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BEFORE THE
POSTAL REGULATORY COMMISSION
WASHINGTON, D.C. 20268–0001

PERIODIC REPORTING (PROPOSAL THIRTEEN)	Docket No. RM2015-7

RESPONSES OF THE UNITED STATES POSTAL SERVICE TO QUESTIONS 1-10 OF CHAIRMAN'S INFORMATION REQUEST NO. 2
(February 11, 2015)

The United States Postal Service hereby provides its responses to Questions 1-10 of Chairman's Information Request No. 2, issued February 4, 2015. The questions are stated verbatim and followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorney:

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1. Please refer to Library Reference USPS–RM2015–7/1, "Report on the City Carrier Street Time Study" (Report) at 16–19, which develops the method to convert in-receptacle and parcel/accountable time pools from activity times as a percent of gross street time to activity times as a percent of directly attributable street time, and uses this information to develop the time pool proportions shown in Table 8.

a. Please confirm that the sum of the street time pools of parcel/accountable and in-receptacle delivery is 9.79 percent, as shown in Table 8.

b. If not confirmed, please explain.

RESPONSE:

a. Confirmed

b. Not Applicable

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2. Please refer to the Report at 18, which states "Accuracy requires using the independently measured in-receptacle package delivery time proportion to reduce the route evaluation delivery proportion." This calculation is done in Table 8.

a. Please explain how the regular delivery time pool proportion, which is 83.38 percent of gross street time, was modified so that the regular delivery time pool represents 78.23 percent of direct street time.

b. Please provide all workpapers, with links, which show how the regular delivery time pool as a share of gross street time was modified to become regular delivery time as a share of direct street time.

RESPONSE:

a. First, please note that the additional package and accountable delivery time identified in the field study is recorded as regular delivery time in the route evaluation process. Thus, any increase in the package and accountable time proportions should lead solely to a reduction in the regular delivery time proportion and should not affect the time proportions for any other activities. This means the sum of the regular delivery and package and accountable delivery proportions should remain the same after the adjustment is made.

To ensure this outcome, the regular delivery time proportion of total street time is adjusted downward by the difference between the field study package and accountable delivery time proportion and the route evaluation package and accountable delivery time proportion. (This just equals the increase in the package and accountable delivery time proportion created by using the field study results). Then, both the new regular delivery street time proportion and the new package and accountable delivery street time proportion are converted to

their respective proportions of directly attributable street time as explained on pages 15-18 of the Report.

b. The calculations that make the adjustment have previously been provided in RM2015-7/1, in the Excel workbook entitled, "I_Forms_Proposal_13" on the tab entitled, "I-CS 6&7 Factors New."

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3. Please refer to the Postal Service Response to CHIR No.1, question 9b, which identifies the SAS log file which created scanrouteday_masked_zips.[1] Please provide the SAS program(s) that correspond to this log and the raw scan data used as inputs to this program. Please also explain the meaning of each variable read from the raw dataset.

RESPONSE:

The SAS program that corresponds to the log file was previously filed in RM2015-7/NP1. The SAS program is called scanrouteday.sas. The meanings of the variables read in from the raw scan dataset, which is entitled, carrier_scans_pa_study.sas7bdat, have already been provided in the response to CHIR1, question 9b.

[1] Response of the United States Postal Service to Questions 1-16 and 19-28 of Chairman's Information Request No. 1, January 12, 2015 (Postal Service Response to CHIR No. 1, question 9b).

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4. Please compare the time pool proportions in Table 9 of the Report at 19 and Docket No. ACR2013, Library Reference USPS–FY13–32 Revised 2-6-14, CS06&7.Revised, Worksheet 7.0.4.1, for the Regular Delivery, Travel To/From, and Network Travel pools.

a. For each of these pools, please identify the change in proportion that results from the use of Form 3999 data.

b. Please discuss the cause(s) of the change in proportion for each of these pools. Identify the connection between each cause and the specific pool(s) affected.

c. Please describe and discuss the impact, both individually and collectively, of the changes in these cost pool proportions.

RESPONSE:

a.

	ACR2013	Table 9 of the Report	Change in Proportion
Regular Delivery	72.26%	78.23%	5.97%
Travel To and From	9.10%	5.03%	-4.07%
Network Travel	11.38%	2.93%	-8.45%

b. These differences were first addressed in the Postal Service's Scoping Study Report which analyzed the potential use of operational databases for city carrier street time costing. That report explained that the differences arise for two reasons, (1) differences in the activity definitions and (2) restructuring of routes

to reduce travel time.[2] For example, with respect to Network Travel Time, the report states:[3]

> A first difference occurs in the definitions of Network Travel Time from the CCSTS data and Travel Within Time from the Form 3999 data. The definition of Network Travel captures travel that takes place outside of delivery sections, including all time spent traveling between route sections, or to and from collection boxes. It includes both driving time and walking time. Travel Within in the Form 3999 data, in contrast, captures the amount of time spent moving the vehicle within the delivery sections.
>
> These definitional differences are illustrated in the following table. Note that the Form 3999 data show virtually no Travel Within for foot routes whereas the CCSTS data show a large proportion of time for Network Travel Time. This is because Travel Within, by definition, excludes any walking time, which exists extensively on foot routes. More generally, the table shows that the Form 3999 Travel Within variable is capturing a different part of street activity than Network Travel Time.
>
> This means that Network Travel Time is incorporated into one of the other Form 3999 activities and the data suggest that it is incorporated into Sector Segment Time. This can be seen by comparing the two measures of delivery time from the two data sets, Sector Segment Time and Regular Delivery Time. As the following table shows, the Sector Segment Time is well above Regular Delivery Time because it includes activities like travelling in between route sections.

The change in activity definitions and restructuring of routes to reduce travel time have the effect of reducing the time proportions for travel to and from time and network travel time and the effect of increasing the time proportion for regular delivery time.

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[2] See, Scoping Study Report of the United States Postal Service, Docket No. RM2011-3, May 15, 2012 at 39.

[3] Id.

c. The variability for regular delivery time is positive whereas the variability for network travel time is zero. Thus, any increase in the proportion of time in the regular delivery cost pool as the result of reducing the proportion of time in the network travel time cost pool would have the tendency to increase attributable costs. Of course, the change in definition also necessitated re-estimating the regular delivery time variability, and a reduction in the variability could offset this impact. Travel to and from time is considered street support and takes the overall variability of the directly attributable street time. A reduction in the time associated with this cost pool thus has no impact on the overall variability. The collective impact of these changes can be assessed by comparing the impact of the new study on overall attributable costs, as is done on page 119 of the Report on City Carrier Street Time, filed in this docket.

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5. The following questions seek detailed information on the motions which comprise in-receptacle delivery.

a. Please describe each motion a carrier makes to deliver in-receptacle parcels during regular operations. In your answer please address all motions, both prescribed and those which normally occur in practice.

b. In your response, please include a discussion of how in-receptacle parcel delivery motions interact with other delivery motions which answers the following questions:

i. What instructions are carriers provided with respect to the delivery of in-receptacle mail when there is also other mail to deliver to the same receptacle? For example, are carriers instructed to deliver all mail other than in-receptacle parcels in a single bundle into the receptacle, and then separately deliver in-receptacle parcels?

ii. What motions does a carrier make after cased mail, DPS mail, FSS mail and Sequenced mail is inserted into the receptacle?

iii. Will a carrier sometimes combine an in-receptacle parcel with other mail, perhaps delivering cased mail and in-receptacle mail in a single bundle, or will a carrier always deliver an in-receptacle parcel only after delivering all other mail?

iv. If the answer to b.iii is that a carrier sometimes combines an in-receptacle parcel with other mail, please estimate the percentage of times an in-receptacle parcel is delivered simultaneously with other mail inserted into the customer's receptacle.

RESPONSE:

a. The motions that a carrier makes depends upon whether the carrier is walking or mounted in a vehicle.

<u>Walking</u>

Note that carrier has the in-receptacle package(s) in the satchel. The carrier first forms the delivery bundle of DPS, cased letters/flats, etc., without the package. The carrier then adds the package to the delivery bundle in his or her hand and makes any required product tracking scans. The carrier then completes the delivery by putting the entire bundle in the receptacle.

Driving

Ideally, parcels would be containerized up front with the other mail so that the carrier could make one motion to the box to deliver all items simultaneously. In this instance the motorized carrier's motions are the same as for a walking carrier. But often, due to space constraints, the carrier has the in-receptacle package(s) in a separate container in the vehicle. In such instances, the carrier first delivers the DPS, cased letters/flats and any other mail into the receptacle and then extracts any outgoing mail and lowers the flag, if necessary, in one motion. The carrier then retrieves the package(s) from the container and makes any required product tracking scans. The carrier then places the package(s) in the receptacle.

Note that measurement of in-receptacle delivery time in the current study was designed to exactly reflect these motions. For motorized carriers with space constraints, in-receptacle delivery time starts after the carrier delivers the DPS, cased/letters and flats and any other mail. The beginning scan is taken immediately before the carrier retrieves the package from the container, and the ending scan is taken when the carrier completes the delivery. On motorized routes without space constraints, in-receptacle delivery time starts after the carrier forms the bundle of DPS and other mail. The beginning scan is made just prior to the carrier retrieving the package from the container. The ending scan is made just after the package is added to the DPS and other mail bundle and product tracking barcodes are scanned. In-receptacle package time ends before

the carrier places the bundle into the receptacle. In this way, the in-receptacle package time captures just the additional time caused by handling the package and does not include any common time for putting mail into the receptacle.

For walking routes, in-receptacle delivery time starts after the carrier forms the bundle of DPS and other mail. The beginning scan is made just prior to the carrier retrieving the package from the satchel. The ending scan is made just after the package is added to the DPS and other mail bundle, and product tracking barcodes are scanned. That is, in-receptacle package time ends before the carrier places the bundle into the receptacle. In this way, the in-receptacle package time captures just the additional time caused by handling the package and does not include any common time for putting mail into the receptacle.

b.i. On motorized routes with space constraints, the carrier delivers the DPS, cased mail and other mail before delivering the in-receptacle packages. On motorized routes without space constraints and on walking routes, the carrier first forms the bundle of DPS, cased and other mail, and then adds the in-receptacle package to that bundle for delivery. The entire bundle is then placed in the receptacle, but in-receptacle package delivery time ends before this last motion is made.

b.ii Please see the answer to a., above.

b.iii. On motorized routes with space constraints, the carrier will deliver the DPS and other mail first. On motorized routes without space constraints and on walking routes, the carrier first forms the bundle of DPS, cased and other mail, and then adds the in-receptacle package to that bundle for delivery.

b.iv. This percentage is unknown. The important point is that regardless of the mode of delivery, in no instance is in-receptacle package delivery time devoted to the delivery of any mail other than in-receptacle packages.

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6. Please refer to pages 98 and 99 of the Report. The discussion on these pages seems to provide different accounts of how mail delivered at neighborhood delivery and collection box units (NDCBUs) was scanned. Please clarify the process of scanning for NDCBU deliveries.

RESPONSE:

There is just one account describing scanning of parcel and accountable delivery to NDCBUs presented on pages 98 and 99. In fact, the discussion relates to the process for scanning barcodes for parcel and accountable delivery in general, and NDCBUs are just used as an example. In all instances, including NDCBU deliveries, scanning proceeds along the following three-step process:[4]

Step 1: ***Scan*** *the delivery activity barcode to indicate the start of the package or accountable delivery.*

Step 2: ***Make the delivery*** *including any deviations, product scans or vehicle moves associated with the delivery.*

Step 3: ***Scan*** *the delivery mode barcode to indicate that the package delivery is done. The delivery mode is the routine delivery process for letters at the address receiving the package or accountable.*

[4] See, Package Accountable Study Exhibit 1, City Carrier Package and Accountable Study Guide, at 10.

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7. Please refer to page 99 of the Report, which states that in order to remove in-receptacle scan time "…participating ZIP Codes were asked to keep track of the additional daily street time that was required to complete the study scans." Please also refer to the Webcast of the January 14, 2015 Technical Conference, at 1:01:20 (which begins "so to take that out…"), where it was explained that individuals in ZIP Codes were asked to estimate the time it took their carriers to do these scans during a day, which was combined with data on the number of scans performed that day to calculate an average of 12 seconds to perform each scan.

a. Please provide a detailed description of the method used to estimate in-receptacle barcode scan time, and to remove this scan time to isolate in-receptacle delivery time.
b. How many ZIP Code days were involved in this data collection?
c. Were the individuals asked to determine in-receptacle scan time for one day for the entire ZIP Code?
d. How did the individuals measure the time it took to perform all in-receptacle scans for each day?
e. Were instructions describing how to measure the time to do all in-receptacle scans for an entire day distributed to participating individuals? If so, please provide a copy of these instructions.

RESPONSE:

a. The Local Coordinator at each selected site was asked to maintain a record of the additional street time incurred for conducting the study scans. The Area Coordinator was responsible for carefully reviewing the Local Coordinator estimates, aggregating the responses from all responding sites, and transmitting them to headquarters. Headquarters calculated the average time per study scan across all areas.

b. One-hundred and fifty-four ZIP Codes participated in the data collection. Each ZIP Code provided their additional street time for the twelve delivery days of the study. Thus the number of ZIP Code days is 154 multiplied by 12 which equals 1,848 ZIP Code days.

c. No. The discussion on page 99 used in-receptacle package delivery to illustrate why it was essential to subtract the time for the carrier to scan the relevant study barcode (end scans were identified by mode of delivery) from all package and accountable delivery times. Thus, regardless of the scan pair, twelve seconds were deducted to account for the average time it took carrier's to conduct the appropriate study scan.

d. The Local Coordinators, in conjunction with the carriers, estimated the additional street time incurred from conducting study scans. The primary position for most Local Coordinators was carrier supervisor, and those individuals are very mindful of street hour usage in their zones. The field estimate of an average of twelve seconds was buttressed by anecdotal evidence collected by headquarters personnel who measured the actual time for carriers to scan the study barcodes during site visits.

e. No. The time to conduct in-receptacle scans was not requested from the study sites. See response to part c.

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8. Please provide electronic copies of the raw barcode scan data and all SAS and/or Excel files (with links) used to calculate an average in-receptacle scan time of 12 seconds.

RESPONSE:

Attached is the Excel workbook named **Proposal13.CHIR.No.2.Q8.xlsx** used to calculate the twelve second average time per study scan. As discussed in the response to question 7a, the Area Coordinators were tasked with obtaining and carefully reviewing the local estimates and transmitting the information to headquarters.

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9. Please refer to CS06&7_Proposal_13.xlsx, Worksheet: 7.0.4.2.

a. Please confirm that barcode scan time was not removed from the in-receptacle parcel delivery time pool shown in this worksheet.

b. If confirmed, please explain why it was not removed.

c. If not confirmed, please explain the meaning of the note in cell G15, "Includes barcode scan time."

RESPONSE:

a. Not confirmed. The times to scan the barcodes associated with the letter route study were removed. The "barcode scan time" in the note refers to time for scanning the USPS Product Tracking barcodes. That time should be, and is, included in the in-receptacle parcel delivery time pool.

b. Not applicable

c. The note in cell G15 refers to time for scanning the USPS Product Tracking barcode, not the time for scanning barcodes used in the study.

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10. Please refer to the Postal Service Response to CHIR No. 1, question 17(a)(iii).[5] For each of the identified Variable Selection Methods (Sequential Regression, Best Subset Selection, and Shrinkage Models), please discuss the "trade-off" between improving model fit and inconsistent parameter estimates for the purposes of developing delivery variabilities by shape.

RESPONSE:

The "tradeoff" posed in this question arises because the variable selection methods typically lead to biased parameter estimates while reducing the variances of those estimated parameters. In considering the application of these methods, it is thus important to evaluate the relative importance of unbiasedness and variance for the model's parameters. For example, if the primary goal of the model is prediction, then variance is likely to be more important than unbiasedness, because the individual parameter estimates are not important. The model's overall ability to predict (particularly out-of-sample) is the essential criterion, and variance reduction can help improve that prediction. In contrast, if a structural model is being estimated, in which the individual coefficients (or elasticities based upon individual coefficients) are being estimated, then it becomes important that those coefficients are unbiased. This is the case for the models used to develop delivery variabilities by shape.

Variable selection through sequential regression involves running numerous regressions with the goal of identifying the model that best fits a particular set of

[5] Response of the United States Postal Service to Questions 17-18 of Chairman's Information Request No. 1, January 15, 2015 (Postal Service Response to CHIR No. 1, question 17(a)(iii).

data. An example of sequential regression is the stepwise procedure that sequentially selects the variables to be included by the model by applying a statistical measure of fit to a series of possible models. Models estimated with this procedure are known to over-fit the data, produce biased parameter estimates, and even estimate significant effects when there is no real association between the dependent variable and the independent variables. Stepwise procedures are used when there is no theory to guide model specification and variable selection, which is not the case in estimating the models used for developing delivery variabilities by shape.

Variable selection through best subset regressions considers all possible subsets of the variables and then, based upon a goodness of fit criterion, selects that subset that best fits the data. The best subset approach is used when there is no underlying theoretical specification, such as in ARIMA models, in which the primary application is to identify the appropriate lag lengths of the explanatory variables. When there are many right-hand-side variables, as is the case in the models used for developing delivery variabilities by shape, estimating all of the possible subsets of variables creates the need to estimate thousands, if not tens of thousands of regression.[6] Because of the impracticality of this process, best subset regression can devolve into a modified sequential procedure and incur the attendant problems discussed above.

[6] For example, if there were 15 right-hand-side variables to be considered, then 32,766 different regression models would have to be estimated. There are over 30 right-hand-side variables in the regular delivery time equation.

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Shrinkage estimators introduce an additional parameter in the model that reduces the size, and the variance, of the traditional regression parameters. Shrinkage estimation thus incorporates the problem of trying to identify the correct value for the additional parameter and, even if that problem can be solved, it still produces biased coefficient estimates. This bias may be acceptable if the variance of traditional coefficient estimates is so large that it precludes reliable inference. That is not the case for the regular delivery time model used for developing delivery variabilities by shape.