

## **The Postal Service’s Cost to Deliver Parcels on Letter Routes and Parcel Routes**

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### **1. Brief Summary and Some Background:**

This paper estimates the cost of delivering parcels on letter routes and on parcel routes.<sup>1</sup> It then examines the profitability of standalone parcel delivery. Using the difference in cost, the paper calculates the Postal Service’s cost savings when delivering parcels on letter routes instead of parcel routes. It then shows that these cost savings are greater than the profits from parcel delivery. It concludes that parcel delivery by the Postal Service would not be profitable on a stand-alone basis. The main paper is followed by a short set of conclusions and implications and an appendix that discusses how parcel delivery costs were rolled forward from 2007 to 2014.<sup>2</sup>

#### **Background :**

- About 94% of USPS letter routes use small trucks or large automobile enabling the delivery of parcels along with regular letter mail
- The vast majority of parcels are delivered on letter routes
- The USPS delivers parcels on national holidays when it does not deliver letters
- The USPS delivers parcels on Sunday for Amazon

### **2. Major Findings:**

- The cost of delivering letters and parcels is much less when delivering them on letter routes than when delivering them on stand-alone parcel routes. This is because of the

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<sup>1</sup> This paper primarily analyses the category of competitive parcels called “ground parcels” which includes Parcel Select. Ground Parcels are not entitled to air transportation and are generally drop shipped at or near the delivery unit. (See Section 4)

<sup>2</sup> The paper was funded by United Parcel Service. The analysis and views are solely the authors who are independent consultants.

significantly reduced per piece cost that arise from delivering the two products together. It is the Postal Service's major competitive advantage in the parcel business.

- Based on the Postal Service FY2015 cost methodology, we estimate the average per-piece delivery cost for all domestic Competitive products under the Postal Service's cost system is about 40 cents.<sup>3</sup> The Postal Service employs parcel routes only in certain situations.
- Special Purpose Routes are a hybrid of stand-alone parcel delivery combined with other street tasks (primarily sweeping street letter boxes). The cost of parcel delivery on these routes is \$1.22 per piece.
- The Postal Service uses City Carrier Assistants for Sunday delivery of parcels. Their starting pay is \$15.56 an hour with virtually no benefits. Their productive hourly cost to the Postal Service is \$19.27 an hour in contrast to \$46.09 an hour for its regular city carriers.
- We estimate the average cost to deliver a Sunday-delivery parcel using city carrier assistants to be \$2.17 assuming 1.2 parcels delivered per stop and 10 stops per hour. If all Parcel Select were delivered on stand-alone parcel routes using City Carrier Assistants, the Postal Service profit per piece (revenue minus attributable cost) would drop from 44 cents to a loss of approximately \$1.33. The loss would be much greater if regular city or rural carriers were used.
- The Postal Service may or may not receive enough revenue to recover its extra cost for delivering parcels on its Sunday parcel routes, but it clearly does not recover the extra cost of using parcel routes during peak load situations, on holidays (when parcels but not letters are delivered) or in other situations, including routine parcel delivery on Special Purpose Routes. Under these circumstances, parcels become unprofitable.
- Using these delivery costs, we estimate the cost difference when delivering parcels on letter routes versus parcel only routes to be \$5.6 billion. While this is a lower bound, it exceeds the total 2014 contribution from domestic Competitive products by \$2.2 billion.

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<sup>3</sup> The Postal Regulatory Commission approved modification of City Carrier Cost Methodology at end of FY2015 and is currently considering major changes to the definition of "attributable" costs." This is described in Section 3. This paper employs the 2014 cost system throughout.

At all reasonable delivery productivities, the Postal Service loses money on Standalone Parcel delivery. This implies the delivery of Competitive parcels by the Postal Service on a stand-alone basis would not be profitable.

### **3. Parcel Routes, Letter Routes and Costs**

Letter routes have an established structure because they pass by the same delivery points on a regular basis. This is due to a concept called coverage, which denotes the percentage of delivery points that will receive mail that delivery trip. Because letter coverage is relatively high, it is efficient for the carrier to pass by each possible stop every delivery trip. Contrast letter routes with pizza delivery where a driver usually carries one or more pizzas to one or two stops. Here there is no fixed route structure.

Parcel routes have much more in common with pizza delivery than with letter delivery.<sup>4</sup> A parcel delivery vehicle will travel directly between each stop that is to receive a parcel. There is no fixed route structure as there is with letter routes. The time it takes a carrier to travel a letter route without stopping to make a delivery is called route time. It does not depend on the number of letters that a carrier delivers (or picks up) on the route. Under current Postal Service costing, the route time incurred on letter routes is treated as institutional. The time that it takes a letter carrier to deviate from his fixed route to approach a specific delivery point and return to his route is also largely institutional.<sup>5</sup> About 63 percent of street delivery costs are institutional on letter routes and therefore not attributed to particular products.<sup>6,7</sup>

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<sup>4</sup> The term "route" connotes a relatively fixed path that is followed repeatedly. Parcel routes, are not routes in that sense. Their path differs from trip to trip depending on which of the possible recipients gets a delivery on that trip.

<sup>5</sup> It takes as much time to make an access to deliver one letter as to deliver a dozen letters. Because a large majority of delivery points on a letter route are accessed each time a carrier travels his route, access time on letter routes does not vary much at the margin. In the past, the Postal Service explicitly modeled access time as a discrete functional cost. It no longer does this, but this treatment of access time continues to be reflected in its simplified model of letter route delivery costs.

<sup>6</sup> Attributable costs are marginal costs plus product-specific costs in US Postal Service cost parlance. Infra-marginal costs are variable but not marginal. Institutional costs are the non-attributable costs and consist of infra-marginal and fixed costs. See: *The Role of Costs for Postal Regulation* by John C Panzar at <http://www.prc.gov/sites/default/files/reports/J%20Panzar%20Final%20093014.pdf>

On a parcel route, the delivery vehicle must travel between each address that is to receive a parcel. It does not follow a fixed route structure requiring it to pass by each possible stop every trip. The parcel(s) to be delivered at each stop cause the total amount of time spent travelling to the stops as well as the time loading the parcels in a receptacle or delivering them to the door. Parcel routes have some institutional costs. Like letter routes, they must travel from their starting facility to the area that they serve and at the end of the route travel back. This is usually a small percentage of total time. In addition, as the number of stops increase, on average, the travel time between stops is reduced. This is called economies of density and it is a source of inframarginal costs. Together these institutional costs are a small percentage of the total cost of parcel routes. It should be noted that density has important implications for cost and profitability because it greatly affects the amount of time the delivery vehicle must travel between deliveries.

A much larger percentage of a parcel route's time is attributable to the products delivered than for letter routes. When the parcel route is only delivering Competitive products, as with the Sunday delivery of parcels, then even the institutional costs incurred are categorized as "group product specific" and attributable to Competitive products. Hence, such routes should be treated as fully attributable under current USPS costing methods.<sup>8,9</sup>

The Postal Service and the Postal Regulatory Commission attributes only the marginal costs plus a very small amount of so-called "product specific- fixed costs" to products, The remaining costs are treated as "institutional" and are paid for by all Postal Service products based on their "profits" or "contribution"(revenue minus attributable *i.e.* marginal cost). Competitive products

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<sup>7</sup> Delivery costs consist of in-office and street costs. Street time costs are approximately 63 percent institutional because of route and access time. Street costs and in-office costs combined are approximately 51 percent institutional. See <http://www.prc.gov/sites/default/files/reports/Financial%20Report%202014.pdf> at 32.

<sup>8</sup> See Section 10 for further discussion of this point.

<sup>9</sup> We use the word "should" because we have found no public description of how the Postal Service treats these costs. We return to this issue in section 5. The lack of public description of parcel costing is highlighted by participant comments in Docket RM 2015-7. We see no reason for the costing methodology (in contrast to the actual costs) of competitive products not to be made public.

contributed less than 13 percent of the institutional costs while they were responsible for about 28 percent of total attributable costs in 2014.<sup>10</sup>

The Postal Regulatory Commission currently has a docket<sup>11</sup> before it that is considering whether infra-marginal costs (costs that vary, but not at the margin) should be included in attributable costs. If they are included, the percentage of total costs considered attributable would be much greater than is currently the case. In addition, the Commission is considering reclassifying some components that the Postal Service currently categorizes as fixed to variable. If the Commission were to make these changes, they would have an important impact on the Postal Service cost system and by implication on the reported cost of parcels.

In Docket RM2015-7, the Postal Service proposed a modification to the carrier cost methodologies that have been in place for ten years. The impact of the Commission's resulting changes was relatively minor.<sup>12</sup> However, the Commission did require the Postal Service to report by February 15, 2016 on further efforts to improve the carrier cost system, especially with respect to parcel costs.<sup>13</sup> Such analyses could further increase the attributable costs of parcels.

#### **4. Cost Revenue and Contribution (profit) of Domestic Competitive Parcel Delivery**

Competitive postal products consist of International Mail, Express, Priority and Domestic Package delivery. The domestic competitive products are shown in Table 1.

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<sup>10</sup> See Appendix A of the PRC Financial Analysis of United States Postal Service Financial Results and 10-K Statement Fiscal Year 2014 at <http://www.prc.gov/sites/default/files/reports/Financial%20Report%202014.pdf>

<sup>11</sup> Docket RM 2016-2.

<sup>12</sup> See <http://www.prc.gov/docs/93/93661/Order%20No.%202792.pdf>

<sup>13</sup> . In addition, the Commission directed the Postal Service to address the status of its investigation into the feasibility of updating the non-public cost model used to assign the costs of Sunday delivery hours and parcel routes."

**Table 1**  
**Domestic Competitive Product's Volume Average Per- Piece Revenue<sup>14</sup>**  
**(2014)**

	Volume (000)	Unit Weight (Lbs.)
Priority Mail Express	36,231	1.02
First-Class Package Service	634,615	0.35
Standard Post	36,024	6.02
Priority	1,483,922	2.16
Parcel Select	920,083	1.75
Parcel Return	55,650	3.07
Total/Weighted Average	3,166,525	1.65

The largest categories of domestic Competitive products are First-Class Package Service, Priority, and Parcel Select, each of which has an order of magnitude more volume than the remainder. First-Class packages by definition are 13 ounces or less. The other two major categories are on average much heavier; Parcel Select is a little below and Priority is a little above two pounds. Priority contains many flats under a pound and Parcel Select contains many of the former lightweight Standard Mail parcels<sup>15</sup>, which were under a pound. Thus, both contain a mix of relatively light and heavier- weight pieces. Priority Express, Priority, and First-Class Packages are all entitled to air transportation. The remaining products use surface transportation only, and are referred to as “ground parcels”.

Table 2 presents the volume, unit revenue, unit cost, and contribution to institutional costs of the domestic Competitive products for FY 2014 that are publically available. Priority Express was formally called “Express mail.” It is a premier service requiring special handling that is much more costly than the other domestic Competitive products. Consequently it will not be

<sup>14</sup> Final 2014 Revenue, Pieces and Weight Report (RPW), U.S Postal Service

<sup>15</sup> Standard mail parcels were transferred from Market Dominant to Competitive in 2012. These parcels are less than one pound.

discussed further. Priority Mail cost per piece is much greater than Ground Parcels owing to the fact that that it receives air transportation and it is usually handled by the Postal Service from origin to destination, as are First-Class parcels. In contrast, Parcel Select is dropped shipped mainly to local sorting centers or delivery units. It most closely represents a delivery- only product. Ideally, we would concentrate on just Parcel Select to estimate Competitive products delivery costs, but the public data for Parcel Select is combined with the other two ground products. Parcel Select, however, comprises 91 percent of the ground products and so the combined cost and revenue data for ground parcels represents Parcel Select closely enough for our purposes.

**Table 2**  
**Domestic Competitive Products**  
**Volume, Revenue, Cost, and Contribution Per Piece**  
**(FY 2014)<sup>16</sup>**

	Volume (000)	Unit Revenue \$	Unit Cost \$	Unit Contribution (\$)
Priority Exp	36,231	20.97	10.09	10.88
Priority Mail	920,083	7.48	5.69	1.79
Ground Parcels	1,575,596	2.01	1.57	0.43
First-Class Package Service	634,615	2.30	1.82	0.48

As we have seen, the data on the total cost of the Postal Service’s domestic Competitive products is public, but disaggregated data is needed to estimate the cost of delivering parcels. In particular, street time cost data are needed on competitive products that is not publicly available. Therefore, in the next section we have estimated the delivery costs for 2014 from public data.

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<sup>16</sup> Source: Financial Analysis of United States Postal Service Financial Results and 10-K Statement, Appendix A, Page 73. See <http://www.prc.gov/sites/default/files/reports/Financial%20Report%202014.pdf>

## 5. Estimation of Delivery Costs for Domestic Competitive Products from Public Data

The Annual Compliance Report (ACR) filed each year by the Postal Service with the Postal Regulatory Commission provides public data on the total costs and volumes of the major domestic Competitive products from which unit costs can be calculated. Included are unit costs for First-Class Parcels, Priority and Parcel Select. These unit costs are the sum of costs from all of the 20 cost segments<sup>17</sup> in the Postal Service accounting system.

Costs broken out by product and cost segment (including delivery) are submitted only in non-public filings that support the Annual Compliance Report (ACR). Thus, it is not possible to ascertain delivery costs for the major Competitive products from publically available data. To circumvent this opacity, Competitive product delivery costs have been estimated by rolling forward the FY 2007 costs for similar product categories that were made public as part of the Annual Compliance Determination (ACD) for FY 2007.<sup>18</sup> These are the most recently publically available cost for these products. For delivery costs, the roll forward process adjusts for changes in the productive hourly wages of carriers, which are published annually.

The results of rolling forward the FY 2007 costs of relevant individual products are given in the Table 3. The calculations and methodology are contained in the Appendix.

The piggybacked<sup>19</sup> average street delivery cost for all Competitive products delivered by city carriers as calculated from the 2014 Cost Segments and Components Report is 40 cents. This compares favorably with the 41 cent weighted average of the roll forward estimates in Table

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<sup>17</sup> The 20 cost segments in the Postal Service's accounting system include (among others): Postmasters, Supervision, Clerks, In-Office City Delivery, City Carrier Street Time, Rural Delivery, Transportation, and Vehicle Service Drivers. See the Summary Description of USPS Development of Costs by Segments and Components, Fiscal Year 2014, available at <http://www.prc.gov/dockets/document/92667>.

<sup>18</sup> The issuing non-public ACD reports for Competitive products began in 2008.

<sup>19</sup> Piggyback costs are the indirect costs associated with a specific direct cost activity or function. Examples of a piggyback cost include supervision, vehicle costs, and facility costs.



3.<sup>20</sup> The piggybacked roll forward delivery cost for Parcel Select is 42 cents per piece. Sunday stand-alone delivery is thought to consist primarily of Parcel Select.

**Table 3**

**Roll Forward of FY 2007 City Carrier Street Time Costs to FY 2014  
(Delivered Competitive product unit costs with piggybacks)**

Product	Unit Cost Delivered by City Carriers (Cents)
First-Class Single Piece Parcel	37
First-Class Presort Parcel	29
Express Mail	175
Standard Mail	33
Priority Mail	40
Parcel Select	42
<hr/> Weighted Average	<hr/> 41

**6. Delivery of Parcels on Special Purpose Routes is More Expensive than on Ordinary Routes**

According to the “Summary Description of USPS Development of Costs by Segments and Components, Fiscal Year 2014” submitted to the Commission by the Postal Service, Special Purpose Routes (SPRs) are generally located in dense urban areas and primarily deliver parcels and collect mail from designated collection points.<sup>21</sup> Special Purpose Routes are a hybrid of the regular letter and stand-alone routes in their treatment of network travel.<sup>22</sup> SPR route delivery activity costs do not include a fixed network travel path that letter routes incur since the delivery points vary according to the set of parcels to be delivered. The fixed

<sup>20</sup> See USPS-FY-2 - FY 2014 Public Cost Segments and Components Report Worksheets for Cost 7 City Carrier Street Time, Tabs Input to DK and Output to CRA PRC.gov., available at <http://www.prc.gov/dockets/document/91010>. Segment 7, Delivery Activity costs of \$513,567/1,714,515 pieces (1,000) equals 29.95 cents per piece. Applying a piggyback factor 33.66 percent gives a piggybacked city carrier delivery costs of 40.04 cents.

<sup>21</sup> See <http://www.prc.gov/dockets/document/92667>

<sup>22</sup> In the Segment 7 discussion of cost methods in the 2014 report, it is stated “in special purpose delivery, network travel includes driving time not related to special purpose delivery activities such as pick-ups and drop-offs from other facilities.” This would include sweeping street collection boxes.

network travel time that is reported in Segment 7 costs reflects travel to designated collection points that are visited each day. Frequently, these are the blue letter collection boxes that are located on street corners.

For special purpose routes, the domestic Competitive product piggybacked unit costs per pieces delivered is \$1.21. This is an 81-cent per piece increase over the delivery costs on an ordinary letter route.<sup>23</sup> As we will see in the next section, the SPR unit cost is closer to the range of the unit costs for the modeled stand-alone costs than to the unit cost of delivery on ordinary letter routes.

Appendix A of the PRC Financial Report shows an average profit per piece of 48 cents for First-Class Package Services and 44 cents for Ground Service parcels. These figures assume that the average unit delivery cost for Competitive products of 40 cents applies to both.<sup>24</sup> This implies that the Postal Service loses approximately 41 cents, or more, per parcel delivered on SPR routes.<sup>25</sup>

## **7. Stand Alone Parcel Delivery Cost Model Based on Sunday Delivery**

The Postal Service delivers only competitive products on Sunday. If the cost were publically available, we would know the standalone cost of competitive parcel delivery. Because it is not public information, we here estimate the cost with a simple model. The cost of delivering a parcel is the labor cost per stop divided by the number of parcels delivered at each stop. Since some stops will receive multiple parcels, we will assume that 1.2 parcels are delivered at each stop. Labor cost is the productive hourly wage that incorporates all fringe benefits plus the piggyback factor that includes supervision, vehicle costs and the other costs indirectly

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<sup>23</sup> See USPS-FY-2 - FY 2014 Public Cost Segments and Components Report Worksheets for Cost 7 City Carrier Street Time, Tabs Input to DK and 7.06, available at <http://www.prc.gov/dockets/document/91010>.

<sup>24</sup> See <http://www.prc.gov/sites/default/files/reports/Financial%20Report%202014.pdf> Financial Analysis of United States Postal Service Financial Results and 10-K Statement.

<sup>25</sup> At a cost of \$1.21 per delivered parcel on SPR routes versus \$0.40 on letter routes, the increased cost of \$0.81 more than offsets the average profit of \$0.48 or \$0.40 per parcel.

associated with the carrier.<sup>26</sup> Table 4 presents the productive hourly wage for the various categories of Postal Service city carriers with and without the piggyback factor.<sup>27</sup>

**Table 4**  
**Productive Hourly Wage for City Carriers**  
**(\$)**

Category of City Carrier	Productive Hourly Wage	With Piggyback
Full Time Regular	46.09	61.11
Part Time Regular	45.26	62.23
Part Time Part Time Flexible	43.86	59.22
City Carrier Assistants	19.27	26.02

The street time activities of stand-alone drivers include driving to each stop, parking the vehicle, fetching the parcel from the van (either from the back door of the van or by turning from the driver’s seat and locating the parcel inside the vehicle), making the delivery and scanning the barcode on the package with a portable scanning device. In many instances the delivery may have to be made to the door versus a mailbox at the curbside or a nearby cluster box, due to size or because the address is routinely receives door delivery and has no curbside or cluster box. The driver must then return to the vehicle and proceed to the next stop.

The actual number of parcels that are delivered per hour will depend importantly on density (the number of deliveries per geographic area). Higher density, *ceteris paribus*, means lower cost of delivery. The Postal Service’s delivery density for Sunday is relatively low because it has only a very small percentage of its parcel customers paying for this service.

Another important determinate of cost is the quality of the delivery personnel. Up to a point, the longer the person has been engaged in delivery and the more familiarity the person has with the route, the more productive the driver will be. The Postal Service, UPS and FedEx use

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<sup>26</sup> The piggyback includes supervision, time & attendance clerks, motor vehicle service personnel, parts & supplies, and vehicle hire. It also includes rents, fuel & utilities, building maintenance and cleaning, building supplies, and depreciation. Finally, city delivery vehicle depreciation is included along with all the segment 18 service-wide personnel costs (workers’ compensation, retiree health benefits, etc.)

<sup>27</sup> City carrier casuals are not shown because that category is being phased out.

well paid and experienced drivers on their ordinary routes. In this paper where we focus on Sunday stand-alone delivery, the Postal Service uses its lowest paid category; city carrier assistants.<sup>28</sup> Table 4 above shows their productive hourly wage cost to the Postal Service, but their actual wage begins at \$15.68. These carriers have no career status and earn no fringe benefits other than social security. They do not receive a premium for working on Sundays or holidays. The Postal Service has acknowledged that it experiences a very high annual turnover for this category; some reports put it as high as 35 to 40 percent.<sup>29</sup> Because city carrier assistants are the lowest paid carriers, are not permanent employees, and have a high turnover, it would be expected that they would be the least productive city carriers. We believe that Postal Service city carrier assistants deliver to between 5 and 15 stops per hour. This means that the delivery person will take between 4 and 12 minutes per stop. This includes the time traveling between stops and the time at the stop. We have chosen 10 stops per hour as our baseline case for city carrier assistants. It should be noted that basing the cost of competitive parcel delivery on city carrier assistants yields a lower bound cost because using other categories of carriers shown in Table 4 would increase the cost greatly.

Table 5 shows the cost of stand-alone delivery over the range of five to fifteen stops per manhour for city carrier assistants and full time regular carriers. The latter is shown for comparison to illustrate how much more expensive it would be for the Postal Service if it didn't use this special category of low paid employees.

At 10 stops per hour, the cost per parcel using city carrier assistants would be \$2.17 per parcel. At 5 stops per hour the cost would be \$4.34 per parcel.<sup>30</sup> Using regular carriers it would be more than twice as much. Of course, regular carriers would be expected to be considerably more productive, thus narrowing that differential.

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<sup>28</sup> The number of city carrier assistants that the Postal Service may employ is limited by the labor contract between the Service and the National Association of Letter Carriers.

<sup>29</sup> While we have used the average training cost for all city carriers in our piggyback estimates, they are clearly understated given that the Postal Service's average attrition rate is less than five percent.

<sup>30</sup> If the number of parcels per delivery were assumed to be 1.1 instead of 1.2, the costs would increase by 9 percent.

**Table 5**  
**Cost of Delivery per Parcel**  
**(1.2 parcels per stop)**

Number of stops per Hour	City Carrier Assistants (\$)	City Carrier Regular (\$)
5	4.34	10.19
6	3.61	8.49
7	3.10	7.28
8	2.71	6.37
9	2.41	5.66
10	2.17	5.09
11	1.97	4.63
12	1.81	4.24
13	1.67	3.92
14	1.55	3.64
15	1.45	3.40

### **8. Profitability of Standalone Routes**

In Fiscal Year 2014, the institutional cost contribution (or profit) per piece of the competitive Ground Service product, which is nearly all Parcel Select, was 43.7 cents.<sup>31</sup> The relatively small profit margin is achieved in spite of the fact that delivery benefits from joint parcel and letter delivery except for the small number pieces that are delivered on stand-alone routes. Overall, the street delivery cost for Ground Service parcels is estimated to be approximately 40 cents per piece. This compares to total attributable costs for Ground Service of \$1.57 per piece for all pieces delivered regardless of the type of route.

If Parcel Select is delivered on a stand-alone route, the cost per piece for street time increases from 40 cents to \$2.17 for delivery in our baseline case. Table 5 displays stand-alone delivery costs that range from an estimated \$1.45 per piece for the highest productivity of 15 parcels delivered per hour to an estimated \$4.34 per hour for the lowest productivity of 5 parcels per

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<sup>31</sup> See Tables III-27 and -28 and Appendix A, FY 2014 Volume, Revenue, Cost, and Cost Coverage by Class, Current Classification (Products) of Financial Analysis of United States Postal Service Financial Results and 10-K Statement, Fiscal Year 2014, available at <http://www.prc.gov/sites/default/files/reports/Financial%20Report%202014.pdf>.

hour. Under our assumptions, delivery on stand-alone routes increases street time costs by between \$1.08 and \$3.94 per delivered piece. The median increase is \$1.77 per piece. Using the average revenue per Parcel Select piece, the Service's net revenue per piece would drop from a positive 44 cents to negative \$1.33 cents, assuming all pieces were delivered using stand-alone delivery.<sup>32</sup> Even at the highest level of modeled street delivery productivity, the loss would be about 61 cents per piece. We assume that the Postal Service charges close to the highest prices that it can in the competitive marketplace for parcel delivery. From this we conclude that the Postal Service could not profitably deliver parcels on a standalone basis.

Table 2 showed that the average Ground Service parcel revenue per pieces was \$2.01 in 2014. If the senders of Sunday delivery parcels paid more than this, it would mitigate the losses indicated above.<sup>33</sup> However the prices paid by Amazon and others based on Negotiated Service Agreements (NSAs) are not publically available. Of course, the Postal Service would receive no price premium when the Postal Service opts to use stand-alone routes for performance reasons, such as during the Christmas period. The use of stand-alone routes during such periods would erode profits. Even if unprofitable, this may be reasonable from a marketing or overall efficiency standpoint. United Parcel Service experienced an erosion of profits in 2014 when the company significantly increased the Christmas workforce to avoid delivery issues experienced in the 2013 season.

As noted in the discussion of Special Purpose Routes, the cost per delivered Competitive parcel is 81 cents greater than on the letter routes. This difference is also greater than the average profit per piece. An average loss of about 37 cents per parcel is realized when parcels are delivered on these routes.

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<sup>32</sup> The loss per piece caused by substituting stand-alone for letter route delivery would be even greater if the unit street time costs for letter routes were based on RPW (total) volumes rather than the city carrier delivered volumes. Unit costs would be 23 cents based on RPW volumes compared to 40 cents based on delivered volumes. Therefore, at our modeled delivery rate, the average loss from substituting stand-alone delivery for letter route delivery would increase by 17 cents to 91 cents if RPW volumes were used.

<sup>33</sup> An article published in Bloomberg BusinessWeek cites a shipping industry analyst from Bernstein Research who estimates that the USPS handled 40 percent of Amazon's volume at a price of \$2 a package. See "It's Amazon's World. The USPS Just Delivers in It" by Devin Leonard, July 30, 2015.

The public Segment 7 cost spread sheets account for only two types of routes; letter routes and Special Purpose Routes. But it is not clear where costs incurred by the routine use of parcel routes are accounted for. Parcel routes are employed on holidays (when letters are not delivered) and on augmentation deliveries during the Christmas rush or in certain high volume areas where the letter carrier cannot handle all of the parcels. If the costs associated with such uses of parcel routes are subsumed in the costs of letter routes, where the costs are less than 50 percent variable, such accounting would be biased in favor of competitive products, since, as discussed above, institutional costs on parcel routes are small. If the costs are reflected in the costs of SPRs, even if they do not include any routine blue box collection activities, they may well be more costly than the total SPRs that do have fixed- cost blue box routes. Either way, these routes also contribute to a loss for each piece delivered.

## **9. The Effect of Economies of Scope**

Economies of scope occur when the cost of producing two goods together is lower than the cost of producing each separately. When Competitive parcels are delivered on ordinary routes, they enjoy the benefit of economies of scope. When competitive parcels are delivered on parcel routes, they do not enjoy the benefits of economies of scope. In this section we compare the cost of the Postal Service's delivery of competitive parcels on ordinary letter routes with the cost to deliver them on parcel routes. We then compare the total value of the savings with the combined profit from all Competitive parcels.

We have found that the cost of ordinary delivery for Competitive parcels is about 40 cents per delivered piece. Thus, the cost difference between ordinary delivery and stand-alone parcel route delivery is about \$1.77 per parcel. The total number of domestic Competitive parcels was 3,167,836 thousand pieces in 2014. When we multiply the cost difference by the number of competitive parcels the total cost savings comes to \$5,602 million.<sup>34</sup> This exceeds the total

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<sup>34</sup> We use delivered pieces for this calculation.

2014 contribution from domestic Competitive parcels of \$3,376 million by \$2,226 million.<sup>35</sup> This implies that the Postal Service could not profitably deliver Competitive parcels without the benefit of a very large preponderance of parcels being delivered on letter routes. In fact, the Postal Service could not profitably deliver parcels on a standalone basis.

This is not surprising. The Postal Service is organized primarily to deliver letters. Still, it is difficult for the Sunday delivery to be profitable given that it has only one customer (or at most, very few customers.) This means relatively low volumes and correspondingly low delivery density, which in turn causes relatively high delivery costs. The Postal Service is clearly attempting to compete based on lower labor costs.

We do not know the average price per piece paid by Amazon (and other customers) for Sunday delivery, but unless it is much more than the average revenue per piece that the Postal Service receives for Parcel Select, it does not appear to be profitable. It should be noted that our calculation of potential losses is based on stand-alone delivery using city carrier assistants. If the calculation used higher- cost labor, then the cost difference between using letter and standalone routes would be much higher. Thus, the above estimate of Postal Service's losses from delivering all parcels on parcel only routes is a lower bound. It is clear that if the Postal Service were to use its regular labor force delivering parcels on a stand-alone basis; it would incur much larger losses

## **10. Market Dominant Products Delivered on Sunday**

One of the authors recently received a book from Amazon delivered on Sunday and with "Bound Printed Matter" printed as the indicia. Amazon promises two day delivery on many of its orders and presumably that is why Amazon included the parcel in those that it dropped shipped for Sunday delivery. It may be that because Amazon normally sends books at the Bound Printed matter rate, it puts that indicia on packages containing books even when they

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<sup>35</sup> This is an upper- bound estimate, since it uses costs for city carrier delivery, who account for 54 percent of the competitive product deliveries. The remaining is delivered by rural carriers or by clerks to box sections where the unit costs are lower.



are to be delivered on Sunday at whatever the usual Sunday price is for a package of that size and weight.

However, this also raises the issue of costing of Sunday Delivery. If the Postal Service routinely includes a small amount of Market Dominant products in its Sunday delivery, is it then excluding the institutional costs from Sunday delivery costs attributed to Competitive products? Sunday delivery was set up as a competitive service. We have estimated that the Postal Service operates Sunday Delivery at a loss and think that it does so to accommodate at least one important customer who needs seven day a week delivery to meet its own service standards. Consequently, we regard Sunday delivery itself a competitive product and all costs associated with Sunday delivery should be properly attributed to Competitive products. As we have stated earlier, the costing methodology for Sunday delivery is not public information.

## **11. Conclusions and Implications**

The Postal Service as currently structured would not be able to be a profitable last mile parcel delivery firm without the benefits that arises out of its letter monopoly and joint delivery of parcels and letters.

Unless the Postal Service is charging substantially more than its average price for Ground Parcels, stand-alone routes are unprofitable. This includes Sunday and holiday delivery. Increased use of parcel routes by the Postal Service to handle peak loads (seasonal or other) will reduce the profits (or contribution) from competitive parcels.

If Saturday letter delivery were eliminated while parcel delivery is continued as proposed by the Postal Service, the Saturday delivery of parcels would be unprofitable. These losses should be factored into the savings estimated from eliminating Saturday delivery.

The limitations in collective bargaining agreements on the permissible number of city carrier assistants may prevent growth in the number of stand-alone parcel routes.

If stand-alone parcel routes used regular city carriers, the routes would be hugely unprofitable, owing to their higher compensation.

Increased reliance on Competitive parcels will mean the Postal Service will be at increased risk from changes facing the parcel delivery business including; self-delivery by shippers, same day delivery, lockers in retail stores, new entrants using low paid workers, and the potential for the Uberization of local delivery. This could lead to stranded investments in plant and equipment that may be made to lower the cost of handling parcels.

### ***Appendix*** ***Estimation of Delivery Cost for Domestic Competitive Products from Public Data***

The Annual Compliance Report (ACR) filed each year by the Postal Service with the Postal Regulatory Commission provides public data on the total costs and volumes of the major domestic competitive products from which unit costs can be calculated. These numbers include unit costs for First-Class Parcels, Priority and Parcel Select. These costs are the sum of cost from all of the cost segments<sup>36</sup> in the Postal Service accounting system.

But the costs by product and by cost segment (including delivery) are submitted only in non-public filings of the ACR. Thus, it is not possible to ascertain delivery costs for the major Competitive products from the data filed. To circumvent this opacity, the Competitive product delivery costs have been estimated by rolling forward the FY 2007 costs for similar product categories that were published (publically) as part of the Annual Compliance Determination (ACD) for FY 2007.<sup>37</sup> These are the most recent publically available costs for these products that could be located. For delivery costs, the roll forward process is based on changes in the productive hourly wages of carriers.

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<sup>36</sup> The 20 Postal Service cost segments in its accounting system include Postmasters, Supervision, Clerks, In-Office City Delivery Street Time, Rural Delivery, Transportation, and Vehicle Service Drivers. See the Summary Description of USPS Development of Costs by Segments and Components, Fiscal Year 2014 <http://www.prc.gov/dockets/document/92667>.

<sup>37</sup> Non-public ACD reports began after this for competitive products, including Parcel Select

For Cost Segment 7, City Carrier Street Costs, the roll forward process starts with the FY 2007 unit costs for First-Class Parcels, Standard Mail Parcels, Priority, and Parcel Select. Since unit costs for each cost segment typically is calculated with a volume from the RPW this number is used in the roll forward process. It should be noted that this is not the unit cost per piece delivered.<sup>38</sup> A little more than 50 percent of the RPW volume is delivered by City Carriers, about 30 Percent of the RPW volume is delivered by Rural Carriers, and the remaining approximately 20 percent is delivered to postal boxes by clerks or by contract carriers. Unit costs are contained in Postal Service file UDCModel2007 available at prc.gov.

The change in the carrier productive hourly wage from 2007 to 2008 was calculated to obtain an adjustment factor of 3.44 percent. This factor was then applied to the FY 2007 product unit costs to obtain a FY 2008 estimated product unit cost. This process was repeated from year-to-year until an estimated city carrier street time cost for 2014 was obtained. Standard Postal cost analysis adds a burden on to the directly attributed costs to reflect indirect costs such as supervision and unemployment compensation, building maintenance, vehicle costs, etc. This burden in Postal costing parlance is called a ‘piggyback’ factor. Thus a representative piggyback factor of 33.66<sup>39</sup> percent was applied to reflect all of the other costs that are incurred along with carrier street time costs.

The Parcel Select product of FY 2007 changed dramatically when the Standard Parcels were transferred in FY 2012 from Market Dominant to Competitive and included in Parcel Select. Thus, it is necessary to create a weighted average of the roll forward Standard Parcels and the original Parcel Select to estimate the delivery costs of Parcel Select as currently defined. Since the roll forward was based on unit costs based on RPW volume, the resulting values are adjusted to reflect the pieces actually delivered by city carriers. In FY 2014, city carriers delivered 54 percent of the RPW volume of competitive products.

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<sup>38</sup> The unit delivery costs are based on the annual City Carrier Cost Survey of the mail to be delivered for a sample of city carrier routes and delivery days. The RPW volume is a more robust reporting system with greater accuracy so unit costs based on the RPW volumes was used for the roll forward process.

<sup>39</sup> See UDCInputs2007 and 20014 at PRC.gov

The results of the individual roll forward process for the relevant FY 2007 products and the weighted average of Standard Mail and the original Parcel Select are given in the following table under the rubric “Parcel Select.”

**Table A-1 (Table 3 in Paper)**  
**Roll Forward of FY 2007 City Carrier Street Time Costs to FY 2014**  
**(Delivered Competitive product unit costs with piggybacks)**

Product	Unit Cost Delivered by City Carriers (Cents)
First-Class Single Piece Parcel	36.89
First-Class Presort Parcel	28.97
Express Mail	174.89
Standard Mail	33.27
Priority Mail	39.51
Parcel Select	41.63

The piggybacked average street delivery cost for all competitive products delivered by city carriers as calculated from the 2014 Cost Segments and Components Report is 40 cents.<sup>40</sup> The piggybacked roll forward cost for Parcel Select is rounded to 42 cents per piece delivered. Sunday standalone delivery is thought to consist primarily of Parcel Select.

<sup>40</sup> See USPS-FY-2 - FY 2014 Public Cost Segments and Components Report Worksheets for Cost 7 City Carrier Street Time, Tabs Input to DK and Output to CRA PRC.gov., available at <http://www.prc.gov/dockets/document/91010>. Segment 7, Delivery Activity costs of \$513,567/1,714,515 pieces (1,000) equals 29.95 cents per piece. Applying a piggyback factor 33.66 percent gives a piggybacked city carrier delivery costs of 40.04 cents.