Imagine you are asked to conduct a cost-benefit analysis of a public project.
Outline your responses to the following elements:

Please describe the project and its location.
What data would you need to undertake this analysis, and where would you access this data from?
What steps would you take to complete the analysis?
What impact, given the project and location, would you expect to include in the CBA and how would you go about valuing these impacts?

Conducting a Cost-Benefit Analysis for a High-Speed Rail Project in Los Angeles

Project and Location Description:

The proposed public project involves the development of a high-speed rail system in the metropolitan area of Los Angeles. The location is characterized by a sprawling population, severe traffic congestion issues, and a growing need for efficient public transportation. The high-speed rail system aims to enhance mobility, reduce traffic-related environmental impact, and contribute to the overall economic development of Los Angeles.

Data Requirements and Sources:

To undertake a comprehensive cost-benefit analysis (CBA) for this public project, a diverse set of data is essential. Firstly, demographic data is crucial, including population density, income distribution, and commuting patterns in Los Angeles. This can be obtained from local government databases and statistical agencies, such as the U.S. Census Bureau. Economic data, such as Gross Metropolitan Product (GMP) growth rates and employment statistics, is necessary for understanding the economic context and can be sourced from economic reports and the Bureau of Economic Analysis. Additionally, environmental data, covering air quality indices and carbon emissions, is vital for assessing the project's impact on the environment and can be obtained from environmental monitoring agencies.

Cost-related data is of paramount importance and includes construction costs, operational costs, and maintenance costs. Construction costs can be acquired from project blueprints and contractor estimates, while operational and maintenance costs may require collaboration with transportation authorities and financial departments in Los Angeles.

Steps to Complete the Analysis:

- Identify Costs and Benefits: Distinguish between various costs associated with constructing, operating, and maintaining the high-speed rail system in Los Angeles. Identify direct and indirect benefits, such as time savings for commuters, reduced traffic congestion, and environmental improvements.
- Discount Future Cash Flows: Convert future costs and benefits to their present values using an appropriate discount rate, considering the prevailing economic conditions in Los Angeles.
- Calculate Net Present Value (NPV) and Benefit-Cost Ratio (BCR): Evaluate the overall economic viability of the project by calculating NPV and BCR specifically for Los Angeles. A positive NPV and BCR greater than 1 indicate that the benefits outweigh the costs.
- Sensitivity Analysis: Assess the impact of changing variables, including construction costs, benefits, and discount rates, on the project's economic feasibility in the context of Los Angeles.

Impacts Included in CBA and Valuation:

Positive impacts to be included in the CBA for Los Angeles encompass time savings for commuters, reduced traffic congestion, and improved air quality. Time savings can be valued based on standard wage rates in Los Angeles, providing a monetary measure of the benefit. The valuation of reduced traffic congestion and improved air quality involves estimating the societal cost of these factors in Los Angeles, considering factors such as healthcare costs and environmental damage.