The doctoral thesis by Zhanyl Mukhatarova has 166 pages – the text itself covers 142 pages. The work is divided into seven chapters, including introduction and conclusion. The thesis has a logical structure – the author is seamlessly moving from theoretical knowledge through simple analysis based on publicly available data to more advanced statistical methods.

In the initial part of the work we can find a minimum of comments. There is a justification of the topic under study, setting research goals and working hypothesis, relatively well-worked theoretical bases, which are supplemented by discussions with the literature from the recent years. There are also correctly described data sources, including discussion of their quality, and problems with differing definitions of selected indicators. Selection of countries was also justified, but given the fact that the author got only data for Turkmenistan until 1998, it could be assumed that it would have been preferable this country from the analysis omitted. Data from the 1998 might have quite considerably influenced the results of the analysis for the period 2005. Errors that are found in the opening three chapters are more formal in nature (e.g. a different font in Table 5), however, it is necessary to point to the fact that it is not sufficiently described (p. 38) which WHO standard population was used for analysis (the WHO has more standard population). It can be also noted that some claims are relatively bold (e.g. on p. 36 that based on the smooth curves of intensities of mortality by major cause of death was a transition to ICD10 smooth). Questionable is also the figure 2, where the author calculated the difference between those years, when we do not know the proportions of these diagnoses in individual countries in 1985 and 2005...

The fourth chapter deals with the analysis of general changes in mortality between the periods of 1985 and the 2005. It is a descriptive chapter based primarily on differences in indicators of life expectancy at birth between the starting and ending year. Calculated are also decompositions of differences in life expectancy at birth by main age groups among the selected countries from "Eastern" bloc and countries with low mortality level. Descriptions of changes in values are quite correct, however, the author did not avoid an error in a comment to the figure 5 (p. 49), where she wrote that the Czech Republic may follow a negative trend, while the graph shows that the Czech Republic is a leader in the relative change in life expectancy at birth between 1985 and 2005 among the selected countries.

The most controversial parts of the presented thesis are chapters 5 and 6, which should be a main part of the work. These chapters are used for analyzing the development and showing the regional differences by causes-specific mortality, both in general and in selected age-specific group, affected by the method of cluster analysis. This method is applied separately for each gender and for both sexes combined. To these chapters I have several key observations:

- How were the z-scores calculated? Respectively, how were calculated the average z-scores for individual clusters? According to my calculations, it is a simple arithmetic average, but in my opinion it should be the weighted arithmetic averages. It is not possible after all to say, for example according to Tables 12 and 13, that the Polish and Slovak women had mortality rates of cerebrovascular diseases in an average of 120 deaths per 100 thousand people (i.e., (171 +69) / 2), when Polish women is up to 7x more than Slovak woman...

- If the average z-scores for each cluster were calculated by using simple arithmetic average, these calculations do not correspond to Table 32.

- Why to the analysis in Chapter 5.2 enters as a variable “All causes”? We can assume that this variable may influence the results significantly, because it includes all other causes de facto again....

- Were in the analysis examined the multicollinearity of input data? Correlation between input data can significantly affect the results of cluster analysis...

- The entire chapter 5.3 is interpreted wrong. The author confuses the concepts of percentage (%) and percentage point! Interpretation of the whole chapter is therefore utterly wrong.
- Was it necessary to transform the input variables in chapter 5.4 into z-scores, when all variables have the same character (relative share of selected causes of death, where the values range from 0 to 100)? Results in this chapter would be better interpreted as average shares, not average z-scores. In addition, used graphs are not very suitable, it would be better to use pie charts, because they monitor the differences in structures.

- Table 34 (with respect to Table 32 and 35) as an input variable missing item All Causes.

- How it was mentioned in the evaluation to the excerpt of Ph.D. thesis, the results of factor analysis from the chapter 3.4, which are calculated from data for mortality for both sexes together, are a basis for analysis, which has been treated separately for each gender (chapter 6). It is therefore questionable, if the use of factor analysis for both sexes separately would not produce a different distribution of age groups / factors for this analysis...

In these chapters there can be found several other problematic passages which, while unrelated to the accuracy of calculations, are still quite important:

- In my last evaluation I wrote, that calculations for one calendar year (taking into account the quality of data that are well aware for the author, see Section 3.2), are quite risky and it would be advisable to use multi-year averages. Unfortunately, this recommendation was not taken into account by the author, as well as the other two problematic issues: the inclusion of Turkmenistan (see above) and, in my opinion, unnecessary analysis indicators for mortality for both sexes together when they are analyzed separately in the work.

- Why was not the "cut" across distances marked in dendograms, respectively more marked individual clusters, which the author identified?

- The visual duplication of information is maybe unnecessary (e.g. Table 8 and 10 and Figure 12).

- It would be preferable to put the same information more together, not apart (e.g. Figure 16 on p. 66 and related Table 11 on p. 69).

- The conclusions after each analysis would be appropriate also to measure trends in the regional differentiation that leads to increased heterogeneity or homogeneity of converging levels of mortality.

Conclusion of the thesis summarizes main results. The main points are affected, but the author never returns to the initial hypotheses, the correct verification is missing.

In the presented thesis there are many other errors, mostly of a formal nature (typographical errors, etc.). In spite of the fact that this thesis is a comparative study of selected countries, there are no graphical objects like maps. Maps would help better visualize both the acquired knowledge and also the initial rationale for the selection states. Working with citations and writing the references are also faced with considerable problems.

Based on the above findings, I concluded that the work contains too many errors. Unfortunately these are not only formal errors, but also errors in the common interpretation of the results of comparative analysis (see Section 5.3). Due to the fact that in the work there is still applied quite only one method (but 26 times) it becomes a work in progress to a reader almost boring. The thesis lacks a larger range of research methods (which allows the subject of causes of death), that would both adequately show the ability and skills that the author has achieved during the study, as well as some insight and understanding of the broader context. These facts led me to conclude that

I recommend to accept the submitted Ph.D. thesis for a defense,

but there are many contentious issues which need to be explained that thesis could be successfully defended.