



AVOIDING GREAT POWER WAR PROJECT

Russia-Ukraine War Report Card

Graham Allison

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HARVARD Kennedy School

BELFER CENTER

for Science and International Affairs

DISCUSSION PAPER

FEBRUARY 2023



Avoiding Great Power War Project

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The Avoiding Great Power War Project

The Avoiding Great Power War Project is an interdisciplinary effort to investigate, analyze, and produce policy-relevant research on great power relations. Directed by Graham Allison, the Douglas Dillon Professor of Government at the Harvard Kennedy School, the project builds upon a basic premise: the historical record of great power conflict can serve as an aid to understanding the dynamics between today's great powers, namely the United States, Russia, and China.

About the Authors

Graham Allison is the Douglas Dillon Professor of Government at the Harvard Kennedy School, where he was the founding dean. He is a former U.S. assistant defense secretary, former director of Harvard's Belfer Center for Science and International Affairs, and the author most recently of the international bestseller *Destined for War: Can America and China Escape Thucydides's Trap?*

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Table of Contents

Introduction	1
Report Card	4
The Russia-Ukraine War in Historical Perspective.....	13
Conclusion	16
Appendix	18

FILE - Ukrainian soldiers prepare a U.S.-supplied M777 howitzer to fire at Russian positions in Kherson region, Ukraine, Jan. 9, 2023. (AP Photo/Libkos, File)





Introduction

One year into the Russia-Ukraine War, it remains difficult to get an accurate picture of what is actually happening. In part, this is the fog of war. In part, it is a reminder of Churchill's observation that truth is the first casualty of war. In part, it reflects the extraordinary success of President Zelenskyy and his team in taking information warfare to the next level—crafting compelling daily narratives and controlling the flow of information: for example, withholding data about Ukrainian casualties. And finally, because most reporting on the war is done by journalists working at a distance rather than on the battlefield, news reports reflect prevailing narratives more than numbers.

On February 24, 2022, Russia began a multi-pronged invasion of Ukraine aimed at seizing Kyiv, capturing or killing Zelenskyy, and seizing eastern Ukraine in time for a May Day victory celebration. Remarkably, Zelenskyy courageously rallied his fellow Ukrainian citizens and soldiers to resist the invaders and remind the world what leadership under fire looks like. After Russia's initial invasion of Ukraine stalled, its forces pivoted to the battleground in the Donbas. In September, Russian President Vladimir Putin annexed four eastern provinces of Ukraine and declared that Russia would use its nuclear arsenal if necessary to defend this territory along with the rest of Mother Russia. Ukraine's September counteroffensive pushed Russian forces back in the north and retook a regional capital, Kherson, but it has stalled since mid-November.

As professional analysts trying to make sense of what we are seeing, we begin by reciting what we most confidently know: namely, the fundamental truths about war that have been learned over centuries of experience. In the past year, it has been vital to keep in mind one axiom that has become a cliché: the fog of war is dense and thickened by disinformation and propaganda.¹ To ensure we have our feet on a solid foundation as we try to interpret the latest news from Ukraine, we created a weekly Report Card.

The bottom line in our inaugural Report Card is that the war has now bogged down in what we have labeled a “snailmate.” Since early November, neither side has made significant advances. But at the end of the first year of war, Russia controls 18% of Ukraine, and intense fighting for advances of a few miles continues to claim hundreds of lives a day.

¹ See Graham Allison and Amos Yadlin, “Piercing the Fog of War: What Is Really Happening in Ukraine?” *The National Interest*, March 24, 2022.

In addition, our report provides graphics that answer four frequently asked questions.

- How long is war? One year on, the Russia-Ukraine War remains much shorter than major historical conflicts, but it is already longer than its predecessor conflict in the Donbas and Crimea in 2014, which entered a lower intensity phase at the beginning of 2015 after Minsk II and the fall of Debaltseve.
- How deadly is war? The death toll in the first year of this war numbers over 100,000—making it far deadlier than other post-Cold War conflicts but still much less lethal than the World Wars.
- How expensive is war? As a percentage of its GDP, Ukraine’s expenditure is about equivalent to the US war effort during World War II, essentially mobilizing all of society, and with unprecedented levels of foreign assistance.
- How has the lethality of Western supply of arms risen? The US and its NATO partners have steadily stepped up the escalation ladder in sending more advanced weapons to Ukraine, expressing concern at each step about the possibility of provoking a Russian response that would widen the war, but nonetheless repeatedly crossing previously-announced red lines.

Report Card

To help clarify the situation on the ground, the Belfer Russia-Ukraine War Task Force created a Report Card of key indicators drawn from the best public sources. It will be updated weekly and posted on the [Russia Matters website](#). We are acutely aware that this is at best a work in progress that has many limitations. Nonetheless, we are publishing it at this point in the hope of soliciting—or even provoking—suggestions for improvement.

The Report Card tracks eight indicators: territorial change (including maps), military casualties, civilian fatalities, military equipment losses, civilian displacement, economic disruption, infrastructure damage, and popular support. For each of these we have been able to find quantifiable indicators that, despite their limits, provide insight into the impact of the war on Russia and Ukraine. We have also listed a number of valuable indicators that we would like to include if we could find reliable public data.

This Report Card does not include multiple factors that are essential in assessing the state of the war, but about which we have been unable to find reliable data. Many of Ukraine's advantages are evident but more difficult to quantify, including morale, military leadership, and dominance in the information war. Moreover, the fact that Russia's tactical success on the battlefield now leaves it in control of 11% more of Ukrainian territory should not obscure the fact that on the larger international chessboard, Putin's invasion of Ukraine has been a colossal strategic blunder. Putin's greatest successes have come in achieving the opposite of what he intended. Rather than erasing Ukraine from the map he has strengthened Ukrainians' sense of their own identity and made Ukraine an inspiration to the world. Rather than undermine NATO, he has revitalized its sense of mission and determination to build military capabilities to deter or defeat any future threats from Russia. Rather than undermining the Transatlantic Alliance, he provoked a US-led Western response that has made it stronger than it had been since the high Cold War. Europe's choice to end its dependence on Russian oil and gas has not only forced Russia to search for new markets where they have had to sell their products at a discount, but has eliminated Russia's geopolitical leverage that European dependence once provided. The Russian government has managed to cope with the shorter-term impact of unprecedented sanctions, but over the long run, Russia will

be poorer than it would have been. And rather than commanding the respect he personally craves, Putin has made himself a pariah in the West—the face of evil that he really is.

Sources for the data reported here include Russia Matters, the Institute for the Study of War, Oryx, the United Nations, the International Monetary Fund, official statements from the US, UK, Ukrainian, and Russian governments, and other public reporting (see [appendix](#) for full list). The Report Card maps of territorial change, updated weekly, provide a snapshot of the battlefield. A color-coded dashboard allows easy side-by-side comparison of the indicators. Green represents relative strength, red represents weakness, and yellow represents a tie or inability to accurately assess.

Tracking these key indicators helps illuminate incandescent facts about developments in the war on the ground in the past year. Five numbers in particular shed light on the outcomes and cost of one year of war in Ukraine.

1. 11% more of Ukraine's sovereign territory has been seized by Russia since the invasion (7% of Ukraine was under Russian control before 2022, in Crimea and Donbas)
2. More than 200,000 combatant and 19,000 civilian casualties (killed or severely wounded)
3. 31% of Ukrainians have been displaced from their homes
4. 35% is the amount Ukraine's GDP has fallen since the invasion
5. 40% of Ukraine's electricity infrastructure has been destroyed or occupied

Russia-Ukraine War Report Card:

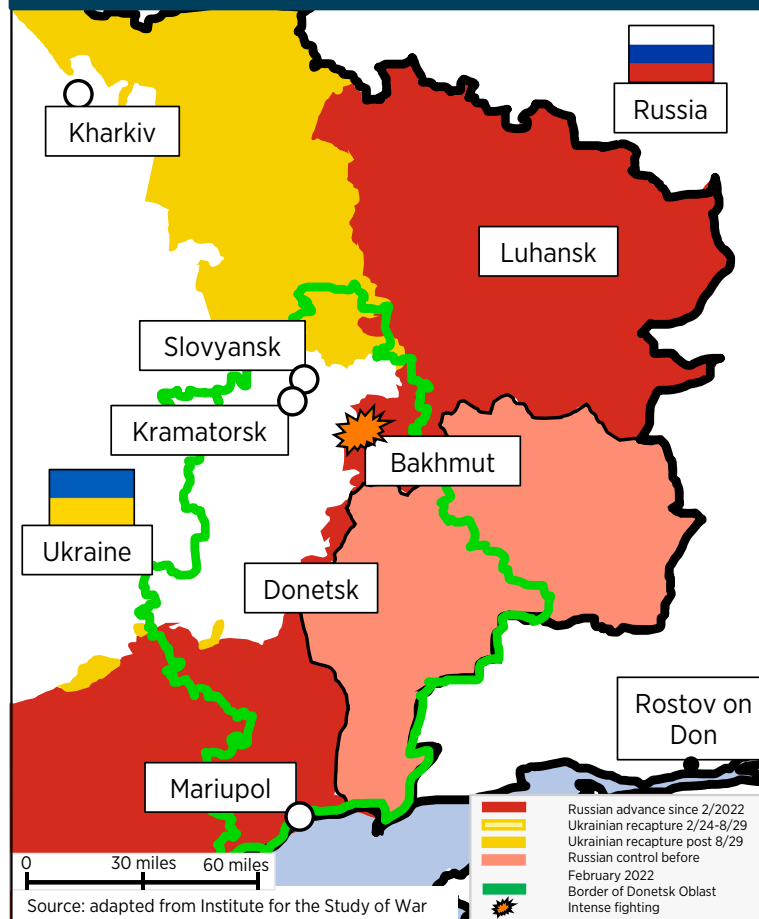
Who's Winning and Who's Losing What?

2/13/2023

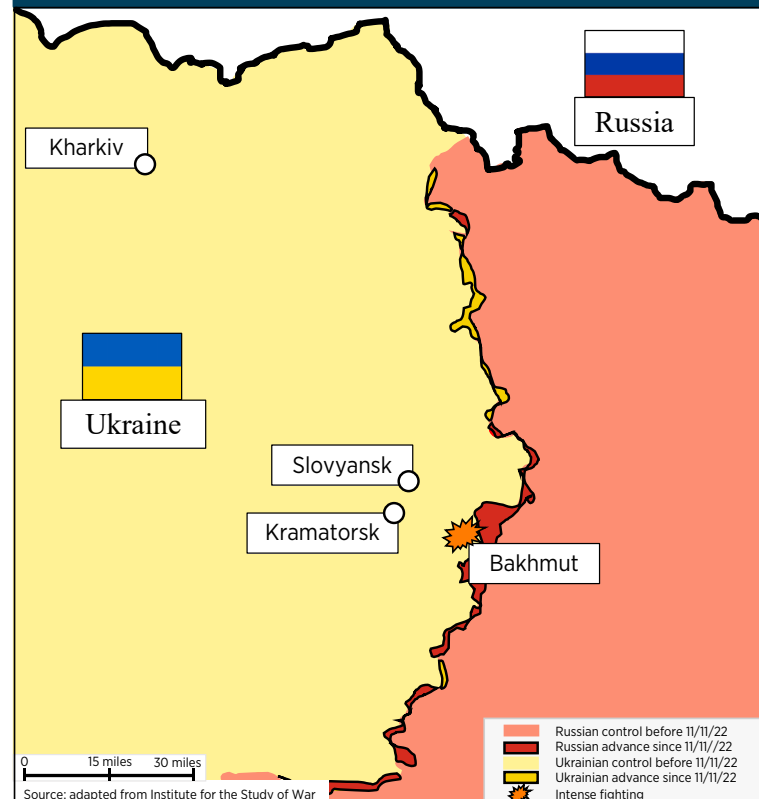
Territorial Control



Front line in Donbas 2/13



Snailmate since November 11



Report Card*

Change in control of Ukrainian territory

Since February 24:

- Russia: +25,000 square miles. 11% of Ukraine. Area equivalent to Massachusetts, New Hampshire, and Connecticut combined.
- Ukraine: 0. Ukraine has not taken any territory controlled by Russia before the 2022 invasion.

Since August 29 Ukrainian counteroffensive: Ukraine +6,850 square miles. 3% of Ukraine. Area equivalent to Connecticut and Rhode Island combined.

- Russia: +150 square miles.
- Ukraine: +7,000 square miles.

In past month: Russia +74 square miles.

- Russia: +82 square miles.
- Ukraine: +8 square miles.

In past week: Russia +12 square miles.

- Russia: +16 square miles.
- Ukraine: +4 square miles.

Total territory occupied by Russia at some point since February 24: 54,000 square miles.

Total territory reclaimed by Ukraine since February 24: 29,000 square miles. 54% of total territory occupied by Russia.

Currently occupied by Russia: 25,000 square miles.

Military casualties

Russia: 130,000+ killed and severely wounded.

Ukraine: 130,000+ killed and severely wounded.

Civilian fatalities

Russia: 25 killed.

Ukraine: 7,199 killed.

- 2/1-2/12: 59 killed.

Military vehicles and equipment

Russia: 9,224 lost.

- Tanks and armored vehicles: 4,914.
- Military aircraft: 148.
- Naval vessels: 12.

Ukraine: 2,887 lost.

- Tanks and armored vehicles: 1,485.
- Military aircraft: 86.
- Naval vessels: 25.

Citizens displaced

Russia: 800,000 emigrated for economic or political reasons, 0.6% of Russian population.

Ukraine: 13.4 million displaced Ukrainians, 31% of Ukrainian pre-invasion population of 44 million.

- Internally displaced: 5.4 million.
- International refugees: 8 million.

Economic impact

Russia: -2.3% GDP growth for 2022

- 0.3% GDP growth forecast for 2023.
- Russian Ruble: 0.014 US dollars. +14% since invasion.
- 3-year bond yield: 8.8%

Ukraine: -35% GDP growth for 2022

- 1% GDP growth forecast for 2023.
- Ukrainian Hryvnia: 0.027 US dollars. -18% since invasion.
- 3-year bond yield: 27%.

Infrastructure

Russia: No significant damage except Kerch Strait Bridge, under repair but open to two-way traffic.

Ukraine: 40%, or 22.5 out of 56 GW electricity generating capacity destroyed or occupied.

Popular support

Russia: 41% support continued fighting over negotiations.

Ukraine: 70% support continued fighting over negotiations.

Other criteria which may be even more important (about which we continue to search for reliable indicators)

Ammunition supply

Foreign military aid

Force generation

Military leadership

Training

Morale

Control of strategic locations

Information war: with US/Europe; with world

* Due to a lack of reliable indicators, our report card does not include multiple factors which may be more important to assessing success and offensive potential. Several ways in which Ukraine likely has an advantage are difficult to quantify, such as foreign military aid, morale, military leadership, and information war, while Russian strengths like concrete territorial control are easier. The available quantitative data paints a picture more favorable to Russia than the reality. It is therefore important to keep in mind what is not included when interpreting the numbers that are.

Russia-Ukraine War Report Card		Russia		Ukraine	
Territory			%		%
Change since February 24 Russian invasion		25,000 sq. mi.	11%	0 sq. mi.	0%
Change since August 29 Ukrainian counteroffensive		150 sq. mi.	0%	7,000 sq. mi.	3%
Change in past month		82 sq. mi.	0%	8 sq. mi.	0%
Change in past week		16 sq. mi.	0%	4 sq. mi.	0%
Control of all territory disputed since February 24*		25,000 sq. mi.	46%	29,000 sq. mi.	54%
Military					
Military killed and severely wounded**		130,000	0.3%	130,000	1.0%
Military equipment losses		9,224		2,887	
Tanks and armored vehicles		4,914	28%	1,485	39%
Military Aircraft		148	7%	86	39%
Naval Vessels		12	5%	25	63%
Economic					
GDP decline since February 24			-2.3%		-35%
2023 projected GDP growth			0.3%		1%
Exchange rate to USD since February 24***		0.014	14%	0.027	-18%
3-year bond yield			8.8%		27%
Electrical grid damage****					40%
Civilian					
Civilian fatalities		25		7,199	
Civilian displacement*****		800,000	0.6%	13,406,000	31%
Popular support for continuing war			41%		70%
* Current status of all territory occupied by Russia at some point since February 24 ** % out of male population 20-64. *** Ukrainian Hryvnia using fixed exchange rate. **** For Russia, no significant infrastructure damage other than Kerch Strait Bridge, under repair but open to two-way traffic. ***** In Russia, largely political refugees, economic emigres, and men fleeing draft.					

Popular support for Russia-Ukraine War	Russia	Ukraine	US	Germany	UK	Poland	India
Support continuing war	41%	70%					
Support maintaining or increasing Western aid			60%	62%	68%	72%	53%

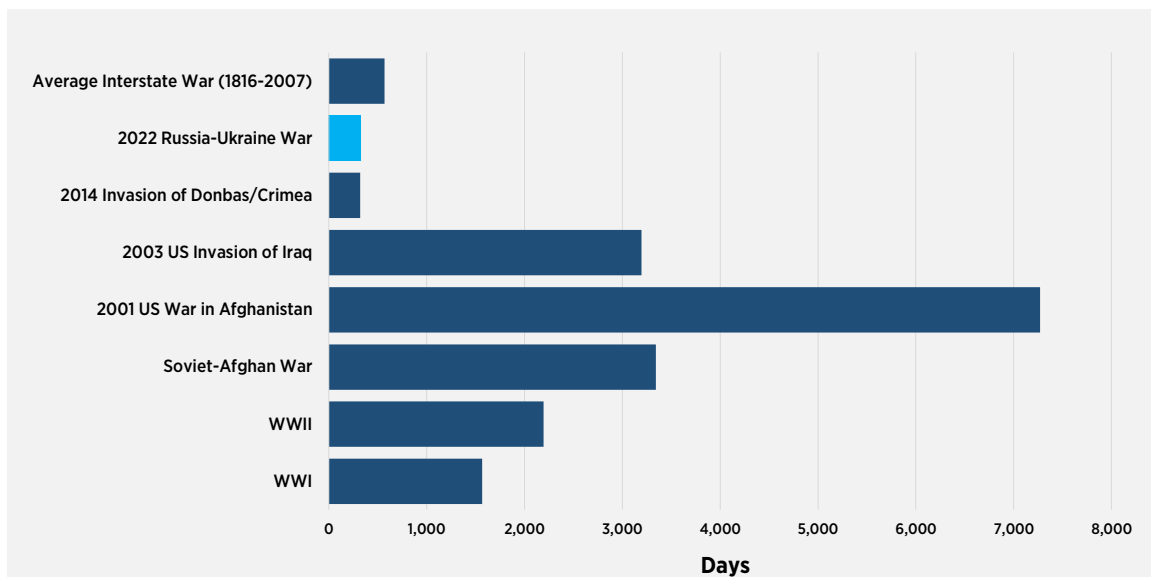
The Russia-Ukraine War in Historical Perspective

Four Charts Ask:

1. How long is war?
2. How deadly is war?
3. How expensive is war?
4. And how rapidly does the supply of arms go up the escalation ladder?

At the one-year mark, this war is already one of the most consequential conflicts of the 21st century on a number of metrics including loss of lives and expenditure of resources. The following charts illustrate how the Russia-Ukraine War compares to previous wars.

How Long Is War?

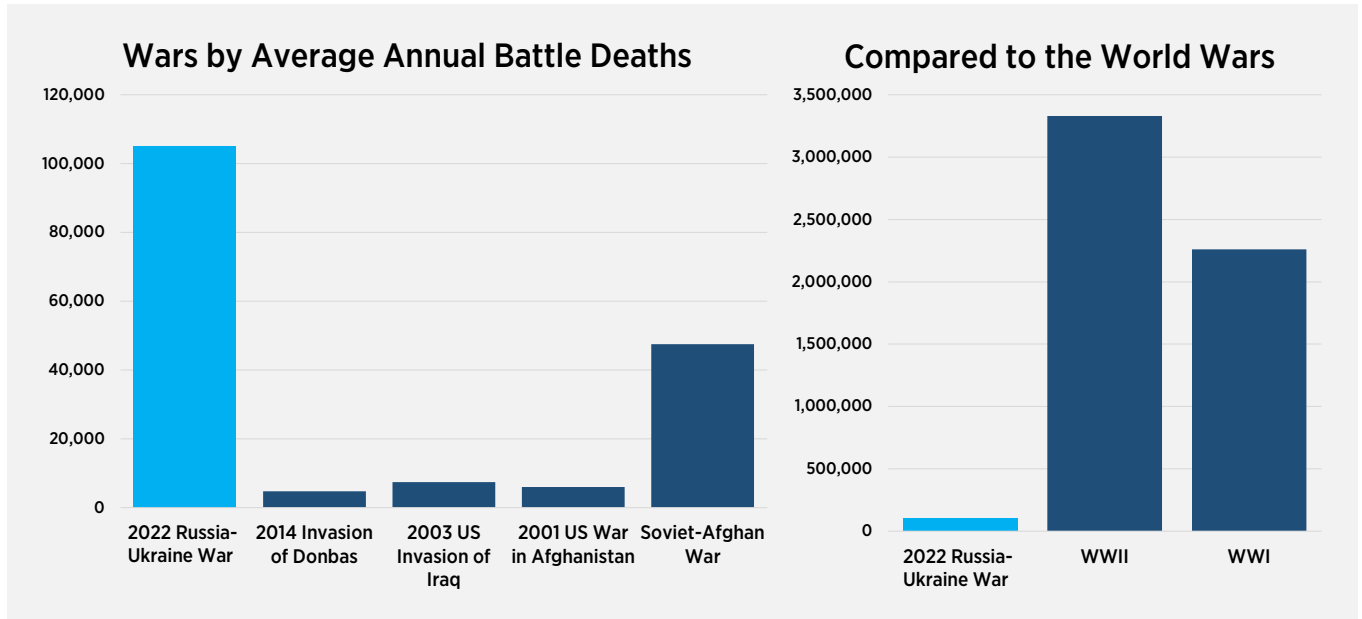


Source: Correlates of War Project and press reports

While the average interstate war lasts less than two years, major Russian and US wars since WWII have lasted over a decade, suggesting that the Russia-Ukraine War could last for many more years.²

² "Of 88 wars between states since 1816, nearly a quarter lasted less than two months and 38% between two and six months. Of the remaining 35, 12 were over within a further six months, seven lasted up to two years, 12 two to five years, and four more than five years. In other words, a war that continues for six months has a roughly one-in-three chance of lasting no longer than a year in total, but an equal chance of lasting between two and five years. We should not forget the Korean War, the first "hot" war of Cold War I, which lasted three years and did not end with a conclusive peace agreement—merely an armistice." Niall Ferguson, "War and Economics in Ukraine," Stanford Hoover Institution, 9/21/22.

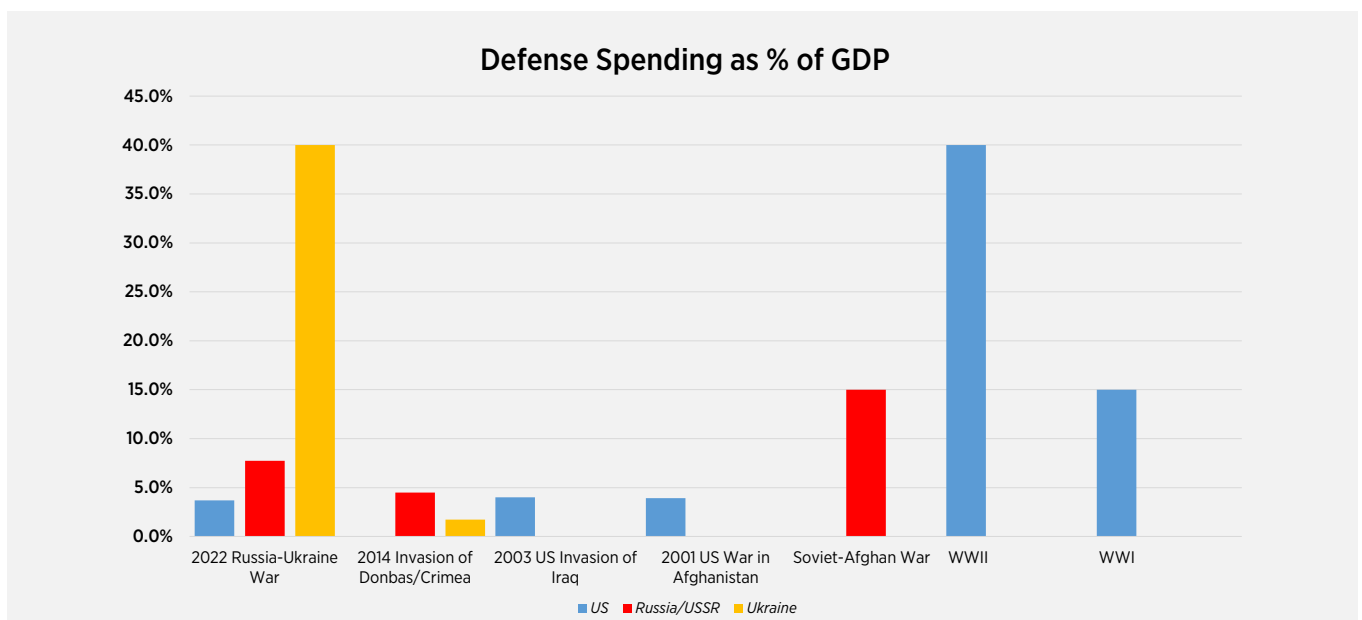
How Deadly Is War?



Source: Belfer Center estimate and press reports

The Russia-Ukraine War is the deadliest conflict of the 21st century. Thankfully, however, the Russia-Ukraine War is far less deadly on an annualized basis than either World War I or World War II. Our estimate of battle deaths in Ukraine draws on many sources, including official statements from the US, Ukrainian, and Russian governments, as well as UN counts of civilian fatalities and expert estimates of killed-to-wounded ratios in Ukraine.

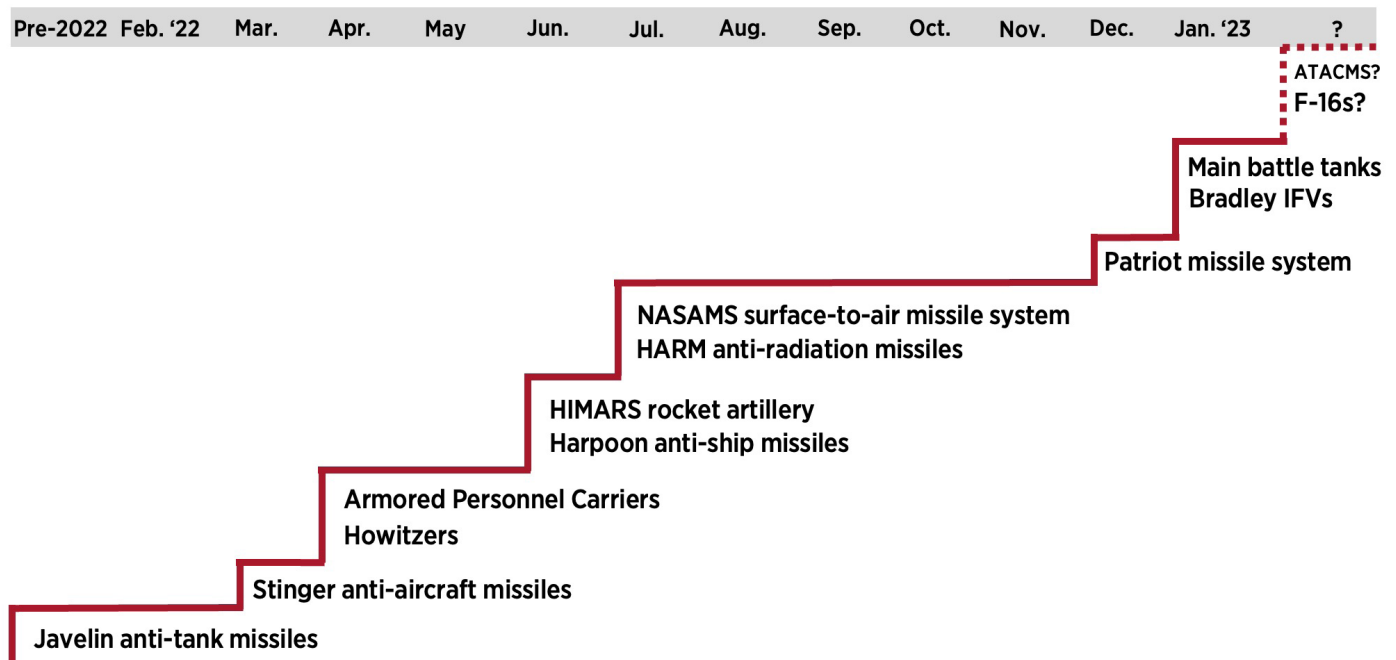
How Expensive Is War?



Source: Congressional Research Services and press reports

As a proxy for an itemization of specific costs of the Russia-Ukraine War, comparing defense budgets as a percentage of GDP provides some perspective. Ukrainian defense spending as a percentage of GDP is eight times higher than it was during the 2014 annexation of Crimea and invasion of the Donbas, and much higher than US and Russian spending in wars since WWII.

Western Arms – Escalation Ladder



Source: press reports

The US, UK, and other Western allies of Ukraine have steadily climbed the escalation ladder by sending ever more powerful weapons systems to Ukraine. Before taking each step up the ladder, Western suppliers have worried about the risk of provoking a Russian escalatory response. Nonetheless, as the war has ground on, steps up the escalator continue.

Conclusion

Our Report Card is intended to provide concrete indicators to anchor interpretation of news reports and leaders' statements. For example, multiple media outlets have claimed that a retreat from Bakhmut would signal that Ukraine is losing the initiative after four months of steady advances. Looking at the numbers, it is clear that Ukraine's counteroffensive lost momentum following the November 11 liberation of Kherson.

As we approach February 24, it is valuable to take a step back to see the big picture. Russia now controls 18% of Ukraine's internationally-recognized territory, including Crimea. Brave Ukrainian resistance against Russian aggression stopped the Russian advance on Kyiv and drove Russia out of another 12% of Ukraine, but Ukraine's counteroffensive slowed as Russian positions became more entrenched. One third of Ukrainians have been displaced by war, many thousands have died, and the economy has shrunk by 35% in 2022.

The outcome of the Russia-Ukraine War remains uncertain and there is no clear path to peace. Ukraine's place on the map of Europe in 2030, however, will be shaped by a score of factors more important than where the fighting stopped—whether at the current line, or after Ukraine has liberated the territory Russia seized since February 24, or after Putin's troops have control of the remainder of Donbas. Ukrainians will not give up their claim to liberate every inch of Ukrainian territory—nor should they. No one can doubt that Ukraine has defeated Putin's attempt to erase it from the map, and that the costs of Putin's misguided venture greatly exceed any benefits that he may have achieved in extending Russian controlled territory. We remain realistically hopeful that at the end of the war, Ukraine will emerge as a free, independent, vibrant nation; NATO will be stronger than it has been in many decades and better armed to deter future Russian aggression; and most importantly, there will have been no nuclear war.

Appendix

Territorial Control

Maps and territorial estimates are based on data from:

“Russian Campaign Assessments,” Institute for the Study of War, <https://www.understandingwar.org/>;
“Russia’s Invasion of Ukraine in Maps — Latest Updates,” Financial Times; “Ukraine Maps: Tracking the Russian Invasion,” The New York Times, <https://www.nytimes.com/interactive/2022/world/europe/ukraine-maps.html>; “Ukraine in Maps: Tracking the War with Russia,” BBC News, sec. Europe, <https://www.bbc.com/news/world-europe-60506682>.

Military casualties

Military casualty estimates are based on:

US, UK, Ukrainian, Russian, and other public government estimates.

Civilian fatalities

United Nations, “Ukraine: Civilian Casualties,” <https://ukraine.un.org/en/resources/publications>;
Central Intelligence Agency, “The World Factbook,” <https://www.cia.gov/the-world-factbook/>;

Russian civilian fatality estimates are based on:

Statement by Belgorod Region Governor Vyacheslav Gladkov, January 24, 2023, <http://kremlin.ru/events/president/news/70389>; Public reporting on civilian casualties in Russia.

Military vehicles and equipment

Oryx, “Attack On Europe: Documenting Equipment Losses During The 2022 Russian Invasion Of Ukraine,” Oryx (blog), <https://www.oryxspioenkop.com/2022/02/attack-on-europe-documenting-equipment.html>; “The Military Balance 2022,” IISS, <https://www.iiss.org/publications/the-military-balance/the-military-balance-2022>.

Citizens displaced

United Nations, “Ukraine Humanitarian Response,” <https://reports.unocha.org/en/country/ukraine/>;

Russian civilian displacement estimates are based off public reporting, including:

“About 700,000 citizens left Russia after September 21,” Forbes.ru, October 4, 2022, <https://www.forbes.ru/society/478827-rossiu-posle-21-sentabra-pokinuli-okolo-700-000-grazdan>; Mary Ilyushina, “Cyprus, a Haven for Russian Expats, Welcomes Techies Fleeing Ukraine War,” The Washington Post, October 24, 2022, <https://www.washingtonpost.com/world/2022/10/23/cyprus-russian-expat-tech-workers/>; “Nearly 4M Russians Left Russia in Early 2022 – FSB,” The Moscow Times, May 6, 2022, <https://www.themoscowtimes.com/2022/05/06/nearly-4m-russians-left-russia-in-early-2022-fsb-a77603>; “Twice as Many People Left Russia in the First Half of 2022 as in the First Half of 2021,” Kyiv Post, <https://www.kyivpost.com/post/5278>.

Economic impact

International Monetary Fund and World Bank estimates. Russia Matters. “Russia and Ukraine 3-Year Bond Yield,” Investing.com, <https://www.investing.com/rates-bonds/russia-3-year-bond-yield>.

Infrastructure

Estimates of infrastructure damage based off public media reporting, including:

“Ukraine Real-Time Electricity Data Explorer – Data Tools,” IEA, <https://www.iea.org/data-and-statistics/data-tools/ukraine-real-time-electricity-data-explorer>; Dara Massicot, “What Russia Got Wrong,” Foreign Affairs, February 8, 2023, <https://www.foreignaffairs.com/ukraine/what-russia-got-wrong-moscow-failures-in-ukraine-dara-massicot>; Aura Sabadus, “Power to Ukraine,” CEPA, February 17, 2023, <https://cepa.org/article/ukraine-energy-grid-resilience-continues-despite-invasion/>; Andrew D’Anieri and Victoria Voytsitska, “How to Save Ukraine’s Energy Infrastructure,” The Hill, November 17, 2022, <https://thehill.com/opinion/international/3729102-how-to-save-ukraines-energy-infrastructure/>; “Russian Air Attacks on Ukraine’s Power System,” Wilson Center, <https://www.wilsoncenter.org/blog-post/russian-air-attacks-ukraines-power-system>.

Popular support

“Conflict with Ukraine: November 2022,” Levada Center, December 12, 2022, <https://www.levada.ru/en/2022/12/12/conflict-with-ukraine-november-2022/>; “Ukrainians Support Fighting Until Victory,” Gallup Inc, Gallup.com, October 18, 2022, <https://news.gallup.com/poll/403133/ukrainians-support-fighting-until-victory.aspx>; “Globalism 2022 - Support for Countering Russia - All Markets,” YouGov-Cambridge Centre, September 22, 2022, <https://yougov.co.uk/topics/yougov-cambridge/survey-results>.



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