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A Model to forecast corporate hotel rates

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A MODEL TO FORECAST CORPORATE HOTEL RATES

by

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Abstract

This study examined the relationship between corporate room rates and the variables of the number of hotel rooms; the number of delegates at conventions, conferences, and trade shows; the economic impact of these delegates; and passenger enplanements in 30 cities in the United States. These variables proved to have an influence on the corporate room rate, with passenger enplanements being the most statistically significant variable. These relationships were then used to develop a predictive model to forecast future corporate room rates.

FORM I

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Table of Contents

Table of Tables

Table of Figures

Chapter I

Introduction

In 1991 the hotel industry's occupancy rate fell to a 20 year low of 60.8 percent and it lost 2.7 billion dollars (Yoshihashi, 1992). Why did this drop occur in the hotel industry? With proper forecasting procedures, could this drop in the hotel industry been avoided? What role can forecasting procedures play in the hotel industry?

Accurate forecasting is an important element in planning and management. Trustworthy forecasts are essential for matching supply and demand, in order to avoid shortages (leading to lost sales) or costly oversupply (Calantone, Di Benedetto & Bojanic, 1988). A hotel property which desires to be an effective competitor must be able to make appropriate strategic and operational decisions. The ability to forecast accurately in the face of a changing environment is critical. The opportunity cost of not forecasting carefully may be high as problems may result, or opportunities lost. A successful hotel property could be even more successful, or could operate more efficiently, if conscientious forecasting were carried out (Calantone, Di Benedetto & Bojanic, 1987).

Hotel corporate room rates may change rapidly in response to such factors as room supply, and the demand for the use of the rooms from the amount of travelers

in an area. By using these factors, it may be possible to forecast corporate hotel rates, thereby allowing hotel properties to operate more successfully and efficiently and allowing them to avoid price fluctuations in the industry by matching room prices with demand.

The number of hotel rooms in a city may have an effect on the corporate room rates of hotels. An oversupply of hotel rooms in an area without enough demand to fill them, can have the effect of lowering the price charged for the rooms. The opposite can also be true, where there is not enough hotel rooms in an area to meet demand and the price charged for the rooms may be raised.

The number of delegates at conventions, conferences, and trade shows in a city and the economic impact of these delegates on that city may have an impact on corporate room rates. During 1991, convention spending was a major contributor to the overall travel and tourism picture. Each convention delegate spent an average of $151.94 per day. With an average convention lasting 4.1 days, this equals an economic impact of $622.97 per conventioneer, up 6.5 percent from 1990. The host association spent an additional $65.34 per attendee for a total economic impact of $688.31. For a convention with just 200 attendees, that would mean $137,662 being infused into the local economy.

Trade shows make an even greater impact, when exhibitor expenditures and

expo fees are considered. These provide an additional $352.46 per delegate for a total trade show impact of $1,040.77 per delegate. Again given 200 attendees, this would equal an economic impact of $208,154. Of the convention and trade show delegate expenditures, 51 percent is spent on hotel rooms and incidentals (International Association of Convention and Visitors Bureaus, 1991). (see Appendix A)

Convention, conference, and trade show delegates increase the demand for the use of hotel rooms in a city, which may have the effect of raising the price charges for the rooms. Convention, conference, and trade show delegates also infuse money into the local economy through their expenditures on local goods and services. This infusion of money into the local economy may drive hotels to change their room rates.

The number of passenger enplanements in a city may also have an effect on the corporate room rates of hotels. Passenger enplanements are indicative of the amount of travelers in an area. A high number of passenger enplanements may signify a high number of travelers in an area. Travelers increase the demand for the use of hotel rooms in an area, which may also have the effect of raising the price charged for the rooms.

Background

For the past five years, the Rochester Institute of Technology in conjunction with Corporate Travel Magazine has developed the annual Corporate Travel Index. The Corporate Travel Index surveys 2,400 hotel properties (having one or more restaurants on site) in the 100 cities in the United States most frequently visited by business travelers to compute daily hotel, car rental, and meal costs in each city. As a graduate research assistant, I had the opportunity to work on the 1992 Corporate Travel Index.

Problem Statement and Hypothesis

Can the relationship between corporate room rate and the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city be used to develop a model to predict or forecast future corporate room rates?

$CR = f(Xr + Xd + Xi + Xe)$

where:

CR = corporate room rate

r = the number of hotel rooms in a city

d = the number of delegates at conventions, conferences, and trade shows in a city

i = the economic impact of these delegates on that city

e = passenger enplanements in a city

This study will determine that the relationship between corporate room rate and the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city can be used to develop a model to predict or forecast future corporate room rates.

Purpose and Significance

The purpose of this study is to analyze the nature of the relationship between corporate room rate and the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city to discover if this relationship can be used to develop a model to predict or forecast future corporate room rates.

This model may be used by others as a forecasting tool to predict corporate room rates. This can aid in planning purposes for hotel properties to make appropriate strategic and operational decisions. Business travelers and the like, may use this model to gain an understanding of the factors that affect and determine corporate room rates.

Scope and Limitations

This study will be based only on the relationship between corporate room rates of hotels and the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city. Rack rates or any other hotel rates are not being studied; only corporate rates will be used.

This study is limited by a data base of 30 cities collected as part of the 1992 Corporate Travel Index. The 30 cities have been selected on the basis of an equal distribution among the four regions of the United States and among the sizes of the cities.

A further limitation of this study is that the regression model developed is appropriate for short to medium term forecasts only (one month to two years) (Calantone, Di Benedetto & Bojanic, 1987).

Definition of Terms

1. Corporate Rate - A reduced room rate that hotels offer to employees of companies while traveling on business (Howell, 1989).

2. Passenger Enplanements - The total number of passengers boarding aircraft (Federal Aviation Administration, 1990).

3. Multiple Regression Model - It is the modeling of a dependent variable Y as a

function of a set of independent variables X1 through Xk. It allows for more than one independent variable to be included in predicting the value of a dependent variable. For forecasting purposes a multiple regression equation is often referred to as a causal or explanatory model (Makridakis, Wheelwright & McGee, 1983).

4. Large Sized Cities - These are cities that have a metropolitan area population of 2.5 million people or higher.

5. Medium Sized Cities - These are cities that have a metropolitan area population between one and 2.5 million people.

6. Small Sized Cities - These are cities that have a metropolitan area population under one million people.

Regions of the United States (see Figure 1)

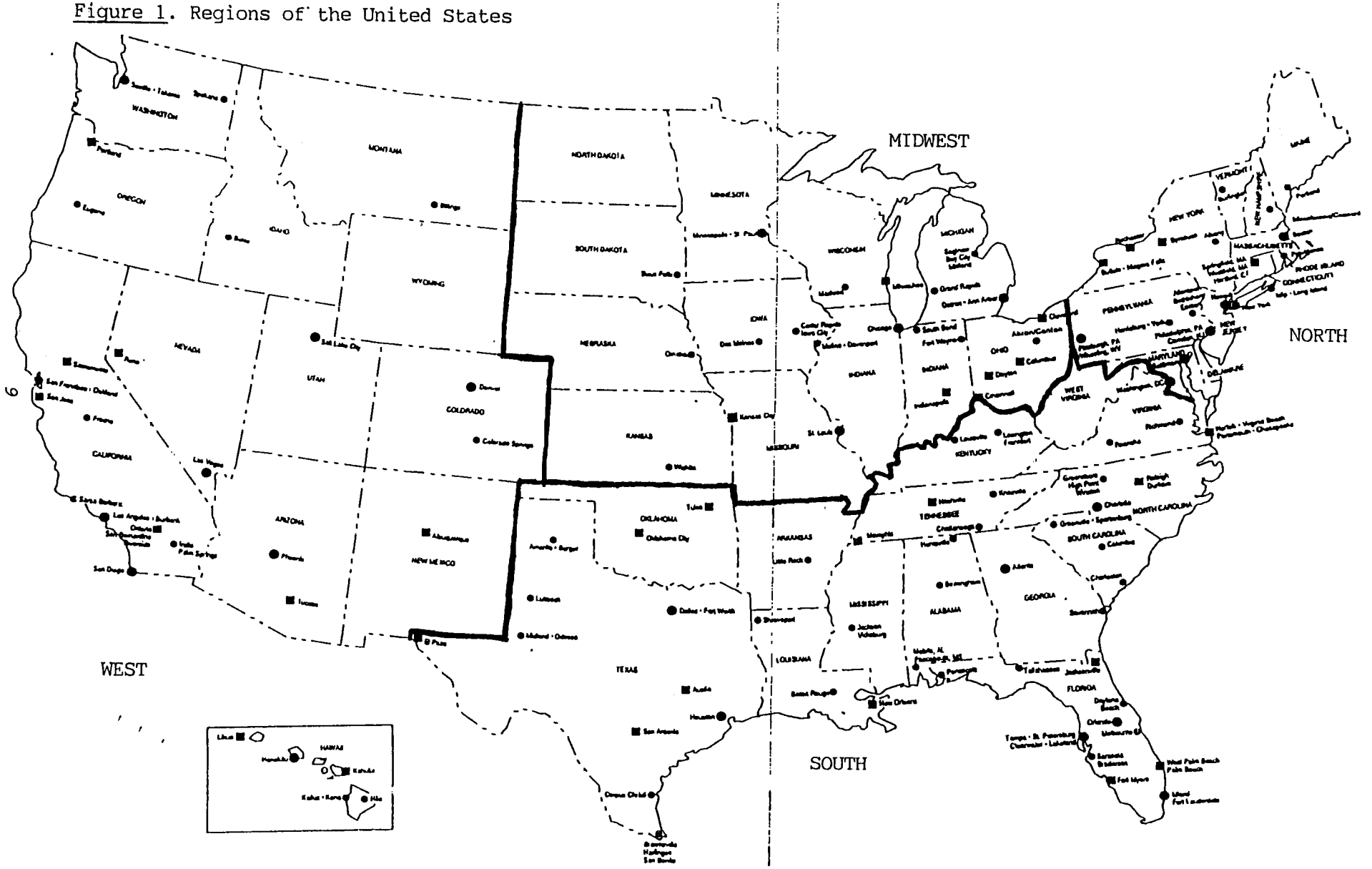
7. North - This region includes the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia.

8. Midwest - This region includes the states of Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.

9. South - This region includes the states of West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas.

10. West - This region includes the states of Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Idaho, Nevada, California, Oregon, Washington, and Hawaii.

Figure 1. Regions of the United States



Chapter II

Review of the Literature

Topics that were investigated for this study included: hotel rates, forecasting methods, regression analysis, and business travel.

Hotel Rate Structure

Hotel properties offer many rates and discounts to their customers which Howell (1989) described. Hotels have a standard day rate for a room known as the rack rate. Some hotel properties even offer day rates that are applicable to the use of a guest room for a portion of the day only. People who stay in a hotel as part of a group can usually expect to pay less for their accommodations than guests who book individually.

Hotels often offer a reduced room rate to employees of companies. This rate is commonly referred to as the corporate rate. Additionally, large discounts are often given to overnight guests attending conventions and meetings in a hotel. Many chain operations have special family rates known as family plan rates, which allow children to share their parents' room at no additional charge. Flat rates quoted for government employees traveling on business are known as government rates.

Regression Analysis

Uysal and Crompton (1985) describe regression analysis as a method of determining the degree of influence exerted upon demand by each of several variables. Regression models are regarded as causal models which attempt to quantify the relationship between a set of causal variables. They are quantitative and require the existence of past data, and are more suitable for short-term forecasting of no more than two years ahead.

Regression models as used in the hospitality-tourism industry, seek to predict the future by identifying relationships between explanatory variables and hospitality-tourism trends. Regression models estimate the magnitude or direction of the effects of a number of explanatory variables (known as the independent variables) on hospitality-tourism trends (the dependant variable). Regression models are popular due to their ease and low cost of development and running, and because of their ease of interpretation (Calantone, Di Benedetto & Bojanic, 1988).

An exploratory approach to forecasting, the regression model, determines the extent of the influence of certain independent variables on one or more outcome variables (for example, tourist demand). Understanding the nature of the effect each independent variable has on the outcome variable allows the user to forecast projected shifts in demand given future independent variable levels (Calantone, Di Benedetto & Bojanic, 1987).

However, Calantone et al. (1987) cited two major criticisms of regression models in tourism forecasting: (1) explanatory ability tended to be comparatively low in almost all studies reported (.34 through .54, where a value of 1.00 would indicate perfect explanatory ability); and (2) forecasts based on simple regression have a short usable time horizon of about three months.

Makridakis, Wheelwright and McGee (1983) describe regression analysis as a powerful method of estimation and the most commonly used causal approach to forecasting. Regression techniques are generally referred to as causal, or explanatory approaches to forecasting. They attempt to predict the future by discovering and measuring the effect of important independent variables on the dependant variable to be forecast. Regression methods develop a model that expresses the functional interdependence of all the variables. A forecast will be expressed as a function of a certain number of factors that determine its outcome.

In multiple regression, there is one dependant measure (Y) to be predicted, and several independent measures (X1, X2,....,Xn) and the objective is to find a function that relates Y to all of the independent (or explanatory) variables (also called regressors).

For example, if sales were the variable to be forecast, several factors such as GNP, advertising prices, competition, research and development budget, and time

could be tested for their influence on sales by using regression. If it is found that these variables do influence the level of sales, they can be used to predict future values of sales.

In regression, the square of the correlation between Y (the dependent variable) and Y^ (the estimated Y value based on the set of independent regressors) is called the coefficient of determination and denoted R-squared. The coefficient of determination tells the proportion of variance in Y that can be explained by X. It will always be positive, and its values range from zero to one (1.00 would indicate perfect explanatory ability). The R-squared value is used to determine the explanatory ability of the regression equation.

Examples of Regression Models in Hospitality-Tourism Literature

Loeb (1982) evaluated the effects of income, exchange rates, and relative prices on the United States' exports of travel services to various foreign countries. All three variables proved to have a significant effect on the demand for travel in the United States (R-squared values between .72 and .987, meaning the statistical results indicated that the models explained between 72 and 98.7 percent of the variation in the dependent variable).

Snepenger and Milner (1990) examined demographic variables as background

factors and situational variables as trip-specific factors which could affect business travel. These variables were used in multiple regression analyses as independent variables in an effort to identify their influence on pre-trip, on-location, and post-trip behaviors and attitudes. The demographic and situational variables accounted for 7 to 23% of the variance in business travel behaviors and attitudes with situational variables proving to be stronger correlates than demographics.

Ansari (1971) estimated demand for particular package tours by residents of each state in the United States. Ansari was able to show that income levels, the daily cost of the tour, and the number of attractions it offered were significant determinants of the number of people taking particular package tours.

Chapter III

Methodology

The Study Setting

This study is examined in the present perspective using correlational research. The corporate rates of hotels in 30 cities in the United States as a cross section that represents small, medium, and large sized cities is correlated with a number of independent variables to display the relationship between all of the variables involved.

Procedure

The population for this study is from a data base of 2,400 hotel and motel properties in the 100 cities in the United States most frequently visited by business travelers, collected as part of the 1992 Corporate Travel Index. The sample consisted of an average of at least five hotels (or 25 percent of the hotels listed in the data base for larger cities) for the corporate rates in 30 cities. Of these 30 cities, seven are from the North, seven are from the Midwest, seven are from the South, and nine are from the West (see Table 1). The sample attempts to represent an even number of luxury, mid-scale, and budget properties. Voluntary participation of all properties was obtained.

The independent variables for this study are the number of hotel rooms in a

Table 1

The 30 Cities

	Large	Medium	Small
	Philadelphia	Pittsburgh	Syracuse
North	Washington	Buffalo	Albany
		Rochester, NY	
	Chicago	St. Louis	Wichita
Midwest		Cincinnati	Peoria
		Milwaukee	Rochester, MN
	Dallas	Norfolk	Nashville
South	Houston	Orlando	Oklahoma City
			Little Rock
	San Francisco	Phoenix	Tucson
West	Seattle	Denver	Albuquerque
		Portland	Santa Barbara
		Salt Lake City	

city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city. The dependent variable is the average of the corporate rates of hotels in 30 cities of the United States.

Data gathering for corporate room rates was performed by the use of a questionnaire that was mailed to the hotel properties in the data base on December 16, 1991 (see Appendix B). Follow-up phone calls were made to hotels that did not respond to the questionnaire during January and February 1992, to obtain the desired response rate from each city. The phone numbers used to call hotel properties that did not respond were taken from the Official Hotel Guide 1992.

Once the data was gathered, an average was taken of all the corporate rates in each of the 30 cities using the SPSS-X (Statistical Package for the Social Sciences) frequency program, to acquire the average corporate room rate in each city (see Appendix C for the corporate rates in the 30 cities).

A letter was sent out to the Convention and Visitors Bureaus in the selected 30 cities during August and September 1992, asking them to send their most recent figures on the number of attendees at conventions, conferences, and trade shows in their city; and the economic impact that these attendees created on the local economy (see Appendix D). If a city did not respond, a new city of the same size

was substituted in its place. The number of hotel rooms in each city, the contact name, and the addresses of the Convention and Visitors Bureaus were taken from Successful Meetings 1992 SourceBook.

The number of enplaned passengers in each city was taken from Airport Activity Statistics of Certified Route Air Carriers, a report published by the Federal Aviation Administration (see Appendix E).

The population data for the 30 cities taken from the 1990 census figures found in The 1992 Information Please Almanac, is displayed in Table 2.

The regression analysis was completed by Lotus 1-2-3. Lotus 1-2-3 will also predict a value for a dependent variable based on the values for one or more independent variables by using a formula based on the regression output. The regression analysis was computed using all of the independent variables against the dependent variable and then by each of the four independent variables computed separately against the dependent variable. The regression analyses were further sorted and computed by size of city and by region of the United States (see Appendix F for instructions for regression analysis on Lotus 1-2-3).

Table 2

1990 Population of the 30 Cities (Standard Metropolitan Statistical Area)

City	Population
Philadelphia	5,899,345
Washington	3,923,574
Pittsburgh	2,242,798
Buffalo	1,189,288
Rochester, NY	1,002,410
Syracuse	659,864
Albany	874,304
Chicago	8,065,633
St. Louis	2,444,099
Cincinnati	1,744,124
Milwaukee	1,607,183
Wichita	485,270
Peoria	339,172
Rochester, MN	106,470
Dallas	3,885,415
Houston	3,711,043
Norfolk	1,396,107
Orlando	1,072,748

City	Population
Nashville	985,026
Oklahoma City	958,839
Little Rock	513,117
San Francisco	6,253,311
Seattle	2,559,164
Phoenix	2,122,101
Denver	1,848,319
Portland	1,477,895
Salt Lake City	1,072,227
Tucson	666,880
Albuquerque	480,577
Santa Barbara	369,608

Source: The 1992 Information Please Almanac

Chapter IV

Results, Analysis, and Discussion

Restatement of the Problem

This study sought to determine if the relationship between corporate room rate and the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city can be used to develop a model to predict or forecast future corporate room rates.

Results

The mailing to the hotel properties for the corporate room rates resulted in 412 mail returns. Follow-up phone calls to hotel properties that did not respond to the questionnaire resulted in an additional 306 completed questionnaires, for a total of 718 completed questionnaires and a response rate of 30%. This data was then entered into an SPSS program to compute the average corporate room rate in each city. The average corporate room rate for each city is displayed in Appendix C.

The mailing to the convention and visitors bureaus resulted in 36 returns, of which 30 were usable. This was due to the fact that several problems were encountered during the mailing to the convention and visitors bureaus. The initial objective of this study was to have a sample of 36 cities representative of small,

medium and large sized cities in each of the four regions of the United States (three small, three medium, and three large sized cities from the four regions). However, many of the convention and visitors bureaus contacted did not respond to the mailing or did not have the information that was requested. When this occurred, a new city was substituted in its place.

For example, in the midwest Chicago, Detroit, and Cleveland were the only large cities in the sample. Detroit did not respond to the mailing and while Cleveland did respond, it did not have the information that was requested. There were no other large cities that could be substituted in their place. Therefore, Chicago was the only large city in the midwest that could be used in this study. This situation accounted for the lack of the 36 cities that comprised the initial objective of this study.

Many of the large sized cities did not respond at all to the mailing. This lack of responsiveness may be due to the fact that many of these cities are popular destinations for conventions, meetings and trade shows and therefore the conventions and visitors bureaus in these cities are busy trying to accommodate the large volume of requests for information that they receive. These convention and visitors bureaus may have decided not to respond to the mailing because they were busy handling many other requests.

Many of the convention and visitors bureaus in the small cities contacted did not have the information requested. Some of these convention and visitors bureaus have a small staff working on a limited budget (as perceived from their annual reports), and they may not be able to undertake some of the studies that larger cities with a larger staff and budget are able to do. While many small sized cities did respond by sending their annual report, often they only had information as to the total number of visitors in the area and their economic impact. These cities did not break these visitors down into convention, conference and trade show delegates only, and their economic impact.

Summary of Findings

In general the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates; and the number of enplaned passengers in a city proved to have an influence on the corporate room rate of that city. The statistical results indicated that the model predicted 47 percent of the variation in the corporate room rate as indicated by the R-squared value (coefficient of determination) of .466.

Of the four independent variables, the number of enplaned passengers was the strongest predictor of the corporate room rate as indicated by the R-squared value of .445. The small sized cities had the highest correlation between the four independent variables and the corporate room rate as shown by the R-squared value

of .615. In addition, midwestern cities also had the highest correlation between the four independent variables and the corporate room rate as indicated by the R-squared value of .992.

Relevance of Summary Findings to the Hypothesis

The hypothesis for this investigation stated this study will determine that the relationship between corporate room rate and the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city can be used to develop a model to predict or forecast future corporate room rates.

The findings of this study suggest that a relationship does indeed exist between the corporate room rate and the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city. In addition, this study also suggests that this relationship can be used to develop a model to predict or forecast future corporate room rates.

Analysis and Discussion of Findings

Table 3 illustrates the regression analysis of the model (computed by Lotus 1-2-3) with the corporate rate as the dependent variable and the number of rooms,

Table 3
Regression Analysis of the Model

City	Corporate Rate	Rooms #	Delegates	Economic Impact	Enplaned Passengers	City Size	Region	Estimated Corporate Rate
Washington	$131.21	34,370	1,347,920	$952,979,430	11,483,285	Large	North	$94.41
Buffalo	$84.86	4,394	165,550	$94,300,000	1,637,293	Medium	North	$74.04
Rochester, NY	$79.44	5,600	347,201	$84,000,000	1,154,747	Medium	North	$73.03
Albany	$77.60	3,573	119,678	$51,223,381	878,372	Small	North	$72.72
Syracuse	$78.20	4,500	118,000	$28,500,000	1,166,598	Small	North	$73.40
Pittsburgh	$77.00	7,778	548,652	$215,900,000	7,912,394	Medium	North	$84.04
Philadelphia	$111.00	10,526	166,023	$124,295,040	6,370,820	Large	North	$84.22
Milwaukee	$87.00	10,981	242,007	$141,500,000	1,915,390	Medium	Midwest	$75.90
Chicago	$123.16	47,838	2,426,007	$832,000,000	29,183,423	Large	Midwest	$123.33
Wichita	$71.40	5,000	272,135	$187,700,160	561,432	Small	Midwest	$72.10
St. Louis	$92.86	21,000	603,000	$456,500,000	9,332,091	Medium	Midwest	$89.53
Cincinnati	$86.00	14,000	279,000	$176,000,000	3,907,625	Medium	Midwest	$79.70
Peoria	$54.63	2,000	190,000	$70,000,000	100,907	Small	Midwest	$70.90
Rochester, MN	$68.02	4,400	81,337	$25,471,012	142,052	Small	Midwest	$71.01
Houston	$103.83	36,000	307,315	$166,100,000	11,535,193	Large	South	$97.44
Nashville	$73.86	20,000	437,290	$275,700,000	3,404,243	Small	South	$80.02
Norfolk	$63.00	5,500	62,354	$30,100,000	1,254,046	Medium	South	$73.95
Oklahoma City	$61.60	10,000	177,777	$42,600,000	1,519,510	Small	South	$75.15
Dallas	$105.00	40,000	2,870,000	$1,854,881,000	25,702,103	Large	South	$115.16
Orlando	$85.46	77,511	1,300,007	$1,013,017,614	7,677,709	Medium	South	$90.02
Little Rock	$59.71	4,500	246,490	$60,030,001	950,540	Small	South	$72.70
Seattle	$82.00	23,000	316,071	$193,109,300	7,307,740	Large	West	$87.53
San Francisco	$109.20	32,423	1,102,000	$590,000,000	13,474,929	Large	West	$97.60
Phoenix	$94.67	35,430	961,000	$702,100,000	10,727,494	Medium	West	$94.43
Portland	$74.44	12,000	105,650	$39,551,590	3,025,345	Medium	West	$70.40
Albuquerque	$56.06	5,039	152,292	$73,610,951	2,304,647	Small	West	$75.63
Denver	$67.49	10,200	540,490	$443,757,000	11,961,039	Medium	West	$93.29
Salt Lake City	$69.50	10,300	90,000	$64,000,000	5,300,170	Medium	West	$01.77
Santa Barbara	$90.20	4,700	22,922	$15,770,330	232,605	Small	West	$72.20
Tucson	$09.40	12,000	209,274	$70,000,000	1,203,509	Small	West	$75.14
Nowhere	Prediction:	9,000	600,000	$100,000,000	4,000,000	Medium	South	$77.77

Regression Output:

Constant		70.734506		
Std Err of Y Est		15.270070		
R Squared		0.4663469		
No. of Observations		30		
Degrees of Freedom		25		
X Coefficient(s)	0.000242	-0.000002	0.0000000005	0.00000162
Std Err of Coef.	0.000267	0.0000176	0.0000000226	0.00000099

the number of delegates, the economic impact, and passenger enplanements as the independent variables. The regression output shows that the coefficient of determination (R-squared value) is .4663469. This means that 47 percent of the variation in the corporate room rate can be attributed to the number of hotel rooms in a city; the number of convention, conference, and trade show delegates in a city; the economic impact of these delegates on that city; and the passenger enplanements in a city. Based on this regression model, future values of the corporate rate can be predicted for any city.

Table 3 also shows the prediction for a future value of the corporate room rate in the fictional city of Nowhere (highlighted in the box). Future values of 9,000 for the number of rooms, 600,000 for the number of delegates, $100,000,000 for the economic impact, and 4,000,000 for enplaned passengers were entered into the spreadsheet. Based on the regression model, the estimated corporate room rate in the city of Nowhere is $77.77.

The prediction of a future corporate room rate in any city can be computed using this regression model. To do this, the user needs only to enter future values of the number of rooms, the number of delegates, the economic impact of these delegates, and enplaned passengers in the city along with a formula based on the regression output. (see Appendix F for instructions on Lotus 1-2-3)

In Table 3, an estimated corporate rate based on the regression model was computed for each city using the actual number of rooms, number of delegates, economic impact, and enplaned passengers to discover how the estimated corporate rate for each city compared to the actual corporate rate. A T-test was run on SPSS using the actual corporate rate versus the estimated corporate rate in a paired run, to determine if there was a significant difference between the two. While the actual corporate rate and the estimated corporate rate were not the same, the T-test determined that there was no significant difference between the two.

Of the four independent variables: the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city, the number of enplaned passengers had the most significant effect on the corporate room rate.

As displayed in Tables 4, 5, 6, and 7 the regression analyses showed the number of rooms in a city had an R-squared value of .319912, the number of delegates in a city had an R-squared value of .374008, the economic impact of the delegates on the city had an R-squared value of .322466, and passenger enplanements in a city had an R-squared value of .445095. Passenger enplanements in a city had the highest coefficient of determination and therefore had the most significant effect on the corporate room rate.

Table 4
Regression Analysis: Corporate Rate by Number of Rooms

City	Corporate Rate	Rooms #
Washington	$131.21	34,370
Philadelphia	$111.00	10,526
Pittsburgh	$77.00	7,778
Buffalo	$84.86	4,394
Rochester, NY	$79.44	5,600
Syracuse	$70.20	4,500
Albany	$77.60	3,573
Chicago	$123.16	47,838
Milwaukee	$87.00	10,981
St. Louis	$92.86	21,000
Cincinnati	$86.00	14,000
Wichita	$71.40	5,000
Peoria	$54.63	2,000
Rochester, MN	$68.02	4,400
Dallas	$105.00	40,000
Houston	$103.83	36,000
Norfolk	$63.00	5,500
Orlando	$85.46	77,511
Nashville	$73.86	20,000
Little Rock	$59.71	4,500
Oklahoma City	$61.60	10,000
San Francisco	$109.20	32,423
Seattle	$82.00	23,000
Phoenix	$94.67	35,430
Denver	$67.49	18,200
Salt Lake City	$69.50	10,300
Portland	$74.44	12,800
Albuquerque	$56.86	5,839
Santa Barbara	$98.20	4,700
Tucson	$89.40	12,000

Regression Output:

Constant		72.39310
Std Err of Y Est		16.28064
R Squared		0.319912
No. of Observations		30
Degrees of Freedom		28
X Coefficient(s)	0.0006425615	
Std Err of Coef.	0.0001770526	

Table 5
Regression Analysis: Corporate Rate by Number of Delegates

City	Corporate Rate	Delegates
Washington	$131.21	1,347,920
Philadelphia	$111.00	166,023
Pittsburgh	$77.00	548,652
Buffalo	$84.86	165,550
Rochester, NY	$79.44	347,201
Syracuse	$70.20	118,000
Albany	$77.60	119,678
Chicago	$123.16	2,426,007
Milwaukee	$87.00	242,807
St. Louis	$92.86	603,000
Cincinnati	$86.00	279,000
Wichita	$71.40	272,135
Peoria	$54.63	190,000
Rochester, MN	$68.02	81,337
Dallas	$105.00	2,870,000
Houston	$103.83	307,315
Norfolk	$63.00	62,354
Orlando	$85.46	1,308,887
Nashville	$73.86	437,290
Little Rock	$59.71	246,498
Oklahoma City	$61.60	177,777
San Francisco	$109.20	1,132,000
Seattle	$82.00	316,071
Phoenix	$94.67	961,000
Denver	$67.49	540,498
Salt Lake City	$69.50	90,000
Portland	$74.44	105,650
Albuquerque	$56.86	152,292
Santa Barbara	$98.20	22,922
Tucson	$89.40	209,274

Regression Output:

Constant		74.42009
Std Err of Y Est		15.62740
R Squared		0.374008
No. of Observations		30
Degrees of Freedom		28
X Coefficient(s)	0.0000174162	
Std Err of Coef.	0.0000042581	

Table 6
Regression Analysis: Corporate Rate by Economic Impact

City	Corporate Rate	Economic Impact
Washington	$131.21	$952,979,430
Philadelphia	$111.00	$124,295,040
Pittsburgh	$77.00	$215,900,000
Buffalo	$84.86	$94,300,000
Rochester, NY	$79.44	$84,000,000
Syracuse	$70.20	$28,500,000
Albany	$77.60	$51,223,381
Chicago	$123.16	$832,000,000
Milwaukee	$87.00	$141,500,000
St. Louis	$92.86	$456,500,000
Cincinnati	$86.00	$176,800,000
Wichita	$71.40	$187,780,160
Peoria	$54.63	$78,000,000
Rochester, MN	$68.02	$25,471,812
Dallas	$105.00	$1,854,881,000
Houston	$103.83	$166,100,000
Norfolk	$63.00	$30,100,000
Orlando	$85.46	$1,013,817,614
Nashville	$73.86	$275,700,000
Little Rock	$59.71	$60,030,881
Oklahoma City	$61.60	$42,600,000
San Francisco	$109.20	$590,000,000
Seattle	$82.00	$193,169,306
Phoenix	$94.67	$762,100,000
Denver	$67.49	$443,757,000
Salt Lake City	$69.50	$64,000,000
Portland	$74.44	$39,551,590
Albuquerque	$56.86	$73,618,951
Santa Barbara	$98.20	$15,770,336
Tucson	$89.40	$70,000,000

Regression Outputs:

Constant		75.49189
Std Err of Y Est		16.25894
R Squared		0.322466
No. of Observations		30
Degrees of Freedom		28
X Coefficient(s)	0.0000000267	
Std Err of Coef.	0.0000000073	

Table 7
Regression Analysis: Corporate Rate by Enplaned Passengers

City	Corporate Rate	Enplaned Passengers
Washington	$131.21	11,483,285
Philadelphia	$111.00	6,970,820
Pittsburgh	$77.00	7,912,394
Buffalo	$84.86	1,637,293
Rochester, NY	$79.44	1,154,747
Syracuse	$70.20	1,166,598
Albany	$77.60	878,372
Chicago	$123.16	29,183,423
Milwaukee	$87.00	1,915,390
St. Louis	$92.86	9,332,091
Cincinnati	$86.00	3,907,625
Wichita	$71.40	561,432
Peoria	$54.63	108,987
Rochester, MN	$68.02	142,052
Dallas	$105.00	25,782,103
Houston	$103.83	11,535,193
Norfolk	$63.00	1,254,846
Orlando	$85.46	7,677,769
Nashville	$73.86	3,404,243
Little Rock	$59.71	950,540
Oklahoma City	$61.60	1,519,518
San Francisco	$109.20	13,474,929
Seattle	$82.00	7,387,748
Phoenix	$94.67	10,727,494
Denver	$67.49	11,961,839
Salt Lake City	$69.50	5,388,178
Portland	$74.44	3,025,345
Albuquerque	$56.86	2,384,647
Santa Barbara	$98.20	232,685
Tucson	$89.40	1,263,509

Regression Output:

Constant	72.51246
Std Err of Y Est	14.71336
R Squared	0.445095
No. of Observations	30
Degrees of Freedom	28
X Coefficient(s)	0.0000018078
Std Err of Coef.	0.0000003815

The regression model was sorted and computed by size of city to discover what size city had the highest correlation between the four independent variables and the corporate room rate. As displayed in Tables 8, 9, and 10 the regression analyses showed that the large sized cities had a coefficient of determination of .2976899, the medium sized cities had a coefficient of determination of .4700887, and the small sized cities had a coefficient of determination of .6153987. The small sized cities had the highest coefficient of determination and therefore had the highest functional interdependence between the four independent variables and the corporate room rate.

The regression model was also sorted and computed by region of the United States to discover which region had the strongest relationship between the four independent variables and the corporate room rate. As displayed in Tables 11, 12, 13, and 14 the northern cities had an R-squared value of .9275029, the midwestern cities had an R-squared value of .9922414, the southern cities had an R-squared value of .9862525, and the western cities had an R-squared value of .5997185. Midwestern cities had the highest R-squared value and therefore had the strongest relationship between the four independent variables and the corporate room rate.

In Tables 8, 9, 10, 11, 12, 13, and 14 the predictions for a future value of the corporate room rate in the fictional city of Nowhere (highlighted in the boxes) was computed based on the regression model in each table. In each table, an estimated

Table 8
Regression Analysis of Large Cities

City	Corporate Rate	Rooms #	Delegates	Economic Impact	Enplaned Passengers	City Size	Region	Estimated Corporate Rate
Houston	$103.83	36,000	387,315	$166,100,000	11,535,193	Large	South	$98.79
Chicago	$123.16	47,838	2,426,007	$832,000,000	29,183,423	Large	Midwest	$120.33
Dallas	$105.00	40,000	2,870,000	$1,854,881,000	25,782,103	Large	South	$110.94
Seattle	$82.00	23,000	316,071	$193,169,306	7,387,748	Large	West	$106.26
Washington	$131.21	34,370	1,347,920	$952,979,430	11,483,285	Large	North	$117.05
San Francisco	$109.20	32,423	1,132,000	$590,000,000	13,474,929	Large	West	$113.49
Philadelphia	$111.00	10,526	166,023	$124,295,040	6,970,820	Large	North	$98.[illegible]
Nowhere	Prediction:	20,000	1,000,000	$200,000,000	12,000,000	Large	Midwest	$121.61

Regression Output:

Constant		113.31684		
Std Err of Y Est		22.718216		
R Squared		0.2376899		
No. of Observations		7		
Degrees of Freedom		2		
X Coefficient(s)	0.000376	0.0000455	-0.0000000364	-0.0000031
Std Err of Coef.	0.001360	0.0000708	0.0000000638	0.00000537

Table 9
Regression Analysis of Medium Cities

City	Corporate Rate	Rooms #	Delegates	Economic Impact	Enplaned Passengers	City Size	Region	Estimated Corporate Rate
Norfolk	$63.00	5,500	62,354	$30,100,000	1,254,846	Medium	South	$77.97
Phoenix	$94.67	35,430	961,000	$762,100,000	10,727,494	Medium	West	$92.90
Cincinnati	$86.00	14,000	279,000	$176,800,000	3,987,625	Medium	Midwest	$77.73
St. Louis	$92.86	21,000	603,000	$456,500,000	9,332,891	Medium	Midwest	$82.77
Buffalo	$84.86	4,394	165,550	$94,300,000	1,637,293	Medium	North	$83.86
Orlando	$85.46	77,511	1,300,887	$1,013,817,614	7,677,769	Medium	South	$88.39
Portland	$74.44	12,800	105,650	$39,551,590	3,025,345	Medium	West	$69.82
Milwaukee	$87.00	10,981	242,807	$141,500,000	1,915,398	Medium	Midwest	$81.43
Rochester, NY	$79.44	5,600	347,201	$84,000,000	1,154,747	Medium	North	$83.35
Salt Lake City	$69.50	10,300	99,000	$64,000,000	5,388,178	Medium	West	$68.33
Denver	$67.49	18,200	548,490	$443,757,000	11,961,839	Medium	West	$78.05
Pittsburgh	$77.00	7,778	540,652	$215,900,000	7,912,394	Medium	North	$77.92
Nowhere	Prediction:	19,000	300,000	$500,000,000	7,000,000	Medium	North	$90.77

Regression Output:

Constant	82.166143			
Std Err of Y Est	9.1863162			
R Squared	0.4700887			
No. of Observations	12			
Degrees of Freedom	7			
X Coefficient(s)	-0.00072	0.0000048	0.0000000714	-0.0000021
Std Err of Coef.	0.000471	0.0000319	0.0000000584	0.00000135

Table 10
Regression Analysis of Small Cities

City	Corporate Rate	Rooms #	Delegates	Economic Impact	Enplaned Passengers	City Size	Region	Estimated Corporate Rate
Little Rock	$59.71	4,500	246,498	$60,030,881	950,540	Small	South	$52.16
Albany	$77.60	3,573	119,678	$51,223,381	878,372	Small	North	$69.32
Syracuse	$78.20	4,500	118,000	$28,500,000	1,166,598	Small	North	$66.99
Nashville	$73.86	20,000	437,290	$275,700,000	3,404,243	Small	South	$75.11
Albuquerque	$56.86	5,839	152,292	$73,618,951	2,384,647	Small	West	$60.31
Peoria	$54.63	2,000	190,000	$70,000,000	100,987	Small	Midwest	$63.41
Wichita	$71.40	5,000	272,135	$187,700,160	561,432	Small	Midwest	$69.41
Oklahoma City	$61.60	10,000	177,777	$42,600,000	1,519,518	Small	South	$73.16
Santa Barbara	$98.20	4,700	22,922	$15,770,336	232,685	Small	West	$89.89
Tucson	$89.40	12,000	209,274	$70,000,000	1,263,509	Small	West	$80.17
Rochester, MN	$60.02	4,400	81,337	$25,471,812	142,052	Small	Midwest	$81.55
Nowhere	Prediction:	7,000	100,000	$80,000,000	1,000,000	Small	North	$85.84

Regression Output:

Constant	78.951495			
Std Err of Y Est	10.811534			
R Squared	0.6153987			
No. of Observations	11			
Degrees of Freedom	6			
X Coefficient(s)	0.003140	-0.000161	0.0000001275	-0.0000891
Std Err of Coef.	0.001220	0.0000779	0.0000001026	0.00000580

Table 11
Regression Analysis of Northern Cities

City	Corporate Rate	Rooms #	Delegates	Economic Impact	Enplaned Passengers	City Size	Region	Estimated Corporate Rate
Washington	$131.21	34,370	1,347,920	$952,979,430	11,483,285	Large	North	$131.83
Buffalo	$84.86	4,394	165,550	$94,300,000	1,637,293	Medium	North	$79.19
Rochester, NY	$79.44	5,600	347,201	$84,000,000	1,154,747	Medium	North	$73.63
Albany	$77.60	3,573	119,678	$51,223,381	878,372	Small	North	$77.90
Syracuse	$78.20	4,500	118,000	$28,500,000	1,166,538	Small	North	$81.78
Pittsburgh	$77.00	7,778	548,652	$215,900,000	7,912,394	Medium	North	$79.31
Philadelphia	$111.00	18,526	166,023	$124,295,040	6,970,828	Large	North	$107.67
Nowhere	Prediction:	15,000	750,000	$450,000,000	7,500,000	Large	North	$92.27

Regression Output:

Constant	70.599975			
Std Err of Y Est	18.413773			
R Squared	0.9275029			
No. of Observations	7			
Degrees of Freedom	2			
X Coefficient(s)	0.003583	-9.000050	-0.0000000068	0.00000135
Std Err of Coef.	0.002877	0.0000522	0.0000000139	0.00000193

Table 12
Regression Analysis of Midwestern Cities

City	Corporate Rate	Rooms #	Delegates	Economic Impact	Enplaned Passengers	City Size	Region	Estimated Corporate Rate
Milwaukee	$87.00	10,981	242,007	$141,500,000	1,915,390	Medium	Midwest	$86.83
Chicago	$123.16	47,838	2,426,007	$832,000,000	29,183,423	Large	Midwest	$123.05
Wichita	$71.40	5,000	272,135	$187,700,160	561,432	Small	Midwest	$70.32
St. Louis	$92.86	21,000	603,000	$456,500,000	9,332,091	Medium	Midwest	$92.46
Cincinnati	$86.00	14,000	279,000	$176,000,000	3,907,625	Medium	Midwest	$88.07
Peoria	$54.63	2,000	190,000	$70,000,000	100,987	Small	Midwest	$57.37
Rochester, MN	$68.02	4,400	81,337	$25,471,012	142,052	Small	Midwest	$64.97
Nowhere	Prediction:	15,000	500,000	$500,000,000	5,000,000	Large	Midwest	$92.65

Regression Output:

Constant		44.428300		
Std Err of Y Est		3.3530741		
R Squared		0.9922414		
No. of Observations		7		
Degrees of Freedom		2		
X Coefficient(s)	0.004427	0.0000221	0.0000000077	-0.0000066
Std Err of Coef.	0.000779	0.0000154	0.0000000215	0.00000226

Table 13
Regression Analysis of Southern Cities

City	Corporate Rate	Rooms #	Delegates	Economic Impact	Enplaned Passengers	City Size	Region	Estimated Corporate Rate
Houston	$103.83	36,000	307,315	$166,100,000	11,535,193	Large	South	$103.69
Nashville	$73.86	20,000	437,290	$275,700,000	3,404,243	Small	South	$69.30
Norfolk	$63.00	5,500	62,354	$30,100,000	1,254,846	Medium	South	$64.70
Oklahoma City	$61.60	10,000	177,777	$42,600,000	1,519,518	Small	South	$64.23
Dallas	$105.00	40,000	2,870,000	$1,854,881,000	25,782,103	Large	South	$105.24
Orlando	$85.46	77,511	1,300,887	$1,013,817,614	7,677,769	Medium	South	$86.15
Little Rock	$59.71	4,500	246,498	$60,030,001	950,540	Small	South	$59.15
Nowhere	Prediction:	15,000	900,000	$250,000,000	15,000,000	Large	South	$95.37

Regression Output:

Constant	60.078956	
Std Err of Y Est	3.9687664	
R Squared	0.9862525	
No. of Observations	7	
Degrees of Freedom	2	
X Coefficient(s)	0.000299	-0.000024
Std Err of Coef.	0.000184	0.0000371
	0.0000000088	0.00000336
	0.000000054	0.00000053

Table 14
Regression Analysis of Western Cities

City	Corporate Rate	Rooms #	Delegates	Economic Impact	Enplaned Passengers	City Size	Region	Estimated Corporate Rate
Seattle	$82.00	23,000	316,071	$193,169,306	7,387,748	Large	West	$81.65
San Francisco	$109.20	32,423	1,132,000	$598,000,000	13,474,929	Large	West	$105.27
Phoenix	$94.67	35,430	961,000	$762,100,000	10,727,494	Medium	West	$97.25
Portland	$74.44	12,000	185,650	$39,551,598	3,025,345	Medium	West	$79.89
Albuquerque	$56.86	5,839	152,292	$73,618,951	2,384,647	Small	West	$77.06
Denver	$67.49	18,200	540,498	$443,757,000	11,961,839	Medium	West	$65.46
Salt Lake City	$69.58	10,300	90,000	$64,000,000	5,388,178	Medium	West	$67.91
Santa Barbara	$98.20	4,700	22,922	$15,770,336	232,685	Small	West	$77.17
Tucson	$89.48	12,000	209,274	$70,000,000	1,263,589	Small	West	$90.10
Nowhere	Prediction:	25,000	850,000	$600,000,000	9,000,000	Large	West	$93.82

Regression Output:

Constant		72.913796		
Std Err of Y Est		15.078327		
R Squared		0.5997185		
No. of Observations		9		
Degrees of Freedom		4		
X Coefficient(s)	0.000903	0.0000653	-0.000000048	-0.0000031
Std Err of Coef.	0.001333	0.0000500	0.0000000699	0.00000239

corporate rate based on the regression model was also computed for each city using the actual number of rooms, number of delegates, economic impact, and enplaned passengers to discover how the estimated corporate rate for each city compared to the actual corporate rate. A series of T-tests were run for each table on SPSS using the actual corporate rate versus the estimated corporate rate in a paired run, to determine if there was a significant difference between the two. While the actual corporate rate and the estimated corporate rate were not the same in each table, the T-tests determined that there was no significant difference between the two in each table.

When the regression model is sorted by region, the coefficients of determination for northern, midwestern, and southern cities are very high. This suggests that in these regions the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and the number of enplaned passengers in a city are significant determinants of the corporate room rate.

Chapter V

Summary and Recommendations

This study examined the relationship between corporate room rates and the variables of the number of hotel rooms; the number of delegates at conventions, conferences, and trade shows; the economic impact of these delegates; and passenger enplanements in 30 cities in the United States. These variables proved to have an influence on the corporate room rate, with passenger enplanements being the most statistically significant variable. These relationships were then used to develop a predictive model to forecast future corporate room rates.

The Model

The regression model developed in this study was based on the relationship between corporate room rate and the number of hotel rooms in a city,; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city. The statistical results computed by Lotus 1-2-3 indicated that 47 percent of the variation in the corporate room rate can be attributed to the number of hotel rooms in a city; the number of delegates at conventions, conferences, and trade shows in a city; the economic impact of these delegates on that city; and passenger enplanements in a city.

Of the four independent variables, the number of enplaned passengers had the most significant effect on the corporate room rate. In addition, the small sized cities and the midwestern cities had the highest correlation between the four independent variables and the corporate room rate.

The model was then used to predict future corporate room rates for a fictional city using future values of the number of hotel rooms in that city; the number of convention, conference, and trade show delegates in that city; the economic impact of these delegates on that city; and passenger enplanements in that city. Lotus 1-2-3 will predict a value for a dependent variable based on the values for one or more independent variables by using a formula based on the regression output (see Appendix F).

An estimated corporate rate based on the regression output was computed for each city using the actual number of rooms, number of delegates, economic impact, and enplaned passengers to discover how the estimated corporate rate for each city compared to the actual corporate rate. A series of T-tests were run on SPSS using the actual corporate rate versus the estimated corporate rate in a paired run, to determine if there was a significant difference between the two. While the actual corporate rate and the estimated corporate rate determined by the model were not the same, the T-tests determined that there was no significant difference between the two.

A limitation of this study is that the regression model developed is appropriate for short to medium term forecasts only (one month to two years) (Calantone, Di Benedetto & Bojanic, 1987).

Generalization of Findings

The regression model presented in this study may be used by others as a forecasting tool to predict corporate room rates. This can aid planning purposes for hotel properties to make appropriate strategic and operational decisions. Business travelers and the like, may use this model to gain an understanding of the factors that affect and determine corporate room rates.

Recommendations

Further studies should be undertaken using the same dependent and independent variables and the same cities to discover how the relationship between the variables changes with new data. It will be interesting to note if the model developed in this study remains statistically significant when new data for the same variables and cities are used. It will also be interesting to discover if the number of enplaned passengers still has the most significant effect on the corporate room rate.

Another regression model could be developed using the total number of tourists in a city or area and the economic impact of these tourists, the number of hotel rooms, and the number of enplaned passengers to discover what affect they

have on the rack rates of hotels in the city. Many of the convention and visitors bureaus contacted for this study had figures for the total number of tourists in their area and the economic impact of these tourists; therefore future investigations should be simple to perform using similar methodology.

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Appendix A

The International Association of Convention and Visitors Bureaus' Convention Income Survey

DELEGATE WORTH TO HOST COMMUNITY INCREASED 6.5% IN 1991

Based on the Travel Price Index (TPI) through December 1991, an adjustment of 6.5% is being used to update the economic impact of convention and trade show delegates to a host community in 1991. Economic impact figures were originally determined by the IACVB Convention Income Survey conducted by Laventhol & Horwath in 1988. The U.S. Travel Data Center's Travel Price Index measures changes in the seasonally unadjusted costs of lodging, food, transportation and other goods and services purchased by Americans traveling away from home in the U.S. The information is based on U.S. Dept. of Labor consumer price data. Each element is weighted to derive the index figure.

The chart below indicates delegate worth to a host community. Per stay figures are based on a 4.1 day stay.

	SPENDING GENERATED PER DELEGATE STAY				SPENDING GENERATED PER DELEGATE DAY			
	1988	1989	1990	1991	1988	1989	1990	1991
		(+4.14%)	(+8.3%)	(+6.5%)		(+4.14%)	(+8.3%)	(+6.5%)
CONVENTION DELEGATE								
Delegate Expenditures	518.65	540.12	584.95	622.97	126.50	131.74	142.67	151.94
Assn Expenditures	54.40	56.65	61.35	65.34	13.27	13.82	14.97	15.94
TOTAL	573.05	596.77	646.30	688.31	139.77	145.56	157.64	167.88
TRADE SHOW DELEGATE								
Delegate Expenditures	518.65	540.12	584.95	622.97	126.50	131.74	142.67	151.94
Assn Expenditures	54.40	56.65	61.35	65.34	13.27	13.82	14.97	15.94
Exhibitor Expenditures	274.33	285.69	309.40	329.51	66.91	69.68	75.46	80.37
Expo. Srv. Contractor Exp.	19.11	19.90	21.56	22.95	4.66	4.85	5.26	5.60
TOTAL	866.49	902.36	977.26	1,040.77	211.34	220.09	238.36	253.85
BREAKDOWN OF DELEGATE EXPENDITURES								
Hotel Room & Incidentals	264.56	275.51	298.38	317.78	64.30	66.96	72.51	77.2
Hotel Restaurants	56.87	59.22	64.14	68.31	13.87	14.43	15.63	16.6
Other Restaurants	59.08	61.53	66.63	70.96	14.41	15.01	16.26	17.3
Hospitality Suites	26.86	27.97	30.29	32.26	6.55	6.82	7.39	7.87
Entertainment	25.95	27.02	29.27	31.17	6.56	6.83	7.40	7.88
Retail Stores	42.44	44.20	47.87	50.98	10.35	10.78	11.67	12.4
Local Transportation	22.39	23.32	25.25	26.89	5.46	5.69	6.16	6.5
Other	20.50	21.35	23.12	24.62	5.00	5.22	5.65	6.0
TOTAL	518.65	540.12	584.95	622.97	126.50	131.74	142.67	151.9

Appendix B

Letter and Questionnaire to the Hotels

December 9, 1991

Dear Front Office Manager;

Each year the Rochester Institute of Technology asks industry professionals for assistance, through the enclosed survey, collecting data for the production of the annual Corporate Travel Index. We hope you have found the Index, published annually by Corporate Travel Magazine, Inc. to be a valuable tool for benchmarking your corporate rack rates with the average prices in your city.

I realize your time is limited because of the nature of our profession. The enclosed survey is brief and should take approximately three minutes to complete. Please return the survey as soon as possible in the postage paid envelope enclosed for your convenience.

We guarantee all information will be held in the strictest confidence from any and all competitors in your city. Your completed survey will be used to generate average corporate rack rates in your city. The rack rates from individual properties will not be published in the annual Index.

We appreciate your participation in this years study since it will assist Corporate Travel Magazine, Inc., and RIT to publish the Corporate Travel Index, 1992.

If you have any questions regarding the survey, or the intent of this study, please contact me personally at (716) 475-5666.

Sincerely,

Edward Stockham

Edward Stockham, Ph.D.
Associate Professor
Department of Graduate Studies

1992 Hotel Operations Survey

NAME OF HOTEL: _____ CITY:_____

1. What is the location of the hotel property used for this questionnaire: (check one)

( ) Airport ( ) City/Downtown ( ) Suburban ( ) Not Sure

2. How are you owned:( ) Corporate ( ) Franchise ( ) Private/Partnership ( ) Not Sure

3. What level of service does your hotel provide?

( ) Luxury ( ) Deluxe ( ) Moderate ( ) Economy

4. What was your average daily rate for 1991? $_____

5. What is your anticipated average daily rate for 1992? $_____

6. Do you move your corporate rate during the year?

( ) Yes ( ) No

If yes, does it ( ) increase ( ) decrease; and when?

( ) Jan-Mar ( ) Apr-Jun ( ) Jul-Sep ( ) Oct-Dec

If so, by how much? ( ) less than 3% ( ) 3% - 5% ( ) 6% 8% ( ) 9% or more

7. Does your hotel offer volume discounts (i.e., "Preferred Corporate Rates")

( ) Yes ( ) No

If yes, please check the average discount off your standard corporate rate

( ) less than 5% ( ) 5% 9% () 10% 14% ( ) 15% or more

8. What is your rack rate for 1992? $_____

9. What is your standard corporate rate for 1992? $_____

10. Does your corporate rate include breakfast or other meals?

( ) Yes ( ) No

11. What is your anticipated standard corporate rate for 1993? $_____

12. Do you have a sales position dedicated to corporate sales?

( ) Yes ( ) No

Would you like a copy of the Corporate Travel Index? If yes, please provide a mailin address:

_____

_____

Appendix C

Corporate Rates of the 30 Cities

City	Corporate Rate ($)
Philadelphia	111.00
Washington	131.21
Pittsburgh	77.00
Buffalo	84.86
Rochester, NY	79.44
Syracuse	70.20
Albany	77.60
Chicago	123.16
St. Louis	92.86
Cincinnati	86.00
Milwaukee	87.00
Wichita	71.40
Peoria	54.63
Rochester, MN	68.02
Dallas	105.00
Houston	103.83
Norfolk	63.00
Orlando	85.46

City	Corporate Rate ($)
Nashville	73.86
Oklahoma City	61.60
Little Rock	59.71
San Francisco	109.20
Seattle	82.00
Phoenix	94.67
Denver	67.49
Portland	74.44
Salt Lake City	69.50
Tucson	89.40
Albuquerque	56.86
Santa Barbara	98.20

Appendix D

Letter to the Convention and Visitors Bureaus

471 Cedarwood Terrace
Rochester, NY 14609
August 5, 1992

Mr. John Marks
San Francisco Convention & Visitors Bureau
201 3rd St.
Suite 900
San Francisco, CA 94103-3185

Dear Mr. Marks:

I am a graduate student in the School of Food, Hotel and Tourism Management at the Rochester Institute of Technology in Rochester, New York. I am currently working on my Master's thesis.

I would appreciate it if you could send me some information from your Convention & Visitors Bureau for my Master's thesis. Perhaps you could send me your most recent annual report. Specifically, I am looking for the most recent information available on:

- the number of attendees at conventions, conferences and trade shows and,

- the economic impact or amount of dollars spent by these attendees.

I believe that most of this information might be contained in your annual report. Any of this information that you could send me would be very helpful for my Master's thesis.

Thank you for your time.

Sincerely,

Betsy Wawrzyniak

Appendix E

The Number of Enplaned Passengers

TABLE 3
Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail in Total Operations, All Services At Large Air Traffic Hubs
12 Months Ended December 31, 1990

COMMUNITY (AIRPORT NAME)	PERCENT OF ENPLANEMENTS	AIRCRAFT DEPARTURES		ENPLANED PASSENGERS	ENPLANED REVENUE TONS	
		TOTAL PERFORMED	SCHEDULED		FREIGHT	MAIL
ATLANTA, GEORGIA						
(WILLIAM B HARTSFIELD INT'L)	5.17	285693	288803	22665665	165668.76	93039.48
BALTIMORE, MARYLAND						
(BALTO/WASH INTL)	1.01	73300	74048	4420425	18041.52	19722.93
BOSTON, MASSACHUSETTS						
(LOGAN INTERNATIONAL)	2.18	114163	115524	9549585	127815.09	29785.72
CHARLOTTE, NORTH CAROLINA						
(DOUGLAS MUNI)	1.61	120210	121798	7076954	36242.84	16399.46
CHICAGO, ILLINOIS						
(MIDWAY)	0.81	64465	66389	3547040	4494.78	4485.58
(O'HARE INTERNATIONAL)	5.85	322430	332338	25636363	300463.80	140359.38
(PAL-WAUKEE)	0.00	1	1		.55	
COMMUNITY TOTAL	6.65	386896	398728	29163423	304959.23	144844.96
DALLAS/FT.WORTH, TEXAS						
(ADDISON)	0.00	1	1		.90	
(CARSWELL AFB)	0.00 1 1					
(DALLAS/FT.WORTH INTL)	5.22	256737	269665	22899267	142660.95	86706.76
(LOVE FIELD)	0.58	39481	40196	2982836	2216.70	242.87
(MEACHAM FIELD)	0.00	1	2			
COMMUNITY TOTAL	5.88	306221	309585	25782103	144878.55	86949.63
DENVER, COLORADO						
(STAPLETON INTERNATIONAL)	2.73	154067	158293	11961839	67345.75	38043.73
DETROIT, MICHIGAN						
(DETROIT CITY)	0.08	6828	7162	362655	258.08	
(WAYNE COUNTY)	2.26	134929	137565	9903078	42631.24	32429.74
(WILLOW RUN)	0.00	4241	4024	35	33858.26	1249.00
COMMUNITY TOTAL	2.34	145998	148751	10255758	76947.58	33678.74
HONOLULU, OAHU, HAWAII						
(HONOLULU INTERNATIONAL)	2.05	92659	96780	9002217	139496.57	19951.37
HOUSTON, TEXAS						
(HOUSTON INTERCONTINENTAL)	1.72	104249	105330	7543899	62425.36	21073.85
(WILLIAM P HOBBY)	0.91	61387	62582	3972027	3787.82	790.44
(ELLINGTON FIELD)	0.00	1188	1253	18967	199.45	1.46
COMMUNITY TOTAL	2.63	166824	169165	11535193	66412.63	21865.75
LAS VEGAS, NEVADA						
(MC CARRAN INTL)	1.78	92196	92072	7796218	11288.52	13132.33
(NELLIS AFB)	0.00	292	292			
COMMUNITY TOTAL	1.78	92488	92364	7796218	11288.52	13132.33
LOS ANGELES/BURBNK/LNG.BCH,CAL						
(HOLLYWOOD-BURBANK)	0.39	30444	30968	1696739	6414.64	1673.24
(LONG BEACH)	0.16	14443	14712	692995	7837.98	929.96
(LOS ANGELES INTERNATIONAL)	4.20	213302	215740	18438056	352823.50	71568.84
(ORANGE COUNTY)	0.50	37275	38137	2203700	1163.62	173.94
COMMUNITY TOTAL	5.25	295464	299557	23033490	368239.74	74365.98
MIAMI/FT. LAUDERDALE, FLORIDA						
(MIAMI INTERNATIONAL)	2.10	106858	105658	9226103	187247.24	33739.59
(FT. LAUDERDALE-HOLLYWOOD INTL)	0.88	46584	46508	3875357	38330.43	7642.12
COMMUNITY TOTAL	2.99	153442	152166	13101460	225577.67	41581.71
MINNEAPOLIS/ST. PAUL,MINNESOTA						
(MINNEAPOLIS-ST PAUL INTL)	2.02	114872	116312	8637228	58045.03	42973.80
NEWARK, NEW JERSEY						
(NEWARK)	2.25	130286	132817	9853925	163211.63	34065.82
NEW YORK, NEW YORK						
(JOHN F KENNEDY INTL)	2.21	74659	74507	9687058	275998.91	70305.53
(LA GUARDIA)	2.45	129670	131310	10725465	23086.56	35713.98
COMMUNITY TOTAL	4.65	204329	205817	20412533	299085.47	106019.51
ORLANDO, FLORIDA						
(ORLANDO INTERNATIONAL)	1.75	84924	84328	7677769	23940.73	12083.04

3-1

TABLE 3—Continued
Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail In Total Operations, All Services At Large Air Traffic Hubs 12 Months Ended December 31, 1990

COMMUNITY (AIRPORT NAME)	PERCENT OF ENPLANEMENTS	AIRCRAFT DEPARTURES		ENPLANED PASSENGERS	ENPLANED REVENUE TONS	
		TOTAL PERFORMED	SCHEDULED		FREIGHT	MAIL
PHILADELPHIA,PA/CAMDEN,NJ						
(INTERNATIONAL)	1.59	105830	107331	6970820	49572.70	42422.
PHOENIX, ARIZONA						
(PHOENIX SKY HARBOR INTL)	2.45	148342	149274	10727494	42604.71	23812
(LUKE AFB)	0.00	73	73			
COMMUNITY TOTAL	2.45	148415	149347	10727494	42604.71	23812
PITTSBURGH,PA/WHEELING W VA						
(GREATER PITTSBURGH)	1.80	125276	126550	7912394	21668.06	24285
ST. LOUIS, MISSOURI						
(LAMBERT-ST LOUIS MUNI)	2.13	135089	137711	9332091	49363.12	37674
SALT LAKE CITY, UTAH						
(SALT LAKE CITY INTL)	1.23	77368	76754	5388178	35247.01	18788
SAN DIEGO, CALIFORNIA						
(SAN DIEGO INTL-LINDBERGH)	1.20	70156	70893	5260607	18882.04	8822
SAN FRANCISCO/OAKLAND, CAL						
(BUCHANAN FIELD)	0.01	1286	1334	49532	7.95	
(OAKLAND METROPOLITAN INTL)	0.61	45986	46217	2670768	69875.80	3697
(SAN FRANCISCO INTL)	3.07	172007	187581	12474929	216259.94	55236
COMMUNITY TOTAL	3.69	219279	235132	16195249	286143.69	58933
SEATTLE/TACOMA, WASHINGTON						
(BOEING FIELD INTL)	0.00	43	10	2154	.28	
(SEATTLE-TACOMA INTERNATIONAL)	1.68	122226	124518	7385594	103409.85	34636
COMMUNITY TOTAL	1.68	122269	124528	7387748	103410.13	34637
TAMPA&ST.PTSBG/CLWTR&LKLND,FLA						
(TAMPA INTERNATIONAL)	1.09	64396	64735	4781020	23048.08	1701
(ST. PETERSBURG/CLWTR INTL)	0.00	2		118		
(MACDILL AFB)	0.00	268	268			
COMMUNITY TOTAL	1.09	64668	65003	4781138	23048.08	1701
WASHINGTON, DIST. OF COL						
(DULLES INTERNATIONAL)	1.01	80651	82588	4448592	53609.69	2534
(WASHINGTON NATIONAL)	1.60	97043	98513	7034693	10470.14	2734
COMMUNITY TOTAL	2.62	177694	181101	11483285	64079.83	5269
OVER-ALL TOTAL LARGE HUBS	72.42	4167868	4237466	317595099	3001216.58	114658

TABLE 4
Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail In Total Operations, All Services At Medium Air Traffic Hubs 12 Months Ended December 31, 1990

COMMUNITY (AIRPORT NAME)	PERCENT OF ENPLANEMENTS	AIRCRAFT DEPARTURES		ENPLANED PASSENGERS	ENPLANED REVENUE TONS	
		TOTAL PERFORMED	SCHEDULED		FREIGHT	MAIL
ALBUQUERQUE, NEW MEXICO						
(ALBUQUERQUE INTL)	0.54	34138	34386	2384647	5286.72	6441.62
(DOUBLE EAGLE II)	0.00	1	1		.20	
COMMUNITY TOTAL	0.54	34139	34387	2384647	5286.92	6441.62
ANCHORAGE, ALASKA						
(ANCHORAGE INTERNATIONAL)	0.31	35891	35273	1362282	318663.23	62566.44
(ELMENDORF AFB)	0.00	31	12	61	220.41	.57
COMMUNITY TOTAL	0.31	35922	35285	1362343	318883.64	62587.01
AUSTIN, TEXAS						
(ROBERT MUELLER MUNI)	0.47	31494	31718	2054955	7549.00	3941.16
BUFFALO&NIAGARA FALLS,NEW YORK						
(GREATER BUFFALO INTERNATIONAL)	0.37	30554	30926	1637293	8505.88	3962.18
CINCINNATI, OHIO						
(GREATER CINCINNATI)	0.89	65533	68217	3907625	16808.48	14295.54
(LUKEN FIELD)	0.00	1	1			
COMMUNITY TOTAL	0.89	65534	68218	3907625	16808.48	14295.54
CLEVELAND, OHIO						
(BURKE LAKEFRONT)	0.00	1	1		.19	
(HOPKINS INTERNATIONAL)	0.87	76988	78018	3636050	19467.41	10427.55
COMMUNITY TOTAL	0.87	76989	76019	3636060	19467.60	10427.55
COLUMBUS, OHIO						
(PORT COLUMBUS INTERNATIONAL)	0.38	29986	30338	1685100	3407.81	11595.43
(LOCKBOURN AFB)	0.00	1735	1733		11311.08	99.03
COMMUNITY TOTAL	0.38	31721	32071	1685100	14718.89	11694.46
DAYTON, OHIO						
(JAMES M COX/DAYTON INTL)	0.42	36966	37191	1845160	20922.76	6306.52
(WRIGHT-PATTERSON AFB)	0.00	371	371			
COMMUNITY TOTAL	0.42	37337	37562	1845160	20922.76	6306.52
EL PASO, TEXAS						
(EL PASO INTERNATIONAL)	0.38	28333	28519	1673243	4824.94	1760.09
(BIGGS AAF)	0.00	18	18	827		
COMMUNITY TOTAL	0.38	28351	28537	1674070	4824.94	1760.09
FORT MYERS, FLORIDA						
(PAGE FIELD)	0.00	2	2		1.43	
(SOUTHWEST)	0.39	22210	22149	1712679	2435.07	1699.90
COMMUNITY TOTAL	0.39	22212	22151	1712679	2436.50	1699.90
HARTFORD/SPRNGFLD/WESTFLD, CT						
(BRADLEY INTERNATIONAL)	0.53	31850	32217	2312455	14432.08	14325.94
INDIANAPOLIS, INDIANA						
(INDIANAPOLIS INTERNATIONAL)	0.59	53471	53125	2601839	110350.63	9713.05
JACKSONVILLE, FLORIDA						
(JACKSONVILLE INTERNATIONAL)	0.29	24585	24854	1266677	8073.55	5411.32
(JACKSONVILLE NAS)	0.00	242	242			
COMMUNITY TOTAL	0.29	24827	25096	1266677	8073.55	5411.32
KAHULUI, MAUI, HAWAII						
(KAHULUI)	0.48	29624	31427	2094390	9015.42	1605.24
KANSAS CITY, MISSOURI						
(INTERNATIONAL)	0.77	52781	52834	3358116	18041.40	17014.09
LIHUE, KAUAI, HAWAII						
(LIHUE)	0.29	18704	19724	1264738	969.51	742.14
MEMPHIS, TENNESSEE						
(MEMPHIS INTERNATIONAL)	0.89	94420	95198	3887208	614223.60	13168.89
MILWAUKEE, WISCONSIN						
(GENERAL MITCHELL FIELD)	0.44	39724	40661	1915390	11747.68	8317.82
NASHVILLE, TENNESSEE						
(METROPOLITAN)	0.78	57474	58060	3404243	7453.14	7887.41
NEW ORLEANS, LOUISIANA						
(INTERNATIONAL/MOISANT FIELD)	0.77	49121	49606	3361062	15439.58	6139.07

TABLE 4—Continued
Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail in Total Operations, All Services At Medium Air Traffic Hubs
12 Months Ended December 31, 1990

COMMUNITY (AIRPORT NAME)	PERCENT OF ENPLANEMENTS	AIRCRAFT DEPARTURES		ENPLANED PASSENGERS	ENPLANED REVENUE TONS	
		TOTAL PERFORMED	SCHEDULED		FREIGHT	MAIL
NEW ORLEANS, LOUISIANA—Continued						
(LAKEFRONT)	0.00	1	1		.50	
COMMUNITY TOTAL	0.77	49122	49607	3361062	15440.08	6139.07
NORFLK/VA BCH/PTSMH/CHESPKE,VA						
(NORFOLK REGIONAL)	0.29	26495	26824	1264546	5371.22	2530.79
(CHAMBERS NAS)	0.00	30			2.91	
COMMUNITY TOTAL	0.29	26525	26824	1264846	5374.13	2530.79
OKLAHOMA CITY, OKLAHOMA						
(WILL ROGERS WORLD)	0.35	25347	25550	1519518	5316.15	4923.59
(TINKER AFB)	0.00	750	732		706.90	
COMMUNITY TOTAL	0.35	26097	26282	1519518	6023.05	4923.59
ONTARIO/SAN BERNARD/RIVERSE,CA						
(ONTARIO INTERNATIONAL)	0.60	40925	41200	2840734	8488.64	10668.98
(NORTON AFB)	0.00	223	223	398		
COMMUNITY TOTAL	0.60	41148	41423	2841132	8488.64	10668.98
PORTLAND, OREGON						
(PORTLAND INTERNATIONAL)	0.69	69578	70763	3025345	33735.01	11622.99
RALEIGH/DURHAM, NORTH CAROLINA						
(RALEIGH-DURHAM)	0.99	66211	67304	4361369	16302.95	8429.78
RENO, NEVADA						
(RENO INTL)	0.31	21609	22010	1343619	3361.04	1543.5
ROCHESTER, NEW YORK						
(ROCHESTER-MONROE COUNTY)	0.26	25132	25585	1154747	8092.40	2910.77
SACRAMENTO, CALIFORNIA						
(SACRAMENTO METROPOLITAN)	0.40	39723	47086	1737096	5991.77	10284.7
(MCCLELLAN AFB)	0.00	30	30			
COMMUNITY TOTAL	0.40	39753	47116	1737096	5991.77	10284.71
SAN ANTONIO, TEXAS						
(SAN ANTONIO INTERNATIONAL)	0.59	39740	40020	2593896	10049.59	7584.9
(KELLY AFB)	0.00	356	356			
COMMUNITY TOTAL	0.59	40096	40376	2593896	10049.59	7584.9
SAN JOSE, CALIFORNIA						
(SAN JOSE MUNI)	0.71	49173	50096	3128393	20971.84	3966.6
SAN JUAN, PUERTO RICO						
(LUIS MUNOZ MARIN INTL)	0.83	39208	39840	3618090	72918.13	4916.5
SYRACUSE, NEW YORK						
(CLARENCE E HANCOCK)	0.27	29514	30065	1166598	11243.51	4347.4
TUCSON, ARIZONA						
(TUCSON INTL)	0.29	20201	20413	1263509	3709.47	2740.0
TULSA, OKLAHOMA						
(TULSA INTL)	0.34	24975	25217	1483037	8241.04	5582.
WEST PALM BEACH/PALM BEACH,FLA						
(PALM BEACH INTERNATIONAL)	0.59	29363	29625	2609138	3089.87	3424
OVER-ALL TOTAL MEDIUM HUBS	18.35	1394833	1417762	80466373	1446744.12	292898

TABLE 5
Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail In Total Operations, All Services At Small Air Traffic Hubs
12 Months Ended December 31, 1990

COMMUNITY (AIRPORT NAME)	PERCENT OF ENPLANEMENTS	AIRCRAFT DEPARTURES		ENPLANED PASSENGERS	ENPLANED REVENUE TONS	
		TOTAL PERFORMED	SCHEDULED		FREIGHT	MAIL
AKRON/CANTON, OHIO						
(AKRON-CANTON)	0.05	5606	5606	230249	334.41	893.32
ALBANY, NEW YORK						
(ALBANY COUNTY)	0.20	15007	15295	876372	2184.93	2712.69
ALLENTOWN/BETHLEHEM/EASTON, PA						
(ALLENTOWN-BETHLEHEM-EASTON)	0.08	7744	7807	349358	2017.81	350.30
AMARILLO/BORGER, TEXAS						
(AMARILLO AIR TERMINAL)	0.10	6616	6668	435297	327.14	781.19
BATON ROUGE, LOUISIANA						
(RYAN)	0.10	8837	8921	423808	529.69	1625.13
BILLINGS, MONTANA						
(LOGAN FIELD)	0.05	8741	6868	237699	420.69	1738.63
BIRMINGHAM, ALABAMA						
(BIRMINGHAM MUNI)	0.23	20112	20185	1001983	5937.63	5255.40
BOISE, IDAHO						
(BOISE AIR TERMINAL/GOWEN FLD)	0.12	16802	17121	525092	3007.15	1941.86
BROWNSVILLE/HRLGN/SAN BNTO,TEX						
(HARLINGEN INDUSTRIAL AIRPARK)	0.12	7444	7527	529042	3656.57	9.01
(SOUTH PADRE ISLAND INTL)	0.00	1	1		2.00	
COMMUNITY TOTAL	0.12	7445	7528	529042	3658.57	9.01
BURLINGTON, VERMONT						
(BURLINGTON INTERNATIONAL)	0.07	7507	7689	306489	1682.98	1143.32
CEDAR RAPIDS/IOWA CITY, IOWA						
(CEDAR RAPIDS MUNI)	0.08	7753	7810	341142	5937.53	1623.80
CHARLESTON, SOUTH CAROLINA						
(CHARLESTON AFB/MUNI)	0.14	14215	14380	631956	2179.36	866.09
CHARLOTTE AMALIE,ST. THOMAS,VI						
(HARRY S.TRUMAN)	0.08	6957	7236	357133	660.84	387.03
CHATTANOOGA, TENNESSEE						
(LOVELL FIELD)	0.05	5327	5388	239746	1045.56	197.31
COLORADO SPRINGS, COLORADO						
(PETERSON FIELD)	0.13	10903	11001	551507	638.32	671.96
COLUMBIA, SOUTH CAROLINA						
(COLUMBIA METROPOLITAN)	0.12	13531	13673	512759	6554.20	2009.81
CORPUS CHRISTI, TEXAS						
(CORPUS CHRISTI INTERNATIONAL)	0.10	6851	6756	423498	298.30	639.46
DAYTONA BEACH, FLORIDA						
(DAYTONA BEACH REGIONAL)	0.11	7514	7507	490336	377.78	89.18
DES MOINES, IOWA						
(DES MOINES MUNI)	0.15	12144	12256	658619	1705.15	9042.02
EUGENE, OREGON						
(MAHLON SWEET FIELD)	0.05	8074	8252	224658	857.10	601.00
FAIRBANKS, ALASKA						
(FAIRBANKS INTERNATIONAL)	0.05	6150	6167	233809	6573.16	6431.49
(FORT WAINWRIGHT)	0.00	6	6		116.00	
COMMUNITY TOTAL	0.05	6156	6173	233809	6689.16	6431.49
FORT WAYNE, INDIANA						
(MUNICIPAL/BAER FIELD)	0.06	7851	8062	242000	1114.74	682.03
FRESNO, CALIFORNIA						
(FRESNO AIR TERMINAL)	0.09	20879	20993	393442	887.12	963.19
GRAND RAPIDS, MICHIGAN						
(KENT COUNTY)	0.14	13086	13368	614280	4010.83	1650 33
GREENSBORO/HIGH PT/WINSTN,N.C.						
(GREENSBORO-HIGH PT-WINSTN REG.)	0.20	23519	23906	894532	9801.19	3841.67
GREENVILLE/SPARTANBURG, SC						
(GREENVILLE/SPARTANBURG)	0.11	11580	11739	503271	1314.55	1908.97
(DONALOSON CENTER)	0.00	60	60		61.15	
COMMUNITY TOTAL	0.11	11640	11799	503271	1375.70	1908.97

TABLE 5—Continued
Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail In Total Operations, All Services At Small Air Traffic Hubs 12 Months Ended December 31, 1990

COMMUNITY (AIRPORT NAME)	PERCENT OF ENPLANEMENTS	AIRCRAFT DEPARTURES		ENPLANED PASSENGERS	ENPLANED REVENUE TONS	
		TOTAL PERFORMED	SCHEDULED		FREIGHT	MAIL
GUAM, GUAM						
(AGANA FIELD)	0.18	6952	7023	770549	20802.56	2357.57
(ANDERSON AFB)	0.00	18	1			
COMMUNITY TOTAL	0.18	6970	7024	770549	20802.56	2357.57
HARRISBURG/YORK, PA.						
(HARRISBURG INTERNATIONAL)	0.10	10537	10746	437341	5692.89	1579.88
HILO, HAWAII, HAWAII						
(GENERAL LYMAN FIELD)	0.15	10868	10817	651191	4522.27	1139.18
HUNTSVILLE, ALABAMA						
(MADISON COUNTY)	0.09	9880	10043	381668	734.72	457.42
INDIO/PALM SPRINGS, CALIFORNIA						
(PALM SPRINGS MUNI)	0.08	9270	9456	353294	151.42	54.68
ISLIP, LONG ISLAND, NEW YORK						
(LONG ISLAND-MACARTHUR)	0.10	7001	7203	422400	542.59	1484.22
JACKSON-VICKSBURG, MISS.						
(ALLEN C THOMPSON FIELD)	0.09	9001	8082	391018	543.63	1812.42
KAILUA-KONA, HAWAII, HAWAII						
(KE-AHOLE)	0.22	14800	15527	977274	5166.70	687.18
KNOXVILLE, TENNESSEE						
(MC GHEE TYSON)	0.11	10228	10234	477768	6192.36	1644.97
LEXINGTON/FRANKFORT, KENTUCKY						
(BLUE GRASS)	0.07	7811	7913	291634	373.87	1331.0
LITTLE ROCK, ARKANSAS						
(ADAMS FIELD)	0.22	15154	15310	950540	918.25	3616.9
LOUISVILLE, KENTUCKY						
(STANDIFORD FIELD)	0.21	21813	21944	937645	8725.05	5618.1
LUBBOCK, TEXAS						
(LUBBOCK REGIONAL)	0.14	11574	11691	611413	7282.56	546.7
MADISON, WISCONSIN						
(TRUAX FIELD)	0.10	8926	9158	425563	4044.83	873.4
MANCHESTER/CONCORD,N.HAMPSHIRE						
(MUNICIPAL)	0.06	6344	6455	267963	7091.74	632.1
MELBOURNE, FLORIDA						
(CAPE KENNEDY REGIONAL)	0.08	5838	5666	360126	133.58	34
MIDLAND/ODESSA, TEXAS						
(MIDLAND REGIONAL)	0.13	8675	8762	580905	559.51	300
MOBILE, AL/PASCAGOULA, MISS						
(BATES FIELD)	0.09	9734	9824	380798	5438.91	646
MOLINE, ILLINOIS						
(QUAD-CITY)	0.05	6286	6553	220093	394.09	310
OMAHA, NEBRASKA						
(EPPLEY AIRFIELD)	0.23	19952	19951	994132	5701.22	14391
(OFFUTT AFB)	0.00	2	2			
(MILLARD)	0.00	12			241.00	
COMMUNITY TOTAL	0.23	19966	19953	994132	5942.22	14391
PENSACOLA, FLORIDA						
(PENSACOLA REGIONAL)	0.09	8765	8930	394222	864.82	1429
PORTLAND, MAINE						
(PORTLAND INTERNATIONAL JETPORT)	0.11	8712	8956	472393	2526.91	1553
PROVIDENCE, RHODE ISLAND						
(THEODORE FRANCIS GREEN STATE)	0.24	16890	17113	1060719	2372.95	3402
RICHMOND, VIRGINIA						
(RICHARD E BYRD FLYING FIELD)	0.20	20443	20652	864381	5403.95	350
ROANOKE, VIRGINIA						
(ROANOKE MUNI)	0.05	7143	7347	224595	257.83	58
SAGINAW/BAY CITY/MIDLAND,MICH.						
(TRI CITY)	0.05	3952	4036	219310	278.94	17

TABLE 5—Continued
Aircraft Departures, Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail
in Total Operations, All Services At Small Air Traffic Hubs
12 Months Ended December 31, 1990

COMMUNITY (AIRPORT NAME)	PERCENT OF ENPLANEMENTS	AIRCRAFT DEPARTURES		ENPLANED PASSENGERS	ENPLANED REVENUE TONS	
		TOTAL PERFORMED	SCHEDULED		FREIGHT	MAIL
SAIPAN, MARIANA ISLANDS						
(SAIPAN INTERNATIONAL)	0.06	4037	3871	279019	1900.96	105.01
SANTA BARBARA CALIFORNIA						
(SANTA BARBARA)	0.05	9999	10263	226472	806.88	.01
(SANTA MARIA PUBLIC)	0.00	1740	1810	6213	197.65	
COMMUNITY TOTAL	0.05	11739	12073	232685	1004.53	.01
SARASOTA/BRADENTON, FLORIDA						
(SARASOTA-BRADENTON)	0.23	15765	15990	989935	542.07	71.36
SAVANNAH, GEORGIA						
(SAVANNAH INTL)	0.12	11089	11270	520881	1306.61	768.92
(HUNTER AAF)	0.00	6	6	1535		
COMMUNITY TOTAL	0.12	11095	11276	522416	1306.61	768.92
SHREVEPORT, LOUISIANA						
(SHREVEPORT REGIONAL)	0.06	7656	7639	257229	6198.18	1618.82
(BARKSDALE AFB)	0.00	289	289			
COMMUNITY TOTAL	0.06	7945	7928	257229	6198.18	1618.82
SIOUX FALLS, SOUTH DAKOTA						
(JOE FOSS FIELD)	0.05	6468	6514	226436	1163.97	1556.28
SOUTH BEND, INDIANA						
(MICHIANA REGIONAL)	0.05	6630	7072	224050	1826.00	212.82
SPOKANE, WASHINGTON						
(SPOKANE INTERNATIONAL)	0.17	25315	25837	747329	7827.61	2283.69
(FAIRCHILD AFB)	0.00	294	293			
COMMUNITY TOTAL	0.17	25609	26130	747329	7827.61	2283.69
TALLAHASSEE, FLORIDA						
(TALLAHASSEE MUNI)	0.09	9193	9306	381840	1492.52	699.40
WICHITA, KANSAS						
(MID-CONTINENT)	0.13	13772	13901	561432	6905.22	2928.32
(MCCONNELL AFB)	0.00	1	1			
COMMUNITY TOTAL	0.13	13773	13902	561432	6905.22	2928.32
OVER-ALL TOTAL, SMALL HUBS	7.02	669450	679103	30771363	191357.90	108655.74

TABLE 6—Continued
Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail By Type of Service, and By Air Carrier
12 Months Ended December 31, 1990

STATE OR U.S. AREA / COMMUNITY / (AIRPORT NAME) / CARRIER / HUB % OF ENPLANEMENTS	OPERATION	SERVICE	ENPLANED PASSENGERS	ENPLANED REVENUE TONS		
				FREIGHT	MAIL	TOTAL FREIGHT AND MAIL
ILLINOIS—Continued						
CHICAGO—Continued						
(PAL-WAUKEE)—Continued						
COMMUNITY TOTAL BY CARRIER—Continued						
TW—TRANS WORLD AIR	TOTAL	S	491405	3387.99	2391.69	5779.68
		NS	2309			
		AS	493714	3387.99	2391.69	5779.68
UA—UNITED AIR LINES	TOTAL	S	12320413	71932.42	79023.11	150955.53
		NS	2189			
		AS	12322602	71932.42	79023.11	150955.53
US—U.S. AIR	TOTAL	S	446137	1114.93	2006.99	3121.92
		NS	200			
		AS	446337	1114.93	2006.99	3121.92
VK—ZANTOP INTL AIRLINES	TOTAL	S	0	3886.00	89.00	3975.00
		NS	0	48.00		48.00
		AS	0	3934.00	89.00	4023.00
WN—SOUTHWEST AIRLINES	TOTAL	S	814376	164.70	48	165.18
		NS	397			
		AS	814773	164.70	.48	165.18
YB—TRANS CONTINENTAL	TOTAL	S	0	3.60		3.60
		NS	160			
		AS	160	3.60		3.60
ZW—AIR WISCONSIN	TOTAL	S	948775	710.52	685.42	1595.94
		NS	0			
		AS	948775	710.52	685.42	1595.94
5X—UNITED PARCEL SERVICE	TOTAL	S	0	2191.75		2191.75
		NS	0			
		AS	0	2191.75		2191.75
COMMUNITY TOTAL	TOTAL	S	29172812	303852.52	144844.96	448697.48
		NS	10611	1106.71		1106.71
		AS	29183423	304959.23	144844.96	449804.19
DECATUR N 0.00						
(DECATUR)						
FM—FEDERAL EXPRESS	TOTAL	S	0	1.22		1.22
		NS	0			
		AS	0	1.22		1.22
MOLINE S 0.05						
(QUAD-CITY)						
FM—FEDERAL EXPRESS	TOTAL	S	0	131.21		131.21
		NS	0			
		AS	0	131.21		131.21
HP—AMERICAN WEST	TOTAL	S	46874	179.68	21.54	201.22
		NS	0			
		AS	46874	179.68	21.54	201.22
TW—TRANS WORLD AIR	TOTAL	S	55936	41.89	211.82	253.71
		NS	160			
		AS	56096	41.89	211.82	253.71
UA—UNITED AIR LINES	TOTAL	S	32417	15.18	44.00	59.18
		NS	0			
		AS	32417	15.18	44.00	59.18
ZW—AIR WISCONSIN	TOTAL	S	84706	26.13	32.91	59.04
		NS	0			
		AS	84706	26.13	32.91	59.04
COMMUNITY TOTAL	TOTAL	S	219933	394.09	310.27	704.36
		NS	160			
		AS	220093	394.09	310.27	704.36
PEORIA N 0.00						
(GREATER PEORIA)						
FM—FEDERAL EXPRESS	TOTAL	S	0	2264.61		2264.61
		NS	0			
		AS	0	2264.61		2264.61
TW—TRANS WORLD AIR	TOTAL	S	50034	31.32	.42	31.74

NOTE: S = Scheduled
NS = Nonscheduled
AS = All Service

TABLE 6—Continued
Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail By Type of Service, and By Air Carrier
12 Months Ended December 31, 1990

STATE OR U.S. AREA / COMMUNITY / (AIRPORT NAME) / CARRIER / HUB % OF ENPLANEMENTS	OPERATION	SERVICE	ENPLANED PASSENGERS	ENPLANED REVENUE TONS		
				FREIGHT	MAIL	TOTAL FREIGHT AND MAIL
ILLINOIS—Continued						
PEORIA—Continued						
(GREATER PEORIA)—Continued						
		NS	489			
		AS	50523	31.32	.42	31.74
UA—UNITED AIR LINES	TOTAL	S	17671	13.30	3.78	17.08
		NS	0			
		AS	17671	13.30	3.78	17.08
ZW—AIR WISCONSIN	TOTAL	S	40793	7.62	11.12	18.74
		NS	0			
		AS	40793	7.62	11.12	18.74
COMMUNITY TOTAL	TOTAL	S	108498	2316.85	15.32	2332.17
		NS	489			
		AS	108987	2316.85	15.32	2332.17
QUINCY/HANNIBAL N 0.00						
(QUINCY MUNI BALDWIN FIELD)						
FM—FEDERAL EXPRESS	TOTAL	S	0	2.28		2.28
		NS	0			
		AS	0	2.28		2.28
ROCKFORD N 0.00						
(GREATER ROCKFORD)						
COMMUNITY TOTAL						
SPRINGFIELD N 0.00						
(CAPITAL)						
INDIANA						
EVANSVILLE N 0.00						
(EVANSVILLE DRESS REGIONAL)						
FM—FEDERAL EXPRESS	TOTAL	S	0	45		.45
		NS	0			
		AS	0	.45		45
US—U.S. AIR	TOTAL	S	92630	80.12	425.29	505.41
		NS	0			
		AS	92630	80.12	425.29	505.41
VK—ZANTOP INTL AIRLINES	TOTAL	S	0	2.00		2.00
		NS	0	2.00		2.00
		AS	0	4.00		4.00
COMMUNITY TOTAL	TOTAL	S	92630	82.57	425.29	507.86
		NS	0	2.00		2.00
		AS	92630	84.57	425.28	508.86
FORT WAYNE S 0.06						
(MUNICIPAL/BAER FIELD)						
AA—AMERICAN AIRLINES	TOTAL	S	28895	10.84	68.39	79.23
		NS	0			
		AS	28895	10.84	68.39	79.23
DL—DELTA AIR LINES	TOTAL	S	45612	86.39	286.77	373.1
		NS	0			
		AS	45612	86.39	286.77	373.1
FM—FEDERAL EXPRESS	TOTAL	S	0	792.57		792.5
		NS	0			
		AS	0	792.57		792.5
JH—AMERIJET INTERNATIONAL	TOTAL	S	0			
		NS	0	20.68		20.6
		AS	0	20.68		20.6
NW—NORTHWEST AIRLINES	TOTAL	S	55680	22.12	107.95	130.0
		NS	0			
		AS	55580	22.12	107.95	130.0
US—U.S. AIR	TOTAL	S	46211	95.63	104.36	199.9
		NS	0			
		AS	46211	95.63	104.36	199.9
YB—TRANS CONTINENTAL	TOTAL	S	0	68.25		66.2
		NS	0			

NOTE: S = Scheduled
NS = Nonscheduled
AS = All Service.

TABLE 6—Continued
Enplaned Revenue Passengers, and Enplaned Revenue Tons of Freight and Mail By Type of Service, and By Air Carrier
12 Months Ended December 31, 1990

STATE OR U.S. AREA / COMMUNITY / (AIRPORT NAME) / CARRIER / HUB % OF ENPLANEMENTS	OPERATION [1]	SERVICE	ENPLANED PASSENGERS	ENPLANED REVENUE TONS		
				FREIGHT	MAIL	TOTAL FREIGHT AND MAIL
MINNESOTA—Continued						
MINNEAPOLIS/ST.PAUL—Continued						
(MINNEAPOLIS-ST PAUL INTL)—Continued						
DL—DELTA AIR LINES	TOTAL	S	246012	762.39	1726.04	2488.43
		NS	250			
		AS	246262	762.39	1726.04	2488.43
FM—FEDERAL EXPRESS	TOTAL	S	0	25699.85	5.33	25705.18
		NS	0	710.34		710.34
		AS	0	26410.19	5.33	26415.52
HP—AMERICAN WEST	TOTAL	S	95649	820.62	426.04	1246.66
		NS	190			
		AS	96839	820.62	426.04	1246.66
JH—AMERIJET INTERNATIONAL	TOTAL	S	0			
		NS	0	01		01
		AS	0	01		01
ML—MIDWAY AIRLINES	TOTAL	S	178376	61.68	508.53	570.41
		NS	200			
		AS	178576	61.38	508.53	570.41
NW—NORTHWEST AIRLINES	TOTAL	S	7076818	35503.19	33850.34	69353.53
		NS	4194	57.37		57.37
		AS	7080812	35560.56	33850.34	69410.90
PA—PAN AMERICAN	TOTAL	S	37612	9.85	147.46	157.31
		NS	0			
		AS	37612	9.85	147.46	157.31
TW—TRANS WORLD AIR	TOTAL	S	136818	311.84	939.89	1251.73
		NS	53917			
		AS	192735	311.84	939.89	1251.73
UA—UNITED AIR LINES	TOTAL	S	402313	879.70	1940.68	2820.38
		NS	444			
		AS	402757	879.70	1940.68	2820.38
US—U.S. AIR	TOTAL	S	129108	332.98	1120.68	1453.66
		NS	5990			
		AS	135098	332.98	1120.68	1453.66
VK—ZANTOP INTL AIRLINES	TOTAL	S	0	1605.00	69.00	1674.00
		NS	0	49.00		49.00
		AS	0	1654.00	69.00	1723.00
YB—TRANS CONTINENTAL	TOTAL	S	0	240.99		240.99
		NS	0			
		AS	0	240.99		240.99
5X—UNITED PARCEL SERVICE	TOTAL	S	0	8.45		8.45
		NS	0			
		AS	0	8.45		8.45
COMMUNITY TOTAL	TOTAL	S	8768507	67228.31	42973.80	110202.11
		NS	70721	816.72		816.72
		AS	6837228	68045.03	42973.80	111018.83
ROCHESTER N 0.00						
(ROCHESTER MUNI)						
AA—AMERICAN AIRLINES	TOTAL	S	51751	13.83	1.82	15.65
		NS	0			
		AS	51751	13.83	1.82	15.65
FM—FEDERAL EXPRESS	TOTAL	S	0	2.41		2.41
		NS	0			
		AS	0	2.41		2.41
NW—NORTHWEST AIRLINES	TOTAL	S	90301	39.00	7.52	46.52
		NS	0			
		AS	90301	39.00	7.52	46.52
COMMUNITY TOTAL	TOTAL	S	142052	55.24	9.34	64.58
		NS	0			
		AS	142052	55.24	9.34	64.58

NOTE. S = Scheduled
NS = Nonscheduled
AS = All Service

Appendix F

Instructions for Regression Analysis on Lotus 1-2-3

/Data Regression lets the user perform a regression analysis on existing data. Use /Data Regression to predict a value for a dependent variable based on the values for one or more independent variables. /Data Regression also indicates the statistical accuracy of these values.

To begin, the user must create a database with the values of the dependent variable in a column to the left of the columns that contain the values for one or more independent variables (refer to Table 3 where Corporate Rate the dependent variable is to the left of Rooms #, Delegates, Economic Impact, and Enplaned Passengers the independent variables).

1. Select /Data Regression X-Range to specify the independent variables (Rooms #, Delegates, Economic Impact, and Enplaned Passengers). The X range contains the independent variables in the database (the variables you already know or can estimate with some degree of accuracy). Once the X range is specified press ENTER.

2. Select /Data Regression Y-Range to specify the dependent variable (Corporate Rate). The Y range contains the dependent variable in the database (the variable you want to predict). Once the Y range is specified press ENTER.

3. Select /Data Regression Output Range to indicate a blank area of the worksheet in which you want Lotus 1-2-3 to place the results of the regression analysis. You need to specify only the first cell of the range (usually at the left edge of the database below the existing data). Once the output range is selected press ENTER.

4. Select/Data Regression Go. Lotus 1-2-3 automatically enters the regression analysis results in the output range.

Now the regression data can be used for the prediction of a future value of the dependent variable (Corporate Rate).

1. Enter the future X values or independent variables (Rooms #, Delegates, Economic Impact, and Enplaned Passengers) in the last cell corresponding to the correct independent variable.

2. Enter the following formula in the cell where you want to see the prediction. (Enter the formula in the next column after the last independent variable.)

+(C9*C18)+(D9*D18)+(E9*E18)+D12

(In this formula as an example, the predicted X values are in cells C9, D9, and E9 and the first x coefficient of the regression output is in cell C18, the second x coefficient is in cell D18, the third x coefficient is in cell E18, and the constant of the

regression output is in cell D12.)

This formula may look complicated, but it is really only the sum of the following:

- the first predicted x value multiplied by the first x coefficient, plus
- the second predicted x value multiplied by the second x coefficient, plus
- the third predicted x value multiplied by the third x coefficient, plus
- the constant

Use absolute references for the x coefficients and the constant because you may want to copy the formula to other cells, and you do not want any adjustment made in references to the coefficients or the constant.

Again, please refer to Table 3 to see a completed regression analysis.