About the Virtual Supermarket Program

The Baltimarket Virtual Supermarket Program is an innovative public-private partnership between the Baltimore City Health Department (BCHD) and ShopRite grocery stores. The program uses ShopRite’s online grocery ordering and delivery platform to bring food to neighborhoods with inadequate access to healthy foods and low vehicle ownership. BCHD trains residents to order groceries at their senior/disabled housing, public housing, or community site and pick up their order during group delivery for no delivery cost. It is the first community-based program nationally that uses online food ordering and accepts SNAP. Payments can also be made with cash, credit or debit.

Program Impact

As of March of 2016, the Virtual Supermarket Program has served over 650 unique customers, who placed over 6,300 orders totaling over $220,000. The program has seven sites: six in senior/disabled housing and one in a public library.
Partner Roles and Responsibilities

Program
- Trains Neighborhood Food Advocates in running ordering and delivery
- Provides computer and wireless, if needed

Neighborhood Food Advocates
- Promote program weekly through signs, door knocking, and calls
- Coordinate grocery ordering online and delivery

Supermarket
- Creates codes to wave delivery fees & to indicate delivery site
- Pays mywebgrocer a fee for each online order
- Shops, bags, and rings up ordered foods

Residents
- Order groceries on-site with Neighborhood Food Advocates or online independently
- Pick up groceries in a 1 hour window
- Pay grocery delivery driver on-site with cash, credit, or EBT (via wireless terminal)

Program
- Pays supermarket a discounted delivery fee
- Pays supermarket for $10 healthy eating incentives
- Collects data, provides TA, & evaluates and monitors progress
Financial Model

BCHD partnered with the University of Maryland Extension to examine the ways in which the current financial model fits within a generic grocer’s business model. An easy to use tool was developed that allows grocers and other entities interested in developing similar community delivery programs to examine viability and costs. Below are directions for the tool, the “Virtual Supermarket Calculator”, as well as a discussion on some of its uses.

How to use the Virtual Supermarket Calculator *(Requires Microsoft Excel)*

1. Open the file “VSP_calculator.xlsx” in Microsoft Excel and click on the “Calculator” tab. You will see the following box:

   ![Virtual Supermarket Model Calculator](image)

   *(Note: Numbers used in this model and throughout the document are only illustrative and do NOT reflect Shoprite sales, costs or delivery model).*

2. Input your estimates of the requested fields in the white boxes. “Regular Delivery” refers to standard deliveries (typically one order per delivery location) that the grocer already conducts. “Community Delivery” refers to the delivery of multiple orders to one single site. “Order Picking Fee” and “Order Delivery Fee” are the fees the grocer charges customers on each order for packing and delivering the order, respectively. “Gross Margin” is the percentage of sales remaining for the grocer after subtracting costs of goods sold. A “trip” refers to a round trip delivery activity that originates at the location of packed grocery orders and includes delivery sites. For “Community Delivery”, a “trip” only includes 1 delivery stop, the Community Delivery pickup location.
3. Continue filling out the requested fields that pertain to costs of the delivery system employed by the grocer (pictured below).

### Delivery Costs
*(if not applicable, set to 0)*

<table>
<thead>
<tr>
<th></th>
<th>Regular Delivery</th>
<th>Community Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per Hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor Rate ($ / hour)</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Delivery Service Rate ($ / hour)</td>
<td>$ 30.00</td>
<td>$ 30.00</td>
</tr>
<tr>
<td>Cost per Delivery Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery Service ($) / location</td>
<td>$ -</td>
<td></td>
</tr>
<tr>
<td>Cost per Mile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mileage Cost ($/mile)</td>
<td>$ 0.60</td>
<td></td>
</tr>
</tbody>
</table>

Not all fields need to be entered. Only enter the fields that are applicable to the grocer’s delivery model. If there are delivery costs that are accrued on an hourly basis, input those in either “Labor Rate” or “Delivery Service Rate”. If there are delivery costs that are accrued per delivery location, input those in “Delivery Service.” If there are mileage costs input those in “Mileage Cost”. Set cells that are not applicable to “0”.

*(Note: Calculations of delivery costs, based on the inputs in these first two boxes, can be found on the “Delivery Cost Worksheet” (pictured below). This worksheet is found on the “Delivery Cost Worksheet” tab.)*

### Delivery Cost Worksheet

<table>
<thead>
<tr>
<th></th>
<th>Per Order</th>
<th>Per Hour</th>
<th>Per Trip</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regular Delivery</td>
<td>Community Delivery</td>
<td>Regular Delivery</td>
</tr>
<tr>
<td>Hourly Labor Cost</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Hourly Delivery Service Cost</td>
<td>$ 10.00</td>
<td>$ 5.00</td>
<td>$ 30.00</td>
</tr>
<tr>
<td>Delivery Service Cost per Location</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Mileage Cost</td>
<td>$ 1.50</td>
<td>$ 0.40</td>
<td>$ 4.50</td>
</tr>
<tr>
<td>Total Delivery Costs</td>
<td>$ 11.50</td>
<td>$ 3.40</td>
<td>$ 34.50</td>
</tr>
</tbody>
</table>

4. Continue filling out requested fields in the “Other Costs” box (pictured below).
The "Hours to pick $1 of Order" is a measure of the speed it takes a worker to collect items in an order and also should include the time it takes the worker to do all other associated activities with the order for it to be prepared for pickup or delivery. As an example, if it takes approximately half an hour to pick and prepare a $100 order, then 0.005 (0.5 hours/$100) should be entered in the "Hours to pick $1 of Order" field.

"Website charge" is the cost the grocer incurs for every order entered via online interface. The "Marginal Tax Rate" is the tax rate the grocer pays on income. This will be used to calculate possible tax savings that would occur due to tax deductions for any discount on fees offered to "Community Delivery" customers.

5. As you fill out the inputs in the previous steps, you will see that values of revenues, costs and gross profit are calculated in the "Report" table on the "Calculator" sheet to the right of the inputting tables (pictured below). Values are presented to allow for comparison between regular and community delivery models as well as on per order, per delivery hour and per round trip basis.
Discussion

Modeling Equal Gross Profits Per Trip – Regular and Community Delivery

This calculator can help identify the conditions (e.g. average order size, number of orders per delivery, etc.) that will make the Virtual Supermarket/Community delivery-style model comparable to standard delivery models for grocers. This can occur because under the Community delivery model, more orders are delivered per delivery location, per hour and/or per mile driven. Also, comparability between the two models can occur despite the community delivery model having smaller order sizes on average.\(^1\) We see in the example “Report” table above, that gross profit per order for the Community delivery model, $15.96, is smaller than gross profit per order for the Regular delivery model, $23.70. This is mainly due to the smaller average order size of Community delivery orders. However, in the same example, we see that on a per delivery hour and per trip basis, the gross profit for the Community delivery model exceeds that of the Regular delivery model.\(^2\) Hence, in this example, every hour of delivery under the Community delivery model yields more gross profit than under the regular model.

If such a scenario arises, in which the efficiency of Community deliveries lead to higher gross profits per hour, then grocers can charge Community Delivery orders lower picking and delivery fees and still expect comparable gross profits to their regular delivery business.

Utilizing Tax Benefits to Equalize Gross Profits Per Trip – Regular and Community Delivery

Furthermore, the loss in in gross profit due to lower revenues from fees can be partially offset by tax savings. For example, if in the above example the grocer decides to waive the $5 order picking fee completely and reduce the delivery fee from $10 to $1.50 for Community delivery orders (see input changes pictured below), then that would lead to a tax savings of $4.75 per order, $47.25 per delivery hour and $70.88 per round trip.

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\(^1\) Smaller ordering size will lead to smaller picking costs but also less gross profit per order.

\(^2\) This is NOT always true and completely depends on the values filled in the input fields.
The previous calculations can be found in the “Tax Benefit Worksheet” under the “Tax Benefit Worksheet” tab pictured below:

<table>
<thead>
<tr>
<th>Tax Benefit Worksheet (Community Delivery)</th>
<th>Per Order</th>
<th>Per Hour</th>
<th>Per Trip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair Value of Pick Fee</td>
<td>$ 5.00</td>
<td>$ 50.00</td>
<td>$ 75.00</td>
</tr>
<tr>
<td>Fair Value of Delivery Fee</td>
<td>$ 10.00</td>
<td>$ 100.00</td>
<td>$ 150.00</td>
</tr>
<tr>
<td>Grocer Charge of Pick Fee</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grocer Charge of Delivery Fee</td>
<td>$ 1.50</td>
<td>$ 15.00</td>
<td>$ 22.50</td>
</tr>
<tr>
<td>In-kind Donation</td>
<td>$ 13.50</td>
<td>$ 135.00</td>
<td>$ 202.50</td>
</tr>
<tr>
<td>After-tax Benefit of Donation</td>
<td>$ 4.73</td>
<td>$ 47.25</td>
<td>$ 70.88</td>
</tr>
</tbody>
</table>

Both the loss in revenues from lower fees as well as tax benefits from the in-kind donation are automatically updated in the “Report” table (pictured below).
Looking under the per hour basis we see that, with reduced fees for Community Delivery orders, an hour of Community deliveries and an hour of Regular deliveries lead to almost the same gross profit ($71.85 vs. $71.10, respectively). Hence, using this calculator that takes into account delivery efficiencies and tax benefits, a grocer can determine the lowest fee to charge on a Community Delivery order in order to maintain comparable profit on a per hour basis to that of a Regular Delivery order. Similarly, organizations interested in setting up a Community Delivery site can use the calculator to determine needed number of orders per delivery site (given an average order value) such that gross profit between delivery models on a per hour basis are similar. Finally, local governments and policy makers can use the calculator to determine if greater tax benefits for grocers who participate in Community Deliveries would be appropriate to make more sites viable in their jurisdictions.

For more information on the Virtual Supermarket, please contact the Baltimarket and Food Access Director Laura Flamm at 410-545-7544 or by email at laura.flamm@baltimorecity.gov. For questions on the Virtual Supermarket Calculator, please contact University of Maryland Extension Specialist Mary Zaki at mzaki@umd.edu.

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Thanks to our partners:

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3 The per delivery hour basis is the most appropriate comparison method as we are comparing how much profit is gained from one hour dedicated to a given delivery model. Looking only at the per order basis maybe misleading since the Community delivery model can deliver more orders per unit of time. Similarly, looking only at the per trip basis maybe misleading as community delivery trips can take less time than regular delivery trips. Hence we recommend using the per hour basis for making the best comparisons and setting fees.