Opponent's assessment of the diploma thesis of Maxat Kulzhanbekov:
Development of lung cancer mortality in the European Union from 1980 to 2006

The diploma thesis of student Maxat Kulzhanbekov *Development of lung cancer mortality in the European Union from 1980 to 2006,* its corrected version consists of 112 numbered pages. Eight pages out of 112 ones are appendixes. The text is organized in seven numbered chapters including the introduction plus conclusion which is not numerated. In addition, there are the lists of abbreviation, tables, figures plus the list of references and the appendixes as a part of the thesis.

Lung cancer and related diseases like malignant neoplasm of trachea and bronchus together as one of relatively frequent causes of death among different types of neoplasm went through specific development of its prevalence and fatality, including the growth of mortality within past two or three decades. The title characterizes the overall goal of the submitted thesis. It is an analysis and assessment of mortality caused by lung cancer. The author formulated three main objectives at the beginning of his work. He decided to describe (and to analyze) development of that kind of mortality in the countries under question and during the given period, to identify main factors and to identify and present the effort of the EU countries with the aim to decrease mortality related to this group of diseases.

The text submitted by Maxat Kulzhanbekov has a standard structure of a final thesis. He is first defining the problem to be solved, formulate the aim and objectives of his work, discuss the relevance of the study and present the structure of the entire text. After this introductory chapter he moves to literature review which untraditionally incorporates also a brief specification and history of a cancer *per se* plus summarization of our basic knowledge about lung cancer. Also rather brief is his conceptual part, especially the subchapter trying to define basic concepts. Here one can find explained only two demographic terms – mortality rate and age standardized mortality rate. The remaining items describe only the main kinds of cancer. As a theoretical base of his research, the author introduces the theory of epidemiological transition and theory of demographic transition which he tries to see in mutual interaction or maybe better in mutual context.

Formulated research questions are again only listed missing any explanation or advocacy; research hypotheses are relatively well formulated. They, however, do not fully and necessarily correspond with research questions since there is a discrepancy between the number research question (7) and hypotheses (5) as it was in the previous version. In the fifth chapter, Maxat Kulzhanbekov presents the sources of used data discussing their quality of data itself at the same time. In the methodological subchapter which is closing the technical part of his thesis he introduces two basic methods applied in the following research: direct standardization and cluster analysis.

The content part of the thesis is represented by two different chapters. The less extensive one is devoted to overview and discussion of the risk factors and prevention measures. It provides a potential base for explanatory analysis which should logically follow description and basic analysis of mortality in the question and its patterns. Lung cancer mortality patterns description and basic analysis is a main but only partial topic of the core chapter 7. The leading theme of the entire thesis is "packed" into the overviews of mortality by causes of death and mortality referring malignant neoplasm. Lung cancer mortality is analyzed in its differentiation by sex and age. The obtained results are further used for classification of countries according to the level and

development of lung cancer mortality. In the closing part, Maxat Kulzhanbekov summarizes main results of his diploma research and formulates basic conclusions.

Regarding its quality, the assessed diploma thesis is divided into two different parts. Its text until the chapter 6 documents a substantial progress made by M. Kulzhanbekov during his work on the theme. Text is mostly written in understandable English and has relatively solid logical structure. In some parts the text could be reduced since problem discussions are sometimes too extensive but in principle the author compiled an interesting and relevant material.

Formerly frequently missing proper quotations and references were added, in some place even more than it was possible (e.g. doubled references in the literature review). Most of criticized formulations were corrected which contributed to the increase of some ideas and findings presented by the author comprehensibility. On the other side, some of formulations still require revision (e.g. the text on pages 47 and 49). The number of deficiencies in the object titles was also reduced on minimum in this corrected version of diploma thesis. Significant discrepancy remains only in using abbreviation ASFR with two different meanings and using two different abbreviations for standardized rates (see the list of abbreviations). Also most of formal errors and deficiencies were eliminated in the corrected text. It is pity that this relatively careful approach to the presented text has not persisted in author´s formulation and checking of the conclusions. They are not complete regarding examination of the set hypotheses and presentation of the cluster analysis results.

Regardless several remaining weak(er) points, I am convinced that the overall assessment of the Maxat Kulzhanbekov diploma thesis could be positive. Regarding this fact I recommend to accept the diploma thesis of Maxat Kulzhanbekov *Development of lung cancer mortality in the European Union from 1980 to 2006* for its defence.

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opponent

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