

Times tables

Making sense of when and where trains run

Foreword

by Suzanne May
Chair of the London Transport Users Committee

Timetables were virtually invented by the first railway companies, and they have been an indispensable part of passengers' lives ever since.

In the course of a year, the rail industry prints millions of these vital information devices. Yet it seems seldom – if ever – to have asked itself whether they are fit for the purpose intended : that of making it as simple as possible for intending travellers to find out when and where the trains run.

In the era of British Rail, the timetable reader's task was at least consistent, if not always easy. All timetables were in an identical format, which still survives in the national timetable book produced by Railtrack. But this is a volume designed for cognoscenti and enthusiasts which few ordinary passengers ever encounter. The timetables found in racks at ticket offices are aimed at the mass market, and these are now the work of individual train companies.

Since privatisation in the 1990s, these fledglings have asserted their new-found freedom by redesigning their timetables in an assortment of sizes, shapes, colours and graphical conventions. As a result, no two operators' publications are alike, and travellers using more than one company's trains have to learn a series of different visual languages.

At the London Transport Users Committee, our only function is to promote the interests of the travelling public. So encouraging transport operators to make service information literature fit for its intended purpose, and as easy to use as possible, has been one of our longstanding concerns. Nearly 20 years ago, we published a pioneering study of bus maps and timetables called *See how they run*. And we have now returned to the subject in this report – but focusing this time on the railways.

We knew that there is now great variety in the rail industry's practice. What we wanted to find out is why. And what our researchers (FDS International) discovered was worrying. Although there are a number of codes of good practice issued to help timetable designers (e.g. from the Association of Transport Co-ordinating Officers and from the Disabled Persons Transport Advisory Committee), awareness of these amongst the industry's practitioners is low. Psychologists and graphical designers have conducted much research into the intelligibility of printed information, but this seems to have passed the industry by. Provided that they display the company logo prominently, and do not exceed their print budgets, the publicity departments have been left largely to their own devices.

(continued)

(continued from previous page)

So we decided to go one step further and commission some operational research. Real timetables were tested on real passengers, using real journey information needs. The results were as we had feared. For many people, some timetables are unintelligible. If the railways are losing (or never gaining) passengers as a result, they have only themselves to blame.

This report sets out what we discovered. It details which timetable reading tasks proved simple, and which proved difficult. It shows which of the formats tested worked best, and which did not. It recognises that there is probably no single, perfect solution to this basic communication task. But it identifies examples of good (or at least better) practice, and suggests what an ideal timetable publication might be like.

We commend it to the railway industry, and we invite the train companies' response. We are ready and keen to discuss its findings, and the improvements to which they point, with all those in the industry who share our desire to see bad practice replaced with good, and good practice improved to best. Passengers and railway companies have a shared interest in seeking improvements, because the industry's only purpose is to meet passengers' needs.

One day, perhaps, trains will run so often that – like the Underground – the main line operators will be able to dispense with public timetables, and simply issue a map. But until that day comes (and we will not be holding our breath until it does), timetables will remain a familiar feature of railway life. So the task must be to make them as user-friendly as possible. The purpose of this study is to kick-start this important task, because train companies need passengers just as much as passengers need trains.



Comments on this report will be warmly welcomed.

Please send them to :

John Cartledge
Deputy Director
London Transport Users Committee
Clements House,
14-18 Gresham Street
London EC2V 7PR

jcartledge@ltuc.org.uk

Executive summary

In January 2002, research was undertaken among passengers and representatives of train operating companies (TOCs) into timetable design in order to assist the London Transport Users Committee in making recommendations to TOCs providing services in and around London.

Despite the probability that a single timetable size and style is unlikely to be either imposed or voluntarily adopted, the research summarised in this report provides many pointers towards how the genre might be simplified and rationalised.

Current timetables cover a vast range of perceived needs. While diversity in size appears an ongoing necessity, many apparent anomalies could be removed from various aspects of style. These include the deployment of bold print, the presentation of connecting services, variations in descriptions of common criteria, and the use of colour and shading.

While there has been considerable contact between TOCs and passenger representative organisations, such as local users' groups, little substantive research had been conducted into the comparative merits of different rail timetables. With almost 200 passengers completing a series of interactive tasks involving various aspects of timetable usage, this study aimed substantially to augment available knowledge.

Based on the key findings of this study, the following assertions can be made :

- TOCs tend to overrate passengers' understanding of timetables, although they recognise that current timetables are perceived to be irritating and potentially confusing for significant segments of the public.
- Younger passengers are considerably less likely to use (or indeed value) traditional timetables and are more inclined to opt for Internet alternatives.
- Passengers under the age of 25 struggle when asked to use traditional timetables
- Social category C2DE passengers are more prone to reject timetables per se, and are much less likely to obtain correct information from them, especially when set tasks which are not very straightforward.
- 'Exceptions' (i.e. codes and footnotes) appear to be highly problematical, with misunderstanding likely across a wide range of timetable presentation devices.
- Conventions such as "MX" to denote that a train does not run on Mondays are often missed or not understood.
- Changes in times within the life-span of a timetable (i.e. trains which only run between certain dates) are possibly even more difficult for the average passenger to comprehend. Few rail

users notice code letters at the top of a column which link to small print at the foot of a page or elsewhere in a timetable detailing which times apply to which dates.

- Each of these two sources of potential alienation could be addressed by larger print, highlighting, and perhaps dedicated colour.
- Route maps on the cover or an inside page are generally welcomed.
- Portrait (i.e. vertical page) presentation appears more widely favoured than landscape (horizontal page) alternatives, even if this results in the timetable running across more pages. The least popular presentation style is concertina (i.e. a single large folded page), which is difficult to handle and quickly becomes tatty.
- Colour is widely appreciated if dark colours are avoided and contrast maintained.
- Similarly, shading should be used to contrast or highlight (as in the main Silverlink and Thameslink timetables).
- Bold should be employed to indicate straight through services.
- Arrows or vertical lines rather than blank spaces should be used at intermediate stations to denote non-stopping trains.
- Underlining can be helpful in breaking up clutter, particularly in timetables in landscape format.
- Deployment and explanation of symbols could be standardised (e.g. by placing footnotes at the bottom of each page, with consistent meanings).
- Additional information (e.g. about ticket types and station amenities) is useful, and should be included at the front of the booklet.
-

In certain areas, TOCs seem reluctant to agree upon uniform criteria in the foreseeable future. These include format (booklet, fold-out sheet, etc), size of print (although there seems some agreement that print size 6 should be the minimum), and both the amount and location of any additional information.

Contents

Section 1	Introduction
Section 2	Methodology
	2.1 Desk research
	2.2 Industry depth interviews (qualitative)
	2.3 Hall tests (quantitative)
	2.4 Passenger depth interviews (qualitative)
Section 3	Background and qualitative research findings
	3.1 Current differences
	3.2 Train operators' perspectives
	3.3 Disability organisations' perspectives
Section 4	Research findings (quantitative)
	4.1 Propensity to use timetables
	4.2 Current difficulties
	4.3 Perceived ease of use (pre-test)
	4.4 Ideal source of timetable information
	4.5 Timetable utilisation tests
	4.6 Journey between two stations
	4.7 Identifying change of train
	4.8 Identifying exceptions
	4.9 Tasks across timetables
	4.10 Ease of completing tasks
	4.11 Perceived ease of use (post-test)
	4.12 Formats perceived difficult to use
	4.13 Formats
	4.14 Colours
	4.15 Non-stopping trains : "easiest style to use"
	4.16 Ideal scope of timetables
	4.17 Additional information
	4.18 Best timetable in unfamiliar area
Section 5	Passenger depth interviews
	5.1 SWT timetable
	5.2 Use of shading and colour
	5.3 Front covers
	5.4 "At the same minutes past each hour"
	5.5 Connections
	5.6 Overtaking trains
	5.7 Dividing trains
	5.8 Departures and arrivals
	5.9 Days of week
	5.10 Length of trains
	5.11 Additional information
	5.12 Virgin Trains timetables
Section 6	The ideal timetable
Appendices	A Glossary of abbreviations
	B List of timetables used
	C References
	D Hall test questions
	E Credits

1. Introduction

1.1 The London Transport Users Committee (LTUC) commissioned FDS International to provide a study of railway timetables during December 2001 and January 2002. The main aim of the project was to provide information which will assist the LTUC in its discussions with the train operating companies (TOCs) which provide services to, from and around London.

1.2 Of primary importance to LTUC was the evaluation of passengers' needs, frustrations and aspirations, in order to produce research findings of significant assistance in encouraging TOCs to publish more 'user-friendly' rail timetables for the future.

“Very little of the timetable information currently available is based upon any market research. There is already some consistency in presentation and this has been furthered by the DiPTAC [Disabled Persons Transport Advisory Committee] code of good practice, but there are many aspects on which further research is needed.”

(R Saxby : Association of Transport Co-ordinating Officers (ATCO) Research Paper, 1997)

1.3 There is an extensive archive of the findings of research into aspects of timetable design. But this has mainly concerned bus timetables, and appears to be little known or applied in the rail industry. Insights were sought from canvassing the views of almost 200 passengers, plus several senior industry decision-makers.

2. Methodology

2.0 The project utilised a combination of desk research, depth interviews with industry figures, and quantitative and qualitative 'hall test' (see paragraph 2.3.1) interviews with rail users.

2.1 Desk research

2.1.1 The first phase of the project featured desk research in which a large range of timetables were gathered from throughout the United Kingdom and beyond and subjected to analysis by FDS International personnel. Major differences in style, layout and content were noted.

2.2 Industry depth interviews (qualitative)

2.2.1 Subsequently, it was agreed (between the LTUC and FDS) to conduct interviews with the following :

- Six senior representatives of train operating companies (TOCs). These comprised Thameslink, Virgin Trains, London Lines (Silverlink, WAGN, c2c), South West Trains (SWT), Connex and First Great Eastern (FGE).
- Two other interested parties: the Disabled Persons Transport Advisory Committee (DiPTAC) and the Joint Mobility Unit (JMU).

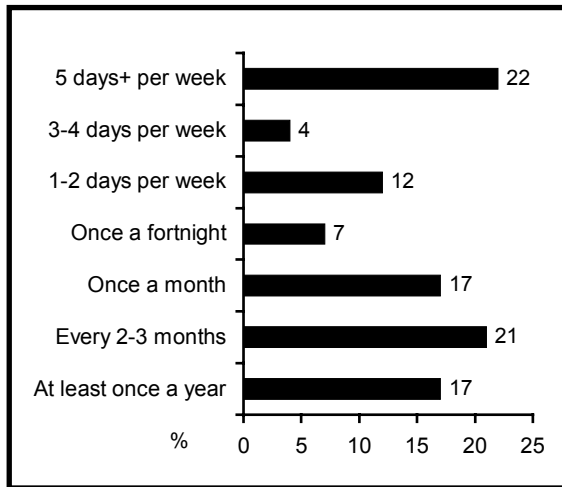
2.2.2 With the exception of contact with JMU (which was by telephone), all interviews lasted between 45 and 60 minutes and were conducted on a face to face basis by senior executives of FDS International. Analysis and interpretation of the eight qualitative interviews provided both findings per se (q.v. section 3 below) and ideas for the comprehensive passenger survey which was to follow.

2.3 Hall tests (quantitative)

2.3.1 The second phase of fieldwork was focused upon hall tests in four different locations in the area served by LTUC : Dunstable, Dartford, Bexley and Kingston-upon-Thames. With an approximately equal number of participants in each location, these provided a detailed survey of 190 rail passengers. All those interviewed travelled by rail in London and the surrounding area at least once a year. (Hall tests involve inviting passers-by into a convenient nearby room - or "hall" - in order to answer a series of structured questions.)

2.3.2 A clear majority of the sample consisted of relatively infrequent rail travellers (55% confirmed they used the railways about once a month or less). This is particularly interesting in that those most concerned with timetable design (q.v. section 3.2) believe that such passengers are those least likely to understand timetables, a view which was largely confirmed by the research.

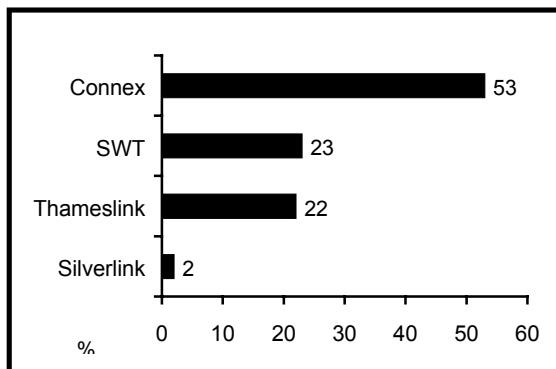
- **Chart 1 : Frequency of railway travel (Base 190)**



2.3.3 When asked about their reasons for travelling in the area in which they were interviewed, over half were either commuting (28%) or visiting friends and family (24%) with a significant portion “travelling on business” (12%).

2.3.4 Respondents stated that they “usually use” the following operators.

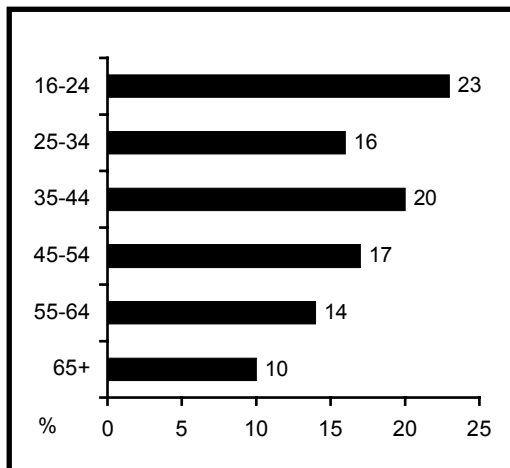
Chart 2: Rail operators used (Base 190)



2.3.5 Connex is the local operator in Dartford and Bexley. SWT is the local operator in Kingston. Dunstable is not directly served by rail, but the nearest stations are served by Thameslink and Silverlink. Having robust numbers of Connex and SWT travellers enabled us to assess the effects of familiarity when using timetables.

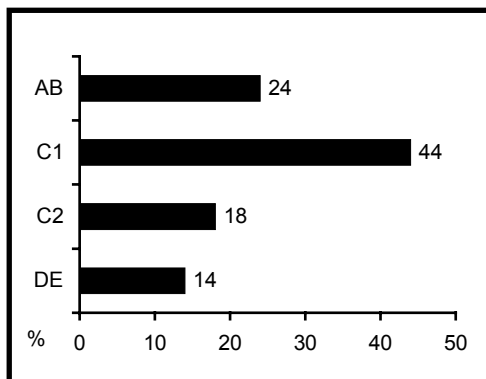
2.3.6 Equal numbers of men and women were surveyed and the 190 hall test participants were sub-divided by age as shown in chart 3 (on following page).

Chart 3 : Age profile (Base 190)



2.3.7 Reflecting the profile of rail users in the south east, most participants were in ABC1 (non-manual) social grades.

Chart 4 : Class profile (Base 190)



2.3.8 While a clear majority were in full-time employment (60%) or working part-time (14%), a sizeable minority had no paid occupation (27%). Many of these had retired, but there were also several in full-time education.

2.3.9 All 190 hall test participants were asked a series of questions by experienced interviewers using a detailed questionnaire, drawn up in close liaison with LTUC. In addition to attitudinal and other questions, respondents completed two designated tasks, which had been formulated to test a variety of potentially problematic situations which might be encountered when using timetables.

2.3.10 The 190 completed questionnaires were cross-tabulated (utilising dedicated research software) to provide a detailed set of quantitative results, and were thoroughly analysed by senior FDS personnel to provide the detailed findings described in this report.

2.4 **Passenger depth interviews (qualitative)**

- 2.4.1 In order further to explore and evaluate passenger response on specific issues not covered in the quantitative study, eight face-to-face qualitative interviews were conducted with selected passengers, most of whom had already taken part in the quantitative research. These discussions lasted approximately 15 to 20 minutes, and included a mix of issues covered in the main survey as well as additional topics which did not lend themselves to a structured quantitative questionnaire.

3. Background and qualitative research findings

3.1 Current differences

3.1.1 Desk research conducted in December 2001 revealed great divergence between various rail timetables. Besides physical size and scope, vast differences were detected in the :

- layout per se
- use of landscape or portrait (i.e. horizontal or vertical) page alignments
- print size and font style
- deployment of colours and shading
- use of underlining and other on-page devices
- codes and explanations (e.g. which trains bicycles are allowed on, or whether they run on Mondays only or Mondays excepted)
- positioning of notes and symbols
- explanations of changes and connections
- employment of bold type
- methods used to denote trains non-stopping at intermediate stations
- provision of maps (of the network, local area around stations, etc)
- provision of supplementary information (e.g. about places served).

3.2 Train operators' perspectives

3.2.1 The senior representatives of the six train operating companies surveyed in this study confirmed that comparatively minimal passenger research had been undertaken in regard to timetables. Indeed, feedback appears in most cases to consist of largely unrelated anecdotes from various members of staff, complemented by a perceived absence of complaint from customers :

"We don't do research but rely on feedback from business managers."

"We get minimal feedback."

3.2.2 Nevertheless, there is some recognition that research is required, probably leading to change and rationalisation :

"We will support anything the passengers want... It's superb of them (LTUC) to commission this because you can't get people in the industry to sit down and talk this out." (Connex)

- 3.2.3 An exception to the perceived lack of passenger research is Virgin Trains, which apparently carried out a good deal of customer research before launching its current range of timetables. SWT has also carried out a relatively recent survey measuring passengers' reaction to a specific alteration to the style of its timetables.
- 3.2.4 Except among a few directly interested parties within each company, there seems to be very little discussion of timetables. One company cited an internal review "5 years ago" while another referred to a "one day seminar in 2000" sponsored by the Association of Train Operating Companies (ATOC). Perhaps more than any other operator, Virgin appears committed to its timetables forming part of a co-ordinated corporate strategy.
- 3.2.5 However, the writers of this report believe that Virgin, in common with some other operators, has placed too much emphasis on aspects such as colour coding for different routes, which is widely perceived as irrelevant by passengers. Meanwhile insufficient consideration has been given to showing, for example, how train times change during different periods within the life of a timetable.
- 3.2.6 Timetables are apparently not produced in ratio to passenger numbers, and print runs vary greatly among the larger TOCs. Among the operators surveyed, a print run of two million in total was cited for the most common form of SWT timetable, which folds out into a single large page. In addition, SWT produces other types of timetable (books and cards) to comprise a total per print run of almost 2.7 million. Except where they impact on the number of timetables which can be produced, cost savings do not appear to be an overriding factor, although there is a widely held perception among operators that a great deal of wastage is inherent to the current system.
- 3.2.7 Large timetable books are perceived as a form of 'company flagship' and, as such, as a (possibly) worthwhile investment in corporate awareness. However, there seems to be no strategy designed to measure the effectiveness of these - or indeed other - types of timetable. TOC interviewees agreed that budgets for timetables are sufficient for the currently perceived need, and tend to increase in line with or slightly above the annual inflation rate.
- 3.2.8 The main rationale for current timetable designs seems to be some cost consideration of cost, plus 'convention', perceived practicality, and customer familiarity. Corporate image is also a factor (primarily shown in the use of colours), although some TOCs seem less enthusiastic and more sceptical than their counterparts about the need to maintain such strategies :

“There’s conventions that say timetables must conform to certain sizes, so that’s obviously a problem” (plus) “Our customers have got used to what we have now and understand it.”

“I think most of that is already set out by ATOC : the days of the week, pick up and set down only, changes with the Underground ... so the only difference is how you need to change.”

3.2.9 However, the complexity involved in certain routes is certainly the key factor in a great deal of timetable design :

“They’ve [First Great Eastern] got less trains. It might work on some of our lines - but not something like Weymouth into Waterloo, with all its stations.”

“[Anglia’s timetable is] fine for the service. It’s got similar columns to us but they have less services to fit in.”

3.2.10 Commuters are widely perceived as overwhelmingly the largest users of timetables. They are generally viewed as having ‘simple needs’ and a high level of understanding of timetables. One TOC highlights a ‘complex’ timetable as having been designed in consultation with local users’ group representatives :

“The regular commuters understand the timetables ... it’s the 20% who don’t travel five days a week that need something clear ... [and] it’s like designing toilets for disabled people because everyone can use them.”

3.2.11 ‘Simple needs’ are cited as producing savings and the alleviation of waste :

“We’re producing another A to B for Putney because of demand for business travellers doing the same journey every day.”

3.2.12 Many insiders apparently feel that the simplicity or complexity of a timetable is driven solely by the nature of the information that needs dictate. There is considerable scepticism about possible all-encompassing solutions to perceived problems :

“If you try to impose a style that isn’t suitable for some, then you’ll have a dog’s dinner.”

“South of the river [Thames] is very complex; so I don’t think you can have one [timetable style] for all.”

3.2.13 While it is widely accepted that use of colours (and of **bold**) has the potential to confuse, there is a tendency to ascribe such shortcomings to other operators. Attitudes towards bold print are highly fragmented :

- *“Bold for straight through is essential – it’s an international convention.”*

“Bold doesn’t mean anything now ... [so] we have rejected it to show straight through.”

3.2.14 However, some rationalisation is already taking place or forecast to happen in the near future :

“We’ll probably look at that again : [I’m] not sure about green there ... if it’s in red it’s one change, in green it’s two.”

“If people recognised a colour to mean something ... it could be useful.”

“This is our [First Great Eastern] house style but it’s changing [and] our timetables will look exactly the same as Great Western and North West Trains.”

3.2.15 While other companies are inclined to reject the large fold-out (concertina) style widely used by SWT, it is recognised as offering at least one substantial advantage :

“But it’s a useful way of getting a lot of information into a small document, that’s the advantage.”

“I’m getting in a mess using this! They’re not friendly to occasional travellers.”

3.2.16 SWT strongly defends the format as :

- the easiest means of showing highly complicated routes
- the most flexible form for easy carrying (it can be re-folded to be kept in smaller spaces)
- cheaper than equivalent booklets (by around 70%)
- easy to place large numbers in racks in stations.

3.2.17 In addition, the frequently cited problem of excessive horizontal distance between station names and the relevant times is being addressed on new print by printing a second ‘bank’ of stations on the right hand side :

“I think what makes this good too is you can fold it over to the section you’re interested in and it’s much more manageable. Booklets would not be as practical.” (SWT)

3.2.18 Portrait-style (vertical) page presentation was favoured over landscape-style (horizontal) by most of the TOC sample :

“That one [WAGN] the distance is too long.”

3.2.19 It is recognised, however, that this choice is often dictated by the number of stations to be included. Hence Thameslink’s timetable pages are portrait whereas Thames Trains’ are landscape.

3.2.20 While booklets are widely cited as superior in terms of easy opening, with less distance along and down timetables, single-sheet ‘concertina’ designs are considered equally valid in certain circumstances, such as when space saving is deemed essential.

3.2.21 Mirroring diverse opinions on the presentation of notes and symbols, there are also widely differing perceptions with regard to public understanding :

“These figures, like buffet information, I think most people know what these are.”

“I know these codes and even I can get confused. What does G mean here? Something about a train to Gatwick – that’s meaningless!”

3.2.22 For both practical and aesthetic considerations, it is generally agreed that additional (‘ancillary’) information should be kept to a minimum on each page. However, while some feel most notes should be listed within an introduction, others consider such information essential on each page of times :

“... because every page should tell a story on its own.”

3.2.23 It became clear from the customer research that notes relating to exceptions (e.g. ‘not Mondays’) need to be more prominent and to tie in easily with the train times to which they refer.

3.2.24 While Virgin now produces some standard information in a separate booklet, this is something which most of the other TOCs are unlikely to copy. Nevertheless, one senior TOC decision-maker perceives the advantage of a smaller print run for this type of publication.

3.2.25 However, despite perceptions that change will be extremely difficult due to ATOC/ATCO conventions, there is some recognition that much of current usage is understandable only among industry cognoscenti and is therefore in need of revision :

“Staff use expressions and write symbols in different ways [but] we have to relate to people.”

“I’ve worked in the railways only ten years but, in many ways, my lack of experience is an advantage because I’m not committed to jargon that doesn’t mean anything to people out there.”

3.2.26 In relation to clearer dissemination of information, c2c has developed a distinctive key for showing what services (e.g. facilities for passengers with physical disabilities) are available at all its stations. Respondents strongly favoured this in the face-to-face depth interviews (q.v. section 5.11). If this innovation is judged a success, London Lines might introduce the practice throughout its range of operators (i.e. Silverlink and WAGN as well).

3.2.27 With the back-up of large print versions available from booking offices (though these are perceived as little used), TOCs appear to be satisfied with the size of print in their publications. One decision-maker stressed that font size had in fact doubled in recent years (from 3 to 6) and any radical increase was condemned as impractical except in relation to certain routes :

“It’s very good to read [size 10] but I’d hate that to be standard.”

“It would be like a telephone directory ... if people have a problem with their sight, that’s not something we can address.”

“The dilemma we’ve got is the level of service we have to show.”

3.2.28 Despite this, most TOCs seem highly sympathetic to seeking solutions to assist visually impaired people (audio and Braille were cited as possibilities), although little has been achieved to date.

3.2.29 There is some perception - as yet apparently limited - that the Internet is becoming increasingly important and may replace much of current paper timetable provision, especially for younger customers. This was strongly confirmed by our passenger research findings and could also produce savings :

“The waste now is incredible, it would help us save on costs.”

3.3 **Disability organisations’ perspectives**

3.3.1 FDS executives interviewed two representatives of the Disabled Persons Transport Advisory Committee (DiPTAC) on a face-to-face basis, and a key advisor to the Joint Mobility Unit (an offshoot of the Royal National Institute for the Blind) by telephone. Each of these interested parties, representing the needs of passengers with disabilities, felt that the railway industry could do considerably more to address such needs.

3.3.2 In terms of font, a print size of 10 (preferably Arial, the font used for this report) was advocated for most timetables :

“Nothing less than 8 can be acceptable.” [This is font size 8] [This is font size 10.]

3.3.3 The SWT fold-out concertina-style timetable was dismissed by DiPTAC representatives as potentially difficult for people with learning difficulties and generally confusing per se :

“The test of a good timetable is ‘can you find things easily?’ You can’t on this one.”

3.3.4 In relation to the use of colour, they noted that :

“It is not so much the colours, but how they contrast with each other and with the paper.”

3.3.5 While partly commended (in relation to horizontal distance and print size), a Thameslink leaflet was condemned for overuse of yellow and for the extent of vertical distances. Unusually for a British timetable, this leaflet adopted the “reflected” format (common in north America) in which the matrix is turned through 90 degrees so that the times at successive points served by a particular journey appear in a horizontal row, and the times of successive departures from each station appear in a vertical column. The station names at the heads of the columns are incorporated in a simplified version of the route map, and only principal points served are shown. Although the map at the top was initially seen as a helpful feature, it was subsequently dismissed as potentially misleading :

“This is confusing because it could stop at a station not mentioned and I could think I was on the wrong line.”

3.3.6 Both Silverlink (“less fussy”) and WAGN received some support :

“This is easier to read ... this underlining within the timetable focuses the eye more.”

3.3.7 However, WAGN also received a strong adverse reaction for displaying two dark colours, and for a long and therefore potentially confusing distance across the timetable :

“When you try to scan further along here you get lost and don’t know what line you’re on.”

3.3.8 It was noted that several timetables (Anglia, First Great Eastern, etc) could employ larger print in place of considerable areas of blank space.

3.3.9 It was felt that although **bold** is widely perceived to denote ‘straight through’ trains (as distinct from connecting services), some operators are ignoring the convention. A uniform approach was advocated to correct this anomaly :

“It would be helpful if your work could focus on making it easy for people to know they’re on the right train.”

3.3.10 Overall, while accepting that different styles of timetable are probably necessary in certain circumstances (‘horses for courses’), these respondents strongly advocate more comprehensive information on timetables to assist passengers with disabilities (e.g. regarding step-free access at stations) :

“Why do timetables have to be the way they are? Just designed for TOCs and ‘anoraks!’”

4. Research findings (quantitative)

4.0 Detailed analysis of the hall test results produced a rich vein of quantitative findings, which are set out in the following pages.

4.1 Propensity to use timetables

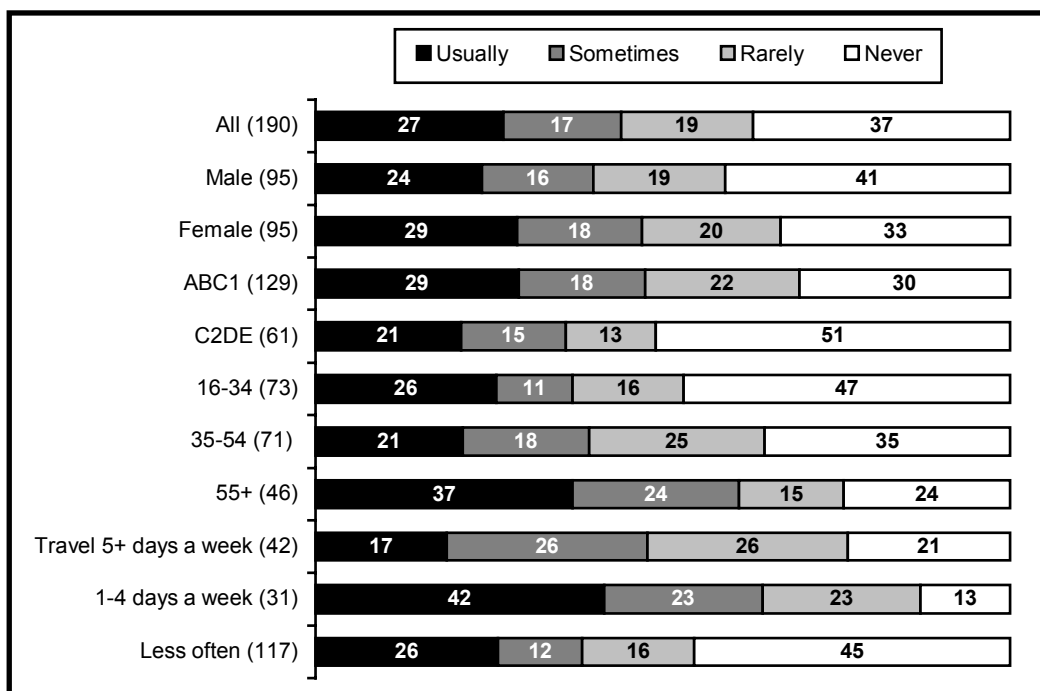
4.1.1 Only a small majority (51%) of the hall test participants currently had timetables. These were divided between multi-route booklets (such as Connex and Thameslink), timetables showing times for a specific route (such as WAGN), or smaller timetables showing times from only one station or a group of stations (such as SWT's concertina-style timetables).

4.1.2 Those more likely to have timetables included :

- those over 55 (74%)
- ABC1s (i.e. people in white-collar occupations) (58%)
- women (56%).

4.1.3 On being shown a comprehensive range of current timetables, a clear majority of the sample stated that they would use such items either "rarely" or "never". Indeed, only around a quarter consistently used timetables in planning rail journeys. Frequent use of timetables is more likely among older travellers (55+), women, people in social categories ABC1, and those who travel by train every week but not every day.

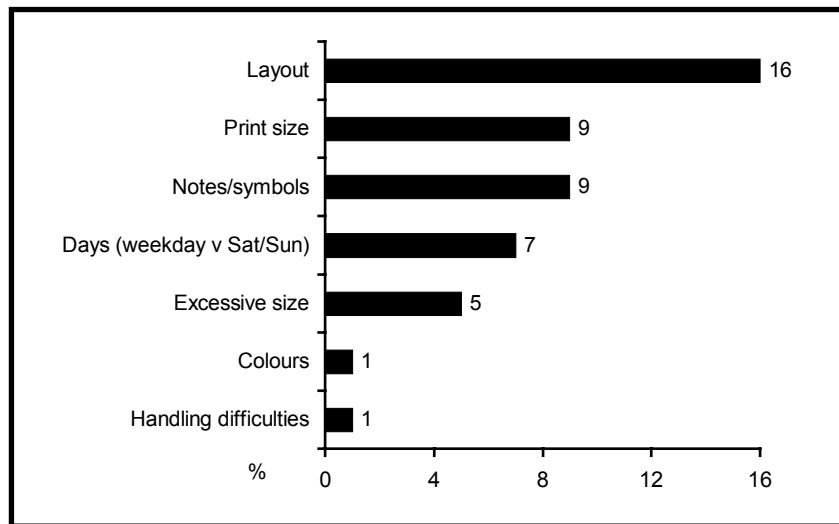
Chart 5 : Frequency of timetable use in journey planning (Base 190)



4.2 Current difficulties

4.2.1 While only 43% of the hall test participants were able spontaneously to cite specific difficulties with current timetables, sizeable segments identified problems intrinsic to layout, size of font and additional information.

Chart 6 : Main problems in timetable use (unprompted) (Base 190)



4.2.2 Representative comments included :

“They take a bit of studying; you need to concentrate.” (regular traveller, i.e. 1-4 days a week)

“Sometimes (it’s) trying to figure out what day ... and where the train starts and finishes.” (frequent traveller, i.e. 5+ days a week)

“There’s so much information – too much! Plus the print is so small, you need a ruler to follow the timetable.” (infrequent traveller, i.e. 1-3 times a month)

“They are a mess, it’s lots of fiddly little numbers that people can’t understand.” (occasional traveller, i.e. less than once a month)

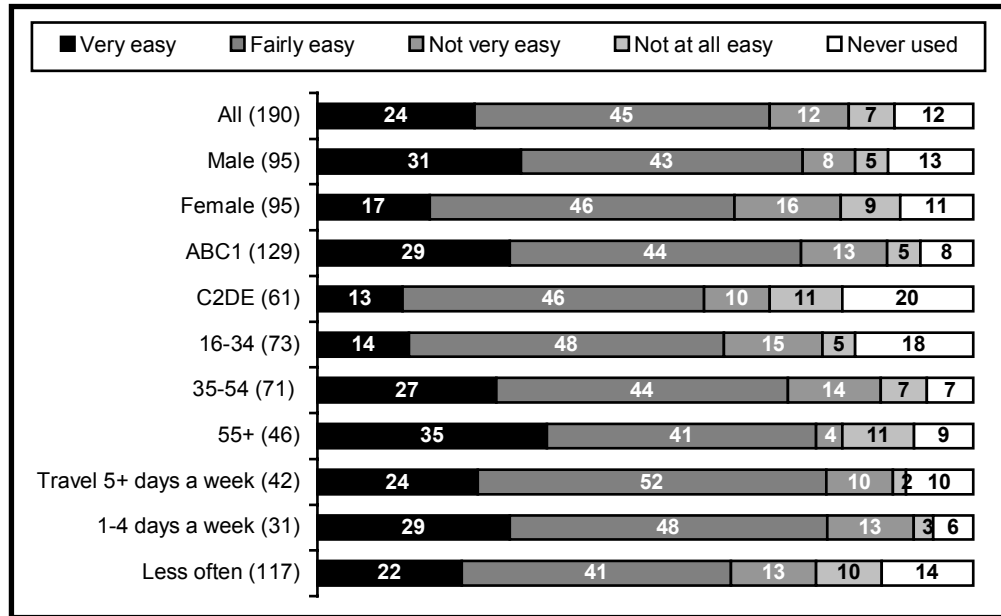
“It’s very confusing regarding weekdays and weekends. Maybe they should be coloured differently.” (frequent traveller)

4.3 Perceived ease of use (pre-tests)

4.3.1 Perhaps surprisingly, the overwhelming majority of respondents were confident of finding rail timetables “easy” to use. Only around a fifth of the sample voiced reservations that the timetables shown might prove difficult. As would be expected, over three-quarters of the commuter segment expected the timetable use to be “easy”.

4.3.2 In survey research, men are generally more reluctant than women to admit to finding things difficult and, true to form, males were more likely than females to rate timetables easy to use. ABC1s (people in non-manual occupations) and the over 55s were more confident in using timetables than C2DEs (manual occupations) or 16-34 year olds.

Chart 7 : Claimed ease of use of rail timetables (Base: 190)



4.4 Ideal source of timetable information

4.4.1 Asked how timetable information could best be provided prior to railway travel, only just over one-third of the sample favoured paper provision. With strong support among commuters and those in the ABC1 social categories, the Internet was the preference of almost a quarter, though significantly less so among over 55s and C2DE respondents. Those who were least confident in using timetables were more likely to visit stations to check with staff.

Table 1: Ideal source of information prior to journey

	All %	Male %	Female %	ABC1 %	C2DE %	16-34 %	35-54 %	55+ %
Paper timetable	36	36	36	40	28	26	32	57
Telephone	29	32	26	29	28	29	28	30
Visit to station	27	23	31	21	39	29	25	26
Internet	23	25	20	29	8	30	24	9
Other	4	3	5	5	3	3	7	2

(Note: some respondents indicated a joint preference. Preferred source for each category shown on shaded background in **bold**.)

4.5 Timetable utilisation tests

4.5.1 In order specifically to target the various potential difficulties within timetables, all respondents were set two comparative tasks (q.v. appendix D). One third of the sample undertook type '1' tasks, one third type '2' and the remaining third type '3' (see below). They used two timetables, one to answer each question. Usually these timetables related to routes and geographical areas with which interviewees were unfamiliar.

4.5.2 Therefore, to ensure they did not fail the tests simply because they did not know the relative position of stations on the route, they were shown a map of the route with the stations they were travelling between highlighted. No other assistance was given to them in attempting the tasks. About 30-35 people completed each of 12 separate tasks.

4.5.3 The tasks were segmented into the following types :

Type 1 Finding the correct train to travel from station A to reach station B by a particular time in the afternoon (requiring the ability to understand the 24-hour clock).

Type 2 Identifying correctly that two trains are required (with a change at an intermediate point) to reach a destination by a certain time.

Type 3 Recognising the situation where 'exceptions' are the key criterion, so that to answer correctly the passenger would have to notice and understand symbols or footnotes (e.g. the code denoting that a particular train does not run on Mondays).

4.5 Journey between two stations

4.5.1 For the relatively straightforward 'Type 1' tasks, correct identification of relevant trains registered at between 59-81%. By operator, this broke down as follows :

- Silverlink (Tring-London Euston) 81%
- SWT (New Malden-Waterloo) 73%
- Connex (Chatham-Victoria) 67%
- WAGN (Hatfield-King's Cross) 59%

4.5.2 Across all four timetables, 70% gave correct answers to the Type 1 task. In other words, almost one in three could not correctly complete even the simplest timetable-reading task our researchers were able to set. Those most likely to struggle included women (only 61% correct), people in social categories C2DE (50%), 16-34 year olds (57%), and non-regular rail travellers who don't generally use timetables (59%).

4.7 Identifying change of train

4.7.1 While most people answered correctly when asked to complete Type 1 tasks, fewer than half were able to complete Type 2 tasks. These were more difficult as interviewees had to identify not only which train they should catch but also whether they needed to change trains en route (and, if so, where). Successful identification of required changes was remarkably consistent at between 45 and 48% for all four operators :

- SWT (Surbiton-Earlsfield, change Wimbledon) 48%
- WAGN (Potters Bar-Old Street, change Finsbury Park) 48%
- Connex (Teynham- Broadstairs, change Faversham) 45%
- Silverlink (Rugby-Harrow & W'stone, change Milton Keynes) 45%

4.7.2 In a few cases, respondents claimed, when shown correct responses, that they chose to take an earlier direct train to avoid the need to change. These answers were marked as incorrect as they implied a lack of confidence in using timetables (or, possibly, trains).

4.7.3 The more complex Type 2 tasks revealed huge differences in success rates between sub-groups. 58% of ABC1s answered correctly, but only 13% of C2DEs. Regular rail travellers who use timetables were far more likely to answer correctly than infrequent travellers who do not use them.

4.8 Identifying exceptions

4.8.1 Results for tasks involving exceptions (i.e. features not common to all trains) showed widely differing levels of success.

4.8.2 The success rates in completing the Type 3 tasks were as follows :

- Silverlink (Euston-Rugby, next train with food/drink available) 59%
- WAGN (Welwyn North-Kings Cross, next train with first class) 48%
- Connex (Faversham-Dover Priory, change of train time during life of the timetable) 23%
- SWT (Surbiton-Waterloo, train does not run on Sunday night/ Monday morning) 22%

4.8.3 Respondents asked to identify the next WAGN train with first class accommodation or the next Silverlink train with food and drink available on board were given a hint by the question that they needed to check whether these facilities were available on particular trains. Accordingly, many looked out for symbols and footnotes to identify which were the appropriate trains and around half answered the questions correctly.

4.8.4 The Connex timetable appeared to feature two trains running within five minutes of each other. In fact, code letters at the top of the respective columns tied in with footnotes informing passengers that one train ran only from 29 October to 23 November. The other ran until 26 October

and from 26 November. Few people noticed the code letters or footnotes. In this particular instance, little damage would have been done as the question related to “next Tuesday” (i.e. after 26 November) and they would simply have arrived at the station five minutes earlier than necessary. Nevertheless, it is still worrying that even those who are normally good at using timetables fail to notice potentially vital information – e.g. if they had been travelling between 29 October and 23 November, when they might have timed their arrival five minutes too late.

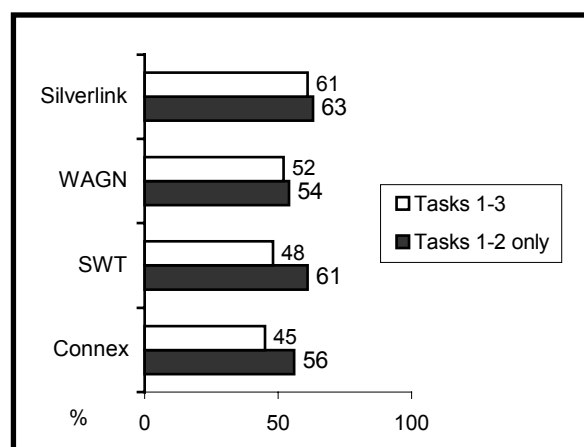
4.8.5 The trains shown in the SWT timetable as leaving Surbiton at 0034 and 0042 on weekdays do not run on Mondays. Respondents shown the SWT timetable were asked to assume they arrived at Surbiton station just before midnight on Sunday and required to say when the next train would be leaving. The overwhelming majority failed to recognise or understand a code indicating “not Mondays”. It is probably safe to assume that in a real travel situation such an error would have created considerable inconvenience and potential alienation.

4.8.6 Exceptions are not labelled sufficiently prominently. Different colours and larger typeface for notes might help to ensure that users consult a key when necessary. The use of letters rather than symbols probably makes codes less obvious, especially if (as in the Virgin timetables) the same letter can have more than one meaning, depending merely on whether it is shown in upper or lower case (i.e. in capital or small lettering). Not all timetables show the meaning of all relevant codes on the same pages as they appear, an additional trap for the unwary.

4.9 Tasks across timetables

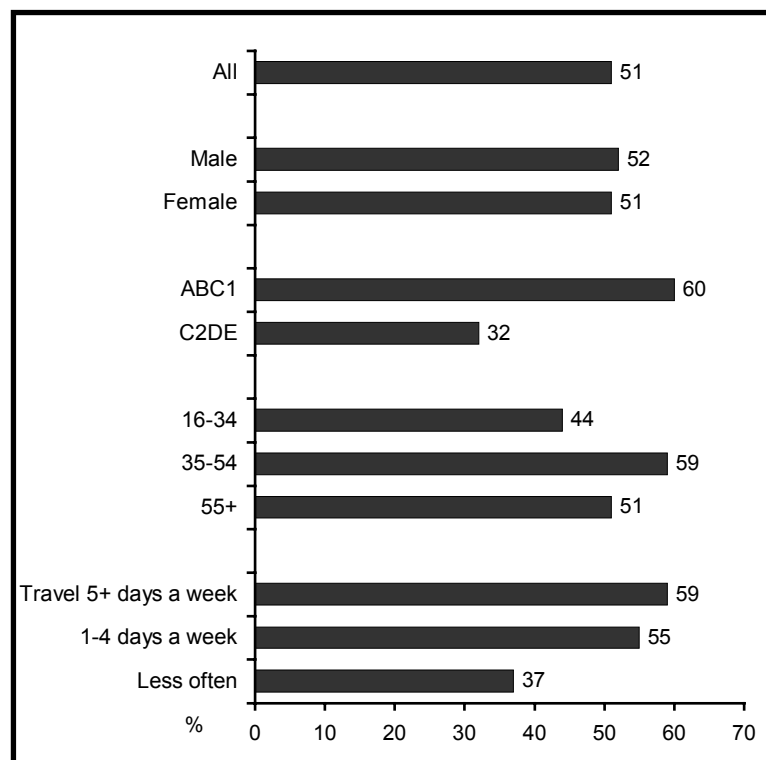
4.9.1 Aggregating responses across timetables shows the following proportions answering questions correctly.

Chart 8 : Correct answers across timetables



- 4.9.2 Silverlink obtains the highest proportions of correct answers, Connex the lowest. If we ignore Task 3 (on the basis that the questions were easier for Silverlink/WAGN), then Silverlink is still the highest scoring timetable but Connex and SWT move above WAGN.
- 4.9.3 Overall, differences in results by operator (and thus timetable style) are relatively minor, especially when compared with the huge differences (of almost two to one) between ABC1s and C2DEs in their ability to use timetables correctly. This suggests that the personal characteristics of the users are more important than details of the timetable format in affecting passengers' ability to use them correctly.
- 4.9.4 Since many of the regular commuters had difficulty in performing some tasks set correctly, it seems that the TOCs' representatives are wrong to believe that commuters can use timetables easily. Nevertheless, non-regular rail users (who are less familiar with them) struggle a lot more.
- 4.9.5 Interestingly, those who travelled on Connex or SWT trains and used these timetables were above average in their skill in using timetables in general. But they were no more successful when undertaking tasks with Connex or SWT timetables than when using those of other operators. This suggests that general familiarity with timetables helps passengers to use them correctly, but that familiarity with a particular style of timetable does not bring particular competence in using it.

Chart 9 : Correct answers across all timetables by sub-groups (Tasks 1 to 3) (Base 190)



4.10 Ease of completing tasks

4.10.1 Respondents were told whether or not they had answered tasks correctly and if they had not done so, the right answer was pointed out to them using a timetable marked with a highlighter pen. They were then asked how easy the tasks were. Although responses inevitably correlated strongly with whether they had given the right answer, some of those who had answered correctly felt the task was difficult, while others felt it was fairly easy despite getting the wrong answer. In the table below tasks rated as easy by at least half the sample are shown on a shaded background in ***bold italics***.

Table 2 : Ease of completing tasks (%)

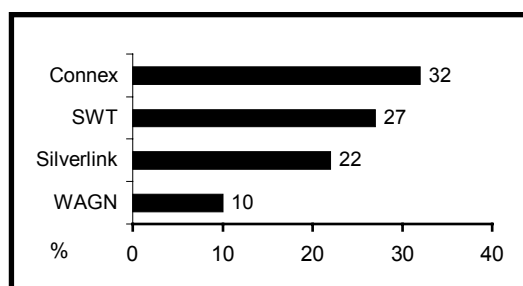
		Very easy	Fairly easy	Not very easy	Not at all easy	No answer / Don't know
Type 1	<i>SWT</i>	39	21	24	15	-
	<i>Silverlink</i>	32	45	10	13	-
	<i>Connex</i>	27	30	17	27	-
	WAGN	9	34	22	34	-
Type 2	<i>SWT</i>	13	39	16	19	13
	Silverlink	6	18	21	39	15
	Connex	9	18	12	45	15
	WAGN	13	29	13	35	9
Type 3	SWT	9	13	38	38	3
	<i>Silverlink</i>	22	31	19	22	6
	Connex	16	29	32	23	-
	<i>WAGN</i>	26	26	16	26	6

4.10.2 People tended to find the more straightforward Type 1 tasks reasonably easy, but found tasks involving changing trains were more difficult. There was no consistent pattern by train company to indicate how easy respondents found tasks when using their individual timetables.

4.11 Perceived ease of use (post-test)

4.11.1 After completing all three tasks, participants were shown all four companies' timetables, and asked which was "easiest to use". This resulted in the following distribution of responses.

Chart 10 : Ease of use (post-tests) (Base 190)



4.11.2 The remainder either stated “don't know” or declared that all seemed “equally easy”.

4.11.3 Rail users gave different reasons for finding particular timetables easier to use :

Connex

“Less information per page...and easier to manage.” (regular user)

“Yellow lines across help to identify station times.” (regular user)

“It is like a regular book, you read down [and] left to right – like you were taught.” (frequent user)

“I like the size, I can put it in my handbag.” (occasional user)

“Gives you the symbols at the bottom of each page, which indicates when to change.” (occasional user)

SWT

“I prefer type in bold.” (regular user)

“It deals with one particular route ... which is straightforward.” (regular user)

“You can open it out ... and it fits in the pocket well.” (infrequent user)

“It's all colour coded, so easier to follow the rows across.” (regular user)

“It's got [the] key at the bottom and bus routes [and] Tube connections.” (infrequent user)

Silverlink

“The map on the front is good, Monday to Friday is clear, [and] the font size is good.” (regular user)

“The route in big text, that's the key thing.” (regular user)

“I like the clear layout ... [and] not too much on each page [and] the codes at the bottom of the page are a big help.” (infrequent user)

“Contrasting colours on each line, clear line between each stop [and] key on every page.” (frequent user)

“I can follow it across without losing the stripe.” (occasional user)

WAGN

“Contents at the front is clearest, [it’s] easiest to find the right section ... also something in the box where it’s not stopping.” (regular user)

“Using the lines to separate means you don’t have to work out where you are.” (occasional user)

“I like the way it’s set out.” (frequent user)

“It gives you so much more information, which would be especially useful if I didn’t know the area.” (occasional user)

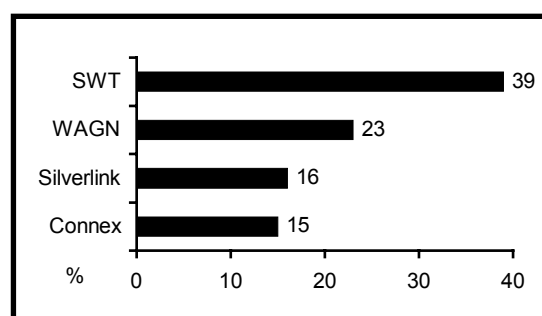
“Because it’s set out in a nice grid.” (frequent user).

4.11.4 Section 4.18 shows responses given to a similar question asked later in the interview, when respondents had studied the timetables in more detail and had differences between them pointed out.

4.12 **Formats perceived “difficult to use”**

4.12.1 This question proved to be the most likely to create a sharp polarisation of opinion. The SWT timetable was declared “most difficult to use” by approximately two-fifths of the sample.

Chart 11 : Most difficult timetable to use (Base 190)



4.12.2 The SWT timetable was declared “most difficult to use” by approximately two-fifths of the sample. Respondents criticised its concertina style, complaining of difficulties in unfolding and refolding it. This could be especially difficult for encumbered or less dextrous passengers, such as those with arthritis. WAGN was heavily criticised for its typeface being too small and difficult to read.

4.12.3 A variety of reasons were given for finding the timetables “difficult to use” :

SWT

“[It’s] inconvenient to pull this one out at a station.” (frequent user)

"For exclusions, you have to turn the page." (regular user)

"It's difficult to re-fold." (occasional user)

"It's like a broadsheet newspaper ... [and] key information is only on one little bit at the end." (infrequent user)

"It is difficult to hold [and] an overload of information on too big a sheet." (frequent user)

WAGN

"[There is] no route map to tell you where to go. It should be at the front – not the back." (regular user)

"The print is a bit small [and] you have to turn it on its side to read it." (infrequent user)

"All the information and the typeface is too small." (frequent user)

"The type is so small [and] the layout is too busy." (regular user)

"Such fine print [and] an absence of colour tracking." (frequent user)

Silverlink

"I don't like the colour; it's very drab ... [and] not clear where you need to change." (occasional user)

"No dividing lines [and] all in grey." (infrequent user)

"All these lines dropping down, a nightmare as to which it refers to." (occasional user)

"It tries to cover the entire Silverlink network." (regular user)

Connex

"Looks more complicated, you almost need a ruler to work it out." (regular user)

"It's trying to do too much on one page ... too busy." (regular user)

"Big gaps between stations, where a journey is ongoing it's not obvious." (occasional user)

"Size of the print, it would help enormously if destinations were highlighted." (regular user).

4.13 Formats

4.13.1 Participants were then questioned about specific aspects of the way in which information was presented. The interviewers highlighted some of the differences between the four timetables.

4.13.2 Asked which format is “easiest to use”, disregarding differences in print and colour, respondents divided as follows :

- Portrait (e.g. Connex)43%
- Landscape (e.g. WAGN)27%
- Concertina (e.g. SWT)24%
- All equally easy 5%

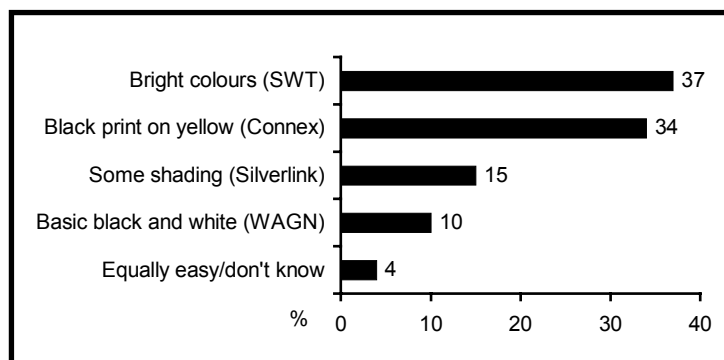
4.13.3 Across all demographic sub-groups, and amongst both frequent and less frequent rail travellers and timetable users, the most popular format was the portrait style used by Connex. However, sizeable minorities preferred the landscape style of WAGN or the concertina style of SWT.

4.13.4 Those who used SWT timetables themselves were a little more likely to favour the concertina style, but even amongst this group the portrait was more popular.

4.14 Colours

4.14.1 Bright colours (red and blue), and black print on a yellow background, emerged as the favourite options in terms of colour and shading. The colourful style of the SWT timetable was popular with men and women in all age and class groups. The plainer options were less popular, especially the basic black on white of WAGN.

Chart 12 : Easiest colour/shading to read (Base 190)



4.15 Non-stopping trains : “easiest style to use”

4.15.1 When respondents were asked the best way of showing in timetables that some trains do not stop at intermediate stations, their preferences were divided as follows :

- vertical line through stations (Silverlink) 35%
- horizontal dots at stations (WAGN/Connex) 31%
- blank space at stations (SWT) 21%
- all equally easy/none 14%

4.15.2 Matching the wide differences in the styles used within existing timetables, there was no clear preference as to the best option. By decisive margins, older respondents (55+) preferred the vertical line and rejected the device of leaving a blank space. Respondents in social categories ABC1 demonstrated a clear preference for the vertical line, whereas C2DE respondents favoured the horizontal dots. Although the results were not clear-cut, those who feel comfortable using timetables were most likely to prefer the vertical line.

4.16 **Ideal scope of timetables**

4.16.1 The specimen timetables shown to the respondents were :

- from Silverlink, which included all of the company's routes
- from Connex and WAGN, which showed only one or two routes (with branches)
- from SWT, which showed trains to London from eight selected stations (i.e. only part of a route).
-

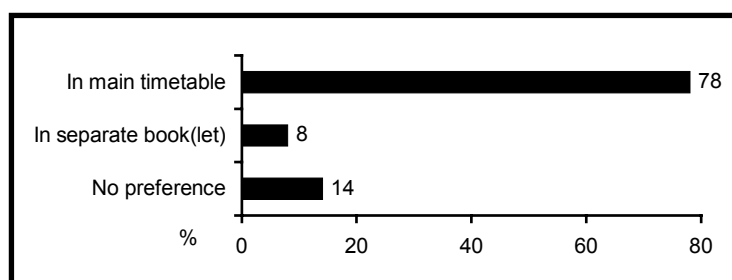
4.16.2 There was no clear verdict on the ideal scope for timetables. Roughly equal proportions of the sample preferred the single and multiple route versions, with almost one-fifth stating that all timetable styles were equally acceptable. Older respondents demonstrated a significant preference for multiple route timetables over partial route designs, while C2DEs favoured the single route alternative :

- multiple routes 32%
- single route 29%
- partial route only 15%
- all equally/ don't know 24%

4.17 **Additional information**

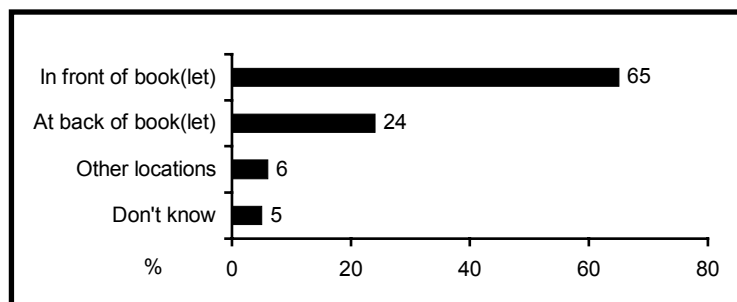
4.17.1 An overwhelming majority stated that all supplementary information for passengers should be contained within the main timetable document. Only a small minority, around one in twelve, advocated a separate publication (such as that produced by First Great Eastern).

Chart 13 : How to give additional information? (Base 190)



4.17.2 Furthermore, among those preferring the main timetable as a source, almost two-thirds stated that additional information should be placed at the front of the book.

Chart 14 : Where to locate additional information (Base 148 advocating main timetable)

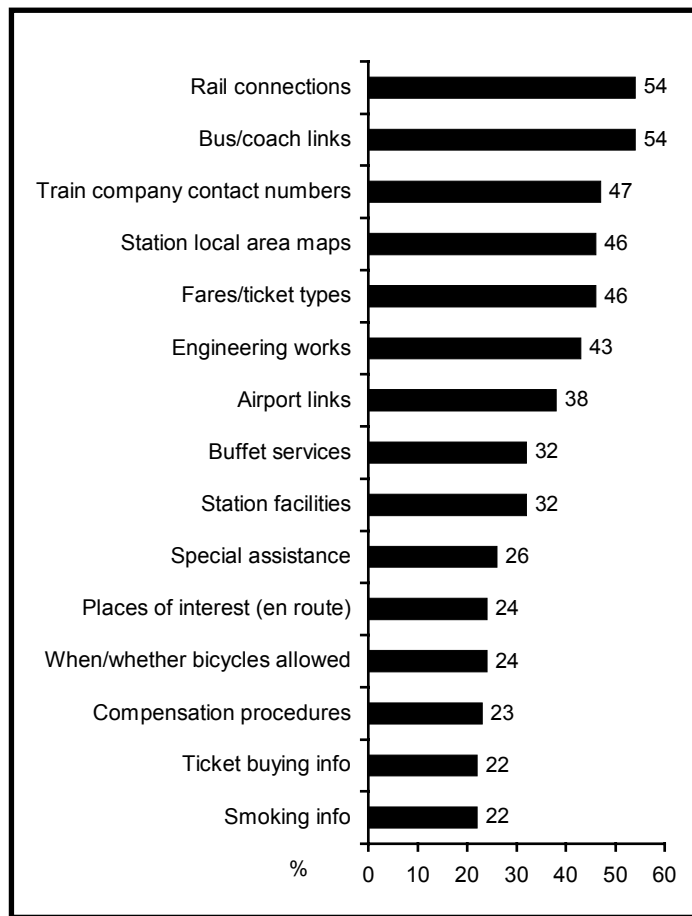


4.17.3 Presented with a list of items of potential additional information (see chart 15 on following page), all respondents were asked to indicate which they would like to see.

4.17.4 As might be expected, older respondents (over 55) displayed more interest in the provision of special assistance while those in the youngest segment (16-34) were more inclined to want advance warning of engineering works (which may disrupt services) and maps of the local areas around stations.

4.17.5 There appears to be sufficient interest in all the topics listed in chart 15 to justify including them, even if only very briefly, among the introductory information given in timetables. If space is limited, priority should be given to providing details of connecting rail services, bus/coach links, and train companies' contact numbers.

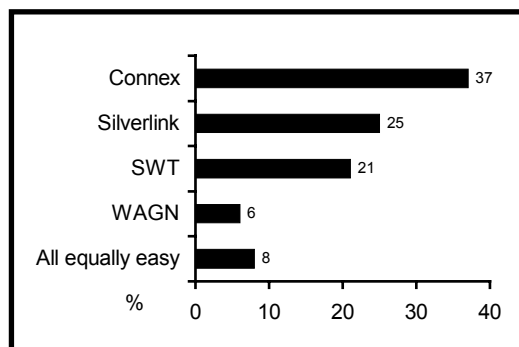
Chart 15 : Additional information sought (Base 190)



4.18 Best timetable in unfamiliar area

4.18.1 Having been encouraged to study them to help answer questions on specific presentational issues, respondents were asked to say which of the four timetables used in the timetable-reading tasks would be easiest to use in an unfamiliar area. Connex was the most popular choice, especially in areas served by Connex trains.

Chart 16 : Best timetable in unfamiliar area (Base: 190)



- 4.18.2 Connex benefited from the fact that two of the four halls (Bexley and Dartford) were within the area it serves, and at both these venues almost half favoured Connex. At Kingston and Dunstable, as many respondents favoured Silverlink as favoured Connex.
- 4.18.3 Connex and Silverlink were liked for their layout, size, use of maps and range of additional information.
- 4.18.4 The SWT timetable was praised for its size and layout, and also for its clear print/type face which helped to set it aside from the others.
- 4.18.5 Few people liked the WAGN timetable. It was the only timetable to use vertical lines to separate each train from the next, which was a popular feature with some respondents. This did not prevent it from being the least preferred timetable.
- 4.18.6 Respondents offered a variety of reasons for considering the timetable of their choice the easiest to use in an unfamiliar area.

Connex

"I like the size of it, and more maps and information in it and more of a pocket size." (infrequent user)

"[It] shows the full route on the front [so] I can see exactly where I am and where I'm going." (regular user)

"A clear map [and] lots of information relating to engineering works, etc." (frequent user)

"I like the alternate lines" (i.e. banded colours) (infrequent user)

"I like the guide for connecting services and phone numbers for assistance." (regular user)

Silverlink

"It has an overall map, tube map and individual route maps." (regular user)

"The layout is nice and clear with a lot of information at the bottom." (infrequent user)

"It lists more than one route." (regular user)

"It has all the different connections." (occasional user)

"Maps of the routes are very plain [plus] information at the beginning [and] phone numbers at the back." (infrequent user)

SWT

"Pretty clear cut, it's all on one page." (regular user)

"It breaks up clearly [so] easiest to read." (frequent user)

"Displays from left to right ... [and] easier to flick through than pages."
(regular user)

WAGN

"It just seems easier to follow ... laid out very clearly." (occasional user)

"The typeface is easier." (regular user)

"When you're dealing with places you don't know it's easier [on a grid] to work through and pick a station." (frequent user)

"The index at the front is good ... and the writing at the top of each timetable is clear." (occasional user)

5. Passenger depth interviews

5.0 Further 'depth' interviews were conducted in-hall in Kingston with a selection of participants who had already taken part in the main survey.

5.1 **SWT timetable**

5.1.1 Impressions gained from the results of the quantitative tests were generally confirmed by the depth interviews.

5.1.2 For example, reaction to the concertina style of the SWT timetable was polarised. Some loved it and said it was by far the most user-friendly format. By folding it under the rows containing the times for particular stations, the timetable could be used as its own ruler. Others hated it and said it was difficult to open and use, that important footnotes were not easily seen and that timetables such as these quickly become 'tatty' and unusable. They felt that re-printing stations at the far right of the sheet would be a partial solution to the problem of having to read a long way from stations to times of trains. Some considered that having stations re-printed just after the middle of sheet would be preferable as one's eye 'moves naturally' from left to right.

5.1.3 Respondents confirmed that exceptions to standard times (e.g. 'Mondays excepted') were not generally flagged sufficiently clearly. It is too easy to miss code letters/symbols at the top of columns and footnotes at the bottom at the bottom of a page (or in some cases, only shown elsewhere in the document).

5.1.4 In common with those of Connex, SWT timetables show route codes (similar to bus route numbers) which appear on the front of the train. While some passengers had no idea what these were, others understood them. They were considered marginally useful, their value being limited by the fact that the timetable itself showed at which stations trains on particular routes stopped. They can, however, be used to verify the stopping pattern of a particular train as it approaches the platform.

5.2 **Use of shading and colour**

5.2.1 During the depth interviews, participants were shown a selection of other publications which they had not seen in the main survey. These included Thameslink timetables which use :

- different background colour shading for Mondays-Fridays (yellow), Saturdays (blue) and Sundays (pinkish brown), and
- heavier shading to denote trains on which off-peak tickets are not valid.

5.2.2 Passengers generally find shading to be helpful when reading timetables, as confirmed by the relatively poor ratings for WAGN timetables which use neither horizontal shading nor colours.

5.2.3 Most respondents grasped fairly quickly what the different colours meant on the Thameslink timetables, and it was generally agreed that this type of shading was helpful. Others felt it was only marginally beneficial, as those unfamiliar with the convention would not immediately associate particular colours with certain days. They argued that it was far more important that prominent labels/headings are used to show 'Monday to Friday', 'Saturday' or 'Sunday'. In general this was done, and people felt it would be difficult to miss the day of the week heading on timetables such as Silverlink's.

5.2.4 Respondents usually took longer to work out why some timetables had darker shading (to denote peak period trains, with restricted ticket availability). Once aware, they felt this to be a useful convention and one that other operators might do well to adopt.

5.3 **Front covers**

5.3.1 While the Thameslink timetable was widely praised for its layout and use of colour and shading, it was thought to have missed a valuable opportunity by featuring an 'arty' but barely relevant design (a soft-focus image of part of a clock face) on its front cover, rather than something more useful and relevant such as a route map showing points served.

5.3.2 One of the major strengths of the Connex and SWT timetables is that they show on the front cover which routes/stations are served by the timetable. This can be particularly important when customers are selecting a timetable from a rack.

5.4 **"and at the same minutes past each hour"**

5.4.1 The depth interviews provided an opportunity to explore views on some of the other conventions used by certain rail operators.

5.4.2 Some timetables, such as SWT's, save space by stating that trains run at the same minutes past each hour between particular times. Those shown this convention said they were familiar with it from bus timetables, felt confident using it, and were keen to see space savings if these resulted in the use of larger type faces.

5.4.3 Our [FDS International's] experience of bus timetable research suggests that this convention makes timetables more user-friendly and appear less cluttered if it allows the use of larger print. On occasions, therefore, it may be appropriate and prudent to use it, although any departures from normal layout may increase opportunities for misunderstanding. It is important to distinguish the start and end of the period of 'clockface' timings clearly, e.g. by inserting columns showing "and then at these minutes past each hour" and "until". The rail industry

practice is to show a sample hour, the start of which is distinguished only by the use of a bold vertical line, which is arguably more confusing to unfamiliar readers.

5.5 Connections

5.5.1 Participants varied in their ability to work out which trains to catch and where to change when making journeys requiring a change of train.

5.5.2 Some understood that in rail timetables times printed in *italics* usually signify a change of train, rather than a through service.

5.5.3 Connex's timetable features an explanatory "guide to connections". This was not immediately noticed, but some studied it when it was pointed out. Passengers struggled with and failed fully to understand Connex's conventions. They could generally grasp an example which showed other stations one could reach from Gatwick by changing at East Croydon (i.e. diverging routes). However, they had real problems with another example which showed that one could travel from London Bridge to East Croydon to join a train to Gatwick which originated from London Victoria (i.e. converging routes).

5.5.3 The inclusion of these "joining" (i.e. converging) train times within the main body of the timetable created confusion and, even when explained, was felt to be of limited value. Some thought that the *italicised* times of connecting trains from Rochester were in fact times of trains to Rochester.

5.5.4 The impression gained from this (admittedly small-scale) study was confirmed when timetables were shown to rail users at the FDS head office. Showing 'joining' trains was thought to create confusion, with little potential benefit. Dropping this convention might enable Connex to increase the size of its type face, space out stations more widely in its timetable, or show footnotes in larger print.

5.6 Overtaking trains

5.6.1 One difficulty faced by train companies is how to show times where an earlier train is overtaken by a later train, usually because the later train stops at fewer stations.

5.6.2 Silverlink shows trains according to the times at which they depart from or arrive at London. This results, for example, in a train which leaves Birmingham New Street at 0745 appearing to the left of one leaving at 0736 (see appendix D, type 2 task : Silverlink).

5.6.3 Respondents found this a little confusing, but said they would find it even more confusing if trains were listed in the order they reached their final destination. Some suggested they would be suspicious and believe there to be a misprint if departure times at the origin of the journey were not in time order. However, the result is that for passengers travelling

from Coventry to Birmingham, trains no longer appear on the timetable in the sequence in which they leave (e.g. the 1626 appears after the 1643).

5.6.4 To overcome this problem, operators such as Connex and Thameslink split the overtaken train between two columns, either side of the overtaking train, at the point in its journey at which it is passed. Forward and backward arrows are used to show that it is continued in a later column/continued from an earlier column. This convention was not understood, and it confused the travellers in this survey.

5.6.5 The Connex timetable shows the 2241 from Victoria reaching Sheerness on Sea at 0023. Use of the double arrow convention confused those shown this timetable, who wrongly believed that they would have to change trains at Sittingbourne :

“Arrows mean you get off train at Sittingbourne and wait.”

5.6.6 Connex’s use of arrows often appears misguided and inappropriate, especially on page 44 of the timetable used in this survey, which features trains running from Dover Priory to London Victoria. A simplified version of part of this timetable is depicted below :

		A	B		A	B
Dover priory	dep	0435	0440	...	...	...
Faversham	arr	0519	0519	0518	←	←
Faversham	dep	0524	0524	0521	0524	0524
Teynham	dep	→	→	...	0529	0529
Sittingbourne	arr	...	...	0529	0534	0534
London Victoria	arr	...	...	0630	0653	0653

The actual timetable features many more stations than this, and the code letters A and B (which refer to different dates of operation) appear a long way above these train times. This presentation is almost certain to confuse customers. Furthermore, nowhere in the booklet does it indicate whether the time passengers travelling from Dover Priory would have at Faversham (two minutes) would be sufficient in which to change platforms to catch the fast train to Victoria.

5.7 Dividing trains

5.7.1 Respondents were much more comfortable with conventions used to show trains which divide en route (a broad column split into two at the relevant point). Although several confessed to getting on the wrong half of a train, none admitted to making such a mistake twice.

5.8 Departures and arrivals

5.8.1 Respondents generally understood terms such as ‘d’ or ‘dep’ to denote the times at which trains depart, and ‘a’ or ‘arr’ to denote when they arrive at a station. However, it was not always clear (on Connex’s

timetable, for example) why times switch midway from departures to arrivals (e.g. between Farningham Road and Swanley, which appear consecutively in a continuous list, and neither of which is shown as a junction at which trains might be required to wait for connections).

5.9 Days of week

5.9.1 One 'depth interviewee' worked in the airline industry and liked the airlines' convention (also used by National Express coaches) of a single timetable with the days of the week on flights operate shown at the head of each column. This would almost certainly save space if adopted for rail timetables although - in the short-term at least - it would create confusion. Where there are marked differences between the service pattern on weekdays and at weekends, more searching would be needed by users to identify the trains relevant to their intended journeys.

5.9.2 The structured tests revealed, however, that many participants were misled by the use of inconspicuous codes to identify trains which do not operate throughout the period for which the timetable is valid. The former British Rail tradition of marking these with a vertical wiggly line has not been continued by some operators. In these cases, prominent date markings at column heads would be useful, rather than letter codes of the kind illustrated in the timetable format shown in paragraph 5.6.6.

5.10 Length of train

5.10.1 Although some passengers find it useful to know the length of the train, as it helps them stand at the right place on the platform, this is a minor concern and it was considered impractical to print this on paper timetables. It has, however, been done by some operators, e.g. c2c.

5.11 Additional information

5.11.1 'Depth interviewees' were shown the leaflet *Travelling with Virgin Trains*, which is produced separately from this operator's timetable leaflets and gives general information of the kind discussed in section 4.17 of this report. Reactions varied. A couple thought it very helpful and the sort of publication they were likely to read and keep. A more common view was that this was only marginally beneficial and that it merited only a cursory glance. Most would neither read nor keep such a booklet, preferring shorter key information to appear within the timetable itself.

5.11.2 The introductory information in WAGN timetables was thought to be useful and well presented.

5.11.3 The comprehensive information on stations in the c2c timetable (e.g. about ticket office opening hours and passenger amenities) was thought to be potentially useful and quite well presented, as a series of icons shown against a list of station names.

5.12 **Virgin Trains timetables**

- 5.12.1 Virgin Trains has recently revamped and simplified its timetables, by producing separate colour-coded versions for different routes (as well as composite versions where trains on different routes run in parallel, and some individual versions for links between key pairs of stations).
- 5.12.2 'Depth interviewees' thought that Virgin's timetables were reasonably simple because the routes were straightforward. However, they criticised them for printing train times up to or over twelve inches away from the name of the relevant station, and for showing date codes on a separate page from the journeys to which they applied. For example, on Sundays Virgin operates only two trains between Holyhead and Euston. It seems extraordinary that one should have to refer to a key on a completely different page to work out when the first train arrives at Euston.

6. The ideal timetable

6.1 No timetable will satisfy everyone. But on the evidence of this research, the ideal *might*

- be similar in page size to Connex
- show a route map on the front
- present other information at the start of timetable like WAGN
- show times of trains in portrait (vertical) style like Connex
- use colour coding and shading like Thameslink
- adopt Silverlink's generally pragmatic approach, e.g. in *not* using arrows to depict overtaking trains
- ensure notes relevant to particular trains are on the same page of the timetable, and make footnotes bigger.

Appendix A

Glossary of abbreviations

ATCO	Association of Transport Co-ordinating Officers
ATOC	Association of Train Operating Companies
DiPTAC	Disabled Persons Transport Advisory Committee
FGE	First Great Eastern
GLA	Greater London Authority
JMU	Joint Mobility Unit
LTUC	London Transport Users Committee
SWT	South West Trains
TOC	Train operating company
WAGN	West Anglia Great Northern

Appendix B

List of timetables used

(1) For the practical tasks set in the hall tests :

Connex	Timetable leaflet number 12 Ramsgate, Dover and Faversham (via Chatham) – London
Silverlink	Silverlink timetable (<i>whole network</i>)
SWT	Timetable leaflet number 8 Surbiton/Wimbledon to London Waterloo
WAGN	Train Times Letchworth Garden City, Welwyn Garden City, Hertford North to London Kings Cross and Moorgate

[The front covers of these are reproduced full-size on the following pages.]

(2) In addition, some respondents were shown a number of other timetables during the face-to-face depth interviews. These were :

Thameslink	Thameslink timetable (<i>whole network</i>)
c2c	c2c timetable (<i>whole network</i>)
Virgin Trains	Route leaflets for London-Birmingham-Wolverhampton (VT9) and London-Manchester (VT7)
SWT	Special Leaf Fall Timetable leaflet number 17a (Portsmouth/Haslemere to London Waterloo) (<i>with additional station bank on right hand side of train times</i>)

In all cases, the timetables were those current from 30/9/01 to 1/6/02.

Appendix C

References

The following documents were consulted in the course of this project :

Code of practice : presentation of timetable information

Association of Train Operating Companies
Revision 0 1997 reprinted July 1998

Printed public transport information : a code of good practice

Association of Transport Co-ordinating Officers
Sixth draft January 2001

Legibility of timetables books and leaflets : a code of good practice

Disabled Persons Transport Advisory Committee
February 1996

Form content and composition of timetables

International Union of Railways
Leaflet 411 OR sixth edition 1978

ATCO research paper : bus timetable information

by Bob Saxby
Association of Transport Co-ordinating Officers
November 1997

A more detailed bibliography of publications relating to the design of passenger information literature is available on request from Rachel King at LTUC.

Appendix D

Hall test questions

A copy of the full questionnaire administered to the participants in the hall tests is available on request from Rachel King at LTUC.

The questions set for the specific timetable-reading tasks are reproduced below, together with the relevant timetable pages in actual size (by kind permission of the train operating companies). Correct answers are given at the end of this appendix.

While stocks last, single specimens of the actual timetable books used are available on request from Rachel King at LTUC.

Type 1 task : Connex

On a Sunday, what time train would you have to catch from Chatham to arrive at London Victoria before 3 p.m.?

[note : original timetable is in 2 colours]

Type 1 task : Silverlink

On a weekday, what time train would you have to catch from Tring to get to London Euston before 3 p.m.?

Type 1 task : SWT

On a weekday, what time train would you have to catch from New Malden to arrive at London Waterloo by twenty past five in the evening?

[note : original timetable is in 2 colours, and has 42 columns of train times in each row, of which - for reasons of space - only 16 are shown here]

Type 1 task : WAGN

On a weekday, what time train would you have to catch from Hatfield to arrive at Kings Cross before 3 p.m.?

[note : original timetable is in 2 colours]

Type 2 task : Connex

You are at Teynham at 6 o'clock on a weekday morning and need to get to Broadstairs by 7 o'clock. Please tell me what time train you will catch, whether you need to change, and if so where.

Type 2 task : Silverlink

You are at Rugby at 7.45 on a weekday morning and must reach Harrow & Wealdstone by 9.30. Please tell me what time train you will catch, whether you need to change, and if so where.

Type 2 task : SWT

You are at Surbiton at 10.20 on a weekday morning and must reach Earlsfield by 10.40. Please tell me what time train you will catch, whether you need to change, and if so where.

Type 2 task : WAGN

You are at Potters Bar at 10.20 on a weekday morning and must reach Old Street by 11 o'clock. Please tell me what time train you will catch, whether you need to change, and if so where.

Type 3 task : Connex

You are at Faversham at half past six next Tuesday morning and wish to travel to Dover Priory. Which is the next train you could catch?

[note : the hall tests were conducted in January]

Type 3 task : Silverlink

You arrive at London Euston just before 12.45 on a weekday lunchtime. What time is the next train to Rugby on which food and drink are available on the train?

Type 3 task : SWT

If you arrive at Surbiton station a few minutes after midnight on a Monday morning, what time is the next train to Waterloo?

[note : the key to the codes used, reproduced here in actual size, is printed in the original on the opposite side of the timetable sheet]

Type 3 task : WAGN

You arrive at Welwyn North at 7.30 on a weekday morning. You have a first class ticket. What time is the next train to London Kings Cross on which you can travel first class?

Correct answers to hall test questions

Type 1	Connex	1344	
	Silverlink	1357	
	SWT	1651	
	WAGN	1423	
Type 2	Connex	0602	(change at Faversham)
	Silverlink	0751 or 0753	(change at Milton Keynes)
	SWT	1024	(change at Wimbledon)
	WAGN	1029	(change at Finsbury Park)
Type 3	Connex	0703	
	Silverlink	1254	
	SWT	0426	
	WAGN	0752	

Appendix E

Credits

Lead members : **Ros Weatherall and Libby Kemp**

Lead officer : **John Cartledge**

Depth interviews (industry) by : **Sue Gibson and David Carr**

Hall tests by : **ace fieldwork** for **FDS International**

Depth interviews (passengers) by : **Stephen Link**

Analysis and text by : **Stephen Link** and **David Carr**

Edited by : **John Cartledge**

Cover design by : **Vincent Stops**

LTUC is grateful for the help provided during the course of this research project by Clodagh Buckley (Virgin Trains), Glen Charles (Connex), Steve Denholm (SWT), Sandra Duncan and Jane Wilmot (DiPTAC), Paul French (London Lines), Peter Northfield (FGE), Chris Platt-Evans (JMU) and Heather Sheeran (Thameslink and Thames Trains).

Commissioned and published by : **London Transport Users Committee**
Clements House, Gresham Street, London EC2V 7PR

March 2002

ISBN : 0 9511 432 7 1

For additional (and/or large print) copies of this report please contact

Rachel King

Phone 020 7880 6110

Fax 020 7550 9003

E-mail rking@ltuc.org.uk