Data Analytics and Enterprise Risk Management

March 6, 2024
What we hope you will learn...

The power of Enterprise Risk Management data:

- Increases transparency
- Helps set strategic priorities
- Creates a risk-informed culture
• University of Massachusetts Overview
• Data Generated by
  • ERM Risk Assessment
  • ERM Mitigation Strategy Assessment
• Data Supporting ERM Analyses
  • Facilities and Deferred Maintenance
  • Financial Sustainability
  • Enrollment
• Key Takeaways
Which option best describes your institution?
Overview: University of Massachusetts
About UMass

University of Massachusetts Amherst
- Land Grant Founded in 1863; Flagship Campus with Broad Research Mission
- Institute for Applied Life Sciences
- State of the art Core Facilities for campus and community users
- Center for Data Science
- UMass Donahue Institute
- Institute for Diversity Sciences
- Energy Transition Institute
- Center for Braiding Indigenous Knowledges and Science
- Elaine Marieb Center for Nursing and Engineering Innovation

Wall Street Journal Ranked #1 Public in Massachusetts
- University Closely Engaged With Regional Industries
- Renowned For Technical Emphasis Such as Engineering, Advanced Materials Sciences and Nano-manufacturing
- Mass Medical Device Development Center (M2D2)
- Rist Institute for Sustainability and Energy
- N.E. Robotics Validation & Experimentation (NERVE) Center
- Raytheon-UMass Lowell Research Institute (RURI)
- Center for Population Health
- Innovation Hub @ 110 Canal

Most diverse public university in New England, with over 50% of students first in family to go to college
- Impactful research with strengths in climate equity and coastal resilience, health for diverse populations, education, and social justice
- Manning College of Nursing and Health Sciences is leading provider of health care professionals
- College of Management with extensive pathway partnerships
- School for the Environment and Stone Living Lab
- Paul English Applied Artificial Intelligence Institute
- On-campus Venture Development Center incubates technology and life sciences startups

UMass Boston
- National Research University With Engineering, Cybersecurity, And Marine Sciences Emphasis (Dartmouth)
- School for Marine Science and Technology (New Bedford)
- Only Performing Art College in the system – College of Visual & Performing Arts
- Plastics Biodegradability Lab (New Bedford)
- UMass Law (Dartmouth)
- Center for Innovation & Entrepreneurship (Fall River)

UMass Chan Medical School
- World-class biomedical research program
- Three graduate schools: T.H. Chan School of Medicine, Tan Chingfen Graduate School of Nursing and Morningside Graduate School of Biomedical Sciences
- Graduate Medical Education
- UMass Center for Clinical & Translational Science
- For Health Consulting
- Mass Biologics
- BRIDGE

UMass Dartmouth
- Acquired in September 2021 to expand educational opportunities for adult learners
- 501(c)3 nonprofit based in CA serving adult learners in Massachusetts, across the nation, and across the world

UMASS Affiliates

UMBA
- Established in 1960 to provide dormitories, dining commons, and other buildings for the University
- Acquires, constructs, and demolishes buildings, manages capital projects, and issues bonds on behalf of the University to finance or refinance capital projects

Foundation
- Established in 1950 to foster & promote growth, progress, & general welfare of the University
- Solicits, receives, & administers gifts & donations
- Maintains a portion of the University’s investment portfolio, predominantly the endowment

UMass Global

EACUBO 2024 Workshop
Partnership, Performance, Progress
March 4-6 | Baltimore, Maryland
UMass by the Numbers

$4.1 billion annual FY24 budget

Nearly 74,000 students by headcount & 20,000 new graduates annually

$395 million in University-generated financial aid

$813 million in annual research & development

$687 million in state appropriation (not including CB, fringe, ARPA)

$153 million average monthly payroll

$86.5 million average monthly spend with over 30,000 vendors

26,000 employees (including students), 3rd largest employer in Massachusetts
UMass Financial Accountability Framework

Independent & objective assurance that analyzes data, processes, policies & controls

Standard processes to provide reasonable assurance regarding achievement of objectives

Reliable, timely information that is accessible & understandable

Systematic approach to identifying, assessing & managing risks across the organization
RISK MANAGEMENT serves as an umbrella for Administration and Finance initiatives.
Data Generated by ERM:
Risk Assessment
Which option do you most relate to?
ERM Governance Structure

- Board
  - Provides direction and guidance as needed
- President’s Council
  - Provides direction and guidance as needed
  - Validates system-wide risks
  - Prioritizes system-wide risks
  - Affirms mitigation strategies for systemwide risks
- ERM Exec. Committee
  - Identifies system-wide risks
  - Assesses system-wide risks
  - Develops/implements mitigation strategies for system-wide risks
- ERM Working Group
  - Identifies campus-level risks
  - Assesses campus-level risks
  - Mitigates campus-level risks
- Campus ERM Committees
Two-Year ERM Program Cycle

- Issue ERM Report
- Identify and Assess Risks
- Prioritize Risks
- Identify Risk Mitigation Strategies
- Assess Risk Mitigation Strategies
- Implement Risk Mitigation Strategies
**Risk Assessment Process**

- Evaluates *inherent* exposure of the University to a risk
- Assesses *systemwide* impact
- Rates risks across three factors

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**Likelihood**

- Could the University system experience this risk?

**Consequence**

- How much could the University system be impacted by this risk?
  - Operations
  - Financial
  - Legal/Compliance
  - Workforce
  - Reputation
  - Life Safety

**Urgency**

- How soon does the University system need to prioritize this risk?

=  

**Inherent Risk Score**

- Assessed by ERM Working Group
- Assessed by ERM Executive Committee
<table>
<thead>
<tr>
<th>Rank</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enrollment</td>
</tr>
<tr>
<td>2</td>
<td>Information Security</td>
</tr>
<tr>
<td>3</td>
<td>Facilities and Deferred Maintenance</td>
</tr>
<tr>
<td>4</td>
<td>Financial Sustainability</td>
</tr>
<tr>
<td>5</td>
<td>Student Health &amp; Mental Health Support</td>
</tr>
<tr>
<td>6</td>
<td>Artificial Intelligence</td>
</tr>
<tr>
<td>7</td>
<td>International Activities</td>
</tr>
<tr>
<td>8</td>
<td>Research</td>
</tr>
<tr>
<td>9</td>
<td>Diversity, Equity, Inclusion &amp; Accessibility</td>
</tr>
<tr>
<td>10</td>
<td>Attract, Recruit, Retain Faculty &amp; Staff</td>
</tr>
<tr>
<td>11</td>
<td>Information Privacy</td>
</tr>
<tr>
<td>12</td>
<td>All Hazards Planning &amp; Response Capabilities</td>
</tr>
<tr>
<td>13</td>
<td>Labor Relations</td>
</tr>
<tr>
<td>14</td>
<td>Data Management</td>
</tr>
<tr>
<td>15</td>
<td>Vendor Risk Management</td>
</tr>
<tr>
<td>16</td>
<td>Sexual Assault Policies &amp; Response Procedures</td>
</tr>
<tr>
<td>17</td>
<td>NCAA Regulations</td>
</tr>
<tr>
<td>18</td>
<td>IT Disaster Recovery</td>
</tr>
<tr>
<td>19</td>
<td>Continuity Planning</td>
</tr>
<tr>
<td>20</td>
<td>Environmental Health, Public Health, &amp; Safety Regulations</td>
</tr>
<tr>
<td>21</td>
<td>Alcohol and Substance Abuse</td>
</tr>
<tr>
<td>22</td>
<td>Fraud, Waste, and Abuse</td>
</tr>
<tr>
<td>23</td>
<td>Crisis Communications</td>
</tr>
<tr>
<td>24</td>
<td>Uninsured Loss</td>
</tr>
<tr>
<td>25</td>
<td>Multi-State Payroll Tax</td>
</tr>
<tr>
<td>26</td>
<td>Multi-State Business Tax</td>
</tr>
<tr>
<td>27</td>
<td>Employment Laws and Regulations</td>
</tr>
<tr>
<td>28</td>
<td>Policies and Procedures Regarding Minors on Campus</td>
</tr>
<tr>
<td>29</td>
<td>Academic Quality and Standards</td>
</tr>
<tr>
<td>30</td>
<td>Oversight of Student Organizations</td>
</tr>
</tbody>
</table>
FY22 Risks Ranked Based on Highest Legal/Compliance Exposure

*Listed by highest legal/compliance exposure, and then by Inherent Risk Score*

<table>
<thead>
<tr>
<th>Key</th>
<th>Risks by Legal/Compliance Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Legal/Compliance Exposure</td>
<td>Enrollment</td>
</tr>
<tr>
<td>Medium Legal/Compliance Exposure</td>
<td>Financial Sustainability</td>
</tr>
<tr>
<td>Lower Legal/Compliance Exposure</td>
<td>Attract, Recruit, Retain Faculty/Staff</td>
</tr>
</tbody>
</table>

Information Security

- Facilities & Def. Maintenance
- Student Hlth & Mental Hlth Support
- Artificial Intelligence
- International Activities
- Information Privacy
- All Hazards Plans & Response Cap.
- Vendor Risk Management
- NCAA Regulations

Research

- Enrollment IT Disaster Recovery
- Financial Sustainability Continuity Planning
- Attract, Recruit, Retain Faculty/Staff Crisis Communications
- Labor Relations Uninsured Loss
- Data Management Oversight of Student Organizations

Diversity, Equity, Inclusion & Accessibility

- Sex. Assault Policies & Response Proced.
- Env. Hlth, Public Hlth, & Safety Regs
- Alcohol and Substance Abuse
- Immigration Rules and Regulations
- Fraud, Waste, and Abuse
- Multi-State Payroll Tax
- Multi-State Business Tax
- Policies/Procedures Minors on Campus
Data Generated by ERM:
Mitigation Assessment
Goals of Mitigation Assessment

- Document risk mitigation strategies for *transparency*

- *Correlate* assessment of risk mitigation strategies to a risk’s assessed inherent risk exposure

- Demonstrate *impact* of mitigation strategies on risk exposure

*To achieve these goals, we needed to create our own assessment tool.*

**Why?**
Traditional Mitigation Assessment

Inherent Risk Exposure

Resiliency
Cost Benefit Analysis
Efficiency
Alignment with Goals and Objectives

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Correlation of UMass Risk Assessment and Mitigation Assessment

Informed by University Data
UMass Mitigation Assessment Tool for Reducing Risk Exposure

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MATRX assesses the effectiveness of mitigation strategies on each risk’s specific range of exposure through three lenses.

- **Individual Effectiveness**: Measure the effectiveness of an *individual* mitigation strategy on reducing risk exposure.
- **Comparative Effectiveness**: *Compare* the effectiveness of *multiple* mitigation strategies on reducing risk exposure.
- **Aggregate Effectiveness**: Measure the *aggregate* effectiveness of all risk mitigation strategies on reducing risk exposure.

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Relationship of Data

Risk Assessment

Risk Ranking and Prioritization

Mitigation Implementation & Assessment

Informed by Data Generated through Accountability Tools

Residual Risk

Follow on actions necessary to be within risk appetite
Data Supporting ERM Analyses:
Facilities and Deferred Maintenance
Facilities & Deferred Maintenance

No. 3 Risk

7 Strategies

Informed by:
• Deferred Maintenance Dashboard

Mitigation

Moderate reduction

Increased focus on capital projects and tracking against deferred maintenance targets

Risk Assessment

Residual Risk

Relationship of Data
Mitigation Data: Movement in Reducing Risk Exposure

Highest Inherent Risk

Range of Potential Risk Exposure

Lowest Residual Risk

Facilities and Deferred Maintenance

- FY22 Assessed Inherent Risk
- FY23 Assessed Residual Risk
- Lowest Possible Residual Risk

Enrollment
Information Security

Financial Sustainability
Student Health and Mental Health Support

Vendor Risk Management
Attract, Recruit, Retain Faculty and Staff

International Activities
Information Privacy
Diversity, Equity, Inclusion and Accessibility

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<table>
<thead>
<tr>
<th>Rank</th>
<th>Mitigation Strategy as of June 30, 2023</th>
<th>Systemwide Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reaching/Maintaining Keep Up Targets</td>
<td>Partially*</td>
</tr>
<tr>
<td></td>
<td>Reaching/Maintaining Catch Up Targets</td>
<td>Partially*</td>
</tr>
<tr>
<td>2</td>
<td>Annual Update of Campus Deferred Maintenance (Gordian)</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Capital Policy &amp; Standards</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Reporting – Biannual Capital Plan</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Reporting – Quarterly Capital Reporting Including Keep Up and Catch Up</td>
<td>Partially</td>
</tr>
<tr>
<td>3</td>
<td>Tracking Spending Against DCAMM Contracts</td>
<td>Partially</td>
</tr>
</tbody>
</table>

* The impact of these strategies is significantly greater if these strategies were fully implemented. See scale.
Capital Plan

What is it?
Comprehensive, five-year plan of capital investment based on financial planning, policy priorities and strategic plans to ensure effective investment in the future and management of capital assets

What is included?
- Prioritized list of projects approved by the President and Board of Trustees
- Connection to strategic plans
- Funding sources of each project
- Impacts on deferred maintenance and key ratios

When do we do it?
Developed and presented to the Board of Trustees biennially; updates prepared and presented quarterly

Why do we do it?
- To identify and prioritize capital needs
- To evaluate available sources of funding
- To understand the financial impact and timing of needs in relation to the financial forecast
- To promote effective communication with stakeholders on capital needs and borrowing plans

Who is involved?
- President’s Office – facilitates development of the capital plan, quarterly reporting and financial forecast; provides assumptions and conducts analysis to support consistent and realistic planning
- Campuses - utilize master and strategic plans to develop a capital program that reflects the strategic priorities, deferred maintenance needs and unique needs for that campus
- UMass Building Authority (UMBA) – serves the University through the planning, financing, design, construction, acquisition, capital maintenance, and replacement of University buildings, infrastructure, and real estate
## Capital Projects Approval

### Approving Authority

<table>
<thead>
<tr>
<th>Board of Trustees</th>
<th>$10M+ total project cost, or $2M+ total project cost and requires debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>$2M-$10M total project cost, Does not include debt</td>
</tr>
<tr>
<td>Campus</td>
<td>&lt;$2M total project cost</td>
</tr>
</tbody>
</table>

### Project Status

<table>
<thead>
<tr>
<th>Authorized</th>
<th>Initial authorization from Board or President (Vote 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved</td>
<td>Final approval from Board or President (Vote 2 &amp; Vote 3)</td>
</tr>
<tr>
<td>Conceptual (not yet authorized)</td>
<td>Priority projects planned but not yet authorized (Campus strategic, master and energy plans)</td>
</tr>
</tbody>
</table>
University Deferred Maintenance: By the Numbers

$4.8B 10-year backlog (24% replacement value)

$3.5B timeframe A (1-3 yrs) (71% of total backlog)

$3.6B backlog in E&G

$1.3B backlog in Aux
Deferred Maintenance - Annual Investment

Established Definitions and Set Targets Based on Industry Best Practice

Keep Up:
- Defined as the annual investment needed to ensure buildings perform properly and reach their useful lives.
- Includes projects funded from a recurring funding source.
- Includes preventive/proactive maintenance funded from the operating budget.

Catch Up:
- Defined as projects funded by one-time funds such as bond proceeds, State resources (also typically bond funds), and in some cases reserves.
- Large backlog that requires funding over a specified time period.

Annual Investment Targets:
- Keep Up - defined as the annual minimum investment required to prevent the deferred maintenance backlog from growing. Gordian calculates the target by discounting the total cost necessary to replace each building component at the completion of its useful life.
- Catch Up – defined as the annual investment needed to eliminate the backlog over a specified time period. This target is still to be determined.
Deferred Maintenance - Annual Investment

- Created a deferred maintenance (DM) spending dashboard to report spending data in real time
- Allows for greater clarity on actuals against targets; enhances transparency
- Spending in recent years has fallen short of targets; total backlog has remained flat
- Current capital plan continues to address DM needs; significant investments required
- UMass will continue to advocate for state resources

**Note:** UMass Chan data campus-reported; not derived from dashboard
### Example Deferred Maintenance: Timeframe A (1-3 Years)

#### Top 10 Building Needs – Timeframe A

<table>
<thead>
<tr>
<th>Building</th>
<th>Project Cost ($ millions)</th>
<th>FCI¹</th>
<th>E&amp;G² vs Aux³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building 1</td>
<td>12.2</td>
<td>100%</td>
<td>E&amp;G</td>
</tr>
<tr>
<td>Building 2</td>
<td>10.4</td>
<td>100%</td>
<td>Aux</td>
</tr>
<tr>
<td>Building 3</td>
<td>10.0</td>
<td>100%</td>
<td>E&amp;G</td>
</tr>
<tr>
<td>Building 4</td>
<td>8.6</td>
<td>100%</td>
<td>E&amp;G</td>
</tr>
<tr>
<td>Building 5</td>
<td>7.0</td>
<td>100%</td>
<td>E&amp;G</td>
</tr>
<tr>
<td>Building 6</td>
<td>5.2</td>
<td>100%</td>
<td>E&amp;G</td>
</tr>
<tr>
<td>Building 7</td>
<td>5.2</td>
<td>100%</td>
<td>E&amp;G</td>
</tr>
<tr>
<td>Building 8</td>
<td>.7</td>
<td>100%</td>
<td>E&amp;G</td>
</tr>
<tr>
<td>Building 9</td>
<td>12.2</td>
<td>98%</td>
<td>E&amp;G</td>
</tr>
<tr>
<td>Building 10</td>
<td>1.6</td>
<td>98%</td>
<td>E&amp;G</td>
</tr>
<tr>
<td><strong>Top 10 – Timeframe A</strong></td>
<td><strong>73.0</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other buildings</td>
<td>1,028.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Timeframe A</strong></td>
<td><strong>1,101.4</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Gordian

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1. Facility Condition Index; reflects total DM cost as a % of replacement value
2. Education & General
3. Auxiliary
Deferred Maintenance – Progress to Date

Backlog Tracking
Engaged Gordian to assess system-wide deferred maintenance

Central Reporting Dashboard
Built dashboard to report DM spending via source systems

Next Steps
Setting, tracking, & achieving spending targets

Reporting Methodology
Created methodology designating spending as Keep-Up vs. Catch-Up

Capital Policy Standards
Formalized concept of target setting & process of tracking DM spending
Data Supporting ERM Analyses: Financial Sustainability
Financial Sustainability

No. 4 Risk

23 Strategies

Informed by:
- UM-Plan
- SPARC©
- SPARC Pro©

Mitigation

Moderate Reduction

Residual Risk

- Maintain current controls
- Continue to increase transparency through Accountability Tools
Mitigation Data: Movement in Reducing Risk Exposure

Range of Potential Risk Exposure

Highest Inherent Risk

Lowest Residual Risk

Financial Sustainability

FY22 Assessed Inherent Risk

FY23 Assessed Residual Risk

Lowest Possible Residual Risk

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## Financial Sustainability

<table>
<thead>
<tr>
<th>Rank</th>
<th>Mitigation Strategy as of June 30, 2023</th>
<th>Systemwide Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>State Financial Support</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>State Funding of CBA Increases</td>
<td>Planned</td>
</tr>
<tr>
<td>2</td>
<td>Reporting – Quarterly Budget Projections and Annual Budget Reporting</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Reporting – Quarterly Capital Reporting and Biennial Capital Plan</td>
<td>Fully</td>
</tr>
<tr>
<td>3</td>
<td>Cash Flow Modeling and Projections</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Reporting – Annual Five-Year Forecast Refresh</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Reserve Policy</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>UMass Global Financial Reporting</td>
<td>Fully</td>
</tr>
<tr>
<td>4</td>
<td>Maintaining Line of Credit</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Operating Cash Invested with Foundation</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Implementation of UMPlan for Annual Budgeting</td>
<td>Fully</td>
</tr>
<tr>
<td>5</td>
<td>Chart of Accounts Update</td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td><strong>SPARC Dashboard</strong>*</td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>Reaching/Maintaining 2% Operating Margin</td>
<td>Partially</td>
</tr>
<tr>
<td>6</td>
<td>UMPlan – Financial Forecast Model</td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>UMPlan – Tuition Planning Module</td>
<td>Partially</td>
</tr>
<tr>
<td></td>
<td>Compliance with Federal Grants</td>
<td>Fully</td>
</tr>
<tr>
<td>7</td>
<td>Monitoring Standard Metrics</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Adoption and Forecasting of Changes in GASB</td>
<td>Fully</td>
</tr>
<tr>
<td></td>
<td>Appropriate Account Treatment for P3s</td>
<td>Fully</td>
</tr>
</tbody>
</table>
What is SPARC?

Original release Spring 2022; enhancements continue

- SPARC stands for “Strategic Planning Analytics and Reporting for Campuses”
- SPARC dashboard is an innovative tool for key stakeholders' users to conduct department level analysis
- Aggregates live data from source systems, including PeopleSoft finance, student, procurement and HR
- Includes choice to select college and department level data;
- Examples of the types of data:
  - Enrollment trends including student mix and overall growth, tuition & fee revenues, and financial aid
  - Employee resource allocation, including faculty by tenure status, administrative staff, student employees, and payroll source
  - Contract Pipeline includes visibility into contract request, contract creation, and contract aging
  - Contract Utilization Dashboard includes visibility into contract utilization
Long-Term Planning

Data creates transparency and drives risk mitigation

HR
- Position data
- Employee data

Financial
- Expense actuals
- Revenue actuals

Procurement
- Contracts
- Utilization

Student
- Admissions data
- Enrollment & tuition data

SPARC*

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- Advanced analytics
- Financial aid, enrollment analysis
- Revenue and expense analysis
- Procurement savings and contract tracking

*Strategic Planning Analytics & Reporting for Campuses
SPARC: Department Analysis

Description:
Simple, easy to consume dashboards to provide real-time, consistent information by college & department

Example Data:
- Financial Aid
- Grants
- Employees
- Faculty by Tenure Status

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SPARC: Payroll

Description:
Simple payroll and FTE information

Example Data:
- Faculty by Tenure Status
- Student Employees
- Earnings by Type
  - Payroll
  - Ad comp
  - Overtime

<table>
<thead>
<tr>
<th>Employee Type Description</th>
<th>Allocated FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>854</td>
</tr>
<tr>
<td>Executive/Admin/Managerial</td>
<td>46</td>
</tr>
<tr>
<td>Professional Nonfaculty</td>
<td>420</td>
</tr>
<tr>
<td>Secretarial/Clerical</td>
<td>76</td>
</tr>
<tr>
<td>Technical/Paraprofessional</td>
<td>25</td>
</tr>
<tr>
<td>Skilled Crafts</td>
<td>Null</td>
</tr>
<tr>
<td>Service Maintenance Workers</td>
<td>Null</td>
</tr>
<tr>
<td>Student</td>
<td>12,384</td>
</tr>
</tbody>
</table>

© 2023 University of Massachusetts
Description:
Allocation of Tuition revenue by department (otherwise revenue is consolidated into one general fund and not viewable by department)
Description: Simple trending of total revenue, expenses and university support at a particular college or department
SPARC Pro: Contract Utilization

Description:

- High level view of non-optimized spend
- Detailed spend data by transactions including key data points to better understand user behavior
Data Supporting ERM Analyses: Enrollment
Relationship of Data

**Enrollment**
- Risk Assessment

**No. 1 Risk**

**22 Strategies**
- Informed by:
  - Real-Time Enrollment and Admissions Tracking
  - SPARC©

**Mitigation**

**Some reduction**
- Evaluate additional opportunities for recruitment
- Evaluate additional opportunities for retention

**Residual Risk**
Mitigation Data: Movement in Reducing Risk Exposure

<table>
<thead>
<tr>
<th>Highest Inherent Risk</th>
<th>Range of Potential Risk Exposure</th>
<th>Lowest Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment</td>
<td>Information Security</td>
<td></td>
</tr>
<tr>
<td>Facilities and Deferred Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Health and Mental Health Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vendor Risk Management</td>
<td>Attract, Recruit, Retain Faculty and Staff</td>
<td></td>
</tr>
<tr>
<td>International Activities</td>
<td>Information Privacy</td>
<td></td>
</tr>
<tr>
<td>Diversity, Equity, Inclusion and Accessibility</td>
<td>Lowest Possible Residual Risk</td>
<td></td>
</tr>
</tbody>
</table>

FY22 Assessed Inherent Risk
FY23 Assessed Residual Risk
Lowest Possible Residual Risk

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<table>
<thead>
<tr>
<th>Rank</th>
<th>Mitigation Strategy as of June 30, 2023</th>
<th>Systemwide Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Real-Time Admissions and Enrollment Tracking</td>
<td>Fully</td>
</tr>
<tr>
<td>2</td>
<td>Build New Partnerships: Early College, Community College, Adult Learners, Corporate Partnerships</td>
<td>Partially</td>
</tr>
<tr>
<td>3</td>
<td>Build New Markets: Targeted States, International Recruitments</td>
<td>Partially</td>
</tr>
<tr>
<td>4</td>
<td>Career and Job opportunities</td>
<td>Partially</td>
</tr>
<tr>
<td>5</td>
<td>Enhance High School Relationships</td>
<td>Partially</td>
</tr>
<tr>
<td>6</td>
<td>Enhanced On-Campus Experience</td>
<td>Partially</td>
</tr>
<tr>
<td>7</td>
<td>Enhance Academic and Career Advising</td>
<td>Partially</td>
</tr>
<tr>
<td>8</td>
<td>Leverage Cohorts (Athletics, Clubs, Honors programs, etc.)</td>
<td>Partially</td>
</tr>
<tr>
<td>9</td>
<td>Promote Program-Specific Academic Strengths</td>
<td>Partially</td>
</tr>
<tr>
<td>10</td>
<td>Retention: Increased Access to Mental Health Services, Supporting Students at Risk of Dropping Out, Outreach to Enrolled but Unregistered Students</td>
<td>Partially</td>
</tr>
<tr>
<td>11</td>
<td>EY Assessment on Enrollment Data Collection and Reporting</td>
<td>Fully</td>
</tr>
<tr>
<td>12</td>
<td>Student Success and Retention Workshop</td>
<td>Completed</td>
</tr>
<tr>
<td>13</td>
<td>Shared Student Acceptances: UMA-UMD Pilot</td>
<td>Completed</td>
</tr>
<tr>
<td>14</td>
<td>Financial Aid Analysis</td>
<td>Partially</td>
</tr>
</tbody>
</table>

Scale: Assessed Systemwide Impact of Mitigation Strategy by Rank

1 More Impact

2 Less Impact

3 Negative Impact
Real-Time FY24 Fall Admissions Tracking (as of 5/24/23)

New freshmen applications & acceptances ahead of budget; transfers below.

**New Freshmen: YTD Headcount**

- Applicants: ▲ 92,645 (Budget: 82,894, FY23 YTD: 85,344)
- Acceptances: ▲ 64,975 (Budget: 54,475, FY23 YTD: 62,584)
- Deposits: ▼ 11,867

**Transfers: YTD Headcount**

- Applicants: ▼ 7,314 (Budget: 7,858, FY23 YTD: 6,978)
- Acceptances: ▼ 5,363 (Budget: 5,955, FY23 YTD: 5,174)
- Deposits: ▲ 2,280

**Deposits vs. FY23 YTD**

- ▼ 29 or 0.2%

Source: Fall admissions tracking from A&F Dashboard

FY23 Yield: 17.7%

FY23 Yield: 48.6%
FY24 Fall Enrollment: Key Takeaways

Total Enrollment (FTE) (comparison to prior year)

- ▼ Budget: 64,363; -0.3%
- ▲ YTD: 64,731; 0.2%

By Career

- ▼ Undergraduate
  Budget: -491 or -1.0%
  YTD: -230 or -0.5%

- ▲ Graduate
  Budget: 226 or 2.0%
  YTD: 574 or 5.2%

- ▲ Continuing Education
  Budget: 45 or 0.8%
  YTD: 146 or 2.6%

By Residency

- ▼ In State
  Budget: -928 or -2.0%
  YTD: -1,037 or -2.2%

- ▲ Out of State
  Budget: 511 or 4.8%
  YTD: 369 or 3.4%

- ▲ International
  Budget: 198 or 2.9%
  YTD: 818 or 11.9%
Enrollment: Residency & Demographics in SPARC

Guiding principles:

- Preserved filtering by college and department
- Preserved ‘views’ of enrollment by credits taken, course enrollments, unique class participants and financial FTE
- Utilized source system data

Data added:

- Residency detail
- Student demographics
- Filtering capabilities

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Enrollment: Residency

Description:
Mapping allows for detailed view of residency by Country, State, City/Town; trend data (Fall 2018-2023)
# Enrollment: Demographics

**Description:**
Simple graphics on frequently requested demographic data including Underrepresented Minority, Person of Color, Ethnicity, Gender, Pell Eligibility

---

### Credits Taken - Academic Level

<table>
<thead>
<tr>
<th></th>
<th>2023 Fall</th>
<th>2022 Fall</th>
<th>2021 Fall</th>
<th>2020 Fall</th>
<th>2019 Fall</th>
<th>2018 Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>38,885</td>
<td>35,650</td>
<td>35,686</td>
<td>39,666</td>
<td>44,114</td>
<td>40,096</td>
</tr>
<tr>
<td>Sophomore</td>
<td>33,371</td>
<td>35,267</td>
<td>36,935</td>
<td>41,824</td>
<td>39,824</td>
<td>40,596</td>
</tr>
<tr>
<td>Junior</td>
<td>37,896</td>
<td>36,935</td>
<td>43,716</td>
<td>42,938</td>
<td>45,372</td>
<td>44,340</td>
</tr>
<tr>
<td>Senior</td>
<td>43,267</td>
<td>48,436</td>
<td>48,881</td>
<td>53,767</td>
<td>50,327</td>
<td>52,002</td>
</tr>
<tr>
<td>Graduate</td>
<td>28,246</td>
<td>20,955</td>
<td>28,440</td>
<td>25,622</td>
<td>23,022</td>
<td>23,753</td>
</tr>
</tbody>
</table>

### Credits Taken - Ethnicity

<table>
<thead>
<tr>
<th></th>
<th>2023 Fall</th>
<th>2022 Fall</th>
<th>2021 Fall</th>
<th>2020 Fall</th>
<th>2019 Fall</th>
<th>2018 Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian/Alaska Native</td>
<td>58,342</td>
<td>59,354</td>
<td>84,392</td>
<td>66,068</td>
<td>64,877</td>
<td>64,372</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>13,733</td>
<td>13,027</td>
<td>12,237</td>
<td>17,237</td>
<td>13,656</td>
<td>13,796</td>
</tr>
<tr>
<td>Native Hawaiian/Oth Pac Island</td>
<td>19,559</td>
<td>17,096</td>
<td>15,082</td>
<td>15,082</td>
<td>20,536</td>
<td>21,530</td>
</tr>
<tr>
<td>Asian</td>
<td>32,310</td>
<td>30,723</td>
<td>30,850</td>
<td>30,726</td>
<td>28,214</td>
<td>27,024</td>
</tr>
<tr>
<td>Black/African American</td>
<td>28,247</td>
<td>27,767</td>
<td>28,352</td>
<td>29,100</td>
<td>27,213</td>
<td>26,963</td>
</tr>
<tr>
<td>Not Specified/Unknown</td>
<td>27,309</td>
<td>26,530</td>
<td>26,209</td>
<td>26,210</td>
<td>24,353</td>
<td>23,399</td>
</tr>
</tbody>
</table>

---

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Using SPARC to Assess Enrollment Strategies

Strategy:
Improve Graduate Enrollment in the College of Engineering

Findings:
Fall 2023 (YTD as of 8/23/23) enrollments shows positive results compared to prior full year data (Fall 2018 – Fall 2022)
Using SPARC to Assess Enrollment Strategies: Credits & Net Revenue

### FY2023

<table>
<thead>
<tr>
<th>Credits Taken</th>
<th>Gross Revenue</th>
<th>Total Financial Aid</th>
<th>Total Financial Aid %</th>
<th>Net Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Total</td>
<td>6,339</td>
<td>7,514</td>
<td>(1,961)</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5,553</td>
</tr>
</tbody>
</table>

### FY2022

<table>
<thead>
<tr>
<th>Credits Taken</th>
<th>Gross Revenue</th>
<th>Total Financial Aid</th>
<th>Total Financial Aid %</th>
<th>Net Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Total</td>
<td>3,745</td>
<td>4,302</td>
<td>(1,646)</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,655</td>
</tr>
</tbody>
</table>

Findings:
- **109%** growth in Net Revenue
- **69%** growth in Credits Taken
Findings:

- Revenue growth is outpacing expense growth
- University support is declining
## Using SPARC to Assess Enrollment Strategies: Staffing

### Findings:
- Existing resources support enrollment growth:
  - Total FTEs decreased by **1.1%**; faculty remained flat
  - Total payroll decreased by **1.4%**

### Table: Staffing Allocation

<table>
<thead>
<tr>
<th></th>
<th>FY2023</th>
<th>FY2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Allocated FTE</td>
<td>Internal Funds</td>
</tr>
<tr>
<td>Faculty</td>
<td>64</td>
<td>7.834</td>
</tr>
<tr>
<td>Student</td>
<td>655</td>
<td>1,260</td>
</tr>
<tr>
<td>Secretarial/Clerical</td>
<td>8</td>
<td>1,020</td>
</tr>
<tr>
<td>Professional Nonfaculty</td>
<td>13</td>
<td>1,133</td>
</tr>
<tr>
<td>Executive/Admin/Managerial</td>
<td>2</td>
<td>315</td>
</tr>
<tr>
<td>Technical/Paraprofessional</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Service Maintenance Workers</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>89</td>
<td>10,961</td>
</tr>
</tbody>
</table>

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Creation of SPARC
Initial focus on Academic departments; secured copyright

Enhancements to Enrollment Data
Added enrollment demographic and residency information

Next Steps
Addition of Auxiliary information; assessing other functional areas

Reporting Methodology
Created methodology for allocating Tuition; reporting at college and department level

Creation of SPARC Pro
Added dashboards on contracting steps and utilization

SPARC: Progress to Date

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Key Takeaways

- **Data is powerful**: it improves analysis and allows for proactive planning

- **Getting at the “right” data can be hard**: start somewhere, create versions, don’t stop pushing through the weeds

- **ERM cannot stand alone**: it must be intertwined in all planning (budget, forecasting, capital, etc.) and use data to assess effectiveness
THANK YOU
ANY QUESTIONS?

LeeAnn Pasquini
University of Massachusetts
lpasquini@umassp.edu

Christine Packard
University of Massachusetts
cpackard@umassp.edu
THANK YOU FOR ATTENDING

WE HOPE YOU ENJOYED THIS SESSION

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  * Post-event survey