

Who is winning Ukraine War? Kill ratios for total equipment and personnel: #48/72



April 2024

Kill ratios for entire Ukraine war

- All links to data sources can be found in excel spreadsheet that can be downloaded by following link in video description to my Vlog at hmexperience.dk
- Confirmed losses are documented at oryxspioenkop.com and unconfirmed RUS losses are reported by UKR Armed Forces
- Russian active and passive arms stocks are from data collected by euromaidanpress.com
- Russian new arms production capacity is from various sources and own estimates

Table 1: Kill ratios calculated for entire length of war

Number of days / months considered D 777 M 25 Type of loss	Remaining Russian active & passive stock on 11-Apr-24	Likely Russian new production daily in 2023	Losses from Feb. 24, 2022 to Apr. 11, 2024				
			Russian losses confirmed	Russian losses unconfi.	Russian avg. losses unco. per day	Ukraine losses confirmed	Kill ratios RUS/UKR confirmed
1 Tanks	6,942	0.68	2,920	7,137	9.2	794	3.7
1.2 of which captured			534			131	4.1
2 Armored fighting vehicles			1,290			362	3.6
3 Infantry fighting vehicles			3,812			896	4.3
4 Armored personnel carriers			421			441	1.0
5 Other APCs (MRAPs)			54			202	0.3
6 Infantry mobility vehicles			240			432	0.6
7 Command and com vehicles			276			18	15.3
8 Total armored vehicles (2 to 7)	15,773	1.64	6,093	13,679	17.6	2,351	2.6
9 Engineering vehicles special equipm.		0.17	458	1,882	2.4	152	3.0
10 Anti-tank vehicles			44			20	2.2
11 Artillery support vehicles			116			26	4.5
12 Towed artillery			361			196	1.8
13 Self propelled artillery			715			318	2.2
14 Multiple rocket launchers			368			64	5.8
15 Total artillery (10 to 14)	9,809	1.64	1,604	11,452	14.7	624	2.6
16 Anti-aircraft guns			51			4	12.8
17 Self propelled anti-aircraft guns			25			14	1.8
18 Surface-To-Air Missile Systems			218			144	1.5
19 Radars			63			104	0.6
20 Jammers and deception systems			79			7	11.3
21 Total anti-aircraft (16 to 20)	2,588	0.76	436	754	1.0	273	1.6
22 Aircraft	1,211	0.15	108	347	0.4	84	1.3
23 Helicopters	831	0.26	136	325	0.4	43	3.2
24 Combat Unmanned Aerial Vehicles			14			27	0.5
25 Reconnaissance UAVs			342			290	1.2
26 Total UAVs (24 to 25)	-	-	356	9,104	11.7	317	1.1
27 Naval ships, Black Sea only	48	0.00	22	26	0.03	35	0.6
28 Submarines, Black Sea only	5	0.00	1	1	0.00	0	-
29 Trucks, Vehicles and Jeeps	-	-	3,203	15,298	19.7	861	3.7
30 Total equipment losses (not 26, 29)	37,207	5.31	11,778	35,603	45.8	4,356	2.7
31 of which destroyed			10,851			3,830	2.8
32 of which damaged			698			474	1.5
33 of which abandoned			853			223	3.8
34 of which captured			2,934			1,007	2.9
35 Killed personnel unconfirmed	24,582,000	986		450,890	580.3	166,758	2.7
36 Wounded personnel 3*killed				1,352,670	1740.9	500,274	2.7

Sources: Follow link below video to download spreadsheet containing clickable sources



Kill ratios for entire Ukraine war

- Key finding is that for confirmed equipment losses of all kinds **Ukraine managed to destroy 2.7 times more equipment than Russia**
- 2.7 is despite UKR having a much smaller & less equipped army lacking many modern weapons
- Ukraine has not published their own personnel losses** but they publish estimates of Russian losses that are 451,000 killed and 1,350,000 wounded as of April 11, 2024
- Ukraine personnel losses can be estimated by assuming they are proportional with the confirmed materiel kill ratio of 2.7**
- Doing that leaves 167,000 killed and 500,000 wounded Ukrainians as of April 11, 2024
- Long-term for Ukraine to win it needs to maintain a kill ratio for personnel well above the 4.13 Russian/Ukrainian population ratio**
- Russia would pull out if kill ratio rises to >6 IMO**

Population and GDP in 2023

Country	Russia	Ukraine	Ratio R/U	USA	EU
Population mill.	145	35	4.1	335	448
GDP billion USD	2,240	161	13.9	25,440	19,350

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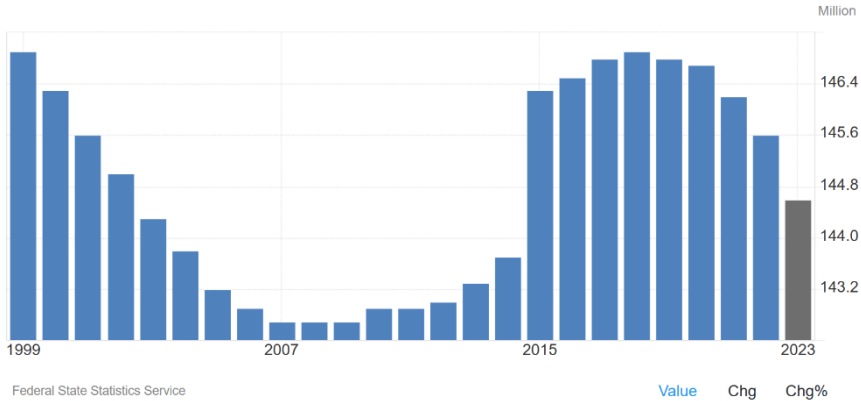
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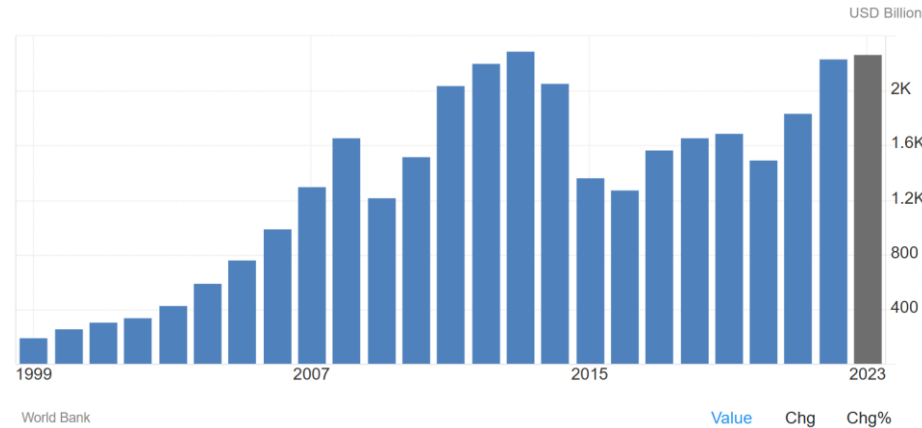
Population/GDP

Russia population millions



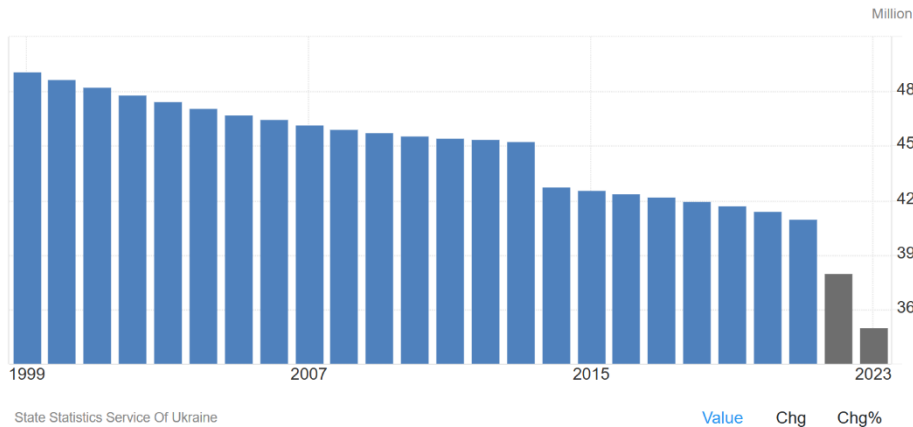
Source/attribution: <https://tradingeconomics.com/russia/population>

Russia GDP billion USD



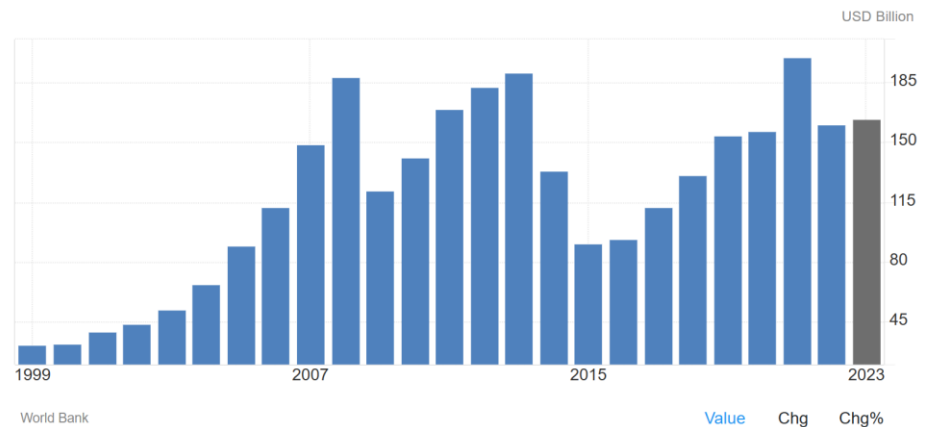
Source/attribution: <https://tradingeconomics.com/russia/gdp>

Ukraine population millions - Ratio: 4.13



Source/attribution: <https://tradingeconomics.com/ukraine/population>

Ukraine GDP billion USD - Ratio: 13.91



Source/attribution: <https://tradingeconomics.com/ukraine/gdp>



Comparing kill ratios and avg losses per day

1. Considering only data since June 15, 2023 Ukraine managed to destroy 2.6 times more equipment than Russia down from 2.7
2. 2.6 is still good, but for Ukraine to win war it needs to be much above 4.13, see pop. table
3. Past 10 months data also show the war with Russia has intensified with 62 equipment losses per day up from 45.8 for the entire war
 - Reasons kill ratio is dropping and intensity of war is going up:
 1. Russia is mobilizing far more resources increasing military spending from 3.7% of GDP in 2021 to 7.1% in 2023 and likely 10.7%, 2024
 2. Russia has adapted and started using FPV drones and glider bombs in massive numbers
 3. Ukraine does not get the ammunition and aid they need to defend themselves effectively

Table 2: Comparing kill ratios - Entire war and last 9 months

Type of loss	Remaining Russian active & passive stock on 11-Apr-24	Likely Russian new production daily in 2023	Feb. 24, 22 to Apr. 11, 24		Jun. 15, 23 to Apr. 11, 24	
			Russian avg. losses unco. per day	Kill ratios RUS/UKR confirmed	Russian avg. losses unco. per day	Kill ratios RUS/UKR confirmed
1 Tanks	6,942	0.68	9.2	3.7	10.6	3.4
1.2 of which captured				4.1		-
2 Armored fighting vehicles				3.6		5.3
3 Infantry fighting vehicles				4.3		4.3
4 Armored personnel carriers				1.0		0.6
5 Other APCs (MRAPs)				0.3		0.1
6 Infantry mobility vehicles				0.6		0.4
7 Command and com vehicles				15.3		11.0
8 Total armored vehicles (2 to 7)	15,773	1.64	17.6	2.6	20.0	2.5
9 Engineering vehicles special equipm.		0.17	2.4	3.0	4.5	1.7
10 Anti-tank vehicles				2.2		-
11 Artillery support vehicles				4.5		4.3
12 Towed artillery				1.8		1.9
13 Self propelled artillery				2.2		2.0
14 Multiple rocket launchers				5.8		8.4
15 Total artillery (10 to 14)	9,809	1.64	14.7	2.6	25.4	2.5
16 Anti-aircraft guns				12.8		-
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19 Radars				0.6		0.8
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Kill ratio determinants

- Equipment quality and quantity:** Obviously better and more weapons increases the kill rate
 - This implies NATO should send its most effective weapons to Ukraine not the old stuff
 - So Leopard 2 tanks newest edition not Leopard 1 and F16 & F35 jets not Soviet era Migs etc
 - But, NATO do not have enough quality weapons so we need to send old the stuff as well
- Ammunition quality and quantity:** Also kill rate increase the more ammunition you have and the lower the error percentage of that ammunition is
- Personnel quality and quantity:** NATO should use all of its training resources to train as many Ukrainians as possible. Russia recruit and make over 30k soldiers MD
 - Ukraine's non conquered population is now down to 35 million so likely 6 million men and women will be fit for military service or 17% of population ($17\% = 6 * 100 / 35$)
 - 6 million compares for NATO to train 100k new Ukrainian soldiers monthly for 5 years
- Willingness to fight and kill the enemy** doing whatever it takes to be effective without restrictions



Sources/attribution for previous slides

- Sources for kill rate data: GoTo www.hmexperience.dk look up video #23 and download excel spreadsheet with data and clickable links to sources
- Main source for confirmed Russian material losses: <https://www.oryxspioenkop.com/2022/02/attack-on-europe-documenting-equipment.html>
- Main source for confirmed Ukrainian material losses: <https://www.oryxspioenkop.com/2022/02/attack-on-europe-documenting-ukrainian.html>
- Other key source for unconfirmed Russian losses: <https://www.minusrus.com/en>
- 405,000 dead US soldiers for all of WW2: https://en.wikipedia.org/wiki/United_States_military_casualties_of_war
- 14 million Russians died in WW2 both soldiers and civilians: https://en.wikipedia.org/wiki/World_War_II_casualties#Soviet_Union
- Lancet drone by Russia: https://en.wikipedia.org/wiki/ZALA_Lancet
- US HARM anti-radar missile: https://en.wikipedia.org/wiki/AGM-88_HARM
- NASAMS: <https://en.wikipedia.org/wiki/NASAMS>
- Russian helicopters has been upgraded with extended range anti-tank missiles in 2023: [Extended Range Russian 'Khrizantema' Air-to-Ground Missile Debuts on Ka-52M, Mi-28NM Helicopters \(defensemirror.com\)](https://www.defensemirror.com/extended-range-russian-khrizantema-air-to-ground-missile-debuts-on-ka-52m-mi-28nm-helicopters)

