1. Maps For Navigation / 2. Sustainability

GGR424 - Transportation Geography & Planning

Jeff Allen

University of Toronto

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Announcements

- Transportation data analysis assignment due March 3
- Project Proposal due March 10
- Monday office hours 3:30pm to 5:00pm in SS5060 (I'll also keep my Zoom room open during this time)
- Friday office hours still only on Zoom, 2:30pm to 3:30pm

Today

- Maps for navigation
- Chat about final project
- Sustainable transport

Maps for navigation

"Stick Charts" from the Marshall Islands

- Shells represent islands
- Sticks represent ocean swells and wave-crests

More info: http://marshall.csu.edu.au/MJHSS/Issue2005/MJHSS2005_103.pdf

Maps for navigation

Peutinger Table

- a road map of the Roman Empire
- (this is a 13th century copy of an unknown original)

Source:
https://commons.wikimedia.org/wiki/File:TabulaPeutingeriana.jpg

Maps for navigation - e.g. 20th and early 21st century road maps

Map Art (2010) Toronto & Area street guide

Maps for navigation - e.g. TTC System Map

https://www.ttc.ca/routes-and-schedules

Maps for navigation - e.g. Google Maps

https://www.google.ca/maps/@43.6574817,-79.4021975,13.25z

What are the design elements that make a good navigational map?

Shared by Megan Belisle
https://transitmap.net/paris-metro-1913/

legenda/legend
metro A Anagnina - Battistini
metro B Laurentina - Rebibbia
metro B1 Laurentina - Conca d'Oro
metro B1 Conca d'Oro - Jonio (apertura 2014)
ferrovie urbane/urban railways
Roma - Lido
Roma - Giardinetti
Roma - Viterbo
ferrovie regionali/regional railways
Orte/Fara Sabina - Fiumicino Aeroporto
Tivoli - Roma Tiburtina
Viterbo/Cesano - Roma Ostiense
Albano/Frascati/Velletri - Roma Termini
Civitavecchia - Roma Termini
Frosinone - Roma Termini
Latina - Roma Termini
Nettuno - Roma Termini
Fiumicino Aeroporto - Roma Termini
stazione di scambio/interchange station
stazione/station
capolinea bus extraurbani/interchange with suburban buses
bus interscambio ferrovie nazionali/interchange with national railways
parcheggio di scambio/parking
linea di validità della tariffa urbana Metrebus
Roma/limit of validity of Rome Metrebus tickets
FL3 Viterbo
Viterbo
FL1 Orte
FL1 Civitavecchia Grosseto
FL2 Tivoli Avezzano
FL6 Frosinone Cassino Caserta
FL1 Fiumicino Aeroporto
Giardinetti
Battistini
Anagnina
Rebibbia
Conca d'Oro
Jonio
Laziali
Termini
Tuscolana
Ostiense
Tiburtina
Nettuno FL8
FL7 Latina Formia FL4
Albano Laziale FL4
Frascati FL4
Velletri
Fiumicino
Aeroporto
Fiera di Roma
Parco Leonardo
Ponte Galeria
Tor di Valle
Vitinia
Casal Bernocchi Centro Giano
Acilia
Ostia Antica
Lido Nord
Lido Centro
Stella Polare
Cristoforo Colombo
Castel Fusano
Pomezia - S.Palomba
CAMPOLEONE
Cecchina
Lanuvio
S.Gennaro
S.Eurosia
Ciampino
Casabianca
S.Maria d'Alois
Pavona
Cancellara
Ceschina
Lanuvio
Cecchina
Genzano
Nettuno
Aprilia
Campoleone
Cisterna
Latina
Formia
Frosinone
Cassino
Caserta
Albano Laziale
Castel Gandolfo
Marino Laziale
Pantanella
Bassone
Acqua Acetosa
Frascati
Giardinetti
Casilino
Casamonica
Tor Vergata
Colle Mitra
Torricola
Anagnina
Cinecittà
Subaugusta
Furio Camillo
Arco di Travertino
Porta Furba - Quadraro
Giulio Agricola
Lucio Sestio
Numidio Quadrato
Gerbatella
Cafè Blanc/Parco Appia Antica
Porta Furba - Quadraro
Arco di Travertino
Furio Camillo
Giulio Agricola
Lucio Sestio
Numidio Quadrato
Gerbatella
Cinecittà
Subaugusta
Colli Albani
Capannelle
Appio
Furio Camillo
Lucio Sestio
Numidio Quadrato
Gerbatella
Cinecittà
Subaugusta

Liniennetz Frankfurt am Main 2015
Network Frankfurt am Main 2015
Vorsicht Stufe!
Linien U4 und U6 wegen Modernisierungsarbeiten nicht auf allen Fahrten und an allen Haltestellen barrierefrei.
Aktueller Stand unter www.traffiQ.de
Main
Rhein
Bad Homburg
Seulberg
Friedrichsdorf
Friedberg
Oberursel (Taunus)
Hohemark
Waldlust
Rosengärten
Kupfer-hammer
Glöckner-wiese
Lahnstr.
Oberursel Altstadt
Oberursel Stadtmitte
Oberursel Bahnhof
Bommersheim
Weißkirchen Ost
Stierstadt
Weißkirchen/ Steinbach
Weißkirchen Nord
Kronberg
Kronberg Süd
Schwalbach Nord
Niederhöchstadt
Eschborn
Schwalbach
Eschborn Süd
Bad Soden
Niederhofheim
Niederursel
Hedderheim
Nordwest-zentrum
Heddernheim
Niederwalt-hausen
Weiterstadt
Zeilweg
Ober-Eschbach
Nieder-Eschbach
Eschborn Mitte
Eschborn
Kalbach
Niederursel Landstr.
Nieder-Erlenbach
Bad Vilbel Süd
Bad Vilbel
Frankfurter Berg
Berkersheim
Praunheim
Heerstr.
Frankfurter Straße
Hausen
Rödelheim
Westend
Bockenheim
Ginnheim
Gonzenheim
Niederursel
Preungesheim
Preungesheim Gewerbepark Platz
Eschersheim
Eschersheim Friedhof
Nordwestzentrum
Kalbach
Niederursel
Niederursel Landstr.
Niederursel Hauptfriedhof
Niederursel Hauptfriedhof
Niederursel Landstr.
Niederursel Landstr.
Niederursel Landstr.

Shared by Tung Ki Yeung
https://www.behance.net/gallery/96041633/Tuen-Mun-District-Bus-Route-Map-Design

Navigational maps have to balance between detail and legibility

Cartographic Selection

- deciding what layers to include on a map, and what not to include

Cartographic Generalization

- simplifying the precision and detail of features to only show what's essential
- e.g. smoothing a line
- e.g. merging areas, aggregating points
- e.g. reclassifying data
- e.g. exaggerating features

Shared by Angel Yang
https://www.translink.ca/-/media/translink/documents/schedules-and-maps/transit-system-maps/regional-maps/january-2022/rdt_2022-01-03.pdf

Shared by Erika Lindsay
https://www.brampton.ca/EN/residents/transit/plan-your-trip/Documents/Brampton_System_M-F_Jan2022.pdf

e.g. Bike Map in Cincinnati

https://www.cincymap.org/cbm/

e.g. Bike Map in Cincinnati

https://www.cincymap.org/cbm/

Its challenging to add data density, but without compromising legibility

e.g. Frequency on transit maps

https://www.ttc.ca/routes-and-schedules

Mind the map! The impact of transit maps on path choice in public transit

Zhan Guo *

Robert F. Wagner Graduate School of Public Service, Rudin Center for Transportation Policy and Management, New York University, 295 Lafayette St., Room 3038, New York, NY 10012, USA

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Tube map
London Underground

ABSTRACT

This paper investigates the impact of schematic transit maps on passengers' travel decisions. It does two things: First, it proposes an analysis framework that defines four types of information delivered from a transit map: distortion, restoration, codification, and cognition. It then considers the potential impact of this information on three types of travel decisions: location, mode, and path choices.[1] Second, it conducts an empirical analysis to explore the impact of the famous London tube map on passengers' path choice in the London Underground (LUL). Using data collected by LUL from 1998 to 2005, the paper develops a path choice model and compares the influence between the distorted tube map (map distance) and reality (travel time) on passengers' path choice behavior. Results show that the elasticity of the map distance is twice that of the travel time, which suggests that passengers often trust the tube map more than their own travel experience on deciding the "best" travel path. This is true even for the most experienced passengers using the system. The codification of transfer connections on the tube map, either as a simple dot or as an extended link, could affect passengers' transfer decisions. The implications to transit operation and planning, such as trip assignments, overcrowding mitigation, and the deployment of Advanced Transit Information System (ATIS), are also discussed.

Transportation improvement plan

For the final project in this class, you will propose an intervention, solution, or improvement to a transportation problem

- (5%) Project Proposal due March 10
- (5%) Presentations March 28 and April 4
- (25%) Final Report due April 8

Transport and the Environment:

Transport and the Environment:

How can we make urban transport more sustainable?

Avoid

- Avoiding (long distance) trips (by car)

Shift

- Shifting trips to more sustainable modes

Improve

- Improving the efficiency (i.e. reducing the impacts) of existing transport options

Urban
Spatial
Structure
Respond
Govern
Society
Environment
Economy
Travel
Behaviour
Cause

e.g. Milton, ON

Single-occupancy KM travelled per person per day

- Milton = 29.4km
- GGH = 19.6km

Mode Share

	Milton	GGH
Car	87.0%	77.6%
Transit	4.2%	12.3%
Active	5.8%	7.9%
Other	3.0%	2.1%

What about urban freight and deliveries?

https://www.thestar.com/news/city_hall/2020/10/09/everyone-is-getting-everything-delivered-these-days-but-that-can-cause-chaos-on-city-streets-and-toronto-officials-are-trying-t
html?rf

Next week

- Health & Equity
- How the costs and benefits of transportation are (in)equitably distributed
- Health impacts of transportation (e.g. pollution, noise)