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Collective Memory and National Identity Formation: The Role of Family and the State*

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Abstract

State-led repression of minority identities is a well-documented phenomenon, yet its implications for national identity remain understudied. We examine how the Soviet state-induced famine (1932–33) shapes contemporary Ukrainian national identity through vertical (familial) and horizontal (community/state) transmission. Using newly geocoded individual-level data, we find that individuals from high-famine-exposure areas are more likely to identify as Ukrainian. We document that under Soviet rule, family networks preserved identity, while church closures weakened community transmission. After independence, state-led remembrance efforts, revitalized horizontal transmission. Our findings show how repression and remembrance shape identity persistence and reflect the famine's lasting influence on Ukrainian-Russian relations.

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Keywords: Political Repression, National Identity, Intergenerational Transmission, Historical Memory, Trade, Conflict.

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1 Introduction

State-led repression of minority identities with national aspirations is a well-documented phenomenon in many historical and contemporary multinational states, where dominant groups seek to enforce unity by suppressing alternative national identities.[1] Conversely, minorities try to protect their national identity in the face of a dominant multinational state via preserving their language, culture, and history, fearing erosion through assimilation. Beyond cultural preservation, many minorities link their national identity to aspirations for autonomy or self-determination, recognizing that a distinct identity plays a crucial role in influencing civic participation, political stability, economic development, and the resilience of institutions.

In a broader context, national identity has been shown to be shaped by economic incentives, historical experiences, institutional factors, and familial influences. Extensive research has explored various aspects of this process. Work on identity formation is summarized in Bisin and Verdier (2011); Bauer et al. (2016), nation-building in Rohner and Zhuravskaya (2023, 2024), and collective beliefs and preferences, including those linked to national identity, in Giuliano and Spilimbergo (forthcoming). However, the resilience of national identity to state-led repression has received relatively little attention.[2] In particular, it remains unclear whether national identity can survive and resurge despite being repressed for multiple generations, and more importantly, the mechanisms through which it is transmitted.

In this paper, we examine how an extreme form of repression—the Soviet state-induced famine of 1932–1933—shaped contemporary Ukrainian national identity. The famine is widely recognized as a central element of Soviet efforts to consolidate control over Ukraine (see, e.g., Applebaum (2017); Markevich et al. (forthcoming)). Today, following Ukraine's independence, its impact on national identity is ambiguous: Repression may have durably weakened Ukrainian identity or, conversely, it may have re-emerged stronger as a form of backlash. This remains an empirical question—one that this paper seeks to address. We document that individuals born in areas more severely affected by the famine are more likely to identify as Ukrainian. We then explore the mechanisms through which the memory of the famine persisted, allowing Ukrainian identity to reemerge after the Soviet era despite decades of suppression.

Specifically, we document the role of family in preserving suppressed identities during the Soviet regime, and how the Ukrainian state has contributed to revitalizing communal and institutional identity formation in the post-Soviet era. By focusing on the interplay between state, community, and family influences, our analysis offers a novel perspective on the mechanisms through which identity is transmitted and preserved over time. We highlight how these channels can substitute for one another: when one is weakened—whether through state repression or the absence of strong

[1] Examples include the Soviet Union's repression of Ukrainians, Tatars, Balts, Chechens, among others; the Ottoman Empire's oppression of Armenian and Kurdish national movements; the suppression of Catalan and Basque identities under Francoist Spain; and China's policies targeting Tibetans and Uyghurs.

[2] Research on state-led repression (e.g., the Holocaust, state-induced famine, and forced deportations) has focused on the economic and political consequences. See, for example, Acemoglu et al. (2011); Rozenas and Zhukov (2019); Becker et al. (2020a); Miho et al. (2024).

community networks—the others can compensate. Finally, we document the lasting implications for Ukrainian pre-war trade relations and the ongoing war with Russia.

The Soviet famine 1932–1933 was the largest famine in modern day Europe with an estimated six to eleven million casualties.[3] It overproportionally impacted the Ukrainian SSR (Soviet Socialist Republic)—as well as Ukrainians throughout the Soviet Union (Markevich et al. (forthcoming)). The Soviet Union banned any discussion of the famine and, to the extent that it was acknowledged, presented it as an unavoidable natural disaster. Recent empirical evidence by Naumenko (2021) and Markevich et al. (forthcoming) provide evidence that the famine was an act of deliberate state repression against ethnic minorities, primarily Ukrainians.[4] In Ukraine, the famine is known as Holodomor, meaning "killing by starvation". The Ukrainian state only started to officially commemorate the famine after the collapse of the Soviet Union (Coulson (2021)).

To examine whether present-day variation in Ukrainian self-identification can be traced to the Holodomor, we primarily rely on individual self-reported national identification and language use data from the 2013 and 2015 surveys conducted by the Ukrainian Regionalism Project (2018).[5] The surveys also cover topics such as socio-demographics, identities, historical memory, foreign policy, language, and religion, with a representative sample of 12,000 individuals (6,000 each). In addition, the surveys provide textual information on individual, parental, and grandparental birth locations, which we have geocoded to trace family origins across multiple generations. We combine this information with historical data on famine deaths across rayons (Ukrainian SSR districts) from Harvard's Ukrainian Research Institute's "The Great Famine Project" (MAPA (2018)).

Our empirical strategy leverages variation in famine exposure based on individuals' birth locations, examining whether those born in rayons with higher famine death rates are more likely to identify as Ukrainians. Conditional on a wide range of controls, we find that individuals heavily exposed to the Holodomor in their birth locations are more likely to self-identify as Ukrainian today and less likely to report Russian as their main language. The latter is relevant for capturing national identity, as, after 1934, Soviet identity became synonymous with Russification, particularly concerning language policy (see Grenoble (2003), p. 54ff). Our estimates indicate that individuals born in a rayon with a 1 percentage point higher famine death rate are 2 percentage points more likely to self-identify as Ukrainian and 5 percentage points less likely to report Russian as their primary language. The estimated effect, of course, reflects only the impact on survivors and their descendants. Our estimate places the number of individuals in Ukraine who additionally identify as Ukrainian due to famine exposure at 2.3 million.[6] These results suggest that birthplace exposure to the famine

[3] Wheatcroft et al. (2004) provide a range of 5.5 to 6.5 million, Conquest (1986) estimates total famine deaths at 7 million, Ellman (2005) references 8.5 million victims of famine and repression between 1930 and 1933, Polyakov and Zhiromskaya (2000) place the number of famine victims between 7.2 and 10.8 million.

[4] These findings mirror opinions in Ukraine, which view the famine as a deliberate act of Genocide (83% of respondents) and a key moment in their national history (76% of respondents)—based on Ukrainian Regionalism Project (2018) data.

[5] Several studies have relied on survey data to develop proxies for measuring the strength of national identity. See Rohner and Zhuravskaya (2024) for a comprehensive overview of various measures used to assess the strength of identification with one's nation-state.

[6] To obtain this back-of-the-envelope estimate, we multiplied the average Holodomor deaths of 2.3 per 100 people by our baseline coefficient estimate and the 2010 Ukrainian population of 45.9 million. Notably, the additional number

plays a significant role in strengthening national identity and shaping long-term linguistic shifts away from Russian. Our findings align with the backlash theory, which posits that violence may provoke a negative reaction or resistance from those who perceive their traditional values or power structures as being threatened. This backlash can manifest itself in various forms, including self-identification, increased opposition, or polarization (Solheim (2020); Gehring (2022); Mahmood and Jetter (2023); Henn and Huff (2024)).

A potential threat to our estimates is that the Soviet state systematically targeted Ukrainians, which could lead to an overestimation of the effect if our results simply reflect pre-famine differences in the share of self-identified Ukrainians. Notably, our baseline specifications control for the proportion of Ukrainians in 1926 (before the famine), so that this concern would only threaten our identification if targeting extended beyond the use of population registers. A priori, this seems unlikely, as evidence indicates that targeting was primarily based on ethnic composition recorded in official census data and implemented through uniform procurement formulas within administrative boundaries (Markevich et al. (forthcoming)). Nevertheless, to empirically address this concern, we undertake two complementary strategies. First, we use an instrumental variable approach that leverages exogenous variation in famine intensity arising from weather shocks. While weather was not the main cause of the famine (it explains about 8% of mortality in our study area; see Naumenko (2021)), it provides plausibly exogenous variation in marginal mortality rates between areas that is unrelated to pre-existing national identity or political targeting. Second, we use data on grain procurement practices over time to assess whether changes in extraction pressure alone explain identity outcomes. We find no evidence for this, as the marginal effect of famine exposure persists beyond areas that were exceptionally singled out for severe increases in requisitioning. Together, these strategies strengthen the credibility of our findings and support the interpretation that famine exposure had lasting effects on national identity.

In a further robustness check, we examine whether national identity is shaped by place of birth, confirming this through the epidemiological approach. Furthermore, we address concerns about selective migration in general and those related to post-famine resettlement and world-war II population changes in particular, leveraging our unique data which allow us to trace the ancestral origins of the respondents. Finally, we also show that our findings are not merely driven by the 2014 Russia–Ukraine conflict, which substantially altered attitudes towards Russia.

Considering that we observe that the Holodomor shaped identity, one would expect that, as an intermediate step, perceptions of the history surrounding the Holodomor must differ. We validate this through two approaches by examining individuals' historical understanding: (i) their perceptions of the Holodomor and (ii) their broader views on key historical figures. First, we find that those with greater famine exposure are significantly more likely to see the Holodomor as a pivotal event in Ukrainian history and as a deliberate act of genocide. Second, they express significantly more negative perceptions of Stalin, while their views on historical figures unassociated with the Holodomor show

of individuals in Ukraine who identify as Ukrainian as a result of famine exposure is far lower than estimates of the famine death toll. Accordingly, the famine likely resulted in a net decrease in the number of individuals identified as Ukrainian compared to a scenario in which it had never occurred.

no significant difference.

The key question is how, nearly a century later, the Holodomor continues to influence national identification. This is particularly notable given that the Soviet state actively banned its memory for nearly 60 years. Ukrainian identity was also suppressed through various measures, including church closures and Ukrainian language bans in schools and public life. However, after Ukraine's independence in 1991, the famine was revived as a foundational national narrative, with new political and educational policies fostering a Ukrainian national identity (Kononenko and Holowinsky (2001)).

National views and beliefs are typically transmitted through two main channels: (i) horizontally, via community and state institutions where individuals grow up, and (ii) vertically, through intergenerational transmission from parents and ancestors (Bisin and Verdier (2001); Richerson and Boyd (2008); Bisin and Verdier (2011); Algan et al. (2022); Bisin and Verdier (2025)). Disentangling these channels remains a central challenge in the literature. Our context offers a unique opportunity to do so, given the shift from Soviet repression of Ukrainian identity to state-supported revitalization after 1991. Under Soviet rule, famine memory could be preserved only through vertical (familial) transmission. After independence, however, it could be reinforced by horizontal influences—particularly through community engagement and state-led efforts to institutionalize remembrance.

Leveraging our geocoded multigenerational data, we extend famine exposure beyond respondents' birthplaces to include the historical rayons where their parents and grandparents were born. Exposure based on respondents' own birthplace captures horizontal transmission (via the local community and state institutions), while ancestral birthplace exposure proxies vertical transmission of famine memory. We further split the sample by socialization period—before and after the Soviet collapse—to compare the relative strength of vertical and horizontal transmission across cohorts.

Consistent with the timing of regime change, we find that for cohorts socialized under Soviet rule, family-driven vertical transmission was dominant, whereas cohorts socialized after the Soviet Union collapsed experienced primarily horizontal transmission through community or state influences. This shift suggests that institutional changes are key in shaping the channels through which national identity is transmitted.

We further distinguish between horizontal and vertical transmission by analyzing how individuals self-identify or self-censor their national identity based on their use of the Ukrainian language in different social contexts.[7] We find that individuals socialized during Soviet times use Ukrainian language more within their family when their ancestors were exposed to the famine. However, relative to family use, they are less likely to speak Ukrainian with the general public and even less with public officials. In contrast, horizontal famine exposure led to increased Ukrainian language use among those socialized in independent Ukraine, particularly in interactions with public officials. This finding appears consistent with the positive reinforcement of Ukrainian identity by public institutions after 1991.

We next directly evaluate the factors that influenced the strength of horizontal transmission, either

[7]Several papers focus on whether people speak in their homes the pan-national language as opposed to languages of smaller ethnic groups, including Bazzi et al. (2019) for Indonesia and Gagliarducci and Tabellini (2021) for the United States.

by suppressing or reinforcing it. We begin by analyzing the role of churches, which were among the few spaces where famine memories and expressions of national identity could plausibly be shared beyond the family during Soviet times.[8] To do this, we construct a novel dataset on church closures and destruction in Ukraine from 1903 to 1987, digitizing and geocoding data from the "Catalog of Destroyed Churches and Monasteries of Ukraine" (Soldatenko et al. (2013)). We uncover that church closures not only weakened horizontal transmission but also increased the importance of vertical transmission for the cohorts socialized under Soviet rule. However, the interaction effect for vertical transmission is relatively small, suggesting that families could not fully compensate for the absence of institutions that would have otherwise reinforced collective memory. This incomplete substitution may be tied to the broader Soviet context, where even family discussions were monitored, and children were sometimes encouraged to denounce their parents (Thurston (1991), p. 556). In contrast, for the cohorts socialized after the Soviet Union collapsed, we do not observe any impact of church closures on transmission. When the latter were socialized, the Holodomor was widely acknowledged in schools and officially commemorated as a national holiday, making churches no longer necessary for the clandestine transmission of collective memory.

Second, we examine whether the Ukrainian state was able to revitalize horizontal transmission following independence by analyzing the impact of Holodomor memorials across Ukraine. We construct a unique dataset on Holodomor memorials across Ukraine by digitizing and geocoding records primarily sourced from the "Holodomor Monuments in Ukraine" database (Holodomor Monuments in Ukraine (2025)). We test whether the impact of being born in a high-famine-exposure area is stronger for individuals living within 1, 2, 5, or 10 km of a memorial. Our findings show that for the post Soviet Union collapse cohorts, the effect of higher historical famine death rates is stronger near Holodomor memorials but disappears beyond 2 km. The gradual decline in the geographic effect is unsurprising given that most memorials are small installations and are unlikely to be known by individuals who do not live in close proximity. In contrast, we observe no heterogeneous effect for the cohorts socialized under Soviet rule, suggesting that, at a later stage in life, Holodomor memorials had little influence on horizontal transmission as their national identity was formed before these memorials were erected.

These additional exercises are more likely subject to potential endogeneity concerns. However, to the extent that they are informative, they suggest that familial institutions initially help preserve collective memory under repression. As state institutions begin to engage in remembrance efforts, they overshadow inter-generational transmission. This interplay between family-driven and state-led remembrance is essential for understanding how historical narratives shape national identity over time. The extent to which state institutions complement or substitute familial memory transmission determines the persistence and evolution of collective memory and national identity, especially in societies emerging from historical repression.

Finally, given the potential significance of national identity transmission in shaping political and economic outcomes, we explore the long-term impact of the Holodomor, focusing on its effects on

[8]See, for example, Kolarz (1963), Chapter 3, for a discussion on the survival of clandestine nationalism in the Ukrainian Autocephalous Orthodox Church.

the current conflict and trade relations with Russia. We first examine the relationship between the Holodomor and the ongoing Russian war in Ukraine and find that locations with higher famine severity tend to experience less state-perpetrated Russian violence. While this may seem counterintuitive, it primarily reflects fewer direct battles, possibly due to stronger initial resistance and faster repellence of Russian forces.[9] Consistent with this, we find that Ukrainian protests and riots against Russian occupation are more frequent in regions with higher historical exposure to the Holodomor, reflecting a form of "peaceful resistance". Our individual-level data confirms these findings, as pre-2014 respondents in high-famine areas placed greater importance on Ukraine's defense. These findings align with Munroe et al. (2023), providing suggestive evidence that national identity and the use of the Russian language are key factors shaping the current conflict. We also document the lasting effect of famine mortality on trade relations between Russia and Ukraine. Using a firm-level Ukrainian customs dataset (Ukrainian Customs (2013-2015)), we examine trade patterns based on the origin of trade partners, focusing on 2013 to minimize the confounding effects of the 2014 Russia-Ukraine conflict (Korovkin and Makarin (2023)). Our findings show a sustained shift in demand away from Russian products among firms in rayons heavily impacted by the Holodomor.

This paper contributes to several strands of literature. First, it expands the understanding of national identity formation and the political economy of nation building by showing how historical state-led repression influences minority national identification. Understanding the determinants of national identification is crucial due to its significant implications for social cohesion, economic development, and political stability (Alesina and La Ferrara (2005); Montalvo and Reynal-Querol (2005); Esteban et al. (2012); Munroe et al. (2023);; Rohner and Zhuravskaya (2023) Rohner and Zhuravskaya (2024)). Our work adds to existing studies that examine how historical events, economic incentives, institutional and familial factors shape national identity, including the impacts of conflict and migration (Akerlof and Kranton (2000); Miguel (2004); Posner (2005); Alesina and La Ferrara (2005); Bisin and Verdier (2011); Nunn and Wantchekon (2011);Michalopoulos and Papaioannou (2013); Bauer et al. (2016); Fouka (2020); Fiedler and Rohles (2021); Dehdari and Gehring (2022); Giuliano and Spilimbergo (forthcoming)).

Second, we contribute to the literature on the transmission of values and beliefs (Akerlof and Kranton (2000); Bisin and Verdier (2001); Shayo (2009); Bisin and Verdier (2011); Algan et al. (2022); Bisin and Verdier (2023); Cremaschi and Masullo (2023); Gay (2023); Haddad (2024); Miho et al. (2024); Bisin and Verdier (2025)) by exploring a unique feature of our historical context—the Soviet regime's collapse. This allows us to disentangle the interaction between family (vertical) and community/state (horizontal) transmission of historical memory and national identity. Our findings highlight the persistence of identity through the substitutability of state, community, and family influences: when one channel is weakened – whether by state repression or the absence of strong community actors – the others compensate. We also add to the growing body of research that explores how narratives shape both beliefs and behaviors (Shiller (2017); Bénabou et al. (2020); Michalopoulos and Xue (2021); Ronconi and Ramos-Toro (2022); Henn and Huff (2024); Ochsner

[9]It appears unlikely that Russian forces deliberately avoided famine-exposed areas considering that the invasion initially commenced along the whole Russian-Ukrainian border.

and Roesel (2024); Ramos-Toro and Voytas (2024)).

Lastly, our study contributes to the extensive literature on political violence by focusing on an extreme form of state-led repression. State-led repression has lasting consequences, influencing political opposition, trust in institutions, and economic stability (Acemoglu et al. (2011); Balcells (2012); Lawrence (2017); Lupu and Peisakhin (2017); Rozenas et al. (2017, 2024); Zhukov and Talibova (2018); Rozenas and Zhukov (2019); Becker et al. (2020b); Bautista et al. (2023); Henn and Huff (2024); Miho et al. (2024)). It affects voting behavior, autocratic resilience, and long-term economic disruption (Charnysh and Finkel (2017); Chen and Yang (2019); Finkel (2015); Homola et al. (2020); Rozenas and Zhukov (2019)), with economic repercussions including lower investment, forced migration, reduced social mobility, and disruption in trade (Meng and Qian (2009); Becker et al. (2020b); Naumenko (2021); Grasse (2023); Korovkin and Makarin (2023)). While existing research has extensively examined the broader political and economic effects of political violence, less attention has been given to the enduring impact of state-led repression on national identity.

The paper is structured as follows: Section 2 provides historical background on the 1932–1933 Soviet Great Famine. Section 3 describes our data sources and outlines our empirical strategy. Section 4 presents our findings. In Section 5, we thoroughly examine the mechanisms of transmission. Section 6 presents additional results on individual's national identity, the perception of history and economic situation. Section 7 explores the impact of the famine via national identity on the current conflict and pre-war trader relations with Russia. Finally, Section 8 concludes the paper.

2 Historical Background: The Soviet Great Famine of 1932–1933

Between 1932 and 1933, the Soviet Great Famine caused the deaths of approximately seven million people (see footnote 3 for details), with about 40% of the fatalities occurring in the Ukrainian Soviet Socialist Republic (USSR). This is striking, given that Ukrainians represented only 21% of the Soviet Union's population before the famine (Yang (2008); Markevich et al. (forthcoming)). In Ukraine, the famine is known as the "Holodomor," meaning "Killing by starvation," and remains deeply ingrained in Ukrainian historical and cultural memory (Naumenko (2021); Markevich et al. (forthcoming)). Historically, scholars offered three main explanations for the famine's disproportionate toll in Ukraine: (i) adverse weather conditions, (ii) unintended policy failures, and (iii) deliberate targeting of Ukrainians and certain ethnic minorities.

The first explanation emphasized that extreme weather in 1931 and 1932, characterized by both heat waves and heavy rains, damaged crops and reduced harvests (Tauger (2001); Kogan et al. (2011); Davies and Wheatcroft (2016)). However, recent empirical work by Naumenko (2021) using new data shows that weather shocks account for only about 8% of excess mortality, making them insufficient to explain the majority of the famine's scale or its geographic concentration in Ukrainian areas.

The second explanation focused on the unintended consequences of Soviet economic policies, particularly collectivization. Beginning in 1928, the state consolidated small farms into large collective farms, undermining incentives and reducing productivity (Li and Yang (2005); Stark (2010)). Many peasants responded by slaughtering livestock, selling equipment, or withholding labor. Ukraine, with

its fertile soil, was a key target for collectivization: by May 1930, nearly half of Ukrainian farms had been collectivized. Unrealistic grain quotas, set to meet export goals and feed urban centers, were imposed even as yields fell, leaving rural populations with little to eat (Stark (2010); Davies and Wheatcroft (2016)). While collectivization and the forced redistribution of food to industry, estimated by Naumenko (2021) to have accounted for 52% of excess mortality, were major contributors to the famine. However, while this was accordingly viewed by some scholars as mere policy failure, the impact of collectivization on famine exposure seems to have differed considerably across ethnic groups in the USSR.

This is emphasized by the third explanation and the dominant view in recent literature (Applebaum, 2017), supported by robust empirical evidence from Naumenko (2021) and Markevich et al. (forthcoming).This work emphasizes that Soviet policies deliberately and disproportionately targeted Ukrainians and other ethnic minorities. The empirical studies document that ethnic Ukrainians faced systematically higher grain quotas and higher mortality both within the Ukrainian SSR and but also in other parts of the USSR. This pattern holds even after controlling for weather and productivity shocks. Archival evidence documents how this ethnic targeting was achieved via additional repressive measures: travel bans, denial of passports, and roadblocks that trapped people in areas hit by famine (Naumenko (2021)). Contemporary descriptions capture this as "terror by hunger" (Conquest (1986)), "state aggression" (Applebaum (2017)), or "premeditated mass murder" (Snyder (2010)). Thus, the famine was not just an economic policy disaster but rather a deliberate instrument of repression, aimed at undermining the Ukrainian national identity and suppressing resistance (Graziosi (2015)).

To summarize, recent work uncovered that Soviet policies deliberately targeted Ukrainians. This historical background to our study, which asks whether the Holodomor succeeded in suppressing Ukrainian identity or instead provoked a backlash that strengthened it. Notably, the recently uncovered historical evidence aligns with pre-existing perceptions in Ukraine where the famine is has for a long time been seen as an act of state violence, in which "they" (the Soviets) sought to annihilate "us" (Ukrainians) (Kulchytskyi (2007)). This view remains deeply embedded in collective memory, with more than 70% of Ukrainians viewing the Holodomor as genocide (Rating Group Ukraine (2017)). The endurance of this public perception is notable given the Soviet regime's decades-long repression of public discussion about the famine.[10] Only after the collapse of the Soviet Union did Ukraine begin officially commemorating the Holodomor through public memorials, annual remembrance days, and its integration into the national historical narrative (Coulson (2021)).[11] The survival of this narrative through decades of censorship and repression, and its resurgence with even greater force after independence, underscores the Holodomor's enduring power in shaping Ukrainian identity.

[10]See Conquest (1986) for details on Soviet censorship, manipulation of statistics, and persecution of those documenting the famine.

[11]The most prominent of these is the National Memorial to the Victims of the Holodomor in Kyiv, inaugurated in 2008. Every year on the fourth Saturday of November, Ukrainians light candles and observe a minute of silence in remembrance.

3 Data & empirical strategy

3.1 Data

In this section, we present our individual-level data source for measuring national identification, which we have newly geocoded to trace both individual and ancestral origins. We combine this information with data on the intensity of the famine. We also describe novel datasets that we have constructed on the distribution of church closures and destructions in Ukraine before 1991, and data on the location of Holodomor memorials erected since 1991. Additionally, we obtained information on contemporary outcomes, including data on current conflicts and trade patterns of firms.

Data on national identification: Our main source of data on self-reported national identification comes from the extensive micro-level data of the Ukrainian Regionalism Project (2018) surveyed in 2013 and 2015 by the University of St. Gallen. Apart from questions related to national identity, the surveys covered various topics, including socio-demographics, historical memory, foreign policy, language and literature, and religion. To the best of our knowledge, the survey sample was larger than any comparable surveys of contemporary Ukraine. The surveys comprise 12,000 respondents (6,000 in each year) and are designed to be representative at the oblast (i.e., region) level, encompassing a country-wide quota sample of Ukrainian individuals aged 18 and older. The sample aimed to obtain representative profiles on age, education and population concentration size, ranging from villages to cities with more than a million inhabitants.

The most important feature of the surveys is that they provide detailed textual information not only on the individual's current residence, but also on their place of birth as well as the birth locations of their parents and grandparents.[12] The available textual information did not allow for automated geocoding procedures, as the process was complicated by changes in oblast, rayon, and municipality names and borders over the course of the 20th century. Instead, we manually geocoded locations by combining various sources, such as OpenStreetMap and others.

This unique feature of our data source allows us to observe individuals' family location history and consequently their vertical (family) and horizontal (individual) exposure to the Holodomor. Identifying ancestors' birthplaces is essential for addressing the challenges posed by extensive migration driven by World War II and other historical disruptions that have long complicated efforts to study the enduring effects of early Soviet policies.

Figure 1 displays the birth locations identified in present-day Ukraine and neighboring European countries. It highlights the diverse range of rayons of origin for individuals and their ancestors in our dataset. For our analysis, we focus on individuals born within the borders of the 1930s Ukrainian SSR that experienced exposure to the Holodomor (the colored area of the map).[13] Appendix Figure

[12] Grandparents' birth locations are only available in the 2013 survey.

[13] About 39.6% of survey respondents were born outside the 1930s Ukrainian SSR borders, mainly in Crimea (then the Crimean ASSR) or Western Ukraine (part of Poland, Czechoslovakia, or Romania at the time). Some were born outside of modern Ukraine. This group also includes a small fraction of individuals whose birthplaces could not be geolocated due to unavailable village names. Our final sample includes 7,248 individuals.

A1 presents the number of respondents across Ukrainian SSR rayons as matched based on their birth location for 2013 (Panel A) and 2015 (Panel B). The maps highlight that we have at least one respondent for the vast majority of rayons of the former Ukrainian SSR with more than 10 respondents per rayon in each survey for a sizable share of locations.[14]

Famine exposure data: To measure the intensity of the famine, we rely on famine-related deaths at the rayon level from Harvard's Ukrainian Research Institute's "The Great Famine Project." Specifically, we use data on 1932-33 famine losses at the rayon level from the MAPA: Digital Atlas of Ukraine (MAPA (2018)) and construct a "famine death rate" as a share of the rayon population reported in the 1926 census. In Figure 1, we combine data on famine intensity with individual-level survey data by mapping the rayons of birth for individuals, their parents, and their grandparents, geocoded to align with historical locations.

Other historical data: We merge the rayon-level datasets with pre-famine covariates, including: (1) urban, rural, Ukrainian, and Russian population data from the 1926 Soviet census (digitized by MAPA (2018)); (2) crop suitability indicators for major local crops such as wheat, potatoes, and dairy (Krupskiy and Polupyan (1979)), as Soviet policy was heavily influenced by crop production and geographic specialization; (3) the share of land covered by forests and the share of area allocated to industry (Enukidze (1928), Bondarchuk (1962)), as these factors limited arable land. Appendix Table A1 presents descriptive statistics for these variables across different rayons.

Data on transmission channels: We supplement these primary sources of information with additional data to further explore the mechanisms behind the transmission of the memory of the Holodomor and national identity. In particular, we construct a novel dataset on the distribution of church closures and destruction in Ukraine over the period 1903 to 1987, by digitizing and geocoding the *"Catalog of Destroyed Churches and Monasteries of Ukraine"* (Soldatenko et al. (2013)). Panel A of Appendix Figure A2 illustrates the permanent closures and destructions that occurred during the pre-1933 and post-1933 periods. We also create a novel dataset on the locations of Holodomor memorials that have been erected. Panel B of Appendix Figure A2 shows the distribution of these memorials across Ukraine. The data was constructed by digitizing and geocoding memorial records based on the *"Holodomor Monuments in Ukraine"* database, compiled by the Ukrainian Canadian Research and Documentation Center (Holodomor Monuments in Ukraine, 2025).

Additional contemporary outcomes: We complement our main outcomes on national identity with additional data sources to explore the long-term political and economic implications of the Holodomor. Additional questionnaires from the Ukrainian Regionalism Project (2018) provide information on religiosity, nationalism, and political beliefs. Data on contemporary violence, protests, and riots in Ukraine comes from the Armed Conflict Location and Event Data Project (ACLED) (Raleigh et al.

[14]The maps also highlight that individuals originating from the Donbas are slightly underrepresented in the 2015 survey as surveying in that area was interrupted by the conflict there.

(2010)). Panel C of Appendix Figure A2 illustrates the distribution of political violence in Ukraine by Russian actors during the period 2022–2024 (up to September 20, 2024), as well as protests and riots by Ukrainians against Russians from 2021 to 2024 (up to September 13, 2024). Political violence includes (non-remote) battles, explosions, remote violence, and violence against civilians. Protests and riots refer to Ukrainian demonstrations against Russian actions. The interaction-level trade data for Ukrainian importers and exporters comes from Ukrainian Customs (2013-2015). Panel D of Appendix Figure A2 shows the locations of exporters and importers across Ukraine in 2013. We geolocated textual firm addresses within our area of interest using ArcGIS. Our analysis focuses exclusively on firms' trade patterns in 2013 to avoid the confounding effect of the 2014 Russian occupation of Crimea and other regions, along with the sanctions that were imposed, which affected trade behavior (Korovkin and Makarin (2023)).

Descriptive statistics: Appendix Table A2 provides descriptive statistics for our sample of individuals that were born within the boundaries of the Ukrainian SSR. The table documents variations in Ukrainian nationalism and collective identity using the variables "Self-identity Ukrainian," which indicates whether an individual identifies as Ukrainian, and "Ukrainian 'We' not 'They'," which reflects whether individuals refer to Ukrainians as "we." It also examines Russian affiliation, specifically through the variables representing the holding of Russian nationality and Russian language usage. The data suggests that about 95% of our sample consider Ukrainian as their national origin, while about 85% declared Ukrainian as their main language. Survey data from 2013 and 2015 show a rise in Ukrainian affiliation and a decline in Russian affiliation following the 2014 Russian invasion.[15]

Appenidx Figure A3 provides descriptives on Ukrainian identification before the Holodmor based on 1926 census data (Panel A) as well as contemporary self-identification as Ukrainian (Panel B), use of the Russian language (Panel C), and perceptions of the Holodmor (Panel D) based on 2013/15 survey data. While measures are not directly comparable, it appears that people living nowadays in the area of the Ukrainian SSR are more homogeneous in their Ukrainian identity than the population that lived there in 1926. Part of this decline in diversity in ethnic and national identity—especially in the West and South—is linked to the Holocaust and population deportations during WWII (see Panel A-C of Appendix Figure A4 on the Jewish, Polish and German shares by 1926). In contrast, the high Russian share by 1926 (Panel D of Appendix Figure A4) continues to predict well the use of the Russian language in the Eastern part of Ukraine, while it is less predictive in the South.

Figure 2 plots the raw data to identify general patterns. Higher famine exposure is strongly associated with a stronger Ukrainian identity, lower identification with Russian nationality, and a greater emphasis on the famine's historical significance. Individuals with high famine exposure are more likely to identify as Ukrainian, view Ukrainians as an in-group, and reject Russian as their main language. They are also more likely to consider the famine a significant historical event and classify it as a genocide. We confirm these patterns in a plausibly causal way in Section 4.

[15]The observed decline in Russian affiliation likely results from a shift in ideological alignment, as well as the exclusion of occupied areas from the 2015 survey, which had a higher proportion of Russian-affiliated individuals in 2013.

3.2 Empirical strategy

To examine whether present-day differences in Ukrainian nationalism and collective identity can be traced back to the 1932–1933 Soviet Great Famine (Holodomor), we rely on pooled cross-sectional data from the 2013 and 2015 surveys and rayon-level data on famine exposure in 1932-33. Using these data, we estimate the following equation capturing the impact of historical exposure to famine deaths on contemporary attitudes:

$$\text{Attitude}_{irlt} = \beta_0 + \beta_1 \text{Famine deaths}_{rl} + X_{irlt}\beta_2 + X_{rl}\beta_3 + \eta_l + \eta_t + \varepsilon_{irlt} \quad (1)$$

The left-hand-side variable, Attitude_{irlt}, includes measures of contemporary attitudes of individual i, in rayon r (based on historical Ukrainian SSR administrative borders), in oblast l, in survey year t. $\text{Famine deaths}_{rl}$ is available at the historical rayon r, in oblast l, and measures the exposure to 1932-33 famine deaths (percent of the 1926 rayon population) for the respective individual. Our main measure uses the location of birth of the individual i to match the exposure to famine of historical rayon r. We construct a set of additional measures of famine exposure that, instead of relying on an individual's birth location, align famine exposure with the historical rayons corresponding to the individual's current location, as well as their parents' and grandparents' birth locations. These measures enable us to distinguish between the transmission of exposure to famine through an individual's environment and the transmission of famine memory within the family. Throughout the remainder of the paper, we refer to these transmission channels as horizontal and vertical transmissions, respectively.

X_{irlt} are individual-level controls for age and gender. X_{rl} are pre-famine controls at the rayon level, such as population, the share of rural population, and the share of Ukrainians and Russians as recorded in the 1926 census. This is crucial for addressing potential concerns arising from Markevich et al. (forthcoming) on the causes of the Holodomor, documenting that the famine was explicitly targeted at areas that report a higher Ukrainian population share in the 1926 census (see also Section 2 for details).[16] We cluster standard errors at the treatment (rayon) level with standard errors being similar for alternative ways of clustering—using the next higher administrative level (oblast) or Conley (1999) spatially clustered standard errors.

4 Exposure to Famine and National Identity

4.1 Main Results

Table 1 shows our estimates on national self-identification using two main measures: Self-identity Ukrainian (columns 1–3) and Russian main language (columns 4–6). All columns of Table 1 include individual-level controls (age and gender) and fixed effects for the survey year, accounting for year-specific characteristics in 2013 and 2015. Columns (2) and (5) add historical, geographic, and

[16] Using province-level data, Markevich et al. (forthcoming) show that among provinces with similar per capita grain production and urbanization in 1932, those with a higher share of ethnic Ukrainians—measured using the 1926 Census—experienced significantly higher famine mortality in 1933.

economic controls that can influence both the famine death rate and the outcome variables. Columns (3) and (6), representing our preferred specification, additionally include oblast fixed effects (2010 borders) to account for regional economic and political differences that can impact self-identification. Appendix Figures A5 visualize these regressions in corresponding scatterplots. Standard errors are similar when clustering using higher administrative levels (oblast) or Conley (1999) spatially clustered standard errors (see Appendix Table A3).

The variable "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise, thus measuring self-reported national/collective identity and the respondent's sense of belonging to the Ukrainian group. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Although this question might appear inadequate for capturing national identity, it is particularly meaningful in the Ukrainian context. Historically, the spread of the Russian language was a key assimilation policy during the Soviet period (see Grenoble (2003) p.57ff). In contrast, the Ukrainian language was suppressed.[17] Today, native language continues to reflect linguistic preference and cultural identity. Its strong association with ethnicity has led some scholars to consider it as nearly synonymous with ethnic identification (Kulyk (2011)).[18]

The results in columns (1)–(3) suggest a positive relationship between famine exposure and Ukrainian self-identification, while columns (4)-(6) show a negative relationship with Russian being the main language individuals speak. In terms of magnitude, column (3) implies that in a rayon that witnessed a 1 percentage point higher famine death rate, ethnic Ukrainian self-identification is higher by around 2 percentage points. In column (6), our estimate suggests that a 1 percentage point increase in the famine death rate is associated with around a 5 percentage points decrease in the likelihood of considering Russian as a main language. Our findings are consistent with the work of sociologists who have emphasized the role of the Holodomor in Ukrainian nation building and its influence on shaping the relationship with Russia (Kuzio (2001); Kas'ianov (2010)).

We also examine heterogeneity by generation of famine exposure. Using respondents' ages, we infer whether exposure occurred during their own, their parents', or their grandparents' lifetimes, and then assess how the impact differs across these generations.[19] The coefficients plotted in Figure 3

[17]The systematic repression began under the Russian Empire in the 17th century and continued into the early 21st century, with Ukrainian language being banned 134 times. For an overview of this linguistic repression, see (Dzyublenko (2023)). More recently, the Ukrainian language has faced suppression in Russian-occupied Crimea and the so-called Luhansk and Donetsk People's Republics since 2014. Some view the language spoken as a contributing factor to the current war (Dzyublenko (2023), (Munroe et al. (2023)).

[18]During the Soviet era, "native language" often referred to the language of one's nationality as much as to actual linguistic practice (Kulyk (2011)). This interpretation remains relevant today, as evidenced by recent public surveys in Ukraine. These surveys found that 34% associate the native language with the language they think and speak freely, 32% with the language of their nation, 24% with their parents' language, and 9% with the language they use most frequently (Olszański (2012)). Similarly, the 2001 post-Soviet census revealed that for many, "native language" signifies identity rather than spoken language, emphasizing its symbolic rather than practical role (Arel (2002)). Linguistic and cultural attitudes are influenced not only by communicative practices but also by individuals' identification with particular languages, even if they do not actively use those languages (Kulyk (2011)).

[19]We do not have information on the birthdates of respondents' parents and grandparents. To assign generational exposure to the famine, we assume a generational interval of 28.5 years. This estimate is based on Zakharov (2023), which reports 28.5 years as the average age at which women in the USSR had their second child in the 1970s. While no

show the baseline effect of famine mortality, as well as the effects by generation exposed. Panels A and B of Figure 3 present the results for Ukrainian identity and Russian language use, respectively. Panel A shows that the effect on Ukrainian identity is strongest among individuals who directly experienced the famine, although the estimates are less precise due to the small sample size in this group. While the estimates suggest persistence in the effect of the famine, the magnitude declines across generations, indicating that the salience of the experience weakens when transmitted rather than directly lived.[20] This generational decline may partly reflect the impact of Soviet repression, which actively suppressed famine memory. In contrast, Panel B shows that the effect on the likelihood of reporting Russian as the main language remains relatively stable across generations. This likely reflects the more path-dependent nature of language use, given its stickier transmission within families. Section 5 provides a detailed examination of the transmission mechanisms and the effects of Soviet repression of memory.

4.2 Robustness Analysis

In this section, we conduct a series of robustness checks to validate our main results. First, to address concerns that our estimates may simply reflect Soviet targeting of Ukrainians rather than the experience of the famine itself, we implement two complementary strategies: an instrumental variable approach leveraging exogenous variation from weather shocks and an analysis of heterogeneity in grain procurement over time. We then assess whether using place of birth as a reference point is appropriate, given that individuals' views on national identity may also be shaped by their current social environment. We also address concerns about selective migration in general and those related to post-famine resettlement and World War II population changes in particular. Finally, we rule out that our results are merely driven by the 2014 Russia–Ukraine conflict, which significantly affected inter-ethnic attitudes.[21]

Targeting of Ukrainians A potential threat to the effects estimated in Equation (1) is that the Soviet state systematically targeted Ukrainians. This could lead to an overestimation of our OLS estimates if we are simply capturing the pre-famine higher share of self-identified Ukrainians. Since we control for the share of Ukrainians in 1926, this concern would arise only if targeting of Ukrainians extended beyond what is measured in population registers. A priori, this seems unlikely, as the official registers likely provided Soviet planners with the most reliable information for identifying ethnic Ukrainians. In fact, Markevich et al. (forthcoming) document that Soviet economic policies were centrally planned and implemented through a hierarchical bureaucracy that applied uniform formulas to assign grain production and procurement targets at each administrative level (i.e., rayon). Markevich et al. (forthcoming) also show that differences in famine mortality between predominantly

comparable data are available for earlier periods, we use the age at second birth as a conservative proxy for generational length, especially given that fertility rates in the 1930s averaged around six children per woman.

[20] Notably, average levels of Ukrainian identity are very similar across groups, making the estimated effects directly comparable.

[21] Korovkin and Makarin (2023), using survey data from the Kyiv International Institute of Sociology (2013–2016), documents shifts in Ukrainians' attitudes toward Russia following the 2014 conflict.

Ukrainian and predominantly Russian rayons disappear once the share of the Ukrainian population is accounted for, suggesting that the targeting was based on administrative-level ethnic composition rather than more fine-grained information—a factor already accounted for in our main specification. The effectiveness of targeting based on administrative units was reinforced by the imposition of migration restrictions during the famine, which prevented Ukrainians from relocating to less affected rayons.[22] While we cannot fully rule out the possibility that the Soviet regime relied on additional unobserved information, we conduct two additional analyses, described below, to help alleviate these concerns.

First, we implement an instrumental variable (IV) approach that leverages exogenous variation in famine intensity arising from weather shocks. Note that while the role of weather in contributing to famine mortality has been actively debated in the literature (see Section 2), our IV strategy does not require that weather be the primary cause of the famine. Rather, we only require weather shocks to explain a small part of excess mortality providing a valid first-stage. This should be the case even for lower-bound estimates of the relevance of weather shocks to famine mortality in the Ukrainian SSR. Naumenko (2021) emphasizes that although the weather contributed to famine mortality, it was not the primary cause (explaining only about 8% excess mortality). Consequently, we do not claim that weather shocks were the main driver of the famine. Instead, we rely on weather variation precisely because it is plausibly exogenous to pre-existing national identity or political targeting, even if it accounts for only a modest share of overall mortality. Our goal is to show that the relationship between famine exposure and Ukrainian self-identification persists even when isolating this exogenous treatment component. Importantly, the central mechanism remains one of "blame attribution" – Ukrainians continue to hold the Soviets responsible for the famine as a whole, even when marginal differences in severity between regions can be attributed to weather shocks.[23]

In Panel A of Appendix Table A4, we follow Rozenas and Zhukov (2019) and rely on a scalar index of weather adversity to obtain instrumental variable (IV) estimates. This index is built using a linear combination of weather shocks defined as deviations in 1931–1932 from median rainfall and temperature in each rayon and month in 1926-1930.[24] In Panel B, we construct our instruments based on deviations in fall temperatures (affecting wheat sowing) and spring precipitation (affecting crop growth) during the 1931–1932 agricultural cycle, interacted with wheat suitability to capture heterogeneous agronomic vulnerability. We include both linear and quadratic terms to allow for nonlinear effects of extreme weather. Overall, the IV estimates are similar in magnitude to our OLS results, suggesting that controlling for the 1926 Ukrainian population share already adequately accounts for Soviet targeting.

Our second strategy examines heterogeneity in extraction pressure over time as a proxy for Soviet targeting. We use changes in grain procurement ratios between 1930/31 and 1931/32, measured at the rayon level. These changes plausibly reflect Soviet decisions to target specific areas. This approach

[22]This approach to targeting based on census data also resembles the Nazi regime's use of population registers to identify and persecute Jews in 1930s Germany; see https://encyclopedia.ushmm.org/locating-the-victims.

[23]We confirm this "blame attribution" in Section 6, particularly in the subsection on perceptions of the famine.

[24]Raw data is obtained using historical 1931–1932 monthly mean air temperature and precipitation data (0.5·0.5 degree grid, Matsuura and CortWillmott (2014)).

allows us to test whether our findings could simply reflect Soviet targeting based on unobserved nationalist sentiment (unobserved in our Census data but potentially known to Soviet authorities).If such targeting extended beyond what is captured by the 1926 Ukrainian share, we would expect the effect of famine mortality to be mainly driven by the more heavily targeted sample rather than the less targeted one. Appendix Table A5 reports results for the highest quartile (Q4) of procurement increases (Panel A) and the lowest quartile (Q1) (Panel B). We find that the effect of famine on national identity is significant in both subsamples and similar in magnitude to our baseline OLS estimates. This confirms that our empirical strategy, which follows Markevich et al. (forthcoming) by controlling for the 1926 Ukrainian share, adequately accounts for the targeting of Ukrainians during the famine.

Birthplace or current residence? We next assess whether using place of birth as a reference point is appropriate, given that individuals' views on national identity may also be shaped by their current social environment. To address this question, we first directly analyze the effect of famine intensity based on residence in our estimation equation. This approach leverages the substantial share of "movers" in our sample—individuals who reside in a different location from their birthplace—allowing us to distinguish between the impact of famine exposure at birth and at the current place of residence. Appendix Table A6 presents these results showing no significant effect of famine death rates in the location of residence on national identity. In contrast, the coefficients on famine death rates based on birthplace remain consistent with our main findings. Accordingly, our results suggest that birthplace plays a more influential role in shaping an individual's national self-identification than their current place of residence. Notably, one concern could be that individuals self-select into locations that strongly identify as Ukrainian based on their own attitudes. However, this would lead to an overestimation of the effect of current location, making it more likely to detect an effect, while the effect of birthplace would be underestimated and thus harder to identify.

To further validate this conclusion, we examine the formation of national identity based on birthplace using the epidemiological approach pioneered by Fernandez (2007) and Giuliano (2007). To this end, we exploit variation in self-identification among individuals who reside in the same rayon but differ in their exposure to historical famine intensity based on their birth rayon—specifically we account for rayon of residence fixed effects. Appendix Table A7 presents these results, which again confirm the effect of birthplace on national identity.

Migration Population movements have long complicated studying the lasting effects of early Soviet policies. Even as for much of the Soviet period internal and external migration was restricted and regulated—there was considerable rural-urban migration in the process of economic development (Ball and Demko 1978; Gang and Stuart 1999). Further, the famine itself via Soviet resettlement and a set of events during World War II triggered mass migration and ethnic-based population replacements within Ukraine.[25] We start by addressing the issue of selective migration in general using

[25]Our data confirms this high levels of internal migration since the Holodmor showing that 56.8% of individuals in the Ukrainian SSR sample have a different birth Rayon as at least one of their grandparents.

our data that accurately traces ancestral origins—before turning to the more particular issues related to post-famine resettlement and WWII. This allows for a more reliable analysis of these long-run impacts. We do this by restricting the sample to individuals who have parental and grandparental ancestry in their rayon of birth in Appendix Table A8 and document similar effects. Accordingly, our results are not driven by the selective migration of individuals themselves (see subsection above), nor by that of their ancestors since the famine.

Soviet resettlement of depopulated areas One particular concern is that around 127,000 people were resettled from the Russian and Byelorussian Soviet Socialist Republics to areas depopulated by the famine (Rozovyk, 2020). This resettlement is expected, *a priori*, to attenuate the effect of the famine on Ukrainian national identity. Newly resettled populations were unlikely to have experienced the famine firsthand and were more likely to identify as Russian or Belarusian rather than Ukrainian. We empirically evaluate this by identifying individuals in the 2013 with ancestry (grandparents) from Russia or Belarus. Approximately 12% of individuals have at least one grandparent born in Russia or Belarus. Panel A in Appendix Table A9 presents estimates excluding these individuals. Our results remain robust. Panel B directly examines the role of resettled ancestry. We find that (partially)[26] resettled ancestry has a negative effect on Ukrainian self-identification and a positive effect on the use of the Russian language. Interestingly, the interaction with famine exposure suggests that individuals with (partially) resettled ancestry are even slightly more influenced by being born in rayons with higher famine exposure, although this effect is not consistently significant across specifications.

WWII & Holocaust World War II represented a major shock for the USSR, with some of the most intense fighting taking place in Ukraine—plausibly shaping national identity in lasting ways. Ukraine's occupation by Nazi Germany also likely reshaped local identities, particularly through the Holocaust (see, e.g., Acemoglu et al. 2011; Grosfeld et al. 2013). This was followed by Germany's defeat and the Soviet-led forced displacement of certain minority groups from Ukraine, including Germans, Poles, and Tatars (see, e.g., Becker et al. 2020a). Appendix Table A10 examines the potential influence of World War II, the Holocaust, and population transfers. Column 1 controls for the Jewish population share in 1926, while Column 2 adds the shares of Germans, Poles, and Tatars. Column 3 incorporates a proxy for the intensity of the Holocaust using distance to Jewish ghettos and massacre sites based on (Browning, 2012). Column 4 accounts for the intensity of wartime fighting across Ukraine by including the distance to major battle locations using (Wikipedia contributors, 2025). The estimated effect of famine mortality on Ukrainian self-identity remains consistent across these specifications. Columns 5–8 replicate the analysis using Russian as the main language as the dependent variable; the results again remain robust.

Current conflict with Russia The 2014 annexation of Crimea and the war in Donbas might affect our

[26]The likelihood that an individual has two grandparents born in Russia is relatively high, with within-lineage correlations above 0.82, while for parents it is only 0.5. This suggests that while each lineage may exhibit relatively homogeneous ancestry, the parents' generation is often mixed, reflecting unions between individuals of Ukrainian and Russian descent.

estimates (Korovkin and Makarin (2023)).[27] So that, one might worry that our estimates primarily reflect a resurgence of anti-Russian sentiment triggered by the conflict (see, e.g., Ochsner and Roesel (2024)). To rule this out, we narrow our analysis to the 2013 survey data in Appendix Table A11. Compared to our main results, estimates show a moderate decrease in magnitude; however, the overall patterns and statistical significance remain similar.

5 Transmission of National Self-Identification

Until now, our empirical examination has focused purely on determining the degree to which present-day national self-identification can be linked to historical repression. Our findings indicated that individuals who were born in locations that experienced higher exposure to the Holodomor are more inclined to identify themselves as Ukrainians today. To explore why the effect persists, we now examine the mechanisms through which variations in national self-identification were transmitted. Transmission could occur in two ways: (i) horizontal transmission, that is, through the places individuals grew up in via local communities and institutions, or (ii) vertically from parents and grandparents within the family (see, e.g., Algan et al. (2022); Bisin and Verdier (2001); Bisin and Verdier (2011); Bisin and Verdier (2023); Bisin and Verdier (2025)). Note that national identity appears to be shaped early in life through birth exposure to the famine, as we have already ruled out later-life transmission via place of residence exposure (see Appendix Tables A6 and A7).

Our dataset offers unique information on an individual's birthplace, as well as the birthplaces of their parents and grandparents. This allows us to explore various transmission channels by leveraging geographic variation in famine exposure within our main specification.[28]

5.1 Vertical or Horizontal Transmission?

Existing literature has identified multiple channels through which the effects of political violence can endure, including state propaganda (Charnysh (2015)), religious institutions (Wittenberg (2006)), and family influences (**?**; Lupu and Peisakhin (2017)). As seen in other cases of mass violence (Rozenas et al. (2017); Blaydes (2018); Ochsner and Roesel (2024)), those who experienced the Holodomor often perceived it not as an attack on individuals or families, but as an assault on their geographically or ethnically defined communities. Thus, it is unsurprising that individuals in famine-affected areas were exposed to narratives of group victimization——not only through their relatives but also through friends, neighbors, co-workers, and other community members.

To empirically disentangle these effects, we rely on the unique information in our data that tracks not just the individual birth location, but also the birth locations of the parents and grandparents. Since we have ruled out the influence of the current place of residence, we take the birth location of the individuals as the main exposure to measure horizontal transmission, while the birth location

[27] Also Ukrainian Regionalism Project (2018) could only conduct the survey in non-occupied areas in 2015.

[28] Since we find no evidence that political targeting biases our estimates of the famine's impact on national self-identification, we focus on the OLS estimation, which generally provides a lower bound relative to the IV estimates. Moreover, examining transmission channels would require instrumenting multiple famine exposure measures using only the sub-sample of movers, significantly weakening first-stage statistical power (F-stats range: 6–15).

of the parents/grandparents acts as a relevant proxy to measure vertical transmission. These effects are identified by cases where at least one parent or grandparent was born in a different location than the individual, allowing us to isolate the relative impact of each transmission pathway.

We start by investigating whether parents/grandparents exert a significant influence on the determination of national identity of individuals in Table 2. To isolate and distinguish the effects between individuals' birthplaces and those of their parents, we expand our main OLS specification (including individual controls, survey fixed effects, rayon-level controls, and current oblast fixed effects). We conduct two analyses: one where we average famine exposure across both parents (columns (1) and (5)) and another where we examine fathers' and mothers' exposures separately (columns (2)–(4) and (6)–(8)). Panel A examines the effect of famine exposure in the parental birth location, while Panel B focuses on grandparental famine exposure. In both panels, we find that horizontal transmission in birth location and vertical transmission through parental exposure matter—rather than just one of them. We also document that paternal and maternal vertical transmissions are identically important. However, the effect is muted for maternal grandparents, with transmission occurring primarily through paternal grandparents.

Why do both forms of transmission matter? One key reason lies in the historical context. The Holodomor provides a crucial case for understanding these dynamics, as the USSR not only suppressed its memory (as discussed in Section 2) but also systematically oppressed Ukrainian identity. This took many forms, including the closure of churches and the ban on the Ukrainian language in schools and public life. Given this repression, the horizontal transmission of ethnic and national identity was severely constrained until 1991, leaving vertical transmission via families as the primary means of preserving national identities (Kononenko and Holowinsky (2001)).

However, this dynamic shifted after the collapse of the Soviet Union. As Kononenko and Holowinsky (2001) highlights, Ukraine's independence in 1991 marked a turning point, enabling new political and educational policies that fostered a Ukrainian national identity. Most notably, while memory of the famine was outlawed during Soviet rule, the newly independent Ukrainian state actively revived it through memorials, museums, and its integration into the school curriculum.

Thus, during the Soviet period, vertical transmission within families was probably the only way the famine influenced identity, as horizontal channels such as schools and public commemorations were suppressed. After independence, however, horizontal transmission became possible. If this narrative holds, we would expect cohorts socialized under Soviet rule to be shaped exclusively by vertical transmission, whereas post-Soviet generations would also be influenced by horizontal transmission.

Table 3 investigates this by splitting our sample into individuals born before 1985 (columns (1)–(4)) and those born after 1985 (columns (5)–(8)), the latter having entered the educational system and engaged with their communities after the Soviet Union's collapse in 1991.[29] Panel A presents effects on Ukrainian self-identity, Panel B on Russian main language spoken.[30] Consistent with

[29]In this analysis, we focus on birthplace versus parental exposure, excluding grandparental exposure due to the reduced power from sample splitting and the unavailability of grandparental locations in the 2013 sample.

[30]Considering, the smaller number of individuals and the high share of Ukrainian self-identification in Panel A, especially, in the later cohort, we confirm that this result holds using another question (Ukrainians "we" not "they") which is reported in Panel C. Notably, for this later question only 77% and 80% respondents answer with yes.

the timing of the regime change, we find that for cohorts born before 1985, vertical transmission - specifically exposure to parental famine - was the primary driver of the effect, as shown in columns (1)–(4). In contrast, for cohorts born after 1985, horizontal transmission (exposure to famine in the individual's birth place) was more important, as documented in columns (5)–(8).[31] Interestingly, we see that for this later group the vertical transmission channel seems to be muted; we interpret this as horizontal transmission replacing the importance of vertical transmission after the former became possible following regime change.[32]

Appendix Figure A6 confirms the robustness of our findings from Table 3. Rather than fixing 1985 as the cutoff to separate cohorts socialized under the USSR from those socialized after independence, we vary this threshold between 1980 and 1990 and plot the resulting estimates corresponding to Panel A, Columns (1) and (5) of Table 3. The results remain robust: estimates are nearly unchanged across Panels A, B, and D of Appendix Figure A6. In Panel C, we find that the effect of horizontal transmission becomes even stronger as we impose a stricter definition of post-independence socialization, consistent with a sample that increasingly excludes individuals exposed to Soviet-era institutions and norms.

5.2 Self-Selected Use of Language

Before directly assessing the institutions that influence horizontal transmission, we first take an indepth look at how individuals self-identify or self-censor their national identity in their relations with different societal groups.

In Table 4, we draw on a unique set of questions from Ukrainian Regionalism Project (2018) that examine language use across different segments of society. Precisely, we assess whether individuals use Ukrainian in various day-to-day interactions, including within their family, with other members of society, and when engaging with government officials. We again divide the sample into cohorts socialized during the Soviet era (columns (1)–(4)) and those socialized afterward (columns (5)–(8)). As before, we consider famine exposure in an individual's birth location as a proxy for horizontal transmission, while parental famine exposure serves as a proxy for vertical transmission.

For cohorts socialized during the Soviet era (columns (1)–(4)), vertical transmission through parental famine exposure increased the use of Ukrainian, aligning with our previous findings. However, breaking down the overall effect documented in column (1) by specific contexts (columns (2)–(4)) reveals considerable variation in vertical transmission effects. Column (2) examines the use of Ukrainian within the family (i.e., with parents or children), where the increase is the most pronounced, likely because the home provided a safe space for its use and served as a key channel for transmitting the memory of the famine.[33] Column (3) focuses on interactions with the general public

[31] In Panel B, columns (5)–(8), the coefficient estimates for horizontal transmission are large in magnitude but borderline insignificant. This may reflect the slow implementation of language policy changes, which take longer to materialize compared to shifts in ethnic self-identity ((Kononenko and Holowinsky, 2001))

[32] Our results are essentially unchanged using the epidemiological approach where we control for current rayon fixed effects, which is consistent with us documenting no effect of horizontal transmission based on individual's current locations.

[33] Interactions with one's parents may have been especially crucial during the Soviet era, as they played a fundamental

(e.g., friends, sellers, co-workers, and strangers), showing a positive effect, though the magnitude is less than half of what is observed for family use in column (2). In contrast, column (4) examines communication with public officials, where the positive effect is the weakest—only a third of the magnitude—and statistically significantly smaller than the overall effect in column (1). More broadly, we observe a positive effect on the use of Ukrainian in both public and official settings, but this effect is significantly weaker than general language use. We interpret this as a broader vertical transmission effect that increased Ukrainian self-identification and language use among cohorts born before 1985. While this effect outweighs individuals' tendencies to distrust strangers and, in particular, officials, its impact remains somewhat subdued due to the enduring legacy of distrust shaped by growing up in the Soviet era.

Regarding horizontal transmission through exposure to famine in the birthplace, we find no effect on the use of Ukrainian language in columns (1)-(3), consistent with our earlier findings on national identity. However, in column (4), we observe a significant negative effect on the use of Ukrainian with public officials. A plausible explanation is that those who experienced reprimands from teachers or other authorities for mentioning the Holodomor or expressing their Ukrainian identity during their formative years internalized these negative experiences. As a result, they may continue to associate interactions with officials with the need for caution. The persistence of such distrust, even after regime change, suggests that individuals may actively choose to self-censor their Ukrainian identity in certain settings.

Turning to cohorts socialized in independent Ukraine (columns (5)–(8)), we find that both vertical and horizontal famine exposure have little overall effect on the use of Ukrainian. This likely reflects the fact that for these generations, the use of Ukrainian is less politically charged than for previous ones, and access to learning the language has been more uniformly provided through educational institutions. However, one notable pattern emerges: individuals with horizontal famine exposure are more likely to speak Ukrainian with public officials. While this interpretation remains tentative, it could be a reflection of individuals having had positive experiences when signaling their Ukrainian identity to teachers or other public officials while growing up. This aligns with the broader efforts of the post-1991 government to actively promote horizontal transmission of Ukrainian identity.

5.3 Evidence of Horizontal Transmission: Memorials and Churches

We now turn to evaluating the factors that may have suppressed or reinforced horizontal transmission, particularly the impact of church closures by the Soviet state and the construction of Holodomor memorials by Ukrainians.

Church closures Under Soviet rule, the state dismantled key institutions that facilitated the transmission of norms outside its control, such as churches (Soldatenko et al. (2013)), which could have served as spaces for sharing collective memories beyond the family.[34] We therefore focus on perma-

role in passing down the Ukrainian language.

[34]Research on church practices during the Soviet period is complex due to the large number of religious denominations, and to the best of our knowledge, scholarly work on the topic remains limited, particularly in English. An

nent church closures that occurred after 1933 and examine their role in shaping the transmission of the Holodomor's impact on national self-identification.[35]

Panel A of Appendix Figure A2 visualizes the data on church closures in Ukraine that we collected from Soldatenko et al. (2013).[36] We hypothesize that in areas where the Soviets were particularly aggressive in dismantling institutions, specifically churches, horizontal transmission should be weakest for the pre-1985 cohort. Consequently, in these areas, vertical transmission through families may have played an even more crucial role in preserving national self-identification.

Table 5 presents our results, where we interact our measures of famine exposure with the number of churches that were permanently closed since 1933 (in birth rayon). Columns (1) and (2) show the effect for the full sample. Column (1) documents that a higher number of permanently closed churches weakened the effect of our proxy for horizontal transmission (famine deaths in birth location), while in locations with few church closures, horizontal transmission remained an important factor. On average, a rayon saw eight church closures so that the estimated effect is close to zero for much of the sample. This suggests that the Soviet state was able to repress horizontal transmission in most of the Ukrainian SSR, but not everywhere. Column (2) accounts for our proxy for the vertical transmission channel (i.e., effect of father's birth location) interacted with church closures with similar effects for horizontal transmission.

Next, we divide the sample into pre-1985 (columns (3)–(4)) and post-1985 (columns (5)–(6)) cohorts. We expect that church closures significantly impacted only the pre-1985 cohort, as the memory of the famine was actively repressed during this period. In contrast, for the post-1985 cohort, church closures were likely irrelevant for horizontal transmission, as the Holodomor became more widely acknowledged in schools and officially commemorated as a national holiday starting on November 26, 1998. Indeed, we document that the heterogenous effect of famine exposure due to church closures is driven by the pre-1985 cohort. Furthermore, we document that church closures not only weakened horizontal transmission but also find evidence that they increased the relevance of vertical transmission for the pre-1985 cohort. Notably, the interaction effect for vertical transmission is considerably smaller, suggesting that families with a history of exposure to the famine were unable to fully compensate for the absence of institutions that otherwise would have fostered horizontal transmission of identities. This incomplete substitution may be linked to the broader Soviet context, where even family discussions were subject to state surveillance, and children were sometimes encouraged to denounce their parents (see, e.g., Thurston 1991, p. 556).

Building Holodomor memorials Following the collapse of the Soviet regime, independent Ukraine actively sought to revive the memory of the famine, which may have revitalized horizontal transmission through deliberate efforts to restore collective memory. Since physical memorialization—through

exception is Kolarz (1963), Chapter 3, which highlights how Ukrainian nationalism was preserved within the Ukrainian Autocephalous Orthodox Church, often clandestinely, during periods of political repression.

[35] While Ukrainian identity was also suppressed within educational institutions, curriculum changes were implemented almost uniformly across Ukraine, making the education system a non-ideal state institution to examine in our analysis.

[36] Considering that Soldatenko et al. (2013) might be incomplete in its geographical coverage of all areas in Ukraine, we focus our analysis on individuals from rayons where at least one church closure is recorded.

monuments, statues, engraved plaques, and the renaming of streets and squares—plays a crucial role in shaping how people remember, identify with, and interpret the past (Villamil and Balcells (2021); Rozenas and Vlasenko (2022)), we focus on Holodomor memorials across Ukraine as a key mechanism of this process.

Panel B of Appendix Figure A2 shows the collected data on Holodomor memorials across Ukraine. In contrast to church closures, which were imposed by the Communist leadership, the construction of memorials was often driven by local sentiment and initiative. This presents a challenge, as memorials may not necessarily enhance horizontal transmission but could instead reflect preexisting strong sentiments about the famine legacy. We address this concern in three ways. First, the erection of a memorial is typically organized at the local administrative level (i.e., the rayon or municipality); in contrast, its impact should be highly localized, primarily affecting individuals who encounter the memorial regularly in their daily lives. To this end, we expect any effect of memorials on stronger horizontal transmission to decline rapidly with distance. Second, the building of memorials is plausibly organized by older generations (e.g., born pre-1985), while the effect of memorials should be strongest for young cohorts, namely those born post-1985. Consequently, if memorials enhance horizontal transmission, we would expect their effect to be more pronounced among younger generations. Lastly, Panel B of Appendix Figure A2 shows only a weak correlation between famine mortality and the location of Holodomor memorials, indicating that memorial placement is not systematically driven by famine intensity.

We investigate this in Table 6 in which we study whether the effect of being born in a rayon with high famine exposure is stronger if one lived within a radius of 1, 2, 5, or 10 km. Panel A presents the results for the cohort born post-1985, while Panel B presents the results for the one born pre-1985. Panel A shows that the effect of higher historical famine death rates is stronger for the post-1985 cohort near Holodomor memorials. However, this effect disappears for individuals living further than 2 km from a memorial, including those at 5 km and 10 km distances. In contrast, Panel B shows no heterogeneous effect for the pre-1985 cohort. This is consistent with the idea that Holodomor memorials, at this later stage in life, have little impact on shaping horizontal transmission.[37]

To summarize, our results indicate that the Soviet state successfully suppressed the horizontal transmission of famine memory and, consequently, its impact of the formation of Ukrainian identity until its collapse. However, an increase in vertical transmission within families partially compensated for this repression. After the fall of the Soviet Union, the Ukrainian state was able to revive horizontal transmission of the famine legacy, thus reinforcing the development of Ukrainian self-identity through, for instance, the establishment of memorial institutions.

[37]We do observe a positive direct correlation between memorials and national self-identification for the pre-1985 cohort. However, we interpret this cautiously, as it may reflect pre-existing pro-Ukrainian sentiment within this older cohort rather than an effect of the memorials themselves. Given that many Holodomor memorials were constructed in the 1990s and 2000s, it is plausible that stronger national sentiment in these areas drove their establishment. In contrast, the younger generation was unlikely to have influenced the construction process, as they were at most 20 years old by 2005.

6 Additional Results

This section provides additional pieces of evidence complementing our main results. First, it shows results for the remaining measures of national self-identity available in Ukrainian Regionalism Project (2018). Second, we analyze the effect of famine intensity on perceptions of the famine as a genocide. Third, we expand our analysis beyond national identity to the effect on individuals' general values and perceptions of history. Finally, we study whether there was a lasting effect on individuals' economic situation.

Alternative measures of national identity: In Appendix Table A12, we assess the sensitivity of our results to the use of two alternative national identity measures: "Ukrainians 'We' not 'They'" (columns 1–3) and "Russian Nationality" (columns 4–6). The variable "Ukrainians 'We' not 'They'" is a dummy equal to one if an individual agrees with the statement that when talking about Ukrainians, they typically use 'we' rather than 'they'. The "Russian Nationality" variable is a dummy equal to one if an individual identifies as Russian when asked about their nationality (only available in 2013).

Results indicate a statistically significant positive relationship between famine exposure and Ukrainian self-identification. Specifically, individuals exposed to a 1 percentage point increase in the famine death rate are 3 to 6 percentage points more likely to refer to Ukrainians as 'we' rather than 'they'. Conversely, these individuals are 4 to 8 percentage points less likely to identify as Russian when asked about their nationality.

Perceptions of the famine: Considering the effect of famine exposure on national identity, one might wonder whether individuals hold different perceptions of the Holodomor itself. Our data allows us to analyze whether individuals are more likely to view the Holodomor as genocide and regard it as significant in the history of Ukraine. Such a shift in perceptions would plausibly be at the core of how historical famine exposure is contributing to shaping national identity. If individuals view the famine as a deliberate act of genocide, it becomes a shared collective memory and historical narrative. In contrast, if individuals do not perceive the famine as genocide, or view it as an accidental consequence of Soviet policies, their sense of shared history with other Ukrainians may be weaker and thus their national identity may not be strongly influenced by the famine. Descending from a family or growing up in a community that has lived through the Holodomor would plausibly make it more likely that individuals view it as being a genocide and understand it as an important event for Ukrainian history.

To understand contemporary views of individuals on the Holodomor, we rely on two questions from Ukrainian Regionalism Project (2018): "Estimate how important the following events were for the history of Ukraine: Holodomor of 1932-1933." and "Do you consider the famine of 1932-33 in Ukraine to be a genocide?". We combine these into an indicator ranging from minus one (no-genocide), zero (unimportant), to one (genocide). We estimate Equation (1) and report the results in Appendix Table A13. Our findings in columns (1)–(3) show that individuals who were more exposed to the famine are more likely to perceive it as an important event in Ukrainian history and as a genocide. The estimate in column (3) indicates that a 1 percentage point increase in famine

death rate corresponds to about a 26% percent increase in the perceived severity (or genocidal nature) of the famine. Our results suggest that famine death could shape Ukrainian identity today, at least in part, through current differences in individuals' perceptions of the famine.

In columns (4)–(6), we extend our analysis by decomposing the variation in famine mortality rates into two components: deaths predicted by weather shocks and residual mortality. This allows us to assess whether the source of mortality influences Ukrainians' perceptions of the famine and, ultimately, their national identity. Our findings show that the estimates for weather-induced and residual mortality are not significantly different, suggesting that even when excess mortality was due to weather conditions, Ukrainians continue to attribute the famine to political targeting. This result helps explain the robustness of our findings across different estimation methods, including OLS and IV, with the latter using weather shocks as an instrument.

General values and broader perception of history We leverage the rich micro-level data from Ukrainian Regionalism Project (2018) to better understand individuals' beliefs outside of national-identity. Specifically, we analyze survey questions that address general values in the form of views on the importance of religiosity, liberal values, and public order as well as ones that ask about individual's understanding of history more broadly. The results are presented in Appendix Table A14, estimated using Equation (1). Column (1) shows that individuals from areas with higher famine deaths exhibit similar levels of religiosity. This suggests that the famine did not broadly foster anti-communist sentiment through increased religiosity. Furthermore, columns (2)–(3) show that there is no shift in attitudes in liberal values and demands for public order (i.e., liberal versus authoritarian views). Our results suggest that the Holodomor primarily shaped national identification rather than other dimensions, like religiosity, or liberal values.

Columns (4) through (9) examine perceptions of key historical figures, focusing on whether individuals believe the figure played an important role in Ukrainian history and whether their role was perceived as positive. We study perceptions on Joseph Stalin, the leader of the Soviet Union 1924–1953, in columns (7)–(8). In columns (9)–(10), we examine perceptions on Stephan Bandera, the controversial and antisemitic leader of the radical militant wing of the Organization of Ukrainian Nationalists 1940–1959, who is viewed by some as a freedom fighter and by others as a Nazi collaborator. Finally, we focus on Leonid Kravchuk, a key figure for Ukraine's 1991 independence and its first elected president, in columns (11)–(12). We find that the most pronounced effect is a significantly stronger negative view of Stalin, as shown in column (8). Interestingly, there is no significant shift in opinions towards Stephan Bandera; if affected at all, his role tends to be viewed more negatively as well. We observe slightly more positive views on the importance of Leonid Kravchuk, though these effects are borderline insignificant. In addition to the reported individuals, questions were asked on pre-20th century historic figures (e.g. Catherine the Great, Peter the Great) as well as on Vladimir Lenin, Vyacheslav Molotov[38], Nikita Chruschtschow, Mikhailo Gorbachov Pope John Paul II. Apart

[38]Best known in the West for his role as Soviet foreign minister from 1939 to 1941 (Molotov–Ribbentrop Pact), he was also a key architect of Stalin's collectivization efforts. Additionally, he directly oversaw the Soviet Great Famine in the 1930s and was found guilty of genocide against the Ukrainian people by the Kyiv Court of Appeal in 2010.

from Vladimir Lenin and Vyacheslav Molotov, historical perceptions show little variation. The effects for these key Soviet figures of the 1920s–30s mirror the negative views of Josef Stalin, but are less pronounced.

Columns (10) through (12) analyze responses regarding the historical significance of Ukraine's independence in 1991 and whether respondents view Ukraine's history as shared with Russia and Belarus or as part of European history. We find weak evidence that individuals exposed to higher famine are more likely to express that Ukraine's independence in 1991 was important. These individuals are also less likely to associate Ukraine's past with an Eastern Slavic narrative and more likely to identify it with a European one.

Persistent economic differences The famine had profound economic consequences, not least the death of millions and the consequent depopulation of parts of the Ukrainian SSR. Consequently, one might consider whether an alternative mechanism lies in changes in economic conditions and behaviors, which could also influence self-identification with Ukraine or the Soviet Union.

We explore this in Appendix Table A15, where we regress our measures of famine exposure on various indicators of economic well-being and behavior. Specifically, we examine whether famine exposure influences individuals' assessments of Ukraine's economic situation at the time of the survey (column (1)) and before 1991 (column (2)); their perceptions of their own financial situation both currently and pre-1991 (columns (3)–(4), respectively); their current employment status, specifically whether they are self-employed or unemployed (columns (5) and (6), respectively); their hypothetical attitudes toward risk-taking in work and business ownership (columns (7) and (8), respectively); their preferences for sharing money and aversion to borrowing (columns (9) and (10), respectively); whether they or their family purchased a new house, car, fashionable clothing, or took a foreign holiday in the past 10 years (columns (11)–(14), respectively); and finally, whether their parents ever owned a business or a plot of land larger than one hectare (columns (15)–(16), respectively). Across all results, there is no evidence that individuals differ along this broad range of economic factors. This suggests a recovery in economic terms for survivors of the Holodomor and their descendants and provides evidence against economic factors shaping national identities in our context.[39]

7 The Legacy of the Holodomor: Shaping Modern Conflict and Trade

Historical events of repression often shape national identity, which in turn affects contemporary outcomes such as trust, political preferences, and inter-ethnic relations. (Nunn and Wantchekon (2011); Balcells (2012); Rohner et al. (2013); Caselli and Coleman (2013); Rozenas and Zhukov (2019)). Munroe et al. (2023) review such legacies, noting that historical repression, whether the Nazi occupation of Italy, the Khmer Rouge in Cambodia, Pinochet's dictatorship in Chile, the Sierra Leone Civil War or the Spanish Civil War, has left lasting cultural and political imprints. The Holodomor

[39] In fact, the restrictive economic policies and limited freedoms during the Soviet era may have played a crucial role in mitigating observable long-term economic repercussions for survivors. Accordingly, one should exercise extreme caution in extrapolating our findings to other episodes of famine and malnutrition, as their effects on economic outcomes in subsequent generations may differ.

also had profound inter-generational effects. Stalin's "terror by hunger" not only suppressed dissent but also cultivated temporary political loyalty to Moscow (Rozenas and Zhukov (2019)). These examples underscore how the scars of violence transcend time and geography. Related to this, Korovkin and Makarin (2023) show that conflict frequently reshapes inter-group economic dynamics along ethnic lines, with effects persisting long after the violence ends. Turning to Ukraine today, national identity and the use of the Russian language, for instance, have been suggested as factors shaping the ongoing Russian war on Ukraine (Munroe et al. (2023)). The repercussions of ethnic tensions are thus far-reaching, leaving lasting imprints on political and economic landscapes.

We first analyze the connection between historical famine death rates and present-day violence, as well as protests, and riots in Ukraine. Second, we investigate the lasting economic effects of the Holodomor, focusing on its influence on shifts in local demand directly linked to Russia compared to the broader trade patterns of Ukrainian firms.

7.1 Exposure to Famine and Modern Conflict

To explore whether historical famine exposure is associated with contemporary conflict dynamics in Ukraine, we rely on data from The Armed Conflict Location and Event Database (ACLED) (Raleigh et al. (2010)) for the period 2021–2024. The dataset captures various forms of political violence by Russian actors, including battles, explosions, and violence against civilians, as well as instances of Ukrainian resistance, such as protests and riots against Russian military actions. Panel C of Appendix Figure A2 maps these events across the historical boundaries of Ukraine. Using the geocoded data, we aggregate outcomes to the historical rayon level, consistent with our treatment definition.

Appendix Table A16 reports the estimates, using a specification analogous to our main equation but at the aggregate rayon level. In column (1), we analyze the political violence perpetrated by Russian actors in Ukraine from 2022 to 2024. Our findings provide weak evidence that regions with higher historical famine severity tend to experience less state-perpetrated Russian violence in the current conflict. Although this may initially seem counterintuitive, column (2) indicates that this effect is potentially driven by a reduction in battles (non-remote confrontations), possibly due to stronger resistance against the initial Russian advances. [40] Our results are consistent with the findings of Munroe et al. (2023), who also document a similar pattern. The last column confirms our interpretation. In contrast to declining Russian perpetrated violence, Ukrainian protests and riots against the Russian occupation are more frequent in areas with a more severe historical exposure to the Holodomor.[41]

Appendix Table A17 underlines the mechanism for these conflict results using our individual level data on attitudes. The results show that historic famine exposure increases the likelihood that

[40] Of course, we cannot fully rule out that our estimated effects might also reflect invading Russian troops selectively avoiding areas for their advance with high historical famine exposure and consequently high Ukrainian self-identification. However, this seems unlikely considering the initial broad operational plans of the Russian military invading along the whole frontline. Reassuringly, our results are confirmed by studying effects for individual years, particularly 2022, when the Russian invasion started and advanced across all border areas.

[41] We find the same result for Ukrainian protests and riots in the period 2018-2021 when the Russian occupied area was essentially stable.

individuals view it as more important to defend Ukraine to be be considered a true Ukrainian. Our results highlight that the legacy of the Holodomor continues to shape resistance to foreign occupation and aggression, contributing to the ongoing political and social dynamics in Ukraine.

7.2 Exposure to Famine and Trade

Finally, we examine the long-term impact of the Holodomor on inter-group economic interactions, particularly its effect on trade patterns. This impact is likely to exist considering our documented shifts in identity and the fact that cultural proximity has been documented as a key factor in driving trade flows between countries (Felbermayr and Toubal, 2010). This exercise complements the work of Korovkin and Makarin (2023), which has shown the impact of the Russian-Ukrainian conflict of 2014 on Ukrainian trade. In contrast to them, we investigate whether the famine influenced Ukrainian firms' trade patterns even before 2014, in particular with regard to dependence on Russia as a trade partner. Finding such an effect on the self-censoring behavior of firms and consumers in trading with Russia would be particularly interesting in light of recent debates on "friend-shoring" and reducing dependence on geopolitically risky suppliers.

To explore this, we use firm-level Ukrainian custom data (Ukrainian Customs (2013-2015)) to construct a dataset of Ukrainian firms' trade by origin of their trade partners.[42] This dataset tracks the universe of Ukrainian trade transactions. It includes details on transaction dates, package weights, values, product codes, etc., for each import and export. To measure trade-flows, we focus on the number of packages as data on values and weights are frequently missing. It also provides textual addresses of Ukrainian trading firms, which enables us to link the trade data to rayon (historical) characteristics, including the intensity of the famine death. We focus on 2013 to avoid the confounding effects of the Russia-Ukraine war, as documented by Korovkin and Makarin (2023). In addition, due to a lack of information on firms that do not trade, we only study the intensive margin of trade.[43]

We start by splitting the sample into importers and exporters to determine whether potential changes are driven solely by an affinity for consuming Russian products (i.e., changes on the import side) or reflect broader trade disintegration (i.e., similar changes in both importing and exporting patterns). Our dataset contains 3,986,429 import and 1,004,407 export transactions by Ukrainian firms in 2013, with 76.08% and 66.01% of these transactions geocoded within the area of the former Ukrainian SSR, respectively.[44]

Table 7 presents the results of our analysis, which focuses on the number of packages traded by Ukrainian firms in 2013, with the volume of trade transformed using the hyperbolic sine function. The empirical strategy is again analogous to Equation (1), but is carried out at the firm level. The analysis is conducted separately for importers (columns (1)–(3)) and exporters (columns (4)–(6)). In

[42] We purchased this dataset from World Marketing (https://worldmarketing.asia/), a marketing firm that offers this data to businesses for market analysis purposes.

[43] We are able to measure the effect on the volume of exports and imports and with which country the firm trades, conditional on a firm recording at least one international transaction. Consequently, we are unable to study the extensive margin on whether firms decide to engage in international trade in general, but we would expect that extensive and intensive margin effects go in the same direction.

[44] In total ArcGIS successfully geolocated over 95% of the locations in the original dataset.

addition to our standard set of controls, we account for industry-specific factors, which might vary across historical rayons and influence trade patterns. We do this by using fixed effects based on 2-digit product codes of traded goods, assigning firms an industrial category based on the mode of their imported products.

The analysis reveals no significant relationship between famine exposure and the worldwide total number of packages traded (imports and exports), as shown in columns (1) and (4) of Table 7. This suggests that the Holodomor did not have a lasting impact on the overall economic integration of Ukrainian firms, aligning with the absence of individual-level economic effects documented in Appendix Table A15.

However, when focusing specifically on imports and exports with Russia (columns (2) and (5)), we observe a negative and statistically significant effect of exposure to famine. Firms located in rayons more severely affected by the historical famine are less likely to engage in both importing from and exporting to Russia, indicating a persistent shift away from economic ties with Russian markets.[45]

This is further confirmed by the lack of a significant relationship between famine exposure and trade with other neighboring countries (columns (3) and (6)). This finding suggests that the shift in trade is specific to Russian products and does not indicate a broader disintegration of trade with border countries.[46]

8 Conclusion

This paper sheds light on the enduring impact of state-led repression on minority national identity, focusing on the 1932-33 Soviet-induced famine (Holodomor), and its long-term effects on contemporary Ukrainian self-identification. Our findings reveal that exposure to the famine significantly strengthens Ukrainian national identity, with individuals more likely to identify as Ukrainian and less likely to use the Russian language if they were born in areas heavily affected by the famine. These shifts in identity are not solely the result of familial transmission but are also reinforced through state-led efforts, that started after Ukraine's independence in 1991, which revived the collective memory of the Holodomor.

We document the interplay between vertical (family-based) and horizontal (community/state-driven) transmission of national identity, showing that while family institutions played a crucial role in preserving memory under Soviet repression, state efforts—such as the establishment of Holodomor memorials—have since overshadowed family transmission as the primary mechanism for fostering Ukrainian national identity in the post-Soviet era. These findings underscore the resilience of national identities in the face of repression and the importance of both familial and state-led narratives in maintaining collective memory and fostering national cohesion.

[45] We observe similar patterns when using the weight of goods traded instead of the number of packages. The results are also robust to using the number of packages traded without applying the hyperbolic sine transformation.

[46] A comparison of the coefficients for famine exposure on imports from Russia versus other border countries reveals a statistically significant difference. However, there are no statistically significant differences for exports. This may suggest that the effects are not driven by general trade disruptions or Ukrainian firms boycotting trade with Russia, but rather by shifts in consumer behavior.

The paper further contributes to understanding the broader consequences of national identity for political and economic outcomes, highlighting how historical events such as the Holodomor continue to shape contemporary political and economic dynamics, particularly in the ongoing conflict between Ukraine and Russia and pre-conflict trade relations.

Overall, our study contributes to the literature on national identity formation, the transmission of collective memory, and the political and economic legacies of state repression, offering new insights into how national identities evolve and persist over time, even under conditions of systematic suppression.

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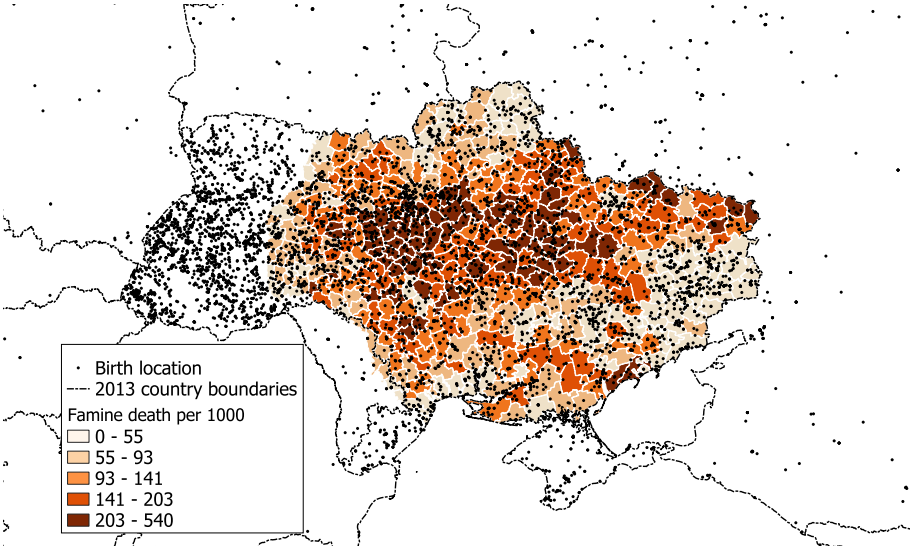
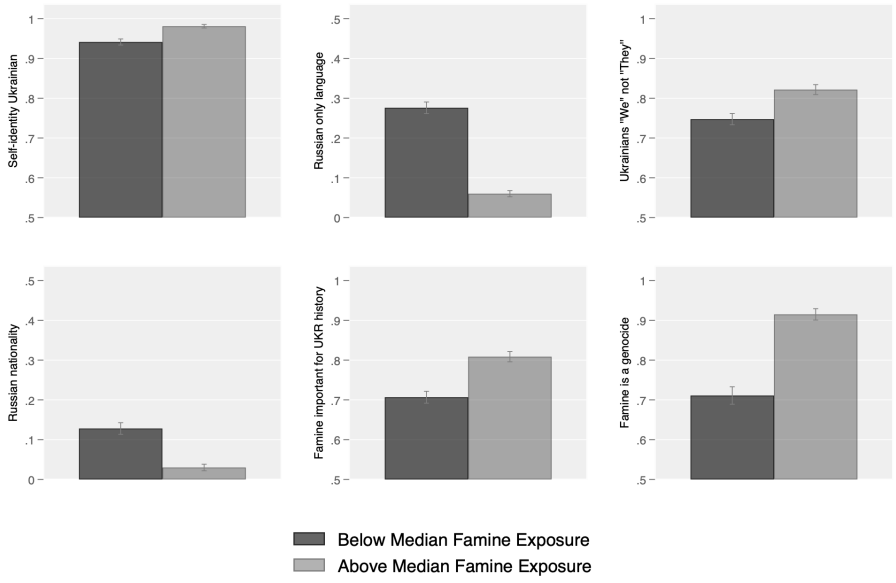
Figure 1: Famine Intensity and Origin of Individuals



Notes: The map illustrates the intensity of the Holodomor across the rayons of the Ukrainian SSR, along with the birth locations of individuals, their parents, and grandparents identified in the 2013 and 2015 samples. Data on famine deaths is sourced from MAPA (2018), while birth locations are geocoded based on textual information from Ukrainian Regionalism Project (2018).

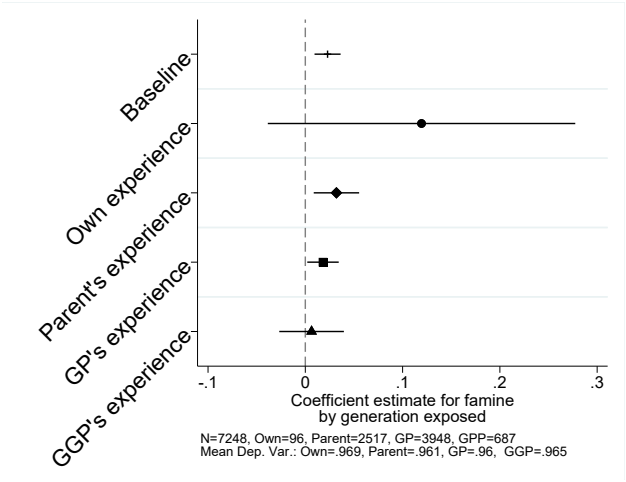
Figure 2: Famine Exposure and National Identity



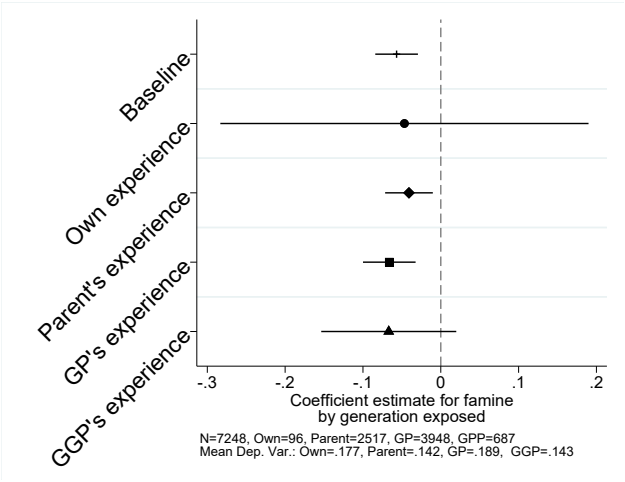
Notes: The figure plots raw data on various measures of self-reported national identification, and views about the famine from Ukrainian Regionalism Project (2018), for individuals from high (above median) versus low (below median) famine exposure locations.

Figure 3: Generational differences in effect

(A) Ukrainian identity



(B) Russian Language



Notes: The figure shows the effect of famine intensity by generation exposed to it. Sample split with regards to birth-age. All baseline controls included.

Table 1: Famine Exposure and National Identity – Individual's Place of Birth

	Self-identity Ukrainian			**Russian main language**		
	(1)	(2)	(3)	(4)	(5)	(6)
Famine death rate	0.036***	0.026***	0.022***	-0.186***	-0.085***	-0.053***
	(0.006)	(0.008)	(0.008)	(0.017)	(0.019)	(0.017)
N	7,248	7,248	7,248	7,248	7,248	7,248
Mean Dep. Var.	0.96	0.96	0.96	0.17	0.17	0.17
SD Dep. Var.	0.19	0.19	0.19	0.37	0.37	0.37
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2: Famine Exposure and National Identity – Ancestors' Place of Birth

	Self-identity Ukrainian				Russian main language			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(A) Parents' Role							
Horizontal transmission:								
Famine death rate (individual birth)	0.016	0.019	0.018	0.016	-0.042**	-0.047**	-0.047**	-0.042**
	(0.012)	(0.012)	(0.011)	(0.012)	(0.020)	(0.020)	(0.020)	(0.020)
Vertical transmission:								
Famine death rate (parents birth)	0.021***				-0.040***			
	(0.005)				(0.009)			
Famine death rate (father birth)		0.011***		0.008**		-0.025***		-0.021***
		(0.004)		(0.004)		(0.008)		(0.007)
Famine death rate (mother birth)			0.014***	0.013***			-0.023***	-0.019***
			(0.003)	(0.003)			(0.006)	(0.006)
N	3,288	3,288	3,288	3,288	3,288	3,288	3,288	3,288
	(B) Grand-Parents' Role							
Horizontal transmission:								
Famine death rate (individual birth)	0.034**	0.035**	0.035**	0.034**	-0.070**	-0.070**	-0.072**	-0.071**
	(0.016)	(0.016)	(0.016)	(0.016)	(0.030)	(0.030)	(0.031)	(0.031)
Vertical transmission:								
Famine death rate (GP birth)	0.015**				-0.017**			
	(0.006)				(0.008)			
Famine death rate (GP paternal)		0.014***		0.013***		-0.020***		-0.021***
		(0.005)		(0.005)		(0.006)		(0.007)
Famine death rate (GP maternal)			0.007	0.002			-0.004	0.004
			(0.005)	(0.005)			(0.008)	(0.009)
N	2,323	2,323	2,323	2,323	2,323	2,323	2,323	2,323
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Econ Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Oblast FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table separates the effects of horizontal (birthplace exposure) and vertical (parental exposure) transmission. "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Famine Exposure and National Identity – Regime Change

	Pre-1985 birth				Post-1985 birth			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(A) Self-Identity Ukrainian							
Horizontal transmission:								
Famine death rate (birth)	0.005	0.009	0.007	0.005	0.035**	0.037**	0.035**	0.037**
	(0.019)	(0.019)	(0.019)	(0.019)	(0.017)	(0.017)	(0.017)	(0.017)
Vertical transmission:								
Famine death rate (parents birth)	0.026***				0.001			
	(0.005)				(0.011)			
Famine death rate (father birth)		0.015***		0.011***		-0.006		-0.007
		(0.004)		(0.004)		(0.008)		(0.007)
Famine death rate (mother birth)			0.017***	0.015***			0.006	0.006
			(0.004)	(0.004)			(0.007)	(0.006)
	(B) Russian main language							
Horizontal transmission:								
Famine death rate (birth)	-0.025	-0.034	-0.030	-0.025	-0.061	-0.059	-0.064	-0.059
	(0.025)	(0.025)	(0.025)	(0.025)	(0.048)	(0.048)	(0.047)	(0.048)
Vertical transmission:								
Famine death rate (parents birth)	-0.050***				-0.019			
	(0.009)				(0.017)			
Famine death rate (father birth)		-0.027***		-0.021***		-0.022		-0.022
		(0.007)		(0.007)		(0.014)		(0.014)
Famine death rate (mother birth)			-0.033***	-0.028***			-0.002	0.001
			(0.006)	(0.006)			(0.012)	(0.012)
	(C) Ukrainians "We" not "They"							
Horizontal transmission:								
Famine death rate (birth)	0.023	0.029	0.027	0.023	0.150***	0.153***	0.151***	0.152***
	(0.037)	(0.037)	(0.037)	(0.037)	(0.050)	(0.051)	(0.050)	(0.050)
Vertical transmission:								
Famine death rate (parents birth)	0.033**				0.016			
	(0.013)				(0.016)			
Famine death rate (father birth)		0.019**		0.015*		-0.002		-0.005
		(0.009)		(0.008)		(0.016)		(0.017)
Famine death rate (mother birth)			0.021**	0.018**			0.018	0.018
			(0.009)	(0.009)			(0.015)	(0.016)
N	2,649	2,649	2,649	2,649	639	639	639	639
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Econ Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Oblast FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table separates the effects of horizontal (birthplace exposure) and vertical (parental exposure) transmission, and compares cohorts socialized during Soviet times (pre-1985) with those socialized afterward (post-1985). "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian", and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Individual controls are age and gender. "Ukrainian 'We' not 'They'" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "When I talk about Ukrainians, I usually use 'we' and not 'they'," and zero otherwise. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Transmission and Language Choice

	Speak Ukrainian With:							
	All	**Family**	**General Public**	**Public Officials**	**All**	**Family**	**General Public**	**Public Officials**
	Pre-1985 birth				**Post-1985 birth**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Horizontal transmission:								
Famine death rate (birth location)	-0.047	-0.043	-0.036	-0.062**	-0.016	-0.012	0.006	0.072*
	(0.033)	(0.033)	(0.030)	(0.028)	(0.047)	(0.047)	(0.040)	(0.041)
T-test birth ($\Delta\beta$=0)		0.848	0.645	0.490		0.896	0.541	0.039
Vertical transmission:								
Famine death rate (parents birth)	0.064***	0.065***	0.032***	0.023**	0.021	0.024	0.003	-0.013
	(0.010)	(0.011)	(0.010)	(0.010)	(0.019)	(0.0170)	(0.017)	(0.018)
T-test parents ($\Delta\beta$=0)		0.898	0.001	0.000		0.813	0.158	0.047
N	2,569	2,565	2,566	2,569	719	719	719	719
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Econ Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Oblast FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table separates the effects of horizontal (birthplace exposure) and vertical (parental exposure) transmission, and compares cohorts socialized during Soviet times (pre-1985) with those socialized afterward (post-1985). The outcome variable "Speaks Ukrainian with" is a dummy variable equal to one if an individual in the sample answers "yes" to speaking Ukrainian with the respective segment of society and zero otherwise. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Impact of Church Closures on Horizontal Transmission

	Self-identity Ukrainian					
	All cohorts		**pre-1985**		**post-1985**	
	(1)	(2)	(3)	(4)	(5)	(6)
Horizontal transmission:						
Famine death rate: birth	0.060***	0.057***	0.062**	0.057*	0.038	0.041
	(0.022)	(0.022)	(0.030)	(0.030)	(0.032)	(0.032)
× destroyed churches	-0.004*	-0.004*	-0.008**	-0.007**	0.004	0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
Vertical transmission:						
Famine death rate: father birth		0.007		0.010*		-0.007
		(0.005)		(0.006)		(0.010)
× destroyed churches		0.0002		0.0003**		0.0002
		(0.0001)		(0.0001)		(0.0003)
Number of destroyed churches	0.013**	0.012**	0.023***	0.022***	-0.013	-0.013
	(0.006)	(0.006)	(0.008)	(0.008)	(0.009)	(0.009)
N	2,350	2,350	1,821	1,821	529	529
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Econ Controls	Yes	Yes	Yes	Yes	Yes	Yes
Oblast FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table analyzes heterogeneous effects based on the number of destroyed churches in individuals' birth locations. It examines heterogeneity in horizontal (birthplace exposure) and vertical (parental exposure) transmission, as well as by cohort socialization before (pre-1985) and after (post-1985) the Soviet era. "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian", and zero otherwise. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Impact of Holodomor Memorials on Horizontal Transmission

	Self-identity Ukrainian			
	(A) Post-1985 Birth			
	1km	**2km**	**5km**	**10km**
	(1)	(2)	(3)	(4)
Famine death rate: birth	0.029*	0.028	0.030*	0.039**
	(0.017)	(0.017)	(0.016)	(0.016)
× Holodomor memorial	0.041**	0.042**	0.020	-0.020
	(0.017)	(0.020)	(0.021)	(0.019)
Holodomor memorial	0.036	0.025	-0.013	-0.062**
	(0.024)	(0.022)	(0.029)	(0.028)
N	639	639	639	639
	(B) Pre-1985 birth			
	1km	**2km**	**5km**	**10km**
	(1)	(2)	(3)	(4)
Famine death rate: birth	0.010	0.011	0.014	0.015
	(0.019)	(0.019)	(0.019)	(0.019)
× Holodomor memorial	0.020	0.006	-0.009	-0.005
	(0.018)	(0.018)	(0.019)	(0.020)
Holodomor memorial	0.033**	-0.011	-0.030	-0.021
	(0.015)	(0.019)	(0.019)	(0.017)
N	2,649	2,649	2,649	2,649
Individual Controls	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes
Historical Controls	Yes	Yes	Yes	Yes
Geographic Econ Controls	Yes	Yes	Yes	Yes
Oblast FE	Yes	Yes	Yes	Yes

Notes: The table examines the heterogeneous effect of the famine death rate in individuals' birth locations based on their proximity to a Holodomor memorial, with radii of 1, 2, 5, and 10 kilometers. Panel A presents results for cohorts socialized after the Soviet period (born post-1985), while Panel B presents results for those socialized during the Soviet era (born pre-1985) and afterwards. "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian", and zero otherwise. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

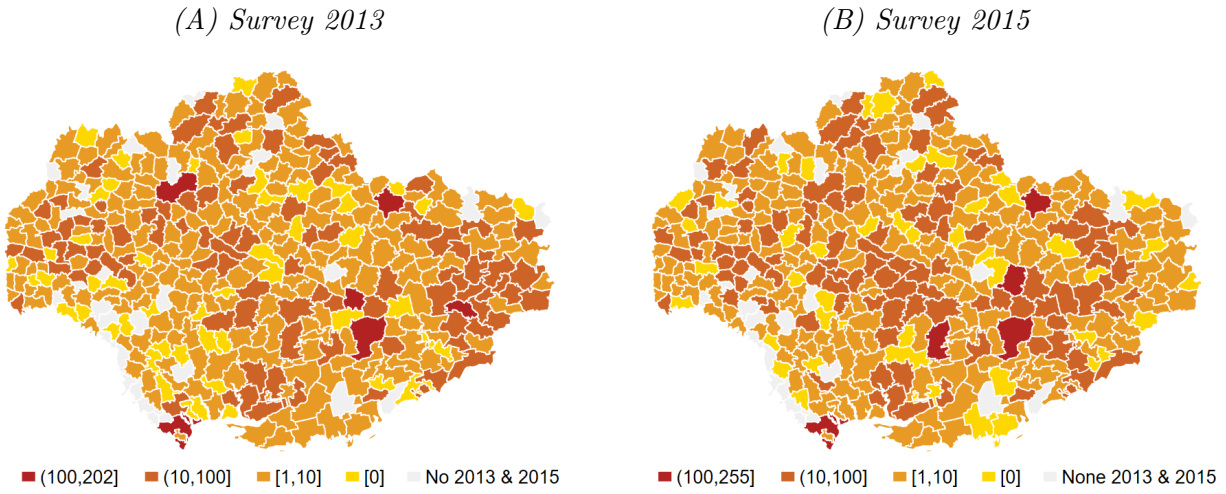
Table 7: Famine Exposure and Firm Level Imports & Exports

	Imports			**Exports**		
	World	**Russia**	**Other border Countries**	**World**	**Russia**	**Other border Countries**
	(1)	(2)	(3)	(4)	(5)	(6)
Famine death rate	0.052	-0.283***	0.079	-0.124	-0.224***	-0.046
	(0.163)	(0.074)	(0.114)	(0.144)	(0.080)	(0.099)
P-value ($\Delta\beta = 0$)		0.0095			0.1054	
N	22,778	22,778	22,778	15,920	15,920	15,920
Mean Dep. Var.	3.15	0.42	0.81	1.32	0.42	0.48
SD Dep. Var.	4.55	1.99	2.68	3.13	1.91	2.05
Historical Controls	Yes	Yes	Yes	Yes	Yes	Yes
Geo Econ Controls	Yes	Yes	Yes	Yes	Yes	Yes
Oblast FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table presents a firm-level analysis for the effect of historic famine exposure on trade by Ukrainian firms. The dependent variable is the number of packages traded by Ukrainian firms in 2013, adjusted using the hyperbolic sine transformation. P-value ($\Delta\beta = 0$) tests whether the coefficients for trade with Russia and other border countries are statistically equal. Industry fixed effects (FE) based on the 2-digit code of the most imported product category. Historical controls include the log of the total population in 1926, the proportion of Ukrainians in 1926, the proportion of Russians in 1926, and the proportion of the rural population in 1926. Geographical and economic controls—such as the distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization—are included throughout. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Online Appendix:

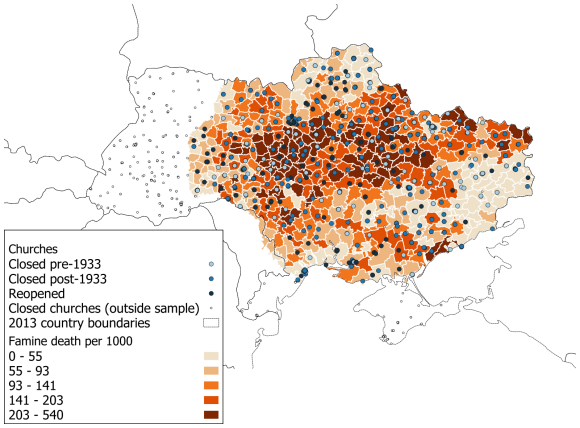
Figure A1: Number of respondents by birth location



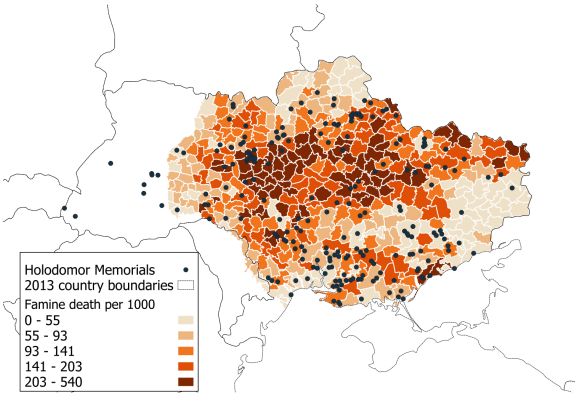
Notes: The map shows the number of individuals in each rayon for the 2013 and 2015 surveys based on their reported birthplace.

Figure A2: Destroyed Churches, Holodomor Memorials, Conflict and Trade

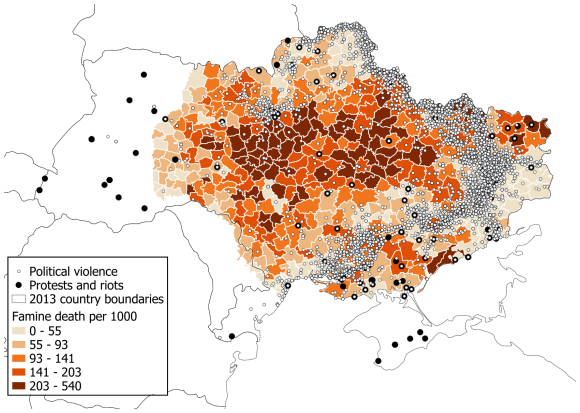
(A) Destroyed Churches



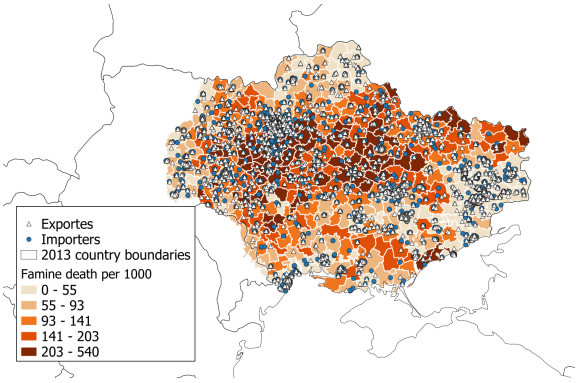
(B) Holodomor Memorials



(C) Conflict



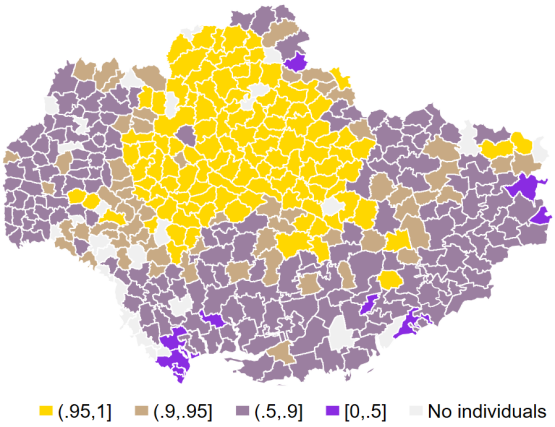
(D) Trade



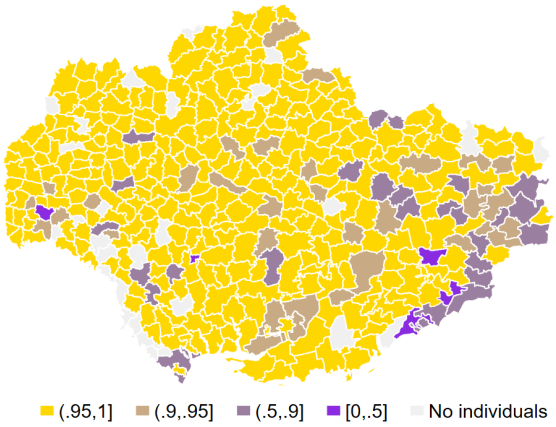
Notes: Map (A) illustrates the distribution of church closures in Ukraine (1903–1987), based on a novel dataset constructed by digitizing and geocoding the *"Catalog of Destroyed Churches and Monasteries of Ukraine"* (Soldatenko et al. (2013)). Permanent closures/destructions are displayed for pre-1933 and post-1933, while temporarily closed churches that later reopened (mostly in the 1940s or 1990s) are shown separately. Map (B) illustrates the location of Holodomor memorials, based on a novel dataset constructed by digitizing and geocoding the list of memorials from *"Holodomor Monuments in Ukraine"* database compiled by the Ukrainian Canadian Research and Documentation Center (Holodomor Monuments in Ukraine, 2025). The first memorial in our sample was build in 1987 (Memorial for Holodomor Victims in Hryhorivka). Map (C) illustrates the distribution of political violence in Ukraine by Russian actors during the period 2022–2024 (up to September 20, 2024), as well as protests and riots by Ukrainians against Russians from 2021 to 2024 (up to September 13, 2024). Political violence includes (non-remote) battles, explosions, remote violence, and violence against civilians. Protests and riots refer to Ukrainian demonstrations against Russian actions, such as military aggression and occupation. The map is computed by the authors based on data from The Armed Conflict Location and Event Database (ACLED) (Raleigh et al. (2010)). Map (D) shows exporters and importers across Ukraine in 2013 as recorded in Ukrainian Customs (2013-2015). We geolocalized firm addresses within our area of interest using ArcGIS. All maps also highlights the intensity of the Soviet Great Famine across the Ukrainian SSR at the rayon level.

Figure A3: Descriptive maps: Ukrainian identification 1926 & 2010s

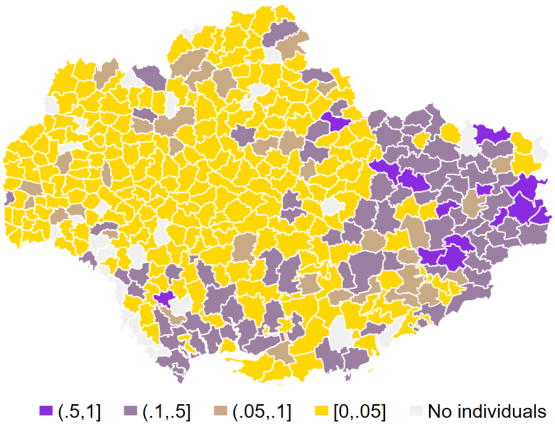
(A) Census 1926: Ukrainian share



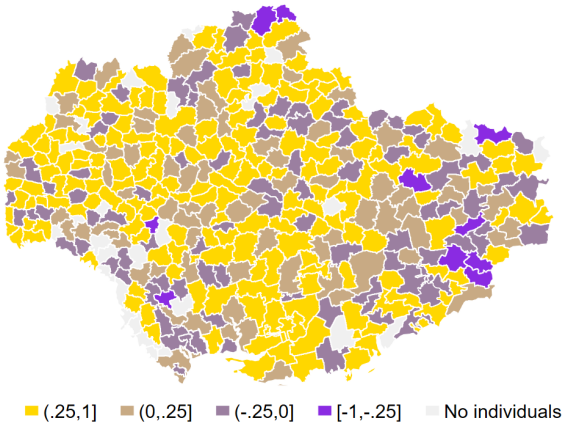
(B) Survey 2013/15: Self-Identity Ukrainian



(C) Survey 2013/15: Russian main language



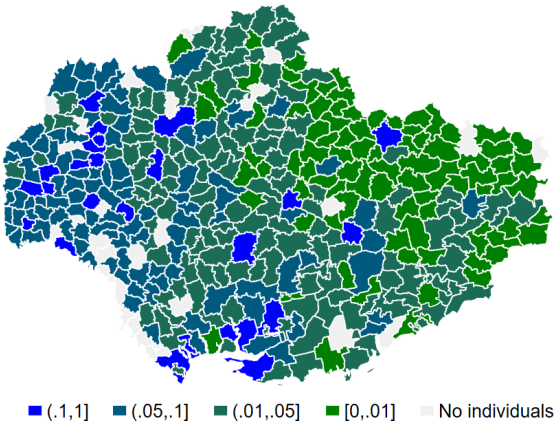
(D) Survey 2013/15: Famine was genocide



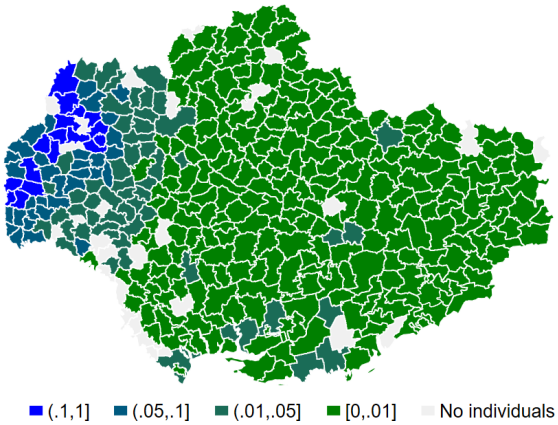
Notes: The map shows (A) identification as Ukrainian in the 1926 census, average share of respondents in the 2013 and 2015 survey reporting (B) self-identification as Ukrainian, (C) Russian being the main language, and indicator on (D) whether famine was important and a genocide (ranging -1 to 1). Data in (B)-(D) based on individual birthplace.

Figure A4: Descriptive maps: Other ethnic groups 1926

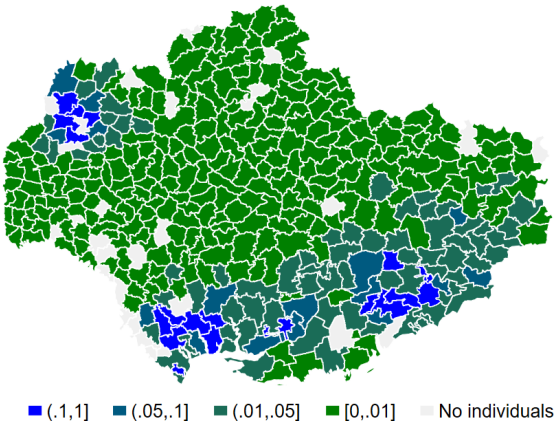
(A) Census 1926: Jewish share



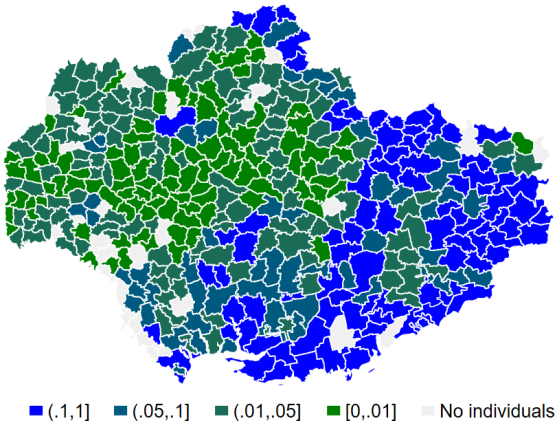
(B) Census 1926: Polish share



(C) Census 1926: German share



(D) Census 1926: Russian share

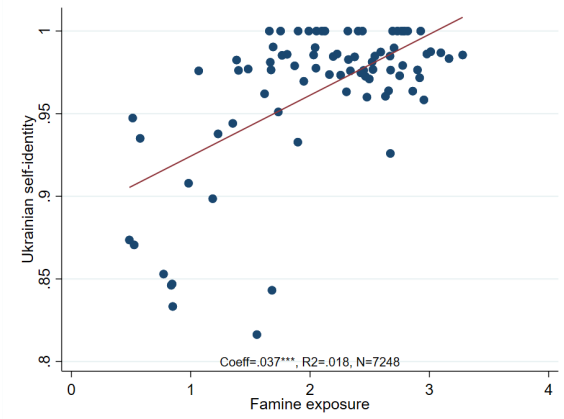


Notes: The map shows share of individuals recorded as Jewish (A), Polish (B), German (C) and Russian (D) in the 1926 census population. Areas with no individuals in 2013 and 2015 marked in gray for comparison.

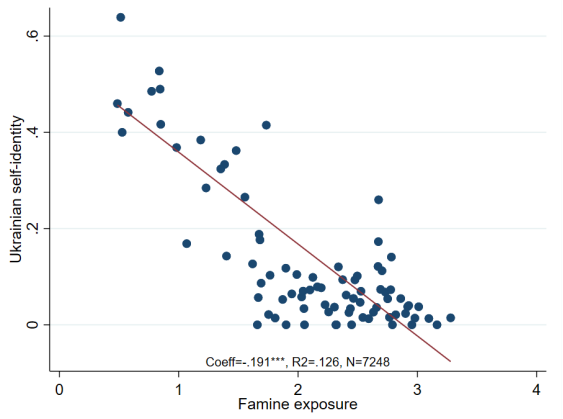
Figure A5: Scatterplots

i. Raw data

(A.1) Self-Identity Ukrainian

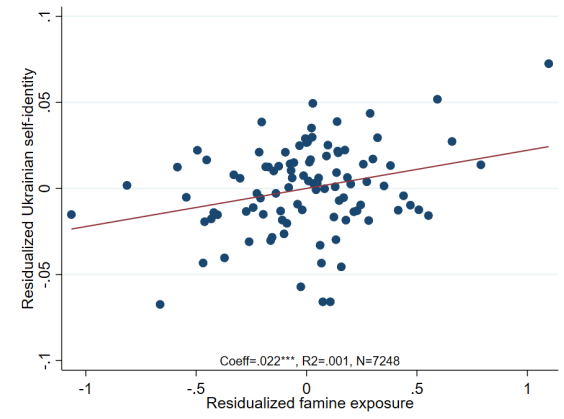


(B.1) Russian main language

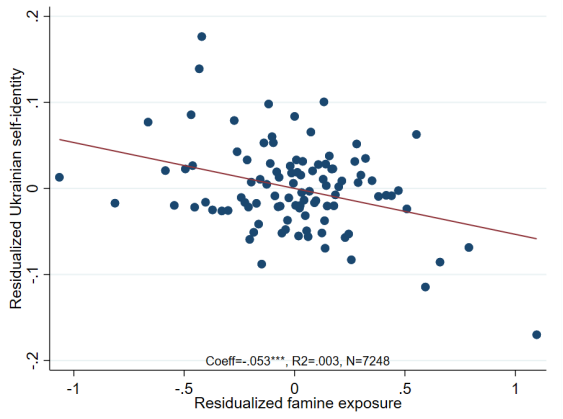


ii. Residualized

(A.2) Self-Identity Ukrainian (residualized)



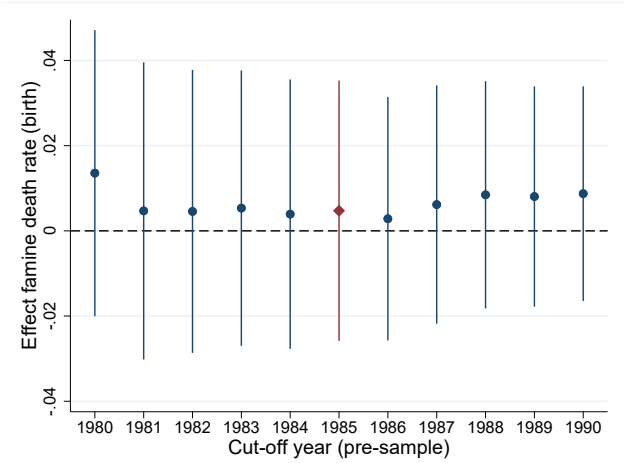
(B.2) Russian main language (residualized)



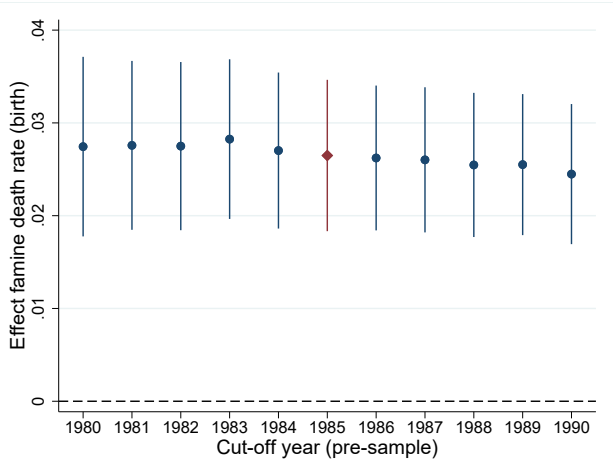
Notes: The binned scatterplots show (i) raw data and (ii) residualized versions of baseline specifications. Outcome and famine data residualized at the individual level accounting for: Age, gender, survey FE, log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926, distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, industrialization, Oblast FE.

Figure A6: Robustness cut-off year for socialization in USSR

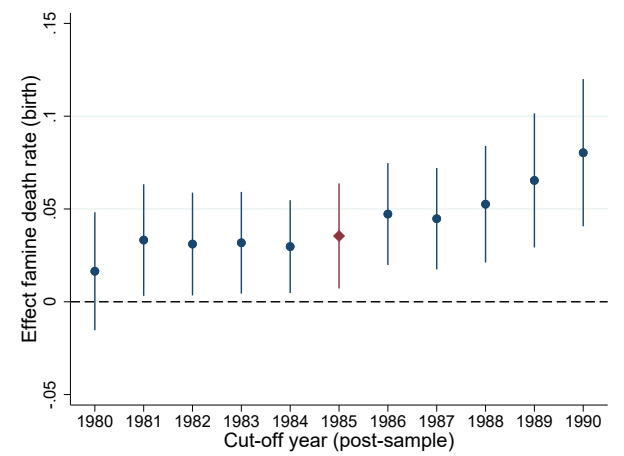
(A) Table 3 Column 1: Famine death rate (birth)



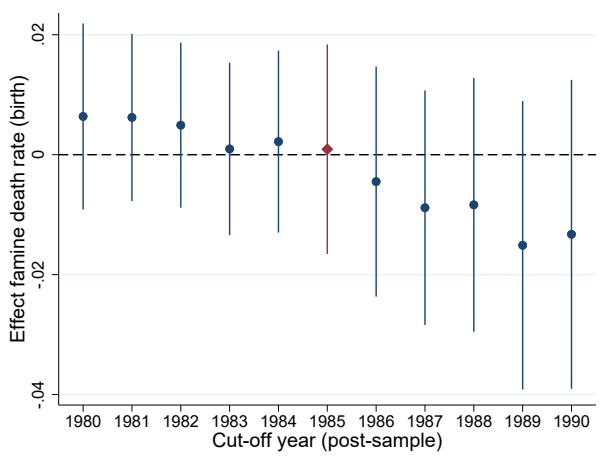
(B) Table 3 Column 1: Famine death rate (parents birth)



(C) Table 3 Column 5: Famine death rate (birth)



(D) Table 3 Column 5: Famine death rate (parents birth)



Notes: The figure replicates the main results in Table 3 varying the cut-off definition of being socialized in the USSR (the year 1985 being the baseline cutoff).

Table A1: Descriptive Statistics: Rayon Level Data

Statistic	N	Mean	St. Dev.
Famine death (percent of rayon population)	357	2.259	0.637
Share of Ukrainians (1926)	357	0.818	0.151
Share of Russian (1926)	357	0.075	0.107
Total Population in 1926 (log)	357	11.082	0.562
Share of Rural Population in 1926	357	0.874	0.141
Crop Suitability Indicator: Potato	357	0.111	0.301
Crop Suitability Indicator: Wheat	357	0.602	0.466
Crop Suitability Indicator: Dairy	357	0.091	0.250
Land Share: Forest	357	0.077	0.149
Area Share: Industry	357	0.397	0.349
Distance to Russian Border (km)	357	274.526	189.569

Notes: The table presents rayon-level summary statistics. Famine deaths, sourced from the Harvard Ukrainian Research Institute's "Mapa: Digital Atlas of Ukraine" (MAPA (2018)), are calculated as the share of famine losses relative to the rayon population in 1926. Population data are based on the 1926 Soviet census. Data on the urban and rural populations by rayon, as well as the share of ethnic Ukrainians and Russians, are sourced from the Central Statistical Directorate of the USSR (1928–1929). Crop suitability indicators for predominant local crops such as wheat, potatoes, and dairy are taken from Krupskiy and Polupyan (1979). Data on the share of land covered by forests and the share of area allocated for industries are sourced from Enukidze (1928) and Bondarchuk (1962). Distance to the Russian border (in kilometers) is calculated using cubic regression splines.

Table A2: Descriptive Statistics: Individual Level Data

Statistic	N	Mean	St. Dev.	N	Mean	St. Dev.
	2013 Survey			2015 Survey		
Age	3,664	44.99	17.00	3,584	46.10	17.07
Male	3,664	0.445	0.497	3,584	0.455	0.498
Self-identity Ukrainian	3,664	0.953	0.213	3,584	0.970	0.171
Russian main language	3,664	0.209	0.407	3,584	0.126	0.126
Ukrainian "We" not "They"	3,664	0.772	0.420	3,584	0.797	0.402
Russian Nationality	3,664	0.084	0.277			

Notes: The table presents individual-level summary statistics for the survey years 2013 (columns 1–3) and 2015 (columns 4–6), based on data from Ukrainian Regionalism Project (2018). The variable "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". The variable "Ukrainian 'We' not 'They"' is a dummy variable equal to one if an individual in the sample answers "yes" to the question "When I talk about Ukrainians, I usually use 'we' and not 'they'," and zero otherwise. The variable "Russian Nationality" is a dummy variable equal to one if a respondent answers "Russian" to the question "What is your nationality?". The variable "Russian Nationality" is available for the survey year 2013 only.

Table A3: Alternative Inference Approaches

	Self-identity Ukrainian			**Russian main language**		
	(1)	(2)	(3)	(4)	(5)	(6)
Famine death rate	0.036***	0.026***	0.022**	-0.186***	-0.085***	-0.053*
	(0.006)	(0.008)	(0.010)	(0.020)	(0.029)	(0.028)
	[0.006]	[0.007]	[0.008]	[0.017]	[0.022]	[0.020]
N	7,248	7,248	7,248	7,248	7,248	7,248
Mean Dep. Var.	0.96	0.96	0.96	0.17	0.17	0.17
SD Dep. Var.	0.19	0.19	0.19	0.37	0.37	0.37
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: Standard errors are clustered at the oblast level (reported in round brackets) and Conley spatially clustered standard errors (100 km) are reported in square brackets. "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Famine Exposure and National Identity – Individual's Place of Birth – IV

	Self-identity Ukrainian			Russian main language		
	(1)	(2)	(3)	(4)	(5)	(6)
	(A) Instrument: Weather Scalar Index from Rozenas and Zhukov (2019)					
$\widehat{\text{Famine death rate}}$	0.042***	0.039***	0.040***	-0.146***	-0.093***	-0.048**
	(0.009)	(0.013)	(0.012)	(0.043)	(0.021)	(0.021)
F-stat	30.42	266.60	302.13	30.42	266.60	302.13
	(B) Instrument: Weather Deviations ×Wheat Suitability					
$\widehat{\text{Famine death rate}}$	0.043***	0.030***	0.023*	-0.220***	-0.125***	-0.059*
	(0.007)	(0.011)	(0.013)	(0.024)	(0.032)	(0.036)
F-stat	54.72	18.40	11.96	54.72	18.40	11.96
N	7,248	7,248	7,248	7,248	7,248	7,248
Mean Dep. Var.	0.96	0.96	0.96	0.17	0.17	0.17
SD Dep. Var.	0.19	0.19	0.19	0.37	0.37	0.37
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". In Panel A, the instrumental variable is a scalar index of weather adversity from Rozenas and Zhukov (2019). The instruments in Panel B are based on deviations in fall temperatures and spring precipitation during the 1931–1932 agricultural cycle, interacted with wheat suitability in both linear and quadratic terms. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Famine Exposure and National Identity – Individual's Place of Birth – Change in Procurement Ratio

	Self-identity Ukrainian			Russian main language		
	(1)	(2)	(3)	(4)	(5)	(6)
	(A) Positive Change in Procurement Ratio (Q4)					
Famine $\widehat{\text{death}}$ rate	0.052***	0.037*	0.058**	-0.249***	-0.078*	-0.088*
	(0.012)	(0.019)	(0.024)	(0.029)	(0.044)	(0.050)
N	1,807	1,807	1,807	1,807	1,807	1,807
Mean Dep. Var.	0.97	0.97	0.97	0.16	0.16	0.16
SD Dep. Var.	0.18	0.18	0.18	0.37	0.37	0.37
	(B) Negative Change in Procurement Ratio (Q1)					
Famine $\widehat{\text{death}}$ rate	0.039**	0.051**	0.043***	-0.195***	-0.056**	-0.031***
	(0.016)	(0.021)	(0.014)	(0.065)	(0.025)	(0.011)
N	1,765	1,765	1,765	1,765	1,765	1,765
Mean Dep. Var.	0.95	0.95	0.95	0.20	0.20	0.20
SD Dep. Var.	0.21	0.21	0.21	0.40	0.40	0.40
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Panel A reports estimates for rayons in the highest quartile (Q4) of the change in procurement ratio, corresponding to areas where procurement pressure increased the most between 1930–1931 and 1931–1932. Panel B shows estimates for rayons in the lowest quartile (Q1), where procurement pressure decreased the most over the same period. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Famine Exposure and National Identity – Individual's Place of Birth & Residence

	Self-identity Ukrainian			Russian main language		
	(1)	(2)	(3)	(4)	(5)	(6)
Famine death rate: Birth	0.037***	0.026***	0.022***	-0.186***	-0.086***	-0.052***
	(0.006)	(0.008)	(0.008)	(0.018)	(0.019)	(0.016)
Famine death rate: Residence	-0.001	-0.002	-0.001	0.000	0.003	0.005
	(0.003)	(0.003)	(0.003)	(0.011)	(0.008)	(0.007)
N	7,248	7,248	7,248	7,248	7,248	7,248
Mean Dep. Var.	0.96	0.96	0.96	0.17	0.17	0.17
SD Dep. Var.	0.19	0.19	0.19	0.37	0.37	0.37
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: The table controls for famine death rate of current rayon of residence (based on historic administrative boundaries). "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Famine Exposure and National Identity – Epidemiological Approach

	Self-identity Ukrainian			Russian main language		
	(1)	(2)	(3)	(4)	(5)	(6)
Famine death rate	0.033***	0.021**	0.038***	-0.123***	-0.058***	-0.078***
	(0.007)	(0.008)	(0.010)	(0.016)	(0.019)	(0.017)
N	7,248	7,248	7,248	7,248	7,248	7,248
Mean Dep. Var.	0.96	0.96	0.96	0.17	0.17	0.17
SD Dep. Var.	0.19	0.19	0.19	0.37	0.37	0.37
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	No	Yes	No	No	Yes
Rayon of Residence FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table replicates Table 1, with an additional control for the individual's current rayon of residence, following the epidemiological approach. "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Famine Exposure and National Identity – Persistent Lineage

	Self-identity Ukrainian			**Russian main language**		
	(1)	(2)	(3)	(4)	(5)	(6)
Famine death rate	0.024***	0.016*	0.019*	-0.210***	-0.139***	-0.115***
	(0.006)	(0.009)	(0.010)	(0.028)	(0.030)	(0.031)
N	2,081	2,081	2,081	2,081	2,081	2,081
Mean Dep. Var.	0.97	0.97	0.97	0.17	0.17	0.17
SD Dep. Var.	0.17	0.17	0.17	0.38	0.38	0.38
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: The table replicates Table 1, but restricts the sample to individuals that have persistent lineage to their grandparents (2013 sample only). This is defined as having at least one parent and grandparent that was born in the same Rayon. "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Famine Exposure and National Identity – Soviet Resettlement of Russians

	Self-identity Ukrainian			Russian main language		
	(1)	(2)	(3)	(4)	(5)	(6)
	(A) Non-resettled sample					
Famine death rate	0.029***	0.016**	0.022**	-0.198***	-0.105***	-0.061**
	(0.007)	(0.008)	(0.009)	(0.023)	(0.027)	(0.026)
N	3,229	3,229	3,229	3,229	3,229	3,229
Mean Dep. Var.	0.97	0.97	0.97	0.17	0.17	0.17
SD Dep. Var.	0.18	0.18	0.18	0.38	0.38	0.38
	(B) Resettlement Effect					
Famine death rate	0.029***	0.016*	0.023**	-0.198***	-0.110***	-0.069***
	(0.007)	(0.009)	(0.011)	(0.023)	(0.025)	(0.025)
Resettled	-0.170***	-0.164***	-0.154***	0.259***	0.241***	0.243***
	(0.045)	(0.044)	(0.046)	(0.082)	(0.076)	(0.072)
Famine×Resettled	0.042*	0.042*	0.036	-0.038	-0.038	-0.048
	(0.023)	(0.023)	(0.024)	(0.042)	(0.039)	(0.038)
N	3,664	3,664	3,664	3,664	3,664	3,664
Mean Dep. Var.	0.95	0.95	0.95	0.21	0.21	0.21
SD Dep. Var.	0.21	0.21	0.21	0.41	0.41	0.41
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: Panel A restricts the sample to individuals with non-Russian and non-Belarusian grandparents. We do this by excluding all individuals that have at least one grandparent that was born in Russia or Belarus. In Panel B, "Resettled" is a dummy variable equal to one if at least one of the individual's grandparents was born in Russia or Belarus. Sample is restricted to 2013 survey only due to data availability. "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A10: Robustness: WW2 and Holocaust

	Self-identity Ukrainian				Russian main language			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Famine death rate	0.023***	0.030***	0.021**	0.025***	-0.050***	-0.050***	-0.044**	-0.044***
	(0.008)	(0.009)	(0.009)	(0.008)	(0.016)	(0.017)	(0.017)	(0.016)
Jewish share 1926	✓	✓			✓	✓		
German share 1926		✓				✓		
Polish share 1926		✓				✓		
Tatar share 1926		✓				✓		
Ghetto/massacre distance			✓				✓	
WW2 battle distance				✓				✓
N	7,248	7,248	7,248	7,248	7,248	7,248	7,248	7,248
Mean Dep. Var.	0.96	0.96	0.96	0.96	0.17	0.17	0.17	0.17
SD Dep. Var.	0.19	0.19	0.19	0.19	0.37	0.37	0.37	0.37
Baseline Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table controls for different proxies of exposure to the Holocaust and WW2: the initial shares of Jewish, other minorities that were forced to migrate during the course of the war, the distance to Jewish ghettos and major massacres (Browning, 2012), the distance to major WW2 battles (Wikipedia contributors, 2025). "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Baseline controls are age, gender, log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926, distance to the Russian border, crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A11: Famine Exposure and National Identity – 2013 only

	Self-identity Ukrainian			**Russian main language**		
	(1)	(2)	(3)	(4)	(5)	(6)
Famine death rate	0.042***	0.027***	0.035***	-0.219***	-0.125***	-0.087***
	(0.009)	(0.010)	(0.011)	(0.019)	(0.026)	(0.026)
N	3,664	3,664	3,664	3,664	3,664	3,664
Mean Dep. Var.	0.95	0.95	0.95	0.21	0.21	0.21
SD Dep. Var.	0.21	0.21	0.21	0.41	0.41	0.41
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: The table restricts the sample to 2013 survey only. "Self-identity Ukrainian" is a dummy variable equal to one if an individual in the sample answers "yes" to the question "I feel like a Ukrainian," and zero otherwise. The variable "Russian main language" is a dummy variable equal to one if an individual responds "Russian" to the survey question "What language do you consider to be your native language?". Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: Famine Exposure and National Identity – Alternative Measures

	Ukrainians "We" not "They"			Russian Nationality		
	(1)	(2)	(3)	(4)	(5)	(6)
Famine death rate	0.066***	0.038*	0.030	-0.085***	-0.041**	-0.045**
	(0.015)	(0.021)	(0.021)	(0.014)	(0.016)	(0.018)
N	7,248	7,248	7,248	3,664	3,664	3,664
Mean Dep. Var.	0.78	0.78	0.78	0.08	0.08	0.08
SD Dep. Var.	0.41	0.41	0.41	0.28	0.28	0.28
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: The variable "Ukrainian 'We' not 'They"' is a dummy variable equal to one if an individual in the sample answers "yes" to the question "When I talk about Ukrainians, I usually use 'we' and not 'they'," and zero otherwise. The "Russian Nationality" variable is a dummy equal to one if an individual identifies as Russian when asked about their nationality and zero otherwise. Russian Nationality available only for 2013. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A13: Perceptions of Famine – Understanding its Impact on Ukrainian Identity

	Holodomor: Important Event in UKR History and Genocide					
	Overall famine mortality			*Natural versus other causes*		
	(1)	(2)	(3)	(4)	(5)	(6)
Famine death rate	0.197***	0.145***	0.070**			
	(0.029)	(0.039)	(0.035)			
Weather mortality				0.206***	0.150***	0.061
				(0.041)	(0.041)	(0.041)
Residual mortality				0.187***	0.128**	0.088*
				(0.034)	(0.057)	(0.053)
p-value (H_0: Weather = Residual)				0.70	0.69	0.66
N	7,176	7,176	7,176	7,176	7,176	7,176
Mean Dep. Var.	0.27	0.27	0.27	0.27	0.27	0.27
SD Dep. Var.	0.601	0.601	0.601	0.601	0.601	0.601
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	No	Yes	Yes	No	Yes	Yes
Geographic Econ Controls	No	Yes	Yes	No	Yes	Yes
Oblast FE	No	No	Yes	No	No	Yes

Notes: The outcome is a categorical variable equal to one if an individual considers the famine both important and a genocide, zero if they regard the famine as unimportant, and minus one if they do not view the famine as a genocide. Columns (1)–(3) show overall effect of famine mortality. Columns (4)–(6) disentangle the effect of famine mortality due to observable weather factors from that due to other factors. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A14: Famine Exposure and Religiosity, Nationalism & Political Beliefs

	General values			Historical figures						Ukrainian History		
	Religious Identity	Liberal Values	Public Order	Josef Stalin		Stepan Bandera		Leonid Kravchuk		Independence 1991	Slavic Community	European Community
				Important	Positive	Important	Positive	Important	Positive			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Famine death rate	-0.014	0.014	0.002	0.018	-0.090***	-0.008	-0.057	0.021	0.028	0.024	-0.032	0.050*
	(0.026)	(0.009)	(0.030)	(0.021)	(0.028)	(0.010)	(0.049)	(0.015)	(0.060)	(0.017)	(0.036)	(0.027)
N	7,248	3,664	3,664	7,248	1,949	7,248	673	7,248	1,080	7,210	2,900	2,900
Mean Dep. Var.	0.54	0.03	0.29	0.27	0.20	0.09	0.42	0.15	0.52	0.84	0.53	0.13
SD Dep. Var.	0.50	0.16	0.45	0.44	0.40	0.29	0.49	0.36	0.50	0.36	0.50	0.33
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Econ Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Oblast FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Outcomes are dummy variables for questions on general values, importance and positive views of historical figures, and general historical relevance as specified in column headers. Selected questions only available for the 2013 survey, and positive view of historical figure only reported when individuals selected them as important. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. + $p < 0.2$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A15: Famine Exposure and Economic Differences

	Ukr economy		Personal finances		Employment status		Risk-taking	
	Now	**Pre-91**	**Now**	**Pre-91**	**Self-emp.**	**Unemp.**	**Work**	**Business**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Horizontal transmission:								
Famine death rate: Birth	0.137	0.332	0.039	0.045	-0.003	-0.027	-0.018	-0.040
	(0.164)	(0.265)	(0.150)	(0.252)	(0.024)	(0.022)	(0.040)	(0.035)
Vertical transmission:								
Famine death rate: Parents	0.026	-0.075	-0.013	-0.176	0.005	-0.008	-0.002	-0.003
	(0.038)	(0.112)	(0.038)	(0.116)	(0.009)	(0.008)	(0.012)	(0.010)
N	3,288	3,288	3288	3,288	1,797	1,919	1,400	1,417
Mean Dep. Var.	3.17	6.57	3.64	5.89	0.07	0.06	0.18	0.12
SD Dep. Var.	1.75	4.43	1.90	4.30	0.25	0.24	0.38	0.33

	View towards		Newly purchased over last 10 years				Parents owned	
	Share	**Borrow**	**House**	**Car**	**Clothes**	**Abroad**	**Business**	**Land**
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Horizontal transmission:								
Famine death rate: Birth	0.052	0.039	0.030	0.004	0.023	0.016	0.001	0.061
	(0.055)	(0.044)	(0.038)	(0.025)	(0.046)	(0.016)	(0.007)	(0.050)
Vertical transmission:								
Famine death rate: Parents	0.009	0.014	-0.007	-0.012	-0.025	-0.009	0.001	0.010
	(0.013)	(0.014)	(0.007)	(0.009)	(0.019)	(0.006)	(0.003)	(0.014)
N	1,566	1,593	1,639	1,639	1,639	1,639	1,639	1,639
Mean Dep. Var.	0.51	0.63	0.09	0.10	0.41	0.05	0.02	0.17
SD Dep. Var.	0.50	0.48	0.28	0.30	0.49	0.22	0.14	0.38
Individual Controls Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historical Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Econ Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Oblast FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Outcome variables as specified in column header are: Categorical measures of current and pre-91 Ukrainian economic situation as well as personal financial situation ranked from 1 (best)-10 (worst) in columns (1) to (4). Columns (5) to (16) are dummy variables for self-employment, unemployment, thinks that risk taking is important in work and business, likes to share and dislikes borrowing money, the individual or the family has purchased a new item over the last 10 years, and whether their parents ever owned a business or plot of land (> 1ha). Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A16: Famine Exposure and Modern Conflict

	Political Violence (1)	**Battles Battles** (2)	**Protests & Riots** (3)
Famine death rate	-0.617*	-0.409	0.116
	(0.370)	(0.264)	(0.096)
N	362	362	362
Mean Dep. Var.	2.36	1.16	0.18
SD Dep. Var.	2.62	1.86	0.55
Historical Controls	Yes	Yes	Yes
Geographic Econ Controls	Yes	Yes	Yes
Oblast FE	Yes	Yes	Yes

Notes: The table presents a rayon-level analysis of the effect of historical famine exposure on the current Russian-Ukrainian conflict. Data from Raleigh et al. (2010). Political violence includes (non-remote) battles, explosions, remote violence, and violence against civilians. Column (2) restricts to non-remote confrontations. Protests and riots refer to Ukrainian demonstrations against Russian actions, such as military aggression and occupation. The dependent variables are transformed by adding 1 to the original value before applying the natural logarithm. Historical controls include the log of total population in 1926, the proportion of Ukrainians in 1926, the proportion of Russians in 1926, and the proportion of the rural population in 1926. Geographical and economic controls include the distance to the Russian border (measured in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Robust standard errors. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A17: Famine Exposure and National Defense

	Categorical (1)	**Dummy** (2)
Famine death rate	0.099***	0.054***
	(0.038)	(0.016)
N	3,584	3,584
Mean Dep. Var.	2.66	0.13
SD Dep. Var.	0.82	0.34
Individual Controls	Yes	Yes
Survey FE	Yes	Yes
Historical Controls	Yes	Yes
Geographic Econ Controls	Yes	Yes
Oblast FE	Yes	Yes

Notes: The dependent variable in column 1 is a categorical ordered response to the question "To be considered true Ukrainian, one must defend Ukraine" ranging from (1) least important to (6) most important. Column 2 is a dummy variable equal to one if an individual in the sample answers that it is at least "somewhat important" and zero otherwise. Individual controls are age and gender. Historical controls are log total population in 1926, the proportion of Ukrainians, Russians, and the rural population in 1926. Geographical and economic controls are distance to the Russian border (in kilometers, modeled with restricted cubic splines), crop suitability (for potato, wheat, and dairy), forestation, and industrialization. Standard errors are clustered at the historical rayon level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.