Case Study: Tasty Burger

Sales Data Analysis To Maximize Profit

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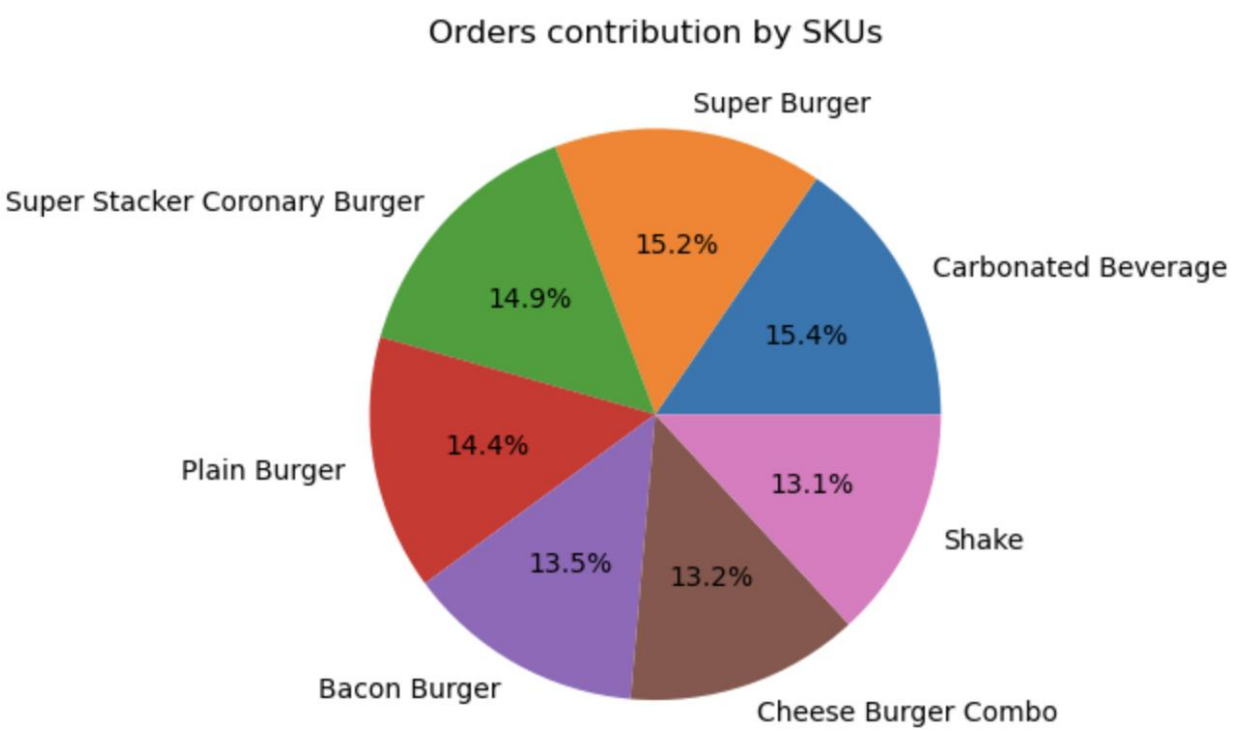
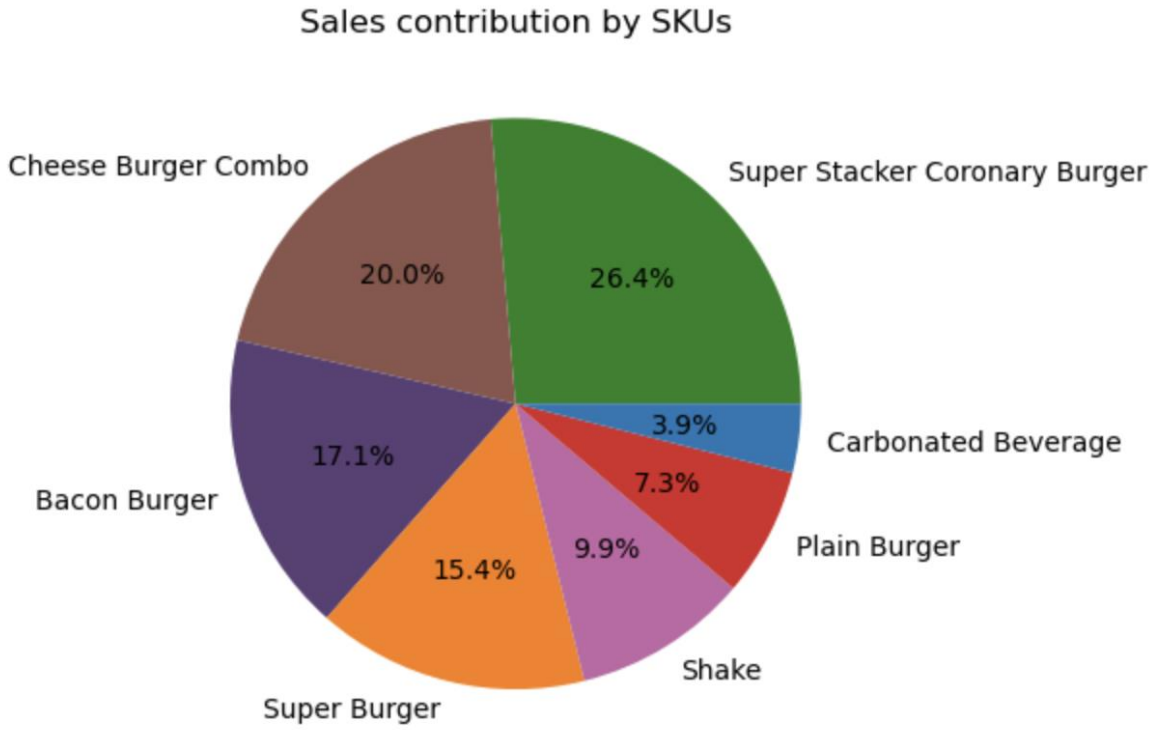
Original Menu Options Analysis

#	SKU	Category	Price ($)	Cost to make ($)	Profit ($)	Profit Margin (%)	Remarks
1	Carbonated Beverage	Drinks	1.00	0.10	0.90	90%	Highest profit margin SKU, so sales should be promoted
2	Shake	Drinks	3.00	0.60	2.40	80%	One of the highest profit margin SKU, so sales should be prompted
3	Plain Burger	Burger	2.00	0.80	1.20	60%	Most preferred option for Persona 1
4	Super Burger	Burger	4.00	1.60	2.40	60%	One of the most preferred option for Persona 1
5	Cheese Burger Combo	Burger Combo	6.00	2.70	3.30	55%	Highest profit margin SKU in dollar terms, so sales should be promoted
6	Super Stacker Coronary Burger	Burger	7.00	9.80	-2.80	-40%	Loss making SKU even at high prices. Cost to make should be reduced to become profitable
7	Bacon Burger	Burger	5.00	6.50	-1.50	-30%	Loss making SKU even at high prices. Cost to make should be reduced to become profitable

- **Persona 1**: Highly Price Sensitive Customer (eg. Students)
- **Persona 2**: Prioritizes deriving maximum pleasure from food, so they would purchase their preferred items regardless of the price

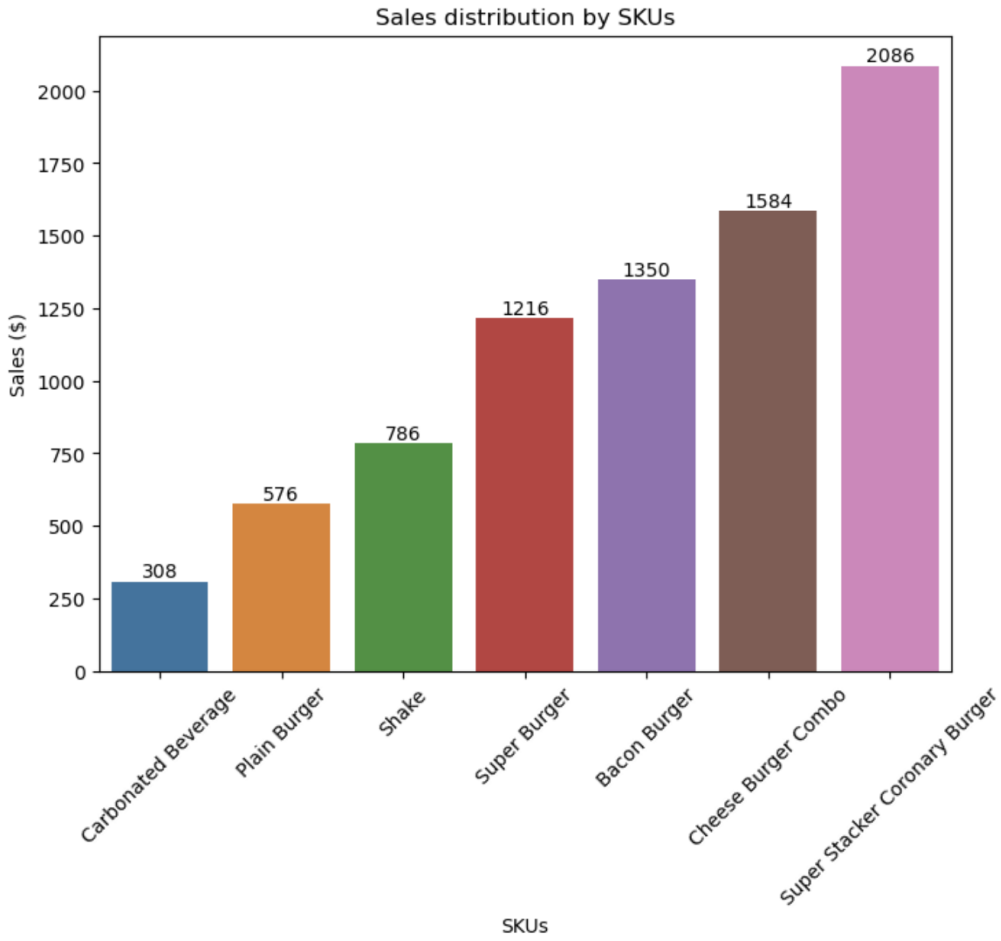
Nearly equal orders with varying sales contributions

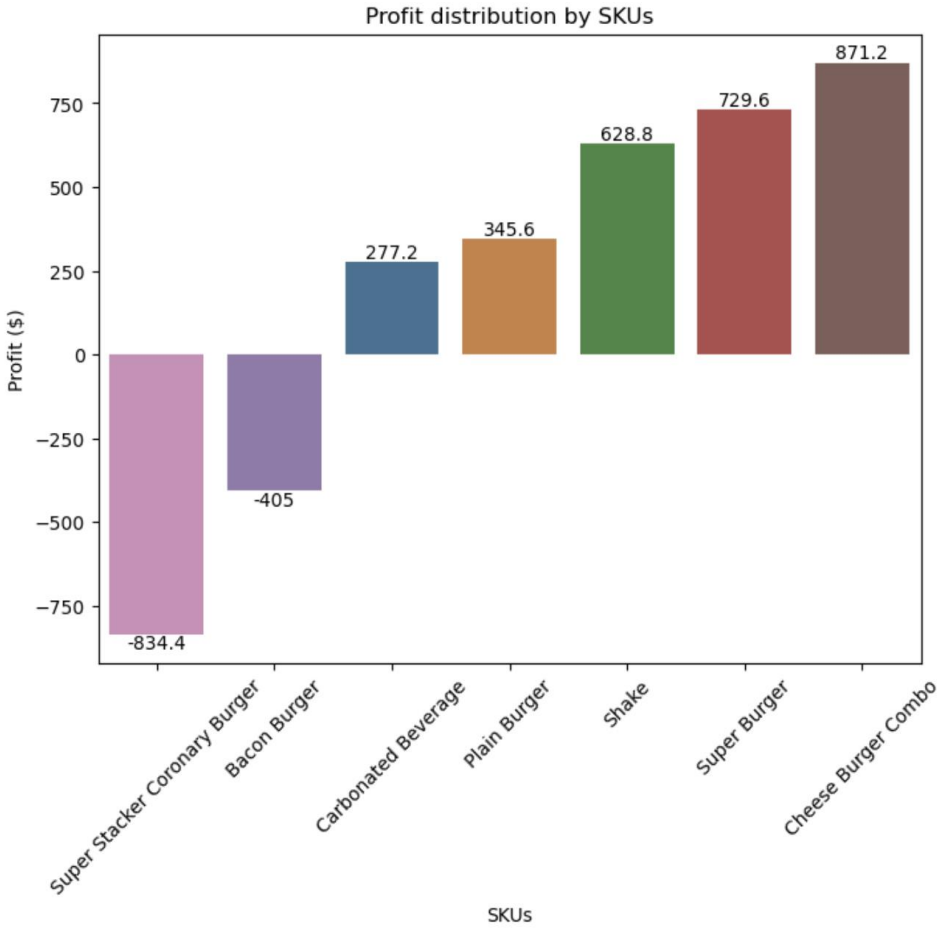




- All SKUs receive almost equal number of orders
- Super Stack Coronary Burger: Even though it contributes 14.9% of Orders but in terms of Sales it contributes the highest at 26.4% due high price of $7
- Carbonated Beverages: Has highest order contribution at 15.4% but lowest Sales contribution at 3.9% due to low price of $1

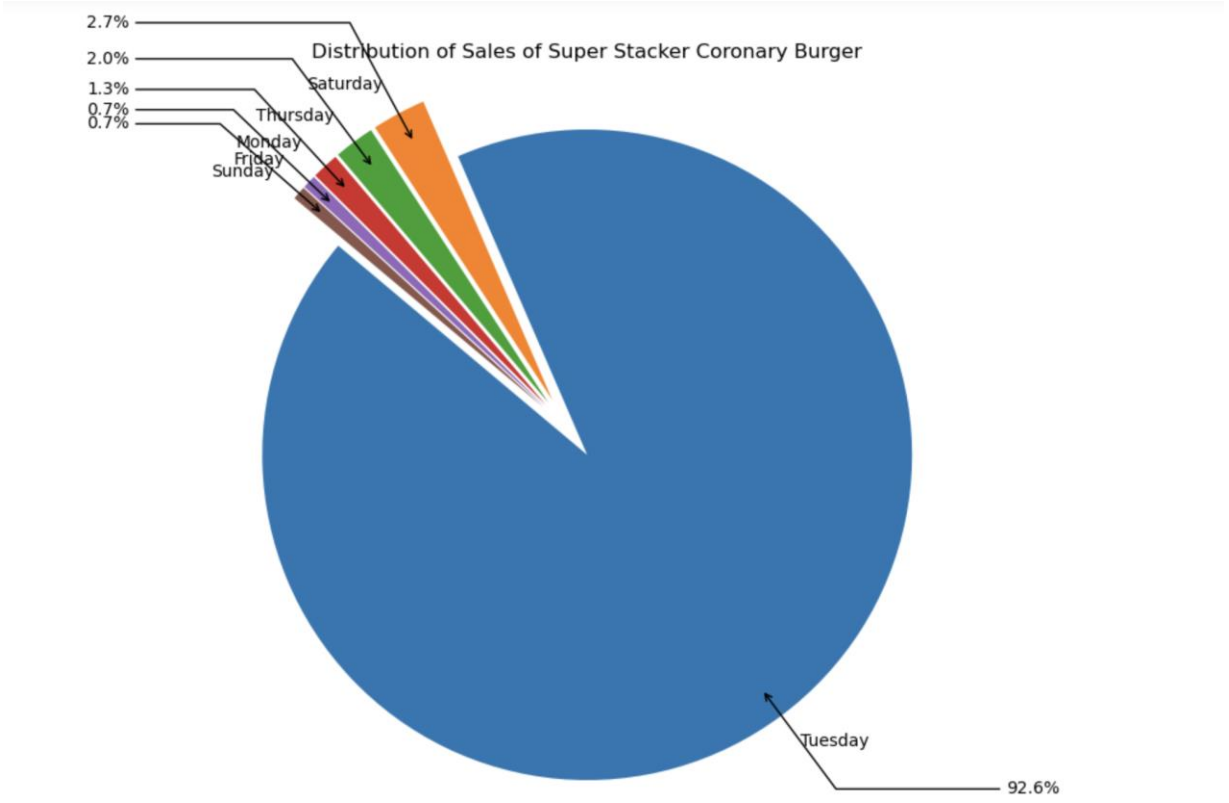
Sales & Profit Contributions by SKUs

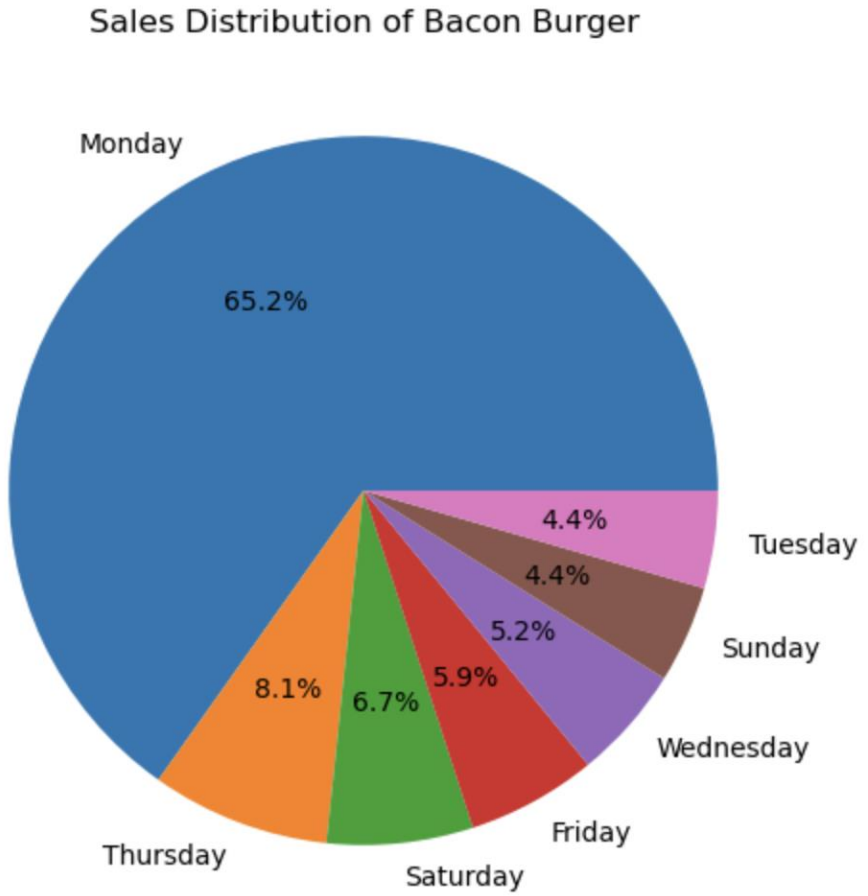




- **Super Stacker Coronary Burger**: Highest sales-contributing SKU, yet most loss-making.
- **Cheese Burger Combo:** Second highest sales contributor and top profit-contributing SKU.

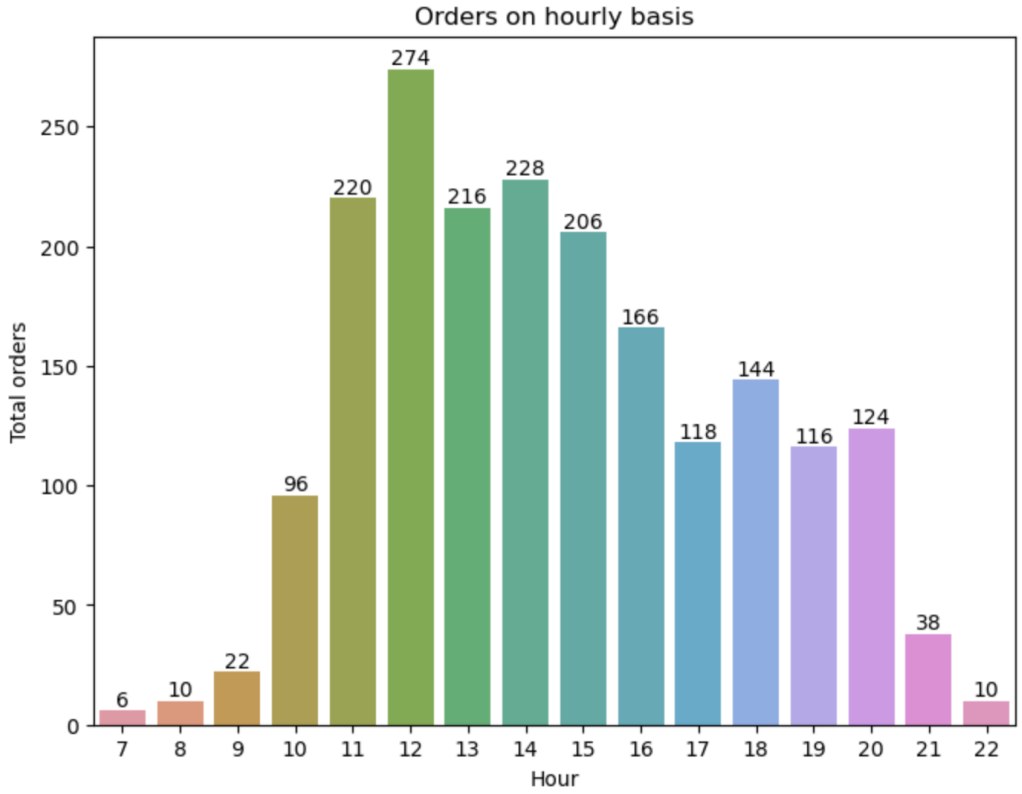
Weekday Sales Distribution of SSCB and Bacon Burger

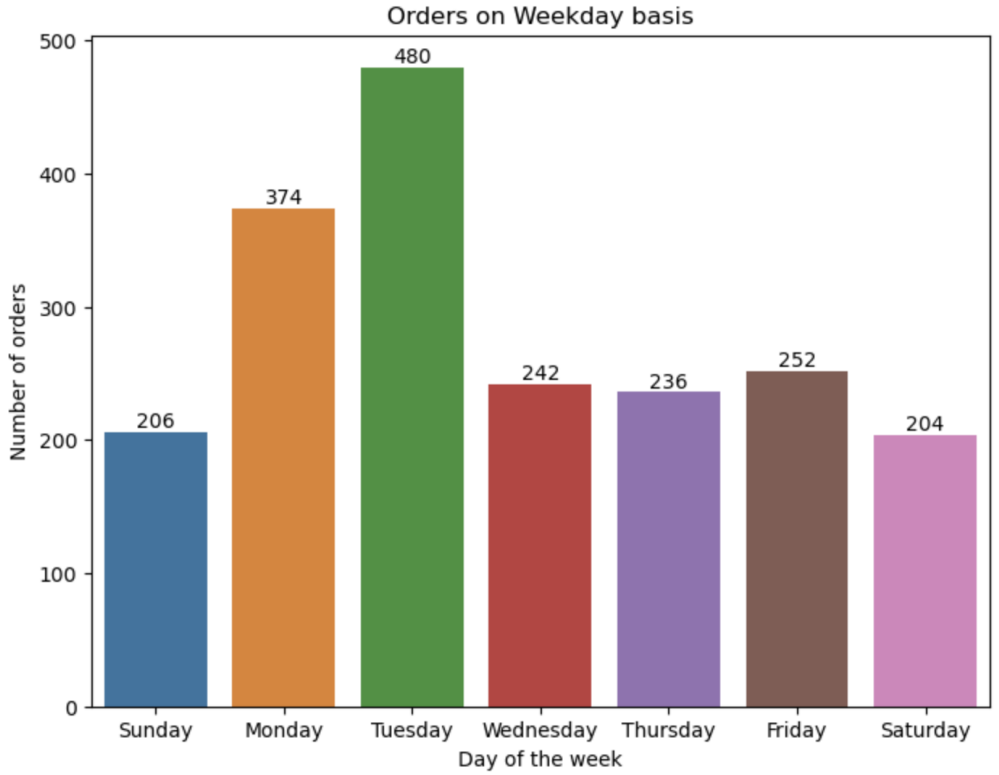




- **Super Stacker Coronary Burger**: Almost all sales (~93%) happen on Tuesday (runs a Special)
- **Bacon Burger:** ~2/3rd of sales (~65%) happen on Monday (Bacon Burger Monday)
- From the data it seems that the majority of the customers assume that these burgers are available only on Special days. I need to focus on marketing and consumer awareness.

Peak Traffic Times of Day and Week





- **Low footfall period of the day:** First 3-hours and last 2-hours of store operation
- **Lowest footfall day of the week:** Saturday
- Low footfall period should be utilized for Inventory management and Logistics
- Order should be Wednesdays so that it is received on Saturdays (D+3)

Key profit drivers to increase profitability

Profit = Revenue - Costs

Revenue = Price * Quantity

- Profit is function of Revenues and Costs. To maximize profit, I need to do the following:
  1. Maximize Revenues: By Increasing Price and/or Quantity
  2. Minimizing Costs: By Reducing Wastage and improving efficiency of operations

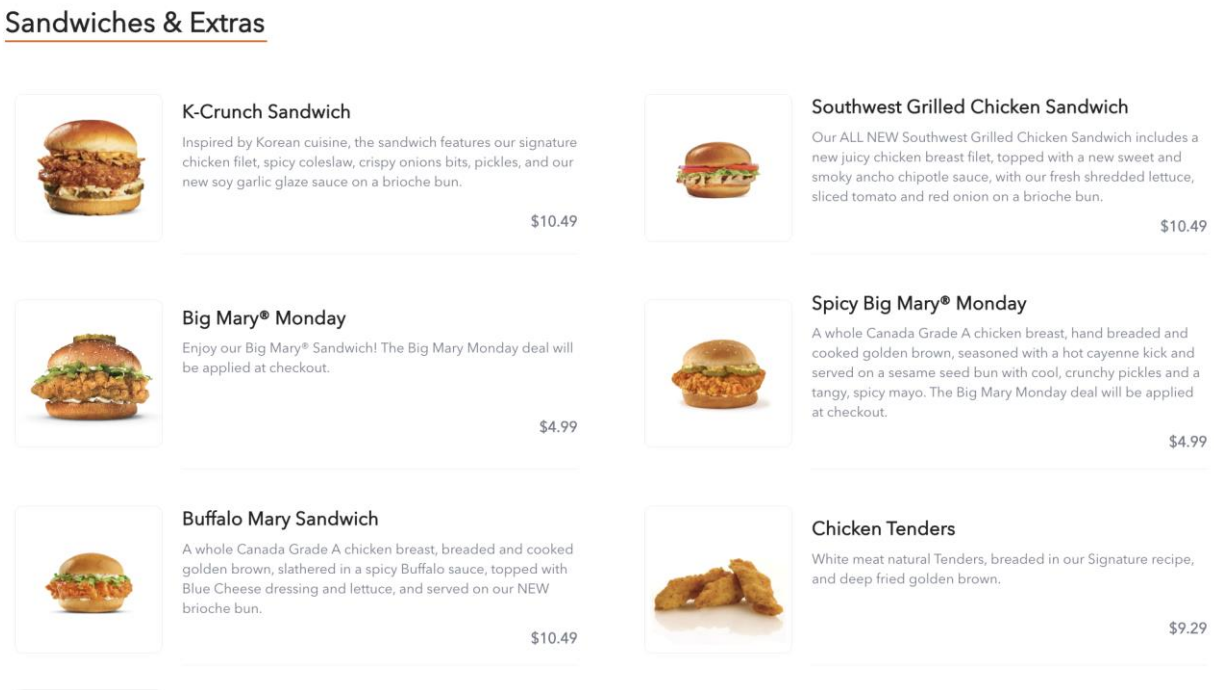
Quantity Drivers: Overview

#	Quantity drivers	Methodology
1	Beverages/Shakes should be pushed with the Burgers to maximize the profit because beverages/shakes have maximum profit margin	1. Basis the Price and Profit given in the Original menu 2. After conducting Secondary research, I found that burger chains like Mary Brown's and McDonalds are offering meal/combo options on all their Burgers
2	Fries should be added to the menu as it would increase the order quantity	1. After conducting Secondary research by studying menu of Mary Brown's and McDonalds
3	A separate option for a single Cheese Burger should be added so that if a customer wants a single Cheese Burger, they would not be forced to buy a combo	1. Basis Original menu analysis
4	If meal option is added, then by default we would be selling burgers along with the beverages	1. The new menu should offer meal options (Burger + Beverage/Shake + Fries)

Price Drivers: Overview (SSCB)

Category	Value	Remarks
Food Inflation	3.5%	Assumed rate of Food inflation for a period 2007 - 2024
Price in 2007	7.00	Original Price
Price in 2024	12.56	Projected Price

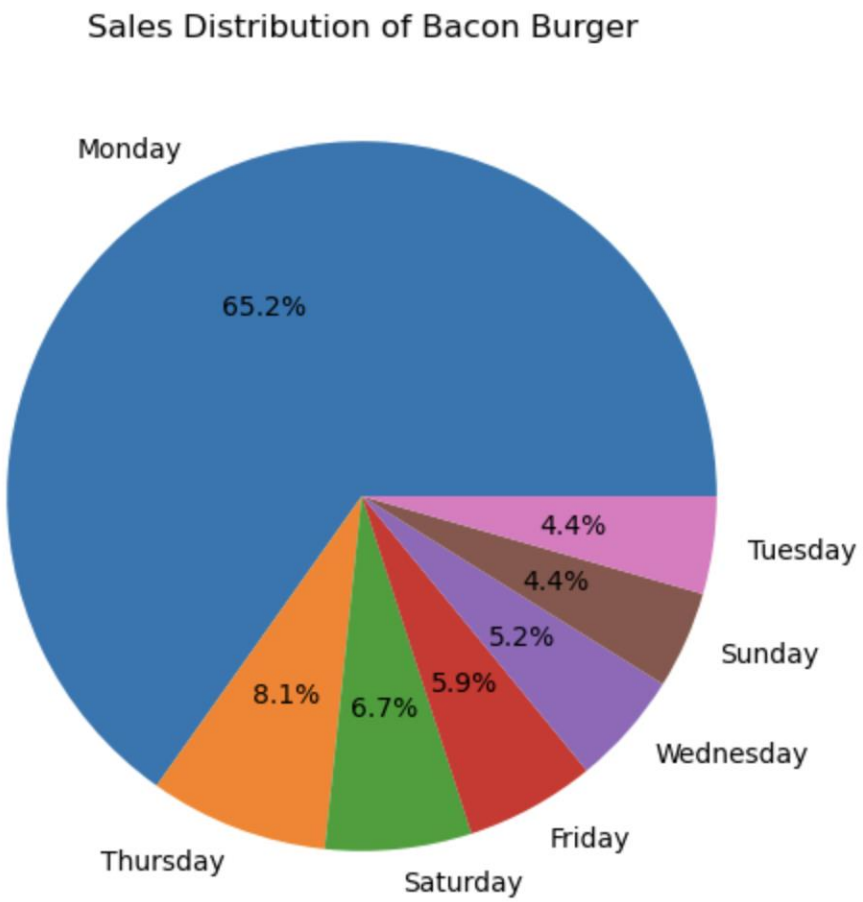
Screenshot of Mary Brown's Burger Menu to understand current prices



- If we project the 2007 prices of SSCB to 2024 prices, it comes to ~$12.5
- Then when we compare it with the 2024 menu of Mary Brown's we see that highest price Burger is for ~$10.5
- From the data, it appears that there is no scope to increase Price of SSCB
- Also, there is no scope to reduce SSCB's Price as it already a loss-making SKU
- So I will keep the price at $7 throughout the week and will focus on cost reduction

Price Drivers: Overview (Bacon Burger)

Category	Special	Normal	Remarks
Food Inflation	3.5%	3.5%	Assumed rate of inflation for a period 2007 - 2024
Price in 2007	5.00	5.50	Original Price
Price in 2024	8.97	9.87	Projected Price



- There appears to be a scope of increasing price of Bacon Burger due to following reasons:
  1. Even after increasing prices, it would still be reasonable (as per inflation data)
  2. 35% of the order are coming on Normal (non-Special) days which means that there is demand for the bacon burger at these prices
- Pricing recommendations:
  1. **On Special Day**: Price should stay the same because of “Bacon Burger Special” Day
  2. **On Normal days:** Price should be increased by $0.5 to reduce losses

New/Updated Menu, Quantity and Revenue

SKU	Category	Price ($)	Cost to make ($)	Profit ($)	Profit Margin	Quantity	Revenue
Carbonated Beverage	Original	1.00	0.10	0.90	90%	308	308
Shake	Original	3.00	0.60	2.40	80%	262	786
Plain Burger	Original	2.00	0.80	1.20	60%	58	116
Super Burger	Original	4.00	1.60	2.40	60%	61	244
Cheese Burger Combo (w/o Fries)	Original	6.00	2.70	3.30	55%	0	0
Super Stacker Coronary Burger	Original	7.00	9.80	-2.80	-40%	60	420
Bacon Burger (Special)	Original	5.00	6.50	-1.50	-30%	38	190
Bacon Burger (Non-special)	New	5.50	6.50	-1.00	-18%	16	88
Fries	Individual	3.00	0.60	2.40	80%	0	0
Cheese Burger	Individual	5.00	1.80	3.20	64%	53	265
Plain Burger Combo (with Bev)	Combo	4.50	1.50	3.00	67%	127	572
Super Burger Combo (with Bev)	Combo	6.00	2.30	3.70	62%	134	804
Cheese Burger Combo (with Bev)	Combo	6.75	2.50	4.25	63%	116	783
SSCB Combo (with Bev)	Combo	8.25	10.50	-2.25	-27%	131	1,081
Bacon Burger Combo (with Bev) (Special)	Combo	6.75	7.20	-0.45	-7%	83	560
Bacon Burger Combo (with Bev) (Non-Special)	Combo	7.25	7.20	0.05	1%	36	261
Plain Burger Combo (with Shake)	Combo	6.00	2.00	4.00	67%	103	618
Super Burger Combo (with Shake)	Combo	7.50	2.80	4.70	63%	109	818
Cheese Burger Combo (with Shake)	Combo	8.25	3.00	5.25	64%	95	784
SSCB Combo (with Shake)	Combo	9.75	11.00	-1.25	-13%	107	1,043
Bacon Burger Combo (with Shake) (Special)	Combo	8.25	7.70	0.55	7%	68	561
Bacon Burger Combo (with Shake) (Non-Special)	Combo	8.75	7.70	1.05	12%	29	254
Total						**1,994**	**10,555**

Order count of individual items

```
In [246]: print(merged_data['Item'].value_counts())
          print("Total Quantity:", sum(merged_data['Item'].value_counts()))
```

```
Carbonated Beverage              308
Super Burger                     304
Super Stacker Coronary Burger    298
Plain Burger                     288
Bacon Burger                     270
Cheese Burger Combo              264
Shake                            262
Name: Item, dtype: int64
Total Quantity: 1994
```

Calculations of quantity for a Plain Burger in the new/updated menu:

- Overall quantity = 288.
  For individual plain burger: 20% of 288 = ~58 (because I assumed 20% of the customers would buy individual items)
  For combos (I assumed 80% of the customers would buy a combo)
  For Beverage: 80% of 288 * 55% for beverage = ~127
  For Shake: 80% of 288 * 45% for shake = ~103

Assumptions:

- Plain burger = Burger Bun + Patty
- Super Burger = Plain Burger + Lettuce + Pickles
- Cheese Burger = Super Burger + Cheese

Cost Drivers: Overview

#	Cost drivers	Remarks
1	The optimum day to receive the delivery should be leanest day (where the footfall is minimum) of the week.	1. As per data analysis, she should order on Wednesdays to receive the order on Saturdays 2. Inventory management should be done in the low-footfall hours 3. I have done cost savings analysis in the later slides
2	Cletus is not a diligent man and sometimes shipment sits in the dock which can hamper the quality of the products leading to wastage	1. I have conducted wastage analysis in the later slides
3	It seems like Edna used to visit the supermarket quite often to refill the inventory for the following day. Instead she should order the supplies in an efficient manner (so that she has enough supplied to last for the whole week) to avoid making the visits to supermarket frequently	1. As per the high-level process Edna goes to fill the inventory if needed 2. I have done cost-saving analysis in the later slides
4	The employee rather than going back to the dock, can directly go to the supermarket to buy the replacement and can dump the wastage food all at once when the store closes to save time.	1. As per the high-level process in the PPT, the employee was going back to the dock with all the wastage before going to the supermarket to fill the inventory
5	The number of people required to receive the order and place it in the inventory depends on the quantity ordered. I will be having two options: 1. One person multiple trips 2. Multiple people one trip. Both options have its pros and cons in terms of time-saving and HR cost	1. 1. Given the shipping docs is located within the building this might lead to any substantial cost savings
6	Rather than clearing off the invoices in the ad-hoc manner, I should utilize the credit period offered by the Tasty Burger HQ.	1. This improves the operational efficiency

Cost Saving by receiving the order on optimum day

Metric	Units	Values	Remarks / Assumptions
Total Hours	#	3.00	-> It takes total 3-hours to manage the inventory which includes: 1. Bringing the inventory from the shipping dock 2. Checking wastage items 3. Stocking inventory in shelves 4. Going to the shipping dock to dump wastage 5. Going to the supermarket to replenish the wastage
# of Employees	#	2.00	-> Assuming 2 employees are required to do this task 1. One Supervisor: To overlook and check the inventory and report to the manager 2. Min. Wage Employee
Cost / Hour	$	10.00	-> Mean of the salaries in 2007 1. Min. Wage: $8/hour 2. Supervisor wage: $12/hour (1.5 times min. wage)
# of Weeks / Month	#	4.35	-> Analysis for a month (365 Days / 7 Days / 12 Months)
Cost Saving / Month	**$**	**261**	

Assumptions:

- Usually, two employees (a supervisor and a minimum wage employee) are needed to fill/arrange the inventory.
- The hourly rate of a supervisor is equal to 1.5 times of salary of a minimum wage employee.

Cost Saving by making operations efficient after receiving the order

Raw Material	Shelf Life (in # of Days) Under Shipping Dock conditions	Cost / Items ($)	Quantity (#)	Wastage (%)	Total Wastage ($)
Burger Buns	7	0.50			
Burger Patty	1	0.40	1,154.00	23%	106
Bacon Patty	1	1.00	270.00	23%	62
Milk	2	0.63			
Cheese	3	0.70			
Lettuce	1	0.05	1,136.00	23%	14
Pickle	30 Days+				
Sauces	30 Days+				
Syrups (for Shakes)	30 Days+				
Beverage (Cans/Bottles)	30 Days+				
Cost Savings					**182**

Assumptions:

- **Frequency of Cletus not informing Edna:** Once in a month
- I have assumed shelf-life on products and typically Cletus would inform after a day resulting in wastage of those which have shelf life of 1 day (under shipping dock conditions)
- I have assumed cost of individual items at 2007 prices

Cost Saving by efficiently ordering from the HQ

Raw Material	Cost / Items ($)	Quantity (#)	% of inventory Filled through Supermarket	Extra Cost because of buying from Supermarket	Total Additional Cost
Burger Buns	0.50	1,424	15%	50%	53.40
Burger Patty	0.40				
Bacon Patty	1.00				
Milk	0.63	773	15%	50%	36.23
Cheese	0.70	832	15%	50%	43.68
Lettuce	0.05	1,136	15%	50%	4.26
Pickle					
Sauces					
Syrups (for Shakes)					
Beverage (Cans/Bottles)					
Cost Savings					**138**

Assumptions:

- Products in red can be replenished from the Supermarket.
- Aunt Edna used to replenish 15% of the required Quantity through Supermarket.
- Aunt Edna has to pay twice at supermarket of what she pays to the HQ for the items.

Summary

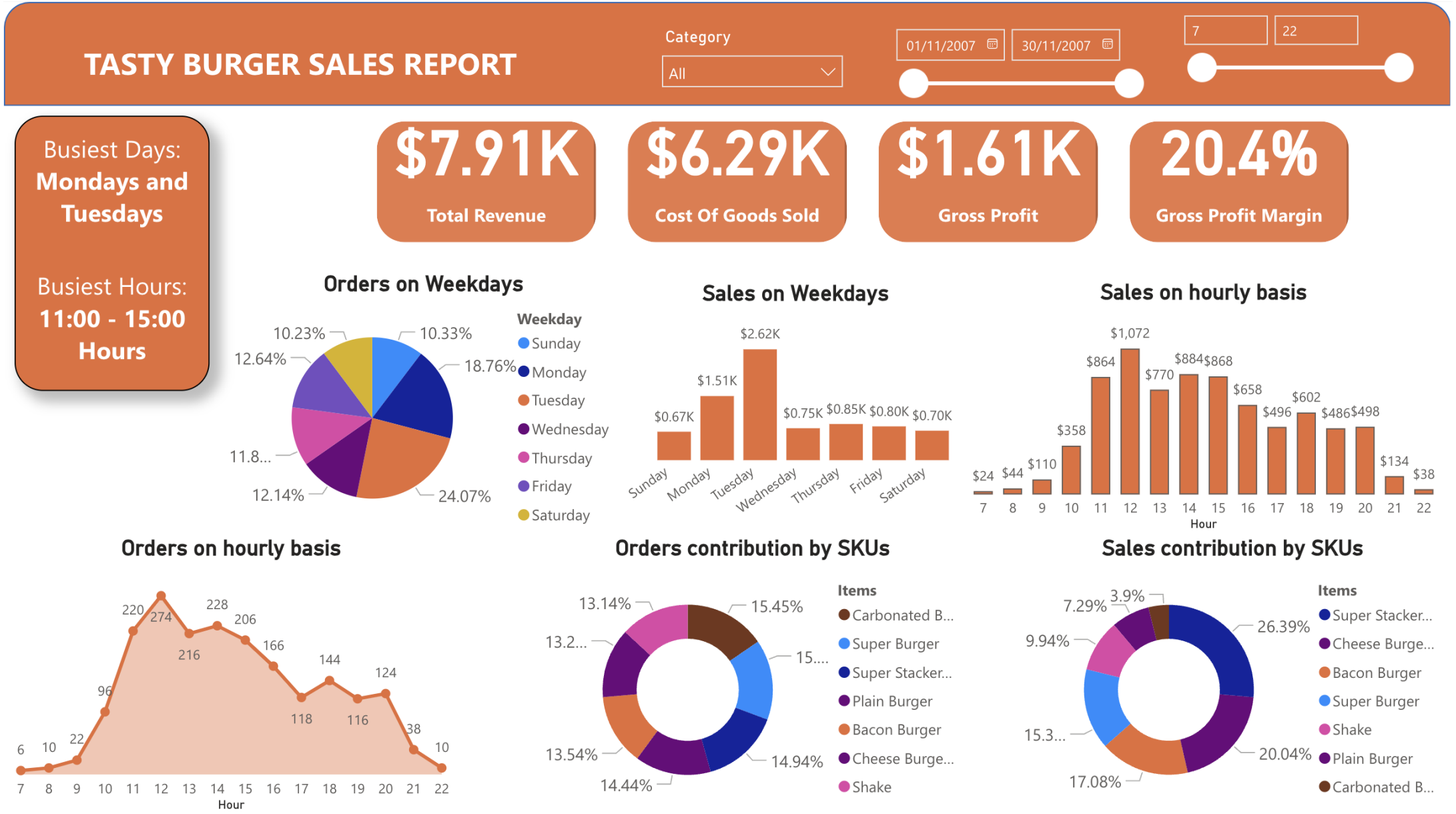
Category	Quantity	Revenue	Cost	Profit	Profit margin
Original	**1,994**	**7,906**	**6,293**	**1,613**	**20%**
After improving Revenue drivers	1,994	10,555	7,108	3,447	33%
Cost Saving 1			-261		
Cost Saving 2			-182		
Cost Saving 3			-138		
Overall Optimization	**1,994**	**10,555**	**6,527**	**4,027**	**38%**

Drivers	Amount	% contribution
Rev	1,834	76%
Cost	580	24%
Overall	2,414	100%

Implementation risks and mitigation plan

#	Revenue drivers- risk	Mitigation
1	Introduction of a new/modified menu might not be accepted by the Tasty Burger HQ	1. I have shown increase in the revenue so the HQ will accept it. 2. I have introduced just the fries and individual cheese burger option and did not make much changes in the items of the original menu
2	These new changes in the menu might lead to confusion among the employees	1. A proper training should be given to the employees before intorducing the menu to the cusutomers
3	The new menu is not accepted by the customers	1. I have to market my products in such a way that attract cutsomters. Eg, if a customer buys a combo, they give will get 25% dicsount
#	Cost drivers- risk	Mitigation
1	If Cletus does not cooperate in implementing the new plan of informing about the delivery on the same day, then the cost reductions through avoiding wastages would not happen	1. The person associated to deliver the orders in the shipment dock can inform the manager about the delivery either by calling them or sending them an email.

Power BI dashboard



THANK YOU!