

UNITED STATES OF AMERICA
POSTAL REGULATORY COMMISSION
WASHINGTON, DC 20268-0001

Periodic Reporting
(Proposal One)

Docket No. RM2022-3

CHAIRMAN'S INFORMATION REQUEST NO. 1

(Issued January 12, 2022)

To clarify the Postal Service's petition to consider proposed changes in analytical principles, filed January 5, 2022,¹ the Postal Service is required to provide written responses to the following questions. Answers should be provided to the individual questions as soon as they are developed, but no later than January 19, 2022.

1. Please refer to the Bradley Study at 16, where it states that "the other 16 ZIP Code days appear to be one-offs and the associated ZIP Codes almost always report valid data."
 - a. Please explain how the view of data as "one-offs" constitutes a legitimate statistical reason or principle for performing data imputation. In the explanation, please provide the set of statistical principles that justify the data imputations performed in Proposal One.
 - b. Please confirm that, among the reasons cited for performing data imputation in Proposal One, obtaining a balanced panel data set while minimizing the loss of observations represents the main goal of the imputation. In the question, a balanced panel data set is understood as a

¹ Petition of the United States Postal Service for the Initiation of a Proceeding to Consider Proposed Changes in Analytical Principles (Proposal One), January 5, 2022 (Petition). The Petition was accompanied by a study supporting its proposal. See Michael D. Bradley, *On the Estimation of a Top-Down Model for City Carrier Street Time**, January 5, 2022 (Bradley Study).

- panel data set in which there are the same time periods, denoted $t = 1, 2, \dots, T$, for each cross sectional unit (here each ZIP Code). If not confirmed, please explain how the Postal Service would model the unbalanced panel if incomplete observations were discarded.
- c. Please explain whether the Postal Service performed any test of randomly missing data to justify the use of data imputation. If so, please discuss and provide the results of the test. If not, please provide the reason(s) for not performing the test.
 - d. When updating the model in the future, please confirm that the Postal Service will use the complex imputation-based procedure to handle the delivery data set and the collection volume data if Proposal One is approved. If not confirmed, please explain how the Postal Service will update the model in the future.
2. Please refer to the article by Jeffrey M. Wooldridge, “Correlated random effects models with unbalanced panels.”² Please explain whether the Postal Service has explored, for the sake of comparison with the imputation-based estimation, techniques such as those discussed in Wooldridge’s article, which provides expert guidance on panel data with missing conditioning variables. If so, please discuss the Postal Service’s findings. If not, please explain the reasons why the Postal Service has not explored those techniques.

² See Jeffrey M. Wooldridge, *Correlated random effects models with unbalanced panels*, 211 J. Econometrics 137, 137-50 (July 2019).

3. Please refer to Library Reference USPS-RM2022-3-1, January 5, 2022.
 - a. Please provide an exhaustive list of all variables used in the various estimations, including the label used for each variable.
 - b. Please confirm that the estimates of the coefficients associated to time-variant explanatory variables in the estimation of the correlated random effects (CRE) model are numerically the same as the estimates that would have been obtained with the fixed effects estimation method. If not confirmed, please explain.
 - c. Please explain analytically and in-detail, with a mathematical representation, how marginal times, *i.e.*, the partial derivatives, are calculated for a volume variable in the CRE model.
 - d. Please indicate, among the CRE models presented in Proposal One, the model that the Postal Service intends to use to calculate the variabilities if Proposal One is approved.

By the Chairman.

Michael Kubayanda