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**DATA ANALYTICS WITH COGNOS**

**Public Transportation Analysis**

**INNOVATION IN THE ANALYSIS:**

**INTRODUCTION:**

Analyzing the innovation of public transportation involves examining the various advancements and changes that have occurred in the industry over time. Public transportation plays a crucial role in urban mobility, sustainability, and the overall quality of life in cities. Here's an analysis of key innovations in public transportation:

1. **Technological Advancements:**
   * **Digital Ticketing and Payments:** The adoption of contactless payment methods, such as mobile apps and smart cards, has made it easier for passengers to pay for fares and reduced the need for physical tickets**.**
   * **Real-time Tracking:** GPS and mobile technology have enabled real-time tracking of buses, trains, and other modes of public transport, allowing passengers to plan their journeys more efficiently.
   * Electric and Hybrid Vehicles: The transition from traditional fossil fuel-powered vehicles to electric and hybrid alternatives has reduced emissions and improved air quality in cities.
2. **Shared Mobility Solutions:**
   * **Ride-Sharing and Carpooling:** Apps like Uber and Lyft have expanded the concept of shared mobility, offering an alternative to traditional public transportation for some commuters**.**
   * **Bike and Scooter Sharing:** The introduction of dockless bike and scooter-sharing programs has provided additional first/last-mile solutions, improving accessibility to public transit**.**
3. **Integration and Intermodality:**
   * **Multi-Modal Integration:** Cities are working to create seamless transitions between different modes of public transportation (e.g., bus to subway) to encourage more people to use public transit for their entire journey.
   * **Transit Hubs:** The development of transit hubs, where different modes of public transport converge, simplifies transfers and enhances the overall transportation experience**.**
4. **Sustainability Initiatives:**
   * **Green Infrastructure:** Public transportation agencies are increasingly investing in eco-friendly infrastructure, such as bus rapid transit (BRT) lanes and tram systems, to reduce emissions and promote sustainable travel.
   * **Renewable Energy:** Some cities are transitioning to renewable energy sources to power public transportation, further reducing the carbon footprint of transit systems.
5. **Accessibility Improvements:**
   * **Universal Design:** Innovations in design and technology have made public transportation more accessible to people with disabilities, ensuring inclusivity.
   * **Real-time Information:** Digital signage and mobile apps provide real-time information for passengers, making it easier for all riders to navigate the system.
6. **Data and Analytics:**
   * **Big Data Analysis:** Public transportation agencies are using big data and analytics to optimize routes, schedules, and maintenance, leading to more efficient and reliable services.
   * **Predictive Maintenance:** Predictive analytics help identify maintenance needs before they cause service disruptions, increasing the reliability of public transportation**.**
7. **Public-Private Partnerships:**
   * Collaborations with private companies have led to innovative services like ride-hailing services integrated into public transit apps, creating more convenient transportation options**.**
8. **Microtransit and On-Demand Services:**
   * Some areas have experimented with microtransit services, using smaller vehicles that can be dispatched on-demand to provide flexible transit solutions tailored to specific communities.

**CONCLUSION:**

Inconclusion, public transportation has seen significant innovation in recent years, driven by technology, sustainability goals, and a focus on improving the overall passenger experience. These innovations aim to make public transportation more accessible, efficient, and environmentally friendly while meeting the evolving needs of urban populations. However, challenges such as funding, infrastructure development, and regulatory issues continue to impact the pace of innovation in the sector.

**STEPS TO BE FOLLOWED FOR THE ANALYSIS:**

**STEP 1 :**

* Collect the dataset of PUBLIC TRANSPORTATION ANALYSIS. We have collected it from

**https://www.kaggle.com/datasets/rednivrug/unisys?select=20140711.CSV**

**STEP 2 :**

* Perform clustering of the data to analyse the different categories of the work the workers are working for

**STEP 3** :

* Preprocess the data and transform it according to the analysis

**STEP 4 :**

* Remove the outliers, null values and other error data

**STEP 5 :**

* Fit the preprocessed data into a model for predictions

**STEP 6** :

* Find the prediction score using r2\_score, accuracy\_score

**STEP 7** :

* Use the preprocessed data for visualizations and other summarization of data given

**STEP 8** :

* Derive the insights from the visualizations made and make it as a report