Abstract - Tourism forecasting is a significant tool/attribute in tourist industry in order to provide for careful planning and management of tourism resources. Although accurate tourist volume prediction is a very challenging task, reliable and precise predictions offer the {opportunity} of gaining major profits. Thus, the development and implementation of more sophisticated and advanced machine learning algorithms can be beneficial for the tourism forecasting industry. In this work, we explore the prediction performance of Weight Constrained Neural Networks (WCNNs) for forecasting tourist arrivals in Greece. WCNN constitute a new machine learning prediction model which is characterized by the application of box-constraints on the weights of the network. Our experimental results indicate that WCNNs outperform classical neural networks and the state-of-the-art regression models: support vector regression, k-nearest neighbor regression, radial basis function neural network, M5 decision tree and Gaussian processes