view is a 2D map called Egmont. There is also a 3D scene called Egmont 3D

Figure 6. Image map of the Taranaki region of New Zealand



(ArcGIS Pro 2.8, s.f.)

1. *On the ribbon, click the View tab. In the Windows group, click Reset panes and click Reset panes for map display (default).*

This ensures that the Contents and Catalog panels are opened and other panels are closed.

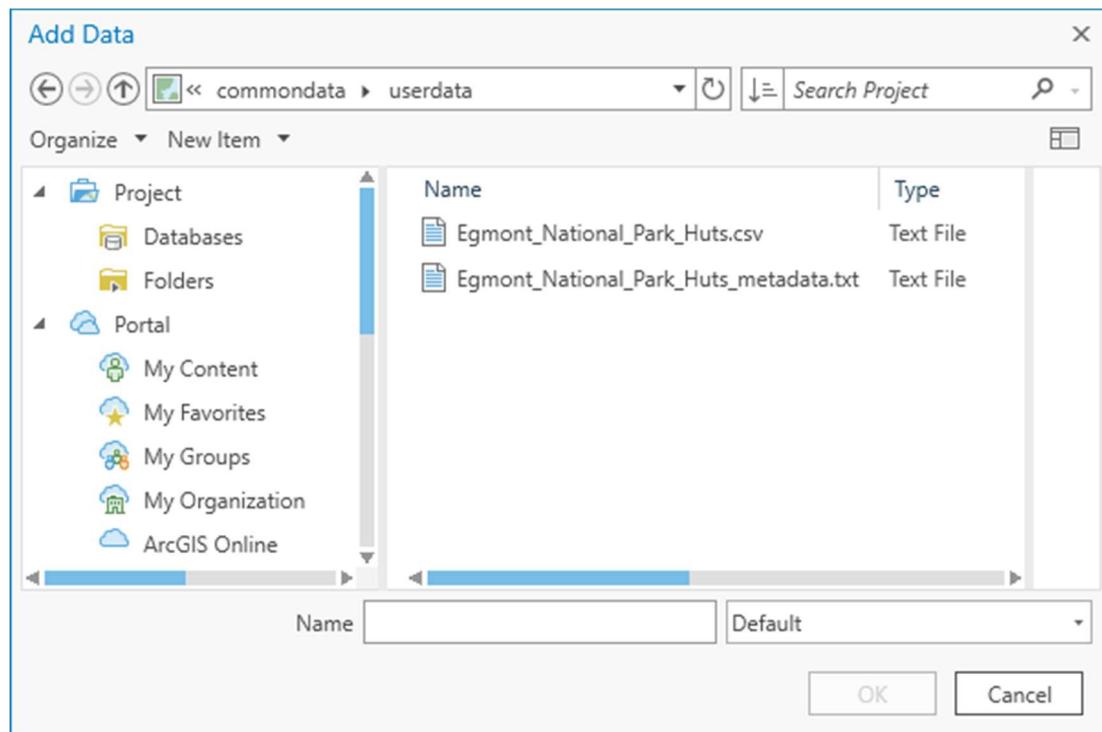
2. *In the ribbon, click the Map tab. In the Navigate group, click Bookmarks. In Egmont Bookmarks, click Egmont National Park to zoom in on the park.*

Creating an entity class from a .csv file

The .csv file is stored as an attachment in your project package. You will add it to the map as a table and convert it into an entity class with the help of a geoprocessing tool.

1. *On the Map tab of the Layer group, click Add data.*
2. *In the Browse dialog box, in the list of quick links, under Project, click Folders.*
3. *In the window on the right side, go to Create_points_from_to_table_1 > commondata > userdata.*

Figure 7. Examine dialog box



(ArcGIS Pro 2.8, s.f.)

The userdata folder contains a .csv file and a text file containing metadata.

4. Click on *Egmont_National_Park_Huts.csv* to select it and click OK.

The .csv file is added to the Contents pane under Separate Tables.

5. In the Contents pane, right-click *Egmont_National_Park_Huts.csv* and click Open.

Figure 8. Table view of the .csv file

The screenshot shows the table view of the 'Egmont_National_Park_Huts.csv' file. The table has columns: NAME, TYPE, CAPACITY, LATITUDE, and LONGITUDE. The data is as follows:

	NAME	TYPE	CAPACITY	LATITUDE	LONGITUDE
1	Holly Hut	Department of Conse...	32	-39.2649	174.0475
2	Kahui Hut	Department of Conse...	6	-39.2943	174.0146
3	Lake Dive Hut	Department of Conse...	16	-39.3361	174.0607
4	Maketawa Hut	Department of Conse...	16	-39.2816	174.099
5	Pouakai Hut	Department of Conse...	16	-39.2352	174.0375
6	Syme Hut	Department of Conse...	10	-39.3094	174.066
7	Waiaua Gorge Hut	Department of Conse...	16	-39.3252	174.0037
8	Waingongoro Hut	Department of Conse...	16	-39.3187	174.1104

At the bottom, there are navigation icons and a status bar showing '0 of 13 selected' and 'Filters:'. The zoom level is set to 100%.

(ArcGIS Pro 2.8, s.f.)

Table attributes include the name and type of the shelter, the number of people it can accommodate, and its latitude-longitude coordinates in decimal degrees Latitude-longitude coordinates or another set of x,y coordinate system values are required to create an entity class from a table.

6. *Close the table.*

7. *In the Contents pane, right-click Egmont_National_Park_Huts.csv and click Show XY data.*

The Show XY Data window appears. The Input table parameter is set correctly in the .csv file. The X-Field and Y-Field parameters are also correctly set to LENGTH and LATITUDE, respectively.

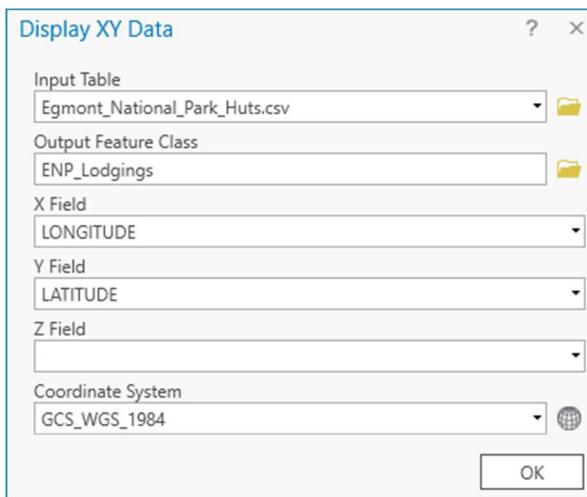
8. *Change the Output Entity Class name to ENP_Lodgings.*

ENP stands for Egmont National Park.

9. *Leave the Z-Field parameter empty. The table does not contain elevation values for the lodges.*

The Coordinate System parameter is defined in GCS_WGS_1984. This coordinate system is used by default as it is usual for latitude-longitude values. (You can confirm this by opening the file Egmont_National_Park_Huts_metadata.txt).

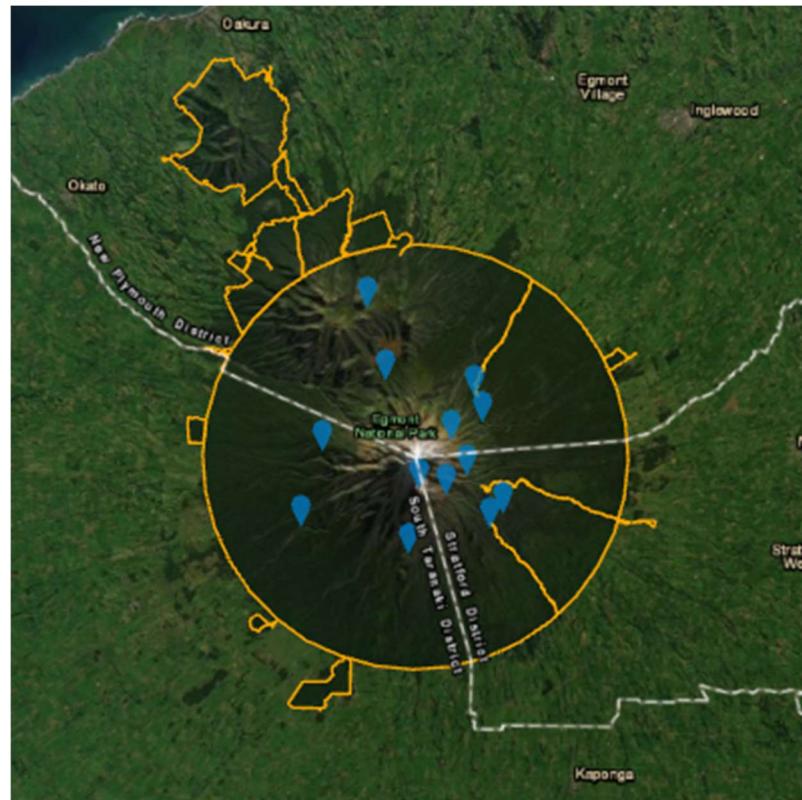
Figure 9. Show XY Data Window



(ArcGIS Pro 2.8, s.f.)

6. Click on OK.

Figure 10. Shelter locations on the map

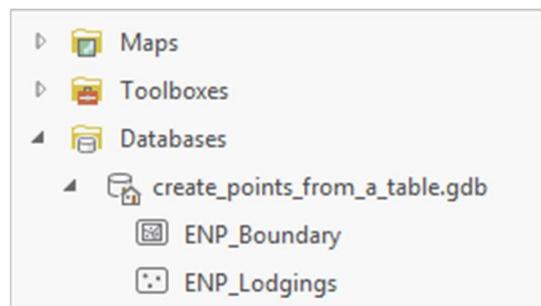


(ArcGIS Pro 2.8, s.f.)

When the operation is completed, a new entity class is created in the project's geodatabase. A layer with the name ENP_Lodgings is added to the map, which re-presents the locations of the shelters.

7. In the Catalog pane, expand Databases and create_points_from_a_table.gdb to see the new entity class." (ArcGIS Pro 2.8, s.f.)

Figure 11. New entity class of the project geodatabase



(ArcGIS Pro 2.8, s.f.)

2.2.1.3. MANUAL EVAR CENEPRED

"2.6 SUSCEPTIBILITY

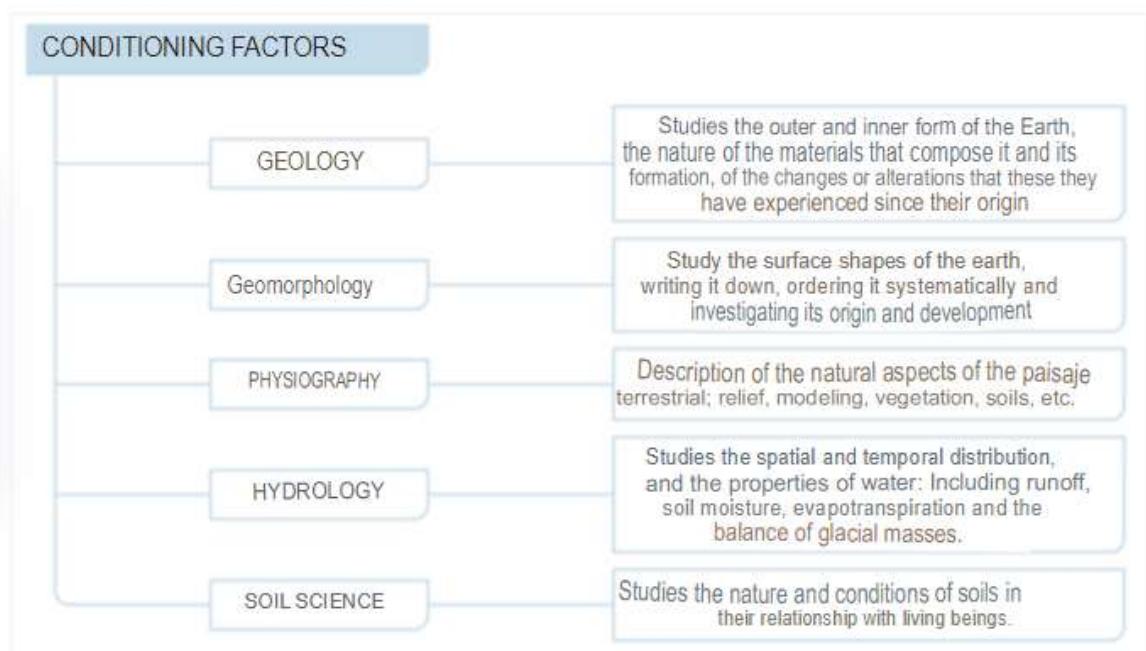
Susceptibility refers to the greater or lesser predisposition to an event happening or occurring in a given geographical area (depending on the conditioning and disincentive factors of the phenomenon and its respective geographical area).

According to this scheme, those strips of land that are quickly submerged by floodwaters would correspond to areas of greater water susceptibility, while those that are not invaded would represent areas of lesser water susceptibility.

2.6.1 Conditioning factors

These are parameters specific to the geographical area under study (see Figure 13), which contribute favorably or unfavorably to the development of the natural phenomenon (magnitude and intensity), as well as its spatial distribution. See figure 12.

Figure 12. Hazard conditioning factors



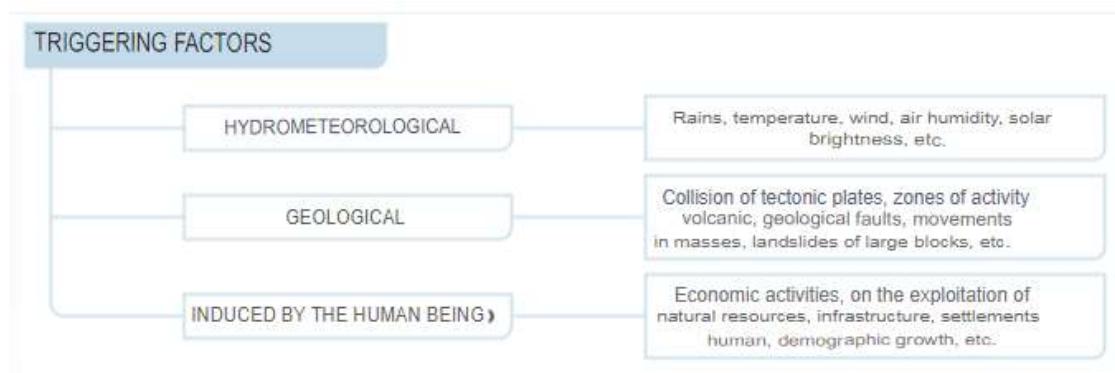
(CENEPRED, 2014)

Figure 13. Hazard conditioning factors

(CENEPRED, 2014)

2.6.2 Triggering factors.

These are parameters that trigger events and/or associated occurrences that can generate hazards in a specific geographic area (see Figure 15). For example: rainfall generates the loosening of loose or weathered material, large magnitude earthquakes occurring in the sea (local) cause tsunamis, etc. See figure 14." (CENEPRED, 2014)

Figure 14. Hazard triggers

(CENEPRED, 2014)

Figure 15. Hazard triggers

Fuente: Peru21 (2014)

(CENEPRED, 2014)

3. CAPITULO III: SPECIFIC OBJECTIVES AND WORK METHODOLOGY

3.1. DETAILED DESCRIPTION OF THE RESEARCH PERFORMED

Information has been gathered from projects and research to assess feasibility, for this project we looked for projects and research conducted for the armed forces and police forces of other countries, as mentioned in different parts of the document, these investigations used the ArcGis tool for predictive analysis and decision making according to the data collected from different relevant institutions in their respective countries.

The project itself consists of the use of different techniques that are used in current institutions in the country for projects of other types, in this case strategic decisions for the Peruvian army and police, so the responsibility of the project consists of the application of these with a strategic intelligence objective in the required areas or future areas that represent a potential danger, also called active cases, observed cases and new cases by the Ombudsman's Office.

The main point for the development of this project consists of the necessary data provided by the entity in charge (RENIEC, Armed and Police Forces, Judicial Power, INEI, SENAMHI, etc.), for the best performance in the actions to be carried out, factors such as environment must be taken into account, since this is necessary for a better strategy, which must be in function of the area where the action will take place, because a city is different from a rural area of our varied geography, as well as inaccessible areas where the different meteorological conditions or terrain (Geodynamics, soil texture, vegetation cover, etc.).

3.1.1. OBJECTIVES

3.1.2. General Objective

- Develop a predictive software based on Opinion Currents for decision making on acts of Violence and Terrorism for Peru.

3.1.3. Specific objectives

- Collect information for the development of a predictive software based on Opinion currents for decision making.
- Develop a Python-based system that allows the creation of maps in a GIS tool.
- Transmit the results of the information for further analysis and application for decision making.

4. CAPITULO IV: SPECIFIC DEVELOPMENT OF THE CONTRIBUTION:

In this chapter the step-by-step explanation of the development of the research is contemplated, taking into consideration the mention of the technologies and their application. For this reason all the information previously provided will be considered exemplified to go directly to the development, to do this a development guide will be given in point 4.1 DESCRIPTION OF THE ACTIVITIES AND TECHNIQUES THAT WILL BE USED FOR THE DEVELOPMENT OF THE PROJECT.

4.1. DESCRIPTION OF THE ACTIVITIES AND TECHNIQUES TO BE USED FOR THE PROJECT DEVELOPMENT

For the realization of this project, three points have been contemplated for the development of the research, which are:

- Collect information on Opinion Currents for decision making.
- Develop a Python-based system that allows the creation of maps in a GIS tool.
- Transmit the results of the information for further analysis and application for decision making.

4.1.1. Gathering information on opinion currents for decision making

The collection of Hashtags information from Opinion Streams. This data refers to the relevant topic within the tweets, it can range from information such as locations where the tweet was made, predefined locations or locations obtained by proximity. Within this point, it is also considered that a specific location to perform an act of violence, whether it is raised for that reason or for a simple demonstration, but despite this, it is considered that the location called also by ordinary people "meeting point" should be taken as relevant for a more optimal zoning in case of contingencies.

For this purpose, a system was developed to obtain and classify the information, where the final result is a GIS system map. For this reason the first thing is to explain the flow of obtaining and classifying the information, so 2 points were planned for this section. The 2 points are:

- Event Chronology
- Hashtags Retrieval, Tweet Storage and Classification

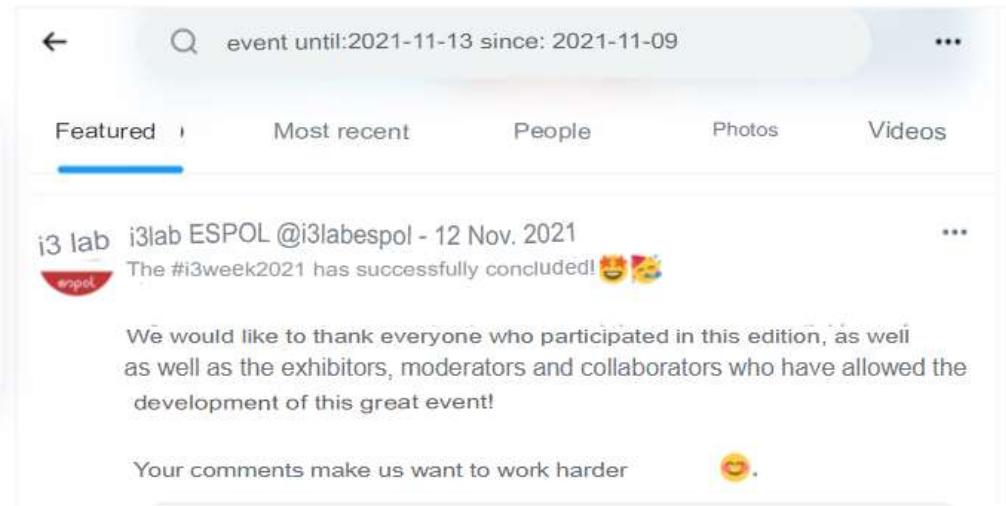
1. Chronology of Events

Point number 1 should explain the narrative of the event, the potential increase and how it evolved throughout the situation to reach the tragic narrative unleashed, for this reason it is proposed the creation of a table where the date, cause, consequence and link of the news (to give veracity of the same) are detailed. This allows to create the environment and give context to the event to be analyzed.

2. Hashtags Retrieval, Tweet Storage and Ranking

Hashtags are derived by understanding the event, the news generated and the visualization of relevant tweets during those dates, that is why twitter is searched for "event until:year-month-day since:year-month-day"

Figure 16. Example of advanced tweet search on Twitter



Source: Own

The next step is to pull hashtags from relevant tweets and create a list of hashtags to consider. For this, a table will be created with the following columns: hashtag, start date and end date.

With the list generated, we proceed to perform the query to obtain the tweets and store them in a local file. Initially the use of the Tweepy api was considered, but because a premium account is required to consult tweets more than a week old, this option was discarded; however, the tool called snscreape was found. This project is free

on github for download and installation on a computer running Python. The search to be performed in the terminal to obtain the tweets is done as follows.

Figure 17. Example search in snscreape

```
(base) D:\>snscreape --jsonl --progress --max-results 1000 twitter-search "#hashtag until:fecha since:fecha" > nombrearchivo.json
```

Source: Own

As shown in Figure 17, a file is generated with the tweets obtained. With the .json file created with the tweets obtained, it proceeds to be loaded to classify or obtain additional information. For this purpose, a Python system was created that allows interacting with the previously generated .json file. The menu of the system created is shown in Figure 18.

Figure 18. Software menu created in Python

```
Network Security- Group Activity/New Folder)
Reloaded modules: configurationstwitter
*****
This is the program of the TFM Predictive Software based on "Currents of Opinion" for the taking of
decisions on Acts of Violence and Terrorism for the PERU menu list:
Before using it remember to have the list of downloaded tweets, for this you need to run the
next command in your Python terminal
snscreape --jsonl --progress --max-results 500 twitter-search "#hastgname since:2018-01-01 until:
2018-04-04" > filename.json

1. Get the list of users and their location
2. Get tweets with the list of most used words
3. Open a file.json
4. Search for a specific location and store it
5. Leaving

Enter the option number you want to make:
```

Source: Own

With the first menu option you can perform the classification and storage of users and their specific location, these are the users who made a tweet with the searched hashtag and within the specified date, these tweets are in the .json file obtained from snscreape.

Figure 19. Example search by user, first option of the software menu

```

Console 1/A
2. Get tweets with the list of most used words
3. Open a file.json
4. Search for a specific location and store it
5. Leaving

Enter the op number of option you want to make: 1
-----
Enter the name of the file containing the tweets: carretera2018
'A total of 87 users were added with their respective locations
"Since there are 7 users without location

Enter the name of the file to store the users and its location: userssampleblah
The file created was:D:\Network Security- Group Activity\New Folder\userssampleblah.json
-----
This is the program of the TFM Predictive Software based on "Currents of Opinion" for the taking of

```

Source: Own

This is the example of entering information for the first type of request. And the information obtained can be seen in figure 20.

Figure 20. Example information obtained, first menu option

```

Console 1/A
1. Get the list of users and their location
2. Get tweets with the list of most used words
3. Open a file.json
4. Search for a specific location and store it
5. Leaving

Enter the option number you want to make: 3
-----
Enter the name of the file you want to view: userssampleblah
-----
[{"username": "cadena_hd", "location": "Huancayo, Peru"}, {"username": "ositranperu", "location": "Lima - Peru"}, {"username": "ositranperu", "location": "Lima - Peru"}, {"username": "noticias_tvperu", "location": "Santa Beatriz, Lima - Perú"}, {"username": "Storklvan", "location": "Lima, Peru"}, {"username": "Storklvan", "location": "Lima, Peru"}, {"username": "ositranperu", "location": "Lima - Peru"}, {"username": "Storklvan", "location": "Lima, Peru"}, {"username": "ositranperu", "location": "Lima - Peru"}]

```

Source: Own

The second menu option performs a decomposition of the tweets and separates them word by word, the classification is shown in order of the most used words and allows saving this dictionary created in a file. This can be seen in Figure 21.

Figure 21. Example word list search, second menu option

The screenshot shows a Python console window titled "Console 1/A X:". The console displays a menu with five options:

1. Get the list of users and their location
2. Get tweets with the list of most used words
3. Open a file.json
4. Search for a specific location and store it
5. Leaving

After selecting option 2, the user is prompted to enter the name of the file containing the tweets: "carretera2018". The results obtained are displayed as a Counter object:

```
Counter({'from': 110, 'the': 98, 'at': 79, '#Centerroad': 52, 'to': 43, 'the': 42, 'and': 40, 'to': 30, 'the': 29, 'with': 22, 'by': 22, 'se': 22, 'the': 21, 'que': 18, '#ATTENTION': 16, 'km': 16, '#carreteracentral': 13, '#DeviandesInforma': 13, 'via': 13, '@PoliciaPeru': 13, 'al': 13, 'entre': 13, 'from': 12, 'is': 11, '#mainroad': 10, 'snowfall': 10, 'for': 9, '#iclio': 9, 'drive': 9, 'block': 8, 'clean-up': 8, 'is': 8, 'su': 8, 'rain': 8, '#now': 8, '150': 8, 'pass': 7, '.....'}
```

At the bottom of the console, there is a "IPython Console History" tab.

Source: Own

After obtaining the list, you are asked whether you want to save the list or not.

Figure 22. Example stored words, second menu option

The screenshot shows a Python console window titled "Console 1/A X:". The console displays a list of words obtained from the previous search:

```
1D4qDWT9sU': 1, 'they continue': 1, 'blocking': 1, 'generating': 1, 'congestion': 1, 'lane': 1, 1, 'https://t.co/DmWoysodPg ': 1, '#La0roya': 1, 'https://t.co/P6sjztLpHD ': 1, '#La0roya.Take': 1, 'https://t.co/hatanUWqbi ': 1, '#NOW': 1, '@eviandesInforma': 1, 'Rains': 1, 'produce': 1, 'BLACKOUT': 1, 'procrastinate': 1, 'Until': 1, 'tomorrow': 1, '69': 1, 'Bridge': 1, 'Collar': 1, '#Matucana': 1, '58': 1, '#Tumable': 1, '#cocachacra': 1, 'procrastinate': 1, 'tomorrow': 1, 'transit': 1, 'https://t.co/cBKeWPWR6i ': 1, '#Pilcomayo': 1, '#Huancayo.Take': 1, 'https://t.co/sEMHvfQ1p2 ': 1, '#Theultimate': 1, 'Farmers': 1, 'mode': 1, 'prices': 1, 'papa': 1, 'https://t.co/SsqID34d37 ': 1)
```

After displaying the list, the user is prompted to choose an option:

1. Save the list of Words obtained and their count
2. NOT saving the list of Words obtained and their count

Next, the user is prompted to enter the name of the file where they want to save the words: "saved wordsblah". Finally, the user is prompted to enter the word they want to search for to store specific tweets: ".....".

Source: Own

Subsequently a specific word is requested to perform a search for all tweets containing that word. This is where only tweets containing those words are stored. This option, unlike the previous one, is mandatory, and is useful if someone wants to search for a word that he/she noticed when retrieving the list of words.

Figure 23. Example final word search, second menu option

```
Help Variables Explorer Notes Files
Console 1/A/X
2. NOT saving the list of Words obtained and their count
#####
Deesea to save the obtained words in a list, choose your option: 1
Enter the name of the file where you want to save the words: saved wordsblah
#####
Enter the word you want to search for to store specific tweets: #La0roya
Enter the name of the file where you want to save the tweets: examplela0royablah
#####
The created file was:D:\Network Security- Group Activity\New Folder\examplela0royablah.json
#####
This is the program of the TFM Predictive Software based on "Currents of Opinion" for the taking of decisions on Acts of Violence and Terrorism for PERU menu list:  
Before using it remember to have the list of downloaded tweets, for this you need to run the
[Python Console History]
D:\Network Security- Group Activity> python console.py saved wordsblah 3.0.17 - Line 68, Col 13 - LITE-B - CRLE - PMI - Mem 40%
```

Source: Own

The code of the created software can be found in Annex 1. Software Python code. The final file created can be seen in Figure 24.

Figure 24. Example final file, second menu option

```
[{"text": "The tweet found #1 corresponds to the tweet #0 in the list and the content is {"_type": "sns scrape.modules.twitter.Tweet", "url": "https://twitter.com/cadena_hd/status/958827906939179009", "date": "2018-01-31T22:22:41+00:00", "rawContent": "#Huancayo #Regional #EstaTarde Situacion\\u00f3n en #CarreteraCentral follow the same. Accesses in #LaOroya for #Pasco, ... https://t.co/qEIC9a5SSK", "renderedContent": "#Huancayo #Regional #StateOfstatus\\u00f3n on #Central road remains the same. Accesses in #LaOroya for #Pasco fb.me/1vves0ys1", "id": 958827906939179009, "user": {"_type": "sns scrape.modules.twitter.User", "username": "chain_hd", "id": 74808874, "displayname": "CADENAHD", "rawDescription": "Se\\u00f1u00f1al televisiva de Huancayo para toda la regi\\u00f3n Jun\\u00f3n del Per\\u00fa y el mundo", "description": "Se\\u00f1u00f1al televisiva de Huancayo para toda la regi\\u00f3n Jun\\u00f3n del Per\\u00fa y el mundo", "descriptionLinks": null, "verified": false, "created": "2012-08-09T22:44:44+00:00", "followersCount": 2617, "friendsCount": 453, "statusesCount": 12004, "favouritesCount": 703, "listedCount": 12, "mediaCount": 2029, "location": "Huancayo, Per\\u00fa", "protected": false, "link": {"_type": "sns scrape.modules.twitter.TextLink", "text": "cadena tv.com.pe", "url": "http://www.cadenatv.com.pe", "tcoUrl": "https://t.co/M343hT05ZD", "indices": [0, 23]}, "profileImageURL": "https://pbs.twimg.com/profile_images/1554185744738033684/HKE7aar_normal.jpg", "profileBannerURL": "https://pbs.twimg.com/profile_banners/74808874/1656616087", "label": null, "url": "https://twitter.com/cadena_hd/status/958827906939179009"}]}]
```

Source: Own

4.1.2. To develop a Python-based system that allows the creation of maps in a GIS tool

The development of a Python system that is based on tables of information collected in the previous point. The objective of this would be to have a direct connection between the tables and the ArcGIS tool, an example of which is in point 2.2.2. It is simply to establish the connection to the Python program as a database (There are different institutions that manage their data in different formats, Excel tables, Postgre SQL, mysql, etc) so you need a program that accesses all of these through an API gateway provided by the most institutions.

Unfortunately, due to the access to the information currently available in Peru, it is impossible to make a direct connection with the services of state institutions or police information (because this information is sensitive), for this reason, it is proposed to use maps generated by own source, so that they can serve to exemplify the operation of this system in general.

Once the hashtags have been obtained and classified, the next step is to analyze what information is relevant or not for the creation of maps. For this process, options 3 and 4 of the software menu are used. Option 3 allows to open one of the created files and display the relevant information classified for analysis.

Figure 25. Example read file, third menu option

```

Console 1/Axt
2. Get tweets with the list of most used words
3. Open a file.json
4. Search for a specific location and store it
5. Leaving

Enter the option number you want to make: 3
*****
Enter the name of the file you want to view: userssampleblah
*****
[{"username": "cadena_hd", "location": "Huancayo, Peru"}, {"username": "ositranperu", "location": "Lima - Peru"}, {"username": "ositranperu", "location": "Lima - Peru"}, {"username": "news_tvperu", "location": "Santa Beatriz, Lima - Peru"}, {"username": "StorkIvan", "location": "Lima, Peru"}, {"username": "StorkIvan", "location": "Lima, Peru"}, {"username": "ositranperu", "location": "Lima - Peru"}, {"username": "StorkIvan", "location": "Lima, Peru"}, {"username": "noticias_tvperu", "location": "Santa Beatriz, Lima - Perú"}, {"username": "DeviandesPeru", "location": "Peru"}, {"username": "JotaceRojis", "location": "Cusco_PE"}, {"username": "COENPeru", "location": "Chorrillos Peru" "fusername": "DeviandesPeru" "location": "Peru" "fusername": }

```

Source: Own

Just as it is possible to open the file of user locations, it is also possible to open the file of the list of words or tweets searched by specific words.

Figure 26. Example open result tweets word, menu option 3

```

Console 1/A X
2018-04-04 > filename.json

1. Get the list of users and their location
2. Get tweets with the list of most used words
3. Open a file.json
4. Search for a specific location and store it
5. Leaving

Enter the option number you want to make: 3
.....
Enter the name of the file you want to view: examplelaoroyablah
.....
[{"The tweet found #1 corresponds to the tweet #0 in the list and the content is {"_type": "snscreape.modules.twitter.Tweet","url": "https://twitter.com/cadena_hd/status/958827906939179009", "date": "2018-01-31T22:22:41+00:00", "rawContent": "#Huancayo #Regional #EstaTarde Situaci\u00f3n en #Central road remains the same. Accesses In #LaOroya for #Pasco,... https://t.co/qElC9a5SSK"}]
Python Console History

```

Source: Own

The next step is in option 4 of the software menu, in this case the user of the soft-ware must analyze the mention of specific areas and generate a map of location points from the classification. This is done only with the naming of the location.

Figure 27. Example search location, menu item 4

```

Console 1/A
Enter the option number you want to make: 4
.....
Enter the name of the location you want to search for: La Oroya
La Oroya, Yauli, Junin, Peru
Latitude = -11.5213917
Longitude = -75.8998811
.....
1. Store Location
2. Do not save location
.....
You want to store this location: | 

```

Source: Own

As an example, Figure 26 shows a tweet obtained by method 2 of the software, this has a specific location mentioned within the body of the tweet which refers to "La Oroya", proceed to choose option 4 from the menu and enter the name of the location, obtaining the latitude and longitude of the location.

Figure 28. Example save location, menu item 4

```

Console 1/A/X
Enter the name of the location you want to search for: La Oroya
La Oroya, Yauli, Junín, Peru
Latitude = -11.5213917
Longitude = -75.8998811
*****
1. Store Location
2. Do not save location
*****
You want to store this location: 1
*****
1. Store location in .JSON
2. Store location in .csv for ArcGIS
3. Return
*****
Enter the type of stored: 2
*****
Enter the name of the file where you want to save this location: locationblahexample

```

Source: Own

You can choose to store the location in .json or .csv format, if you store the location in .csv format the necessary tables are created to send them to ArcGIS GIS.

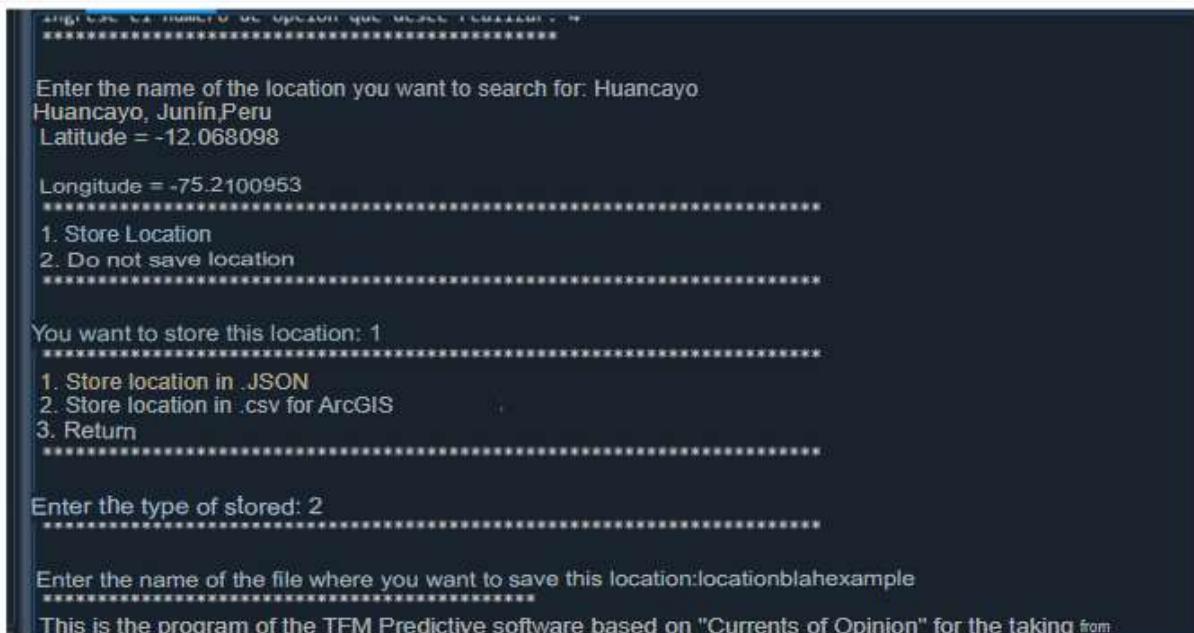
Figure 29. Example .csv result file, menu option 4

A	B	C	D	E	F	G	H
1	Name	TYPE	CAPACITY	LATITUDE	LONGITUDE		
2	La Oroya, Yau PuntoDelImpo		10	-11.5213917	-75.8998811		

Source: Own

Additionally there is the possibility to increment the created table with locations, you only need to perform operation 4, as many times as you want, in order to generate points according to what is convenient or necessary.

Figure 30. Example add locations, option 4 menu item 4



Source: Own

The table created with the locations can be as large as desired by the user using the software.

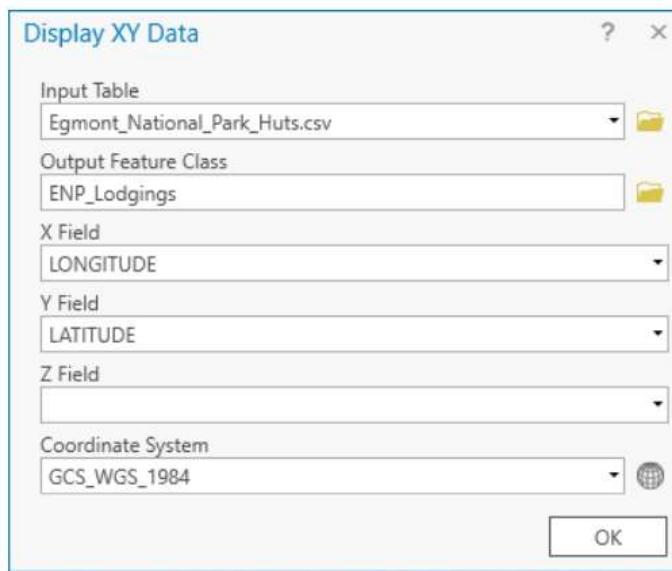
Figure 31. Example add location, menu item 4

A	B	C	D	E	F
1	Name	TYPE	CAPACITY	LATITUDE	LONGITUDE
2	La Oroya, Yau	PuntoDelImpo	10	-11.5213917	-75.8998811
3	Huancayo, Jur	PuntoDelImpo	10	-12.068098	-75.2100953
4					

Source: Own

4.1.3. To transmit the results of the information for its subsequent analysis and application for decision making.

Initially we considered using Python to create Hotspots so that they could be obtained in ArcGIS, but when obtaining the locations and storing them in a .csv file we found it convenient to pull these points in a faster way. This is accomplished with the "Display XY Data" option within ArcGis.

Figure 32. Show XY Data Window

(ArcGIS Pro 2.8, s.f.)

The next step in the analysis is to determine the conditioning and triggering factors. As mentioned in the bibliographic reference 2.2.1.3. MANUAL EVAR CENEPRED, the conditioning factors are categorized, processed and digitalized information, this information is relevant data for the scenarios proposed, the information can range from the type of terrain zone (additional geographic information), register of incidences, cadastral zones, etc. This type of information should be taken with care since its use will depend on the expertise of a professional in the field. To consider or not a conditioning factor in a certain scenario of an act of violence. And the triggering factor would be the points located through the currents of opinion.

For this, a weighting of the values in the Saaty matrix will be made by the person in charge of the area involved (area of military strategies, police interventions, etc.), these are the conditioning and triggering factors mentioned in point 2.2.1.3.

The generation of reports created by the ArcGis interface, at the request of the interested areas will be provided from the integration of the Saaty matrices as a reference for the factors that will act in the decision making for this example I will use a re-course that I have already mentioned previously, according to the formats of the Excel tables of pair comparison.

Therefore, we will proceed to show the content of a table of the Saaty matrix.

Example of Comparison Matrix

Step 01: The pairwise comparison matrix evaluates the intensity of preference of one parameter over another. The scale developed by Saaty is used to select the values. The ordinal scale of comparison ranges from 9 to 1/9.

Tabla 3. Tabla de escalas matriz de Saaty

ESCALA NUMERICA	ESCALA VERBAL	EXPLICACIÓN
9	Absolutely or much more important or preferred than	When comparing one element with the other, the first is considered absolutely or much more important than the second.
7	Much more important or preferred than	When comparing one element with the other, the first is considered much more important or preferred than the second.
5	More important or preferred than	When comparing one element with the other, the first is considered more important or preferred than the second.
3	Slightly more important or preferred than	When comparing one element with the other, the first is considered more important or preferred than the second.
1	Equal	When comparing one element with the other, there is indifference between them.
1/3	Slightly less important or preferred than	When comparing one item with the other, the first is considered slightly less important or preferred than the second.
1/5	Less important or preferred than	When comparing one item with the other, the first is considered much less important or preferred than the second.
1/7	Much less important or preferred than	When comparing one item with the other, the first is considered much less important or preferred than the second.
1/9	Absolutely or very much less important or preferred than	When comparing one item with the other, the first is considered absolutely or very much less important or preferred than the second.
2, 4, 6, 8	Valores intermedios entre dos juicios adyacentes, que se emplean cuando es necesario un término medio entre dos de las intensidades anteriores.	

(CENEPRED, 2014)

Step 02: The analysis starts by comparing the row with respect to the column (row/column). The diagonal of the matrix will always be unity because it is a comparison between parameters of equal magnitude. The values are entered in the red cells and the inverse values of the blue cells are automatically displayed (because the analysis is inverse).

Tabla 4. Pairwise Comparison Chart

PAIR COMPARISON MATRIX				
PARAMETER	A1	A2	A3	A4
A1	1.00	1.00	1.00	1.00
A2	1.00	1.00	1.00	1.00
A3	1.00	1.00	1.00	1.00
A4	1.00	1.00	1.00	1.00
AMOUNT	4.00	4.00	4.00	4.00
1/AMOUNT	0.25	0.25	0.25	0.25

(CENEPRED, 2014)

Step 03: The normalization matrix shows the prioritization vector (weighted weight). It indicates the importance of each parameter in the analysis of the phenomenon.

Tabla 5. Normalization matrix table

NORMALIZATION MATRIX					
PARAMETERS	A1	A2	A3	A4	Vector Prioritization
A1	0.250	0.250	0.250	0.250	0.250
A2	0.250	0.250	0.250	0.250	0.250
A3	0.250	0.250	0.250	0.250	0.250
A4	0.250	0.250	0.250	0.250	0.250
	1.000	1.000	1.000	1.000	1.000



**WEIGHTED WEIGHT OF
PARAMETERS**

Percentage(%)
25.000
25.000
25.000
25.000

(CENEPRED, 2014)

Paso 04: The Consistency Ratio is calculated, which should be less than 8% ($CR < 0.08$), which will indicate that the criteria used for pairwise comparison are the most appropriate.

Tabla 6. Finding the weighted vector sum and consistency ratio

BY FINDING THE WEIGHTED VECTOR SUM				
Matrix operation results				Weighted Sum Vector
0.250	0.250	0.250	0.250	1.000
0.250	0.250	0.250	0.250	1.000
0.250	0.250	0.250	0.250	1.000
0.250	0.250	0.250	0.250	1.000

FINDING THE λ_{max}	
Weighted Sum Vector / Vector Prioritization	
	4.000
	4.000
	4.000
	4.000
AMOUNT	16.000
AVERAGE	4.000

CONSISTENCY INDEX
CONSISTENCY RATIO < 0.08 (*)

IC	0.000
RC	0.000

(CENEPRED, 2014)

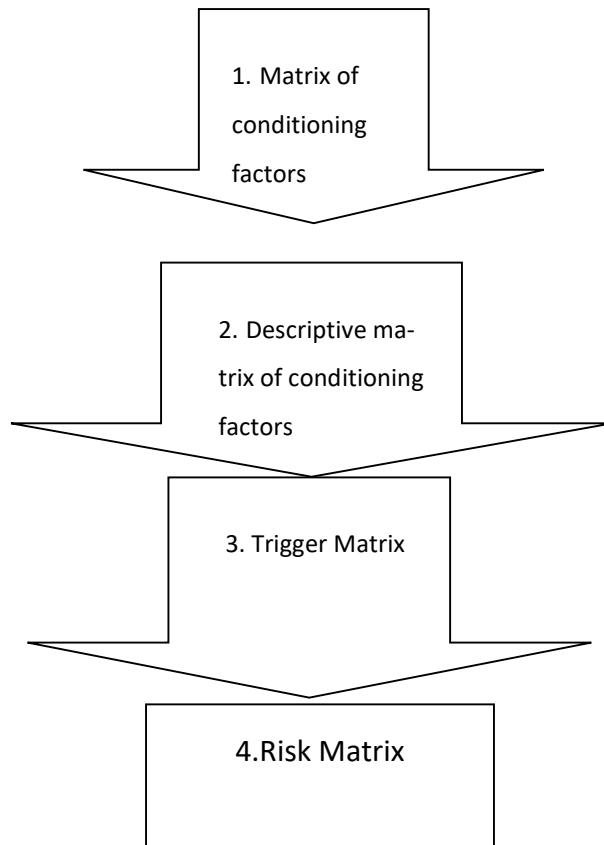
(*) To determine the random index that helps to determine the consistency ratio, the table obtained by Aguaron and Moreno, 2001 was used. Where "n" is the number of parameters in the matrix.

Figure 33. Scale of values according to the number of parameters

n	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IA	0.525	0.882	1.115	1.252	1.341	1.404	1.452	1.484	1.513	1.535	1.555	1.570	1.583	1.595

(CENEPRED, 2014)

According to the development of this methodology to perform the risk assessment, first this pairwise comparison matrix is used, which must be repeated in 3 stages.

Figure 34. Explanation of EVAR CENEPRED Technique

Source: Own

1. The matrix of conditioning factors, is the first matrix where the categories of what is to be evaluated are considered, at this point the main categories that directly influence the area are considered, e.g.: Vegetation Cover, Geodynamics, Existence of Roads, Slope, Soil Type, etc.
2. The second matrix, the descriptive matrix of conditioning factors, is the detailed development of each category, since each one of these has a different value for each subcategory, e.g.: In the case of vegetation cover, forest, jungle, scrub, no cover, etc., would be considered.
3. The third matrix is that of triggering factors, this matrix has as its objective the primary value that triggers the evaluated risk, e.g., in the case of a flood, Precipitation or the river bed per year would be considered, in the case of a landslide, some tectonic movement or rainfall could be considered. For the current investigation, the point of importance would be considered.
4. The fourth matrix is the result of all the previous matrices, the values of the conditioning factors are given a percentage, in the same way a value is given to the triggering factor and the resulting levels are established.

Tabla 7. Hazard Matrix

Hazard Matrix

CONDITIONING FACTORS (CF)								TRIGGERING FACTOR (FD)			
FACTOR1		FACTOR2		FACTOR3		FACTOR4		VALOR	PESO	FD1	
Ppar (1)	Pdesc	Ppar (1)	Pdesc	Ppar (1)	Pdesc	Ppar (1)	Pdesc			VALOR	PESO
52.96	0.42	0.53	0.54	0.23	0.42	0.14	0.47	23.96	0.50	1.000	0.50
52.96	0.30	0.53	0.20	0.23	0.23	0.14	0.28	15.22	0.50	1.000	0.50
52.96	0.17	0.53	0.14	0.23	0.23	0.14	0.17	8.89	0.50	1.000	0.50
52.96	0.11	0.53	0.13	0.23	0.12	0.14	0.07	5.78	0.50	1.000	0.50

(1) The Parameter Weight (Ppar) of the conditioning factors is derived from the 4x4 Matrix.

Source: Own

The hazard matrix generates the susceptibility matrix.

Tabla 8. Susceptibility matrix and evaluation parameters

SUSCEPTIBILITY (S)		EVALUATION PARAMETERS (PE)	
VALUE (FC VALUE*FC WEIGHT)+(FD VALUE*FD WEIGHT)	WEIGHT	MAGNITUDE	
		VALUE	WEIGHT
12.479	1.00	0.000	0.00
8.112	1.00	0.000	0.00
4.946	1.00	0.000	0.00
3.392	1.00	0.000	0.00

Source: Own

The hazard value matrix is generated by the value of the susceptibility matrix and the assessment parameters.

Tabla 9. Hazard Value Matrix

HAZARD VALUE
$(S\text{-}VALUE}\ast S\text{-WEIGHT})+(PE\text{-}VALUE}\ast PE\text{-WEIGHT})$
12.479
8.112
4.946
3.392

Source: Own

The resulting hazard value matrix creates upper and lower categories where the different types of hazards are assumed according to the previous tables. This is the final table.

Tabla 10. Hazard stratification matrix

LEVEL	RANGE		
VERY HIGH	8.112	$\leq R \leq$	12.479
HIGH	4.946	$\leq R <$	8.112
MEDIUM	3.392	$\leq R <$	4.946
LOW	0.000	$\leq R <$	3.392

Source: Own

The idea is the integration of all these matrices together with the values created by the Python software for the weighting of the values by the relevant areas. And in this way to finally achieve a hazard map showing the areas where the potential hazard is highest.

4.2. COLLECTION OF INFORMATION FROM OPINION CURRENTS

The first thing is to situate oneself in the current situation of Peru, as in many countries, different protests are carried out for different reasons, be they political, activist, economic, etc.; but in Peru many of these protests end with violent results, since the current situation is very tense due to different political currents that converge at the current level. These protests are carried out by different groups, for this reason, it is not possible to have the same formula for each case, since each of these must be evaluated individually by the circumstances that precede them. For this reason, a description will be made individually of 2 events carried out in 2 different years and for different reasons, taking one case at a time. This will serve to demonstrate the use of the software and the proposed methodology.

4.2.1. Year 2020

During the year 2020, at the height of the pandemic, there were a total of 11 days of mobilizations in Peru, this due to the vacancy of the then president Martin Vizcarra, but when it was unleashed until the inauguration of a second president, the atmosphere was algid. For this reason the dates to be considered are between Monday, November 9 and Monday, November 16.

4.2.1.1. Chronology of events

Tabla 11. Chronology of events chronology table event 2020

<u>Date</u>	<u>Reason</u>	<u>Consequences</u>	<u>Link to news item</u>
Monday, November 9	The Peruvian Congress approved the presidential vacancy motion against Martin Vizcarra. The head of Parliament, Congressman Manuel Merino must assume the Presidency of the Republic until July next year. The motion was supported by the majority of the members of Acción Popular, APP, Frepap, Fuerza Popular, UPP, and Podemos Perú.	A group of people and collectives began to march towards San Martin Square in Lima, Peru. A young man assaulted one of the congressmen. There were also demonstrations in other parts of the country such as Chiclayo, Arequipa and Trujillo.	https://elcomercio.pe/desde-la-reddaccion/cinco-noticias-que-debes-leer-hoy-lunes-9-de-noviembre-martin-vizcarra-congreso-vacancia-presidencial-gianluca-lapadula-joe-biden-noticia/?ref=ecr#google_vignette

Tuesday, November 10	Demonstrations were held in different Peruvian cities starting at 9:00 a.m. today, rejecting the inauguration of the president of Congress Manuel Merino.	Throughout the country various demonstrations were held. In the afternoon, demonstrators were dispersed in Lima, they gathered in the Plaza San Martin, the police used tear gas canisters to disperse them, according to the head of the Lima Police Region Jorge Luis Cayas, to avoid contact between demonstrators and police, and thus prevent possible COVID-19 infections.	https://elpais.com/opinion/2020-11-10/peru-pais-en-descomposicion.html
Wednesday, November 11	In order to maintain the measures of social distancing and peaceful protest, hundreds of demonstrators, especially from Lima and other large cities in Peru, made pots and pans in sectors with multi-family residential buildings (apartments) and honked at cars in the streets, against the new government of Manuel Merino.	In the city of Huancavelica, close to 5,000 people attempted to take control of the Mantaro hydroelectric plant; they were dispersed with tear gas bombs thrown by the police. In Puerto Maldonado, a total of 20 people were arrested and a journalist was injured after the demonstrations.	https://elpais.com/internacional/2020-11-11/peru-vive-el-tercer-dia-de-protestas-contra-el-gobierno-interino-y-la-concentracion-de-poderes.html

Thursday, November 12 (1st National March)	<p>On November 12, a national march was called, the main venue was Plaza San Martin, demanding the resignation of President Manuel Merino, which was called for 5:00 pm.</p>	<p>Under the slogans: "Merino does not represent me", "Peru I love you, that is why I defend you" protests were registered in different cities such as Trujillo, Arequipa, Iquitos, Chimbote, Huaraz, Chiclayo.</p> <p>Due to the large number of people gathered until late at night, the Peruvian National Police indiscriminately launched tear gas bombs, rubber bullets and buckshot in order to disperse the demonstrators at Nicolás de Piérola and Abancay Avenues in Lima. It was reported that there was an infiltrated agent of the Terna group, who fired shots into the air when he was discovered.</p>	https://larepublica.pe/sociedad/2020/11/12/marcha-nacional-peru-hoy-jueves-12-de-noviembre-de-2020-contra-el-congreso-y-manuel-merino-minuto-a-minuto-atmp/
Friday, November 13	<p>During November 13, no such important mobilizations were registered in the capital. However, hundreds of people gathered in the district of La Molina, some going</p>	<p>During the night there were confrontations between the police and the demonstrators near the house of the Prime Minister, Ántero Flores-Aráoz, when they were not allowed to continue with the mobilization. A total of at</p>	https://www.reuters.com/article/peru-protestas-idESKBN27T21T

	as far as the house of the President of the Council of Ministers, Ántero Flores-Aráoz; meanwhile, dozens of people in the district of San Borja gathered to demonstrate outside the house of President Manuel Merino.	least 27 people were injured, between police and demonstrators.	
2.6 Saturday, November 14 (2nd National March)	Through different social networks a second national march was announced, where citizens continued with the protest against the government of Manuel Merino demanding his resignation. This march was planned for 2:30 in the afternoon and was named as the 2nd National March. In Lima the concentration point was San Martin Square.	Numerous people were injured by police weapons, including a journalist from the Televisa network who was seriously wounded. After the curfew, during the night there were confrontations between police and demonstrators, where the first person to die in the protests was confirmed, a 22 year old identified as Jack Brian Pintado Sánchez, who arrived lifeless at the Guillermo Almenara hospital. That same night and after this event, several people of the national society and politics in general began to demand the resignation of Manuel	https://ges-tion.pe/peru/manuel-merino-anuncian-segunda-marcha-nacional-para-este-sabado-14-de-noviembre-en-contra-de-vacancia-presidencial-martin-vizcarra-nndc-noticia/

		Merino to the Presidency of the Republic.	
2.7 Sunday, November 15 (Merino's announcement)	In the early hours of the 15th, it was confirmed that a second demonstrator, Jordan Inti Sotelo Camargo, 24 years old, died in the Grau Emergency Hospital after the violent protests carried out in the vicinity of Abancay Avenue. The body of the deceased Inti had been hit by pellets. During the early hours of the morning, speculations arose regarding President Merino's flight from the country due to reports that the Jorge Chavez International Airport was closed by its operator, Lima Airport Partners.	At 12:00 pm the then President Manuel Merino resigns irrevocably as president of the republic, the Congress accepts his resignation hours later. With the balance of 2 dead and more than 100 wounded as a result of the continuous protests.	https://www.bbc.co m/mundo/noticias- america-latina- 54948270
2.8 Monday, November 16	A funeral procession and burial of Jordan Sotelo took place at	On this day, the votes were obtained in Congress, and who would assume the	https://www.france2 4.com/es/am%C3%A 9rica-

	<p>the Campo Fe cemetery in Huachipa. In the afternoon, demonstrators marched demanding a new constitution and asked for justice for the balance of injured and dead people resulting from the demonstrations.</p>	<p>presidency would be the legislator of the Purple Party, Francisco Sagasti. That afternoon, the new Board of Directors of the Parliament was sworn in.</p>	<u>latina/20201116-</u> <u>peru-congreso-se-</u> <u>sion-extraordinaria-</u> <u>eleccion-presidente-</u> <u>mesa-directiva</u>
--	--	--	---

Source: Own

On Tuesday, the 17th, a new president was sworn in as a transitional government, but what followed were peaceful marches, with the new president in the days that followed promising protesters that the police would not confront peaceful marches.

4.2.1.2. Hashtag Retrieval, Tweet Storage and Classification

To obtain hashtags, we will take as an example one of the tweets of those dates oriented to the aforementioned event.

Figure 35. First twitter search on the 2020 event

The screenshot shows a Twitter search interface. The search bar at the top contains the query: 'vacancia until:2020-11-13 since:2020-11-09'. Below the search bar, there are five filter tabs: 'Destacado' (highlighted), 'Más reciente', 'Personas', 'Fotos', and 'Videos'. The main content area displays a single tweet from November 12, 2020. The tweet text reads: '#MarchaNacional #12Nov Recorrido de la marcha por la Av. Wilson, en el centro de Lima, contra la **vacancia** presidencial y la toma del nuevo gobierno de Manuel Merino. (Fotos: Gian Masko)'. Below the text are three images: a close-up of a protestor holding a sign with multiple 'NO ES MI PRESIDENTE' (Not my president) messages; a group of people marching down a street; and a view of a large crowd marching through a city street. At the bottom of the tweet card, there are engagement metrics: 37 replies, 245 retweets, 762 likes, and a share icon.

Source: Búsqueda Own en Twitter

Figure 36. Second twitter search on the 2020 event

#TomaLaCalle #MarchaNacional #Merinonomerepresenta
#MerinoNoEsMiPresidente



Source: Búsqueda Own en Twitter

The table of relevant information is composed of the most common Hashtags generated by users, from the start date of the event to the end date, for this reason we would have.

Tabla 12. Table of Hastags 2020 event

Hashtag	Start Date	End Date
#Merinonomerrepresenta	09-11-2020	14-11-2020
#MarchaNacional	09-11-2020	14-11-2020
#MerinoNoEsMiPresidente	09-11-2020	14-11-2020
#TomaLaCalle	09-11-2020	14-11-2020

Source: Own

As a result of the above, we would have the following applications in snscreape:

Tabla 13. List of snscreape execution commands event 2020

- ```

1. snscreape --jsonl --progress --max-results 1000 twitter-search "#Merinonomerrepresenta until:2020-11-14 since:2020-11-09" > merino2020.json
2. snscreape --jsonl --progress --max-results 1000 twitter-search "#MarchaNacional until:2020-11-14 since:2020-11-09" > marcha2020.json
3. snscreape --jsonl --progress --max-results 1000 twitter-search "#MerinoNoEsMiPresidente until:2020-11-16 since:2020-11-09" > merinonoes2020.json
4. snscreape --jsonl --progress --max-results 1000 twitter-search "#TomaLaCalle until:2020-11-16 since:2020-11-09" > tomalacalle2020.json

```

Source: Own

Due to the fact that the number of tweets corresponding to the first hashtag with a limit of 1000 were not very convincing since it was considered at a national level, and by not limiting the number of tweets, the number of tweets exceeded 28500, as shown in the illustrations below

*Figure 37. First search for snscreape event 2020 commands*

```
(base) D:\>snscreape --jsonl --progress twitter-search "#Merinonomerrepresenta until:2020-11-14 since:2020-11-09" > merino2020.json
Scraping, 100 results so far
Scraping, 200 results so far
Scraping, 300 results so far
Scraping, 400 results so far
Scraping, 500 results so far
Scraping, 600 results so far
Scraping, 700 results so far
Scraping, 800 results so far
Scraping, 900 results so far
```

Source: Own

*Figure 38. Cancel the first search for snscreape command event 2020*

```
■ Seleccionar Anaconda Prompt (anaconda3)
Scraping, 27600 results so far
Scraping, 27700 results so far
Scraping, 27800 results so far
Scraping, 27900 results so far
Scraping, 28000 results so far
Scraping, 28100 results so far
Scraping, 28200 results so far
Scraping, 28300 results so far
Scraping, 28400 results so far
Scraping, 28500 results so far
Traceback (most recent call last):
 File "C:\Users\Amir\anaconda3\lib\runpy.py", line 197, in _run_module_as_main
 return _run_code(code, main_globals, None,
 File "C:\Users\Amir\anaconda3\lib\runpy.py", line 87, in _run_code
 exec(code, run_globals)
 File "C:\Users\Amir\anaconda3\Scripts\snscreape.exe_main_.py", line 7, in <module>
 File "C:\Users\Amir\anaconda3\lib\site-packages\snscreape\cli.py", line 318, in main
 for i, item in enumerate(scraper.get_items(), start = 1):
 File "C:\Users\Amir\anaconda3\lib\site-packages\snscreape\modules\twitter.py", line 1453, in get_items
 for obj in self._iter_api_data('https://api.twitter.com/2/search/adaptive.json', _TwitterAPIType.V2, params, paginationParams, cursor = self._cursor):
```

Source: Own

It was decided to add a conditional for the execution of the commands in this case, and to limit this act of violence to the area of Lima, for this reason the condition "near: Lima" was added within twitter-search.

*Figure 39. First updated search for snscreape event 2020 commands*

```
■ Anaconda Prompt (anaconda3)
(base) C:\Users\Amir>D:
(base) D:\>snscreape --jsonl --progress twitter-search "#Merinonomerepresenta near:Lima until:2020-11-14 since:2020-11-09" > 2merino2020.json
Scraping, 100 results so far
Scraping, 200 results so far
Scraping, 300 results so far
Scraping, 400 results so far
Scraping, 500 results so far
Finished, 549 results
(base) D:\>
```

Source: Own

The tweet query was updated, ending as follows.

**Tabla 14. Updated list of snscreape event 2020 execution commands**

- |    |                                                                                                                                                         |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | <code>snscreape --jsonl --progress twitter-search "#Merinonomerepresenta near:Lima until:2020-11-14 since:2020-11-09" &gt; 2merino2020.json</code>      |
| 2. | <code>snscreape --jsonl --progress twitter-search "#MarchaNacional near:Lima until:2020-11-14 since:2020-11-09" &gt; marcha2020.json</code>             |
| 3. | <code>snscreape --jsonl --progress twitter-search "#MerinoNoEsMiPresidente near:Lima until:2020-11-14 since:2020-11-09" &gt; merinonoes2020.json</code> |
| 4. | <code>snscreape --jsonl --progress twitter-search "#TomaLaCalle near:Lima until:2020-11-14 since:2020-11-09" &gt; tomalacalle2020.json</code>           |

Source: Own

This way we have a more specific and limited database of tweets to achieve the final maps of the research.

*Figure 40. First resulting file with updated snscreape event 2020*

|                  |                  |           |          |                  |
|------------------|------------------|-----------|----------|------------------|
| 2merino2020.json | 9/3/2022 3:37 AM | JSON File | 2,167 KB | 9/3/2022 3:49 AM |
|------------------|------------------|-----------|----------|------------------|

Source: Own

The next step is to run the software to obtain the list of possible sites of potential danger, to achieve this we will use the software developed in Python, see Annex 1. And option 2 will be used, this option allows to create a dictionary of all the words used in the tweets, sorted by the number of times it is used.

*Figure 41. First use of software in python with event 2020*

```
In [3]: runfile('D:/Seguridad in Networks- Group Activity/ New Folder/SistemaTesisAmlr.py ', wdir='D:/Network Security- Group Activity/New Folder')
Reloaded modules: configurationswwitter

This is the program of the TFM Predictive Software based on "Currents of Opinion" for the taking of decisions on Acts of Violence and Terrorism for PERU , menu list:
Before using it remember to have the list of downloaded tweets, for this you need to run the next command in your Python terminal
snscreape --jsonl --progress --max-results 500 twitter-search "#hastgname since: 2018-01-01 until: 2018-04-04" > filename.json

1. Get the list of users and their location
2. Get tweets with the list of most used words
3. Open a file.json
4. Search for a specific location and store it
5. Send the location points to ArcGIS
```

Source: Own

When searching with the resulting file in option 2 of the Python software menu, the following results can be verified.

*Figure 42. Result of execution of option 2 first file event 2020*

```

Console 1/A X
3. Abrir un archivo .json
4. Buscar una localizacion especifica y almacenarla
5. Enviar los puntos de localizacion a ArcGIS
6. Salir

Ingrese el numero de opcion que deseé realizar: 2

Ingrese el nombre del archivo que contiene los tweets: 2merino2020

Los resultados obtenidos son:
Counter({'#Merinonomerrepresenta': 372, 'de': 229, 'la': 151, 'que': 145, '#MerinoNoEsMiPresidente': 138, 'en': 124, 'a': 123, 'y': 123, 'el': 112, 'no': 90, 'los': 68, '': 67, 'por': 67, 'se': 61, 'es': 55, '\n#Merinonomerrepresenta': 55, '#MarchaNacional': 52, 'del': 47, 'con': 45, 'las': 40, '#MerinoJamasSeraMiPresidente': 40, 'un': 39, 'para': 38, '\n#MerinoNoEsMiPresidente': 35, 'lo': 33, '#MerinoNoEresMiPresidente': 30, 'te': 29, 'al': 28, '#MarchaPeru': 27, '#GolpeDeEstadoEnPeru': 27, '#MarchaPacifico': 27, '#MerinoSurpadoor': 25, '@ste': 24, 'más': 24, 'No': 23, 'me': 22, 'pueblo': 22, 'mi': 22, 'nos': 22, 'El': 21, 'ni': 20, 'La': 19, 'todo': 19})

```

Source: Own

After obtaining the result, the list of words obtained is saved in the file merino2020palabras.

*Figure 43. Stored result execution execution option 2 first file event 2020*

```

Console 1/A X
1, 'Alguien': 1, 'debería': 1, 'crear': 1, 'imagen': 1, 'perfil': 1, 'diga': 1, '\n\n#NoALaVacanciaPresidencial': 1, '#NoAlGolpeDeEstado': 1, 'TANTO': 1, 'perdón': 1, 'poco': 1, '\n\n#Merinonomerrepresenta': 1, 'existe': 1, 'https://t.co/sPR7Xk81Ut': 1, '#merinoNOMEREPRESENTAS': 1, '#VaquenAMerino': 1, 'PEÑA': 1, '#Merinonomerrepresenta\n\n@ManuelMerinoDe': 1, 'RECONCHATUMARE': 1})

1. Guardar la lista de Palabras obtenidas y su conteo
2. NO Guardar la lista de Palabras obtenidas y su conteo

Desea guardar las palabras obtenidas en una lista, elija su opción: 1
Ingrese el nombre del archivo donde desea guardar las palabras: merino2020palabras

Ingrese la palabra que deseé buscar para almacenar tweets específicos:
```

Source: Own

Finally, option 2 of the Python software asks to search for a specific word to save these tweets in a .json file, so we proceed by entering the word pla-za and the name of the file plaza2020.

*Figure 44. Option 2 word search and storage of tweets event 2020*

The screenshot shows a terminal window titled "Console 1/A". The output of the script is as follows:

```

Deesea guardar las palabras obtenidas en una lista, elija su opción: 1
Ingrese el nombre del archivo donde desea guardar las palabras: merino2020palabras

Ingrese la palabra que desee buscar para almacenar tweets específicos:plaza
Ingrese el nombre del archivo donde desea guardar los tweets:plaza2020

El archivo creado fue:D:\Seguridad en Redes- Actividad grupal\New Folder\plaza2020.json

Este es el programa del TFM Software predictivo basado en “Corrientes de Opinión” para la toma de
decisiones en actos de Violencia y Terrorismo para el Pe-rú, lista de Menús:
Antes de usarlo recuerde que debe tener la lista de tweets descargados, para esto debe ejecutar el
siguiente comando en su terminal python
Ve a Configuración para activar Windows.
```

Activar Windows

IPython Console History

Source: Own

When analyzing the results, information is obtained about the mention of many streets and many hateful comments due to the situation that is being experienced. In addition to mentioning on repeated occasions the location where the march congregated "Plaza San Martin" in Lima, Peru; this area was used to call for the march from the first days that they wanted to claim for the vacancy of the then president.

When reviewing the file with the content classified by the software, certain words could be found which are relevant to mention, these will be presented from images.

*Figure 45. Results Analysis option 2 event menu 2020*

```
\n#TodosLosDiasHastaQueCaiga': 1, 'alucinante': 1, 'asombroso': 1, 'visto': 1, 'objetivo?': 1, 'amo': 1, 'Peru\n#Merinonomerepresenta': 1, 'viviendo.': 1, 'Unos': 1, 'otros.': 1, 'Cuánta': 1, 'cerremos': 1, 'círculo': 1, 'vicioso': 1, 'mafias': 1, 'asesinatos': 1, 'robos': 1, 'Estado?': 1, '#represion': 1, 'desmedido': 1, 'fuerza...': 1, 'bus': 1, '#metropolitano': 1, '\nTodos': 1, 'estación': 1, 'Naranjal': 1, 'Tanto': 1, 'tiempo': 1, 'cuarentena': 1, 'virus': 1, 'matando': 1, 'miserables': 1, 'calle': 1, 'odio.\n\nDios': 1, 'proteja': 1, 'todos': 1, 'PeruTeQuieroPorEsoTeDefiendo': 1, 'responden': 1, '#AsambleaConstituyente': 1, '@MininterPeru????????': 1, 'NI': 1, 'HAY': 1, 'TIRNIS': 1, 'IDIOTAS!!!': 1, '@ONU_derechos': 1, 'puedo': 1, 'señora': 1, 'Llorando.': 1, 'lastimar': 1, 'peruanos!': 1, 'https://t.co/DbG6r0vhsk': 1, 'Malditos!': 1, 'Era': 1, 'pacífica!': 1, 'hacían': 1, 'nada!': 1, 'Estaban': 1, 'cantando!': 1, 'abusiva!': 1, '#oxapampa': 1, '#Pasco': 1, 'https://t.co/PuFFo367zH': 1, 'https://t.co/pI6wEHS905': 1, '@MerinoDeLama?': 1, '¿Que': 1, 'gaseando': 1, 'reprimiendo': 1, 'atacando': 1, 'ganar': 1, 'necesita': 1, 'gobernar?': 1, 'pata': 1, 'punto': 1, 'gobernar': 1, 'dictador.': 1, 'FOTOS': 1, 'VIDEOS': 1, 'CONSERVENLOS': 1, 'SUS': 1, 'PCS': 1, 'Laptops': 1, 'CELUS.': 1, 'BAJARSELOS': 1, 'RRSS.': 1, 'HAN': 1, 'BLOQUEADO': 1, 'SEÑAL': 1, 'MÓVILES': 1, 'CALLES': 1, 'HACER': 1, 'COSAS': 1, '\n#MarchaNacional': 1, '#12Nov': 1, 'escucha': 1, 'https://t.co/7XMTMshnxO': 1, '#centrocivico': 1, 'metro': 1}
```

Source: Own

Mention of metropolitan, station and orange grove is observed. For this reason this is a point to consider.

*Figure 46. Second Analysis of Results option 2 menu event 2020*

```
\n#Merinonomerepresenta': 1, '\n#Chosica': 1, 'https://t.co/4Vt99gG4bl': 1, 'https://t.co/EshGju0DH': 1, 'https://t.co/loEfXdsP96': 1, 'https://t.co/Aa7Nk8M0fy': 1, 'https://t.co/j4crtagAMW': 1, 'Responde': 1, '@PoliciaPeru': 1, 'HACES': 1, 'ESTO?': 1, 'pasa?': 1, '\n#GabineteDeLaVerguenza': 1, '@hrw_espanol': 1, 'https://t.co/tGKcMMowsa': 1, 'https://t.co/3mmppfRtwZ8': 1, 'SIGAMOS': 1, 'BUSCANDO': 1, 'JUSTICIA!': 1, '#NoMasCorrupcion': 1, 'https://t.co/k04PJn9sNa': 1, '\n#ArribaPeru': 1, '♥': 1, 'https://t.co/CZx0jcM0EF': 1, 'tranquila': 1, 'entero': 1, 'gasear': 1, 'malditos': 1, '.': 1, 'https://t.co/6hRCCXekX8': 1, 'NECESIDAD': 1, 'LANZAR': 1, 'TANTAS': 1, 'BOMBAS??': 1, 'cólera': 1, 'ODIO': 1, 'población!': 1, 'CHOSICA': 1, 'PRESENTE!'\n#ElCongresoNoMeRepresenta': 1, '\n#marchachosica\n#Chosica': 1, '#Lurigancho': 1, 'https://t.co/1IUJ0US6wC': 1, 'dan': 1, 'estábamos': 1, 'tranquilos': 1, 'jr.Lampa..': 1, 'llegando': 1, 'universitario': 1, 'pasó': 1, '10': 1, 'minutos': 1, 'caen': 1, 'https://t.co/72IgukvbqX': 1, '腐败': 1, 'Pudrete\n@gastonrodriguez': 1, '\n#Merinonomerepresenta': 1, 'https://t.co/4zzRATfpRA': 1, 'https://t.co/b1zJobjAkj': 1, 'Ha': 1, 'intenciones': 1, 'enfrentamiento': 1, 'autoridad.': 1, 'Han': 1, 'intentado': 1, 'reprimir': 1, 'lanzando': 1, 'gases': 1, 'lógicamente': 1, 'reaccionaron.': 1, '#PlazaSanMartín': 1, 'carajo': 1, '\n#Merinonomerepresenta\n#CongresoCorrupto\n#MarchaPeru': 1, 'https://t.co/NOPZ8zKTLX': 1, 'Voz': 1, 'Corrupto': 1, 'Ratero': 1, 'Incapaz-': 1, 'https://t.co/xwZ6KLrrd8': 1, '#ViolenciaPolicial': 1, '#LaViolenciaNoMeRepresenta': 1, '#MerinoPresidente': 1, 'corruption': 1, 'activating windows': 1, 'configuration for windows': 1}
```

Source: Own

In Figure 46. the important points of mention were jr. Lampa and Plaza San Martin, both in Lima, Peru.

*Figure 47. Third Analysis of Results option 2 menu event 2020*

```
'"gobierno".\n#MerinoNoEsMiPresidente': 1, 'https://t.co/CmGhtWnm1m': 1,
'repudia..': 1, 'https://t.co/aKwJ6RpCjd': 1, '@UNMSM_': 1, '████████
\n#MerinoNoEsMiPresidente': 1, 'QUITARON': 1, 'TANTO': 1, 'ACABARON':
1, 'QUITANDONOS': 1, 'QPPE\n#MerinoNoEsMiPresidente': 1, 'https://t.co/
sJzCQC9DaT': 1, '#12Noviembre': 1, 'MUNICIPALIDAD': 1, 'SALGAN': 1,
'CASAS': 1, 'ESCUCHAR': 1, 'VOZ': 1, 'marchas.': 1, 'https://t.co/
wtgk7GPoQ6': 1, 'https://t.co/qJvF1KafDC': 1, 'QMarcha': 1, 'Norte.': 1,
'https://t.co/pxrGA6GfCZ': 1, 'https://t.co/U51EWqYsQY': 1, 'Casi': 1,
'sodomizan': 1, '#RichardSwing': 1, '#jiron delaunion.': 1, '#URGENTE':
1, '#Ahora': 1, 'https://t.co/GojLasQGPW': 1, 'PUTAMADRE': 1,
'FELICIDAD': 1, 'VER': 1, 'TANTA': 1, 'MOVILIZÁNDOSE': 1, 'SERIO!!!': 1,
'OLIVOS': 1, 'ESTAMOS': 1, 'YENDO': 1, 'TODA': 1, 'AV': 1, 'PALMERAS':
1, 'Acuérdense': 1, 'graben': 1, 'cabezas': 1, 'mierdas': 1, 'vuelvan':
1, 'contigo': 1, 'https://t.co/7dGJj6KytZ': 1, 'Movilización': 1,
'Cáceres': 1, 'María\n\n#MerinoNoEsMiPresidente': 1, 'https://t.co/
a6jT61o3T2': 1, 'Hermoso': 1, 'despierto.': 1, 'https://t.co/
zccPnTZ9Gt': 1, 'disolvió': 1, 'celebró': 1, 'lesbianos': 1, 'marchita':
1, '27': 1, 'gatos.': 1, 'celebran': 1, 'victoria': 1, 'pirrica': 1,
'demostrar': 1, 'real': 1, 'https://t.co/ub7lvMWLQC': 1,
'\n#PeruSinPresidente': 1, 'https://t.co/11DeMycz2q': 1, 'Sheput': 1,
'increchento...no': 1, 'pandilla': 1, 'reciclados': 1, 'reconoce': 1,
'Profesionales': 1, 'destacados,improvisados': 1, 'profesional': 1,
'destacado': 1, 'ensucie': 1, '#Huánuco': 1, 'https://t.co/xn880lfCNl':
```

Source: Own

In Figure 47, the most important point mentioned is the Jirón de la Unión de Lima, Peru.

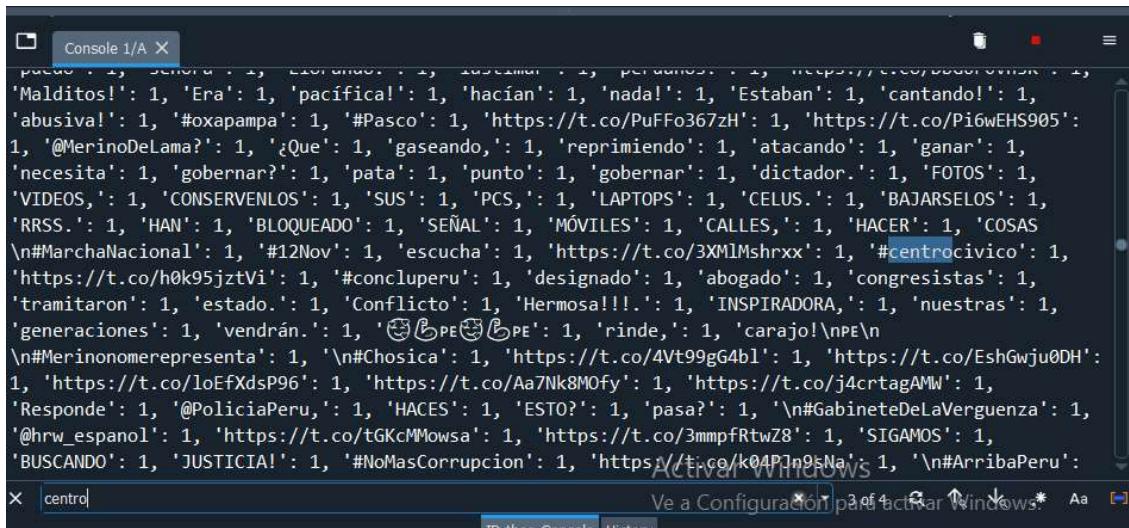
*Figure 48. Fourth Analysis of Results option 2 menu event 2020*

```
Help | Variable Explorer | Plots | Files
Console 1/A X
...\n#GolpeDeEstadoEnPeru\n#MerinoNoEsMiPresidente\n#Merinonomerepresenta': 1, 'https://t.co/j6r4haYpk4':
1, 'Las': 1, 'ahogan,' : 1, '#COVID_19': 1, 'también,' : 1, 'jamás!': 1, '': 1, 'https://t.co/
PEesyYzqn2': 1, ''No': 1, 'izquierda': 1, 'derecha,' : 1, 'abajo': 1, 'yendo': 1, 'hacia': 1,
'arriba': 1, '\n12.11.2020\n#Merinonomerepresenta': 1, 'https://t.co/E9zh0rQgXK': 1, 'entiende': 1,
'porqué': 1, 'ataca': 1, 'peatones': 1, 'choferes,' : 1, 'lacrimógenas,' : 1, 'mascarillas': 1,
'médicos.' : 1, 'https://t.co/b0twicbDzi': 1, 'lugar,' : 1, 'duda': 1, 'órdenes': 1, 'fueron': 1, 'dé':
1, 'lugar.' : 1, 'dirigía': 1, 'avenida': 1, 'Arequipa': 1, 'PACÍFICAMENTE,' : 1, 'recibió': 1,
'lacrimógenas.' : 1, 'pudimos': 1, 'Cívico.' : 1, 'https://t.co/LUhNj45fRy': 1, 'OO': 1, 'COPIAR': 1,
'PEGAR': 1, '\n\n@Almagro_OEA2015\n@OEAnoficial\n@ONU_derechos\n@ONU_es\n@CIDH\n@CNNE
\n@Defensoria_Peru': 1, '\n@TC_Peru\n\n#GolpeDeEstadoEnPeru\n#Merinonomerepresenta': 1, 'carajo,' : 1,
'rinde': 1, 'carajo': 1, '\nPerú,' : 1, 'desistas': 1, 'B@PE\nTomaLaCalle\n#Merinonomerepresenta':
1, 'https://t.co/X2W2wEr12U': 1, 'cubrir''' : 1, 'cubrir'\n\nPolicía': 1, 'Dispara*\n\nPolicía': 1,
'"Matalo': 1, 'Matalo"\n\nPolicía': 1, 'Csm': 1, 'traba': 1, 'cagada': 1, 'oe': 1, 'https://t.co/
QztDF3Oxpy': 1, 'Ama': 1, 'Suwaychu': 1, 'Llaqtaykita': 1, '#Fueragolpistas': 1, 'https://t.co/
CVybKjhLwi': 1, 'quedan': 1, 'callados!': 1, '': 1, '¡ARRIBA': 1, 'SIEMPRE': 1, 'https://t.co/
Activar Windows
```

Source: Own

In Figure 48, the most important points were Arequipa Avenue and the Civic Center

*Figure 49. Fifth Analysis of Results option 2 menu event 2020*



The screenshot shows a software interface titled 'Console 1/A' with a list of tweets. The tweets are displayed as a series of key-value pairs, where each key is a phrase or URL and each value is the count '1'. Some of the phrases include 'pacas!', 'Senado', 'Ecuador', 'lastima', 'peruanos', 'https://t.co/...', 'Malditos!', 'Era', 'pacifica!', 'hacían', 'nada!', 'Estaban', 'cantando!', 'abusiva!', '#oxapampa', '#Pasco', 'https://t.co/Pi6wEHS905', '@MerinoDeLama?', '#Que', 'gaseando', 'reprimiendo', 'atacando', 'ganar', 'necesita', 'gobernar?', 'pata', 'punto', 'gobernar', 'dictador.', 'FOTOS', 'VIDEOS', 'CONSERVENLOS', 'SUS', 'PCS', 'Laptops', 'CELUS.', 'BAJARSELLOS', 'RRSS.', 'HAN', 'BLOQUEADO', 'SEÑAL', 'MÓVILES', 'CALLES', 'HACER', 'COSAS', '\n#MarchaNacional', '#12Nov', 'escucha', 'https://t.co/3XMLMshrx', '#centrocivico', 'https://t.co/h0k95jztVi', '#concluperu', 'designado', 'abogado', 'congresistas', 'tramitaron', 'estado', 'Conflicto', 'Hermosa!!!', 'INSPIRADORA', 'nuestras', 'generaciones', 'vendrán', '¶PE', 'rinde', 'carajo!\nPE\n', '\n#Merinonomepresenta', '\n#Chosica', 'https://t.co/4Vt99gG4bl', 'https://t.co/EshGwju0DH', 'https://t.co/loEfXdsP96', 'https://t.co/Aa7Nk8MOfy', 'https://t.co/j4ctagAMW', 'Responde', '@PoliciaPeru', 'HACES', 'ESTO?', 'pasa', '\n#GabineteDeLaVerguenza', '@hrw\_espanol', 'https://t.co/tGKcmMowsa', 'https://t.co/3mmpfRtwZ8', 'SIGAMOS', 'BUSCANDO', 'JUSTICIA!', '#NoMasCorrupcion', 'https://t.co/k04PJn9sNa', '\n#ArribaPeru'. The interface has a dark theme with light-colored text and includes standard window controls like minimize, maximize, and close.

Source: Own

In Figure 49, the important point was the Civic Center.

As demonstrated the software allows the classification and breakdown of tweets, so that important mention points can be generated for subsequent steps.

#### 4.2.1.3. Creating X/Y coordinates

Apparently the list of locations mentioned will be presented below.

**Tabla 15. Table of event importance points 2020**

| Name Place       |
|------------------|
| Plaza San Martin |
| Jr. Lampa        |
| Jr. De la Union  |
| Civic Center     |
| Naranjal Station |

Source: Own

The next step is to add the points to generate the coordinates in ArcGIS, using option 4 of the system and searching for the mentioned locations.

*Figure 50. First location entry, menu option 4 of event menu 2020*

```

Este es el programa del TFM Software predictivo basado en "Corrientes de
Opinión" para la toma de decisiones en actos de Violencia y Terrorismo
para el Pe-rú, lista de Menués:
Antes de usarlo recuerde que debe tener la lista de tweets descargados,
para esto debe ejecutar el siguiente comando en su terminal python
snscreape --jsonl --progress --max-results 500 twitter-search
"#nombrehastg since:2018-01-01 until:2018-04-04" > nombrearchivo.json

1. Obtener la lista de usuarios y su ubicación
2. Obtener tweets con la lista de palabras más usadas
3. Abrir un archivo .json
4. Buscar una localización específica y almacenarla
5. Salir

Ingrese el numero de opcion que desee realizar: 4

Ingrse nombre de la localización que desee buscar: Plaza San Martin
Lima Peru
Plaza San Martín, Avenida Nicolás de Pierola, Lima, Lima Metropolitana,
Lima, 15001, Perú
Latitude = -12.05165965
Longitude = -77.03460482707533

```

Source: Own

After the user enters the location, option 1 and option 2 are chosen, respectively, to store the location and store it in a .csv file for ArcGIS.

*Figure 51. Location storage, menu option 4 of event menu 2020*

```

Console 1/T
Ingrse nombre de la localización que desee buscar: Plaza San Martin
Lima Peru
Plaza San Martín, Avenida Nicolás de Pierola, Lima, Lima Metropolitana,
Lima, 15001, Perú
Latitude = -12.05165965
Longitude = -77.03460482707533

1. Almacenar Ubicacion
2. No guardar ubicación

Desea almacenar esta localización: 1

1. Almacenar Ubicacion en .Json
2. Almacenar Ubicacion en .csv para ArcGIS
3. Regresar

Ingrse el tipo de almacenado: 2

Ingrse el nombre del archivo donde desee guardar esta
ubicación: vacancia2020

Este es el programa del TFM Software predictivo basado en "Corrientes de

```

Source: Own

The file where the locations will be stored will be named "vacancy2020".

*Figure 52. Second location entry, menu option 4 of event menu 2020*

```
Ingrese el numero de opcion que desee realizar: 4

Ingrese nombre de la localizacion que desee buscar: jiron lampa lima
peru
Jirón Lampa, Lima, Lima Metropolitana, Lima, 15001, Perú
Latitude = -12.0503037
Longitude = -77.0313849

1. Almacenar Ubicacion
2. No guardar ubicación

Desea almacenar esta localizacion: |
```

Source: Own

By storing each of the locations following the aforementioned steps. Finally the final file is obtained, this can be seen in figure 53.

*Figure 53: Final Table of Importance Point .csv, option 4 menu event 2020*

The screenshot shows a Microsoft Excel window titled 'vacancia2020.csv - Excel'. The ribbon menu includes 'Archivo', 'Iniciar', 'Insertar', 'Disp', 'Fórm', 'Data', 'Revis', 'Vista', 'Ayud', '¿Qué des', and 'Compartir'. The table has columns labeled A, B, C, D, E, and F. The data is as follows:

|   | A                          | B            | C        | D           | E           | F |
|---|----------------------------|--------------|----------|-------------|-------------|---|
| 1 | Name                       | TYPE         | CAPACITY | LATITUDE    | LONGITUDE   |   |
| 2 | Plaza San Mar              | PuntoDelImpo | 10       | -12.0516597 | -77.0346048 |   |
| 3 | EstaciÃ³n Nar              | PuntoDelImpo | 10       | -11.9827434 | -77.0586044 |   |
| 4 | JirÃ³n Lampa, PuntoDelImpo |              | 10       | -12.0503037 | -77.0313849 |   |
| 5 | JirÃ³n de la Ur            | PuntoDelImpo | 10       | -12.0511977 | -77.0349781 |   |
| 6 | Pasaje Centro              | PuntoDelImpo | 10       | -11.0230317 | -77.6438958 |   |

Source: Own

The .csv file is loaded into the ArcGIS project and proceeds to the last step of the project, to generate the maps for decision making.

#### 4.2.2. Year 2018

In 2018 took place the agrarian strike in Peru, these were a number of initially peaceful protests that took place from January 9 to February 11 in much of the Peruvian territory by small and medium independent farmers who demanded the government to declare the agricultural sector in a state of emergency due to deficiencies in production and trade, with greater extent in the potato sector. Since January 30, the demonstrations became violent and expanded into departments that at first did not comply with the strike. At the end of the agrarian protest, confrontations between the Peruvian national police and the demonstrators resulted in two deaths and serious material damage in all areas of the revolt.

##### 4.2.2.1. Chronology of events

**Tabla 16. Chronology of events table event 2018**

| <u>Date</u>        | <u>Cause</u>                                                                                                                                                                                                                                                                               | <u>Consequences</u>                                                                                                                                                                                                                                                         | <u>News link</u>                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tuesday, January 9 | On January 9, the National Committee of Potato Producers announced the beginning of the strike with quiet protests in several cities in the central highlands of Peru, after an agreement between the farmers and the government, a halt to the demonstration was agreed until January 25. | Farmers blocked important roads such as Libertadores and the Central Highway, roads which link Ica and Ayacucho. Their demands to the Government included the declaration of an emergency in the agricultural sector and the payment of compensation for their crop losses. | <a href="https://rpp.pe/economia/economia/por-que-los-agricultores-de-papa-acatan-un-paro-de-72-horas-noticia-1098901">https://rpp.pe/economia/economia/por-que-los-agricultores-de-papa-acatan-un-paro-de-72-horas-noticia-1098901</a> |

|                      |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                        |                                                                                                                                                                                                                                                                                                 |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thursday, January 25 | The strikers were expecting the arrival of government representatives such as the President of the Council of Ministers Mercedes Aráoz Fernández and the Minister of Agriculture and Irrigation José Arista, but on the agreed day they did not arrive and instead representatives of each state organization attended. | The strike was resumed and the highways were taken over and they even tried to take over state structures.                             | <a href="https://www.agro-junin.gob.pe/institucion-mesa-de-trabajo-para-buscar-solucion-a-problema-agraria-en-junin/">https://www.agro-junin.gob.pe/institucion-mesa-de-trabajo-para-buscar-solucion-a-problema-agraria-en-junin/</a>                                                           |
| Tuesday, January 30  | Protesters demonstrated their non-conformity by blocking highways and burning state facilities in all departments, in this case two dead and numerous wounded were reported.                                                                                                                                            | The regions of Pasco, Huánuco, Apurímac, Huancavelica and Aya-cuchcho were blocked, as well as other sectors where roads were blocked. | <a href="https://www.radiounacional.com.pe/informa/nacional/paro-agrario-registran-2-agricultores-fallecidos-durante-enfrentamientos-con-policias">https://www.radiounacional.com.pe/informa/nacional/paro-agrario-registran-2-agricultores-fallecidos-durante-enfrentamientos-con-policias</a> |

Source: Own

#### 4.2.2.2. Obtaining Hashtags

To obtain the hashtags, we will take as an example one of the tweets of those dates oriented to the above-mentioned agricultural strike.

*Figure 54. First twitter search on the 2018 event*



Source: Own

The relevant information table is composed of the most common Hashtags generated by users, from the start date of the event to the end date, for this reason you would have.

**Tabla 17. Table of Hastags event of 2018**

| Hashtag | Start Date | End Date |
|---------|------------|----------|
|         |            |          |

|                   |            |            |
|-------------------|------------|------------|
| #CarreteraCentral | 01-01-2018 | 02-01-2018 |
| #ParoAgrario      | 01-01-2018 | 02-01-2018 |

Source: Own

As a result of the above, we would have the following applications in snscreape.

**Tabla 18. List of snscreape run commands event 2018**

- ```
1. snscreape --jsonl --progress --max-results 1000 twitter-search "#CarreteraCentral until:2018-01-30 since:2018-01-01" > 2paro2018.json
2. snscreape --jsonl --progress --max-results 1000 twitter-search "#CarreteraCentral until:2018-01-30 since:2018-01-01" > 2carreteracentral2018.json
```

Source: Own

With the number of tweets corresponding to the first hashtag, the following results were obtained.

Figure 55. First search for snscreape commands event 2018

```
(base) D:\>snscreape --jsonl --progress --max-results 1000 twitter-search "#ParoAgrario until:2018-02-01 since:2018-01-01" > 2paro2018.json
Scraping, 100 results so far
Finished, 124 results
(base) D:\>
```

Source: Own

The result of the second query in snscreape can be seen in Figure 56

Figure 56. Second snscreape command search event 2018

```
(base) D:\>snscreape --jsonl --progress --max-results 1000 twitter-search "#CarreteraCentral until:2018-02-01 since:2018-01-01" > 2carreteracentral2018.json
Scraping, 100 results so far
Scraping, 200 results so far
Scraping, 300 results so far
Finished, 345 results
(base) D:\>
```

Source: Own

By following the same logic when using the software in these tweets. Reviewing the file with the content classified by the software, it was possible to find certain words which are relevant to mention, these will be presented from images.

Figure 57. Result of execution of option 2 first file event 2018

```
Console 1/A X
cisterna': 19, 'personas': 19, 'esta': 19, 'l': 14, 'vía': 14,
'@DeviandesPeru': 14, 'carretera': 14, 'tramo': 14, 'vehículos': 14,
'hacia': 14, 'transporte': 14, '#Ticlio': 14, 'muertos': 14, 'nos': 13,
'Se': 13, 'vehículo': 13, 'tránsito': 13, '@policiaperu': 13,
'#DeviandesInforma': 13, 'Policía': 12, 'está': 12, 'debido': 12,
'tomar': 12, 'mecánico': 12, '#Casapalca': 11, 'empresa': 11,
'atendiendo': 10, 'ya': 10, 'central': 10, 'menos': 10, 'Tránsito': 10,
'q': 10, 'indicaciones': 10, '': 10, 'auxilio': 10, 'muerto': 9,
'dirigiendo': 9, 'ómnibus': 9, 'San': 9, 'desde': 9, 'horas': 9,
'arrastre': 9, 'sus': 9, 'donde': 9, 'heridos': 9, 'interprovincial': 9,
'Central': 9, 'deja': 9, 'Esta': 9, 'ambos': 9, '#AHORA': 9,
'#Ocatara': 8, 'Puente': 8, '#Matucana': 8, '#eneste momento': 8, 'Lima': 8,
'Central': 8, 'carro': 8, '@RPNoticias': 8, 'carril': 8,
'#SanMateo': 8, '#LaOroya': 8, '2': 8, 'zona': 8, 'fallecidos': 8,
'operativo': 8, '#EnEsteMomento': 7, 'camiones': 7, 'liberación': 7,
'años': 7, 'congestión': 7, 'ante': 7, 'caos': 7, 'pero': 7,
'realizaron': 7, 'nuestra': 7, 'hace': 7, 'trabajando': 7, 'reportan': 7,
'cuando': 7, 'paro': 7, 'este': 7, 'Nuestras': 7, 'lado': 7,
'realizar': 7, 'manejear': 7, 'precaución': 7, 'limpieza': 7, 'incautó': 7,
'tonelada': 7, 'insumos': 7, 'químicos': 7, 'dejó': 7, '#accidente': 7,
'DE': 7, 'No': 7, 'lugar': 7, 'peaje': 7, 'carga': 7, '#AHORA': 7,
'mañana': 7, 'inspectores': 7, 'Mateo': 6, 'A': 6, 'varados': 6, '10': 6,
'4': 6, 'poco': 6, 'están': 6, '5': 6, '081': 6, '#Huallatupe': 6,
'tres': 6, 'respeten': 6, 'obstruyendo': 6, 'camioneta': 6, 'fue': 6,
'hasta': 6, 'restringido': 6, 'hoy': 6, 'ocurrido': 6, 'sobre': 6,
'ruta': 6, 'ciierre': 6, 'cerro': 6, 'Y': 6, '#Concorona': 6, 'personal': 6
```

Source: Own

As has been shown in this case, places were also mentioned that are located on the Central Highway, where roads were taken over. The places referred to are La Oroya, San Mateo, Matucana and the Central Highway.

4.2.2.3. Creación de coordenadas X/Y

In the case of this agrarian strike the #Hashtags used for events of violence in Peru were used, it should be noted that not all people who used these Hashtags, are or may be involved in the acts of violence that occurred. But given the consequences of the events that occurred, it was considered pertinent to use this information for research evidence.

Apparently the list of locations mentioned will be presented as follows.

Tabla 19. Table of event highlights 2018

Place Name

Carretera Central
La Oroya
San Mateo
Matucana

Source: Own

The next step is to add the points to generate the coordinates in ArcGIS, using option 4 of the system and searching for the mentioned locations.

Figure 58. First location entry, menu option 4 of event menu 2018

```

1. Obtener la lista de usuarios y su ubicación
2. Obtener tweets con la lista de palabras más usadas
3. Abrir un archivo .json
4. Buscar una localizacion especifica y almacenarla
5. Salir

Ingrese el numero de opcion que desee realizar: 4
*****
Ingresar nombre de la localizacion que desee buscar: Carretera Central
Junin Peru
Carretera Central, Florida, Tupin, Acobamba, Tarma, Junín, 12651, Perú
Latitude = -11.3698163

Longitude = -75.6809311
*****
1. Almacenar Ubicacion
2. No guardar ubicación
*****
```

Source: Own

The following .csv file was obtained by doing this with all the mentioned locations

Figure 59. Final Table of Importance Point .csv, option 4 menu event 2018

A	B	C	D	E	F
1	Name	TYPE	CAPACITY	LATITUDE	LONGITUDE
2	Carretera Cen PuntoDelImpo		10	-11.3698163	-75.6809311
3	La Oroya, Yau PuntoDelImpo		10	-11.5213917	-75.8998811
4	San Mateo, Hu PuntoDelImpo		10	-11.8020525	-76.2392624
5	Matucana, Hu PuntoDelImpo		10	-11.8447264	-76.3860598
6					

Source: Own

Within the hashtag searches, other locations were mentioned. But even though these locations may be considered relevant to the research, not delimiting an area in a country of 1.285 million km² would be counterproductive to the evidence. It would be counterproductive to the evidence.

Figure 60. Other items of importance, option 2 of menu item event 2018

```
Counter({'de': 196, 'la': 90, 'el': 78, 'en': 67, '#ParoAgrario': 63, 'y': 62, '': 48, 'papa': 45, 'a': 45, 'los': 44, 'que': 44, 'del': 24, 'se': 24, 'con': 22, 'por': 22, 'productores': 21, 'las': 20, '#paroagrario': 19, 'para': 19, 'paro': 16, 'es': 14, 'no': 14, 'al': 13, 'un': 12, 'agricultores': 11, 'región': 9, 'una': 9, 'PARO': 8, 'horas': 7, 'A': 7, 'sector': 7, 'importación': 7, 'esta': 7, 'su': 7, '#PERU': 7, 'más': 7, '@minagriperu': 7, 'Y': 6, 'EL': 6, 'AGRARIO': 6, 'EN': 6, 'hoy': 6, 'central': 6, 'lo': 6, '10': 6, 'como': 6, 'El': 6, 'DE': 6, 'LA': 6, 'Perú': 6, 'd': 6, 'Junín': 5, 'Ayacucho': 5, 'acatan': 5, 'carretera': 5, 'desde': 5, 'Ayacucho': 5, 'Central': 5, 'contra': 5, 'nuestros': 5, 'hay': 5, 'precio': 5, 'provincia': 4, 'de...': 4, 'emergencia': 4, 'dirigentes': 4, '#Ayacucho': 4, 'enero': 4, '#PAROAGRARIO': 4, 'hasta': 4, 'tiene': 4, 'Carretera': 4, 'ya': 4, 'ahora': 4, 'gobierno': 4, 'este': 4, 'ha': 4, 'hermanos': 4, 'Agricultura': 4, '#EstadoDeEmergencia': 4, 'producto': 4, '#ParoNacionalAgrario': 4, 'venden': 4, 'producción': 4, 'protestan': 4, 'nacional': 4, 'ministro': 4, '': 4, 'céntimos': 4, 'Huancavelica': 3, 'x': 3, 'vía': 3, 'Agricultores': 3, 'La': 3, 'solidaridad': 3, 'Frente': 3, 'políticas': 3, 'día': 3, '48': 3, '@ppkamigo': 3, '31': 3, '1': 3, 'agrario': 3, 'Esto': 3, 'tomar': 3, 'Huánuco': 3, '#Huánuco': 3, '#ParoAgrario\nEn': 3, '#Apurímac': 3, 'seguridad': 3, 'Mañana': 3, 'me': 3, 'entrada': 3, 'así': 3, 'qué': 3, 'comprar': 3, 'nuestra': 3, 'debido': 3, 'No': 3, '#Perú': 3, 'ActionWindow': 3, 'mercados': 3, '!': 3, 'esto': 3}
```

Source: Own

The localities mentioned include Ayacucho, Huanuco, Huancayo, Huancavelica, etc. But these localities will not be considered on this occasion, since it is more a demonstration of the operation than an in-depth analysis of the issues involved. This is done to limit the localities to the area of the central highway and not to generate many more maps.

4.3. DEVELOPMENT OF A PYTHON-BASED SYSTEM THAT ALLOWS THE CREATION OF MAPS IN A GIS TOOL

For this section it is necessary to explain the system that was created from the information collected, the first thing was to obtain information. This can be seen in the headings "Hashtags Retrieval, Tweets Storage and Classification". Points were created as previously visualized and demonstrated depending on the event either 2020 or 2018. After the analysis the points were created which create a .csv file, this is where the geolocated points are located to then be processed. As it was obtained everything was documented in a previous point using the system created in Python by the researcher.

Figure 61. Python System

The screenshot shows the Spyder Python 3.9 IDE interface. The code editor displays a script named 'SistemaTesisAmir.py' with the following content:

```

1 # -*- coding: utf-8 -*-
2 """
3 Created on Wed Aug 31 17:20:44 2022
4 @author: Amir
5 """
6
7 # -*- coding: utf-8 -*-
8
9 import json
10 import collections
11 from geopy.geocoders import Nominatim
12 import os
13 import csv
14 import os.path
15 directory = os.getcwd()
16
17 def menubot():
18     print ("*****")
19     print ("Este es el programa del TFM Software predictivo basado en "Corrientes de Opinión" para la toma de decisiones e")
20     print ("(tweets de usuario recuerde que debe tener la lista de tweets descargados, para esto debe ejecutar el siguiente c")
21     print ("("nsisrape --jsonl --progress --max-results 500 twitter-search "#nombrehastg since:2018-01-01 until:2018-04-04")
22     print ("'\n")
23     print ("1. Obtener La lista de usuarios y su ubicación")
24     print ("2. Obtener tweets con la Lista de palabras más usadas")
25     print ("3. Abrir un archivo .json")
26     print ("4. Buscar una localización específica y almacenarla ")
27     print ("5. Salir")
28
29
30
31
32
33
34     loop = True
35
36     while loop:
37         menubot()
38         opcionbot = int(input("Ingrese el numero de opción que deseé realizar: "))
39         print ("*****")
40         if opcionbot == 1:

```

The Variable Explorer shows the following data:

Name	Type	Size	Value
archivoabrir	str	9	2paro2018
aux	str	0	
busq	list	35	['#DeviandesInforma', '6...
busquedapalabra	str	4	Paro
busquedatable	list	0	[]

The Terminal window contains the following text:

```

Este es el programa del TFM Software predictivo basado en "Corrientes de Opinión" para la toma de decisiones en actos de violencia y terrorismo para el Perú en la lista de Meilleure. Recuerde que debe tener la lista de tweets descargados, para esto debe ejecutar el siguiente comando en su terminal python nsisrape --jsonl --progress --max-results 500 twitter-search "#nombrehastg since:2018-01-01 until:2018-04-04" > nombrearchivo.json

1. Obtener la lista de usuarios y su ubicación
2. Obtener tweets con la lista de palabras más usadas
3. Abrir un archivo .json
4. Buscar una localización específica y almacenarla
5. Salir

Ingrese el numero de opción que deseé realizar:

```

Source: Own

The system code is documented in Appendix A. Python Software Code. So we proceed to the final part of the project development, the analysis of the .csv together with the Saaty matrices which can be visualized in Annex B. Saaty Matrix Tables.

4.4. TO TRANSMIT THE RESULTS OF THE INFORMATION FOR ITS SUBSEQUENT ANALYSIS AND APPLICATION FOR DECISION MAKING

The Report Map from the predictive software based on opinion currents for decision making in acts of violence and terrorism in Peru, is given in conjunction with all the previously mentioned points and is established thanks to the information collected.

The Saaty matrices are 5 in total, which are:

- Table of Conditioning Factors
- Road Network Table
- Population Density Table
- Vegetation Cover Table
- Geomorphology Table

Each of these tables can be found in Annex B. Saaty Matrix Tables. These matrices were considered for the hazard mapping. It should be noted that the methodology proposed by the CENEPRED EVAR MANUAL allows the tables to be considered according to one's expertise, which is why these were considered for this research. If in the future one wishes to use other matrices that can provide a greater degree of predictivity or specificity for decision making, one is not obliged to use these already presented.

Each of these tables will be considered for the two case studies, 2018 and 2020. Thus maintaining the values of the matrix tables with their respective classifications.

Triggering factor, as mentioned in the theoretical framework, is the one that triggers the hazard in a specific geographic area and this factor, as well as the conditioning factors, can be made in a Saaty matrix table. In this research the triggering factor is the x/y coordinate creation points in each event. In the case of this research, given that the cases taken took place in passed time, it was considered not to establish a Saaty matrix for this factor, thus having a constant value for the hazard matrix. For this reason, in each case to be analyzed, the following table was used for the final formula.

Tabla 20. Trigger Factor Table for events

TRIGGERING FACTOR (FD)	
PointOfImportance	
VALOR	PESO
1.000	0.50
1.000	0.50
1.000	0.50
1.000	0.50

Source: Own

A value of 1 and a weight of 0.50 was considered for the events since it would determine the degree of hazard potential in the final map.

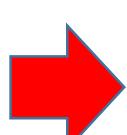
Susceptibility is the result of the conditioning factors multiplied by the weight of the conditioning factor plus the value of the conditioning factor multiplied by its weight. Thus, for the case of the evaluation parameters, no value was considered to contribute to the research, since these values are given by magnitudes and would require statistical analysis of hazards based on historical data showing magnitudes, but since they are so variable because they are products of people, it is not possible to have true information, so for this research this magnitude was kept at 0 so that it does not affect the final matrix.

Tabla 21. Event Susceptibility Table

SUSCEPTIBILITY (S)		EVALUATION PARAMETERS (EP)	
VALUE (FC VALUE* FC WEIGHT)+(FD VALUE* FD WEIGHT)	WEIGHT	MAGNITUDE	
		VALUE	WEIGHT
12.479	1.00	0.000	0.00
8.112	1.00	0.000	0.00
4.946	1.00	0.000	0.00
3.392	1.00	0.000	0.00

Source: Own

Finally, we have the hazard value matrices and the hazard classification levels, which are given by ranges. And they are obtained by the process of Saaty matrices.

Tabla 22. Hazard and Hazard Stratification Table


HAZARD VALUE		LEVEL	RANGE		
(S*S VALUE*S WEIGHT+(PE VALUE*PE WEIGHT)			VERY HIGH	8.112	$\leq R \leq$
12.479		HIGH	4.946	$\leq R <$	8.112
8.112		MEDIUM	3.392	$\leq R <$	4.946
4.946		LOW	0.000	$\leq R <$	3.392
3.392					

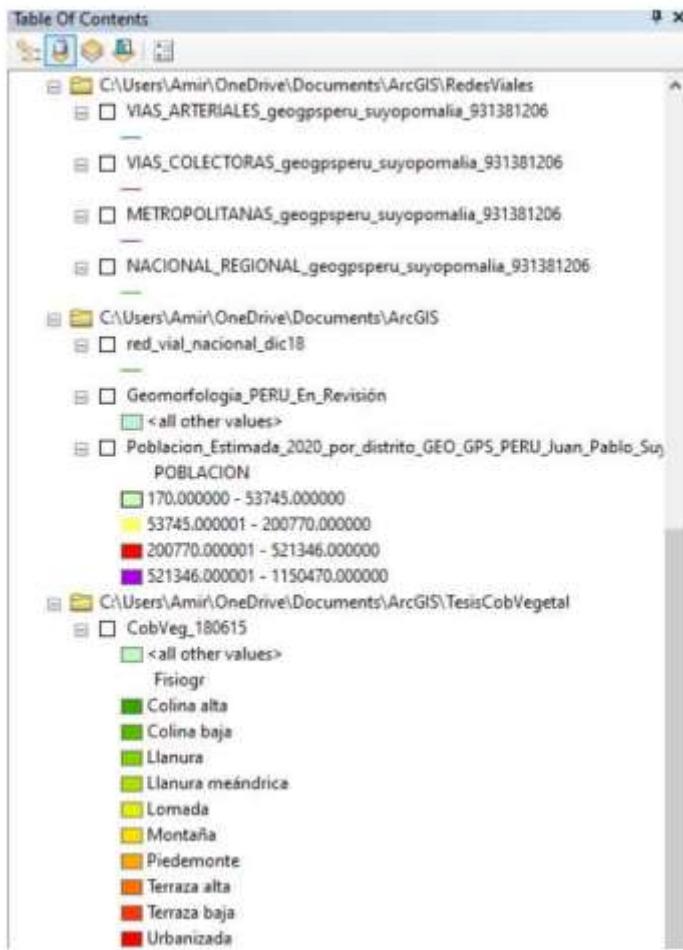
Source: Own

4.4.1. ArcGIS Hazards Map

Finally, having obtained all the previous information, we proceed to create the Hazard maps in the ArcGIS GIS tool, for this purpose we must load the .csv of each of the years and delimit the zones on the maps. This would be the map in Annex C. Triggering Factor Map for the year 2020 and year 2018. The coordinates are loaded as shown in the theoretical basis 2.2.1.2.

Create points from an ArcGIS table, for the specific cases the coordinate system "WGS_1984_UTM_Zone_18S" is used. In the case of the maps of the conditioning factors, these were obtained from the web Geo GPS Peru (Geo GPS PERU, 2022). These are the maps of Road Networks, Population Density, Vegetation Cover and Geo morphology used as conditioning factors. The layers are shown below.

Figure 62. Unedited Map Layers, ArcGIS tool



Source: Own

An additional field was added to these maps where the value given by the tables is entered according to the category in which they are located; resulting in total tables.

Figure 63. ArcGIS Data Frame Image

The first screenshot shows a table with columns: #ID, Shape #, Name, PFD_VA, Name_1, tipoarea, subc_uni, Descrip, Desr_Nombre, PFC_GE, PD_UF, PFFC_GE, CodRegB111, Proyegr, Descript_1, Desr_N_1. It contains three rows with values like '830 Polygon ZSM Jiron de la Unión' and '831 Polygon ZSM Jiron de la Unión'.

The second screenshot shows a table with columns: USR001, IDPROV, CODIGO, POBLACION, FECHM, DAT_POB, Descripc_2, Desr_Na_2, PFC_DP, FD_DP, PFFC_DP, FD_RedVia, NOMBRE, DISTRITO, Descripc_3, Desr_Na_3, PFC_RV, PFFC_RV, FD_VALOR, SUSC_VALOR. It contains several rows with numerical values.

Source: Own

Then all the shapes of the conditioning factor maps and the mapping of the x/y coordinates of the triggering factor are integrated, and finally the calculation is generated based on the Saaty matrices. As shown in figure 63.

Figure 64. Hazard Map Final Formulation

Show Codeblock

FC_VALOR =

```
[PFFC_DP] + [PFFC_GE] + [PFFC_CV] + [PFFC_RV]
```

Show Codeblock

SUSC_VALOR =

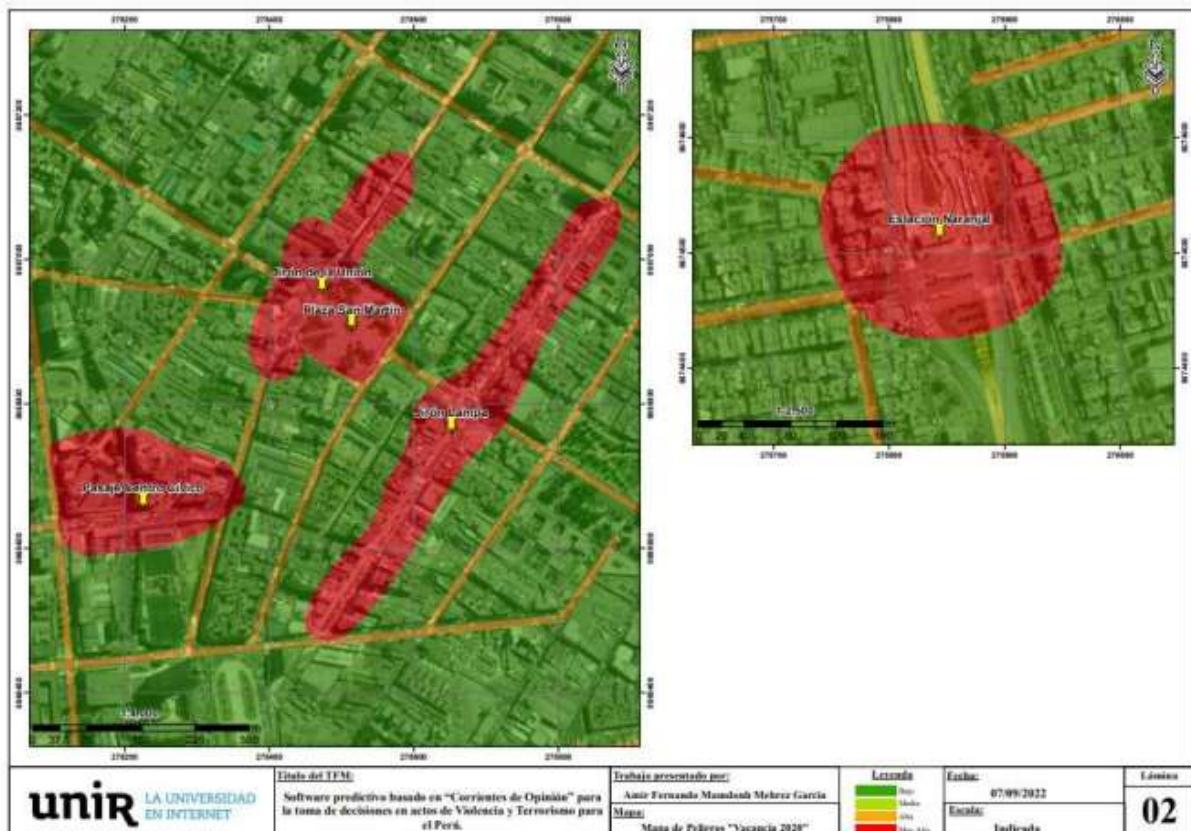
```
([PFD_VA]*0.5)+( [FD_VALOR]*0.5)
```

Source: Own

4.4.1.1. Hazard Map 2020

As can be seen in the "Vacancy 2020 Dangers" Map, the areas that would be most dangerous and affected by protesters are located near Plaza San Martin, this can be seen in more detail in Annex C. Plans Map of "Dangers Vacancy 2020".

Figure 65. Map of "Vacancy 2020" Hazards



Source: Own

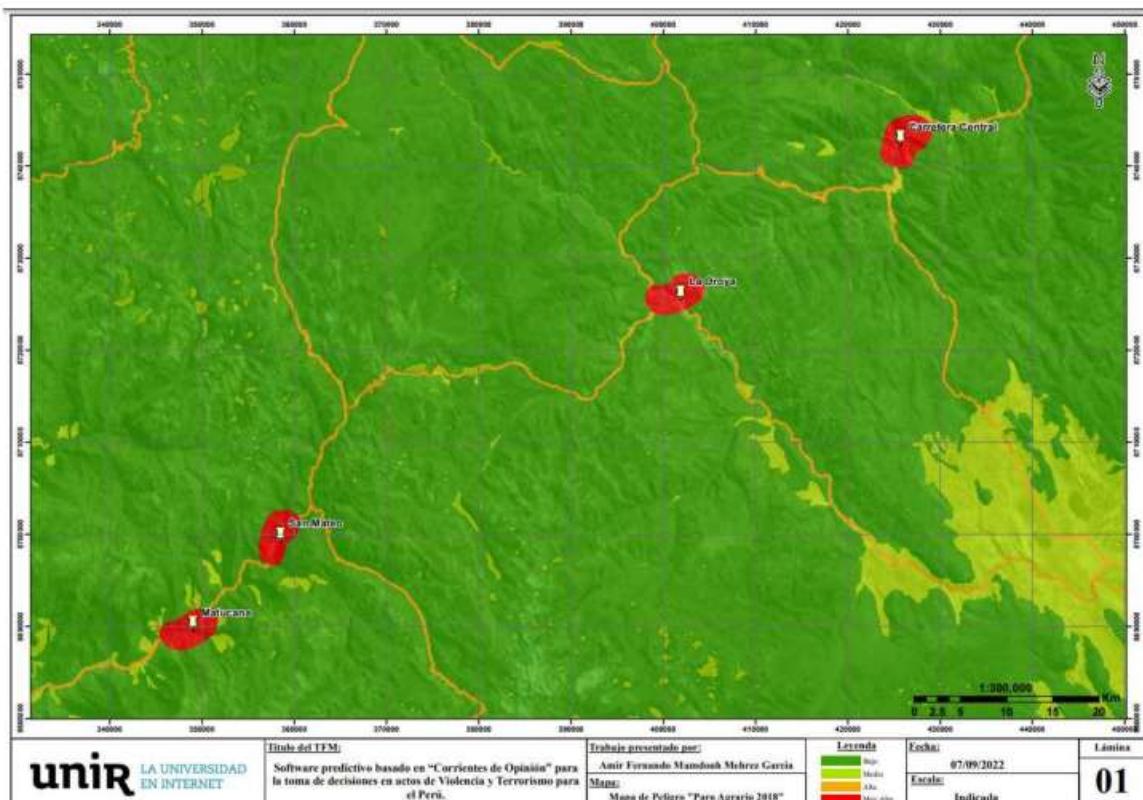
Therefore, where finally the peat generated havoc was in the sectors near the Plaza San Martín, so that in the plan all the surrounding areas most referenced present a very high danger. This result could be obtained by creating the points obtained by Python, these were processed as x/y points in ArcGIS and finally converted to polygons. The polygons of the Twitter hashtags interact as triggering factors in the CENEPRED methodology in conjunction with the conditioning factors considered, thus, areas with reddish coloration are obtained, these areas are considered with very high danger, since they are streets where people go and the business infrastructures facing these can be the most damaged because they have open doors. For example, on Jiron Lampa there is a station of the Metropolitano (popular urban transport in the city of Lima), This point, being within a very high danger zone, is susceptible to riots. Thus, to corroborate the operation of the software in Python in conjunction with the methodology used for

the notions taken in this research we have a newspaper article "Two people dead, more than 60 injured and several people dead is the balance left by the second national march called in protest to the interim government of Manuel Merino de Lama. The clashes not only left material damages in various structures but also in some stations of the Metropolitano, such as the Colmena station, which ended up with shattered windows". (Panamericana, 2020). As can be seen in the previous paragraph, the performance of the investigation is validated by demonstrating that there was a very high danger in the area of Jr. Lampa, an area shown and obtained by the software. Just as this site was the target of riots, many other businesses in the surrounding area suffered the same tragic fate, leaving substantial losses to other businessmen.

4.4.1.2. Hazard Map 2018

As can be seen in the 2018 hazard map, the areas that would be the most dangerous and affected by the Agrarian strike are located along the Central Highway, this can be seen in Annex C. Plans "Danger Map "Paro Agrario 2018".

Figure 66. Danger Map "Paro Agrario 2018".



Source: Own

Here it is observed that the Central Highway was taken at different points, being so that in the plan all the areas near and along the road present a very high danger. Thus, to corroborate the operation of the software in Python and of the notions taken in this investigation, we have a newspaper article "In the Huanuco region, farmers blocked a stretch of the Central Highway and went to the Cayhuayna police station, where they were dispersed with tear gas bombs by the police. The confrontation caused three officers and two farmers to suffer injuries. Meanwhile, in Tingo Maria, protesters gathered in the El Mirador sector where they prevented vehicles from passing" (El Comercio, 2018).

As can be seen, the operation of the investigation is validated, demonstrating that there was a very high level of danger in the

a very high danger in the area of the central highway. And in the mentioned points there was a total blockage of the road, generating losses for the transporters and in some cases physical damages for them. Additionally, in the search of Tweets, mention was made of the areas of Huancayo and Ayacucho, among these areas is the Tablachaca dam, which the protesters took over and confronted the police, resulting in one death (Radio Nacional, 2018). Although only the area of the Central Highway was considered for the mapping of this case, mention of these zones was also obtained. Therefore, if a large-scale analysis is carried out, this area could also be included in the mapping.

5. CAPITULO IV: CONCLUSIONS AND FUTURE WORK

5.1. CONCLUSIONS

- The objective of this project was to solve a latent problem in Peru, that is to combat acts of violence and terrorism, which are happening for different reasons and from different fronts. For this reason it was proposed to address this problem with technology, based on something so used today as the currents of opinion, where people publish what happens around them or views on events that they consider relevant.
- A predictive software was developed using the Python programming language, creating a system that allows to obtain Tweets from Hashtags and classify them according to their importance. To achieve the development, libraries such as Snscreape, Geopy,

csv, etc. were used. These allowed the creation of files, collection of information and displaying the results in an optimal way as well as pleasing to the eye.

- In this Master's Thesis we have developed a software that allows to obtain and classify Tweets, this with the aim of generating spatial coordinates which are uploaded to an ArcGIS file and then generate a map of hazards, since the maps allow to provide information in a more visual, fast and digestible way. The hazard map provides sufficiently relevant information for decision making by the responsible authorities, who can establish safety measures or make decisions based on a spatial map of the nearby hazard. For this reason, the software was tested in conjunction with the methodology used by CENEPRED (National Center for Estimation, Prevention and Reduction of Disaster Risk) of Peru, taking events for the years 2020 and 2018.
- In order to verify the efficiency of this software and the methodology used, hazard maps were created with the information collected, and from the non-news observed and mentioned, congruence was obtained between the software proposed and the events narrated in the news. Therefore, thanks to the software developed, it is possible, together with the approach, to verify the relationship of hazard potential with the ravages of the event itself, finally in the accompanying maps.
- The project has complied in the realization of the software and its testing, thus demonstrating that it is functional and applicable. Although good results were obtained in demonstrating the potential of the hazard maps, this research development can be even more assertive if more relevant conditioning factors are considered or if more important historical information is available. Unfortunately, due to the lack of information in the country, this was a limiting factor for further development.
- Finally, this research was presented with the objective of demonstrating the functionality and development of the software in general, which does not limit its use for future projects.

5.2. FUTURE WORK

- It is proposed for future work to improve this software, this could be done with a dictionary of streets and in this way the researcher could obtain the streets without the need for manual analysis of the information. without the need to do a manual analysis of the information. As not all users are the best in terms of handwriting this may be a bit difficult, since the dictionary should perhaps cover something like deep learning, since many times what is written will not coincide with the point. the written will not match the well-written point.
- For future work, it is also proposed to create an additional option in the software that allows the uploading of the tables of conditioning factors or triggers, being possible to connect with ArcGIS and provide a more automatic process.
- A limitation to be considered was the time and the lack of expertise in the creation of systems with the creation of the presentation layer. Although it is not registered initially we wanted to do this with a visual interface instead of a terminal, but we had problems with tkinter. In the same way Snsrape could not be integrated into the current system because of a Python versioning problem, and so the search for Tweets is generated externally in an anaconda3 console.

Bibliographical References

- Agro Junin. (25 de Enero de 2018). INSTALARÁN MESA DE TRABAJO PARA BUSCAR SOLUCIÓN A PROBLEMÁTICA AGRARIA EN JUNÍN. Obtenido de <https://www.agrojunin.gob.pe/instalaran-mesa-de-trabajo-para-buscar-solucion-a-problematica-agraria-en-junin/>
- AMIRI, S. (Diciembre de 2014). *TESTING A GEOSPATIAL PREDICTIVE POLICING STRATEGY:*. Obtenido de <https://www.proquest.com/dissertations-theses/communications-methodologies-crime-geography/docview/2506296458/se-2?accountid=169794>
- ArcGis. (Setiembre de 2021). *Análisis de punto caliente (Gi* de Getis-Ord)*. Obtenido de <https://desktop.arcgis.com/es/arcmap/10.3/tools/spatial-statistics-toolbox/hot-spot-analysis.htm>
- ArcGIS Pro 2.8. (s.f.). *Crear puntos a partir de una tabla*. Obtenido de <https://pro.arcgis.com/es/pro-app/2.8/get-started/create-points-from-a-table.htm>
- CENEPRED. (2014). *MANUAL Para la Evaluación de Riesgos originados por Fenómenos Naturales 02 Versión.* Obtenido de http://sigrid.cenepred.gob.pe/docs/PARA%20PUBLICAR/CENEPRED/Manual-Evaluacion-de-Riesgos_v2.pdf
- Data, B. (04 de Noviembre de 2017). *¿Que son los Sistemas de Información Geográfica – GIS o SIG?* Obtenido de <https://www.cic.es/que-es-gis/>
- Edwar E. Escalante, M. (2019). The Political Economy of Violence and Development in Latin America. *Tech Texas University Library*, 122.
- El Comercio. (01 de Febrero de 2018). *Esta es la cronología del paro en seis regiones del país.* Obtenido de [\(https://elcomercio.pe/peru/cronologia-paro-agrario-productores-papa-noticia-493855-noticia/#:~:text=Productores%20de%20papa%20iniciaron%20su,cuales%20han%20ejado%202%20muertos&text=El%20paro%20agrario%20se%20viene,Apur%C3%ADmac%2C%20Ayacucho%20y%20Pasco\)](https://elcomercio.pe/peru/cronologia-paro-agrario-productores-papa-noticia-493855-noticia/#:~:text=Productores%20de%20papa%20iniciaron%20su,cuales%20han%20ejado%202%20muertos&text=El%20paro%20agrario%20se%20viene,Apur%C3%ADmac%2C%20Ayacucho%20y%20Pasco))

Geo GPS PERU. (Setiembre de 2022). *Geo GPS PERU.* Obtenido de Nuestra misión es proporcionar las mejores Soluciones Integrales en Ingeniería y Geomática adecuadas a las necesidades de nuestros clientes.: <https://www.geogpsperu.com/>

Instituto Nacional de Investigación en Glaciares y Ecosistemas de Montaña INAIGEM. (Diciembre de 2020). *Evaluación del riesgo por aluvión en la ciudad de Huaraz, distritos de Huaraz e Independencia, provincia de Huaraz, departamento de Áncash.* Obtenido de http://sigrid.cenepred.gob.pe/sigridv3/storage/biblioteca//11763_evaluacion-del-riesgo-por-aluvion-en-la-ciudad-de-huaraz-distritos-de-huaraz-e-independencia-provincia-de-huaraz-departamento-de-ancash.pdf

Ministerio de la Mujer y Poblaciones Vulnerables. (Agosto de 2017). *Violencia en cifras.* Obtenido de https://www.mimp.gob.pe/files/programas_nacionales/pncvfs/publicaciones/informe-estadistico-01-PNCVFS-UGIGC.pdf

Oficina General de Estadística y Tecnologías de la Información y Comunicaciones. (Febrero de 2017). *HUELGAS EN EL PERÚ.* Obtenido de https://www2.trabajo.gob.pe/archivos/estadisticas/huelgas/2016/HUELGAS_2016-1.pdf

Panamericana. (15 de Noviembre de 2020). *METROPOLITANO: ASÍ QUEDÓ LA ESTACIÓN COLMENA TRAS ENFRENTAMIENTOS DURANTE MARCHA.* Obtenido de <https://panamericana.pe/eldominical/locales/307512-metropolitano-asi-quedo-estacion-colmena-enfrentamientos-marcha>

Pueblo, D. d. (Septiembre de 2019). *REPORTE DE CONFLICTOS SOCIALES N.º 187.* Obtenido de <https://www.defensoria.gob.pe/wp-content/uploads/2019/10/Conflictos-Sociales-N%C2%BO-187-Septiembre-2019.pdf>

Pueblo, D. d. (Julio de 2020). *PREVENCIÓN Y GESTIÓN DE CONFLICTOS SOCIALES EN EL CONTEXTO DE LA PANDEMIA POR EL COVID-19.* Obtenido de <https://www.defensoria.gob.pe/wp-content/uploads/2020/07/Informe-Especial-026-2020-DP-Prevenci%C3%B3n-y-Gesti%C3%B3n-de-conflictos-APCSG.pdf>

Radio Nacional. (01 de Febrero de 2018). *Paro Agrario: 2 agricultores fallecieron por duros enfrentamientos con policías.* Obtenido de

<https://www.radionacional.com.pe/informa/nacional/paro-agrario-registran-2-agricultores-fallecidos-durante-enfrentamientos-con-policias>

USIP. (13 de Julio de 2001). *Truth Commission: Peru 01*. Obtenido de Truth Commissions Digital Collection: <https://www.usip.org/publications/2001/07/truth-commission-peru-01>

Anexo A. Python Source Code

```

1. # -*- coding: utf-8 -*-
2. """
3. Created on Wed Aug 31 17:20:44 2022
4.
5. @author: Amir
6. """
7.
8. # -*- coding: utf-8 -*-
9.
10. import json
11. import collections
12. from geopy.geocoders import Nominatim
13. import os
14. import csv
15. import os.path
16. directory = os.getcwd()
17.
18. def menubot():
19.     print ("*****")
20.     print ("Este es el programa del TFM Software predictivo basado en "Corrientes de Opinión" para la toma de decisiones en actos de Violencia y Terrorismo para el Perú, lista de Menús:")
21.     print ("Antes de usarlo recuerde que debe tener la lista de tweets descargados, para esto debe ejecutar el siguiente comando en su terminal python")
22.     print ("snsscrape --jsonl --progress --max-results 500 twitter-search \"#nombrehastg since:2018-01-01 until:2018-04-04\" > nombrearchivo.json")
23.     print ("\n")
24.     print ("1. Obtener la lista de usuarios y su ubicación")
25.     print ("2. Obtener tweets con la lista de palabras más usadas")
26.     print ("3. Abrir un archivo .json")
27.     print ("4. Buscar una localización específica y almacenarla ")
28.     print ("5. Salir")
29.
30.
31.
```

```

32.
33.
34. loop = True
35.
36. while loop:
37.     menubot()
38.     opcionbot = int(input("Ingrese el numero de opcion que desee realizar: "))
39.     print("*****")
40.     if opcionbot == 1:
41.         archivoabrir=input("Ingrese el nombre del archivo que contiene los tweets: ")
42.
43.     prueba=[]
44.
45.     milista= []
46.     chunks= []
47.     valor =[[]]
48.     cantidadagregados=0
49.     tablanuevauser=[]
50.     cantidad= int(0)
51.     cantidad2= 0
52.     adicional=""
53.     data = [json.loads(line)
54.             for line in open(archivoabrir+'.json', 'r', encoding='utf-8')]
55.     total=''
56.     a=str("username")
57.     for entry in data:
58.         adicional=data[cantidad]['user']
59.         usuario=adicional['username']
60.         ubicacion=adicional['location']
61.         auxiliar= { 'username': usuario , 'location':ubicacion}
62.         if(adicional['location']!=''):
63.             tablanuevauser.append(auxiliar)
64.             cantidadagregados=cantidadagregados+1
65.
66.         cantidad=cantidad+1
67.         print(f"*Se agrego un total de {cantidadagregados} usuarios con sus respectivas
localizaciones ")
68.         print(f"*Ya que existen {cantidad-cantidadagregados} usuarios sin localización")
69.
70.         nombreachivo=input("Ingrese el nombre del archivo para almacenar los usuarios y
su localización: ")
71.
72.         file1 = open(""+nombreachivo+".json","w", encoding="utf-8")
73.         file1.write(str(tablanuevauser))
74.         file1.close()
75.         print("-----")
76.         print(f"El archivo creado fue:{directory}\{nombreachivo}.json")
77.         print("-----")
78.
79.
80.     if opcionbot == 2:
81.         prueba=[]
82.         milista= []
83.         chunks= []
84.         valor =[[]]
85.         cantidad= 0
86.         cantidad2= 0
87.         archivoabrir=input("Ingrese el nombre del archivo que contiene los tweets: ")
88.
89.         data = [json.loads(line)
90.                 for line in open(""+archivoabrir+'.json', 'r', encoding='utf-8')]
91.         total=''
92.         for entry in data:
93.             chunks.append(entry['rawContent'].split(' '))
94.             cantidad=cantidad+1
95.
96.
97.         for data2 in data:

```

```

98.         milista.append(data2['rawContent'].split(' '))
99.         prueba = milista[cantidad2]
100.
101.        counts = collections.Counter(prueba)
102.        if(cantidad2==0):
103.            resultado=counts
104.        else:
105.            resultado=resultado+counts
106.        cantidad2=cantidad2+1
107.        total=resultado
108.
109.
110.       print("*****")
111.       print("Los resultados obtenidos son: ")
112.       print(total)
113.       print("*****")
114.       print ("1. Guardar la lista de Palabras obtenidas y su conteo")
115.       print ("2. NO Guardar la lista de Palabras obtenidas y su conteo")
116.       print("*****")
117.       guardarpalabras=int(input("Deesea guardar las palabras obtenidas en una lista,
    elija su opción: "))
118.       if(guardarpalabras==1):
119.           palabrasarchivo=input("Ingrese el nombre del archivo donde desea guardar las
    palabras: ")
120.           file1 = open(""+palabrasarchivo+".json","w", encoding="utf-8")
121.           file1.write(str(dict(total.most_common())))
122.
123.           file1.close()
124.
125.       if(guardarpalabras!=1):
126.           print("No se almacenaron las palabras.....")
127.
128.       print("*****")
129.
130.
131.       contador2=0
132.       aux=""
133.       busquedatable=[]
134.       busquedapalabra = str(input("Ingrese la palabra que deseé buscar para almacenar
    tweets específicos:"))
135.       for busq in chunks:
136.           newcontador=1
137.           aux= str(chunks[contador2])
138.           if aux.find(busquedapalabra)!=-1:
139.               texto=json.dumps(data[contador2])
140.               nuevo=" El tweet encontrado nro %d corresponde al tweet #%" + str(contador2) + " de la lista
    y el contenido es %s" %(newcontador,contador2,texto)
141.               busquedatable.append(nuevo)
142.               newcontador=newcontador+1
143.
144.       contador2+=1
145.
146.       guardararchivo = str(input("Ingrese el nombre del archivo donde desea guardar
    los tweets:"))
147.       file1 = open(""+guardararchivo+".json","w", encoding="utf-8")
148.       file1.write(str(busquedatable))
149.       file1.close()
150.       print("-----")
151.       print(f"El archivo creado fue:{directory}\{guardararchivo}.json")
152.       print("-----")
153.
154.
155.       if opcionbot == 3:
156.           archivoabrir=str(input("Ingrese el nombre del archivo que quiere visualizar:
    "))
157.           print("*****")
158.
159.           f = open(""+archivoabrir+".json", "r",encoding='utf-8')

```

```

160.         print(f.read())
161.         print("*****")
162.         print("Puede revisar el archivo")
163.
164.     if opcionbot == 4:
165.         loc = Nominatim(user_agent="GetLoc")
166.         nombrelloc=str(input("Ingrese nombre de la localizacion que desee buscar: "))
167.         tablalocation=[]
168.         getLoc = loc.geocode(nombrelloc)
169.         print(getLoc.address)
170.         print("Latitude = ", getLoc.latitude, "\n")
171.         print("Longitude = ", getLoc.longitude)
172.
173.         print("*****")
174.         print ("1. Almacenar Ubicacion")
175.         print ("2. No guardar ubicación")
176.
177.         elegir=str(input("Desea almacenar esta localizacion: "))
178.
179.         if(elegir=="1"):
180.
181.             print("*****")
182.             print ("1. Almacenar Ubicacion en .Json")
183.             print ("2. Almacenar Ubicacion en .csv para ArcGIS")
184.             print ("3. Regresar")
185.
186.             elegirguardado=str(input("Ingrese el tipo de almacenado: "))
187.
188.             if(elegirguardado=="1"):
189.                 locacionesalmacenadas=str(input("Ingrese el nombre del archivo donde"
190.                     "desee guardar esta ubicación:"))
191.                 auxiliar0=f" [Locacion: \'{str(getLoc.address)}\', Latitude:"
192.                 auxiliar0+=f"\'{getLoc.latitude}\', Longitude: \'{getLoc.longitude}\']"
193.                 with open(""+locacionesalmacenadas+".json", "a+", encoding="utf-8") as
194.                     file_object:
195.                         file_object.seek(0)
196.                         data = file_object.read(100)
197.                         if len(data) > 0 :
198.                             file_object.write(" ")
199.                             file_object.write(auxiliar0)
200.                         if(elegirguardado=="2"):
201.                             locacionesarcgis=str(input("Ingrese el nombre del archivo donde desee"
202.                     "guardar esta ubicación:"))
203.
204.                             file_exists = os.path.exists(''+locacionesarcgis+'.csv')
205.                             columna = ['Name', 'TYPE', 'CAPACITY', 'LATITUDE', 'LONGITUDE']
206.                             fila = {"Name": str(getLoc.address), "TYPE":"PuntoDeImportancia", "CA-"
207.                                 "PACITY":10, "LATITUDE":getLoc.latitude, "LONGITUDE": getLoc.longitude}
208.                             if file_exists==False:
209.                                 with open(''+locacionesarcgis+'.csv', 'w', encoding='utf-8',new-
210.                                     line='') as csv_file:
211.                                         dict_object = csv.DictWriter(csv_file, fieldnames=columna)
212.                                         dict_object.writeheader()
213.                                         dict_object.writerow(fila)
214.                                         if(elegir!="1"):
215.                                             print(".....")
216.                                         if opcionbot == 5:
217.                                             print("Gracias por usar este software")

```

Anexo B. Saaty Matrix Tables

TABLES OF CONDITIONING FACTORS

TABLA DE FACTORES CONDICIONANTES	
PARAME-TRO	DESC
RED VIAL	P1
DENSIDAD POBLACIO-NAL	P2
COBERTURA VEGETAL	P3
GEOMORFO-LOGIA	P4

MATRIZ DE COMPARACION DE PARES

PARÁME-TRO	RED VIAL	DENSIDAD POBLACIO-NAL	COBER-TURA VE-GETAL	GEO-MORFO-LOGIA
RED VIAL	1.00	3.00	4.00	5.00
DENSIDAD POBLACIO-NAL	0.33	1.00	2.00	3.00
COBERTURA VEGETAL	0.33	0.50	1.00	3.00
GEOMORFO-LOGIA	0.20	0.33	0.33	1.00
SUMA	1.87	4.83	7.33	12.00
1/SUMA	0.54	0.21	0.14	0.08

MATRIZ DE NORMALIZACIÓN

PARÁMETRO	RED VIAL	DENSIDAD POBLACIO-NAL	COBER-TURA VE-GETAL	GEOMORFO-LOGIA	Vector Prioriza-ción
RED VIAL	0.536	0.621	0.545	0.417	0.529631
DENSIDAD PO-BLACIONAL	0.179	0.207	0.273	0.250	0.227049
COBERTURA VEGETAL	0.179	0.103	0.136	0.250	0.167096

GEOMORFO-LOGIA	0.107	0.069	0.045	0.083	0.076224
	1.000	1.000	1.000	1.000	1.0000000



Porcentaje (%)
52.963
22.705
16.710
7.622

HALLANDO EL VECTOR SUMA PONDERADO

Resultados de la operación de matrices				Vector Suma Ponderada
0.530	0.681	0.668	0.381	2.260
0.177	0.227	0.334	0.229	0.966
0.177	0.114	0.167	0.229	0.686
0.106	0.076	0.056	0.076	0.314

HALLANDO EL λ_{max}

Vector Suma Ponderado/Vector Priorización	
4.268	
4.257	
4.104	
4.113	
SUMA	
PRO-MEDIO	4.185

ÍNDICE DE CONSISTENCIA

RELACIÓN DE CONSISTENCIA < 0.1
(*)

IC	0.062
RC	0.070



El valor del coeficiente debe ser menor a 0.1. Si el coeficiente es mayor a 0.1 se debe volver a analizar los criterios en la matriz de comparación de pares

n	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IA	0.525	0.882	1.115	1.252	1.341	1.404	1.452	1.484	1.513	1.535	1.555	1.570	1.583	1.595

FACTORES CONDICIONANTES RED VIAL

PARAMETRO	DESCRITOR	Nº DE DESCRIPTORES	DESCRIPTORES
RED VIAL	D1	4.00	RED VIAL NA-CIONAL
	D2		VIA COLECTORA
	D3		VIA ARTERIAL
	D4		METROPOLI-TANA

MATRIZ DE COMPARACION DE PARES

DESCRITOR	D1	D2	D3	D4
D1	1.00	2.00	3.00	3.00
D2	0.50	1.00	2.00	3.00
D3	0.33	0.50	1.00	2.00
D4	0.33	0.33	0.50	1.00
SUMA	2.17	3.83	6.50	9.00
1/SUMA	0.46	0.26	0.15	0.11

MATRIZ DE NORMALIZACION

DESCRITOR	D1	D2	D3	D4	Vector Priorizacion
D1	0.462	0.522	0.462	0.333	0.444537
D2	0.231	0.261	0.308	0.333	0.283166
D3	0.154	0.130	0.154	0.222	0.165087
D4	0.154	0.087	0.077	0.111	0.107209
SUMA	1.000	1.000	1.000	1.000	1.0000

HALLANDO EL VECTOR SUMA PONDERADO

Resultados de la operación de matrices				Vector Suma Ponderado
0.445	0.566	0.495	0.322	1.828
0.222	0.283	0.330	0.322	1.157
0.148	0.142	0.165	0.214	0.669
0.148	0.094	0.083	0.107	0.432

INDICE DE CONSISTENCIA
RELACION DE CONSISTENCIA < 0.1

Vector Suma Ponderado/Vector Priorización	
	4.112
	4.087
	4.054
	4.032
SUMA	16.285
PROMEDIO	4.071
IC	0.024
RC	0.027

FACTORES CONDICIONANTES

DENSIDAD POBLACIONAL

PARAMETRO	DESCRIPTOR	Nº DE DESCRIPTORES	DESCRIPTORES (°)
DENSIDAD POBLACIONAL N° DE PERSONAS	D1	4	521346-1150470
	D2		200770-521346
	D3		53745-200770
	D4		170-53745

MATRIZ DE COMPARACION DE PARES

DESCRIPTORES (°)	D1	D2	D3	D4
D1	1.00	2.00	3.00	4.00
D2	0.50	1.00	2.00	2.00
D3	0.33	0.50	1.00	1.00
D4	0.25	0.50	1.00	1.00
SUMA	2.08	4.00	7.00	8.00
1/SUMA	0.48	0.25	0.14	0.13

MATRIZ DE NORMALIZACION

DESCRIPTORES (°)	D1	D2	D3	D4	Vector Priorizacion
D1	0.480	0.500	0.429	0.500	0.477143
D2	0.240	0.250	0.286	0.250	0.256429

D3	0.160	0.125	0.143	0.125	0.138214
D4	0.120	0.125	0.143	0.125	0.128214
	1.000	1.000	1.000	1.000	1.000

HALLANDO EL VECTOR SUMA PONDERADO

Resultados de la operación de matrices				Vector Suma Ponderado
0.477	0.513	0.415	0.513	1.918
0.239	0.256	0.276	0.256	1.028
0.159	0.128	0.138	0.128	0.554
0.119	0.128	0.138	0.128	0.514

HALLANDO λ_{max}

Vector Suma Ponderado/Vector Priorización	
4.019	
4.008	
4.006	
4.008	
SUMA	16.041
PROMEDIO	4.010

INDICE DE CONSISTENCIA
RELACION DE CONSISTENCIA < 0.1

IC	0.003
RC	0.004

FACTORES CONDICIONANTES

COBERTURA VEGETAL

PARAMETRO	DESCRIPTOR	Nº DE DESCRIPTORES	DESCRIPTORES
COBERTURA VEGETAL	D1	4	Urbanizada (Terrazas altas y bajas)
	D2		Montaña (Pie de Montaña, Lomada)
	D3		Llanura y llanura meandrica
	D4		Colina alta y baja

MATRIZ DE COMPARACION DE PARES

DESCRIPTORES	D1	D2	D3	D4
D1	1.00	2.00	2.00	3.00
D2	0.50	1.00	1.00	2.00
D3	0.50	1.00	1.00	2.00
D4	0.33	0.50	0.50	1.00
SUMA	2.33	4.50	4.50	8.00
1/SUMA	0.43	0.22	0.22	0.13

MATRIZ DE NORMALIZACION

DESCRIPTORES	D1	D2	D3	D4	Vector Prioriza-cion
D1	0.429	0.444	0.444	0.375	0.423115
D2	0.214	0.222	0.222	0.250	0.227183
D3	0.214	0.222	0.222	0.250	0.227183
D4	0.143	0.111	0.111	0.125	0.122520
	1.000	1.000	1.000	1.000	1.000000

HALLANDO EL VECTOR SUMA PONDERADO

Resultados de la operación de matrices				Vector Suma Pon-derado
0.423	0.454	0.454	0.368	1.699
0.212	0.227	0.227	0.245	0.911
0.212	0.227	0.227	0.245	0.911
0.141	0.114	0.114	0.123	0.491

HALLANDO λ_{\max}

Vector Suma Pon-derado/Vector Priorización

4.016	
4.010	
4.010	
4.005	
SUMA	16.041
PROMEDIO	4.010

INDICE DE CONSISTENCIA
RELACION DE CONSISTENCIA <
0.1

IC	0.003
RC	0.004

Anexo C. MAPS



Título del TFM:

Software predictivo basado en “Corrientes de Opinión” para la toma de decisiones en actos de Violencia y Terrorismo para el Perú.

Trabajo presentado por:

Amir Fernando Mamdouh Mehrez Garcia

Mapa:

Factor Condicionante Red Vial "Vacancia 2020"

Legenda

- Red Vial Nacional
- Via Calectera
- Via Arterial
- Metropolitana

Fecha:

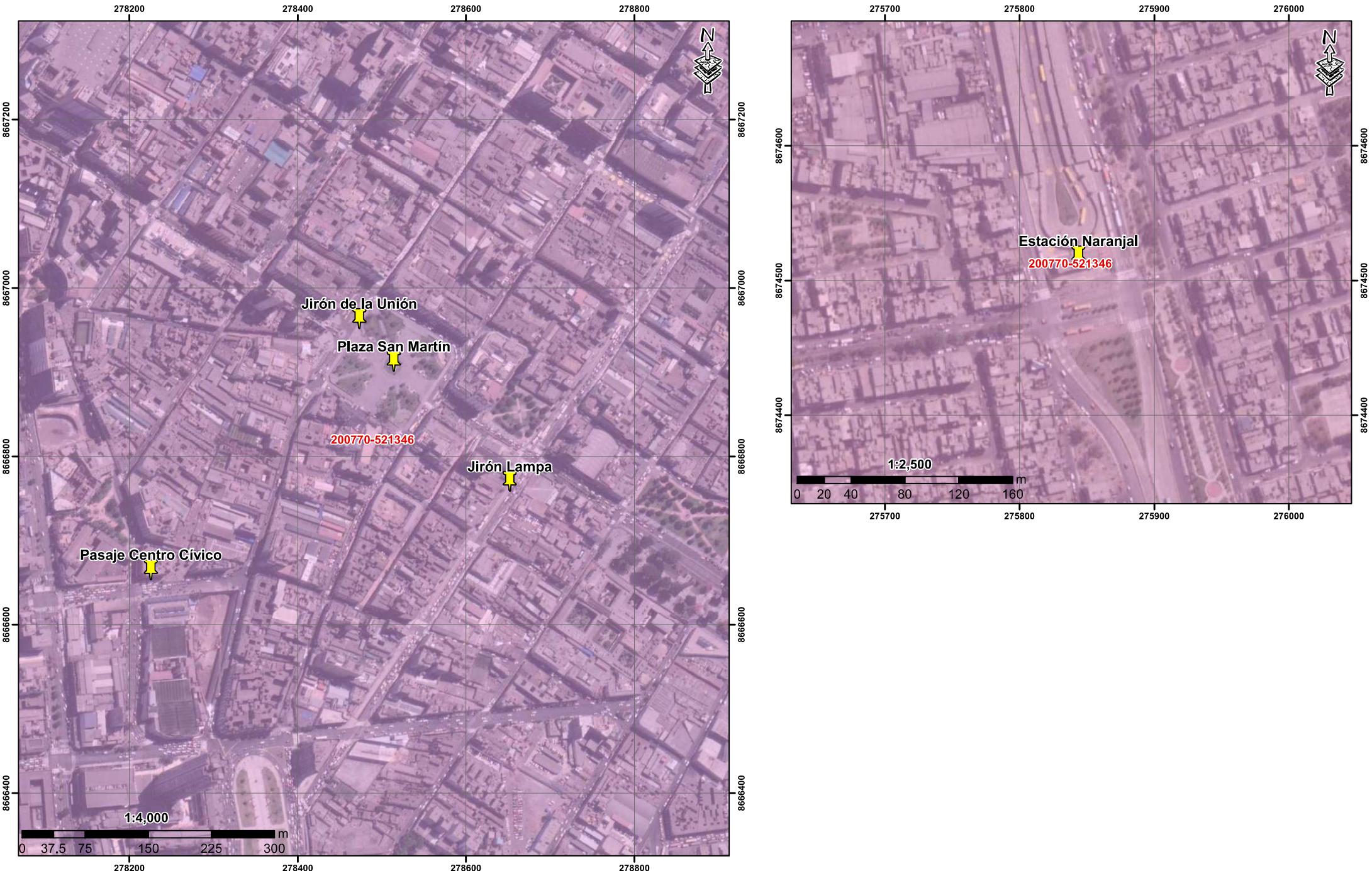
07/09/2022

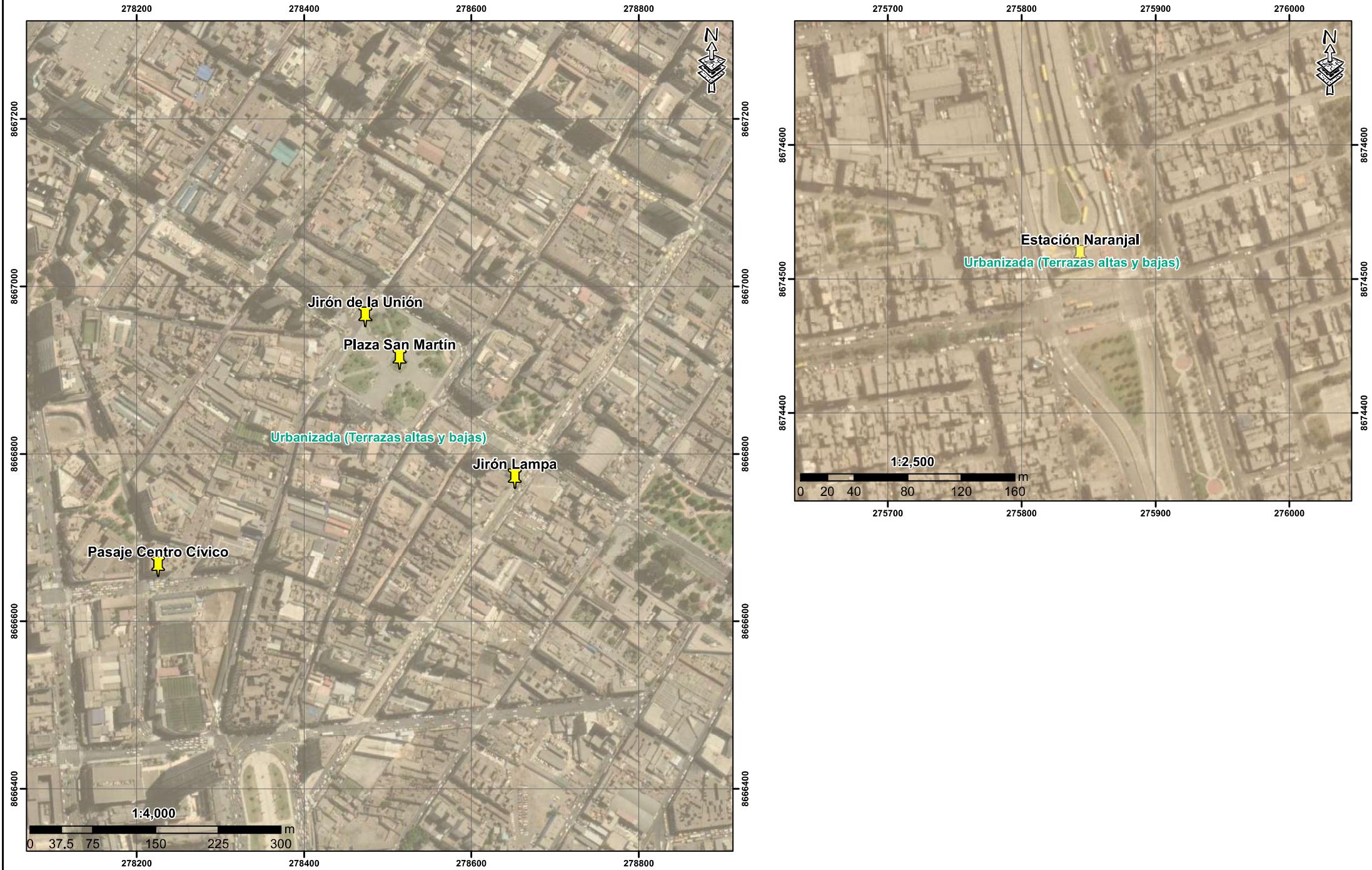
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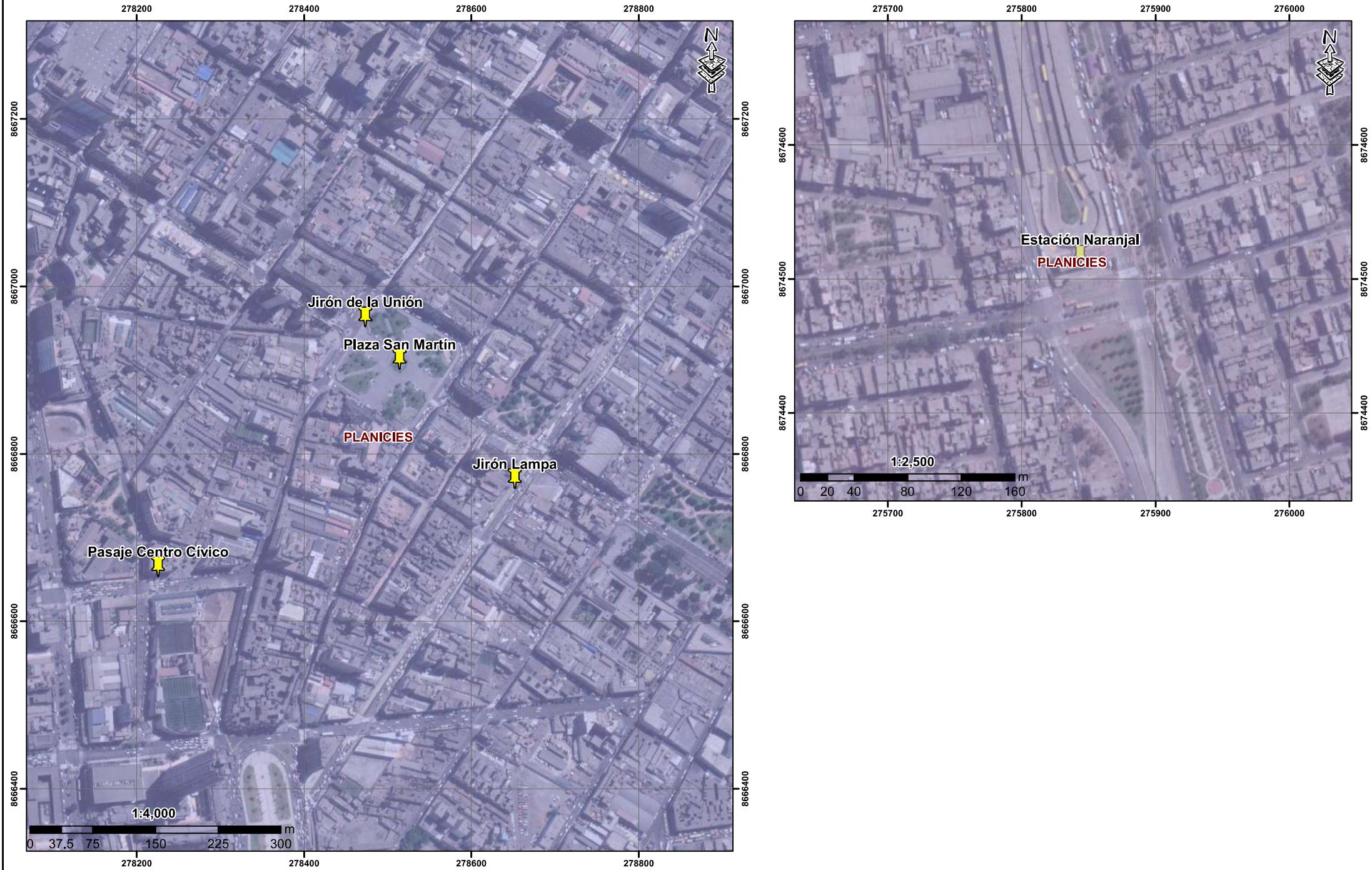
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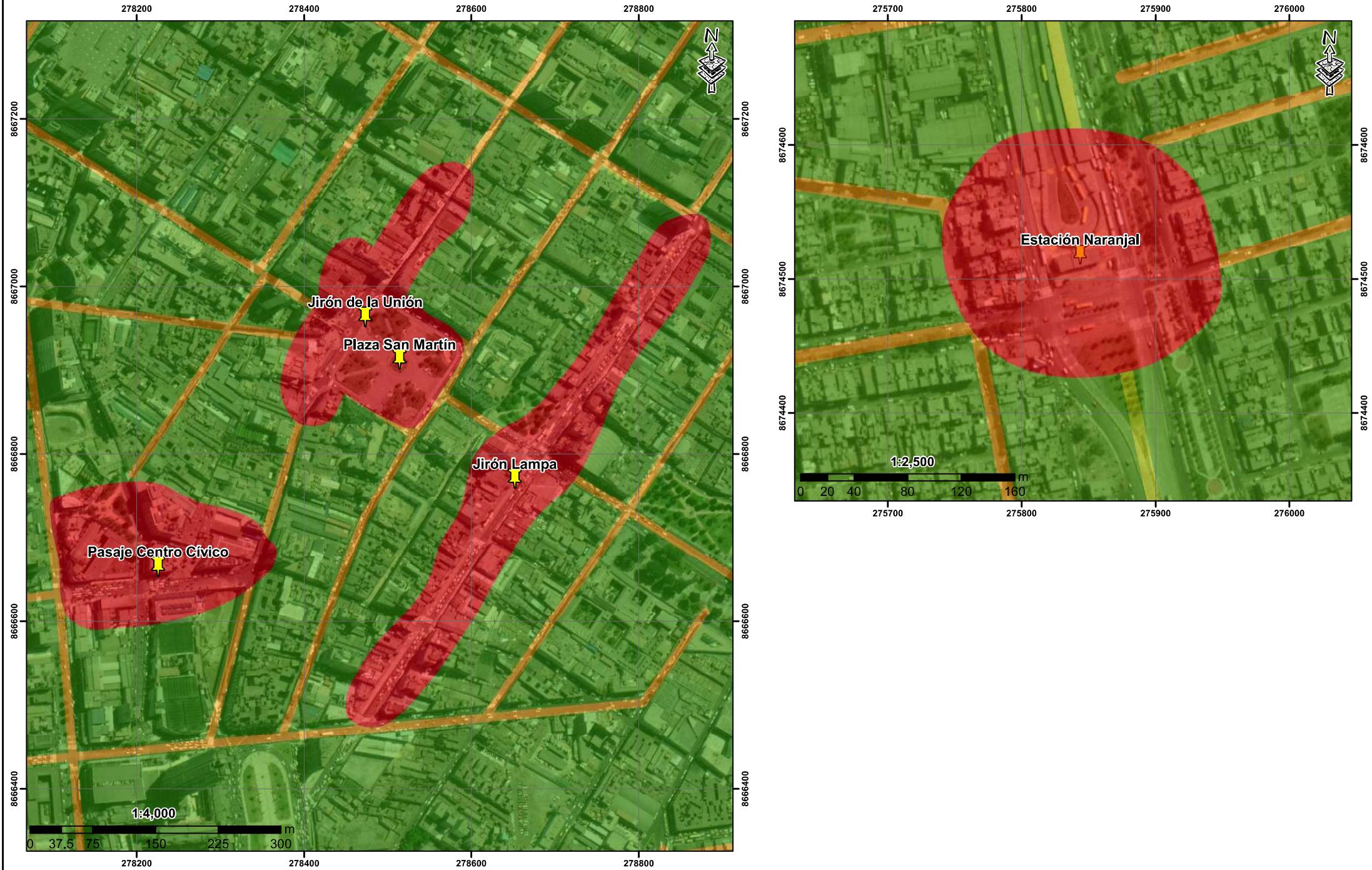
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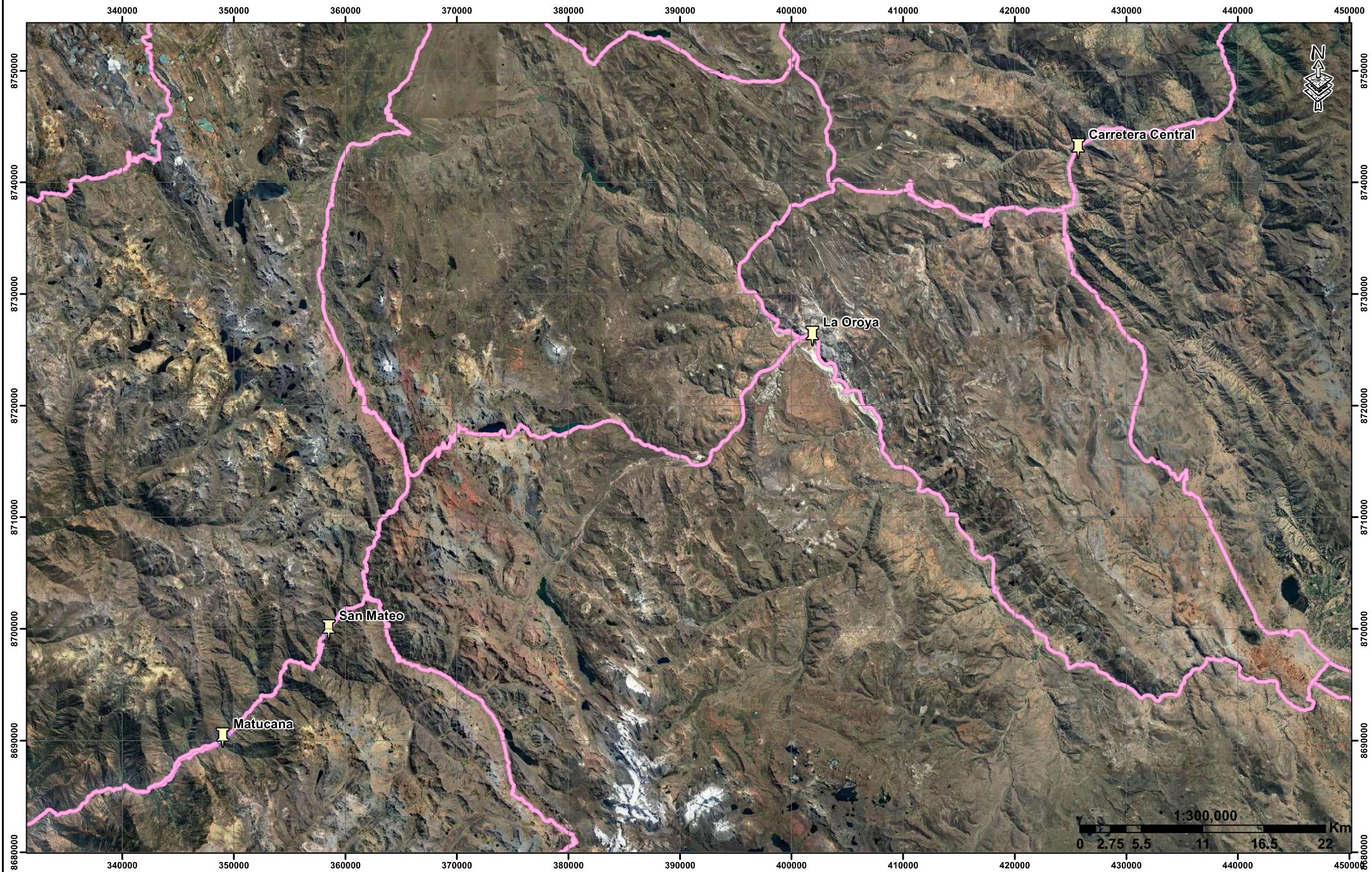
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Título del TFM:

Software predictivo basado en “Corrientes de Opinión” para la toma de decisiones en actos de Violencia y Terrorismo para el Perú.

Trabajo presentado por:

Amir Fernando Mamdouh Mehrez Garcia

Mapa: Factor Condicionante Red Vial "Paro Agrario 2018"

Leyenda

Red Vial Nacional

Via Calectera

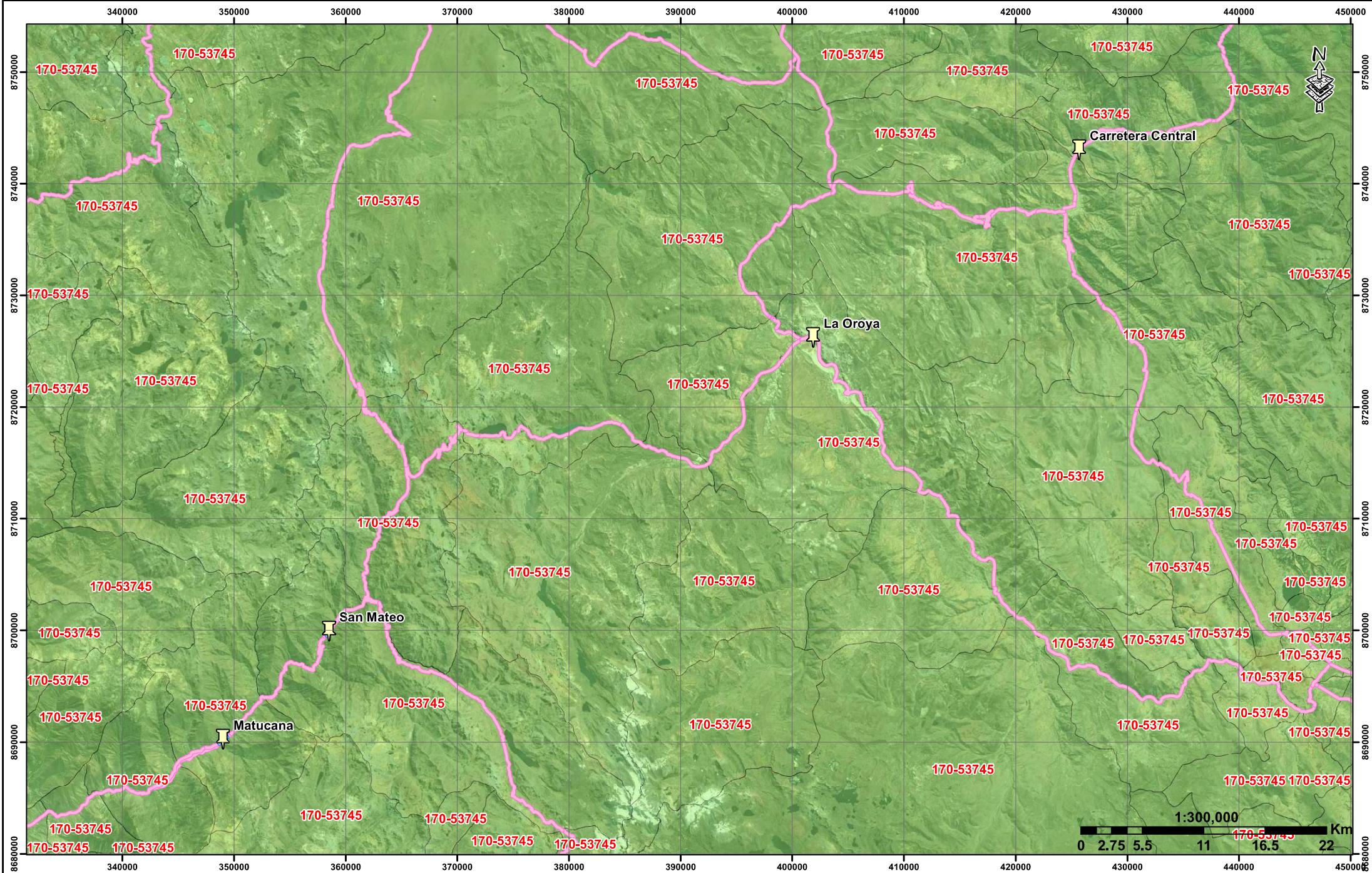
Via Arterial

Metropolitana

Fecha: 07/09/2022

Escala:

Indicada



Título del TFM:

Software predictivo basado en "Corrientes de Opinión" para la toma de decisiones en actos de Violencia y Terrorismo para el Perú.

Trabajo presentado por:

Amir Fernando Mamdouh Mehrez Garcia

Mapa: Factor Condicionante Densidad Poblacional "Paro Agrario 2018"

Leyenda

Pbl: 170-53745

Pbl: 200770-521346

Pbl: 521346-1150470

Pbl: 53745-200770

Fecha:

07/09/2022

Escala:

Indicada

