DEMOGRAPHIC RESEARCH
A peer-reviewed, open-access journal of population sciences

DEMOGRAPHIC RESEARCH

VOLUME 48, ARTICLE 31, PAGES 883–898
PUBLISHED 8 JUNE 2023
https://www.demographic-research.org/Volumes/Vol48/31/
DOI: 10.4054/DemRes.2023.48.31

Descriptive Finding

Ethnic and regional inequalities in Russian military fatalities in Ukraine: Preliminary findings from crowdsourced data

Alexey Bessudnov

Contents

Demographic Research: Volume 48, Article 31
Descriptive Finding

Ethnic and regional inequalities in Russian military fatalities in Ukraine: Preliminary findings from crowdsourced data

Alexey Bessudnov[1]

Abstract

OBJECTIVES
This paper investigates ethnic and regional disparities in fatality rates in the Russian military in 2022–2023 during the war in Ukraine.

METHODS
The analysis uses a new crowdsourced dataset comprising the names of over 20,000 Russian soldiers killed in Ukraine between February 2022 and April 2023. This dataset was compiled by a team of volunteers who gathered information from social media and other accessible sources. The dataset is incomplete and therefore the findings reported in this paper are tentative. Mortality rates and relative risks are estimated by ethnic group and region, and a linear model is fitted to assess the correlation between the ethnic composition of the population, socioeconomic factors, and regional fatality rates.

RESULTS
The study reveals significant disparities in military fatality rates across Russian regions, with the highest mortality observed among soldiers originating from economically disadvantaged areas in Siberia and the Russian Far East and the lowest among soldiers from Moscow and St. Petersburg. Buryats and Tuvans are overrepresented among the fatalities relative to their population share. However, when regional socioeconomic disparities are accounted for, ethnic differences in mortality rates are considerably reduced.

CONCLUSIONS
The observed regional and ethnic fatality disparities appear to be driven by socioeconomic inequalities between regions.

CONTRIBUTION
This paper evaluates social inequalities in fatalities in the Russian military in Ukraine and compares these findings with research on US military casualties.

[1] University of Exeter, **Exeter,** UK. Email: a.bessudnov@exeter.ac.uk.

1. Introduction

On 24 February 2022, the Russian army launched an invasion of Ukraine. The ensuing conflict between Russia and Ukraine has resulted in the loss of tens of thousands of lives, comprising both military personnel and civilians. Media reports have suggested that a significant proportion of the Russian military's rank and file are not ethnic Russians but instead soldiers from Russia's ethnic minorities, who effectively have been utilised by the Russian state as 'cannon fodder' (Ivanova, Seddon, and Hall 2022; Petkova 2022; Mackinnon 2022; Roth 2022; Cuesta and Sahuquillo 2022). This allegation has sparked public debate in Russia, particularly among activists from ethnic republics, as well as at the international level. However, the claim of disproportionate representation of Russia's ethnic minorities in the military is based on anecdotal evidence and has never been empirically evaluated. The objective of this paper is to provide an empirical assessment of the regional and ethnic disparities in Russian military fatalities in Ukraine. In this paper I conduct a secondary data analysis of a database compiled by a team of volunteers, containing information on over 20,000 deceased Russian soldiers. By coding ethnicity based on their first names and surnames, I estimate mortality rates and relative risks of death by region and ethnic group.

2. Data

The Russian government have not disclosed information regarding the ethnic composition of its army or casualties in the war in Ukraine. Our data are derived from a crowdsourced dataset assembled by a team of volunteers, supported by two media organisations, BBC News Russian and Mediazona. Both organisations regularly publish statistical summaries of these data (Ivshina 2023; Mediazona 2023). The volunteers have monitored social media (primarily VK and Telegram, which have a large following in Russia) and other websites, gathering posts and articles reporting deaths of Russian military personnel in Ukraine. The original social media reports came from regional and local governments in Russia, educational institutions, non-governmental organisations, newspapers, and in some cases the families of the deceased soldiers. This makes the data more conservative than that from Ukrainian sources. The data collectors archived the reports using the Archive.today service (https://archive.ph). The author of this paper was not involved in the data collection.

As of 12 April 2023 the dataset contained 20,253 unique records of deceased Russian military personnel. The data included the names of the killed soldiers, along with available information on their dates of birth and death, type of military unit, and rank. The period covered ranges from 24 February 2022 (the first day of Russia's invasion) to 12 April 2023. The data collectors also coded the region where the death was reported (or alternatively,

where the family of the deceased lived or where they were buried). The records include soldiers from all Russian regions, as well as Crimea and Sevastopol (two Ukrainian regions annexed by Russia in 2014), but not from the areas in Eastern Ukraine annexed by Russia in 2022.

The ethnicity of the deceased soldiers was not part of the original dataset. I coded ethnicity from first names and surnames using a previously developed machine learning classifier (Bessudnov et al. 2023). The classifier demonstrated an accuracy of 0.92 for 15 major ethnic groups residing in Russia; however, it has certain limitations. Tracing the patrilineal origins of surnames can only serve as a proxy for ethnicity, as ethnic names do not necessarily imply ethnic identity. Additionally, some ethnic groups living in Russia, predominantly those of Finno-Ugric and Turkic origin in the Volga region, have ethnically Russian names, making classification using the names-based method impossible. However, most ethnic groups tend to have rather characteristic names.

There may be several reasons why certain ethnic groups or regions are overrepresented among military fatalities. First, enrolment in the army may be unequal across regions and ethnic groups. Second, some groups may be overrepresented in the combat units most likely to suffer casualties or sustain injuries in action (Burk and Espinoza 2012). I cannot separate these mechanisms with the available data. There are no data on ethnic inequalities in Russian military enrolment or service in combat units. The estimates I produce refer to overall ethnic and regional inequalities in fatality rates relative to the male population.

The dataset is incomplete and does not encompass all Russian fatalities in Ukraine. Without a reliable estimate of the total number of deaths it is impossible to confidently determine the proportion of all deaths represented in the dataset. According to a US government document leaked online and published in April 2023, Russia may have suffered between 35,500 and 43,500 troop fatalities (Miller 2023). The source of this estimate is unclear and unverifiable. If it is accurate, the dataset represents approximately half of total Russian fatalities.

The analysis below presumes that missing data are randomly distributed across regions and ethnic groups. If the reporting of deaths varies across regions, bias will be introduced in the analysis. To externally verify the data's reliability I use data from Yandex, the most popular Russian internet search engine. Yandex publish statistics on the popularity of search expressions by region over the previous month. This is provided as the affinity index, which is the percentage of search results for a keyword in a region divided by the percentage of all search results displayed in that region (see https://wordstat.yandex.com/#!/regions). The regional fatality rates correlate well with the regional affinity index for the search expression "payments for the killed" (*vyplaty pogibshim*) on Yandex, which refers to searches for information about the financial compensation provided by the Russian government to the families of deceased military personnel ($r = 0.53$ for the data collected on 10 February 2023 and $r = 0.61$ for the data

collected on 19 April 2023). This confirms that the crowdsourced data reflect regional inequalities in the number of deaths, although some disparities in reporting by region cannot be dismissed.

The official Russian mortality statistics were less informative. The Russian statistical office published overall mortality statistics by region for 2022 but did not provide breakdowns by age and sex. Even in the most severely affected regions, military fatalities account for only a small portion of overall mortality, complicating data interpretation due to regional differences in population age structure and the effects of Covid. There is minimal correlation between the regional fatality rates in our data and the change in officially reported regional mortality rates in 2022 compared to 2019, the last pre-Covid year (r = 0.09). The extent to which the officially published mortality data for 2022 included military fatalities and the regions to which they were assigned remains unclear.

The data and the R code for replication analysis can be found at the Github repository: https://github.com/abessudnov/ruCasualtiesPublic. The names of the deceased servicemen and their implied ethnicity have been removed from the dataset. However, 93% of the records contain links to archived original social media posts and other reports, allowing the information to be verified.

3. Findings

3.1 Ethnic inequalities in fatalities

Table 1 presents the number of deceased soldiers and the associated relative risks of death for various ethnic categories, some of which have been combined. The relative risk was computed by dividing the proportion of deaths linked to specific ethnic groups in the dataset by the proportion of these ethnic groups in Russia's male population aged 8 to 32, as per the 2010 census (corresponding to ages 20 to 44 in 2022). The average age of death in the dataset is 34 years, with approximately uniform distribution of deaths between ages 20 and 40. Relative risks exceeding 1 indicate a greater likelihood of being killed in comparison to the population share.

Table 1: Ethnic inequalities in Russian military fatalities

Ethnic category	Number of killed servicemen	Percentage of killed servicemen	Percentage in the male Russian population [a]	Relative risk	95% confidence Interval [b]
Russian / Ukrainian / Belarusian [c]	16,455	81.2	80.5	1.01	[1.00; 1.02]
North Caucasus [d]	1,169	5.8	6.5	0.89	[0.84; 0.94]
Bashkir / Tatar	1,049	5.2	4.8	1.08	[1.02; 1.15]
Buryat	317	1.6	0.4	3.83	[3.44; 4.28]
Tuvan	210	1.0	0.2	4.68	[4.07; 5.33]
Others	1,053	5.2	7.6	0.68	[0.64; 0.72]
Total	20,253	100	100		

Note: [a] Aged 8 to 32, according to the 2010 census (corresponding to age 20 to 44 in 2022).
[b] Calculated with the *RelRisk* function from the *DescTools* R package using the normal approximation method.
[c] Ethnic Russians, Ukrainians, and Belarusians cannot be separated on the basis of name only.
[d] The North Caucasus group includes Chechens, Ingushes, Kabardins, Adyghe, Karachays, Balkars, Ossetians, and main Dagestani ethnic groups.

The majority of the killed Russian military personnel possessed Slavic names, with most being ethnic Russians. (It is not feasible to distinguish between ethnic Russians, Ukrainians, and Belarusians based solely on names, as a Ukrainian may have a surname of Russian origin, and vice versa.) The proportion of Slavic names among the deceased is roughly equivalent to the proportion of ethnic Slavs in the population. Bashkirs and Tatars, two Turkic-origin groups primarily residing in the Volga region, are slightly overrepresented (RR = 1.1). Conversely, ethnic groups from the North Caucasus are somewhat underrepresented (RR = 0.9). This includes Chechens who, according to media reports, were actively involved in the initial stages of Russia's military campaign. As Chechnya has autonomous status within Russia the data on Chechen fatalities may be less comprehensive than data from other regions; thus, the estimated relative risk for the Northern Caucasus group should be regarded as a lower bound. Generally, for these three ethnic categories the relative risk is close to 1, implying proportional representation among fatalities in relation to population share.

The two groups exhibiting the highest relative risks ($RR \approx 4$) are Buryats and Tuvans, who inhabit ethnic republics in Eastern Siberia near the Russian–Mongolian border. As the relative risk indicates, their proportion among the killed military personnel is approximately four times greater than their share in the overall population.

The low relative risk in the 'Other' category can be attributed to the fact that some ethnic groups (such as Chuvash, Udmurt, Mordvin, Mari) possess Russian names and were categorised as Slavic by the name coding tool. This also biases upward the relative risk for ethnic Slavs, although the bias is unlikely to be substantial given the size of these groups.

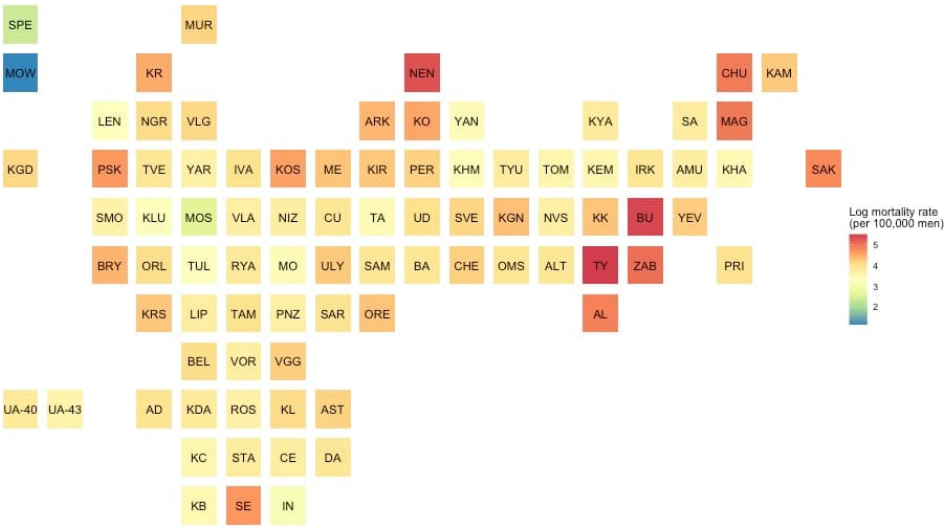
These findings are broadly in line with Vyushkova and Sherkhonov (2023) who use the same data set (up to September 2022) but a different method for coding ethnicity and document the overrepresentation of Buryats, Tuvans and some other ethnic groups among Russian military fatalities.

3.2 Regional inequalities in fatalities

Figure 1 illustrates mortality rates per 100,000 working-age men (16 to 61.5 years, as defined by the Russian Statistical Office) across Russian regions. The regions are displayed on the map with their ISO 3166-2 codes (refer to https://en.wikipedia.org/wiki/ISO_3166-2:RU and https://en.wikipedia.org/wiki/ISO_3166-2:UA for full names). The number of deaths and fatality rates by region can be found in Appendix A.

Buryatia (BU) and Tuva (TY), two ethnic republics in Eastern Siberia, top the list with fatality rates of approximately 240 per 100,000 working-age men. More broadly, the eight regions with the highest mortality rates are all located in Siberia and the Russian Far East or North. The lowest fatality rates are observed in Moscow (MOW, 3.1 per 100,000 men) and St Petersburg (SPE, 10.2 per 100,000 men). A man from Buryatia was around 75 times more likely to die in Ukraine than a man from Moscow.

Figure 1: Regional differences in the Russian military fatality rates

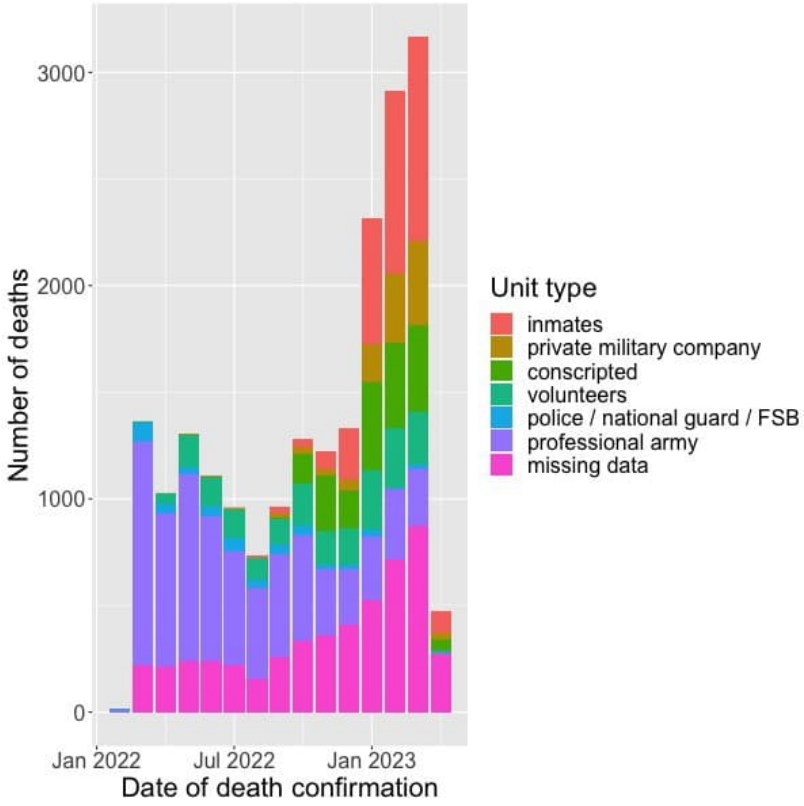


The data reveals two patterns. Firstly, some ethnic republics (Buryatia, Tuva, Altai, North Ossetia) exhibit high mortality rates, while others (Kabardino-Balkaria, Mordovia, Tatarstan) do not. Secondly, it is often predominantly impoverished regions lacking natural resources that tend to suffer the most significant fatalities.

3.3 Changes in ethnic and regional fatalities over time

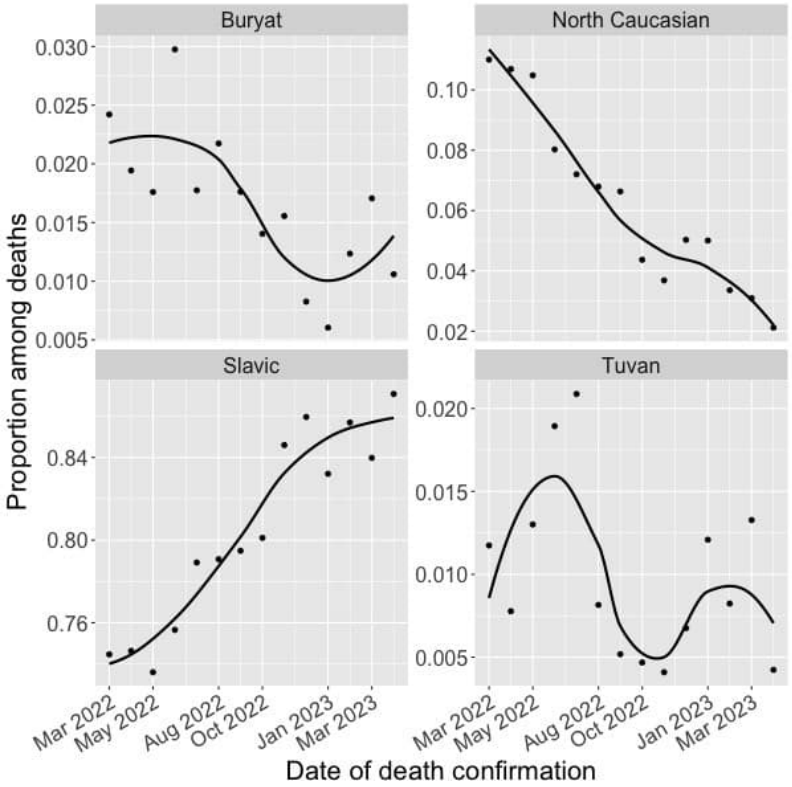
The Russian military campaign in Ukraine unfolded in several phases. During the spring 2022 offensive the regular army was primarily deployed, with support from national guard units. In September 2022 Ukraine conducted a counter-offensive in the Kharkiv region, prompting Russia to initiate a conscription campaign mobilising reservists. Russia also released some prisoners on the condition that they serve on the frontline as part of a private military company. This company was heavily used by the Russians in the battle for the Ukrainian town of Bakhmut, commencing in January 2023. Figure 2 illustrates the evolution of Russian fatalities over time by type of military unit, indicating a sharp increase in fatalities from January 2023, predominantly suffered by former inmates, other private military company personnel, and conscripted reservists.

Figure 2: Changes in fatalities over time by type of military unit



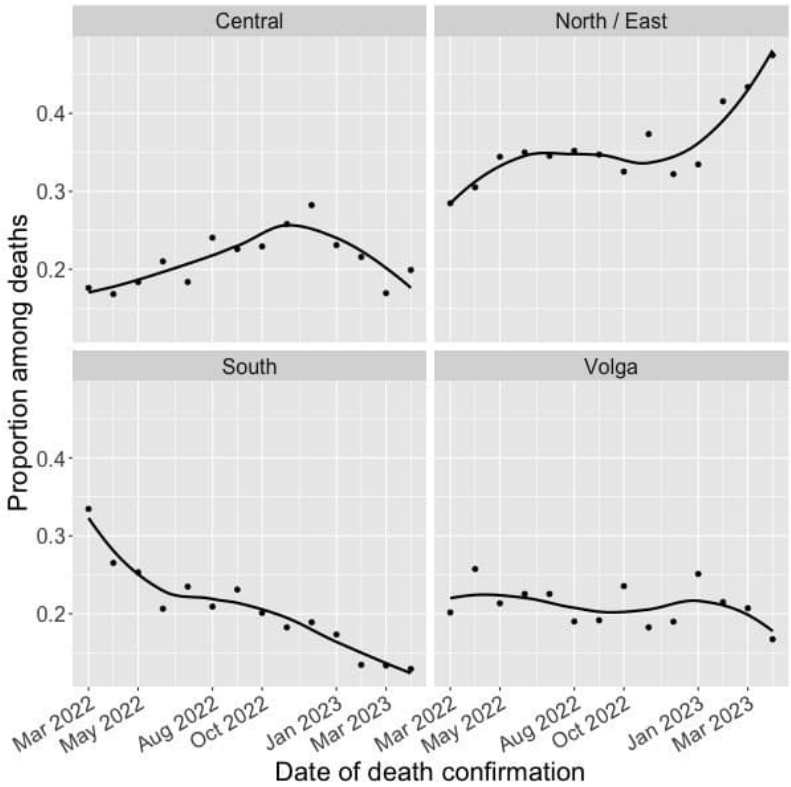
As the Russian military campaign progressed, the ethnic and regional composition of fatalities shifted (see Figures 3 and 4). The proportion of Slavic names among the deceased increased from around 75% in spring 2022 to approximately 85% in spring 2023. Conversely, the share of Buryats and particularly ethnic groups from the Northern Caucasus diminished. This likely reflects their high representation in the combat units of the professional army, which sustained heavy losses in the early stages of the war. On the other hand, they were less represented among conscripted reservists and private military company personnel. This trend is also evident in the changes in fatalities over time by region. The share of fatalities in the Eastern and Northern regions (where numerous prisons are situated) grew in February to April 2023, while the share of the Southern region declined.

Figure 3: Changes in fatalities over time by ethnicity



Note: Slavic includes names of ethnically Russian, Belarusian, and Ukrainian origin. North Caucasian includes names of Chechen, Dagestani, Ingush, Kabardin, Adyghe, Karachay, Balkar, and Ossetian origin. The lines represent a non-parametric monthly trend.

Figure 4: Changes in fatalities over time by macro-region



Note: Central: the Central federal district + St Petersburg, Leningrad oblast, Kaliningrad, Novgorod, Pskov, Vologda regions. North/East: the Urals, Siberia, Far East federal districts + Arkhangelsk, Karelia, Komi, Murmansk, Nenets regions. South: the Southern and North Caucasian federal districts. Volga: the Volga federal district. The lines represent a non-parametric monthly trend.

3.4 Ethnic and socioeconomic factors in the fatality gap

The ethnic composition of the population across Russia's ethnic republics varies considerably. Some republics predominantly consist of non-ethnically Russian populations, while in others ethnic Russians are the majority. By examining the fatality rates for different ethnic groups within the same region we can separate the relative contributions of ethnic and regional socioeconomic inequalities to the overall fatality gap.

Table 2 presents the findings from this analysis and demonstrates the extent to which non-Slavs are overrepresented in regional fatalities compared to their population share. Only

regions with at least 30% of non-ethnically Russian population are displayed, excluding regions where the name coding tool could not be applied to the main ethnic groups (such as Chuvashia, Sakha, Mari El, and others).

Table 2: Ethnic inequality in fatalities within regions

Region name	Percentage of non-Slavic names among the killed	Percentage of non-Slavic population [a]	Relative risk	95% confidence Interval [b]
Astrakhan oblast	48.9	35.8	1.37	[1.17; 1.57]
Buryatia	37.9	36.1	1.05	[0.95; 1.16]
Tuva	90.0	86.2	1.04	[0.99; 1.08]
Dagestan	97.0	97.4	1.00	[0.98; 1.01]
Chechnya	99.0	99.0	1.00	[0.97; 1.01]
Bashkortostan	63.6	64.1	0.99	[0.93; 1.05]
Ingushetia	97.4	99.4	0.98	[0.87; 1.00]
Kalmykia	68.8	74.4	0.92	[0.73; 1.08]
Kabardino-Balkaria	75.3	81.9	0.92	[0.80; 1.01]
North Ossetia	69.0	82.1	0.84	[0.76; 0.91]
Karachay-Cherkessia	58.3	72.3	0.81	[0.61; 0.98]
Tatarstan	44.9	61.1	0.73	[0.65; 0.82]
Adygea	23.7	39.6	0.60	[0.39; 0.87]

Note: [a] In the male population aged 8 to 32 according to the 2010 census (aged 20 to 44 in 2022). Non-Slavic was defined as not ethnically Russian, Belarusian, or Ukrainian.
[b] Calculated with the *RelRisk* function from the *DescTools* R package using the normal approximation method.

In most regions the relative risk measuring non-Slavic overrepresentation in fatalities is close to 1, indicating little or no ethnic inequality within regions. In Buryatia (where ethnic Russians constitute the majority of the population) the relative risk is 1.05 (down from 3.8 for Buryats in Russia overall). Note, however, that some Buryats have ethnic Russian names and this estimate should be treated as conservative. The highest ethnic overrepresentation is in Astrakhan Oblast, a predominantly ethnically Russian region with substantial Kazakh and Tatar minorities. In Adygea, North Ossetia, Karachay-Cherkessia, and Tatarstan, ethnic Russians appear to be overrepresented among the killed. However, it should be noted that in some of these regions there has been an increase in ethnic intermarriage (Bessudnov and Monden 2021), making the coding of ethnicity from names potentially less reliable.

Table 3 displays the results of linear regression analysis, where regional fatality rates are regressed on the percentage of non-ethnically Russian and socioeconomically disadvantaged populations. The association between the percentage of non-ethnically Russian population and regional fatality rates is very weak: when the share of the population with income below the subsistence level is taken into account it disappears completely.

Table 3: Linear model: Regional characteristics and fatality rates

	Dependent variable: Regional fatality rate per 100,000 men		
	(1)	(2)	(3)
Percentage non–ethnically	0.2		–0.02
Russian population (2010)	[–0.1; 0.6]		[–0.43; 0.39]
Percentage below		2.6	2.6
subsistence level (2020)		[0.8; 4.4]	[0.5; 4.7]
Constant	58.4	28.5	28.4
	[45.5; 71.2]	[2.0; 55.1]	[1.2; 55.5]
Observations	83	83	83
2	0.02	0.09	0.09

Note: 95% confidence intervals in brackets. Crimea and Sevastopol excluded from the analysis.

4. Conclusion

The analysis reveals that the Russian military in Ukraine have experienced significant regional disparities in fatality rates. Fatality rates (per 100,000 working-age men) are highest in certain regions of Siberia and the Russian Far East, while the lowest rates are found in St Petersburg and Moscow. The regions with higher fatality rates are often poor, with a large portion of the population living on incomes below subsistence level.

Moreover, there are ethnic disparities in fatalities. Specifically, Buryats and Tuvans are approximately four times more likely to be killed in Ukraine than ethnic Russians. However, fatality rates for some other ethnicities, such as Tatars, Bashkirs, and groups from the Northern Caucasus, are not substantially different from those of ethnic Russians. The higher fatality rates for Buryats and Tuvans can be attributed to increased military recruitment in Buryatia and Tuva, two regions in Eastern Siberia where these ethnic groups predominantly reside. In these regions, fatality rates for the titular ethnic groups and ethnic Russians are comparable, suggesting that military recruitment is primarily influenced by regional socioeconomic factors rather than ethnicity.

What accounts for the disparity in regional fatalities? Due to limited data on the composition of the Russian military it is challenging to draw definitive conclusions, but several potential explanations can be proposed. The Russian military forces in Ukraine comprise various types of units, including the professional army, conscripted reservists, volunteers, and prisoners recruited to a private military company. Although the recruitment into each unit type may be driven by distinct factors, the economic situation in a region could impact most of them. Men from poorer regions with limited job opportunities have greater incentives to join the army. They may also be more inclined to volunteer, as those fighting in Ukraine receive a salary considerably higher than the national average. Crime rates, particularly for violent crime, are higher in some economically deprived regions in

the Urals, Siberia, and the Russian Far East and North, where many prisons are located (Moran, Pallot, and Piacentini 2011). The population's age distribution differs across regions, with some ethnic areas, particularly the Northern Caucasus and Tuva, exhibiting higher fertility rates, which may result in a larger pool of young men available for military recruitment. Cultural factors and traditions might also contribute to the appeal of military service in specific ethnic regions. Another possibility is that the Russian government set varying recruitment quotas by region, encouraging military recruitment in particular areas; however, as this information is classified, this hypothesis remains unverifiable.

The attraction of a military career for young men in economically disadvantaged areas with limited civilian opportunities is not exclusive to Russia. Kriner and Shen (2010) provide evidence of casualty gaps in the US military during World War II, as well as the wars in Korea, Vietnam, and Iraq. Maynard (2009) estimates the correlation coefficients between mortality rates and per capita income at the US state level for the wars in Vietnam ($r = 0.51$) and Iraq ($r = 0.52$). Unlike Russia, the United States does not have distinct 'ethnic' states (although the proportion of Black and Hispanic populations varies across the country), which prevents significant ethnic and racial disparities in military casualties. In the early years of the Vietnam War, African Americans were overrepresented among casualties, while in more recent conflicts, including the Iraq War, they were underrepresented (with Hispanics being somewhat overrepresented) (Armor and Gilroy 2010; Burk and Espinoza 2012; Buzzell and Preston 2007). The examination of inequalities in the Russian army's mortality in Ukraine contributes to the comparative analysis of ethnic and regional differences in military service and casualties.

The dataset used in this study has limitations. It is incomplete, and gauging the extent to which actual Russian fatalities are reflected in data gathered from social media is challenging. However, the aim of this paper is not to estimate total fatalities and their contribution to overall Russian mortality, but to assess regional and ethnic inequalities. This necessitates a weaker assumption that the proportion of missing data is constant across regions. While regional differences in fatality reporting cannot be entirely dismissed, a high correlation between the reported regional fatality rates and the popularity of specific Yandex search terms confirms data reliability. This dataset represents the only available individual-level data on Russian fatalities at present, and it is uncertain whether the Russian government will publish any official data on fatalities in the future.

Finally, the analysis of ethnic inequalities depends on coding ethnicity from personal names using an automatic classification tool. While highly reliable, especially at the level of aggregated ethnic categories, it has its limitations. The tool is unable to differentiate ethnic groups with predominantly Russified names, such as Chuvash, Mordvin, Udmurt, Mari, Komi, or Yakut. Consequently, a separate analysis of fatality rates for these ethnic categories could not be conducted.

References

Armor, D.J. and Gilroy, C.L. (2010). Changing minority representation in the US military. *Armed Forces and Society* 36(2): 223–246. doi:10.1177/0095327X09339900.

Bessudnov, A. and Monden, C. (2021). Ethnic intermarriage in Russia: The tale of four cities. *Post-Soviet Affairs* 37(4): 383–403. doi:10.1080/1060586X.2021.1957345.

Bessudnov, A., Tarasov, D., Panasovets, V., Kostenko, V., Smirnov, I., and Uspenskiy, V. (2023). Predicting perceived ethnicity with data on personal names in Russia. *Journal of Computational Social Science*. doi:10.1007/s42001-023-00205-y.

Burk, J. and Espinoza, E. (2012). Race relations within the US military. *Annual Review of Sociology* 38(1): 401–422. doi:10.1146/annurev-soc-071811-145501.

Buzzell, E. and Preston, S.H. (2007). Mortality of American troops in the Iraq War. *Population and Development Review* 33(3): 555–566. doi:10.1111/j.1728-4457.2007.00185.x.

Cuesta, J.G. and Sahuquillo, M.R. (2022, October 7). Putin's conscription drive targets Russia's ethnic minorities. *EL PAÍS English Edition*. https://english.elpais.com/international/2022-10-07/putins-conscription-drive-targets-russias-ethnic-minorities.html.

Ivanova, P., Seddon, M., and Hall, B. (2022, October 4). 'We're minor losses': Russia's mobilisation targets ethnic minorities. *Financial Times*. https://www.ft.com/content/ae06c532-e1ff-488a-b77c-cb93422d3dd7.

Ivshina, O. (2023, April 14). Over 20,000 identified fatalities: What is known about the Russian casualties in Ukraine by April [in Russian]. *BBC News Russian*. https://www.bbc.com/russian/features-65277028.

Kriner, D.L. and Shen, F.X. (2010). *The casualty gap: The causes and consequences of American wartime inequalities*. Oxford: Oxford University Press. doi:10.1093/acprof:oso/9780195390964.001.0001.

Mackinnon, A. (2022, September 23). Russia is sending its ethnic minorities to the meat grinder. *Foreign Policy*. https://foreignpolicy.com/2022/09/23/russia-partial-military-mobilization-ethnic-minorities/.

Maynard, C. (2009). The association of state per capita income and military service deaths in the Vietnam and Iraq wars. *Population Health Metrics* 7(1): 1–5. doi:10.1186/1478-7954-7-1.

Mediazona (2023). Russian casualties in Ukraine. Mediazona count, updated. *Mediazona*. https://en.zona.media/article/2022/05/20/casualties_eng.

Miller, C. (2023, April 20). 'We need every man': Ukraine's troops prepare for counter-offensive against Russia. *Financial Times*. https://www.ft.com/content/2f966366-5a5d-4851-bc68-bd735ac871ff.

Moran, D., Pallot, J., and Piacentini, L. (2011). The geography of crime and punishment in the Russian Federation. *Eurasian Geography and Economics* 52(1): 79–104. doi:10.2747/1539-7216.52.1.79.

Petkova, M. (2022, October 25). 'Putin is using ethnic minorities to fight in Ukraine'. *Al Jazeera*. https://www.aljazeera.com/features/2022/10/25/russia-putin-is-using-ethnic-minorities-to-fight-in-ukraine.

Roth, A. (2022, September 22). 'It's a 100% mobilisation': Day one of Russia's drive to build its army. *The Guardian*. https://www.theguardian.com/world/2022/sep/22/russia-mobilisation-ukraine-war-army-drive.

Vyushkova, M. and Sherkhonov, E. (2023). Russia's ethnic minority casualties of the 2022 invasion of Ukraine: A data story from the Free Buryatia Foundation. *Inner Asia* 25(1): 126–136. doi:10.1163/22105018-02501011.

Appendix: Regional fatality rates per 100,000 men of working age

Table A-1: Regional inequalities in Russian military fatalities

Region name		Region name (ISO 3166-2)	Number of killed	Mortality rate per 100,000 men [b]
1	Tuva	RU-TY	231	249
2	Buryatia	RU-BU	643	231
3	Nenets	RU-NEN	27	212
4	Zabaykalsky	RU-ZAB	476	160
5	Magadan	RU-MAG	66	144
6	Chukotka	RU-CHU	23	143
7	Altai Republic	RU-AL	78	134
8	Sakhalin	RU-SAK	182	124
9	North Ossetia	RU-SE	229	111
10	Pskov	RU-PSK	187	108
11	Kostroma	RU-KOS	163	101
12	Komi	RU-KO	214	96.7
13	Karelia	RU-KR	139	92.4
14	Bryansk	RU-BRY	295	85.4
15	Arkhangelsk	RU-ARK	236	82.8
16	Kurgan	RU-KGN	164	77.0
17	Mari El	RU-ME	148	74.8
18	Orenburg	RU-ORE	401	74.4
19	Khakassia	RU-KK	111	73.7
20	Kursk	RU-KRS	224	72.2
21	Kirov	RU-KIR	231	71.9
22	Kamchatka	RU-KAM	67	70.4
23	Ulyanovsk	RU-ULY	244	70.1
24	Yevreyskaya	RU-YEV	31	68.2
25	Volgograd	RU-VGG	526	66.8
26	Chelyabinsk	RU-CHE	668	66.3
27	Perm	RU-PER	482	65.7
28	Astrakhan	RU-AST	186	64.4
29	Murmansk	RU-MUR	137	64.3
30	Sverdlovsk	RU-SVE	804	62.6
31	Kaliningrad	RU-KGD	198	61.9
32	Vologda	RU-VLG	202	61.2
33	Kalmykia	RU-KL	48	59.9
34	Novgorod	RU-NGR	96	59.1
35	Belgorod	RU-BEL	264	58.2
36	Oryol	RU-ORL	119	57.3
37	Udmurtia	RU-UD	232	55.5
38	Tambov	RU-TAM	158	54.7
39	Primorsky	RU-PRI	312	54.1
40	Ivanovo	RU-IVA	144	53.9
41	Adygea	RU-AD	76	52.1
42	Saratov	RU-SAR	384	52.0
43	Omsk	RU-OMS	274	50.2

Table A-1: (Continued)

Region name		Region name (ISO 3166-2)	Number of killed	Mortality rate per 100,000 men [b]
44	Samara	RU-SAM	470	50.1
45	Dagestan	RU-DA	495	50.0
46	Bashkortostan	RU-BA	612	49.4
47	Altai Krai	RU-ALT	290	48.8
48	Tver	RU-TVE	175	48.4
49	Irkutsk	RU-IRK	330	48.2
50	Chuvashia	RU-CU	165	48.2
51	Sevastopol[a]	UA-40	84	46.7
52	Ryazan	RU-RYA	148	46.3
53	Krasnodar	RU-KDA	817	45.7
54	Krasnoyarsk	RU-KYA	396	45.6
55	Tyumen	RU-TYU	199	43.8
56	Stavropol	RU-STA	385	43.2
57	Sakha	RU-SA	133	43.0
58	Lipetsk	RU-LIP	140	42.1
59	Nizhny Novgorod	RU-NIZ	382	41.9
60	Chechnya	RU-CE	193	41.7
61	Vladimir	RU-VLA	165	41.7
62	Amur	RU-AMU	99	41.4
63	Voronezh	RU-VOR	285	41.2
64	Penza	RU-PNZ	148	40.5
65	Novosibirsk	RU-NVS	330	40.2
66	Rostov	RU-ROS	503	39.5
67	Yaroslavl	RU-YAR	133	38.6
68	Smolensk	RU-SMO	100	38.1
69	Crimea[a]	UA-43	203	36.4
70	Tomsk	RU-TOM	113	35.1
71	Karachay-Cherkessia	RU-KC	48	34.5
72	Kemerovo	RU-KEM	260	34.5
73	Khabarovsk	RU-KHA	134	33.2
74	Kabardino-Balkaria	RU-KB	89	32.3
75	Tatarstan	RU-TA	372	31.2
76	Mordovia	RU-MO	73	30.8
77	Yamalo-Nenets	RU-YAN	52	30.6
78	Khanty-Mansi	RU-KHM	164	29.9
79	Leningrad	RU-LEN	186	29.1
80	Tula	RU-TUL	115	26.0
81	Kaluga	RU-KLU	85	25.7
82	Ingushetia	RU-IN	38	22.0
83	Moscow Oblast	RU-MOS	366	13.0
84	St. Petersburg	RU-SPE	175	10.2
85	Moscow	RU-MOW	125	3.1

Note: The table includes Crimea and Sevastopol, two regions in Ukraine that were annexed by Russia in 2014. The Russian government established administration in these regions and recruited military personnel there. The Ukrainian territories annexed by Russia in 2022 are not included.

[b] The mortality rates were calculated per 100,000 men of the working age (defined by the Russian Statistical Service as 16 to 61.5 years), as per the 2020-2021 census.