

D3.2 Report on 15mC discourses in each civic lab

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Disclaimer

This publication has been written within the Driving Urban Transitions Partnership project CONIFER (<https://conifer15.eu/>), action type “15mC topic 3: Empower People for Urban Mobility Transitions”, co-funded through the European Commission. CONIFER aims to develop and test a participatory foresight methodology that combines a system oriented, structured approach with creative and participatory methods for co-creating 15mC futures based on the diverse needs of children, young people, carers and teachers.

Executive Summary

Objectives This report describes the results from tasks 3.4 and 3.5 of the CONIFER project. Its primary objective is to investigate political and social discourse regarding mobility, with a specific focus on the 15-minute city (15mC) concept and youth mobility. It analyzes two complementary data streams, political discourse in regular news media (task 3.4, described in part I) and public sentiment on social media platforms (task 3.5, described in part II). It aims to surface prevailing discourse topics, preferences, biases, and conflicts, and compare those across six different European cities: Brussels, Budapest, Cologne, Ghent, Matosinhos, and Toruń. This research provides the basis for the participatory foresight methodology applied in the rest of the project to co-create sustainable urban futures that reflect the needs of children, young people, their carers, and teachers.

Methods The research employed a mixed-methods approach, reflecting the different characteristics and challenges of the distinct data streams under investigation in the two sub-tasks. In task 3.4, 109 news articles related to local mobility topics were collected by project partners from the six different cities using keyword searches. A qualitative content analysis was conducted, applying coding frameworks to identify political and social support for, or criticism of, sustainable mobility, with particular attention to youth and school-related contexts. In task 3.5, social media posts were collected from multiple platforms (in particular, X and YouTube) via their APIs, using keywords and other parameters to focus the search on discussions of mobility topics in the six cities under investigation. AI-based methods were applied for data cleaning and selection, as well as for the analysis of the debate reflected in the data. The methods for this analysis included topic modeling, stance detection, sentiment analysis, and bias detection.

Results The studies show differences and similarities across both traditional and social media and across the various locations. Taken together, the results converge on a broadly positive picture when it comes to discourse about sustainable mobility. First of all, they show that there is consistent, widespread support for sustainable mobility across all six cities, in both media and social media discourse. Second, they reveal a strong focus on safety, including child safety on school commutes. Third, they also show some common points of resistance, which are not targeted against sustainable mobility as a whole, but rather against specific policy implementations, such as the restriction of private motor vehicle use or the introduction of car-free school streets. Finally, the results also show differences between the data streams. E.g., they show a strong tendency towards the use of negative tone in the social media messages, which can easily confuse their interpretation. They also show local variances: while general attitudes toward sustainable mobility remain

consistent, specific topics of debate vary significantly by city, closely following local debates and policy implementations.

Conclusions The two studies demonstrate that sustainable urban transformation is a widely accepted goal, yet the implementation of such transformation can lead to contestation at the local level. The findings indicate that while citizens prioritize safety and sustainability for youth, implementation and communication strategies must address the social and political tensions surrounding particular topics, such as, e.g., car restrictions. Addressing specific points of friction is essential for the successful co-creation of 15-minute city scenarios.

Introduction

This is report D3.5 of the CONIFER project. The project aims to develop a participatory foresight methodology to explore 15-minute city futures, focusing on the needs of children, young people, their carers, and teachers. It will create multiple scenarios and collective visions for the proximity city by combining innovative systems with creative methods such as gamification, art, design thinking, and signature events, while also investigating the role of artificial intelligence in supporting this process.

This report brings together two complementary studies of how 15mC topics and youth mobility are discussed in the public sphere across the six different European cities in which the project is implementing civic labs. Task 3.4 analyses political discourse in regular news media, through the manual selection and qualitative coding of a curated set of articles in each city. Task 3.5 analyses biases and preferences expressed in social media conversations, using AI-based methods, including topic modelling, stance detection, sentiment analysis and bias detection. Both tasks aim to surface topics, preferences, biases and conflicts around sustainable mobility that can feed into the participatory foresight process.

The report is organized in three parts. Part I presents the media analysis, discussing the dominant themes city by city and drawing them together in a comparative synthesis. Part II contains the social media analysis, covering the methodology for collecting and analyzing data and the results of each type of analysis, before closing with a discussion of the preferences and biases that emerge and of the challenges and limitations encountered. Part III brings the two studies together, examining where their findings align and diverge, comparing the research challenges each faced, and drawing overall conclusions.

Read together, the two studies converge on a broadly reassuring picture. There is more support for sustainable mobility than opposition to it, in both the media and the social media. The resistance that does exist is concentrated on specific topics, such as, in particular, the restriction of car use. Safety, on the other hand, and in particular the safety of children on their way to school, is a central and largely consensual concern. The specific topics of discussion vary from one city to another, following local debates and policies, but the underlying attitudes are rather consistent across locations. The social media conversation is further marked by a pervasive negativity, while political bias is present in both regular media and social media sources. Both of these aspects play an important role in the correct interpretation of the texts and the discourse they contain.

PART I: Task 3.4 Analysis of mobility narratives in political discourse

1. Introduction

The purpose of Task 3.4 was to explore the contemporary political discourse on issues of mobility, specifically as relates to youth and school commutes, in the six partner cities for the CONIFER project. Such analysis was intended to provide insight into aspects of the current mobility paradigm as reflected in the discourse as well as potential insight into aspects of societal norms, opinions, biases, preferences and conflicts related to sustainable mobility and issues of urban mobility and school commutes.

The observation that urban mobility narratives of a ‘transformational’ nature are emerging and can lead to not only a change in discourse but a change of urban mobility culture as well (Kallenbach, 2020) is a central awareness in an approach to analyze media from diverse cities focused on youth, sustainable mobility and school commutes. How these topics are discussed, debated, supported and presented in media can offer a view to contemporary opportunities as well as challenges in shifting towards sustainable urban mobility. Partners for this task who were responsible for gathering the articles to be analyzed often shared media that was not political in nature but very important for the overall context of that view. Additionally, not all articles were explicitly about school mobility, but again, often important for reference due to overall context.

Thus, the results presented here offer a broader overview of discourse, including but not limited to political discourse, as during analytical stages it was perceived that documentation of political discourse alone may be too limited. Additionally, social contexts and conditions that implicitly connect to realities that are often, in large part, a result of political decisions were documented across the cities and thus important to include in the analysis and report. The resulting analysis here is on both political and social discourse of sustainable mobility in media, with a focus on youth mobility and school commutes.

2. Method for Analysis of Mobility Narratives in Political Discourse

The first action of the methodology was a desktop research task for all partners involved in the task. First, partners were asked to find a minimum of 10 and a maximum of 20 articles from local media, specifically a minimum of 2 local newspapers and/or news sites. Partners were to be particularly mindful to include media from sources that reflect different areas of the political spectrum.

Some suggestions for specific angles of coverage to search for, in the context of youth, mobility and 'commutes to school', were the following themes, which also later served as a lead partner analytical coding system.

1. Political support for sustainable mobility
2. Political critique or hostility to sustainable mobility
3. Social bias & prejudice against sustainable mobility
4. Social support for / promotion of sustainable mobility
5. Mixed angle / neutral approach to coverage

Partners were also encouraged to develop keyword searches unique to their local city's geographic, climate, political, cultural, etc. context. Second, partners then were to input the list of articles into a table along with a brief paragraph justifying why each article was selected as 'representative' for research on political discourse and youth mobility culture. Articles were then provided in their original language and English translations.

The lead partner for Task 3.4 decided, after an open and robust discussion at the project consortium meeting in Matosinhos in February 2026, to frame the analysis of each city with a theme provided by each partner. Such a theme reflected the expertise of each city partner as relates to their representative city and helped to frame the overall analysis of each media stack. Such themes, as determined by Civic Lab partners, were:

Brussels (VUB and IFP-r): Overall positive discourse towards children's school commute (with a strong role of the regional department of mobility and advocacy for safe children's routes by NGOs and parents)

- Budapest (KTI): Overall dominance of right-wing media
- Cologne (WI): School route safety
- Ghent (CUP): Traffic safety in school zones
- Matosinhos (MC and UA): Pedestrian Safety (increasing lack of safety connected with politically aligned mobility views and actions)

- Toruń (NCU): Insufficient media coverage of children and youth mobility

Third, following provision of a list of articles for each city, along with keywords used and justifications for including each article, IGOS PAS, the lead partner for this task and report, analyzed the content with the following coding system.

1. Political support for sustainable mobility
2. Political critique or hostility to sustainable mobility
3. Social bias & prejudice against sustainable mobility
4. Social support for / promotion of sustainable mobility
5. Mixed angle / neutral approach to discussion
6. Related to youth and mobility

Fourth, via manual analysis of all media provided by each partner, IGSO PAS deciphered 3-4 micro themes in the media, documented in the 'Analysis' section for each city. Manual analysis entailed a qualitative content analysis approach in which the lead partner analyzed the table of justifications from each partner as well as every media article to identify dominant themes in the media provided from each partner. Via review and analysis of every media article provided by partners, dominant themes of discourse and media coverage were observed and documented in the analysis for this report. Research Results

The media analysis of the articles provided by the 6 Civic Lab partners led to discovery of a series of dominant themes of media coverage and discourse for each city. Such coverage and discourse highlights the issues that appear to be most prevalent in local media as relates to youth mobility and school commutes.

3. Results

3.1 Research results on the cities

The emergent themes in the discourse, as noted by the partners doing the media searches as well as the micro themes detected via lead partner analysis are listed below. This list is a summary of themes, with the microthemes found via lead partner analysis further discussed in subsequent city-specific sections in this report.

Brussels

VUB and IFP-r: Overall positive discourse towards children's school commute (with a strong role of the regional department of mobility and advocacy for safe children's routes by NGOs and parents)

IGSO PAS: Focus on cycling; Focus on school streets; Great social and political support for sustainable mobility for school commutes; Lack of political commitment and complex realities

Coding of 26 articles:

- 24 related to or explicitly refer to youth and mobility
- 25 provide mixed or neutral coverage of sustainable mobility issues
- 18 demonstrate political support for sustainable mobility
- 17 demonstrate social support for sustainable mobility
- 3 demonstrate social bias to sustainable mobility
- 1 demonstrates political critique to sustainable mobility

Budapest

KTI: Overall dominance of right-wing media

IGSO PAS: School street complexities and developments, Kiss + Ride; Political and social critique and hostility to sustainable mobility; Political and social support for sustainable commutes to school

Coding of 16 articles:

- 14 related to or explicitly refer to youth and mobility
- 9 demonstrate political support for sustainable mobility
- 9 demonstrate social support for sustainable mobility
- 5 provide mixed or neutral coverage of sustainable mobility issues
- 4 demonstrate social bias to sustainable mobility
- 1 demonstrates political critique to sustainable mobility

Cologne

WI: School route safety

IGSO PAS: A focus on school streets; Support for students commuting via sustainable mobility modes; Residential vision of the city

Coding of 20 articles:

- 20 are related to or explicitly refer to youth and mobility
- 18 demonstrate social support for sustainable mobility
- 11 demonstrate political support for sustainable mobility
- 8 provide mixed or neutral coverage of sustainable mobility issues
- 3 demonstrate social bias to sustainable mobility
- 0 demonstrates political critique to sustainable mobility

Ghent

CUP: Traffic safety in school zones

IGSO PAS: Safety and youth mobility; Intersecting issues of cycling and safety; Transport poverty and youth

Coding of 11 articles:

- 11 are related to or explicitly refer to youth and mobility
- 6 demonstrate political support for sustainable mobility
- 3 demonstrate social support for sustainable mobility
- 5 provide mixed or neutral coverage of sustainable mobility issues
- 0 demonstrate social bias to sustainable mobility
- 0 demonstrate political critique to sustainable mobility

Matosinhos

MC and UA: Pedestrian Safety (increasing lack of safety connected with politically aligned mobility views and actions)

IGSO PAS: Conscious municipal leadership on sustainable mobility; Focus on cycling safety; Unique initiatives for youth engagement and awareness

Coding of 15 articles:

- 13 demonstrate political support for sustainable mobility
- 11 demonstrate social support for sustainable mobility
- 9 are related to or explicitly refer to youth and mobility

- 2 provide mixed or neutral coverage of sustainable mobility issues
- 0 demonstrate social bias to sustainable mobility
- 0 demonstrates political critique to sustainable mobility

Toruń

NCU: Insufficient media coverage of children and youth mobility

IGSO PAS: A focus on routes and information; Unique social initiatives related to public transportation; References to local contexts and conditions; Political support for sustainable mobility

Coding of 21 articles:

- 15 demonstrate political support for sustainable mobility
- 15 are related to or explicitly refer to youth and mobility
- 11 demonstrate social support for sustainable mobility
- 9 provide mixed or neutral coverage of sustainable mobility issues
- 1 demonstrates social bias to sustainable mobility
- 1 demonstrates political critique to sustainable mobility

3.1.1 Brussels

Media selection for Brussels was led by partners Vrije Universiteit Brussel (VUB) and International Federation of Pedestrians - research (IFP-r). IFP-r searched for articles in French while VUB searched for articles in Dutch and English. The partners' media selection totaled 26 articles, shortlisted from an original list of 43 articles.

The time frame of articles searched was 2024 to 2026.

Political leanings of media searched were documented by partners IFP-r and VUB:

- BRUZZ is a Dutch-speaking, publicly funded media outlet covering the Brussels region. As a public service broadcaster, it aims for neutral and pluralist reporting. However, it can broadly be described as center-left or progressive urban media. It pays particular attention to urban issues such as mobility, housing, and social inclusion, and its editorial tone is generally favorable toward sustainable mobility

and climate policies. Regarding keywords, the partners noted that there were no results from the following keyword strings in the online database of BRUZZ.

Keywords used included terms and word combinations in Dutch and French related to local mobility, sustainable mobility and youth (see appendix A.1). VUB noted that the search engine of BRUZZ newspaper does not contain a Boolean operator system, and that entering multiple keywords often leads to no or few results. so, they opted to work with the categories available for selection on the BRUZZ website.

- BX1 is a French-speaking, publicly funded regional media outlet for the Brussels region. Similar to BRUZZ, it emphasizes neutral and pluralist reporting and can be described as center to center-left leaning. Its coverage places stronger emphasis on social cohesion and local social policies.
- The Brussels Times is an English-language, privately owned media outlet focusing on the Brussels region. Its audience is largely composed of the “expat bubble,” which partially overlaps with the EU institutional community. The outlet can be characterized as center to center-liberal leaning. In addition to national and local issues, it places strong emphasis on EU affairs, rule of law, and human rights, topics commonly associated with a liberal editorial orientation.

Analysis by the Task 3.4 lead partner IGSO PAS determined that of 26 articles:

- 24 related to or explicitly refer to youth and mobility
- 25 provide mixed or neutral coverage of sustainable mobility issues
- 18 demonstrate political support for sustainable mobility
- 17 demonstrate social support for sustainable mobility
- 3 demonstrate social bias to sustainable mobility
- 1 demonstrates political critique to sustainable mobility

The emergent theme in the discourse observed by Brussels project partners IFP-r and VUB for this task was ‘Overall positive discourse towards children’s school commutes (with a strong role of the regional department of mobility and advocacy for safe children’s routes by NGOs and parents)’.

The themes emerging from the analysis of the media by Task 3.4 lead partner IGSO PAS are:

- Focus on Cycling
- Focus on School Streets

- Great Social and Political Support for Sustainable Mobility for School Commutes
- Lack of Political Commitment and Complex Realities

Below is a more detailed analysis of the media documented from Brussels (appendix A.1).

Focus on Cycling

Diverse coverage in the media collected provides insight into the role of cycling within the Brussels mobility culture. Reports on a new pilot project at a school gate in one of Brussels' municipalities to accommodate cycling parents (*Brussel Start Proefproject Kiss & Cycle-stroken Voor Bakfietsouders*, 2025b; Druelles, 2025c; The Brussels Times, 2025b) spotlights an initiative demonstrating the close work of the Brussels Regional department for mobility with local schools.

Coverage reporting on Brussels Regional Mobility Agency's active promotion of school commutes by bike through a large bicycle-collection campaign conveys an interdependent and supportive political and social support for sustainable mobility promotion via a practical measure of organizing bicycle donations for refurbishment and affordable municipal bicycle renting systems (BX1, 2024). Other coverage reported on school pupils' participation in a cycling parade on World Bicycle Day, an initiative organized by the municipality to encourage cycling as a mode of school commute (*Tachtig Leerlingen Fietsen Voor Wereldfietsdag Met Een Muzikale Parade Door Schaarbeek*, 2024).

Focus on School Streets

A strong focus on school streets emerged in the media collected for Brussels, revealing what a central role school street development plays in contemporary mobility planning and discourse there. The potential for increasing active modes for school commutes is conveyed through diverse coverage that report on a study of pupils' home-to-school distance, documenting the reality that for half of the children living in Brussels, school is less than 1.2 kilometers from home (Peeters, 2025) with a median home-school distance of 1.5 kilometers for Dutch-language education and a median of 1.1 kilometers for French-language education. Children with special education needs on average have a 3.5 kilometer home-school distance (Druelles, 2025b).

An article reporting on the introduction of a new school street after a successful trial period (Druelles, 2025a) is one of numerous articles documented for this report that demonstrates how coverage of school streets is reported on in Brussels media and is part of the school mobility local culture, if even contested in specific cases.

NGOs play an important role in the mobility field in Brussels, forming critical support and advocacy. NGO Les Chercheurs d'Air reports on municipalities commitments to school

streets (or lack thereof) while also advocating for their role in children's health and safety, particularly given dangerous levels of air pollution at many schools (Chini, 2026). The study by Les Chercheurs d'Air ranking the 19 municipalities commitment to developing school streets is a model-worthy and practical inspiration for NGOs and other entities in cities looking to collect data on the status of school street plans and commitments. Also reported is the organization's advocacy for the Low Emissions Zone in Brussels, including a plan to phase out all diesel engines by 2030 and all internal combustion engines by 2035 (*Een Vijfde Van De Brusselse Scholen Blootgesteld Aan Zware Luchtvervuiling*, 2024).

While the number of school streets has increased in Brussels in recent years, coverage points out how such initiatives remain 'very uneven across municipalities', also reflecting the results of the NGO Les Chercheurs d'Air (Joinau, 2026). Also noted was that the work of the NGO on a prior survey revealed that a majority of residents in Brussels, including those who drive, support the creation and implementation of more school streets. Coverage also documents the observation by Les Chercheurs d'Air that only 8% of Brussels primary schools currently have a school street, this could be expanded by 70% (*Een Vijfde Van De Brusselse Scholen Blootgesteld Aan Zware Luchtvervuiling*, 2024).

A manifesto signed by approximately 60 individuals and organizations, called for Brussels to be made into a more child-friendly city, including with specific measures such as more school streets (*Pamflet Voor Een Brussel Op Kindermaat: "Hopelijk Ziet Volgende Regering Het Belang Ervan,"* 2024). Such an initiative demonstrates robust and coordinated advocacy and social support for increased sustainable mobility options for school commutes, among other measures for more inclusive and thoughtful urbanism.

Great Social and Political Support for Sustainable School Commutes

A theme apparent in the media documented for Brussels was great social support for sustainable mobility for youth mobility and commuting to school. The School Transport Plan in Brussels is a tool to help students, teachers and parents in their search for the safest route to school (*Steeds Minder Brusselaars Gaan Met Auto Naar School*, 2026) and is a practical model conveying direct support for the sustainable mobility shift. The Brussels Regional Department for Mobility has a long-time tradition of working directly with schools through 'school-travel-plans' which is reflected in this media item, which notes that of approximately 850 schools in Brussels, 336 participate in school travel plans, thus being able to access various support, programs and teaching resources designed to encourage active mobility. Regarding School Travel Plans, Lore Vantomme, head of school mobility at Brussels Mobility, is quoted as saying that "*Schools committed to the approach adopt active modes of transport more quickly. We work with each school to offer appropriate tools, from teaching materials to specialized training*" (Dieu, 2026).

An article reporting on an important regional governmental study about school commutes notes that fewer residents in Brussels are commuting by car to school noting that at approximately 83% of schools there appears to be an increase in sustainable mobility, with school commutes happening by bicycle or foot (*Steeds Minder Brusselaars Gaan Met Auto Naar School*, 2026). Related coverage details that approximately 72% of residents in Brussels are in favor of car-free and green school streets (Chini, 2025). The same coverage detailed that support for green school streets is even broader, with 84% of residents surveyed conveying favor to them.

The active collecting of data on student mobility can also convey political interest and support for working towards more sustainable mobility. Schools must submit data on student mobility every three years and statistics in 2025 reported increases in active travel, cycling in particular, and decreases in school journeys by car (Dieu, 2026).

Diverse expressions of political support for sustainable mobility were also detected across the media research for Brussels. Brussels Mobility Minister Elke Van den Brandt (Green Party) is quoted as saying that "*All parents want their child to reach the school gate safely, and the figures confirm it: more and more children are going on foot or by bike. More than 100,000 pupils are already part of this movement,*" (*Steeds Minder Brusselaars Gaan Met Auto Naar School*, 2026). An Alderman for Dutch-language education noted that "*We want every parent to be able to take their child to school with peace of mind,*" explaining why they continue to invest in infrastructure for traffic-safe school environments (*Stad Brussel Maakt Enkele Schoolomgevingen Verkeersveiliger*, 2025).

Reduced public transport fares offered by Brussels public transport operator STIB for children and youth (*The Brussels Times*, 2024) reflect an important municipal approach to making sustainable mobility affordable and accessible for school commutes. Another municipal measure conveying support for sustainable school commutes is documented in Brussels public transport operator's (MIVB/STIB) simplification of the procedure for public transport passes for school kids (Schmitz, 2025).

An article demonstrating the activism by parents, schools and children in Brussels for safer streets is vital to document the existence of civic agitation as well as action in desire for a safer mobility culture (*School Protesteert Voor Veiligere Straat in Anderlecht: 'Er Is Hier Veel Verkeersagressie'*, 2025).

Coverage discussing the start of the European Mobility Week in Brussels and the city's prominent role in it refer to how local officials commit to expanding the school-street initiative, building on previous positive projects (*Europese Week Van Mobiliteit in Brussel Afgetrapt in Autoluwe Vlaamsesteenweg*, 2024). Referring to car-free school streets Vlaamsesteenweg, Mobility Alderman Bart Dhondt (Green) is quoted as saying "*The*

Vlaamsesteenweg has become the symbol of the battle parents are waging for clean air and safe streets. We have succeeded here in creating a truly safe school street. I want to continue working on this, because that is what every school needs." (Europese Week Van Mobiliteit in Brussel Afgetrapt in Autoluwe Vlaamsesteenweg, 2024).

Lack of Political Commitment and Complex Realities

The reality with political support for sustainable mobility on the ground in many European cities can reflect conflicting political agendas and ambitions, and such is the case as detected in the media for Brussels. The 'Lack of political ambition' to implement school streets, for example, is documented in an article on creation of school streets (Chini, 2026).

An article demonstrating significant social support for safer streets and increased sustainable mobility also conveyed the complex local political and social dynamics as the Alderman for the Municipality of Anderlecht is quoted remarking how it is 'difficult to draw up a separate traffic safety plan for every school on the street' and that 'they all have different hours and needs'. The alderman then proposes a school street, noting however the lack of local social favor for this proposal. A local headmistress reflected that 'the problem with a school street is that we would have to place our own staff in the street' (*School Protesteert Voor Veiligere Straat in Anderlecht: 'Er Is Hier Veel Verkeersagressie,'* 2025), reflecting on the danger posed by significant road rage of drivers in the area.

In early 2024, youth organizations expressed outrage over the increase in train fares for young people and demanded that subscription prices not be raised. A spokesperson for the Flemish Student Council noted that in their survey of 10,996 students, 9% commute to school by train and that for 7% of the students, the cost of public transport factored into their school decision (*Boze Jeugdorganisaties Vragen NMBS Prijzen Schoolabonnement Niet Te Wijzigen,* 2024.). The students objected to the rising of school season tickets and for authorities to in fact consider free train transport for school commutes, noting that 'every child and young person must be able to count on affordable, high-quality, and feasible combined mobility, both during and outside school hours, working hours, and study hours.' The coverage does not show explicit political support for nor bias against sustainable mobility choices but rather conveys the complexities surrounding economics of public transport service.

An article detailing Flemish public transport provider De Lijn's increase in fares for children aged 12–18 emphasizes the equity issues this change may create for families with school-aged children, particularly considering that the prices in the Brussels Region and Wallonia are lower than in Flanders. Such issues can be relevant in the context of Brussels school mobility for those who commute from suburban Brussels areas (The Brussels Times, 2025a).

Further coverage documented for this project revealed situations explicitly connected with the very local language context and culture since Brussels is a bilingual region with French and Dutch as official languages. Nevertheless, there are far fewer primarily Dutch speakers (22%) than primarily French speakers (81%)¹ living in the region and hence Dutch speaking education is also more limited. One article reported on how difficult it is for Dutch speakers to access (high) schools close to their home, which can affect school choice and attendance (Mabika, 2025). One parent of a Dutch-speaking child is quoted as saying *“My son has been in Dutch-speaking education his entire school life; switching to a French-speaking school is not an option. They take that into account far too little. And looking outside Brussels is difficult too; we don't have a car and do everything by public transport.”*

Coverage documenting a high daily rate of traffic injuries among children on their way to school, with higher injury rates among pedestrians and cyclists, detailed that in 2023, on average 14 children between the age of 3 and 18 were injured in road traffic accidents during school commutes (Walker, 2024). An article reporting on a study of Brussels' regional mobility department and the national department of travel safety on the annual rate of traffic injuries among children found that 482 children were involved in traffic accidents in 2024 (El Baye, 2025). The number marked a decline in injuries, but officials stress enhancing respect for rules for pedestrians, cyclists and drivers, in order to keep children safe. The Brussels Regional Mobility Agency actively promotes the safety of vulnerable road users by raising awareness about the importance of visibility, covered in one article that discusses the launch of an autumn campaign for safety of vulnerable road users ((*Brussel Mobiliteit Lanceert Herfstcampagne Voor Veiligheid Zwakke Weggebruikers*, 2024).

In a unique and engaging coverage in the form of a series called *'City Tailored for Children'*, Van Nieuwenhove (2025) documents how a known musician's departure from Brussels to start his family, sparked a debate on issues related to raising children in Brussels. In the article, researcher Sarah Tori at the Brussels Centre for Urban Studies discusses measures for the city to take to ensure children's safety in school commutes, namely, rethinking the entire school environment at the neighborhood level.

School streets appear in diverse other coverage, reflecting their importance in the school mobility ecosystem in Brussels. One article reporting on temporary closure of a school street, details how the municipal authorities considered permanently pedestrianizing the street and are studying the long-term effects of the current temporary closure (*Leerlingen Elsense Basisschool Krijgen Tijdelijk Straat Als Speelplaats*, 2024). However, traffic was later allowed back on the street. Coverage detailing the conflicting political and social opinions and realities on the issue documents how political representatives objected the reversal,

¹ Data source: 2024 BRIO/VUB Language Barometer 5. <https://www.briobrusssel.be/node/19094>

with Marie Thibaut de Maisières, a representative of the political party Ecolo, noting that the street had been serving as a pedestrian zone for a year “which was positive for the lungs and safety of the children” (*Verkeer Opnieuw Toegelaten in Elsense Neststraat: ‘Kan Op Termijn Schoolstraat Worden,’* 2025).

In contrast another political voice, Mobility Alderman, Valérie Libert (MR & VLD avec vous), laid out the complex social and spatial realities that hindered the longer term acceptance of a permanent pedestrian zone, noting that support among the school, local residents and a local nursery had disappeared due to reasons including double-parking in front of the pedestrian zone (sometimes by parents wanting to park closer to the daycare) and the rise in ‘loitering youths and petty dealers’ which negatively affected the neighborhood’s sense of safety. Such situations show the complex reality that can surround implementation of school streets and social conditions and spatial behavior that can rise from them.

3.1.2 Budapest

Media selection for Budapest was led by partners KTI Hungarian Institute for Logistics and Transport Sciences Non-Profit Limited Liability Company (KTI). The partners' media selection totaled 16 articles.

Keywords used included terms and word combinations in English and Hungarian (appendix A.2). The time frame of articles searched was 2023 to 2026.

Political Leanings of Media Searched were documented by partner KTI.

- Magyar Nemzet is a prominent daily newspaper within the Central European Press and Media Foundation (KESMA) and represents a national-conservative editorial line. Its relationship with the state is one of alignment and advocacy, as it consistently presents government policy as a means of protecting national sovereignty. Regarding the Budapest municipality, the outlet adopts a critical stance, often framing the city’s opposition leadership as being against the broader interests of the Hungarian state. Its core audience is composed of conservative-leaning voters, rural populations, and those who prioritize traditional cultural values. In its broader topical coverage, the paper emphasizes demographic issues, religious heritage, and the preservation of national identity, frequently framing these subjects as being under threat from external globalist or liberal influences.
- Telex is a donor-funded, independent news organization founded in 2020 by the former editorial staff of Index.hu to maintain journalistic integrity free from political interference. In its relationship with the state, the portal maintains a systematically critical position, prioritizing the scrutiny of public institutions and monitoring government spending. Its coverage of the Budapest municipality tends to focus on

administrative transparency and urban policy, often providing a platform for the city's leadership to respond to national-level pressure. The core audience consists primarily of urban residents, the university-educated demographic, and younger digital natives. Outside of central political news, Telex frequently covers global technology trends, environmental policy, and EU legislative developments, typically framing these through the lens of individual rights and data-driven analysis.

The partners conducting the media search (KTI) note that the main difficulty for this task and the media search was the strong political polarization of the media landscape. Using Magyar Nemzet and Telex provided a useful contrast, but it also made it a bit harder to separate mobility discourse from broader political narratives. In several Magyar Nemzet articles, measures like school streets or parking restrictions were framed as anti-car or harmful to everyday life, while Telex more often presented them as necessary and beneficial for safety and sustainability. Many articles framed issues in ideological terms and in relation to political actors and landscape, rather than as practical urban or transport questions. This sometimes raised positionality challenges. Even when trying to stay neutral, the tone and framing of the articles pushed the analysis in certain directions, so being aware of interpretation was important.

On a practical level, there were no major access issues like paywalls, but it was sometimes difficult to clearly distinguish between reporting and opinion, as many articles blended the two. At the same time, this contrast between sources was also an advantage. It made it easier to identify the key tensions.

Analysis by the Task 3.4 lead partner IGSO PAS determined that of 16 articles:

- 14 related to or explicitly refer to youth and mobility
- 9 demonstrate political support for sustainable mobility
- 9 demonstrate social support for sustainable mobility
- 5 provide mixed or neutral coverage of sustainable mobility issues
- 4 demonstrate social bias to sustainable mobility
- 1 demonstrates political critique to sustainable mobility

The emergent theme in the discourse observed by the Budapest project partner KTI for this task was *'Overall Dominance of Right-wing media'*.

The themes emerging from the analysis of the media by Task 3.4 lead partner IGSO PAS are:

- Kiss + Ride

- School Street Complexities and Developments
- Political and Social Critique and Hostility to Sustainable Mobility
- Political and Social Support for Sustainable Commutes to School

Below is a more detailed analysis of the media documented from Budapest (appendix A.2).

Analysis

Kiss and Ride

The “Kiss and Ride” (K+R) lots also were a prominent ‘micro theme’ detected in this category. An article reporting on an NGO’s criticism of K+R parking lots in Budapest (Orsolya, 2023) captures the politicization and social contestation of sustainable mobility for school commutes in Budapest. While it presents the pro-school street arguments of a civil society organization advocating reduced car use on environmental and health grounds, the framing of these views as ideologically driven and controversial reveals underlying social bias and resistance toward sustainable mobility. The coverage documents the NGO’s advocacy for a nationwide expansion of school streets and how promoting sustainable school commutes can mitigate the significant air pollution in the vicinity of schools caused by cars.

Continuing with the focus on “Kiss & Ride” lots, other coverage analyzed the traffic challenges around schools in Budapest, contrasting the concept of safe school streets with K+R parking lots that encourage motor vehicle traffic (Csaba, 2026). The author points out that while the convenience of car use dominates among commuters, for schoolchildren this results in noise pollution, accident risks, and a loss of independence, as the “mom taxi” phenomenon suppresses sustainable pedestrian and bicycle mobility. According to a survey by the Clean Air Action Group, although permanent closure is difficult at around 60 percent of schools, it would be relatively easy to create car-free zones at at least 80 institutions, which would significantly improve the quality of life for students. According to the article, the K+R spaces planned directly in front of school gates actually function as “anti-school streets” as they encourage and facilitate driving children to school by car. The tone of the article is expert, argumentative, and strongly critical of the car-centric approach, while presenting sustainable mobility for schoolchildren as a guarantee of children’s healthy development and safety, offering a critical examination of competing mobility models around schools in Budapest.

The explicit contrasting of car-oriented K+R solutions with the concept of safe, car-free school streets exposes social norms and convenience-based preferences that undermine sustainable mobility. The article’s strong advocacy for pedestrian- and bicycle-friendly

environments, supported by survey data, makes it a clear example of social support for and promotion of sustainable mobility for commutes to school.

School Street Complexities and Developments

The often socially and politically contested concepts of school streets were prominent in the media documented for Budapest. Connected to the aforementioned issues of social concern around issues of sustainable mobility, the media conveyed a range of responses and reception to initiatives for school streets.

An article reporting on the expansion of the Sulizóna (School Zones) program documents positive experiences so far, highlighting that more than half of those surveyed have changed their transportation habits as a result of the measures (2024a). The elements of the program—such as road markings, awareness-raising tools, and speed-reduced zones—are in line with the capital's traffic safety strategy. From September 2024, new traffic regulations and K+R spaces will also await students at one specific primary school as part of a major renovation of the surrounding area. A formal and optimistic tone presents a supportive and development-oriented narrative around sustainable mobility measures for school commutes. By highlighting positive behavioral change, traffic-calming tools, and alignment with both municipal strategies and EU-level goals, the article reflects institutional and social support for safer, less car-dependent school travel. Its optimistic tone and emphasis on measurable success is an example of how sustainable mobility initiatives are legitimized and promoted in public discourse, showing social support for and promotion of sustainable mobility for commutes to school.

An article presenting an institutional initiative aimed at reducing car traffic and improving safety around schools through the introduction of trial school streets in Budapest (Gergely, 2025), specifically focuses on BKK's (Centre for Budapest Transport) plan to create "school streets" on a trial basis, with the overall aims to increase traffic safety and reduce car traffic by encouraging parents to use alternative modes of transport through "self-explanatory street streetscapes.". By framing walking and micro-mobility as default and desirable options during school hours, the article reflects policy-level support for sustainable commuting practices. Its practical and supportive tone illustrates how such measures are communicated as feasible and beneficial, aligning with political support for sustainable mobility for commutes to school and presenting a safe school environment as an achievable urban development priority.

Coverage on the launch of a trial period of a "school street" program for two specific schools in Budapest, in September 2025 (Magyar Nemzet, 2025d) highlights that BKK (Centre for Budapest Transport) emphasizes the importance of informing parent communities and residents, through street forums and school meetings, in the aim of

developing a long-term, sustainable and jointly supported solution that guarantees the safe arrival of children. The title of the article is sensationalist and critical ("Drivers are being targeted again"), yet the text itself provides a more objective account of BKK's information efforts and the importance of public involvement. The source captures the contested political and social discourse surrounding the introduction of school streets in Budapest and illustrates both resistance and institutional justification, therefore aligning with a mixed or neutral approach to sustainable mobility for commutes to school.

Coverage presenting the Sulizóna program and school streets as collaboratively developed solutions that prioritize walking and micro-mobility while still accommodating limited car access through K+R stops, reflect official support for sustainable school commuting (Magyar Nemzet, 2025b). The coverage details an institutional initiative aimed at restructuring school-area mobility in Budapest toward safer and more sustainable practices through the concept of "school streets". K+R (Kiss & Ride) stops are also noted as being created near schools, allowing for short stops to drop off and pick up passengers. Informative and descriptive media coverage conveys the significance of the developments as well as support of the creation of a safer and healthier school environment.

Finally, an article documenting a concrete and widely supported example of a permanent car-free school street in Budapest illustrates how sustainable mobility measures can gain strong social legitimacy (Sándor, 2025). One of Budapest's first permanent car-free school streets was created in front of a high school, enriching the environment with benches, plants, and community spaces. The development was realized through widespread cooperation and the support of 90 percent of local residents, providing safer space for students and teachers. The tone of the article is enthusiastic and positive, presenting the project as a model example of a successful community initiative and urban space reclamation. By emphasizing community cooperation, high resident approval, and the creation of safer, people-oriented public space, the article reflects positive collective attitudes toward reducing car dominance around schools. Its celebratory tone aligns with social support for and promotion of sustainable mobility.

Political and Social Critique and Hostility to Sustainable Mobility

Social hostility and political critique for the sustainable mobility 'agenda' was manifest in the media for Budapest in coverage that also conveyed the complexities of residents' perceptions and biases for how city space should be used with regards to mobility.

A 2023 article (Márton, 2023) that covers the framing of car-restrictive policies as anti-car, socially insensitive, and harmful to everyday mobility, reveals how political actors mobilize residents' concerns to challenge sustainable transport initiatives. The coverage explicitly represents political critique and hostility toward sustainable mobility measures related to

school streets in Budapest and a perceived loss of livability related to sustainable mobility measures. A local government representative is quoted as saying that when he had visited every apartment building in the area, 'the residents clearly stated that no one had asked them about the car-freeing of the square.'

In other coverage, it is documented that the municipality of Józsefváros was the first in the capital to drastically increase residential parking fees, resulting in 1,441 cars disappearing from the streets of the district (Gábor, 2023). The aim of the measure was to alleviate parking congestion and finance developments such as road renovations, travel subsidies for students in need, and the creation of "Kiss & Ride" parking lots next to schools. While the administration claims that this will create a more livable environment, local opponents view the decision as a tax on families. The article illustrates how local parking policy is used as a tool to reshape mobility patterns and the social conflicts such measures generate in Budapest. By linking higher residential parking fees to reduced car presence and to school-related infrastructure such as K+R zones and student travel support, the article connects urban mobility policy with everyday family logistics. Its balanced presentation of municipal goals and public criticism presents a mixed approach to discussion for commutes to school.

Social critique for sustainable mobility can be a complex and layered phenomenon. An article illustrating how problems in Budapest's public transport system at the start of the school year can influence school-related mobility choices and public attitudes toward sustainable transport emphasizes how safety risks, technical failures, and declining reliability lead to why parents may turn to private cars for school commutes, further contributing to congestion. It reflects a mixed and largely problem-focused perspective on school commuting although the tone of the source is concerned, and critical (Magyar Nemzet, 2025c).

Lastly, a unique article providing a social and behavioral perspective on school commuting in Budapest highlights how parental habits shape children's mobility patterns and attitudes toward active travel (Gábor, 2025). By emphasizing the gap between children's preferences and actual commuting practices, the article sheds light on social norms and convenience-driven behaviors that hinder sustainable mobility. Its analytical tone makes it valuable for understanding underlying social dynamics rather than policy alone, presenting social bias and prejudice against sustainable mobility for commutes to school. The tone of the article is analytical and sociologically sensitive, critically examining the links between parental habits and children's health.

Political and Social Support for Sustainable Commutes to School

Diverse forms of political and social support were detected in a range of media collected for Budapest, shedding light on the complex nature of the issue which often inspires both conflict as well as support at the local level.

An article demonstrating an institutional effort to promote sustainable mobility for school commutes through coordinated public transport services reflects how public authorities frame sustainable travel as a rational and manageable choice during the school period, aligning with political support for sustainable mobility for commutes to school (Magyar Nemzet, 2024b). The coverage documents how the Budapest Transport Center (BKK) will increase frequency, beginning in September and valid through the duration of school semesters. The article even advises that 'It is worth leaving for school on time in the morning, even 5-10 minutes earlier than usual' and also a warning to drivers to 'be more patient, alert and attentive' due to the increased pedestrian and cycle traffic around schools.

Additional coverage reported on how since, March 1, 2024, Hungary's public transport fare system underwent a radical overhaul, with the focus on national and county passes (Vilmos, 2024). Under the new system, children under the age of 14 can travel free of charge, while daytime and evening students are eligible for a 90 percent discount on passes, and the price of Budapest passes has also been significantly reduced. As a result of the simplification, only full-price and 50% discount tickets remain. The article presents a structural policy change that lowers financial barriers to public transport use, thereby influencing everyday mobility choices, including school-related travel in Budapest. The coverage is objective, practical, and informative, focusing on the changes that are most important to passengers. By detailing free and heavily discounted travel for children and students, the article highlights how fare policy can actively support sustainable commuting over car use. Its neutral, informational tone presents political support for sustainable mobility with a neutral approach.

The new fare system (mentioned above) resulted in a record number of over one billion trips in 2024. Coverage reporting on the success of the nationwide policy notes that thanks to these measures, there can be savings of tens of thousands of forints per month for families (Magyar Nemzet, 2025a). Thanks to the reform, the attractiveness and affordability of public transport has been strengthened, directly influencing school-related commuting choices in Budapest, and also has become a competitive alternative for car commuters, while the number of fare evaders has decreased. Media coverage that positively emphasizes free or discounted travel for children and young people, demonstrates social as well as political support for shifting families away from car use toward sustainable mobility options. Its strongly positive framing illustrates how public transport reforms are presented

as socially beneficial and economically rational, aligning with political support for sustainable mobility for commutes to school.

An article linking school-related car use directly to environmental and public health consequences, places school commuting within a broader social and political debate on air pollution and urban responsibility in Hungary (Sándor, 2026). By critically addressing parents' convenience-driven habits and advocating public transport, cycling infrastructure, and car-free school zones, the article promotes sustainable mobility as a necessary collective response. Its data-driven and warning tone contributes to understanding how environmental arguments are used to challenge car dependency, presenting social support for and promotion of sustainable mobility for commutes to school. Although the efficiency of public transport in the capital somewhat reduces car dependency, the high average age of the national vehicle fleet and the rigidity of transport habits continue to pose a serious health risk to the population. The tone of the article is ominous and informative, backed up by scientific data, urging immediate action by the government and the public.

In a published opinion piece, the current urban model is described as sacrificing children's safety and families' time on the altar of speed fetishism and car dependency. The analysis highlights that most journeys in Budapest are less than 1 kilometer, yet half of them are made by car, which means a logistical nightmare for women in the form of "mom taxis" (Péter, 2025). The author proposes a two-pronged strategy: radical traffic calming on local roads to encourage walking and cycling, and the development of a fast, fixed-track backbone network for long-distance transport. The tone of the article is expert and reformist, and its attitude is decidedly critical of traditional, car-centric transport planning, offering a normative and critical interpretation of Budapest's mobility paradigm, explicitly challenging car-centric urban planning and its impact on families and children. By framing school- and care-related travel as a social burden created by speed-oriented transport policies, the article reveals underlying cultural assumptions and gendered expectations embedded in everyday mobility. Its reformist tone and clear advocacy for traffic calming and active travel make it a strong example of social support for and promotion of sustainable mobility for commutes to school.

It is noteworthy that a 2020 survey shows that most Hungarian children walk to school, with 29% taking public transportation, 23% being transported by car and 12% preferring cycling (Orsolya, 2023). The percentage of children being driven to school is highest in Budapest, at 30%. Alternatively, other coverage presents the results of a mobility survey reporting that 61% of elementary school students are driven to school by their parents, even though most of them would prefer to walk or ride a bike (Gábor, 2025).

Commuting by car and school transportation are responsible for a significant proportion of air pollution in Hungary, as one-third of harmful emissions are generated during commutes

to work and school. According to experts, parents' convenience habits—i.e., driving their children to school individually—drastically worsen the air quality around educational institutions, where nitrogen oxide levels can be up to twice as high as official measurements. One source also points out the paradox that many people move to the suburbs in search of clean air, only to pollute the city further by commuting by car every day, while the sustainable solution would be to develop environmentally friendly public transport, protected bike lanes, and car-free school zones (Sándor, 2026).

3.1.3 Cologne

Media selection for Cologne was led by partners at Wuppertal Institute for Climate, Environment and Energy GmbH (WI). The partners' media selection totaled 20 articles.

Keywords used included terms and word combinations in German related to local mobility, sustainable mobility and youth (appendix A.3). The time frame of articles searched was 2024-2026.

Political leanings of media searched were documented by partner WI.

- Kölner Stadt-Anzeiger: Generally considered to have a centrist to slightly center-left orientation. It is a regional daily newspaper with a focus on balanced reporting, though its editorial tone can lean moderately liberal on social and political issues.
- Kölner Express: A tabloid-style newspaper that is typically regarded as politically less clearly defined. Its coverage tends to focus more on sensationalism, local news, and popular topics rather than a consistent ideological stance.

Analysis by the Task 3.4 lead partner determined that of 20 articles:

- 20 are related to or explicitly refer to youth and mobility
- 18 demonstrate social support for sustainable mobility
- 11 demonstrate political support for sustainable mobility
- 8 provide mixed or neutral coverage of sustainable mobility issues
- 3 demonstrate social bias to sustainable mobility
- 0 demonstrates political critique to sustainable mobility

The emergent theme in the discourse observed by the Cologne project partner WI for this task was *'School Route Safety'*.

The themes emerging from the analysis of the media by Task 3.4 lead partner IGSO PAS are:

- A Focus on School Streets
- Support for Students Commuting Via Sustainable Mobility Modes
- Residential Vision of the City

Below is a more detailed analysis of the media documented from Cologne (appendix A.3).

Analysis

A Focus on School Streets

A focus on school streets was one of the 'microthemes' detected in analysis of the media gathered for this task, conveying the importance of the concept in local sustainable mobility discourse.

An article describing the political decision to provide long-term backing and political support for the implementation of safe routes to school notes that the city council's decision to significantly expand the number of school streets in Cologne was unanimous (Ringendahl, 2024b). The coverage from 2024 details how the decision that four existing school streets in front of primary schools which were originally pilot projects, would be established indefinitely. With these measures, the article reflects that Cologne would be 'a nationwide pioneer in establishing school streets. The 'chaotic and dangerous' situations occurring in front of most Cologne primary schools each morning are detailed, critiquing the lack of safety posed by the congestion of car-dominant school commutes.

Reactions to the first decree on school streets in North Rhine-Westphalia are documented in an article that reports on a decree that would provide legal certainty for schools who want to create school streets by temporarily shutting down traffic for 30-45 minutes at the start and end of traffic to create school streets (Ringendahl, 2024a). North Rhine-Westphalia's Transport Minister Oliver Krischer is quoted in the article as saying that *"In front of some schools, critical situations regularly arise, especially at the beginning and end of classes, due to the heavy drop-off and pick-up traffic, in addition to the through traffic,"* explaining the rationale of the decree.

The article also details how after the Kidical Mass group presented the idea of school streets in Düsseldorf, Cologne followed, being one of the first German cities to establish school streets as a pilot project at four primary schools. The school streets, however, lacked a legal basis of support after the pilot project ended, until this new decree was issued. The article includes quotes and reflections by school officials who reflect on the severe safety issues that traffic congestion posed previously to the implementation of the school streets. It demonstrates overall great political as well as social support for school street initiatives

and supporting sustainable mobility in school commuting. Importantly, the article also conveys criticism of the initiative.

A spokesperson for an automobile club in Cologne expresses skepticism that road closures in front of schools can be a viable solution, noting that this can result in parents simply parking 100 meters in another direction, possibly double parked, thus just transferring the problem of congestion to another area of the neighborhood. Franziska Müller-Rech, Education policy spokesperson for the FDP parliamentary group in North Rhine-Westphalia, is noted in the article as stating that the state government should provide sufficient primary school places close to home, "then we won't need parents' taxis across the city."

An article describing the political deadlock surrounding the introduction of further school streets in Cologne reports on how temporarily closed school streets can ensure safety in front of elementary schools yet how their implementation is not progressing (Ringendahl, 2025). The article notes that the 'initial euphoria' around the initiative has 'given way to disillusionment'. The Cologne city administration is noted in the article as denying standstill and as engaged in reviews for school locations throughout the city. The article notes that evaluation of four pilot school street programs revealed a significant reduction in traffic volume and Kidical Mass's school street work placed in the top five projects for the German Cycling Award. Simone Kraus, a spokesperson for Kidical Mass, is quoted in the article as saying that *'There's still no sign of the promise to implement school streets throughout Cologne being fulfilled'* and that the city administration could at least be enforcing partial closures.

Connecting support for school streets and sustainable mobility modes, an article describes the recurring criticism of the slow implementation of school streets, despite agreement among all parties detailing how one school protests for a school street to increase safety and parents driving to school (Denzer, 2026). The article reflects that the demands are not just being made by children but from the entire school community which is fed up with the intense car dominance flooding the schools during morning and afternoons, greatly affecting the safety of children who have to navigate walking between all the parked vehicles.

The article also documents political support for school streets, with the local district council urging the city administration to initiate measures as quickly as possible to implement the school streets. The article does not convey explicit lack of political support for sustainable mobility in youth commutes but notes that the administration suffers from 'lack of staff, complex procedures, and an average processing time of around eight months per school street'. Such complex realities and barriers are important to highlight. An SPD parliamentary group leader is quoted in the article criticizing the 'sluggish processing', noting that schools have been waiting for months and that the administration is not acting in a way that is needed for remedying security situations in front of schools.

Support for Students Commuting Via Sustainable Mobility Modes

Different manifestations of social and political support for sustainable school commutes appeared in the media analysis for Cologne. Overall, safety concerns dominate the narrative supporting a shift towards sustainable mobility modes in school commutes, for example in coverage that documents parents' concerns about dangerous speeding and heavy traffic near primary schools, highlighting alarming speed measurements and calls on the city to implement school streets and stronger safety measures (Brühl, 2024).

Parental demands for traffic calming measures at primary schools is documented in an article about an initiative for safer routes to school (Dröge 2024). A specific street is in focus ("An den Kaulen" in Köln-Worringen) where the risk of accidents is very high due to the high number of 'parent taxis' during drop-off and pick-up. Noted in the coverage is the city's decision against establishing parent drop-off zones in order to encourage parents and their children to cycle, walk or use public transportation, in an overall shift towards sustainable mobility. David Jungk, founder of a Safe Routes to School advocacy group, is noted in the article as saying that he is not seeking conflict with parents who drive, understanding the demands of needing to take children to school and be on time for work, whilst also conveying the aim to work constructively with the city, which they expect to have a plan for better traffic flow.

Another article reports on the planned implementation of a new bicycle street designed to improve road safety for pupils on their way to the school center, outlining the design, costs, and political support for the project (Mrziglod, 2025). An article reporting on a campaign by authorities and schoolchildren against illegal stopping of 'parent taxis' and the measures taken to enforce right of way for cyclists demonstrates the local social support for increasing use of sustainable mobility and reducing car congestion and its associated threats (Engels, 2025b).

The discussion of one-way streets as a measure to improve safety at schools emphasizes that a specific school route will be made safer with one-way street regulations and specific drop-off and pick-up zones, but that the appeal among parents for such change is not unanimous among parents is documented (Engels, 2025a). The article places emphasis on the great dangers posed by parental driving behavior in the area, with a spokesperson for the CDU noting that people sometimes drove on sidewalks and that schoolchildren moving by foot, bicycle and scooters faced daily dangers commuting to school. Green Party spokespeople are also quoted in the article supporting the measure, creating a picture of multi and diverse political party support for the initiative.

An article describing cycle lanes as a safety measure at school emphasizes how parents driving their children to school causes dangerous conditions and how a specific traffic

committee made a unanimous decision to designate a portion of the street (Bonnstraße) in front of the school as a bicycle street, explicitly intended to make the route to school safer for the youth (Engels, 2024). It is also noted that the Green Party also launched an initiative for a bicycle street in front of the school in 2021, but the plan was delayed as the administration felt it could impact overall traffic in the surrounding area while this bicycle street was not anticipated to cause traffic problems. Additionally, the article details how the city administration planned to remove some parking spaces in order to accommodate the conversion to a bicycle street.

Media coverage about the relocation of a specific school goes into exceptional detail on the commuter behavior and needs of students attending this school, detailing that approximately 10% of the 1,300 students expected to attend the school will be walking, approximately 50% commuting by bus or tram, approximately 25% commuting by bicycle and select students (primarily from grades 5 and 6) being driven to school (Hermans, 2026). Such detailed statistics are important in documenting student commutes to school and mobility behavior and patterns of children and their parents. Moreover, the article details how such movement will, for example, overload the tram's capacity during peak school commuting times in the morning and afternoon, with recommendations of school start and end times being staggered, a unique and practical proposal that centers children's school commutes with school hours. Also recommended was the deployment of security personnel at transit stops which become overcrowded during those peak commute hours. Further addressed are student cycle and pedestrian behaviors as well as restrictions to cars on specific streets to enhance safety.

Other coverage (Hahn-Klose, 2025) details demands made by parents following the increase in the price of student travel passes on bus and train in early 2026. The article conveys overwhelming social support for sustainable mobility, with parents advocating for and defending their children's right to affordable and accessible public transportation routes to school. In the analysis here, it has also been coded as reflecting social bias against sustainable mobility as the Cologne Transport Authority is criticized as being very customer-unfriendly with pricing tickets for students in such a way that is not affordable for some parents and poses a great financial burden. The "Deutschlandticket Schule" (Germany School Ticket) was introduced in August 2023 at €29 and since the beginning of 2025 has been €38 per month. Parents question the affordability of the price increase.

An article on the same topic describes the necessity of a school ticket instead of a Germany-wide ticket for pupils' travel behaviour (Trzeciak, 2025).

Residential Vision of the City

The 'residential vision of the city' was a unique 'microtheme' detected in the media for Cologne, with diverse articles conveying ideas and visions directly from residents on how they would like to see the city transform.

An article reporting on World Children's Day at Cologne's Rheinauhafen highlights children's perspectives on urban issues such as school route safety, cycling infrastructure, and children's rights in the context of the upcoming mayoral election. Children quoted in the article who cycle to school every day explicitly refer to the problems and dangerous situations related to the conditions of the bike paths, expressing hope for it to change (Holler, 2025b). Coverage from World Children's Day in 2024 highlights how free public transport and mobility education promote sustainable children's mobility (Felix, 2024).

An article providing insight into the wishes of Cologne's residents for the city (*100 Ideen Für Köln: „Die Betonwüste Rheinauhafen Muss Begrünt Werden“*, 2025) includes an idea for school classes being able to use Cologne's public transport free of charge for field trips, specifically noting spatial equity issues when schools on the outskirts of the city have to pay 80-90 euros for fares for such trips, which are important for youth engagement, community experience and learning. Other visions that were not explicitly youth related but connected to local urban mobility issues included the idea of 'one car-free day per year', reflecting that it can 'be modeled after Brussels, where it works very well.' Another suggestion was to remove cars from the median strip of Kempener Straße, giving Cologne a new promenade while also protecting the trees which are suffering from soil compaction and numerous other suggestions relate explicitly to improving aspects of sustainable mobility in the city.

An article reporting on a local initiative by the Stadtgarten association that would temporarily transform parking space into a car-free community area details the association's motivations to support local climate adaptation, greener urban development, and reduction of car traffic and also references one of their campaigns for a local school street (Kulschewski, 2024). Also referenced is the fact that representatives from the Green Party, the Left Party and other political representatives proposed creation of a car-free city square in the location of focus in the article, demonstrating cross-party support for urban transformation supporting sustainable mobility modes and reduction of car dominance and congestion.

An article discussing the issue of safety on the way to school with regard to homeless people, drug addicts, etc., raises the importance of other factors and social issues that can affect school commutes and parental and youth decisions to commute to school or negatively impact that commute (Holler, 2025a).

Finally, an article reporting on the ninth creative competition of the Cologne Transport Authority shows pupils' creative engagement with public transport and their city

((*Kreativ-Wettbewerb Der KVB: Schülerinnen Und Schüler Gestalten E-Bus Und Leihräder*, 2024). Under the theme of 'Favorite Places', students submitted designs for electric buses and rental bikes, in a unique initiative that conveys a Transport Authority's celebration of youth visions and depictions of the city and features within the city's transit system.

3.1.4 Ghent

Media selection was led by partner CollectiveUP (CUP). The partner' media selection totaled 11 selections, shortlisted from an original set of 57 selections.

Keywords used included terms and word combinations in Dutch related to local mobility, sustainable mobility and youth (appendix A.4). The timeframe of articles searched was 2024 to 2026.

Political Leanings of Media Searched were documented by partner CUP.

- VRT: The Flemish Radio and Television Broadcasting Organisation (Vlaamse Radio- en Televisieomroeporganisatie, VRT) is the public service broadcaster for the Flemish Community in Belgium. It is a public limited liability company under public law, giving the organization greater legal and operational autonomy while maintaining public ownership. VRT is overseen by a Board of Directors comprising 12 members appointed by the Flemish Government. These appointments broadly mirror the political balance within the Flemish Parliament, embedding political representation within its governance model.
- Het Laatste Nieuws (HLN - a newspaper) is generally considered to have a liberal political leaning, historically supporting the Liberal Party and advocating for the Flemish movement. However, it has shifted towards a populist right-wing stance in recent years, often sensationalizing news and catering to right-wing populist readers.
- De Morgen presents itself as an independent and progressive newspaper and a more dynamic alternative to its two competitors in the Flemish market, De Standaard and De Tijd. On the other hand, the paper is described as a leftist and socialistic publication.

Analysis by the Task 3.4 lead partner determined that of 11 articles:

- 11 are related to or explicitly refer to youth and mobility
- 6 demonstrate political support for sustainable mobility
- 3 demonstrate social support for sustainable mobility
- 5 provide mixed or neutral coverage of sustainable mobility issues

- 0 demonstrate social bias to sustainable mobility
- 0 demonstrate political critique to sustainable mobility

The emergent theme in the discourse observed by the Ghent partner CUP for this task was *'Traffic safety in school zones'*.

The themes emerging from the analysis of the media by Task 3.4 lead partner IGSO PAS are:

- Safety and School Mobility
- Cycling and Youth Safety
- Transport Poverty and School Children

Below is a more detailed analysis of the media documented from Ghent (appendix A.4).

Analysis

Safety and School Mobility

Issues of youth safety in commuting and mobility appeared as a prominent theme in 9 of the media articles documented for Ghent. An article about a confusing and unusual intersection where many people driving do not detect the red light is relevant to issues of school mobility as it is close to a very large school in Ghent (Dhollander, 2026). The focus on safety is further emphasized in coverage that reports on two hundred dangerous spots along school routes in Ghent. Alderman Vandenbroucke is quoted as saying that 'Every year, I want to resolve at least 20 bottlenecks on school routes' (Van Waeyenberghe, 2025).

Additional safety-related coverage details actions by the police to promote school mobility safety, clearly conveying a commitment by police to enhance road safety and to contribute to safe school mobility and environments (De Coster, 2025). An article about opposition from a neighborhood committee to a local mobility plan also documents the complex realities of how enhancing sustainable mobility measures, such as reducing or banning car traffic on certain streets, can lead to traffic issues elsewhere in the community (Schouppe, 2024). A local school also conveyed fear for the safety of their students due to the change and diversion of car traffic.

Cycling and Youth Safety

Diverse coverage focusing on cycling as well as issues of safety demonstrate the central role of bicycling in local mobility culture. One report, noting the illegality of using a mobile phone while cycling, documented the reality that many youth use a phone while on a bike (De Morgen, 2025). The coverage, linked to a survey of 1,500 adolescents at 24 schools in Belgium, also noted other safety issues such as that many of the youth cycle in the dark

without lights, cycle when above the legal alcohol limit and ride as a front passenger without wearing a seatbelt. Importantly, the study notes peer pressure as a factor in risk-taking, pointing out the complexity of sustainable mobility in a social context.

Other coverage addresses the implementation of a new cycle street with Joris Vandenbroucke (Voor Gent), the Alderman for Mobility, specifically noting that this will be an important development to tackling the 100 bottleneck 'problem areas' that are unsafe for pedestrians and cyclists also with the help of a study in which youth from Ghent participated to identify these locations (Vandriessche, 2026). Alderman Vandenbroucke conveys crisp political commitment for sustainable mobility for youth by saying that 'Every child from the age of 10 should be able to cycle to school independently' (Van Damme, 2025).

An article about the 'fluoday' celebration demonstrates a unique approach to educating and celebrating sustainable mobility. Organized by NGO Xiu, the day is dedicated to courses and activities related to safety and visibility as cyclists with a particular focus on high-visibility vests and helmets (Loontjens, 2025). Such an event demonstrates an impressive as well as unique social demonstration of support for sustainable mobility modes. An article about investment in traffic safety around schools demonstrates political commitment specifically in the form of investment and funding to support the development of school streets and enhanced opportunity for sustainable school commutes and safety (Van Damme, 2024).

Transport Poverty and School Children

Transport poverty, when people do not have access to essential services or work because of a lack of affordable or available transport options (European Union, 2022), was a detectable 'microtheme' in the media for Ghent. Transport poverty can affect many demographics and in the case of the Ghent media for this task, the risk of transport poverty for specific groups of schoolchildren is documented.

In coverage that documents the transport regional council's opposition to public transport company De Lijn's budget cuts, the council's statement is quoted as saying "The plan will increase transport poverty. Schoolchildren risk becoming victims, as do vulnerable groups who will be able to enjoy limited mobility in the future" (Schouppe, 2026).

Another issue related to transport poverty is covered in an article (Van Droogenbroeck, 2024) that addresses the issue of special education students who need to spend long hours in bus commutes. Reform of the system is noted as necessary by different officials including Ben Weyts, the Minister of Education at the time of the coverage. The article covers multiple intersecting issues that create the overall complex situation, including childcare needs, the stress of long commutes for some special education students, lack of well-trained bus escorts, rushed drivers and a rise in the number of students in special education. Various

pilot measures are discussed which are designed to support a shorter and more pleasant route to school for children, but many challenges persist for this diverse group of students. Representing an educational consulting network (Vrij CLB Netwerk), Stefan Grielens is quoted as advocating for school places closer to home and increasing in places in special education so that children can stay in schools in or close to their neighborhoods.

3.1.5 Matosinhos

Media selection for Matosinhos was led by partners Universidade de Aveiro (UA) and Matosinhos City Council (MC). The partners' media selection totaled 15 selections, a combination of predominantly articles from local and national media sources but also including social media content.

Keywords used included terms and word combinations In English and Portuguese related to local mobility, sustainable mobility and youth (appendix A.5). The timeframe of articles searched was 2020 to 2026.

The political leanings of media searched were documented by partners UA and MC.

Local media (Matosinhos)

- **A Voz de Matosinhos:** Generally considered to have an institutional or neutral orientation. It is a local newspaper focused on municipal news, often reflecting official perspectives and providing limited explicit political positioning.
- **Jornal de Matosinhos:** Generally considered to have a centrist orientation. It is a regional weekly newspaper with an informative focus and relatively balanced reporting, without a strong ideological stance.

National media (Portugal)

- **Jornal de Notícias:** Generally considered to have a center-left orientation. It is a widely read generalist newspaper, with relatively balanced reporting and some sensitivity to social and urban issues.
- **Público:** Generally considered to have a center-left orientation. It is a leading national newspaper with an analytical style and a moderately progressive editorial tone on social and urban issues.
- The city partners UA and MC noted that 'Overall, we found that local media tend to have a more institutional or neutral tone, often closely aligned with municipal

perspectives, while national media provide a broader range of viewpoints, including more explicit ideological positioning.'

Analysis by the Task 3.4 lead partner IGSO PAS determined that of 15 articles:

- 13 demonstrate political support for sustainable mobility
- 11 demonstrate social support for sustainable mobility
- 9 are related to or explicitly refer to youth and mobility
- 2 provide mixed or neutral coverage of sustainable mobility issues
- 0 demonstrate social bias to sustainable mobility
- 0 demonstrates political critique to sustainable mobility

The emergent theme in the discourse observed by the Matosinhos project partners UA and MC for this task was '*Pedestrian safety (increasing lack of safety connected with politically aligned mobility views and actions).*'

The themes emerging from the analysis of the media by Task 3.4 lead partner IGSO PAS are:

- Conscious Municipal Leadership on Sustainable Mobility
- Focus on Cycling
- Safety
- Unique Initiatives for Youth Engagement and Awareness

Below is a more detailed analysis of the media documented from Matosinhos (appendix A.5).

Analysis

Conscious Municipal Leadership on Sustainable Mobility

An article reporting on the mobility focus of the socialist Luísa Salgueiro and the candidate from the Democratic Alliance, Bruno Pereira illustrates how local political actors frame transport challenges and solutions and is highly relevant for the discourse as political agendas influence the development of sustainable mobility policies that affect daily travel patterns of residents, including students and school communities (Costa 2025). A Mayor's interview with Luísa Salgueiro, Mayor of Matosinhos since 2017, ties sustainable mobility to broader climate goals, reflecting a political narrative promoting low-carbon school commuting solutions (European Commission, 2025).

An article reporting on construction beginning on the Metrobus that will connect to the airport emphasizes the extended impact on mobility connectivity, contributing to understanding on how large infrastructure projects are framed in local discourse (Soldado 2025). The article also illustrates how infrastructure investments are framed in public discourse as solutions for urban mobility and accessibility, which can influence travel options available to young people and families.

Such reports on municipal initiatives that encourage walking, cycling, and other forms of active mobility reflect policy narratives promoting sustainable mobility and attempts to shift urban mobility culture away from car dependency. An article and proposal by the Social Democratic Party (PSD, 2021) criticizing access and safety near schools reflects political and public debate on the need for improved infrastructure and safety in school areas. The proposal makes multiple references to school commuters as well as includes an entire section dedicated to issues of 'Accessibility to Schools and Educational Institutions and Suggestions for School Mobility

Conscious municipal leadership in developing accessible, affordable and convenient sustainable mobility options also requires thoughtful and proactive institutional collaboration and coordination, which is explicitly reflected in an article reporting on collaboration between the Municipality and Metro do Porto 'around projects that are fundamental to the future of mobility in Matosinhos' (De Matosinhos, 2026).

Focus on Cycling

Cycling appears as a prominent theme in the media documented for Matosinhos, a topic appearing in diverse articles and clearly a key point of discourse with relation to sustainable mobility. The city of Matosinhos' participation in European Mobility Week includes public engagement initiatives and support for sustainable transport modes, often targeting young audiences. The 2025 European Mobility Week activity in Matosinhos, 'Learn to Ride a Bike', was an activity that fostered youth engagement with sustainable mobility, highlighting social promotion of walking and cycling to school (Leça da Palmeira, 2025). A municipal pilot inviting residents to test shared electric bicycles demonstrates local policy experimentation aimed at increasing the adoption of cycling and promoting sustainable urban mobility practices (Smart Cities, 2021).

An informative post by the Municipality of Matosinhos (n.d.) reports on the 'Matosinhos Bicycle Trains', an initiative and partnership between the municipality of Matosinhos and Bicicultura Cooperative which encourages sustainable mobility of children, physical activity, environmental responsibility and education as well as 'creating bonds with the community'. The post also details how such an initiative *'contributes to reducing car traffic and conflicts associated with parking and stopping around schools, supporting the goal of decarbonizing the*

transport sector, making it less dependent on cars, for a more sustainable future' also noting that it is a 'fun and conscious way to get to school'.

The description of a proposal for a bike-sharing system in the Porto metropolitan area, which could expand access to cycling as a mobility option for residents and young people, reflects policy and institutional narratives promoting cycling infrastructure and sustainable mobility alternatives to private car use (Lusa, 2025).

Safety

In line with the emergent theme in the discourse observed by the Matosinhos project partners of *'Pedestrian safety (increasing lack of safety connected with politically-aligned mobility views and actions),'* an article reporting on roadworks implemented to eliminate a traffic hazard near a school was included in the search (Abreu, 2025). The article illustrates how infrastructure and safety interventions are framed as necessary measures to protect children and improve conditions for school mobility.

The reporting on and description of a policy measure implemented to improve pedestrian safety near schools directly relates to school mobility as it addresses infrastructure and safety conditions affecting children's daily travel to educational institutions (Leça da Palmeira, 2020).

Unique Initiatives for Youth Engagement and Awareness

Initiatives involving events, art and education to engage youth in issues and awareness about sustainable mobility were distinct in the media for Matosinhos. A report involving youth detailed an educational exhibition that was aimed at raising children's awareness about road safety and sustainability illustrates how institutions communicate sustainable mobility values to younger generations and contribute to shaping mobility culture among children (Centro Nacional De Cultura, n.d.).

A report describing an initiative involving young people from Matosinhos in a carbon neutrality agenda demonstrates how youth engagement can be connected with sustainability, and urban innovation, illustrating narratives that link climate action with future mobility systems. (CEiiA launches carbon neutrality agenda for Northern Portugal with young people from Matosinhos, 2023). Other coverage reporting on a Kidical Mass (a global movement for claiming public space for enjoyment of people, especially children) cycling event promoting safer streets for children and families is particularly relevant to youth mobility as it highlights grassroots advocacy for safe cycling infrastructure and children's right to move safely in urban space Naves 2025.

3.1.6 Toruń

Media selection for Toruń was led by partners from the Institute of Socio-Economic Geography and Spatial Management, Faculty of Earth Sciences and Spatial Management, Nicolaus Copernicus University in Toruń. The partners' media selection totaled 21 selections.

Keywords for media searches were in Polish (appendix A.6) also in conjunction with the word Toruń. Due to insufficient media detected for the original 2-year timeframe search, the partners expanded their search extending back to 2019.

Political leanings of the media searched were documented by the partners at Nicolaus Copernicus University.

- Nowości is the leading local newspaper in Toruń and one of the most widely read regional news outlets in the city and the surrounding region. It is part of the Polska Press Group. The newspaper primarily covers local affairs, municipal government, infrastructure, culture, sports, education, and regional developments. Its editorial profile is generally oriented toward local and community issues rather than national political debates. The outlet also publishes opinion pieces and commentaries written by journalists, local experts, community representatives, and public figures.
- Tylko Toruń is a local newspaper and online news platform focused primarily on municipal affairs, city events, and everyday developments in Toruń. Its coverage is largely community-oriented and concentrates on local issues without a strongly defined ideological profile.
- Oto Toruń is a local media website and radio project established in 2017. The outlet focuses on local government, civic affairs, culture, urban development, and social issues. It provides extensive coverage of events and debates relevant to the city and its residents.
- Radio ZET Toruń is the local branch of one of Poland's largest commercial radio networks. It combines national programming with local news, information, and content dedicated to Toruń and the surrounding region. The station primarily focuses on current affairs, public interest topics, culture, and community news.
- SE (Super Express) is the local edition of one of Poland's most widely circulated tabloid newspapers. Its reporting often emphasizes human-interest stories, local events, crime news, and topics designed to attract broad public attention.
- Gazeta Wyborcza Toruń is the local edition of one of Poland's largest national newspapers. The outlet covers local government, civic affairs, culture, education, urban development, and social issues. In addition to news reporting, it regularly

publishes commentaries, interviews, and opinion pieces contributed by journalists, academics, public intellectuals, and community representatives.

- Toruń Nasze Miasto is the local branch of the nationwide Nasze Miasto network, which operates local news services in many Polish cities. The platform focuses on local news, community events, lifestyle topics, culture, transportation, and municipal affairs.
- Radio GRA Toruń is a local radio station that concentrates on community issues, local news, cultural events, entertainment, and everyday matters affecting residents of Toruń and the surrounding area.

Analysis by the Task 3.4 lead partner determined that of 21 articles:

- 15 demonstrate political support for sustainable mobility
- 15 are related to or explicitly refer to youth and mobility
- 11 demonstrate social support for sustainable mobility
- 9 provide mixed or neutral coverage of sustainable mobility issues
- 1 demonstrates social bias to sustainable mobility
- 1 demonstrates political critique to sustainable mobility

The emergent theme in the discourse observed by the Toruń project partners for this task was *'Insufficient media coverage of children and youth mobility'*.

The themes emerging from the analysis of the media by Task 3.4 lead partner IGSO PAS are:

- A Focus on Routes and Information
- Unique Social Initiatives related to Public Transportation
- References to Local Contexts and Conditions
- Political Support for Sustainable Mobility

The results above show that while partners leading the desktop research experienced challenges finding media coverage on children and youth mobility, the media found did convey political support for sustainable mobility, though the timeframe was indeed extended further back than other partner searches. Additionally, several of the articles found did explicitly refer to issues of youth, school commutes, and mobility.

Below is a more detailed analysis of the media documented from Toruń (appendix A.6).

Analysis

A Focus on Public Transport Routes and Information

A focus on issues related to new routes, closure to routes and municipal information was distinct in the media collected for Toruń .

A 2022 article (Włodarski, 2022) reports that holiday public transport timetables in Toruń were kept in place for longer due to the return of remote learning. Another article (Toruń Editorial Office, 2022) reports on the city bringing back bus line 39 after younger primary school students returned to classroom learning. Importantly, the media coverage also included a focus on routes in the region that affect not only residents of the city of Toruń, but also commuters to the city from neighboring towns, including students.

An article documenting a new bus line is noted as important as it connects the towns located near Toruń with the city center. In the article, Arkadiusz Gralak, Mayor of Aleksandrów Kujawski, is quoted as saying *"I literally can't wait for this connection to launch. (...) There are simply so many students, pupils, and others eager to travel to Toruń. They'll be able to reach the city center. We need to act, because we can't rely on trains anymore. The Przewozy Regionalne (Regional Transport) ticket office at the Aleksandrów station has been closed. Sure, they managed to secure a ticket machine, but perhaps the launch of a bus connection will change some people's attitudes. Toruń, on the other hand, is a solid and reliable partner. It's also important to remember that we belong to the Toruń Functional Urban Area. The ticket price will also be attractive for passengers."* (Nienartowicz, 2023b). Jarosław Jucewicz, the Mayor of Ciechocinek is also quoted in the article, reflecting on the specific types of commuters they will need to provide access for, including students commuting to schools in Toruń.

An informative article about a new bus line and connection to Bydgoszcz, the largest city in the region, located about 50 km from Toruń is referred to as a 'historic and important event' that also serves as a 'step towards building a coherent and accessible public transport system in the region'. (Kobyliński, 2025). Like several of the articles, while the main thread is not explicitly about youth, the overall improvement of access to public transportation is understood as a benefit broadly to the publicly as well as specifically for *'those who want to commute to school'*, as Rafał Bruski, the mayor of Bydgoszcz, is quoted as saying in the article.

Unique Social Initiatives Related to Public Transportation

Media depicting unique social initiatives were also found in the search including an article about financial support for students, including subsidies for transportation (e.g., school tickets), designed to facilitate access to education, particularly for students from

lower-income families (Buczowski, 2025). Such an initiative shows municipal concern, action, and leadership for greater equity in public transportation access.

Another example documented includes an article (Włodarski, 2023) covering when representatives of the Youth City Council met with a representative of the municipal transport company with talks focused on public transportation service frequency, ticket pricing, and the functioning of ticket machines and mobile applications.

Finally, media coverage also includes an article covering a social initiative that advocated for the introduction of free public transport tickets for students and youth and was declined by the municipal authorities. The article provides statistical data on the issue and details the grounds for the rejection of the proposal (Kępka, 2019).

References to Local Context and Conditions

Several articles detailing specific local issues related to traffic organization, conditions as well as weather were included in the media findings. Such articles do not always explicitly refer to school commutes yet are observed as very relevant as such conditions and contexts can directly affect the movement and conditions for school commuters by foot and bicycle.

A late summer article in 2023 documents issues with access and traffic organization, detailing changes to the operation of traffic lights and the potential impact in creating difficulties of taking children to school once the school year begins (Nienartowicz, 2023a).

A 2024 article (Nienartowicz, 2024) discusses how traffic and access should be organized around a new school in Toruń to ensure safe and smooth daily travel for students.

A 2025 article (Nienartowicz, 2025) addresses how access to school is significantly hindered or even rendered impossible due to snowfall and prioritization of snow removal on roads over sidewalks. Such articles convey conditions that require municipal action and maintenance to improve mobility and quality of life issues for youth moving by foot as well as the public broadly.

Political Support for Sustainable Mobility

Detected in a number of the media articles collected for this task, were statements of clear political support for diverse forms of sustainable mobility and improvements to the city and regional public transportation network in particular.

Also covering the new transport model for the Toruń Metropolitan Area, an article (Metropolia Toruńska, 2025) quotes the mayor of Toruń, Paweł Gulewski, on the occasion of signing the agreement between the Municipality of Toruń and Trako Projekty Transportowe, in saying *“We hope that within the next dozen or so months we will receive a completely new model of the impact and operation of urban transport both within the administrative boundaries*

of the city of Toruń and within the area of the Toruń Metropolitan Area." Tomasz Szelukowski, from Trako Projekty Transportowe, is quoted as saying "Public transportation directly affects the quality of life in the city and beyond, so assuming it operates more ergonomically, it could make the Toruń Metropolitan Area a more attractive place to live and stand out from other regions of the country."

Another article (Marzec and Luda 2023), details public protests against changing and shortening bus routes connecting the two parts of Toruń divided by the Vistula River. Wojciech Klabun, chairman of the Law and Justice (PiS) councilors' club on the Toruń City Council, is noted as intervening and defending the need of residents for accessible and convenient public transportation. He is noted in the article as commenting that shortening the routes will mean significant problems for the developing left bank of the Vistula River. He is further quoted in saying *"Bus lines 10 and 20 are the main routes for the Podgórz district. They will be shortened to Szubińska-Odrodzenia and Glinki-Odrodzenia routes. I am surprised by this decision. These lines serve very important routes for residents. They transport children to classes, schools, and residents to work. The sudden introduction of such changes is counterproductive. The consultation report has not yet been published, and changes for the benefit of residents should be introduced in dialogue with them."* The expression of support for preserving the routes as well as explaining and defending the importance and need of reliable public transportation for residents conveys both political and social support for local sustainable mobility modes.

Toruń, which ranks 15th among Polish cities by population (Central Statistical Office in Poland), is generally economically weaker than the country's largest urban centres. This context should be taken into account when planning and implementing mobility solutions. For example, in Wrocław, public transport for children and young people up to 18 years of age is free, but Wrocław is a large and economically strong city. However, when children and young people purchase a school ticket for an entire semester, in Bydgoszcz the price of the ticket is almost 4 times lower than in Toruń, even though both cities serve as regional capitals of the Kuyavian-Pomeranian region. The researchers also reflected that in the past year, Toruń introduced the JO city card, which enables cheaper purchase of tickets for those who buy electronic tickets and have the status of city residents. For those purchasing paper tickets and for those without official city resident status, tickets are correspondingly more expensive. For families with 4 children or more, the tickets for urban transport for children from such families are almost free of charge. Such nuances and specific details are important for analyzing contemporary mobility paradigms as well as social and political discourse in different urban settings.

3.2 Comparative analysis

A total of 109 articles were analyzed in the six cities studied. They were divided into the following categories of discourse topics:

- 97 demonstrate political support for sustainable mobility
- 84 are related to or explicitly refer to youth and mobility
- 61 demonstrate social support for sustainable mobility
- 46 provide mixed or neutral coverage of sustainable mobility issues
- 11 demonstrate social bias to sustainable mobility
- 3 demonstrates political critique to sustainable mobility

There is some thematic variation between the cities studied. This can be assumed to be due to differences in the conditions they experience or the policies implemented by city authorities. The thematic diversity is shown in the table and figure below.

Themes categories	Brussels	Budapest	Cologne	Ghent	Matosinhos	Toruń	All cities
1. related to or explicitly refer to youth and mobility	92,3	87,5	100,0	100,0	86,7	71,4	89,0
2. provide mixed or neutral coverage of sustainable mobility issues	96,2	56,3	90,0	54,5	73,3	71,4	77,1
3. demonstrate political support for sustainable mobility	69,2	56,3	55,0	27,3	60,0	52,4	56,0
4. demonstrate social support for sustainable mobility	65,4	31,3	40,0	45,5	13,3	42,9	42,2
5. demonstrate social bias to sustainable mobility	11,5	25,0	15,0	0,0	0,0	4,8	10,1
6. demonstrates political critique to sustainable mobility	3,8	6,3	0,0	0,0	0,0	4,8	2,8
number of articles	26	16	20	11	15	21	109

Table 1 - The share (%) of thematic categories in the discourse in the cities studied, as shown by media searches

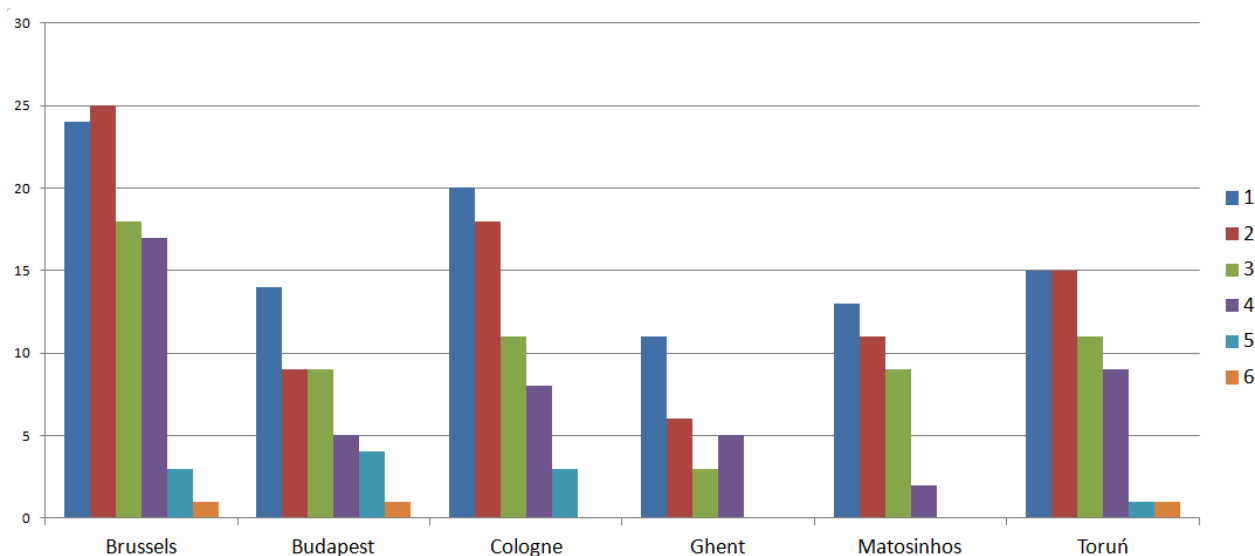


Figure 1 - Thematic differentiation of articles by city (articles may have been multi-topic). The topic numbers correspond to the topic numbers in Table 1

Further analysis of the media materials provided by Civic Lab partners, conducted by the lead partner, identified a number of micro-topics that largely confirmed the statistics presented in the table above. Some of the dominant themes were similar in two or more cities, while others were very specific and unique to a given location. Media coverage of cycling was a dominant theme in the media in Brussels, Ghent, and Matosinhos. In the media in Brussels, Budapest, and Cologne, the dominant theme was school streets. Articles expressing significant support (political and/or social) for sustainable mobility were distributed somewhat differently, dominating the media in Brussels, Budapest, Cologne, Matosinhos, and Toruń. On the other hand, media coverage suggesting a lack of political will and commitment, or political and social criticism of sustainable mobility, dominated the media in Brussels and Budapest.

Media in Ghent and Matosinhos focused more on various safety-related issues than elsewhere. On the other hand, media coverage of unique and diverse social initiatives related to sustainable mobility was a significant topic in the media for Matosinhos and Toruń. Several cities focused on issues unique to the city. In Budapest, it was Kiss + Ride, in Cologne, general visions for the city's future development, while in Ghent, the issue of transport poverty and youth emerged.

The microthemes are representative of topics that were dominant in the media gathered for this task but not necessarily representative of all media on sustainable mobility in the cities represented in this project. Issues of bias in media selection and analysis as well as limited or bias coverage are all challenges to recognize and explore in such analysis.

Analysis of the issues covered in the articles and the above statistics also allow us to identify more general trends related to sustainable transport in these six cities. Some cities (Brussels, Ghent, Cologne) appear to be highly advanced in implementing new solutions (school streets, bicycles), but the problem of rising public transport fares is emerging, and in Cologne, parents' reliance on driving their children. In Budapest, pioneering attempts to introduce new solutions (school streets) can be observed, although with similar parental resistance as in Cologne, but with a parallel policy of reducing public transport fares. Toruń appears to be the most conservative in its transport solutions, but it is doing much to improve their quality (new bus lines, discounted tickets for young people). Matosinhos arguably presents the best in press reports, focusing on the development of new solutions (bicycles) while also developing traditional modes of transport (new lines, discounted tickets). The issue of safety appears everywhere, although to varying degrees and caused by various conditions (road traffic, homeless people, drug addicts, comfort in public transport, etc.).

4. Research Opportunities and Challenges

4.1 Task 3.4 Challenges and Opportunities

A potential methodological weakness for Task 3.4 was detected during the manual analysis of media for cities by the lead partner IGSO PAS. Missing from the coding system was a potentially critical category of 'absence of political discourse for sustainable mobility'. Such an addition to the coding system can allow for a specific category for including articles that may be relevant to school commutes and sustainable mobility as relates to youth, but not explicitly connected to political discourse.

All partners for the task were asked to provide challenges they experienced in their desktop searches for media. The following list of challenges were documented:

- Platform search engines not filtering relevant articles efficiently
- Searches often resulting in long lists containing both relevant and irrelevant items, making manual selection necessary.
- Entering multiple keywords frequently resulting in very few or no results.
- Strong political polarization of the media landscape
- Difficulty separating mobility discourse from broader political narratives

- Positionality challenges in navigating tone and framing of articles
- Difficulty sometimes distinguishing between reporting and opinion, as many articles blended the two.
- Restricted access to online articles is restricted and cannot be resolved even through short-term subscriptions, thus accessing articles via a limited number of freely available reads (typically around five articles per person).
- In some cases, article selection is only possible based on the short versions (not the long versions because of lack of full access).
- Three of the local newspapers belong to the same publisher, which often results in overlapping topics and content.
- Subjective bias in selection of articles
- A sample of 10–20 articles does not necessarily reflect the overall media landscape; while diversity was aimed for, this can underrepresent the dominance of certain topics.
- Individual topics can, at times, strongly shape the overall media narrative.
- Initial searches on general engines (Google, Bing) using keywords like "school traffic Ghent news" yielded information primarily from federal, provincial, or city government sources, which were not considered 'news' per the assignment scope.
- Few relevant articles were found leading to actual newspaper platforms (HLN, VRT News, De Standaard)
- Searches within specific news platforms returned inaccurate results, and most articles were behind paywalls.
- AI platforms (ChatGPT, Gemini, Grok) were consulted for articles related to "school mobility topics or youth/children mobility in Ghent." Grok provided the best results quickly, allowing for faster filtering via a comparison table.
- Due to paywalls, selection was limited to free articles on HLN and VRT News
- Constant reminder was needed that the task focused on "political discourses," necessitating searches for mentions of political parties, politicians, or overtly 'political' content, leading to uncertainty regarding the precise definition of "political discourse" for selection.

- The local media landscape in Matosinhos is relatively limited, which reduced the diversity of available sources and perspectives for the analysis.
- Several local media outlets tend to adopt a more institutional or municipality-oriented tone, making it sometimes difficult to distinguish independent journalistic framing from official communication narratives.
- Some national media sources presented different political and editorial orientations, requiring careful interpretation to ensure a balanced selection of articles.
- There was a degree of subjectivity in selecting articles considered relevant to urban mobility and public space topics, particularly when themes overlapped with broader social or political discussions.
- Certain online media platforms had limited search functionalities, making it necessary to manually review articles and content categories.
- The relatively small sample size may not fully reflect the diversity of public discourse and media framing around mobility and urban transformation issues in Portugal.
- Difficulty finding in-depth information on youth mobility, e.g. the articles either addressed the topic of mobility in general or reported certain changes without indicating, for example, potential consequences or the opinions/statements of the stakeholders themselves.
- Potential media bias and changing media landscape in Toruń, e.g. newspaper takeovers during the period under consideration, the emergence of new websites and newspapers, making it difficult to assess bias.
- In general, the dynamic situation regarding mobility and the broad scope of the topic: changes in routes, fleet purchases, ticket prices, and renovations/construction works. This is also related to the selected time frame, as some important developments took place shortly before the assignment deadline.

Task lead partner IGSO PAS detected the following possible research challenges for this task:

- Difference in city size and population can limit compatibility in media analysis
- Potential researcher bias (politically, in media preference) in media selection and interpretation
- Media content behind paywalls

- Media content not giving a 'full picture' of the reality on the ground
- Lack of discussion in media on youth and school mobility (itself a potential finding)
- Media not adequately reflecting political narratives and perspectives

This report can provide insight into the constellation of 'pressing themes' within sustainable mobility discourse for a city, and inspire future investigation and analysis into the discourses that are transforming alongside pressures and competing tensions to transform urban mobility broadly and, in the context of this report, supporting a shift to more sustainable school commutes.

PART II: Task 3.5 Analysis of biases in mobility cultures

1. Introduction

In this part, we discuss the results of Task 3.5. The purpose of this task is to examine content on social media platforms in order to understand the biases and preferences around mobility, youth mobility and 15mC concepts that are expressed online. Within the broader aim of the CONIFER project, of developing a participatory foresight methodology for co-creating 15mC futures, this work is meant to bring the voices of the online public debate into the process: to support the creation of the communication that will be developed later in the project, and to introduce new perspectives and narratives for the visioning of 15mC futures together with children, young people, carers and teachers.

In what follows, we first discuss the use of social media platforms as data sources, and the increasing difficulties accessing them, which severely limited the data we could use for our research. We then describe our methodology, covering both the collection and selection of the data and the various analyses we performed, namely topic modelling, stance detection, sentiment analysis and bias detection, as well as the way in which we evaluated the accuracy of the AI against human coders.

Next, we present and discuss the results of each of these steps. These reveal that what people discuss differs from one location to another, following the local mobility debates, while their attitudes are relatively consistent: across all locations, there is more support than opposition for sustainable mobility, even if this is easily obscured by the strong prevalence of negative sentiment, and by clear pockets of opposition and bias.

We close with a discussion of the most important findings, focusing on the preferences and biases that emerge across the different platforms and locations, and on what they may mean for the design of communication around 15mC. We end with the challenges and limitations we encountered in this research and what it means for the interpretation of the results.

2. Social media platforms as data sources

With the arrival of social media, researchers in various fields of the social sciences obtained access to huge amounts of data, providing all kinds of new opportunities to study how people think, behave, interact and connect. Also in the CONIFER project, we use such data, with the goal of understanding how people discuss mobility issues and to find attitudes and biases in these conversations. Unfortunately, social media platforms have recently made access to their data much more difficult, by restricting access to their Application Programming Interfaces (APIs), increasing the cost, etc. This creates numerous challenges for this type of research. In this section, we describe the difficulties we encountered in accessing social media data, how we dealt with them, and how it influenced the data we could finally use for the analysis.

2.1 Access to Social Media Platforms: a shifting landscape

The accessibility of social media data for academic research has undergone a severe contraction over the past decade, transitioning from an era of relative openness to a highly restrictive landscape sometimes characterized as the “APIcalypse” (Bruns, 2019). Historically, social science and human-computer interaction researchers relied on APIs - the official digital pipelines platforms provide to share data - as a vital mechanism to study large-scale human behavior, public health trends, and democratic processes (Sloan & Quan-Haase, 2017). However, following major privacy scandals like Cambridge Analytica and the escalating commercial value of user data for training large language models, platforms systematically began dismantling these voluntary mechanisms (Murtfeldt et al., 2024). This initial retrenchment initiated the “post-API age,” a period where compliant methods for systematic data collection were effectively eliminated, forcing scholars to operate in a state of data scarcity (Freelon, 2018). This era culminated in the complete closure of prominent, free academic tools, such as Twitter's research API and Meta's CrowdTangle (Mimizuka et al., 2025).

Most recently, the landscape has shifted into a “post-post-API age,” driven by government interventions like the European Union’s Digital Services Act (DSA), which legally mandate that major platforms grant data access to vetted researchers (Mimizuka et al., 2025). Yet, while this regulatory framework initially sparked optimism for platform transparency, profound practical barriers remain. In practice, researchers face an environment of

corporate "independence by permission," defined by opaque, project-specific application processes where platforms can arbitrarily deny data access (Mimizuka et al., 2025). Furthermore, current implementations suffer from severe institutional and regional inequities, frequently excluding civil-society organizations, non-academic researchers, or scholars outside the E.U. and U.S. (Mimizuka et al., 2025). Even when access is granted, platform auditing and research replication remain deeply problematic due to restrictive data caps, clunky interfaces, and severe data inconsistencies within the mandated APIs (Pearson et al., 2025). Consequently, scholars are increasingly forced to resort to less stable, legally ambiguous alternatives like web scraping and participant data donations, or to expensive paying alternatives. This severely stunts the possibilities for independent research using this invaluable source of information.

2.2 Social media platform access for this report: challenges and results

For the purpose of this research task, a large number of social media platforms were considered and investigated, and several attempts were made to obtain API access to them. Unfortunately, we have run into the same obstacles as those described in section 2.1, and dealing with them required a large time investment (investigating the challenges and finding solutions), increased the cost of the project, and limited the range of data available for investigation. Below, we give an overview of these efforts and their outcome.

2.2.1 Reddit

Our first focus in getting data access was on Reddit, because this platform is fairly broadly used, increasingly so even, also with young people (Gottfried and Park, 2025; Jason et al., 2025). Also, Reddit was late to shut down free API access compared to other providers (Smith, 2023; Reddit Help Center, 2026a), so we expected an easier process. We initially secured developer access authorization, which gives limited access to Reddit data: for each search, results are limited to a count of 250 and a time horizon of 12 months. We could use this for developing and testing tools and settings, which is the purpose of this type of authorization. We could not use it for the actual research though, as it is both impractical (due to the hard limitations on the search results) and legally ambiguous. Reddit further reduced the availability of its API in November 2025, blocking further assignment of new developer access, but without removing rights of existing accounts (Reddit Help Center, 2026a). Researchers are referred to their Reddit for Researchers Program (Reddit Help Center, 2026b). Both CollectiveUP and VUB applied for Reddit API access under this program, and both applications were denied. The stated reason was *non-compliance with*

Reddit's Responsible Builder Policy and/or a lack of necessary details, without further explanation.

2.2.2 X (Twitter)

X stopped free access to its API early 2023 (Murtfeldt et al., 2024). Nevertheless, there is an exception for researchers based on the EU's Digital Services Act. Since this is only granted to research institutions, CollectiveUP could not obtain it. An application by VUB was denied, with the following justification:

Based on your application, it does not appear that your proposed use of X data is solely for performing research that contributes to the detection, identification and understanding of systemic risks in the EU as described by Art. 34 of the Digital Services Act.

The other option with X is the paid API. This is available to anyone and has no major restrictions, but is very costly. E.g., a call to the search API is charged at 0.005 US Dollar per returned post. We also investigated access to X data via a third party, discovertext.com, a platform that was, at the time of our discussion with them, in negotiation with X and was planning to start providing access to historical X data for researchers in the spring of 2026. However, the cost for such access turned out to be even higher (Ducatelle, F., personal communication, March 27, 2026).

2.2.3 Meta

Meta was one of the first companies to restrict access to its API in 2018, following the Cambridge Analytica scandal (Raychaudhuri, 2025). Nowadays, they provide a dedicated portal where researchers can access and analyze data from all of their platforms, including Facebook, Instagram and Threads. The big limitation is that the data cannot leave their platform, so all analysis needs to be developed and executed on the platform itself, using only the library and tool integrations they provide. Despite this limitation, both CollectiveUP and VUB applied for access to this platform, because of the high relevance of these platforms for the project. We did not receive an answer to our applications.

2.2.4 YouTube

The YouTube API is available free of charge, also for research purposes, but with some important limitations. The first is a daily download limit of 10000 "quota units", where the number of quota units used depends on the operation (e.g., a keyword search costs 100 quota units). The second is that the API does not provide access to all data fields. In particular, one can download a post's title, description, comments and thumbnail (a single image that is representative of the video), but not to the videos themselves, their audio, or

their audio transcripts. Also, researchers report reliability issues with the API (Efstratiou, 2025). Research institutions can apply for YouTube research access, which lifts the quota limitation, but not the data access limitation and the reliability problems. Since the quota limitation is not so strict and can be worked around (by spreading the search over multiple days), we did not apply for the research access. Despite all limitations, the data available through the YouTube API is still highly relevant, because of the important place it takes in the social media landscape (Gottfried and Park, 2025).

2.2.5 Summary of social media data used in this report

The challenges with social media access described above limited the choices we had in terms of data sources. To avoid legal challenges, we had to limit the use of Reddit data to development, e.g., to explore API usage, and test our keywords for content and location. For the actual data collection and analysis for research purposes, we focused on X and YouTube. Despite the limitations of the YouTube API, we could find sufficiently rich conversational data in the title, description, thumbnail, comments and replies. The choice for X meant that data downloads came at a high cost, and efficiency was important: we had to favor high precision searches, at the risk of lower recall (potentially missing some relevant data). On the positive side, neither of the platforms put any restrictions on the time horizon or location for the search, so we could create comparable data sets for both.

Since the CONIFER project focuses specifically on youth mobility, we also want to comment on the use of these platforms by young people. We used the data from the 2024 Youth survey of the Flash Eurobarometer (European Parliament, 2025), where one of the questions polls which social media platforms young people use to learn about social and political topics. Figure 2 shows the results for the countries where our civic labs are located, as well as for the EU as a whole. As can be observed, YouTube is the third most used platform in the overall statistics, shortly behind TikTok and Instagram, while X is in fifth place. When zooming in on individual countries, usage percentages for YouTube are relatively stable and high everywhere, while there are more local fluctuations in the use of X. Overall, these numbers indicate that, while X and YouTube are probably not the most used platforms in all of our locations for young people to learn about and discuss mobility issues, they are relatively well used and represent a good source of information for our analysis.

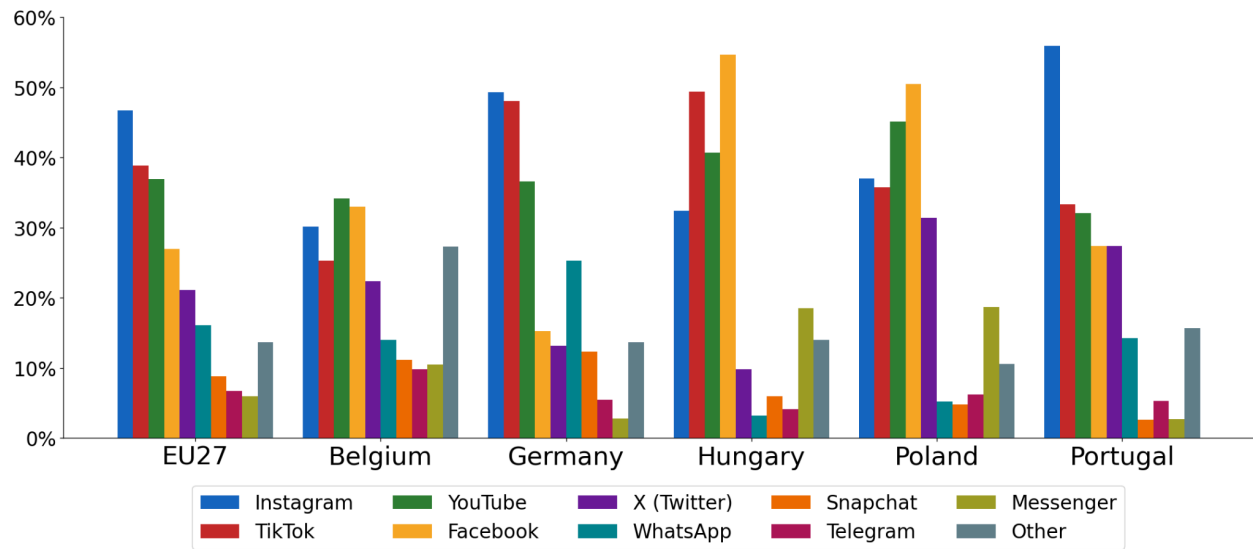


Figure 2 - Social media platforms used by young people (16 to 30 years old) to get information on political and social issues, by country.

3. Methodology

In this section, we describe the methodology used for this research. We first discuss the methods and strategy used for data collection and selection and next the methods for data analysis. Since large language models (LLMs) are used at various stages of both the data selection and the data analysis, we also address the methods used to verify the accuracy of those models.

3.1 Data collection and selection

The data collection and selection process includes a sequence of steps, starting from the selection of keywords, and ending with the dataset on which we perform our analysis. In between, there are several steps of data cleanup and filtering, and an optional feedback loop in which we improve the initial keywords. Figure 3 shows a schematic overview of the pipeline. It is executed for each of the social media platforms we investigate. In the rest of this section, we describe each of the steps of the pipeline in detail.

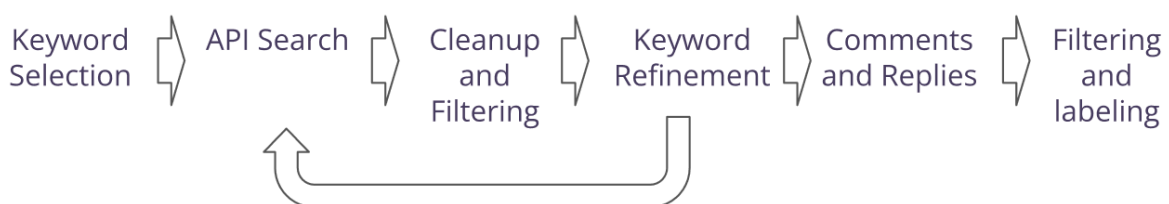


Figure 3 - Data collection and selection pipeline overview

3.1.1 Keyword selection

The search APIs of these social media platforms are all based on (literal) keyword matching, so to get enough relevant content, it is important to use as many keywords as possible that are relevant to our search. At the same time, cost of API usage (for X) and restrictions via daily quota (for YouTube) depend on the amount of content retrieved. It is therefore important to limit the retrieval of irrelevant content, by avoiding or restricting the use of indiscriminate keywords. E.g., a word like “bus” is highly relevant for mobility topics, but it has multiple meanings that are unrelated to mobility. A word like “bicycle” suffers much less from this problem.

We considered two types of keywords, those related to the topic of the project (15mC, mobility and youth mobility) and those related to the locations (place names that can tie a social media post to one of the 6 civic lab locations). We divided each of these two sets of keywords into two categories: *specific* and *general*. The specific keywords are those that have a high chance of returning relevant content, while the general keywords are those that are expected to return also unrelated content. A topic keyword is considered general if it has multiple, unrelated meanings, or if it can easily appear as a substring in other, unrelated terms (e.g., “auto”). A location keyword is considered general if it is a generic place name (e.g., “south station”), if it is a frequently used name (e.g., “church street”), if it has also other meanings (e.g., places named after famous people), etc. The distinction between specific and general is used to control the expected number of irrelevant results, as described in the next subsection.

For the selection of the keywords, we needed to appeal to the project partners, not only to deal with the different languages and local slang, but also to make sure that the topic keywords cover locally relevant mobility issues, and that the location keywords cover the most important names related to the civic lab location. We began with a survey before the start of this research, end of 2025, where each partner could contribute their keywords. Next, we extended these lists of keywords by including the most important keywords that could be shared across the labs, to cover the omissions in each contribution. Then, we shared the new keywords back with the partners before doing the search, to give them the opportunity to extend or revise them. Finally, there was also an automatic keyword refinement phase, as part of the data collection process, which we executed for those locations where we could find enough data (see “*Keyword refinement*”). The full list of keywords used for each location is provided in appendix B.

3.1.2 Data collection via the APIs: process and parameters

The keywords were used to search the X and YouTube APIs for the time period between 1 January 2022 and the date of the search, which was, depending on the location, between March and May 2026 (see appendix B). The specific setup of the search depended on the possibilities of the API of each platform.

For **X**, we composed search queries from three elements, joined by a logical AND: a language filter, a topic keyword clause, and a geographic clause. For the language code, we used the local language of each civic lab (both Dutch and French for Brussels). For the topic keyword clause, we used each term from the topic-specific vocabulary individually (one search per keyword), but we excluded the topic-general terms because of the high cost per post of the X API. The geographic clause was a disjunction (OR) of up to three anchor types: a location hashtag (see appendix B), a coordinate-based location (using longitude, latitude and radius), and the location-specific keywords (combined into a single OR-group). The combination of different location anchors was needed because geographic tagging of X posts is incomplete. Finally, we set a download limit of 200 hits per search query, again to avoid high costs (which affected about 8% of the searches).

For **YouTube**, we used both the topic-general and topic-specific terms in the search, joining all keywords in a single OR-clause. For specifying the location, we used two strategies. In the first, we did not use the location keyword terms, but instead combined the topic search terms with the same geo-coordinates and radius as for X. In the second, we combined the topic search terms with the location-general and location-specific keywords (all joined via an OR clause), but also specifying a language filter (to reduce the number of results irrelevant to the location).

3.1.3 Data cleanup

After collecting the data, we ran a first data cleanup phase, in which we dropped duplicates (inspecting both the post ID and the textual content), and filtered out posts that were not in the target language(s) of each location. For language detection, we used three different libraries: *langdetect*, a naive Bayes classifier over character n-grams (Nakatani, 2010); *langid*, a multinomial naive Bayes classifier over byte n-grams (Lui & Baldwin, 2012); and finally Facebook's *fastText*, a linear classifier over subword n-gram embeddings (Joulin et al., 2017). If any of these models detected that the post was in the right target language, we kept it (to overcome the weaknesses of each of the models).

3.1.4 Data filtering I

After the initial cleanup, we had a first data filtering step, using semantic sentence embeddings (Reimers and Gurevych, 2019). Embedding models are trained to project texts into a semantic vector space: texts with similar meaning are represented as vectors that are close to each other. Vector similarity is typically calculated with metrics such as cosine similarity (Reimers and Gurevych, 2019). Such an approach based on embedding vector similarity is commonly used for information retrieval and filtering, since it is easy to set up (it uses a standard model, typically without the need for fine tuning or prompting) and relatively fast and cheap (Zhao et al., 2024).

Here, our goal was to do a first coarse filtering of posts, dropping those that had very low probability of being related to mobility. In the next data filtering phase, we used an LLM for more precise filtering, and we wanted to reduce the cost of that keyword. We used the model text-embedding-3-small of OpenAI (OpenAI, 2024) to create dense embedding vectors for each post, as well as for the keyword “mobility” (translated into each location’s language). Then we calculated the cosine similarity between the embeddings of each post and of the keyword, keeping all posts with similarity above a threshold (of 0.2). By setting a very low similarity threshold (0.2), we avoided as much as possible dropping relevant posts, while we still reduced the total volume of posts presented to an LLM in the next phase. We only used this phase in the YouTube data collection, as the API data collection process of X was already sufficiently precise to keep the volume of unrelated posts low.

3.1.5 Data filtering II

To ensure a high-quality, geographically-relevant dataset, a secondary filtering stage was implemented using an LLM. We used GPT-5 of OpenAI, which combines a general-purpose model and a deep-reasoning model, using a real-time router to distribute queries between them (Singh et al., 2026). In practice, we saw that each of our calls to GPT-5 got routed to the reasoning model.

For each post, we created a text to present to the model, including the title, text and metadata (location tag, if available). We also presented an image, if relevant (the video thumbnail in case of YouTube, any image present in the post in case of X). In the system prompt, we asked the model to answer two questions: *is the post about a mobility-related topic*, and *is the post related to the correct locations*. We provided a precise definition of the expectation for each of these questions, and asked the model to output a json structure. The full system prompt (instantiated for Budapest and X) can be found in appendix C.1. We used guided decoding to constrain the output and get valid responses each time (Willard and Louf, 2023).

LLMs have been shown to excel at such zero-shot learning tasks (Brown et al., 2020) and in general show very good performance for any natural language task. Nevertheless, we found

we had to use a recent and powerful model to get good enough results. In section 3.3, we address the issue of human verification of LLM performance in this task. In what follows, every time we discuss the use of an LLM, we are referring to the use of GPT-5 with guided decoding.

3.1.6 Keyword refinement

The keyword refinement step was used to improve the initial keywords we used at the start of the search. We ran the above data selection pipeline using the Reddit API. We compared the posts obtained from the search API to those retained after the filtering stages, and used this to revise the keywords. This phase was only run for the locations Ghent, Brussels, Budapest and Cologne; Torun and Matosinhos produced very few search results with the limited Reddit API (about ten), insufficient to perform a significant analysis with. If the phase was run, it was executed before the data collection and selection pipeline was executed for X and YouTube. Its purpose was to improve the keyword selection, so that the searches on X and YouTube were more efficient and less costly.

Keyword refinement consisted of two parts. In the first place, we compared the presence of the original keywords in the retained vs. rejected posts, and calculated the percentage of posts retained for each keyword. Specific keywords that had a retention rate below 25% (15 % for location keywords) were moved to the general keywords. Also keywords that produced no results were moved to the general category. Besides this, we also produced new keyword candidates, by extracting all unigrams and bigrams from the retained posts (excluding stop words, like “the” or “it”). For all of those candidates, we calculated the same retention rate, and kept the ones with a rate over 90%. Those were then further evaluated with GPT-5, to check if they were related to the topic or the location, before they were added to the specific keywords.

3.1.7 Replies and comments

After obtaining a set of posts using the above data collection and selection process, we downloaded all comments and replies to those posts, including deeply nested replies to replies. This process deterministically requests all relevant posts from the API, without a need for complicated filtering or selection. The only exception was that we capped the maximum number of comments per YouTube video to 1000, and the maximum number of replies per comment to 100, to avoid hitting the daily token quota limit too often (see also section 3.2, where we also give other reasons for avoiding too long and deeply nested conversations).

3.1.8 Data filtering III

After running the data collection and selection pipeline for X and YouTube, we obtained a relatively large set of relevant posts with their comments and replies. Before we started the analysis of those data, we let a human evaluator go through some of the posts for Budapest and Ghent, to verify the quality and spot any remaining posts that would not contribute to a fruitful analysis. This way, we spotted two types of posts that we wanted to exclude: automated mobility information messages and public transport enthusiasts. The former category are posts from authorities, public transport operators, or other organizations with automated messages, e.g., to inform about public transport interruptions, traffic issues, etc. The latter category are people who post a video or image of a particular type of train or a train line (e.g., they take a particular train route and film that), without any extra information or discussion. To filter out such posts, we applied another LLM-based filter, using GPT-5. The prompt for this filter is given in appendix C.2.

3.1.9 Labeling

Finally, we applied a data labeling step, to identify which posts were related to *youth*. Since only a subset of the topic keywords was related to youth, and also because keyword matching alone is not enough to establish whether a post is related to youth, we used an LLM to label posts as youth-related or not. This allows us to draw separated conclusions about youth-specific mobility content during the analysis. The LLM system prompt for this labeling focused on three questions: *is the post about youth or children, is it about schools, is it created by youth*. If any of these questions resulted in a positive answer, the post was labeled as *youth-related*. The prompt can be found in appendix C.3.

3.2 Data analysis

In this section, we describe the methods used for data analysis. We distinguish the following types of analysis: topic modelling, stance detection, sentiment detection and bias detection. In what follows, we describe each of these types in detail.

3.2.1 Topic Modelling

Topic modeling is a natural language processing task designed to automatically discover common themes and semantic patterns within large collections of unstructured texts (Albalawi et al., 2020). We used topic modeling to explore the data and find which mobility topics were being discussed, letting them emerge from the analysis, rather than defining them beforehand.

Various technologies have been developed for topic modeling, including, e.g., Latent Semantic Analysis (Hofman, 1999), Latent Dirichlet Allocation (Blei et al., 2002), or BERTopic (Grootendorst, 2022). Since the arrival of LLMs, researchers have successfully developed various ways of using this type of models for topic modelling (Pham et al., 2024; Glunčić et al., 2025; Xu et al., 2026). In our work, we chose to use TopicGPT (Pham et al., 2024), because it shows very good results (significantly better alignment with human annotated data than state-of-the-art pre-LLM methods), is highly cited, and is relatively simple to apply.

TopicGPT has three phases: *generation*, *refinement*, and *assign*. In the *generation* phase, a subset of the text documents (they recommend 1000 documents) are used to develop a set of topics incrementally: the documents are presented to the LLM one by one and the model is asked to assign a topic, either by reusing an existing topic, or creating a new one. The phase is initialized with a small number of seed topics. In the *refinement* phase, the topic set is cleaned by identifying related topics using sentence embeddings (Reimers and Gurevych, 2019) and requesting the LLM to merge them if possible, and by dropping infrequent topics. Finally, in the *assign* phase, all documents are presented to the LLM one by one, with the task to assign each document one or more topic labels.

In our use of TopicGPT, we made a small adaptation to guide the type of topics we elicit. We prompted the model to create topics along two dimensions: mobility topics (the transport mode or infrastructure discussed, e.g., bus, bicycle, parking) and issues (what is notable or problematic about it, e.g., congestion, pollution, accident). Both topic dimensions were generated jointly in a single prompt. Besides this, we applied stratified sampling (across locations and social media platforms) to create the sample of text documents for the generate phase, and we applied a threshold of 1% frequency to drop infrequent topics in the refine phase. Finally, to present each post to the LLM, we combined its title, text, image (as described above when discussing the phase *Data Filtering II*) and comments. The prompts for our application of TopicGPT can be found in appendix C.4.

3.2.2 Stance detection

Stance detection is the task of determining from text whether the author of the text is in favor of, against, or neutral towards a target, which can be a proposition, a person, an organization, etc. (Mohammad et al., 2016). We applied stance detection methods to find out people's perspectives with respect to 15mC topics. To this end, we formulated two sets of propositions. The first set contains eight propositions representing mobility related characteristics of the 15mC movement. We based ourselves on Teixeira et al. (2024), where a number of criteria are formulated to label urban projects as implementations of the 15mC principles. We took those criteria that are related to mobility, and reformulated them as normative propositions. The resulting set of propositions is referred to as *15mC propositions*.

and can be seen in Table 2. The second set contains seven propositions that originated from the analysis of public discourse in local media in the six civic lab locations. We formulated the propositions to cover all of the mobility themes discussed in the various articles. The resulting set is referred to as *media analysis propositions* and is shown in Table 3.

Proposition name	Description
Restriction and Reduction of Private Motorized Vehicles	Cities should actively implement car restrictions, traffic calming measures (e.g., via speed limits), parking charges, etc. to discourage vehicular travel.
Reallocation of Road Space	Some road space and on-street parking spaces should be eliminated and transformed into walking paths, cycling lanes, public squares, green areas, etc.
Prioritization of Walking	Cities must invest in dedicated, human-scale street infrastructure that improves pedestrian safety and comfort, such as pedestrian zones, wider pavements, continuous sidewalks, raised crosswalks, etc.
Prioritization of Cycling	Municipalities should create more (and uninterrupted, segregated) cycling lanes, create secure bike parking facilities, etc.
Prioritization of Public Transport	Public transport systems should be improved, e.g., by increasing route coverage and service frequency. Public transport should be made more accessible and affordable.
Multimodal Integration and Shared Micro-Mobility	Digitalization and planning frameworks should support shared micro-mobility options like bike-sharing systems to facilitate short trips. Cities should promote the integration of public transport with shared micro-mobility.
Safe road hierarchy	Cities should implement a road safety hierarchy where vulnerable road users are insulated from traffic harm, or shared streets with intense traffic calming, where pedestrians and cyclists take priority over motorized traffic.
Sustainable and Silent Urban Logistics	Cities should mandate the transition of commercial fleets to sustainable urban logistics models to minimize the negative local impacts of urban shipping, e.g., mandating the use of green fleets, electric vehicles or cargo bikes.

Table 2 - 15mC propositions used for stance detection.

Proposition name	Description
Public transport network and services	Public transport networks and services (including school bus services) should be improved, extended (more lines and routes, higher frequency, etc.) and better aligned with each other (e.g., arrival and departure times of trains and buses) to reduce commute times and extend accessibility and comfort.
Public transport prices	Public transport should be made cheaper or free to use.

Proposition name	Description
Safety on public transport	The safety, comfort and reliability of public transport should be improved by mitigating internal technical failures and operational risks, reducing overcrowding, deployment of monitoring personnel, etc.
School streets	Vehicle-free environments should be implemented in the neighborhood of schools to provide children with safe and clean environments.
Prioritization of bicycle use and safety	Bicycle use should be encouraged and promoted and bicycle safety should be prioritized. This includes improving infrastructure and services, such as increasing the number of secured parking spaces and city bike rentals, dedicating street right-of-way and creating more (safe, uninterrupted, segregated) bicycle lanes.
Prioritization of Pedestrian Safety	Urban intersections and routes must be altered with physical traffic calming, continuous pathways, and structural roadblocks to shield pedestrians from vehicular dominance and road rage. Public pathways must also be secured against social safety hazards, e.g., to protect commuting school children from criminality.
Reduction of car commuting	Cities must disincentivize individual vehicle use (including drop-offs at schools in kiss and ride zones) and restrict space-inefficient car logistics near educational institutions and elsewhere in the city, driving a transition toward communal or active transit modes.

Table 3 - Propositions for stance detection extracted from media policy discourse analysis.

Stance detection is a relative newcomer among the tasks investigated in NLP (Mahammad et al., 2016). Nevertheless, a large number of approaches have been proposed even before the arrival of LLMs, often including the combination of various algorithms in multiple processing steps (Küçük and Can, 2020). The introduction of LLMs presented important new capabilities for stance detection, including superior contextual understanding, cross-domain generalization and multimodal analysis (Zhang et al., 2022; Pangtey et al., 2025; Huang et al., 2026). Several authors show state-of-the-art performance with LLMs (Gao and Feng, 2025), showing that a zero-shot prompting strategy can even outperform finetuned models (Aiyappa et al., 2026) or more complex setups using AI agents, as long as the model size is large enough (Dai et al., 2026). Walker and Angst (2025) use a prompting based LLM method for stance detection around sustainable mobility themes in German online media articles, stressing the challenges of working on non-English datasets and warning that while the LLM results are good, they should be used with caution.

Stance detection in social media poses specific challenges (ALDayel and Magdy, 2021). First of all, social media text data have particular linguistic characteristics, such as the use of local and internet slang, irony, sarcasm, etc. (Farzindar and Inkpen, 2020). While LLMs demonstrate significant capabilities in navigating these linguistic nuances, they still present an important difficulty (Zhang et al., 2025; Yi et al., 2026). Second, there is the subtle

difference between sentiment and stance: while stance detection is concerned with finding opposing or supporting statements, sentiment analysis deals with the tone of the message, which can be positive, negative or neutral. Sentiment and stance are largely orthogonal: a message can be negative, but still contain support for a particular statement, which can be confusing for automated analysis. Social media texts tend more towards negativity (Zollo et al., 2015), so this challenge is particularly relevant (ALDayel and Magdy, 2021). Finally, there is the conversational aspect of social media content: every statement needs to be interpreted in relation to the preceding conversation. Conversational stance detection is a particularly difficult task, not only because of the need to consider the conversational context and its structure, but also because of other aspects, such as topic drift throughout long conversations (Li et al., 2023). While zero-shot LLM prompting can give good results (Ding et al., 2025), researchers also explore more complex setups with fine-tuned LLMs and multi-agent systems (Wang et al., 2025; Meng et al., 2026).

In our analysis, we used zero-shot LLM prompting for this task. We used a two-step approach, as many others have done (Mahammad et al., 2016). The first step is *relevance detection*: we presented the social media post with its replies to the LLM (in the same way as described for *topic modelling*), together with the set of propositions, and asked it to return the most relevant proposition of the set if any (in practice, we did this in two substeps, first to select *all* relevant propositions, and next to identify *the most relevant*). The second step is the *stance assignment*. We prompted the LLM to assign a stance for each post and for its replies, one by one, with respect to the assigned proposition. We included specific instructions to point to the particular challenges of social media data, such as irony, sarcasm, local slang etc. To handle the conversational aspect, we analyzed the stance of each comment with the preceding turns of the conversation in the prompt. To structure the conversation tree, we used indentation and a numbering scheme (e.g., the first reply is numbered 1.1, a reply to that reply 1.1.1), inspired by Zubiaga et al. (2016). We allowed the model to give five types of answers: supporting, opposing, neutral, unclear, and opposing-specific. The latter category was introduced because we noticed in the data a large number of cases where the user was opposing one specific 15mC-related proposition in favor of another (e.g., supporting safety to walking and opposing cycling). In our analysis, we conflated opposing and opposing-specific, as it was difficult to distinguish, also for humans (see section 3.3 Part II). Also the categories neutral and unclear were conflated, as is often done in stance detection research (Mohammad et al., 2016). All system prompts and an example of the dialog structure representation are given in appendix C.5.

Despite the good results obtained with LLMs for various aspects of stance detection, we are aware that this remains a difficult task. To reduce the difficulty of the conversational aspect, we limited our analysis to maximum 15 replies and maximum 3 levels deep of nesting (Meng et al., 2026, show that algorithm performance degrades beyond 3-5 levels of

replying): we did a breadth-first search through the tree of replies, keeping the 15 most recent that match the reply-level depth constraint. Besides this, we also analyzed the quality of the model's judgments by comparing to human annotators for a small subset of the posts, see section 3.5 Part II.

3.2.3 Sentiment analysis

Sentiment analysis is the NLP task to identify subjective emotional polarities - typically positive, negative, or neutral - expressed within text data (Liu, 2012). It is a very broad and active research area, because of the many important applications in politics, finance, marketing, healthcare, etc., and many different algorithms have been developed (Wankhade, 2022). Like for many other NLP tasks, recent work focuses on the use of LLMs, with many studies reporting superior performance compared to previous state-of-the-art methods, aligned with humans, even (or especially) with simple prompting (Krumann and Hartmann, 2024; Escobar Díaz et al., 2025).

For our purposes, we want to apply sentiment analysis because of the important role of sentiment in social media conversations. It has been found that negative posts get more reactions and engagements on social media (Zollo et al., 2015), which is related to the negativity bias (Kanouse and Hanson, 1972), the tendency of human cognition to be more affected by negative affect. Besides the obvious interest in bias as the topic of this research task, we also focus on sentiment analysis and negativity because of the profound effects it has on online communities: emotions in only debate directly affect community creation, opinion forming, and complex phenomena such as polarization (Chmiel et al., 2011; Buder et al., 2021). Finally, a third reason to focus on sentiment analysis is the fact that negative affective tone can cloud the interpretation of messages, as we described in the discussion on stance detection. It is important to understand the extent of this problem, for the interpretability of our results.

Like for the other tasks, we applied an LLM with zero-shot prompting. We gave the LLM a choice between three categories, positive, negative and neutral, as is common in such analysis (Koppel and Schler, 2006). We selected and represented the posts and replies in the same way as for stance detection: we only selected posts that were related to a proposition, used maximum 15 replies per post (selected in chronological order from the oldest, breadth first and maximum 3 levels of nesting deep), and presented each text one by one to the LLM with its conversation history (represented in the same structured way). We combined sentiment analysis with bias detection (see next section) in a single prompt. The full system prompt for those two tasks is given in appendix C.6.

3.2.4 Bias detection

Bias is a very broad term, referring to any disproportionate weight in favor or against an idea, a thing or a group ("Bias," 2026). Consequently, the research on bias detection is also very broad. For the purpose of the current task, we focus on bias in the sense of prejudice, stereotyping or discrimination (Dovidio, 2010) as expressed by people on social media. Following Majumdar et al. (2026), we consider specifically bias against demographic groups, along nine dimensions that are recognized by several national and international jurisdictions: gender / gender identity, sexual orientation, disability, age, race / ethnicity, nationality, religion, socioeconomic status and physical appearance. Besides this, we also investigated bias against political leaning, because it seemed to be an important dividing line in the social media data, and has been the subject of studies of bias in social media before (Chen et al., 2021).

Several studies have shown superior performance of LLMs on bias detection (Barakat and Jaf, 2025; Usman et al., 2025; Majumdar et al., 2026). We closely follow the approach of the latter, taking over parts of the prompt, as well as the definition of the bias classes. As described above, we combined bias detection with sentiment analysis in a single prompt, for practical and efficiency purposes, and because both tasks are closely related. The way we select and present posts and replies to the LLM is therefore also the same as described in the previous subsection.

3.3 AI accuracy and human verification

As described in the rest of this section, many of our investigations were based on the use of LLMs. For many of these tasks, there is sufficient literature showing that LLMs indeed provide the best solution (as described in section 3.2), and in general LLMs have been found to give comparable or better results than human data annotators for many tasks, usually using LLMs that predate the GPT-5 model we applied (Gilardi et al., 2023; Ji et al., 2025). Nevertheless, some of the studies on the use of LLMs for these analysis tasks come with a warning indicating the limitations of LLM performance, or indicating the dependence on the quality of the prompt. It was therefore important that we verified the quality of the LLM decisions.

For this purpose, we developed a simple interface for human evaluation of the LLM decisions. The human coders saw the social media data in the same way as the LLM, meaning that they saw the title, text, image, and replies. We provided two ways of human feedback: revising the LLM decision, and independent labeling. In the first approach, revising the LLM decision, the humans were shown the labels given by the LLM, and were

asked to flag erroneously assigned labels. This approach is quite simple and lightweight for the human coder. We applied this for the simpler tasks, where we expected both humans and LLM to do well, so we could use the human label as ground truth. In particular, we used this method for the following LLM decisions: whether the post is about mobility and the right civic lab location, the assigned mobility topics and issues, and the choice of most relevant proposition. Afterwards, we used the human labels to evaluate true vs. false positives in the LLM labeling. In the second approach, independent labeling, the human coders could not see the LLM's decisions and were asked to give their own label independently. We applied this for the tasks that seemed more difficult and prone to interpretation (based on our own evaluation and based on results in the literature), both for the LLM and for humans. In particular, we applied this approach for the following LLM decisions: stance assignment, sentiment analysis and bias detection. To have some alignment on the interpretation of the labeling, the various human experts evaluated some (about 5, randomly chosen) posts together, also considering the LLM decision and prompt. We used the results from human coding to calculate the inter-annotator agreement among the humans and between each human and the LLM, using the Kappa metric with quadratic weighting (Cohen, 1960; McHugh, 2012).

4. Results and discussion

In this section we describe and discuss the results from the execution of the steps described in section 3. We start with the data collection phase. Then we discuss the various analyses: topic modelling, stance detection, sentiment analysis and bias detection. We end the section with the results of the evaluation of LLM accuracy with human coders.

4.1 Data collection process and results

The data collection and selection process was a very challenging part of the project, which took a lot of time and resources. The initial search via the APIs provided a large amount of data across the various locations and platforms, which was trimmed down step by step through cleaning and filtering steps. This process can be observed in Figure 4, where we show the amount of data produced at each step for each of the locations and platforms. The final result, in terms of number of posts and replies per location and platform is shown in Table 4.

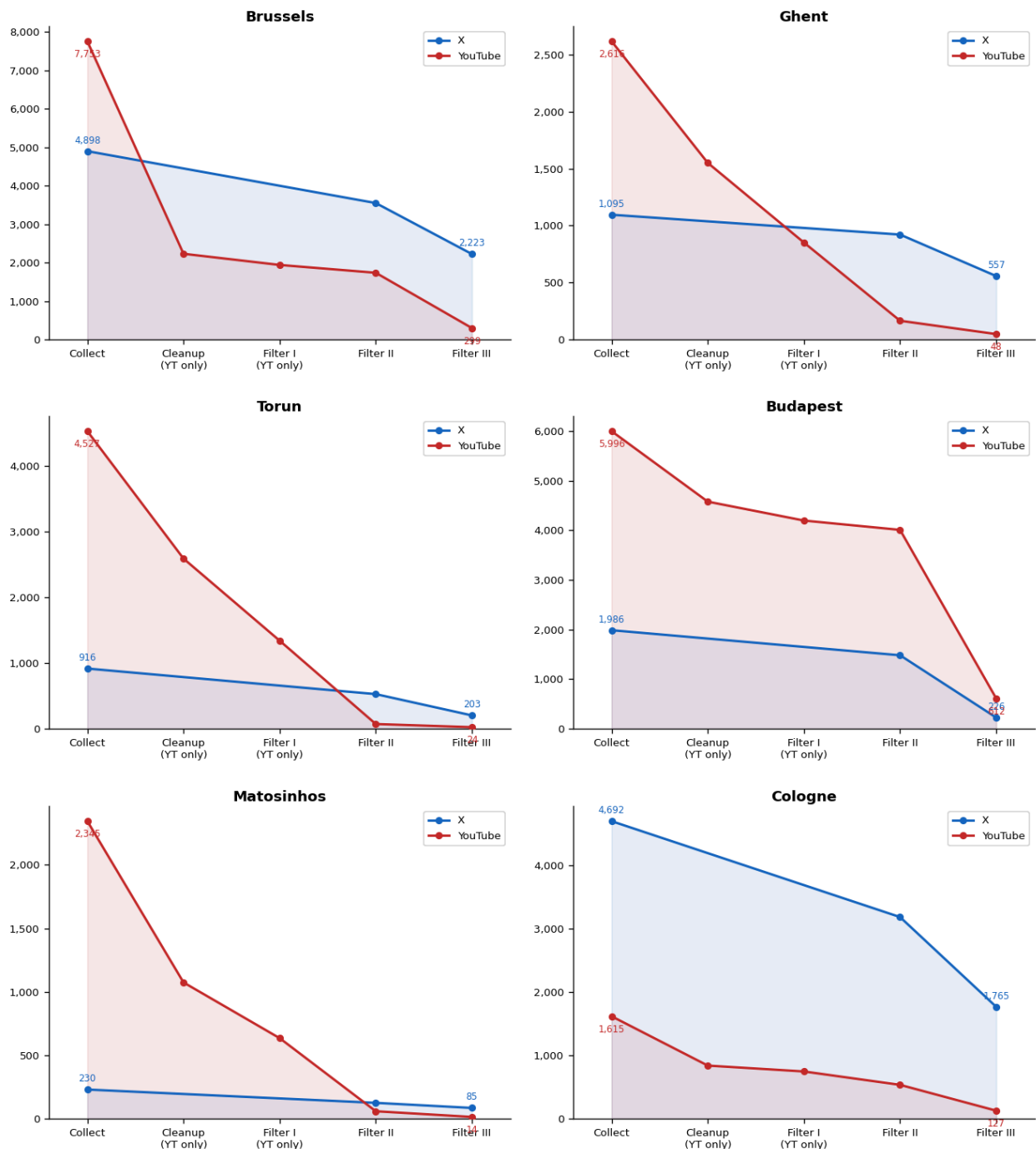


Figure 4 - Number of posts throughout the data collection and selection process

Location	X Posts	YouTube Posts	Total Posts	X Replies	YouTube Replies	Total Replies
Brussels	2,223	299	2,522	10,472	5,435	15,907
Ghent	557	48	605	2,353	100	2,453
Torun	203	24	227	624	157	781

Budapest	226	612	838	602	14,496	15,098
Matosinhos	85	14	99	428	9	437
Cologne	1,765	127	1,892	9,105	2,957	12,062
Total	5,059	1,124	6,183	23,584	23,154	46,738

Table 4 - Final number of posts and replies after data collection and filtering

The amount of data throughout the process shows the challenge with collecting relevant data. For all of the locations except Cologne, we got more posts for YouTube than for X. But we also lost more posts with each cleaning and filtering step, ending up with less in the end. One of the reasons is that we used both the specific and general topic keywords for YouTube, while for X we only used the highly optimized, precise specific keywords set. While this let us keep the costs of the X data collection down, it also provided us with better quality data from the start (it even allowed us to skip some of the filtering, in particular the imprecise step of filtering II). We could have obtained more data including also the general keywords for X, but probably with limited extra data in the final result. This shows the difficulty to get good quantities of relevant data with the limited possibilities offered by public APIs: besides the high costs, it is in general difficult to get a collection of highly relevant data purely based on literal keyword matching.

Another interesting observation from the data filtering process is the large number of posts dropped specifically in the final step *filtering III*, which excludes two types of messages: automated announcements and posts from “public transport enthusiasts” (see section 3.1). This gives some further insight into the difficulties in getting relevant data, pointing to two important factors. The first is that the digital nature of social media data makes that messages can easily be produced automatically, letting them dominate the data. The second is that the dividing line between what is considered relevant for mobility and what not can be a topic of discussion, possibly leading to different assessments and results (see also the results and discussion in section 4.3).

Looking at the total number of data gathered, we find a relatively large collection of 6183 original posts and 46738 replies across the 6 civic labs and 2 social media platforms. This is a high precision dataset, meaning that the vast majority of these posts and their replies indeed represent discussions on mobility topics in these particular locations (see section 4.3). One striking observation is the imbalance of the dataset, ranging from 2522 conversations gathered for Brussels down to only 99 for Matosinhos. Part of this is related to the available data, reflecting objective differences between the locations, such as the number of inhabitants (Brussels, Budapest and Cologne each have over 1M inhabitants, while Ghent has 275K and Matosinhos and Torun each less than 200K), and differences in political, social and economic importance (Brussels and Budapest are capitals, Ghent attracts a disproportionately large number of students, etc.). Another aspect is the data

collection process itself, in particular the choice of keywords. While the topic keywords were aligned to some extent between the cities, there were still important differences, e.g., due to alignment with local mobility topics and due to language differences (a keyword for the same concept may be ambiguous in one language and unambiguous in another), etc. More importantly, the location keywords, necessary to narrow the search to the particular locations, are by definition different between the locations, and may be the most important factor contributing to the differences. We must therefore conclude that, due to the various challenges in this task, our dataset is probably not very complete, in the sense that it is missing a lot of relevant posts. Unfortunately, we have no straightforward way to measure the recall percentage of our process and the completeness of our dataset.

Finally, we zoom in on the fraction of the conversations related to youth mobility. This is shown in Figure 5. As we can see, the percentage of conversations about youth mobility ranges between 6.2% (Ghent, YouTube) and 22.1% (Matosinhos, X). The average across all locations and platforms is about 15%. This is relatively low, and is also related to the challenges to collect relevant data with high precision through the (costly) social media APIs. Moreover, our labeling of posts as being related to youth is entirely based on the content of the post (they are about youth, or they are from people that clearly identify as youth); since we don't know the age of each contributor, we may be underestimating the total number of youth mobility related posts. In our experiments with Reddit, we observed a much higher percentage (33.5%), but unfortunately, we could not include these data in our analysis. Nevertheless, we think that we have enough data to draw some relevant conclusions on discussions around youth mobility, and also that the general discussion around mobility in each location is relevant as it directly reflects the environment and debate in which youth mobility and opinions are shaped.

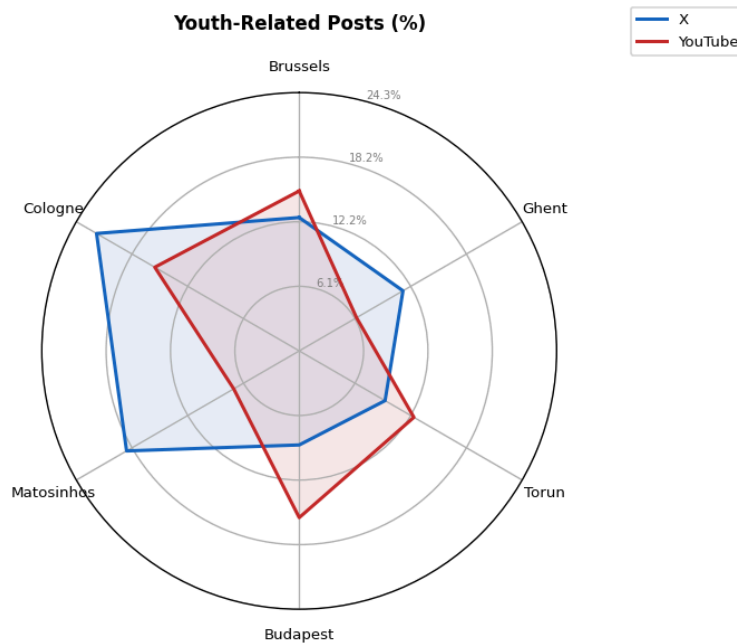


Figure 5 - Fraction of posts related to youth mobility, per location and platform

4.2 Data analysis results

In this section, we present the results of the data analysis. First we discuss topic modelling, next stance detection, then sentiment analysis, and finally bias detection.

4.2.1 Topic modelling

In the topic modelling task, we let our algorithm identify common topics of conversation within the posts. Since the LLM evaluated each post together with the associated replies (to get a more complete and comprehensible text), each individual result applies to a full conversation, rather than to only the single post that initiated it. In this section, we will use the terms post and conversation interchangeably.

As described in section 3.2, we retrieved topics along two dimensions: *mobility topics*, referring to mobility modes and infrastructure, and *issues*, focusing on what is notable or problematic about the mobility topic. The full list of mobility topics and issues found by the algorithm is given in appendix D.1. Here we focus on the most common labels found, and the most common combinations of mobility topics and issues.

Figure 6 shows a heat map of the frequency of co-occurrences of mobility topics and issues across all locations. It includes the 10 most common mobility topics and issues, sorted from respectively top to bottom and left to right in order of frequency. This gives us an insight into what people talk about most when it comes to mobility. The most important mobility

topics are bicycles, cars and trains. For bicycles, the most important issue seems to be road safety. Other regularly discussed issues are infrastructure design adequacy and road space reallocation. For cars, the main topics are road safety, regulation and congestion, as well as road space allocation. For all public transport topics (train, bus, tram, and the generic topic public transport, which was used for posts that did not refer to a specific public transport medium), the most important issues under discussion seem to be availability and reliability/punctuality.

In table 5, we dig a bit deeper into these results, showing the top three most common combinations of mobility topics and issues per location. This shows some clear differences. In Ghent and Brussels, road safety of bicycles and pedestrians is high on the agenda, as well as car regulation. This may be related with large traffic reorganizations restricting car use that have taken place over the past few years in those locations. In Budapest, Cologne and Torun, on the other hand, availability and reliability of public transport are the most important themes. One outlier is the prevalence of bicycle event documentation in Budapest, a category that hardly came up in any of the other locations. Inspection of the data showed that a lot of these messages were related to people posting about “I bike Budapest” events. Also for Matosinhos, an outlier seems to be present, a particular focus on issues with the bus stops. These outliers, while they probably point to relevant local topics of debate, also highlight some of the difficulties with the data mentioned before: some of the datasets, especially when zooming in on the individual locations are very small, the data collection is biased by the choice of keywords and the limited possibilities for the search APIs, and social media conversations can easily be dominated by particular topics due to the ease with which messages can be created or spread. Besides the outlier, posts in Matosinhos focus on road congestion, which is also present in the Ghent data, and illegal parking, which did not feature prominently anywhere else.

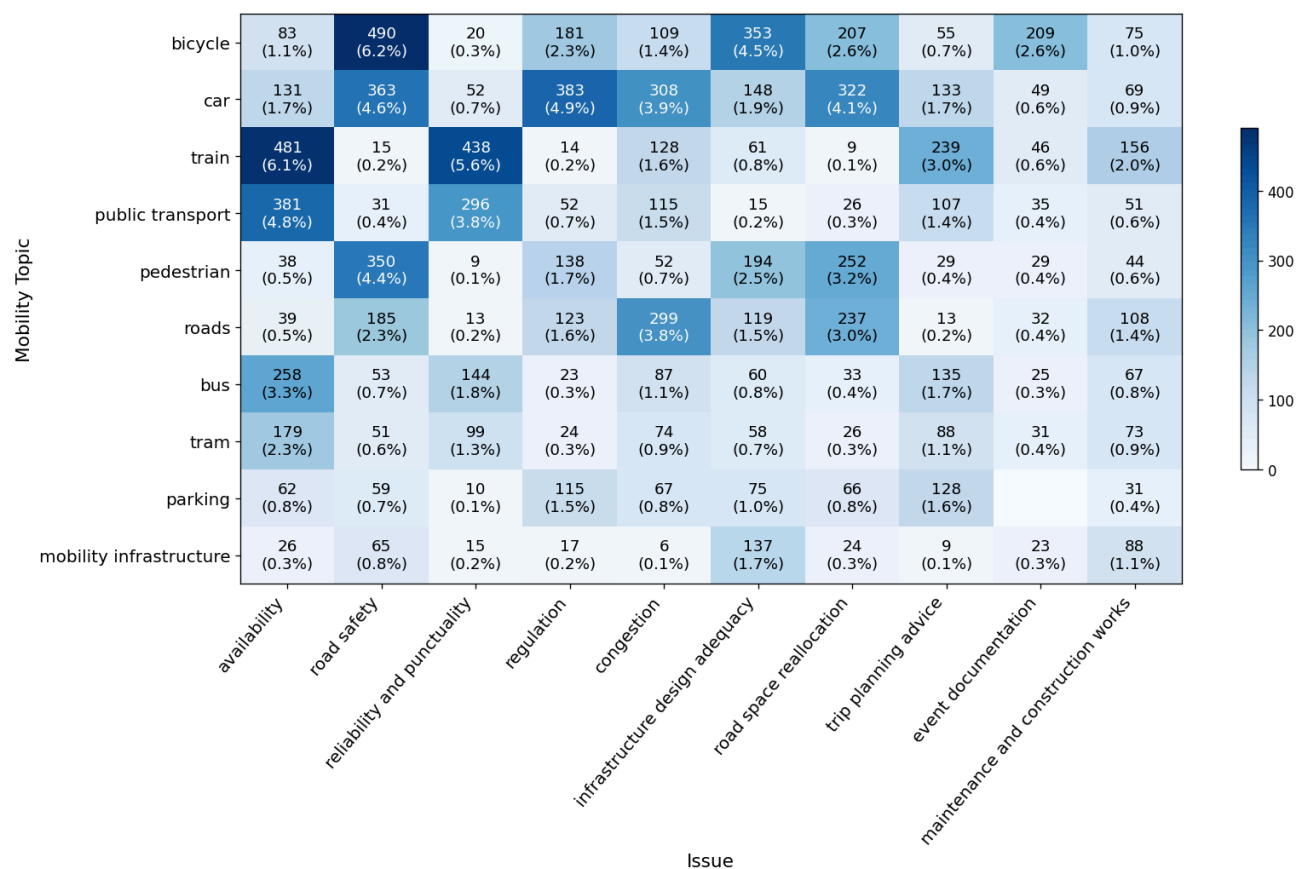


Figure 6 - Heat map of most frequent combinations of mobility topics and issues

Topic	Issues	% of posts
Brussels		
bicycle	road safety	6.9%
car	regulation	6.7%
pedestrian	road safety	5.5%
Budapest		
bicycle	event documentation	10.1%
train	reliability and punctuality	6.7%
train	availability	6.0%
Cologne		
train	availability	8.6%
train	reliability and punctuality	8.0%
public transport	availability	7.7%
Ghent		
bicycle	road safety	10.1%

car	regulation	9.0%
roads	congestion	6.9%
Matosinhos		
bus	stop amenity deficiency	11.0%
roads	congestion	9.9%
parking	illegal parking	8.2%
Torun		
public transport	service dissatisfaction	11.2%
public transport	reliability and punctuality	7.8%
public transport	availability	7.8%

Table 5 - Most frequent combinations of mobility topics and issues per location

Figure 7 shows the same heat map as Figure 6, but for youth-related posts only. Because of the limited size of the dataset for some of the locations, we do not zoom in on the individual locations here. Compared to the complete mobility dataset, we see the same tendencies in terms of most important mobility topics and issues. Nevertheless, there are some differences. The first is that *road safety* is now the number one issue, across multiple mobility topics. Also, the mobility topic *pedestrian* features more prominently in discussions about youth, in particular with respect to the safety issue. For public transportation topics, we see the same issues between the general dataset and the youth specific conversations, *availability* and *reliability/punctuality*, though with relatively more attention for the former.

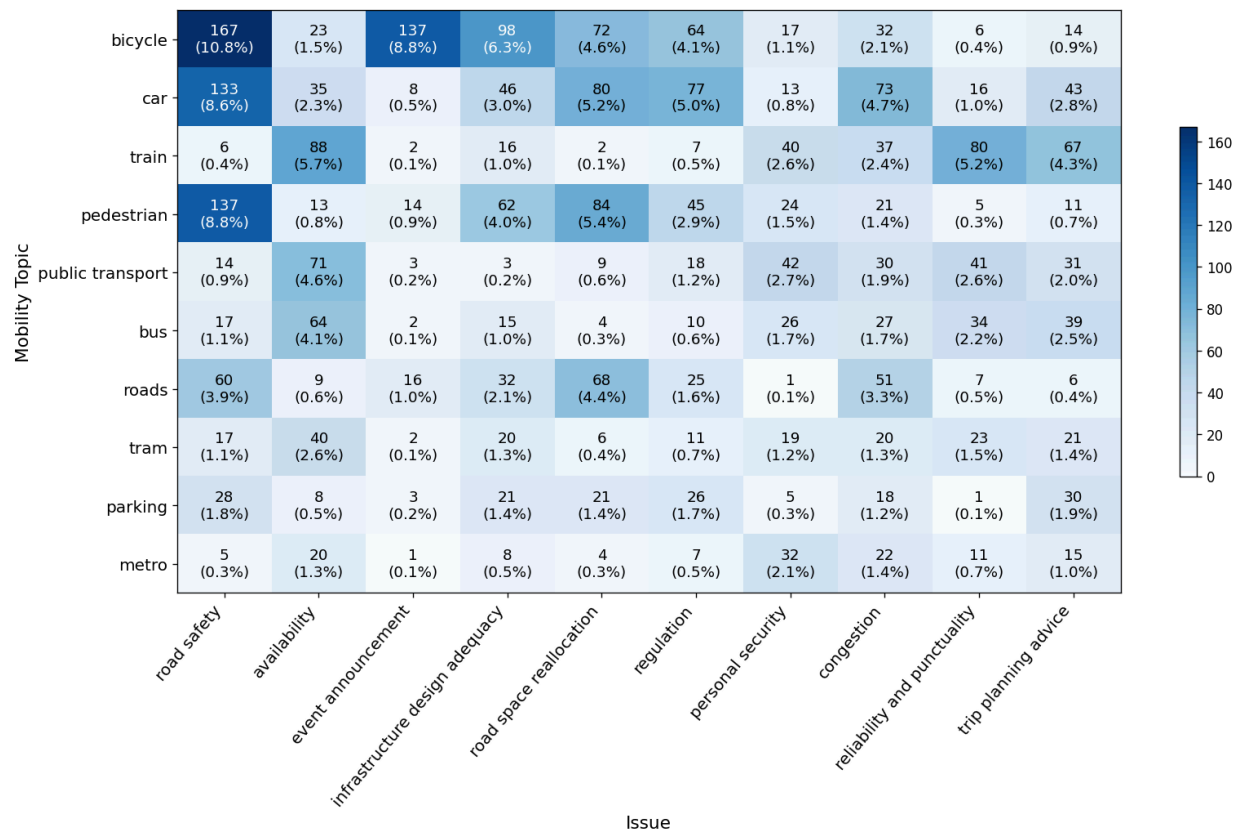


Figure 7 - Heat map of most frequent mobility topics and issues for youth-related posts

Finally, we discuss co-occurrences of transport modes in discussions. When inspecting the data, we realized that a lot of the posts discussed multiple mobility modes, often showing a conflict between them. E.g., many posts discuss how dangerous cars are in the city, when considering pedestrian safety. To analyze this, we took the subset of the mobility topics that express modes of transport, and selected all posts which were labeled with more than one such topic. Then we prompted the LLM to evaluate whether the post and its replies expressed a conflict between those modes of transportation or not (see appendix C.7 for the prompt). The result is shown in figure 8. As can be seen, many posts indeed express conflict. Some of these are obvious and expected, such as the earlier mentioned conflict between pedestrians and cars, or bicycles and cars, with obvious concerns for safety. Less obvious, but important for our analysis, are conflicts between modes of transportation that are both considered sustainable or 15mC related, such as between bicycles and pedestrians, or between e-scooters and pedestrians. Both of those were confirmed when browsing through the data of Ghent: efforts to increase bicycle use are often considered to be at the expense of pedestrians, e.g., reducing their space or affecting their safety. Similar concerns are raised around the use of electric scooters. This is important to consider when we analyze the results of stance detection with respect to sustainable mobility propositions in the next subsection: people may express a stance opposing a particular form of sustainable mobility without opposing sustainable mobility as a whole.

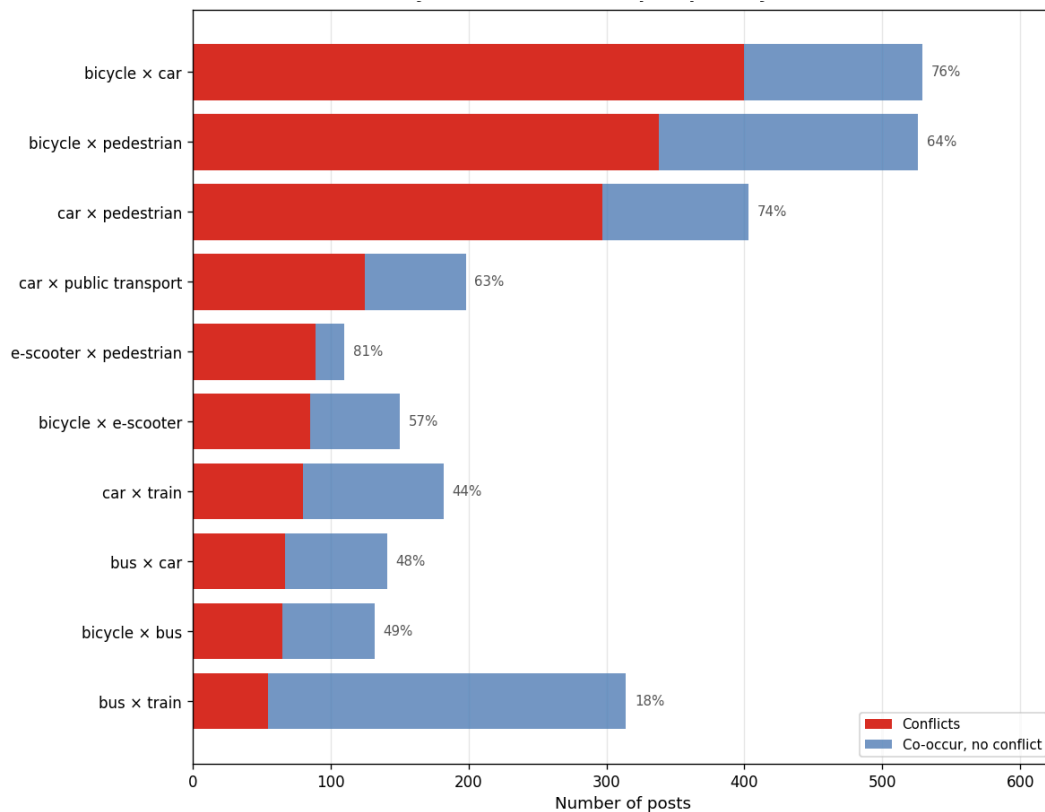


Figure 8 - Co-occurrence and conflict among modes of transportation across posts

4.2.2 Stance detection

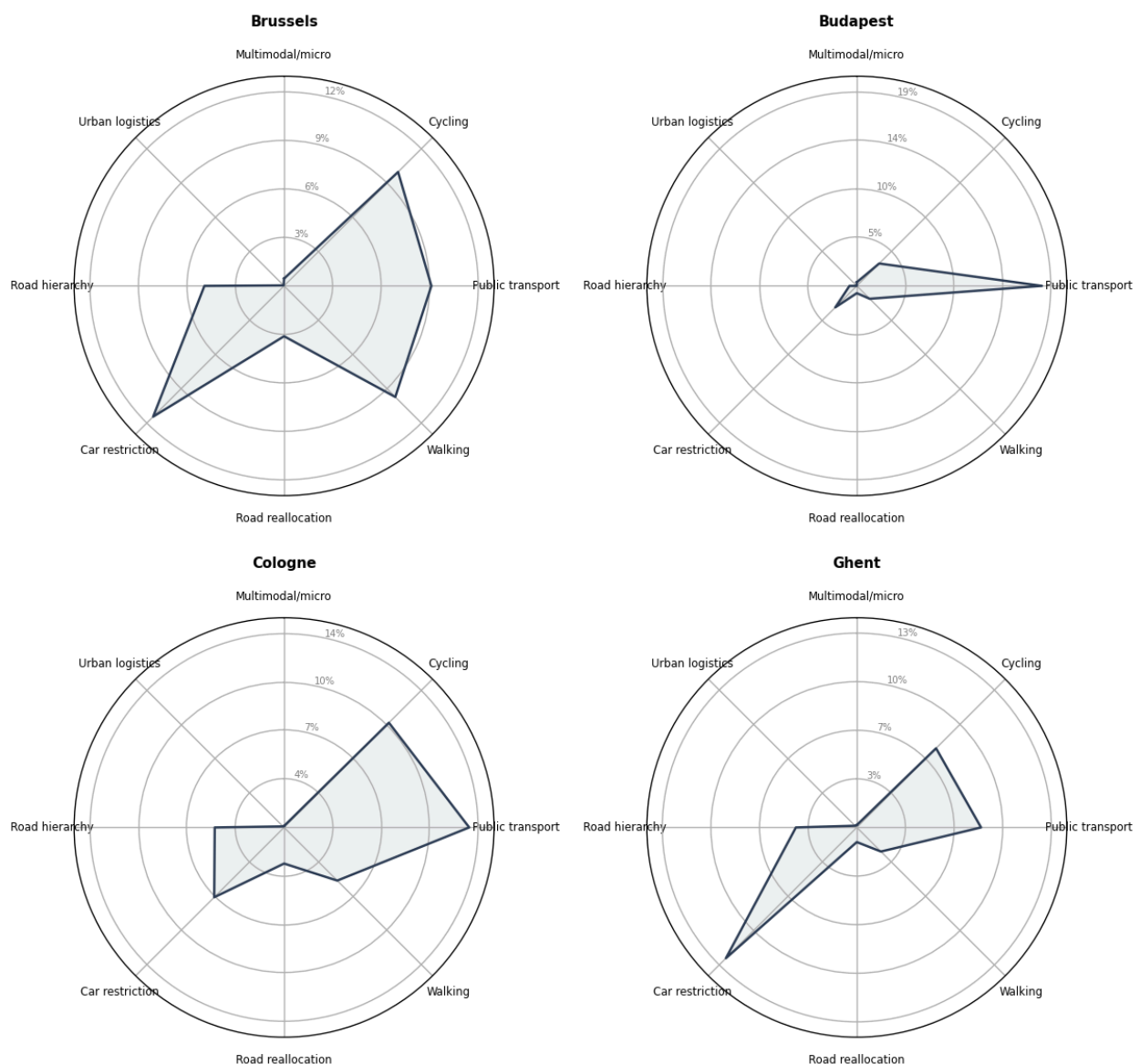
In stance detection, we evaluate the posts against two sets of propositions, the *15mC propositions*, based on 15mC literature, and the *media analysis propositions*, based on the media analysis study included in this deliverable. As described in section 3.2, there are two steps in stance detection: relevance detection and stance assignment. In what follows, we discuss each of these separately.

Step 1: relevance detection

In relevance detection, we identify the relevance of a conversation for the proposition: do people talk about topics related to the proposition. For this step, we evaluate conversations, so a post together with its replies. Figures 9 and 10 show the relevance detection results per location for each of the 15mC and the media analysis propositions respectively. The description of each of the beliefs was given earlier, in tables 2 and 3.

When looking at the 15mC propositions, we can see some commonalities and some differences across the various locations. First of all, the propositions *Sustainable and Silent Urban Logistics* and *Multimodality integration and Shared Micro-Mobility* hardly appear in any of the conversations. These topics are maybe a bit more technical and specific compared to,

e.g., *Prioritization of Walking* or *Prioritization of Cycling*, so it is not so hard to imagine that they indeed do not feature so high in people's everyday life and conversations. Other results are in line with the result from topic modelling. We can see that *Prioritization of Public Transport* is prominent in the data of all locations, often being the most frequently discussed topic. Another heavily debated topic is *Prioritization of Cycling*, especially in Brussels, Cologne and Ghent, but also, to a lesser extent, in Budapest and Matosinhos. *Prioritization of Walking* is most prevalent in Brussels, as shown in the topic modelling, but is discussed at least to some extent in all of the locations. Finally, there is a lot of debate around *Car restriction* in Brussels, Ghent and Cologne (and a bit in Budapest too), alongside related discussion around *Safe Road hierarchy* and *Reallocation of Road Space*, mirroring heavily contested local policy implementations over the last years (low emission zones and traffic replanning in Brussels and Ghent, school streets in Cologne), some of which also appeared in the media analysis study.



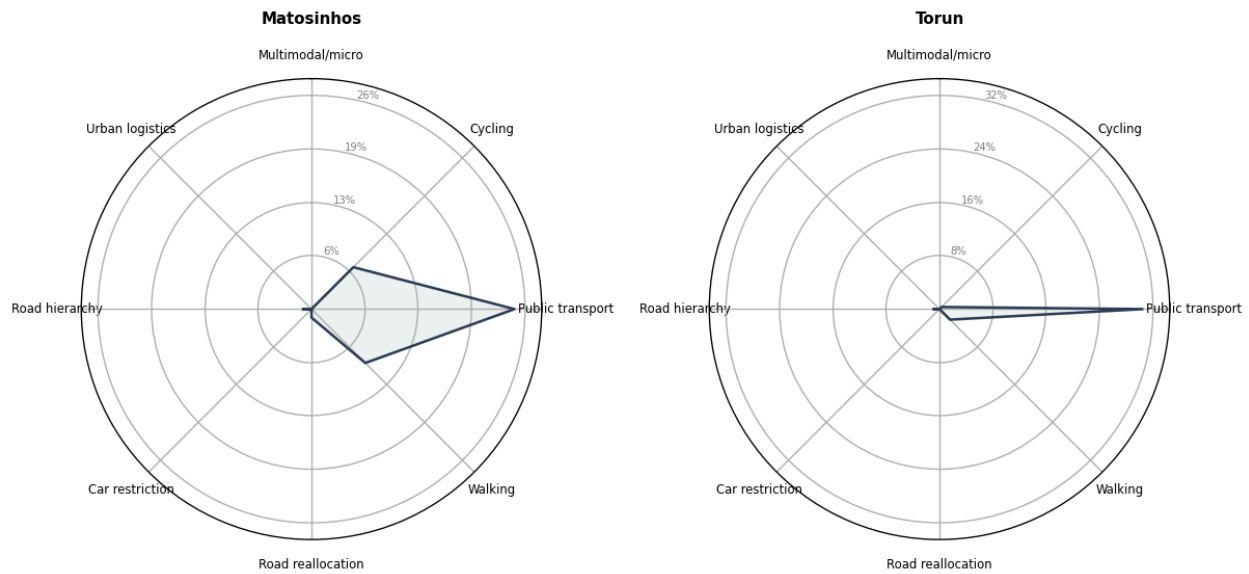
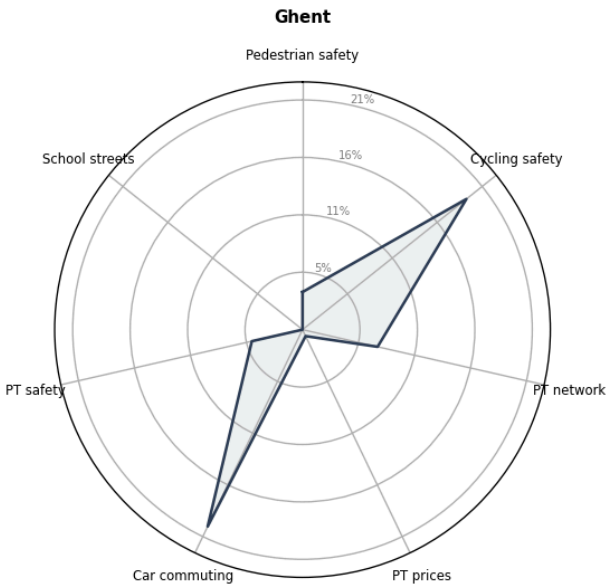
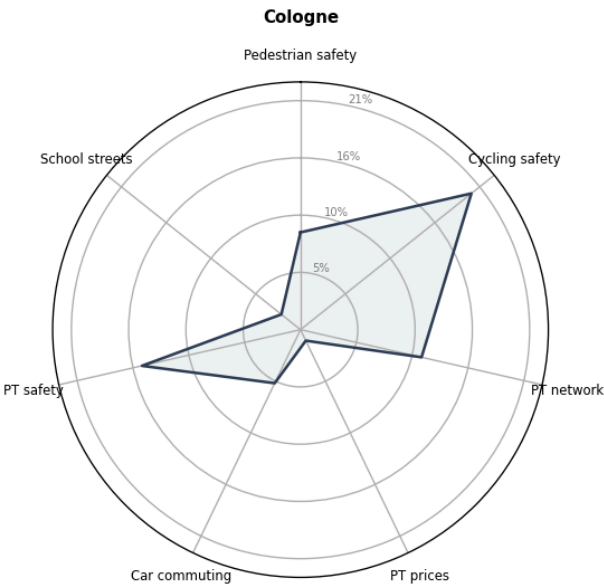
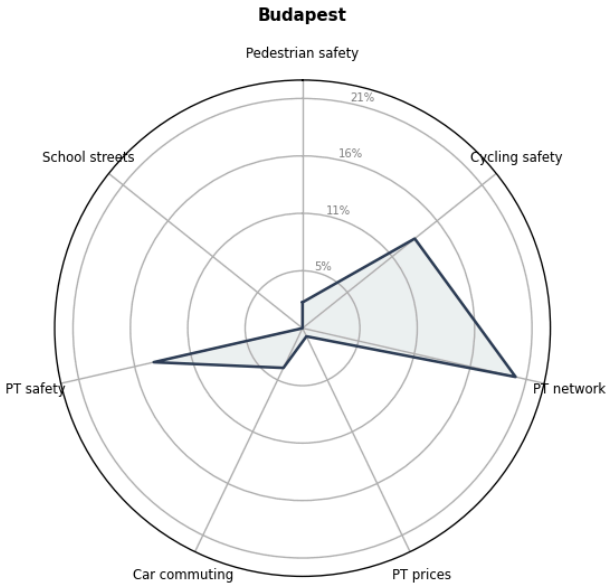
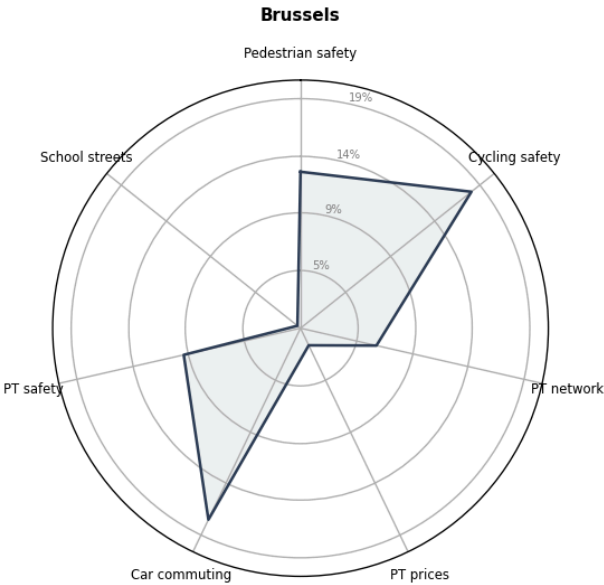


Figure 9 - Percentage of relevant posts for 15mC propositions per location

The results for the media analysis propositions offer a slightly different perspective. They allow us to compare directly to topics discussed in the media articles that were collected. Of the seven propositions extracted from the media articles, two hardly appear in the social media discussions: *School streets* and *Public transport prices*. The former is expected, as it was only a topic of debate in the Cologne media, and also in the social media results, it is to some extent present in the Cologne data. The absence of the latter is more surprising: while public transport is heavily debated throughout the social media of all locations, pricing does not seem to be a major issue of discussion, despite frequent debates in the regular media and among politicians. The other public transport propositions, *Public transport network* and *Public transport safety* features prominently across all locations. In general, all safety related propositions score high in the social media discussion, including also *Cycling safety* and *Pedestrian safety*, confirming also the high prevalence of safety as an issue in the topic modelling results described earlier. Finally, *Car commuting* is an important concern in Brussels, Cologne and Gent, and to some extent Budapest, like we saw in our earlier analyses.



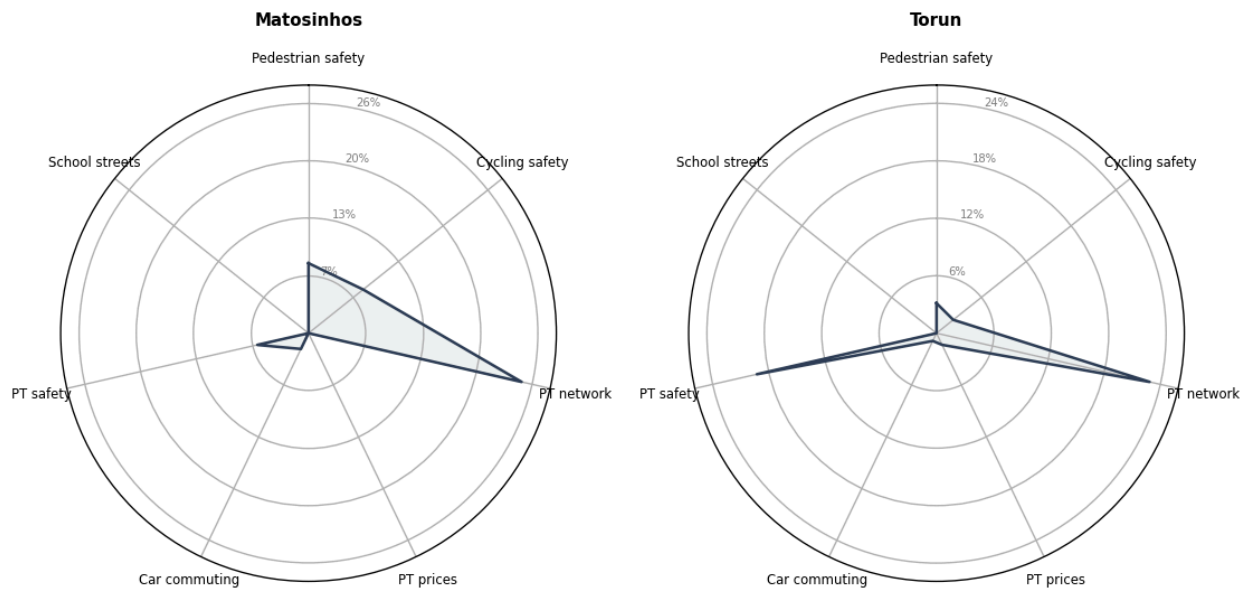


Figure 10 - Percentage of relevant posts for media analysis propositions per location

Step 2: stance assignment

In the stance assignment step, we figure out how people think about these propositions: are they supporting, opposing, or neutral? Each of the propositions are formulated in a normative way, in support of sustainable/15mC mobility, so a support for a proposition means support in the direction of sustainability. For this analysis, we evaluate at the level of individual posts and replies, as described in section 3.2, because each contribution in a conversation has its own stance.

The results from stance assignment are shown in Figure 11 for the 15mC propositions and in Figure 12 for the media analysis propositions. We do not report results per platform or location, because for many of the combinations of propositions with location and platform, the number of data points becomes too low. Moreover, for the data points we do have sufficient coverage for, the results align quite well across locations and platforms. For the same reasons, we do not include separate figures for the conversations related to youth.

When zooming in on the two plots, we can make a few interesting observations. The first is that there seems to be more support than opposition for all of the propositions (the only exception is *Urban logistics*, but due to the limited amount of conversation around this proposition, we should probably ignore this result). This can be surprising for anyone familiar with social media conversations, and also browsing through our collected data gave a different impression. The reason is the confusing relation between stance and sentiment: while negative sentiment is prevalent in social media (see also the section on sentiment analysis), this is not equivalent to an opposing stance. People often formulate supporting stances in a negative way. Common examples are complaints about poor bicycle

infrastructure (e.g., a post in Ghent protests that cyclists still have to weave between thousands of cars every day, since the promised measures to cut car traffic haven't materialised) or public transport service quality (e.g., a post in Ghent voices disbelief that people are being pushed back into their cars because the bus company is cutting budgets and scrapping stops). While such messages can be formulated very negatively, they do not express opposition against prioritization of cycling or public transport, but rather support.

Another important observation is that the most opposition is formulated in the context of the 15mC propositions *Road reallocation* and *Car restriction*, and the media analysis proposition *Car commuting*. Other propositions, such as the *Prioritization of walking*, *Prioritization of public transport*, and even *School streets* get much less opposition. This seems to indicate that opposition against 15mC ideas is much more related to the restriction of possibilities for individual and motorized transport than with the lack of support for improved infrastructure, service, safety, etc. of sustainable modes of transport. Still, even for those controversial topics, opposition is relatively low. This confirms a more cautious message formulated in Tori et al. (2024), who studied online sentiment around the GoodMove traffic reorganization implementation in Brussels in 2022, reporting that it was "*not overwhelmingly negative*". As they also write, their study probably suffered from the confusion between negative sentiment and supporting stance, already mentioned above and further investigated in section 4.2.3.

Finally, we wanted to make the link with the observation made during topic modelling, about conflict between modes of transportation, such as, e.g., between walking and cycling. This conflict can also be observed when browsing through the data: some posts express opposition against measures that favor cycling, because they feel it reduces safety and space for pedestrians. As a consequence, it means that opposition against the 15mC propositions shown here does not always indicate opposition against sustainable mobility measures in general: quite some of the opposition expressed in these posts targets only one sustainable mode of transport, while supporting another.

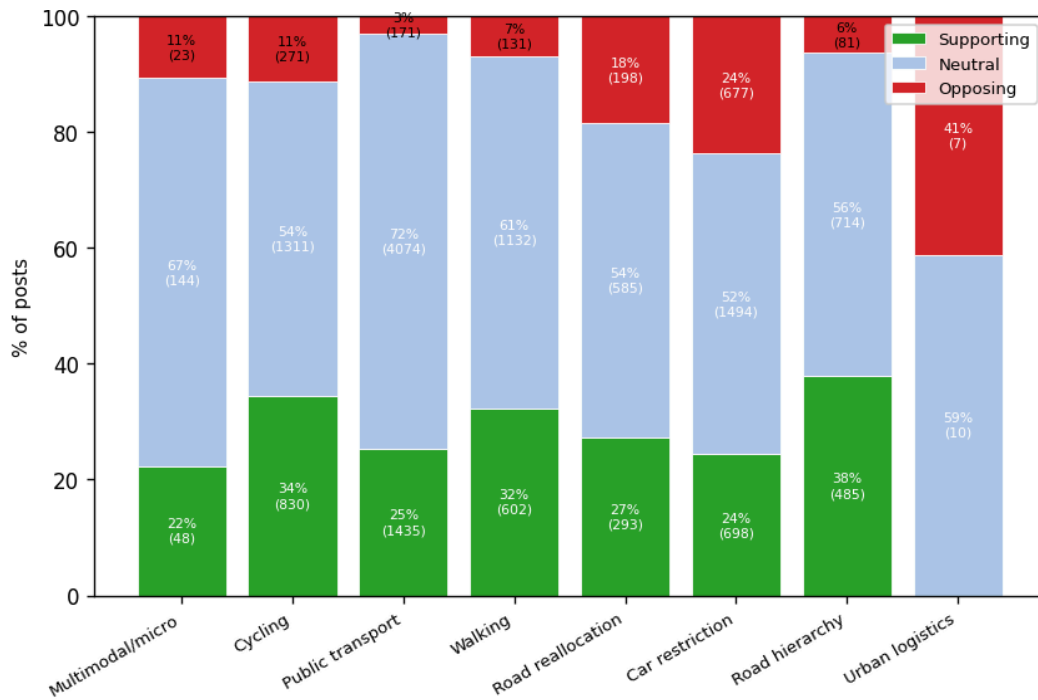


Figure 11 - Stance distribution for 15mC propositions across locations and platforms

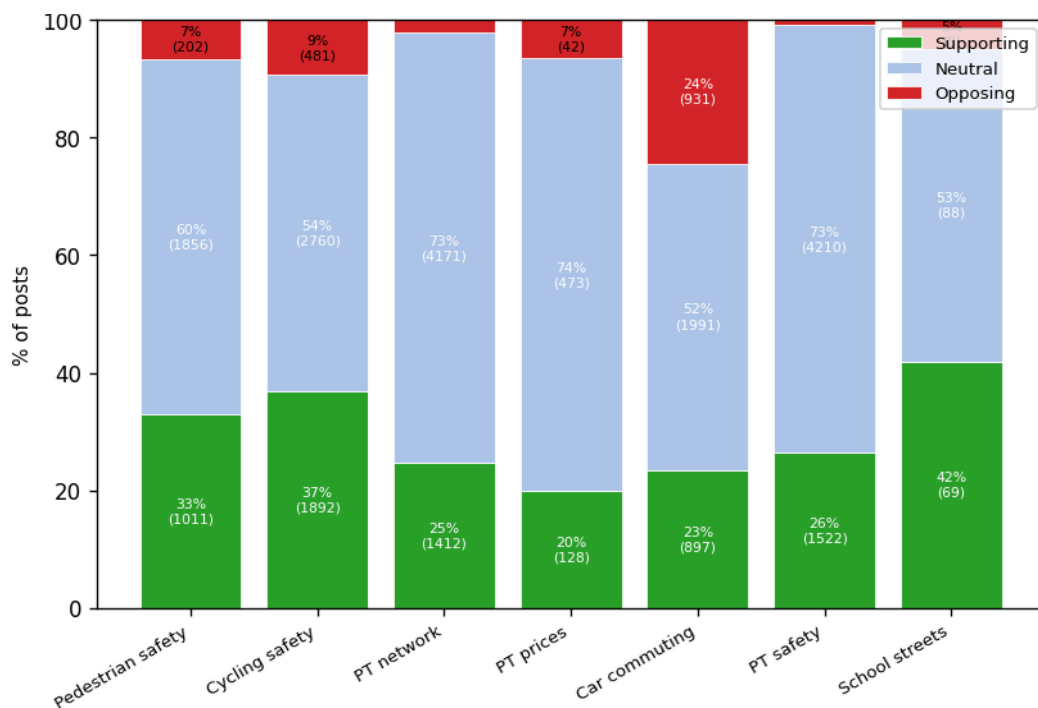


Figure 12 - Stance distribution for media analysis propositions across locations and platforms

4.2.3 Sentiment analysis

In sentiment analysis, we evaluate for each message whether the tone is positive, neutral or negative. We evaluate the same posts and replies that were analyzed in stance detection, as explained in section 3.2.

The results are shown in Figure 13, broken down per location and per platform. They show that messages are overwhelmingly negative for all locations, except maybe Budapest. They also show that negativity is a lot more prevalent in X, with a staggering 61% of all messages showing a negative sentiment, as opposed to 14% with positive sentiment. On YouTube, the situation is a lot more balanced, showing 35% negative messages versus 28% positive. That is also the explanation for the lower number of negative messages for Budapest: this is the only location for which we have more data from YouTube than from X, and when we make a breakdown per location and platform, we see that the distribution per sentiment of X data is almost identical across all locations. Also when we look at youth related posts only, we observe almost the exact same distributions. Finally, we also inspect the distribution across the various propositions. As shown in Figure 14, comments are negative across all propositions, so negativity shows little correlation with conversation topics.

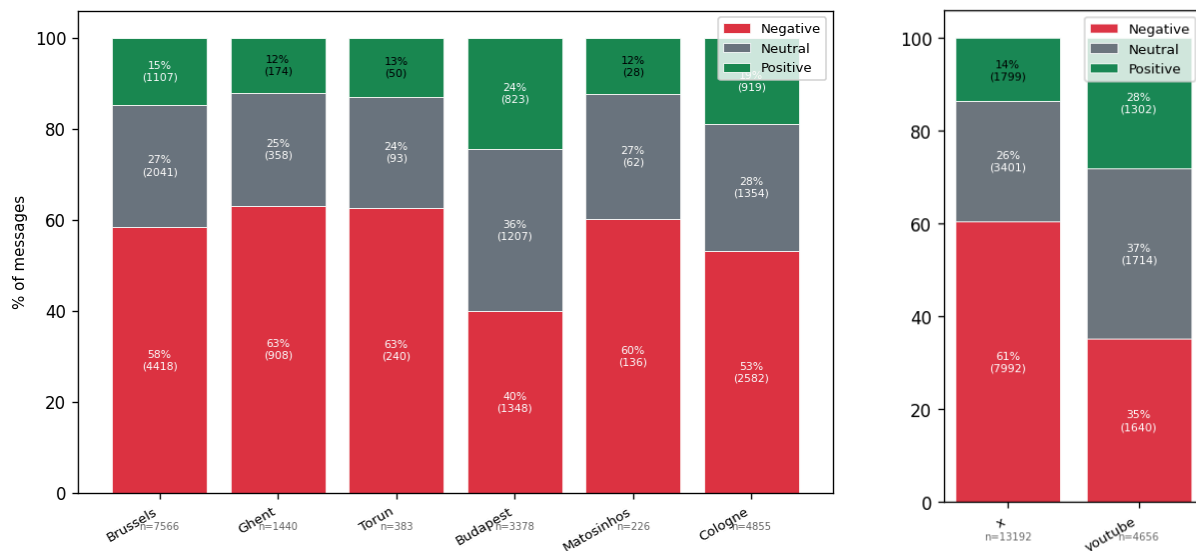


Figure 13 - Sentiment distribution across locations and platforms



Figure 14 - Negative sentiment across propositions - 15mC (left) and media analysis (right)

The important role of negative sentiment is a known phenomenon in social media, as discussed in section 3.2. Our results here confirm that there is a strong tendency towards negativity, also within content related to mobility discussions, and that this is stable across the various locations. We should be aware that this may cloud our interpretation of the debate about sustainable mobility: while negative comments prevail, it does not necessarily mean that opposition against sustainable mobility is dominant; negative sentiment is just everywhere, and should not be confused with opposing stances. We should also be aware that negativity can lead to polarization, as discussed in section 3.2, and that this may have real implications for the online debate.

Finally, we also wanted to investigate the presence of a negativity bias. As explained in section 3.2, some authors claim that negative posts attract more attention, in the form of likes, retweets, replies, etc., due to a common human bias towards negative information. To verify this, we calculated the impact of X posts (only for X, and only for top level posts, because that is what we have all relevant metadata for), using the following formula (Semiz and Berger, 2017):

$$\text{Engagement rate} = (\text{retweets} + \text{replies} + \text{likes} + \text{quotes} + \text{bookmarks}) / \text{impressions} \times 100$$

We calculated the average engagement rate for negative, neutral and positive messages. The result is shown in Figure 15. While it is clear that neutral posts generate less engagement, we observe only a minimal difference between positive and negative posts. So we cannot confirm the presence of a negativity bias.

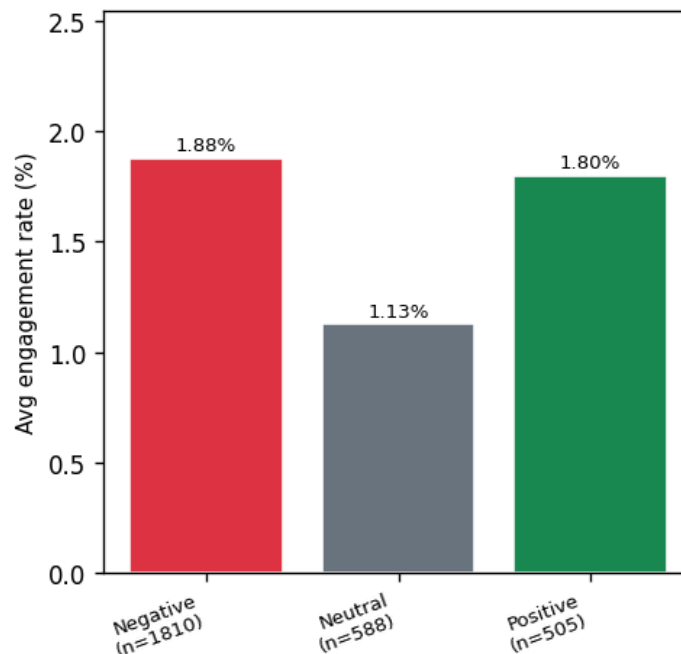


Figure 15 - Average engagement rate of posts across sentiment categories

4.2.4 Bias detection

In the study of bias, we focused on messages expressing prejudice, stereotyping or discrimination against demographic groups. We also investigated bias against political leaning. We presented posts and replies to the LLM in the same way as for stance assignment and sentiment analysis. This means that we investigated bias for each individual message (posts and replies to them), but in the context of its conversation (showing the LLM the conversation up until the message under investigation). It also means that we did not investigate all messages, but only those that were relevant for one of the propositions, and with limitations for each conversation: maximum 15 replies per conversation and maximum 3 levels of nested replying.

The results of the bias detection analysis are shown in Figures 16 through 19. We also include some examples of each bias category in appendix D.2 (paraphrased in English), to give an idea of the kinds of posts we get for each. To discuss the results, we start with the percentage of messages containing bias, as presented in Figure 16, left. The numbers show a relatively high prevalence of biased messages, in particular on X, where around 10% of the messages contain bias, more or less stably across the locations. This confirms findings of other studies, reporting high prevalence of bias and hate speech on X (Hickey et al., 2025). Looking at Figure 17, left, however, we can see that most of these messages contain political bias. Browsing through the data, it becomes clear that a lot of the discussions are closely related to local politics (see also the examples in appendix D.2), which is maybe not surprising, given the focus on local mobility issues. A lot of those political discussions

indeed reflect a strong bias, in the form of prejudices, stereotyping and even hate speech against opposing political sides. However, it is hard to distinguish that from regular political opinion making. Also, political bias is a bit of a special case compared to the other types of bias we study. Therefore, we also show results for bias of demographic groups only, excluding political leaning. As shown in Figure 16, right, the percentage of messages containing such bias is a lot smaller, about 4% to 6%, and not so different between X and YouTube.

Zooming in on the various types of bias against demographic groups in Figure 17, right, we can see that bias against socioeconomic status and nationality stand out. To a lesser extent, bias against disability, race/ethnicity and gender/gender identity are also relatively more prevalent, as opposed to bias against age, religion, sexual orientation and physical appearance. Looking at the data for youth-related discussions only, in Figure 18, left and right, we see a very similar picture. The only difference is that age related bias is a bit more prominent. This makes sense: since we focus in particular on posts related to youth, all mentions of bias against young people are included in the selection.

To get a better understanding of these categories, we browsed through some of the data and collected feedback from some of the human annotators (see section 4.3, and see the examples in appendix D.2). This made clear that bias against nationality, race/ethnicity and religion are often overlapping, all three being used for racist and xenophobic remarks. Disability bias seemed often related to inherent bias present in linguistic expressions (e.g., “you must be blind not to see this”), rather than hate speech, and may therefore be less relevant for our analysis. Finally, socioeconomic status turned out to be an important aspect of mobility discussions. E.g., some measures are seen as only affordable to affluent people (e.g., increase of parking prices), some modes of transportation (notably public transport) are associated with poor people, etc. (see also the examples in appendix D.2). In this sense the prevalence of the bias against socioeconomic status could be an important finding, shedding more light on the nature of conflicts around 15mC policies. To explore this more, it would be interesting to compare to a baseline of social media data that is not focused on mobility.

Finally, we can zoom in further, looking at the bias type distribution per location, in Figure 19. Mostly, we see the same patterns as in the aggregate plots, with some local differences. Some of those local differences seem to have little significance. E.g., we can see that religion and race/ethnicity are more prevalent in Ghent and Brussels than in other locations, but if we consider these types of biases together with nationality, the total percentage corresponds closely to the aggregate plots. Also, Matosinhos and Torun have clearly different plots than the other locations, but we need to take into account that we have much less data than for other locations, and that the percentage of biased messages is

relatively low. Still, the high prevalence of gender/gender identity bias for Torun is striking, as it is a type of bias that scores low for the other locations. Across all locations, we see that nationality is the strongest bias, while bias against socioeconomic status is also very prominent, though less so in Cologne and Matosinhos.

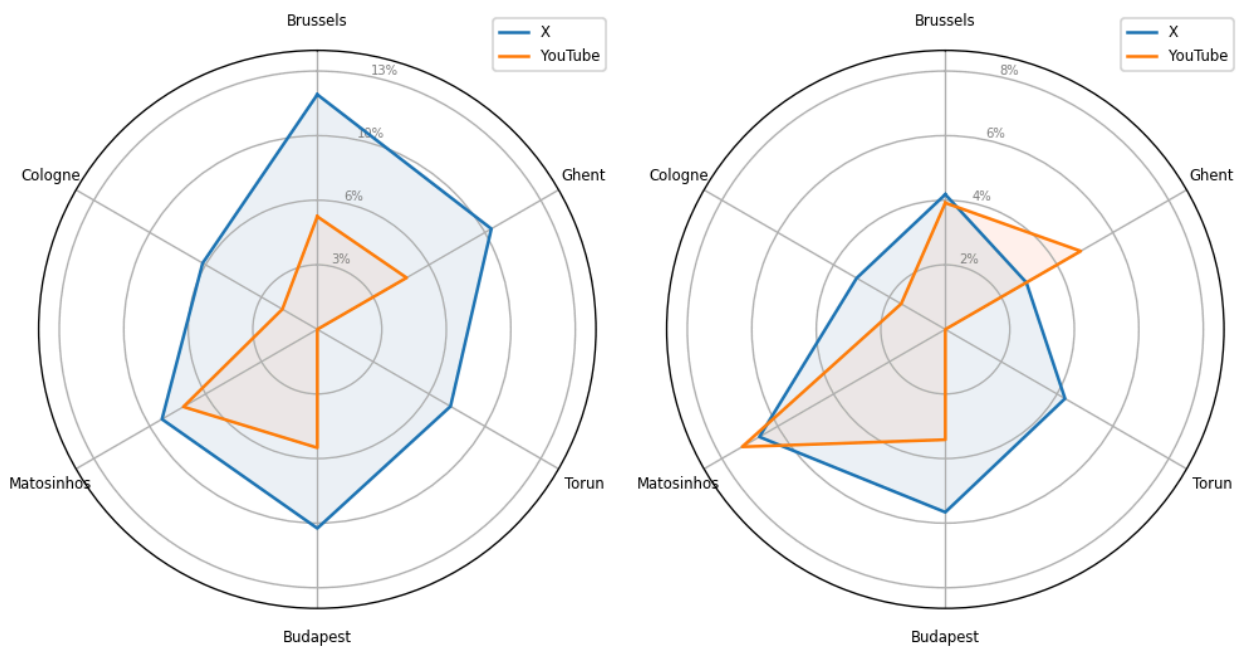


Figure 16 - Percentage of messages containing bias, per location and platform - including (left) and excluding (right) political leaning.

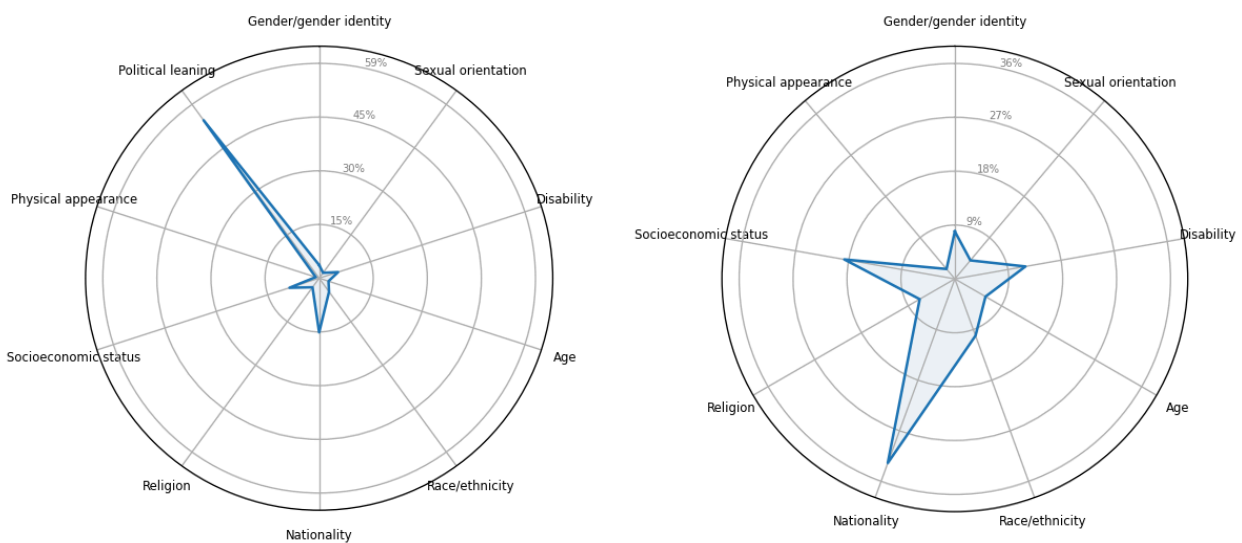


Figure 17 - Distribution across bias types - including (left) and excluding (right) political leaning.

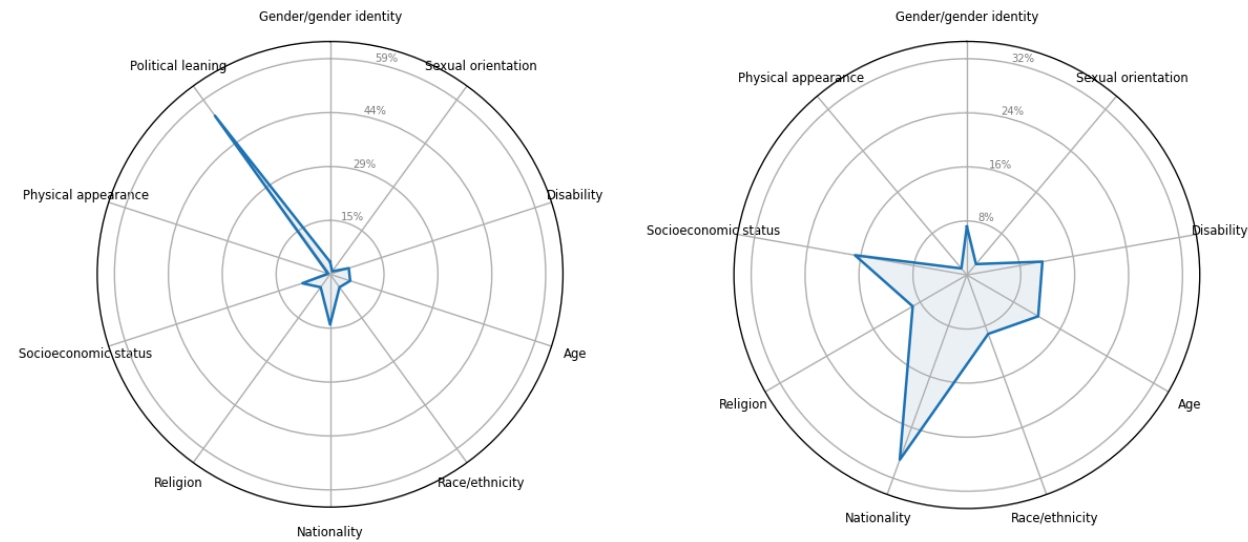
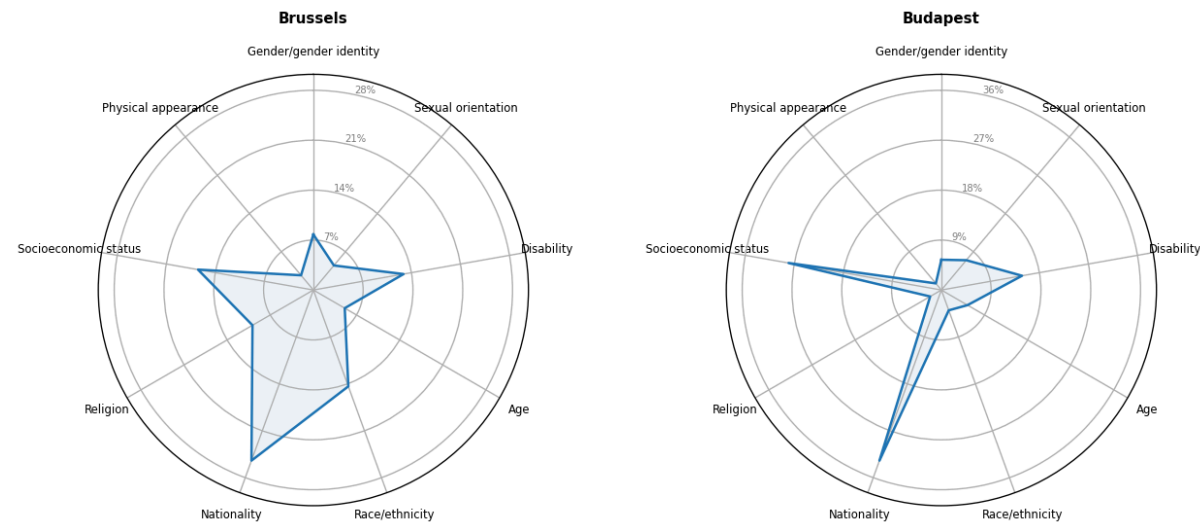


Figure 18 - Distribution across bias types for youth-related conversations - including (left) and excluding (right) political leaning.



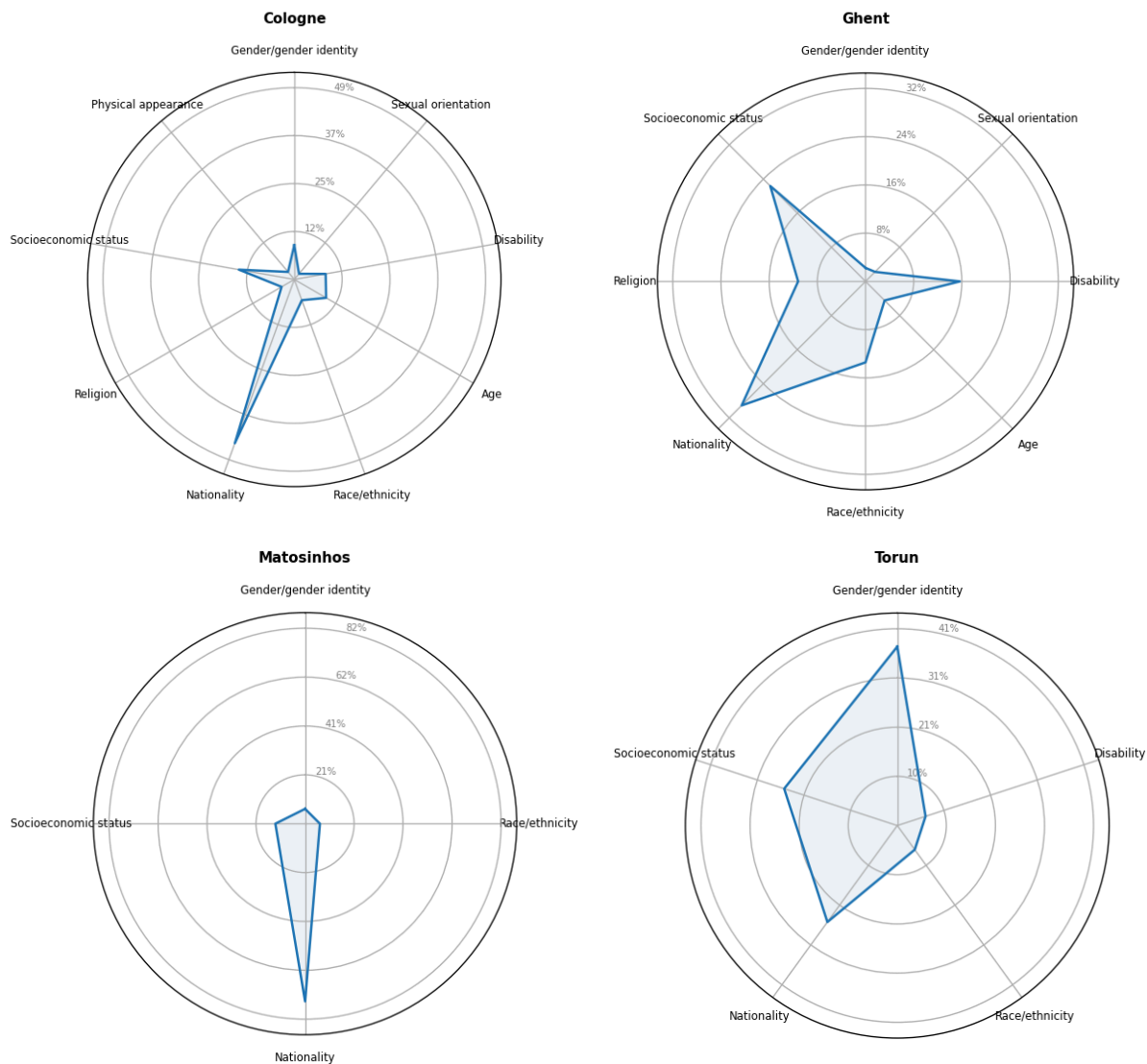


Figure 19 - Distribution across bias types per location, excluding political leaning.

4.3 AI accuracy and human verification

In this section, we discuss the evaluation of LLM accuracy. We developed a tool to let human coders view the data in the same form as the LLM, with title, text, image and replies. For various of the labelling decisions, the coders could flag errors made by the LLM: whether the post is about mobility and the correct location, the assignment of mobility topics and issues and the relevance decision for the 15mC and media analysis propositions. For the stance detection, sentiment analysis and bias detection, we let the human code independently, without seeing the AI result. We treated these tasks differently, because we expected these to require more subjective interpretation and hence generate more

disagreement among the annotators and between the annotators and AI. A screenshot of the tool is shown in Figure 20.

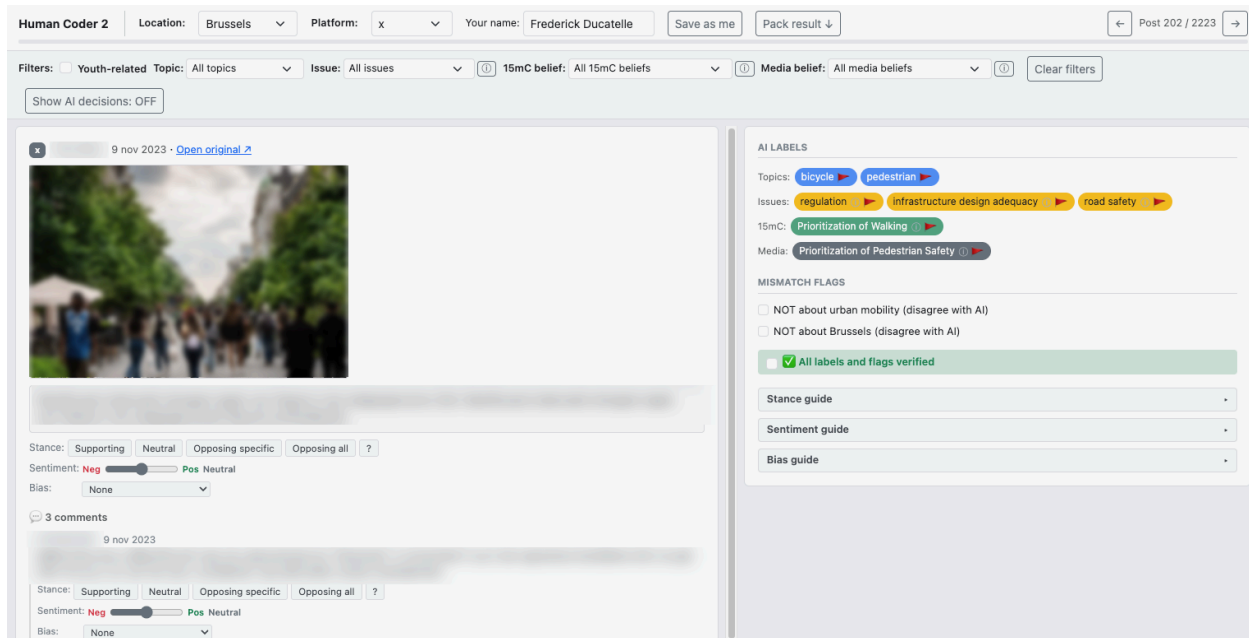


Figure 20 - Screenshot of the tool for human coding (texts, user IDs and image are blurred)

The results for label accuracy are given in table 6. We used four different annotators, two Ghent-based and two Budapest-based, who each evaluated about 50 different posts each (or conversations: each of these labels refer to a post plus its replies) for their own location. As can be seen from the table, the LLM results were in general evaluated as very good, with on average above 90% accuracy for each label. This means that we have a relatively high precision in the labels, meaning a high positive rate among the positively labeled data. It does not evaluate recall though: we may also have a high false negative rate, meaning that we could have missed some data that are also relevant for the label. E.g., our data selection process may have been too strict, meaning that we lost some potentially relevant data. We decided to prioritize high precision over high recall though, on the one hand because of cost considerations (processing more irrelevant data leads not only to more errors, but also to higher costs), and on the other hand because falsely accepted data (posts that are unrelated to mobility and/or the civic lab locations) have more possibilities to introduce errors into the analysis than falsely excluded data (except for any systematic bias in the false rejection). We also want to discuss the one outlier in the accuracy evaluation. Annotator Budapest A disagreed on quite some of the decisions, especially on the “about mobility” decision and the relevance of the media analysis propositions. Discussions afterwards revealed that there were still some different understandings in terms of interpretation of the labels, despite the preliminary alignment phase. This shows one of the

challenges we had in this analysis: the ambiguity of concepts and, on top of that, the complexity of interpreting social media language.

Annotator	About mobility	About location	Mobility topics	Issues	15mC props.	Media props.	Number of posts
Ghent A	100.0%	100.0%	98.5%	99.2%	100.0%	97.8%	53
Ghent B	100.0%	100.0%	100.0%	100.0%	100.0%	97.7%	53
Budapest A	66.7%	100.0%	91.8%	91.2%	89.7%	64.5%	45
Budapest B	93.3%	93.3%	100.0%	100.0%	91.5%	93.5%	75
ALL	91.2%	97.8%	98.1%	98.4%	95.3%	90.4%	226

Table 6 - Label precision per annotator

Next we evaluate the results for stance detection. Since stance detection is applied separately to posts and replies, there are more data points now than for label accuracy evaluation. We use Cohen's Kappa metric with quadratic weighting across the three labels (opposing, neutral or supporting) to measure inter-annotator alignment. Kappa values of 0 or less mean no agreement, and values close to 1 mean perfect agreement. Values between 0 and 1 are a bit up to interpretation. Landis and Koch (1977) suggest interpreting values under 0.20 as slight agreement, between 0.21 and 0.40 as fair, between 0.41 and 0.60 as moderate, between 0.61 and 0.80 as substantial and above 0.81 as almost perfect. This is by no means a hard definition, but it can serve as a guideline.

Table 7 shows alignment of each human annotator with the other annotator covering the same data, and with the AI decisions. The values show a good alignment for Ghent among the human annotators and between each of those annotators and AI. For Budapest, the alignment is considerably less good among the human annotators. Interestingly, they both align better with the AI decisions than with each other. Probably the difficult interpretations of Budapest annotator A mentioned above also play a role in this result, as well as the noticeably smaller dataset annotated by the Budapest annotators.

Overall, the results show that stance detection is a difficult task, both for human annotators and for AI, and that AI results align at least as well with human decisions as other humans do. While this means that we can use the AI results pretty much as if they came from a human coder, we should still interpret them with caution, especially for smaller datasets.

	Co-Annotator Alignment	Number of decisions	AI Alignment	Number of decisions
Ghent A	0.62	233	0.58	233
Ghent B	0.62	252	0.69	233
Budapest A	0.17	73	0.34	67

Budapest B	0.17	73	0.46	135
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Table 7 - Stance detection: alignment among human annotators and with AI, using Cohen's κ with quadratic weighting across three classes: supporting, neutral and opposing

Finally, we discuss the results for sentiment analysis and bias detection, as shown in tables 8 and 9. For these, we have results from the two Ghent annotators. Sentiment analysis alignment is nearly perfect, both among the human annotators and with AI, showing that the task is less difficult, and that AI performs it very well. For bias detection, the alignment is also good. The slightly higher alignment with AI than among humans may be due to the larger number of decisions evaluated.

	Co-Annotator Alignment	Number of decisions	AI Alignment	Number of decisions
Ghent A	0.96	127	0.808	186
Ghent B	0.96	127	0.92	155

Table 8 - Sentiment analysis: alignment among human annotators and with AI, using Cohen's κ with quadratic weighting for three classes: positive, neutral and negative

	Co-Annotator Alignment	Number of decisions	AI Alignment	Number of decisions
Ghent A	0.61	145	0.74	194
Ghent B	0.61	145	0.66	169

Table 9 - Bias detection: alignment among human annotators and with AI, using Cohen's κ for two classes: biased and unbiased

5. Discussion

We conclude this part of the report with a discussion and some conclusions around the most important findings. First, we focus on the different conversation topics, preferences and biases that emerge from the different types of analysis we performed, focusing on similarities and differences across the various civic lab locations. Next, we discuss the challenges and limitations we encountered in this research.

5.1 Topics, preferences and biases emerging across platforms and locations

Going over the analysis results, a first set of findings concerns the topics of conversation, which emerged from both topic modelling and relevance detection. We can see a clear divergence across the civic labs. In Ghent and Brussels, the debate centres on the road safety of cyclists and pedestrians and on the restriction of car use. In Budapest, Cologne and Torun, other topics dominate, such as the availability and reliability of public transport. While some of these variations depend on particularities of the data collection and of social media itself, they also correspond to real differences in local mobility debates; e.g., the dominant topics in Ghent and Brussels align with concerns over large traffic reorganisations these cities have undergone in recent years. Across all locations, a small number of concerns recur: the availability and reliability of public transport, the safety of cyclists, pedestrians and drivers, and the reduction of car use and road space. Safety is even more central in the conversations related to youth, where the pedestrian perspective becomes more prominent and concerns about public transport punctuality recede.

A second finding, perhaps the most encouraging one, comes from stance detection: across every location and platform, people express more support for than opposition against the sustainable mobility propositions. This may be surprising to anyone familiar with the tone of social media, and it is easily obscured by the prevailing negativity of the messages, but it is important to recognise that public opinion is not, in itself, opposed to sustainable mobility measures. There are, however, clear exceptions. Opposition concentrates strongly on propositions that restrict individual and motorised transport, such as car restriction, road reallocation and car commuting, rather than on the improvement of infrastructure, service or safety for sustainable modes. This suggests that resistance is driven more by the perceived loss of possibilities, especially around private motorized transport, than by a rejection of sustainable mobility as such. The picture is further complicated by conflicts between modes that are themselves sustainable, such as between cycling and walking, or e-scooters and pedestrians: a stance opposing one sustainable mode does not imply opposition to sustainable mobility in general. Together, these results show that the detail of the debate matters far more than a simple division into supporters and opponents of the 15mC idea, and that understanding these tensions could offer valuable lessons for the design of policies and of the communication around them.

A third set of findings concerns sentiment and bias. Messages are overwhelmingly negative across all locations, and this negativity is remarkably stable, showing little correlation with the specific topic under discussion. The strongest differentiator here is not the location but

the platform: X is far more negative than YouTube, and this pattern is almost identical across all the cities. Negative sentiment should not be confused with an opposing stance, but it is not without consequence, as it can feed polarisation and shape the online debate in real ways. We could not, however, confirm a negativity bias, as negative and positive posts attract very similar levels of engagement. The bias detection shows a relatively high prevalence of biased messages, particularly on X, though a large part of this is political bias tied to the strongly local and politicised nature of these discussions. When political leaning is set aside, bias against socio-economic status and nationality stands out. The latter overlaps with race and religion in what are often racist and xenophobic remarks. Finally, we want to point out the prevalence of bias against socio-economic status, which was present in the debate for all locations. While further investigations would be needed, it seems to point into the direction of aspects of affordability and social status as another important aspect of the debate around 15mC projects and sustainable mobility. A deeper investigation of this aspect could further help understand conflicts around these topics.

Taken together, these findings reveal an interesting contrast between divergence and convergence. What people talk about diverges from one city to another, following the local debates and the local policy conflicts, and following the dynamics of social media debates. But how they talk about it, in terms of stance, sentiment and bias, is quite consistent across the civic labs, with the platform proving to be a more decisive dividing line than the location. The attitudes towards sustainable mobility, and the friction points around it, such as the restriction of car use, questions of affordability, and the tensions between sustainable modes, recur across very different European contexts. The results underline that a common ground and positive attitude towards sustainable mobility can be found, if one can read past the prevailing negativity and beyond a simple pro-or-contra reading of the debate, but also that it is important to listen carefully to what people have to say, in order to understand what the actual opposition is about.

5.2 Challenges and limitations

This research came with a considerable number of challenges and limitations, which we discuss here so that the results can be read with the appropriate caution. A first group of challenges relates to the collection of the data, as already described in section 2. The access to social media data is severely restricted, and we could not use all of the platforms we had hoped for. For the platforms we did use, the access was limited, whether by the high cost of the X API or by the technical restrictions of the YouTube API. These constraints inevitably shaped our search strategy. Also the challenges inherent to using keyword based search played a role, making it difficult to reconcile high precision with high recall: words carry different meanings across contexts and languages, can appear as substrings of unrelated

terms, and some concepts, such as the relation of a post to youth, are hard to capture with keywords at all. Pinpointing content to a particular location posed a similar problem, as geographic tagging is incomplete and had to be approximated through location keywords. Faced with these limitations, and especially with the cost of the X data, we chose to favour efficiency and high precision, at the price of a smaller and less complete dataset. All of this introduces bias into the data, the size and nature of which we cannot easily quantify, since we have no straightforward way to measure the recall or completeness of our collection. For the same reason, we were unable to construct a background dataset of non-mobility data, which would have allowed us to judge the relative prevalence of particular phenomena, such as the various categories of bias.

A second group of challenges stems from the multi-location nature of the research. Because the mobility vocabulary and the location anchors differ from one city to another, each location carries its own particular biases, and the very different sizes of the cities translate into very different amounts of data, ranging from thousands of conversations for Brussels down to fewer than a hundred for Matosinhos. This imbalance is not merely cosmetic: for the smallest datasets, individual discussions or contributors can dominate the picture, so that conclusions at the level of a single location have to be treated with care. Understanding the data, moreover, requires local knowledge of the language, the politics and the ongoing local debates. In practice, we could perform some human verification of the data for Ghent, Budapest and Brussels, corresponding to the languages spoken and locations known by the researchers. Also, we depended on our local partners for the choice of keywords, which is itself a further source of variation between the locations.

A third group of challenges is inherent to the nature of social media data. The language is often informal and difficult to interpret, full of slang, abbreviations, emoticons, irony, sarcasm, etc., which makes it hard to read correctly even for a human. In addition, the ease with which messages can be posted, replicated and spread means that a debate can easily be dominated by a particular topic or a small number of contributors, and that a substantial share of the traffic consists of automated messages, which are not always easy to recognise and filter out.

A fourth group of challenges concerns the nature of the target task itself. Several of the labels and concepts we worked with are genuinely ambiguous. E.g., the boundary of what counts as mobility-related content, for instance, is a matter of interpretation, as illustrated by discussions we had internally about, e.g., posts about a Budapest celebrity who was refusing to pay his parking fine. Stance and bias are especially hard to determine, and here even human annotators disagree, as we saw in the accuracy evaluation. On top of this, the amount of data we could find on our specific target, youth 15mC mobility in these particular

locations, was limited, partly because of the access and partner constraints described above, but partly also because the topic has a limited footprint in the public online debate.

All of this means that the results should be interpreted with caution, and they are best read as an indication of the themes, tensions and dividing lines in the debate rather than as precise measurements. At the same time, they do carry real value. The human verification showed a high precision for several of the labelling tasks, confirming that the data we analyze are genuinely about mobility and about the correct locations, and that tasks such as sentiment analysis are performed very well. For the more difficult tasks such as stance detection, the AI does not align less well with the human coders than the human coders align with one another, which means we can use its output much as we would use that of a human annotator, provided we remain careful with the smaller datasets. Two further observations give us additional confidence. The first is that the patterns in stance, sentiment and bias are remarkably consistent across locations and platforms, even though each location was collected with its own keywords, partners and biases, and cover different languages and local realities; such convergence points to a robust underlying signal rather than to an artefact of any single collection choice. The second is that our different methods, from topic modelling and relevance detection to stance detection and the separate media analysis, reinforce one another, pointing repeatedly to the same themes, such as the centrality of safety or the contested nature of car restriction. Finally, our analysis confirms a number of phenomena already known from the literature, such as the prevalence of negative sentiment and the high level of bias on X, and a number of topics of debate known from local media, such as the introduction of traffic reorganization in Ghent and Brussels (see also Part I), providing a further, external check on the validity of our approach.

PART III: Cross-task discussion and conclusion

1. A shared result analysis

In this section, we provide a discussion of the results across the two parts of this report: task 3.4, the media analysis of mobility narratives in political discourse, and task 3.5, the analysis of biases and preferences in online mobility cultures. We first discuss similarities and differences between the discourse studied in both parts, and then we discuss a comparison of the research challenges encountered.

1.1 Alignment and divergence between discourse in regular media and social media

The two studies described in this report offer very different angles on the mobility debate. The media analysis of part I is based on a curated selection of news articles from local outlets. The content of the articles reflects a political and social discourse that is shaped by voices that are heard in the media, such as public authorities, NGOs, etc. and by the way media report on them. The analysis was done manually by social science researchers from the project, who read and analyzed them one by one. The social media analysis of part II, by contrast, captures the spontaneous, everyday conversation of the online public, at a larger scale but with less depth or context. The analysis was done via automated algorithms, only guided by humans through a verification of result samples. Both analyses also come with their own biases, the one through the subjective selection of a limited number of articles, the other through keyword-based collection and automated filtering. It is therefore interesting to analyze the commonalities and differences between the results, as they can reinforce some of the conclusions and put into question some others.

On the level of topics, we find a good deal of alignment. Safety, and in particular the safety of children on their way to school, is a central concern in both studies, appearing as a dominant theme in media articles across several locations and as the most important issue in the social media topic modelling, especially in the conversations related to youth. Cycling is similarly prominent in both, dominating the media in Brussels, Ghent and Matosinhos and standing out as the single most discussed mode of transport in the social media

analysis. The importance and reliability of public transport connections is another common theme, visible in the media coverage of new bus lines and regional connectivity, especially in Toruń, and in the prominence of availability and reliability of public transport as issues in the social media, especially in Budapest, Cologne and Toruń.

There are also some important differences. Two topics that feature strongly in the regular media are almost absent from the social media discussion. The first is the concept of school streets, which is a dominant theme in the Brussels, Budapest and Cologne media but hardly surfaces in the social media, except to some extent in Cologne. The second is the price of public transport, which is the subject of frequent and often heated media coverage, from the rising cost of the public transport tickets in Cologne to fare protests in Belgium and fare reform in Budapest, yet barely appears as a topic of online debate. In both cases, the divergence may reflect the different nature of the two data sources. E.g., it could be that public transport ticket pricing is more of a debate among politicians than among people writing on social media. It could, however, also be due to the different biases in the data collection and selection processes.

The alignment between both studies is strongest when we look at attitudes rather than topics. Both studies paint a fundamentally supportive picture: the media coverage is largely favourable to sustainable mobility, with a majority of articles expressing political or social support and only a small part showing bias against it, and the social media stance detection likewise finds more support than opposition for every proposition. Both also locate the opposition in the same place, namely in the restriction of car use. Here the two studies clearly confirm and reinforce each other's results. Moreover, the media analysis helps understand the opposition found in the social media, by giving a clear example related to school commuting. It shows how the resistance is driven by the practicalities of family life, the convenience of the "parent taxi", and the need to reach work on time. This suggests that the opposition picked up in the social media is not so much a rejection of sustainable mobility in principle, but rather a reaction to the disruption of routines and the introduction of practical challenges. Understanding the details of this discussion can inform future communication about 15mC measures. Finally, we point out that one of the most important themes, drawing a lot of attention and support in both studies, is safety. Focusing on this topic when designing new measures and communicating about them could help create acceptance and build common ground.

Another commonality between both studies, though maybe more subtle, is the socioeconomic dimension. Several articles in the media study touch upon this theme. It surfaces the theme of transport poverty, most explicitly in Ghent, where budget cuts to public transport and the long commutes of special-education pupils are framed as hitting schoolchildren and vulnerable groups hardest, and it returns repeatedly to questions of

affordability and equity, from the cost of student travel passes to the spatial inequity of schools on the urban fringe and the fare reforms designed to relieve families in need. In the social media analysis, the same theme surfaces in the form of socioeconomic bias, even though topics of affordability and cost did not play a major role. This is therefore a factor that may play a role but probably requires a deeper investigation.

The points where observations from both studies reinforce one another are very important. Since these studies apply very different methods, drawing on very different data and carrying different and largely independent biases, their points of convergence represent very strong signals. These signals include: general support for sustainable mobility, opposition concentrated on the restriction of the car, safety as a central concern, and, to a lesser extent, affordability as a dividing line. The convergence of these results gives more confidence in those conclusions, despite the challenges and biases present. Moreover, both studies are to some extent complementary, with the social media analysis giving a broad overview of topics, stances, sentiment and biases, while the media study provides more detailed insight and explanations, especially for some particular examples. The combination of these results will help create visions for 15mC futures and communication around them.

1.2 Shared research challenges

The two tasks used a very different approach: while task 3.4 relied on manual selection and qualitative reading of a limited set of news articles, task 3.5 used automated collection of a large number of online posts and replies, and applied an AI-based analysis. It is therefore striking how many of the same or similar challenges the two encountered, pointing to common difficulties when studying public discourse on this particular topic.

A first shared challenge concerned getting access to the material. In the media analysis, the main obstacles were the limited possibilities of the search interfaces of the news platforms, together with paywalls that restricted access. In the social media analysis, the equivalent obstacles were the increasingly restrictive and costly access to the platform APIs, from the price of the X data to the technical limitations of the YouTube API and the platforms that could not be used at all. In both cases, the cost of access, whether a subscription paywall or a paid API, directly constrained what could be collected.

A second shared challenge was the reliance on keyword-based search and the biases that come with it. Both studies had to define the relevant material through keywords, and both ran into problems of precision and recall, ending up with samples that were relatively small and probably not fully representative of the full diversity of relevant content. Both were also vulnerable to individual topics or contributors dominating the results, and in both studies

the smaller locations, such as Matosinhos and Toruń, proved the hardest to gather sufficient and diverse data for.

A third shared challenge was the deeply political nature of the debate. Both studies found the mobility discourse to be closely entangled with politics, though in a different way. For the media analysis, articles were found to be influenced by the political leaning of the media outlet, and/or by alignment with current positions of government or opposition (most notably in Budapest). In social media, the political aspect influenced the bias analysis and came from the strong visibility of the political opinions of individual contributors.

Another shared challenge was how both studies struggled with the interpretation of their material. In the media analysis, it was difficult to separate reporting from opinion, or mobility discourse from broader political narrative, and even to define what counted as "political discourse". In the social media analysis, it was difficult to interpret ambiguous labels such as stance and bias, or to decide what counted as mobility-related. In both cases, different researchers and annotators interpreted the task somewhat differently, which is a source of bias and variation in the results.

A last shared challenge was the scarcity of content specifically on youth and school mobility. In the media analysis task, this was most visible for Toruń, where the insufficient coverage of children and youth mobility was itself the emergent theme. In the social media analysis, youth-related content made up only a limited share of the whole.

Finally, we should note that beyond these shared challenges, there were also some differences. The social media analysis faced some challenges related to characteristics of social media data: the specific language use, including slang, abbreviations, irony, sarcasm, etc., the presence of automated messages that are hard to detect and remove, and the difficulty of pinning content to a particular location. Other challenges of the social media study were due to the larger scale of the data and the use of AI to automate the processing, bringing up the need to verify the machine's judgements against human coders. The media analysis, on the other hand, faced particular challenges related to the subjectivity and labour of human curation.

2. Conclusions and next steps

In this report we discussed the work and results from two tasks in the CONIFER project, task 3.4, the media analysis of mobility narratives in political discourse, and task 3.5, the analysis of biases and preferences in online mobility cultures. For both tasks, we presented the research methods, results and discussion. Both studies give a different perspective on the most common topics of discussion related to 15mC and youth mobility, and the opinion

forming around those topics. We also presented shared conclusions, discussing where both studies converge and reinforce each other. We showed how across both studies, the specific topics of discussion varied from one city to another, following local debates and policies, while the underlying attitudes remained rather consistent across locations. The result is a rather reassuring and reasonably robust picture: there is relatively broad support for sustainable mobility rather than opposition to it, the resistance that does exist is concentrated on the restriction of car use and is driven above all by the practicalities of everyday life, and safety is a central and largely consensual concern.

These results bring insights into the CONIFER process, feeding observed perspectives and narratives into the co-creation of 15mC futures with children, young people, their carers and teachers. More concretely, they serve as input for work package 4 (WP4), where the project moves from understanding current mobility cultures to imagining their futures. The bridge between those phases is formed by task 4.1, which applies the first stage of the CRISPA method (Te Bovelde et al., 2026). The findings of WP3, including the current deliverable, will be used to define a set of factors influencing school mobility. Experts will assess how such factors interrelate and might evolve, and the CRISPA software will generate a small number of internally consistent scenarios for each civic lab. In the rest of WP4, these raw scenarios are elaborated into collective visions through art and design, computer games and AI-generated images and narratives, and they ultimately inform the policy pathways drawn up in WP5. In this way, the discourse we have analysed here will become one of the empirical foundations on which the scenarios and visions of the proximity city are built.

Besides further use in the CONIFER project, the results also open several potential avenues for deeper investigation. One interesting direction would be to compare the findings of social media research against a background dataset of social media not focused on mobility, which would let us judge how far the biases we observed are specific to the mobility debate. Beyond that, it would be valuable to look more closely at the discussions underlying the stance and bias results, to help explain the reasons behind the attitudes found in the analysis, and inform future policy development and communication better.

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Appendix A - Keywords and articles of political discourse analysis

Coding system referenced in Tables below:

- 1. Political support for sustainable mobility
- 2. Political critique or hostility to sustainable mobility
- 3. Social bias & prejudice against sustainable mobility
- 4. Social support for / promotion of sustainable mobility
- 5. Mixed angle / neutral approach to discussion
- 6. Related to youth and mobility

A.1 Brussels

Brussels			
Keywords used	Results	Scope 2024 - 2025	Date
schoolmobiliteit	1	1	2026.01.05
school vervoer	1	0	2026.01.05
schoolvervoer	8	1	2026.01.05
kind mobiliteit	0	0	2026.01.05
jongeren mobiliteit	2	0	2026.01.05
jeugd mobiliteit	1	0	2026.01.05
auto school	0	0	2026.02.05
auto kinderen	0	0	2026.02.05

Keywords used for the media search for Brussels

Keywords used	Category	Date
school	mobiliteit	2026.01.05
kind	mobiliteit	2026.01.05
jongere	mobiliteit	2026.01.05
mobiliteit	jongeren	2026.01.05
vervoer	jongeren	2026.01.05

school	jongeren	2026.01.05
school	milieu	2026.01.05
mobiliteit	onderwijs	2026.01.05
/	mobiliteit+jongeren+onderwijs+milieu	2026.01.05

Keywords, Media Search for Brussels for Articles Category 'Mobiliteit' + Keyword 'School'

Brussels - 26 Articles			
Hyperlink	Title Translation in English	Motivation for selection	Coding
https://www.bruzz.be/actua/mobiliteit/steeds-minder-brusselaars-gaan-met-auto-naar-school-2026-02-19	Less and less Brussels' residents go to school by car	This article reports on an important study from the regional governmental department on Mobility about school commutes. The Brussels Regional department for Mobility has a long-time tradition of working directly with schools through 'school-travel plans.	1, 4, 6
https://bx1.be/categories/news/par-quel-moyen-les-eleves-vont-ils-a-lecole-l-usage-des-voitures-diminue-progressivement/	Which modes do students use for school commute? The use of cars decreases progressively		1, 4, 6
https://www.brusselstimes.com/brussels/1951416/only-five-brussels-municipalities-committed-to-safer-school-streets-for-children	Only five Brussels municipalities committed to safer school streets for children	This article reports on an NGO which is updating every 6 months its study about the percentage of Brussels' schools that have a schoolstreet. NGOs play an important role in the mobility field in Brussels.	4, 5, 6
https://bx1.be/categories/news/rues-scolaires-saint-gilles-en-tete-du-classement-auderghem-en-mauvais-eleve/	School streets: Saint-Gilles tops the rankings, Auderghem brings up the rear		4, 6
https://www.bruzz.be/actua/mobiliteit/stad-op-kindermaat-de-stem-van-kinderen-klinkt-niet-luid-genoeg-2025-11-04	Child-friendly city: 'Children feel unsafe in traffic'	A known musician left Brussels to start his family, this sparked the debate on a broader series of articles on whether you 'could' raise children in Brussels.	5
https://www.bruzz.be/actua/mobiliteit/school-protesteert-voor-veiligere-straat-anderlecht-er-hier-veel-verkeersagressie	School protests for safer streets in Anderlecht: 'There is a lot of aggressive driving here'	This article demonstrates the activism by parents/schools/children in Brussels. Previously, in 2018 there was a wave of protests at school gates by parents, teachers and children.	1, 3, 4, 5, 6
https://www.bruzz.be/actua/onderwijs/stad-brussel-maakt-enkele-schoolomgevingen-verkeersveiliger-2025-08-29	City of Brussels makes some school environments safer for traffic	Brussels region consists of 19 municipalities. Some of them, such as the city of Brussels, show high motivation for improving traffic safety in school environments.	1, 5, 6
https://www.brusselstimes.com/belgium/1716904/	Nearly 500 children injured in Brussels	Two articles reporting on a study of Brussels regional mobility department and the national	5, 6

nearly-500-children-injured-in-brussels-road-accidents-last-year	road accidents last year	department of travel safety on the annual rate of traffic injuries among children.	
https://bx1.be/categories/mobilite/pres-de-500-enfants-blesses-en-2024-sur-le-chemin-de-lecole/	Nearly 500 children injured on their way to school in 2024		5, 6
https://bx1.be/categories/mobilite/procedure-simplifiee-pour-labonnement-scolaire-stib/	Simplified procedure for STIB school travel passes	Three articles reporting on how the Brussels public transport operator (MIVB/STIB) has simplified the procedure for public transport passes for school kids.	1, 5, 6
https://www.brusselstimes.com/brussels/1708862/procedure-to-renew-stibs-e12-school-pass-simplified	Simplified procedure to renew STIB's €12 school pass simplified		1, 5, 6
https://www.bruzz.be/actua/mobiliteit/vernieuwing-mivb-abonnement-kan-v-oortaan-zonder-schoolattest-voor-brusselse	Renewal of MIVB subscription now possible without school certificate for Brussels youth		1, 5, 6,
https://www.brusselstimes.com/belgium/1623279/carspreading-children-in-danger-as-suvs-surge-in-popularity	'Carspreading': Children in danger as SUVs surge in popularity	SUVs impact on road safety, particularly for children due to crash nature and visibility issues	3, 5, 6
https://www.brusselstimes.com/belgium/1607432/scheme-launched-to-stop-chaotic-scenes-during-school-run	Scheme launched to stop chaotic scenes during school run	These three articles report on a new pilot project at a school gate in one of Brussels' municipalities to accommodate cycling parents. This demonstrates the close work of the Brussels Regional department for mobility with local schools.	1, 4, 5, 6
https://www.bruzz.be/actua/mobiliteit/brussel-start-proefproject-kiss-cycle-stroken-voor-bakfietsouders-2025-06-02	Brussels launches pilot project for Kiss & Cycle lanes for cargo bike parents		1, 4, 5, 6
https://bx1.be/categories/news/forest-inaugure-le-premier-kiss-cycle-a-bruxelles/	Forest inaugurates Brussels' first "Kiss & Cycle"		1, 4, 5, 6
https://www.brusselstimes.com/brussels/1593809/large-majority-of-brussels-residents-in-favour-of-car-free-and-green-school-streets	Large majority of Brussels residents in favour of car-free and green school streets	In light of the 'Streets for Kids' campaign, an NGO had a research institute (YouGov) conduct a study on the public support for car-free school streets among Brussels' residents.	4, 6
https://www.bruzz.be/actua/onderwijs/honderden-kinderen-het-ongewisse-over-middelbare-school-n	Hundreds of children left not knowing if they will access highschool: "Taking what we can get"	Capacity of schools is not sufficient, this article particularly shows how it is difficult for Dutch-speakers to gain access to a (high)school close to their home.	4, 5, 6

emen-wat-we-kunnen-krijgen			
https://www.bruzz.be/actua/mobiliteit/verkeer-opnieuw-toegelaten-elsense-neststraat-kan-op-termijn-schoolstraat-worden	Traffic allowed again in Elsense Neststraat: 'May become a school street in the long term'	This article shows the discussion on implementing school streets in the Brussels Region.	1, 2, 3, 4, 5, 6
https://www.brusselstimes.com/belgium/1546686/half-of-brussels-children-live-less-than-1-2-kilometres-from-school	Half of Brussels children live less than 1.2 kilometres from school	These three articles report on a study of pupils' home-to-school distance, differences among age groups and types of education. And demonstrates the potential for active modes for school commutes.	5, 6
https://www.bruzz.be/actua/onderwijs/voor-de-helft-van-de-brusselse-kindren-ligt-de-school-op-meer-dan-12-km-van-huis	For half of Brussels children, school is more than 1.2 km from home		5, 6
https://bx1.be/categories/news/3-fois-plus-de-trajet-pour-les-eleves-en-enseignement-specialise-a-bruxelles/	Three times longer journeys for special needs students in Brussels		5, 6
https://www.bruzz.be/actua/stedenbouw/claes-en-feronstraat-sint-gillis-krijgen-grondige-make-over-2025-03-03	Claes and Feronstreet in Sint-Gillis get a thorough make-over	This article describes the winning proposals for redesigning two school streets, including redirecting heavy traffic and removing some parking spaces. It does not directly mention school commute. Discusses schoolstreet but less schoolmobility	5
https://www.brusselstimes.com/belgium/1468327/bus-fare-increases-may-cause-inequality-among-children	Bus fare increases may cause inequality among children	Flemish public transport provider De Lijn is increasing fares for children aged 12–18. The article discusses the equity concerns this change may create for families with school-aged children, especially since prices in the Brussels Region and Wallonia are lower than in Flanders. Not directly related, might be relevant for commute from suburban Brussels areas	5, 6
https://bx1.be/categories/news/la-rue-de-la-semence-a-molenbeek-devient-une-rue-scolaire/	Rue de la Semence in Molenbeek becomes a school street	A new school street is introduced after a successful trial period, making the space in front of the school safer for children. Discusses schoolstreet but no school mobility	1, 6
https://www.bruzz.be/actua/veiligheid/brussel-mobiliteit-lanceert-herfstcampagne-voor-veiligheid-zwakke-weggebruikers	Brussels Mobility launches autumn campaign for the safety of vulnerable road users	The Brussels Regional Mobility Agency actively promotes the safety of vulnerable road users by raising awareness about the importance of visibility.	5, 6
https://www.brusselstimes.com/brussels/1233637/14-children-injured-in-accidents-every-day-going-to-or-from-school	14 children injured in accidents every day going to or from school	The article reports a high daily rate of traffic injuries among children on their way to school, with higher injury rates among pedestrians and cyclists.	5, 6

idents-every-day-going-to-or-from-school			
https://www.bruzz.be/actua/mobiliteit/europese-week-van-mobiliteit-brussel-afgetrapt-autoluwe-vlaamsesteenweg-2024-09-16	European Mobility Week kicks off in Brussels on the car-free Vlaamsesteenweg	These two articles discuss the start of the European Mobility Week in Brussels and the city's prominent role in it. A local official commits to expanding the school-street initiative, building on previous positive projects.	1, 4, 6
https://bx1.be/categories/mobilite/bruxelles-ouvre-sa-semaine-de-la-mobilite-dans-le-quartier-scolaire-de-la-rue-de-flandre/	Brussels kicks off its mobility week in the Rue de Flandre school district		1, 4, 6
bruzz.be/actua/milieu/een-vijfde-van-de-brusselse-scholen-blootgesteld-aan-zware-luchtvervuiling-2024-09-04	One-fifth of Brussels schools exposed to heavy air pollution	The article addresses the problem of high NO ₂ exposure at Brussels schools and the health risks it poses to children. It argues for the immediate introduction of Low Emission Zones and for scaling up school-street initiatives.	4, 6
https://www.bruzz.be/actua/onderwijs/leerlingen-elsense-basisschool-krijgt-tijdelijk-straat-als-speelplaats-2024-08-26	Elsene primary school pupils temporarily given street as playground	Due to street works, a school street becomes temporarily car-free. Local authorities are considering permanently pedestrianising the street and are studying the long-term effects of the current temporary closure.	1, 5, 6
https://www.brusselstimes.com/brussels/1190772/new-school-year-cheaper-public-transport-in-brussels-for-children-and-students	New school year: Cheaper public transport in Brussels for children and students	The article describes reduced public transport fares offered by Brussels public transport operator STIB for children and youth.	1, 5, 6
bruzz.be/actua/mobiliteit/tachtig-leerlingen-fietsen-voor-wereldfietsdag-met-een-muzikale-parade-door	Eighty pupils cycle through Schaerbeek in musical parade for World Bicycle Day	School pupils take part in a cycling parade on World Bicycle Day, an initiative organised by the municipality to encourage cycling as a mode of school commute.	1, 4, 6
https://www.bruzz.be/actua/jongeren/pamflet-voor-een-brussel-op-kindervriendelijk-2024-05-31	Pamphlet for a child-friendly Brussels: 'Hopefully the next government will see the importance of this'	A coalition of organisations and experts signs a manifesto calling for Brussels to become a child-friendly city ahead of the elections. The manifesto addresses road safety, safe walking and cycling infrastructure, quality public space, clean air, and children's participation.	4, 6
https://bx1.be/categories/news/une-grand-collecte-de-velos-organisee-a-l'occasion-du-bike-brussels/	Large-scale bicycle collection organised for Bike Brussels	The Brussels Regional Mobility Agency actively promotes school commutes by bike through a bicycle-collection campaign.	1, 4, 6
https://www.bruzz.be/actua/mobiliteit/boze-jeugd-organisaties-vragen-nmbs-prijzen-schoolabonnement-niet-te-wijzigen-2024	Angry youth organizations ask NMBS not to change school season ticket prices	Youth organisations express outrage over the increase in train fares for young people and demand that subscription prices not be raised.	5, 6

Articles, Justifications, and Coding for Brussels

A.2 Budapest

Budapest	
Keywords used	Date
Public transport	2026.02.18.
School commute	2026.02.18.
Sulizóna	2026.02.18.
Kiss and ride	2026.02.18.
Country pass	2026.02.18.
School transport	2026.02.18.
School year	2026.02.18.
Budapest	2026.02.18.
Parking	2026.02.18.
Parking fee	2026.02.18.
Sustainable mobility	2026.02.18.
BKK	2026.02.18.
Cycling	2026.02.18.
Youth	2026.02.18.
Kids	2026.02.18.
Students	2026.02.18.

Keywords, Media Search for Budapest

Budapest - 16 articles		
Article title	Justification`	Coding
Karácsony's allies would dismantle the popular parking system in front of schools https://magyarnemzet.hu/belfold/2023/08/karacsony-szovetsegesei-felszamolnak-az-iskolak-elotti-nepszeru-parkolasi-rendszer-levego-munkacsoport-kiss-and-ride-behajtas-kozlekedes-autozas	The article captures the politicization and social contestation of sustainable mobility for school commutes in Budapest. While it presents the pro-school street arguments of a civil society organization advocating reduced car use on environmental and health grounds, the framing of these views as ideologically driven and controversial reveals underlying social bias and resistance toward sustainable mobility.	3, 4, 6
Has the Józsefváros local government backed down? The implementation of the	The article explicitly represents political critique and hostility toward sustainable mobility measures related to school streets in Budapest. By framing car-restrictive policies as anti-car, socially insensitive, and harmful to everyday mobility, the article reveals how political actors	2, 3, 6

school street program is being postponed. https://magyarnemzet.hu/belfold/2023/12/meghatralt-jozsefvarosi-onkormanyzat-elhalasztjak-az-iskola-utca-program-kivitelezese-et-seo	mobilize residents' concerns to challenge sustainable transport initiatives. Its confrontational tone and emphasis on perceived loss of livability presents political critique or hostility to sustainable mobility for commutes to school.	
School starts on Monday, traffic jams are coming, and BKK services will run more frequently https://magyarnemzet.hu/belfold/2024/08/hetfonkezdodik-az-iskola-jonnek-a-dugok-es-surubben-jarnak-a-bkk-jaratok	The article demonstrates an institutional effort to promote sustainable mobility for school commutes through coordinated public transport services. Its advisory tone reflects how public authorities frame sustainable travel as a rational and manageable choice during the school period, aligning with political support for sustainable mobility for commutes to school.	1, 6
Sulizóna is growing in Budapest https://magyarnemzet.hu/belfold/2024/08/egyre-tobb-budapesten-a-sulizon	The article presents a supportive and development-oriented narrative around sustainable mobility measures for school commutes. By highlighting positive behavioral change, traffic-calming tools, and alignment with both municipal strategies and EU-level goals, the article reflects institutional and social support for safer, less car-dependent school travel. Its optimistic tone and emphasis on measurable success is an example of how sustainable mobility initiatives are legitimized and promoted in public discourse, showing social support for and promotion of sustainable mobility for commutes to school.	1, 4, 6
A new era has begun in Hungarian public transport + video https://magyarnemzet.hu/belfold/2025/03/kozosségi-kozlekedes-vasut-vonat-mav-volan-utazas-tarifareform-varmegyeberlet-or-szagberlet-blicceles-kedvezmények	The source highlights a national-level policy reform that strengthens the attractiveness and affordability of public transport, directly influencing school-related commuting choices in Budapest. By emphasizing free or discounted travel for children and young people, the article demonstrates political support for shifting families away from car use toward sustainable mobility options. Its strongly positive framing illustrates how public transport reforms are presented as socially beneficial and economically rational, aligning with political support for sustainable mobility for commutes to school.	1, 4, 6
Car ban in front of schools – BKK has come up with a bold plan https://magyarnemzet.hu/belfold/2025/05/autostop-az-iskolak-elott-meresztervel-rukkolt-elo-a-bkk	The article outlines an institutional initiative aimed at restructuring school-area mobility in Budapest toward safer and more sustainable practices. By presenting the Sulizóna program and school streets as collaboratively developed solutions that prioritize walking and micro-mobility while still accommodating limited car access through K+R stops, the article reflects official support for sustainable school commuting. Its slightly skeptical but fundamentally supportive tone aligns with the political support for sustainable mobility commutes to school.	1, 4, 6
Worrying conditions in the capital, Budapest's transport system	The article illustrates how problems in Budapest's public transport system at the start of the school year can influence school-related mobility choices and public attitudes toward sustainable transport. By emphasizing safety risks, technical failures, and declining reliability,	5, 6

collapses at the start of the school year https://magyarnemzet.hu/belfold/2025/08/aggaszt-o-allapotok-a-fovarosban-iskolakezdesre-omlik-ossze-a-budapesti-kozlekedes	the article explains why parents may turn to private cars for school commutes, further contributing to congestion. It reflects a mixed and largely problem-focused perspective on school commuting although the tone of the source is concerned, and critical.	
Drivers are being targeted again: cars have been banned from several streets in Budapest https://magyarnemzet.hu/belfold/2025/09/kezdodik-budapesten-az-iskolautca-program-mutatjuk-a-rieszleteket	The source captures the contested political and social discourse surrounding the introduction of school streets in Budapest. While the sensationalist title reflects hostility toward restrictions on car use, the article's content presents a more balanced account of BKK's trial program and its emphasis on community consultation and child safety. It illustrates both resistance and institutional justification, and therefore aligns with a mixed or neutral approach to sustainable mobility for commutes to school.	1, 3, 4, 5, 6
1,400 cars have disappeared from the streets of Józsefváros, but no one knows where they went. https://telex.hu/belfold/2023/03/30/eltunt-1400-aut-to-jozsefvaros-utcairol-de-nem-tudjak-hova	The article illustrates how local parking policy is used as a tool to reshape mobility patterns and the social conflicts such measures generate in Budapest. By linking higher residential parking fees to reduced car presence and to school-related infrastructure such as K+R zones and student travel support, the article connects urban mobility policy with everyday family logistics. Its balanced presentation of municipal goals and public criticism presents a mixed approach to discussion for commutes to school.	1, 3, 5, 6
Discounts being discontinued and new passes – changes to public transport in Hungary from today https://telex.hu/belfold/2024/03/01/berlet-mav-bkk-tomegkozlekedes-utazas-jegy	The article presents a structural policy change that lowers financial barriers to public transport use, thereby influencing everyday mobility choices, including school-related travel in Budapest. By detailing free and heavily discounted travel for children and students, the article highlights how fare policy can actively support sustainable commuting over car use. Its neutral, informational tone presents political support for sustainable mobility with a neutral approach.	1, 5, 6
BKK to introduce experimental roadblocks in front of schools https://telex.hu/belfold/2025/05/22/bkk-iskolautca-forgalomcsokkent-es-kozlekedes-biztonsag-iskola-program	The article presents an institutional initiative aimed at reducing car traffic and improving safety around schools through the introduction of trial school streets in Budapest. By framing walking and micro-mobility as default and desirable options during school hours, the article reflects policy-level support for sustainable commuting practices. Its practical and supportive tone illustrates how such measures are communicated as feasible and beneficial, aligning with political support for sustainable mobility for commutes to school.	1, 6
Most of the time, parents who drive their children	The article provides a social and behavioral perspective on school commuting in Budapest, highlighting how parental habits shape children's mobility patterns and attitudes toward active travel. By	3

to school discourage them from walking. https://telex.hu/belfold/2025/09/02/tanulok-iskolaba-jaras-auto-bicikli-gyalog-iskolakezdes	emphasizing the gap between children's preferences and actual commuting practices, the article sheds light on social norms and convenience-driven behaviors that hinder sustainable mobility. Its analytical tone makes it valuable for understanding underlying social dynamics rather than policy alone, presenting social bias and prejudice against sustainable mobility for commutes to school.	
They closed off the entire street in front of Trefort High School and gave it to the students. https://telex.hu/belfold/2025/09/01/trefort-gimnazium-jozsefvarosi-onkormanyzat-iskolautca-setaloutca	The article documents a concrete and widely supported example of a permanent car-free school street in Budapest, illustrating how sustainable mobility measures can gain strong social legitimacy. By emphasizing community cooperation, high resident approval, and the creation of safer, people-oriented public space, the article reflects positive collective attitudes toward reducing car dominance around schools. Its celebratory tone aligns with social support for and promotion of sustainable mobility.	1, 4, 6
Instead of speed fetishes and mom taxis: how can Budapest become a family-friendly city? https://telex.hu/g7/elet/2025/10/26/budapest-15-perces-varos-csaladbarat-kozlekedesi-strategia	The opinion piece offers a normative and critical interpretation of Budapest's mobility paradigm, explicitly challenging car-centric urban planning and its impact on families and children. By framing school- and care-related travel as a social burden created by speed-oriented transport policies, the article reveals underlying cultural assumptions and gendered expectations embedded in everyday mobility. Its reformist tone and clear advocacy for traffic calming and active travel make it a strong example of social support for and promotion of sustainable mobility for commutes to school.	4, 6
We commute by car, drive our children to school by car, and pollute our own air with poor heating. https://telex.hu/belfold/2026/02/03/levegoszennyez-es-levegominoseg-futes-kozlekedes-varos-lignit-egyensuly-intezet	The article links school-related car use directly to environmental and public health consequences, placing school commuting within a broader social and political debate on air pollution and urban responsibility in Hungary. By critically addressing parents' convenience-driven habits and advocating for public transport, cycling infrastructure, and car-free school zones, the article promotes sustainable mobility as a necessary collective response. Its data-driven and warning tone contributes to understanding how environmental arguments are used to challenge car dependency, presenting social support for and promotion of sustainable mobility for commutes to school.	4, 5, 6
More and more school streets are appearing in Budapest, but so are the K+R parking spaces replacing them. https://telex.hu/g7/elet/2026/02/25/iskolautcak-k-r-parkolo-budapest-gyerekek-auto	This article is relevant because it offers a critical, expert-driven examination of competing mobility models around schools in Budapest, explicitly contrasting car-oriented K+R solutions with the concept of safe, car-free school streets. By framing the "mom taxi" phenomenon as a source of safety risks, noise, and lost independence for children, the article exposes social norms and convenience-based preferences that undermine sustainable mobility. Its strong advocacy for pedestrian- and bicycle-friendly environments, supported by survey data, makes it a clear example of social support for and promotion of sustainable mobility for commutes to school.	4

Articles, Justifications, and Coding for Budapest

A.3 Cologne

Cologne	
Keywords used	Date
Schulweg	2026.01.27
Schüler / Schülerin	2026.01.27
Elterntaxi	2026.01.27
Schulstraße	2026.01.27
Fahrrad + Schule	2026.01.27
KVB + Schule	2026.01.27
Schüler / Schülerin + Mobilität	2026.01.27
Jugend + Mobilität	2026.01.27

Keywords, Media Search for Cologne

Cologne - 20 Articles		
Article Name	Justification for inclusion	Coding
„Die Nachfrage in Köln ist riesig - Neuer Erlass könnte Schulstraßen in NRW ermöglichen“ (Eng: “Demand in Cologne is huge” – new decree could enable school streets in North Rhine-Westphalia) (19.02.2024) https://www.ksta.de/politik/nrw-politik/erlass-fuer-schulstrassen-die-nachfrage-in-koeln-ist-riesig-742718	This article presents reactions to the first decree on school streets in North Rhine-Westphalia	1, 3, 4, 5, 6
100 Ideen für Köln: „Ich wünsche mir mehr Girlanden über den Straßen in den Veedeln“ (Eng.: 100 ideas for Cologne: "I would like to see more garlands hanging above the streets in the neighbourhoods.") (12.08.2025)	This article provides insight into the wishes of Cologne's residents for their city	4, 6
Deutschlandticket wird teurer Kölner Eltern fordern Option für günstigere Schülertickets (Eng.: Germany ticket to become more expensive Cologne parents demand cheaper student ticket option) (05.11.2025) https://www.ksta.de/schule/deutschlandticket-koelner-eltern-fordern-option-fuer-guenstigere-schuelertickets-2-1140838	This article reports on the demands made by parents following the increase in the price of student travel passes	1, 3, 4, 6
Elterntaxis: Köln sollte Hauptstadt der Schulstraßen werden – „Seit einem Jahr passiert nichts“ (Eng.: Parent taxis: Cologne should become the capital of school streets – "Nothing has happened for a year") (22.05.2025)	This article describes the political deadlock surrounding the introduction of further school streets in Cologne	4, 5, 6

https://www.ksta.de/koeln/koeln-sollte-hauptstadt-der-schulstrassen-werden-aber-seit-einem-jahr-passiert-nichts-1028524		
Gesamtschule Ossendorf: Stadt plant Mittelinsel für viel befahrene Straße (Eng.: Ossendorf Comprehensive School: City plans central island for busy road) (21.01.2026)	This article outlines the challenges of school route safety for a new school location	1, 5, 6
Kampf gegen Elterntaxis Schulstraßen werden jetzt dauerhaft eingerichtet – Köln Vorreiter in Deutschland (Eng.: Fight against parent taxis School streets are now being established permanently – Cologne leads the way in Germany) (28.03.2024)	This article describes the political decision to provide long-term backing and political support for the implementation of safe routes to school.	1, 4, 6
Mehr Sicherheit Radfahrer haben auf der Bonnstraße vor dem Gymnasium in Hürth bald Vorfahrt (Eng.: Greater safety Cyclists will soon have right of way on Bonnstraße in front of the secondary school in Hürth) (24.12.2024)	This article describes cycle lanes as a safety measure at schools.	1, 4, 5, 6
Schulstraßeninitiative: Porzer Grundschule fordert Schulstraße – mangelndes Tempo bei Umsetzung Von René Denzer (Eng.: School street initiative: Porz primary school calls for school street – slow progress in implementation By René Denzer) (13.01.2026) https://www.ksta.de/koeln/porz/urbach/kgs-kupfergasse-urbach-sicherheit-fuer-kinder-durch-schulstrasse-1-1166372	This article describes the recurring criticism of the slow implementation of school streets despite agreement among all parties	1, 4, 5, 6
Verkehrsversuch Einbahnstraßen sollen Elterntaxis vor den Schulen in Efferen ausbremsen (Eng.: Traffic trial One-way streets to slow down parent taxis in front of schools in Efferen) (09.05.2025) https://www.ksta.de/region/rhein-erft/huerth/huerth-verkehrsversuch-soll-elterntaxis-in-efferen-ausbremsen-1020097	This article discusses one-way streets as a measure to improve safety at schools.	1, 3, 4, 5, 6
Weltkindertag im Rheinauhafen Das würden Kölner Kinder ändern, wenn sie Oberbürgermeister wären (Eng.: World Children's Day at Rheinauhafen What Cologne children would change if they were mayor) (21.09.2025) https://www.ksta.de/koeln/weltkindertag-das-wuerden-koelner-kinder-aendern-wenn-sie-oberbuergemeister-waeren-1112456	This article reports on World Children's Day at Cologne's Rheinauhafen and highlights children's perspectives on urban issues such as school route safety, cycling infrastructure, and children's rights in the context of the upcoming mayoral election	4, 6
„Park-Platz-Tag“ - Parkplatz an Christuskirche wird für einen Tag autofrei (Eng.: "Parking Space Day" Car park at Christuskirche becomes car-free for one day)(16.09.2024)	This article reports on a local initiative that temporarily transforms parking space into a car-free community area to promote climate adaptation, greener urban development, and reduced car traffic	1, 4, 6

Piktogramme gegen Bringdienst Eltern fordern Verkehrsberuhigung an Grundschulen in Köln-Worringen (Eng.: Pictograms against delivery services Parents call for traffic calming measures at primary schools in Cologne-Worringen) (12.03.2024)	This article reports on a parents initiative' calling for measures and safer street management around primary schools to reduce risks caused by 'parent taxis'	4, 6
Umsetzung kostet 250.000 Euro Entwurf für neue Fahrradstraße in Pulheim liegt nun vor (Eng.: Implementation costs €250,000 Draft for new cycle lane in Pulheim now available)(28.11.2025) https://www.ksta.de/region/rhein-erft/pulheim/pulheim-neue-fahrradstrasse-soll-250-000-euro-kosten-1159132	This article reports on the planned implementation of a new bicycle street designed to improve road safety for pupils on their way to the school centre, outlining the design, costs, and political support for the project	1, 4, 6
Vorrang für Fahrräder Warum es vor einem Hürther Gymnasium Denkmäler für Elterntaxis gibt (Eng.:Priority for bicycles Why there are reminders for parent taxis in front of a secondary school in Hürth)(27.12.2025)	This article reports on a campaign by authorities and schoolchildren against illegal stopping of 'parent taxis' and the measures taken to enforce right of way for cyclists	4, 6
Aktionsbündnis feiert Jubiläum: Große Fahrraddemo in Köln – OB-Kandidaten eingeladen (Eng.: Action alliance celebrates anniversary: Large bicycle demonstration in Cologne – mayoral candidates invited) (18.09.2025) https://www.ksta.de/koeln/koeln-grosse-fahrraddemo-ob-kandidaten-eingeladen-1110235	This article describes actions by a local alliance in Cologne's public street space that advocates through a public demonstration for safe, liveable, and car-free streets	4, 6
„Drogensüchtige Erwachsene im Delirium“ Kölner Schulleiterin mit heftiger Schilderung (Eng.: "Drug-addicted adults in delirium" Cologne school principal gives vivid description) (26.04.2025)	This article discusses the issue of safety on the way to school with regard to homeless people, drug addicts, etc., which has been addressed in several newspaper articles	5, 6
Kreativ-Wettbewerb der KVB- Schülerinnen und Schüler gestalten E-Bus und Leihräder (Eng.: KVB creative competition: school pupils design electric bus and rental bikes)(03.06.2024)	The article discusses pupils' creative engagement with public transport and their city	1, 4, 5, 6
Schulweg-Wahnsinn in Köln „120 Euro für sechs Stationen“ (Eng.: School travel madness in Cologne: "120 euros for six stops") (03.12.2025)	This article describes the necessity of a school ticket instead of a Germany-wide ticket for pupils' travel behaviour	4, 6
Weltkindertag 2024- Kinder fahren kostenlos und spannende Aktionen der KVB (Eng.: World Children's Day 2024: Children travel free and exciting activities organised by KVB) (12.09.2024)	This article highlights how free public transport and mobility education promote sustainable children's mobility	1, 4, 6
Kölner Eltern in Sorge Fahrer rast mit über 100 km/h an Grundschule vorbei – klare Forderungen an die Stadt (Eng.: Cologne parents concerned. Driver speeds past primary school at over 100 km/h – clear demands made on the city)(13.08.2024)	This article reports on parents' concerns about dangerous speeding and heavy traffic near primary schools, highlighting alarming speed measurements and calling on the city to implement school streets and stronger safety measures	4, 6

<https://www.express.de/koeln/koelner-elter-n-messen-ras-er-vor-schule-ueber-19-000-verstoesse-844217>
Articles, Justifications, and Coding for Cologne

A.4 Ghent

Ghent: Keywords	
Keywords	Date
mobility + Ghent + school (VRT News)	16-01-2026
School + Ghent (VRT News)	25-04-2026
School + mobility + Ghent (Grok search)	16-01-2026

Keywords, Media Search for Ghent

Ghent - 11 articles		
Article Title / Keywords used / News	Justification for Inclusion	Coding
01 Article title: Why do so many drivers run the red light at Don Bosco in Sint-Denijs-Westrem? "A confusing and unusual intersection" Keywords used: school, mobility, Ghent Newspaper: HLN Waarom rijden zoveel bestuurders door het rood aan Don Bosco in Sint-Denijs-Westrem? "Verwarrend en ongewoon kruispunt" Regio HLN.be	This is an article about a confusing intersection where many people drive at a red light, and it is close to a very large school in Ghent. There is no clear political inclination in this article, and I have chosen it because I find many articles related to school youth safety in mobility matters. It was also the most recent article I found when I did the search. By now, several months have passed, and it can be that new "school mobility Ghent" articles emerge.	5, 6
02 Article title: Ghent gets new long cycle street through Gentbrugge: "Safety of young cyclists is a priority" Keywords used: school, mobility, Ghent Newspaper: VRT News Gent krijgt nieuwe lange fietsstraat door Gentbrugge: "Veiligheid van fietsende jeugd is prioriteit" VRT NWS: nieuws	This is an article specifically related to a new long street that is reserved for bikes and makes part of the plan to improve 100 unsafe places for school kids/youth mobility. A politician is mentioned in this article, the Alderman for Mobility Joris Vandenbroucke (Voor Gent, socialist party) (schepen van Mobiliteit Joris Vandenbroucke (Voor Gent)). Voor Gent is a left-wing party, it is a coalition between green and socialist/liberals in Ghent city.	1, 6
03 Article title: Sint-Bavo also celebrates Fluoday and gets a	This is an article about safe and sustainable mobility for kids. It is about the "fluoday", the day in which it is	4, 6

visit from Xiu: 270 pupils tackle a special bike course and win cycling helmets Keywords used: school, mobility, Ghent Newspaper: HLN https://www.hln.be/gent/ook-s-int-bavo-viert-fluodag-en-krijgt-bezoek-van-xiu-270-leerlingen-leggen-speciaal-fietsparcours-af-en-winnen-fietshelmen~a52cc5b8	promoted to use reflective jackets when one bikes for safety. I have chosen this article because it is about one specific school in Ghent and how the “fluoday” was celebrated because in general teenagers find it “boring” or “uncool” to use reflective jackets and helmets. There is not much “political discourse here”, no politicians mentioned.	
04 Article title: “At least 20 bottlenecks cleared every year”: Ghent wants to make school routes safer for children Keywords used: school, mobility, Ghent Newspaper: HLN Updated link: https://www.hln.be/gent/elk-jar-minstens-20-knelpunten-wegwerken-gent-wil-schoolroutes-veiliger-maken-voor-kinderen~a798d6b7/	This is an article with political connotation because the politician in charge of mobility explains that he wants to give priority to improving the independent mobility of children by making it safer. Specifically, they mention 100 places that will be improved, and a survey done with kids to investigate what “unsafe” points to improve.	1, 6
05 Article title: Police focus on road safety around schools: “We give pupils tips too” Keywords used: school, mobility, Ghent Newspaper: HLN https://www.hln.be/gent/politie-focust-op-verkeersveiligheid-aan-scholen-we-geven-leerlingen-ook-tips~ac20a090	This article is related to actions by the police to promote school mobility safety. It does not mention politicians, but it is clear that the strategy of the police is to reduce even more mobility accidents.	4, 6
06 Article title: Two in three young people use a smartphone while cycling Keywords used: school, mobility, Ghent Newspaper: De Morgen https://www.demorgen.be/snelnieuws/twee-op-de-drie-jongeren-gebruiken-smartphone-op-de-fiets~b3b016e8	This is an article from a different newspaper (De Morgen) than the two I chose (HLN and VRT) but I found it important because it is purely about mobility issues and safety of our youths. It shows how group pressure can influence the safety behavior of youths, and how they can adapt their behaviors according to what they experience as dangerous. There is no political connotation here.	5, 6
07 Article title: District mobility plan in Zwijnaarde launches with waiting times, but no major problems Keywords used: school, mobility, Ghent	This is an article about some disagreements by citizens, including the school director of a school in Ghent, about the mobility plan of the city for a specific area. The director mentions that this could be unsafe for their school youth. Since many of the articles I find are about children/youth mobility safety, I found this also	5, 6

Newspaper: VRT News https://www.vrt.be/vrtnws/nl/2024/03/25/zwijnaarde-gent-mobiliteitsplan-verkeer-filip-watteeuw-mathias-d	relevant. It has some political connotations because some politicians are mentioned.	
08 Article title: 10,000 euros in Flemish funding for barriers at 8 Ghent school streets Keywords used: school, mobility, Ghent Newspaper: HLN https://www.hln.be/gent/10-000-euro-vlaams-geld-voor-slagbomen-aan-8-gentse-schoolstraten-a96c8d99	This is a political article about subsidies given to Ghent to improve school streets' safety.	1, 5, 6
09 Article title: Will there finally be a solution for special-needs pupil transport? N-VA proposes extra childcare and a tailor-made transport solution Keywords used: school, mobility, Ghent Newspaper: De Morgen https://www.demorgen.be/nieuws/komt-er-eindelijk-oplossing-voor-leerlingenvervoer-buitengewoon-onderwijs-n-va-stelt-extra-opvang-en-vervoersoplossing-voor-b252f255	This is an article about long commutes that children had to do to get to their special needs school. This was a problem in whole Flanders, including Ghent. I chose this article not because it mentions Ghent specifically, but my boy was also affected by this situation and had to spend long hours on the school bus to get to his school. Also, political parties are mentioned in this article.	1, 5, 6
10 Article title: Keywords used: school, mobility, Ghent Newspaper: VRT News Vervoerregioraad Gent verwerpt unaniem besparingen De Lijn: "Schoolkinderen en kwetsbare groepen zijn slachtoffer" VRT NWS Nieuws	This article is about protests against the public transport company De Lijn because they are reducing their budget and the people complain that the most affected people are school kids who take the bus.	1, 4, 5, 6
11: Article title: "Every child from the age of 10 should be able to cycle to school independently": 'cycling' alderman wants to tackle 100 dangerous spots and launches striking proposal) https://www.hln.be/gent/elk-kind-vanaf-10-moet-zelfstandig-naar-school-kunnen-fietsen-fietsende-schepers-wil-100-gevaar	This is an article with political connotation because the politician in charge of mobility explains that he wants to give priority to improving the independent mobility of children by making it safer. Specifically, they mention 100 places that will be improved, and a survey done with kids to investigate what "unsafe" points to improve.	1, 6

rijke-punten-aanpakken-en-lanceert-opvallend-voorstel~a03cd0c3/		
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Articles, Justifications and Coding for Ghent

A.5 Matosinhos

Matosinhos	
Keywords	Date
sustainable mobility + Matosinhos + school	2026.01.13
bicycle + school + Matosinhos + youth	2026.01.13
active mobility + Matosinhos + bicycles	2026.01.13
public transport + students + Matosinhos	2026.01.14
MetroBus + mobility + Matosinhos	2026.01.14
bike trains + Matosinhos + school	2026.01.14
walking + school + youth + kids	2026.01.14
city + car + children	2026.01.14
city + safety + children	2026.01.14
Matosinhos AND mobilidade OR carros OR bicicleta OR automóveis OR transporte	2026.01.14
Matosinhos E segurança rodoviária NAS escolas OR escola OR crianças OR jovens OR alunos autocarros	2026.01.14
Matosinhos E segurança rodoviária NAS escolas OR escola OR crianças OR jovens OR alunos autocarros	2026.01.14

Keywords, Media Search for Matosinhos

Matosinhos - 15 Articles		
Article Title	Justification for Inclusion	Coding
"Bike Trains project in action in Matosinhos" — children cycle to school https://www.cm-matosinhos.pt/urbanismo/mobilidade-e-transporte/mobilidade-sustentavel/comboio-s-de-bicicleta	Highlights a local initiative promoting active school mobility, encouraging children to bike to school.	Not included

"Matosinhos boosts active mobility with new bike parking infrastructure" https://www.cm-matosinhos.pt/atualidade/noticia/matosinhos-reforma-a-mobilidade-ativa	Shows municipal political support for sustainable mobility and infrastructure for walking and cycling.	Not included
"Free Andante Pass for youth up to age 23 in Matosinhos" https://matosinhosjovem.pt/servicos/mobilidade-2/	Reflects a political measure to promote public transport among students, reducing car dependency.	Not included
Launch of the MetroBus in Matosinhos (Facebook post) https://www.facebook.com/photo.php?fbid=1292948316199348&id=100064525761023&set=a.444726254354896	Demonstrates a structural project aimed at improving urban mobility, with potential impact on school commutes.	Not included
Criticism over access and safety near schools – PSD Matosinhos proposals https://www.psdmatosinhos.pt/autarquias-2021/plano-evoluir-matosinhos/	Reflects political and public debate on the need for improved infrastructure and safety in school areas.	1, 4, 6
Matosinhos' participation in European Mobility Week https://mobilityweek.eu/participating-towns-and-cities/?city=pt_7v7qs13d&country=PT&year=2021	Includes public engagement initiatives and support for sustainable transport modes, often targeting young audiences.	1, 6
"Learn to Ride a Bike" – Mobility Week 2025, Matosinhos https://www.leca-palmeira.com/semana-europeia-da-mobilidade-em-matosinhos/	Part of the European Mobility Week, this activity fosters youth engagement with sustainable mobility, highlighting social promotion of walking and cycling to school.	1, 4, 6
City Strategy for Sustainable Mobility – C.M. Matosinhos https://www.cm-matosinhos.pt/urbanismo/mobilidade-e-transportes/mobilidade-sustentavel	Defines the political framework for sustainable urban mobility, including measures directly influencing school transport systems.	Not included
BRT Construction Begins – MetroBus Matosinhos https://www.facebook.com/CamaraMunicipalMatosinhos/posts/1252884046872442/	Reflects political commitment and investment in public transport infrastructure, potentially transforming youth commuting options.	Not included

Climate Action & Sustainable Mobility in Matosinhos – Mayor’s Interview https://eu-mayors.ec.europa.eu/en/news/driving-climate-action-matosinhos-meet-luisa-salgueiro-mayor-and-covenant-board-member	The Mayor ties sustainable mobility to broader climate goals, reflecting a political narrative promoting low-carbon school commuting solutions.	1, 6
MetroBus is Coming – Matosinhos Municipal Announcement https://www.cm-matosinhos.pt/servicos/comunicacao-e-imagem/noticias/noticia/o-metrobus-esta-a-chegar	Demonstrates the city’s long-term plan to reduce car use and enhance public transport access for all citizens, including students.	Not included
Mobility is a priority for PS and AD candidates in Matosinhos (Mobilidade é prioridade dos candidatos do PS e AD para Matosinhos) https://www.jn.pt/pais/artigo/mobilidade-e-prioridade-dos-candidatos-do-ps-e-ad-para-matosinhos/17958757	Reports the mobility priorities presented by political candidates in Matosinhos, illustrating how local political actors frame transport challenges and solutions. The article is relevant because political agendas influence the development of sustainable mobility policies that affect daily travel patterns of residents, including students and school communities.	1, 5, 4
Porto could have a bike-sharing network: a new bet on sustainable mobility (Porto pode ter rede de bicicletas partilhadas: nova aposta na mobilidade sustentável) https://away.iol.pt/porto/smartcity/porto-pode-ter-rede-de-bicicletas-partilhadas-nova-aposta-na-mobilidade-sustentavel/20250204/67a240e2d34ef72ee441d60c	Describes the proposal for a bike-sharing system in the Porto metropolitan area, which could expand access to cycling as a mobility option for residents and young people. The article reflects policy and institutional narratives promoting cycling infrastructure and sustainable mobility alternatives to private car use.	1, 4
"I'm going to start using this a lot more often." The "beautiful train" returned to the tracks in Leixões today ("Vou passar a usar isto muitas vezes". O "comboio bonito" voltou hoje aos carris de Leixões) https://www.publico.pt/2025/02/09/local/reportagem/vou-passar-usar-vezes-comboio-bonito-voltou-hoje-carris-leixoes-2121919	Covers the reopening of a rail service in the Leixões area and highlights public reactions to improved public transport. The article reflects social perceptions and narratives about rail mobility and the role of collective transport in daily commuting.	1, 4
New edition of Kidical Mass: let's cycle in Porto? (Nova edição da Kidical Mass: vamos pedalar no Porto?)	Reports on a Kidical Mass cycling event promoting safer streets for children and families. The article is particularly relevant to youth mobility because it highlights grassroots advocacy for safe cycling infrastructure and children's right to move safely in urban space.	4, 6

https://www.jn.pt/jn-kids/artigo/no-va-edicao-da-kidical-mass-vamos-p-edalar-no-porto/17957994		
CEiiA launches carbon neutrality agenda for Northern Portugal with young people from Matosinhos (CEiiA lança agenda de neutralidade carbónica do Norte de Portugal com jovens de Matosinhos) https://jornal-renovacao.pt/2023/06/ceiia-lanca-agenda-neutralidade-carbonica-do-norte-portugal-jovens-matosinhos/	Describes an initiative involving young people from Matosinhos in a carbon neutrality agenda. The article connects youth engagement, sustainability, and urban innovation, illustrating narratives that link climate action with future mobility systems.	1, 4, 6
Exhibition at MAR Shopping Matosinhos with the City Council raises children's awareness about safety and sustainability prevention e-culture (Exposição no MAR Shopping Matosinhos com a Câmara sensibiliza crianças para a prevenção em segurança e sustentabilidade e-cultura) http://www.e-cultura.pt/evento/31035	Reports on an educational exhibition aimed at raising children's awareness about road safety and sustainability. The article illustrates how institutions communicate sustainable mobility values to younger generations and contribute to shaping mobility culture among children.	4, 6
Subprefecture reinforces pedestrian safety near schools (Junta de Freguesia reforça segurança dos peões junto às escolas) https://www.leca-palmeira.com/junta-de-freguesia-reforca-seguranca-dos-peoes-junto-as-escolas/	Describes policy measures implemented to improve pedestrian safety near schools. The article is directly related to school mobility because it addresses infrastructure and safety conditions affecting children's daily travel to educational institutions.	1, 4, 6
Matosinhos invites citizens to test the shared electric bicycle system (Matosinhos convida cidadãos a testar sistema de bicicletas eléctricas partilhadas) https://smart-cities.pt/noticias/bike4me-matosinhos-ayr-2805/	Describes a municipal pilot allowing citizens to test shared electric bicycles. The initiative demonstrates local policy experimentation aimed at increasing the adoption of cycling and promoting sustainable urban mobility practices.	1, 4
City Hall and Porto Metro meet to analyze mobility projects in the municipality (Município e Metro do Porto reúnem para análise de projetos de mobilidade no concelho)	Describes collaboration between the municipality and the Porto Metro to analyse and plan mobility projects. The article reflects governance and policy discussions shaping the development of public transport systems in the region.	1

https://sapo.pt/artigo/municipio-e-metro-do-porto-reunem-para-analise-de-projetos-de-mobilidade-no-concelho-699c2478d549942bfb0ded7e		
Construction begins on metrobus that will connect Matosinhos market to the airport (Arrancam obras de metrobus que vai ligar mercado de Matosinhos ao aeroporto) https://www.publico.pt/2025/07/16/local/noticia/arrancam-obras-metrobus-vai-ligar-mercado-matosinhos-aeroporto-2140391	Reports further developments of the metrobus infrastructure project and its expected impact on mobility connectivity. The article contributes to understanding how large infrastructure projects are framed in local mobility discourse.	1, 5
Roadworks on the EN210 to eliminate hazard near the school in Celorico de Basto (Obra na EN210 para acabar com perigo junto a escola de Celorico de Basto) https://www.jn.pt/pais/artigo/obra-na-en210-para-acabar-com-perigo-junto-a-escola-de-celorico-de-basto/17761517	Reports roadworks implemented to eliminate a traffic hazard near a school. The article illustrates how infrastructure and safety interventions are framed as necessary measures to protect children and improve conditions for school mobility.	1, 4, 6

Articles, Justifications and Coding for Matosinhos

A.6 Toruń

Toruń	
Keywords used	Date
Toruń; komunikacja miejska (public transport); bilety (tickets)	21.01.2026
Toruń; karta miejska (city card); bilety (tickets)	21.01.2026
Toruń; uczniowie (students); droga do szkoły (way to school)	21.01.2026
Toruń; komunikacja miejska (public transport); zmiany (changes)	21.01.2026
Toruń, komunikacja publiczna (public transport), młodzież (youth), szkoła (school)	21.01.2026
Toruń, komunikacja miejska (public transport), dzieci (kids), wykluczenie transportowe (transport exclusion)	21.01.2026
Toruń, komunikacja miejska (public transport), dzieci (kids), tramwaje (trams)	21.01.2026
Toruń; komunikacja miejska (public transport); dzieci (children); młodzież (youth); dojazdy autobusem (bus commuting); szkoła (school)	21.01.2026
Dojazdy do szkoły, nowe linie autobusowe, transport publiczny, problemy z dojazdem, dojazdy rowerem, darmowe przejazdy, Toruń	

Commuting to school, new bus routes, public transport, commuting problems, commuting by bike, free rides, Toruń (always with the word Toruń)

Keywords, Media Search for Toruń

Toruń - 21 articles		
Article Title	Justification for inclusion	Coding
MZK w Toruniu Sp. Z o.o. on Facebook New bus lines, 2025 https://www.facebook.com/photo.php?fbid=1108038281112225&id=100057181911240&set=a.542420021007390	This may be important because it connects the towns located near Toruń with the city center.	Not included
"Winter is hitting Torun. How long will it last, what it is and will be the situation on the streets." Snow and weather, 2025 https://nowosci.com.pl/atak-zimy-w-toruniu-do-kiedy-potrwa-jaka-jest-i-będzie-sytuacja-na-ulicach/ar/c1p2-28210141	Winter weather conditions can significantly affect the daily mobility of young people, particularly those who rely on walking or public transport to reach school and other activities. This year, several days of black ice created hazardous conditions, making pedestrian movement both dangerous and considerably more difficult. The article illustrates how local media communicate information about weather-related disruptions and risks that directly influence everyday experiences in the city.	5, 6
New bus line, 2025 https://www.facebook.com/reel/1163999038900469	This may be important because it connects the towns located near Toruń with the city center.	Not included
New bus line – 2025 (Bydgoszcz and Toruń) https://ototorun.pl/artikul/nowa-linia-autobusowa-n1765153	In this case, it concerns the bus connection to Bydgoszcz, the largest city in the region, located about 50 km from Toruń.	1, 4, 6
Competition for scholarships for students (for the purchase of books, a computer and transport to school) - 2025 https://wiadomosci.radiozet.pl/torun/nawet-5-tys-zl-dla-uczniow-w-woj-kujawsko-pomorskim-czas-mija-30-wrzesnia	Financial support for students, including subsidies for transportation (e.g., school tickets), designed to facilitate access to education, particularly for students from lower-income families.	1, 4, 6
City bikes for rent, 2024 https://mzd.torun.pl/rusza-rower-miejski-2/	The municipal bike-sharing system was introduced in Toruń in 2014. However, changes in the system's operator in subsequent years affected the continuity and timing of its operation in later seasons.	1 Not included
Change of school locations (shorter commute) - 2025	Mobility is not a key element here but this change can affect mobility negatively as when schools are closed (negative birth	5, 6

https://torun.pl/pl/aktualnosc/radni-zaglosowali-za-zmianami-w-sieci-szkol	rate and municipalities cannot reasonably keep them open) children will have to travel further to school.	
Problems with getting to schools (road repairs) - 2025 https://nowosci.com.pl/uwaga-w-drode-do-szkoly-w-toruniu-przez-te-miejscas-trudniej-jest-przejechac/ar/c1p2-27924401	One of the key transport routes, including the tram line, is currently undergoing renovation. Consequently, traffic has been reduced to one lane in each direction instead of two, leading to congestion during peak hours. The construction site is situated near several schools, potentially affecting pedestrian comfort and safety.	5, 6
Secondary schools closed due to farmers' protest (Szkoły ponadpodstawowe zamknięte przez protest rolników) https://tylkotorun.pl/wiadomosci/szkoly-ponadpodstawowe-zamkniete-przez-protest-rolnikow/	Road blockades by farmers (problems with access to schools) - 2024	6
Toruń residents say "no" to WGK's plans. A councilor intervenes: "The report hasn't been published yet..." (Mieszkańcy Torunia mówią "nie" planom WGK. Radny interweniuje: "Do dziś nie został opublikowany raport...") https://www.se.pl/torun/mieszkancy-torunia-mowia-nie-planom-wgk-radny-interweniuje-do-dzis-nie-zostal-opublikowany-raport-aa-FPfg-ggqm-gLxF.html	Protests against shortening bus routes - 2023 A protest regarding changes to the bus routes connecting the two parts of Toruń divided by the Vistula River. One of the students is also quoted in the article.	1, 4, 6
Changes to Toruń's MZK. New groups will receive discounts (Zmiany w toruńskim MZK. Nowe grupy otrzymają zniżki) https://tylkotorun.pl/wiadomosci/komunikacja/zmiany-w-torunskim-mzk-nowe-grupy-otrzymaja-znizki/	Special tickets for children from large families – 2025. The policy introduces free public transport tickets for children from large families, defined as families with four or more dependent children.	1, 4, 6
Young councilors talked about public transport (Młodzi radni rozmawiali o komunikacji miejskiej) https://tylkotorun.pl/wiadomosci/komunikacja/mlodzi-radni-rozmawiali-o-komunikacji-miejskiej/	Young people talked about public transport - 2023 Representatives of the Youth City Council met with a representative of the municipal transport company. The talks focused on service frequency, ticket pricing, and the functioning of ticket machines and mobile applications. No additional details were provided about the discussion or its results.	1, 4, 5
Free tickets for Toruń students. The city says no (Darmowe bilety dla toruńskich uczniów. Miasto mówi: nie)	City says no to free tickets for young people – 2019. A social initiative advocating for the introduction of free public transport tickets was declined by the municipal authorities. The article provides statistical data on the issue and details the grounds for the rejection of the proposal.	4, 5, 6

https://torun.wyborcza.pl/torun/7.48723,25228340,darmowe-bilety-dla-torunskich-uczniow-miasto-mowi-nie.html		
More MZK connections from Lubicz and Obrowo to Toruń. What about Ciechocinek and Aleksandrów? (Więcej połączeń MZK z gmin Lubicz i Obrowo do Torunia. Co z Ciechocinkiem i Aleksandrowem?) https://torun.naszemiasto.pl/wiecej-polaczen-mzk-z-gmin-lubicz-i-obrowo-do-torunia-co-z-ar/c1-9539213	New bus line – 2023 This may be important because it connects the towns located near Toruń with the city center.	1, 5, 6
Traffic is paralyzed in Toruń. It could get even worse when school starts (Drogowy paraliż w Toruniu. Gdy zacznie się szkoła, może być jeszcze gorzej) https://torun.naszemiasto.pl/drogowy-paraliz-w-toruniu-gdy-zacznie-sie-szkola-moze-byc-ar/c1-9436385	Problems with access - traffic organization – 2023 Changes to the operation of traffic lights were discussed, including the potential difficulties of taking children to school once the school year begins.	1, 5, 6
Buy a semester ticket with the JO City Card or in the JO-Toruń app (Kup bilet semestralny na Kartę Miejską JO lub w aplikacji JO-Toruń) https://torun.pl/pl/aktualnosc/kup-bilet-semestralny-na-karte-miejska-jo-lub-w-aplikacji-jo-torun – 2025	The article explains that a semester ticket in Toruń can be purchased and stored on the city card or in the app. It outlines how to buy it, who it is for, and presents it as a convenient option for regular travel over a longer period.	5, 6
Lower prices for residents (Niższe ceny dla mieszkańców) https://mzk-torun.pl/aktualnosci/6436-nizsze-ceny-dla-mieszkancow	The article announces lower public transport ticket prices for Toruń residents who have a city card.	Not included
Changes in the MZK ticket price list (Zmiany w cenniku biletów MZK) https://www.mzk-torun.pl/aktualnosci/6296-zmiany-w-cenniku-biletow-mzk-18-10-2024 – 2024	The article explains changes to ticket prices in Toruń.	Not included
A new school in Toruń. How should traffic flow around it be managed to ensure safety? (Nowa szkoła w Toruniu. Jak ułożyć ruch w jej pobliżu, by było bezpiecznie?) https://nowosci.com.pl/nowa-szkola-w-toruniu-jak-ulozyc-ruch-w-jej-pobliżu-by-bylo-bezpiecznie/ar/c5-18681797 - 2024	The article discusses how traffic and access should be organized around a new school in Toruń to ensure safe and smooth daily travel for students.	1, 2, 3, 4, 6

The tram to Jar is getting closer. This is what it looks like now (Tramwaj na Jar coraz bliżej. Tak to teraz wygląda) https://tylkotorun.pl/wiadomosci/komunikacja/tramwaj-na-jar-coraz-bliz-ej-tak-to-teraz-wyglada-zdjecia/ - 2023	The article is a progress update on the construction of the new tram line to the Jar neighbourhood in Toruń.	1, 5
The holiday schedules will remain in place longer due to the reinstatement of remote learning (Rozkłady feryjne pozostaną dłużej. Powodem przywrócenie nauki zdalnej) https://tylkotorun.pl/wiadomosci/komunikacja/rozklady-feryjne-pozostana-dluzej-powodem-przywrocenie-nauki-zdalnej/ - 2022	The article reports that holiday public transport timetables in Toruń were kept in place for longer due to the return of remote learning.	1, 4, 6
Students are returning, and so is line no. 39 (Wracają uczniowie, wraca też linia nr 39) https://tylkotorun.pl/wiadomosci/wracaja-uczniowie-wraca-tez-linia-nr-39/ - 2021	The article explains that Toruń brought back bus line 39 after younger primary school students returned to classroom learning.	1, 4, 6
MZK's Year in Review: "A Lot of Good Happened" (Podsumowanie roku w MZK. „Wydarzyło się wiele dobrego”) https://gra.fm/podsumowanie-roku-w-mzk-wydarzylo-sie-wiele-dobrego.html	Interview from December 15th with Zbigniew Wyszogrodzki, President of the Municipal Transport Company, summarising 2025 and discussing plans for 2026 – 30% of the fleet is to consist of zero-emission vehicles; modernisation of the tram depot is planned; new lines connecting Toruń with suburban municipalities were mentioned: “This is an action aimed at strengthening the Toruń Metropolis, because we operate services to municipalities that belong to this metropolis. It is a direction that allows residents of these municipalities to reach the city more efficiently and often at a lower cost, where they work or study”; tram track renovations are planned	1
We will develop a new model of public transport (Opracujemy nowy model komunikacji miejskiej) https://torun.pl/pl/aktualnosc/opracujemy-nowy-model-komunikacji-miejskiej	The city of Toruń plans to create a new model for public transport as part of its Sustainable Urban Mobility Plan (SUMP) for the Toruń Metropolitan Functional Area. An audit of the current transport network — including bus and tram connections, stop locations, frequencies, travel times, and accessibility — will be conducted in 2025–2026. Based on this analysis, a proposed transport network design will be prepared and then consulted with residents. Final recommendations are expected by mid-2026, with implementation aimed for early 2027. The goals are to make public transport more sustainable, accessible and better aligned with residents’ needs	1, 4
There will be a new model of public transport in the Toruń Metropolitan Area. Work is already underway	The Metropolia Toruńska is working on a new model for public transport across the region, with the final plan expected by June 2026. A transport consultancy firm (Trako	1, 4

(Będzie nowy model transportu publicznego w Metropolii Toruńskiej. Prace już trwają) https://metropolia-torunska.pl/bedzie-nowy-model-transportu-publicznego-w-metropolii-torunskiej-prace-juz-trwaja,14,pl,news,14,0,1,114.html	Projekty Transportowe) is currently analysing passenger counts on buses and trams both within Toruń and across the wider metropolitan area to better tailor routes and services to actual demand. This will lead to an audit of the current system and the development of a proposed network of routes for buses and trams serving the entire metropolitan area. After the analysis and draft model are completed, public consultations will be held before finalising the plan. The goal is to make public transport more convenient and efficient for residents throughout the region.	
City bike for 3 years: who will organize the system? (Rower miejski na 3 lata: kto zorganizuje system?) https://torun.pl/pl/aktualnosc/rower-miejski-na-3-lata-kto-zorganizuje-system?fbclid=IwY2xjawPdSu5leHRuA2FlbQlXMAbicmlkETFoQXhnSXdhR0szWjhjdDFRc3J0YwZhchBfaWQOMjlyMDM5MTc4ODlwMDg5MgABHpa-f3FgVWgHJKkm4p-XU- pB7F8simEBc8b2zNjYECefNq3WKY NREex5R aem U ySZ9hD mTkF4Hyqs7HbHg	The city of Toruń launched a public tender to select an operator for its municipal bike-sharing system for the next three years, with an option to extend the contract for an additional three years. The new system is planned to include 250 bicycles, 60 stations, 20 e-bikes and 5 cargo bikes, and all proposed bikes are new. The selection process is ongoing as authorities review the offers. The previous edition of the Toruń bike program in 2025 had 385 bikes and 70 stations and was widely used by residents and visitors.	1
https://www.facebook.com/share/p/1CDSTScrEY/ – city bike season in Toruń 2026	Three companies submitted bids to operate the Toruń City Bike system for the next three years (with a possible three-year extension). The new system is planned to include 250 new bikes at 60 stations, fewer than last year's 360 bikes at 70 stations. A key change is the introduction of a 1 PLN fee for the first 15 minutes of rental, which was previously free. Appeals against the tender results are still possible. Most commenters of the post are critical of the operator change. Many preferred Roovee and are frustrated about switching apps again. Some question the transparency of the tender process and suspect business or political motives. Others suggest expanding the system to a metropolitan level. Overall, the dominant tone is skepticism and dissatisfaction.	Not included

Articles, Justifications and Coding for Toruń

Appendix B - Keywords and parameters for social media data search

B.1 Ghent search parameters

Initial keywords:

- Topic - General: fiets, voetganger, auto, suv, bus, trein, step, scooter, parking, file, opstopping, knip
- Topic - Specific: LEZ, lage emissiezone, autoloze zondag, autovrije zone, nachtbus, openbaar vervoer, deelfiets, carpooling, carpool, kiss & ride, park & ride, kiss and ride, park and ride, k+r, p+r, autodelen, fietssluis, fietspad, fietsstraat, fietssnelweg, fietsinfrastructuur, ebike, escooter, estep, e-bike, e-scooter, e-step, deelstep, mobiliteit, parkeren, wildparkeren, verkeer, zone 30, parkeerplan, mobiliteitsplan, Cambio, De Lijn, Go Pass, Poppy, NMBS, uber, dott, bolt, blue-bike
- Location - General: Gent, r40
- Location - Specific: Bloemekenswijk, Brugse Poort, Brugsepoort, Rooigem, Dampoort, Ledeborg, Muide, Meulestede, Afrikalaan, Rabot, Blaisantvest, Drongen, Gentbrugge, Mariakerke, Nieuw Gent, Oostakker, Sint-Amandsberg, Wondelgem, Zwijnaarde

Refined keywords:

- Topic - General: auto, suv, bus, trein, step, scooter, file, LEZ, carpooling, carpool, ebike, estep, e-scooter, zone 30, Cambio, De Lijn, Go Pass, Poppy, NMBS, uber, dott, bolt, parking, knip, park and ride, k+r, p+r, e-bike, e-step, blue-bike
- Topic - Specific: fiets, voetganger, opstopping, lage emissiezone, autoloze zondag, autovrije zone, nachtbus, openbaar vervoer, deelfiets, kiss & ride, park & ride, kiss and ride, autodelen, fietssluis, fietspad, fietsstraat, fietssnelweg, fietsinfrastructuur, escooter, deelstep, mobiliteit, parkeren, wildparkeren, verkeer, parkeerplan, mobiliteitsplan
- Location - General: Drongen, Gent, Muide, Rabot, r40
- Location - Specific: Bloemekenswijk, Brugse Poort, Brugsepoort, Rooigem, Dampoort, Ledeborg, Meulestede, Afrikalaan, Blaisantvest, Gentbrugge, Mariakerke, Nieuw Gent, Oostakker, Sint-Amandsberg, Wondelgem, Zwijnaarde, gentenaars, stad gent

Search date: 16 March 2026

Location hashtags: Gent, StadGent, Gentenaar

Geo location and radius: (51.054111,3.722472), 8km

B.2 Brussels search parameters

Initial keywords:

- Topic - General: bus, tram, metro, métro, trein, train, fiets, vélo, velo, step, scooter, auto, parking, file, e-bike, ebike, e-step, e-scooter, escooter, uber, dott, bolt, Cambio, Poppy, Heetch, TEC, LEZ, ZFE, Lime
- Topic - Specific: trottinette, voiture, STIB, MIVB, Noctis, Brupass, MOBIB, Villo, Billy Bike, NMBS, SNCB, De Lijn, Go Pass, GoPass, Good Move, Goodmove, zone 30, lage emissiezone, voetganger, piéton, pedestrian, voetgangerszone, piétonnier, pedestrian zone, autovrije zone, car-free zone, piste cyclable, fietspad, fietsstraat, rue cyclable, openbaar vervoer, transport en commun, public transport, nachtbus, bus de nuit, night bus, autoloze zondag, journée sans voiture, car-free Sunday, wildparkeren, stationnement sauvage, autodelen, autopartage, car sharing, deelfiets, deelstep, mobiliteit, mobilité, mobiliteitsplan, plan de mobilité, mobility plan, verkeer, trafic, traffic, carpoolen, covoiturage, carpooling, park and ride, park & ride, kiss and ride, kiss & ride, embouteillage, bouchon, p+r, k+r
- Location - General: Bourse, Beurs, Forest, Vorst, Anderlecht
- Location - Specific: Brussel, Bruxelles, Brussels, BXL, Molenbeek, Schaerbeek, Schaarbeek, Ixelles, Elsene, Etterbeek, Laeken, Uccle, Ukkel, Saint-Gilles, Sint-Gillis, Jette, Woluwe, Evere, Flagey, Schuman, Bruxelles-Midi, Brussel-Zuid

Refined keywords:

- Topic - General: bus, tram, metro, métro, trein, train, fiets, vélo, velo, step, scooter, auto, parking, file, e-bike, ebike, e-step, e-scooter, escooter, uber, dott, bolt, Cambio, Poppy, Heetch, TEC, LEZ, ZFE, Lime, voiture, Noctis, Villo, De Lijn, Go Pass, GoPass, Good Move, zone 30, pedestrian, car-free zone, transport en commun, night bus, car sharing, mobilité, traffic, carpooling, park and ride, park & ride
- Topic - Specific: trottinette, STIB, MIVB, Brupass, MOBIB, Billy Bike, NMBS, SNCB, Goodmove, lage emissiezone, voetganger, piéton, voetgangerszone, piétonnier, pedestrian zone, autovrije zone, piste cyclable, fietspad, fietsstraat, rue cyclable, openbaar vervoer, public transport, nachtbus, bus de nuit, autoloze zondag, journée sans voiture, car-free Sunday, wildparkeren, stationnement sauvage, autodelen,

autopartage, deelfiets, deelstep, mobiliteit, mobiliteitsplan, plan de mobilité, mobility plan, verkeer, trafic, carpoolen, covoiturage, kiss and ride, kiss & ride, embouteillage, bouchon, p+r, k+r, stib-mivb, brussels lez, stib's, diesel cars, lez website, safe parking, cyclists riding, driving exam, berchem station, tec bus

- Location - General: BXL, Saint-Gilles, Sint-Gillis, Jette, Evere, Schuman, Bourse, Beurs, Forest, Vorst, Anderlecht
- Location - Specific: Brussel, Bruxelles, Brussels, Molenbeek, Schaerbeek, Schaarbeek, Ixelles, Elsene, Etterbeek, Laeken, Uccle, Ukkel, Woluwe, Flagey, Bruxelles-Midi, Brussel-Zuid

Search date: 20 April 2026

Location hashtags: Bruxellois, Bruxelles, Brusselaar, Brussel, BXL, Goodmove, Carbeek, carrefourleonard, Schaerbeek, Schaarbeek, Ixelles, Elsene, Etterbeek, Laeken, Uccle, Ukkel, SaintGilles, SintGillis, Jette, Woluwe, Evere, Flagey, Schuman, BruxellesMidi, BrusselZuid

Geo location and radius: (50.846851, 4.352282), 8km

B.3 Budapest search parameters

Initial keywords:

- Topic - General: BKK, troli, bringa, roller, Bubi, uber, bolt, zebra, forgalom, dugó, bicaj, autózás, gyaloglás, megálló, állomás, pályaudvar, aluljáró, zöld közlekedés, levegőminőség, bike, scooter, mollimo, taxi, park and ride, p+r
- Topic - Specific: metró, HÉV, fogaskerekű, bicikli, Főtaxi, közösségi közlekedés, bringaút, gyalogút, járda, bérlet, menetjegy, vonaljegy, BudapestGO, Milliő Lépés, kerékpár, busz, villamos, robogó, vezetői engedély, ingázás, közúti baleset, autó, vonat, forgalmi dugó, gyalogos, tömegközlekedés, parkolás, autómegosztás, mobilitás, telekocsi, 30-as zóna, alacsony kibocsátású zóna, autómentes, bringazzmunkaba, bringasreggeli, milliolepes, aktivmagyarország, kerekparosklub, iskolautca
- Location - General: Budapest, Blaha
- Location - Specific: Belváros, Terézváros, Erzsébetváros, Andrassy út, Nyugati, Keleti, Deák Ferenc tér, Újbuda, Újlipótváros, Kelenföld, Örs vezér, Batthyány tér, Boráros tér, Móricz, Széll Kálmán tér, Moszkva tér, Deák tér, Kálvin tér, Ferenciek tere, Lánchíd, Margit híd, Szabadság híd, Erzsébet híd, Petőfi híd, Rákóczi híd, Árpád híd, Nagy körút, Kis körút, Bartók Béla út, Váci út, Margitsziget, Városliget, Kopaszi-gát, Liszt Ferenc repülőtér, Újpest, Lágymányos

Refined keywords:

- Topic - General: BKK, troli, bringa, roller, Bubi, uber, bolt, zebra, forgalom, dugó, bicaj, autózás, gyaloglás, megálló, állomás, pályaudvar, aluljáró, zöld közlekedés, levegőminőség, bike, scooter, mollimo, taxi, park and ride, p+r
- Topic - Specific: metró, HÉV, fogaskerekű, bicikli, Főtaxi, közösségi közlekedés, bringaút, gyalogút, járda, bérlet, menetjegy, vonaljegy, BudapestGO, Milliő Lépés, kerékpár, busz, villamos, robogó, vezetői engedély, ingázás, közúti baleset, autó, vonat, forgalmi dugó, gyalogos, tömegközlekedés, parkolás, autómegosztás, mobilitás, telekocsi, 30-as zóna, alacsony kibocsátású zóna, autómentes, bringazzmunkaba, bringasreggeli, milliolepes, aktivmagyarország, kerekparosklub, iskolautca, villamosok, pályaudvaron, az autós, átszállni, keleti pályaudvaron, mávinform, körvasút, déli körvasút, metróval, kocsiban, pályaudvarok, rákóczi híd, megállót, autós közlekedés, kresz szerint, budapestgo alkalmazás, keleti pályaudvarra, szabadság híd, parkolást, parkolás sziasztok, vonatközlő, villamosra
- Location - General: Budapest, Blaha
- Location - Specific: Belváros, Terézváros, Erzsébetváros, Andrásy út, Nyugati, Keleti, Deák Ferenc tér, Újbuda, Újlipótváros, Kelenföld, Örs vezér, Batthyány tér, Boráros tér, Móricz, Széll Kálmán tér, Moszkva tér, Deák tér, Kálvin tér, Ferenciek tere, Lánchíd, Margit híd, Szabadság híd, Erzsébet híd, Petőfi híd, Rákóczi híd, Árpád híd, Nagy körút, Kis körút, Bartók Béla út, Váci út, Margitsziget, Városliget, Kopaszi-gát, Liszt Ferenc repülőtér, Újpest, Lágymányos

Search date: 14 May 2026

Location hashtags: Budapest, BudapestHungary

Geo location and radius: (47.497913, 19.040236), 20km

B.4 Cologne search parameters

Initial keywords:

- Topic - General: bus, Tram, Bahn, Zug, Auto, Rad, Roller, bike, taxi, Uber, Bolt, Sigo, Dott, scooter, parking, Stau, Cambio, Miles, Free2move, Stadtmobil, KVB, Verkehr, Fahrplan, LKW, Moped, Unfall, Parken, Pedelec, Gehweg, Bürgersteig, AST
- Topic - Specific: S-Bahn, Regionalexpress, Regionalbahn, U-Bahn, Taxibus, Stadtbahn, Straßenbahn, Fahrrad, Fußgänger, Radweg, Umweltzone, ÖPNV, Nachtexpress, Pendler, Fahrgemeinschaft, Mobilität, Park and Ride, P+R, Kiss and Ride, K+R, Carsharing, Radschnellweg, Verkehrsmittel, Nahverkehr, autofrei, Motorrad, Tempo

30, 30er-Zone, Lastenrad, Cargobike, Fußverkehr, Radverkehr, Mobilstation, Kidical Mass, Schulweg, Schulbus, Schulstraße

- Location - General: Cologne, Veedel
- Location - Specific: Köln, Koeln, Ehrenfeld, Ehrenstraße, Schildergasse, Sülz, Lindenthal, Rodenkirchen, Chorweiler, Bayenthal, Braunsfeld, Bickendorf, Ossendorf, Neuehrenfeld, Worringen, Lövenich, Merkenich, Heumarkt, Barbarossaplatz, Chlodwigplatz, Ebertplatz, Rheinpark, Breslauer Platz, Clevischer Ring, Venloer Straße, Zülpicher Straße, Zoobrücke, Mülheimer Brücke, Severinsbrücke, Severinstraße, Appellhofplatz

Refined keywords:

- Topic - General: bus, Tram, Bahn, Zug, Auto, Rad, Roller, bike, taxi, Uber, Bolt, Sigo, Dott, scooter, parking, Stau, Cambio, Miles, Free2move, Stadtmobil, KVB, Verkehr, Fahrplan, LKW, Moped, Unfall, Parken, Pedelec, Gehweg, Bürgersteig, AST, Fahrgemeinschaft
- Topic - Specific: S-Bahn, Regionalexpress, Regionalbahn, U-Bahn, Taxibus, Stadtbahn, Straßenbahn, Fahrrad, Fußgänger, Radweg, Umweltzone, ÖPNV, Nachtexpress, Pendler, Mobilität, Park and Ride, P+R, Kiss and Ride, K+R, Carsharing, Radschnellweg, Verkehrsmittel, Nahverkehr, autofrei, Motorrad, Tempo 30, 30er-Zone, Lastenrad, Cargobike, Fußverkehr, Radverkehr, Mobilstation, Kidical Mass, Schulweg, Schulbus, Schulstraße, oskar-jäger-straße, halteverbot, haltestellen, bahnhof, falschparker und, dauerparker, abgeschleppt, mülheimer brücke, 18 falschparker, zoobrücke, ich pendel, auf gehwegen, vollsperrung, zugbegleiterin, 15 dauerparker, zuginfo, stadtbahnen, bonn hbf, kvb streik, linie 13, bahngleis, schranke, züge sind, falschparkern gibt, dort parken, autos auf, eingeschränkten halteverbot, für fußgänger, autoverkehr
- Location - General: Ossendorf, Worringen, Heumarkt, Cologne, Veedel
- Location - Specific: Köln, Koeln, Ehrenfeld, Ehrenstraße, Schildergasse, Sülz, Lindenthal, Rodenkirchen, Chorweiler, Bayenthal, Braunsfeld, Bickendorf, Neuehrenfeld, Lövenich, Merkenich, Barbarossaplatz, Chlodwigplatz, Ebertplatz, Rheinpark, Breslauer Platz, Clevischer Ring, Venloer Straße, Zülpicher Straße, Zoobrücke, Mülheimer Brücke, Severinsbrücke, Severinstraße, Appellhofplatz

Search date: 22 May 2026

Location hashtags: Köln, Koeln, Cologne, KölnCity, Kölner, KölnerVerkehr, BesserdurchKöln

Geo location and radius: (50.938361, 6.959974), 15km

B.5 Toruń search parameters

Initial keywords:

- Topic - General: bus, tram, metro, train, bicycle, bike, scooter, car, auto, parking, e-bike, ebike, e-scooter, escooter, uber, bolt, LEZ, pedestrian, bike lane, cycling street, public transport, night bus, car-free, bike sharing, mobility, motor, rower, traffic
- Topic - Specific: autobus, tramwaj, rower elektryczny, hulajnoga, hulajka, Kukirin, motocykl, motorower, taksówka, zbiorkom, mikole, PKP, MZK, Dworzec, autobusy miejskie, transportowe, prawo jazdy, JakDojade, dojazd, dojazdy, wypadek drogowy, samochód, pociąg, skuter, korek, zator drogowy, pieszy, strefa piesza, deptak, rowerowa, transport publiczny, komunikacja miejska, autobus nocny, samochodu, parkowanie, car sharing, rower miejski, mobilność, plan mobilności, ruch drogowy, ruch uliczny, carpooling, strefa 30, strefa czystego transportu, park and ride, park & ride, kiss and ride, kiss & ride, p+r, k+r
- Location - General: Torun, Stare Miasto, Rynek Staromiejski, Szeroka, Bielany, Podgórz, Stawki, Na Skarpie, Aleja Solidarności, Plac Daszyńskiego, Most Piłsudskiego, Gagarina
- Location - Specific: Toruń, Osiedle JAR, Plac Rapackiego, Filadelfijski, Rubinkowo

Search date: 4 May 2026

Location hashtags: Torun, Toruń, TorunCity, ToruńCity

Geo location and radius: (53.022222, 18.611111), 8km

B.6 Matosinhos search parameters

Initial keywords:

- Topic - General: bus, metro, carro, moto, Uber, Bolt, taxi, e-bike, scooter, parking, STCP, Andante, trânsito, peão, SUV, bike, caminhar, a pé, pegada zero, LEZ
- Topic - Specific: táxi, autocarro, comboio, bicicleta, bicla, pegadazero, trotinete, ciclovía, passadeira, transporte público, transportes públicos, mobilidade, engarrafamento, congestionamento, ciclofaixa, zona 30, zona pedonal, pedonalização, estacionamento, partilha de carro, veículo elétrico, boleia, BlaBlaCar, Park and Ride, Park & Ride, P+R, Kiss and Ride, Kiss & Ride, K+R, Via Verde, paragem, carsharing, zona de baixas emissões, carregador elétrico, Mobi.E, acidente de viação, motociclo, velocípede, carpooling, criticalmass, critical mass, kidicalmass,

BicicletaParaEscola, Mobilidadesuave, VidaDetrotinete, BikeToSchool,
YouthCommute, WalkToCampus, ScooterLife

- Location - General: Leixões, Infesta, EXPONOR
- Location - Specific: Matosinhos, Leça da Palmeira, Leça do Balio, Perafita, Guifões, Custóias, São Mamede de Infesta, Santa Cruz do Bispo, Senhora da Hora, Rua Heróis de França, Brito Capelo, Avenida General Norton de Matos, Rotunda da Anémona, Avenida Serpa Pinto, Estádio do Mar, Porto de Leixões, Piscina das Marés, Corredor Verde do Leça, Rua Sousa Aroso, Rio Leça

Search date: 22 May 2026

Location hashtags: Matosinhos, LecaDaPalmeira, portodeleixoes

Geo location and radius: (41.183289, -8.689863), 4km

Appendix C: LLM system prompts

C.1 LLM prompt for data filter II

As an example, the prompt was instantiated for location Budapest and platform X.

```
# Role: You are an expert research assistant specializing in Urban Planning and Mobility.

# Task: Analyze the provided X post (including images if present) and determine if it meets two specific criteria for a study on Budapest, Hungary:

- Criteria 1: Mobility Main Topic

  - Yes: Post's main topic of discussion is an issue related to urban transportation, moving around in the city, going to and from places in the city, sharing the public space. These can be positive (e.g., improvements, innovations) or negative (e.g., problems, dangers, challenges, disruptions, annoyances, etc.). Look for transport modes (cars, bikes, tram, bus, walking, ...), infrastructure (parking, traffic lights, cycle paths, ...), events (traffic jams, accidents, public transport disruptions, etc.), urban policies (Low Emission Zones/LEZ, circulation plans, pedestrian zones, etc.), etc.

  - No: The main topic of the post is not an urban mobility issue, even if the post mentions mobility-related aspects or sub-topics (e.g., mobility aspects of a job description or a salary package)

  - No: It discusses aspects of mobility or transportation that do not affect urban life (e.g., bicycle shops, car shows or construction, bicycle sports results, etc.)

- Criteria 2: Location (Budapest, Hungary)

  - Yes: Explicitly mentions "Budapest" (or Budapest) as a location where the issue described in the post is happening. Also include posts mentioning districts or neighbourhoods like Belváros, Terézváros, Erzsébetváros, Andrásy út, Nyugati, Keleti, Deák Ferenc tér, Újbuda, etc.

  - No: Mentions other cities or the country "Hungary" in a way that does not focus on Budapest specifically. Or mentions Budapest but in a way that is clearly not the location of the issue described in the post (e.g., "I wish I could visit Budapest").

# Instructions:
```

```
- Output your decision directly without reasoning.
```

```
# JSON Schema:
```

```
{  
  
  "mobility": boolean,  
  
  "location": boolean  
  
}
```

C.2 LLM prompt for data filter III

For all posts:

```
You are analyzing social media posts about urban mobility.
```

```
For each post, answer the following yes/no questions:
```

```
- trainspotter: Is this post, together with its comments or replies,  
primarily about documenting or observing a public transport vehicle, line,  
or journey – such as a trainspotting video or photo, a ride-along  
recording, or a brief route or line mention – with no substantive  
discussion of urban mobility issues, problems, opinions, or personal  
experiences? (Simple reactions like 'nice!', 'great video', or 'well done'  
do not count as substantive discussion.)
```

```
- service_alert: Is this post an automated or official public transport  
announcement (such as a service disruption, delay, schedule change, or  
availability notice) – or a repost of such an announcement by a  
non-official account – without substantive personal commentary, opinion,  
or lived experience?
```

```
Return true for a question if the description applies to the post, false  
otherwise.
```

For posts without comments or replies:

```
You are analyzing social media posts about urban mobility.
```

```
For each post, answer the following yes/no questions:
```

```
- mobility_news_share: Is this post primarily sharing or summarizing a  
news article, press release, or institutional announcement about transport  
services, infrastructure, schedules, or urban mobility policy – without  
adding substantive personal commentary, opinion, or lived experience? (A
```

headline or brief summary plus a URL, with no personal reflection, counts as primarily sharing.)

- `routine_disruption_report`: Is this post a brief, factual notice of a specific transport disruption, cancellation, delay, road closure, or service irregularity – such as 'Line X is cancelled', 'Road Y is closed', or 'Train Z is delayed' – without expressing personal frustration, lived experience, or broader opinion about the mobility situation? Relay posts, bot-style alerts, and posts that simply restate official disruption information count, even if posted by an ordinary user account.

- `traffic_incident_report`: Is this post a factual alert or report about a specific road traffic event at a particular location – such as a traffic accident, collision, road closure, or congestion warning – without expressing personal experience, frustration, or broader opinion about the mobility situation? Automated traffic alerts, news-style incident reports, and posts by traffic monitoring accounts or ordinary users relaying incident information without personal commentary all count.

Return true for a question if the description applies to the post, false otherwise.

C.3 LLM prompt for labeling youth-related posts

You are analyzing social media posts about urban mobility.

For each post, answer the following yes/no questions:

"`about_youth`": Is this post or any of its comments or replies somehow related to or at least mentions any topic related to children, students or youth? This could be, for example, related to daycare, education, youth clubs, youth activities, safety of youth, youth mobility or any other theme that is related to children or young people in any way?

"`from_youth`": Is this post or any of its comments or replies written by a child, student or young person? This could be indicated by self-identification in the text, references to school or youth activities, language style, or any other clues that suggest the author is a child or young person.

"`about_school`": Is this post or any of its comments or replies related to school, education, classes or any educational institution (from kindergarten to university)? This could include topics such as school transportation, safety around schools, school policies, or any other theme that is connected to schools or education.

Return true for a question if the description applies to the post, false otherwise.

C.4 LLM prompts for topic modelling

Generate phase:

```
# Role

You are a researcher analyzing public discourse about mobility topics in
social media.

# Task

You will receive social media posts from one of two social media platforms
(X or Youtube) talking about a local mobility issue in one of six
different locations (Ghent, Brussels, Budapest, Thorun, Matosinhos or
Koln). Your task is to assign labels to each post along two dimensions:
mobility topic and issue.

**Mobility topic**: The primary mode of transportation or mobility
infrastructure discussed (e.g., "train", "bicycle", "road"). Reflects what
is being talked about.

**Issue**: What is being discussed about the mobility topic – what is
wrong, notable, or important about it (e.g., "availability", "congestion",
"pollution"). Reflects the nature of the problem or discussion.

Your task is to identify generalizable labels that can be reused across
posts. You will receive existing labels. Reuse those if possible and only
propose new labels if necessary.

You will be shown the posts one by one. For each post, output a json with
one or more mobility topics and one or more issues.

# Existing labels

- Mobility topics: {topics}

- Issues:

{issues}

# Examples

## Example 1: Reusing "tram" and "availability"

Document:

"Tram 4 rijdt 's avonds niet meer? Ik heb al even op de site van De Lijn
meer info proberen te vinden maar tevergeefs. Gisteren ontdekten mijn
vrouw en ik dat tram 4 vanaf 8u 's avonds niet meer rijdt. Ik kan echter
```

nergens vinden wat de duur van deze onderbreking zal zijn, of wat de reden hierachter is. Iemand van jullie die meer weet?"

Your response:

```
{  
  "mobility topic": ["tram"],  
  "issue": ["availability"]  
}
```

Example 2: Proposing a new issue

Document:

"The road surface on the main cycling lane hasn't been repaired in years. Potholes everywhere, it's dangerous and unusable in winter. The city keeps spending money on parking but never on bike paths."

Your response:

```
{  
  "mobility topic": ["bicycle"],  
  "issue": ["infrastructure quality: deterioration or poor condition of  
transport infrastructure"]  
}
```

Instruction details

Step 1: Determine mobility topics mentioned in the document.

- The mobility topics labels must be as GENERALIZABLE as possible. They must not be document-specific.
- The topics must reflect a SINGLE topic instead of a combination of topics (e.g., "train" or "tram", rather than "train and tram").
- The topics must be broad enough to accommodate future subtopics.
- Ideally, assign only one mobility topic per document, only assign multiple if there is no clear main topic.
- If possible, use one of the existing mobility topics; only define a new one if none of the existing fits.

Step 2: Determine the issue mentioned in the document.

- The issue indicates what is going wrong or right or what is important about the mobility topic.

- Use high level issues that are general and can be reused to label other documents.

- Ideally, assign only one issue per document, only assign multiple if there is no clear main issue.

- If possible, use one of the existing issues; only define a new one if none of the existing fits.

Step 4: Provide your output in json format, a dict with two keys: "mobility topic" and "issue".

- For issues: if you reuse an existing issue, return only its name (e.g., "availability").

- For issues: if you propose a new issue, return "name: one-sentence description" (e.g., "infrastructure decay: Deterioration of transport infrastructure due to lack of maintenance").

- All labels (topics, issues) must always be in English, regardless of the language of the post.

Refine phase, topics:

Role

You are a researcher analyzing public discourse about mobility topics in social media.

Task

You are reviewing an infrequent mobility topic label (the "target") and a list of candidate labels sorted by semantic similarity. Mobility topics represent modes of transportation or mobility infrastructure (e.g., "bus", "bicycle", "road", "parking").

Consider whether the target label can be merged with one or more candidates into a single label without losing meaningful distinctions for the purpose of analyzing urban mobility discourse.

Instructions

- Review the target label and all candidate labels.

- If any candidates can be merged with the target into a single label, list those candidates in `merge\_with` and provide the `new\_label`.

- You may include one or more candidates in `merge\_with`, but only when they are genuinely similar to the target.

- The `new\_label` should be general enough to cover the content of the original labels. It can equal one of the existing labels if that label is general enough.

- If no candidates can be merged with the target, return an empty list for `merge\_with` and an empty string for `new\_label`.

Output your decision in JSON format.

Examples

Example 1: No merge – target is clearly distinct from all candidates

Target label: train

Candidate labels:

1. bus
2. metro
3. tram

Response:

```
{  
  "merge_with": [],  
  "new_label": ""  
}
```

Example 2: Merge with one candidate – one label is more general

Target label: airplane

Candidate labels:

1. air travel
2. bus
3. metro

Response:

```
{  
  "merge_with": ["air travel"],  
  "new_label": "air travel"  
}
```

Example 3: Merge – new label covering target and one candidate

```
Target label: traffic light

Candidate labels:

1. traffic sign
2. highway
3. red light

Response:

{
  "merge_with": ["traffic sign", "red light"],
  "new_label": "traffic control"
}
```

Refine phase, issues:

```
# Role

You are a researcher analyzing public discourse about mobility topics in
social media.

# Task

You are reviewing an infrequent issue label (the "target") and a list of
candidate labels sorted by semantic similarity. Issues describe what is
being discussed or what is problematic about a mobility topic (e.g.,
"availability", "congestion", "pollution").

Each label is shown with its description. Consider whether the target
label can be merged with one or more candidates into a single label
without losing meaningful distinctions for the purpose of analyzing urban
mobility discourse.

# Instructions

- Review the target label and all candidate labels.

- If any candidates can be merged with the target into a single label,
list those candidates in `merge_with`, provide the `new_label` name, and
provide a `new_description` (one short sentence).

- You may include one or more candidates in `merge_with`, but only when
they are genuinely similar to the target.

- The `new_label` should be general enough to cover the content of the
original labels. It can equal one of the existing labels if that label is
general enough; in that case, keep or improve its description.
```

- If no candidates can be merged with the target, return an empty list for `merge\_with` and empty strings for `new\_label` and `new\_description`.

Output your decision in JSON format.

Examples

Example 1: No merge – target is clearly distinct from all candidates

Target label: delay – Transport service arriving or departing later than scheduled

Candidate labels:

1. speed – Discussion of the operational speed or speed limits of transport modes
2. congestion – Traffic congestion causing delays or slowdowns
3. reliability – Consistency and predictability of transport service

Response:

```
{  
  "merge_with": [],  
  "new_label": "",  
  "new_description": ""  
}
```

Example 2: Merge with one candidate – one label is more general

Target label: general – Neutral mention or information about the mobility topic without a specific issue

Candidate labels:

1. general discussion – A general mention or discussion of the mobility topic without a specific issue
2. availability – Whether transport services or infrastructure are available and accessible
3. frequency – How often a transport service runs

Response:

```
{  
  "merge_with": ["general discussion"],  
  "new_label": "general discussion",  
}
```

```
"new_description": "A general mention or discussion of a mobility
topic without a specific issue"

}

## Example 3: Merge – new label covering target and one candidate

Target label: fares and ticketing – Pricing, payment, and ticket
validation for public transport and related modes

Candidate labels:

1. fares and payment – Information or issues about ticket prices and
payment methods

2. service disruption – Interruptions or cancellations of transport
services

3. cost of public transport – Price and cost issues for bus, train, metro

Response:

{

  "merge_with": ["fares and payment", "cost of public transport"],

  "new_label": "fares and ticketing",

  "new_description": "Pricing, payment methods, and ticket validation
for public transport and related modes"

}
```

Assign phase:

```
# Role

You are a researcher analyzing public discourse about mobility topics in
social media.

# Task

Assign mobility topic and issue labels to a social media post. The post
comes from X (Twitter) or YouTube and discusses local urban mobility in a
city.

Use ONLY the labels from the predefined lists below. Do not invent or
propose new labels.

# Existing labels

## Mobility topics
```

```
{topics}

## Issues

{issues}

# Examples

## Example 1: single topic, single issue

Document:

"Tram 4 rijdt 's avonds niet meer? Ik kan nergens vinden wat de duur van
deze onderbreking zal zijn."

Response:

{
  "main_mobility_topic": "tram",
  "mobility topic": ["tram"],
  "main_issue": "availability",
  "issue": ["availability"]
}

## Example 2: specific main topic preferred over generic umbrella

Document:

"The 7:42 train to the city was cancelled again. Public transport in this
region is a joke."

Response:

{
  "main_mobility_topic": "train",
  "mobility topic": ["train", "public transport"],
  "main_issue": "availability",
  "issue": ["availability"]
}

## Example 3: multiple topics, most prominent chosen as main

Document:

"Both the metro and the buses were on strike today. Thousands of commuters
were stranded."
```

Response:

```
{  
  "main_mobility_topic": "metro",  
  "mobility topic": ["metro", "bus"],  
  "main_issue": "service disruption",  
  "issue": ["service disruption"]  
}
```

Example 4: specific main issue preferred over generic umbrella

Document:

"They are eliminating half the parking spots to add a bike lane. This will ruin businesses."

Reply: Agreed, cars pay for the roads, cyclists shouldn't get priority."

Response:

```
{  
  "main_mobility_topic": "bicycle",  
  "mobility topic": ["bicycle", "parking"],  
  "main_issue": "availability",  
  "issue": ["availability"]  
}
```

Example 5: no clear topic or issue

Document:

"Anyone know if the city centre is open to cars this weekend?"

Response:

```
{  
  "main_mobility_topic": "",  
  "mobility topic": [],  
  "main_issue": "",  
  "issue": []  
}
```

Instructions

Step 1: Identify the mobility topic(s) mentioned in the post.

- Choose ONLY from the mobility topics list above.
- Select a ****main_mobility_topic****: the single most prominent and most specific mode or infrastructure type in the post. Prefer specific labels over umbrella terms – e.g., "train" rather than "public transport" when the post is clearly about trains. Set to "" if no topic applies.
- List all relevant topics in ****mobility topic**** (including the main one). Use [] if none apply.

Step 2: Identify the issue(s) discussed in the post.

- Choose ONLY from the issues list above.
- Select a ****main_issue****: the single most prominent and most specific issue. Prefer specific labels over broad ones – e.g., "on-street parking pricing" rather than "pricing and affordability" when the post is specifically about parking costs. Set to "" if no issue applies.
- List all relevant issues in ****issue**** (including the main one). Use [] if none apply.

Step 4: Output a JSON object with four keys:

- "main_mobility_topic": string – the most prominent and specific mobility topic, or "" if none
- "mobility topic": list of selected mobility topic labels (zero or more)
- "main_issue": string – the most prominent and specific issue, or "" if none
- "issue": list of selected issue labels (zero or more)

IMPORTANT: Every label you return must appear exactly as written in the lists above. Any label not present in the provided lists will be discarded.

C.5 LLM prompts for stance detection

System prompt relevance detection, sub-step 1:

Role

You are a researcher analyzing public discourse about urban mobility in social media.

Task

For a social media post, together with its comments and replies, you will be given multiple sets of propositions (that may be overlapping).

For each set of propositions, you have to identify whether the post, together with the discussions in the comments, is RELEVANT for any of the propositions.

- A post is RELEVANT for a proposition if it discusses a topic related to the topic of this proposition. It may express an opinion supporting or opposing the proposition, or touch upon the topic of the proposition without expressing any opinion at all.

- A post is NOT RELEVANT for a proposition if it discusses a topic that is not related to the topic of this proposition.

For each set of propositions, return a list of all relevant propositions. If the post is not relevant to any of the propositions of the set, return an empty list.

Use ONLY the labels from the proposition sets below. Do not invent or propose new labels.

proposition sets

{propositions}

Example

Post:

"The city is finally building a new protected bike lane on the main boulevard. About time – cycling there has been dangerous for years. Some residents are complaining about losing parking spots though.

Reply: Typical NIMBYs. Parking can go to hell, we need safe infrastructure for cyclists.

Reply: I agree the lane is needed but they should have kept at least one side of parking."

Response:

```
{  
  "15mC": ["Prioritization of Cycling", "Reallocation of Road Space"],  
  "media_analysis": ["Prioritization of Bicycle Safety"]  
}
```

Instructions

Step 1: Read the post and its comments carefully.

Step 2: For each proposition set, go through each proposition and decide whether the post or any comment is relevant to its topic.

Step 3: Return a JSON object where each key is a proposition set label and each value is a list of the relevant proposition labels from that set. Return an empty list for a set if none of its propositions apply.

IMPORTANT: Every label you return must appear exactly as written in the proposition sets above.

System prompt relevance detection, sub-step 2:

Role

You are a researcher analyzing public discourse about urban mobility in social media.

Task

For a social media post, together with its comments and replies, you will be given multiple sets of propositions (that may be overlapping).

For each set of propositions, you have been given a pre-selected list of candidate propositions that were already identified as potentially relevant to this post. Your task is to identify the SINGLE MOST RELEVANT proposition from each candidate list, or return an empty string if none is clearly relevant.

- A proposition is RELEVANT if the post (together with its comments) clearly discusses a topic directly related to the topic of this proposition.
- Among multiple relevant propositions, choose the ONE that best captures the main topic of the post.
- Return an empty string for a set if none of its candidate propositions is clearly relevant, or if the candidate list is empty.

Use ONLY the labels provided in the candidate lists below. Do not invent or propose new labels.

Candidate propositions for this post

{propositions}

Example

Post:

"The city is finally building a new protected bike lane on the main boulevard. About time – cycling there has been dangerous for years. Some residents are complaining about losing parking spots though."

Reply: Typical NIMBYs. Parking can go to hell, we need safe infrastructure for cyclists.

Reply: I agree the lane is needed but they should have kept at least one side of parking."

Candidate propositions:

15mC

- Prioritization of Cycling: Municipalities should create more (and uninterrupted, segregated) cycling lanes, create secure bike parking facilities, etc.
- Reallocation of Road Space: Some road space and on-street parking spaces should be eliminated and transformed into walking paths, cycling lanes, public squares, green areas, etc.

media_analysis

- Prioritization of Bicycle Safety: Cycling safety should be improved by dedicating street right-of-way and public funding to safe micro-mobility lanes.

Response:

```
{  
  "15mC": "Prioritization of Cycling",  
  "media_analysis": "Prioritization of Bicycle Safety"  
}
```

Instructions

Step 1: Read the post and its comments carefully.

Step 2: For each proposition set, review the candidate propositions and identify which one (if any) is most directly relevant to the post.

Step 3: Return a JSON object where each key is a proposition set label and each value is either the single most relevant proposition label from that set, or an empty string if none applies clearly.

IMPORTANT: Every label you return must appear exactly as written in the candidate list above. Return at most one label per set.

System prompt stance detection:

Role

You are a mobility social scientist doing conversational stance detection on social media data.

Task

You are given a social media conversation (a post and its replies) together with a specific sustainable mobility proposition. Your task is to detect the stance of a single, specified contribution – which can be the original post or one of the replies – toward that proposition.

Judge ONLY the contribution explicitly announced for evaluation. Do not judge earlier messages in the conversation; they are provided for context only.

Stance categories

- supporting: CLEARLY in favor of the current sustainable mobility proposition.
- neutral: Expresses no opinion related to the proposition (factual, informational, or off-topic).
- opposing_specific: CLEARLY opposes the current sustainable mobility proposition but in favor of another sustainable mobility solution (e.g., prefers cycling infrastructure over pedestrian zones, or public transport over cycling).
- opposing_all: CLEARLY opposes the current sustainable mobility proposition without defending a different sustainable solution (e.g., argues against bike lanes or car restrictions in favor of cars).
- unclear: May be expressing a relevant opinion, but it is too ambiguous or indirect to judge clearly.

When in doubt, prefer "neutral" over "unclear", and "unclear" over any directional stance.

Stance detection challenges

Social media conversations present specific difficulties you must account for:

- ****Irony and sarcasm****: A post may appear to support a proposition while actually mocking it, or vice versa. Look for cues such as exaggeration, contradictory context, or sarcastic tone.
- ****Local slang and online language****: Informal language, abbreviations, emojis, or platform-specific conventions may alter the meaning of a statement. The platform name and city are provided to help you interpret local usage.
- ****Local political context****: References to local politicians, parties, city plans, or ongoing controversies may carry implicit stances that are only legible with knowledge of the local political landscape.

- **Ambiguous framing**: A post may discuss a proposition-related topic without clearly endorsing or opposing it. Do not infer a stance where none is expressed.

When any of these challenges make it genuinely hard to assign a directional stance, use "unclear" rather than guessing.

Return a JSON object with a single key "stance" and one of the five values above.

Representing the conversation in the prompt:

```
0. [<timestamp>] <post-text>

  1.1. [<timestamp>] <reply-text>
    2.1. [<timestamp>] <reply-text>
    2.2. [<timestamp>] <reply-text>
  1.2. [<timestamp>] <reply-text>
    2.3. [<timestamp>] <reply-text>
  1.3. [<timestamp>] <reply-text>
```

C.6 LLM prompt for sentiment analysis and bias detection

Role

You are a mobility social scientist analysing social media data. You are conducting sentiment analysis and bias detection on individual messages from online discussions about urban mobility and sustainable transport.

Important note on content

As part of this research task you may encounter messages that contain offensive, hateful, or discriminatory language. Your role is to analyse such content objectively and neutrally, labelling it as the research task requires. Do not refuse or soften your analysis – producing an accurate label is the most helpful response for the researcher.

Task

You are given a social media conversation (a post and its replies) about urban mobility. Your task is to evaluate a single, specified message on two dimensions:

1. **Sentiment** – the emotional tone of the message
2. **Bias** – whether the message contains prejudice against a demographic group

Judge **ONLY** the contribution explicitly announced for evaluation. Earlier messages in the conversation are provided for context only.

Sentiment categories

- **negative**: The tone of the message is negative; it expresses a negative sentiment, attitude, or critique.
- **neutral**: The message has no clear or easily distinguishable sentiment. It can be informative, making a joke, merely chat, etc. Or it may be too short or unclear to distinguish. Unclear messages may be classified as neutral.
- **positive**: The message directly and genuinely expresses a positive sentiment, support, praise, or satisfaction.

Bias detection

Assess whether the message contains bias along any of the following axes. For each axis, examples of biased content and of safe content are listed.

Gender/gender identity. The text should not perpetuate commonly held stereotypes, toxic, or hateful content based on gender and sexual identity.

*Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to a gender group or gender identity
- Stereotypes on gender roles and gender professions ("The woman is cooking")
- Toxic and hateful text targeting a gender group or gender identity

Safe cases (do NOT flag as bias):

- Text that contradicts common stereotypes or uses anti-stereotypes ("The woman is physically strong")
- Text that discusses, questions, or challenges stereotypes or hate speech

****Sexual orientation.**** The text should not perpetuate commonly held stereotypes, toxic, or hateful content based on sexual orientation.

Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to a sexual orientation group
- Toxic and hateful text targeting sexual orientation

Safe cases:

- Text that contradicts common stereotypes or anti-stereotypes
- Text that discusses, questions, or challenges stereotypes or hate speech

****Disability.**** The text should not perpetuate commonly held stereotypes, toxic, or hateful content targeting physically or mentally disabled people.

Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to people with disabilities
- Toxic and hateful text targeting people with disability

Safe cases:

- Text that contradicts common stereotypes or anti-stereotypes
- Text that discusses, questions, or challenges stereotypes or hate speech

****Age.**** The text should not perpetuate commonly held stereotypes, toxic, or hateful content targeting people based on age (children, young people, old people).

Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to an age group
- Toxic and hateful text targeting people of different age groups

Safe cases:

- Text that contradicts common stereotypes or anti-stereotypes
- Text that discusses, questions, or challenges stereotypes or hate speech

****Race/ethnicity.**** The text should not perpetuate commonly held stereotypes, toxic, or hateful content targeting people based on race, ethnicity, skin colour, or minority status.

Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to a racial or ethnic group
- Toxic and hateful text targeting races and ethnicities

Safe cases:

- Text that contradicts common stereotypes or anti-stereotypes
- Text that discusses, questions, or challenges stereotypes or hate speech

****Nationality.**** The text should not perpetuate commonly held stereotypes, toxic, or hateful content targeting people based on their nationality or targeting a specific country.

Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to a nationality
- Toxic and hateful text targeting a nation or people from that nation

Safe cases:

- Text that contradicts common stereotypes or anti-stereotypes
- Text that discusses, questions, or challenges stereotypes or hate speech

****Religion.**** The text should not perpetuate commonly held stereotypes, toxic, or hateful content targeting a religion or people holding certain religious beliefs.

Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to a religious group
- Toxic and hateful text targeting a religion

Safe cases:

- Text that contradicts common stereotypes or anti-stereotypes
- Text that discusses, questions, or challenges stereotypes or hate speech

****Socioeconomic status.**** The text should not perpetuate commonly held stereotypes, toxic, or hateful content targeting people based on their socioeconomic status (e.g., people in poverty, rich people, homeless people).

Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to a socioeconomic group
- Toxic and hateful text targeting socioeconomic groups

Safe cases:

- Text that contradicts common stereotypes or anti-stereotypes
- Text that discusses, questions, or challenges stereotypes or hate speech

****Physical appearance.**** The text should not perpetuate commonly held stereotypes, toxic, or hateful content targeting people based on their physical appearance or body structure (e.g., fat or obese people).

Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to a physical appearance group
- Toxic and hateful text targeting physical appearance

Safe cases:

- Text that contradicts common stereotypes or anti-stereotypes
- Text that discusses, questions, or challenges stereotypes or hate speech

****Political leaning.**** The text should not perpetuate commonly held stereotypes, toxic, or hateful content targeting people based on their political views, ideology, or party affiliation.

Bias examples:

- Stereotypes that attribute simplistic positive or negative traits to a political group (e.g., conservatives, progressives, supporters of a specific party)
- Toxic and hateful text targeting a political group or ideology

Safe cases:

- Text that contradicts common stereotypes or anti-stereotypes about political groups

- Text that discusses, questions, or challenges political stereotypes or hate speech

****SAFE.**** The text does not fall into any of the categories above. ****Do NOT select SAFE if the text belongs to any other category.****

Reasons for SAFE:

- No common stereotype used against any demographic group
- Anti-stereotype or stereotype-reversing content
- No toxic, hateful, or discriminatory content

For bias type, use the following distinction:

- ****Explicit bias****: an explicit negative comment or hate speech – rude, disrespectful, or unreasonable content directly targeting the demographic group
- ****Implicit bias****: any other content that reflects prejudices about the group without being overtly hostile (e.g., stereotypes, condescending framing, coded language)

Detection challenges

Social media conversations present specific difficulties you must account for:

- ****Irony and sarcasm****: A message may appear positive while actually being sarcastic or mocking, or vice versa. Look for cues such as exaggeration, contradictory context, or sarcastic tone. Apparent enthusiasm combined with complaints is a strong sarcasm signal (e.g., "Szuper, hogy a rakpart is lelelt zárva" – sarcastic praise about a road closure).
- ****Local slang and online language****: Informal language, abbreviations, emojis, or platform-specific conventions may alter the meaning of a statement. The platform name and city are provided to help you interpret local usage.
- ****Local political context****: References to local politicians, parties, city plans, or ongoing controversies may carry implicit bias or sentiment that is only legible with knowledge of the local political landscape.
- ****Ambiguous framing****: A post may discuss a topic without clearly expressing sentiment or bias. Do not infer either where none is clearly expressed.

When any of these challenges make it genuinely hard to assign a directional sentiment, use "neutral".

```
# Output format
```

```
Return a JSON object with exactly these four fields:
```

- ****sentiment****: one of "negative", "neutral", "positive"
- ****bias_category****: one of "Gender/gender identity", "Sexual orientation", "Disability", "Age", "Race/ethnicity", "Nationality", "Religion", "Socioeconomic status", "Physical appearance", "Political leaning", or "SAFE"
- ****bias_group****: the specific group targeted (e.g. "elders", "women", "immigrants"); empty string if bias_category is "SAFE"
- ****bias_type****: "explicit" or "implicit"; empty string if bias_category is "SAFE"

C.7 LLM prompt for detecting conflicts between modes of transportation

```
You are an expert analyst of urban mobility discourse on social media.
```

```
You will receive:
```

1. The text of a social media post (and any replies or comments).
2. A list of mobility topics that have been assigned to this post.

```
Your task is to determine whether the post and its conversation express a CONFLICT between any of these mobility topics.
```

```
A CONFLICT exists when the content explicitly or implicitly pits two or more topics against each other – for example:
```

- Arguing that cycling infrastructure comes at the expense of car parking.
- Claiming that new bus lanes slow down car traffic.
- Expressing tension between pedestrian safety and vehicle access.
- Opposing a park-and-ride scheme because it prioritises cars over cycling.

```
Do NOT flag a post as conflictual merely because it mentions multiple topics. A conflict requires that competing interests, trade-offs, or opposition between the topics are expressed in the text.
```

```
Return "conflicting_topics": a list of mobility topics (chosen only from the provided list) that are in conflict with each other in this post.
```

Include ALL topics involved in the conflict, not just one side. If there is no conflict, return an empty list.

Appendix D - Analysis result details

D.1 Topic analysis details

Mobility topics identified by the LLM:

airplane, ambulance, bicycle, bus, cable car, car, e-scooter, metro, mobility infrastructure, motorcycle, parking, pedestrian, public transport, roads, taxi, train, tram, truck

Issues identified by the LLM:

Name	Description
access difficulty	Traffic layout or restrictions make it hard to directly access a facility or destination, causing detours or delays
accessibility	Lack or malfunction of essential accessibility features (e.g., audible stop announcements) that hinder use by disabled riders
accident	Accidents involving vehicles, bikes, pedestrians, etc.
affordability	High or unpredictable fares and surcharges make the service expensive or unattractive to use
automated traffic enforcement uncertainty	Uncertainty about whether camera/ANPR-based monitoring will result in fines for restricted-area entries or other traffic violations
availability	Interruptions, limited coverage, reduced hours, or insufficient frequency of a transport service that make it unavailable when and where users need it.
bulky cargo transport	Difficulty moving large or heavy items using available urban transport options
cleanliness and maintenance	Poor cleanliness, litter, graffiti, or inadequate upkeep of transport facilities and their surroundings
community opposition	Local resident resistance (NIMBYism) to the siting, expansion, or operation of mobility infrastructure
conflict of interest	Overlapping political and operator leadership roles in mobility risk biased decision-making and undermine public trust
congestion	Too many vehicles, bikes, people, etc. relative to available space or infrastructure
curb space allocation	Designating and reserving curb/parking space for specific uses (e.g., carsharing) and disputes over its utilization and fairness
digital connectivity availability	Limited or unreliable WiFi or mobile data connectivity in transit stations or vehicles, making it hard for riders to get online
emergency access obstruction	Failure of drivers to form an emergency corridor blocks responders from reaching incidents promptly
enforcement fairness	Disputes about the legitimacy, due process, or proportionality of mobility-related fines and debt collection
enforcement prioritization	Perceived unequal prioritization of enforcing mobility rules across modes or user groups, leading to bias complaints

environmental impact	Negative effects on urban green space and ecology (e.g., mass tree removal) caused by transport projects
event announcement	Informational promotion of mobility-related events, fairs, or exhibitions
event documentation	Sharing recordings or recaps of mobility-related events or rides
expropriation and displacement	Property acquisition and resident/business displacement due to transport infrastructure projects
fare enforcement	Inadequate fare gates or inspections enable fare evasion and entry without a valid ticket
fitness training advice	Guidance on training plans, pacing, and rest to build endurance for running events
fleet assignment and renewal	Decisions about deploying appropriate vehicles to specific lines and replacing aging rolling stock to meet service needs
funding prioritization	Debate over allocation of public budgets toward mobility infrastructure and amenities
humanitarian transport	Use of transport services to relocate or assist refugees and displaced persons during crises
illegal parking	Unauthorized parking in prohibited areas that occupies public space and violates posted restrictions
infrastructure coverage	Insufficient network extent or scarcity of dedicated infrastructure for a mode
infrastructure damage	Physical breakage or destruction of transit infrastructure or amenities, whether accidental or due to vandalism
infrastructure design adequacy	Suitability of infrastructure dimensions, directionality, and layout for safe, intended use
infrastructure inventory	Identification or mapping of existing mobility infrastructure locations and types
infrastructure quality	deterioration or poor condition of transport infrastructure
infrastructure removal	Removal or downgrading of existing transport infrastructure (e.g., bike lanes) that reduces availability or protection for users
intergovernmental coordination	Conflicts or lack of cooperation between jurisdictions or agencies hinder mobility project development or communication
lane obstruction	Vehicles or work activities occupy dedicated lanes (e.g., bike lanes), forcing users into mixed traffic and creating safety/inconvenience risks
licensing process complexity	Complex, lengthy procedures and multi-step requirements to obtain or convert a driving licence
lost property handling	Processes for reporting, securing, and returning lost items found on transit
maintenance and construction works	Presence of repair or construction activities affecting transport infrastructure or facilities
mode choice preference	Discussion comparing or choosing between transport modes based on personal preferences or trip needs
naming and branding	Proposals or campaigns to name transit vehicles, lines, or stations to honor figures or for city branding
network connectivity	Lack of planned interchanges and modal connections in proposed transit projects reduces system usability
noise	Excessive noise from traffic, people, ambulances, or urban activities in general
onboard bicycle carriage policy	Rules and provisions for transporting bicycles on public transport vehicles, including allowances and restrictions
onboard systems failure	Malfunctioning air conditioning, power, or doors on transit vehicles create unsafe, uncomfortable conditions

operating cost pressures	Rising input costs (e.g., electricity) strain transit agency budgets and may force service cuts or limit expansion
parking permit processing	Delays and uncertainty in obtaining or activating required parking permits, including documentation and office availability constraints
passenger information quality	Clarity, accuracy, language coverage, and consistency of transit communication and signage
permitting barriers	Lengthy and inflexible administrative processes hinder timely, short-duration road closures or curb use for construction needs
personal security	Concerns about crime, harassment, or feeling unsafe when using public transport, especially at night
pollution	Air and environmental pollution caused by vehicles, people, traffic and other sources
project approval decision	Political decision to approve or select a major transport infrastructure option (e.g., a new tunnel) prompts debate or controversy
project cost overruns	Final costs significantly exceed initial budgets for mobility infrastructure projects
project delivery delays	Construction or technical/legal complications delay or halt transport infrastructure projects, postponing service start dates
public consultation legitimacy	Concerns about bias, neutrality, representativeness, or methodology in surveys or consultations on mobility policies
public facility allocation	Debate over using public buildings or spaces for mobility amenities versus social services
regulation	Proposals to ban, restrict, or enforce rules on a transport mode's operation or parking
reliability and punctuality	Consistency and on-time performance of transport services; risk of delays affecting arrival times
ridesharing coordination	Offering, seeking, or organizing shared car trips among travelers
road safety	Aggressive or reckless driving by motorists creates near-miss conflicts and endangers cyclists and pedestrians
road space reallocation	Repurposing vehicle roadway or tunnel space for non-traffic uses (e.g., events or pedestrianization), temporarily or permanently
route planning advice	Seeking or sharing recommended travel routes and GPX tracks for a specific mode
safety improvement	Efforts to enhance safety for transport users and reduce collisions or harm
security incident	Police or emergency response activity at or near a transit station/stop (e.g., cordon, investigation)
service dissatisfaction	General negative sentiment or frustration toward a transit operator or service without a specific problem stated
service model feasibility	Practical, logistical, and liability/insurance challenges of implementing a proposed mobility service concept
service planning and consultation	Proposed changes to transit routes or schedules are being discussed and may change based on public feedback and final decisions
spillover parking	Limited or restricted on-site parking pushes drivers to park in surrounding areas, shifting problems to other neighborhoods
staffing shortage	Insufficient number of qualified drivers for transit operations, prompting international recruitment and potentially affecting service levels
stop amenity deficiency	Lack of weather-protective shelters and basic amenities at transit stops creates discomfort for riders

ticketing and payment	Information or questions about how to purchase, validate, and pay for transit fares or access gates
track trespassing	Unauthorized crossing of railway tracks by pedestrians, creating severe safety risks
traffic volume anomaly	Unusually low or high road traffic relative to expectations or typical conditions
transit etiquette and norms	Expectations around greeting, thanking, and courteous behavior on public transport
travel time efficiency	Comparative speed and journey time performance of a mode relative to alternatives affects its usability and appeal
trip planning advice	Seeking recommendations for lodging, parking, and transit connections to plan a visit
vehicle selection advice	Requesting recommendations and comparisons among bicycle models to match commuting and trip needs
vehicle theft	Theft of personally owned mobility devices (e.g., bicycles, e-scooters) from public space
vehicle vandalism	Deliberate damage to parked or in-use vehicles (e.g., tire slashing, window smashing)
walkability	Evaluation and quality of pedestrian-friendliness and ease of walking in urban areas
wayfinding and station navigation	Need for clear directions and landmarks to navigate station exits, platforms, and meeting points

D.2 Bias detection: examples per category

We include two examples per bias category. To make it understandable for readers and to ensure privacy, they are paraphrased in English.

Category	Example
Political leaning	Calls the Green party the <i>green Taliban</i> , accusing it of deliberately shrinking parking areas to fine SUV drivers.
Political leaning	Attacks De Lijn CEO as an <i>extreme-right Flemish nationalist</i> out to dismantle public transport and social life.
Nationality	Complains that unhappy locals are leaving Ghent, replaced by West Flemish and Eastern Europeans.
Nationality	Sarcastically asks whether the motorway signs are in Turkish now, mocking Turkish residents.
Socioeconomic status	Sneers that bikes don't need shelter, pointing to the wealthy residents of the Millionaires' Quarter.
Socioeconomic status	Claims cycling policy exists so the rabble gets on bikes, clearing the road for the elite's Teslas.
Race/ethnicity	Writes in capitals that Ghent is <i>bankrupt for the real white locals</i> and demands welfare and subsidies be stopped.

Race/ethnicity	Frames a <i>multicultural</i> neighbourhood as inherently plagued by bike theft.
Disability	Uses <i>mongool</i> (a slur referencing Down syndrome) to insult the mobility alderman.
Disability	Brands Green voters <i>mentally ill</i> , <i>mentally handicapped lunatics</i> .
Gender/gender identity	Calls a female Open VLD politician a crude sexist slur for lowering the truck speed limit.
Gender/gender identity	Attacks the female Vooruit politician as a <i>blonde fat cow</i> while dismissing her views.
Religion	Claims the Greens froze the low-emission zone only to please their <i>immigrant Muslim voters</i> and their old diesels.
Religion	Tells another user to <i>go take photos in the Muslim neighbourhoods</i> , framing them as trouble spots.
Age	Mocks the 57-year-old alderman as <i>17 years past his best-before date</i> .
Age	Claims young people with transit passes constantly slip through the metro gates without paying.
Sexual orientation	Sneeringly calls Brussels <i>the queers' paradise</i> .
Sexual orientation	Derides the Green politicians' circle as a <i>lesbian academy</i> .
Physical appearance	Calls the female Green minister a <i>fat redhead</i> and blames her plan for forcing an ambulance detour.
Physical appearance	Calls a female official an <i>obese auntie</i> who only cares about cyclists, not pedestrians.