# Task 1.

Draw a histogram for each product. In the demands-file, there is four products and one-year demand numbers from previous year. Frequency of demand (how many days) should be on y-axis and daily demands at x-axis. You can also calculate mean and standard deviation for each product. Please use any software you like, e.g. Microsoft excel or any statistical program.

What can you say about demands of the products?

# Task 2.

For Product 1 you should set a M (replenishment level) for the next year in PersistCo. When setting an order size, replenishment level is reduced by existing inventory but demand lead is added (approximation of demand when waiting order to arrive).

For this product, review period is 7 days.

For Product 1 stock-out (=empty inventory) should be avoided. On the other hand, the director said that we are in problems if inventory level exceeds 1500 items for product 1.

Please try to minimize stock-outs and days when inventory level over 1500.

What is your recommendation for replenishment level (M)?

Quiz choice options:

250, 500, 750 or 1000?

# Task 3

For Product 2 you should set a M (replenishment level) for the next year in PersistCo. When setting an order size, replenishment level is reduced by existing inventory but demand lead is added (approximation of demand when waiting order to arrive). For this product, review period is 7 days.

For Product 2 stock-out (=empty inventory) should be avoided. On the other hand, the director said that we are in problems if inventory level exceeds 5000 items for product 2.

Please try to minimize stock-outs and days when inventory level is larger than 5000.

What is your recommendation for replenishment level (M)?

Quiz choice options:

750, 1000, 2000 or 4000?

# Task 4

For Product 3 you should set a M (replenishment level) for the next year in PersistCo. When setting an order size, replenishment level is reduced by existing inventory but demand lead is added (approximation of demand when waiting order to arrive). For this product, review period is 7 days.

For Product 3 stock-out (=empty inventory) should be avoided. On the other hand, the director said that we are in problems if inventory level often exceeds 5000 items for product 3.

Please try to minimize stock-outs and days when inventory level is larger than 5000.

What is your recommendation for replenishment level (M)?

Quiz choice options:

250, 500, 1000, 2000?

# Task 5

For Product 4 you should set a M (replenishment level) for the next year in PersistCo. When setting an order size, replenishment level is reduced by existing inventory but demand lead is added (approximation of demand when waiting order to arrive). For this product, review period is 7 days.

For Product 4 stock-out (=empty inventory) should be avoided. On the other hand, the director said that we are in problems if inventory level often exceeds 1300 for product 4.

Please try to minimize stock-outs and days when inventory level is larger than 1400.

What is your recommendation for replenishment level (M)?

Quiz choice options:

250, 500, 750, 1000?

# Concepts

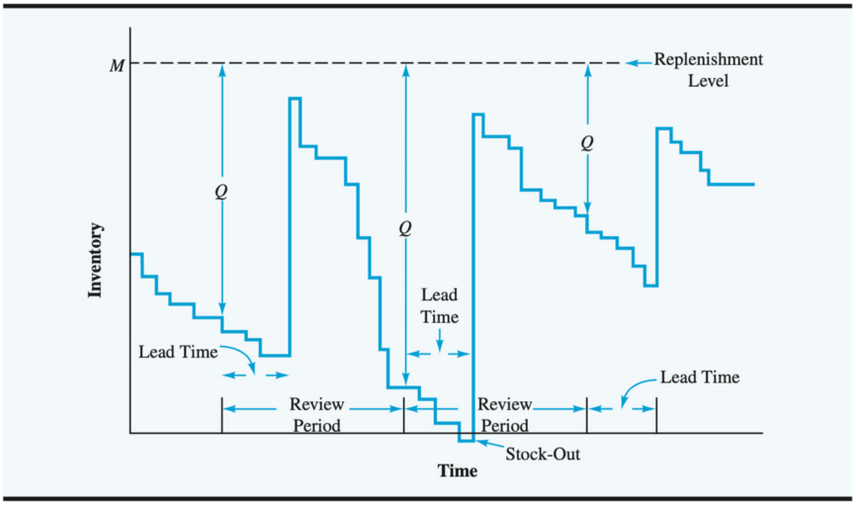


Fig. Source: <https://towardsdatascience.com/inventory-management-using-python-17cb7ddf9314>

Logic of the inventory:

1. If the demand can be completely serviced by the current inventory level — the inventory level is reduced by the demand and number of units taken on that day increments
2. If the demand cannot be serviced completely by the inventory level — the inventory on hand would be the number of units taken on that day

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| Concept | Description |  |
| probability | Expected proportion of days when somebody demand the product |  |
| lead time | amount of days before order arrive |  |
| inventory | number of product items in inventory |  |
| review period | Time in days between orders |  |
| demand lead | amount of demand during lead time |  |
| M | replenishment level |  |
| Q | order | q = M -inventory + demand lead |
| Product costs | Product costs are calculated by multiplying the unit costs of each product to the aggregation of the units ordered. |  |
| Ordering costs | The ordering costs are calculated by multiplying the number of times in that year an order was placed to the individual cost of ordering for that product. The inventory levels for each day of the year were aggregated to indicate how much stock was held throughout the duration of the year. |  |
| Holding costs | The holdings costs were then calculated by multiplying the amount of stock held with the unit size of the product and the daily cost of holding a unit. |  |
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