Intro Slide

Hello world and welcome to my presentation on retail sales analytics. My name is Robert Burns and this presentation is for Bellevue University class DSC680, Applied Data Science.

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The first thing we should ask ourselves is, “why do we perform retail data analysis?” The bottom line to everything is “profit,” but there are many factors that go into increasing profitability in the retail world. For starters, we need to improve the customer experience making shopping a pleasure.

96% of Americans shop online but 65% of America's shopping budget is spent in the traditional brick and mortar store. This is a good indication that convenience is very important to the American shopper, but having a good experience all around, even in store, is also very important. Otherwise, more and more customers will be drawn to the online experience and brick and mortar stores will experience more consistent reductions in growth.

Improving efficiency is another reason to perform retail data analysis. Knowing where to spend our money and knowing how it will be used to keep the retail locations operating most effectively can help keep costs down. Better advertising methods can be derived by understanding retail data, as it gives us an insight as to who our customers are and how they are being reached, be it through in-store fliers, newspaper mailers or email advertising. We can use retail data analysis to forecast trends and understand what we will be facing in the way of manpower needs, supply and stock expectations and overall market performance. The list goes on and on, as there are many other factors that go into creating an efficient work environment.

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So what factors are important? What information are we gathering? Are we getting customers’ information, sales information, information about external factors? How are we getting this information? Are customers able to create accounts with us and personalize their relationship with our store? How are we using this information? Gone are the days of “here’s how well we did.” Now is the time when we say, “here’s how well we WILL DO.” The only way to do that, though, is by having the appropriate information to analyze. At the rate data can be generated, we need to gather all we can and put it to good use.

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Who are we observing by using this data? As I said, first and foremost, we are looking at our customers. We want to know how they have been buying, when they have been buying and what they have been buying. We want to look at potential customers, identifying the areas, possibly even the department's in our stores, which may not necessarily be serving the same customers as the other departments. We want to look at our suppliers, understand how our relationship is with them and how, based on sales trends, we may ask more of them at times than others. We're also observing our employees, determining how many people we need on staff during times of forecasted peak seasons.

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We've also learned that we need to pay attention to external factors, not just the ones that are within the realm of our control. Weather is one of the key external factors that affects the successes of individual departments within our stores. Sometimes the weather, depending on what kind of effect it is having on the community, can cause accessibility challenges to customers. If customers are snowed in at home, it's reasonable to assume that we will see an increased challenge in getting the customers through the door. Our developed and cultivated relationships with those customers will keep them coming back to us rather than sitting on their couches ordering from their phones.

As you can see from this graph, Department 72 in store number 4 experiences extreme fluctuation that are converse to the temperature in their region. The warmer it gets, the more sales decline and the colder it gets the more likely to see sales spike. Department 92 has a similar upturn in colder weather but it remains more stable throughout the year. Department 95, while it doesn't have as drastic a fluctuation, does have noticeable decreases in sales in colder weather, but then bounces right back to a normal steady rate throughout the rest of the year. Depending on what the product is, there may be an increased need for it during certain weather changes. Our supply chain also needs to be closely monitored as the weather changes, so that we are properly stocked for those items that are in high demand during peak season.

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As we can see from this graphic, unemployment does have somewhat of an effect, it appears, but nothing very drastic. We can see that unemployment from 2010 to 2012 drops considerably, whereas we only see a slight upturn in business as unemployment rates fall. Consequently, when unemployment rates began to go back up, there could have been some degree of skepticism and fear in the community, which we see bring sales back down just a little bit. In every study that was conducted, the consumer price index, or CPI, had very little change, and therefore, had little to no effect or correlation in overall sales.

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So, now that we have this information, what should we do with it? For one thing, it should help us understand the impacts of some of these external factors, like the weather. There may be somewhat of an impact as unemployment rates change, but no matter what the external factor we are studying, we must understand how to plan accordingly. If we know that the weather changes affect performance in different departments, we need to plan for the kinds of things that happen every year. The winter, the summer, the holiday seasons…they will all be considered important factors in determining what is going to be sold and what kind of performance each Department will have. In doing this, we will be able to prepare for the future, keeping track of the trends of the past and understanding what the future holds. By doing this, we can increase overall profitability by ensuring the workplace is managed efficiently, supply lines are prepared for fluctuations, and the customers get the best possible experience by shopping with us.

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I will now begin a question and answer period and if you would like to look back at these slides or my notes, you can use the link www.github.com/kirbyburns/DSC680\_Project1\_Retail\_Analytics. Thank you for your time I hope you enjoyed it. I look forward to your feedback.