

Sales at the Sandwich Shop

In this module, we will look at how transaction data from a sandwich shop can be used in understanding performance and in inventory planning.

Part 1: Graphing Point-of-Sale (POS) Data

On the tab called POS Data, you have one month of transaction data from the POS system (point-of-sale system, also known as the “cash register”).

- 1) Revenue per day.
 - a. What was total revenue on July 8?

 - b. Create a graph of daily revenue.

- 2) Number of items per day.
 - a. How many items were sold on July 15?

 - b. Create a graph of items sold per day.

- 3) What patterns do you notice in the graphs?

You should be able to answer similar questions for any date(s) in the data set.

Part 2: Understanding the Product Mix

- 1) How many different product types are there?
- 2) How many different desserts are there?
- 3) How many different sandwiches are there?
- 4) What is the most expensive sandwich?
- 5) Create a graph that shows the frequency (number of units sold) for each of the products sold on July 1.
- 6) What was the most popular product sold on July 1? How many units of that product were sold?
- 7) What percentage of the sandwiches sold during the month were grilled cheese sandwiches?
- 8) Which product brought in the most revenue on July 1?
- 9) How much revenue did the BLT sandwich bring in on July 10?
- 10) Create a graph that shows the top five products in terms of their percentage of total revenue for the month.

You should be able to analyze the data on the POS Data tab to answer questions referring to any date, any product, and any transaction.

Part 3: Ingredient Usage Per Day

- 1) Create a table that shows how many of each sandwich was sold on July 1. Fill in the missing cells below

Sandwich	Number of Sandwiches Sold
BTL	27
Chicken Salad	
Grilled Cheese	
Ham and Cheese	
Italian Sub	
Meatball Sub	17
Philly Cheesesteak	
Roast Beef	
Tuna Salad	
Turkey Club	25
Vegetarian	

You should be able to determine the number sold for any product on any date.

- 2) Using the information on the Ingredients tab, create a table that shows how much of each ingredient was used on July 1. Fill in the missing cells below

Ingredient	Units	Amount Used July 1
Roll	EACH	77
Bread	EACH	
Tomato	OZ	
Lettuce	OZ	
Peppers	OZ	
Sprouts	OZ	
Onions	OZ	
Cheese	OZ	
Bacon	OZ	
Ham	OZ	52
Salami	OZ	
Roast Beef	OZ	153
Tuna	OZ	
Chicken	OZ	
Turkey	OZ	50
Meatballs	OZ	68

Using a matrix of ingredients, you should be able to determine the number of units used on any date for any ingredient.

Part 4: Ingredient Usage Inventory

- 1) Create a table that shows how many of each sandwich was sold during the 7-day period from July 25-31. Fill in the missing cells below

Sandwich	Number of Sandwiches Sold
BTL	105
Chicken Salad	
Grilled Cheese	
Ham and Cheese	
Italian Sub	
Meatball Sub	67
Philly Cheesesteak	
Roast Beef	
Tuna Salad	
Turkey Club	118
Vegetarian	

You should be able to determine the number of any product sold during any 7-day period.

- 2) Create a table that shows how much of each ingredient was used July 25-31. Then use the amounts actually used in that week as the *forecasted usage* for the next week (August 1-7). Figure out how much of each ingredient you would need to order to have enough on hand to meet that forecasted demand for products for August 1-7. Fill in the missing cells below.
- (The Current Inventory tab shows the inventory on hand for each ingredient on the morning of August 1.)

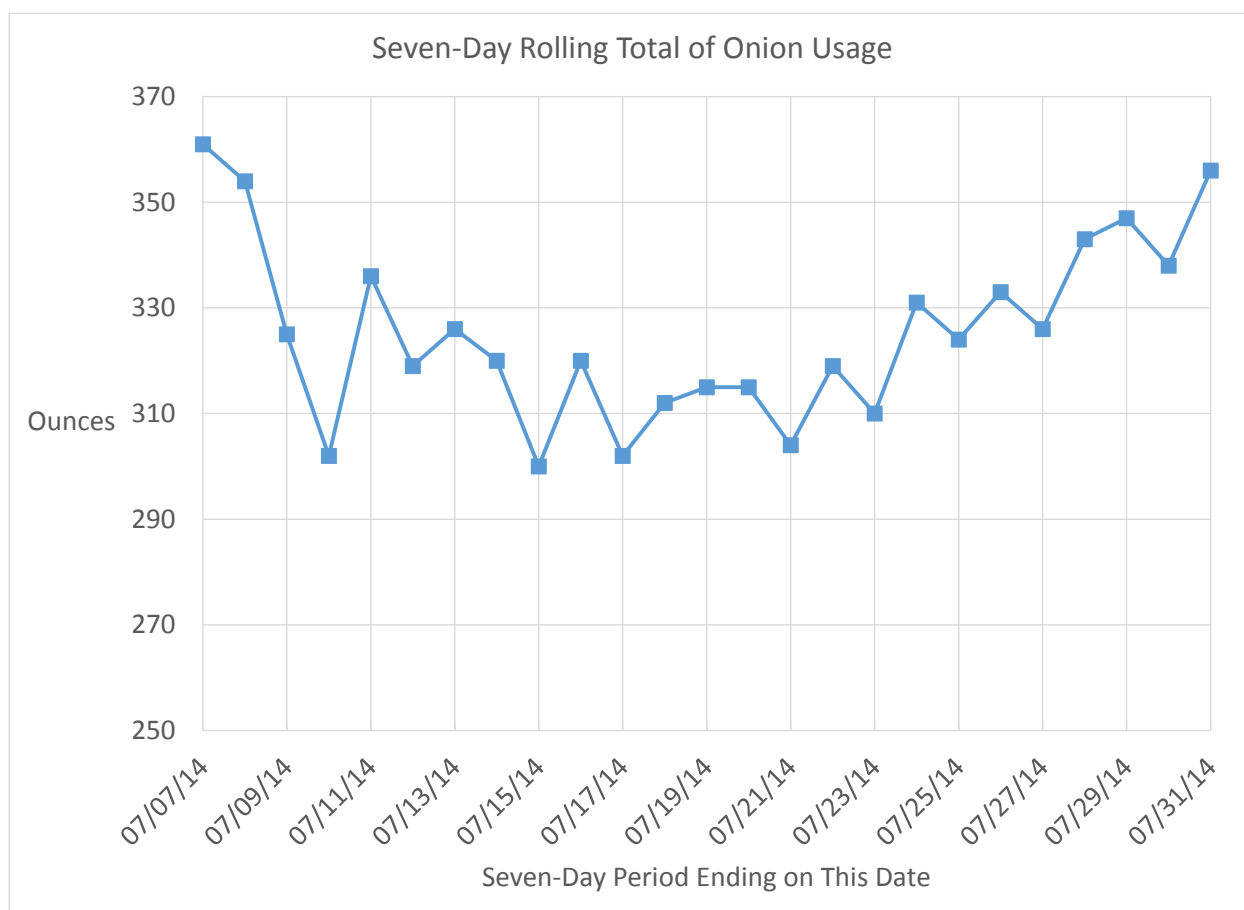
Ingredient	Units	Amount Used July 25-31	Amount To Order
Roll	EACH		
Bread	EACH	1150	
Tomato	OZ	734	439
Lettuce	OZ	558	378
Peppers	OZ	159	39
Sprouts	OZ	50	20
Onions	OZ	356	257
Cheese	OZ	719	519
Bacon	OZ		
Ham	OZ		
Salami	OZ		
Roast Beef	OZ		
Tuna	OZ		
Chicken	OZ		
Turkey	OZ		
Meatballs	OZ		

You should be able to determine the amount of these ingredients used over any 7-day period and to determine the amount to order based on a current inventory list.

Part 5: Rolling Totals

Ordering based on the last seven days doesn't take into account week-to-week fluctuations. We will look at rolling totals (moving totals) to understand the fluctuations.

Here is a graph that shows the seven-day rolling total of onion usage. The graph shows, for each 7-day period, how many onions were used in orders placed in those seven days. For example, for the period from 7/17/14 to 7/23/14, the sandwich shop used 310 ounces of onions.



- 1) Looking at the chart above, approximately how many ounces of onions were used in the 7-day period ending on 7/10/14?
- 2) Create a graph like the one above that shows the 7-day rolling total for usage of **salami**.
Hint: For the seven days ending 7/19/14, 184 ounces were used.

You should be able to read data from and to create similar graphs for the usage of any product in the inventory.

Now we are going to revisit the order quantities you calculated in Part 4 and take into account fluctuations. To do so, use the data on the Current Inventory tab and also 7-day rolling totals of usage of all of the ingredients (not just onions and salami).

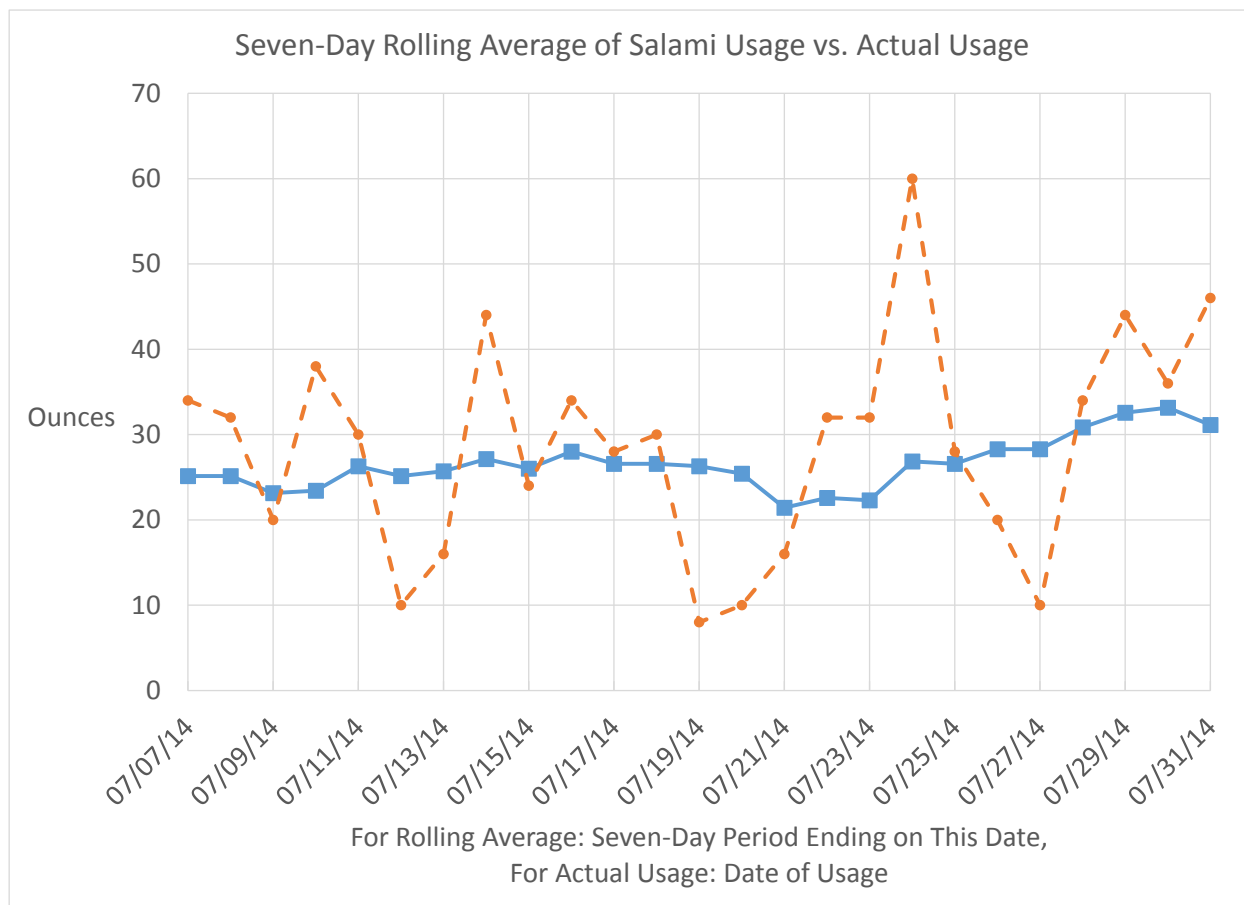
- 3) How much of each ingredient would you need to order on 8/1/2014 to have enough on hand to meet the **highest** 7-day rolling total in the month of July? Fill in the missing cells below.

Ingredient	Units	Amount To Order to Meet the Highest 7-Day Rolling Total Usage
Roll	EACH	263
Bread	EACH	850
Tomato	OZ	441
Lettuce	OZ	
Peppers	OZ	
Sprouts	OZ	
Onions	OZ	
Cheese	OZ	
Bacon	OZ	
Ham	OZ	
Salami	OZ	
Roast Beef	OZ	
Tuna	OZ	
Chicken	OZ	
Turkey	OZ	156
Meatballs	OZ	351

Part 6: Rolling Averages vs. Daily Actual Usage (*OPTIONAL*)

In the previous part, you calculated rolling totals: the total usage of each ingredient over a 7-day period. In this part, we will calculate rolling **averages** (moving averages).

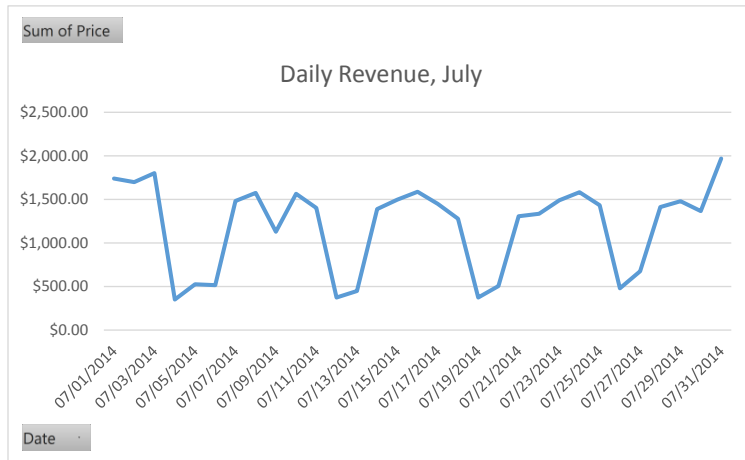
Here's a graph that shows the 7-day rolling average for salami usage *and* the actual daily usage of salami for 7/7-7/31.



- 1) Is the dashed line the rolling average or the actual daily usage? (You should be able to answer this question without doing any calculations with the data.) How can you tell?
- 2) Generate the same type of graph for roast beef. Hint: for the seven days ending 7/19/14, 65.14 ounces was the average usage, while actual usage was 18 ounces.

Part 1

1a) \$1,573.30

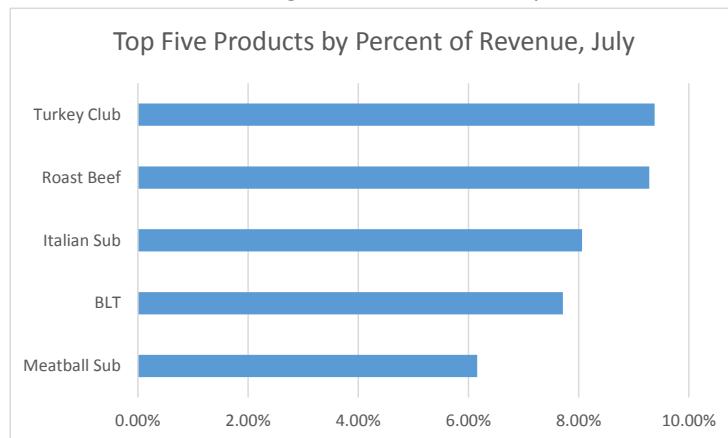


1b)

2a) 451

Part 2

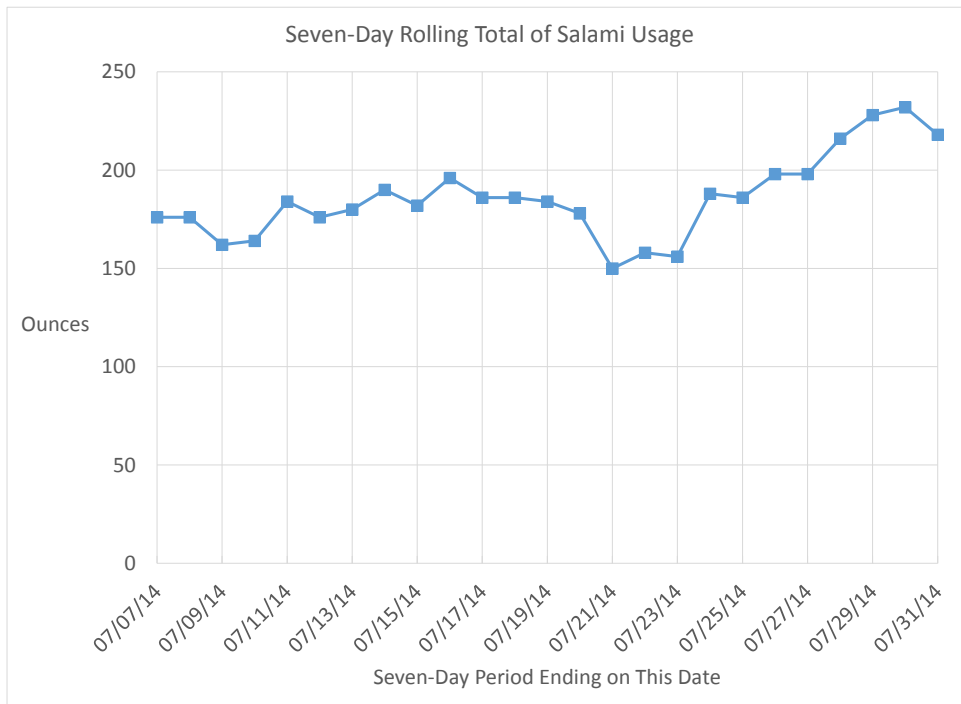
- 1) 4
- 2) 6
- 3) 11
- 4) Philly Cheesesteak
- 5) Graph: the top five are Potato Chips, Fritos, Roast Beef, BBQ Potato Chips, and BLT
- 6) Potato Chips, 46
- 7) 8.85% of the sandwiches during the month were Grilled Cheese
- 8) Roast Beef sandwich (\$223.68)
- 9) The BLT sandwich brought in \$113.81 on July 10.



10)

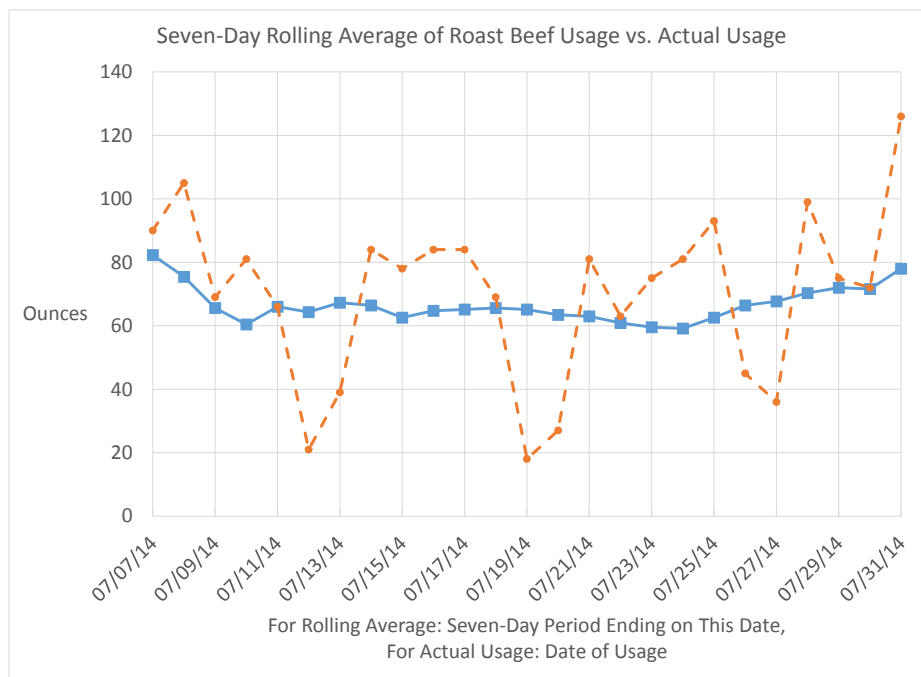
Part 5

1) The exact answer is 302 ounces.



2)

Part 6



2)