Improving Population Healthcare Through Data Analytics, Visualization, and Reporting Tools
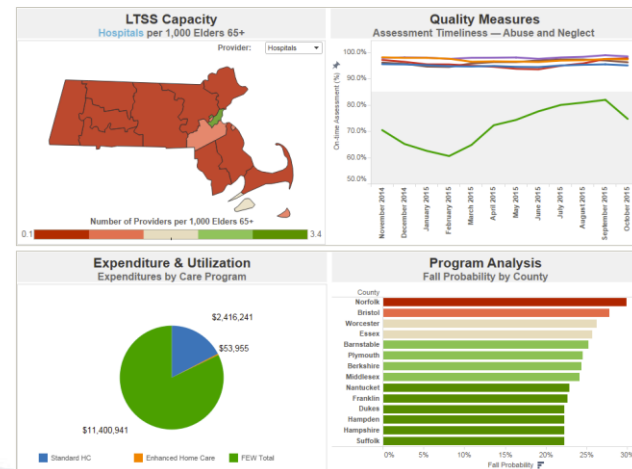
LTSS Waiver Services in Massachusetts

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TrendFinder LTSS
Data Solutions for Health and Human Services

University of Massachusetts Medical School
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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

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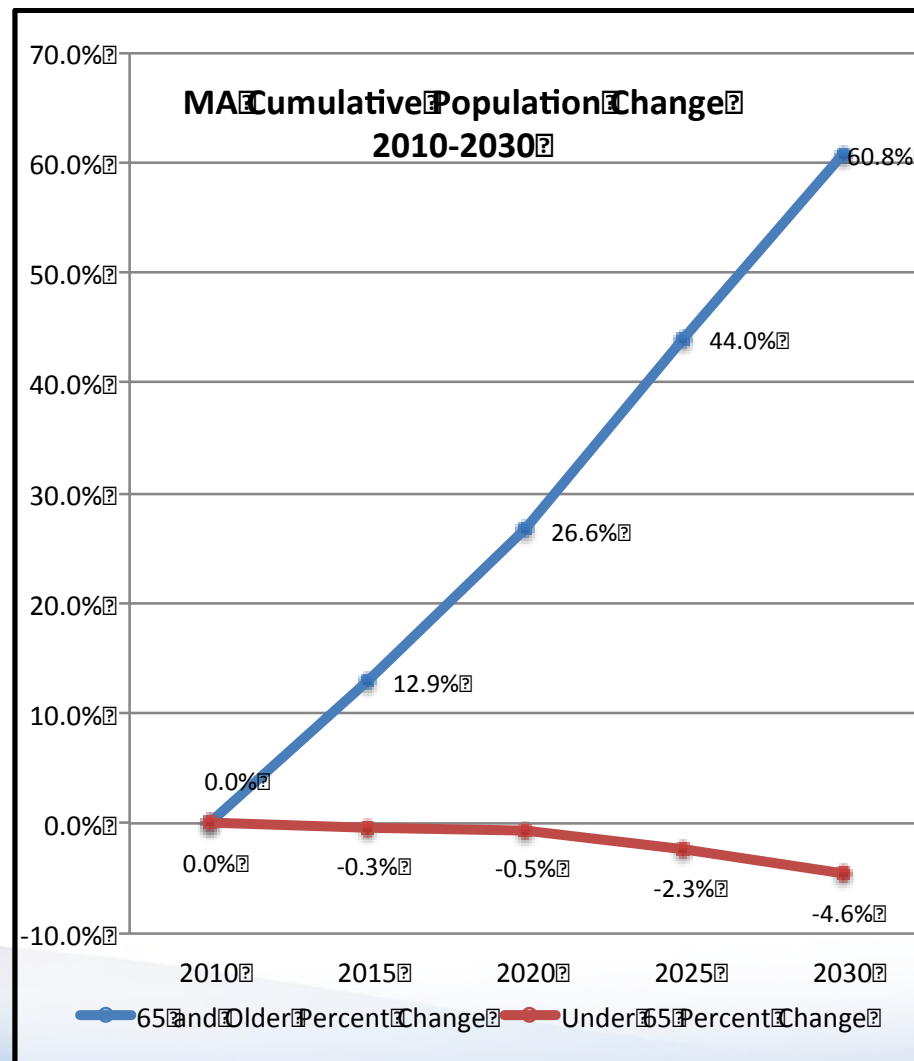**umassmed.edu**

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

MA Cumulative Population Change 2010-2030

Year	65 and Older Percent Change	Under 65 Percent Change
2010	0.0%	0.0%
2015	12.9%	-0.3%
2020	26.6%	-0.5%
2025	44.0%	-2.3%
2030	60.8%	-4.6%

Reporting and Analytics

- Transforming the data into actionable information
- Progression of Analytics

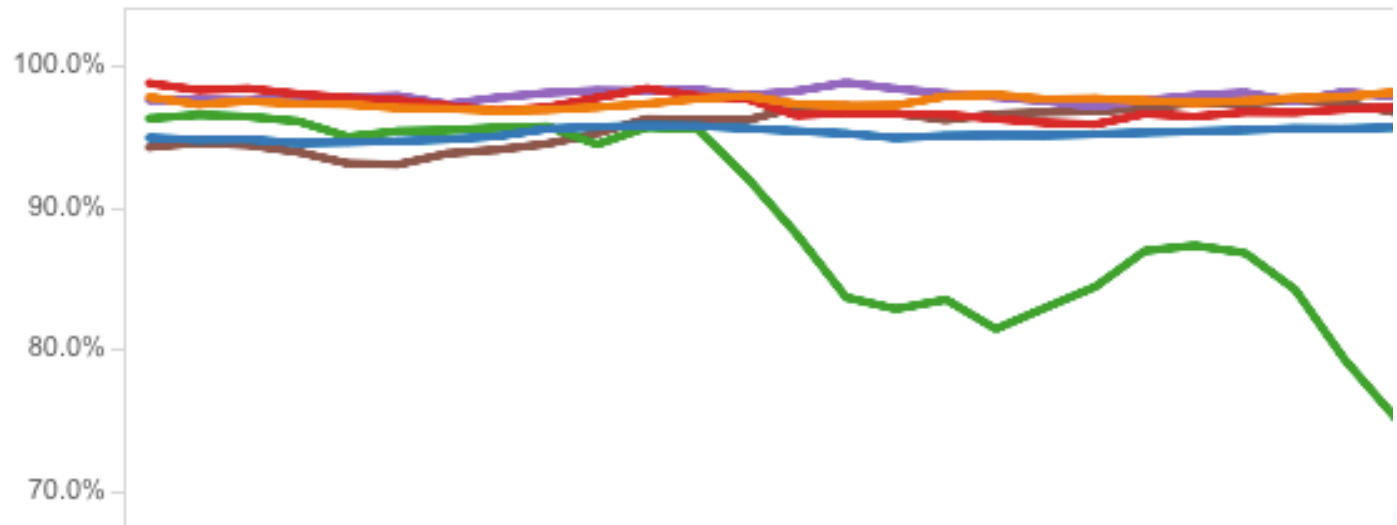Descriptive → Predictive → Prescriptive

- Reports being delivered to Elder Affairs and Service Delivery organizations

Descriptive Analytics

- Current State
- Trend

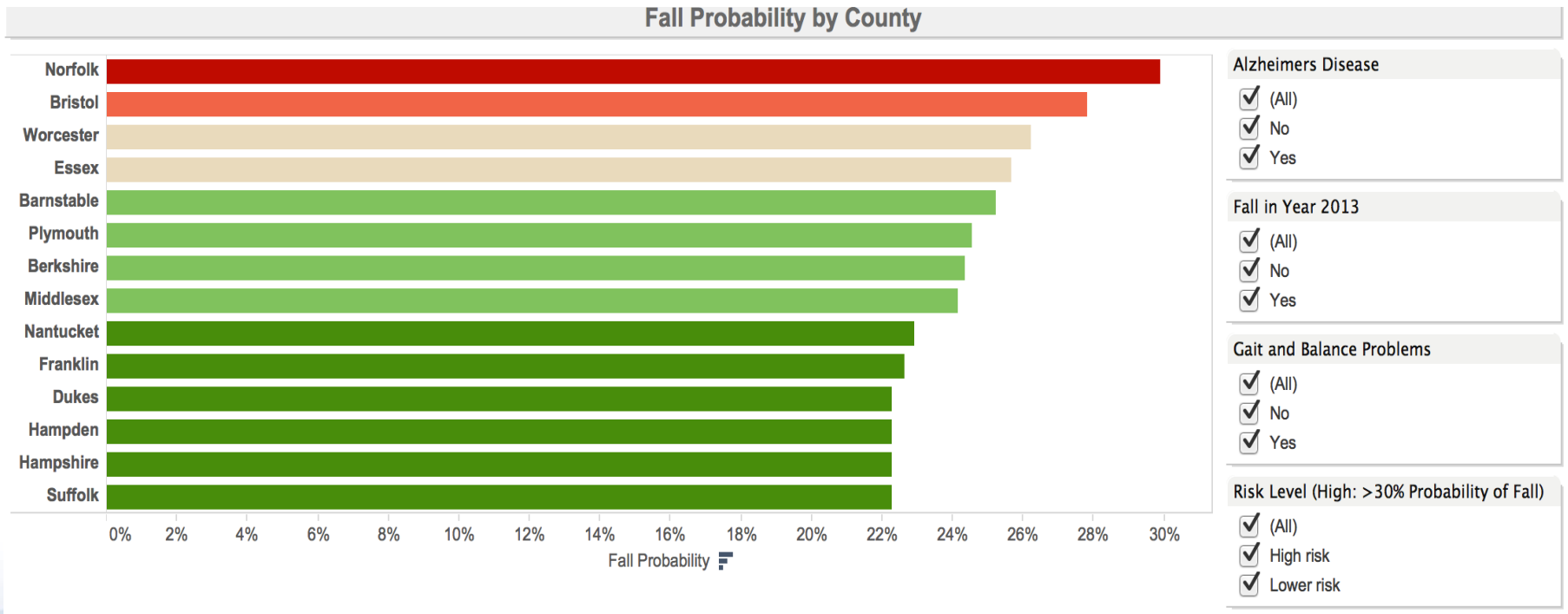**Health and Welfare 1—Abuse and Neglect Trends**

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

Demo Data

Predictive Analytics

- ## What do we expect to happen?

Fall Probability by County

Demo Data

Moving from Predictive to Prescriptive

Lists of individuals that should be monitored more closely

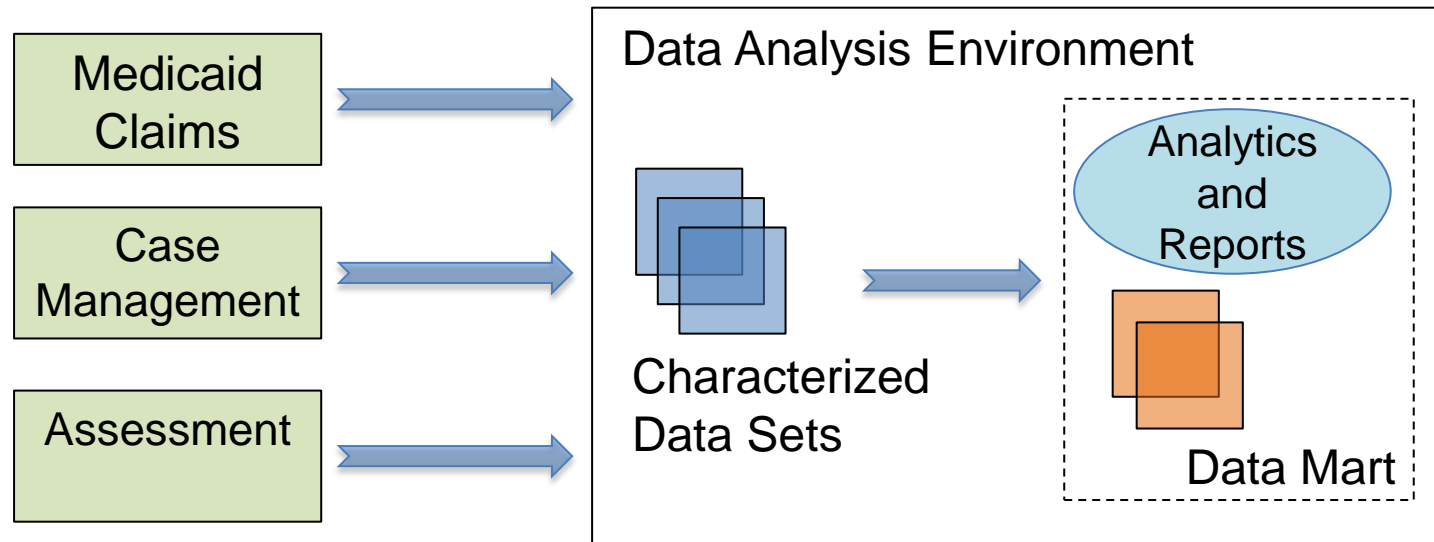## Falls Risk Assessment for Agency AAA 19

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

Demo Data

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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

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Thank you

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