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Aim: **Design Big Data Dashboard using Tableau on the dataset - Education Sector**

☐ **Dataset Link:**
https://www.kaggle.com/datasets/vidyapb/indian-school-education-statistics?select=dropout-ratio-2012-2015.csv

☐ **Dataset Description:**

The dataset contains dropout rates for different educational levels (Primary, Upper Primary, Secondary, and Higher Secondary) across Indian states and union territories, segmented by gender (boys, girls) and aggregated totals. It spans three academic years (2012-13, 2013-14, and 2014-15), allowing for both regional and temporal analysis. Each education level is represented by separate columns for boys, girls, and totals, facilitating insights into gender-based disparities and overall dropout trends. The "State UT" column enables geographic comparison across regions, making it possible to identify states with high or low dropout rates and observe changes over time, highlighting areas where targeted interventions may be necessary.

☐ **Dashboard:**

• **Map of Primary Dropout Rates by State:**

☐ **Description:** This map uses color coding to display dropout rates for primary school (Primary Total) across various states in India. Each state is shaded based on the dropout rate, with the values labeled directly on the map.

☐ **Insight:** Darker colors indicate higher dropout rates, making it easy to see which states have higher rates. For instance, Maharashtra shows a relatively high dropout rate of 10.28, whereas states like Karnataka and Kerala have lower rates. This chart helps identify geographical trends in primary education dropout rates.

- **Bar Chart of Primary Dropout Data by Year**

☐ **Description**: This clustered bar chart shows dropout rates over the years (2012-13 to 2014-15) for Primary Boys, Primary Girls, and Primary Total.

☐ **Insight:** Comparing the dropout rates by gender and overall helps identify trends over time. If there is a noticeable decline or increase from year to year, it indicates either improvements or setbacks in dropout reduction efforts. This chart can also reveal if there's a significant gender disparity in dropout rates

- **Line Chart of Minimum Dropout Rates by Year**

☐ **Description**: This line chart tracks the minimum dropout rate for primary education each year, showing the lowest rate achieved across states.

☐ **Insight:** The trend line here allows us to see whether the minimum dropout rate is decreasing over time, which could indicate positive progress. However, the slight rise from 2013-14 to 2014-15 might suggest a need for targeted intervention in certain regions.

- **Bubble Chart for Primary and Upper Primary Dropout Rates by Year**

☐ **Description**: This bubble chart shows the dropout rates for primary and upper primary levels, with each bubble representing a year. Larger bubbles may signify higher dropout values

☐ **Insight:** By using the size of the bubbles to indicate dropout magnitude, this chart allows for quick comparison across years. If the bubble size decreases, it could suggest progress in reducing dropout rates.

- **Tree Map of Higher Secondary and Secondary Dropout Rates by State**

  ☐ **Description:** This treemap shows dropout rates at the higher secondary and secondary levels across different states. Each box represents a state, with larger boxes for higher dropout values.

  ☐ **Insight:** This visualization is useful for comparing dropout rates across states at the secondary education level. For example, Maharashtra has a significant dropout rate, as indicated by the large box. This could point to issues specific to that state's education system at these levels.

- **Scatter Plot of Boys and Girls Dropout Rates by State**

☐ **Description**: This scatter plot compares dropout rates for boys and girls across different states, likely for secondary education. The y-axis shows dropout rates for boys, while each dot represents a state's data point.

☐ **Insight:** By observing the spread of dots, we can identify if dropout rates for boys and girls are closely aligned or if there's a wide disparity. For instance, if many dots cluster close to the line of equality, it suggests gender parity; otherwise, it highlights gender-based dropout discrepancies.

• <u>Bar Chart of Higher Secondary Dropout Rates by Year</u>

☐ **Description**: This bar chart represents dropout rates for higher secondary education, broken down by boys, girls, and total dropout rate for each year (2012-13 to 2014-15).

☐ **Insight:** Similar to the primary level bar chart, this chart allows for tracking gender disparities over time. If one gender consistently has a higher dropout rate, it could indicate underlying socio-cultural or economic factors affecting that group.

• <u>Box Plot of Secondary Dropout Rates by State</u>

☐ **Description**: This box plot visualizes the distribution of dropout rates for secondary education across states, with the box representing the interquartile range and whiskers for minimum and maximum values.

☐ **Insight:** The box plot is useful for identifying outliers and understanding the spread of dropout rates. States with rates above the upper whisker might require targeted interventions, while those within the interquartile range reflect typical dropout rates for the group.

☐ **Conclusion**:

Overall, the dashboard provides a detailed picture of dropout rates across India from 2012 to 2015, revealing significant regional, gender, and level-specific disparities. Consistent dropout rates in some areas and increases in others highlight the need for ongoing, targeted efforts to reduce dropout rates. Addressing factors like socio-economic challenges, cultural barriers, and gender-specific issues through localized and flexible policies will be key to ensuring higher retention and reducing dropout rates across India.