**1. Summary**

SmartStat is a web-based tool designed to simplify statistical test selection and analysis. It helps users choose the correct test based on the structure and type of their data and then performs the analysis automatically. The tool supports six common statistical tests: Independent t-test, Paired t-test, ANOVA, Pearson correlation, Chi-square test, and Z-test for proportions. No statistical background or coding knowledge is required.

**2. Purpose of the tool**

Many users, especially in business or marketing, collect valuable data but are unsure how to analyze it correctly. They often struggle with questions like “Which test should I use?” or “What does a p-value mean?”

SmartStat was created to bridge this gap by guiding users through basic questions about their data and recommending the most appropriate statistical test. It empowers users to make data-driven decisions without needing to learn complex statistical theory.

**3. How the tool works**

The tool starts by asking users three simple questions:

1. What type of data are you analyzing? (Numerical or categorical)

2. How is the data structured? (Two groups, paired data, or multiple groups)

3. Is the data assumed to follow a normal distribution?

Based on these inputs, the system recommends a suitable statistical test. Users then upload their dataset, choose relevant columns, and view data visualizations such as scatter plots, violin plots, heatmap or bar charts. Once they click “Perform Test,” the tool runs the statistical analysis and displays results — including p-values, test statistics, and effect sizes — along with hover-over definitions to help interpret the output.

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**4. Links to models & files**

SmartStat (ZIP) contains the full source code for running the SmartStat web tool locally using Streamlit.

Includes:

• Main Python file (SmartStat.py)

• Sample dataset files (CSV)

• statement.doc with step-by-step instructions

• Presentation Revised.pptx explains the purpose, logic, and demonstration of each statistical test in SmartStat.