Oponent review for the doctoral thesis of Zhanyl Mukhtarova, entitled

 Patterns and trends in survival: Kazakhstan and post-communist countries confronted with low mortality populations  

Charles University in Prague  
Faculty of Science  
Department of Demography and Geodemography  
Supervisor: prof. RNDr. Jitka Ryhtaříková, CSc.  
Review: RNDr. Markéta Pechholdová, PhD  

The thesis aims to analyze recent mortality trends in Kazakhstan and other central Asian countries, and compare them to central European and Baltic countries, with selected low mortality populations as reference. The work is divided into six chapters, including introduction and conclusion.  

In the first chapter the topic is introduced and research questions are postulated. The areas of interest include general mortality measured by life expectancy at birth, cause-specific mortality levels and proportions, the excess male mortality and age-cause specific mortality.  

The second chapter provides a comprehensive overview of literature dealing with the epidemiological transition theory. In this chapter a good work with literature is to be appreciated, the author covers both the “old” and the recent resources and theories. Little more attention could have been paid here to the literature devoted to mortality in the ex-USSR, as similar patterns, problems and explanations are to be expected for central Asia and Baltic countries.  

The third chapter discussed methodological and data quality issues. The author uses primarily WHO Mortality Database as source for cause-specific mortality data. The list of selected causes of death is given in Table 2 (page 34), but the table has two mistakes: first of all, the given codes are not ICD9 codes, but BTL (basic tabulation list) codes. Second, there is an overlap between the categories: Diseases of the circulatory system (B25-B30) include Cerebrovascular diseases (B29). The same overlap is present in Table 4 for ICD10. In Figure 1 the author aims to show that Kazakhstan passed to ICD10 smoothly, but because of the big scale (due to inclusion of “all causes”) nothing can be read from the graph. In Figure 2 the title and the y-axis title is wrong - it is not proportions but the change of the proportions. Moreover, just proportions in % would have been much more interesting in this case. Finally, why did the author decide for the old world population as standard population (p. 38, last paragraph)? European standard population is more common in this type of analyses.  

Chapter IV is already devoted to the mortality trends. Unfortunately, all of the indicators, including life expectancy, are presented only for the two time points: 1985 and 2005. It is therefore impossible to follow highly fluctuating trends that have certainly been observed in central Asia, as they were observed in all the ex-USSR countries. The representation is also difficult to follow: for example, in Figure 3 (p. 47) the ranking of the countries is different for 1985 and 2005. In Figure 5 (p. 49) it is very unlikely that life expectancy of Czech males was worse in 2005 than in 1985 ! Concerning the sex ratio at conception: is it 160:100 (p. 48, second line from the bottom) or 115:100 (p. 28, paragraph 4)? At the end of chapter IV,
cause-specific decomposition of life expectancy at birth is given for selected countries. Why only for period 2005 and not for 1985?

Chapter five continues with the analysis of causes of death and represents the core of the work. The author performs cluster analysis in order to create groups of countries based on similarities on cause-specific levels and structures. In the next section, excess male mortality and age-specific profiles are clustered. The results are accompanied by comments based either on literature. On page 77, par. 2, the author lists heart burn, constipation, hemorrhoids, irritable bowel syndrome, celiac disease etc. as main digestive disorders. In fact, the main digestive disease causing mortality is liver cirrhosis, while the cited diseases are usually not even deadly (the same for page 79, par. 3). In table 13, p. 74, I would like to clarify why the Z-scores in the first column are all negative - how the Z-scores were calculated? In many cluster analyses for year 1985 (see Fig 17 p. 71, Fig 29 p. 103, Fig. 38 p. 121 etc), Kazakhstan stands apart because of extremely high cerebrovascular mortality of males compensated by low mortality from other circulatory conditions. Can it be due to a problem in coding or classification?

The formal style of the thesis can be considered satisfactory, the graphs are readable, but the color distinction of causes of death in the bar charts could be clearer – it is very difficult to distinguish the shades of blue and yellow.

The presented thesis represents a large piece of work, especially in the field of cause-specific data collection and processing. The author proved good skill in demographic and statistical methods (decomposition, cluster analysis). At the same time, several issues and questions appeared, as was seen above, especially the calculation of the Z-scores.

The presented thesis could therefore be recommended for approval only if the author performs well during the defense and answers all the questions to the satisfaction of the jury.