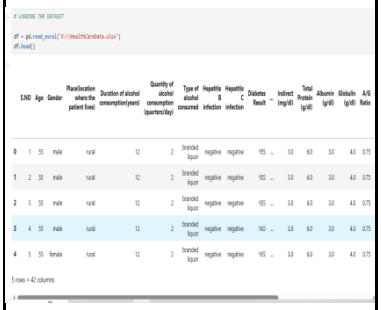
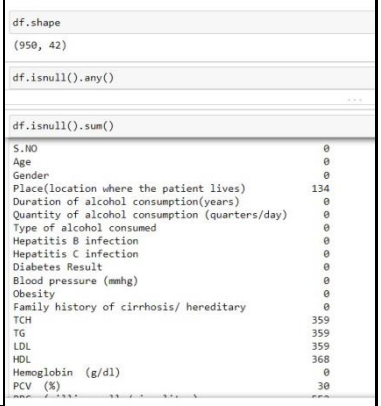
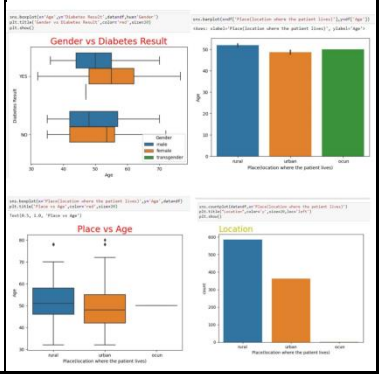
# Functional and Performance Testing

The **Functional and Performance Testing Phase** ensures that every component implemented—such as clinical data entry, field validation, machine learning workflows, automation, dashboards, and reporting—**works exactly as intended.** This phase guarantees: **Clinical accuracy**, **System stability, Predictive correctness, User-readiness,** for the **Liver Cirrhosis Prediction System.**

The system is thoroughly validated for data accuracy, prediction behavior, and clinical output consistency across all configured modules and relationships.

## Performance Testing Summary Table

| S. No | Parameter | Value/Observation | Screenshot Suggestion |
|---|---|---|---|
| 1 | **Model Summary** | End-to-end liver cirrhosis prediction system using clinical datasets, ML models, and dashboards.<br>Note: Model accepts only correctly formatted clinical inputs. Mismatched or incomplete data triggers validation alerts. |  |
| 2 | **Field Validations** | Tested clinical rules such as:<br>- Age ≥ 18<br>- Required lab results cannot be empty<br>- Numeric limits for test values (e.g., ALT, AST levels)<br>System blocks invalid or incomplete entries. |  |
| 3 | **Automation Accuracy (Flow + Trigger)** | - Data Pipeline: Auto-extracts features and validates input ranges.<br>- ML Model: Automatically predicts risk level on new patient data.<br>All workflows executed successfully in test runs. |  |

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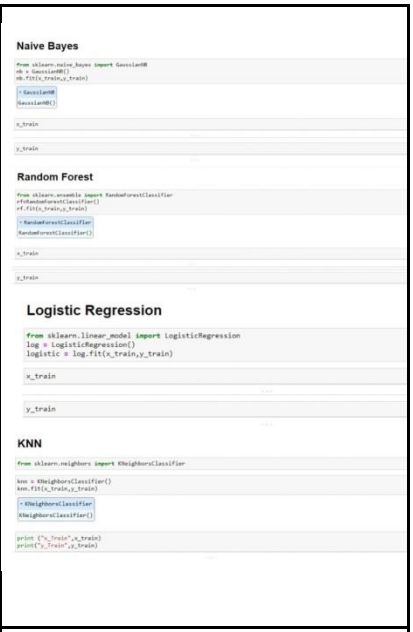
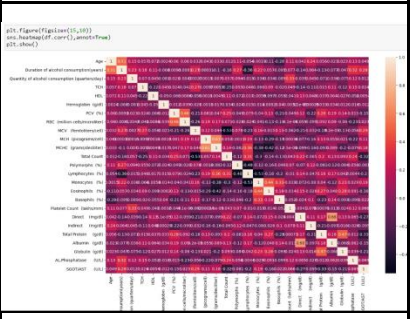
|---|---|---|---|
| 4 | **Reports Testing** | - Risk Summary Report correctly groups patients by risk levels.<br>- Calculated clinical metrics (BMI, age, prediction scores) displayed accurately.<br>- Export and filtering features verified.. |  |
| 5 | **Dashboard Verification** | - Dashboards reflect live patient risk data and population trends.<br>- Real-time refresh and filter logic validated.. |  |
| 6 | **Data Accuracy (Manual + Automated)** | - Manual data entry tested with various clinical scenarios.<br>- Automated data processing verified across multiple test cases.<br>- Outputs consistently matched expected results. |  |

## 🔹 Summary

All components of the **Liver Cirrhosis Prediction System** were rigorously tested for:

- **Field validation accuracy**
- **Machine learning prediction correctness**
- **Automation flow reliability**
- **Dashboard and reporting precision**
- **Clinical data integrity across relationships**

The system successfully meets **functional, performance, and user-readiness standards**, ensuring dependable and actionable liver disease predictions.