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

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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 Abuse and Neglect 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>
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<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>
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<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>
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<td>1717</td>
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<td>Yes</td>
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<td>2/10/2016</td>
<td>A. Test</td>
<td>High risk</td>
<td>0.4529</td>
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<td>Yes</td>
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<td>1893</td>
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<td>High risk</td>
<td>0.3935</td>
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</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

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