



Bakery Simulator

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Data 604 - Final Project

Workflow for Baking Cookies

1. Stand Mixer:
Make cookie dough



2. Is there space in
Oven?

Yes

No

3. Oven:
Bake cookies





Verification & Validation

- Print statements throughout the code to make sure the code was working appropriately
- Researched oven and mixer prices available for purchase to mimic real world resource purchasing
- Researched and reviewed average cookie sales from bakers & average cookie prices
- Used personal knowledge of baking cookies for flow chart and resource time aspects

Problem: Which oven to buy?



Stainless Steel Oven
\$608.00

Holds 24 cookies

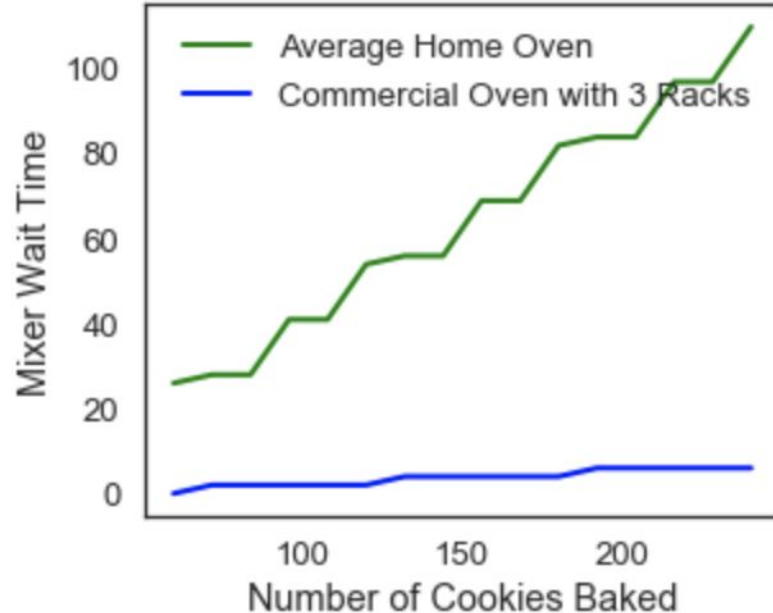


3 Rack Commercial Oven
\$2199.99

Holds 108 cookies

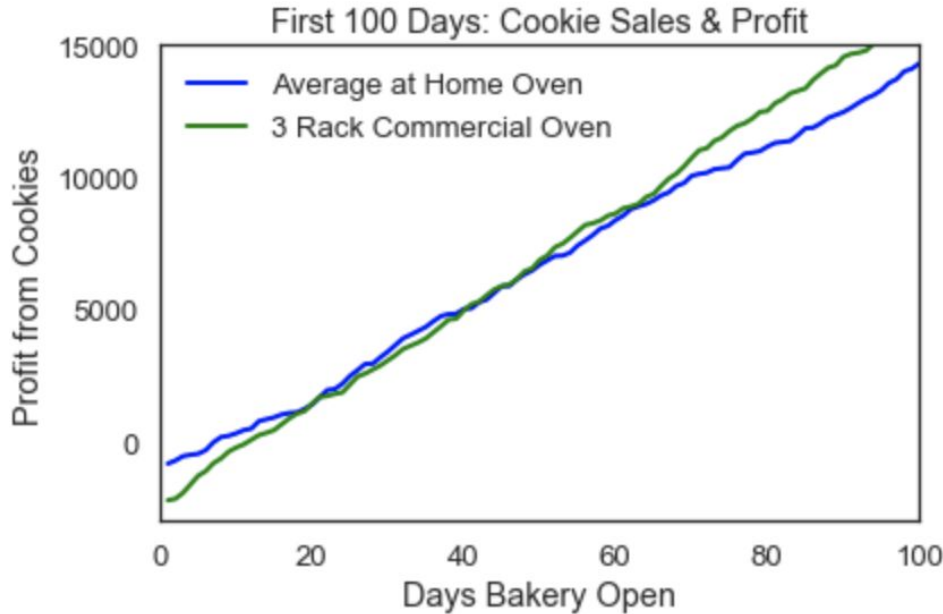
Bottleneck: Baking Time in Ovens

How Long Cookie Dough is Waiting in the Mixer due to an Already Full Oven



- Home oven inefficient
- Commercial oven has virtually no wait time
- Increased baking time increases payroll expenses

Cookie Sales Over Time



- Even though the commercial mixer is a higher initial investment, it makes financial sense within 30 days of cookie sales
- The bakery breaks even with the first few weeks, assuming (108-208) cookies are sold daily for \$2.50 each



Conclusions

- Bakers should invest in a commercial size oven instead of regular at home oven
- The initial investment for resources is made back within the first few months of business
- To make the simulation even more realistic, adding in rent and utilities would be preferred
- Adding complexity with additional mixer and oven types could help bakers decide on the ideal resource purchase combination for their bakery



References

- [Kitchen Aid Classic Plus Series 4.5 Qt 10 Speed Stand Mixer](#)
- [Home Depot 30in 5.3 cu ft Electric Range Stainless Steel Oven](#)
- [Full Size 3 Rack Natural Gas Convection Oven](#)
- <https://www.jesrestaurentequipment.com/commercial-baking-sheets-size-chart.html>