Expert Comment

Mortality patterns in post-Soviet Georgia

Paulina Kellersmann, Nana Khetsuriani, and Sebastian Vollmer (2019)
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Introduction

After the dissolution of the Soviet Union, Georgia underwent a shift of ‘shock therapy’, namely price liberalisation without the complementary development of market conditions and institutions. The region’s economic collapse was preceded by a civil war in 1989 and followed by the Abkhazian war in 1992–93, which led to further political turmoil, social instability, and economic crisis (Papava, 1996)\(^1\). The 1990s were further characterised by high levels of corruption, a growing organised crime sector, widespread gangsterism, and paramilitary groups instilling fear and terror in the country. In that decade, Georgia was close to becoming a failed state (Kukhianidze, 2009). During the Soviet Union, sectoral economic division between the republics had been high; therefore, when the region collapsed, Georgia and many other former Soviet Union (FSU) countries were left with an unnatural and highly inefficient economic structure. The GDP began to fall rapidly following the civil war in 1989, dropping by 82.1% by 1994. The country had been heavily reliant on cheap energy from the USSR and suffered immensely from rising prices and acute energy shortages (Gogishvili, Gogodze, & Tsakadze, 1996). A swift decline in economic production resulted in a shortage of market goods, especially food. This scarcity translated into dramatic price jumps, and the country faced several years of hyperinflation (European Bank for Reconstruction and Development, 1999). Unemployment rates stayed at a constant level of 9% in the first years after the collapse but rose to about 14% in the second half of the decade (see Figure A6 in

\(^1\) The country fought another war in South Ossetia and Abkhazia in 2008.
Appendix; World Bank, 2018). Many people fell below the poverty line and had limited access to food (“Health and Healthcare Overview in Georgia,” 2001; Sulaberidze, 2001).

**The Georgian health sector in the 1990s**

These changes are presumed to have led to generally deteriorating health levels in the country (Transformative Monitoring for Enhanced Equity [TransMonEE], 2018). The end of the Soviet Union also meant the end of the Soviet healthcare system, and most FSU countries were struggling to maintain universal and free basic health services. During the Soviet Union, Georgia had been part of the so-called Semashko model, which was completely state-funded. When the Soviet Union collapsed, the Georgian health system effectively collapsed with it. Due to this economic ruin, government revenues declined as well, and healthcare system funding dropped in absolute and relative terms. In 1991, only 1% of GDP was invested in health (Sehngelia, Pavlova, & Groot, 2016). The government, unable to maintain the highly inefficient system inherited from the USSR, relinquished much of the health sector to the market. Many people reported challenges accessing medical services and necessary drugs, mainly due to inability to pay. Additionally, informal payments and bribery during consultations were widespread (Balabanova, McKee, Pomerleau, Rose, & Haerpfer, 2004). The first radical health system reforms were implemented in 1995 when the government introduced health insurance, formalised out-of-pocket payments, and began promoting family medicine (Balabanova, McKee, Koroleva, Chikovani, Goguadze, Kobaladze, Adeyi, & Robles, 2008).

The number of births attended by skilled personnel, as well as various immunisation rates, declined in the early 1990s, fluctuated slightly, and then recovered to initial levels by the middle to end of the decade; thus, the 1990s did not exhibit clear increasing or decreasing patterns. The number of physicians per 1,000 people did not vary much over time and tended to be rather high in Georgia (Gogishvili et al., 1996). Even so, the number
of hospital beds per 1,000 people started to decline after 1994: there were 9.7 beds per 1,000 people before 1994, after which the rate more than halved to 4.3 hospital beds per 1,000 people until 2001 with the sharpest decline in 1994–96 (World Bank, 2009). The density of hospital beds relative to the total population can be seen as a measure of inpatient healthcare availability. In this case, it suggests that inpatient services became less available in Georgia during the 1990s; however, the reduction in hospital beds may have also resulted from greater efficiency, response to lower demand, or changes in treatment delivery.

**Mortality patterns**

Although information on mortality patterns in Georgia is limited, substantive literature has addressed such patterns in Russia and FSU countries (Azarova et al., 2017; Cornia, 2016; Earle & Gehlbach, 2010; Gasnikov, 2009; Stuckler, King, & McKee, 2009). However, the situation in Georgia was quite different from other countries as Georgia experienced two armed conflicts in that period, one shortly before and after the collapse (1989 and 1992–93). As these conflicts and their consequences naturally drove up death rates, it is difficult to disentangle and estimate the effect of the collapse and the transition from communism to a market economy on mortality. Available data indicate that approximately 2,000 to 3,000 people died as a result of the wars, and about 240,000 people were displaced (Uppsala University Department of Peace and Conflict Research). There is reason to believe that these armed conflicts affected health services in war-torn regions and led to trauma, disability, and higher stress levels, indirectly driving up all-cause mortality in addition to direct war casualties. Moreover, internally displaced persons were at arguably higher risk of falling ill than if they had not been displaced (e.g., due to lower income, poor housing conditions, and stress).
Data

Data for this paper were collected from official Georgian and international sources, specifically the National Statistics Office of Georgia (GeoStat; 2018), the World Bank database, the World Health Organization’s (WHO; 2018) Health for All (HFA) database, and the TransMonEE (2018) database. However, due to political and social turmoil after the collapse of the Soviet Union and the Abkhazian war, there are severe limitations to the data; for example, nearly no data exist for 1993 (the year of the Abkhazian war) and some sub-national regions of Georgia. A significant obstacle hindering demographic analysis of Georgia is that only the approximate population at that time is known due to inaccurate migration reporting and incomplete birth and death registration. The establishment of a registration fee disincentivised people to register, a death certificate was often not even needed for burial, especially in rural areas (Duthe, Badurashvili, Kuyumjyan, Mesle, & Vallin, 2010). From 1993–94, the Abkhazia and Tskhinvali regions did not report data to the government and were thus not incorporated into official figures. These issues must be kept in mind throughout our analysis of mortality trends in Georgia; accordingly, data-based findings should be interpreted with caution.

Crude death rate

The TransMonEE database gives crude death rates calculated per 1,000 people (mid-year population) and mortality rates that are age-standardised measures of death per 1,000 people in the relevant age group. The Abkhazia and Tskhinvali regions have not been included in the data since 1992, but total population estimates have only excluded these regions since 1994. Information is based on GeoStat data, filed directly by entity representatives.

Crude death rates in the HFA database are also calculated per 1,000 people (mid-year population), although the number of deaths has been adjusted since 1995 to account
for under-registration. The Abkhazia and Tskhinvali regions are excluded, and the population figure has been adjusted to account for non-reporting regions and unregistered migration since 1993–94.

Death rates published by the World Bank are based on United Nations World Population prospects and include Abkhazia and South Ossetia, which are excluded from other datasets. Death rates are again calculated per 1,000 people (mid-year population); however, disaggregation is performed on a weighted-average basis from five-year data, which may explain data-based discrepancies.

Due to poor data quality and various adjustments made by data sources to account for under-reporting and occupied territories, Georgia’s mortality rates and life expectancy figures reveal different patterns depending on the dataset (Figure 1). We subsequently present all three/four patterns. Potential explanations for discrepancies are given in the Discussion section. When data were available, we began our analysis in 1985 to identify trends in the years prior to the dissolution and extended our analysis until 2015 to account for longer-term effects.

The crude death rate per 1,000 people, as reported by the HFA database (WHO, 2018), was 8.79 in 1985 and remained fairly stable over the next 7 years with a few minor fluctuations. After the dissolution in 1991, we noticed a small increase, but it was not different from prior fluctuations. Data for 1993 were unavailable, but we would expect a higher death rate that year as a consequence of the Abkhazian war. Although direct war casualties of 1,837 deaths in 1993 and 775 in 1992 (Uppsala University Department of Peace and Conflict Research) would not be high enough to increase death rates substantially, we can still assume that mortality was higher in that period as war worsened the overall state of society. The crude death rate declined in subsequent years, reaching its lowest point (7.45) in 1996. The overall trend started to increase thereafter; current rates are much higher than those of previous decades, reaching 13.21 in 2015 (Figure 1).
The TransMonEE (2018) crude death rates displayed different levels and trends. Although the initial level, 9.2, in 1989 (first year available) was similar to the HFA value (8.71), TransMonEE rates subsequently increased with a peak in 1993. These death rates were also substantially higher throughout the 1990s than those presented by the HFA (WHO, 2018). After reaching a second peak in 2004, crude death rates declined to nearly the initial 1989 level before increasing again after 2007, first slowly but then more noticeably between 2013 and 2015. In 2015, the crude death rate was as high as ever at 13.2 deaths per 1,000 people. Until 1993, TransMonEE death rates were consistent with GeoStat (2018) data, which is unsurprising as GeoStat is reportedly the source of TransMonEE data. Nonetheless, from 1994 onwards, death rates differed: those from GeoStat increased with a much steeper slope. The GeoStat values were by far the largest of all four sources and exceeded 13 deaths per 1,000 people between 2007 and 2015. Potential explanations for this discrepancy are provided in the Discussion section.

Lastly, we consider crude death rates reported by the World Bank (2018), which demonstrated yet another trend. Starting with 9.26 deaths per 1,000 people in 1988, death rates increased consistently during the subsequent 25 years and reached more than 13 deaths per 1,000 people since 2013. The slope in the 2000s was steeper than that in the 1990s, and rates remained nearly constant between 1995 and 2000. This pattern raises doubt that mortality patterns changed due to the collapse of the USSR, and if they did, they did so with a time lag of a decade.
Figure 1: Crude death rates differ by data source

Source: GeoStat (2018); TransMonEE (2018); WHO HFA database (2018); World Bank (2018).

It should be noted that crude rates are affected by the age structure of a population; therefore, demonstrated changes could merely be related to demographics. If the population share of elderly people increased substantially during the 1990s, then estimates could increase accordingly. It is thus necessary to consider the age-standardised death rate, which is adjusted for demography. We found that age-standardised all-cause mortality did not change in the years following the Soviet Union collapse and was even lower for the rest of the 1990s and most of the 2000s (WHO, 2018).
Figure 2: Little change in all-cause age-standardised death rates after Soviet Union collapse

When examining age-group-specific death rates from TransMonEE in 2018 (Figure 3), mortality declined greatly within the under-1 and 1–4 age groups from 1989 until 2015 (by 147% and 178%, respectively). Death rates for older children, teenagers, and middle-aged people likewise decreased albeit at much less profound rates, ranging between 4% and 30%. Although the death rate for the 40- to 59-year-old group was no different in 2015 compared to 1989, deaths in the over-60 age group increased by 16% over time. The relative sizes of these age groups also changed (Figure 4). Notably, the mortality rates of 15- to 39-year-old men were significantly higher between 1992 and 1994, peaking in 1993 (the year of the Abkhazian war), while respective female mortality rates remained unchanged during these years (Figure 5).

Figure 3: Young and middle-age mortality declining, elderly mortality increasing


Figure 4: Aging population

Figure 5: Male middle-age mortality peaked around 1993

Life expectancy

Next, we examine how life expectancy changed in the decades following the Soviet Union collapse (Figure 6). Again, the picture changes depending on the data source. However, in all cases, the patterns for women and men were roughly the same with women living on average about eight years longer than men at all points in time and across all datasets. Life expectancy can be overestimated if based on incomplete mortality data, as was the case for Georgia with under-registration of deaths and uncertain population estimates (WHO, 2018).

The HFA database has adjusted data for incomplete mortality from 1995 onwards: corresponding numbers are estimates from the State Statistics Department (WHO, 2018) and thus differ from other data. According to the HFA data (WHO, 2018), women and men had an average life expectancy of about 75 and 68 years, respectively, before dissolution. These values increased in the 1990s, peaking in 1996 when women were expected to live
to nearly 79 and men to 71. Estimates decreased in 2002–04 and increased again thereafter.

Recalling that death rates reported by TransMonEE (2018) and the World Bank (2018) both tended to be higher than those reported by the HFA (WHO, 2018), it is unsurprising that life expectancy figures were lower. The TransMonEE dataset saw a notable drop in 1993 during the Abkhazian war, which explains why the drop was more pronounced for men than for women. However, life expectancy was only this low in 1993; it increased immediately thereafter. Following 2002, life expectancy figures reported by HFA and TransMonEE were quasi-congruent; however, World Bank data differed from other sources.

Figure 6: Life expectancy rates differed among data sources, but showed an overall positive trend

Sources: TransMonEE (2018); WHO HFA database (2018); World Bank (2018).

Causes of death

Information about causes of death in Georgia was available from several sources, namely the GeoStat (2018) and HFA (WHO, 2018) databases. All databases follow standards of the
International Classification of Diseases, Tenth Revision (ICD-10) and group deaths into 19 categories.

GeoStat (2018) data suggested that diseases of the circulatory system comprised the most common cause of death for women and men (76.8% and 62.6%, respectively, in 1992). This group includes hypertensive diseases; ischaemic heart diseases; pulmonary heart disease and diseases of pulmonary circulation; cerebrovascular diseases; diseases of arteries, arterioles, and capillaries; vein diseases; and others. Neoplasms are the second largest group, lagging far behind circulatory system diseases (around 10% each for men and women in 1992). Injuries, poisoning, and other consequences of external causes represented the third most common cause of death for men (around 10%), while only a small share of female deaths were attributed to injuries and poisoning. The other disease groups constituting the five most common causes of death were diseases of the respiratory system and diseases of the digestive system. As the HFA dataset (WHO, 2018) presented similar levels and trends, we did not analyse it separately.

Diseases of the circulatory system exhibited an increasing trend in terms of the share of deaths during the early 1990s: they caused 65% of deaths in 1990 but were the underlying reason for nearly 72% of deaths in 1995. The following several years did not see much variation until 2007, when this disease rate started to drop dramatically until reaching half its initial level. During the years of this dramatic drop, the group ‘Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified’ increased from 8% to 55% of total deaths. Such a sudden change in the composition of disease burden was most likely due to inconsistencies in the data. Neoplasms demonstrated a decline in the early 1990s and began to increase after 1994, from 8.7% to 12.3%. After a sudden one-time drop in 2010, the ratio of people dying from neoplasms has risen in recent years, reaching 13.7% in 2017. Deaths from injury, poisoning, and other external causes were highest in 1989–1992 and could be expected to be high in 1993 as well, but no data were available; after
1994, this group of deaths declined and never reached its initial level again. We therefore cannot conclude that the dissolution of the USSR led to more violent deaths in the 1990s; rather, higher levels of deaths from injury, poisoning, or external causes appeared attributable to the civil war and Abkhazian war, which seems plausible.

The share of mental and behavioural disorders causing death represented a trivial portion of all deaths according to official statistics; however, mental disorders have been associated with 90% of one million suicides annually worldwide, and this number is presumed to be larger due to the common under-reporting of suicide (WHO, 2007). Makhashvili (2015) sought to identify the severity of mental health disorders among Georgia’s conflict-affected population. Results showed that the prevalence of post-traumatic stress disorder and depression/anxiety disorders among this population (a large share of the total population: 250,000–300,000 internally displaced persons from the 1992–93 war alone) was 23%, 14%, and 10%, respectively, and caused substantial disability. In addition, as Makhashvili’s (2015) survey only included internally displaced persons, the overall absolute number of people experiencing mental health problems should be higher; stress-inducing factors associated with the Soviet Union’s dissolution likely affected the entire population.

Causes of death related to smoking and drinking showed different trends. The number of individuals who died from alcohol-related causes remained small and relatively stable over time, whereas the number of deaths related to smoking was rather high and quite volatile, increasing twice between 1996 and 2000 (i.e., from 373 to 638 per 100,000 people) before eventually falling to less than 200 deaths in 2010 (see Figure A2 in Appendix).

Although external causes of death were only the 5th largest group and the rate was below 50 deaths per 100,000 people, homicide rates still warrant attention (see Figure A3 in Appendix). This rate increased from 7 deaths per 100,000 in 1992 to 17 deaths in only 3
years and then started to fall again. Georgia’s total crime rate increased from 300 cases per 100,000 people in 1989 to around 500 cases in 1991 before declining and remaining stable until 2003. This was followed by a strong increase: criminality nearly quadrupled, reaching 1400 crimes per 100,000 people in 2005. This swell was likely related to the new government: in 2003, the United National Movement party, led by Mikheil Saakashvili, came into power with a main objective of fighting crime. Under Saakashvili’s presidency, crime-revealing mechanisms were strengthened, and sentences became stricter and more rigorously enforced (i.e., a zero-tolerance policy) (Kukhianidze, 2009). The strong increase of official crime statistics is thus potential a consequence of increased detection and registration of crimes.

Discussion

Death rates and life expectancy each developed differently in the years following the Soviet Union collapse, depending on the data source. Although most discrepancies were related to levels, opposing trends emerged in respective indicators during some years. Death rates in 1990 were quite similar across sources and were effectively the same in 2015, but sources disagree on whether death rates increased right after the collapse or more recently (World Bank [2018] data: steeper slope in 2000s, nearly constant between 1995 and 2000) and whether the rates decreased at certain points.

The increase in life expectancy between 1990 and 2015, which appeared in all four data sources, was much lower in magnitude. Moreover, it seems counterintuitive for life expectancy to rise when death rates are increasing. However, life expectancy values are over-proportionally sensitive to changes in child mortality, whereas death rates count the death of each person equally independent of age. According to the TransMonEE (2018) database, under-five mortality fell to less than a fourth of its value between 1990 and 2015 (from 47.2 to 11.4 deaths per 1,000 live births, as estimated by the Inter-agency Group for
Child Mortality Estimation); it is therefore highly likely that life expectancy increased because many preventable child deaths were averted. Conversely, life expectancy may have been overestimated either because it is based on incomplete mortality (e.g., due to under-registration of deaths) or because of flawed population estimates. Thus, we cannot be certain whether life expectancy actually increased.

A potential explanation for differences in mortality and life expectancy patterns could be that the data sources use distinct population estimates for calculations (Figure 7). Population estimates will differ based on adjustments made to account for death under-registration, migration, and the question of whether to include Abkhazia and Tskhinvali. Population figures from the HFA database (WHO, 2018) and TransMonEE (2018) overlapped; hence, the difference in death rates until 2001 was presumably due to the disparate death numbers used for calculation. As life expectancy calculations are based on these numbers, it is reasonable that the figures would also vary for that time period. Another point to note is that the World Bank (2018) reported lower population estimates until 1994 and after 2002; between those years, all three data sources coincided. Although HFA and TransMonEE data indicated rising population numbers after 2002, World Bank data continued to show a declining trend. The divergence of population estimates in 2002 may have been related to the census conducted in that year and in 2014. As mentioned earlier, the World Bank, in contrast to the other sources, includes Abkhazia and Tskhinvali. For 2014, when these regions were not considered in the census, data were adjusted to account for these populations. Discrepant death rates during years when the same population estimates were used (i.e., 1994 until 2002) suggest that the World Bank used higher death numbers than HFA and lower numbers than TransMonEE in calculations.

Another noteworthy characteristic is that HFA (WHO, 2018) and TransMonEE (2018) data ceased to differ in 2001 and were congruent from 2004 onwards (HFA data were unavailable for 2002 and 2003; congruence excludes 2014). This pattern was likely due to
the population census conducted in Georgia in 2002 that revealed the country’s population numbers, which analysts could then use in recalculations. Until 2002, the databases needed to adjust relevant figures to obtain a somewhat realistic picture of mortality in Georgia, and the sources did so quite differently. This convergence in population estimates, together with the congruence in death rates, can also explain why life expectancy rates reported by HFA and TransMonEE were virtually the same after 2002 as noted in the section on life expectancy.

Recalling that TransMonEE data are taken from the National Statistics Office (i.e., GeoStat in Georgia), it seems surprising that the values only coincided with those from GeoStat until 1993. From 1994 on, GeoStat-provided death rates increased with a much steeper slope and ultimately exceeded 13. A potential explanation is that TransMonEE began excluding Abkhazia and Tskhinvali from population estimates in 1994 and used de jure population estimates.

**Figure 7: Occasionally substantial differences in population estimates**

![Population graph](image)

*Source: TransMonEE (2018); WHO HFA database (2018); World Bank (2018).*

World Bank (2018) data were found to differ. As mentioned previously, the institution used official estimates adjusted for under-registration and included Abkhazia and Tskhinvali, which likely accounts for related differences. However, life expectancy values for women
and men were similar or identical to TransMonEE data for the years 1994–1999, which seems astonishing given that death rates for these years varied by around 0.6 deaths per 1,000 people.

Despite the uncertainty attached to these mortality estimates, the overall picture suggests that life expectancy did not decline (or did so only slightly) in the 1990s. Among FSU countries, Georgia experienced a transition similar to former Yugoslavia and south-eastern Europe. This pattern stands in sharp contrast to the significant decline in life expectancy in Russia, many parts of Central Asia, and Western countries belonging to the Commonwealth of Independent States (UNICEF, 2001). Because of unprecedented large mortality increases in these countries after the Soviet Union dissolution, this period is often referred to as the ‘Post-Soviet mortality crisis’ (Gasnikov, 2009).

Our finding that Georgia was ‘spared’ by this crisis is initially somewhat surprising, considering that Georgia was worse off than other republics in many respects in that it endured two civil wars, economic collapse, and complete deterioration of its health system in the 1990s. To determine what could have prevented a ‘mortality crisis’ in Georgia, we examine rationales for the rise in mortality from previous studies to see how such causes relate to this country. In a second step, we seek explanations regarding what might have helped the Georgian people survive one of its darkest decades in recent history.

Several authors have explored the reasons behind higher death rates in the post-Soviet area (Azarova et al., 2017; Cornia, 2016; Earle & Gehlbach, 2010; Gasnikov, 2009; Gavrilova et al., 2000; Stuckler et al., 2009). Two arguments dominate this debate: greater alcohol consumption and higher stress levels due to economic crisis and transition (Popov, 2018).
The alcohol hypothesis

In the case of Russia, where the increase in death rates was particularly high, Azarova et al. (2017) found that rapid privatisation was mostly to blame. Their analysis indicated that working-age men in towns with faster privatisation experienced 13% to 21% higher mortality than in other towns. Among the contributors, the authors named higher alcohol consumption and worsening social protection. Cornia and Paniccià (2000) further investigated the alcohol hypothesis, namely by examining the increase in alcohol-related deaths in FSU countries. Their results suggested that between 27% and 40% of the increase in male mortality from 1989 to 1994 in Russia, Lithuania, and Poland was likely due to higher alcohol consumption. Moreover, the way alcohol is consumed seems to matter: drinking large quantities on few occasions (‘binge drinking’) has been associated with an increased risk of cardiovascular diseases, whereas drinking a bit every day seems to be less harmful (Cornia, 2016). The first pattern has been observed in many FSU countries, including Georgia.

Measuring alcohol consumption is difficult, particularly in contexts where many alcoholic drinks are produced at home and not sold on the formal market. In Georgia, alcohol consumption increased in the initial years after the collapse, ranging between 3.2 and 6.8 litres of pure alcohol per person per year, but declined in the second half of the decade (WHO, 2018). However, experts have posited that actual alcohol consumption may be closer to 10 to 12 litres (“Health and Healthcare Overview in Georgia,” 2001). By contrast, the incidence of alcohol-induced psychosis or deaths directly related to alcohol consumption did not increase. In fact, HFA data suggest that such deaths declined: in 1991, 83 deaths per 100,000 were due to ‘selected alcohol-related causes’ compared to 57 per 100,000 in 2000 (age-standardised). This pattern applied to men and women, although male mortality exhibited some fluctuations (WHO, 2018). We have thus found no evidence for the alcohol hypothesis in Georgia, potentially because alcohol intake predominantly involves wine rather than spirits (Figure 8). This is not surprising considering that wine making is an
inseparable part of the Georgian identity, and wine appears at every celebration or feast. Georgia differs from Russia and the other FSU countries in this regard, where much larger shares of pure alcohol are consumed in the form of hard liquor. If liquor consumption is mostly responsible for the growing death rates, then the low amount of consumed spirits in Georgia could explain the non-declining life expectancy. This supposition is substantiated by the finding that many alcohol-related deaths occurred due to alcohol poisoning; many spirits were produced unofficially and thus did not undergo quality checks (Brainerd & Cutler, 2005).

**Figure 8: Alcohol consumption**

![Graph showing alcohol consumption](image)


**The stress hypothesis**

High alcohol intake can be perceived as an intermediate cause of the increase in mortality because several other factors lead people to consume more alcohol (Cornia, 2016). Brainerd and Cutler (2005) found that higher alcohol consumption and an increase in alcohol-related deaths are often associated with greater stress; however, high stress levels could also be responsible for increased mortality without affecting drinking behaviour, such
as through higher risk for cardiovascular diseases (Marmot, 2000). Cornia (2016) outlined several reasons for psychosocial stress: unexpected unemployment, job turnover, income inequality, divorce or death of a spouse, and migration. Unemployment may be most important among these. In Georgia, although nearly everyone was employed during the Soviet era, many people lost their jobs when the economy collapsed. In the first years after independence, unemployment rates amounted to 9% but increased to around 14% in the second half of the decade (World Bank, 2018). Youth unemployment was particularly high. Moreover, many people had to work in a profession different from what they had learnt, which may have evoked additional discomfort (Gogishvili et al., 1996). High unemployment has been tied to other stress-inducing factors, namely family erosion and migration. Many Georgians went to work in Russia or emigrated in search of a job, especially in Western Europe or Israel. Moving to countries outside the USSR had not been possible during Soviet times, which is why population outflows to the West only started in the 1990s. Until then, around 96% of Georgians were living on the territory of Georgian Soviet Union, however, starting from 1990, they could be easily found in many foreign countries. By the end of the century, at least 30% more Georgians were employed abroad rather than within the country borders, and around one million migrants would never return to the country. Most frequently, namely in the 70% of the cases, the main motives of leaving the country were economic. People were forced to migrate to find a job. (Berdzenishvili 2014). Among those migrating, many were highly qualified (e.g., doctors who the state could not pay); this mass search for employment thus led to ‘brain drain’ in Georgia (Gogishvili et al., 1996). Remittances sent by those migrants to their families staying in Georgia might have been one of the contributing factors for the recovery of the economy, however, no data on the actual volume of remittances is available until 2008 year, hence, we have no ground to draw reasonable conclusions on.
Another potential source of stress is rising inequality, the rationale being that when incomes are unequally distributed, interpersonal trust and assurance decline (Cornia, 2016). GINI index estimates for Georgia were only available starting in the late 1990s, not for the years immediately following the collapse. In 1996, the GINI was at 37.1 and increased to 41.3 in 1998; at present, it is 37.9 (World Bank, 2018). According to these estimates, inequality was moderate – roughly the same as in Russia but above many other FSU countries (at least those for which data are available). As mentioned earlier, divorce can also increase individuals’ stress and is associated with higher mortality. Marriage on the other hand seems to have positive effects on mortality: In their econometric analysis Cornia and Paniccià (1996) find a correlation between declining marriage rates and a rise in death rates for many of the FSU countries in the years after the Soviet Union collapse. Marriage and divorce rates are indicators of family stability and influence the proportion of people living alone. Living alone is known to be an important mortality-increasing factor. In Georgia, both the crude marriage rate and the age-specific marriage rate decreased by more than half during the post-Soviet Union decade: from 7.1 marriages per 1,000 average population in 1989 to 2.9 in 2000. (TransMonEE, 2018). However, divorce rates in Georgia did not climb during the 1990s; rather, Kutelia, Meladze, and Tsuladze (1998) observed a declining divorce rate until 1998. Even so, this figure only reflects registered divorces and may in fact be higher due to under-registration. In addition, couples have changed their preferences towards religious marriage and do not consider the official civil registration of their marriage a necessity. We can thus not be certain about the net effect on the percentage of people living alone and on family stability in post-Soviet Georgia.

Although Cornia (2016) did not list these factors, we believe that the severe drop in individual income, skyrocketing inflation rates that reduced people’s certainty about the future, and general changes in values and norms that accompanied the transition from a communist system to a market economy likely also contributed to higher stress levels. GDP
growth dropped sharply after 1989, reaching a low of -45% in 1992, after which the economy slowly recovered. Georgia has begun experiencing growth again since 1995. Inflation rates also increased after the collapse, reaching their highest value by far in 1993 (more than 15,000%) followed by a rapid recovery, with rates having fallen below 10% since 1997 (World Bank, 2018). Many people were living below the poverty line; for example, in 1994, 70.2% of the population was below the poverty line, and almost 40% were in extreme poverty (“Health and Healthcare Overview in Georgia,” 2001). In a 1994 survey, when families were asked to rate their welfare status, 83% evaluated their economic situation as being worse than before, and 69% considered themselves poor; only 8% had labelled themselves poor a few years earlier (Gogishvili et al., 1996). Basic food items were heavily subsidised by the government, but bread was the only such item supplied regularly. To receive their ration of bread, however, people had to stand in line for hours (Gogishvili et al., 1996). A 1998 survey from the Institute of Demographic and Sociologic Research and Government Department of Statistics of Sociological Research found that only 36.5% of the population had enough food; 44.8% did not earn enough to purchase sufficient food provisions; and only 17.4% of the population was satisfied with their income for food (Sulaberidze 2001). Due to food shortages and lower household income, many people’s nutritional status deteriorated substantially (Gogishvili et al., 1996).

**Georgian ‘survival strategies’**

Despite numerous obstacles, the Georgian population managed to make ends meet somehow. In their UNICEF report on Georgia’s circumstances in the mid-1990s, Gogishvili et al. (1996) outlined several beneficial factors. The agricultural sector played a crucial role. After the collapse of the Soviet Union, the region was restructured to focus more on self-sufficiency. Additionally, a partial land reform in 1992 provided subsidiary plots and increased the size of many private farms. Agricultural production could then feed the entire
rural population along with several urban areas. Besides food, this sector also generated extra income for many people. Sales of agricultural products were facilitated by the development of domestic markets. Other private-sector activities grew as well, enabling many people to generate additional income, mostly informally (e.g., selling trinkets on the street or pursuing other small-business activities). Another important support pillar was, and still is, extended family, neighbours, and friends. A rich body of evidence exists on the correlation between social capital and health outcomes and general well-being, both for low- and middle income country settings (see, for example, Skrabski Kopp & Kawachi, 2004; Rose, 2000) as well as advanced economies (see, for example, Putnam, 1993). In Georgia, in the absence of public social security systems, strong relations at the local level proved crucial in dealing with shocks and hardships. Georgian society has long been characterised by strong solidarity. Contrary to other countries, this high level of support survived the Soviet times and became even more relevant during the country’s transitional period. Traditional social structures in all of the South Caucasus had moved to informality due to persecution by the Soviet authorities, were they had even gained in strength. After the USSR collapse, weak governmental structures, unemployment and high insecurity meant that people continued to rely on the support through extended families and in a next level on friends and neighbours (Aliyev, 2013). Assistance was often provided in the form of in-kind transfers such as food. In addition to ensuring mere survival, this social support net presumably had a positive influence on stress levels and likely prevented excessive mortality. Lastly, humanitarian assistance helped the Georgian people deal with the economic hardship of the 1990s (Gogishvili et al., 1996).

Even though the Soviet Union collapse hit Georgia particularly hard, the country managed to get back to its feet after a few years, albeit gradually. The worst had passed once Gogishvili et al. (1996) drafted their report: fighting had come to an end (at least for the moment), and the country experienced some political stabilisation. Georgia introduced
a new constitution, a new currency, and a new health system. Many people were starting to adapt to these fresh economic conditions, and support for market reforms was growing. In 1995, the economy experienced the first real rise in GDP since its collapse. Put simply, and in reference to the report’s title “The transition in Georgia: From collapse to optimism”, people were becoming optimistic again (Gogishvili et al., 1996).

**Conclusion**

Data limitations hindered our ability to draw definitive conclusions. The data contained many uncertainties; however, a combination of structural economic changes and political and social instability undoubtedly brought the Georgian economy to the brink of collapse during the 1990s. Extreme deterioration of the economic environment – specifically hyperinflation, higher unemployment, and a sharp drop in GDP – had significant ramifications on the society as a whole. The real GDP fell by 82% during the first 5 years after the collapse of the Soviet Union, and a critical food shortage spurred hyperinflation of around 7,000%. Many people were living below the poverty line at this time (European Bank for Reconstruction and Development, 1999). These factors presumably led to general deteriorating health in the country. Total crude death rates increased between 1990 and 2015, although the levels and trends differed across sources. In Georgia, patterns in male and female mortality were quite similar (except for middle-aged men around 1993, during the Abkhazian war). In this regard, Georgia is unique from Russia and many other FSU countries, where men were particularly affected by higher mortality (Azarova et al., 2017; Stuckler et al., 2009). We found that child mortality declined significantly, as did middle-aged mortality (albeit to a lesser extent), while death rates increased among individuals over 60.

Although our analysis does not increase knowledge of mortality patterns in post-Soviet countries or, more generally, the connection between societal transitions and population health, we do demonstrate and elaborate on the uncertainty researchers face
when investigating mortality patterns; data are either non-existent or potentially flawed. This uncertainty is clearly true for Georgia, a unique setting in the 1990s due to its civil wars. However, similar issues would likely manifest in other countries, such as those affected by conflict and most definitely in failed states. Thus, poor data quality and inconsistent datasets are common obstacles when examining health in these areas, and it is crucial that researchers agree on guidelines to manage them. Simply not investigating health questions in such areas is not a viable alternative.

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Appendix

Figure A1: GDP growth rate and inflation of Georgia, 1989–1999


Figure A2: Alcohol and smoking-related causes (per 100,000 people)

Figure A3: Total crime rate and homicide rate (per 100,000 people)

Source: TransMonEE (2010).

Figure A4: GDP Growth in Georgia

Figure A5: Inflation in Georgia

Inflation, GDP deflator (annual %)


Figure A6: Unemployment in Georgia

Unemployment as % of total labor force (modeled ILO estimate)