

Master of Science in Sustainability Management

Access, Innovation, and the Urban Transportation Transition - PS5450 **3 Credits**

Instructor: Eric Goldwyn

Course Overview

An urgent need exists to radically transform the transportation sector in the era of both climate change and urbanization. Globally, transportation is responsible for 23% of global carbon emissions, and if nothing is done this share is likely to grow. Further, the growth of automobiles is occurring as cities are growing across the globe; in cities this is contributing to low density, growing congestion, air pollution, traffic violence and obesity. Currently, an unusual consensus exists on global goals for transportation. It should be 1) accessible 2) efficient 3) clean and low carbon 4) contribute to public health versus creating public health problems. This is in part reflected in the new Urban Sustainable Development Goal, which have for a target:

“By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.”

To achieve both our carbon reduction targets and also the Sustainable Development Goal target will require a paradigm shift and strong advocacy for investments in green, equitable and healthy forms of urban transportation including walking and cycling (NMT), clean public transit and also new forms of efficiencies enabled by technology innovation and the “data revolution” along with better, mixed land-use and transit oriented development that is also affordable.

This course provides an overview of new thinking, innovation and advocacy in public transportation with a focus on passenger transport. We pose the question of whether we need a Transportation Transition? If so, what would it look like in different parts of the world and how do we get there? We then explore the Public Transport Impetus, the need to shift transportation modes worldwide and how this might be achieved. We also explore technological disruption and transportation. Is technology a friend or foe? How will technological change such as the rise of autonomous cars, big data and the Internet of things play into the transportation transition? Next we look at who pays for change in the sector and how? How do we move the resources and financing to make reforms happen? Finally, what are the political, institutional and cultural barriers to change in different places? What are effective advocacy strategies and will they be the same in all places?

This class draws on a series of lectures, a case study approach and experiential learning in New York City, which provides a living laboratory for the issues and themes discussed in class around the transportation transition. This class is ideal for graduate students and young professionals interested in urban sustainability, the transport sector and urban planning and design. It is also geared towards management professionals who wish to work in the transportation/urban policy arena and want an overview of cutting edge and key issues in the sector as it relates to land-use and broader environmental and planning concerns. This class serves as an elective in the MS Sustainability Management. This course satisfies the Area 1: Integrative Sustainability Management elective course and Area 4: Public Policy course requirement for the M.S. in Sustainability Management.

Learning Objectives

At the end of this course students should be able:

- To think about transportation issues in a coherent fashion that draws on first principles and allows us to tackle any question in a thoughtful manner.
- To explain current transportation policy and devise means to improve the ability to react to future policy developments as they emerge.
- Develop a strong, holistic overview of the major issues facing the problems of access and transportation globally, the major policy frameworks and also the key players
- To apply best practices from a number of case studies including in particular New York City that can provide ideas for future research and policy or civic engagement.
- Analyze a city’s transportation network and identify its strengths and weaknesses.

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Course Requirements (Assignments)

Course Readings: I have scanned and uploaded readings to the course website. On average we'll have three readings per class, and I expect you to do them. I expect lively discussions that pull apart the readings and show a command of the different topics we examine.

Case Study and Presentation (Hand in the write up after your presentation):

Each student will select a city to analyze and study. I want you to identify the boundaries of the city (in the US this will be the Metropolitan Statistical Area), number of jobs, housing units, modal splits, commute times, extent of the transportation network, annual investments in transportation projects by mode, percentage of land that is given over to paved roads, and the transport governance structure. Also, try to figure out how some of these things have changed over time. Once you've identified the existing conditions, you will write an overview that explains how people travel around this city. What are the weaknesses, what are the strengths, and what are the opportunities? This overview should feed into your final strategic plan. Presentations should encapsulate the key findings and point towards your strategic plan. Presentations will allow us to comment on your thinking/arguments re: the final strategic plan. Note: Data availability is important for this assignment so select your city carefully! North American, European, Australian, and some Asian Cities will have good English-language data. If you speak Spanish, it is often possible to find good data on cities in South America. There is more and more good data on African cities coming online each week. If you're interested in investigating one of these cities, let me know.

Analysis of New York City Learning Exercise:

This is a short, 2-3 pages of analysis of two learning exercises in New York City. Over the course of the semester, we will visit the Museum of the City of New York's exhibit on Cycling ([Links to an external site.](#)) and Summer Streets ([Links to an external site.](#)). Students are also encouraged to try New York's ferry system, Citi Bike, Select Bus Service. While New York isn't especially good at transportation innovation and planning, it has a lot of different things going on that can be instructive.

Final Strategic Plan:

You must submit a 10-page strategic plan for a set of specific reforms to be implemented in the city you selected for your case study. I want you to develop a plan for the city that thinks holistically about transport. By nature this is an argumentative exercise that requires evidence to support your claims. For instance, if you want to reduce GHG emissions by promoting cycling, dig into the existing infrastructure, modal splits, and transport investments and explain how that will have to change to achieve your goal. Will people still be able to access jobs, schools, and hospitals under this plan? Think about overall capacity of the transport network and existing population. If you need to move a million people a day, you better have a system that will accommodate those trips. If you think electric cars are the future, think about the complementary infrastructure needed for charging and where that will be located and how it will be paid for in the future. Keep in mind the following quote as you think about this assignment: "In defining the function of transport one is driven back to the questions of what sort of city one wants, what size, and for what classes of people."

Grading:

- Class Participation: 10 percent
- Case Study and Presentation: 30 percent
- Analysis of New York City Learning Experience: 20 percent
- Final Strategic Plan: 40 percent

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Course Policies

We expect you to come to class on time and thoroughly prepared. We will keep track of attendance and look forward to an interesting, lively and confidential discussion. If you miss an experience in class, you miss an important learning moment and the class misses your contribution. Engagement with your peers will be an important part of the course. Through posts on the course website and participation in the live sessions, you need to actively contribute to course discussions. In addition, you will have the opportunity both to present before your peers and to respond to their presentations in small group work. You are also expected to complete all assigned readings, attend all class sessions, and engage with others. If you need to miss a class for any reason, please discuss the absence with me in advance.

School Policies

Copyright Policy

Please note—Due to copyright restrictions, online access to this material is limited to instructors and students currently registered for this course. Please be advised that by clicking the link to the electronic materials in this course, you have read and accept the following:

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials. Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement.

Academic Integrity

Columbia University expects its students to act with honesty and propriety at all times and to respect the rights of others. It is fundamental University policy that academic dishonesty in any guise or personal conduct of any sort that disrupts the life of the University or denigrates or endangers members of the University community is unacceptable and will be dealt with severely. It is essential to the academic integrity and vitality of this community that individuals do their own work and properly acknowledge the circumstances, ideas, sources, and assistance upon which that work is based. Academic honesty in class assignments and exams is expected of all students at all times.

SPS holds each member of its community responsible for understanding and abiding by the SPS Academic Integrity and Community Standards posted at <http://sps.columbia.edu/student-life-and-alumni-relations/academic-integrity-and-community-standards>. You are required to read these standards within the first few days of class. Ignorance of the School's policy concerning academic dishonesty shall not be a defense in any disciplinary proceedings.

Accessibility

Columbia is committed to providing equal access to qualified students with documented disabilities. A student's disability status and reasonable accommodations are individually determined based upon disability documentation and related information gathered through the intake process. For more information regarding this service, please visit the University's Health Services website: <http://health.columbia.edu/services/ods/support>.

Course Outline and Readings

Week 1:

What is a city and why does transport matter?

Sorkin, Michael, "Density Noodle"

Attoh, Kafui excerpt from Rights in Transit

Mees, Paul excerpt from Transport for Suburbia

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Week 2:

How to think about and analyze transportation

Thomson, J. Michael excerpt from Great Cities and Their Traffic

Miller, Harvey, "Theories and Models in Transportation Planning."

Rode, Phillip et al., "Accessibility in Cities: Transport and Urban Form." Pp. 239-273.

Loo and Tsoi, "The sustainable transport pathway: A holistic strategy of Five Transformations."

Week 3:

So what are cities doing?

Guest Speaker: Aimee Gauthier (Chief Program Officer ITDP)

Land Transport Masterplan 2040 (Singapore):

https://www.lta.gov.sg/content/dam/ltaweb/corp/AboutUs/files/LTMP2040_May2019/LTA%20LTMP%202040%20eReport%20FA%20hires.pdf (Links to an external site.)

NSW Long Term Transport Master Plan (Sydney, Australia):

Klopp and Cavoli, "Mapping minibuses in Maputo and Nairobi."

Lehe, Lewis, "Downtown Congestion Pricing in Practice."

Week 4:

Assessing different policies and modes

Class trip to Museum of the City of New York

Patton, Jason, "A Pedestrian World." <http://journals.sagepub.com/doi/abs/10.1068/a389> (Links to an external site.)

Boisjoly et al., "Invest in the ride: A 14 year longitudinal analysis of the determinants of public transport ridership in 25 North American Cities."

Buehler and Pucher, "Sustainable Transport in Freiburg: Lessons from Germany's Environmental Capital."

Barter, Paul, "Singapore's Changing Relationship with Cars."

Week 5:

Technology, Politics, and the Future

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Summer Streets

Spain Wants to Ban Cars in Dozens of Cities:

<https://www.citylab.com/transportation/2018/11/spain-nationwide-car-free-city-center-car-ban/576976/> (Links to an external site.)

and the follow up:

<https://www.citylab.com/environment/2019/06/madrid-election-car-ban-traffic-congestion-emissions-spain/591961/> (Links to an external site.)

and the follow up to the follow up:

<https://www.citylab.com/transportation/2019/07/madrid-car-ban-street-map-city-politics-mayor-court-decision/594487/> (Links to an external site.)

Langdon Winner excerpt from The Whale and the Reactor: A Search for Limits in the Age of High Technology. Pp. 3-39.

WRI, “From Mobility to Access for All”

https://wriorg.s3.amazonaws.com/s3fs-public/from-mobility-to-access-for-all.pdf?_ga=2.68040081.1258233084.1561553670-1675235043.1561345992 (Links to an external site.)

Week 6:

Final Presentations