

Organization Overview

Virginia Mason Franciscan Health (VMFH) is a nonprofit health system based in Tacoma, Washington, with a team of more than 12,000 doctors, nurses and staff that provide expert, compassionate medical care at eight acute care hospitals and over 200 primary and specialty care clinics in Pierce, King and Kitsap counties. VMFH's mission focuses on creating healthier communities, including caring for the poor and underserved.

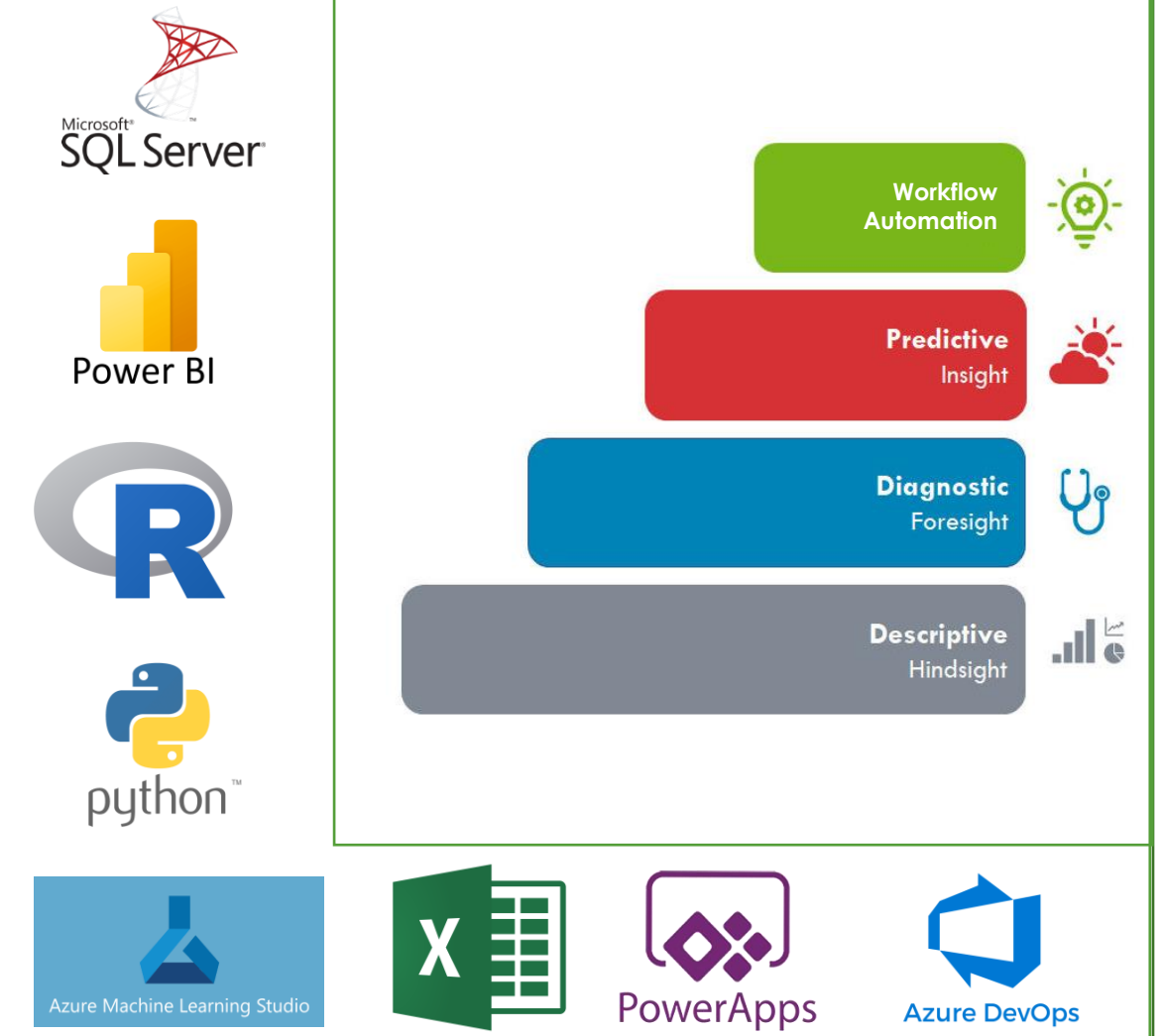
Project Scope & Objectives

Mission Control Command Center has identified the 'Ancillary Services Department' is impacted by a delay in services provided to patients. Patients are waiting above the recommended time to receive their ancillary services.

Team A1 MSBA Consultants were tasked to perform an analysis on 'Care Progression' data, with regards to ancillary services to identify the overall turnaround time for each service, the total delay for each service, and/or recognize any patterns or trends to build an effective analytical solution.

Measures that are included in the analysis are the hospital location, department, urgency for level of care, type of unit, volume on certain days/times, the type of service requested, etc.

Analytics Tools & Techniques

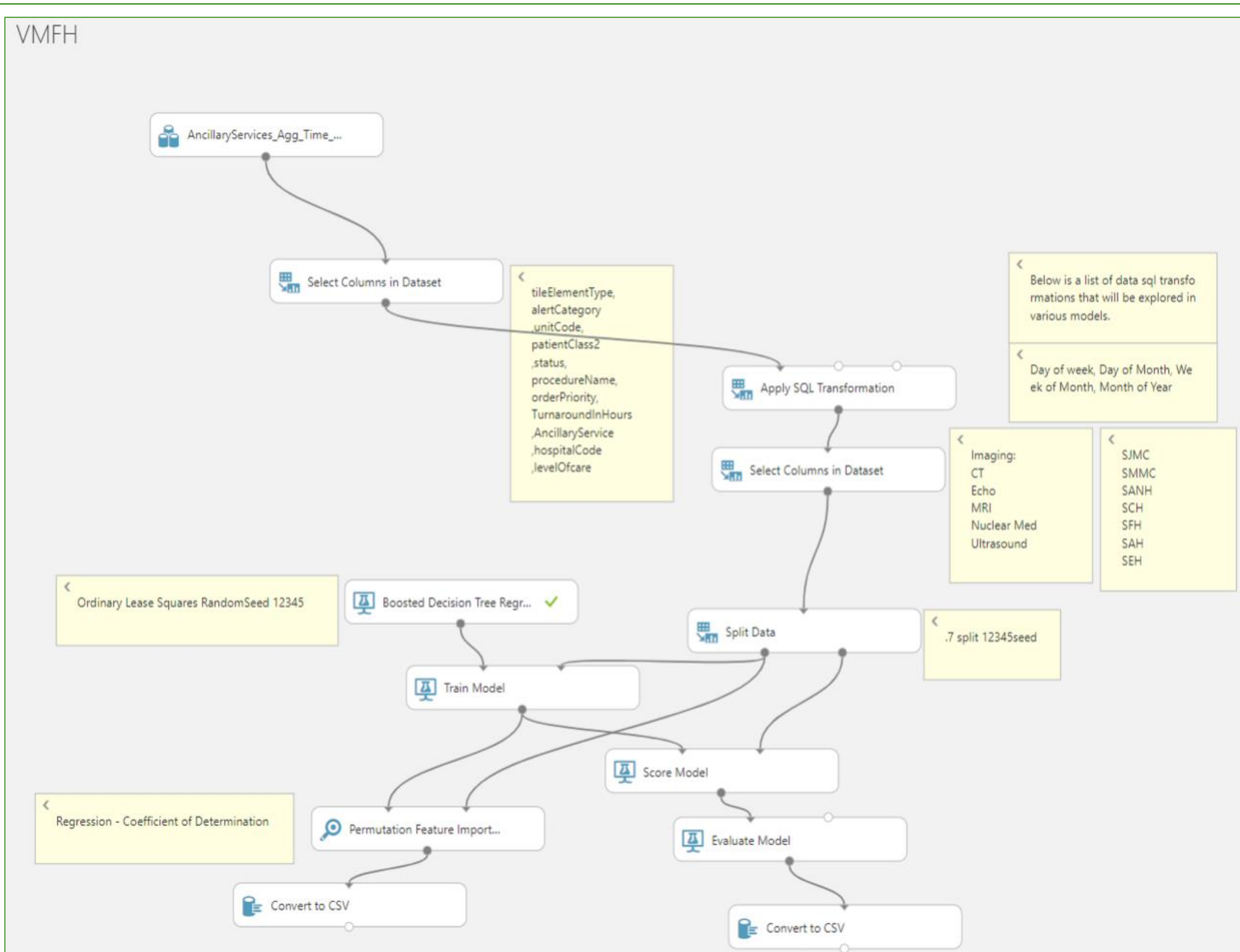


Descriptive & Diagnostic Analytics



The Power BI Dashboard includes four different views: [1] Overview of VMFH; Turnaround Time (TAT) by ancillary service, TAT by patient and order volumes by hospital, order volume by hospital, hospital metrics [2] Hospitals; order-patient volume by hospital, TAT by hospital, order vs. TAT by hospital [3] Order-Patient; order-patient volume by month, average TAT by month, TAT & order-patient volume by weekday [4] Tile Element Type

Predictive Analytics



Azure Machine Learning (ML) Pipeline: Through regression model testing, it was determined that the 'Boosted Decision Tree' was the best fit model with a coefficient of determination of 0.25. Then, each ancillary service and hospital was individually tested using boosted decision tree and linear regression.

Workflow Automation

A Statistic-Command developed using Power Apps to return each ancillary service's turnaround time in hours through the VMFH network. Each ancillary service and hospital in the VMFH network is included in this Statistic-Command.

Deployment & Recommendations

Virginia Mason Franciscan Health Mission Control Command Center will receive Tangible Deliverable for Client and Project Support as a deployment ready business analytical solution. These folders will have our year-long work which entails Repos (Python, SQL, R Scripts), Power BI, Azure ML Pipelines, and our Power App solution. Furthermore, it will contain supporting documents such as reports, excel sheets, slide decks, and more.

Our recommendation for VMFH personnel to build-of our business analytical solution and streamline our efforts to positively impact VMFH triple bottom line. It is of high importance to review our "Jump Start Ideas" folder to derive insights and inspiration on how to implement our solutions.



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