



New England University Transportation Center
77 Massachusetts Avenue, E40-279
Cambridge, MA 02139
617.253.0753
utc.mit.edu

Year 25 Final Report

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Principal Investigator:

Frederick Salvucci

Title:

Senior Lecturer

University:

Massachusetts Institute of Technology

Email:

Salvucci@mit.edu

Phone:

617-253-5378

Co-Principal Investigator:

Mikel Murga

Title:

Lecturer and Research Associate

University:

Massachusetts Institute of Technology

Email:

mmurga@mit.edu

Phone:

617-452-3121

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1. Accomplishments

Completion of Transit Research Board (TRB) paper by Javier Morale-Sarriera on “The Rising Costs of Transit and Baumol’s Cost Disease”. The abstract of the said paper is attached herewith.

The paper has been used in the preparation of several assignments in the course 1.252J/11.540/ESD.225J, and as recourse document for students taking this course

The paper is also being used as a resource in ongoing research by two Masters' students in further analysis of the evolution of higher development densities in urban areas, and the capacity expansions in the transportation system needed to support the increased density, and the importance of economic development at greater density in resolution of Baumol Disease type problems in urban transit systems

In addition, the research is being used in the preparation of a summary paper on the combined research products of conclusions reached in the Massachusetts Avenue living Laboratory, which will be submitted to TRB this coming year.

1A. Research Project

Project No.	PI	Project Title	Status
MITR25-14	Salvucci Murga	MALL Transit and Wider Economic Benefit Assessment	Active

Accomplishments under the New England UTC’s research goal

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The results of the research have provided useful support to the ongoing planning processes in the Kendall Square area in real time, and are being provided to the Cambridge Planning Board and the Cambridge Redevelopment Authority in their ongoing planning process for Kendall Square.

How the New England UTC’s research results have been disseminated

The results of the research are also being provided to the business association ABC, "A Better City" for their consideration in planning the transportation infrastructure requirements to support the economic development densification of the Seaport Innovation District in Boston.

The research paper was submitted to TRB by Javier Morale-Sarriera entitled “The Rising Costs of Transit and Baumol’s Cost Disease”.

1B. Education Projects

Accomplishments under the New England UTC’s education goal

Nothing to report

1C. Technology Transfer Projects

Accomplishments under the New England UTC's technology transfer goal

Nothing to report

2. Products

Journal publications, books, or one time publications Websites, media are being pursued, but have not yet occurred.

This research is part of an interconnected series of research products about the complexity of economic development, land use densification, and mode share change in the Cambridge area which is undergoing rapid transformation and growth in a context of capacity constraints in affordable housing, transit capacity, roadway capacity, and parking availability. The series of research projects is called the "Massachusetts Avenue Living Laboratory". Related research in this effort includes completed masters theses on residential parking and transit universal passes, employee parking freezes, their strengths and weaknesses, transit capacity constraint relaxation in the context of continued roadway capacity constraint, and Baumol's disease in Public transportation, with the MBTA as a focus case. Two of these research efforts are not yet complete, and will include a synthesis paper unifying the body of work of the Massachusetts Avenue Living Laboratory.

Technologies or techniques

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This research has furthered the use of accessibility quantification in the development of land use models which are ongoing in collaboration with the Department of Urban Studies and Planning of MIT. The results of this ongoing research will be offered to journals for dissemination this coming year.

Inventions, patent applications, and licenses

Nothing to report

Other products

Nothing to report

3. Participants & Other Collaborating Organizations

Organizations that have been involved as partners:

- MBTA - transit provider for the Boston Massachusetts region
- TfL (Transport for London) - transport provider for London, England

Both organizations have provided matching funds.

Other collaborators or contacts that have been involved

Nothing to report

4. Impact

The impact on the development of the principal disciplines of the program

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This research project has resulted in added insights into the unique high tech development cluster now underway in Kendall Square Cambridge, and the Seaport Innovation District in Boston, as well as the Inner Belt development district in Somerville, providing input into the ongoing revision of zoning requirements in the cities involved. This will be an ongoing activity of the principal investigators over the next six months to a year, using the results of the completed research as inputs into the regulatory regimes now being revised.

The further development of techniques in the utilization of transportation accessibility under conditions of capacity constraint is an ongoing activity being pursued in several academic and professional venues, including particularly TRB.

The impact on other disciplines

Nothing to report

The impact on the development of transportation workforce development

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This project has had direct benefit in the education of the student involved in the thesis research, and in approximately fifty students in the Urban Transportation class 1.25J/11.540J/ESD.225J

The impact on physical, institutional, and information resources at MIT

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MIT has been actively involved in promoting and participating in the process of economic change and densification of land uses in Cambridge, and the investigators have been actively involved in these processes, including presenting testimony at public meetings of the Planning Board, City Council, and articles in the faculty newsletter. The results of the research undertaken in MITR25-14, "MALL Transit and Wider Economic Benefit Assessment" have been directly useful in the preparation of these activities.

The impact on technology transfer

Nothing to report

The impact on society beyond science and technology

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The research undertaken in MITR25-14, "MALL Transit and Wider Economic Benefit Assessment" has been directly useful in supporting and shaping the economic development of the area, benefiting employees and firms and the tax base of the city and the Commonwealth.

5. **Additional Information**

Additional information regarding Products and Impacts

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The research undertaken with the support of MITR25-14, "MALL Transit and Wider Economic Benefit Assessment" has been directly supportive of the education of over fifty students, many of them from diverse backgrounds, and the theses which were a direct product of the research continues to be a useful resource for ongoing research of others.

The improved balancing of economic growth with adequate relaxation of capacity constraints is directly beneficial to the improvement in travel time reliability and reduction of carbon and other harmful emissions from transportation sources.

Outputs

Nothing to report

Outcomes

Nothing to report

Impacts

Nothing to report

THE RISING COSTS OF TRANSIT AND BAUMOL'S COST DISEASE**ABSTRACT**

This paper analyzes whether the public transit sector suffers from Baumol's cost disease by assessing the evolution of labor productivity and average labor costs across transit agencies in the United States, as compared with other industries. We found that (i) labor productivity in the transit sector has been mostly stagnant over 1997-2013, even more so in bus operations than rail operations (0.0% and 0.7% average labor productivity growth rates, respectively), and even more so measuring output as vehicle revenue miles rather than passenger miles traveled; (ii) the transit sector is highly labor intensive as it represents on average 64% of total costs (operating and capital) for bus and 40% for rail; (iii) compensation per employee has risen at a faster pace than inflation in 85% of the agencies we analyzed; and (iv) compensation per employee has risen at a faster pace than the average local wage rate in 65% of the agencies we analyzed. These findings support the hypothesis that not only does the transit sector suffer from Baumol's cost disease, but also that additional factors contribute to spiraling labor costs. Although there is no clear antidote to the disease, policymakers should recognize that as the economy becomes more productive overall, it can continue to support growing levels of transit service in recognition of its growing external benefits, despite its inherent nature of stagnant productivity growth.

Keywords: Baumol's cost disease, transit, productivity, labor costs