

THE LABOUR MARKET ASPECTS OF SUSTAINABLE URBAN MOBILITY PLANS – AN EMPIRICAL RESEARCH ON COUNTY SEATS IN HUNGARY

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Abstract: This paper presents exploratory research into the development of theories and practices for Sustainable Urban Mobility Plans (SUMPs). Current economic shifts, technological advancements, energy, and climate policy objectives all create conflicts among the pillars of sustainability, which are often concentrated in cities. The urban population is continually increasing, and cities, like county seats, serve as key centres for the economy, education, health, and tourism. Consequently, their role in the labour market is crucial not only for residents within the city but also for those in surrounding settlements. However, this results in increased travel within and beyond city limits, raising additional social, economic, and environmental challenges. Therefore, planning the transport system, reviewing existing plans, and adapting them to changing circumstances are essential. The study examines labour market issues within the Sustainable Urban Mobility Plans of Hungary's county seats, using a content analysis methodology. The findings highlight that labour market concerns are especially significant in SUMPs, with a strong emphasis on collaboration with labour market stakeholders. The research also identified that, beyond common features, there are distinct issues that present valuable opportunities for further investigation. Although the study includes a case study conducted in Hungary, the findings may be relevant in many countries.

Keywords: content analysis, Hungary, labour market, mobility, Sustainable Urban Mobility Plan, urban areas

1 INTRODUCTION

Over recent decades, countries worldwide have experienced substantial population growth, along with increasing urbanisation and urban sprawl. Forecasts indicate that by 2070, 58% of the global population will live in cities, and this proportion is likely to be higher in Europe. This trend is already influencing economic, social, and environmental development (UN-Habitat, 2022). The expanding role of cities in the economy and labour market has led to urban areas and regions securing a prominent position in the regional policies of EU Member States (Kovács, 2017). Peri-urban

zones are expanding across Europe, now covering as much built-up area as cities (Piorr et al., 2011). Urban mobility planning must address conflicts among sustainability pillars, such as those arising from limited natural resources and evolving mobility demands. Managing and resolving these conflicting interests often requires seeking compromises; mobility should be assessed from diverse perspectives and viewpoints (Russo and Rindone, 2023).

By the end of the twentieth century, one consequence of social change was the separation of homes and workplaces, which increased transport demands. Similar to most European nations, this also occurred in Hungary, leading the working population to travel more within and between settlements (Takács, 2019; Káposzta, 2018). Furthermore, urban transport is currently undergoing significant changes, driven by technological advances, economic shifts, and social developments (e.g., digital transformation, Mobility as a Service (MaaS), Logistics as a Service (LaaS), carpooling, ridesharing, and self-driving vehicles). Consumer behaviour has also changed markedly; people now seek solutions as swiftly as possible (e.g., same-day deliveries). These trends and transformations continually influence supply and demand (de la Cruz et al., 2023).

The study examines development policies aimed at promoting sustainable urban and peri-urban mobility in Hungarian county seats, with a focus on labour market links. It covers literature on the SUMP concept and the labour market roles of Hungarian cities. Using content analysis, it investigates SUMPs as strategic documents. The goal is to understand how cities plan mobility to align with sustainability and labour market goals, filling a research gap on Hungarian county seats. The paper concludes with key findings, implications, and suggestions for future research.

2 THEORETICAL BACKGROUND

The most expressive definition of SUMP is: “a strategic plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life. It builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles.” (EPSUMP, 2020, p. 9). SUMPs aim to reshape transport planning by advancing sustainability objectives, safeguarding the urban environment, and prioritising citizens in strategic planning. This approach can offer significant benefits but also presents challenges in many countries (Jordová and Brůhová-Foltýnová, 2021). Another approach, SUMPs aim to create a balance between private car use and other modes of transport (Gadžo et al., 2024), thereby enhancing quality of life, environmental efficiency, and promoting economic and social development (Turoń, 2025).

However, numerous studies emphasise that future research should explore the extent of collaboration involved in the design and implementation of SUMPs (van der Craats et al., 2025). Currently, there is no universally accepted route to attain sustainable mobility. Policies and practices at international, national, and local levels offer numerous concepts, design models, and sophisticated governance, regulatory,

and technological tools, but they also face numerous shortcomings and challenges (Turoń, 2025).

Sustainable Urban Mobility Planning is a strategic, integrated approach to achieving sustainable mobility. The process involves analysing and interpreting the past, present, and future across various policy areas and a wide range of stakeholders (EPSUMP, 2020). During strategic planning, it is essential to consider both long-term and short-term goals. In the short term, the main aim is to respond effectively to changes, while in the long term, the focus is on facilitating effective planning, operation, and development (Politis et al., 2024). Challenges in planning include limited infrastructure in peri-urban and rural areas, weak transport resilience to threats, and issues for vulnerable groups (EGUM, 2025).

Although the coordination of SUMP preparation is mainly the responsibility of the local government, it can and does involve participation from various levels of government. Besides public administration actors, almost anyone can get involved, including healthcare institutions, public transportation providers, private companies, and national transportation agencies. These collaborations can be mutually beneficial (Mladenovič et al., 2022; de la Cruz et al., 2023; Venezia and Gattullo, 2024). Urban transport systems can also be seen as socio-technological systems, so social embeddedness must be considered alongside technological and organisational aspects. The analysis of social and demographic processes should precede the planning process and remain a vital step during the review (Takács, 2019). Co-creation is vital in SUMPs, but engaging all stakeholders early is challenging. It's important to understand each group's interests and to include those who are less able to voice their views. Since SUMPs cover areas beyond city boundaries, regional development principles and documents for surrounding settlements should be taken into account (Munkácsy and Virág, 2020; Szabó, 2021).

An appropriate institutional system is essential during the preparation of SUMPs; however, involving too many actors can be challenging, especially when conflicts of interest exist between them (Okraszewska et al., 2022). Initially, it is essential to determine which organisation will coordinate the process, although a shortage of mobility specialists may hinder this. It is necessary to train versatile, effective professionals who can adapt quickly to different tasks and interpret them comprehensively (CIVITAS, 2023). Besides the fact that transport development involves multiple stakeholders, it is also important to consider the city's image, as changes to the public transport system will impact it. In other words, cities' SUMPs are embedded in unique cultural and institutional contexts (Dömötör et al., 2016; Okraszewska et al., 2022).

During the preparation and implementation of the SUMP, various regulations, laws, and guidelines must be interpreted and integrated into the process. These can include European Union regulations, as well as national, central, and local regulations. SUMPs can coordinate goals across city, regional, and national levels, and, in addition to building sustainable transport, they also encompass well-being, environmental protection, and social equity (UN-Habitat, 2022; Okraszewska et al., 2022; Russo and Rindone, 2023).

Sustainable Urban Mobility Planning is a complex, multi-faceted process that often involves diverse needs and expectations among stakeholders, along with conflicting goals. When developing SUMP, it is also crucial to consider the interests and opinions of disadvantaged groups, ensuring that the final plan effectively addresses their needs (Arsenio et al., 2016). There is relatively limited literature on the implementation processes of SUMP, the emerging challenges, and the effects of partnership agreements, and these areas still require further research. Identifying failed interventions is necessary and unavoidable (Okraszewska et al., 2022). Furthermore, more inclusive governance models and improved data sharing are essential during the planning and review stages (EGUM, 2025).

Overall, several issues affect the planning and implementation phases and should be addressed from the beginning, including identifying and engaging stakeholders, managing concurrent sustainability aspects, and establishing time horizons.

In an ever-changing socio-economic environment, introducing flexibility in employment within local labour markets is crucial, mainly due to unexpected events. An effective mobility system is essential, along with other factors, of course (Hartal et al., 2023; Ďurček et al., 2024). It is also a fundamental principle of mobility planning that designing SUMP solely for the urban area is not enough; they must be developed for the “Functional Urban Area”. In addition to “population density” and “travel to-work flows”, these plans aim to encompass the entire commuting area. One of their goals is “Improving accessibility of transport”, which means enhancing access to employment, services, and education (EPSUMP, 2020). The definition of a functional urban area incorporates a labour market approach, in which employed individuals identify settlements with labour markets integrated into the centre based on flows: a functional urban area consists of a city and its commuting zone. This provides an idea of the extent to which cities influence surrounding settlements from a labour market perspective. However, a key question is to what extent restructuring or developing the transport system contributes to reducing labour market inequalities. Of course, this requires initial data collection, cooperation, and knowledge of mobility trends for each specific group (OECD, 2013; EPSUMP, 2020; EUROSTAT, n.a.).

Furthermore, as a multidimensional concept, urban and local economic resilience also encompasses key elements relevant to the present study. The four closely interconnected pillars form the foundation of resilience, with one pillar being the fulfilment of labour market conditions. This involves, on one hand, increasing labour market participation and, on the other, facilitating resource mobility (UN-Habitat, 2022). A study in Hungary shows cities have good labour indicators but often face labour shortages, partly due to limited spatial mobility (Alpek and Tétits, 2019). Labour market resilience depends on mobility and factors such as distance, wages, job supply and structure, housing prices, living costs, urbanisation, and opportunities for free movement (Káposzta, 2018).

In recent decades, economic activities have shifted to the outskirts of cities and peri-urban areas, benefiting from the availability of large tracts of land and easy access to strategic road networks (Piorr et al., 2011). In Hungary, the population of

large cities is decreasing, while the population of agglomerations is steadily increasing. This is linked to rising commuting (mainly by car), pollutant emissions, and strain on transport infrastructure, which adds high costs for municipalities and organisations involved (Egyensúly Intézet, 2023). Commuting patterns in Hungary are closely related to the settlement structure and the nature of the economic centres in the cities. Often, cities with county rights – especially county seats – attract a large share of the workforce, leading to increased daily commuting (Németh, 2024). The Hungarian labour market is characterised by a dominance of larger cities, with smaller towns playing a limited role as labour market centres. There is significant commuting from these towns to bigger cities (Pirisi et al., 2016).

The Territorial Agenda 2030 also prioritises creating new links between cities and the countryside and elevating existing relationships. One of the key elements is access to various services and opportunities, along with suitable infrastructure. Regional cooperation must be strengthened; a hierarchical system is needed, but it should remain flexible when necessary (Szegvári, 2022). Infrastructure is vital for economic development, but focusing only on physical construction or transport isn't enough, because these systems also serve key social needs (Polyzos and Tsiotas, 2020). However, developing and maintaining an adequate transport network often presents challenges for many large cities in Hungary (Sikos Tomay and Szendi, 2023). Kovács (2017) emphasises that, beyond traditional areas, new fields must emerge in urban research; sustainable urban mobility remains vital but has many unexplored aspects.

3 RESEARCH METHODOLOGY AND DATA

The research analyses accepted and online SUMP of Hungarian county seats using qualitative content analysis, focusing on labour market themes. The documents offer valuable insights, considering each city's unique characteristics and broader environment.

Hungary has 19 counties, but only 15 county seats are included in the sample, as Budapest, the county seat of Pest County, also serves as the country's capital and holds a special status due to this position (Varró and Szalai, 2021). About one-fifth of Hungary's population lives in Budapest, serving as the country's labour, service, and education centre. It is a major tourist spot with a large urban area, and its public transport system is more extensive and complex than other county seats. Three county seats – Nyíregyháza, Székesfehérvár, and Zalaegerszeg – were excluded from the analysis because SUMP is currently not available online.

Figure 1 illustrates the locations of the selected cities, supplemented with the dates of the SUMP, and the number of pages of the analysed documents. These documents are extensive, containing a vast amount of data and information that are only indirectly or not at all related to the current research topic. Information relevant to this article's theme is scattered throughout the documents – some even include a separate labour market chapter – highlighting that content analysis is a valuable

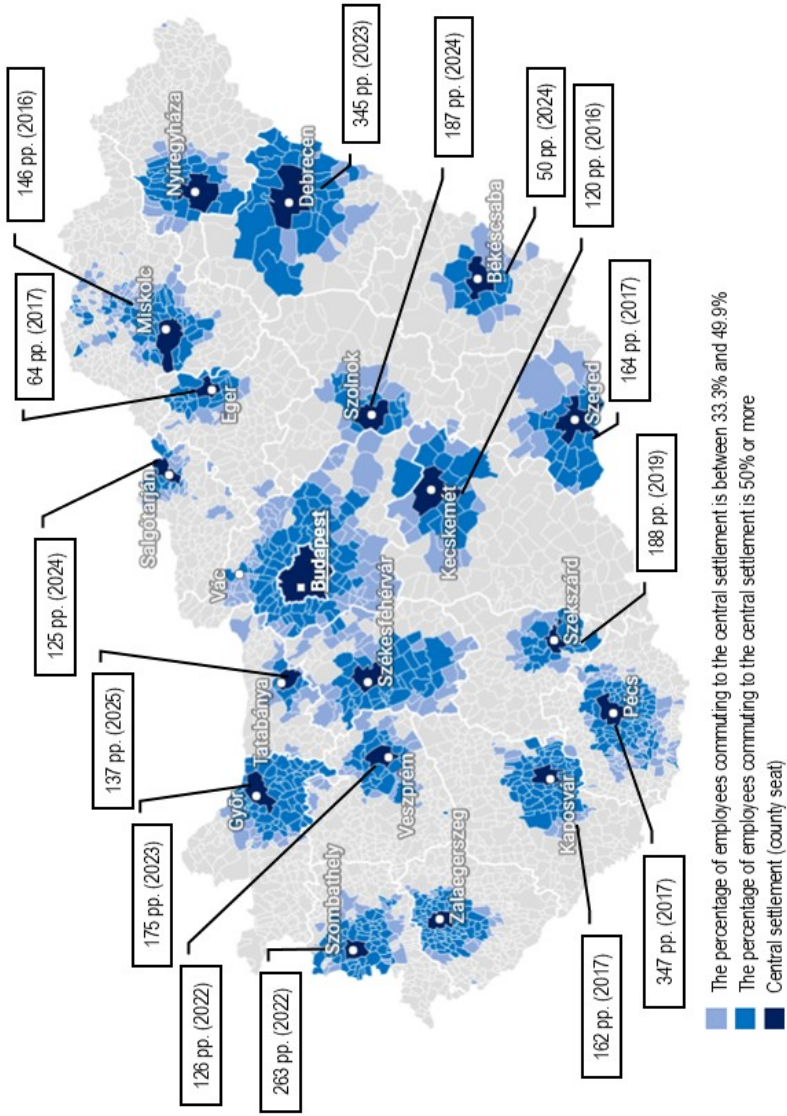


Figure 1 Labour market catchment areas of county seats in Hungary supplemented with the page number and year of publication of the SUMP document. Source: Oeconomus Gazdaságtudató Alapítvány, 2025

research technique here because it is suitable for analysing, understanding meanings, and exploring connections within large texts (Prasad, 2008; Dehghani et al., 2022). However, as later parts of the empirical research support, many cases lack indicators on the subject that would enable evaluation and comparison (Okraszewska et al., 2022).

Although qualitative research is often criticised, the literature still conveys that this method can be highly effective for investigating a new phenomenon (Vears and Gillam, 2022; Vaismoradi et al., 2013), offering an opportunity to explore a chosen area with an open mind (Mwita, 2022). One significant advantage of qualitative research approaches is that they can be utilised when other methods fail to achieve the desired outcomes. Its application is recommended in situations where there is limited knowledge of a complex phenomenon, the phenomenon cannot be examined through simple physical measurements, or when exploring a problem from a new perspective, or when synthesising fragmented current knowledge (Kyngäs, 2020). It is crucial to present the complexity of data within the overall narrative or interpretation, rather than attempting to make things neat and tidy by removing parts that do not fit (Vears and Gillam, 2022). The unique role humans play in the content analysis process is crucial, particularly their ability to bring contextual sensitivity to content (Lewis et al., 2013).

Qualitative methods provide a flexible approach to applying various theoretical approaches and data collection strategies (Hall and Liebenberg, 2024). These methods are popular in the social sciences for mapping change and are effective when three principles – objectivity, a systematic approach, and generalisability – are observed. Evaluation should be based on predetermined criteria, after reviewing all study material, and results should be usable in future or similar research (Prasad, 2008).

In this work, ICA (Inductive Content Analysis) is employed. One of its features is that the codes can evolve throughout data processing, allowing the list to be supplemented and expanded as needed. ICA is not solely descriptive; it also involves interpretation and explanation (Vears and Gillam, 2022). Additionally, this method does not require prior knowledge or research in the subject area, making it suitable for analysing long texts and fragmentary knowledge. It provides the opportunity to identify interesting elements that may not have been anticipated. Consequently, a key aspect of content analysis is to identify relevant units within the text. This is typically achieved by keeping the research question in mind throughout the process, ensuring it is neither too ambiguous nor too extensive (Elo and Kyngäs, 2008). In all cases, the research question helps to narrow and focus the study's purpose. This involves a central question, and sub-questions with more specific meanings may also emerge. When considering the central question, it is essential to remember that “The intent is to explore the complex set of factors surrounding the central phenomenon and present the varied perspectives or meanings that participants hold.” (Creswell, 2009, p. 125). The main question can be framed as follows: How do labour market topics and issues manifest in the SUMP of county seats in Hungary? During the research, no sub-questions were specified; instead, related areas to the main question

were grouped. In subsequent research on the topic, it will be possible to formulate additional, specific questions. Figure 2 illustrates the research process.

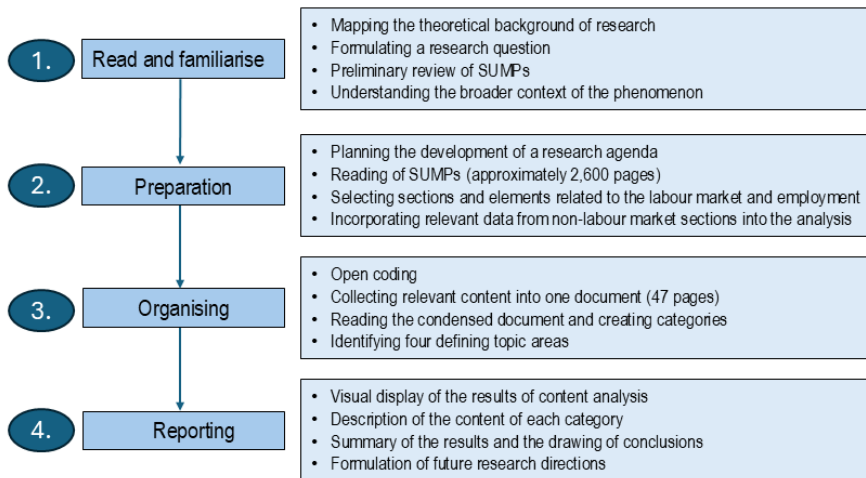


Figure 2 The research Method. Source: Elo and Kyngäs, 2008; Prasad, 2008; Vears and Gillam, 2022; Vaismoradi et al., 2013, own elaboration

4 RESULTS

As highlighted in the theoretical introduction, the need for sustainable mobility and transport systems, and their regulation, arises not only at the international level but also at the national and local levels. Numerous European Union guidelines have been issued (Mozos-Blanco et al., 2018); however, it is also necessary to address the relevant national regulations. Every SUMP examined in this study, without exception, emphasises its link to these documents.

According to the National Transport Infrastructure Development Strategy, alongside making the transport system more efficient and sustainable, it is crucial to enhance demand satisfaction, improve interregional accessibility, and develop public transport (National Transport Infrastructure Development Strategy, 2014). The National Development and Territorial Development Concept also emphasises the significance of interconnected spaces, accessibility, and mobility, particularly labour mobility (National Development and Territorial Development Concept, 2014).

The National Sustainable Development Framework Strategy emphasises the importance of strengthening local economic ties, especially by developing mobility between urban and rural areas, which is also vital for the functioning of the labour market (National Sustainable Development Framework Strategy, 2013). Additionally, each SUMP highlight connections with other local spatial development plans and visions.

Before conducting content analysis, some characteristics are evident: the documents were prepared at different times, often with review documents already in place. Although their lengths vary, this is not closely related to the labour market information content.

Many SUMPs emphasise that the design and transformation of sustainable transport systems are increasingly complex processes. They aim to serve the needs of the city, its districts, and the settlements within its commuting area (Győr SUMP, 2023). Sustainable mobility involves both qualitative definitions and quantitative criteria to be achieved (Pécs SUMP, 2017), adopting a complex and open approach that considers not only the needs of the population but also those of society, the economy, and the environment (Salgótarján SUMP, 2024). A more human-centred design of transport systems seeks inclusion, which fosters support and acceptance (Szekszárd SUMP, 2019). Today, transport is an essential part of daily life, and efficient urban mobility is a fundamental condition for socio-economic development and a key criterion of sustainable development (Kaposvár SUMP, 2017). There is a strong link between sustainability and resilience: a flexible, multimodal transport system relies less on a single mode, enabling quick adaptation to changes (Tatabánya SUMP, 2025).

SUMPs reveal common themes tied to the labour market, like increased individual motorisation and mobility's link to fulfilling basic needs (housing, work, leisure, social ties). They detail alignment with local, regional, and national plans and incorporate survey data (questionnaires, school surveys, employer info). Many also consider the health impacts of transport modifications, relating to mental and physical illnesses. Figure 3 illustrates the core components of this study.

Before analysing the specific documents, it is important to highlight that the roles and attractiveness of individual county seats' labour markets vary. This role shapes decisions about residential options, suburbanisation, and agglomeration patterns. The economic growth of individual cities and their significance in the labour market directly impact commuting patterns and other labour-market-related movements.

The study will primarily rely on the analysed documents, but where necessary, other sources will also be utilised, especially when the analysis highlights differences between the individual cities studied.

4.1 Spatial factors influencing mobility

Cities' natural conditions and history influence settlement patterns, shaping the labour market and transportation. For example, a city's transport network is affected by topography and layout. Salgótarján, in a valley, expanded along topographical lines, creating separate residential and industrial zones that affect commuting patterns (Salgótarján SUMP, 2024). Similarly, Tatabánya grew through the merger of individual settlements, which determined its structure and road network (Tatabánya SUMP, 2025). Border settlements, due to their strategic locations, often include neighbouring country settlements within their commuting areas (Szeged SUMP, 2017; Szombathely SUMP, 2022).

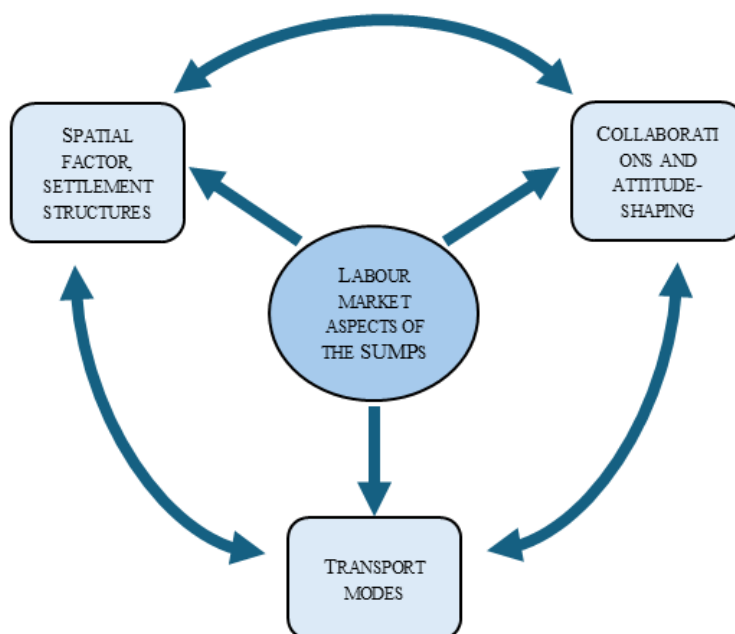


Figure 3 Identified labour market aspects of SUMP. Source: own elaboration

In addition to travelling within the city, SUMP. are also expected to plan for settlements in the urban area, during which they face further challenges affecting the labour market. In the large cities of the Great Hungarian Plain, the proportion of the population living in the outskirts remains significant in some settlements (Békéscsaba SUMP, 2024), and because large cities are less densely located, the commuting area can extend 80-100 km (Szeged SUMP, 2017). The settlement pattern of small villages is also characteristic of many large Hungarian cities, which can be traced back to historical and natural conditions (Szombathely SUMP, 2022). This is mainly typical of western and southern Hungary, including Baranya, Somogy, Zala, and Vas counties, as well as some areas of Veszprém and Tolna counties, and in the border regions of northern Hungary, particularly in Borsod-Abaúj-Zemplén and Hajdú-Bihar counties. Often, the inferior roads do not form a coherent network, creating dead-end villages (Kaposvár SUMP, 2017). In areas with small villages that are little or not functional, the labour-market attraction of the central city is stronger (Pécs SUMP, 2017). Agglomeration settlements near central cities are growing as more people move from cities and smaller villages into these areas within the commuting zone.

Suburbanisation processes significantly influence urban transport planning in Hungary, as the proportion of the urban population is decreasing, with very few ex-

ceptions (e.g., Győr), while the population of surrounding settlements is steadily increasing. The growing number of inhabitants in the agglomeration predicts an increase in suburban mobility (Kecskemét SUMP, 2016; Pécs SUMP, 2017; Szeged SUMP, 2017); however, due to centralised services and workplaces in the city, most traffic is directed towards the city centre and its surroundings (Győr SUMP, 2023). Transport planning is often complicated because public transport routes don't match settlement growth. This causes more people to drive, leading to traffic congestion and dissatisfaction with public transport (Debrecen SUMP, 2023). These patterns are mainly typical of cities that serve as important economic centres, where industrial development is high or growing, e.g., Győr, Kecskemét, Pécs, and Szeged.

There are settlements with low levels of suburbanisation, where a major relocation of the urban population to surrounding areas is not expected in the future. They may even see the rural population moving from zones lacking functions to the city (Kaposvár SUMP, 2017). Besides the slow suburbanisation, often skilled labour migrates from the region to areas with more favourable conditions (Salgótarján SUMP, 2024). This pattern is also common in other regions, leading to population declines in small settlements, which in turn pose difficulties for public transport planning. The working-age population and those who can afford it prefer private transport because public transport services are infrequent. For these villages, maintaining the public transport system might be crucial for the settlement's survival. On the other hand, not everyone can afford individual modes of travel. For older residents and schoolchildren, public transport often remains the only travel option.

Besides organising transport in suburban areas, problematic zones within cities that also impact commuting can be recognised in every county seat without exception. These include the need to travel due to spatially separate functions, such as the separation of traffic-generating facilities (workplaces, schools, shopping centres, etc.) from residential areas, which can lead to a compulsion to travel. This stems from the historical and natural characteristics previously mentioned, which means that the city's transport system is essentially shaped by geographical conditions and the established urban layout (Pécs SUMP, 2017; Debrecen SUMP, 2023). The solution might involve reducing trip lengths, supported by regional development initiatives aimed at developing diverse functions in specific areas (Veszprém SUMP, 2022). It is also beneficial to evenly distribute urban functions and bring them closer together, creating hybrid zones typical of compact cities (Békéscsaba SUMP, 2024). To further reduce high transit traffic, establishing bypass roads and intermodal hubs is also a viable strategy. Most cities have train and bus stations located in the city centre, generating significant inward traffic (Kecskemét SUMP, 2016). It is also common for local and intercity bus stations to be situated near railway stations, though the connection between them is often weak (Salgótarján SUMP, 2024).

The workplace structure is changing, but the transport sector does not always keep pace with these changes (Miskolc SUMP, 2016). Workplaces, industrial parks, and residential areas are spatially separated, and the high traffic demand between them is forced to pass through bottlenecks and inner cities (Veszprém SUMP, 2022). This issue is worsened, as is often the case, by the fact that individual motorised

transport is the only efficient way to travel (Békéscsaba SUMP, 2024). Some proposals that appear in every SUMP include enhancing bus access to economic zones, developing bicycle infrastructure for commuting, and modernising roads.

4.2 Transport modes and the labour market

As mentioned several times, in Hungary, cars have become the main mode of transport for commuting to work. Between the 2011 and 2022 Censuses, the share of commuters using private cars increased from 35 percent to 46 percent. At the same time, the proportion of all other modes of transport declined, with only combined trips remaining approximately unchanged (Mobilissimus, 2025).

Public transport is typically used by a higher percentage of schoolchildren and older citizens than by adults and the middle-aged. Recently, there has been a noticeable change: most adults now prefer to travel by car, mainly for commuting to work, so they are absent from the traveller population (Debrecen SUMP, 2023; Győr SUMP, 2023; Szombathely SUMP, 2022). This is further supported by the latest Census data, which clearly shows this trend. It can be observed in nearly all settlements, with few exceptions, among those commuting between settlements for work (Mobilissimus, 2025).

In many settlements (for example, Kaposvár SUMP, 2017; Szeged SUMP, 2017), commuters from surrounding settlements mostly travel by bus. Still, in public transport, passenger traffic has declined significantly, partly because the car has become the preferred mode of transport for employees, posing challenges for the development and operation of public systems. Issues include declining passenger numbers, revenue losses, development hurdles, and uncertain prospects. On the other hand, there is often a focus on developing car transport options among the population. This is also problematic, as one of the SUMP states (Tatabánya SUMP, 2025), because the road network is already mainly in favour of motorists.

Due to the inferior quality of public transport services, car travel remains the primary mode of transportation (Salgótarján SUMP, 2024); because cars are fast, comfortable, practical, and often double as work tools (Tatabánya SUMP, 2025). Travel habits have undergone considerable changes in recent years beyond commuting to work; many trips are made to destinations far apart multiple times a day – for example, for shopping or to transport children – where public transport is less viable, especially in terms of time efficiency (Szeged SUMP, 2017). Consequently, even when public transport could facilitate commuting, many people still prefer driving because of other daily activities and needs.

The latest available census data (Mobilissimus, 2025) show that, for intra-city travel, cycling and walking are dominant in some Great Plains settlements, although car use remains the primary mode in most large cities. In addition, public transport is available in traditional industrial cities, such as Miskolc, Tatabánya, or Salgótarján, and in other large cities, such as Pécs, Debrecen, Szeged, Eger, or Veszprém.

The use of public transport and soft mobility varies across cities, and this is also linked to the previously mentioned topography and traditions. The historic city centre and diverse topography make pedestrian and bicycle traffic challenging in

many cities (Veszprém SUMP, 2022). In many towns (Eger SUMP, 2017; Pécs SUMP, 2017), the topography is not conducive to cycling; but in cities of the Great Hungarian Plain (for example: Szeged SUMP, 2017; Kecskemét SUMP, 2016; Szolnok SUMP, 2024), the topography supports soft modes of mobility, primarily cycling; but bicycle paths should be extended to all parts of the city and towards surrounding settlements. In many cities, cycling has increased, but those who switched to cycling were mainly former public transport users, not previous car users (Szeged SUMP, 2017). Many cities use their own questionnaires to assess willingness to switch to cycling, yet many people would not prefer this mode even with improvements (Salgótarján SUMP, 2024; Szombathely SUMP, 2022; Tatabánya SUMP, 2025). However, it must be recognised that for many people, travelling to work by bicycle would be unthinkable, especially if they need to take children, carry work equipment, or visit other destinations before or after working hours.

As another potential alternative to car travel, investment in rail-guided systems is also mentioned in the SUMPs, but the topography and urban landscape influence their design. In Hungary, this public transport option is currently available only in a few major cities – Szeged, Debrecen, and Budapest – and there is limited data on its role in the transport system, making its future success unpredictable.

The return on investment remains questionable in all cases, as substantial costs would be linked to these developments. On the other hand, the development of the trail also raises strong sustainability issues (Szombathely SUMP, 2022; Győr SUMP, 2023). In Szeged and its surroundings, rail transport is not a popular mode of daily commuting, but the number of tram-train users among commuters is quite significant (Szeged SUMP, 2017).

It is essential to acknowledge the impact of the COVID-19 pandemic, during which the public transportation system suffered significantly. Due to changes in work patterns and mandatory distancing regulations, many people have shifted to using private transport, mainly cars. The COVID-19 pandemic hit cities when passenger numbers on local public transport were already significantly lower (Győr SUMP, 2023). Unfortunately, several post-pandemic SUMPs indicate that although passenger numbers have increased after the decline, they have not yet returned to pre-pandemic levels. It remains uncertain whether this will change in the future (Debrecen SUMP, 2023; Salgótarján SUMP, 2024; Szolnok SUMP, 2024; Veszprém SUMP, 2022).

4.3 Collaborations and attitude-shaping

Several planning documents emphasise that employers have been engaged through questionnaires and interviews to contribute their experiences and suggestions for the planning and future success of the SUMP. Involving large employers with many employees is essential, as they draw a significant workforce from the city and the surrounding areas.

One key area of collaboration is integrating the employer-organised employee commuting systems into local and intercity bus services (Békéscsaba SUMP, 2024; Kaposvár SUMP, 2017; Salgótarján SUMP, 2024; Veszprém SUMP, 2022; Szom-

bathely SUMP, 2022). As a result of the cooperation several other tools are identified that could enhance the sustainability of the transport system through employer collaboration: workplace mobility programmes, carpooling initiatives, e-bike programmes (Kecskemét SUMP, 2016; Miskolc SUMP, 2016; Pécs SUMP, 2017; Szolnok SUMP, 2024), work time regulation, and flexible start of work (Békéscsaba SUMP, 2024; Debrecen SUMP, 2023; Salgótarján SUMP, 2024; Szolnok SUMP, 2024), “Employers' Forum for Environmentally Conscious Mobility”, co-working workstations and offices (Veszprém SUMP, 2022). Additionally, deploying workplace mobility plans in municipal companies could serve as a model for other employers (Szombathely SUMP, 2022). In post-pandemic SUMPs, forms of work that were not common before, such as working from home, are emerging, reducing travel and requiring greater trust in employees and IT systems (Békéscsaba SUMP, 2024). Interestingly, this was also a goal in previous SUMPs, but the COVID-19 pandemic accelerated this change in the labour market before planned measures could be fully implemented.

Many SUMPs underline that regular and planned communication with employers can serve as a tool for sustainable labour market mobility in the future. In addition, communication between cities is also essential in SUMP-related labour market issues. Debrecen plans to apply lessons from Győr and Kecskemét to its sustainable transport planning, taking into account the impact of the BMW factory, as these cities previously hosted a multinational automotive company. This growth has increased mobility demands and commuters (Debrecen SUMP, 2023). This further reinforces the importance of strengthening ties between cities and urban areas, as well as enhancing multimodal access to employment opportunities (Eger SUMP, 2017). Special organisations should be established to oversee cooperation and planning, ensuring issues are handled effectively, flexibly, and transparently. Without these organisations, there is often redundant work, leading to wasted time and resources. Furthermore, the transport sector is experiencing a labour shortage, making workforce development essential (Békéscsaba SUMP, 2024; Pécs SUMP, 2017; Szombathely SUMP, 2022).

While the examination of future visions and attitude shaping does not always begin with labour market issues, involving employers is important because they generate one of the most significant transport demands. Awareness-raising is also crucial alongside infrastructural developments, as these campaigns and initiatives can lead to a lasting shift in needs. However, this requires sufficient information in both quantity and quality, as emphasised in the plan (Békéscsaba SUMP, 2024). A lack of information or reliance on incorrect data can impede feasibility. Therefore, cities must seek cooperation with employers and their representatives, and take every opportunity to involve labour market actors in the development of the decision-making process.

There are various forms of awareness-raising campaigns, including mobile applications and integrated online interfaces (Debrecen SUMP, 2023), mobility challenges, the traffic role model competition, community meme competitions, the green commuter competition, and tax incentives or city subsidies specifically offered to

participating businesses (Szolnok SUMP, 2024). Sustainable mobility could be linked to a prize draw, among those who complete the mobility questionnaire (Szombathely SUMP, 2022). Unfortunately, these initiatives often occur only once, lack coordination, and end when resources are exhausted (Veszprém SUMP, 2022). However, collaboration with employers can change this, as companies can also become active participants in these initiatives, reaching many people who were not accessible to other organisations during surveys. These initiatives and employer involvement are crucial as motorisation increases, despite the growing use of soft transport modes. Although cyclists and pedestrians mainly use public transport, the declining school-age population – key users of public transport – reduces passenger numbers. This decline, combined with service cuts, may adversely affect the labour market.

5 DISCUSSION

Figure 4 summarises the main lessons learned from the SUMP, focusing exclusively on findings, challenges and proposed solutions relevant to labour market dilemmas and actors.

Often, analysing available data is not enough for planning, and understanding road users' attitudes towards specific modes of transport and future changes can only be achieved through targeted surveys, especially when no other options are available or the data are incomplete (Békéscsaba SUMP, 2024; Tatabánya SUMP, 2025). Therefore, it is crucial not to gather isolated information but to maintain a systematic, pre-planned approach (Szeged SUMP, 2017).

Cities often have SUMP or similar plans, but these need ongoing development and adaptation; additional documents may be required for each travel mode (Loo and du Verle, 2017). Hudoklin and co-authors (2021) note that, in many cases, the national framework is still in its early stages and needs further development. One approach to addressing this may be to incorporate lessons from previous processes and results into future planning (Mladenovič et al., 2022). One of the most significant future challenges is planning costs, primarily determined by recent events such as the COVID-19 pandemic, raw material shortages, and the energy crisis. Budget items are mainly planned in the short term (Debrecen SUMP, 2023), and financing data are based on current information (Eger SUMP, 2017). Among the high-risk factors are increases in investment costs, decreases in own resources, and rising operating costs (Győr SUMP, 2023; Pécs SUMP, 2017; Szeged SUMP, 2017). The enforced reduction of service levels may lead to a further decline in passenger numbers (Szekszárd SUMP, 2019). At present, the actual return seems uncertain, and the practicality of the planned developments remains unclear.

Reduced travel times, the development of comfort and convenience features, and the provision of high-quality transport conditions all contribute to social well-being (Győr SUMP, 2023). Collaborations can reduce the unpredictability of changes driven by the external environment, but these efforts, involving a wide



Figure 4 Challenges in the labour market and potential solutions based on SUMPs. Source: own elaboration

range of participants, need sufficient political support during planning and implementation. In addition, agile and flexible administration is necessary to manage changes (Hudoklin et al., 2021; de la Cruz et al., 2023). It is essential to influence both supply and demand through mobility management tools, which can impact various aspects of the labour market, such as working-hour regulations, commuting patterns, and attitude shaping (Salgótarján SUMP, 2024).

Land use and transport management not only help shape the mobility system but also bolster economic dynamism, social cohesion, and well-being. The SUMP itself can significantly influence the labour market by enhancing entrepreneurial opportunities through improved mobility. The accessibility of a city and the effectiveness of its transport systems fundamentally shape the opportunities and constraints faced by urban areas, with profound consequences. Overall, it can be observed that a “change of rhythm and pace” (Kaposvár SUMP, 2017) is necessary to achieve the goals of sustainable development and competitive, resource-efficient transport systems. The coordination of public transport, the operation of the labour market, and their adaptation to real needs are of paramount importance. Lessons from early phases must be integrated into the system, seeking opportunities and learning from other cities' documents and best practices.

In the case of public transport, keywords such as “negative spiral” (Debrecen SUMP, 2023; Szolnok SUMP, 2024) or “vicious circle” (Győr SUMP, 2023) appear. These indicate a decrease in revenue due to declining occupancy, which in turn leads to a further decline in quality, resulting in a drift away and loss of trust among users of the public transport system.

Overall, the commuting balance of the cities is positive, with more people arriving from surrounding settlements than leaving the city. People commuting to work and school constitute the majority of travellers, with some using public transport, but within cities, most people clearly prefer and use cars to get to work. Overall, it is evident that sustainable mobility is not solely the responsibility of individuals; cities and employers also have a vital role in planning, implementation, and management. Future urban planning must focus on developing transportation systems, city travel, and partnerships with neighbouring settlements. Sharing manuals, studies, and experiences can support this. Besides addressing deficiencies and challenges in infrastructure, greater emphasis should also be placed on cooperation among passenger transport companies (Dömötör et al., 2016).

6 CONCLUSIONS

Based on the literature sources and empirical research, it is obvious that preparing SUMPs is necessary but not sufficient. For sustainable urban and peri-urban mobility, ongoing review and adaptation to changing needs are essential. Without these, the goal of SUMP creation cannot be fully achieved.

One of the best ways to understand the link to the labour market is to recognise that human resources are unevenly distributed across the cities and their surrounding

areas. Examining the locations of employers – especially larger ones – it becomes clear that the county seats dominate the labour market, increasing the need to travel to these cities and their surroundings. Addressing this requires fostering more balanced regional labour-market development, as mobility options also influence trends in the labour market, such as businesses' choice of premises and ongoing changes in settlement patterns. Mobility is a vital component of the economy and society, playing a key role in reducing regional inequalities. However, city features, topography, and other elements of infrastructure – such as natural features and built environment – pose challenges for sustainable transport options like bicycles, electric scooters, walking, and even public transport. Additionally, given the city's historical character and plans, development often involves transforming the cityscape in ways that could significantly alter the city's image.

What is certain is that social well-being and the consideration of intangible benefits should be at least as important as the evident physical advantages. However, in many cases, the public transport system is currently struggling to survive, and it is difficult to think long-term in the ever-changing economic climate, marked by the uncertainty of energy markets, the difficulty in planning costs, and the spread of individual motorisation. The current research can be extended in various directions in the future. It would also be worthwhile to study medium-sized cities in Hungary, as they often have favourable socio-environmental conditions but are unable to develop. One consequence of this is that services and jobs become concentrated in large cities. Additionally, beyond the labour market aspect, many SUMP's also emphasise other traffic-generating factors, which play an essential role in transport planning. It is clear that a development path based solely on labour market criteria is not sustainable; therefore, broader involvement and the joint management of certain turnover-generating factors are essential. In this research, qualitative content analysis was used as the methodology; however, other approaches within the topic area can also offer valuable insights. For example, comparisons across individual countries can be conducted using qualitative analysis, or quantitative methods can be employed using the identified keywords.

While the study primarily focuses on key areas of SUMP's within the Hungarian labour market's structure and trends, its findings and recommendations may have broader applicability. The research aims to contribute to academic knowledge and provide valuable insights for other stakeholders within the wider context.

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Aspekty trhu práce v plánoch udržateľnej mestskej mobility – empirický výskum župných sídel v Maďarsku

Súhrn

Táto štúdia skúma, ako trendy na trhu práce ovplyvňujú plánovanie a implementáciu plánov udržateľnej mestskej mobility (SUMP) v maďarských krajských mestách. S urýchľovaním urbanizácie a s tým, ako sa mestá stávajú kľúčovými centrami ekonomických, vzdelávacích a sociálnych aktivít, rastie význam strategického plánovania dopravy. Výskum zdôrazňuje potrebu prispôbiť plánovanie mobility meniacim sa ekonomickým podmienkam, technologickému pokroku a cieľom udržateľnosti, najmä uprostred rastúcich požiadaviek na dochádzanie a priestorových rozdielov. Plánovanie mestskej mobility v Maďarsku čelí zložitým výzvam v dôsledku oddelenia obytných a komerčných zón, rastúcej závislosti od automobilov a meniacich sa preferencií spotrebiteľov. Štúdia zdôrazňuje, že plány udržateľnej mestskej mobility by sa mali zameriavať nielen na mobilitu na úrovni miest, ale aj na širšie regióny dochádzania, kde je integrácia trhu práce obzvlášť dôležitá.

Teoretický rámec považuje SUMP za strategické dokumenty s viacerými zainteresovanými stranami, ktoré si vyžadujú koordináciu na rôznych úrovniach vlády

a v rôznych sektoroch. Efektívne plánovanie zahŕňa vyváženie okamžitých reakcií s dlhodobými rozvojovými cieľmi. Medzi významné výzvy patrí nedostatočná infraštruktúra v prímestských oblastiach, dopravná chudoba, potreba odolných systémov a konflikt záujmov rôznych zainteresovaných strán. Aspekty trhu práce sú integrované do plánov udržateľnej mestskej mobility (SUMP) prostredníctvom cieľov, ako je zlepšenie dostupnosti dopravy, podpora regionálnej spolupráce a podpora hospodárskej odolnosti.

Výskum využíva induktívnu obsahovú analýzu (ICA) na preskúmanie plánov udržateľnej mestskej mobility (SUMP) z 15 maďarských krajských miest. Táto metóda umožňuje flexibilné kódovanie a interpretáciu, vďaka čomu je vhodná na analýzu rozsiahlych, fragmentovaných textov. Hlavná výskumná otázka skúma, ako sa otázky trhu práce objavujú v plánoch udržateľnej mestskej mobility (SUMP). Zistenia sú rozdelené do troch kategórií: (1) priestorové faktory, (2) spôsoby dopravy a (3) spolupráca a formovanie postojov.

Priestorové faktory, ako sú topografické prvky a historické vývojové vzorce, významne ovplyvňujú mobilitu a prístup na trh práce. Suburbanizácia, oddelenie obytných a priemyselných zón a územne nerovnomerný rozvoj trhu práce generujú značnú dennú dopravu v mestských oblastiach, pričom mnohí dochádzajúci do práce prichádzajú zo vzdialenejších sídiel, ktorým často chýbajú pracoviská a služby. Na riešenie vznikajúcich výziev bolo navrhnutých niekoľko riešení, pričom všetky sa zameriavajú na vyvážený trh práce, rovnomerne rozložený hospodársky rozvoj v priestore a blízkosť rôznych mestských funkcií.

Analýza druhov dopravy odhaľuje dve kľúčové výzvy na trhu práce. Prvou je klesajúca úloha verejnej dopravy, najmä pri cestovaní súvisiacom s prácou, čo je trend, ktorý sa počas pandémie COVID-19 výrazne zhoršil. Druhou sú meniace sa dopravné návyky, ktoré sa zdajú byť rozšíreným trendom ovplyvňujúcim mobilitu pracovnej sily. Mnohé dokumenty zdôrazňujú rozvoj systému verejnej dopravy; existuje však neistota, či to skutočne zvýši počet cestujúcich. Naliehavo žiadajú aj spoluprácu medzi mestami a poskytovateľmi dopravy, ako aj podporu ekologických a šetrných druhov dopravy.

Skúmajú sa rôzne otázky týkajúce sa formovania postojov a spolupráce, pričom sa zdôrazňuje, že takéto partnerstvá a programy ponúkajú dlhodobé riešenia. Širšie zapojenie zamestnávateľov je kľúčové, pretože oslovujú veľkú časť zamestnancov a môžu kontaktovať jednotlivcov, ku ktorým miestne samosprávy alebo iné štátne agentúry nemusia mať prístup. Spolupráca môže navyše podporiť mnohé iniciatívy formujúce postoje s cieľom pozitívne ovplyvniť procesy mobility.

Stručne povedané, maďarské plány udržateľnej mestskej mobility (SUMP) čoraz viac uznávajú faktory trhu práce, ale pretrvávajú nedostatky v implementácii. Na podporu udržateľného rastu miest je nevyhnutné riešiť priestorové nerovnosti, zlepšiť spoluprácu zainteresovaných strán a prispôsobiť dopravné systémy vyvíjajúcim sa pracovným modelom. Je tiež dôležité posúdiť a koordinovať jednotlivé možnosti a plány rozvoja, pretože len tak možno podporiť všetky tri piliere udržateľnosti.