




# A Dynamics Research on the Israeli-Palestinian Conflict and Global Refugee Trends from an International Humanitarian Crisis Perspective

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**Abstract.** Amid the current international focus on the Israel-Palestine conflict, there is increasing attention on humanitarian crises research worldwide. This paper visualizes casualty data from the Israel-Palestine conflict since its outbreak in 2023, alongside yearly global refugee numbers from 1951 to 2023, revealing trends in the global refugee crisis and its driving factors. The research data comes from the United Nations High Commissioner for Refugees (UNHCR) and official Palestinian datasets. Using Python and Power BI, the analysis dynamically visualizes data from the Gaza region and global refugee data. The results indicate that factors such as war, natural disasters, and domestic conflicts are primary drivers of refugee number changes, while international policies and assistance measures significantly influence refugee flows.

**Keywords:** Israel-Palestine conflict, international refugees, Python, Power BI.

## 1 Introduction

Current international situation is very complex and changeable, especially with the resurgence of the Israeli-Palestinian conflict in 2023, which has sparked widespread global attention to humanitarian crises. The conflict not only resulted in a large number of casualties, but also further exacerbated regional instability, prompting a large number of refugees to flee their homes. The Israeli-Palestinian conflict, as an international hotspot, is not only a regional issue, but also has a profound impact on the global refugee crisis. In order to gain a deeper understanding of this phenomenon, this paper systematically analyzes the casualty data since the Israeli-Palestinian conflict in 2023 and the annual number of world refugees in various countries from 1951 to 2023, revealing the changing trends of global refugee flows and the driving factors behind them.

In order to ensure the authority and accuracy of the data, the United Nations High Commissioner for Refugees (UNHCR) and the official Palestinian dataset are used in this research. Python and Power BI technology are applied to dynamically visualize

analysis on Gaza Strip and global refugee data. Through these technological methods, not only data analysis becomes more intuitive, but the interpretability of the results is also improved.

The purpose of this research is to reveal how factors such as war, natural disasters, and domestic conflicts drive changes in the global refugee population through data analysis, and to explore the impact of international policies and assistance measures on refugee flows. We hope our research can provide valuable references for policy makers, scholars, and the public concerned about humanitarian issues, and contribute to solve the global refugee crisis.

The structure of this paper is as follows: first, we brief review the historical background and current situation of the Israeli-Palestinian conflict; Second, we analyze the overall trend of global refugee flows; Third, the focus will be on exploring the impact of the 2023 Israeli-Palestinian conflict on the Gaza Strip; Finally, several policy recommendations are proposed to provide reference for the international community's response to the refugee crisis. Through these analyses and discussions, our purpose is to provide readers with a comprehensive and systematic understanding framework, help readers better grasp complex international humanitarian issues.

## 2 Datasets Description

### 2.1 Data Source

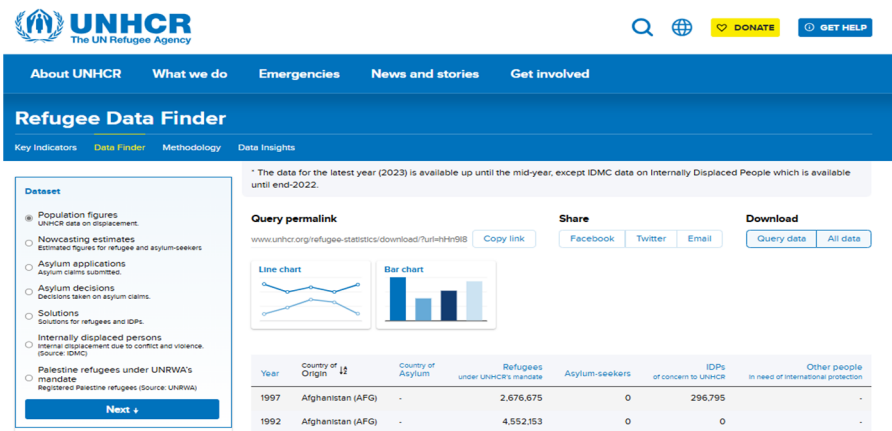


Fig. 1. Website of UNHCR dataset

The data source are selected from the official datasets of the United Nations High Commissioner for Refugees (UNHCR, <https://www.unhcr.org/>, see figure 1) and the certified NGOs in Palestinian (<https://data.techforpalestine.org/docs/datasets/>, see figure 2), as well as international humanitarian organization websites. They respectively collect data on various daily casualties represented by the Gaza Strip since the outbreak of the current international political hotspot of the Israeli-Palestinian conflict such as daily child casualties, medical staff casualties, media worker casualties, etc.,

as well as data on similar damaged buildings. We also collect the data on the number of registered refugees and asylum seekers in various countries worldwide recorded by UNHCR from 1951 to 2023.

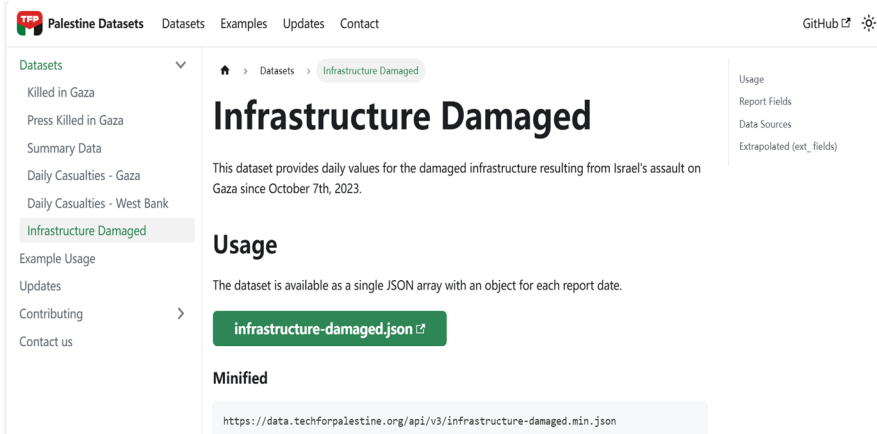


Fig. 2. Website of NGOs in Palestinian

## 2.2 Data Attributes and Quantity

Due to file type limitations and some missing values on the datasets of official website, data cleaning is first performed to improve the efficiency of data analysis and visualization. After initial cleaning and organization, the dataset file is obtained. Table 1 lists the collected three dataset files.

Table 1. Dataset analysis

Dataset name	File name	Quantity (Records)
Number of casualties in Gaza	casualties_daily.csv	241
Number of buildings damaged in Gaza	gaza_struc.json	241
Number of world refugees from 1951 to 2023	query_data.csv	7212

**Number of Casualties in Gaza.** We download the Palestinian dataset from October 7, 2023, when Hamas launched attacks on Israel, until the opening of this research on June 2, 2024. Since the outbreak of the conflict, there have been a total of 241 data on casualties in the Gaza Strip of Palestine.

**Number of Buildings Damaged in Gaza.** Since the outbreak of the conflict, there have been a total of 241 records of building damage in the Gaza Strip of Palestine. The file format is .json. In order to uniform the .csv dataset format used in previous

file, Python is used to format and convert the json format dataset to .csv format dataset.

**Number of World Refugees from 1951 to 2023.** Those data was collected from the official website of the United Nations High Commissioner for Refugees. Due to the uncertainty of their refugee nationality, only the official historical dataset (2024 data has not been released yet) was used. After preliminary data cleaning and organization, 7212 data points were obtained. The file format is. csv, and Table 2 lists the last 5 pieces of information in the file, including year, refugee country, official statistics of refugees and asylum seekers.

**Table 2.** Number of world refugees from 1951 to 2023 (The latest five records)

Year	Refugee countries	# of refugees	# of asylum seeker
2023	Syrian Arab Rep.	6494141	160209
2023	Afghanistan	6110219	324541
2023	Ukraine	5865447	37190
2023	South Sudan	2227684	6700
2023	Myanmar	1266022	49522

### 3 Research Method and Tools

This article has four files for data storage, including conversion files for early data processing and two files for later storage, which are visualized using Python and Power BI respectively. Table 3 summarizes the processed datasets, tools and programs.

**Table 3.** Processed datasets, tools and program name.

Lan- guage/Tools	Datasets	Program name
Power BI	Number of world refugees from 1951 to 2023	Big Data Visualization.pbix
Python	Number of casualties in Gaza	Gaza_killed_num.py
	Number of buildings damaged in Gaza (Json format)	
	Number of buildings damaged in Gaza (Csv format)	Json_Convert_to_csv.py

### 4 Visual Chart Presentation

We use Python to dynamically display various data in the Israeli-Palestinian conflict, which can provide a more intuitive view of casualties and the severity of the war. We

use Power BI to visualize and dynamically adjust the number of refugees in various countries around the world from 1951 to 2023. The number of refugees in specific countries for each year can be visualized, located and searched. We also use map shadows color to display the local order situation.

### 4.1 Dynamic Bar Chart of Casualties in Gaza

This dynamic chart shows the cumulative number of casualties in the Gaza Strip during a specific period of time. The casualty data of different categories (injured, dead, child deaths, female deaths, medical staff deaths, and journalist deaths) are displayed through horizontal bar charts. See figure 3 example.

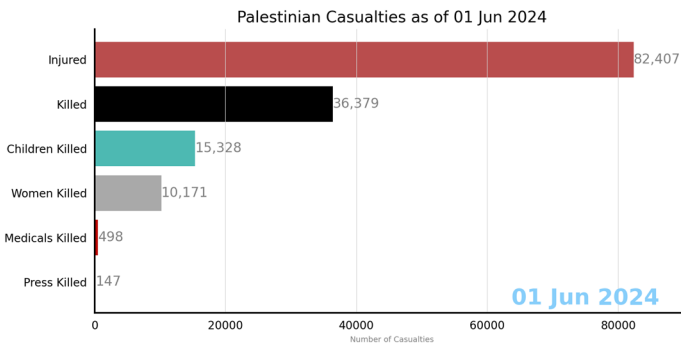


Fig. 3. Casualty data of different categories on June 1, 2024

### 4.2 Line Graph of Gaza Casualties Over Time

The chart displays the cumulative number of injuries from the start date of the research to the latest date, and visually illustrates the trend changes through a line chart. See figure 4 example.

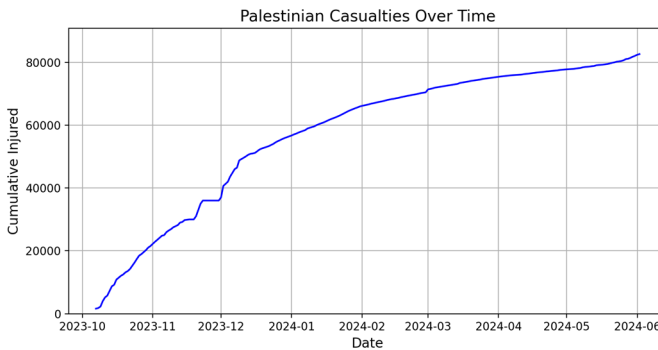


Fig. 4. Cumulative Figure of Casualty Data on June 2, 2024

### 4.3 Line Graph of Building Damage Over Time

This dynamic chart shows the damage to different types of buildings in the Gaza Strip, including civilian buildings, educational buildings, mosques, churches, and residential buildings. See figure 5 example.

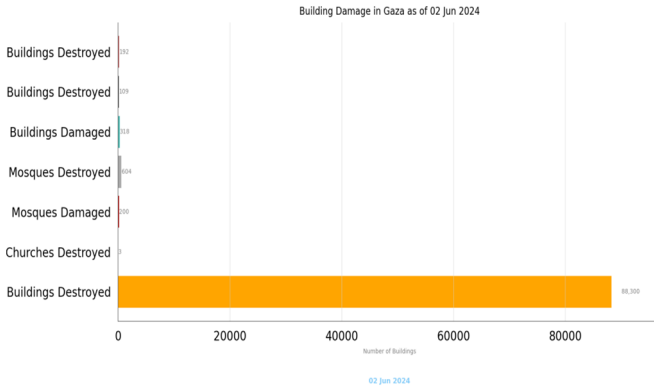


Fig. 5. Various types of building damage on June 2, 2024

### 4.4 Interactive Display

Via the slicer of Power BI, we can see the situation of world refugee selected by country and year. By presenting bar charts, histograms, pie charts, and trend charts, the changes and trends in the number of refugees since 1951 can be visually observed. See Figure 6. Figure 7 mainly analyze the comparative relationship between refugee data and the total number of asylum seekers, arrange trends by year, and screen refugee countries and years based on slicing periods.

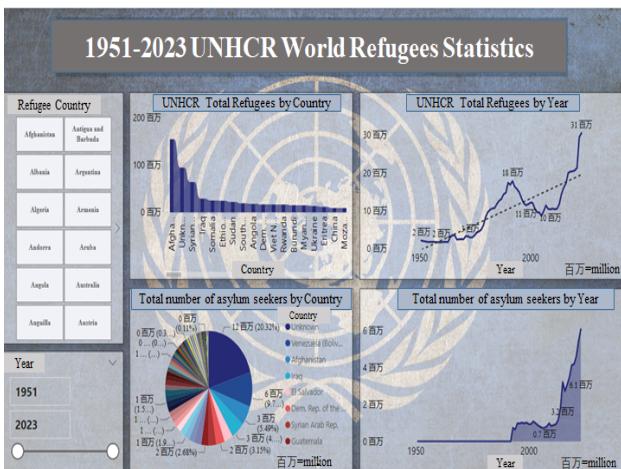


Fig. 6. The changes and trends in the number of refugees since 1951

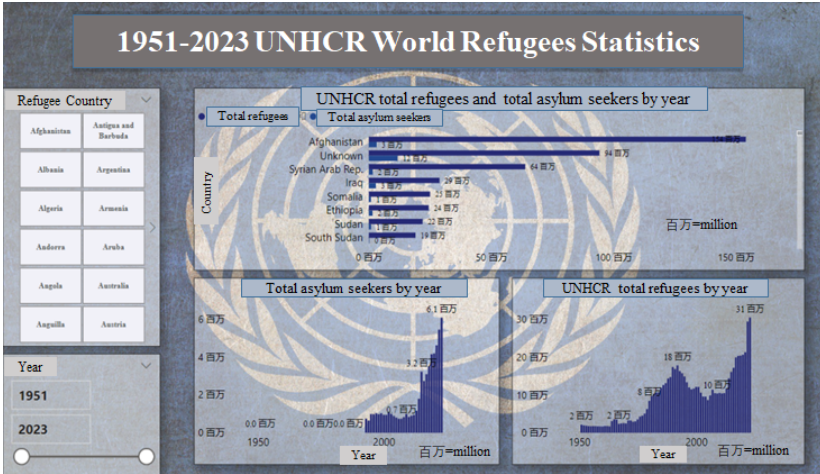


Fig. 7. The comparative relationship between refugee data and total asylum seekers

According to the data, each country has been plotting the number of refugees in each year since 1951. The darker the color, the more refugees there are in that area. If there is no color, there are no official statistics on the number of refugees. The map can be dynamically moved and scaled, and can also be filtered multiple layers based on the refugee country and year of the slicer. We can filter the colored countries on the map based on the year of war or famine, and view in detail the number of refugees in each region and the comparison with other countries. We can also directly select a country for one-on-one year selection viewing. See Figure 8.

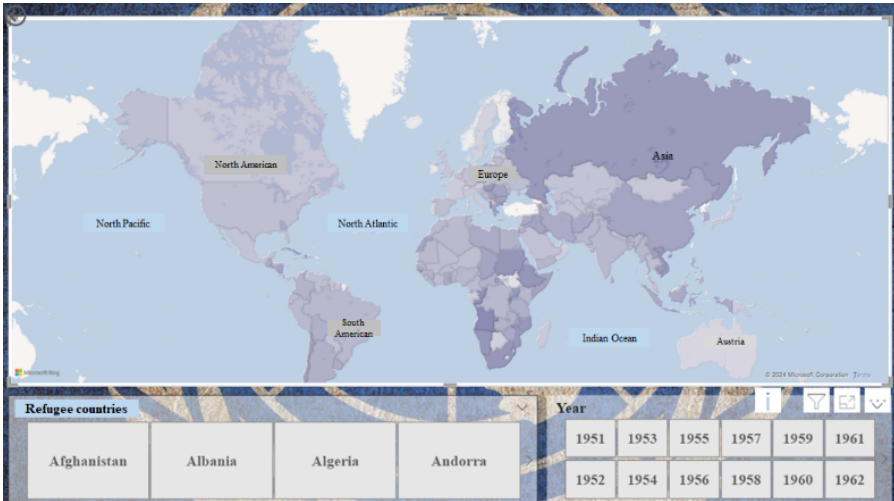


Fig. 8. Visualization of refugee data maps

## 5 Result Analysis and Explanation

The analysis results are mainly divided into two categories: Gaza dataset analysis and world refugee data analysis

### 5.1 Analysis of Gaza Dataset under the Israeli-Palestinian Conflict

From the speed of the visual animation (Figure 9), it can be seen that Gaza suffered heavy casualties due to the impact of the war. It can be clearly seen from the chart data that the daily number of casualties in Gaza is constantly increasing. This increasing trend indicates the severity and intensity of the current conflict.

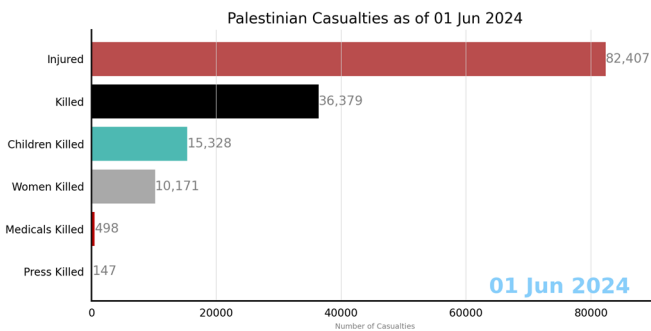


Fig. 9. Casualty data of different categories on June 1, 2024

**Escalation of Conflict.** The increase in casualties indicates that the scope and intensity of the conflict are constantly expanding, directly leading to more casualties among civilians and combatants. What is even more serious is that a large number of medical staff and NGO members have died in the war, and a large number of media workers have been injured or killed due to local conflicts.

**Humanitarian Crisis.** The increase in casualties also highlights the serious humanitarian crisis that Gaza is facing. The shortage of medical resources and rescue supplies has prevented many injured people from receiving timely treatment, leading to a further increase in the number of deaths.

**Urgent Assistance Needs.** Faced with such a severe situation, the international community should increase its assistance to the Gaza Strip, providing necessary medical and humanitarian aid to ease the tension and protect civilian lives.

**The Necessity of Peaceful Dialogue.** In order to fundamentally reduce casualties, all parties to the conflict should engage in peaceful dialogue as soon as possible, resolve disputes through negotiations, and avoid more innocent casualties.

### 5.2 Analysis of the 1951-2023 World Refugee Dataset

A visual chart of the annual number of world refugees in each country from 1952 to 2023 provides a comprehensive historical perspective (Figure 10). This chart provides a detailed display of the trend in the number of refugees in each country over the course of each year, revealing the fluctuations and changes in refugee issues across different historical periods and geographical regions.

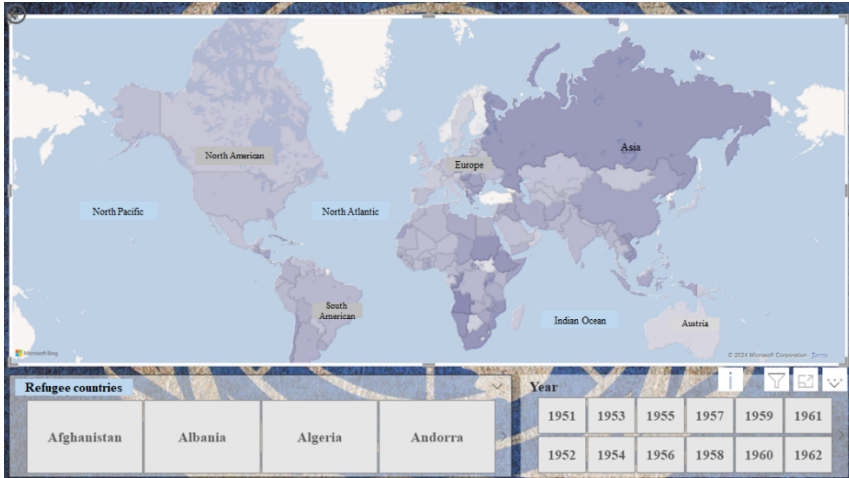


Fig. 10. Visualization of Refugee Data Maps

#### The Relationship between Historical Background and Refugee Flow.

(1) The Cold War period (1952-1991): During the Cold War, proxy wars and civil wars broke out in multiple regions, such as the Vietnam War, the Afghanistan War, and civil wars in many African countries, resulting in a large number of refugees being displaced. The data shows a significant increase in the number of refugees during this period, especially in Asia and Africa.

(2) The disintegration of the Soviet Union and the transformation of Eastern Europe (around 1991): The collapse of the Soviet Union and the dramatic changes in Eastern Europe have triggered a series of new conflicts and economic turbulence. The number of refugees in many Eastern European and Central Asian countries has significantly increased during this period.

(3) At the beginning of the 21st century (after 2001): After the 9/11 attacks in 2001, conflicts and the war on terror in the Middle East and South Asia led to a large number of refugees, especially in Afghanistan and Iraq. This trend is reflected in the data as a significant increase in the number of refugees.

#### Regional Conflicts and Refugee Flows.

(1) Middle East and North Africa: The turmoil caused by the Arab Spring (2010) and the subsequent Syrian civil war and Sudan War in 2011 [1] led to a large influx of

refugees to neighboring countries and Europe. The data shows that the number of refugees in the Middle East and North Africa region surged during this period.

(2) Great Lakes Region: The Rwandan genocide (1994) and the ongoing conflict in the Democratic Republic of Congo led to a sustained increase in the number of refugees in the region during the 1990s and early 2000s.

### **The Response and Measures of the International Community.**

(1) International aid and resettlement: Data shows that the international community's response to refugee issues varies at different times. In the late Cold War and early 21st century, international organizations and governments increased their assistance and resettlement efforts for refugees. The United Nations High Commissioner for Refugees (UNHCR) played an important role during this period by providing support to refugees through various channels [2].

(2) Changes in refugee policies: Some countries have adjusted their refugee policies at different times, which directly affects the direction and quantity of refugee flows. For example, the European Union implemented an emergency resettlement plan during the 2015 refugee crisis, while the United States strengthened restrictions on refugee entry in specific years, and these policy changes are reflected in the data [2].

### **Globalization and Refugee Tides.**

(1) The double-edged sword of globalization: Globalization promotes the flow of information and people, making it easier for refugees to migrate across borders. On the other hand, it exacerbates conflicts and inequality in some regions, indirectly leading to an increase in the number of refugees.

(2) Climate change: In recent years, climate change has become a new factor in the refugee problem. The livelihood issues caused by environmental disasters and climate change have forced many people to leave their homes, which may become increasingly prominent in future refugee data.

The data on the number of refugees from 1951 to 2023 clearly shows the profound impact of historical and geographical factors on refugee flows [3]. Different historical periods and regional conflicts, economic turmoil, policy changes, and globalization processes are all shaping the distribution and number of refugees in the world [4]. This visual chart not only displays historical data, but also provides important references for us to understand and respond to future refugee crises. The international community needs to continue to pay attention to and strengthen the resolution of refugee issues, reduce the generation of refugees through humanitarian assistance, peace negotiations, and sustainable development, and provide security and hope for existing refugees [5].

## **6 Conclusion**

This paper reveals the changing trends of global refugee flows and the driving factors behind them through a detailed analysis of casualty data since the 2023 Israeli-

Palestinian conflict and the global refugee numbers from 1951 to 2023. Research has shown that war, natural disasters, and domestic conflicts are the main factors leading to changes in the number of refugees, and international policies and aid measures also have a significant impact on refugee flows.

By using Python and Power BI technology for data visualization, this paper provides an intuitive and dynamic analytical perspective, making the presentation of complex data clearer and easier to understand. The application of this technical method is one of the innovative points of this study, which helps to more comprehensively demonstrate the profound impact of conflicts and crises on human life.

The main conclusions drawn from this paper are as follows:

(1) The Israeli-Palestinian conflict has caused a serious humanitarian crisis in Gaza, resulting in a large number of casualties and refugees.

(2) The global number of refugees fluctuates significantly at different times, reflecting the frequent occurrence of wars and natural disasters in different historical periods.

(3) The policies and assistance measures of the international community have played a crucial role in addressing the refugee crisis, but further improvement and strengthening are still needed.

There are also some shortcomings in this study. For example, although the time span of the data is long, detailed data on certain regions and events may be lacking, resulting in a lack of comprehensiveness in the analysis. In addition, despite the use of advanced data visualization tools, quantitative analysis of certain complex factors still needs to be further explored.

In summary, this paper provides an important references for understanding the Israeli-Palestinian conflict and the global refugee crisis, while also pointing out future research directions. We hope that through the results of this study, more scholars and policy makers can pay attention to humanitarian crises and encourage the international community to take more effective measures to address the global refugee problem.

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