NUDGE:
behavioral changes in public transport

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"A growing body of evidence demonstrates that behavioral science insights - research findings from fields such as behavioral economics and psychology about how people make decisions and act on them - can be used to design government policies…"[1]

INTRODUCTION

The Nudge approach has been brought to the attention of policy makers through the work of Thaler and Sunstein (2008) two professors from Chicago, moved by dissatisfaction with institutional theories, based on the assumption that human beings have only rational behavior. Their central message is that there are many situations where people run the risk of acting against their own interest: they take both unnecessary risks and too many precautions, letting their decisions be influenced by irrelevant information.

The authors, using some research carried out in the field of social sciences (in particular psychology and behavioral sciences) applied theories on the "predictivity" of human behavior to the regulatory action of institutions proposing a flexible model of regulation.

The central policy innovation they propose is the concept of "libertarian paternalism", which they define as policies that:

Maintain or increase freedom of choice – the "libertarian" side.

Try to influence the tendency of institutions to impose their own choices in ways that will make choosers better off, as judged by themselves – the "paternalistic" side.

The central concepts in their approach are therefore "choice architecture" (the organisation of the context in which people make decisions) and "nudges" (small features designed in the environment of choice making).

In order to define an intervention as Nudge[2] (Thaler, Sunstein, 2008)[3], it is necessary that it: (i) be an element of an architecture of choices, (ii) alter the behavior of individuals in a systematic (and therefore predictable) way - paternalistic component, (iii) does not limit the possibility of choosing the latter -libertarian component, (iv) nor significantly modify economic incentives.

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[1] Executive Order -Using Behavioral Science Insights to Better Serve the American People, The White House, Washington, United States, September 15, 2015

[2] Nudge definition: A nudge, as we will use the term, is any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates.

[3] Thaler, Richard H., and Cass R. Sunstein. Nudge: Improving Decisions about Health, Wealth, and Happiness. New Haven, Conn.: Yale University Press, 2008.

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FOR WHAT BEHAVIOURS ARE NUDGE INSTRUMENTS USUALLY APPLIED?

Thaler and Sunstein suggest that Nudge interventions are appropriate when choices have delayed effects, when they are complex or infrequent and thus learning is not possible, when feedback is not available, or when the relation between choice and outcome is ambiguous.[4] According to Verplanken and Wood (2006) about 45% of our everyday actions are not really choices at all, but habits or routines. For example, people do not usually "choose" to leave the lights on when leaving a room or to accelerate heavily when driving a car. People might not see themselves as "choosing" to over-eat the wrong kinds of food, such as sausages or cookies, either. People often succumb to bad habits in spite of having made an explicit choice to avoid these behaviours, since behaviour is error-prone (Thaler and Sunstein 2008).

Thus, it is clear that a large portion of our behaviours are not actively reflected upon and this is the primary application area for Nudge interventions. So these analyses are most appropriate in what marketing researchers call "low-involvement" decisions, i.e., ones that involve little conscious deliberation, and also in high involvement decisions that are complex or unfamiliar. However, it is not self-evident that nudge are likely to work in the case of high-involvement decisions that are perceived to have low complexity. Examples of such decisions where (at least individual, one-off) nudges might not be effective could be the choice of a car brand in the case of people who have high brand loyalty.

Attempts to influence values or attitudes are not part of the nudge paradigm. Indeed, nudges can be seen as complementary or even tangential to interventions focusing on attitude or value change. However, there is evidence that suggests that nudges are likely to be more effective if they are perceived of as legitimate (i.e., helping people to do what they ideally would like to do) or when they are so unobtrusive as to be virtually invisible.

THEORETICAL FRAMEWORK IN TRANSPORT POLICIES

Most transport problems (congestion, air pollution, accidents) arise because private and public interests are not aligned – that is because there are externalities.

First, in some cases, externalities are exacerbated because people make choices against their own interests. For instance, there may be instances where people would be better off taking public transport rather than a car, but still take their car. This is usually attributed to 'status quo bias': people tend to stick with the current situation, even if they would gain by changing.

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[4] Oksana Mont, Matthias Lehner and Eva Heiskanen. Nudging A tool for sustainable behaviour?, SWEDISH ENVIRONMENTAL PROTECTION AGENCY, 2014

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Second, behavioural biases such as the status quo bias may hinder the effectiveness of some policy instruments such as congestion charging: even if the congestion charge is set high enough to make a switch to public transport the optimal choice, people may still stick to using their cars.

Third, the insights derived from the "nudging" approach can help to improve the effectiveness of market based instruments and regulation, but also of "soft" policy measures (Avineri, 2012)[5] such as (sustainable) travel plans, promotion of car sharing, or leveraging social media.

Some examples of tools and insights from behavioural economics that could be useful in this specific context are:

- ✔ Increasing the salience of the variable costs of a private car (for instance, through real-time reporting of the value of fuel consumption) could compensate for some of the behavioural biases that induce people to favour cars.
- ✔ Route planners could propose "sustainable" travel modes as the default option – defaults have a strong impact on the options people choose.
- ✔ People can be helped in the selection of alternatives, by expressing information in such a way that they can translate it directly into benefits and costs, such as expressing automobile fuel consumption in financial terms ("mapping").

WHY A NUDGE INTERVENTION TO ENCOURAGE PUBLIC TRANSPORT?

Implementing a citizenship Nudging intervention means acting on cognitive, social and emotional phenomena, managing them so that, despite their possible distortions and limitations, they become allies capable of directing individual and collective behaviors in more advanced and functional directions to well-being of the person and of society.

Transport planning is firmly embedded in a neoclassical economic framework, which assumes perfect rationality in all decision making. However, this intellectual framework has been questioned by an alternative approach, behavioural economics (whose Nudge approach is just a possible declination), which aims to align economic analysis with insights from other behavioural sciences.

The central message of the behavioural economics approach to policy making is that there are many situations where people run the risk of acting against their own interest. [6]

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[5] Avineri, E., Nudging Travellers to Make Better Choices, The International Choice Modelling Conference, Leeds, 2012

[6] L. Franckx, Nudges in Transport, 2017

The economic and qualitative aspects play a fundamental role in understanding the factors that influence citizens' choices regarding public transport. To promote the latter, every traditional policy making intervention acts both on positive pricing and economic incentives (costs related to fuel, parking, tolls, tickets), and on the improvement of the service offered.[7]

The modus operandi of the administrations needs to fill a gap, starting to understand the cognitive-behavioral factors that guide people's choices. The transport sector, in fact, is no stranger to behaviour change, and applying behavioural techniques to encourage certain behaviours.

The improvement in the quality offered and the change in prices presuppose, in fact, a too idealized economic citizen model, according to which, in terms of transport, individuals make rational, consistent and perfectly informed choices, aiming to maximize their utility through a cost-benefit analysis. Research in behavioral sciences indicates that human decision-making processes, in reality, do not fit this image.

Which behavioral factors, in fact, act in the choices on the use of public transport, making it less attractive compared to other forms of mobility? Researches in this field suggesting many lines of intervention.

- ✓ In terms of transport, *decisions are strongly routine* and, therefore, difficult to modify with approaches that do not take into account the underlying cognitive processes. The whole of their habits, including even the most dysfunctional ones, end up representing a protective and anxiolytic area of comfort from which one only comes out with discomfort and difficulty and rather with gradual and minimal changes.

- ✓ Individuals, for example, overestimate and underestimate travel times and prices linked to specific types of transport. The information provided is often not very salient, opaque and not easy to compare, calling into question the use of heuristics and "mental shortcuts" that influence the cost-benefit calculation, with a predominance for the choice of using private cars.

- ✓ The use of public transport is, in many cases, perceived as the exception from citizens. The ways are influenced by the choices of their peers and tend to conform, an erroneous perception of the spread of the use of buses and subways can be a greater circulation of private cars, while the social dimension and the diffusion of public mobility can encourage them the development and increase of users.

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[7] C. Canepa, La "spinta gentile" del trasporto pubblico, 2014

✓ Regarding pollution, data on the environmental consequences of a single choice are rarely considered by citizens, as they are never immediately available and lack real-time feedback that shows the virtuosity of the habitual use of public mobility.

✓ The different types of transport are correlated with travel experiences that influence the happiness of citizens. It is really difficulty to understand the experience of public transport as a broad phenomenon, in which the expectation of the means, the services offered on board and towards the arrival, as a whole, a very important aspect in the daily life of the citizen.

✓ Some nudge interventions exploit the propensity to suffer social influence through the mechanisms of imitation, conformism, social confrontation and contagion. Several nudging campaigns promoting the use of public transport leverage the use of positive social models from which citizens can draw inspiration. Obviously, the propensity to use public transport also correlates with the tendential orientation of one's own social network of reference. It could indeed be argued that giving the example is not a way to influence others but rather represents the most impactful way to do it. When we don't know what is right to do, we tend to do what others do. Informing people about the behavior of their neighbors can bring unexpected results. So descriptive social norms work better than injunctive ones.

✓ Other types of Nudge intervention tend to compensate and capitalize on the tendency of the human mind to suffer of stringent attention constraints. There are few elements that individuals are able to pay attention before suffering from a cognitive overload that paralyzes their decision-making abilities and induces an avoidance behavior. The consequence of a coerced attentional ability is the tendency to neglect potentially important information in preparing one's own decisions with respect to, for example, the best modes of transport to deal with one's daily journeys. In fact, some studies show that individuals tend to neglect or underestimate the information relating to the costs associated with the use of the car for their journeys in the city between wear, fuel, parking, possible penalties, risk of Accidents, etc. A nudge strategy could point to making this implicit information salient, for example by carrying out leafleting on cars parked in the center with postcards that recall the format and colors of a fine and instead remind the driver how much it usually costs them to use the car, especially if the stop had been really punishable. A complementary strategy could be one that aims to make salient information (for example with an urban mobility management app that also has a pedometer function) information about the calories consumed and the fitness gained thanks to the greater physical activity that inevitably involves the leave the car in the garage.

✓ The propensity to suffer from cognitive overload, combined with the laziness that typically characterizes human behaviors, could then inhibit the use of public transport if it requires the coordination of different operations that overall, especially for a neophyte, can be complex and "taxing ". For example, we need to get a ticket, find out about public transport routes, calculate arrival times, plan connections, etc. It is evident that for a limited (bounded) mind these operations can be highly discouraging.

✓ Another human tendency that limits the propensity to evolved mobility concerns the difficulty in coordinating with other people. It is sufficient to observe the dysfunctional behavior of the passengers that slow down the flow of other passengers, positioning themselves in front of the vehicle doors, to guess how much waste of resources is attributable to the deficient ability of coordination among the citizens. At the base of these limitations there is the inability to put oneself in the shoes of others, not feeling responsible, the fear of losing opportunities for the benefit of others, the fear of being exploited, interpersonal distrust, inhibiting communication.

✓ Finally, other types of Nudge propose to manage those phenomena that facilitate the use of public transport in relation to the human being's tendency to maintain a positive self-image by experiencing emotionally rewarding and enhancing situations. The nudge interventions to promote public transport should aim in the same direction through "Emotional Nudges" capable of inducing a positive affective state in those who use public transport, countering the tendency to associate the places and instruments of public transport with a feeling of lack of satisfaction.

NUDGING TIPS

According to Cass Sunstein,[8] the co-author of Nudge, there are a lot of them:

Default rules
Setting the most beneficial to customers (as perceived by the initiative owners) as a default—most of us automatically accept them without giving second thought. Application may include automatic enrolment in programmes, including education, health, transport and savings.
Simplification
Making programmes intuitive. This may include simplification of (at times numerous and lengthy) forms and regulations (which only experts dare 'decoding')
Uses of social norms
For example, by emphasizing what most people do—putting phrases like 'most people in your area reach the workplace by metro, bus, bycicle or 'most people pay their taxes ' or 'tourist rewards' in the communication with customers
Increases in ease and convenience
The benefit shall be presented up-front, to immediately   attract attention, without much ef-fort. Applications may include, for example, making low-cost options;

Disclosure	
For example, the economic or environmental costs associated with energy use, or the full cost of certain credit cards, or making easily available large amounts of data, through the Internet.	
Warnings	
We know they work—campaign against smoking, with its emotional appeal through graphic means (as for cigarettes), is an example. Other visual effects, such as large fonts, bold letters, and bright colours can be effective in triggering people's attention. Generally, visual effects can be used not only to warn but to encourage certain behaviour: for example, the use of flags can affect tension between communities, feeding into reconciliation strategies (as shown in the Northern Ireland Government's Shared Future policy).	
Precommitment strategies	
These are nudges by which people commit to a certain course of action at a precise future moment in time—it is thought to better motivate action and to reduce procrastination.	
Reminders	
For example, by e-mail or text message. The purposes may broadly vary—from paying bills, to taking medicines. It also has a nice touch which is good for building consumer trust and confidence. Closely related approach is 'prompted choice', by which people are not required to choose, but asked whether they want to choose (for example, clean energy, a privacy setting on computer, or to be organ donors.	
Eliciting implementation intentions	
Asking questions like 'do you plan to vote?' or. Emphasizing people's identity can also be effective ('you are a voter, as your past practices suggest'). There are some interesting outcomes, for example in encouraging people towards more sustainable transport habits by leaving their cars at home and use public transport, by using this nudge.	
Informing people of the nature and consequences of their own past choices	
Private and public institutions often have a great deal of information about people's own past choices – for example, their expenditures on health care or on public mobility.	

PEOPLE'S BEHAVIOUR PATTERNS

Preferred mode of transport is a status symbol for some social groups; particularly car ownership, as private mobility possesses a utilitarian function, but also a self-expressive function. Research has shown that, alongside the functional elements, motives for car driving were symbolic and affective elements – cars are seen as prestige and higher status.[9]

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[9] L. Pickup, The psychology of sustainable mobility, August 7, 2017

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People are guided by three goals: gain, hedonic and normative. The potential solutions for resolving the conflicts between the three types of goals include making sustainable mobility less threatening for hedonic and gain goal achievement and strengthening normative goals to do the right thing. However, providing hedonic or gain incentives to encourage more sustainable lifestyles may usurp people's intrinsic motivations. It is said that to affect long-term change the strategy should be to pursue normative goals and keep people believing they are doing the right thing by changing their behaviour.

How can we better understand and predict the psychological factors that influence our mobility mind-sets; for example in leading to people adopting more sustainable ways of travelling?

- ✓ Gain goals – individuals focus on whether they gain finances, status and power from a particular way of behaving.

- ✓ Hedonic goals – individuals focus on whether a particular way of behaving would take undue effort, be costly and too difficult for them. So hedonic behaviour only occurs when it is fun, easy and not costly.

- ✓ Normative goals – people should engage in 'doing the right thing'; the costliness of behaviour is ignored.

So given the diversity of these 3 goals, we can foresee 3 different types of behaviour arising from one situation. Resolving the conflicts between these goals is similar to economic choice models in mobility economics, trading of the pros and cons of different behaviours with a psychological rather than economic framework. Two different solutions are foreseen to resolve the conflict between the 3 types of goals:

- ✓ Making sustainable mobility less threatening for hedonic and gain goal achievement – making mobility more fun, easy and less costly.

- ✓ Strengthening the normative goals to do the right thing, pushing hedonic and gain goals into the background.

We can see both strategies being used in sustainable mobility policy development.

For example, let us take initiatives to change behaviour by promoting soft mobility modes or reduced mobility prices: the aim here has been to 'break the car habit' and develop positive associations towards using public transport. However, the results in many cases show changes only in the short term. Providing hedonic or gain incentives to get people to change to a more sustainably mobile lifestyle 'overcrowds' the intrinsic motivation and has the opposite impact of strengthening the extrinsic motivation to act in a normative way. To achieve longer term changes to encourage safer and more sustainable behaviours, the important strategy to pursue is to keep the normative goals active: people believing they are doing the right thing.

Conclusions

When evaluating the effectiveness of nudges, a variety of aspects have to be taken into account. Cognitive psychology offers a rationale of how nudges work, but when it comes to practical implementation, it becomes clear that the 'nudgee's' personal attributes and social circumstances as well as the broader perception of the nudge in society can result in a range of context-specific outcomes for the same tool, including potentially unexpected countervailing effects.[10]Thus, the effectiveness and acceptability of economic interventions and demand management measures to change travel behaviour may be enhanced if more consideration and emphasis is given to the design of the information context.[11] In particular, carefully framing how information and incentives are presented to individuals, as well as considering when such interventions should occur, can have a significant impact on the travel choices they make.

For the promotion of public mobility, behavioral interventions could represent a simple and inexpensive tool – if compared to the necessary technological development.

Architectures of choices, suitable are therefore probably the most congenial alternatives in contexts dominated by explicit rules and impositions, with the consequence of being able in part to do without regulation as the primary instrument of orientation of behavior.

In some cases, synergy between the pricing and a soft intervention by nudges could be an effective policy; 'Getting the prices right' by taxes and subsidies could be the first step of a transport policy; however the effect of pricing policies on behavioural change is limited – partly because of individuals' bounded rationality; travellers do not always associate their behaviour with the relevant costs and this slows down the process of behavioural change.

Nudges can help individuals to overcome these cognitive biases, to highlight the better choices for them, and to increase the effect and speed of behavioural change - without restricting choices or limiting travellers' freedom of choice.

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[10] G. Michalek, G. Meran, R. Schwarze, Ö. Yildiz. Nudging as a new "soft" tool in environmental policy. An analysis based on insights from cognitive and social psychology, Discussion Paper Series Recap15, No 21 – October 2015

[11] Avineri, E., Nudging Travellers to Make Better Choices, The International Choice Modelling Conference, Leeds, 2012

Nudge

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Sustainable mobility best practices
around the world:
the nudging

Preface

Nudges increasingly support public interventions in the field of sustainable mobility; they do not attempt to change the value system or increase the amount of information available, instead they focus on those enabling behaviors and private decisions that are good for individuals and consequently also for society.

This document constitutes a selection among the best practices of international level which have as their common denominator the use of one or more nudge mechanisms, designed on the basis of intuitions of cognitive and social psychology and characterized, more generally and only recently, by the use of inductive approaches deriving from the behavioral economy. The selected experiences come from all continents and, therefore, are not only in the logic of cultures more closely related to the context and the Italian mentality.

The objective of the collection was to define which practical experiences on nudging exist in the field of mobility, in which behavioral contexts the "gentle push" is most efficient and effective and what are the critical factors for success. Even if the nudge promotes an empirical approach, the evaluation and monitoring of the experience represent the key component of each intervention designed with the awareness that the actual results of the interventions - even more if inserted in specific local contexts - remain difficult to measure, especially in the medium-long term.

It should also be remembered that even where it is possible to demonstrate visible or significant effects, as in some of the cases treated, they cannot be indiscriminately generalized in a different context or in a universe of population larger than the one investigated. The unknown is represented by the complexity of human behaviour and the diversity of factors that influence it. This means that the impact of the political decisions taken could be difficult to estimate ex ante even in the presence of solid empirical conclusions.

The best practices selected are presented according to the nudge mechanisms adopted:

      FRAMING & **RATING**

      CONTEXT

      SOCIAL LABELLING

      PRICING AND REWARD

FRAMING & RATING	
CITY	**Cockburn, Western Australia**
PROMOTER	Department of Transport and Department of Sport and Recreation (duration: over six months)
TARGET	10000 households
STAKEHOLDERS INVOLVED	Local Authorities and Public Transport Companies
GOAL	Shift form Cars to Buses/walking
TYPES OF INTERVENTION	Individual coaching and goal setting to get people started; to encourage intrinsic motivation; to help set specific actions; and to identify support people to maintain new behaviours.
NUDGING MECHANISMS	People received tailored resources, including location, specific bus timetables for each household and incentives plus up to three coaching calls. Used social networks as support and motivation (through community events, social media). Prompts used in follow up phone/email reminders. Made it easy by providing relevant information about local groups and services.
RESULTS/LESSONS LEARNED	Average daily increase of 12 minutes/ per person per day

CITY	**Durham, North Carolina**
PROMOTER	City Council
TARGET	1,500 downtown workers over a period of six months in 2017-2018
STAKEHOLDERS INVOLVED	Organisations, Public Transport Companies, Car Agencies, City Leaders, Universities
GOAL	Decrease Utilization of Private Cars
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Shift Downtown Commuters out of their cars to cut down single-person vehicle trips into the city's core by 5 percent
TYPES OF INTERVENTION	With the Program, the city emailed personalized route maps from individuals' home to work addresses (which participants provided by opting in) that showed routes by bike, a GoDurham bus, and walking, compared to driving. The emails also included trip time comparisons and listed the potential benefits of alternatives to solo driving, including the weight loss potential, the savings in gas money, and the time commuters could reclaim from the city's infamous traffic.
NUDGING MECHANISMS	Positive Reinforcement and Indirect Hints
RESULTS/LESSONS LEARNED	The share of Commuters who reported driving to work alone was 12 percent lower among those who received the alternate commute maps than those who didn't, according to post-mortem participant surveys. And the solo-driving share dropped by 16 percent among those who received the maps and took transit for prizes

CITY	Geelong, Victoria
PROMOTER	Victoria Walks, VicHealth and Active City
TARGET	1,200 employees and 1,000 residents
STAKEHOLDERS INVOLVED	Local Authorities, Citizens, Health Experts
GOAL	To modify Travel Choices
DESCRIPTION SOLUTION/ SERVICE/ POLICY	People engaged to become more physically active, including use of active travel. Large-scale intervention delivered over 12 months.
TYPES OF INTERVENTION	Phone-based Coaching Intervention supported by local Referrals
NUDGING MECHANISMS	Coaching to identify intrinsic motivation.
RESULTS/LESSONS LEARNED	8.6 minute increase in average daily activity (20% increase in activity). 40% of people choosing more walking (for exercise). High participation rates by using opt-out (every employee invited to participate).

CITY	Flanders, Belgium
PROMOTER	Local Authorities
TARGET	670 Citizens Involved Duration: 3 months in 2012/2013
STAKEHOLDERS INVOLVED	Urban Transport Planners, Local Authorities, Citizens
GOAL	Influencing mode choice devoted to free public transport
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Impact of public transport at a reduced and zero price on the modal shares for individuals
TYPES OF INTERVENTION	Survey distributed through Internet
NUDGING MECHANISMS	The participants were forced to engage in a cognitive and deliberate evaluation of the alternatives before making a decision, thereby making non-affective, more cognitive evaluations available and accessible. In particular, the participants were first asked to which degree they prefer to spend less for a random purchase. Consequently, the respondents were forced to make an internal comparison of the different modes.
RESULTS/LESSONS LEARNED	A zero-price effect was found for the work/school motive and the shopping motive at a 5% significance level and for the recreational motive at a 10% significance level. This implies that the use of public transport will increase significantly when it is provided for free, and a change in relative prices does not provoke significant changes in the modal split because of the insignificance of the price effect. Thus, the subsidizing of public transport with the aim of making it free seems to be an effective measure to increase the use of public transport.

CONTEXT	
CITY	**Portland, USA**
PROMOTER	Portland Bureau of Transportation Duration 3 weeks in 2016
TARGET	Citizens, Tourists
STAKEHOLDERS INVOLVED	Associations, Local Authorities, Urban Planners
GOAL	Increase the Utilization of Bikes
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Design of Infrastructures
TYPES OF INTERVENTION	Massive introduction of 1000 orange bikes
NUDGING MECHANISMS	EAST Framework that is to help people try a new behavior, you must make it Easy, Attractive, Social, and Timely
RESULTS/LESSONS LEARNED	Biketown stats after three weeks*: Miles traveled: 108,316 Logged 4000 bike in a week Trips by annual pass holders: 17085 Trips by single ride pass holders: 16766 Trips by day ride pass holders: 11957 Trips per bike per day: 1.9 Minutes ridden: 1,310,416

CITY	Seoul
PROMOTER	Seoul Metropolitan Government 2014 Programme
TARGET	Children and their families
STAKEHOLDERS INVOLVED	Schools, Government organizations and local authorities
GOAL	Encouraging residents to take public transportation
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Decorated four buses to look like the popular cartoon 'TAYO' for Children's Day, an annual event
TYPES OF INTERVENTION	100 buses decorated after 2 months (duration of the intervention) Parents and children can use the Daum map to check run times and the real-time locations of each vehicle.
NUDGING MECHANISMS	Kid-friendly nudge
RESULTS/LESSONS LEARNED	The event drew over 40,000 riders, including many parents accompanying their young kids. This response led to an unexpected consequence: parents who rode the bus with their kids kept riding after the promotion ended. Every day 400 people hopped on each bus.

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CITY	Cambridge, UK
PROMOTER	SNC Lavalin Group and Atkins Global
TARGET	Citizens, Advocacy Groups, Private and Public Transport Companies
STAKEHOLDERS INVOLVED	Organisations, Public Transport Companies, Car Agencies
GOAL	Increase on-demand transport service in Cambridge
DESCRIPTION SOLUTION/ SERVICE/ POLICY	2 weeks qualitative study focusing on a new on-demand commuter shuttle service. The Service provided participants with a Multi-modal Commuter Transport that brings them to and from work Customers located along a linear route Stops are positioned on the main road, facilitating pick from other conurbations so to minimise the time added to customers journeys
TYPES OF INTERVENTION	Intelligent Mobility Solutions
NUDGING MECHANISMS	Social Changing defaults
RESULTS/LESSONS LEARNED	The two week trial provided lots of lessons learned and opened new transport partner opportunities and genuine interest from Public

CITY	Darebin, Melbourne Region, Australia
PROMOTER	City Council
TARGET	Citizens
STAKEHOLDERS INVOLVED	Local Authorities, urban transport planners
GOAL	Pedestrianisation
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Project focused on reducing car use for local trips to neighbourhood centres.
TYPES OF INTERVENTION	Footpath stencils (prompts), pedestrian wayfinding (prompts and timely information, also building social norms), newsletters for residents, kits for new tenants. Strategies for making walking easier included an incentive based home delivery service for groceries so that people didn't need to drive to the local market; behaviour change interventions focusing on shopping trips.
NUDGING MECHANISMS	Social Changing Defaults
RESULTS/LESSONS LEARNED	No outcome evaluation data available. Delivered over three years.

SOCIAL LABELLING	
CITY	ROTTERDAM
PROMOTER	Collective Innovation for Public Transport in European Cities Working Group (in brief CIPTEC)
TARGET	6% of all Passengers of Buses
STAKEHOLDERS INVOLVED	Public Transport Companies, Citizens
GOAL	Encourage bus users in Rotterdam to take the bus more often
TYPES OF INTERVENTION	Label people as environmentally friendly individuals on free travel card holders. Six Buses line with experimental travel cards holder for 4000 people just on three lines. Pre-test message: "Naturally, I take public transport. During the week or during the weekend, you travel quite sustainably" Measure: bus payment records passengers per hour, per bus line 21 months before and 1 month after the intervention About 13000 observations per bus line
NUDGING MECHANISMS	Social Labelling[12] and Changing Defaults
RESULTS/LESSONS LEARNED	Increase of bus rides between pre e post intervention on experimental lines Post - pre-intervention bus use 0.89% larger on experimental vs. standard lines = 120 -340 rides
CITY	**Oxfordshire, UK**
PROMOTER	Oxfordshire County Council
TARGET	Children
STAKEHOLDERS INVOLVED	Schools, public administrations and authorities
GOAL	More Children walking to school
TYPES OF INTERVENTION	WOW Travel Tracker is used by schools participating in WOW, the year-round walk to school challenge, to record daily pupil journeys and earn their monthly WOW badges. Each class is provided with an engaging dashboard to see which classes are leading the way in active travel. Pupils log daily journeys to school on the system. The WOW Travel Tracker also confirms which pupils have walked enough to earn a badge each month and these key statistics can be used to earn your school a Modeshift STARS award
NUDGING MECHANISMS	Social Norms and Competition
RESULTS/LESSONS LEARNED	Walking has increased from 47% to 54%; Car trips right to the school have fallen from 31% to 16%; Park and Stride has increased from 7% to 15%

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[12] Making a statement about an individual's identity, with the aim of eliciting from the individual, behavior that is congruent with that identity.

CITY	Boroondara, Victoria
PROMOTER	Camberwell Community Centre City Council
TARGET	140 people involved
STAKEHOLDERS INVOLVED	Local Authorities
GOAL	To replace short Driving Trips with Walking
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Residents logged their walking journeys on a smartphone app. The app measured changes in walking activity following infrastructure upgrades in key locations
TYPES OF INTERVENTION	Prompted self-monitoring and goal setting by recording walking information. Received timely feedback on walking distances and times. Wayfinding and capital works reduced 'friction costs' of walking by making it more direct, informative and pleasant.
NUDGING MECHANISMS	Social Labelling
RESULTS/LESSONS LEARNED	88% walked more often and 64% drove less. Significant increases in walking on upgraded streets.

CITY	LONDON
PROMOTER	Borough of Hounslow
TARGET	Families with Children
STAKEHOLDERS INVOLVED	Local Authorities,Citizens
GOAL	No Driving to go to School
DESCRIPTION SOLUTION/ SERVICE/ POLICY	London Borough targeted those commencing school several months prior to the school year to get families to plan for active travel to school instead of driving. Once school started, the follow up campaign offered incentives.
TYPES OF INTERVENTION	Targeted message when people are most receptive at a key change in life. Personalised advice to increase motivation and participation.
NUDGING MECHANISMS	Social Norms and Gamification Engagement
RESULTS/LESSONS LEARNED	Not available

CITY	The Hague, The Netherlands
PROMOTER	HTM, Urban Public Transport Operator of The Hague
TARGET	Citizens
STAKEHOLDERS INVOLVED	Organisations, Public Transport Companies

The SaMBA project is co-financed by the European Regional Development Fund through the Interreg Alpine Space programme.

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GOAL	Changing Travel Choices Information to obtain: Congestion reduction. Road and parking savings. Consumer savings. Environmental protection. Efficient land use. Improve equity
TYPES OF INTERVENTION	Installation of monitors providing realtime information on tram arrival stops
NUDGING MECHANISMS	Social Norms
RESULTS/LESSONS LEARNED	The perceived wait time decreased by 20%, and that this likely to Increase Transit Ridership.

CITY	**Sidney, Australia**
PROMOTER	New South Wales (NSW) government's Behavioral Insights Unit and Centre for Transport Planning and Product Development at NSW Department of Transport Duration: nine weeks
TARGET	Eight Major Organizations, which employed well over 1,000 staff who commuted to work in central Sydney
STAKEHOLDERS INVOLVED	NSW Department of Premier and Cabinet, NSW Transportation Companies, Organizations, Local Authorities
GOAL	To increment transit choices towards walking
TYPES OF INTERVENTION	Prompting managers to discuss and model flexible working.
NUDGING MECHANISMS	Social Labelling and Competition
RESULTS/LESSONS LEARNED	Following the calendar change there was a 3.3-percentage-point increase in the number of off-peak arrivals and departures. Following this, we ran the competition for nine weeks — enough time - to disrupt old habits and form new ones. Even two months after the competition had finished, there was still a 7.1-percentage-point increase in the number of off-peak arrivals and departures.

PRICING and REWARD

CITY	**Singapore**
PROMOTER	The Singapore Land Transport Authority 2012 programme
TARGET	Employees
STAKEHOLDERS INVOLVED	Urban Transport Planners, Organisations
GOAL	Incentivisation to shift PT users from onpeak to off-peak. The goal is to make commuters more aware by 'nudging' them towards more consideration for each other… [and] putting a smile on everyone's face
TYPES OF INTERVENTION	The incentives used are based on earning credits for each trip taken during

	weekdays for both on-peak and off-peak travel, but the off-peak trips earn 3 times the credits of on-peak trip
NUDGING MECHANISMS	Positive pricing and Incentives
RESULTS/LESSONS LEARNED	Reduction in peak hour congestion. In particular the result was a 10% shift from onpeak to off-peak travel.

CITY	Seattle, Washington State, USA
PROMOTER	The Seattle Department of Transportation
TARGET	23 families in the Pilot Programme
STAKEHOLDERS INVOLVED	Local Authorities, Citizens
GOAL	Incentivizing individual to take actions for efficient transport
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Way-To-Go Household Car Reduction Program Shorter trips, shift mode, reduce vehicle trips, reduce vehicle ownership
TYPES OF INTERVENTION	Seattle's Strategic Planning Office paid the participating families $85 per week for keeping a daily dairy of their transportation activities and expenses during the six weeks that they did not use their extra cars.
NUDGING MECHANISMS	Incentives
RESULTS/LESSONS LEARNED	The 23 Families in the pilot program made nearly 200 fewer car weekly trips totaling 1,260 miles of travel avoided. 2) At lease four families decided to sell the car.

CITY	Bangalore, India
PROMOTER	Stanford University and Infosys Duration: six months among 2008 and 2009
TARGET	14000 Employees of Infosys Technologies in Bangalore
STAKEHOLDERS INVOLVED	Organizations/Companies/Advocacy Groups
GOAL	Incentivisation to shift to earlier Arrival Times
TYPES OF INTERVENTION	Lottery tickets were combined with transit passes in a pilot project to reduce peak hour travel. Implemented a bus ticket lottery wherein the more a passenger rides during off-peak times, the more chances he/she has to win. This field experiment provides a high degree of external validity.
NUDGING MECHANISMS	Incentives and positive pricing
RESULTS/LESSONS LEARNED	This system has shifted 17% of Commuters away from peak hour travel and proven to be economically sustainable. It relies on research suggesting people are risk-seeking when the stakes are small. The incentive is also sensitive to distance. The further you ride, the more chances at winning you earn. This

strategy helps to target more choice riders living on the peripheries of a city where ridership is naturally lower.

The number of Commuters arriving in various pre-rush-hour periods doubled. The average morning commute time per bus commuter, averaged over all bus commuters, dropped from 71 minutes to 54 minutes. This translates to about 2600 person-hours per day saved on the morning commute.

Over the six months of the experiment the number of bus commuters who arrived before 9 a.m. increased by almost 30%.

CITY	Osaka, Japan
PROMOTER	Tokyo Institute of Technology in 2003
TARGET	Drivers. 43 drivers was carried out, in which a one-month free bus ticket was given to 23 drivers in an experimental group but not to 20 drivers in a control group
STAKEHOLDERS INVOLVED	Local Authorities, urban transport planners
GOAL	Shift from car to bus
TYPES OF INTERVENTION	One-month free bus ticket to habitual drivers
NUDGING MECHANISMS	Incentives and positive pricing
RESULTS/LESSONS LEARNED	The results showed that attitudes toward bus were more positive and that the frequency of bus use increased, whereas the habits of using automobile decreased from before the intervention, even one month after the intervention period. Furthermore, the increase in habitual bus use had the largest effect on the increase in the frequency of bus use. The results suggest that a temporary structural change, such as offering auto drivers a temporary free bus ticket, may be an important tool for converting automotive travel demand to public-transport travel demand.

CITY	Sheffield, UK
PROMOTER	Greener Journeys Behaviour Change Lab
TARGET	Citizens
STAKEHOLDERS INVOLVED	Organisations, Public Transport Companies, Car Agencies
GOAL	Achieve an 80% reduction in CO2 emissions by 2050
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Direct Contact with Drivers around negative experiences such as parking, sitting in traffic or paying for petrol, offering them a Voucher incentive to try the bus next time they came into the city
TYPES OF INTERVENTION	Modal Shift from Car to Buses
NUDGING MECHANISMS	Incentives
RESULTS/LESSONS LEARNED	A strong Voucher Redemption rate at 15%, 32% said their trial trip was better than expected (and only 2% said it was worse), 57% of very infrequent bus

users went on to use the bus again within a few weeks, 56% said it made them more likely to use the bus in future.
It is possible to effectively target people who are not already regular bus users, and to encourage them to sample the experience of using the bus via the offer of a free ticket. 51% of people involved would not have travelled by bus on the day they used the voucher

CITY	Leicester, UK
PROMOTER	Greener Journeys Behaviour Change Lab
TARGET	Citizens
STAKEHOLDERS INVOLVED	Local Authorities, Bus Companies, Charities and Community Groups, Confederation for Passenger Transport
GOAL	Reduction in CO2 emissions by 2050
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Recruitment of a network of community ambassadors to promote bus travel to their friends and neighbours
TYPES OF INTERVENTION	Targeted people living on and around five specific bus routes, via community events and at venues like libraries and supermarkets, handing out tailored information packs and free ticket vouchers to the people they spoke to.
NUDGING MECHANISMS	Voucher Incentives
RESULTS/LESSONS LEARNED	Extremely High Voucher Redemption at 52%, 45% said their trial trip was better than expected, 53% of very infrequent bus users went on to use the bus again within a few weeks, 67% said it made them more likely to use the bus in future. it is possible to effectively target people who are not already regular bus users, and to encourage them to sample the experience of using the bus via the offer of a free ticket. 24% of people involved would not have travelled by bus on the day they used the voucher; 55% of infrequent bus users made more trips within a few weeks of their free trip Voucher redeemers 21% more likely to use the bus again in the next few months

CITY	Manchester, UK
PROMOTER	Greener Journeys Behaviour Change Lab
TARGET	Citizens
STAKEHOLDERS INVOLVED	Local Authorities, Bus Companies, Charities and Community Groups, Confederation for Passenger Transport
GOAL	Reduction in CO2 emissions by 2050 encouraging people to switch some of their car journeys to bus or coach instead

DESCRIPTION SOLUTION/ SERVICE/ POLICY	Worked with three different community groups to test how 'trusted messengers' could be used to raise the profile of the bus within their communities
TYPES OF INTERVENTION	Modal Shift from Car to Buses
NUDGING MECHANISMS	Voucher Incentives
RESULTS/LESSONS LEARNED	The likely rate of redemption of the vouchers and the proportion redeemed by existing bus users. Generally the redemption rate gained through using street teams was high, and the proportion of existing users was very low, in comparison with industry norms for free ticket giveaways. The key factor that lowers the redemption rate is the validity period of the vouchers – the shorter the period, the less chance people will have to redeem.

CITY	**Sidney, Australia**
PROMOTER	Health Promotion Service and Liverpool Hospital Sustainability Taskforce Duration: from 2011 to 2014
TARGET	About 3000 staff people involved during the three years
STAKEHOLDERS INVOLVED	Health Experts, Public Authorities, Transport Companies
GOAL	To promote active forms of transport and decrease the proportion of staff private driving to work by 10% by 2014
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Mix of strategies including policy (e.g. completing a parking management study to inform a new parking policy, public transport ticket salary deduction/sacrifice schemes), infrastructure (e.g. provision of end of trip facilities, marking of carpooling spaces in staff car park)
TYPES OF INTERVENTION	Multiple interventions undertaken, with a focus on personalised journey planning, end of trip facilities, subsidised public transport tickets. Events and active travel campaigns.
NUDGING MECHANISMS	Incentives and positive pricing
RESULTS/LESSONS LEARNED	Evaluated outcomes (statistically significant) using travel survey data: 4-6% reduction in car trips and associated increase in walking and cycling trips. Compared to baseline, after adjusting for distances staff lived from work staff had 33% greater odds of travelling to work via active modes in 2012, and 50% greater odds in 2013

CITY	**Vancouver, Canada**
PROMOTER	TransLINK, BIT, Alta Planning + Design (2015 intervention)
TARGET	Population of Metro Vancounver
STAKEHOLDERS INVOLVED	Associations, Local Authorities, Transportation Companies,
GOAL	To encourage people to make use of the transportation systems in place - to improve transit ridership

DESCRIPTION SOLUTION/ SERVICE/ POLICY	A new way to approach transportation demand management; understanding and addressing the individual micro-behaviours or decisions that potential users make on a daily basis
TYPES OF INTERVENTION	Make the ride social, gamification
NUDGING MECHANISMS	Incentives and removal of barriers based on new perceptions
RESULTS/LESSONS LEARNED	Not available

CITY	Tallinn, Estonia
PROMOTER	City of Tallinn and Tallinn Development and Training Centre
TARGET	1500 households
STAKEHOLDERS INVOLVED	Professionals, Decision Makers and Researchers, Media Partners
GOAL	Modal shift Objective from Car to Public Transport
DESCRIPTION SOLUTION/ SERVICE/ POLICY	Introduction of a free-fare Public Transport (FFPT)
TYPES OF INTERVENTION	Face-to-Face Interviews
NUDGING MECHANISMS	Positive pricing applied and Mechanisms of Involvement through Travel Satisfaction
RESULTS/LESSONS LEARNED	Almost a year after the introduction of FFPT, public transport usage increased by 14 % and there is evidence that the mobility of low-income residents has improved. The effect of FFPT on ridership is substantially lower than those reported in previous studies due to the good level of service provision, high public transport usage and low public transport fees that existed already prior to the FFPT.