A costly mistake: examining the casualties of the mistaken bombardment of Nijmegen in 1944

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Abstract. During the Second World War individual bombardments could cause hundreds to thousands of casualties. This paper takes a deeper look into the catastrophic Bombardment of Nijmegen on the 22nd of February 1944 and seeks to draw comparisons between this bombardment and other events which caused civilian casualties in the city of Nijmegen. Digitisation of contemporary archival data provides more opportunities to analyse historical events using computer science methods. Using dataset cleaning and manual coding of digitised datasets, comparisons can be drawn between multiple events during the war in Nijmegen and the resulting casualties. Furthermore, data visualisation can be used to present the results in an insightful manner. From this it becomes clear that the February 22 Nijmegen bombardment was the single most fatal event during the war in the Dutch city of Nijmegen, trumping even the count of casualties over a sustained six month period of fighting when Nijmegen was a front line city.

Keywords: Bombardments, Nijmegen, February 1944, Second World War, Archives, War Casualties, Front Line City, Digital Humanities.

1 Introduction

The Second World War was the deadliest conflict in human history. Between 70 and 85 million individuals are estimated to have perished during this series of hostilities between 1939 and 1945 [9]. On May 10, 1940, the Netherlands was invaded by the Germans and occupied until May 5, 1945 [7]. Throughout WWII, the Netherlands was a theatre of many battles, subject to both German and Allied bombing raids [8] while the repressive Nazi regime systematically murdered more than a hundred thousand Jewish persons and other minorities [2].

The most known bombardment of the Netherlands occurred in Rotterdam on May 14, 1940. Nearly 900 people are estimated to have died due to German bombs dropped on the city centre [12]. A lesser-known, but equally devastating aerial bombardment happened on 22 February 1944 when American bombers devastated the city of Nijmegen in the eastern province of Gelderland, close to the German border. In 1944, a hundred thousand civilian inhabitants were living in Nijmegen [10].

Within this research project, a closer look will be taken into the human cost of this bombardment by comparing the number of casualties to other events resulting in civilian deaths during WWII in Nijmegen. The project was supervised by the Dutch Institute for War, Holocaust and Genocide studies (NIOD) which has forwarded digitised archival data on persons in and from Nijmegen who lost their lives due to war events. This paper aims to contribute to a more complete knowledge of the 22nd February Bombardment of Nijmegen by examining only the loss of civilian lives. The availability of digitised data broadens the scope for analysis of historic information using computational methods – a field of study now referred to as digital humanities. The insights gathered by utilising these digital data tools are examined via a historic approach which places the civilian casualties of war central.

2 Related work

2.1 Historic context of the Nijmegen bombardment

What precisely happened on the catastrophic day of February 22, 1944 in Nijmegen was debated for a long time. Citizens could not understand why their city centre was bombed indiscriminately by Allied bombers who were supposed to help liberate them from the occupying Germans [1]. The Nazis then used this mistaken bombardment event in their propaganda to sew dissension between the Dutch and the Allies [6].

Through eyewitness accounts, reports from bomber pilots, and analysis of facts on the ground, a recollection can be made of what happened on this fateful day in Nijmegen. Brinkhuis [1] gives an account of events supported by findings of other researchers, arguing that the bombardment of Nijmegen must be seen in the larger context of the war. In 1943 and 1944, Germans fought a bloody war on the Eastern Front against the Soviets. British, American, and other Western allies invaded the south of Italy and prepared a naval invasion of France to liberate Western Europe. In preparation for this mission, the German war machine had to be weakened. Allied forces decided to methodically bomb German industries to achieve their goals. Main targets for the Allied bombers were (in order of importance) submarine bases, the aeroplane industry, ball bearing factories, the oil industry, synthetic rubber producers, fabricants of military vehicles, as well as airports and railways [1][11]. In cases where aerial raids could not reach these targets, bomber crews had been instructed to find “targets of opportunity” in Germany.

As part of Operation Argument (a series of bombing raids with the goal of destroying the aforementioned targets in Western Germany near the Dutch border), hundreds of fighter planes and bombers were deployed on February 22, 1944 [11]. 150 of these war planes on course to Germany were spotted above Nijmegen and air raid alarms rang out across the city. Due to heavy winds, confusion, and crowded airspace, groups of bombers needed to divert course, circling around Nijmegen an hour later. It was recalled that some Allied bomber crews assumed they were above Germany, while others knowingly bombed the Dutch city. Nevertheless, bomber crews sought targets of opportunity and chose to bomb railways around the Nijmegen train station [1]. Fourteen bombers dropped a total of 144 500-pound fragmentation bombs and 71 cluster bombs. The bombs landed close to the rail station in Nijmegen

city centre, destroying buildings, igniting fires, and striking churches which caused debris to fall over several city squares [1]. An estimated 800 people perished while another 800 were injured when bombs delivering death rained down on Nijmegen [11]. On the same day, the cities of Enschede, Arnhem, and Deventer were also hit by Allied bombers heading towards Germany in search of targets of opportunity [1].

Such a costly mistake by the Allies was not the end of the suffering for citizens of Nijmegen during the war. In June 1944, Allied forces conducted the largest naval invasion in history (now known as D-Day) and through this military operation, large parts of France, Belgium, and the Netherlands were liberated. In September 1944, the Allied forces conducted another massive offensive, Operation Market Garden, where paratroopers landed in Nijmegen with a goal of capturing the bridge over the Waal river. From 17–22 September, fighting took place within Nijmegen, after which the city was liberated from occupation. From the end of September until March 24, 1945, Nijmegen remained a front line city, regularly bombarded by German forces. Since a large part of the city was destroyed during the February 22 bombardment and the ongoing violence, citizens of Nijmegen lived in improvised bomb shelters and in the outskirts of the city. During this six month period, it is estimated that an additional 800 people died because of fighting and bombardments [1][6][11].

2.2 Similar research

Accessibility to digital data and resources is a key priority for many different research communities. Paradoxically, however, lots of archival data remains non-digitised or is digitised but not accessible [5]. Efforts to increase digitisation of historic archival data have gathered steam in recent years as machine-readable data sources provide new opportunities for the analysis of historical events through computational methods [3].

Analysis of digitised historical archival data can encounter several challenges. Firstly, digitised archival data can be unstructured or have a heterogeneous format [3]. Secondly, datasets can contain ambiguities or be missing entries. Lastly, digital data can contain huge quantities of entries, making data cleaning and analysis harder [4]. Hyvönen et al.'s project is an example of how historical archival data from the Second World War can be digitised, made insightful, and harnessed to encourage public interest. Through digitisation and creating a linked data portal for archival collections from Finland during WWII, further analyses on this information can be performed in the future. Their work highlights the need for mindfulness when comparing digital archival data and addresses the challenges of harmonisation between sources.

3 Problem statement

3.1 Problem statement and research challenge

The Bombardment of Nijmegen caused massive casualties and is considered to be one of the deadliest days in a Dutch city during the war. In archival data and previous research, about 800 casualties (mostly civilian) were recorded. Digitised archival data on this and other events which occurred in Nijmegen during WWII allows for the application of digital humanities methods to deepen understanding of this experience. However, it is imperative that all the data used for analyses be structured and valid.

Therefore, the largest challenge of this research project was data management. The existing scholarship on the February 22 Bombardment of Nijmegen makes use of manual archive and literature reviews, yet through application of digital analysis and visualisation methods, new insights into the aforementioned events can be put forth.

3.2 Research question and sub-questions

The research question posed by this project is: "How does the amount of casualties of the February 22 Nijmegen bombardment compare to the civilian casualties of war in this city from 1940 to 1945?". The research goal for this project is firstly to provide a deeper understanding of the gravity of the event that happened on February 22, 1944 in Nijmegen by comparing the numbers of civilian war casualties. A secondary goal through this research question is to assess how digital humanities can help to answer research questions using digitised archival data. To approach these research goals, the following sub-questions should first be answered:

- What number of civilian casualties resulted from the Bombardment of Nijmegen?
- What number of civilian casualties resulted from other bombardments and fighting in Nijmegen between 1940 and 1945?
- What number of Jewish, Roma and Sinti, or other minorities from Nijmegen were methodically murdered by the Nazis in concentration or extermination camps?
- What number of Dutch civilian resistance members from Nijmegen were killed while performing acts of resistance or perished in German labour camps?
- How do the digital humanities provide new insights into digitised archival data?

4 Dataset

To delve deeper into the violent events surrounding Nijmegen during World War II, researchers are no longer limited to written historical sources. Digitisation projects conducted by institutes such as NIOD[1] or initiatives like the Nijmegen War Dead Working Group[2] by Foundation 4 and 5 May Nijmegen[3] have resulted in distributable datasets containing a wealth of information.

4.1 Description of Datasets

Two existing sets were used to collect the information needed for assessing the cost of human life during the bombardment of Nijmegen. The first dataset was gathered from WieWasWie[4] – a website for genealogical research owned by CBG Centre for Family History in The Hague.[5] Narrowing search parameters to death certificates for persons in Nijmegen during 1944 led to collections of Gelders Archive in Arnhem.[6] Their system allowed for further narrowing by dates and those results were collected in a

[1] NIOD Instituut voor Oorlogs-, Holocaust- en Genocidestudies: [https://www.niod.nl/].
[2] Werkgroep Oorlogsdoden Nijmegen: [https://www.oorlogsdodennijmegen.nl/].
[3] Stichting 4 en 5 mei Nijmegen: [https://www.4en5mei-nijmegen.nl/].
[4] WieWasWie: [https://www.wiewaswie.nl/].
[5] CBG Centrum voor familiegeschiedenis Den Haag: [https://cbg.nl/].
[6] Gelders Archief Arnhem: [https://www.geldersarchief.nl/].

text file.[7] A more extensive set had already been sourced from collections gathered by the Nijmegen War Dead Working Group[2]. This data included information on persons in or from Nijmegen who died due to WWII related events.[8] By adapting file formats and overlapping the two files, a single dataset was drafted and prepared for cleaning.[9]

4.2 Data Statistics

At the time of its creation, the drafted dataset contained 4,745 entries in 25 categories. Each entry represented a person in or from Nijmegen who died due to circumstances related to WWII. Categories included an individual ID number and URL for that person in War Dead Nijmegen's digital monument, as well as the dossier numbers for primary sources. Other categories describe the individuals by name (full names, first names, nicknames), gender, marital status, religion, nationality, (place of) residence, (last known) address, and professions. Their birthplaces and birth dates were provided where available, as well as a comment column for notable circumstances surrounding births. The dates of death are recorded beside the place (city) and location (address) where remains were found, plus another comments column, and the place where he or she was or is now interred. Four additional categories explain the circumstances of death (bombardment, gassed, killed, perished, or suicide), the specific event and an event group (Bombardment of Nijmegen, Liberation of the Netherlands, etc.) causing the death, as well as a war category or class of person (civilian, military, etc.).

5 Methods

The information in the dataset was quite extensive, including 4,745 persons who were born or living in Nijmegen but died elsewhere, residents of Nijmegen executed in concentration camps, those killed after the war was over (in labour camps or from accidents and disarmaments), and soldiers (Dutch, German, or Allied) killed in action around Nijmegen. Therefore, the dataset required cleaning and processing before the narratives contained within could be brought to light. After the dataset has been processed and cleaned, it can be analysed and visualised for a deeper understanding.

5.1 Preprocessing

Since the reception of data, files required congruent formatting to transform them into a single dataset appropriate for use in OpenRefine[10], an open-source software tool for cleaning messy data. The "find" and "replace" functions of the Notepad++[11] text and code editing software were appropriate for managing any encoding errors (special characters) and separating lines of text into multiple columns. A .tsv file format was

[7] List of decedents in Nijmegen, 22 February 1944. Sourced from Gelders Archief: [https://github.com/Group9-DHIP2023/wardeadnijmegen/blob/main/Overlijden_Nijmegen.tsv].
[8] List of Nijmegen decedents from events during or after World War II: [https://github.com/Group9-DHIP2023/wardeadnijmegen/blob/main/Oorlogsdoden_Nijmegen.tsv].
[9] List of decedents of Nijmegen due to the Second World War (Cleaned dataset): [https://github.com/Group9-DHIP2023/wardeadnijmegen/blob/main/War_Dead_Nijmegen.tsv].
[10] OpenRefine v3.6.2 open-source data cleaning software: [https://openrefine.org/].
[11] Notepad++ v8.4.8 free text and source code editor: [https://notepad-plus-plus.org/].

chosen for the dataset so that it may be accessed by a multitude of software programs. Loading the file with OpenRefine then allowed for the standardisation of alternative spellings and the removal of strings such as “unknown” (“onbekend”) or “++”. Text filtering and faceting functions expedited the data cleaning processes and granted the option to smoothly remove entries which are not applicable for this research (military deaths, accidents, etc.). The results of data preprocessing are included below [**Table 1**].

Table 1. Dataset statistics after cleaning

Category	Entries	Category	Entries
URL	2195 links to webpages	**Date of Birth**	2091 Birth dates + 104 [null]
Name	2195 Full names	**Birthplace**	844 [Nijmegen], 89 [Amsterdam], etc.
First Names	2195 First names	**Age**	471 ages + 1724 [null] or uncalculated ages
Gender	960 [Female], 1232 [Male], 3 [null]	**Date of Death**	705 [1944-02-22], 113 [1944-01-02], etc.
Nationality	2025 [Dutch], 94 [Stateless], 23 [German], etc.	**Place of Death**	1519 [Nijmegen], 366 [Oświęcim, PL], etc.
Religion	1281 [Roman Catholic], 468 [Jewish], 212 [Protestant], 61 [Non-Religious], etc.	**Death Location**	366 [Auschwitz Concentration Camp], 103 [Kapokfabriek De Ruyterstraat], etc.
Profession	107 [Student], 46 [Office Worker], etc.	**Burial Place**	366 [Auschwitz], 268 [Daalseweg], etc.
Position	1635 [null] + 560 job-specific positions	**Death Circumstances**	1001 [Bombardment], 619 [Perished], 476 [Gassed], 96 [Killed], 3 [Suicide]
Marital Status	879 [Married], 531 [N/A], 510 [Single], 115 [Widowed], 18 [Divorced], 142 [null]	**Event Group**	750 [Bombardment of Nijmegen], 671 [Front City Nijmegen], etc.
Address	177 [null] + 2018 street addresses	**Event**	295 [Transport: Westerbork-Auschwitz], 123 [Bombardment Stationsplein], etc.
Residence	1649 [Nijmegen], 44 [Amsterdam], 25 [Groesbeek], 16 [Lent], 12 [Elst], etc.	**War Category**	1639 [Civilian], 496 [Civilian (Jewish)], 53 [Civilian Resistance], 7 [Civilian (Roma/Sinti)]

In addition, to assess the impact of the Bombardment of Nijmegen on civilians, a map will be used to visualise the casualties and destruction of buildings. To prepare the map, metadata on WWII crafted by Historic Atlas Nijmegen[12] was sourced. This data was filtered to show the destruction and death per war event. The war casualties category originally contained six events but was reduced to only the Bombardment of Nijmegen. The same goes for destruction events, originally containing three events.

5.2 Solution approach and design

Once the dataset was cleaned and trimmed to contain only the relevant information, tabulation was possible to uncover the statistics of casualties for several events related to Nijmegen in WWII. Civilians who died during the February 22 bombardment can be compared to those who died during other violent events. The number of Jewish and Roma/Sinti victims removed from Nijmegen for extermination and civilian resistance fighters who perished in German labour camps are also available for analysis. Results of these data cleaning activities can then be visualised in graphs, timelines, or maps.

The numbers of war casualties collected in the dataset will be disseminated using RStudio[13] for visualising statistics and exploring events over time. The map will

[12] Historische Atlas Nijmegen: [https://kaart.nijmegen.nl/historie/].
[13] RStudio v2022.07.2 integrated development environment: [https://www.rstudio.com/].

be generated using ArcMap, a geospatial rendering program by ArcGIS[14]. Collected metadata will be added to a topographic map of Nijmegen made by Esri Nederland[15]. As the metadata is georeferenced to specific coordinates, certain data regarding the bombardment cannot be separated from this set. Therefore, destroyed locations will be added again with a new shapefile containing only those locations destroyed in the bombardment. The outcome will be presented as a KNA-approved map.[16]

6 Results

Visible in the following map [**Figure 1**, larger version included as **Appendix A**], most destruction during the bombardment occurred in the city centre near the railway station. As this part of Nijmegen was heavily populated by civilians, the map also explains why the death toll of this single event is so high.

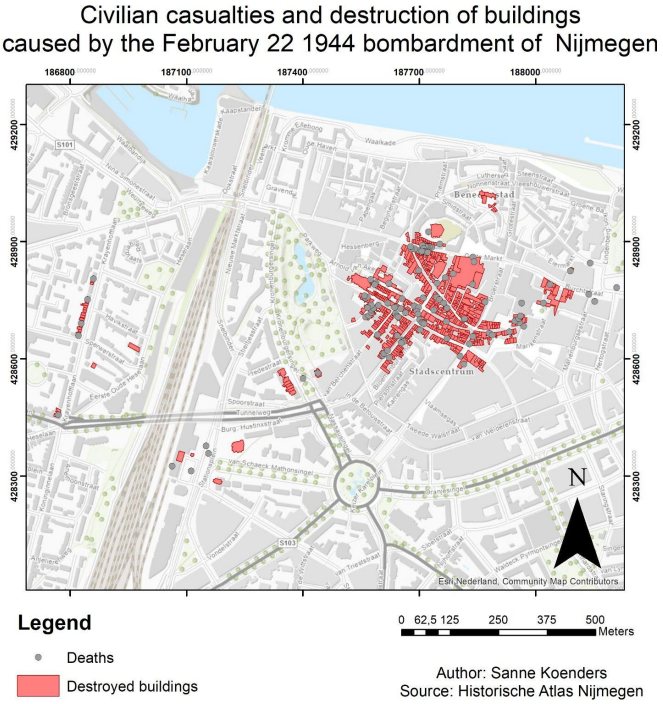

Figure 1. Map of civilian casualties and destruction, Nijmegen (22 February 1944)

In the cleaned dataset, 2,202 individual civilians are identified as casualties of WWII. The first chart featured below [**Figure 2**] displays four civilian groups who lost their lives due to acts of war: city residents, resistance members, and Roma and Sinti

[14] ArcGis interactive map software: [https://www.arcgis.com/].
[15] Esri Nederland location intelligence: [https://www.esri.nl/].
[16] Data used to generate a topographical map of the Bombardment of Nijmegen: [https://github.com/Group9-DHIP2023/wardeadnijmegen/blob/main/Map_Bombardment_Nijmegen.zip].

or Jewish persons removed from Nijmengen via transports. A second chart [**Figure 3**] visualises six event groups which lead to civilian casualties: the Bombardment of Nijmegen, two liberation events and the six month period when Nijmegen was a front line city, the persecution of Jews, and the arrests of resistance members or traitors. The data also contains more specific events; 60 facets profile the minor events which claimed the lives of five or more civilians at a time [**Table 2**]. To clarify the impact of these events on the residents of Nijmegen, a timeline spanning from May 1942 to May 1945 was designed [**Figure 4**, larger version included as **Appendix B**]. Together, these visualisations distinguish February 22, 1944 as the most fatal day in Nijmegen.

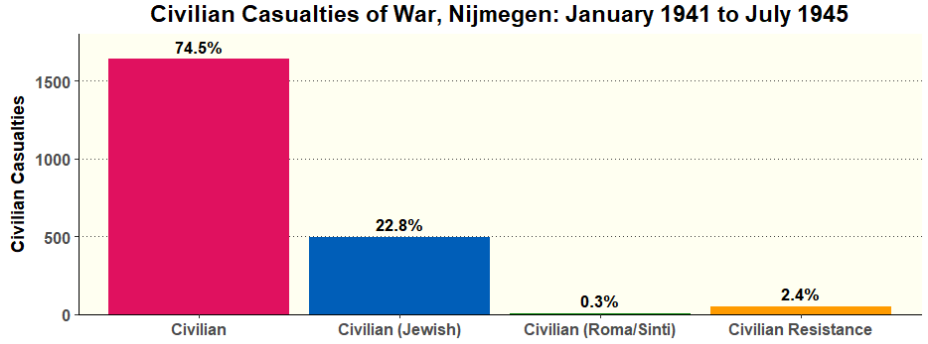

Figure 2. Categories of civilian casualties related to Nijmegen in World War II

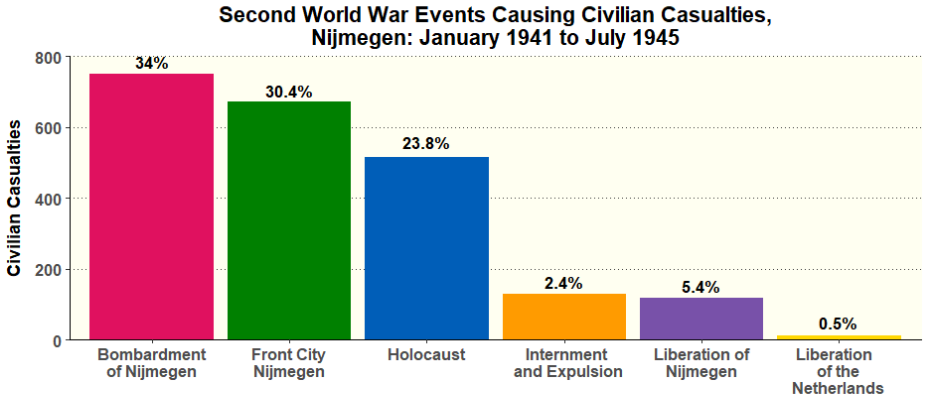

Figure 3. WWII events causing civilian casualties in Nijmegen

Table 2. Eight most deadly events of WWII in Nijmegen

Casualties	Event	Casualties	Event
295	Transports: Westerbork-Auschwitz	**110**	Front City: October 1944
147	Labour and Concentration Camps	**104**	Bombardment Kapokfabriek
123	Bombardment Stationsplein	**101**	Front City: September 1944
122	Bombardment of Nijmegen (Other)	**101**	Liberation of Nijmegen

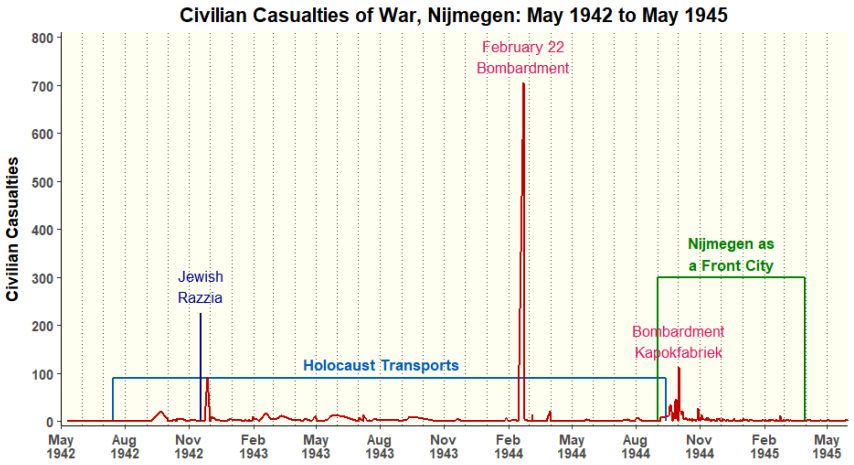

Figure 4. Timeline of civilian casualties of war in or from Nijmegen, May 1942 to May 1945

6.1 Evaluation of results

It is difficult to determine the validity of the results of this project, primarily because data may be missing from the archives. However, to evaluate the results of our data cleaning and thereby also the extent to which our data is correct, qualitative evaluation can be performed by comparing our data to the data found in other sources. It is clear that our civilian death count for the Nijmegen bombardment is in line with the estimations that were made by other researchers. The total death count for the bombardment was estimated at 800, however this also included soldiers [1][6][11].

These sources also mention that 800 people died in the six month period where Nijmegen was a front line city. It is unclear, however, how many of these people were civilians and how many were military personnel. It has become clear that the civilian death count attributed to this event period in our results is significantly lower than the 800 estimate (670 confirmed deaths). For the casualties of the Holocaust, even more problems occur. In the data cleaning process, it was noted that many of the victims included in the dataset did not have a clear direct relationship with Nijmegen – neither born in nor residents of the city. Their inclusion in the dataset is based either upon the archival data of transport trains which moved these persons from Nijmegen through to the Nazi Westerbork Transit Camp or because they perished while hiding in locations within the city. With this in mind, it must also be noted that remains had been located which to this day remain unidentified, as well as persons declared as missing whose remains have never been recovered.

Therefore, it cannot be proven that the information in this data is quantitatively accurate and complete. In terms of quality, the cleaning and processing of existing datasets has produced a single dataset containing a fuller representation of available knowledge on victims of the Second World War in Nijmegen. The resulting data has been made available for further analysis and research.[9] Metadata used for mapping the Bombardment of Nijmegen came from reputable sources and is also included in the repository of files used during this project.[16]

7 Discussion and Conclusion

7.1 Discussion

The limitations of this research project include first the dependence on data that is likely to be incomplete as collection consists of digitised archival data from around 80 years ago. It is possible that some casualties were not recorded in this data during the war or that recorded casualties were not included in these datasets. Second, since this project is a case study of a single bombardment event, the results are not generalisable with other individual events in the war which caused civilian casualties. However, it is an accepted fact that thousands of Dutch civilians perished during the Second World War as a consequence of systematic bombing raids from both enemies and allies [1].

A recommendation for further research would be to apply methods used in this project on data from other cities where casualties are recorded. There are thousands of WWII events having grave consequences and it is valuable to reconstruct the brutality of war by examining these events. Furthermore, it would be interesting to create an interactive map of Nijmegen using the linked data. Each casualty could be shown on the map and their information could be accessed by clicking their data profile. This would add value to the digital monument at *War Dead Nijmegen 1940-1945*.[2]

7.2 Conclusions

The aim of this research project was to answer questions regarding the cost of civilian lives during WWII in Nijmegen by examining proportional impact between the single most fatal event, the February 1944 Bombardment of Nijmegen, and other war events in the city. Several sub-questions were first explored through analysis of digitised archival datasets using computer science or digital humanities tools and methods. After constructing a single dataset from multiple archival sources, it was determined that 750 civilians had died as a result of the mistaken bombardment on 22 February.

Comparing this number to other events, it was found that during the six month period of violence between 1944 and 1945 when Nijmegen was a front line city, a further 671 civilians had died. The horrors of the Holocaust presented in Nijmegen as well, where Jewish, Roma and Sinti, or other “undesirable” persons were arrested and transported to other locations for extermination or forced labour – a recorded number of 496 civilian lives were taken by the Nazi regime. In addition, 53 known civilian resistance members (men and women) were executed or arrested and transferred to concentration camps where they perished from exhaustion, illness, or violence.

Regarding the question: “How do the digital humanities provide new insights into digitised archival data?”, the following can be said: The use of digitised archival data significantly increased the options for data analysis in the scope of this project. Manual analysis of such a collection of data would not have been possible, especially since data was largely unstructured or ambiguous. By cleaning the data, comparisons could be drawn between 60 events that caused civilian casualties throughout the war. Further, machine-readable data provides new options for visualising data in insightful ways. The results prove the Bombardment of Nijmegen was the deadliest event in the city during the war, trumping both the number of Holocaust victims and casualties accumulated over six months of violence when Nijmegen was a front line city.

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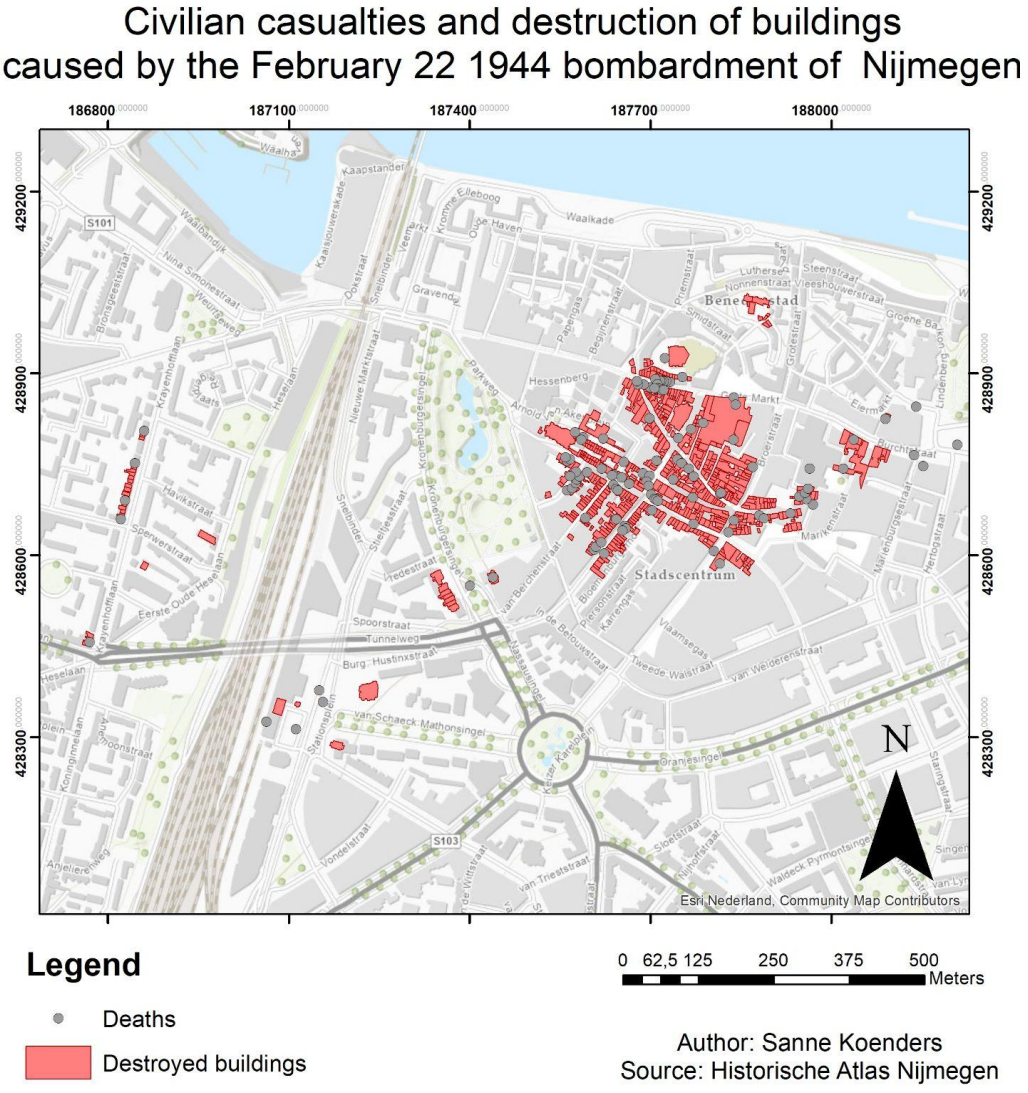
Repository Information

Files used during this project are available in a GitHub repository:
[https://github.com/Group9-DHIP2023/wardeadnijmegen]

References

1. Brinkhuis, A.E.: De fatale aanval 22 februari 1944 - Opzet of vergissing?: De waarheid over de mysterieuze Amerikaanse bombardementen op Nijmegen, Arnhem, Enschede en Deventer. Gooise Uitgeverij, Weesp (1984).
2. Griffioen, P., Zeller, R.: Jodenvervolging in Nederland, Frankrijk en België 1940-1945: Overeenkomsten, verschillen, oorzaken. Boom, Amsterdam (2011).
3. Hawkins, A.: Archives, linked data and the digital humanities: increasing access to digitised and born-digital archives via the semantic web. Archival Science 22, 319-344 (2022). https://doi.org/10.1007/s10502-021-09381-0.
4. Hyvönen, E. et al.: WarSampo Data Service and Semantic Portal for Publishing Linked Open Data About the Second World War History. In: Sack, H., Blomqvist, E., d'Aquin, M., Ghidini, C., Ponzetto, S., Lange, C. (eds) The Semantic Web. Latest Advances and New Domains, ESWC 2016, pp. 758–773. Springer, Cham (2016). https://doi.org/10.1007/978-3-319-34129-3_46.
5. Jaillant, L.: How can we make born-digital and digitised archives more accessible?: Identifying obstacles and solutions. Archival Science 22, 417-436 (2022). https://doi.org/10.1007/s10502-022-09390-7.
6. Janssen, B.: De pijn die blijft: Ooggetuigenverslagen van het bombardement van Nijmegen 22 februari 1944. Uitgeverij Vantilt, Nijmegen (2005).
7. Netwerk Oorlogsbronnen: Duitse inval in Nederland (n.d.). Retrieved 24 January 2023, from www.oorlogsbronnen.nl/thema/Duitse%20inval%20in%20Nederland.
8. NIOD Instituut voor Oorlogs-, Holocaust- en Genocidestudies: Cijfers bombardementen (n.d.). Retrieved 24 January 2023, from www.niod.nl/nl/veelgestelde-vragen/duitse-en-geallieerde-bombardementen-op-nederland-cijfers.
9. O'Neill, A.: Second World War: Deaths per country 1939-1945. Statista (2022). Retrieved 24 January 2023, from https://www.statista.com/statistics/1293510/second-world-war-fatalities-per-country/.
10. Regionaal Archief Nijmegen (RAN), 579 Collectie Tweede Wereldoorlog Nijmegen 1931 - 2019, 1.2.1.7 Bevolking en verkiezingen, 383 Grafieken met demografische gegevens over de ontwikkeling van de Nijmeegse bevolking in de jaren vóór, tijdens en na de oorlog 1945-1969. Digital copy from https://studiezaal.nijmegen.nl/detail.php?id=2126808842.
11. Rosendaal, J.: Nijmegen '44: verwoesting, verdriet en verwerking. Uitgeverij Vantilt, Nijmegen (2009).
12. Stadsarchief Rotterdam: *Brandgrens*. (n.d.). Retrieved 24 January 2023, from https://www.brandgrens.nl/en/the-bombing-of-rotterdam.

<u>Appendix A</u>: Civilian casualties and destruction of buildings caused by the February 22, 1944 Bombardment of Nijmegen



<u>Appendix B</u>: Civilian casualties of war in or from Nijmegen, May 1942 to May 1945