

**Tutor's review of the diploma thesis by Maxat Kulzhanbekov
„Development of lung cancer mortality in the European Union from 1980 to 2006“**

Maxat Kulzhanbekov's diploma thesis „Development of lung cancer mortality in the European Union from 1980 to 2006“ consists of 111 pages of text. The thesis has a standard structure. It is divided into seven numbered chapters along with a conclusion, an overview of abbreviations and lists of tables and figures as well as the bibliography and data sources sections. The thesis' integral part includes annexes with tables.

The selected research theme is highly topical, which primarily arises from the fact that malignant neoplasms of trachea, bronchus and lung constitute one of the most significant causes of death from the group of neoplasms. Moreover, in almost all countries under observation, we have witnessed a growing intensity of female mortality from this disease over the approximately past 30 years.

The assessed diploma thesis has set three main objectives:

1. To describe the development of mortality from malignant neoplasm of trachea, bronchus and lung by sex in 24 countries of the European Union in 1980-2006;
2. To delineate major factors that underlie this type of mortality;
3. To present the measures implemented in the EU to lower the mortality from the above malignant neoplasm.

Roughly one-half of the main text or six chapters are devoted to the theoretical and methodological aspects of the thesis. The first chapter sums up the introduction, consisting of four parts: the definition of the problem; the objectives of the thesis; its importance; and a description of its structure. The second chapter primarily focuses on a discussion of professional literature and current knowledge of the research topic. The following chapter examines the theoretical background. It is divided into two subchapters: basic terminology and relevant theories. The basic terminology is defined on the basis of the Multilingual Demographic Dictionary, and, unfortunately, also Wikipedia. The subchapter of theories characterizes endogenous as well as exogenous factors of mortality and describes the epidemiological transition. In the fourth chapter, the student formulates in an understandable way seven research questions and five hypotheses. The next chapter presents the used sources of data (the European Health for All Databases and WHO Mortality database) and in a relatively great detail describes the applied methods (direct standardization and cluster analysis). In this part of the text, Maxat Kulzhanbekov also examines the classification of diseases and comparability of data according to this classification and explains the reasons of why the evaluated sample was divided into Western European and post-communist countries. The sixth chapter is divided into four separate parts dealing with risk factors, prevention, the European anti-smoking policy and the European anti-cancer policy.

The seventh, analytical chapter constitutes the core part of the thesis. With a correct logic, the student gradually moves from an analysis of mortality of the most important groups of causes of death (in the following structure: total mortality, diseases of the circulatory system, malignant neoplasms and other causes of death) to the presentation of standard mortality rates in total and selected most important malignant neoplasms (lung; colon, rectum and anus; stomach; bladder; prostate for males and breast for females) and eventually to an analysis of the intensity of mortality from the malignant neoplasm of trachea, bronchus and lung itself. At the end of the chapter, the student presents the results of an applied hierarchical cluster analysis. At this point one can state that the analysis has only more or less confirmed the expected results proving that differences between post-communist and Western European states are decisive. The conclusion of the thesis sums up the obtained findings, however, in a rather inconsistent way.

Maxat Kulzhanbekov drew up his thesis independently, using listed literature and available data sources. When working on the thesis, he showed an interest in the chosen topic. On the other hand, it should be said that the student did not try to apply any advanced techniques or analyses. The thesis is largely based on the calculation of standardized mortality rates and their comparison on the level of the countries under observation. The results are only described and summarized in the text, while the student only exceptionally tried to make a detailed interpretation and explanation of the ascertained trends.

The quality of the submitted thesis is considerably affected by a large number of defects of both its content and formal aspect. I present the most important ones:

1. In a number of places, there is a discrepancy between the text and standardized mortality rates in figures and tables. For instance, on the page 51 it is written that standardized mortality rate of diseases of the circulatory system was 926 deaths per 100,000 men in the Czech Republic in 1990, whereas the correct value of 834 deaths per 100,000 appears in Table 3 on page 46. In the case of the same year for malignant neoplasms in Sweden, the text gives 204 deaths per 100,000 men in the text, but the relevant table gives 199 deaths per 100,000 men, etc.
2. Similarly, the accompanying text similarly does not exactly describe the data appearing in some tables. This is exemplified by the commentary under Table 5 on page 48 or under Table 10 on page 55.
3. Tables 15a–f in the subchapter 7.5 give statistical indices of the distribution of the evaluated countries according to the mortality from malignant neoplasm of lungs in selected age groups. Unfortunately, I did not find any accompanying text relating to those data.
4. Figure 1 on page 34 presents the values for the Flemish and Francophone parts of Belgium separately, but the text only speaks about „Belgium.“ As a result, it is not clear whether the data relate to one of the parts, an average for both regions, etc. The same problem can be seen in the following Figure 2, page 35 in the case of the United Kingdom.
5. Figure 4 on page 37 does not depict the consumption of cigarettes by sex, though the title says so.
6. It is not clear in the subchapter 7.6 what input variables were applied in the cluster analysis and how the „index of mortality change“ was calculated (see Figure 36, page 94).
7. The thesis does not include any overview of when the individual revisions of ICD were introduced in the countries under comparison.
8. The author does not always observe typographic rules and not all chapters have optimal titles (see, for instance, the title of the chapter 2). When it comes to figures, one can come across problems relating to their basic elements (the title, description of axes, key, data sources). Similar problems are obvious in some tables.
9. Some passages of the text are poorly comprehensible (such as the initial text of subchapter 4.2) and in some places there is no quotation relating to the used sources (e.g. on pages 28 and 30).

After a long hesitation and despite the presented reservations, I can say that the student has displayed the ability of making a professional work on a level required from a graduate of Master studies in Demography. This is why I recommend the acceptance of Maxat Kulzhanbekov's diploma thesis „Development of lung cancer mortality in the European Union from 1980 to 2006“ for defence.

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tutor