The Impact of the EU-US Open Skies Agreement on Commercial Airline Passenger Traffic over the North Atlantic

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1 Executive Summary

Nine econometric models were developed to forecast passenger traffic between the United States and nine selected European countries between 2008 through 2020. The transatlantic passenger traffic was modeled as a function of the product of the United States Gross Domestic Product (GDP) and the European country's GDP with a dummy variable to account for effect of September 11, 2001 events. A semi-logarithmic linear relationship was recommended form modeling purposes. Only United States to European countries passenger traffic was forecast in the study. The passenger traffic in the opposite direction is assumed to be same based on the symmetric historical passenger traffic between the United States and the nine European countries studied.

The airport to airport passenger traffic was estimated by assigning the enplaning passengers at each of 31 United States gateway airports and deplaning passengers at each of 35 European gateway airports using a Fratar model. It is assumed that at each United States airport in the period of analysis will retain its base year (2007) market share of total passenger traffic during the forecast period (through 2020).

After the OD airport analysis was completed, 68 new nonstop flights between United States airports and the European airports are predicted by the model in 2020 using the airport pair passenger demand forecast. These new nonstop flights are forecast for two types of airport pairs: (1) pairs which in 2007 could only be travelled with connecting flights (2) and pairs which in 2007 could be travelled in one flight which includes intermediate stops. The analysis shows that 30 new nonstops flights are forecast from 2010 on; 46 in 2015, and 68 in 2020. Analysis of 2007 airline behavior indicates that airlines are likely to establish 12 month service for transatlantic airport pairs when the passenger demand per year is in the neighborhood of 44,000. This translates to five or more flights per week.

As demand for air travel continues to grow in the future, passenger traffic at certain airports could place further strain in passenger capacity. Part of the traffic at these airports will, by necessity, be diverted to airports or perhaps even choose other modes of transportation. Diversion of passengers traffic from the United States to London, Heathrow is demonstrated as an example for rerouting the excess air travel passengers from one airport to other airports when the airport operational capacity is exceeded assuming all rerouted travelers continue to use the commercial air travel mode. The excess passengers to European airport from the United States were categorized into excess terminating passengers and connecting passengers. The excess terminating passengers from the United States are reassigned to selected nearby candidate airports which already handle similar terminating passengers. The excess connecting passengers were rerouted to connect at other European candidate airports which are frequently used for connecting. It is assumed that all the candidate airports have sufficient capacity to process the rerouted passengers.

2 Introduction

The purpose of this report is to deliver to the FAA mathematical models which permit forecasting the effect of EU-US Open Skies Agreement on commercial airline passenger traffic over the North Atlantic Ocean. Specifically, models are delivered to predict the passenger traffic amongst the most highly travelled United States to European country pairs, and to predict the traffic amongst the highly travelled passenger United States airport to European airport pairs. From these predictions, potential new nonstop flight airport pairs are offered. Lastly, suggestions are made as to European airports where selected passengers will be rerouted to address the situation when London, Heathrow Airport reaches full capacity and can accept no additional passenger traffic.

The European Union – United States Open Skies Agreement, which became effective March 30, 2008, was established to accomplish several goals including:

- " … to promote an international aviation system based on competition among airlines in the marketplace with minimum government interference and regulation."
- " … to facilitate the expansion of international air transport opportunities, including through the development of air transportation networks to meet the needs of passengers and shippers for convenient air transportation services."
- " … to make it possible for airlines to offer the travelling and shipping public competitive prices and services in open markets." [1]

The FAA contracted with the Virginia Tech (Air Transportation Systems Laboratory) to develop forecasting models to predict the effect of the new Open Skies agreement on the behavior of passengers flying across the North Atlantic Ocean and airline's behavior such as opening new nonstop flights, increase frequency, decrease airfare, adopt new available aircraft type based on the new aircraft skills.

Data shows that more than 51 million (25.5 million from the United States to Europe and 25.6 million from Europe to the United States) passengers travelled between Europe and the United States in 2007. These passengers took direct flights (either non-stop flights involving no intermediate stops or flights that include a stopover at an intermediate airport) between 31 gateway airports in the United States and 35 European gateway airports. The analysis performed uses a representative number of European Countries and gateway airports and a representative number of gateway airports in the United States to predict passenger and airline's behavior.

Previous Literature of Passenger Demand Forecast

The previous passenger demand forecast literature is summarized in Table 2-1.

Table 2-1: Summary of Previous Passenger Demand Models

Author and Year	Dependent Variables	Market Segments	Independent Variables	Demand Functional Form	Data
J.D. Jorge-Calderon 1997	Intra-European, international city pairs with at least 52 flights a year Distance	3 by route distance - < 600 - 601 - 1200 - > 1200	- Population of both origin and destination - Average distance - Income - Frequency	Semi-log linear	339 cross-section
J. Dargay and M. Hanly 2001	International air travel from/to UK to 20 counties	4 by trip purpose and residents: - UK residents leisure - UK residents business - Non-UK residents leisure - Non-UK residents business	- Real airfare - Disposable income per capita - Relative price level - Relative exchange rate	Autoregressive distributed lag	10 years time-series cross-section
Inter*VISTAS* Consulting Inc. 2007	Europe to/from North America	- U.S. domestic - 6 world regions • Intra-Europe • Intra South Asia and South East Asia • Trans Atlantic (Europe to/from North America) • Trans Pacific (South Asia and South East Asia to/from North America) • Intra Sub Sahara Africa (Central/Western Africa and Eastern Africa) • Intra Latin America (Non-Caribbean	- Average fare - Geometric mean of city/country pair GDP - Geometric mean of city/country pair population - Route distance - Time period dummy (quarter/month)	Semi-log linear	Time-series cross-section

		Central America and South America) - UK outbound • Leisure • Business			
Transports Canada 2003	340 zone pairs	4 by fare class and distance - Domestic economy - Domestic discount - Transborder economy - Transborder discount		Log linear	7 years time-series cross-section
B. Battersby and E. Oczkowski 2001	Revenue passenger kilometer (RPK) per capita of 4 domestic city pairs in Australia	3 by fare class: - Discount economy - Full economy - Business	- Price - Income - Substitute prices - Seasonality dummy	Linear	26 quarters time-series
L. Castelli, R. Pesenti, W. Ukovich (2005)	Daily passenger for 9 routes of one Italian regional carrier	2 by fare class: - Economy - Business	- Population - GDP per-capita - Frequency of flights - Airfare - Aircraft seat capacity - Year - Hub Airport - Tourist market - Direct competition - Weekend - May	Semi-log linear	Daily time-series cross-section
S. Y. Abed, A. O. Ba-Fail, S.	International air travel demand	N/A	- Population - Total Expenditures	Linear	24 years time series

M. Jasimuddin	(passengers) in Saudi Arabia				

Data Sources

All data used for this study is publicly available data except for the DB1B international travel data which was made available by the FAA. The data sources are summarized in Table 2-2.

Table 2-2: Data Sources

Data	Source
Air passenger traffic between the United States and European countries	U.S. DOT Bureau of Transportation Statistics International T-100 Market Data (http://www.transtats.bts.gov/Fields.asp?Table_ID=306)
- Frequency for nonstop flights between U.S. and Europe - Average aircraft size between U.S. and Europe - Average load factor between U.S. and Europe	U.S. DOT Bureau of Transportation Statistics International T-100 Segment Data (http://www.transtats.bts.gov/Fields.asp?Table_ID=306)
- 10% sample of airline tickets sold for trips between U.S. and Europe	U.S. DOT Bureau of Transportation Statistics Origin and Destination Survey Data (http://www.transtats.bts.gov/Tables.asp?DB_ID=125&DB_Name=Airline%20Origin%20and%20Destination%20Survey%20%28DB1B%29&DB_Short_Name=Origin%20and%20Destination%20Survey)
- Population of European countries from 1990 to 2020 - Real GDP of European countries from 1990 to 2020	United States Department of Agriculture (USDA) International Macroeconomic Data Set (http://www.ers.usda.gov/Data/Macroeconomics/)
Consumer Price Index	U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

The U.S. Department of Agriculture International Macroeconomic Date set provides population, gross domestic product data for the United States and many of the European countries. It includes historical data from 1990 through 2007 and projections of population, and gross domestic product through 2020.

3 Domain of Analysis

Time Frame of Forecast Model

The time frame of applicability of the model ranges from 2008 through 2020. Socioeconomic data from the U.S. Department of Agriculture is not projected beyond 2020. Therefore, the forecasts are not made beyond 2020.

Geographical Domain of Analysis

Along with the United States, nine of the 44 European countries are included in the domain of analysis for the forecast model. As discussed hereafter, these European countries contribute the great majority of passengers to North Atlantic air traffic, have and are projected to have the great majority of the gross domestic product for Europe and have no missing or abnormal in their historical passenger traffic data.

It is observed from T100 International Market data that passengers crossed the Atlantic by the direct flights (nonstop flights or flights that have stopover(s) without change in flight number) between the United States and 24 European countries in 2007. Nine European countries included in the analysis domain are highlighted in Figure 3-1.

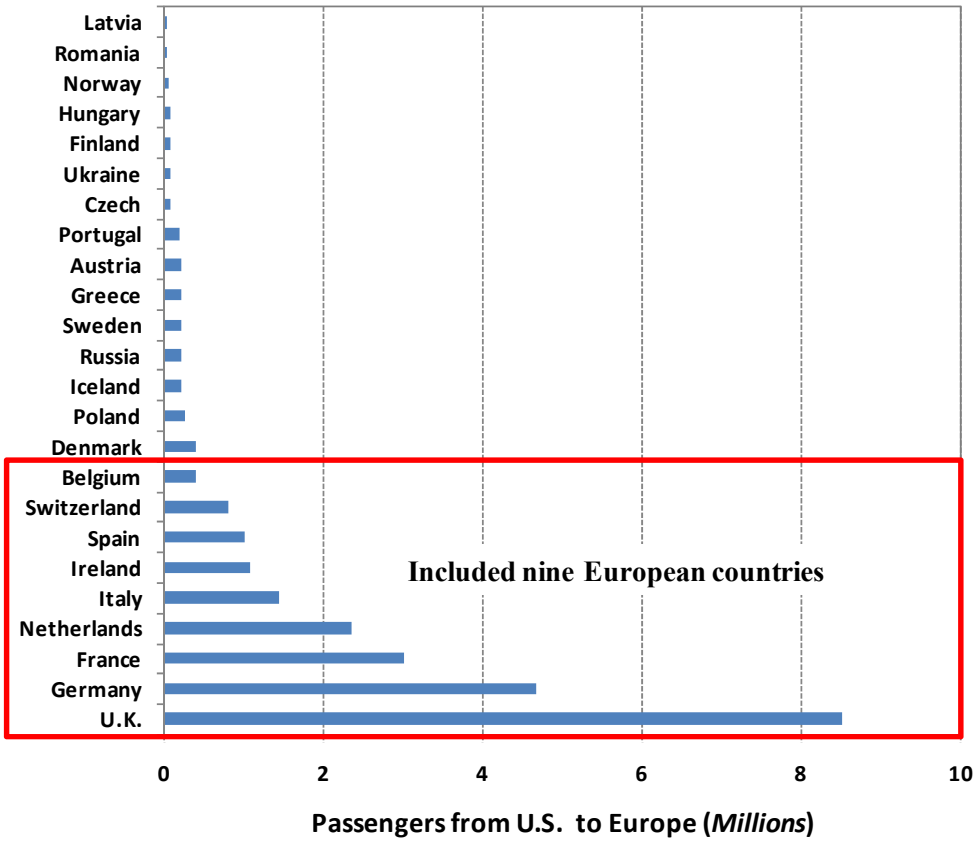

Figure 3-1: 2007 Passenger Traffic from United States to European Countries
(Source: 2007 T100 International Market Data)

Figure 3-2 shows 91% of the total passenger traffic from U.S. to Europe is included in the analysis domain when include the European countries with the top nine passenger traffic in 2007.

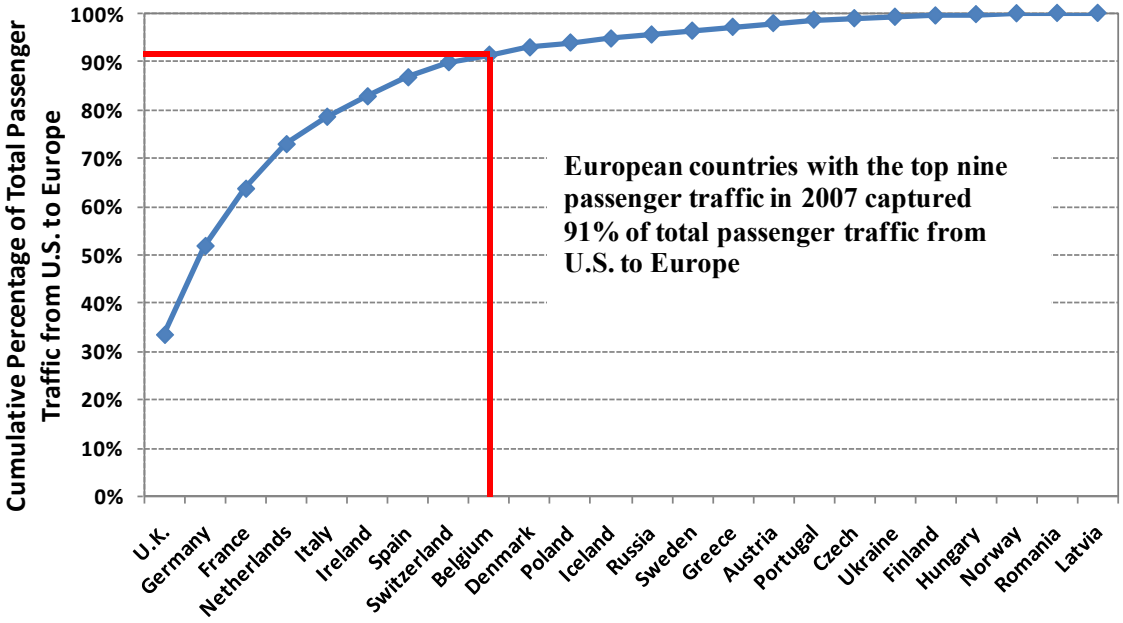

Figure 3-2: 2007 Cumulative Percentage of Total Passenger Traffic from U.S. to Europe
(Source: 2007 T100 International Market Data)

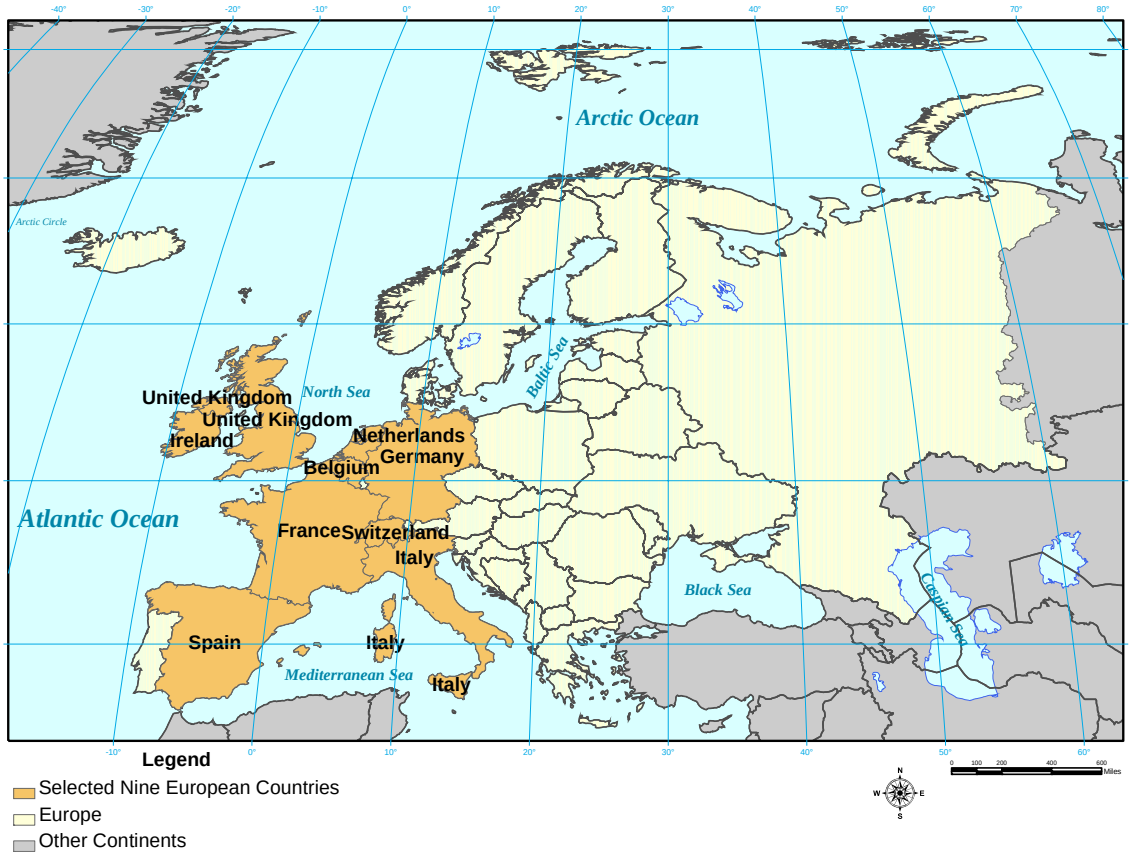

Figure 3-3: Map of Europe and Selected Nine European Countries in Analysis Domain

Assumption: It is assumed that the country-to-country passenger traffic between the United States and the selected nine European countries in the analysis domain is symmetric. Based on this assumption, only one direction of passenger traffic from the United States to the selected nine European countries is forecast. The passenger traffic for the other direction is assumed to be same.

The total passenger traffic, the country-to-country passenger traffic and the airport-to-airport passenger traffic between the United States and selected nine European countries are all symmetric. In 2007, total 23.3 million air passengers were transported from the United States to. Comparably, 23.4 million air passengers were transported from selected nine European countries to the United States. The symmetry for country-to-country passenger traffic and airport-to-airport passenger traffic between the United States and nine European countries is observed in Figure 3-4 and Figure 3-5, respectively. Figure 3-5 shows the transatlantic airport pairs with the top 35 passenger traffic. The passenger traffic data for all transatlantic airport pairs is included in Appendix A.

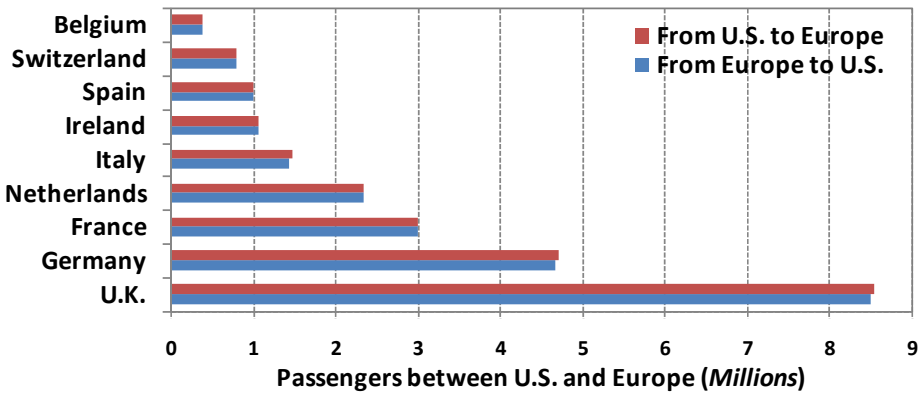

Figure 3-4: Country-to-Country Passenger Traffic from Europe to the United States vs. Traffic from the United States to Europe *(Source: 2007 T100 International Market Data)*

The last factor in selecting the domain of analysis for the forecast model is that the historical passenger traffic from U.S. to Denmark, the country with the tenth highest passenger traffic in 2007, was abnormal. The historical passenger traffic for Denmark is presented in Figure 3-6. The historical data did not lend itself to the credible forecast modeling using the semi-log linear model eventually judged as preferred for the nine countries with more passenger traffic. Once it was determined that historical passenger traffic data for Denmark did not allow Denmark passenger traffic to be credibly modeled, it was deemed inappropriate to include other European countries with passenger traffic less than Denmark in 2007 in the domain of analysis.

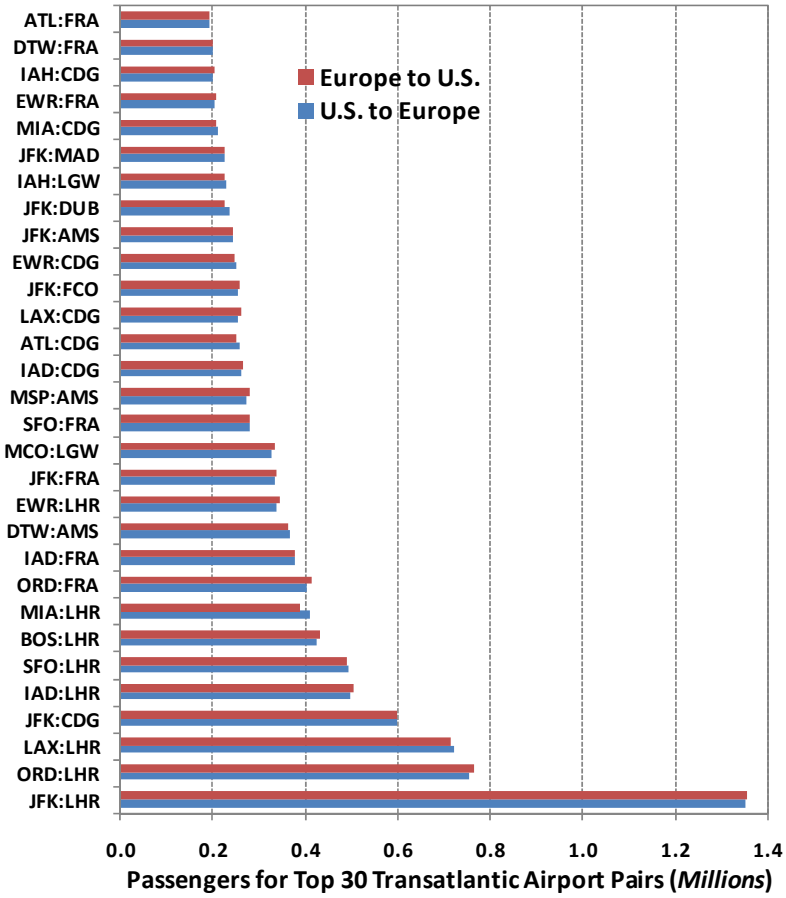

Figure 3-5: Airport-to-Airport Passenger Traffic from Europe to the United States vs. Traffic from the United States to Europe *(Source: 2007 T100 International Market Data)*

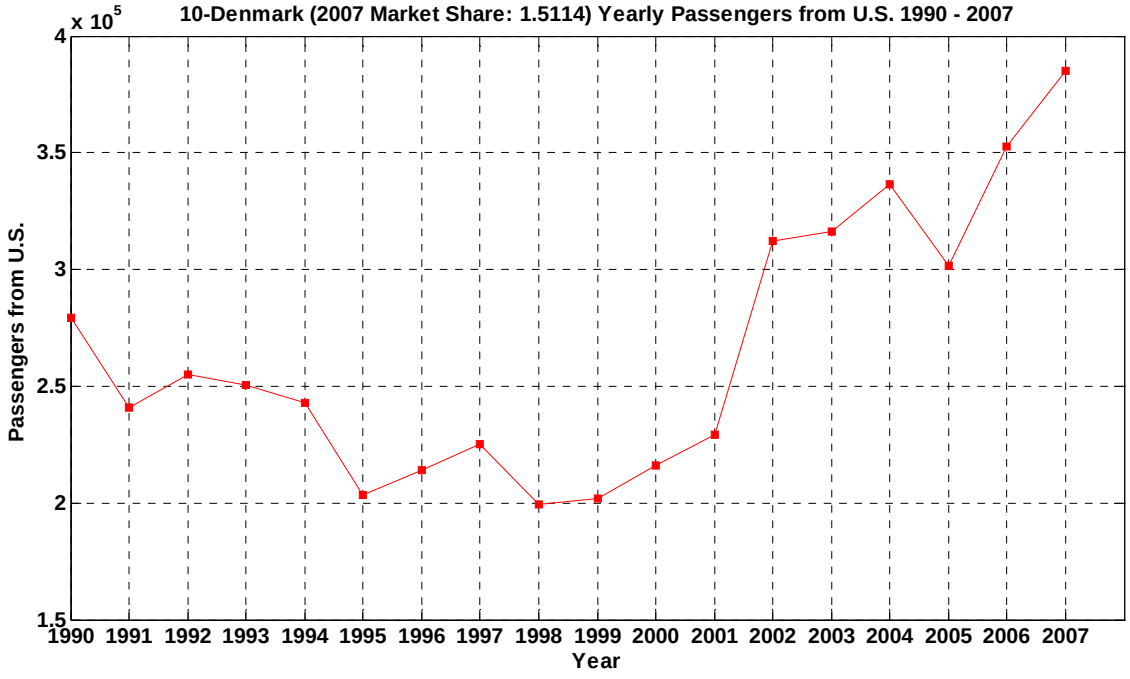

Figure 3-6: 1990 – 2007 Historical Passenger Traffic from the United States to Denmark
(Source: 2007 T100 International Market Data)

Airports Included in Domain of Analysis

Thirty-one United States gateway airports and 35 European gateway airports are included in the modeling domain of analysis. Gateway airports are defined as the airport serving direct flights (either non-stop flights involving no intermediate stops or flights including a stopover at an intermediate airport without a change in flight number) to another country. The airports mentioned later in this report mean gateway airports.

The 31 United States airports included in the domain of analysis were those with more than 10,000 passengers to Europe per year in 2007. Figure 3-7 shows the 2007 passenger traffic from each of selected 31 United States airports in analysis domain to all the selected 35 European airports. The other category includes passenger traffic from non-selected airports in the in the United States to all destinations in Europe.

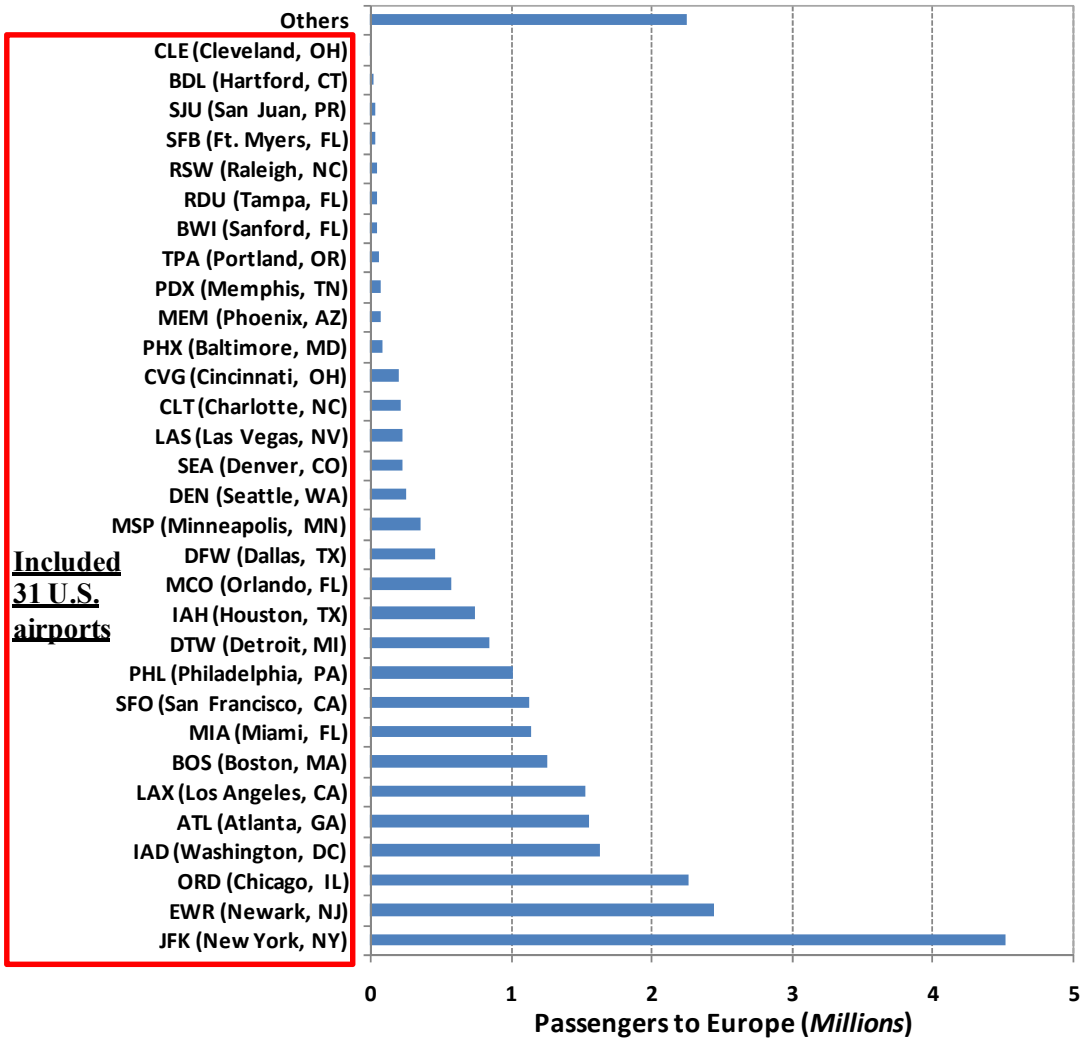

Figure 3-7: 2007 Passenger Traffic from Selected 31 United States Airports in Analysis Domain to All 35 European Airports
(Source: 2007 T100 International Market Data)

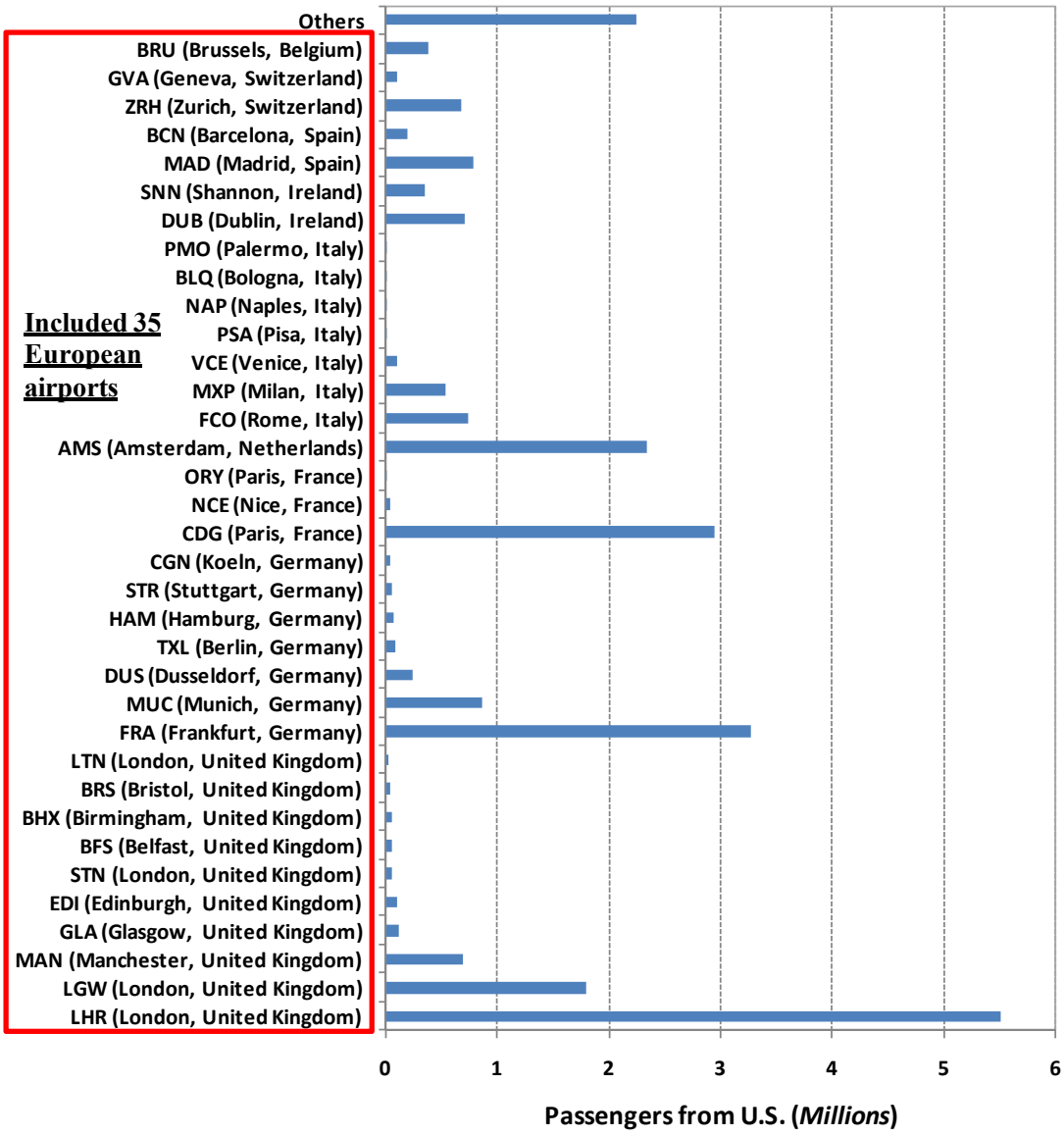

Figure 3-8: 2007 Passenger Traffic from All the Selected 31 United States Airports to each 35 Selected European Airports in the Analysis Domain
(Source: 2007 T100 International Market Data)

Thirty-five European airports from nine countries included in the geographical domain are included in the domain of analysis. In addition, any other airports within the nine selected geographical domain countries which had more than 10,000 passengers to the United States in 2007 were also included in the analysis. Figure 3-8 shows the 2007 passenger traffic from all the selected 31 United States airports in analysis domain to each of the selected 35 European airports. The other category includes the passenger traffic from the United States to European airports.

As shown in Figure 3-9 and Figure 3-10, a total of 66 airports in the United States and Europe accounts for 91% of all the passenger traffic between the United States and Europe in 2007.

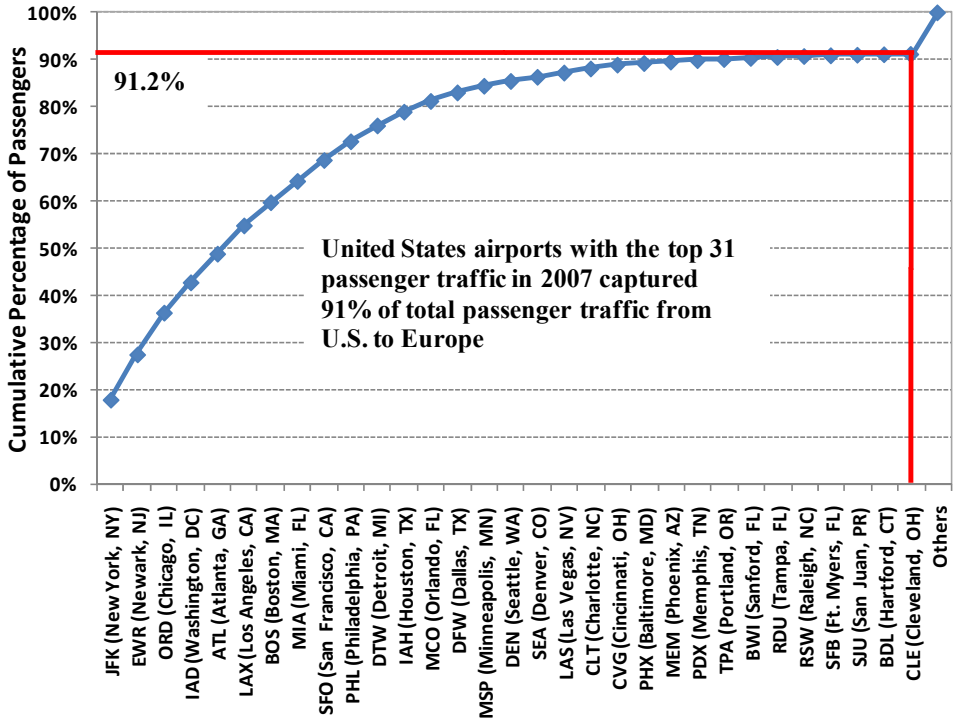

Figure 3-9: 2007 Selected 31 United States Airports' Cumulative Percentage of Total Passenger Traffic from the United States to Europe
(Source: 2007 T100 International Market Data)

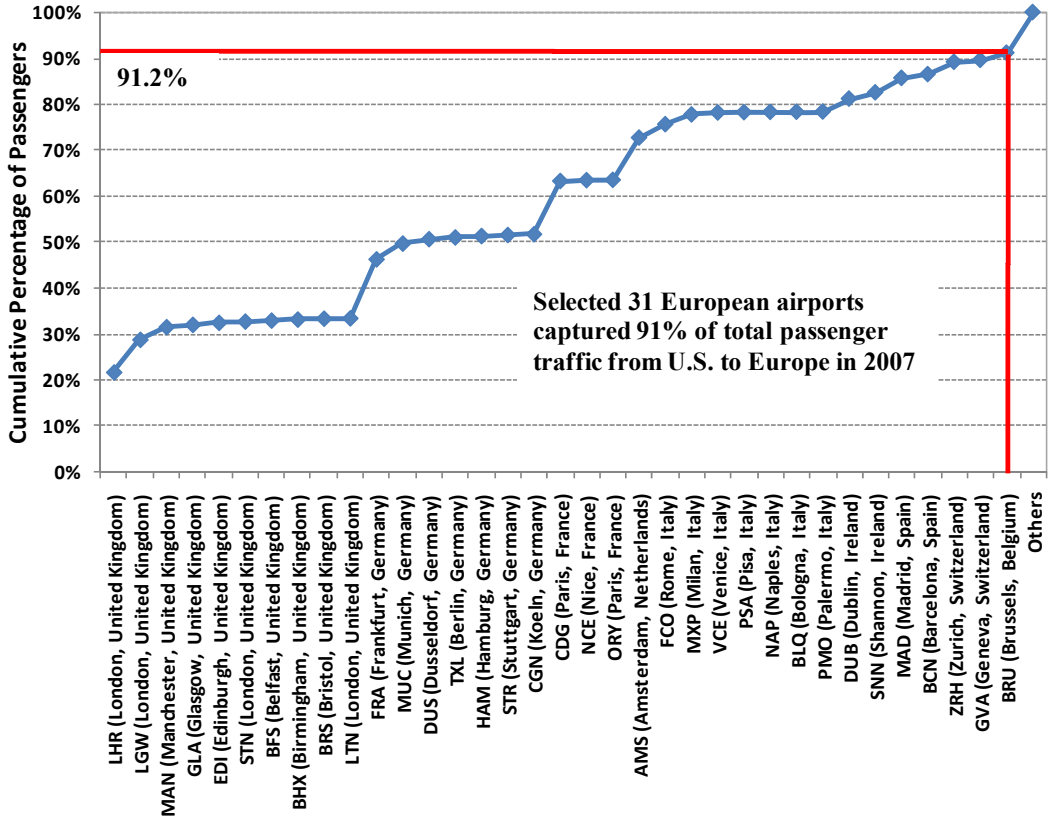

Figure 3-10: 2007 Selected 35 European Airports' Cumulative Percentage of Total Passenger Traffic from the United States to Europe

(Source: 2007 T100 International Market Data)

4 Modeling Demand among the United States and Selected European Countries

Recommended Models

It is recommended that commercial air passenger traffic between the United States and the nine European countries be modeled as a function of the product of the U.S. Gross Domestic Product (GDP) and the specific European country's GDP with a dummy variable to account for effect of events of September 11, 2001. Further, a semi-log relationship is recommended. The estimated model is presented in Equation 4-1. Equation 4-2, presents its linearized form.

$$P_j = PGDP_j^{\beta 1 j} \times \exp\left(\alpha_j + \beta_{2j} Dummy\_911 + \varepsilon_j\right) \quad \text{Equation 4-1}$$

$$\text{Ln}P_j = \alpha_j + \beta_{1j}\text{Ln}PGDP_j + \beta_{2j} Dummy\_911 + \varepsilon_j \quad \text{Equation 4-2}$$

where:

P_j = Total passengers on the commercial flights from U.S. to European country j

$PGDP_j$ = Product of European country j's GDP and U.S. GDP in year 2000 millions of dollars

$Dummy\_911$ = Dummy variable explaining 911 effect on traffic (0 for 1990 to 2000 and 1 for 2001-2007)

α_j = Estimated intercept

β_{1j}, β_{2j} = Estimated coefficients for European country j model

ε_j = Random error associated with model for European country j

The observed passenger demand from U.S. to each of nine European countries from the T100I Market data and the GDP (in millions of year 2000 dollars) from USDA International Macroeconomic Data Set for the period 1990 – 2007 were used for the calibration. The estimated coefficients and their statistical metrics are provided in Table 4-1. The R-squared values for nine estimated models range from 0.6 to 0.97. All coefficients are of expected sign. The estimated coefficients are positive for the products of the Gross Domestic Products (PGDP) and negative for Dummy_911. Except that the coefficients for Dummy_911 for France and Ireland are significant at a ten percent (10%) level on a one-tailed test. All the other estimated coefficients are significant at five percent (5%) level on a two-tailed test.

To further validate the passenger demand models, the historical passenger traffic from the U.S. to each of nine European countries was compared with the corresponding estimated passengers using the semi-log linear models. Figure 4-1 shows the comparison between the historical U.S. to United Kingdom passenger traffic to the forecast. From Figure 4-1, it is seen that the forecast follows the historical trend most of time though some discrepancy exist between the historical value and the forecast in year 1991 and 2001. The discrepancy in year 1991 was caused by the first Gulf War, while the discrepancy in

year 2001 was caused by the events of September 11, 2001. The comparisons for all the other eight countries' models are included in Appendix B.2.

Table 4-1: Statistical Metrics for Semi-Log Country-to-Country Passenger Demand Model

j	European Country	**Semi-log Model*: $Ln(P_j) = C_j + \beta_{1j}Ln(PGDP_j) + \beta_{2j}Dummy\_911 + \varepsilon$**			
		Estimated Coefficients			Adjusted R^2
		C_j *(t-value)*	β_{1j} *(t-value)*	β_{2j} *(t-value)*	
1	U.K.	-15.722 *(-4.95)*	1.046 *(9.86)*	-0.249 *(-3.81)*	0.90
2	Germany	-16.693 *(-8.06)*	1.042 *(15.24)*	-0.135 *(-4.06)*	0.96
3	France	-18.669 *(-5.78)*	1.108 *(10.26)*	-0.098 *(-1.67)***	0.94
4	Netherlands	-43.190 *(-11.19)*	2.002 *(14.83)*	-0.395 *(-5.02)*	0.96
5	Italy	-26.339 *(-5.68)*	1.349 *(8.64)*	-0.280 *(-3.72)*	0.87
6	Ireland	-15.538 *(-8.94)*	1.052 *(16.32)*	-0.118 *(-1.72)***	0.98
7	Spain	-13.060 *(-4.71)*	0.909 *(9.50)*	-0.273 *(-4.21)*	0.90
8	Switzerland	-22.655 *(-3.69)*	1.279 *(5.88)*	-0.442 *(-4.32)*	0.67
9	Belgium	-30.225 *(-3.23)*	1.535 *(4.62)*	-0.870 *(-4.79)*	0.57

*: 18 time-series observations during 1990 - 2007 are used for each country's regression analysis
**: Significant at 0.10 level on a one-tailed test

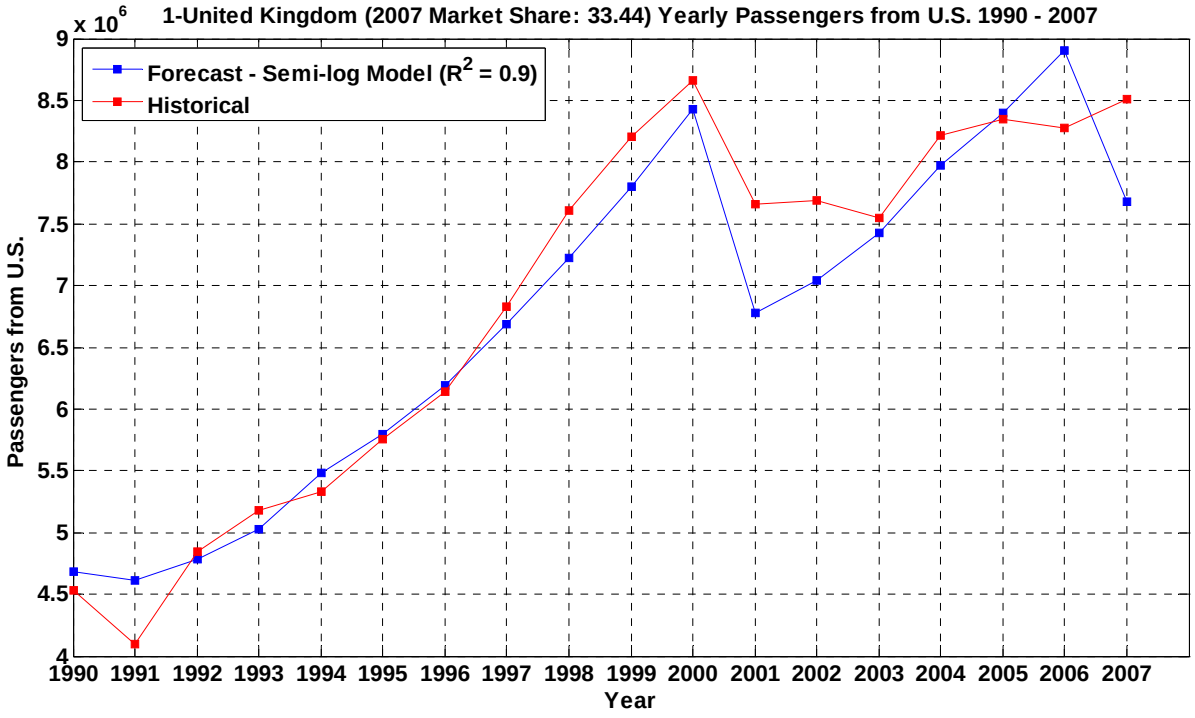

Figure 4-1: Comparison between Historical and Forecast Enplanements from U.S. to U.K. during 1990 – 2007 *(Historical Source: 1990 - 2007 T100 International Market Data)*

All the nine estimated models were applied using the forecast GDP (Appendix B.1: Table B.1-3) of U.S. and each of nine European countries from USDA International Macroeconomic Data Set for the period 2008 – 2020. The resulting forecast passenger traffic was then adjusted by the adjustment factors. The adjust factor for each of nine

models is the difference between the base year (2007) historical passenger traffic from the U.S. to the specific European country and the base year forecast. The adjustment factors for all the nine country-to-country passenger demand models are listed in Table 4-2. The resulting forecast passenger traffic from U.S. to United Kingdom is displayed in Figure 4-2. The forecast passenger traffic from U.S. to each of the other eight European countries is included in Appendix B.1.

Table 4-2: Adjustment Factors for Semi-Logarithmic Country-to-Country Passenger Demand Model

	European Country	Model Adjustment Factor
1	United Kingdom	-833,749
2	Germany	346,764
3	France	-287,222
4	Netherlands	-408,596
5	Italy	52,333
6	Ireland	18,981
7	Spain	108,144
8	Switzerland	-88,214
9	Belgium	-37,903

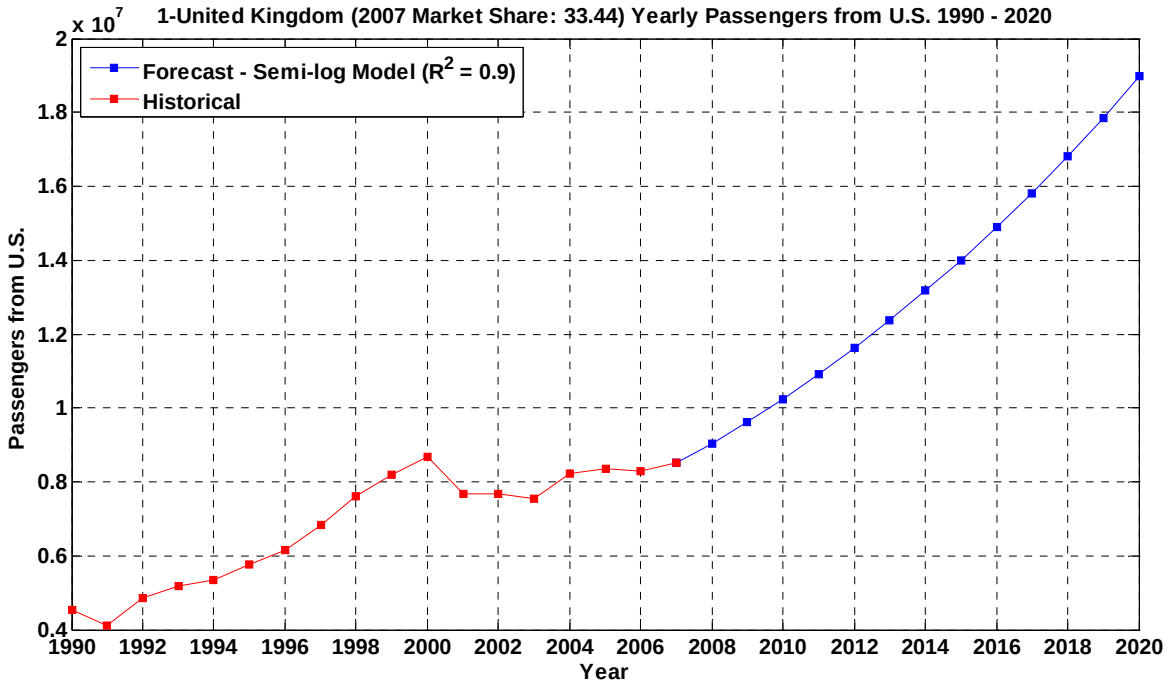

Figure 4-2: Historical (1990 – 2007) and Forecast (2008 – 2020) Enplanements from the United States to United Kingdom

(Historical Source: 1990 - 2007 T100 International Market Data)

The product of U.S. population and destination European country population, and airfare were also tested as variables which could affect passenger traffic. Surprisingly, airfare was not found to be a significant contributor during the period of analysis (1990-2007). The product of population was found to be significantly correlated with product of GDP during the period of analysis (1990-2007). A description of other models examined is contained next.

Other Models Investigated

To forecast how passenger behavior and airline behavior would change with open skies, the publically available data was examined along with the DB1B report for international travel which was made available by the FAA. The data examined for forecasting passenger traffic are:

- T100 transatlantic passenger survey (100% sample) from 1990 – 2007 (Appendix B.3: Table B.3-1)
- The GDP data for US and European countries from USDA for the years 1990 through 2007 (Appendix B.3: Table B.3-3)
- The population data for US and European countries from USDA for the years 1990 through 2007 (Appendix B.3: Table B.3-5)
- The DB1B airfare data (10% sample) for US to Europe travel from 1998 through 2007. This data allowed computation of US to European country average airfares for each of the 9 years (Appendix B.3: Table B.3-6)

These data allow examining the following as independent variables affecting passenger traffic between the US and Europe:

- GDP,
- Population,
- Average airfare, and
- The effect of September 11, 2001 attack was also examined.

Semi-logarithmic model was examined hypothesizing that passengers flying from the United States to Europe were a function of population, the gross domestic products of the United States and the destination European country, and the annual average airfare from the United States to the European country and the effect for September 11.

A Fixed Effect Model was examined wherein the airfare elasticity was assumed to be constant across all US-European country pairs while country pair specific intercept was allowed for each US-European country pairs. The difference between country pairs is represented by the country pair specific intercept. The model is presented in Equation 4-3 and Equation 4-4. Population was excluded in the model because the natural logarithms of product of GDP (PGDP) was found to be highly correlated (correlation coefficient is 0.7) with the natural logarithms of product of population (PPopulation).

$$P_j = PGDP_j^{\beta 1} \times Airfare_j^{\beta 2} \times \exp\left(\alpha_j + \beta_3 Dummy\_911 + \varepsilon\right) \qquad \text{Equation 4-3}$$

$$LnP_j = \alpha_j + \beta_1 \text{Ln}PGDP_j + \beta_2 \text{Ln}Airfare_j + \beta_3 Dummy\_911 + \varepsilon \qquad \text{Equation 4-4}$$

where:

P_j	= Total passengers on the commercial flights from U.S. to European country j
$PGDP_j$	= Product of European country j's GDP and U.S. GDP in year 2000 millions of dollars
$Airfare_j$	= Average airfare from the United States to European country j in year 2000 dollars
$Dummy\_911$	= Dummy variable explaining 911 effect on traffic (0 for 1990 to 2000 and 1 for 2001-2007)
α_j	= Estimated country-pair specific intercept
$\beta_1, \beta_2, \beta_3$	= Estimated coefficients
ε	= Random error

To justify the assumed logarithmic linear relationship between passenger traffic and the product of GDP (PGDP), the scatter plot of these two variables was made, as shown in Figure 4-3. The apparent linear trend is seen from this figure. This relationship will be justified further by the significant estimated coefficient for PGDP.

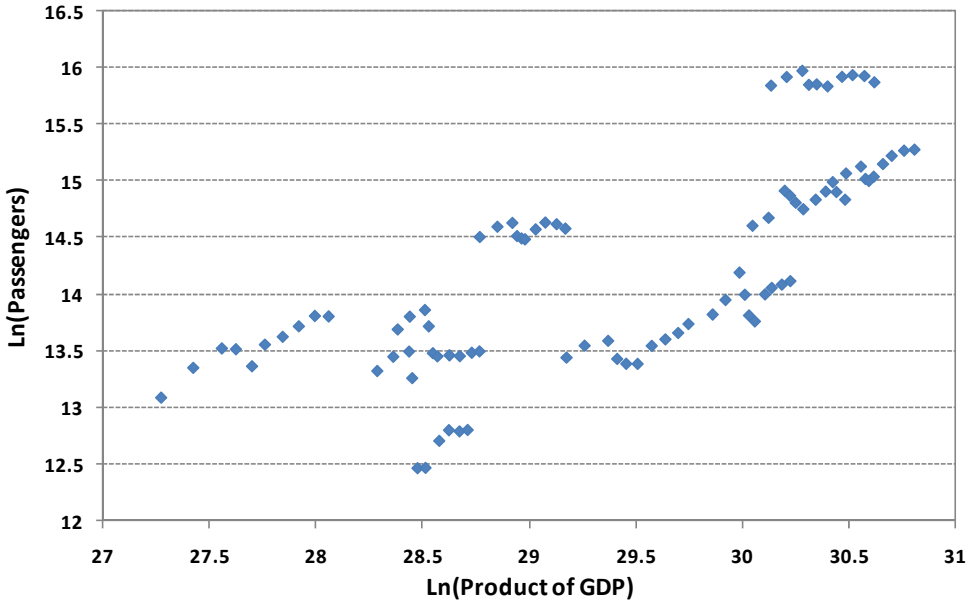

Figure 4-3: 1998 – 2007 Scatter Plot of Nature Logarithm of Passenger Traffic from the United States to Selected Nine European Countries and Nature Logarithm of Product of United States' GDP and European Country's GDP

(Passenger Traffic Source: 1998 - 2007 T100 International Market Data; GDP Source: 1998 – 2007 USDA International Macroeconomic Data Set)

To justify the assumed logarithmic linear relationship between passenger traffic and the real average airfare, the scatter plot of these two variables was made, as shown in Figure

4-4. Surprisingly, no apparent trend can be observed from this figure. Airfare was not found to be a significant factor in predicting passenger traffic.

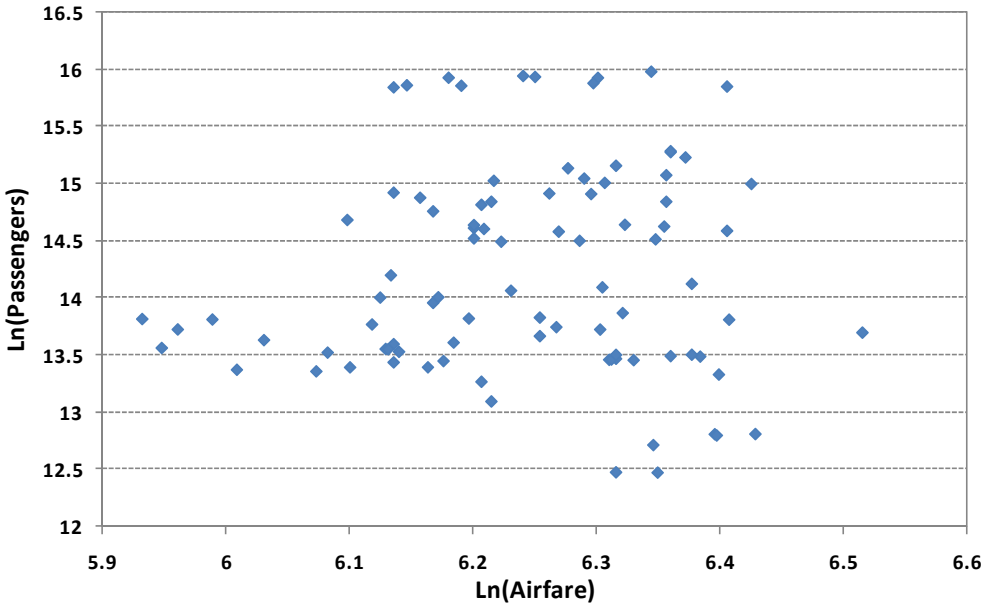

Figure 4-4: 1998 – 2007 Scatter Plot of Nature Logarithm of Passenger Traffic from the United States to Selected Nine European Countries and Nature Logarithm of Associated Average Airfare from United States to Nine European Countries *(Passenger Traffic Source: 1998 - 2007 T100 International Market Data; Airfare Source: 1998 – 2007 DB1B Data)*

The model was estimated by the Weighted Least Squares Regression approach using the time-series (1998 – 2007) cross-section (nine countries) data. Each country was weighted by its 2007 passenger traffic from the United States.

Table 4-3: Estimated Coefficients for the Fixed Effect Model Using Weighted Least Squares Regression

					95% Confidence Interval	
Parameter	B	Std. Error	t	Sig.	Lower Bound	Upper Bound
Intercept	-5.383	3.350	-1.607	.112	-12.055	1.289
Ln_PGDP	.671	.125	5.384	.000	.423	.919
Ln_Real_Airfare	-.084	.161	-.523	.602	-.405	.236
Dummy_911	-.155	.039	-4.008	.000	-.232	-.078
[Country_ID=1]	1.530	.249	6.153	.000	1.035	2.025
[Country_ID=2]	.605	.273	2.220	.029	.062	1.148
[Country_ID=3]	.542	.241	2.249	.027	.062	1.023
[Country_ID=4]	1.153	.099	11.683	.000	.956	1.349
[Country_ID=5]	-.140	.216	-.649	.518	-.571	.290
[Country_ID=6]	11.819	2.095	5.642	.000	7.647	15.991
[Country_ID=7]	-.215	.160	-1.341	.184	-.533	.104
[Country_ID=8]	.480	.088	5.441	.000	.305	.656
[Country_ID=9]	0[a]	.	.	.	.	.

a. This parameter is set to zero because it is redundant.

The estimated adjusted R-squared value for this model is 0.986. Equation 4-3 provides all the estimated coefficients and the statistical metrics. As can been seen, the coefficients for product of GDP and 911 attack dummy variable are statistically significant, while the coefficient for airfare (underscored) is not statistically significant. This result was unexpected. This is abnormal economic behavior as it is expected that commercial air travel demand would decrease with increasing average airfare and that average airfare would be a rather strong contributor to estimating passenger traffic.

The underlying reasons for this abnormal economic are perhaps in intuitively understood by viewing the average airfare over time (Figure 4-5) and the annual passenger traffic between US and Europe over time (Figure 4-6). From Figure 4-5 and Figure 4-6, it is qualitatively observed that passenger traffic increases over time at the same time that airfare increases. These figures show that air travel was not elastic with respect to airfare during the analysis period. Understanding this abnormal economic behavior is the subject for future research.

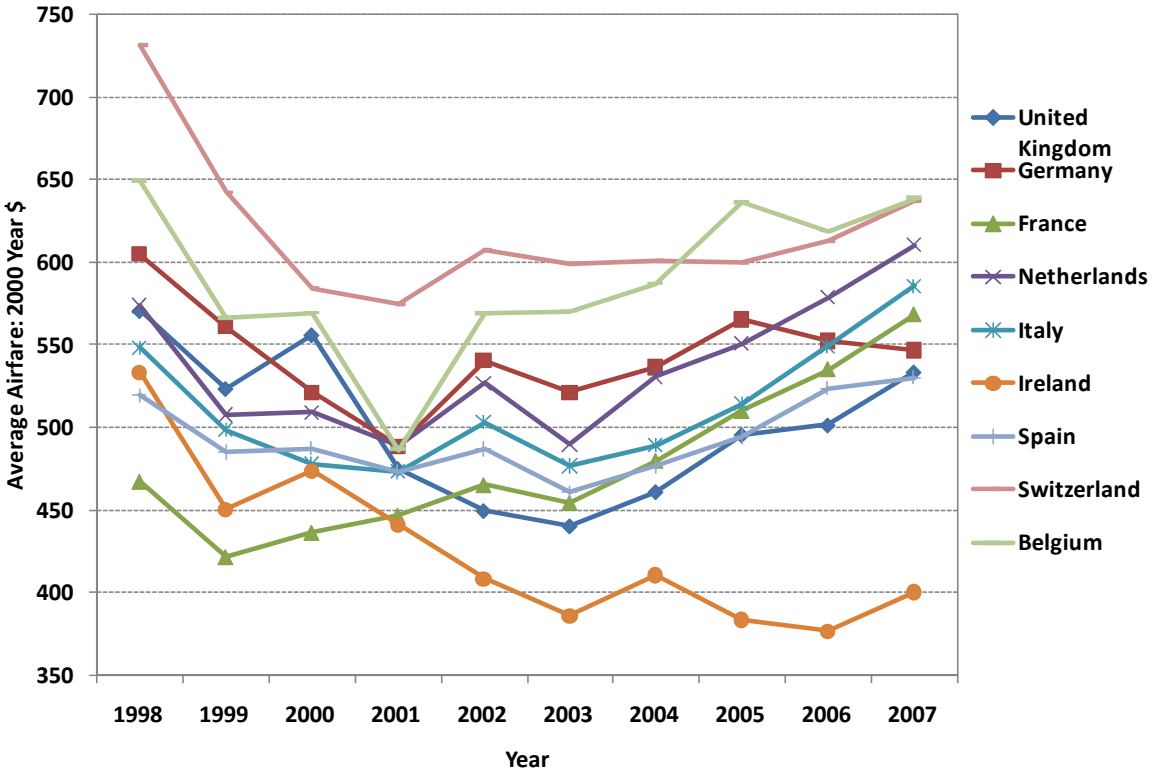

Figure 4-5: 1998 – 2007 Average Airfare from the United States to Selected Nine European Countries *(Data Source: 1998 - 2007 DB1B Data)*

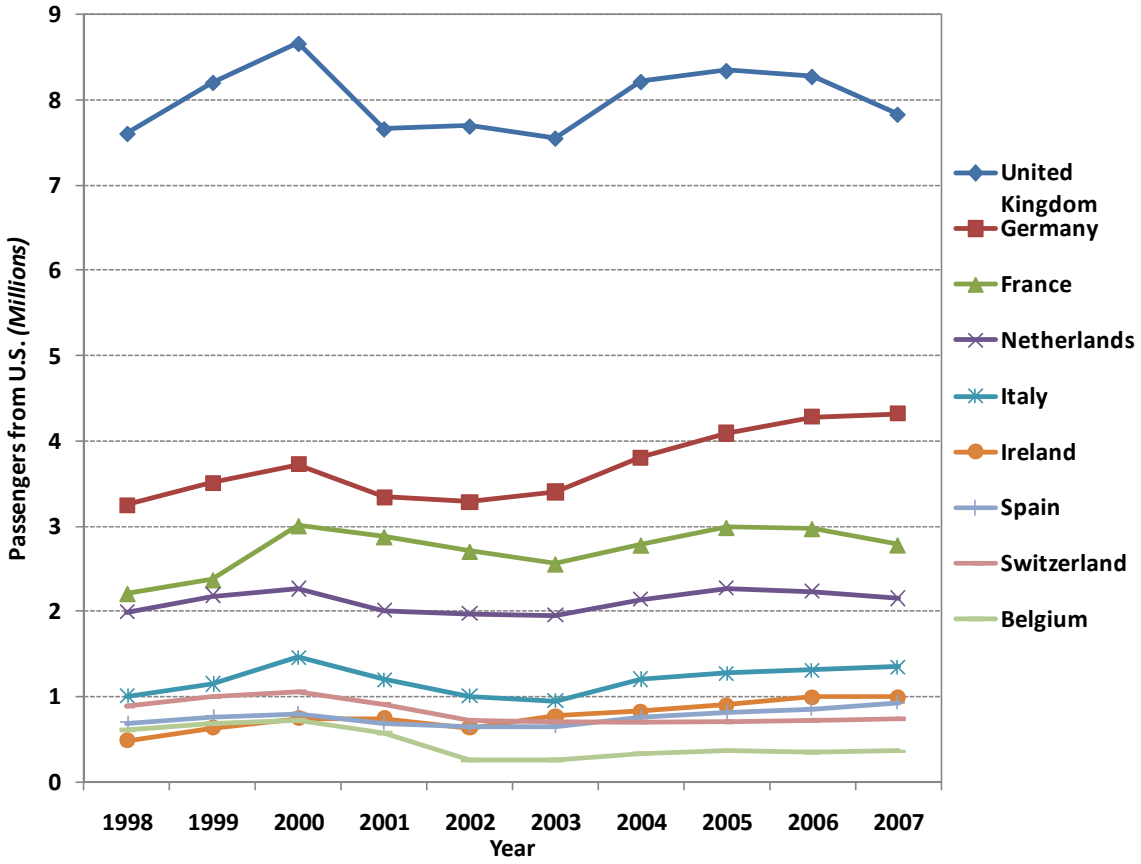

Figure 4-6: 1998 – 2007 Passenger Traffic from the United States to Selected Nine European Countries *(Data Source: 1998 - 2007 T100 International Market Data)*

With the finding that airfare is not a significant variable to forecast the passenger traffic, the semi-logarithmic formulation recommended in Section 4 was examined by using data for years (1990 – 2007) as time-series data.

5 Distribution of United States to European Country Passenger Demand to Airport Pairs

To distribute the estimated future passenger traffic from the United States to each European country and to specific airport pairs, a Fratar (growth factor) model is used. Growth of airport pair's passenger traffic is projected from the base year, 2007 (2007 T100I Market Data).

Figure 5-1 shows simple spreadsheet example of the Fratar method and the iterative process for one forecast year which will be described in parallel with the formulas for applying the growth factors and achieving convergence in the iterative process. Known at the beginning of the distribution process from the T100I Market data are the base year passengers (from US gateway airport o_i to European gateway airport d_j) (Figure 5-1, T_{ij}^b, shown in red type face in Iteration 0 , rows 3-6 and columns C-F), and the forecast country-to-country passengers estimated by the socio-economic model described in section 4 (P_l^t, (shown in red type face, row 9). To be determined are the annual passengers for each airport pair in the forecast year (shown in blue type face for iterations 1, 2 and 3).

The process of distributing estimated passenger traffic may be thought of as filling specific numbers in a spreadsheet where the spreadsheet row and column totals are known and the individual numbers summing to the row and column totals are not known. Iterative estimates of a forecast year passengers for each airport pair are made until the total estimated enplaning passengers (from the United States) (Figure 5-1, blue type face totals, column G), and deplaning passengers (in Europe) for each airport (Figure 5-1 blue type face, rows 17, 27, and 37 for iteration 1, 2, and 3, respectively) match the forecast totals (Figure 5-1 green type face totals, column H and rows 18, 28, and 38 for iteration 1, 2, and 3, respectively) within a desired tolerance.

Assumption: It is assumed that each United States airport in the domain of analysis will retain its base year (2007) market share of total passenger traffic from the United States to the nine European countries in the domain of analysis during the forecast period (through 2020).

Total passengers from each United States airport in the forecast year are established using Equation 5-1. These (Figure 5-1, column H) serve as one set target values for the iterative estimates.

$$O_i^t = \left\{\sum_{l=1}^{9} P_l^t\right\}\left\{\frac{\sum_{j=1}^{35} T_{ij}^b}{\sum_{i=1}^{31}\sum_{j=1}^{35} T_{ij}^b}\right\} \qquad \text{Equation 5-1}$$

Where:

O_i^t is United States airport *i's* estimated passengers to all (35) European airports in forecast year *t*

P_l^t is the estimated passengers from the United States to European country *l* in forecast year *t*
T_{ij}^b is the passengers from United States airport *i* to European airport *j* in the base year *b*, 2007 (2007 T100I Market Data)

Assumption: It is assumed that each European airport in the domain of analysis will retain its base year (2007) market share of total passenger traffic from the United States to its nation during the forecast period.

The total deplaning passengers to each European airport from all United States airports are established per Equation 5-2. These (Figure 5-1, row 8 for iteration 0, row 18 for iteration 1, etc.) serve as the other set of target values for the iterative estimates.

$$D_{jl}^t = P_l^t \left\{ \frac{\sum_{i=1}^{31} T_{ij}^b}{\sum_{j \in l} \sum_{i}^{31} T_{ij}^b} \right\} \qquad \text{Equation 5-2}$$

Where:

D_{jl}^t is European airport *j*'s passengers for country *l* from all (31) United States airports in year *t*
P_l^t is the estimated passengers from the United States to European country *l* in forecast year *t*
T_{ij}^b is the passengers from United States airport *i* to European airport *j* in the base year *b*, 2007 (2007 T100I Market Data)

The iterative process is used to modify the transatlantic airport pair passenger demand in the base year so that the total enplaning passengers at United States gateway airports and deplaning passengers at European airports match the forecasts within a desired tolerance.

Iterations are accomplished as follows: Adjustment factors, (Figure 5-1, in black type face, column H and rows 10, 20, 30, and 40 for iteration 0, 1, 2, 3) are calculated from the prior iteration data, and used to obtain the current iterative estimates of the passenger traffic, $T_{ij}^{t,k}$, between any Unite States airport and European airport pair using Equation 5-3. The adjustment factors for a specific iteration are the ratios of the forecast total passengers to the total passengers for an airport estimated by the previously completed iteration.

$$T_{ij}^{t,k} = T_{ij}^{t,(k-1)} R_i^{t,(k-1)} R_j^{t,(k-1)} \left(\frac{1}{2}\right) \left\{ \frac{\sum_{\mathrm{j}=1}^{35} T_{ij}^{t,(k-1)}}{\sum_{j=1}^{35} R_j^{t,(k-1)} T_{ij}^{\mathrm{t},(k-1)}} + \frac{\sum_{i=1}^{31} T_{ij}^{t,(k-1)}}{\sum_{i=1}^{31} R_i^{t,(k-1)} T_{ij}^{t,(k-1)}} \right\}$$

Equation 5-3

Where:

$T_{ij}^{t,k}$ is the estimated number of air passengers in the current (k^{th}) iteration from United States airport i to European airport j, for the year t

$T_{ij}^{t,(k-1)}$ is the estimated number of air passengers from United States airport i to European airport j, for the previous $(k\text{-}1)^{th}$ iteration. For the first iteration, this term is set at the base year (b) passengers, $T_{ij}^{t,0} = T_{ij}^{b}$

$R_i^{t,(k-1)}$ is adjustment factor for U.S. airport i at $(k-1)^{th}$ iteration for year t

$$R_i^{t,(k-1)} = \frac{O_i^t}{\sum_{j=1}^{35} T_{ij}^{t,(k-1)}} \;\; ; \;\; R_i^{t,0} = \frac{O_i^t}{\sum_{j=1}^{35} T_{ij}^{b}}$$

$R_j^{t,(k-1)}$ is adjustment factor for European airport j at $(k-1)^{th}$ iteration for year t

$$R_j^{t,(k-1)} = \frac{D_j^t}{\sum_{i=1}^{35} T_{ij}^{t,(k-1)}} \; ; \; R_j^{t,0} = \frac{D_j^t}{\sum_{i=1}^{35} T_{ij}^{b}}$$

Equation 5-3 may be expressed as follows. Passengers for k^{th} iteration in forecast year t between United States airport i and European airport j are estimated to be the product of four terms:

- the passengers estimated between United States airport i and European airport j for the previous ($(k\text{-}1)^{th}$) iteration
- the adjustment factor for the total passengers from United States airport i to all 35 European airports
- the adjustment factor for the total passengers from all United States airports to European airport j and
- the average of two terms:
    - the inverse of the average of European airports' adjustment factors (Figure 5-1, rows 10, 20, and 30) weighted by its estimated deplaning passenger traffic (Figure 5-1, rows 17, 27, and 37) from United States airport i
    - the inverse of the average of United States airports' adjustment factors (Figure 5-1, column H) weighted by its estimated enplaning passenger traffic (Figure 5-1, column G) to European airport j

	A	B	C	D	E	F	G	H	I
1									
2	**Iteration 0**	**$o_i \backslash d_j$**	**d_1**	**d_2**	**d_3**	**d_4**	**$\sum_j T_{ij}^{b,0}$**	**O_i^t**	**$R_i^{t,0}$**
3		**o_1**	**120**	**90**	**100**	**80**	**390**	**455**	1.1666667
4		**o_2**	**100**	**85**	**90**	**70**	**345**	**403**	1.1681159
5		**o_3**	**90**	**100**	**85**	**80**	**355**	**414**	1.1661972
6		**o_4**	**100**	**85**	**90**	**75**	**350**	**408**	1.1657143
7		**$\sum_i T_{ij}^{b,0}$**	**410**	**360**	**365**	**305**	**1,440**		
8		**D_j^t**	**490**	**430**	**414**	**346**			
9		**P_l^t**	**920**		**760**			**1,680**	
10		**$R_j^{t,0}$**	1.1948052	1.1948052	1.1343284	1.1343284			
11									
12	**Iteration 1**	**$o_i \backslash d_j$**	**D_1**	**D_2**	**D_3**	**D_4**	**$\sum_j T_{ij}^{t,1}$**	**O_i^t**	**$R_i^{t,1}$**
13		**o_1**	**143.36162**	**107.52265**	**113.42120**	**90.73844**	**455**	**455**	0.9999035
14		**o_2**	**119.62333**	**101.68119**	**102.21179**	**79.49935**	**403**	**403**	0.9999611
15		**o_3**	**107.48700**	**119.43159**	**96.37734**	**90.70956**	**414**	**414**	0.9999867
16		**o_4**	**119.40109**	**101.49229**	**102.02190**	**85.01963**	**408**	**408**	1.0001595
17		**$\sum_i T_{ij}^{t,1}$**	**490**	**430**	**414**	**346**	**1,680**		
18		**D_j^t**	**490**	**430**	**414**	**346**		**1,680**	
19		**P_l^t**	**920**		**760**			**1,680**	
20		**$R_j^{t,1}$**	0.9999941	1.0000050	0.9999942	1.0000091			
21									
22	**Iteration 2**	**$o_i \backslash d_j$**	**D_1**	**D_2**	**D_3**	**D_4**	**$\sum_j T_{ij}^{b,2}$**	**O_i^t**	**$R_i^{t,2}$**
23		**o_1**	**143.34708**	**107.51279**	**113.40961**	**90.73046**	**455**	**455**	1.0000001
24		**o_2**	**119.61809**	**101.67772**	**102.20723**	**79.49694**	**403**	**403**	1.0000001
25		**o_3**	**107.48500**	**119.43053**	**96.37547**	**90.70909**	**414**	**414**	0.9999998
26		**o_4**	**119.41954**	**101.50895**	**102.03758**	**85.03391**	**408**	**408**	1.0000000
27		**$\sum_i T_{ij}^{t,2}$**	**490**	**430**	**414**	**346**	**1,680**		
28		**D_j^t**	**490**	**430**	**414**	**346**		**1,680**	
29		**P_l^t**	**920**		**760**			**1,680**	
30		**$R_j^{t,2}$**	1.0000009	0.9999997	0.9999999	0.9999993			
31									
32	**Iteration 3**	**$o_i \backslash d_j$**	**D_1**	**D_2**	**D_3**	**D_4**	**$\sum_j T_{ij}^{b,3}$**	**O_i^t**	**$R_i^{t,3}$**
33		**o_1**	**143.34722**	**107.51277**	**113.40961**	**90.73040**	**455**	**455**	1.0000000
34		**o_2**	**119.61820**	**101.67770**	**102.20722**	**79.49688**	**403**	**403**	1.0000000
35		**o_3**	**107.48507**	**119.43047**	**96.37544**	**90.70901**	**414**	**414**	1.0000000
36		**o_4**	**119.41965**	**101.50893**	**102.03757**	**85.03385**	**408**	**408**	1.0000000
37		**$\sum_i T_{ij}^{t,3}$**	**490**	**430**	**414**	**346**	**1,680**		
38		**D_j^t**	**490**	**430**	**414**	**346**		**1,680**	
39		**P_l^t**	**920**		**760**			**1,680**	
40		**$R_j^{t,3}$**	1.0000000	1.0000000	1.0000000	1.0000000			

Figure 5-1: Spreadsheet illustration of Fratar Method and Iterative Process for Distributing United States to Europe Passengers to Airport Pairs in Future Forecast Years

Iterations are performed until the totals of the iterative based enplaning passengers at United States airports (Figure 5-1 column G,) are within one one-hundredth of one percent (0.01%) of the forecasts for that year (Figure 5-1, column H) and the totals of the deplaning passengers at European airports (Figure 5-1, rows 17, 27, and 37) are within one one-hundredth of one percent (0.01%) for the forecasts (Figure 5-1 rows 18, 28, and 38) . This is accomplished by iterating until the adjustment factors converge to between 0.9999 and 1.0001. This convergence was usually reached within nine iterations for the 31 by 35 matrix (31 United States airports and 35 European airports in the domain of analysis). A stop criterion for these iterations, set at 1000 iterations, was never approached. For the spreadsheet example in Figure 5-1 a tighter adjustment factor convergence criteria of 1.0000000 was used in order to illustrate multiple iterations. In the simple spreadsheet Fratar model example, convergence was essentially reached in the first iteration.

The results obtained for 182 airport pairs with 12 month service in 2007 or at least 44,000 forecast passengers in 2020 follow in Appendix C.1.

6 New Nonstop Flights Suggested by Forecast

Sixty eight new nonstop flights between United States airports and the European airports are forecast by the model in 2020 using the airport pair passenger demand forecast. These new nonstop flights are forecast for two types of airport pairs: (1) pairs which in 2007 could only be travelled with connecting flights (2) and pairs which in 2007 could be travelled in one flight which includes intermediate stops. 30 new nonstops flights are forecast from 2010 on; 46 in 2015, and 68 in 2020. Table 6-1 shows the new nonstop transatlantic airport pairs forecast in our analysis.

Table 6-1: New Nonstop Transatlantic Airport Pairs and Their Forecast Passenger Demand in Year 2010, 2015 and 2020

	US Airport	US City, State	European Airport	European City, County	Passengers	Year	Remark*
1	LAS	Las Vegas, NV	LHR	London, United Kingdom	128,913	2007	0
2	LAX	Los Angeles, CA	FCO	Rome, Italy	102,856	2007	1
3	MCO	Orlando, FL	LHR	London, United Kingdom	92,857	2007	0
4	DFW	Dallas/Ft.Worth, TX	LHR	London, United Kingdom	77,596	2007	1
5	SFO	San Francisco, CA	FCO	Rome, Italy	76,624	2007	1
6	LAX	Los Angeles, CA	MAD	Madrid, Spain	70,011	2007	1
7	SEA	Seattle, WA	FRA	Frankfurt, Germany	62,464	2007	1
8	SFO	San Francisco, CA	MAD	Madrid, Spain	59,574	2007	0
9	MCO	Orlando, FL	CDG	Paris, France	56,635	2007	1
10	LAS	Las Vegas, NV	AMS	Amsterdam, Netherlands	56,017	2007	1
11	PHX	Phoenix, AZ	FRA	Frankfurt, Germany	53,784	2007	1
12	MSP	Minneapolis/St. Paul, MN	FRA	Frankfurt, Germany	51,702	2007	0
13	LAS	Las Vegas, NV	CDG	Paris, France	48,573	2007	1
14	DEN	Denver, CO	CDG	Paris, France	45,900	2007	0
15	DEN	Denver, CO	AMS	Amsterdam, Netherlands	65,480	2010	1
16	DTW	Detroit, MI	FCO	Rome, Italy	53,252	2010	0
17	SFO	San Francisco, CA	MAN	Manchester, United Kingdom	50,434	2010	1
18	MSP	Minneapolis/St. Paul, MN	CDG	Paris, France	49,748	2010	0
19	TPA	Tampa, FL	LHR	London, United Kingdom	48,987	2010	0
20	LAX	Los Angeles, CA	BCN	Barcelona, Spain	48,402	2010	1
21	LAX	Los Angeles, CA	MAN	Manchester, United Kingdom	48,075	2010	1
22	LAX	Los Angeles, CA	MXP	Milan, Italy	47,518	2010	1
23	TPA	Tampa, FL	CDG	Paris, France	47,317	2010	0
24	PDX	Portland, OR	LHR	London, United Kingdom	46,870	2010	1
25	MIA	Miami, FL	FCO	Rome, Italy	46,465	2010	1
26	RDU	Raleigh/Durham, NC	LHR	London, United Kingdom	45,998	2010	0
27	PHX	Phoenix, AZ	CDG	Paris, France	45,362	2010	0
28	TPA	Tampa, FL	FRA	Frankfurt, Germany	45,083	2010	1
29	DFW	Dallas/Ft.Worth, TX	AMS	Amsterdam, Netherlands	45,028	2010	0
30	PHX	Phoenix, AZ	AMS	Amsterdam, Netherlands	44,108	2010	0

Table 6-1: New Nonstop Transatlantic Airport Pairs and Their Forecast Passenger Demand in Year 2010, 2015 and 2020 (Continued)

	US Airport	US City, State	European Airport	European City, County	Passengers	Year	Remark*
31	TPA	Tampa, FL	AMS	Amsterdam, Netherlands	70,808	2015	1
32	LAX	Los Angeles, CA	BRU	Brussels, Belgium	61,126	2015	1
33	DFW	Dallas/Ft.Worth, TX	FCO	Rome, Italy	58,109	2015	0
34	LAX	Los Angeles, CA	LGW	London, United Kingdom	57,417	2015	1
35	SFO	San Francisco, CA	BRU	Brussels, Belgium	55,999	2015	0
36	PDX	Portland, OR	AMS	Amsterdam, Netherlands	54,618	2015	0
37	SFO	San Francisco, CA	MXP	Milan, Italy	53,259	2015	0
38	ORD	Chicago, IL	BCN	Barcelona, Spain	52,021	2015	1
39	MSP	Minneapolis/St. Paul, MN	FCO	Rome, Italy	51,958	2015	0
40	RDU	Raleigh/Durham, NC	CDG	Paris, France	51,242	2015	0
41	MCO	Orlando, FL	MAD	Madrid, Spain	49,487	2015	1
42	ATL	Atlanta, GA	LHR	London, United Kingdom	48,514	2015	0
43	CLE	Cleveland, OH	AMS	Amsterdam, Netherlands	47,322	2015	0
44	PDX	Portland, OR	CDG	Paris, France	44,974	2015	0
45	DFW	Dallas/Ft.Worth, TX	MAD	Madrid, Spain	44,254	2015	0
46	LAS	Las Vegas, NV	DUB	Dublin, Ireland	44,167	2015	0
47	MSP	Minneapolis/St. Paul, MN	LHR	London, United Kingdom	57,527	2020	0
48	SEA	Seattle, WA	FCO	Rome, Italy	56,589	2020	0
49	RDU	Raleigh/Durham, NC	AMS	Amsterdam, Netherlands	55,804	2020	0
50	MIA	Miami, FL	LGW	London, United Kingdom	55,580	2020	0
51	DTW	Detroit, MI	MUC	Munich, Germany	54,949	2020	1
52	MIA	Miami, FL	MAN	Manchester, United Kingdom	54,946	2020	0
53	SFO	San Francisco, CA	BCN	Barcelona, Spain	53,349	2020	0
54	LAX	Los Angeles, CA	VCE	Venice, Italy	52,446	2020	1
55	MIA	Miami, FL	BRU	Brussels, Belgium	52,430	2020	0
56	DEN	Denver, CO	FCO	Rome, Italy	52,393	2020	0
57	RDU	Raleigh/Durham, NC	FRA	Frankfurt, Germany	52,236	2020	0
58	CLT	Charlotte, NC	CDG	Paris, France	52,067	2020	0
59	IAH	Houston, TX	FCO	Rome, Italy	51,198	2020	1
60	MIA	Miami, FL	BCN	Barcelona, Spain	51,032	2020	1
61	SFO	San Francisco, CA	LGW	London, United Kingdom	50,988	2020	1
62	LAX	Los Angeles, CA	TXL	Berlin, Germany	50,968	2020	1
63	CLE	Cleveland, OH	FRA	Frankfurt, Germany	50,078	2020	0
64	ORD	Chicago, IL	LGW	London, United Kingdom	49,606	2020	0
65	ORD	Chicago, IL	VCE	Venice, Italy	48,600	2020	0
66	LAS	Las Vegas, NV	MUC	Munich, Germany	48,558	2020	0
67	ORD	Chicago, IL	TXL	Berlin, Germany	45,100	2020	0
68	CLE	Cleveland, OH	CDG	Paris, France	45,094	2020	0

*: 1 - Airport pairs only provided with service with intermediate stop
0 - Airport pairs only provided with connecting service

Criteria for suggesting new nonstop flights

Analysis of 2007 airline behavior indicates that airlines are likely to establish 12 month service for transatlantic airport pairs when the passenger demand per year is in the neighborhood of 44,000. This translates to five or more flights per week assuming a load factor of 0.75 and 200-240 seats per flight.

To understand when new nonstop flights between gateway airport pairs are likely to be instituted by the airlines, the 2007 T100 International Segment data was examined to infer the airlines' threshold values of passenger demand and flight frequency to offer

service. It is judged that the annual passenger demand for a pair of gateway airports served by only one air carrier is a credible indicator of the passenger demand threshold for airlines to establish nonstop service between an airport pair.

Of the 1085 possible transatlantic airport pairs studied (31 United States airports and the 35 European airports in the domain of analysis), 214 pairs have nonstop flights and 59 pairs have flights with intermediate stops. Travel among the remaining 812 airport pairs is accomplished by crossing the Atlantic on one of the 214 nonstop flights or one of the 59 flights with an intermediate stop(s) and connecting via other flights.

Figure 6-1 shows the number of airlines providing nonstop service to each of the 214 transatlantic airport pairs in the domain of analysis in 2007. 135 of the 214 airport pairs are served by only one airline, while the remainders are served by two or more carriers.

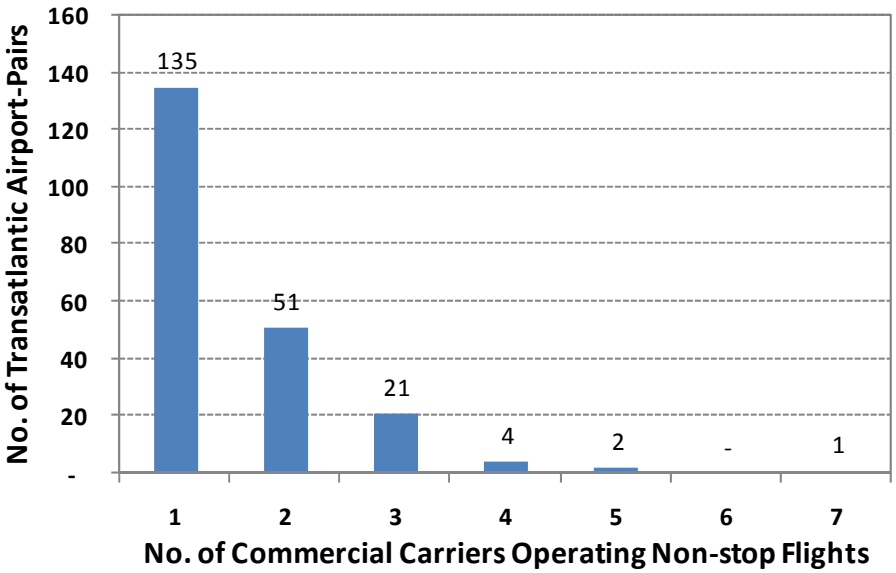

Figure 6-1: Distribution of the number of airlines providing nonstop service
(*Source: 2007 T100I Segment Data*)

Year-round service is provided for 89 of the 135 pairs where nonstop service was provided in 2007 by a single airline while 46 of airport pairs are served less than 12 months per year. Figure 6-2 shows the distribution of the number of months the nonstop service was provided for 135 pairs by a single airline.

Forecasts for seasonal markets (with less than 12 month service) are not undertaken in this analysis. The passenger demand models discussed in Section 4 are annual passenger demand models and are not deemed effective at seasonal effects in monthly passenger demand.

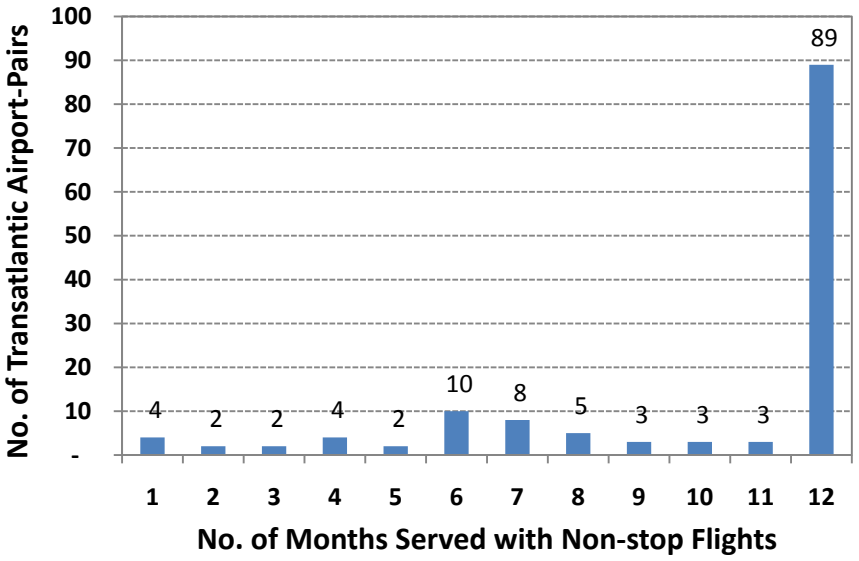

Figure 6-2: Distribution of the number of months for single airline to provide nonstop service (*Source: 2007 T100I Segment Data*)

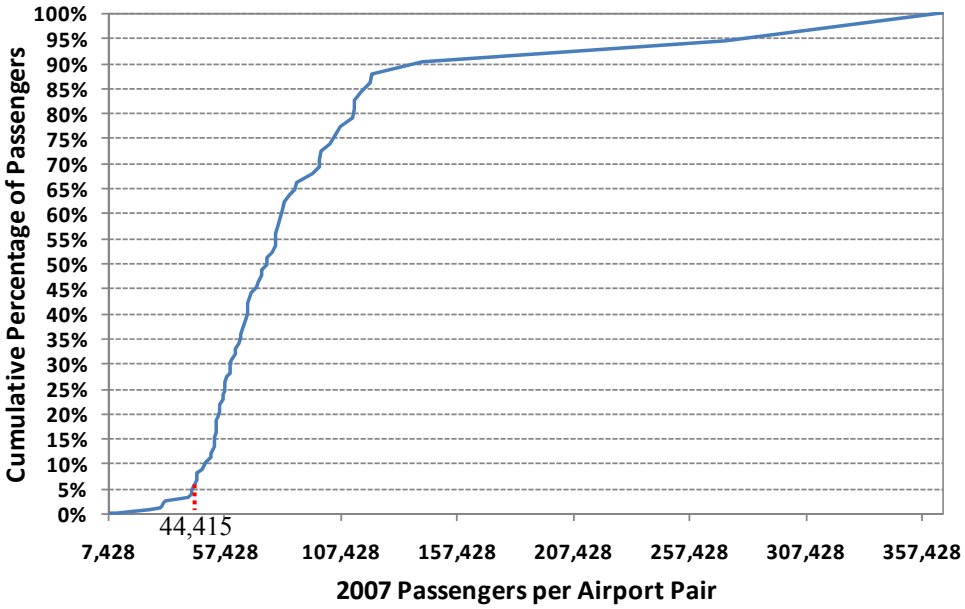

Figure 6-3: Passengers per airport pair per year for the 89 airport pairs provided with nonstop flight by a single airline (*Source: 2007 T100I Segment Data*)

Figure 6-3 shows the cumulative distribution of the 2007 T100I Segment annual passenger demand for 89 airport pairs in the domain served by one airline for 12 months. It is seen that 95% of the passengers traveling between these 89 pairs served by one carrier have annual enplanements in the neighborhood of 44,000 or more. It should be noted that 10 pairs with less than 44,000 passengers per year have nonstop service. (One airport pair that has a very low number of annual passenger enplanement is Newark, NJ,

to Zurich, Switzerland, where business class service is an exclusive air service offering). The 95% cutoff point encompasses 79 of the pairs served by one carrier.

Figure 6-4 shows the cumulative distribution of 2007 annual flights for the 89 airport pairs in the domain served by one airline for 12 months. It can be seen that about 95 percent of the 89 airport pairs are served with 260 flights per year, which is five flights per week.

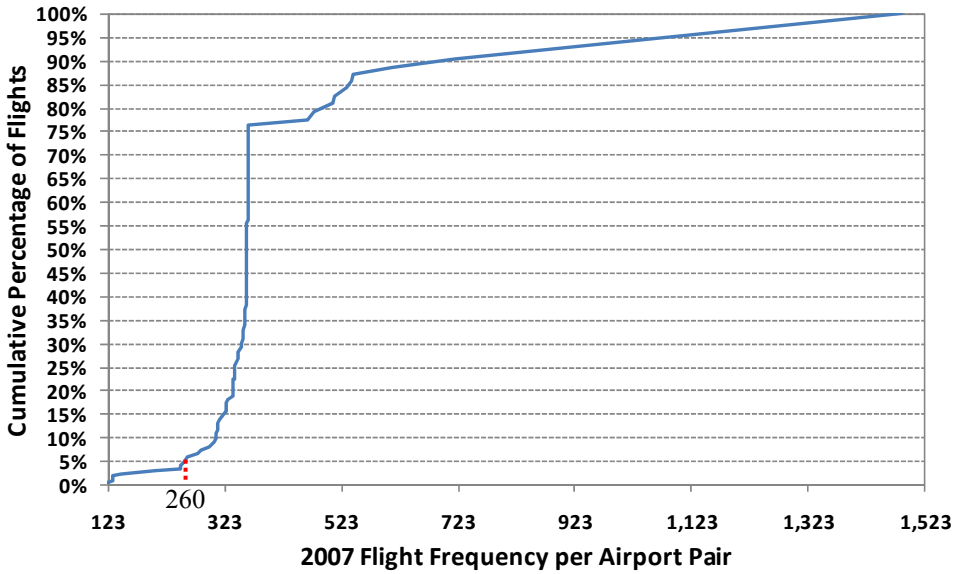

Figure 6-4: Flight frequency per airport pair per year for the 89 airport pairs 89 airport pairs provided with nonstop flight by a single airline (*Source: 2007 T100I Segment Data*)

Assumption: Based on the foregoing analysis, it is assumed that the threshold for airlines to provide nonstop service to an airport pair is in the neighborhood of 44,000 passengers per year.

With the identification of demand threshold for establishing nonstop service, demand is forecast between all gateway airport pairs in the analysis time frame for comparison the threshold value to identify potential new nonstop flights.

Demand for travel between gateways without nonstop flights

New nonstop flights are expected to be established when the estimated demand between the 871 (812+59) pairs reaches the threshold observed for nonstop transatlantic service (i.e., 44,000 passengers/year).

Travel between 871 airport pairs (not provided with nonstop service) is accomplished by traveling across the Atlantic using one of gateway airport pairs with nonstop service. Passenger demand for the 871 pairs that do not have nonstop service is estimated by determining how many passengers for each of the 871 pairs travel between each of the 182 gateway airport pairs that have credible direct passenger forecast resulted from section 5 (Appendix C.1). The analysis considers 98% of total passengers from U.S. to selected nine European countries in 2007.

2007 DB1B data is used to derive the fraction of demand for each of the 182 airport pairs that is attributed to the 871 airport pairs (that are not provided nonstop flight service). This fraction is assumed to remain constant during the forecast period**.** For 39 of the 182 gateway airport pairs, the DB1B sample was less than one percent of the T100I Market survey. These pairs were not included in the new nonstop service analysis as they are not considered credible samples. Future demand for the 871 pairs is then estimated using the demand forecast for the 143 (=189-39) credible pairs and the fraction of this demand attributed to each of the 871 pairs.

To illustrate this computation, consider the demand between Atlanta, Hartsfield and London, Heathrow. All 2007 DB1B records are examined for each ATL - LHR candidate gateway pair. For illustration purposes the records are grouped according to the airport pairs used to cross the North Atlantic without stops. DB1B sample records show that 616 passengers traveling through Atlanta, Hartsfield (ATL) and London, Heathrow (LHR) used Chicago, O'Hare (ORD) London. All records between ATL-LHR passing through ORD include 104 unique routes. All these routes are shown in Figure 6-5.

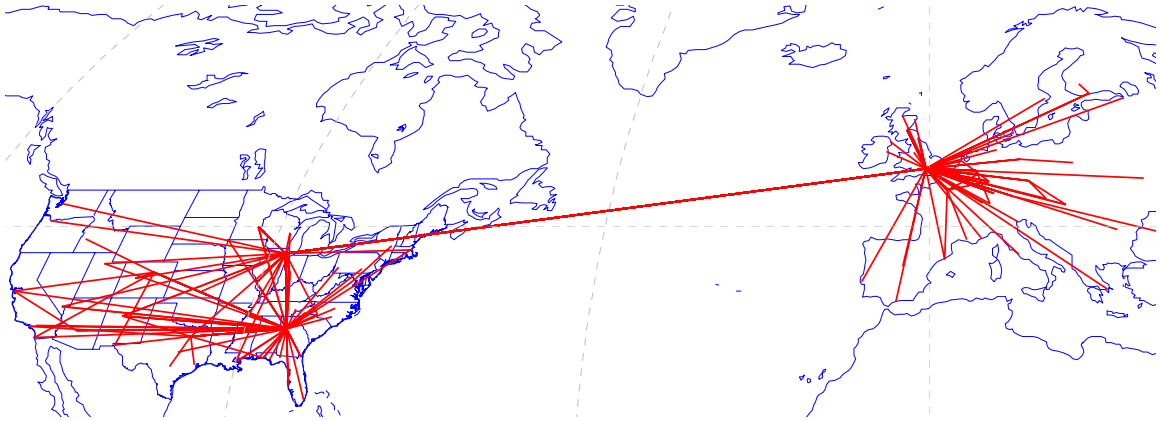

Figure 6-5: 104 Unique Routes for Passengers Travelling through ATL and LHR using ORD and LHR airport pair where nonstop service is provided (*Source: 2007 DB1B Data*)

Overall DB1B sample records include 1,321 passengers using 41 of the 143 credible gateway airport pairs for travel between Atlanta, and London, Heathrow. The fraction of passengers traveling between ATL and LHR using the ORD-LHR gateway airport pair is 616/50,608. Combined with total passengers using ORD-LHR gateway airport pair in 2007 (754,060) and 2010 (991,612), it yields 9,178 passengers in 2007 and 12,070 for 2010.

Table 6-2 shows completion of the process for all 41 gateway airport pairs including ORD-LHR, with 27,282 passengers being estimated for this pair in 2007 and 35,929 being forecast in 2010.

Table 6-2: Process for Estimating Total Passenger Travelling between Atlanta and London, Heathrow

	ATL - LHR Gateway Airport Pairs	2007 ATL - LHR DB1B Passengers (A)	2007 No. of Routes (B)	2007 All DB1B Passengers (C)	Fraction of ATL - LHR Passengers (D = A/C)	2007 T100I Passengers (E)	2007 Passenger Demand for ATL - LHR (F = E*D)	2010 Forecast T100I Passengers (G)	2010 Passenger Demand for ATL - LHR (H = G*D)
1	ORD:LHR	616	104	50,608	1.217%	754,060	9,178	991,612	12,070
2	IAD:LHR	291	59	22,426	1.298%	498,183	6,464	650,727	8,444
3	JFK:LHR	123	53	35,955	0.342%	1,352,621	4,627	1,768,333	6,049
4	ATL:LGW	77	63	11,297	0.682%	190,248	1,297	259,781	1,771
5	MIA:LHR	38	15	6,807	0.558%	408,631	2,281	544,832	3,042
6	BOS:LHR	35	18	13,046	0.268%	424,873	1,140	545,148	1,463
7	ATL:CDG	30	14	15,239	0.197%	258,415	509	338,277	666
8	ATL:AMS	24	8	6,609	0.363%	135,832	493	227,441	826
9	ATL:FRA	15	6	10,478	0.143%	192,871	276	208,550	299
10	ATL:MAN	8	4	6,567	0.122%	70,532	86	93,741	114
11	ATL:DUB	7	5	5,104	0.137%	54,678	75	68,086	93
12	EWR:LGW	5	5	13,563	0.037%	145,812	54	196,106	72
13	ATL:EDI	5	4	3,431	0.146%	36,438	53	47,889	70
14	DTW:AMS	4	1	25,196	0.016%	366,228	58	544,606	86
15	ORD:MAN	4	2	11,759	0.034%	128,649	44	170,453	58
16	JFK:CDG	3	2	22,096	0.014%	598,834	81	776,914	105
17	ORD:DUB	3	1	8,698	0.034%	136,512	47	169,458	58
18	ATL:MXP	3	2	5,595	0.054%	66,608	36	76,442	41
19	ATL:MAD	3	3	5,790	0.052%	65,572	34	67,384	35
20	LAX:LHR	2	2	19,297	0.010%	720,705	75	919,287	95
21	JFK:LGW	2	2	7,438	0.027%	77,608	21	105,027	28
22	CVG:LGW	2	2	4,852	0.041%	52,583	22	71,855	30
23	ORD:SNN	2	1	3,264	0.061%	51,575	32	63,966	39
24	ATL:SNN	2	2	2,729	0.073%	28,096	21	34,955	26
25	IAH:LGW	1	1	11,608	0.009%	229,033	20	283,705	24
26	DFW:LGW	1	1	13,204	0.008%	189,793	14	258,458	20
27	BOS:CDG	1	1	4,117	0.024%	177,834	43	226,437	55
28	MIA:MAD	1	1	6,643	0.015%	172,784	26	179,466	27
29	ORD:AMS	1	1	6,472	0.015%	136,363	21	227,622	35
30	JFK:SNN	1	1	4,841	0.021%	123,275	25	151,993	31
31	ATL:FCO	1	1	9,487	0.011%	101,673	11	116,759	12
32	JFK:MAN	1	1	3,906	0.026%	93,862	24	123,636	32
33	MSP:LGW	1	1	8,295	0.012%	84,331	10	90,195	11
34	ATL:MUC	1	1	6,022	0.017%	66,962	11	71,506	12
35	EWR:GLA	1	1	6,655	0.015%	65,693	10	85,998	13
36	PHL:LGW	1	1	6,258	0.016%	62,962	10	87,872	14
37	ATL:STR	1	1	5,728	0.017%	59,686	10	63,934	11
38	ATL:BRU	1	1	5,179	0.019%	58,228	11	80,427	16
39	EWR:BHX	1	1	5,515	0.018%	54,816	10	71,276	13
40	ATL:DUS	1	1	4,202	0.024%	45,506	11	48,557	12
41	ATL:BCN	1	1	3,735	0.027%	41,070	11	42,579	11
	Total	1,321	-	-	-	-	27,282	-	35,929

The demand forecast results for all 871 airport pairs without nonstop service are shown in Table 6-3 for 2010. Results for years 2015 and 2020 are contained in Appendix D.1. The airport pairs forecast to have nonstop flights are highlighted.

Table 6-3: 2010 Passenger Traffic for 871 Transatlantic Airport Pairs without Nonstop Service

Year = 2010 (Passenger Demand)		1 - U.K.										2 - Germany						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		LHR	LGW	MAN	GLA	EDI	STN	BFS	BHX	BRS	LTN	FRA	MUC	DUS	TXL	HAM	STR	CGN
1	JFK	-	-	-	14,438	16,461	-	39	2,923	623	-	-	-	-	-	-	-	1,734
2	EWR	-	-	-	-	-	42	-	-	-	-	-	-	-	-	-	2,533	-
3	ORD	-	27,774	-	18,217	20,373	489	899	3,576	1,034	-	-	-	-	25,863	19,770	12,890	3,675
4	IAD	-	6,266	10,733	8,758	12,342	-	676	1,868	483	-	-	-	10,817	20,365	15,049	14,032	4,024
5	ATL	35,929	-	-	1,955	-	96	962	2,949	1,342	-	-	-	-	14,365	7,063	-	986
6	LAX	-	43,326	48,075	-	19,712	-	1,287	2,921	1,538	-	-	-	-	28,378	19,871	12,140	5,541
7	BOS	-	-	-	-	14,002	522	1,639	3,581	2,186	-	-	-	6,532	14,167	6,629	5,245	2,852
8	MIA	-	30,401	30,294	9,222	6,575	726	976	961	483	-	-	-	-	10,815	7,724	6,460	606
9	SFO	-	29,410	50,434	13,813	17,765	458	1,779	3,292	1,500	-	-	-	11,984	19,505	16,652	9,266	4,608
10	PHL	-	-	-	-	721	125	39	319	56	-	-	-	3,461	9,026	4,563	4,729	467
11	DTW	-	-	14,725	6,996	6,862	12	672	9,729	2,868	-	-	27,100	-	12,821	8,308	18,210	4,691
12	IAH	23,032	-	11,945	6,108	7,500	44	2,223	3,457	2,682	-	-	8,645	2,616	5,398	5,002	2,120	3,411
13	MCO	121,638	-	-	-	10,189	347	4,695	4,561	2,721	-	-	24,462	7,828	9,003	4,913	3,726	918
14	DFW	102,035	-	16,384	4,854	7,951	470	729	956	528	-	-	16,705	2,336	4,987	3,330	2,962	747
15	MSP	31,787	-	10,424	5,270	5,755	-	1,229	4,320	1,188	-	55,641	22,591	7,794	10,048	6,125	6,895	2,990
16	DEN	-	19,279	15,909	2,851	5,177	17	976	1,563	966	-	-	-	3,906	7,175	6,229	4,186	1,745
17	SEA	-	18,591	9,281	2,413	4,220	197	937	1,683	901	-	70,815	21,961	3,064	6,259	3,377	3,888	1,520
18	LAS	167,195	-	-	13,591	9,551	-	2,173	2,958	1,770	-	-	29,868	-	4,542	4,462	3,525	992
19	CLT	18,680	-	9,719	1,796	2,100	29	611	1,063	468	-	-	-	4,049	5,577	3,343	2,867	673
20	CVG	10,774	-	4,965	1,181	2,379	-	195	689	442	-	-	7,396	1,919	3,896	2,216	2,237	147
21	PHX	-	23,162	10,343	1,784	2,220	57	455	659	600	-	58,916	22,589	1,944	3,229	2,505	1,913	698
22	MEM	12,541	12,565	5,900	2,549	2,954	-	338	2,345	937	-	14,550	4,446	1,453	1,589	1,861	2,220	464
23	PDX	46,870	13,399	5,329	1,594	2,707	84	416	662	505	-	-	22,009	1,061	3,241	1,914	1,921	552
24	TPA	48,987	-	16,657	3,199	4,799	94	1,392	2,561	1,595	-	45,083	15,589	1,953	5,059	4,114	3,623	676
25	BWI	-	5,837	5,119	592	1,019	62	325	403	520	-	18,768	2,566	483	1,482	661	1,329	275
26	RDU	45,998	-	6,085	2,320	3,211	243	702	574	645	-	32,512	9,541	2,194	2,703	1,604	2,775	745
27	RSW	12,182	10,891	6,600	1,442	1,732	33	688	1,031	676	-	-	-	-	1,565	1,804	2,159	150
28	SFB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	SJU	1,952	57	193	68	-	-	26	13	-	-	254	14	122	22	-	-	-
30	BDL	5,919	2,242	1,224	233	420	14	65	443	180	-	7,595	2,247	404	637	430	339	147
31	CLE	18,024	-	5,819	1,711	2,260	17	714	2,568	1,325	-	31,546	7,871	1,476	2,470	1,907	1,231	1,757

Table 6-3: 2010 Passenger Traffic for 871 Transatlantic Airport Pairs without Nonstop Service (Continued)

Year = 2010 (Passenger Demand)		3 - France			4 - Netherlands	5 - Italy							6 - Ireland		7 - Spain		8 - Switzerland		9 - Belgium
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		CDG	NCE	ORY	AMS	FCO	MXP	VCE	PSA	NAP	BLQ	PMO	DUB	SNN	MAD	BCN	ZRH	GVA	BRU
1	JFK	-	-	3,009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	EWR	-	5,503	-	-	-	-	10,976	1,525	6,006	4,321	4,151	-	-	-	-	-	-	-
3	ORD	-	16,685	868	-	-	-	27,880	2,753	8,682	5,977	3,620	-	-	-	39,197	-	15,658	-
4	IAD	-	12,665	366	-	-	13,945	17,671	2,019	6,823	3,181	1,595	-	4,805	-	17,545	-	13,448	-
5	ATL	-	13,913	2,013	-	-	-	-	3,115	6,484	3,858	3,551	-	-	-	-	-	8,247	-
6	LAX	-	14,893	344	-	122,020	47,518	28,351	1,646	4,308	7,299	2,565	-	14,449	75,606	48,402	-	18,183	42,471
7	BOS	-	8,745	1,040	-	-	-	8,054	1,735	1,974	2,877	378	-	-	-	18,294	-	8,654	20,007
8	MIA	-	11,961	1,857	-	46,465	-	8,914	1,074	1,940	2,808	617	22,734	6,365	-	29,378	-	5,267	25,538
9	SFO	-	12,699	348	-	88,389	40,425	21,805	1,677	4,857	5,238	1,924	-	20,502	62,665	31,873	-	13,996	39,366
10	PHL	-	3,226	366	-	-	-	-	1,201	5,543	1,510	4,296	-	-	-	-	-	2,450	-
11	DTW	-	6,365	352	-	53,252	14,873	14,026	430	1,249	7,454	1,708	11,613	5,310	17,495	17,924	15,516	9,763	-
12	IAH	-	4,331	848	-	28,500	16,805	6,224	503	1,014	1,013	446	7,005	3,708	16,116	11,926	9,878	6,386	9,342
13	MCO	73,348	4,181	255	-	23,637	11,887	5,359	370	1,041	699	604	-	19,175	38,179	9,802	13,906	3,187	15,180
14	DFW	-	5,792	443	45,028	43,001	10,180	11,996	1,942	3,024	2,705	313	18,335	6,025	33,961	12,685	-	4,214	14,391
15	MSP	49,748	4,346	39	-	37,196	13,752	11,862	209	963	4,541	391	-	7,377	17,935	12,615	17,198	9,262	12,011
16	DEN	58,436	3,320	92	65,480	29,896	10,171	9,439	697	2,280	1,469	251	12,730	5,202	13,624	8,820	17,795	5,499	10,998
17	SEA	-	4,269	129	-	30,544	10,326	8,155	643	1,461	1,472	451	15,070	4,656	13,856	9,395	11,744	4,185	9,407
18	LAS	62,369	2,590	195	84,922	14,309	13,577	5,083	549	763	2,127	370	31,948	6,482	17,875	6,335	25,310	3,485	16,306
19	CLT	29,720	1,652	97	-	15,315	6,171	6,102	398	1,505	1,099	115	6,250	2,624	5,710	4,645	5,270	1,820	4,590
20	CVG	-	4,780	473	-	-	8,576	6,907	310	1,072	596	747	8,103	4,841	6,834	5,550	5,289	5,330	6,339
21	PHX	45,362	1,737	185	44,108	21,933	8,371	6,948	140	641	717	405	10,416	3,263	10,370	6,561	10,146	2,076	7,968
22	MEM	11,508	1,174	54	-	8,722	2,526	3,241	51	419	854	47	3,527	1,037	3,303	3,398	2,620	1,833	3,495
23	PDX	34,283	1,450	97	35,327	16,049	5,196	4,094	497	856	1,241	238	9,833	2,498	5,715	5,836	8,649	2,295	4,470
24	TPA	47,317	2,543	44	43,972	21,508	8,132	5,157	320	1,183	548	658	12,096	6,022	11,756	6,122	8,877	1,906	7,688
25	BWI	14,491	759	57	8,998	9,534	2,270	2,519	197	367	98	292	10,587	4,925	4,049	2,774	2,743	888	2,922
26	RDU	38,783	1,851	133	22,023	15,306	4,664	3,650	576	1,036	744	258	7,574	2,759	9,020	3,783	10,735	2,195	6,464
27	RSW	10,838	366	16	9,633	4,043	1,301	981	11	69	124	47	4,514	1,429	1,512	771	3,904	768	2,007
28	SFB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	SJU	277	-	-	101	42	78	-	-	35	-	-	161	31	-	22	339	119	77
30	BDL	5,324	210	21	-	3,402	817	648	29	87	29	32	1,248	437	1,076	476	1,304	319	1,531
31	CLE	26,312	1,011	20	29,576	19,687	9,013	2,750	105	460	435	502	8,367	4,257	5,320	3,930	8,320	2,577	5,750

7 Demonstration of Capacity Constraints

As demand for air travel continues to grow in the future, passenger traffic at certain airports could reach that airport's operational capacity. Part of the traffic at these airports will, by necessity, be diverted to airports or perhaps even choose other modes of transportation. The purpose of this section is to demonstrate a method for rerouting the excess air travel passengers from one airport to other airports when an airport's passenger capacity is exceeded assuming all rerouted travelers continue to use the commercial air travel mode. Traffic is analyzed from the United States to Europe. This method offered address passengers from the United States only. To understand all the diversion of passenger traffic from London, Heathrow, similar analyses could be performed for all other regions of the world. The method is presented followed by an example calculation/analysis of reassigning excess passenger traffic at London, Heathrow airport.

When the number of passengers served per year reaches a European airport's passenger capacity, it is assumed that the number of passengers from the United States to the "at-capacity" airport will be held at the existing level when demand reached capacity. United States Passenger demand beyond this level is termed excess demand and is divided into two categories: passengers who would normally terminate at the "at-capacity" airport and passengers who would normally connect to other airports through the "at-capacity" airport:

1. The excess terminating passengers from the United States are reassigned to selected nearby candidate airports which already handle similar terminating passengers. It is assumed that the candidate airports have sufficient capacity to process the rerouted passengers. The specific number of excess passengers reassigned to each candidate nearby airport is proportionate to the candidate airport's fraction of the total number of T100 Market passengers from the United States for all the candidate airports. In the event, there are no nearby airports which handle terminating passengers, then all excess passengers are assigned to the excess connecting passenger category and rerouted in that manner.
2. The excess connecting passengers from the United States are rerouted to connect at other European candidate airports which are frequently used for connecting. It is assumed that the candidate airports have sufficient capacity to process the rerouted passengers. The specific number of excess passengers reassigned to each candidate nearby airport is proportionate to the candidate airport's fraction of the total number of connecting passengers from the United States at all the candidate airports. The number of United States connecting passengers at each airport is calculated as the product of the DB1B connecting passenger ratio and the base year (T100I Market) passenger demand. The DB1B connecting passenger ratio is the ratio of the DB1B sample of connecting passengers to the sum of the DB1B samples of connecting and terminating passengers.

Table 7-1: Estimated DB1B Connecting Passenger Ratio at 35 European Airports in Domain in Base Year (2007) (*Source: 2007 DB1B Data*)

	European Airport	2007 DB1B Terminating Passengers (A)	2007 DB1B Connecting Passengers (B)	2007 DB1B Passengers from U.S. (C = A+B)	2007 DB1B Connecting Passenger Ratio (D = B/C)	CDF of 2007 DB1B Connecting Passengers (E)
1	**LHR**	54,275	124,198	178,473	69.6%	12.8%
2	**CDG**	37,624	101,326	138,950	72.9%	23.3%
3	**FRA**	62,713	92,737	155,450	59.7%	32.9%
4	**LGW**	15,613	91,203	106,816	85.4%	42.3%
5	**FCO**	9,087	73,550	82,637	89.0%	49.9%
6	**AMS**	66,026	63,102	129,128	48.9%	56.4%
7	**MAN**	3,101	45,518	48,619	93.6%	61.1%
8	**MAD**	12,955	37,131	50,086	74.1%	65.0%
9	**DUB**	3,846	35,932	39,778	90.3%	68.7%
10	**BRU**	6,627	34,613	41,240	83.9%	72.3%
11	**MUC**	22,526	32,220	54,746	58.9%	75.6%
12	**ZRH**	7,448	27,258	34,706	78.5%	78.4%
13	**BCN**	3,126	27,256	30,382	89.7%	81.2%
14	**MXP**	9,451	21,796	31,247	69.8%	83.5%
15	**SNN**	3,001	17,237	20,238	85.2%	85.3%
16	**TXL**	1,340	15,701	17,041	92.1%	86.9%
17	**VCE**	4,854	15,160	20,014	75.7%	88.5%
18	**EDI**	1,269	14,363	15,632	91.9%	89.9%
19	**GLA**	941	11,539	12,480	92.5%	91.1%
20	**GVA**	843	10,655	11,498	92.7%	92.2%
21	**DUS**	1,164	10,286	11,450	89.8%	93.3%
22	**STR**	503	9,620	10,123	95.0%	94.3%
23	**HAM**	617	9,187	9,804	93.7%	95.2%
24	**NCE**	989	9,047	10,036	90.1%	96.2%
25	**BHX**	349	6,712	7,061	95.1%	96.9%
26	**STN**	67	5,365	5,432	98.8%	97.4%
27	**CGN**	370	5,225	5,595	93.4%	98.0%
28	**BFS**	213	5,062	5,275	96.0%	98.5%
29	**BRS**	199	4,793	4,992	96.0%	99.0%
30	**NAP**	206	3,202	3,408	94.0%	99.3%
31	**PSA**	437	2,774	3,211	86.4%	99.6%
32	**BLQ**	247	2,366	2,613	90.5%	99.8%
33	**PMO**	282	1,391	1,673	83.1%	100.0%
34	**ORY**	378	95	473	20.1%	100.0%
35	**LTN**	-	-	-	N/A	100.0%

Eighty percent (80%) of passengers from the United States connected at 13 European airports in the base year (2007). The DB1B connecting passenger ratio at these airports ranges from 49% to 94%. Table 7-1 shows the DB1B connecting and terminating passengers from the United States to the 35 European airports in the domain of analysis.

Table 7-2: Estimated Connecting Passenger at Top 13 European Connecting Airports in Base Year (2007) (*Source: 2007 DB1B Data; 2007 T100 Market Data*)

	European Airport	2007 DB1B Connecting Passenger Ratio (A)	2007 T100 Passengers from U.S. (B)	2007 Total Connecting Passengers (C = A*B)
1	**LHR**	69.6%	5,497,250	3,825,494
2	**CDG**	72.9%	2,947,419	2,149,336
3	**FRA**	59.7%	3,265,511	1,948,110
4	**LGW**	85.4%	1,804,194	1,540,480
5	**FCO**	89.0%	742,191	660,578
6	**AMS**	48.9%	2,344,001	1,145,461
7	**MAN**	93.6%	703,639	658,760
8	**MAD**	74.1%	798,243	591,773
9	**DUB**	90.3%	716,723	647,425
10	**BRU**	83.9%	392,701	329,597
11	**MUC**	58.9%	874,898	514,909
12	**ZRH**	78.5%	684,262	537,418
13	**BCN**	89.7%	205,130	184,024

Demonstration of Method with London, Heathrow

To demonstrate the aforementioned method, rerouting of passenger traffic from the United States to London, Heathrow airport is shown for the year 2010 assuming the United States passenger traffic to London, Heathrow is constrained to 2007 level. As discussed earlier in this report, passenger traffic from the United States to Europe has been historically symmetric with traffic from Europe to the United States.

The T100I Market data shows that 5,497,250 passengers from the United States connected or terminated their air travel at London, Heathrow airport in 2007. Considering that the total demand at London, Heathrow airport has reached 99.3% of the airport capacity, it is assumed that passenger traffic from the United States to London, Heathrow airport will be held at the 5,497,250 level. Per Appendix C.3, the projected passengers from the United States to London, Heathrow in 2010 is 6,609,964 resulting in an excess of 1,112,714 passengers.

The candidate airports for rerouting the excess terminating passengers are London, Gatwick, 26 statute miles distant from Heathrow, London, Stansted, 41 statute miles distant, and Lodon, Luton, 28 statute miles distant. The candidate airports for excess connecting passengers are Charles De Gaulle, Paris France (CDG), Frankfurt, Germany (FRA) and London, Gatwick (LGW).

From Table 7-2 the percentage of passengers from the United States connecting at London, Heathrow is 69.6% and the percentage of terminating passengers is 30.4%. The number of excess passengers assigned to the connecting category is 744,329 (=1,112,714

x 69.6%) and the number assigned to the terminating category is 338,385 (=1,112,714 x 30.4%).

The number of excess terminating passengers assigned to the candidate terminating airports is shown in Table 7-3.

Table 7-3: Assignment of the excess terminating passengers at London, Heathrow to the candidate terminating airports

Candidate Terminating Airport	2007 T100 Market Passengers from the United States	Percentage of 2007 T100 Market Passengers from United States at All the Candidate Airports	Number of Excess Terminating Passengers Assigned
London, Gatwick	1,804,194	95.1%	321,944
London, Stansted	67,965	3.6%	12,128
London, Luton	24,168	1.3%	4,313
Total	1,896,327		

The number of excess connecting passengers assigned to the candidate connecting airports is shown in Table 7-4.

Table 7-4: Assignment of the excess connecting passengers at London, Heathrow to the candidate connecting airports

Candidate Connecting Airport	2007 Connecting Passengers from the United States (DB1B Connecting Passenger ratio * T100 Market Passengers from the United States)	Percentage of 2007 Connecting Passengers from United States at All the Candidate Airports	Number of Excess Connecting Passengers Assigned
Charles De Gaulle, Paris, France	2,149,336	38.1%	295,196
Frankfurt, Germany	1,948,110	34.6%	267,559
London, Gatwick	1,540,480	27.3%	211,574
Sum	5,637,926		

Table 7-5 shows the resulting passenger traffic after application of the capacity constraint and rerouting of the excess passenger traffic at all candidate airports

Table 7-5: Overview of Assignment of the excess passengers at London, Heathrow to the candidate connecting airports and terminating airports

European Airport	2010 Projected Passengers from the United States	Connecting Passengers from United States Rerouted	Terminating Passengers from United States Rerouted	2010 Passengers with 2007 Constraint on United States Passengers to London, Heathrow
London, Heathrow	6,609,964	-774,329	-338,385	5,497,250
Charles De Gaulle, Paris, France	3,498,603	295,196		3,793,799
Frankfurt, Germany	3,739,970	267,559		4,007,529
London, Gatwick	2,169,386	211,574	321,944	2,702,904
London, Stansted	81,722		12,128	93,850
London, Lutton	29,060		4,313	33,373
Total	16,128,705			16,128,705

8 Conclusions and Recommendations

Nine econometric models were developed to forecast the passenger traffic between United States and selected European countries in the period from 2008 through 2020. The total passenger traffic from the United States to selected nine European countries is forecast to increase from 23.2 million in 2007 to 52.7 million in 2020. The average growth rate per year is 6.5%. This does not account for the current Economic problems on both sides of the Atlantic due to the GDP forecasts used in our analysis. The product of United States GDP and each European country's GDP was a significant variable to forecast the transatlantic passenger traffic. The effect of September 11, 2001 on the transatlantic passenger traffic was statistically significant, while average airfare was found not a significant variable to explain the trend of passenger traffic.

Sixty eight new nonstop flights between the United States airports and the European airports are likely to be introduced by 2020 according to the demand forecast. These new nonstop flights are suggested for two types of airport pairs: (1) those pairs which in 2007 could only be travelled with connecting flights (2) and those pairs which in 2007 could be travelled in one flight which includes intermediate stops. 30 new nonstops flights are suggested from 2010 on; 46 from 2015 on, and 68 from 2020 on. Analysis of 2007 airline behavior indicates that airlines are likely to establish 12 month service for transatlantic airport pairs when the passenger demand per year is in the neighborhood of 44,000. This translates to five or more flights per week.

The forecast passenger demands on the 182 airport pairs (with existing direct service) need to be revised when new nonstop flights are established for 68 airport pairs. New nonstop airport pair markets will attract some passengers traveling through the 182 airport pairs with existing direct service in the future. The passenger demand needs to be revised to consider the competition effect of new nonstop airport pair markets on the existing ones.

To fully analyze the airport capacity constraint on the passenger demand, both enplaning passengers and deplaning passengers needs to be rerouted, and both the domestic passengers and all the international passengers at the "at-capacity" airport needs to be rerouted. Since the domain of this analysis only includes the transatlantic passenger traffic, and the data of passenger demand for other passenger categories is limited, it is simply assumed in the above analysis that the domestic passengers and international passengers to/from different world regions will keep their shares in base year (2007) in the future. In the practical operations, the effect of capacity constraint on the passenger demand of different categories (domestic/specific world region) may vary depending on the airport/airline's strategies.

The Impact of the EU-US Open Skies Agreement on Commercial Airline Passenger Traffic over the North Atlantic

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A.

Passenger Traffic Symmetry Observed at Top 91 Airport Pairs between the United States and Selected Nine European Countries

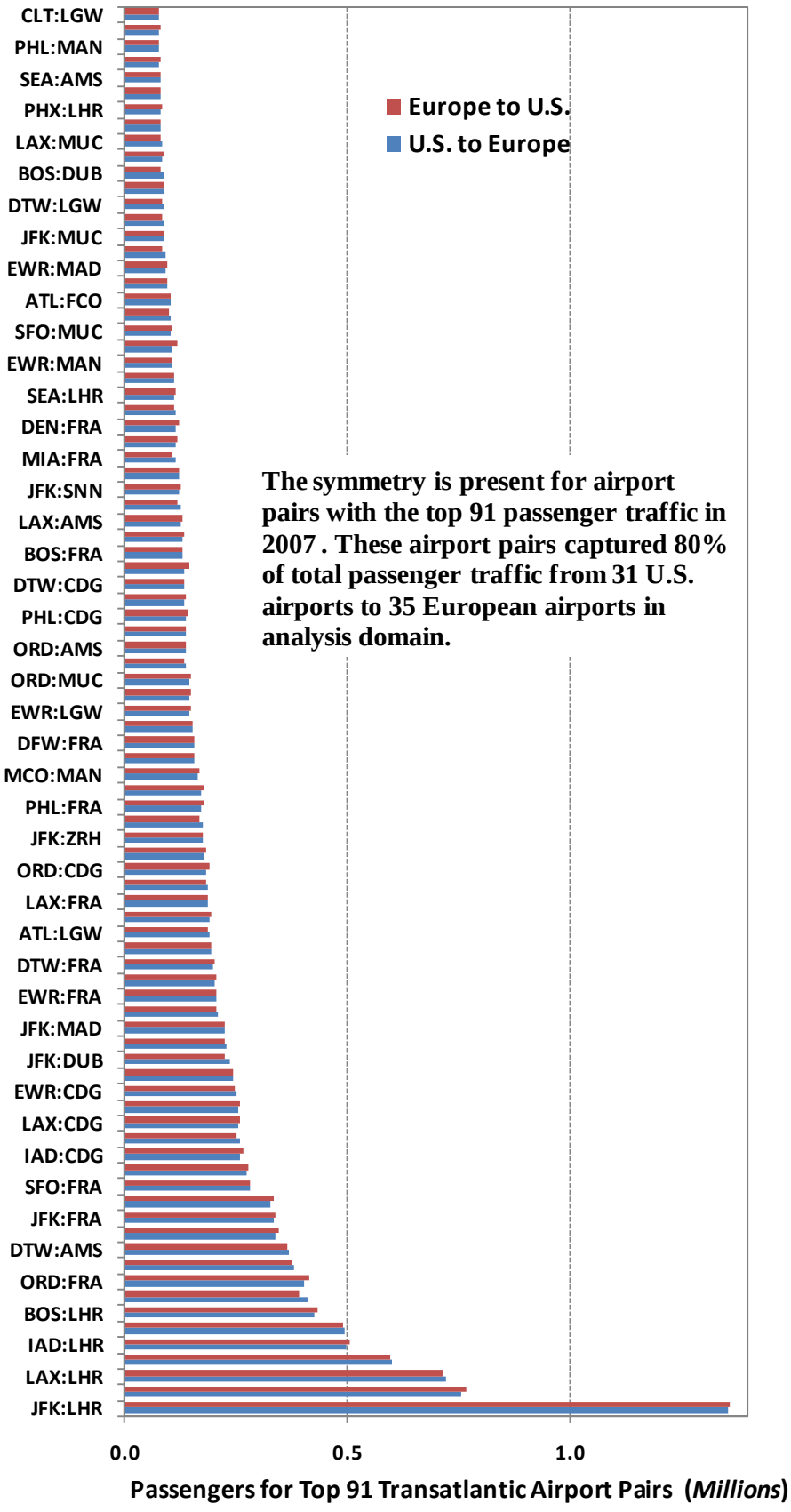


Figure A-1: Airport-to-Airport Passenger Traffic from Europe to the United States vs. Traffic from the United States to Europe ***(Source: 2007 T100 International Market Data)***

B.1
Passenger Traffic from the United States to Selected Nine European Countries during 1990 - 2020

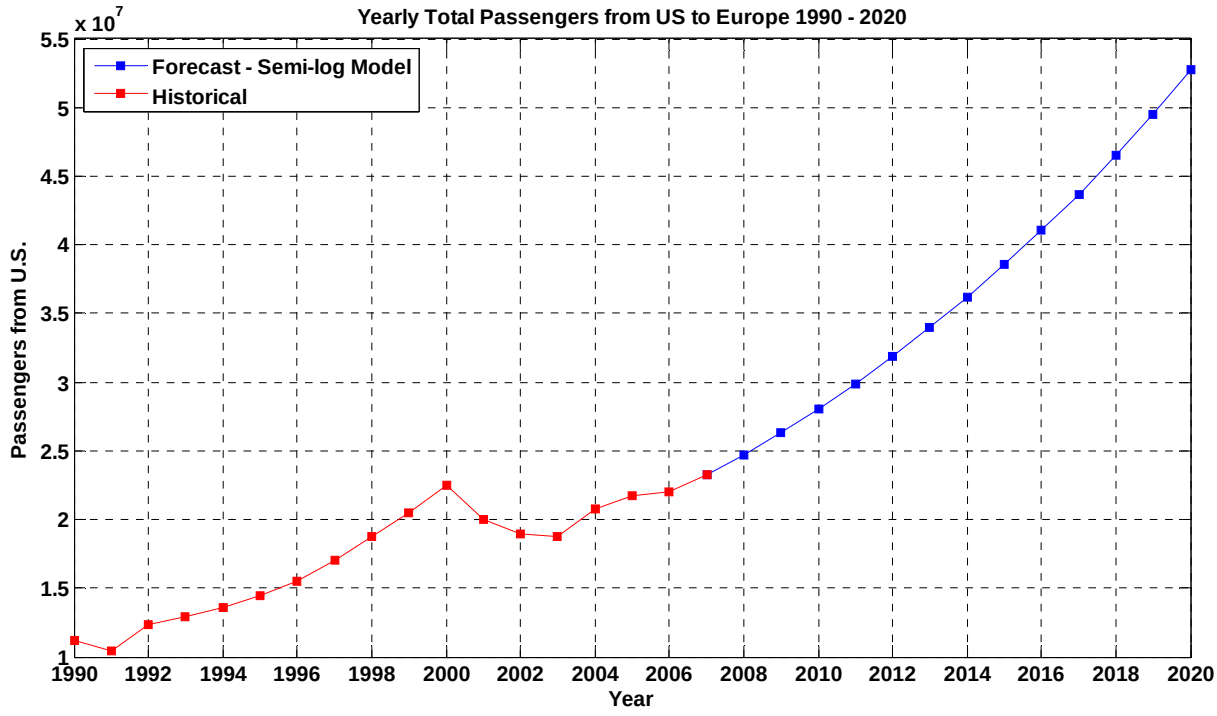


Figure B.1-1: Historical (1990 – 2007) and Forecast (2008 – 2020) Passenger Traffic from U.S. to U.K.
(Historical Source: 1990 - 2007 T100 International Market Data)

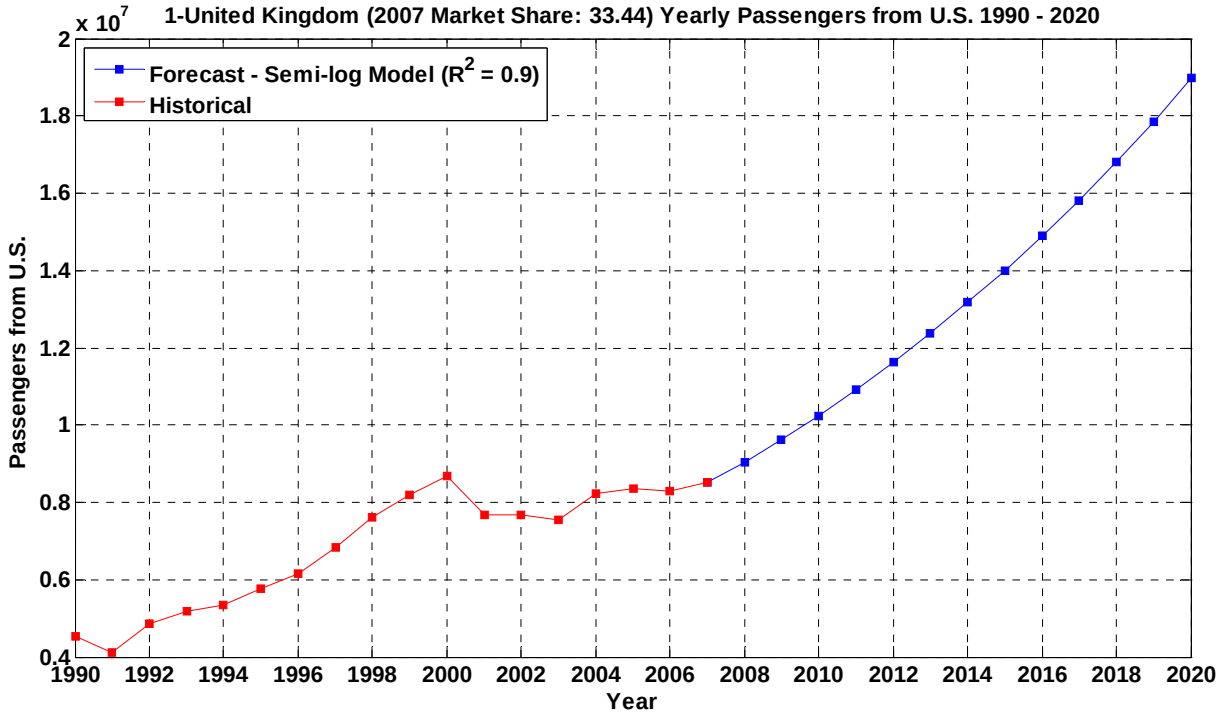
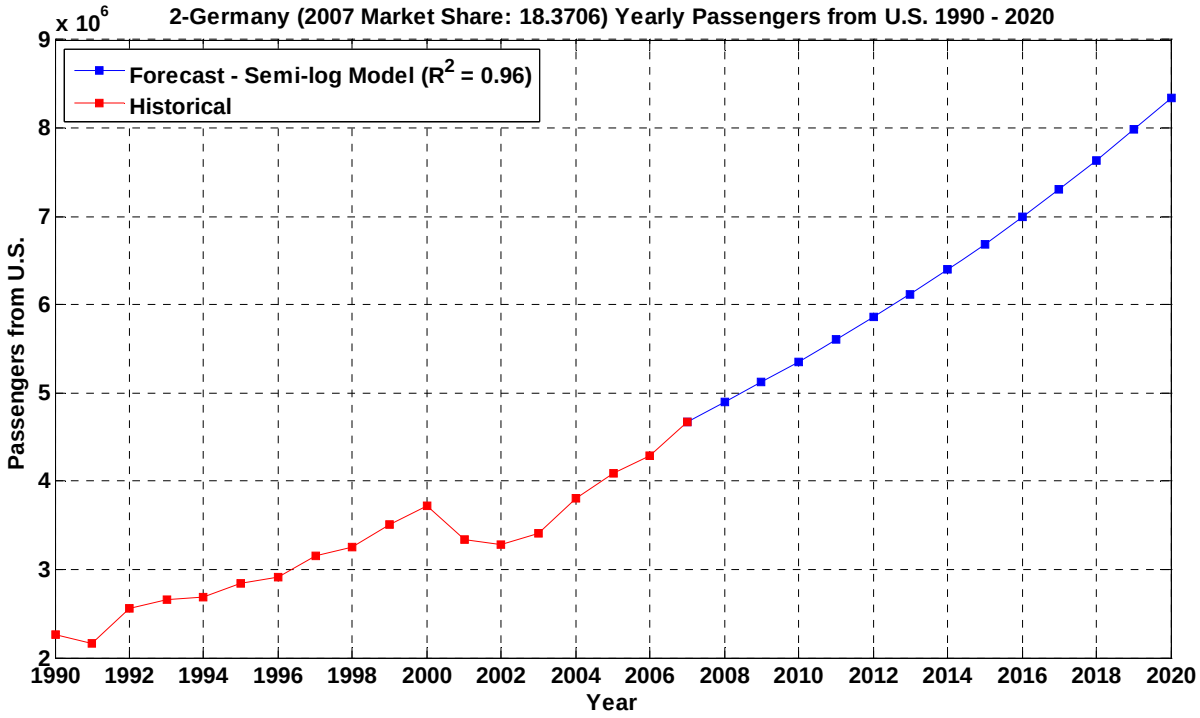


Figure B.1-2: Historical (1990 – 2007) and Forecast (2008 – 2020) Passenger Traffic from U.S. to U.K.
(Historical Source: 1990 - 2007 T100 International Market Data)



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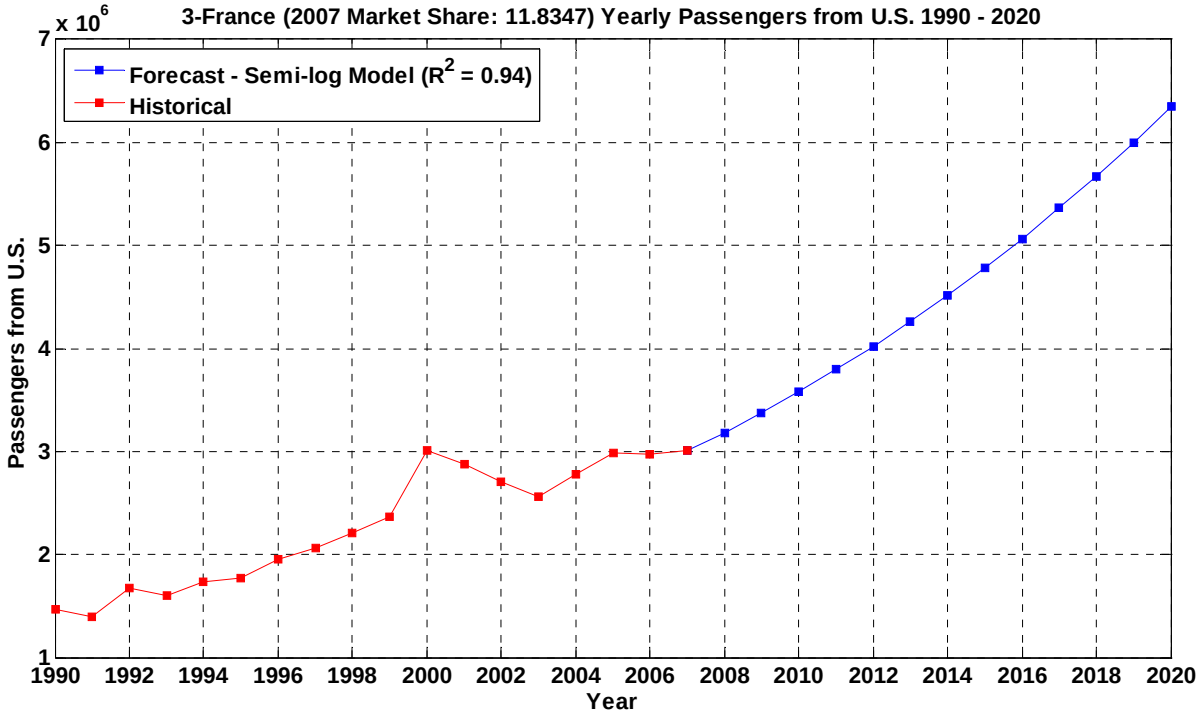

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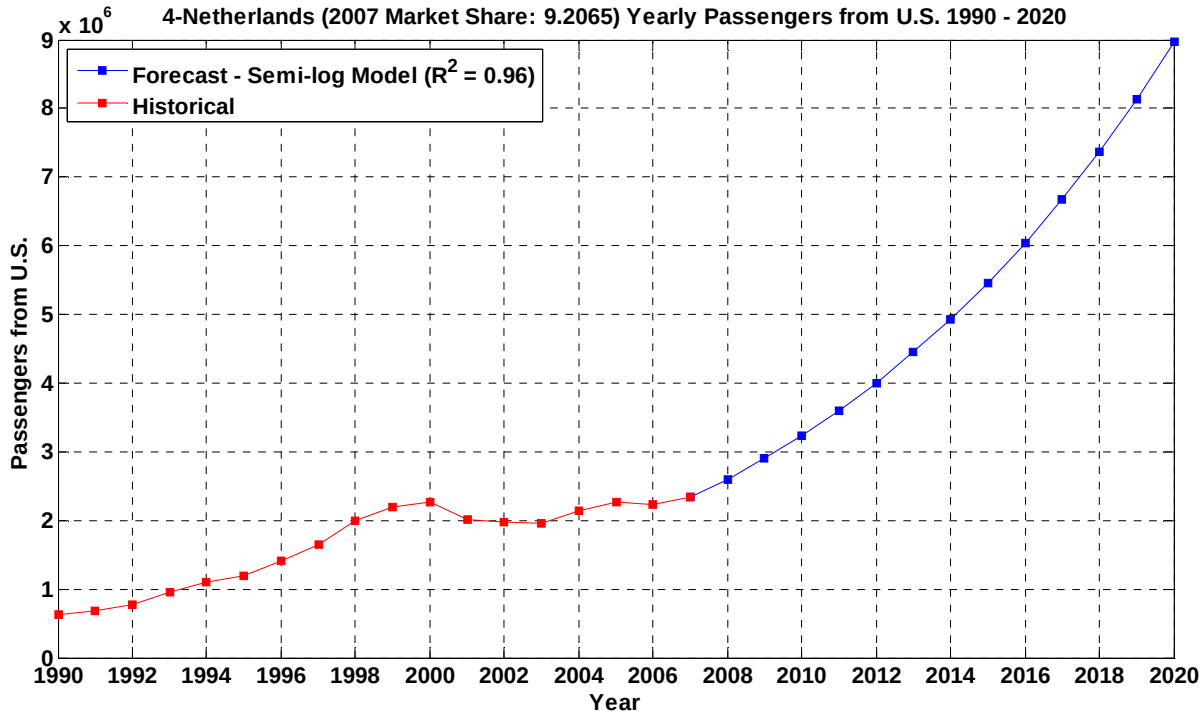


Figure B.1-5: Historical (1990 – 2007) and Forecast (2008 – 2020) Passenger Traffic from U.S. to Netherlands ***(Historical Source: 1990 - 2007 T100 International Market Data)***

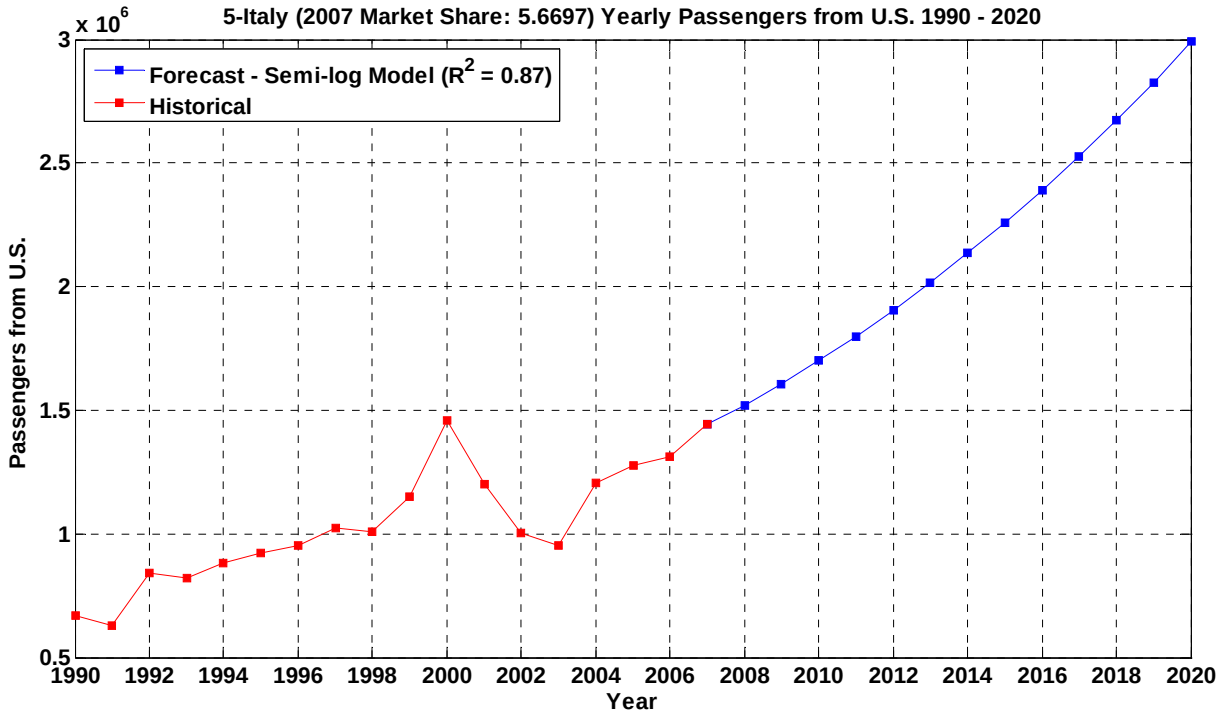


Figure B.1-6: Historical (1990 – 2007) and Forecast (2008 – 2020) Passenger Traffic from U.S. to Italy ***(Historical Source: 1990 - 2007 T100 International Market Data)***

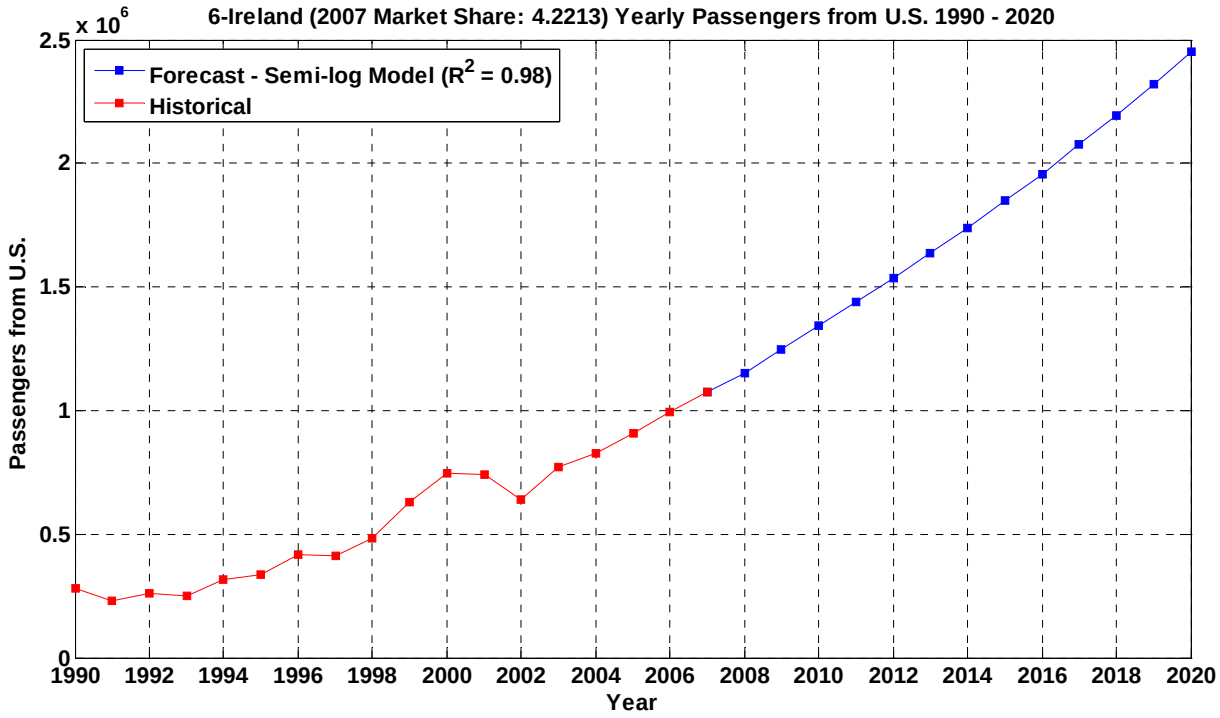


Figure B.1-7: Historical (1990 – 2007) and Forecast (2008 – 2020) Passenger Traffic from U.S. to Ireland
(Historical Source: 1990 - 2007 T100 International Market Data)

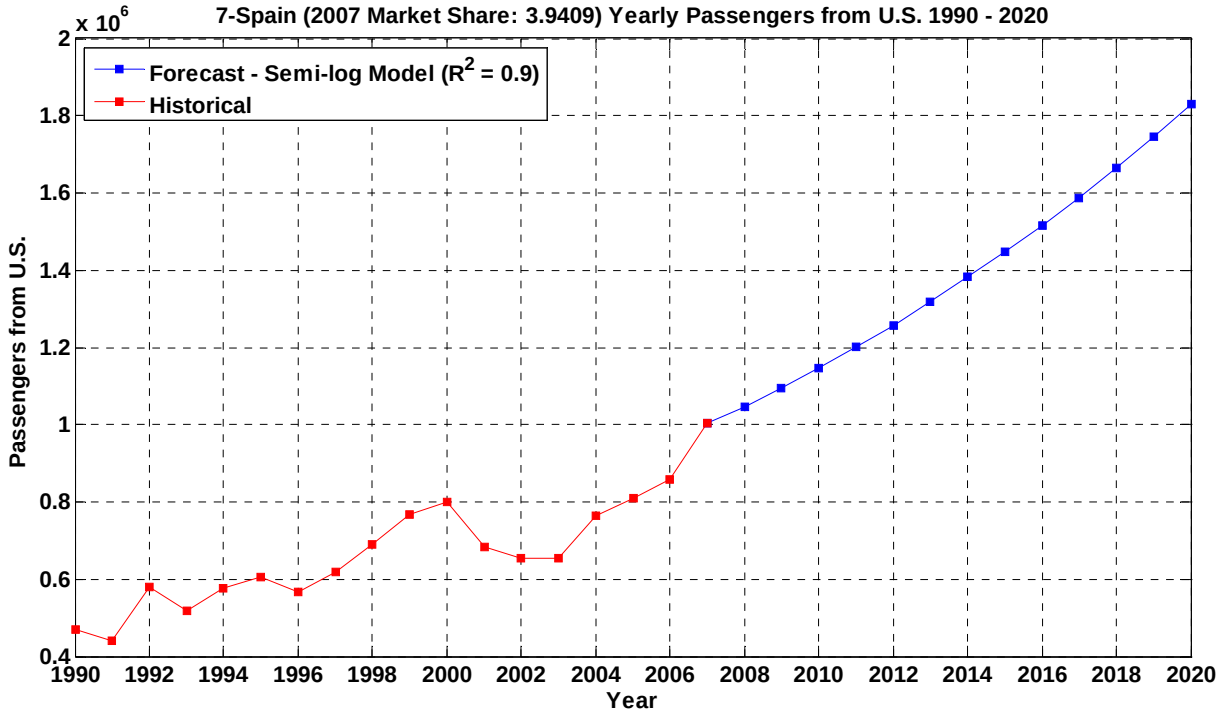


Figure B.1-8: Historical (1990 – 2007) and Forecast (2008 – 2020) Passenger Traffic from U.S. to Spain
(Historical Source: 1990 - 2007 T100 International Market Data)

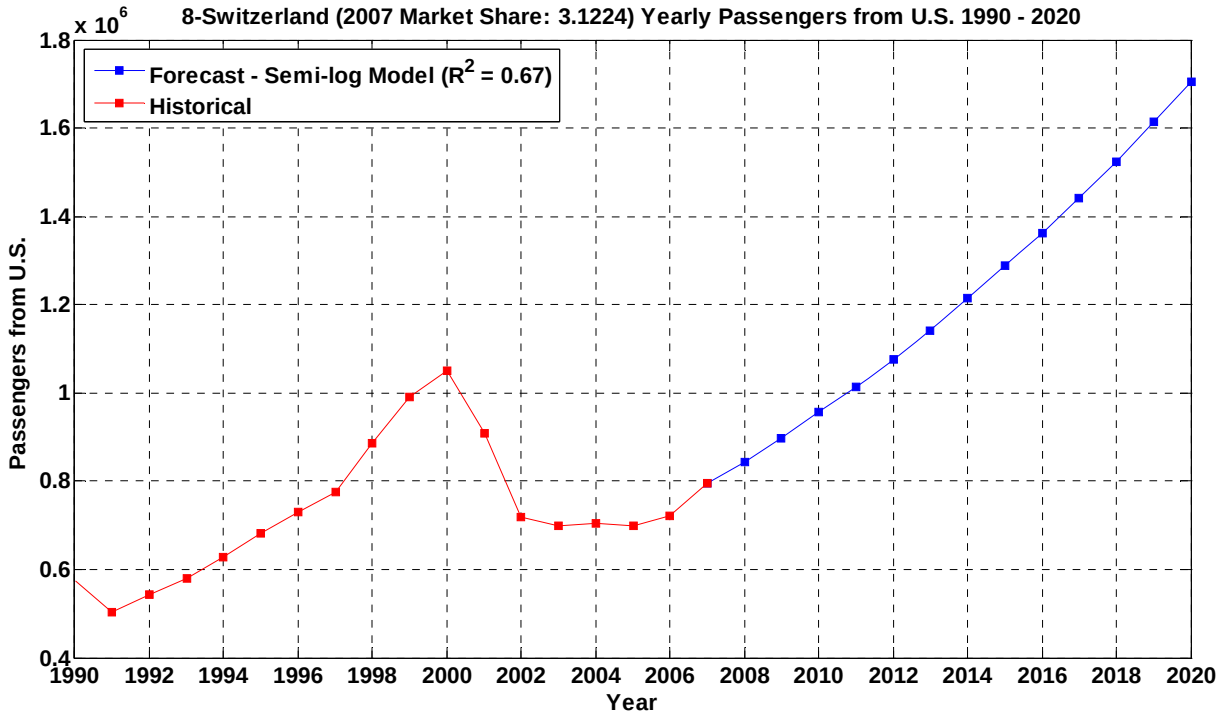


Figure B.1-9: Historical (1990 – 2007) and Forecast (2008 – 2020) Passenger Traffic from U.S. to Switzerland ***(Historical Source: 1990 - 2007 T100 International Market Data)***

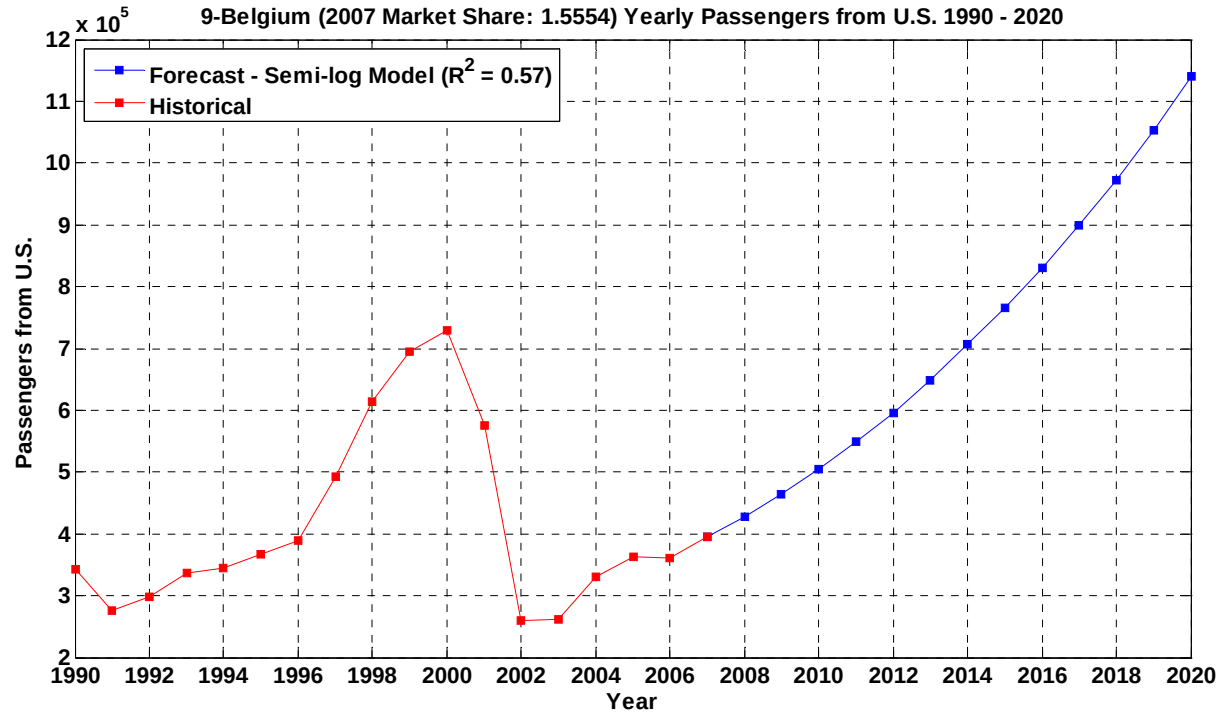


Figure B.1-10: Historical (1990 – 2007) and Forecast (2008 – 2020) Passenger Traffic from U.S. to Belgium ***(Historical Source: 1990 - 2007 T100 International Market Data)***

Table B.1-1 Passenger Traffic between the United States and Selected Nine European Countries in Analysis Domain during 1990 – 2020 ***(1990 – 2007 Data Source: 1990 – 2007 T100 International Market Data)***

Year\European Country		1	2	3	4	5	6	7	8	9	Sum
Passengers		U.K.	Germany	France	Netherlands	Italy	Ireland	Spain	Switzerland	Belgium	
Historical	1990	4,528,446	2,256,382	1,470,630	637,325	669,932	279,364	468,842	574,408	342,196	11,227,525
	1991	4,098,713	2,156,690	1,397,422	687,294	626,814	231,550	439,215	503,685	275,476	10,416,859
	1992	4,842,188	2,555,764	1,671,992	776,632	840,132	258,562	578,701	542,098	297,750	12,363,819
	1993	5,174,786	2,657,348	1,606,463	964,422	822,010	248,994	519,705	581,136	335,986	12,910,850
	1994	5,333,169	2,690,340	1,738,517	1,094,743	882,644	316,378	577,783	628,521	345,132	13,607,227
	1995	5,759,648	2,845,646	1,765,418	1,186,835	920,484	338,800	605,000	680,574	366,790	14,469,195
	1996	6,141,315	2,912,320	1,949,248	1,404,848	953,423	416,048	567,609	729,683	389,560	15,464,054
	1997	6,829,973	3,151,366	2,056,891	1,652,792	1,023,953	414,485	619,862	774,321	492,387	17,016,030
	1998	7,606,402	3,247,833	2,208,808	2,000,085	1,009,600	484,939	690,228	885,156	613,387	18,746,438
	1999	8,206,666	3,504,471	2,369,384	2,189,654	1,148,349	630,692	767,081	990,856	695,452	20,502,605
	2000	8,665,584	3,723,927	3,008,111	2,265,435	1,461,210	748,719	800,155	1,050,556	728,523	22,452,220
	2001	7,660,202	3,338,407	2,878,633	2,017,044	1,202,177	743,481	682,384	909,585	575,957	20,007,870
	2002	7,692,186	3,277,681	2,706,402	1,974,929	1,001,086	639,532	653,740	717,803	260,257	18,923,616
	2003	7,552,207	3,403,578	2,556,152	1,959,699	950,437	774,089	653,147	698,051	261,028	18,808,388
	2004	8,216,281	3,807,120	2,779,885	2,139,464	1,205,983	829,352	765,522	704,368	331,242	20,779,217
	2005	8,344,689	4,093,115	2,986,896	2,272,816	1,277,667	909,869	811,046	699,668	363,961	21,759,727
	2006	8,276,607	4,285,164	2,973,593	2,238,902	1,314,422	996,896	858,197	720,786	360,237	22,024,804
	2007	8,513,976	4,677,240	3,013,163	2,344,010	1,443,529	1,074,759	1,003,373	794,974	396,021	23,261,045
Forecast	2008	9,029,528	4,899,345	3,183,732	2,600,525	1,521,776	1,152,753	1,046,962	844,274	426,803	24,705,698
	2009	9,605,373	5,125,107	3,370,979	2,900,243	1,606,402	1,247,148	1,094,419	898,027	463,158	26,310,856
	2010	10,237,314	5,356,814	3,576,641	3,232,907	1,700,217	1,342,442	1,146,109	955,523	504,585	28,052,552
	2011	10,907,512	5,599,758	3,793,867	3,599,033	1,799,697	1,437,451	1,200,505	1,013,503	548,699	29,900,025
	2012	11,618,282	5,854,483	4,023,303	4,001,955	1,905,181	1,536,199	1,257,753	1,076,470	595,919	31,869,545
	2013	12,372,078	6,121,560	4,265,637	4,445,376	2,017,031	1,636,877	1,318,002	1,142,410	648,592	33,967,563
	2014	13,171,511	6,401,586	4,521,597	4,933,397	2,135,635	1,740,706	1,381,408	1,213,729	707,316	36,206,885
	2015	14,004,256	6,688,770	4,786,483	5,459,060	2,258,508	1,847,467	1,446,955	1,288,161	766,714	38,546,374
	2016	14,886,509	6,989,574	5,065,958	6,036,428	2,388,625	1,956,868	1,515,875	1,362,265	830,453	41,032,555
	2017	15,821,223	7,304,644	5,360,830	6,670,646	2,526,418	2,074,924	1,588,343	1,441,522	898,819	43,687,369
	2018	16,811,516	7,634,659	5,671,944	7,367,252	2,672,337	2,193,472	1,664,542	1,524,497	972,721	46,512,940
	2019	17,860,696	7,980,328	6,000,192	8,132,382	2,826,863	2,318,859	1,744,665	1,613,046	1,053,598	49,530,629
	2020	18,972,251	8,342,391	6,346,523	8,972,848	2,990,502	2,451,478	1,828,911	1,705,779	1,139,359	52,750,042

Table B.1-2 Growth Factor of Passenger Traffic between the United States and Selected Nine European Countries in Analysis Domain during 1990 – 2020 ***(1990 – 2007 Data Source: 1990 – 2007 T100 International Market Data)***

Year\European Country Passengers Growth		1 U.K.	2 Germany	3 France	4 Netherlands	5 Italy	6 Ireland	7 Spain	8 Switzerland	9 Belgium	Sum
Historical	1990	-	-	-	-	-	-	-	-	-	-
	1991	-9.5%	-4.4%	-5.0%	7.8%	-6.4%	-17.1%	-6.3%	-12.3%	-19.5%	-7.2%
	1992	18.1%	18.5%	19.6%	13.0%	34.0%	11.7%	31.8%	7.6%	8.1%	18.7%
	1993	6.9%	4.0%	-3.9%	24.2%	-2.2%	-3.7%	-10.2%	7.2%	12.8%	4.4%
	1994	3.1%	1.2%	8.2%	13.5%	7.4%	27.1%	11.2%	8.2%	2.7%	5.4%
	1995	8.0%	5.8%	1.5%	8.4%	4.3%	7.1%	4.7%	8.3%	6.3%	6.3%
	1996	6.6%	2.3%	10.4%	18.4%	3.6%	22.8%	-6.2%	7.2%	6.2%	6.9%
	1997	11.2%	8.2%	5.5%	17.6%	7.4%	-0.4%	9.2%	6.1%	26.4%	10.0%
	1998	11.4%	3.1%	7.4%	21.0%	-1.4%	17.0%	11.4%	14.3%	24.6%	10.2%
	1999	7.9%	7.9%	7.3%	9.5%	13.7%	30.1%	11.1%	11.9%	13.4%	9.4%
	2000	5.6%	6.3%	27.0%	3.5%	27.2%	18.7%	4.3%	6.0%	4.8%	9.5%
	2001	-11.6%	-10.4%	-4.3%	-11.0%	-17.7%	-0.7%	-14.7%	-13.4%	-20.9%	-10.9%
	2002	0.4%	-1.8%	-6.0%	-2.1%	-16.7%	-14.0%	-4.2%	-21.1%	-54.8%	-5.4%
	2003	-1.8%	3.8%	-5.6%	-0.8%	-5.1%	21.0%	-0.1%	-2.8%	0.3%	-0.6%
	2004	8.8%	11.9%	8.8%	9.2%	26.9%	7.1%	17.2%	0.9%	26.9%	10.5%
	2005	1.6%	7.5%	7.4%	6.2%	5.9%	9.7%	5.9%	-0.7%	9.9%	4.7%
	2006	-0.8%	4.7%	-0.4%	-1.5%	2.9%	9.6%	5.8%	3.0%	-1.0%	1.2%
	2007	2.9%	9.1%	1.3%	4.7%	9.8%	7.8%	16.9%	10.3%	9.9%	5.6%
Forecast	2008	6.1%	4.7%	5.7%	10.9%	5.4%	7.3%	4.3%	6.2%	7.8%	6.2%
	2009	6.4%	4.6%	5.9%	11.5%	5.6%	8.2%	4.5%	6.4%	8.5%	6.5%
	2010	6.6%	4.5%	6.1%	11.5%	5.8%	7.6%	4.7%	6.4%	8.9%	6.6%
	2011	6.5%	4.5%	6.1%	11.3%	5.9%	7.1%	4.7%	6.1%	8.7%	6.6%
	2012	6.5%	4.5%	6.0%	11.2%	5.9%	6.9%	4.8%	6.2%	8.6%	6.6%
	2013	6.5%	4.6%	6.0%	11.1%	5.9%	6.6%	4.8%	6.1%	8.8%	6.6%
	2014	6.5%	4.6%	6.0%	11.0%	5.9%	6.3%	4.8%	6.2%	9.1%	6.6%
	2015	6.3%	4.5%	5.9%	10.7%	5.8%	6.1%	4.7%	6.1%	8.4%	6.5%
	2016	6.3%	4.5%	5.8%	10.6%	5.8%	5.9%	4.8%	5.8%	8.3%	6.4%
	2017	6.3%	4.5%	5.8%	10.5%	5.8%	6.0%	4.8%	5.8%	8.2%	6.5%
	2018	6.3%	4.5%	5.8%	10.4%	5.8%	5.7%	4.8%	5.8%	8.2%	6.5%
	2019	6.2%	4.5%	5.8%	10.4%	5.8%	5.7%	4.8%	5.8%	8.3%	6.5%
	2020	6.2%	4.5%	5.8%	10.3%	5.8%	5.7%	4.8%	5.7%	8.1%	6.5%

Table B.1-3 Real 2000 GDP of U.S. and nine European countries during 2008 - 2020 ***(Source: United States Department of Agriculture (USDA) International Macroeconomic Data Set)***

Year\European Country	0	1	2	3	4	5	6	7	8	9
	U.S.	U.K.	Germany	France	Netherlands	Italy	Ireland	Spain	Switzerland	Belgium
2008	11,834,433	1,766,398	2,124,003	1,530,634	412,106	1,178,309	139,067	739,594	274,974	260,673
2009	12,165,797	1,814,091	2,164,359	1,561,246	420,348	1,194,805	145,962	759,563	279,468	266,326
2010	12,530,771	1,863,071	2,198,988	1,592,471	428,104	1,211,532	152,141	780,072	283,621	272,302
2011	12,906,694	1,913,374	2,234,172	1,624,321	436,004	1,228,494	157,770	801,133	287,251	278,184
2012	13,293,895	1,965,035	2,269,919	1,656,807	444,049	1,245,693	163,292	822,764	291,273	284,053
2013	13,692,711	2,018,091	2,306,238	1,689,943	452,242	1,263,132	168,518	844,979	295,234	290,501
2014	14,103,493	2,072,580	2,343,137	1,723,742	460,587	1,280,816	173,573	867,793	299,545	297,531
2015	14,512,494	2,128,540	2,380,628	1,758,217	469,086	1,298,748	178,607	891,224	304,038	303,958
2016	14,933,356	2,186,010	2,418,718	1,793,381	477,741	1,316,930	183,429	915,287	307,838	310,432
2017	15,366,424	2,245,032	2,457,417	1,829,249	486,557	1,335,367	188,565	939,999	311,871	316,951
2018	15,812,050	2,305,648	2,496,736	1,865,834	495,535	1,354,062	193,279	965,379	315,863	323,639
2019	16,270,600	2,367,901	2,536,684	1,903,150	504,678	1,373,019	198,111	991,445	320,064	330,694
2020	16,742,447	2,431,834	2,577,271	1,941,213	513,991	1,392,241	203,064	1,018,214	324,225	337,606

Table B.1-4 Growth Factor of Real 2000 GDP of U.S. and nine European countries during 2008 – 2020 ***(Source: United States Department of Agriculture (USDA) International Macroeconomic Data Set)***

Year\European Country	0	1	2	3	4	5	6	7	8	9
	U.S.	U.K.	Germany	France	Netherlands	Italy	Ireland	Spain	Switzerland	Belgium
2008	2.5%	2.7%	2.4%	2.1%	2.0%	1.6%	4.4%	2.8%	1.8%	2.0%
2009	2.8%	2.7%	1.9%	2.0%	2.0%	1.4%	5.0%	2.7%	1.6%	2.2%
2010	3.0%	2.7%	1.6%	2.0%	1.8%	1.4%	4.2%	2.7%	1.5%	2.2%
2011	3.0%	2.7%	1.6%	2.0%	1.8%	1.4%	3.7%	2.7%	1.3%	2.2%
2012	3.0%	2.7%	1.6%	2.0%	1.8%	1.4%	3.5%	2.7%	1.4%	2.1%
2013	3.0%	2.7%	1.6%	2.0%	1.8%	1.4%	3.2%	2.7%	1.4%	2.3%
2014	3.0%	2.7%	1.6%	2.0%	1.8%	1.4%	3.0%	2.7%	1.5%	2.4%
2015	2.9%	2.7%	1.6%	2.0%	1.8%	1.4%	2.9%	2.7%	1.5%	2.2%
2016	2.9%	2.7%	1.6%	2.0%	1.8%	1.4%	2.7%	2.7%	1.3%	2.1%
2017	2.9%	2.7%	1.6%	2.0%	1.8%	1.4%	2.8%	2.7%	1.3%	2.1%
2018	2.9%	2.7%	1.6%	2.0%	1.8%	1.4%	2.5%	2.7%	1.3%	2.1%
2019	2.9%	2.7%	1.6%	2.0%	1.8%	1.4%	2.5%	2.7%	1.3%	2.2%
2020	2.9%	2.7%	1.6%	2.0%	1.8%	1.4%	2.5%	2.7%	1.3%	2.1%

B.2

Comparison between Historical and Forecast Passenger Traffic from U.S. to Selected Nine European Countries during 1990 – 2007

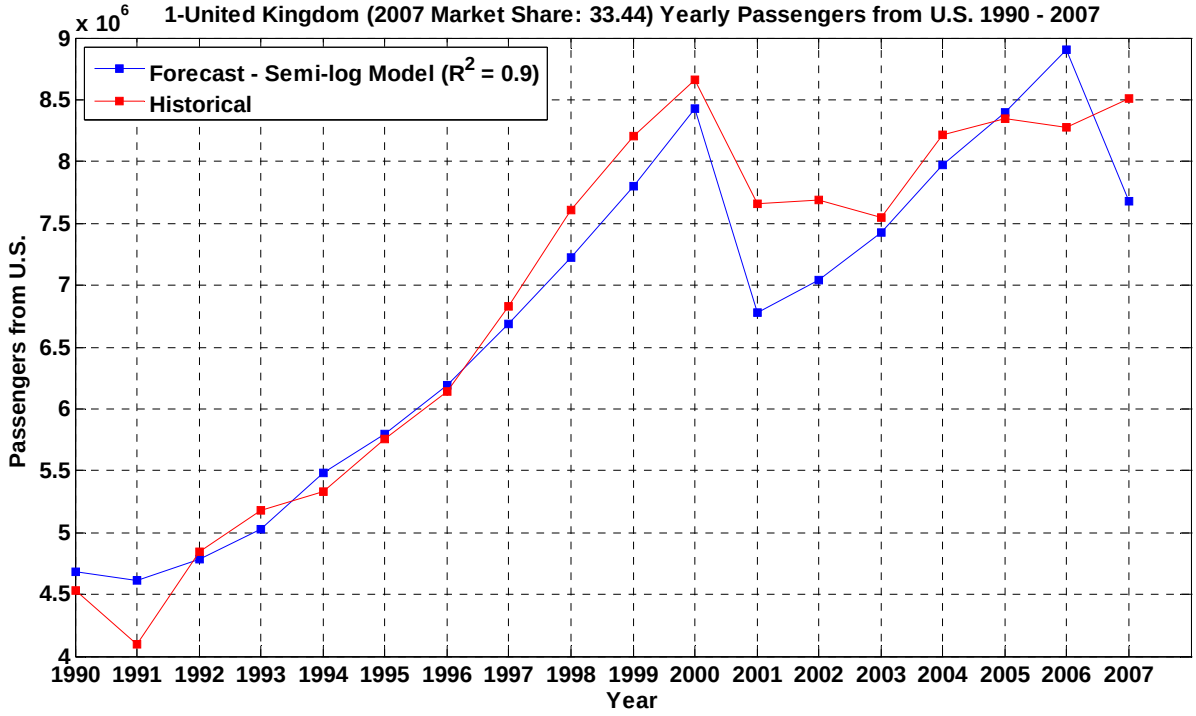


Figure B.2-1: Comparison between Historical and Forecast Passenger Traffic from U.S. to U.K. during 1990 – 2007 ***(Historical Source: 1990 - 2007 T100 International Market Data)***

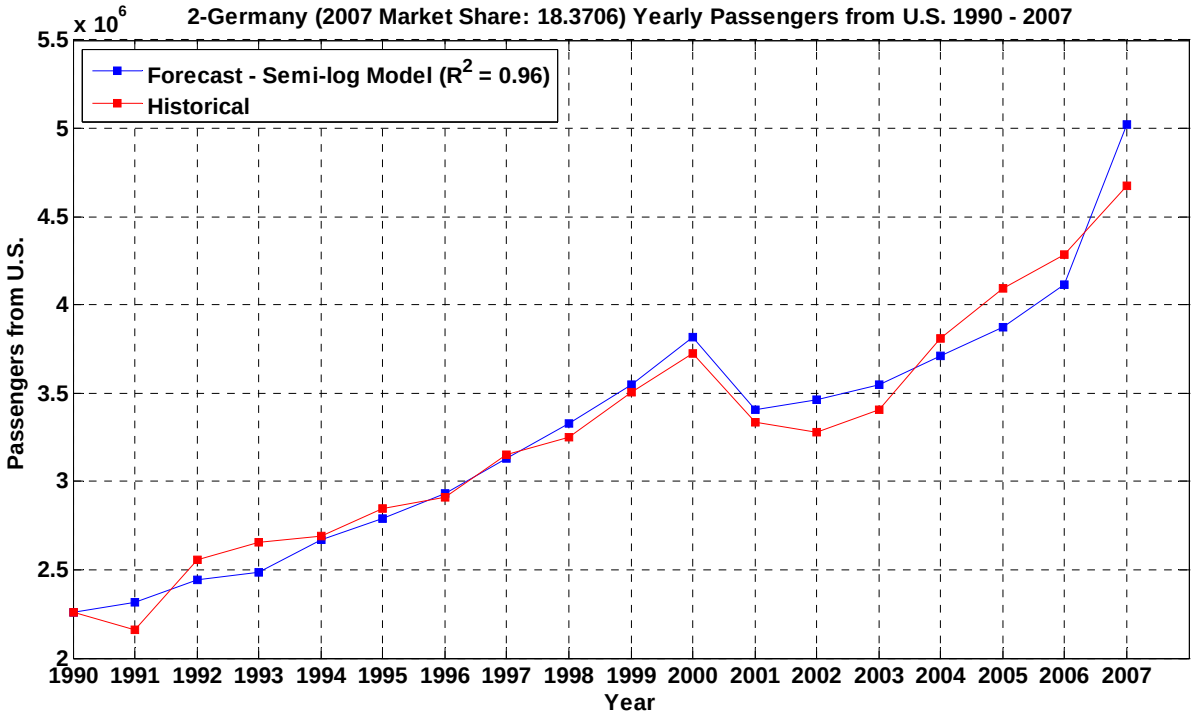


Figure B.2-2: Comparison between Historical and Forecast Passenger Traffic from U.S. to Germany during 1990 – 2007 ***(Historical Source: 1990 - 2007 T100 International Market Data)***

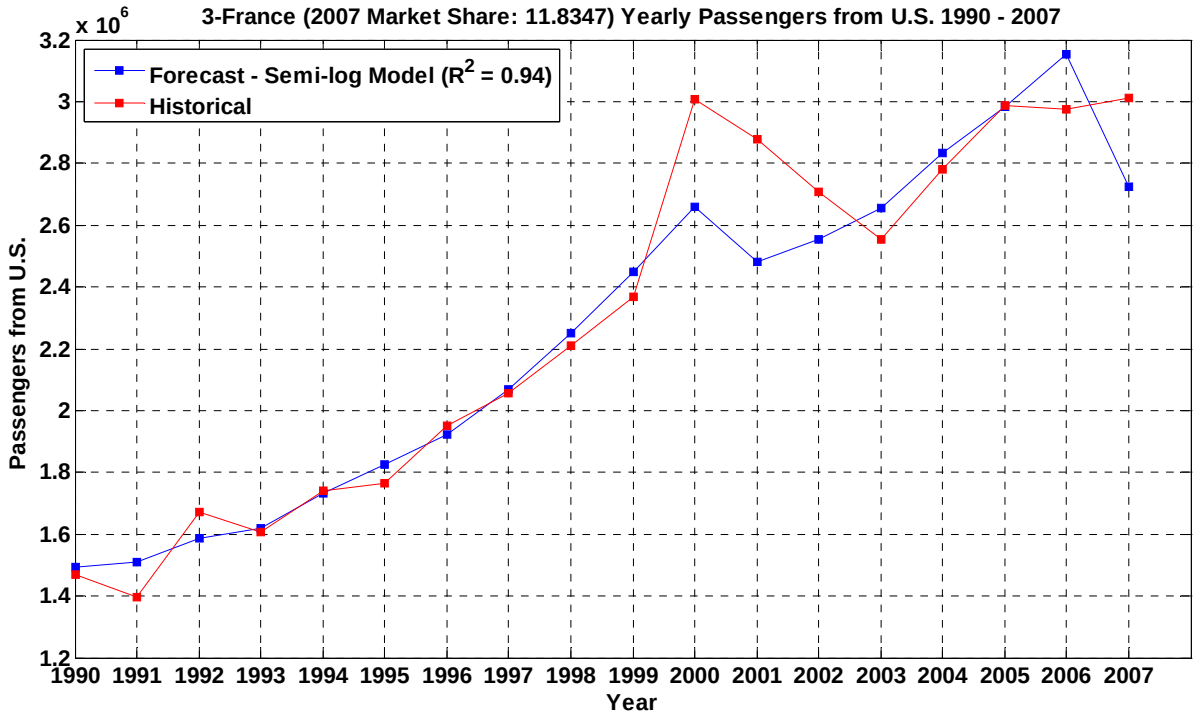


Figure B.2-3: Comparison between Historical and Forecast Passenger Traffic from U.S. to France during 1990 – 2007 ***(Historical Source: 1990 - 2007 T100 International Market Data)***

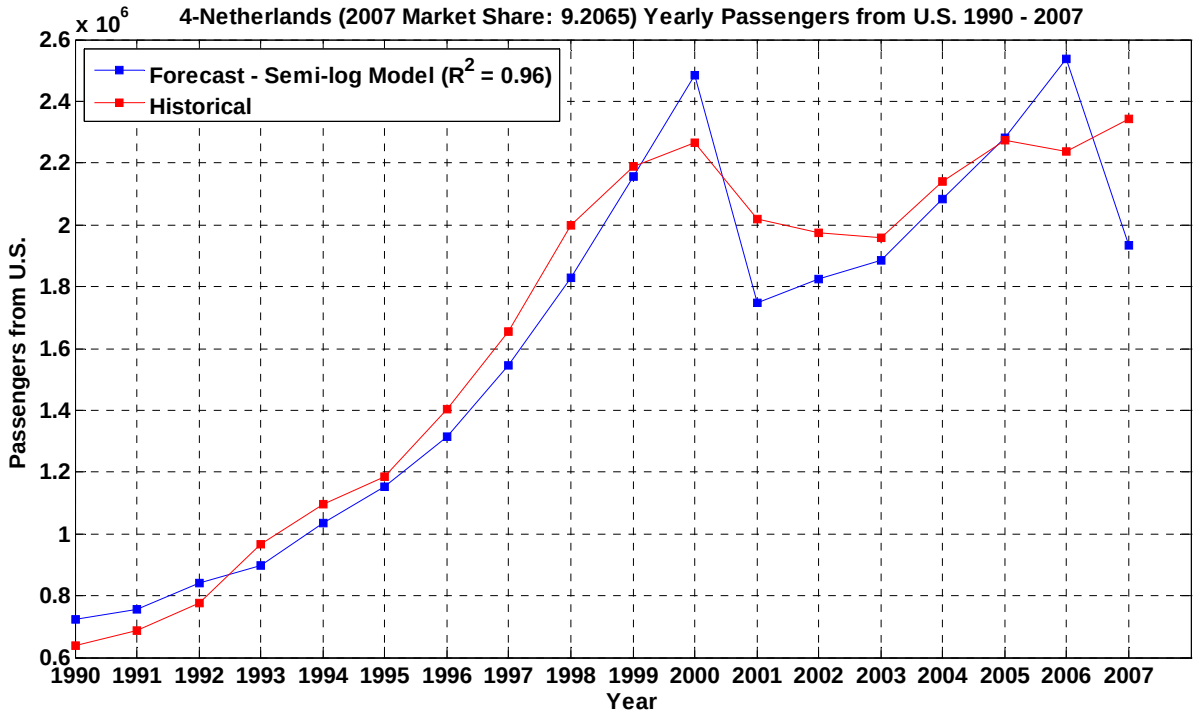


Figure B.2-4: Comparison between Historical and Forecast Passenger Traffic from U.S. to Netherlands during 1990 – 2007 ***(Historical Source: 1990 - 2007 T100 International Market Data)***

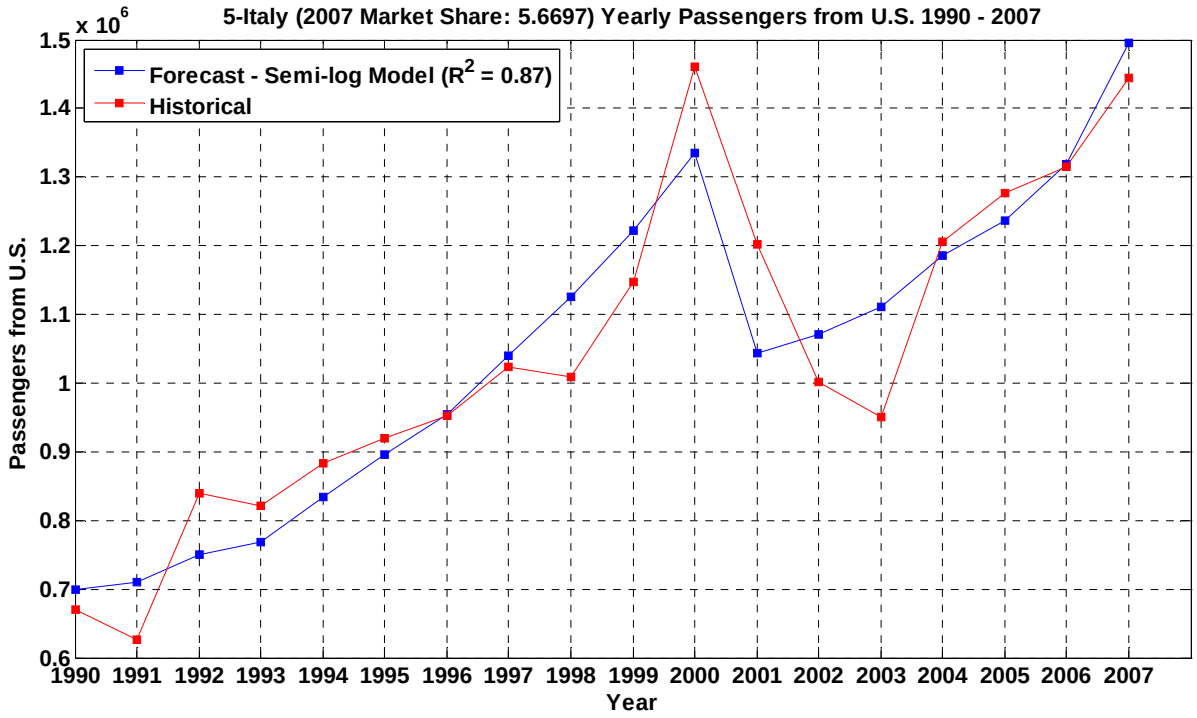


Figure B.2-5: Comparison between Historical and Forecast Passenger Traffic from U.S. to Italy during 1990 – 2007 ***(Historical Source: 1990 - 2007 T100 International Market Data)***

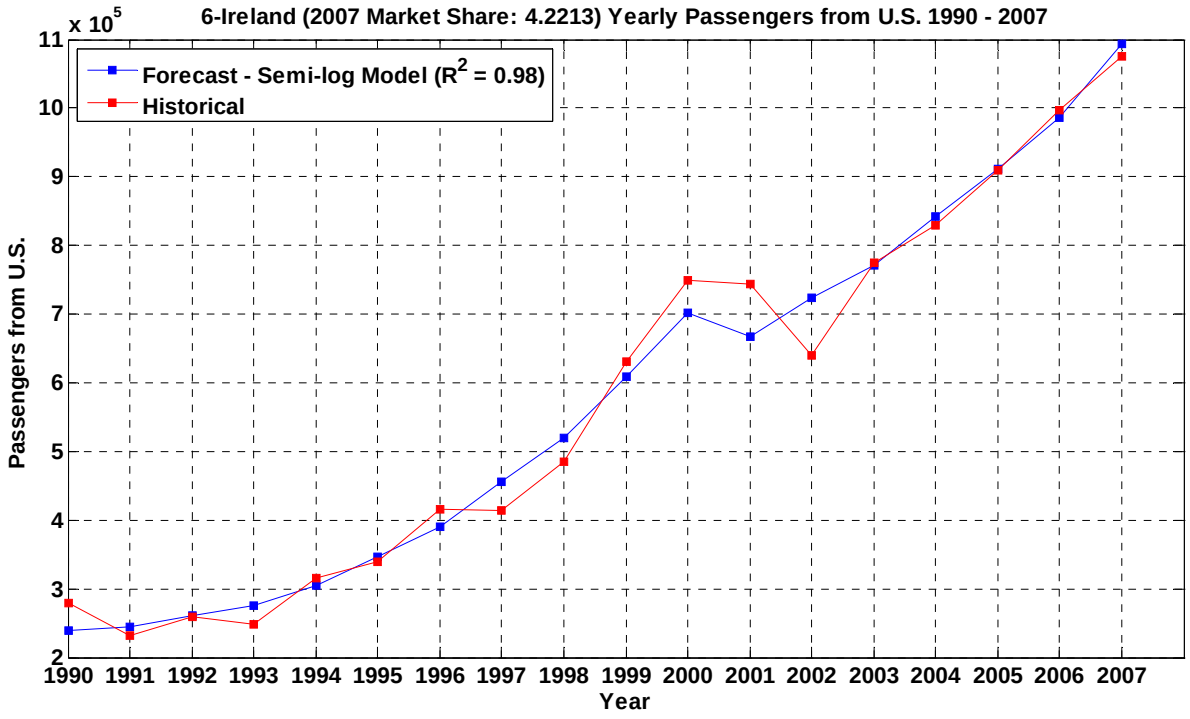


Figure B.2-6: Comparison between Historical and Forecast Passenger Traffic from U.S. to Ireland during 1990 – 2007 ***(Historical Source: 1990 - 2007 T100 International Market Data)***

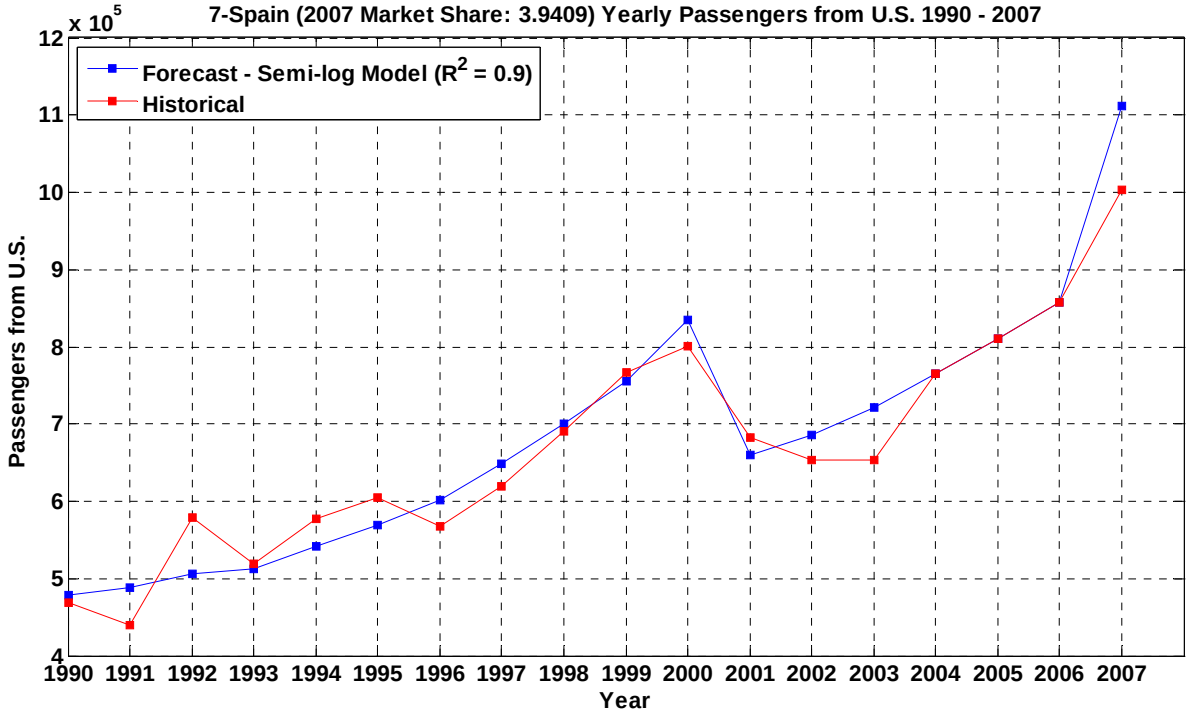


Figure B.2-7: Comparison between Historical and Forecast Passenger Traffic from U.S. to Spain during 1990 – 2007 ***(Historical Source: 1990 - 2007 T100 International Market Data)***

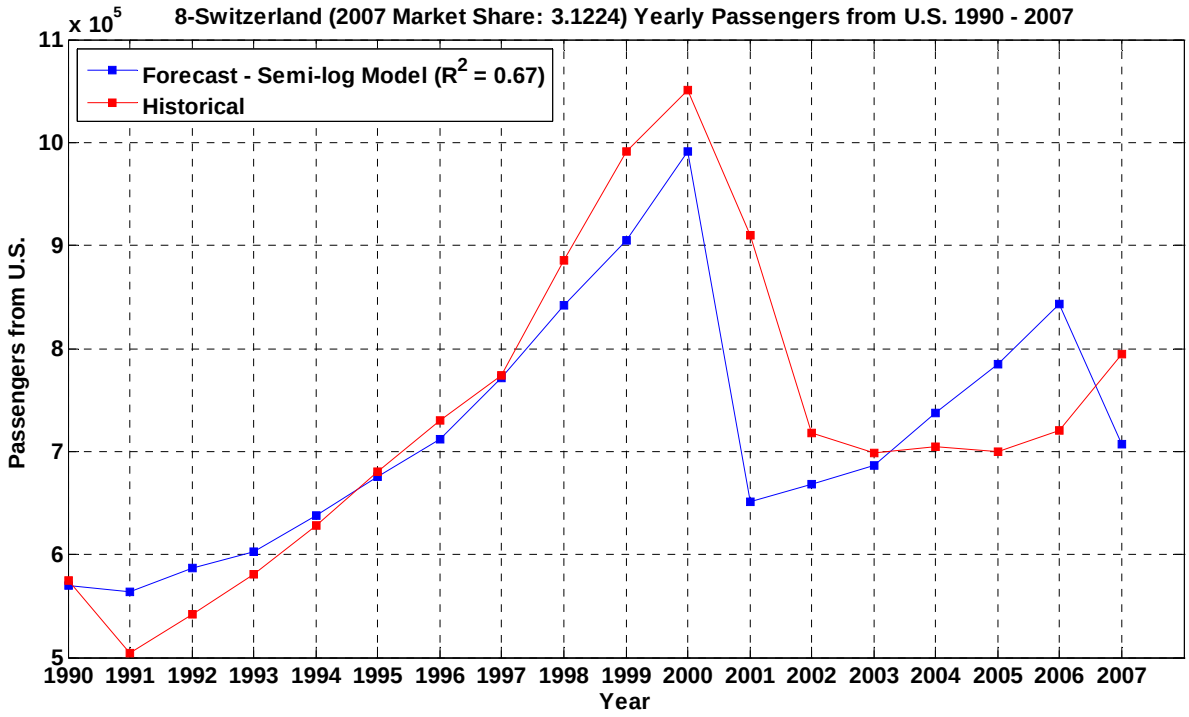


Figure B.2-8: Comparison between Historical and Forecast Passenger Traffic from U.S. to Switzerland during 1990 – 2007 ***(Historical Source: 1990 - 2007 T100 International Market Data)***

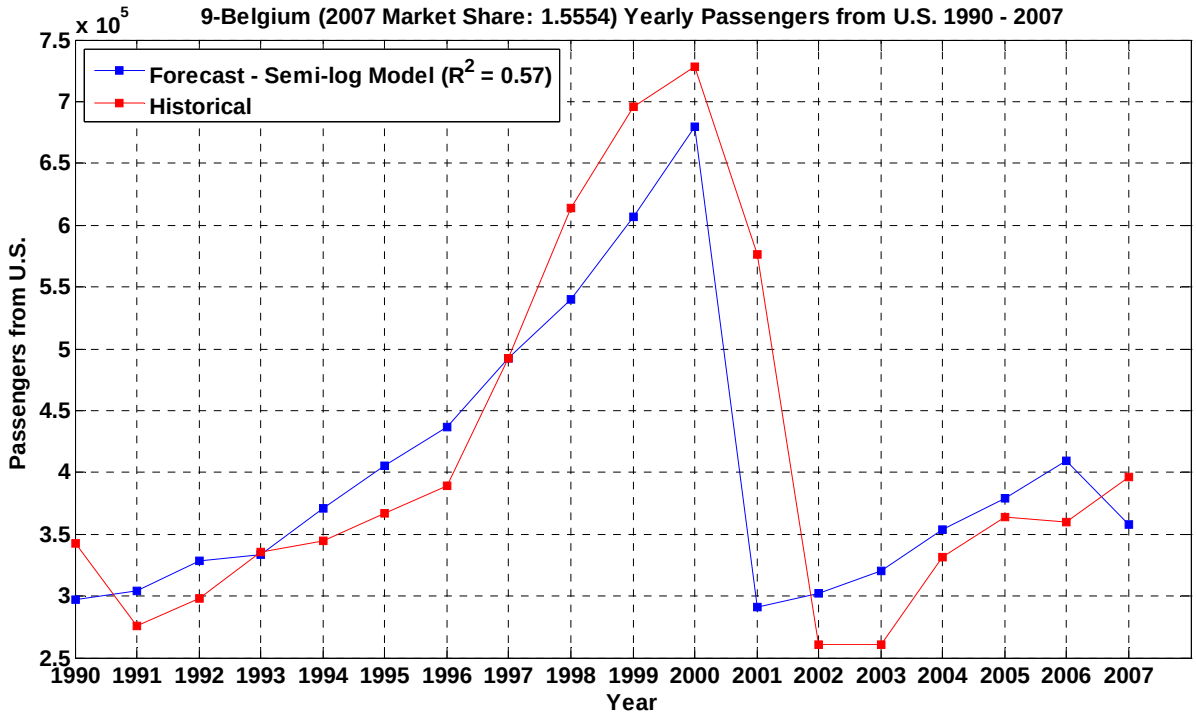


Figure B.2-9: Comparison between Historical and Forecast Passenger Traffic from U.S. to Belgium during 1990 – 2007 ***(Historical Source: 1990 - 2007 T100 International Market Data)***

B.3

Input Data for Modeling Passenger Traffic between the United States and Selected Nine European Countries during 1990 - 2007

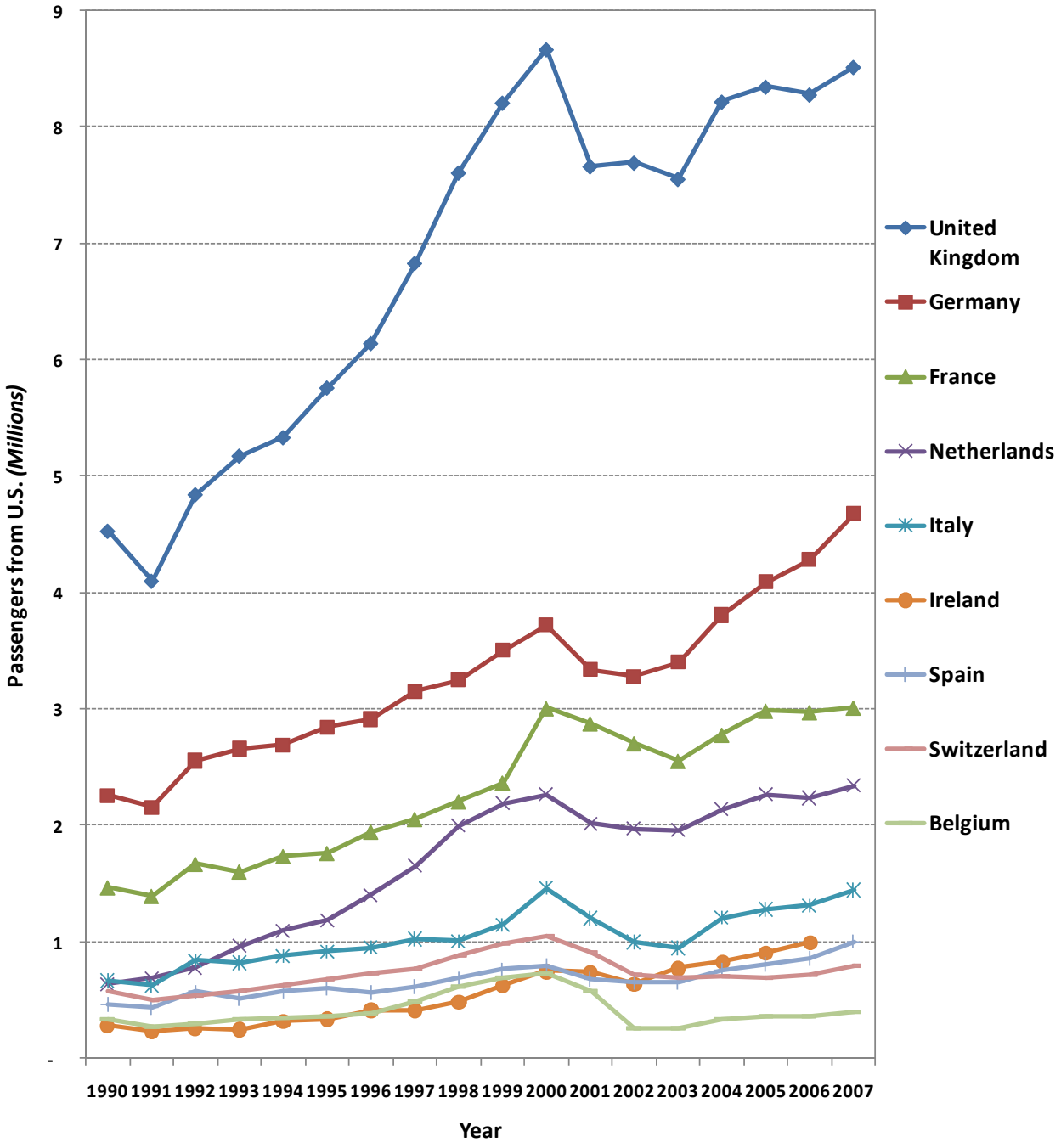


Figure B.3-1: Passenger Traffic from the United States to Selected Nine European Countries in Analysis Domain during 1990 - 2007 ***(Source: 1990 - 2007 T100 International Market Data)***

Table B.3-1 Passenger Traffic between the United States and Selected Nine European Countries in Analysis Domain during 1990 – 2007 ***(Source: 1990 – 2007 T100 International Market Data)***

Year \ European Country	1 U.K.	2 Germany	3 France	4 Netherlands	5 Italy	6 Ireland	7 Spain	8 Switzerland	9 Belgium	Sum
1990	4,528,446	2,256,382	1,470,630	637,325	669,932	279,364	468,842	574,408	342,196	11,227,525
1991	4,098,713	2,156,690	1,397,422	687,294	626,814	231,550	439,215	503,685	275,476	10,416,859
1992	4,842,188	2,555,764	1,671,992	776,632	840,132	258,562	578,701	542,098	297,750	12,363,819
1993	5,174,786	2,657,348	1,606,463	964,422	822,010	248,994	519,705	581,136	335,986	12,910,850
1994	5,333,169	2,690,340	1,738,517	1,094,743	882,644	316,378	577,783	628,521	345,132	13,607,227
1995	5,759,648	2,845,646	1,765,418	1,186,835	920,484	338,800	605,000	680,574	366,790	14,469,195
1996	6,141,315	2,912,320	1,949,248	1,404,848	953,423	416,048	567,609	729,683	389,560	15,464,054
1997	6,829,973	3,151,366	2,056,891	1,652,792	1,023,953	414,485	619,862	774,321	492,387	17,016,030
1998	7,606,402	3,247,833	2,208,808	2,000,085	1,009,600	484,939	690,228	885,156	613,387	18,746,438
1999	8,206,666	3,504,471	2,369,384	2,189,654	1,148,349	630,692	767,081	990,856	695,452	20,502,605
2000	8,665,584	3,723,927	3,008,111	2,265,435	1,461,210	748,719	800,155	1,050,556	728,523	22,452,220
2001	7,660,202	3,338,407	2,878,633	2,017,044	1,202,177	743,481	682,384	909,585	575,957	20,007,870
2002	7,692,186	3,277,681	2,706,402	1,974,929	1,001,086	639,532	653,740	717,803	260,257	18,923,616
2003	7,552,207	3,403,578	2,556,152	1,959,699	950,437	774,089	653,147	698,051	261,028	18,808,388
2004	8,216,281	3,807,120	2,779,885	2,139,464	1,205,983	829,352	765,522	704,368	331,242	20,779,217
2005	8,344,689	4,093,115	2,986,896	2,272,816	1,277,667	909,869	811,046	699,668	363,961	21,759,727
2006	8,276,607	4,285,164	2,973,593	2,238,902	1,314,422	996,896	858,197	720,786	360,237	22,024,804
2007	8,513,976	4,677,240	3,013,163	2,344,010	1,443,529	1,074,759	1,003,373	794,974	396,021	23,261,045

Table B.3-2 Growth Factor of Passenger Traffic between the United States and Selected Nine European Countries in Analysis Domain during 1990 – 2007 ***(Source: 1990 – 2007 T100 International Market Data)***

Year \ European Country	1 U.K.	2 Germany	3 France	4 Netherlands	5 Italy	6 Ireland	7 Spain	8 Switzerland	9 Belgium	Sum
1990	-	-	-	-	-	-	-	-	-	-
1991	-9.5%	-4.4%	-5.0%	7.8%	-6.4%	-17.1%	-6.3%	-12.3%	-19.5%	-7.2%
1992	18.1%	18.5%	19.6%	13.0%	34.0%	11.7%	31.8%	7.6%	8.1%	18.7%
1993	6.9%	4.0%	-3.9%	24.2%	-2.2%	-3.7%	-10.2%	7.2%	12.8%	4.4%
1994	3.1%	1.2%	8.2%	13.5%	7.4%	27.1%	11.2%	8.2%	2.7%	5.4%
1995	8.0%	5.8%	1.5%	8.4%	4.3%	7.1%	4.7%	8.3%	6.3%	6.3%
1996	6.6%	2.3%	10.4%	18.4%	3.6%	22.8%	-6.2%	7.2%	6.2%	6.9%
1997	11.2%	8.2%	5.5%	17.6%	7.4%	-0.4%	9.2%	6.1%	26.4%	10.0%
1998	11.4%	3.1%	7.4%	21.0%	-1.4%	17.0%	11.4%	14.3%	24.6%	10.2%
1999	7.9%	7.9%	7.3%	9.5%	13.7%	30.1%	11.1%	11.9%	13.4%	9.4%
2000	5.6%	6.3%	27.0%	3.5%	27.2%	18.7%	4.3%	6.0%	4.8%	9.5%
2001	-11.6%	-10.4%	-4.3%	-11.0%	-17.7%	-0.7%	-14.7%	-13.4%	-20.9%	-10.9%
2002	0.4%	-1.8%	-6.0%	-2.1%	-16.7%	-14.0%	-4.2%	-21.1%	-54.8%	-5.4%
2003	-1.8%	3.8%	-5.6%	-0.8%	-5.1%	21.0%	-0.1%	-2.8%	0.3%	-0.6%
2004	8.8%	11.9%	8.8%	9.2%	26.9%	7.1%	17.2%	0.9%	26.9%	10.5%
2005	1.6%	7.5%	7.4%	6.2%	5.9%	9.7%	5.9%	-0.7%	9.9%	4.7%
2006	-0.8%	4.7%	-0.4%	-1.5%	2.9%	9.6%	5.8%	3.0%	-1.0%	1.2%
2007	2.9%	9.1%	1.3%	4.7%	9.8%	7.8%	16.9%	10.3%	9.9%	5.6%

Table B.3-3 Real 2000 GDP of U.S. and Nine European Countries during 1990 – 2007 ***(Source: United States Department of Agriculture (USDA) International Macroeconomic Data Set)***

Year\U.S. + European Country	0 U.S.	1 U.K.	2 Germany	3 France	4 Netherlands	5 Italy	6 Ireland	7 Spain	8 Switzerland	9 Belgium
1990	7,112,500	1,136,040	1,586,630	1,089,006	276,583	918,137	47,165	434,608	220,373	183,710
1991	7,100,500	1,120,617	1,625,029	1,100,599	282,859	930,901	48,075	444,466	218,608	187,256
1992	7,336,600	1,123,136	1,655,319	1,114,532	288,589	937,981	49,682	447,520	218,332	190,230
1993	7,532,700	1,148,766	1,642,215	1,105,494	290,786	929,691	51,020	442,313	217,281	187,337
1994	7,835,500	1,198,226	1,686,891	1,129,983	300,159	950,214	53,956	452,270	218,438	192,909
1995	8,031,700	1,233,329	1,720,124	1,155,761	308,520	977,328	59,300	465,150	222,655	199,488
1996	8,328,900	1,267,278	1,737,121	1,168,552	317,897	988,011	64,088	476,486	223,817	201,841
1997	8,703,500	1,305,773	1,769,405	1,194,542	330,099	1,008,031	71,196	495,671	228,087	208,810
1998	9,066,900	1,349,437	1,801,927	1,237,052	344,457	1,026,115	77,349	517,210	234,457	213,026
1999	9,470,300	1,390,218	1,835,825	1,276,856	358,220	1,043,186	86,076	539,056	237,537	219,847
2000	9,817,000	1,443,190	1,899,301	1,328,494	370,638	1,074,763	94,956	580,673	246,049	228,417
2001	9,890,700	1,477,138	1,925,223	1,352,017	375,927	1,093,724	100,661	601,255	248,612	230,059
2002	10,048,800	1,507,556	1,925,318	1,366,737	378,064	1,097,917	106,835	617,369	249,421	232,138
2003	10,301,000	1,547,741	1,921,473	1,381,362	374,743	1,100,708	110,738	635,360	248,541	235,061
2004	10,676,000	1,598,241	1,936,285	1,412,523	380,136	1,114,184	116,133	655,007	253,761	241,910
2005	11,003,000	1,629,119	1,957,507	1,436,812	385,951	1,115,377	121,541	677,451	258,454	245,633
2006	11,319,400	1,674,125	2,015,951	1,468,362	395,540	1,137,005	127,375	699,174	265,648	250,904
2007	11,545,788	1,719,959	2,075,094	1,499,151	404,025	1,159,745	133,208	719,450	270,127	255,523

Table B.3-4 Growth Factor of Real 2000 GDP of U.S. and Nine European Countries during 1990 – 2007 ***(Source: United States Department of Agriculture (USDA) International Macroeconomic Data Set)***

Year\U.S. + European Country	0 U.S.	1 U.K.	2 Germany	3 France	4 Netherlands	5 Italy	6 Ireland	7 Spain	8 Switzerland	9 Belgium
1990	-		-	-	-	-	-	-	-	-
1991	-0.2%	-1.4%	2.4%	1.1%	2.3%	1.4%	1.9%	2.3%	-0.8%	1.9%
1992	3.3%	0.2%	1.9%	1.3%	2.0%	0.8%	3.3%	0.7%	-0.1%	1.6%
1993	2.7%	2.3%	-0.8%	-0.8%	0.8%	-0.9%	2.7%	-1.2%	-0.5%	-1.5%
1994	4.0%	4.3%	2.7%	2.2%	3.2%	2.2%	5.8%	2.3%	0.5%	3.0%
1995	2.5%	2.9%	2.0%	2.3%	2.8%	2.9%	9.9%	2.8%	1.9%	3.4%
1996	3.7%	2.8%	1.0%	1.1%	3.0%	1.1%	8.1%	2.4%	0.5%	1.2%
1997	4.5%	3.0%	1.9%	2.2%	3.8%	2.0%	11.1%	4.0%	1.9%	3.5%
1998	4.2%	3.3%	1.8%	3.6%	4.3%	1.8%	8.6%	4.3%	2.8%	2.0%
1999	4.4%	3.0%	1.9%	3.2%	4.0%	1.7%	11.3%	4.2%	1.3%	3.2%
2000	3.7%	3.8%	3.5%	4.0%	3.5%	3.0%	10.3%	7.7%	3.6%	3.9%
2001	0.8%	2.4%	1.4%	1.8%	1.4%	1.8%	6.0%	3.5%	1.0%	0.7%
2002	1.6%	2.1%	0.0%	1.1%	0.6%	0.4%	6.1%	2.7%	0.3%	0.9%
2003	2.5%	2.7%	-0.2%	1.1%	-0.9%	0.3%	3.7%	2.9%	-0.4%	1.3%
2004	3.6%	3.3%	0.8%	2.3%	1.4%	1.2%	4.9%	3.1%	2.1%	2.9%
2005	3.1%	1.9%	1.1%	1.7%	1.5%	0.1%	4.7%	3.4%	1.8%	1.5%
2006	2.9%	2.8%	3.0%	2.2%	2.5%	1.9%	4.8%	3.2%	2.8%	2.1%
2007	2.0%	2.7%	2.9%	2.1%	2.1%	2.0%	4.6%	2.9%	1.7%	1.8%

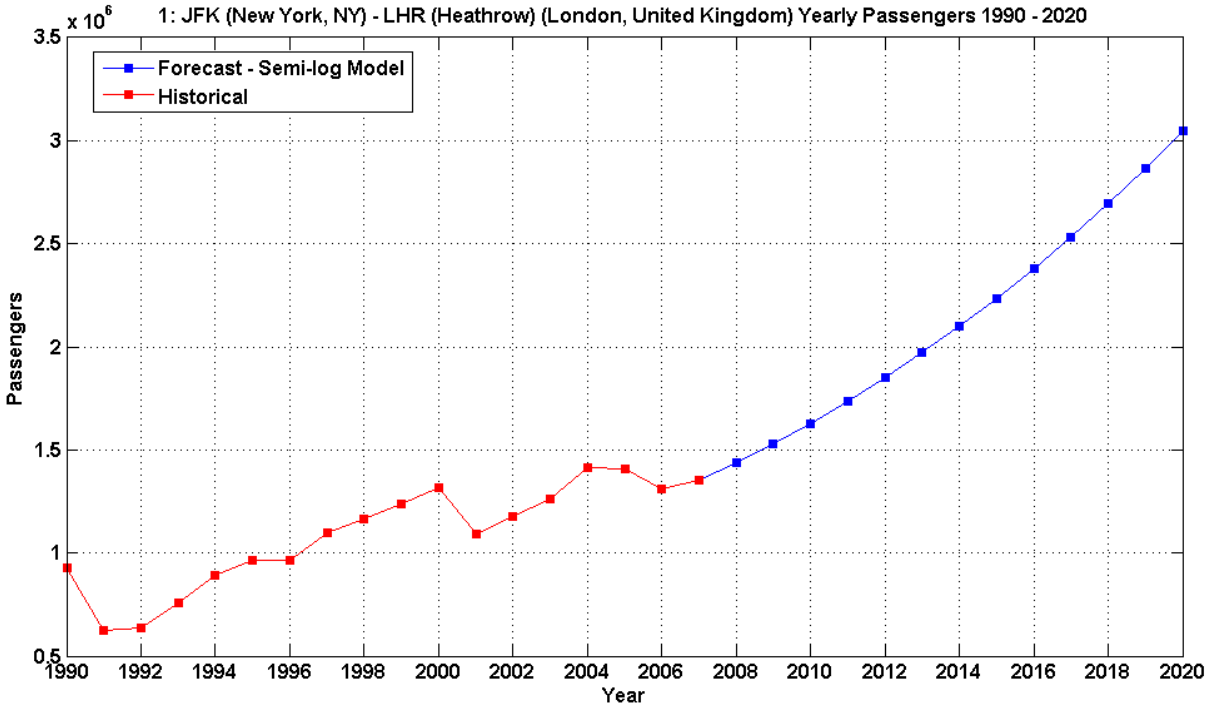
Table B.3-5 Population of U.S. and Nine European Countries during 1990 – 2007 ***(Source: United States Department of Agriculture (USDA) International Macroeconomic Data Set)***

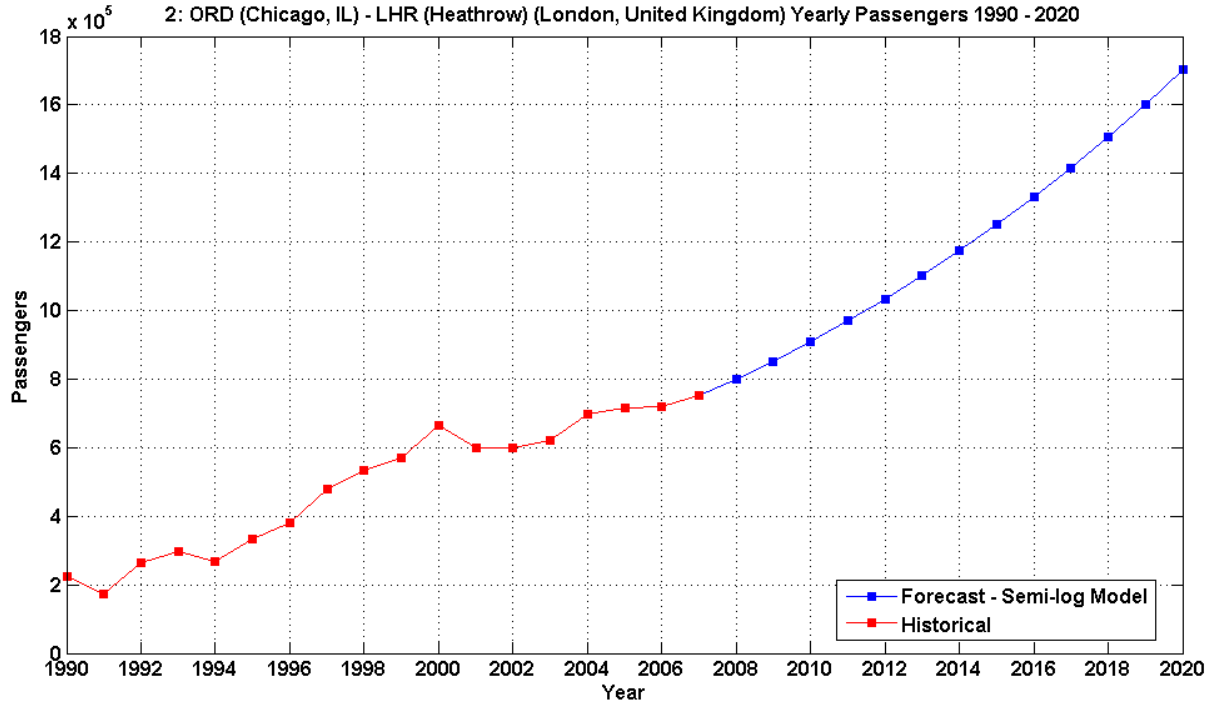
Year\U.S. + European Country	0 U.S.	1 U.K.	2 Germany	3 France	4 Netherlands	5 Italy	6 Ireland	7 Spain	8 Switzerland	9 Belgium
1990	250,131,894	57,493,307	79,380,394	56,735,161	14,951,510	56,742,886	3,508,200	39,350,769	6,836,626	9,969,310
1991	253,492,503	57,665,646	79,984,244	57,055,448	15,066,220	56,747,462	3,530,771	39,461,418	6,920,562	10,004,487
1992	256,894,189	57,866,349	80,597,764	57,374,179	15,174,244	56,840,847	3,557,761	39,549,438	6,995,447	10,045,622
1993	260,255,352	58,026,920	81,132,272	57,658,289	15,274,942	57,026,746	3,578,349	39,627,587	7,058,211	10,085,426
1994	263,435,673	58,212,518	81,414,164	57,906,847	15,382,198	57,179,460	3,595,542	39,690,971	7,114,530	10,122,914
1995	266,557,091	58,426,014	81,653,702	58,149,727	15,459,054	57,274,531	3,613,890	39,749,715	7,157,106	10,155,459
1996	269,667,391	58,618,663	81,890,667	58,388,408	15,527,809	57,367,032	3,636,179	39,803,829	7,181,024	10,178,934
1997	272,911,760	58,808,266	82,011,073	58,623,428	15,604,464	57,479,469	3,667,233	39,855,442	7,193,761	10,199,787
1998	276,115,288	59,035,652	82,023,672	58,866,290	15,699,259	57,550,318	3,707,555	39,906,235	7,207,995	10,217,030
1999	279,294,713	59,293,320	82,074,778	59,116,128	15,801,947	57,603,634	3,750,141	39,953,263	7,232,809	10,235,655
2000	282,338,631	59,522,468	82,187,909	59,381,628	15,907,853	57,719,337	3,791,690	40,016,081	7,266,920	10,263,618
2001	285,023,886	59,723,243	82,280,551	59,658,144	16,017,445	57,844,924	3,835,025	40,087,104	7,311,237	10,291,679
2002	287,675,526	59,912,431	82,350,671	59,925,035	16,122,830	57,926,999	3,879,155	40,152,517	7,361,757	10,311,970
2003	290,342,554	60,094,648	82,398,326	60,180,529	16,223,248	57,998,353	3,924,023	40,217,413	7,408,319	10,330,824
2004	293,027,571	60,270,708	82,424,609	60,424,213	16,318,199	58,057,477	3,969,558	40,280,780	7,450,867	10,348,276
2005	295,734,134	60,441,457	82,431,390	60,656,178	16,407,491	58,103,033	4,015,676	40,341,462	7,489,370	10,364,388
2006	298,444,215	60,609,153	82,422,299	60,876,136	16,491,461	58,133,509	4,062,235	40,397,842	7,523,934	10,379,067
2007	301,139,947	60,776,238	82,400,996	61,083,916	16,570,613	58,147,733	4,109,086	40,448,191	7,554,661	10,392,226

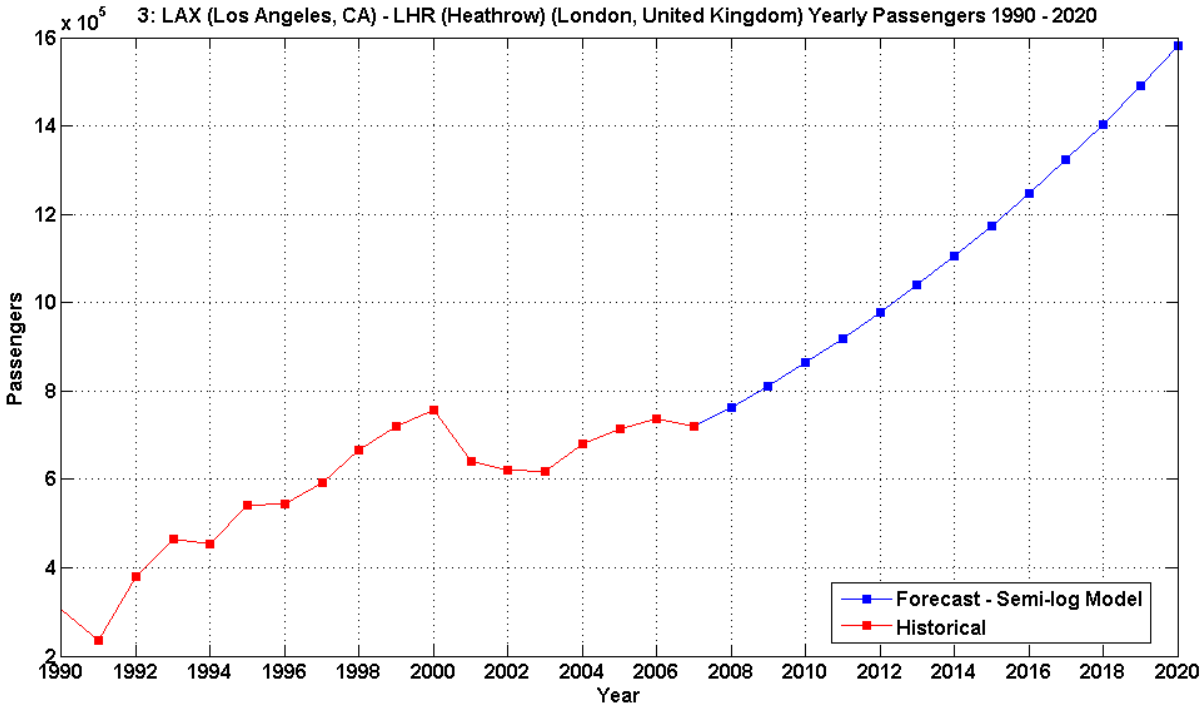
Table B.3-6 Average Airfare (2000 Year $) from U.S. to Nine European Countries during 1998 – 2007 ***(Source: 1998 – 2007 DB1B Data)***

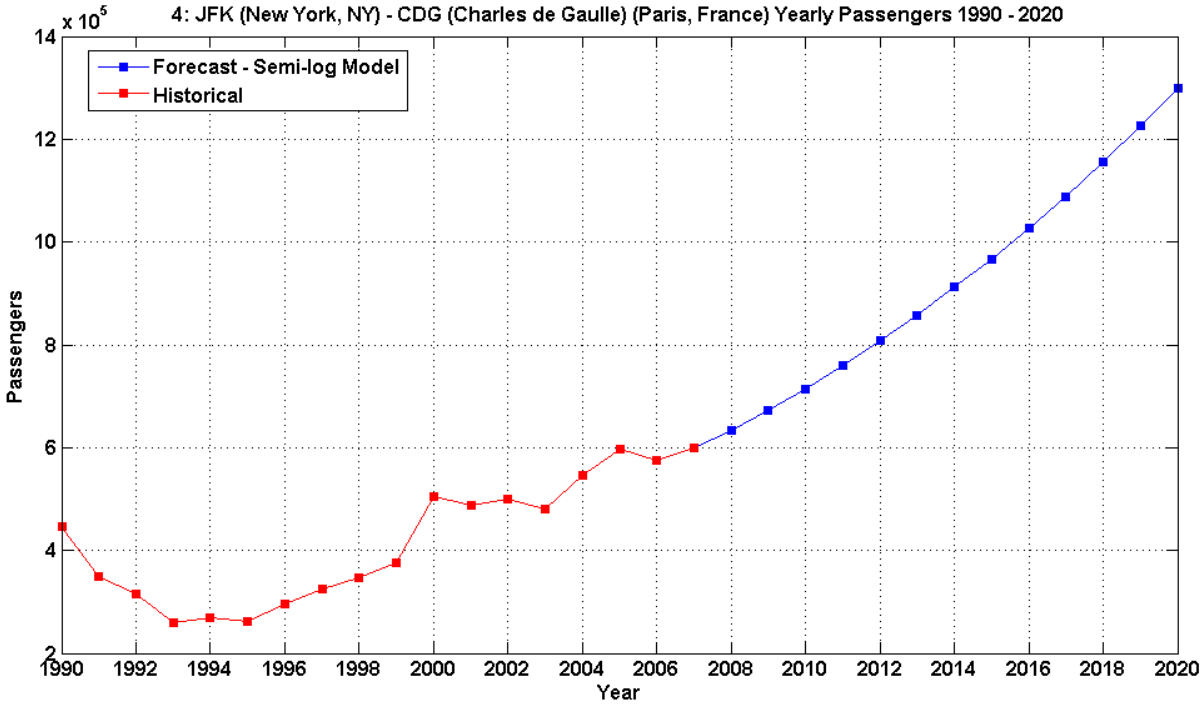
Year\European Country	1 U.K.	2 Germany	3 France	4 Netherlands	5 Italy	6 Ireland	7 Spain	8 Switzerland	9 Belgium
1998	605	617	493	571	520	500	481	675	601
1999	545	576	445	497	477	434	459	606	561
2000	569	532	462	493	461	464	462	556	553
2001	488	501	472	493	457	438	462	546	496
2002	467	548	496	537	491	407	475	592	572
2003	462	539	477	504	454	383	446	550	553
2004	483	553	500	528	479	416	460	553	570
2005	513	585	524	557	508	388	485	551	599
2006	518	578	542	575	547	377	520	578	600
2007	543	578	576	605	588	399	527	588	619

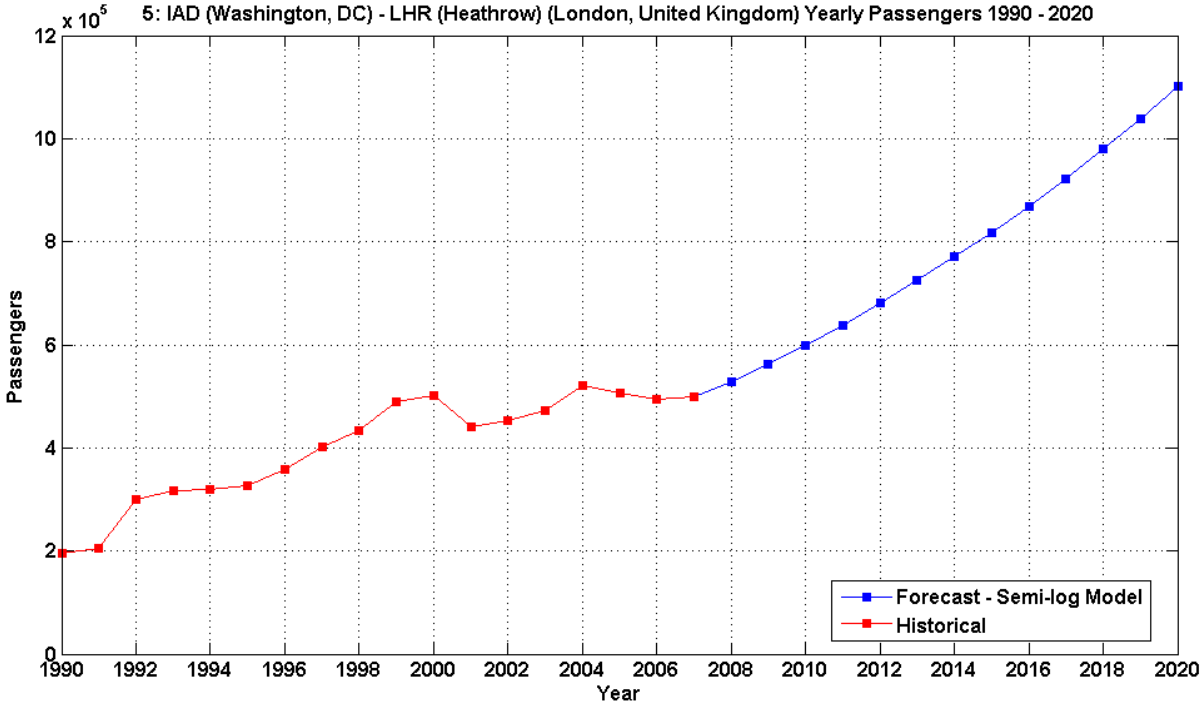
C.1
Passenger Traffic for 182 Gateway Airport Pairs from the United States to Selected Nine European Countries

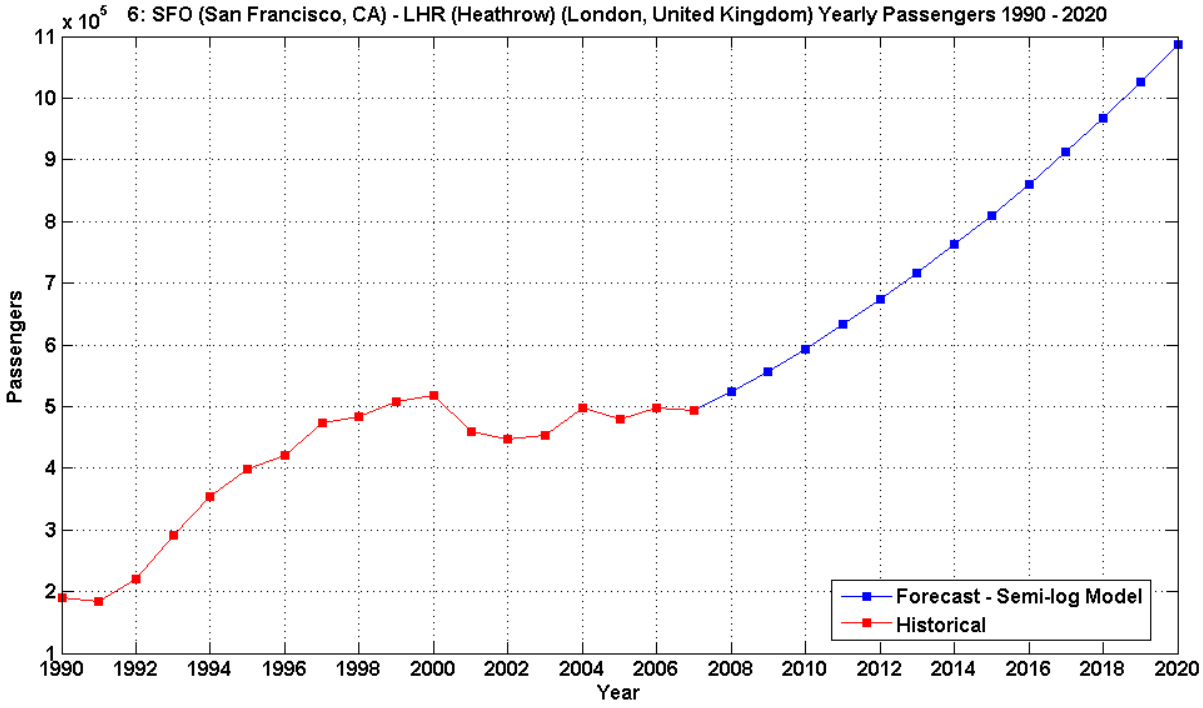

1: JFK (New York, NY) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers
Year
3.5
3
2.5
2
1.5
1
0.5
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

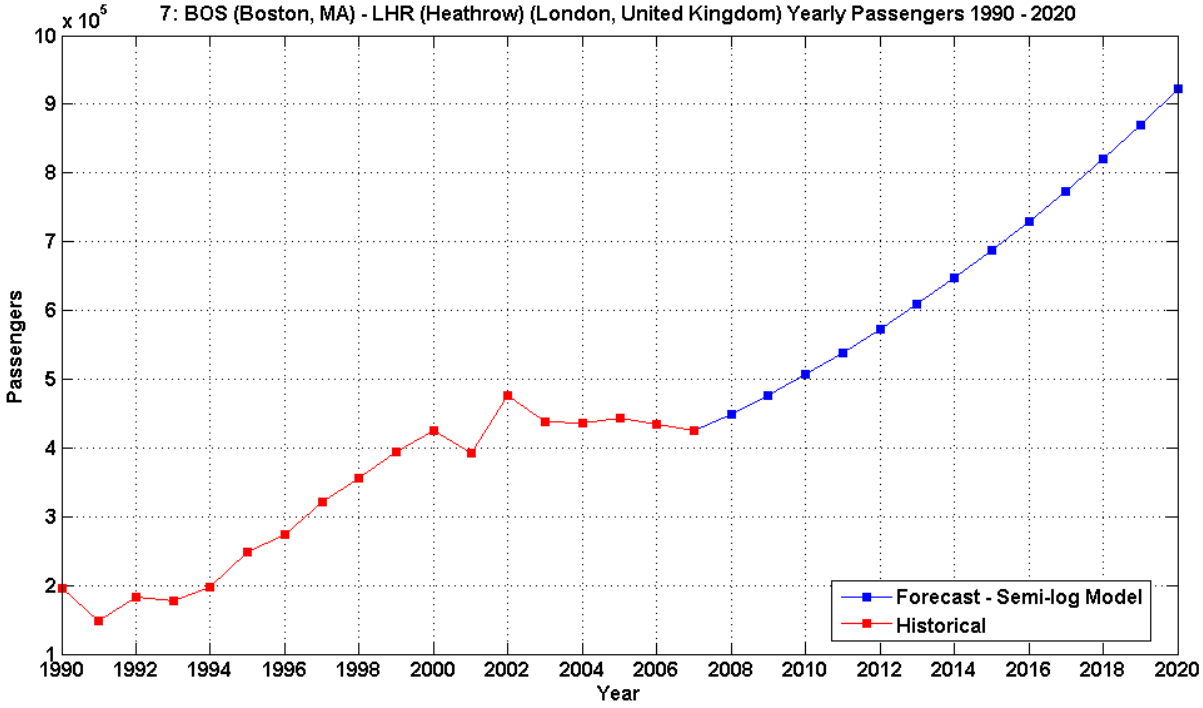

2: ORD (Chicago, IL) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
18
16
14
12
10
8
6
4
2
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

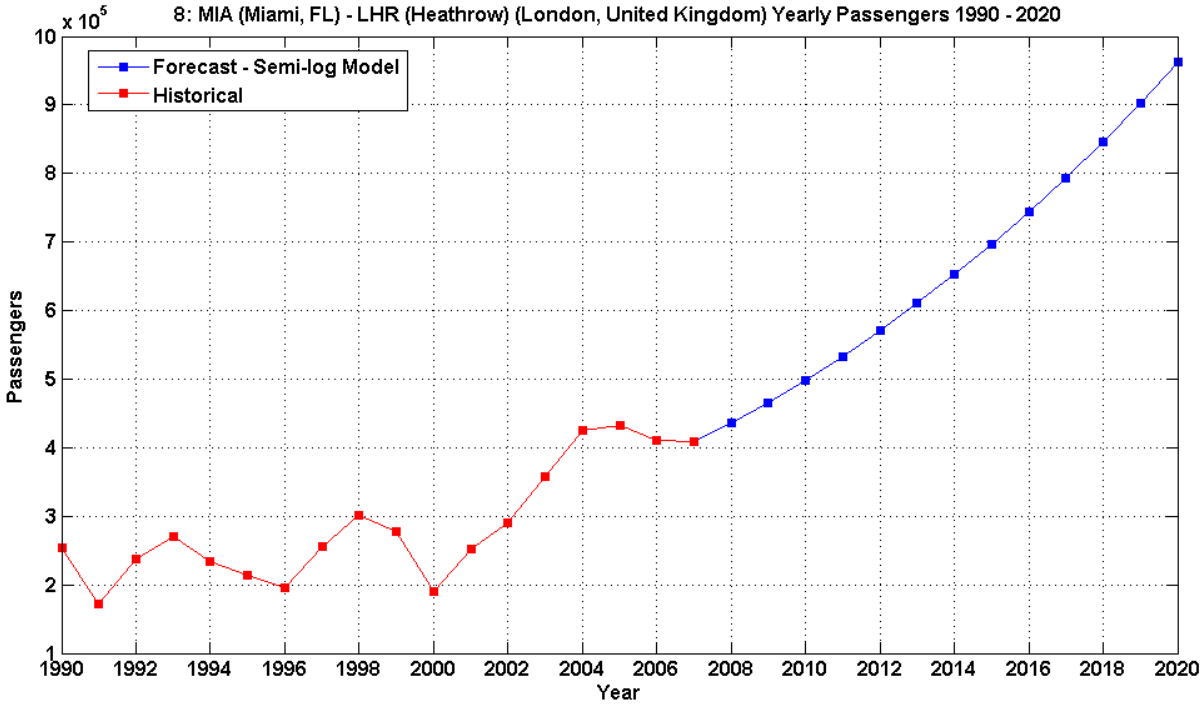

x 10^5
3: LAX (Los Angeles, CA) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
Passengers
Year
Forecast - Semi-log Model
Historical

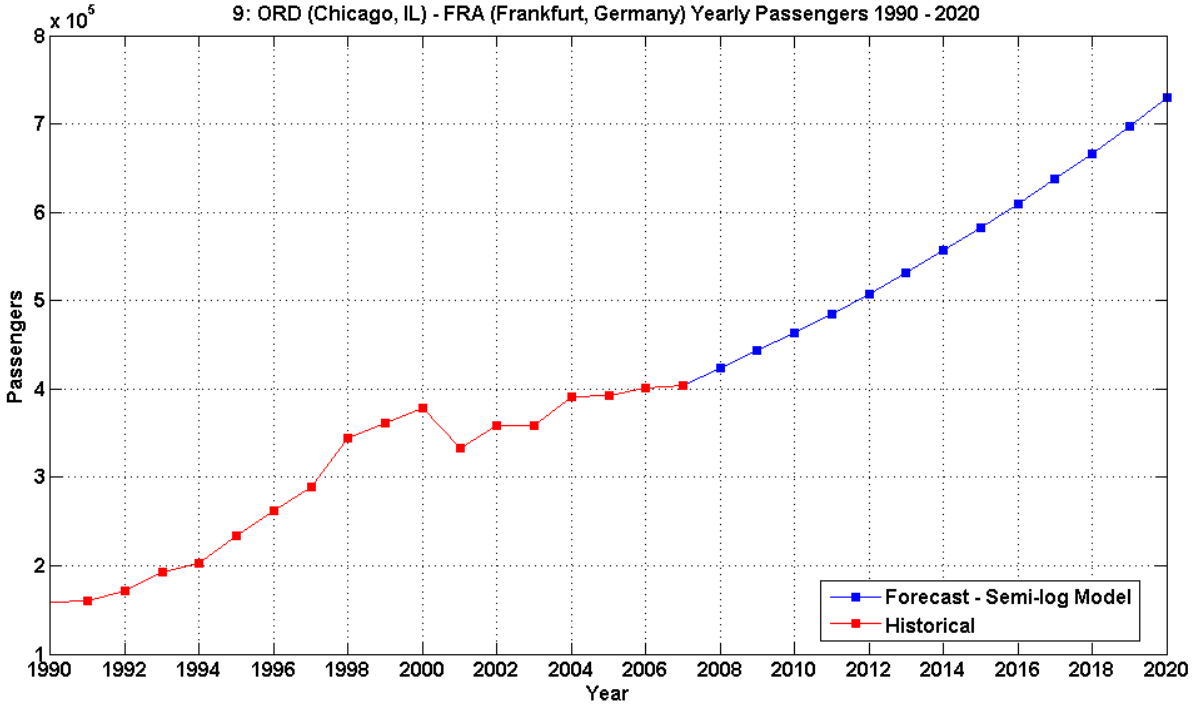

x 10^5
4: JFK (New York, NY) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
Passengers
Year
Forecast - Semi-log Model
Historical

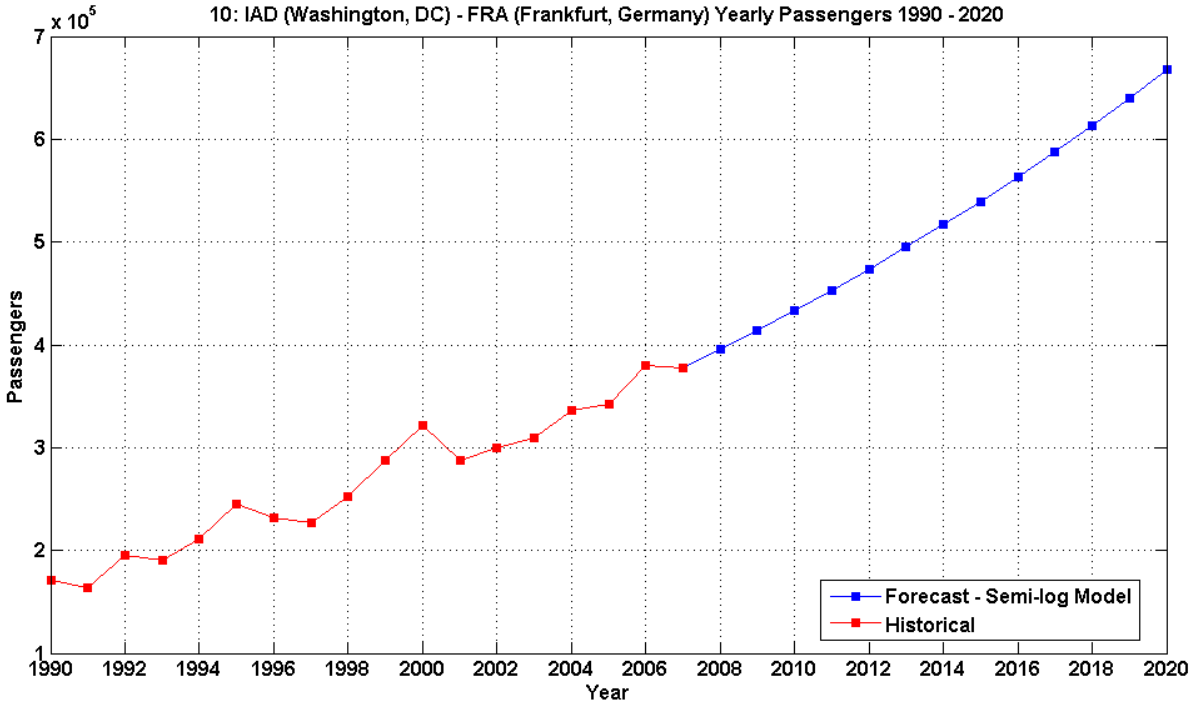

x 10^5
5: IAD (Washington, DC) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
Passengers
Year
Forecast - Semi-log Model
Historical

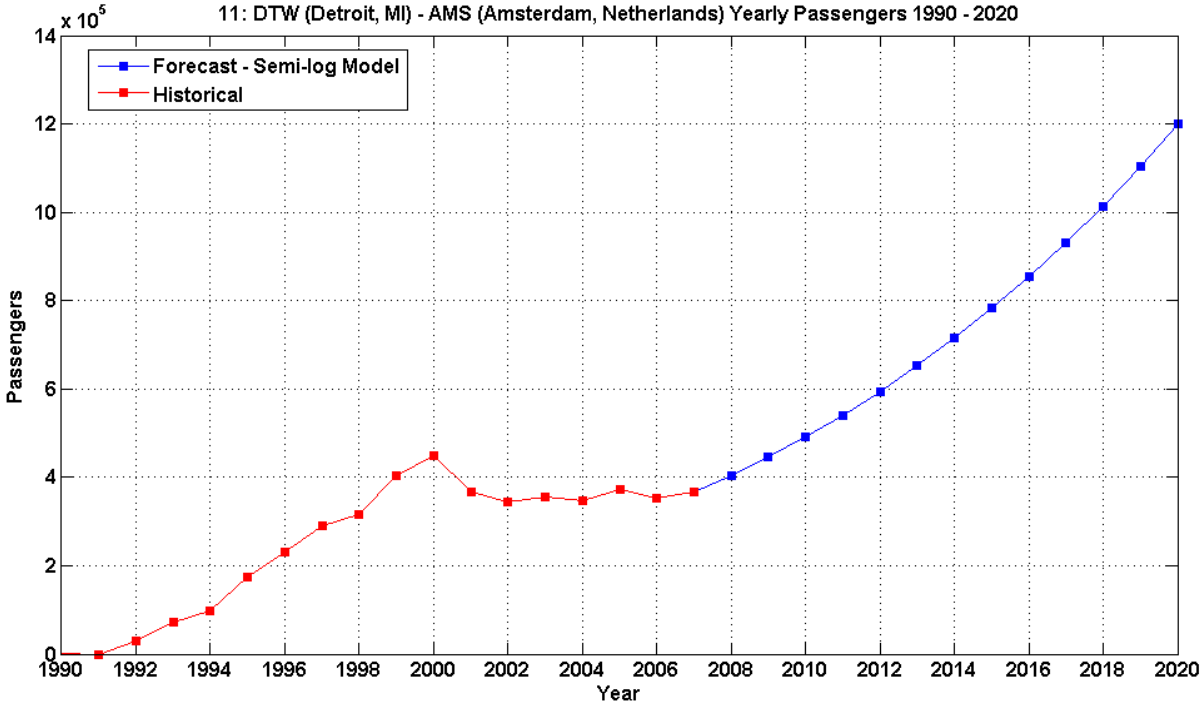

x 10^5
6: SFO (San Francisco, CA) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
Passengers
Year
Forecast - Semi-log Model
Historical


7: BOS (Boston, MA) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


8: MIA (Miami, FL) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


9: ORD (Chicago, IL) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


10: IAD (Washington, DC) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


11: DTW (Detroit, MI) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
2
4
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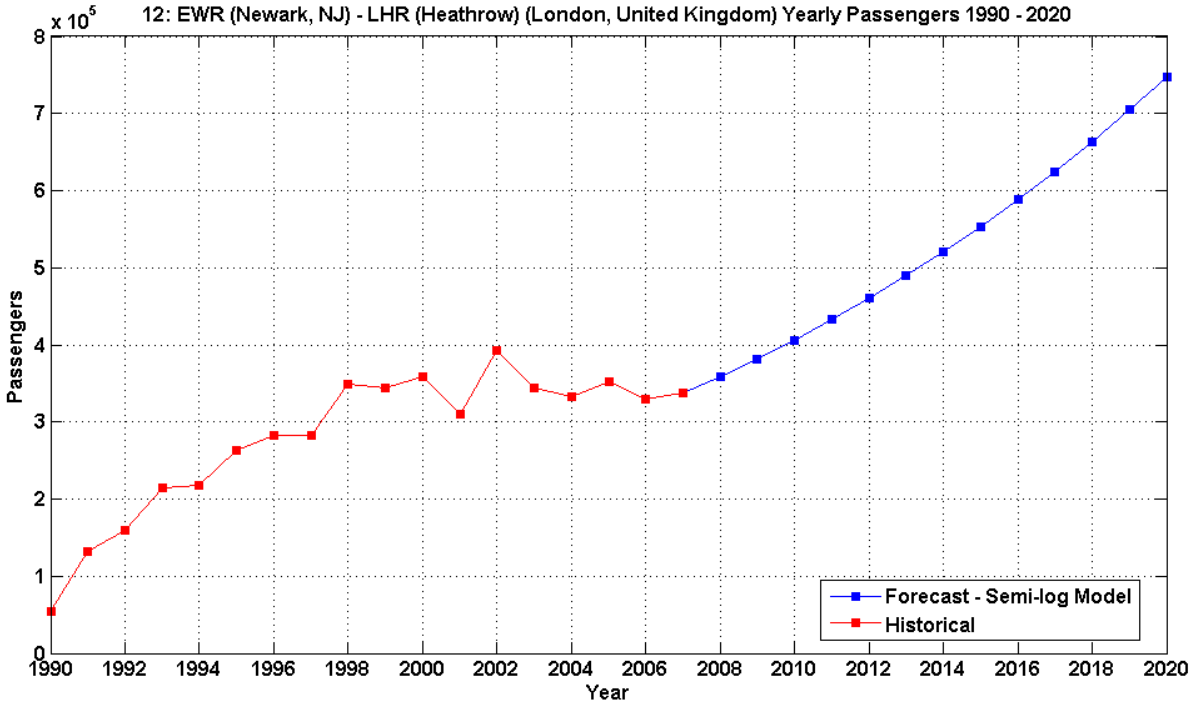
12: EWR (Newark, NJ) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
1
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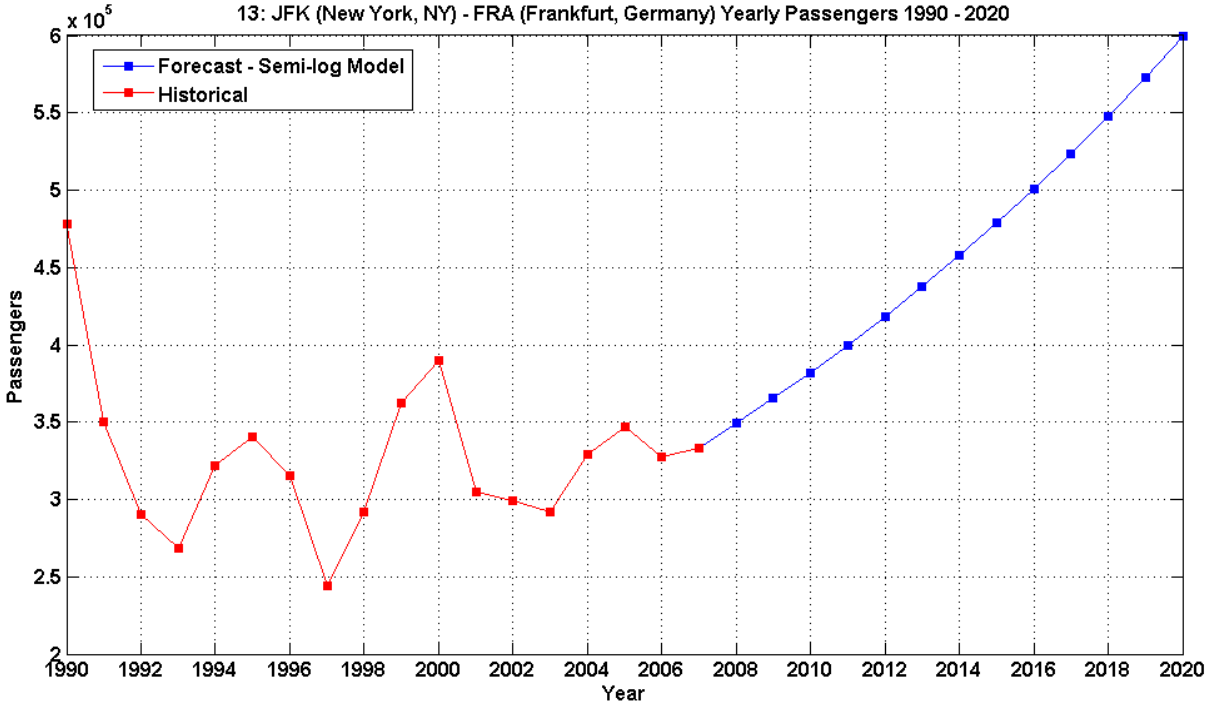
2020


13: JFK (New York, NY) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
6
5.5
5
4.5
4
3.5
3
2.5
2
1990
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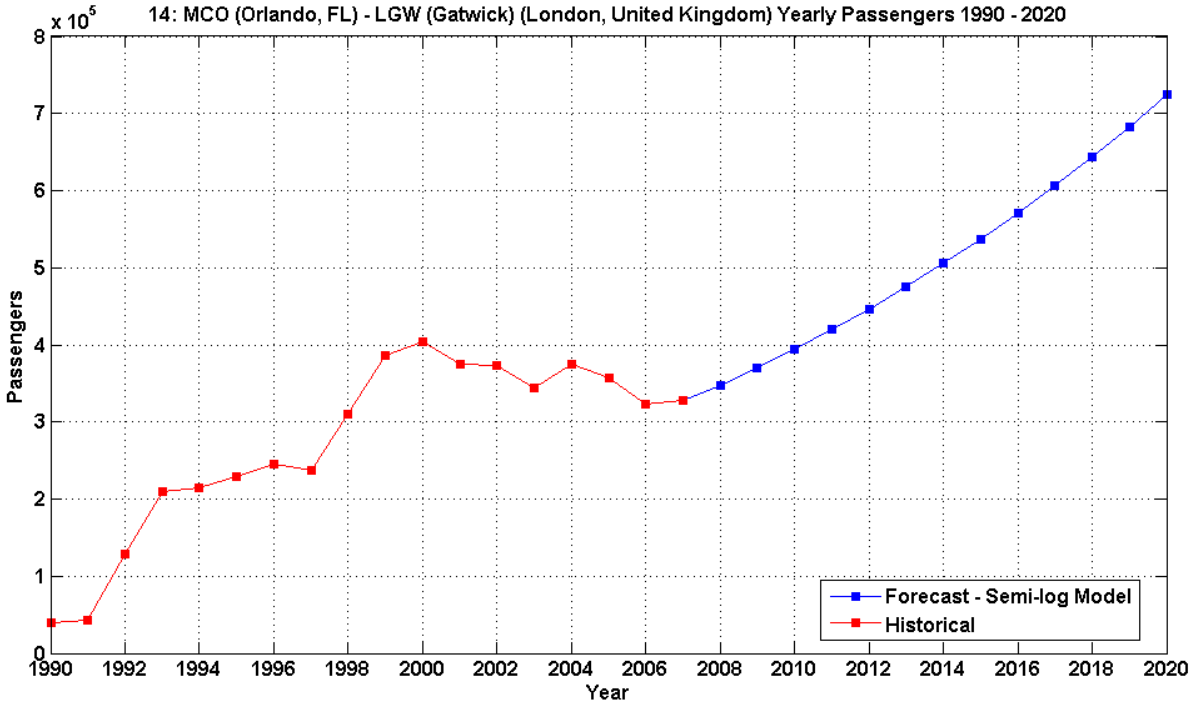
14: MCO (Orlando, FL) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
8
7
6
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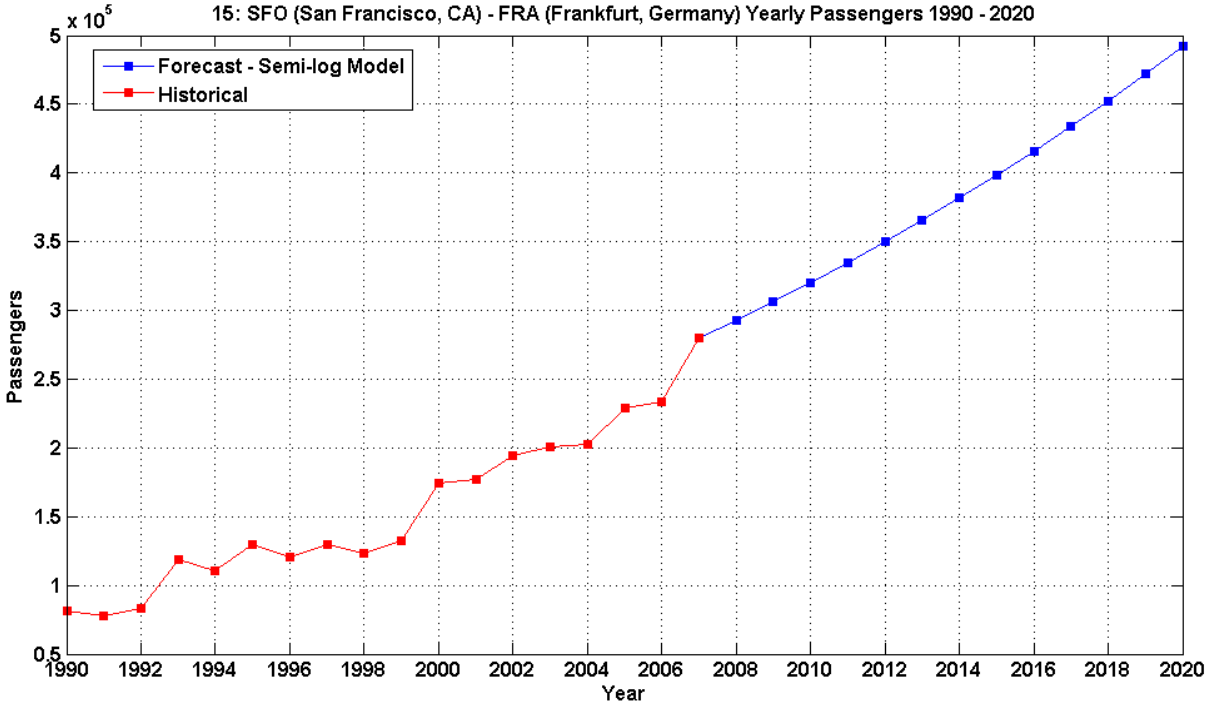
15: SFO (San Francisco, CA) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0.5
1
1.5
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2.5
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3.5
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1990
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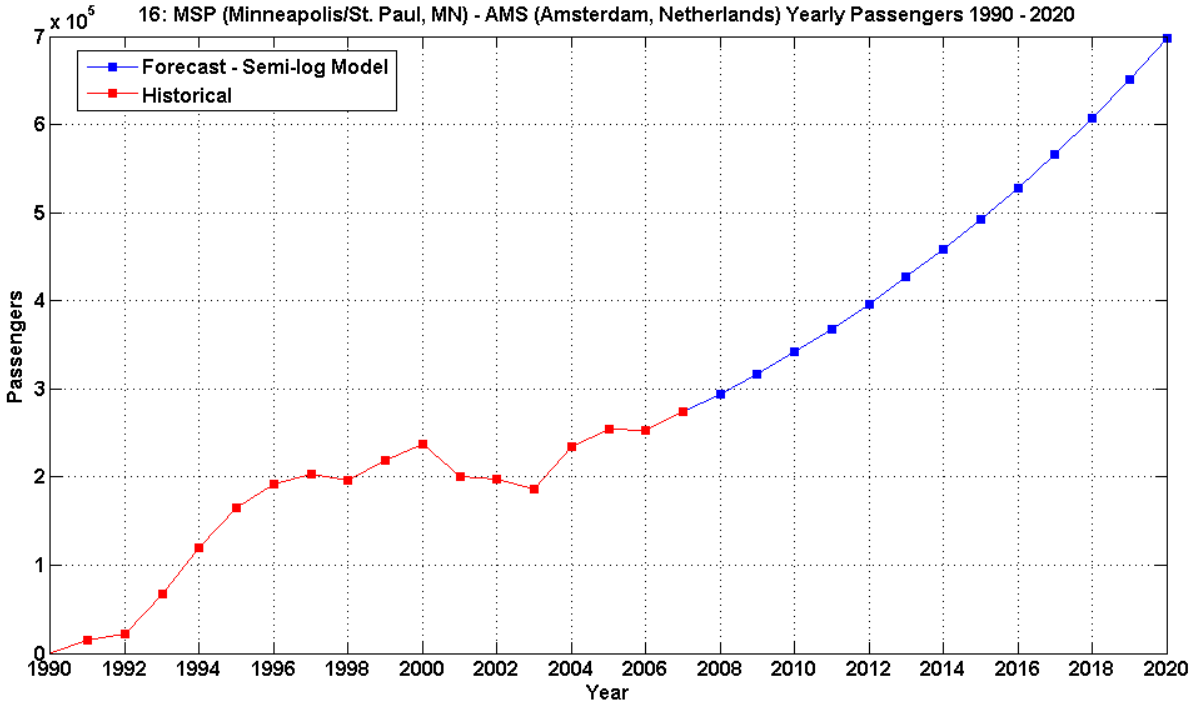
16: MSP (Minneapolis/St. Paul, MN) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
1
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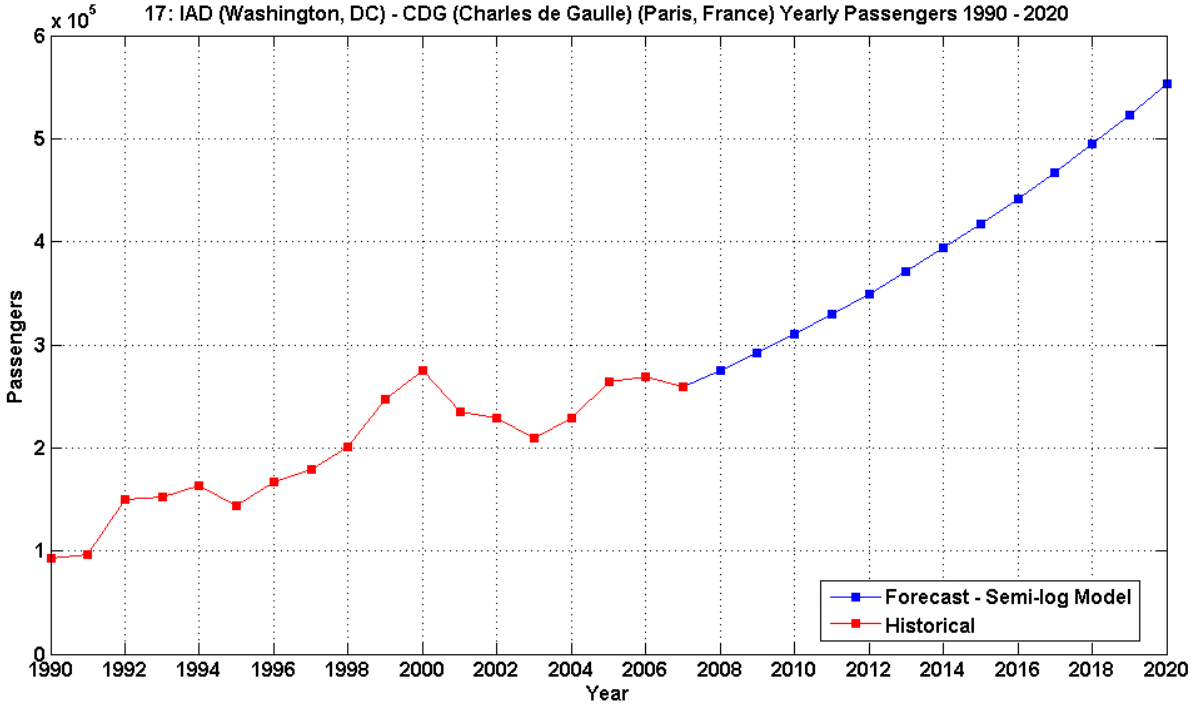
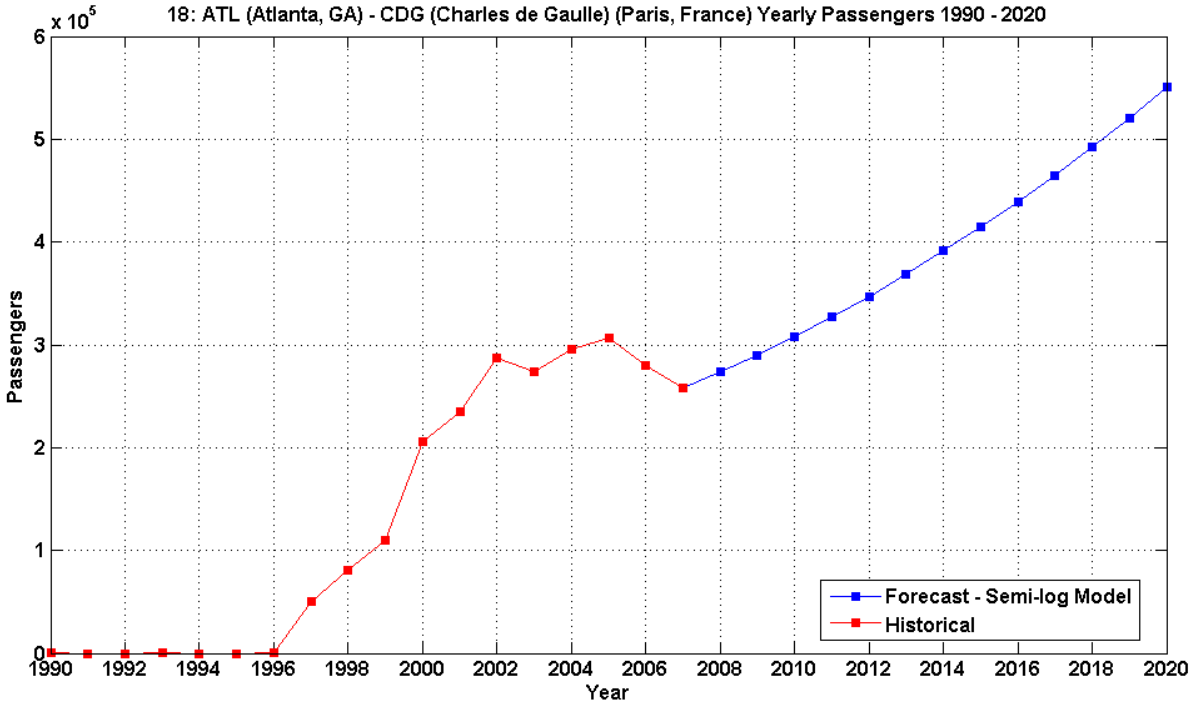
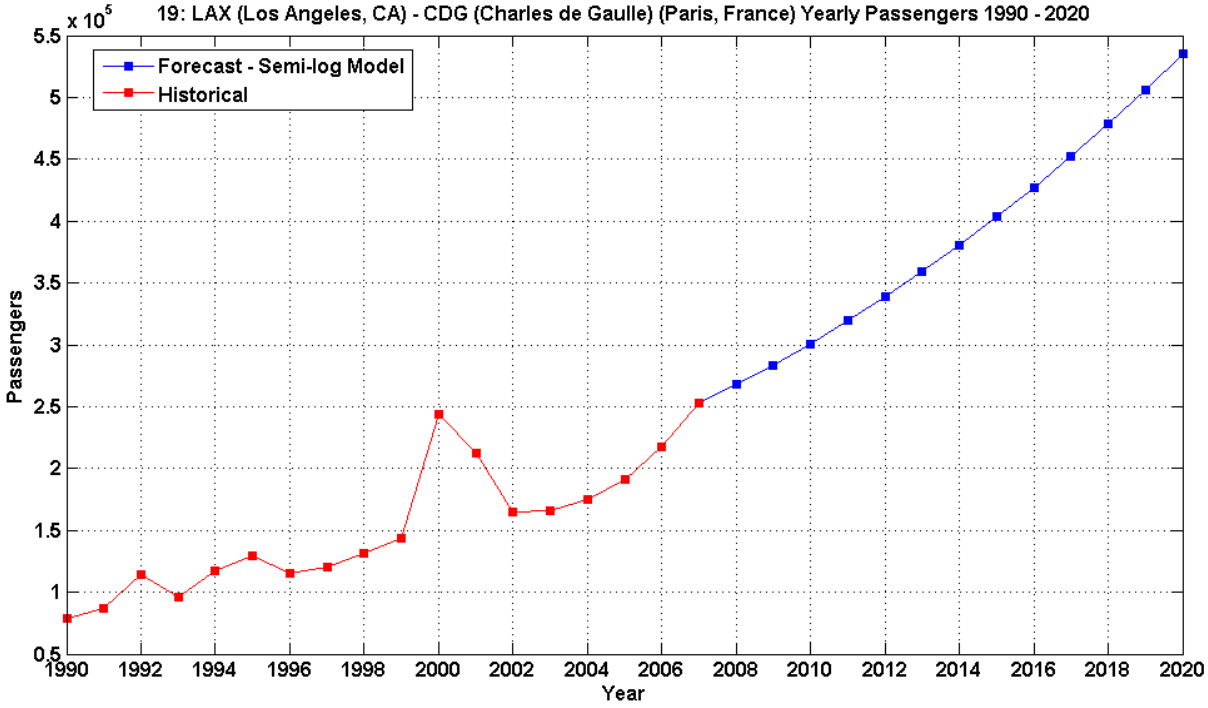

x 10^5
17: IAD (Washington, DC) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
Passengers
Year
Forecast - Semi-log Model
Historical


x 10^5
18: ATL (Atlanta, GA) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
Passengers
Year
Forecast - Semi-log Model
Historical


19: LAX (Los Angeles, CA) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
5.5
5
4.5
4
3.5
3
2.5
2
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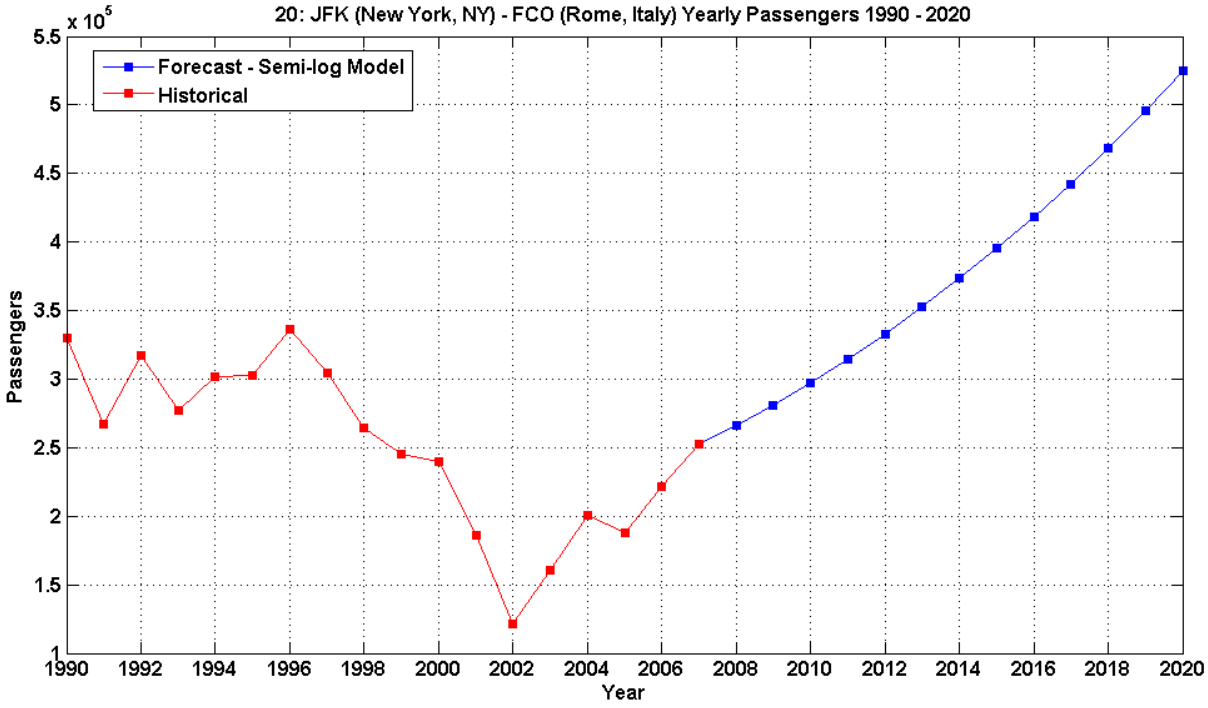
20: JFK (New York, NY) - FCO (Rome, Italy) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
5.5
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4.5
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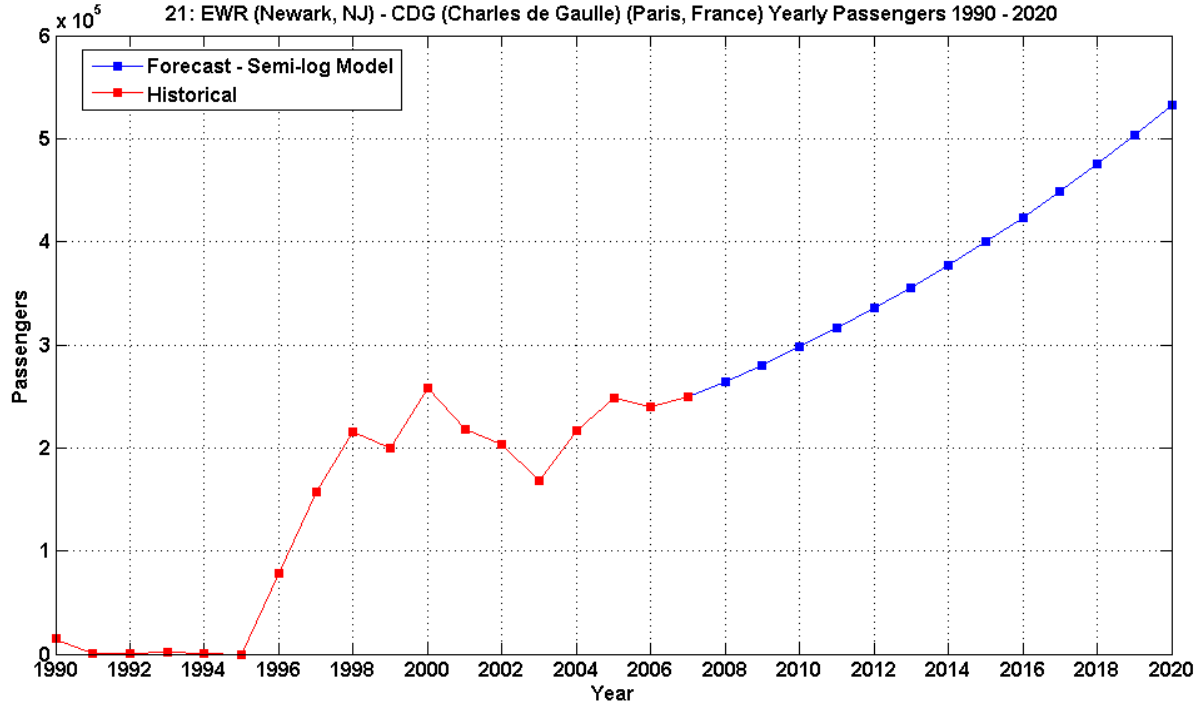
21: EWR (Newark, NJ) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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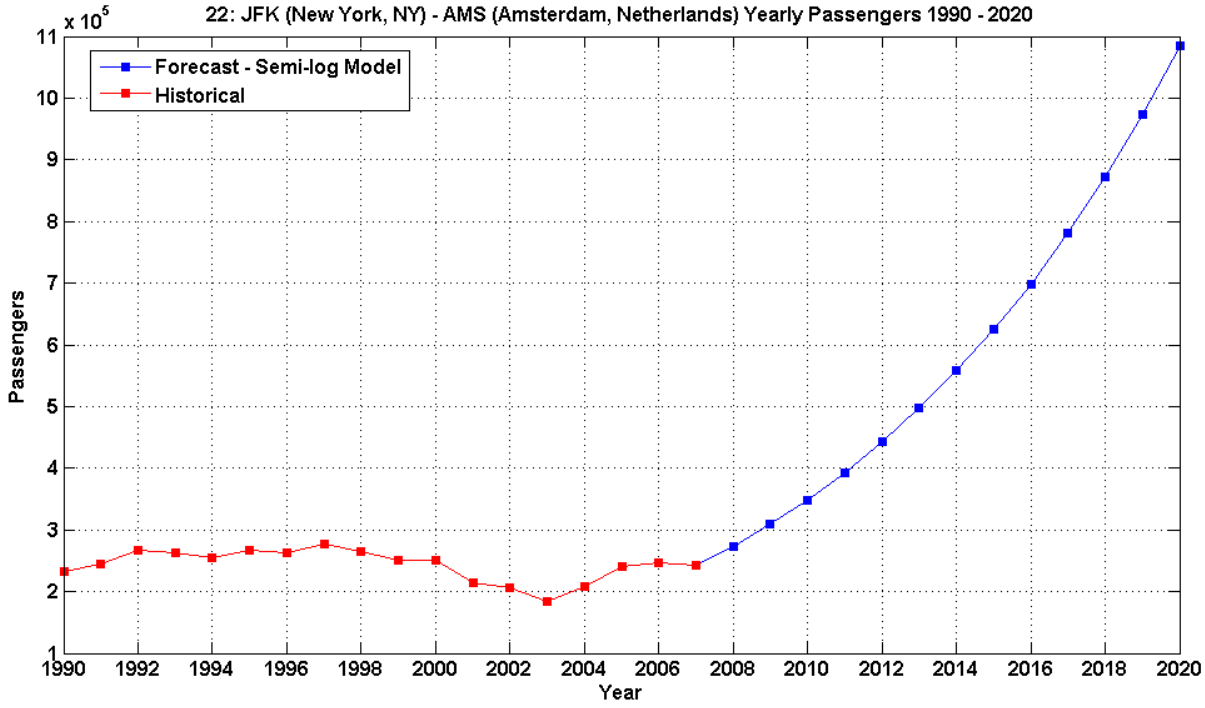
22: JFK (New York, NY) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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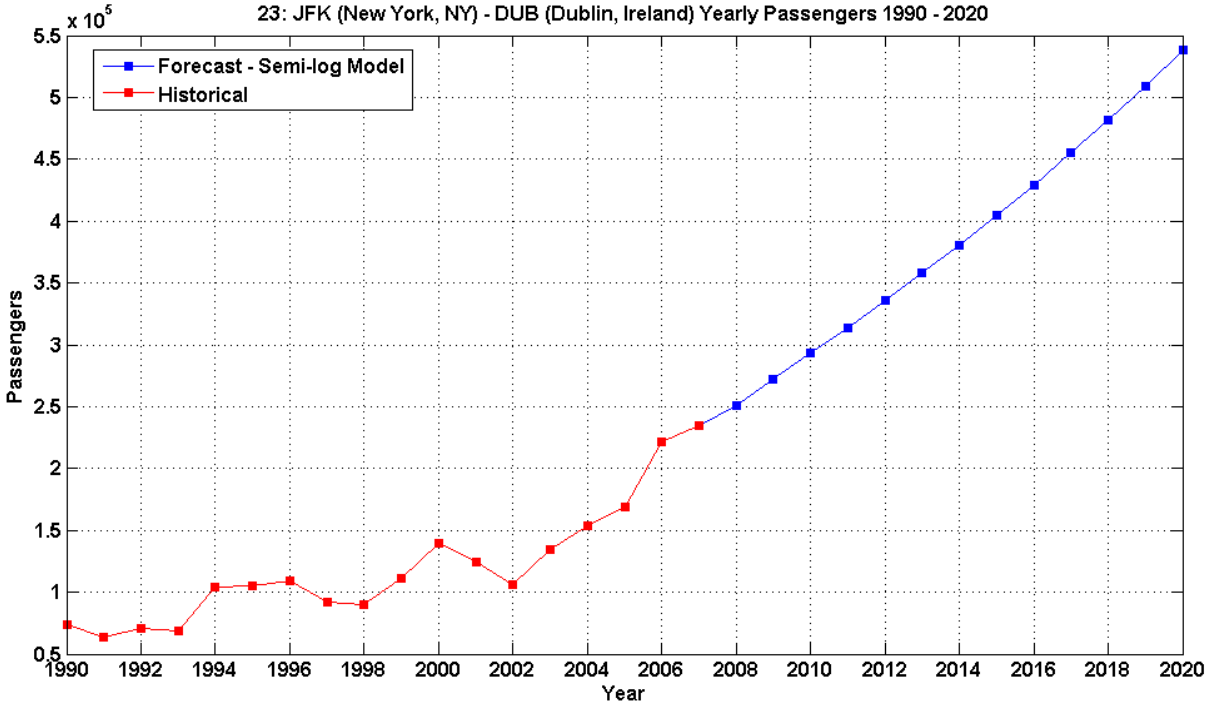
23: JFK (New York, NY) - DUB (Dublin, Ireland) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
5.5
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4.5
4
3.5
3
2.5
2
1.5
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1990
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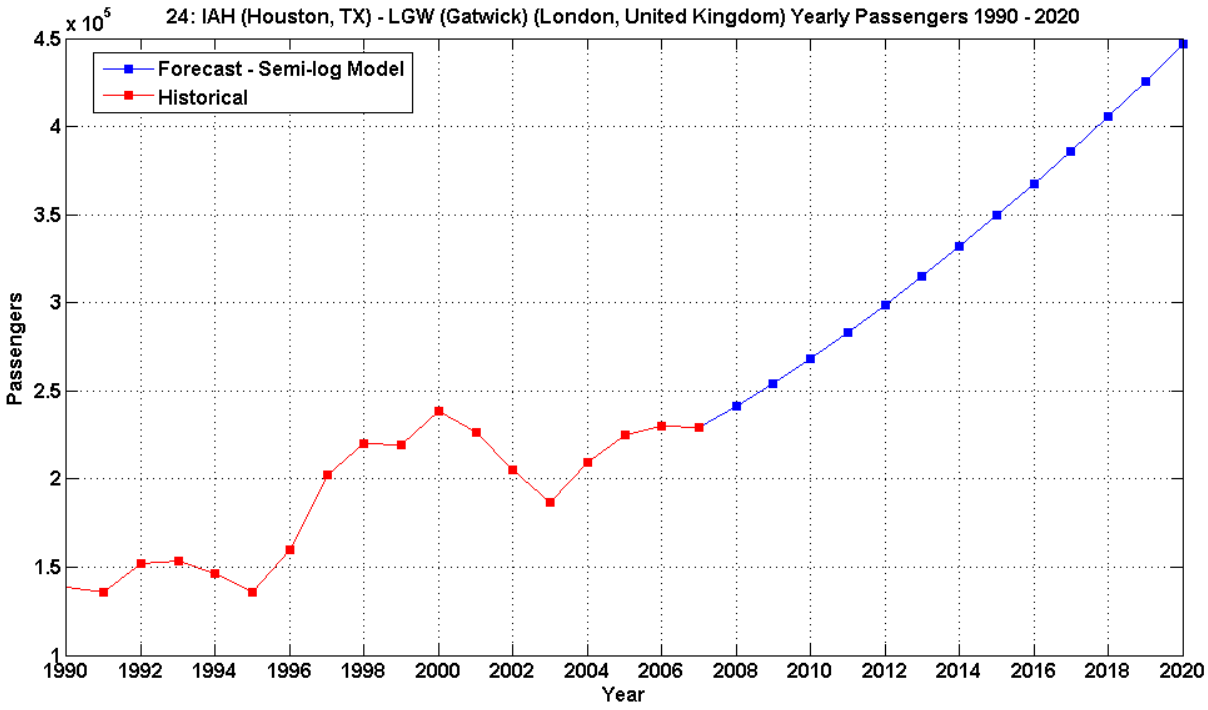
24: IAH (Houston, TX) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
4.5
4
3.5
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2.5
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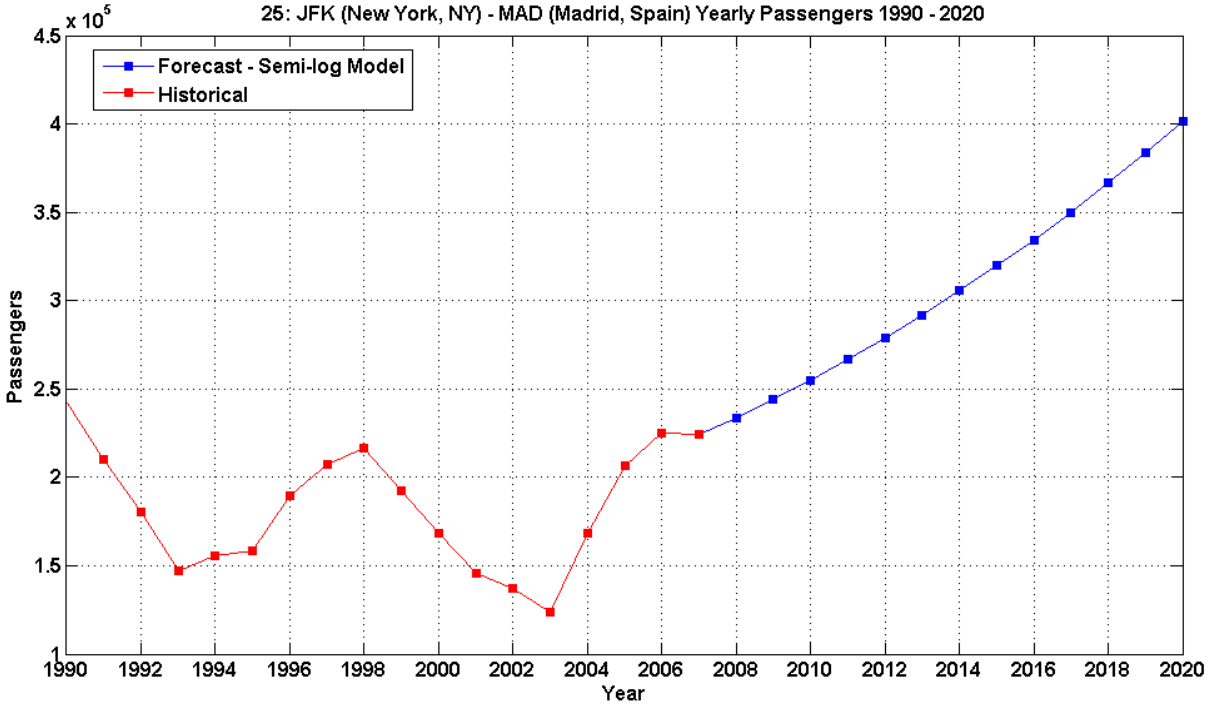
25: JFK (New York, NY) - MAD (Madrid, Spain) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
4.5
4
3.5
3
2.5
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1.5
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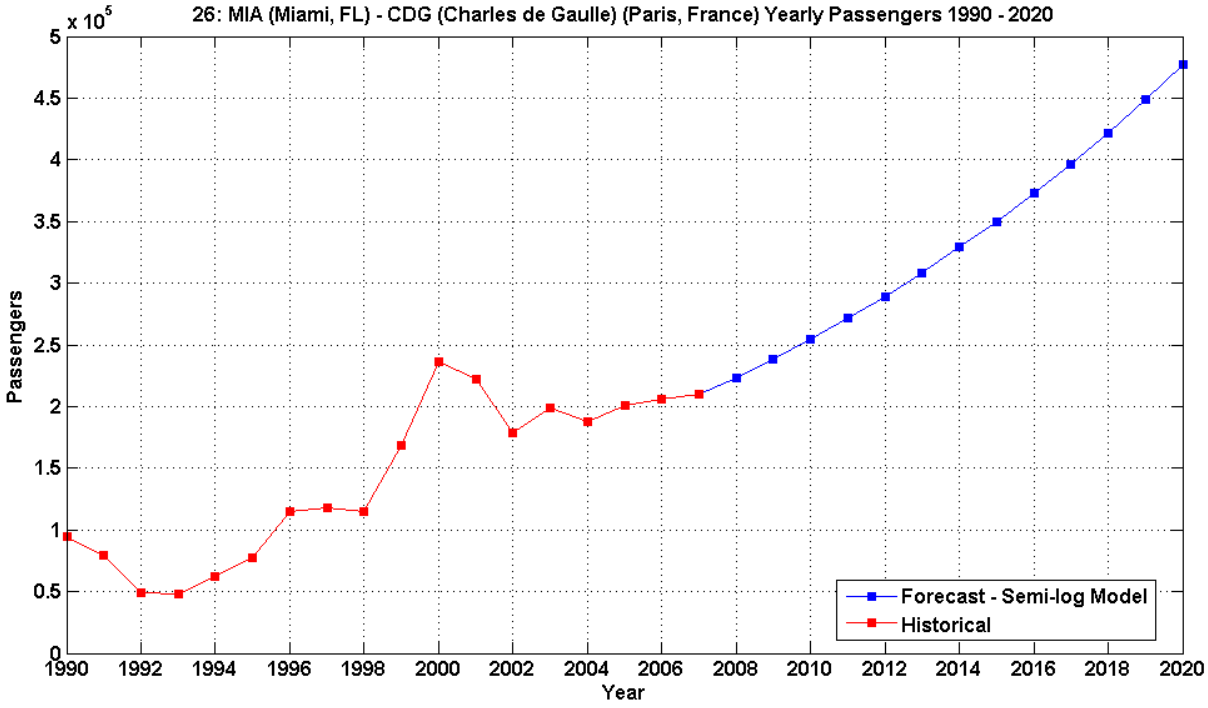
2018
2020


26: MIA (Miami, FL) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
5
4.5
4
3.5
3
2.5
2
1.5
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0.5
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1990
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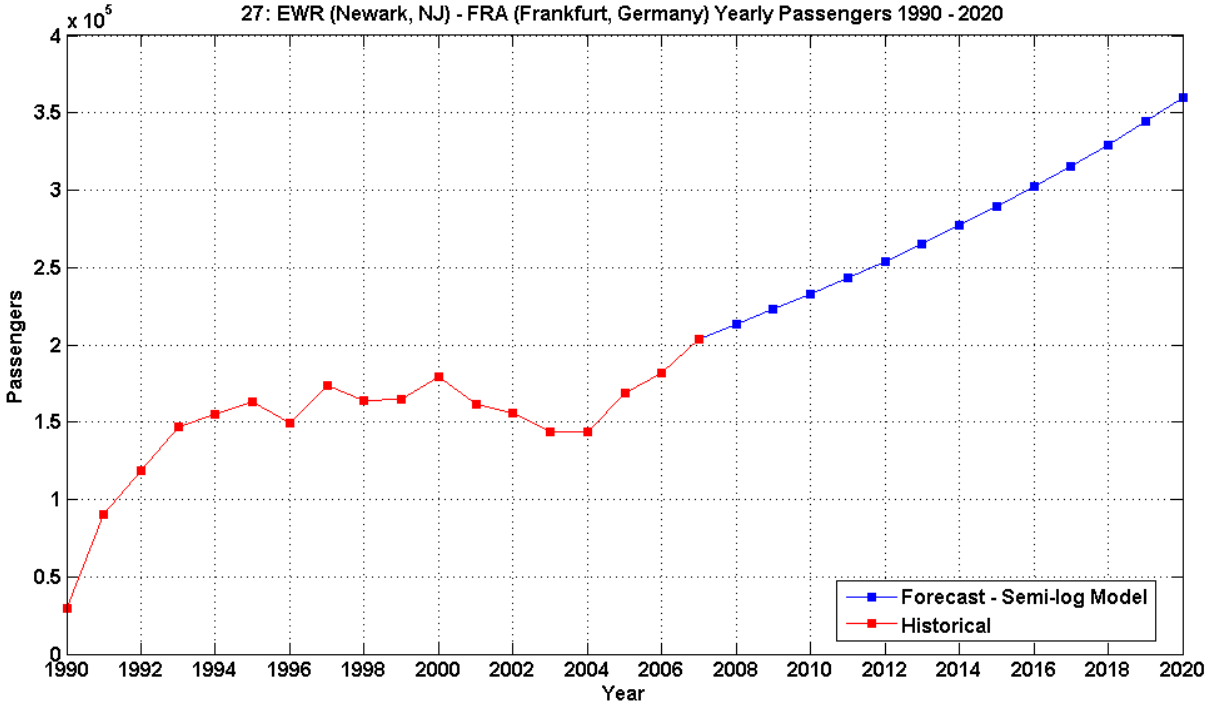
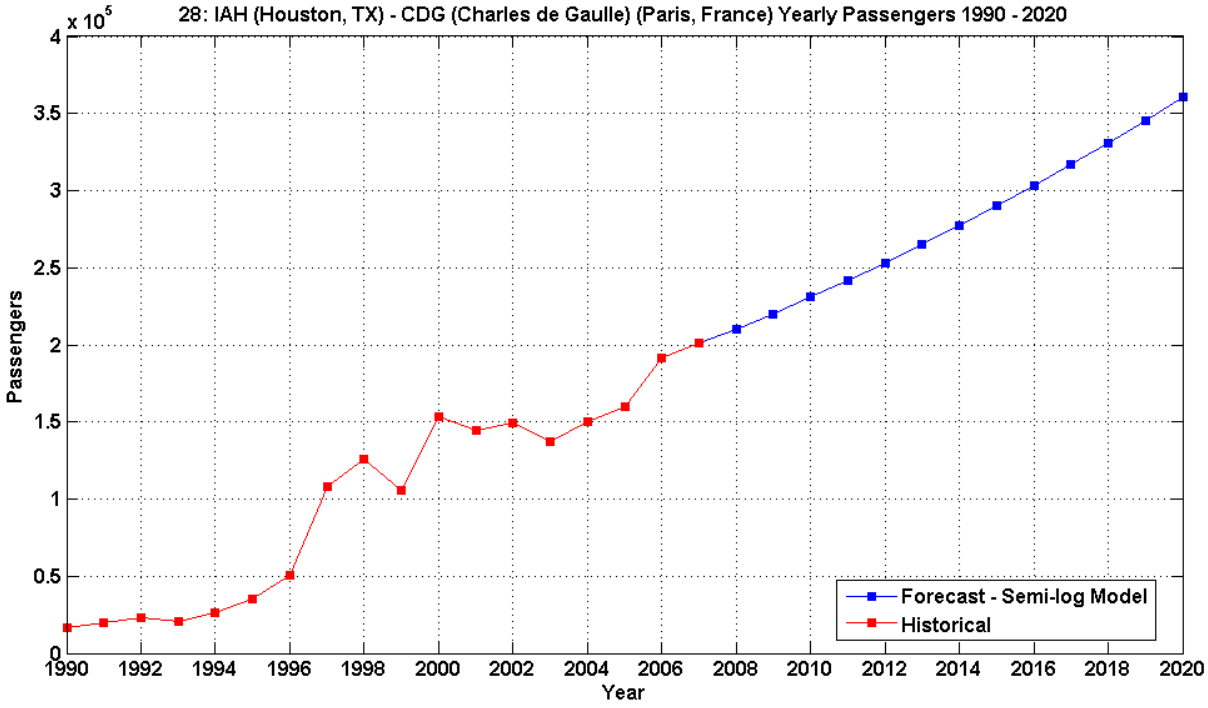
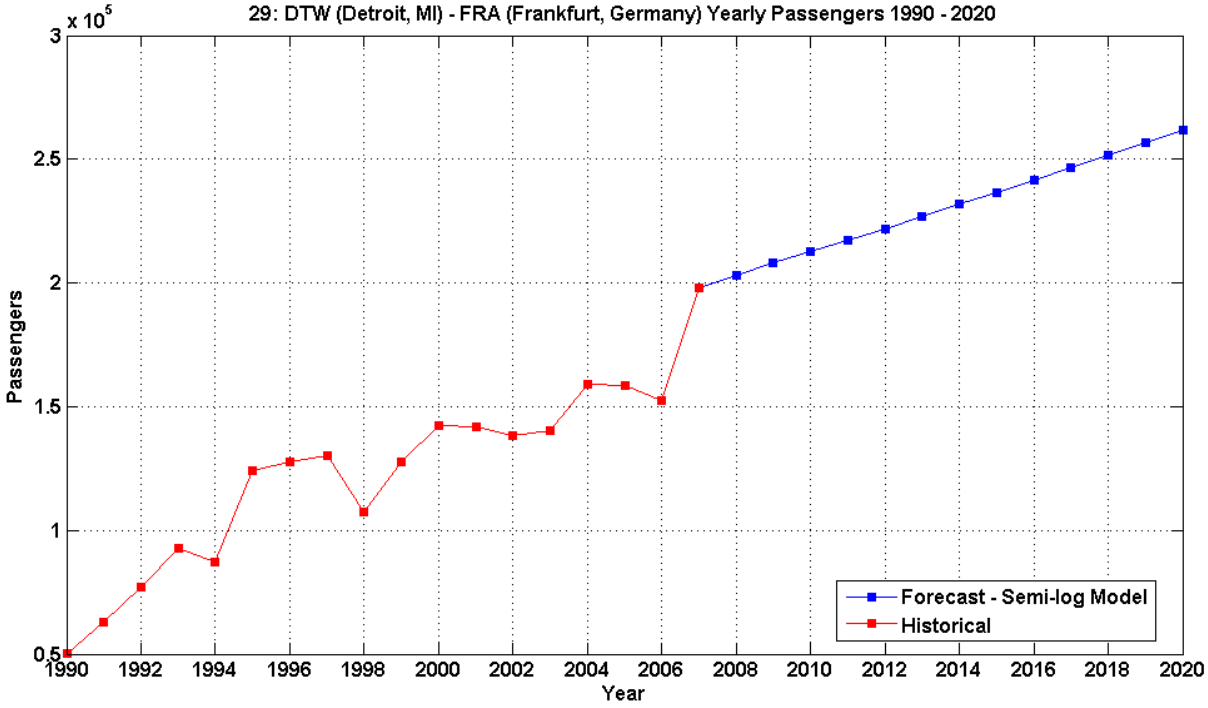
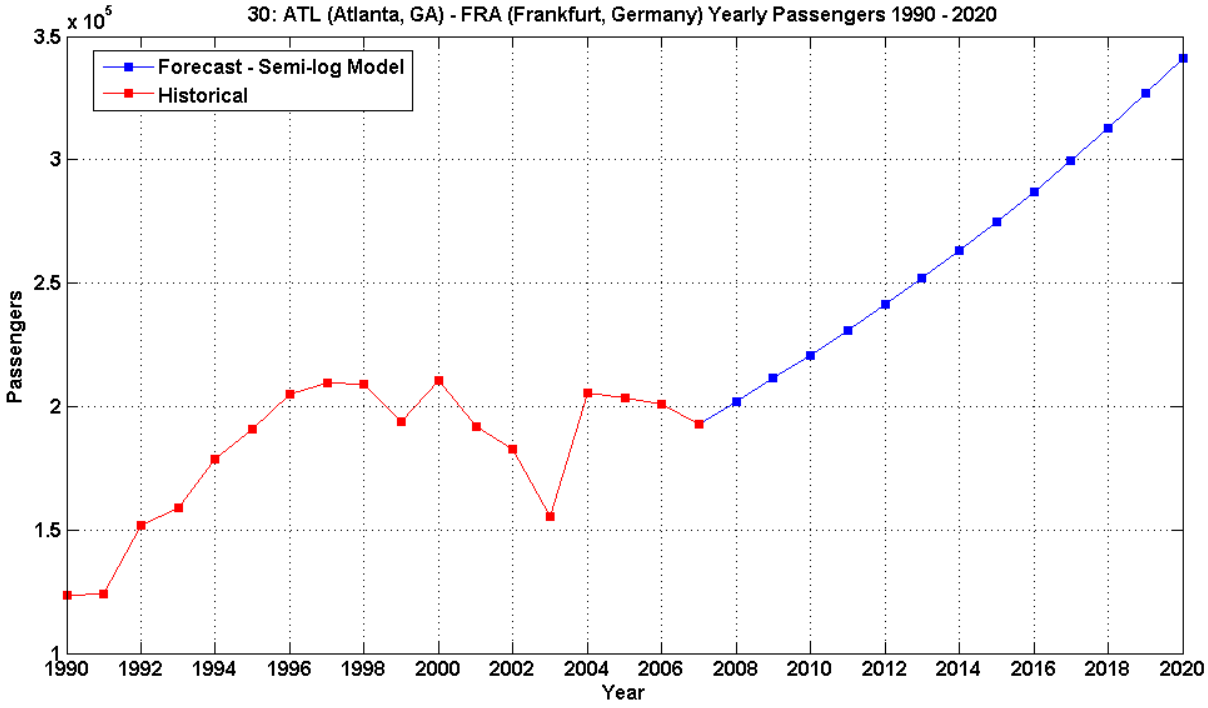
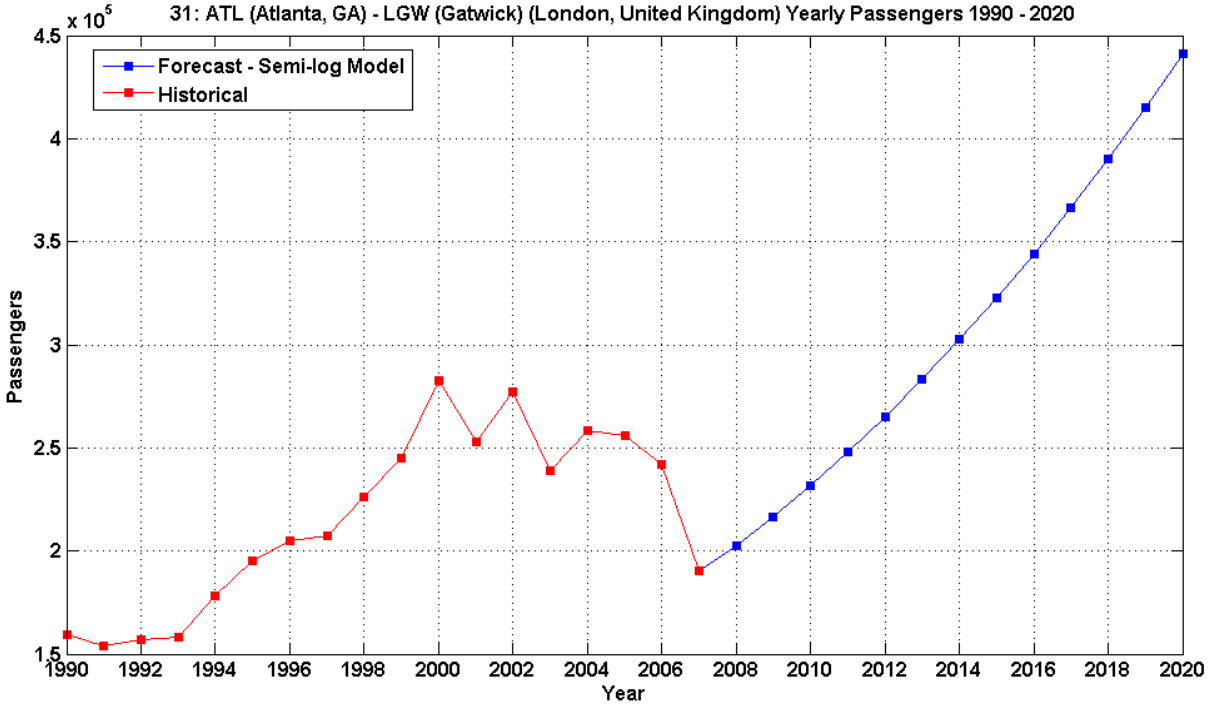

27: EWR (Newark, NJ) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


28: IAH (Houston, TX) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


29: DTW (Detroit, MI) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


30: ATL (Atlanta, GA) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


x 10^5
31: ATL (Atlanta, GA) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
Forecast - Semi-log Model
Historical
Passengers
Year
4.5
4
3.5
3
2.5
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1.5
1990
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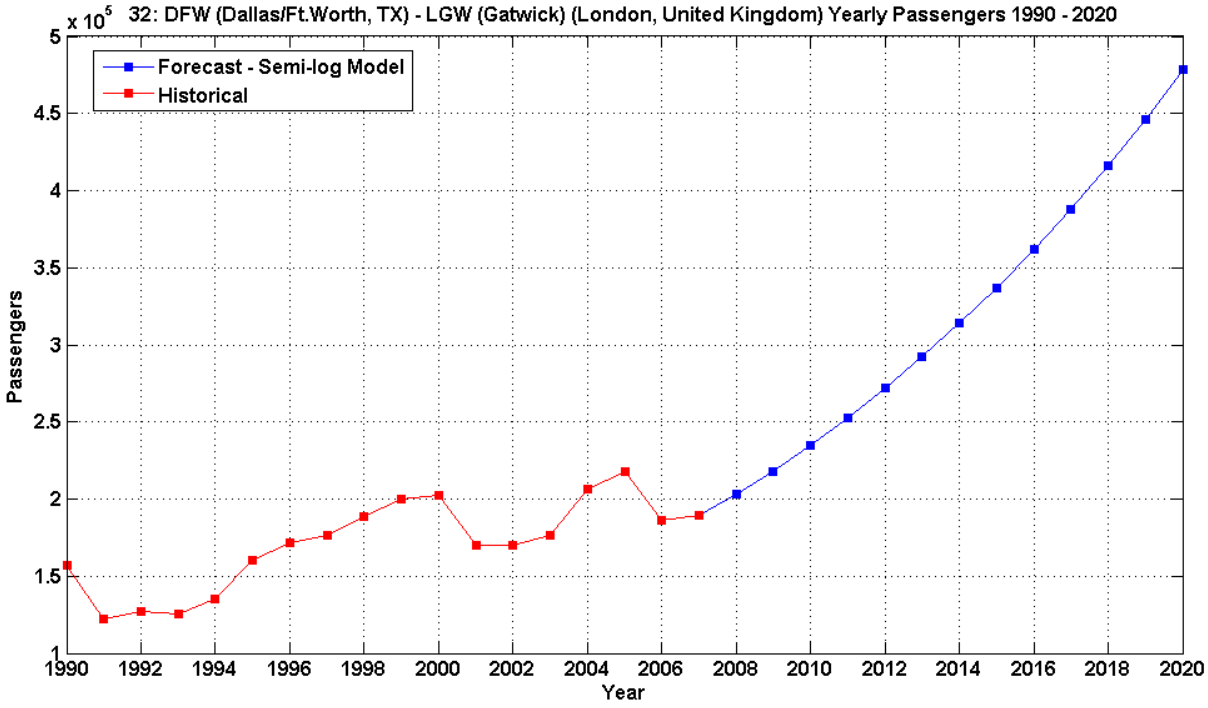
x 10^5
32: DFW (Dallas/Ft.Worth, TX) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
Forecast - Semi-log Model
Historical
Passengers
Year
5
4.5
4
3.5
3
2.5
2
1.5
1
1990
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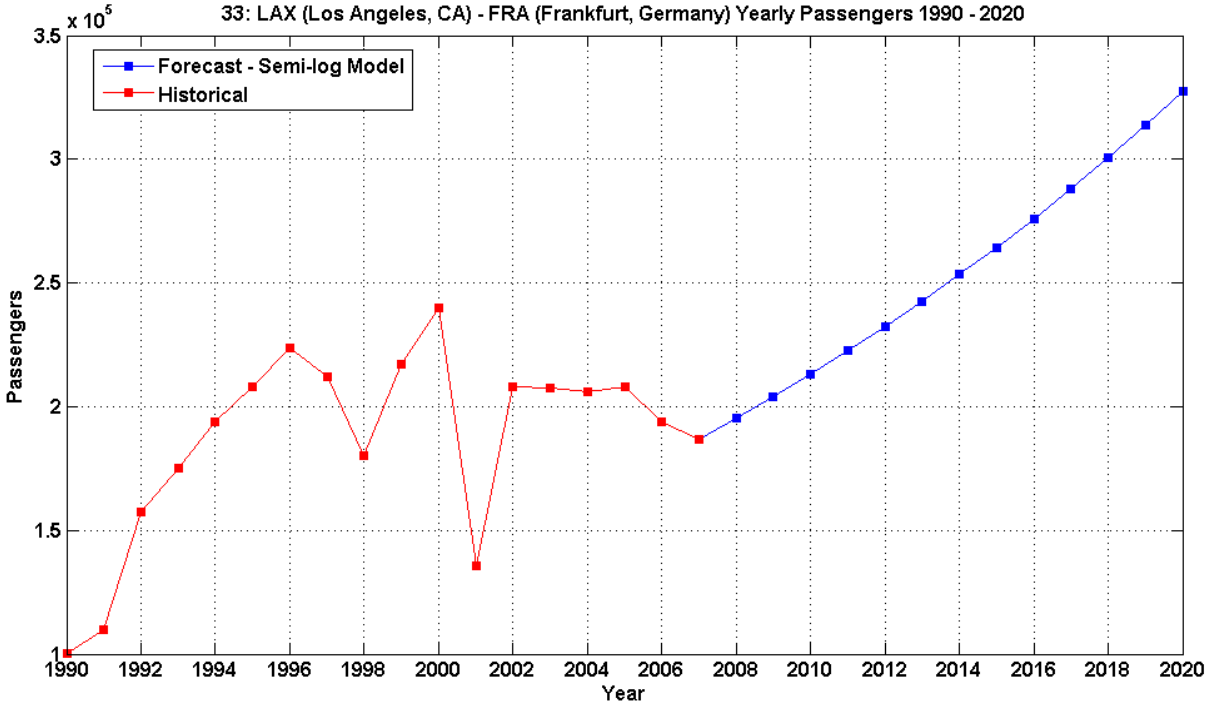
33: LAX (Los Angeles, CA) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
3.5
3
2.5
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1.5
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1990
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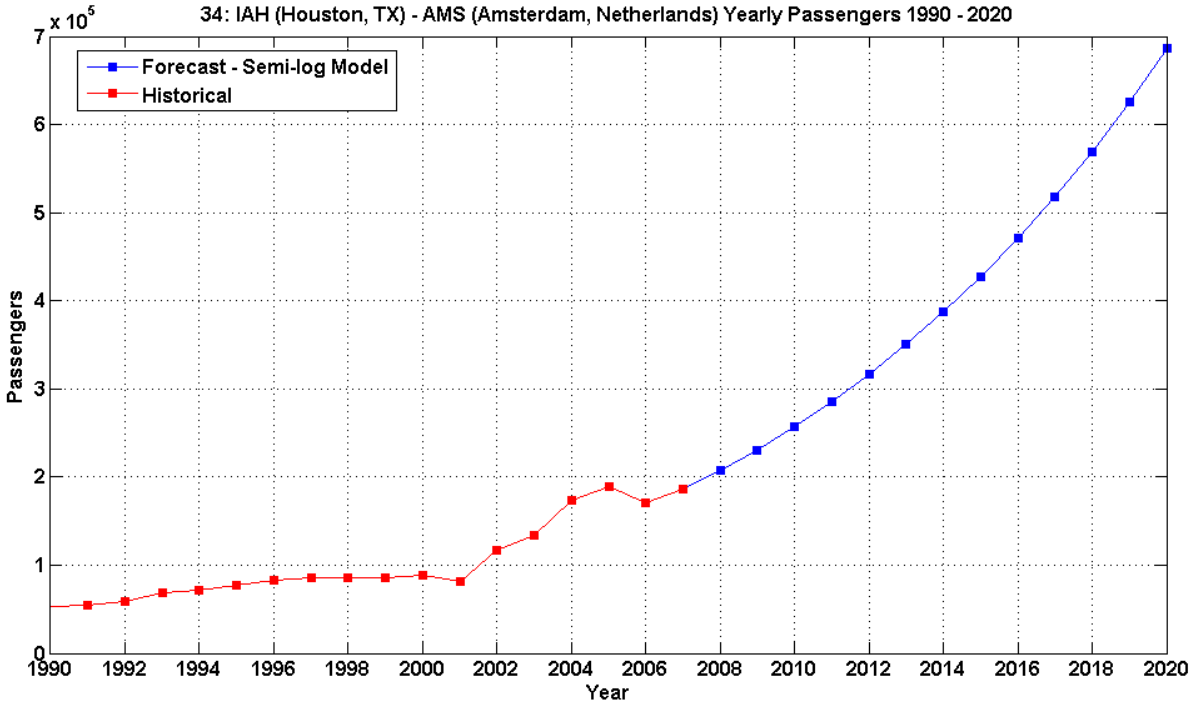
34: IAH (Houston, TX) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
7
6
5
4
3
2
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1990
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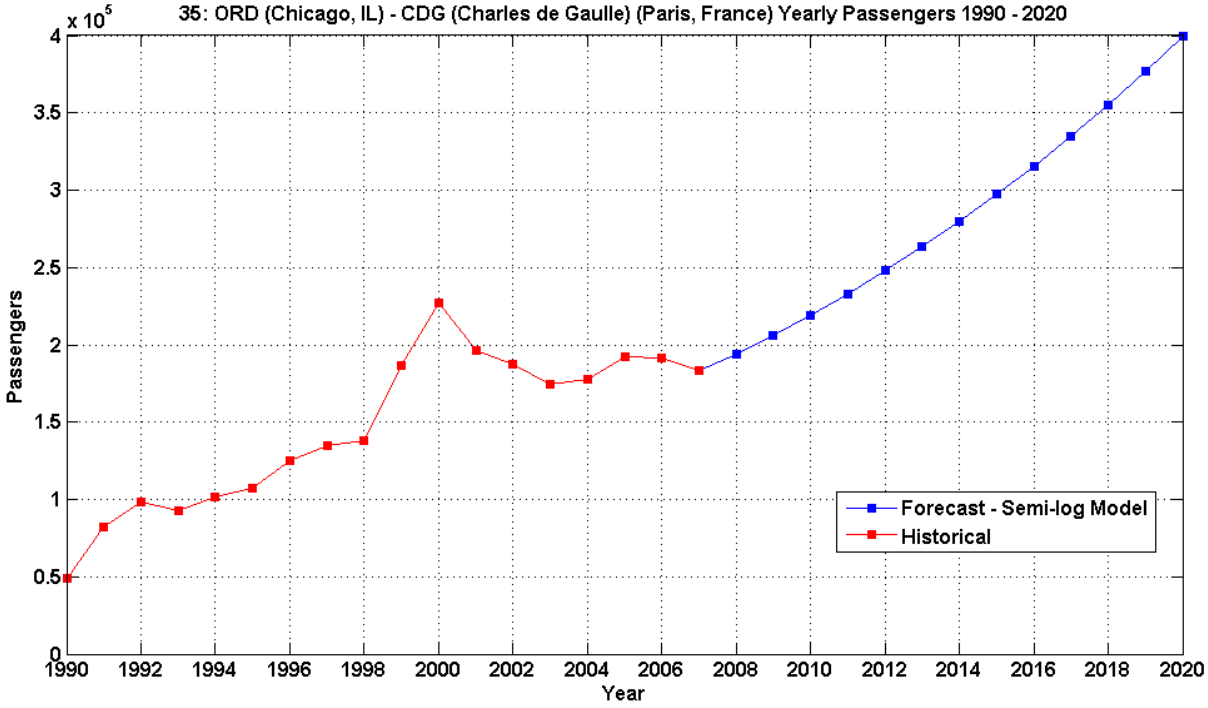
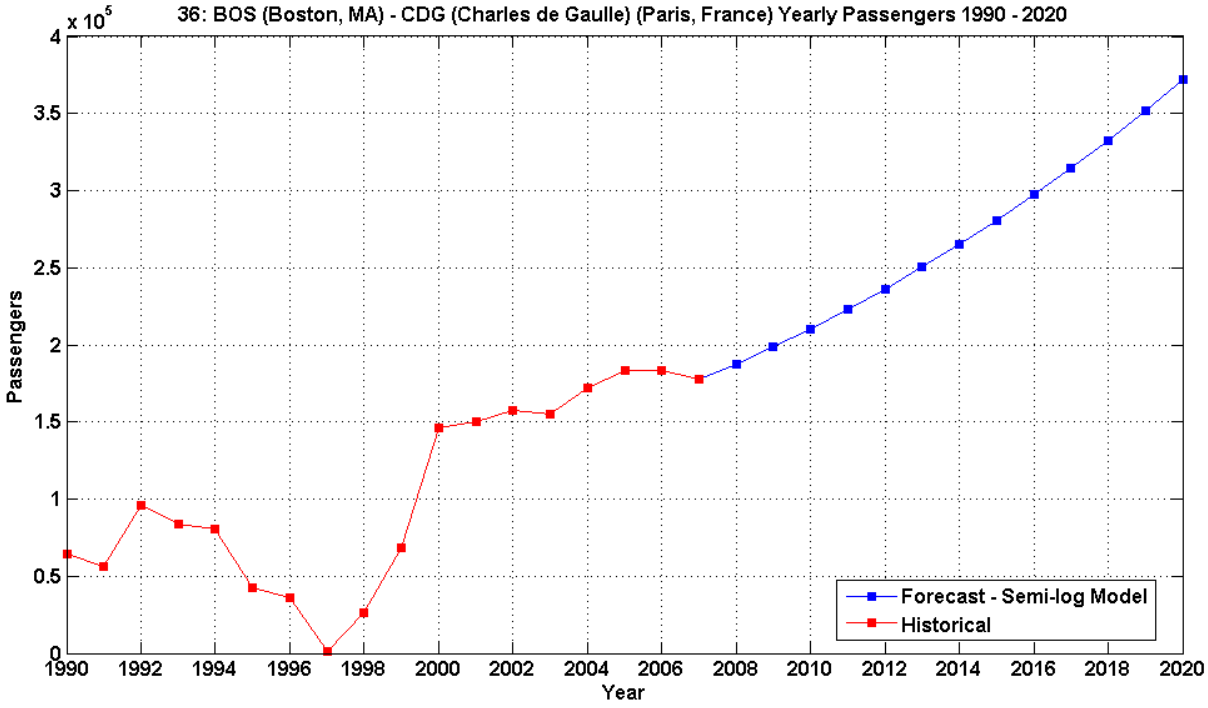
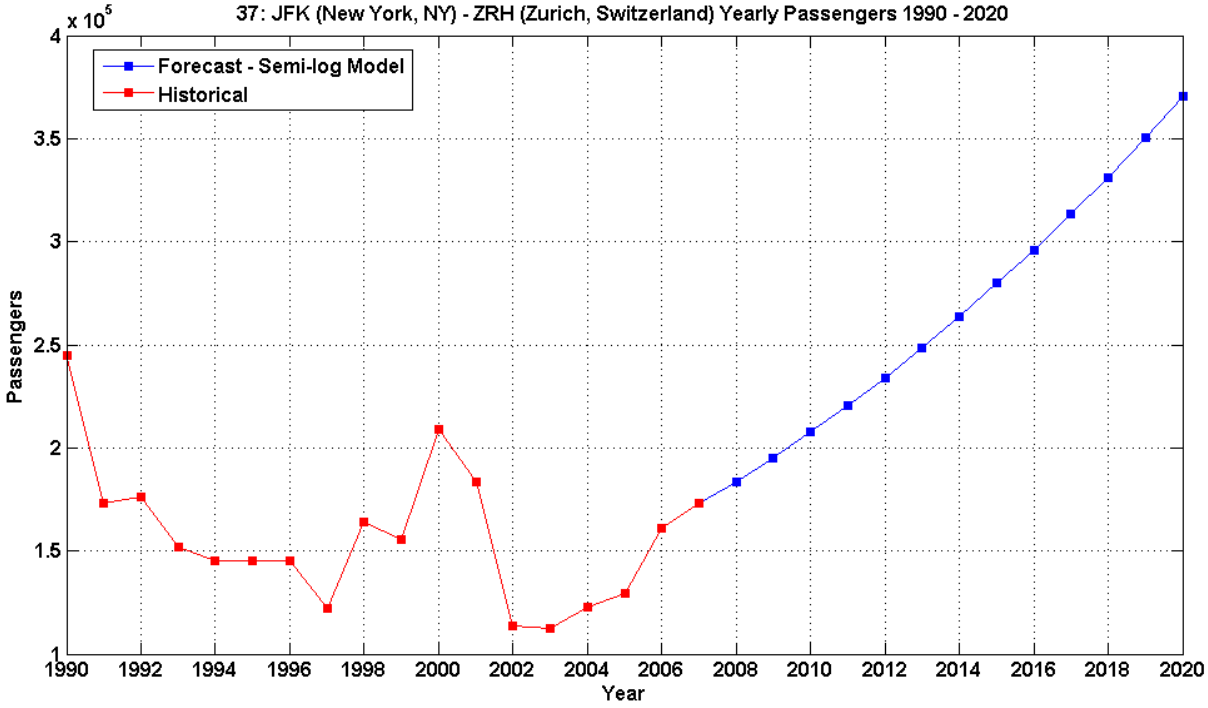
2016
2018
2020


35: ORD (Chicago, IL) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


36: BOS (Boston, MA) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


37: JFK (New York, NY) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
4
3.5
3
2.5
2
1.5
1
1990
1992
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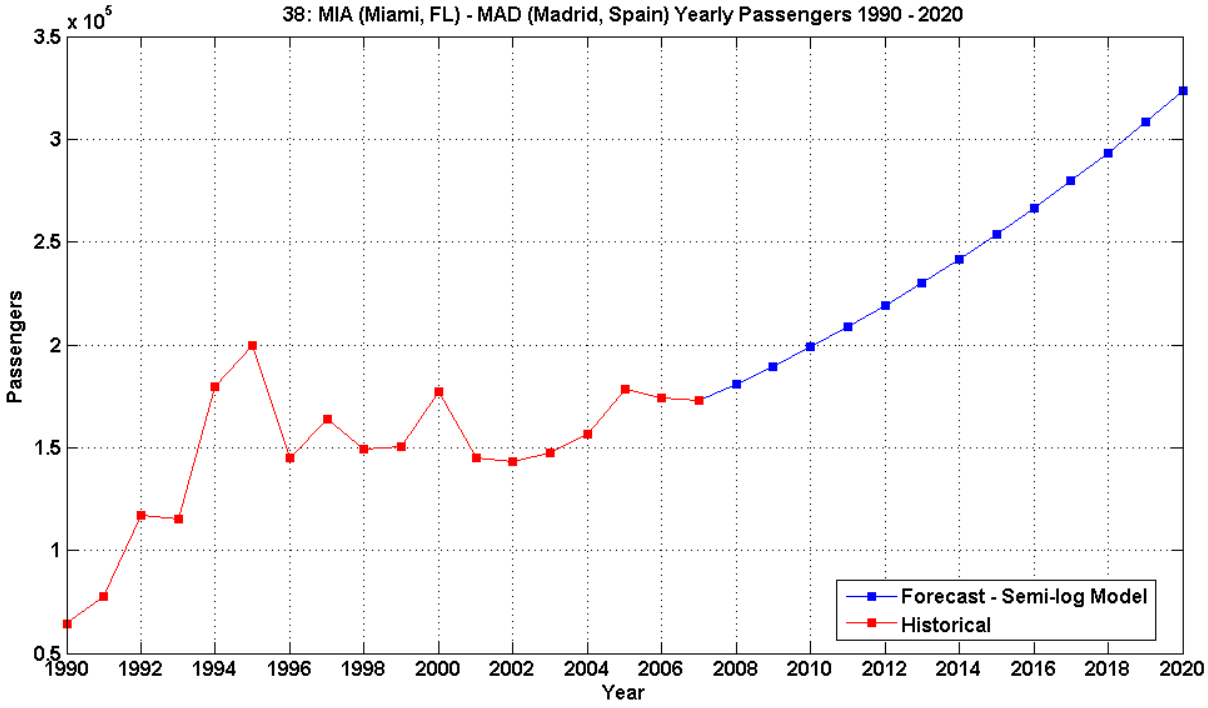
38: MIA (Miami, FL) - MAD (Madrid, Spain) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
3.5
3
2.5
2
1.5
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0.5
1990
1992
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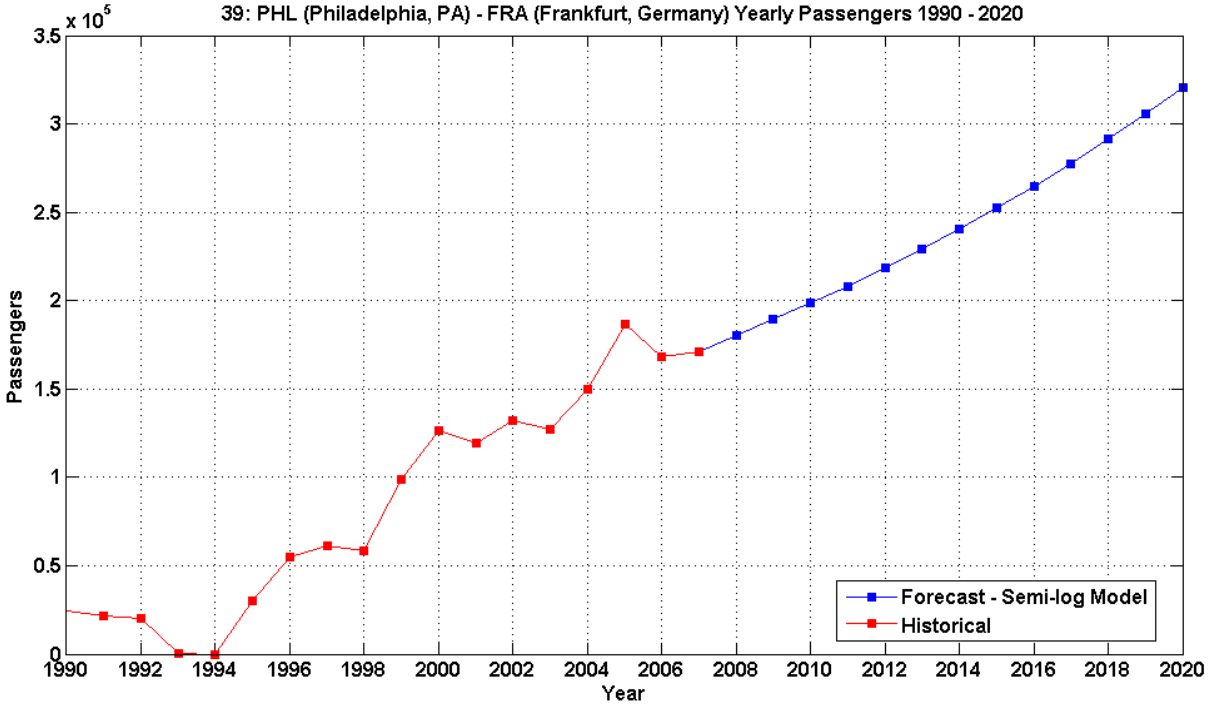
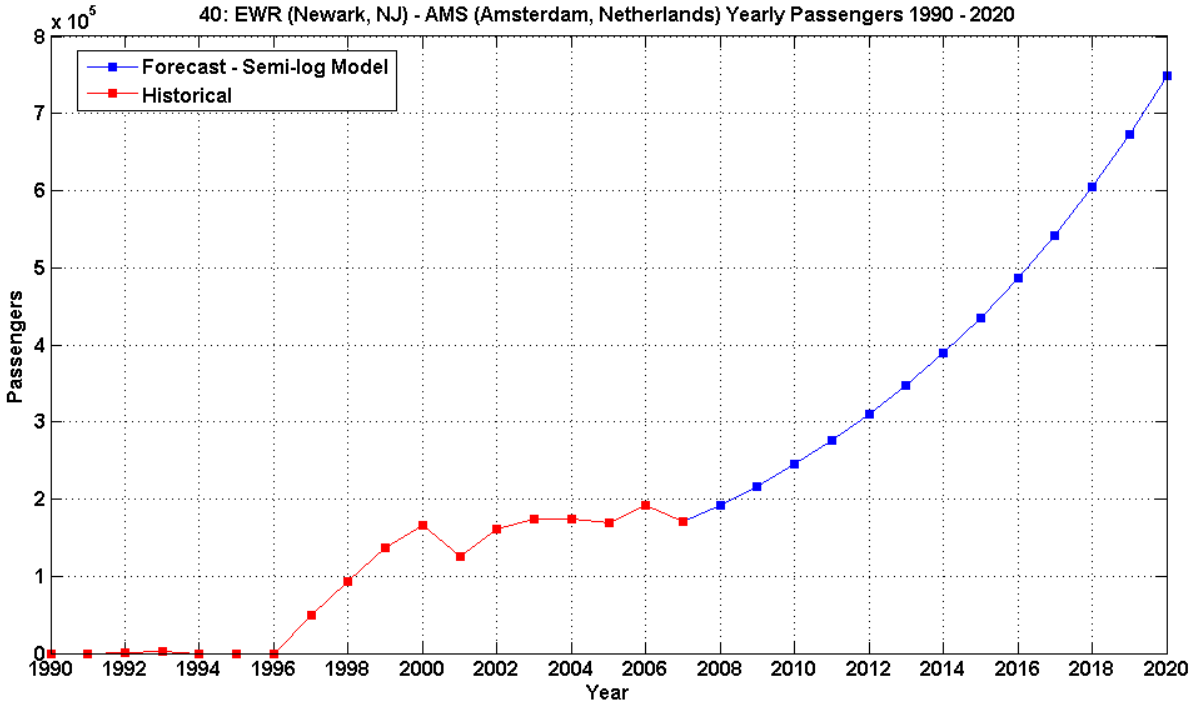
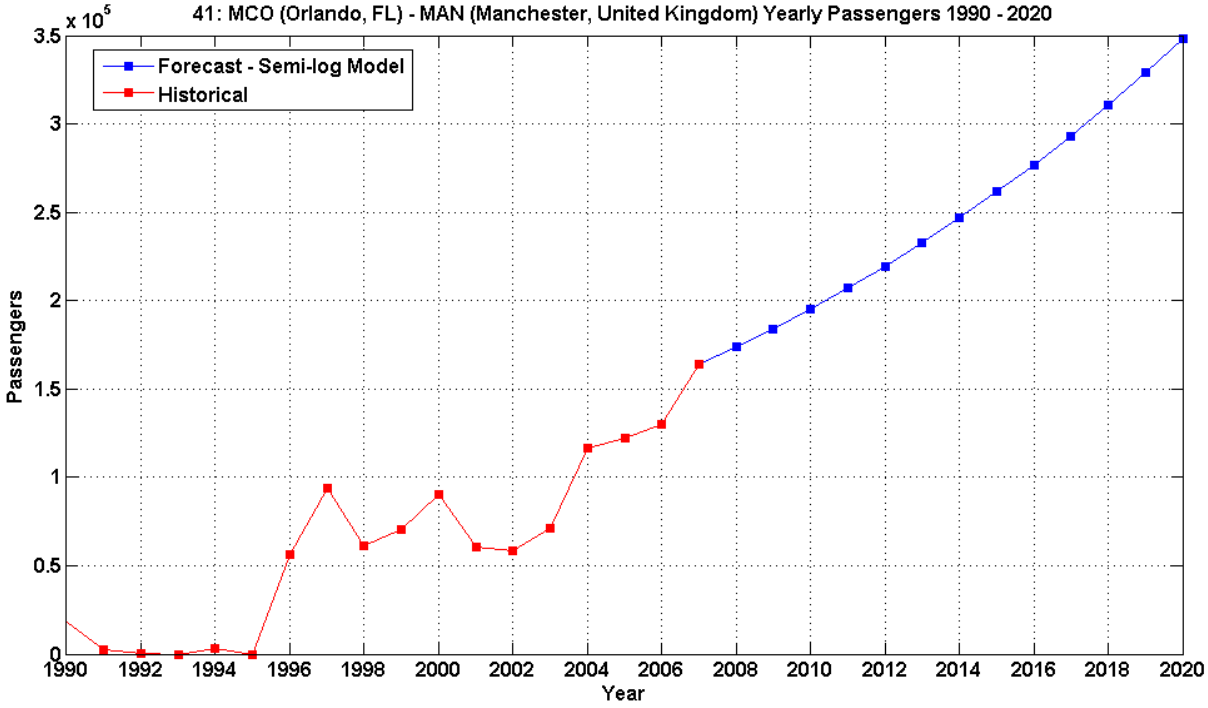

39: PHL (Philadelphia, PA) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


40: EWR (Newark, NJ) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


41: MCO (Orlando, FL) - MAN (Manchester, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.5
1
1.5
2
2.5
3
3.5
1990
1992
1994
1996
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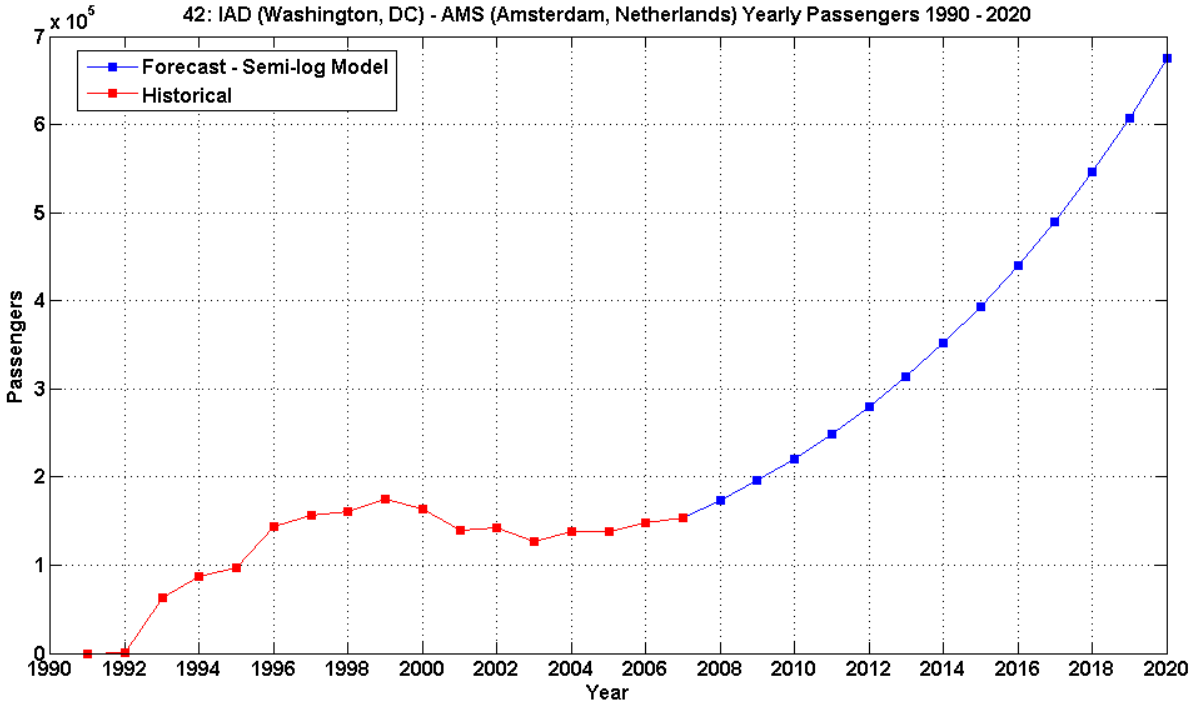
2020


42: IAD (Washington, DC) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
1
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1990
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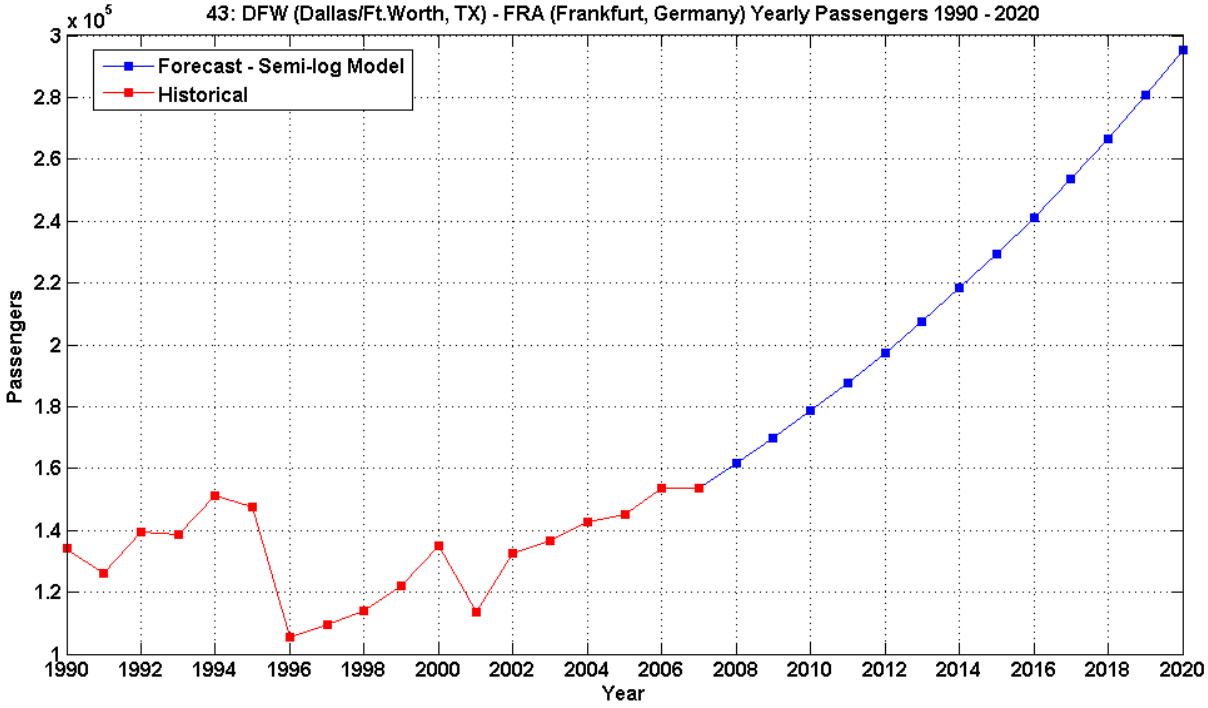
43: DFW (Dallas/Ft.Worth, TX) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
1990
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2016
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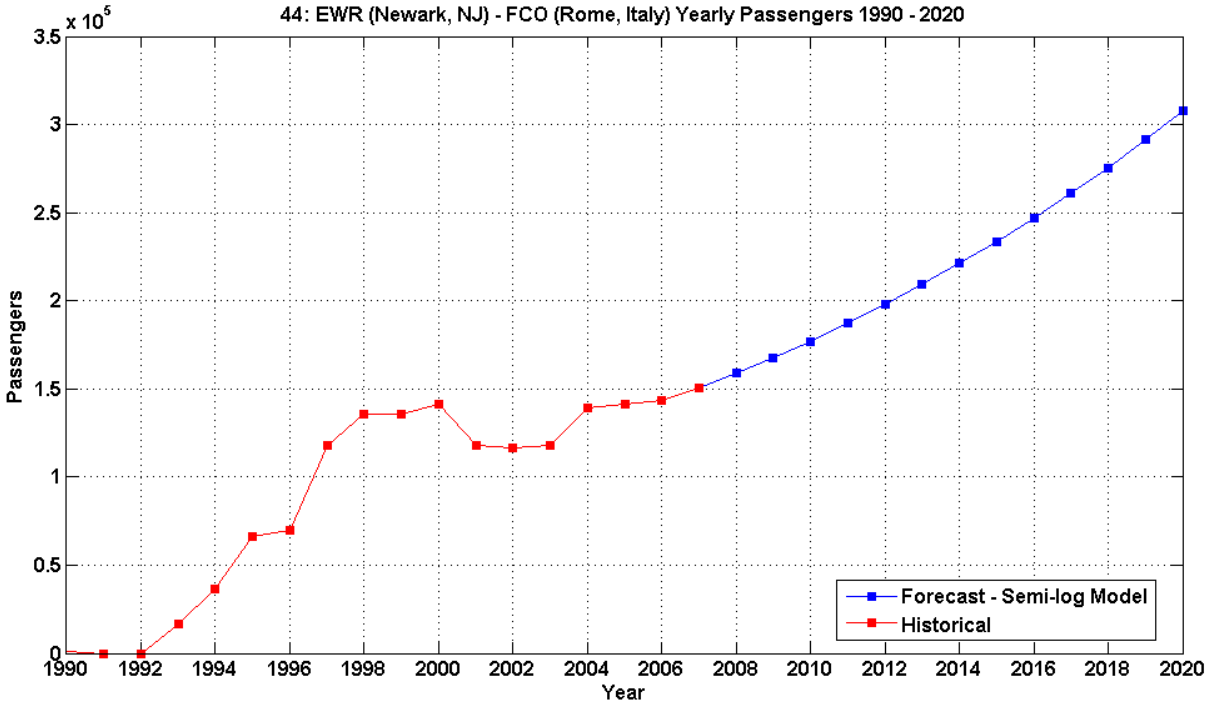
2020


44: EWR (Newark, NJ) - FCO (Rome, Italy) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
3.5
3
2.5
2
1.5
1
0.5
0
1990
1992
1994
1996
1998
2000
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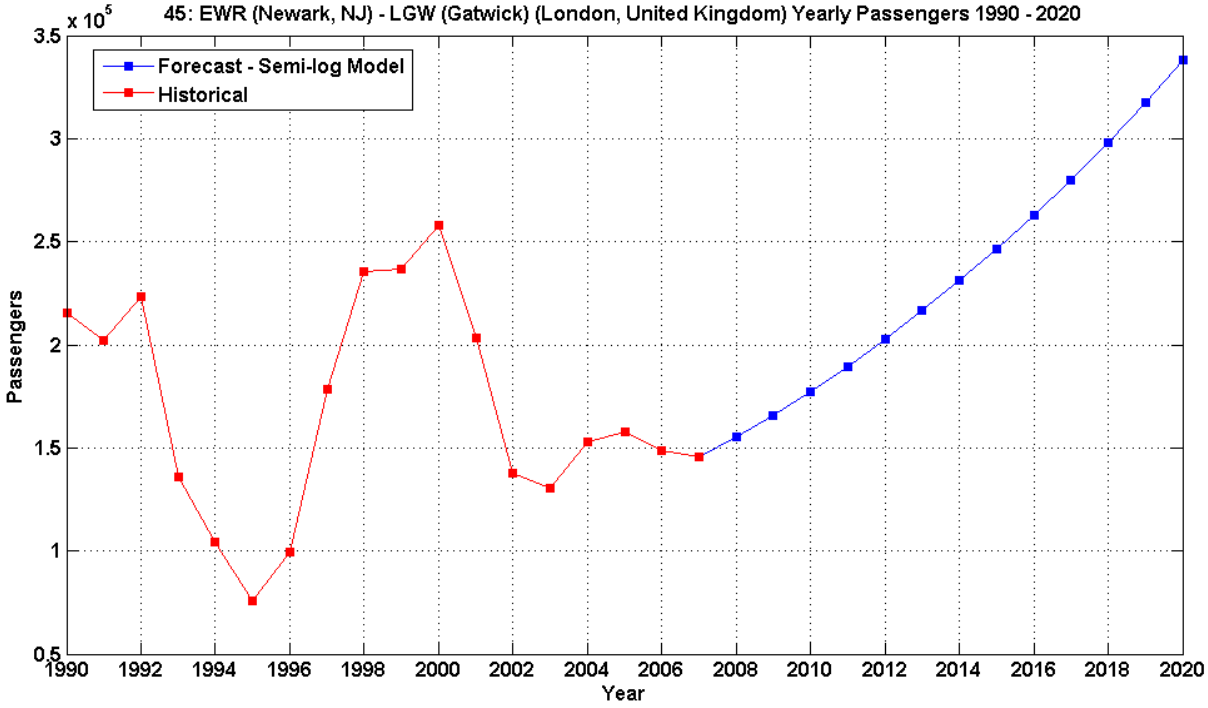
45: EWR (Newark, NJ) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
3.5
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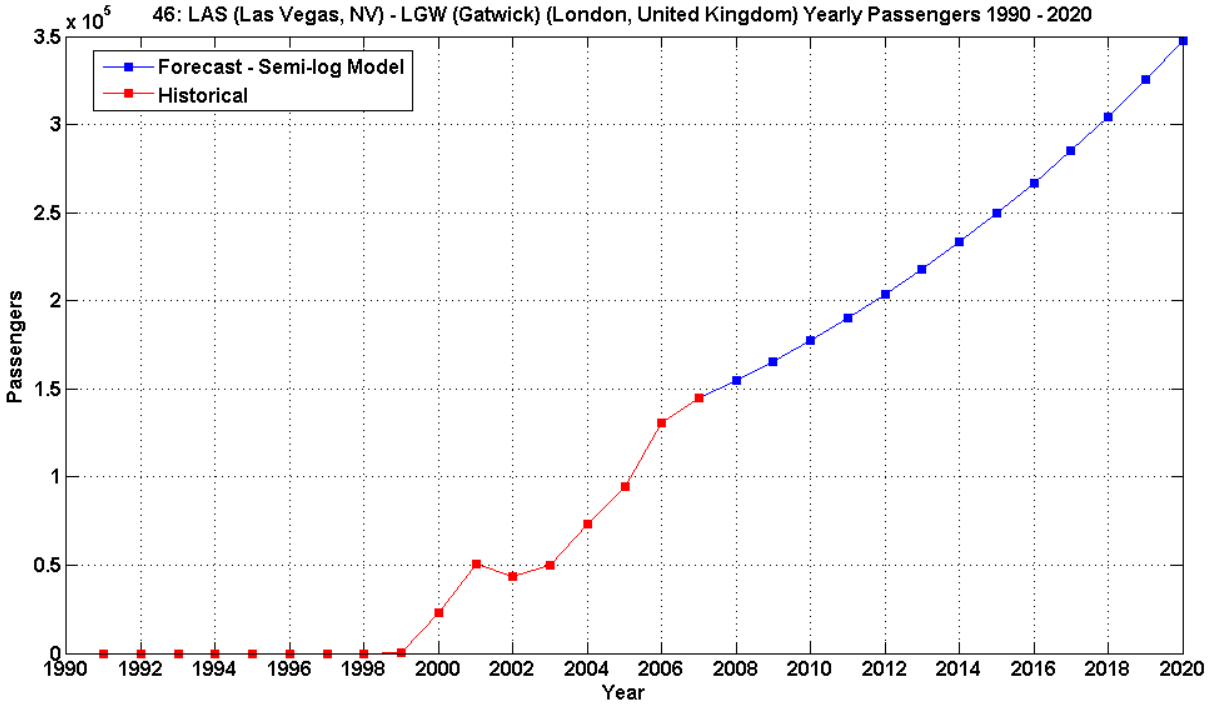
46: LAS (Las Vegas, NV) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
3.5
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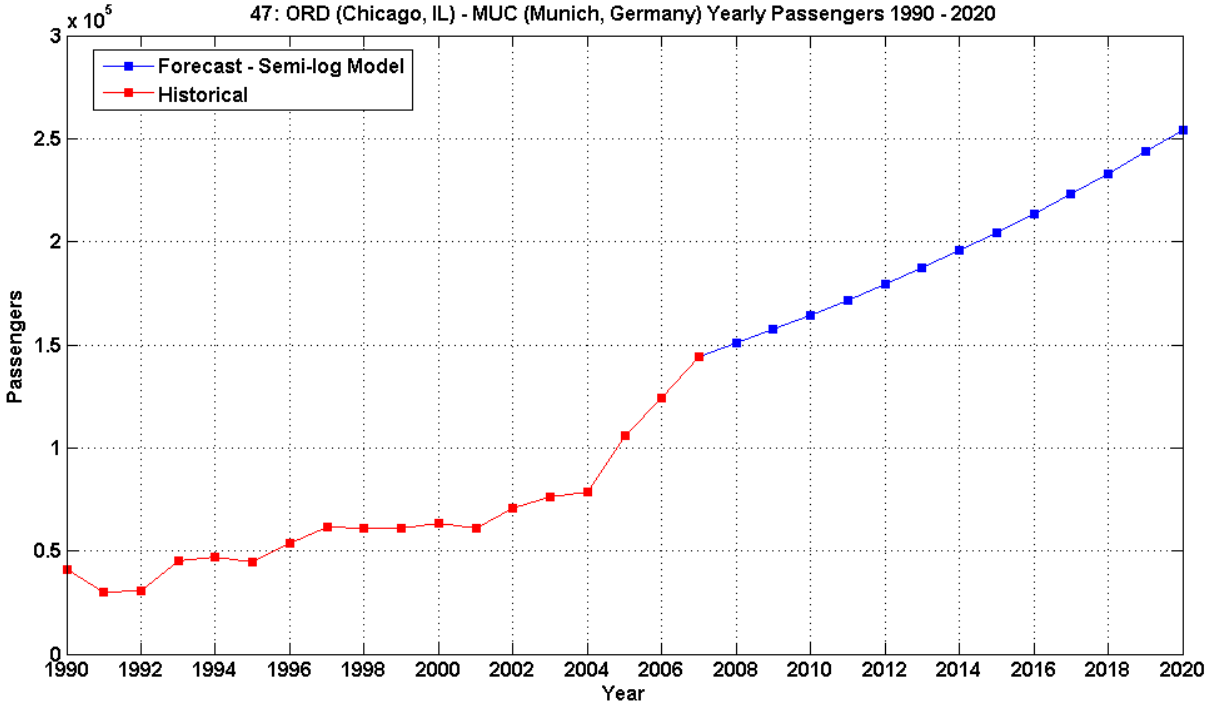
47: ORD (Chicago, IL) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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0.5
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1.5
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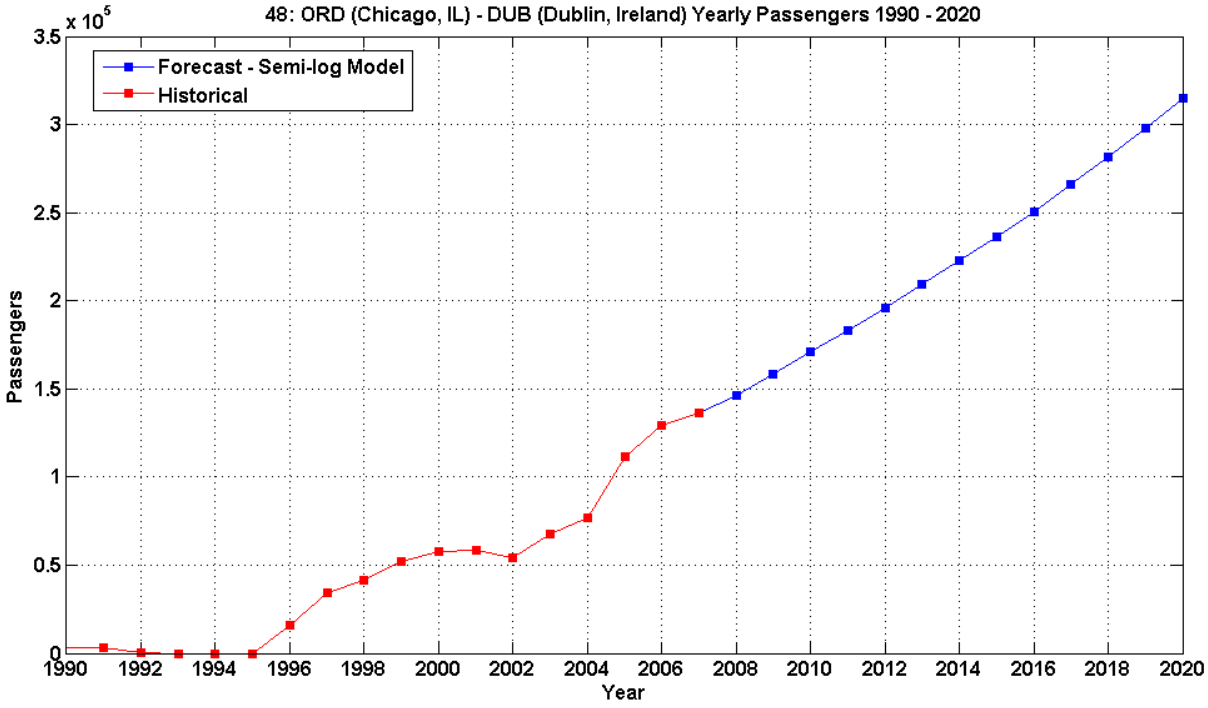
48: ORD (Chicago, IL) - DUB (Dublin, Ireland) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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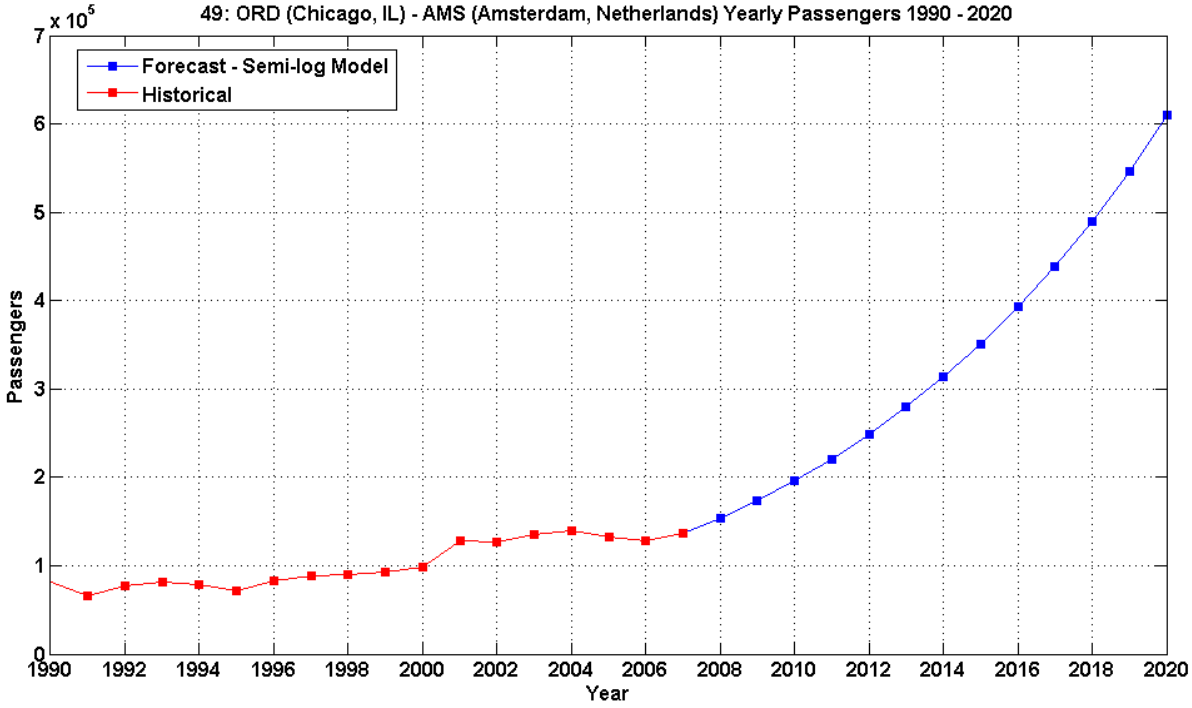
49: ORD (Chicago, IL) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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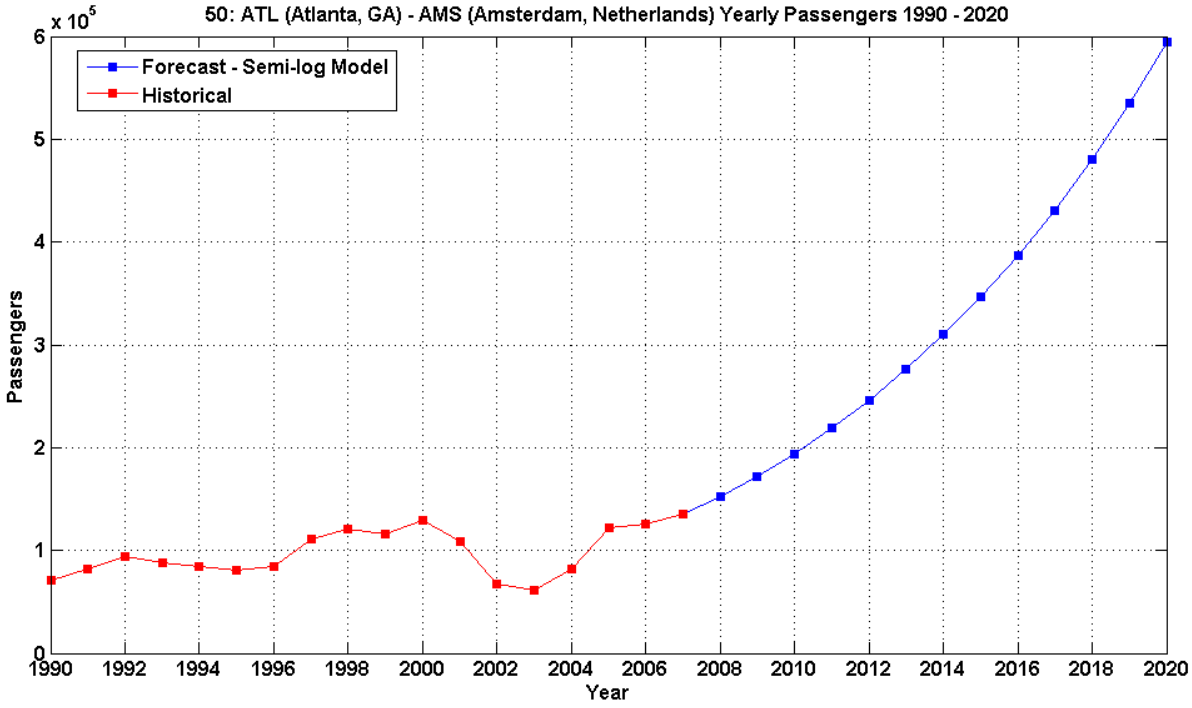
50: ATL (Atlanta, GA) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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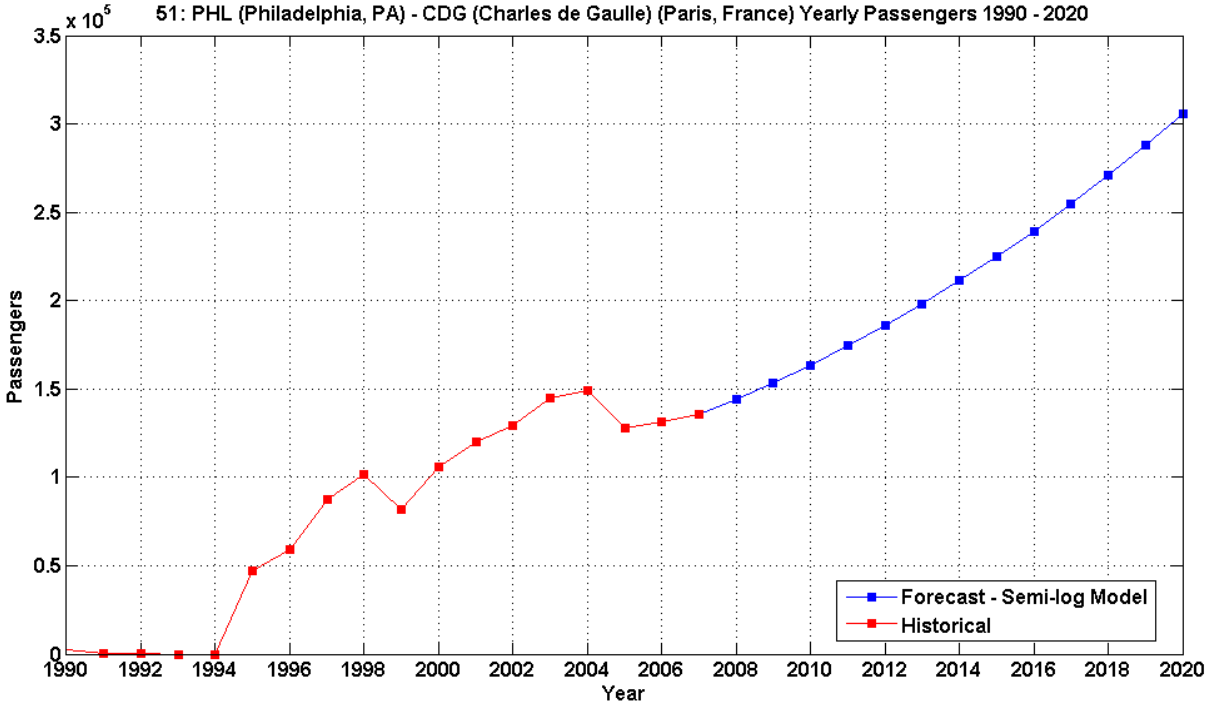
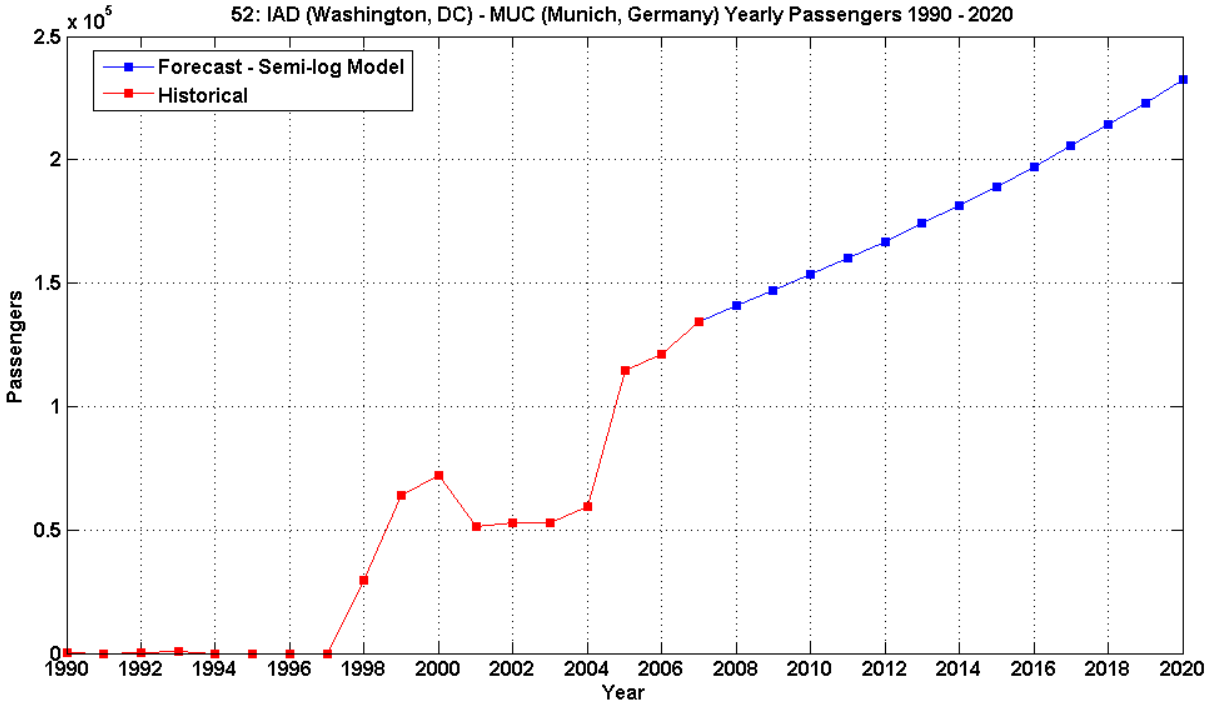
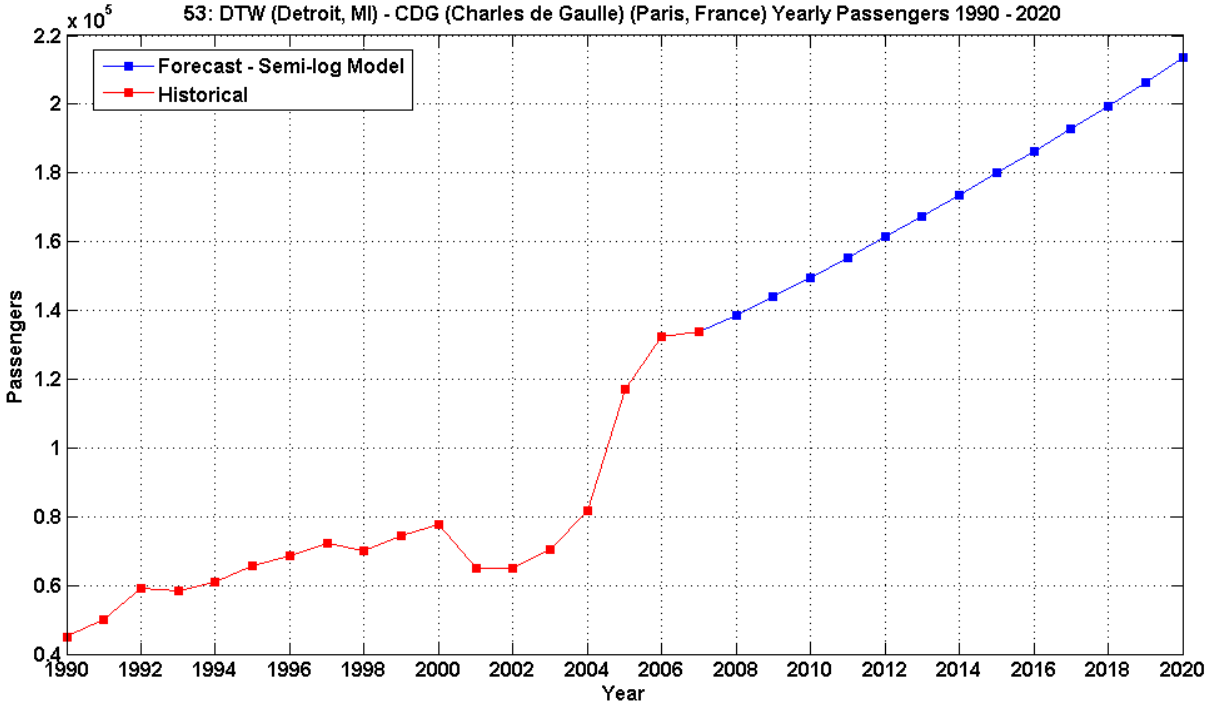

51: PHL (Philadelphia, PA) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


52: IAD (Washington, DC) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


53: DTW (Detroit, MI) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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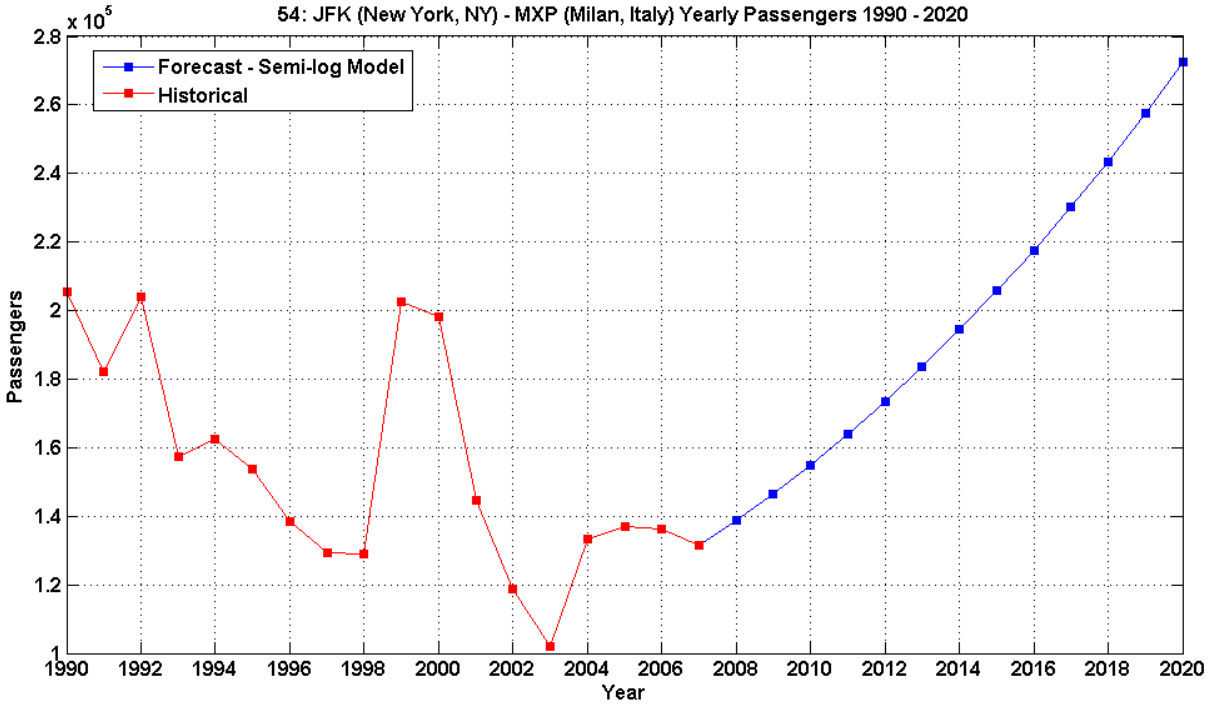
54: JFK (New York, NY) - MXP (Milan, Italy) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
2.8
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2.4
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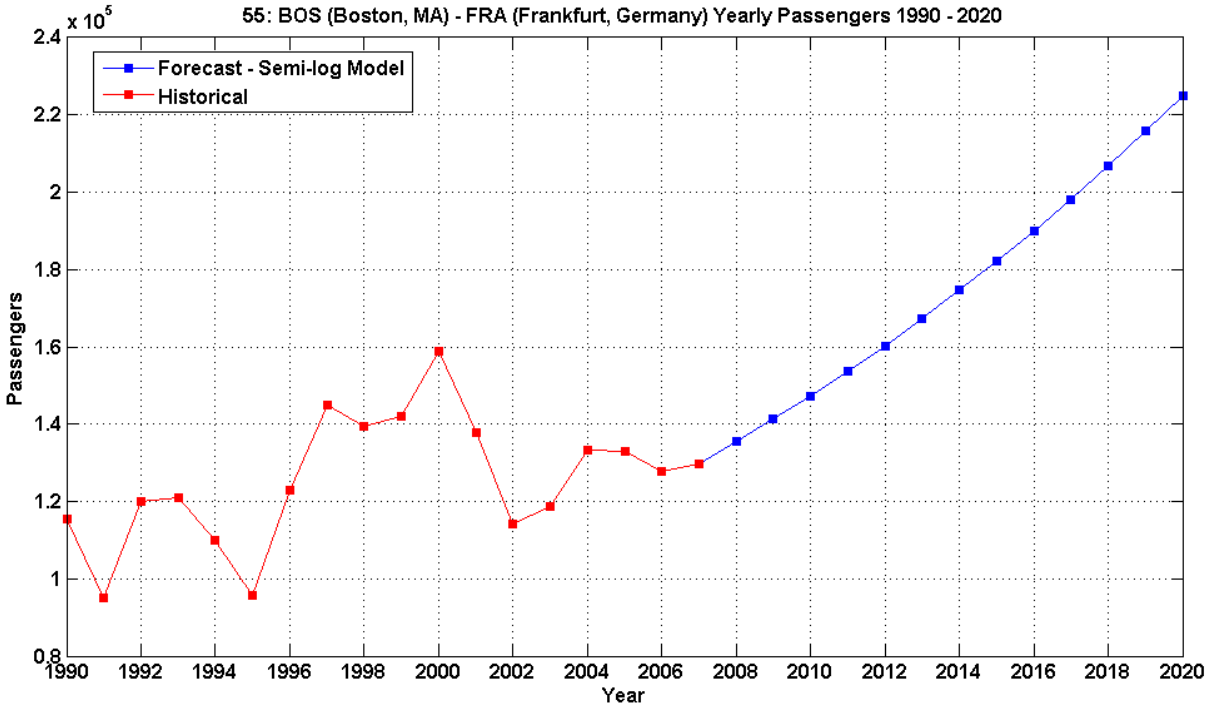
55: BOS (Boston, MA) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
2.4
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1.8
1.6
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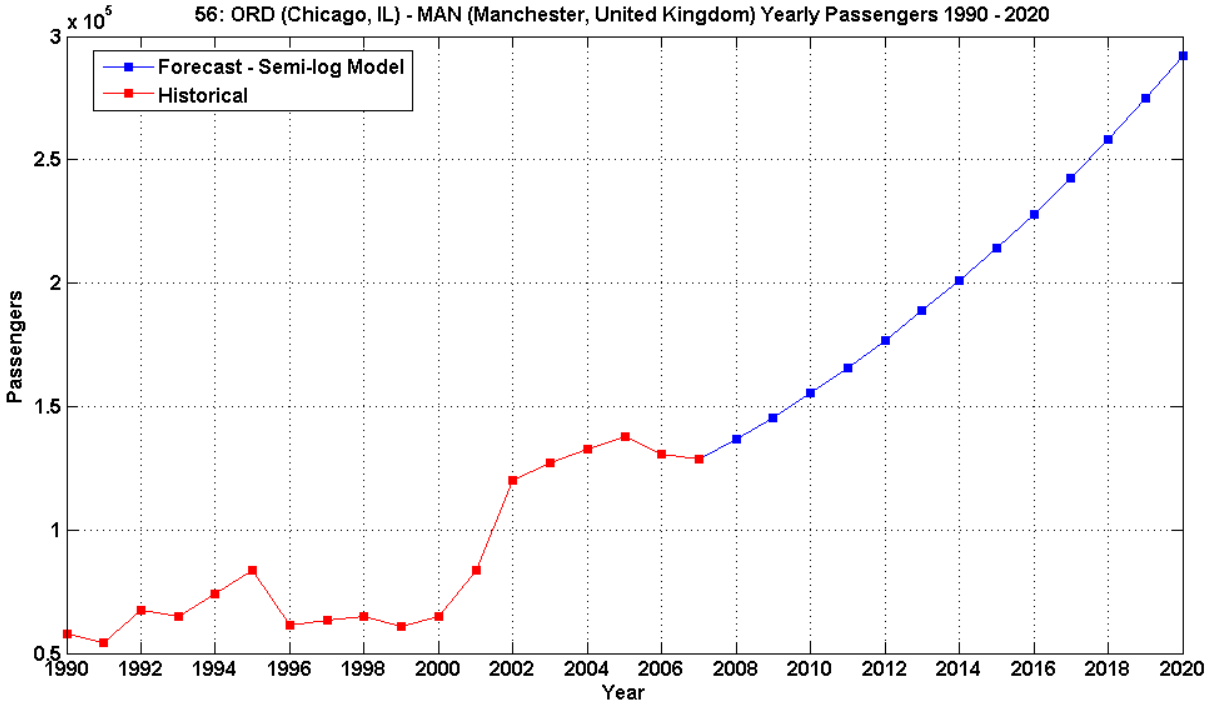
56: ORD (Chicago, IL) - MAN (Manchester, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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2.5
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1.5
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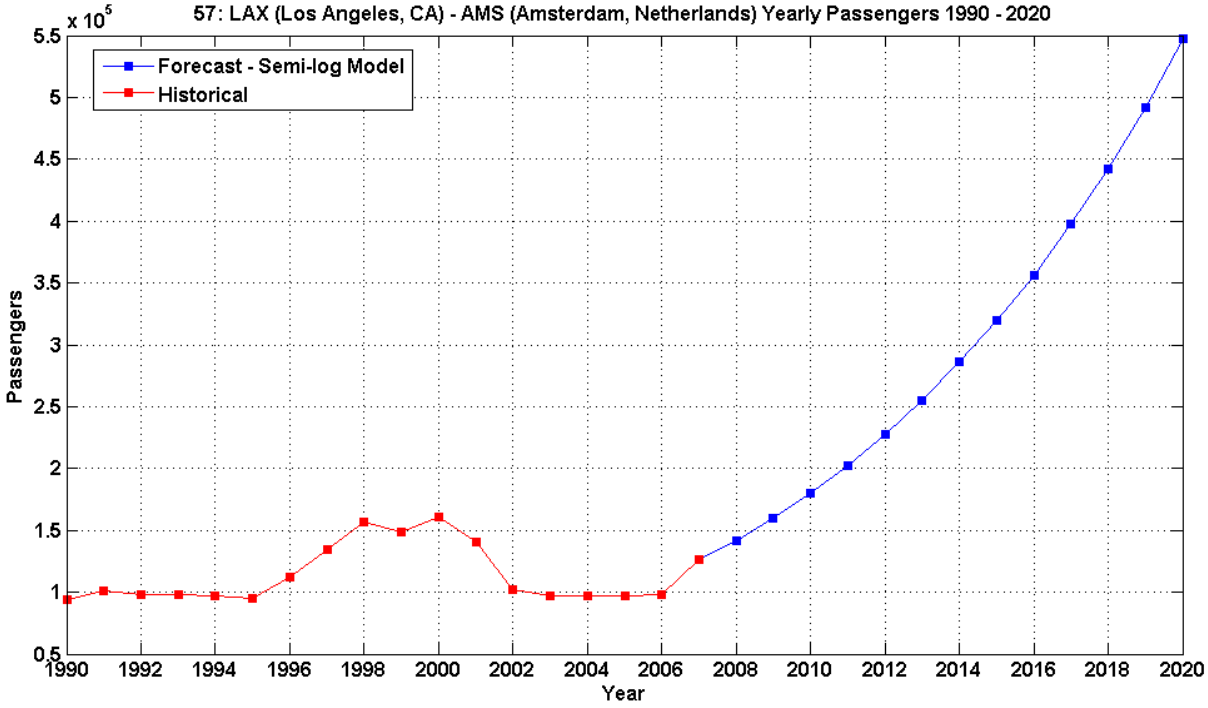
57: LAX (Los Angeles, CA) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
5.5
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4.5
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3.5
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2.5
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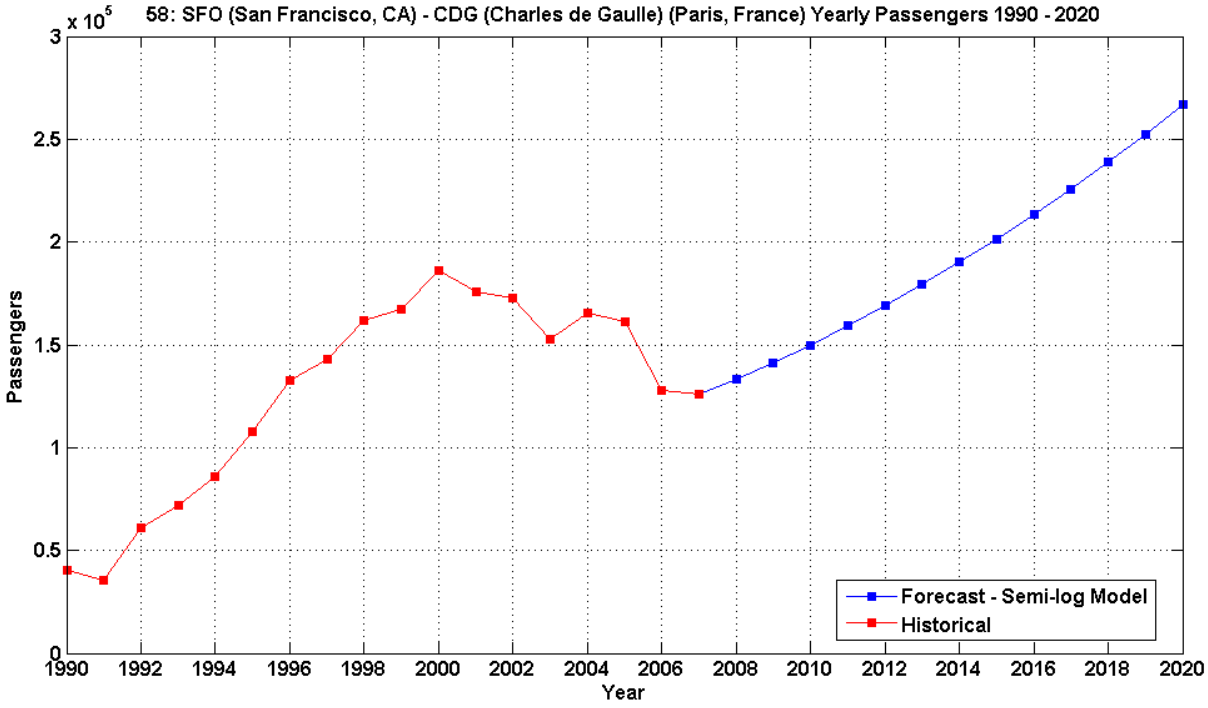
58: SFO (San Francisco, CA) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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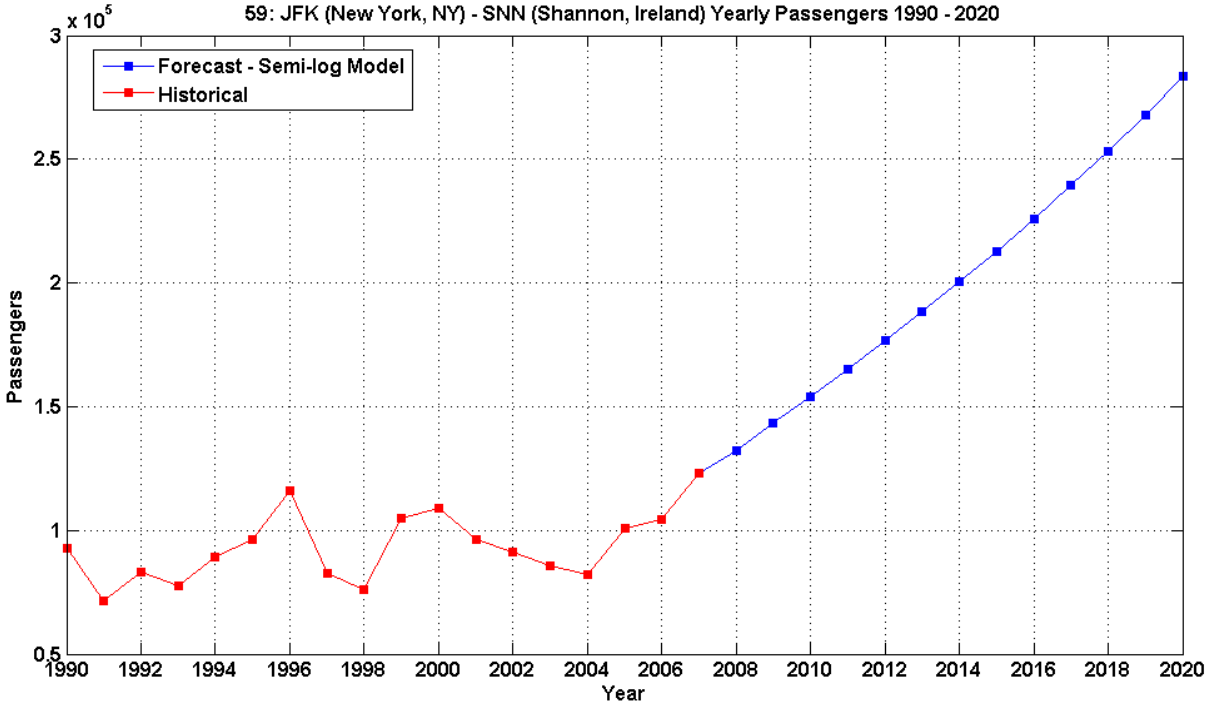
59: JFK (New York, NY) - SNN (Shannon, Ireland) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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2.5
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1.5
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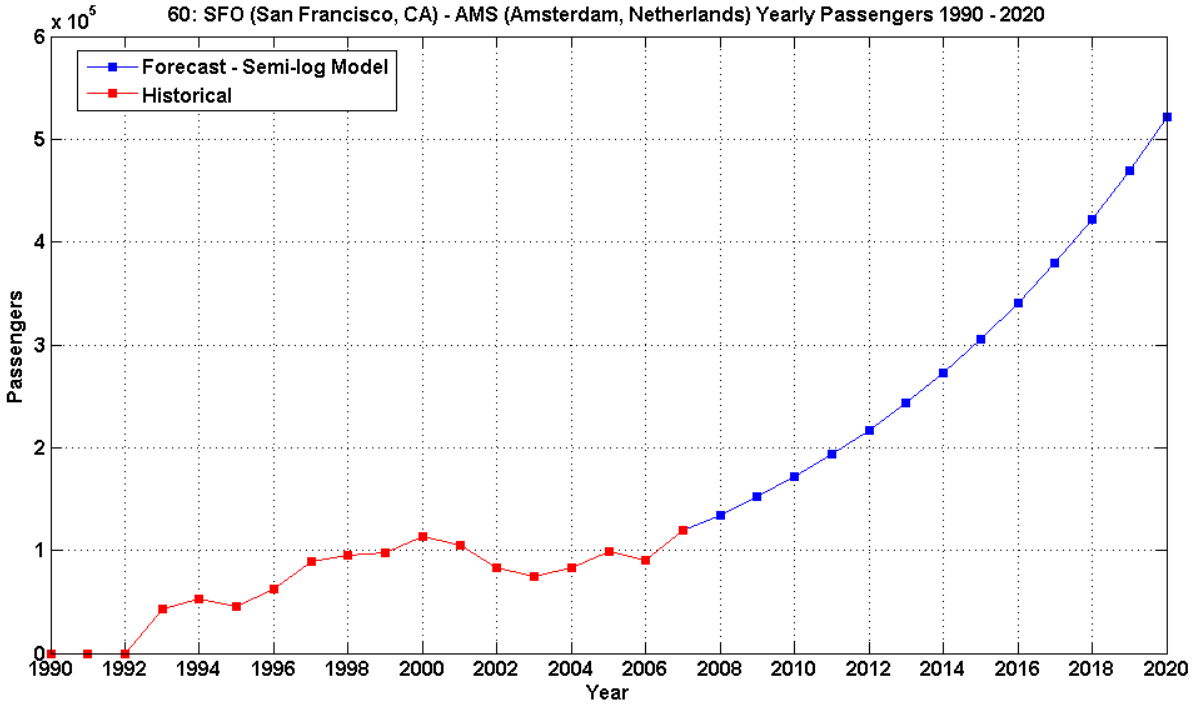
60: SFO (San Francisco, CA) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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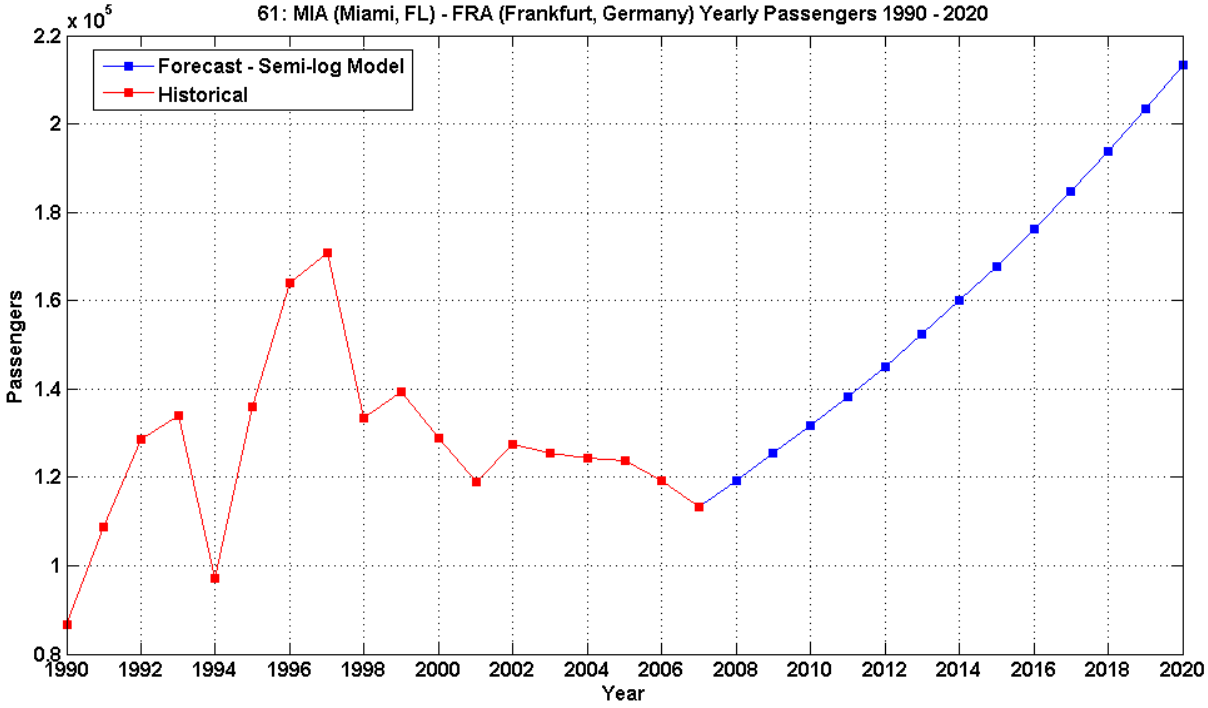
61: MIA (Miami, FL) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
2.2
2
1.8
1.6
1.4
1.2
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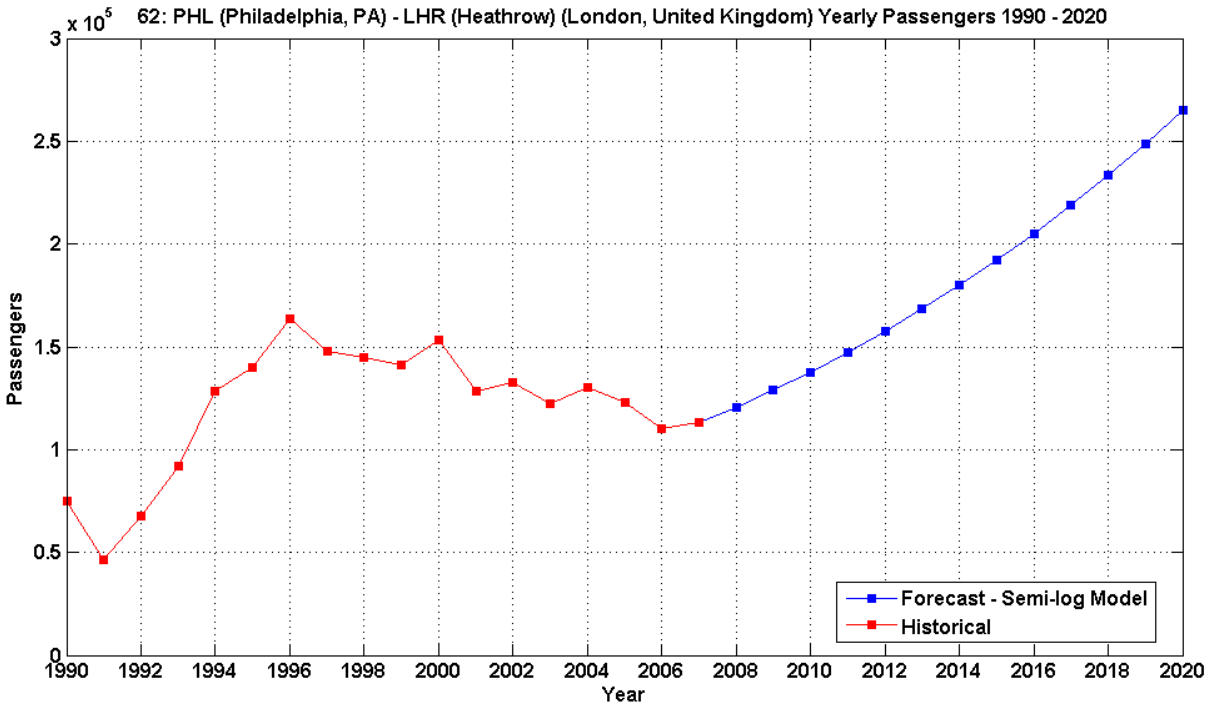
62: PHL (Philadelphia, PA) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
3
2.5
2
1.5
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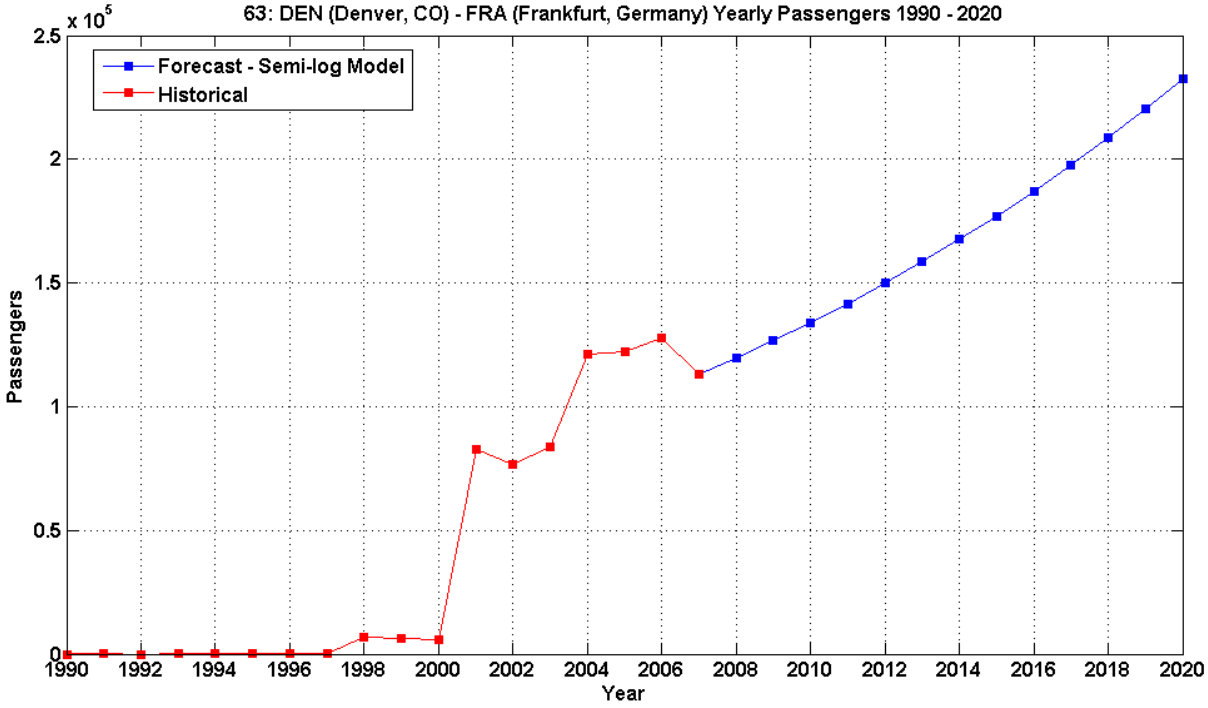
63: DEN (Denver, CO) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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0.5
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1.5
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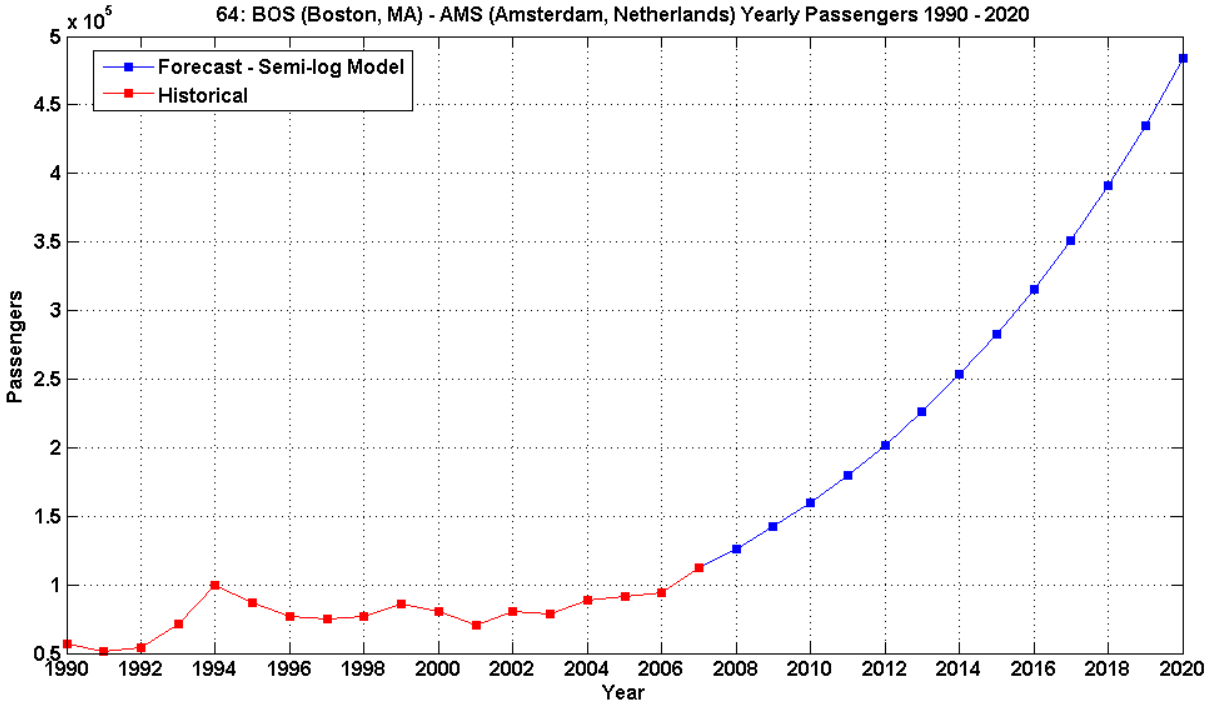
64: BOS (Boston, MA) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0.5
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1.5
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2.5
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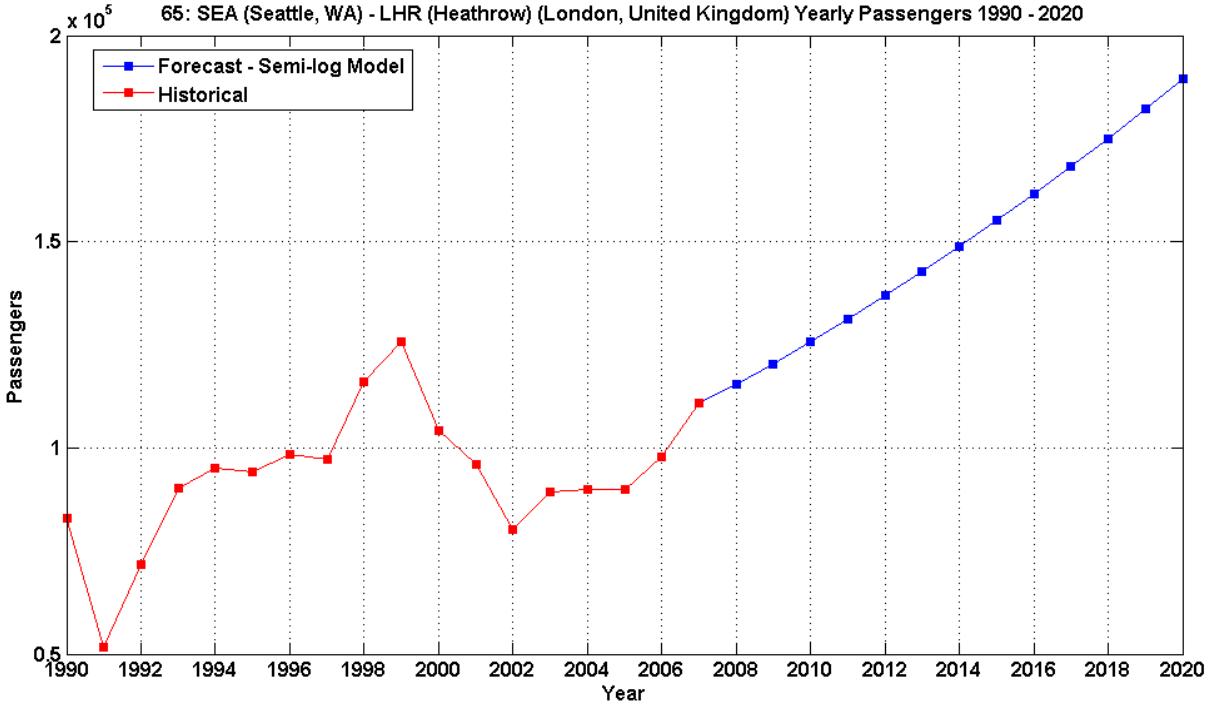
65: SEA (Seattle, WA) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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1.5
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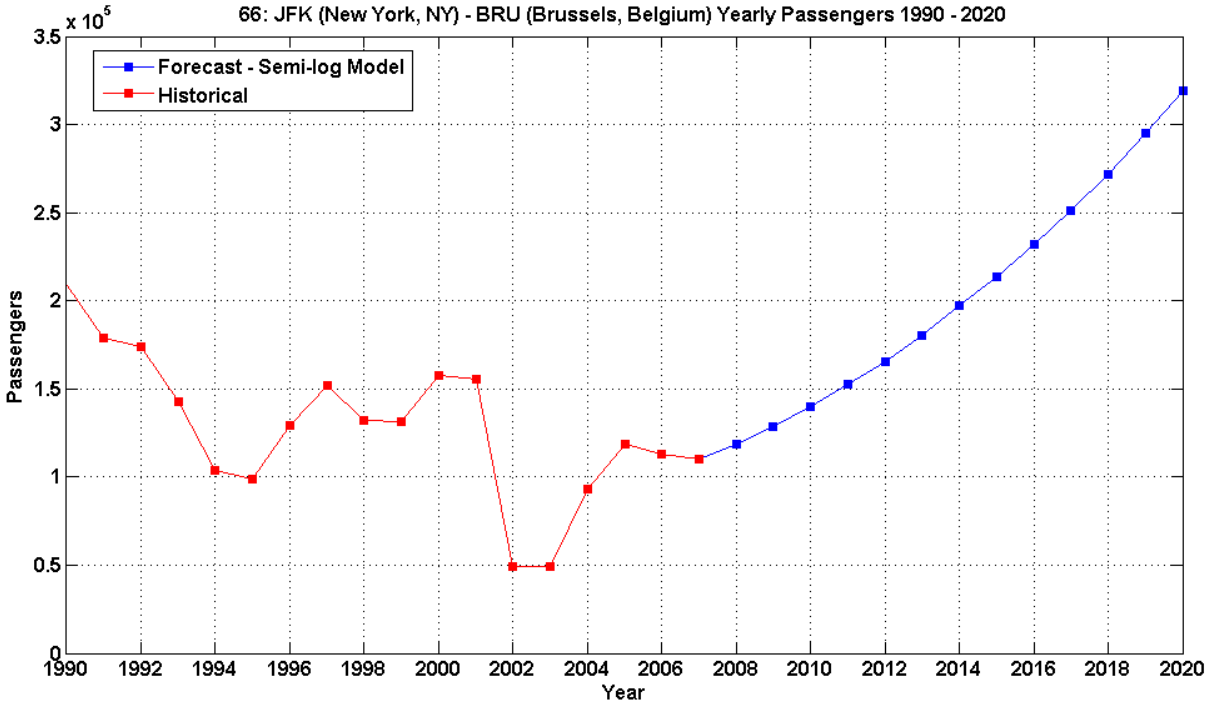
66: JFK (New York, NY) - BRU (Brussels, Belgium) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
3.5
3
2.5
2
1.5
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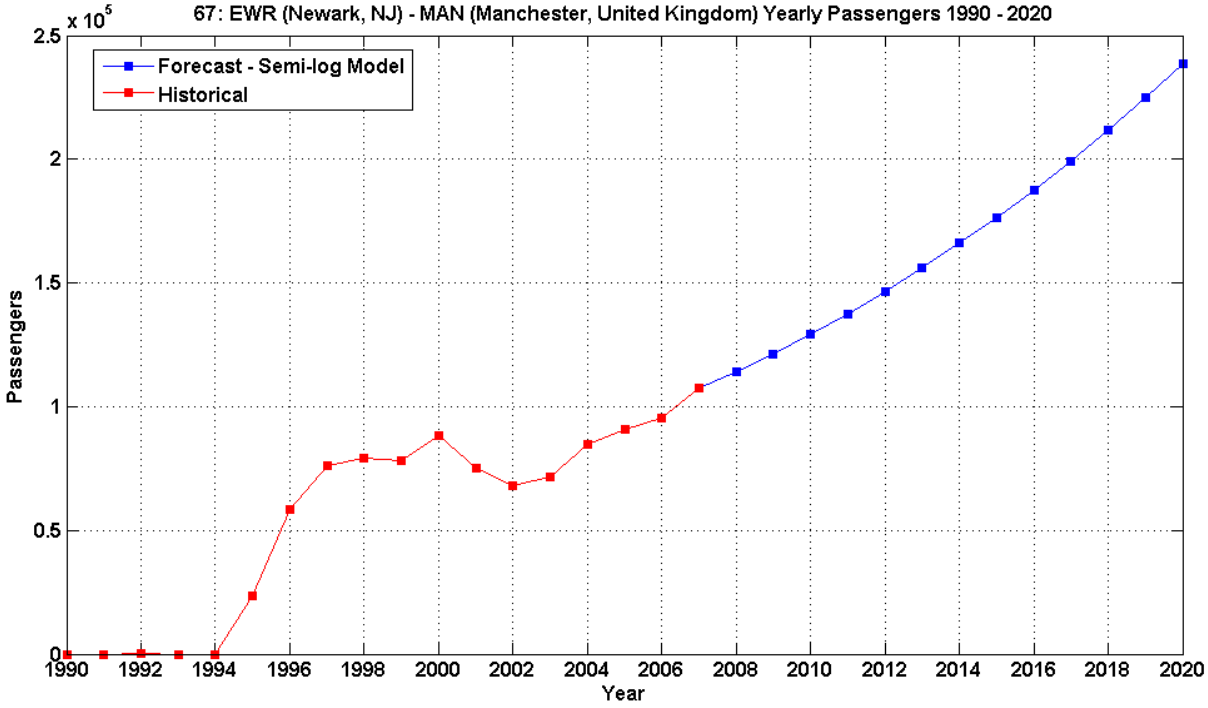
67: EWR (Newark, NJ) - MAN (Manchester, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.5
1
1.5
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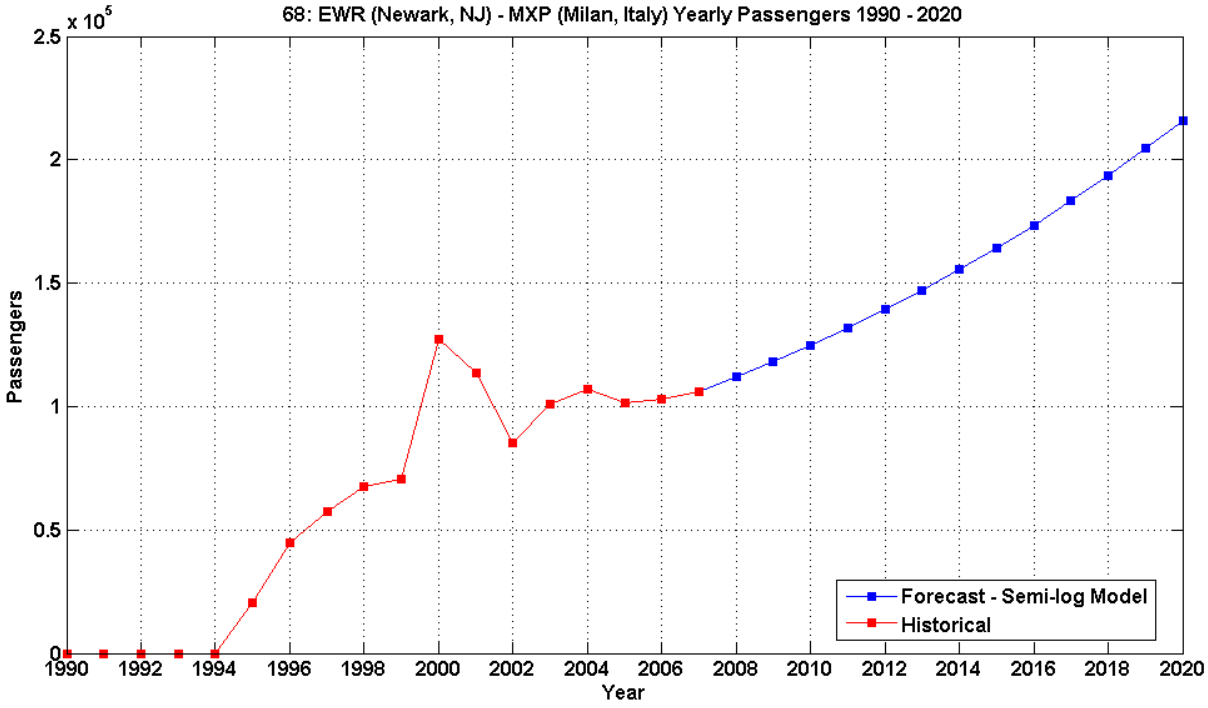
68: EWR (Newark, NJ) - MXP (Milan, Italy) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.5
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1.5
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1990
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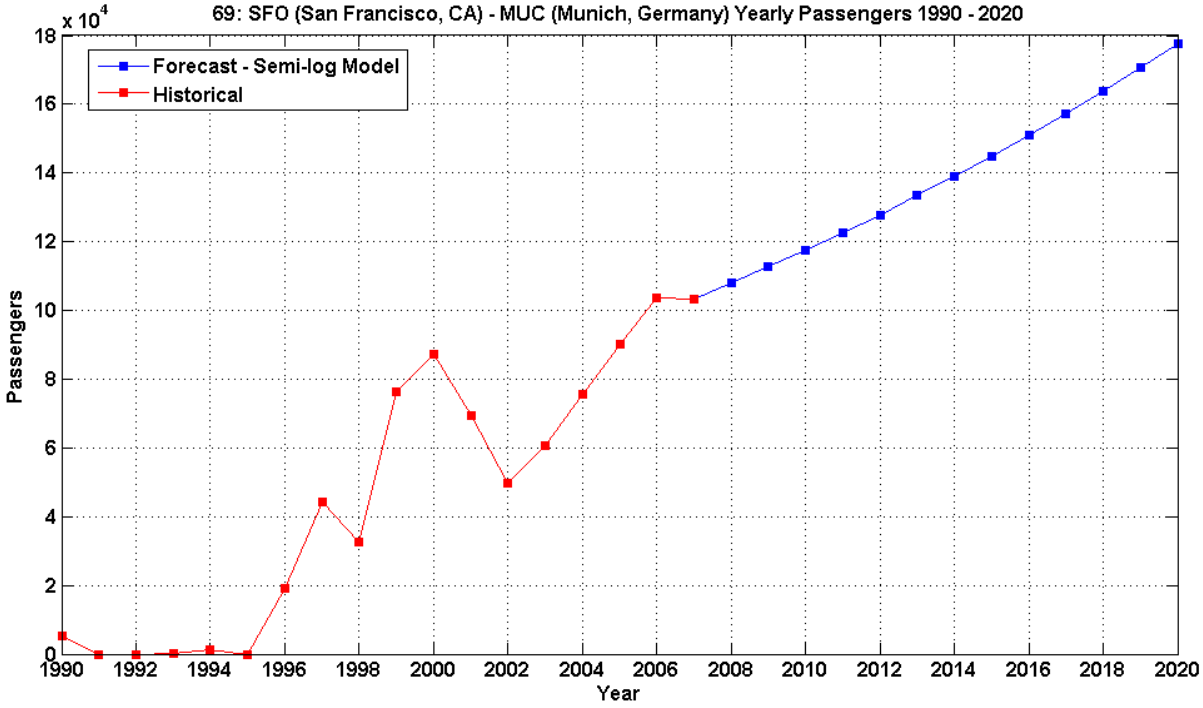
69: SFO (San Francisco, CA) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
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6
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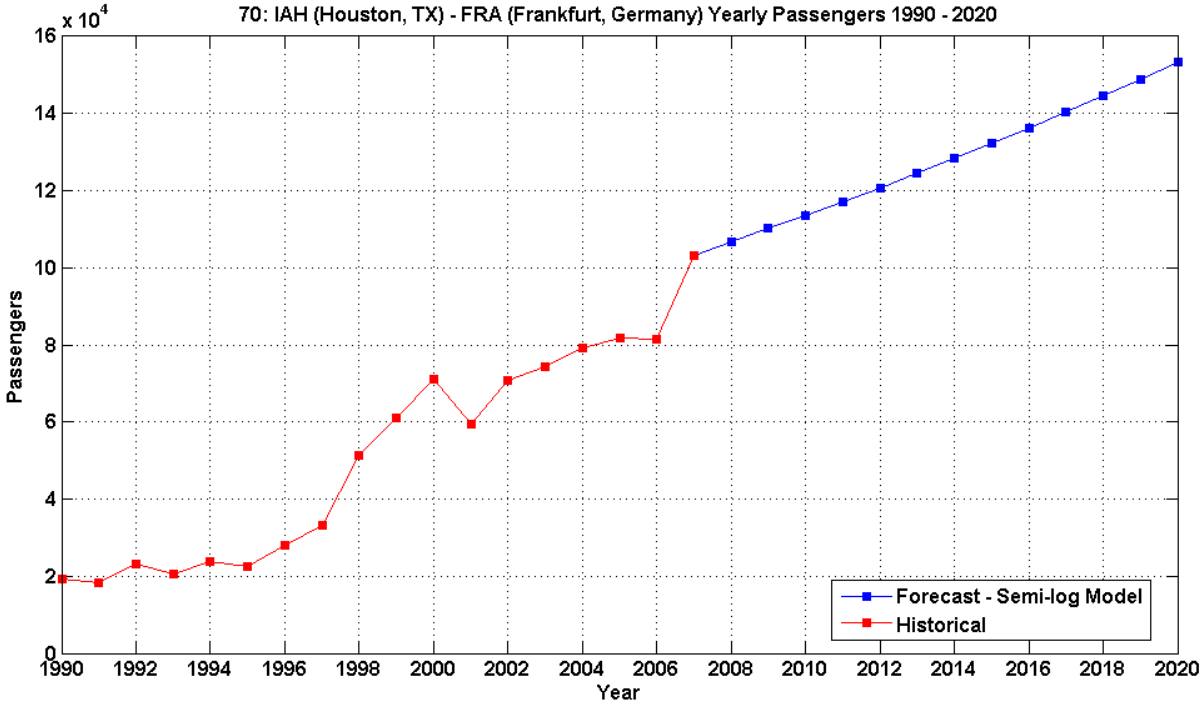
70: IAH (Houston, TX) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
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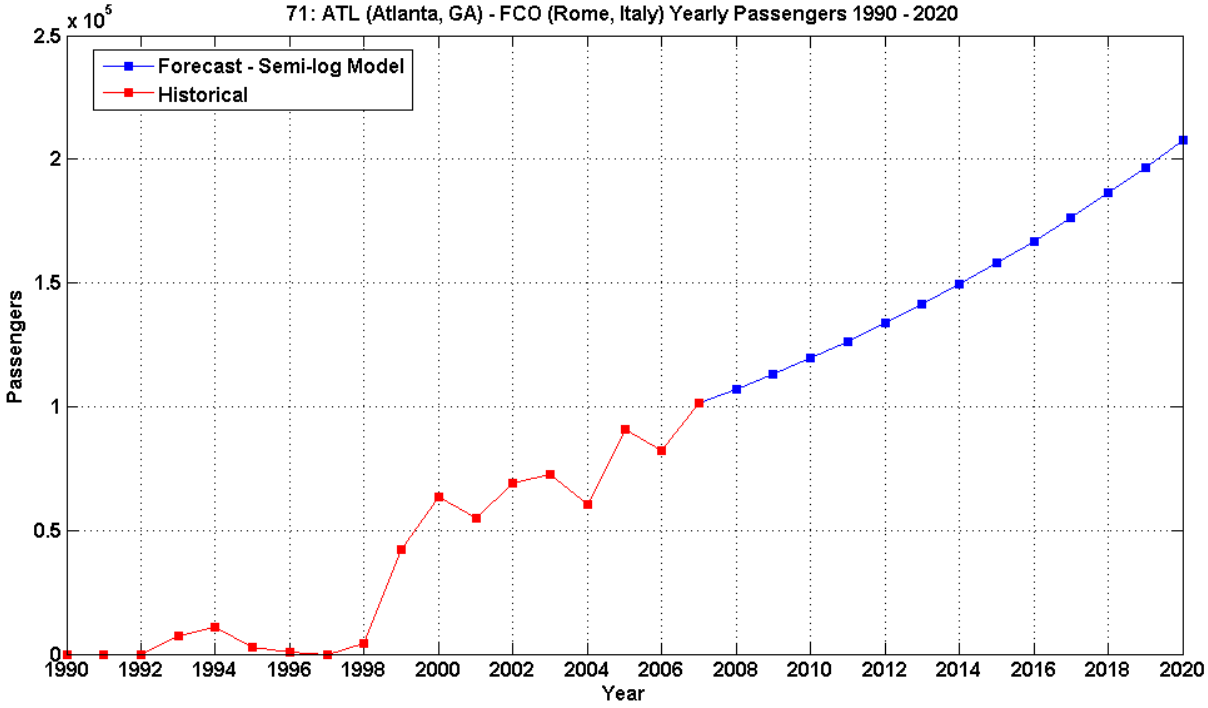
71: ATL (Atlanta, GA) - FCO (Rome, Italy) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
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0.5
1
1.5
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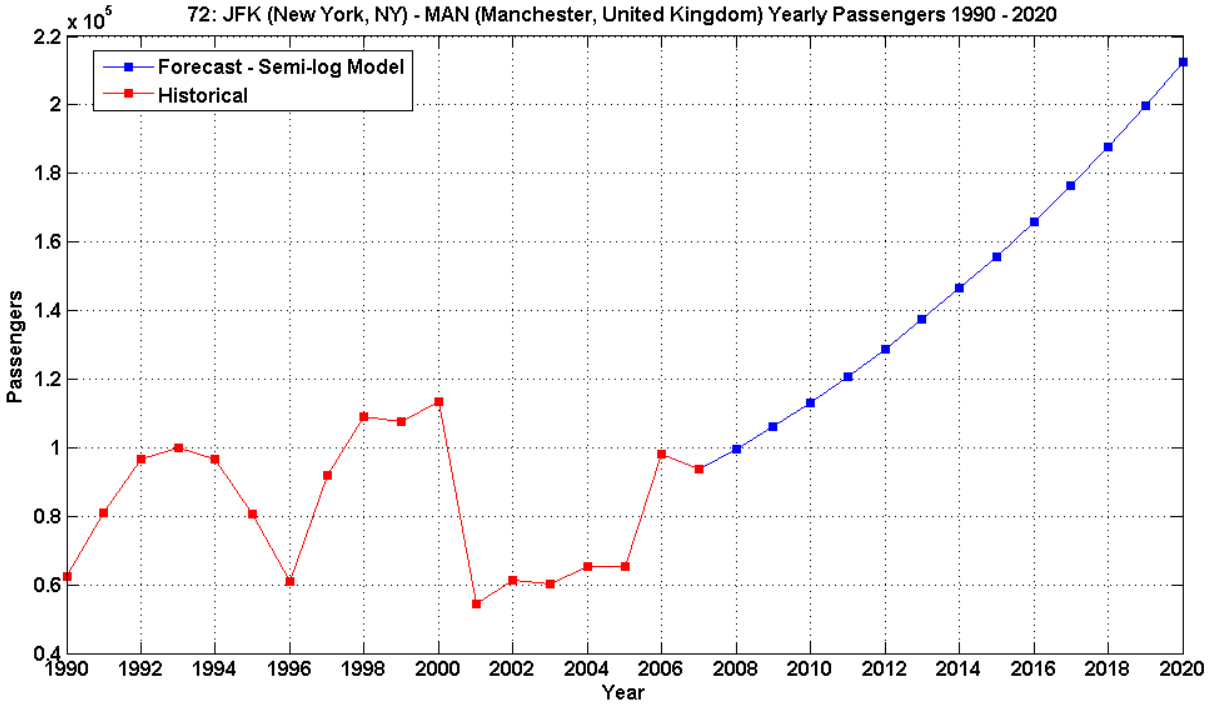
72: JFK (New York, NY) - MAN (Manchester, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0.4
0.6
0.8
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1.2
1.4
1.6
1.8
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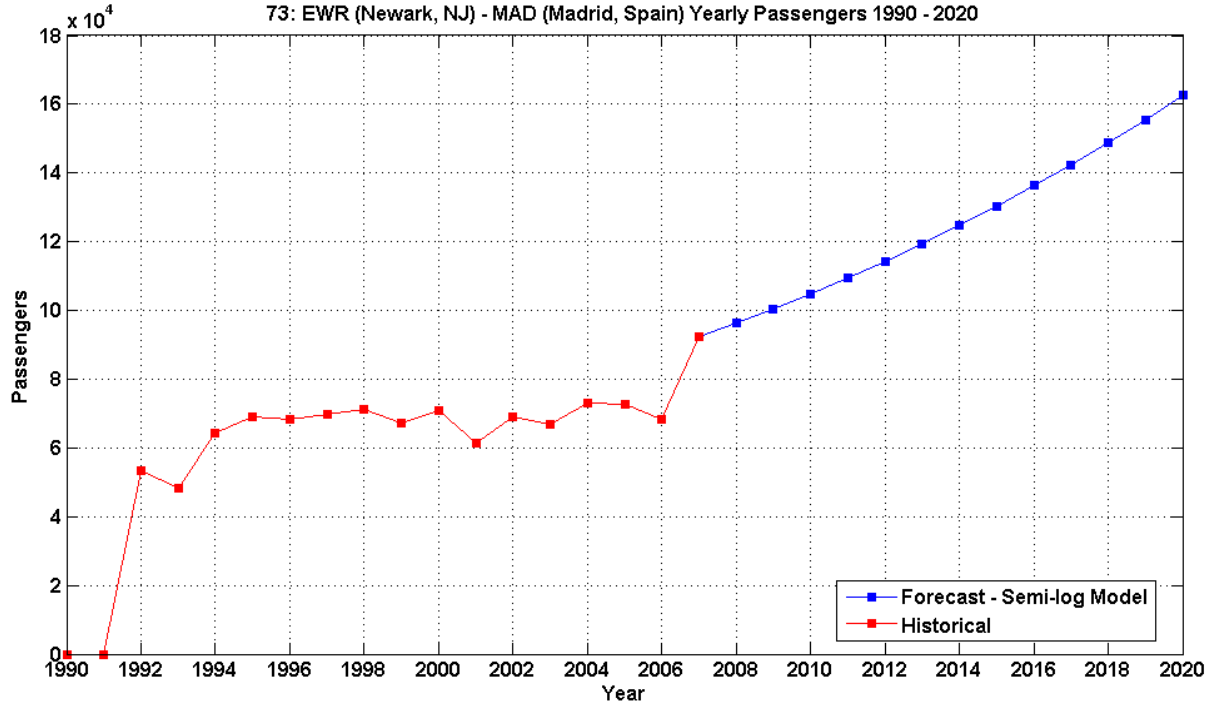
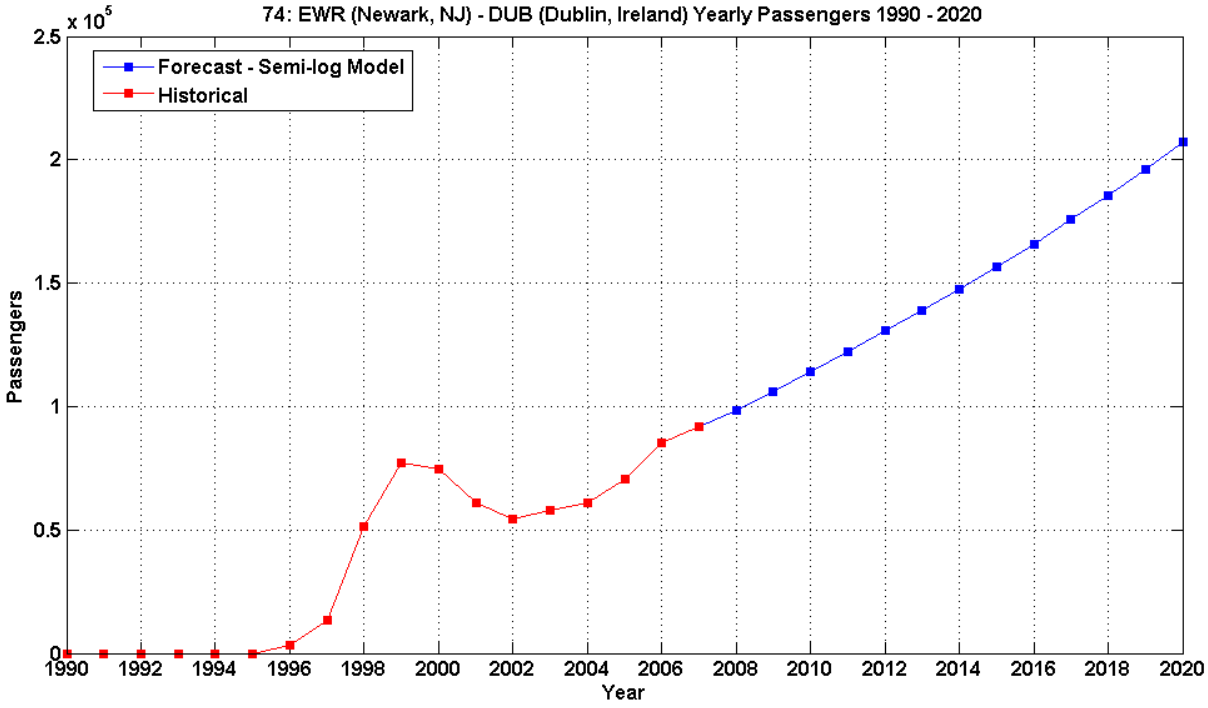
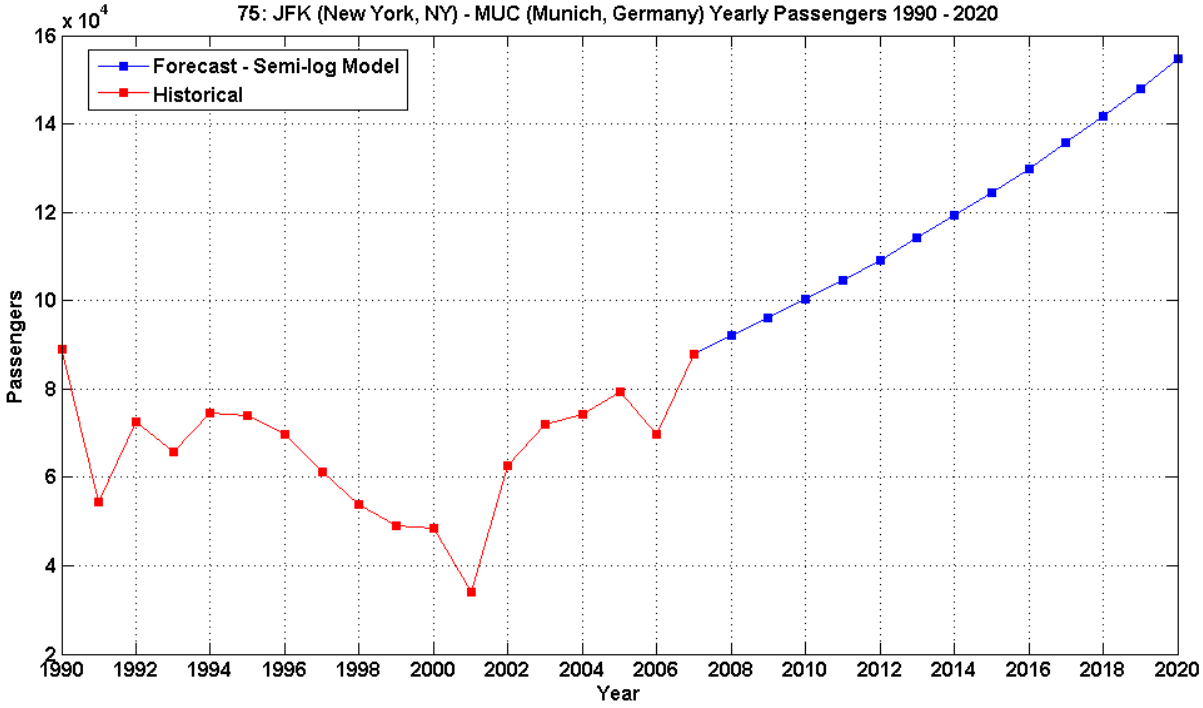

73: EWR (Newark, NJ) - MAD (Madrid, Spain) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


74: EWR (Newark, NJ) - DUB (Dublin, Ireland) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


75: JFK (New York, NY) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
16
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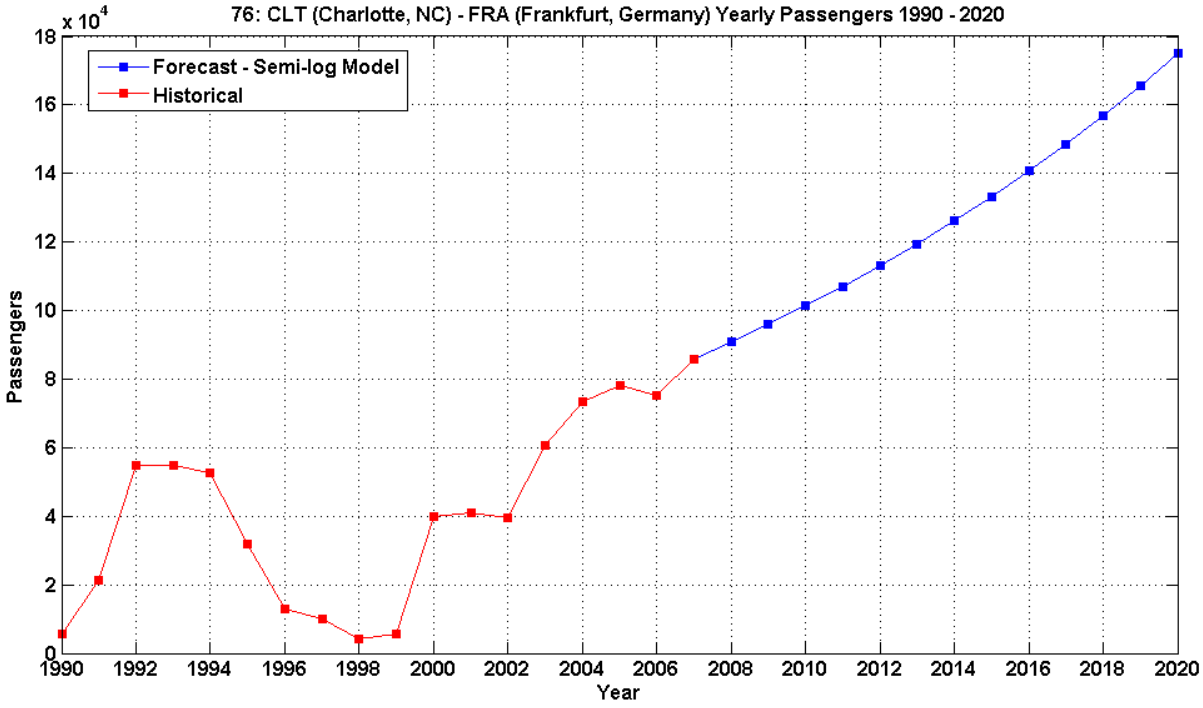
76: CLT (Charlotte, NC) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
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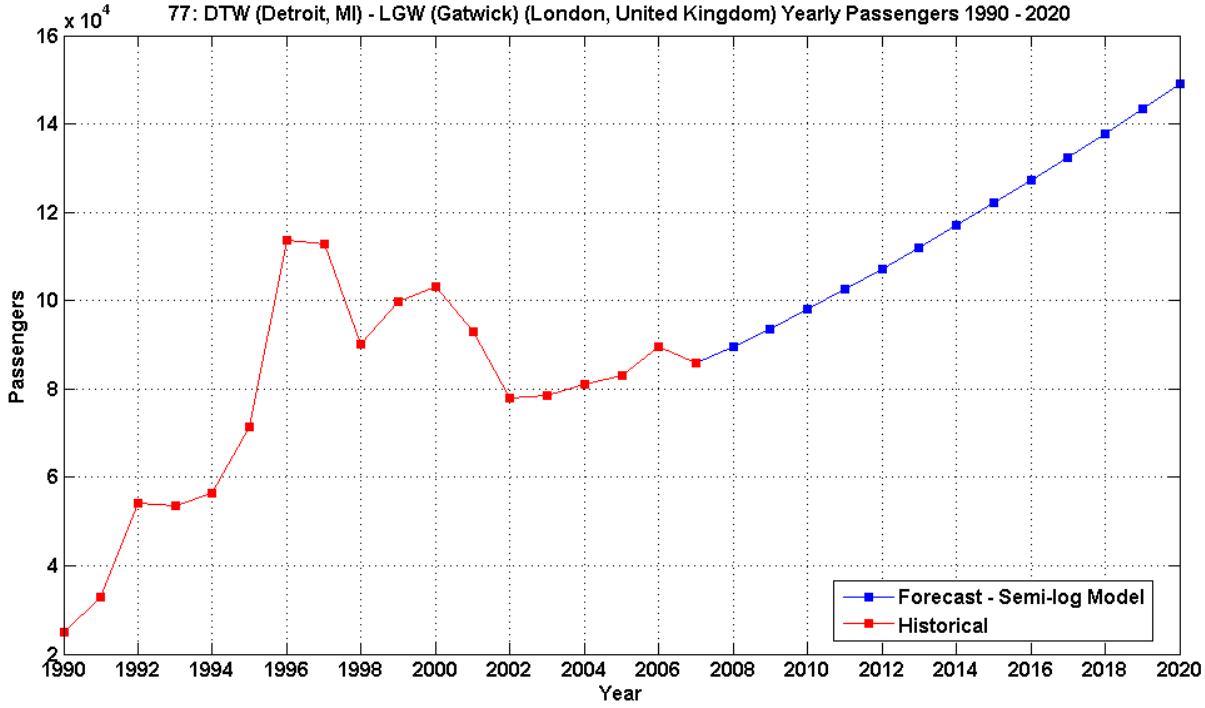
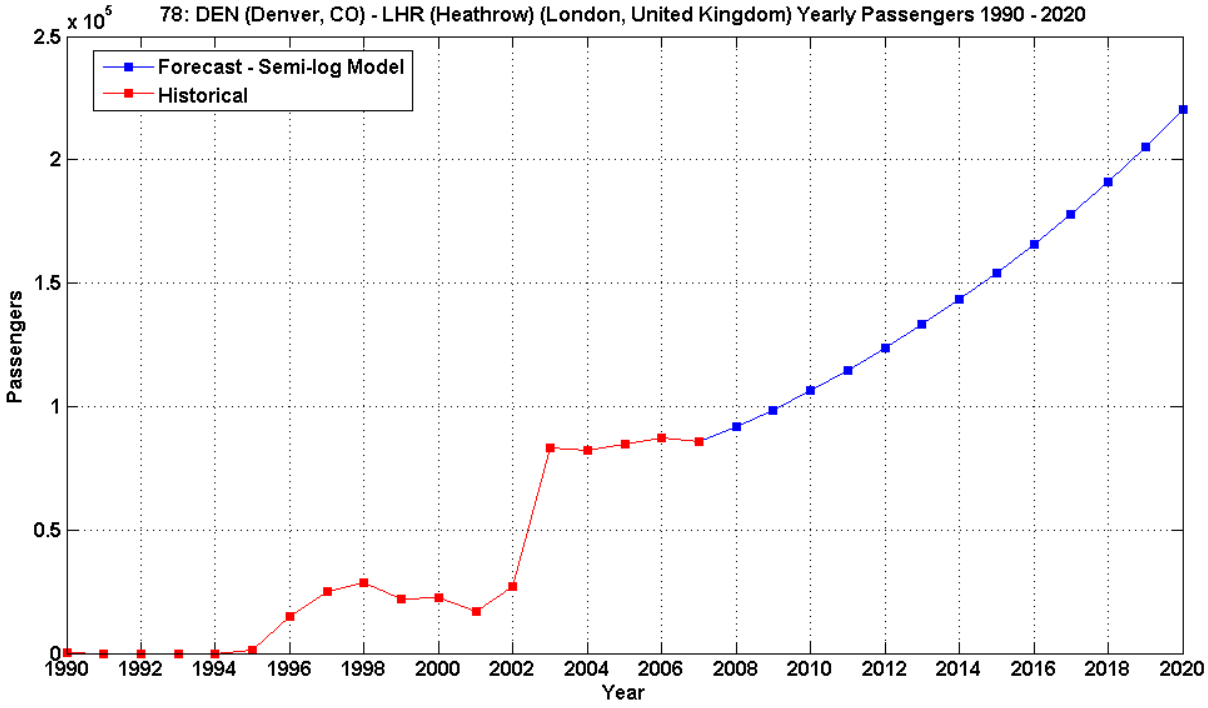
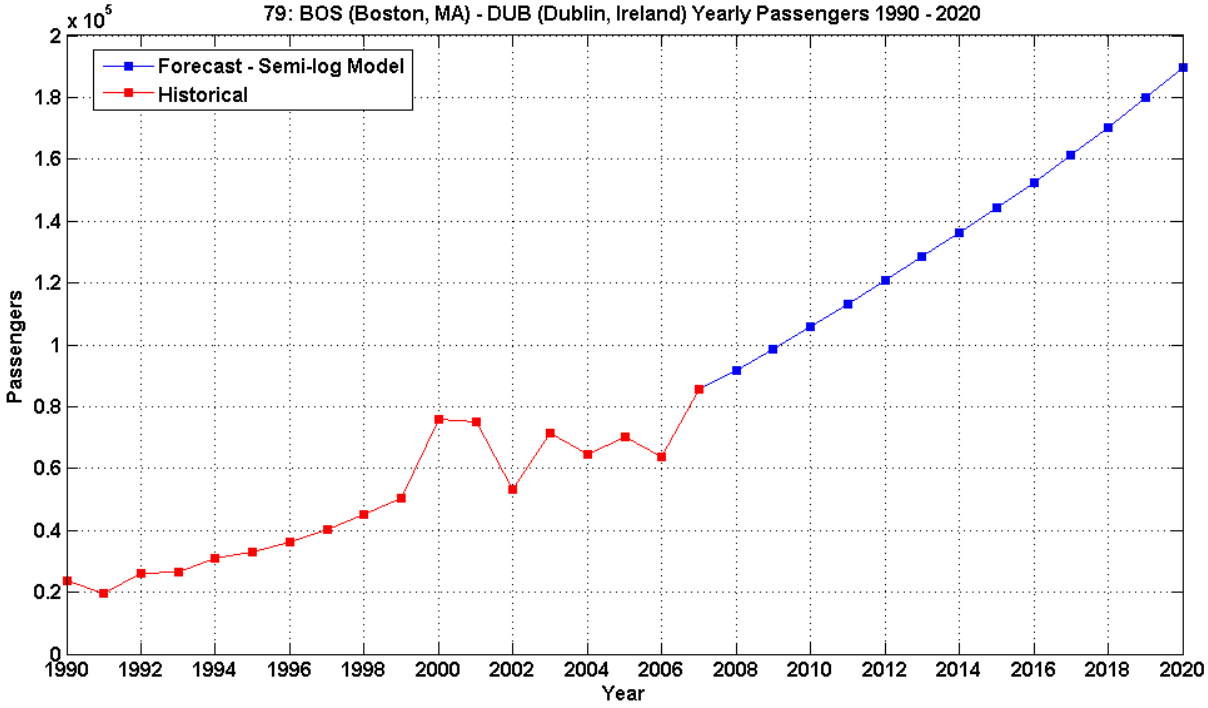
2018
2020


77: DTW (Detroit, MI) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


78: DEN (Denver, CO) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


79: BOS (Boston, MA) - DUB (Dublin, Ireland) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1990
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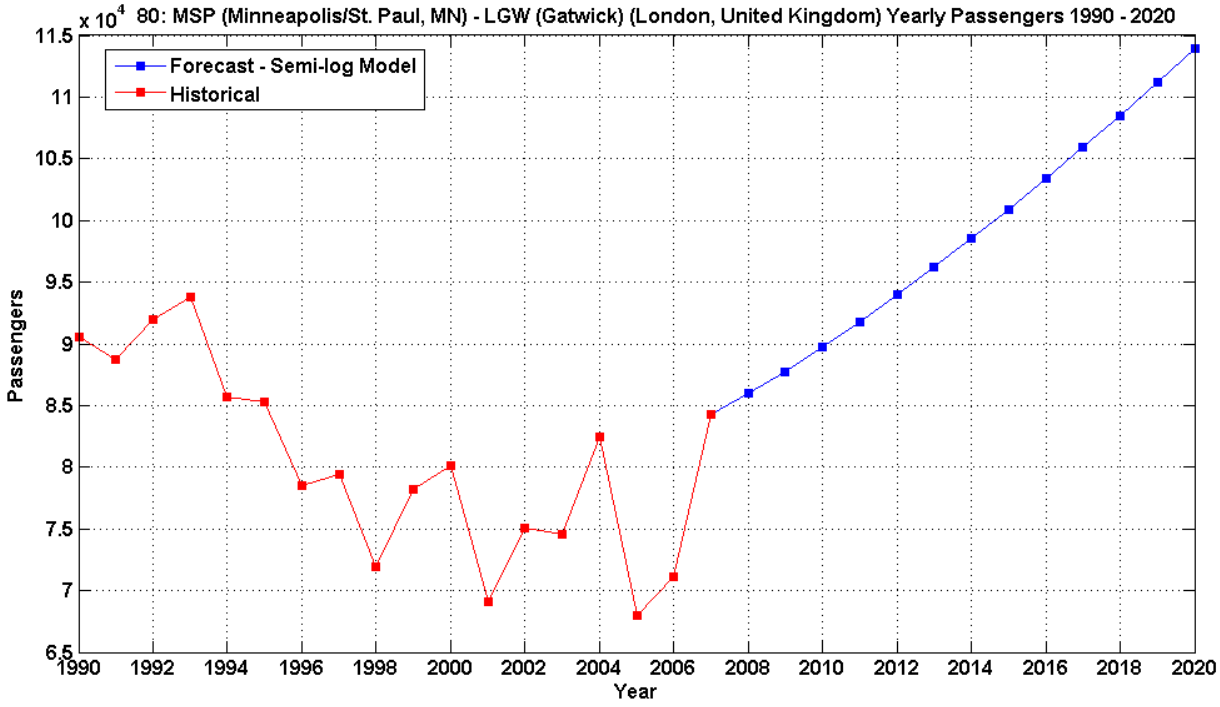
2018
2020


x 10^4 80: MSP (Minneapolis/St. Paul, MN) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
Forecast - Semi-log Model
Historical
Passengers
Year
6.5
7
7.5
8
8.5
9
9.5
10
10.5
11
11.5
1990
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2012
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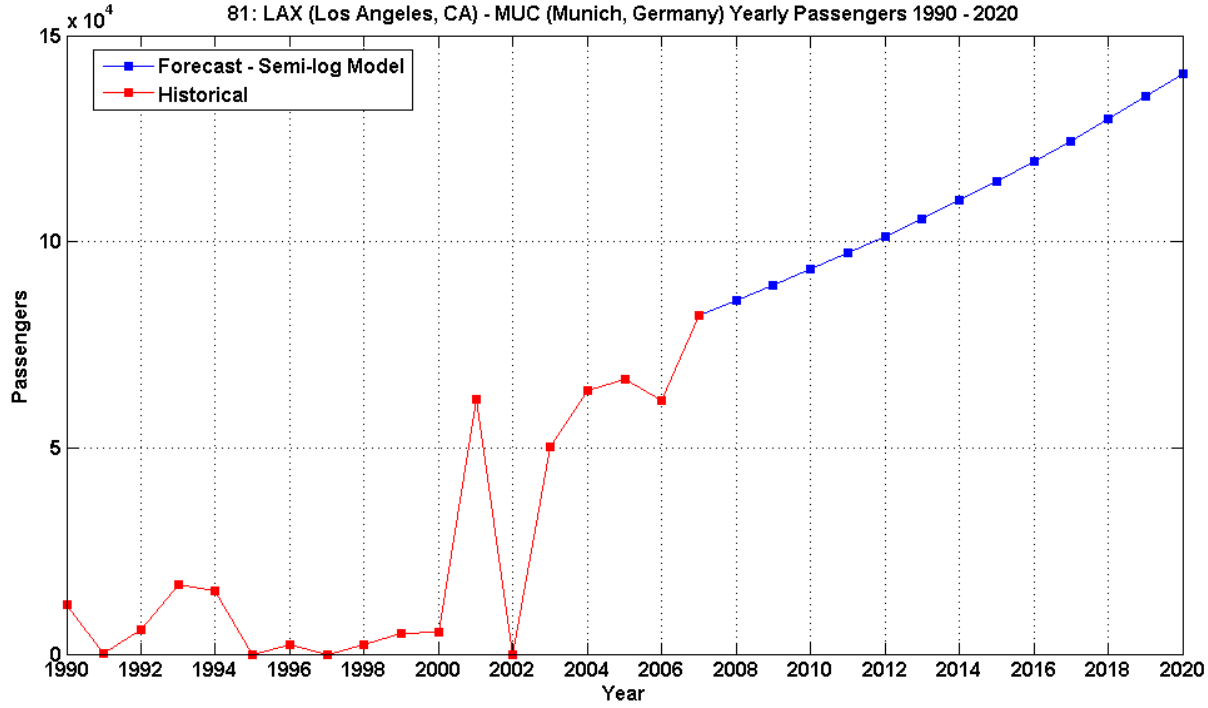
2016
2018
2020


81: LAX (Los Angeles, CA) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
5
10
15
1990
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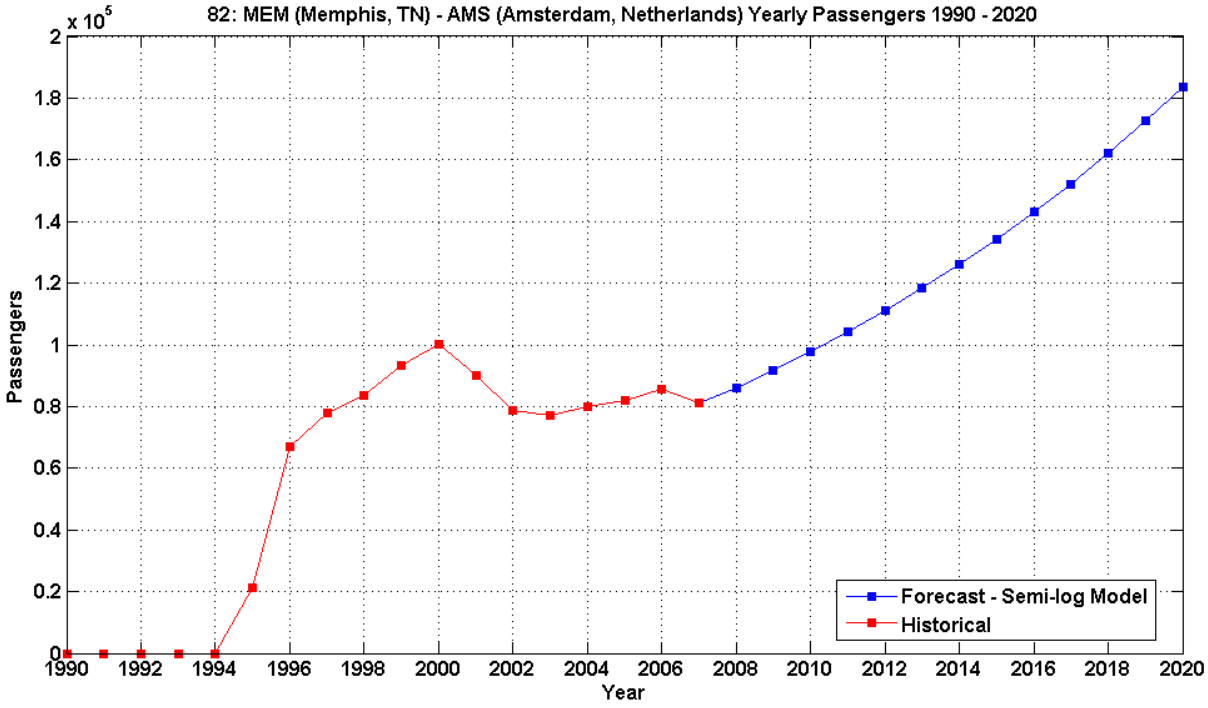
2018
2020


82: MEM (Memphis, TN) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1990
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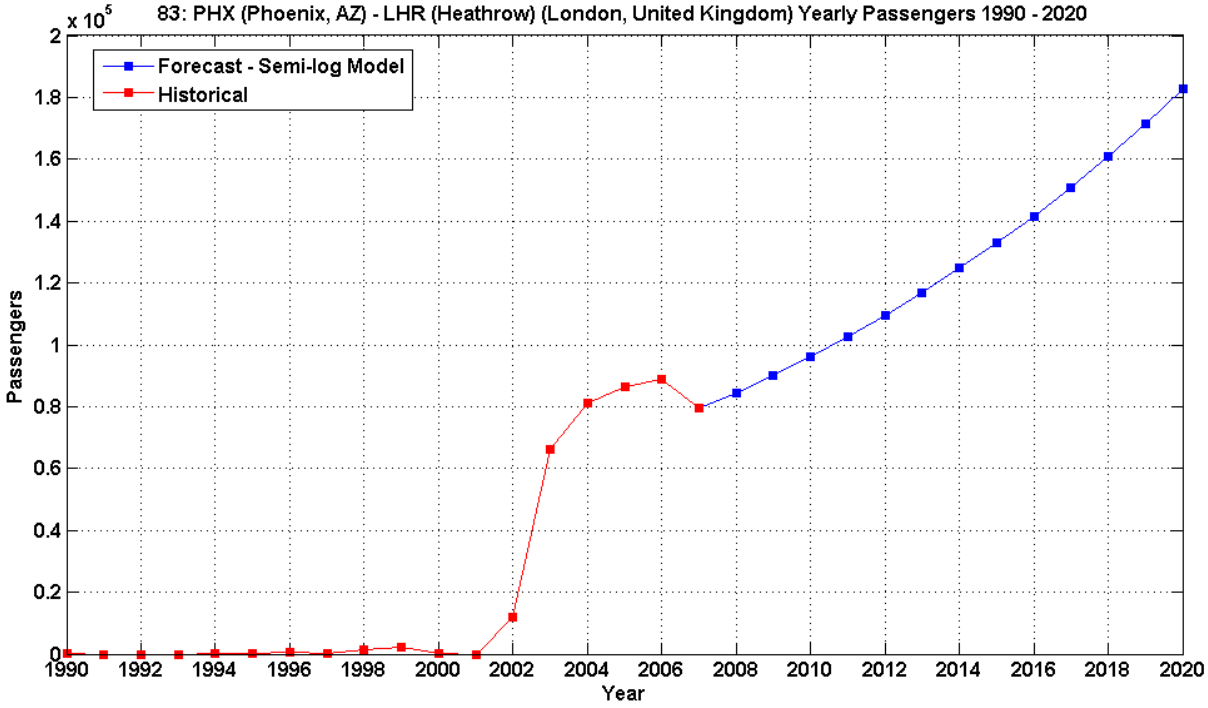
2018
2020


x 10^5
83: PHX (Phoenix, AZ) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1990
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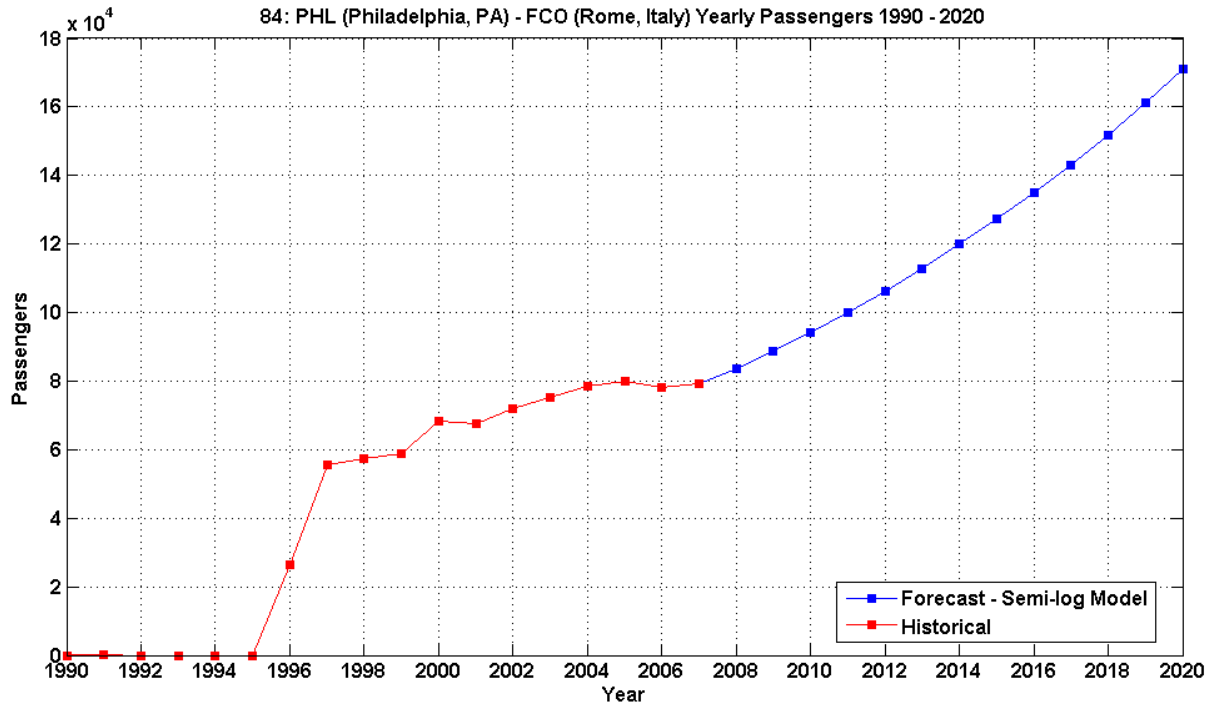
2020


x 10^4
84: PHL (Philadelphia, PA) - FCO (Rome, Italy) Yearly Passengers 1990 - 2020
Forecast - Semi-log Model
Historical
Passengers
Year
0
2
4
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1990
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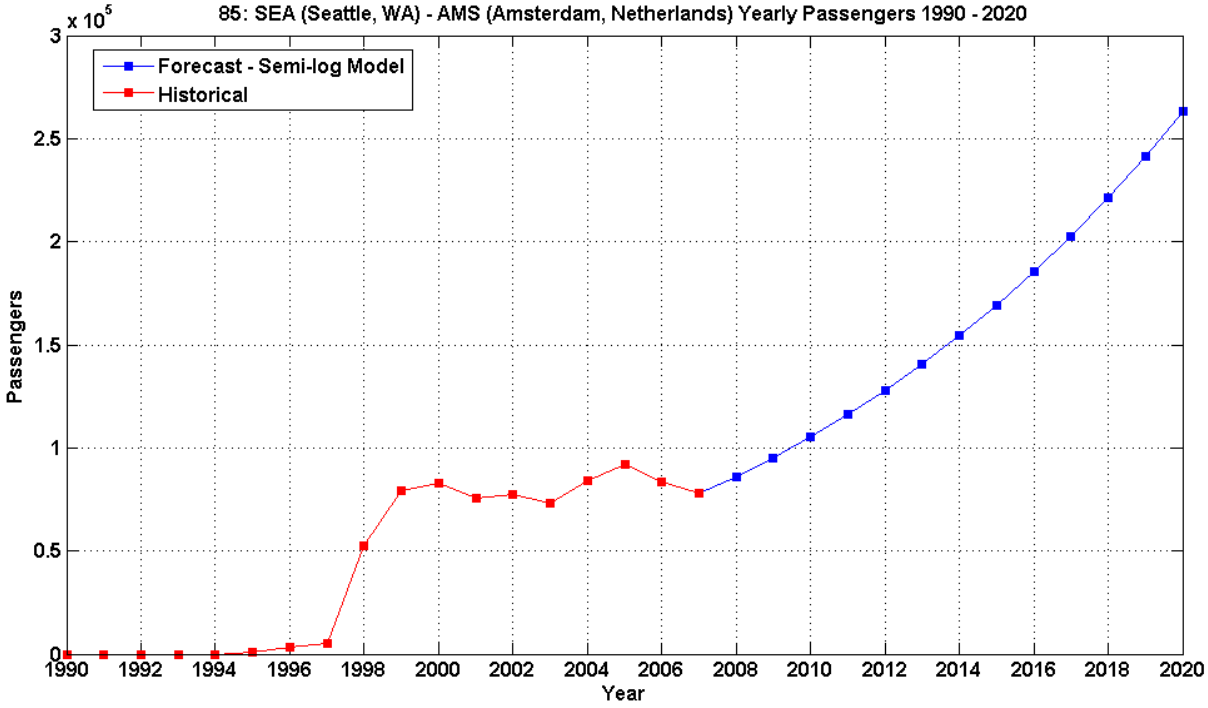
2018
2020


85: SEA (Seattle, WA) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.5
1
1.5
2
2.5
3
1990
1992
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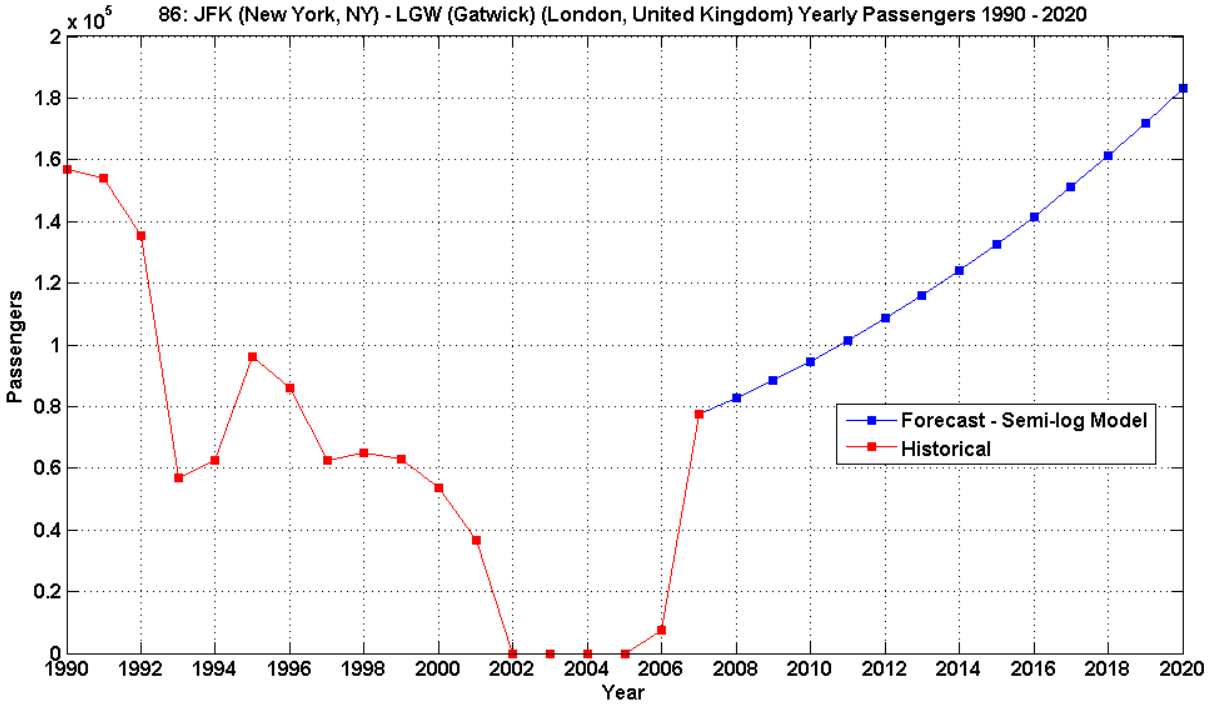
2016
2018
2020


86: JFK (New York, NY) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
1990
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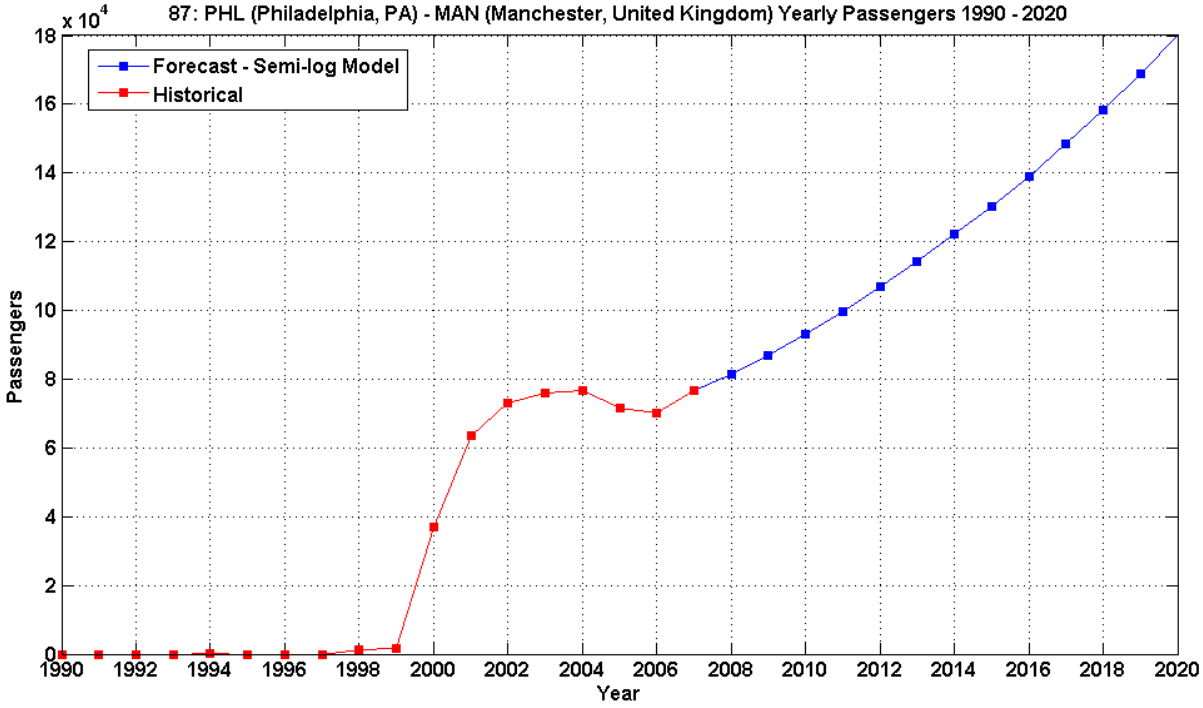
2018
2020


87: PHL (Philadelphia, PA) - MAN (Manchester, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
2
4
6
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1990
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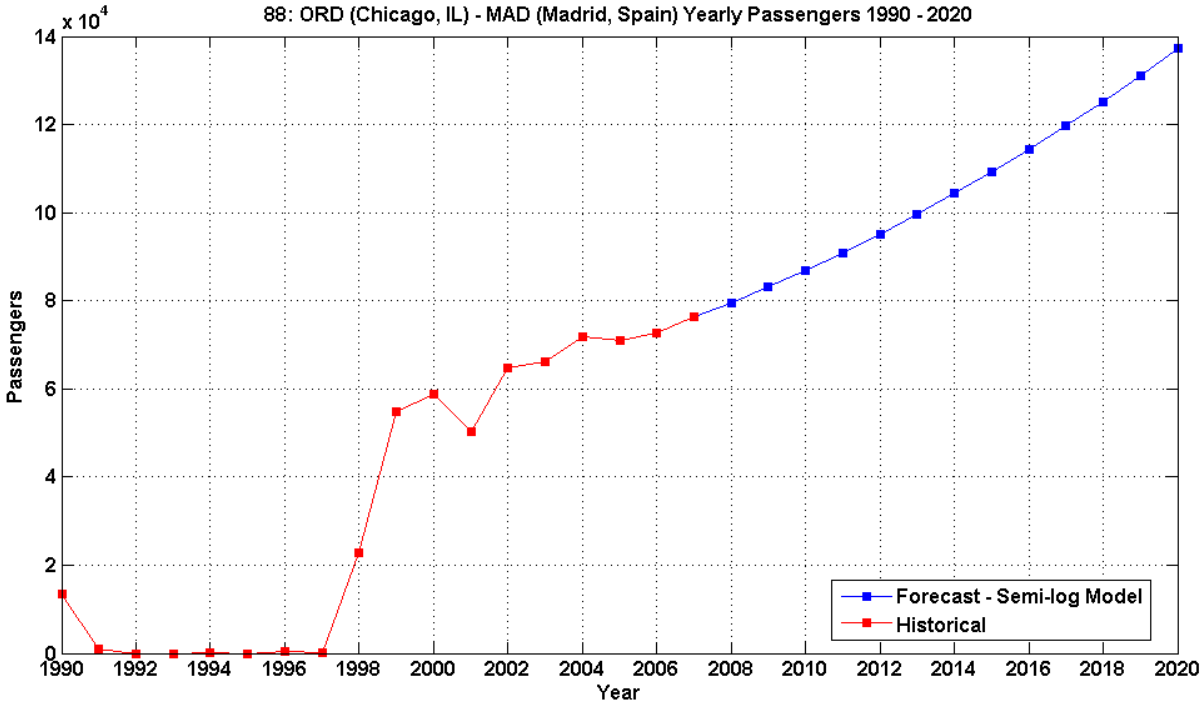
2020


88: ORD (Chicago, IL) - MAD (Madrid, Spain) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
2
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1990
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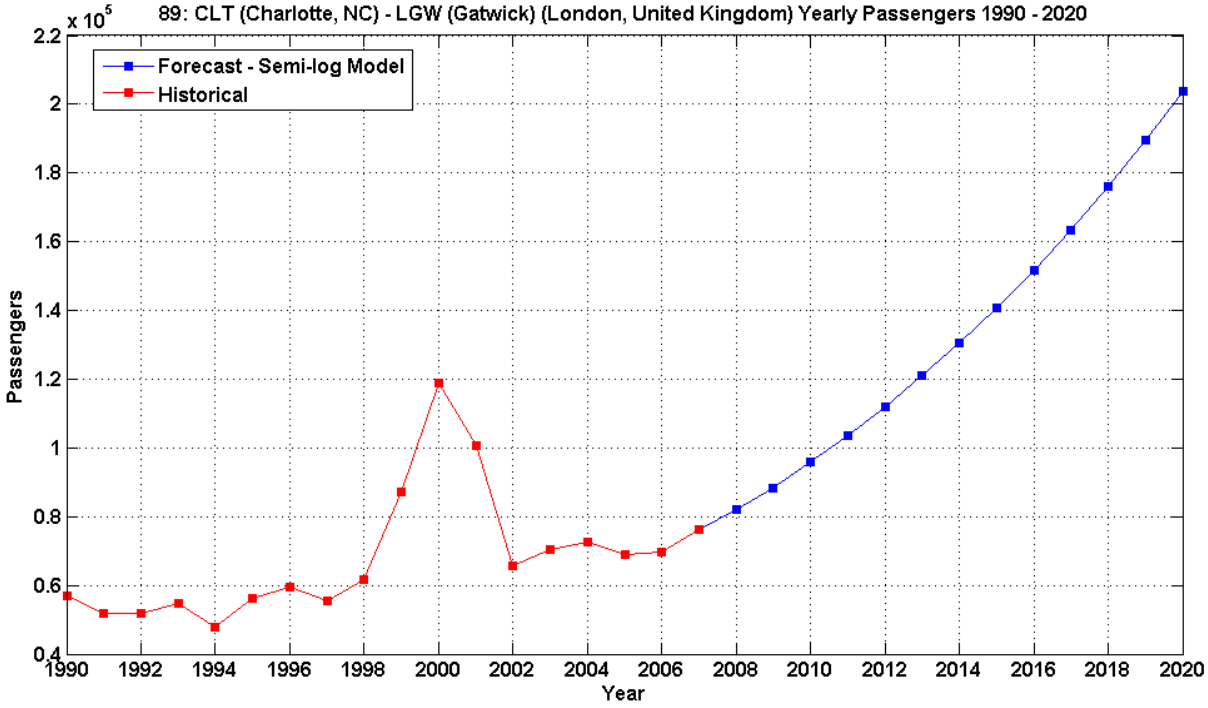
2020


89: CLT (Charlotte, NC) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
1990
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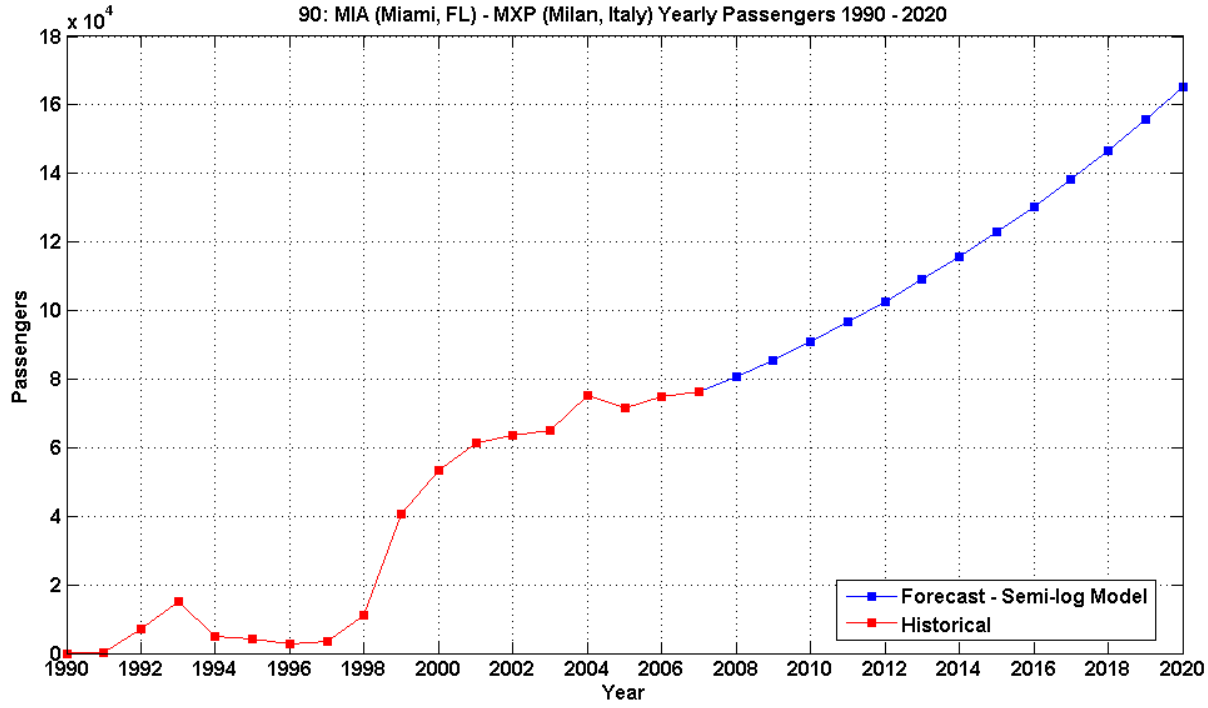
2020


90: MIA (Miami, FL) - MXP (Milan, Italy) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
18
16
14
12
10
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1990
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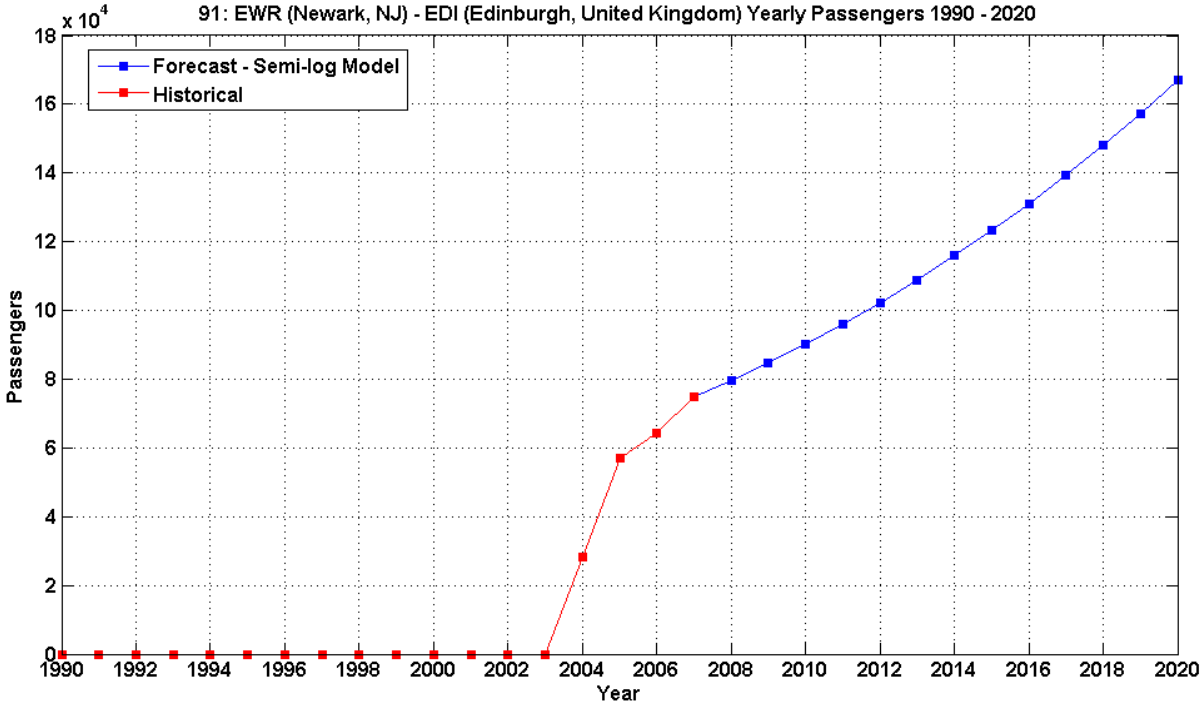
2018
2020


91: EWR (Newark, NJ) - EDI (Edinburgh, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
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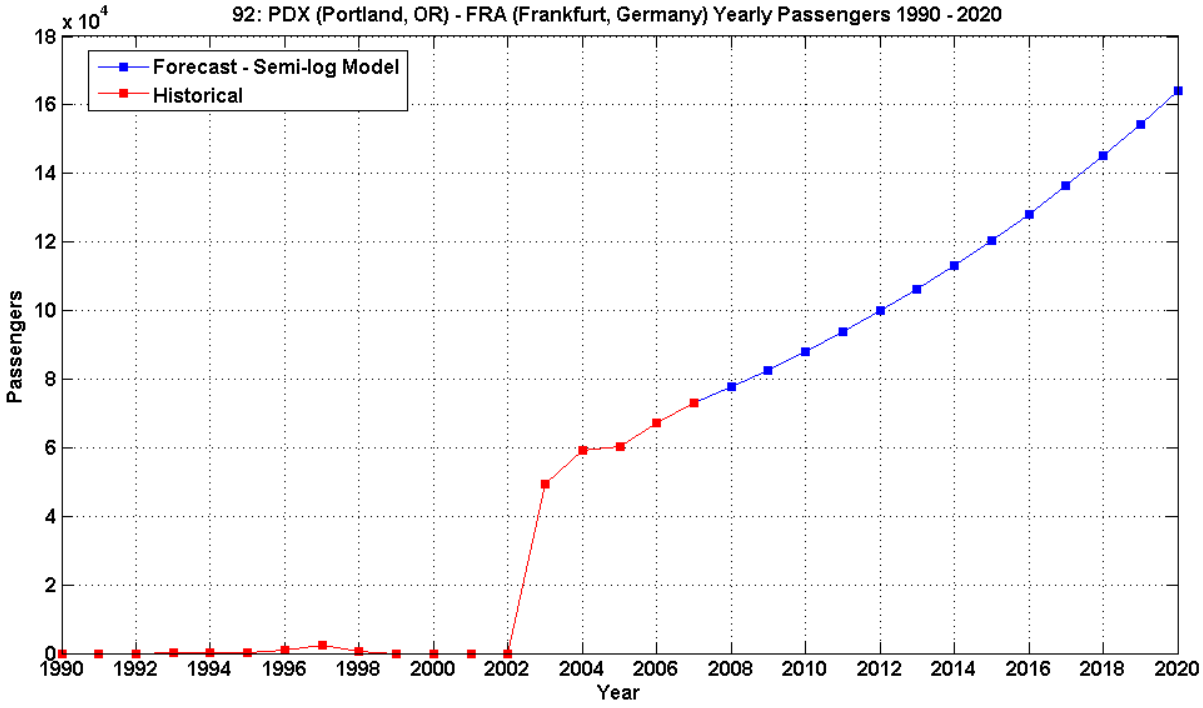
2020


92: PDX (Portland, OR) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
2
4
6
8
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12
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1990
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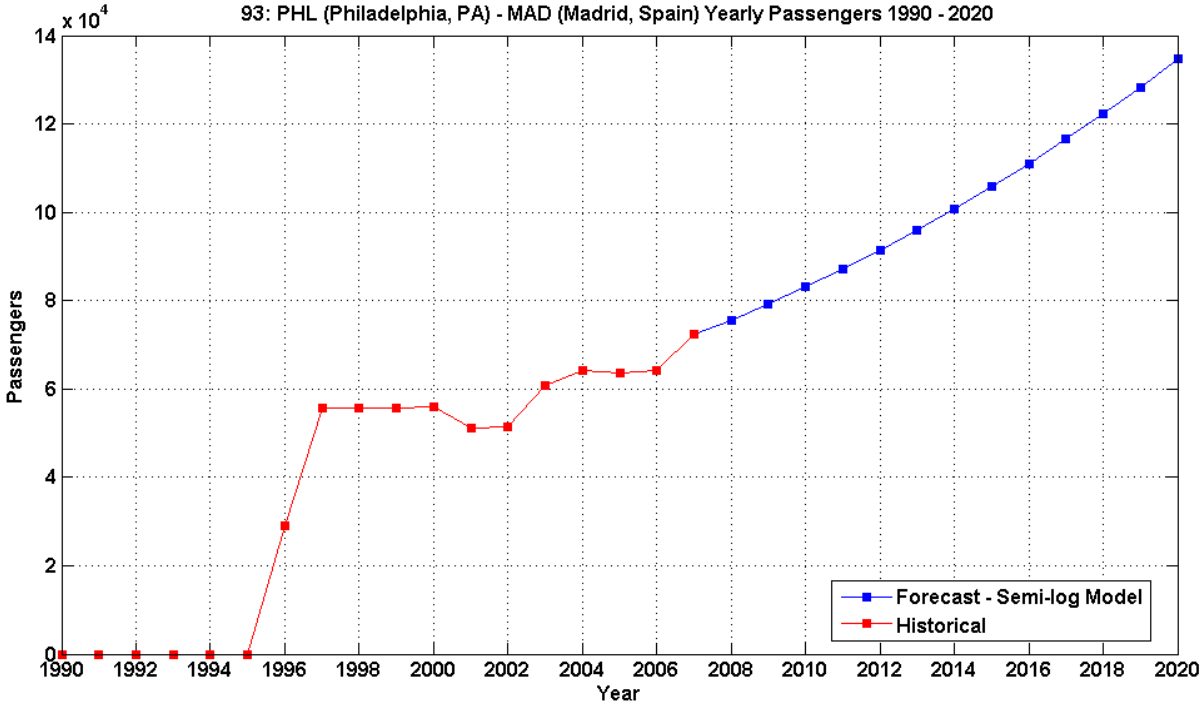
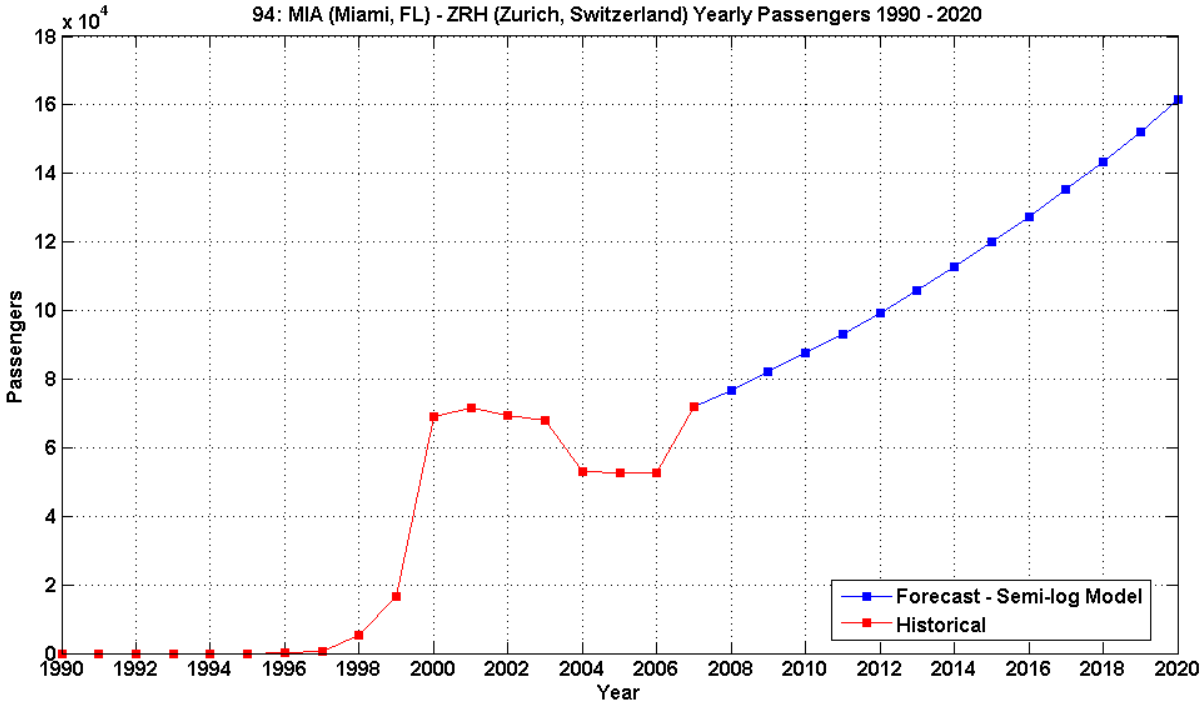
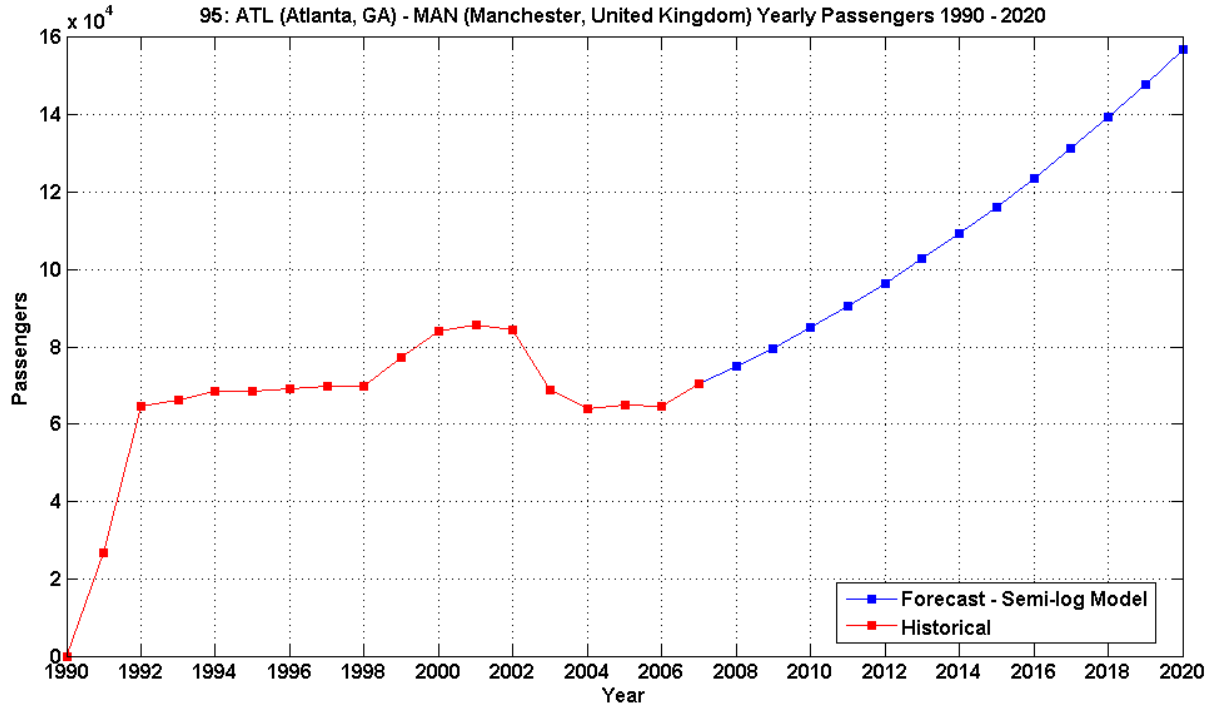
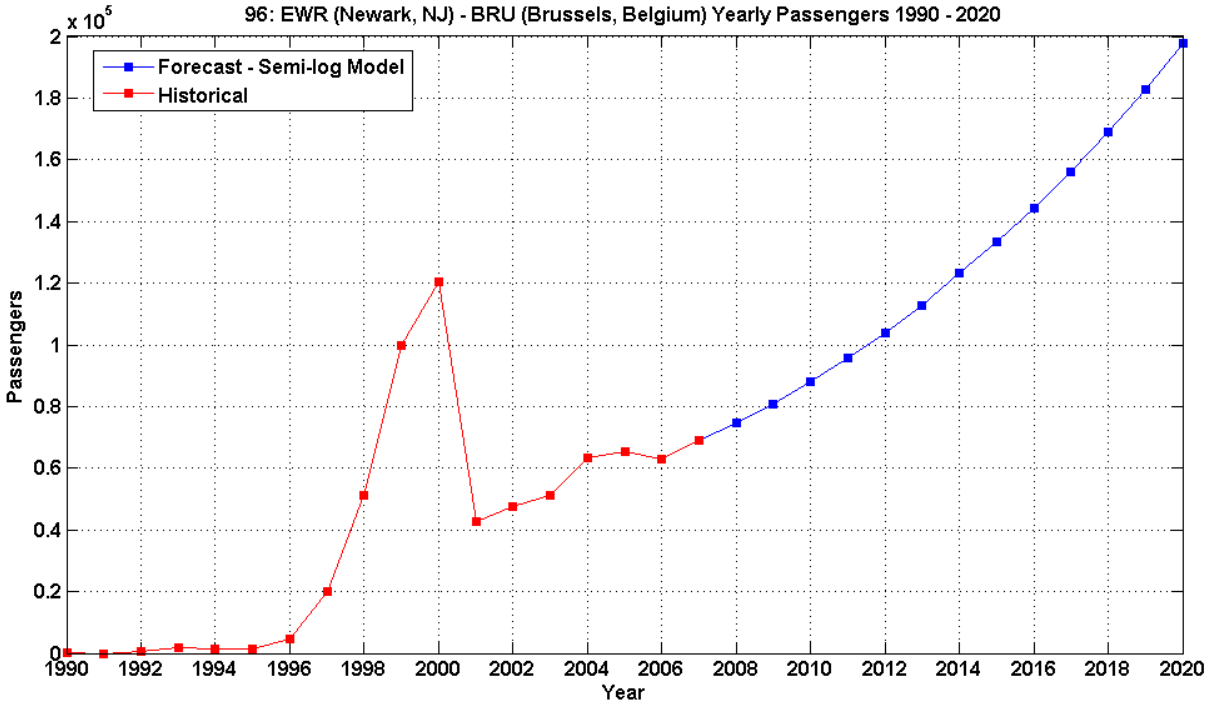
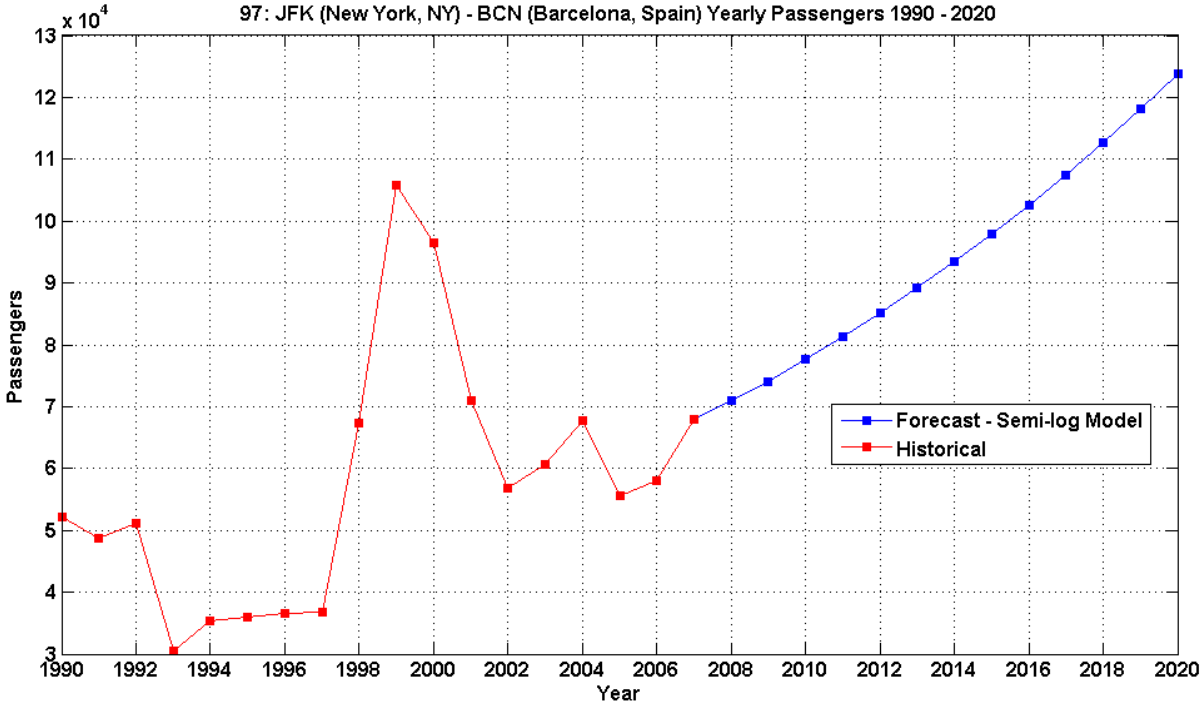
2018
2020

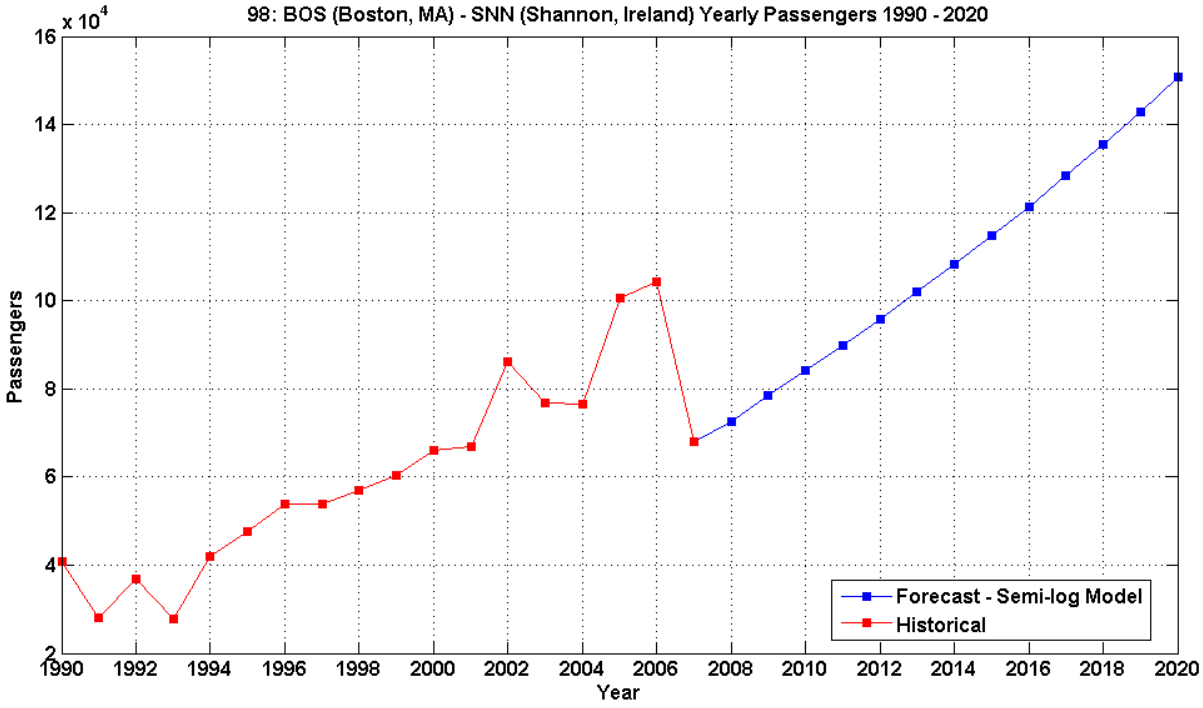

93: PHL (Philadelphia, PA) - MAD (Madrid, Spain) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical

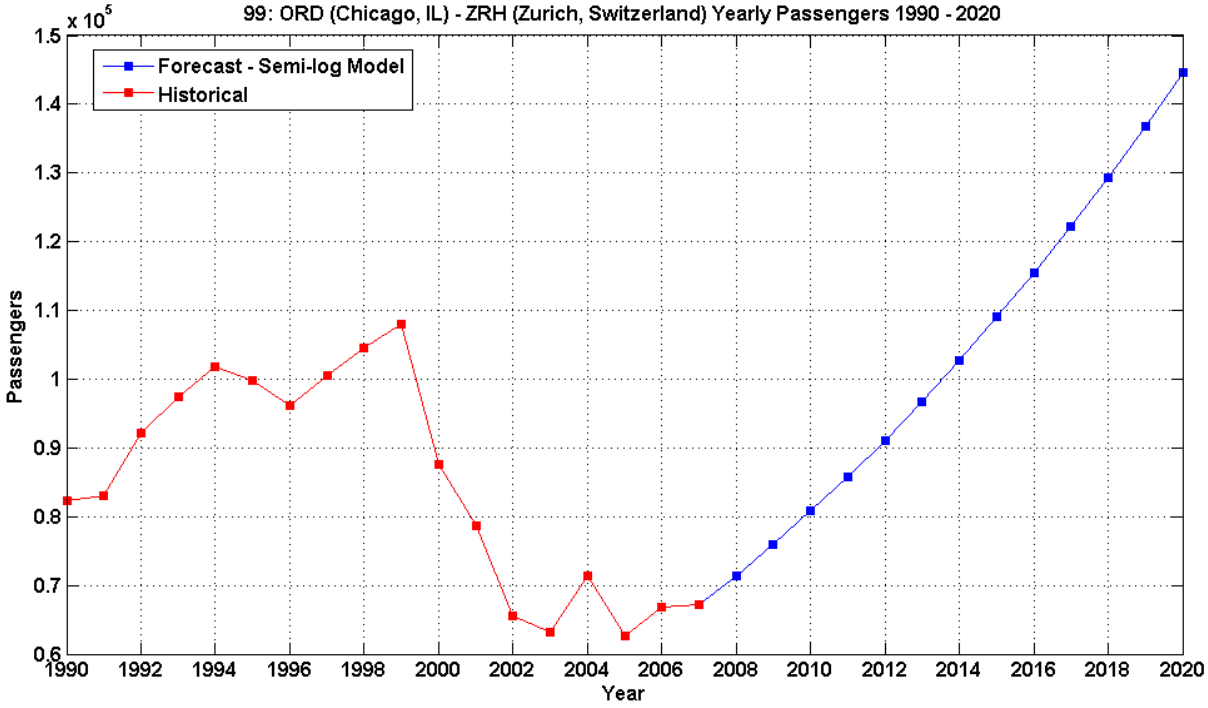

94: MIA (Miami, FL) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


95: ATL (Atlanta, GA) - MAN (Manchester, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


96: EWR (Newark, NJ) - BRU (Brussels, Belgium) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


97: JFK (New York, NY) - BCN (Barcelona, Spain) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


98: BOS (Boston, MA) - SNN (Shannon, Ireland) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


99: ORD (Chicago, IL) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
1990
1992
1994
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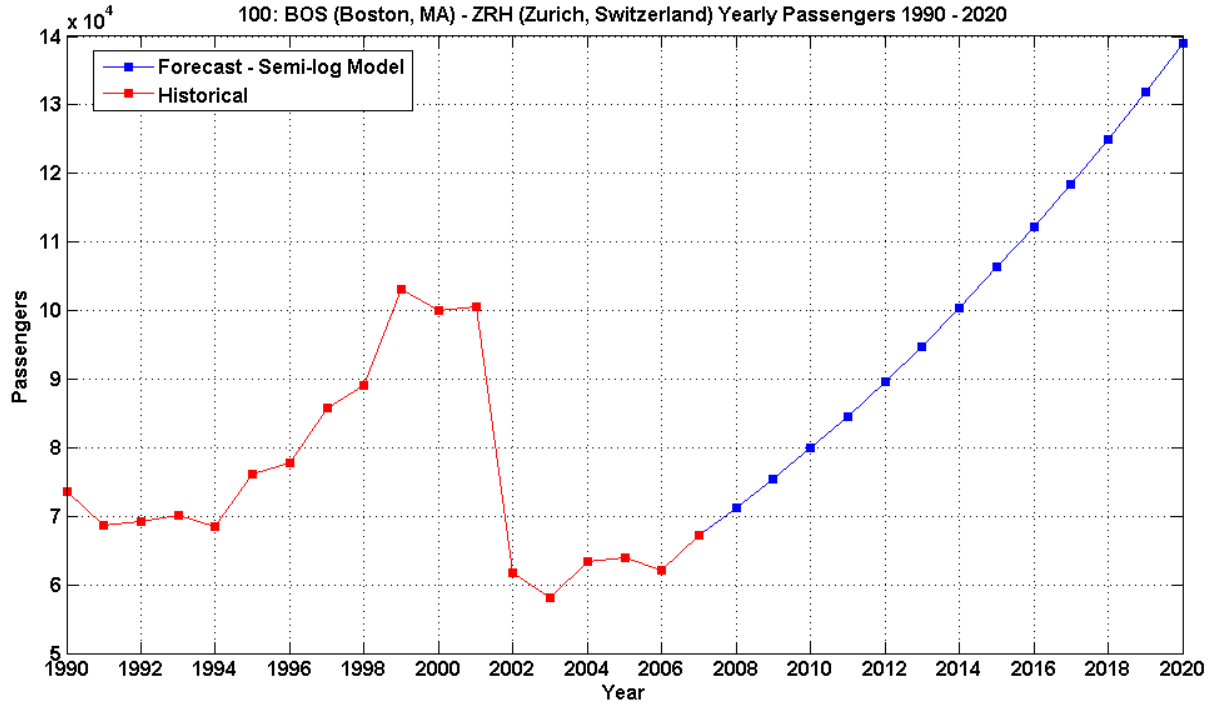
2014
2016
2018
2020


100: BOS (Boston, MA) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
14
13
12
11
10
9
8
7
6
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1990
1992
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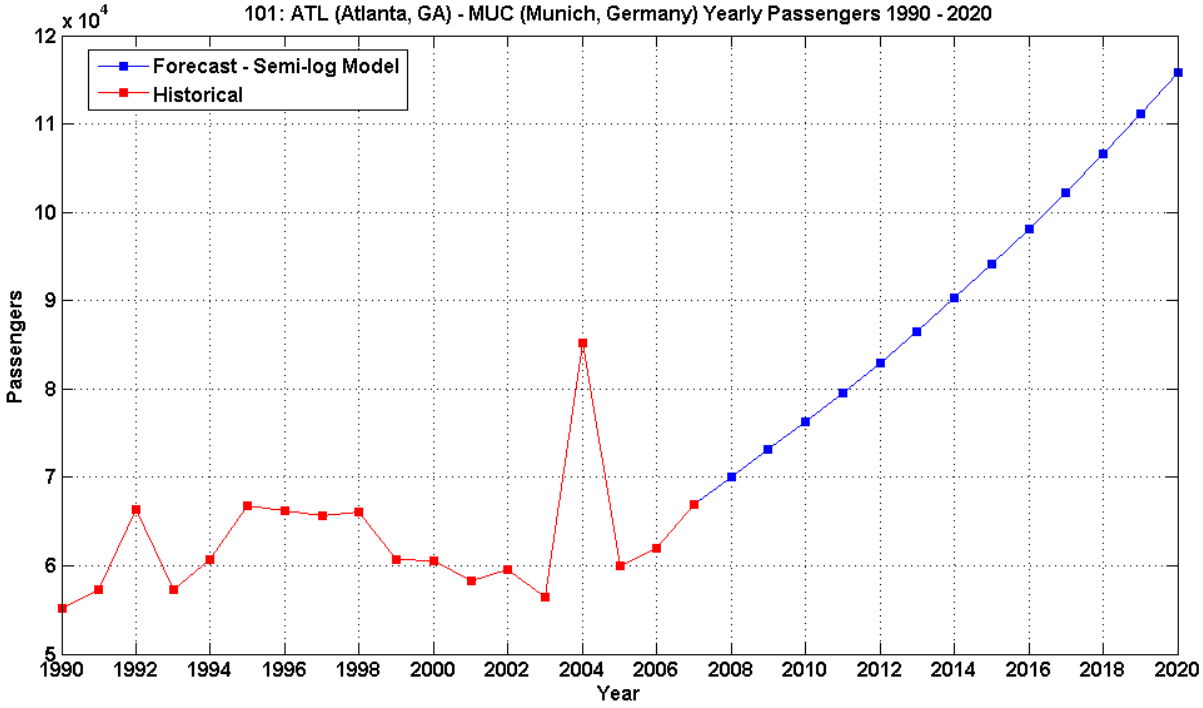
101: ATL (Atlanta, GA) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
12
11
10
9
8
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1990
1992
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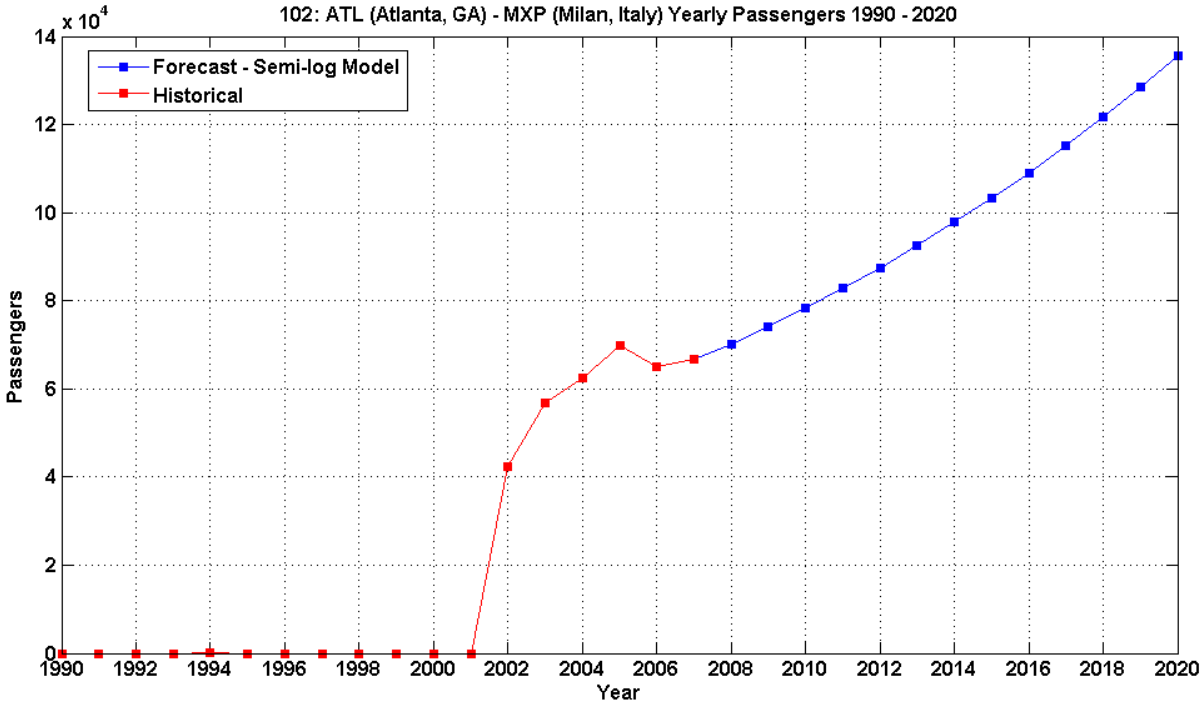
2020


102: ATL (Atlanta, GA) - MXP (Milan, Italy) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
14
12
10
8
6
4
2
0
1990
1992
1994
1996
1998
2000
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2014
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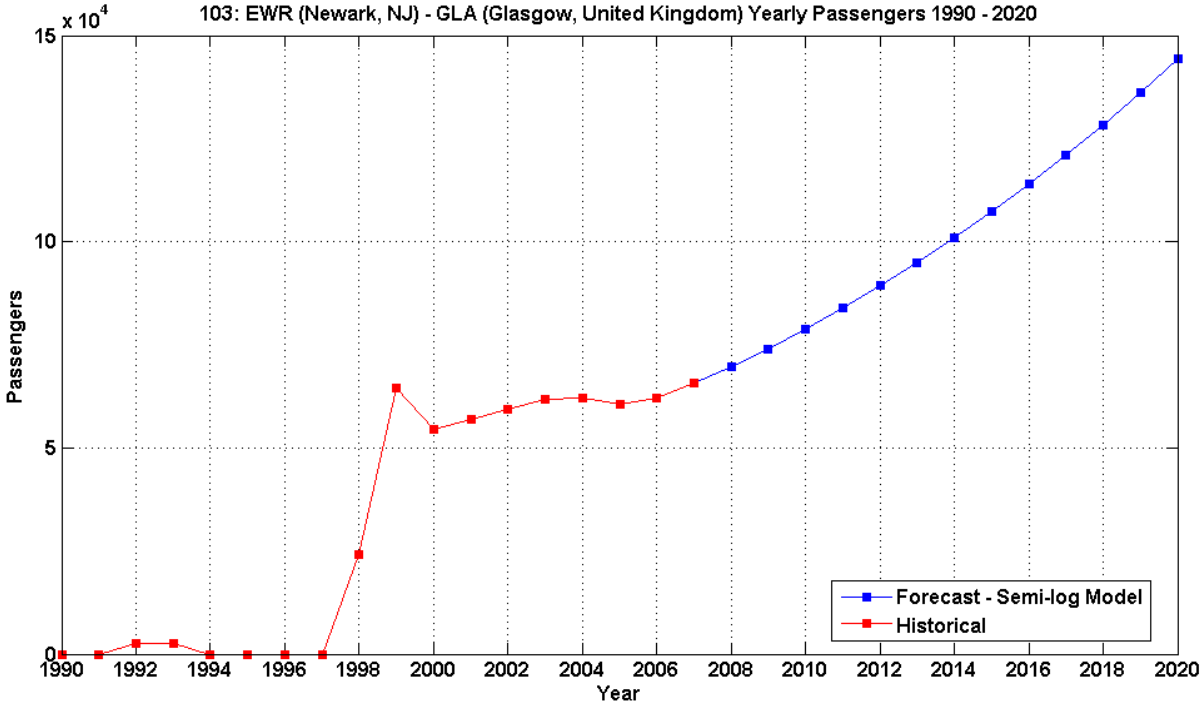
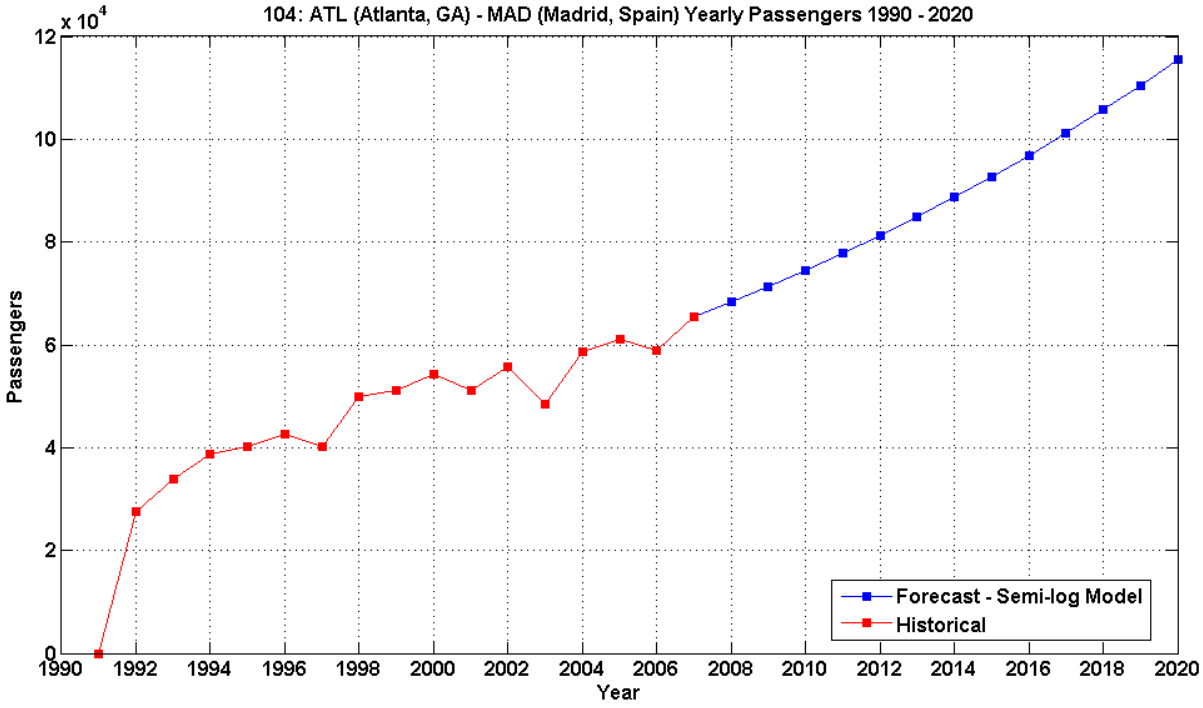
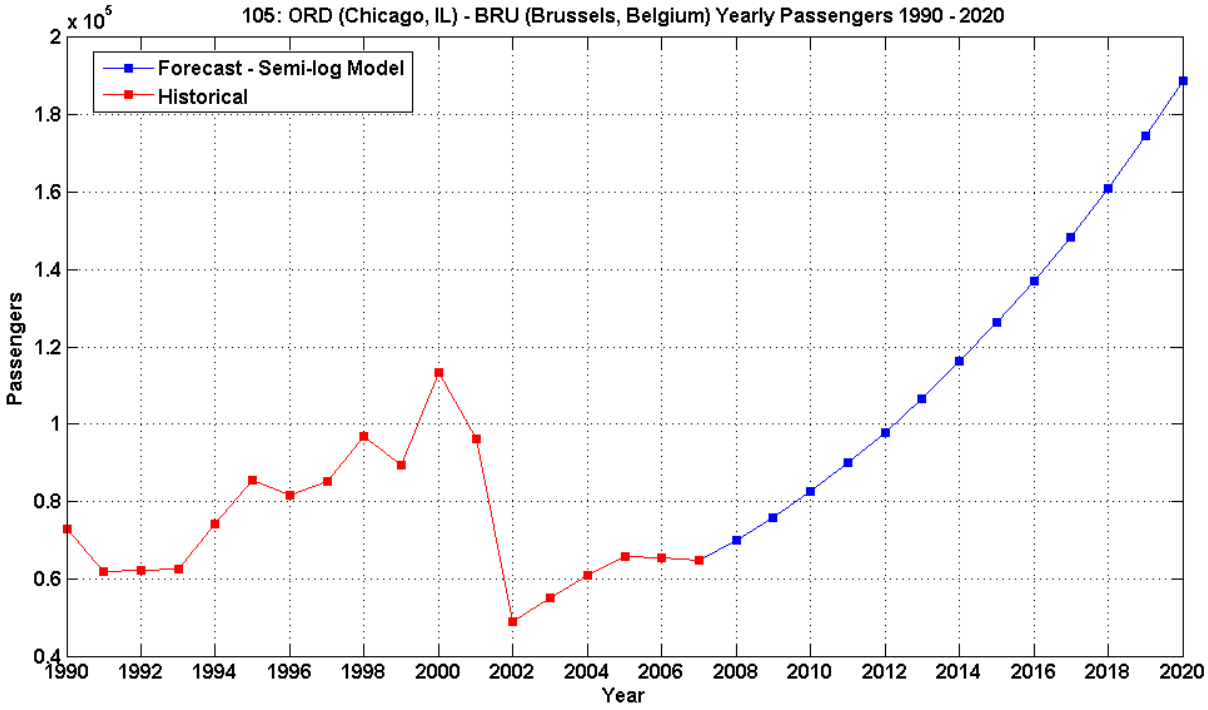
2020


103: EWR (Newark, NJ) - GLA (Glasgow, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


104: ATL (Atlanta, GA) - MAD (Madrid, Spain) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


105: ORD (Chicago, IL) - BRU (Brussels, Belgium) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
Year
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
1990
1992
1994
1996
1998
2000
2002
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2006
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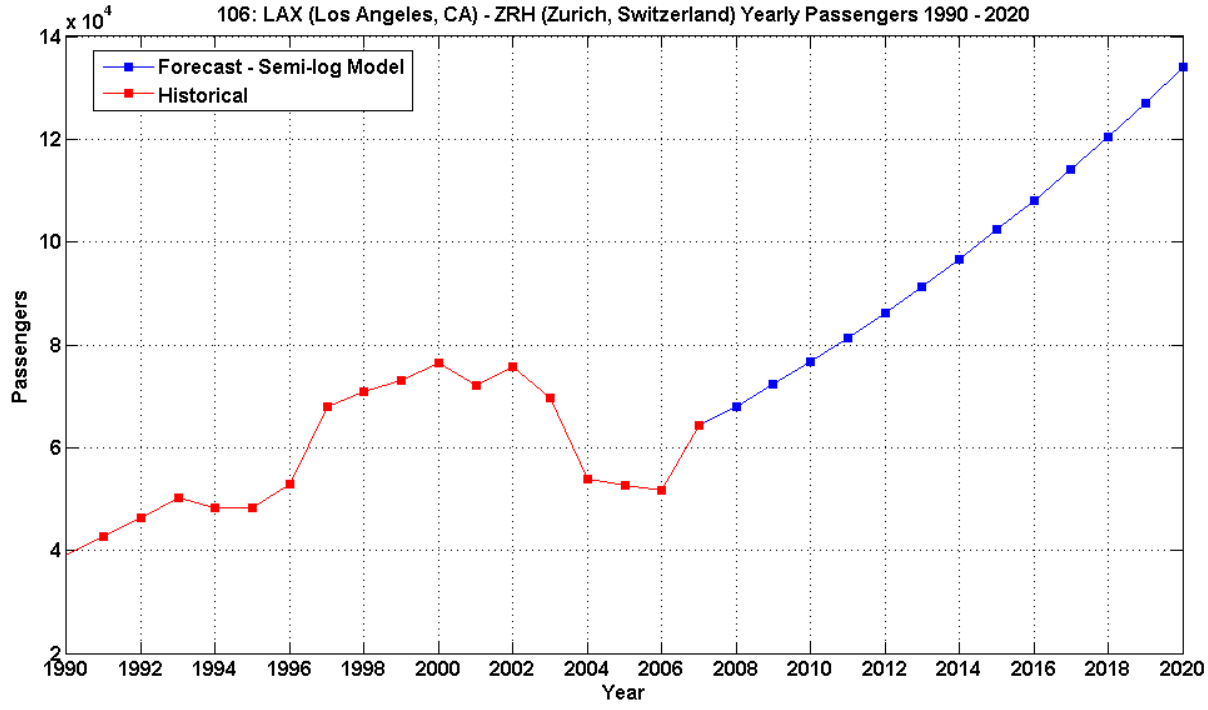
2018
2020


106: LAX (Los Angeles, CA) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
14
12
10
8
6
4
2
1990
1992
1994
1996
1998
2000
2002
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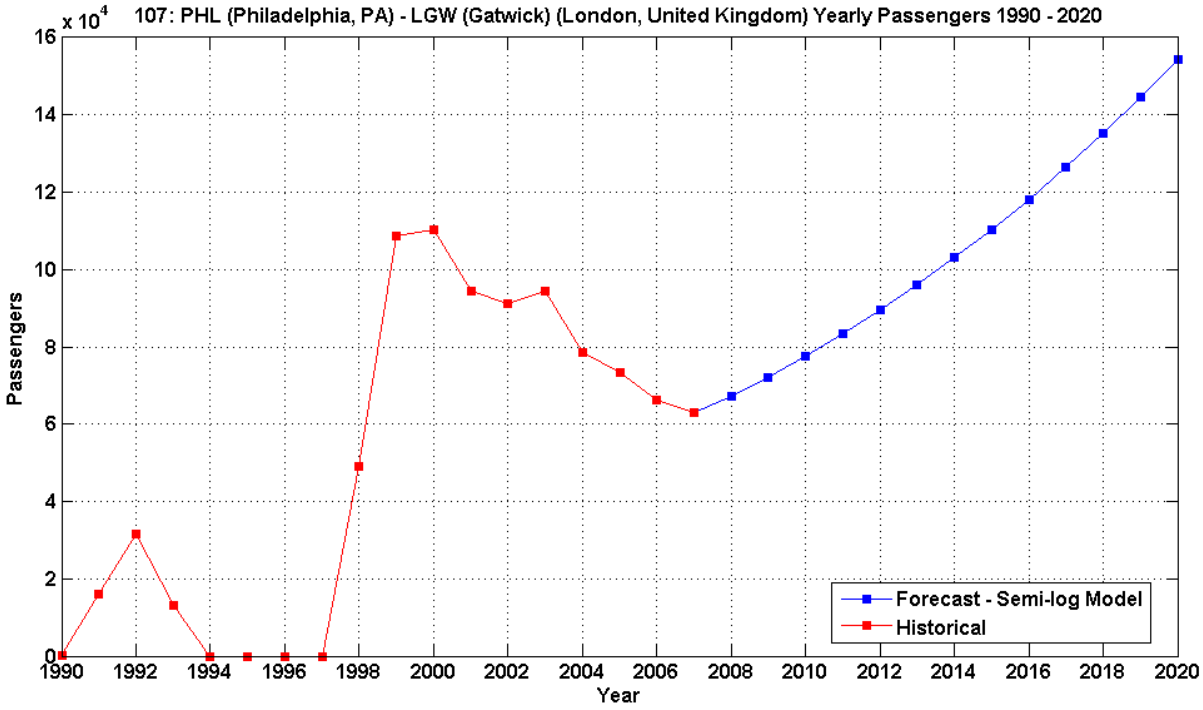
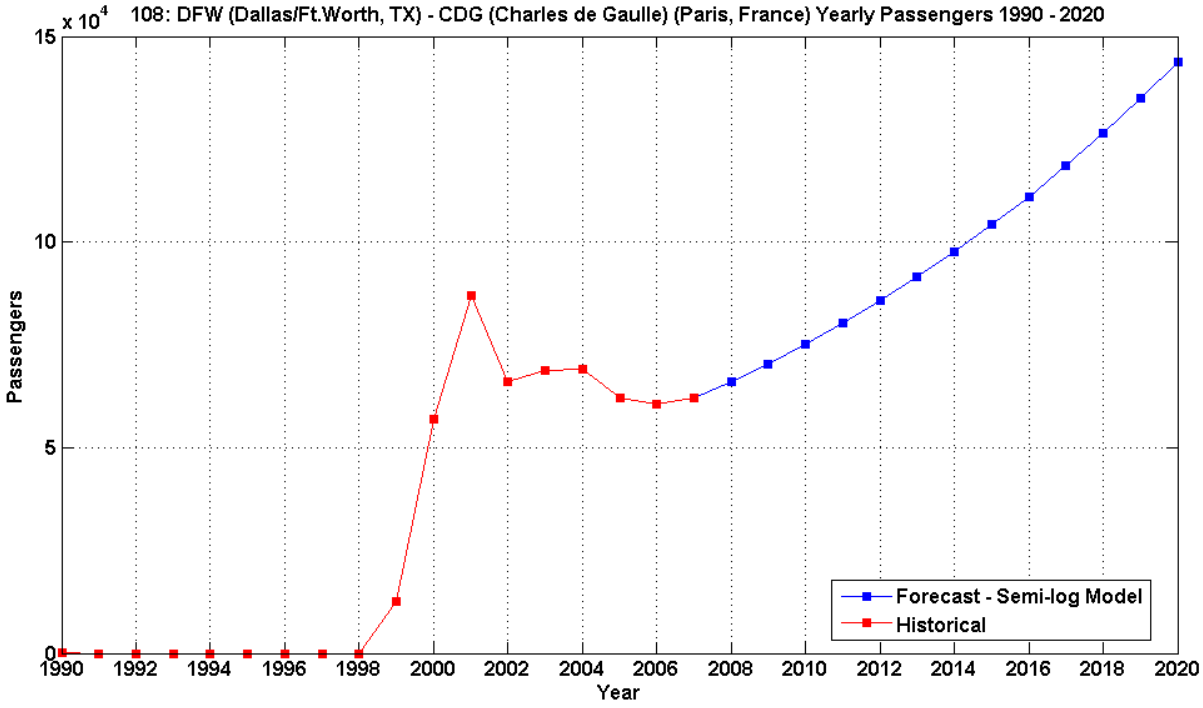
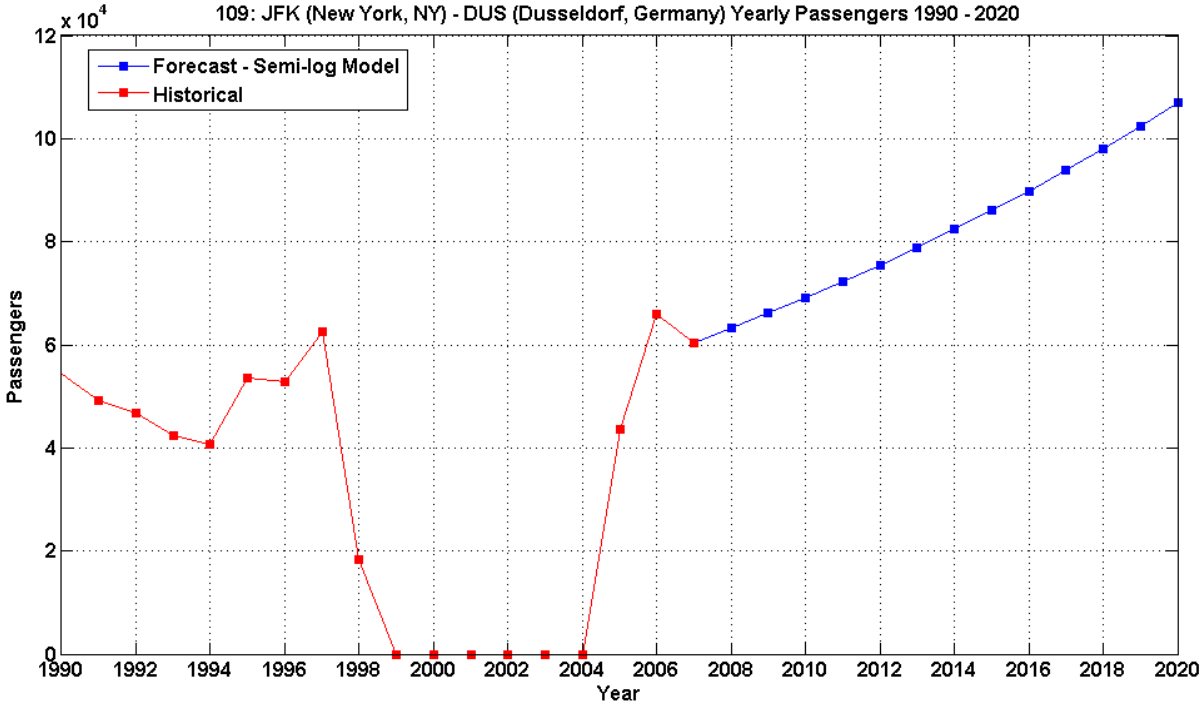
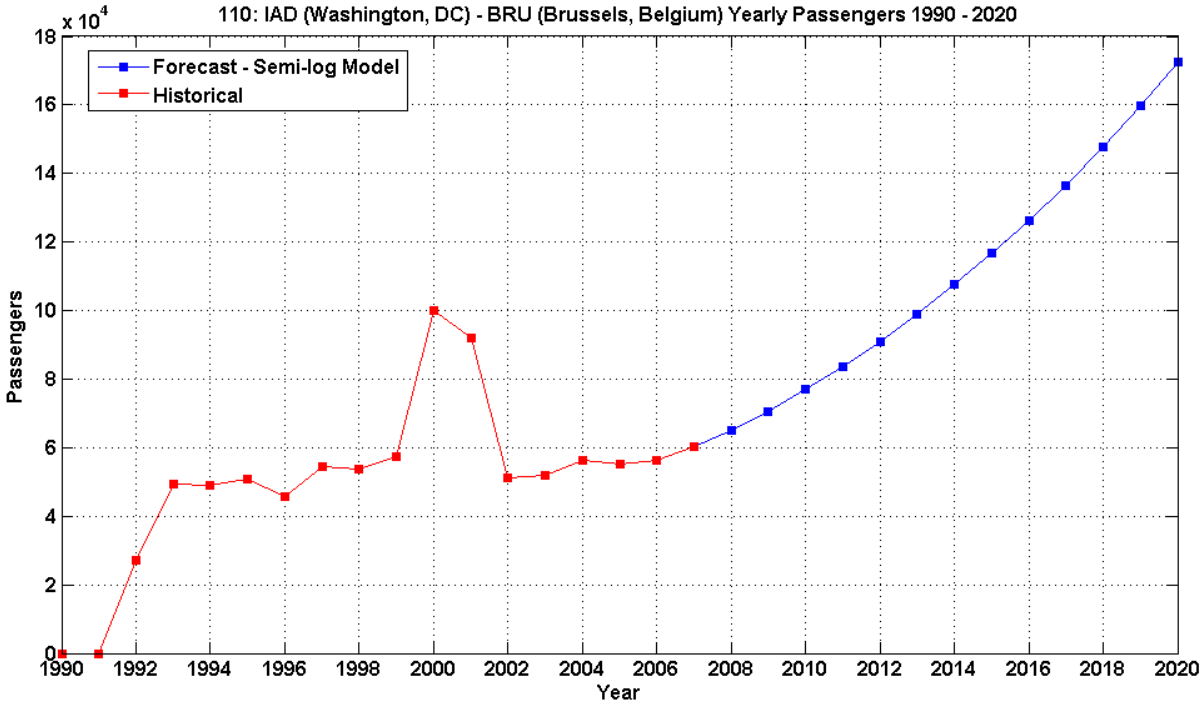
2012
2014
2016
2018
2020


x 10^4
107: PHL (Philadelphia, PA) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
Passengers
Year
Forecast - Semi-log Model
Historical


x 10^4
108: DFW (Dallas/Ft.Worth, TX) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
Passengers
Year
Forecast - Semi-log Model
Historical


109: JFK (New York, NY) - DUS (Dusseldorf, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
2
4
6
8
10
12
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


110: IAD (Washington, DC) - BRU (Brussels, Belgium) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
2
4
6
8
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12
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16
18
1990
1992
1994
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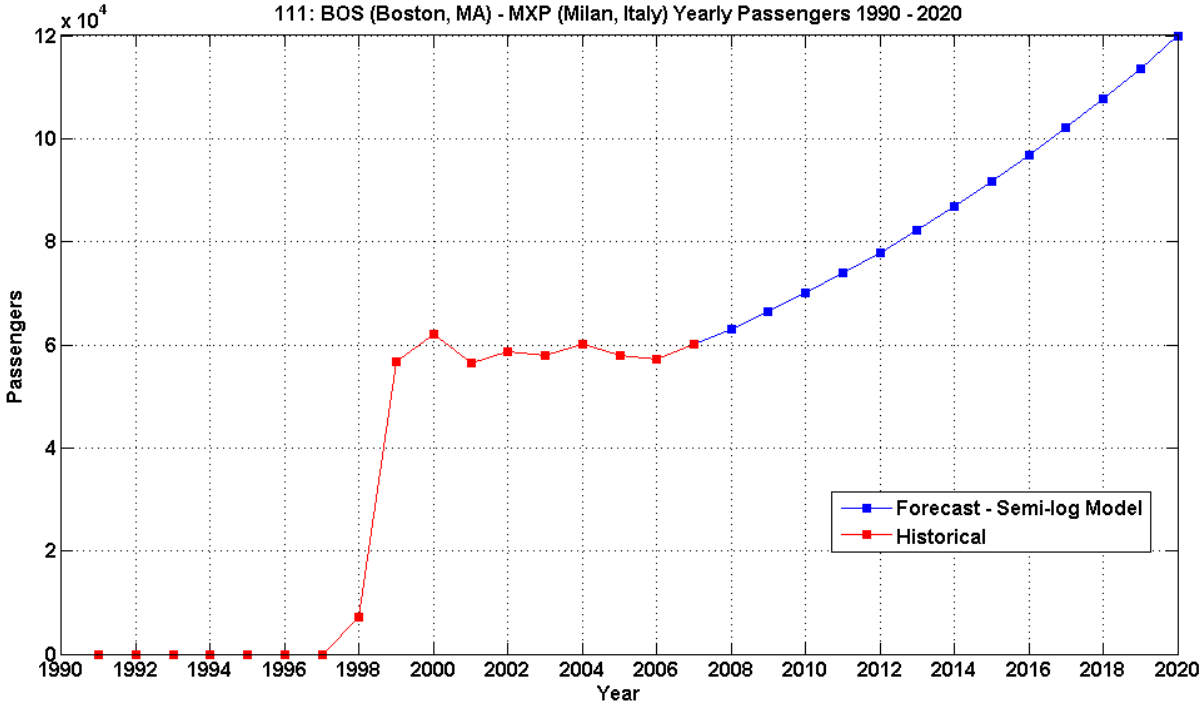
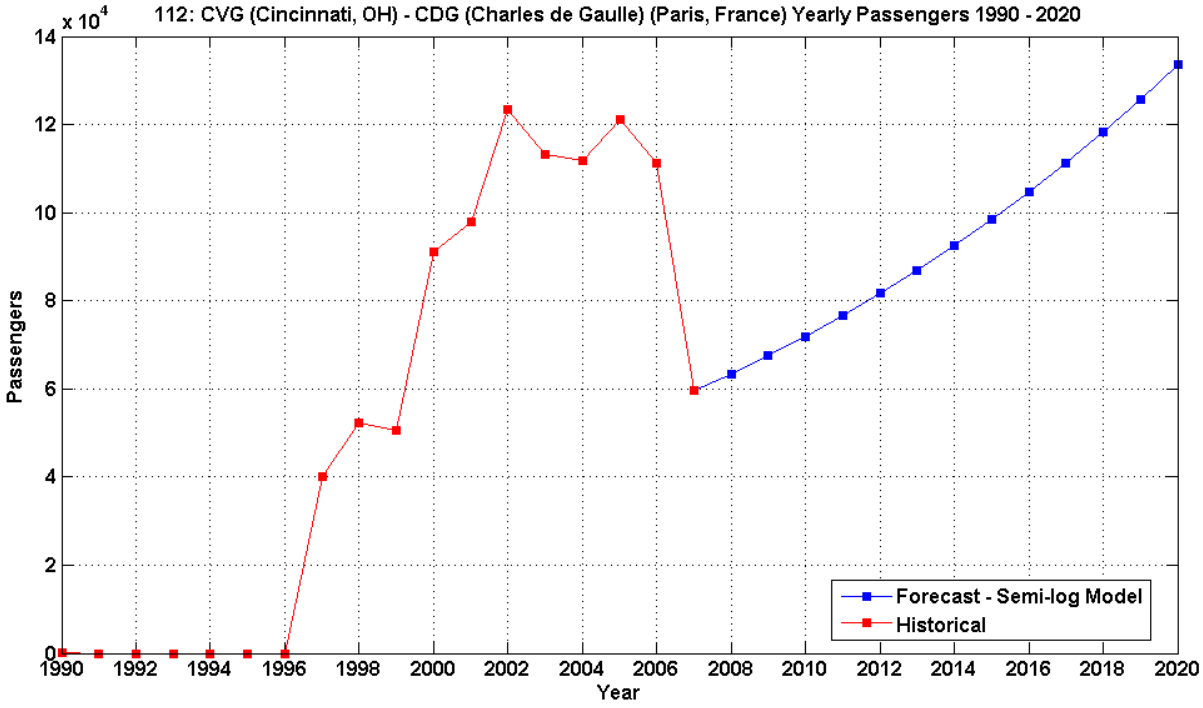
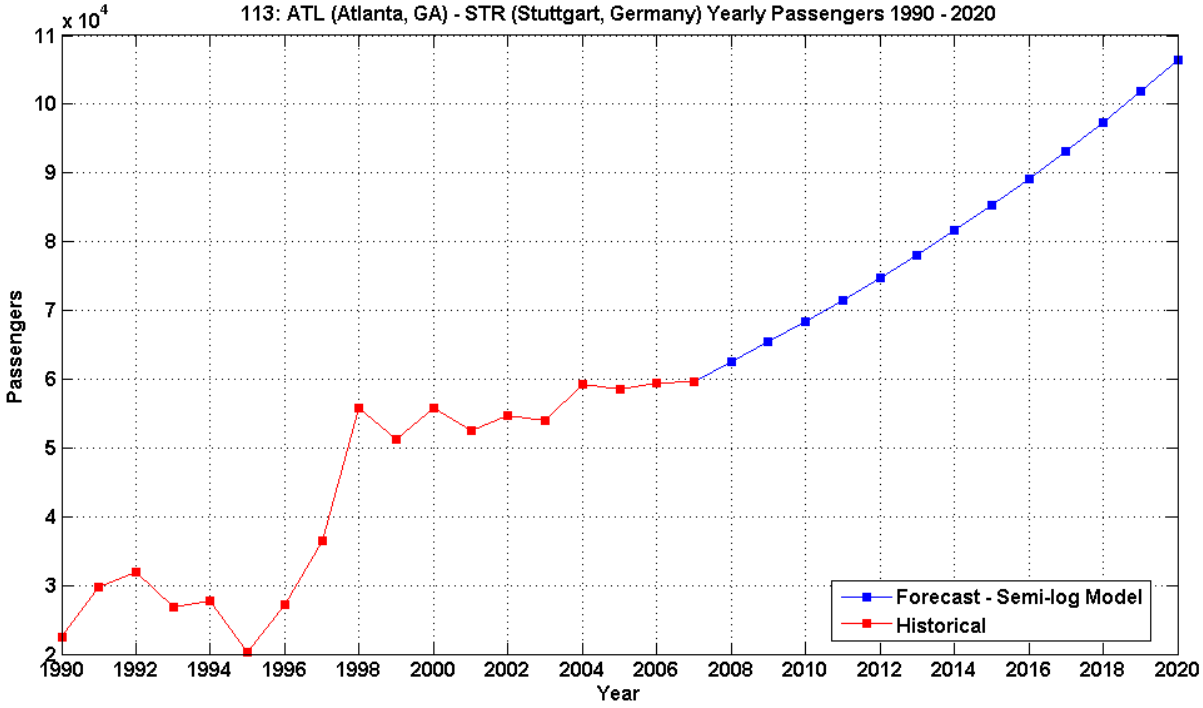
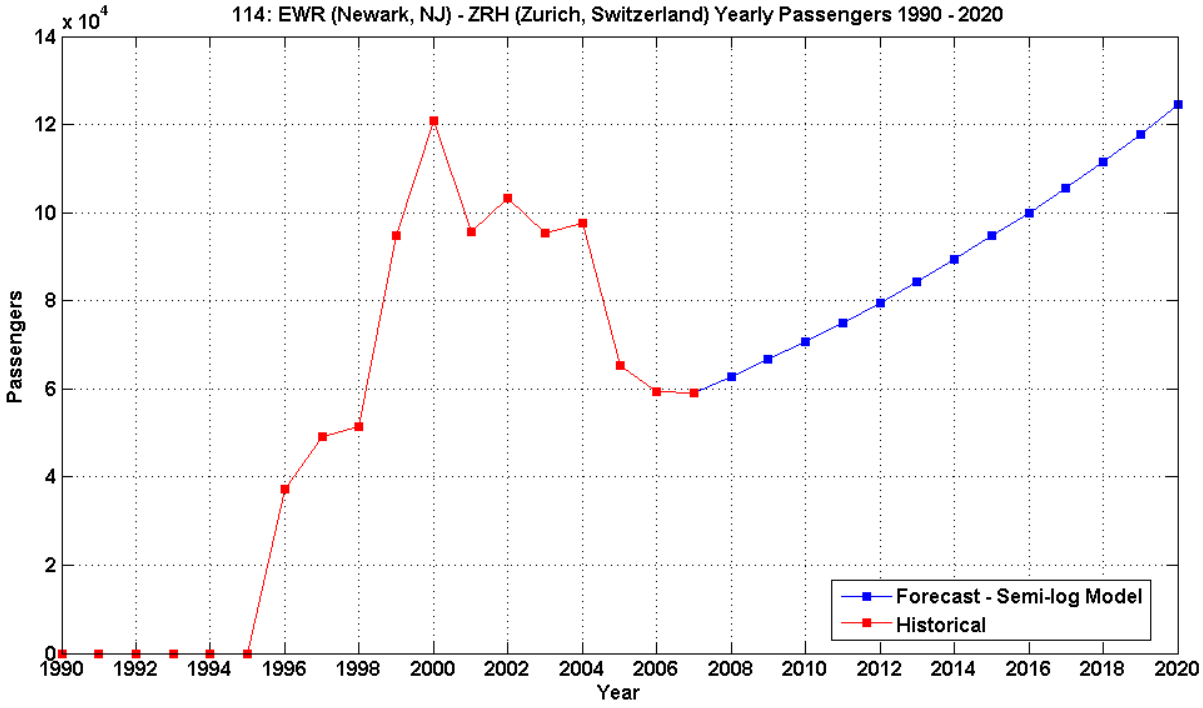
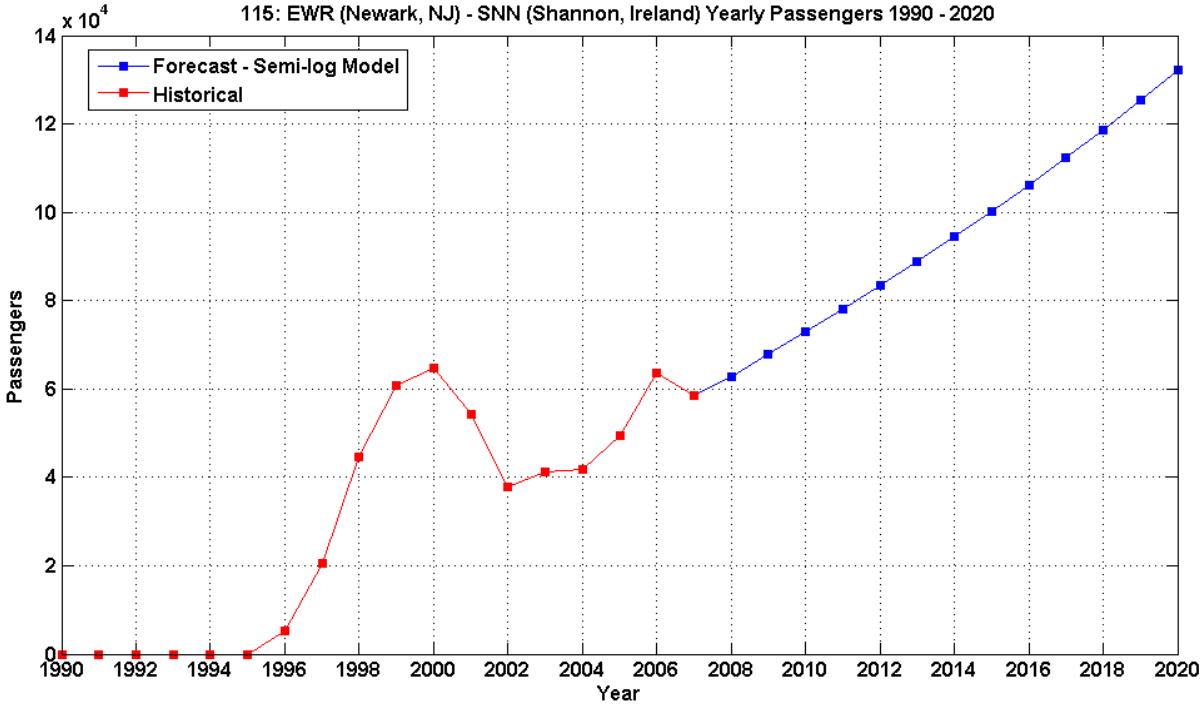
2018
2020


111: BOS (Boston, MA) - MXP (Milan, Italy) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


112: CVG (Cincinnati, OH) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


113: ATL (Atlanta, GA) - STR (Stuttgart, Germany) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


114: EWR (Newark, NJ) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


115: EWR (Newark, NJ) - SNN (Shannon, Ireland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
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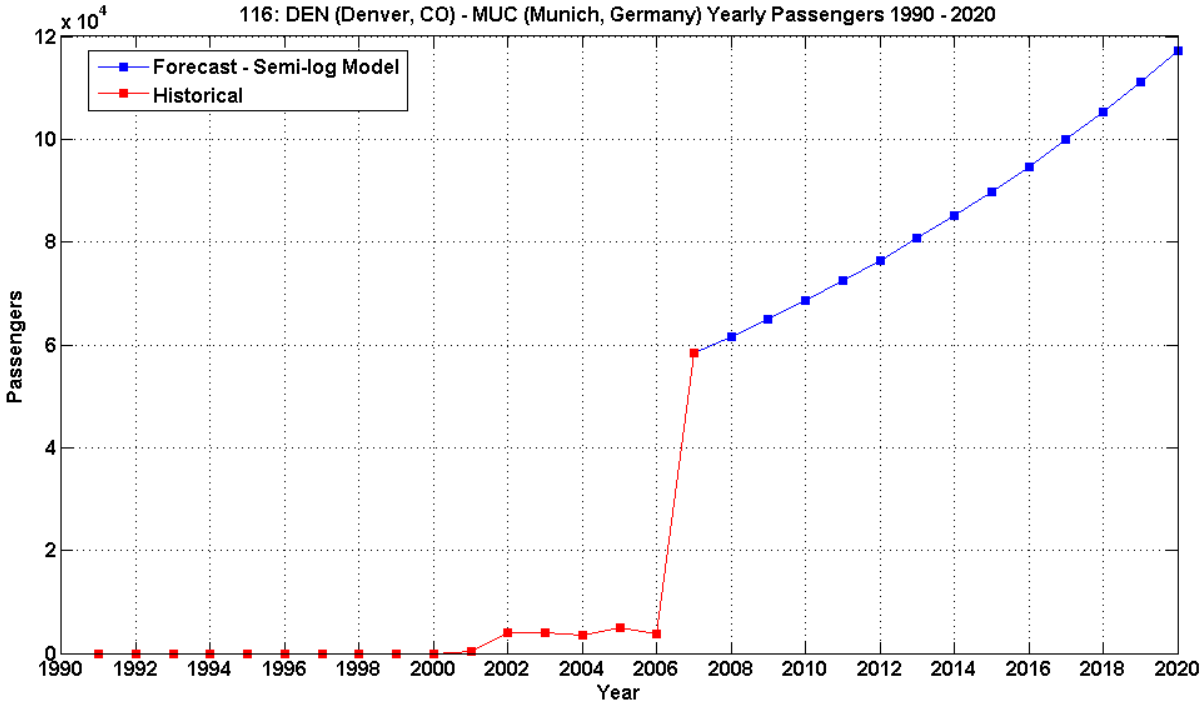
116: DEN (Denver, CO) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
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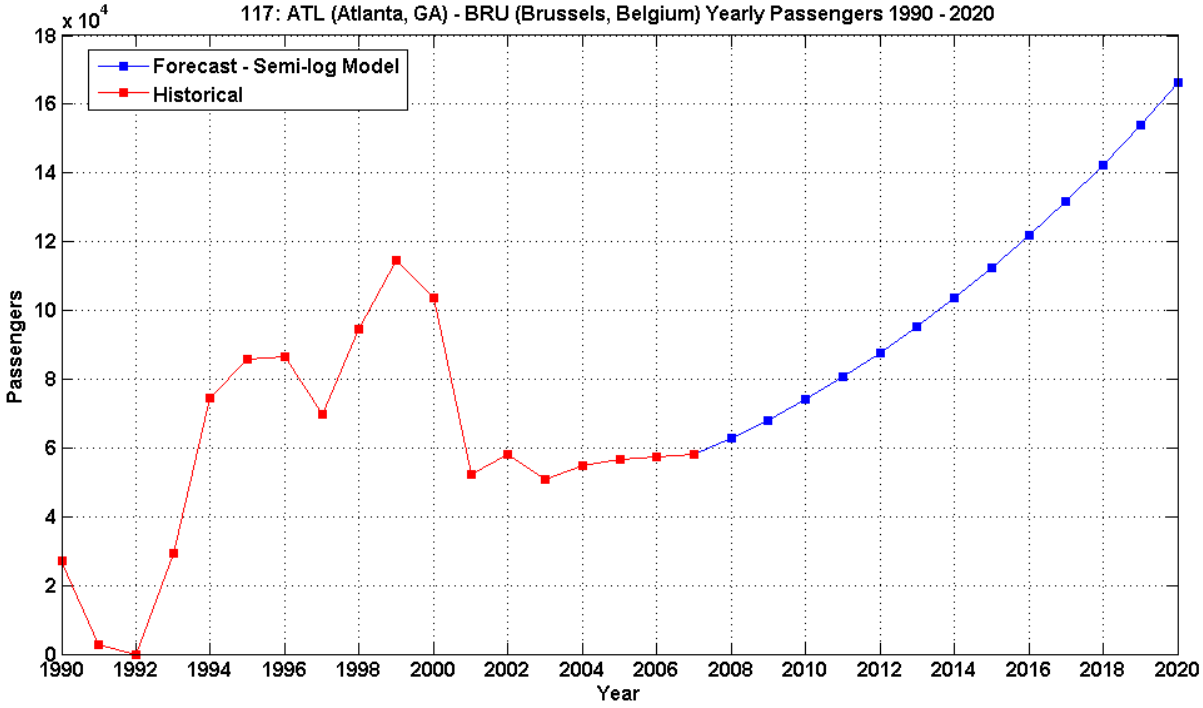
117: ATL (Atlanta, GA) - BRU (Brussels, Belgium) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
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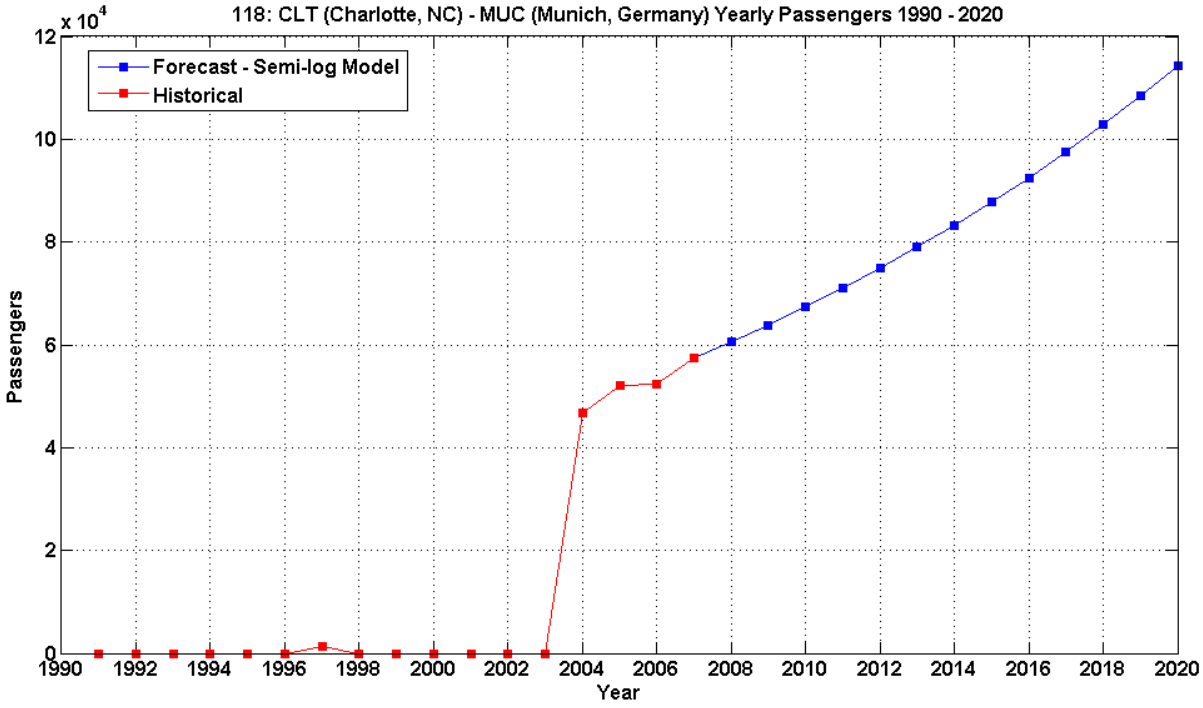
118: CLT (Charlotte, NC) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
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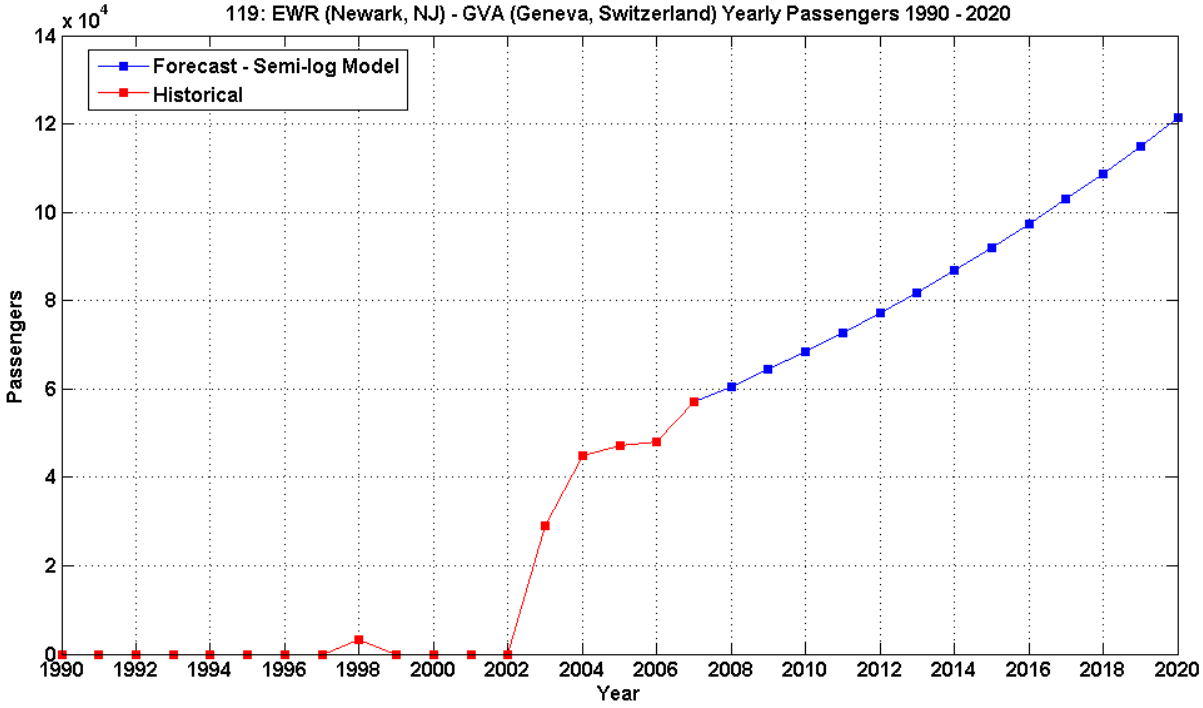
119: EWR (Newark, NJ) - GVA (Geneva, Switzerland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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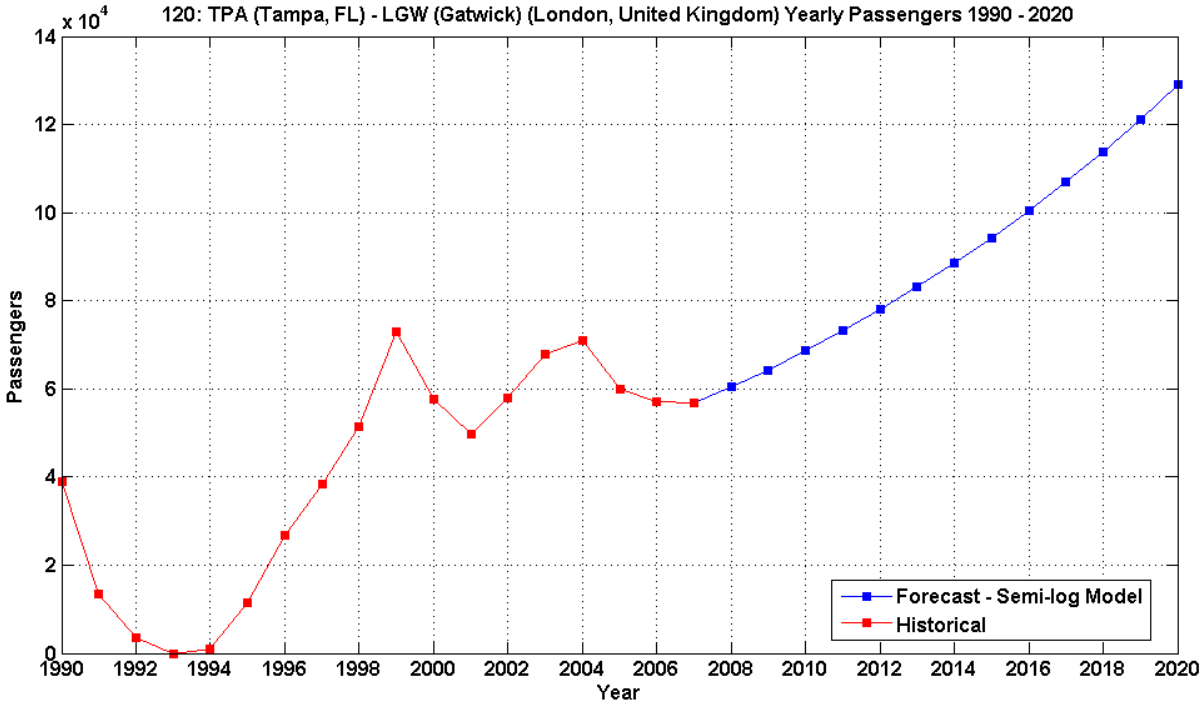
120: TPA (Tampa, FL) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
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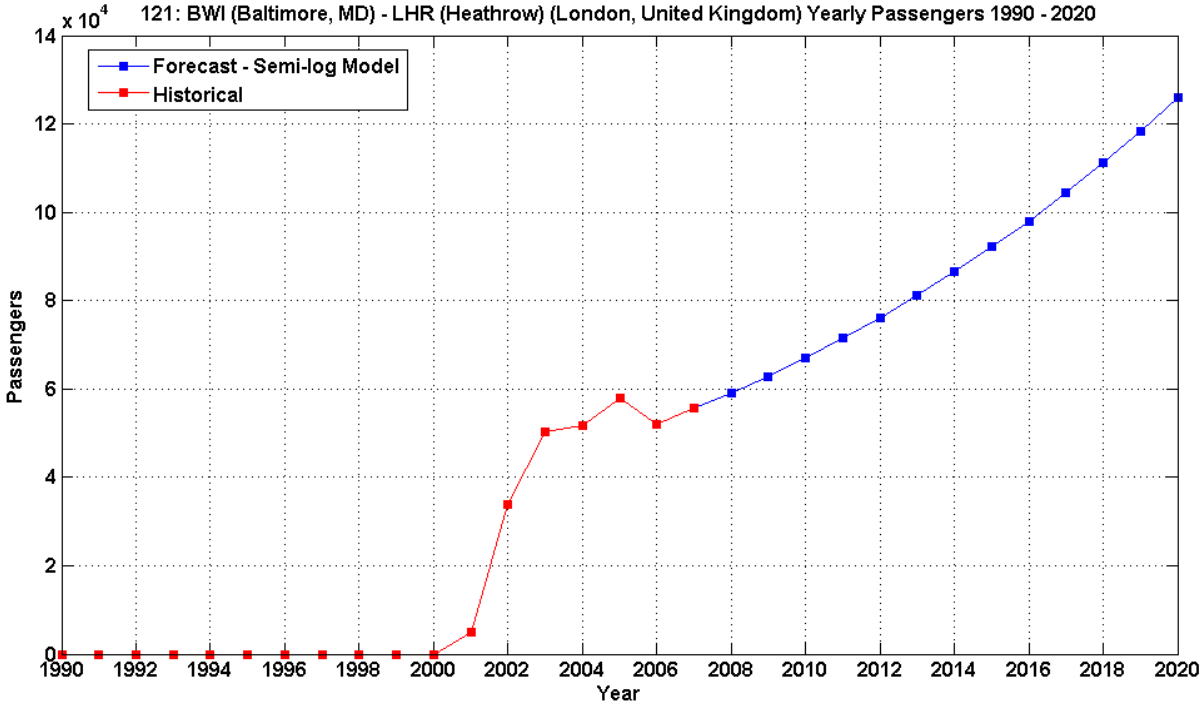
x 10^4
121: BWI (Baltimore, MD) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
Forecast - Semi-log Model
Historical
Passengers
Year
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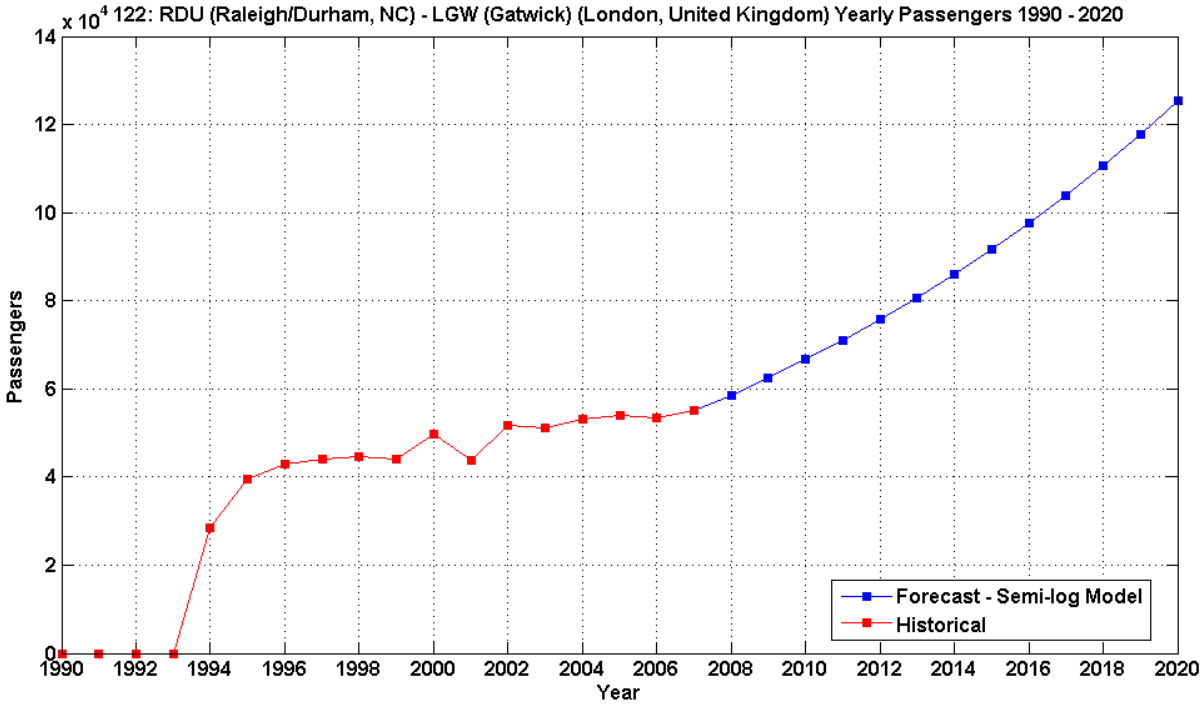
x 10^4
122: RDU (Raleigh/Durham, NC) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
Forecast - Semi-log Model
Historical
Passengers
Year
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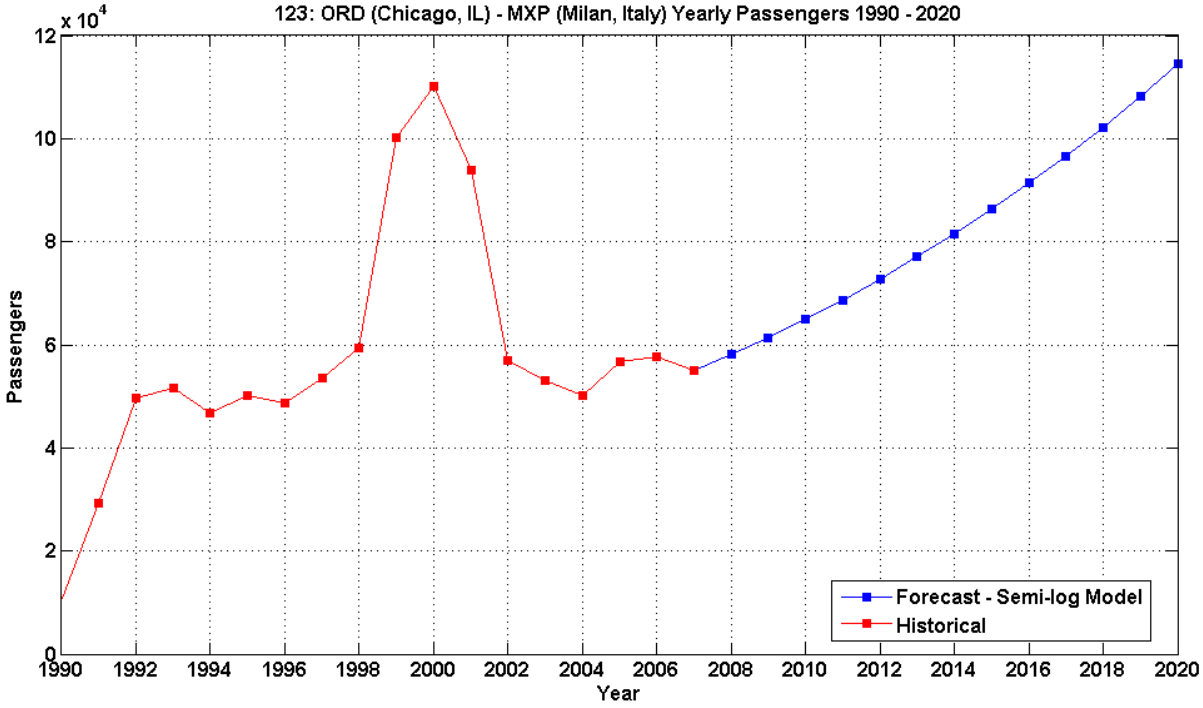
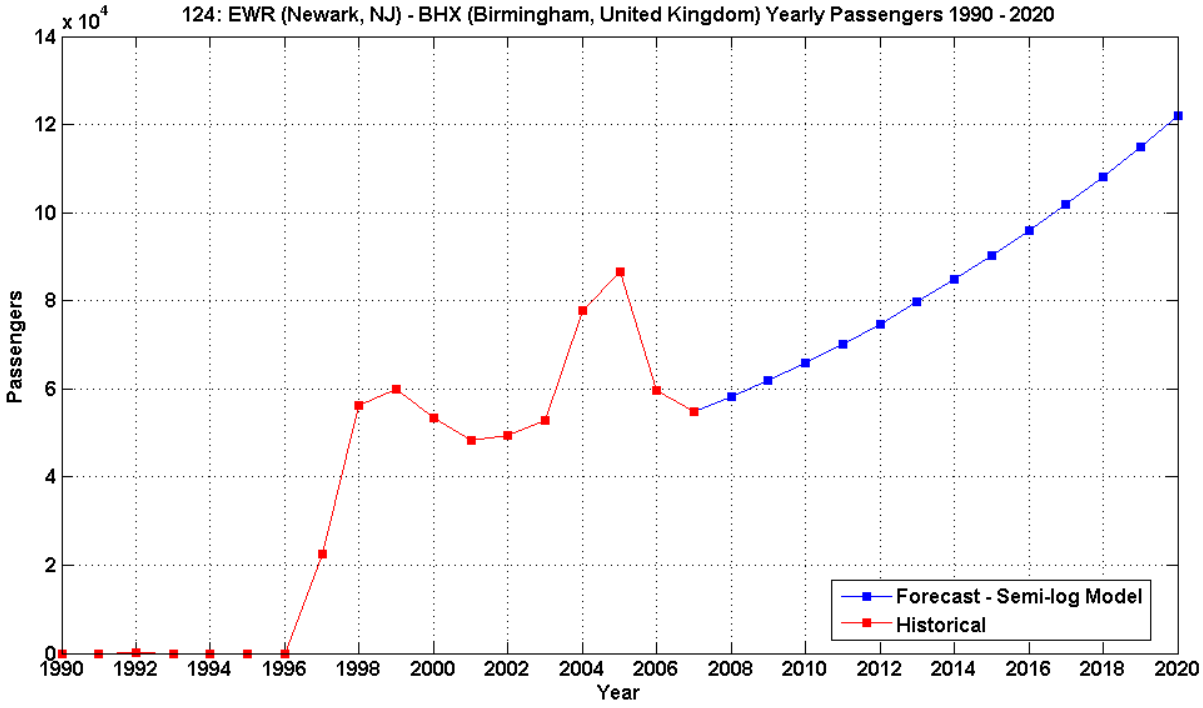
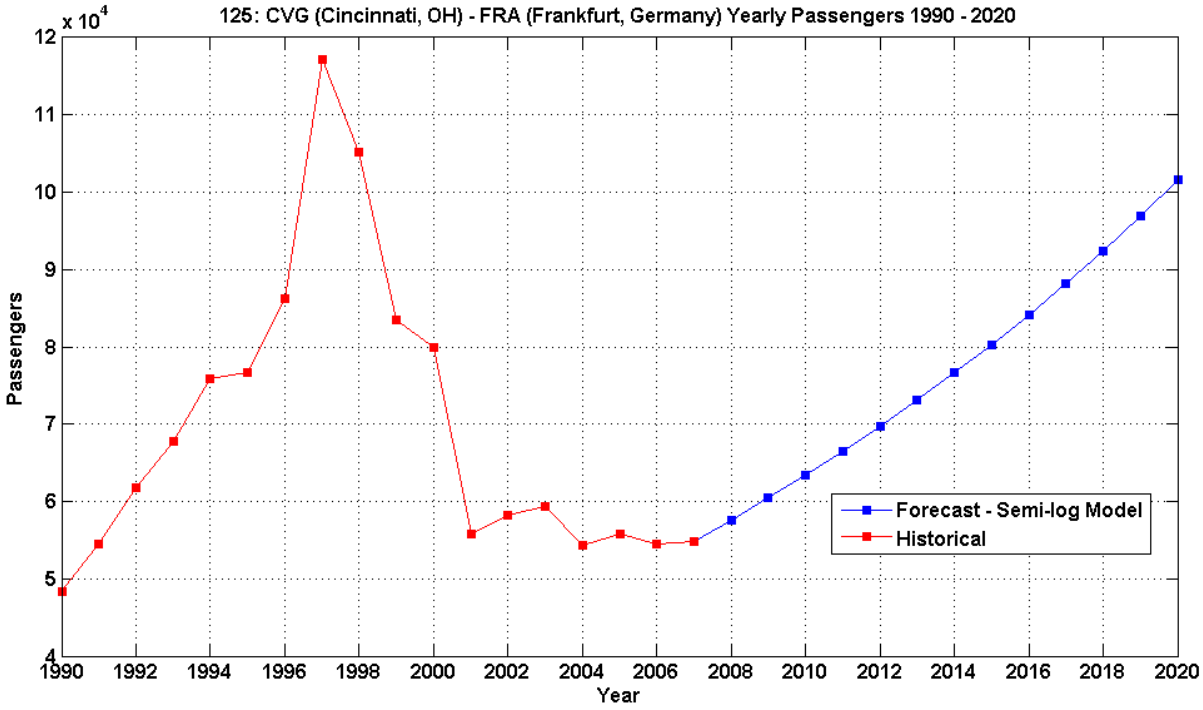
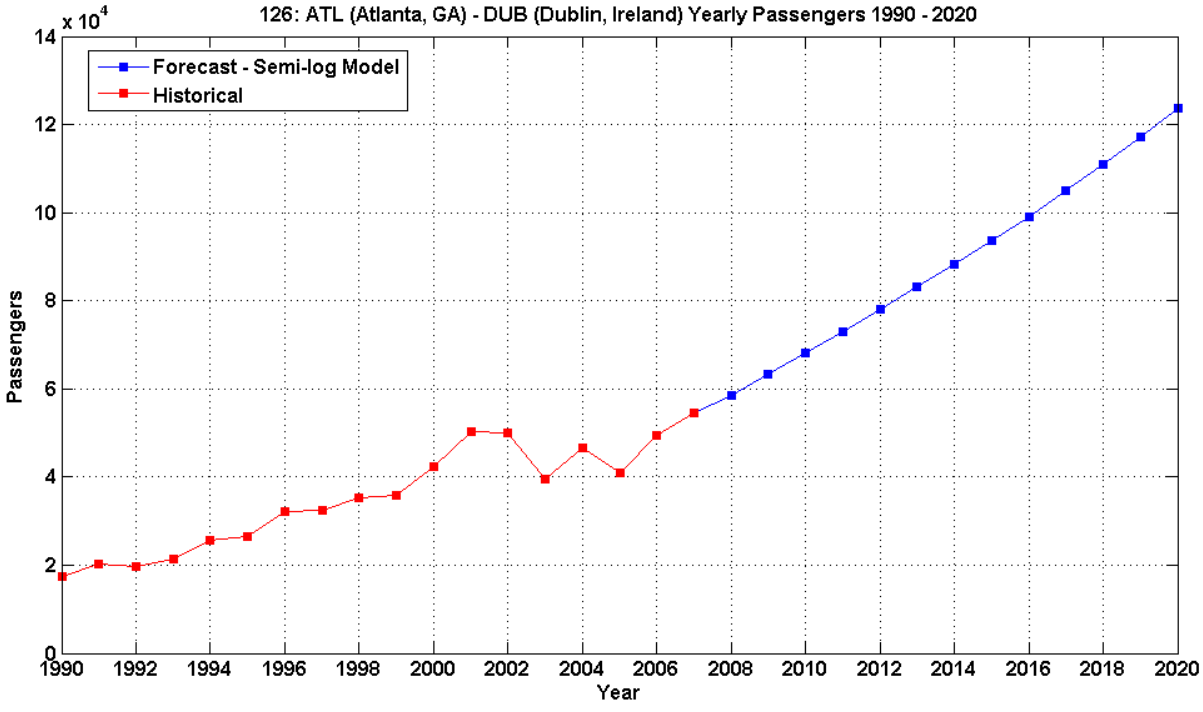
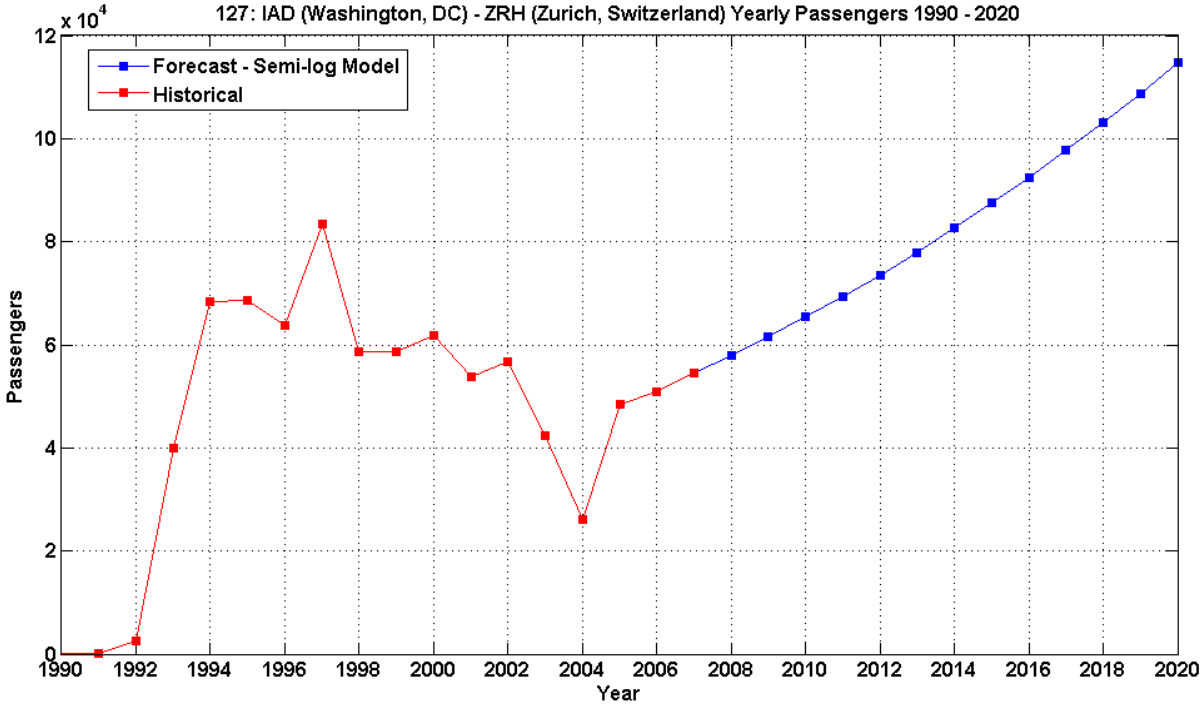

123: ORD (Chicago, IL) - MXP (Milan, Italy) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


124: EWR (Newark, NJ) - BHX (Birmingham, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


125: CVG (Cincinnati, OH) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


126: ATL (Atlanta, GA) - DUB (Dublin, Ireland) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


127: IAD (Washington, DC) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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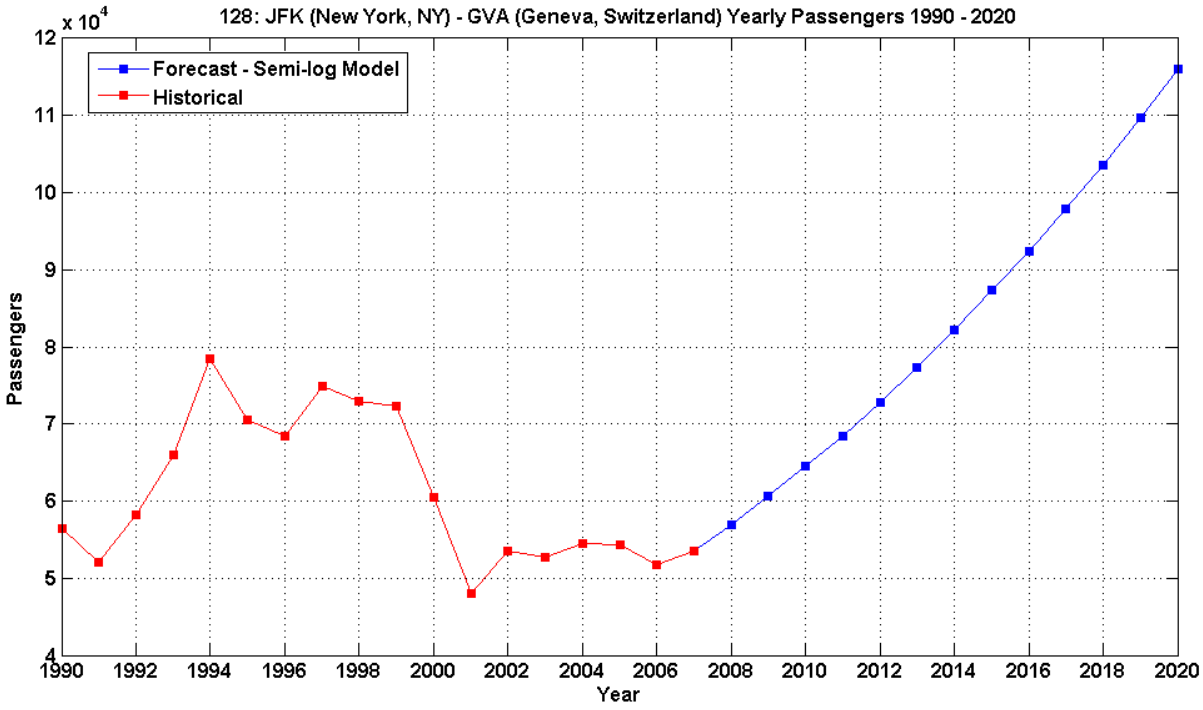
128: JFK (New York, NY) - GVA (Geneva, Switzerland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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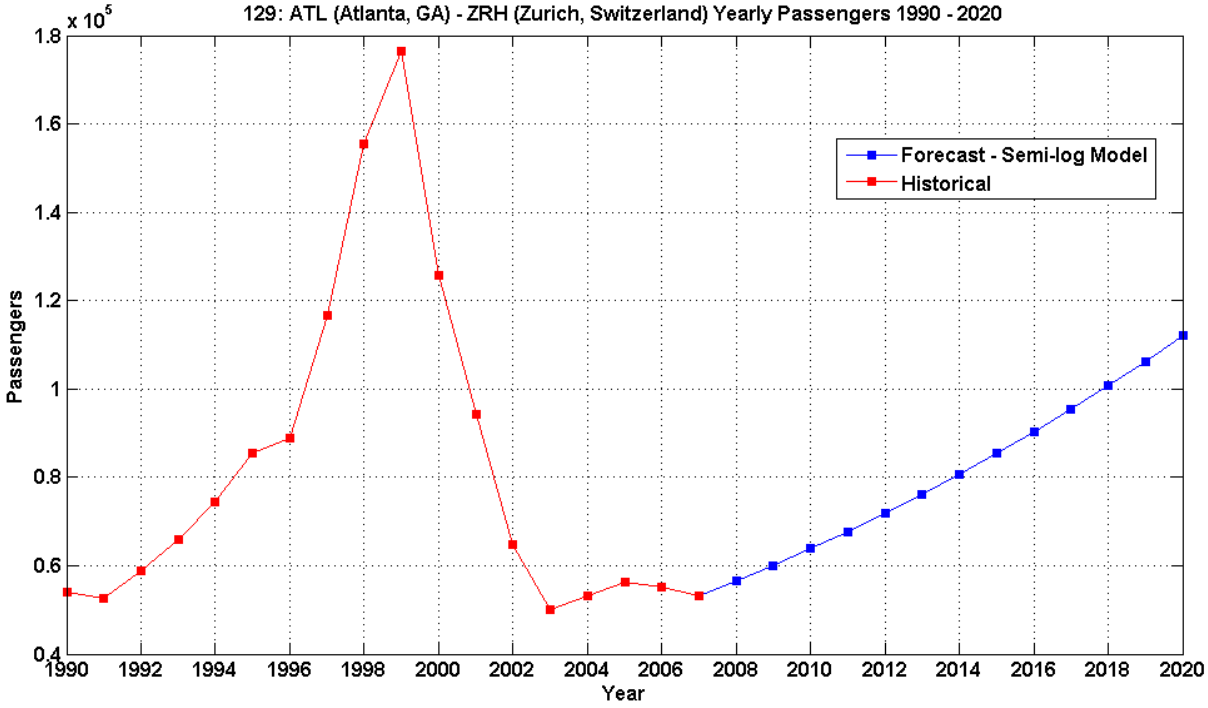
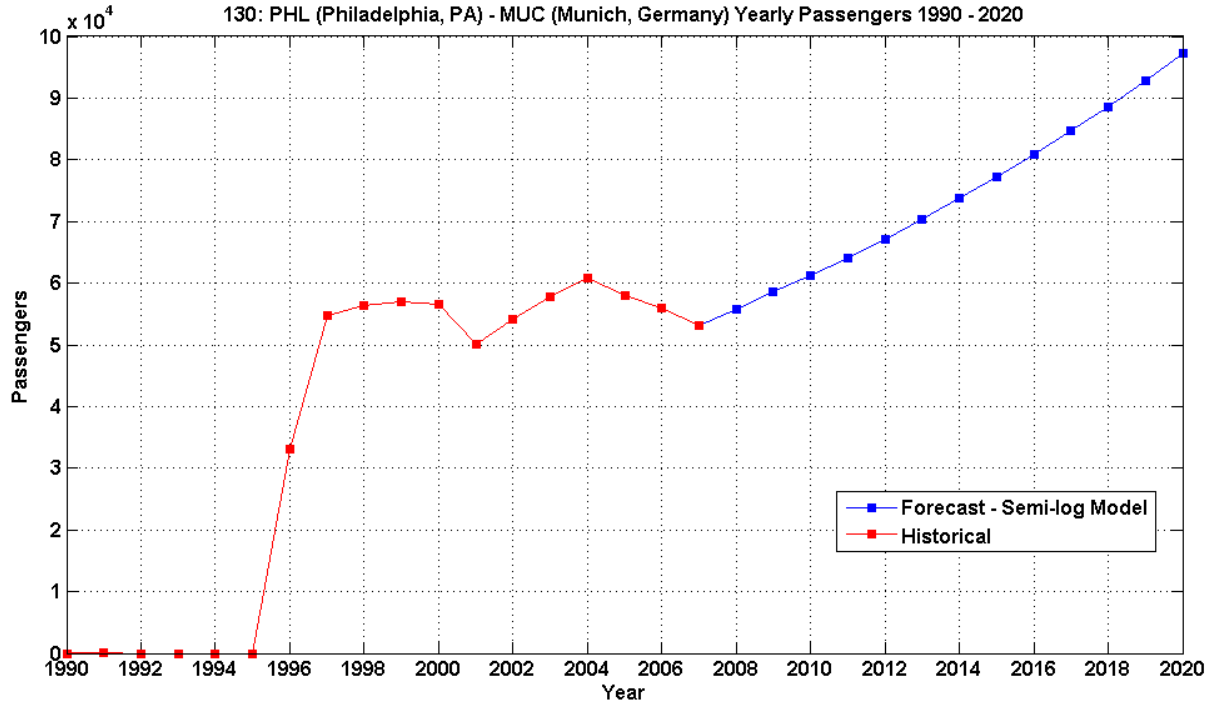
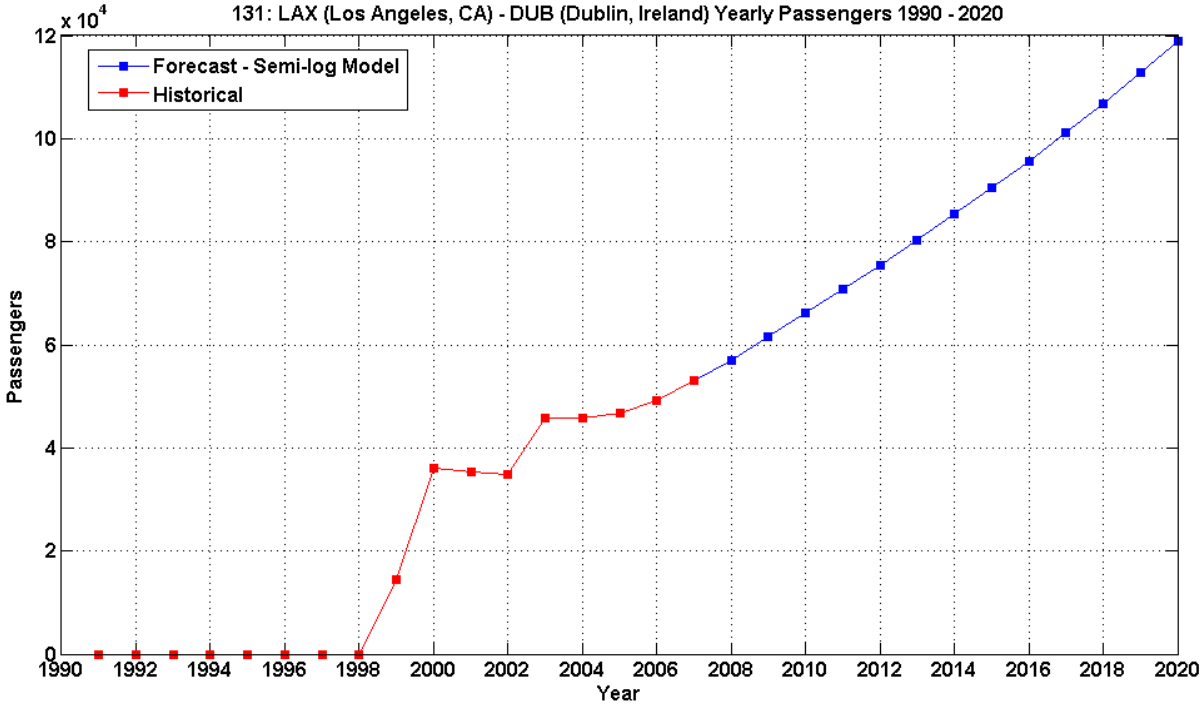

129: ATL (Atlanta, GA) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^5
Passengers
Year
Forecast - Semi-log Model
Historical


130: PHL (Philadelphia, PA) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical


131: LAX (Los Angeles, CA) - DUB (Dublin, Ireland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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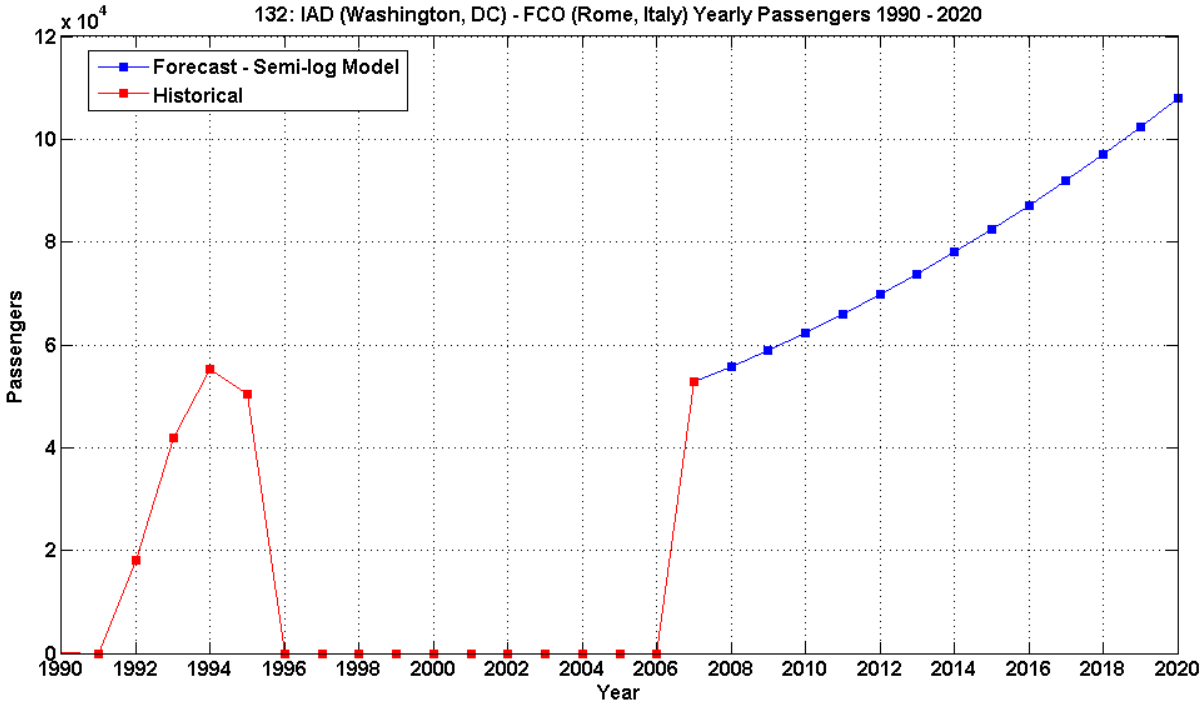
132: IAD (Washington, DC) - FCO (Rome, Italy) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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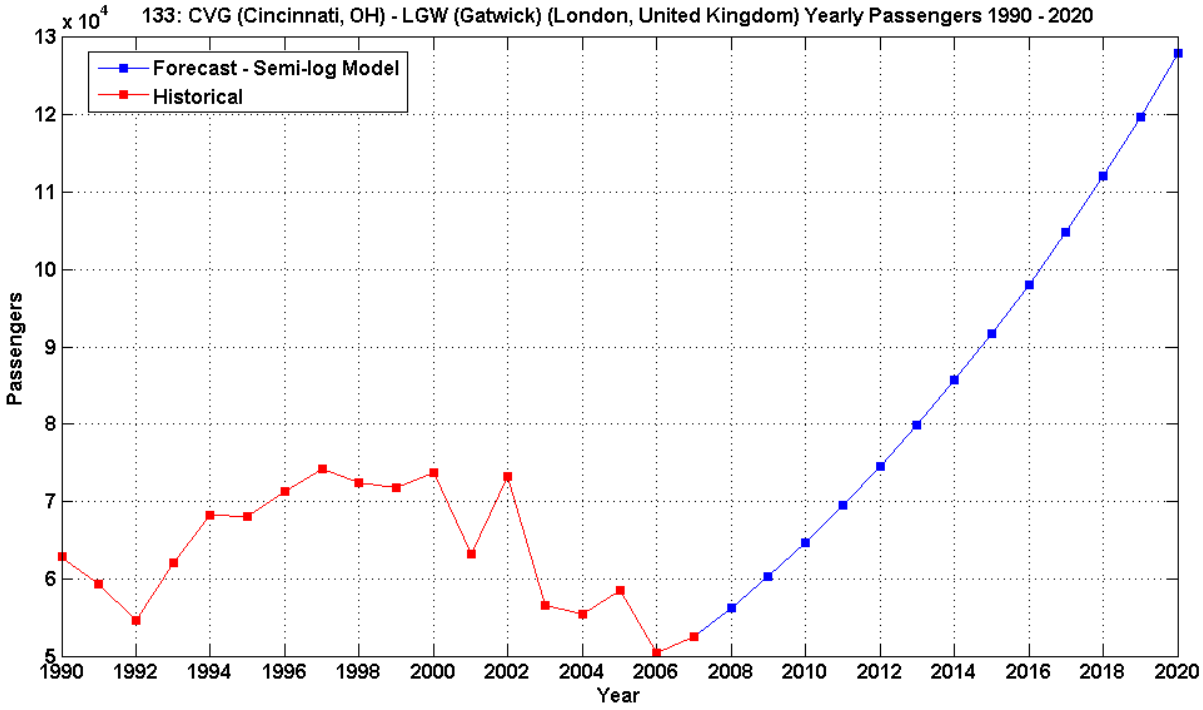
133: CVG (Cincinnati, OH) - LGW (Gatwick) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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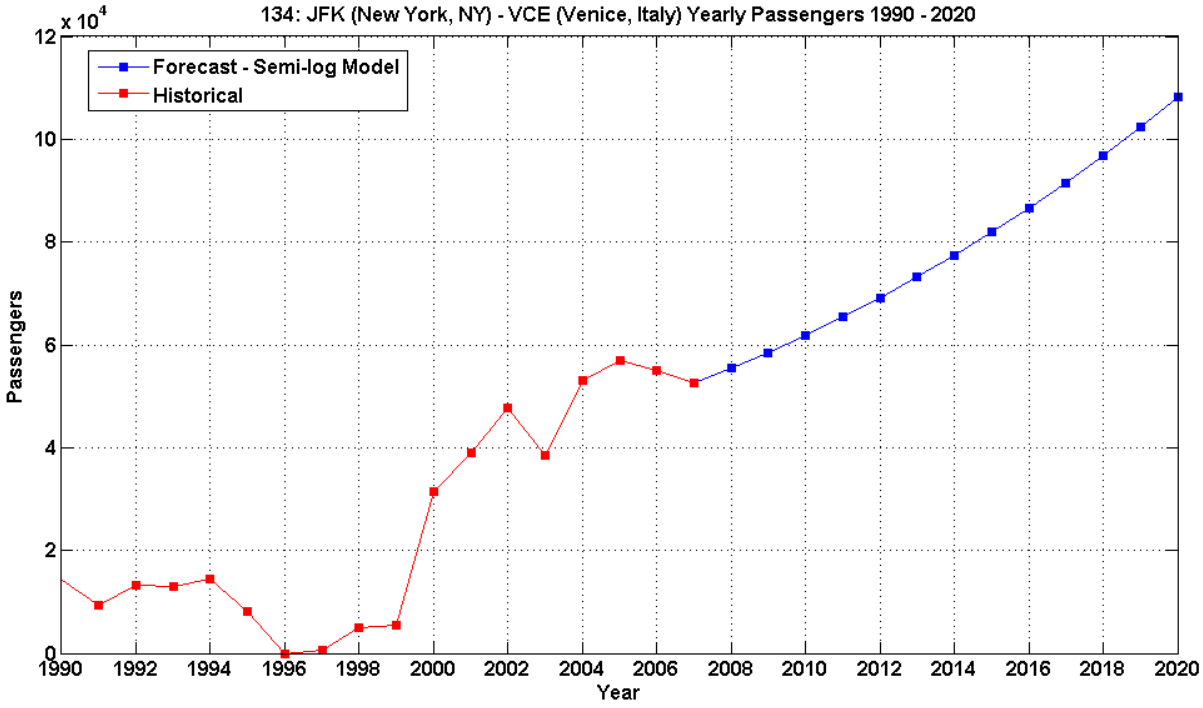
134: JFK (New York, NY) - VCE (Venice, Italy) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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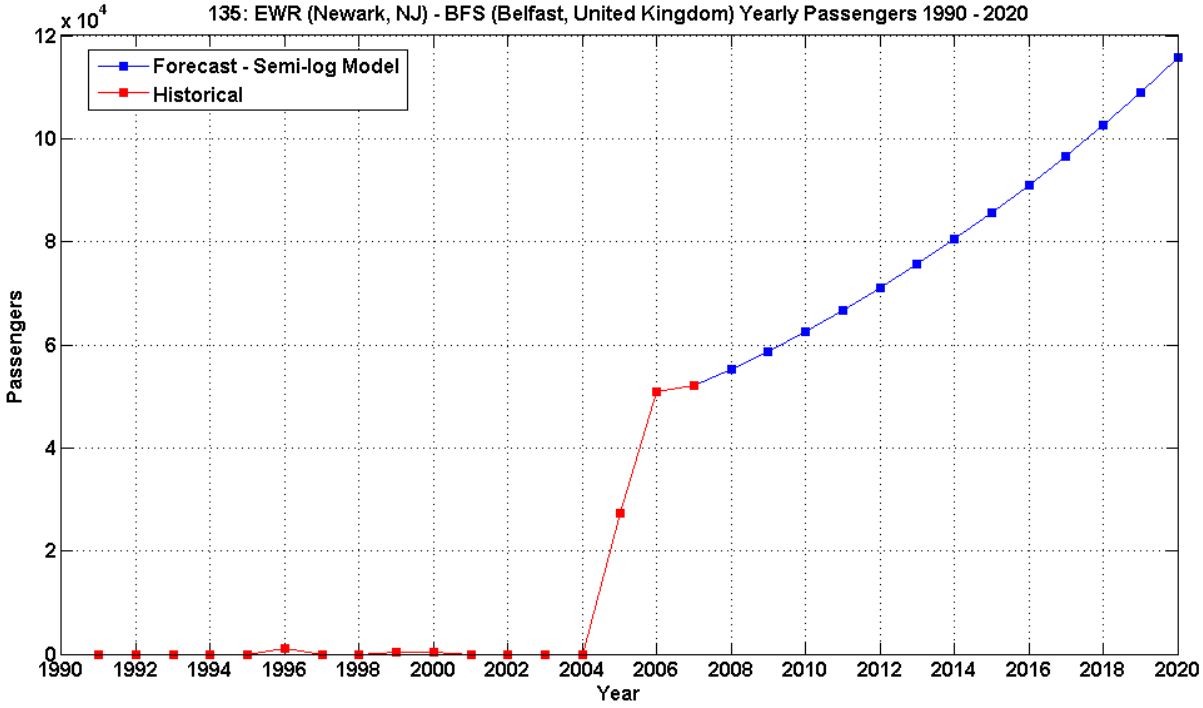
135: EWR (Newark, NJ) - BFS (Belfast, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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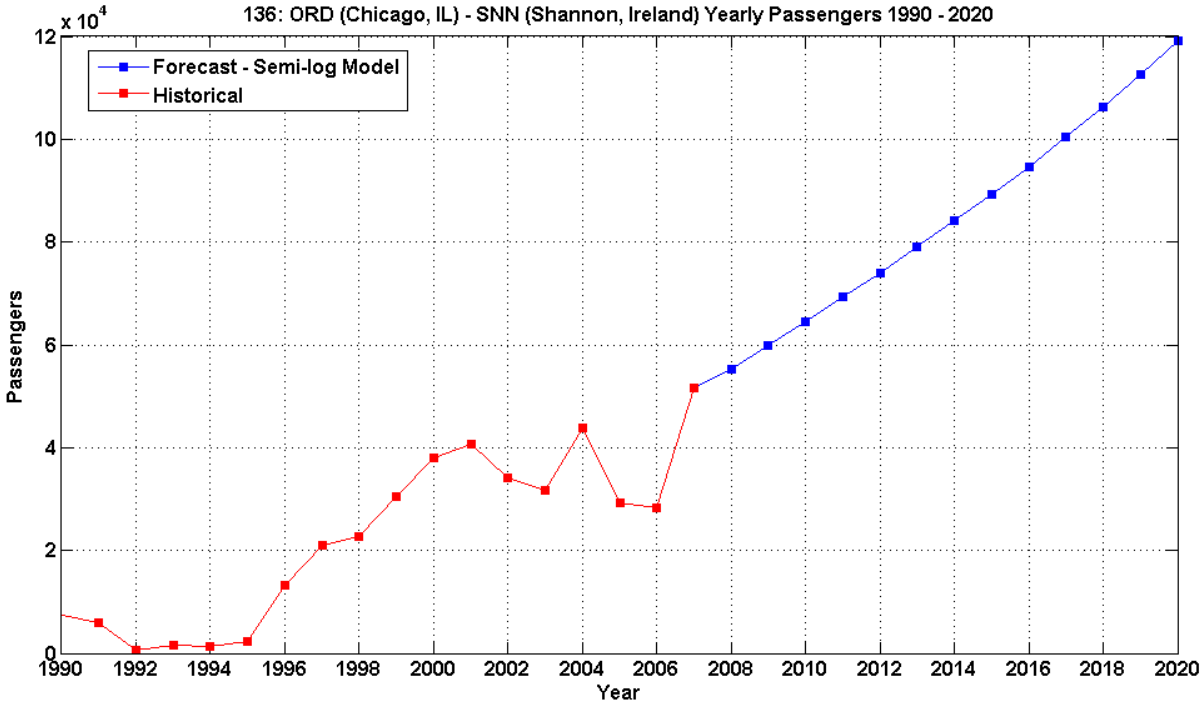
136: ORD (Chicago, IL) - SNN (Shannon, Ireland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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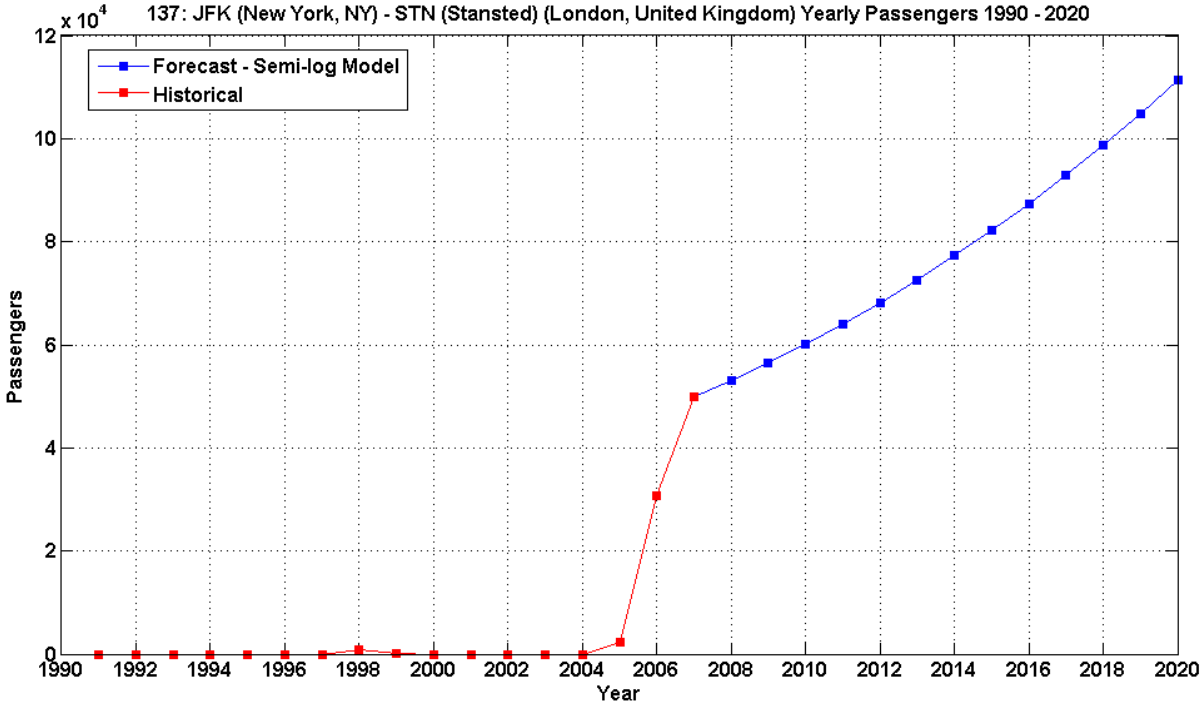
137: JFK (New York, NY) - STN (Stansted) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
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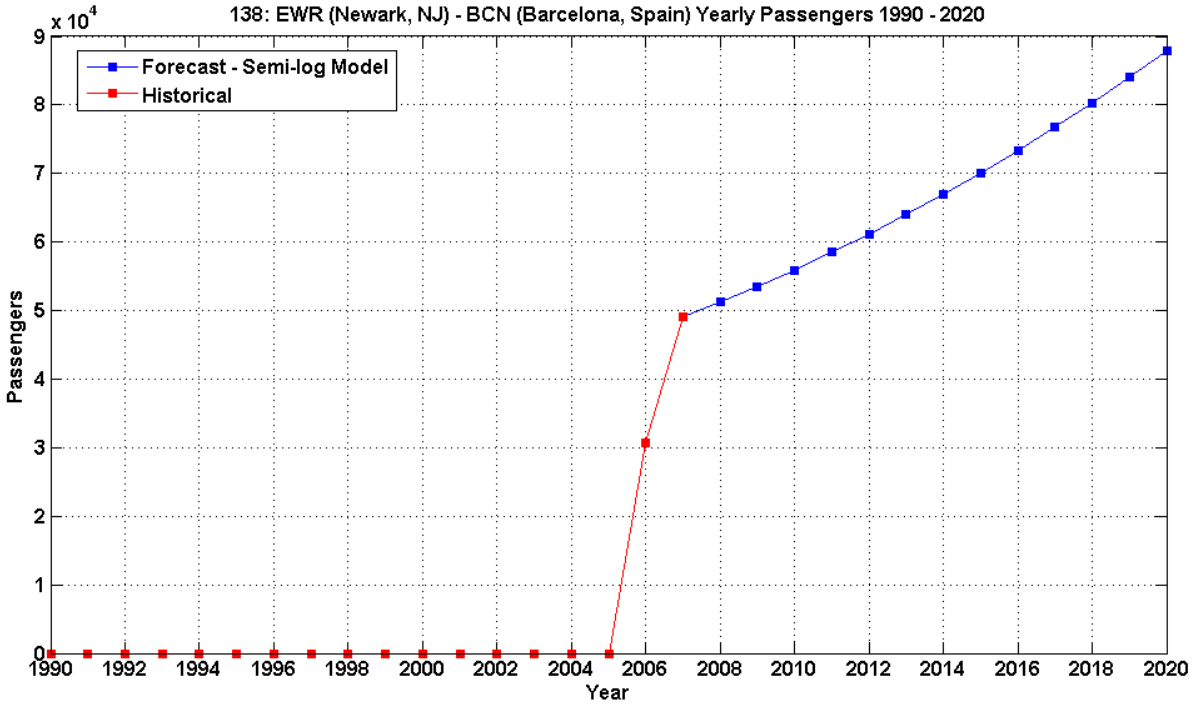
138: EWR (Newark, NJ) - BCN (Barcelona, Spain) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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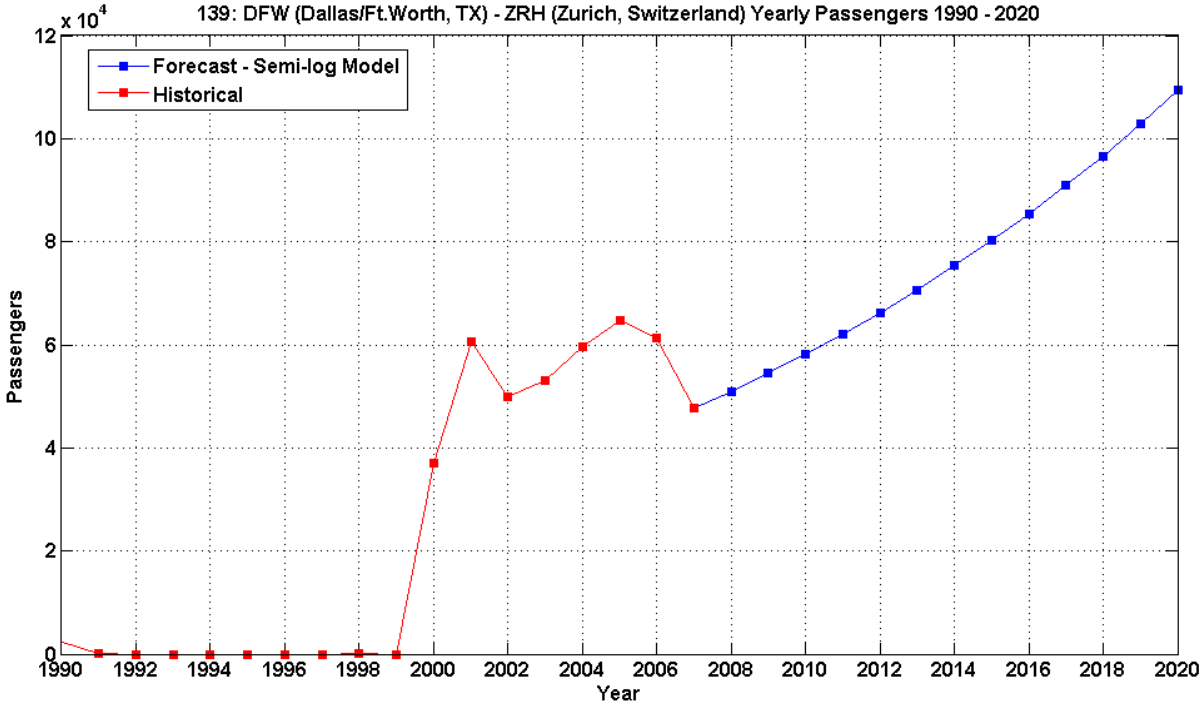
139: DFW (Dallas/Ft.Worth, TX) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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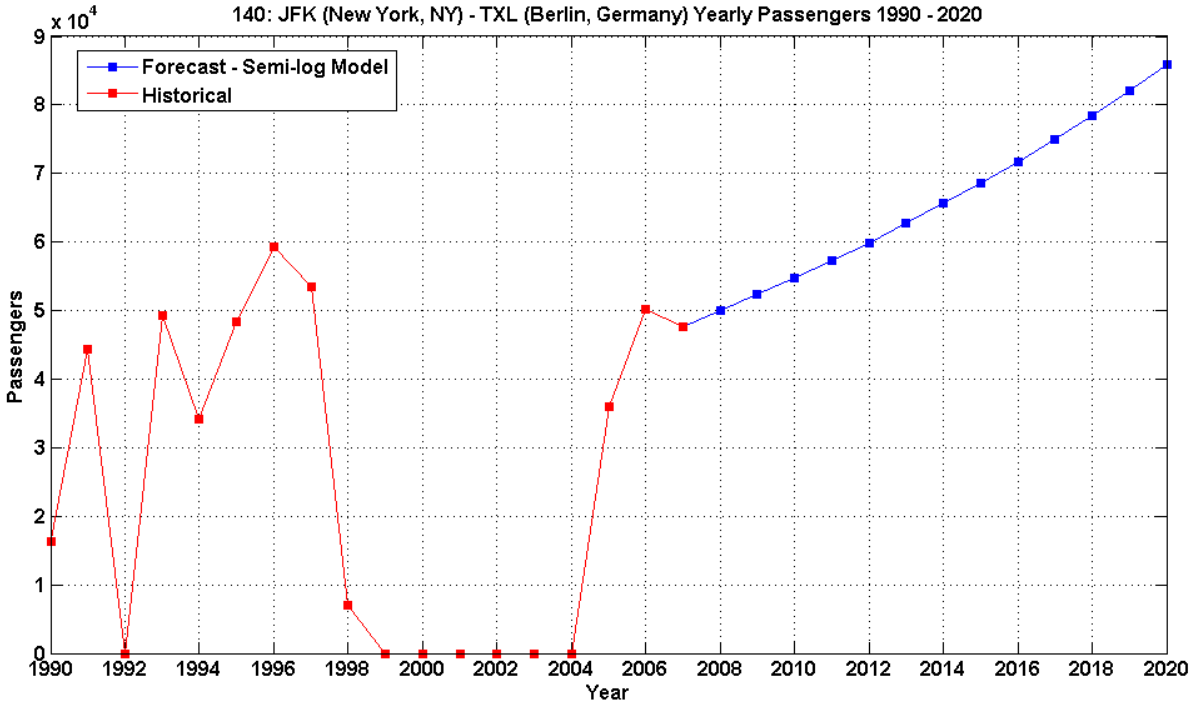
140: JFK (New York, NY) - TXL (Berlin, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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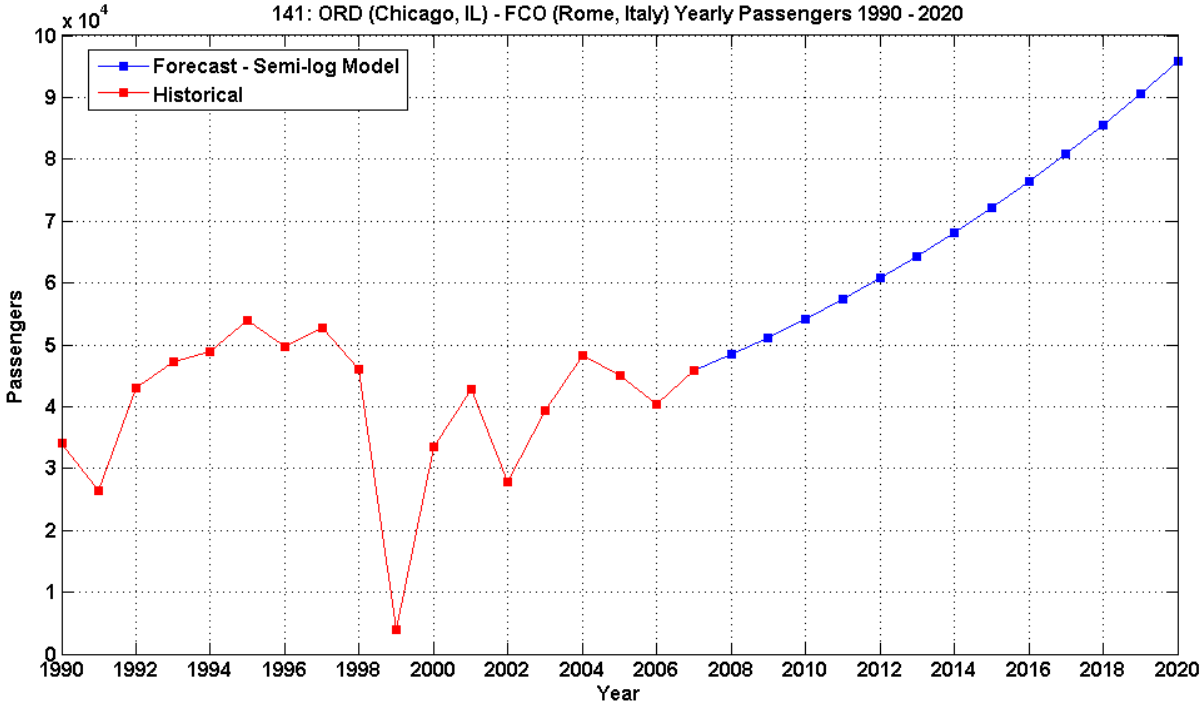
141: ORD (Chicago, IL) - FCO (Rome, Italy) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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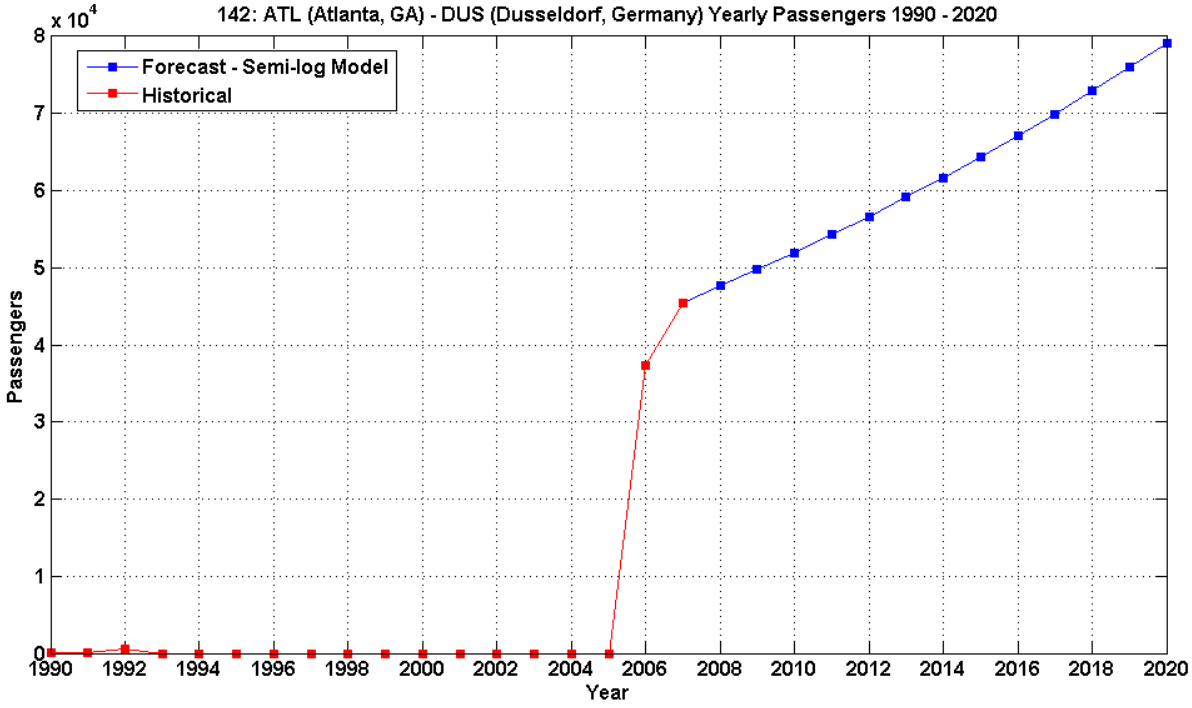
142: ATL (Atlanta, GA) - DUS (Dusseldorf, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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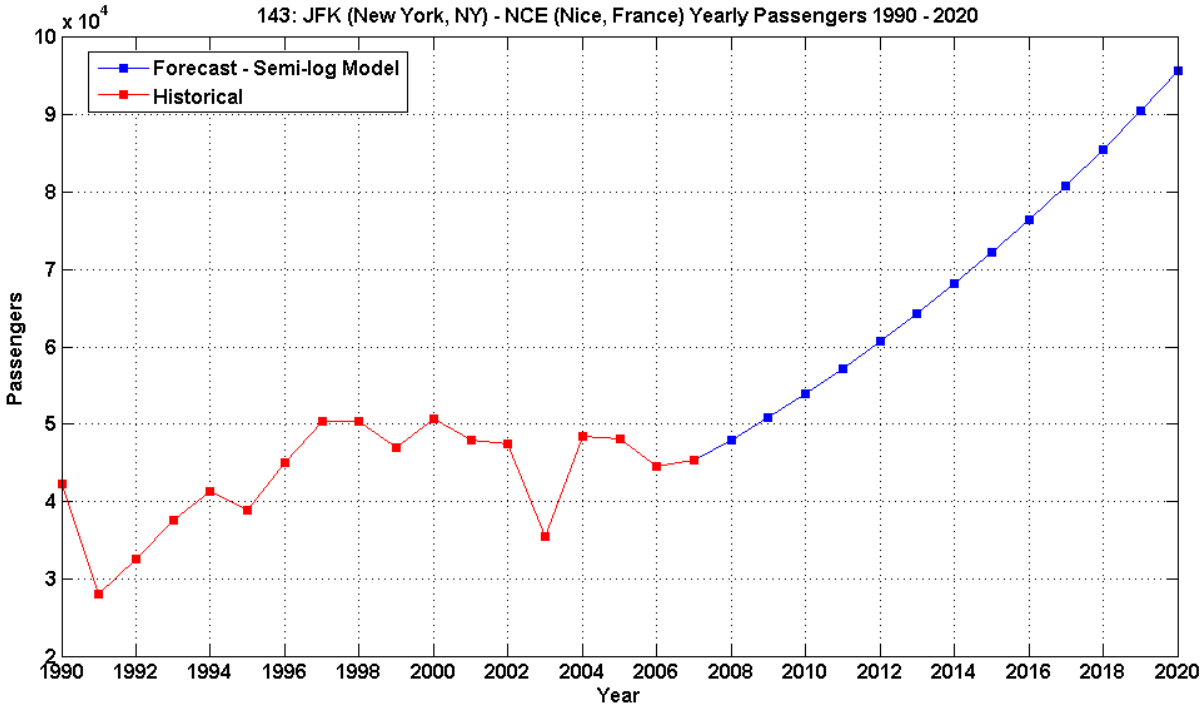
143: JFK (New York, NY) - NCE (Nice, France) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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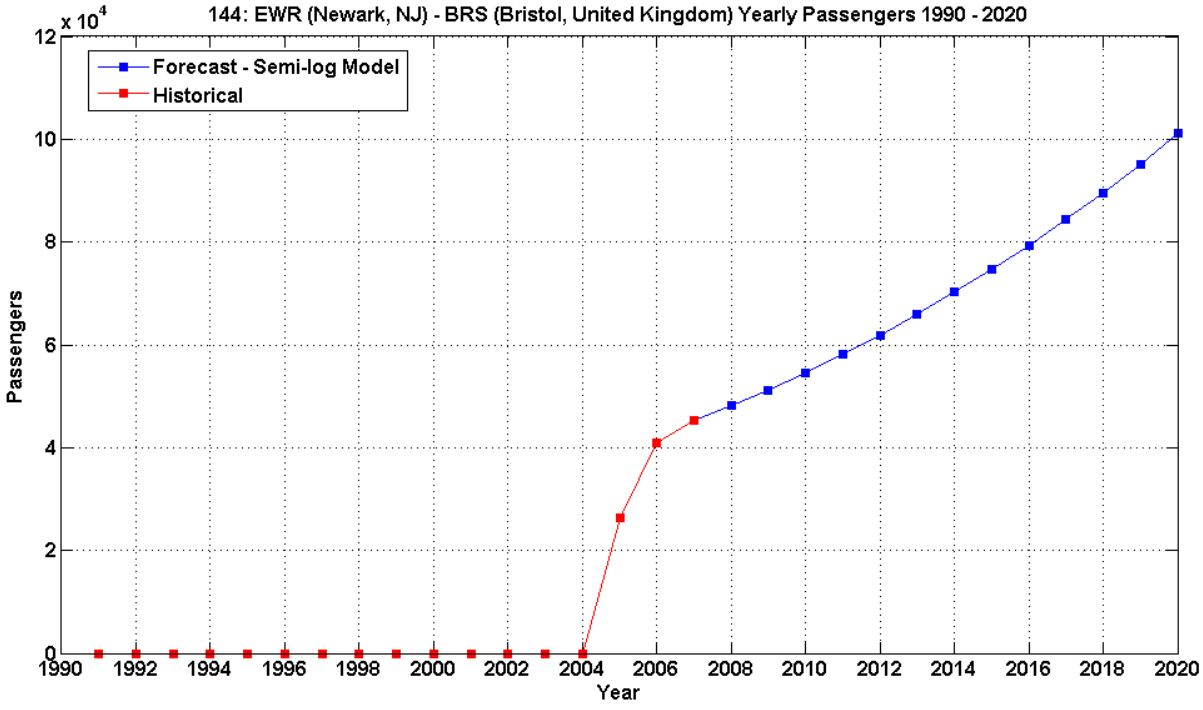
144: EWR (Newark, NJ) - BRS (Bristol, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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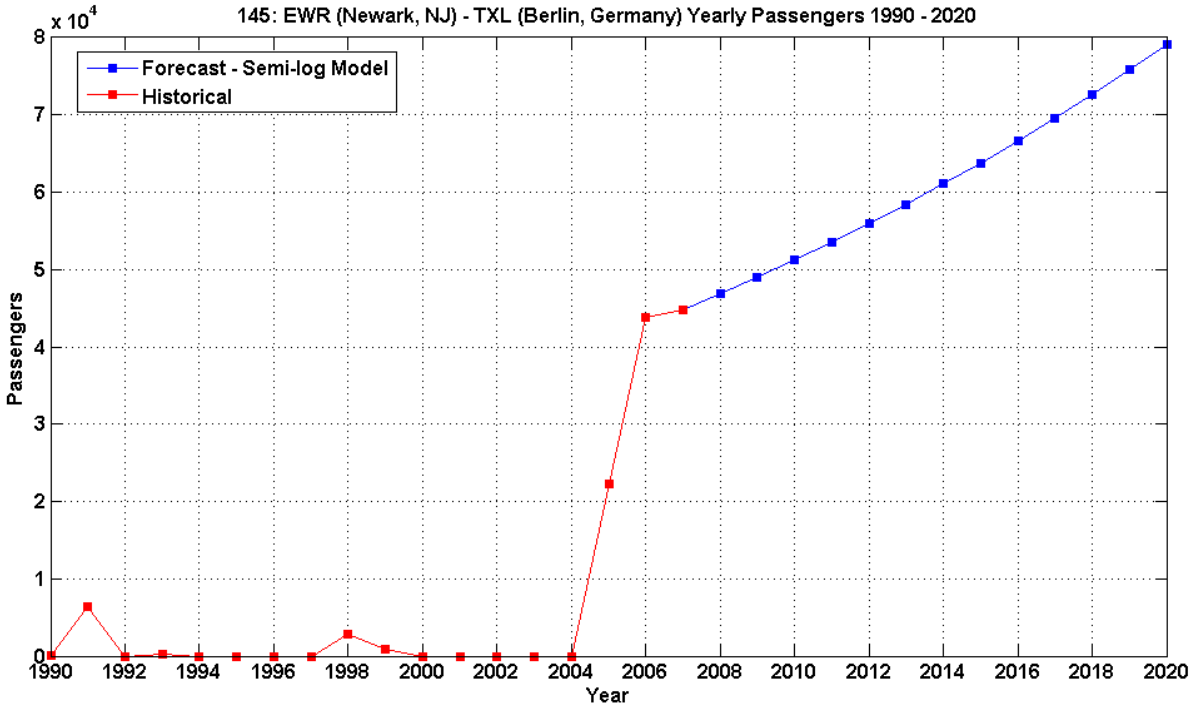
145: EWR (Newark, NJ) - TXL (Berlin, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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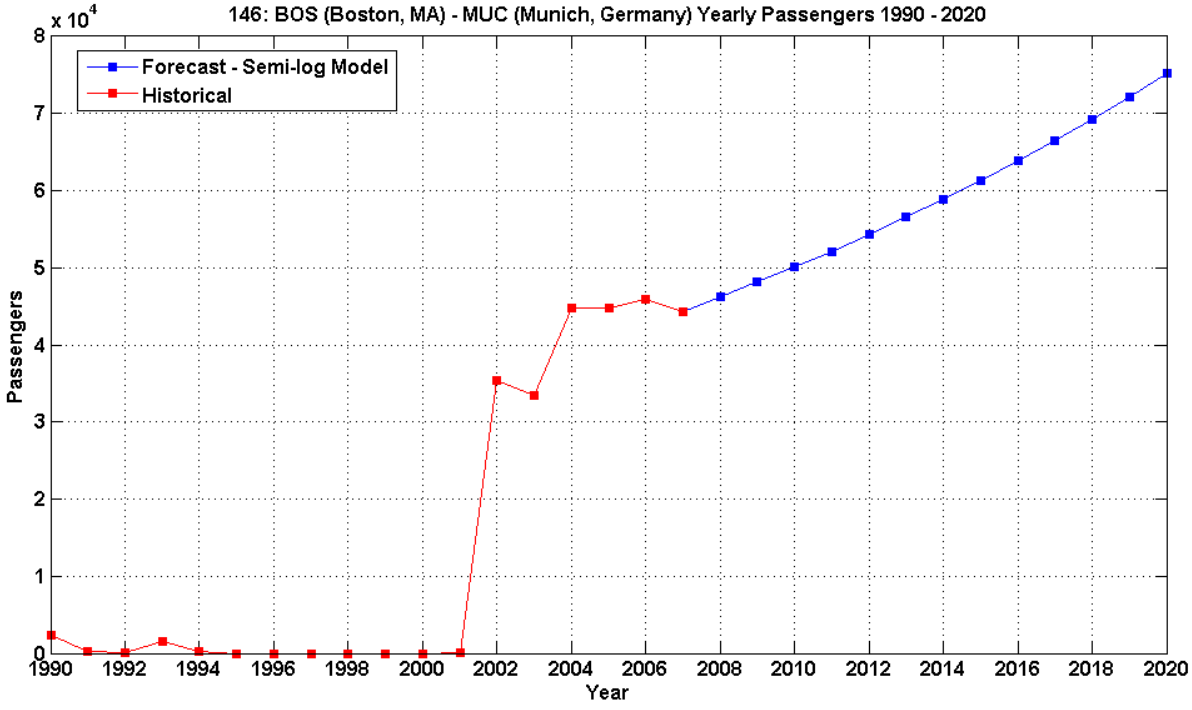
146: BOS (Boston, MA) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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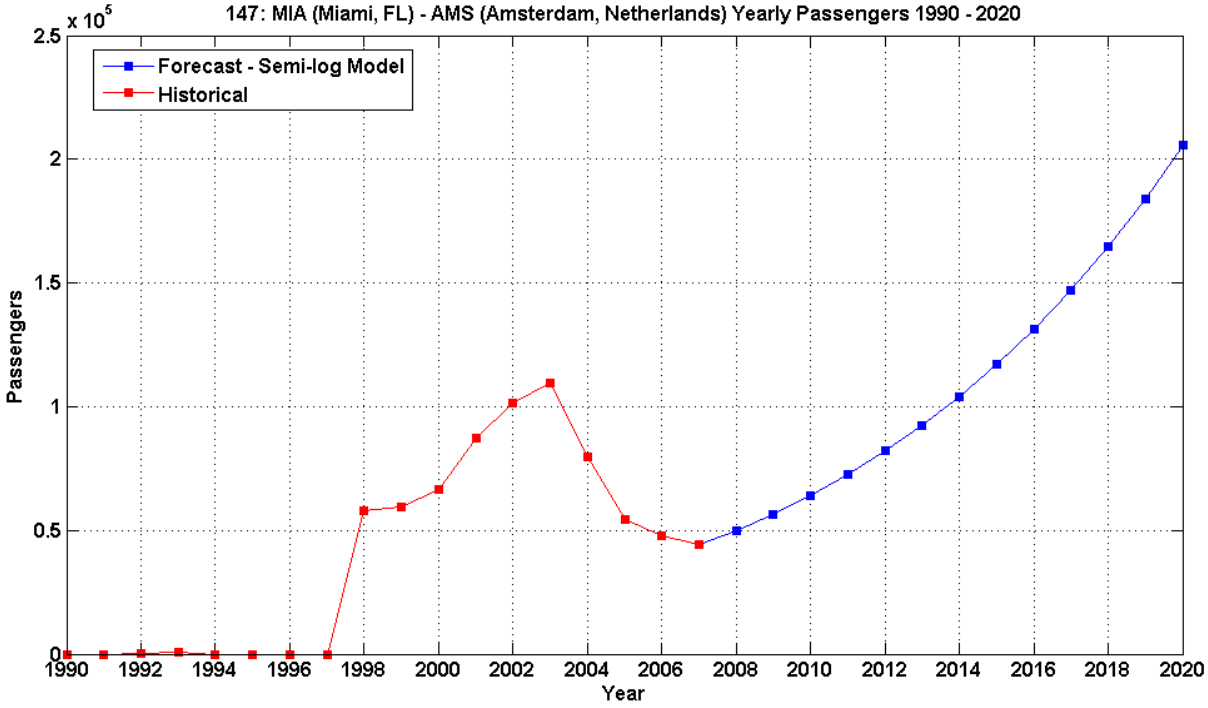
147: MIA (Miami, FL) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
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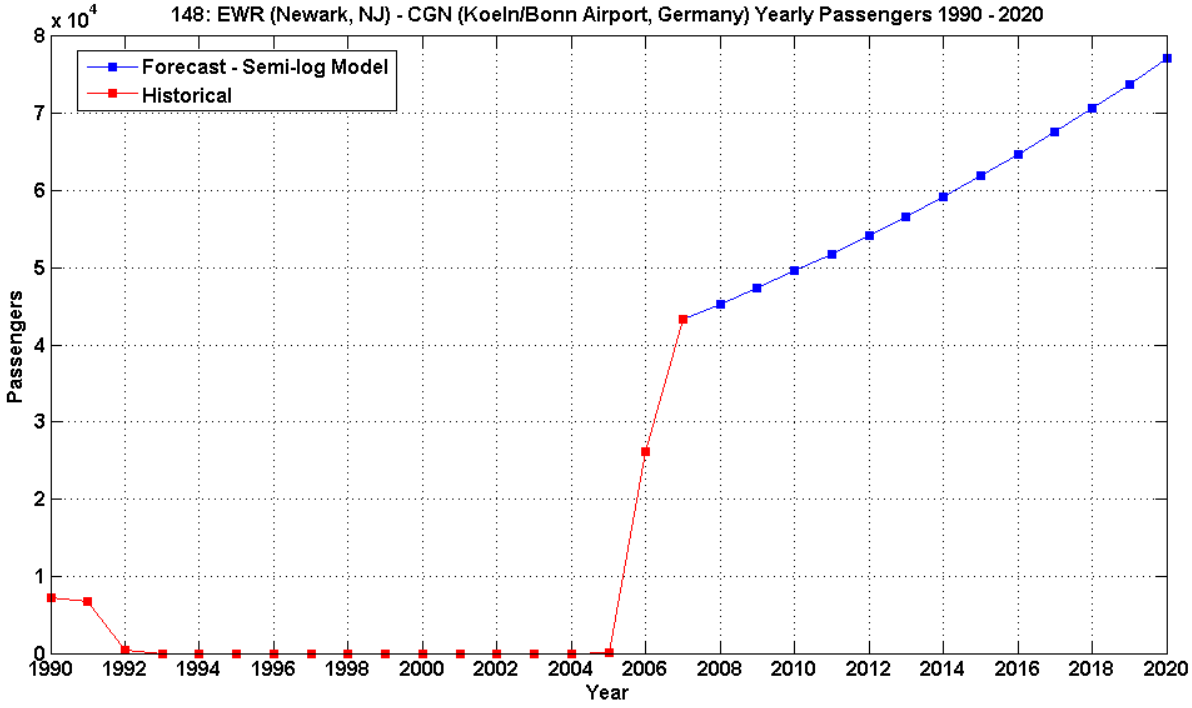
148: EWR (Newark, NJ) - CGN (Koeln/Bonn Airport, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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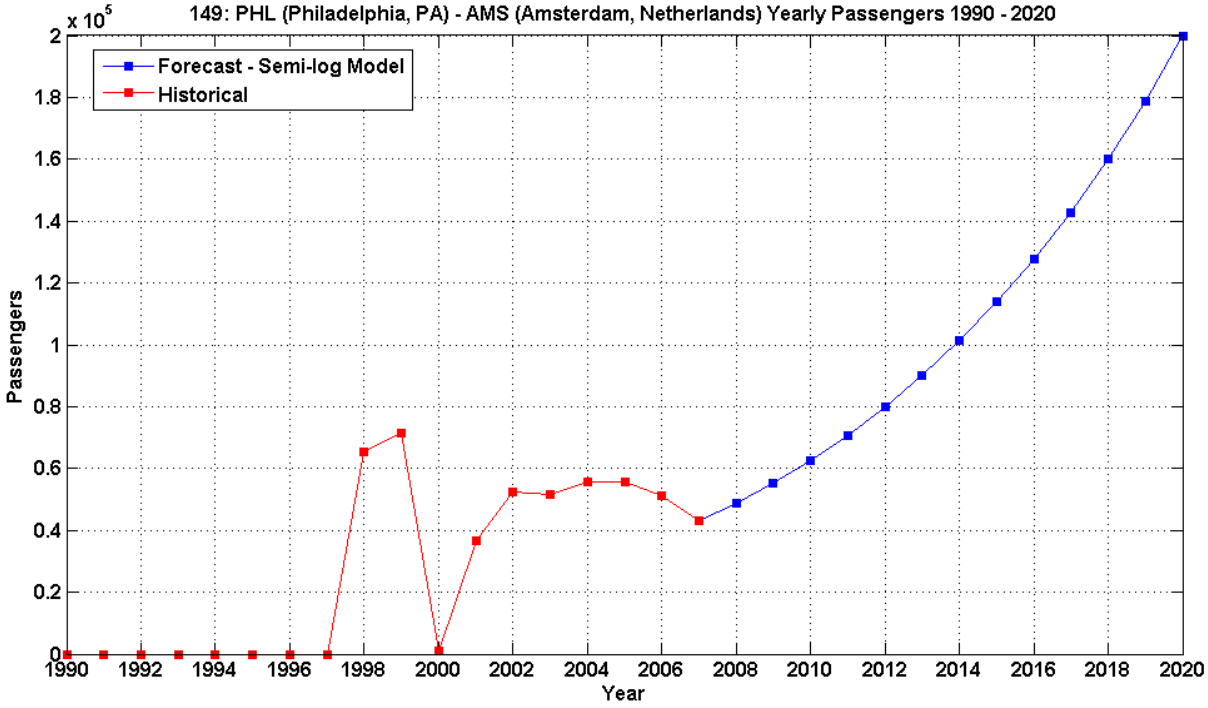
149: PHL (Philadelphia, PA) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers
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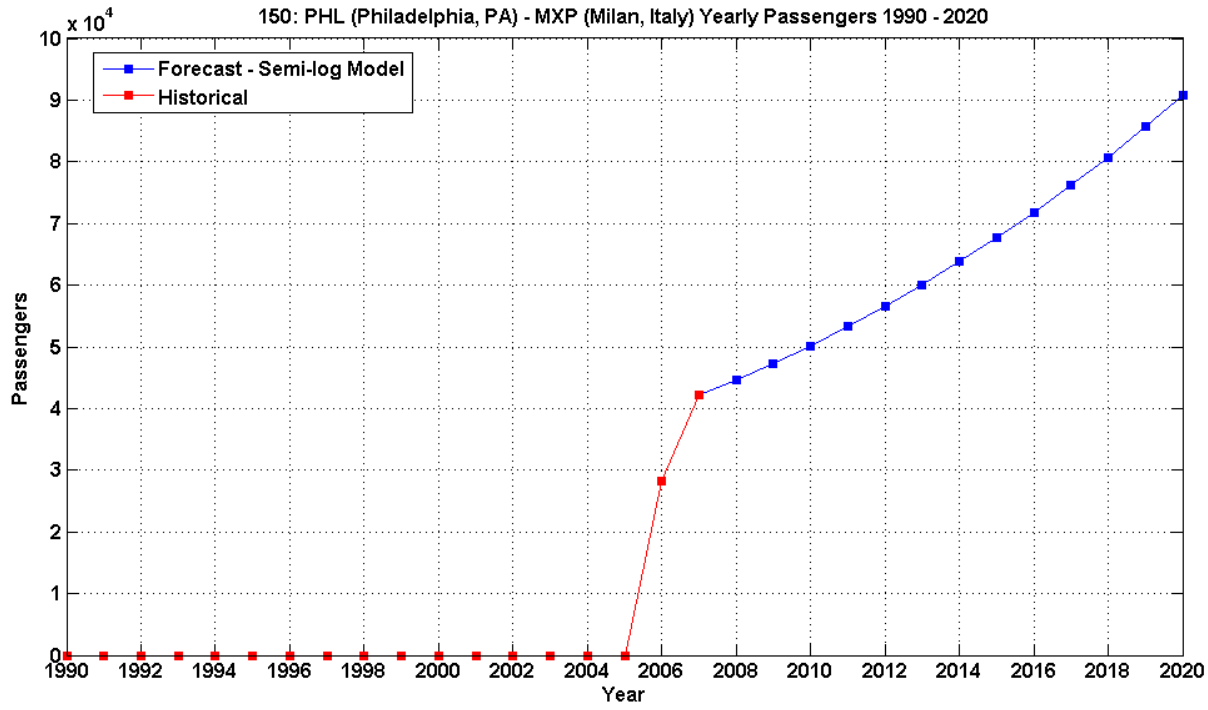
150: PHL (Philadelphia, PA) - MXP (Milan, Italy) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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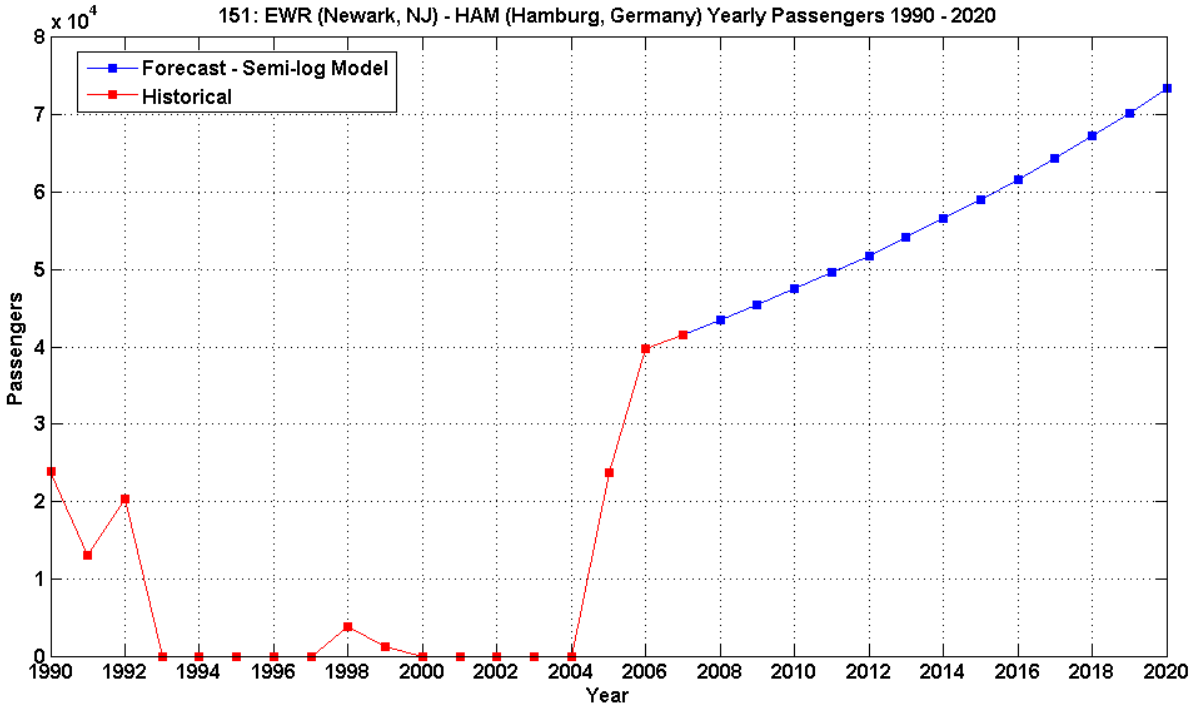
151: EWR (Newark, NJ) - HAM (Hamburg, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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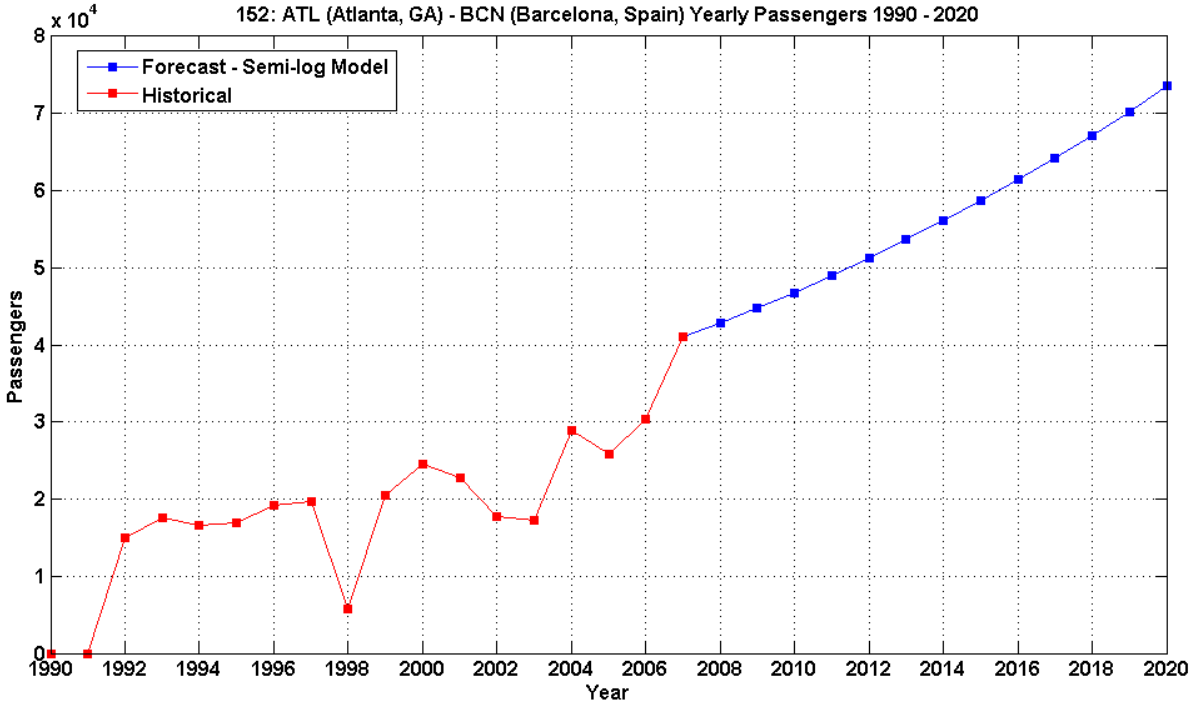
152: ATL (Atlanta, GA) - BCN (Barcelona, Spain) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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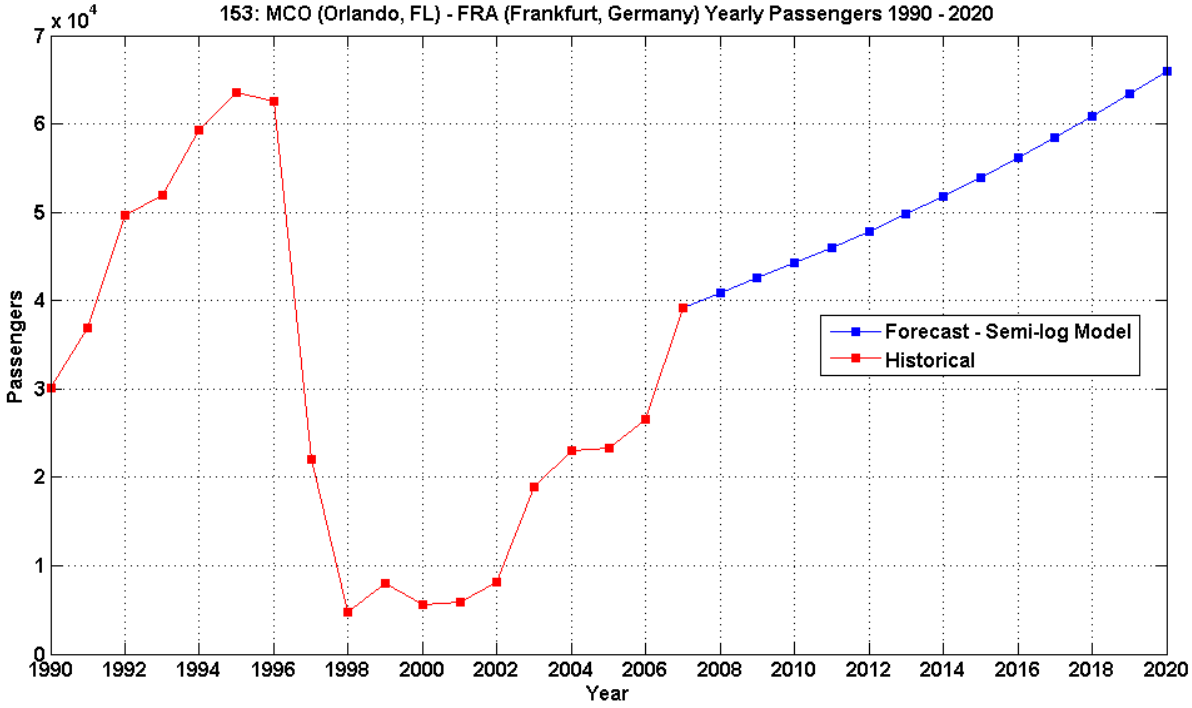
153: MCO (Orlando, FL) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^4
Passengers
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Forecast - Semi-log Model
Historical
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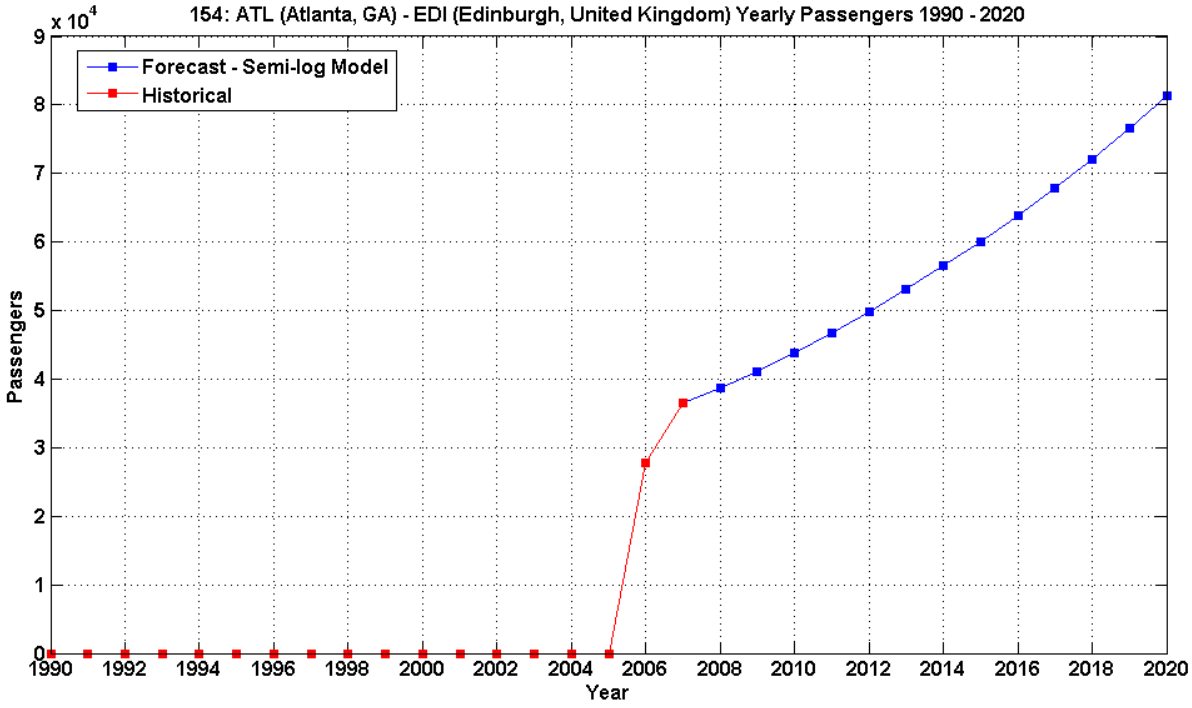
154: ATL (Atlanta, GA) - EDI (Edinburgh, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Passengers
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Forecast - Semi-log Model
Historical
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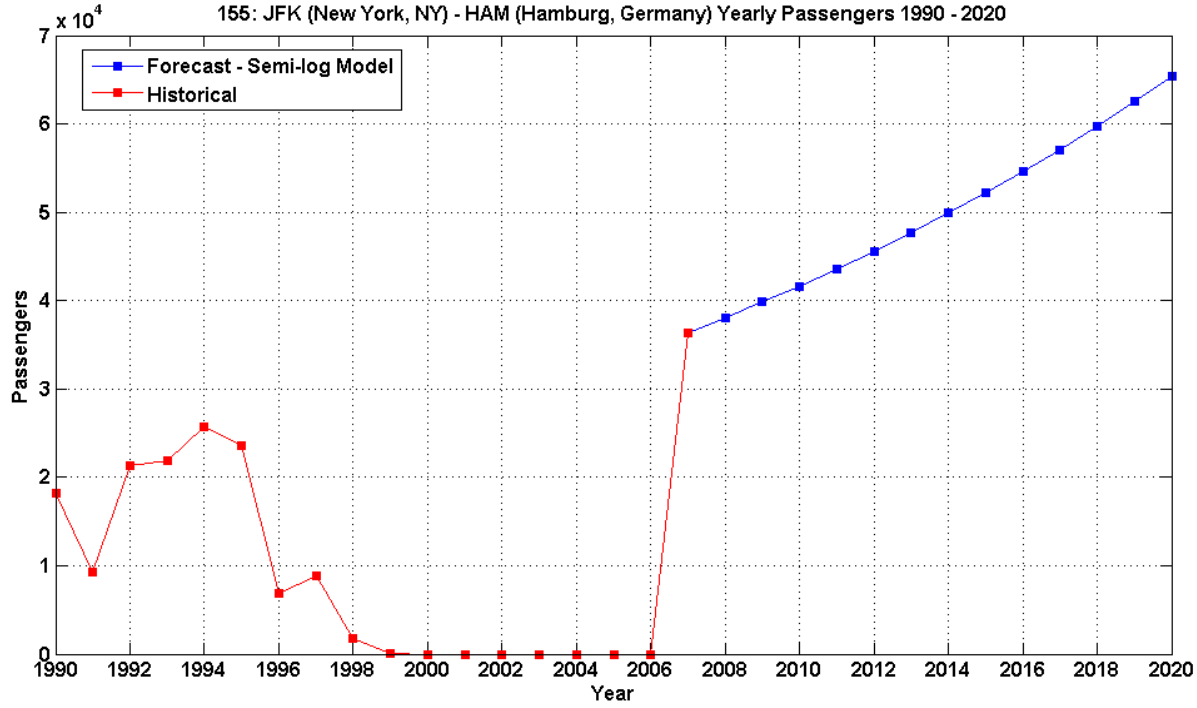
155: JFK (New York, NY) - HAM (Hamburg, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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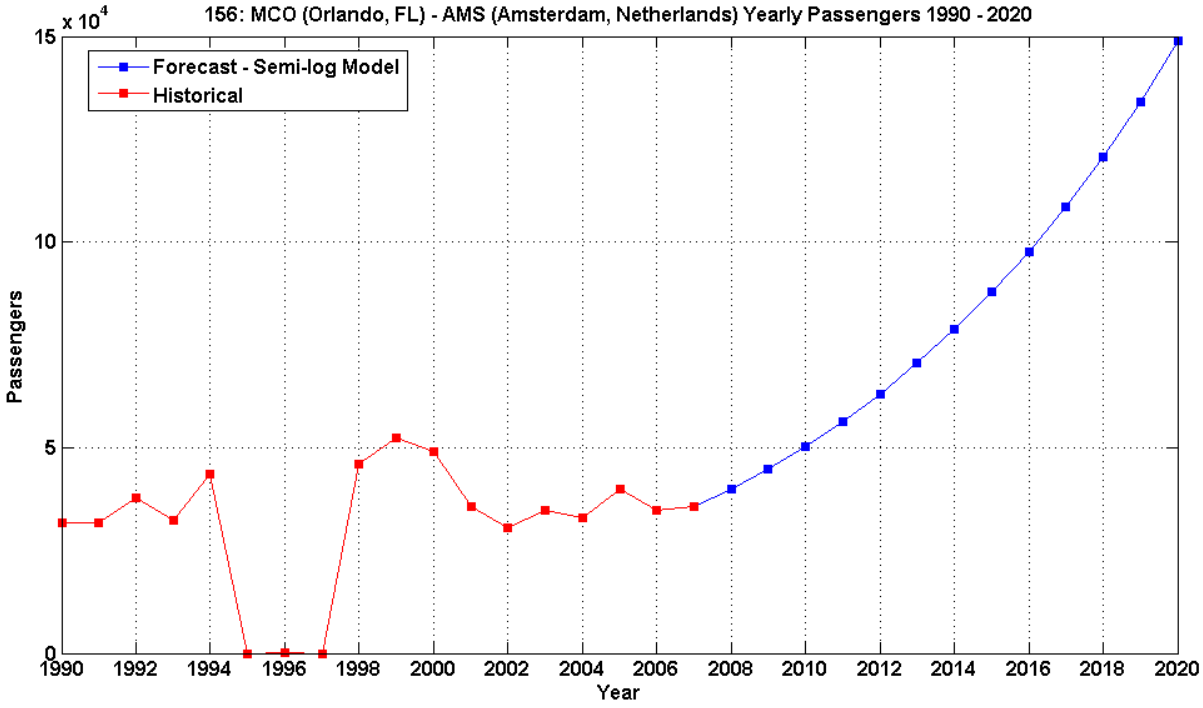
156: MCO (Orlando, FL) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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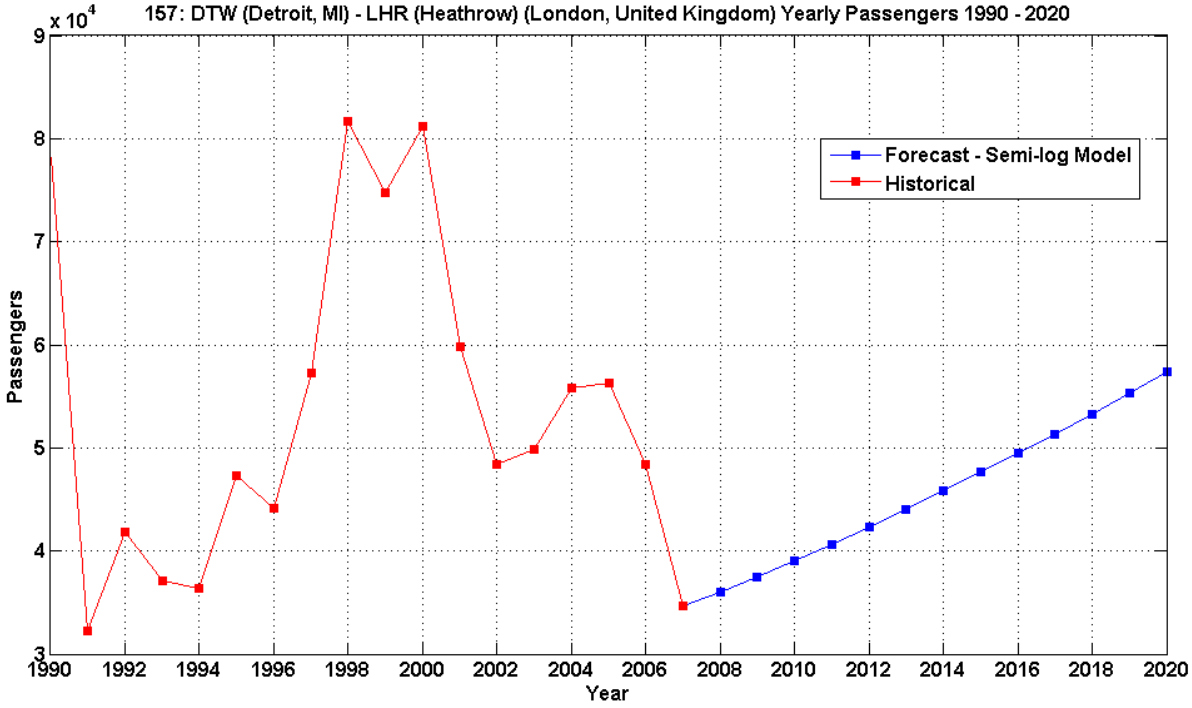
x 10^4
157: DTW (Detroit, MI) - LHR (Heathrow) (London, United Kingdom) Yearly Passengers 1990 - 2020
Forecast - Semi-log Model
Historical
Passengers
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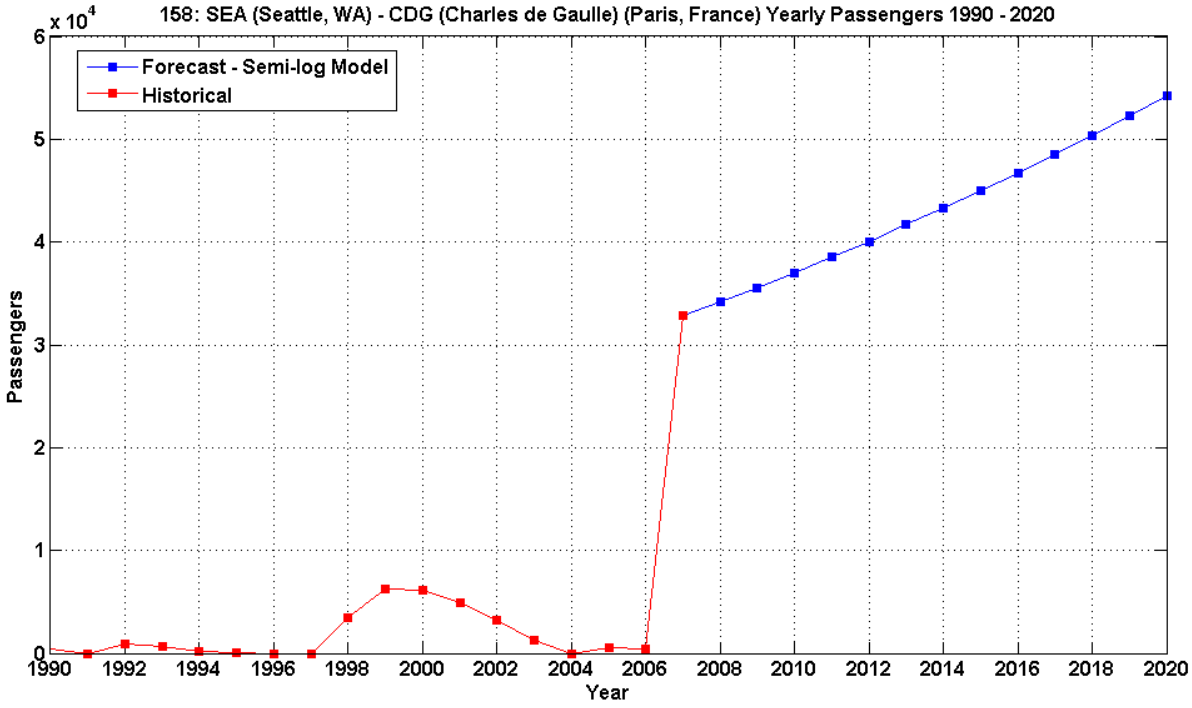
x 10^4
158: SEA (Seattle, WA) - CDG (Charles de Gaulle) (Paris, France) Yearly Passengers 1990 - 2020
Forecast - Semi-log Model
Historical
Passengers
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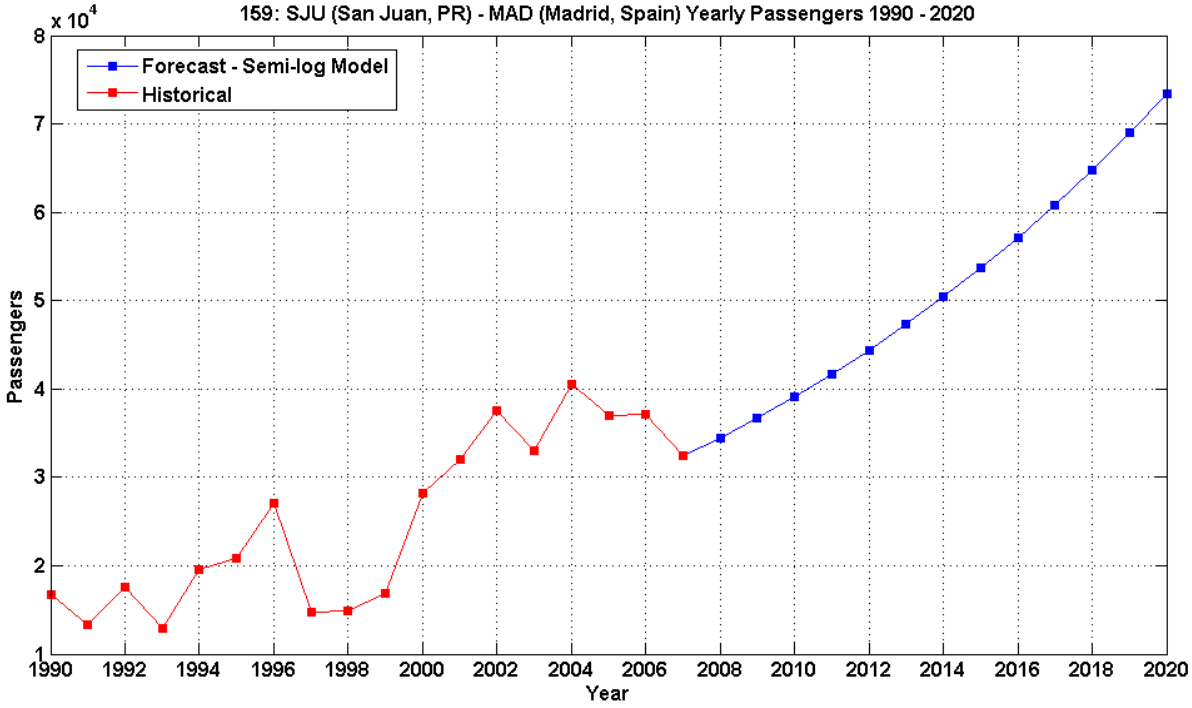
159: SJU (San Juan, PR) - MAD (Madrid, Spain) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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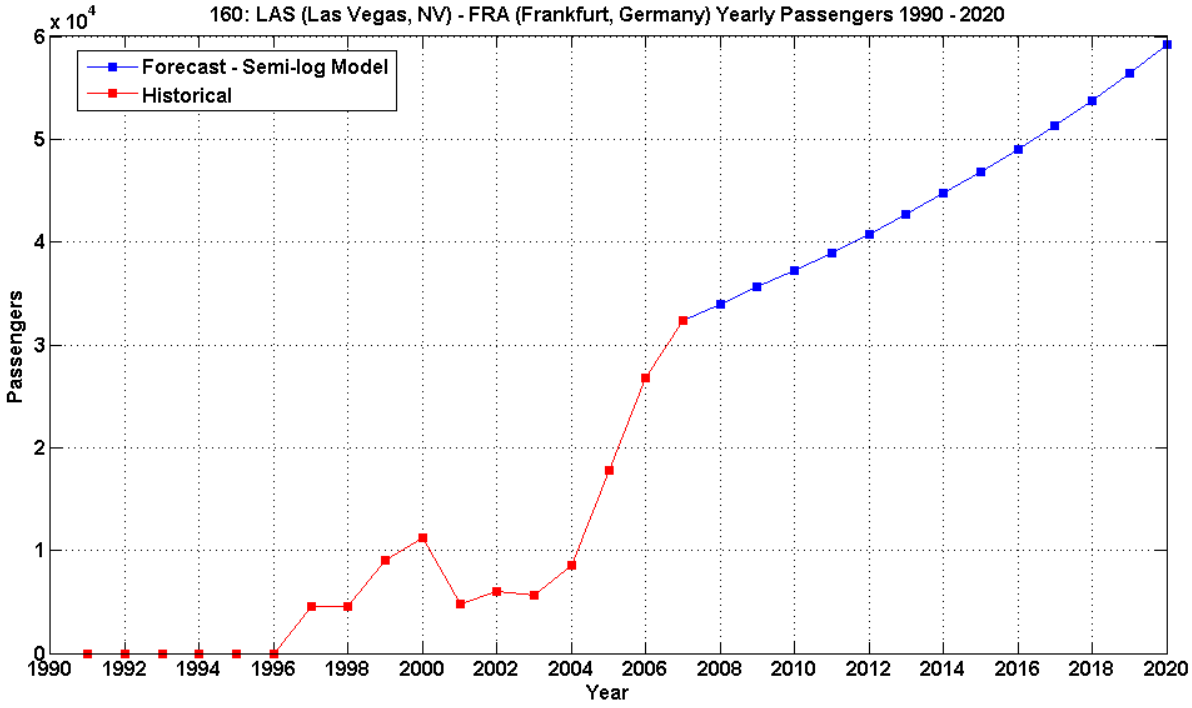
160: LAS (Las Vegas, NV) - FRA (Frankfurt, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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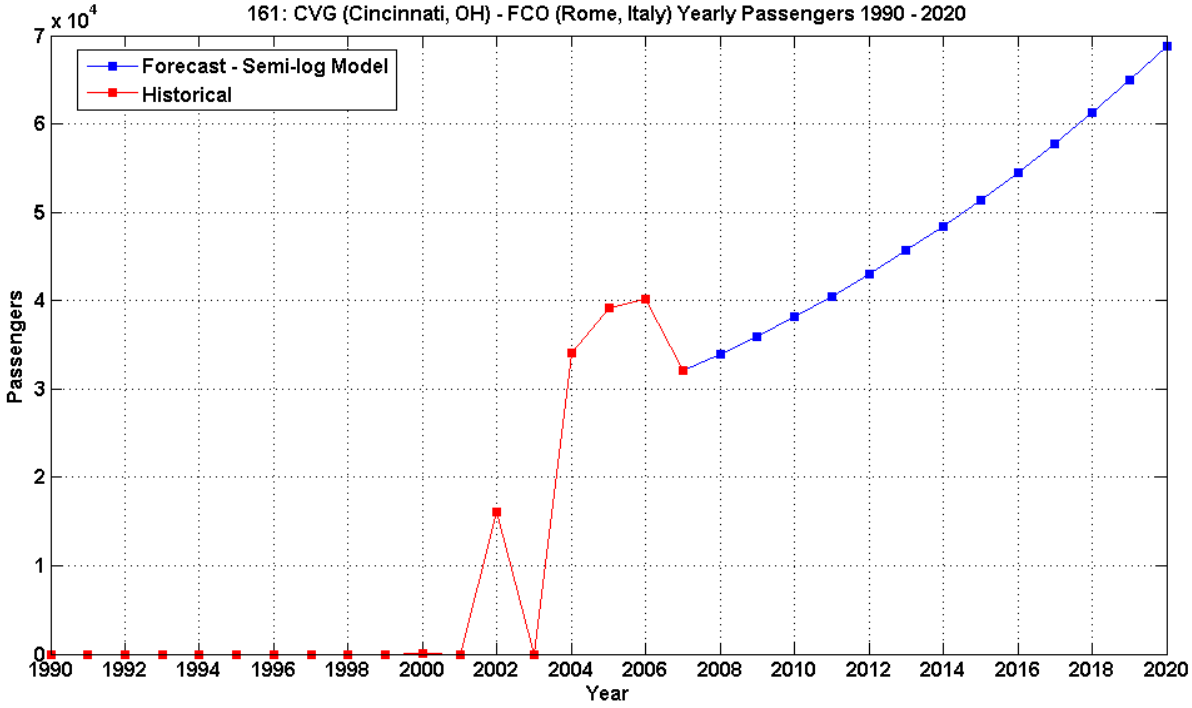
161: CVG (Cincinnati, OH) - FCO (Rome, Italy) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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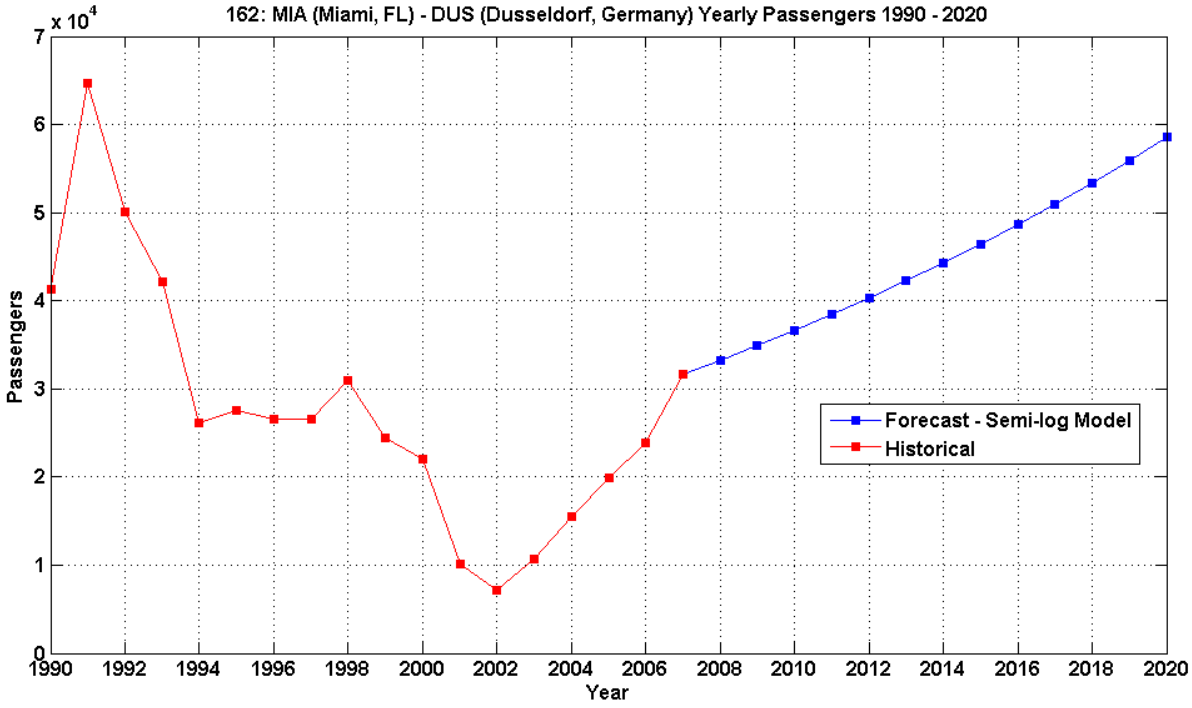
162: MIA (Miami, FL) - DUS (Dusseldorf, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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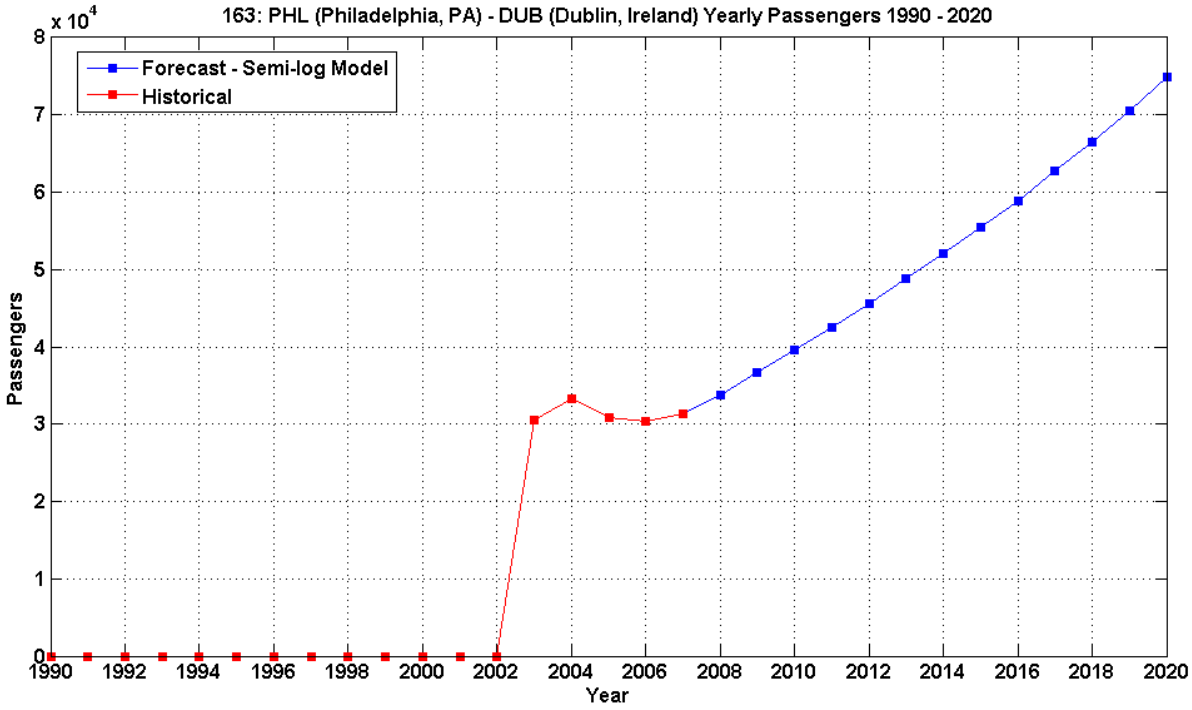
163: PHL (Philadelphia, PA) - DUB (Dublin, Ireland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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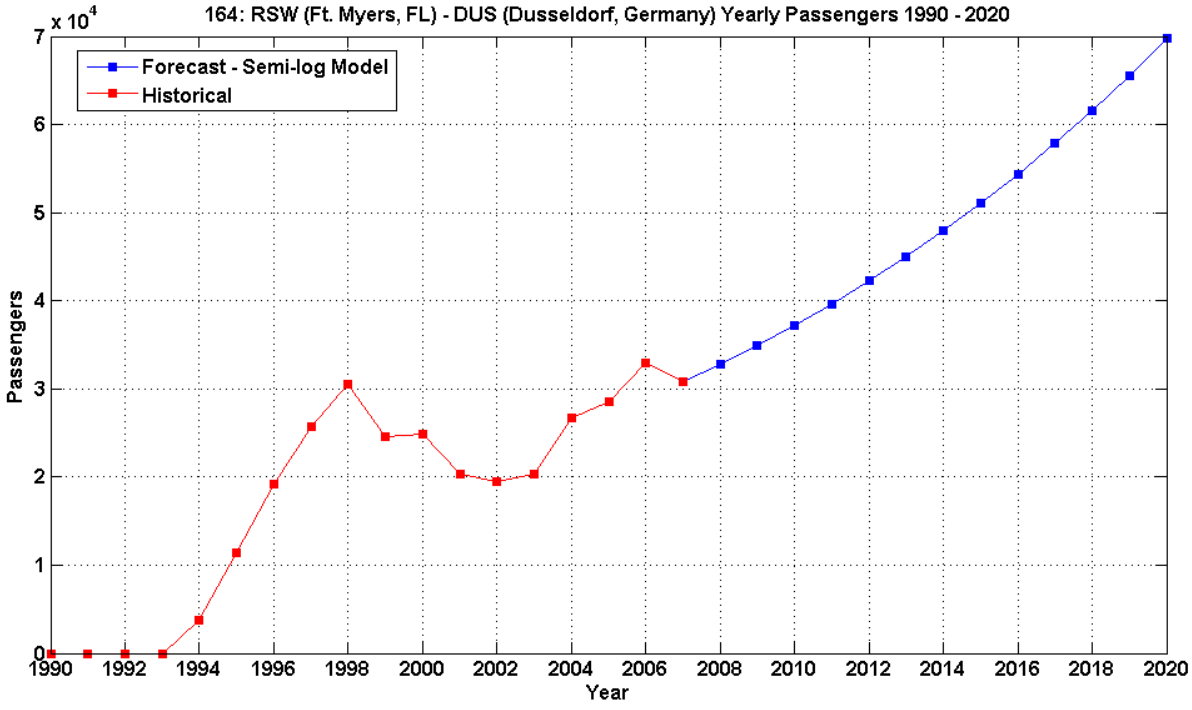
164: RSW (Ft. Myers, FL) - DUS (Dusseldorf, Germany) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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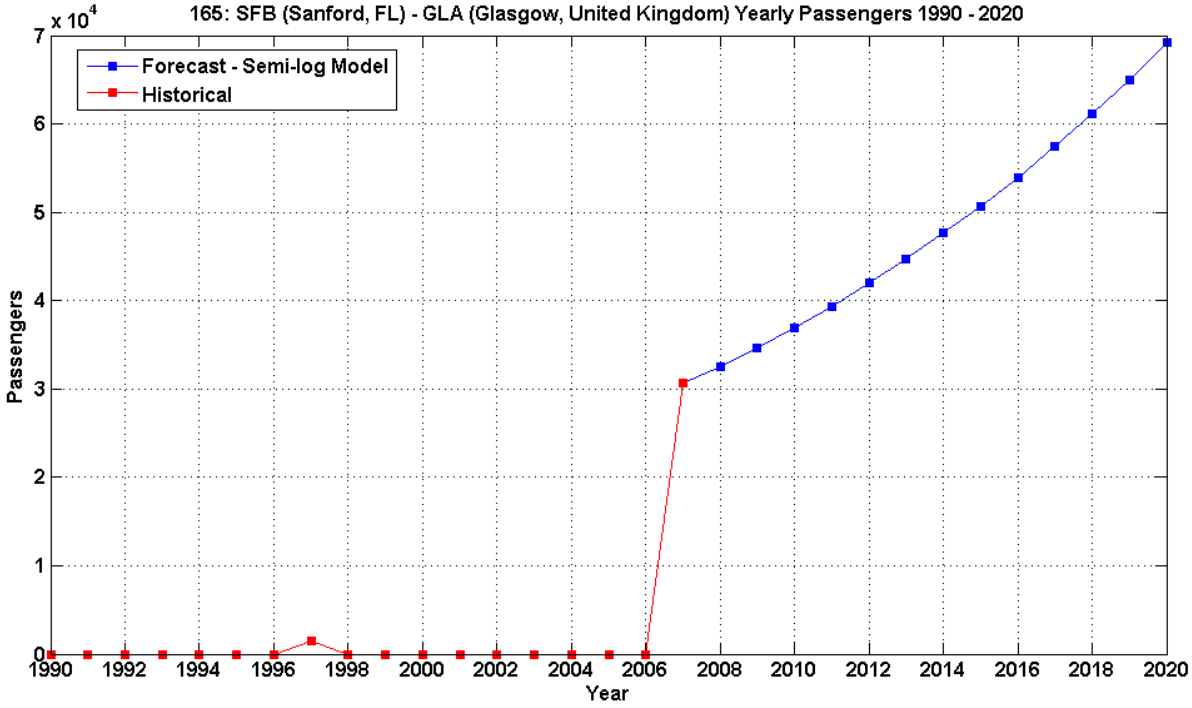
165: SFB (Sanford, FL) - GLA (Glasgow, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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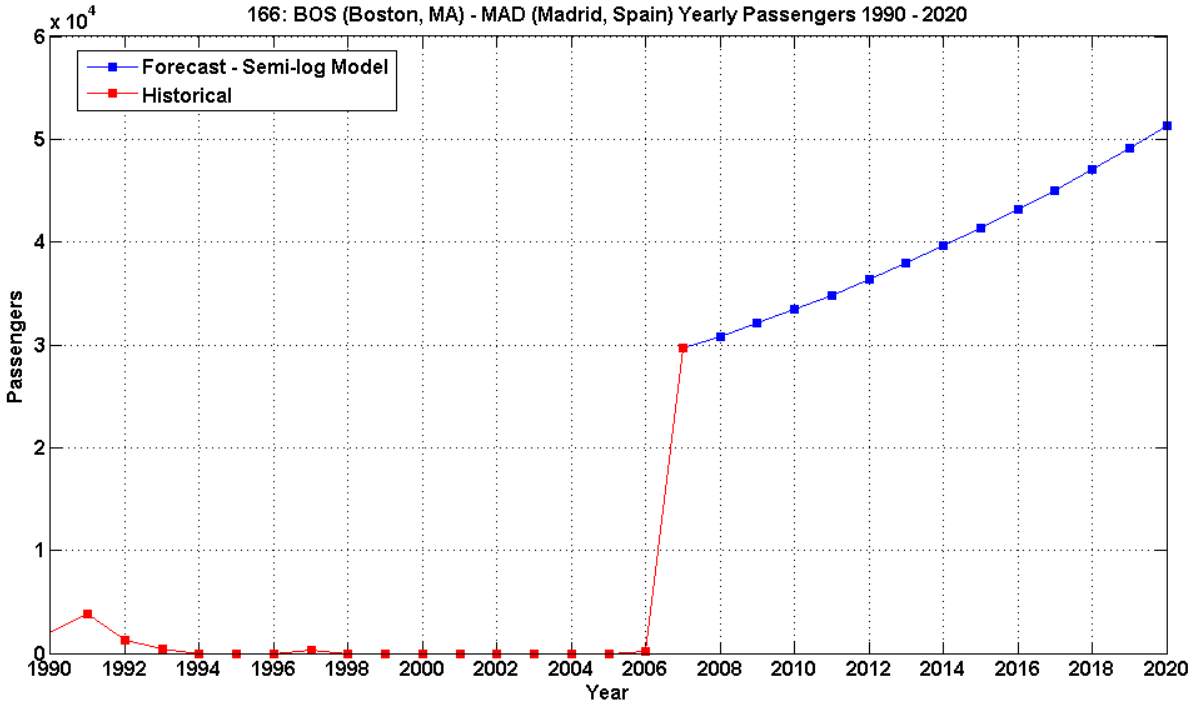
166: BOS (Boston, MA) - MAD (Madrid, Spain) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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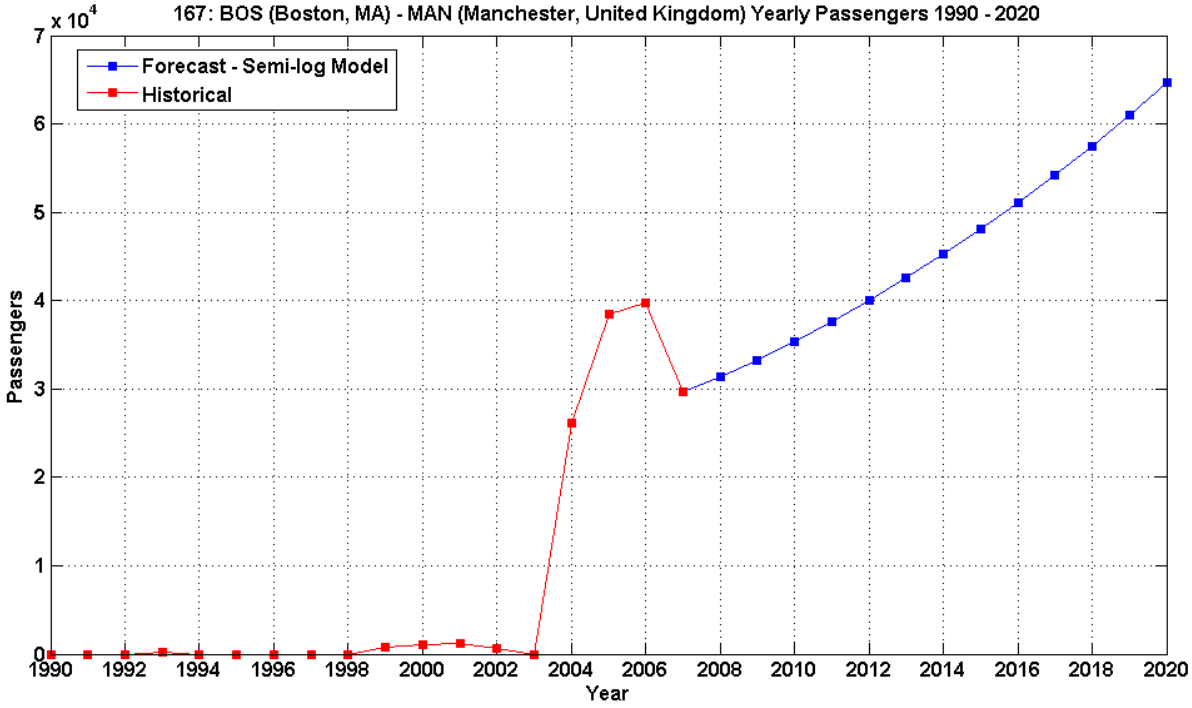
167: BOS (Boston, MA) - MAN (Manchester, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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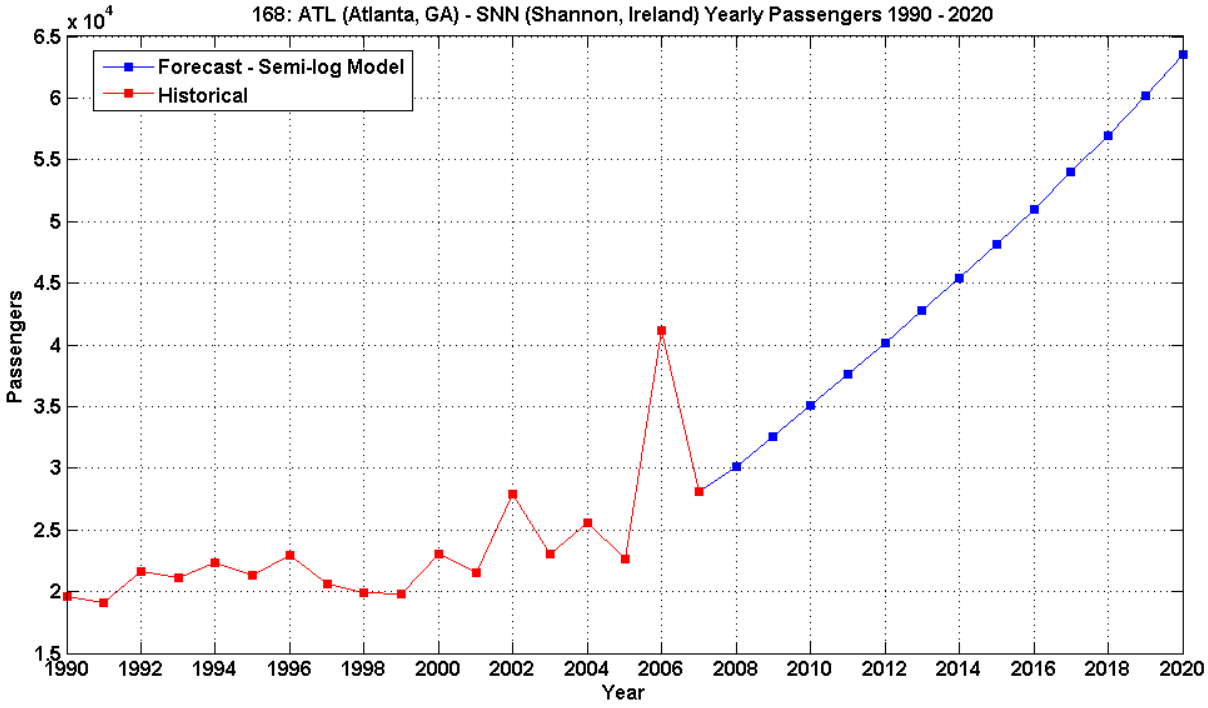
168: ATL (Atlanta, GA) - SNN (Shannon, Ireland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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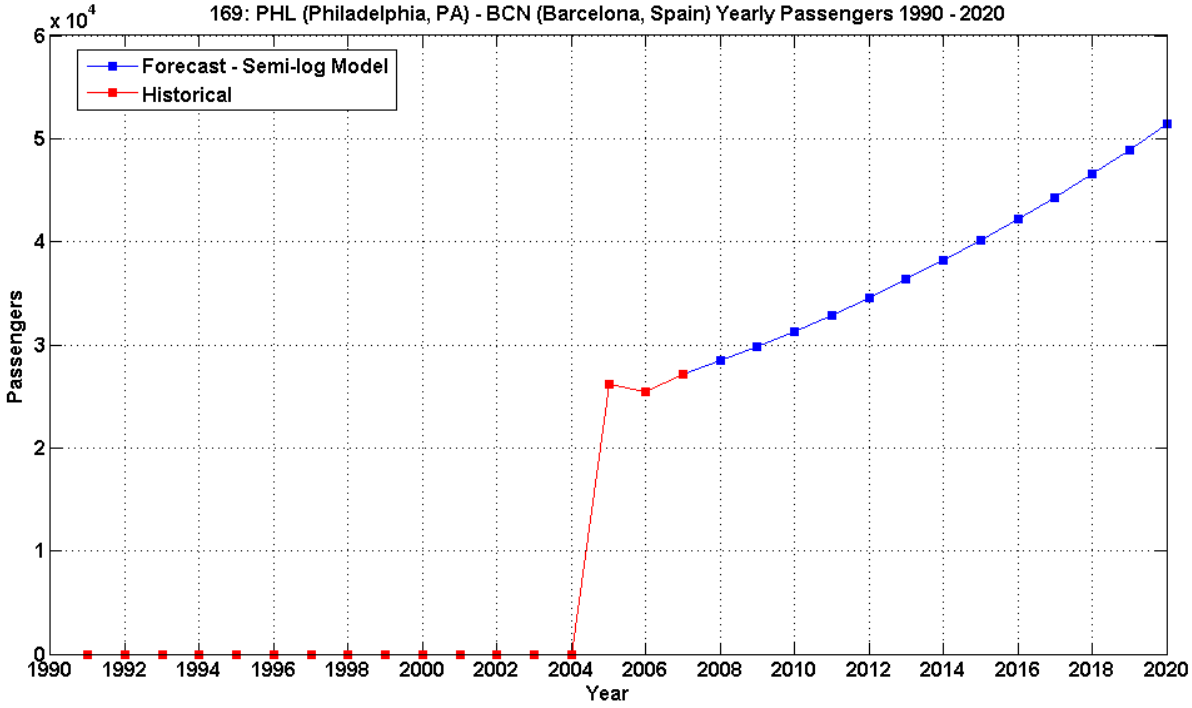
169: PHL (Philadelphia, PA) - BCN (Barcelona, Spain) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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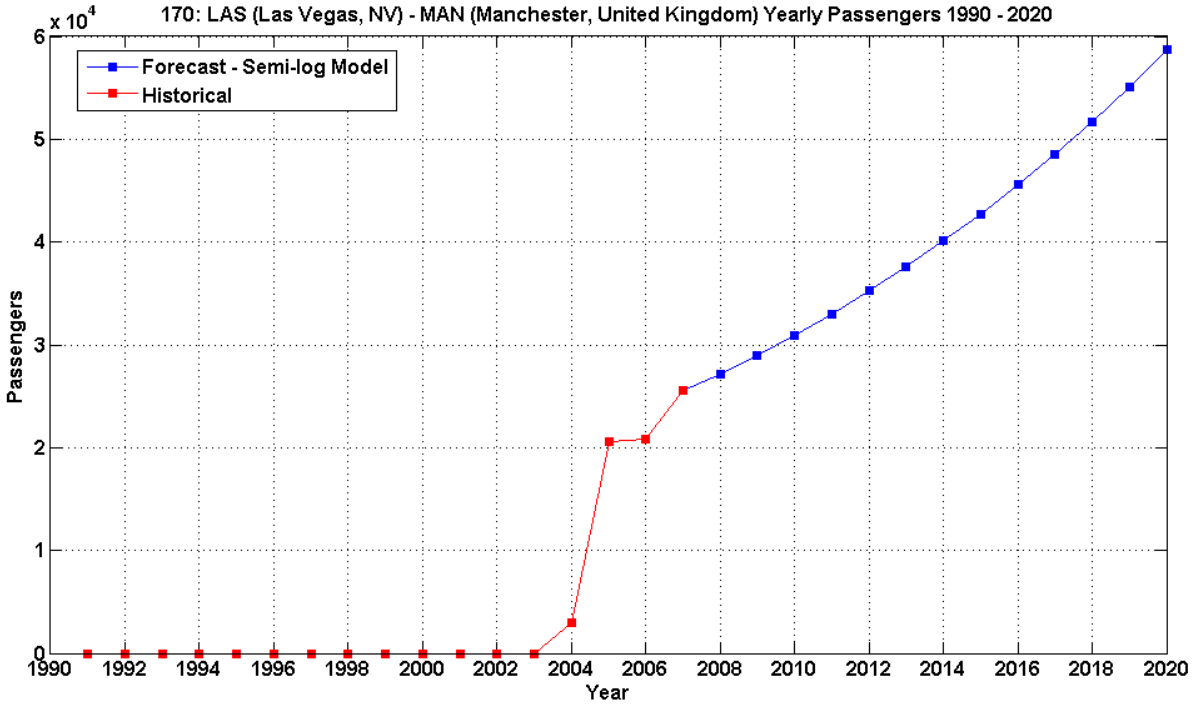
170: LAS (Las Vegas, NV) - MAN (Manchester, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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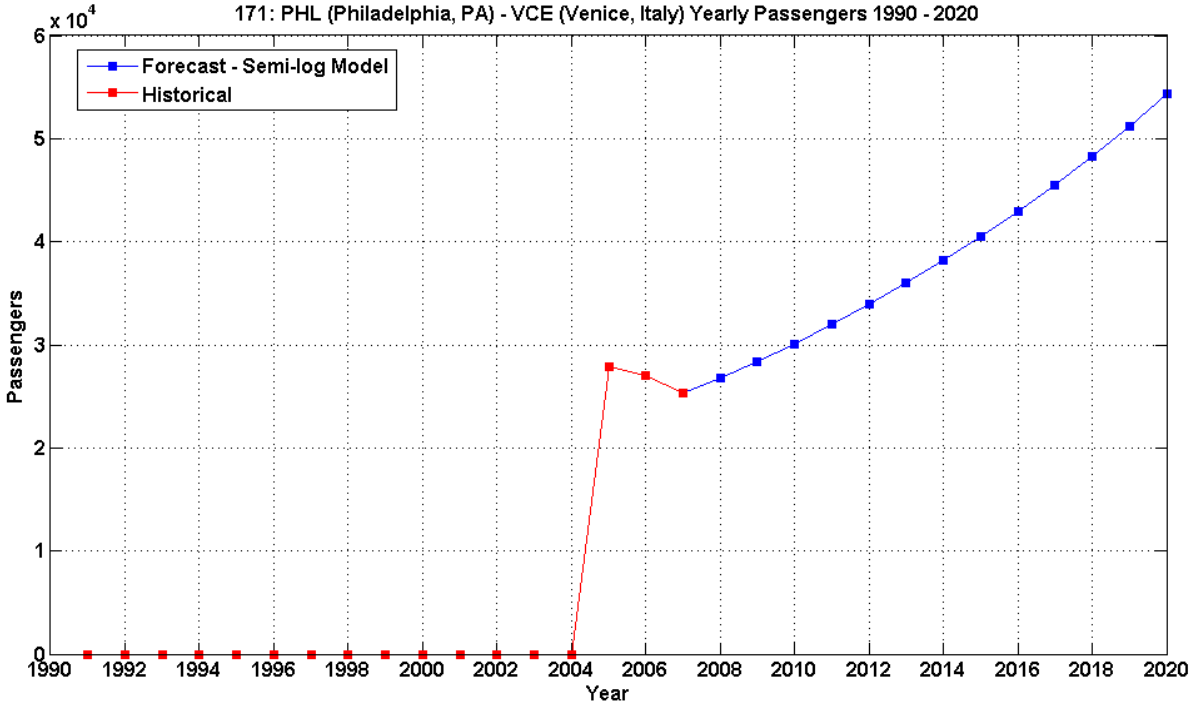
171: PHL (Philadelphia, PA) - VCE (Venice, Italy) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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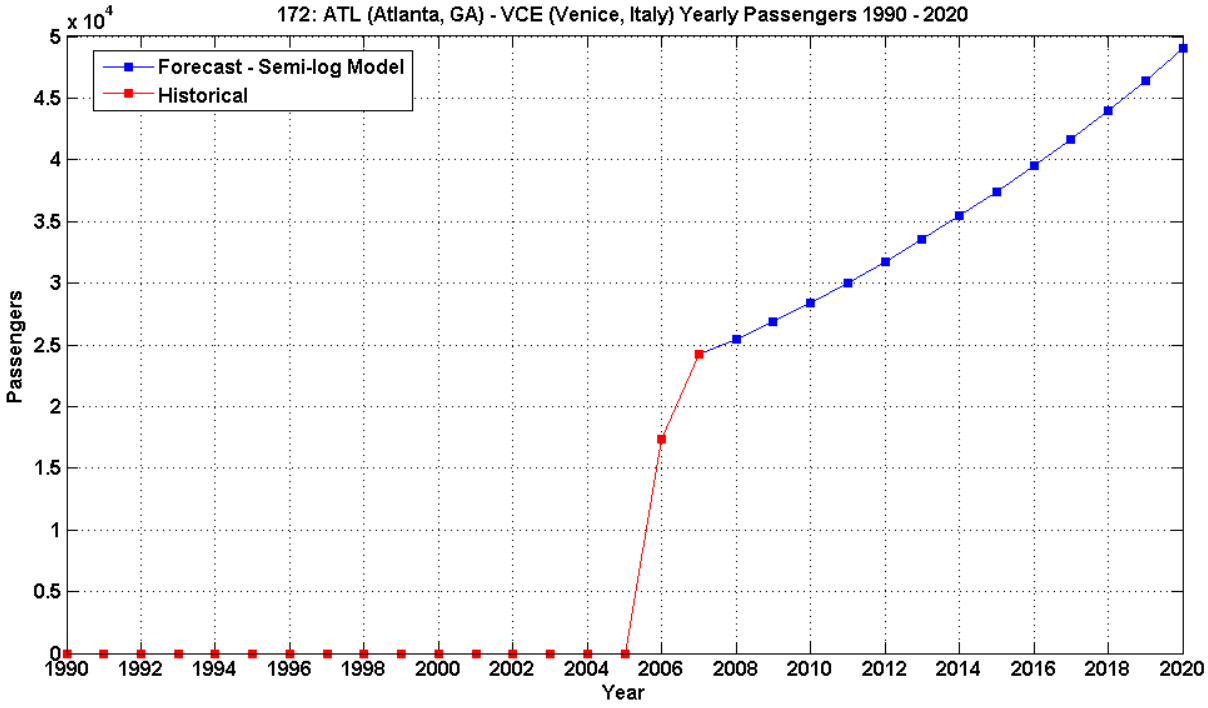
172: ATL (Atlanta, GA) - VCE (Venice, Italy) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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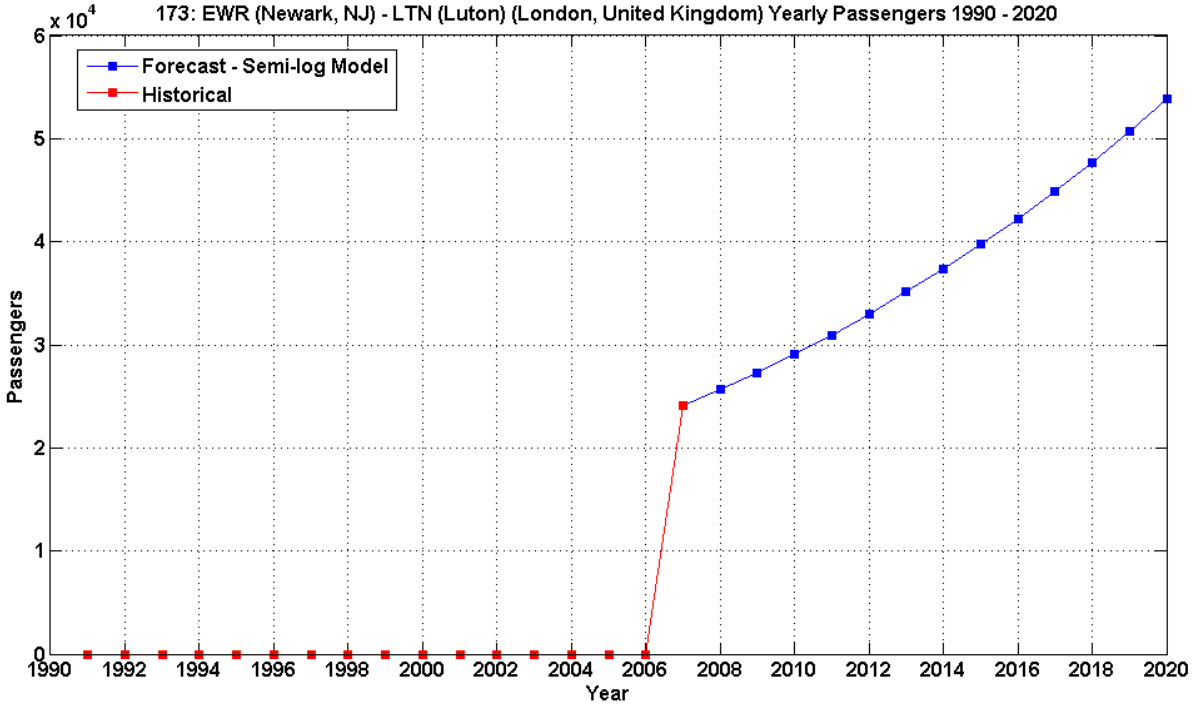
173: EWR (Newark, NJ) - LTN (Luton) (London, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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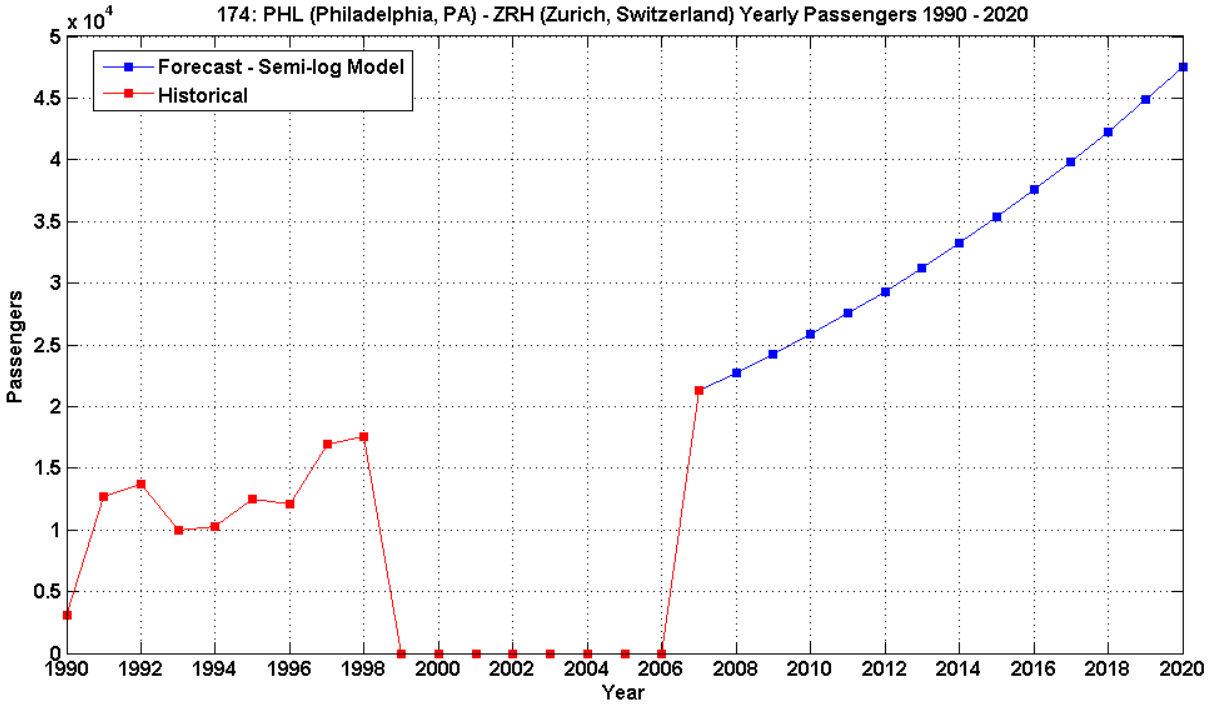
174: PHL (Philadelphia, PA) - ZRH (Zurich, Switzerland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
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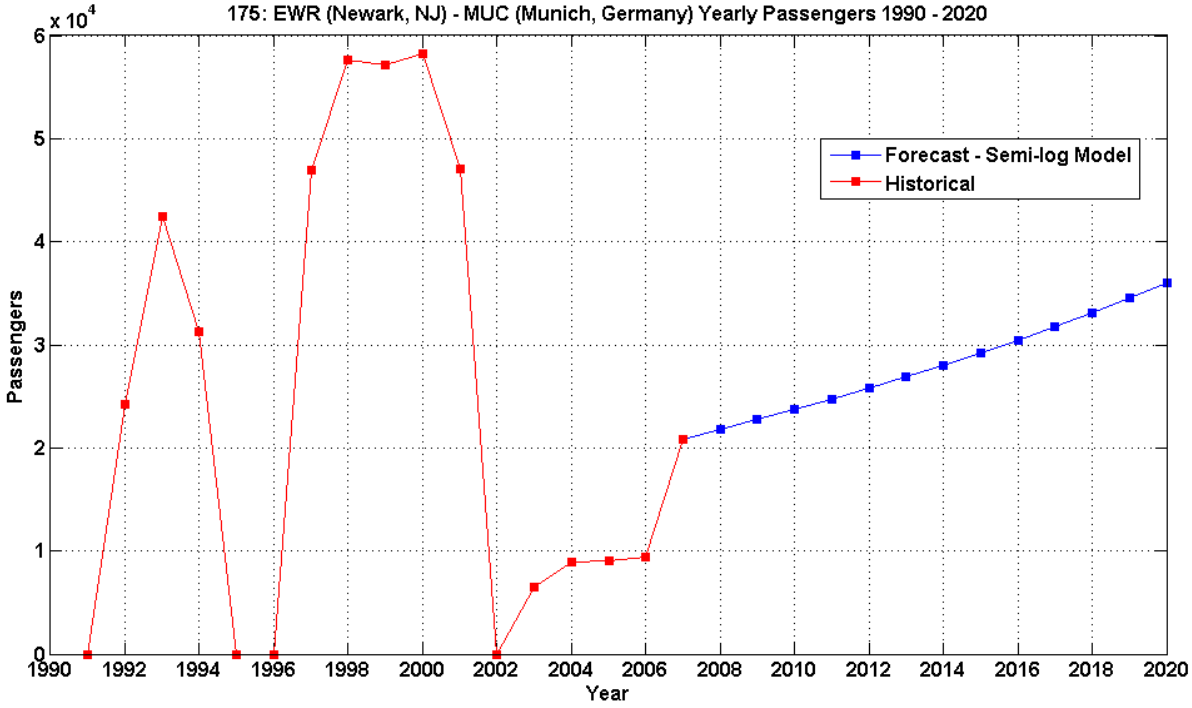
175: EWR (Newark, NJ) - MUC (Munich, Germany) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical
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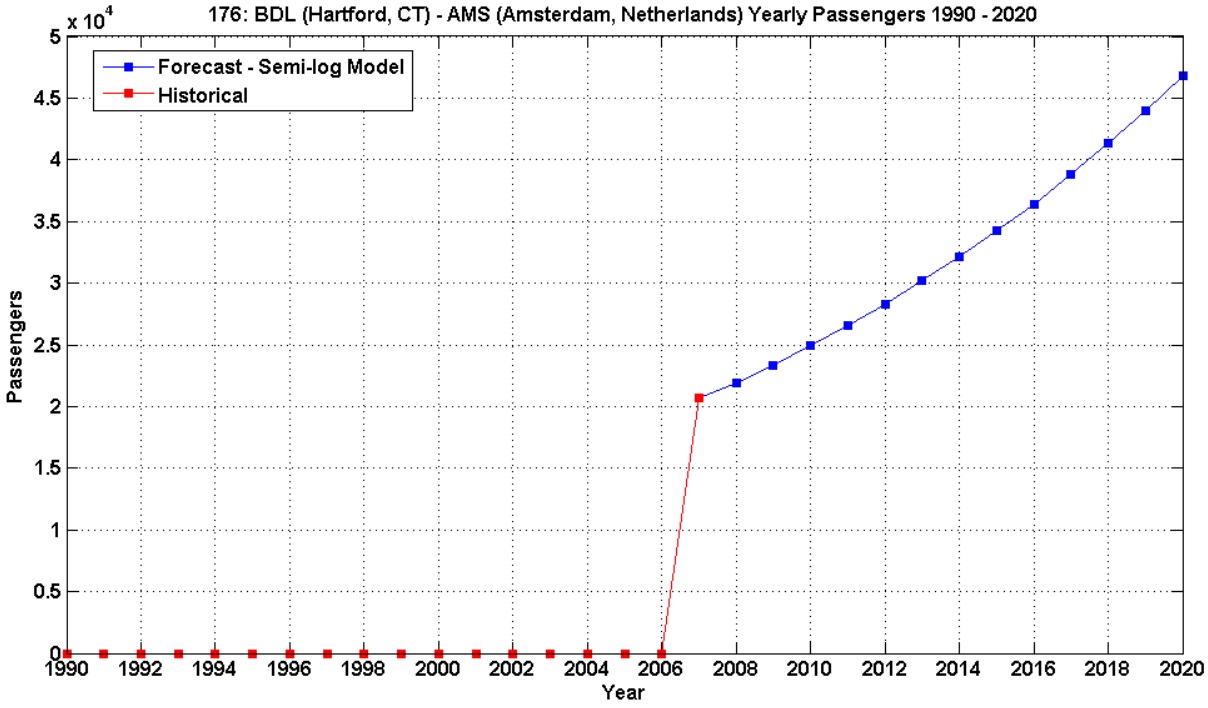
176: BDL (Hartford, CT) - AMS (Amsterdam, Netherlands) Yearly Passengers 1990 - 2020
x 10^4
Passengers
Year
Forecast - Semi-log Model
Historical
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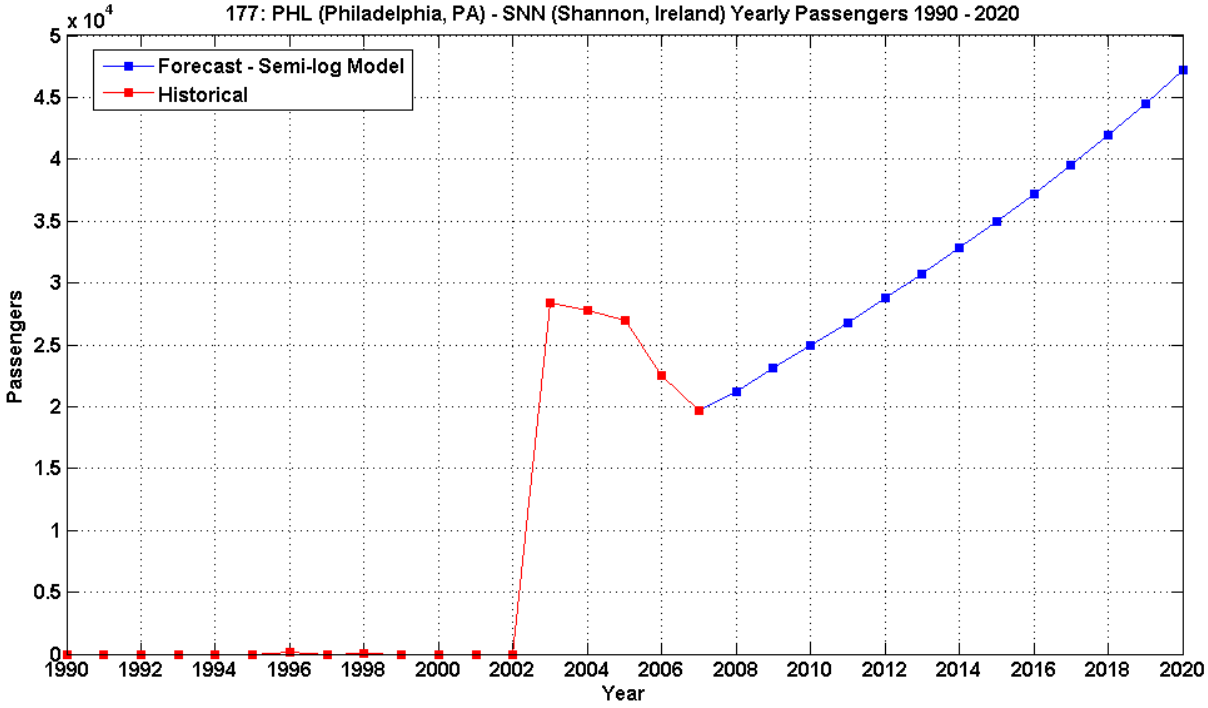
177: PHL (Philadelphia, PA) - SNN (Shannon, Ireland) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.5
1
1.5
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3.5
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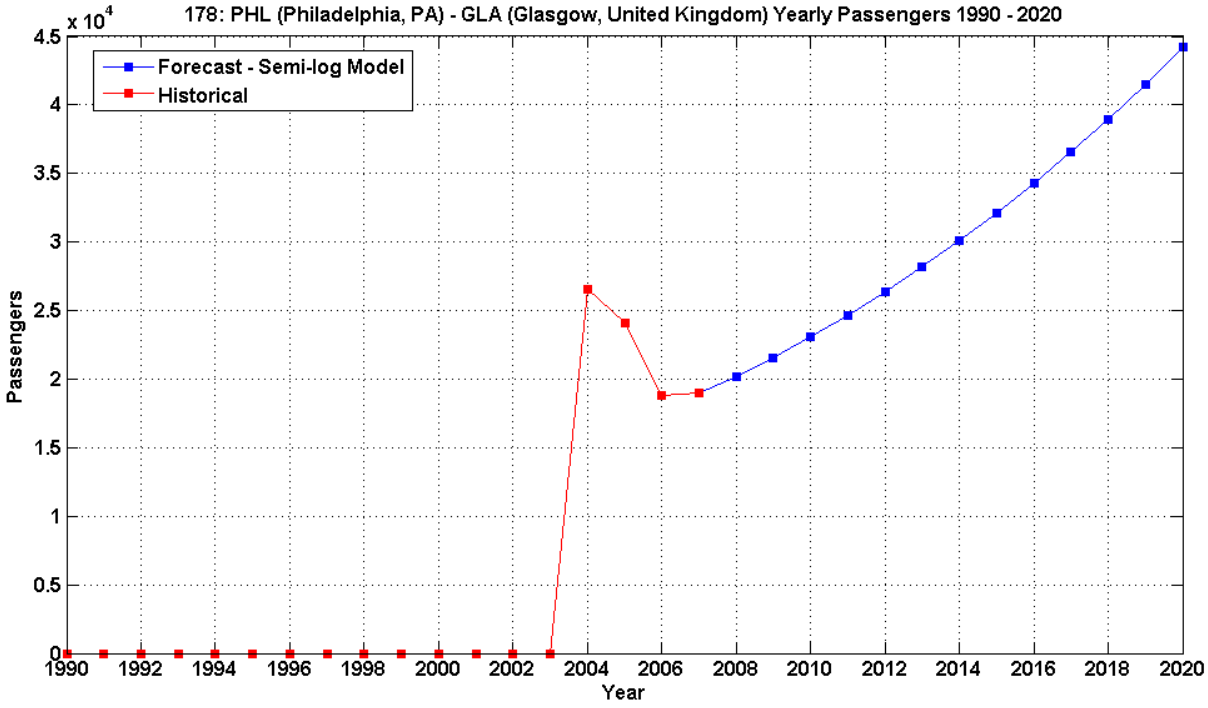
2018
2020


178: PHL (Philadelphia, PA) - GLA (Glasgow, United Kingdom) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
0.5
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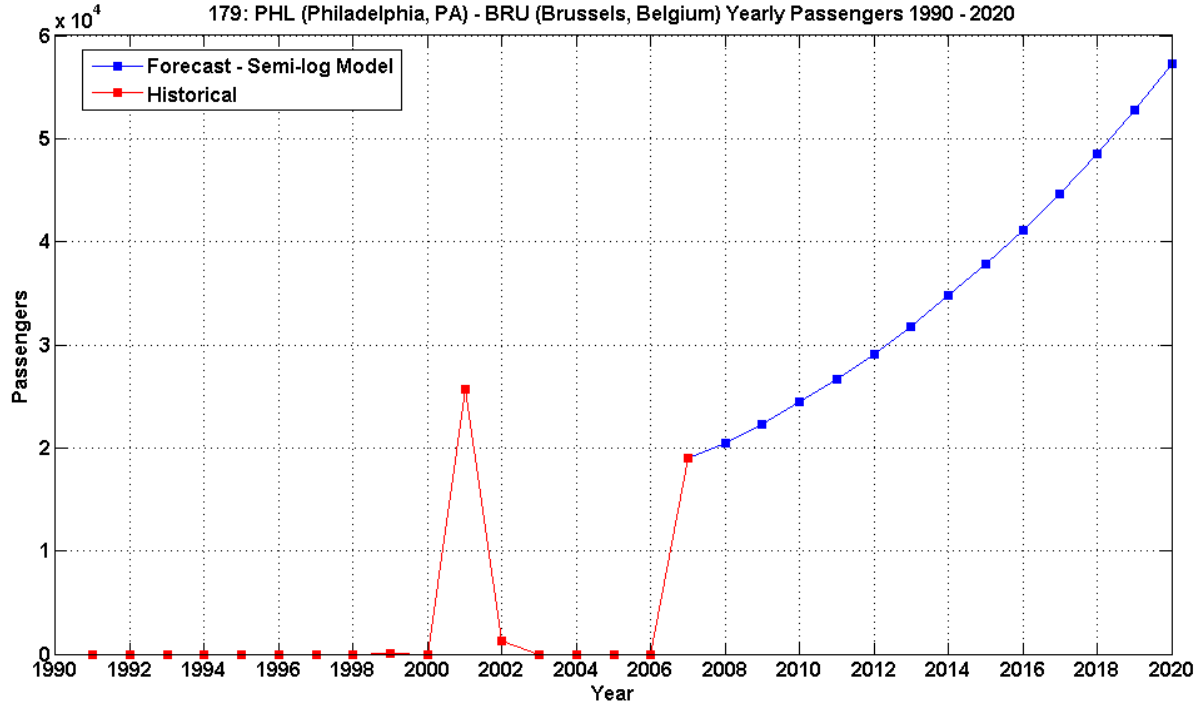
179: PHL (Philadelphia, PA) - BRU (Brussels, Belgium) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
1
2
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1990
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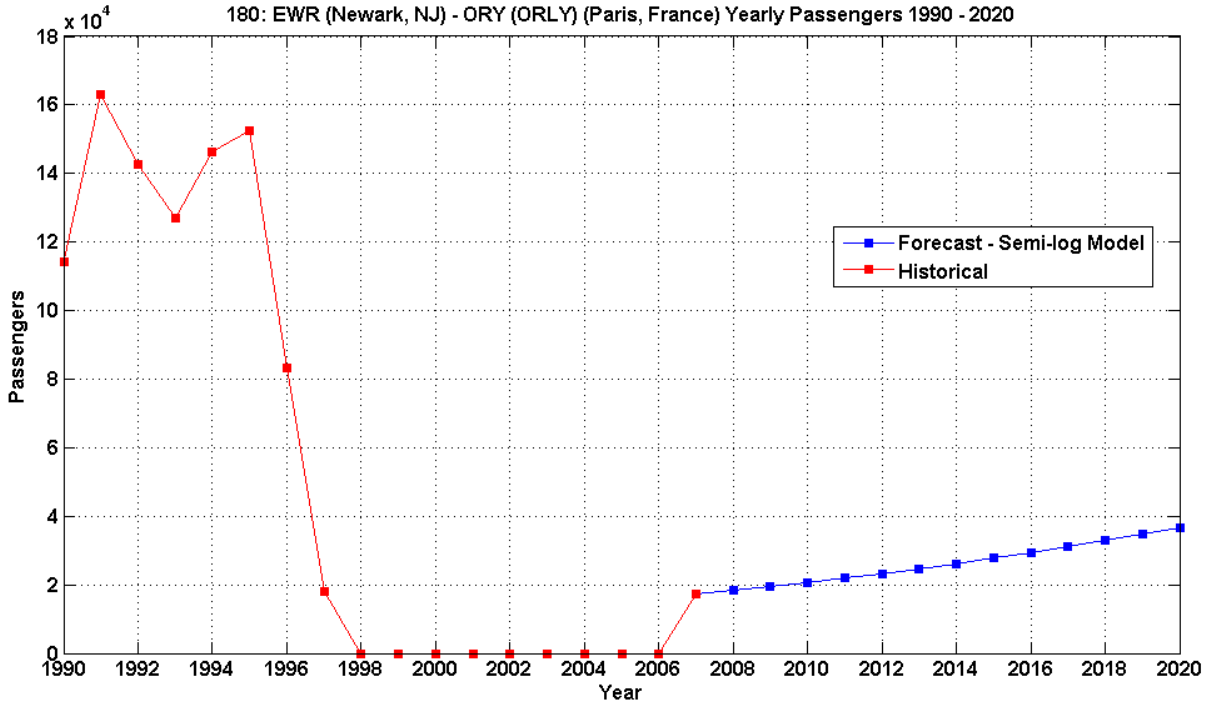
180: EWR (Newark, NJ) - ORY (ORLY) (Paris, France) Yearly Passengers 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers
Year
0
2
4
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1990
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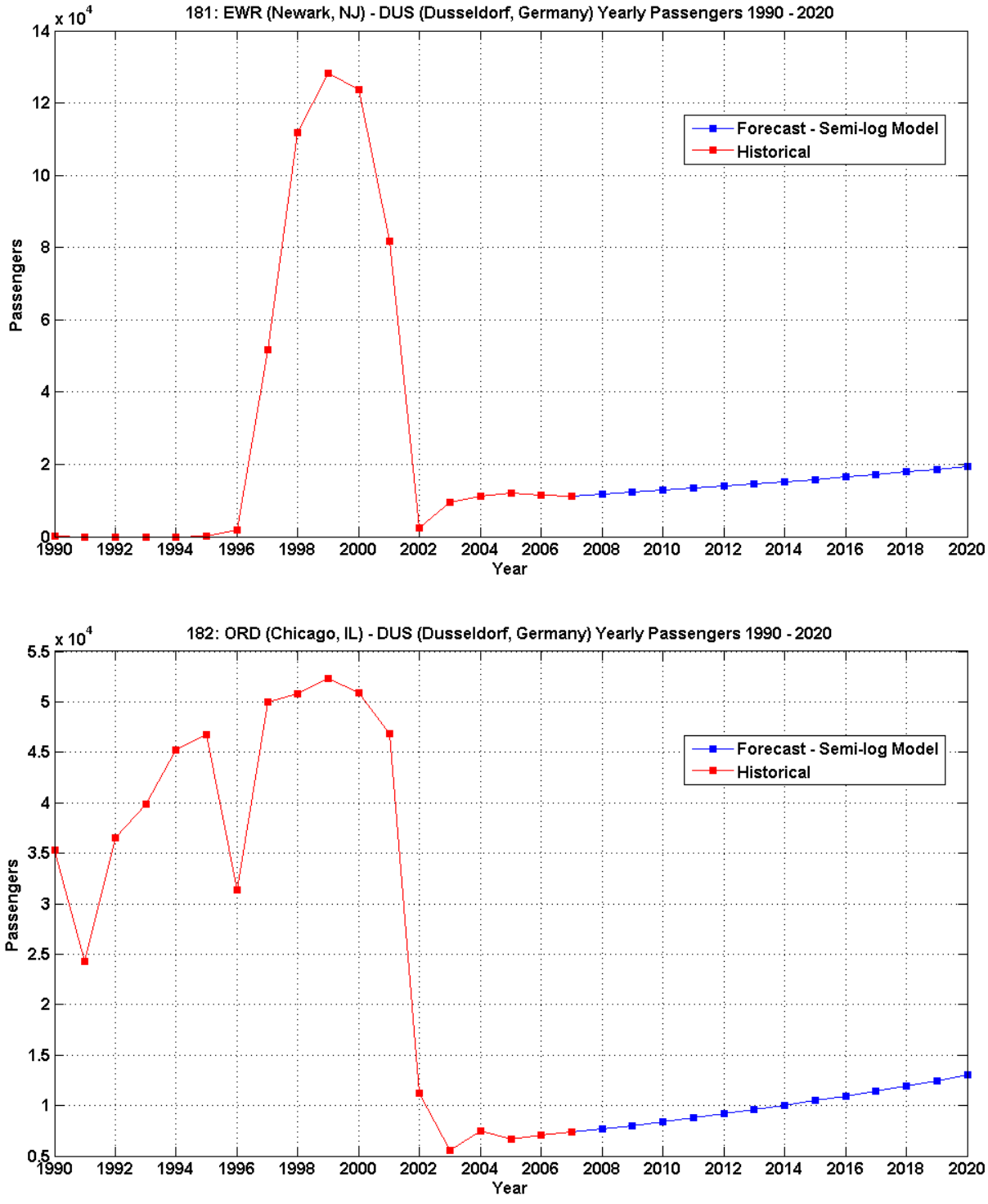


Figure C.1-1: Passenger Traffic for 182 Airport Pairs from the United States to Selected Nine European Countries during 1990 – 2020 in the Order of Decreasing 2007 Passenger Traffic
(Historical Source: 1990 - 2007 T100 International Market Data)

Table C.1-1 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (1 – 30) Airport Pairs from the United States to Selected Nine European Countries in the Order of Decreasing 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airports	US City, State	European Airports	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
1	JFK	New York, NY	LHR (Heathrow)	London, United Kingdom	1,352,621	1,628,779	2,236,172	3,045,512	7	12
2	ORD	Chicago, IL	LHR (Heathrow)	London, United Kingdom	754,060	908,785	1,250,299	1,703,973	5	12
3	LAX	Los Angeles, CA	LHR (Heathrow)	London, United Kingdom	720,705	863,869	1,174,527	1,580,406	5	12
4	JFK	New York, NY	CDG (Charles de Gaulle)	Paris, France	598,834	714,941	967,560	1,299,136	3	12
5	IAD	Washington, DC	LHR (Heathrow)	London, United Kingdom	498,183	599,560	818,431	1,101,612	3	12
6	SFO	San Francisco, CA	LHR (Heathrow)	London, United Kingdom	493,762	593,798	809,596	1,087,422	3	12
7	BOS	Boston, MA	LHR (Heathrow)	London, United Kingdom	424,873	506,861	686,650	922,678	3	12
8	MIA	Miami, FL	LHR (Heathrow)	London, United Kingdom	408,631	498,456	696,448	962,644	3	12
9	ORD	Chicago, IL	FRA	Frankfurt, Germany	404,051	463,844	582,194	729,822	4	12
10	IAD	Washington, DC	FRA	Frankfurt, Germany	378,021	433,351	539,676	668,157	2	12
11	DTW	Detroit, MI	AMS	Amsterdam, Netherlands	366,228	491,355	782,587	1,200,110	1	12
12	EWR	Newark, NJ	LHR (Heathrow)	London, United Kingdom	338,400	406,193	553,783	748,128	2	12
13	JFK	New York, NY	FRA	Frankfurt, Germany	333,114	382,086	478,571	599,517	3	12
14	MCO	Orlando, FL	LGW (Gatwick)	London, United Kingdom	328,093	394,291	537,396	725,418	2	12
15	SFO	San Francisco, CA	FRA	Frankfurt, Germany	279,700	320,401	398,537	492,375	2	12
16	MSP	Minneapolis/St. Paul, MN	AMS	Amsterdam, Netherlands	273,643	341,983	492,303	697,934	1	12
17	IAD	Washington, DC	CDG (Charles de Gaulle)	Paris, France	259,739	309,926	417,037	553,406	2	12
18	ATL	Atlanta, GA	CDG (Charles de Gaulle)	Paris, France	258,415	308,017	414,432	551,040	2	12
19	LAX	Los Angeles, CA	CDG (Charles de Gaulle)	Paris, France	253,251	300,967	403,367	535,093	2	12
20	JFK	New York, NY	FCO	Rome, Italy	252,391	297,224	395,228	524,687	4	12
21	EWR	Newark, NJ	CDG (Charles de Gaulle)	Paris, France	250,082	297,619	399,980	532,716	3	12
22	JFK	New York, NY	AMS	Amsterdam, Netherlands	243,468	348,888	625,228	1,084,502	2	12
23	JFK	New York, NY	DUB	Dublin, Ireland	234,265	293,048	404,453	538,827	3	12
24	IAH	Houston, TX	LGW (Gatwick)	London, United Kingdom	229,033	268,592	349,414	446,606	2	12
25	JFK	New York, NY	MAD	Madrid, Spain	224,382	254,991	319,642	401,739	3	12
26	MIA	Miami, FL	CDG (Charles de Gaulle)	Paris, France	210,240	254,267	350,200	477,211	2	12
27	EWR	Newark, NJ	FRA	Frankfurt, Germany	203,450	232,617	289,331	359,524	3	12
28	IAH	Houston, TX	CDG (Charles de Gaulle)	Paris, France	201,247	230,926	290,312	360,640	2	12
29	DTW	Detroit, MI	FRA	Frankfurt, Germany	198,003	212,631	236,660	262,027	2	12
30	ATL	Atlanta, GA	FRA	Frankfurt, Germany	192,871	220,868	275,032	341,183	2	12

Table C.1-2 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (31 – 60) Airport Pairs from the United States to Selected Nine European Countries in the Order of Decreasing 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airports	US City, State	European Airports	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
31	ATL	Atlanta, GA	LGW (Gatwick)	London, United Kingdom	190,248	231,756	322,669	441,412	2	12
32	DFW	Dallas/Ft.Worth, TX	LGW (Gatwick)	London, United Kingdom	189,793	234,702	336,941	478,528	2	12
33	LAX	Los Angeles, CA	FRA	Frankfurt, Germany	186,737	213,206	264,458	327,314	3	12
34	IAH	Houston, TX	AMS	Amsterdam, Netherlands	186,530	256,909	427,715	686,541	3	12
35	ORD	Chicago, IL	CDG (Charles de Gaulle)	Paris, France	183,399	219,144	297,199	399,316	3	12
36	BOS	Boston, MA	CDG (Charles de Gaulle)	Paris, France	177,834	210,339	280,888	372,111	2	12
37	JFK	New York, NY	ZRH	Zurich, Switzerland	173,001	207,745	279,877	370,849	2	12
38	MIA	Miami, FL	MAD	Madrid, Spain	172,784	198,906	253,753	323,676	2	12
39	PHL	Philadelphia, PA	FRA	Frankfurt, Germany	171,324	198,511	252,502	320,507	2	12
40	EWR	Newark, NJ	AMS	Amsterdam, Netherlands	171,207	244,556	435,216	748,840	3	12
41	MCO	Orlando, FL	MAN	Manchester, United Kingdom	164,288	195,196	261,485	348,229	2	12
42	IAD	Washington, DC	AMS	Amsterdam, Netherlands	154,306	220,995	393,780	675,076	2	12
43	DFW	Dallas/Ft.Worth, TX	FRA	Frankfurt, Germany	153,700	178,675	229,418	295,461	2	12
44	EWR	Newark, NJ	FCO	Rome, Italy	150,763	176,979	233,696	307,740	2	12
45	EWR	Newark, NJ	LGW (Gatwick)	London, United Kingdom	145,812	177,345	246,629	337,957	2	12
46	LAS	Las Vegas, NV	LGW (Gatwick)	London, United Kingdom	145,194	177,486	249,431	347,590	1	12
47	ORD	Chicago, IL	MUC	Munich, Germany	144,078	164,470	204,549	254,442	2	12
48	ORD	Chicago, IL	DUB	Dublin, Ireland	136,512	170,912	236,380	315,128	2	12
49	ORD	Chicago, IL	AMS	Amsterdam, Netherlands	136,363	195,574	351,216	609,619	2	12
50	ATL	Atlanta, GA	AMS	Amsterdam, Netherlands	135,832	194,331	346,238	594,750	2	12
51	PHL	Philadelphia, PA	CDG (Charles de Gaulle)	Paris, France	135,698	163,659	224,923	306,008	2	12
52	IAD	Washington, DC	MUC	Munich, Germany	134,542	153,369	189,253	232,501	2	12
53	DTW	Detroit, MI	CDG (Charles de Gaulle)	Paris, France	133,845	149,611	179,923	213,526	2	12
54	JFK	New York, NY	MXP	Milan, Italy	131,672	154,952	205,742	272,673	3	12
55	BOS	Boston, MA	FRA	Frankfurt, Germany	129,660	147,338	182,098	225,069	2	12
56	ORD	Chicago, IL	MAN	Manchester, United Kingdom	128,649	155,323	214,242	292,191	3	12
57	LAX	Los Angeles, CA	AMS	Amsterdam, Netherlands	126,173	179,976	319,408	547,399	1	12
58	SFO	San Francisco, CA	CDG (Charles de Gaulle)	Paris, France	125,751	149,937	201,516	266,846	1	12
59	JFK	New York, NY	SNN	Shannon, Ireland	123,275	154,250	212,908	283,590	3	12
60	SFO	San Francisco, CA	AMS	Amsterdam, Netherlands	119,826	171,487	305,198	522,119	1	12

Table C.1-3 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (61 – 90) Airport Pairs from the United States to Selected Nine European Countries in the Order of Decreasing 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airports	US City, State	European Airports	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
61	MIA	Miami, FL	FRA	Frankfurt, Germany	113,331	131,680	167,852	213,408	1	12
62	PHL	Philadelphia, PA	LHR (Heathrow)	London, United Kingdom	113,288	137,807	192,135	265,143	1	12
63	DEN	Denver, CO	FRA	Frankfurt, Germany	113,255	133,968	177,029	232,747	1	12
64	BOS	Boston, MA	AMS	Amsterdam, Netherlands	112,629	159,896	282,749	483,915	1	12
65	SEA	Seattle, WA	LHR (Heathrow)	London, United Kingdom	110,849	125,755	155,133	189,469	1	12
66	JFK	New York, NY	BRU	Brussels, Belgium	109,827	140,122	213,696	319,330	2	12
67	EWR	Newark, NJ	MAN	Manchester, United Kingdom	107,415	129,164	176,553	238,678	2	12
68	EWR	Newark, NJ	MXP	Milan, Italy	106,254	124,642	164,347	216,053	2	12
69	SFO	San Francisco, CA	MUC	Munich, Germany	103,212	117,567	144,901	177,638	1	12
70	IAH	Houston, TX	FRA	Frankfurt, Germany	103,090	113,648	132,230	153,249	1	12
71	ATL	Atlanta, GA	FCO	Rome, Italy	101,673	119,540	158,032	207,752	1	12
72	JFK	New York, NY	MAN	Manchester, United Kingdom	93,862	113,228	155,852	212,410	3	12
73	EWR	Newark, NJ	MAD	Madrid, Spain	92,502	104,786	130,440	162,618	1	12
74	EWR	Newark, NJ	DUB	Dublin, Ireland	91,656	114,291	156,641	206,999	1	12
75	JFK	New York, NY	MUC	Munich, Germany	87,904	100,259	124,431	154,676	1	12
76	CLT	Charlotte, NC	FRA	Frankfurt, Germany	85,948	101,341	133,312	174,945	1	12
77	DTW	Detroit, MI	LGW (Gatwick)	London, United Kingdom	85,837	98,057	122,031	149,007	1	12
78	DEN	Denver, CO	LHR (Heathrow)	London, United Kingdom	85,665	106,382	154,087	220,247	2	12
79	BOS	Boston, MA	DUB	Dublin, Ireland	85,522	105,987	144,341	189,725	2	10
80	MSP	Minneapolis/St. Paul, MN	LGW (Gatwick)	London, United Kingdom	84,331	89,734	100,928	113,920	1	12
81	LAX	Los Angeles, CA	MUC	Munich, Germany	82,177	93,298	114,669	140,829	1	12
82	MEM	Memphis, TN	AMS	Amsterdam, Netherlands	81,038	97,732	134,295	183,786	1	12
83	PHX	Phoenix, AZ	LHR (Heathrow)	London, United Kingdom	79,495	96,187	132,944	182,837	1	12
84	PHL	Philadelphia, PA	FCO	Rome, Italy	79,182	94,198	127,202	171,107	1	12
85	SEA	Seattle, WA	AMS	Amsterdam, Netherlands	77,859	105,115	169,282	263,381	1	12
86	JFK	New York, NY	LGW (Gatwick)	London, United Kingdom	77,608	94,693	132,609	183,193	3	12
87	PHL	Philadelphia, PA	MAN	Manchester, United Kingdom	76,521	93,249	130,345	180,000	1	12
88	ORD	Chicago, IL	MAD	Madrid, Spain	76,410	86,907	109,172	137,303	1	12
89	CLT	Charlotte, NC	LGW (Gatwick)	London, United Kingdom	76,343	95,757	140,836	203,809	1	12
90	MIA	Miami, FL	MXP	Milan, Italy	76,304	90,963	122,916	165,328	1	12

Table C.1-4 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (91 – 120) Airport Pairs from the United States to Selected Nine European Countries in the Order of Decreasing 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airports	US City, State	European Airports	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
91	EWR	Newark, NJ	EDI	Edinburgh, United Kingdom	74,978	90,116	123,245	167,069	1	12
92	PDX	Portland, OR	FRA	Frankfurt, Germany	73,139	88,036	120,508	164,296	1	12
93	PHL	Philadelphia, PA	MAD	Madrid, Spain	72,395	83,109	105,797	134,733	1	12
94	MIA	Miami, FL	ZRH	Zurich, Switzerland	72,010	87,594	120,099	161,506	1	12
95	ATL	Atlanta, GA	MAN	Manchester, United Kingdom	70,532	84,945	116,244	156,885	1	12
96	EWR	Newark, NJ	BRU	Brussels, Belgium	69,226	88,042	133,334	197,635	1	12
97	JFK	New York, NY	BCN	Barcelona, Spain	67,993	77,579	97,894	123,853	1	12
98	BOS	Boston, MA	SNN	Shannon, Ireland	67,933	84,213	114,696	150,731	4	12
99	ORD	Chicago, IL	ZRH	Zurich, Switzerland	67,259	80,834	109,129	144,702	1	12
100	BOS	Boston, MA	ZRH	Zurich, Switzerland	67,238	79,989	106,335	139,016	1	12
101	ATL	Atlanta, GA	MUC	Munich, Germany	66,962	76,252	94,084	115,811	1	12
102	ATL	Atlanta, GA	MXP	Milan, Italy	66,608	78,258	103,306	135,577	1	12
103	EWR	Newark, NJ	GLA	Glasgow, United Kingdom	65,693	78,797	107,316	144,474	1	12
104	ATL	Atlanta, GA	MAD	Madrid, Spain	65,572	74,397	92,717	115,392	1	12
105	ORD	Chicago, IL	BRU	Brussels, Belgium	64,748	82,679	126,355	188,943	1	12
106	LAX	Los Angeles, CA	ZRH	Zurich, Switzerland	64,226	76,769	102,425	134,085	1	12
107	PHL	Philadelphia, PA	LGW (Gatwick)	London, United Kingdom	62,962	77,606	110,365	154,484	1	12
108	DFW	Dallas/Ft.Worth, TX	CDG (Charles de Gaulle)	Paris, France	62,078	75,116	104,211	143,850	1	12
109	JFK	New York, NY	DUS	Dusseldorf, Germany	60,403	69,103	86,016	106,892	2	12
110	IAD	Washington, DC	BRU	Brussels, Belgium	60,372	76,983	116,731	172,395	1	12
111	BOS	Boston, MA	MXP	Milan, Italy	60,023	69,979	91,684	119,885	1	12
112	CVG	Cincinnati, OH	CDG (Charles de Gaulle)	Paris, France	59,740	71,945	98,510	133,552	1	12
113	ATL	Atlanta, GA	STR	Stuttgart, Germany	59,686	68,357	85,352	106,443	1	12
114	EWR	Newark, NJ	ZRH	Zurich, Switzerland	59,115	70,762	94,667	124,426	2	12
115	EWR	Newark, NJ	SNN	Shannon, Ireland	58,588	73,076	100,166	132,339	1	12
116	DEN	Denver, CO	MUC	Munich, Germany	58,321	68,599	89,820	117,185	1	10
117	ATL	Atlanta, GA	BRU	Brussels, Belgium	58,228	74,169	112,456	166,410	1	12
118	CLT	Charlotte, NC	MUC	Munich, Germany	57,436	67,342	87,778	114,304	1	12
119	EWR	Newark, NJ	GVA	Geneva, Switzerland	57,115	68,543	92,089	121,458	1	12
120	TPA	Tampa, FL	LGW (Gatwick)	London, United Kingdom	56,845	68,604	94,359	129,141	1	12

Table C.1-5 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (121 – 150) Airport Pairs from the United States to Selected Nine European Countries in the Order of Decreasing 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airports	US City, State	European Airports	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
121	BWI	Baltimore, MD	LHR (Heathrow)	London, United Kingdom	55,577	67,029	92,110	126,063	1	12
122	RDU	Raleigh/Durham, NC	LGW (Gatwick)	London, United Kingdom	55,211	66,618	91,616	125,458	1	12
123	ORD	Chicago, IL	MXP	Milan, Italy	55,089	64,884	86,333	114,495	1	12
124	EWR	Newark, NJ	BHX	Birmingham, United Kingdom	54,816	65,910	90,161	122,141	1	12
125	CVG	Cincinnati, OH	FRA	Frankfurt, Germany	54,762	63,362	80,293	101,558	1	12
126	ATL	Atlanta, GA	DUB	Dublin, Ireland	54,678	68,287	93,700	123,615	1	12
127	IAD	Washington, DC	ZRH	Zurich, Switzerland	54,494	65,402	87,606	114,722	1	12
128	JFK	New York, NY	GVA	Geneva, Switzerland	53,597	64,527	87,300	116,080	1	12
129	ATL	Atlanta, GA	ZRH	Zurich, Switzerland	53,248	63,839	85,505	112,193	1	12
130	PHL	Philadelphia, PA	MUC	Munich, Germany	53,166	61,257	77,206	97,246	1	12
131	LAX	Los Angeles, CA	DUB	Dublin, Ireland	53,109	66,130	90,386	118,969	1	12
132	IAD	Washington, DC	FCO	Rome, Italy	52,940	62,308	82,380	108,086	2	12
133	CVG	Cincinnati, OH	LGW (Gatwick)	London, United Kingdom	52,583	64,719	91,699	127,905	1	12
134	JFK	New York, NY	VCE	Venice, Italy	52,573	61,792	81,888	108,330	1	12
135	EWR	Newark, NJ	BFS	Belfast, United Kingdom	52,096	62,616	85,599	115,808	1	12
136	ORD	Chicago, IL	SNN	Shannon, Ireland	51,575	64,590	89,340	119,077	4	8
137	JFK	New York, NY	STN (Stansted)	London, United Kingdom	49,979	60,090	82,212	111,342	3	12
138	EWR	Newark, NJ	BCN	Barcelona, Spain	49,168	55,923	70,074	87,942	1	12
139	DFW	Dallas/Ft.Worth, TX	ZRH	Zurich, Switzerland	47,812	58,190	80,364	109,472	1	10
140	JFK	New York, NY	TXL	Berlin, Germany	47,728	54,744	68,578	85,860	1	12
141	ORD	Chicago, IL	FCO	Rome, Italy	45,934	54,138	72,142	95,836	1	9
142	ATL	Atlanta, GA	DUS	Dusseldorf, Germany	45,506	51,978	64,322	79,153	1	12
143	JFK	New York, NY	NCE	Nice, France	45,420	53,914	72,156	95,681	1	12
144	EWR	Newark, NJ	BRS	Bristol, United Kingdom	45,369	54,559	74,647	101,141	1	12
145	EWR	Newark, NJ	TXL	Berlin, Germany	44,819	51,244	63,750	79,167	1	12
146	BOS	Boston, MA	MUC	Munich, Germany	44,320	50,078	61,328	75,216	2	8
147	MIA	Miami, FL	AMS	Amsterdam, Netherlands	44,193	64,151	116,997	205,956	1	12
148	EWR	Newark, NJ	CGN	Koeln/Bonn Airport, Germany	43,280	49,567	61,891	77,189	1	12
149	PHL	Philadelphia, PA	AMS	Amsterdam, Netherlands	43,189	62,519	113,778	199,973	1	12
150	PHL	Philadelphia, PA	MXP	Milan, Italy	42,219	50,190	67,676	90,880	1	12

Table C.1-6 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (151 – 180) Airport Pairs from the United States to Selected Nine European Countries in the Order of Decreasing 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airport	US City, State	European Airport	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
151	EWR	Newark, NJ	HAM	Hamburg, Germany	41,513	47,473	59,082	73,406	1	12
152	ATL	Atlanta, GA	BCN	Barcelona, Spain	41,070	46,784	58,695	73,534	1	8
153	MCO	Orlando, FL	FRA	Frankfurt, Germany	39,160	44,239	53,930	66,011	2	12
154	ATL	Atlanta, GA	EDI	Edinburgh, United Kingdom	36,438	43,865	60,057	81,278	1	10
155	JFK	New York, NY	HAM	Hamburg, Germany	36,310	41,656	52,206	65,390	1	2
156	MCO	Orlando, FL	AMS	Amsterdam, Netherlands	35,673	50,350	87,818	148,854	1	12
157	DTW	Detroit, MI	LHR (Heathrow)	London, United Kingdom	34,635	39,047	47,639	57,344	1	12
158	SEA	Seattle, WA	CDG (Charles de Gaulle)	Paris, France	32,907	37,014	45,010	54,197	1	7
159	SJU	San Juan, PR	MAD	Madrid, Spain	32,424	39,097	53,707	73,479	1	12
160	LAS	Las Vegas, NV	FRA	Frankfurt, Germany	32,413	37,247	46,818	59,163	1	12
161	CVG	Cincinnati, OH	FCO	Rome, Italy	32,145	38,186	51,372	68,861	1	6
162	MIA	Miami, FL	DUS	Dusseldorf, Germany	31,619	36,642	46,420	58,545	1	12
163	PHL	Philadelphia, PA	DUB	Dublin, Ireland	31,312	39,568	55,458	74,862	1	8
164	RSW	Ft. Myers, FL	DUS	Dusseldorf, Germany	30,819	37,175	51,064	69,789	1	12
165	SFB	Sanford, FL	GLA	Glasgow, United Kingdom	30,672	36,949	50,680	69,225	1	8
166	BOS	Boston, MA	MAD	Madrid, Spain	29,685	33,421	41,340	51,262	2	8
167	BOS	Boston, MA	MAN	Manchester, United Kingdom	29,628	35,407	48,092	64,666	2	7
168	ATL	Atlanta, GA	SNN	Shannon, Ireland	28,096	35,098	48,166	63,529	1	9
169	PHL	Philadelphia, PA	BCN	Barcelona, Spain	27,170	31,317	40,130	51,447	1	6
170	LAS	Las Vegas, NV	MAN	Manchester, United Kingdom	25,609	30,950	42,751	58,775	1	12
171	PHL	Philadelphia, PA	VCE	Venice, Italy	25,356	30,107	40,517	54,310	1	6
172	ATL	Atlanta, GA	VCE	Venice, Italy	24,199	28,399	37,415	49,012	1	11
173	EWR	Newark, NJ	LTN (Luton)	London, United Kingdom	24,168	29,060	39,751	53,851	1	11
174	PHL	Philadelphia, PA	ZRH	Zurich, Switzerland	21,339	25,886	35,415	47,549	1	7
175	EWR	Newark, NJ	MUC	Munich, Germany	20,850	23,705	29,216	36,023	2	12
176	BDL	Hartford, CT	AMS	Amsterdam, Netherlands	20,654	24,908	34,227	46,841	1	6
177	PHL	Philadelphia, PA	SNN	Shannon, Ireland	19,732	24,942	34,961	47,185	1	6
178	PHL	Philadelphia, PA	GLA	Glasgow, United Kingdom	18,983	23,075	32,137	44,196	1	6
179	PHL	Philadelphia, PA	BRU	Brussels, Belgium	18,948	24,421	37,824	57,270	1	7
180	EWR	Newark, NJ	ORY (ORLY)	Paris, France	17,447	20,710	27,714	36,745	2	12
181	EWR	Newark, NJ	DUS	Dusseldorf, Germany	11,212	12,785	15,805	19,483	1	12
182	ORD	Chicago, IL	DUS	Dusseldorf, Germany	7,332	8,394	10,471	13,022	1	12

Table C.1-7 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (1 – 30) Airport Pairs from U.S. to Selected Nine European Countries in the Order of European Country and Airport 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airport	US City, State	European Airport	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
1	EWR	Newark, NJ	BFS	Belfast, United Kingdom	52,096	62,616	85,599	115,808	1	12
2	EWR	Newark, NJ	BHX	Birmingham, United Kingdom	54,816	65,910	90,161	122,141	1	12
3	EWR	Newark, NJ	BRS	Bristol, United Kingdom	45,369	54,559	74,647	101,141	1	12
4	EWR	Newark, NJ	EDI	Edinburgh, United Kingdom	74,978	90,116	123,245	167,069	1	12
5	ATL	Atlanta, GA	EDI	Edinburgh, United Kingdom	36,438	43,865	60,057	81,278	1	10
6	EWR	Newark, NJ	GLA	Glasgow, United Kingdom	65,693	78,797	107,316	144,474	1	12
7	SFB	Sanford, FL	GLA	Glasgow, United Kingdom	30,672	36,949	50,680	69,225	1	8
8	PHL	Philadelphia, PA	GLA	Glasgow, United Kingdom	18,983	23,075	32,137	44,196	1	6
9	MCO	Orlando, FL	LGW (Gatwick)	London, United Kingdom	328,093	394,291	537,396	725,418	2	12
10	IAH	Houston, TX	LGW (Gatwick)	London, United Kingdom	229,033	268,592	349,414	446,606	2	12
11	ATL	Atlanta, GA	LGW (Gatwick)	London, United Kingdom	190,248	231,756	322,669	441,412	2	12
12	DFW	Dallas/Ft.Worth, TX	LGW (Gatwick)	London, United Kingdom	189,793	234,702	336,941	478,528	2	12
13	EWR	Newark, NJ	LGW (Gatwick)	London, United Kingdom	145,812	177,345	246,629	337,957	2	12
14	LAS	Las Vegas, NV	LGW (Gatwick)	London, United Kingdom	145,194	177,486	249,431	347,590	1	12
15	DTW	Detroit, MI	LGW (Gatwick)	London, United Kingdom	85,837	98,057	122,031	149,007	1	12
16	MSP	Minneapolis/St. Paul, MN	LGW (Gatwick)	London, United Kingdom	84,331	89,734	100,928	113,920	1	12
17	JFK	New York, NY	LGW (Gatwick)	London, United Kingdom	77,608	94,693	132,609	183,193	3	12
18	CLT	Charlotte, NC	LGW (Gatwick)	London, United Kingdom	76,343	95,757	140,836	203,809	1	12
19	PHL	Philadelphia, PA	LGW (Gatwick)	London, United Kingdom	62,962	77,606	110,365	154,484	1	12
20	TPA	Tampa, FL	LGW (Gatwick)	London, United Kingdom	56,845	68,604	94,359	129,141	1	12
21	RDU	Raleigh/Durham, NC	LGW (Gatwick)	London, United Kingdom	55,211	66,618	91,616	125,458	1	12
22	CVG	Cincinnati, OH	LGW (Gatwick)	London, United Kingdom	52,583	64,719	91,699	127,905	1	12
23	JFK	New York, NY	LHR (Heathrow)	London, United Kingdom	1,352,621	1,628,779	2,236,172	3,045,512	7	12
24	ORD	Chicago, IL	LHR (Heathrow)	London, United Kingdom	754,060	908,785	1,250,299	1,703,973	5	12
25	LAX	Los Angeles, CA	LHR (Heathrow)	London, United Kingdom	720,705	863,869	1,174,527	1,580,406	5	12
26	IAD	Washington, DC	LHR (Heathrow)	London, United Kingdom	498,183	599,560	818,431	1,101,612	3	12
27	SFO	San Francisco, CA	LHR (Heathrow)	London, United Kingdom	493,762	593,798	809,596	1,087,422	3	12
28	BOS	Boston, MA	LHR (Heathrow)	London, United Kingdom	424,873	506,861	686,650	922,678	3	12
29	MIA	Miami, FL	LHR (Heathrow)	London, United Kingdom	408,631	498,456	696,448	962,644	3	12
30	EWR	Newark, NJ	LHR (Heathrow)	London, United Kingdom	338,400	406,193	553,783	748,128	2	12

Table C.1-8 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (31 – 60) Airport Pairs from U.S. to Selected Nine European Countries in the Order of European Country and Airport 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airport	US City, State	European Airport	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
31	PHL	Philadelphia, PA	LHR (Heathrow)	London, United Kingdom	113,288	137,807	192,135	265,143	1	12
32	SEA	Seattle, WA	LHR (Heathrow)	London, United Kingdom	110,849	125,755	155,133	189,469	1	12
33	DEN	Denver, CO	LHR (Heathrow)	London, United Kingdom	85,665	106,382	154,087	220,247	2	12
34	PHX	Phoenix, AZ	LHR (Heathrow)	London, United Kingdom	79,495	96,187	132,944	182,837	1	12
35	BWI	Baltimore, MD	LHR (Heathrow)	London, United Kingdom	55,577	67,029	92,110	126,063	1	12
36	DTW	Detroit, MI	LHR (Heathrow)	London, United Kingdom	34,635	39,047	47,639	57,344	1	12
37	EWR	Newark, NJ	LTN (Luton)	London, United Kingdom	24,168	29,060	39,751	53,851	1	11
38	MCO	Orlando, FL	MAN	Manchester, United Kingdom	164,288	195,196	261,485	348,229	2	12
39	ORD	Chicago, IL	MAN	Manchester, United Kingdom	128,649	155,323	214,242	292,191	3	12
40	EWR	Newark, NJ	MAN	Manchester, United Kingdom	107,415	129,164	176,553	238,678	2	12
41	JFK	New York, NY	MAN	Manchester, United Kingdom	93,862	113,228	155,852	212,410	3	12
42	PHL	Philadelphia, PA	MAN	Manchester, United Kingdom	76,521	93,249	130,345	180,000	1	12
43	ATL	Atlanta, GA	MAN	Manchester, United Kingdom	70,532	84,945	116,244	156,885	1	12
44	BOS	Boston, MA	MAN	Manchester, United Kingdom	29,628	35,407	48,092	64,666	2	7
45	LAS	Las Vegas, NV	MAN	Manchester, United Kingdom	25,609	30,950	42,751	58,775	1	12
46	JFK	New York, NY	STN (Stansted)	London, United Kingdom	49,979	60,090	82,212	111,342	3	12
47	EWR	Newark, NJ	CGN	Koeln/Bonn Airport, Germany	43,280	49,567	61,891	77,189	1	12
48	JFK	New York, NY	DUS	Dusseldorf, Germany	60,403	69,103	86,016	106,892	2	12
49	ATL	Atlanta, GA	DUS	Dusseldorf, Germany	45,506	51,978	64,322	79,153	1	12
50	MIA	Miami, FL	DUS	Dusseldorf, Germany	31,619	36,642	46,420	58,545	1	12
51	RSW	Ft. Myers, FL	DUS	Dusseldorf, Germany	30,819	37,175	51,064	69,789	1	12
52	EWR	Newark, NJ	DUS	Dusseldorf, Germany	11,212	12,785	15,805	19,483	1	12
53	ORD	Chicago, IL	DUS	Dusseldorf, Germany	7,332	8,394	10,471	13,022	1	12
54	ORD	Chicago, IL	FRA	Frankfurt, Germany	404,051	463,844	582,194	729,822	4	12
55	IAD	Washington, DC	FRA	Frankfurt, Germany	378,021	433,351	539,676	668,157	2	12
56	JFK	New York, NY	FRA	Frankfurt, Germany	333,114	382,086	478,571	599,517	3	12
57	SFO	San Francisco, CA	FRA	Frankfurt, Germany	279,700	320,401	398,537	492,375	2	12
58	EWR	Newark, NJ	FRA	Frankfurt, Germany	203,450	232,617	289,331	359,524	3	12
59	DTW	Detroit, MI	FRA	Frankfurt, Germany	198,003	212,631	236,660	262,027	2	12
60	ATL	Atlanta, GA	FRA	Frankfurt, Germany	192,871	220,868	275,032	341,183	2	12

Table C.1-9 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (61 – 90) Airport Pairs from U.S. to Selected Nine European Countries in the Order of European Country and Airport 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airport	US City, State	European Airport	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
61	LAX	Los Angeles, CA	FRA	Frankfurt, Germany	186,737	213,206	264,458	327,314	3	12
62	PHL	Philadelphia, PA	FRA	Frankfurt, Germany	171,324	198,511	252,502	320,507	2	12
63	DFW	Dallas/Ft.Worth, TX	FRA	Frankfurt, Germany	153,700	178,675	229,418	295,461	2	12
64	BOS	Boston, MA	FRA	Frankfurt, Germany	129,660	147,338	182,098	225,069	2	12
65	MIA	Miami, FL	FRA	Frankfurt, Germany	113,331	131,680	167,852	213,408	1	12
66	DEN	Denver, CO	FRA	Frankfurt, Germany	113,255	133,968	177,029	232,747	1	12
67	IAH	Houston, TX	FRA	Frankfurt, Germany	103,090	113,648	132,230	153,249	1	12
68	CLT	Charlotte, NC	FRA	Frankfurt, Germany	85,948	101,341	133,312	174,945	1	12
69	PDX	Portland, OR	FRA	Frankfurt, Germany	73,139	88,036	120,508	164,296	1	12
70	CVG	Cincinnati, OH	FRA	Frankfurt, Germany	54,762	63,362	80,293	101,558	1	12
71	MCO	Orlando, FL	FRA	Frankfurt, Germany	39,160	44,239	53,930	66,011	2	12
72	LAS	Las Vegas, NV	FRA	Frankfurt, Germany	32,413	37,247	46,818	59,163	1	12
73	EWR	Newark, NJ	HAM	Hamburg, Germany	41,513	47,473	59,082	73,406	1	12
74	JFK	New York, NY	HAM	Hamburg, Germany	36,310	41,656	52,206	65,390	1	2
75	ORD	Chicago, IL	MUC	Munich, Germany	144,078	164,470	204,549	254,442	2	12
76	IAD	Washington, DC	MUC	Munich, Germany	134,542	153,369	189,253	232,501	2	12
77	SFO	San Francisco, CA	MUC	Munich, Germany	103,212	117,567	144,901	177,638	1	12
78	JFK	New York, NY	MUC	Munich, Germany	87,904	100,259	124,431	154,676	1	12
79	LAX	Los Angeles, CA	MUC	Munich, Germany	82,177	93,298	114,669	140,829	1	12
80	ATL	Atlanta, GA	MUC	Munich, Germany	66,962	76,252	94,084	115,811	1	12
81	DEN	Denver, CO	MUC	Munich, Germany	58,321	68,599	89,820	117,185	1	10
82	CLT	Charlotte, NC	MUC	Munich, Germany	57,436	67,342	87,778	114,304	1	12
83	PHL	Philadelphia, PA	MUC	Munich, Germany	53,166	61,257	77,206	97,246	1	12
84	BOS	Boston, MA	MUC	Munich, Germany	44,320	50,078	61,328	75,216	2	8
85	EWR	Newark, NJ	MUC	Munich, Germany	20,850	23,705	29,216	36,023	2	12
86	ATL	Atlanta, GA	STR	Stuttgart, Germany	59,686	68,357	85,352	106,443	1	12
87	JFK	New York, NY	TXL	Berlin, Germany	47,728	54,744	68,578	85,860	1	12
88	EWR	Newark, NJ	TXL	Berlin, Germany	44,819	51,244	63,750	79,167	1	12
89	JFK	New York, NY	CDG (Charles de Gaulle)	Paris, France	598,834	714,941	967,560	1,299,136	3	12
90	IAD	Washington, DC	CDG (Charles de Gaulle)	Paris, France	259,739	309,926	417,037	553,406	2	12

Table C.1-10 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (91 – 120) Airport Pairs from U.S. to Selected Nine European Countries in the Order of European Country and Airport 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airport	US City, State	European Airport	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
91	ATL	Atlanta, GA	CDG (Charles de Gaulle)	Paris, France	258,415	308,017	414,432	551,040	2	12
92	LAX	Los Angeles, CA	CDG (Charles de Gaulle)	Paris, France	253,251	300,967	403,367	535,093	2	12
93	EWR	Newark, NJ	CDG (Charles de Gaulle)	Paris, France	250,082	297,619	399,980	532,716	3	12
94	MIA	Miami, FL	CDG (Charles de Gaulle)	Paris, France	210,240	254,267	350,200	477,211	2	12
95	IAH	Houston, TX	CDG (Charles de Gaulle)	Paris, France	201,247	230,926	290,312	360,640	2	12
96	ORD	Chicago, IL	CDG (Charles de Gaulle)	Paris, France	183,399	219,144	297,199	399,316	3	12
97	BOS	Boston, MA	CDG (Charles de Gaulle)	Paris, France	177,834	210,339	280,888	372,111	2	12
98	PHL	Philadelphia, PA	CDG (Charles de Gaulle)	Paris, France	135,698	163,659	224,923	306,008	2	12
99	DTW	Detroit, MI	CDG (Charles de Gaulle)	Paris, France	133,845	149,611	179,923	213,526	2	12
100	SFO	San Francisco, CA	CDG (Charles de Gaulle)	Paris, France	125,751	149,937	201,516	266,846	1	12
101	DFW	Dallas/Ft.Worth, TX	CDG (Charles de Gaulle)	Paris, France	62,078	75,116	104,211	143,850	1	12
102	CVG	Cincinnati, OH	CDG (Charles de Gaulle)	Paris, France	59,740	71,945	98,510	133,552	1	12
103	SEA	Seattle, WA	CDG (Charles de Gaulle)	Paris, France	32,907	37,014	45,010	54,197	1	7
104	JFK	New York, NY	NCE	Nice, France	45,420	53,914	72,156	95,681	1	12
105	EWR	Newark, NJ	ORY (ORLY)	Paris, France	17,447	20,710	27,714	36,745	2	12
106	DTW	Detroit, MI	AMS	Amsterdam, Netherlands	366,228	491,355	782,587	1,200,110	1	12
107	MSP	Minneapolis/St. Paul, MN	AMS	Amsterdam, Netherlands	273,643	341,983	492,303	697,934	1	12
108	JFK	New York, NY	AMS	Amsterdam, Netherlands	243,468	348,888	625,228	1,084,502	2	12
109	IAH	Houston, TX	AMS	Amsterdam, Netherlands	186,530	256,909	427,715	686,541	3	12
110	EWR	Newark, NJ	AMS	Amsterdam, Netherlands	171,207	244,556	435,216	748,840	3	12
111	IAD	Washington, DC	AMS	Amsterdam, Netherlands	154,306	220,995	393,780	675,076	2	12
112	ORD	Chicago, IL	AMS	Amsterdam, Netherlands	136,363	195,574	351,216	609,619	2	12
113	ATL	Atlanta, GA	AMS	Amsterdam, Netherlands	135,832	194,331	346,238	594,750	2	12
114	LAX	Los Angeles, CA	AMS	Amsterdam, Netherlands	126,173	179,976	319,408	547,399	1	12
115	SFO	San Francisco, CA	AMS	Amsterdam, Netherlands	119,826	171,487	305,198	522,119	1	12
116	BOS	Boston, MA	AMS	Amsterdam, Netherlands	112,629	159,896	282,749	483,915	1	12
117	MEM	Memphis, TN	AMS	Amsterdam, Netherlands	81,038	97,732	134,295	183,786	1	12
118	SEA	Seattle, WA	AMS	Amsterdam, Netherlands	77,859	105,115	169,282	263,381	1	12
119	MIA	Miami, FL	AMS	Amsterdam, Netherlands	44,193	64,151	116,997	205,956	1	12
120	PHL	Philadelphia, PA	AMS	Amsterdam, Netherlands	43,189	62,519	113,778	199,973	1	12

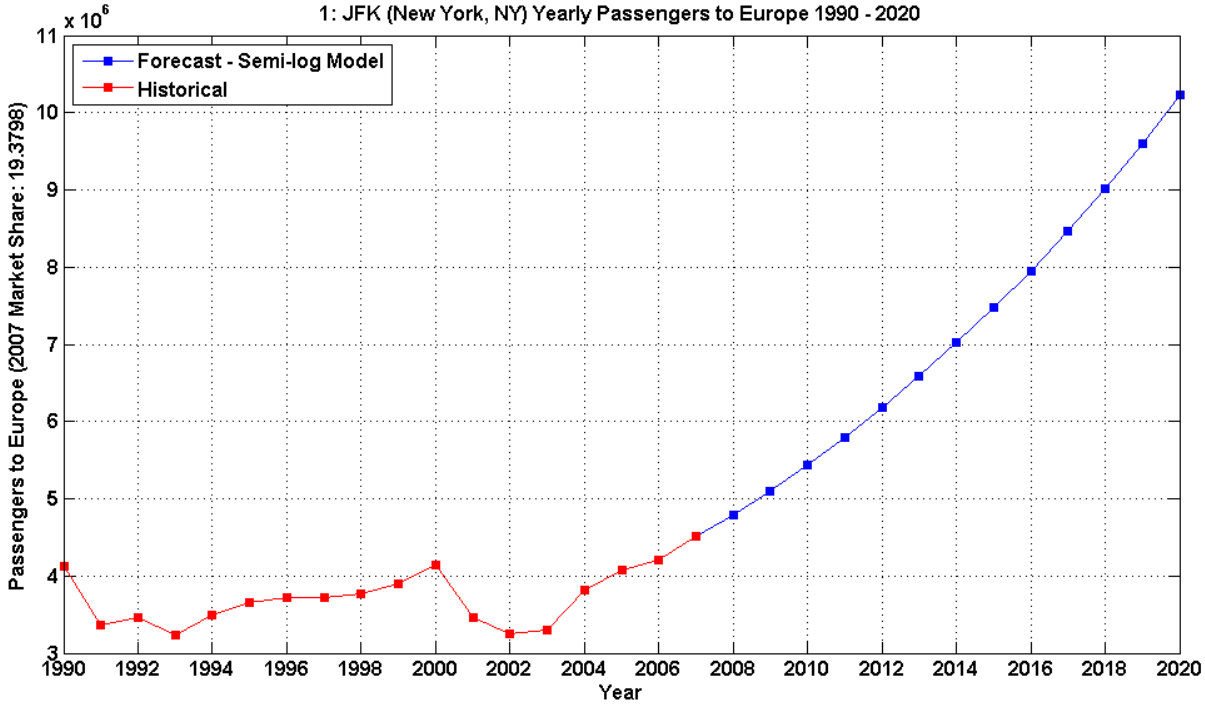
Table C.1-11 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (121 – 150) Airport Pairs from U.S. to Selected Nine European Countries in the Order of European Country and Airport 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airport	US City, State	European Airport	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
121	MCO	Orlando, FL	AMS	Amsterdam, Netherlands	35,673	50,350	87,818	148,854	1	12
122	BDL	Hartford, CT	AMS	Amsterdam, Netherlands	20,654	24,908	34,227	46,841	1	6
123	JFK	New York, NY	FCO	Rome, Italy	252,391	297,224	395,228	524,687	4	12
124	EWR	Newark, NJ	FCO	Rome, Italy	150,763	176,979	233,696	307,740	2	12
125	ATL	Atlanta, GA	FCO	Rome, Italy	101,673	119,540	158,032	207,752	1	12
126	PHL	Philadelphia, PA	FCO	Rome, Italy	79,182	94,198	127,202	171,107	1	12
127	IAD	Washington, DC	FCO	Rome, Italy	52,940	62,308	82,380	108,086	2	12
128	ORD	Chicago, IL	FCO	Rome, Italy	45,934	54,138	72,142	95,836	1	9
129	CVG	Cincinnati, OH	FCO	Rome, Italy	32,145	38,186	51,372	68,861	1	6
130	JFK	New York, NY	MXP	Milan, Italy	131,672	154,952	205,742	272,673	3	12
131	EWR	Newark, NJ	MXP	Milan, Italy	106,254	124,642	164,347	216,053	2	12
132	MIA	Miami, FL	MXP	Milan, Italy	76,304	90,963	122,916	165,328	1	12
133	ATL	Atlanta, GA	MXP	Milan, Italy	66,608	78,258	103,306	135,577	1	12
134	BOS	Boston, MA	MXP	Milan, Italy	60,023	69,979	91,684	119,885	1	12
135	ORD	Chicago, IL	MXP	Milan, Italy	55,089	64,884	86,333	114,495	1	12
136	PHL	Philadelphia, PA	MXP	Milan, Italy	42,219	50,190	67,676	90,880	1	12
137	JFK	New York, NY	VCE	Venice, Italy	52,573	61,792	81,888	108,330	1	12
138	PHL	Philadelphia, PA	VCE	Venice, Italy	25,356	30,107	40,517	54,310	1	6
139	ATL	Atlanta, GA	VCE	Venice, Italy	24,199	28,399	37,415	49,012	1	11
140	JFK	New York, NY	DUB	Dublin, Ireland	234,265	293,048	404,453	538,827	3	12
141	ORD	Chicago, IL	DUB	Dublin, Ireland	136,512	170,912	236,380	315,128	2	12
142	EWR	Newark, NJ	DUB	Dublin, Ireland	91,656	114,291	156,641	206,999	1	12
143	BOS	Boston, MA	DUB	Dublin, Ireland	85,522	105,987	144,341	189,725	2	10
144	ATL	Atlanta, GA	DUB	Dublin, Ireland	54,678	68,287	93,700	123,615	1	12
145	LAX	Los Angeles, CA	DUB	Dublin, Ireland	53,109	66,130	90,386	118,969	1	12
146	PHL	Philadelphia, PA	DUB	Dublin, Ireland	31,312	39,568	55,458	74,862	1	8
147	JFK	New York, NY	SNN	Shannon, Ireland	123,275	154,250	212,908	283,590	3	12
148	BOS	Boston, MA	SNN	Shannon, Ireland	67,933	84,213	114,696	150,731	4	12
149	EWR	Newark, NJ	SNN	Shannon, Ireland	58,588	73,076	100,166	132,339	1	12
150	ORD	Chicago, IL	SNN	Shannon, Ireland	51,575	64,590	89,340	119,077	4	8

Table C.1-12 2007, 2010, 2015 and 2020 Passenger Traffic for 182 (151 – 182) Airport Pairs from U.S. to Selected Nine European Countries in the Order of European Country and Airport 2007 Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airport	US City, State	European Airport	European City, Country	2007	2010	2015	2020	2007 No. of Carriers	2007 No. of Months
151	ATL	Atlanta, GA	SNN	Shannon, Ireland	28,096	35,098	48,166	63,529	1	9
152	PHL	Philadelphia, PA	SNN	Shannon, Ireland	19,732	24,942	34,961	47,185	1	6
153	JFK	New York, NY	BCN	Barcelona, Spain	67,993	77,579	97,894	123,853	1	12
154	EWR	Newark, NJ	BCN	Barcelona, Spain	49,168	55,923	70,074	87,942	1	12
155	ATL	Atlanta, GA	BCN	Barcelona, Spain	41,070	46,784	58,695	73,534	1	8
156	PHL	Philadelphia, PA	BCN	Barcelona, Spain	27,170	31,317	40,130	51,447	1	6
157	JFK	New York, NY	MAD	Madrid, Spain	224,382	254,991	319,642	401,739	3	12
158	MIA	Miami, FL	MAD	Madrid, Spain	172,784	198,906	253,753	323,676	2	12
159	EWR	Newark, NJ	MAD	Madrid, Spain	92,502	104,786	130,440	162,618	1	12
160	ORD	Chicago, IL	MAD	Madrid, Spain	76,410	86,907	109,172	137,303	1	12
161	PHL	Philadelphia, PA	MAD	Madrid, Spain	72,395	83,109	105,797	134,733	1	12
162	ATL	Atlanta, GA	MAD	Madrid, Spain	65,572	74,397	92,717	115,392	1	12
163	SJU	San Juan, PR	MAD	Madrid, Spain	32,424	39,097	53,707	73,479	1	12
164	BOS	Boston, MA	MAD	Madrid, Spain	29,685	33,421	41,340	51,262	2	8
165	EWR	Newark, NJ	GVA	Geneva, Switzerland	57,115	68,543	92,089	121,458	1	12
166	JFK	New York, NY	GVA	Geneva, Switzerland	53,597	64,527	87,300	116,080	1	12
167	JFK	New York, NY	ZRH	Zurich, Switzerland	173,001	207,745	279,877	370,849	2	12
168	MIA	Miami, FL	ZRH	Zurich, Switzerland	72,010	87,594	120,099	161,506	1	12
169	ORD	Chicago, IL	ZRH	Zurich, Switzerland	67,259	80,834	109,129	144,702	1	12
170	BOS	Boston, MA	ZRH	Zurich, Switzerland	67,238	79,989	106,335	139,016	1	12
171	LAX	Los Angeles, CA	ZRH	Zurich, Switzerland	64,226	76,769	102,425	134,085	1	12
172	EWR	Newark, NJ	ZRH	Zurich, Switzerland	59,115	70,762	94,667	124,426	2	12
173	IAD	Washington, DC	ZRH	Zurich, Switzerland	54,494	65,402	87,606	114,722	1	12
174	ATL	Atlanta, GA	ZRH	Zurich, Switzerland	53,248	63,839	85,505	112,193	1	12
175	DFW	Dallas/Ft.Worth, TX	ZRH	Zurich, Switzerland	47,812	58,190	80,364	109,472	1	10
176	PHL	Philadelphia, PA	ZRH	Zurich, Switzerland	21,339	25,886	35,415	47,549	1	7
177	JFK	New York, NY	BRU	Brussels, Belgium	109,827	140,122	213,696	319,330	2	12
178	EWR	Newark, NJ	BRU	Brussels, Belgium	69,226	88,042	133,334	197,635	1	12
179	ORD	Chicago, IL	BRU	Brussels, Belgium	64,748	82,679	126,355	188,943	1	12
180	IAD	Washington, DC	BRU	Brussels, Belgium	60,372	76,983	116,731	172,395	1	12
181	ATL	Atlanta, GA	BRU	Brussels, Belgium	58,228	74,169	112,456	166,410	1	12
182	PHL	Philadelphia, PA	BRU	Brussels, Belgium	18,948	24,421	37,824	57,270	1	7

C.2
Passenger Traffic to Selected Nine European Countries
from 31 United States Gateway Airports


1: JFK (New York, NY) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 19.3798)
Year
11
10
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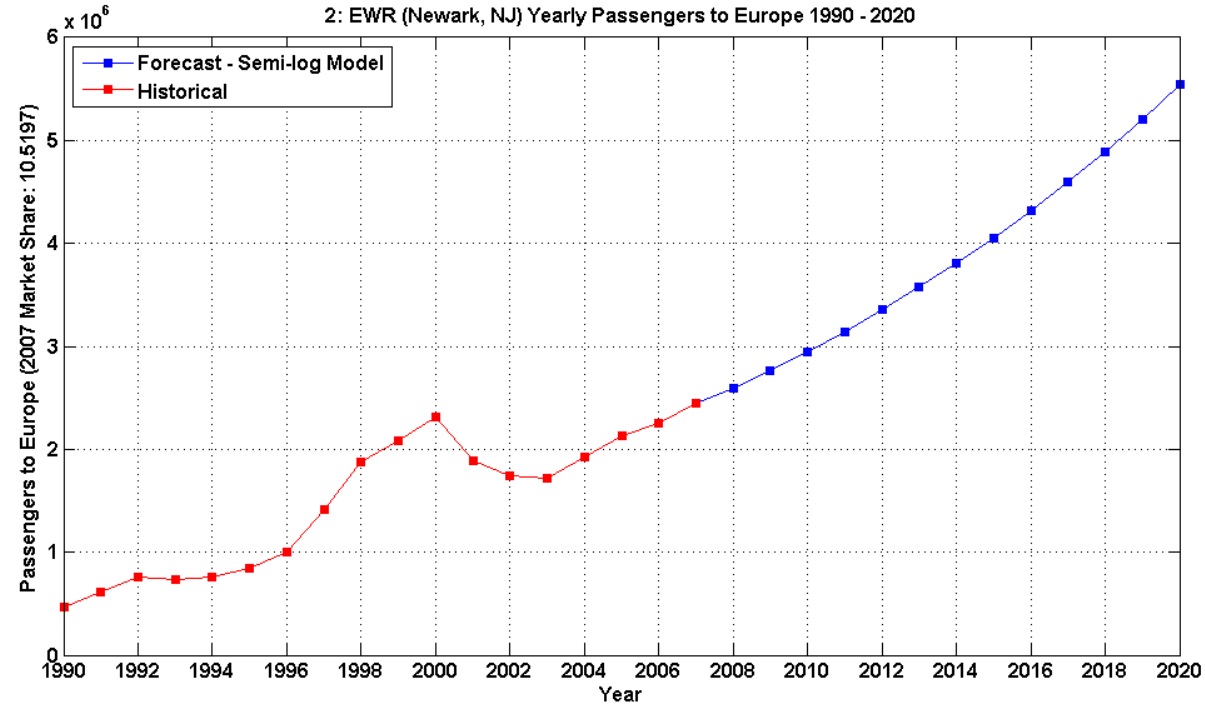
2: EWR (Newark, NJ) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 10.5197)
Year
6
5
4
3
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1990
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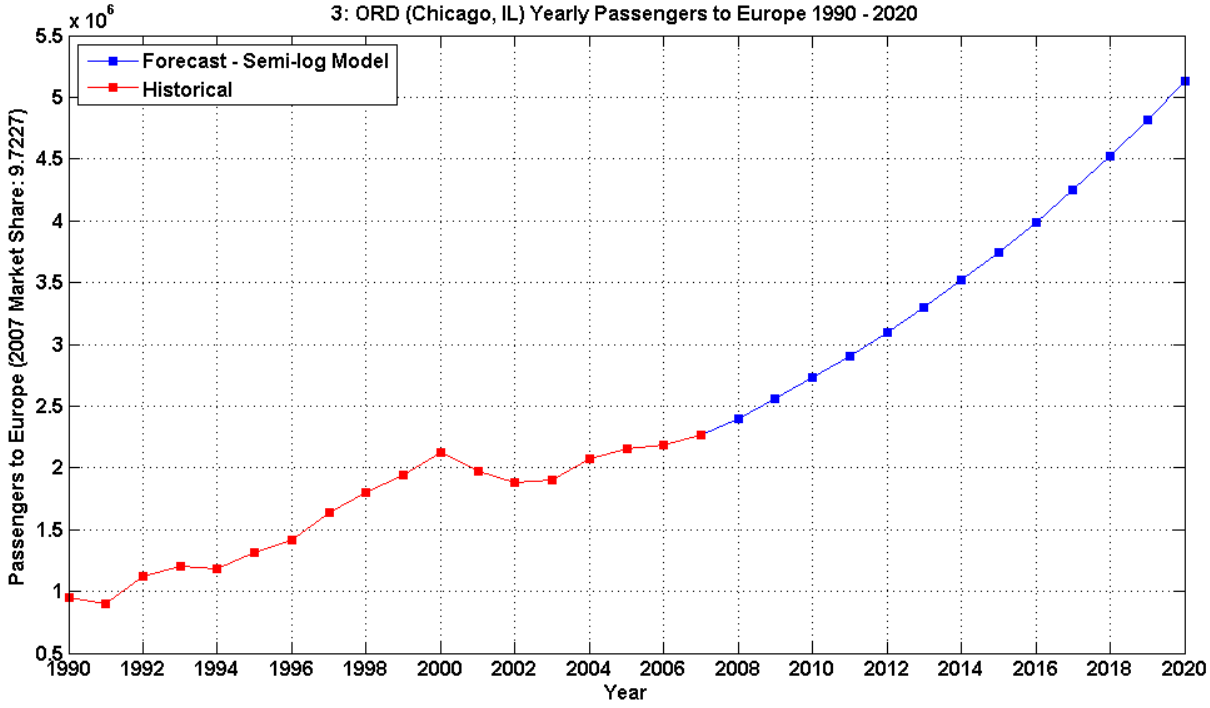
3: ORD (Chicago, IL) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 9.7227)
Year
5.5
5
4.5
4
3.5
3
2.5
2
1.5
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0.5
1990
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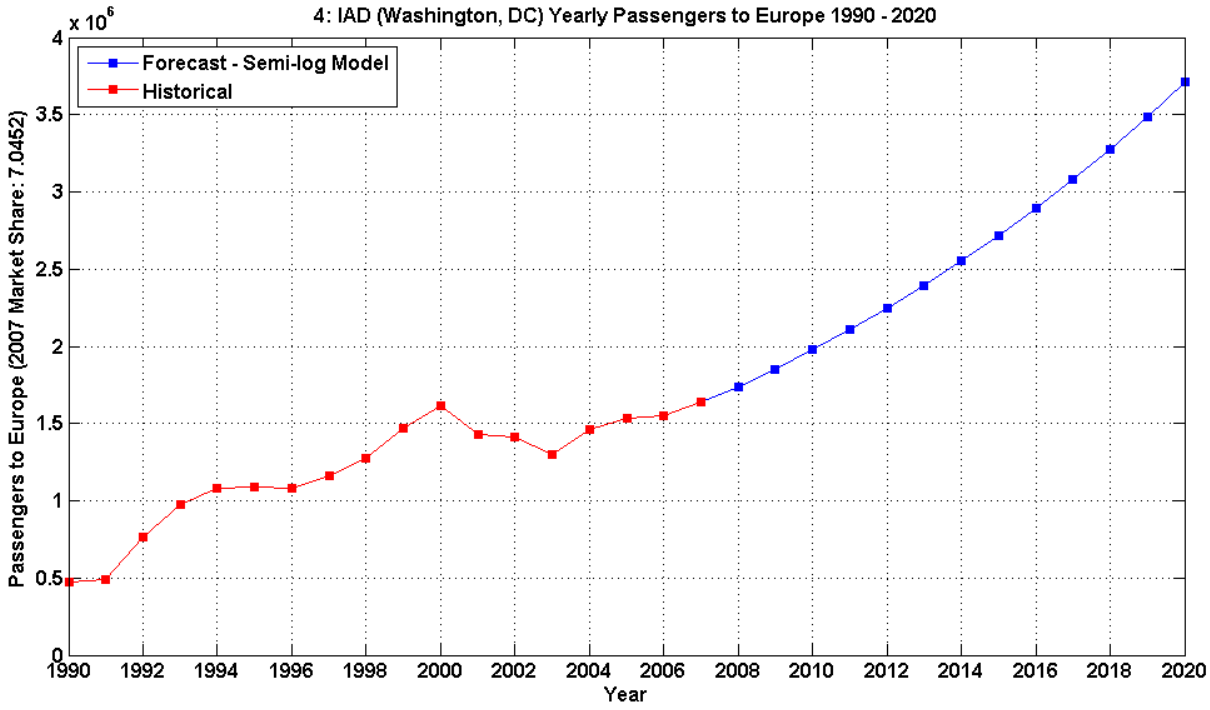
4: IAD (Washington, DC) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 7.0452)
Year
4
3.5
3
2.5
2
1.5
1
0.5
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1990
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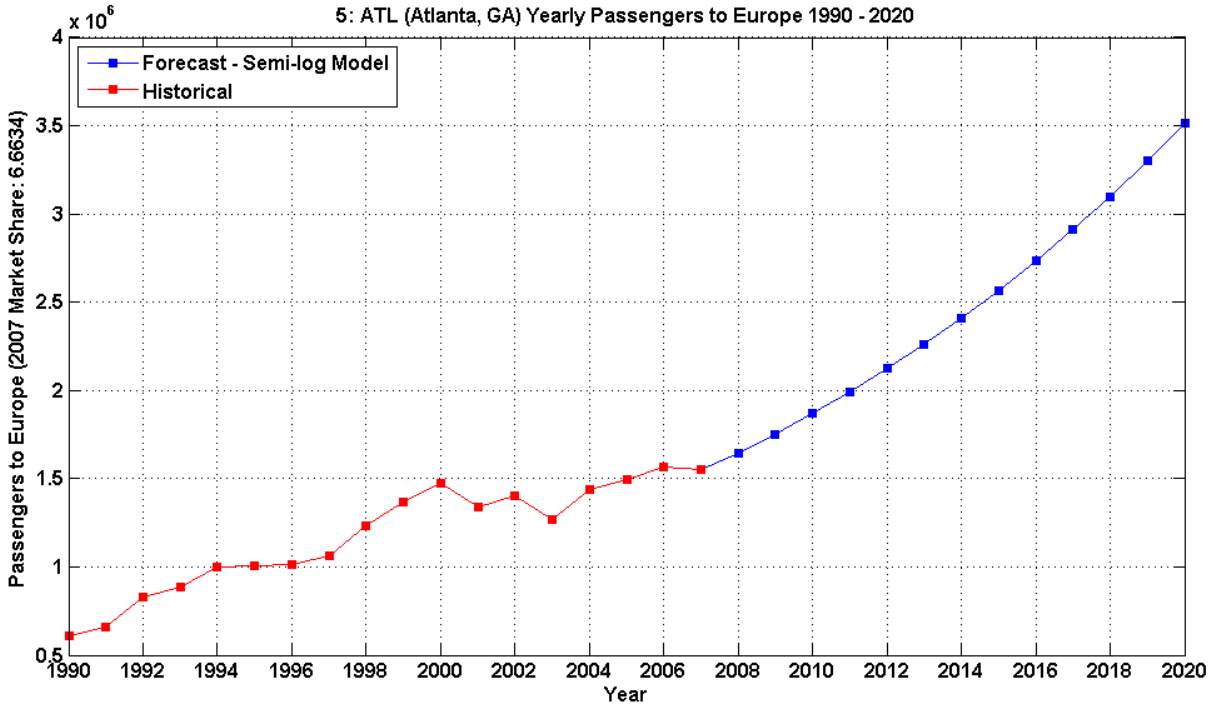
2020


5: ATL (Atlanta, GA) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 6.6634)
Year
0.5
1
1.5
2
2.5
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3.5
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1990
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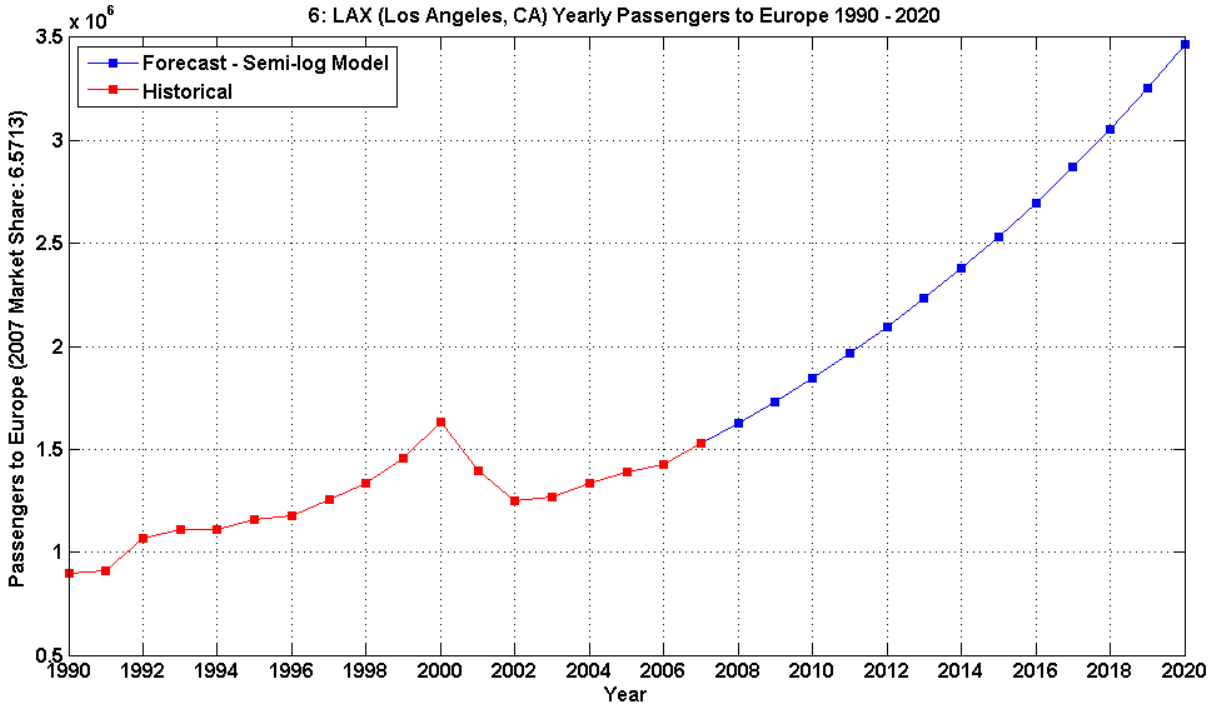
2020


6: LAX (Los Angeles, CA) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 6.5713)
Year
0.5
1
1.5
2
2.5
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3.5
1990
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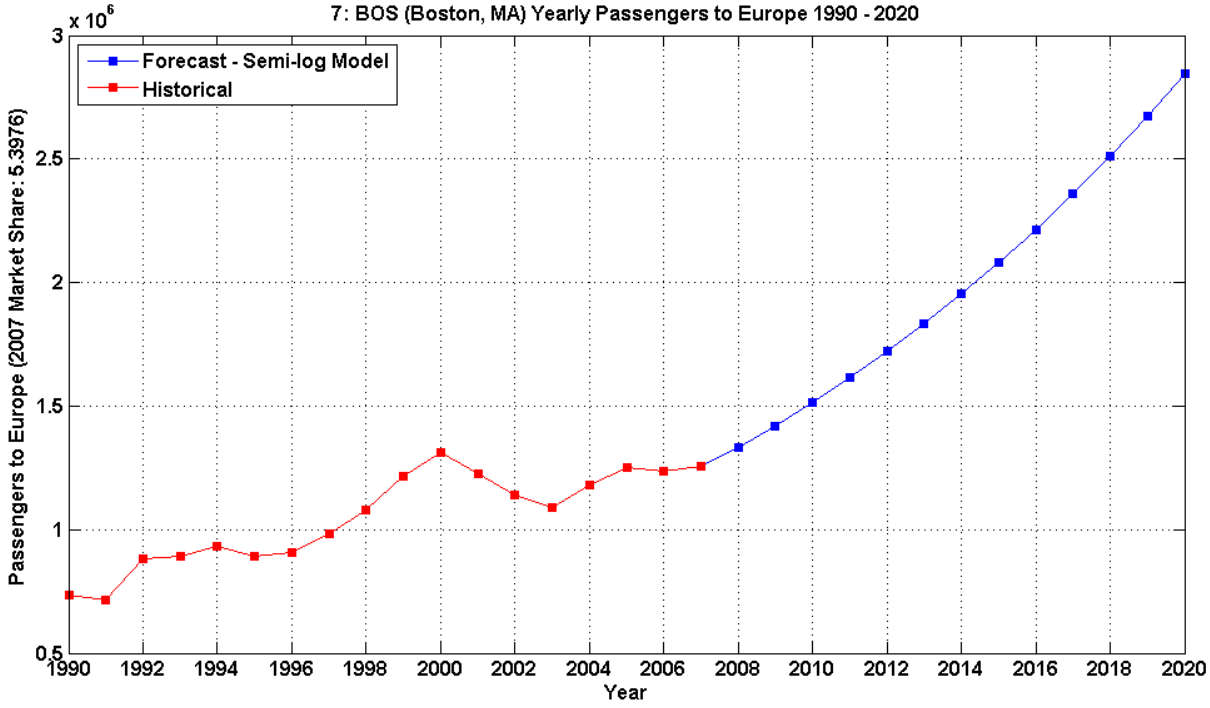
2020


7: BOS (Boston, MA) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 5.3976)
Year
0.5
1
1.5
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2.5
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1990
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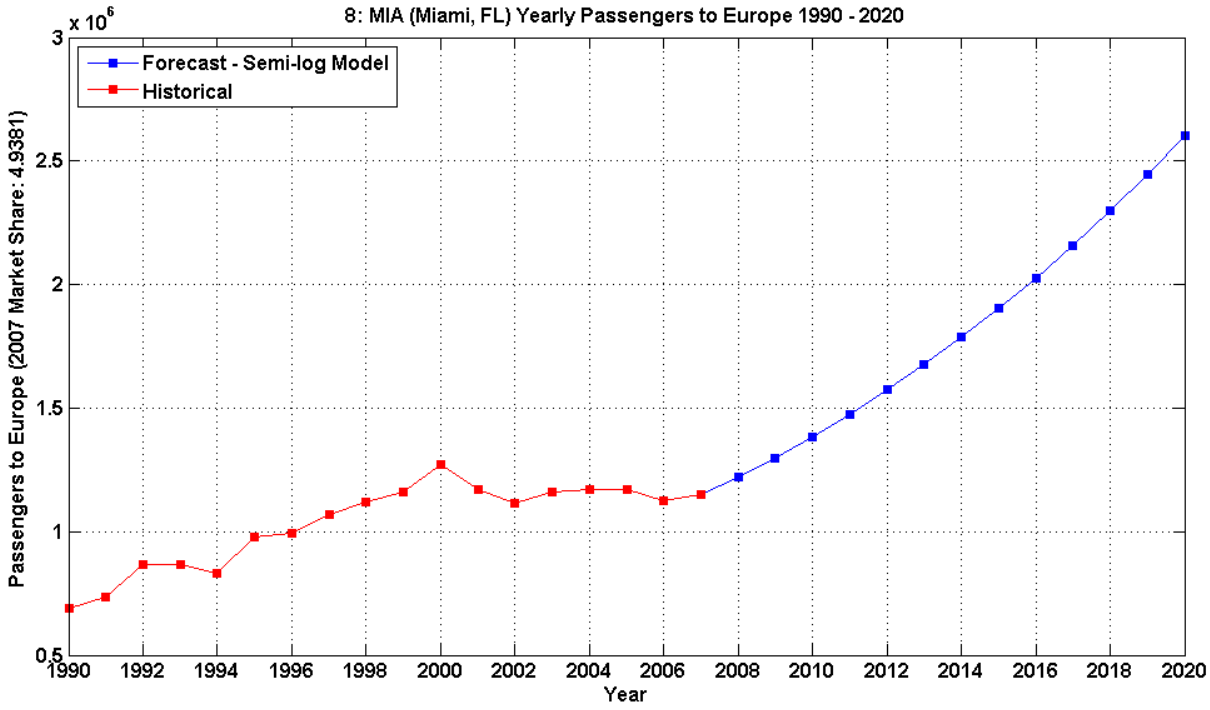
8: MIA (Miami, FL) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 4.9381)
Year
0.5
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1.5
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1990
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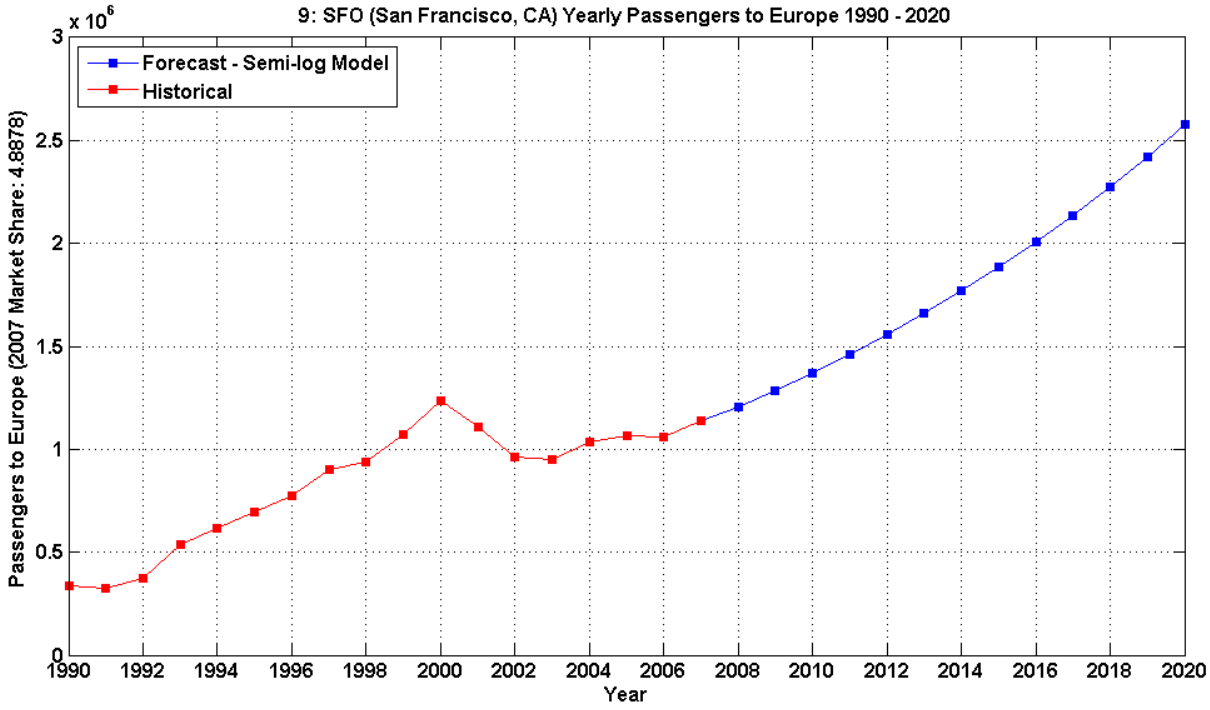
9: SFO (San Francisco, CA) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 4.8878)
Year
0
0.5
1
1.5
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2.5
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1990
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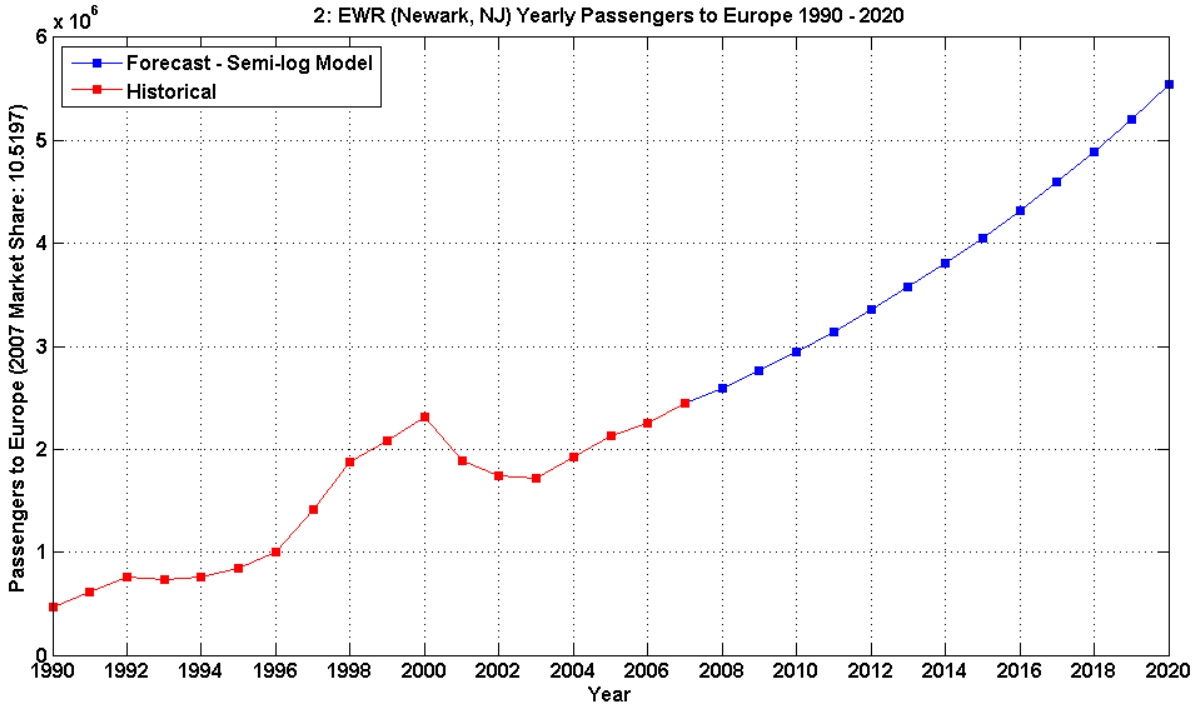
2020


2: EWR (Newark, NJ) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 10.5197)
Year
0
1
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1990
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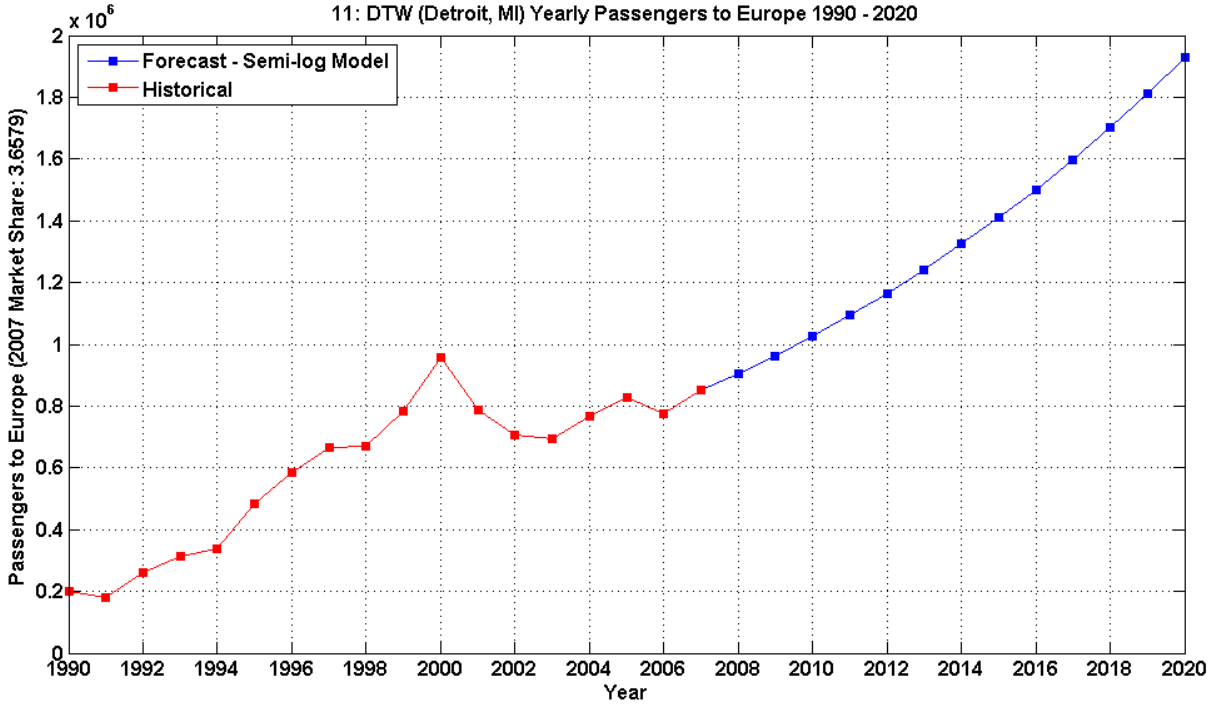
11: DTW (Detroit, MI) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 3.6579)
Year
0
0.2
0.4
0.6
0.8
1
1.2
1.4
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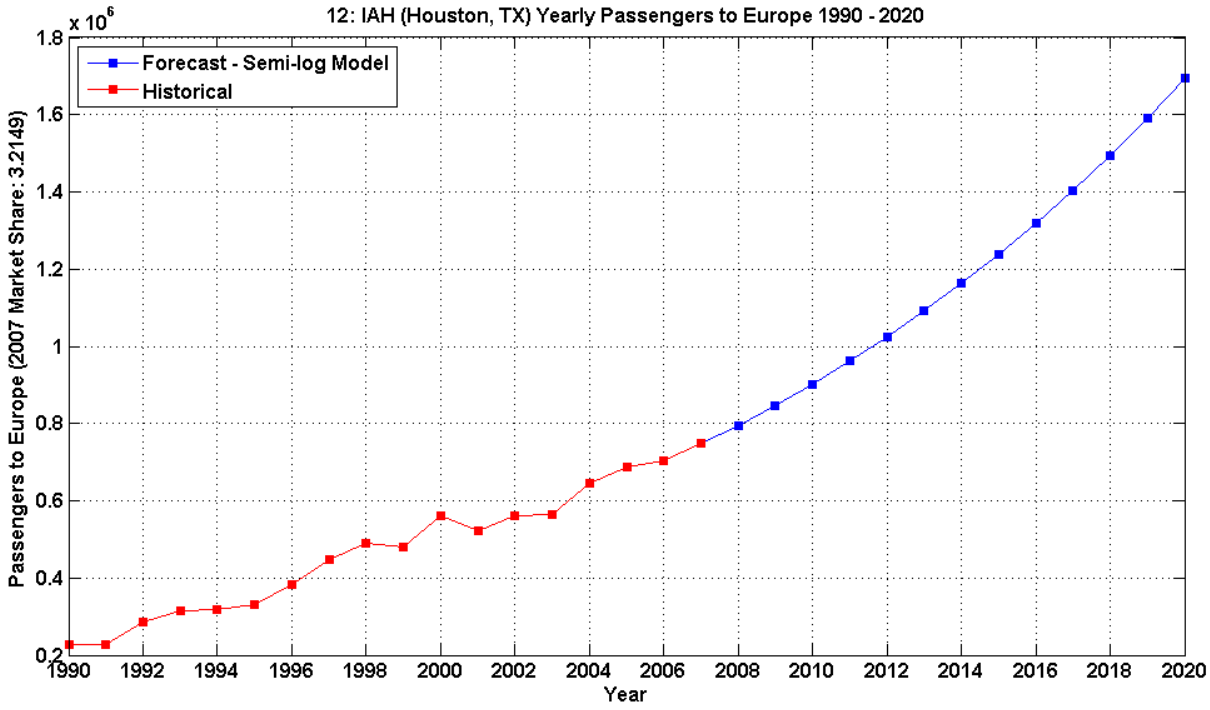
12: IAH (Houston, TX) Yearly Passengers to Europe 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 3.2149)
Year
0.2
0.4
0.6
0.8
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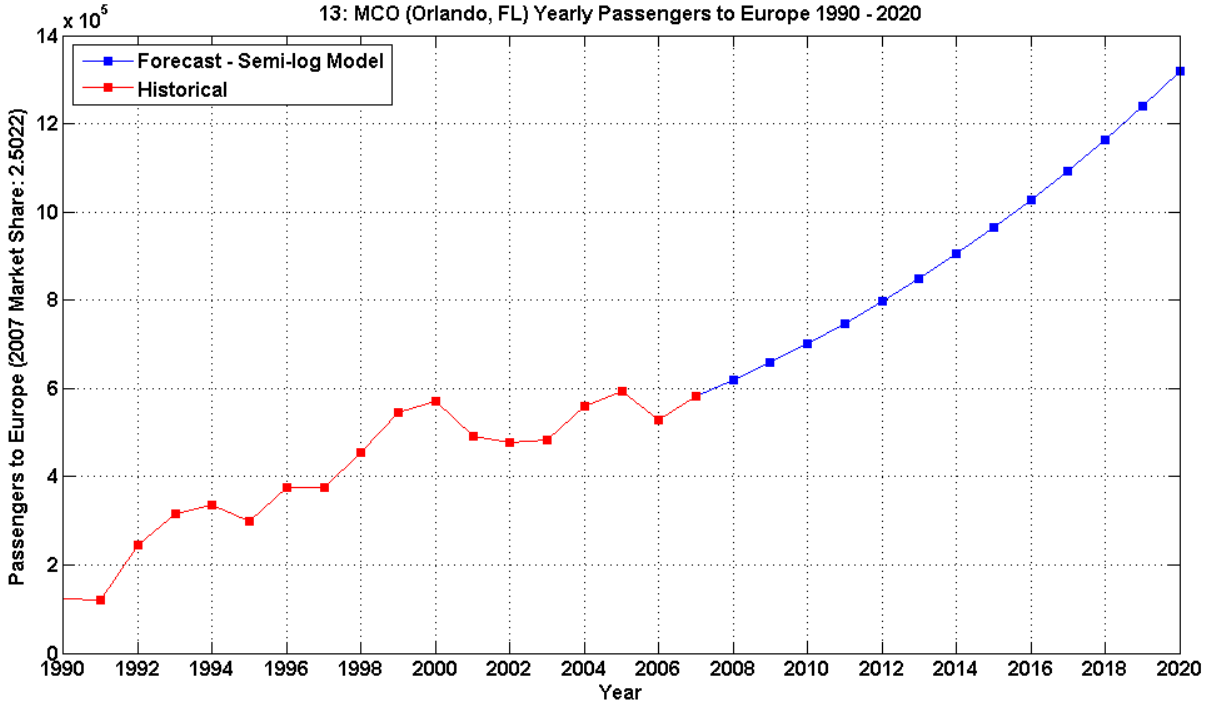
13: MCO (Orlando, FL) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 2.5022)
Year
0
2
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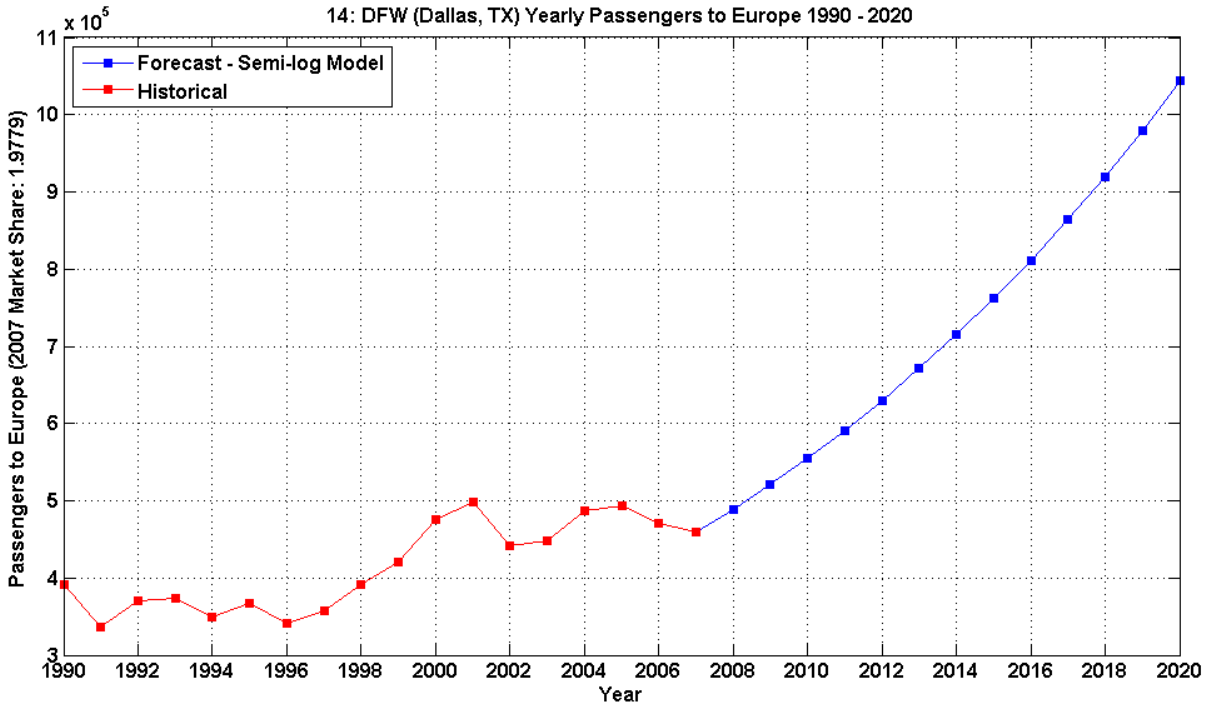
14: DFW (Dallas, TX) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 1.9779)
Year
3
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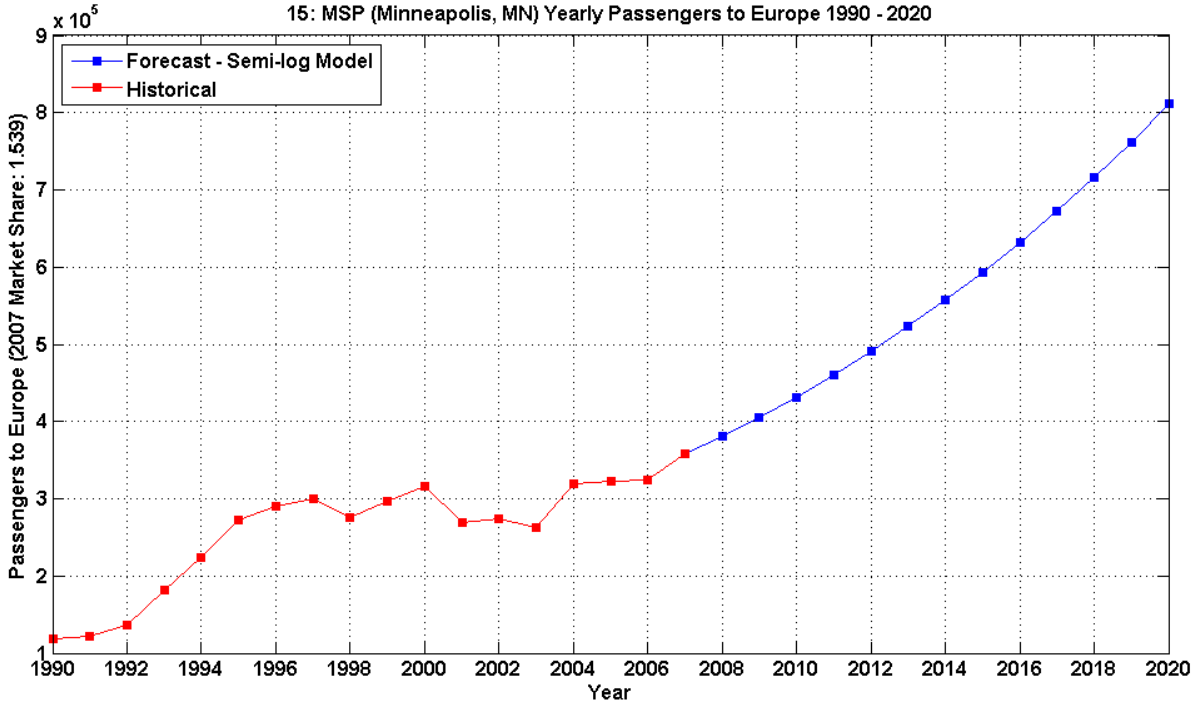
15: MSP (Minneapolis, MN) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 1.539)
Year
1
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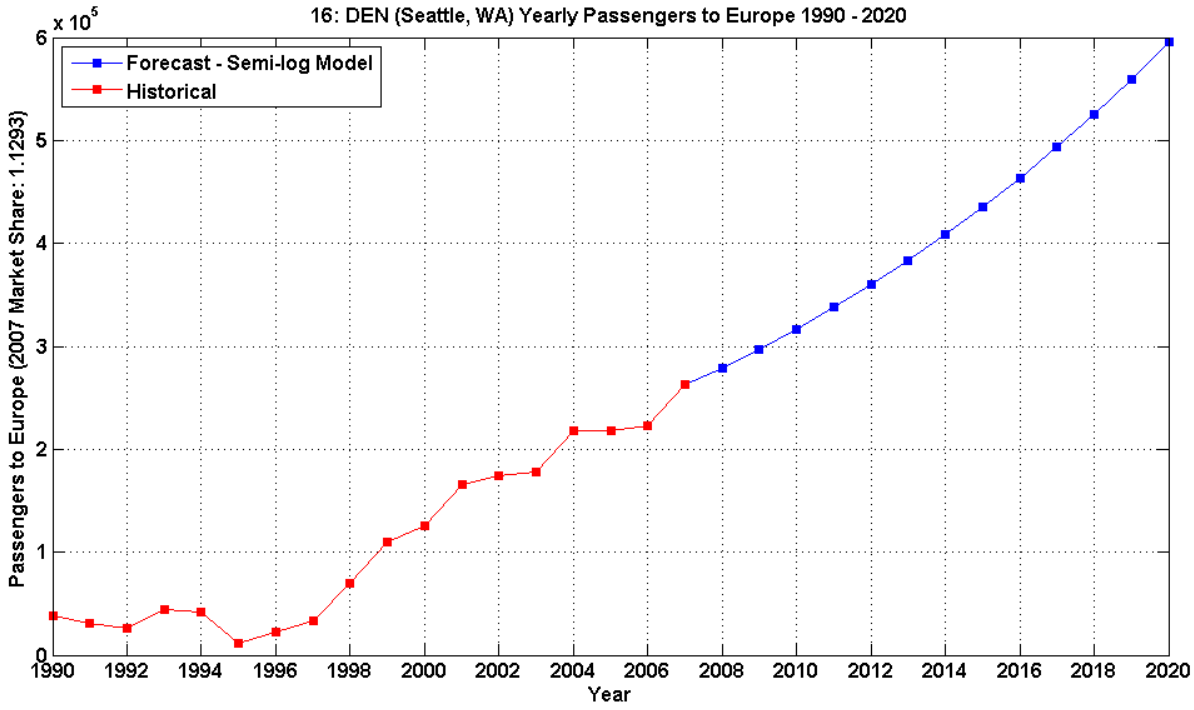
16: DEN (Seattle, WA) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 1.1293)
Year
0
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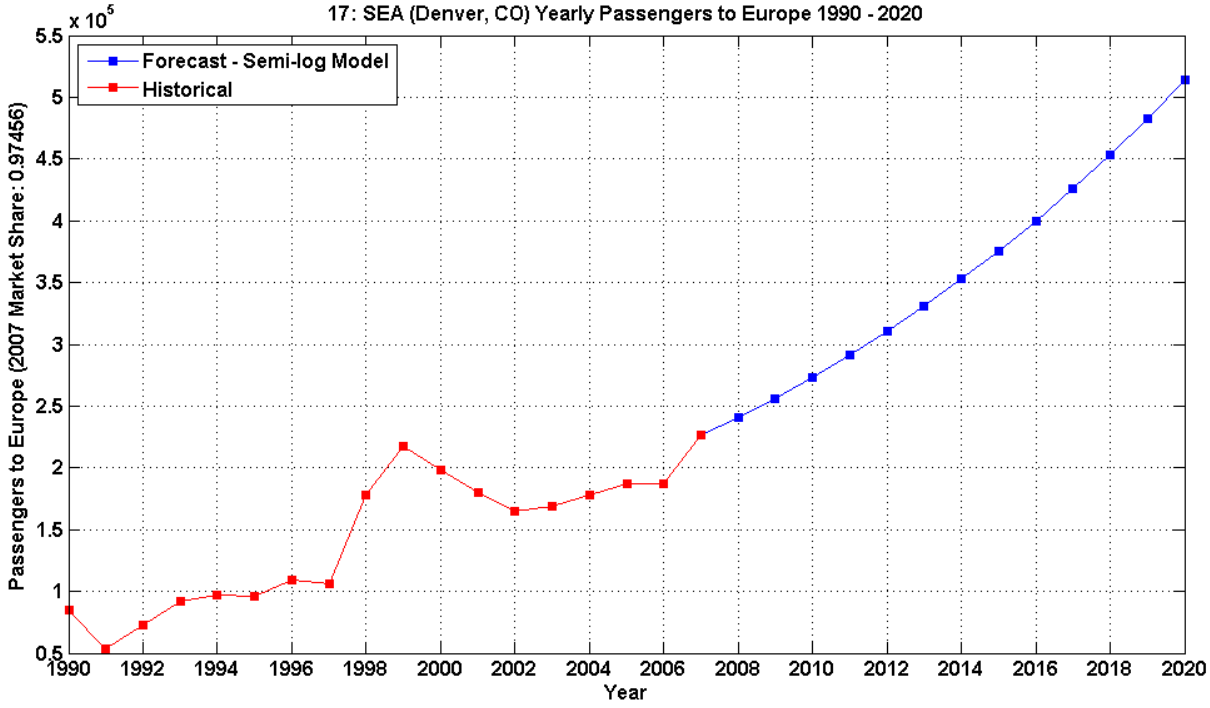
17: SEA (Denver, CO) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.97456)
Year
5.5
5
4.5
4
3.5
3
2.5
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1990
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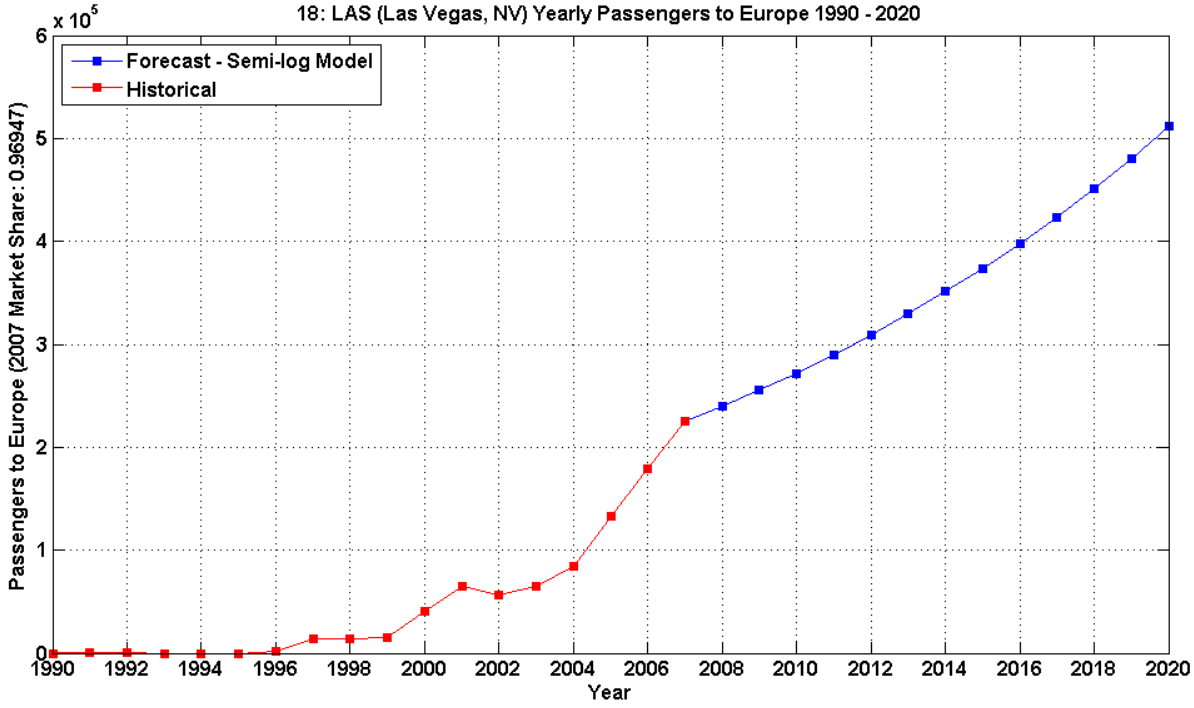
18: LAS (Las Vegas, NV) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.96947)
Year
6
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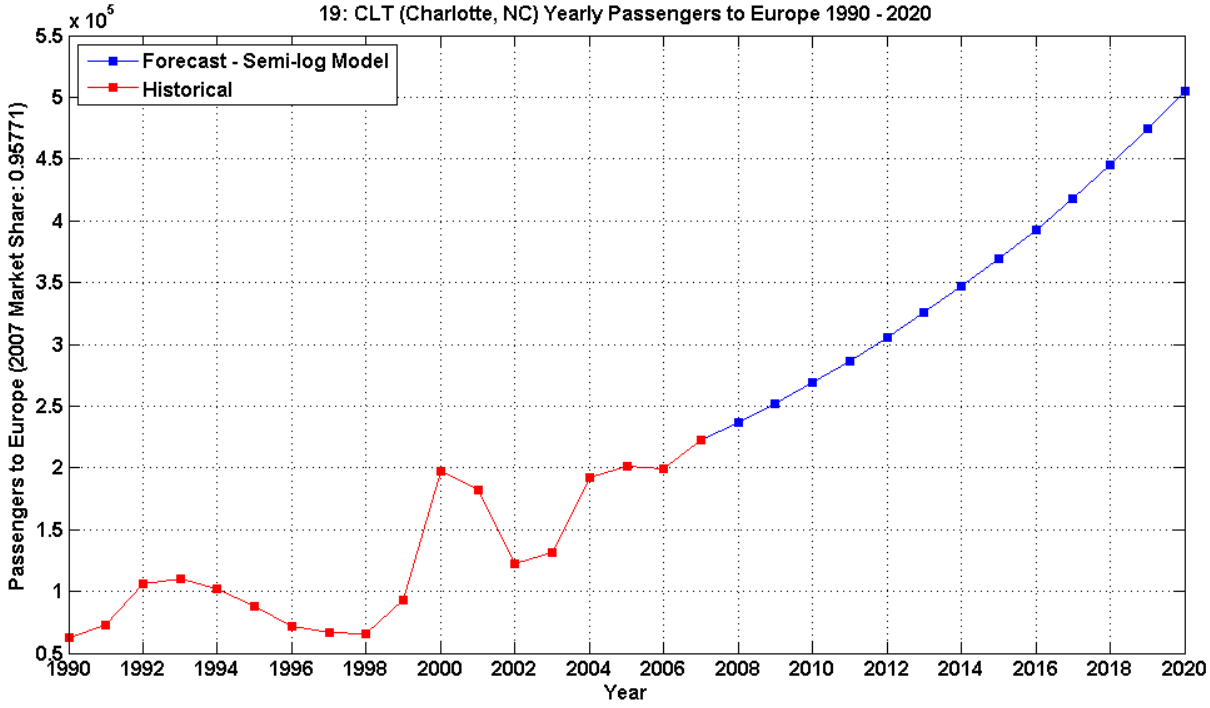
19: CLT (Charlotte, NC) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.95771)
Year
5.5
5
4.5
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3.5
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2.5
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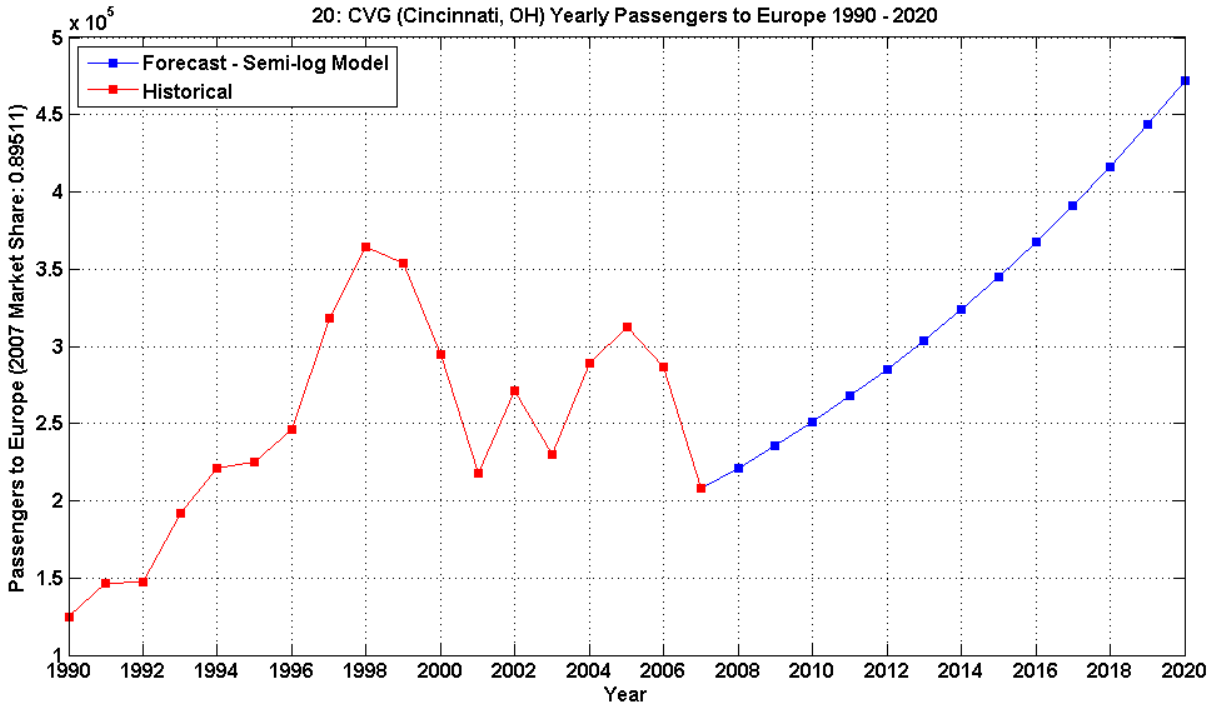
20: CVG (Cincinnati, OH) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.89511)
Year
5
4.5
4
3.5
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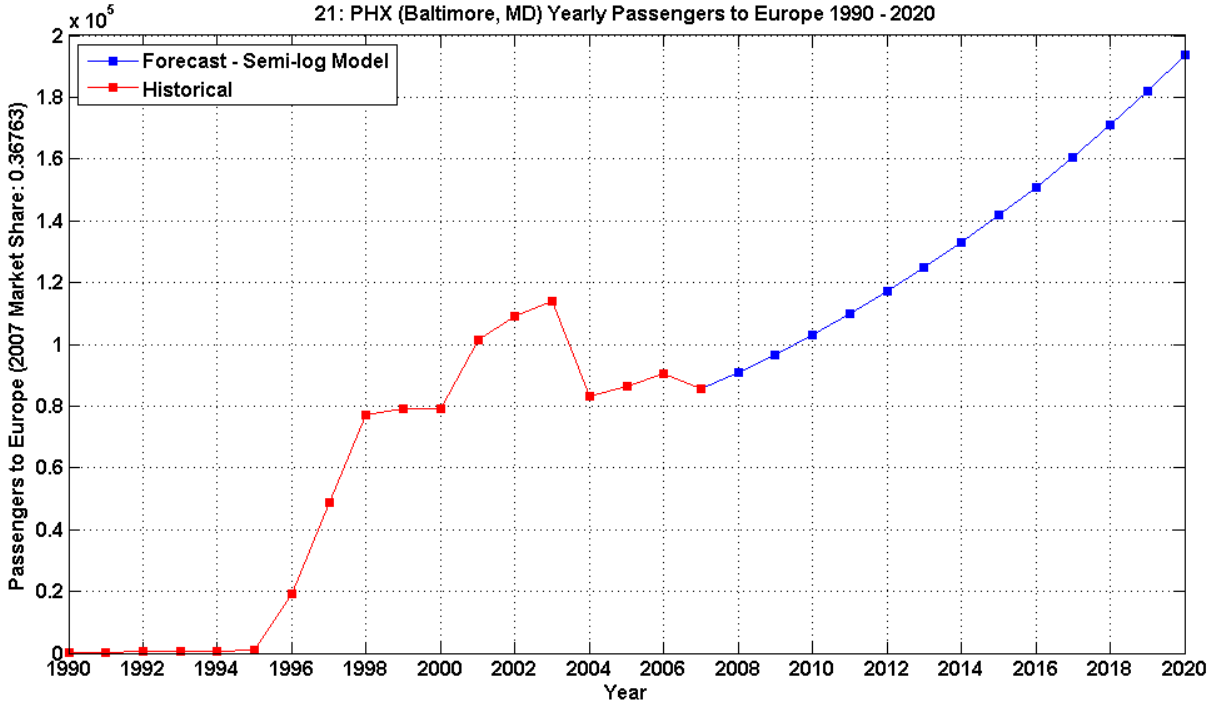
21: PHX (Baltimore, MD) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.36763)
Year
0
0.2
0.4
0.6
0.8
1
1.2
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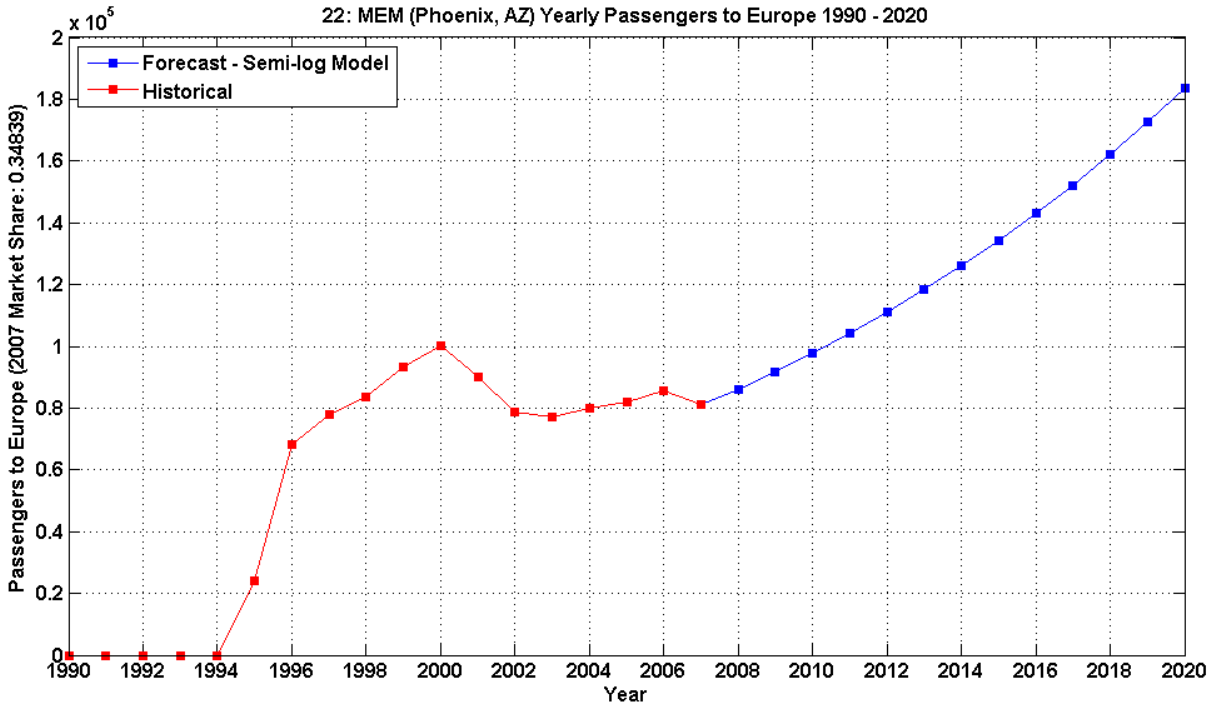
22: MEM (Phoenix, AZ) Yearly Passengers to Europe 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.34839)
Year
0
0.2
0.4
0.6
0.8
1
1.2
1.4
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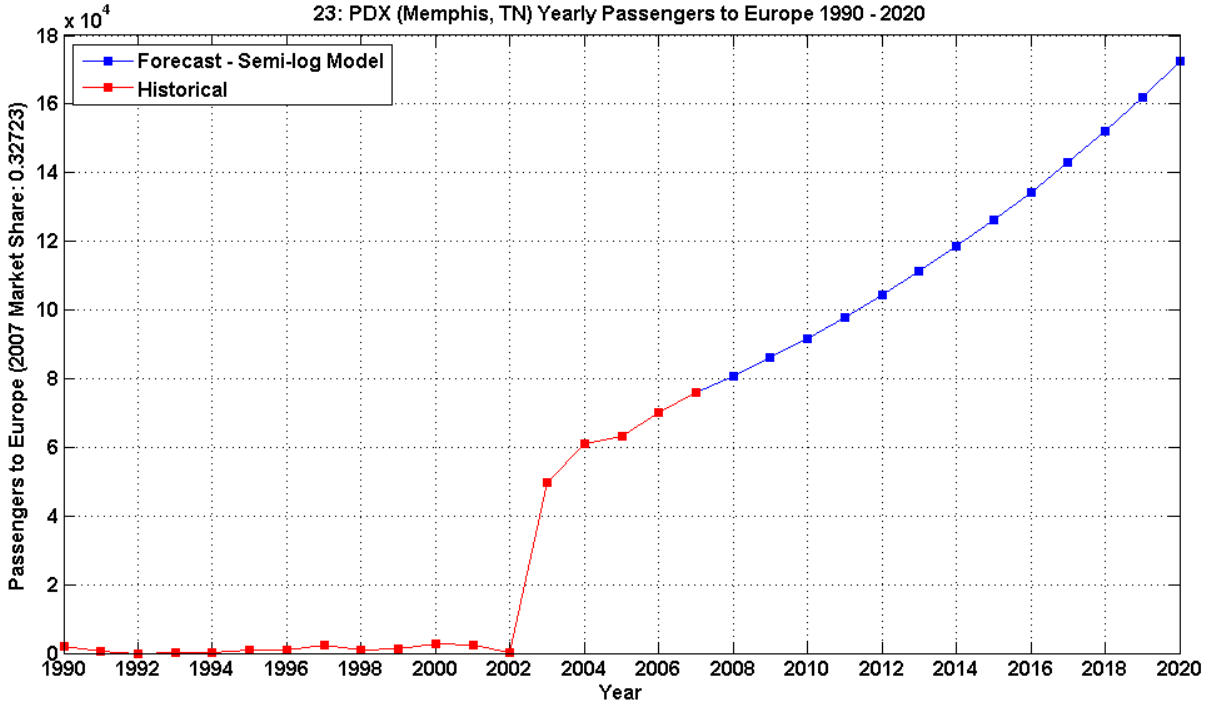
23: PDX (Memphis, TN) Yearly Passengers to Europe 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.32723)
Year
0
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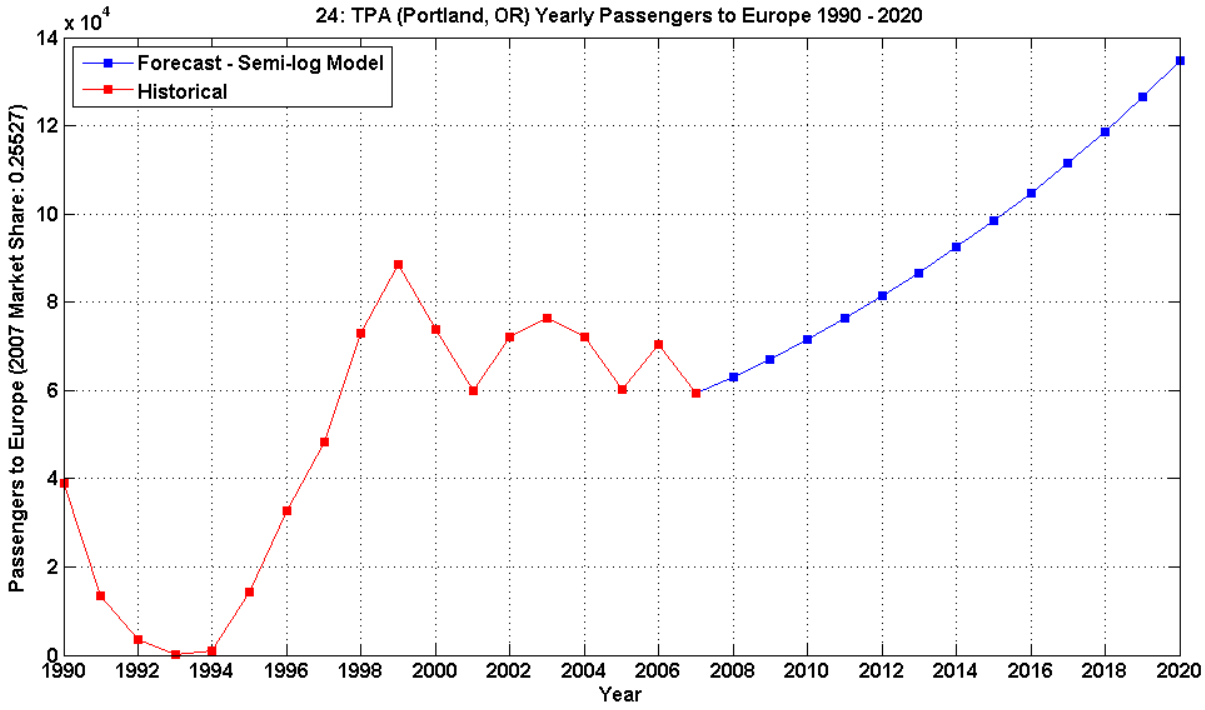
24: TPA (Portland, OR) Yearly Passengers to Europe 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.25527)
Year
0
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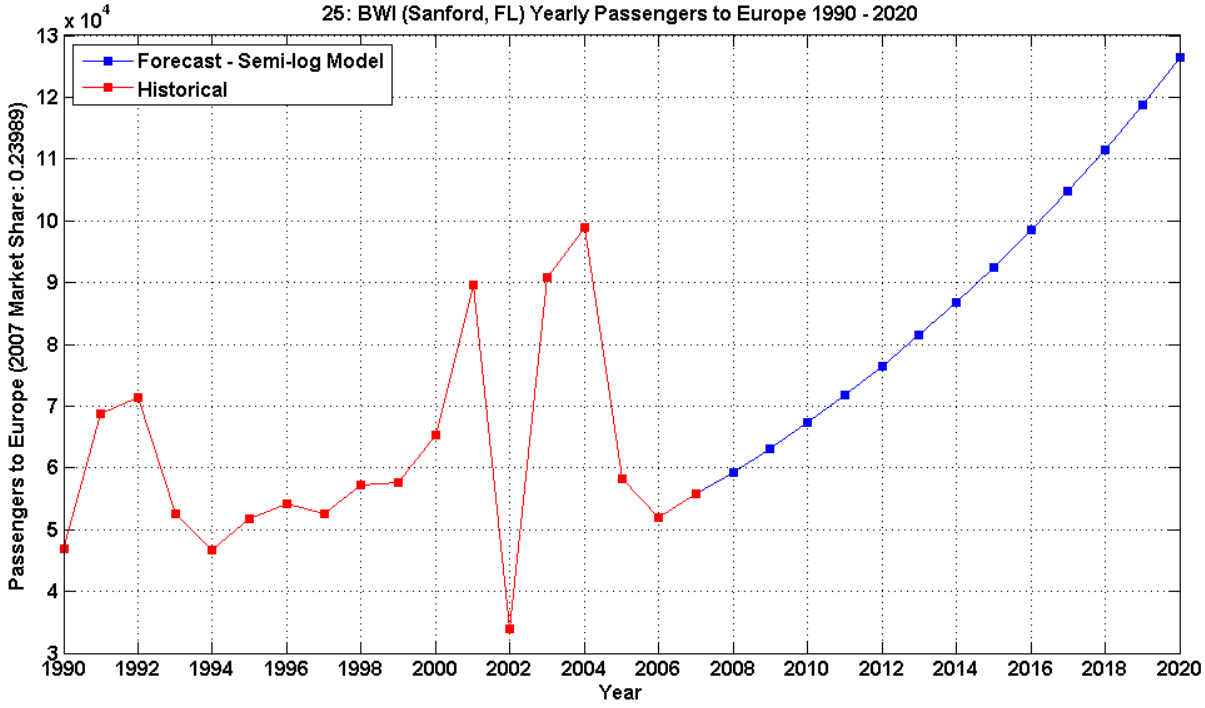
25: BWI (Sanford, FL) Yearly Passengers to Europe 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.23989)
Year
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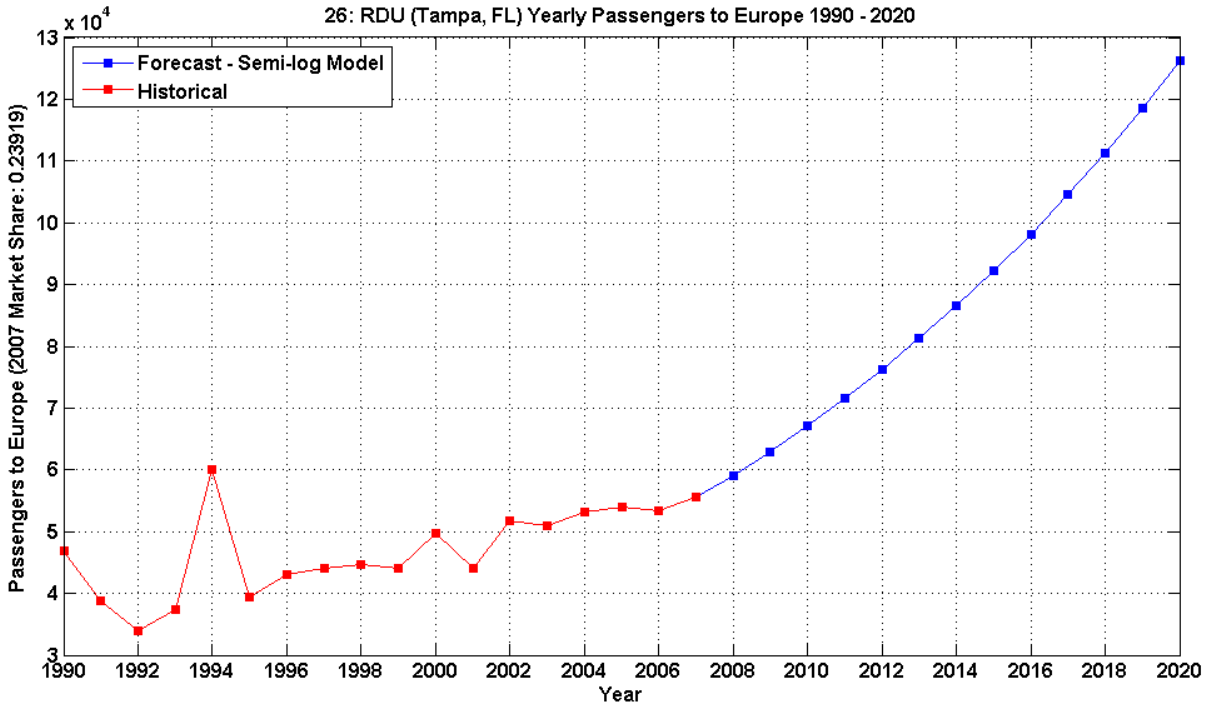
26: RDU (Tampa, FL) Yearly Passengers to Europe 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.23919)
Year
3
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8
9
10
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12
13
1990
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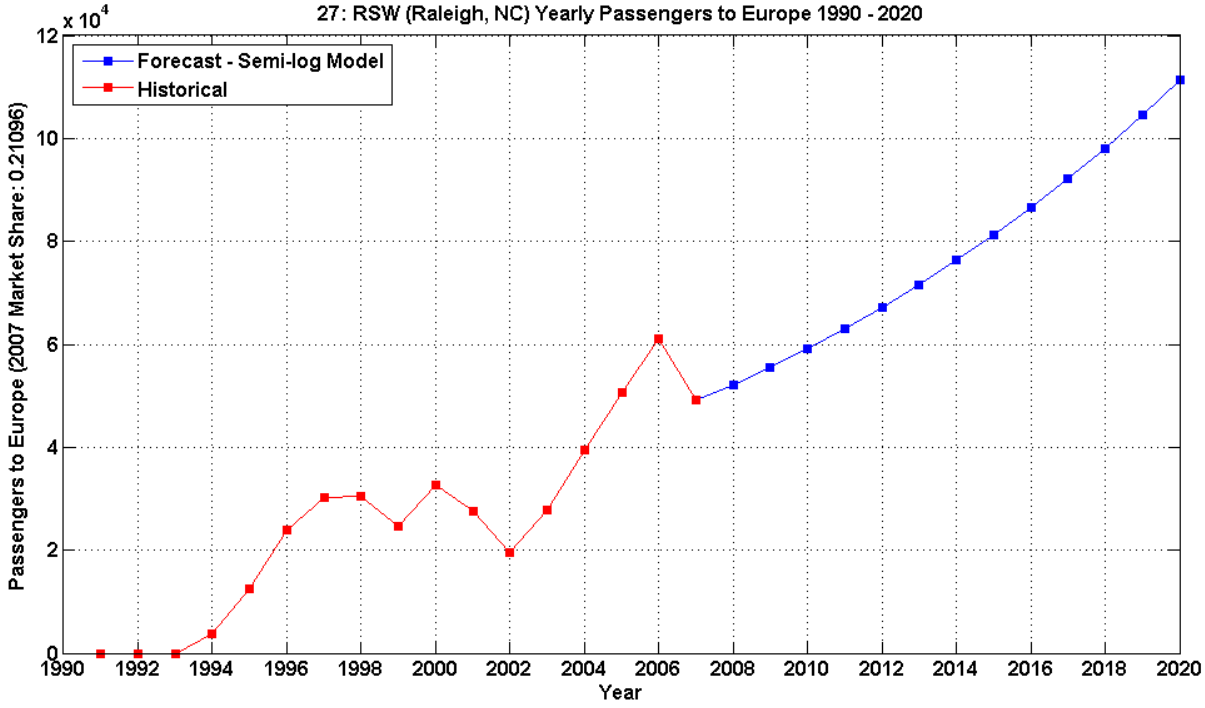
27: RSW (Raleigh, NC) Yearly Passengers to Europe 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.21096)
Year
0
2
4
6
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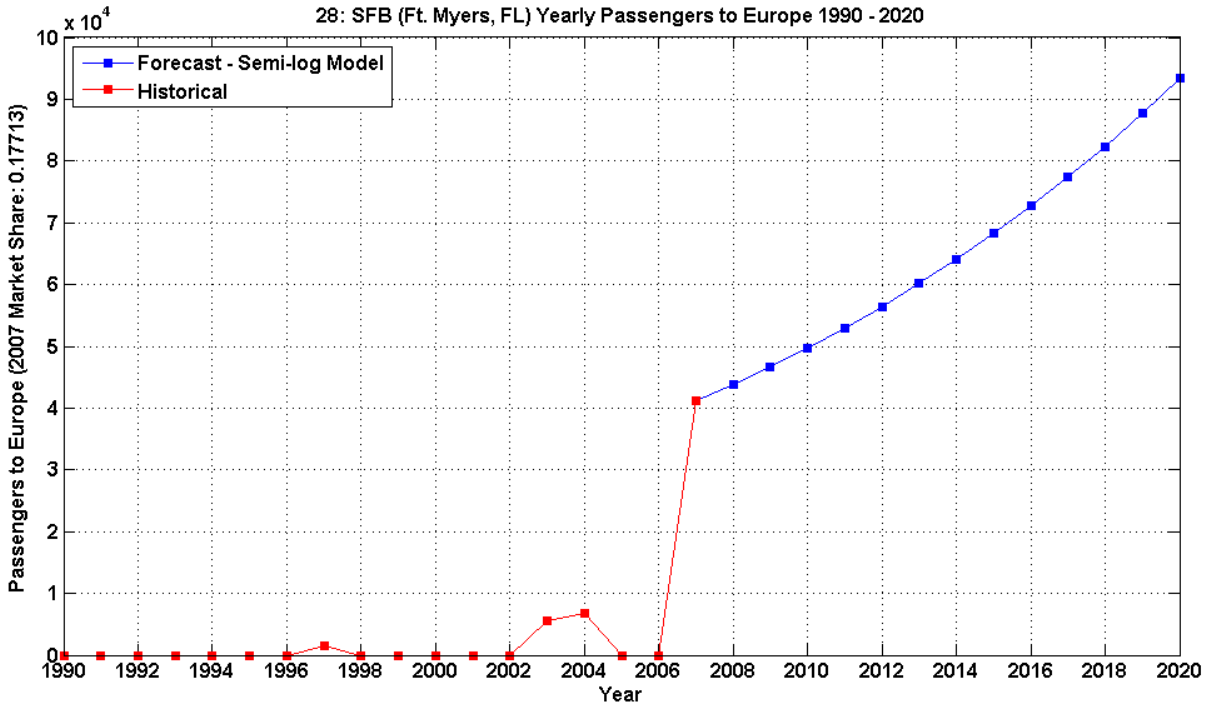
2020


28: SFB (Ft. Myers, FL) Yearly Passengers to Europe 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.17713)
Year
0
1
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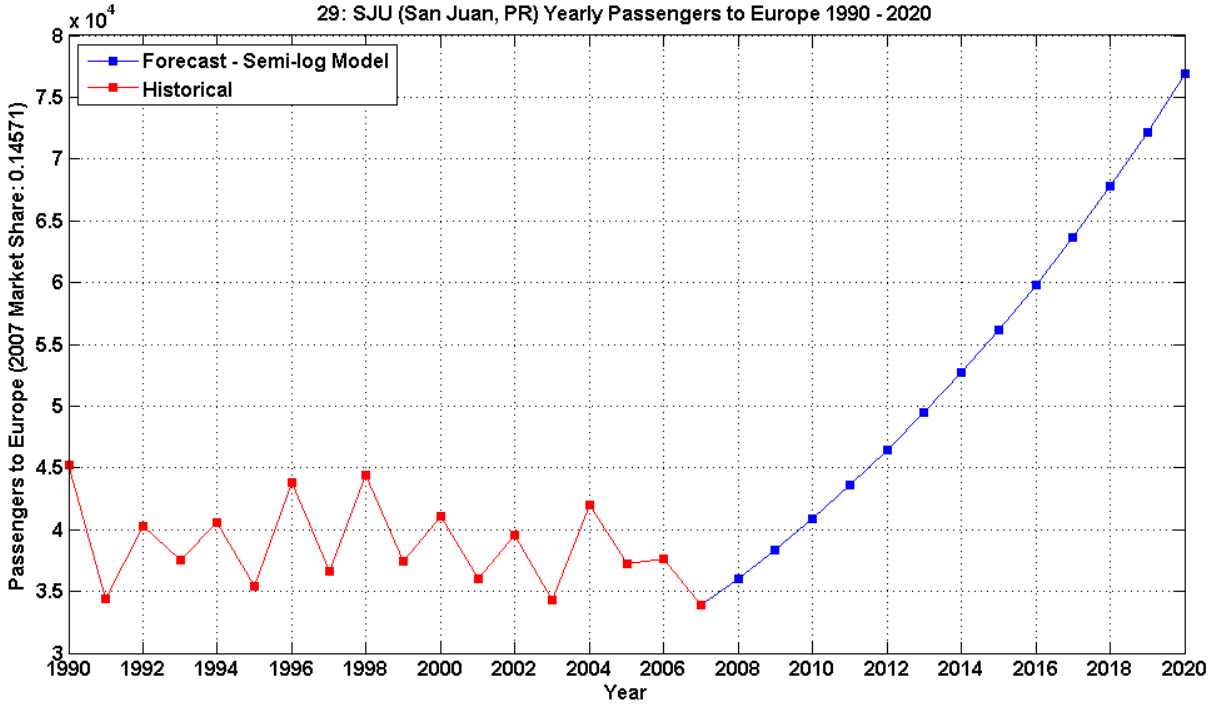
29: SJU (San Juan, PR) Yearly Passengers to Europe 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.14571)
Year
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
1990
1992
1994
1996
1998
2000
2002
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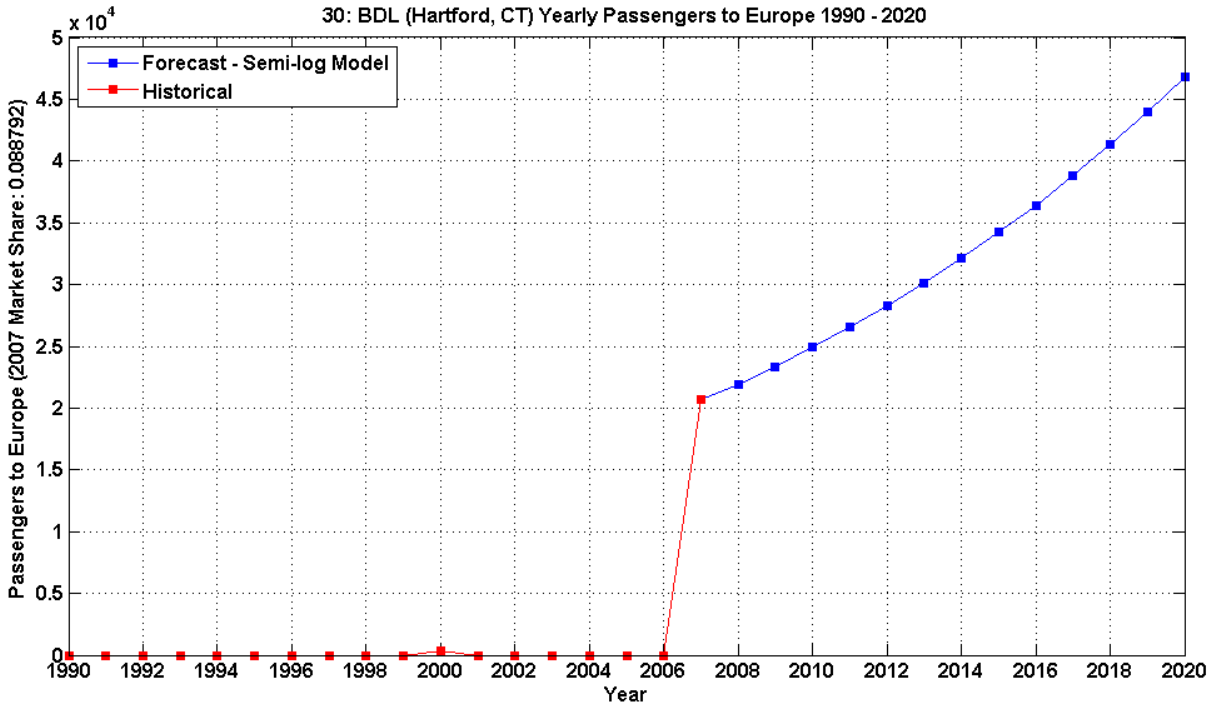
2016
2018
2020


30: BDL (Hartford, CT) Yearly Passengers to Europe 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers to Europe (2007 Market Share: 0.088792)
Year
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1990
1992
1994
1996
1998
2000
2002
2004
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2012
2014
2016
2018
2020

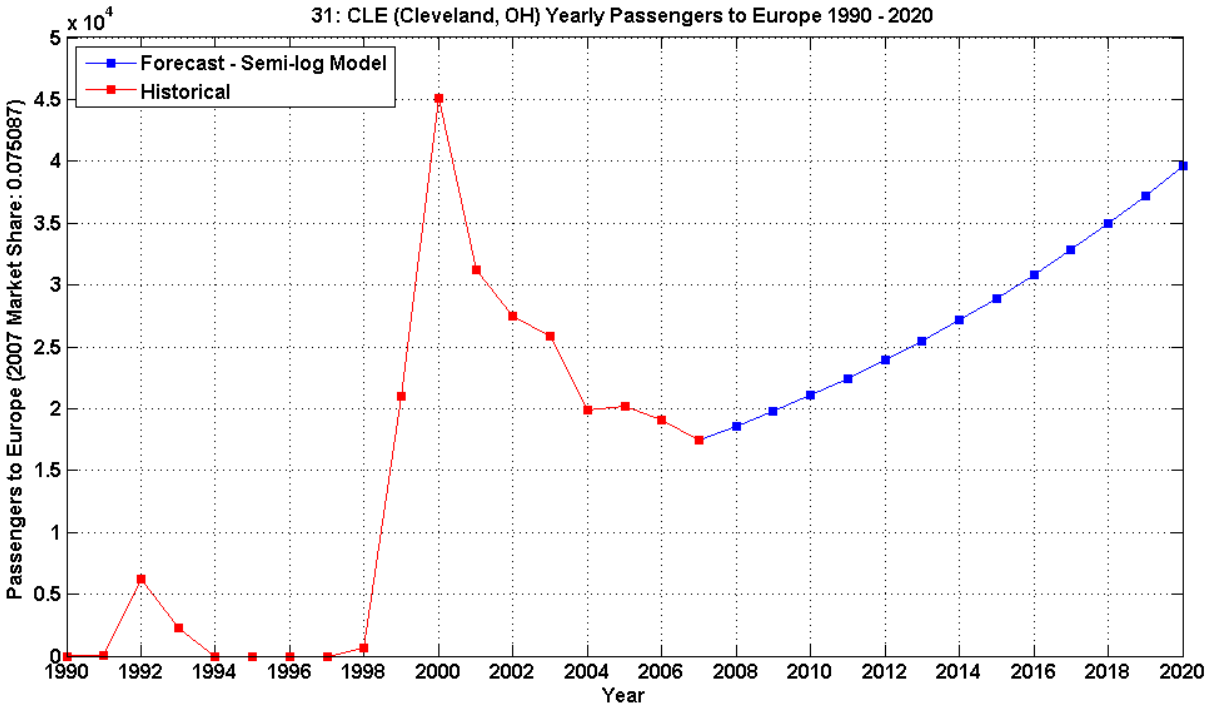
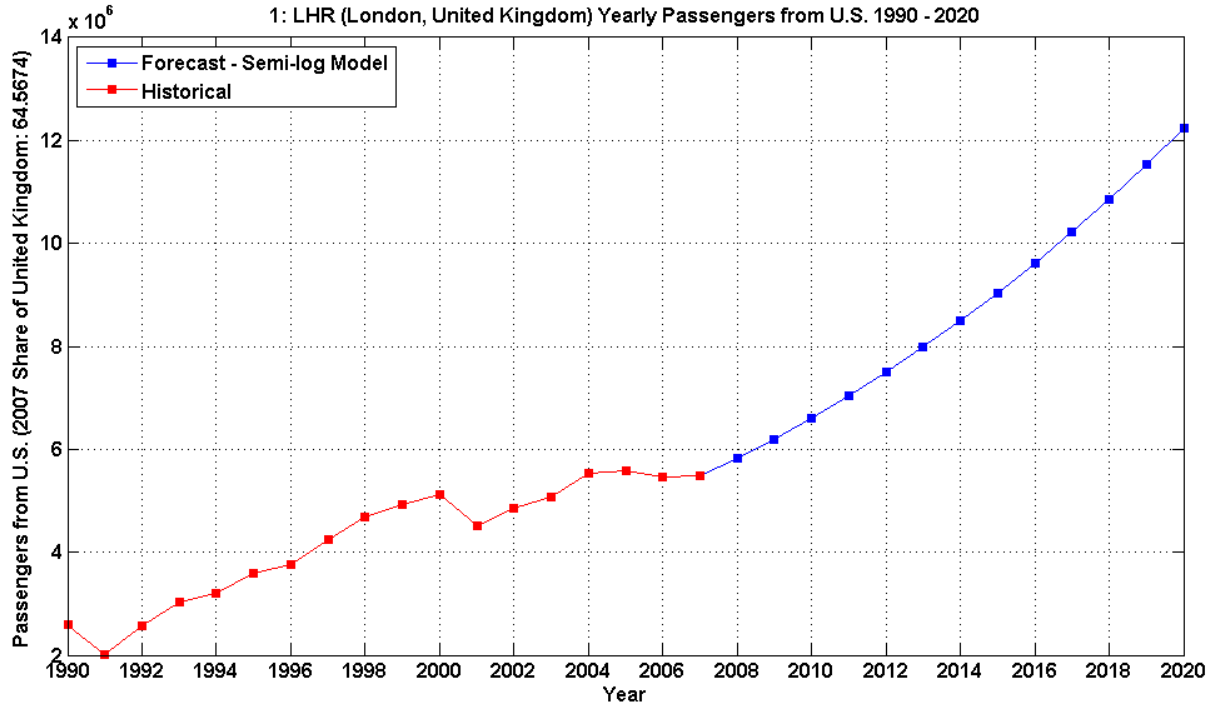


Figure C.2-1: Passengers Traffic to Selected Nine European Countries at 31 United States Gateway Airports during 1990 – 2020 in the Order of Decreasing 2007 Passenger Traffic
(Historical Source: 1990 - 2007 T100 International Market Data)

Table C.2-1 2007, 2010, 2015 and 2020 Passengers Traffic to Selected Nine European Countries at 31 United States Gateway Airports ***(2007 Data Source: 2007 T100 International Market Data)***

	US Airport (City, State)	2007	2010	2015	2020
1	JFK (New York, NY)	4,507,942	5,436,526	7,470,207	10,222,848
2	EWR (Newark, NJ)	2,446,994	2,951,047	4,054,966	5,549,150
3	ORD (Chicago, IL)	2,261,605	2,727,470	3,747,754	5,128,736
4	IAD (Washington, DC)	1,638,793	1,976,365	2,715,679	3,716,359
5	ATL (Atlanta, GA)	1,549,981	1,869,259	2,568,507	3,514,957
6	LAX (Los Angeles, CA)	1,528,562	1,843,428	2,533,013	3,466,384
7	BOS (Boston, MA)	1,255,545	1,514,173	2,080,590	2,847,252
8	MIA (Miami, FL)	1,148,659	1,385,270	1,903,467	2,604,862
9	SFO (San Francisco, CA)	1,136,957	1,371,157	1,884,076	2,578,325
10	PHL (Philadelphia, PA)	1,012,784	1,221,406	1,678,306	2,296,733
11	DTW (Detroit, MI)	850,867	1,026,136	1,409,990	1,929,547
12	IAH (Houston, TX)	747,810	901,850	1,239,212	1,695,840
13	MCO (Orlando, FL)	582,038	701,931	964,508	1,319,912
14	DFW (Dallas, TX)	460,091	554,864	762,427	1,043,368
15	MSP (Minneapolis, MN)	357,978	431,717	593,213	811,802
16	DEN (Seattle, WA)	262,684	316,794	435,299	595,699
17	SEA (Denver, CO)	226,693	273,389	375,658	514,081
18	LAS (Las Vegas, NV)	225,508	271,960	373,694	511,394
19	CLT (Charlotte, NC)	222,774	268,663	369,164	505,194
20	CVG (Cincinnati, OH)	208,212	251,101	345,033	472,171
21	PHX (Baltimore, MD)	85,514	103,129	141,707	193,924
22	MEM (Phoenix, AZ)	81,038	97,731	134,290	183,773
23	PDX (Memphis, TN)	76,118	91,797	126,137	172,616
24	TPA (Portland, OR)	59,378	71,609	98,397	134,654
25	BWI (Sanford, FL)	55,800	67,294	92,467	126,540
26	RDU (Tampa, FL)	55,639	67,100	92,201	126,175
27	RSW (Raleigh, NC)	49,072	59,180	81,318	111,283
28	SFB (Ft. Myers, FL)	41,202	49,689	68,277	93,435
29	SJU (San Juan, PR)	33,894	40,876	56,166	76,863
30	BDL (Hartford, CT)	20,654	24,908	34,226	46,838
31	CLE (Cleveland, OH)	17,466	21,064	28,943	39,608

C.3
Passengers Traffic from Untied States to
35 Gateway Airports in Selected Nine European Countries


1: LHR (London, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 64.5674)
Year
14
12
10
8
6
4
2
1990
1992
1994
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2000
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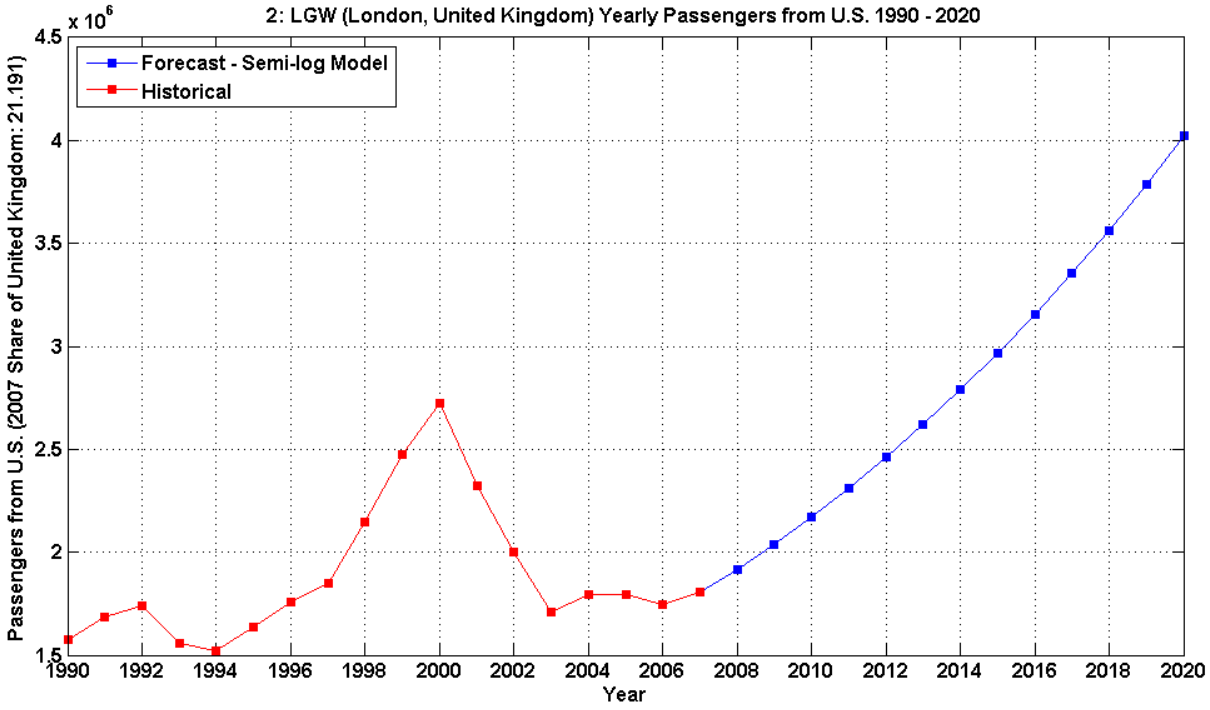
2016
2018
2020


2: LGW (London, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 21.191)
Year
4.5
4
3.5
3
2.5
2
1.5
1990
1992
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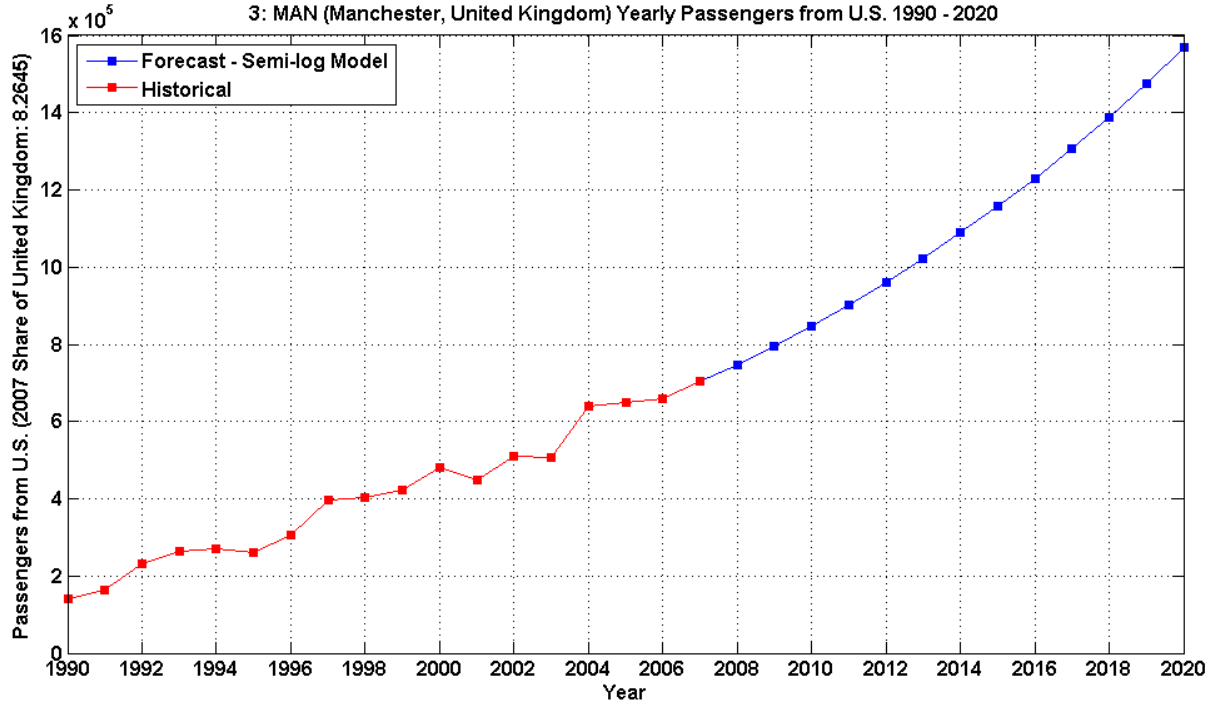
2018
2020


3: MAN (Manchester, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 8.2645)
Year
0
2
4
6
8
10
12
14
16
1990
1992
1994
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1998
2000
2002
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2014
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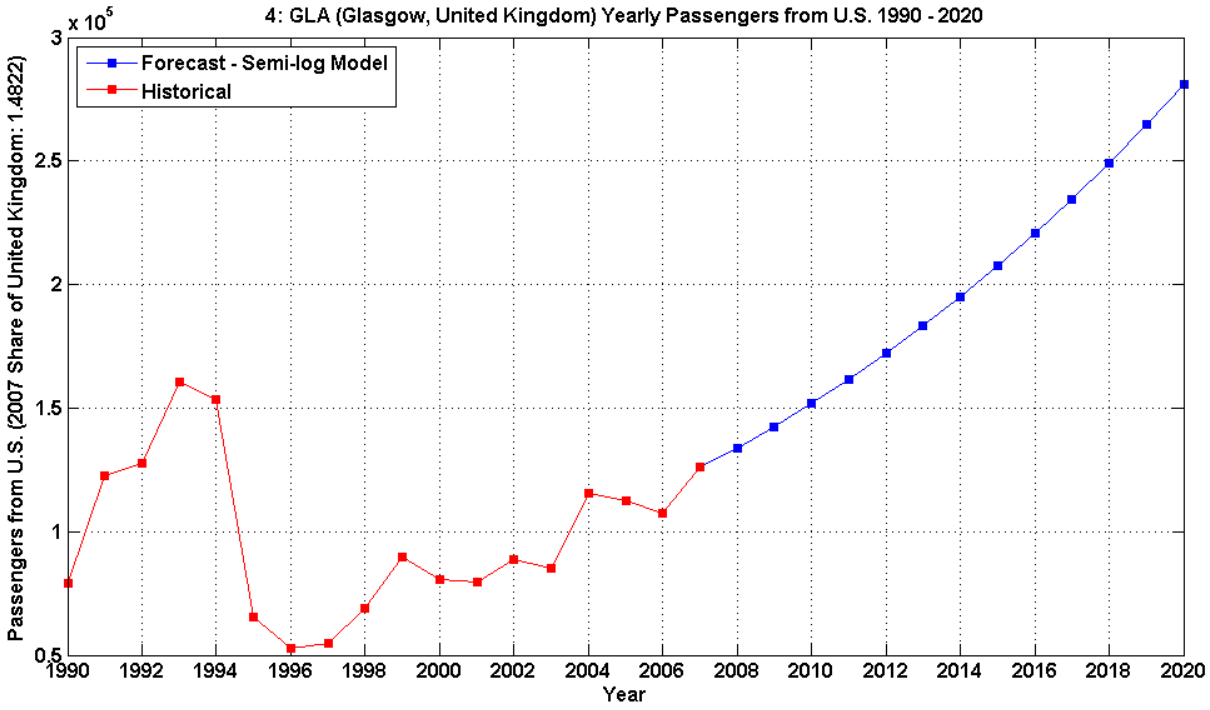
2020


4: GLA (Glasgow, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 1.4822)
Year
0.5
1
1.5
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2.5
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1990
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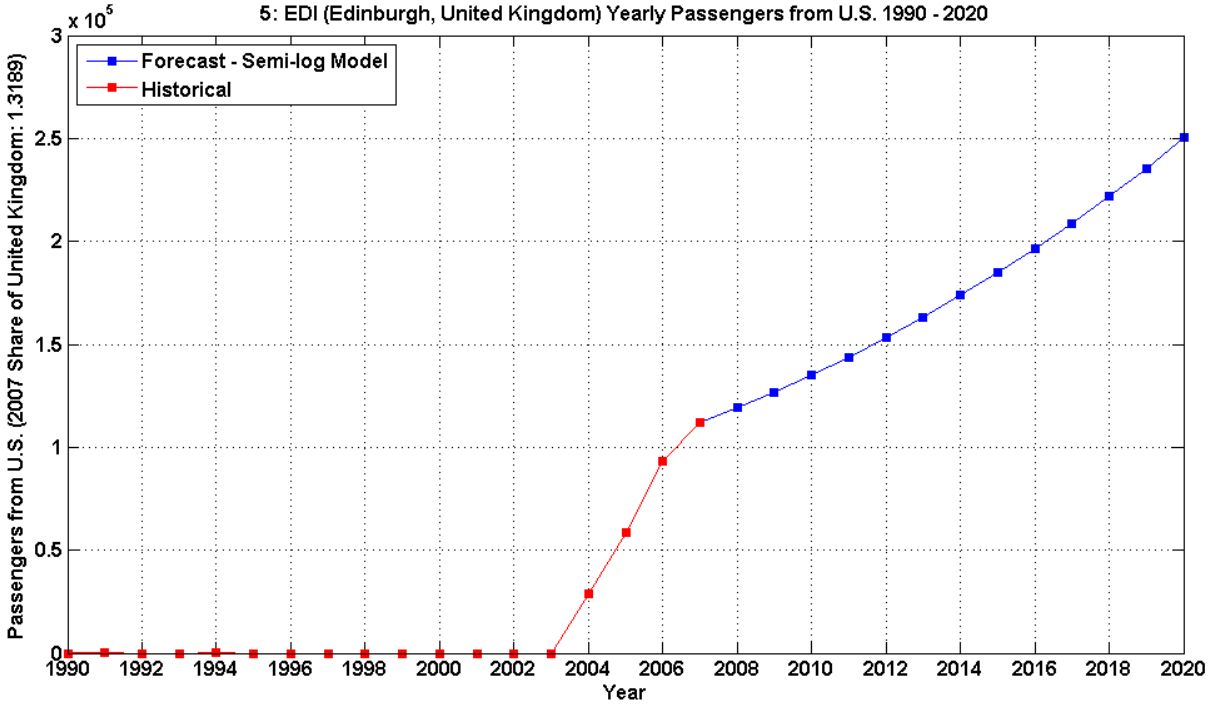
2020


5: EDI (Edinburgh, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 1.3189)
Year
0
0.5
1
1.5
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2.5
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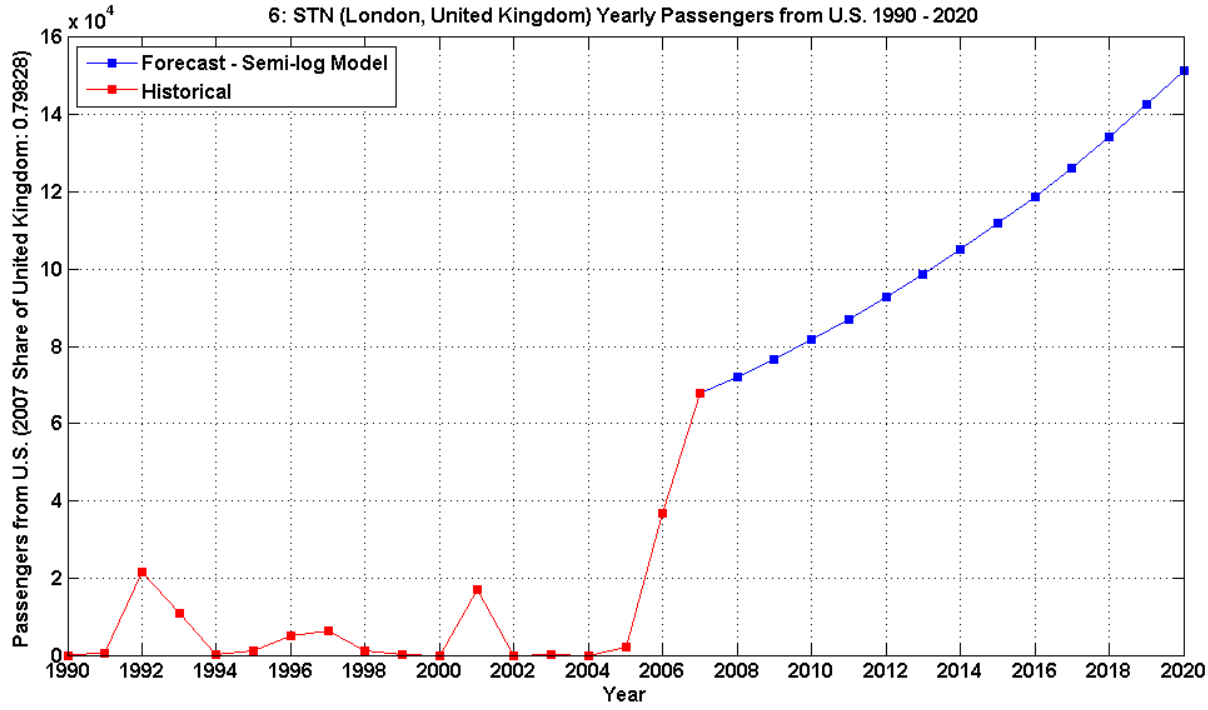
6: STN (London, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 0.79828)
Year
0
2
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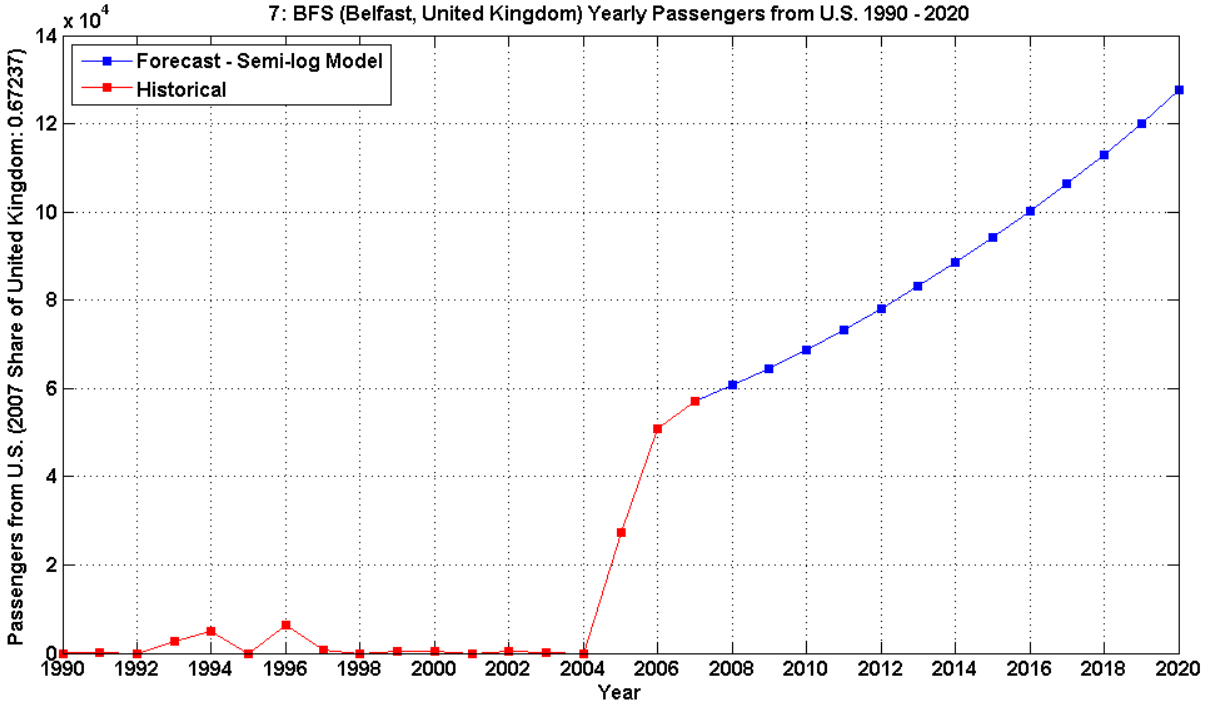
7: BFS (Belfast, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 0.67237)
Year
0
2
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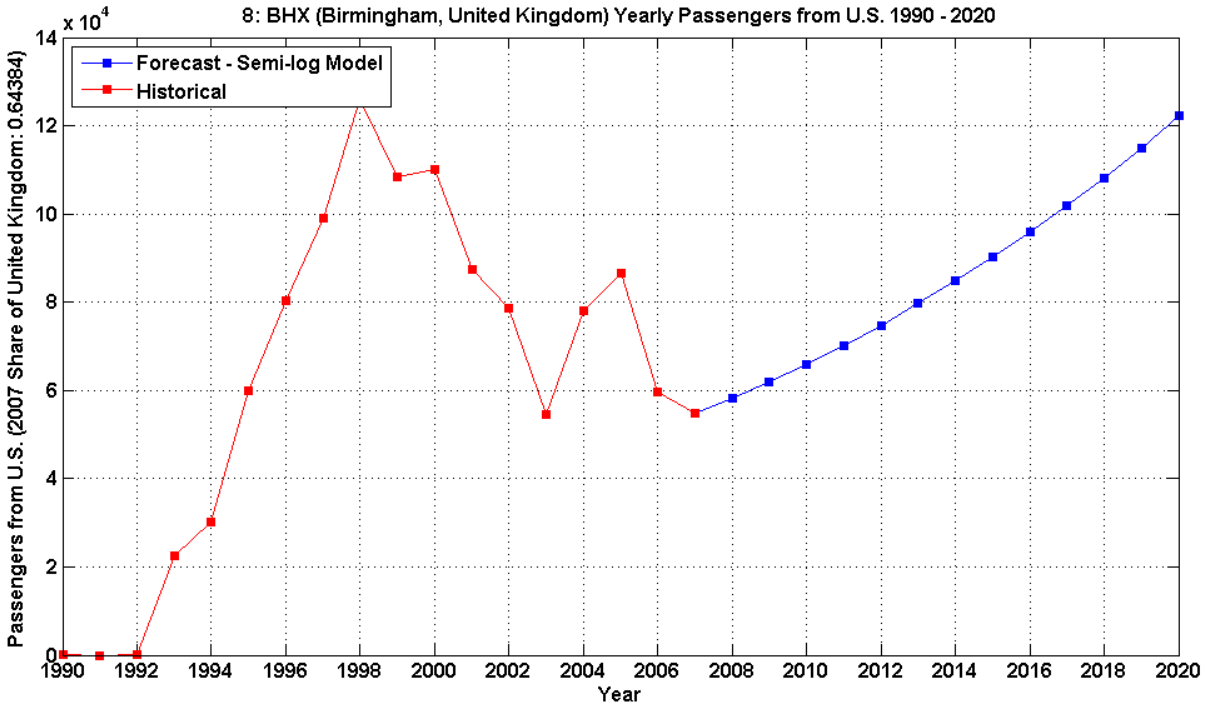
8: BHX (Birmingham, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 0.64384)
Year
0
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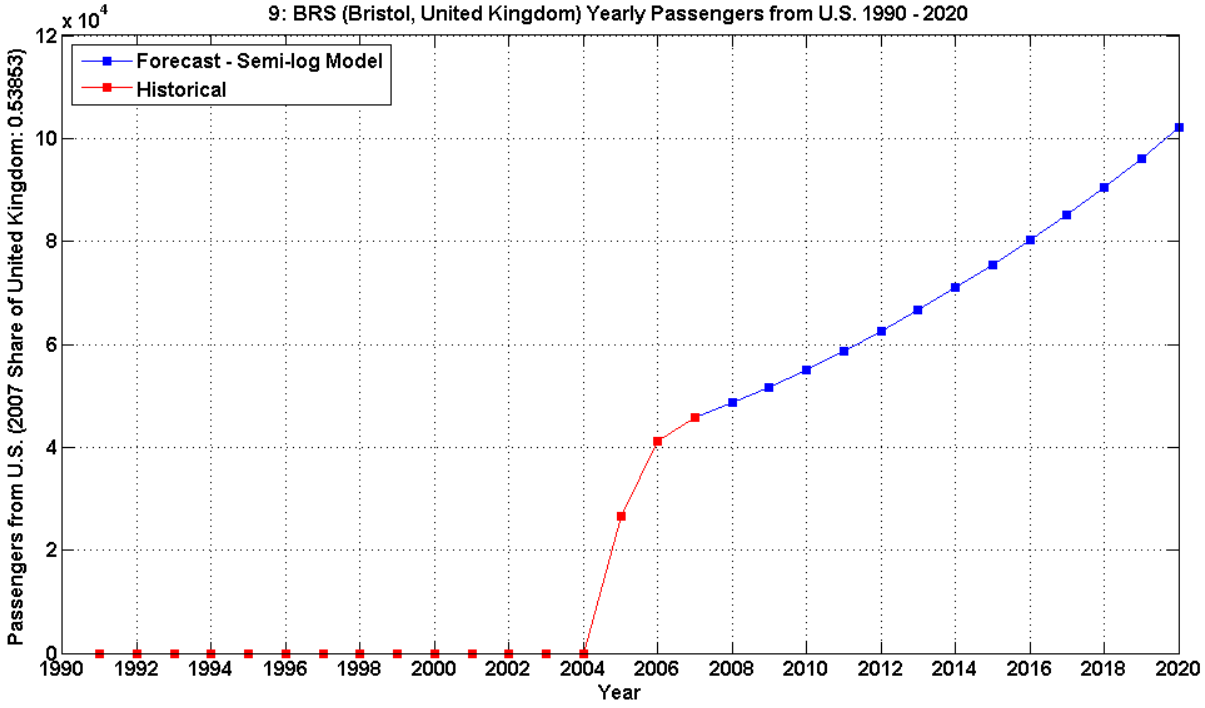
2020


9: BRS (Bristol, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 0.53853)
Year
0
2
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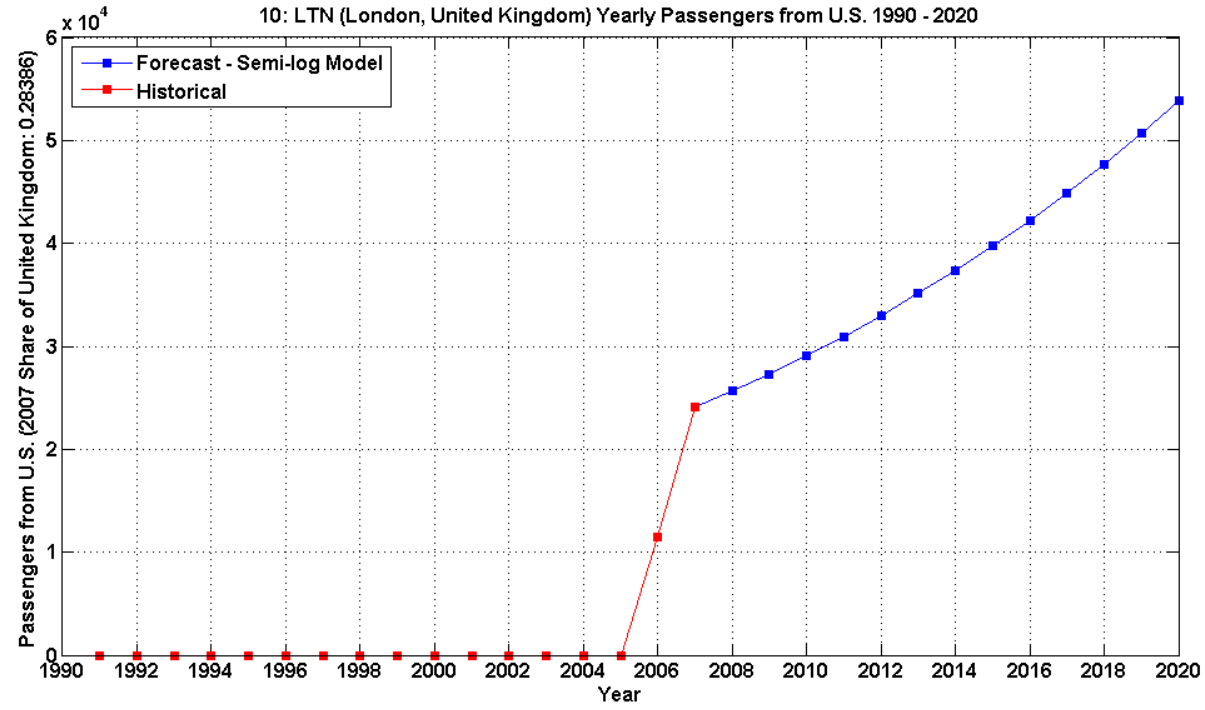
2020


10: LTN (London, United Kingdom) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of United Kingdom: 0.26386)
Year
0
1
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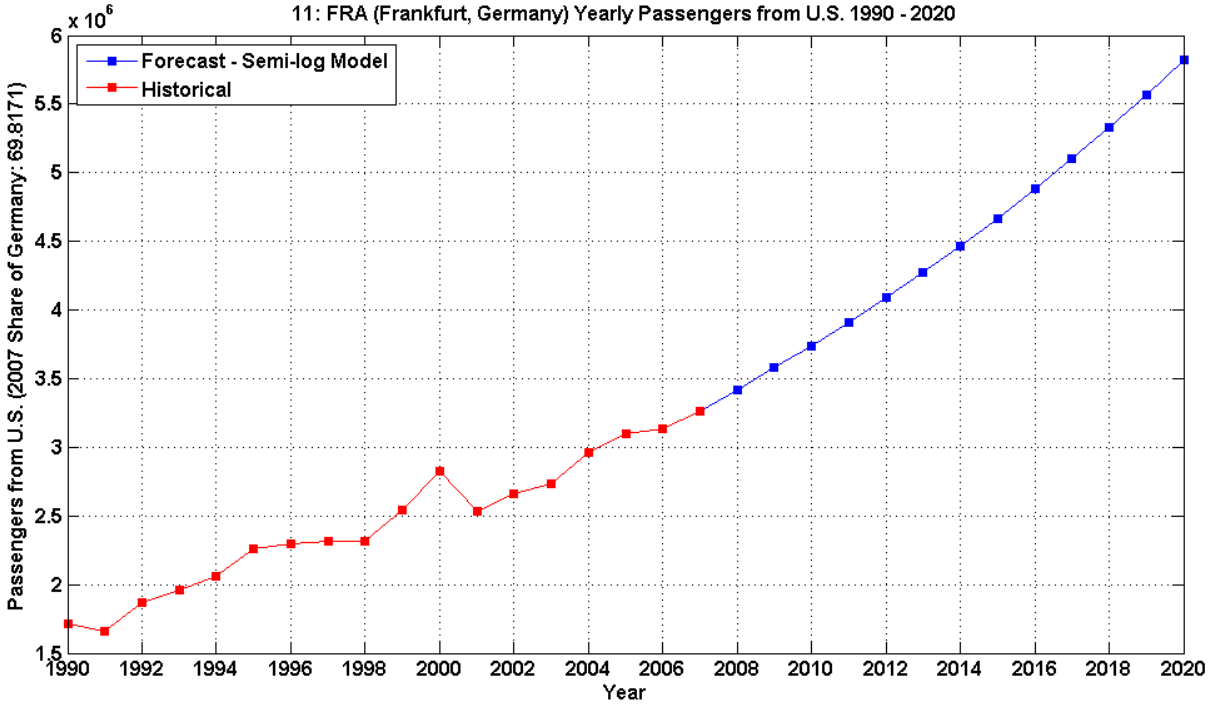
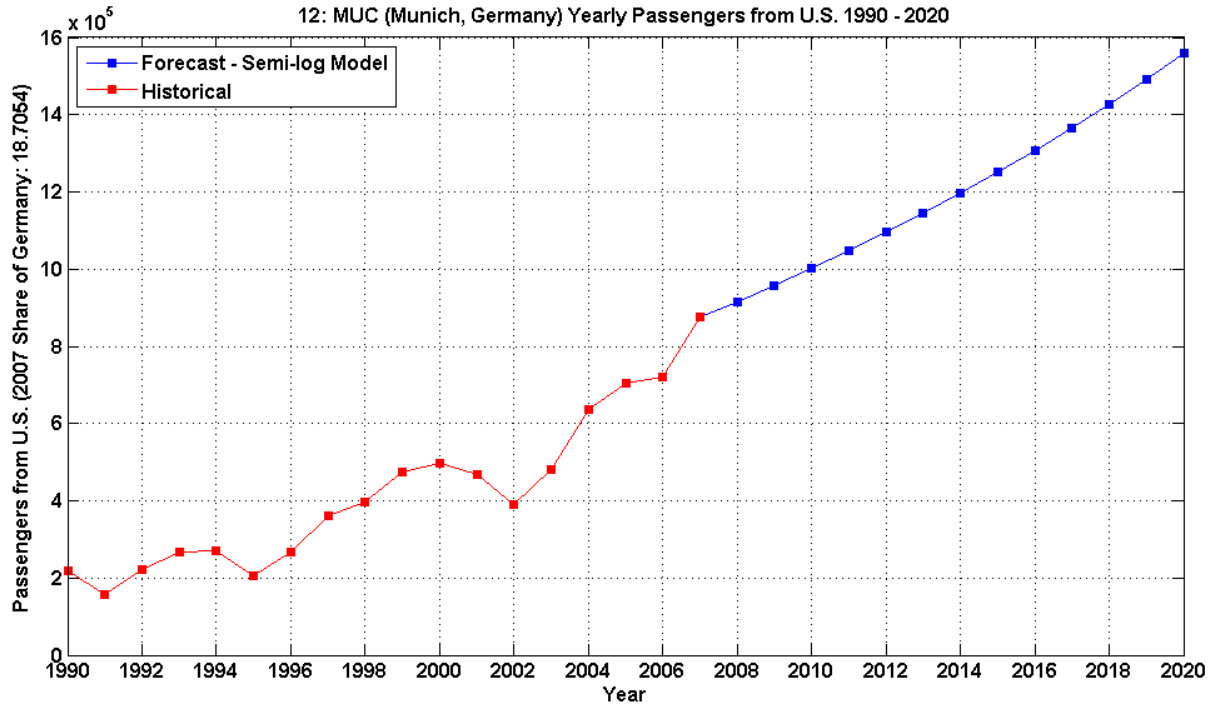
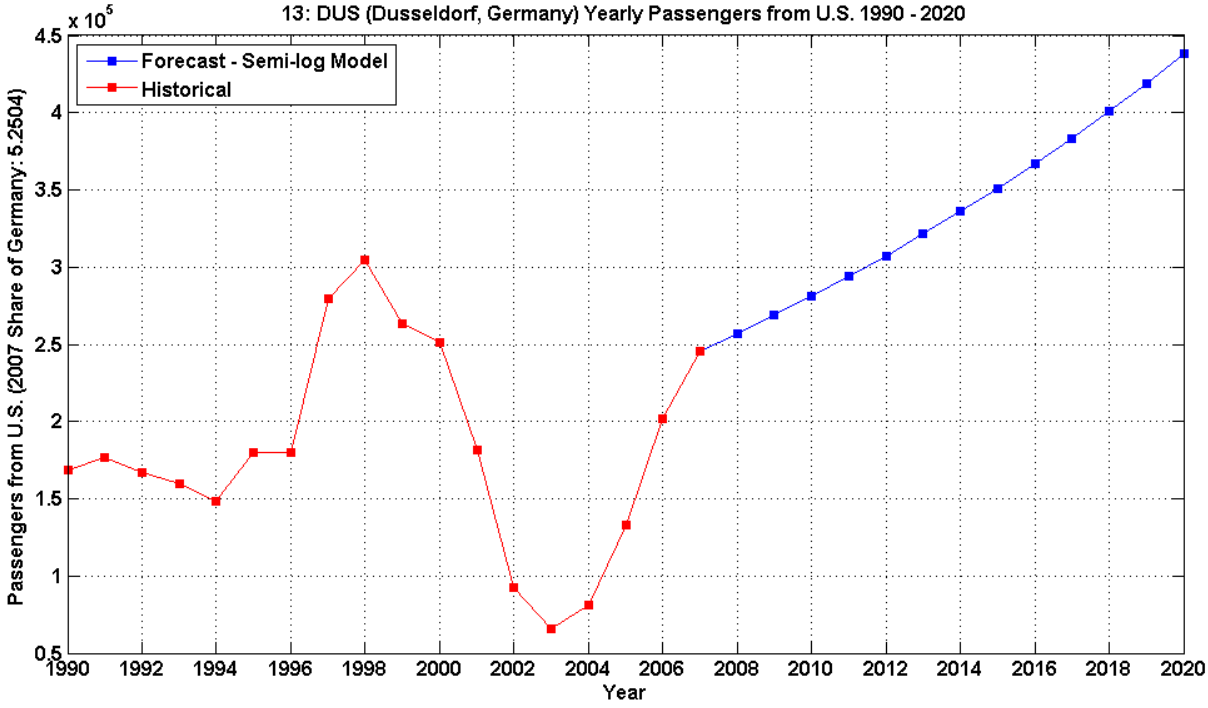
2020


11: FRA (Frankfurt, Germany) Yearly Passengers from U.S. 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Germany: 69.8171)
Year


12: MUC (Munich, Germany) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Germany: 18.7054)
Year


13: DUS (Dusseldorf, Germany) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Germany: 5.2504)
Year
0.5
1
1.5
2
2.5
3
3.5
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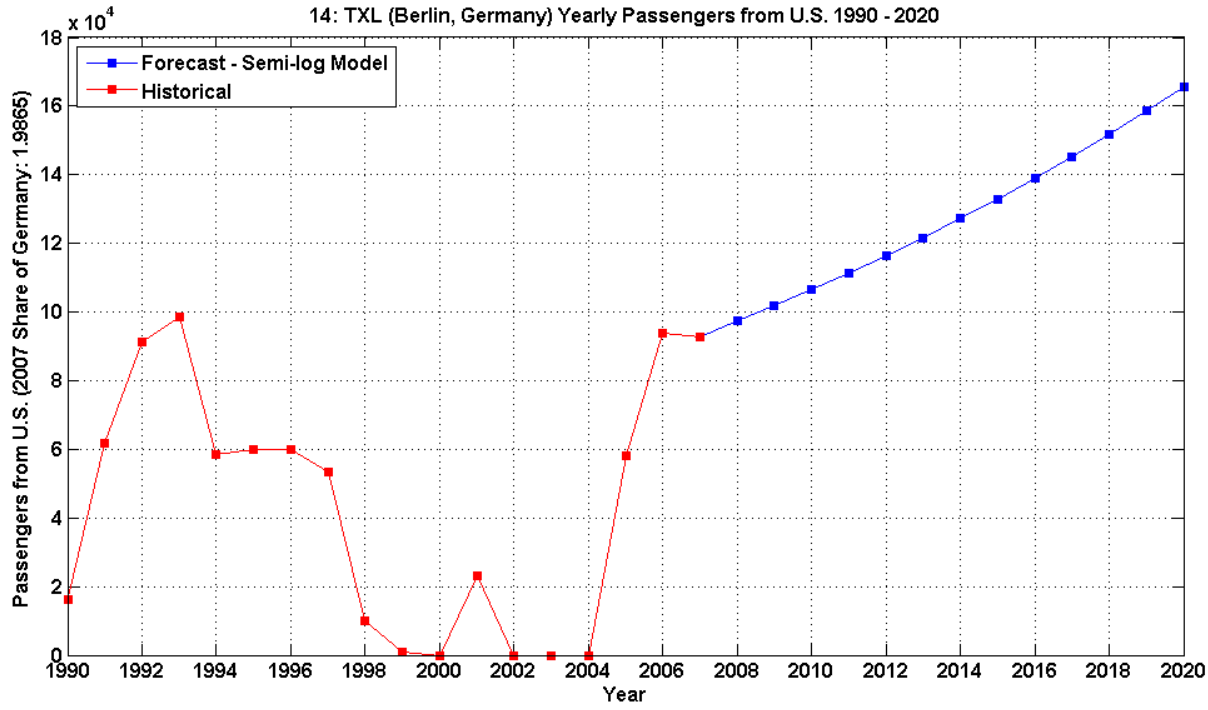
14: TXL (Berlin, Germany) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Germany: 1.9865)
Year
0
2
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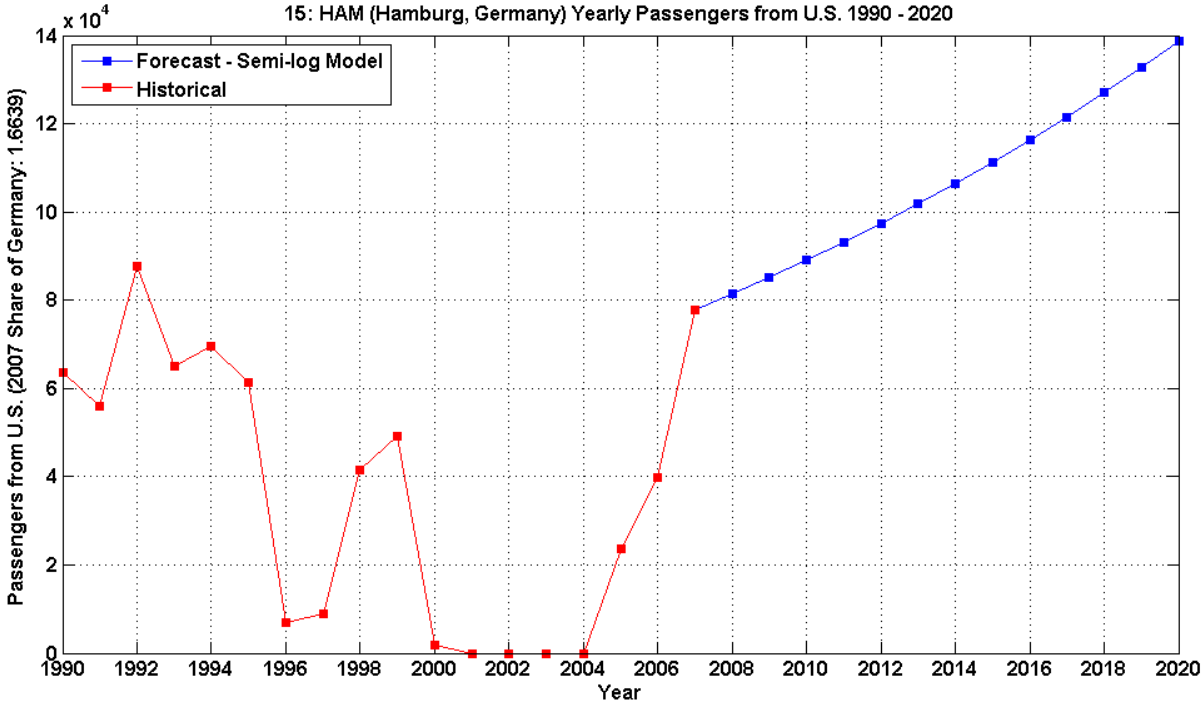
15: HAM (Hamburg, Germany) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Germany: 1.6639)
Year
0
2
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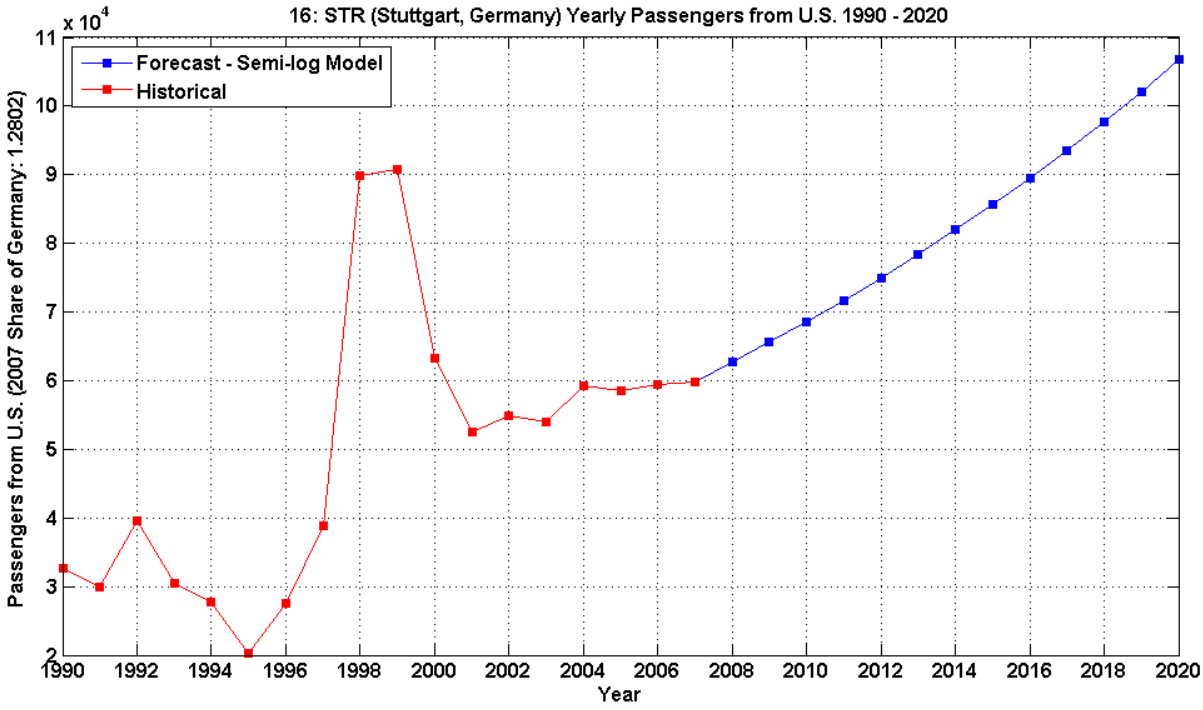
16: STR (Stuttgart, Germany) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Germany: 1.2802)
Year
2
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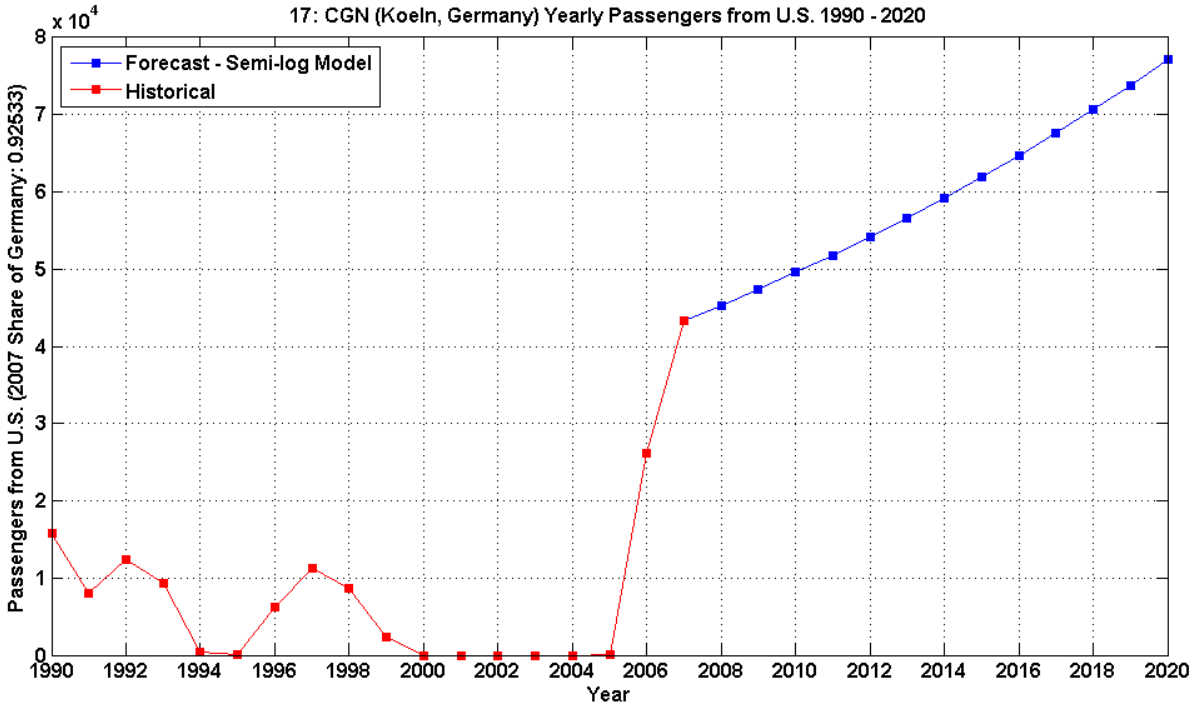
17: CGN (Koeln, Germany) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Germany: 0.92533)
Year
0
1
2
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1990
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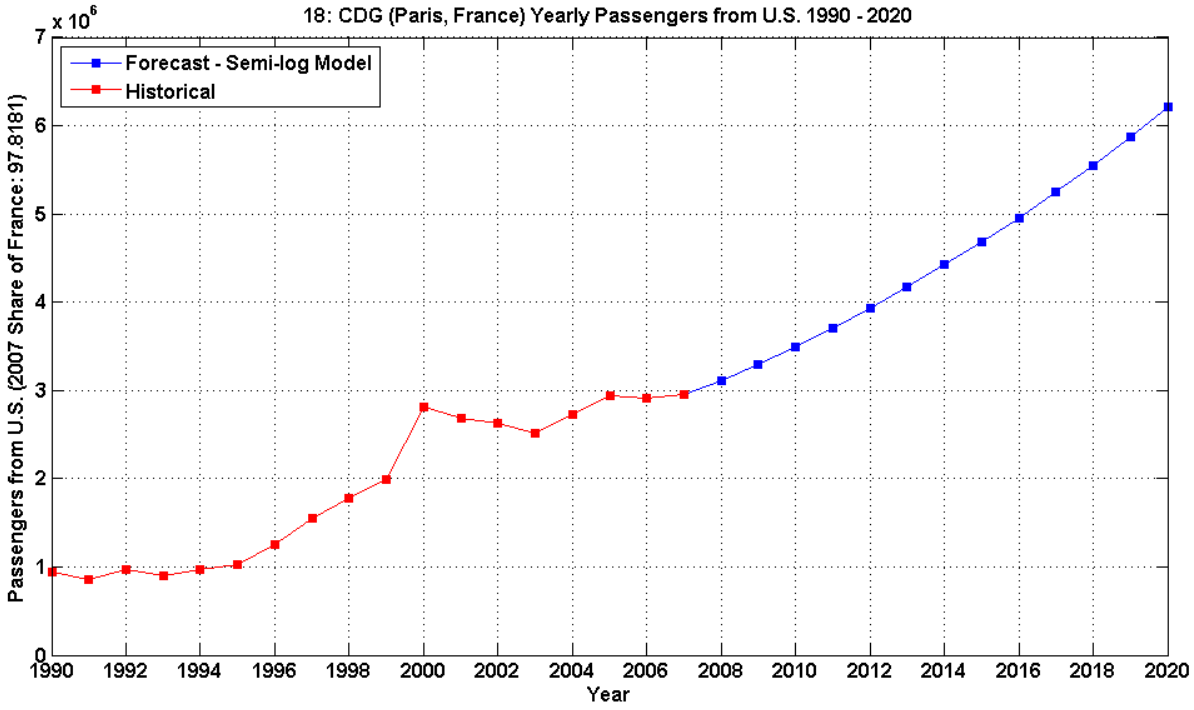
2018
2020


18: CDG (Paris, France) Yearly Passengers from U.S. 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of France: 97.8181)
Year
0
1
2
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4
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1990
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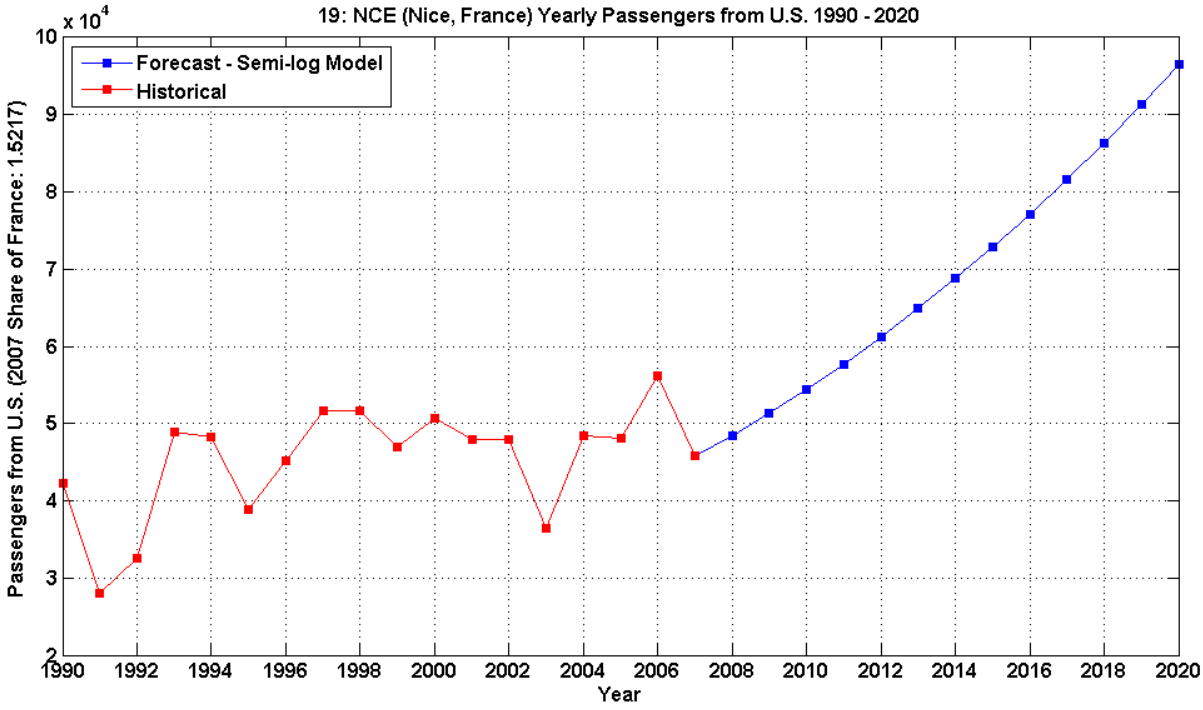
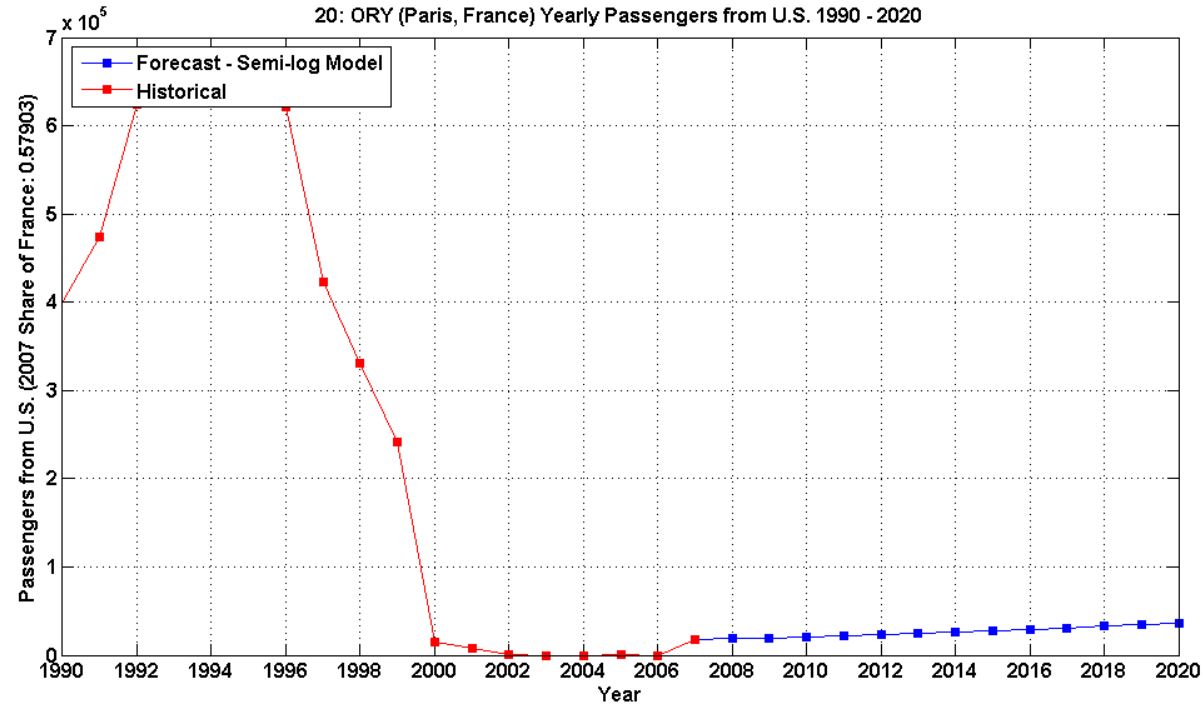
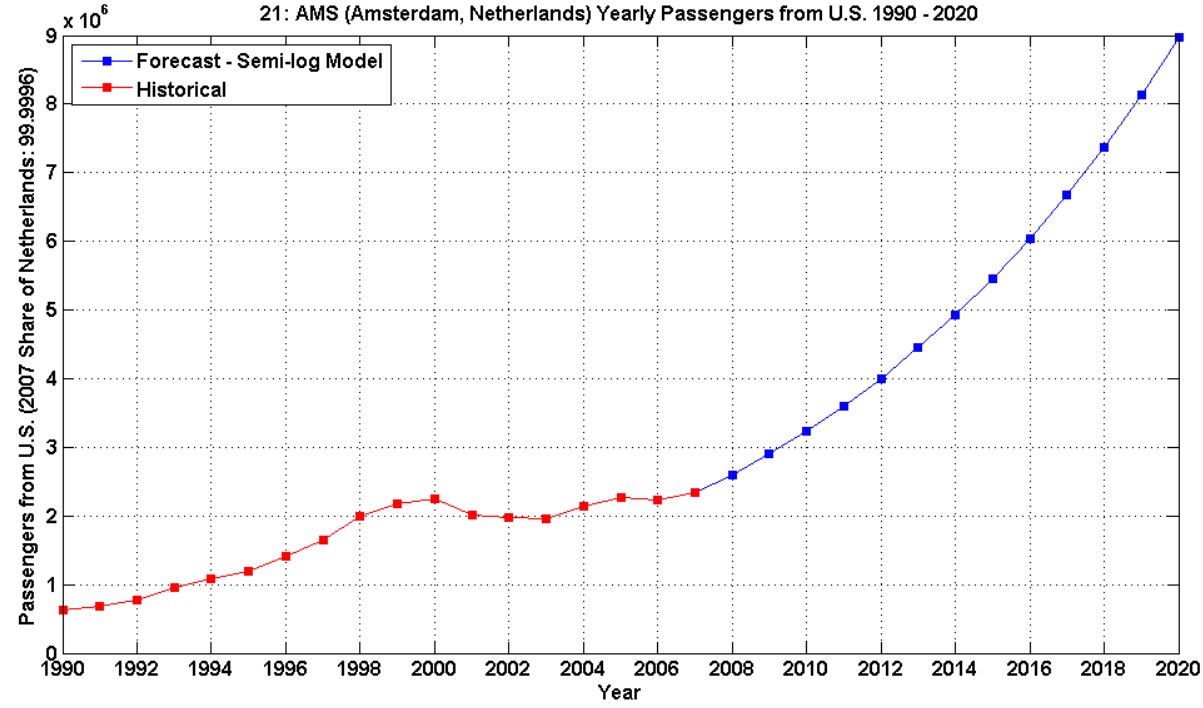
2004
2006
2008
2010
2012
2014
2016
2018
2020


19: NCE (Nice, France) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of France: 1.5217)
Year


20: ORY (Paris, France) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of France: 0.57903)
Year


21: AMS (Amsterdam, Netherlands) Yearly Passengers from U.S. 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Netherlands: 99.9996)
Year
0
1
2
3
4
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1990
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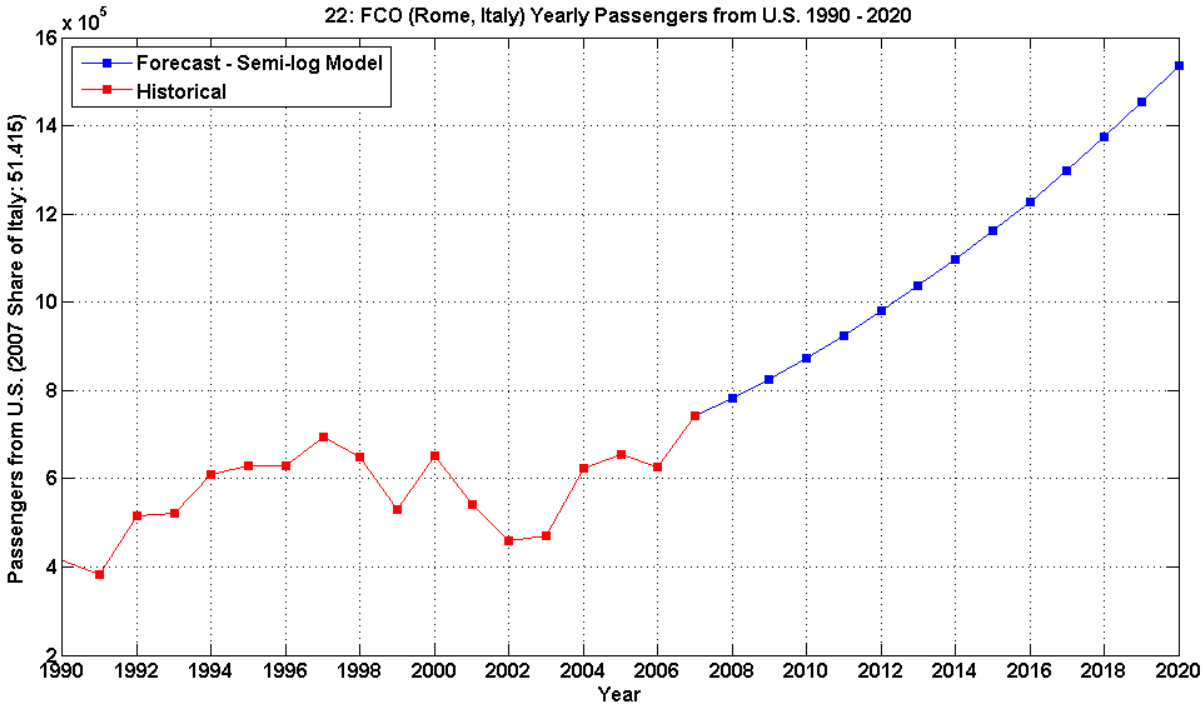
22: FCO (Rome, Italy) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Italy: 51.415)
Year
2
4
6
8
10
12
14
16
1990
1992
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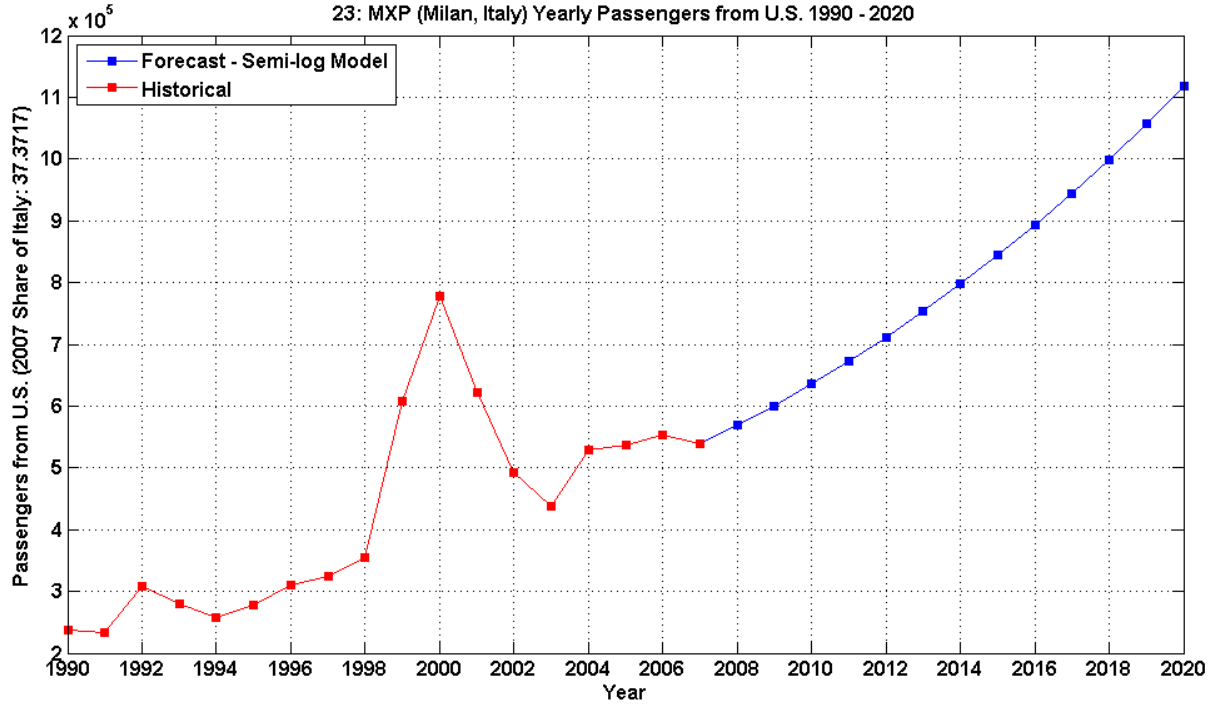
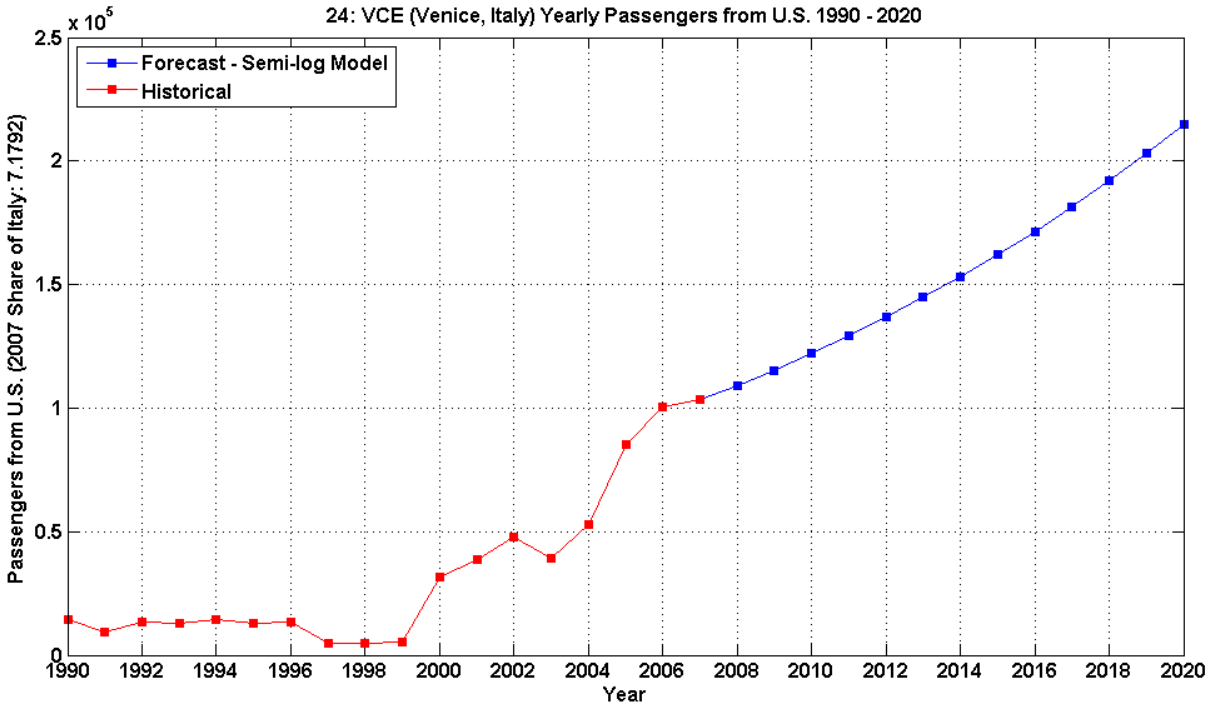
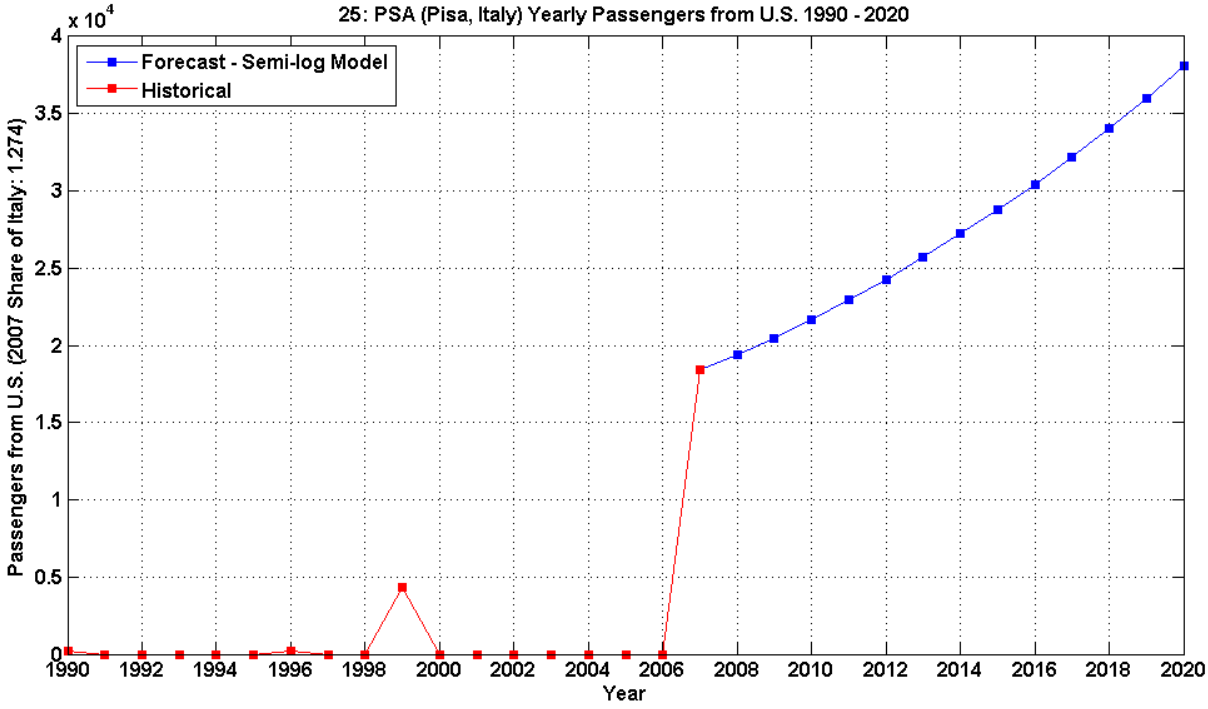
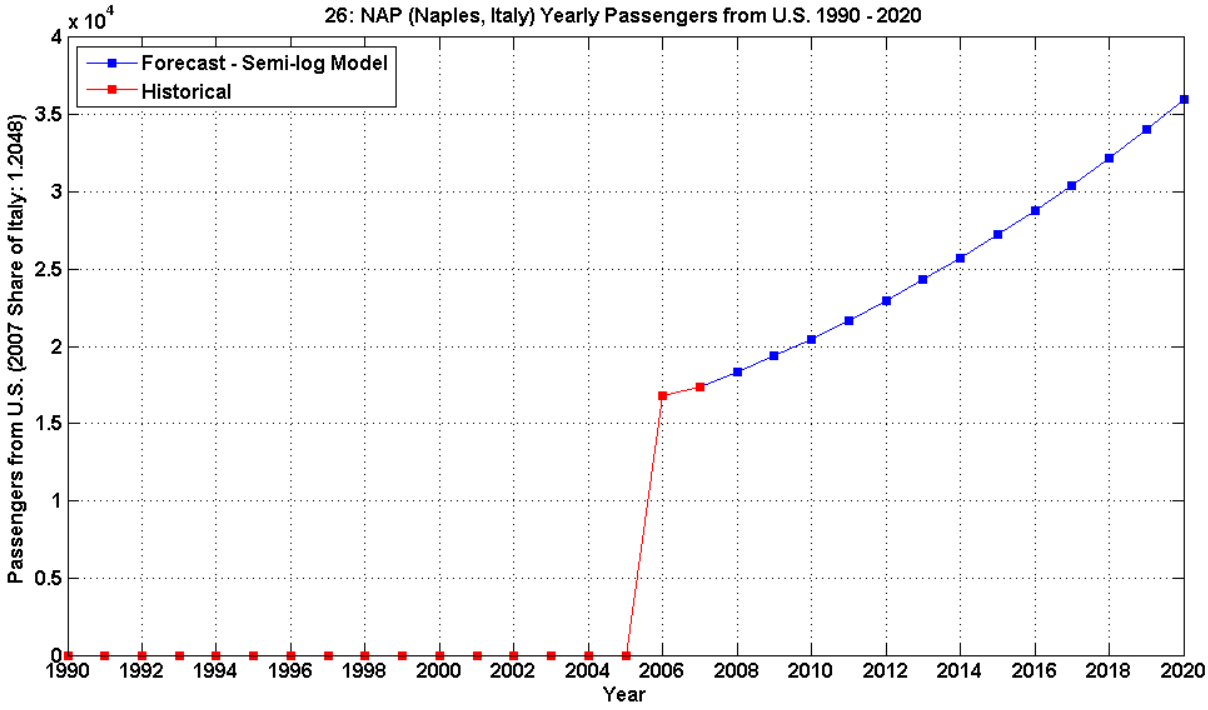
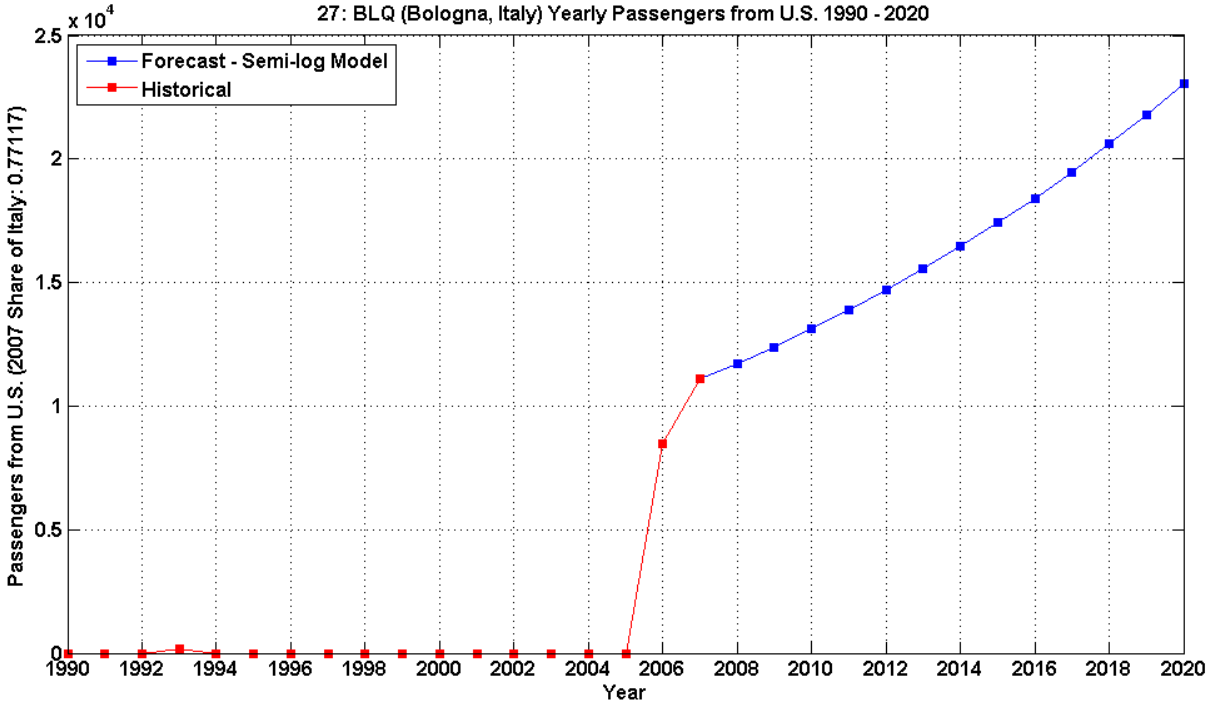
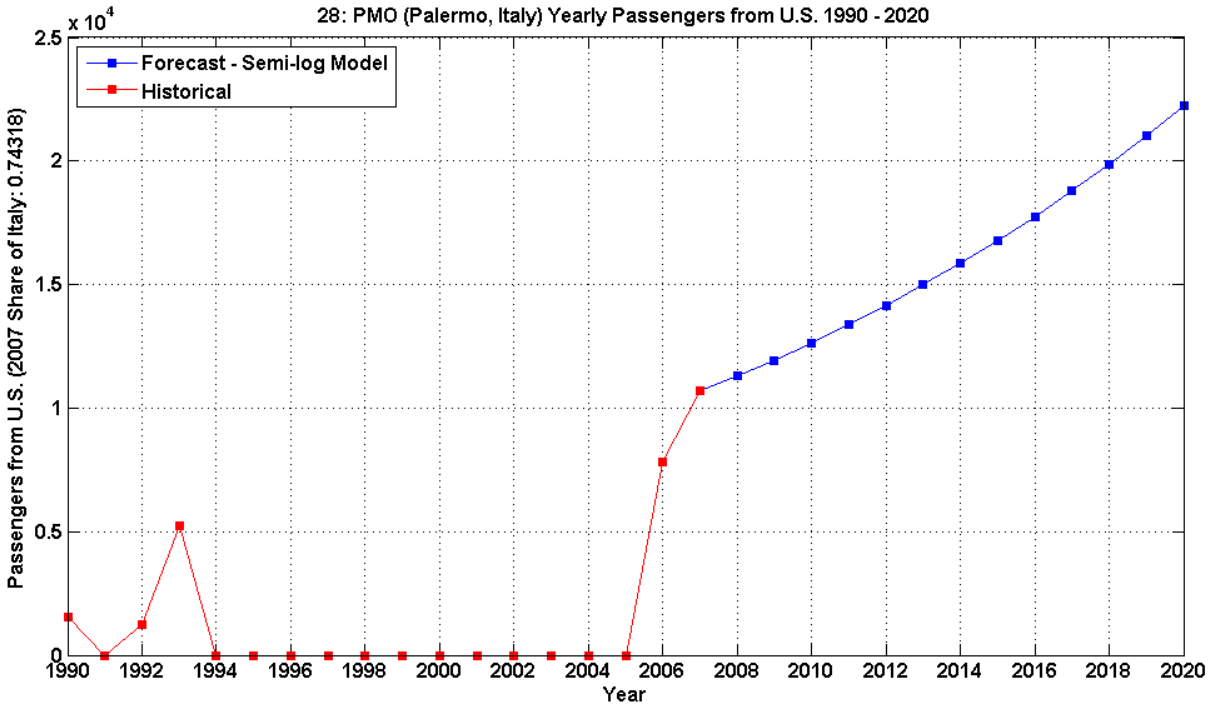

23: MXP (Milan, Italy) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Italy: 37.3717)
Year
12
11
10
9
8
7
6
5
4
3
2
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

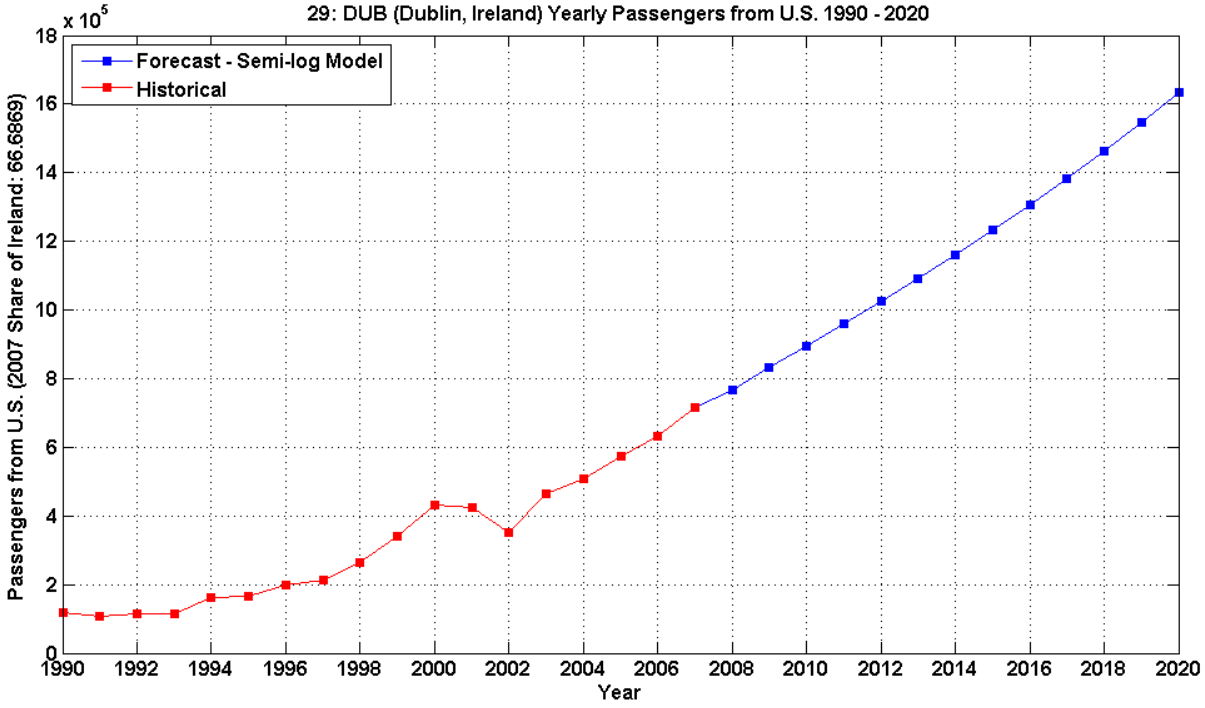

24: VCE (Venice, Italy) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Italy: 7.1792)
Year
2.5
2
1.5
1
0.5
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

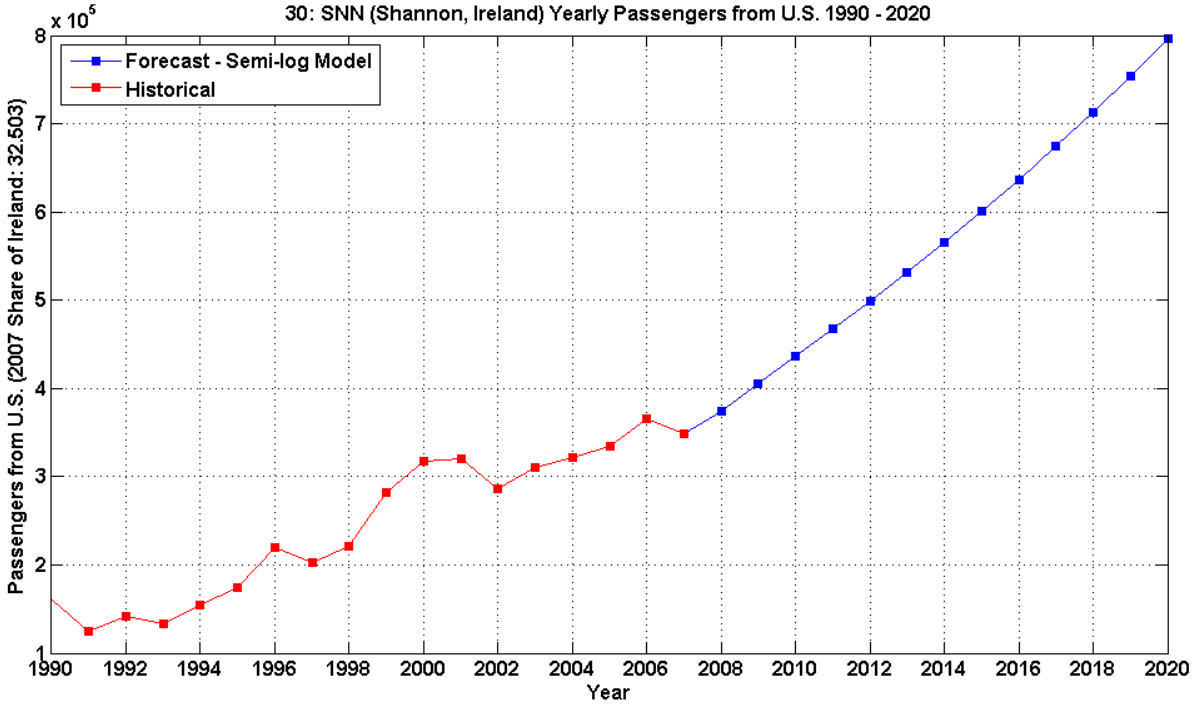

25: PSA (Pisa, Italy) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Italy: 1.274)
Year
0
0.5
1
1.5
2
2.5
3
3.5
4
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

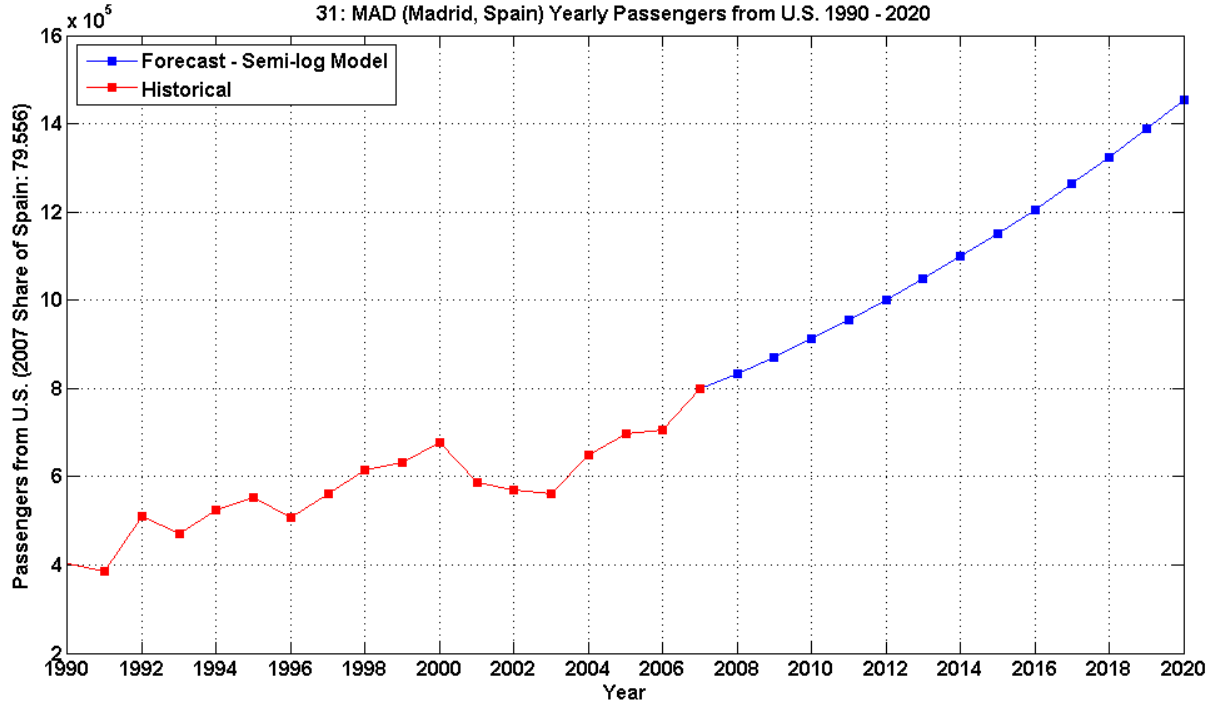

26: NAP (Naples, Italy) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Italy: 1.2048)
Year
0
0.5
1
1.5
2
2.5
3
3.5
4
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

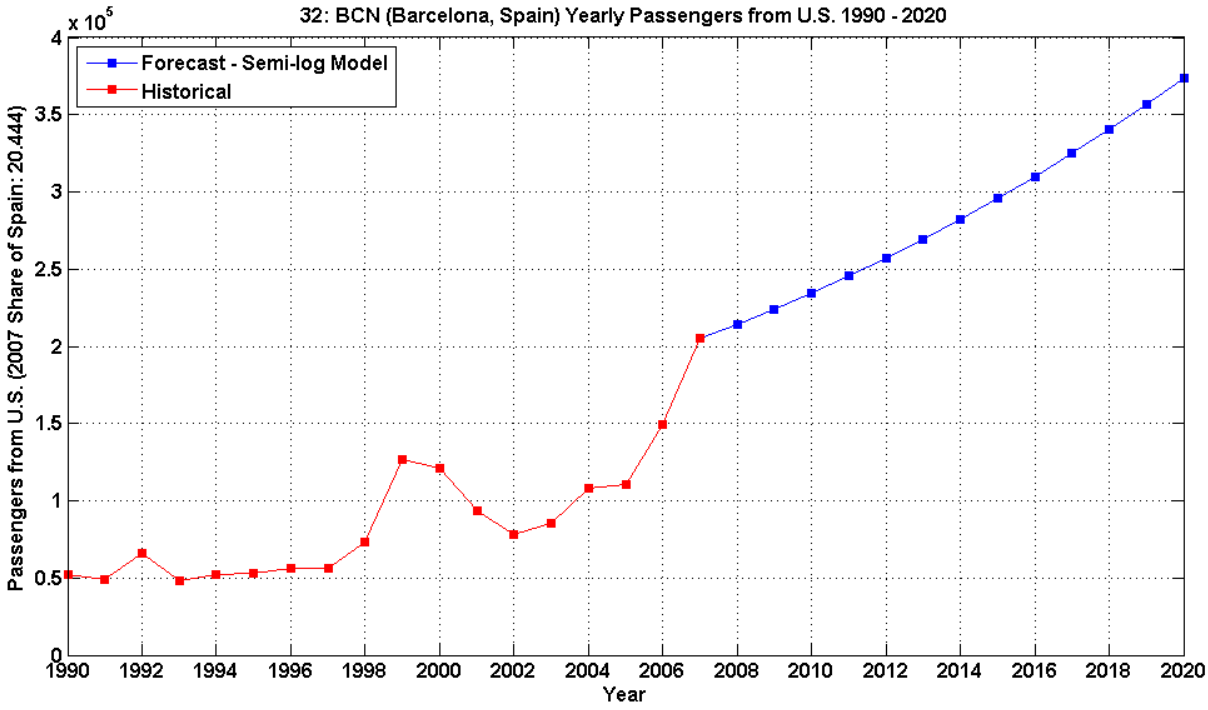

27: BLQ (Bologna, Italy) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Italy: 0.77117)
Year
0
0.5
1
1.5
2
2.5
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

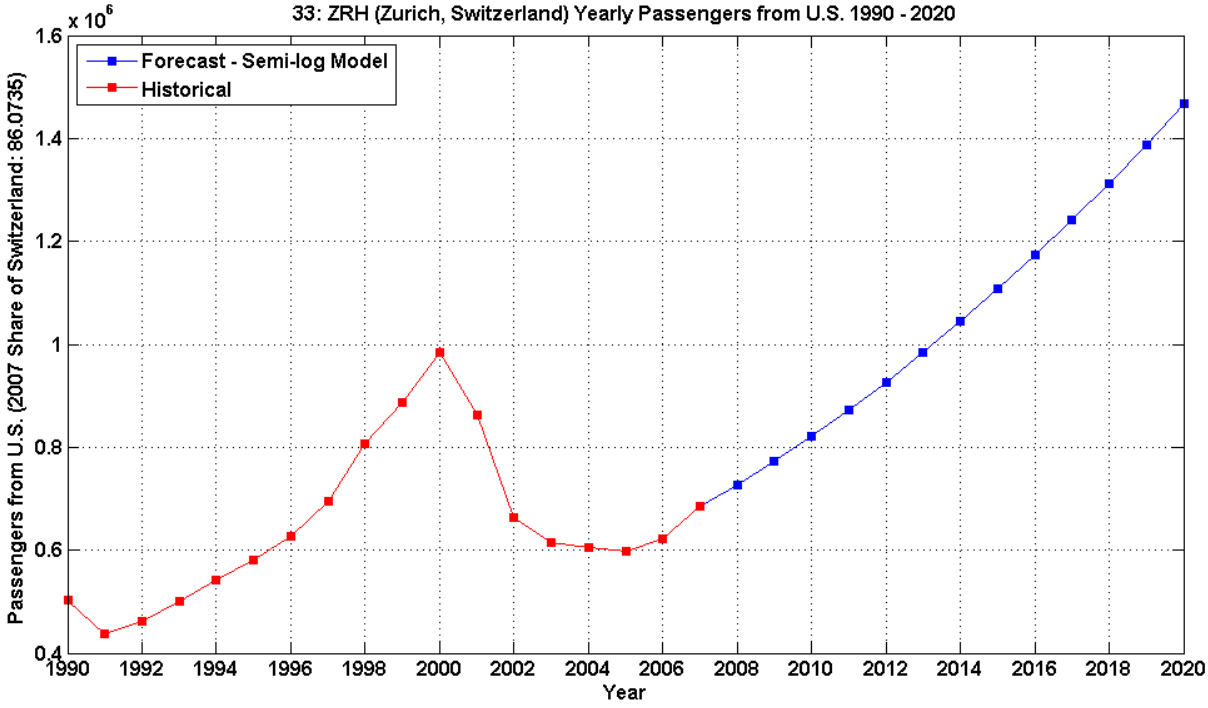

28: PMO (Palermo, Italy) Yearly Passengers from U.S. 1990 - 2020
x 10^4
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Italy: 0.74318)
Year
0
0.5
1
1.5
2
2.5
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

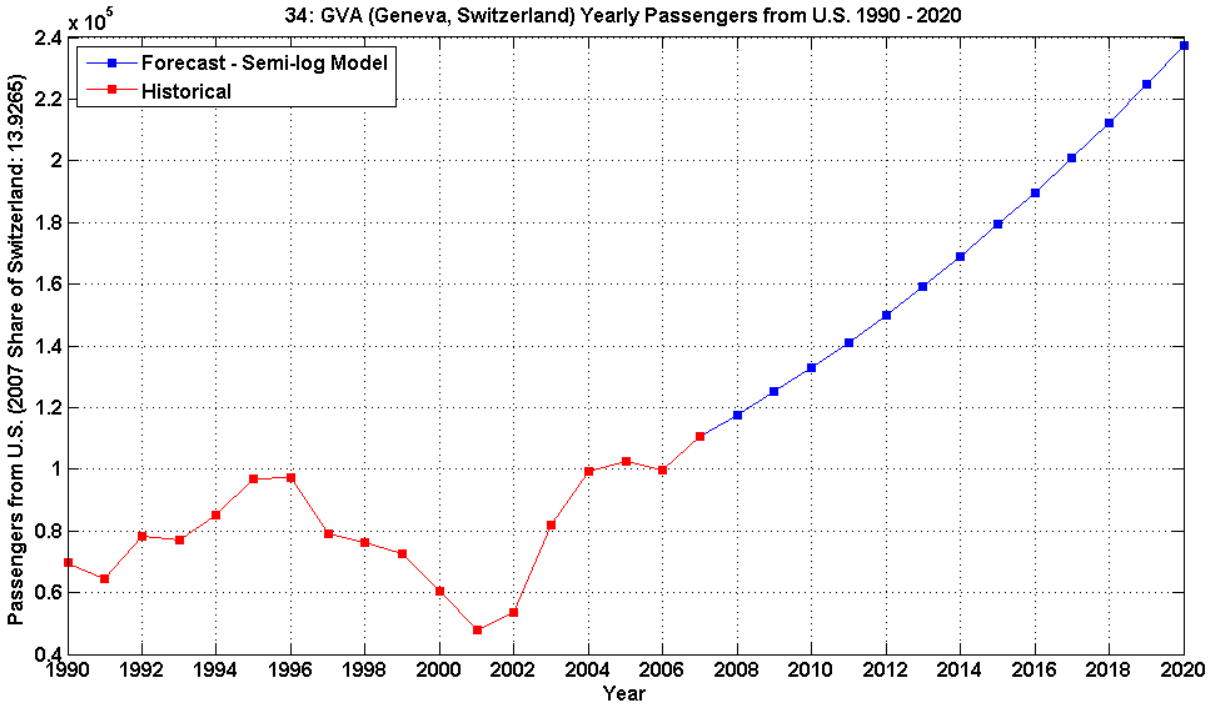

29: DUB (Dublin, Ireland) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Ireland: 66.6869)
Year
0
2
4
6
8
10
12
14
16
18
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


30: SNN (Shannon, Ireland) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Ireland: 32.503)
Year
1
2
3
4
5
6
7
8
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


31: MAD (Madrid, Spain) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Spain: 79.556)
Year
16
14
12
10
8
6
4
2
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


32: BCN (Barcelona, Spain) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Spain: 20.444)
Year
4
3.5
3
2.5
2
1.5
1
0.5
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


33: ZRH (Zurich, Switzerland) Yearly Passengers from U.S. 1990 - 2020
x 10^6
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Switzerland: 86.0735)
Year
1.6
1.4
1.2
1
0.8
0.6
0.4
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020


34: GVA (Geneva, Switzerland) Yearly Passengers from U.S. 1990 - 2020
x 10^5
Forecast - Semi-log Model
Historical
Passengers from U.S. (2007 Share of Switzerland: 13.9265)
Year
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020

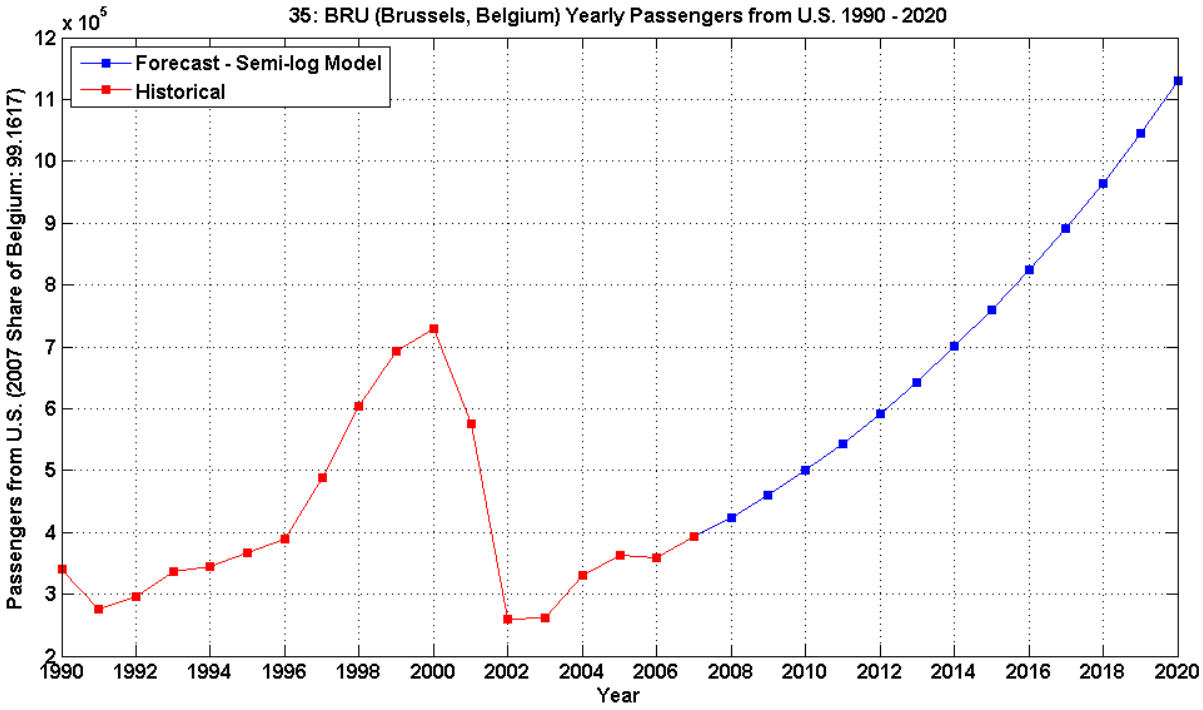


Figure C.3-1: Passenger Traffic from the United States to 35 Gateway Airports in Selected Nine European Countries during 1990 – 2020 in the Order of Decreasing 2007 European Country Passenger Traffic ***(Historical Source: 1990 - 2007 T100 International Market Data)***

Table C.3-1 2007, 2010, 2015 and 2020 Passenger Traffic from the United States to 35 Gateway Airports in Selected Nine European Countries during 1990 – 2020 in the Order of Decreasing 2007 European Country Passenger Traffic ***(2007 Data Source: 2007 T100 International Market Data)***

	European Airport (City, Country)	2007	2010	2015	2020
1	LHR (London, United Kingdom)	5,497,250	6,609,964	9,042,179	12,249,883
2	LGW (London, United Kingdom)	1,804,194	2,169,386	2,967,638	4,020,404
3	MAN (Manchester, United Kingdom)	703,639	846,065	1,157,384	1,567,965
4	GLA (Glasgow, United Kingdom)	126,193	151,736	207,569	281,204
5	EDI (Edinburgh, United Kingdom)	112,295	135,025	184,709	250,234
6	STN (London, United Kingdom)	67,965	81,722	111,793	151,451
7	BFS (Belfast, United Kingdom)	57,245	68,832	94,160	127,563
8	BHX (Birmingham, United Kingdom)	54,816	65,911	90,164	122,150
9	BRS (Bristol, United Kingdom)	45,850	55,131	75,417	102,171
10	LTN (London, United Kingdom)	24,168	29,060	39,753	53,855
11	FRA (Frankfurt, Germany)	3,265,511	3,739,970	4,669,902	5,824,411
12	MUC (Munich, Germany)	874,898	1,002,015	1,251,163	1,560,480
13	DUS (Dusseldorf, Germany)	245,576	281,257	351,190	438,013
14	TXL (Berlin, Germany)	92,914	106,414	132,873	165,723
15	HAM (Hamburg, Germany)	77,823	89,130	111,292	138,806
16	STR (Stuttgart, Germany)	59,878	68,578	85,630	106,799
17	CGN (Koeln, Germany)	43,280	49,568	61,893	77,195
18	CDG (Paris, France)	2,947,419	3,498,603	4,682,047	6,208,049
19	NCE (Nice, France)	45,851	54,425	72,835	96,574
20	ORY (Paris, France)	17,447	20,710	27,715	36,748
21	AMS (Amsterdam, Netherlands)	2,344,001	3,232,895	5,459,039	8,972,814
22	FCO (Rome, Italy)	742,191	874,167	1,161,213	1,537,568
23	MXP (Milan, Italy)	539,472	635,401	844,044	1,117,603
24	VCE (Venice, Italy)	103,634	122,062	162,143	214,694
25	PSA (Pisa, Italy)	18,390	21,660	28,773	38,098
26	NAP (Naples, Italy)	17,392	20,485	27,211	36,030
27	BLQ (Bologna, Italy)	11,132	13,111	17,417	23,062
28	PMO (Palermo, Italy)	10,728	12,636	16,785	22,225
29	DUB (Dublin, Ireland)	716,723	895,232	1,232,018	1,634,814
30	SNN (Shannon, Ireland)	349,329	436,334	600,482	796,804
31	MAD (Madrid, Spain)	798,243	911,798	1,151,139	1,455,008
32	BCN (Barcelona, Spain)	205,130	234,311	295,816	373,903
33	ZRH (Zurich, Switzerland)	684,262	822,452	1,108,765	1,468,224
34	GVA (Geneva, Switzerland)	110,712	133,071	179,396	237,555
35	BRU (Brussels, Belgium)	392,701	500,355	760,286	1,129,807

D.1
2015, 2020 Estimated Passengers Traffic for
871 Gateway Airport Pairs without Nonstop Service

Table D.1-1 2015 Passenger Traffic for 871 Transatlantic Airport Pairs without Nonstop Service

Year = 2015 (Passenger Demand)		1 - U.K.										2 - Germany						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		LHR	LGW	MAN	GLA	EDI	STN	BFS	BHX	BRS	LTN	FRA	MUC	DUS	TXL	HAM	STR	CGN
1	JFK	-	-	-	19,664	22,378	-	52	4,330	939	-	-	-	-	-	-	-	2,520
2	EWR	-	-	-	-	-	57	-	-	-	-	-	-	-	-	-	3,626	-
3	ORD	-	37,210	-	24,607	27,502	654	1,203	5,020	1,464	-	-	-	-	34,144	26,364	17,210	4,853
4	IAD	-	8,405	14,373	11,730	16,576	-	905	2,530	692	-	-	-	14,163	26,586	20,607	18,379	5,275
5	ATL	48,514	-	-	2,714	-	128	1,288	4,190	1,845	-	-	-	-	19,154	9,768	-	1,336
6	LAX	-	57,417	64,777	-	26,696	-	1,723	4,247	2,236	-	-	-	-	38,011	26,663	16,463	7,408
7	BOS	-	-	-	-	19,928	694	2,193	5,451	3,189	-	-	-	9,485	19,959	9,518	7,516	4,124
8	MIA	-	41,182	40,883	12,536	8,933	971	1,305	1,307	650	-	-	-	-	14,464	10,371	8,638	782
9	SFO	-	38,780	67,926	18,530	23,783	614	2,380	4,369	2,024	-	-	-	15,597	25,133	21,769	12,148	6,007
10	PHL	-	-	-	-	993	170	52	441	82	-	-	-	4,518	11,777	5,969	6,152	614
11	DTW	-	-	21,367	10,510	10,124	15	903	14,579	4,254	-	-	38,688	-	18,918	12,417	26,979	6,995
12	IAH	30,824	-	16,032	8,369	10,130	58	2,976	4,746	3,619	-	-	11,725	3,505	7,221	6,842	2,926	4,529
13	MCO	163,809	-	-	-	13,734	464	6,283	6,193	3,683	-	-	31,294	9,998	11,530	6,448	4,869	1,184
14	DFW	137,924	-	22,192	6,689	10,964	638	975	1,293	708	-	-	21,900	3,071	6,675	4,515	3,918	963
15	MSP	42,792	-	14,414	7,409	8,006	-	1,645	6,109	1,678	-	69,993	30,730	10,899	14,110	8,618	9,801	4,135
16	DEN	-	25,443	21,419	3,848	6,961	22	1,305	2,099	1,308	-	-	-	5,099	9,436	8,229	5,502	2,271
17	SEA	-	24,326	12,804	3,435	5,848	265	1,253	2,405	1,328	-	92,301	28,904	4,273	8,639	4,798	5,463	2,148
18	LAS	224,158	-	-	18,308	12,850	-	2,907	4,075	2,396	-	-	38,164	-	5,911	5,914	4,613	1,282
19	CLT	25,095	-	13,141	2,454	2,823	39	818	1,433	627	-	-	-	5,221	7,332	4,373	3,757	875
20	CVG	14,471	-	6,677	1,602	3,217	-	261	922	592	-	-	9,594	2,493	5,112	2,964	2,929	186
21	PHX	-	31,107	13,960	2,419	2,993	76	609	901	813	-	75,462	29,070	2,527	4,292	3,303	2,490	901
22	MEM	16,943	16,306	8,028	3,477	4,041	-	453	3,257	1,287	-	18,112	5,906	1,960	2,196	2,549	3,036	639
23	PDX	62,865	17,659	7,204	2,162	3,673	115	557	895	686	-	-	28,933	1,411	4,328	2,581	2,576	726
24	TPA	66,019	-	22,427	4,305	6,438	126	1,862	3,449	2,158	-	57,197	20,029	2,485	6,568	5,455	4,701	883
25	BWI	-	7,900	6,903	796	1,380	84	435	545	697	-	23,864	3,300	628	1,921	862	1,748	353
26	RDU	61,679	-	8,197	3,132	4,342	326	940	768	870	-	41,288	12,297	2,822	3,543	2,112	3,661	978
27	RSW	16,534	14,817	8,855	1,930	2,324	44	922	1,390	906	-	-	-	-	2,046	2,341	2,769	189
28	SFB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	SJU	2,626	77	259	90	-	-	35	17	-	-	322	18	165	29	-	-	-
30	BDL	7,926	3,002	1,655	310	567	19	87	593	245	-	9,632	2,901	525	824	580	436	188
31	CLE	24,199	-	7,818	2,322	3,041	22	956	3,457	1,796	-	39,814	10,182	1,924	3,195	2,517	1,628	2,263

Table D.1-1 2015 Passenger Traffic for 871 Transatlantic Airport Pairs without Nonstop Service (Continued)

Year = 2015 (Passenger Demand)		3 - France			4 - Netherlands	5 - Italy							6 - Ireland		7 - Spain		8 - Switzerland		9 - Belgium
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		CDG	NCE	ORY	AMS	FCO	MXP	VCE	PSA	NAP	BLQ	PMO	DUB	SNN	MAD	BCN	ZRH	GVA	BRU
1	JFK	-	-	3,978	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	EWR	-	7,450	-	-	-	-	15,177	2,033	8,034	6,384	5,557	-	-	-	-	-	-	-
3	ORD	-	22,200	1,140	-	-	-	36,860	3,673	11,360	8,032	4,841	-	-	-	52,021	-	21,053	-
4	IAD	-	16,579	481	-	-	18,214	22,898	2,570	8,696	4,191	2,114	-	6,535	-	23,115	-	17,519	-
5	ATL	-	18,481	2,656	-	-	-	-	4,136	8,593	5,286	4,727	-	-	-	-	-	10,999	-
6	LAX	-	19,766	444	-	163,709	63,811	38,540	2,151	5,592	10,157	3,402	-	19,849	98,791	64,584	-	24,595	61,126
7	BOS	-	11,800	1,370	-	-	-	11,512	2,294	2,646	4,253	522	-	-	-	25,260	-	12,278	29,254
8	MIA	-	16,128	2,472	-	62,495	-	11,930	1,445	2,601	3,786	832	31,279	8,781	-	38,797	-	7,105	36,746
9	SFO	-	16,523	452	-	116,292	53,259	28,392	2,143	6,267	6,770	2,529	-	28,222	80,832	41,336	-	18,143	55,999
10	PHL	-	4,252	488	-	-	-	-	1,602	7,464	2,006	5,800	-	-	-	-	-	3,221	-
11	DTW	-	9,100	431	-	77,851	21,438	20,635	537	1,665	11,198	2,456	16,185	7,336	24,850	26,253	22,553	14,509	-
12	IAH	-	5,574	1,068	-	38,255	22,944	8,515	641	1,315	1,416	584	9,591	5,112	21,033	15,788	13,390	8,527	13,851
13	MCO	96,850	5,545	336	-	31,762	15,894	7,124	497	1,374	942	804	-	26,508	49,487	12,873	18,338	4,256	22,408
14	DFW	-	7,798	587	69,063	58,109	13,667	16,377	2,694	4,162	3,760	423	25,369	8,339	44,254	16,949	-	5,744	21,061
15	MSP	65,106	6,117	54	-	51,958	19,000	16,765	273	1,284	6,485	532	-	10,183	24,121	17,634	23,651	13,044	17,305
16	DEN	76,797	4,355	122	104,408	39,669	13,533	12,473	920	3,004	1,950	332	17,548	7,178	17,659	11,608	23,509	7,281	15,997
17	SEA	-	5,795	164	-	41,635	14,090	11,217	817	1,923	2,121	618	20,908	6,437	18,277	12,880	15,821	5,844	14,084
18	LAS	81,894	3,403	254	134,719	19,205	18,117	6,855	724	1,007	2,898	492	44,167	8,968	23,082	8,321	33,414	4,625	24,068
19	CLT	39,414	2,185	128	-	20,480	8,230	8,138	534	1,996	1,460	155	8,653	3,633	7,408	6,089	7,004	2,401	6,751
20	CVG	-	6,353	634	-	-	11,538	9,298	427	1,439	817	1,008	11,214	6,697	8,903	7,296	7,031	7,114	9,318
21	PHX	59,301	2,279	236	69,718	29,365	11,252	9,250	188	847	970	542	14,379	4,525	13,400	8,622	13,519	2,765	11,732
22	MEM	14,936	1,602	70	-	12,103	3,439	4,498	69	556	1,169	64	4,853	1,430	4,396	4,657	3,531	2,494	5,033
23	PDX	44,974	1,910	125	54,618	21,504	6,968	5,468	649	1,123	1,685	322	13,518	3,442	7,457	7,753	11,541	3,093	6,544
24	TPA	62,537	3,372	58	70,808	28,873	10,902	6,897	424	1,575	742	880	16,701	8,322	15,261	8,023	11,772	2,525	11,379
25	BWI	19,140	1,030	76	14,616	12,859	3,039	3,363	260	488	137	392	14,668	6,833	5,232	3,653	3,646	1,170	4,373
26	RDU	51,242	2,448	178	35,153	20,545	6,262	4,890	771	1,389	1,008	347	10,448	3,815	11,727	4,995	14,215	2,944	9,543
27	RSW	14,290	482	22	15,638	5,407	1,751	1,316	15	92	171	62	6,218	1,970	1,953	1,005	5,162	1,009	2,977
28	SFB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	SJU	370	-	-	170	56	107	-	-	47	-	-	221	44	-	28	446	157	115
30	BDL	7,035	277	27	-	4,564	1,097	851	37	115	38	43	1,722	606	1,388	640	1,741	419	2,289
31	CLE	34,509	1,335	26	47,322	26,454	12,082	3,693	141	607	610	674	11,567	5,884	6,829	5,151	10,948	3,469	8,520

Table D.1-2 2020 Passenger Traffic for 871 Transatlantic Airport Pairs without Nonstop Service

Year = 2020 (Passenger Demand)		1 - U.K.										2 - Germany						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		LHR	LGW	MAN	GLA	EDI	STN	BFS	BHX	BRS	LTN	FRA	MUC	DUS	TXL	HAM	STR	CGN
1	JFK	-	-	-	26,771	30,379	-	70	6,445	1,425	-	-	-	-	-	-	-	3,702
2	EWR	-	-	-	-	-	76	-	-	-	-	-	-	-	-	-	5,248	-
3	ORD	-	49,606	-	33,058	36,923	872	1,602	7,038	2,074	-	-	-	-	45,100	35,229	22,989	6,416
4	IAD	-	11,243	19,152	15,601	22,127	-	1,205	3,431	995	-	-	-	18,463	34,536	28,328	23,929	6,896
5	ATL	65,285	-	-	3,767	-	171	1,715	5,982	2,535	-	-	-	-	25,577	13,578	-	1,826
6	LAX	-	75,778	86,919	-	35,993	-	2,295	6,178	3,265	-	-	-	-	50,968	35,775	22,364	9,911
7	BOS	-	-	-	-	28,529	921	2,921	8,338	4,676	-	-	-	13,878	28,332	13,780	10,849	6,025
8	MIA	-	55,580	54,946	16,972	12,091	1,296	1,739	1,768	870	-	-	-	-	19,285	13,888	11,532	1,008
9	SFO	-	50,988	91,075	24,672	31,605	820	3,169	5,777	2,721	-	-	-	20,181	32,225	28,295	15,890	7,780
10	PHL	-	-	-	-	1,354	230	70	608	119	-	-	-	5,896	15,357	7,815	7,991	811
11	DTW	-	-	30,725	15,581	14,786	18	1,209	21,569	6,242	-	-	54,949	-	27,634	18,337	39,538	10,296
12	IAH	41,052	-	21,421	11,425	13,633	75	3,963	6,503	4,867	-	-	15,934	4,698	9,670	9,377	4,047	6,024
13	MCO	219,556	-	-	-	18,432	618	8,369	8,386	4,970	-	-	39,908	12,707	14,716	8,470	6,363	1,526
14	DFW	185,916	-	29,951	9,186	15,074	864	1,298	1,738	947	-	-	28,680	4,028	8,914	6,124	5,172	1,238
15	MSP	57,527	-	19,846	10,373	11,095	-	2,193	8,591	2,358	-	87,955	41,722	15,181	19,725	12,103	13,879	5,699
16	DEN	-	33,504	28,718	5,168	9,311	29	1,739	2,801	1,764	-	-	-	6,633	12,378	10,843	7,210	2,944
17	SEA	-	31,794	17,603	4,855	8,065	354	1,669	3,423	1,945	-	120,101	37,991	5,949	11,933	6,799	7,655	3,033
18	LAS	298,894	-	-	24,534	17,212	-	3,872	5,607	3,230	-	-	48,558	-	7,677	7,830	6,029	1,649
19	CLT	33,556	-	17,696	3,337	3,777	53	1,090	1,923	837	-	-	-	6,710	9,620	5,709	4,916	1,134
20	CVG	19,360	-	8,940	2,158	4,326	-	348	1,228	790	-	-	12,426	3,227	6,701	3,961	3,820	234
21	PHX	-	41,652	18,766	3,260	4,012	99	811	1,225	1,097	-	96,319	37,295	3,278	5,704	4,346	3,229	1,159
22	MEM	22,839	21,078	10,896	4,740	5,522	-	603	4,531	1,768	-	22,504	7,850	2,648	3,038	3,496	4,156	884
23	PDX	83,868	23,208	9,698	2,917	4,962	156	742	1,205	927	-	-	37,966	1,874	5,773	3,480	3,447	953
24	TPA	88,546	-	30,064	5,762	8,597	169	2,481	4,627	2,913	-	72,290	25,661	3,144	8,508	7,246	6,091	1,153
25	BWI	-	10,633	9,266	1,064	1,861	112	580	734	930	-	30,251	4,234	816	2,480	1,122	2,299	451
26	RDU	82,457	-	10,997	4,212	5,852	436	1,252	1,023	1,168	-	52,236	15,800	3,619	4,644	2,773	4,833	1,287
27	RSW	22,355	20,045	11,820	2,571	3,103	59	1,228	1,869	1,209	-	-	-	-	2,672	3,033	3,543	239
28	SFB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	SJU	3,520	104	345	119	-	-	46	23	-	-	407	22	222	38	-	-	-
30	BDL	10,552	4,001	2,227	410	763	26	116	790	330	-	12,175	3,741	681	1,062	785	558	239
31	CLE	32,355	-	10,452	3,138	4,069	29	1,274	4,637	2,426	-	50,078	13,152	2,506	4,124	3,325	2,149	2,912

Table D.1-2 2020 Passenger Traffic for 871 Transatlantic Airport Pairs without Nonstop Service (Continued)

Year = 2020 (Passenger Demand)		3 - France			4 - Netherlands	5 - Italy							6 - Ireland		7 - Spain		8 - Switzerland		9 - Belgium
		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		CDG	NCE	ORY	AMS	FCO	MXP	VCE	PSA	NAP	BLQ	PMO	DUB	SNN	MAD	BCN	ZRH	GVA	BRU
1	JFK	-	-	5,246	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	EWR	-	10,114	-	-	-	-	21,065	2,702	10,714	9,515	7,409	-	-	-	-	-	-	-
3	ORD	-	29,451	1,493	-	-	-	48,600	4,903	14,819	10,810	6,445	-	-	-	68,942	-	28,224	-
4	IAD	-	21,560	628	-	-	23,649	29,506	3,250	11,013	5,518	2,780	-	8,681	-	30,356	-	22,658	-
5	ATL	-	24,479	3,492	-	-	-	-	5,460	11,314	7,250	6,255	-	-	-	-	-	14,622	-
6	LAX	-	26,167	570	-	219,037	85,536	52,446	2,799	7,224	14,243	4,490	-	26,411	128,836	86,055	-	33,167	87,542
7	BOS	-	15,948	1,803	-	-	-	16,564	3,028	3,547	6,334	724	-	-	-	35,122	-	17,524	42,650
8	MIA	-	21,663	3,277	-	83,722	-	15,901	1,936	3,472	5,086	1,115	41,940	11,747	-	51,032	-	9,539	52,430
9	SFO	-	21,371	585	-	152,127	69,791	36,726	2,720	8,039	8,710	3,307	-	37,587	103,861	53,349	-	23,339	79,032
10	PHL	-	5,593	648	-	-	-	-	2,130	10,011	2,665	7,797	-	-	-	-	-	4,228	-
11	DTW	-	12,929	521	-	112,724	30,675	30,034	666	2,215	16,572	3,501	21,888	9,771	35,139	38,119	32,469	21,295	-
12	IAH	-	7,128	1,330	-	51,198	31,239	11,642	807	1,696	1,977	760	12,685	6,784	27,377	20,865	18,047	11,307	20,305
13	MCO	127,357	7,331	440	-	42,533	21,153	9,435	667	1,807	1,268	1,066	-	35,300	63,889	16,874	23,938	5,651	32,700
14	DFW	-	10,461	777	105,576	78,224	18,268	22,290	3,728	5,715	5,212	570	33,893	11,124	57,481	22,575	-	7,799	30,513
15	MSP	85,006	8,592	73	-	72,292	26,146	23,575	357	1,707	9,203	719	-	13,551	32,372	24,535	32,320	18,270	24,731
16	DEN	100,449	5,687	160	165,685	52,393	17,935	16,420	1,209	3,943	2,579	438	23,390	9,564	22,811	15,233	30,764	9,586	23,036
17	SEA	-	7,854	210	-	56,589	19,175	15,392	1,034	2,522	3,047	843	28,078	8,580	24,077	17,649	21,161	8,139	20,825
18	LAS	107,122	4,454	328	212,804	25,675	24,064	9,233	951	1,324	3,955	651	58,902	11,950	29,702	10,893	43,625	6,088	35,088
19	CLT	52,067	2,879	170	-	27,286	10,936	10,824	715	2,640	1,935	206	11,579	4,846	9,578	7,959	9,242	3,151	9,833
20	CVG	-	8,408	846	-	-	15,462	12,464	588	1,922	1,115	1,354	14,993	8,927	11,574	9,566	9,279	9,459	13,545
21	PHX	77,192	2,977	298	109,483	39,147	15,054	12,263	250	1,114	1,308	721	19,152	6,044	17,251	11,297	17,843	3,657	17,072
22	MEM	19,322	2,183	89	-	16,788	4,666	6,249	94	736	1,597	86	6,475	1,902	5,850	6,387	4,744	3,385	7,205
23	PDX	58,769	2,508	161	84,155	28,721	9,320	7,285	844	1,468	2,286	436	18,008	4,582	9,703	10,275	15,284	4,153	9,484
24	TPA	82,331	4,452	76	113,282	38,597	14,552	9,195	559	2,089	1,005	1,171	22,232	11,074	19,736	10,497	15,464	3,316	16,650
25	BWI	25,206	1,390	100	23,558	17,274	4,050	4,470	340	646	191	524	19,617	9,141	6,736	4,803	4,807	1,524	6,470
26	RDU	67,491	3,227	236	55,804	27,478	8,380	6,529	1,031	1,854	1,361	464	13,940	5,088	15,215	6,587	18,649	3,926	13,926
27	RSW	18,761	631	29	25,149	7,192	2,344	1,756	20	122	236	82	8,251	2,613	2,510	1,303	6,753	1,313	4,356
28	SFB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	SJU	492	-	-	285	75	147	-	-	62	-	-	297	58	-	36	582	204	169
30	BDL	9,257	363	36	-	6,096	1,465	1,114	46	150	50	58	2,295	808	1,785	863	2,309	545	3,387
31	CLE	45,094	1,756	35	75,001	35,393	16,134	4,942	188	797	851	901	15,413	7,832	8,735	6,736	14,259	4,632	12,484

D.2
Airport-pair Clusters by the Non-stop Service in 2007

Table D.2-1 Airport-pair Clusters by the Non-stop Service in 2007 *(Source: 2007 T100 International Market Data)*

		1 - U.K.										2 - Germany							3 - France			4 - Netherlands	5 - Italy							6 - Ireland		7 - Spain		8 - Switzerland		9 - Belgium
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		LHR	LGW	MAN	GLA	EDI	STN	BFS	BHX	BRS	LTN	FRA	MUC	DUS	TXL	HAM	STR	CGN	CDG	NCE	ORY	AMS	FCO	MXP	VCE	PSA	NAP	BLQ	PMO	DUB	SNN	MAD	BCN	ZRH	GVA	BRU
1	JFK	1	1	1	3	0	1	3	3	0	0	1	1	1	1	1	1	3	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	EWR	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	3	1	1	0	1	1	1	1	3	0	0	0	0	1	1	1	1	1	1	1
3	ORD	1	3	1	3	0	3	0	3	0	0	1	1	1	3	0	0	3	1	0	3	1	1	1	0	3	0	0	0	1	1	1	2	1	3	1
4	IAD	1	3	3	3	0	1	0	0	0	0	1	1	3	3	0	0	3	1	0	3	1	1	3	0	0	0	0	0	1	3	1	2	1	3	1
5	ATL	3	1	1	0	1	0	0	0	0	0	1	1	1	3	3	1	3	1	3	3	1	1	1	1	2	0	0	0	1	1	1	1	1	3	1
6	LAX	1	2	2	1	0	1	3	3	0	0	1	1	1	2	0	3	3	1	2	3	1	2	2	2	0	0	0	0	1	3	2	2	1	3	2
7	BOS	1	1	1	1	3	3	0	0	0	3	1	1	3	3	0	3	3	1	0	3	1	1	1	3	3	0	0	0	1	1	1	2	1	3	3
8	MIA	1	3	3	0	0	0	0	0	0	0	1	1	1	2	3	3	3	1	0	3	1	2	1	0	0	0	0	0	0	3	1	2	1	0	3
9	SFO	1	2	2	3	3	0	0	3	0	0	1	1	3	2	3	3	0	1	3	3	1	2	3	2	0	0	0	0	1	3	3	3	1	3	3
10	PHL	1	1	1	1	0	0	0	3	0	0	1	1	0	0	0	0	3	1	0	3	1	1	1	1	0	0	0	0	1	1	1	1	1	3	1
11	DTW	1	1	3	3	0	3	0	3	0	0	1	2	1	0	0	0	3	1	0	3	1	3	3	0	0	0	0	0	0	3	0	0	0	0	1
12	IAH	2	1	3	3	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	3	1	2	0	0	0	0	0	0	3	3	2	0	3	0	3
13	MCO	3	1	1	1	2	3	0	3	2	0	1	3	3	0	0	3	0	2	0	3	1	3	3	0	0	0	0	0	1	3	2	0	2	0	2
14	DFW	2	1	3	0	0	0	0	3	0	0	1	3	3	3	3	0	3	1	0	3	3	3	0	0	0	0	0	0	0	0	3	0	1	0	3
15	MSP	3	1	3	3	0	3	0	0	0	0	3	0	3	0	0	0	0	3	0	3	1	0	0	0	0	0	0	0	1	3	0	0	0	0	0
16	DEN	1	2	3	0	0	3	0	3	0	0	1	1	3	0	0	0	3	3	0	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	3
17	SEA	1	2	3	3	0	3	0	0	0	0	2	3	0	0	0	0	0	1	0	3	1	0	0	0	0	0	0	0	0	3	0	0	3	0	0
18	LAS	3	1	1	0	0	1	0	0	0	0	1	3	1	0	0	0	3	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	0	2
19	CLT	3	1	3	0	0	0	0	0	0	0	1	1	0	0	0	0	3	3	0	3	1	0	0	0	0	0	0	0	2	3	3	0	0	0	2
20	CVG	0	1	2	0	0	0	0	0	0	0	1	3	0	0	0	3	0	1	3	3	1	1	2	3	0	0	0	0	0	3	3	0	3	0	3
21	PHX	1	3	3	0	0	0	0	0	0	0	2	3	3	0	0	3	0	3	0	3	3	3	0	0	0	0	0	0	0	2	0	0	0	0	3
22	MEM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0
23	PDX	2	3	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	3	3	2	3	3	0	0	0	0	0	0	0	0	2	0	0
24	TPA	3	1	2	3	0	0	0	0	0	0	2	3	3	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	2	2	0	0	0	0
25	BWI	1	3	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	2	0	0	3	3	0	0	0	0	0	0	3	3	0	0	0	0	0
26	RDU	3	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
27	RSW	3	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	SFB	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	SJU	3	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	1	2	0	0	3
30	BDL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	CLE	0	1	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0

0	No direct service during 1990 - 2007
1	Direct service (non-stop) in 2007
2	Direct service (with stopovers) in 2007
3	No direct service in 2007