

Demand Based Forecasting

Forecasting Demands
for Improved Service

Audit and Finance
Committee Meeting

June 14, 2019

Demand- based forecasting

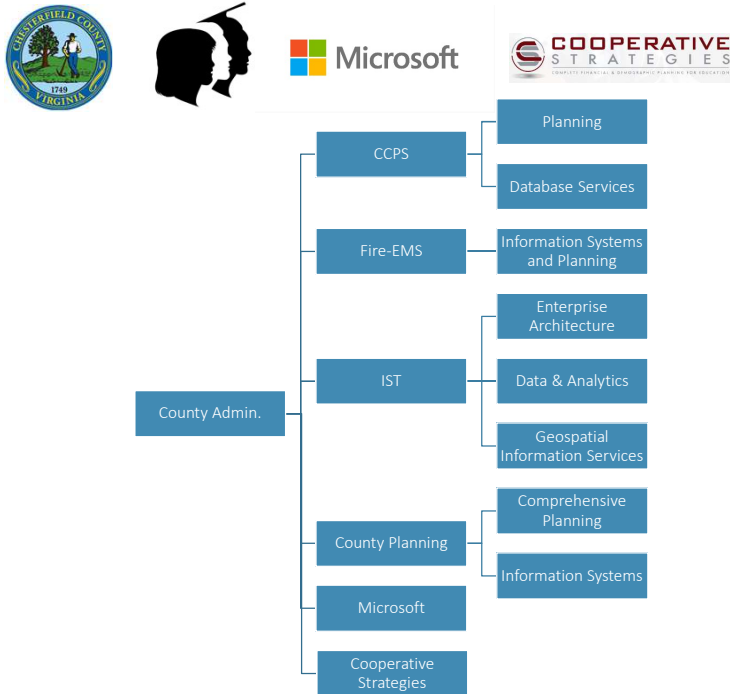
Purpose: Improve forecasting methods to facilitate the deployment of finite resources

What: The process of predicting future needs based on existing and forecasted demands influenced by area-specific changing demographics

Who:

- IST maintains a centralized county data repository for sharing across business units.
- Detailed data analysis and forecasting occurs in business specific areas such as Planning, Schools, or Fire department

Multi-
disciplined
project team
established



Early project
activities
focused on
organization
and
discovery

December 2018 - March 2019

1. Project planning
2. Discovery based: historical trends, current state, best practice research
3. Team assembly

Recent focus areas and efforts

Data accumulation and establishing repeatable processes

1. Identifying influencing factors; sourcing from systems of record; executing data sharing agreements (e.g. CCPS, VA Dept. of Health)
2. Controlled via data cataloging; establishing system interfaces (from/to, refresh frequency); aggregated data repository
3. Source data clean-up in progress

Efforts accomplished thru new technology tools deployment and training

New technology tools in use

Data cataloging

Microsoft Azure Data Catalog | Chesterfield County Enterprise Data Catalog


Home Publish Discovery User

My Assets

Recent Assets

- KPI Avg Assessment Value
- KPI Avg Sale Price
- County Subdivisions
- FactParcelTransaction
- Census Population AgeRange?
- [See All \(2\)](#)

Pinned Assets

Click the pin icon  on a data asset to add it to your list of pins.

Saved Searches

Did You Know?

Top Tags

- TabularModel
- Tabular
- Analysis Services
- Measure

1798 Assets

895 Annotated Assets

25 Users

6 Publishers

Top Experts:

- PatelV@chesterfield.gov
- ZimmermanD@chesterfield.gov

Top Data Sources:

- SQL Server Analysis Services Tabular
- SQL Server

Top Object Types:

- Measure
- Table

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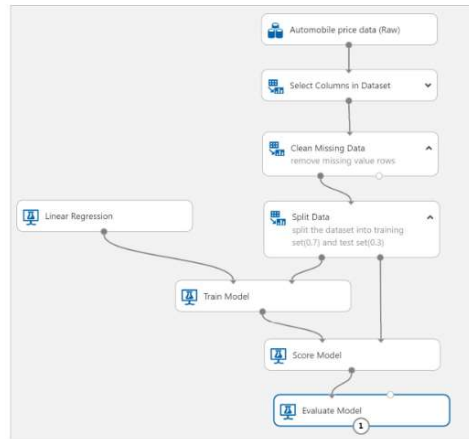
New technology tools in use

Machine learning

Code-free / low code experience

For code-free training, try:

- The visual interface for drag-n-drop experimenting and deployment



- The Azure portal option for automated ML experiments

Initial deliverables

Phase I deliverables

1. Predictive modeling results for School and Fire-EMS facilities (Aug. 2019)
2. General purpose demand report to assist other facility intense departments (before FY2021 CIP cycle)

Future deliverables

Next steps

1. Provide periodic update to Audit & Finance, Board of Supervisors (Sept. & Oct. 2019)
2. Open government reporting capabilities (Dec. 2019)
3. Incorporate new approach into zoning case reports

A case study in applied data

JUSTICE AND PUBLIC SAFETY


Data Drives Down Nashville's Emergency Response Times

Together with the Vanderbilt Initiative for Smart Cities Operation and Research, the Nashville Fire Department and the city's IT agency created a tool that uses predictive modeling to forecast emergency response times.

BY BEN LEVINE, STEFANIA DI MAURO-NAVA | MAY 13, 2019

Abhishek Dubey: The **Integrated Safety Incident Forecasting and Analysis project** is a collaborative project undertaken by the **Vanderbilt Institute for Smart Cities Operation and Research (VISOR)** team, the Nashville Fire Department (NFD), and the Metro Nashville and Davidson County Information Technology Services (ITS) Department as part of a National Science Foundation grant. The objective of this research is to understand and improve the resource coordination and dispatch mechanisms used by first responders in Nashville. The analysis and tools created in this project seek to improve NFD's ability to respond quickly and effectively to emergencies such as traffic collisions with injuries to humans, medical emergencies, and fire incidents that occur in the Nashville area.

response time for the incident. We integrated this data with other crucial parameters that affect incident occurrence, like pedestrian traffic, road characteristics, traffic congestion and weather, and developed models for different parts of the city. These models predict with high accuracy the likelihood of when and where incidents will happen in the future.



← Multi-disciplined team

← Improved service

← Accumulated data for results