

**USPS-RM2021-1-1**

**Public Material Supporting Proposal Seven**

**PREFACE**

USPS-RM2021-1-1 provides the public supporting materials for the analysis provided by Professor Michael D. Bradley on behalf of the United States Postal Service. It includes the analysis data set used to estimate the econometric models, all programs for, and results from, the econometric analyses, and the public version of the impact analysis.

**PURPOSE AND CONTENT**

The purposes of USPS-RM2021-1-1 are four-fold. First, it presents the TCSS data set used to estimate the new variability equations. Second, it provides descriptive statistics from that data set. Third, it provides the SAS programs used in the various econometric exercises described in Professor Bradley's report, along with an explanation of what each program does, and the associated SAS logs and listings. Note that the SAS programs are internally self-documented. Fourth, it provides the public version of the impact of the new study on attributable product costs.

**CORRESPONDING NON-PUBLIC FOLDER**

Submitted concurrently with this folder is a non-public folder USPS-RM2021-1-NP1 containing related non-public material. The non-public folder includes the Excel workbook used to calculate the impact of the new study on competitive product costs.

**ORGANIZATION**

This Preface and the accompanying zip file present the data used to estimate the highway transportation models, and present and describe the programs used in the estimation. The Preface indicates where all the econometric results are located. The zip file also presents the analysis of the impact of the proposed new variabilities on attributable purchased highway transportation costs. The Preface has six sections. The first discusses the TCSS data set used in the econometric analysis. That is followed by presentation of the SAS program used to estimate descriptive statistics, presentation the SAS programs used to estimate the Christmas highway transportation models, presentation of the SAS programs used to estimate the DRO highway transportation models and the SAS program used to estimate the Intra P&DC highway transportation models. The final section presents the Excel workbooks used to calculate the public version of impact of the new variabilities on attributable transportation costs.

## I. Description of the Analysis Data Set

The data in the analysis data set were extracted from the Postal Services Transportation Contract Support System (TCSS). The data were drawn for the fourth quarter of FY 2019 and represent annual values.

The data set is entitled, TCSS\_FY19.sas7bdat. Each observation is a contract cost segment trip. There are 91,164 observations and 17 variables. Below is a listing of each variable in the dataset along with its definition.

<b>Variable Name</b>	<b>Definition</b>
account	Highway Account Number
annmiles	Annual Miles on the Contract Cost Segment
area	Postal Area
con_code	Numerical Identifier of the Contract Type
con_desc	Contract Type Description
con_type	Contract Account Type
costsegamt	Annual Cost on the Cost Segment
costsegmentcode	Cost Segment Identifier
emergency	Emergency Contract Identifier
opfreq	Trip Frequency Per Year
route	Contract Identifier
routetypedesc	Description of Contract Type
rttypecode	Numerical Identifier of Contract Type
state	US State
trip	Trip Identifier
tripmiles	Length of Trip in Miles
vcube	Vehicle Cube

## II. Descriptive Statistics

Descriptive statistics were presented in Tables 1, 2, 3, and 4 in Professor Bradley's report. The SAS program entitled Descriptive Statistics.sas produces those statistics. The SAS Logs and Listings (containing the results) are included in the Descriptive Statistics directory. The produced files are listed below:

Descriptive Statistics.log  
Descriptive Statistics.lst

Professor Bradley's report also includes 4 graphs. The Excel files that produce those graphs are also included in the Descriptive Statistics directory. They are Christmas Accounts by Quarter FY19.xlsx and DRO Cross Plots.xlsx.

### III. Christmas Transportation Equations

The SAS programs described in this section estimate the variability models for the Christmas Intra SCF, Christmas Inter SCF and Christmas NDC contract cost segments. The programs are internally self-documented, but they accomplish the following tasks: (1) read in the TCSS data, (2) aggregate to the cost segment level, (3) determine truck types, (4) define the account categories, (5) mean center the data, (6) estimate the variability equation(s), (7) identify potentially anomalous observations, (8) re-estimate the variability equation(s) with anomalous observations removed, and (9) when necessary, calculate the account-level variability.

#### 1. Estimate the Christmas Intra SCF Variabilities

There are two models estimated for Christmas Intra SCF contract cost segments, one for van transportation and one for tractor trailer transportation. The estimation is done by the SAS program entitled XMAS INTRA SCF Variability Equations.sas. The SAS Logs and Listings (containing the results) are included in the Christmas Transportation Models directory. The produced files are listed below:

XMAS INTRA SCF Variability Equations.log  
XMAS INTRA SCF Variability Equations.lst

#### 2. Estimate the Christmas Inter SCF Variability

There is one model estimated for Christmas Inter SCF contract cost segments and it covers all observations in the account. The estimation is done by the SAS program entitled XMAS INTER SCF Variability Equations.sas. The SAS Logs and Listings (containing the results) are included in the Christmas Transportation Models directory. The produced files are listed below:

XMAS INTER SCF Variability Equations.log  
XMAS INTER SCF Variability Equations.lst

#### 3. Estimate the Christmas NDC Variabilities

There are two ways the Christmas NDC variabilities are estimated. In the first approach, a single equation is estimated for both Christmas Intra NDC cost segments and Christmas Inter NDC contract cost segments, and a single variability is thus estimated. This estimation is done by the SAS program entitled XMAS NDC Variability Equations.sas. The SAS Logs and Listings (containing the results) are included in the Christmas Transportation Models directory. The produced files are listed below:

XMAS NDC Variability Equations.log  
XMAS NDC Variability Equations.lst

The second approach is an attempt to estimate separate equations for Christmas Intra NDC cost segments and Christmas Inter NDC contract cost segments. The two estimated variabilities are then combined. This estimation is done by the SAS program entitled XMAS INTRA AND INTER NDC Variability Equations.sas. The SAS Logs and Listings (containing the results) are included in the Christmas Transportation Models directory. The produced files are listed below:

XMAS INTRA AND INTER NDC Variability Equations.log  
XMAS INTRA AND INTER NDC Variability Equations.lst

#### **IV. DRO Transportation Equations**

The SAS programs described in this section estimate the variability models for the DRO contract cost segments. The programs are internally self-documented, but they accomplish the following tasks: (1) read in the TCSS data, (2) aggregate to the cost segment level, (3) determine truck types, (4) define the account categories, (5) mean center the data, (6) estimate the variability equation(s), (7) identify potentially anomalous observations, (8) re-estimate the variability equation(s) with anomalous observations removed, and (9) when necessary, calculate the account-level variability.

DRO transportation variabilities are estimated in two approaches. In the first approach, DRO van, DRO tractor trailer, and DRO combined equations are estimated. The estimation is done by the SAS program entitled DRO Variability Equations.sas. The SAS Logs and Listings (containing the results) are included in the DRO Transportation Models directory. The produced files are listed below:

DRO Variability Equations.log  
DRO Variability Equations.lst

In the second approach, a few very small DRO van contracts cost segments are identified as a separate subgroup and controlled for with a categorical variable. DRO van and DRO combined equations are then estimated. The estimation is done by the SAS program entitled DRO Variability Equations.DSMALL.sas. The SAS Logs and Listings (containing the results) are included in the DRO Transportation Models directory. The produced files are listed below:

DRO Variability Equations DSMALL.log  
DRO Variability Equations DSMALL.lst

#### **V. Intra P&DC Transportation Equations**

The SAS program described in this section estimates the variability models for the Intra P&DC contract cost segments. The program is internally self-documented, but it

accomplishes the following tasks: (1) read in the TCSS data, (2) aggregate to the cost segment level, (3) determine truck types, (4) define the account categories, (5) mean center the data, (6) estimate the variability equations, (7) identify potentially anomalous observations, (8) re-estimate the variability equations with anomalous observations removed, and (9) calculate the account-level variability.

There are three models estimated for Intra P&DC contract cost segments, one for intra City transportation, one for van transportation and one for tractor trailer transportation. The estimation is done by the SAS program entitled INTRA P&DC Variability Equations.sas. The SAS Logs and Listings (containing the results) are included in the Intra PDC Models directory. The produced files are listed below:

INTRA PDC Variability Equations.log  
INTRA PDC Variability Equations.lst

## **VI. Public Impact Analysis**

The public version of the analysis of impact of the new variabilities on attributable cost is performed in two Excel workbooks. Both workbooks are in the Public Impact Analysis directory.

The first workbook, CS14-Public-FY19.New Variabilites.xlsx, is a version of the CS14-Public-FY19 workbook filed with the FY 2019 Annual Compliance Report. Changes are made in two tabs, "Inputs – Variabilities," and "WS14.3". In both tabs, both the proposed new and established variabilities are listed, allowing the user to switch between the two. This allows the user to look at the separate impacts of the New Christmas Transportation variabilities, the new DRO transportation variability, and the new Intra P&DC transportation variability. The new Christmas and Intra P&DC variabilities are entered in the Inputs-Variabilities tab and the new DRO variability is entered in the WS14.3 tab. The new attributable transportation costs, by product, can be found in the "Outputs to the CRA" tab.

The second workbook, Impacts of New Variabilities.Public.xlsx, incorporates the new product level attributable transportation costs, and then uses RPW volumes to calculate the impact on unit transportation costs.

## **DIRECTORIES**

USPS-RM2021-1-1 contains five directories.

### 1. Directory – Analysis Data Set

This directory includes the analysis data set used to estimate the new highway transportation variabilities.

### 2. Directory –Descriptive Statistics

This directory includes the SAS program and Excel workbooks that produce the descriptive statistics and graphs in Professor Bradley's report.

### 3. Directory – Christmas Transportation Models

This directory includes the SAS programs for and results from estimating the Christmas Transportation Models.

### 4. Directory DRO Transportation Models

This directory includes the SAS programs for and results from estimating the DRO Transportation Models.

### 5. Directory – Intra P&DC Transportation Models

This directory includes the SAS programs for and results from estimating the Intra P&DC Transportation Models.

### 6. Directory – Public Impact Analysis

This directory includes the Excel workbooks used to perform the public impact analysis.