Supply-Side and Demand-Side Data for a Quick-Service Restaurant Chain

Data at a Glance:
Observation Window: July 2013 – July 2015

Data are collected from a major quick-service restaurant chain from 5 markets across 4 focal regions

- **Transactions**: menu items purchased, how many, including discounts/promotions
- **Ingredients**: lists for individual menu items
- **Surveys**: submitted by customers linked to individual restaurants
- **Supply Chain**: product deliveries and pricing, including complaints submitted by stores about suppliers & distributors
- **Restaurants**: location & store type

WEBINAR WILL BEGIN SHORTLY

Presentation recording and slide deck will be made available on the WCAI website by August 3, 2015

Submit your proposal by **Monday, August 17, 2015**. Learn more at [http://wcai.wharton.upenn.edu/research](http://wcai.wharton.upenn.edu/research)
Supply-Side and Demand-Side Data for a Quick-Service Restaurant Chain

A WCAI Research Opportunity
sponsored by Independent Purchasing Cooperative, Inc.

July 31, 2015
Introductions

Steven Elinson  
Strategic Portfolio Director,  
Independent Purchasing Cooperative, Inc.

Ahnaf Ali  
Business Intelligence Product Owner  
Independent Purchasing Cooperative, Inc.

Evan Williams  
Payments Processing Platform Product Owner  
Independent Purchasing Cooperative, Inc.

Millie Nunez  
Data Architect  
Independent Purchasing Cooperative, Inc.

Brandon Krakowsky  
Research Director, WCAI

Melissa Hartz  
Assistant Research Director, WCAI

Colleen O’Neill  
Executive Director, WCAI

Elea Feit  
Senior Fellow, WCAI  
Assistant Professor of Marketing, Drexel
IPC is an independent franchisee-owned and operated purchasing cooperative. IPC works to negotiate the lowest costs for purchased goods and services, while improving quality, enhancing competitiveness and ensuring the best value to its members and their customers.
IPC's mission is to help its members be more profitable and competitive – today and for the future.

We would like to gain:

• A fresh perspective on restaurant profitability!!!

• Effectiveness of the Reward program at driving Consumer behavior

• Insights into the value of Limited Time Offers

• Awareness of Consumer Payment preferences

• New models, processes and ideas to improve product quality
One Customer in the Data

Sue comes to the quick-service restaurant at lunchtime. She orders a sandwich and a drink.
One Customer in the Data

Sue pays for the order with her credit card or by redeeming points from her rewards card.
One Customer in the Data

Or Sue pays for the order with cash …
One Customer in the Data

We can see all the details of Sue’s order, including what she ordered, how much she paid, any discounts applied, and her method of payment.

---

Store # 35124-0  Phone 253-762-5869
6352 Restaurant Blvd
McGregor, TX 173619

Served by: jill 6/15/2014 12:48:25 pm
Term ID-Trans# 1 A-539705

<table>
<thead>
<tr>
<th>Qty</th>
<th>Size</th>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Medium</td>
<td>Turkey Sub</td>
<td>3.99</td>
</tr>
<tr>
<td>1</td>
<td>Medium</td>
<td>Bottled Water</td>
<td>1.50</td>
</tr>
</tbody>
</table>

Sub Total: 5.50
General Sales Tax (7%): 0.39
Total (Eat In): 5.89
Credit Card: 5.89
Change: 0.00

Call us with your Comments
Phone (800) 617-4869

Approval No: 63728D
Reference No: 738920657102
Card Issuer: Visa
Account No: **********4792
Acquired: Swipe
Amount: $5.89

CUSTOMER COPY

Host Order ID: 392-546-234184

Thanks for visiting our restaurant. Please let us know how we did today by taking our 1 minute survey at www.submitfeedback.com
One Customer in the Data

At the bottom of Sue’s receipt, there is a link to an optional survey. She might go online and provide feedback based on her experience that day at the restaurant.
How is the Data Collected?

The dataset contains every credit or rewards card transaction Sue made with that card during the observation window...

---

Store # 35124-0  Phone 253-762-5869  6352 Restaurant Blvd  McGregor, TX 77819
Served by: Jill 6/15/2014 12:48:25 pm  Term ID-Trans# 1 A-539705

<table>
<thead>
<tr>
<th>Qty</th>
<th>Size</th>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Medium</td>
<td>Turkey Sub</td>
<td>3.99</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Bottled Water</td>
<td>1.50</td>
</tr>
</tbody>
</table>

Sub Total: 5.50

General Sales Tax (7%): 0.39

Total (Eat In): 5.89

Credit Card: 5.89

Change: 0.00

Approval No: 63728D
Reference No: 736920657102
Card Issuer: Visa
Account No: ********4792
Acquired: Swipe
Amount: $5.89

---

Store # 35124-0  Phone 253-762-5869  6352 Restaurant Blvd  McGregor, TX 77819
Served by: Jill 6/25/2014 2:49:30 pm  Term ID-Trans# 1 A-322876

<table>
<thead>
<tr>
<th>Qty</th>
<th>Size</th>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Small</td>
<td>Italian Sub</td>
<td>4.99</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Diet Coke</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Sub Total: 6.99

General Sales Tax (7%): 0.49

Total (Eat In): 7.48

Credit Card: 7.48

Change: 0.00

Approval No: 67352A
Reference No: 528753241223
Card Issuer: Visa
Account No: ********4792
Acquired: Swipe
Amount: $7.48

---

Store # 35124-0  Phone 253-762-5869  6352 Restaurant Blvd  McGregor, TX 77819
Served by: Jill 6/20/2014 11:32:41 am  Term ID-Trans# 1 A-678433

<table>
<thead>
<tr>
<th>Qty</th>
<th>Size</th>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Large</td>
<td>Roast Beef Sub</td>
<td>7.34</td>
</tr>
<tr>
<td>1</td>
<td>Medium</td>
<td>Turkey Sub</td>
<td>3.99</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Bottled Water</td>
<td>1.50</td>
</tr>
</tbody>
</table>

Sub Total: 5.50

General Sales Tax (7%): 0.39

Total (Eat In): 5.89

Credit Card: 5.89

Change: 0.00

Approval No: 78364A
Reference No: 528371847323
Card Issuer: Visa
Account No: ********4792
Acquired: Swipe
Amount: $5.89

---

Store # 35124-0  Phone 253-762-5869  6352 Restaurant Blvd  McGregor, TX 77819
Served by: Jill 6/20/2014 11:32:41 am  Term ID-Trans# 1 A-678433

<table>
<thead>
<tr>
<th>Qty</th>
<th>Size</th>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Medium</td>
<td>Turkey Sub</td>
<td>3.99</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Bottled Water</td>
<td>1.50</td>
</tr>
</tbody>
</table>

Sub Total: 5.50

General Sales Tax (7%): 0.39

Total (Eat In): 5.89

Credit Card: 5.89

Change: 0.00

Approval No: 78364A
Reference No: 528371847323
Card Issuer: Visa
Account No: ********4792
Acquired: Swipe
Amount: $5.89

---

Store # 35124-0  Phone 253-762-5869  6352 Restaurant Blvd  McGregor, TX 77819
Served by: Jill 6/20/2014 11:32:41 am  Term ID-Trans# 1 A-678433

<table>
<thead>
<tr>
<th>Qty</th>
<th>Size</th>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Medium</td>
<td>Turkey Sub</td>
<td>3.99</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Bottled Water</td>
<td>1.50</td>
</tr>
</tbody>
</table>

Sub Total: 5.50

General Sales Tax (7%): 0.39

Total (Eat In): 5.89

Credit Card: 5.89

Change: 0.00

Approval No: 78364A
Reference No: 528371847323
Card Issuer: Visa
Account No: ********4792
Acquired: Swipe
Amount: $5.89

---
How is the Data Collected?

… as well as every transaction Sue made with cash, but we don’t know it’s Sue. These transactions look like separate customers in the dataset.
How is the Data Collected?

The dataset contains every response Sue provided to the optional online survey. Each survey can be linked to the specific transaction that triggered it.
How is the Data Collected?

... even if she paid with cash.
Where Does the Data Come From?
Where Does the Data Come From?

- Customers are tracked ordering food items at a quick service restaurant.
Where Does the Data Come From?

- Customers are tracked ordering food items at a quick service restaurant.
- Customers are identified by their payment method.
Where Does the Data Come From?

- Customers are tracked ordering food items at a quick service restaurant.
- Customers are identified by their payment method.
- Purchases are made by customers at store locations in 5 markets across 4 geographic regions.
Where Does the Data Come From?

- Customers are tracked ordering food items at a quick service restaurant.
- Customers are identified by their payment method.
- Purchases are made by customers at store locations in 5 markets across 4 geographic regions.
- Purchases are made within a two-year observation period from July 2013 – July 2015.
Where Does the Data Come From?

- Customers are tracked ordering food items at a quick service restaurant.
- Customers are identified by their payment method.
- Purchases are made by customers at store locations in 5 markets across 4 geographic regions.
- Purchases are made within a two-year observation period from July 2013 – July 2015.
- Customer survey data is linked to individual transactions.
Data Structure

Restaurant Location - Supply Chain

Transactions - Customer Experience

Observation Window: July 2013 – July 2015
Data Structure

Restaurant Location

Transactions

Supply Chain

Customer Experience

Observation Window: July 2013 – July 2015
Restaurant Location

The dataset contains data and information for approximately 4000 store locations from 5 markets.

Restaurant location data include:

- store ID, address and region
- type of store (street store vs. food court, etc.)
- store open/close status
- flag indicating if the store participates in the loyalty program
- initial date the store opened
Distribution of Restaurant Type

This shows a random sample of stores from all US markets. The full dataset will include all stores within the circled markets.

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Sneak Peek: Restaurant Location

We can see the details of the store location where Sue made her purchase ...

<table>
<thead>
<tr>
<th>STORE_NUMBER</th>
<th>store_region</th>
<th>store_zip</th>
<th>store_type</th>
<th>STORE_STATUS</th>
<th>STORE_INITIAL_OPEN_DATE</th>
<th>STORE_LOYALTY_FLAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>35012-0</td>
<td>SOUTH</td>
<td>32966</td>
<td>Store</td>
<td>Open &amp; Operating</td>
<td>2006-07-13 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35013-0</td>
<td>NORTHEAST</td>
<td>14843</td>
<td>Store</td>
<td>Open &amp; Operating</td>
<td>2005-06-29 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35018-0</td>
<td>WEST</td>
<td>92391</td>
<td>C-Store/Gas Station</td>
<td>Open &amp; Operating</td>
<td>2005-03-16 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35022-0</td>
<td>SOUTH</td>
<td>30096</td>
<td>Store</td>
<td>Open &amp; Operating</td>
<td>2005-05-02 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>3505-0</td>
<td>NORTHEAST</td>
<td>15229</td>
<td>Traditional</td>
<td>Open &amp; Operating</td>
<td>1988-08-18 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35055-0</td>
<td>SOUTH</td>
<td>76137</td>
<td>Traditional</td>
<td>Open &amp; Operating</td>
<td>2005-10-07 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>3507-0</td>
<td>SOUTH</td>
<td>77505</td>
<td>Traditional</td>
<td>Open &amp; Operating</td>
<td>1988-04-26 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>3510-0</td>
<td>WEST</td>
<td>92078</td>
<td>Traditional</td>
<td>Open &amp; Operating</td>
<td>1988-03-07 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35103-0</td>
<td>MIDWEST</td>
<td>49770</td>
<td>Store</td>
<td>Open &amp; Operating</td>
<td>2005-08-03 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35124-0</td>
<td>SOUTH</td>
<td>76657</td>
<td>Traditional</td>
<td>Open &amp; Operating</td>
<td>2005-03-16 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35126-0</td>
<td>SOUTH</td>
<td>30078</td>
<td>Traditional</td>
<td>Open &amp; Operating</td>
<td>2008-03-28 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35127-0</td>
<td>SOUTH</td>
<td>28208</td>
<td>Store</td>
<td>Open &amp; Operating</td>
<td>2005-10-24 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35143-0</td>
<td>WEST</td>
<td>92254</td>
<td>C-Store/Gas Station</td>
<td>Open &amp; Operating</td>
<td>2006-12-14 00:00:00</td>
<td>N</td>
</tr>
<tr>
<td>35146-0</td>
<td>NORTHEAST</td>
<td>7032</td>
<td>Store</td>
<td>Open &amp; Operating</td>
<td>2006-06-12 00:00:00</td>
<td>Y</td>
</tr>
</tbody>
</table>

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Data Structure

- Restaurant Location
- Supply Chain
- Transactions
- Customer Experience

Observation Window: July 2013 – July 2015
Data Structure

Restaurant Location

Supply Chain

Transactions

Customer Experience

Observation Window: July 2013 – July 2015
Transactions – Menu Items, Recipes & Ingredients

A single transaction includes some number of menu items, recipes and ingredients.

Observation Window: July 2013 – July 2015
Transactions

The dataset contains approximately 150 million transactions over a two-year period.

Transaction data include:

- **customer ID** (card purchases) and **order ID**

- **menu items** and **transaction date**

- **total order amount** and **payment type**

- **applied discounts** and **promotions**

- **rewards card** payment information, including **points earned** and **points redeemed** at participating retailers

- **ID of the employee** who rang up the order
* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Sneak Peek: Transactions

We can see the details of Sue’s transaction …

<table>
<thead>
<tr>
<th>MD5KEY_ORDERSALE</th>
<th>StoreNumber</th>
<th>TransactionDate</th>
<th>Employeeld</th>
<th>PaymentAmount</th>
<th>PaymentType</th>
</tr>
</thead>
<tbody>
<tr>
<td>0EC552659F22B3615B3ED066E022C2E4</td>
<td>2267-0</td>
<td>2015-03-12 11:32:00</td>
<td>4</td>
<td>10.0000</td>
<td>MasterCard</td>
</tr>
<tr>
<td>0EC84EC8F66A78A0DEA64F831D8045B</td>
<td>15015-0</td>
<td>2014-11-20 20:28:00</td>
<td>10</td>
<td>8.4900</td>
<td>VISA</td>
</tr>
<tr>
<td>0ED347ADEB4A496FD6D0B9ACA0D21475</td>
<td>37312-0</td>
<td>2014-09-03 12:37:00</td>
<td>11</td>
<td>5.0000</td>
<td>MasterCard</td>
</tr>
<tr>
<td>0EE33810E88080D8C8CF0A8819550C65</td>
<td>11437-0</td>
<td>2015-02-05 12:56:00</td>
<td>9</td>
<td>7.7000</td>
<td>Cash</td>
</tr>
<tr>
<td>0EEB47C53E8C6AE2E6AC630806AF1AA6</td>
<td>3377-0</td>
<td>2015-06-21 15:26:00</td>
<td>25</td>
<td>6.2100</td>
<td>Cash</td>
</tr>
<tr>
<td>0EFACE949B3EBC2E7CF6CBA4A49BAD13</td>
<td>28863-0</td>
<td>2015-03-30 17:49:00</td>
<td>14</td>
<td>8.3200</td>
<td>VISA</td>
</tr>
<tr>
<td>0EFBEDEDAEFB029CF1E75B7B4D8A1B97</td>
<td>32175-0</td>
<td>2015-02-18 18:40:00</td>
<td>14</td>
<td>6.3600</td>
<td>Cash</td>
</tr>
<tr>
<td>0F384B5554C202D624684BA84A51061E</td>
<td>10231-0</td>
<td>2015-05-12 19:55:00</td>
<td>16</td>
<td>8.1400</td>
<td>RewardsCard</td>
</tr>
<tr>
<td>0F4ECA374E6CBD69BB1834C1851165EA</td>
<td>29971-0</td>
<td>2015-06-02 12:17:00</td>
<td>35</td>
<td>12.9000</td>
<td>VISA</td>
</tr>
<tr>
<td>0F86952BE2CC5396C0CB1239E3EF139A</td>
<td>13017-0</td>
<td>2015-04-23 13:47:00</td>
<td>4</td>
<td>5.2500</td>
<td>Cash</td>
</tr>
<tr>
<td>0F86952BE2CC5396C0CB1239E3EF139A</td>
<td>13017-0</td>
<td>2015-04-23 13:47:00</td>
<td>4</td>
<td>-0.0100</td>
<td>Cash Roun...</td>
</tr>
<tr>
<td>0F8EA8819A466079DA3362AE1968095</td>
<td>25414-0</td>
<td>2015-01-30 11:21:00</td>
<td>10</td>
<td>7.6100</td>
<td>VISA</td>
</tr>
<tr>
<td>0F939E7A5A6741B7DB3D4656DEA7649C</td>
<td>25006-0</td>
<td>2015-03-13 20:35:00</td>
<td>7</td>
<td>8.3000</td>
<td>VISA</td>
</tr>
</tbody>
</table>

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Transactions – Menu Items, Recipes & Ingredients

The dataset contains approximately 3000 unique menu items including recipe and ingredients information from all store transactions.

Menu item and recipe data include:

- menu item price and quantity
- applied menu item promotions with original price and discounted price
- recipe ID, name and description
- menu item intro date
- ingredients list with quantity of each
Transactions by Menu Item Category

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Transactions by Menu Item Promotion Type

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Sneak Peek: Transactions - Menu Items

We can see the details of Sue’s purchased menu items …

<table>
<thead>
<tr>
<th>MENU_ITEM_ID</th>
<th>MDSKEY_ORDERSALE</th>
<th>StoreNumber</th>
<th>TransactionDate</th>
<th>AppliedPromotionId</th>
<th>AdjustedPrice</th>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>0EFD84D7E57A75B7B4D</td>
<td>32175</td>
<td>2015-02-18 18:40:00</td>
<td>1603</td>
<td>6.0000</td>
<td>4.5000</td>
<td>2</td>
</tr>
<tr>
<td>33</td>
<td>0F84B5554C202D6246B4B8A4A51</td>
<td>10231</td>
<td>2015-05-12 19:55:00</td>
<td>0</td>
<td>7.7500</td>
<td>7.7500</td>
<td>1</td>
</tr>
<tr>
<td>2576</td>
<td>0F4ECA374E6CDB69B1834C1851</td>
<td>29971</td>
<td>2015-06-20 12:17:00</td>
<td>0</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1</td>
</tr>
<tr>
<td>2415</td>
<td>0F4ECA374E6CDB69B1834C1851</td>
<td>29971</td>
<td>2015-06-20 12:17:00</td>
<td>0</td>
<td>7.9500</td>
<td>7.9500</td>
<td>1</td>
</tr>
<tr>
<td>2874</td>
<td>0F4ECA374E6CDB69B1834C1851</td>
<td>29971</td>
<td>2015-06-20 12:17:00</td>
<td>0</td>
<td>3.9500</td>
<td>3.9500</td>
<td>1</td>
</tr>
<tr>
<td>43</td>
<td>0F73E96447A3D7B8BBF534A1522B</td>
<td>35124</td>
<td>2014-06-15 12:48:25</td>
<td>0</td>
<td>1.5000</td>
<td>1.5000</td>
<td>1</td>
</tr>
<tr>
<td>1711</td>
<td>0F86952BE2C4539C5C6B12393E3</td>
<td>13017</td>
<td>2015-04-23 13:47:00</td>
<td>0</td>
<td>4.9900</td>
<td>4.9900</td>
<td>1</td>
</tr>
<tr>
<td>1229</td>
<td>0F8EA8819A466079DAA3362AE196</td>
<td>25414</td>
<td>2015-01-30 11:21:00</td>
<td>0</td>
<td>7.0000</td>
<td>7.0000</td>
<td>1</td>
</tr>
<tr>
<td>85</td>
<td>0F939E7A56741B7DB3D4656DEA</td>
<td>25006</td>
<td>2015-03-13 20:35:00</td>
<td>0</td>
<td>7.7500</td>
<td>7.7500</td>
<td>1</td>
</tr>
<tr>
<td>280</td>
<td>0FB33463F9861B6620E889D4906E</td>
<td>18349</td>
<td>2014-09-15 12:31:00</td>
<td>1471</td>
<td>1.2500</td>
<td>1.8500</td>
<td>1</td>
</tr>
<tr>
<td>277</td>
<td>0FB33463F9861B6620E889D4906E</td>
<td>18349</td>
<td>2014-09-15 12:31:00</td>
<td>1471</td>
<td>0.9500</td>
<td>1.2500</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>0FB33463F9861B6620E889D4906E</td>
<td>18349</td>
<td>2014-09-15 12:31:00</td>
<td>1471</td>
<td>2.8000</td>
<td>4.3900</td>
<td>1</td>
</tr>
<tr>
<td>49</td>
<td>0FC698BBF74D3F56B25AD6AB786</td>
<td>52076</td>
<td>2013-12-31 13:21:00</td>
<td>174</td>
<td>0.0000</td>
<td>4.7500</td>
<td>1</td>
</tr>
</tbody>
</table>

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
**Sneak Peek: Transactions - Recipes and Ingredients**

And we can see the details of the specific recipes and ingredients used in Sue’s purchased menu items …

<table>
<thead>
<tr>
<th>recipeld</th>
<th>RecipeName</th>
<th>departmenttypeid</th>
<th>flavorTypeld</th>
<th>createdDT</th>
<th>createdby</th>
<th>LastUpdateDt</th>
<th>lastupdateby</th>
</tr>
</thead>
<tbody>
<tr>
<td>107</td>
<td>FtL</td>
<td>10001</td>
<td>5</td>
<td>2011-03-09 18:31:15</td>
<td>6</td>
<td>2014-01-08 18:19:00</td>
<td>47013</td>
</tr>
<tr>
<td>608</td>
<td>dmF</td>
<td>10023</td>
<td>5</td>
<td>2011-06-06 20:03:50</td>
<td>6</td>
<td>2014-01-08 19:17:00</td>
<td>47013</td>
</tr>
<tr>
<td>1601</td>
<td>BgM/BcnEgg</td>
<td>10016</td>
<td>30</td>
<td>2012-06-05 19:03:01</td>
<td>6</td>
<td>2014-01-08 16:03:35</td>
<td>38982</td>
</tr>
<tr>
<td>1602</td>
<td>CrM/BcnEgg</td>
<td>10017</td>
<td>30</td>
<td>2012-06-05 19:03:01</td>
<td>6</td>
<td>2014-01-08 16:03:35</td>
<td>38982</td>
</tr>
<tr>
<td>1603</td>
<td>BsM/BcnEgg</td>
<td>10018</td>
<td>30</td>
<td>2012-06-05 19:03:01</td>
<td>6</td>
<td>2014-01-08 16:03:35</td>
<td>38982</td>
</tr>
<tr>
<td>1604</td>
<td>3Bf/BcnEgg</td>
<td>10068</td>
<td>30</td>
<td>2012-06-05 19:03:01</td>
<td>6</td>
<td>2014-01-08 16:02:07</td>
<td>38982</td>
</tr>
<tr>
<td>1605</td>
<td>FbK/HamEgg</td>
<td>10003</td>
<td>33</td>
<td>2012-06-05 19:05:10</td>
<td>6</td>
<td>2014-01-08 17:11:29</td>
<td>38982</td>
</tr>
</tbody>
</table>

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Data Structure

Restaurant Location → Transactions

Supply Chain → Customer Experience

Observation Window: July 2013 – July 2015
Data Structure

- Restaurant Location
- Transactions
- Supply Chain
- Customer Experience

Observation Window: July 2013 – July 2015
Supply Chain - Supplier to Distributor to Store to Customer

Products move from suppliers to distribution centers to stores to individual customers.
Supply Chain - Supplier to Distributor Transactions

The dataset contains detailed invoice information on products sold by suppliers to distributors.

Supplier to distributor transaction data include:

- invoice number and date

- supplier name and address

- product description, shipment date, and quantity

- distributor name and address

- unit price and total cost

- supplier-distributor contract metadata, including the original contracted price
Supply Chain - Distributor to Store Transactions

The dataset contains transaction data on products sold to stores in all focal markets.

Distributor to store transaction data include:

- transaction ID and date
- distributor name and address
- product description, pack quantity and unit price
- store ID and account metadata
Suppliers by City

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Distributors by City

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Supply Chain - Quality Management

The dataset contains quality management data for all products supplied to the restaurants. This includes complaints from stores about product deliveries and complaints from distribution centers about suppliers.

Quality management data include:

- quality complaints linked to individual restaurants
- date of complaint
- affected product(s)
- original date of shipment
- refund status
Supply Chain - Quality Management

Quality management data also contains free-text descriptions of the issue(s). Here is a complaint from a store about a product delivery ...

**Complaint**
[26-NOV-07 01:11:22 PM] “When manager received the avocados they were green and underripe.”

**What Caused the Problem?**
[29-NOV-07 12:11:40 PM] “Break Down. Store will get credit for 3 cases. … will credit on the po# 63782981.”

**Credit Amount**
[29-NOV-07 12:31:21 PM] $64.44
Supply Chain - Quality Management

Quality management data also contains free-text descriptions of the issue(s). Here is a complaint from a distribution center about a supplier …

**Complaint**
[15-JUN-06 11:06:01 AM]  *“Tomatoes are watery and mushy.”*

**What Caused the Problem?**
[16-JUN-06 12:47:08 PM]  *“Possible temperature abuse.”*

**Credit Amount**
[16-JUN-06 12:53:46 PM]  $11.45
Top 100 Words in Complaints

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Complaints by Product Category

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Sneak Peek: Supply Chain - Quality Management

<table>
<thead>
<tr>
<th>store</th>
<th>credit_amount</th>
<th>comp_invoice_num</th>
<th>delivery_date</th>
<th>cont_state</th>
<th>comp_owner_type</th>
<th>category_l2</th>
<th>category_l3</th>
</tr>
</thead>
<tbody>
<tr>
<td>17747-0</td>
<td>23.0900</td>
<td>2877471</td>
<td>2005-07-19</td>
<td>ON</td>
<td>DISTRIBUTOR</td>
<td>DAIRY</td>
<td>CHEESE</td>
</tr>
<tr>
<td>6785-0</td>
<td>NULL</td>
<td>NULL</td>
<td>2005-08-10</td>
<td>CA</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>TOMATO</td>
</tr>
<tr>
<td>6785-0</td>
<td>13.8100</td>
<td>16961319</td>
<td>2005-08-17</td>
<td>CA</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>TOMATO</td>
</tr>
<tr>
<td>6785-0</td>
<td>59.5600</td>
<td>17641156</td>
<td>2005-11-30</td>
<td>CA</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>TOMATO</td>
</tr>
<tr>
<td>6785-0</td>
<td>87.9000</td>
<td>17984468</td>
<td>2006-01-25</td>
<td>CA</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>TOMATO</td>
</tr>
<tr>
<td>6785-0</td>
<td>29.3000</td>
<td>17984470</td>
<td>2006-01-25</td>
<td>CA</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>TOMATO</td>
</tr>
<tr>
<td>17747-0</td>
<td>47.6700</td>
<td>3053972</td>
<td>2006-06-06</td>
<td>ON</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>LETTUCE</td>
</tr>
<tr>
<td>6785-0</td>
<td>15.3500</td>
<td>18763695</td>
<td>2006-06-14</td>
<td>CA</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>AVOCADO BULK</td>
</tr>
<tr>
<td>11254-0</td>
<td>7.6000</td>
<td>607120217</td>
<td>2006-06-16</td>
<td>ME</td>
<td>DISTRIBUTOR</td>
<td>PROTEIN</td>
<td>PEPPERONI &amp; SALAMI</td>
</tr>
<tr>
<td>6785-0</td>
<td>30.4000</td>
<td>19413347</td>
<td>2006-09-13</td>
<td>CA</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>AVOCADO BULK</td>
</tr>
<tr>
<td>6785-0</td>
<td>44.4000</td>
<td>19334003</td>
<td>2006-09-13</td>
<td>CA</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>TOMATO</td>
</tr>
<tr>
<td>4539-0</td>
<td>82.8000</td>
<td>1516525</td>
<td>2006-10-11</td>
<td>NM</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>TOMATO</td>
</tr>
<tr>
<td>37327-0</td>
<td>10.0600</td>
<td>203980</td>
<td>2006-11-02</td>
<td>NC</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>CUCUMBER</td>
</tr>
<tr>
<td>26764-0</td>
<td>9.7200</td>
<td>204017</td>
<td>2006-11-13</td>
<td>SC</td>
<td>DISTRIBUTOR</td>
<td>PRODUCE</td>
<td>LETTUCE</td>
</tr>
</tbody>
</table>

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Data Structure

- Restaurant Location
- Supply Chain
- Transactions
- Customer Experience

Observation Window: July 2013 – July 2015
Data Structure

- Restaurant Location
- Supply Chain
- Transactions
- Customer Experience

Observation Window: July 2013 – July 2015
Customer Experience

The dataset contains over 1 million customer satisfaction survey results for all participating store locations.

Customer experience survey data include:

- receipt number linking a survey to a transaction
- date and time survey was submitted
- 10+ customer satisfaction ratings, including Net Promoter Score
- geographic location of customer while completing the survey
Customer Experience

Customer experience data also contains free-text feedback and comments. Here are some comments from customers …

[2012-10-03] “*Keep up the good work of welcoming and serving customers!*”

[2012-10-08] “*The lettuce used in my sandwich was on the verge of wilting. Not very appetizing!*”

[2012-10-12] “*The chicken melt today was really delicious. Too bad I had to eat it without my usual unsweetened tea*”
Top 100 Words in Customer Survey Data

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Customer Experience – Submissions Over Time

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Customer Experience – Submissions Over Time by Payment Method

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Sneak Peek: Customer Experience

<table>
<thead>
<tr>
<th>sus_id</th>
<th>sus_submitDate</th>
<th>Month_Submit</th>
<th>YEAR_submit</th>
<th>week_Submit</th>
<th>storeNumber</th>
<th>city</th>
<th>device_id</th>
</tr>
</thead>
<tbody>
<tr>
<td>6305057</td>
<td>2012-10-03</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>14326-0</td>
<td>Austin</td>
<td>6740d01d983bd44809638df7013...</td>
</tr>
<tr>
<td>6305535</td>
<td>2012-10-03</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>14326-0</td>
<td>Austin</td>
<td>NULL</td>
</tr>
<tr>
<td>6306397</td>
<td>2012-10-03</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>14326-0</td>
<td>Austin</td>
<td>8f2b18f4bc864f0db5087620190...</td>
</tr>
<tr>
<td>6309788</td>
<td>2012-10-03</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>1254-0</td>
<td>Portland</td>
<td>fbc02ae781bd48c79a375f976b...</td>
</tr>
<tr>
<td>6310568</td>
<td>2012-10-03</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>47272-0</td>
<td>Mount Olive</td>
<td>a5a91aa72a4d484e81d1107bd...</td>
</tr>
<tr>
<td>6310587</td>
<td>2012-10-03</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>4539-0</td>
<td>Santa Fe</td>
<td>a6da41ada8484b849acde001c7...</td>
</tr>
<tr>
<td>6310906</td>
<td>2012-10-03</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>27766-0</td>
<td>Nampa</td>
<td>NULL</td>
</tr>
<tr>
<td>6318149</td>
<td>2012-10-04</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>14326-0</td>
<td>Austin</td>
<td>NULL</td>
</tr>
<tr>
<td>6319826</td>
<td>2012-10-04</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>14326-0</td>
<td>Austin</td>
<td>07e66fb65406448a952f51a54...</td>
</tr>
<tr>
<td>6321411</td>
<td>2012-10-04</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>14326-0</td>
<td>Austin</td>
<td>8f2b18f4bc864f0db5087620190...</td>
</tr>
<tr>
<td>6322105</td>
<td>2012-10-04</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>14326-0</td>
<td>Austin</td>
<td>1a1196ea2983436ea60158745...</td>
</tr>
<tr>
<td>6322264</td>
<td>2012-10-04</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>14326-0</td>
<td>Austin</td>
<td>16e0093110074f2bbed3f9319...</td>
</tr>
<tr>
<td>6323024</td>
<td>2012-10-04</td>
<td>10</td>
<td>2012</td>
<td>40</td>
<td>14326-0</td>
<td>Austin</td>
<td>375e0ada182a46e9b56197329...</td>
</tr>
</tbody>
</table>

* Only a sample of the data is represented. Awarded teams will have access to the full dataset.
Data Structure

Restaurant Location

Transactions

Supply Chain

Customer Experience

Observation Window: July 2013 – July 2015
Possible Research Areas from IPC

- How do restaurant employees affect customer satisfaction, customer complaints and sales?
- How does the reward program affect customer behavior over time? Is the rewards program beneficial to the franchisees?
- How much impact does product quality and service have on sales and future customer behavior?
- How does satisfaction at the distributor and store levels affect satisfaction at the customer level?
- How do certain products, limited time offers, discounts and promotions drive profitability? What impact do these have on attracting new customers and driving customer visits?
- Can we predict how customers will react to limited time offers?
- How can customers who pay with cash be uniquely identified? Can cash transactions be grouped together or linked with credit card/rewards card transactions to create a transaction history for customers who pay with cash?
Possible Research Areas from IPC

• How do restaurant employees affect customer satisfaction, customer complaints and sales?

• How does the reward program affect customer behavior over time? Is the rewards program beneficial to the franchisees?

• How much impact does product quality and service have on sales and future customer behavior?

• How does satisfaction at the distributor and store levels affect satisfaction at the customer level?

• How do certain products, limited time offers, discounts and promotions drive profitability? What impact do these have on attracting new customers and driving customer visits?

• Can we predict how customers will react to limited time offers?

• How can customers who pay with cash be uniquely identified? Can cash transactions be grouped together or linked with credit card/rewards card transactions to create a transaction history for customers who pay with cash?

something else not on this list …
Proposal Format

Proposals should be in PDF format, no more than 2,000 words, and include the following information:

• Title
• Author(s) name, title, affiliation and e-mail address: Please designate a corresponding author.
• Summary information: a single “slide” that visually summarizes team & project.
• Abstract
• Introduction: Describe expected contribution(s), covering both the academic and practical aspects. Please keep it concise, and cite relevant work as necessary to explain your academic contribution. There is no need to include a lengthy literature review.
• Detailed project proposal: Please include enough detail that we can assess the feasibility & merit of the proposed approach. For example, modeling projects should include at least a sketch of the model. In addition, include a rough estimate of how long the project will take. Also include the business relevance of your research and the impact for the sponsor as well.
• Data Needs: Bulleted list of data required or requested for analysis not explicitly mentioned during this webinar. While we can’t guarantee the inclusion of these items, we are happy to investigate the availability.
• Biographies: Include up to a paragraph-long biography highlighting what each team member will contribute to the project.
Proposal Submission Process

• Read more about the proposal format at http://www.wharton.upenn.edu/wcai/Proposals.cfm

• Submit proposals at http://www.wharton.upenn.edu/wcai/proposalform.cfm no later than Monday, August 17, 2015, 12 noon US Eastern.

  – Proposals will only be accepted online.

  – A single PDF combining the written portion and the single slide.

• Proposals will be evaluated both on academic contribution and potential to significantly improve the research sponsor’s marketing practice by the proposal review committee:

  Elea Feit (Drexel University), Eric Bradlow (WCAI), Pete Fader (WCAI), Seethu Seetharaman (Washington University), and representatives from Independent Purchasing Cooperative, Inc.

• Contact wcai-research@wharton.upenn.edu, if you have questions prior to submitting your proposal.
A Few Operational Notes

This webinar is intended for researchers & scholars. It should not be published or presented without permission from WCAI.

• Questions on program: wcai-research@wharton.upenn.edu

• Press contacts: wcai-press@wharton.upenn.edu

To get access to the data, research teams should submit a proposal to WCAI and the sponsor for approval.

Please note that the data sponsor cannot be named in any publication or presentation.
Other WCAI Opportunities for Researchers

If you registered for this webinar, you will receive regular announcements regarding:

- **Upcoming Research Opportunities:**
  - Television Viewing Habits and Customer Experience
  - 1-2 more projects in the Fall

Also find us at:

- **Announcements:** [http://wcai.wharton.upenn.edu](http://wcai.wharton.upenn.edu)