

Chapter 10

ICTs and Activities on the Move? People's Use of Time While Traveling by Public Transportation

Bertil Vilhelmson, Eva Thulin, and Daniel Fahlén

10.1 ICTs, Time Use, and Travel

10.1.1 Issue

Are people's perceptions and uses of travel time changing in our ever-expanding information society? Is the capacity to use time more meaningfully while on the move enhanced by the spread of modern mobile information and communication technologies (ICTs), such as laptop computers, cell phones, portable music players, wireless broadband, and the Internet? One line of mobility research questions the established view of travel time as wasted time in people's daily lives and doubts whether travel demand only derives from a desire to engage in activities at destinations (Lyons & Urry, 2005; Mokhtarian & Salomon, 2001; Urry, 2006). More useful or productive travel time is believed to be a salient feature of the emerging network society. Train cars and buses are changing into "mobile spaces" where various useful activities, such as work, social interaction, and relaxation are performed while on the move. The notion of more useful travel time may have implications for future mobility levels and the modal distribution of travel, making longer journeys more acceptable (fueling regional extension and urban sprawl) and improving the competitiveness of public transportation versus the car.

Our intention is to draw on this alternative perspective on travel time and to consider the significance of productive/useful/meaningful travel time given present mobility levels. First, we glance at the theoretical background, after which we present some preliminary findings from our ongoing project examining the relationships between ICT, activities, and transportation.

B. Vilhelmson (✉)

Department of Human and Economic Geography, School of Business, Economics and Law,
University of Gothenburg, SE 405 30, Gothenburg, Sweden
e-mail: Bertil.Vilhelmson@geography.gu.se

10.1.2 Theoretical Concern

In most transport modeling, travel is treated as a cost and disutility in people's lives. Travel time is assumed to be unproductive and wasted. It is treated as distinct from the meaningful and productive activities people perform at the various locations distributed in space and that give rise to travel. The only value of time spent traveling is derived from what is undertaken at the destination (Holley, Jain, & Lyons, 2008). Accordingly, it is no surprise that major investments in the transportation sector are often justified by the travel time they can save (Jain & Lyons, 2008).

Current research is challenging this position (e.g., Lyons, 2003; Mokhtarian, 2005; Ohmori & Harata, 2008). One argument is that the *activity of traveling itself* can possess a positive utility in people's lives. The individual traveler gains something from being away from or between fixed locations, activities or people. Ory and Mokhtarian (2005) review a list of reasons why daily travel might be desirable for its own sake: adventure, variety, independence, status, exposure to the environment, escape, curiosity, and physical/mental relaxation.

It has further been suggested that account should be taken of the utility derivable from *activities undertaken while traveling*. Travel time is not necessarily wasted, "dead," or empty time (Holley et al., 2008; Kenyon & Lyons, 2007; Lyons & Urry, 2005; Mokhtarian, 2005). On the contrary, time spent on the move (i.e., in the bus, train, and car) can and is being used to perform various meaningful activities, such as working, relaxing, socializing, and communicating. It is further emphasized that people's capacity to perform activities while on the move is enhanced in our increasingly informational society. Schwanen and Kwan (2008) suggest that modern ICTs (cell phones and the Internet in particular) can fundamentally increase the spatial and temporal flexibility of people's daily lives. From a time-geographic perspective, they argue that the constraints of capability, coupling, and authority that surround various activities are reduced by ICTs, as people can meet, communicate, and interact almost anywhere, anytime, and for any reason. ICTs make activities less tied to specific time-spaces and let people undertake more activities at any given time or place. Furthermore, ICTs are increasing the windows of opportunity for shopping and other errands, allowing people to circumvent the restrictions imposed by the opening hours of various facilities. All in all, ICTs, especially the cell phone, make people more connected, allowing interaction-based planning and activity-scheduling that is more instant, flexible, and spontaneous in time and space (Thulin & Vilhelmson, 2008).

The spread of modern ICTs combined with the ongoing virtualization of many everyday activities (e.g., e-work, e-shopping, various e-services, and contacts via e-mail, MSN, SMS, and blogs) could weaken the association between activity, place, and time (Couclelis, 2000, 2004). Mobile ICTs, such as laptops, cell phones, and wireless Internet, provide new opportunities and access to activities for those traveling. People can make more productive use of "empty" moments throughout the day, for example, using travel or waiting time more productively. Daily travel is transformed into a *hybrid mobile place* where certain activities can take place and virtual and physical communication can occur simultaneously. Train cars

and buses may become regular places of work and business interaction, places where people organize daily meetings or rest and relax. Mobile technologies and networks—enabling potentially new ways of *engineering time and space*—are certainly expanding this range of opportunities, but how are they really being accessed and used in real life?

10.1.3 Previous Empirical Studies

A few empirical studies have specifically addressed the question of travel time use. Recent surveys of how passengers (business travelers in particular) use their time when traveling by train have been conducted in England (Axtell, Hislop, & Whittaker, 2008; Lyons, Jain, & Holley, 2007), Japan (Ohmori & Harata, 2008) and Norway (Hjorthol, 2008). Findings from these studies indicate that leisure activities were most common, activities such as leisure reading and window gazing/people watching. Relatively few people were using their travel time productively for work or study. The results also indicated that differences in traveling mode (i.e., different classes of travel), journey duration, and work hours affected the participation rate in different activities. Most passengers were using cell phones while on the move, while other mobile ICTs, such as laptops and wireless Internet, were relatively uncommon. There were substantial though not overwhelming signs that travel time was acquiring a positive utility; only a minority of travelers considered their travel time to be wasted time. Productive uses of travel time were generally considered more worthwhile than time spent on “anti-activities.”

Using focus group interviews, Jain and Lyons (2008) explore the notion of travel time as “a gift” in people’s daily lives. They find two key categories of travel time where the traveler actively benefits from the journey: travel time as *transition time* (giving time to adjust and transition between places and activities) and travel time as *time out* (legitimizing a break in daily activity). They further conclude that mobile technologies expand the opportunities for travelers to *equip* themselves for the transition time and time out. In addition, based on small-scale qualitative research on mobile workers and their travel, Poppitz (2007) stresses the importance of putting the use of regular commuting time use into the context of everyday life, and of not exaggerating the role of single determinants, such as new technology and specific equipment.

10.2 Mobile Activities on Bus and Train

10.2.1 Preliminary Findings of a Swedish Survey

In the following, we present some empirical observations from ongoing research on how people actually spend their time when traveling by bus and train in an everyday context. We initially explore what activities really take place while traveling. Is travel dominated by work, leisure, relaxation (“time out”), and social interaction,

or perhaps by “anti-activities” such waiting, doing nothing, and sleeping? We further consider the role of equipment and the extent to which mobile ICTs are actually used. Finally, we discuss how worthwhile passengers consider their travel time to be.

We draw on data from an activity-based time-use survey of 400 passengers of public transportation. The survey was recently conducted in the Gothenburg metropolitan area, the second largest metropolitan area in Sweden with a population of about one million (in 2009). In the November 2008–January 2009 period, respondents were recruited among passengers on four train and bus lines linking four towns in the region with the city of Gothenburg (Fig. 10.1). The lines were regarded as typical routes for intraregional commuting (i.e., excluding local and interregional trips),



Fig. 10.1 Public transportation network in the survey area—Gothenburg region, Sweden. Transportation lines included in the survey are Uddevalla–Göteborg, Trollhättan–Göteborg, Borås–Göteborg, and Kinna–Göteborg

and the average journey length was one hour. In total, 402 passengers on 42 departures (10 by train and 32 by bus) on regular weekdays (between 06:00 and 22:00) were included. The respondents were contacted personally en route, told about the survey, asked whether they were willing to participate, and, if so, asked to pay attention to their use of travel time and be prepared to report how they spent it on the actual trip. A link to a web-based questionnaire was then sent to the respondents via e-mail. The response rate was 51% of all passengers. The composition of the sample was typical of users of regional public transportation in Sweden, as 60% were women and most passengers were either students or gainfully employed commuters. Due to the design of the study, elderly people (with no e-mail), people difficult to contact (sleeping or extremely hurried), and children were underrepresented.

The survey primarily concerns how journey time was spent on various activities, what equipment was brought and used, and how the traveler valued the time use en route. Special attention was paid to the use of portable ICTs (e.g., cell phones, laptops, and mobile broadband). Questions were also asked about trip characteristics (e.g., distance, duration, and purpose) and relevant background data concerning the individual. This includes information on circumstances that might affect activity patterns and time use, such as commuting habits, perceived stress, environmental attitudes, and attitudes towards public transport.

To extend our investigation beyond the limits of previous research on mobile activities, our investigation captures the time-use dimension more systematically. Furthermore, we focus on everyday regional travel (not interregional or local travel) and include travel by bus (not only train). Consequently, the respondents report an average trip time of one hour (*mean value* = 54 min; *s.d.* = 16) and that 95% of all trips lasted more than 30 min. As expected, trips were concentrated in rush hours in the morning, at lunch time, and in the afternoon. Forty percent of all trips were to or from work, 40% were related to school, and the rest were for various shopping, visiting, and leisure purposes.

10.2.2 Frequent Activities en Route

Now, what do people really do when they regularly spend an hour traveling on public transportation? This basic question of the study could of course be answered in several ways, depending on how activities are measured. One straightforward measure is how many passengers engage in particular activities during the trip; this approach indicates that the most frequent activities are very *passive* in character (Table 10.1). “Doing nothing,” “window gazing,” and “sleeping/resting” are common “anti-activities” performed by around half of all surveyed passengers. Other common and somewhat more active activities are “using the cell phone,” “thinking/planning,” “listening to music,” “reading,” and “socializing,” while even more *active* or *productive* activities such as “studying” and “working” are only performed by one fifth of all passengers. In general terms, it seems that “passive” activities are more common than more “active” ones. In terms of the most frequent activities, it appears that actual travel time use (in regional commuting) conforms to an

Table 10.1 Activities while traveling measured in terms frequency and time intensity

Activity	Frequency—percent of all travelers performing a certain activity	Time intensity—minutes per person engaged in a certain activity
Window gazing/doing nothing	53.5	16
Sleeping/snoozing	46.0	21
SMS/cell phone calls	43.5	9
Thinking/planning personal issues	38.8	14
Listening to music/radio/e-book	31.8	32
Reading for leisure	30.6	24
Talking to other passengers	21.4	40
Studying	21.4	23
Working	16.9	26
Eating, drinking	11.7	9
Other leisure activities	8.0	15
E-mail/chat	6.7	13
Taking care of children	5.0	21
Hobby	3.5	13

Source: Authors' survey, Gothenburg region, Sweden, 2009

expected stereotype: mobile time as a kind of unproductive waiting-time, a disutility that is more or less motivated by purposeful stationary activities surrounding the trip. A person could, however, engage in more than one activity during the trip, for example, resting a while and then starting to read or study.

10.2.3 Time-Intensive Activities

Yet, the importance of activities could be measured more elaborately, not least as regards to how much time is really spent on particular activities. If we focus on how much time a person engaged in a specific activity *really* spends on it—what is here called *time-intensity*—we get a different picture from that given by merely ranking the frequency of common activities (see Table 10.1). The list of time-intensive activities is topped by “social interaction” and “listening to music,” as well as cognitively more intense and demanding activities such as “working” and “studying.” “Sleeping/resting” and “doing nothing” are here ranked lower, indicating that most people take just a little time out, maybe only a few minutes, during a journey. From this time-use perspective, it seems that active or productive time uses, such as social communication, work, and study, when performed take more time than do more passive ones. This further indicates that many people spend their travel time in rather meaningful and productive ways that are hard to consider as disutility or a waste of time.

10.2.4 Equipped Time

This leads to the question of “equipped” travel time. To what extent do travelers bring certain ICT equipment and portable devices with them on their journeys?

This also indicates intentions or plans to actively use the journey for meaningful activity. Not surprisingly, the cell phone is the most common device used by the travelers, and newspapers, books, music players, and material for studies or work are also common. Slightly more than 20% of all surveyed passengers carry laptops; about 40% of these passengers actually use their computers during the trip and 20% connect to the Internet via mobile broadband, in other words, becoming virtually mobile. (It is reasonable to believe that this virtually mobile group is growing fast). In addition, when used, the computer is a very time-intensive type of equipment: on average, a laptop user spends 40 min (of the average 55-min trip) using her/his computer, that is, for most of the journey. As regards to other types of equipment, material for work and study and music players comprise considerable travel time.

10.2.5 Valued Time

This brings us to a third dimension of time use en route, namely, whether travel time is considered worthwhile or wasted. Notably, we find that two-thirds of the surveyed passengers find time use on the actual trip to be “rather” or “very worthwhile,” and that only one third find it more or less wasted time. If we focus on one important group of passengers, those who found their travel time “very worthwhile” (15% of all surveyed travelers; $n = 60$), and consider how much time they spend on certain activities or using certain equipment, we find that productive activities such as studying and working rank high (Fig. 10.2). In addition, these truly satisfied travelers frequently spend time using ICT-based equipment, such as laptops, cell phones, and portable music players. We see a tentative relationship between the amount of ICT use, on the one hand, and travel satisfaction, on the other—an important observation warranting further analysis. As these early mobile ICT users could be regarded as “forerunners,” they represent the potential for an increase in the popularity of public transport (versus car driving).

Our findings are, of course, not homogenous across the surveyed passengers. There are some notable differences between young and old, and, not least, from a gender perspective. More men than women perceive their travel time being worthwhile (69% vs. 60%). Also, productive activities and the use of laptop computers are slightly more common among men.

However, the spread of mobile ICTs that can be used for productive purposes is still comparatively limited, though progress is rapid, especially among working people. What are the technical and social conditions necessary for continuing growth in ICT-based mobile work during travel time? A preliminary look reveals that 50% of all surveyed passengers were gainfully employed, meaning that many could potentially do some work en route. In fact, 40% of these employed passengers state that they could already do so, and 15% can even include working en route in their regular working time, indicating institutional incentives to promote mobile work. From the point of view of technical access, 25% of those gainfully employed also brought laptops on their journeys to/from work, 67% of them actually used them, and 28% accessed the Internet via a private mobile broadband connection. Finally, the cell phone is of course a more established tool for work-related communication and,

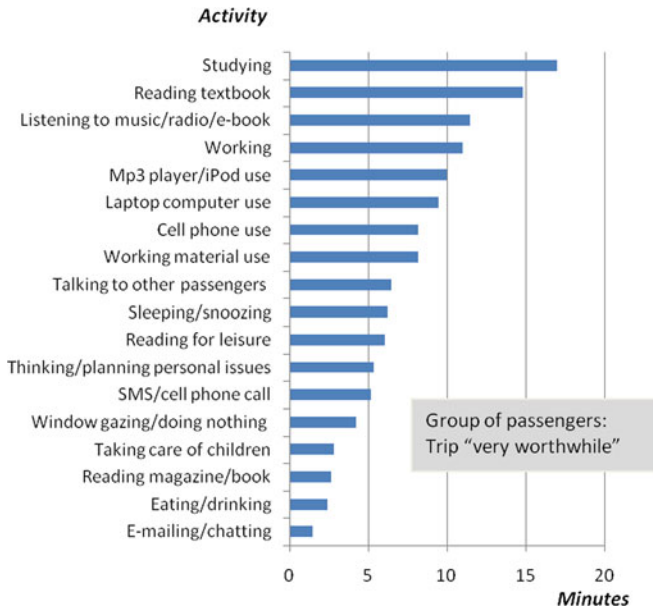


Fig. 10.2 Average time spent on various activities or using various kinds of equipment by travelers who perceive their trips as “very worthwhile” ($n = 60$). Average trip time = 55 min. Source: Authors’ survey, Gothenburg region, Sweden—preliminary findings

not surprisingly, was used by most commuters during their trips. It is reasonable to believe that cell phones serve as continuing enablers of the use of laptops and the Internet.

10.3 Concluding Discussion

This report is based on preliminary findings concerning how people use travel time in a period of growing “virtual mobility,” that is, access to and the use of mobile ICTs. Our conclusions must, therefore, be tentative in nature. Overall, a preliminary general impression is that our results, which are valid for intraregional trips by bus and train, to some extent confirm previous research on long-distance travel by train in various parts of the world. We conclude that even comparatively shorter trips also increasingly integrate physical and virtual spaces, leaving room for extended mobile activity. It is not difficult to see that the spread of mobile ICTs has played a role in transforming the use of travel time.

In addition, we conclude that most passengers already find their travel time valuable and do not only perceive it as wasted time or a cost. We find some indications that ICT may play a reinforcing role here, a crucial issue for further data analysis. We also find that using time productively (for study or work) and using various types

of electronic equipment (e.g., laptops, music players, and cell phones) are significant features of trips that are considered very worthwhile. However, it should be noted that, as mobile ICT use is still rather low in terms of frequency of use by all travelers, it should still be regarded as offering considerable potential for growth.

Our results further indicate that productive time use and laptop computer use are more common among men compared to women. Men are also more satisfied with their travel time than women. Thus, gender aspects and digital divides are of crucial importance for the continued analysis of people's mobile engineering of time and space.

Accordingly, it is important to recognize the broader perspective of daily life when discussing the use and value of travel time. The context of everyday activities and routines essentially structures people's use and perception of time, even when on the move (Vilhelmson, 1999). This is indicated by the fact that most of the surveyed passengers use parts of the journey as transition time or time out. Therefore, ICTs may well confer more utility and meaning on certain existing activities undertaken while traveling, but perhaps not fundamentally transform the basic activity patterns of and need for rest, listening, reading, communicating, and working throughout the day.

Finally, the notions of mobile space and productive travel time may have implications for future mobility levels and the modal distribution of travel. Enhanced possibilities to undertake worthwhile activities while on the move may extend journey times and make longer journeys more tolerable; for example, the working day could be said to start at the beginning of the journey. This might have geographical impacts, for example, fuelling intraregional migration, regional enlargement, and urban sprawl. By improving the competitiveness of public transportation, better opportunities for activities undertaken on the move may encourage a modal shift away from the car system to more sustainable and environmentally friendly mobility options.

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