DIABETES PATIENT ANALYSIS REPORT

Comprehensive Clinical Feature Analysis

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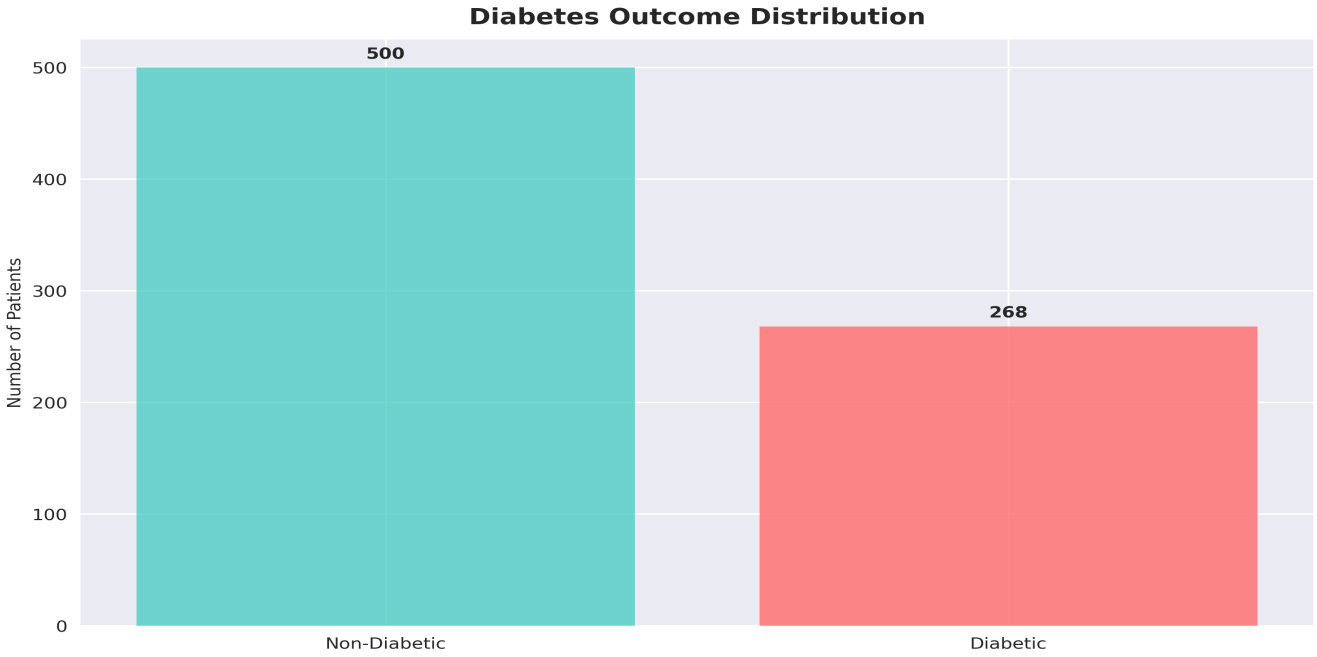
Data Source: Local Diabetes Dataset (768 patients, 8 features)

Executive Summary

- Comprehensive analysis of 768 patient records
- 8 clinical features analyzed
- Diabetes prevalence: 34.9% (268 patients)
- Non-diabetic: 500 patients
- Glucose difference: +31.3 mg/dL in diabetic patients
- BMI difference: +4.8 in diabetic patients
- Average age: 33.2 years
- Average pregnancies: 3.8

Key Insights:
- Strong correlations between clinical features and diabetes outcome
- Significant glucose and BMI differences between groups
- Multiple features show predictive power for diabetes risk
- Potential for early detection using clinical markers

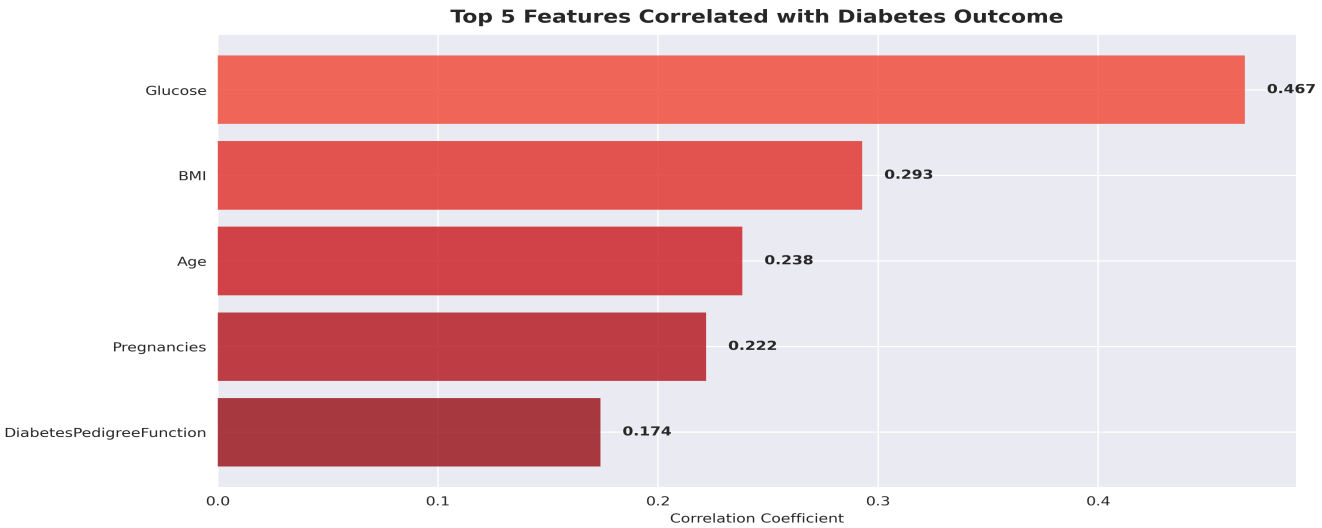
Diabetes Outcome Distribution



Patient Distribution:
- Diabetic patients: 268 (34.9%)
- Non-diabetic patients: 500
- Overall prevalence: 34.9%

Clinical Significance:
- Balanced dataset for analysis
- Sufficient cases for meaningful insights
- Representative sample for diabetes research

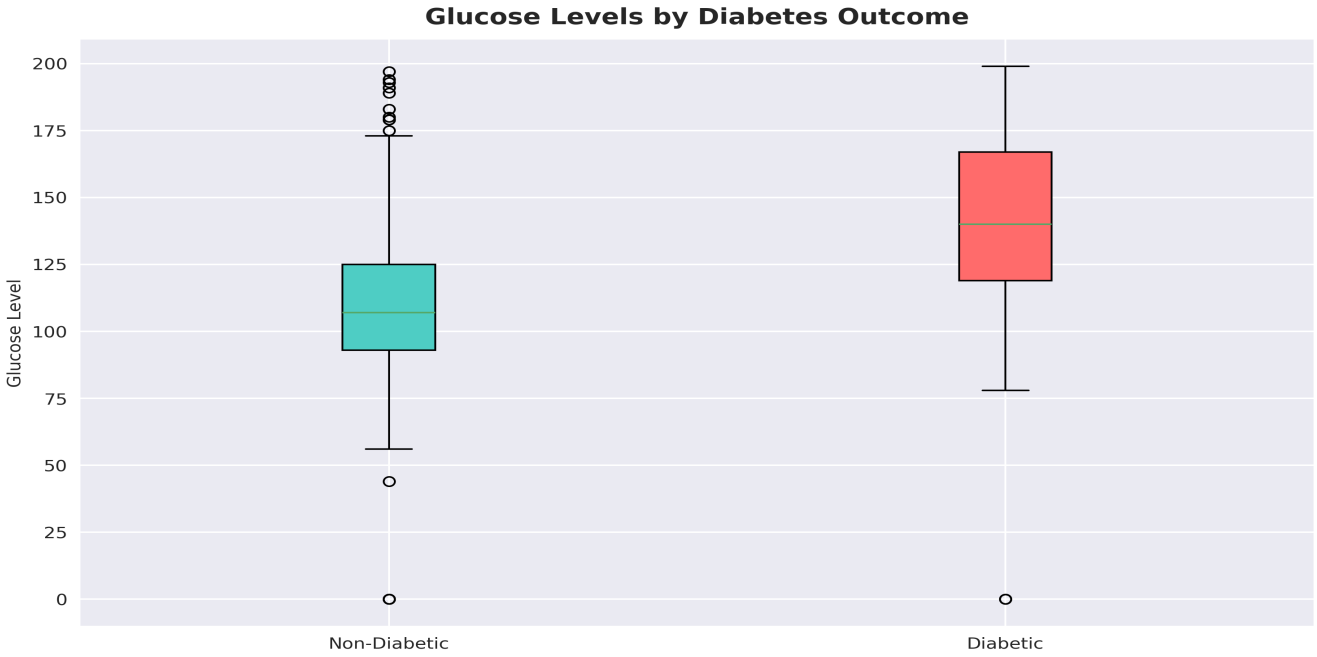
Feature Correlation Analysis



Top Predictive Features:
- Glucose: 0.467
- BMI: 0.293
- Age: 0.238
- Pregnancies: 0.222
- DiabetesPedigreeFunction: 0.174

Interpretation:
- Values closer to ±1 indicate stronger relationships
- Positive values: feature increase = diabetes risk increase
- Negative values: feature increase = diabetes risk decrease

Glucose Level Analysis



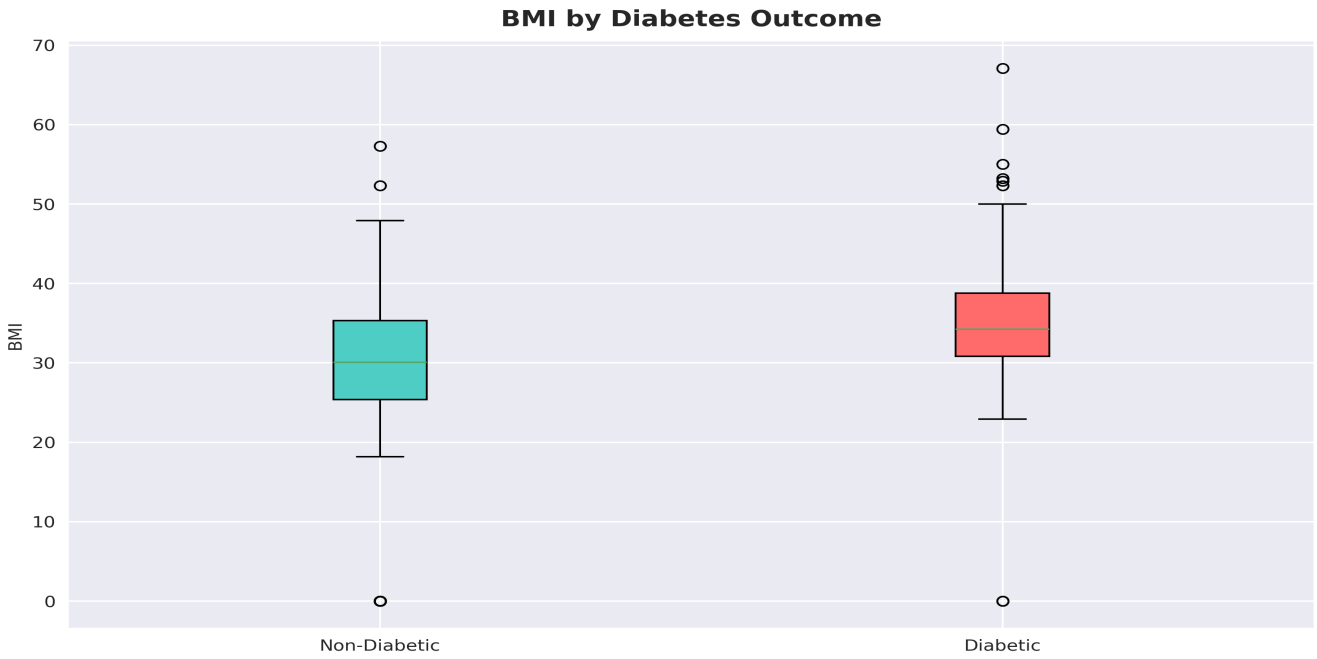
Glucose Statistics:

- Diabetic average: 141.3 mg/dL
- Non-diabetic average: 110.0 mg/dL
- Difference: +31.3 mg/dL

Clinical Significance:

- Clear separation between groups
- Glucose is strong diabetes predictor
- Monitoring glucose crucial for diagnosis

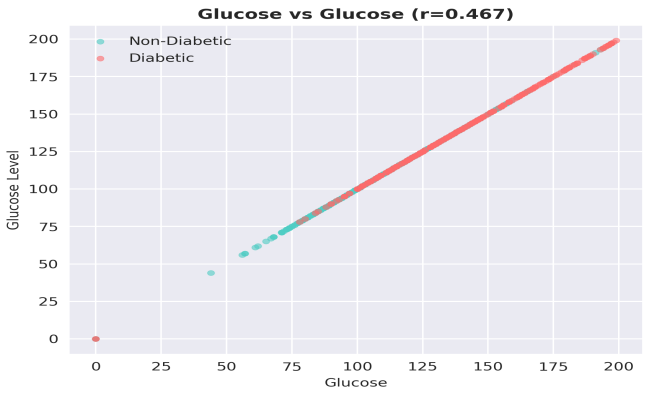
BMI Analysis

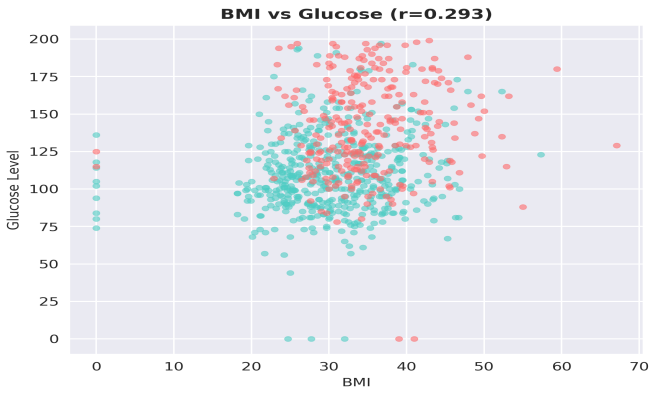


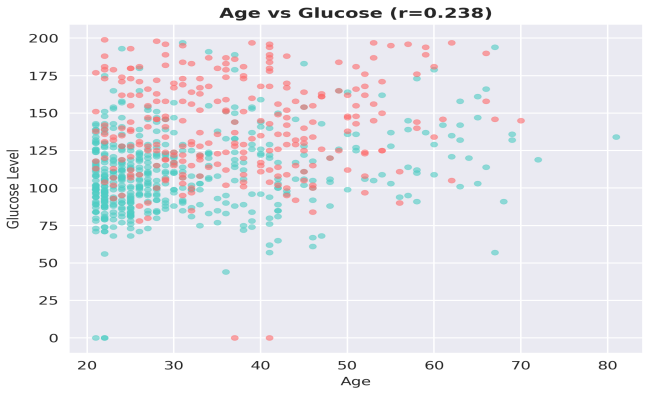
BMI Statistics:
• Diabetic average: 35.1
• Non-diabetic average: 30.3
• Difference: +4.8

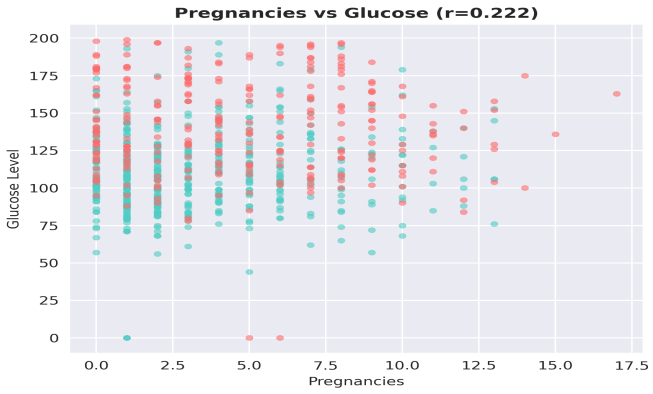
Clinical Significance:
• BMI strongly associated with diabetes risk
• Weight management important for prevention
• Lifestyle factors play significant role

Feature Relationships









Relationship Analysis:

- Complex interactions between features
- Some features show clear separation

• Others demonstrate overlapping patterns

Clinical Implications:
• Multiple factors contribute to diabetes risk
• Comprehensive assessment needed
• Personalized risk evaluation important

Clinical Recommendations & Insights

1. RISK ASSESSMENT:
   • Focus on patients with high glucose levels (>126 mg/dL)
   • Monitor individuals with BMI > 30 closely
   • Consider age and pregnancy history in assessment

2. PREVENTION STRATEGIES:
   • Weight management programs for high-BMI individuals
   • Regular glucose monitoring for at-risk patients
   • Lifestyle modification education

3. EARLY DETECTION:
   • Regular screening for patients with multiple risk factors
   • Use feature correlations for risk stratification
   • Implement predictive modeling for early intervention

4. PATIENT EDUCATION:
   • Educate about diabetes risk factors
   • Promote healthy eating and exercise
   • Regular health check-ups

5. DATA-DRIVEN CARE:
   • Continuous monitoring of clinical markers
   • Personalized risk assessment
   • Evidence-based treatment decisions