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## **The use of travel time by rail passengers in Great Britain**

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### **Abstract**

In the face of a society that exhibits an increasing dependence on motorised mobility, the response of transport policy is one that remains grounded in the pursuit of quicker journey times. Less time spent travelling is assumed to convert 'unproductive' time into economically valuable time. This paper explores an alternative perspective on travel time. It seeks to examine the notion that travel time, rather than being wasted, can and does possess a positive utility. This brings into question the extent of assumed economic benefits derived from schemes and policies intended to reduce journey times. Specifically the paper reports on a national mail-back questionnaire survey of 26,221 rail passengers in Great Britain conducted in autumn 2004. The survey examined how passengers used their time on the train, how worthwhile that time use was considered to be and the role of mobile technologies. The results paint a picture of travel time use in which the behaviour and opinions of commuters, business travellers and leisure travellers are compared and contrasted. A substantial if not overwhelming incidence of positive utility of travel time use is revealed, especially for business travel but also for commuting and leisure travel. In light of the survey evidence the paper points to the challenge of understanding the notion of productivity and offers some critical comments concerning the current approach to economic appraisal in Britain.

**Keywords:** travel time; time use; economic appraisal; passenger rail

## 1 Introduction

Great Britain<sup>1</sup>, like many developed countries, faces the enduring and growing problem of a transport system that struggles to cope with the demands placed upon it as society continues to increase seemingly its reliance upon motorised mobility. Whether by road or rail, a key metric of the level of service provided by the transport system is journey time. Accordingly, aspirations and indeed declared intentions to speed up journeys are embedded in statements of transport policy (DfT, 2004a). Major investment decisions in the transport sector have tended to derive their justification from the savings they can achieve in travel times. At the heart of economic appraisal of transport in Great Britain is an assumption that any travel time saved during the working day represents a conversion of unproductive time to productive time thereby realising an economic value (DETR, 2000). Assumptions about, and values attributed to, time spent travelling outside the working day likewise are founded upon a basic presupposition that time spent travelling is a disutility. The importance of such assumptions was underlined in an investigation into the links between transport and the economy. “Travel time savings are the single most important component in the measured transport benefits/disbenefits of most schemes and policies. Hence the methods of valuing them critically affect the measurement of the economic impacts of schemes” (DETR, 1999: 183). As an illustration of the importance of the treatment of travel time in the appraisal of transport schemes, consider the example of the recently commissioned feasibility study examining the business case for constructing a new high-speed railway line in the UK from London to the north (Atkins, 2004). Figures (net present value) for ‘Option 1’ showed a total scheme cost of £8.4bn outweighed by benefits of £11.8bn, £8.8bn of which were non-financial benefits “primarily journey time savings to users”.

The assumptions outlined above are at the heart of economic appraisal of transport schemes and have remained largely the same for some forty years. There have, over this time, been many studies that have sought to establish the monetary values of travel time (savings) (for further details see Wardman, 1998; and Mackie et al, 2003) and some which have examined the legitimacy of the assumptions made or looked at alternative approaches (a notable early example being the work of Hensher, 1977). Nevertheless, the assumptions have endured. This has in part been because of a difficulty in obtaining, and hence a paucity of, empirical evidence to refute the assumptions or legitimately support proposed alternative approaches (such as the ‘Hensher approach’ recently revisited by Mackie et al (2003)). Thus has travel time continued to be seen in mainstream transport studies as a ‘cost’ incurred by individuals and society as a means to enjoy the benefits of what is available at the destinations of journeys, whether that be employment, education, healthcare or leisure.

Now (re)surfacing is interest in a rather different proposition, namely that travel time is not merely a cost and thus, ultimately, something to be reduced to zero but instead something that can possess positive utility. Hensher’s seminal early work had pointed to this in suggesting that account should be taken of the productive work that can be done while travelling on business. More recently Mokhtarian and Salomon have identified three means by which positive utility can be derived from travel: “1. the

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<sup>1</sup> To avoid doubt, Great Britain (GB) is comprised of England, Wales and Scotland; as distinct from the United Kingdom (UK) which is comprised of Great Britain and Northern Ireland.

activities conducted at the destination; 2. activities that can be conducted while travelling; 3. the activity of travelling itself” (Mokhtarian and Salomon, 2001: 701).

Lyons and Urry (2005) provide an exposition of the second means, giving particular attention to the implications of travel time use for the validity of the assumptions in economic appraisal. They emphasise the potential dynamic nature of this area as products of the information age potentially increase the possibilities of using travel time. While their paper raises many issues it concludes with a call for more empirical evidence to move the debate forwards.

This paper stems from a unique opportunity to gather such empirical evidence on travel time use and thereby contribute to the debate. Specifically it considers the experiences and opinions of rail passengers in Great Britain. The Strategic Rail Authority (though shortly to be disbanded, with its functions transferred to other bodies and into the UK Department for Transport) has been responsible for leadership of the rail industry in Great Britain and specifically for planning the rail system and franchising the train company contracts within what is a privatised industry. Since 1999 it has been running a National Passengers Survey twice a year to capture representative experiences and views from users of the rail network’s passenger services. The SRA gave permission for a module of questions titled ‘Passing the time on your journey today’ to be included in the Autumn 2004 wave of the survey. The survey yielded 26,221 valid responses. This paper centres upon providing and discussing the key survey findings concerning travel time use.

The principal aim of the paper is to paint an evidence-based picture of the travel time use of rail passengers in Great Britain. In addressing this aim, elements of the paper are necessarily descriptive but interpretive commentary is also introduced. Three key themes are examined:

1. how travel time is used;
2. the extent of its positive utility (as judged by the travellers themselves); and
3. what supports travel time use and lends it positive value.

Following this examination the paper returns to the debate set out in this introduction and considers what key findings contribute to that debate.

Before examining the three themes, the paper first gives a brief statistical overview of passenger rail in Great Britain and a summary of the survey methodology.

## **2 Passenger rail in Great Britain**

From 1994/95 (when the British rail industry was privatised) to 2003/04 total passenger kilometres has increased by 42.5 per cent (from 28.7 to 40.9 billion passenger kilometres) and over the same period passenger journeys have increased by 37 per cent (from 735 to 1014 million journeys) (SRA, 2005). Passenger distance travelled now exceeds the levels travelled 50 years ago and, impressively, is accommodated on a network of half the size (SRA, 2003). Sixty nine per cent of all passenger journeys are made in the London and South East region and 65 per cent of rail journeys begin and/or end in London (RPC, 2003). In 2000, 46 per cent of rail passengers were commuting to work or education, 20 per cent for business and personal business travel, 22 per cent for leisure and tourism and 13 per cent visiting

friends and family (Steer Davies Gleave, 2002). Based on 2002/03 figures, 60 per cent of surface rail trips are under 25 miles in length and 83 per cent are under 50 miles. Rail accounts for 10 per cent of trips between 50 miles and under 75 miles in length (84 per cent of such trips are made by car). The average trip time for rail (here including London Underground) as main mode is 71 minutes (DfT, 2005).

### **3 Survey methodology**

The National Passengers Survey has been run twice a year since Autumn 1999. The survey instrument is a self-completion mailback questionnaire. The questionnaire is designed to focus upon the particular train journey<sup>2</sup> to be made by the respondent at the time they receive it. The rationale for distributing the questionnaires to individuals at the start of their journey is as follows (Continental Research, 2005).

- Individuals at their origin train station are typically less rushed than they are when disembarking at their destination station.
- Their arrivals at the origin station are more dispersed than at the point of disembarkation.
- Questionnaire distribution at the start of the journey also lends itself to devising a sampling plan to ensure all train operating companies (TOCs) are adequately represented in responses<sup>3</sup>.

Individuals are asked to fill in the questionnaire when they have completed their train journey and to return it in the reply-paid envelope provided.

A stratified sampling approach is adopted for distribution based upon the division of the rail network into 28 elements corresponding to the current 25 TOCs (with one TOC split further into two and another into three 'virtual' TOCs). The target sample size for each element is then based upon corresponding known passenger numbers. Response data are weighted to ensure the national profile of rail passenger travel is matched in terms of each TOC and by journey purpose. For the Autumn 2004 survey the majority of fieldwork took place between 1 September and 2 November. Questionnaires were distributed at 680 of the 2,500 stations in Great Britain and were distributed at different times of day and across all days of the week. In total, 75,930 questionnaires were distributed to passengers and 26,221 valid questionnaires were returned by the 26 November cut-off date (a response rate of 34.5 per cent).

The following contextual information of potential relevance to examining travel time use is captured by the questionnaire:

- scheduled departure time of the train journey in question;
- journey purpose and whether outward or return journey;
- whether travelling alone or with others;
- ticket type (first class or standard class; single/return or season ticket); and
- how often the train journey in question is made.

The module of questions on travel time use sought to determine the following:

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<sup>2</sup> Specifically the questionnaire concerns travel on a single train. Thus for journeys involving a change of trains and hence travel on more than one train, the survey does not capture feedback on the entire rail journey.

<sup>3</sup> Under franchise the privatised passenger rail industry is delivered by 25 train operating companies.

- the approximate amount of time spent on the train in question;
- how the time was spent on this train and what single activity most time was spent on;
- an indication of the extent of positive utility attained;
- what items an individual had to hand and which of these were used during the journey;
- the extent to which electronic devices (personal organiser, computer, mobile phone, iPod, personal stereo etc.) made the time spent better or made it seem to pass more quickly;
- where appropriate, whether tasks concerning paid employment could be undertaken while on the train;
- to what extent the individual had planned in advance how to spend the time on the train; and,
- how the presence of other passengers affected the train journey experience and for how much of the time the individual had a seat during the journey.

The survey results presented below are based on weighted data - weighted by TOC, journey purpose and weekday/weekend. Although in terms of journey purpose, the distributions between commute, business and leisure for weighted and unweighted data are very similar, in relation to the focus of this paper it is appropriate to note that results are not weighted by whether journeys are outbound or return<sup>4</sup> or by age or gender.

Data are weighted such that 44 per cent of trips are for commuting, 16 per cent for business and 40 per cent for leisure. These figures correspond closely to the 2000 figures reported earlier in the paper. As a caveat to the results reported subsequently, it should be noted that journey purpose is further subdivided as shown in Table 1. This shows that 'commute' principally refers to the daily commute to/from work and 'business' refers only to company business. Meanwhile leisure encompasses a diverse set of specific purposes but with the common characteristics of being (predominantly) discretionary travel and non-work travel in personal time.

*Table 1 about here please*

#### **4 How travel time is used**

Respondents were asked to indicate which of the following they had undertaken while on the train and of those selected, which one they had spent most time on:

- sleeping/snoozing;
- reading for leisure;
- working/studying (reading/writing/typing/thinking);
- talking to other passengers;
- window gazing/people watching;

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<sup>4</sup> For the weighted response data, 63 per cent of journeys are outbound and 34 per cent are return (with the remaining three per cent one-way only or unknown). This imbalance between outbound and return is evidently peculiar. It arises as a consequence of the distribution of the questionnaires at 680 different stations and the fact that each station itself is the generator of an unequal number of outbound departing journeys and returning departing journeys. Allied to this is the fact that only just over 12 per cent of responses from weekday questionnaire distribution were distributed after 4pm.

- listening to music/radio;
- text messages/phone calls – work;
- text messages/phone calls – personal;
- eating/drinking;
- entertaining children;
- playing games (electronic or otherwise);
- being bored;
- being anxious about journey (e.g. delays or where to get off);
- planning onward or return journey; and
- other.

Table 2 summarises, according to journey purpose and direction of travel, time use across national rail travel for those activities above that occupied *most* of a rail journey for at least 2 per cent of rail travellers<sup>5</sup>.

*Table 2 about here please*

#### 4.1 *Variation by journey purpose*

Journey purpose is significant to economic appraisal in that a clear distinction is made between travel during the working day (business) and that outside of it (commute and leisure). Travel time during the working day is valued, by mode, according to the average wage rate of people using that mode; meanwhile a national average value applies to travel time outside the working day, derived from people's willingness to trade time for money. Presently used 'market' values of time in appraisal are: £36.96/hour for rail travel in working time; £5.04 for commuting; and £4.46 for other non-working time travel (DfT, 2004b).

Table 2 reveals that the majority of rail travellers (just over half) spend *some* of their travel time reading for leisure, and over a third spend *most* of their time doing so, this being the most popular use of time overall. Commuters are much more likely to devote their time to reading for leisure than leisure or business travellers. They are three times more likely to spend most of their journey doing this rather than working or studying. This said, 13 per cent commuters do work or study for most of the time. In such cases a potentially important question is prompted: if people work during their commute, why does appraisal assume *all* commuting is outwith the working day thus attributing it with six times less value than travel time during the working day? It might be suggested that for many people the very notion of a day in which work time and non-work time are discretely separated with easily defined boundaries has become ill-suited. Observing the distribution of time uses of commuters raises a second question that has a relevance to the survey results as a whole: how and why has this distribution changed over time and how will it change in future?

Working or studying is the activity *most* prevalent amongst those travelling on business who are more than twice as likely as commuters to spend most of their time doing this. In contrast, leisure travellers are twice as likely to spend most of their time window gazing/people watching than other passengers. The passing scenery may indeed be part of their leisure experience, reflecting Urry's concept of the 'tourist gaze' (Urry, 1990).

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<sup>5</sup> 'Other' accounted for six per cent of all responses.

#### 4.2 *Variation by direction of travel*

It might be assumed that noticeable differences exist between how time is used on outbound and return rail journeys. For round trips completed within a day, the outbound journey could be imagined to be characterised by being wide awake and engaging, with the return journey characterised by being tired and detached. The data in Table 2 are revealing in this respect. Considering all travel, the distribution of time use across activities is remarkably consistent between outbound and return journeys overall, especially concerning how *most* time is spent by each person. Disaggregating by journey purpose reveals that this consistency still applies for the case of commuting and, only slightly less so, for leisure travel. The differences are also not substantial for business, with one interesting and intuitively sensible exception. Business travellers are 23 per cent less likely to work/study on a return trip compared to an outbound trip and, it is assumed correspondingly, 32 per cent more likely to read for leisure. This suggests an underlining of the notion that an outbound journey for business may involve preparation time for the purpose of the trip itself while the return journey finds the individual with depleted energy from engagement in the business activity and/or the outbound journey itself. It might also be the case that the return journey is more likely to be outside the traditional ‘working day’ thus reinforcing the individual’s choice to revert to personal, non-work, time use (in which case it could be asked whether this is any longer a ‘business’ trip or now resembles a commute trip?).

#### 4.3 *A different class of travel*

Those travelling first class are much more likely to spend most of their time working or studying than those in standard class - 28 per cent compared to 15 per cent for single/return tickets; and 22 per cent compared to 11 per cent for season tickets (in most cases season ticket holders will be commuting). That the difference is apparent for both season tickets and other tickets suggests it applies irrespective of journey purpose. This may be interpreted in various ways: (i) the higher quality of travelling environment enjoyed in first class facilitates greater ease of working (although this difference is likely to vary across TOCs); (ii) a sense of moral obligation to justify being in first class encourages time use on the train for work or study; or (iii) the type of person travelling in first class is more motivated to work/study while on the train. Though different interpretations may apply to different individuals, there is a need to note that the substantial majority of those travelling in first class do *not* work/study for most of the time. First class and standard class are devised as two separate services by the passenger rail providers. This distinction in time use between the two classes does suggest that the service providers have within their gift the means to influence travel time use and, if a link between time use (opportunity) and mode choice exists, to thereby influence the demand for rail travel (as indeed they may already, intentionally or unintentionally, be doing).

#### 4.4 *Travel time use and gender*

While for commuting there is a balanced gender split of 47 per cent men and 51 per cent women, 63 per cent of business travellers in the weighted response data<sup>6</sup> are men and 35 per cent are women, while for leisure travel 37 per cent are men and 61 per cent are women (remainders not stated). To examine any gender difference in time

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<sup>6</sup> Note that the response data were not weighted by gender.

use, time use by journey purpose and gender was considered. This revealed that within each journey purpose there is a very high degree of consistency between men and women. There are some departures from this. Women for all journeys are more likely than men to spend most of their time talking to other passengers (seven per cent compared to four per cent). Meanwhile, men are more likely than women to spend most of their time working or studying (16 per cent compared to 10 per cent). Across journey purposes, women are much more likely to use their phones for personal calls/text messages than men – 25 per cent of female commuters do so compared to 15 per cent of male commuters. For business travel the figures are 21 per cent and 12 per cent respectively; and 21 per cent and 14 per cent respectively for leisure travel. During the journey, men are more likely to use their phones for work purposes (10 per cent do so) compared to women (seven per cent do so).

#### 4.5 *The influence of journey duration*

Journey duration may contribute to the types of activities selected. It must be borne in mind that the survey concerned itself with travel on a *specific* train and is unable to take account of duration from start station to end station for journeys involving more than one train. What the survey results clearly show is that as journey time increases so too does the likelihood that the number of *different* activities individuals engage in will also increase. In terms of what people spend *most* of their time doing, as Figure 1 shows for the subset of different activity categories used in Table 2, journey duration also has an influence.

Window gazing shows a marked increase for journeys of less than 15 minutes duration which suggests a possible travel duration threshold below which there is not a suitable amount of time to do *other than* window gaze / people watch<sup>7</sup>. This possible threshold might also point instead towards an amount of time that individuals need in order to adjust between different settings and roles – most obviously work life and home life. Mokhtarian and Salomon in a survey of San Francisco Bay Area residents in the US found that more than a third of respondents saw their commute trip “as a useful transition” (Mokhtarian and Salomon, 2001: 709; see also Pazy et al 1996 and Davies 2001). However, the experience of transition is also found to be associated with longer journeys (see for example Pearce 2000 and Edensor 2003) and indeed over one in 10 rail passengers spend most of their time window gazing/people watching even when journey durations exceed three hours.

It is perhaps surprising that the use of mobile information and communication technologies (ICTs), such as phones and PDAs, is not more important during short journeys, as these offer the opportunity for filling short amounts of time with activities like checking emails or quick calls (Gleick, 1999). (The availability and use of ICTs is considered later.)

*Figure 1 about here please*

The likelihood of people spending most of their time working or studying increases with increase in journey duration up to 2 hours after which it declines (the latter

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<sup>7</sup> However, it should be noted that people may also simultaneously be thinking about a range of non-work or work related issues while window gazing and listening to music, which was not captured by this survey, where the passing scenery may invoke memories or the creation of personal biographies (Pearce 2000, Edensor 2003).



decline may be in part attributable to a higher incidence of leisure travel associated with longer journeys). The tendency to spend most time reading for leisure also seems to correlate with journey duration. Collectively these observations in Figure 4 further highlight the heterogenous nature of time use when travelling by rail. For appraisal, concern is with ensuring the underlying assumptions are sufficient to prove appropriate *on average*, thus the existence of variation is not ignored. However, if journey durations change either because this is a proposed scheme's intended effect (as for the earlier example of high speed rail) or because over time the distances people travel change and thus their journey durations, then our findings suggest that the nature of time use will change thus affecting the *average* condition.

What people do with their time on a train is interesting but, in relation to economic appraisal (and indeed wider assessment of possible social benefits of travel time) it is how well-spent that time is considered to be that is of greater importance and relevance. It is apt in now moving on to consider the extent of positive utility to highlight two further time use response categories that were offered: 'being bored' and 'being anxious about the journey'. It was felt that this would present survey respondents with the opportunity to express the disutility they associated with their journey time. Only two per cent of all respondents spent most of their time on the train being bored and only one per cent spent most of their time being anxious<sup>8</sup>.

## **5 The extent of positive utility**

As a means to gauge the extent of positive utility within the confines of the survey instrument and questionnaire design, respondents were asked to indicate which one of three statements they most agreed with. The results are shown in Table 3.

*Table 3 about here please*

Anecdotal evidence abounds that people can make worthwhile use of their time when travelling thus rendering the time far from wasted. However, resoundingly with answers from a sample of over 20,000 rail passengers, Table 3 provides evidence that for over three quarters of rail passengers their use of time while travelling is not entirely wasted. Indeed across all journey purposes over one fifth of people are making very worthwhile use of their time. Though doubtless interpreted in different ways by the respondents themselves, the Collins English Dictionary definition of 'worthwhile' is as follows: "sufficiently important, rewarding, or valuable to justify time or effort spent". Abiding by this definition then first impressions suggest that these results underline a challenge to the appraisal assumption that travel time is wasted and, perhaps most importantly, in the case of business travel time, unproductive. Further discussion of whether the challenge is necessarily upheld by such evidence follows later in this section.

### *5.1 Journey purpose and time use*

Table 4 shows the responses to the survey question disaggregated according to journey purpose *and* which activity individuals spend most of the time on the train

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<sup>8</sup> When considering how *some* of the time was spent these figures increase to 12 and seven per cent respectively.

undertaking<sup>9</sup>. The figures in the Table highlight the importance of not seeking to interpret utility from the description of an activity itself. For example, although over one in four rail passengers who spend most of their time reading for leisure consider their time use very worthwhile, over one in 10 rail passengers who spend most of their time doing so consider their time has been wasted on the train. The prospect of uninterrupted time to read for leisure is clearly welcomed by some passengers, in the same way that it has previously been observed that Walkman users welcomed the opportunity of travel to listen to their own music (Bull, 2000). However, reading, like listening to music, may instead be a method of regaining a sense of control over travel time, or even just 'killing time' (see Zerubavel, 1981).

*Table 4 about here please*

Likewise, window gazing and people watching are activities that are open to interpretation in terms of their utility – for some it will constitute a relaxing and pleasant experience while for others it could reflect monotony and sense of being a 'hostage' to journey time. Table 4 reveals that while more than one in eight people who spend most of their time doing this seemingly consider it very worthwhile (and over half consider it of some use), nearly one in three people who mostly window gaze / people watch while on the train consider it wasted time. Almost the same is true for sleeping/snoozing.

Yet interestingly such people refrained in the questionnaire from selecting being bored as one of the available responses to how they spent most of their time. We suggest this observation is less likely to reflect a methodological shortcoming than instead touch upon the complex issue of judging time worth. On the other hand the two explanations may be intertwined since respondent interpretation of the question of time worth may vary as we have already said. It is likely that the time 'worth' assessment will in part have been comparative, e.g. 'reading for leisure was wasted time when I could have been at home getting on with other things' or 'reading for leisure was very worthwhile because I never get a minute to myself at home'<sup>10</sup>. A category of time use that is apparently less ambiguous is working/studying. Regardless of journey purpose, hardly anyone who works/studies for most of the time considers their rail travel time has been wasted (only three per cent of such people). However, even here and perhaps *especially* here the issue of comparison can be important. An individual who has worked on the train may still consider that his level of productivity has been less than that she would have achieved in the 'office' (though of course there may be instances when quite the reverse is true). Comparison is pivotal to appraisal assumptions: the concern is with what would otherwise have been achieved with the time had it not been spent travelling.

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<sup>9</sup> It should be noted that 'most time' does not necessarily equate to 'nearly all the time'. In practice an individual may do several activities on the train such that 'most time' simply indicates that more time was spent on a particular activity than on any other.

<sup>10</sup> In relation to appraisal it should be noted that for business travellers, as the wage rate is used for valuing time savings, it only considers time wasted from an employers perspective, rather than the travelling worker, who's feelings on the matter are currently irrelevant. In his models, Hensher allowed for the travellers' values to be considered, as did other work specifically concerning road users (AHCG, 1999). It could be argued that besides for their own wellbeing, the traveller gaining some positive utility from a journey could benefit the employer, by leading to increased, or preventing reduced, productivity at the destination.

What Table 4 also reveals is that for all six of the main travel time uses shown, commuters are more likely to consider their time use wasted than business or leisure travellers. For example of those people who spend most of their time window gazing or people watching, commuters are 50 per cent more likely to consider this wasted time than business travellers. Repetition of the commute may decrease the value of window gazing, whereas the less frequent journey for a business traveller may compare with tourism and the tourist gaze. In general, business travellers in turn are somewhat more likely to consider their time use wasted than leisure travellers. This apparent distinction by journey purpose could have several explanations. The following is offered as a possibility. By definition, daily commuters (that make up 80 per cent of the 'commute' category) are faced with a very routine and familiar train journey. The total amount of time they spend travelling by train each week is likely to be higher, typically, than for business and leisure travellers. Accordingly there is less novelty to the train environment and perhaps appeal from the time use opportunities it provides and which are indulged in<sup>11</sup>. Travelling by train once a month and spending one's time window gazing/people watching could be intriguing. Travelling every day and doing so may well not be the case. As distinct from commuters, leisure travellers it seems have a greater congruity between the purpose of their trip and the activities undertaken during the journey which themselves are leisurely in nature. Thus 'getting there is half the fun' seems to ring true in terms of the journey time use being seen to offer some positive utility. Likewise a degree of congruity exists for business travellers with the individual activity most likely to occupy their train journey being work/study.

## 5.2 *Other factors and time use*

A greater proportion of travellers in first class (33 per cent) considered they had made very worthwhile use of their time compared to 23 per cent of other passengers. Survey results show a modest increase in time use being judged as worthwhile once journey duration becomes an hour or more (linked, probably, to the changing distribution of time uses with changing journey duration). There is no difference in overall response to the utility statements according to gender. However, response is influenced by age as shown in Figure 2<sup>12</sup>.

*Figure 2 about here please*

The difference according to age is intriguing although the survey data are not helpful in yielding an explanation. However, it is suggested that it may relate to differences in the wider set of activities and environments in an individual's life. By way of illustration whilst a young person may have the same opportunity as a middle-aged person to read for leisure on the train, the former may be more time rich and crave social engagement while the latter may be time poor and subject to an excess of engagement with others such that the 'selfish' time on the train to read is relished. Such explanations of course acknowledge differences across people which, in the case of business travel, is not a relevant consideration with the exception of the mode they are using leading in turn to identifying the *average* wage rate of a traveller on that mode.

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<sup>11</sup> Commuters are also less likely to have a seat for all or most of the journey (85 per cent) than business travellers (94 per cent) or leisure travellers (93 per cent).

<sup>12</sup> Other parameters may be associated with age, such as journey purpose and time use activity. They may therefore contribute to explaining this trend in increasing utility of rail travel time use with age.

### 5.3 *Positive utility and transport appraisal*

Returning attention to Table 4, the results for working/studying touch upon a significant line of reasoning used in exploring the assumption underlying appraisal. The empirical evidence is that almost no-one who works/studies for most of the time is wasting their time. In other words, the time on the train is not unproductive, contrary to the assumption explicitly made for business travel in appraisal<sup>13</sup>. However, what the evidence from this survey has not been able to ascertain is the *extent* to which rail journeys that mainly involve working/studying have been productive. Across journey purposes, the majority of those who work/study for most of the time consider their time to be of *some* use – by implication, it seems, they are conceding that their use of time has not been as productive as had they not been travelling (recall earlier consideration of the issue of comparison – though if asked, people may also not indicate that their non-travelling time has been very worthwhile).

The line of reasoning (for business travel time at least) is then that appraisal is in fact not concerned with travel time per-se but rather with the *marginal savings* in time that a new scheme or policy may bring about. It is argued in turn (Fowkes et al, 1986; and Fowkes, 2001) that unless the entire journey time is being used productively (and to the same extent of productivity as would be the case if not travelling) then the marginal amount of time saved will not encroach upon productive travel time use. Thus the reasoning concludes that the appraisal assumption *is* upheld. The available evidence from this survey would appear to support this line of reasoning, at least for the 73 per cent of business rail passengers who did not consider their travel time use ‘very worthwhile’. However, the deliberation here may yet not be conclusive. Consider for example the evaluation of a scheme that saves two minutes of time for an individual on a 50 minutes journey for business in which 80 per cent (40 minutes worth) of that time is used working productively. There are at least three consequence scenarios for the marginal journey time saving: (i) the individual can still work for 40 minutes on the shorter journey; (ii) the individual needed 10 minutes to settle into and prepare for ending the train journey and therefore now only has 38 minutes of time to work productively; or (iii) the individual works at a lower level of productivity than in ‘the office’ for the full duration of the journey *equivalent to* 40 minutes worth of ‘fully’ productive time and hence a *proportion* of the two minutes saved would have been used productively on the train. In the absence of conclusive empirical evidence it is not possible to judge which of the three apply in practice but if either (ii) or (iii) do so to a sufficient extent then the current appraisal assumption of unproductive business travel time remains questionable.

## 6 **The support of travel time use and its positive value**

Examination of the survey results has thus far considered how travel time is used and how that time use is judged. The third aspect that the survey sought to learn more on concerned factors that may play a supporting role in how time is used and in turn how worthwhile it is judged to be. Thus respondents were asked “to what extent had you planned in advance how you would spend the time on this train?”. They were also

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<sup>13</sup> Government guidance in relation to travel time on employers business notes that “the [travel] time spent or saved is assumed to be lost or gained in productive working time—the travel activity taking up the time is therefore deemed irrelevant” (DETR, 2000).

asked to indicate which items they had to hand and in turn which of these they used<sup>14</sup>. For the latter issue of equipped travel there was also a specific interest in examining what impact the information age may be having.

### *6.1 Advance planning*

Overall, 13 per cent had planned 'a lot', 41 per cent 'a little' and 47 per cent 'not at all'. Gender does not influence the response but there are differences between journey purpose, class of travel, and journey duration. Business travellers are much more likely to plan in advance 'a lot' (20 per cent) or 'a little' (47 per cent) compared to other passengers. More first class passengers plan a lot in advance (24 per cent) than other passengers (12 per cent). A clear link exists between advance planning and journey duration - the longer the journey the more likely people are to plan a little or to plan a lot in advance.

Those passengers who consider their travel time to have been wasted are more than twice as likely to have done no advance planning of how to use their travel time (70 per cent) than those who consider their travel time to have been very worthwhile (31 per cent). This may also reflect the large group of commuters whose journeys are routine. It is also possible that carrying the permanently packed bag may be entrenched in the routine of regular rail travellers such that they no longer view this as advanced planning. Thus, it is not surprising that many passengers are 'equipped' with items that serve a purpose throughout the day, and are not specific to the journey, as discussed below. Nevertheless, the apparent correlation between the extent of advance planning and the extent of worthwhile time use suggests a need for further research to better understand the reasons why people do not plan and the factors that contribute to experiencing travel time as wasted time, to then creatively work with transport providers and travellers to reshape travel time as an opportunity rather than a burden.

### *6.2 Equipped travel*

Figure 3 shows, by journey purpose, what items individuals have to hand when they travel. Further to the results shown, the survey also revealed that older people are less likely to be equipped with a personal stereo radio, a mobile phone, food and drink and reading book or text book. For example, 85 per cent of those aged 16-25 have a mobile phone with them compared to only 26 per cent of those aged 65 or above. Those in the middle of the age range are more likely than those younger and older to have a laptop computer, paperwork, and/or PDA/hand-held computer with them. There are also some differences by gender. Women are more likely to have a reading book and less likely to have paperwork with them than men. They are also much less likely to have laptop computers or PDAs/hand-held computers than men. Such differences can be partly explained by the higher proportion of women than men who are travelling for leisure (46 per cent compared to 32 per cent). However, the gendered profile of employment may also impact on this.

*Figure 3 about here please*

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<sup>14</sup> Here we sought to draw upon Gasparini's notion of 'equipped waiting' (1995) to argue that rail passengers equip themselves with mobile objects to enhance travel time experience.

In terms of *use* of items to hand, the results reveal that while people are equipped for using their time on train journeys in many cases they do not use (all) the equipment they have. For example, 65 per cent of individuals taking laptop computers with them on business do *not* use them on the train journey. Likewise, 62 per cent of commuters who have paperwork with them do not spend time using it. 64 per cent of all passengers with a mobile phone do not use it on the train journey. First class travellers equipped with a PDA/handheld computer, mobile phone, laptop computer and/or paperwork are more likely to use them than other travellers with these items. Nevertheless, with the exception of paperwork, nearly half of first class travellers do not use these items in spite of having them to hand.

It may be that in some instances, individuals have particular items with them associated with activities at the destination of their journey rather than with any intention of using them on the journey. Generally, however, it would appear that people prepare themselves for possible time uses on the train journey but that the decision on time use remains flexible. Indeed this may point to the discretionary nature of time use while travelling. For many people there will not be an expectation placed upon them by others about how their travel time is used. The presumption may often be that the time is wasted and a necessary forfeit for reaching the activity at the destination. In this context the individual is 'free' to do with the time as they see fit and such that any worthwhile or productive time use is a 'bonus'.

### 6.3 *The information age*

Individuals were asked about the availability and use of ICTs on their journeys. It could be suggested that such ICTs (and their continuing evolution, capabilities and affordability) increase the opportunities for, and worth of, time uses when travelling. The laptop and mobile phone together, for example, can potentially provide the individual with a mobile office comparable to their traditional spatially fixed office. Yet the majority of rail passengers who are equipped with these two items that potentially create the mobile office do not use them. This corresponds with a number of other studies that have found that paper is still the most important resource for mobile working due to its low space requirements and suitability for shared working (O'Hara et. al., 2002; Brown and O'Hara, 2003; and Sellen and Harper, 2001). However, of the available ICTs, previous studies have found the mobile phone to be by far the most useful device for working on the move, providing an important link to co-workers and clients not previously possible, as well as allowing a remote link to many further less mobile ICTs such as fax machines (Laurier and Philo, 1998, Perry et. al., 2001).

In the survey, respondents were specifically asked to what extent electronic devices had made the spending of time on the train journey better and whether having electronic devices made the time seem to pass more quickly than otherwise. In the case of the former it should be noted from above that many people will have electronic devices with them but will not be using them. Thus it should mean that ICTs in such instances do not make the journey better or seem quicker.

Over a fifth of rail passengers considered having electronic devices with them made the time on the train a lot better. However, nearly half of all passengers, 46 per cent, considered electronic devices had not made the travel time any better. Business travellers generally saw slightly more benefit and leisure travellers slightly less. Those

travelling first class were more likely to consider that electronic devices had made their time use better than other passengers. Overall there was no difference in response by gender. There is, however, a marked difference in opinion by respondent age as shown in Figure 4. Respondents could indicate 'not applicable' and hence Figure 4 should represent the views of individuals having *one or more* electronic devices with them. The results seem to reflect the commonly held view that younger people have a stronger affinity with new technology. The interesting query raised by the results is whether over time the results for each age group will change with an overall shift from 'not at all' across to 'a lot'?

*Figure 4 about here please*

Respondents were asked "Would you say that by having electronic devices with you the time seemed to pass more quickly than otherwise?". Overall, 46 per cent said 'yes', 32 per cent 'no' and 22 per cent 'don't know/no opinion'. Corresponding to Figure 4, a belief that electronic devices can help time to pass more quickly decreases with increasing age.

The opportunity to probe further on the issues of advance planning and equipped travel was not available within the survey. Nevertheless, given the relatively recent mainstreaming of many of the mobile technologies they seem already to be having an influence on time use for a potentially significant minority of rail passengers. Indeed this may prove to be an aspect of travel time use that is rapidly changing – something which these cross-sectional data based on a specific train journey have been unable to reveal.

Consider, nevertheless, that the survey results have revealed that for some two-thirds of all rail journeys people spend most of their time engaged in one of three activities: reading for leisure; window gazing/people watching; and working/studying. Intriguingly, the first two of these (which for commuting and leisure travel account for the time use of over half of all rail passengers) are not dependent upon mobile technologies. In other words, while the modern train carriage can seem characterised by the sound of mobile phones and the sight of people busily working on laptop computers, the time uses that predominate in the information age may be little different to those of the age of steam. Even if the use of ICTs increases (as may well be the case) ICTs may prove only to represent an increase in the number of *ways* in which an individual can achieve the same goal in terms of time use. For example, if the goal is relaxation then playing games on a laptop computer may only be a substitute for reading a book. Checking emails on the computer may only be a substitute for annotating a paper document in terms of the goal of addressing the individual's weekly workload. Conversely, some activities and goals have only been made possible through ICTs – notably before the availability of the mobile phone it was not possible while on the train to speak with people remote from the journey (notwithstanding any public phones that have been installed on trains for some years).

## **7 Concluding discussion**

The opportunity to acquire and examine these empirical data on travel time use clarifies and reinforces the central two difficult questions that govern the debate over travel time use and valuation:

1. In the light of fresh reasoning and evidence, does the current approach to economic appraisal stand up to sufficient scrutiny to remain 'fit for purpose'?
2. If sufficient doubt is cast on the current approach then what fresh difficulties are posed in working towards a better alternative?

The evidence presented in this paper, drawn from the experience of some 26,000 rail travellers, reveals not surprisingly that there are some notable variations in travel time use and its perceived value across different types of rail journey (in terms, for example, of journey duration) and different types of passenger (in terms, for example, of age). Variations are also attributable to factors that arguably relate to the type of passenger and type of journey (for example journey purpose and class of travel). As mentioned earlier it is the *average* situation that appraisal concerns itself with as distinct from variations between individuals. However, where the assumption sets the average in terms of productivity of, in particular, business travel time as zero then any variations that are established point towards a move away from the average. Variations uncovered by this study are substantial: nearly one third of travel during the working day is dominated by working/studying and, where this takes place, in over 40 per cent of instances this time use is considered very worthwhile. Further evidence of variation from 'zero productivity' is revealed for non-work travel (though it is argued that this variation is addressed in consideration of individuals' willingness to pay in the establishment of values of non-work travel time).

The paper has acknowledged, however, that appraisal does not, strictly speaking, concern itself with travel time but with *savings* in travel time. While our evidence cannot substantiate a counter-argument, we have contested the argument that the focus of appraisal assumptions on the *marginal* savings in travel time are not challenged by *some* productive use of travel time.

The line of argument, once a departure from the simplicity of the assumption that travel time during the working day is unproductive is made, confronts what we suggest is the crux of what occurs in practice: how is productivity defined, where is it temporally located in an individual's day and how is it measured? Evidence from the survey points to 13 per cent of commuters who work or study for most of the time on their journey to/from work and nearly 30 per cent who do so for some of the time. The working day for such individual's has clearly overspilled outside the boundaries of the definition of working day assumed in appraisal. If an individual works during their commute and reads for leisure during a business trip how is this reconciled in the logic of appraisal? Measuring productivity or personal value attached to travel time use cannot simply be a matter of recording activities as this study has discovered. It is notable that some manifestations of productivity are less tangible than people reporting working or studying. For example, the recognition that over one in 10 commuters and business travellers who window gaze for most of the time on their journey consider their time spent on the train very worthwhile demands an explanation. In terms of the temporal distribution of productivity one could legitimately ask how performance of an individual varies throughout the day with or without the consideration of travel.



We welcome the reactions from others concerning whether or not some of our points above can be reconciled by the economic arguments (as distinct from ‘paucity of evidence’ arguments) underpinning appraisal’s current approach.

In moving to the second question of the debate we are quick to sympathise with the challenge of defining metrics and in turn obtaining measurements that can recalculate values of time savings. Nearly 30 years ago Hensher attempted to define metrics and these have seen a longevity of interest but a lack of data to date to provide values deemed credible for evaluation. We suggest that the matters of metrics and measurement might need to be reconsidered together rather than separately.

In this regard we would make two methodological observations stemming from this study. The first is to acknowledge the limitation of space available within the questionnaire for questions concerning travel time use. Conspicuous by their absence as a result have been open response data to contribute to an *explanation* of the recorded behaviours and opinions of rail travellers. To better understand notions of productivity during travel and outside it, qualitative research is called for. In light of this, ongoing research by the authors, in collaboration with colleagues at the Centre for Mobilities Research at Lancaster University, is employing travel ethnography to record in detail the experiences of rail travel. We are also seeking to examine the time use of the business traveller by studying the patterns of activity and productivity of knowledge workers across their working days encompassing time in the ‘office’ and on the move. In so doing the hope is that more light can be shed on the *comparison* of time use and its value between that used when travelling and that when not. This in turn may progress the examination of metrics and measurement.

The second observation is to note the importance of longitudinal data to the issues of travel time use. Without such data it remains difficult and inappropriate to speculate about the future extent, nature and value of travel time use. This is particularly pertinent to transport scheme appraisal which has now seen its time frame changed from 30 years to 60 years (DfT, 2004d). With the pace of technological change and the potential time uses afforded by mobile technologies it could prove unwise to unquestioningly persist with today’s appraisal assumptions about travel time use if the possibility remains that such assumptions may *increasingly* become invalid over time.

We have not dwelt upon travel behaviour within the paper but a brief commentary relating to this now brings the article to a close. Travel behaviour is not directly addressed in economic appraisal but it *is* accounted for indirectly in the modelling of travel choices that give rise to forecast levels of use by mode or service that in turn are fed into appraisal. Hence the importance of an understanding of travel time use in relation to travel behaviour. We were not able to ascertain from this study the extent to which the use of time while travelling was a *determinant* of individuals electing to travel by rail. The dramatic growth in rail travel since privatisation is likely to be attributable to a number of factors. Such growth has taken place alongside ongoing increases in fares levels and increasing road traffic levels. It seems plausible that the positive utility of travel time use is at least one of the factors explaining this growth. Some of this growth will be attributable to mode switch from road to rail.

Were appraisal to acknowledge the positive utility of travel time and thus reduce the monetary value of travel time saved, this would, perversely, penalise those modes

enabling greater travel time utility through weakening the investment case by reducing the projected benefits. Thus if travel time use when travelling by train were shown to be more productive than travel time use when travelling by car then a logical next step in the reasoning might be to favour investment in road rather than rail. However, this overlooks the monetary benefits that would accrue for rail in appraisal of schemes achieving or seeking to achieve *mode switch* from road to rail. If a journey made by car switches to being made by rail (and for the sake of simplicity assume that journey times are the same) then a marginal reduction in traffic flow delivers a travel time saving to journeys on the road network. Meanwhile the increase in positive utility of travel time moving from car to train represents an additional economic gain in terms of that individual journey. Such deliberations point to the importance of adequately interpreting economic values of time savings or use *and* behavioural values of time savings or use. Both are likely to be changing over time and indeed in some respects there are opportunities for initiatives and interventions to actively seek to change them.

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*Table 1. Share of trips by journey purpose for weighted response data*

	journey purpose	percentage of all trips
commute	daily commute to/from work	32.8
	less regular commute to/from work	6.8
	daily commute for education	2.7
	less regular commute for education	1.8
business	on company business (or own if self employed)	15.8
leisure	on personal business (job interview, dentist etc.)	5.4
	visiting friends or relatives	13.3
	shopping trip	6.3
	travel to/from holiday	3.4
	a day out	5.9
	sport	0.9
	other leisure trip	4.7

*Table 2. Comparison, by journey purpose and direction of travel, of the percent of travellers undertaking activities for some time during the train journey and (shown in brackets) for most of the time*

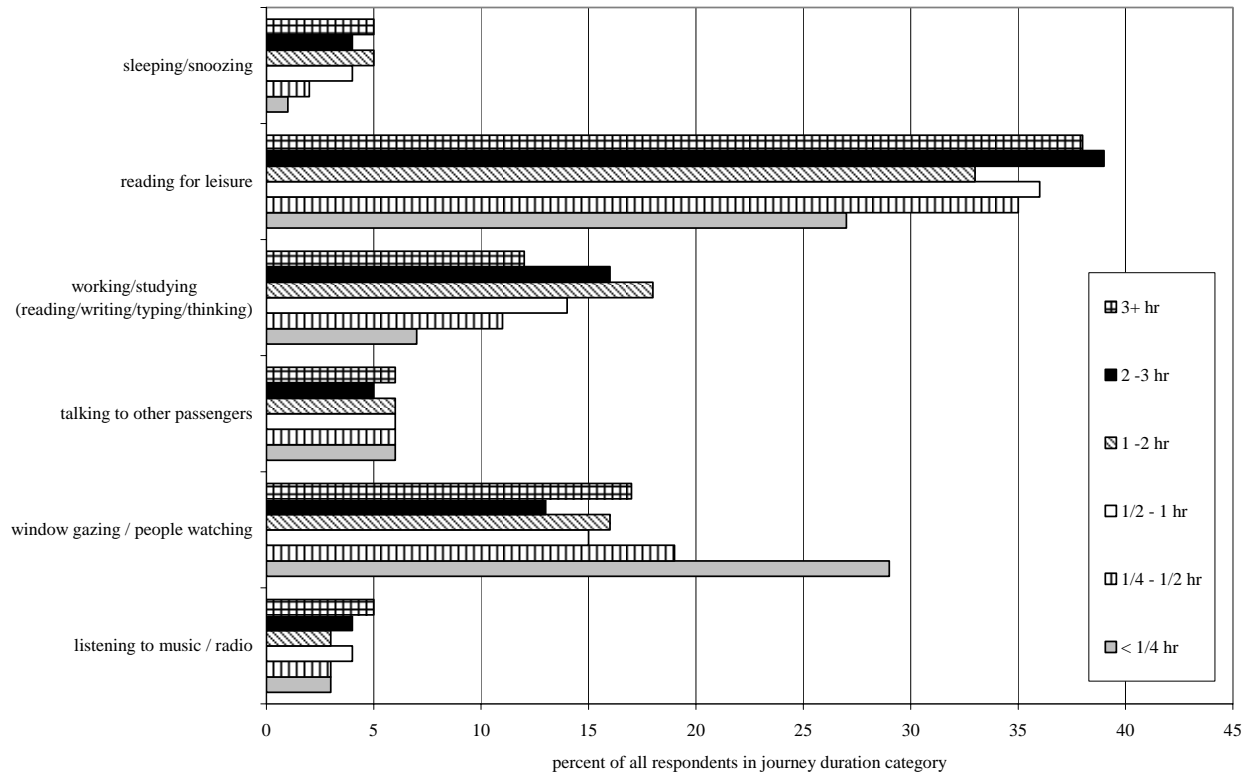
activity	journey purpose							
	all		commute		business		leisure	
	out	return	out	return	out	return	out	return
reading for leisure	53(33)	56(35)	62(42)	62(42)	43(22)	53(29)	46(27)	51(31)
window gazing/people watching	56(18)	58(18)	49(12)	48(11)	51(12)	58(14)	66(27)	68(27)
working/studying	26(13)	25(12)	27(13)	29(13)	55(35)	48(27)	13(6)	12(5)
talking to other passengers	16(6)	14(5)	11(4)	10(3)	14(5)	11(4)	23(9)	21(8)
sleeping/snoozing	13(3)	19(4)	16(5)	23(5)	11(2)	17(3)	9(1)	14(3)
listening to music/radio	9(3)	9(3)	12(4)	13(5)	4(1)	5(1)	7(3)	6(2)
not answered	1(11)	1(10)	1(9)	1(9)	1(10)	1(10)	1(12)	1(11)

*Table 3. "Thinking about the time you spent on the train after being given a copy of this questionnaire, which one of the following statements do you most agree with?" (per cent of respondents selecting each statement)*

statement most agreed with	all	commute	business	leisure
I made very worthwhile use of my time on this train today	23	22	27	23
I made some use of my time on this train today	55	53	58	55
my time spent on this train today is 'wasted time	18	22	13	17
not answered	4	3	2	5

*Table 4. Distribution of time worth assessment (per cent of respondents, for each activity that most time was spent on, within a given category of journey purpose)*

activity	time on train was:	journey purpose			
		all	commute	business	leisure
sleeping/snoozing	very worthwhile	17	16	15	23
	of some use	45	43	57	45
	wasted time	35	39	27	28
	not answered	2	2	1	4
reading for leisure	very worthwhile	26	25	23	28
	of some use	59	58	63	60
	wasted time	13	16	12	8
	not answered	2	2	2	4
working/studying	very worthwhile	39	37	42	40
	of some use	56	58	54	54
	wasted time	3	4	2	3
	not answered	1	1	1	2
talking to other passengers	very worthwhile	25	20	24	27
	of some use	54	54	56	53
	wasted time	19	25	19	16
	not answered	3	1	1	4
window gazing/people watching	very worthwhile	14	10	12	17
	of some use	51	45	58	52
	wasted time	30	42	28	25
	not answered	5	3	2	6
listening to music/radio	very worthwhile	16	16	14	18
	of some use	52	52	53	54
	wasted time	30	32	27	27
	not answered	2	1	7	2



*Figure 1. Activities rail passengers spend most time doing compared by length of time spent on train*



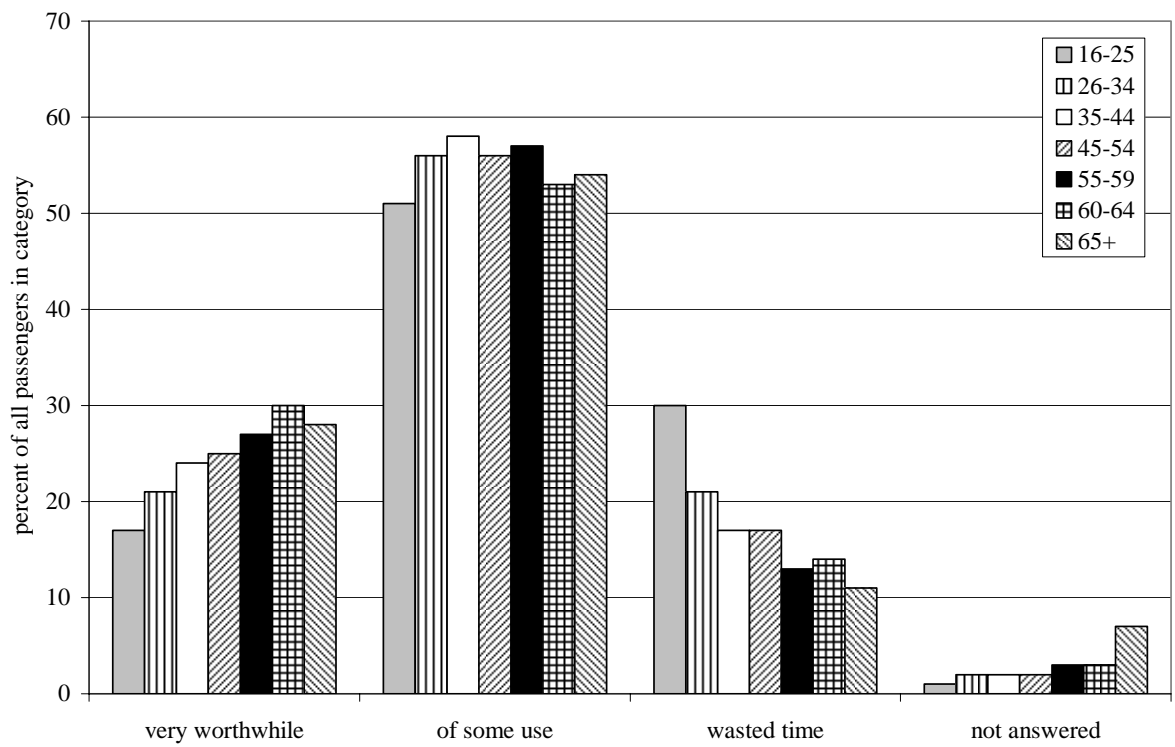
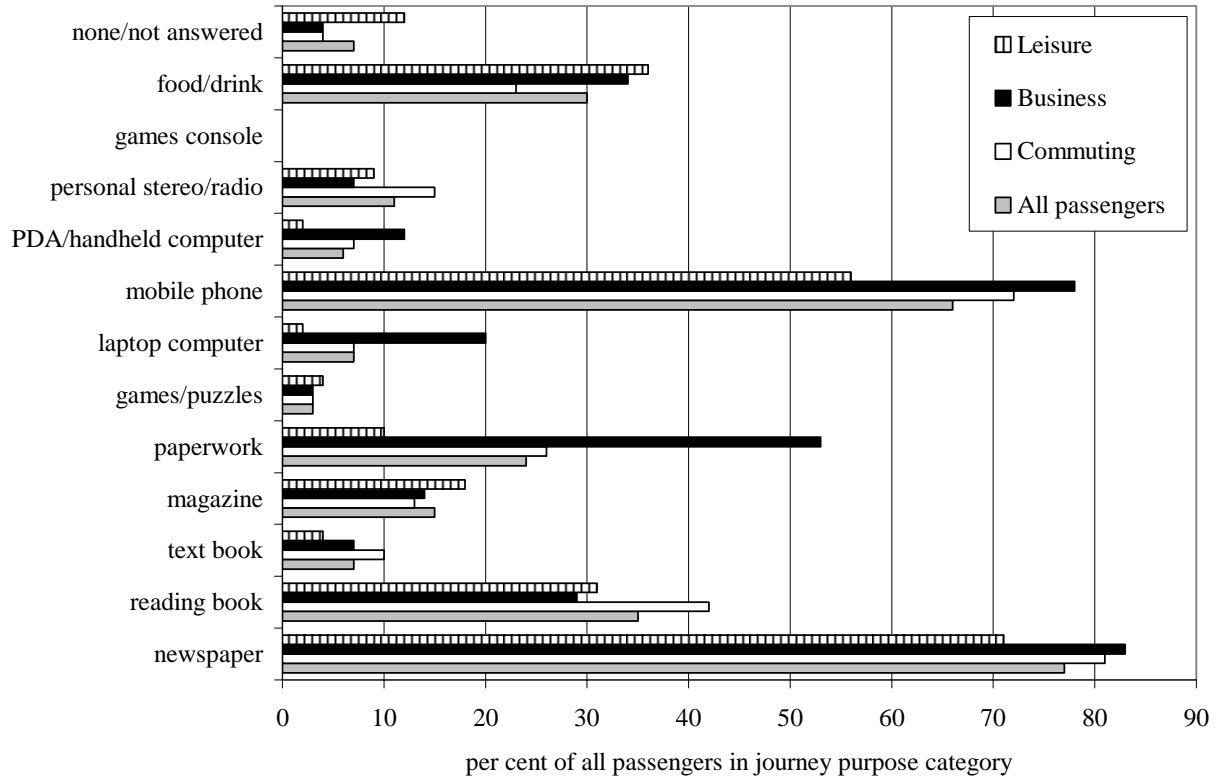


Figure 2. Respondents' opinions, by age, on 'positive utility' of travel time



*Figure 3. Items individuals have to hand, according to journey purpose, when they travel by rail*

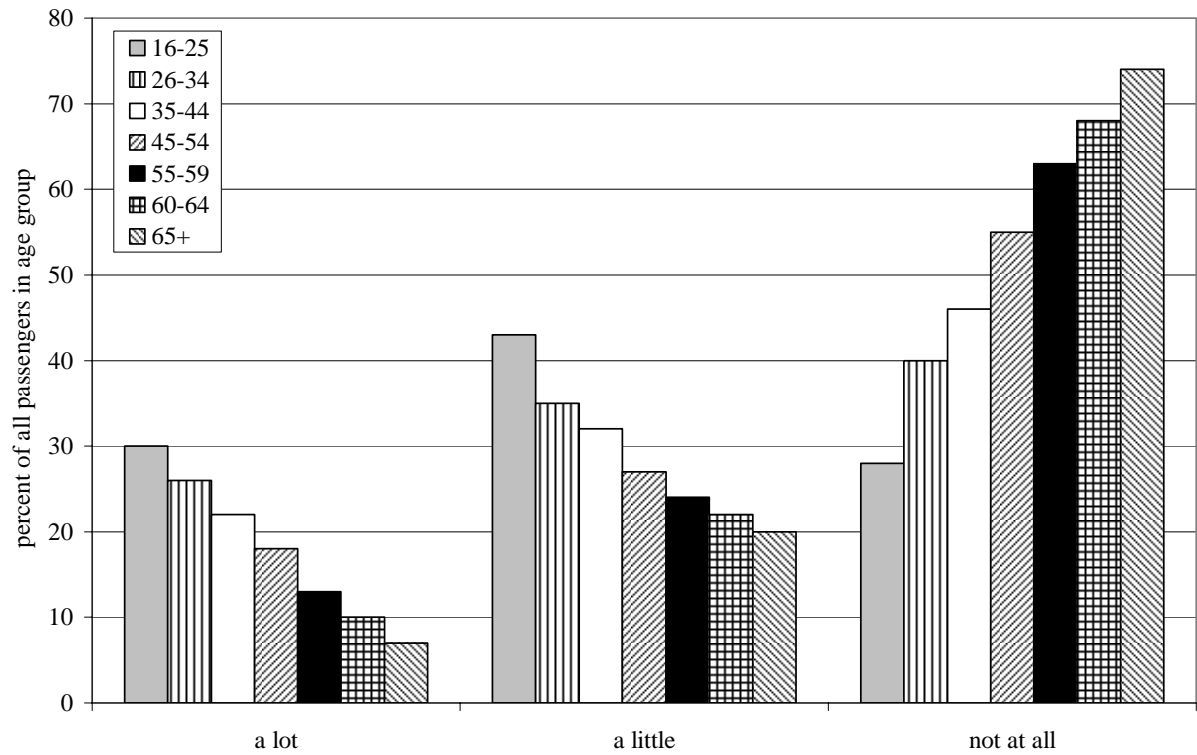


Figure 4. Respondents' answering other than 'Not applicable' to the question "To what extent did any electronic devices (personal organiser, computer, mobile phone, iPod, personal stereo etc) you had with you today make the time you spent on this train better?"