

Article 43 – Appendices
Appendix 6 – RIM Model and Conjoint Analysis

Remail Impact Model Design and Methodology



15 June, 2001

Overview of Remail Impact Model

Remail scenarios to be evaluated can either involve the calculation of national impacts via sequential evaluation of all at-risk categories over the relevant weight steps based on a particular scenario, or could consist of specific mail characteristics and amounts based on a single remaining / specific remailer. The following discussion and flowchart focuses on the national impacts.

RIM and Conjoint Model Interactions

The interaction between RIM and the Conjoint Model begins with a scenario description. A scenario is described by the following inputs to the conjoint model

- Mail Class (First-Class, Standard or Periodicals)
- Cost Savings Percentage
- Additional Delivery Time
- Indicia
- Mail Production Location (note: linked to transportation mode -- physical remail = domestic production, electronic remail = foreign production)

Conjoint Model outputs are:

- Percentage of Domestic Mail Re-Routed as Remail
- Percentage Increase (over baseline domestic mail) Representing New Mail Due to the Lower Cost of Remail Options (elasticity)

Primary Propensity Sensitivities:

- Discount Sensitivity -- provided directly by the conjoint model.
- Additional Delivery Time Sensitivity – provided directly by the conjoint model.

Handled As Combinations of Primary Sensitivities:

- Dropship Discounts – handled as a combination of additional delivery time / discounts. *Handled in RIM within a scenario* using proportions of domestic mail subclasses that are dropshipped.¹

Other Sensitivity Considerations:

- Number of Entry Points – drop ship is considered, but otherwise the number of entry points should be embedded in the ABA remail propensities. No sensitivity analysis proposed unless there is a way to vary this option.

¹ The conjoint remail propensities need to characterize delivery time sensitivity in terms of additional days. This is because if the conjoint propensity is only sensitive to total time, then the following situation arises – a Standard A dropshipper may be obtaining 4 days service time. Assume that a non-dropshipper experiences 8 days on average. Assume that the ABA remail route into the First-Class domestic stream takes 6 days. Remail delivery time is 2 days longer for the dropshipper and 2 days shorter for the non-dropshipper – but the total delivery time for both cases is 6 days. Only if the conjoint is cast in terms of differential days – either positive or negative, can the RIM address the differential behavior of dropshippers relative to service time.

- Quality control – mail production for electronic / non-physical ABA only should be embedded in the electronic remail propensities. No sensitivity analysis proposed unless there is a way to vary this option.
- Address Correction (none for remail) – should be embedded in sensitivity. No sensitivity analysis proposed.
- Return of Undeliverable (same as for domestic) – No sensitivity analysis proposed.

RIM Scenario Specification and Execution Outline

1. Specify a year for this scenario to determine projected flows and to set harmonization targets for the countries. The difference between the projected mail flow and the harmonization cap is the harmonization “remail flow capacity” of that country.
2. Specify an access fee to be applied as a percentage markup of the terminal dues charges.
3. Specify a probability of detection of a bulk mailing under the bulk mail option of Article 49. Increases in the detection probability will increase the payment to the intermediary “B” country as an “insurance fee” against additional charges.
4. Specify international air transportation cost assumptions for economy air mail. Two values must be specified, the proportion of priority air costs that the economy costs represent and the number of additional days required for the economy air transportation.
5. Select a Bulk Mail Class and Subclass from Billing Determinants and a weight-step of the mail.² Note, must choose an arbitrary execution order.³ Propose that the order be based on greatest arbitrage potentials (at least for the maximum revenue impact scenario). Here is abbreviated unsorted list with gaps and no weight distribution (weight step would be a required dimension of the actual model).

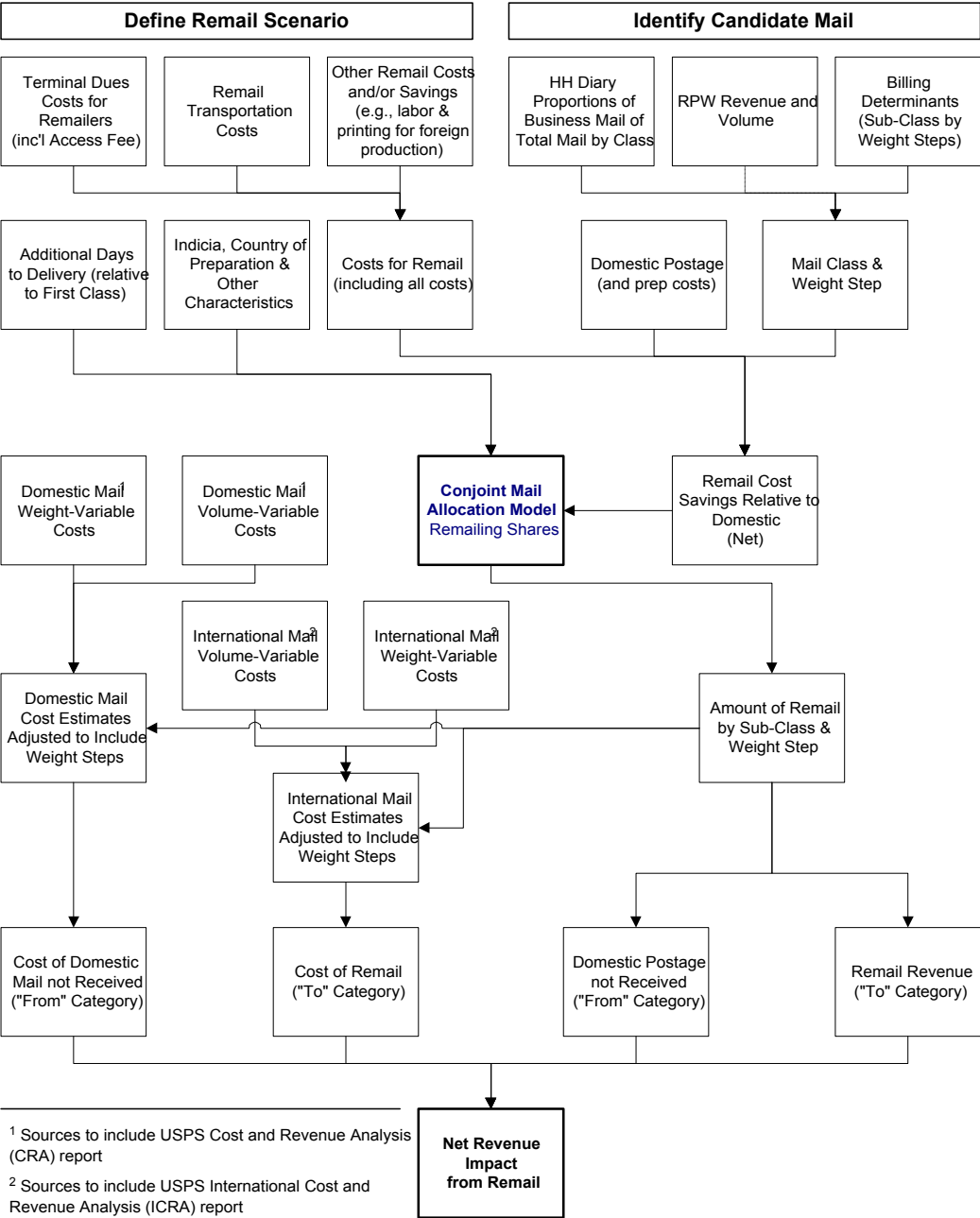
Class	Automation	Sortation	ECR	Format	Entry
First-Class Mail	Nonautomation	Presorted	Non-ECR	Cards	No Entry Discount
First-Class Mail	Nonautomation	Presorted	Non-ECR	Letters, Flats, and Packets	No Entry Discount
First-Class Mail	Automation	Basic - Nonstandard	Non-ECR	Flats	No Entry Discount
First-Class Mail	Automation	3-Digit - Nonstandard	Non-ECR	Flats	No Entry Discount
First-Class Mail	Automation	5-Digit - Nonstandard	Non-ECR	Flats	No Entry Discount
Priority Mail	Nonautomation	Single Piece	Non-ECR	Undifferentiated	No Entry Discount
Periodicals -- Regular Rate	Nonautomation	Carrier Route Presort Nonadvertising	Basic	Undifferentiated	No Entry Discount
Periodicals -- Regular Rate	Automation	5-Digit Presort Advertising	Non-ECR	Letters	Zone 8
Regular Standard Mail	Nonautomation	Presorted - Basic	Non-ECR	Flats	No Entry Discount
Regular Standard Mail	Nonautomation	Presorted - Basic	Non-ECR	Flats	DBMC Entry
Regular Standard Mail	Nonautomation	Presorted - Basic	Non-ECR	Flats	DSCF Entry
Nonprofit Standard Mail	Automation	3/5-Digit	Non-ECR	Flats	No Entry Discount
Nonprofit Standard Mail	Automation	3/5-Digit	Non-ECR	Flats	DBMC Entry
Nonprofit Standard Mail	Automation	3/5-Digit	Non-ECR	Flats	DSCF Entry

² The “from category” should be a bulk mail category, when both single piece and bulk rates exist. An exception would be Priority mail since are no bulk Priority rates, but mailers can still tender bulk amounts under this category – only the bulk portion of Priority should be assumed at risk – need to determine or assume what percentage of Priority is bulk mail.

³ Under this proposed structure, there may be differences in results contingent upon execution order. Alternative orderings could be used to set an uncertainty range on the results.

6. Compute the total percentage cost savings for remail (remail costs include transportation, terminal dues, access fee, estimated detection risk insurance costs, etc...) and delivery time for every country in the world. The input to the conjoint model will then be a matrix with countries times the number of transportation options (priority air, non-priority air, surface and electronic priority air) as rows (approximately 800 rows, roughly 200 per transportation option) and three or four columns:
 - percentage cost savings (positive represents a percentage cost saving, negative implies higher costs for remail),
 - additional delivery time relative to the domestic product (can be positive for additional delivery time or negative in the event that remail can be delivered in a more timely manner than domestic mail –e.g., Standard mail going cross-country may take longer than remail),
 - the indicia indicator for the country (in the spreadsheet this is represented by a numeric score based on area of the world),and
 - mail production location.
7. Compute the shares for each country / transportation option combination by executing the conjoint model. Outputs are percentages of existing domestic mail converted to remail and any new mail stimulated by a price elasticity response under the hypothetical removal of remail provisions in Article 43, expressed as a percentage of existing. Multiply these percentages times the billing determinants. Compute total pieces and weight of remail along with USPS financial impacts (lost domestic revenue and new foreign inbound revenue, the avoided marginal costs of not handling the lost domestic mail plus the marginal costs for handling new inbound international mail).
8. Calculate gross revenue impacts to foreign postal administrations, remailers, and other stakeholders.
9. Continue until all US domestic bulk categories are processed. When completed, RIM has allocated all estimated migrating remail and all “new” remail to specific countries. At this stage, proceed to the final summary calculations of RIM.

Concept Design Draft for Discussion Only
Remail Impact Model
 Apply This Algorithm to Each "Arbitrageable" Mail Sub-Class



**Sample Calculations for Remail Conversion from First Class Automation Basic Letters
To First Class Single Piece Letters**

Volume Shift:	5,000	pieces
Average Weight per Piece	0.50	ounces
From Category:	First Class Automation Basic Letters	
To Category:	First Class Single Piece Letters	
Country Group:	Developing	

Comments:

This example assumes the volume conversion. Under full implementation this amount will be estimated rather than assumed.

Input assumption.

This category was chosen for exemplary purposes. Under full model implementation the volumes shifted by category will be estimated.

Cost characteristics based on "To Category", revenue assumed to be terminal dues using official SDR conversion rate.

Developing or Industrialized for terminal dues revenue calculations.

Change in Contribution Due to Migration from Domestic Mail Service

Revenue	(\$1,390)	=	-5,000	*	\$0.278	Per piece revenue estimated from current domestic rate schedules
Cost	(\$427)	=	-5,000	*	\$0.085	Cost per piece estimated from adjusted CRA 1999 (see sources).
Net Revenue	(\$963)					

Change in Contribution Due to Servicing Terminal Dues Mail

T.D. Revenue	\$326	=	5,000	*	\$0.065	Estimated from current developing country terminal dues schedule and SDR conversion rate.
Cost	\$977	=	5,000	*	\$0.195	Assume mail migrates to non-worksharing (high-cost, low preparation). Costs are from CRA 1999 (see sources)
Net Revenue	(\$651)					

Summary Net Revenue Impacts of Remailing

Revenue	(\$1,064)				
Cost	\$550				
Net Revenue	(\$1,614)		-\$0.323		per piece

Sources:

- o Rates are current rates for a letter-shaped piece mail item weight less than 1 ounce.
- o Cost estimates are short-run marginal costs from Cost and Revenue Analysis "A" Report for 1999 with final adjustments to detailed mail categories derived from Library Reference 483 of omnibus case R2000. Inbound costs from ICRA will also be considered for estimating the cost of inbound terminal dues mail. USPS estimated costs from CRA are for average mail weights and in this version do not vary by piece weight.