

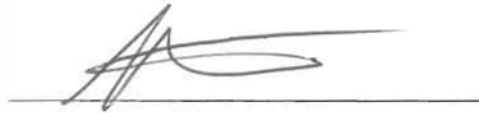
Linear Regression Analysis to Study Transportation Cost Variances within Divisions at
Company XYZ.

by

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A Research Paper
Submitted in Partial Fulfillment of the
Requirements for the
Master of Science Degree
in
Technology Management

Approved: 3 Semester Credits

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke, positioned above a solid horizontal line.

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December, 2008

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Title: *Linear Regression Analysis to Study Transportation Cost Variances within Divisions at Company XYZ.*
Graduate Degree/ Major: MS Technology Management
Research Adviser: Prof. Gene Gutman
Month/Year: December/2008
Number of Pages: 47
Style Manual Used: American Psychological Association, 5th edition

ABSTRACT

Within the operations of a company, there is uncertainty about how much product will be sold, manufactured and shipped. Even with improved forecasting methods it is not possible know precisely how much demand there will be for a company's products in the future. This means that it is difficult to know how much transportation expense the firm will require, or the impact of the transportation elements would have on total freight expenses.

This paper presents a framework for using linear regression as a method to analyze the impact of transportation elements on freight costs. The main focus of this study is building a reliable tool for Company XYZ to create better visibility of the significance of certain variables on freight cost; meanwhile, it will also work as a tool to support prediction on future transportation values enabling a wide range of cost saving opportunities.

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Acknowledgments

I look forward to see how the results of this project will be implemented and the benefits this study will bring to the logistics department of Company XYZ. I would like to address some thanks to the people that supported my success and was there for me at all times whenever I needed help.

First, I want to especially thank my parents Manuel and Mery. Their unconditional love, care and support has been there for me at all times and I am pretty confident that I would not be here if it was not for them.

My loving wife Claudia, without her overcoming this challenge was not possible, thank you, I love you forever. You were a key for success for the whole project. Thanks!

I would like to thank Matt O'Connor and the company he represents, without them this project could not exist. Professor Gene Gutman, thanks for being an outstanding advisor. He provided the key knowledge and experience needed to spark up this project.

Professor John Dsizzah, thanks for teaching me all about the tools needed to develop this project and to perform such great analysis.

Last but not least, I am very lucky of having a wonderful family that supported me through the entire process (Manuel, Lule, Manu, Andres – Eduardo, Sonia). Also my new family, my father and mother in law, Daniel and Mercedes, thanks for caring about my progress and success.

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CHAPTER I

INTRODUCTION

Company XYZ is principally engaged in the manufacturing and marketing of both branded and private label products sold throughout the world. Company XYZ is the largest supplier of coffee filters and private label baby wipes in North America. Other products manufactured and distributed by Company XYZ include paper for tea bags and coffee pouches; water activated and wet facial wipes, incontinent wipes, and a variety of contract wipe products.

The project will be developed within the Logistics Department. The project will be used as a tool to report to top management some of the cost variances related to logistics and transportation, and the main variables that impact freight costs. Also it will work as a tool to predict future transportation costs based on the regression analysis results and coefficients. The main focus will be all the variables that drive transportation costs. Such variables will be analyzed using linear regression and evaluated in order to determine with the main causes of variances on freight costs.

The company has four main divisions; Coffee Filters, Tub Wipes, Facial Wipes and Can Wipes. The analysis methodology will be implemented in division 576 as a pilot, and further on will be implemented in the rest of the divisions.

Purpose of the Study

Justification:

- Being able to analyze the impact of the variables provided by the company on the transportation cost for the different divisions.

- Building a useful tool for the company to predict and analyze transportation cost drivers to top management.
- To build a useful tool that will provide the company with information that will represent cost savings for their customer and their own company.

Goals:

- Use linear regression analysis to study the transportation cost variances for the different divisions of the company.
- Provide an innovative and useful tool for the company to report transportation cost to top management; and at the same time provides information regarding cost saving opportunities for their customers and the company itself

Assumptions of this Study

The following assumptions were made concerning this study:

1. Previous analysis was not conducted in this area using regression analysis as a tool or method to identify transportation cost variances and to predict future values.
2. Product mix is the main reason for transportation cost variances; meaning that dimensions, weight and quantity are major cost drivers regarding transportation for this company.
3. The Transportation Management Systems are underperforming and are not providing the required information to easily predict cost saving opportunities.

Definition of Terms

Independent variable: a variable that causes, or influences, another variable (Bobrow, 1993)

Dependent variable: a variable that is caused or influenced by another variable

(Bobrow,1993).

Empirical rule for normal distributions: the interval from one standard deviation below the mean to one standard deviation above the mean contains approximately 68% of the measurements; the interval from three standard deviations below the mean to three standard deviations above the mean contains approximately all of the measurements

(Bobrow, 1993).

Mean: the sum of the measures in a distribution divided by the number of measures

(Bobrow); the average.

Allocation: Allocations are used to distribute cost amounts that are posted to a dimension.

This enables to credit one dimension and debit the costs to another dimension. It can be only performed on secondary cost categories”. (UCR Libraries, 2004).

Standard deviation: the measure of data variation; the square root of the variance

(Bobrow).

Problem Statement

Company XYZ’s Logistics department has a prominent need of a tool or method that can support the transportation cost variances analysis and reports made to top management. Top management has the knowledge that certain cost variances have occurred during different periods of time, but they struggle to understand the reasons of these changes and identify the exact amount of changes produced in each division. This method or tool will help to predict future costs and also will help to identify the ideal mix of each cost element needed to hit the targeted costs. This field project will provide a simple way to analyze transportation cost variances through a linear regression analysis.

CHAPTER II

LITERATURE REVIEW

The literature review provides key information about some of the main issues and concepts that will be treated to reach the goal of this study. As mentioned on previous chapters, top management has the knowledge that certain cost variances have occurred during different periods of time, but they struggle to understand the reasons of these changes. On the other hand, Company XYZ's logistics department has a prominent need of a tool that can support the transportation cost variances reports to top management. This field project will provide a simple way to analyze transportation cost variances to top management through a linear regression model analysis. Transportation cost, including the question of economy of scale, has been of interest to decision makers in different transportation sectors for many years. Managers need to have enough information about their costs to make the right decision about the type of services to provide and the prices to charge.

In this particular chapter some previous studies' methodologies and results will be compared and associated to the objective of this project. Due to lack of studies applying linear regression analysis applied to transportation and logistics, this paper will refer to previous work that might include linear regression in their methodology. Many of them deviates from the main purpose of this study, they have contributed to gain knowledge and guidance for this field project. For example, Pumar (2002) in his field project *Global Manufacturing Facility Design* defines distribution costs as those directly related to the shipping of supplies and products to customers and other branches of the distribution network. This particular definition provides lots of support to the goal of this study by

providing an accurate concept and meaning to distribution. It gives a reason for this research. Since distribution costs are considered directly related with logistics and supply chain; however, any financial analysis must consider this particular element of the business and also might be looked as a cost saving opportunity.

Tiravanit (2003) in his field project stated that “A model is a tool that a manager uses to solve the problem in a scientific way. For example, when a manager is facing a situation involving conflicting or competing alternatives, the situation is analyzed and decisions are made in order to resolve the conflicts or competing alternatives.” This particular concept provides a deeper insight to the purpose of this field project. When the author mentions that a manager faces issues relating to conflicts or competition they must proceed to make a decision. The main goal of this study is to find a reliable method to be used whenever an immediate or future decision would need to be made.

How (2006) in his field project *Measurement System Analysis for Process Control at Company XYZ*, stated that “statistical tools allow measurement and evaluation of the performance in a process to improve its quality and outcome. The tools frequently used to support decision making.” The application of linear regression analysis to study transportation cost is a statistical tool, one that will be developed in this paper as a reliable tool for decision making regarding transportation. It is expected that by the end of this project this statistical tool will be implemented whenever an analysis of cost impact is done. Forecasting will be a matter of seconds away once all the variables are correctly collected.

Logistics

Logistics, also known as business logistics, is defined by Brandimarte and Zotteri (2007) as the integration of two or more activities for the purpose of planning, implementing and controlling the efficient flow of raw materials, in-process inventory and finished goods from the point of origin to the point of consumption. Logistics includes many activities. These activities may include customer service, demand forecasting, inventory control, procurement, packaging, transportation, etc. (Brandimarte & Zotteri, 2007). Transportation and its cost will be the main focus of this field project; therefore, some key concepts must be defined in order to clearly understand the goal of this study.

Transportation

Movements of people, goods and information have always been fundamental components of human societies. (Rodrigue, Slack & Comtois, 2008). Transportation is considered one of the activities within the business logistics. “Refers to the means and methods of the physical movement of persons or goods” (UCR Libraries, 2004). There are many transportation modes such as air, ground, rail, water, pipeline and electronic. U.S. commercial trucks traveled 91 billion miles in 2006, a number equal to nearly 200,000 round trips to the moon, with revenues reaching \$220 billion. Of that amount, motor carrier revenue equaled \$204 billion, with 67 percent from long-distance trucking and the remaining \$67.9 billion from local trucking (Edwards, 2007). The most common modes of ground transportation are by truck or by rail. In many cases, it may be a combination of both, meaning that it will be considered an intermodal transportation.

Transportation is considered a primary focus for reducing cost. Due to increasing fuel cost, many businesses are considering deep studies and new techniques to identify the major impacts on transportation and logistics cost in order to trigger actions along the processes to avoid profit losses. Once transportation main cost drivers are identified and its impacts are made clear, cost reduction opportunities will enable process re-engineering. Even though main cost drivers in transportation are sometimes obvious, the challenge is to measure the impact of each one of the variables in order to be able to perform sensitivity analysis with the values and find ideal combinations that will lead to cost reduction and process reliability.

Cost Analysis

“Cost analysis can be used to understand the level of resources that are required to operate a logistics system, with the goal of maximizing the desired performance of the system while minimizing the cost of resources” (Abdallah, 2004, p.23). Being able to analyze the main costs related to the company’s transportation enables management to trigger action plans to attack cost reduction points within the transportation system.

Cost analysis is about knowing the costs involved in performing logistics functions and its impact on the target. As mentioned in transportation, cost analysis is vital to identify the variable changes and the impact. Once the company has this information under control, coming up with cost saving opportunities will be a matter of analysis, creativity and innovation. The bottom line is that cost analysis is a simple part of good forecasting and accounting practices, which allow managers to determine the true cost of providing a given unit of service. Accuracy and visibility play an important role when performing such analysis. This particular field project will develop linear

regression analysis as a tool and method to accurately perform transportation cost analysis and identify its variances and impact on total costs; also, it will focus as a forecasting supportive tool.

Cost Drivers

Cost may have many definitions, depending on how it is used and the purpose of it. Generally speaking, Abdallah defines cost as “the value of something that is expended to obtain a benefit; or it is the quantity of one thing that is exchanged for a service or a product” (Abdallah, 2004, page 23). When talking about transportation cost analysis it is vital to get into what the cost drivers for this activity are and their definitions. In other words, defining transportation cost drivers is to describe the elements that have a direct impact on the fixed and variable costs that you are concerned about, and that will change when these factors change. Once again, the main purpose of this study is to identify the impact of main transportation cost drivers in total logistics expenses. Summarizing, cost driver is any activity or variable that causes a cost to be incurred or has a major impact on the cost variance.

Fuel cost

Fuel cost is considered vital to transportation cost analysis. “If an analysis is being done to determine the existing costs of a transport system, ideally, information on fuel costs expended would be tracked and should correspond or be related to the total distance traveled by each vehicle for distribution activities”(Abdallah, 2004, p. 24). The oil market drives fuel cost up and down depending on the demand. This fluctuation certainly has an impact on transportation within the United States.

There will be many years to come before efficient fuel solution is in the market. This is a main reason for looking at transportation as a critical element of cost reduction. Whatever is done to drive efficiency throughout transportation cost will be reflected in cost and fuel reduction. There are many companies looking at solutions for their transportation by adding some artifacts to make their fleet more fuel efficient; this is when a company owns their fleet, but for companies that rely on transportation outsourcing, the focus will be primarily in internal and external processes that can cause impact on transportation usage. Weight and dimensions of products can be re-engineered in order to cause an impact on distribution methods and also in packaging designs causing a modification on transport outcomes.

Distance

In the transportation industry, distance is considered one of the main cost drivers. Distance is defined as the total miles traveled to deliver a product (Abdallah, 2004). Basically, delivery and pick up routes are established in a transportation system; enabling the user to modify the route as per their convenience and cost efficiency. Delivery Frequency is also factored in the distance because it will drive the total miles driven to deliver a product on an annual basis. Depending on the nature of business and on how the distribution routes are established, distance can play an important role on cost reduction.

Distance is strongly related to fuel cost. In the transportation industry, the fuel charge is commonly based on distance multiplied by a fuel rate. It is commonly a 1:1 relationship. Where the distance increases, fuel cost will rise. This means that whatever reduction is made on distribution distances will lead to reduction on fuel cost.

Linear Regression Analysis

Linear regression analysis is one of the most important and commonly used statistical methods that serve three major purposes: (1) description, (2) control, and (3) prediction (Neter, Kutner, Nachtsheim, & Wasserman, 1996). According to Larsen, regression models are statistical models which describe the variation in one (or more) variable(s) when one or more other variable(s) vary. Inference based on such models is known as regression analysis (Larsen, 2003).

Regression takes us one large step further. A regression is a test to see if we can predict one variable's value if we know the value of another variable (or variables). Here, we will limit ourselves to linear regressions, which fit the data to a straight line. Regressions are really Cartesian geometry, the classical formula $y=mx+b$ and the X and Y axis chart; where, the X axis is our independent variable, and the Y axis is our dependent variable. Linear regression analyzes the relationship between two variables, X and Y. For each subject or experimental unit, you know both X and Y and you want to find the best straight line through the data. In some situations, the slope and/or intercept have a scientific meaning. In other cases, you use the linear regression line as a standard curve to find new values of X from Y, or Y from X (Neter, Et. al, 1996)

Minitab

Because Regression analysis often entails lengthy and tedious calculations, computers are usually utilized to perform the necessary calculations. Almost every statistics package for computers contains a regression component. While packages differ in many details, their basic regression output tends to be quite similar.

For this particular field project, MINITAB® statistical software has been utilized as the regression calculation tool. MINITAB® regression analysis allows the user to investigate and model the relationship between a response variable and one or more predictors (Minitab, 2008). MINITAB® is a comprehensive statistical and graphical analysis software package and it has been providing statistical software solutions for over 25 years. Currently, MINITAB® is used by thousands of companies worldwide, including GE, 3M, Ford Motor Company, and the leading Six Sigma consultants. Some other software such as Microsoft Access and Excel were used to provide the data set to be analyzed.

CHAPTER III

METHODOLOGY

Introduction

Company XYZ lacks an efficient and reliable method or tool to identify and analyze the main cost drivers for transportation. They are not able to identify what is causing the cost variances and therefore cannot visualize the impact of these variables on the total transportation cost. This field project will create a tool to report to top management some of the cost variances related to logistics and transportation, and the main variables that impact freight costs. Also, it will work as a tool to predict future transportation costs based on the regression analysis results and coefficients. The main focus will be all the variables that drive transportation costs. Such variables will be analyzed using linear regression and evaluated in order to come up with actual facts of costs variances. The main goal of this field project is using linear regression analysis to study the transportation cost variances for the different divisions of the company. This analysis will focus its efforts on creating an efficient and reliable tool and method to identify the impact of certain variables on the transportation total cost and at the same time use these results to predict future impacts.

Data collection

To begin with, a face to face meeting with the company representative was arranged in order to define expectations of the project. In this meeting, many hypotheses to their problems were treated from different angles in order to identify as many cost drivers and variables as possible that might be having some sort of impact on their total transportation costs. After identifying the variables, the company provided a data base

with all the information needed for calculation and results' analysis. Cleaning up the data set took little time and there were a few thousand records missing from the mentioned data set. The data provided from the company in order to be analyzed was:

Order Number	Order Type	Shipment Number	Load Number
Date	Sold to Number	Item Number	Allocated Freight Cost
Quantity Shipped	Weight Shipped	Item Cube	Shipment Miles
Division	Family	Origin	Freight Handling Code
Ship to Number	Destination	Carrier Code	Total Invoice Price
Load Cost	Fuel Cost	DST (State of Destination)	

On Appendix 1 there are definitions for each data element. This database comes from the different systems used within the company to manage transportation and many other corporate functions.

The company provided the mentioned data with a time frame from May 2007 until January 2008. This timeframe would enable the analysis to find a big enough pattern to identify cost variances and its impact on transportation costs.

More than 206,000 data records were contained in the database sent from the company for the analysis. For this particular field project MINITAB® software was the main tool used to obtain results from linear regression. Some other software such as Microsoft Access and Excel were used to provide the data set to be analyzed.

Keeping confidentiality was one of the concerns that the company addressed when accepting the project; therefore, a non-disclosure agreement was signed between the company and the author of this project to protect the information handled during the entire process and everyone involved. The data was provided directly from the company

systems and transferred to Access and Excel, proving the validity of the data and the source.

Methods

In order to provide a better visibility on methodology and processes the following chart shows the steps of the data analysis:



Figure 1: Data Analysis and Results Process

In order to analyze the freight cost variances for this field project, the following steps were followed:

- Database provided by the company was sorted; first by Freight Type in order to focus on prepaid transportation costs, then by division-to test this

method with the smallest division first, and then by Origin-due to the nature of the business.

- The data was run in MINITAB® using linear regression analysis.
- Regression analysis was used to individually test the correlation of each of the 18 variables with total freight costs. Regression analysis has been applied to each set of data in order to obtain coefficients and indicators that statistically prove significant impact on freight cost.
- After running the regression analysis and obtaining the results, some of the variables ended up not having any significance or correlation with the target value, in this case the freight cost.
- Results of the regression analysis were copied by Origin and respective Quarters for further deep statistical analyses determining the significance of each resulting variable and their regression results in freight cost, in order to identify impact and prediction rates.
- Some variables were not included in the analysis due to a lack of significance or impact in Freight Costs. These variables are: Order Number, Order Type, Shipment Number, Load Number, Sold to Number, DST (State of Destination), Family, Freight Handling. Code, Ship to Number, Carrier Code.
- Significance analysis was performed on each data result obtained from running the sorted data in MINITAB®.
- based on the regression equation obtained from each analysis with conclusions and recommendations was elaborated for the Company XYZ.

- Based on final results and analysis, important recommendations were made to the company from a cost saving stand point. Some suggestions were made regarding packaging re-design that would lead to reduce some of the impacts created from the lack management in such variables.

Figure No.2 gives a better picture of this particular project and its processes to obtain results.

Project Methodology

Project Selection	Project Approach	Company & Student Meeting	Hypothesis & Approach	Data Collection	MINITAB Calculations
<ul style="list-style-type: none"> ✓ UW-Stout Business Department Staff contacted Company XYZ looking for project opportunities for students. ✓ Company XYZ proposed various issues where students could develop a project. ✓ It was chosen the one that was closely related to supply chain management. ✓ The main issue was related to transportation and the variables related to it. They had the lack of a tool to explain transportation cost variances. 	<ul style="list-style-type: none"> ✓ Parameters were established to address the issue facing the company ✓ These parameters indicated how the project approach was going to be made by the student and his duties and responsibilities for this task. Also established the duties and responsibilities of the company. ✓ A face to face meeting was arranged in order to propose the hypothesis and methodology for this particular project. 	<ul style="list-style-type: none"> ✓ This face to face meeting had the purpose of obtaining more detailed information from the company and sharing the hypothesis proposed by the student for their issues with transportation. ✓ Hypothesis were broken down to a single hypothesis. All data needed to be analyzed was also debriefed ✓ The hypothesis required key information to be analyzed. ✓ The company affirmed they would provide the data needed. 	<ul style="list-style-type: none"> ✓ During the meeting, the approach was clearly explained to the company. Linear regression analysis was going to be used with MINITAB in order to obtain the information to prove the hypothesis. ✓ The hypothesis was that product mix was causing the transportation cost variances due to the nature of the business for this particular company. ✓ The approach was based on proving the hypothesis on only one division out of the existing four. 	<ul style="list-style-type: none"> ✓ The company provided a full set of data containing all the information required for calculation purposes and analysis. ✓ The data was cleaned up and sorted per division in order to brake down the data division. ✓ Data was arranged in order to fit MINITAB 	<ul style="list-style-type: none"> ✓ Data was organized to fit on MINITAB format and make it easy to use at the same time. ✓ The data was run through MINITAB in order to obtain the regression equation needed to prove the hypothesis. ✓ Results were obtained according to regression analysis. ✓ Conclusions and suggestions were made based on Results analysis

Figure 2: Project Methodology.

Limitations

This study included the following limitations:

- This study was limited to Company XYZ and those XYZ divisions that the company provided information about.
- No comparisons were made to the other companies due to a lack of information and research.
- Access to some information was limited due to an underperformance on the company's management systems. Some of this information includes: transportation rates, handling rates, storage cost, and some others that could have helped while performing the analysis.
- There was a time constraint of three months to complete the study.

CHAPTER IV

RESULTS

The main purpose of this project is to identify the impact of certain transportation cost drivers on the company XYZ's freight costs. The data provided by the company was sub divided into divisions and then into origins. The particular division used for this analysis has many origins as per its set up. Each origin delivers to different customers a mix of products. As mentioned on previous chapters, the analysis of the data and calculations was made through MINITAB® using regression analysis.

The results analysis criterion was based on the statistical theory where the P-value obtained from the calculations is compared to a standard deviation, deciding whether or not the values obtained are significant or not to the target which in this case has been set as the "Allocated Freight Cost". The standard deviation used as default for this analysis was 0.05. Any value greater than the standard deviation is not causing a significant impact on freight cost; but, any value below this standard is considered as a focus of distortion and a main cause for freight cost value fluctuation. The analysis was performed using the exact same variables for each origin in order to find a pattern and to be able to identify possible saving opportunities and identify main distortions through the analysis. Such variables or cost drivers that were analyzed in order to obtain the following results are:

- Quantity Shipped
- Weight Shipped
- Item Cube (Dimensions)
- Shipment Miles

- Allocated Fuel Cost

In order to explain the results analysis and the findings of this particular project, Table No.1 will be used to point out and explain the factors that drove this analysis and the criterion used during this analysis.

A. Regression Equation.

This particular equation shows the formula based on the coefficients obtained in the regression analysis. The formula indicates the variables that after the analysis were considered to be causing an impact on the target, which is the freight cost. This formula will be tested by substituting the total values for each variable and multiply them for the respective coefficient, and then add them all together in order to obtain the present value for the freight cost.

Some alterations might be encountered as this analysis will show on the formula test. Such alterations are higher or lower depending on the R-square value obtained during the regression analysis. The R-square will indicate the accuracy of the regression equation to predict future values; it is represented in the tables as a percentage. This formula is the key for this particular project since it will work as a prediction tool for freight costs.

B. P-value

This indicator was previously defined and indicates whether or not a variable has a significant impact on the target, which in this case is the freight cost. If the P-value of a particular variable is greater or equal to 0.05, it is considered as not having a significant impact on freight cost; however, if it is lower than 0.05 is considered as having a significant impact on freight cost

variances. Even though it might be obvious that a particular variable or cost driver is causing cost variances, linear regression analysis will provide a better visibility in order to be able to measure it.

C. R-Sq (R-square value)

This particular value indicates the accuracy of the regression equation. It can be found either in percentages or on a scale from 0.0 to 1.0. This indicator will tell the user how accurate the regression equation will be regarding prediction for future values.

Results Mississauga

Regression Analysis: Allocated Fr versus Quantity Shi, Weight Shipp, ...

The regression equation is

$$\text{Allocated Frt Cost} = -0.275 + 0.00310 \text{ Quantity Shipped} + 0.00306 \text{ Weight Shipped} + 0.00144 \text{ Item Cube} + 0.000347 \text{ Shipment Miles} + 10.8 \text{ Allocated Fuel Cost}$$

Predictor	Coef	SE Coef	T	P
Constant	-0.27471	0.06506	-4.22	0.000
Quantity Shipped	0.003099	0.001514	2.05	0.041
Weight Shipped	0.0030575	0.0003400	8.99	0.000
Item Cube	0.001444	0.003374	0.43	0.669
Shipment Miles	0.00034724	0.00004219	8.23	0.000
Allocated Fuel Cost	10.8147	0.0364	297.02	0.000

S = 1.37784 R-Sq = 99.4% R-Sq(adj) = 99.4%

Table No.1: Analysis Mississauga

Mississauga:

Mississauga is a very unique scenario for this company. Results indicate that all variables are significant but the dimension, or “item cube”, of the product being shipped. This indicates that the company is facing some transportation cost variances due to the product mix. The products being shipped out are heavy. The company is under using the trucking services due to the nature of the product. The company is weighting out the trucks.

When looking at the coefficients, it shows that “item cube” will have the less impact on target when modifying the variables.

Results Montville

Regression Analysis: Allocated Fr versus Quantity Shi, Weight Shipp, ...

The regression equation is

$$\begin{aligned} \text{Allocated Frt Cost} = & 0.412 - 0.0097 \text{ Quantity Shipped} + 0.00684 \text{ Weight Shipped} \\ & + 0.192 \text{ Item Cube} + 0.000574 \text{ Shipment Miles} \\ & + 8.69 \text{ Allocated Fuel Cost} \end{aligned}$$

Predictor	Coef	SE Coef	T	P
Constant	0.4124	0.6423	0.64	0.521
Quantity Shipped	-0.00975	0.01467	-0.66	0.506
Weight Shipped	0.006835	0.002606	2.62	0.009
Item Cube	0.19187	0.03536	5.43	0.000
Shipment Miles	0.0005738	0.0004363	1.32	0.189
Allocated Fuel Cost	8.6869	0.2022	42.96	0.000

S = 14.0527 R-Sq = 84.4% R-Sq(adj) = 84.3%

Table No.2: Analysis Montville

Montville:

Montville behaves differently. All variables are not significant except for the “item cube”. Besides fuel, as per its coefficient, item cube represents the biggest impact on the regression formula. The product nature in this particular origin tends to be lighter but considerably dimensioned. In this particular scenario, the company is cubing out their distribution source generating higher expenses on logistics and transportation. Weight coefficients indicate some influence on target when modifying variables but not as significant as dimensions.

Results Sheboygan

Regression Analysis: Allocated Fr versus Quantity Shi, Weight Shipp, ...

The regression equation is

$$\text{Allocated Frt Cost} = 5.67 - 0.000437 \text{ Quantity Shipped} + 0.0101 \text{ Weight Shipped} \\ - 0.0041 \text{ Item Cube} + 0.00579 \text{ Shipment Miles} \\ + 6.49 \text{ Allocated Fuel Cost}$$

Predictor	Coef	SE Coef	T	P
Constant	5.668	1.967	2.88	0.004
Quantity Shipped	-0.0004366	0.0002342	-1.86	0.062
Weight Shipped	0.010078	0.001852	5.44	0.000
Item Cube	-0.00410	0.02251	-0.18	0.855
Shipment Miles	0.005788	0.001562	3.70	0.000
Allocated Fuel Cost	6.4948	0.1509	43.03	0.000

S = 36.5062 R-Sq = 87.8% R-Sq(adj) = 87.7%

Table No.3: Analysis Sheboygan

Sheboygan:

This origin is facing similar situation as Mississauga. All variables are significant except for the dimensions. What is particular about this origin is that item cube coefficient is negative. This indicates that it will become a positive result when

modifying this variable towards the freight cost prediction. Quantity is also negative coefficient, not as high as dimensions but favorable.

Results Wittenberg

Regression Analysis: Allocated Fr versus Quantity Shi, Weight Shipp, ...

The regression equation is

$$\begin{aligned} \text{Allocated Frt Cost} = & -4.15 + 0.00096 \text{ Quantity Shipped} + 0.00527 \text{ Weight Shipped} \\ & - 0.00701 \text{ Item Cube} + 0.00958 \text{ Shipment Miles} \\ & + 6.80 \text{ Allocated Fuel Cost} \end{aligned}$$

Predictor	Coef	SE Coef	T	P
Constant	-4.155	2.622	-1.58	0.113
Quantity Shipped	0.000964	0.001273	0.76	0.449
Weight Shipped	0.0052666	0.0007293	7.22	0.000
Item Cube	-0.007006	0.001638	-4.28	0.000
Shipment Miles	0.009580	0.002350	4.08	0.000
Allocated Fuel Cost	6.80026	0.07053	96.42	0.000

S = 48.7737 R-Sq = 91.1% R-Sq(adj) = 91.1%

Table No.4: Analysis Wittenberg

Wittenberg:

The pattern is repeated as Mississauga. Due to the nature of the product the company is under using the transportation resources because is cubing out the loads. Based on the coefficients, item cube shows again as the predominant variable that will cause a significant impact on the target once substituting the values. Coefficient is again negative which will result on a positive outcome if variable is modified accordingly.

Results Springdale

Regression Analysis: Allocated Fr versus Quantity Shi, Weight Shipp, ...

The regression equation is

$$\text{Allocated Frt Cost} = -11.4 + 0.150 \text{ Quantity Shipped} + 0.0310 \text{ Weight Shipped} \\ - 0.243 \text{ Item Cube} + 0.0106 \text{ Shipment Miles} \\ + 5.33 \text{ Allocated Fuel Cost}$$

Predictor	Coef	SE Coef	T	P
Constant	-11.385	2.248	-5.06	0.000
Quantity Shipped	0.15012	0.01019	14.73	0.000
Weight Shipped	0.030958	0.004033	7.68	0.000
Item Cube	-0.24334	0.03499	-6.95	0.000
Shipment Miles	0.010643	0.001984	5.36	0.000
Allocated Fuel Cost	5.3321	0.1024	52.09	0.000

S = 40.8650 R-Sq = 93.4% R-Sq(adj) = 93.3%

Table No.5: Analysis Springdale

Springdale:

Springdale does not escape from the pattern obtained from analyzing the results. Item cube is shown once with a negative coefficient, but in this particular scenario all variables are significant. This means that all variable will cause an impact on target. Quantity is shown as one of the coefficients with more impact besides fuel. This impact can be positive or negative. This origin is basically shipping a lot of products and under using the transportation resource.

Summary:

Overall, after analyzing each one of the origin for the chosen division, it was found that there are many variations regarding the impact that some of the variables have on the target. In some origins was the item cube which had the highest impact and on

some other was the quantity and the weight. It was also found that in all five origins of this particular division fuel cost was the variable that causes the biggest impact on freight cost. When some other variables were considered as main cost drivers had high coefficient values such as 0.1918, the lowest coefficient value for fuel cost was 5.33. Such values, as mentioned before, will act as prediction coefficients; when multiplying the estimates for each variable times the respective coefficient, and then adding all the results together to obtain the predicted freight cost.

Table No.6 shows a summary of all the coefficients found during this analysis. Using these values a graphic was plotted in order to illustrate the impact of such variables either positive or negative. Once the graph was plotted (Figure No.2) it became really easy to identify some patterns and also enables to trigger some actions towards cost reductions or savings. Such is the case of Montville and Springdale where it was identified that “item cube” was the main cost driver causing freight cost variations. In Montville the volume that is being shipped drives the freight cost, meaning that if the values for this variables are reduced it will drive the cost down. On the other hand Springdale has an issue with volume; “item cube” increment will represent a reduction on freight cost. In this particular case a specific analysis has to be performed in order to find the right combination of values for each variable in order to optimize costs. Increasing volume is linked to other variables that may or may not cause cost variances, in order to find out if further analysis must be performed.

Coefficients Results SUMMARY

- This is a table with all the coefficients that will be used for the predictions and analysis of the impact of each of them on freight cost.

	MISSISSAUGA	MONTVILLE	SHEBOYGAN	SPRINGDALE	WITTENBERG
Quantity Shipped	0.003099	-0.00975	-0.0004366	0.15012	0.000964
Weight Shipped	0.0030575	0.006835	0.010078	0.030958	0.0052666
Item Cube	0.001444	0.19187	-0.0041	-0.24334	-0.007006
Shipment Miles	0.00034724	0.0005738	0.005788	0.010643	0.00958
Allocated Fuel Cost	10.8147	8.6869	6.4948	5.3321	6.80026
R-square	99.4%	84.3%	87.7%	93.3%	91.1%

Table No.6: Coefficients Summary

Variables Impact on Freight Costs

- This graph represents the coefficients obtained after the regression. It helps to identify the positive or negative impact of the different variables on Freight Cost per each unit increase. After obtaining the regression results many cost saving opportunities might be found throughout the entire analysis. Fuel will be plotted separately since after the analysis came out to be the biggest impact of course on freight costs; therefore will be major cost saving opportunity.

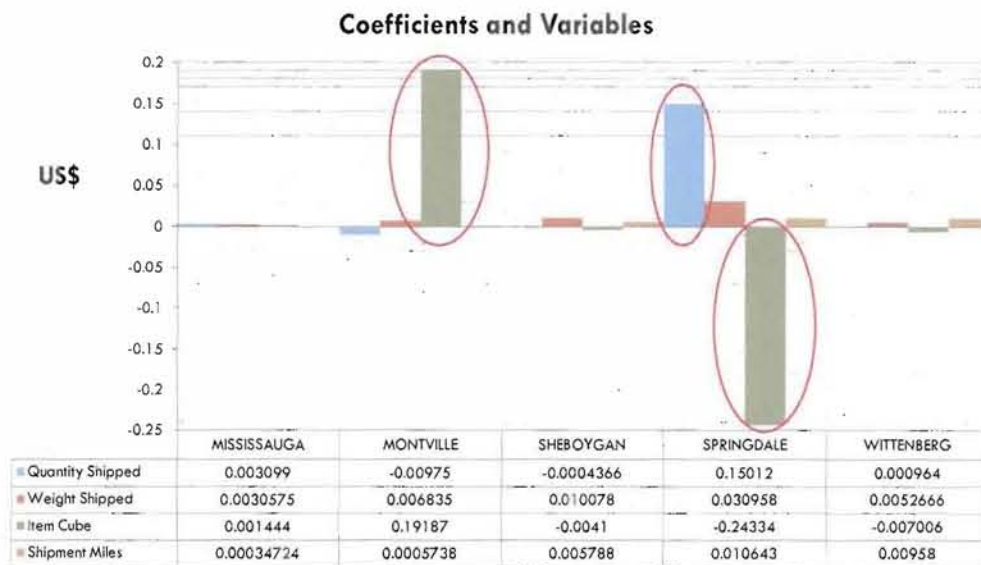


Figure No.3: Coefficients Graph

Figure No.3 shows the impact of fuel cost on the companies freight cost. In Mississauga, every time the company’s fuel cost increases one cent the total freight cost will be increased by \$10.81. This means that manipulating this particular variable can significantly affect the target. This variable is driven by the amount of products delivered from each origin; therefore, it can fluctuate along the same division depending on the nature of the business for each origin. Mainly, it can be seen that Mississauga is the origin that delivers the most product meaning the use of more transportation.

Variables Impact on Freight Costs

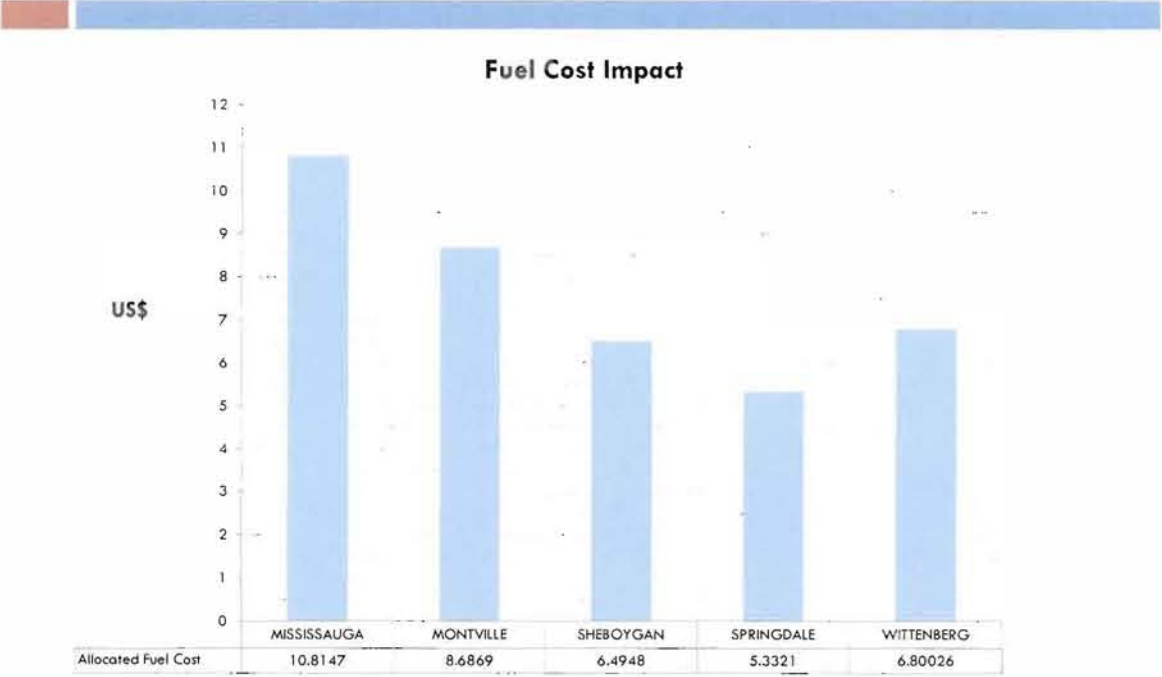
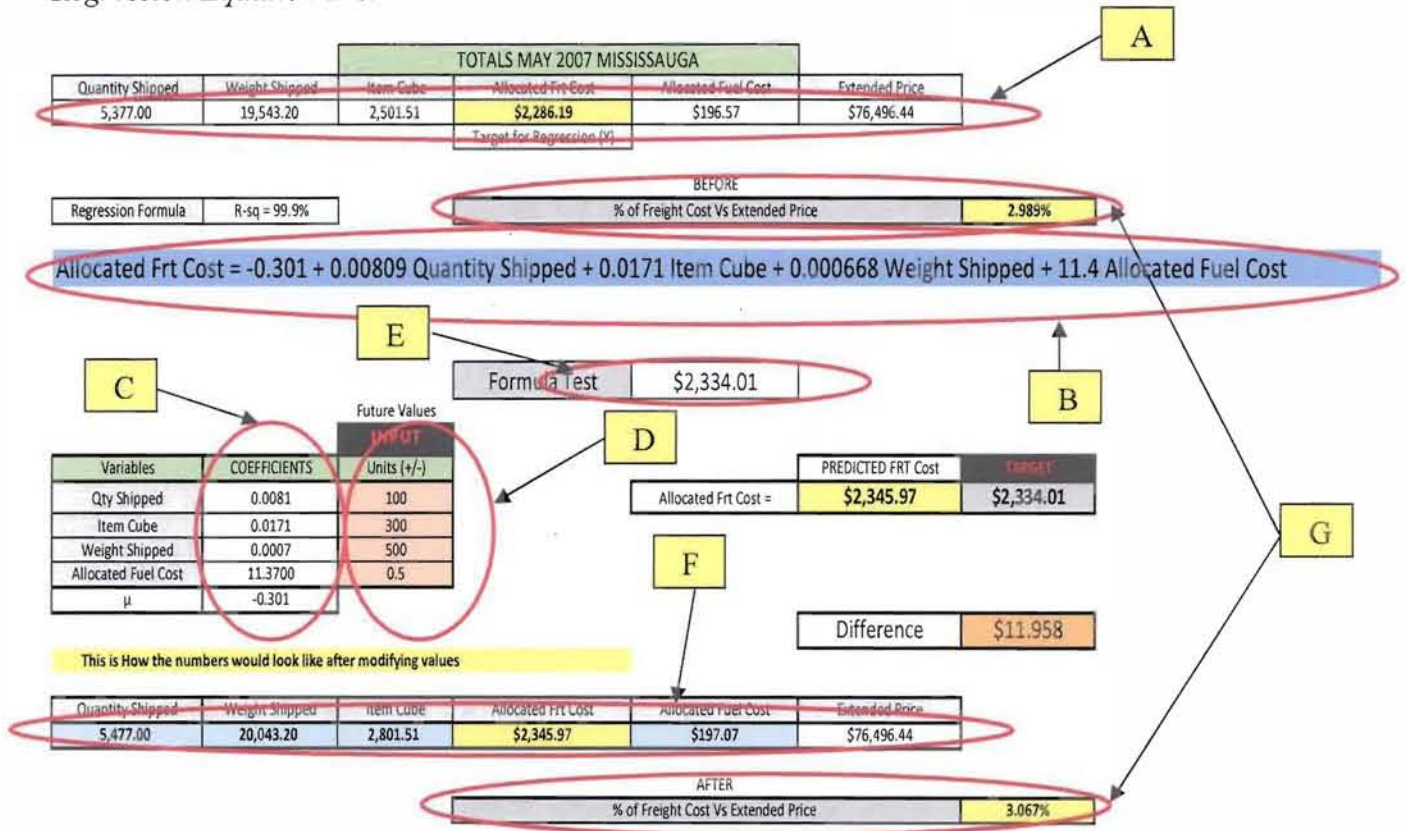


Figure No.4: Fuel Cost Graph

Once again this project proves that linear regression can be used as a method to identify the impact of some variables in freight cost for manufacturing companies, and also can be used as a prediction tool to obtain future values for freight costs based on forecasted production and demand. The following table has been developed in order to

prove the regression equation as a prediction formula for freight cost. On Appendix 2, there is the data that supports the equation test. In order to explain the process, the most important elements will be pointed out and explained.

Regression Equation Test



A. This table indicates the total value for each variable that have been calculated manually summing all the data provided from the company for the specific origin and time period which in this particular case is Mississauga during May 2007 (see appendix 1). In yellow, is the calculation target which is freight cost. This was done in order to have a point of control to compare the formula results against the manual calculations.

- B. It indicates the regression equation obtained from MINITAB after running the data (see appendix 1) using regression analysis. This particular formula as mentioned on previous explanations will act as a template where the forecasted values for production and demand will be input in order to obtain the future values for freight cost.
- C. This small table works as a coefficient input where each variable will be assigned its own respective coefficient
- D. This particular table is the key for this test. In this table, the forecasted values for quantity, volume, fuel cost, etc. will be input in order to be substituted on the regression equation for further calculations. These values will be added to the total values obtained manually as explained on point A. This means that the values that will be input will represent the exceeding amount forecasted for each variable.
- E. This result is obtained after multiplying each coefficient with its respective exceeding forecasted value and then adding them all together to obtain the freight cost using the regression equation.
- F. This table indicates the how the values for each variable will look like after adding the forecasted exceeding values.
- G. These particular cells indicate the relation between the amounts of money expended in freight versus the amount of money charged to the client on the invoice.

This test was designed using Microsoft Excel in order to prove the equations and to demonstrate the purpose of this entire project which was to create a tool or method to identify freight cost variances at company XYZ.

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

Conclusions

The purpose of this project was to create an effective tool or method to identify transportation cost variances for company XYZ which has been completely proven. The use of linear regression analysis and MINITAB throughout this entire project shows that this particular task can be easily performed. It is also considered a powerful tool either to predict future values for freight costs or to identify cost savings opportunities and trigger actions plans. Company XYZ was completely satisfied with the results obtained in this project and with the benefits that it will bring to the company processes. Many cost saving opportunities were identified throughout the entire process and analysis which could easily could be performed by the company users and top management for future analysis or current operations performance evaluations.

This particular project opens a path of new opportunities for graduate students to perform further analysis using this as a starting point. Some further analysis might need to be done in order to explore the fuel cost variances. In order to perform this analysis, it is recommended to work with variables that might cause fuel cost variances as an isolated study and afterwards unite it with this entire project. Such variables could be: delivery frequency considering each customer destination, distance and delivery routing.

This analysis has proven that statistical methods and calculations can be used to identify improvement opportunities within the distribution and logistics chain. Today's businesses are forced to cut operational costs in order to keep up with the competition. Here is a tool that will help to identify elements within the production and distribution p

Limitations

When performing this project and its respective analysis it is good to have in mind the following limitations:

- This study was limited to Company XYZ and those XYZ divisions that the company provided information about.
- No comparisons were made to the other companies due to a lack of information and research.
- Access to some information was limited due to an underperformance on the company's management systems.
- There was a time constraint of three months to complete the study.
- The following table summarize the results obtain form the analysis performed.

ORIGIN	CONCLUSION
Mississauga	Increasing the volume shipped and reducing the weight, the outcome will be an improvement on target. An improvement on quantity shipped per load must be the most favorable result.
Montville	Increasing quantity per load will improve target. Reducing item cube by re-engineering process seems like a cost saving solution for this particular origin.
Sheboygan	This origin has the particularity that indicates a close balance between variables and target. Again, the common pattern is item cube as a predominant source of improvement.
Wittenberg	It has the particularity of having the same pattern as Mississauga but with an insignificancy from the quantity that is being shipped out of this location. Quantity can be increased but weight will influence the results.
Springdale	All variables are significant for this specific origin. Quantity represents the only opportunity regarding cost saving opportunities.

Table No.7: Results Summary

Recommendations

Fuel costs are rising repeatedly with no signs of going down any time soon; therefore the company should focus on those variables that are having an impact on freight cost but are not variables related to fuel. For example volume is one of the major

cost drivers for origins such as Montville, where the nature of business drives the transportation to cube out and at the same time lowers the transportation efficiency.

This origin deals with coffee filters that have crown shape, therefore it contributes to cube out the trucks and mode of transportation. One recommendation after doing this entire analysis is to re-engineer the product design and packaging. Coffee filters could be redesigned in order to be pre-folded in order to generate the marks and then flatten out for packaging, in this way the company could save close to 50% in coffee filter transportation because they would not be delivering any air and will optimize truck space. On the other hand they could incur on a reduction on packaging material using less cardboard to pack their filters, reducing cost and also helping the environment.

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Appendix 1

Definition of Data Elements

Order Number

This number is used to identify the customer's shipment. This number is shown in the commercial invoice and the shipping documents as well.

Order Types

These codes are used to define whether an order is a sales shipment or an internal transfer from warehouse to warehouse for company XYZ. The ST and SK codes are used to identify internal transfers. SC, SW and SO are used to identify direct sales to customers.

Shipment Number

This number is used to identify the delivery. On a single shipment number, many order numbers can be contained.

Load Number

It is used to identify the event. A load number will be assigned to the truck and the dock where the cargo is loaded in order to be able to track a trace all the movements. Shipment numbers will be assigned to the load number. Everything needs to be linked.

Date

It is the actual day, month and year when an order number has been shipped out.

Sold to Number

It is a number that is assigned to each customer. It is done this way to identify the customer with a numerical code.

Item Number

It is a code assigned to each product. This code is unique for each product and can be recognized in all system used within the company.

Allocated Freight Cost

It is the portion from the total freight cost that a single order represents. It is used to proportionally break down a total cost into small portions. The calculation is based on the total amount of pounds in a particular shipment number. Each order will represent a portion of the total weight. It is converted into a percentage. This percentage is applied to calculate the portion of freight cost corresponding to an order. If an order represents 10% of the total weight, it will also represent 10% of the total freight cost. This 10% will be the allocated freight cost.

Quantity Shipped

Total number of items contained in an order number.

Weight Shipped

It is the actual weight of all items contained in an order number.

Item Cube

It is the actual cubical dimension of the products contained in an order. This is calculated by multiplying the length by the width and then by the height of each single item and then totaling all results.

Shipment Miles

It is the distance between the point of origin and the point of destination calculated in miles.

Division

The division is the different segments in which the company is divided. Each division has a specific focus of production and each one produces a different family of products.

Family

The term “family” is used to reduce the type of products produced by the company. Each family contains different presentations and differentiators. Families can have the same product in different presentations.

Origin

The origin is where the order is being produced and shipped out.

Freight Handling Code

It is used to identify the freight payment terms. It used to identify who pays for the freight. PP is used to identify prepaid freight and CC to identify collect freight.

Ship to Number

It is a number used to identify each destination. This number is unique for each shipment destination.

Carrier Code

It is a code assigned to each transportation provider.

Total Invoice Price

It is the total amount of money shown in the commercial invoice of a specific order.

Load Cost

It is the total amount of money due to transportation charges.

Fuel Cost

It is the amount of money due to fuel charges for a specific order.

DST (State of Destination)

It is the State where the final destination is located.

Appendix 2

Database for Equation Test

Order Number	Order Type	Shipment Number	Load Number	Date	Sold To Number	Item Number	Family	Quantity Shipped	Weight Shipped	Item Cube	Shipment Miles	Division	Allocated Frt Cost	Freight Handling Code	ORIGIN	Ship To Number	RCity	DST	RPostal	SCAC	Carrier	LeadCost	Fuel \$ Load	LeadDistance	Extended Price	Allocated Fuel Cost
537289	SW	1132464	569558	03-May-07	51275	G30004W	Filter	6	9.18	2.82	0	5.4661	5.53	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	89.42	0.537241
537289	SW	1132464	569558	03-May-07	51275	G30010W	Filter	7	9.8	1.89	0	5.4661	3.69	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	104.33	0.358484
537289	SW	1132464	569558	03-May-07	51275	97-1001C	Raw	7	19.74	3.22	0	5.4661	13.56	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	84.7	1.317358
537289	SW	1132464	569558	03-May-07	51275	97-0401C	Raw	3	4.44	5.88	0	5.4661	3.04	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	23.06	0.295337
536325	SW	1118976	569369	03-May-07	51068	025/692	Small	112	526.4	38.08	0	5.4661	9.91	PP	MISSISSAUGA	53749	MISSISSAUGA	ON	L5T2R9	UPSG	63778	118.58	10	0	1250.48	0.835723
536572	SW	1131045	569366	04-May-07	50800	030/667	Facial	27	89.1	10.9026	0	5.4661	2.23	PP	MISSISSAUGA	53063	MISSISSAUGA	ON	L4T4H1	UPSG	63778	98.27	8	0	541.22	0.181541
536572	SW	1131045	569366	04-May-07	50800	78E512U6	Wipe	26	122.2	8.8114	0	5.4661	3.05	PP	MISSISSAUGA	53063	MISSISSAUGA	ON	L4T4H1	UPSG	63778	98.27	8	0	523.87	0.248296
538445	SW	1139286	569823	07-May-07	51275	G30010W	Filter	4	5.6	1.08	0	5.4661	1.32	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	61.72	0.128238
538445	SW	1139286	569823	07-May-07	51275	97-0401C	Raw	6	8.88	11.76	0	5.4661	5.95	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	47.74	0.578044
538445	SW	1139286	569823	07-May-07	51275	G30004W	Filter	8	12.24	3.76	0	5.4661	5.29	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	123.45	0.513925
538445	SW	1139286	569823	07-May-07	51275	97-1001C	Raw	8	22.56	3.68	0	5.4661	15.11	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	100.22	1.46794
539196	SW	1144644	570067	08-May-07	51275	97-0401C	Raw	4	5.92	7.84	0	5.4661	2.69	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	31.83	0.261334
539196	SW	1144644	570067	08-May-07	51275	G30010W	Filter	4	5.6	1.08	0	5.4661	1.55	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	61.72	0.150583
539196	SW	1144644	570067	08-May-07	51275	97-1001C	Raw	17	47.94	7.82	0	5.4661	21.88	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	212.97	2.125648
539196	SW	1144644	570067	08-May-07	51275	G30004W	Filter	3	4.59	1.41	0	5.4661	1.55	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	46.29	0.150583
538465	SW	1139427	569940	09-May-07	51068	025/692	Small	112	526.4	38.08	0	5.4661	9.06	PP	MISSISSAUGA	53749	MISSISSAUGA	ON	L5T2R9	UPSG	63778	133.78	11	0	1294.69	0.744954
540019	SW	1150795	570345	11-May-07	51275	97-0401C	Raw	3	4.44	5.88	0	5.4661	2.52	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	23.87	0.244819
540019	SW	1150795	570345	11-May-07	51275	G30010W	Filter	7	9.8	1.89	0	5.4661	3.08	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	108.02	0.299223
540019	SW	1150795	570345	11-May-07	51275	G30004W	Filter	10	15.3	4.7	0	5.4661	7.69	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	154.31	0.747085
540019	SW	1150795	570345	11-May-07	51275	97-1001C	Raw	8	22.56	3.68	0	5.4661	12.83	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	100.22	1.246438
539707	SW	1146528	570347	15-May-07	51068	025/692	Small	112	526.4	38.08	0	5.4661	9.91	PP	MISSISSAUGA	53749	MISSISSAUGA	ON	L5T2R9	UPSG	63778	111.53	9	0	1294.69	0.799695
540823	SW	1152784	570588	16-May-07	51275	G30004W	Filter	6	9.18	2.82	0	5.4661	4.16	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	92.58	0.404145
540823	SW	1152784	570588	16-May-07	51275	97-1001C	Raw	14	39.48	6.44	0	5.4661	16.83	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	175.39	1.635039
540823	SW	1152784	570588	16-May-07	51275	G30010W	Filter	9	12.6	2.43	0	5.4661	2.77	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	138.88	0.269106
540823	SW	1152784	570588	16-May-07	51275	97-0401C	Raw	4	5.92	7.84	0	5.4661	2.53	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	31.83	0.24579
539997	SW	1150779	570344	17-May-07	50800	78E512U6	Wipe	35	164.5	11.8615	0	5.4661	3.1	PP	MISSISSAUGA	53063	MISSISSAUGA	ON	L4T4H1	UPSG	63778	154.82	13	0	730.14	0.260302
539997	SW	1150779	570344	17-May-07	50800	030/667	Facial	41	135.3	16.5558	0	5.4661	2.54	PP	MISSISSAUGA	53063	MISSISSAUGA	ON	L4T4H1	UPSG	63778	154.82	13	0	850.9	0.21328
540888	SW	1152910	570586	17-May-07	51068	025/692	Small	112	526.4	38.08	0	5.4661	13.15	PP	MISSISSAUGA	53749	MISSISSAUGA	ON	L5T2R9	UPSG	63778	89.04	7	0	1294.69	1.033805
541726	SW	1166916	570878	18-May-07	51275	97-0401C	Raw	4	5.92	7.84	0	5.4661	3.4	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	31.83	0.330311
541726	SW	1166916	570878	18-May-07	51275	97-1001C	Raw	11	31.02	5.06	0	5.4661	17.77	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	137.8	1.72636
541726	SW	1166916	570878	18-May-07	51275	G30004W	Filter	5	7.65	2.35	0	5.4661	3.24	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	77.15	0.314767
541726	SW	1166916	570878	18-May-07	51275	G30010W	Filter	4	5.6	1.08	0	5.4661	1.63	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	61.72	0.158355
542331	SW	1168512	571266	23-May-07	51275	G30004W	Filter	8	12.24	3.76	0	5.4661	4.43	PP	MISSISSAUGA	54373	MISSISSAUGA	ON	L5W1W2	UPSG	63778	30.88	3	0	123.45	0.430376

Order Number	Order Type	Shipment Number	Load Number	Date	Sold To Number	Item Number	Family	Quantity Shipped	Weight Shipped	Item Cube	Shipment Miles	Division	Allocated Frt Cost	Freight Handling Code	ORIGIN	Ship To Number	RCity	DST	RPostal	SCAC	Carrier	LoadCost	Fuel S Load	LoadDistance	Extended Price	Allocated Fuel Cost
542331	SW	1168512	571266	23-May-07	51275	G30010W	Filter Small	9	12.6	2.43	0	5.4661	2.22	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	138.88	0.215674
542331	SW	1168512	571266	23-May-07	51275	97-1001C	Raw	20	56.4	9.2	0	5.4661	18.59	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	250.55	1.806023
542331	SW	1168512	571266	23-May-07	51275	97-0401C	Raw	5	7.4	9.8	0	5.4661	2.44	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	39.79	0.237047
543191	SW	1175379	571430	25-May-07	51275	97-0401C	Raw	2	2.96	3.92	0	5.4661	1.94	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	15.91	0.188472
543191	SW	1175379	571430	25-May-07	51275	G30010W	Filter Small	2	2.8	0.54	0	5.4661	2.13	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	30.86	0.20693
543191	SW	1175379	571430	25-May-07	51275	G30004W	Filter Small	8	12.24	3.76	0	5.4661	8.5	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	123.45	0.825777
543191	SW	1175379	571430	25-May-07	51275	97-1001C	Raw	7	19.74	3.22	0	5.4661	12.97	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	87.69	1.260039
542005	SW	1167360	571011	29-May-07	50800	92-030/667	Facial Wipe	60	198	24.228	0	5.4661	5.56	PP	MISSISSA UGA	53063	MISSISSA UGA	ON	L4T4H1	UPSG	63778	53.98	4	0	1245.22	0.412004
542834	SW	1174785	571350	29-May-07	51068	95-025/692	Small Wipe	112	526.4	38.08	0	5.4661	9.04	PP	MISSISSA UGA	53749	MISSISSA UGA	ON	L5T2R9	UPSG	63778	116.77	10	0	1294.69	0.774171
542834	SW	1174785	571350	29-May-07	51068	24-242/692	Small Wipe	144	216	51.84	0	5.4661	3.72	PP	MISSISSA UGA	53749	MISSISSA UGA	ON	L5T2R9	UPSG	63778	116.77	10	0	1610.4	0.318575
542005	SW	1167360	571011	29-May-07	50800	78ES12UG	Small Wipe	25	117.5	8.4725	0	5.4661	3.3	PP	MISSISSA UGA	53063	MISSISSA UGA	ON	L4T4H1	UPSG	63778	53.98	4	0	521.53	0.244535
543899	SW	1177192	571689	30-May-07	51275	G30010W	Filter Small	3	4.2	0.81	0	5.4661	1.19	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	46.29	0.115609
543899	SW	1177192	571689	30-May-07	51275	G30004W	Filter Small	7	10.71	3.29	0	5.4661	3.62	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	108.02	0.351684
543899	SW	1177192	571689	30-May-07	51275	97-1001C	Raw	17	47.94	7.82	0	5.4661	18.78	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	212.97	1.824482
543899	SW	1177192	571689	30-May-07	51275	97-0401C	Raw	5	7.4	9.8	0	5.4661	2.89	PP	MISSISSA UGA	54373	MISSISSA UGA	ON	L5W1W2	UPSG	63778	30.88	3	0	39.79	0.280764
537518	SW	1133047	569568	04-May-07	50988	95-025D747	Medium Filter	144	3176.64	302.4	16	5.4661	79.3	PP	MISSISSA UGA	62147	TORONTO CORNWA	ON	M3N1W8	UPSG	63778	88.5	7	16	3988.22	6.272316
537299	SW	1132474	569568	03-May-07	51275	G30010W	Filter Small	14	19.6	3.78	281	5.4661	6.25	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	208.65	0.55273
537299	SW	1132474	569568	03-May-07	51275	G30004W	Filter Small	7	10.71	3.29	281	5.4661	4.66	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	104.33	0.412116
537299	SW	1132474	569568	03-May-07	51275	97-1001C	Raw	18	50.76	8.28	281	5.4661	24.51	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	217.79	2.167588
537299	SW	1132474	569568	03-May-07	51275	97-0401C	Raw	5	7.4	9.8	281	5.4661	3.57	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	38.43	0.31572
538444	SW	1139285	569830	04-May-07	51275	97-1001C	Raw	16	45.12	7.36	281	5.4661	23.8	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	200.44	2.104798
538444	SW	1139285	569830	04-May-07	51275	G30010W	Filter Small	13	18.2	3.51	281	5.4661	6	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	200.6	0.530621
538444	SW	1139285	569830	04-May-07	51275	G30004W	Filter Small	7	10.71	3.29	281	5.4661	4.56	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	108.02	0.403272
538444	SW	1139285	569830	04-May-07	51275	97-0401C	Raw	6	8.88	11.76	281	5.4661	4.68	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	47.74	0.413885
539195	SW	1144643	570076	08-May-07	51275	97-1001C	Raw	17	47.94	7.82	281	5.4661	27.83	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	212.97	2.461198
539195	SW	1144643	570076	08-May-07	51275	97-0401C	Raw	12	17.76	23.52	281	5.4661	10.31	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	95.49	0.911784
539195	SW	1144643	570076	08-May-07	51275	G30010W	Filter Small	9	12.6	2.43	281	5.4661	2.39	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	138.88	0.211364
540017	SW	1150793	570350	11-May-07	51275	97-1001C	Raw	9	25.38	4.14	281	5.4661	26.3	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	112.75	2.32589
540017	SW	1150793	570350	11-May-07	51275	G30004W	Filter Small	3	4.59	1.41	281	5.4661	2.71	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	46.29	0.239664
540017	SW	1150793	570350	11-May-07	51275	97-0401C	Raw	4	5.92	7.84	281	5.4661	6.13	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	31.83	0.542118
540017	SW	1150793	570350	11-May-07	51275	G30010W	Filter Small	7	9.8	1.89	281	5.4661	5.4	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	108.02	0.477559
540821	SW	1152782	570583	16-May-07	51275	G30010W	Filter Small	16	22.4	4.32	281	5.4661	6.49	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	246.89	0.573955
540821	SW	1152782	570583	16-May-07	51275	G30004W	Filter Small	2	3.06	0.94	281	5.4661	1.62	PP	MISSISSA UGA	54372	LL CORNWA	ON	K6H5R8	UPSG	63778	45.23	4	281	30.86	0.143268

Order Number	Order Type	Shipment Number	Load Number	Date	Sold To Number	Item Number	Family	Quantity Shipped	Weight Shipped	Item Cube	Shipment Miles	Division	Allocated Frt Cost	Freight Handling Code	ORIGIN	Ship To Number	RCity	DST	RPostal	SCAC	Carrier	LoadCost	Fuel \$ Load	LoadDistance	Extended Price	Allocated Fuel Cost
540821	SW	1152782	570583	16-May-07	51275	97-1001C	Raw	16	45.12	7.36	281	5.4661	25.74	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	200.44	2.276365
540821	SW	1152782	570583	16-May-07	51275	97-0401C	Raw	6	8.88	11.76	281	5.4661	5.06	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	47.74	0.447491
541722	SW	1166912	570883	18-May-07	51275	G30004W /6	Filter Small	1	1.53	0.47	281	5.4661	1.59	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	15.43	0.140615
541722	SW	1166912	570883	18-May-07	51275	97-1001C	Raw	17	47.94	7.82	281	5.4661	28.19	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	212.97	2.493036
541722	SW	1166912	570883	18-May-07	51275	97-0401C	Raw	7	10.36	13.72	281	5.4661	6.09	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	55.7	0.538581
541722	SW	1166912	570883	18-May-07	51275	G30010W /6	Filter Small	9	12.6	2.43	281	5.4661	3.12	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	138.88	0.275923
542338	SW	1168519	571275	23-May-07	51275	97-1001C	Raw	23	64.86	10.58	281	5.4661	25.47	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	288.13	2.252487
542338	SW	1168519	571275	23-May-07	51275	97-0401C	Raw	11	16.28	21.56	281	5.4661	6.39	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	87.53	0.565112
542338	SW	1168519	571275	23-May-07	51275	G30010W /6	Filter Small	21	29.4	5.67	281	5.4661	5.8	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	324.05	0.512934
542338	SW	1168519	571275	23-May-07	51275	G30004W /6	Filter Small	5	7.65	2.35	281	5.4661	1.89	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	77.15	0.167146
543190	SW	1175378	571434	28-May-07	51275	97-1001C	Raw	14	39.48	6.44	281	5.4661	26.38	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	175.39	2.332965
543190	SW	1175378	571434	28-May-07	51275	G30004W /6	Filter Small	2	3.06	0.94	281	5.4661	1.58	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	30.86	0.13973
543190	SW	1175378	571434	28-May-07	51275	G30010W /6	Filter Small	8	11.2	2.16	281	5.4661	3.12	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	123.45	0.275923
543190	SW	1175378	571434	28-May-07	51275	97-0401C	Raw	8	11.84	15.68	281	5.4661	7.91	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	63.66	0.699536
543905	SW	1177198	571711	30-May-07	51275	97-0401C	Raw	7	10.36	13.72	281	5.4661	6.09	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	55.7	0.538581
543905	SW	1177198	571711	30-May-07	51275	97-1001C	Raw	17	47.94	7.82	281	5.4661	28.19	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	212.97	2.493036
543905	SW	1177198	571711	30-May-07	51275	G30010W /6	Filter Small	11	15.4	2.97	281	5.4661	4.66	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	169.74	0.412116
543905	SW	1177198	571711	30-May-07	51275	G30004W /6	Filter Small	2	3.06	0.94	281	5.4661	1.59	PP	MISSISSAUGA	54372	CORNWALL	ON	K6H5R8	UPSG	63778	45.23	4	281	30.86	0.140615
543868	SW	1176794	571709	30-May-07	50931	78ES12U4	Wipe Small	1113	5231.1	377.1957	353	5.4661	304.2	PP	MISSISSAUGA	53241	LAVAL	PQ	H7M5G4	UPSG	63778	339.47	28	353	15508.99	25.09088
538652	SW	1139969	569944	10-May-07	50733	252/263	Wipe Small	56	84	20.16	1224	5.4661	7.39	PP	MISSISSAUGA	62057	WINNIPEG	MB	R3E2T4	UPSG	63778	806.42	66	1224	658.56	0.604821
539499	SW	1145739	570270	15-May-07	50733	252/263	Wipe Small	56	84	20.16	1224	5.4661	7.38	PP	MISSISSAUGA	62057	WINNIPEG	MB	R3E2T4	UPSG	63778	902.74	74	1224	658.56	0.604958
542798	SW	1174618	571357	29-May-07	50733	030/711	Facial Filter	160	384	34.64	1224	5.4661	33.76	PP	MISSISSAUGA	62057	WINNIPEG	MB	R3E2T4	UPSG	63778	695.29	57	1224	2035.2	2.767651
537303	SW	1132478	569564	03-May-07	51275	G30010W /6	Filter Small	16	22.4	4.32	2041	5.4661	6.61	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	238.46	0.581525
537303	SW	1132478	569564	03-May-07	51275	G30004W /6	Filter Small	19	29.07	8.93	2041	5.4661	14.92	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	283.17	1.31261
537303	SW	1132478	569564	03-May-07	51275	97-1001C	Raw	20	56.4	9.2	2041	5.4661	32.06	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	241.99	2.820528
537303	SW	1132478	569564	03-May-07	51275	97-0401C	Raw	7	10.36	13.72	2041	5.4661	5.89	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	53.8	0.518182
538447	SW	1139288	569827	04-May-07	51275	97-0401C	Raw	5	7.4	9.8	2041	5.4661	10.17	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	39.79	0.894721
538447	SW	1139288	569827	04-May-07	51275	G30004W /6	Filter Small	6	9.18	2.82	2041	5.4661	9.66	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	92.58	0.849853
538447	SW	1139288	569827	04-May-07	51275	G30010W /6	Filter Small	9	12.6	2.43	2041	5.4661	6.42	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	138.88	0.564809
538447	SW	1139288	569827	04-May-07	51275	97-1001C	Raw	9	25.38	4.14	2041	5.4661	34.87	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	112.75	3.067742
537613	SW	1134417	569680	07-May-07	50116	78ES12U6	Wipe Small	5	23.5	1.6945	2041	5.4661	3.28	PP	MISSISSAUGA	51482	CALGARY	AB	T2C2V7	UPSG	63778	155.48	13	2041	97.8	0.190635
539200	SW	1144648	570074	08-May-07	51275	G30010W /6	Filter Small	20	28	5.4	2041	5.4661	16.07	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	308.62	1.413783
539200	SW	1144648	570074	08-May-07	51275	G30004W /6	Filter Small	13	19.89	6.11	2041	5.4661	19.31	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	200.6	1.698827

Order Number	Order Type	Shipment Number	Load Number	Date	Sold To Number	Item Number	Family	Quantity Shipped	Weight Shipped	Item Cube	Shipment Miles	Division	Allocated Frt Cost	Freight Handling Code	ORIGIN	Ship To Number	RCity	DST	RPostal	SCAC	Carrier	LoadCost	Fuel S Load	LoadDistance	Extended Price	Allocated Fuel Cost
539200	SW	1144648	570074	08-May-07	51275	97-0401C	Raw	1	1.48	1.96	2041	5.4661	1.12	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	7.96	0.098534
539200	SW	1144648	570074	08-May-07	51275	97-1001C	Raw	10	28.2	4.6	2041	5.4661	21.38	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	125.28	1.880938
540020	SW	1150797	570354	11-May-07	51275	G30010W	Filter	13	18.2	3.51	2041	5.4661	15.28	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	200.6	1.344282
540020	SW	1150797	570354	11-May-07	51275	G30004W	Filter	13	19.89	6.11	2041	5.4661	22.91	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	200.6	2.015543
540020	SW	1150797	570354	11-May-07	51275	97-1001C	Raw	9	25.38	4.14	2041	5.4661	21.66	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	112.75	1.905572
540020	SW	1150797	570354	11-May-07	51275	97-0401C	Raw	1	1.48	1.96	2041	5.4661	1.26	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	7.96	0.11085
539231	SW	1144718	570273	11-May-07	51068	025/692	Wipe	84	394.8	28.56	2041	5.4661	42.98	PP	MISSISSAUGA	53748	CALGARY	AB	T2C4C7	UPSG	63778	379.84	31	2041	971.01	3.50774
539231	SW	1144718	570273	11-May-07	51068	242/692	Wipe	54	81	19.44	2041	5.4661	8.81	PP	MISSISSAUGA	53748	CALGARY	AB	T2C4C7	UPSG	63778	379.84	31	2041	603.9	0.719013
540819	SW	1152780	570592	16-May-07	51275	97-1001C	Raw	11	31.02	5.06	2041	5.4661	28.46	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.19	6	2041	137.8	2.504179
540819	SW	1152780	570592	16-May-07	51275	G30004W	Filter	16	24.48	7.52	2041	5.4661	18.83	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.19	6	2041	246.89	1.656841
540819	SW	1152780	570592	16-May-07	51275	97-0401C	Raw	5	7.4	9.8	2041	5.4661	6.79	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.19	6	2041	39.79	0.597448
540819	SW	1152780	570592	16-May-07	51275	G30010W	Filter	11	15.4	2.97	2041	5.4661	7.02	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.19	6	2041	169.74	0.617686
541725	SW	1166915	570885	18-May-07	51275	G30010W	Filter	9	12.6	2.43	2041	5.4661	7.22	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.21	6	2041	138.88	0.635097
541725	SW	1166915	570885	18-May-07	51275	G30004W	Filter	6	9.18	2.82	2041	5.4661	10.76	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.21	6	2041	92.58	0.946489
541725	SW	1166915	570885	18-May-07	51275	97-1001C	Raw	10	28.2	4.6	2041	5.4661	34.17	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.21	6	2041	125.28	3.005718
540373	SW	1151704	570723	18-May-07	51068	025/692	Wipe	14	65.8	4.76	2041	5.4661	8.05	PP	MISSISSAUGA	53748	CALGARY	AB	T2C4C7	UPSG	63778	216.45	18	2041	161.84	0.669439
540373	SW	1151704	570723	18-May-07	51068	242/692	Wipe	18	27	6.48	2041	5.4661	3.3	PP	MISSISSAUGA	53748	CALGARY	AB	T2C4C7	UPSG	63778	216.45	18	2041	201.3	0.274428
541725	SW	1166915	570885	18-May-07	51275	97-0401C	Raw	3	4.44	5.88	2041	5.4661	5.37	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.21	6	2041	23.87	0.472365
542337	SW	1168518	571271	23-May-07	51275	G30010W	Filter	16	22.4	4.32	2041	5.4661	7.39	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	246.89	0.650147
542337	SW	1168518	571271	23-May-07	51275	G30004W	Filter	12	18.36	5.64	2041	5.4661	11.18	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	185.17	0.983578
542337	SW	1168518	571271	23-May-07	51275	97-1001C	Raw	9	25.38	4.14	2041	5.4661	26.7	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	112.75	2.348974
542337	SW	1168518	571271	23-May-07	51275	97-0401C	Raw	9	13.32	17.64	2041	5.4661	14.01	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	71.62	1.232551
543195	SW	1175383	571437	25-May-07	51275	G30010W	Filter	9	12.6	2.43	2041	5.4661	8.12	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	138.88	0.71437
543195	SW	1175383	571437	25-May-07	51275	G30004W	Filter	9	13.77	4.23	2041	5.4661	16.32	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	138.88	1.435777
543195	SW	1175383	571437	25-May-07	51275	97-1001C	Raw	18	50.76	8.28	2041	5.4661	32.58	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.2	6	2041	225.5	2.866276
542653	SW	1174096	571432	25-May-07	51068	025/692	Wipe	28	131.6	9.52	2041	5.4661	13.68	PP	MISSISSAUGA	53748	CALGARY	AB	T2C4C7	UPSG	63778	252.86	21	2041	323.67	1.136123
542653	SW	1174096	571432	25-May-07	51068	242/692	Wipe	18	27	6.48	2041	5.4661	2.8	PP	MISSISSAUGA	53748	CALGARY	AB	T2C4C7	UPSG	63778	252.86	21	2041	201.3	0.23254
543902	SW	1177195	571701	30-May-07	51275	97-0401C	Raw	5	7.4	9.8	2041	5.4661	5.95	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.19	6	2041	39.79	0.523537
543902	SW	1177195	571701	30-May-07	51275	97-1001C	Raw	15	42.3	6.9	2041	5.4661	34.01	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.19	6	2041	187.91	2.992521
543902	SW	1177195	571701	30-May-07	51275	G30004W	Filter	10	15.3	4.7	2041	5.4661	11.8	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.19	6	2041	154.31	1.038275
543902	SW	1177195	571701	30-May-07	51275	G30010W	Filter	10	14	2.7	2041	5.4661	7.02	PP	MISSISSAUGA	54371	CALGARY	AB	T1Y7J4	UPSG	63778	68.19	6	2041	154.31	0.617686
536229	SW	1118634	569300	03-May-07	50733	030/711	Facial	64	153.6	13.856	2101	5.4661	18.67	PP	MISSISSAUGA	54456	ON	AB	TSJ2J5	UPSG	63778	1384.83	113	2101	814.08	1.523443
536229	SW	1118634	569300	03-May-07	50733	252/263	Wipe	56	84	20.16	2101	5.4661	10.2	PP	MISSISSAUGA	54456	ON	AB	TSJ2J5	UPSG	63778	1384.83	113	2101	658.56	0.832304

Order Number	Order Type	Shipment Number	Load Number	Date	Sold To Number	Item Number	Family	Quantity Shipped	Weight Shipped	Item Cube	Shipment Miles	Division	Allocated Frt Cost	Freight Handling Code	ORIGIN	Ship To Number	RCity	DST	RPostal	SCAC	Carrier	LoadCost	Fuel \$ Load	LoadDistance	Extended Price	Allocated Fuel Cost
538672	SW	1139993	569945	07-May-07	50800	78ES12U6 67	Wipe Small	8	37.6	2.7112	2101	5.4661	4.59	PP	MISSISSA UGA	53062	EDMONT ON	AB	T5S1P6	UPSG	63778	181.67	15	2101	166.89	0.378984
540342	SW	1151627	570463	15-May-07	50800	92- 030/667	Facial	24	79.2	9.6912	2101	5.4661	9.7	PP	MISSISSA UGA	53062	EDMONT ON	AB	T5S1P6	UPSG	63778	296.92	24	2101	498.09	0.78405
540342	SW	1151627	570463	15-May-07	50800	78ES12U6 67	Wipe Small	16	75.2	5.4224	2101	5.4661	9.21	PP	MISSISSA UGA	53062	EDMONT ON	AB	T5S1P6	UPSG	63778	296.92	24	2101	333.78	0.744443
541280	SW	1165093	570809	18-May-07	50733	93- 030/711	Facial	64	153.6	13.856	2101	5.4661	18.66	PP	MISSISSA UGA	54456	EDMONT ON	AB	T5J2J5	UPSG	63778	2367.46	194	2101	814.08	1.529082
541280	SW	1165093	570809	18-May-07	50733	24- 252/263	Wipe Small	112	168	40.32	2101	5.4661	20.41	PP	MISSISSA UGA	54456	EDMONT ON	AB	T5J2J5	UPSG	63778	2367.46	194	2101	1317.12	1.672484
542083	SW	1168035	571273	23-May-07	50800	78ES12U6 67	Wipe Small	5	23.5	1.6945	2101	5.4661	2.88	PP	MISSISSA UGA	53062	EDMONT ON	AB	T5S1P6	UPSG	63778	157.66	13	2101	104.31	0.237473
543878	SW	1176801	571704	31-May-07	50733	93- 030/711	Facial	64	153.6	13.856	2101	5.4661	17.18	PP	MISSISSA UGA	54456	EDMONT ON	AB	T5J2J5	UPSG	63778	2529.84	207	2101	814.08	1.405725
536994	SW	1131978	569566	03-May-07	51219	78ES12U6 87	Wipe Small	16	75.2	5.4224	2575	5.4661	9.28	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	756.06	62	2575	312.96	0.760998	
536994	SW	1131978	569566	03-May-07	51219	21- 016/478	Wipe Small	56	145.6	39.2	2575	5.4661	17.97	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	756.06	62	2575	907.32	1.473613	
536994	SW	1131978	569566	03-May-07	51219	14- 010/478	Wipe Small	55	164.89	34.2265	2575	5.4661	20.35	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	756.06	62	2575	1013.94	1.668783	
539266	SW	1144854	570181	09-May-07	51219	14- 005/478	Wipe Small	65	260	38.35	2575	5.4661	29.71	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	723.52	59	2575	1389.18	2.422725	
539266	SW	1144854	570181	09-May-07	51219	78ES12U6 87	Wipe Small	16	75.2	5.4224	2575	5.4661	10.4	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	723.52	59	2575	324.03	0.848076	
539266	SW	1144854	570181	09-May-07	51219	14- 010/478	Wipe Small	110	329.78	68.453	2575	5.4661	45.61	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	723.52	59	2575	2099.56	3.719303	
539266	SW	1144854	570181	09-May-07	51219	21- 016/478	Wipe Small	140	364	98	2575	5.4661	50.34	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	723.52	59	2575	2348.5	4.105014	
541797	SW	1167128	571016	22-May-07	51219	21- 016/478	Wipe Small	28	72.8	19.6	2575	5.4661	7.63	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	744.79	61	2575	469.7	0.624914	
535173	SW	1167006	570946	22-May-07	51219	24- 252/478	Wipe Small	240	360	86.4	2575	5.4661	73.27	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	81.77	7	2575	2716.97	6.272349	
541797	SW	1167128	571016	22-May-07	51219	78ES12U6 87	Wipe Small	16	75.2	5.4224	2575	5.4661	7.88	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	744.79	61	2575	324.03	0.64539	
543643	SW	1176131	571706	30-May-07	51219	78ES12U6 87	Wipe Small	16	75.2	5.4224	2575	5.4661	9.9	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	1042.1	85	2575	324.03	0.807504	
543643	SW	1176131	571706	30-May-07	51219	21- 016/478	Wipe Small	28	72.8	19.6	2575	5.4661	9.59	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	1042.1	85	2575	469.7	0.782219	
543643	SW	1176131	571706	30-May-07	51219	14- 010/478	Wipe Small	55	164.89	34.2265	2575	5.4661	21.72	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	1042.1	85	2575	1049.78	1.771615	
543643	SW	1176131	571706	30-May-07	51219	14- 005/478	Wipe Small	65	260	38.35	2575	5.4661	28.31	PP	MISSISSA UGA	54111	LANGLEY BC	V4W3Z2	UPSG	63778	1042.1	85	2575	1389.18	2.309135	
542660	SW	1174113	571356	24-May-07	50116	78ES12U6 87	Wipe Small	5	23.5	1.6945	2576	5.4661	2.51	PP	MISSISSA UGA	51481	SURREY BC	V4N4H1	UPSG	63778	149.49	12	2576	101.26	0.201485	
537562	SW	1133054	569682	04-May-07	50733	24- 252/263	Wipe Small	56	84	20.16	2597	5.4661	11.66	PP	MISSISSA UGA	54457	VANCOUV ER	BC	V5X2S8	UPSG	63778	1790.65	147	2597	658.56	0.957205
537562	SW	1133054	569682	04-May-07	50733	93- 030/711	Facial	64	153.6	13.856	2597	5.4661	21.32	PP	MISSISSA UGA	54457	VANCOUV ER	BC	V5X2S8	UPSG	63778	1790.65	147	2597	814.08	1.750225
538651	SW	1139968	569949	07-May-07	50733	93- 030/711	Facial	32	76.8	6.928	2597	5.4661	11.24	PP	MISSISSA UGA	54457	VANCOUV ER	BC	V5X2S8	UPSG	63778	1477.79	121	2597	407.04	0.92032
539498	SW	1145738	570278	10-May-07	50733	24- 252/263	Wipe Small	56	84	20.16	2597	5.4661	12.31	PP	MISSISSA UGA	54457	VANCOUV ER	BC	V5X2S8	UPSG	63778	1275.16	104	2597	658.56	1.003984
539498	SW	1145738	570278	10-May-07	50733	93- 030/711	Facial	32	76.8	6.928	2597	5.4661	11.26	PP	MISSISSA UGA	54457	VANCOUV ER	BC	V5X2S8	UPSG	63778	1275.16	104	2597	407.04	0.918348
541281	SW	1165094	570812	17-May-07	50733	24- 252/263	Wipe Small	56	84	20.16	2597	5.4661	11.67	PP	MISSISSA UGA	54457	VANCOUV ER	BC	V5X2S8	UPSG	63778	2434.62	199	2597	658.56	0.953878
542797	SW	1174617	571355	24-May-07	50733	24- 252/263	Wipe Small	56	84	20.16	2597	5.4661	11.66	PP	MISSISSA UGA	54457	VANCOUV ER	BC	V5X2S8	UPSG	63778	2424.24	198	2597	658.56	0.952331
542797	SW	1174617	571355	24-May-07	50733	93- 030/711	Facial	32	76.8	6.928	2597	5.4661	10.67	PP	MISSISSA UGA	54457	VANCOUV ER	BC	V5X2S8	UPSG	63778	2424.24	198	2597	407.04	0.871473
543879	SW	1176802	571707	30-May-07	50733	93- 030/711	Facial	32	76.8	6.928	2597	5.4661	11.26	PP	MISSISSA UGA	54457	VANCOUV ER	BC	V5X2S8	UPSG	63778	1509.18	124	2597	407.04	0.925165