* **Social Network Modeling (Marvel Cinematic Universe)**: Built and analyzed social network models for the MCU, revealing that key characters like Captain America and Iron Man are 20% more central. This analysis provided valuable insights into character relationships and narrative influence within the franchise.
* **Sentiment Analysis**: Developed NLP models using TensorFlow to analyze Twitter data and hospital reviews, achieving accuracy rates of 71% and 75% respectively. This work enhanced understanding of public sentiment, improved engagement metrics, and identified performance areas while maintaining strict data security and privacy standards.
* **Statistical Analysis for Housing Affordability**: Conducted a comprehensive analysis of Austin’s housing and crime data using Power BI, Pearson correlation, and t-tests, identifying 14 affordable and safe neighborhoods. This analysis supported informed decision-making for employee housing recommendations.
* **Heart Disease Prediction Using Healthcare Data:** Integrated and analyzed multi-source Electronic Health Records (EHR) to improve heart disease prediction models by 8%. Applied feature selection, correlation analysis, and cross-validation while ensuring HIPAA compliance and data privacy.
* **R Package Development for Traffic Modeling:** Created an optimized R package implementing the Biham–Middleton–Levine traffic model. Vectorization improved the iteration rate by 41% and reduced total processing time by 14%, significantly enhancing computational efficiency.
* **Sales Data Time Series Analysis:** Performed trend analysis on sales data to optimize product placement and promotional strategies. Identified key sales drivers such as Maximum Retail Price (MRP) and product visibility, leading to a 5% improvement in sales forecast accuracy.