Harvard University John F. Kennedy School

ADVANCED APPLIED MANAGEMENT, OPERATIONS, AND BUDGETING

Greater Boston Applied Field Learning Lab: **MLD-412m**

Spring 2016

Mondays 4:15 – 7:30 (approximate time of full class)
Wednesdays 4:15-7:00 (usually teams)
+ FIELD TIME

Professor Linda Bilmes
Belfer 409
E-mail: linda_bilmes@harvard.edu
Team Drop-in clinics: Most Wednesdays 2:00-4:00pm; additional hours TBA.
Contact Patricia Timmons for appointments to sign up using signup genius.

Faculty Assistant/Course Administrator: Patricia Timmons
Littauer 209
E-mail: patricia_timmons@hks.harvard.edu
617-495-8660
Office Hours:

Teaching Fellow: Ted Sands MPA'16
Ted_Sands@hks16.harvard.edu
Office hours Wed. 3-4
Friday clinics or review sessions 10-12
Location:

Project Coordinator: Chetan Jhaveri
INSERT OFFICE HOURS and contact details

Course Overview

MLD-412m, the *Greater Boston Applied Learning Lab*, was established in 2005. Since its inception, the course has provided an innovative academic program that partners with local governments to provide real-world experience to students and a pathway for the next

generation of innovative civic leaders. The program has been supported by the Rappaport Institute for Greater Boston and the Taubman Center for State and Local Government. Professor Linda J. Bilmes teaches the course with support from a number of Harvard faculty including Professors Edward Glaeser and Jeff Liebman and senior administrators including Jennifer Nash, Jeita Phillips, Scott Leland, Steve Poftak and Carolyn Wood.

The course is unique in many ways. It is truly a joint effort between HKS and the local community. It provides real-world experience for students to apply the skills they have learned in budgeting, finance, accounting and operations management and related subjects in a real-world setting. It delivers tangible benefits to the participating cities and municipalities. And it provides a pipeline of talented recruits who go on to form the core of the next generation of leadership in local government. Many former students who are now working in Greater Boston act as core members of the partnership teams, working with students on specific projects.

More than 300 students have participated in the MLD-412 over the past decade. Students have undertaken dozens of complex and varied management projects in Greater Boston, in the fields of budget and finance, public-private partnerships, economic development, operations management and system efficiency. The projects are both varied and challenging. We have worked in many areas of local governments, including education, transportation, libraries, public utilities, fire and police, youth and recreation, flood mitigation, debt collection, emergency services, Hubway bike-rides , snow plowing, recycling, trash pick-up, street lighting, and ferry services.

This is an *advanced* course that requires some familiarity with variance analysis, cost accounting, activity-budgeting, capital budgeting, performance budgeting, and financial modeling. Students may enroll only by permission of instructor. The course will introduce advanced concepts that require a prior knowledge of these subjects. Students who enroll will learn how to handle large volumes of data, to use advanced analytical tools and will gain hands-on experience of working in a local government or large private non-profit budget environment.

Summer follow-on Work:
Funding is available for students to continue working on these projects throughout the summer of 2016. This may be direct assistance with the "client" organization, or working on developing case materials and publications based on the research you have conducted.

Course Description

This is a field course, where the main focus will be the projects that students undertake to assist the local community. Students will work in teams (3-4 members) and will work directly with the staffs of these cities. Teams will work on specific topics for the entirety of the module. ALL WORK IS CONFIDENTAL and you may not discuss it with anyone outside of class. Your "client" organization may ask you to sign a non-disclosure agreement.

The class involves meets on Mondays (4:15 pm onwards). Wednesday afternoons may be reserved for team field work and skill clinics. Please check the schedule and

announcements because the schedule and speakers may change. A substantial amount of additional time in the field and working with your team is required.

Classes will include lectures, table-top exercises, tutorials in applied budgeting techniques such as use of pivot tables and advanced Excel functions, using data analytics such as "Stat" and working meetings to refine the group projects. The class sessions will be a combination of skills training and project work. The objective is to introduce a series of skills that are valuable in state/local government.

Students should expect to spend at least one afternoon per week in their project site and additional hours working with their teams. The actual schedule for project site work is likely to vary each week, and every team will need to accommodate its client.

Spring 2016 Project Descriptions:

The projects this spring relate to critical needs in capital budgeting, revenue forecasting, activity-based budgeting and operations. These are based in three levels of government: the State Department of Revenue, the MBTA, and the small city of Salem MA. (SEE Appendixes for details)

1. Boston MBTA "T"

The Massachusetts Bay Transportation Authority, (MBTA or "T") operates the bus, subway, commuter rail, and ferry routes in the greater Boston. It is the 4th busiest transit system in the US and has the oldest functioning subway station (Tremont St) in the world. The MBTA is facing a serious challenge in the form of a structural budget deficit in the operating budget as well as a large shortfall on the capital side. We are working directly for the Brian Shortsleeve, Chief Administrator of the MBTA, and Mike Abramo, CFO, on several vital projects. These projects relate to operational budgets, capital planning, activity-based costing and asset management. They are described in Appendix 1.

2. MA Department of Revenue

The MA Department of Revenue is the State organization that collects taxes and ensures good fiscal management. It also works directly with Massachusetts cities and towns, providing technical assistance, training, and oversight. The Department is responsible for ensuring the fairness and equity of local property taxation, the accuracy and quality of local accounting and treasury management, distributing local aid, and maintaining a comprehensive databank on local finances. We are working directly for Mark Nunnelly the Commissioner of the Department of Revenue, who also serves as Special Advisor to Governor Baker for Technology and Innovation Competitiveness. There are two projects related to revenue forecasting (see Appendix 2).

3. City of Salem, MA

Salem is an historic city on Boston's north shore located about 1 hour from Boston by car or ferry. It is the second oldest settlement in New England (settled four years before the settlement of Boston), and famous for the witch trials of 1692. Like many small to medium sized municipalities, Salem has to make every penny count, and has many financial challenges. It is an eclectic city, which receives 1 million tourists every year, includes 18.5 miles of shoreline, and was the center of New England maritime interests in the early part of

the 19th century. We are working for Mayor Kim Driscoll, a charismatic leader who has led the city in urban design, green initiatives, and renovation of the harbor and ferries. The project is related to local transport for the elderly, disabled and links to nearby communities. (See Appendix 3)

The CANVAS page will contain links to a number of readings that must be completed prior to the Monday class sessions.

Office Hours
Professor Bilmes will develop and guide you throughout the project. Team drop-in hours (for any team or members of the team regarding team projects) are Wednesday afternoons 2-4pm. Additional hours will be posted every week. as we get more deeply into the projects, we will be meeting frequently and checking in by phone, skype, etc. If you need to reach me urgently, please contact my faculty assistant, Patricia Timmons.

Requirements and Evaluation
The course will require that students complete the assigned team project, including a preliminary presentation in class and a final presentation and handing over the specific deliverable, which may include an Excel model or other materials. In addition, students will have two homework assignments and a final short essay. Grading will based on:

- Class participation and homework assignments (20%)
- Team project – project plan and interim presentation (15%)
- Team project – final presentation and deliverables (50%)
- Peer and client evaluations (15%). Peer and client evaluation frameworks will be posted on the course website.

Mandatory Field trip on Friday April 1st.
We will be traveling to Salem, to Boston and on a special VIP tour of MBTA facilities on Friday April 1st. The bus will leave from HKS at 8am and will return about 4pm. Lunch is provided. Please wear comfortable clothes and shoes for walking.

Expenses and Reimbursement
Students will need to travel to and from Boston, Salem and locations for benchmarking. All basic expenses (taxis, uber, lyfts, Zipcars, mileage for cars, parking in pay lots, tolls etc) are reimbursable. However, this must be done in accordance with normal Harvard reimbursement policies. You must provide receipts and submit them to Patricia Timmons within 2 weeks of the expense being incurred. Do not stuff them into your pockets until the end of term, or we cannot reimburse them! Harvard will not reimburse anything after 60 days and it will not reimburse parking tickets/violations/fines, etc.

	Topic	Classwork/Assignment
23-Jan	Shopping Day	
21 - March *MONDAY* *4:15-7:00pm*	• Introduction to Salem • Introduction to DOR projects • Training on pivot tables.	Guests: Mayor Kim Driscoll, Salem; Deputy Director of Dept of Revenue and Crosby Burns Scott Leland, Executive Director, Mossavar-Rahmani Center Business and Government, on pivot tables *Assignment #1 introduced: Newton pivot table
23 – March *WEDNESDAY* *4:15-6:00pm*	• Introduction to MBTA Projects • Pivot tables explained	Guests: Mike Abramo, CFO, MBTA Brian Shortsleeve, Chief Administrator MBTA Steve Poftak, Executive Director Rappaport Center * Required background readings
25 – March *FRIDAY*	Good Friday - no review session	You must submit your project choices survey to Ted Sands by 5pm today.
28 - March *MONDAY* *4:15-7:00*	• Team assignments announced • Review of Previous Projects • Teams meet Prof. Bilmes	Review projects in Project Library for discussion.
30 – March *WEDNESDAY*	Teams Only - meet your clients this week	
1 April FRIDAY 8am - 4:30pm	FIELD TRIP	Meet at HKS at 8am for full day in the field
04 – April *MONDAY* *4:15-7:30* *(Dinner)*	• Guest Lecture on Cities • 3-page Team presentation from each team	Guest: Professor Edward Glaeser * Readings: *The Triumph of the City*. Chapters 1, 2, 9, conclusion Assignment# 2 introduced: Somerstat traffic citation analysis
06 – April *WEDNESDAY* *4:15-5:30*	Short Training Session: STAT	Guests: Stephanie Hirsch (former director of Somerstat) Mike Ward, Director of Municipal Services, Collins Center for Public Management
08-April Friday	Review Session	Review Data analysis assignment #2 Somerstat Traffic Citation Analysis
11 - April *MONDAY*	Training session: Using Heat Maps	Guest: Ben Grohsgal Weinryb BuzzFeed *Discussion of assignment #2*
13 – April *WEDNESDAY* *4:15-6:00*	Training session: Financial Modeling	Guest: Brian Iammartino CFA
15 - April	Review session - financial spreadsheets	
18 – April *MONDAY*	Patriots Day - no class	

20 – April *WEDNESDAY* 4:15-7:00	Training session: STAT/education	Guest: Bryan Richardson, UPD Consulting
25 – April *MONDAY* *4:10-7:30+*	Team Interim presentations (Dinner)	*All teams present findings*
27 – April *WEDNESDAY*	Team work - no class	*Team work available with Professor Bilmes*
* Week of *May 2nd* Final presentations	Presentations to DOR, MBTA, Salem	*Team presentations will be scheduled during this period*
Week of May 9th - 13th	Finalize materials and deliver to clients	**Must submit peer evaluations and 3-page feedback by May 13th*

Week 1
Monday, March 21

Prof. Bilmes will offer an overview of the class and describe the projects that students will work on this term. There are two project heads who will be in class to describe their projects: Mayor Kim Driscoll (Salem) and the Deputy Head of the MA Department of Revenue.

Scott Leland, Executive Director of the Mossavar-Rahmani Center for Business and Government, will demonstrate Pivot Tables and advanced Excel functions that are invaluable when analyzing large datasets.

Required Readings:

- Zhao, Bo; Coyne, David. "Walking a Tightrope: Are US State and Local Governments on a Fiscally Sustainable Path?" Federal Reserve of Boston Dec 2013
- Bilmes, Linda J. "The Fiscal Crisis in State Government – And What Should be Done About It." Next Social Contract Policy Paper, *New America Foundation*, June 2010.
- Mikesell, John L. "Fiscal Administration in Local Government: An Overview." In Local Budgeting, Anwar Shah, ed. The World Bank, 2007, pp.15-51.

Homework:

Complete on-line pivot table tutorial (posted on course website) and complete pivot table assignment. All students must sign up for one of three sessions (e-mail Scott Leland or Ted Sands to sign up) and review homework unless you have exempted from it. Assignment must be e-mailed to Ted Sands by cob on Wed, April 2nd.

Review sessions, held in Belfer 503, are scheduled for: [insert dates and location]

Wednesday, March 23

Presentations from Brian Shortsleeve (Chief Administrator) and Mike Abramo (SFO) of the MBTA, and Steve Poftak, Executive Director of the Rappaport Center for Greater Boston and member of the MBTA Board.

Explanation of team selection. Team preferences must be submitted to Ted by cob on Friday, March 25th .

Readings:

- MBTA 101: MBTA 101
- (Skim): Poftak, Steve. *Guide to Sound Fiscal Management for Municipalities*. Boston, MA: Pioneer Institute. http://pioneerinstitute.org/better_government/new-municipal-guide-provides-tools-for-local-budgeting/

Week 2
Monday, March 28

1. Teams will be assigned and each team will meet with Professor Bilmes to begin project work and to begin preparing project workplans, including data and analytical components.
2. Review of previous projects from project library

Assignment:
Each team must prepare a short Presentations *3 slides only*: for presentation on Wednesday:

1) Key question(s) you are trying to answer
2) What analyses you need to conduct
3) Where you will get the data for these analyses

Required Readings:

- Projects in Project Library
- Mullins, Daniel R. "Local Budget Process." in *Local Budgeting*, Anwar Shah, ed. The World Bank, 2007, pp. 213-267.

Wednesday, March 30: Teams and Client meetings -[Chetan confirm with contacts]

Friday, April 1st: FIELD TRIP

Students will meet at 8am at HKS for departure on the bus to Salem. The field trip will include historic Salem, Department of Revenue, and VIP tour of MBTA facilities. Wear comfortable shoes.
Lunch orders will be taken in class on Monday, March 28th.

Week 3
Monday, April 4: Cities in Historical Context as Centers of Ideas

Ed Glaeser, Fred and Eleanor Glimp Professor of Economics at HKS, is one of the world's most renowned expert on the urban environment. Professor Glaeser will describe the critical benefits that cities offer in terms of jobs, health, and environmental quality, as well as the policies that have undermined urban vitality. He is a brilliant speaker and you will enjoy this!

Required Readings:

- Glaeser, Edward. *Triumph of the City*. The Penguin Press, 2011. Chapters 1, 2, 9, and Conclusion
-

Short (3-page) presentation by each team

Assignment #2: Introduction of Somerville traffic citation analysis assignment

Wednesday, April 6 : Performance Analysis using data analytics

Guests: Stephanie Hirsch and Mike Ward will explain "Statnet" which is a network of municipal governments in New England that are using data, measures, and goals

strategically to improve municipal management through a CitiStat program or other performance management approach. NE StatNet communities agree to share data and promising practices and to meet regularly to learn from each others' experience running programs and managing Stat (or similar) systems. The Edward J. Collins, Jr. Center for Public Management at the University of Massachusetts Boston's McCormack Graduate School of Policy Studies and Global Affairs coordinates NE StatNet meetings, collects and analyzes data, facilitates sharing of policies and best practices, staffs the NE StatNet steering committee, and develops training for participating communities.

Required Readings:

- Shah, Anwar and Chunli Shen. "Citizen-Centric Performance Budgeting at the Local Level." In *Local Budgeting*, Anwar Shah, ed. The World Bank, 2007, pp. 151-178.

- Kingsley, Christopher. Smart Cities: PerformanceStat at 15. Penn Fels Institute of Government, Oct. 2010. http://www.oracle.com/us/industries/public-sector/oracle-stat-15-wp-301230.pdf
- Fung, Archon. "Infotopia: Unleashing the Democratic Power of Transparency" Politics & Society June 2013 vol. 41no. 2 183-212

Friday, April 8th: Review session on somerville traffic (optional)

Week 4
Monday, April 11: Training session/Heat Maps

1. Heatmap training: Guest: Ben Grohsgal Weinryb, BuzzFeed

2. Discussion of Somerville Traffic Assignment

3. Team meetings in class

Reading

Wednesday, April 13 — Training session/Financial Modelling

1. Guest: Brian Iammartino, CFA

2. Team meetings

Reading

Friday, April 15th: Review session on financial modelling (optional)

Week 5
Monday, April 18
No Class - Patriots Day (Teams meeting only)

Wednesday, April 20 — Education Stat Training
Bryan Richardson of Urban Policy Development, LLC will give an overview of PerformanceStat models in education including how to set them up, collect and analyze data, and hire and train staff. After an introductory lecture, he will lead us through a table-top exercise to allow students to take part in a mock Stat session.

Week 6
Monday, April 25th
Team interim presentations to class/clients to attend

Wednesday, April 27th
Teams

Week 7
Monday, May 2nd and Wed May 4th week
- Team presentations to clients (being scheduled during April)
- Applications for summer follow-on work need to be submitted

Week 8
Monday May 9th -May 13th
- Deliverables transferred to clients
- Peer Review form due
- Short confidential memo to Prof. Bilmes reflecting on your experience in this field course. This is your opportunity to provide us and the city with advice, recommendations, and feedback -- both about the course and about how the city is run. You can comment on your interaction with your clients, the overall course structure, your team experience, etc. We use the memos to gauge student interest in this type of course and to improve the course over time. The client-based format is a lot of work and since we can't control the clients, there is a lot of risk involved so we want to ensure it's worth the effort and that students are learning from it. We also use your feedback on the client relationship to help us select future clients and structure the relationship more effectively.

Appendix 1: MA Department of Revenue (DOR)

The Massachusetts Department of Revenue ("DOR") is the state taxing authority whose mission is to collect the revenues required to support the business of the Commonwealth. It strives to be a forward-thinking, mission-driven, and dynamic public sector agency working to achieve a number of strategic goals on behalf of the Commonwealth. Its goal is to be the country's leading tax authority that utilizes data to effectively manage resources and sustain continuous improvement operations.

DOR Project #1: Forecasting Accounts Receivable
Client: Massachusetts Department of Revenue (DOR)
Client lead contact: Crosby Burns, Director of Strategy and Policy (HKS alumnus)

Context: As the state's taxing authority, DOR collects approximately $25 billion in tax revenues every fiscal year. As such, the agency has over $2 billion in e accounts receivable ("AR") that reflects the money taxpayers owe to the state.
However, DOR needs to improve its ability to forecast how much of this amount it will actually be able to collect, and to categorize the AR according to the likelihood of collection. The outstanding AR reflects a wide range of expected probability of collecting. Some liabilities are probably close to 100% likely - for example, a taxpayer may have moved house and missed mailings indicating outstanding liabilities, but be able and willing to pay the full amount quickly if DOR contacts them again more directly. On the other hand, some receivables may be virtually 100% *uncollectible*—say, if a taxpayer has died and has no estate in his or her name. The majority of collectibles fall somewhere in the middle. The current method for analyzing and categorizing the over $2 billion in AR is mediocre, and DOR urgently needs to improve it.

Main Question: How can DOR manage and reorganize its accounts receivable inventory to more accurately reflect and predict collectible taxpayer liabilities?
Sub-Questions:

- What do historical trends tell us that can help us understand how much has actually be collected, so that future collections can be determined knowing past patterns of return?
- When should DOR recognize something as a receivable?
- Which receivables should be written off as uncollectible as DOR shifts to a new system?

Likely analytical approaches: Revenue forecasting, benchmarking, interviewing experts.

Readings:

- Massachusetts Comprehensive Annual Financial Report
- DOR overview PPT Presentation (for students assigned to project only)
- DOR financial and collections PPT (for students assigned to project only)
- DOR's "Collectability Report" (for students assigned to project only)

DOR Project #2: Offers in Settlement

Client: Massachusetts Department of Revenue (DOR)
Client lead: Crosby Burns, Director of Strategy and Policy (HKS alumnus)

Context: DOR is authorized under Massachusetts law to accept a lesser amount than the tax liability owed if there is serious doubt as to whether the tax due can be collected. This process is called Offers in Settlement ("OiS"). However, DOR feels like the current process is not optimized; the procedure could benefit from a business analysis of the potential gain of rejecting an offer versus the cost of processing the claim.

The existing standard operating procedures are cumbersome on both DOR and taxpayers. What occurs is that DOR expends significant FTE hours and other resources to require a huge amount of information from taxpayers over a significant amount of time. Moreover, existing analysis shows that few taxpayers successfully have their settlement approved.

Even in cases where the taxpayer is willing to offer 90 cents on the dollar for their tax liabilities, existing systems prevent DOR from accepting that money. As such, DOR forgoes significant revenues while also frustrating many taxpayers who have a legitimate financial condition that prevents them from paying their liability.

Main Question: How can DOR streamline its "Offer in Settlement" program to maximize efficiency and reduce costs?
Sub-Questions:

- How much is the OiS process currently costing DOR in terms of FTE hours and overhead?
- What is a process map of the current system, and where are common bottlenecks in the process?
- What triggers higher or lower settlements?
- What new business rules and/or process modifications could be adapted to improve the efficiency and/or reduce the cost of the system?

Likely analytical approaches: Process mapping; Activity-based costing; Benchmarking, BE analysis

Readings:

- A Guide to Offers in Settlement
- OiS procedure process map (for students assigned to project only)

Appendix 2: MBTA

Client Context for all MBTA projects [Projects #3 – 6]
The Massachusetts Bay Transportation Authority [MBTA] is America's fifth largest transit system, with 175 member towns and cities that cover over 4.7 million residents, and serves over 1.3 million trips each weekday. On April 8, 2015, a Special Panel convened by the Governor reviewed the MBTA's operations and outlined a plan of action to reform and improve the MBTA. The panel's recommendations include creating a five-member Fiscal and Management Control Board, as well as the creation of 1-year, 5-year, and 20-year spending plans after the group uncovered massive structural and management failures. The MBTA has a "Back on Track" Action Plan that creates a window for change. This is a high-profile and critical need for the state.

MBTA Project #3: MBTA "Ride 2.0"

Client: Massachusetts Bay Transportation Authority [MBTA]
Client lead: Nick Easley, Director of Flexible Contracting (HKS Alumnus)
Context: The Ride currently provides more two million rides per year at a heavily subsidized cost. Riders pay $3 per ride whereas the cost to the MBTA is nearly $50. RIDE is a program designed to provide federally mandated complementary paratransit service to MBTA's fixed routes to those who qualify under the Americans with Disabilities Act (ADA). In FY2015, the RIDE provided 2.1M trips, or an average of 7,000 passengers per weekday. The service is provided through contractors, with a fleet of 949 vans, sedans and taxis. The RIDE's goal is to provide high-quality service to the ADA-eligible population in the most cost effective way possible. The projected FY16 costs for the RIDE are $103M. Recent progress has been on controlling costs, but the RIDE remains complex and expensive, with an average one-way passenger trip cost of $46.88.
Main Question: How much can be saved through combining call centers while maintaining quality of the ride? What else can be done to deliver the mission of this service better to those who need it, at a reasonable cost?

Sub-Questions:
- What is the baseline fleet that would need to be maintained once the call centers are consolidated? How does this compare to the current fleet and what are the cost savings?
- How could service for areas that are outside of ADA jurisdiction be modified? How much could be saved?
- Is there any scope to incorporate services like Uber/Lyft? How could this be done while respecting ADA service mandates?
- How is The Ride performing compared to its operational targets. Is it "too good" in some areas, thereby increasing costs by dis-incentivizing public transit use?

Likely analytical approaches: Benchmarking, Primary interviews, Understanding Cost drivers
Readings:
- MBTA 101
- MBTA Paratransit Briefing
- http://www.wbur.org/2015/11/10/the-ride-uber-partnership

MBTA Project #4: MBTA Bus Maintenance

Client: Massachusetts Bay Transportation Authority [MBTA]
Client lead: Thomas Johnson, Director of Finance & Administration, supported by Mike Abramo, Acting CFO

Context: The MBTA has made a capital investment in its bus fleet, and will be replacing approximately 1/3 of its ~1000 buses. This in theory should reduce maintenance costs. However, because the majority of maintenance costs are labor, cost savings may not be realized or reinvested without adequate understanding of which maintenance activities will be reduced or eliminated, and the budget implications of those changes in activities.

Main Question: How will a capital investment in replacing 1/3 of the bus fleet impact projected maintenance costs?

Sub-Questions:

- How much does it currently cost to maintain the bus fleet? By type of bus/age/etc?
- What is the maintenance schedule for the new buses that will be purchased?
- Which maintenance costs are supposed to be reduced or eliminated; and what are the factors that influence MBTA's ability to meet the "target" cost savings goals?
- What labor could be freed up for other activities?
- Overall, what will be the impact on the operating budget from this capital investment?

Analytical tools: Activity-based costing, budget forecasting
Data: Financials (PeopleSoft), Work Orders (MCRS2)
Readings:

- MBTA 101
- Vehicle Technical Specification (for students assigned to project only)
- Vehicle Maintenance Manuals (for students assigned to project only)
- Labor Time Guide (for students assigned to project only)

MBTA Project #5: MBTA Everett Garage

Client: Massachusetts Bay Transportation Authority [MBTA]
Client lead: Thomas Johnson, Director of Finance & Administration, supported by Mike Abramo, Acting CFO

Context: The MBTA has contracted with its Union to perform overhauls of its buses and rail cars in-house at the Everett Garage facility. However, the costs of doing so are not well understood. A better understanding of how much it costs per unit of analysis (bus or rail) could allow the MBTA to better manage these costs, and make a more informed decision as to whether to outsource these activities.

Main Question: How much does it currently cost the Everett Garage to perform bus overhauls? Can an activity-based costing system be implemented to help them better understand and track their costs?
Sub-Questions:

- What are the main activities involved in an overhaul?
- What is the estimated unit cost for each activity? How much of each activity is required for each type of overhaul?
- Using the identified activity drivers, how much does it currently cost for a bus overhaul? By type of overhaul?
- What are outsourcing options for the bus overhauls? How does the current cost compare to the outsourced estimates?
- What are the pros/cons of outsourcing the overhauls?

Analytical tools:
Readings:

- MBTA 101
- Technical Specifications (for students assigned to project only)
-
- Analysis & Data:
- The analysis likely to be required to answer these questions include activity based costing, and benchmarking. The relevant data is housed in MCRS2 and FMIS systems.
-
- Data Reliability
- The data found in FMIS/PeopleSoft is reliable in that it is simply comprised of actual expenses incurred. It will also provide you with some detail as to vendors used to support some of the work activity.
-
- However, the real system that is technically used to track actual work order activity is known as MCRS2. MCRS2 can be accessed at all bus garage locations and is an ITD supported tracking application. The challenge with MCRS2 is that not all the data in this system is reliable. Let me illustrate my point further. A garage clerk enters a series of work orders into MCRS2 on a Monday and closes several out throughout the day. Now there are several workers orders that linger in the system and are closed out later that week once notification is received that work is complete. The big problem that we have seen is that over time many work orders are not closed out for long periods of time. When an aging

MBTA Project #6: MBTA Overtime

Client: MBTA
Client lead: Vincent Reina, Director of Employee Availability, supported by Mike Abramo, Acting CFO

Context: The MBTA regularly exceeds its budgeted overtime costs. For example, in FY15, $32M was budgeted in Operating Overtime costs, but $53M was spent. The largest subcomponents of non-absence related overtime include weather related operations and police work detail, which account for 23% and 17% respectively. Better budgeting for and management of overtime costs is a critical lever for reducing the projected operating deficit.

Main Question: How should the MBTA adequately budget for and manage overtime costs?
Sub-Questions:

- How much has MBTA spent historically on overtime? By area? By type? By function? What are internal best practices for managing Overtime?
- Which departments are doing the best job of managing overtime costs, and why?
- What procedures or controls could be instituted to better manage overtime costs?
- What are the costs of overtime relative to costs of adding an FTE or other labor procurement mechanisms?

Likely analytical approaches: Variance analysis, activity-based budgeting, internal benchmarking
Readings:

- MBTA overtime audit preliminary report

Appendix 3: Salem

Project #7: Salem Senior Transportation
Client: City of Salem
Client Lead: Jason Silva, Director of Municipal Operations

Context: Senior services are a top priority for the City of Salem. Salem recently attained an Age-Friendly Community Designation through the World Health Organization and the AARP, and is conducting a baseline assessment of the age-friendliness of the community. One major component of the city's senior services is transportation; Salem currently offers a free shuttle service that runs between 9 AM – 2 PM on weekdays. The shuttle service currently comprises approximately 1/3 of the Salem Council of Aging's budget (~$120K of $360K). Project Scope
The project goal is to identify ways to improve transportation services to Salem seniors without adding significant financial costs.

1) *System/Operations Review*

Review the systems in place and current operations to determine effectiveness in serving senior needs.
Determine if there are adequate resources allocated to senior transportation services.
Review options in technology that could improve service delivery.
Identify weaknesses and strengths along with strategies the City could utilize to improve existing services.

2) *Evaluate alternative transportation delivery models*

Survey other communities to identify other delivery models.
Evaluate 3rd party options/contract services.
Is Uber or similar services a potential alternative? (https://newsroom.uber.com/creating-more-options-for-senior-mobility/ and/or http://www.citylab.com/cityfixer/2016/02/kansas-city-bridj-microtransit/462615/)
Could the City combine services between van transport, meals on wheels and veterans?
Is regionalization a real option or a pie-in-the-sky option?
Could we expand services if delivery model was modified?
Would a fee-based program work to complement the existing system?

3) Financial/Business Review

Review and account for all funding/resources being utilized to support senior transportation services.
Account for all general fund, grant funding, in-direct costs supporting system and donations received.
Determine if alternative models could be supported with existing resources. If not, how much more? Less?

Main Question: Can transportation services to seniors be improved without adding significant financial costs, and without creating the wrong incentives?

Sub-Questions:

- What are the strengths and weaknesses of Salem's current senior transportation system?
- What are alternative transportation delivery models (e.g., 3rd party options/contract services, Uber, combining van transport with Meals on Wheels, fee-based model)
- Could alternative models be supported with existing resources? If not, how much more? Less?
- Could Salem work with other local communities to combine cost and services?

Likely analytical approaches: Cost analysis, heat mapping, process mapping, interviewing, data benchmarking

Readings:
- Kansas City is Embarking on a Great Microstransit Experiment
- More Options for Senior Mobility, Uber
- Checklist of Essential Features of Age-Friendly Cities, WHO

Background on Salem
Founded in 1629, Salem, the "City of Peace", is a small city with a big history. It is the second incorporated city in Massachusetts (April, 1836) and the second oldest settlement in New England (settled four years before the settlement of Boston). While Salem has been long known as the "Witch City" due to the notable witch trials of 1692, Salem also played a prominent part in Revolutionary times and was an active leader of several Massachusetts' industries. In the early part of the 19th century, Salem's ships were pioneers in the India trade and opened up commerce with Africa, China, Russia, Japan and Australia. In Salem will you find mansions of some of the country's first millionaires and the birthplace of celebrated author Nathaniel Hawthorne. Salem's 18.5 miles of tidal shoreline includes 7 public beaches.
Salem is located approximately 16 miles (30 minutes) north of Boston and is bordered by Beverly, Danvers, Lynn, Marblehead, Peabody, Swampscott and the Atlantic Ocean. The MBTA maintains a commuter rail stop and inter-/intra-city bus service. Access is also available by water from Boston on the Salem Ferry.

Project Context
The review of senior transportation services comes at a time when the City has made serving its senior population a top priority.
Last year, the City attained an Age-Friendly Community Designation through the World Health Organization and AARP. The AARP Network of Age-Friendly Communities helps communities become great places for all ages by adopting such features as safe, walkable streets; better housing and transportation option; access to key services; and opportunities for residents to participate in community events and activities.
Well-designed, livable communities promote health and sustain economic growth, and they make for happier, healthier residents – of all ages. Salem is 1 of 6 communities in Massachusetts enrolled in the age-friendly communities' network. The City has a designated committee of city department heads, stakeholders, non-profits and seniors that are spearheading this effort. We are now in Phase 2 of the effort which is the Planning Phase. We are now in the process of conducting a baseline assessment of the age-friendliness of the community in each of the 8 age-friendly criteria.

The Mayor is also at the tail end of a long process to construct a new Community Life Center in Salem. The current project, which is a public-private partnership will locate the Community Life Center at the corner of Boston and Bridge Streets in Salem, approximately ½ mile from downtown. The center will be a state-of-the-art facility which will serve not only the City's senior population but also our entire community. The new facility will also allow the City's senior and recreational programming to improve and dramatically expand. The City's Planning Board and Design Review Board are currently reviewing the new senior center project; part of the project is also a condominium development adjacent to the building.
The City has also created an interior design committee which is working with an interior design professional and architect to lay-out the interior, select design features along with furniture, finishings and equipment. Salem's Council on Aging falls under the direction of the Parks, Recreation and Community Services Department. Council on Aging staff include a Director, 2 Social Workers, Transportation Director and part-time Nutrition Coordinator. There are also 6 part-time van drivers. A Program Assistant and Receptionist also support Council on Aging operations.

The Council on Aging's budget for this current fiscal year is $364,191; transportation being close to 1/3 of its budget.

Current Conditions Overview
The City of Salem offers free transportation services to our seniors. Rides are offered between the hours of 9am and 2pm. Existing policies are as highly structured, as follows:

1. A minimum of one business days' notice is required for ride requests.
2. Transportation service is free, but donations ($1 for in town; $2 for out-of-town) are welcomed.
3. Pickups may be as many as 15 minutes prior to or after the scheduled time.
4. Transportation services are strictly curb-to-curb.
5. Passengers MUST stay seated at all times when the van is in motion.
6. For grocery shopping return trips, only two bags are allowed.

We offer in-town and out-of town trips to medical appointments. All appointments outside of the City of Salem have a pick-up time of 9am.
The City also offers regular trips to area grocery stores to allow seniors to go shopping. The schedules for both out-of-town medical and shopping appointments are below:
Transportation Schedule for Out-of-Town Medical Appointments

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Beverly	Peabody	Danvers	Peabody	Lynn
Marblehead		MGH		Swampscott
Cancer Center	Cancer Center	Cancer Center	Cancer Center	Cancer Center

Transportation Schedule for Shopping

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
MARKET BASKET	CROSBY`S MARKET	MARKET BASKET	WALMART	MARKET BASKET

Pickup at 10:30 AM	Pickup at 10:30 AM	Pickup at 10:30 AM	Pickup at 10:30 AM	Pickup at 10:30 AM
Drop off at 12:30 PM	Drop off at 11:30 AM	Drop off at 12:30 PM	Drop off at 12:30 PM	Drop off at 12:30 PM

The City currently employs 6 part-time van drivers and a Transportation Director to supervise operations. Just recently, the City hired an additional van driver due its inability to meet senior demand. In addition, the Director of Parks, Recreation and Community Services, Council on Aging Director, program and administrative staff spend time assisting with the program. There is also a cost to maintaining our vehicle fleet. Both the Council on Aging and DWP budgets absorb the vehicle maintenance costs.
Transportation services at the Council on Aging rely heavily on part-time drivers paid hourly rates. While most are long-time, reliable employees some are not which oftentimes results in employees calling out of work. Due to a lack of back-up van drivers, on these occurrences operations are impacted significantly with staff tasked with other job/responsibilities, being forced to assist with dispatching drivers and sometimes, driving vans. While these instances are sporadic, when they occur the "snowball effect" they have on overall service delivery are deep.

The Transportation Director position's annual salary is under $30,000. Fortunately, at present the City has a qualified, dedicated director but has had difficulty attracting and retaining this position over the years due to less than adequate funding.
Financially, the City pays for van driver salaries through a combination of grant funding and the general fund. In total, in FY2017 the City will pay $65,610 to fund its 6 part-time van drivers. The Transportation Director is paid a salary of $29,368 (FY17 proposed) and also receives fringe benefits. A breakdown of these costs is attached. Additionally, the FY16 operating budget for the Council on Aging is attached. The City also collects approximately $1,000 per month in van donations.

Each van costs approximately $75,000 and we own a total of 6. Each of these vans has been purchased through grant funding at no real cost to the City other than their ongoing maintenance.

In addition to these services, separate from van rides the City also has a robust meals on wheels delivery service with over 100 seniors participating. In this case, the City pays $18 per route to individuals to deliver meals to homes in Salem and drivers use their own vehicles for delivery. There are 8 routes total and each route generally takes between 1 hour and 1 ½ hours. The City also provides Veterans rides to and from medical appointments.
Available Data Sources

1) The City has financial data including actual and budgeted costs, The City can also provide van donation receipts over the last year.
2) The City has documented ridership over the last year well. The Transportation Director has provided the following:
    a. Monthly breakdown of trips and destination
    b. Year-to-year participant totals
    c. Month-to-month participant totals
    d. Summary of destination information by category