8-18-2016

Improving Population Healthcare Through Data Analytics, Visualization, and Reporting Tools

Rick Perro
University of Massachusetts Medical School

Follow this and additional works at: https://escholarship.umassmed.edu/commed_pubs

Part of the Health Economics Commons, Health Information Technology Commons, Health Law and Policy Commons, Health Policy Commons, Health Services Administration Commons, and the Health Services Research Commons

Repository Citation
https://escholarship.umassmed.edu/commed_pubs/154

This material is brought to you by eScholarship@UMMS. It has been accepted for inclusion in Commonwealth Medicine Publications by an authorized administrator of eScholarship@UMMS. For more information, please contact Lisa.Palmer@umassmed.edu.
Improving Population Healthcare Through Data Analytics, Visualization, and Reporting Tools

LTSS Waiver Services in Massachusetts

Rick Perro
Commonwealth Medicine, University of Massachusetts Medical School
Massachusetts 1915c Frail Elder Waiver

- Administered by MA Executive Office of Elder Affairs
- Many Services
  - Adult Day Health  Skilled Nursing  Home Health Aide
  - Chore Service  Companion Service  Transportation
- Multiple Information Needs
  - Operations monitoring
  - Efficiency opportunities
  - Quality assessment and reporting
  - Program integrity
  - Expanded service planning
Approach

• The University of Massachusetts Medical School has been working with Elder Affairs on analyzing Waiver data since 2012
• Agency Partnership
• Focus on the Data and Analytics
• Low-Touch Implementation
  – Minimize Development of Custom Applications
  – Utilize Commercial and Open Source tools
    • SQL Server
    • Tableau
    • Web Portal
    • R
Agency Partnership

• Agency
  – Sets priorities
  – Outlines information needs; clarifies processes and procedures

• Data Analytics Team
  – Provides analytic consultation including:
    • Analytic design
    • Reporting metrics
    • Benchmarking

• Data Management Team
  – Develops data analysis environments
  – Implements data analytics, visualizations and reports
Objectives

• Plan for projected increasing demand for services
• Improve operational efficiency
• Deliver the right services to the right individuals at the right time
• Provide operational and program management with timely, actionable information
Reporting and Analytics

- Transforming the data into actionable information
- Progression of Analytics

- Reports being delivered to Elder Affairs and Service Delivery organizations
Descriptive Analytics

- Current State
- Trend

Health and Welfare 1—Abuse and Neglect Trends
Health and Welfare 1: Home Care consumers were assessed every six months to identify their concerns about Assessment Status (%): Question answered in required time frame (%)
Program(s): All

Demo Data
Predictive Analytics

• What do we expect to happen?
Moving from Predictive to Prescriptive

Lists of individuals that should be monitored more closely

### Falls Risk Assessment for Agency AAA 19

<table>
<thead>
<tr>
<th>Person Id</th>
<th>Fall in Year 2013</th>
<th>Gait and Balance Problems</th>
<th>Alzheimers Disease</th>
<th>Assessment Date</th>
<th>Case Manager</th>
<th>Risk Level (High: &gt;30% Probability of Fall)</th>
<th>Fall Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1623</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>2/17/2015</td>
<td>C. Testcase</td>
<td>High risk</td>
<td>0.3111</td>
</tr>
<tr>
<td>1628</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>1/11/2016</td>
<td>C. Testcase</td>
<td>High risk</td>
<td>0.4205</td>
</tr>
<tr>
<td>1705</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>12/29/2015</td>
<td>E. Tester</td>
<td>High risk</td>
<td>0.3546</td>
</tr>
<tr>
<td>1717</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>2/10/2016</td>
<td>A. Test</td>
<td>High risk</td>
<td>0.4529</td>
</tr>
<tr>
<td>1799</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>11/4/2015</td>
<td>C. Testcase</td>
<td>High risk</td>
<td>0.4141</td>
</tr>
<tr>
<td>1893</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>2/2/2016</td>
<td>C. Testcase</td>
<td>High risk</td>
<td>0.3935</td>
</tr>
</tbody>
</table>

Demo Data
Data Management

• Multiple Sources
  – Medicaid claims and enrollment
  – Waiver case management
  – MDS Assessment

• Time spent in the data, far less on visualization

• Characterization
  – Data: Two Components
    • Value
    • Meta/Quality Information

• Transformation (Business Rules)
  – What was done
  – Traceable
Implementation

- Moved from building data warehouses to data marts
- Moving to on-demand data and transformations
Next Steps

• Continue low-touch implementation approach

• More data integration
  – Consumer profiles combining Medicaid claims and HCBS data
  – Currently working with the MA Department of Transitional Assistance, integrating SNAP data with the Waiver data

• More predictive and prescriptive analytics
Thank you

Rick Perro
University of Massachusetts Medical School
rick.perro@umassmed.edu