Adult mortality in the Asian part of the former USSR: similarity and disparity of epidemiological profiles in Armenia, Georgia and Kyrgyzstan

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The former USSR region has been experiencing a major health crisis. In Russia - the largest and most studied former Soviet republic - unfavorable mortality trends have been observed for several decades, and these trends have been attributed to a large extent to high consumption of strong alcoholic beverages. In this presentation, we focus on adult mortality trends in three countries located in the Asian part of the former USSR: Armenia and Georgia in the Caucasus, and Kyrgyzstan in Central Asia. We examine similarities and differences in the epidemiological profiles of these three countries. We find that mortality attributable to alcohol contributes to a great extent to adult mortality levels in these countries. However, we also find that levels and trends vary greatly from one country to another. These differences may be explained by differences in the proportion of the population that is Slavic, but also by cultural differences among native populations in the production and consumption of alcoholic beverages.

Introduction

The former USSR region has been experiencing a major health crisis. In Russia - the largest and most studied former Soviet republic - unfavorable mortality trends have been observed for several decades, and these trends have been attributed to a large extent to high consumption of strong alcoholic beverages (Leon et al., 2007; Meslé 2004; Zaridze et al. 2009b). The consideration of the "Soviet world" as a whole has concealed existence of different mortality patterns which may diverge from the Russian one characterized by a high level of adult mortality (Meslé et al. 1996; 1998; 2003; Shkolnikov et al. 1996). The Asian part of the former USSR appears to present specific evolution (Duthé et al. 2010; Guillot et al. 2010). In this presentation, we focus on adult mortality trends in three countries from this region: Armenia and Georgia in the Caucasus, and Kyrgyzstan in Central Asia. We examine similarities and differences in the epidemiological profiles of these three countries, one to each other but also with Russia, from the early 1980s.

Data and method

Deaths and population are from official statistics.
Deaths by cause and age group are from reconstructed series for Armenia & Georgia, successive classifications for Kyrgyzstan & Russia - see annex 1.

Method: Adult mortality trends
Age group: 20-59 years old
Global and cause-specific mortality rates for each year and country are standardized using equal weights for each five year age group.
$_{40}M_{20} = (_5M_{20} + _5M_{25} + \ldots + _5M_{55}) / 8$
Ill-defined treatment : to be defined.
No data for 1993 in Georgia.

First analysis: large cause-specific mortality trends
Infectious diseases; neoplasms; circulatory diseases; respiratory diseases; digestive diseases; external causes; ill-defined and unknown causes, and other causes.

Second analysis: alcohol-related group of causes
Groups have been constituted with causes of death that have been identified as strongly related to alcohol consumption in Russia (Zaridze et al. 2009a, 2009b). As this group is very large, we subdivided this alcohol related (AR) group in subgroups to look at specific trends of mortality due to what is supposed to be strongly AR group (Alcoholic and other liver cirrhosis, chronic alcoholism and alcohol poisoning), the cardiovascular causes, the other external causes, the other diseases and the ill-defined causes (see annex 1 & 2).
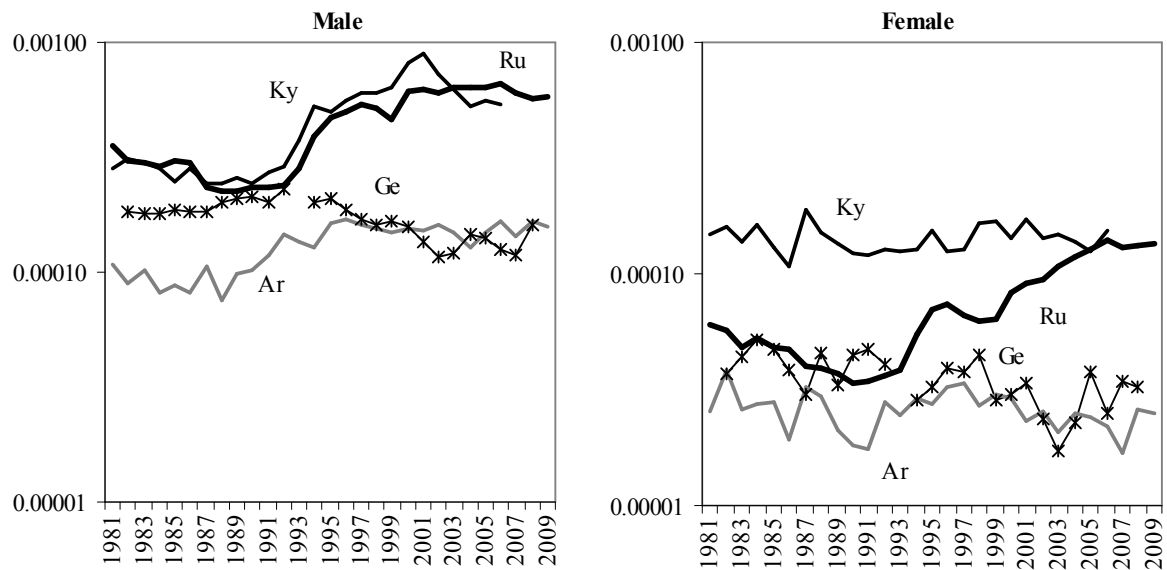
Results

Global mortality trends

Figure 1. Global adult mortality rate in Armenia, Georgia, Kyrgyzstan and Russia

Infectious diseases trends

Figure 2. Adult mortality rate due to infectious diseases in Armenia, Georgia, Kyrgyzstan and Russia

Burden of the alcohol consumption

Figure 3. Total, Alcohol Related (AR) and not-AR mortality rate in Armenia, Georgia, Kyrgyzstan and Russia, for adult males
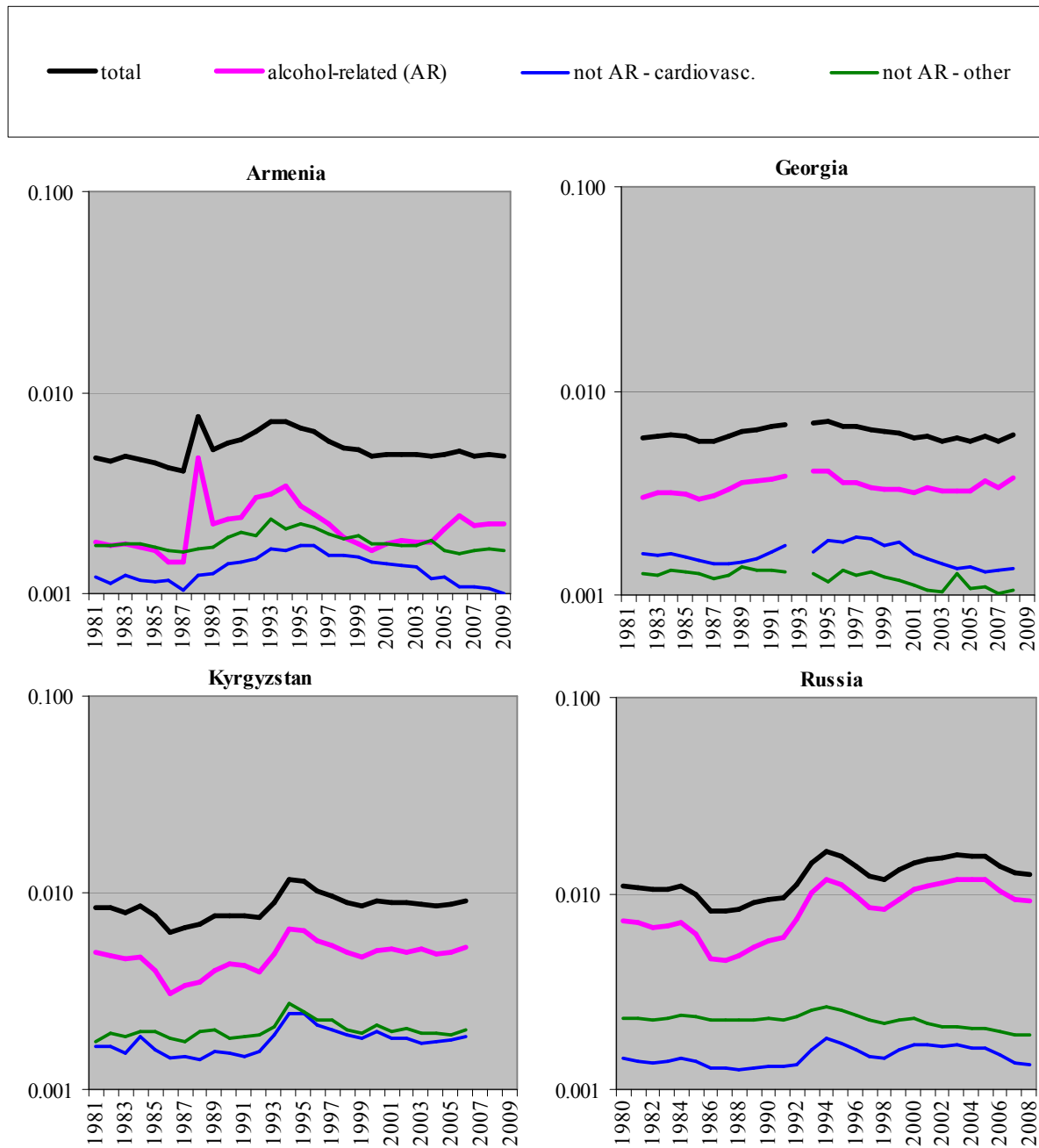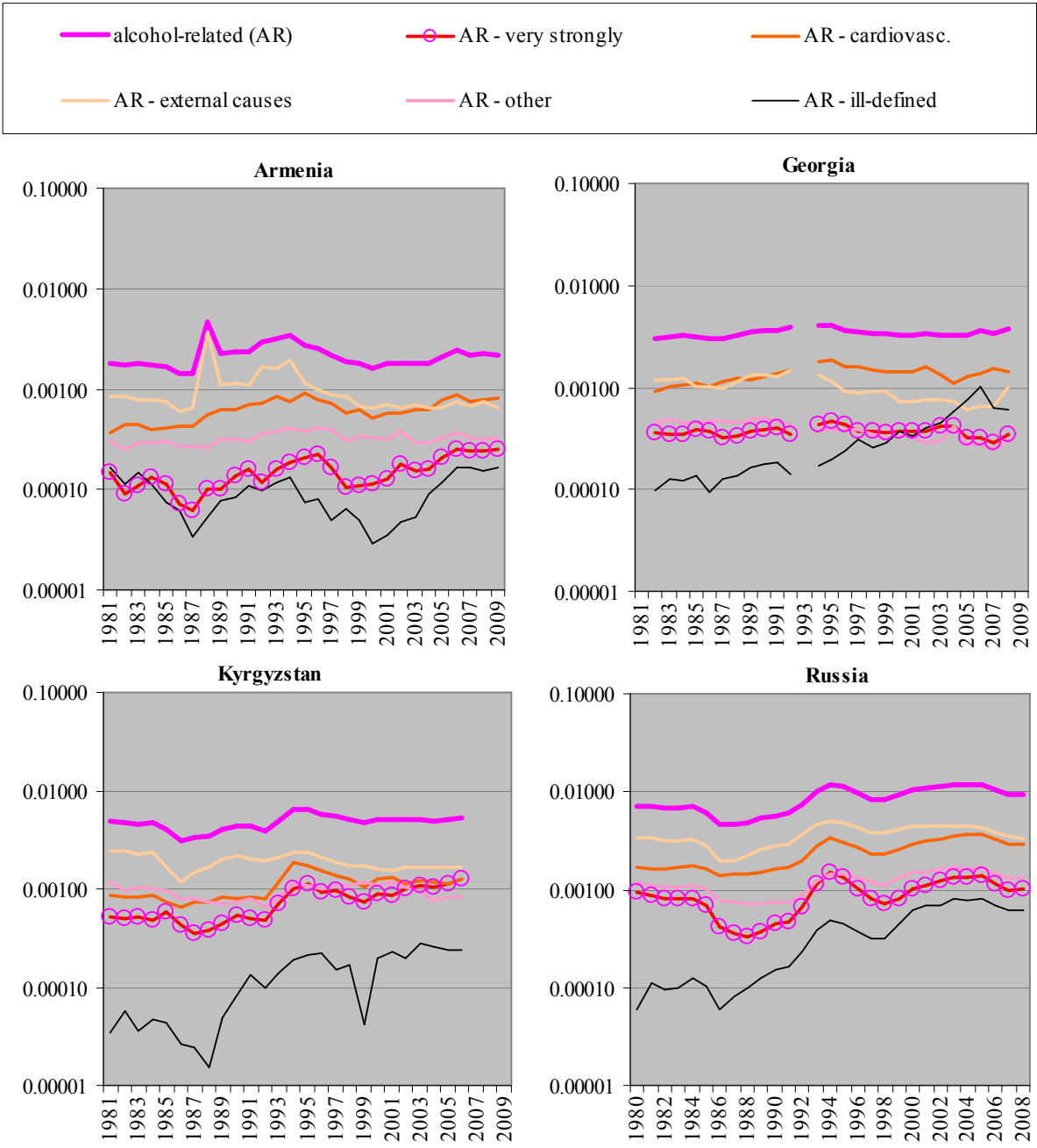
Figure 4. Detailed alcohol Related (AR) mortality rate in Armenia, Georgia, Kyrgyzstan and Russia, for adult males

Discussion- conclusion

On the data and the method

- civil registration coverage is not 100%
- ill defined deaths treatment
- classification changes over time: statistical rupture, don't include few codes from ICD-10 mentioning alcohol (negligible)
- international comparison: tiny differences in the correspondence
- infectious diseases would have a more important weight if we would consider other ages (at youngest and oldest ages)
- validity of the AR-causes group : illustration with the earthquake in Armenia

On the results

We find that mortality attributable to alcohol contributes to a great extent to adult mortality levels in these countries. However, we also find that levels and trends vary greatly from one country to another. These differences may be explained by differences in the proportion of the population that is Slavic (Table 1), but also by cultural differences among native populations in the production and consumption of alcoholic beverages (Pomerleau, 2008; WHO, 2009 & 2011).

Table 1. % of Slavic population among *de jure* population at censuses in the 3 countries

To be completed	1979 Soviet census	1989 Soviet census	Most recent census
Armenia			0.5 % (in 2001)
Georgia		7.3 %	1.7 % (in 2002)
Kyrgyzstan			13.6% (in 1999)

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Annex 1. Codes used for the calculation of cause-specific mortality in the four countries

#	Cause of death	Russia Classif. based on ICD9 YEARS	Russia Classif. based on ICD-10 YEARS	Russia Correspondence in detailed ICD-10	Armenia Abriged ICD-10	Armenia Correspondence in detailed ICD-10	Georgia hadoc abridged ICD-10	Georgia Correspondence in detailed ICD-10	Kyrgyzstan See annex 2.	Kyrgyzstan From 2000 - detailed ICD-10
1	Infectious diseases	1-44	1-55	A00-B99	1-48	A00-B99	1-52	A00-B99		A00-B99
2	Neoplasms	45-67	56-89	C00-D48	49-81	C00-D48	53-83	C00-D48		C00-D48
3	Cardio-vascular diseases	84-102	115-147	I00-I99	104-125	I00-I99	105-120	I00-I99		I00-I99
4	Respiratory system diseases	103-114	148-164	J00-J98	126-140	J00-J98	121-133	J00-J98		J00-J98
5	Digestive system diseases	115-127	165-179	K00-K93	141-155	K00-K92	143-147	K00-K92		K00-K93
6	Other diseases	68-83,128-157	90-114,180-225	D50-H95,L00-Q89	82-103,156-199	D50-H95,L00-Q89	84-104, 148-179	D50-H95, L00-Q89		D50-H95,L00-Q89
7	External causes	160-175	239-256,272-274	V01-Y89	214-229	V01-Y84	181-197	V01-Y89		V01-Y89
8	Ill defined	158-159	226-228	R00-R99	200-202	R00-R99	180-181,999b	R00-R99		R00-R99
9	Total all causes	999	999	A00-R99,V01-Y89	1-229	A00-R99, V01-Y84*	1-197, 999	A00-R99, V01-Y89		A00-R99,V01-Y89
10	Alcohol related group	10 = 11 + 12 + 13 +14 +15								
11	AR-Direct	73, 75, 122-123, 163	97,98,173,174,247	F10, K70, K74, X45	88-89, 149-150, 222	F10, K70, K74, X45	91-92, 141-142, 185	F10, K70, K74, X45		F10, K70, K74, X45
111	Alcoholic liver cirrhosis	122	173	K70	149	K70	141	K70		K70
112	Other liver cirrhosis	123	174	K74	150	K74	142	K74		K74
113	Chronic alcoholism	73,75	97,98	F10	88-89	F10	91-92	F10		F10
...										
114	alcohol poisoning	163	247	X45	222	X45	185	X45		X45
12	AR-cardiovascular	92-97	125-132	I20, I24-I51	110, 113-116	I20, I23-I51	111, 113-115	I20, I24-I51		I20, I24-I51
13	AR-other external causes	160-162,164-175	239-246,248-256,272-274	V01-X44, X46-Y89	214-221, 223-229	V01-X44, X46-Y84*	182-184, 186-197	V01-X44, X46-Y89		V01-X44, X46-Y89
14	AR-other diseases	9-13, 30, 43, 45, 46, 52, 103-107, 110-114, 126	9-15, 41-43, 54, 56, 57, 65, 148, 150-155, 160-164, 178	A15-A19, B15-B19, B90, C00-C15, C32, J00-J01, J02.8-J22, J30-J39, J60-J99, K85-K86	9-14, 38, 47, 49-50, 58, 126-132, 136-140, 154	A15-A19, B15-B19, B90, C00-C15, C32, J00-J22, J30 -J39, J60-J98,K85-K86	9-14, 34, 51,53-54, 62, 121-126, 129-133, 146	A15-A19, B15-B19, B90, C00-C15, C32, J00-J22 ,J30 -J39, J60-J98,K85-K86		A15-A19, B15-B19, B90, C00-C15, C32, J00-J22, J30-J39, J47, J60-J99, K85-K86
15	AR-ill defined	158-159	226-228	R00-R99	200-202	R00-R99	180-181	R00-R99		R00-R99
16	Not AR-other cardiovascular	84-91,98-102	115-124,133-147	I00-I19, I21-I23, I60-I99	104-109, 111-112, 117-125	I00-I19, I21-I22, I60-I99	105-110, 112, 116-120	I00-I19, I21-I23, I60-I99		I00-I19, I21-I23, I60-I99
17	Not AR-other	17 = 9 - (10+15)								