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Literature review on the links between commuting and subjective well-being

Revue de la littérature sur les liens entre les trajets domicile-travail et le bien-être subjectif

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Abstract

Commuting plays an important role in the daily lives of working individuals and affects multiple dimensions of subjective well-being. This article explores the relationship between key commuting characteristics such as duration, mode, and distance and the cognitive, affective, and eudaimonic components of well-being. The existing literature on the relationship between commuting and subjective well-being indicates that long commutes are generally associated with lower life satisfaction due to stress, fatigue, and reduced free time. The mode of transport also influences the commuting experience. Many studies have found that active modes (walking, cycling) are often perceived positively due to their health benefits, while public transport is frequently associated with lower satisfaction levels due to delays and congestion. Satisfaction with public transportation mainly depends on frequency, comfort, and service regularity. Finally, improving transport infrastructure and services could mitigate the negative effects of commuting and promote higher subjective well-being.

Keywords : Commuting ; Subjective Well-Being ; Travel Satisfaction ; Public Transport ; Urban Mobility.

Résumé

Les déplacements domicile-travail jouent un rôle important dans la vie quotidienne de la population active et influencent divers aspects du bien-être subjectif. Cet article examine la relation entre les caractéristiques du trajet, à savoir la durée, le mode et la distance, et les différentes composantes du bien-être subjectif, notamment la composante cognitive, affective et eudémonique du bien-être. La littérature existante sur la relation entre les déplacements domicile-travail et le bien-être subjectif indique que les trajets longs sont généralement associés à une diminution de la satisfaction de vie en raison du stress, de la fatigue et de la réduction du temps libre. Le mode de transport influence également l'expérience du déplacement. De nombreuses études ont trouvé que les modes actifs (marche, vélo) sont souvent perçus positivement en raison de leurs bénéfices pour la santé, tandis que les transports en commun sont fréquemment associés à des niveaux de satisfaction plus faibles, en raison des retards et de la congestion. La satisfaction à l'égard des transports en commun dépend principalement de la fréquence, du confort et de la régularité du service. Enfin, l'amélioration des infrastructures et des services de transport pourrait atténuer les effets négatifs des déplacements et favoriser un bien-être subjectif plus élevé.

Mots clés : Déplacements domicile-travail ; Bien-être subjectif ; Satisfaction des trajets ; Transport en commun ; Mobilité urbaine.

Introduction

Commuting plays an important role in the daily life of the working population, taking into account its impact on various aspects of life. Commuting refers to the regular (daily or periodic) movements of individuals between their place of residence and their workplace and vice versa. It is characterized by repetitive travel patterns Ababio-Donkor, A., Saleh, W., & Fonzone, A. (2020). Understanding transport mode choice for commuting. It is influenced by several factors, including the mode of transport used, the distance traveled, and the duration of the journey. These three measures are the main determinants of the commuting experience and affect commuters' quality of life.

At the same time, subjective well-being (SWB) is a conceptualization of well-being interpreted through an individual's perceptions and experiences. It refers to the evaluations a person makes of their own well-being or happiness. It is generally categorized into hedonic components (satisfaction and positive feelings) and eudaimonic components (self-realization) (De Vos et al., 2013). The conceptualization of hedonic subjective well-being refers to short-term positive and negative affect elements, as well as long-term cognitive evaluation. However, the conceptualization of eudaimonic subjective well-being refers to psychological well-being. Singleton, P. A. (2019).

At the individual level, commuting is on one hand a means of promoting social equality, as it allows individuals to access employment opportunities and also improve their economic situation. However, it also represents a loss in terms of money and time (Liu et al., 2020). According to the assumptions of the equilibrium theory in urban economics, the costs borne by individuals related to long commutes will be compensated either by the labor market (higher wages) or by the housing market (lower housing prices). However, the seminal study *"The Commuting Paradox"* by Stutzer and Frey (2008) found that commuting costs are not fully compensated by the benefits individuals gain from higher wages or lower housing costs. This paradox challenged the equilibrium theory by arguing that long commutes are systematically associated with unfavorable outcomes in terms of subjective well-being.

Commuting is likely to influence well-being in multiple ways, depending on both the characteristics of the journey and the individual. In this regard, many studies argue that the mode used for commuting can impact subjective well-being. Indeed, the results of the study by Singleton and Clifton (2021) show that active transport modes such as walking and cycling are associated with higher levels of happiness, due to their health benefits and the flexibility they offer (Singleton and Clifton, 2021). Conversely, other studies have found that public

transport users often report lower satisfaction due to overcrowding, schedule-related stress, and the lack of service reliability (Olsson et al., 2013). Similarly, several studies have found that car users also report lower levels of subjective well-being due to congestion, road insecurity, and other driving-related risks (Ye and Titheridge, 2019).

Another important determinant of commuters' subjective well-being is the duration of commuting trips. According to research, long commutes are generally associated with lower life satisfaction because they reduce the time available for leisure, family, and rest (Hilbrecht et al., 2014). However, this effect depends on the context; some employees take advantage of their commuting time to relax, listen to music, or read, thus somewhat offsetting the negative effects of trip duration (Jain and Lyons, 2008). Moreover, the mode of transport and personal perception of the journey influence the impact of the distance traveled (Morris and Zhou, 2018). In this regard, the mode of transport used mediates the impact of distance traveled on subjective well-being. Hendriksen, Simons, Garre, and Hildebrandt (2010) found that Dutch workers who commute by bicycle, particularly those covering long distances, are less prone to physical and mental illnesses. Conversely, life satisfaction reaches its lowest levels when commuting distances exceed 80 km, according to Ingenfeld et al. (2018). In addition, Lorenz (2018) also found that individuals reported lower levels of happiness concerning their leisure time and family life when their commuting distance was longer.

Satisfaction with commuting aims to assess the impact of commuting on subjective well-being. Some studies consider satisfaction with commuting as a key dimension of subjective well-being (e.g., Olsson et al., 2013). It reflects the short-term experience during the trip, as well as long-term satisfaction with daily commutes (Ettema et al., 2010). It is influenced by several factors, including the mode of transport, trip duration, distance, and other factors such as comfort, congestion, and the possibility of engaging in activities during the journey (Friman et al., 2017). High satisfaction can offset the negative effects of commuting on overall well-being, whereas chronic dissatisfaction can increase frustration and stress (McCarthy & Habib, 2018). Studies show that public transport users report lower satisfaction due to schedule variability and overcrowding. Some car users are satisfied with their commuting due to the flexibility of their transport mode, while others report low levels of satisfaction with their commuting due to congestion (Chatterjee et al., 2020).

This study aims to understand the relationship between commuting and subjective well-being, taking into account the different characteristics of daily commutes and the various components of well-being. The central question of this research can be formulated as follows:

to what extent do commuting characteristics influence the various components of subjective well-being? To address this question, we adopted a narrative literature review approach. Academic publications were identified through a comprehensive search of major databases such as Scopus, Google Scholar, and PubMed. More than 2,000 studies were initially considered, with a focus on those examining the link between commuting characteristics (e.g., duration, mode, distance) and at least one dimension of subjective well-being (e.g., life satisfaction, emotional well-being, perceived quality of life). Only articles written in English and belonging to the academic literature were included. Although this review does not follow a formal systematic protocol, the literature was selected and analyzed based on relevance, thematic coherence, and academic rigor, aiming to identify patterns and gaps across various empirical studies. This question also raises several sub-questions, particularly regarding the differentiated effects of transport mode, commuting duration, and travel distance on cognitive, affective, and eudaimonic well-being. This literature review aims to explore this relationship by synthesizing findings from previous studies and identifying the main mechanisms through which commuting may affect different dimensions of subjective well-being. The study is structured into several sections. The first part is devoted to the definition and measurement of commuting, as well as the factors influencing this mobility. The second part focuses on subjective well-being, detailing its components and evaluation methods. The third part examines the impact of various commuting characteristics on subjective well-being through a literature review. Finally, the last part presents an analysis of empirical studies on the links between commuting satisfaction and subjective well-being, highlighting the main observed trends.

1. Commuting

1.1. Definition of Commuting

Commuting refers to the regular (daily or periodic) movements of individuals between their place of residence and their place of work and vice versa. It is characterized by repetitive travel patterns (Ermans et al., 2017). Commuting significantly affects individuals, communities, and society, as it represents a fundamental aspect of life for most of the working population (Mazúrová, B., Kollár, J., & Nedelová, G., 202*1) "Commuting is of strategic importance in everyday life of individuals and households. It links personal life and working life, enables reach and access to the labor market and can manifest gendered relationships between women and men. Accordingly, commuting is a concern at both the individual and*

household levels as well as for policy and planning at various levels" Mazúrová, B., Kollár, J., & Nedelová, G. (2021), p. 3.

According to Ermans et al. (2018), commuting is defined as regular trips carried out under specific spatial and temporal constraints. These commutes follow recurring patterns, generally determined by fixed schedules and daily frequency, thereby influencing urban traffic flows.

1.2. Factors Influencing Commuting

Commuting is shaped by various structural and individual factors that influence its frequency, duration, and impact on workers and territories. One of the main determinants is the spatial separation between housing and employment, which increases the need for frequent travel. Indeed, the growing distance between residential areas and employment centers results from urbanization, territorial specialization, and housing costs, forcing many workers to move farther from their workplaces to find more affordable housing (Strale, 2019). This spatial mismatch has a direct impact on travel times and the modes of transport preferred by commuters.

Another important aspect of this phenomenon lies in the societal and economic benefits and costs of commuting. Liu et al. (2020) emphasize the importance of commuting in promoting social equality and opening up career opportunities. On the other hand, it also generates significant financial expenses (fuel costs, public transport subscription fees, vehicle maintenance costs) as well as a loss of time that could be devoted to other productive activities. In this sense, mobility choices are often influenced by trade-offs between cost, duration, and travel comfort.

1.3. Evolution of Commuting and Current Challenges

Historically, commuting has been closely linked to urban planning and the evolution of economic models. During the 20th century, growing urbanization and the economic boom encouraged the expansion of cities and the distancing of residential areas from activity centers (Kaufmann, 2007). This trend led to a significant increase in the distances traveled by workers. Since the 1990s, urban planners have gradually become aware of the importance of the relationship between land use planning and transport, increasingly integrating the issue of commuting into their strategic thinking (Jin, 2019).

Today, several trends are shaping the evolution of mobility patterns. First, urban sprawl continues to lengthen travel distances, making it more difficult to implement efficient and sustainable transport solutions (Hu, Deng & Zhang, 2020). At the same time, there is a diversification of transport modes, with a growing desire to promote public transportation and

carpooling to reduce the environmental impact of commuting. In short, commuting is a central issue in the organization of territories and the well-being of workers. Its effective management requires coordination between urban planning, transport policies, and innovations in sustainable mobility in order to limit its negative impacts and promote solutions adapted to the new realities of the working world.

2. Various Measures of Commuting

2.1. Mode of Transport

The mode of transport is a key variable for understanding the dynamics of commuting. A common method for measuring the mode of transport is to ask participants to indicate the type of transport they usually use to get to and from work. This approach allows for a detailed analysis of their choices, behaviors, and transport experiences. One of the most widespread forms is the closed-ended question, in which participants select a primary mode of transport from a predefined list, generally including options such as car (alone or carpooling), bus, train/metro/tram, bicycle, walking, motorcycle/scooter, or other alternative modes. Among national and regional studies using this approach is the study by Dissanayake (2017), which divided transport modes into three main categories: private vehicles, public transportation (bus, train, metro), and non-motorized transport (walking, cycling). Similarly, (Ababio-Donkor et al., 2020) used it by separating active transport, public transport, and private vehicles.

Furthermore, Ko, Lee, and Byun (2019) conducted a study on the most commonly used modes of transport by asking respondents a closed-ended question: "What is your main mode of transport to get to work?" with options such as vehicle, public transport, bicycle, or walking. This closed question helps identify mobility patterns and examine the factors influencing modal choice. Similarly, Djakfar, Bria, and Wicaksono (2020), in order to examine the impact of trip characteristics on modal choice, used a closed-ended question about the main mode of transport used in daily commutes. In contrast, the study by Shannon et al. (2006) used an open-ended question to determine the mode of transport used by commuters in their home-to-work travel.

2.2. Travel Distance

The distance between home and the workplace is generally measured in kilometers using different methods. Whether through closed or open-ended questions, or through technological tools such as GPS and Geographic Information Systems (GIS), the various ways of assessing the distance between home and work depend on a diverse methodology. While some studies

have favored more precise approaches, such as map-based calculations or GPS tracking, others have used self-reported questionnaires in which respondents state the distance they travel in their daily commutes.

Stigell and Schantz (2011) compared several methods for measuring commuting distance: first, self-reported distance, in which workers estimate their own route; second, straight-line distance, measured on a map between home and work; third, GIS-calculated distance, which estimates the shortest route based on the road network; and finally, GPS-measured distance, which provides an accurate trajectory based on individuals' actual movements. Using a closed-ended question on commuting distance in kilometers, Djakfar, Bria, and Wicaksono (2020) assessed the extent of commuting between neighborhoods and employment centers. Meanwhile, Shannon et al. (2006) used an open-ended survey in which participants described their routes. This approach allowed for detailed responses regarding individual perceptions of commuting routes.

Other research has used transport databases and urban statistics. Tao, Fu, and Comber (2019) used a Generalized Linear Model (GLM) to compare average commuting distances between urban and rural areas for 0.63 million workers in the United Kingdom. Djakfar et al. (2020) studied commuting distance between residential areas and workplaces in Jakarta by combining GIS data with commuters' self-reports.

2.3. Travel Time

One of the most frequently used measures to assess the time burden of commuting is travel time. Dissanayake (2017) used data from the UK National Travel Survey to calculate travel time in minutes per trip over a nine-year period (2003–2011). Ababio-Donkor et al. (2020) measured travel time in minutes for each mode of transport in a study conducted among Scottish workers**.** Other studies have used a categorical method. To examine the impact of long commutes on health, Halonen et al. (2020) defined several time thresholds: 1 to 5 hours/week, 6 to 10 hours/week, > 15 hours/week. Using an ordered logit model, Rüger et al. (2021) investigated factors influencing the likelihood of a long commute (> 120 minutes round trip).

The difference between perceived and actual travel time has also been explored. Ory and Mokhtarian (2009) studied perceptions of commuting time, revealing that workers with a comfortable commute tend to underestimate their travel time, while those using public transport tend to perceive it as longer.

In addition to essential measures such as mode of transport, duration, and distance, several studies have explored complementary indicators to better understand the dynamics of commuting and its effects on individuals and territories. These indicators include, in particular, trip variability, commuting frequency, accessibility to infrastructure, environmental impact, and subjective
perceptions of travel.

3. Complementary Measures

3.1. Commuting Frequency

Measuring trip frequency helps identify repetitive mobility patterns, as in the study by Rüger et al. (2021), who used a closed-ended question asking participants how many commuting trips they made per week, and applied a random-effects ordered logit regression model to analyze individuals' propensity to undertake long-distance commutes (more than 60 minutes one-way), taking into account their weekly frequency. The study found that workers who make more than three long-distance commutes per week are more affected by fatigue and lack of time for leisure. Tao, Fu, and Comber (2019) also measured commuting frequency by public transport indirectly, by analyzing the share of commuters using a specific mode of transport for work. The study highlights a disparity between urban and rural areas, where urban commuters make more frequent trips.

3.2. Transport Accessibility

Accessibility to transport infrastructure can be quantified in various ways, including through quantitative indicators based on infrastructure density and declarative methods that collect individuals' perceptions of their transport environment. Ko, Lee, and Byun (2019) assessed transport infrastructure accessibility using a quantitative approach based on urban indicators. Their method involved measuring the density of transport infrastructure in respondents' residential neighborhoods, such as the number of subway stations, bus stops, and road intersections per square kilometer. They also examined accessibility disparities between different areas of Seoul to better understand transport inequalities. Shannon et al. (2006) evaluated transport infrastructure accessibility by combining self-reported data and map analysis. Respondents were asked to indicate the distance to and availability of public transport stations and bike paths near their homes. Simultaneously, participants were categorized into three accessibility zones based on the distance between their residence and the University of Western Australia: less than 1 km for walking, between 1 and 8 km for

cycling, and more than 8 km for motorized transport. Data were collected through an online survey of 2,210 peoples, including university staff and students.

4. Components of Subjective Well-Being

4.1. Definition of Well-Being

Well-being is a unique, complex, and multidimensional concept that encompasses various aspects of an individual's life. The conceptualization of well-being has undergone significant evolution over time, reflecting changes in societal values and scientific knowledge. In the past, the concept of well-being was associated with physical health and material comfort. However, over time, we have learned more about human psychology and life in general, which has led to a broader view of well-being that includes aspects such as emotional well-being, personal happiness, and social well-being (Dehkal, A., 2016).

Previous studies focused on objective measures of well-being due to data availability. However, over time, the limitations of these measures have become increasingly significant, which has led to growing interest in subjective well-being measures among academics and policymakers, as they allow for a more direct understanding of individuals' well-being (Ishio, J., Abe, N., 2017).

4.2. The Evolution of the Concept of Well-Being and the Shift to Subjective Well-Being

The concept of well-being has undergone a significant evolution over time, shifting from an objectivist and normative approach to a subjective and individualized one. Early reflections on well-being stemmed from moral philosophy and political economy, particularly through utilitarianism and welfarism, which aimed to maximize collective happiness through objective measures. Subsequently, anti-utilitarian approaches, such as the capabilities approach, challenged this view by emphasizing individuals' real freedoms and opportunities. Finally, with the rise of happiness economics, researchers highlighted the importance of subjective perception in the assessment of well-being, thereby paving the way for studies on subjective well-being.

4.3. Theoretical Approaches to Well-Being

- **Utilitarianism: Maximizing Collective Happiness**

Utilitarianism, developed by Jeremy Bentham (18th century), is one of the first theories to link well-being to a quantifiable measure. According to this doctrine, a just action is one that maximizes happiness and reduces suffering within a society. For Bentham, well-being is synonymous with pleasure and can be measured in terms of utility. This view inspired the

early attempts to measure well-being through objective indicators, notably income and the satisfaction of material needs.

John Stuart Mill (19th century) refined this approach by introducing the notion of the quality of pleasures. Unlike Bentham, who considered all pleasures to have the same value, Mill argued that certain pleasures (intellectual, moral) are superior to others (physical). An important variant of utilitarianism is preference utilitarianism, developed by John Harsanyi (1977). Unlike Bentham and Mill, Harsanyi did not define well-being in terms of pleasure or happiness, but rather based it on individual preferences. According to him, well-being should be evaluated based on individuals' choices and desires, implying that each person is the best judge of their own well-being. This approach laid the groundwork for a more subjective measure of well-being, although Harsanyi remained rooted in a logic of collective optimization.

- **Welfarism: An Economic Evaluation of Well-Being**

In the early 20th century, welfare economics emerged as a discipline aiming to apply utilitarian principles to the evaluation of public policies. One of the pioneers of this approach, Arthur Cecil Pigou (1920), emphasized that economic well-being is not limited to individual income, but also includes non-market elements such as health, education, and environmental quality. Pigou also advocated for the idea that state intervention is necessary to correct market failures and improve collective well-being.

Another major contributor, John Rawls (1971), proposed an alternative vision to welfarism by introducing his theory of justice. For Rawls, a just society does not merely seek to maximize overall utility, but must ensure a fair distribution of well-being, giving priority to the least advantaged. This approach led to a reassessment of simple utility maximization and to growing interest in well-being inequalities.

- **Anti-Utilitarian Approaches: Well-Being Beyond Utility**

Given the limitations of Utilitarianism and Welfarism, some researchers have proposed alternative approaches to evaluating well-being. One of the most notable contributions is the capabilities[1] approach, developed by Amartya Sen (1985). Sen criticizes the utilitarian view that reduces well-being to monetary resources or levels of satisfaction, arguing that these indicators do not necessarily reflect individuals' real freedom to live the lives they value. Sen maintains that it is the actual opportunities to act and flourish that define individuals' well-being, rather than their possessions or feelings.

[1] Capability consists of all potentially achievable functionings.

4.4. The Shift Toward a Subjective Perception of Well-Being:

While early theories of well-being were based on objective indicators such as income, employment, or public services, a major shift occurred with the emergence of subjective well-being. This change is based on the idea that individuals are best positioned to evaluate their own well-being, regardless of external material conditions.

One of the first economists to theorize this approach was Richard Easterlin (1974), through his famous Easterlin Paradox. His study revealed that increases in income do not systematically lead to greater happiness. In other words, once basic needs are met, additional income has a limited impact on subjective well-being. This paradox challenged the supremacy of economic indicators in evaluating well-being and encouraged the development of new measurement methods based on satisfaction surveys and subjective assessments.

The emergence of subjective well-being thus marked a major turning point in well-being analysis, by emphasizing individual perceptions rather than purely economic criteria.

4.5. Definition of Subjective Well-Being:

Subjective well-being is a multidimensional concept that refers to an individual's overall evaluation of their own life, both in terms of satisfaction and emotional experience. It is a subjective phenomenon because it is based on individual perceptions and judgments, and is influenced by internal factors such as emotions, aspirations, and personal values. Subjective well-being is thus considered a key indicator of happiness and quality of life, going beyond strictly economic or objective measures of well-being (Diener, 1984; Deci & Ryan, 2006). Subjective well-being is based on two main dimensions, notably the hedonic component, which includes experiences of pleasure and satisfaction, and the eudaimonic component, which reflects self-realization and the sense of meaning in life (Ryan & Deci, 2001; Kahneman & Krueger, 2006).

4.6. The Hedonic Component of Subjective Well-Being

The hedonic approach to subjective well-being is based on the classical concept of happiness as the experience of pleasure and the absence of pain (Kahneman et al., 1999). This component includes two main sub-dimensions :

- **Cognitive evaluation of well-being (life satisfaction)**: This refers to an individual's perception of overall life satisfaction, as well as satisfaction in specific domains such as work, social relationships, or health. According to Ed Diener (1984), this dimension is measured through reflective judgments and a comparison between the individual's current situation and their personal aspirations.

- **Affective evaluation of well-being (affective well-being)**: This concerns the frequency and intensity of positive and negative emotions experienced in daily life. Positive affects (joy, serenity, enthusiasm) contribute to high levels of well-being, while negative affects (stress, sadness, anxiety) reduce the perception of well-being (Diener et al., 1999; Veenhoven, 2004). Thus, from this perspective, an individual who evaluates their life positively and frequently experiences pleasant emotions while minimizing negative ones is considered to have high subjective well-being.

4.7. The Eudaimonic Component of Subjective Well-Being

Unlike the hedonic approach, the eudaimonic perspective of subjective well-being emphasizes meaning and self-realization rather than the mere pursuit of pleasure. It is based on the idea that an individual reaches a state of well-being when they develop their full potential, pursue meaningful goals, and experience a sense of personal accomplishment (Ryan & Deci, 2001). This component is influenced by several factors, namely:

- **Autonomy and control over one's life**, which reflect the ability to make choices aligned with one's values and to live according to personal convictions (Deci & Ryan, 2006),
- **A sense of competence**, which refers to feeling effective and capable of achieving one's goals (Ryff & Singer, 1998),
- **Personal growth and life meaning**, which reflect having a clear purpose and finding meaning in one's experiences (Veenhoven, 1991).

Thus, from the eudaimonic perspective, an individual may not feel immediate hedonic well-being, but may achieve a high level of subjective well-being by developing a long-term sense of coherence and personal growth.

4.8. Measures of Subjective Well-Being:

Subjective well-being is a multidimensional concept consisting of three main components: cognitive, affective, and eudaimonic. Each dimension is assessed using psychometric instruments that measure individuals' perceptions of satisfaction, experienced emotions, and sense of personal fulfillment. These measures are widely used in scientific literature to analyze the determinants of well-being and how they evolve according to life experiences, particularly in the context of commuting.

- **Measures of the Cognitive Component of Subjective Well-Being**

The cognitive component of subjective well-being refers to the global and conscious evaluation individuals make about their life and specific domains of their existence. This dimension is generally measured through self-assessment scales that quantify life satisfaction.

One of the most widely used measures is the Satisfaction With Life Scale (SWLS), developed by Diener et al. (1985), which allows individuals to evaluate their general satisfaction through five items rated on a seven-point Likert scale. This scale has been extensively used in research, notably in the work of Lorenz (2018) and Mouratidis (2020), who used the SWLS to analyze life satisfaction in relation to transport conditions and the urban environment.

Another commonly used measure is the Cantril Ladder Scale, a visual scale from 0 to 10 where individuals place their satisfaction level on a gradual ladder. This approach was used in the work of Morris and Zhou (2018) to explore the link between transport conditions and perceived well-being.

Beyond overall life satisfaction, researchers are also interested in satisfaction in specific life domains, which allows for a more nuanced assessment of subjective well-being. Satisfaction scales for specific aspects of life are used to measure satisfaction in areas such as work, social relationships, or housing. For example, Bowling, Wagner, and Beehr (2018) developed scales to assess work satisfaction among commuters, incorporating criteria such as comfort, duration, and perceived stress during daily commutes.

- **Measures of the Affective Component of Subjective Well-Being**

The affective component of subjective well-being is based on the analysis of positive and negative emotions experienced by an individual in daily life. Unlike life satisfaction, which tends to be relatively stable over time, this dimension captures emotional fluctuations and their impact on overall well-being.

One of the most widely used tools to assess this dimension is the Positive and Negative Affect Schedule (PANAS), developed by Watson, Clark, and Tellegen (1988). This scale distinguishes between positive emotions (enthusiasm, pride, joy) and negative emotions (stress, anxiety, irritation) and measures their intensity. Diener et al. (2010) compared this scale with other emotional assessment tools, particularly the Scale of Positive and Negative Experience (SPANE), which measures the frequency of emotions experienced over a given period. This latter scale has been widely used in recent studies, such as Friman et al. (2013), who analyzed the impact of commuting on individuals' affective experience.

Other scales have also been developed to capture affective variations. The Swedish Core Affect Scale (SCAS), developed by Västfjäll and Gärling (2007), is a tool designed to assess momentary mood as well as recalled or anticipated emotions. This instrument has been used in studies examining the impact of transport on mood fluctuations and perceived stress.

These various tools provide a deeper understanding of individuals' affective well-being by accounting for the frequency and intensity of experienced emotions.

- **Measures of the Eudaimonic Component of Subjective Well-Being**

The eudaimonic component of subjective well-being emphasizes personal growth, meaning in life, and the development of individual capabilities. Unlike hedonic approaches, which focus on immediate satisfaction and experienced emotions, the eudaimonic perspective considers deeper elements related to autonomy, personal fulfillment, and social contribution. One of the most commonly used scales to measure this dimension is the "Flourishing Scale", introduced by Diener et al. (2010). This scale assesses individuals' perceptions of their success in various life areas, such as social relationships, self-esteem, and optimism. Singleton and Clifton (2021) incorporated this measure into their work to examine the relationship between eudaimonic well-being and transport conditions. Finally, the "Eudaimonic Well-Being Scale (EWB)", developed by Ryff and Keyes (1995), is often used to measure aspects such as autonomy, environmental mastery, and meaning in life. Diener et al. (2010) confirmed the reliability of this scale for assessing personal flourishing and its impact on overall well-being.

5. The relationship between commuting and subjective well-being

5.1. The Impact of Transport Mode on Subjective Well-Being

The choice of transport mode profoundly shapes how individuals experience their daily commute and influences each component of subjective well-being differently. Transport mode plays an important role in individuals' overall life satisfaction. Public transport users generally report lower life satisfaction levels due to overcrowding, discomfort, and the unpredictability of trips (Hilbrecht et al., 2014; Morris, 2015). In contrast, active modes such as walking and cycling are more often associated with higher satisfaction, particularly due to perceived health and mental well-being benefits (Liu, J., Ettema, D., & Helbich, M., 2022). However, even car users may derive specific satisfaction from their mode of transport, especially in terms of comfort and flexibility—although this effect tends to diminish in cases of road congestion (Stutzer & Frey, 2008).

Transport mode also influences the emotions experienced during the commute. Active modes generate positive emotions such as relaxation and pleasure, while public transportation and car use are often associated with stress and frustration, especially in cases of congestion or delays (Olsson et al., 2013). However, some aspects of car commuting can be perceived as pleasant if associated with activities such as listening to music, etc. (Zhang, X., & Ma, L.,

2024).

The eudaimonic aspect of subjective well-being, which refers to a sense of fulfillment and autonomy, varies significantly depending on the transport mode used. Active modes, particularly cycling, are often linked to greater autonomy and a heightened sense of competence, thereby enhancing intrinsic satisfaction during the commute (Singleton & Clifton, 2021). In contrast, public transport users may feel a loss of control over their schedule, which reduces their eudaimonic well-being. Additionally, the car is perceived by some as a symbol of status and independence, although this effect is limited by the constraints associated with driving (Steg, L., & Gifford, R., 2005).

5.2. The Impact of Commute Duration on Subjective Well-Being

Commute duration is a major constraint that directly influences workers' perception of well-being. Studies show that longer commutes are generally correlated with lower life satisfaction, mainly due to the reduction in time available for leisure and family (Stutzer & Frey, 2008; Hilbrecht et al., 2014). This phenomenon is particularly noticeable among workers with family responsibilities, for whom long commute times represent an additional constraint on daily organization (Nie & Sousa-Poza, 2016).

Prolonged commute time is also associated with increased stress and fatigue, especially among public transport users and car drivers facing congestion (Morris, 2015). However, some workers manage to make good use of their commuting time by engaging in relaxing activities such as listening to music or reading, which can mitigate negative effects (Malokin, A., Circella, G., & Mokhtarian, P. L., 2015).

The effect of commute duration on the eudaimonic component of well-being is more nuanced. For some, a long commute may provide a valuable transition between work and personal life, allowing time to relax or mentally prepare for the day's challenges (Jain & Lyons, 2008). Conversely, excessively long commutes can reduce the sense of control over one's schedule, thereby limiting perceived autonomy (Singleton & Clifton, 2021).

5.3. The Impact of Commuting Distance on Subjective Well-Being

The distance of home-to-work trips plays an essential role in the perception of well-being, although its impact is often mediated by the mode of transport and travel duration. Longer distances are generally associated with lower life satisfaction, as they limit opportunities for participation in social and family activities (Clark, B., Chatterjee, K., Martin, A., & Davis, A., 2020). However, some studies find that individuals accept longer commutes

in exchange for a better living environment or a more satisfying job, which can mitigate the negative impact on overall satisfaction (Handy, S., 2019).

Long commutes are often perceived as a source of stress and anxiety, particularly when they involve multiple transfers or a higher risk of delays (Wheatley, 2014). However, in some contexts, a long distance may be experienced positively if it offers a pleasant environment or comfortable travel opportunities (Olsson et al., 2013).

The distance traveled also impacts the eudaimonic dimension of well-being by influencing the work–life balance. Excessively long commutes can reduce the time available for leisure and social relationships, thereby decreasing overall satisfaction (Morris, 2015). Nevertheless, for some workers, a long commute may represent an opportunity to access better living or working conditions, thus strengthening their sense of personal fulfillment (Singleton & Clifton, 2021).

5.4. Satisfaction with Commuting

Satisfaction with commuting is an important aspect of subjective well-being, influencing not only the travel experience but also overall life satisfaction and perceived quality of life (Ettema et al., 2010; Friman et al., 2017; McCarthy & Habib, 2018). It is often defined as a subjective evaluation of comfort, pleasure, and stress experienced during daily or occasional commutes (De Vos, J., 2019). This satisfaction can be affected by various factors such as commute duration, mode of transport used, distance traveled, as well as other factors like travel conditions and the opportunities to engage in activities while in transit (Ettema et al., 2012; Olsson et al., 2013).

Several studies have shown that satisfaction with commuting has both direct and indirect effects on overall subjective well-being. On the one hand, the emotions experienced during commuting directly influence life satisfaction (De Vos, 2018). On the other hand, commuting enables access to social and professional activities, thereby enhancing overall well-being (De Vos, J., 2019).

Moreover, studies have demonstrated that longer commutes are often associated with lower life satisfaction (Handy & Thigpen, 2018; Lorenz, 2018; Stutzer & Frey, 2008), while some research suggests that the effects of travel time depend on the activities that can be performed during the trip and the individual's perception of the journey (Olsson et al., 2013).

Satisfaction with commuting is generally assessed using various methods, ranging from simple subjective measures to more complex multidimensional models. Multidimensional scales are more advanced methods that allow travel satisfaction to be measured across several

cognitive and affective dimensions. The most widely accepted scale is the Satisfaction with Travel Scale (STS), developed by Ettema et al. (2011). It is based on three components : "Positive Activation", "Positive Deactivation", and Cognitive Evaluation (e.g., perception of the efficiency and smoothness of the trip) (Singleton, 2019; De Vos et al., 2015). This scale is measured using a 7-point Likert scale ranging from -3 (very dissatisfied) to +3 (very satisfied), where participants are asked to rate their feelings based on various adjectives related to their travel experience (e.g., Enthusiastic, Happy, Frustrated, Annoyed).

Cantwell, M., Caulfield, B., and O'Mahony, M. (2009) measured satisfaction using a single variable called "commuting satisfaction," derived from the degree of agreement or disagreement expressed by respondents regarding six statements about their commuting experience (e.g., "My commute is consistent from day to day," "I feel overwhelmed when commuting to work," "Commuting is stressful for me," "My daily commute to work requires a lot of effort"). Responses to these statements were measured on a five-point scale. Satisfaction with commuting is strongly influenced by three main travel characteristics. Many studies have shown that active modes (walking and cycling) are the most satisfying, followed by the car and public transport. For instance, De Vos et al. (2015) report that pedestrians and cyclists are more satisfied with their commutes than car drivers, while public transport users report the lowest satisfaction levels due to delays, overcrowding, and lack of reliability (Cantwell et al., 2009; Chatterjee et al., 2020). However, some studies suggest that public transport can be more pleasant than driving when it allows for engagement in productive activities during the journey (Ettema et al., 2012; Olsson et al., 2013).

In contrast, the relationship between commute duration and satisfaction with commuting is often negative. Several studies show that longer trips reduce commuters' satisfaction with their travel (Mokhtarian et al., 2015; Olsson et al., 2013; Smith, 2017). However, some researchers, such as Olsson et al. (2013), point out that if commuters can engage in enjoyable or productive activities, the negative perception of travel time may be mitigated. Travel distance also impacts satisfaction with commuting. Long distances can be perceived as burdensome, particularly if they reduce the time available for leisure and social interaction (Stutzer & Frey, 2008; Hilbrecht et al., 2014). However, some studies show that individuals sometimes accept longer distances in exchange for a better quality of life, such as access to more spacious housing or higher-paying jobs (De Vos et al., 2013; Waygood et al., 2017).

- **Public Transport Users' Satisfaction with Their Commuting**

Public transport users' satisfaction varies according to several factors, including service quality, congestion, timetable reliability, and opportunities for activities during the trip. Unlike active modes such as walking and cycling, which are generally associated with the highest levels of satisfaction due to their autonomy and positive impact on well-being (Chatterjee et al., 2020; De Vos et al., 2015), public transport users often report lower satisfaction. This is mainly explained by overcrowding, delays, vehicle discomfort, and travel time variability (Cantwell et al., 2009; Ettema et al., 2012).

Moreover, perceived safety and service quality are key elements in passengers' experience, directly influencing their satisfaction (Olsson et al., 2013). However, some public transport users find benefits in this mode of travel, such as the opportunity to relax, read, or listen to music, which can improve their perception of the journey (Ettema et al., 2012; Olsson et al., 2013).

Public transport satisfaction also depends on contextual factors such as weather conditions, travel duration and frequency, and seat availability (Ettema et al., 2017). Therefore, to improve the commuting experience on public transport, it is essential to implement appropriate infrastructure and transport policies aimed at improving service quality, schedule regularity, and commuter comfort.

Table 1: Presentation of the literature review

Study	Country	Sample	Method of Analysis	Type of Transport Mode	Measures	Findings / Results
Acharya, S., Mekker, M., & Singleton, P. A. (2023)	**United States**	696 American adults	Structural equation modeling	Car	Satisfaction with Travel Scale (STS)	**The pleasure of driving increases travel satisfaction among private car users; however, congestion and stress reduce it.**
Cantwell, M., Caulfield, B., & O'Mahony, M. (2009)	**Ireland**	324 commuters traveling to Dublin	Multinomial logit model	Public transport (Bus, Train)	Crowding, reliability, travel time variability	**Crowding reduces travel satisfaction among public transport users.**
De Vos, J., Schwanen, T., Van Acker, V., & Witlox, F. (2015)	**Belgium**	1411 respondents from Ghent	Factor analysis and structural equation modeling	Car, Public transport, Bicycle, Walking	Satisfaction with Travel Scale (STS)	**Car users are engaged and confident but less enthusiastic; walking yields the highest travel satisfaction; public transport users are the least satisfied with their commuting.**
Eriksson, L., Friman, M., & Gärling, T. (2013)	**Sweden**	123 university students	Experimental simulation	Car, Bus	Satisfaction with Travel Scale (STS)	**Car users report higher satisfaction than bus users due to enjoyment, lifestyle fit, and safety; bus users report lower satisfaction due to crowding, lack of flexibility, and discomfort.**
Chatterjee, K., Chng, S., Clark, B., Davis, A., De Vos, J., Ettema, D., ... & Reardon, L. (2020)	**United Kingdom**	Review of several studies	Literature review and meta-analysis	Car, Public transport, Walking, Bicycle	Satisfaction with Travel Scale (STS), stress measures	**Walking and cycling provide the highest travel satisfaction. In contrast, private car use is associated with stress from congestion, and public transport users are the least satisfied with their travel.**
Ettema, D., Friman, M., Gärling, T.,	**Sweden**	996 public transport	Regression analysis	Public transport (Bus, Train,	Satisfaction with Travel	**Commuters' activities during travel increase their travel satisfaction.**

Olsson, L. E., & Fujii, S. (2012)		users		Metro)	Scale (STS)	
Ettema, D., Gärling, T., Eriksson, L., Friman, M., Olsson, L. E., & Fujii, S. (2011)	**Sweden**	155 undergraduate students (experimental study)	Survey and development of the STS scale	Car, Bus	Satisfaction with Travel Scale (STS)	**Car users report higher satisfaction due to convenience; bus users report lower evaluations due to perceived discomfort and waiting time.**
Ettema, D., Friman, M., Olsson, L. E., & Gärling, T. (2017)	**Sweden**	363 commuters in three Swedish cities	Fixed effects regression	Car, Public transport, Walking, Bicycle	Satisfaction with Travel Scale (STS)	**Weather conditions significantly influence travel satisfaction: higher temperatures and more sunshine increase satisfaction, while wind and rain reduce it.**
Gerber, P., Thériault, M., Enaux, C., & Carpentier-Postel, S. (2020)	**Luxembourg**	3093 cross-border commuters	Ordered logistic regression and structural equation modeling	Car, Public transport	Commuting satisfaction	**Public transport users report higher satisfaction than car users due to reduced congestion-related stress and the opportunity to engage in activities during the commute.**
Gnerre, M., Abati, D., Bina, M., Confalonieri, F., De Battisti, S., & Biassoni, F. (2022)	**Italy**	448 public transport users in Turin	Survey analysis and STS	Public transport (Bus, Tram, Metro)	Satisfaction with Travel Scale (STS)	**Public transport users report lower travel satisfaction due to a heightened perception of risks related to crowding; younger users are less satisfied than older ones.**
Handy, S., & Thigpen, C. (2019)	**United States**	Students and staff from UC Davis	Survey analysis	Car, Bicycle, Train, Bus	Commuting-related stress, perceived wasted time, transport mode appraisal	**Cyclists and train users report the highest commuting satisfaction; bus users report the lowest satisfaction due to stress and perceived wasted time.**
Lunke, E. B. (2020)	**Norway**	7630 commuters in Oslo	Statistical modeling (ANOVA, t-tests,	Public transport	Commuting satisfaction scale	**Satisfaction with public transport depends on travel distance and availability; efficient routes and short**

			linear regression)			**waiting times improve satisfaction, while long commutes and frequent transfers reduce it.**
Wang, Y., & Gao, Y. (2022)	**China**	604 public transport passengers in Xi'an	Structural equation modeling	Public transport	Travel satisfaction and well-being	**Public transport satisfaction is influenced by COVID-19 safety measures; well-being is a better predictor of transport choices than satisfaction alone.**
Mogaji, E., Ugboma, O., Farinloye, T., Nguyen, N. P., & Oginni, A. (2024)	**Nigeria**	16 commuters with disabilities	Ethnographic interviews and qualitative analysis	Public transport	Travel satisfaction and well-being	**Passenger interactions affect satisfaction; positive interactions improve well-being, while negative ones cause stress and dissatisfaction.**
Negm, H., De Vos, J., & El-Geneidy, A. (2024)	**Canada**	1865 commuters in Montreal	Binary logistic regression	Car, Public transport, Walking, Bicycle	Travel satisfaction and transport mode preference	**Pedestrians are the most satisfied with their commuting; car users report the lowest satisfaction.**
Olsson, L. E., Friman, M., Lättman, K., & Fujii, S. (2020)	**Sweden, Finland, Norway, Denmark**	257 respondents in 5 cities	PLS-SEM and ANOVA	Public transport	Travel satisfaction and life satisfaction	**Satisfaction with commuting is positively associated with life satisfaction across generations; safety is a key component of this satisfaction.**
Olsson, L. E., Friman, M., Pareigis, J., & Edvardsson, B. (2012)	**Sweden**	361 public transport users	Satisfaction analysis using the Satisfaction with Travel Scale (STS)	Public transport	Satisfaction with Travel Scale (STS)	**Crowding and poor service reduce travel satisfaction among public transport users.**
Olsson, L. E., Gärling, T., Ettema, D., Friman, M., & Fujii, S. (2013)	**Sweden**	713 commuters in Stockholm, Gothenburg,	Survey analysis and regression models	Car, Public transport, Walking, Bicycle	Satisfaction with Travel Scale (STS) and life satisfaction	**Active travel modes (walking, cycling) generate the highest satisfaction, while public transport users have lower satisfaction due to waiting**

		and Malmö				**times.**
Pritchard et al. (2021)	**United Kingdom, Netherlands, Brazil**	2644 commuters (London, Randstad, São Paulo)	Binary logistic regression and generalized linear models	Car, Public transport, Active modes	Travel satisfaction and job accessibility	**Active mode users report the highest satisfaction with their commuting.**
Shi, K., Yang, Y., De Vos, J., Zhang, X., & Witlox, F. (2022)	**China**	618 commuters in Chengdu	Structural equation modeling	Car, Public transport	Travel satisfaction and income	**Low-income groups use public transport due to limited access to cars, which results in lower satisfaction; high-income car users also experience dissatisfaction due to congestion.**
Sogbe, E., Susilawati, S., & Pin, T. C. (2024)	**Developing countries**	Systematic review of 104 articles	Systematic literature review	Public transport (Bus)	Service quality and satisfaction	**Public transport user satisfaction depends on safety, reliability, comfort, and connectivity.**
St-Louis, E., Manaugh, K., van Lierop, D., & El-Geneidy, A. (2014)	**Canada**	3377 commuters in Montreal	Ordinary least squares (OLS) regression	Walking, Bicycle, Car, Bus, Metro, Train	Commuter satisfaction	**Walking and cycling commuters are the most satisfied, while public transport users (bus, metro) have lower satisfaction due to external factors such as delays and crowding.**
Sukhov, A., Lättman, K., Olsson, L. E., Friman, M., & Fujii, S. (2021)	**Sweden**	353 public transport users	Fuzzy-set Qualitative Comparative Analysis (fsQCA)	Public transport	Service quality and travel satisfaction	**High travel satisfaction is influenced by a combination of reliability, comfort, safety, and simplicity; poor service results in low public transport satisfaction.**
Ye, R., & Titheridge, H. (2017)	**China**	1215	Structural equation modeling	Car, Public transport, Walking, Bicycle	Travel satisfaction	**Active mode users (walking, cycling) have the highest satisfaction; congestion significantly reduces satisfaction, while the built environment has an indirect effect.**
Ye, R., &	**China**	1215	Survey analysis	Public transport,	Commuting	**Low-income commuters report lower**

Titheridge, H. (2019)			and regression models	Bicycle, Car	satisfaction	**satisfaction; a mismatch between chosen transport mode and personal preference leads to increased dissatisfaction.**
Ye, R., De Vos, J., & Ma, L. (2020)	**China**	2471	Regression analysis	Car, Public transport, Active modes	Satisfaction with Travel Scale (STS)	**Active travel (walking, cycling) is associated with the highest satisfaction, while public transport users report lower satisfaction due to external factors such as delays.**

Source: created by the authors

The results of these studies show that active modes (walking and cycling) offer the highest satisfaction, due to their flexibility, health benefits, and the absence of constraints related to schedules and congestion. In contrast, public transport users are generally the least satisfied, due to overcrowding, delays, lack of reliability, and perceived stress. However, some elements such as the ability to engage in activities during the trip, connectivity, and service quality can improve their perception of public transport. Car users appreciate the flexibility of their vehicle, but congestion reduces their satisfaction. Other factors, such as distance, travel time, weather, and service quality, also influence users' experiences. Low-income groups, often compelled to use public transport, report lower satisfaction.

Conclusion

This study highlights the significant influence of commuting characteristics namely, duration, mode, and distance on the various dimensions of individuals' subjective well-being. Commuting is not merely a logistical necessity but a daily experience that can profoundly shape life satisfaction, emotional states, and a sense of personal fulfillment.

Longer commute durations are consistently associated with lower levels of subjective well-being, particularly due to increased stress, fatigue, and the reduced availability of time for leisure and social relationships. However, the ability to engage in enjoyable or productive activities during the commute can partially mitigate these negative effects. Similarly, the mode of transportation plays a crucial role in shaping commuter experiences: active modes such as walking and cycling are generally associated with higher levels of well-being due to their physical and psychological benefits, while public transport and car use often generate dissatisfaction, particularly when associated with congestion, delays, and lack of comfort or flexibility.

Commuting distance exerts a more indirect but important influence. While longer distances may offer access to better jobs or improved residential environments, they tend to lower life satisfaction when they compromise time availability and elevate travel-related stress. Nevertheless, individuals may accept this trade-off if it aligns with broader life goals, such as improved income or living standards.

Satisfaction with public transport is shaped by multiple factors, including service reliability, crowding levels, travel frequency, and the ability to engage in meaningful activities during the journey. While public transport users often report lower satisfaction compared to drivers and active commuters, these perceptions can be improved through high-quality infrastructure,

clean and safe environments, seamless connectivity, and better management of travel disruptions.

Despite these insights, this review has several limitations. First, the heterogeneity in study designs, well-being measures, and commuting indicators hinders cross-study comparability and synthesis. Second, the lack of research in low- and middle-income countries, limits the global applicability of findings. Third, the reviewed literature often overlooks contextual variables such as informal transport systems, gender-specific commuting burdens, and environmental constraints. These limitations suggest the need for localized empirical research, especially in urban centers of the Global South, where commuting patterns are rapidly evolving but understudied.

Future studies should consider conducting quantitative field surveys to collect primary data on commuting satisfaction and well-being at the local level. Cross-national comparative analyses between different urban contexts (e.g., developed vs. developing cities, or compact vs. sprawled cities) could provide more nuanced insights into how geography, governance, and culture shape commuter experiences. Moreover, integrating longitudinal approaches would help better understand how changes in transport infrastructure or working conditions (e.g., telecommuting) impact well-being over time.

On a practical level, the findings of this review have several implications for urban mobility policy and quality of life strategies. Improving the subjective experience of commuting should become a core concern for transport planning. This includes enhancing the reliability, cleanliness, and accessibility of public transport systems; promoting active modes through safe infrastructure; reducing travel time through better land-use integration; and allowing flexibility in work schedules to minimize peak-time stress. Policymakers should also consider well-being indicators as part of transport project evaluations, moving beyond traditional cost-efficiency metrics.

In conclusion, this review contributes to a better understanding of how commuting affects subjective well-being. It emphasizes the need for people-centered and well-being-oriented mobility policies. By identifying gaps in the literature and proposing avenues for future empirical work, particularly in underrepresented regions, it invites a more inclusive and socially responsive research agenda at the intersection of transport studies and well-being research.

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