

Raymond Chan, PhD

Engineering Intern (E.I.T)

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Education

Northwestern University, Evanston, IL

PhD in Civil Engineering – Transportation Systems Analysis and Planning, December 2015

Topic: Severe Weather Resilience and Institutional Decisions in Public Transit Systems

Masters of Science in Civil Engineering, June 2011 – 3.2/4.0 GPA

Bachelor of Science in Civil Engineering, June 2010 – 3.3/4.0 GPA

Minor in Transportation and Logistics

Awards: Deans List – Spring 2008

Employment History

Project Manager, Transportation Analytics – Chicago Transit Authority – Chicago, IL August 2016 – Present

I am implementing asset management techniques using advanced statistical methods to track faulty automated passenger counter (APC) equipment and maintain APC data quality

I developed Python libraries to analyze passenger transactional data, joined with CADAVAL data, to examine customer flows at the trip level.

Strategic Services Temporary Employee – Pace Suburban Bus – Arlington Heights, IL June 2016 – August 2016

I developed a strategic vehicle purchase plan using passenger loading data from Pace's CADAVAL (Trapeze TransitMaster) system that reduced empty seat hours on vehicles using advanced graphical tools developed in Tableau. This analysis helped reduce capital needs by matching equipment to demand without changing dispatching patterns. This led to the inclusion of 53 small busses in Pace's 2017 Budget, saving over \$16 million.

I developed analytical tools using Python to improve the speed and accuracy of Pace's regulatory reporting requirements, saving over 30 hours a month. In addition, I developed modern web apps using to assist Long Range Planning and Service Analysis collecting field data for vehicle tracking and APC validation.

Instructor – EXCEL Program, Northwestern University – Evanston, IL June 2010 – July 2010

I taught a group of ten incoming Northwestern engineering students chemistry over five weeks during the summer as part of an intense college preparation program

Publications

Chan, Raymond, Durango-Cohen, Pablo L. and Schofer, Joseph L. "Dynamic Learning Process for Selecting Storm Protection Investments." Transportation Research Record. Transportation Research Board. Volume 2599. Washington, DC. [<http://dx.doi.org/10.3141/2599-01>]

Chan, Raymond and Schofer, Joseph L. "Measuring Transportation System Resilience: Response of Rail Transit to Weather Disruption." Natural Hazards Review (2015) ASCE. [[http://dx.doi.org/10.1061/\(ASCE\)NH.1527-6996.0000200](http://dx.doi.org/10.1061/(ASCE)NH.1527-6996.0000200)]

Verbas, Ömer; Frei, Charlotte; Mahmassani, Hani S.; Raymond Chan. "Stretching resources: sensitivity of optimal bus frequency allocation to stop-level demand elasticities." Public Transport: Vol 7 Issue 1 (2015) pp 1-20. Springer Berlin Heidelberg. [<http://dx.doi.org/10.1007/s12469-013-0084-6>]

Chan, Raymond and Schofer, J.L. "Role of Social Media in Communicating Transit Disruptions." Transportation Research Record. Transportation Research Board, Volume 2415/Transit 2014 Washington, DC. [http://dx.doi.org/10.3141/2415-16]

Schofer, J.L and Chan, Raymond. "We Can Learn Something from That! Promoting an Experimental Culture in Transportation" ACCESS. The University of California Transportation Center, Berkeley, CA, June, 2014.

Schofer, J.L; Chan, Raymond and Durango-Cohen, Pablo. "Managing a Regional Transit System in a Severe Weather Event: Case Study of the New York Region and Hurricane Irene." WEATHER Project. The Fraunhofer Institute for Systems and Innovation Research ISI, March, 2012.

Professional Affiliation

Committee Member, Transportation Research Board ABE30 (Transportation Issues in Major US Cities)

Member, American Society of Civil Engineer

Member, Young Professionals in Transportation

Key Skills

Programming and Design

- PHP
- HTML
- CSS
- JavaScript
- Python
- C++
- MATLAB
- VBA

Analytical and Business Systems

- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint
- Microsoft Access
- ArcGIS
- MySQL
- Minitab
- R

Operating Systems and Platforms

- Windows
- OSX & Linux (Ubuntu & Red Hat)
- Web Stacks (LAMP)
- Amazon Web Services

Teaching Experience

Northwestern University, Evanston, IL

Design Thinking and Communication – Adjunct Lecturer, Segal Design Institute (Fall Quarter: 2015)

Introduction to Transportation Analysis & Planning and Transportation Systems Planning & Management Combined Section, Teaching Assistant, Civil & Env. Eng. (Fall Quarter: 2011, 2012, 2013, 2014)

Brady Scholars Program in Ethics and Civic Life – Graduate Fellow, Philosophy (Fall 2011 – Spring 2014)

Programming – Teaching Assistant, Civil & Environmental Engineering. (Winter Quarter: 2014, 2015)

Civil Engineering Law – Teaching Assistant, Civil & Environmental Engineering. (Spring Quarter: 2011)

Chemistry I – Instructor, EXCEL Program (Summer Quarter 2010)

Transportation Research Projects

Measuring Transportation System Resilience

January 2013 – June 2015

I developed performance metrics that communicate the scope and scale of disruptions on transit properties compared to financial costs. I created a disruption framework, which identifies the different response methods to various disruption, large and small. I collected data from numerous transit agencies to measure their performance during different severe weather patterns.

Role of Social Media in Communicating Transit Disruptions

February 2013 – August 2013

I led a project on NYC public transit's institutional use of and consumer response to social media during Hurricanes Irene and Sandy. I collected and analyzed over six thousand tweets to understand the content of messages sent out. I obtained Twitter follower data to show the consumer response to social media.

CTA Bus Frequency Reallocation

December 2011 – December 2012

In an effort to reduce cost and increase efficiency on the bus network, Chicago Transit Authority and researchers at Northwestern University used data on passenger trips to reallocate bus frequencies to better suit demand. I developed a dashboard using open source web technologies to support this work. This helped communicate relevant research information to other researchers and decision makers.

Presentations

Chan, Raymond, Schofer, J.L. and Durango-Cohen, Pablo. "**Dynamic Learning Process for Selecting Storm Protection Investments.**" Lecture, First International Conference on Surface Transportation System Resilience to Climate Change and Extreme Weather Events, Washington, DC, September, 2015.

Chan, Raymond and Schofer, J.L. "**Measuring Transportation System Resilience: Response of Rail Transit to Weather Disruptions.**" Lecture, 10th Transportation Asset Management Conference from Transportation Research Board, Miami, Florida, April 29, 2014.

Chan, Raymond and Schofer, J.L. "**The Role of Social Media in Communicating Transit Disruptions.**" Lecture, Transportation Research Board Annual Meeting from Transportation Research Board, Washington, DC, January 14, 2014.

Chan, Raymond; Verbas, Omer; Mahmassani, Hani. "**Using a web based GIS system to visually depict the predicted effects of bus frequency changes on the Chicago Transit Authority network.**" Lecture, GIS in Transit Conference from Transportation Research Board, Washington, DC, October 17, 2013.