**. Introduction (1 min)**

* *“This project analyzes the World Happiness Report 2023 dataset, which includes data for 137 countries. It measures life satisfaction through the ‘Ladder Score’ and explores how factors like GDP, health, social support, and freedom contribute to happiness.”*

**2. Dataset Overview (1 min)**

* 138 rows, 19 columns
* Key metrics:
  + **Ladder Score**: Main happiness indicator
  + **GDP, Social Support, Health, Freedom, Generosity, Corruption**
  + Each factor also has an "explained by" version showing its contribution to happiness
* Includes bounds for confidence intervals, a dystopia baseline, and residuals

**3. Data Cleaning & Preprocessing (2 min)**

* **Normalization**: Checked and adjusted skewed metrics like GDP using log scale
* **Missing Values**: Handled nulls in Generosity by using mean imputation or regional averages
* **Grouping**: Assigned each country to a continent to enable regional comparisons

**4. Visual Analysis (2 min)**

* **Bar Chart**: Top 10 happiest countries (e.g., Finland, Denmark, Iceland) show clear trends among developed nations
* **Scatter Plot**: Ladder Score vs. GDP reveals a moderate positive correlation—richer countries generally report higher happiness
* **Map Visualization**: Global map color-coded by continent, showing social support levels—stronger in Nordic and Western countries
* **Pie Chart**: Shows distribution of countries by region; helps understand dataset representation (e.g., more from Europe and Asia)

**5. Interactive Dashboard Features (2 min)**

* **Filters**: Users can explore by Continent and GDP per Capita
* **Hover Tooltips**: Show full set of metrics per country
* **Highlights**: Automatically spotlights top and bottom 10 countries by Ladder Score
* **Correlation Heatmap**: Shows strong links between Healthy Life Expectancy, Social Support, and overall happiness

**6. Insights & Conclusion (2 min)**

* **Key Insight**: Social support and health are as critical as GDP for happiness
* **Developed Countries**: Tend to rank higher due to better governance, life expectancy, and perceived freedom
* **Developing Countries**: Lower scores often tied to poor infrastructure or low trust in institutions
* *“Overall, this dashboard allows users to visually and interactively explore how different factors shape happiness globally and regionally.”*