IS Analytic Competition

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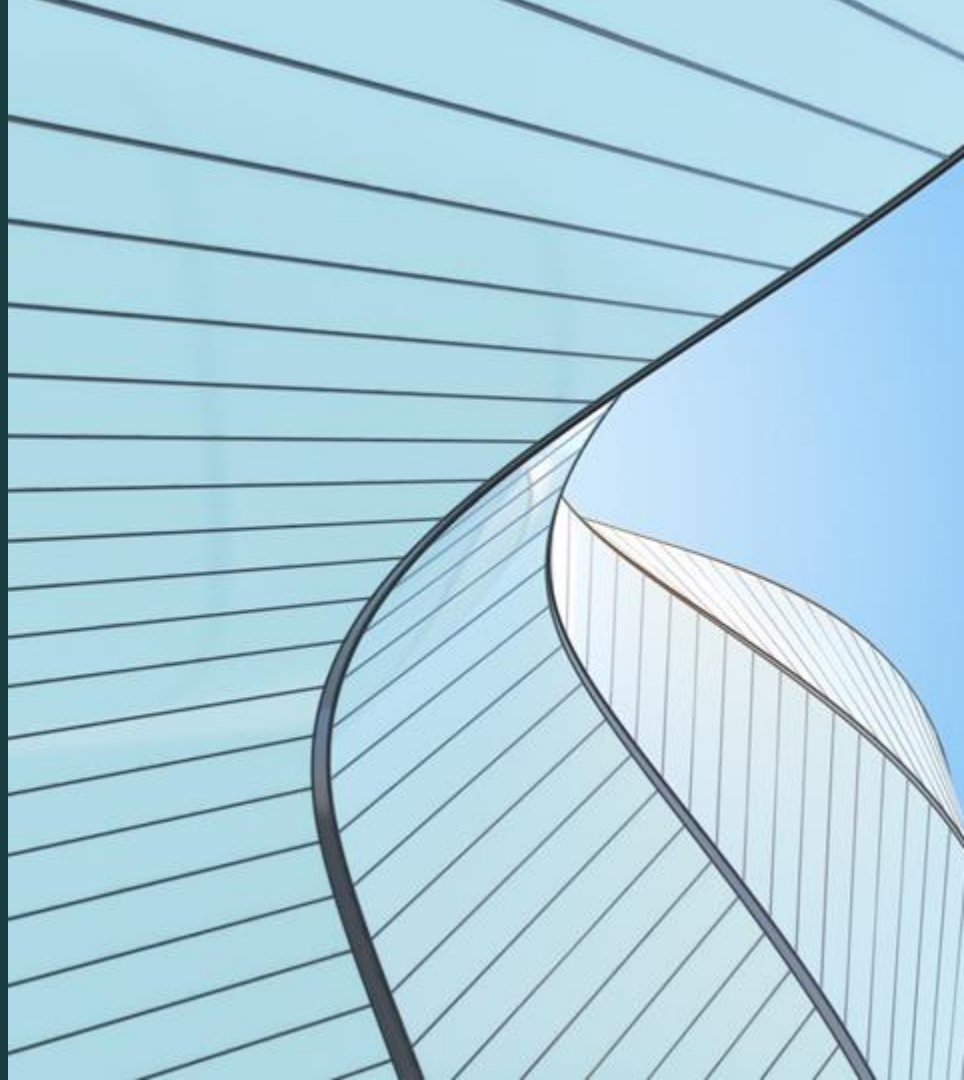

Our *analysis team*

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Executive Summary

Goal: Analyze a year of simulated sales, weather, and foot traffic to find patterns in demand for a mobile coffee cart on campus

Key Findings:

- Peak Sales Hours 7-8 AM
- Peak Week: April 24-30, 2024
- Most popular beverage: Lattes
- Expected Daily revenue: $395.39 - $507.05

Coffee Demand by Time of Day

- Peak hours 7 AM - 1 PM
- Highest 7-8 AM
- Significant drop after 1PM; lowest sales from 6 -8 PM

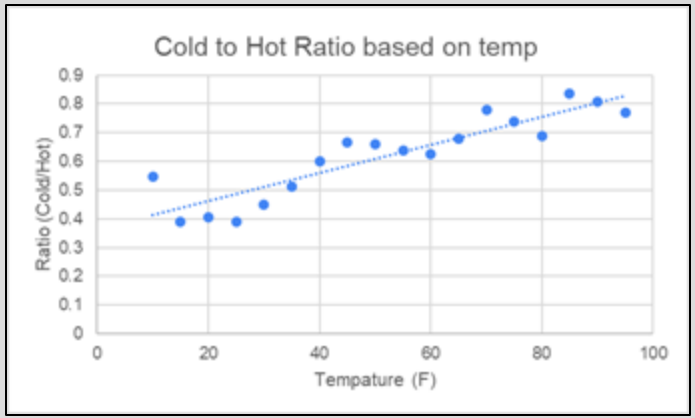
Popular Drink Model

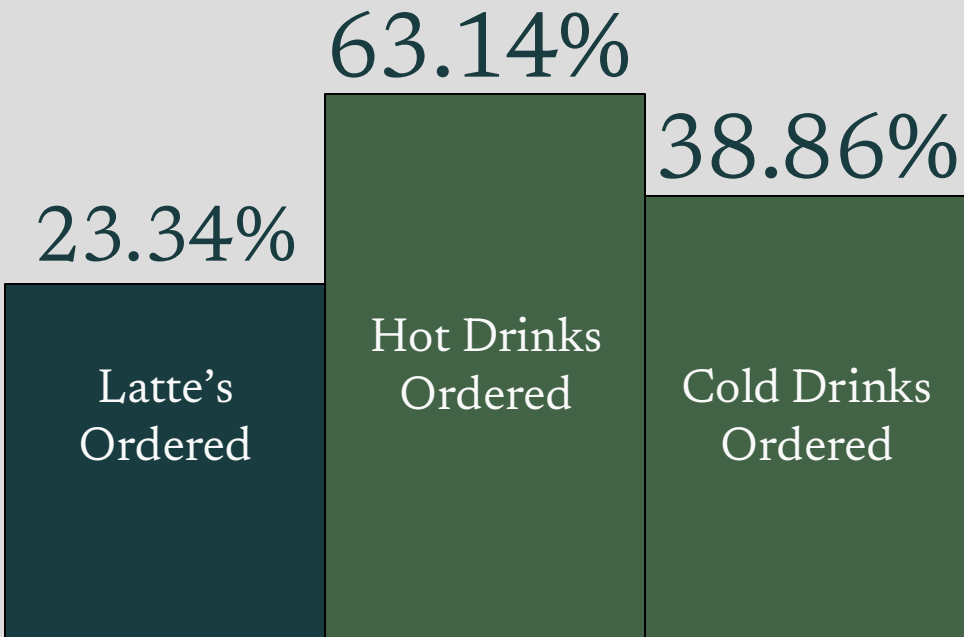
	Drink Type Count	% of Orders
Latte	8023	23.24%
Americano	5810	16.83%
Iced Coffee	5891	17.06%
Cold Brew	5907	17.11%
Cappuccino	5645	16.35%
Hot Chocolate	2318	6.71%
Iced Tea	927	2.69%
Totals	34521	100.00%

	Hot vs Cold Orders	% of Orders
Hot	21796	63.14%
Cold	12725	36.86%
Totals	34521	100%

Temperature Influence:

- As temperature rises, cold drink ratio increases
- Correlation: y= 0.3653 +0.0049x, R^2 = 0.8143





Weather Influences on Sales

Average sales per hour by weather type:

Clouds: 7.203

Clear: 7.260

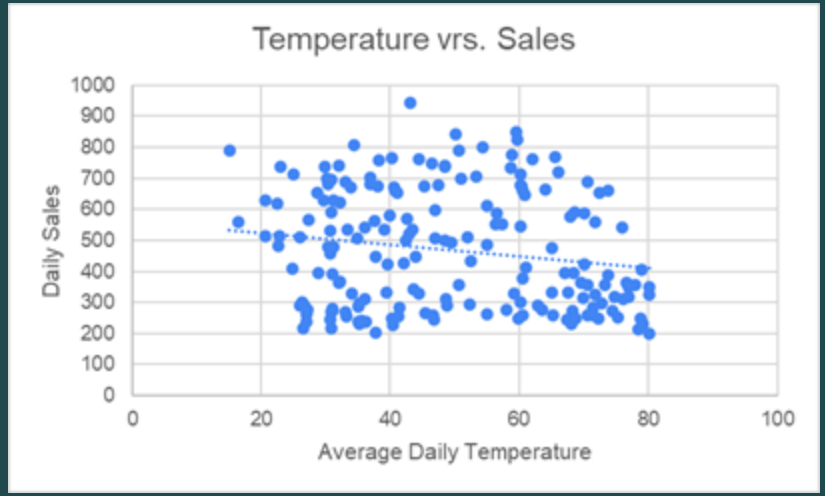
Rain: 6.531

Snow: 6.645

Note: Some hours missing (MNR problem), especially for rain/snow

Temperature Influence on Sales

- Average Temperature versus Sales
- Showed little correlation
- R^2 = 0.0297



	Coefficients
Intercept	4.713583764
Temperature (F)	0.000830341

Correlation and Linear Regression

	Coefficients	Standard Error	t Stat	P-value
Intercept	4.821984352	0.190630138	25.29497378	6.8554E-140
Date	-8.629E-06	4.17016E-06	-2.069226707	0.038532244
Time	-0.015960295	0.033998984	-0.469434455	0.638762091
hour	0.000802902	0.001420537	0.565210034	0.571934587
Temperature (F)	-5.69098E-06	3.58501E-05	-0.158743681	0.873871751
Humidity (%)	5.1746E-05	3.37861E-05	1.531578491	0.125635651
Wind Speed (mph)	-0.000260006	0.000175667	-1.480110576	0.138852869
Cloud Cover (%)	-1.02425E-06	1.1974E-05	-0.085539822	0.931832734
Is_Latte	0.567950716	0.001256913	451.8616246	0
Is_ColdBrew	1.06798655	0.001353851	788.8508512	0
Is_cappuccino	0.567956847	0.00137285	413.7064928	0
Is_HotChocolate	-0.182072213	0.00183413	-99.26900126	0
Is_IcedTea	0	0	65535	0
Is_Americano	-0.432074659	0.001362015	-317.2318261	0

	total_sales	Date	Time	hour	quantity	price	mperature	lumidity (%d	Speed (mud	Cover (	Is_Latte	s_ColdBrev	_cappuccir	HotChocol	Is_IcedTea
total_sales	1														
Date	-0.00829	1													
Time	0.006563	-0.00555	1												
hour	0.006902	-0.00635	0.996881	1											
quantity	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1										
price	1	-0.00829	0.006563	0.006902	#DIV/0!	1									
Temperature (F)	0.028629	-0.36995	0.16436	0.164766	#DIV/0!	0.028629	1								
Humidity (%)	-0.02201	0.20271	-0.17314	-0.17322	#DIV/0!	-0.02201	-0.71499	1							
Wind Speed (mph)	-0.00319	-0.03062	0.043792	0.04398	#DIV/0!	-0.00319	-0.06929	-0.00201	1						
Cloud Cover (%)	-0.00799	0.055355	0.016816	0.016792	#DIV/0!	-0.00799	-0.2886	0.412809	0.069994	1					
Is_Latte	0.265615	0.02528	-0.00082	-0.00085	#DIV/0!	0.265615	-0.03404	0.024201	-0.00282	0.009823	1				
Is_ColdBrew	0.666402	-0.02914	0.001363	0.001354	#DIV/0!	0.666402	0.056367	-0.04015	-0.00499	-0.01453	-0.25001	1			
Is_cappuccino	0.21343	0.020496	0.007048	0.007456	#DIV/0!	0.21343	-0.0278	0.018217	0.008543	0.004702	-0.24329	-0.20089	1		
Is_HotChocolate	-0.26649	0.011199	-5.6E-05	-0.00083	#DIV/0!	-0.26649	-0.03422	0.021638	0.004983	0.007299	-0.14763	-0.1219	-0.11862	1	
Is_IcedTea	0.666402	-0.02914	0.001363	0.001354	#DIV/0!	0.666402	0.056367	-0.04015	-0.00499	-0.01453	-0.25001	1	-0.20089	-0.1219	1

Foot Traffic and Sales

Insights

- Foot traffic strongly correlates with total sales
- Peak periods vary by time of day, day of weem, season
- High traffic aligns with higher average order value

Expected Range for Sales

- Random sample: 50 days
- Average daily revenue: $451.22
- Confidence level [395.39, 507.05]
- How to use: Revenue predictions to help with staffing, inventory and promotions

Time	hour
20:58:27	20
20:18:14	20
20:43:37	20
20:04:21	20
20:51:28	20
20:02:37	20
20:54:21	20
20:47:01	20
20:05:08	20
20:02:25	20
20:18:54	20
20:46:25	20
20:07:48	20
20:28:24	20
20:58:40	20
20:17:05	20
20:13:25	20
20:39:00	20
20:51:45	20
20:36:12	20
20:44:19	20
20:44:49	20
20:49:03	20
20:39:19	20
20:13:37	20
20:56:39	20
20:18:59	20
20:18:32	20
20:58:23	20
20:16:24	20
20:58:36	20
20:01:12	20
20:15:44	20

THE OUTLIER

- Discovered a outlier in the Information
- After the Coffee Cart closed, it still brought in revenue
- It cumulated to 1092 sales after hours
- Our group could have attack the anomaly differently
- Necessary data

Efficient Operating Start

- Opening the Coffee Cart earlier could increase revenue by capturing student demand that likely exists before 7 A.M.
- Current data shows strong demand from 7–8 A.M., suggesting students would also purchase coffee closer to 6 A.M.
- Since sales peak from 7 A.M. to 1 P.M. and decline steadily after 2 P.M., operating until 8 P.M. is inefficient.
- Adjusting the closing time to 6 P.M. would better align operating hours with actual demand.
- Opening at 6 A.M. and closing at 6 P.M. would extend morning revenue opportunities while still supporting an expanded non-caffeinated drink menu for afternoon foot traffic.

Thank you