

Intro to Data Analytics

1.6: INTRODUCTION TO ANALYTICAL METHODS

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Scenario 1: GameCo's marketing team has noticed that puzzle game sales are down this year. The finance director wants a report on what's causing this drop in sales, so the marketing team reaches out to the analysts for help.

1. This calls for a descriptive and diagnostic analysis which will help summarise the data by showing sales trends over time, while diagnostic analysis can help identify the factors contributing to the decline in puzzle game sales. The descriptive analysis will provide a historical overview of the drop of sales and the diagnostic analysis will provide an investigation into the causes.
2. This calls for a multivariate analysis which measures the relationship between three or more variables. In this case, there could be several factors influencing the drop in sales such as: marketing budget, competitor games, change in customer preferences, or change in trends.
3. Using the different variables, we can answer the following questions:
 - a. How have sales of puzzle games developed over the last 5 years compared to other games? (This will allow us to find whether the decline is specific to this genre or part of a bigger trend related to other games.)
 - b. Have there been any new trends in puzzle games or has a new competitor emerged that is changing consumer behaviour? (This will allow to focus on competitor analysis as well as market analysis. Both can reveal external factors that might affect sales performance.)
 - c. Have there been changes in marketing budget or strategies for puzzle games this year internally? (Understanding marketing strategies can help establish a relation between promotion and drop in sales.)

Scenario 2: The sales team wants to know which games it should stock in each city in order to most effectively meet local customer demand. Shipping rates vary by location and this difference will need to be reflected in which games are recommended for which locations.

1. This calls for a predictive analysis that will allow the sales team to anticipate customer demand by city based on historical sales data, customer preferences, and shipping rates (descriptive analysis). Predictive analysis can generate recommendations tailored to each location. It could be combined with prescriptive analysis as it goes one step further by predicting what will happen and suggesting to the sales team about games to stock based in light of previous predictions.
2. This calls for a multivariate analysis which has in consideration multiple factors such as: historical demand by city, game genre preferences, and shipping rates
3. Using the different variables, we can answer the following questions:
 - a. What are the historical sales trends for different games across cities? (This will help identify which games are more popular in each city, providing a basis for recommendations.)
 - b. How do shipping costs vary by location and how do they impact the overall profitability? (Factoring in shipping costs will ensure recommendations are cost-effective and aligned with profitability goals.)
 - a. Are there any regional preferences? (Understanding local preferences will help target specific games for stocking based on customer demand.)

Scenario 3: A GameCo executive is due to give a presentation at an upcoming gaming conference and they want to know how sales vary by month of the year.

1. This calls for descriptive analysis that helps understand what happened in the past, it uses historical data to try to reconstruct a story around how parts of a system interact. This analysis requires a clear, data-driven description of how sales fluctuate throughout the years, which is best achieved by descriptive statistics.
2. This calls for a univariate analysis that aims to identify patterns within a single variable rather than trying to understand relationships or causes. Since the primary focus is on how sales change month by month, univariate analysis will be sufficient to represent sales.
3. Using the different variables, we can answer the following questions:
 - a. What are the total monthly sales for the last 2-3 years? (This data will give a clear sense of the sales patterns over time..)
 - b. Are there any consistent spikes or drops in specific months, and what events (holidays, game releases) coincide with these fluctuations? (This will help contextualise why sales increase or decrease in certain months.)

- a. How do sales trends differ across game genres or platforms during certain months? (This will allow the executive to give a more nuanced presentation, highlighting genre-specific trends.)

Scenario 4: The Olympic Games will take place in six months. GameCo's operations team wants to forecast how many sports games it will sell in the months before, during, and after the games so it can order the correct amount from the production facility.

1. This calls for a descriptive and predictive analysis. While descriptive analysis will help account for historical sales patterns during similar events, predictive analysis will use that historical sales data to forecast how sales might work in this season.
2. This calls for a multivariate analysis as several factors must be considered, such as: historical sales data, marketing campaigns, and influence of the Olympic Games.

We could use a bivariate analysis which involves two variables and the main focus is uncovering what relationship exist between this two variables. This analysis could be useful to understand the relationship between sales during previous sporting events and game releases (In case of using any other major sporting event, the analyst should be careful in drawing conclusions as each sport event has their own singularities)

3. Using the different variables, we can answer the following questions:
 - a. What were the sales patterns for sports games during past major sporting events, such as previous Olympic Games or World Cups? (This historical data will help forecast potential sales trends for the upcoming event.)
 - b. Are there any upcoming marketing campaigns or promotions planned around the Olympics for sports games? (Understanding marketing efforts will help adjust the forecast based on the impact of promotions.)
 - c. How do the release dates of new sports games correlate with the timing of the Olympic Games? (Aligning game releases with the event timeline can increase sales, making it essential to consider in forecasting.)