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AIR PASSENGER TRAFFIC FORECAST ANALYSIS

Researchers M.I.Zagordan and F.P.Kravets in 1932 proposed for forecasting model in which passenger flow was as product fraction of population in corresponding cities by square of distance between them. The authors tried to take into account influence of a number of factors on passenger flow by multiplying it by correction factor, which differs significantly for different cities (3-5 times).

In modern conditions, when substantiating volume of passenger transportations, two types of forecasts are used: forecast of demand for air transportation and forecast of possible volumes of transportations (passenger turnover), obtained on the basis of data on actual demand. The difference between these values is amount of unmet demand. In practice, air transportations forecasts in most cases focus on data on actual traffic. Further improvement of passenger transportations forecasting methods is aimed at identifying unmet demand, and planning - to meet it in economically justified amounts.

Scientific forecasting has a large number of methods and techniques of forecasting, of which the most widespread in air transport are methods: mathematical modeling based on regression and correlation analysis; statistical forecasting of time series (extrapolation); heuristic forecasting (expert assessments).

Forecasting based on methods of correlation and regression analysis is reduced to finding regression equation (paired or multiple), in which transportations volume or passenger turnover (dependent variable) is depending on one or group of factors. Regression model is built by processing reporting data on transportation (passenger turnover), presented in the form of time series and corresponding values of passenger-forming factors (population, its monetary income, level of tariffs, etc.).

Currently, significant number of models have been developed that are used to forecast the passenger transportations volume. All of them can be combined into two large groups:

- general (undirected) models for forecasting transportations volume and passenger turnover in the country as a whole, economic regions, territorial administrations, enterprises;
- partial (directed) models of passenger flows forecasting by specific correspondence (connections) between cities (settlements), airlines, groups of directions (airlines).

Time series extrapolation is the most common and most developed statistical method of forecasting. Essence of extrapolation method is that on the basis of statistical data analysis for a number of years establish patterns of indicator change and development trend, which is represented as an equation. Then determine value of indicator outside the time series. This method is based on premise that established trend will continue in the future.

Another method that allows to justify the choice of dependence is to compare characteristics of change in actual data increments with corresponding characteristics of growth curves. Dependence is chosen, law of growth change of which is closest to regularity of actual data change.

Heuristic forecasting methods are of great importance for air transportations forecasting. Their essence consists in processing of forecast estimations received from highly skilled experts in the field of air transportations organization and planning.

Positive qualities of method include its versatility: possibility of use in any time intervals and to assess development of various forecasting objects; application at difficulties with application of other methods; use as a stand-alone method and in combination with others.

Disadvantages of method: more complex than other methods, organizational support; influence of specialists-experts competence level; presence of subjective factor.

Positive properties of extrapolation method include: availability of statistical and other information on transportations volume of required detail, developed mathematical apparatus and software for forecasting operations.

Main disadvantages: transfer to the future of past trends that may not be sufficiently confirmed and lack of connection with passenger-forming factors.

For air transportations planning, it is advisable to use different methods of forecasting. Preference should be given to regression models and methods of heuristic forecasting, as they take into account influence of real factors on passenger flows formation processes.

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