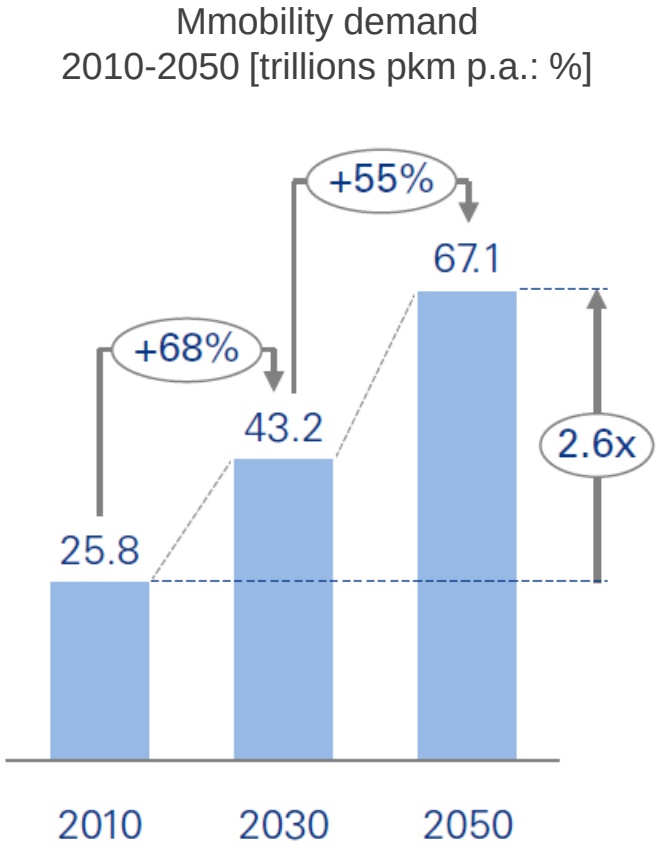
Future Urban Transport Systems

Dr Alexander Erath | 18th February 2014 | stars Singapore Symposium

The urban mobility challenge

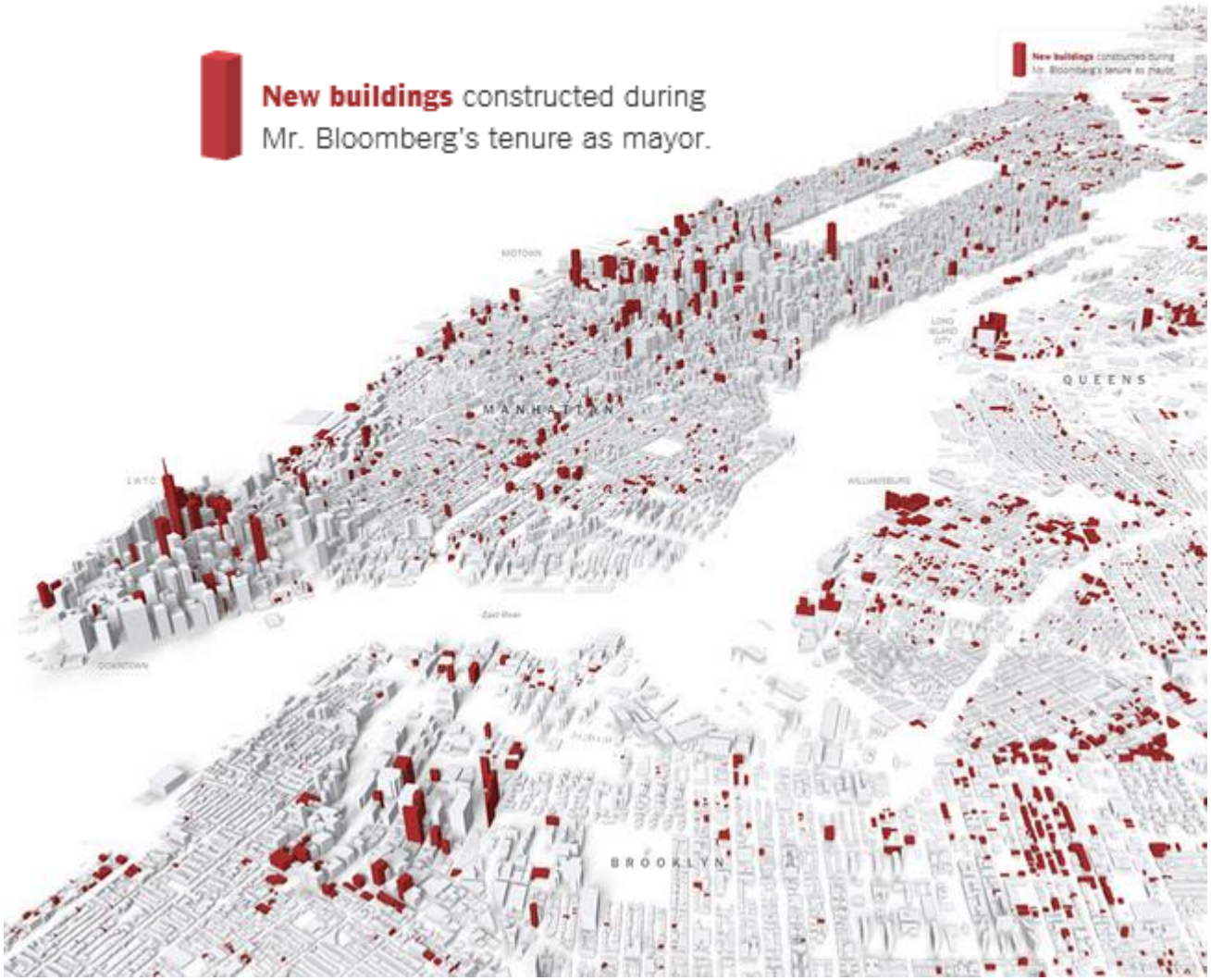


Schafer, Andreas and David G Victor (2000). 'The Future Mobility of the World Population', *Transportation Research Part A: Policy and Practice* 34(3): 171–205.

Future Infrastructure

Theses:

Densification of cities continues, spread slows down.



http://www.nytimes.com/newsgraphics/2013/08/18/reshaping-new-york/

Future Infrastructure

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Densification of cities continues, spread slows down.

Future urban transport infrastructure will be constructed underground at high cost.

Image source: www.lta.gov.sg

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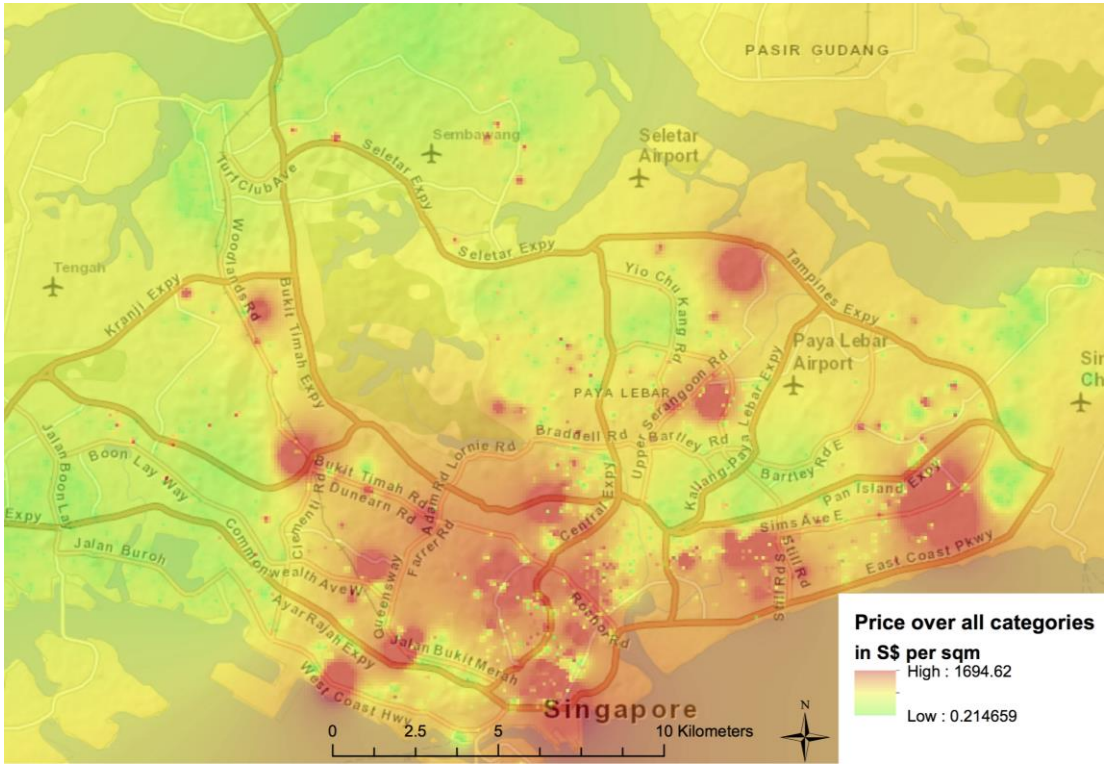

Caduff, Luzian (2013). 'Spatial Hedonic Regression Modelling of Commercial and Office Space Prices in Singapore'. Master thesis, Singapore ETH Centre, ETH Zurich.

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The allocation of urban public space will be re-negotiated.

Image sources;
http://publicuseofprivatespace.wordpress.com/2012/10/26/world-class-streets-re-envisioning-times-square-nyc/
http://www.downing-co.com/2012/02/10/parklet-redux-escape-from-new-york/

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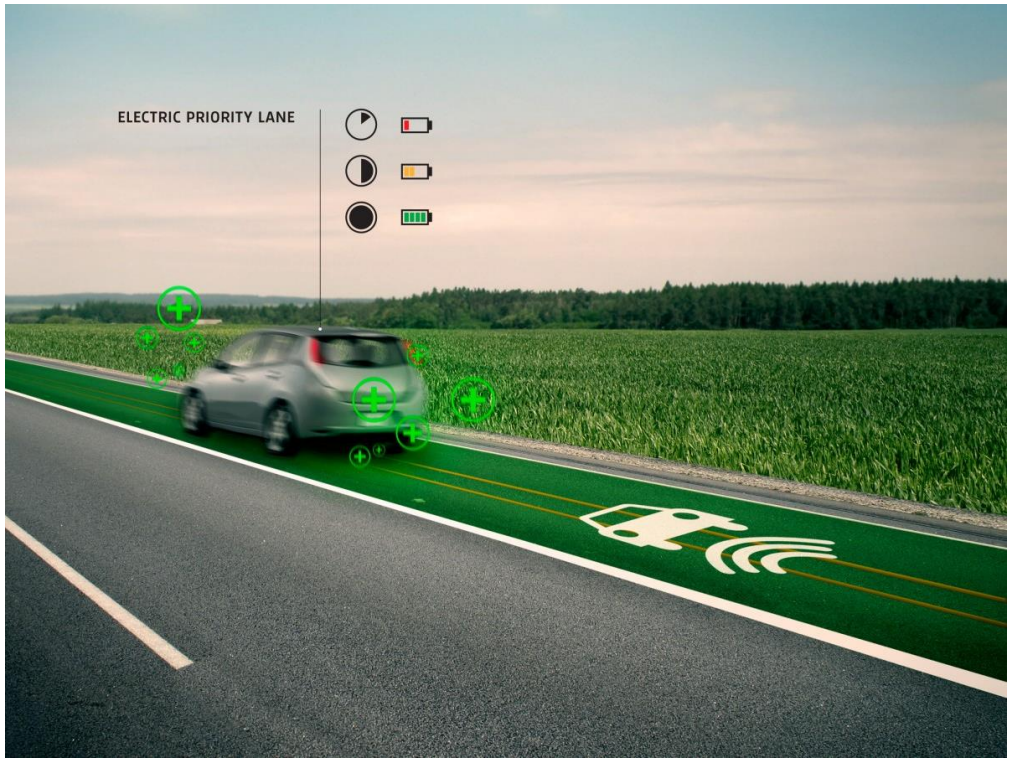

Studio Roosengarde (2013) http://www.studioroosegaarde.net/project/smart-highway/info/

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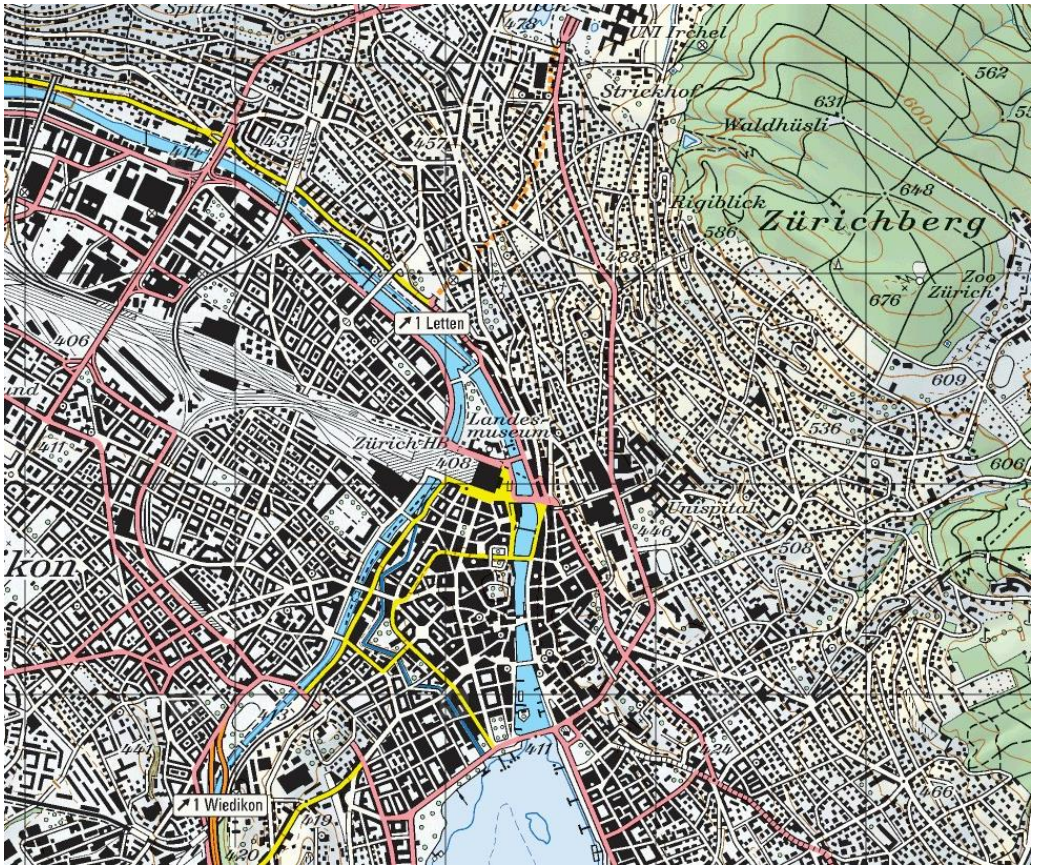
Transport infrastructure will continue to have long lasting impact on the functioning of the city.



Schweizer Landestopographie (2014) http://map.geo.admin.ch/

Future Vehicles

Theses:

Vehicles will be connected with each other and the infrastructure to increase road safety and boost capacity.

http://articles.latimes.com/2014/feb/05/autos/la-fi-hy-v2v-nthsa-safety-20140204

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Vehicle technology will continue to make travelling more convenient and hence lead to longer travel distances.

Image source: http://www.itechwhiz.com/2012/05/future-cars-legally-blinds-google-cars.html

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Vehicles will respect the imperatives of global warning and urban form.

Image source: www.superpedestrian.com

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Most people in cities will travel by bus.

Image source: Dario Hidalgo - http://thecityfix.com/blog/transmilenio-a-retrospective/

Future Policy

Theses:

Transport policy will aim at distribute transport demand temporally more equally.

Image source: www.lta.gov.sg

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Transport policy will aim at distribute transport demand temporally more equally.

Technology will be an enabler of demand-based pricing.

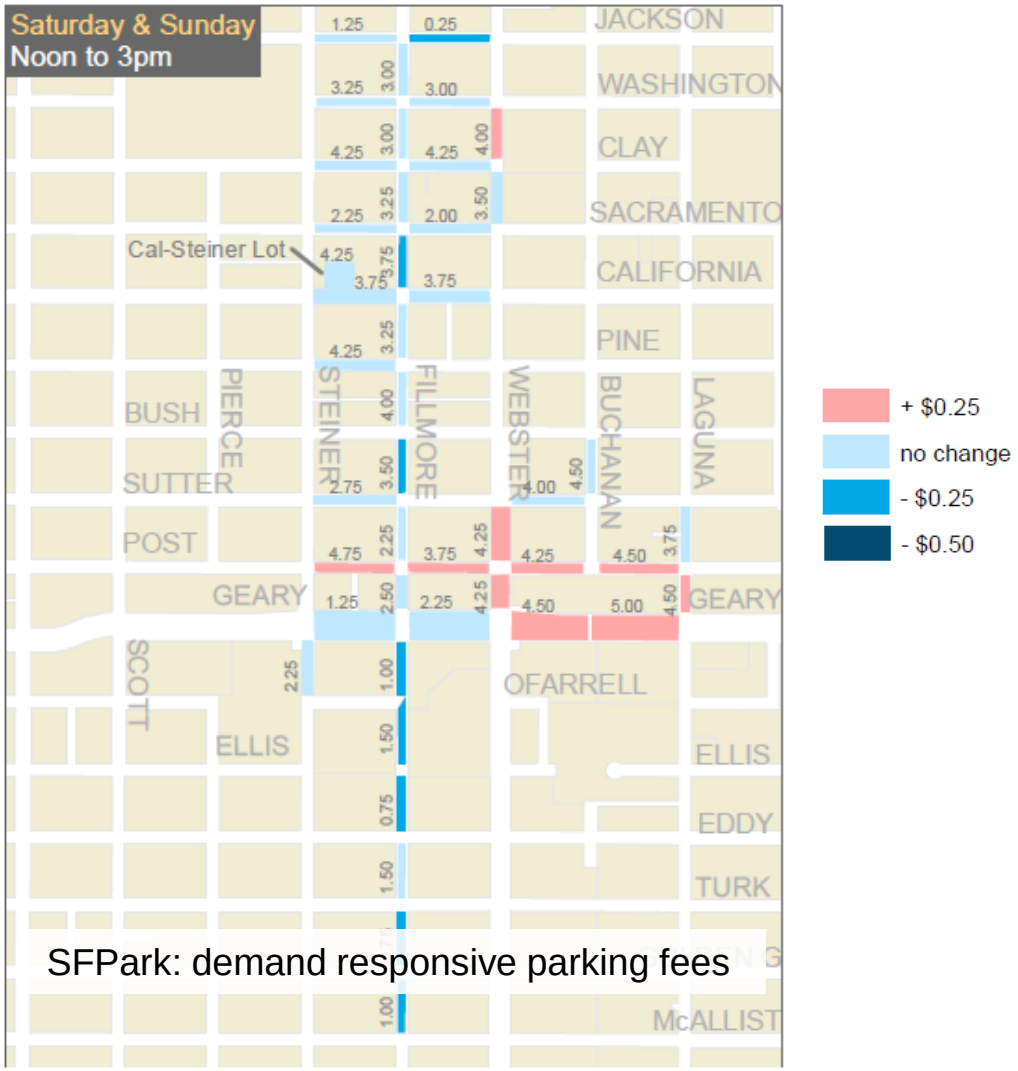

Image source: www.sfpark.org

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New policies will be introduced as pilots.

Image source: www.ehcitychallenge.org/peopleschoice/city/stockholm

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More mayors will be photographed on / with a bicycle.

Image source: http://www.stodgell.co.uk/?p=1940

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Open Data and the social internet will lead to new forms of participative planning.

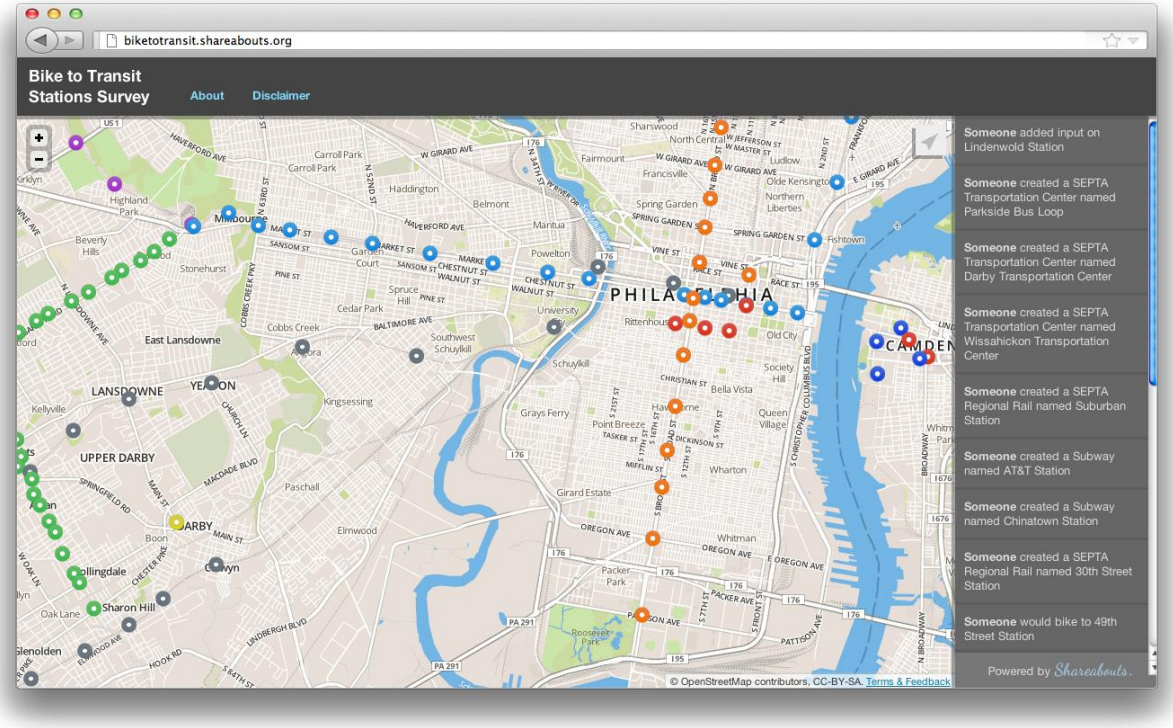

Image source: biketransit.shareabouts.org

Future Information Technology

Theses:

Information technology will further boost innovation in urban transport.

Image source: http://www.2cents2share.com/review/driving-my-wheels-without-owning-a-car/

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Information technology will further boost innovation in urban transport.

Information technology will democratize innovation but monopolies services.

Image sources:
www.waze.com

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Information technology will democratize innovation but will monopolies services.

New services will challenge existing policy frameworks.

Image sources:
http://www.technobuffalo.com/2013/08/28/uber-starts-testing-its-taxi-hailing-app-in-dubai/
http://agbeat.com/cities/san-francisco-cities/uber-when-technology-threatens-tradition/

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Any form of mobility will leave digital traces.

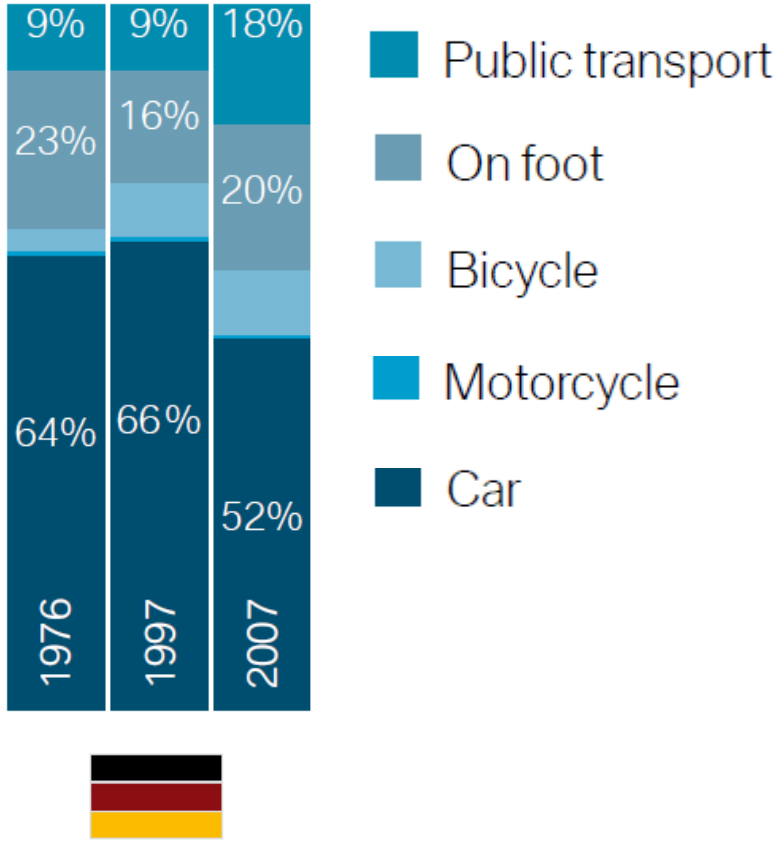
http://www.flickr.com/photos/jmhuttun/7905025482/

Future Behavior

Theses:

More people will adapt an urban lifestyle.

Mode shares (by trip)
for 19-29 year old in Germany



Feige, Irene and Tobias Kuhnimhof (2013). "Mobility Y' – The Emerging Travel Patterns of Generation Y'. Munich: Institute for Mobility Research (ifmo).

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A connected world will fly more.

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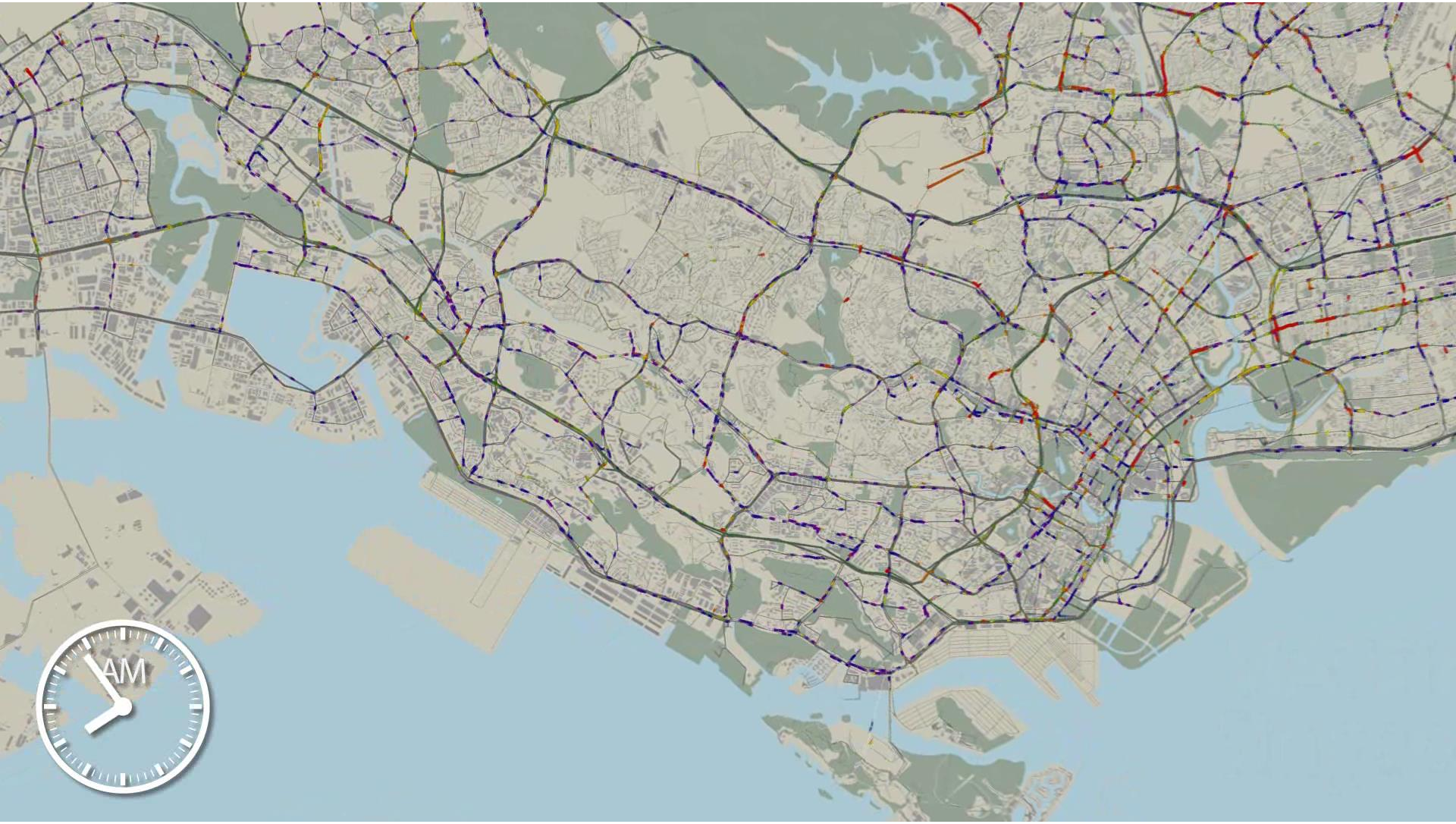
More people will adapt an urban lifestyle.

A connected world will fly more.

An ageing society will pose new demands to infrastructure, vehicles, policy and technology.

Source: http://knowledge.allianz.com/demography/population/?357/key-facts-and-figures-about-germanys-population

Our contribution: agent-based transport simulation MATSim



Video available at: http://vimeo.com/65878227

Questions:

1. How can we redesign cities for more sustainable mobility?
2. Will autonomous cars be the new public transport?
3. Who is in charge of the world and the city, and how can we overcome those conflict?
4. How to shape a public policy makes technology an enabler of sustainable mobility?
5. How can we nudge people to take up a more sustainable mobility lifestyle?

THANK YOU

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