

# Risk Assessment & Mitigation Plan



## Risks and alternatives

This document outlines potential risks associated with the Healthcare Predictive Analytics project and provides strategies to mitigate them. By identifying challenges early, we can ensure a more robust and reliable predictive model that improves healthcare outcomes.

### 1. Data-Related Risks

Risks	Solutions
Data Quality Issues (incomplete, inconsistent, or biased data)	Perform data preprocessing (cleaning, normalization, handling missing values). Use diverse and representative datasets.
Data Privacy & Security Concerns	Use anonymized and encrypted data. Follow HIPAA/GDPR guidelines. Implement strict access controls.
Limited Availability of Healthcare Data	Use synthetic data generation or publicly available datasets (MIMIC, Kaggle healthcare datasets). Collaborate with hospitals for access.

## 2. Model-Related Risks

Risks	Solutions
Model Bias	Use fairness-aware algorithms, check for biases in data, and test on diverse patient demographics.
Overfitting	Use cross-validation, regularization techniques, and ensure adequate dataset size.
Explainability Issues	Use interpretable models (SHAP, LIME) and provide clear visual explanations of predictions.

## 3. Implementation Risks

Risks	Solutions
Integration with Healthcare Systems	Follow standard APIs (FHIR, HL7). Ensure modular design for easy integration.
Resistance from Healthcare Professionals	Provide training and workshops to demonstrate benefits and usability. Collect feedback for improvements.

# 4. Technical Risks

Risks	Solutions
Scalability Issues	Optimize model performance, use cloud-based solutions (AWS, GCP).
Computational Resource Limitations	Use cloud-based GPU/TPU resources. Optimize code for efficiency.