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

PERIODIC REPORTING
(PROPOSAL ONE)

Docket No. RM2021-3

PETITION OF THE UNITED STATES POSTAL SERVICE FOR THE
INITIATION OF A PROCEEDING TO CONSIDER PROPOSED CHANGES
IN ANALYTICAL PRINCIPLES (PROPOSAL ONE)
(March 11, 2021)

Pursuant to 39 C.F.R. § 3050.11, the Postal Service requests that the

Commission initiate a rulemaking proceeding to consider a proposal to change

analytical principles relating to the Postal Service's periodic reports. The proposal,

relating to changes in RPW reporting methodology in terms of sample design, sample

size, and subsequent estimation procedures, is labeled Proposal One and is discussed

in detail in the attached text.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

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PROPOSED CHANGE IN RPW METHODOLOGY FOR THE ODIS-RPW SAMPLING PROGRAM AND SAMPLE SIZE REDUCTIONS

OBJECTIVE:

The Postal Service requests a change in methodology for estimating revenue, pieces, and weight for domestic products and services in the Revenue, Pieces and Weight (RPW) Report. With the introduction of numerous census system sources approved by the Postal Regulatory Commission (Commission) over the last ten years, the reliance on statistical estimates from the ODIS-RPW sampling portion of RPW is greatly diminished. As such, we propose a sample design and statistical estimation methodology change, in concert with an overall reduction in ODIS-RPW test size of 42 percent beginning Quarter 4 of FY 2021, which starts July 1, 2021. If this request were approved, it would enable significant reductions in manual data collection costs in this program, eventually saving the Postal Service millions of dollars per year. The statistical reliability of the RPW report would be minimally impacted because of the proposed statistical design changes, and because of extensive current use of census sources previously approved by the Commission.

OVERVIEW OF THE CURRENT RPW REPORTING SYSTEM:

Regulatory reporting of revenue, pieces, and weight is presented in the RPW report filed quarterly with the Commission, in accordance with Commission Rule 3050.25. The RPW system used to develop this report was discussed in detail in witness Pafford's testimony (USPS-T-3) in Docket No. R2006-1. Revenue, pieces, and

weight data for Postal Service products are obtained through various source systems, one of which is the ODIS-RPW probability sampling system last fully documented in Docket No. R2006-1, Library References USPS-LR-L-16 and USPS-LR-L-17. Since R2006-1, ODIS-RPW has included a digital sampling component discussed previously in Docket No. RM2015-11 for the collection of digital images (approved on September 30, 2015 in Order No. 2739) and implementation of a ratio estimation methodology for digital sampling in Docket No. RM2016-1 (approved on December 18, 2015 in Order No. 2901).

ODIS-RPW Probability Sampling System

The ODIS-RPW system is a probability-based destinating mail sampling system used to support the Postal Service's many and varied business needs for revenue and pieces information. ODIS-RPW primarily supplies official RPW estimates of revenue, piece, and weight for single-piece stamped and non-PC Postage metered mail and services.

The ODIS-RPW sampling and estimation is divided into two segments; non-digital and digital as described below.

ODIS-RPW Program – Non-digital

ODIS-RPW data collectors travel to randomly selected Mail Exit Points (MEPs) on randomly selected days and randomly sample mail as it arrives at the delivery units. Container and mailpiece skip-sampling procedures are applied to the mail containers.

Data collectors record mail characteristics from sampled mailpieces, including revenue, pieces, weight, mail class, subclass, extra services, and indicia type.

Current Sample Design – Non-digital

Currently, MEPs are grouped into strata based on average daily volumes for letters, flats and parcels as maintained in the MEP system for each MEP. There are one hundred eighty-nine sample areas, corresponding roughly to mail processing plant geographic areas. For each MEP in each sample area, information is maintained by the Managers of Financial Programs Compliance (MFPC) regarding the average daily volume of letters, flats and parcels. These averages are often termed reference volumes. The stratification process results in strata being formed in each sample area associated with letter, flat and parcel reference volume. Within strata, MEP-days are selected for data collector sampling. A discussion of the stratification and sampling methodology can be found in Library Reference USPS-LR-L-1, Docket No. R2006-1.

Current Statistical Expansion – Non-digital

Each month and quarter, statistical estimates for products and services are created by strata and then summed across strata for national estimates sent to the RPW system. The following describes the ODIS-RPW statistical formula, which starts with the definition of the strata.

Current Stratification – Non-digital

Indices for the current estimator are defined below;

$j = Sample\ area,\ \ (j = 1, \ldots, 189)$

$h = Strata\ based\ on\ Reference\ Volumes\ for\ SA\ j,\ \ (h = 1, \ldots, H_j)$

$k = \ MEP\ day\ for\ stratum\ (j, h),\ \ (k = 1, \ldots, n_{jh}, \ldots, N_{jh})$

$l = Mailpiece\ for\ MEP\ day\ k\ in\ stratum\ (j, h), (l = 1, \ldots, n_{jhk}, \ldots, N_{jhk})$

The number of strata H varies by sample area. The non-digital population is stratified geographically to one hundred eighty-nine sample areas. Each sample area is further clustered into ten to fifteen mail-characteristic strata based on reference volumes of letter, flats, and parcel shapes. The two-layer stratification results in a total of over 2,200 strata. MEP-days are randomly selected for each stratum.

Current Estimators – Non-digital

Define

$N_{jh} = \ the\ number\ of\ MEP\ days\ in\ strata\ (j, h)$

$n_{jh} = \ the\ number\ of\ MEP\ days\ sampled\ in\ strata\ (j, h)$

$N_{jhk} = the\ number\ of\ mailpieces\ in\ MEP\ day\ k\ in\ strata(j, h)$

$n_{jhk} = the\ number\ of\ mailpieces\ sampled\ in\ MEP\ day\ k\ in\ strata\ (j, h)$

$y_{jhkl} = \begin{cases} revenue, pieces\ or\ weight\ for\ mailpiece\ l\ for\ the\ product\ of\ interest, \\ \qquad\qquad\qquad 0, \qquad otherwise \end{cases}$

The volume on a test day N_{jhk} is estimated by

$$\widehat{N}_{jhk} = (Container\ Skip) \times (Mailpiece\ Skip) \times n_{jhk}$$

The current production estimator $\hat{t}$ for a given product is defined as

$$\hat{t} = \sum_{j=1}^{189} \sum_{h=1}^{H_j} \hat{t}_{jh}$$

where $\hat{t}_{jh}$ is,

$$\hat{t}_{jh} = \frac{N_{jh}}{n_{jh}} \sum_{k=1}^{n_{jh}} \frac{\widehat{N}_{jhk}}{n_{jhk}} \sum_{l=1}^{n_{jhk}} y_{jhkl}$$

$\hat{t}$ is a direct expansion estimator, whose estimates are constructed from the inverse of the probabilities of selection. Then, the variance of the direct expansion estimator is,

$$V(\hat{t}) = \sum_{j=1}^{189} \sum_{h=1}^{H_j} V(\hat{t}_{jh})$$

with

$$V(\hat{t}_{jh}) = N_{jh}^2 \left(1 - \frac{n_{jh}}{N_{jh}}\right) \frac{S_1^2}{n_{jh}} + \frac{N_{jh}}{n_{jh}} \sum_{k=1}^{N_{jh}} \widehat{N}_{jhk}^2 \left(1 - \frac{n_{jhk}}{\widehat{N}_{jhk}}\right) \frac{S_2^2}{n_{jhk}}$$

ODIS-RPW Program – Digital

The second component of the ODIS-RPW system is the digital sampling program. Letters and cards processed through Delivery Barcode Sorter (DBCS)

machines are sampled digitally. Currently, approximately 89 percent of all Delivery Point Sequence (DPS) letters and cards, and approximately 66 percent of all letters and cards are sampled under the digital framework. Images for randomly selected MEP days and randomly selected mailpieces are chosen according to a sampling plan as they are processed by DBCS machines. These images are sent to ODIS-RPW. Exact daily volumes of mailpieces processed are available for all digital MEPs. Data collectors observe digital images of selected mailpieces and record mail characteristics, including revenue, mail class, subclass, extra services, and indicia type.

Current Sample Design – Digital

MEPs are stratified to five strata by ratios of business delivery stops (BDS) to the total delivery stops (BDS stratification). Within strata, MEPs are further stratified geographically into one hundred eighty-nine sample areas. There are total of 1,134 strata.   For each stratum, MEP-days are selected from DBCS machines that provide images of the randomly selected mailpieces. A discussion of the stratification and sampling methodology can be found in Docket No. RM2016-1.

Current Statistical Expansion – Digital

Each period, statistical estimates for products are created by strata and then summed across sample areas to obtain five strata-level estimates. Ratios of total volumes to expanded sample MEP-day volumes are taken by strata and multiplied by strata-level estimates. Ratio-adjusted strata-level estimates are added to obtain

national estimates. The following describes the ODIS-RPW statistical formula, which starts with the definition of the strata.

Current Stratification – Digital

Indices for the current estimator are defined below;

$i = Business\ Delivery\ Stops,\ \ (i = 1, ..., 5)$

$j = Sample\ Area\ j,\ \ (j = 1, ..., 189)$

$k = MEP\ day\ for\ stratum\ (i, j),\ \ (k = 1, ..., n_{ij}, ..., N_{ij})$

$l = Mailpiece\ for\ MEP\ day\ k\ in\ stratum\ (i, j), (l = 1, ..., n_{ijk}, ..., N_{ijk})$

Over 13,000 digital MEPs are stratified to 945 strata defined by BDS and sample area.

Current Estimators – Digital

Define

$N_{ij}\ =\ the\ number\ of\ MEP\ days\ in\ strata\ (i, j)$

$n_{ij}\ =\ the\ number\ of\ MEP\ days\ sampled\ in\ strata\ (i, j)$

$x_{ijk}\ =\ the\ volume\ in\ MEP\ day\ k\ in\ strata(i, j)$

$n_{ijk}\ =\ the\ number\ of\ mailpieces\ sampled\ in\ MEP\ day\ k\ in\ strata\ (i, j)$

$y_{ijkl} = \begin{cases} revenue, pieces\ or\ weight\ for\ mailpiece\ l\ for\ the\ product\ of\ interest, \\ 0, \quad otherwise \end{cases}$

The current production estimator $\hat{t}_R$ for a given product is defined as

$$\hat{t}_R = \sum_{i=1}^{6} \hat{t}_{R,i} \stackrel{\text{def}}{=} \sum_{i=1}^{6} \frac{X_i}{\hat{X}_i} \hat{t}_i$$

where

$$\hat{t}_i = \sum_{j=1}^{189} \frac{N_{ij}}{n_{ij}} \sum_{k=1}^{n_{ij}} \frac{x_{ijk}}{n_{ijk}} \sum_{l=1}^{n_{ijk}} y_{ijkl}$$

$$\hat{X}_i = \sum_{j=1}^{189} \frac{N_{ij}}{n_{ij}} \sum_{k=1}^{n_{hi}} x_{ijk}$$

$$X_i = \sum_{j=1}^{189} \sum_{k=1}^{N_{ij}} x_{ijk}$$

$\hat{t}_R$ is a ratio estimator, whose estimates are constructed from the inverse of the probabilities of selection and then adjusted by ratios of total volumes to estimated volumes. The first-order Taylor approximation variance of the ratio estimator is,

$$V(\hat{t}_R) = \sum_{i=1}^{6} V(\hat{t}_{R,i})$$

with

$$V(\hat{t}_{R,i}) = \left(\frac{X_i}{\hat{X}_i}\right)^2 \left\{ \sum_{j=1}^{189} N_{ij}^2 \left(1 - \frac{n_{ij}}{N_{ij}}\right) \frac{S_1^2}{n_{ij}} + \sum_{j=1}^{189} \frac{N_{ij}}{n_{ij}} \sum_{k=1}^{N_{ij}} x_{ijk}^2 \left(1 - \frac{n_{ijk}}{\hat{N}_{ijk}}\right) \frac{S_2^2}{n_{ijk}} \right\}$$

PROPOSAL BACKGROUND:

The Use of Census Source Data in RPW Mitigates the Need for ODIS-RPW Statistical Sampling

The Postal Service has submitted numerous requests for the replacement of statistical estimates with census data. Recent dockets include: Docket No. RM2014-4 (Proposal One) for Self Service Kiosk and PostalOne!–related products of Merchandise Return Service and Business Reply Mail; Docket No. RM2015-15 for Click-N-Ship census data; Docket No. RM2015-11 and RM2016-1 for tying estimation methodology to letter mail end-of-run counts for digital ODIS-RPW sampling; Docket No. RM2017-5 for PC Postage extra services census data; Docket No. RM2017-7 for Retail Systems Software Business Partners census data; Docket No. RM2019-11 for Priority Mail Express International census data; and Docket No. RM2020-6 for non-contract domestic PC Postage census data. All filings have been approved by the Postal Regulatory Commission. *See* Order No. 2101 (June 25, 2014); Order No. 2732 (September 28, 2015); Order 2739 (September 30, 2015); Order No. 2901 (December 18, 2015); Order No. 4039 (August 15, 2017); Order No. 4066 (August 24, 2017); Order No. 5280 (October 22, 2019); and Order No. 5515 (May 19, 2020).

RPW Reporting Combining Census and Estimation Data

The current RPW methodology involves the collection of revenue, pieces, and weight from census systems, combined with statistical estimates generated from the ODIS-RPW statistical sampling system. ODIS-RPW supplies official estimates of

revenue, pieces, and weight for single-piece stamped and metered mail, as well as mail that does not go through a system with available or reliable transactional data. In a typical quarter, ODIS-RPW estimates for approximately 15 percent of the revenue and 11 percent of the volume in the RPW report.

Limitations with the Current Methodology

Implementing significant sample size reductions under the existing ODIS-RPW methodology would produce biased statistics.   Reductions of the magnitude proposed within the existing 2,200 non-digital strata would result in an extensive number of sampling strata with no test data in both monthly (preliminary) and quarterly (official) reports, leading to an underestimate. Even if that problem could be resolved, the current simple expansion estimator is inefficient; not drawing on the correlations available with other data that a ratio estimator such as the estimator that is proposed here would draw upon. Statistical variation in ODIS-RPW estimates can be managed at acceptable levels if the approach described below were to be approved by combining proposed sample reductions with the estimation methodology using ratio estimation techniques that exist currently (digital) or that are proposed in this filing (non-digital).

Prior Filings Requesting ODIS-RPW Sample Reductions

The Postal Service previously filed requests for ODIS-RPW sample size decreases in Docket Nos. RM2009-5 and RM2010-10. Order No. 396 (January 21, 2010) in Docket No. RM2009-5 rejected the request, and Order No. 650 (January 14,

2011) partially allowed the request for use of that reduction to study alternative sample designs. The Commission found that a reduced sample produced acceptable results for some applications. For example, the Commission agreed that "the effect of imprecision in ODIS-RPW-based billing determinants on class price cap calculations would be *de minimis*" (Order No. 650, page 7). However, the primary objection to the broader proposal was the Postal Service's many varied uses of disaggregated data in its conduct of business, such as for service performance measurement. The Commission noted:

> A more appropriate sequence of events would be to first develop the alternative sources of disaggregated data, verify that these alternatives provide reliable substitute inputs to the affected studies and reports, and then seek a reduction of the size of the ODIS-RPW sample. Once adequate alternative sources of data have been developed, the Commission would be receptive to proposals that make substantial cuts of the ODIS-RPW sample size.

Order No. 650, page 9.

Over the last ten years, systems of alternative disaggregated data have been developed and matured, and the Postal Service is using them for business decisions. The source of disaggregate data is Informed Visibility (IV), in which counts of pieces from manifests and operations scans of mailer-applied and Postal Service-applied barcodes are stored and used to identify mail category, origin ZIP Code, destination ZIP Code, and mail shape. Of concern to the Commission in those prior filings was service measurement. The previous reporting mechanism External First-Class (EXFC) relied upon ODIS-RPW. Now, however, Service Performance Measurement (SPM) has

replaced EXFC, and does not rely on ODIS-RPW volumes. *See* Docket No. PI2015-1.

In addition, origin and destination volumes by mail category and origin-destination pair

volumes by mail category are now available each month and are used in the Postal

Service's Field Workload budget process. These data are reliable and consistent with

target system data at a national aggregate level.

PROPOSAL:

The proposed RPW methodology redesigns the non-digital sampling plan and

introduces a ratio estimator that utilizes MEP reference volume or volume by mail shape

available in the MEP system. The changes proposed in this filing for the digital

sampling plan are minor. In addition to sampling plan change requests, reductions are

proposed in non-digital and digital ODIS-RPW test sample size, with approximately one-

third of the reductions coming from digital and two-thirds from non-digital. Most test

reductions for non-digital are proposed in the parcel and parcel/flat MEPs where almost

all data are now available in census systems. Reductions in digital ODIS-RPW testing

have limited impact due to the current highly efficient sample design and ratio estimator.

An overview of the proposed statistical design changes is provided next. See

also the more detailed statistical documentation provided in the Technical Appendix that

is electronically attached as a separate pdf document.

Proposed Sample Design – Non-digital

Sample areas are consolidated from one hundred eighty-nine to ten, which are defined by the leading digit of the MEP ZIP Code. A consolidation is necessary to reduce the chance of creating empty strata.[1] A mail characteristic stratification (strata based on reference volumes by shape) is defined uniformly at the national level. Under the proposed design, sample data are pooled across sample areas to ensure a large enough sample size for each of the twenty mail characteristic strata. Sampling resources will be allocated to sample areas proportional to their mail volumes to obtain a balanced sample.

Proposed Statistical Expansion – Non-digital

A ratio estimator is proposed that would use total reference volume (sum of letter, flat, and parcel reference volume) as the auxiliary variable. Within each mail characteristic stratification, sample data as well as total reference volume of sampled MEPs are expanded to the sample area level and are summed across the ten sample areas. Ratios of total reference volume to the expanded reference volume from the sample are taken by strata. Strata-level estimates are multiplied by their respective ratios and summed across strata to obtain national estimates.

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[1] Empty strata are defined as sampling strata with no usable tests.

Proposed Stratification – Non-digital

Indices for the current estimator are defined below;

$$h = Strata\ based\ on\ Reference\ Volumes, (h = 1, \dots, 20)$$

$$j = Consolidated\ Sample\ Area, (j = 1, \dots, 10)$$

$$k = MEP\ day\ for\ stratum\ (h,j), (k = 1, \dots, n_{hj}, \dots, N_{hj})$$

$$l = Mailpiece\ for\ MEP\ day\ k\ in\ stratum\ (h,j), (l = 1, \dots, n_{hj}, \dots, N_{hjk})$$

MEPs are stratified to twenty strata based on reference volumes. Each stratum is further partitioned into ten geographical regions. The cross-stratification results in defining a total of two hundred strata. MEP-days are randomly selected for each stratum.

Proposed Estimators – Non-digital

Define

$$N_{hj} = the\ number\ of\ MEP\ days\ in\ strata\ (h,j)$$

$$n_{hj} = the\ number\ of\ MEP\ days\ sampled\ in\ strata\ (h,j)$$

$$N_{hjk} = the\ number\ of\ mailpieces\ in\ MEP\ day\ k\ in\ strata(h,j)$$

$$n_{hjk} = the\ number\ of\ mailpieces\ sampled\ in\ MEP\ day\ k\ in\ strata\ (h,j)$$

$$z_{hjk} = the\ total\ reference\ volume\ of\ sampled\ MEP\ day\ (h,j,k)$$

$$y_{hjkl} = \begin{cases} revenue, pieces\ or\ weight\ for\ mailpiece\ l\ for\ the\ product\ of\ interest, \\ \qquad\qquad\qquad 0, \quad otherwise \end{cases}$$

The volume on a test day N_{hjk} is estimated by

$$\widehat{N}_{hjk} = (Container\ Skip) \times (Mailpiece\ Skip) \times n_{hjk}$$

The proposed ratio estimator $\hat{t}_R$ for a given product is defined as

$$\hat{t}_R = \sum_{h=1}^{20} \hat{t}_{R,h} \overset{\text{def}}{=} \sum_{h=1}^{20} \frac{Z_h}{\hat{Z}_h} \hat{t}_h$$

where

$$\hat{t}_h = \sum_{j=1}^{10} \frac{N_{hj}}{n_{hj}} \sum_{k=1}^{n_{hj}} \frac{\widehat{N}_{hjk}}{n_{hjk}} \sum_{l=1}^{n_{hjk}} y_{hjkl}$$

$$\hat{Z}_h = \sum_{j=1}^{10} \frac{N_{hj}}{n_{hj}} \sum_{k=1}^{n_{hi}} z_{hjk}$$

$$Z_h = \sum_{j=1}^{10} \sum_{k=1}^{N_{hj}} z_{hjk}$$

$\hat{t}_R$ is a ratio estimator, whose estimates are constructed from the inverse of the

probabilities of selection and then adjusted by ratios of total reference volume to

estimated total reference volume. The first-order Taylor approximation variance of the

ratio estimator is,

$$V(\hat{t}_R) = \sum_{h=1}^{20} V(\hat{t}_{R,h})$$

with

$$V(\hat{t}_{R,h}) = \left(\frac{Z_h}{\hat{Z}_h}\right)^2 \left\{\sum_{j=1}^{10} N_{hj}^2 \left(1 - \frac{n_{hj}}{N_{hj}}\right)\frac{S_1^2}{n_{hj}} + \sum_{j=1}^{10} \frac{N_{hj}}{n_{hj}} \sum_{k=1}^{N_{hj}} \hat{N}_{hjk}^2 \left(1 - \frac{n_{hjk}}{\hat{N}_{hjk}}\right)\frac{S_2^2}{n_{hjk}}\right\}$$

Proposed Sample Design – Digital

There are two minor changes to the current sample design: First, sample areas are consolidated from one hundred eighty-nine to ten as in non-digital. Second, an additional stratum is added to the existing five BDS strata for digital letter MEPs with average daily volume less than 5,000. The additional stratum is needed to prevent over-sampling small volume digital MEPs by random chance.

Proposed Statistical Expansion – Digital

No change from the current estimator.

Proposed Stratification – Digital

Same as the current stratification except for the number of strata:

$$i = Business\ Delivery\ Stops,\ \ (i = 1, \dots, 6)$$

$$j = Consolidated\ Sample\ Area\ j,\ \ (j = 1, \dots, 10)$$

Proposed Estimators – Digital

No change from the current estimator.

Proposed Sample Size Reduction

This proposal seeks to reduce overall ODIS-RPW sample sizes from approximately 31,000 tests to approximately 18,000 tests per quarter; a reduction of 13,000 tests (42 percent of the FY2020 base). This reduction is possible because of the proposed non-digital stratification, an improved non-digital estimator, and the fact that much of the Postal Service's mail product information included in RPW reporting already comes from census source systems.   The sample reductions would hopefully begin July 1, 2021, which is the beginning of Q4 FY2021.

Regarding the non-digital population, major sample reductions are proposed for strata that contain MEPs with predominately parcels and parcel/flats reference volume for which ODIS-RPW is responsible only for a small fraction of the RPW report total. Of the 13,000 overall test reduction, approximately 8,000 tests or two-thirds are non-digital and 5,000 tests or one-third are digital. Approximately 6,500 tests are proposed to be reduced in non-digital parcel and parcel/flat strata where almost all parcels in RPW are captured from census systems.

For the digital population, the proposed 5,000 test reduction is 50 percent of the current test size. However, the precision of the letter/card product categories is often extraordinarily high due to the known volume of the population being used through a ratio estimator (see Docket No. RM-2016-1). For example, based on simulations, a 50 percent reduction (5,000 tests per quarter) of the digital population is expected to

increase the coefficient of variation (CV) an insignificant amount for First-class single piece estimates (of the digital portion) from 0.9 percent to 1.3 percent on a quarterly basis. Examined annually instead of quarterly, those projected CVs would be cut in half.

RATIONALE:

The proposed change in methodology would provide a comprehensive redesign of the ODIS-RPW program, while at the same time would reduce sampling without compromising the integrity of the RPW program. Estimates from ODIS-RPW, when combined with census source information on revenue, pieces, and weight for products and services, provide reliable and consistent information with acceptable CVs. Census origin-destination volumes by 3-digit ZIP Code, mail category, and shape are available from IV, removing previous reliance on ODIS-RPW data for this purpose.

IMPACT:

As a measure of the impact of switching the design of the non-digital ODIS-RPW statistical sampling program and decreasing in sample sizes, simulation studies were conducted on the Q2 FY2020 ODIS-RPW test data. Estimates were generated under the new design and sample reductions under simulated replication studies to measure impact. Estimated CVs from these simulations were then combined with census source data used in RPW (which have no sampling variation) to measure the impact on the

RPW report itself. The RPW report lines impacted are shown in the table below, and in more detail in the electronically attached Excel Impact file. (A nonpublic version of the Impact file is provided under seal in USPS-RM2021-3-NP1, because the full analysis includes commercially-sensitive competitive product breakouts that are not included in the public version of RPW reports). Note that Q3 and Q4 FY2020 were not used in these replication studies as the COVID-19 quarantine affected the completion of some ODIS-RPW tests.

In this analysis, current estimated CVs are compared with the proposed estimated CVs that have been constructed through simulations of two thousand replicates under the new design and sample sizes using Q2 FY2020 ODIS-RPW data. The first column is the Q2 FY2020 RPW categories impacted by the ODIS-RPW sample. The next two columns are the Q2 FY2020 RPW report revenue and piece totals. The two columns after this are the percentage contribution of the ODIS-RPW sample estimates to the RPW report. The next series of columns are the estimated CVs under the existing design for Q2 FY2020, as well as the proposed CVs. Included are the quarter and annual estimates. Annual estimates assume that the CVs for the three untested quarters of the year are the same as for the tested second quarter. Since the ODIS-RPW sample is the same each quarter, this assumption leads to reasonably approximated CVs for the annual revenue and piece estimates that are used for the Annual Compliance Report (ACR).

REVENUE, PIECES, AND WEIGHT BY CLASSES OF MAIL AND SPECIAL SERVICES FOR QUARTER 2, FY2020 - IMPACT OF SAMPLE DESIGN CHANGE AND SAMPLE REDUCTIONS												
						RPW Report Estimated Coefficient of Variation 3/						
						Quarterly				Annual 5/		
			Sample Estimated Percentage of			Current		Proposed 4/		Current		Proposed
RPW Report Categories 1/	RPW Report Total 2/											
	Revenue	Pieces	Revenue	Pieces		Revenue	Pieces	Revenue	Pieces	Revenue	Pieces	Revenue	Pieces
First-Class Single-Piece Letters	2,013,662,280	3,733,386,833	92%	92%		1.6%	1.5%	1.7%	1.7%	0.8%	0.8%	0.9%	0.8%
First-Class Single-Piece Cards	43,861,980	120,743,384	80%	79%		2.0%	2.0%	2.0%	2.0%	1.0%	1.0%	1.0%	1.0%
First-Class Flats	406,740,382	313,619,735	54%	45%		1.1%	0.9%	1.5%	1.2%	0.5%	0.4%	0.8%	0.6%
Media and Library Mail	75,917,527	21,279,118	9%	11%		0.3%	0.4%	0.6%	0.6%	0.2%	0.2%	0.3%	0.3%
USPS Mail		66,177,060		92%			16.2%		16.7%		8.1%		8.4%
Certified Mail	170,321,900	47,830,712	59%	59%		2.3%	2.2%	2.9%	2.8%	1.2%	1.1%	1.4%	1.4%
Return Receipts	78,945,563	33,838,067	46%	38%		2.1%	1.7%	2.4%	2.0%	1.1%	0.8%	1.2%	1.0%
Total First Class Package Service	1,150,765,104	339,963,281	10%	11%		0.3%	0.4%	0.5%	0.6%	0.2%	0.2%	0.2%	0.3%
Total Priority Mail	2,466,138,193	271,208,596	9%	9%		0.3%	0.3%	0.5%	0.5%	0.2%	0.2%	0.2%	0.2%
Total RPW	17,876,000,158	34,012,758,432	15%	11%									
1/ RPW report categories not listed have either no sample estimate contribution, are minor, or are unaffected by the design change												
2/ Q2 FY2020 RPW Report												
3/ Coefficient of Variation (CV) - computed by dividing estimated standard error by the estimate. With large sample sizes and assuming a normal distribution one would expect the true number to be within plus/minus this percentage 67% of the time over repeated samples												
4/ CVs were estimated through simulation studies of 2,000 replicates under the new design using Q2 FY2020 ODIS-RPW data												
5/ Assumes QT2 FY2020 estimated CV applies for each quarter												

For the current estimates, all RPW Report CVs impacted by the sample, except for USPS mail, are less than 2.3 percent for the quarter and less than or equal to 1.2 percent annually. For the proposed estimates, all RPW Report CVs impacted by the sample, except for USPS mail, are less than or equal to 2.9 percent quarterly and less than or equal to 1.4 percent annually. There is no universal standard for acceptable levels of variation. Coefficients of variation of 5 percent or less are often considered the standard, although this can vary by application. The Postal Service does not view the potential minor increases in the level of variability for RPW reporting that this analysis suggests might be associated with adoption of Proposal One as sufficiently material to constitute a source for concern.

In that sense, we therefore see little or no practical impact from Proposal One on the accuracy or the reliability of estimates generated for the RPW report. With proposed sample reductions, the Postal Service can continue to make sound business decisions based on RPW Report data, while saving on data collection costs that are not necessary in the face of a tremendous amount of census data that currently exist for product and services revenue and volume reporting.