BATS

Hamburg | Bezirksamt Altona

UMEÅ KOMMUN

KALUNDBORG KOMMUNE

LSBG Landesbetrieb Straßen, Brücken und Gewässer Hamburg

GDYNIA moje miasto

KKT

HOL HARJUMAA OMAVALITSUSTE LIIT

Aalto University

PORVOO BORGÅ

GDAŃSK UNIVERSITY OF TECHNOLOGY

TAL TECH

CYKEL 1934 FRÄMJANDET

GATE 21

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The BATS project, co-funded by the Interreg Baltic Sea Region 2021-2027, helps drive the transition to a green and resilient Baltic Sea Region.
#madewithinterreg interreg-baltic.eu/project/bats/

Status BATS YRAM Experiments

- Lighting & projectors
- Protective elements & infrastructure
- Traffic control and modelling
- Maintenance & winter services
- YRAM Campaigns

Preparation

Implementation

Altona

- Protective Elements for the Reventlowstraße
- Walking safety for tunnels

Umeå

- Communication system winter maintenance and YRAM
- Light Projection Project
- Loan of e-bikes

Kalundborg

- Retrofitting &Winter Maintenance at Elmegade
- Light the bike lane - Connection to Rynkevangen
- Bike all year round

Porvoo

- Interactive virtual reality modelling of a planned new AM infrastructure
- “winter agents programme” to enhance interaction around snow cleaning

Gdynia

- Optimalisation of traffic signalisation taking into account weather conditions
- YRAM hubs and campaigns in kindergartens

Kiili (HOL)

- YRAM road maintenance
- YRAM promotion through schools in Kiili

Klaipeda

- Bike path lightening
- Monitoring of bicycle path pavement condition

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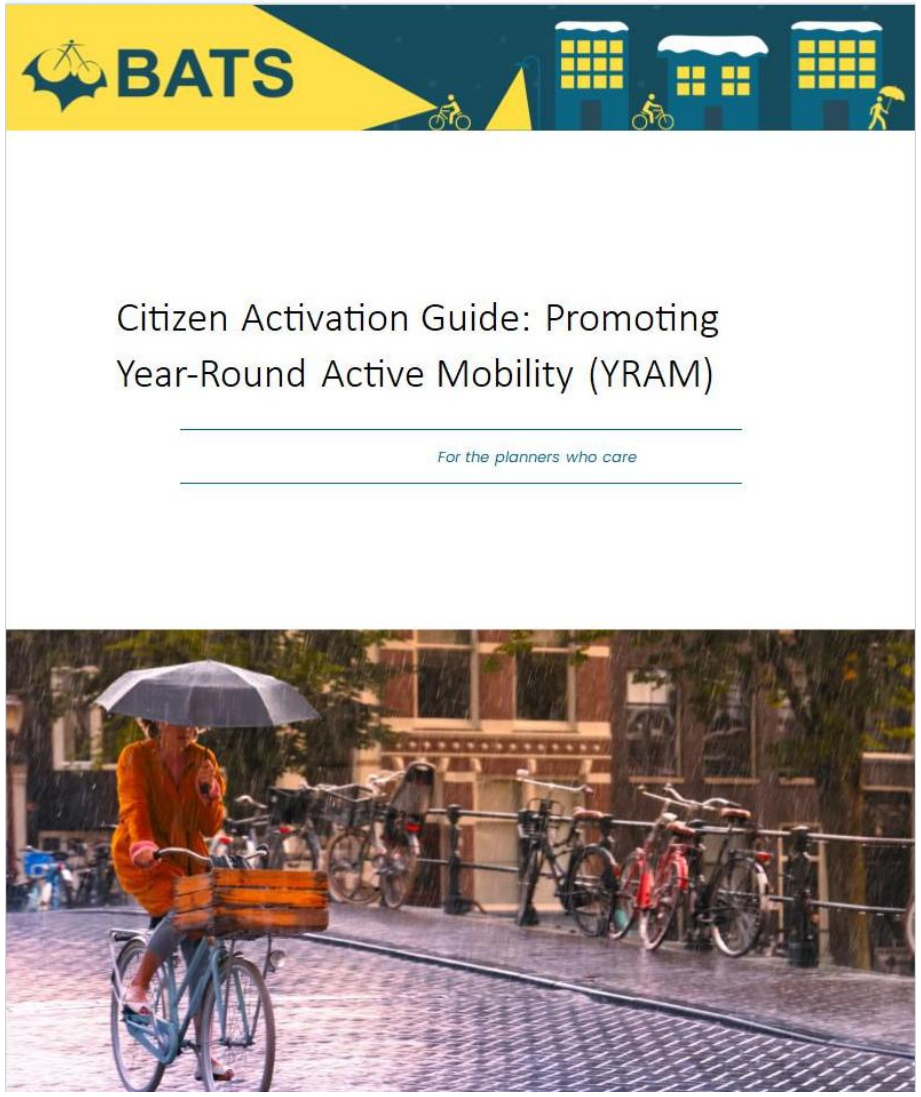
BATS toolkits



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Campaign in schools and kindergartens in Gdynia

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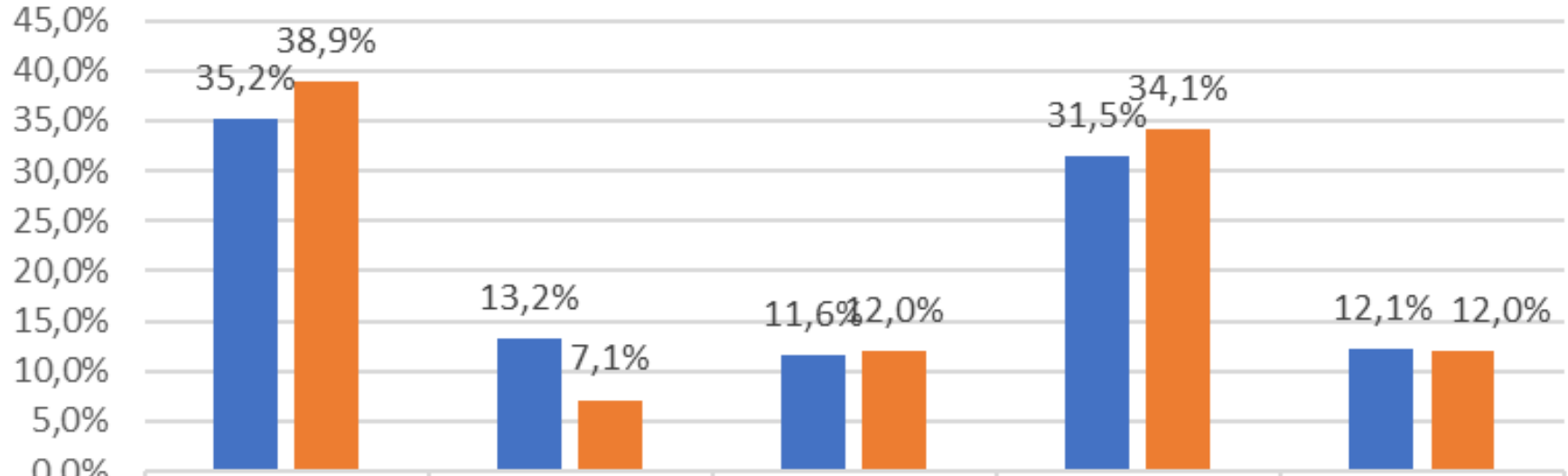
Division of trips to kindergarten and school at the beginning and end of the campaign



	on foot	bicycle, scooter	public transport	car	on foot and by car
Campaign start	35,2%	13,2%	11,6%	31,5%	12,1%
Campaign end	38,9%	7,1%	12,0%	34,1%	12,0%

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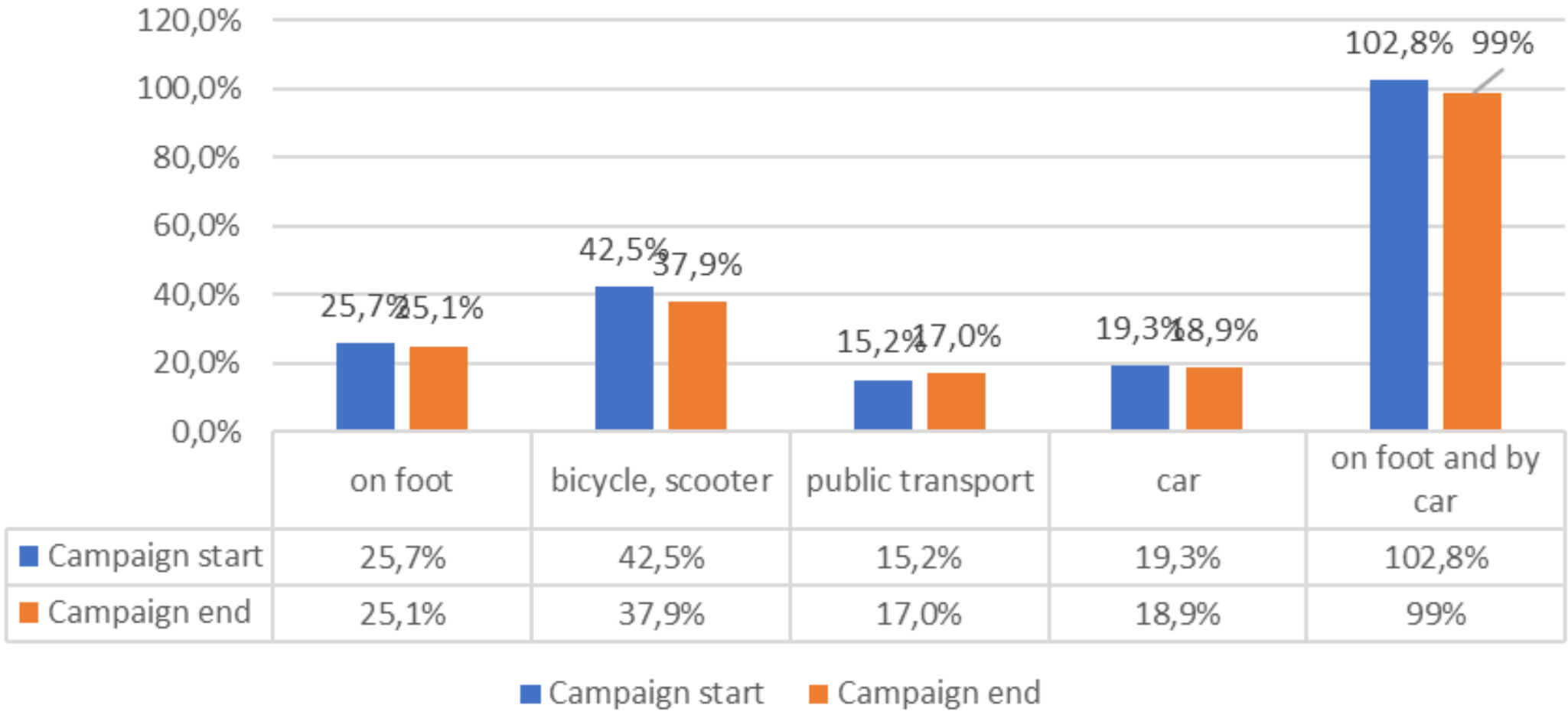
Photo Maaris Tölp

Preferred travel mode to kindergarten and school at the beginning and end of the campaign



	on foot	bicycle, scooter	public transport	car	on foot and by car
Campaign start	25,7%	42,5%	15,2%	19,3%	102,8%
Campaign end	25,1%	37,9%	17,0%	18,9%	99%

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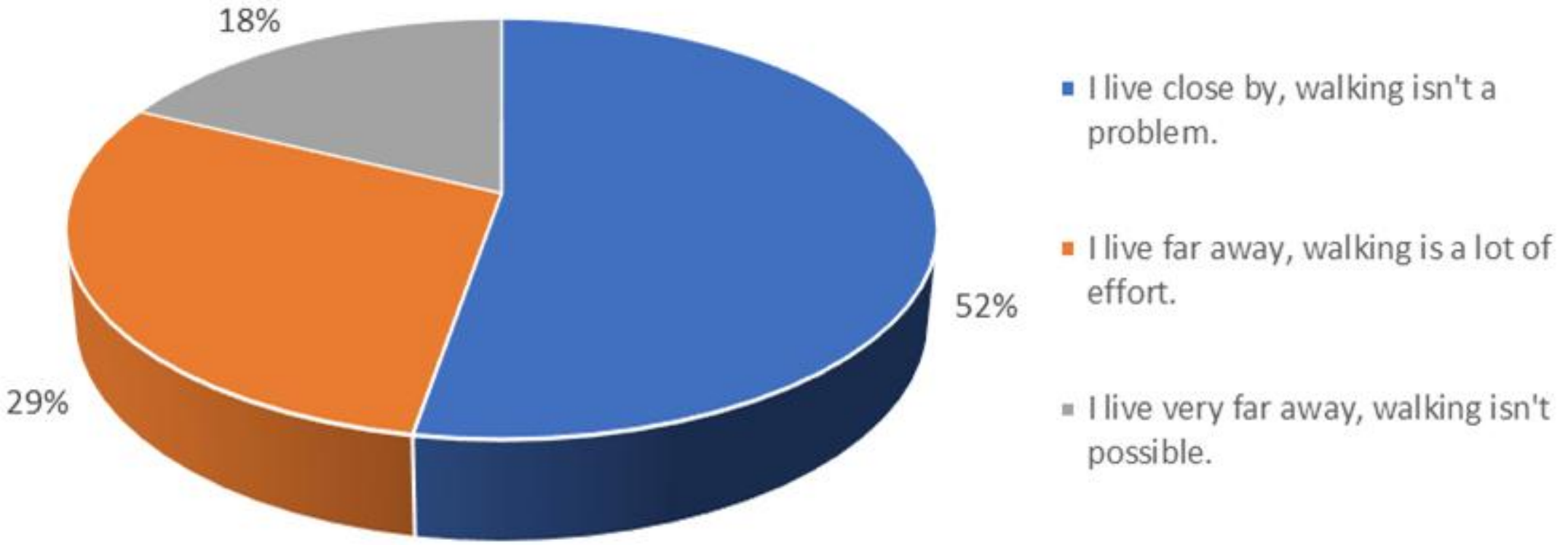
How far from the kindergarten or school do you live?



Summary of teachers' statements

- In summary, the results of the analysis indicate that respondents primarily **expect an expansion and enhancement of educational activities** through workshops, ready-made teaching materials, and formats that engage both children and parents.

These suggestions highlight the need for a comprehensive approach to campaign implementation, based on practical experience, age-appropriate content, and strengthening the role of adults in shaping children's pro-environmental attitudes.

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Summary of parents' opinions

Overall, the responses indicate that the campaign is perceived as a necessary and valuable initiative;

Its further development requires better adaptation to the real-life circumstances of families, stronger informational communication, and a more empathetic and flexible approach to children's participation.

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BATS Weather-Responsive Program Selection — Overview

Weather Detection Algorithm for Traffic Signal Control

Advanced algorithm implementation for dynamic, weather-responsive traffic signal management system with thermal imaging integration

Jacek Oskarbski, Tomasz Marcinkowski, Karol Żarski

BATS Weather-Responsive Program Selection — Overview

Existing Infrastructure

Thermal Imaging Detection
Successfully installed and integrated in previous year

Pedestrian & Cyclist Detection
Earlier and more reliable detection capabilities

System Integration
Fully integrated with traffic controller system

Real-time Data Foundation
Provides critical environmental and traffic data for new algorithm

Current deployment status

- Signal plans are currently switched manually to collect data and estimate effectiveness KPIs.
- The automated selection algorithm is planned to be ready by mid-February 2026 (latest: end of February 2026).
- Thermal (IR) detection for earlier pedestrian & cyclist detection was installed and integrated with the controller last year; traffic control programmes were developed last year; remaining work is algorithm refinement and

Manual Operation Challenges

Time-consuming manual process for changing signal programs

Resource-intensive operations requiring constant operator attention

High risk of human error in manual signal program selection

Inability to respond dynamically to real-time conditions

Suboptimal traffic flow and reduced safety performance

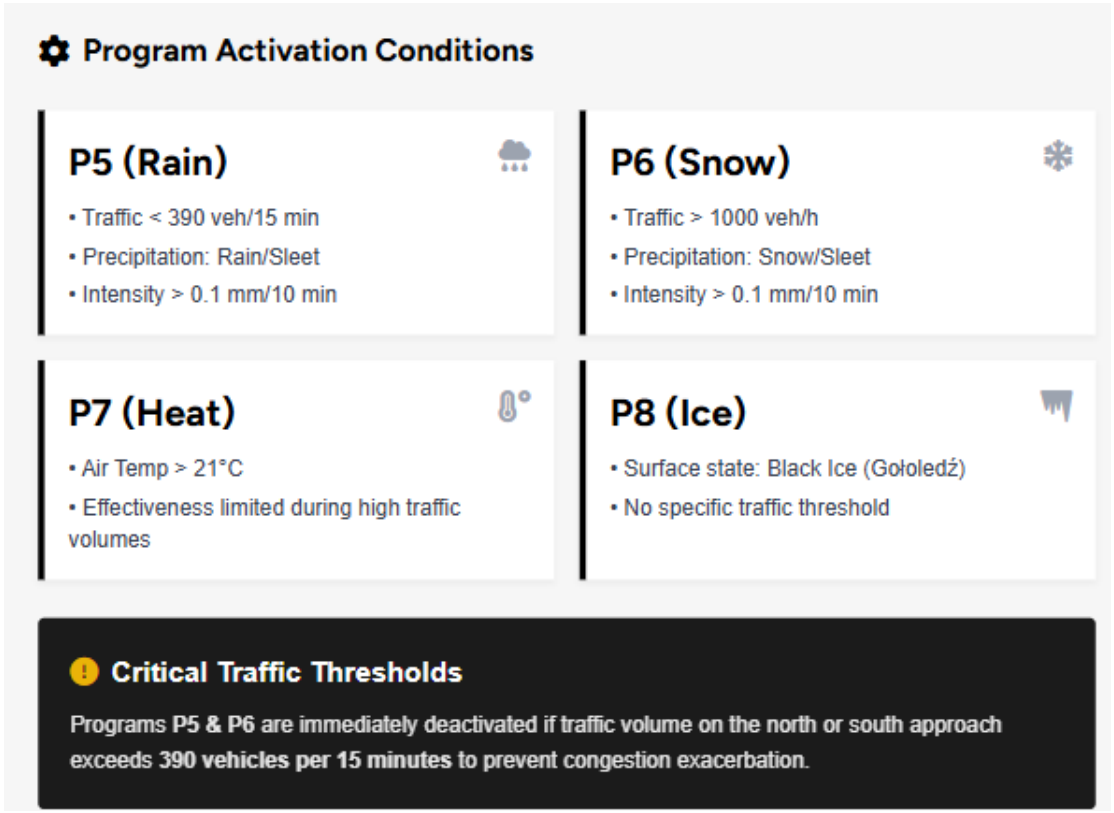
BATS Weather-Responsive Program Selection — Overview

What the algorithm does

- Selects the appropriate signal plan (P1–P8) based on current weather, pavement condition, and operational constraints.
- Targets safer and more comfortable crossings by adapting pedestrian timings to weather-driven behavior changes.
- Adds safeguards so that weather plans do not degrade traffic operation beyond acceptable limits.

Key inputs

- Weather station: air temperature, precipitation type/state, precipitation intensity.
- Road surface sensor: dry / wet / contaminated / black ice (and related states).
- Traffic volumes (north & south approaches) used to gate activation of some weather plans.



Decision Logic & Operational Thresholds

Core selection rules

- Weather & pavement conditions select a dedicated plan: rain/snow (P5–P6), heat (P7), or black ice (P8).
- Activation is stabilized using persistence: switch ON after 2 consecutive intervals meet criteria; switch OFF after 2–3 intervals no longer meet criteria.
- If multiple conditions overlap, prioritize safety-critical scenarios (e.g., black ice over precipitation).

Weather condition triggers (current)

P5 / P6 — Rain or snow

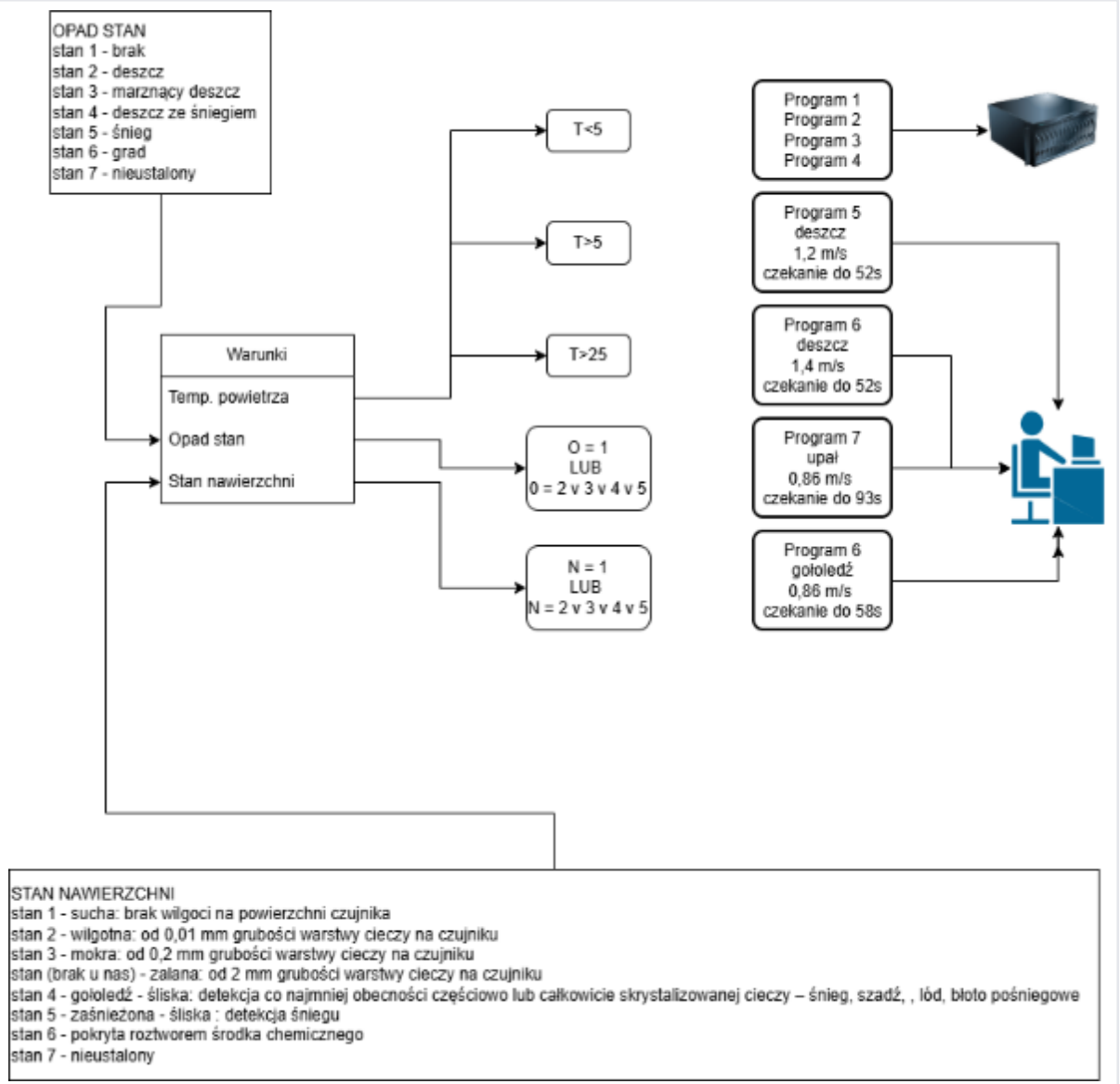
• Enable when precipitation is snow, OR rain with intensity > 0.1 mm / 10 min.
• Use traffic conditions to choose plan (proposal):
– P5: lower traffic (≈ below 1000 veh/h/approach)
– P6: higher traffic (≈ above 1000 veh/h/approach)
• Operational gate (to avoid PSR E): only start if BOTH N/S approaches < 390 veh / 15 min; stop if threshold is exceeded on any approach.

P7 — Heat

• Enable when air temperature > 21°C (pedestrian speed drop observed).
• Traffic threshold for activation/deactivation: 480 veh / 15 min.

P8 — Black ice

• Enable when pavement state indicates black ice.
• Traffic threshold for activation/deactivation: 340 veh / 15 min.
• Note: the shared diagram labels black ice as P6; correct plan is P8.



Decision flow (simplified)

Roadmap: Manual → Semi-Automatic Operation

Why we are switching manually now

- Current manual switching is intentional: it builds a dataset to estimate effectiveness KPIs (safety, delay, compliance) before automation.
- The same thresholds used by the algorithm are applied by operators, creating comparable “before/after” observations.

Implementation timeline

2025 (done)

Thermal (IR) detection installed
Controller integration completed
Operator interface available

Now (Jan–Feb 2026)

Manual plan switching for data
Finalize thresholds & persistence
Validate against traffic impacts

Mid-Feb → End-Feb 2026

Algorithm ready for deployment
Semi-automatic mode enabled
(operator confirm ON; auto OFF)

Next step (optional)

Full automation (no confirmation)
after KPI review & safety sign-off

Semi-automatic behavior (target mode)

- Operator is notified when a boundary condition occurs (e.g., rain intensity threshold, black ice, heat).
- Operator confirms switching to the dedicated program (P5–P8).
- The system automatically returns to the baseline program once the triggering conditions cease (after persistence rules).

Kalundborg

Add a picture from each experiment and include a short update on the following questions

1. What have you implemented in the last winter period
2. What has been your most interesting result
3. What is left to do before concluding the experiment

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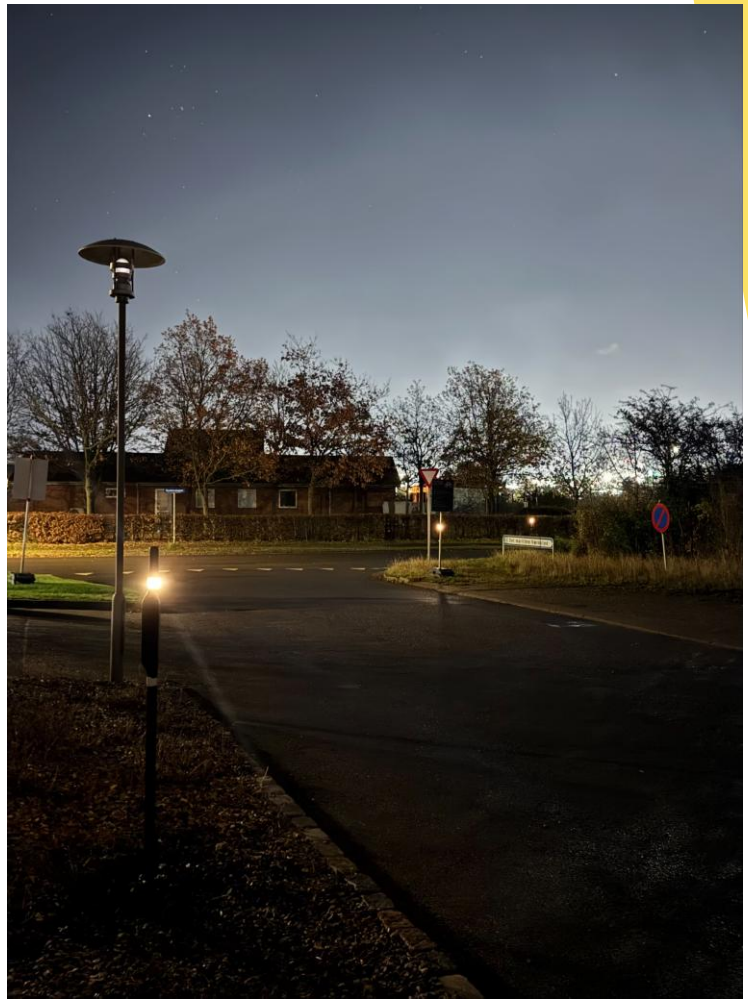
Kalundborg

1. What have we implemented

1. Guiding biker's through our missing Link with small lights

   Nudging with dots – showing a bikeroute



Results

Results – most of the result from our testgroup responded to our question about our nudging, that the color should have been blue, because that is the "normal" color for bike signs in Denmark

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Union of Harju County Municipalities

HOL: Winter tire installation workshop – Bike tuning Day, 14.11.25)

A total of **55 winter tires** for bicycles were purchased, benefiting from a 32% discount from the local company Veloplus, as well as approximately 20% support from the BATS project.

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HOL: Bicycle count in the school parking lot - Illuminated pedestrian crossing sign – Webinar YRAM school campaigns, 14.01.26

2024/2025 academic year

08.10.24 - +6°C - 157 bikes

06.12.2024 - -5°C – 35 bikes

2025/2026 academic year

30.09.2025 - 0°C – 171 bikes

05.12.2025 - +1.5C – 86 bikes

(32 with studded tyres)

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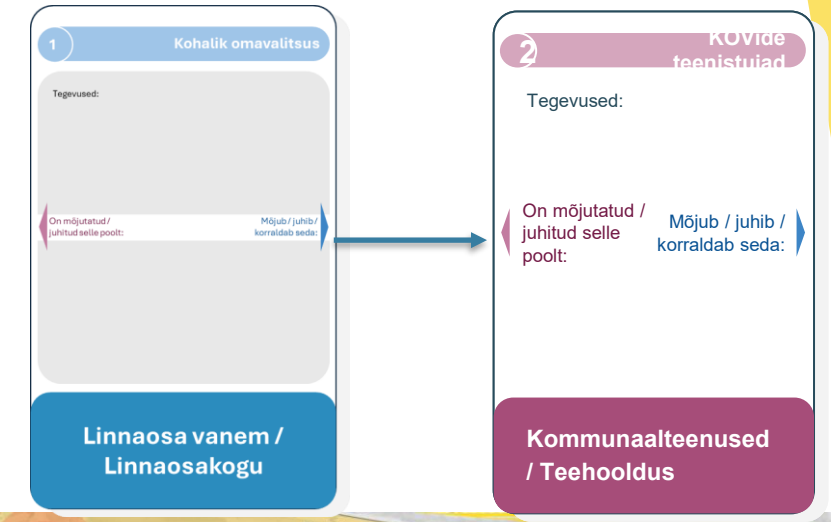
HOL: Winter maintenance study

- Introducing Year-Round Active Mobility
- Stakeholder Mapping
- Analysing Legal Framework
- Examples from European Cities
- Interviews and Results
- Practices of Municipalities in Harju County
- Comparison of International Best Practices
- Winter Maintenance System Mapping
- Examples of Problematic Locations
- Recommendations for the Future



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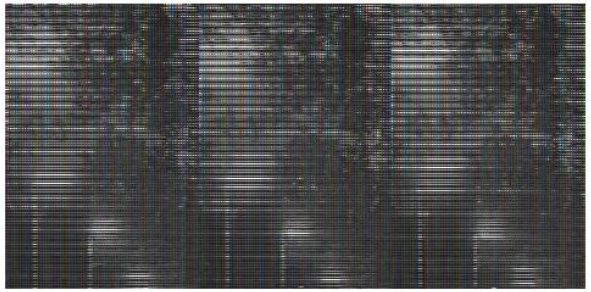
HOL: Winter maintenance study – Good Practice Cards

6 Pimedus



Ruumiprobleem
Hirm pimedates kohtades kõndimise ees

Probleem jalakäijale
Puudulik valgustus rattataristul

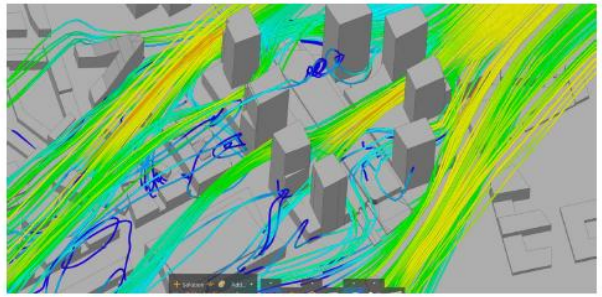
Probleem ratturile
Halb valgustus loob ebaturvalisi alasid

Anduritega nutikad valgustussüsteemid

Kopenhaagen: liikumisanduritega nutikas valgustus

Kopenhaagen on rakendanud kogu linnas nutika valgustuse uuenduse. LED-laternad on ühendatud liikumisandurite ja adaptiivsete juhtimissüsteemidega.
Tulemused:
üle 18 800 valgusti (umbes pool linna valgustuspargist) on välja vahetatud
valgustid reguleerivad eredust automaatselt vastavalt jalakäijate, ratturite või sõidukite liikumisele
märkimisväärne energiasääst ja suurem ohutus

3 Külm



Ruumiprobleem
Tuulekülm mõjutab paljast nahka

Probleem jalakäijale
Tuulekülm tekitab ohtliku külmakäitumise

Probleem ratturile
Tuulekülm vähendab kasutatavaid väliruume

Wind protection Tuulekaitse ja mikroklimaatiline disain design

Helsingi: ulatuslik tuulekaitsega linnaplaneerimine

Helsingi strateegiadokumendid — sealhulgas Helsingi linna strateegia ja mitmed kliimakohanemise kavad — käsitlevad tugevaid tuuli selgesõnaliselt kui äärmuslikku ilmastikunähtust, mis nõuab ennetavaid maandamismeetmeid.
Üks keskne põhimõte on „suurenenud tuulerõhu kontroll" kõikides uutes arendustes.

14 Äärmuslik külm

Ruumiprobleem

Probleem jalakäijale
Külm temperatuur tühjendab elektrirataste akusid kiiremini ja metallosad muutuvad rabedaks

Probleem ratturile
Äärmuslik temperatuur mõjutab materjalide omadusi

Külmakindlate materjalide nõuded

Fairbanks: arktilised ehitusstandardid

Fairbanks järgib Alaska ehitusnorme, mis põhinevad rahvusvahelisel ehitusnormidel, kuid sisaldavad spetsiifilisi muudatusi igikeltsa ja külma kliima jaoks, nõudes vähemalt 42 tolli sügavust vundamendi all, et vältida külmakerke.

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Klaipėda

secretariat@klaipedatransport.lt About us News Contacts Lost items Search EN

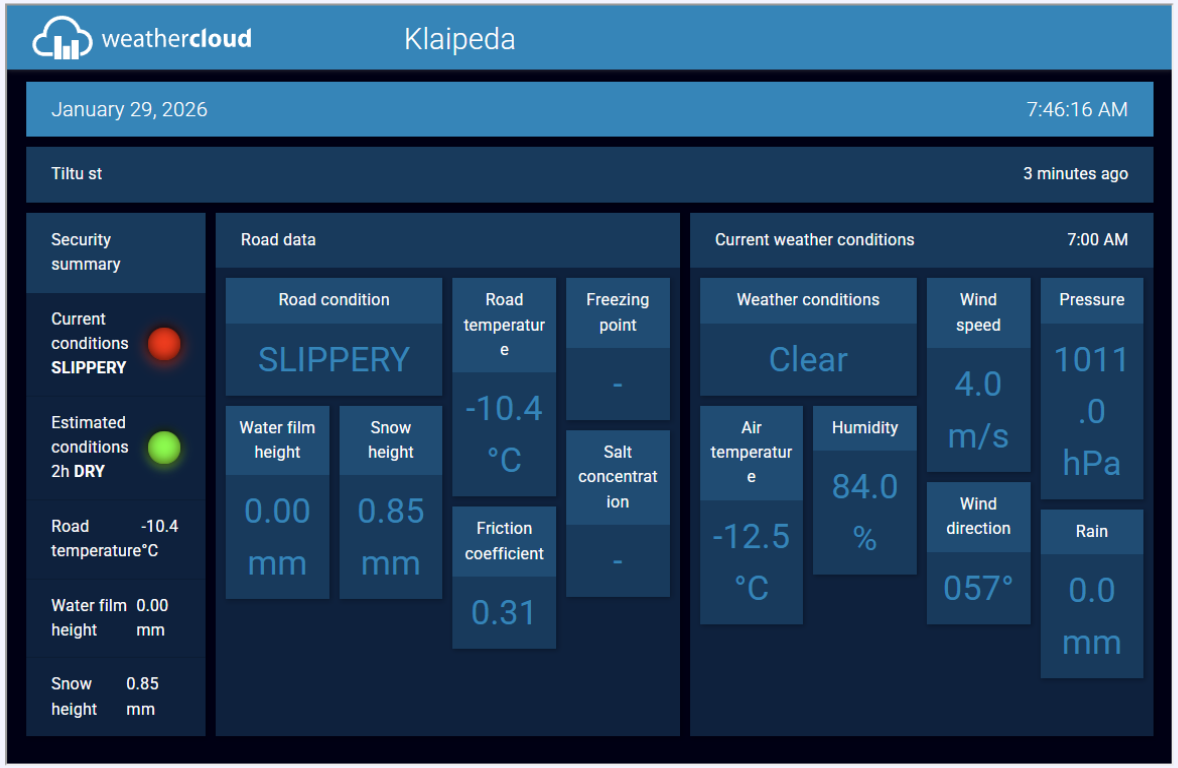
Public transport Parking • Bicycles Taxi FAQ

Title page / Bicycles / Weather station

- Bicycle storage rules
- Order a permit online
- Map of bicycle storage facilities
- Permit application form
- Weather station

Weather station

This page presents the actual condition of the bicycle path pavement on the bridge street.



A weather station has been added to our website for public access.

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Klaipėda

"Is it the light festival already, or is this a new installation of bicycle icons? Either turn them off or shovel the snow off them 😳 Klaipėda City Municipality?? Maybe save the money of Klaipėda's residents and don't waste electricity for no reason – thanks!"

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Klaipėda

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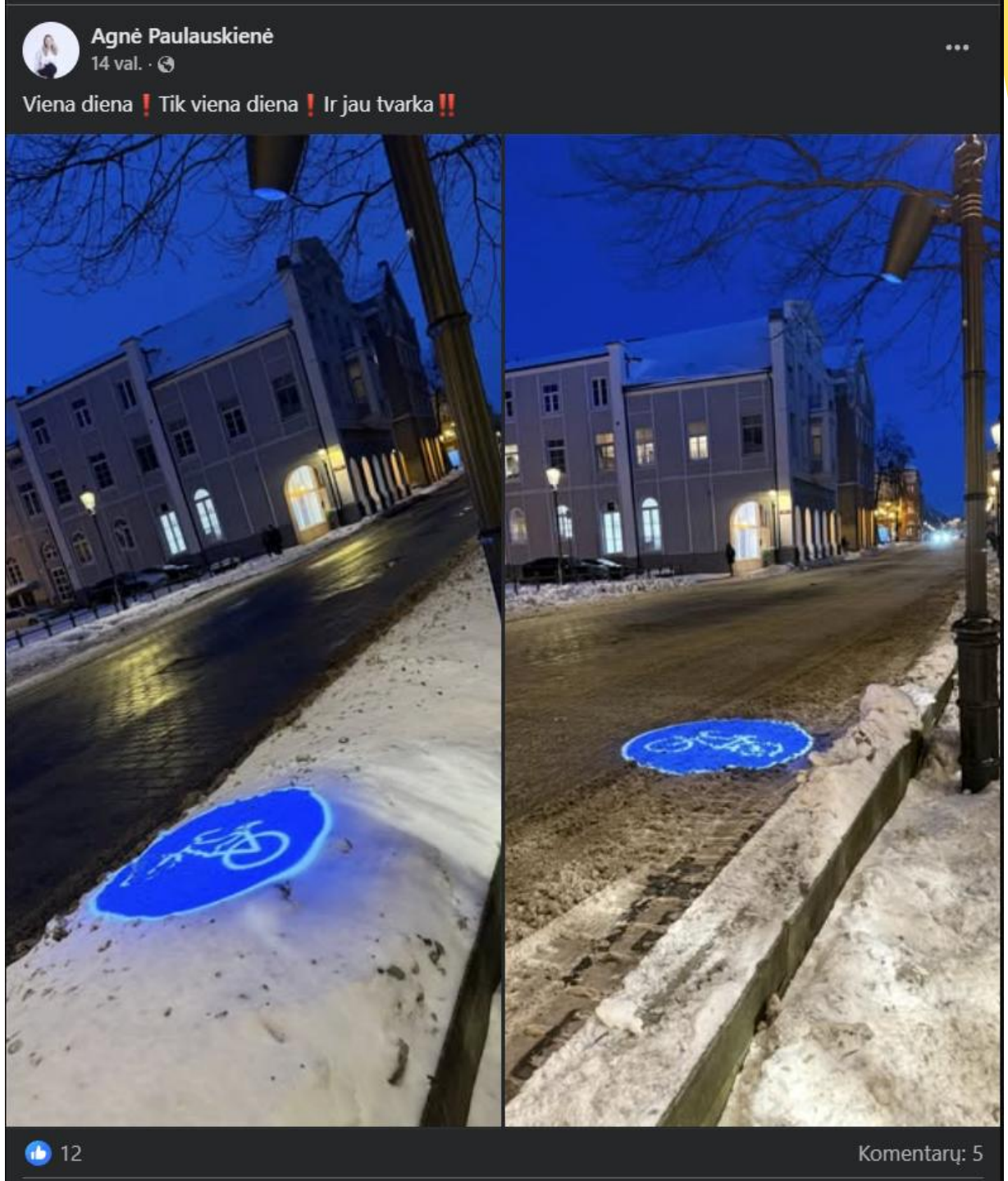
Klaipėda

One day ❗
Just one day ❗
And it's already sorted ‼️



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Klaipėda

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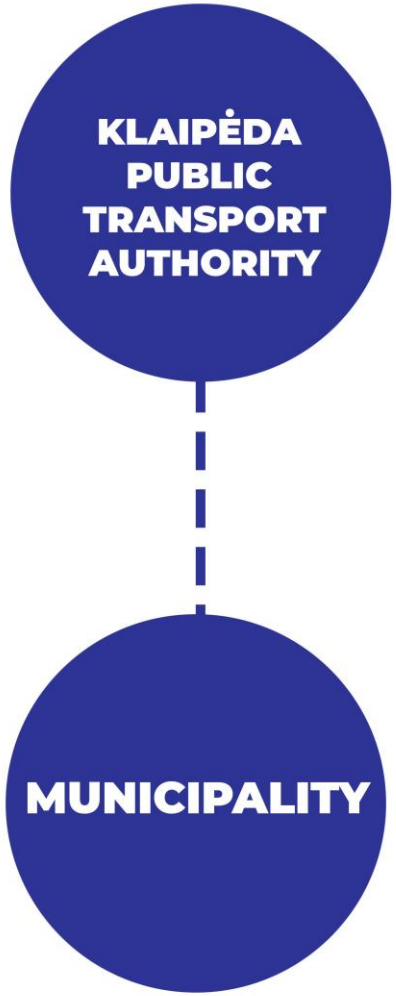
Klaipėda

PLANNING FOR DISCUSSIONS



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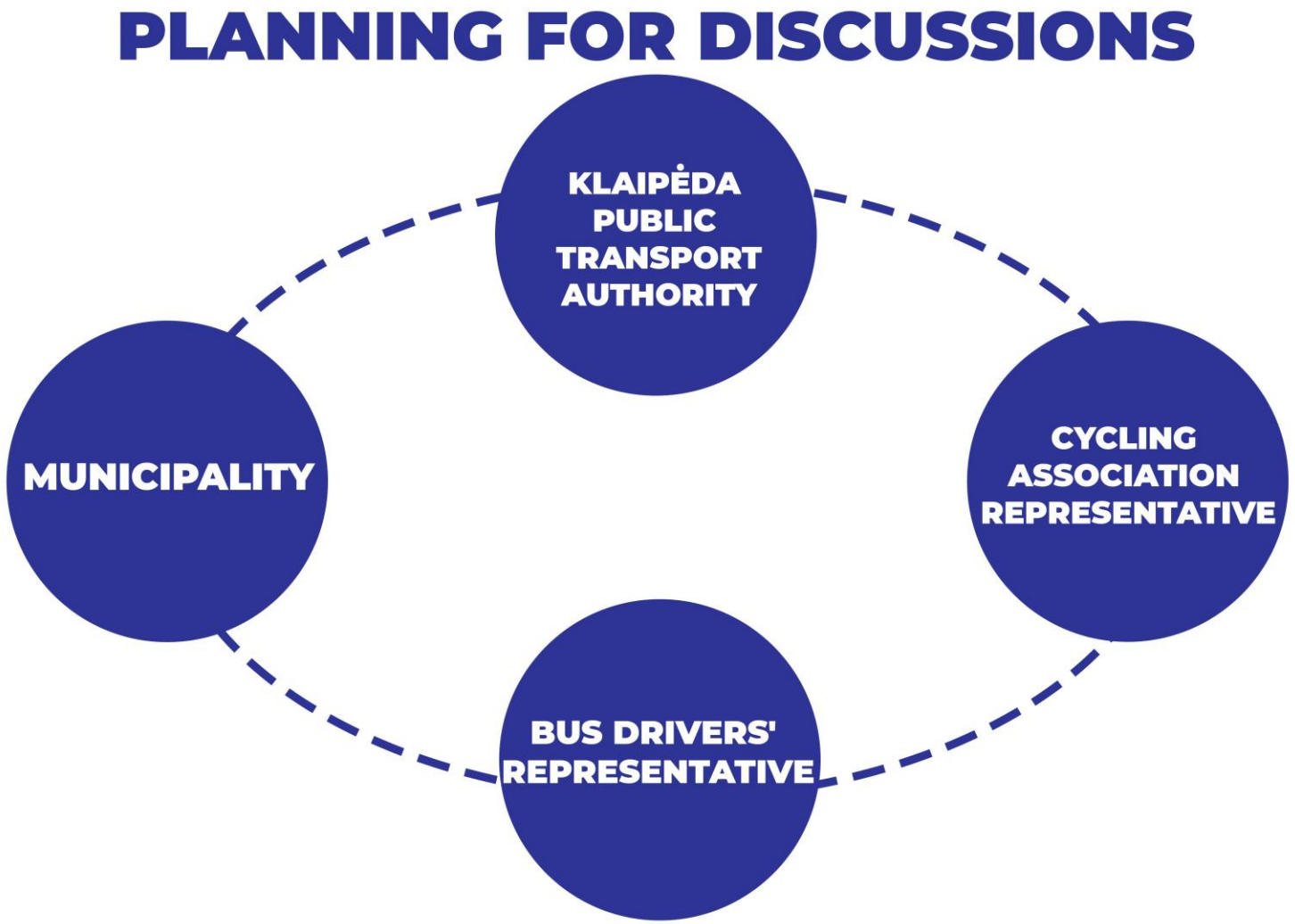
Klaipėda



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Umeå

- Winter Agents
- Winter marketing films for winter cycling (social media)
- Winter cycling activity with maintenance contractors

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Umeå

E-bike lending during winter

Three new projections

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Hamburg-Altona

„Walking safely - without tunnel vision”

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Baltic Sea Region

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Hamburg-Altona

Radverkehr Reventlowstraße

Herzlich Willkommen zur Umfrage

Hallo!

Danke, dass du an dieser Umfrage teilnimmst!

Wir von der Hansestadt Hamburg (Bezirksamt Altona), möchten herausfinden, wie du die **Kreuzung Reventlowstraße/Walderseestraße beim Radfahren** erlebst – besonders jetzt, wo dort **neue Schutzelemente zum Schutz von Radfahrenden** ausprobiert werden (siehe Bilder). Deine Meinung ist uns sehr wichtig, denn sie hilft dabei, Straßen und Wege für alle, die mit dem Fahrrad unterwegs sind, sicherer und angenehmer zu machen.

Bevor du mit der Umfrage beginnst, **schau dir bitte die angezeigten Bilder der Schutzelemente ganz genau an.** Sie sollen dir helfen, dich an die Kreuzung und an die Verkehrssituation dort zu erinnern und dir ein gutes Bild davon zu machen.

links: Orcas und Pylone; **mittig**: Orcas; **rechts**: Pylone; **unten**: Hochbord

Die Umfrage dauert nur ein paar Minuten. Es gibt keine richtigen oder falschen Antworten – wichtig ist nur, was du denkst und wie du die Fahrt erlebt hast. Deine Angaben bleiben selbstverständlich anonym.

Vielen Dank für deine Unterstützung!

Neue Befragung beginnen

Anmeldung

BATS-Umfrage

Bitte eine Antwort auswählen

Wie oft fährst du normalerweise über die Kreuzung Reventlowstraße/Walderseestraße **mit dem Fahrrad**?

Bitte eine Antwort auswählen

fast täglich	1-3 Mal pro Woche	1-3 Mal im Monat	seltener	heute das erste Mal

Wie **sicher** fühlst du dich normalerweise an der Kreuzung Reventlowstraße/Walderseestraße?

Bitte eine Antwort auswählen

Sehr unsicher	unsicher	mittel	sicher	**Sehr sicher**

Die **Schutzelemente (Pylonen oder Orcas)** haben mich gut genug vom Autoverkehr getrennt.

Bitte eine Antwort auswählen

stimme gar nicht zu	stimme eher nicht zu	teils/teils	stimme eher zu	**stimme voll zu**

Die **erhöhte Bordsteinkante (Hochboard)** hat mich gut genug vom Autoverkehr getrennt.

Bitte eine Antwort auswählen

stimme gar nicht zu	stimme eher nicht zu	teils/teils	stimme eher zu	**stimme voll zu**

Wie **angenehm** fandest du das Radfahren insgesamt an der Kreuzung Reventlowstraße/Walderseestraße?

Bitte eine Antwort auswählen

schlecht	eher schlecht	mittel	eher gut	**sehr gut**

Die **Wegführung/Markierungen** an der Kreuzung Reventlowstraße/Walderseestraße waren für mich **leicht zu verstehen**.

Bitte eine Antwort auswählen

stimme gar nicht zu	stimme eher nicht zu	teils/teils	stimme eher zu	**stimme voll zu**

Der **Zustand** der Schutzelemente (z. B. Laub, Nässe, Sichtbarkeit) war für mich in Ordnung.

Bitte eine Antwort auswählen

stimme gar nicht zu	stimme eher nicht zu	teils/teils	stimme eher zu	**stimme voll zu**

Wie **zufrieden** bist du **insgesamt** mit der Strecke an der Kreuzung Reventlowstraße/Walderseestraße mit den neuen Schutzelementen?

Bitte eine Antwort auswählen

sehr unzufrieden	eher unzufrieden	teils/teils	eher zufrieden	**sehr zufrieden**

Interreg Baltic Sea Region

Poorvo

Winter maintenance

- Winter agents -> an anonymous feedback survey and a separate targeted citizen panel (using personas)
- After the previous winter season new maintenance equipment, work load swaps between the city and the state, more responsibilities (in street km:s) for the city
- Done: a monitoring workshop, the first set of KPIs, the relaunch of the last winter feedback survey, a separate profile survey with personas drafted

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Poorvo

Winter maintenance

- After PM7 (ending in May): the final assessment of the KPIs, a comparative analysis of the feedback survey, the second event with the panelists
- Lesson thus far: some citizens eager to participate, the maintenance professionals more wary

Poorvo

Cycling simulator

- Done: the equipment, venues secured, 3D visualisation mostly done, connecting the bike and the 3D model progressing
- Before PM7: the simulation running, most bugs and glitches fixed, early results from experimenting with planners
- After PM7 (ending in August): finalizing the model, testing with more planners and politicians, citizen participation with the help of CAG
- Lesson thus far: the simulation as a boundary object

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Poorvo

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UPCOMING ACTIVITIES & PLANNING

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COMS: Webinar promotion

https://interreg-baltic.eu/event/bats-webinar-why-dont-they-go-by-night-integrating-womens-needs-into-yram/

BATS

THANK YOU FOR JOINING!

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