# ABSTRACT

The work consists of an introduction, three chapters and conclusions and has 38 pages. Contains 7 illustrated materials, 2 tables and literature references 41.

The goal of this thesis is to development mathematical and software tools for monitoring and optimizing the prevention of respiratory viral infections.

At this work was made a analysis of solutions that allow to predict the incidence of influenza and SARS. Was done comparing compared in terms of the GUI, publicity information, decision-making and forecasting period.

Was made a comparative analysis of mathematical methods for forecasting diseases. Basing on provided analysis were choosen the methods of forecasting using hidden Markov models and constructed predictors.

Developed software that implements chosen methods and provided tests of it.

Methods for forecasting disease influenza and SARS in Ukraine compared via developed system and the effect of vaccination on the incidence in future periods.

The key words: influenza, SARS, forecasting, vaccination.