



# Florida Department of Transportation Research

## Florida Aviation Activity Forecast

### Methodologies and Tools Development

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#### Project Number

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#### Project Manager

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#### Current Situation

To ensure the efficient operation and healthy development of the state's airports, the Florida Department of Transportation (FDOT) developed the Aviation Grant Program to provide financial assistance to Florida's airports. To guide airport planning and financial decisions, it is essential to have accurate forecasts of airport activity, which provide information about requirements for future capacity and financial requirements. The forecast tool currently in use by FDOT was developed some years ago, and more advanced methods are now available.

#### Research Objectives

University of South Florida researchers developed new methodologies for airport activity forecasting and updated the existing Florida Aviation Database activity forecast tool with an advanced forecasting module.

#### Project Activities

The researchers reviewed a wide range of forecast methodologies that are currently used by planners. This review helped identify the parameters essential for accurate forecasting. Several Florida airports were used in case studies to determine how airports develop forecasts from historical traffic information, factors that could influence aviation activities, socioeconomic data, as well as data collection needs and existing forecasting methods used.

Based on the review phase of the project and analysis of the advantages and disadvantages of various methodologies, the researchers selected two approaches for further development and use by FDOT: the autoregressive integrated moving average (ARIMA) model and Monte Carlo simulation. Both approaches were included in the forecast module because of their respective capabilities. ARIMA forecasting can handle complex time series data and provides accurate forecasts with minimal data requirements. Monte Carlo simulation improves analysis of positive or negative historical growth trends in aviation activities.

To demonstrate the use of the new forecasting module, the researchers conducted case studies for four Florida airports. For two commercial airports, Orlando-Melbourne International Airport and Jacksonville International Airport, forecasting focused on passenger enplanements and aircraft operations. For two general aviation airports, Ormond Beach Municipal Airport and Flagler Executive Airport, the focus was on aircraft operations and aircraft based at these airports.

The researchers developed a user interface for the forecasting module to facilitate its use by designers and planners. They also produced a user guide to take users through various forecasting tasks in a step-by-step fashion.

#### Project Benefits

Improved airport activity forecasting will allow better planning decisions and more appropriate and better targeted funding support

*For more information, please see [www.fdot.gov/research/](http://www.fdot.gov/research/).*



*Florida airports accommodated over 80 million passengers in 2016 – and this is expected to increase.*