

American relief and the Soviet famine of 1921-22

Volha Charnysh,^{*} Andrei Markevich,[†] and Natalya Naumenko[‡]

*Prepared for the 2023 Summer Workshop in the Economic History and Historical Political
Economy of Eurasia
First draft (May 2023) please do not circulate*

Abstract

This paper explores the efficiency of one of the first mass-scale international aid policies – American relief to Soviet Russia suffering from the 1921-22 famine. We construct a large novel panel dataset and document several new facts. We show that the famine resulted from the combination of grain requisitions during the War Communism and the severe drought and the resulting harvest failure in 1921. We further show that despite Soviet interference and infrastructural difficulties, the American Relief Administration (ARA) managed to distribute the relief based on the severity of the famine, with provinces that collected smaller harvests receiving more food. As a result, birth cohorts from the time window around the famine were more likely to survive in the provinces where the ARA fed more people. To establish a causal effect of American aid on survival, we rely on the arguably exogenous variation in grain shipments to Soviet ports and the location of the first ARA's headquarters in the suffering region. Our analysis shows how effective international aid can be when it is not captured by local elites.

I ask all honest European and American People for prompt aid to the Russian people. Give bread and medicine.
Maxim Gorky, open letter on July 13, 1921

1 Introduction

In 1921-1922, the Soviet Union experienced one of the worst famines in recent history. Nearly twenty million people were at risk from starvation or related epidemics. The Soviet government had no means of dealing with the food shortages but was reluctant to accept international assistance from the capitalist West. As Moscow dithered, writer Maxim Gorky issued a dramatic appeal for help, in an open letter addressed to "all honest persons." Herbert Hoover of the American Relief Administration (ARA) – an American state agency set up in 1919

^{*}Assistant Professor, Department of Political Science, MIT; charnysh@mit.edu.

[†]Professor, University of Helsinki, and New Economic School (Moscow); andrei.markevich@helsinki.fi

[‡]Assistant Professor, Department of Economics, George Mason University; nnaumenk@gmu.edu

to assist Europe to overcome post-WWI food difficulties – replied the same day, taking the Soviet leaders by surprise (Edmondson, 1977, 516). After intense negotiations, the ARA and the Soviet government signed an agreement on August 20, 1921 at Riga. Just a week later, the first ARA food shipment reached Petrograd (St. Petersburg).

The ARA would end up feeding over ten million people, despite the "almost insurmountable obstacles," including a suspicious Bolshevik government, ramshackle transportation system, and the general "dishonesty, trickery, demoralization, incompetence, apathy" and raging epidemics (Patenaude, 2002, 172). Approximately two hundred Americans directly administered the distribution of relief through the network of some 21,000 kitchens across the Soviet Union, with the help of a much larger Russian staff (Patenaude, 2002, 178). From the beginning of its operations in Russia in the fall of 1921 up to their close in 1923, ARA delivered 741,572.7 metric tones of relief supplies, valued at \$63,174,848.78 (Surface and Bland, 1931, 247) or more than one billion dollars in modern prices. Of this, 471,567.1 metric tons, or about 64 percent, were used for child and adult relief (as opposed to seed grain, remittances, medical supplies, and bulk sales).

What were the results of this massive effort? Which parts of the Soviet Union receive the American relief? Did the distribution of food supplies reflect humanitarian needs on the ground or did the Bolsheviks divert relief to more strategically important areas? At the end of the day, did the ARA succeed in saving lives?

We collected a novel panel dataset to address these questions. We first explore which provinces the Soviet government recognized as famishing because this influenced the ARA activities. To estimate the availability of food, we digitized the data on harvest in 1920 and 1921 and predicted grain yields using summer temperatures and precipitation levels, sown area, and soil suitability. We find that the severity of the famine, as acknowledged by the Soviet government, was positively associated with exposure to the drought of 1921, operationalized as receiving precipitation one standard deviation away of local averages in May 1921, and the resulting availability of grain. We also find that the scale of grain procurement in 1920, the last year of compulsory grain requisitions under the "War Communism" policy, predict the Soviet designation of famine severity. Famine provinces did not differ in the strength of the nationalist vote, which suggests that the government defined areas as famishing on the base of food availability and did not use this definition strategically.

Second, we analyse determinants of the famine relief, drawing on original archival data about the ARA activities in the Soviet Union. We find that the strongest predictor of the ARA presence as well as of the timing and magnitude of relief was the severity of the harvest failure, as measured by exposure to the 1921 drought, 1921 harvest, or the predicted grain yields. This means that the Communist Party did not succeed in capturing and diverting relief allocation.

Finally, we investigate whether the ARA aid managed to save lives using data on birth cohorts from the 1926 population census. To account for the endogeneity of the relief allocation, we exploit the fact that the ARA started the investigation of the famine region in Kazan, reaching this city by train from Moscow in early September 1921. From Kazan, ARA teams set off to other locations by rail and boat. Places that were easier to reach from Kazan in the fall of 1921 were where the ARA headquarters were established earlier, leading to earlier feeding and higher total aid. We combine this spatial variation in the ARA's presence with over-time variation in grain shipments. American grain arrived to ports in the Baltic and

Black Seas, which varied in terms of natural conditions (e.g. Baltic ports are often frozen during winter) that affected the dynamic of grain delivery. Other arguably exogenous factors outside the Soviet Union, such as the availability of Congressional funding for the purchase of supplies, also likely affected these dynamics. We thus instrument the ARA relief by dividing the total shipments in a given year by the distance of each provincial capital to Kazan, interacted with the drought dummy. Our 2SLS analysis with province and region-month fixed effects demonstrates that the ARA relief had increased the birth cohorts in 1921-1923. One standard deviation increase in the per capita rations translates into approximately one-fifth of a standard deviation increase in cohort size.

This paper makes several contributions. Our first contribution is to measure the extent of the famine and of the ARA relief operations. The 1921-22 famine is understudied despite its massive scale and political importance. This is partially because of data availability: the geography of the famine is not very well documented and there is no disaggregated data on famine mortality (Adamets, 2003; Andreev et al., 1998; Markevich and Harrison, 2011). The ARA operations received some attention from historians (Patenaude, 2002), but are largely overlooked by quantitative social scientists. By collecting original data about weather conditions, harvest, procurement levels, grain prices, cohort sizes, and the number of people fed by the ARA, we are able to establish which areas of the Soviet Union suffered the most and whether the American food reached these areas, saving lives. In doing so, we contribute to the growing literature on the causes and consequences of historic famines (Naumenko, 2021; Charnysh, 2022; Markevich et al., 2023; Meng et al., 2015).

Our second contribution is to demonstrate that famine relief can have a positive impact even in a highly politicized environment. This finding is important in light of the dramatic rise in food insecurity in recent years. According to the World Food Programme, some 345 million people in developing countries are facing acute hunger and require emergency food relief.¹ In December 2022, the UN Secretary General called for \$1 Billion for Central Emergency Response Fund.² At the same time, the evidence that international food aid reaches the neediest recipients and alleviates human suffering has been mixed at best. Studies find that international and domestic aid is typically allocated based on donors' strategic and economic interests rather than recipients' needs (Alberto and David, 2000; Mesquita and Smith, 2009). Furthermore, humanitarian aid is frequently captured by various political actors in recipient countries (Barnett, 2011; Findley, 2018) and can produce negative externalities (Nunn and Qian, 2014; Wood and Sullivan, 2015). The Soviet-US relationship in the early 1920s seem a ripe case for political manipulation of relief efforts, and the ARA and Soviet records detail numerous attempts to divert aid in line with political considerations in both the Soviet Union and the United States. Nevertheless, thanks to the ingenuity and perseverance of the ARA team on the ground, the allocation of aid largely followed the geography of need and most supplies reached their intended recipients. Likely as a result of this impartial allocation process, we find that the aid did save lives.

¹International Monetary Fund. (2022, Sep. 30). "Global Food Crisis Demands Support for People, Open Trade, Bigger Local Harvests." IMF Blog. Retrieved from <https://bit.ly/3udj7kF>

²United Nations. (2022). "Pointing to Steep Rise in People Worldwide Needing Humanitarian Aid." UN News SG/SM/21624, Retrieved from <https://press.un.org/en/2022/sgsm21624.doc.htm>

2 Historical Background: Famine and ARA Relief

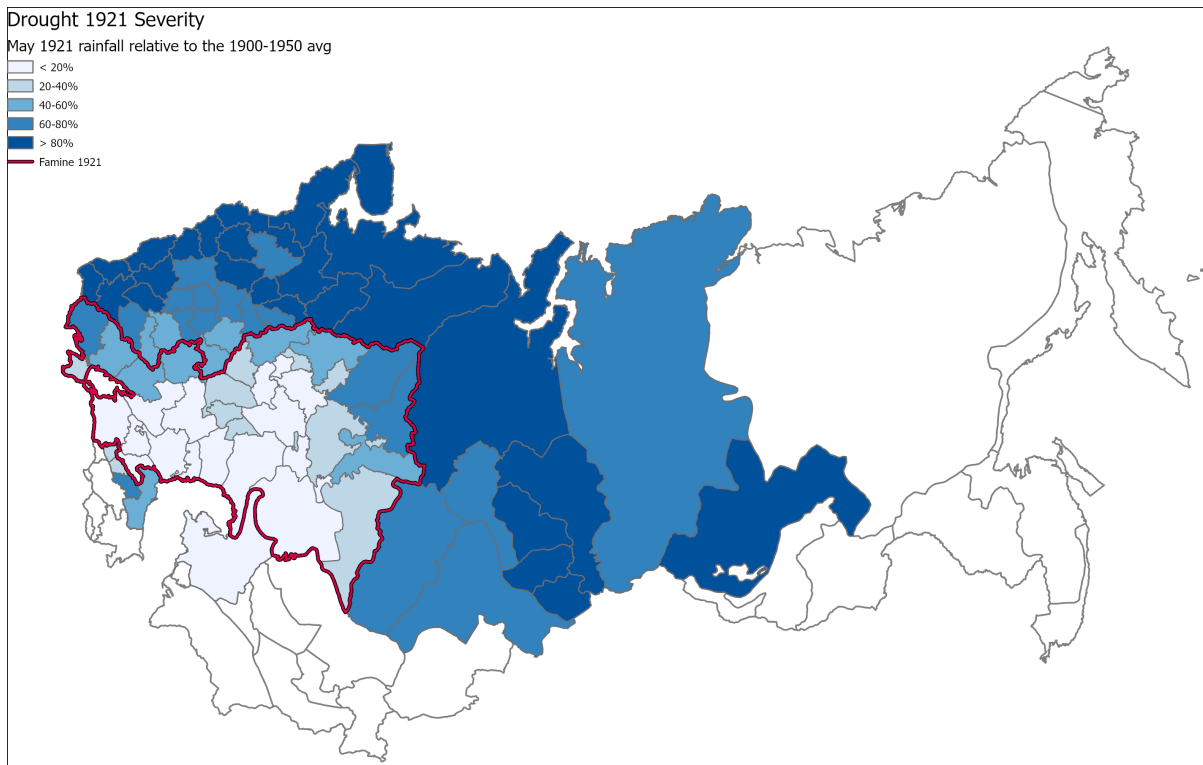
Famine extent and causes The famine of 1921-1922 in the Soviet Union was among the worst famines in recent history. The “famine zone” extended some 800 miles long and 350 miles wide. While mortality estimates vary, up to 5 million people may have died from starvation and famine-related diseases. The official estimates from 1923 state that in the epicenter of the famine population losses exceeded 25% (Bukhman, 1923, 100). The geography of the famine is still poorly understood because of the inadequate population registration records. The definitive list prepared by the Soviet Famine Relief Committee (Pomgol) in October 1922 includes 25 provinces with the status of “famishing,” 7 provinces receiving tax exemptions, and 6 provinces receiving aid without tax exemptions (Adamets, 2002, 122-124). The list from the spring of 1923 counted 33 provinces as famishing based on the criterion of harvest below 14 puds per capita as affected by the famine (Bukhman, 1923, 89).

Scholars have extensively debated the multifaceted causes of the famine (Lih, 1990; Adamets, 2003; Wheatcroft, 1990; Litoshenko, 2001). It is generally acknowledged that the two consecutive bouts of drought in the spring of 1920 and 1921 were the immediate cause. The 1920 drought undermined harvests in the black soil and middle Volga region. The drought of 1921 was even more devastating, with only 7.1 mm of rain between April and June, compared to the average of 108.3 mm of rain in the previous 17 years (Adamets, 2002, 122-124). The map portrays the geography of rainfall deviations in May 1921 from their long-run averages.

Yet the roots of the famine went back to the disruption caused by WWI and the Civil War, which drew millions of men away from agricultural production and destroyed productive capital (Khryascheva, 1921; Patenaude, 2002). The famine was likely exacerbated by the Bolshevik agricultural policies. In 1919-1920, the government implemented *prodrazverstka*, or forced procurement of “surplus” grain and fodder from peasants. Forced requisitions of grain destroyed peasants’ incentives to produce, fueled armed rebellions, and reduced land under cultivation (Lih, 1990; Litoshenko, 2001). From 1919 to 1921, the area of sown acreage fell by 18% in the grain-consumer provinces of the north, i.e. the provinces which exported grain, and by 33% in the grain-producing regions in the south, i.e. the provinces which imported grain (Patenaude, 2002, 26). *Prodrazverstka* ended in March 1921 with the introduction of the New Economic Policy (NEP), intended to stimulate economic recovery. Under NEP, the grain and fodder requisitions were replaced by a fixed tax *prodnalog* and surpluses could be sold on the market. However, this was too little too late; the peasant economy was already depleted and thus extremely susceptible to drought.

Government response Aware of the impending famine, the Soviet government faced a dilemma. The problem was too big to be ignored; failure to react would not only decimate the population in the economically important region but strengthen the domestic opposition. Domestic resources were insufficient to avert the disaster, but soliciting foreign aid risked opening the doors to subversion and sabotage. Concerns about foreign influence were not without basis. In June 1918, US officials discussed the possibility of establishing a special “Russian Relief Commission” as a means of US influence and an alternative to armed intervention (Edmondson, 1977, 510). In the spring of 1919, the Western allies supplied food to the White forces in the Russian Civil War, while imposing constraining requirements for the delivery of aid to the

Figure 1: The severity of the 1921 drought at the province (gubernia) level.



Notes: Drought is measured based on the May 1921 rainfall, relative to the 1900-1950 average.

Bolshevik government.³ Several anti-Bolshevik émigré organizations offered their assistance to the US in liberating Russia from Bolshevik control with the help of food aid. In short, the political risks of admitting famine and accepting foreign aid were nontrivial.

As the food shortages worsened, the Soviet government eventually acknowledged the famine by acquiescing to the establishment of the All-Russian Famine Relief Committee. Composed of concerned activists, intellectuals, and celebrities, the Committee was intended to play only a marginal role.⁴ This changed when its member Maxim Gorky, a prominent writer, issued an open letter to "all honest persons" asking for aid. The letter reached Herbert Hoover, then the head of the American Relief Administration (ARA), who responded on July 23 1921 that the ARA could provide aid, but that the release of all American citizens being held prisoner in Russia was a prerequisite for starting negotiations (Patenaude, 2002, 38). The talks began at Riga on August 10, the same day that Russia released seven of the American prisoners.⁵

The agreement on the provision of relief between the ARA and the Soviet Union was signed ten days later. The ARA promised to feed a million children⁶ and promised not to participate

³The Council of Four agreed that relief could be supplied to Russia on the condition that all military operations should stop, a much more stringent condition.

⁴The committee also included Bolsheviks and some anti-Bolshevik activists (Edmondson, 1977).

⁵Around the same time, the UK and France decided to offer aid to Russia through the All-Russian Famine Relief Committee, on the condition that Russia allows them to inspect the famine area. Edmondson (1977) argues that this new development contributed to the Soviets' decision to deal with the ARA, which agreed to work directly with the Soviet government and imposed less stringent conditions (Edmondson, 1977).

⁶The agreement was extended to sick adults and eventually all adults on December 30, 1921

in politics. The Soviet Union agreed to give the ARA full control of the distribution up to the time of consumption as well as the freedom from search. Under par. 26 of the Agreement, the ARA could “carry on its operations where it finds its relief can be administered most efficiently and secure best results” but the agreement stated that the ARA’s principle objective was “to bring relief to the famine-stricken areas of the Volga” (Patenaude, 2002, 45). The Soviet Union allowed the ARA to establish committees of local citizens, provided that the Soviet government will also be represented on these committees (Patenaude, 2002, 45). Moscow would bear the costs of unloading, storage, and other expenses. The agreement freed the import of ARA foodstuffs from duties and simplified the inspection process.⁷

To mitigate political concerns of foreign influence, the Soviet government empowered Soviet secret police to monitor closely ARA officials and screen ARA operations (Makarov and Khristoforov, 2006).

Determining need (ARA investigation and allocation decisions) A small group of ARA men arrived in Moscow on August 27, 1921 to establish the headquarters and to prepare for receiving food stocks that were already on the way from Riga, Danzig, and Hamburg. The feeding points for children in Petrograd opened on September 6, and in Moscow four days later. One hundred thousand children were examined by ARA doctors, who accepted about half of them to receive rations of white bread, corn grits, rice, lard, milk, cocoa, and sugar (Patenaude, 2002, 53). The Americans planned to focus on cities, assuming that the peasants had sufficient supplies (Patenaude, 2002, 53). They would soon discover that the situation in the countryside was much worse.

Five days after reaching Moscow, a team of three Americans departed to the Volga region to investigate the situation and to advise the headquarters of how much food will be needed. They reached Kazan, a city 650 miles east of Moscow, by train on September 3, 1921, after a delay caused by the absence of cars and the non-appearance of the government chauffeur (Fisher, 1927, 85). After exploring the city and the surrounding countryside for three days by car and boat, they proceeded south by rail to Simbirsk. This 150-mile journey took them three-and-a-half days, because there were no direct lines and cars had to be switched many times. After two-and-a-half days in Simbirsk province, they boarded a steamer south along the Volga, taking 36 hours to reach Samara, the epicenter of the Volga famine.

The allocations to starving provinces were made from the ARA headquarters in Moscow based on reports from the ARA district supervisors. This means that the itinerary adopted by the investigative team in these early days and their success at getting from one point to another determined how quickly relief operations in a particular province would commence. Thus, the earliest ARA feeding points opened in October 1921 in the cities of Kazan, Simbirsk, Samara, and Saratov. By the middle of November 1921, the ARA team travelled to Ufa, Orenburg, and Tzaritzin, establishing new headquarters and starting relief operations there. A few weeks later, feeding points appeared in Astrakhan and in the Kirghiz and Bashkir Republics, through the subbases organized at Uralsk and Sterlitamak. Some of these provinces were not included in the official Soviet famine zone, and received aid only following the ARA investigation.

Importantly, the way ARA travelled and how long each trip took depended on idiosyncratic choices made by the investigators and random events. For instance, the ARA team

⁷In practice, this did not always work this way and there was a lot of argument and wiring with Moscow for each ship.

chose to travel from Kazan to Simbirk by railway even though the Volga connection offered a more direct route (Patenaude, 2002, 57). Their trips were delayed by the availability of railway cars, steamers running aground, and so forth. Subsequent relief deliveries did not follow the circuitous route of the investigative team, although they faced similarly challenging conditions. How soon the investigative team arrived in a particular province was unrelated to the severity of the famine. As Fisher (1927, 105) notes, although the ARA arrived to the Kirghiz and Bashkir republics three months later than in Kazan and Samara, "the condition of the population [there] was much the same as in the middle Volga districts." This is partly because the ARA possessed very limited information about the local conditions prior to conducting investigations. It is notable that until December 1922, the ARA's target was feeding one million children, as promised in the Riga agreement. Its mission eventually expanded more than tenfold as the ARA team learned more about the conditions in the Soviet Union, leading Hoover to petition Congress for an appropriation of \$20,000,000 for relief purposes.⁸

The famine in Ukraine was discovered accidentally, as the ARA traveled there to deliver remittances from the American Jewish JDC and other organizations in December-January 1922. The Soviet government argued that Ukraine produced a surplus that was used to feed the Volga provinces (Fisher, 1927, 247-48). This was true for northern Ukraine, but the conditions in the southern governments, bordering the Black Sea, appeared dire, motivating American intervention. Several provinces reached by the ARA were helped even though the organization acknowledged that they were not in dire need, including the three republics in Transcaucasia (Fisher, 1927, 281-83).

Delivering food supplies While the ARA men were investigating conditions in the Volga region, the first relief shipments were already unloaded in the Baltic Sea ports. These first supplies came very fast because they were redirected from Europe. In subsequent periods, the ARA team would send an estimate of the required supplies to the New York office a month in advance, and the New York office would organize their purchase and shipment.

A small portion of the shipments was sent directly to north Baltic ports Petrograd (St. Petersburg), Reval (Tallinn), Riga, Windau (Ventspils), and Libau (Liepāja). More frequently, because these ports lacked equipment and adequate storage facilities, the trans-Atlantic cargoes were discharged at Hamburg and then trans-shipped on small steamers to their final destinations in the Baltic. Some supplies were also sent to Moscow by rail from the port of Danzig (Gdańsk) (Surface and Bland, 1931, 139). After the Baltic was closed by winter ice in February 1922, the ARA directed shipments to the Black Sea port of Novorossiisk (principal destination) and later to Theodosia, Odessa, and Batoum (Fisher, 1927, 174).⁹ After reaching the port, relief was stored or immediately shipped by rail and, starting in April 1922, by boat (using Volga, Kama, Viatka, and Belaya) rivers (see Figure 2). In the more remote locations, the ARA relied on sleds, camels, and human backs.

Problems piled up two months into the relief operations. The biggest challenges were infrastructural. The ports lacked warehouses and were unprepared for handling large shipments. The railways were in terrible condition, and the Russian authorities failed to supply

⁸Hoover was also interested in helping American farmers, who faced an oversupply of crops due to increased productivity and a decline in demand after World War I.

⁹The port of Petrograd, best connected to the Volga region, was icebound 4.5-5 months per year. The port of Riga was closed by ice from January 18 to April 19, 1922. The heaviest tonnages were handled through Riga and Novorossiisk (Surface and Bland, 1931, 139).

Figure 2: Ports and transport lines used by ARA as well as key destinations for ARA relief.



Notes: We use historical city names to match ARA and Soviet documents. For reference, we used the map of Russian transport lines used by ARA in ARA (1922, 22).

a sufficient number of cars and fuel. Trains from Baltic ports to Moscow took from one to four weeks. The first train with supplies shipped to Odessa took a month to reach Simbirsk, fifteen hundred miles away (Surface and Bland, 1931, 139). During the winter, the main line from Moscow to Orenburg was frequently blocked with snow for weeks at a time.

Even when the weather cooperated, there were frequent jams and interruptions. Fisher (1927, 189) likens the ARA shipments to the famine region to "shots in the dark that had a good chance of missing their mark entirely." According to the records of the ARA's Traffic Division, non-arrivals of cars to destination increased from 11% in October 1921 to 23% in December 1922 to 35% in January 1922 (Fisher, 1927, 189). Interruptions also occurred because traffic workers refused to work without food. In February 1922, the Soviet government seized American relief supplies in transit, distributing some of it to the railwaymen to prevent labor unrest (Fisher, 1927, 209). The crisis was resolved only after the ARA threatened to suspend the entire operation.

When delivery plans failed, the ARA improvised. For example, after four people died trying to cross the Kama river en route to Spassk district (Tatar Republic), relief was redirected to Laishev district (Fisher, 1927, 221). Similarly, when the main line from Moscow to Orenburg was blocked with snow, food supplies were diverted to Samara and Ufa instead (Coleman, 1923, 12-13).

Feeding the population The ARA employed a very small staff, supervising a much larger number of local citizens. This was in line with its vision of encouraging self-help over charity

and keeping the overhead costs low (Patenaude, 2002, 31). At the peak of its operations in Russia, the ARA team consisted of only 199 men, and each district had only a few Americans. The organization was able to feed millions by relying on locals, which the ARA had full discretion of hiring.¹⁰ According to (Fisher, 1927, 101): “The ARA was usually able to secure the kind of committee-men it desired by insisting on certain indispensable qualifications, and this insistence prevented the appointment of persons whose sole virtue might be membership in the Communist Party.”

Gubernia capitals and towns received food first, even though the need was greater in villages because of superior connectivity and the availability of warehouses (Fisher, 1927, 98). When expanding beyond cities, the ARA sought statistics from the local officials about conditions in each uezd and made a “theoretical allocation, sending into the uezds in the worst straights a larger number of ratios in relation to the total population than [in less stricken uezds]” (Fisher, 1927, 98). They proceeded to subdistricts and eventually to villages, which had been warned of their coming and asked to provide information for allocations.

Fisher (1927, 227) remarks that the arrival of ARA aid had an immediate impact: “The prices of local food products everywhere dropped, and such hidden supplies as existed began to be revealed. People were still underfed; there were still occasional deaths from starvation, and distress was everywhere; but, within a few weeks’ time, the demand which began to be most widely expressed was not for food, but for horses, tools, and the supplies necessary for the planting season.”

3 Which provinces were included in the famine region

Because the official “famine” status affected ARA movement within Russia, we first consider the predictors of inclusion on the list of 33 famishing provinces by the Soviet government, published in Bukhman (1923). The official criterion for inclusion on the list is collecting harvest below 14 puds per capita.¹¹ The list differentiates between four degrees of “exhaustion and hunger”: 12 provinces did not collect any harvest (severity of 4); eight provinces with harvest between 1 and 5 puds per capita (severity of 3); ten provinces with harvest between 5.1 and 10 puds per capita (severity of 2); and three provinces with harvest between 10.1 and 14 puds (severity of 1). We code provinces not mentioned in the document as zero (no famine).¹²

We consider both natural and man-made causes of the famine highlighted in the literature. To account for the 1921 drought, we collected data on rainfall. Drought is coded as 1 if the rainfall in May 1921 was one standard deviation below the long-term average. We also gathered information about the 1920 and 1921 harvest (in thousand puds) from the official records published by the Central Statistical Committee. To account for the expropriation of grain during the War Communism and subsequent policy changes, we gathered data on procurement levels in 1919, 1920, and 1921. By 1921, the year of the famine, *prodrazverstka*

¹⁰However, the Soviet authorities constantly tried to interfere with this authority and even arrested a few ARA employees.

¹¹This is a final list, compiled in 1923, and the number of provinces considered famishing expanded in 1921-1922.

¹²Our sample consists of the Soviet republics of Belarus, Russia, and Ukraine and excludes Russian Far East and the republics of Georgia, Azerbaijan, Armenia, and Turkestan. Note that Kirgiz ASSR (future republic of Kazakhstan) was at the time part of Russia and is in our sample.

was replaced with grain tax, above which sales of grain to state became voluntary for peasants. Levels of grain collection in this period likely reflected economic conditions on the eve of the famine. To measure the contribution of the Civil War, we use an indicator coded as one if the province was affected by military fighting using information from Osipov (2007).

To investigate whether the Bolshevik government dissuaded the ARA from entering anti-Bolshevik provinces, we use data on the results of the 1917 Constituent Assembly elections collected by Castañeda Dower and Markevich (2022). We measure share of the vote cast for the Bolshevik Party (formally called Russian Social Democratic Labor Party of the Bolsheviks, which changed the name to the Communist Party in 1918) and the share of the vote cast for various nationalist parties, including the Ukrainian Socialist-Revolutionary Party, the Armenian Revolutionary Federation, the Alash Party (Kazakhs), the Buryat National Committee, Jewish national lists, and many others. Guerrilla bands of nationalists in the Volga region continued to resist Communist authorities on the eve of the famine, which may have influenced government incentives in allowing the ARA in and providing famine relief. We also collected information about ethnic composition of the population, to investigate whether famine designation depended on the presence of specific groups. In all analyses, we also control for the share of urban population and include dummies to signify Russian capitals, Moscow and Petrograd.

Using a cross-section of 83 Soviet provinces, we regress the famine indicator on these economic and political variables (see Table 1). First, we confirm that the 1921 drought and the resulting harvest failure predict famine (Columns 1-2). The 1920 harvest, which was also below the norm, seems to have contributed to the famine severity as well (Column 3). We further see that Bolshevik procurement in 1920 is a strong predictor of famine, even when we control for the 1921 and 1920 harvests (Columns 3). The coefficient on the 1919 procurement is positive, but does not reach statistical significance. Thus, it appears that the requisitions of grain, particularly in 1920, indeed contributed to starvation. The sign on the 1921 procurement, which was smaller, is negative but does not reach significance. This is likely because by 1921, there was no grain to collect in the severely affected provinces.

Next we consider political indicators. We see that provinces where Bolsheviks secured higher vote share in the 1917 election were less likely to starve in 1921, although this variable is significant only at a 10% level. The coefficient on the nationalist vote share is positive but not significant (column 5). There is no evidence that the Civil War exacerbated the famine, although it is possible that our binary indicator is too crude to detect an effect (Column 6).¹³ We also see that areas populated by ethnic Germans and other non-Russians were more likely to suffer, even after conditioning on the drought, harvest, and procurement levels. To sum up, we confirm existing research that famine was a product of the extraordinary drought and resulting harvest failure, as well as the procurement policy during the War Communism.

4 The determinants of ARA assistance

Next, we investigate the determinants of the ARA relief. We ask whether the ARA supplies reached the neediest provinces and whether political considerations influenced whether and how much relief was granted. We collected data on the number of people fed in each province on a monthly basis from August 1921 to July 1923, when the relief operation was completed,

¹³We are considering using the intensity of civil war using data on battles.

Table 1: Determinants of food scarcity, as estimated by the Soviet government in 1923.

	Dependent Variable: Famine 1921 severity (0-4)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dep. var. mean.	1.120	1.250	1.241	1.268	1.243	1.120	1.268
Drought 1921	1.914*** (0.341)						1.122*** (0.274)
Grain 1921		-2.309*** (0.523)	-2.820*** (0.818)	-2.805*** (0.427)			-2.119*** (0.335)
Grain 1920			0.704*** (0.242)				
Procurement 1921			-2.561 (4.544)				
Procurement 1920			4.209*** (1.033)	3.417*** (0.590)			3.318*** (0.554)
Procurement 1919			0.308 (0.745)				
Voteshare bolsheviks 1917.					-1.352* (0.763)		
Voteshare nationalists 1917					1.284 (1.413)		
Civil War indicator						-0.077 (0.212)	
Ukrainians							1.555 (1.321)
Germans							2.714** (1.254)
Jews							-2.729 (2.566)
Other non-Russians							1.315*** (0.505)
Observations	83	72	58	71	74	83	71
R-squared	0.660	0.697	0.809	0.767	0.573	0.489	0.859

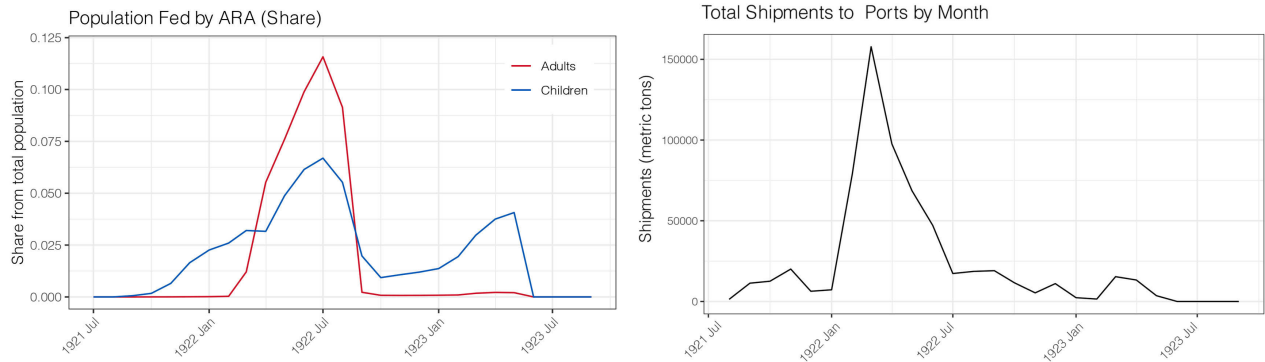
Notes: Observations are at the province level. Our sample includes the Soviet republics of Belarus, Russia, and Ukraine. All models also include dummies for capitals (Petrograd and Moscow), the share of the urban population in 1920, and region fixed effects. Drought 1921 is an indicator that equals to one if May 1921 rainfall is one standard deviation or more below the 1900-1950 average. Grain and procurement are measured in kg per person per day. Ukrainians, Germans, Jews, and Other non-Russians are the share of each ethnicity in the population according to the 1897 Census. Standard errors adjusted for spatial correlation over 1,000 km are in parentheses. *p < .1; **p < .05; ***p < .01.

preserved in the archival collections of the Hoover Institution. We also digitized data on the arrival of food supplies (in net metric tons) by port for each ARA operation in the Soviet Union from Surface and Bland (1931). We incorporate information from both original and transshipping steamers to compute the total amount of relief supplies available for distribution in a given year.¹⁴

The arrival of supplies to all ports used for the ARA Soviet program and the accompanying progress of children and adult feeding are presented in Figure 3. In the beginning, the ARA limited its activities to feeding kids; it expanded feedings to adults in the early spring of 1922, after a corresponding amendment in the agreement with the Soviet government. During the peak months of summer 1922, the ARA fed more than fifteen percent of the population in the famine-stricken provinces. From the fall of 1922 forward, the ARA again mostly concentrated

¹⁴We omit shipments of medical supplies, which amounted to 3,427 tons, or 0.4% of total shipments.

Figure 3: The number of children and adults fed by the ARA over time (left) and monthly variation in the volume of supplies arriving for distribution within the Soviet Union (right).

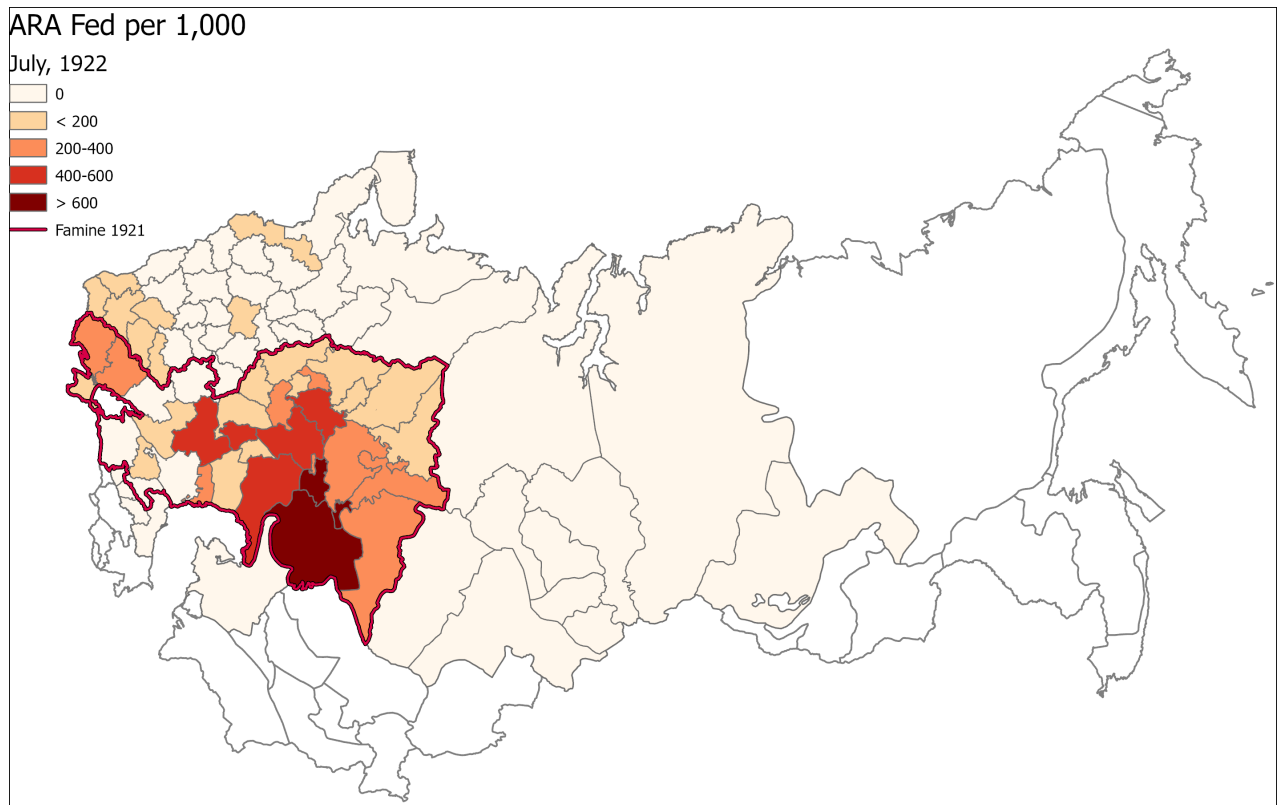


its efforts on feeding kids. The total area covered by the ARA relief operations at the peak of the campaign is mapped in Figure 4. Already a brief visual examination shows that the territory of the ARA's presence closely corresponds to the area affected by the 1921 drought shown in Figure 1.

As a first formal test, we use a binary indicator coded one for provinces that had (ever) received ARA relief. We also consider how soon the relief arrived, using the number of months from the signing of the Riga agreement until the start of the feeding. As a third indicator, we use the number of kids and adults fed from August 1921 to May 1923 normalized by the population and the total number of months the ARA spent in the Soviet Union (22). We regress each of these indicators on famine status, drought severity, grain harvest, food requisitions, Civil War indicator, party preferences in the 1917 Assembly election, and ethnic demography (see variable descriptions above).

Results Regression results in a cross-section setting of eighty-three Soviet provinces are presented in Tables 2 and 3. Results are similar for all three measures of the ARA activities. The ARA was present and more active in provinces that were officially designated as famishing (column 1). Factors that predict the official famine status – the 1921 drought, poor grain harvest in 1921, and higher 1920 procurement (columns 2-4) – are also positively associated with the ARA activities (the coefficients on 1921 drought and 1920 procurement are not precisely estimated in panel B of table 3; here, our sample is halved). These results imply that the ARA managed to channel the aid to the most suffering regions, and the communist government did not capture the relief allocation. In line with this interpretation, there is no evidence that higher loyalty to the Bolshevik regime measured with the share of votes for this party at the 1917 election or Civil War fighting dummy affected ARA relief (columns 5 and 6). Instead, we have some evidence that the ARA was more likely to provide relief, came in earlier, and provided more relief per capita in provinces where the nationalist parties secured higher voteshares in 1917. Relatedly, we find that the ARA was more likely to be present in places with more Jews and other non-Russians (column 7 in Table 2), although this result is less stable across specifications. The coefficient on the Jewish share in panel A of table 2 does not replicate in panels B and C of table 3. The coefficient on the share of other non-Russians does not replicate in panel C of table 3. One reason for this finding could be the greater

Figure 4: The map of provinces that received ARA aid.



severity of the famine in places where Jews and other non-Russians were concentrated, as evident in Table 1 based on the Soviet classification of famine regions by the severity of the harvest failure.

5 Did the ARA relief make a difference?

Finally, we examine whether receiving the ARA aid made a difference for the starving population. The ARA historiographers assume that aid prevented the starvation of millions of people (Fisher, 1927; Patenaude, 2002). Yet their claims are rarely substantiated with statistical evidence. Furthermore, studies on the effectiveness of foreign aid are generally pessimistic about its impact on receiving populations as aid can be looted or captured by political elites (e.g., Findley, 2018; Nunn and Qian, 2014). This appears particularly likely in the aftermath of the civil wars in weak and divided states like the USSR in the 1920s.

There is no systematical subnational data on mortality or natality rates, but the impact can be measured using data on the sizes of birth cohorts derived from age data collected in the 1926 census.¹⁵ The ARA relief could affect the sizes of the birth cohorts in several ways. First, the survival of young children born prior to the famine likely improved following the receipt of ARA rations. Second, the ARA also provided rations to adults, impacting birth rates indirectly. We can clearly see this in the yearly data on the sizes of birth cohorts in

¹⁵Markevich et al. (2023) show that this measure closely tracks other metrics, such as death and birth rates, using data from the 1932-33 famine. Census data by cohorts has been used as a proxy for famine losses when data on mortality is missing in other contexts, e.g. the Great Chinese famine of the late 1950s – early 1960s.

Table 2: Determinants of ARA presence at the province level.

Panel A.	DV: Indicator that ARA ever provided relief						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dep. var. mean.	0.494	0.556	0.563	0.527	0.494	0.494	0.574
Drought 1921 dummy	0.523*** (0.146)						0.425*** (0.141)
Grain 1921		-0.414*** (0.154)	-0.542*** (0.165)				-0.323*** (0.110)
Procurement 1920			1.145*** (0.335)				0.818*** (0.281)
Bolshevik vote share 1917				-0.053 (0.474)			
Nationalist vote share 1917				0.678* (0.393)			0.196 (0.231)
Civil war indicator					0.090 (0.155)		
Ukrainians						0.220 (0.462)	0.459 (0.479)
Germans						1.067* (0.626)	0.008 (0.301)
Jews						3.099** (1.482)	3.167** (1.299)
Other non-Russians						0.295 (0.272)	0.530** (0.252)
Observations	83	72	71	74	83	83	68
R-squared	0.572	0.514	0.573	0.526	0.455	0.525	0.803

Notes: Observations are at the province level. Our sample includes the Soviet republics of Belarus, Russia, and Ukraine. All models also include dummies for capitals (Petrograd and Moscow), the share of the urban population in 1920, and region fixed effects. Standard errors adjusted for spatial correlation over 1,000 km are in parentheses. *p < .1; **p < .05; ***p < .01.

Figure 5. While the sizes of the birth cohorts in famine and non-famine provinces follow parallel trends up to 1919, they diverge starting with the 1918 birth cohort, i.e. with children who were approximately three years old during the famine. The biggest difference is observed in 1921-22, during the actual famine, and probably is a combination of differences in birth rates and in the survival of children that were born. We also observe a downward shift in WWI cohorts in famine areas, i.e. in cohorts of kids who were between eight and three years old during the famine.

Using birth cohort size to proxy for famine severity assumes that children registered in the 1926 census were born or lived in the same province during the famine. It is well-known that food scarcity led to a mass refugee movement out of the starving provinces. Using the estimates of refugees traveling by rail suggests that around 900,000 people were displaced from July 1, 1921 to July 1, 1922, alone (Bukhman, 1923, 99). While this is a massive number, which excludes refugees traveling on foot and by other means of transport, it still represents less than 10 percent of the population in the most affected provinces.¹⁶ It is likely that famine refugees who survived the ordeal would have returned to their provinces of origin by December 1926, when the census was conducted.

¹⁶The estimate of refugees traveling by rail is at 6.8% in the most heavily affected Samara province and the Kyrgyz Republic.

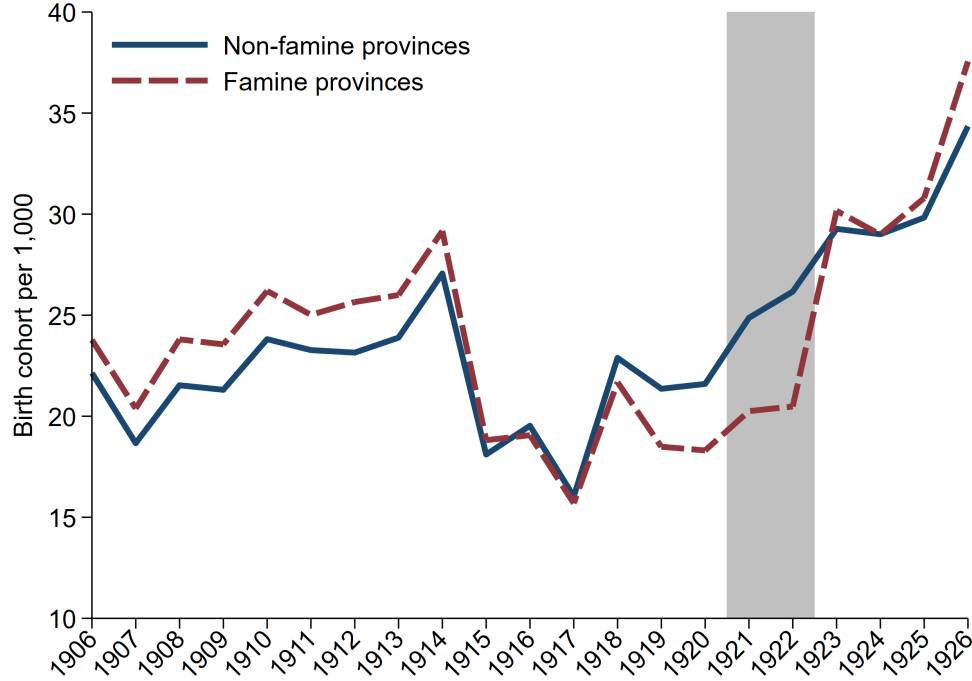
Table 3: Determinants of ARA relief at the province level (continued).

Panel B.	DV: Months from Aug 1921 till the start of ARA feeding						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dep. var. mean.	7.659	7.375	7.375	7.256	7.659	7.659	7.256
Drought 1921 dummy	-1.999 (2.084)						-1.390 (0.954)
Grain 1921		4.935* (2.622)	5.101* (2.703)				4.198** (1.879)
Procurement 1920			-5.261 (4.007)				-7.600*** (2.516)
Bolshevik vote share 1917				1.561 (7.728)			
Nationalist vote share 1917				-5.783*** (1.832)			-9.601*** (1.493)
Civil War indicator					1.474 (1.347)		
Ukrainians						-2.585 (5.011)	1.036 (3.359)
Germans						-3.459 (4.688)	0.842 (2.976)
Jews						8.945 (18.813)	10.408 (6.680)
Other non-Russians						4.369 (3.459)	5.057*** (1.078)
Observations	41	40	40	39	41	41	39
R-squared	0.523	0.593	0.610	0.568	0.516	0.583	0.765
Panel C.	DV: Fed kids and adults Aug 1921-May 1923 / Pop 1920 / 22						
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Dep. var. mean.	0.023	0.027	0.027	0.026	0.023	0.023	0.028
Drought 1921 dummy	0.042*** (0.011)						0.022*** (0.009)
Grain 1921		-0.061*** (0.018)	-0.076*** (0.019)				-0.060*** (0.017)
Procurement 1920			0.130** (0.053)				0.145*** (0.047)
Bolshevik vote share 1917				-0.016 (0.015)			
Nationalist vote share 1917				0.073** (0.033)			0.090*** (0.032)
Civil War indicator					-0.002 (0.008)		
Ukrainians						-0.031 (0.032)	0.061* (0.033)
Germans						0.332*** (0.046)	0.147** (0.060)
Jews						-0.053 (0.074)	0.101 (0.118)
Other non-Russians						0.000 (0.020)	-0.039 (0.030)
Observations	83	72	71	74	83	83	68
R-squared	0.400	0.454	0.540	0.377	0.312	0.388	0.674

Notes: Observations are at the province level. Our sample includes the Soviet republics of Belarus, Russia, and Ukraine. All models also include dummies for capitals (Petrograd and Moscow), the share of the urban population in 1920, and region fixed effects. Standard errors adjusted for spatial correlation over 1,000 km are in parentheses.

*p < .1; **p < .05; ***p < .01.

Figure 5: Birth cohorts over time



Identification Identifying the causal effect of food aid on economic and political outcomes is challenging due to (1) reverse causality (food aid goes to places that are doing poorly and may either improve on their own (reversion to the mean) or get worse for reasons unrelated to aid; (2) joint determination (preexisting economic circumstances determine aid and subsequent economic outcomes). The direction of the resulting bias in the OLS estimates is unclear.

To address the endogeneity concerns, we use the instrumental variables approach. To instrument for the size of the population fed by the ARA in a given province-year, we exploit the temporal variation in the arrival of US supplies to ports used for relief distribution and the cross-sectional variation in distance to Kazan from each drought-stricken province. The first component of the instrument depends on factors exogenous to the conditions in affected provinces, such as the availability of Congressional funding for the purchase of supplies, weather conditions in Baltic and Black Sea ports, and the amendment of the Riga agreement expanding feeding to adults. The second component, distance to Kazan, depended on the itinerary adopted by the ARA investigative team in its first few months in the USSR, when they lacked information about the local conditions. As noted above, the ARA started the investigation of the Volga region in Kazan, which was easy to reach from Moscow, and continued the investigation by traveling from Kazan to more remote places by rail or by boat. Its itinerary was a product of idiosyncratic decisions based on the availability of transport and weather conditions. Subsequent distribution of aid did not follow the same circuitous path but relied on railway connections from the Baltic and Black Sea ports and, from April 1922 onward, on waterways. The third component of the instrument comes from the natural conditions: we define a province as affected by 1921 drought if its May precipitation was one standard deviation away from long-term averages. Conditional on the 1921 harvest and

urbanization levels, we expect that distance to Kazan and the total supply of food reaching ports is exogenous to economic conditions in a specific province. The formula for calculating the instrument, *Available food*, is as follows:

$$\frac{Relief_t}{Distance_i} * Drought_i * 10^4$$

We compute the total amount of relief supplies in time period t by adding up all relief shipments. We compute the logged distance (in km) from the capital of each province to Kazan by rail or by boat using the shortest path algorithm in QGIS.¹⁷ Multiplying this fraction by the drought indicator accounts for the fact that the ARA was not interested in providing aid for places that were not touched by the famine, no matter how close to Kazan they may have been located. We multiply the result by 10^4 for scale. Conceptually, using this instrument amounts to an estimation strategy where the first-stage estimates compare ARA aid amounts in drought-stricken provinces at various distances to the Kazan in months following the arrival of aid to the Soviet Union relative to prior months.

There are several possible concerns about this approach. One is that the distance to Kazan captures the severity of the famine rather than the ARA's idiosyncratic decisions about the investigation itinerary. We thus control for the severity of the drought, harvest failure, and pre-famine procurement in all specifications. To ensure that the cross-sectional component of our instrument (the log distance to Kazan) does not pick up economic development for the region, we control for urbanization rates in all specifications and for railway density, log distance to Petrograd, and log distance to Moscow in robustness tests.

We present OLS and 2SLS results for the relationship between the availability of ARA aid and cohort sizes in Table 4. In these models, our key explanatory variable is *Fed by ARA*, which includes the average monthly share of all children and adults fed by the ARA to the population in a given year ($\mu = 0.027$, $\sigma = 0.005$). In 1922, at the peak of the campaign, *Fed by ARA* varied from 0 to 0.392 in Bashkir province, where the ARA fed nearly 40% of the population per month. In our baseline specification, the F statistic is above 17, suggesting a strong first-stage relationship between the instrument and our key independent variable. Both OLS and 2SLS specifications indicate that the ARA aid had a positive and statistically significant impact on the size of the birth cohorts. However, the coefficients are 25-40% larger in the 2SLS estimation, suggesting the presence of endogeneity in the OLS models. The OLS coefficients would be biased downward if, for example, the ARA aid arrived at places where children were suffering the most and where the birth cohorts and natality rates were declining faster, relative to the less affected provinces treated by the ARA. Our most conservative estimate (column 6) indicates that a standard deviation increase in the number of people fed by the ARA in a given year, predicts an increase in the size of the cohort by 0.189 of a standard deviation in cohort size. In 1922, ARA fed on average 36 people per 1,000 per month or 3.6% of the population; feeding 1 more person per 1,000 per month (this is a large increase) increases the 1923 birth cohort by 2202 persons ($0.001 \times 0.017 \times 129.5$ mln people in 1927 in our provinces = 2,202). This also means that the overall 1922 feeding increased the 1923 cohort by 79 thousand people ($0.036 \times 0.017 \times 129.5$ mln = 78,918). ARA feeding targeted children born earlier, so the impact on the next year cohort is probably a tiny sliver of the overall impact of relief.

¹⁷The ARA relief first arrived to province capitals and was then distributed outward.

Table 4: The effect of ARA relief on the size of the birth cohort at the province-year level.

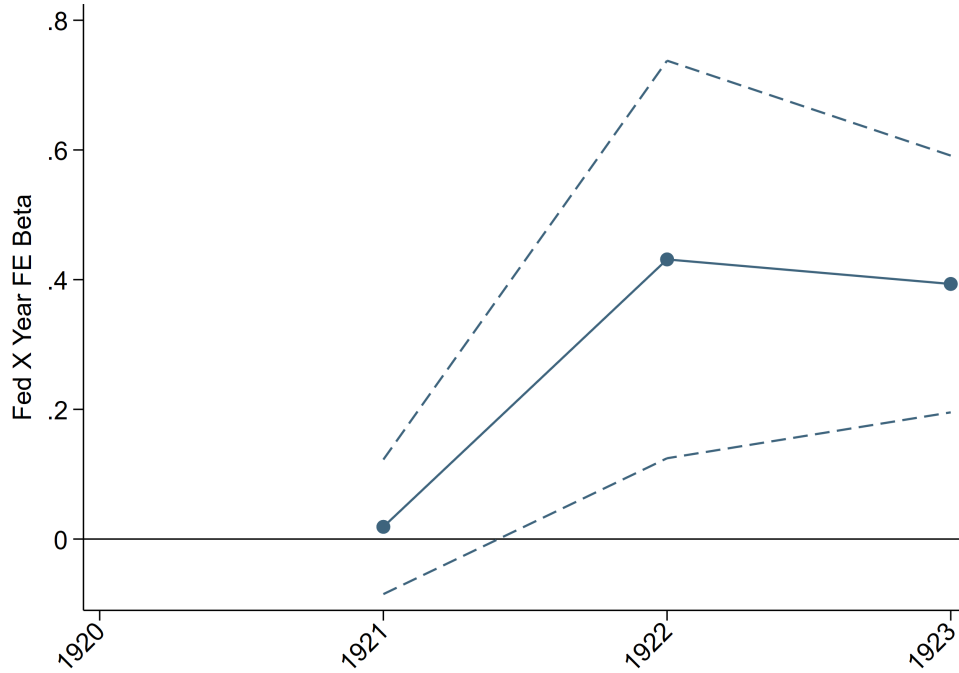
	A. Dependent Variable: Cohort size in year $t + 1$					
	OLS			2SLS 2nd stage		
	Reported grain (1)	(2)	(3)	Reported grain (4)	(5)	Baseline (6)
<i>Dep. var. mean.</i>	<i>0.027</i>	<i>0.027</i>	<i>0.027</i>	<i>0.027</i>	<i>0.027</i>	<i>0.027</i>
Fed by ARA	0.013*** (0.004)	0.012*** (0.003)	0.010*** (0.004)	0.017*** (0.006)	0.018*** (0.006)	0.017** (0.007)
<i>Standardized coeff</i>	<i>0.151</i>	<i>0.133</i>	<i>0.110</i>	<i>0.206</i>	<i>0.197</i>	<i>0.189</i>
Grain	0.002*** (0.001)	0.001*** (0.0002)	0.001*** (0.0002)	0.002*** (0.0004)	0.001*** (0.0002)	0.001*** (0.0002)
<i>Standardized coeff</i>	<i>0.141</i>	<i>0.239</i>	<i>0.192</i>	<i>0.136</i>	<i>0.228</i>	<i>0.192</i>
<u>Additional controls:</u>						
Urbanization	Y	Y	Y	Y	Y	Y
Lag Grain, Procurement, Lag Procurement			Y			Y
Province FE	Y	Y	Y	Y	Y	Y
Region x Year FE	Y	Y	Y	Y	Y	Y
Observations	284	304	304	284	304	304
R-squared	0.917	0.923	0.927	0.916	0.922	0.925
F statistic				11.677	14.340	17.292

Notes: Observations are at the province-year level. Our sample includes the Soviet republics of Belarus, Russia, and Ukraine from 1920 to 1923. Columns 1 and 4 control for reported grain; Columns 2 and 5 control for predicted grain; Columns 3 and 6 control for predicted grain in years t and $t-1$ and procurement in years t and $t-1$. Grain and procurement are measured in kg per person per day. All regressions control for urbanization, province FE and Year $\times$ Regions FE. Standard errors adjusted for spatial correlation over 1,000 km and time correlation over 4 years are in parentheses. * $p < .1$; ** $p < .05$; *** $p < .01$.

We also estimated the effects of ARA feeding by year, plotting the results in Figure 6. We see that the ARA relief made the biggest impact on birth cohorts in years 1922 and 1923 when ARA activities reached full scale and it gathered information on local conditions from experience.

Robustness We probe the robustness of these results in Table A1 in the Appendix. We demonstrate that our results hold when we subset them to ARA provinces only, which suggests that they are not driven by the selection into receiving ARA aid. Our results are also robust to using alternative measures of adverse weather, including the average monthly temperature and precipitation 1-2 years before treatment, monthly temperature and precipitation deviations from the 1900-1950 average 1-2 years before treatment, and a weather shock indicator, coded one if either temperature or precipitation deviates by more than one standard deviation from the mean. Next, we show that our results are robust to using additional economic controls, such as the railway density, the logged distance to Moscow and Petrograd, as well as the

Figure 6: The estimated coefficient on *Fed by ARA* from the second stage of the 2SLS.



Notes: The model included province and region-year FE, urbanization x year FE, predicted grain pc x Year FE, lag grain x Year FE, procurement x Year FE and lag procurement x Year FE.

nominal or real income in 1897. Finally, we demonstrate that the coefficient on *Fed by ARA* remains statistically significant and similar in magnitude when we control for the Bolshevik and Nationalist vote in the 1917 election, and the share of non-Russians or specific ethnicities (Ukrainians, Jews, Germans, and other non-Russians) in the 1897 census.¹⁸

To account for correlations across space and time, we re-estimate standard errors for our baseline specification (Table 4, column 6) by allowing for temporal correlation for up to 4 years and by imposing a distance linear decay between observations within the spatial correlation cutoff from 400 to 1,500 km. Our estimated standard error using this approach remains the same, with the most conservative estimate at 0.007, with an F-statistic of 17.292. In other words, our estimates are robust to heteroskedasticity and autocorrelation.

6 Discussion

We have gathered and analyzed data on one of the biggest humanitarian operations in modern history, which took place amidst ideological and geopolitical tensions. Even though actors in both the donor and recipient countries sought to use food as a political weapon, the relief campaign succeeded in preventing the deaths of millions of people. This finding on the positive demographic effects of food aid challenges a significant volume of literature that suggests that aid with ideological motives to nations at risk of civil war is ineffective or possibly even harmful.

¹⁸We interact time-invariant indicators from the 1897 census with year dummies in these specifications.

Our next steps are to dig deeper into how the Bolshevik authorities perceived the ARA operations and to understand why they failed to divert or to instrumentalize the US aid. In particular, we plan to explore the selection of local population for work in the ARA kitchens and offices and the corresponding regional variation in the ARA's staff to determine which local characteristics made the American aid more efficient. We also plan to look at the political consequences of working with and receiving food from the capitalist West in the Soviet Union. The Soviet secret police viewed the ARA activities with suspicion, intervened in and lobbied for the limitation of ARA work on the ground, disrupting the distribution process. Did interacting with Americans and later with the Cheka influence political attitudes and behavior of Soviet citizens exposed to the ARA activities?

References

- Adamets, S. (2002). Famine in nineteenth- and twentieth-century Russia: Mortality by age, cause, and gender. In T. Dyson and C. Ó Gráda (Eds.), *Famine Demography: Perspectives from the Past and Present*, pp. 158–180. Oxford University Press.
- Adamets, S. (2003). *Guerre civile et famine en Russie: Le pouvoir bolchévique et la population face à la catastrophe démographique de 1917–1923*. Paris: Institut d'études slaves.
- Alberto, A. and D. David (2000). Who gives foreign aid to whom and why? *Journal of Economic Growth* 5(1), 33–63.
- Andreev, E., D. L.E., and K. T.L. (1998). *Demographicheskaya istoriya Rossii: 1927–1959*. Moskva: Informatika.
- ARA (1922, November). Map of Russian transport lines used by ara. *ARA Bulletin* 2.
- Barnett, M. N. (2011). *Empire of Humanity: A History of Humanitarianism*. Ithaca, NY: Cornell Univ. Press.
- Bukhman, K. (1923). Golod 1921 goda i deiatelnost inostrannykh organizatsij. *Vestnik Statistiki* 14, 87–113.
- Castañeda Dower, P. and A. Markevich (2018). Labor misallocation and mass mobilization: Russian agriculture during the great war. *The Review of Economics and Statistics* 100(2), 245–259.
- Castañeda Dower, P. and A. Markevich (2022). Did industrialization increase support for the radical left? evidence from the 1917 Russian revolution. Working paper available at SSRN.
- Charnysh, V. (2022). Explaining outgroup bias in weak states: religion and legibility in the 1891–92 Russian famine. *World Politics* 74(2), 205 – 248.
- Coleman, W. (1923, March). The A.R.A. in orenburg. Notes from a report on the Orenburg district. *ARA Bulletin* 2.
- Edmondson, C. M. (1977). The politics of hunger: The soviet response to famine, 1921. *Soviet Studies* 29(4), 506–518.
- Findley, M. G. (2018). Does foreign aid build peace? *Annual Review of Political Science* 21, 359–84.
- Fisher, H. H. (1927). *The Famine in Soviet Russia, 1919–1923: The Operations of the American Relief Administration*, Volume 9. Macmillan.
- Khryasheva, A. I. (1921). *Krestyanstvo v voine i revolyutsii. Statistiko-ekonomicheskie ocherki*. Moscow: Tsentralnoe Statisticheskoe Upravlenie.
- Lih, L. T. (1990). *Bread. Authority in Russia, 1914–1921*. Berkeley: University of California Press.
- Litoshenko, L. (2001). *Sotsializatsiya zemli v Rossii*. Novosibirsk: Sibirskij Khronograph.
- Makarov, V. and V. Khristoforov (2006). Novye dannye deyatelnosti amerikanskoj administratsii pomoshchi (ara) v rossii. *Novaya i Novejshaya istoriya* 2006(5).
- Markevich, A. and M. Harrison (2011). Great war, civil war, and recovery: Russia's national income, 1913 to 1928. *The Journal of Economic History* 71(3), 672–703.
- Markevich, A., N. Naumenko, and N. Qian (2023). Great war, civil war, and recovery: Russia's national income, 1913 to 1928.
- Meng, X., N. Qian, and P. Yared (2015). The institutional causes of China's great famine, 1959–1961. *Review of Economic Studies* 82, 1568–1611.
- Mesquita, B. B. d. and A. Smith (2009). A political economy of aid. *International Organization* 63(2), 309–40.
- Naumenko, N. (2021). The political economy of famine: the ukrainian famine of 1933. *The Journal of Economic History* 81(1), 156–197.
- Nunn, N. and N. Qian (2014). US food aid and civil conflict. *American Economic Review* 104(6), 1630–66.
- Osipov, Y. (2007). Grazhdanskaia vojna. In O. Y. Sergeevich (Ed.), *Bolshaya Rossiyskaya Entsiklopediya v 30 t.*, Volume 7, Germafrodit - Grigorev. Moskva: Bolshaya Rossiyskaya Entsiklopediya.
- Patenaude, B. M. (2002). *Big Show in Bololand. The American Relief Expedition to Soviet Russia in the Famine of 1921*. Stanford: Stanford University Press.
- Smith, D. (1922). *Rynok khlebov i ego regulirovanie vo vremya vojny i revolyutsii*. Moskva: Novaya Derevnnya.
- Surface, F. M. and R. L. Bland (1931). *American Food in the World War and Reconstruction Period. Operations of the Organizations Under the Direction of Herbert Hoover 1914 to 1924*. Stanford University Press.
- TsSU, C. S. A. (1923). *Dvizhenie tsen na glavnye predmety potrebleniya*, Volume 15.
- Wheatcroft, S. G. (1990). Agriculture. In R. Davies (Ed.), *From Tarism to the New Economic Policy: continuity and change in the economy of the USSR*, pp. 79–103. Basingstoke and London: Macmillan.
- Wood, R. M. and C. Sullivan (2015). Doing harm by doing good? the negative externalities of humanitarian aid provision during civil conflict. *Journal of Politics* 77(3), 736–48.