Focus session

A2: Rediscover walking and cycling in urban environment (after COVID)

16.00–17.30

TRAFICOM Finnish Transport and Communications Agency

eParking.fi

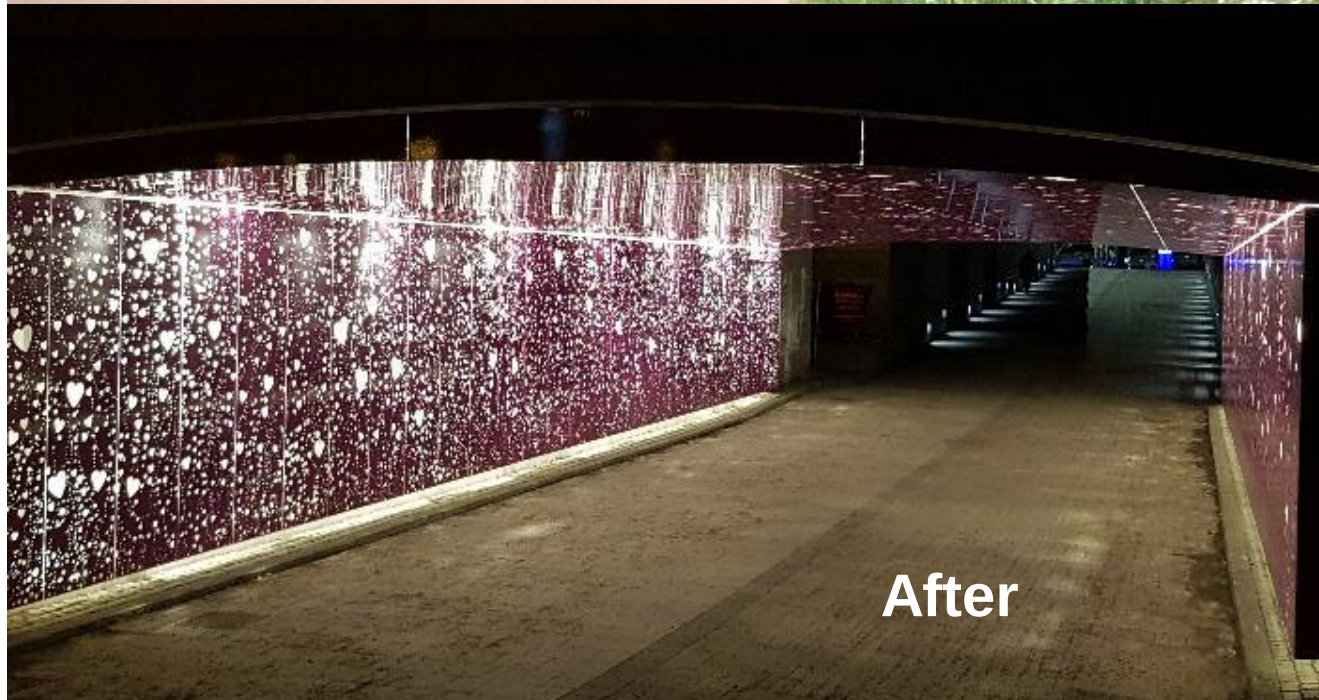
SITOWISE The Smart City Company

Regional Council of Southwest Finland

How to improve walking and cycling environment – quickly and efficiently

Mette Granberg
Transport system specialist
Helsinki Region Transport HSL

Infrastructure makes all the difference

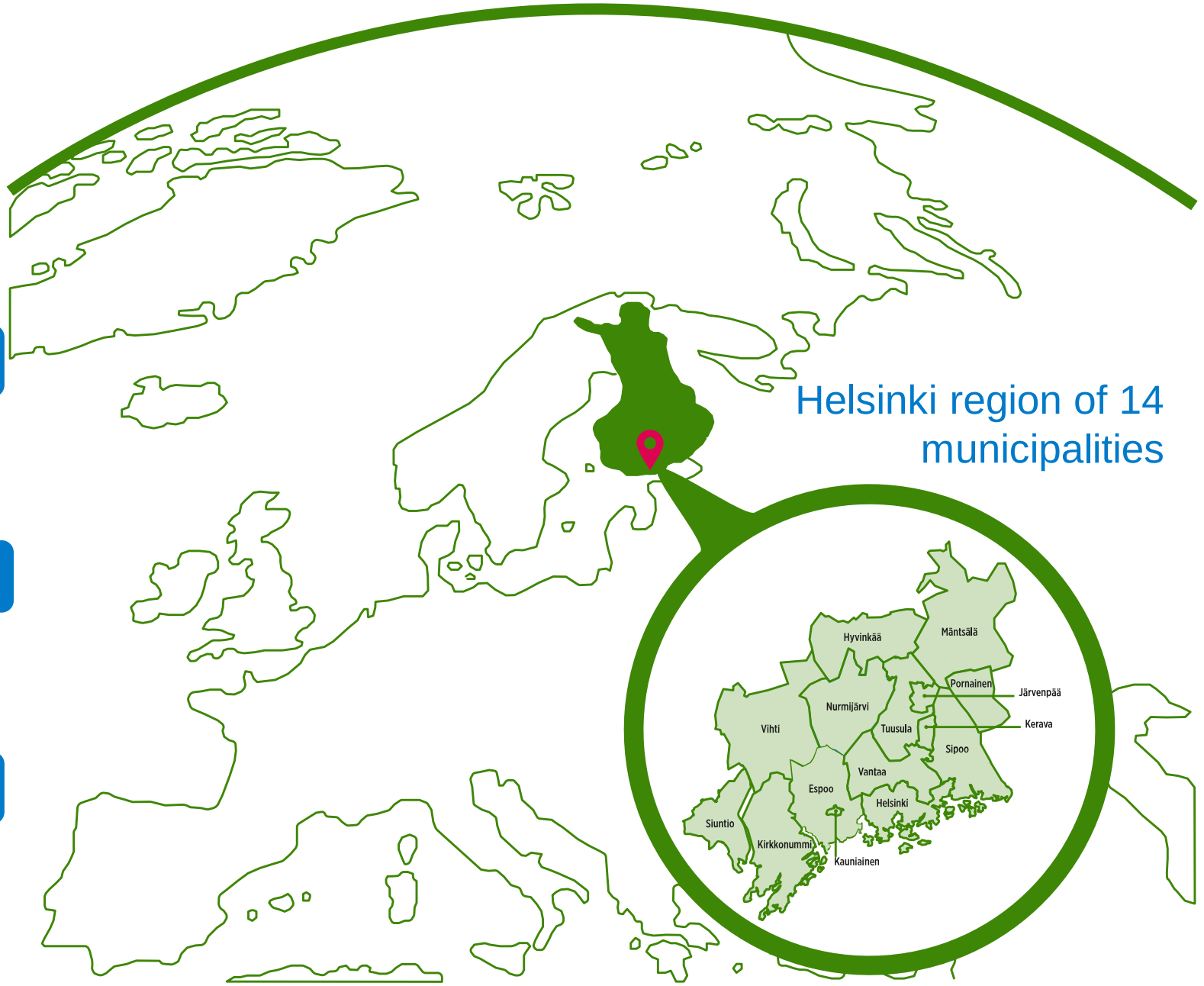


Contents

WHAT AND WHY?

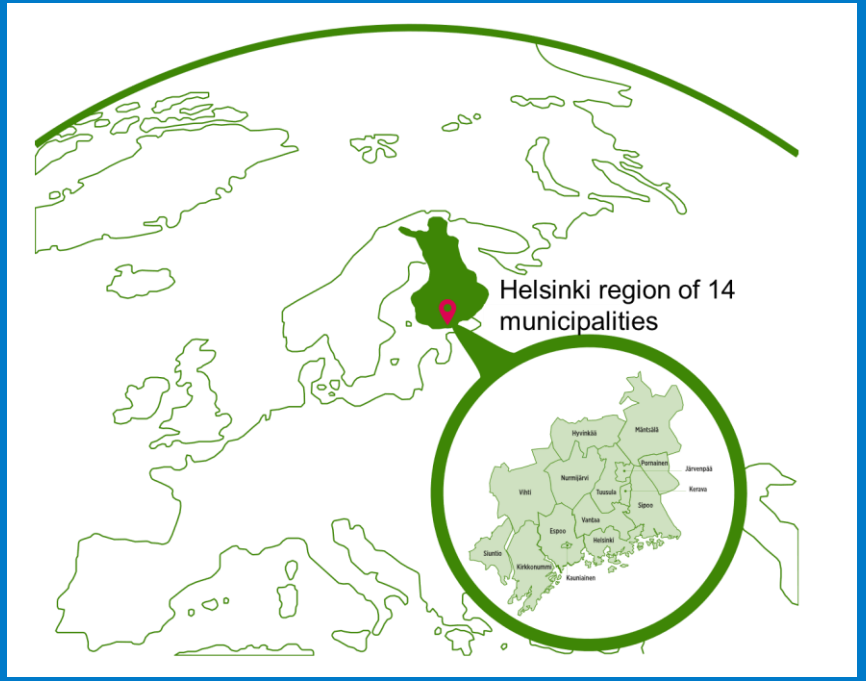
CASE STUDIES

LESSONS LEARNT



What and why?

Background



“By being sweet to the pedestrian and the cyclist you hit five birds with one stone – you get a lively city, you get an attractive city, you get a safe city, you get a sustainable city, and you get a city that’s good for your health.”

–Jan Gehl

HSL HRT

75%

Of issues affecting health occur outside the health sector

7.5 billion

Annual costs of inactivity in Finland

Sources: Tapani Melkas (2013). The health in all policies principle (in Finnish with an English abstract).
Vasankari et al: Costs of physical activity are increasing – the societal costs of physical inactivity and poor physical fitness (in Finnish with an English abstract, Publications of the Government´s analysis, assessment and research activities 31/2018)

81%

Are ready to walk a longer distance if the enviroment is pleasant

Source: [Helsinki regional barometer study 2021, N=3690]

Program for agile piloting: quick experiments

June-October 2021

→ Site-by-site, short timeframe, low costs

→ Promoting walking and cycling in co-operation with state and municipalities

→ Learning by doing, documenting and spreading the lessons learnt

Improving the mobility environment by site-specific, cost-effective measures to make it more attractive for pedestrians and cyclists: e.g., colour, light, plantings.

Approaches that inspired the program

Tactical urbanism: short-term/temporary changes

Placemaking: improving the attractiveness of public spaces

Experimental culture: learning by doing, agility, tolerating uncertainty

Program for quick experiments

- → Can be both temporary and permanent
- → Concentrates on improving the mobility environment (incl. public places)
- → Emphasising impact assessment and learning by doing
- → Bringing agility to the public sector
- → A regional measure with local impacts

Measure in the Helsinki region land use housing and transport plan 2019

[Helsinki region land use housing and transport plan 2019]

Parties in the program

- **State**: co-funding (<50%)
- **Region's municipalities**: site-specific improvements (>50%)
- **Helsinki region transport**: co-ordinating the program, support in impact assessment, reporting
- **Consultant** (Motiva Ltd.): facilitating the program (e.g., website, organising events, communication)
- **Inhabitants**: views and behaviour in impact assessment
- Others e.g., companies, associations: supporting the implementation

HSL HRT

Case studies

what did we achieve?

In short

→ 6 site-specific experiments in 4 municipalities

→ impact assessment; happy, active people

→ Co-operation

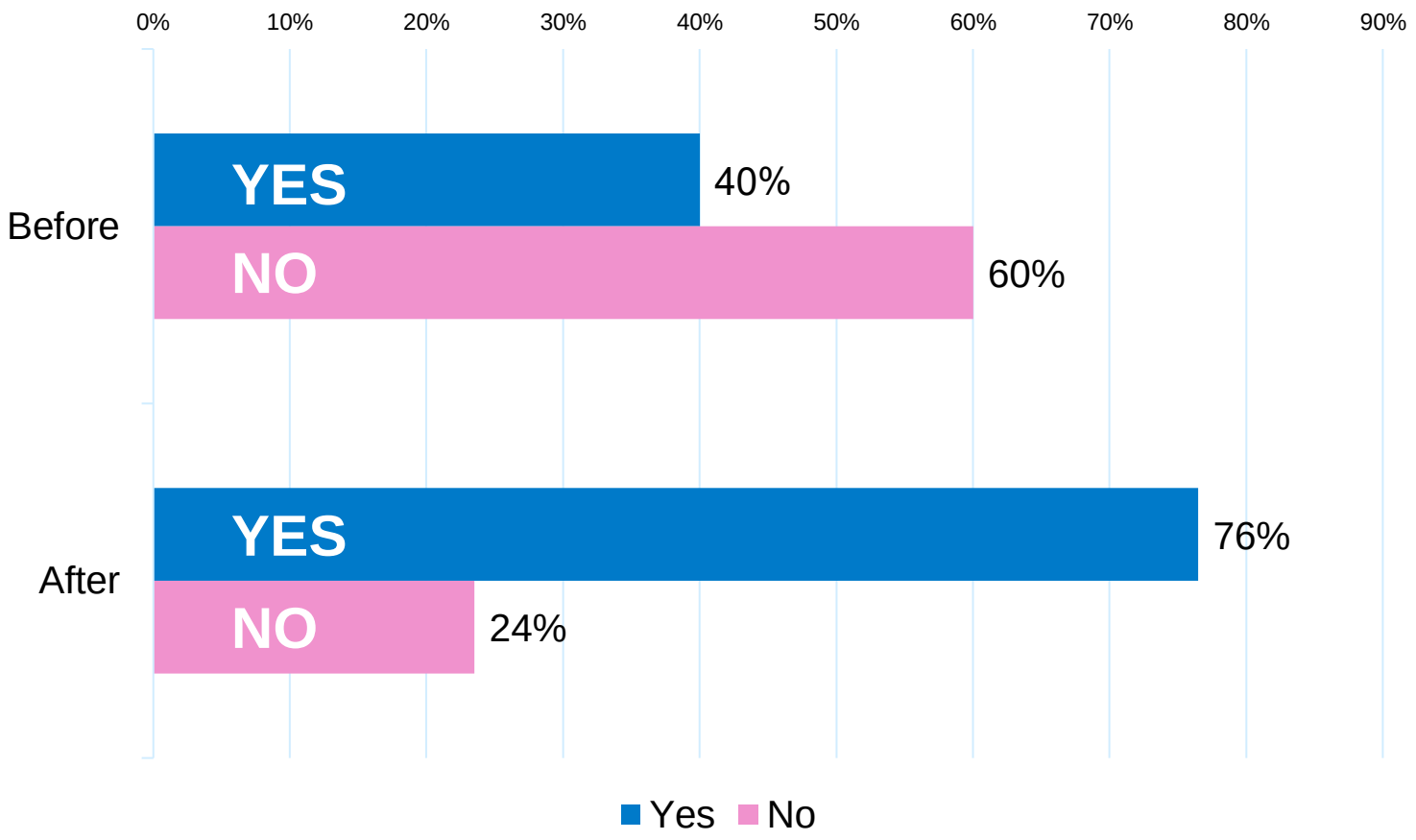
Espoo

Street paintings in Kauppamäki living street (20km/h), Espoo

- Improving pedestrians' feeling of safety, reducing speeds and speeding
- Emphasising the characteristics of the street through art
- In co-operation with the city of Espoo and a car repair chain Autoklinikka Ltd, urban culture association Mimmit Peinttaa painted the art

Espoo

Did you know that pedestrians are allowed to walk on a living street and drivers must give way to pedestrians?



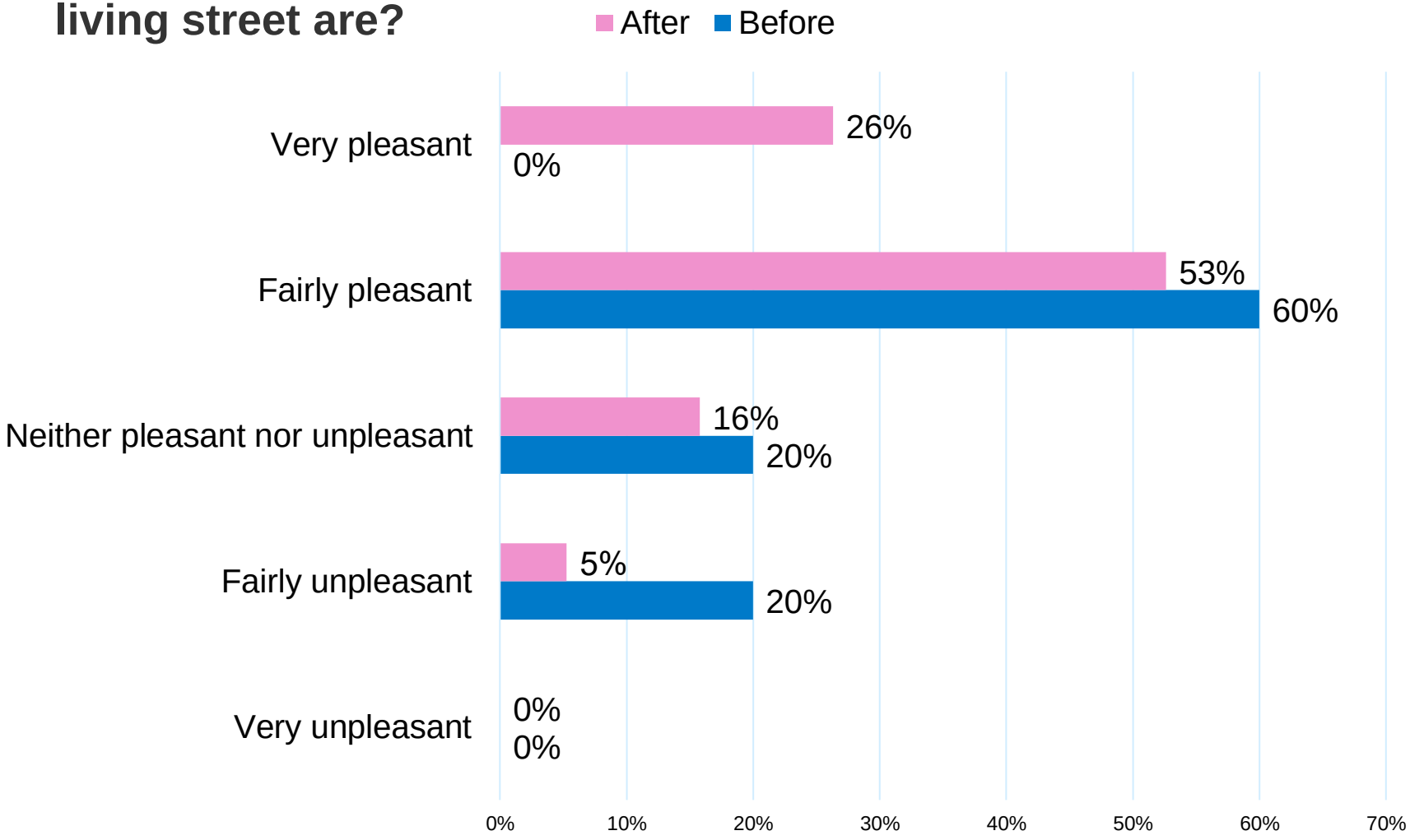
Small number of respondents, before: 5, after: 17 (10 interviews and 7 questionnaire respondents)

HSL HRT

Speeding reduced:
62% →55%
average speed:
22 →21km/h

Espoo

How pleasant do you think the surroundings of the Kauppamäki living street are?

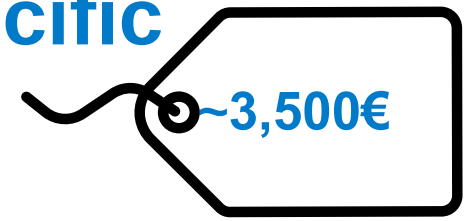


Average grade:
3.4 →4,1
With scale 1 (very unpleasant) – 5 (very pleasant)


Photo: Autoklinikka

Small number of respondents, before: 5, after: 17 (10 interviews and 7 questionnaire respondents)

Planned cycling routes with specific destinations in Vihti



- → A response to the wishes of local residents
- → Routes' lengths: 9km + 11km

Maintenance building for the 1952 Helsinki Summer Olympics

Filming location from the Finnish movie "Ilosia aikoja, Mielensäpahoittaja" ("Happy times, the Grump")

Vihti Summer Theater


KIRKONKYLÄ

1 OLYMPIALAISTEN HUOLTORAKENNUS Urheilukentt toimi vuoden 1952 olympialaisten heittolajien kilpaili- joiden harjoittelukenttänä. Urheilukentän laidalla oleva huoltorakennus oli urheilijoiden peseytymis- ja pukeu- tumistila. Huoltorakennus on suojeltu ja sen seinään on suunniteltu asennettavaksi olympiarenkaat sekä kyltti.

2 VIHDISSÄ ON KUVATTU USEITA ELOKUVIA Tämä maisema on tuttu vuonna 2018 ensi-iltansa saaneesta elokuvasta Iloisia aikoja, mielensäpahoittaja. Se oli Suo men katsotuin kotimainen elokuva elokuvateattereissa vuonna 2018. Kaikista elokuvista se oli toiseksi katso- tuin, edelle meni vain Mamma Mia: Here We Go Again!

3 VIHDIN KESÄTEATTERI on tuottanut kesäteatteri- esityksiä jo 50 vuoden ajan. Kesäteatterissa vierailee vuosittain n. 6 000–10 000 katsojaa Vihdistä ja eri puolilta Suomea.

Vihti

Route maps reached 6,400 people in social media (Vihti's population: 29,000)

- 740 took a closer look
- new route suggestions

A query with just 8 respondents

- 3 stated the routes had made them cycle/walk more than before

Photo: Laura Kilpeläinen

A route of 11km with 18 destinations

A route of 9km with 20 destinations

Helsinki

Summer streets in Helsinki

13.6.-15.8.2021

~230,000€

- → Streets surrounding a pop-up summer terrace area in Kasarmitori were made temporarily one way living streets
- → Street side parking spaces were replaced by lounge areas, small parklets and bicycle racks
- → Floral wreaths were hung on the wires of street lights to create an atmosphere of a summer festival

Photos: Helsinki city

Helsinki

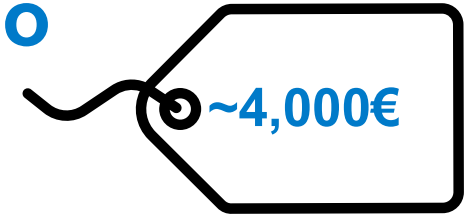
Increased activity

- → Based on counts the number of pedestrians in the area increased significantly especially in the evening (46%) as did cyclists' (49%)
- → Also staying increased
- → Entrepreneurs in the area were very happy with the experiment
  - Over 300,000 visitors and 110,000 servings of food sold

Photo: Camilla Bloom / Helsinki Marketing

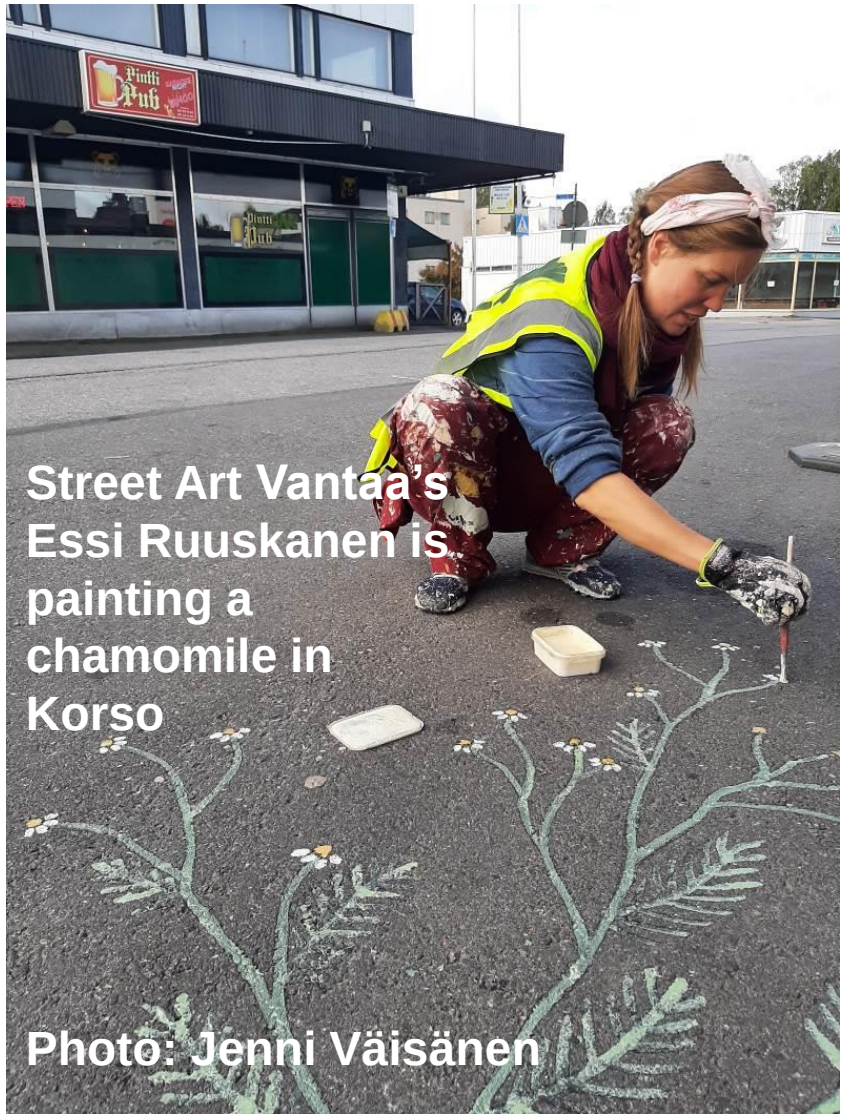
Vantaa

Street paintings at two locations in Vantaa



- In the areas of Martinlaakso and Korso, routes to parks were made more pleasant with street paintings and planting
- Above Martinlaakso with lungwort (top left) and milk thistle (top right)
- Below Korso with carnations (below left), and a Siberian poppy with dandelions (below right)

Vantaa



Street Art Vantaa's Essi Ruuskanen is painting a chamomile in Korso

Photo: Jenni Väisänen

"Passers-by gave a lot of positive feedback, and people stopped to talk about flowers and nearby parks. Everyone said the paintings brighten up the route and make you feel good as you walk by. So, this was truly a project of good will." -Essi Ruuskanen, a painter of Street Art Vantaa

Recipe used in Korso

1:1:1

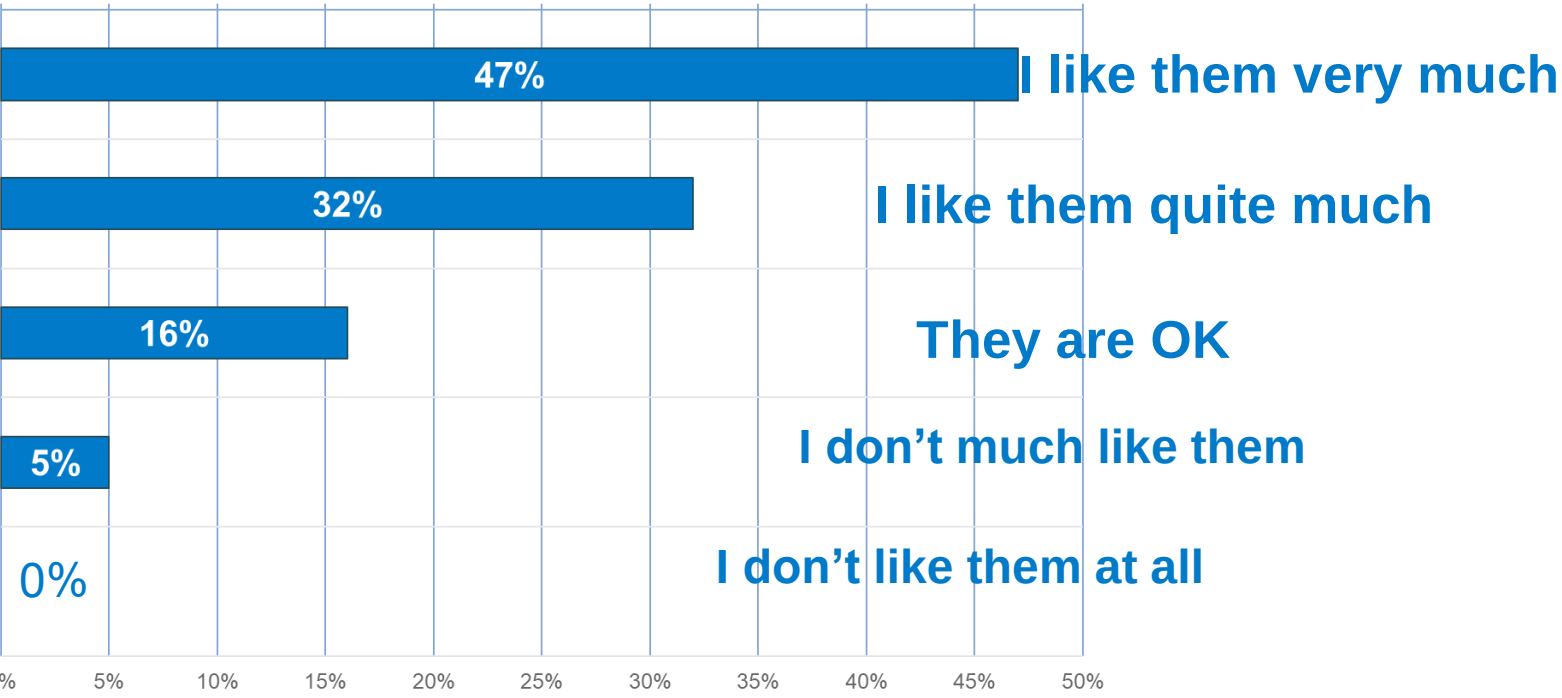
Water: linseed oil: egg

+some compound powder, fish glue, colouring agent

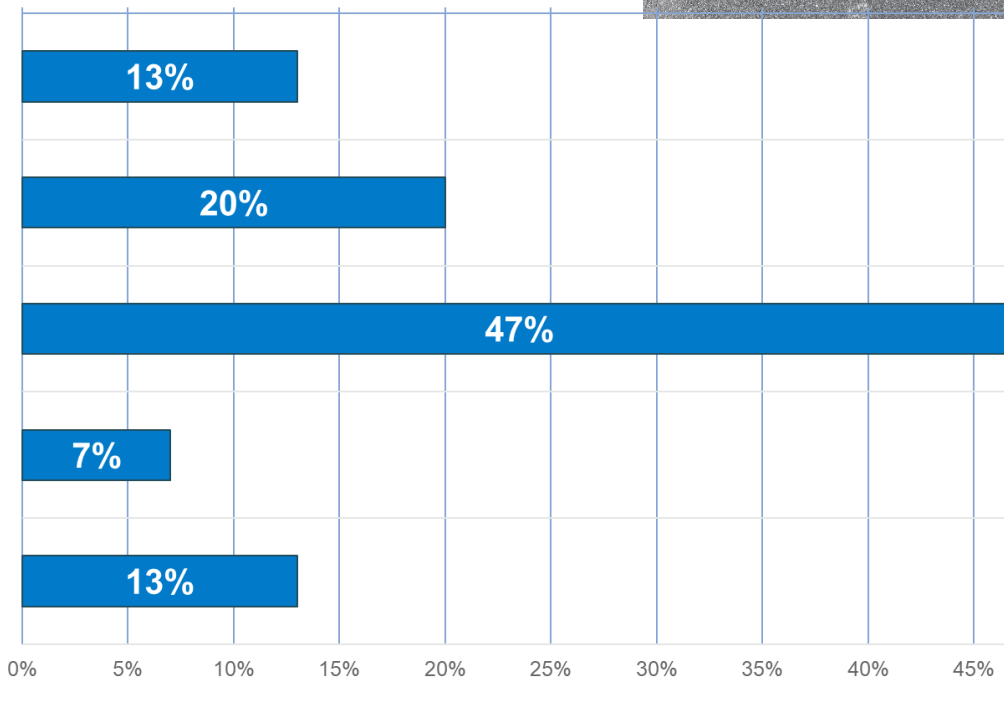
Vantaa

What do you think of the street paintings?

Korso



Martinlaakso



80% would like to have more similar street paintings **67%**

Small number of respondents : Korso 21, Martinlaakso 15

Lessons learnt

"You must learn from the mistakes of others. You can't possibly live long enough to make them all yourself."

— Sam Levenson

1. Improving the walking and cycling environment quickly is possible, cost-effective, and appreciated by the users.

…

2. Doing things differently is a lot of work: quick experiments ≠ less work.
3. Getting enough feedback for quantitive analyses is not always easy.
4. Strategic plans into action; concrete, visible improvements “think regional, act local” → larger benefits through information change and impact assessment data.
5. Communication is important.
6. Reserving enough resources helps in reacting to possible setbacks along the implementation.

7. Impact assessment takes time and effort, yet it is very important in identifying results and learning from them.

in unattractive places even a small change make a difference

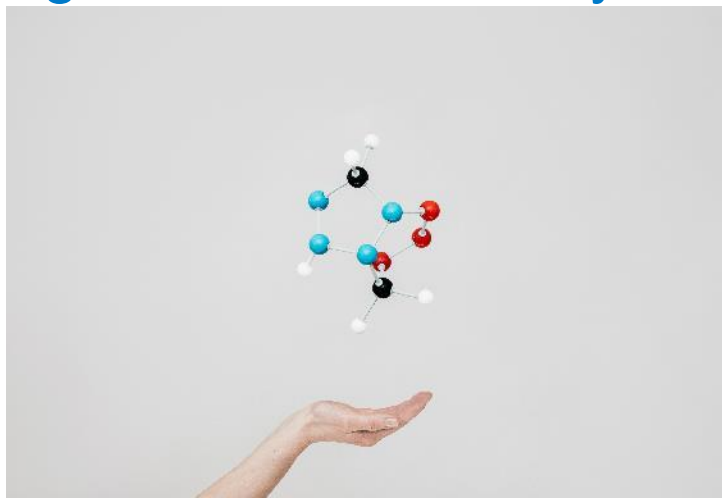
8. The magnitude and experience of change is relative

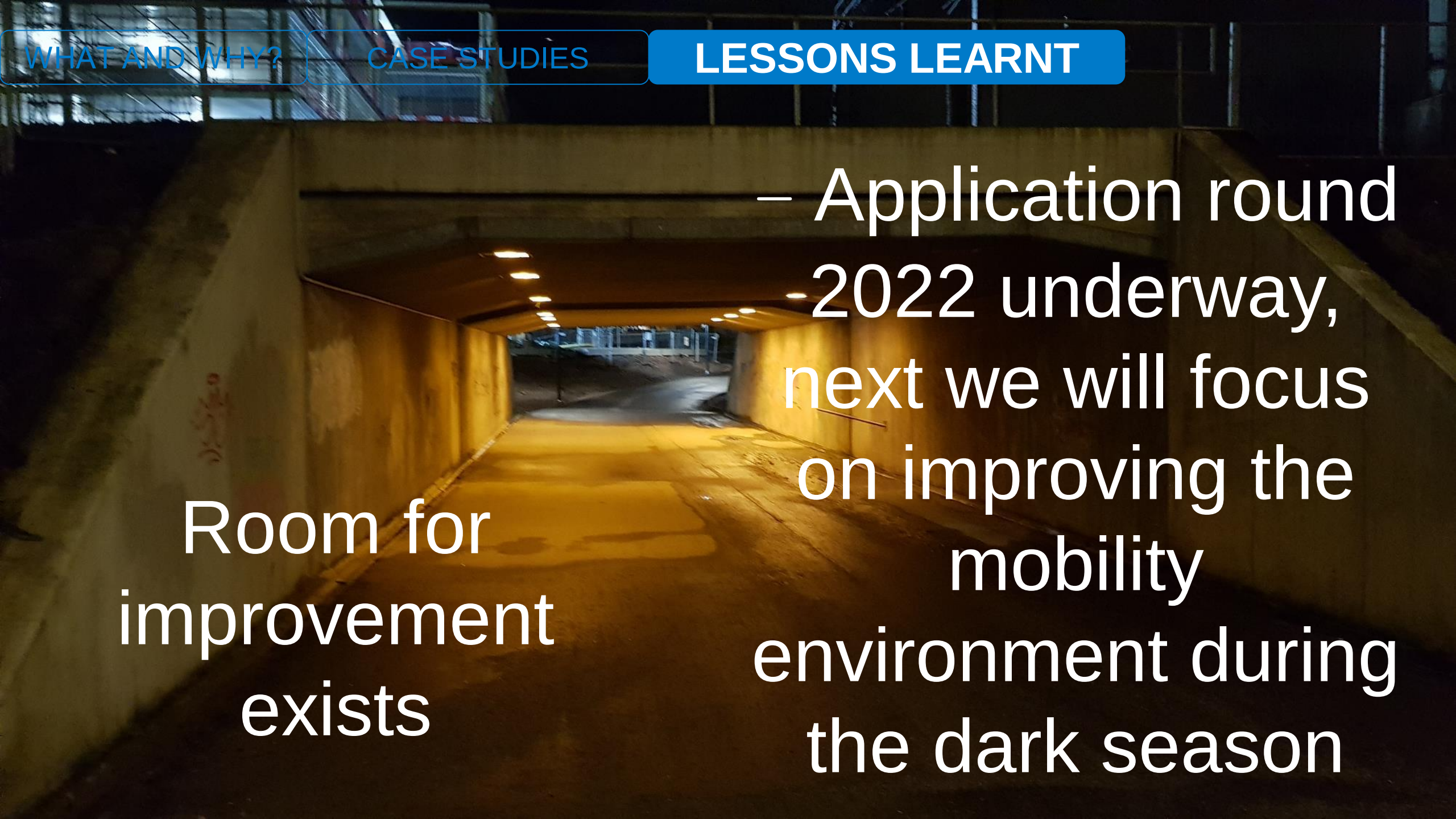
Further development needs

→ Timing and structure of the program

→ How to ease the work load of municipalities?

→ How to best make use of lessons learnt and guarantee continuity?





– Application round 2022 underway, next we will focus on improving the mobility environment during the dark season

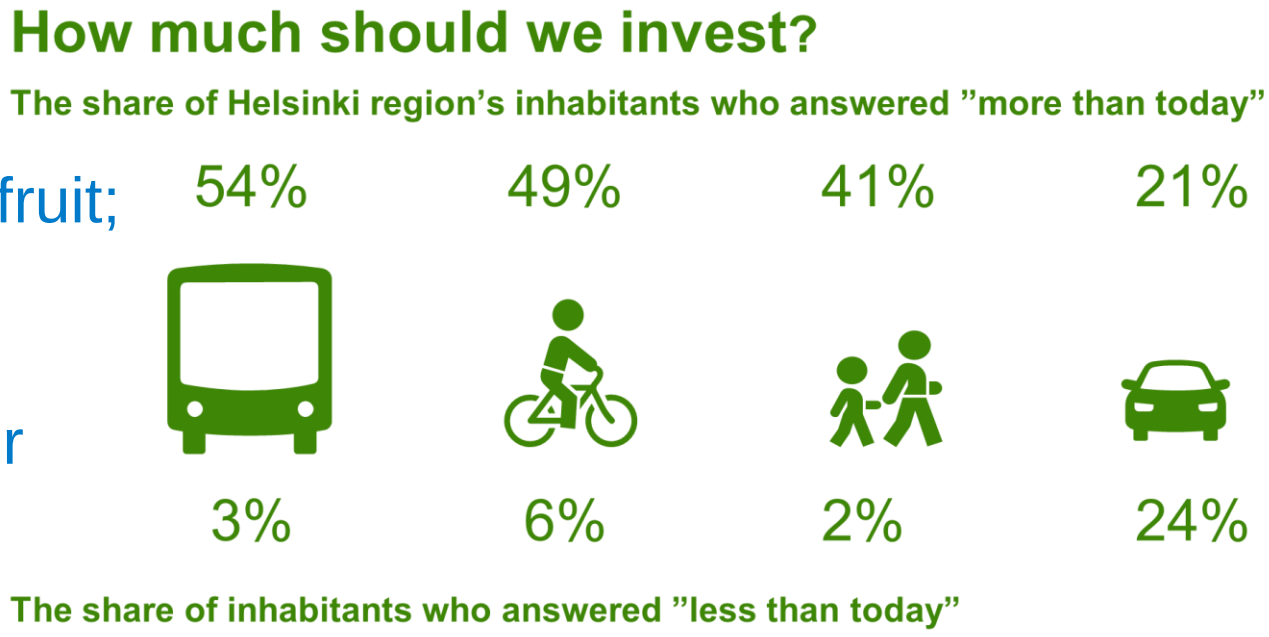
Room for improvement exists

Darkness makes light effective

Leppävaara in Espoo

Last thoughts

- → **Are you after improved satisfaction of current users?**
  - Quick, local infrastructure improvements are a low hanging fruit; ”success guaranteed”
- → **Do you want more people walking/cycling?** → requires bigger (systemic) changes that often have silent approval but might have loud opposition
  - Opinion polls with representative samples might make the silent approval visible



Source: Opinion poll for over 15 year-old Helsinki region inhabitants 2021 (in Finnish), N=3690

Thank you for listening!

Ask/tell me more!

mette.granberg@hsl.fi

040 8211 116

Reports (in Finnish with an English and Swedish abstracts)

- Using agile piloting for rapid improvements to walking and cycling environment. Report for the first round (2022)
- Using experimental culture to achieve rapid improvements in the environment for walking and cycling– preliminary study on the operating model (2020)

Bundesministerium
Klimaschutz, Umwelt,
Energie, Mobilität,
Innovation und Technologie

klimaaktiv mobil

klimaaktivmobil.at
bmk.gv.at

Strengthening mobility on foot through holistic concepts

klima**aktiv** mobil – climate protection initiative for mobility in Austria

Eva Mastny, Raphael Glück
ECOMM 2022, Turku (Finland)
31.05.2022

klimaaktiv mobil

- Successful climate protection initiative for mobility in Austria
- Promotes climate-friendly and healthy mobility
- Supports cities, municipalities, companies, tourism, schools, youth
- Multi-level governance instrument with integrated and administrative approach

klima**aktiv** mobil in a nutshell

- Counseling programmes
- Financial support programmes
- Awareness raising
- Education and certification schemes
- Partnership and awarding

klima**aktiv** mobil target groups

- Businesses, property developers and fleet operators
- Cities, municipalities and regions
- Tourism and leisure sector
- Schools, educational institutions and youth initiatives
- Public administration

➔ Supported by different programme managements to find ways to the financial support programs offered by federal money (e.g. submission process for funding,…)

klimaaktiv mobil „family“ since 2006

- Visibility, marketing, credibility

Financial support approx.
€ 167.5 million

Environment-related investment triggered
€ 1.2 billion

Climate-friendly mobility projects
21,000

Annual CO_2-savings in tons about
350,000

klimaaktiv mobil competence partners, (eco-driving trainers etc.)
2,400

Children/young people in projects
88,000

Green jobs secured/created
10,700

klima**aktiv** mobil implements Austrian policy strategies and master plans

- Master Plan Cycling aims to double mode share to 13% until 2025
- Master Plan Walking: strengthening walkability to avoid zero sum game between cycling and walking
- Master Plan Mobility: separate chapter on mobility management highlighting klima**aktiv** mobil

klima**aktiv** mobil – talk the money talk

- Increased budgeting allows ambitious and enlarged actions and initiatives

	Annual budget klimaaktiv mobil			
Year	2019	2020	2021	2022
Financial support programme	€ 4,8 Mio.	€ 40 Mio.	€ 40 Mio.	€ 60 Mio.
Advisory programmes, awareness, education	€ 2,2 Mio.	€ 2,6 Mio.	€ 6,1 Mio.	€ 6,6 Mio.

klima**aktiv** mobil subsidies

- “Package for cycling and walking – offensive for active, soft mobility”
  - Cycling action programme for children
  - Combination of flexible mobility offers and sharing services
  - Cycling promotion (cycle network expansion programs and bike-highways)
  - Increasing the attractiveness of pedestrian traffic
  - Infrastructure for pedestrian traffic becomes eligible
  - Climate-neutral administration by 2040, including mobility management
- Fostering mobility management

Why subsidies for walking? Subsidarity in Austria

- Communities in AT responsible for regional planning and community streets including infrastructure for walking, cycling
- Federal level has no formal responsibility in [illegible] areas -> can „lure“ communities with subsidies of federal money
- Active mobility in communities often neglected or currently no focused measures
- Communities all over the country have different starting points & targets
- Federal subsidies for communities are used to enhance the quality of infrastructure for walking, cycling and mobility management in communities

First time in Austria that federal money goes directly into walking measures!

Klimaaktiv mobil Subsidy-scheme „Active Mobility“

- Focus in klimaaktiv mobil financial support programme for Federal States, cities and municipalities for investing in cycling and walking networks and infrastructure
- Subsidies of up to 50 % from federal money for infrastructure measures
- Combinations possible with EU – support scheme (e.g. ERDF) as well as federal province money
- Preconditions for klima**aktiv** mobil subsidies: comprehensive local Masterplan Walking / Cycling

Klimaaktiv mobil Subsidy for walking measures

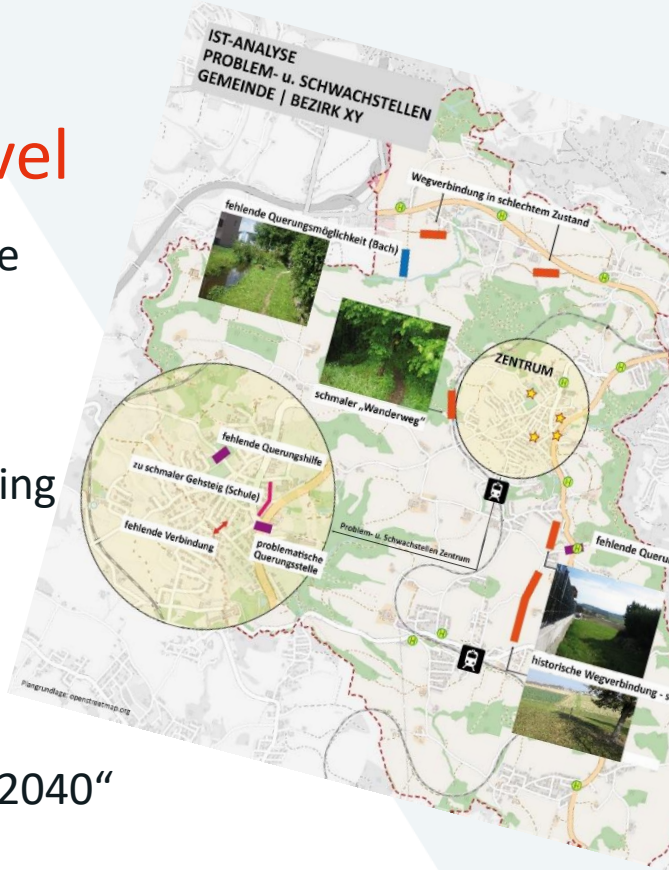
- to secure a coherent, close-meshed, loopway-minizing and comprehensive walking network in a short to medium level in a settlement area
- Support rate: 20 % of eligible costs upgradeable to 50%

  + for more comprehensive measures in urban planning, SUMP, awareness-raising, digitalisation of design etc.
- max 50 % of eligible costs and max. 100 €/resident

Walking & Cycling on a community level

- In return for generous federal subsidies communities are forced to deal with the topic „Active Mobility“ in a comprehensive way
  - In-depth analysis of the status-quo for walking & cycling
  - NO „Hit & Run“ measures, NO standalone measures
  - YES to a development of widespread measures

➔ Important measures on the way to „Climate Neutrality 2040“



Masterplan Walking & Cycling on a community level

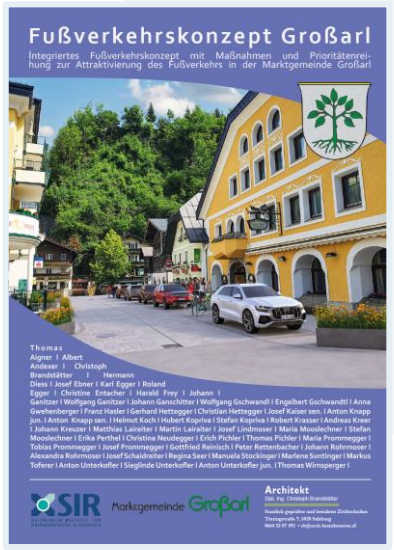
- Federal funding possible if preconditions fullfilled -> local Masterplan!
- Masterplan can be made locally customized, only few guiding principle from federal level
- Masterplan includes detailed descriptions and drafts of measures, timelines and budgeting
- Masterplan must be adopted by the municipal council to be effective

Strenghtening mobility on foot in Austria

- Current status after implementation of funding scheme „Walking“to strenghten infrastructure for pedestrians in communities in 2021:
  - Over 8 local Masterplans for walking in progress
  - Submissions from 6 out of 9 federal provinces
  - 5 more concepts are in the early stages of planning
  - Besides infrastructure measures for walking: implementation of urban planning measures, SUMPs, many awareness-raising campaigns


INNS' BRUCK
Förderansuchen klima:aktiv
Einreichunterlage 2021/2022
Technische Beschreibung und Maßnahmenbegründung
Bozner Platz
Rennweg, Universitätsstraße und Vorplatz Hofburg
Marktgraben, Museumstraße
Schulcampus Wilten, Michael-Gaismair-Straße
Pradler Straße


Örtliches
Fußverkehrskonzept
Stadtgemeinde Trofaiach
verkehrplus – Prognose, Planung und Strategieberatung GmbH
Endbericht
2021
trofaiach
meine Stadt.


Fußverkehrskonzept Großarl
Integriertes Fußverkehrskonzept mit Maßnahmen und Prioritätenreihung zur Attraktivierung des Fußverkehrs in der Marktgemeinde Großarl
Architekt
Marktgemeinde Großarl


Örtliches
Fußverkehrskonzept
Stadtgemeinde Zeltweg
verkehrplus – Prognose, Planung und Strategieberatung GmbH
Endbericht
2021
STADTGEMEINDE ZELTWEG
DIE SPORTSTADT


walk-space.at
Fußverkehrskonzept Althofen
Endbericht, Stand 21.01.2022
DI Michael Skoric
DI Dieter Schwab
DI Martina Strasser

Future Goals

Front runner-communities get fundings for their measures

Realize measures for active mobility

Communities share and present success of realized measures

Follow-up communities see positive effects

Further submitted plans are based on proven measures

Thank you for your attention!

AT Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology, klimaaktiv mobil
Eva Mastny
E-Mail: eva.mastny@bmk.gv.at
www.bmk.gv.at

Klimaaktiv mobil Counseling Programme for innovative climate-friendly mobility for regions, cities and municipalities
Helmut Koch, Raphael Glück, Daniela Hirländer
E-Mail: mobilitaetsmanagement@komobile.at
www.klimaaktivmobil.at/gemeinden

Bundesinstitut
für Bau-, Stadt- und
Raumforschung
im Bundesamt für Bauwesen
und Raumordnung

TRANSFORMING CITY NEIGHBOURHOODS THROUGH ACTIVE MOBILITY

May, 31st 2022

Melanie Schade

RESEARCH PROGRAMME EXWOST

Federal research programme: Experimental Housing and Urban Development (ExWoSt)

- Supporting innovative planning and measures regarding important civic and housing political topics.
- From the experiences and outcomes, hints for further development of urban planning housing policy should be derived and knowledge transfer supported.

The programme is supervised by the Federal Institute für Research on Building, Urban Affairs and Spatial Development (BBSR) within the Federal Office for Building and Regional Planning (BBR).

- The BBSR is a is a departmental research institution in the portfolio of the Federal Ministry for Housing, Urban Development and Building (BMWSB). It is responsible for research and specialist advice in the spheres of spatial planning, urban development, housing and building.

ACTIVE MOBILITY IN URBAN QUARTERS

BBSR

Selected Research Questions

- How can urban development and transport planning at the district and urban quarter level be linked in the sense of the Leipzig Charter of achieving significant effects on improving quality of life and the environment?

- How can active mobility be strengthened to improve quality of life in urban quarters?

- How can existing urban quarters be efficiently and cost-effectively redesigned to better promote active mobility?

ACTIVE MOBILITY IN URBAN QUARTERS

BBSR

Four pilot projects

- City of Aachen, Suermondtviertel:
  „close, urban creative and diverse – an urban quarter on the move“
- City of Kiel, Ellerbeck-Wellingdorf:
  „Play street project“
- City of Cologne, Severinsviertel:
  „Active mobility changes space“
- City of Leipzig, Stötteritz:
  „Actively mobile in Stötteritz“

ACTIVE MOBILITY IN URBAN QUARTERS

BBSR

- Goal: Integration of urban planning and transportation planning
- Pilot project‘s tasks included
  - Develop mobility offers and provide options
  - Active mobility in public spaces
  - Rearranging and redesigning public spaces
  - Encourage active forms of transportation, especially walking and cycling
- Urban transport should be in accordance with the requirements for living, working, environment and public spaces.

AACHEN – MAIN FOCUS AND TOPICS

- Establishment of bicycle priority route and pedestrian priority route
- Compatible, shared use of public streets and squares by pedestrians, cyclists and motor vehicles
- Transformation from traffic to meeting space
- Increasing the quality of stay for residents and visitors
- Expansion for car and bike sharing services
- Imlementation of an extensive bicycle parking concept
- Use of new participatory instruments such as district walks and finanical instruments (neighbourhood fund)

AACHEN - SUERMONDTVIERTEL

Source: City of Aachen 2020

Source: City of Aachen 2020

Lothringerstraße before and after

AACHEN - SUERMONDTVIERTEL

Source: City of Aachen 2020

Schildplatz - Fair together campaign

KIEL – MAIN FOCUS AND TOPICS

- Improving connections for pedestrians and cyclists
- Marking of cycling facilities on the streets bordering the quarter and improving their crossability
- Implementation of the existing footpath corridor and children‘s path concept
- Redesigning public streetscape to support active mobility by increasing traffic safety and creating a compatible coexistence of pedestrian, bicycle and motorised traffic
- Introduction of play streets and strengthening of the quality of stay, especially for children
- Enabling mobility without having to own a car, introduction of carsharing options

KIEL – ELLERBECK-WELLINGDORF

Source: Tiefbauamt, Landeshauptstadt Kiel

Danziger Str./ Erlenkamp - Before

Source: Tiefbauamt, Landeshauptstadt Kiel

Danziger Str./ Havemeisterstr. - After

KIEL – ELLERBECK-WELLINGDORF

Source: Tiefbauamt, Landeshauptstadt Kiel 2017

Wellingdorfer Living Room - Before

Source: Tiefbauamt, Landeshauptstadt Kiel 2021

Wellingdorfer Living Room - After

COLOGNE – MAIN FOCUS AND TOPICS

- Relieving the Severinstraße, which is highly frequented by pedestrians and cyclists, of bicycle through traffic
- Closing gaps in the cycling network by establishing cycle lanes
- Advancement of private and public bicycle parking
- Encouraging pedestrian traffic by shifting other uses off the pavements and enhancing the quality of stay
- Redistribution of road space
- Expansion of sharing offers
- Strengthening physiscal activity through the construction of an outdoor fitness facility
- Gaining acceptance and temporary upgrading of the public street space through the implementation of creative actions with the participation of residents

COLOGNE – ALTSTADT SÜD

Source: City of Cologne 2021

Urichgasse Cycle Lane

Source: City of Cologne 2021

Parquet

COLOGNE – ALTSTADT SÜD

Source: City of Cologne 2021

Mobility station

Source: City of Cologne 2021

Private bicycle parking

LEIPZIG – MAIN FOCUS AND TOPICS

- Advancement of non-motorised traffic and car-free, active mobility
- Implementation of the measures previously defined in a noise reduction initiative (‚Mach‘s leiser – Lärmaktionsplanung in Stötteritz)
- Improvement of quality of life and traffic safety in the Stötteritz quarter
- Use of a neighbourhood approach in order to achieve large local effects through the bundling of measures
- Specification and implementation of measures with the active participation of cititzens
- Exemplary implementation of measures and methods in the heterogeneous district of Stötteritz for later transfer to other neighbourhoods

LEIPZIG – STÖTTERITZ

Source: City of Leipzig 2021

Naunhofer Straße / Holzhäuser Straße

Source: City of Leipzig 2021

Schönbachstraße

LEIPZIG - STÖTTERITZ

Source: City of Leipzig 2021

Public bicycle parking

Source: City of Leipzig 2021

Public bicycle parking

RESULTS

- Advantages of neighbourhood approach include:
  - direct interaction with citizens
  - targeted evaluation
  - rapid visible effects through bundling of measures
  - suitable for experimental measures
  - transfer of concepts, design standards and methods to other quarters
- Importance of cooperation with initiatives, associations and citizens
- Joint implementation of measures with all stakeholders is the prerequisite for a rapid promotion of walking and cycling
- Resistance against road space redistributions, must be countered with added values at neighbourhood level in order to achieve acceptance
- Supply-oriented planning is effective – after implementation the demand for walking and cycling increased, quality of public spaces
- Early and targeted coordination in the planning measures within the administration as well as with external parties (e.g., utility companies)
- Temporary immediate implementation measures avoids having to wait for long-term construction processes

Thank you for your attention!

Contact information:

Melanie Schade

Federal Research Institute for Building, Urban Affairs and Spatial Development (BBSR)

Melanie.Schade@bbr.bund.de

+49 228 401 99 2235

Assessing the Benefits of Redesigned Urban Spaces

Michelle DeRobertis, Ph.D., P.E.
April Renard, P.E., PTOE, RSP2I

But first, a little history…

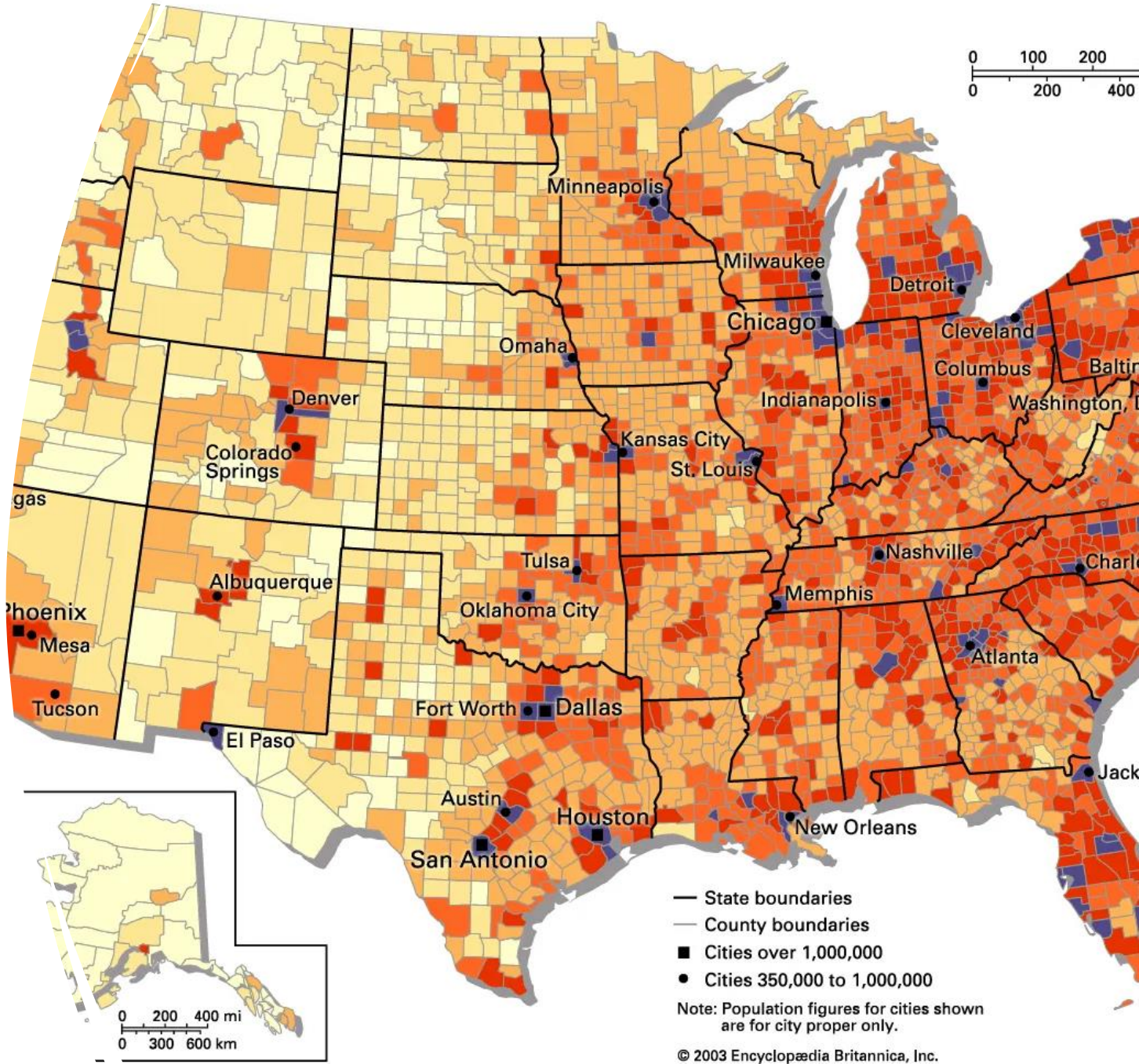
- Wind, Human, Horse, Steam, Fossil Fuels (Petro/Coal)
- First automobile (2.5 mph = 4 kph)
- **Trains (1800's)**
- Submarines
- Airplanes
- Ford Model T and the **Assembly Line** (1918)

But first, a little history…

- Creation of the Interstate System (1956) and
- FHWA (1966)
- Suburbs

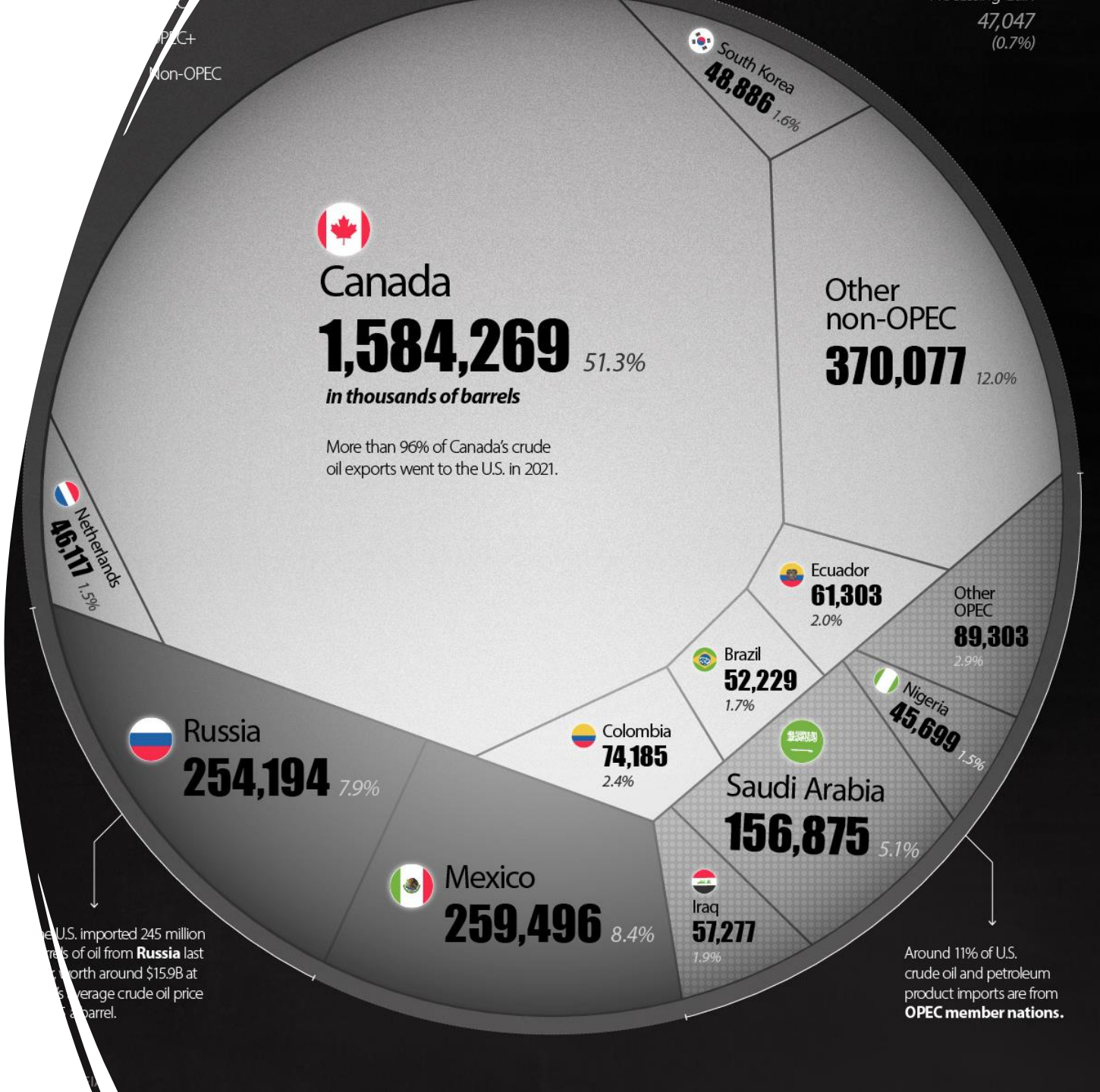
Land Development Patterns

- Heavy development east of the Mississippi River
- Followed rail network, then interstate network
- Sprawl



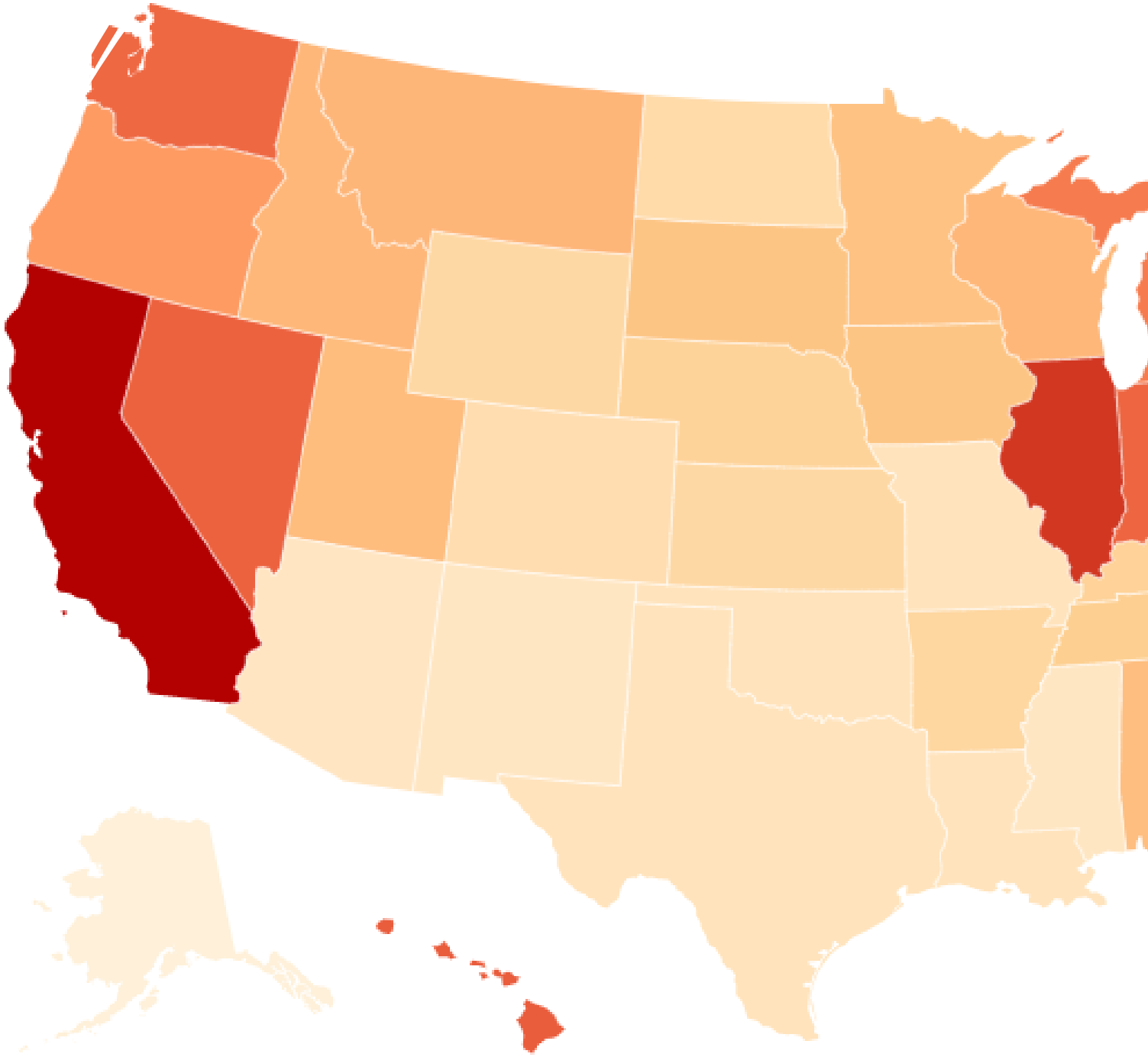
2021 U.S. Oil Imports

- 56.5% Domestic Production
- 42.8% Oil and Products Imports
- 0.7% Processing Gain



Transportation Funding

- Federal Gas Tax $0.184/gal = 0.045 € / L (same since 1997)
- State Gas Tax varies
- Inadequate to maintain existing infrastructure, yet we keep building…
- Past metrics still used
  - Level of Service
  - VMT (vehicle-miles traveled)



Recent Cultural Shifts

COVID

- Work from home = reduced traffic congestion
- Reduced traffic congestion = improved air quality
- Outdoor activities = healthier lifestyles

War in Ukraine

- Economic strategy to reduce oil imports from Russia
- Higher gas prices due to higher demand for imports from other countries (Americans willing to pay more at the pump)
- Average $4.57/gal = 1.147 € / L

Impacts of Transportation Investments

OTHER MODES

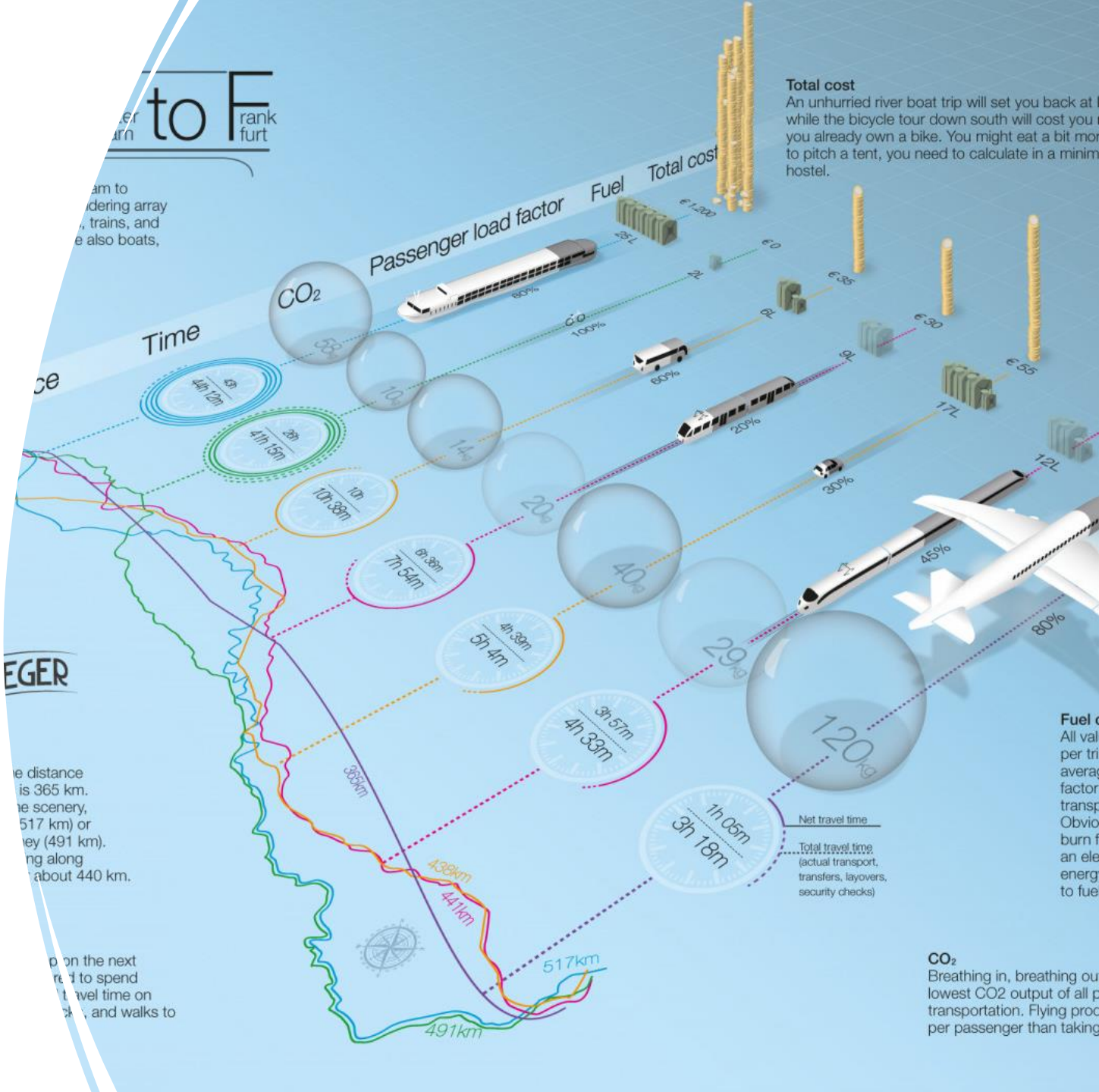
HUMANS (HEALTH/ LIVABILITY)

ENVIRONMENT

ECONOMIC VITALITY

Modal Indicators

- Change in modal split
- Increases in walking or biking
- Change in bus travel time
- Access to goods and services
- Pedestrian safety
- No. of collisions
- Comfort (BLOS)



Human Indicators

Table 1. Indicators for Analyzing Improved Livability in Traffic-Limited Zones (1)

Criteria	Explanation	Quantitative Indicator
Harm to Health and Safety		
Traffic Safety	Risk of someone being hurt or killed by motor vehicles.	Crash trends over a ten-year period in ZTL vs citywide.
		Change in crashes in ZTL vs citywide.
		Change in street crash rate before/ after ZTL?
Traffic Exhaust Health Impacts	Harmful effects to human health from automobile emissions.	PM10 concentration compared to 40 micrograms/m3 (2).
		NO2 concentration compared to 40 micrograms/m3 (2)
Annoyance to Smell, Hearing, and Sight		
Traffic Fumes	Annoyance to sense of smell.	Traffic fumes-Opinion of residents-How often are you bothered by traffic fumes on your street?
Traffic Noise	Annoyance to sense of hearing.	Percent of time ambient noise is above 65 decibels.
		Traffic noise-Opinion of residents-How often are you bothered by traffic noise on your street?
Traffic Visual	Annoyance to sense of sight.	Visual encumbrance-Physical volume of cars (cubic meters)
Improved Attractiveness of ZTL Streets		
More Pleasant Place to Live	With ZTLs, is city center a nicer place to live?	Families with children living in city center vs. citywide.
		Street livability-Opinion of residents-How do you rate the livability of your street?
More Pleasant Place To Be?	With ZTLs, do more people come to / stay longer in the city center?	Percent of eating establishments with outdoor seating: ZTL vs nonZTL streets.

Developed by DeRobertis, 2019. Annual average; (European Union threshold for human health).

Environmental Indicators

- Air quality
- Street level concentrations of air pollutants
- Greenhouse gases (GHG)
- Water pollution from roadway runoff
- Urban heat
- Habitat damage
- Solid waste

Environmental Indicators

- Air quality
- Street level concentrations of air pollutant
- Greenhouse gases (GHG)
- **Water pollution from roadway runoff**
- Urban heat
- Habitat damage
- Solid waste

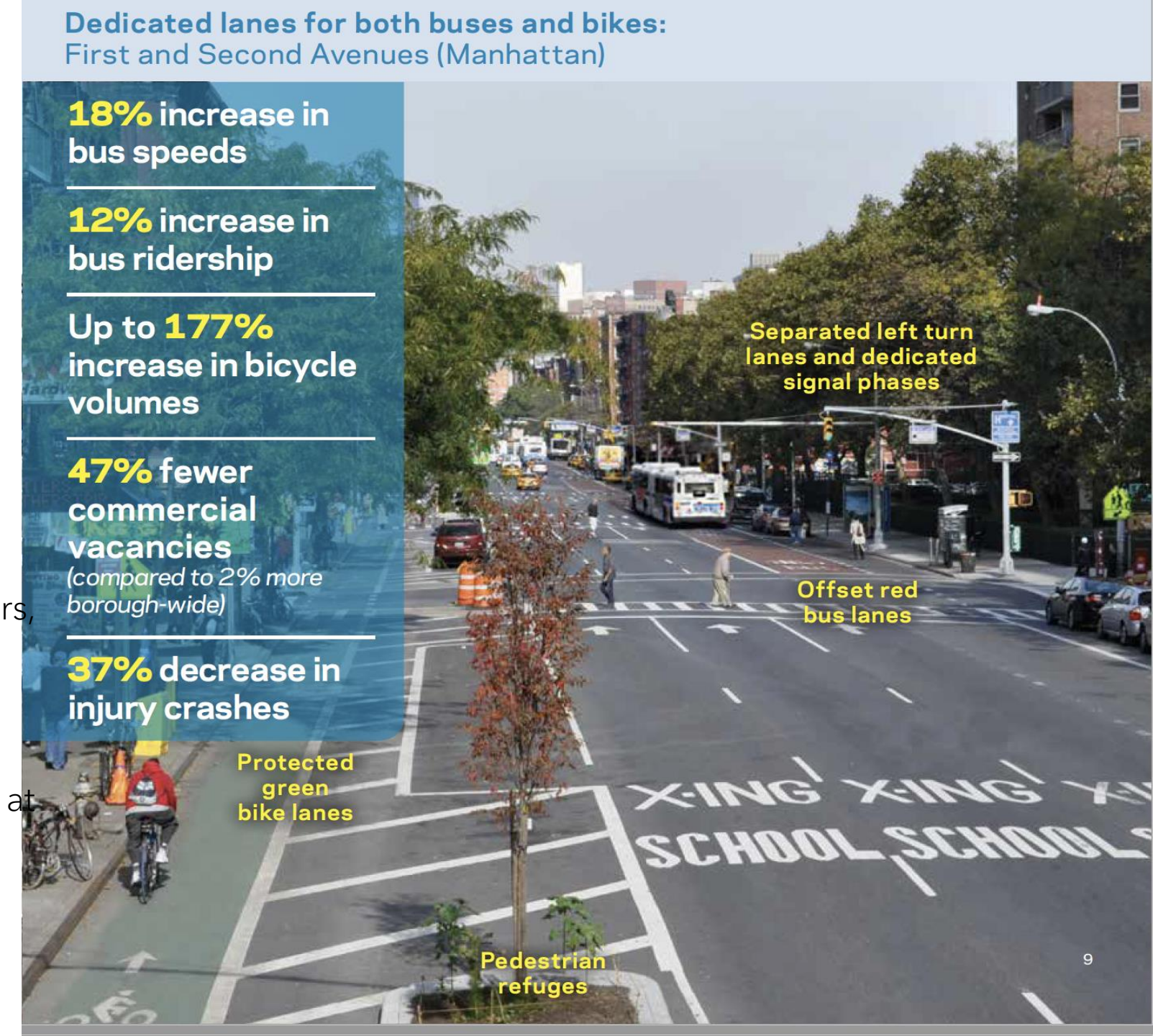
Economic Indicators

- Direct tourism
- Retail sales
- Sales tax revenue
- Rents
- Property values
- Commercial vacancies

Case Studies

First Ave, New York City, New York

- Safety: crashes/injuries for motorists, pedestrians, cyclists; vehicle speed
- Volume of vehicles, bus passengers, bicycle riders
- Economic vitality: commercial vacancies, retail sales
- Public spaces: seated pedestrians at parklets, sales at fronting businesses
- Transit: bus speeds, ridership
- User satisfaction survey
- Environmental: GHG emissions



Better Market St, San Francisco, California

- Improve Safety
- Improve Perceptions of Safety/Comfort
- Improve Transit Performance
- Improve Curb Management
- Effectively Manage Motor Vehicle Diversion

- Improve Safety
  - Police-reported collisions for all modes
  - SFMTA-reported Muni incidents
  - Driver-yielding behavior at crosswalks
  - Bicyclists' path of travel
- Improve Perceptions of Safety/Comfort
  - Bicycle counts
  - User surveys
- Improve Transit Performance
  - Stop-to-stop travel time and variability
  - Customer surveys
  - Muni operator feedback
- Improve Curb Management
  - Loading zone demand and compliance
- Effectively Manage Motor Vehicle Diversion
  - Stop-to-stop Muni travel time and variability
  - Compliance with vehicle restrictions and transit-only lanes

Government St., Baton Rouge, Louisiana

- Safety: Change in Crashes
- Operations & Health: Change in counts & mode shift
- Economic: Change in property values surrounding the project area
- Environmental: Change in impervious surface area

Dundas St., London, Ontario

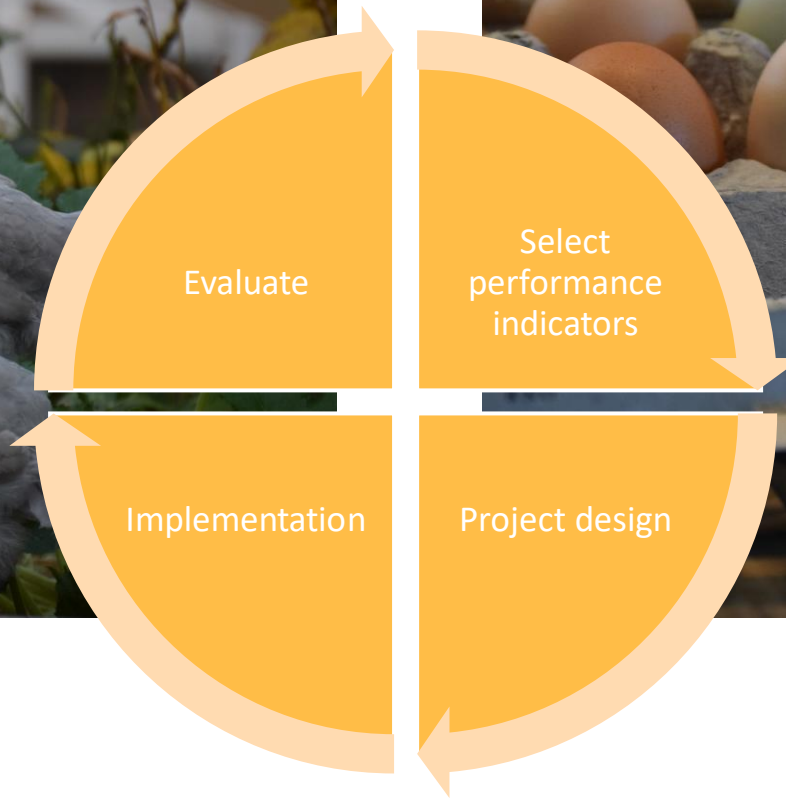
- Safety: Speeds, Gender of cyclists
- Operations & Health: Change in counts & mode shift
- Livability: Surveys from residents and local business owners

Case Study Indicators

Table 2. Indicators Used by Case Study Cities

City (type of project)	Indicator Categories			
	Non-auto mode choice (transit, bike, walk)	**Human (health-safety, annoyance, or comfort-experience)**	**Environment (air, GHG, water-runoff, ecology, etc.)**	**Economy**
New York (various project types)	Yes (bus speeds, ridership, bike counts)	Yes (collisions, user satisfaction, seated pedestrians)	Yes (greenhouse gases)	Yes (retail sales, vacancies)
San Francisco (Street redesign + partial car-free section)	Yes (bus travel time, bus reliability, bike counts)	Yes (collisions, transit-rider experience)	None	None
Baton Rouge (Road diet)	Yes (bike, walk counts, mode shifts)	Yes (collisions)	Yes (runoff)	Yes (property values)
London Ontario (restricted traffic on downtown street)	Yes (ped & bike counts, auto speeds)	Yes (collisions, cyclist- comfort, opinion survey of residents, visitors, business owners)	None	Indirectly (survey of business owners)

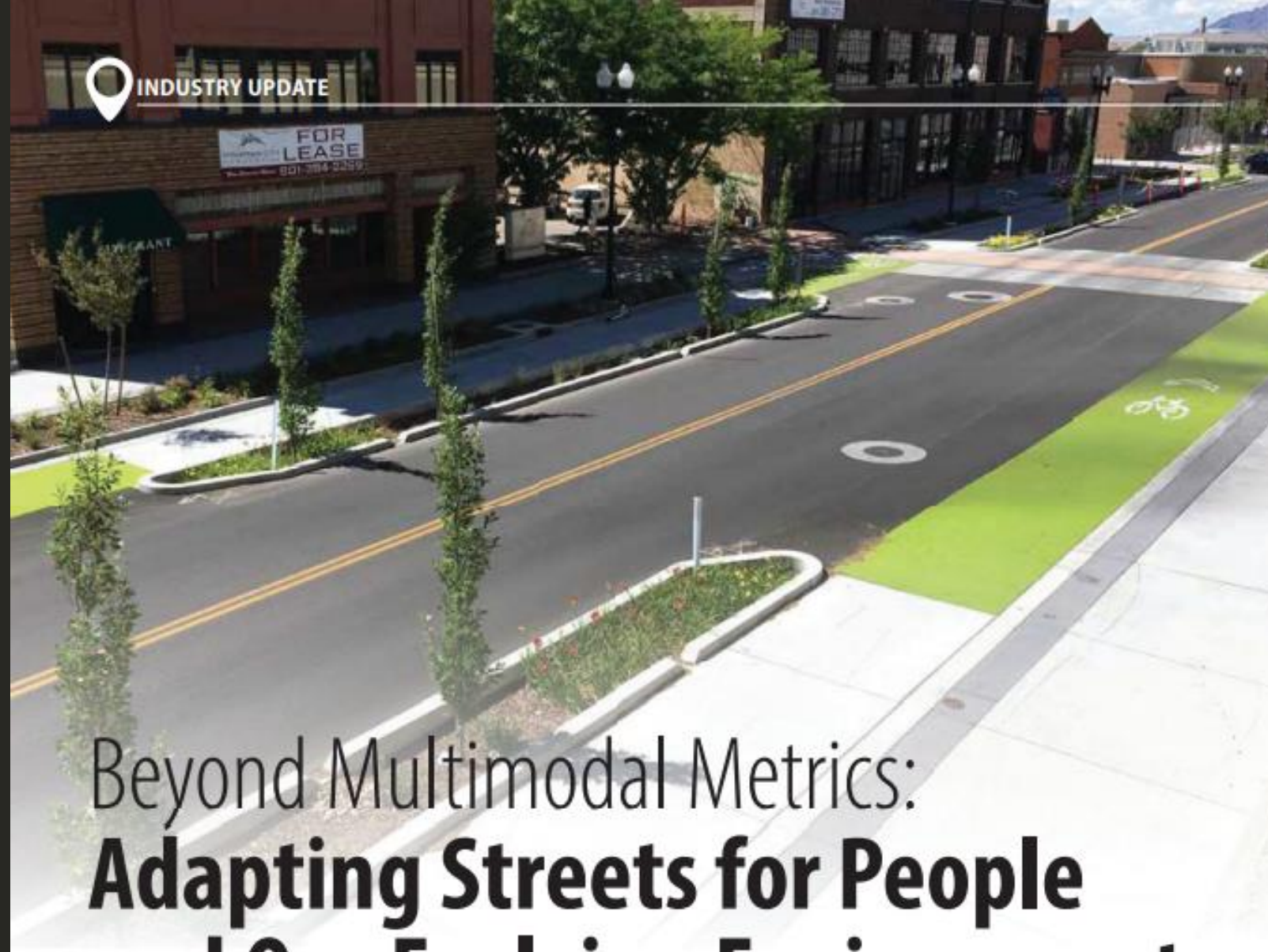
Are new metrics needed for Project Selection or Evaluation?



"What gets measured gets managed"

"THE DIFFERENCE BETWEEN WHO YOU ARE AND WHO YOU WANT TO BE IS WHAT YOU DO."

thisisjaky.com



Beyond Multimodal Metrics: Adapting Streets for People and Our Evolving Environment

By Michelle DeRobertis, Ph.D., P.E. (F) and April Renard, P.E., PTOE, RSP2I (M)

ITE Journal, Vol. 92, no.6. June 2022.