

# The District Company: Predictive Analytics for Sales and Marketing

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**University of Wisconsin Stout**

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# Problem Statement

The District  
Company:  
Predictive  
Analytics for  
Sales and  
Marketing

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Connor Phu,  
Brian Dassow,  
Bella Nordahl

Introducing  
the Problem

Data Analysis

Regressions

Recognitions

- Interpret data to help the company make important business decisions
- Look at the correlation between events and concession sales
- Create and evaluate surveys to determine what customers want and need

# Problem Importance or Relevance

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They can make business decisions based off our results

- Know which games and events bring in the most profit in concession sales
- Know which events do better than others
- Informed about how to best meet the customers' needs

# Events

The District  
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Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
6:00 PM Modern Monday	5:00 PM- 11:00 PM Board Game Night	6:30 PM Magic: The Gathering - Standard Format	5:00 PM <u>Yu- gi-Oh!</u> Tournament.	6:00 AM- 9:30 AM <u>Friday Night Magic - Booster</u> Draft, just \$10!	5:00 PM Super Smash Bros Wii U @ The District	12:00 PM-4:00 PM Kids Board- Game Teach-&- Play
6:30 PM Star Wars X-Wing Miniatures Game - Meet-up	6:00 PM- 11:00 PM <u>EDH/Comman der meet up!</u>	6:30 PM Warhamme r 40k Casual Play	5:00 PM-11:00 PM Board Game Night	9:30 AM <u>Friday Night Magic - Booster</u> Draft, just \$10!	5:30 PM Force of Will Tournament	4:00 PM-8:00 PM Dungeons and Dragons: Expeditions
6:30 PM Warhammer 40k Casual Play	8:00 PM Game Designer Meet-up	6:30 PM Star Wars X- Wing Miniatures Game - Meet-up	6:00 PM Throwback Thursday		6:00 PM Magic the Gathering Chaos Draft	4:00 PM-8:00 PM <u>Pokemon</u> Trading Card Game League

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<u>pokemon</u>				network	<u>pokemon</u>	<u>pokemon</u>
				Dice	Network	network
				+accessories	Dice	Dice
			<u>Yu gi oh</u>	<u>Yu gi oh</u>	+accessories	+accessories
Warhammer					<u>Yu gi oh</u>	<u>Yu gi oh</u>
		Dragon ball z		Dragon ball z	Dragon ball z	
			Video gaming		Video gaming	Video gaming
				Event tickets		
				Card games		
				D and d		
					Beverages	Beverages
					Board games	
					Force of will	

Suggestion: Market Wednesday Warhammer event

# Total Monthly Revenue

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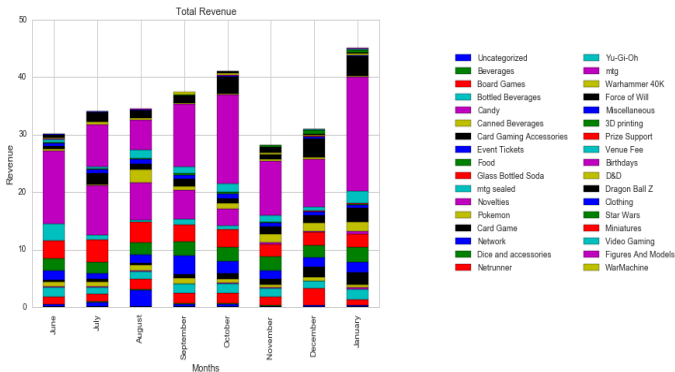
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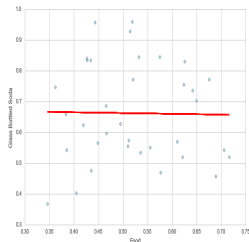
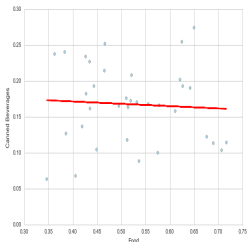
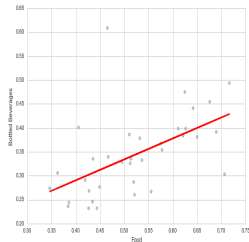
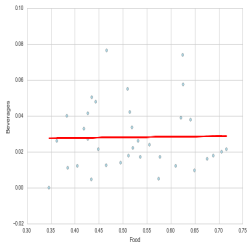
Suggestion: Market sales for holidays, especially Dragon Ball Z and Board and Card Games

# Correlations with Food and Different Beverages

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Suggestion: Encourage customers to buy beverages other than Bottled Beverages when buying food

# Multiple Regression Weights

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After D&D By Weeks

x/y down	MTG Combined	D&D	Novelties	Event Tickets	Board Games
Beverages	-0.004	0.017	0.024	-0.014	-0.024
Bottled Beverages	0.014	-0.236	0.085	-0.012	0.034
Food	0.031	-0.230	0.037	0.094	0.092
Glass Bottle Beverages	0.023	0.261	0.188	0.023	0.084
Canned Beverages	-0.006	0.023	0.023	0.084	-0.024
Candy	0.003	0.070	-0.025	0.004	-0.017

Before D&D By Days

x/y down	MTG	D&D	Novelties	Event Tickets	Board Games
Beverages	0.001	0.010	0.005	-0.004	-0.007
Bottled Beverages	0.020	-0.041	0.030	0.052	0.088
Food	0.026	0.107	0.033	0.085	0.104
Glass Bottle Beverages	0.032	0.089	0.137	0.015	0.185
Canned Beverages	0.003	0.023	0.026	0.026	0.015
Candy	0.003	0.009	-0.003	0.0001	0.002

greater than 1.0, 0.51 to 0.99, 0.1 to 0.5, less than 0.1

## Suggestions:

- Market Bottled Beverages and Food more during D&D events
- Market all Food and Drink products better during MTG events

# Big Data Analysis

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Recognitions

- Given:
  - Item Name
  - Category
  - Amount Sold
  - Gross Sales
  - Profit
  - Tax
- Able to decrease the scope
- Data is organized in Data Frames



# Decrease Scope Explanation

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Category	Items Sold	Gross Sales	Net Sales
3D printing	28	0.35763	0.34555
Bottled Beverages	5272	12.02576	11.21322
Candy	1579	1.18444	1.11405
Canned Beverages	2739	5.86174	5.48176
Card Game	2206	10.73258	9.94015
Card Gaming Accessories	1271	7.64518	7.25185
Dice and accessories	824	1.40916	1.4417
Event Tickets	1631	14.247	13.60231
Food	1417	18.25576	17.11109
Force of Will	2601	15.00294	12.85157
Glass Bottled Soda	10265	23.162	21.4417
Miscellaneous	107	1.21907	1.03904
Network	914	5.329	5.2638
Pokemon	1150	8.83377	7.45969
Uncategorized	1138	5.94413	5.43347

Decrease Scope

Item Name	Category	Items Sold	Gross Sales	Net Sales
Al Stephen's Sarsaparilla	Glass Bottled Soda	1	0.002	0.002
Ale 8 One	Glass Bottled Soda	10	0.02	0.02099
Americana Black Cherry	Glass Bottled Soda	6	0.012	0.02119
Americana Cherry Cola	Glass Bottled Soda	32	0.044	0.03859
Americana Honey Cream	Glass Bottled Soda	47	0.094	0.09016
Americana Huckleberry	Glass Bottled Soda	114	0.228	0.20022
Americana Orange Cream	Glass Bottled Soda	29	0.096	0.04275
Americana Root Beer	Glass Bottled Soda	41	0.082	0.07731
Ancher Root Beer	Glass Bottled Soda	20	0.04	0.02615
Apple Beer	Glass Bottled Soda	60	0.205	0.19347
Bavls Cherry	Glass Bottled Soda	136	0.254	0.49021
Bavls G31K B31R	Glass Bottled Soda	122	0.369	0.14452
Bavls Guarana	Glass Bottled Soda	146	0.531	0.34406
Bavls Orange	Glass Bottled Soda	185	0.403	0.17675
Beckford's Ginger Ale	Glass Bottled Soda	2	0.004	0.00377
Beckford's Root Beer	Glass Bottled Soda	26	0.052	0.0402
Bedford's Vanilla Cream	Glass Bottled Soda	10	0.022	0.0205
Bienheim's Ginger Ale Spicy	Glass Bottled Soda	62	0.136	0.17209

- Helps to better understand why certain categories are doing well
- Can see what's causing correlations
- Suggest improvements to the company about categories that aren't doing as well

# Category Sums

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Category	Items Sold	Gross Sales	Net Sales
3D printing	28	0.35763	0.34555
Beverages	492	0.983	0.93667
Birthdays	3	0.14	0.14
Board Games	656	13.05529	11.52154
Bottled Beverages	5272	12.02576	11.21322
Candy	1579	1.18444	1.11405
Canned Beverages	2739	5.86174	5.48176
Card Game	2206	10.73258	9.94015
Card Gaming Accessories	1271	7.64518	7.25165
Clothing	3	0.054	0.018
D&D	89	1.61659	1.37206
Dice and accessories	824	1.48916	1.4417
Dragon Ball Z	227	1.46857	1.26794
Event Tickets	1631	14.247	13.60231
Figures And Models	9	0.12191	0.11219
Food	8417	18.25576	17.11109
Force of Will	2601	15.08294	12.85157
Glass Bottled Soda	10265	23.162	21.6417
MTG Sealed (booster packs, fat packs, etc)	565	5.81935	5.0339
Magic The Gathering	6950	76.87371	66.67143
Miniatures	12	0.03488	0.03488
Miscellaneous	107	1.21907	1.03904
Netrunner	4	0.08384	0.06985
Network	914	5.329	5.2638
Novelties	5907	36.8991	29.55752
Pokemon	1150	8.83377	7.45969
Prize Support	4	0.135	0
Star Wars	74	1.58122	1.51311
Uncategorized	1138	5.94413	5.43347
Venue Fee	8	0.04	0.04

# Comparisons Between Items Sold and Net Sales

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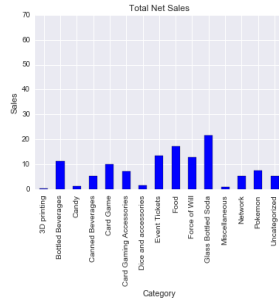
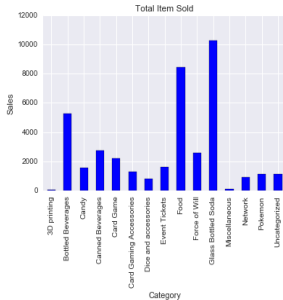
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Suggestion: Raise prices of Glass Bottled Soda, Food, and Bottled Beverages

# Recognitions

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- PIC Math is a program of the Mathematical Association of America (MAA) and the Society for Industrial and Applied Mathematics (SIAM). Support is provided by the National Science Foundation (NSF grant DMS-1345499).
- Advisor: Dr. Keith J. Wojciechowski
- Project Consultant: Dustin Jepperson
- The District Company