



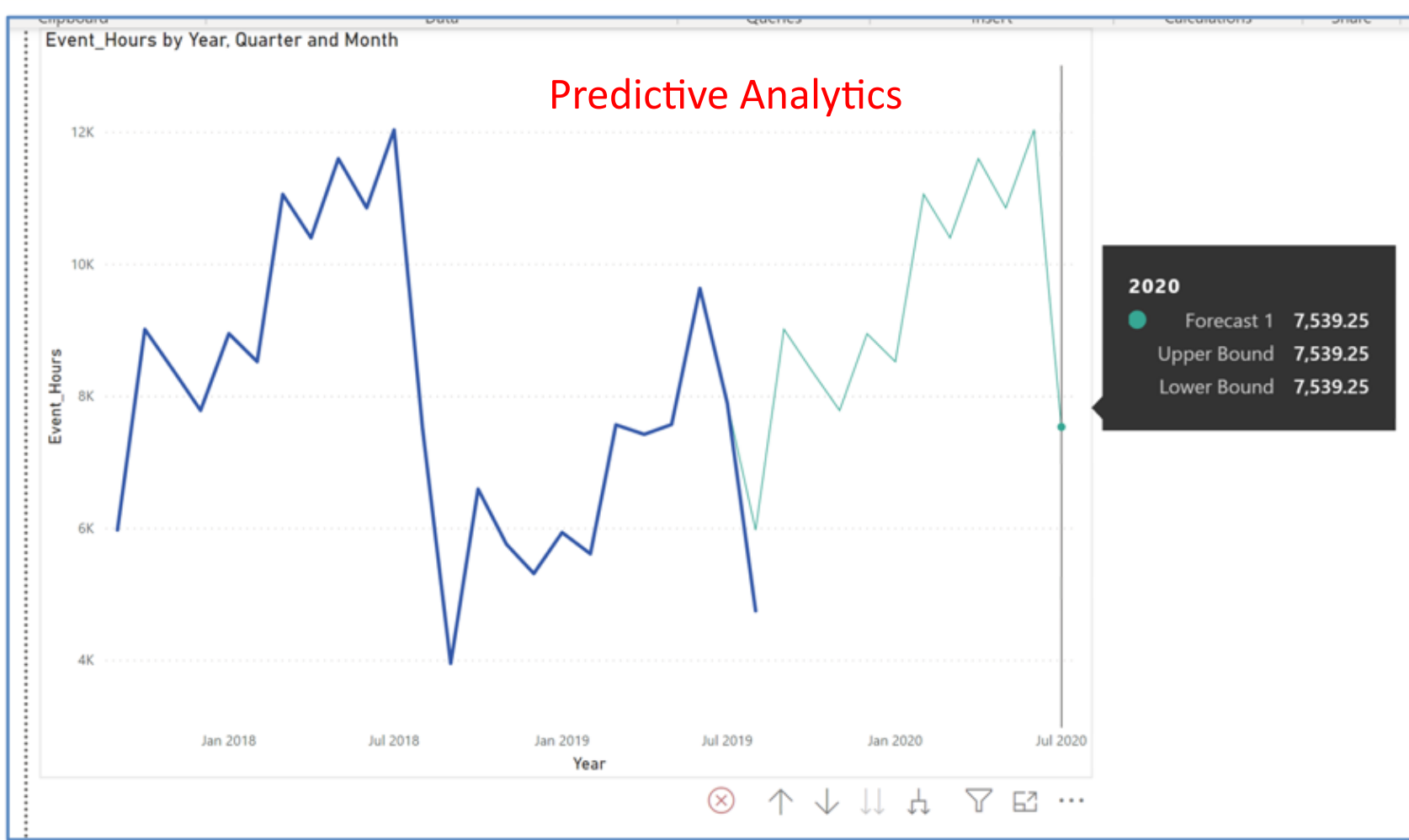
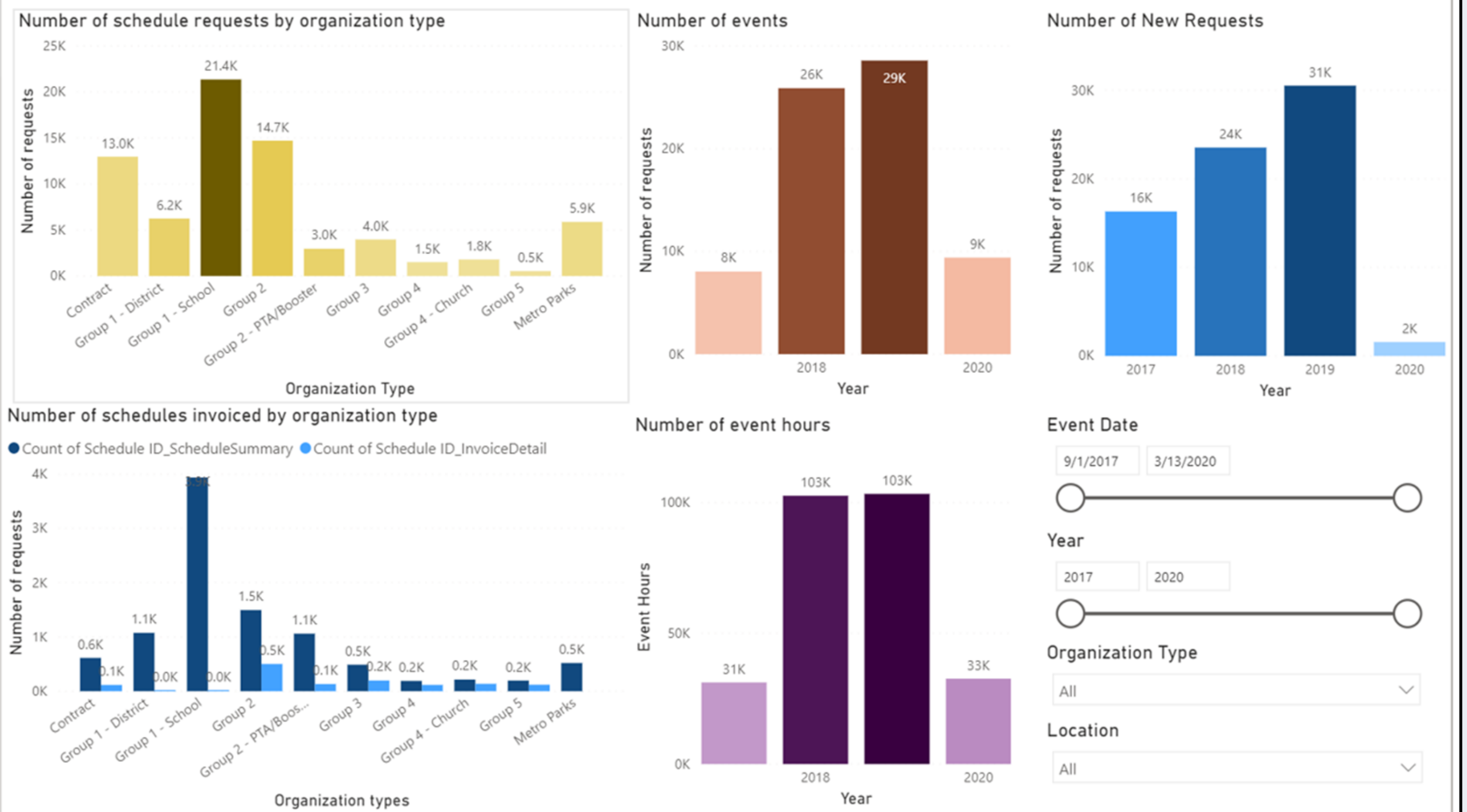
# Facilities Dashboard for Data-Driven Decisions

Tacoma Public Schools (TPS) is one of the largest districts in Washington State serving approximately 30,000 children. TPS has nearly 5,000 employees and is one of the largest employers in Tacoma. The General Support Services (GSS) Department of the Tacoma Public Schools (TPS) manages over 140 buildings, stadiums, parks and other properties on behalf of the school district.

GSS-TPS sought to leverage the power of technology to better understand their facility rental program, assess its impacts and to better serve their students and the Tacoma community.

The purpose of this project is to provide Tacoma Public schools improved ways to visualize and analyze their data to make better operations decisions. Specifically we examined the use of their rental facilities and fields in addition to invoicing and services attached to the rentals.

- How are the rental facilities and fields being utilized?
- Who are the largest customers?
- What locations receive the most use?
- Which buildings/rooms are rented most?
- How is overtime being used?
- Which events/customers create the most overtime use?
- How is overtime being distributed?
- Are costs being recouped?
- What is the staffing impact?



The visualizations previously built in Tableau were rebuilt in Power BI and enhanced. The diagram on the left displays hours of utilization by hours over time. This includes forecast information based on past trends. **We found that future patterns will mirror the past closely allowing justification for maintaining headcount.**

**Applications & Technologies**

- python
- Azure ML
- tableau
- Microsoft SQL Server
- R
- Visual Studio
- Power BI
- rapidminer

Location	Event_Date	Organization	Organization_Type	Building_Room	Number_of_Invoice_Total	Scored Labels
Wilson High	2019-05-02T16:30:00Z	Wilson Athletic Department	Group 1 - School	Athletics   POOL	1	2.630266545
Wilson High	2019-05-09T16:30:00Z	Wilson Athletic Department	Group 1 - School	Athletics   POOL	1	2.629048938
Wilson High	2019-05-28T15:00:00Z	Wilson Athletic Department	Group 1 - School	Athletics   GYM, Athletics	1	2.189905056
Wilson High	2019-05-29T15:00:00Z	Wilson Athletic Department	Group 1 - School	Athletics   GYM, Athletics	1	2.189731112
Wilson High	2019-05-30T15:00:00Z	Wilson Athletic Department	Group 1 - School	Athletics   GYM, Athletics	1	2.189557168

**We found that using Excel as a "front-end" to VS MLs could be a practical tool for TPS staff to use predict rental hours by organization.**

Prescriptive Analytics

**Regressions in Azure Machine Learning Studio & R**  
Neural Networks, Linear Regressions, Poisson, Decision Forests, Boosted Decision Tree, Time Series

