

Traffic Signs Policy Review

Research Project into the Awareness of the Meaning of Traffic Signs

Project PPRO 04/16/24

Final Report

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Traffic Signs Policy Review - Project PPRO 04/16/24

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Executive Summary

The Department for Transport (DfT) commissioned AECOM to undertake a study to explore road user awareness and understanding regarding the meaning of a number of traffic signs and identify any areas for improvement.

Overall 38 signs were specified, by DfT, for inclusion in this project. All signs were shown to respondents in the context of how they would usually be seen on the road network. All but one of the signs were shown in a static presentation. For each sign respondents were shown a large picture of the sign itself and a photograph depicting a scenario where that sign would usually be seen.

Seven signs were shown dynamically whereby a simulation of a driving experience was created which included the sign under consideration. The video clips were designed so each sign would be seen by respondents for a couple of seconds reflecting how long a person travelling at 30 miles an hour would realistically have to take in all the information given on the sign.

The first stage of the study involved depth interviews with members of the public and stakeholders in order to get views on the traffic signs being considered and to get feedback on the proposed method for undertaking the survey which used computers to show the signs to respondents both statically and dynamically.

We also carried out cognitive interviews to test peoples' understanding of what they were being asked in the survey. This showed that people are able to read the words on the sign and feel that it was easy to understand. However when asked what the sign allowed them to do, they became less confident. Consequently rather than just using peoples' unprompted comments to get an understanding of what the sign meant, which can be difficult to interpret accurately, this study used a number of comprehension questions to test people's actual understanding of what the sign meant. We believe this more robust approach gives a far better guide to whether people understand traffic signs.

The second stage of the study involved a large scale household survey. Between 15th and 28th January 2011, 820 people were interviewed across England. Respondents represented a range of road users including:

	Achieved
Drivers with up to two years experience from passing the test	100
Drivers with between two and 13 years experience	103
Drivers with between 14 and 35 years experience	111
Drivers with more than 35 years experience	97
Professional who drive more than 18,000 miles per year	100
Drivers who have difficulty reading or understanding English	25
Foreign drivers	25
HGV drivers	102
Motorcyclists	46
Cyclists with driving licences	26
Cyclists without driving licences	25
Pedestrians with driving licences	24
Pedestrians without driving licences	36

For Each Sign: respondents were asked:

- Their **understanding** of the sign (unprompted) by recording verbatim what they understood the sign to mean.
- A series of **comprehension questions** to further test whether respondents fully understood the sign and were not just 'reading' what was written on the sign.
- After being told by the interviewer what the sign actually meant, respondents were then asked to bear in mind the answers they gave and the meaning of the sign, **how easy or difficult** they found it to understand.
- Whether they thought the sign **could be improved**, and if so, how?

The table below summarises the key areas of understanding and miss-understanding for each sign. It also provides some suggestions for improvement. There were few significant differences in understanding for different types of people.

In the context of sign clutter, a minority thought there were too many road signs. A quarter thought there were too many road signs on main roads, One in five thought there were too many on local roads.

This study has shown that the overall meanings of the signs under consideration were generally understood. It also showed a good basic level of understanding as to what different types of traffic sign meant. Nine out of ten knew a red triangle sign gave a warning, seven out of ten knew a blue circular sign gave a positive instruction and six out of ten knew a red circular sign was forbidding an action.

However, respondents were often confused with the unwritten information. For example, on parking signs where a sign shows times of restrictions, there tends to be uncertainty about what is permitted outside those hours. Where a sign relates to access such as 'no vehicles' or pedestrian zones there is less certainty about whether cyclists are or not allowed.

Respondents had most difficulty where signs showed several pieces of information such as parking signs which show restrictions for no waiting, no loading and parking. Respondents would find it difficult to take in all the information and therefore be unsure as to the appropriate behaviour. When viewed dynamically the amount of information respondents were able to take in was small; respondents could take in the main message for example; bus lane but they were unable to take in the times of operation.

The symbol for 'no waiting' was not easily recognised by respondents and they also regularly used the terms 'no waiting', 'no stopping' and 'no parking' interchangeably.

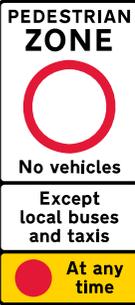
Some prohibitive signs (red circle signs) such as 'no vehicles' and 'no pedestrians' were shown to respondents with and without a bar across. Although the addition of the bar increases understanding, the level of understanding was already extremely high (around 80%).

The table below provides an overview of the main findings of the research. The conclusions have been drawn from several areas including verbatim comments, the response given to the comprehension questions and the in depth interviews and therefore an exact statistic cannot always be provided. Where it is possible, the proportion of people answering correctly has been specified.

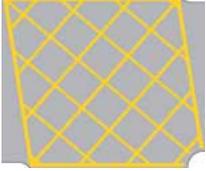
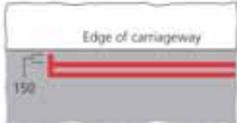
Sign		Key Area of Understanding	Key Area of Misunderstanding	Improvements/ Recommendations
<p>Parking Sign 1: 640 Marking: 1028.2, 1017 and 1019</p>		<ul style="list-style-type: none"> • Loading restrictions • Taxis only 	<ul style="list-style-type: none"> • 'No waiting' symbol • Amount of different restrictions/ time bands 	<ul style="list-style-type: none"> • Write 'no waiting' • Reduce amount of time bands • Say 'taxis only' not 'except taxis'
<p>Parking Sign 2: Double Kerb Blips</p>		<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Meaning of Double Kerb Blips 	<ul style="list-style-type: none"> • Add a sign saying 'no loading' • Improve the public's awareness of what double kerb blips mean
<p>Parking Sign 3: Complicated Variant of Diagram 639.1B</p>		<ul style="list-style-type: none"> • Pay and Display 	<ul style="list-style-type: none"> • Loading restrictions (27% answered incorrectly) • Amount of different restrictions/ time bands • Unwritten information (24% did not know what was allowed on a Sunday) 	<ul style="list-style-type: none"> • Reduce the number of restrictions. For example; combine no loading and no waiting restrictions • Be explicit on what is allowed outside the times shown
<p>Parking Sign 4: Specially Authorised – 661.1 Combined with 660</p>		<ul style="list-style-type: none"> • Permit Holders only 	<ul style="list-style-type: none"> • Times restrictions apply • When/if non permit holders can park • Name of the permit required 	<ul style="list-style-type: none"> • Make it clearer how the two restrictions interact • Make the name of the permits allowed clearer i.e. CA to CH not CA-H • Be more explicit about what is allowed outside the times shown

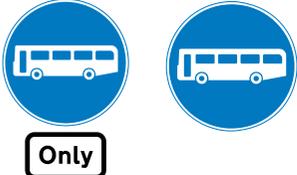
Sign	Key Area of Understanding	Key Area of Misunderstanding	Improvements/ Recommendations	
<p>Parking Sign 5: 661.1 Combined with 660: Residents Must Hold a Saint Dunstan's Permit</p>		<ul style="list-style-type: none"> Permit holders only on Sunday (88% answered correctly) Time limit on how long could park for Term 'no return' (88% answered correctly) 	<ul style="list-style-type: none"> Name of permit required (no one mentioned unprompted) 	<ul style="list-style-type: none"> Be explicit that St Dunstan's is the name of the permit required
<p>Parking Sign 6: 642.3 Combined With 660.7;</p>		<p>Bottom part of sign</p> <ul style="list-style-type: none"> Pay and display When parking allowed 	<p>Top part of sign</p> <ul style="list-style-type: none"> Amount of time bands 	<ul style="list-style-type: none"> Reduce the amount of time bands shown even if it is more onerous for example, no stopping overnight Fri, Sat, Sun 6pm to 8am Remove words 'except emergency vehicles' as it's assumed they would be exempt.
<p>Parking Sign 7: 660.7 Combined with 660.6</p>		<ul style="list-style-type: none"> Parking restrictions for non permit holders Pay and display 	<ul style="list-style-type: none"> Overlapping time bands for permit holders and 'pay and display' Permit holders have to pay at certain times 	<ul style="list-style-type: none"> Be more explicit when permit holders are expected to pay Remove the word 'or' and make it clearer where the sign refers to permit holders and where it applies to non permit holders; two signs.

Sign	Key Area of Understanding	Key Area of Misunderstanding	Improvements/ Recommendations	
<p>Parking Sign 8: 661A With Non-Prescribed Expression of Times</p>		<ul style="list-style-type: none"> Disabled Badge Holders only (96% mentioned unprompted) Time limit on how long can park Term 'no return' 	<ul style="list-style-type: none"> That bay was always for disabled badge holders at all times (36% thought non Disabled Badge Holders could park outside the hours shown) What is allowed outside time bands shown 	<ul style="list-style-type: none"> Specify the bay is only for Disabled Badge Holders at all times Be clearer what is allowed outside the times shown
<p>Parking Sign 9: Residents Parking With and Without Parking Permit Sign</p>		<ul style="list-style-type: none"> Permit Holders Only (98% answered correctly) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
<p>Parking Sign 10: Non Standard Variant of 660.7 with 660 Permit Parking Only on Event Days</p>		<ul style="list-style-type: none"> Pay and display Time limit on how long can park for Term 'no return' 	<ul style="list-style-type: none"> Permit holders only on a Event Day (51% thought they could park here on an event day) EV is name of permit What is an event day 	<ul style="list-style-type: none"> Be more explicit that parking is not allowed on event days for non permit holders Explain where they find out if it is an event day
<p>Restricted Zone 1: NP633.2 Variant: Entry to a Restricted Parking Zone With no On Street Parking or Loading During Times of Operation</p>		<ul style="list-style-type: none"> No loading (97% answered correctly static; 72% dynamic) 	<ul style="list-style-type: none"> 'No waiting' symbol Can drop someone off (82% static; 80% answered incorrectly) Time restriction when viewed dynamically 	<ul style="list-style-type: none"> Write the time restrictions in larger font Be explicit that parking and drop off/ pick up is allowed.

Sign	Key Area of Understanding	Key Area of Misunderstanding	Improvements/ Recommendations	
Restricted Zone 2: NP633.2 Variant: Entry to a Restricted Parking Zone With Provisions for Parking or Loading in Signed Bay		<ul style="list-style-type: none"> No loading (79% answered correctly static; 67% dynamic) 	<ul style="list-style-type: none"> Can drop someone off (88% static; 90% dynamic answered incorrectly) Parking is allowed (58% static; 37% dynamic answered incorrectly) 	<ul style="list-style-type: none"> Increase awareness of the 'no waiting' symbol and its meaning. Be explicit that parking and drop off/ pick up is allowed.
Pedestrian Zone 1: 618.3: Pedestrian Zone Where Cycles Are Allowed		<ul style="list-style-type: none"> No vehicles allowed (94% answered correctly) Loading allowed at specified times 	<ul style="list-style-type: none"> That bicycles are allowed in (32% answered incorrectly) 	<ul style="list-style-type: none"> State Bicycles are allowed
Pedestrian Zone 2: 618.3 Pedestrian Zone Where Cycles Are Not Allowed		<ul style="list-style-type: none"> Vehicles not allowed in the area (98% answered correctly) 	<ul style="list-style-type: none"> That bicycles are not allowed (26% answered incorrectly) 	<ul style="list-style-type: none"> State Bicycles are NOT allowed
Cycling Sign C1: NP 960.2		<ul style="list-style-type: none"> Cycle lane (94% answered correctly) 	<ul style="list-style-type: none"> Not segregated Whether cycles allowed with main flow of traffic (42% answered incorrectly) 	<ul style="list-style-type: none"> Use symbols to show type of vehicles allowed with main flow of traffic, including bicycles.

Sign		Key Area of Understanding	Key Area of Misunderstanding	Improvements/ Recommendations
Cycling Sign C2: 955		<ul style="list-style-type: none"> Bicycles Only (97% answered correctly) 	<ul style="list-style-type: none"> If pedestrians are allowed (21% answered incorrectly) 	<ul style="list-style-type: none"> None
Pedestrian Signs C3a/ C3b: 951 With and Without Red Cancellation Diagonal Bar		<ul style="list-style-type: none"> No pedestrians (96% answered correctly with a bar, 79% without) 	<ul style="list-style-type: none"> Bicycles are allowed (30% with a bar and 40% without answered incorrectly) 	<ul style="list-style-type: none"> None
No Vehicles Sign C4: 617		<ul style="list-style-type: none"> No vehicles (84% answered correctly) 	<ul style="list-style-type: none"> No Bicycles (11% thought bicycles were allowed and 15% were unsure) 	<ul style="list-style-type: none"> Detail exactly what is allowed/ not allowed in this area including types of vehicle, bicycles and pedestrians.
Sign C5a/ C5b: 619 With and Without Red Cancellation Diagonal Bar		<ul style="list-style-type: none"> No Vehicles (98% answered correctly with bar; 88% without bar) 	<ul style="list-style-type: none"> Bicycles allowed (32% with bar and 18% without thought bicycles were not allowed) 	<ul style="list-style-type: none"> Specify bicycles are allowed
Pedestrian and Cycling Sign C6: 956		<ul style="list-style-type: none"> Shared Pedestrian and Cycle route (98% knew pedestrians allowed and 95% knew cycles were allowed in this area) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Pedestrian and Cycling Sign C7: 957		<ul style="list-style-type: none"> Pedestrian and Cycle route 	<ul style="list-style-type: none"> Segregated (19% thought could ride a bike in right hand lane) 	<ul style="list-style-type: none"> None

Sign		Key Area of Understanding	Key Area of Misunderstanding	Improvements/ Recommendations
Pedestrian Sign C8a/C8b: Existing and Experimental Zebra Crossing		<ul style="list-style-type: none"> Zebra crossing (97% answered correctly current; 98% new) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
YB1: Yellow Box Junction		<ul style="list-style-type: none"> Cannot enter unless can exit (94% answered correctly) 	<ul style="list-style-type: none"> Can wait in box if turning and exit is blocked by oncoming traffic (53% answered incorrectly) 	<ul style="list-style-type: none"> Improve public's awareness on how to act when turning right across a box junction. Greater publicity when rules change
Red Route R1: Road Marking		<ul style="list-style-type: none"> No Stopping at any time (85% answered correctly) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Red Route DR2a/b: Red Route Clearway, No Road Markings With and Without 'No Stopping' Text		<ul style="list-style-type: none"> No Stopping at any time (96% answered correctly with 'no stopping', 92% without) 	<ul style="list-style-type: none"> Term Red Route 	<ul style="list-style-type: none"> None
Bus Lanes and Gates B1: 959 / 961		<ul style="list-style-type: none"> Bus lane 	<ul style="list-style-type: none"> Taking in time restriction when seen on the move (78% of those shown sign statically got all comprehension questions correct compared to just 42% of those who saw it dynamically) 	<ul style="list-style-type: none"> Larger text for time restrictions And/or: <ul style="list-style-type: none"> Repeater signs Standardised hours for bus lanes.
Bus Lanes and Gates B2/DB2: 960		<ul style="list-style-type: none"> Contra-flow Bus Lane 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None

Sign		Key Area of Understanding	Key Area of Misunderstanding	Improvements/ Recommendations
Bus Lanes and Gates B3a/b: 953 Bus Only		<ul style="list-style-type: none"> Buses only (98% answered correctly with 'only' plate; 96% without) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Sign H1: 629.2A Height Restrictions		<ul style="list-style-type: none"> Height restriction (94% got all comprehension questions correct) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Sign H2: 6221.A Weight Restriction		<ul style="list-style-type: none"> Weight restriction (96% got all comprehension questions correct) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Sign H3: 629 Width Restriction		<ul style="list-style-type: none"> Width restriction (96% got all comprehension questions correct) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Sign H4: NP820A Unsuitable for Heavy Goods		<ul style="list-style-type: none"> Road unsuitable for HGV (all HGV drivers) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Sign M1: Public Transport Information		<ul style="list-style-type: none"> Public Transport Information 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Sign M2: Wig Wags at Tunnel Portal		<ul style="list-style-type: none"> Stop (91% answered correctly) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None

Sign		Key Area of Understanding	Key Area of Misunderstanding	Improvements/ Recommendations
Sign M3: VMS 6031.1		<ul style="list-style-type: none"> Lane closed (92% answered correctly) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None

Table of Contents

1	Introduction	2
1.1	Background.....	2
1.2	Objectives	2
1.3	Methodology	2
1.4	Data Analysis and Reporting.....	8
2	Parking Signs.....	14
2.1	Introduction	14
2.2	Parking Sign 1: 640 Marking: 1028.2, 1017 and 1019	14
2.3	Parking Sign 2: Double Kerb Blips.....	17
2.4	Parking Sign 3: Complicated Variant of Diagram 639.1B.....	20
2.5	Parking Sign 4: Specially Authorised – 661.1 Combined with 660.....	23
2.6	Parking Sign 5: Specially Authorised – 661.1 Combined with 660: Residents Must Hold a St Dunstan’s Permit.....	26
2.7	Parking Sign 6: Specially Authorised – 642.3 Combined With 660.7; Complicated by Part Week Overnight Times	29
2.8	Parking Sign 7: Specially Authorised – 660.7 Combined with 660.6; Resident Can Park on the Shoulder Hours but Need to P&D During the Day	33
2.9	Parking Sign 8: 661A With Non-Prescribed Expression of Times	36
2.10	Parking Sign 9: Residents Parking With and Without Parking Permit Sign.....	39
2.11	Parking Sign 10: Specially Authorised Non Standard Variant of 660.7 with 660 Permit Parking Only on Event Days.....	41
2.12	Summary	45
3	Restricted Zones and Pedestrian Zones.....	49
3.1	Restricted Zone 1: NP633.2 Variant: Entry to a Restricted Parking Zone With no On Street Parking or Loading During Times of Operation.....	49
3.2	Pedestrian Zone 1: 618.3: Pedestrian Zone Where Cycles Are Allowed	56
3.3	Pedestrian Zone 2: 618.3 Pedestrian Zone Where Cycles Are Not Allowed.....	59
3.4	Summary	62
4	Cycling and Pedestrian Zones.....	64
4.1	Introduction	64
4.2	Cycling Sign C1: NP 960.2.....	64
4.3	Cycling Sign C2: 955	66
4.4	Pedestrian Signs C3a/ C3b: 951 With and Without Red Cancellation Diagonal Bar.....	68
4.5	No Vehicles Sign C4: 617	71
4.6	Sign C5a/ C5b: 619 With and Without Red Cancellation Diagonal Bar.....	74
4.7	Pedestrian and Cycling Sign C6: 956	77
4.8	Pedestrian and Cycling Sign C7: 957	79
4.9	Pedestrian Sign C8a/C8b: 544 Existing and Experimental Zebra Crossing.....	81
4.10	Summary	83
5	Yellow Box Junction and Red Routes.....	85
5.1	Introduction	85
5.2	YB1: Yellow Box Junction	85
5.3	Red Route R1: Road Marking.....	88

5.4	Red Route DR2a/b: Red Route Clearway, No Road Markings With and Without 'No Stopping' Text.....	91
5.5	Summary	93
6	Bus Lanes and Gates.....	95
6.1	Introduction	95
6.2	Bus Lanes and Gates B1: 959 / 961	95
6.3	Bus Lanes and Gates B2/DB2: 960	98
6.4	Bus Lanes and Gates B3a/b: 953 Bus Only.....	100
6.5	Summary	102
7	Height and Weight Restrictions	104
7.1	Introduction	104
7.2	Sign H1: 629.2A Height Restrictions.....	104
7.3	Sign H2: 6221.A Weight Restriction.....	106
7.4	Sign H3: 629 Width Restriction	108
7.5	Sign H4: NP820A Unsuitable for Heavy Goods	110
7.6	Summary	112
8	Miscellaneous Signs.....	114
8.1	Introduction	114
8.2	Sign M1: Public Transport Information.....	114
8.3	Sign M2: Wig Wags at Tunnel Portal	116
8.4	Sign M3: VMS 6031.1	118
9	Cyclists Consultation Questions	121
9.1	Introduction	121
9.2	Low Headroom.....	121
9.3	Pedestrian Signs.....	122
9.4	Branding	122
9.5	Cycle Routes Across Pedestrian Crossings and Junctions.....	123
9.6	Direction Signs on Road	124
9.7	Cycle Route Diversions Signs.....	124
9.8	Summary	125
10	Sign Clutter.....	128
11	Conclusions and Recommendations	131
11.1	Conclusions	131
11.2	General Recommendations	132
	Figure 1 Demographic Profile of Respondents	6
	Figure 2 Speed of Driving on	7
	Figure 3 Understanding Traffic Signs in General.....	8
	Figure 4 Where You See This Sign Are You Allowed To	15
	Figure 5 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly	16
	Figure 6 Where You See This Sign Are You Allowed To	18
	Figure 7 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly	19
	Figure 8 Where You See This Sign Are You Allowed To	21

Figure 9 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly	22
Figure 10 Where You See This Sign Are You Allowed to Park on a	24
Figure 11 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly.....	25
Figure 12 Where You See This Sign Are You Allowed to Park on a	27
Figure 13 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly.....	28
Figure 14 Where You See This Sign Are You Allowed to Park on a	30
Figure 15 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly.....	31
Figure 16 Is the Alternative Wording Easier to Understand	32
Figure 17 Where You See This Sign Are You Allowed to Park on a	34
Figure 18 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly.....	35
Figure 19 Where You See This Sign Are You Allowed to Park on a	37
Figure 20 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly.....	38
Figure 21 Where You See This Sign Are You Allowed to Park on a	42
Figure 22 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly.....	44
Figure 23 Proportion of Respondents Getting ALL Comprehension Questions Correct ...	45
Figure 24 Where You See This Sign Are You Allowed to	50
Figure 25 Ease of Understanding	51
Figure 26 Where You See This Sign Are You Allowed to	54
Figure 27 Ease of Understanding	55
Figure 28 Where You See This Sign Are You Allowed to	57
Figure 29 Ease of Understanding	58
Figure 30 Where You See This Sign Are You Allowed to	60
Figure 31 Ease of Understanding	61
Figure 32 Where you see this sign can you....	65
Figure 33 Where you see this sign can you....	67
Figure 34 Where you see this sign can you....	69
Figure 35 Where you see this sign can you....	72
Figure 36 Where you see this sign can you....	75
Figure 37 Where you see this sign can you....	78
Figure 38 Where you see this sign can you....	80
Figure 39 Where you see this sign can you....	82
Figure 40 Where You See These Road Markings can you....	86
Figure 41 Ease of Understanding	87
Figure 42 Where You See This Sign Can You....	89
Figure 43 Ease of Understanding Road Markings.....	90
Figure 44 Where You See This Sign Can You....	92
Figure 45 Where You See This Sign Can You....	96
Figure 46 Able to Drive in the Right Hand Lane of Traffic?.....	99
Figure 47 Where You See This Sign Can You.... (STATIC).....	101
Figure 48 Where You See This Sign Can You.... (DYNAMIC).....	101
Figure 49 Where You See This Sign Can You....	105
Figure 50 Where You See This Sign Can You....	107

Figure 51 Where You See This Sign Can You.....	109
Figure 52 If You Drove An HGV Past This Sign Would You Be Breaking The Law?	111
Figure 53 If you had a SatNav and it Directed You Down a Road With This Sign On, Would You Follow It?	111
Figure 54 Agreement Regarding Sign Usage and Effectiveness	115
Figure 55 Can you Proceed Past the Lights?	117
Figure 56 Can You Proceed Past the Sign in the Lane With the Cross Above it?.....	118
Figure 57 Amount of Signage on... ..	128
Figure 58 Proportion Stating There Are Too Many Signs by Location.....	129

1 Introduction

Capabilities on project:
Transportation

1 Introduction

1.1 Background

As car ownership in the UK continues to grow, more pressure is being placed on the current highways infrastructure. The need to control and manage users of the network is therefore a key importance in ensuring acceptable safety levels and maximum usage capacity.

Although the expectation of drivers has not dramatically changed in the last 30 years i.e. they still wish to park or load next to their destination and want ease of movement around the network; expectations of pedestrians and cyclists have increased dramatically. Tackling the needs of these vulnerable users while still ensuring their safety is therefore a concern which needs to be addressed.

Traffic signing is the main way of communicating with highway users regardless of mode of transport, and the vast amounts of information required such as access, parking and directions can lead to complex and cluttered messages needing to be conveyed in a very short space of time. The communication of these messages has led to a number of compromises in both signage design and usage.

Consequently, the Department for Transport (DfT) has become aware of issues which are arising in their usage, and so have commissioned AECOM to undertake a study to explore road user awareness and understanding regarding the meaning of a number of traffic signs and identify any areas for improvement.

1.2 Objectives

The overall purpose of the study was to explore road user awareness and understanding of the meaning of a number of traffic signs and identify any areas for improvement. More specifically the study objectives were as follows:

- Assess user awareness of specific traffic signs ;
- Examine difficulties experienced in understanding signs;
- Assess user understanding of parking conditions when expressed in different ways;
- Look at ways of increasing user understanding without adding sign clutter;
- Assess adequacy of current situation (in terms of existing sign designs, their positioning, impact of sign clutter etc); and
- Provide recommendations on improvements.

1.3 Methodology

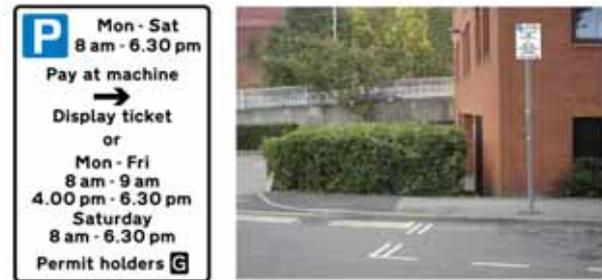
The survey took place in four distinct stages namely:

- Development of show material for use in the survey (static and dynamic formats);
- In-depth interviews with members of the public and stakeholders;
- Questionnaire development and cognitive interviews; and
- Large scale quantitative survey.

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Transportation

1.3.1 Development of Show Material

Overall 38 signs were specified, by DfT, for inclusion in this project. All signs had to be shown to respondents in the context of how they would usually be seen on the road network. All but one of the signs were shown in a static presentation. For each sign respondents were shown a large picture of the sign itself and a photograph depicting a scenario where that sign would usually be seen. An example is shown opposite, and all the show material can be found in Appendix A.



P7

Seven signs were shown dynamically whereby a simulation of a driving experience was created which included the sign under consideration. The video clips were designed so each sign would be seen by respondents for a couple of seconds reflecting how long a person travelling at 30 miles an hour would realistically have to take in all the information given on the sign. Six signs were shown both statically and dynamically.

1.3.2 In-depth Interviews with Members of the Public

In total, 15 in-depth interviews were carried out with members of the public. The purpose of the interviews were in part, to address the main objectives of the survey, but mainly they aimed to test the show material and provide results that could be fed into the main survey. The interviews took place during October 2010 and all interviews were audio recorded. The results of these qualitative interviews are contained in a separate report (see Depth Interviews with the Public (November 2010)).

1.3.3 Stakeholder Interviews

Eight interviews were also carried out with representatives of the following organisations:

- Parking and Traffic Appeals Service (PATAS);
- RAC Foundation;
- Freight Transport Association;
- Transport for London (TfL);
- Confederation of Passenger Transport;
- Automobile Association;
- Sustrans; and
- Motor Cycle Industry Association.

The findings of these interviews can also be found in a separate qualitative Stakeholder report (Stakeholder Consultation Report (March 2011)). The findings of both the stakeholder interviews and interviews with members of the public were used to develop the questionnaire used in the main survey.

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1.3.4 Questionnaire Development and Cognitive Interviews

In previous studies aimed at assessing people's understanding of Traffic Signs there have been some difficulties in evaluating the extent to which a person has actually understood a traffic sign. The qualitative research showed that people can read the words of a sign and think they understand it, but when asked what the sign means in terms of what is permitted, they were less certain. Therefore, when designing the questionnaire great care was taken to design questions that would test respondents' understanding of the signs and not rely just on the respondent saying they understood it.

The questionnaire was further tested on 10 people via cognitive interviews. Cognitive interviews involve asking people a question as it would be asked in the main questionnaire survey but then asking them to describe in detail how they reached their answer. This method allows the researcher to ascertain whether the respondent is answering the question in the desired way and if the allowed responses are appropriate/ allow respondents to answer as they would like to.

1.3.5 Quantitative Survey

In this section we describe:

- The questionnaire;
- Fieldwork;
- Respondent's profile and driver attitudes; and
- Data analysis.

1.3.6 The Questionnaire

A copy of the questionnaire used can be found in Appendix B. Topics covered:

- Respondent Profile:
 - Type of driving licence held;
 - Length of time held a driving licence;
 - Mode of travel used/ used most often;
 - Type of vehicle driven;
 - Type of driving (business travel);
 - Annual mileage;
 - Any difficulty understanding English; and
 - Blue badge holder.
- Understanding Traffic Signs in General:
 - Red Triangle;
 - Red Circle; and
 - Blue Circle.

For Each Sign: respondents were asked:

- Their **understanding** of the sign (unprompted) by recording verbatim what they understood the sign to mean.
- A series of **comprehension questions** to further test whether respondents fully understood the sign and were not just 'reading' what was written on the sign.
- After being told by the interviewer what the sign actually meant, respondents were then asked to bear in mind the answers they gave and the meaning of the sign, **how easy or difficult** they found it to understand.
- Whether they thought the sign **could be improved**, and if so, how?

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Level of agreement with (Cyclist only):

- Low headroom signs;
- Cyclists allowed sign in Pedestrian Zones;
- Branding on cycle routes;
- Cycle lanes across pedestrian crossings;
- Cycle lanes across side streets;
- Cycle lanes across major junctions;
- Cycle directions on the road; and
- Temporary cycle route signs at roadworks.
- Further Driver Information (Drivers only):
 - Attitude to driving;
 - Propensity to speed; and
 - Whether they had received a Penalty Charge Notice (PCN).
- General:
 - View on the amount of signs on the network.
- Demographics:
 - Age;
 - Gender;
 - Working Status;
 - Social Economic Grouping; and
 - Ethnic Origin.

1.3.7 Fieldwork

Fieldwork took place January 2011. The survey was administered via CAPI (Computer Assisted Personal Interviewing). The interview took around 30 minutes to administer. Through our depth and cognitive interviews it was demonstrated that the maximum amount of signs a respondent could be shown before they lost interest and the quality of their answers deteriorated was about 10 static signs and 2- 3 video clips. Planning which 10 signs were shown to any one respondent took careful consideration.

As respondents were given a definition of each sign and this could be found to influence respondents' response to a later sign; for example, several of the parking signs contained the term 'no return'. A respondent may not know what the term 'no return' means but after being shown the first sign with 'no return' in and its definition the respondent would then know for subsequent signs and therefore be recorded as understanding these later signs. As a result no two signs with overlapping meanings such as parking permits no return and signs in a red circle were shown to the same respondent.

Four separate sets of sign combinations were designed which avoided similar signs being seen by the same respondent as explained. The set of signs shown to respondents was then selected at random by the computer in such a way that each set of signs was shown an equal number of times, and thus each sign was shown an equal number of times.

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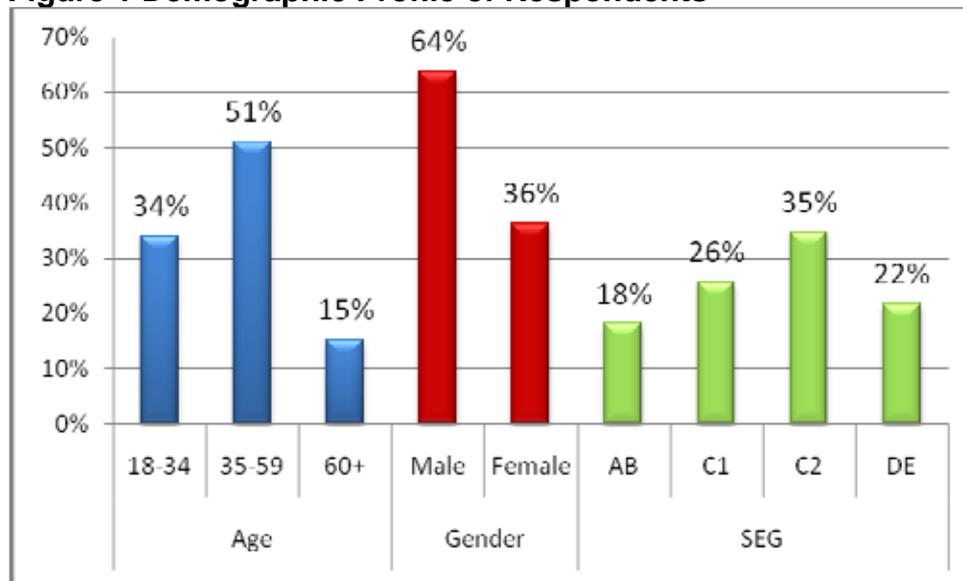
1.3.8 Respondent Profile

In total 820 people were interviewed which is higher than the 800 target. Respondents represented a range of road users including:

	Target	Achieved
Drivers with up to two years experience from passing the test	100	100
Drivers with between two and 13 years experience	100	103
Drivers with between 14 and 35 years experience	100	111
Drivers with more than 35 years experience	100	97
Professional who drive more than 18,000 miles per year	100	100
Drivers who have difficulty reading or understanding English	25	25
Foreign drivers	25	25
HGV drivers	100	102
Motorcyclists	50	46
Cyclists with driving licences	25	26
Cyclists without driving licences	25	25
Pedestrians with driving licences	25	24
Pedestrians without driving licences	25	36

The figure below shows the demographic profile respondents.

Figure 1 Demographic Profile of Respondents



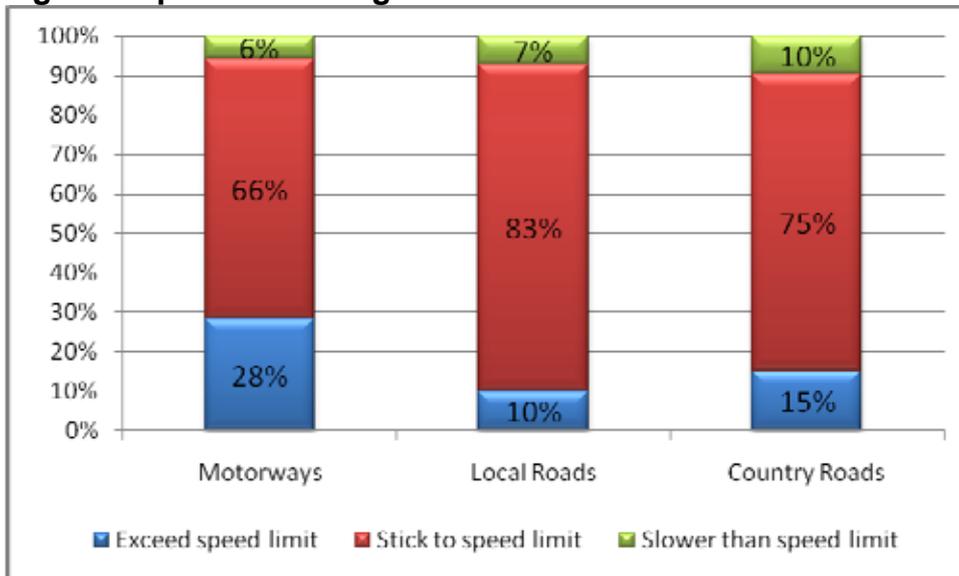
Base: all respondents (820)

Respondents represented a range of ages; 51% were aged 35-59, 34% 18-34 and 15% were aged 60 or over. 64% of respondents were male which reflects the profile of drivers. There was a wide spread of people from different Social Economic Groupings.

Respondents were further asked about their attitude towards driving. The majority (82%) of respondents said they liked driving and considered themselves confident drivers (86%). Just 4% said they did not like driving and considered themselves nervous drivers.

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Figure 2 Speed of Driving on



Base: all drivers (738)

Drivers were asked how they drove on motorways, local roads in built up areas, and country roads. They said they were more likely to stick to the speed limit on local roads (83%) and country roads (75%) than motorways (66%). Over a quarter (28%) of respondents said they generally exceed the speed limit on motorways.

1.3.9 General Understanding of Traffic Rules and Regulations

Almost a third (34%) of respondents had received a Penalty Charge Notice for the following violations:

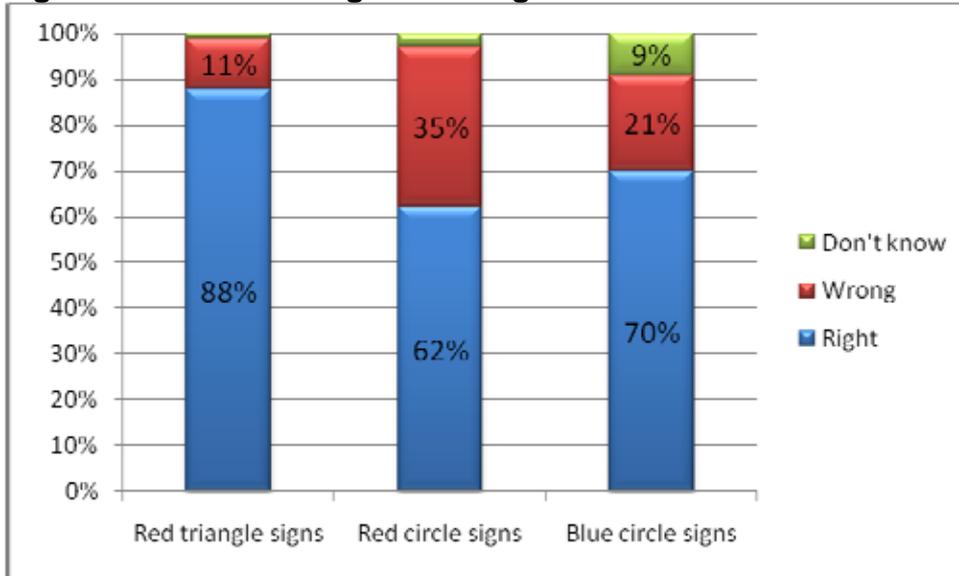
- Stayed longer than time limit allowed (36%);
- Didn't display valid ticket/ payment on meter (20%);
- Parked on a double yellow line (16%);
- Parked outside of times specified (14%);
- Parked on a single yellow line (9%);
- Drove in a bus lane (7%);
- Parked without a valid permit (6%);
- Parked in a loading only bay (6%);
- Stopping in a box junction (5%);
- Parked in a disabled spot (5%);
- Went through red light (4%); and
- Other (8%).

Respondents were asked if they knew what signs in the shape of a red triangle, red circle and blue circle generally indicated. Figure 3 below illustrates that overall respondents were aware that signs in the shape of a red triangle were generally giving a warning (88%).

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There was a little more confusion about what signs in a red circle meant, with 62% answering correctly that they were forbidding an action. Seventy percent knew that signs in a blue circle were giving a positive instruction, showing a good basic understanding.

Figure 3 Understanding Traffic Signs in General



Base: all respondents 820

Foreign drivers and those who had difficulty reading or understanding English were the least likely to understand what these types of sign meant:

- Red Triangle (52% and 68% respectively);
- Red Circle (44% and 52% respectively); and
- Blue Circle (44% and 48% respectively).

1.4 Data Analysis and Reporting

1.4.1 Data Analysis

Data was analysed using SPSS which allows for complex analysis and significance testing. All responses have been analysed by the following variables:

- Road user type;
- Location;
- Age; and
- Gender.

Only differences between respondent groups that are significant have been reported.

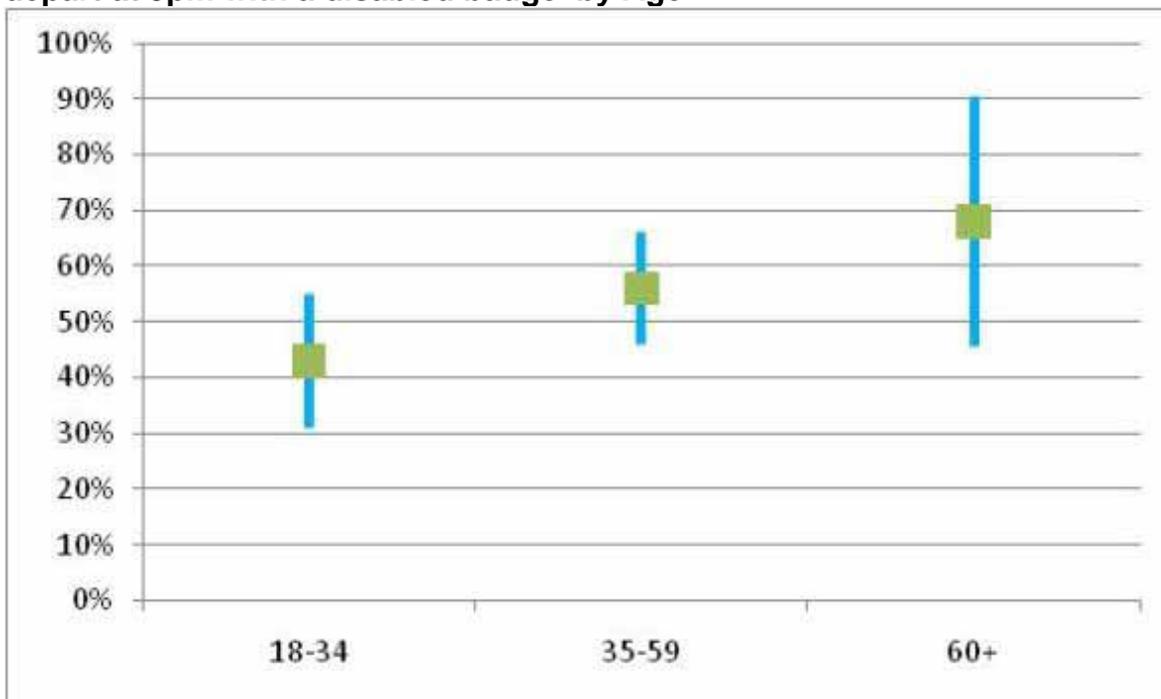
For results using the whole sample of 820 interviews the confidence intervals at the 95% level are +/-3.5%. However, not everyone saw every sign. A minimum of 200 people were shown each sign which gives a confidence interval of +/- 7%. When the sample is further broken down by different segments, the confidence intervals increase; for example, results for a segment of only 100 respondents would have a confidence interval of around +/-10%. This means that when comparing results between two segments each of 100 respondents, the differences would need to be greater than 20% for us to be confident that the results are actually different and not

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the result of chance. Strictly speaking the confidence intervals here apply only to random samples, but in practice good quality quota sampling has been found to be as accurate.

The figure below shows the proportion of people answering the comprehension question for sign P8 correctly. The green boxes show the mean proportion recorded for each age subgroup and the blue bars show the 95% Confidence Interval for each result. Although this seems to indicate that the proportion answering correctly increases with age (the proportion answering correctly rises from 43% for 18-34 year olds, 56% for 35-59 year olds and 68% for 60+ year olds) the confidence intervals for each age group overlap illustrating that the results between ages are not significantly different.

Figure 4 Proportion Answering Correctly that you can 'Park here on a Tuesday at 4pm and depart at 9pm with a disabled badge' by Age



Base: 18 -34 (67); 35-59 (97); 60+ (19)

Some tables sum to over 100% and this is due either to rounding or where respondents were allowed to give more than one response.

1.4.2 Comparison of Results from 2004 Traffic Signs Study

In 2004 TPI and SRA carried out research into peoples' understanding of traffic signs (TPI, 2004, increasing the Understanding of Traffic Signs) for DfT. Although the methodology used was different to ours, a number of signs were common to both studies. These were:

- No Vehicles (619) **Sign C5a**, Page 73;
- No vehicles (617) **Sign C4**, Page 70;
- Zebra Crossing (544) **Sign C8a**, Page 80;
- No Pedestrians (951) **Sign C3a**, Page 67; and
- Height Restriction (629.2A) **Sign H1**, Page 103.

The 2004 study did not use the same approach in assessing whether respondents understood traffic signs. Of the five signs common to both studies, four of these in the 2004 study were

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paired with other signs and respondents were asked to say how they were different. Only for one of the signs were people asked directly to say what they understood by the sign. The current study asked respondents what they understood from each sign on its own.

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The 2004 study used respondents' verbatim comments to understand whether they understood the sign correctly. These were coded into the following categories for the level of understanding:

- Total Right:
 - Full and complete; and
 - Main idea right.
- Total Wrong:
 - Partially right;
 - Wrong;
 - Don't know; and
 - Opposite meaning.

The verbatim comments provided by respondents can be very ambiguous which is why a more direct approach has been adopted in the current study, asking respondents a number of comprehension questions to directly test their understanding. As a consequence, the results from the two studies may not be directly comparable. The results of the 2004 study have been compared for each comparable sign. We have compared the proportion 'Total Right' from the 2004 study and the proportion getting all the comprehension questions correct from the current study.

1.4.3 Format of Report

Following this introduction, Chapters 2 -8 examines respondents understanding of the following types of sign:

- Chapter 2: Parking Signs;
- Chapter 3: Restricted and Pedestrian Zones;
- Chapter 4: Cycling and Pedestrian Signs;
- Chapter 5: Yellow Box Junctions and Red Routes;
- Chapter 6: Bus Lanes and Gates;
- Chapter 7: Height and Weight Restrictions;
- Chapter 8: Miscellaneous Signs;
- Chapter 9: Cyclist Consultation Questions;
- Chapter 10: Sign Clutter; and
- Chapter 11: Summary and Conclusions.

We show for each sign:

- Key Findings;
- A picture of the sign and a definition of what the sign means;
- Level of unprompted understanding – this is based on the verbatim comments provided by respondents;
- Level of prompted understanding – this is based on the answers to the comprehension questions;
- Ease of understanding – how easy respondents found the sign to understand;
- Whether the sign should be improved and if so how; and
- Recommendations – these are based on respondents' comments from the main survey, but also include suggestions made in the depth interviews with members of the public and stakeholders where appropriate.

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Copies of the show material and the questionnaire used can be found in the Appendices.

2 Parking Signs

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2 Parking Signs

2.1 Introduction

In total 10 parking signs were included in the survey. Around 200 people were shown each parking sign.

2.2 Parking Sign 1: 640 Marking: 1028.2, 1017 and 1019

Key Findings

- The number of time bands caused confusion amongst respondents.
- Very few respondents recognised the ‘no waiting’ symbol.
- Despite the evidence showing that respondents did not have a good understanding of this sign three quarters said they thought it was easy to understand.

Meaning of sign as read to respondents:

“This sign means no waiting for any vehicles apart from taxis between the hours of 8am and 6pm any day of the week. Taxis are allowed to park here between 10am and 4pm. There is no loading here for anyone Monday – Friday 8am and 10am and 4pm and 6pm.”



2.2.1 Level of Understanding: Unprompted

Only a quarter (26%) of respondents mentioned all the elements of waiting restrictions; taxis; and loading restrictions. However, most did recognise that the bay was for taxis only (90%) and half recognised that there were loading restrictions (52%).

Very few (4%) respondents recognised the blue and red circle as ‘no waiting’ but tended to use the term ‘no parking’ (30%) instead.

2.2.2 Level of Understanding: Prompted

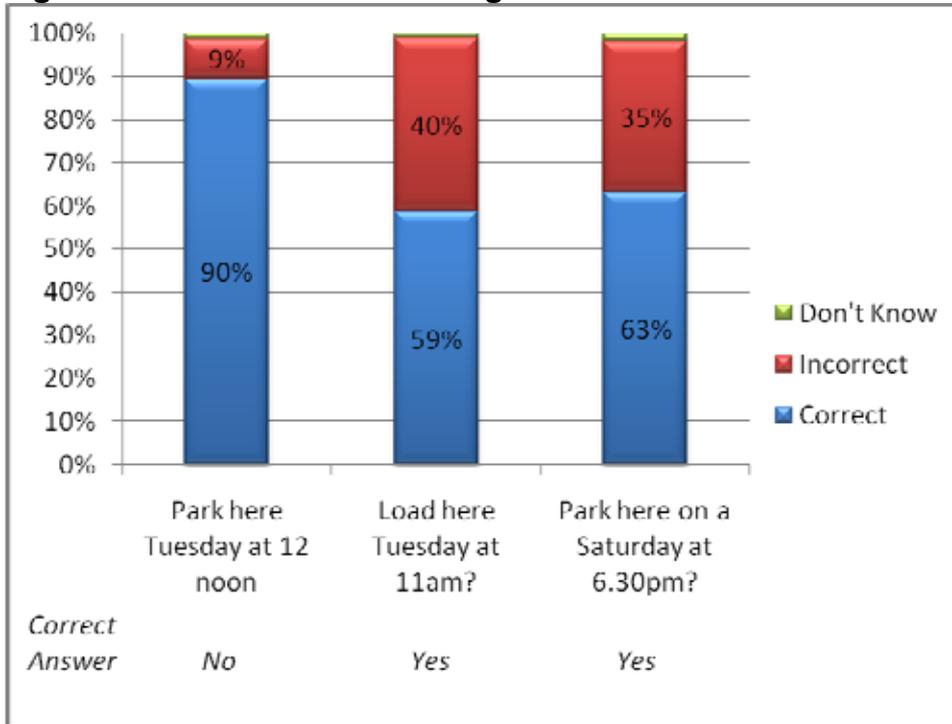
To test comprehension of the sign, respondents were asked if, where they saw this sign, they would be allowed to:

- Park here Tuesday at 12 noon?
- Load here Tuesday at 11am?
- Park here on a Saturday at 6.30pm?

The results show there was some confusion over the meaning of this sign; just 38% answered correctly to all three comprehension questions.

Capabilities on project:
Transportation

Figure 5 Where You See This Sign Are You Allowed To



Base: all respondents shown sign; 201

The number of time bands shown on this sign caused confusion amongst respondents. Although respondents (90%) knew parking was not allowed on a Tuesday at 12 noon less than two thirds (63%) knew parking was allowed on a Saturday at 6.30pm. They were also confused at the times loading restrictions were in place, with 59% answering correctly that loading was allowed there on a Tuesday at 11am.

There was no significant difference in responses between groups.

2.2.3 Ease of Understanding

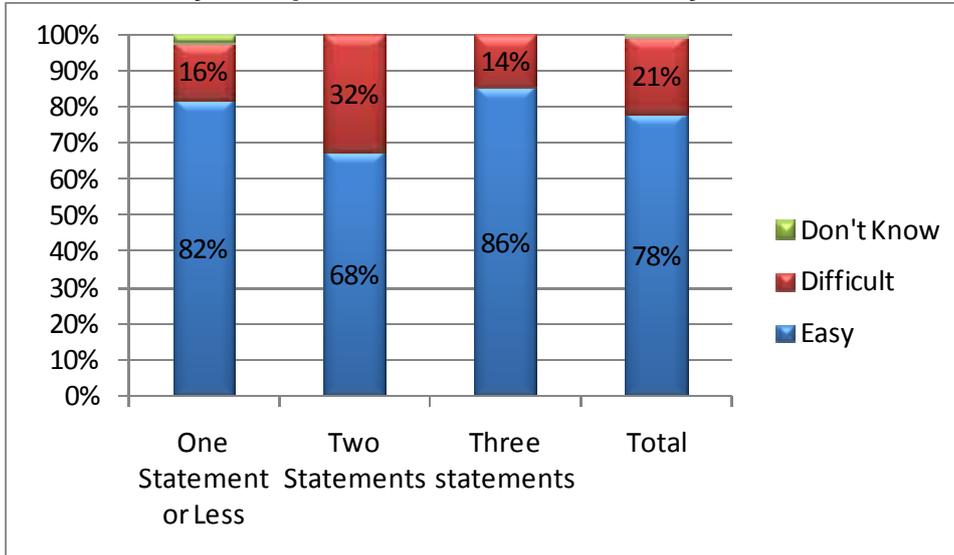
Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign was to understand.

Although over half (61%) of respondents got at least one comprehension question wrong, the majority 78% said they thought the sign was easy to understand. The graph below shows that even those who got only one statement or less correct thought the sign was easy to understand (82%). This highlights that respondents understood neither the sign nor the definition of it.

Capabilities on project:
Transportation

Figure 6 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly



Base: all respondents shown sign; one or less statements correct (50); two statements correct (74); three statements correct (77)

2.2.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 30% (n=61) thought it could and suggested the following:

- Make it clearer (n=27);
- Make it bigger (n=12);
- Too much writing (n=10);
- Needs more information (n=6);
- Explain what the symbols mean (n=4); and
- Add more colour (n=4).

Recommendations

- Reduce the number of time bands shown on a sign
- Use text to say 'no waiting'
- Say 'taxis only' not 'except taxis'

Capabilities on project:
Transportation

2.3 Parking Sign 2: Double Kerb Blips

Key Findings

- There was a lot of confusion as to the meaning of double kerb blips; Only a quarter knew, unprompted, that they meant 'no loading'.
- Only half of respondents found them easy to understand.
- Just over half of respondents wanted an accompanying sign in order to aid understanding, which in practice would usually be the case.

Meaning of sign as read to respondents:

"No loading or unloading at any time."



2.3.1 Level of Understanding: Unprompted

Only a quarter (26%) of respondents knew the double kerb blips referred to loading restrictions. Other responses given included:

- No Parking (42%);
- No Stopping (6%); and
- No Waiting (4%).

2.3.2 Level of Understanding: Prompted

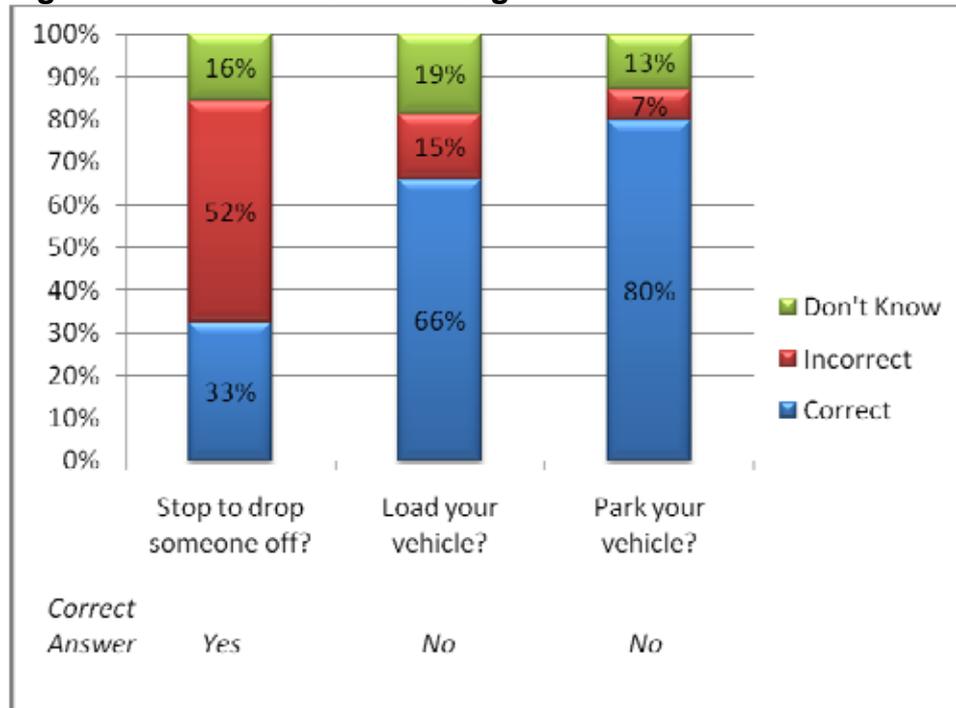
To test comprehension of the road markings, respondents were asked if they thought they would be allowed to:

- Stop to drop someone off?
- Load their vehicle?
- Park their vehicle?

Just 17% of respondents answered all three comprehension questions correctly.

Capabilities on project:
Transportation

Figure 7 Where You See This Sign Are You Allowed To



Base: all respondents shown sign; 224

There was a lot of confusion about the meaning of double kerb blips. Two thirds (67%) of respondents did not know that they were able to stop to drop someone off where there were double kerb blips and 15% thought they would be able to unload their vehicle. Men were more likely to know that they could stop to drop someone off (38%) than women (24%).

Double kerb blips would usually be found along side double yellow lines. To ensure respondents were only answering in regards to the double kerb blips respondents were shown them in isolation. However, most (80%) respondents were still aware that they would not be able to park here even though the picture shown to them only referred to loading restrictions and not parking restrictions.

There was no significant difference in response between driver types.

2.3.3 Ease of Understanding

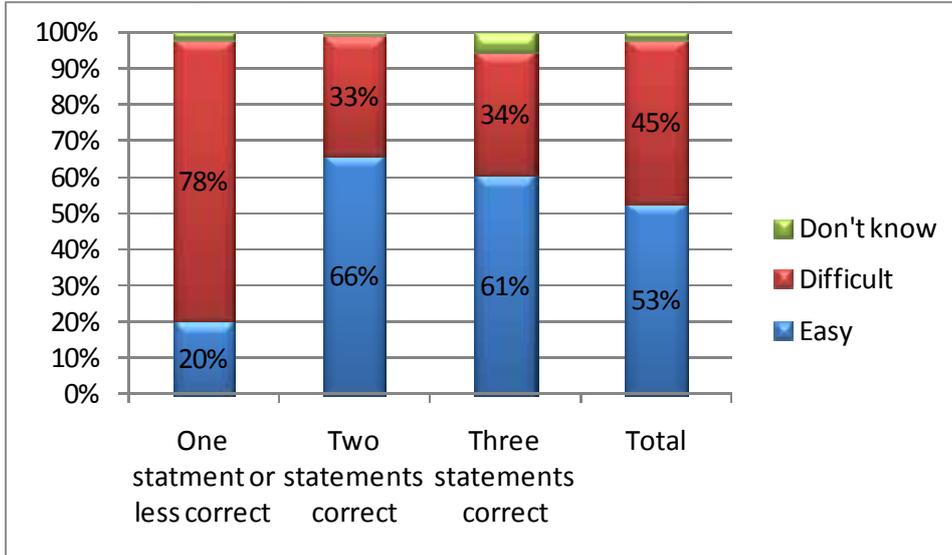
Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the road markings were to understand. Only half (53%) of respondents thought double kerb blips were easy to understand. HGV drivers were the most likely to say double kerb blips were easy to understand (77%), and women were the least likely (41%).

The graph below shows those who did not understand what double kerb blips meant generally found them difficult to understand (78%).

Capabilities on project:
Transportation

Figure 8 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly



Base: all respondents shown sign; one or less statements correct (59); two statements correct (127); three statements correct (38)

2.3.4 Improvements

Respondents were asked, unprompted, if they thought the road markings could be improved; 56% (n=125) thought they could and suggested the following:

- Add a sign (70%);
- Make it simpler to understand (17%);
- Paint them bigger/bolder/ need to be more visible (12%);
- Use double yellow lines/ yellow lines on the road (6%);
- Needs more information/ explanation (3%); and
- Use a picture (3%).

Recommendations

- Have accompanying sign saying 'no loading'
- Improve the public's awareness of what double kerb blips mean

Capabilities on project:
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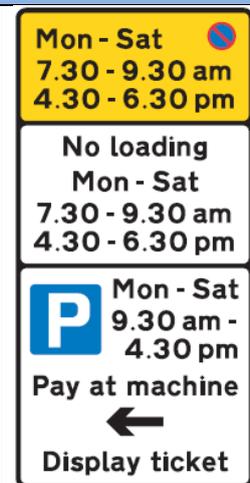
2.4 Parking Sign 3: Complicated Variant of Diagram 639.1B

Key Findings

- This purpose (waiting restrictions; loading restrictions and ‘pay and display’) of this sign was well understood.
- However:
 - The number of time frames caused confusion.
 - The ‘unwritten’ information also confusion with a quarter of respondents being unsure if they could park on a Sunday or not.

Meaning of sign as read to respondents:

“This sign means no waiting Monday to Saturday between 7.30am and 9.30am and 4.30pm and 6.30pm. There is also no loading allowed here Monday to Saturday between 7.30am and 9.30am and 4.30pm and 6.30pm. Between the hours of 9.30am and 4.30pm Monday to Saturday parking is allowed if a ticket is purchased at the machine, to the left, and displayed in the vehicle.”



2.4.1 Level of Understanding: Unprompted

The purpose of this sign was generally well understood. Three quarters (74%) recognised that there were waiting restrictions but tended to use the terms ‘no parking’ (53%) or ‘no stopping’ (15%) and over half (63%) of respondents mentioned that parking was allowed if they were to ‘pay and display’ and that there were loading restrictions (65%).

2.4.2 Level of Understanding: Prompted

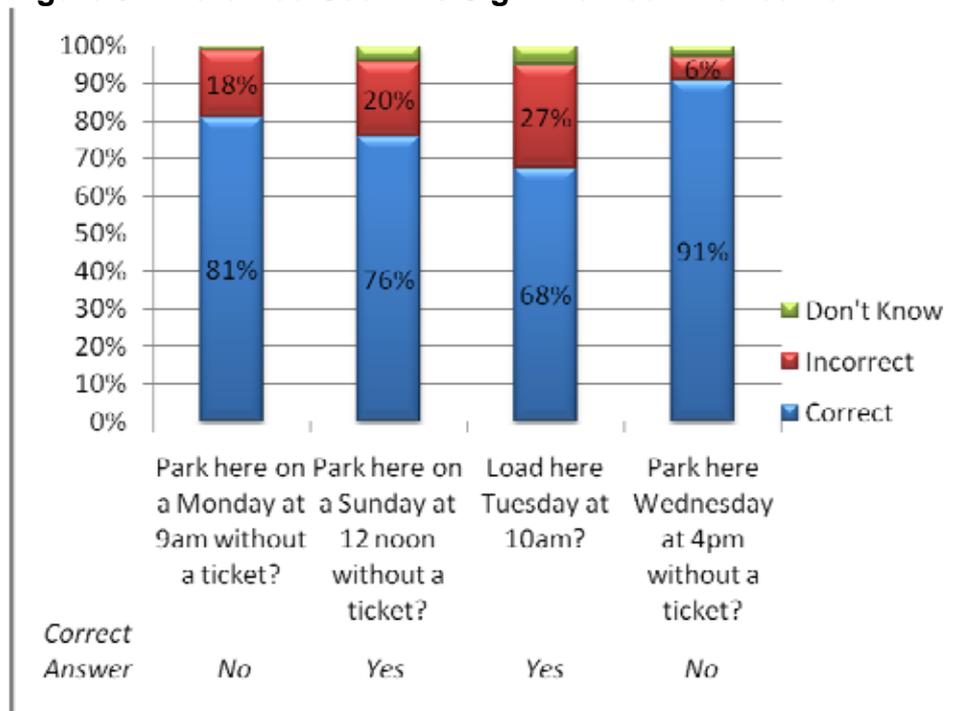
To test comprehension of the sign, respondents were asked if they thought they would be allowed to:

- Park here on a Monday at 9am without a ticket?
- Park here on a Sunday at 12 noon without a ticket?
- Load here Tuesday at 10am?
- Park here Wednesday at 4pm without a ticket?

Just under half (42%) answered all four comprehension questions correctly and a further 38% answered three questions correctly (80% answered three or four questions correctly) which is higher than most of the other parking signs included in this survey.

Capabilities on project:
Transportation

Figure 9 Where You See This Sign Are You Allowed To



Base: all respondents shown sign; 212

The loading restrictions on this sign caused respondents the most problems, with a quarter (27%) answering the comprehension question about loading incorrectly.

The number of time frames given on the sign also caused confusion amongst respondents. Respondents understood the times the ‘pay and display’ operated, illustrated by the fact that 91% answered correctly that they could park on a Wednesday at 4pm without a ticket, but were less certain when having to refer to the ‘no waiting’ time restriction.

The ‘unwritten’ information given on this sign; that is parking is allowed on Sunday caused confusion for a quarter of respondents (24%).

Respondents aged 60 or over were more likely to find this sign confusing than others; only 65% of those aged 60 or more answered three or four comprehension questions correctly compared to 80% of those aged 18-34 and 84% of those aged 35-59.

2.4.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

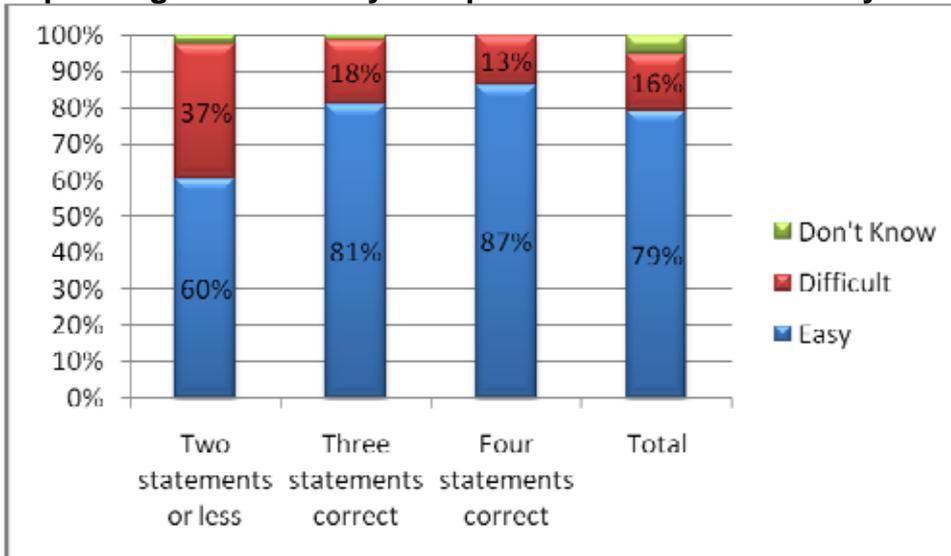
They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Overall 79% of respondents found this sign easy (52%) or very easy (27%) to understand.

Those who found got all four comprehension questions correct found the sign easy to understand (87%) and those that got fewer than two statements correct generally found the sign more difficult to understand (37%).

Capabilities on project:
Transportation

Figure 10 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly



Base: all respondents shown sign; up to two statements correct (43); three statements correct (80); four statements correct (89)

2.4.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 31% (n=65) thought it could and suggested the following:

- Make it simpler e.g. one sign (n=25);
- Too much writing (put 'no loading' and 'no waiting' information together) (n=19);
- Needs more information e.g. say 'no waiting' and can park on Sunday (n=12);
- Use a picture (n= 4);
- Make it bigger (n=3);
- Add more colour (n=3); and
- Have a separate sign (n=2).

Recommendations

- Reduce the number of restrictions. For example; combine no loading and no waiting restrictions
- Be explicit on what is allowed outside the times shown

Capabilities on project:
Transportation

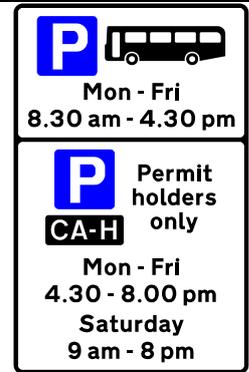
2.5 Parking Sign 4: Specially Authorised – 661.1 Combined with 660

Key Findings

- Majority (70%) knew the sign presented parking restrictions that apply to Buses and Permit holders.
- There was some confusion about when the restrictions applied; for example, 35% of respondents thought permit holders were allowed to park in the bay on a Wednesday at 11am when during this time the bay is for the use of buses only.
- Respondents were unsure of what parking was allowed outside the hours shown a third (33%) of respondents did not know they could park here on a Sunday.
- The name of the permit caused confusions amongst respondents.

Meaning of Sign as Read to Respondents:

“Only buses can park here Monday to Friday 8.30am – 4.30pm. On Monday to Friday 4.30pm -8.00pm and Saturday 9am – 8pm only those with a residents permit CA to CH can park here. Other cars can park here outside these times.”



2.5.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. The majority of respondents (70%) knew that sign presented parking restrictions that apply to Buses and Permit Holders.

The sign does not explicitly state that non permit holders can park here outside the times shown and only six respondents mentioned this unprompted.

2.5.2 Level of Understanding: Prompted

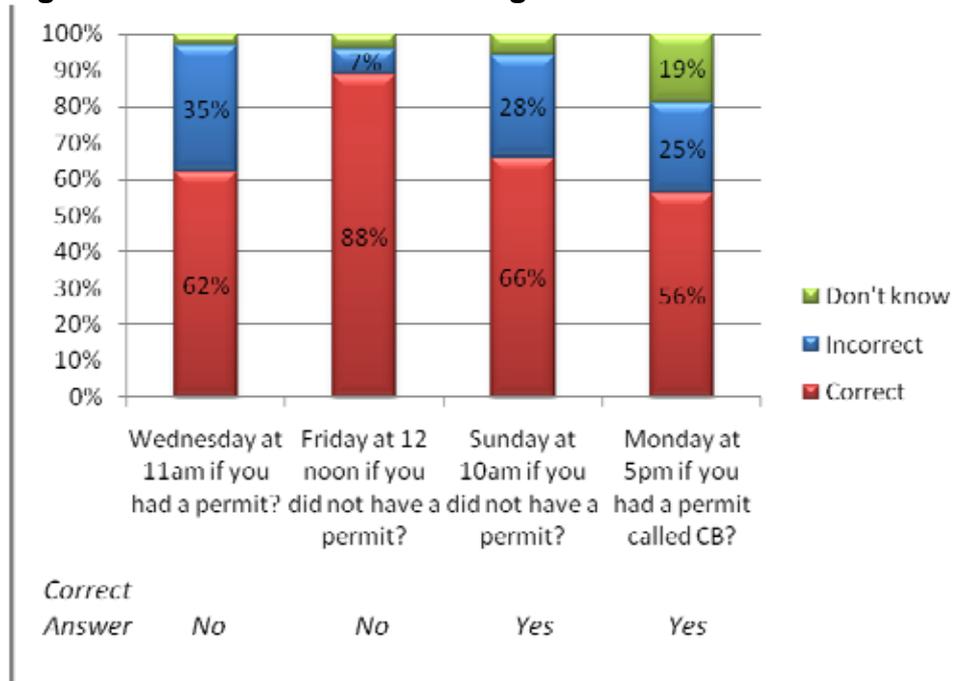
To test comprehension of the sign, respondents were asked if they thought they would be allowed to park where they saw this sign on a:

- Wednesday at 11am if you had a permit?
- Friday at 12 noon if you did not have a permit?
- Sunday at 10am if you did not have a permit?
- Monday at 5pm if you had a permit called CB?

Less than a third (28%) of respondents gave the correct response to all four comprehension questions. Drivers with between 2 and 13 years experience (32%), and professional drivers (30%) were the most likely to give the correct answer to all four questions.

Capabilities on project:
Transportation

Figure 11 Where You See This Sign Are You Allowed to Park on a



Base: all respondents shown sign; 201

Further examination of the responses shows that although respondents appear to have understood that the bay was restricted to permit holders only at certain times, there was some confusion regarding which times the restrictions applied; for example 35% of respondents thought permit holders were allowed to park in the bay on Wednesday at 11am when during this time the bay is for the use of buses only.

There was also confusion about when non permit holders could park there, if at all. Almost a third (28%) of respondents did not think they could park without a permit on Sunday at 10am when in fact non permit holders are allowed at anytime on a Sunday.

Just under half of respondents were confused over the name of the permit; only 56% knew that someone with a permit called CB could park in the bay on Monday at 5pm. It is apparent some respondents misunderstood the name of the permit believing the name was “CA-H” rather than the name of the permits allowed to park here being CA to CH (ie CA, CB and so on).

2.5.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

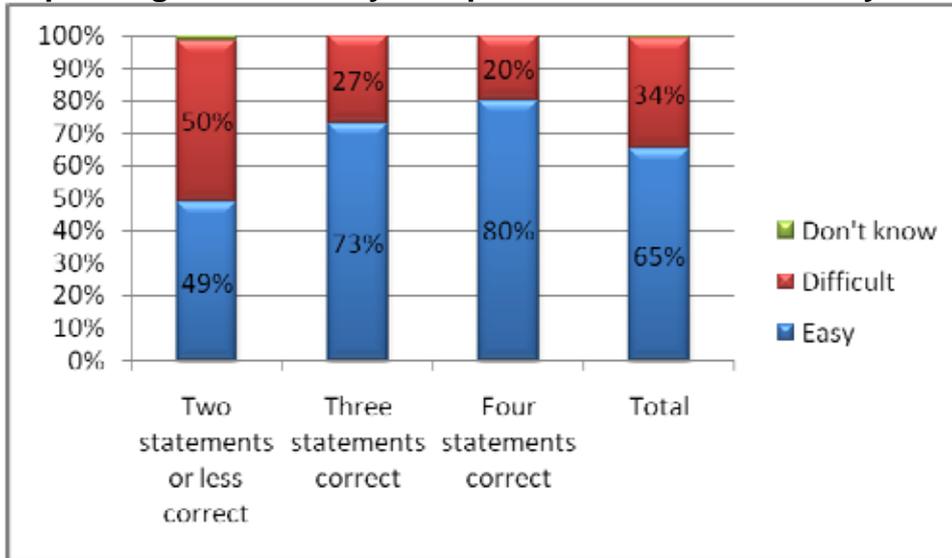
They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Overall, two thirds (65%) of respondents thought the sign was easy (44%) or very easy (21%) to understand.

Those who found got all four comprehension questions correct found the sign easy to understand (80%) and those that got less than two statements correct generally found the sign difficult to understand (50%).

Capabilities on project:
Transportation

Figure 12 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly



Base: all respondents shown sign; up to two statements correct (82); three statements correct (63); four statements correct (56)

2.5.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 40% (n=80) thought it could and suggested the following:

- Make it simpler (n=37);
- Too much information (n=11);
- Say when parking IS allowed (positive instruction) (n=9);
- Needs more information (n=8);
- Use words (n=4);
- Use plain English (n=4);
- Don't understand CA-H (n=4);
- Make it bigger (n=3); and
- Add more colour (n=3).

Recommendations

- Make it clearer how the two restrictions interact
- Make the name of the permits allowed clearer ie CA to CH not CA-H
- Be more explicit about what is allowed outside the times shown

Capabilities on project:
Transportation

2.6 Parking Sign 5: Specially Authorised – 661.1 Combined with 660: Residents Must Hold a St Dunstan’s Permit

Key Findings

- There was a general understanding that permit holders only could park on a Sunday (88%).
- St Dunstan’s was the name of the permit required and although this name would have relevance to permit holders other road users did not recognise it; no one in our sample recognised it.
- The majority (88%) understood the term “no return”.

Meaning of sign as read to respondents

“Vehicles may park here for a maximum of 20 minutes. Once they have left, vehicles can’t return to park again in this area for 40 minutes Monday to Saturday 8am to 6.30pm. At times outside of these hours and on Sundays parking bays may only be used by St Dunstan’s permit holders.”



2.6.1 Level of Understanding: Unprompted

Unprompted, no respondents mentioned all the elements of this sign and just 60% recognised that parking was allowed for general cars as well as for permit holders.

No one recognised that St Dunstan’s was the name of the permit.

The majority (76%) recognised that there was a 20 minute parking restriction and half (56%) of respondents mentioned that they could not return within 40 minutes.

2.6.2 Level of Understanding: Prompted

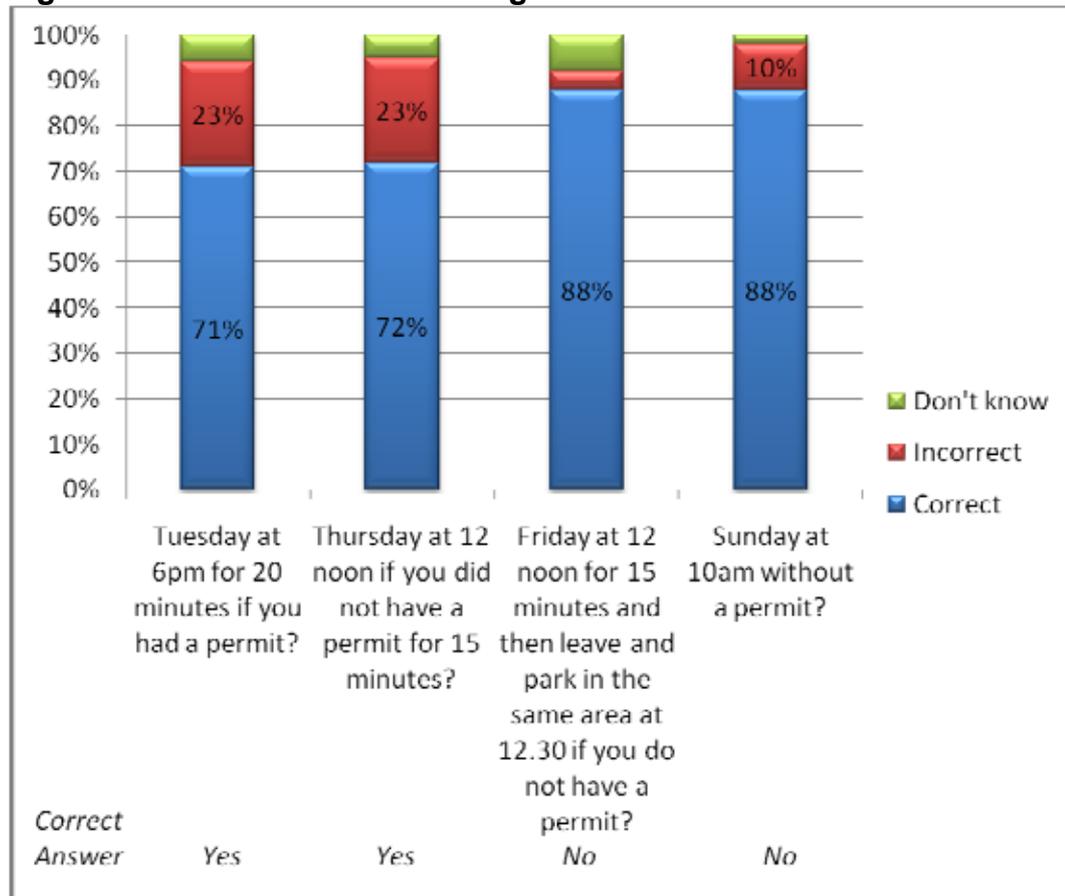
To test comprehension of the sign, respondents were asked if they thought they would be allowed to park where they saw this sign on a:

- Tuesday at 6pm for 20 minutes if you had a permit?
- Thursday at 12 noon if you did not have a permit for 15 minutes?
- Friday at 12 noon for 15 minutes and then leave and park in the same area at 12.30 if you do not have a permit?
- Sunday at 10am without a permit?

There was a high level of understanding of this sign with 79% of respondents answering three or four of the comprehension question correctly: 46% answered all four correctly.

Capabilities on project:
Transportation

Figure 13 Where You See This Sign Are You Allowed to Park on a



Base: all respondents shown sign, 212

There was a general understanding that on Sunday the parking bay was restricted to permit holders only; 88% of respondents answered correctly that non permit holders could not park on a Sunday.

Almost three quarters of respondents (71% and 72% respectively) recognised that there was a time limit on how long cars could park there during the day Monday to Saturday.

The majority (88%) understood the term “no return”, answering correctly that they could not park on a *Friday at 12 noon for 15 minutes and then leave and park in the same area at 12.30*.

Less experienced drivers (passed their test in past 2 years) were more likely to be confused by this sign with a third (32% and 36% respectively) answering the first two statements incorrectly (compared to 14% of drivers with over 35 years experience).

2.6.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

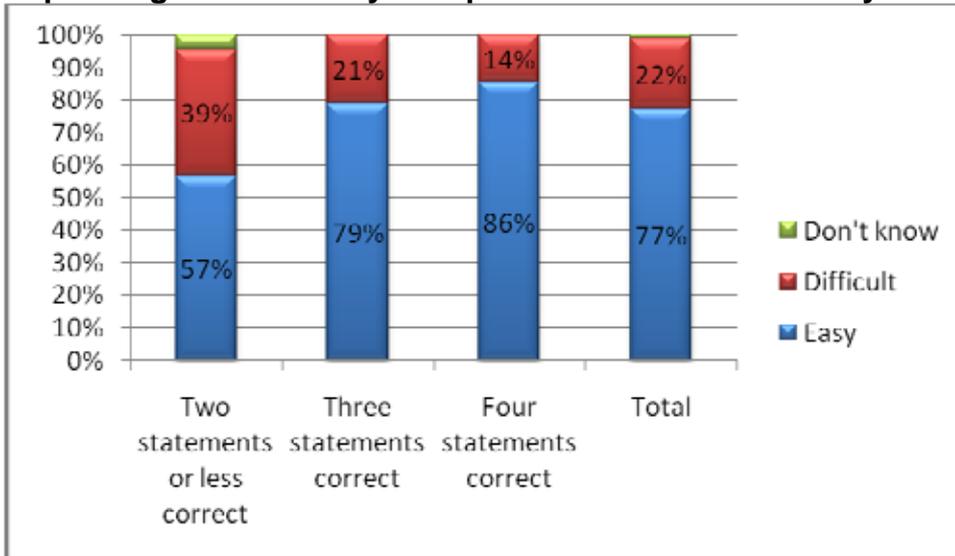
They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Over three quarters (77%) thought the sign was easy (54%) or very easy (23%) to understand.

Capabilities on project:
Transportation

Those who got all four comprehension questions correct found the sign easy to understand (86%) and those that only got one or two statements correct found the sign more difficult to understand (39%).

Figure 14 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly



Base: all respondents shown sign getting two statements or less correct, 44; three statements correct, 71 and; four statements correct, 91

2.6.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 27% (n=57) thought it could and suggested the following:

- Make it simpler (n=22);
- Needs more information (n=8);
- Too much writing (n=5);
- Use symbols (n=5);
- Make it bigger (n=4);
- Needs rewording (n=3);
- Use plain English (n= 2);
- Add more colour (n=1); and
- Say when parking IS allowed (positive instruction) (n=1).

Recommendations

- Be explicit that St Dunstan's is the name of the permit required

Capabilities on project:
Transportation

2.7 Parking Sign 6: Specially Authorised – 642.3 Combined With 660.7; Complicated by Part Week Overnight Times

Key Findings

- Almost all respondents recognised there were parking restrictions here.
- Most (69%) respondents understood the bottom part of the sign which refers to Pay and Display.
- The top part of the sign caused some confusion with only 45% mentioning it unprompted. However, three quarters (75%) answered correctly that they were not allowed to park there on a Friday at 7pm.
- Just under half (40%) of respondents thought the alternative wording shown was easier to understand, but 13% found it hard and nearly half (46%) found it did not make a difference.

Meaning of sign as read to respondents

“Vehicles may park in the bays if they ‘pay and display’ Monday to Saturday 8am to 6pm. During Friday and Saturday 6pm to midnight and Saturday and Sunday midnight to 8am no stopping is allowed in the bay except for emergency vehicles. Outside these hours parking is permitted and no charges apply.”



2.7.1 Level of Understanding: Unprompted

Overall, most respondents (99%) recognised that this sign referred to parking restrictions. However, only 32% of respondents mentioned all the elements detailed in the sign.

Less than half (45%) of respondents referred to the fact that the bay is reserved for Emergency Vehicles at the times specified but over two thirds (69%) recognised that they would have to pay and display to park there during the day Monday to Saturday. Just 2% mentioned that parking was free on Sunday (the unwritten part of the sign).

2.7.2 Level of Understanding: Prompted

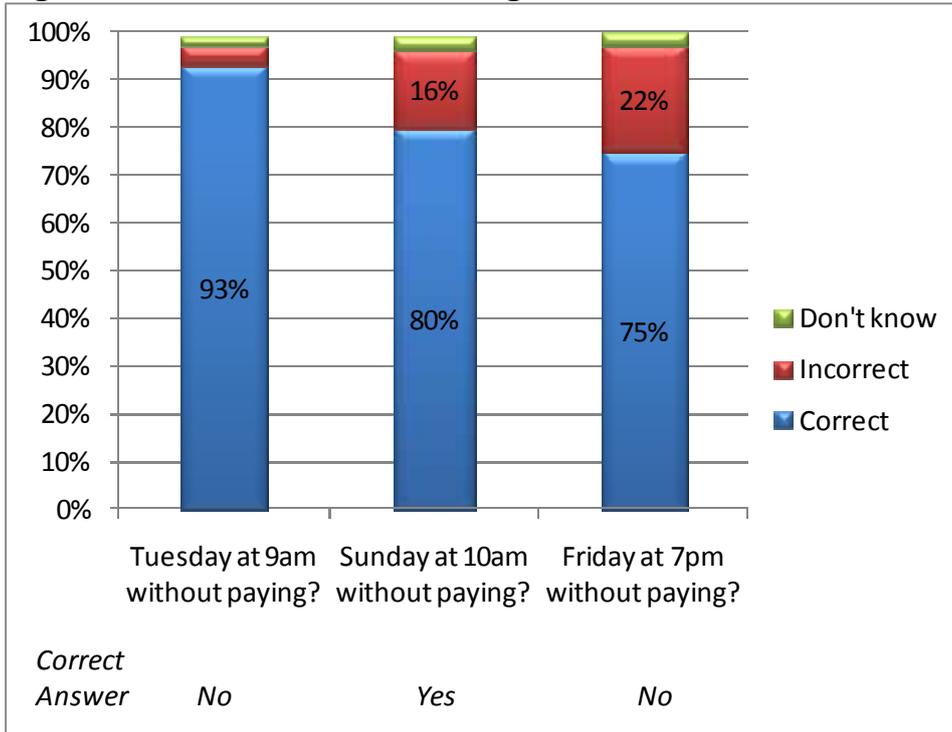
To test comprehension of the sign, respondents were asked if they thought they would be allowed to park where they saw this sign on a:

- Tuesday at 9am without paying?
- Sunday at 10am without paying?
- Friday at 7pm without paying?

Just over half (55%) of respondents got all three comprehension questions correct.

Capabilities on project:
Transportation

Figure 15 Where You See This Sign Are You Allowed to Park on a



Base: all respondents shown sign, 183

Respondents have generally understood the bottom part of the sign which refers to when parking is allowed using pay and display. Ninety three percent of respondents answered correctly that they would not be able to park in this bay on a Tuesday at 9am without paying, and 80% answered correctly they could park on a Sunday at 10am without paying.

There was a little more confusion around the restrictions detailed at the top of the sign although three quarters (75%) of respondents still responded correctly that they were not allowed to park there on a Friday at 7pm.

There was no significant difference in responses between groups.

2.7.3 Ease of Understanding

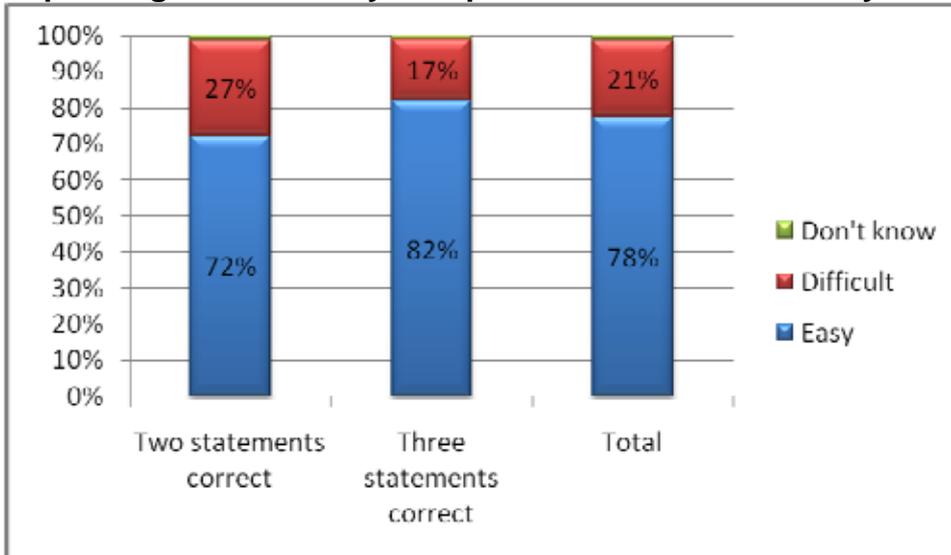
Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Over three quarters (78%) of respondents found this sign easy (47%) or very easy (31%) to understand.

Capabilities on project:
Transportation

Figure 16 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly



Base: all respondents shown sign getting two statements or less correct, 83; three statements correct, 100

2.7.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 30% (n=54) thought it could and suggested the following:

- Make it simpler (particularly the yellow part) (n= 27);
- Too much writing (one time in top part) (n= 7);
- Needs more information (n=4);
- Use a picture (n= 4);
- Say when parking IS allowed (positive instruction) (n=4);
- Use plain English (n=2);
- Have two different signs (n= 2); and
- Needs rewording (n=2).

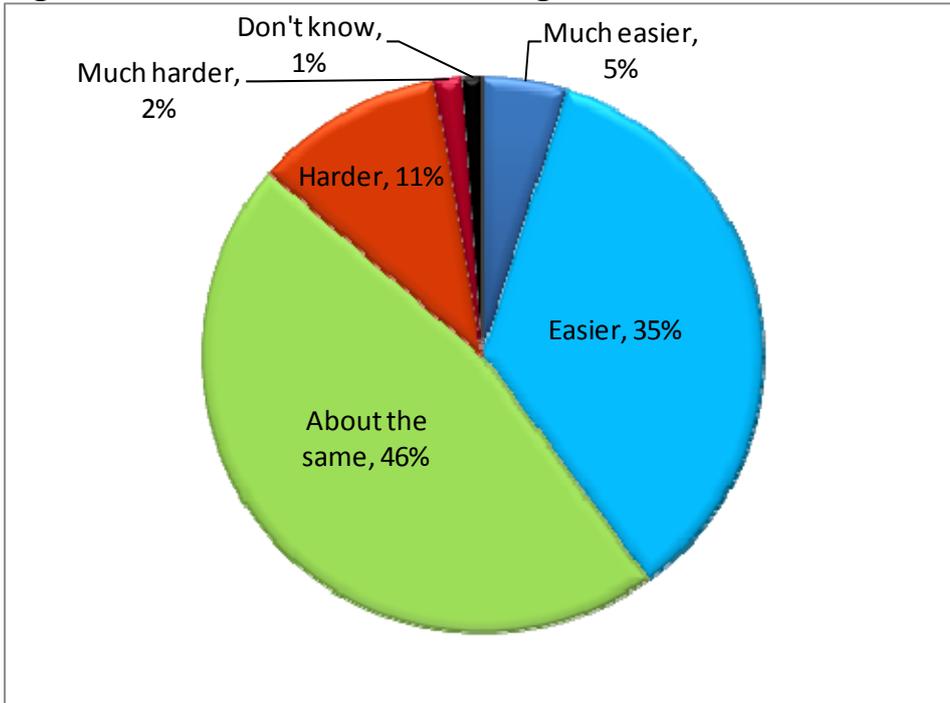
Respondents were shown alternative wording for the top part of the sign and asked if this way of presenting the same information was easier or more difficult to understand.

Just 40% thought the wording was easier to understand and almost half (46%) did not think it was any easier or harder to read.



Capabilities on project:
Transportation

Figure 17 Is the Alternative Wording Easier to Understand



Base: all respondents shown sign, 183

Recommendations

- Reduce the amount of time bands shown even if it is more onerous for example, no stopping overnight Fri, Sat, Sun 6pm to 8am
- Remove words 'except emergency vehicles' as it's assumed they would be exempt

Capabilities on project:
Transportation

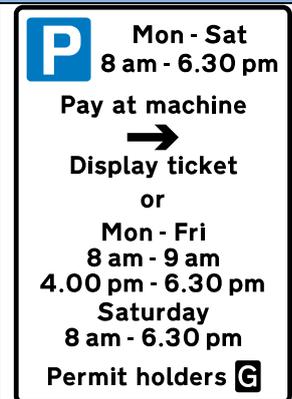
2.8 Parking Sign 7: Specially Authorised – 660.7 Combined with 660.6; Resident Can Park on the Shoulder Hours but Need to P&D During the Day

Key Findings

- Respondents recognised the sign presented ‘Pay and Display’ parking restrictions (71%) and generally understood these restrictions.
- A quarter (26%) of respondents became confused where the time bands for the ‘Pay and Display’ overlapped with the Permit Holder time restrictions.
- Only half (55%) of respondents understood that Permit Holders were required to pay at certain times.

Meaning of Sign as Read to Respondents

“From Monday to Saturday parking charges apply from 8am to 6.30pm. Tickets can be purchased from ‘Pay and display’ machine to the right. However, if you hold ‘Permit G’ then you can park on Monday to Friday from 8am to 9am and 4pm to 6.30pm and Saturday from 8am to 6.30pm for no extra charge. Between 9am and 4pm, on Monday to Friday, ‘Permit G’ holders are required to ‘Pay and Display’. At all other times there are no parking charges.”



2.8.1 Level of Understanding: Unprompted

Unprompted, almost three quarters (71%) of respondents recognised there were parking restrictions involving ‘pay and display’ and just over half (55%) recognised that there was information on the sign for permit holders. Overall, almost half (46%) of respondents recognised that this sign gave information about both ‘pay and display’ parking and ‘Permit holders only’.

2.8.2 Level of Understanding: Prompted

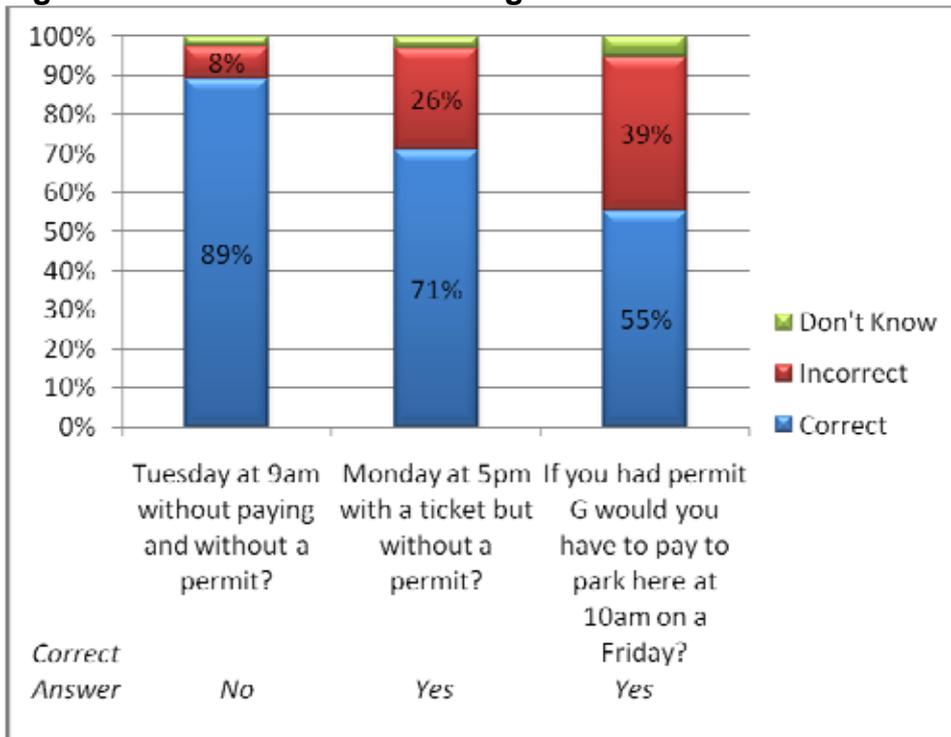
To test comprehension of the sign, respondents were asked where they see this parking bay are they allowed to park here:

- Tuesday at 9am without paying and without a permit?
- Monday at 5pm with a ticket but without a permit?
- If you had permit G would you have to pay to park here at 10am on a Friday?

Just 39% answered all three comprehension questions correctly illustrating that elements of this sign caused confusion amongst respondents. The next section details what elements of the sign were causing confusion.

Capabilities on project:
Transportation

Figure 18 Where You See This Sign Are You Allowed to Park on a



Base: all respondents shown sign, 224

Most respondents understood the restrictions around when non permit holders had to ‘pay and display’ with the majority (89%) answering correctly that parking is not allowed on a Tuesday at 9am without paying and without a permit but it is allowed on a Monday at 5pm with a ticket but without a permit (71%).

However, less people answered comprehension question two correctly compared to the first (26% answered incorrectly) suggesting the over lapping times of ‘pay and display’ and ‘permit holders’ were confusing to some respondents.

Whether Permit Holders had to pay to park at certain times also caused a lot of confusion amongst respondents with only 55% answering correctly that they did.

There was no significant difference in responses between groups.

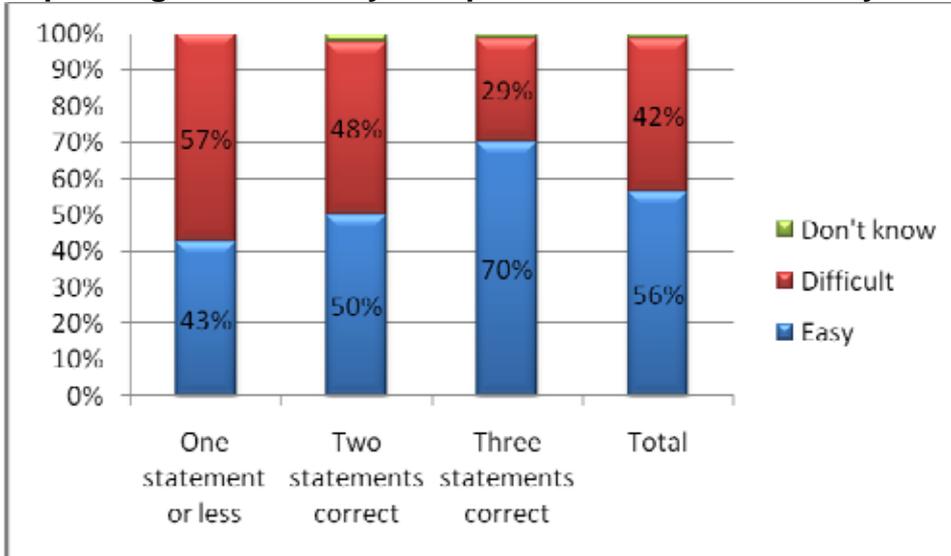
2.8.3 Ease of Understanding

Respondents were given a definition of the sign see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt it was to understand the restrictions around the parking. A significant proportion, 42% found this sign difficult to understand.

Capabilities on project:
Transportation

Figure 19 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly



Base: all respondents shown sign getting one statements or less correct, 47; two statements correct, 90; three statements correct, 87

2.8.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 42% (n=93) thought it could and suggested the following:

- Make it clearer (e.g. when permit holder/ when can park) (n=42);
- Too much writing (n=14);
- Needs more information (what is permit holder/ Parking on Sunday) (n=13);
- Have two different signs (n=9);
- Needs rewording (n=7);
- Make it bigger (n=4);
- Use symbols (n=3);
- Add more colour (n=2);
- Use plain English (n=2);
- Get rid of the restrictions (n=2); and
- Say when parking IS allowed (positive instruction) (n=2).

Recommendations

- Be more explicit when permit holders are expected to pay
- Remove the word 'or' and make it clearer where the sign refers to permit holders and where it applies to non permit holders; two signs

Capabilities on project:
Transportation

2.9 Parking Sign 8: 661A With Non-Prescribed Expression of Times

Key Findings

- Almost all (96%) recognised that this parking bay was for Disabled Badge holders only.
- The term 'no return' was well understood by respondents (85%).
- Over a third (36%) of respondents thought non disabled badge holders were allowed to park here outside the hours shown.

Meaning of Sign as Read to Respondents

“Only those with a disabled parking badge can park here at any time. Between 8am and 6pm, everyday of the week, disabled badge holders can park here for maximum of 3 hours and once they have left, they can't return to park again in this area for 2 hours. Outside of these hours there is no maximum time limit for parking.”



2.9.1 Level of Understanding: Unprompted

It was well recognised (96%) that this parking bay is for disabled badge holders only. Half (51%) of respondents also mentioned that there was a time limit of three hours and recognised that there was a 'no return' limit of 2 hours (48%).

2.9.2 Level of Understanding: Prompted

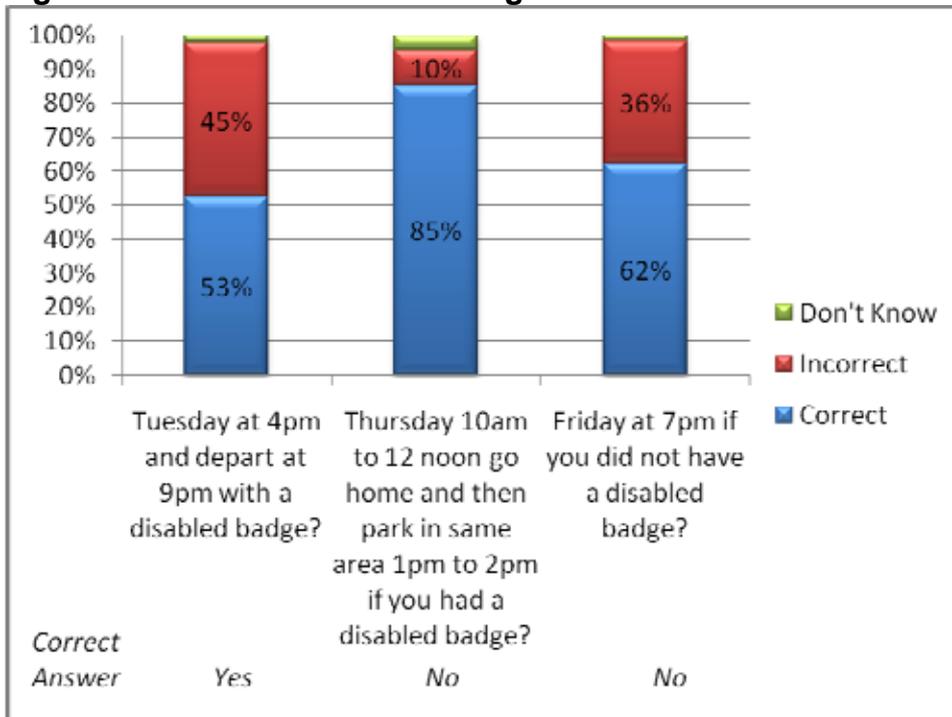
To test comprehension of the sign, respondents were asked where they see this parking bay are they allowed to:

- Tuesday at 4pm and depart at 9pm with a disabled badge?
- Thursday 10am to 12 noon go home and then park in same area 1pm to 2pm if you had a disabled badge?
- Friday at 7pm if you did not have a disabled badge?

Although respondents understood that the sign related to disabled badge holders the rest of the information caused confusion amongst respondents with just 28% getting all three comprehension questions correct.

Capabilities on project:
Transportation

Figure 20 Where You See This Sign Are You Allowed to Park on a



Base: all respondents shown sign, 183

Respondents did not understand what was allowed outside the hours shown. Thirty six percent of respondents thought non disabled badge holders were allowed to park here outside the hours shown and almost half of respondents were confused by the 3 hour time limit and how it applied if the three hours extended outside the hours specified on the sign; forty five percent answered incorrectly that that a disabled badge holder could not park on a Tuesday at 4pm and depart at 9pm.

Respondents showed good understanding of the term 'no return' with 85% of respondents answering correctly that a disabled badge holder could not park on a Thursday 10am to 12 noon go home and then park in same area 1pm to 2pm.

There was no significant difference in responses between groups.

2.9.3 Ease of Understanding

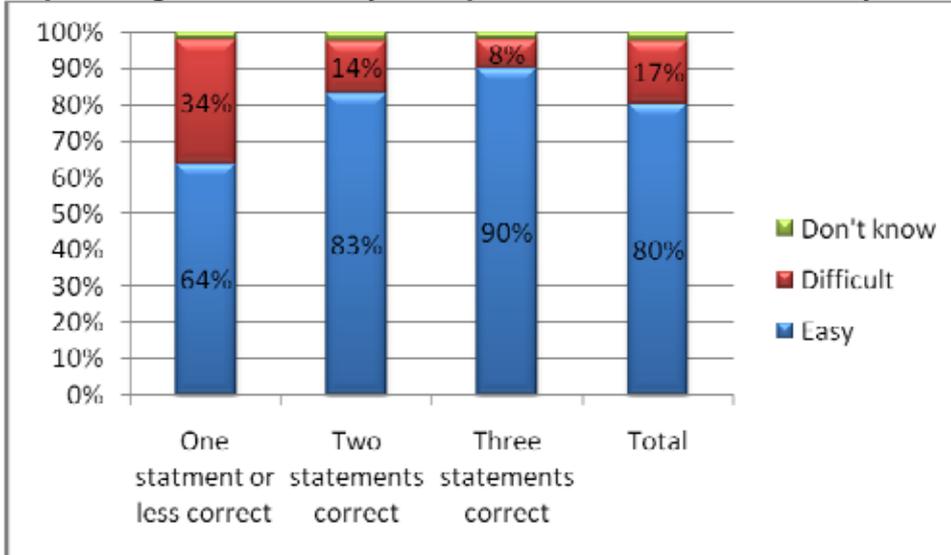
Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt it was to understand the restrictions around the parking. Despite the fact that only 28% of respondents got all three comprehension questions correct, 80% said they had found the sign easy (52%) or very easy (28%).

The Figure below shows that 64% of those who only got one or less comprehension questions correct thought the sign was easy to use.

Capabilities on project:
Transportation

Figure 21 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly



Base: all respondents shown sign getting one statements or less correct, 47; two statements correct, 84; three statements correct, 52

The older the respondent the more likely they were to say the sign was easy to understand; 95% of those aged 60 or more said they found the sign easy to understand compared to 84% of those aged 35-59 and 71% of those aged 18-34. Older respondents were also more likely to get all three statements correct (37% compared to 29% of 35-59 year olds and 25% of 18-34 year olds).

2.9.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 21% (n=39) thought it could and suggested the following:

- Make it clearer (state Disabled badge holders only at all times) (n=20);
- Too much writing (n=5);
- Needs rewording (n=5);
- Needs more explanation (n=2);
- Add more colour (n=2); and
- Make more visual (n=2).

Recommendations

- Specify the bay is only for Disabled Badge Holders at all times
- Be clearer what is allowed outside the times shown

Capabilities on project:
Transportation

2.10 Parking Sign 9: Residents Parking With and Without Parking Permit Sign

Key Findings

- Almost all respondents knew that the bay was for permit holders only regardless of whether it was with the plate (91%) or without the plate (95%).
- All but three respondents thought the meaning of it was easy to understand.

Meaning of Sign as Read to Respondents

“Only those with a Permit allowed to park in this bay at anytime.”

Half of respondents were shown a picture of the parking bay without a plate stating ‘permit holders only’ and half of respondents were shown a picture of the parking bay with a plate stating ‘permit holders only’.



2.10.1 Level of Understanding: Unprompted

Almost all respondents knew the bay was for permit holders only regardless of whether there was the plate (91%) or without the plate (95%).

Very few respondents (19 with the plate and 4 without the plate) thought the bay was for disabled badge holders only.

2.10.2 Level of Understanding: Prompted

To test comprehension of the sign, respondents were asked where they see this parking bay are they allowed to:

- Park without a permit; and
- Park with a permit.

Almost all (98%) respondents answered correctly regardless of whether they saw the sign with or without the plate.

2.10.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt it was to understand the restrictions around the parking bay. Just three respondents who were shown the bay without the plate thought it was difficult to understand and no one that was shown the bay with the plate thought it was difficult to understand.

Capabilities on project:
Transportation

2.10.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 13% (n=26) of those who saw the bay with no plate thought it could and just 3% (n=7) who saw the bay with the plate:

	Without Plate	With Plate
Have a sign on a pole	n=17	n=0
Make it bigger/ bolder/ more visible	n=7	n=3
Make it clearer	n=1	n=1
Tell you what permit is needed	n=1	n=1
Add more colour	n=0	n=1

Recommendations

None

Capabilities on project:
Transportation

2.11 Parking Sign 10: Specially Authorised Non Standard Variant of 660.7 with 660 Permit Parking Only on Event Days

Key Findings

- Respondents understood the 'pay and display' element of the sign and knew that they could only park for an hour (72%).
- There was a lot of confusion about the event day parking with only 31% of respondents answering all the comprehension question about this correctly.
- Several respondents thought the event day parking element of the sign meant they could park there on event days and for longer than they could normally.

Meaning of Sign as Read to Respondents

"From Monday to Saturday parking charges apply from 8.30am to 6.30pm. Vehicles can park here for a maximum of 1 hour and once they have left, vehicles can't return to park again in this area for 2 hours. Tickets can be purchased from adjacent 'Pay and display' machine. On event days, permit holders only may park here from 8am to midnight."



2.11.1 Level of Understanding: Unprompted

Over three quarters (76%) of respondents mentioned elements of the top part of the sign and generally understood that they would have to 'pay and display' to park in this bay (55%) and do so within the times shown (48%).

The majority (72%) mentioned that they could only park for an hour and half; 51% stated that there was 'no return' within 2 hours.

The bottom part of the signs refers to event day parking. Not many respondents (n=37) referred to this part and those that did showed confusion as to its meaning, with respondents stating:

- Can park on events days (n=23); and
- Free parking on event days (n=6).

2.11.2 Level of Understanding: Prompted

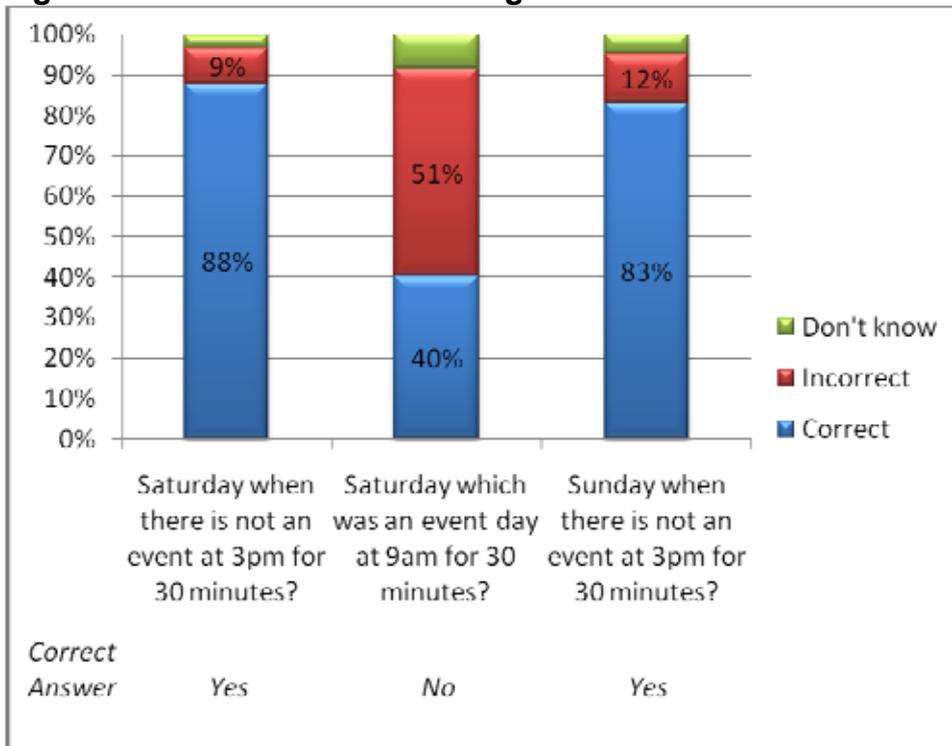
To test comprehension of the sign, respondents were asked where they see this parking bay are they allowed to:

- Saturday when there is not an event at 3pm for 30 minutes?
- Saturday which was an event day at 9am for 30 minutes?
- Sunday when there is not an event at 3pm for 30 minutes?

Less than a third (31%) of respondents answered all three statements correctly.

Capabilities on project:
Transportation

Figure 22 Where You See This Sign Are You Allowed to Park on a



Base: all respondents shown sign, 224

The majority of respondents understood that the area was a ‘pay and display’ and answered correctly that they would be able to park in the bay on a *Saturday when there is not an event at 3pm for 30 minutes* (88%).

The majority of respondents (83%) also understood the ‘unwritten’ information that parking on a Sunday is allowed and answered correctly that they could park there on a *Sunday when there is not an event at 3pm for 30 minutes* (83%). New drivers were the only group to be confused by this; 36% of new drivers answered incorrectly here.

Respondents did not understand the restrictions on event days with only 40% answering correctly that they would not be allowed to park there on a *Saturday which was an event day at 9am for 30 minutes*.

Men were more likely to understand the restrictions around parking on an event day than women; 49% of men answered correctly compared to just 27% of women. HGV drivers were also more likely to answer correctly (69%) than any other type of driver.

2.11.3Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand. Over half (63%) of respondents thought the sign was easy to understand but over a third (36%) did not.

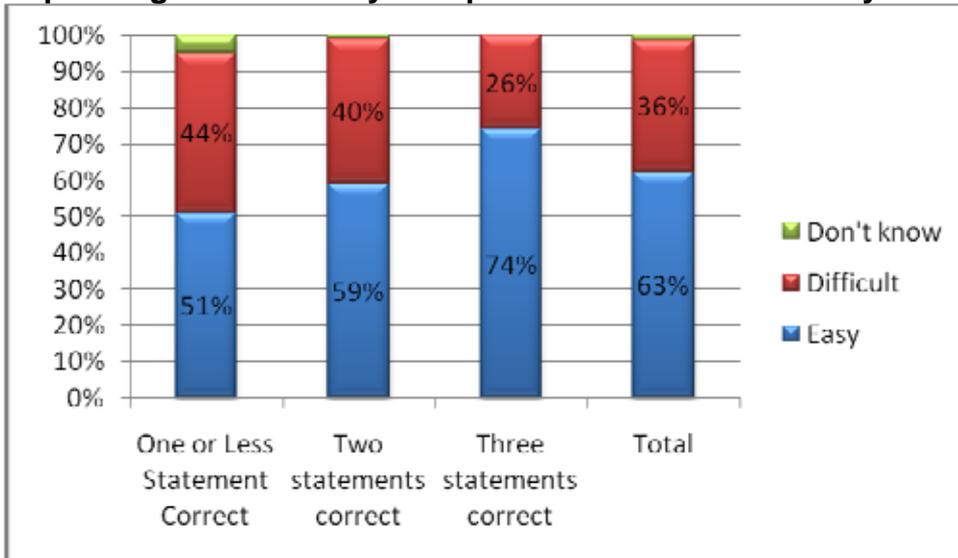
Those who found got all three comprehension questions correct found the sign easy to understand (74%) and those that only got one statement or less correct found the sign more

Capabilities on project:
Transportation

difficult to understand (44%).

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Transportation

Figure 23 Proportion of People Finding the Sign Easy or Difficult to Understand Depending on How Many Comprehension Questions they Answered Correctly



Base: all respondents shown sign getting one statements or less correct, 41; two statements correct, 113 and; four statements correct, 70

2.11.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 45% (n=101) thought it could and gave the following suggestions:

- Needs more information (e.g. what is event day) (42%);
- Make it clearer (that you need a permit on event days) (35%);
- Needs rewording (add words permit holders only) (9%);
- Use less text (6%); and
- Have two different signs (3%).

Recommendations

- Be more explicit that parking is not allowed on event days for non permit holders
- Explain where they find out if it is an event day

Capabilities on project:
Transportation

2.12 Summary

2.12.1 General Understanding of Parking Signs

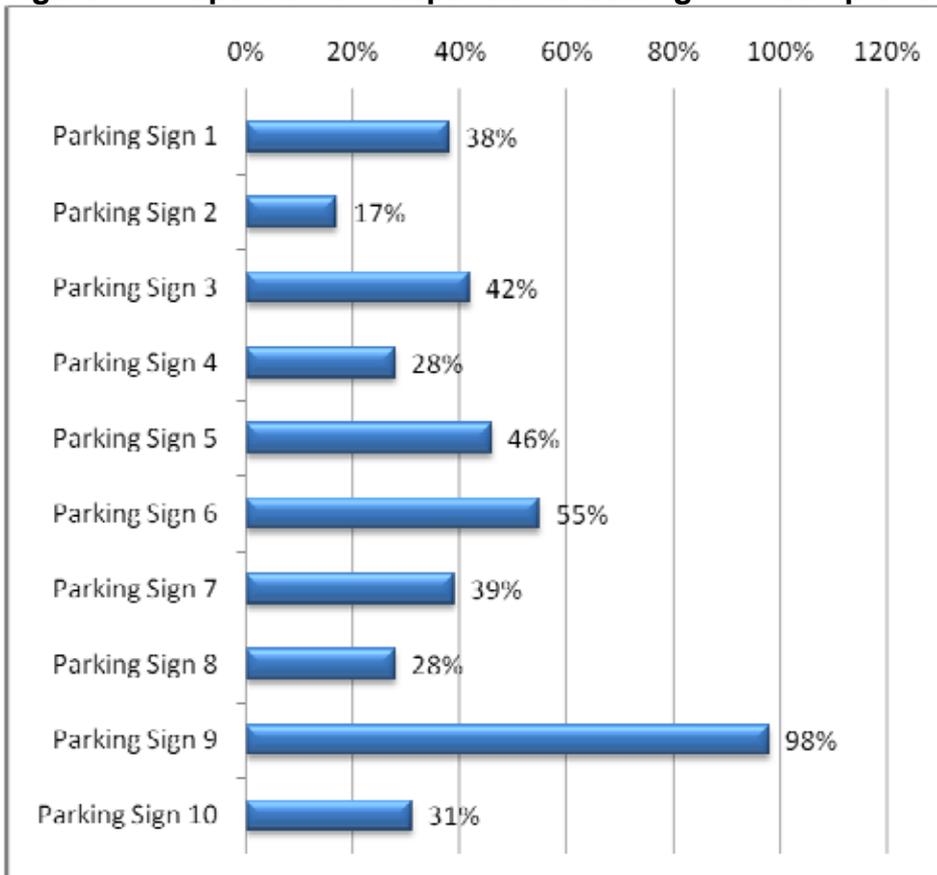
Apart from Parking Sign 9 (Permit Holders only bay) less than half of respondents answered all the comprehension questions correctly to any sign. The signs most understood were:

- Parking Sign 5 (46%)
- Parking Sign 3 (42%)
- Parking Sign 1 (38%)

The least understood signs were:

- Parking Sign 2 (17%)
- Parking Sign 4 (28%)
- Parking Sign 8 (28%)

Figure 24 Proportion of Respondents Getting ALL Comprehension Questions Correct



Base: all respondents seeing sign (minimum 183)

There was no significant difference in overall understanding or lack of understanding of parking signs based on age, gender or driver type. There were however, elements that caused confusions for some respondents more than others and these are detailed below.

Capabilities on project:
Transportation

2.12.2 Items That Caused Confusions Amongst Respondents

- **'Unwritten' information:** The unwritten information on parking signs mean that many respondents were unsure as to what was allowed at times not specified on the sign. For example:
 - **Parking Sign 3:** A quarter (24%) of respondents did not know they could park on a Sunday as it wasn't directly specified on the sign.
 - **Parking Sign 4:** 28% of respondents did not think non permit holders could park on a Sunday when in fact they can.
 - **Parking Sign 8:** 36% thought non disabled badge holders could park outside the hours shown despite non disabled badge holders not being allowed to park at anytime.

- **Looking across several different time bands:** Respondents were generally confused when having to look across several time bands particularly if they referred to different types of restrictions for example:
 - **Parking Sign 3:** Respondents knew when they had to 'pay and display' but outside of these times respondents were confused by the 'no waiting' times given and how these related to the parking times specified.
 - **Parking Sign 4:** 35% thought permit holders could park in the bay when the bay was for buses only.
 - **Parking Sign 6:** 22% thought they could park on a Friday evening when the top part of the sign denotes there is 'no stopping' during this time.
 - **Parking Sign 7:** 26% thought they could not park without a permit when in fact they could if they were to 'pay and display'; illustrating overlapping times of 'pay and display' and 'permit holders only' were confusing to some respondents.

- **Permits:** Although respondents generally recognised when an area was designated for permit holders they did not recognise when the sign was detailed the name of the permit. For example:
 - **Parking Sign 4:** 44% of respondents thought CA-H was the name of the sign and not CA, CB, CC...CH.
 - **Parking Sign 5:** Although most (88%) recognised the restrictions for permit holders only no one recognised that St Dunstain's was the name of the permit required.
 - **Parking Sign 10:** Respondents did not understand the restrictions around event day parking; only 40% responded correctly. Respondents did not recognise EV was the name of a permit.

- **Difference between No waiting, No stopping and No parking:** Respondents tended to use these terms interchangeably. Respondents did not generally recognise the 'no waiting' symbol. (See Parking Sign 1).

- **Double kerb blips:** respondents did not recognise double kerb blips. Only 26% unprompted referred to loading restrictions and only two thirds answered correctly that loading is not allowed where you see these road markings.

Capabilities on project:
Transportation

2.12.3 Items That Respondents Generally Understood

- **'No return'**: Respondents generally understood no return for example:
 - o **Parking Sign 5**: 88% answered correctly the comprehension question that tested their understanding of 'no return'.
 - o **Parking Sign 8**: 85% answered correctly the comprehension question that tested their understanding of 'no return'.

3 Restricted Zones and Pedestrian Zones

Capabilities on project:
Transportation

3 Restricted Zones and Pedestrian Zones

As part of this survey four signs depicting Restricted Zones and Pedestrian Zones were shown to respondents.

3.1 Restricted Zone 1: NP633.2 Variant: Entry to a Restricted Parking Zone With no On Street Parking or Loading During Times of Operation

This sign was shown twice; as a picture (statically) to 201 respondents and in a simulated driving scenario (dynamic) to 212 respondents.

Key Findings

- Respondents understood the sign meant 'no loading' (75% static and 77% dynamic).
- Respondents didn't recognise the 'no waiting symbol'.
- Respondents did not understand what was allowed outside the hours shown.
- Respondents who saw the sign dynamically were less likely to observe the time restrictions stated.

Meaning of Sign as Read to Respondents

"Restricted zone. Within the zone waiting and loading is not allowed from Monday to Saturday from 8.30am to 6.30pm."



3.1.1 Level of Understanding: Unprompted

Overall three quarters (75% static and 77% dynamic) knew that the sign meant 'no loading' however, very few respondents recognised the 'no waiting' symbol with only 4% and 5% respectively specifically mentioning this.

Several respondents said the sign meant no stopping and/or no parking; 13% and 12% respectively who saw the static presentation and 29% and 17% respectively who saw the dynamic presentation; highlighting that people do not understand the difference in meaning between no waiting, no parking and no stopping.

Around a third (38% statically and 30% dynamically) mentioned that the sign indicated a Restricted Zone. However, it is not clear what they understood by the term 'restricted zone'

Two thirds of respondents (68% statically and 66% dynamically) recognised that there were time restrictions applied in this area.

Capabilities on project:
Transportation

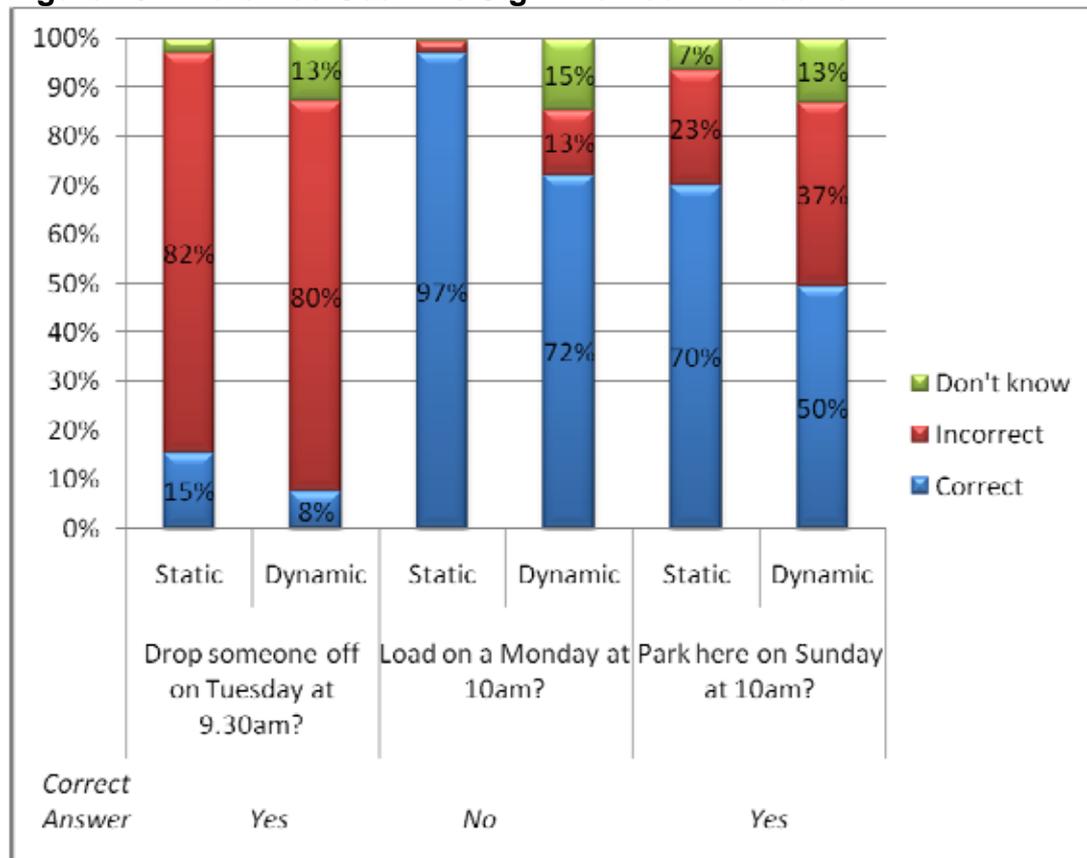
3.1.2 Level of Understanding: Prompted

To test comprehension of the sign, respondents were asked where they see this sign were they allowed to:

- Drop someone off on Tuesday at 9.30am?
- Load on a Monday at 10am?
- Park here on Sunday at 10am?

Very few people got all three comprehension questions correct (11% static and 3% dynamic).

Figure 25 Where You See This Sign Are You Allowed to



Base: all respondents shown sign, statically 201 and dynamically 212

Very few people (15% static and 8% dynamic) understood that stopping to drop someone off was acceptable in this area and is not included under the 'no waiting' or 'no loading' instructions on this sign.

Almost all (97%) respondents who saw the sign statically understood that they could not load in this area on a Monday at 10am and although almost three quarters (72%) of those who saw the sign dynamically also got this correct, the difference in response is significantly lower; illustrating the difficulties in reading the times of operation when driving.

Over two thirds (70%) of respondents shown the sign statically and half (50%) of those shown it dynamically thought they could park in this area on a Sunday at 10am; again the difference in response is significantly lower illustrating the difficulties in reading the times of operation when driving.

Capabilities on project:
Transportation

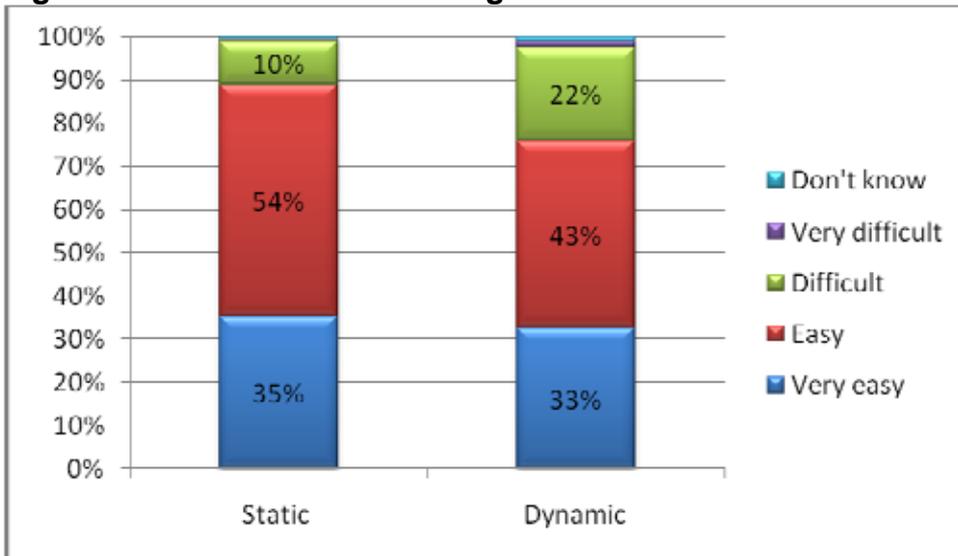
There was no significant difference in response between groups.

3.1.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand. Overall, respondents generally found this sign easy to use (89% and 76% respectively).

Figure 26 Ease of Understanding



Base: all respondents shown sign, statically 201 and dynamically 212

3.1.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 13% (n=26) of those shown the sign statically and 19% (n=40) of those dynamically thought it could and gave the following suggestions:

Static

- Needs more information (what other restrictions) (n=8)
- Use words
 - o No waiting (n=4);
 - o No stopping (n=2);
 - o No parking (n=1);and
- Make it easier to understand (where zone is) (n=4).

Dynamic

- Needs more information (n=12);
- Make it clearer (n=10);
- Make it bigger (text particularly times) (n=19); and
- Use words (n=3).

Recommendations

- Write the time restrictions in larger font
- Be explicit that parking and drop off/ pick up is allowed

Capabilities on project:
Transportation

3.1.5 Restricted Zone 2: NP633.2 Variant: Entry to a Restricted Parking Zone With Provisions for Parking or Loading in Signed Bay

This sign was shown twice; as a picture (statically) to 224 respondents and in a simulated driving scenario (dynamic) to 183 respondents.

Key Findings

- That there was no loading except in the signed bays was well understood by respondents.
- Those that saw the sign dynamically were less aware of the time restrictions which applied.
- Respondents were confused as to whether parking was allowed in the bays.
- There was a general lack of awareness as to whether stopping to drop off/pick up was allowed.

Meaning of Sign as Read to Respondents

“Restricted zone. Within the zone loading and parking is only allowed in the signed bays.”



3.1.6 Level of Understanding: Unprompted

Respondents who were shown the sign statically generally understood that loading was not allowed (84%) except in the signed bays (74%). However, as with the previous sign, respondents did not recognise the ‘no waiting’ symbol and only 8% said ‘no waiting’ when giving their interpretation of the sign.

Although over half (60%) of respondents who saw the sign dynamically recognised there was ‘no loading’ in this area except in the signed bays (68%). Many gave other meanings for the sign including ‘no stopping’ (24%) and ‘no parking’ (18%). Only 6% said ‘no waiting’.

As with the previous sign less than a third of respondents recognised the term ‘restricted zone’ (30% who saw the sign statically and 19% who saw the sign dynamically)

3.1.7 Level of Understanding: Prompted

To test comprehension of the sign, respondents were asked where they see this sign are they allowed to:

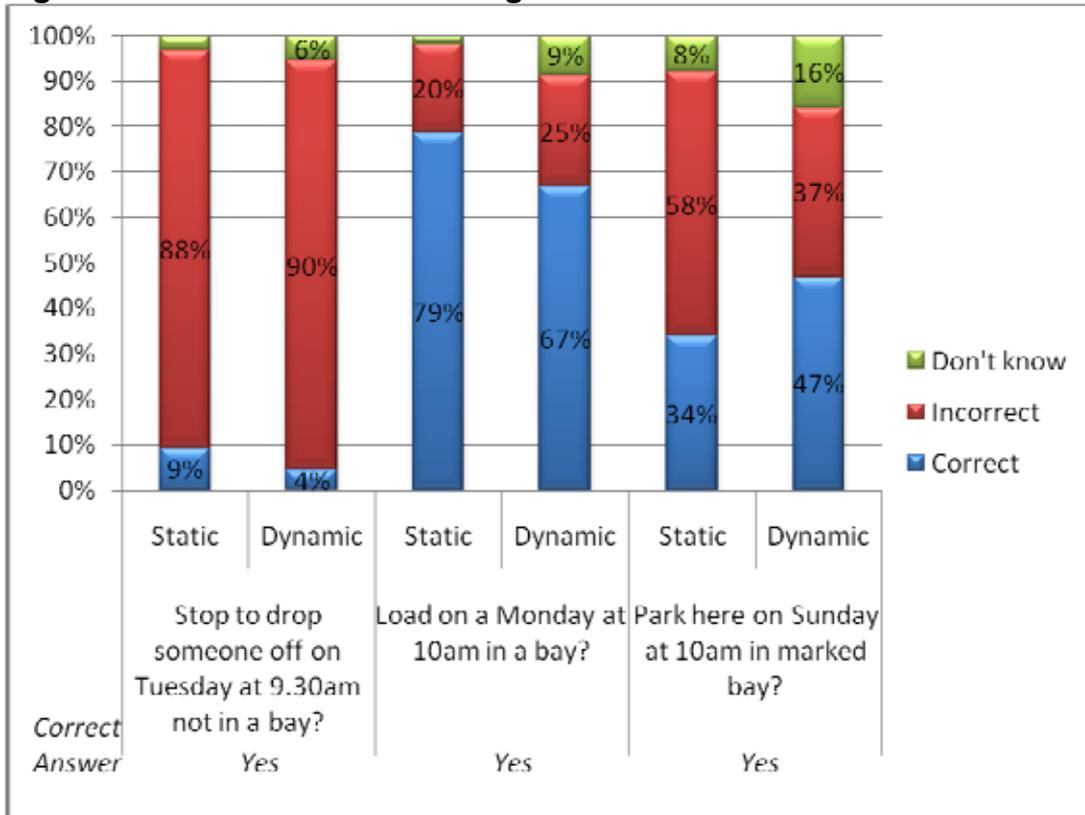
- Drop someone off on Tuesday at 9.30am?
- Load on a Monday at 10am?
- Park here on Sunday at 10am?

Capabilities on project:
Transportation

This sign caused a lot of confusion among respondents only 4% of those who were shown the sign statically and 1% who saw the sign dynamically answered all three statements correctly.

Capabilities on project:
Transportation

Figure 27 Where You See This Sign Are You Allowed to



Base: all respondents shown sign, statically 224 and dynamically 183

As with the previous sign respondents did not understand that in this area they are allowed to stop to drop someone off; 88% of respondents who saw the sign statically and 90% of people who saw it dynamically answered incorrectly and said they would not be allowed to drop someone off on Tuesday at 9.30am.

Most respondents understood that loading was allowed in the bays however; those who saw the sign dynamically were less likely to know the times of operation and therefore respondents who saw the sign dynamically were more likely to answer incorrectly or say 'don't know' than those who saw the sign statically (25% and 9% respectively compared to 20% and 2% respectively).

Respondents were very confused as to whether they could or couldn't park in the area regardless of how the sign was presented to them.

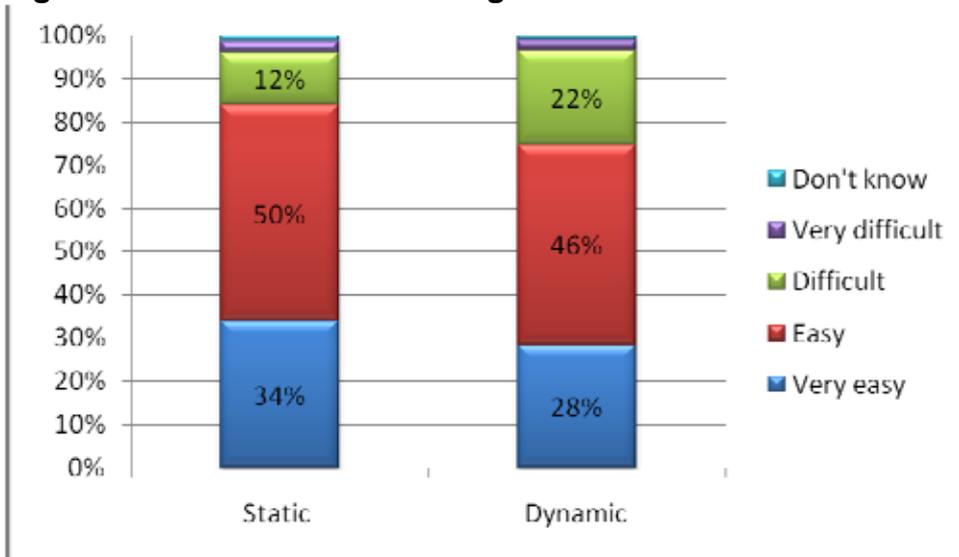
3.1.8 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Capabilities on project:
Transportation

Figure 28 Ease of Understanding



Base: all respondents shown sign, statically 201 and dynamically 212

Even though the answers given above show that respondents did not fully understand the meaning of the sign, the majority (84% statically and 74% dynamically) thought the sign was easy to understand.

3.1.9 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 18% of those shown the sign statically and 21% of those dynamically thought it could and gave the following suggestions:

	Static	Dynamic
Needs more information/ explanation (e.g. what about parking/ weekends/ type of vehicle aimed at)	n=20	n=14
Make it bigger	n=0	n=10
Make it simpler to understand	n=11	n=8
Say when parking IS allowed (positive instruction)	n=5	n=0
Too much writing/ information/ use less text	n=0	n=4
Needs rewording (add parking restrictions)	n=7	n=0

Recommendations

- Increase awareness of the 'no waiting' symbol and its meaning
- Be explicit that parking and drop off/ pick up is allowed

Capabilities on project:
Transportation

3.2 Pedestrian Zone 1: 618.3: Pedestrian Zone Where Cycles Are Allowed

Key Findings

- There was a high understanding that vehicles were not allowed in this area (94%).
- Nineteen percent (19%) of women thought they could drive in to drop someone off.
- Respondents were confused as to whether bikes were allowed in the area or not. Almost half (42%) either answered incorrectly and said they were not or said they did not know.

Meaning of Sign as Read to Respondents

“Area is a Pedestrian Zone, motor vehicles are not allowed. Lorries are allowed in to load or unload between 6am and 9.30am, and 4.30pm to 7pm. There is no waiting at any time. Bicycles are allowed”.



3.2.1 Level of Understanding: Unprompted

The majority of respondents recognised that this sign signalled the start of a Pedestrian Zone (78%) and that lorries were allowed in for loading (88%).

Just 2% (n=4) completely misunderstood the sign and thought it meant cars and bikes only.

3.2.2 Level of Understanding: Prompted

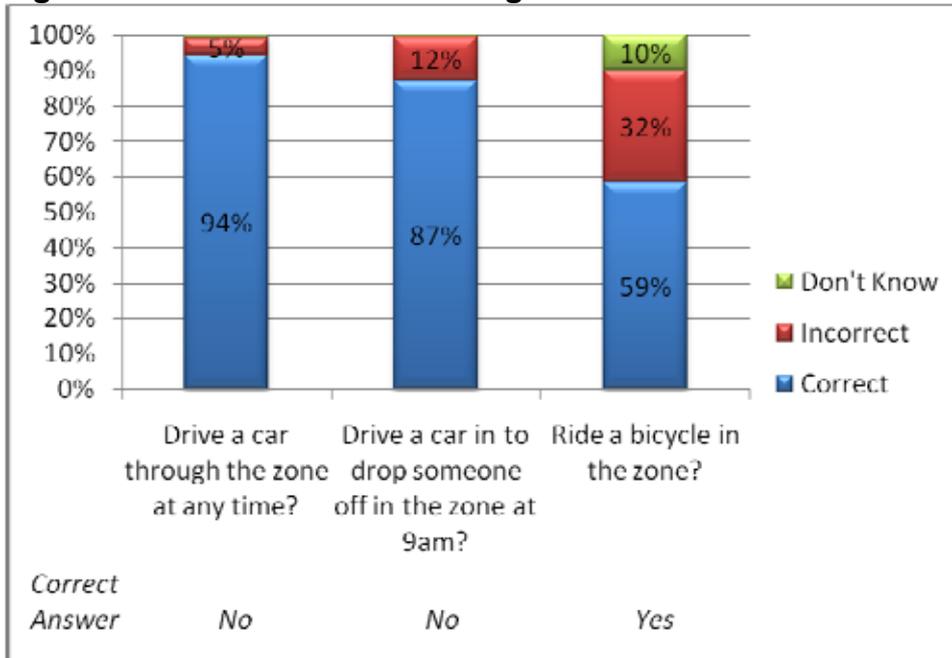
To test comprehension of the sign, respondents were asked where they see this sign are they allowed to:

- Drive a car through the zone at any time?
- Drive a car in to drop someone off in the zone at 9am?
- Ride a bicycle in the zone?

Almost half (47%) got all three statements correct.

Capabilities on project:
Transportation

Figure 29 Where You See This Sign Are You Allowed to



Base: all respondents shown sign, 212

There was a high level of awareness that cars were not allowed in the zone at anytime (94%) and that cars were not allowed in even to drop someone off (87%). However, a fifth of female respondents (19%) thought they could drive into the area to drop someone off.

Respondents were unsure as to whether bicycles were allowed in the area with just 59% answering correctly that they were. The number of cyclists seeing this sign was small (n=12) and therefore the results should be treated with caution. However; the data indicates that cyclists were more likely to know that bicycles were allowed in this area; 75% of cyclist knew that they were allowed in this area.

3.2.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Three quarters (76%) of respondents found the sign easy (43%) or very easy (33%) to understand.

Capabilities on project:
Transportation

Figure 30 Ease of Understanding



Base: all respondents shown sign, 212

3.2.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved 34% (n=71) thought it could and gave the following suggestions:

- Make it clearer bikes are allowed (n=31);
- Make it clearer (what allowed and what not at what time) (n=16);
- Needs more information (n=10);
- Use words (n=6);
- Just have one sign (n=5);
- Should have a line through (n=5);
- Use picture (n=4); and
- Have two different signs (n=3).

Recommendations

- State Bicycles are allowed

Capabilities on project:
Transportation

3.3 Pedestrian Zone 2: 618.3 Pedestrian Zone Where Cycles Are Not Allowed

Key Findings

- There was an extremely high level of understanding that vehicles were not allowed in this area (98%).
- Respondents were confused as to whether bicycles were allowed in the area or not with less than two thirds (62%) answering correctly that they are not.

Meaning of Sign as Read to Respondents

“Area is a Pedestrian Zone. No vehicles including ridden bicycles are allowed in this area. However, local buses and taxis are allowed in this area. There is no waiting at any time.”



3.3.1 Level of Understanding: Unprompted

The majority of respondents recognised this was a Pedestrian Zone (73%) which means no vehicles are allowed (58%) but local buses and taxis were (85%).

3.3.2 Level of Understanding: Prompted

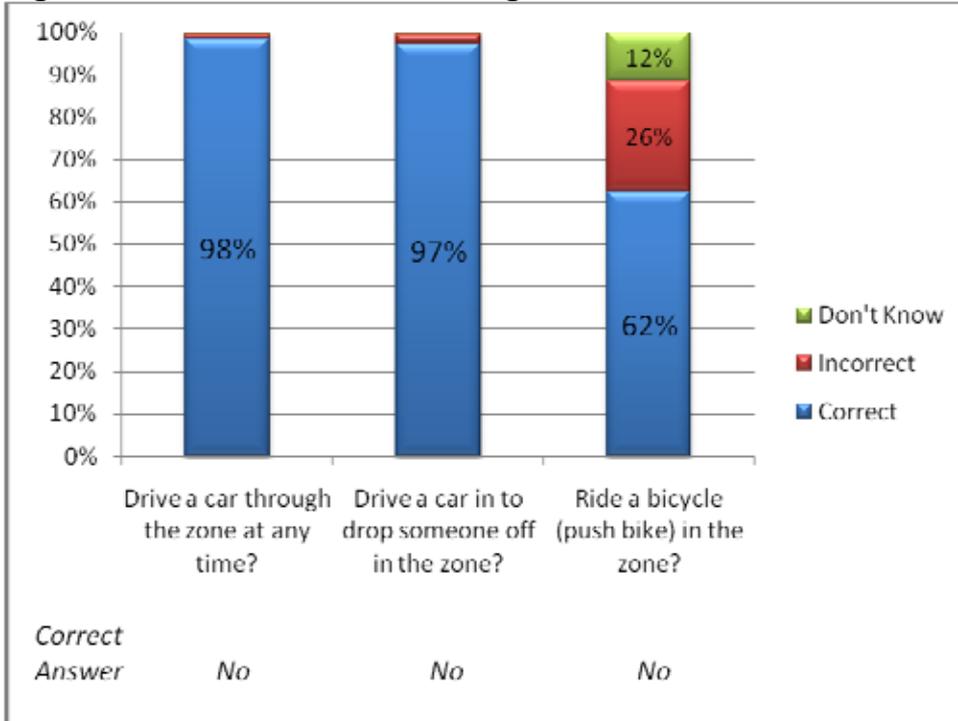
To test comprehension of the sign, respondents were asked where they see this sign are they allowed to:

- Drive a car through the zone at any time?
- Drive a car in to drop someone off in the zone?
- Ride a bicycle (push bike) in the zone?

Over half (61%) of respondents answered all three comprehension questions correctly and a further (38%) answered two statements correctly.

Capabilities on project:
Transportation

Figure 31 Where You See This Sign Are You Allowed to



Base: all respondents shown sign, 183

There was a very high level of understanding that cars were not allowed in the zone at any time (98%) not even to drop someone off (97%).

As with the previous sign there was confusion as to whether bicycles were allowed in the area; a quarter (26%) answered incorrectly and thought bicycles were allowed and a further 12% said they did not know.

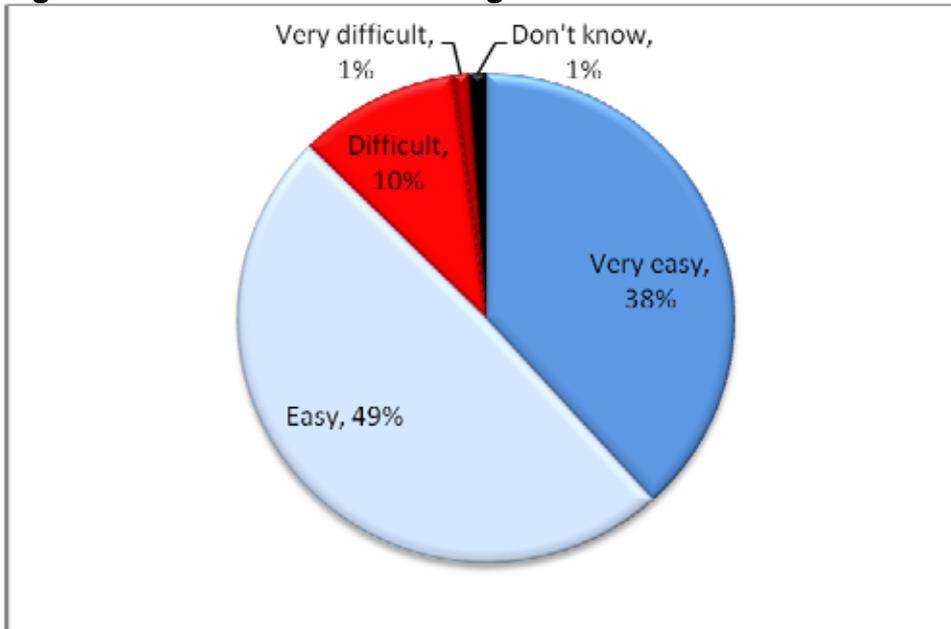
3.3.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Capabilities on project:
Transportation

Figure 32 Ease of Understanding



Base: all respondents shown sign, 183

Almost all (87%) of respondents thought the sign was easy (38%) or very easy (49%) to understand.

3.3.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved 26% thought it could and gave the following suggestions:

- Make clearer bikes are NOT allowed (n=22);
- Needs more information (n=11);
- Make clearer bikes are allowed (n=4);
- Make more visual (n=3);
- Have more education on sign (n=3); and
- Make it simpler (n=2).

Recommendations

- State bicycles are NOT allowed

Capabilities on project:
Transportation

3.4 Summary

The data shows that respondents were generally unfamiliar with restricted zones but were familiar with pedestrian zones.

Respondents showed a high level of understanding regarding the no loading restrictions when shown Restricted Zone Sign 1 and Sign 2 (97% static and 72% dynamic and 79% and 67% respectively answered the appropriate comprehension question correctly). However respondents did not understand the 'no waiting' symbol and people were unsure if parking was or wasn't allowed or not and whether pick up and drop offs were acceptable.

Respondents were more familiar with the Pedestrian Zones Signs 1 and 2 but were confused as to whether bicycles were allowed in the area where either sign was shown. Less than two thirds of respondents answered the comprehension question correctly on whether bikes were allowed in the Pedestrian Zone for either sign 1 or 2 (56% and 62% respectively).

4 Cycling and Pedestrian Zones

Capabilities on project:
Transportation

4 Cycling and Pedestrian Zones

4.1 Introduction

In total, 8 cycling and pedestrian signs were included in the survey. Three of the signs were shown twice, with a slight alteration on the second version (for example, with and without a red bar) to allow any difference in response to be observed.

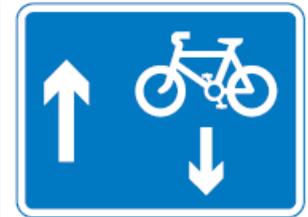
4.2 Cycling Sign C1: NP 960.2

Key Findings

- Over half of respondents correctly identified all aspects of this sign.
- Almost all respondents correctly answered questions regarding traffic flow relating this sign, however there was some confusion regarding whether bikes could travel in the left hand lane.
- The main improvement stated was to make the sign clearer/ simpler/ easier to understand.

Meaning of Sign as Read to Respondents

“Main flow of traffic is in the direction of large arrow. Bicycles are travelling in the opposite direction but the cycle lane is not segregated.”



4.2.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Fifty four percent of respondents got all aspects of the sign right, stating that traffic was going in one direction and there was a cycle lane going against this flow of traffic. Only five respondents however stated that the cycle lane was not segregated.

Thirty two percent of respondents also correctly identified from the sign that there was a cycle lane but did not mention the oncoming traffic.

4.2.2 Level of Understanding: Prompted

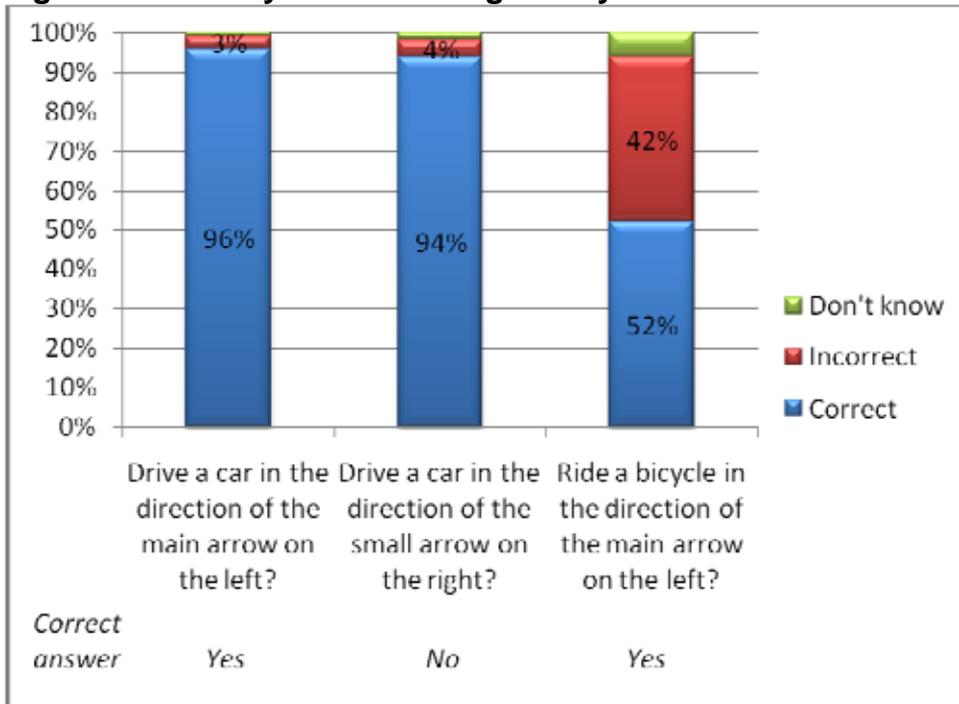
To test comprehension of the sign, respondents were asked if they thought they could:

- Drive a car in the direction of the main arrow on the left?
- Drive a car in the direction of the small arrow on the right?
- Ride a bicycle in the direction of the main arrow on the left?

Less than half (47%) of respondents answered all three comprehension questions correctly.

Capabilities on project:
Transportation

Figure 33 Where you see this sign can you....



Base: all respondents shown sign; 212

The majority of respondents clearly understood the meaning of the sign as 96% answered correctly that a car could be driven in the direction of the main arrow on the left, and 94% answered correctly that a car could not be driven in the direction of the small arrow on the right.

However, respondents were less certain of whether you could ride a bicycle in the direction of the main arrow on the left, with only just over half (52%) correctly answering that you could. This shows that although respondents have a good general understanding of the sign, they are not as sure about the specifics of it. There was no significant difference in response between groups.

4.2.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost four fifths of respondents (79%) thought that the sign was easy (49%) or very easy (30%) to understand.

4.2.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 24% (n=50) thought that it could, suggesting:

- Make it clearer (n=19);
- Needs more information (e.g. where cycles/ cars can go) (n=16);
- Use words/ writing (n=8);
- Make it bigger (n=5); and
- Use a picture (n=2).

Capabilities on project:
Transportation

Recommendations

- Use symbols to show type of vehicles allowed with main flow of traffic, including bicycles

4.3 Cycling Sign C2: 955

Key Findings

- Almost all respondents understood that this sign showed a cycle route ahead.
- A fifth of respondents were unsure whether you could walk past this sign.
- The majority of respondents felt this sign was easy to understand.

Meaning of Sign as Read to Respondents

“Route to be used by bicycles only.”



4.3.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. All except two respondents knew that the sign meant cycle path or bicycles only. The two respondents who did not get the meaning correct unprompted, said that it meant ‘no cycles’.

4.3.2 Level of Understanding: Prompted

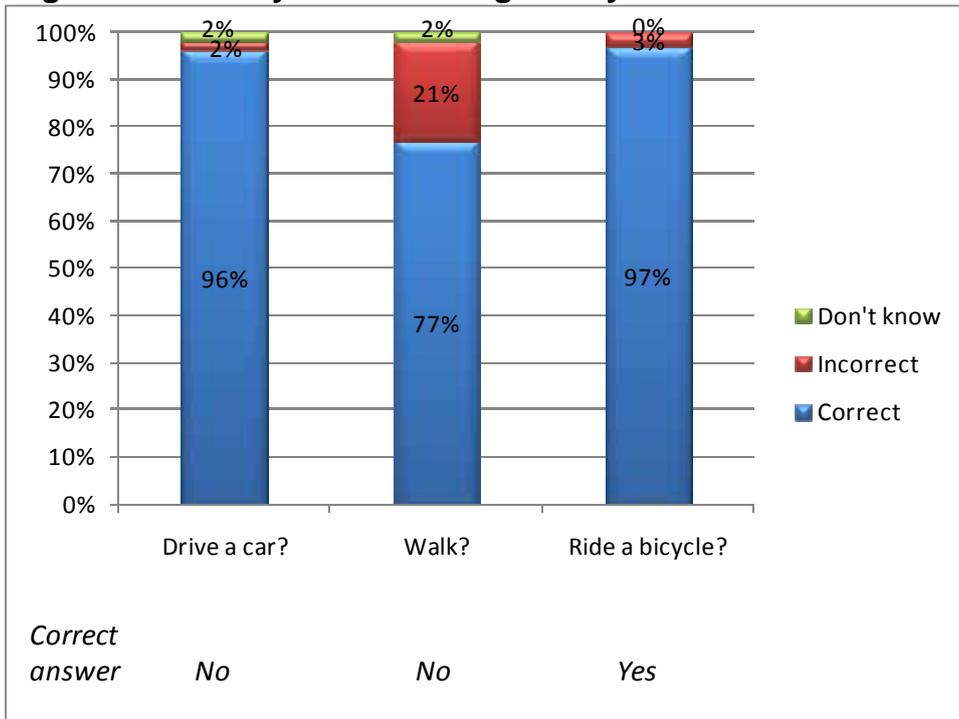
To test comprehension of the sign, respondents were asked if they thought they could:

- Drive a car here?
- Walk here?
- Ride a bicycle here?

Three quarters (75%) of respondents got all three statements correct.

Capabilities on project:
Transportation

Figure 34 Where you see this sign can you....



Base: all respondents shown sign; 183

While overall there was a good understanding of the sign, there was a lack of clarity among respondents on the specific restrictions to the meaning. While 96% and 97% respectively were aware that you could not drive a car past the sign but you could ride a bicycle past it, only just over three quarters (77%) answered correctly that you could not walk down the road past the sign.

4.3.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost all respondents (95%) thought that the sign was easy (25%) or very easy (70%) to understand.

4.3.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 11% (n=20) thought that it could, suggesting:

- Use words (n=10);
- Make it clearer that pedestrians are not allowed (n=6); and
- Use an image to show pedestrian not allowed (n=2) and tick to show bike allowed (n=1).

Recommendations

- None

Capabilities on project:
Transportation

4.4 Pedestrian Signs C3a/ C3b: 951 With and Without Red Cancellation Diagonal Bar

Key Findings

- There was a high awareness among respondents of the meaning of this sign, although more respondents were correct in both their prompted and unprompted understanding from seeing the sign with the bar across.
- There was a lack of understanding as to whether you could travel past this sign on a bike.
- The main improvement, which was mentioned by respondents who had seen the sign without the bar across, was that the sign should have a bar across.

Meaning of Sign as Read to Respondents

"No pedestrians."



4.4.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Of the respondents who saw the sign without the red bar across, 80% of respondent knew that the sign meant no pedestrians, and of those who incorrectly identified the sign (n=43), thirty seven said the sign meant 'beware of pedestrians'. Of the respondents who saw the sign with the red bar across, only three respondents did not correctly know that the sign meant no pedestrians.

4.4.2 Level of Understanding: Prompted

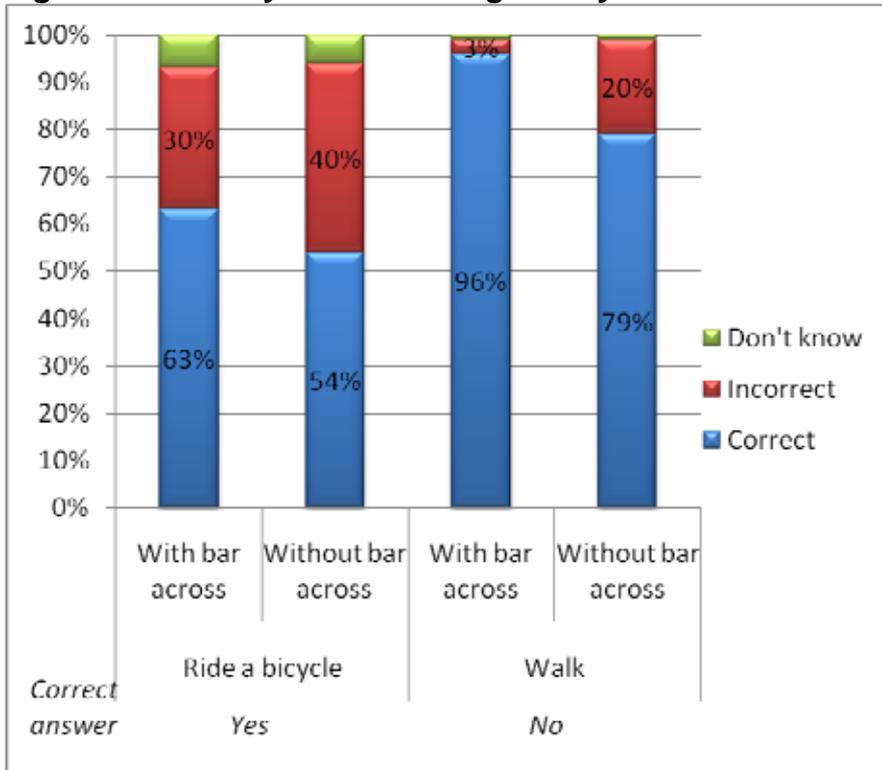
To test comprehension of the sign, respondents were asked if they thought they could:

- Ride a bicycle?
- Walk?

Without the bar 43% of respondents answered both comprehension questions correctly. With the bar 61% answered both comprehension questions correctly.

Capabilities on project:
Transportation

Figure 35 Where you see this sign can you....



Base: all respondents shown sign; 224

Almost all respondents who saw the sign with the bar across correctly answered that you could not walk past that sign (96%), which is higher than those who saw the sign without the bar across (79%). This is not significantly different from the response given in the verbatim response described above (80%).

There was less of a difference however when respondents were asked whether you could ride a bicycle past the sign, with 63% of those who saw the sign with the bar correctly answering that you could ride a bike past that point, compared to 54% of those who saw the sign without the bar across.

Pedestrians who saw the sign with a bar across were significantly less likely to answer correctly that you could ride a bicycle past this sign than professional drivers who were also shown that sign (25% compared to 87%).

4.4.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, over four fifths of respondents who saw the sign without the red bar across (82%) thought that the sign was easy (29%) or very easy (53%) to understand. However, significantly more respondents who saw the sign with the red bar across thought it was easy to understand (97%), with 31% saying it was easy and 66% saying it was very easy.

Capabilities on project:
Transportation

4.4.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 27% (n=60) of respondents who saw the sign without the red bar across thought that it could, suggesting:

- Should bar through it (n=35); and
- Use words (n=21).

This is compared to only 7% (n=14) of respondents who saw the sign with the red bar across and said the sign should use words such as no entry or no pedestrians (n=7), and two respondents each who said the sign should be bigger or that said it should be made clearer e.g. whether cyclists are allowed.

Recommendations

- None

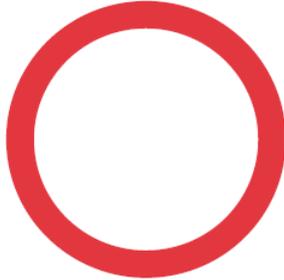
4.4.5 Comparison with 2004 Traffic Signs Study

In the 2004 survey the No Pedestrian Sign (625.1) was shown with Zebra Crossing Sign (544) and respondents were asked to say how different they were. Only 17.3% gave an answer that was considered correct for both signs.

When asked directly in the current study what they could do when seeing the no pedestrian sign 79% answered correctly that it means No Pedestrian Sign and 43% answered all comprehension questions correctly.

Capabilities on project:
Transportation

4.5 No Vehicles Sign C4: 617

<p>Key Findings</p> <ul style="list-style-type: none"> - Over half (55%) of respondents understood that this sign meant no vehicles. - Respondents were most unsure as to whether you could ride a bike past this sign. - The most frequently mentioned improvement that could be made to this sign was to use words/ writing on it. 	
<p>Meaning of Sign as Read to Respondents</p> <p><i>“No vehicles including ridden bicycles are allowed past this sign. Bicycles can be pushed.”</i></p>	

4.5.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Over half (55%, n=100) of respondents said that the sign meant no motor vehicles, with seven of these respondents also adding that no bicycles were allowed either.

A further twenty eight respondents said the sign meant pedestrians only, and eleven said it meant no entry. The rest of the respondents gave irrelevant and incorrect answers or stated they did not know what the sign meant.

4.5.2 Level of Understanding: Prompted

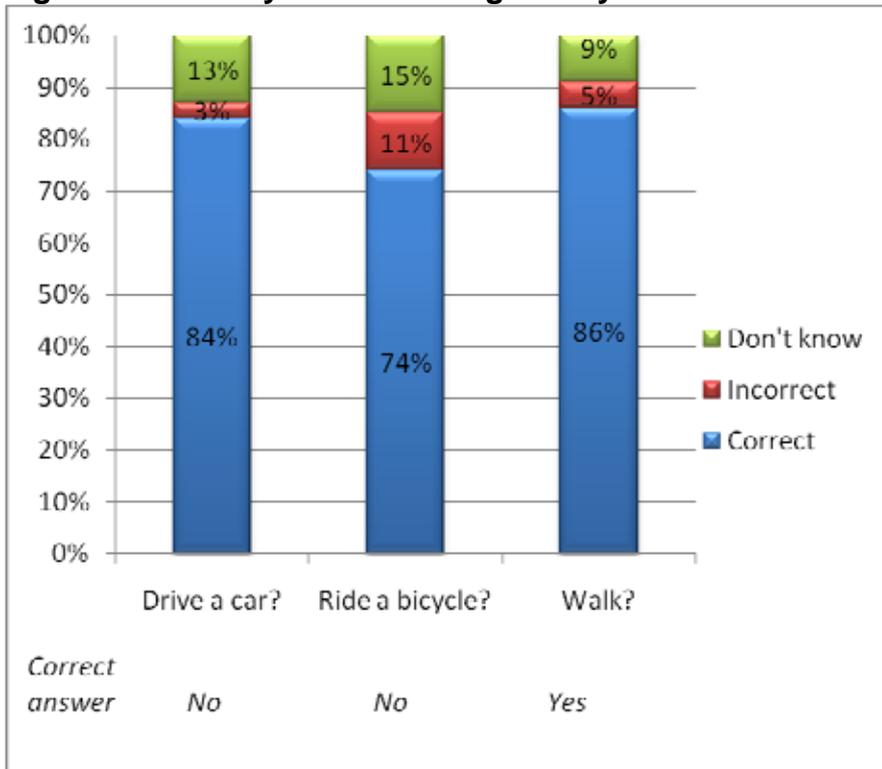
To test comprehension of the sign, respondents were asked if they thought they could do any of the following past this sign:

- Drive a car?
- Ride a bicycle?
- Walk?
- Push a bike?

Over half (56%) answered all comprehension questions correctly. Only 22% answered two or less correctly.

Capabilities on project:
Transportation

Figure 36 Where you see this sign can you....



Base: all respondents shown sign; 183

At least three quarters of respondents (74%) who saw the sign gave the correct response to each question, showing that the sign was relatively well understood and observed.

The options to drive a car or walk past the sign were most frequently answered correctly (84% and 86% correctly), with a higher proportion of respondents likely to be unclear regarding riding a bike past this sign (11% answered incorrectly and 15% said don't know)

Male respondents were significantly more likely than female respondents to answer the question on riding a bike past the sign correctly compared to female respondents (79% compared to 64%).

4.5.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, just over three fifths of respondents found this sign easy to understand (62%), with 28% saying it was easy to understand and thirty four percent finding it very easy.

Respondents who drove for work or were HGV drivers (45% and 61% respectively) were significantly more likely than those who didn't and drivers with either 2-13 years or 14-35 years experience to say that this sign was easy to understand (24%, 30% and 38% respectively).

Capabilities on project:
Transportation

4.5.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 48% (n=87) - thought that it could, suggesting:

- Use words/ writing such as no vehicles (n=48);
- Use symbols/ make more visual (such as car/truck/bike) (n=28); and
- Needs more information (n=14).

Recommendations

- Detail exactly what is allowed/ not allowed in this area including types of vehicle, bicycles and pedestrians

4.5.5 Comparison with 2004 Traffic Signs Study

In the 2004 TPI survey the No Vehicles Sign (617) was shown on its own and respondents were asked to say what it meant. Only 5.6% gave an answer that was considered 'Totally Right'.

When asked directly in the current study what they could do when they saw this sign 56% correctly answered all the comprehension questions.

Capabilities on project:
Transportation

4.6 Sign C5a/ C5b: 619 With and Without Red Cancellation Diagonal Bar

Key Findings

- Almost all respondents, regardless of which sign they saw, understood that it meant no motorised vehicles.
- Again, respondents were least confident regarding the meaning of the sign when answering whether you could ride a bike past the sign.
- The most frequently mentioned improvement for this sign was to use words or writing.

Meaning of Sign as Read to Respondents

“No motor vehicles allowed past this sign. Bicycles are allowed.”



4.6.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Almost all respondents (99%) who had seen the sign with the bar across stated that it meant no motor vehicles/ cars, with two respondents each saying that bicycles were not allowed or that taxis and buses were allowed.

Eighty seven percent of respondents who saw the sign without the bar across also stated that the sign meant no motor vehicles allowed, although 6% (n=13) thought it meant, the opposite meaning that, motor vehicles were allowed.

4.6.2 Level of Understanding: Prompted

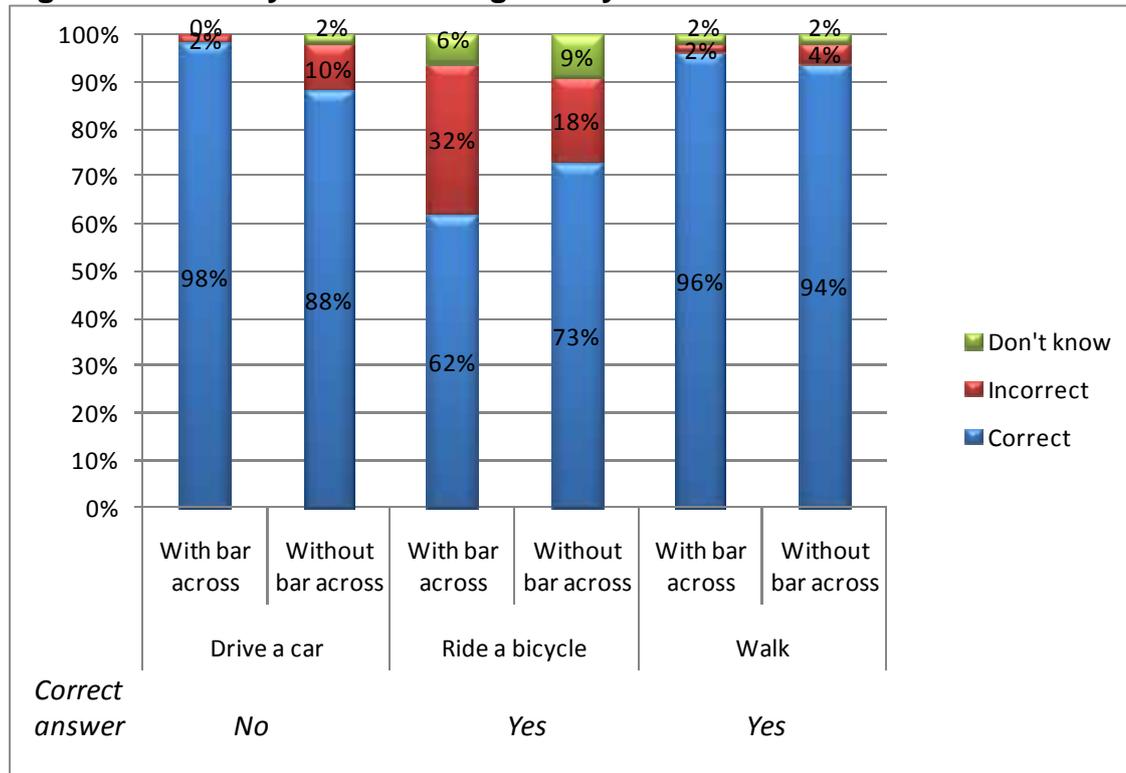
To test comprehension of the sign, respondents were asked if they thought they could:

- Drive a car?
- Ride a bicycle?
- Walk?

Over half of respondents answered all three comprehension question correctly with the bar (63%) and without (59%).

Capabilities on project:
Transportation

Figure 37 Where you see this sign can you....



Base: all respondents shown sign; 212 (sign without bar across), 183 (sign with bar across)

The majority of respondents who saw either the sign with the bar across or the sign without the bar across clearly understood that you could not drive a car past the sign but you could walk past the sign. This is not significantly different from the unprompted response described above (with bar 99% answered correctly unprompted and 98% answered correctly in the comprehension question; without the bar 87% answered correctly unprompted and 88% in the comprehension questions).

However, there was a greater lack of clarity among respondents regarding whether you could ride a bicycle past the sign. Fewer respondents who saw the sign either with or without the bar answered the question for bicycles incorrectly (62% seeing the sign with a bar and 73% seeing a sign without a bar), compared to the other questions on walking or driving. The data shows that the bar may decrease understanding amongst cyclists as to whether they could drive in this area; without the bar 83% answered correctly that bicycles were allowed in whereas only 56% answered correctly when the bar was introduced. However, the number of cyclists seeing this sign was small (n=12) and therefore these results should be treated with caution.

4.6.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost all respondents (91% for those who saw the sign with the bar across, and 82% for those who saw the sign without) thought that the sign was easy (49% and 42% respectively) or very easy (43% and 39% respectively) to understand.

Capabilities on project:
Transportation

4.6.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 24% (n=51) who saw the sign without the bar across, and 14% (n=25) who saw the sign with the bar across thought that it could, suggesting:

	Without Bar	With Bar
Make clearer that bicycles are allowed	n=20	n=18
Use words/ writing (e.g. no motor vehicles)	n=17	n=3
Should have a line through it	n=13	n=0
Make it easier to understand	n=4	n=1
Needs more explanation	n=3	n=2

Recommendations

- Specify bicycles are allowed.

4.6.5 Comparison with 2004 Parking Study

In the 2004 TPI survey the No Vehicles Sign (619) was shown alongside No Motor Vehicles Sign (619.2) and respondents were asked to say how different they were. Half (48.9%) gave an answer that was considered 'Totally Right'.

In the current study respondents were asked directly what they could do when seeing this sign. Sixty three percent correctly answered all three comprehension questions.

Capabilities on project:
Transportation

4.7 Pedestrian and Cycling Sign C6: 956

Key Findings

- Almost all respondents understood the meaning of this sign.
- Respondents found the sign easy to understand with few improvements to be made.

Meaning of Sign as Read to Respondents

“Shared bicycle and pedestrian route.”



4.7.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Eighty eight percent of respondents said that the sign meant cyclists and pedestrians only.

Thirteen respondents stated that the signs represented a family area or children present and ten mentioned that it meant cyclists only. Nine respondents said it meant no cycles, and six thought it showed that cyclists had to give way to pedestrians.

4.7.2 Level of Understanding: Prompted

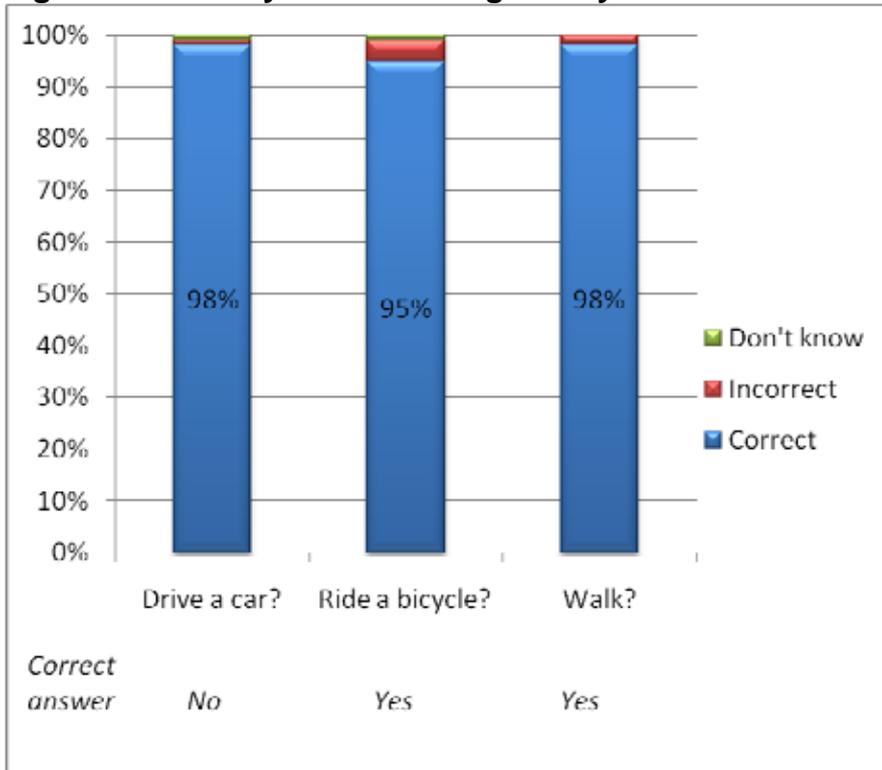
To test comprehension of the sign, respondents were asked if they thought they could:

- Drive a car?
- Ride a bicycle?
- Walk?

Almost everyone (93%) answered all three comprehension questions correctly.

Capabilities on project:
Transportation

Figure 38 Where you see this sign can you....



Base: all respondents shown sign; 201

4.7.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost all respondents (94%) thought that the sign was easy (27%) or very easy (67%) to understand.

4.7.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 8% (n=15) who saw the sign thought that it could, suggesting:

- Use words (e.g. shared path) (n=7);
- Needs more information (n=3);
- Add more colours (n=2); and
- Use a different picture (n=2).

Recommendations

- None

Capabilities on project:
Transportation

4.8 Pedestrian and Cycling Sign C7: 957

Key Findings

- Almost all respondents correctly identified that this sign showed a cycle and pedestrian route, but only a third identified that it was segregated.
- The majority of respondents thought it was easy to understand.

Meaning of Sign as Read to Respondents

“A segregated bicycle and pedestrian route.”



4.8.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Thirty seven percent of respondents (n=83) correctly identified this sign as a segregated pedestrian and cycle route, with only two respondents thinking the sign meant the opposite; no cycles or pedestrians.

The remaining 61% of respondents correctly stated that the sign showed a pedestrian and cycle lane but did not specify that it was segregated.

4.8.2 Level of Understanding: Prompted

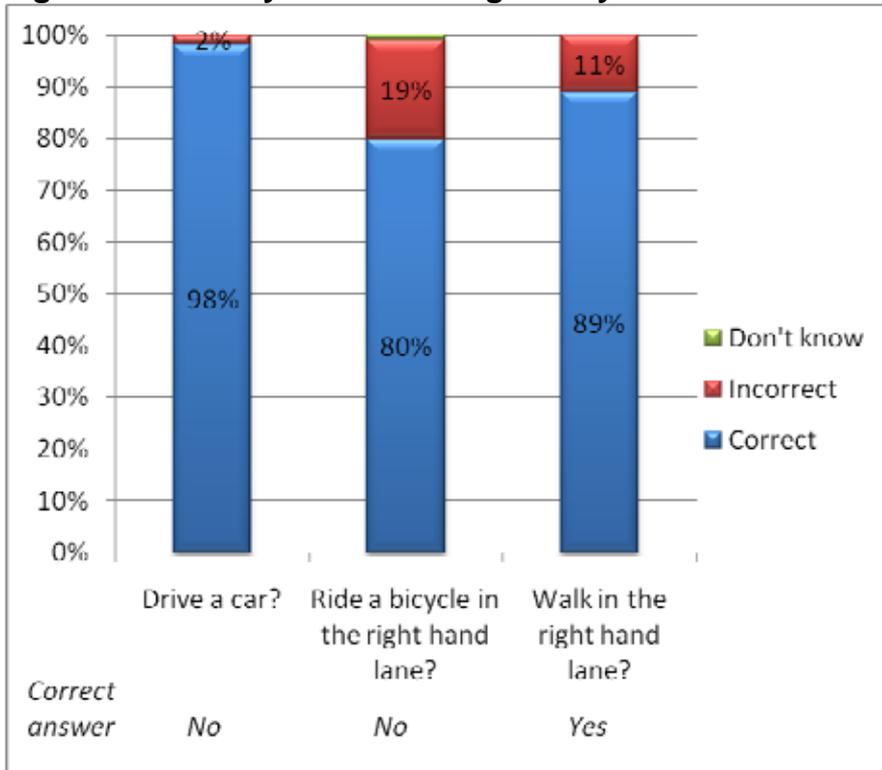
To test comprehension of the sign, respondents were asked if they thought they could:

- Drive a car?
- Ride a bicycle in the right hand lane?
- Walk in the right hand lane?

Three quarters (75%) answered all three comprehension questions correctly.

Capabilities on project:
Transportation

Figure 39 Where you see this sign can you....



Base: all respondents shown sign; 224

At least four fifths (80%) of respondents who saw the sign gave the correct response to each question, showing that the sign was well understood and observed. However, significantly fewer respondents answered correctly whether they could ride a bike the right hand lane compared to the other two questions.

4.8.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost all respondents (98%) thought that the sign was easy (31%) or very easy (67%) to understand.

4.8.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 6% (n=13) who saw the sign thought that it could, suggesting:

- Use words/ writing (n=6); and
- Make it clearer/ simpler/ easier to understand/ it's confusing (n=2).

Recommendations

- None

Capabilities on project:
Transportation

4.9 Pedestrian Sign C8a/C8b: 544 Existing and Experimental Zebra Crossing

Key Findings

- Very few respondents incorrectly identified either of these signs. However, while the majority of respondents were able to say it showed a pedestrian crossing, only 34% who saw the current sign and 45% who saw the new sign, specifically stated that it showed a zebra crossing.
- Almost all respondents found this sign easy to understand and it was not felt by that many improvements could be made.

Meaning of Sign as Read to Respondents

“Zebra Crossing ahead.”



4.9.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. For respondents who saw the current sign, all except four respondents correctly identified that the sign showed a pedestrian crossing, however only a third (34%, n=72) specifically identified it was a zebra crossing.

For respondents who saw the new sign, again, all except three correctly identified it meant a pedestrian crossing, with 45% identifying it as a zebra crossing (n=83), and three respondents stating it was specifically a pelican crossing.

4.9.2 Level of Understanding: Prompted

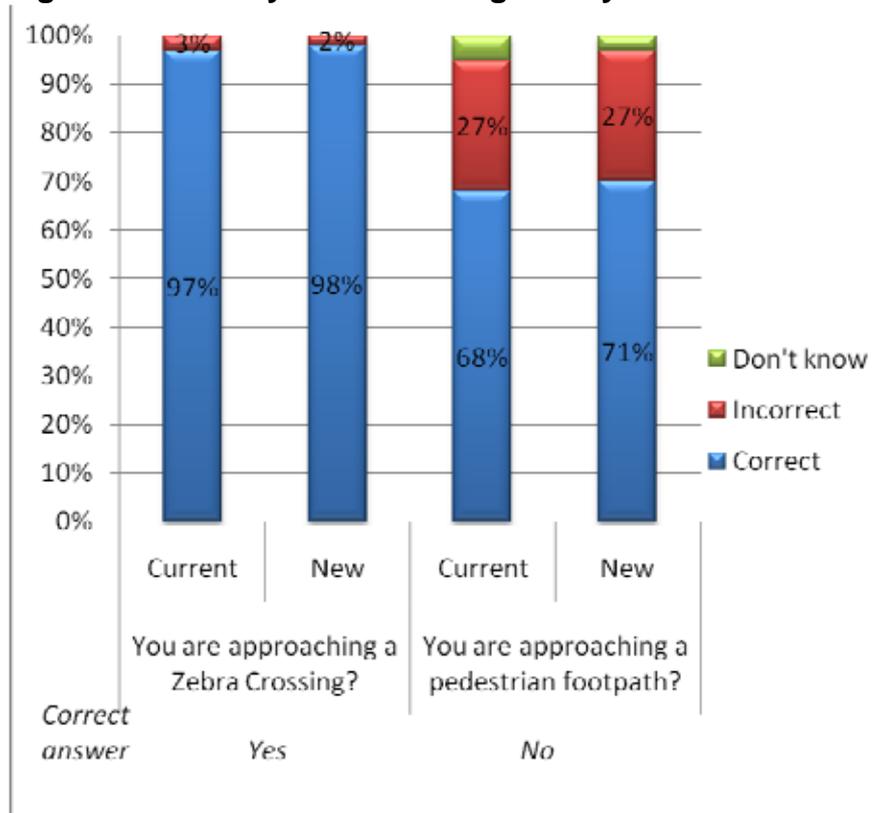
To test comprehension of the sign, respondents were asked if they thought they were:

- Approaching a Zebra Crossing?
- Approaching a pedestrian footpath?

Over two thirds (68% and 69% respectively) answered both comprehension questions correctly.

Capabilities on project:
Transportation

Figure 40 Where you see this sign can you....



Base: all respondents shown sign; 212 (current), 183 (new)

Almost all respondents regardless of whether they saw the current or new sign correctly answered that it meant you were approaching a zebra crossing (97% & 98% respectively). Over two thirds of respondents correctly answered that the sign did not mean you were approaching a pedestrian footpath, with no significant difference in responses depending on whether the current or new sign was shown (68% and 71% respectively).

There was no significant difference in response between groups.

4.9.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost all respondents (96% for both current and 100% for the new sign) though it was easy (27% and 24% respectively) or very easy (69% and 76% respectively) to understand.

4.9.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 9% (n=19) who saw the current sign and 1% (n=1) who saw the new sign thought that it could, suggesting:

- Put black stripes (like on Zebra crossing) (n=8);
- Use words (n=6); and
- Make it clearer (n=2).

Capabilities on project:
Transportation

Recommendations

- None

4.9.5 Comparison with 2004 Traffic Signs Study

In the 2004 TPI study the Zebra Crossing Sign (544) was shown with the No Pedestrian Sign (625.1) and respondents were asked to say how different they were. Only 17.3% gave an answer that was considered 'Totally Right'.

When asked directly in the current study what they understood by the Zebra Crossing sign 97% answered correctly that it means you are approaching a Zebra Crossing and 68% answered all comprehension questions correctly.

4.10 Summary

Respondents had a high level of understanding of the blue signs (positive instruction) with the majority of respondents recognising:

- C2: Bicycles only (75% answering all comprehension questions correctly).
- C6: Shared Bicycle and pedestrian route (93% answering all comprehension questions correctly).
- C7: Segregated Cycle and pedestrian route (75% answering all comprehension questions correctly).

Sign C1 was the only sign which caused some confusion, as although respondents recognised there was a cycle lane respondents were unsure if bicycles could also travel with the main flow of traffic.

Respondents were shown a number of signs in a red circle (prohibitive signs). Respondents showed a strong understanding of:

- C3a/b No pedestrians: Almost all (96% with bar and 79% without) knew this sign meant no pedestrians but were unsure of the implications for cyclists with only 63% and 54% respectively answering correctly that bicycles could be ridden.
- C8a/b: Zebra Crossing: this sign was generally recognised as a Zebra crossing with over two thirds answering both comprehension questions correctly (68% current version 69% new version).

Although respondents showed a strong overall understanding of the no vehicles signs, the unspecified information i.e. the implications for bicycles caused confusion for respondents and lowered their overall scores:

- C5a/C5b: No vehicles: Over half (63% with a bar and 59% without bar) answered all three comprehension questions correctly. Almost all respondents recognised the vehicles were not allowed but there was some confusion as to whether bicycles would be.
- C4 No Vehicles including Bicycles: 56% answered all three comprehension questions correctly.

Adding a red bar to the no pedestrian sign and no vehicles sign did increase understanding but the level of understanding without a bar is very high anyway, and adding the zebra stripes to the zebra crossing sign made no difference to understanding.

5 Yellow Box Junction and Red Routes

Capabilities on project:
Transportation

5 Yellow Box Junction and Red Routes

5.1 Introduction

The survey included showing respondents road markings; Yellow Box Junction and double red lines as well as two Red Route signs.

5.2 YB1: Yellow Box Junction

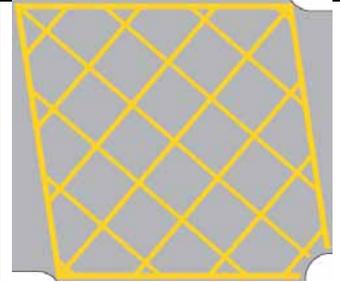
This sign was shown to two different groups of respondents; one group was shown a picture of a box junction (static) and one group was shown a video simulation of box junction (dynamic).

Key Findings

- Almost all (94% static; 95% dynamic) respondents knew that vehicles are not allowed to drive into the marked area if their exit is blocked.
- Just over a third (36% static and 38% dynamic) of respondents knew that vehicles were allowed to stop in the marked area if they were turning right and their exit was blocked by either other cars turning right or oncoming traffic.

Meaning of Sign as Read to Respondents

“No vehicle is allowed to enter a box junction if it will have to stop within it due to the presence of stationary vehicles. A vehicle can only stop in a box junction if it is waiting to turn right, and it is prevented from completing the right turn by oncoming vehicles or other vehicles which are stationary whilst waiting to complete a right turn.”



5.2.1 Level of Understanding: Unprompted

Almost all respondents knew that vehicles aren't allowed to stop in a box junction (90% static; 97% dynamic).

Only a few respondents mentioned, unprompted, that vehicles can stop in the box if they are turning right (11% static; 19% dynamic).

5.2.2 Level of Understanding: Prompted

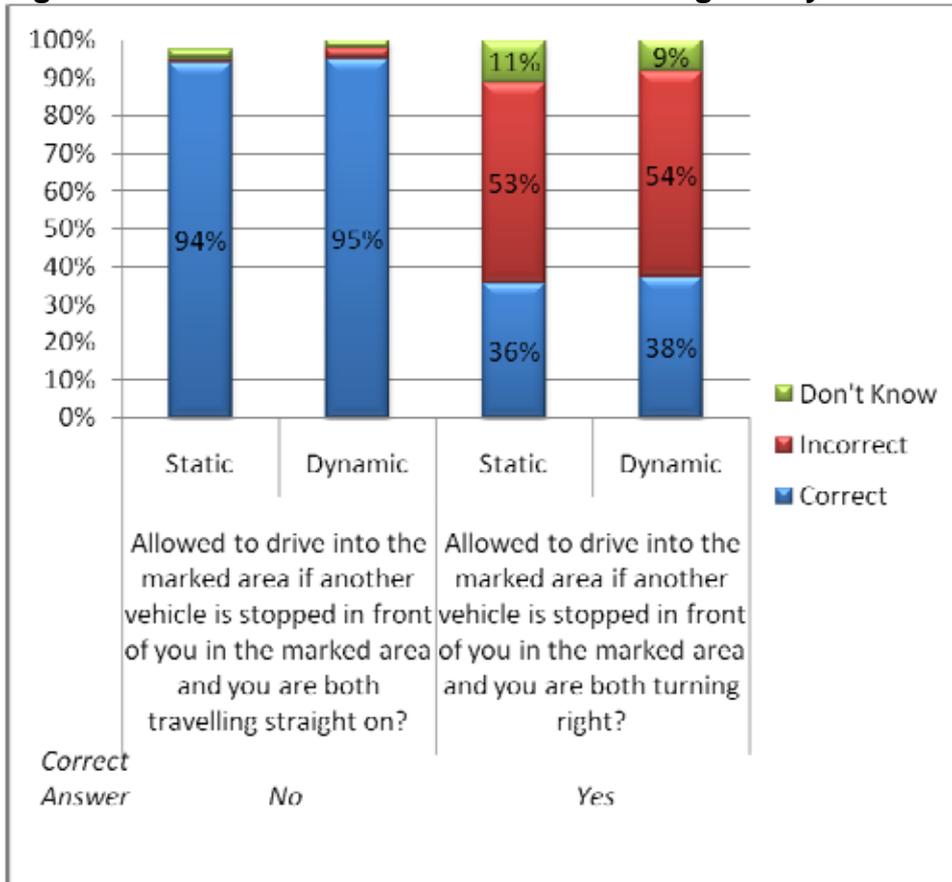
To test comprehension of the rules of a yellow box junction respondents were asked whether they thought vehicles were:

- Allowed to drive into the marked area if another vehicle is stopped in front of you in the marked area and you are both travelling straight on?
- Allowed to drive into the marked area if another vehicle is stopped in front of you in the marked area and you are both turning right?

Less than half of respondents answered both comprehension questions correctly (34% static and 38% dynamic).

Capabilities on project:
Transportation

Figure 41 Where You See These Road Markings can you....



Base: all respondents shown sign; 201 (static), 224 (dynamic)

Almost all (94% static; 95% dynamic) respondents knew that vehicles are not allowed to drive into the marked area if their exit is blocked.

However, less than a half (36% static and 38% dynamic) of respondents knew that vehicles were allowed to stop in the marked area if they were turning right and their exit was blocked by either other card turning right or oncoming traffic. Those who had most recently passed their driving test were much more likely to answer correctly than those that passed their driving test some time ago.

- Drivers with up to two years experience from passing the test (64%).
- Drivers with between two and 13 years experience (44%).
- Drivers with between 14 and 35 years experience (30%).
- Drivers with more than 35 years experience (24%).

This is likely to be because the rules surrounding yellow box junctions have changed and sp previously cars turning right were not allowed into the junction unless they could exit immediately.

There was no significant difference in response between groups who saw the road markings statically.

5.2.3 Ease of Understanding

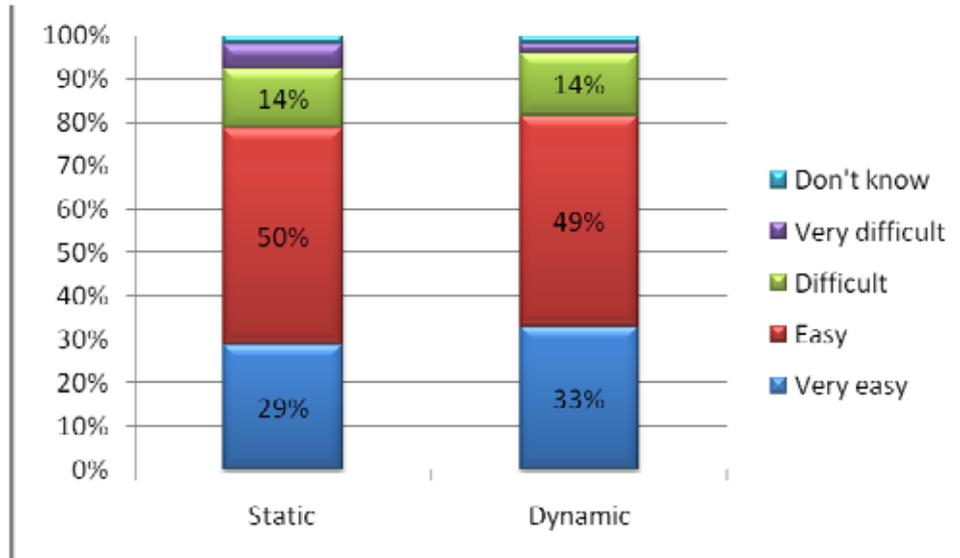
Respondents were given a definition of the road markings (see beginning of this section).

Capabilities on project:
Transportation

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the road markings were to understand.

Despite the fact that only a third (34% static; 38% dynamic) answered both comprehension questions correctly, the majority of respondents found Yellow Box junctions easy (29% static; 33% dynamic) or very easy (50% static; 49% dynamic) to understand (79% and 82% total respectively).

Figure 42 Ease of Understanding



Base: all respondents shown sign; 201 (static), 224 (dynamic)

5.2.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 19% (n=39) who saw the static sign and 18% (n=40) who saw the dynamic sign thought that it could, suggesting:

	Static	Dynamic
Add written instructions	n=18	n= 12
Add a sign	n=6	n=0
Needs more explanation	n=4	n=12
Get rid of Yellow Box Junctions	n=4	n=2
Make it easier to understand	n=3	n=7
Have more education on Yellow Box Junction	n=2	n=3

Recommendations

- Improve public’s awareness on how to act when turning right across a box junction
- Greater publicity when rules change

Capabilities on project:
Transportation

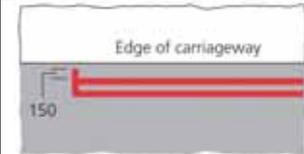
5.3 Red Route R1: Road Marking

Key Findings

- Very few respondents outside London recognised the term ‘red route’.
- However almost all respondents (85%) including those outside London knew that they were not allowed to stop to drop someone off on double red lines and that they could not park on double red lines (91%).

Meaning of Sign as Read to Respondents

“No stopping at anytime.”



5.3.1 Level of Understanding: Unprompted

Unprompted, respondents thought double red lines meant:

- No Stopping (47%);
- No Parking (46%); and
- No Loading (13%).

Just 9% used the term ‘red route’ and of those that did the majority lived around London.

5.3.2 Level of Understanding: Prompted

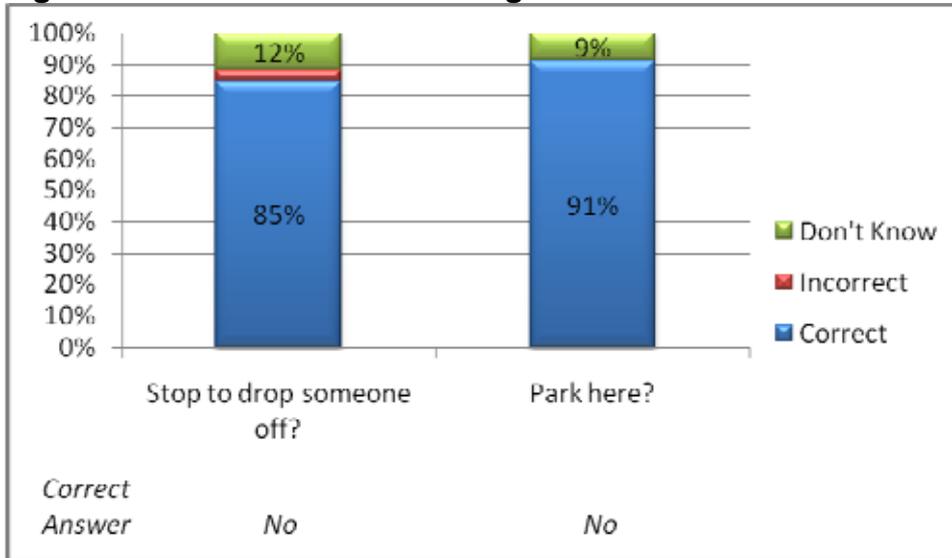
To test comprehension of the road markings, they were asked if they thought they were allowed to:

- Stop to drop someone off?
- Park here?

Most respondents (85%) answered both comprehension questions correctly.

Capabilities on project:
Transportation

Figure 43 Where You See This Sign Can You....



Base: all respondents shown sign; 224

The majority (85%) of respondents knew that they were not allowed to stop to drop someone off on double red lines and that they definitely could not park on double red lines (91%).

Respondents living in London were more likely (98%) than others to know that you could not stop to drop someone off on double red lines. The equivalent figure for people living outside London was 81%.

5.3.3 Ease of Understanding

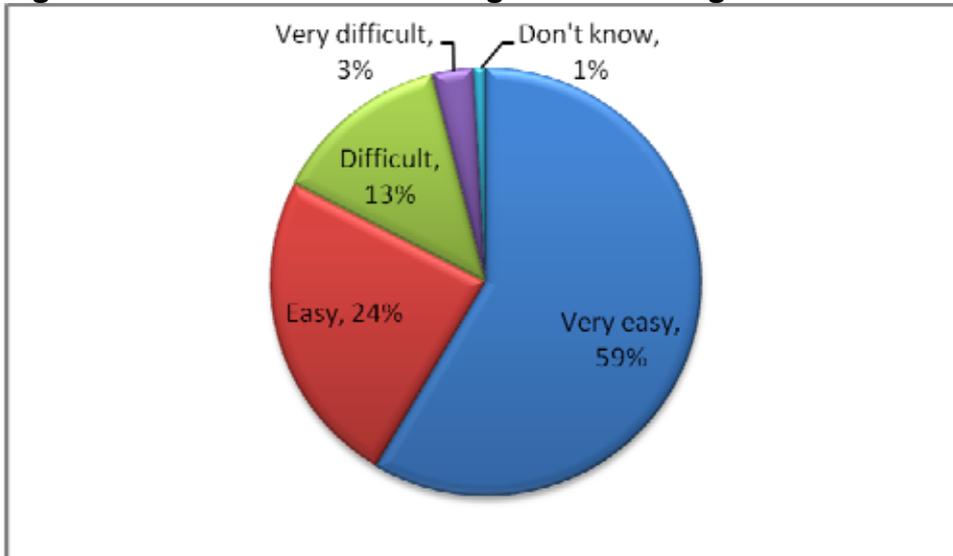
Respondents were given a definition of the road markings (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the road markings were to understand.

The majority (83%) of respondents found it easy (24%) or very easy (59%) to understand these road markings.

Capabilities on project:
Transportation

Figure 44 Ease of Understanding Road Markings



Base: all respondents shown sign; 224

5.3.4 Improvements

Respondents were asked, unprompted, if they thought the road markings could be improved; 19% (n=42) thought that they could and suggested:

- Sign for double red lines (n=30);
- Needs publicity (n=11);
- It's confusing (n=3);
- Make lines bigger (n=2);
- Add more colour/ use colours (n=2); and
- Use double yellow lines/ yellow lines on the road (n=2).

Recommendations

- None

Capabilities on project:
Transportation

5.4 Red Route DR2a/b: Red Route Clearway, No Road Markings With and Without ‘No Stopping’ Text

Two groups of respondents were shown the red route clearway sign in a video presentation; one group saw the sign with the additional words ‘no stopping’ and the other group saw the sign without the words.

<p>Key Findings</p> <ul style="list-style-type: none"> - The majority of respondents understood that this sign meant no stopping regardless of whether the words ‘no stopping’ were written on the sign. - Having the words ‘no stopping’ written on the sign did increase understanding. 	
<p>Meaning of Sign as Read to Respondents</p> <p><i>“Red Route Clearway. No Stopping at Any time.”</i></p>	

5.4.1 Level of Understanding: Unprompted

Less than a quarter (24% with ‘no stopping’; 17% without ‘no stopping’) recognised that the area was a Red Route.

With or without the words ‘no stopping’, the majority of respondents knew stopping was not allowed. The proportion of respondent stating ‘no stopping’ was higher amongst those that saw the sign with the words ‘no stopping’ (89%) than those that saw the sign without (69%).

5.4.2 Level of Understanding: Prompted

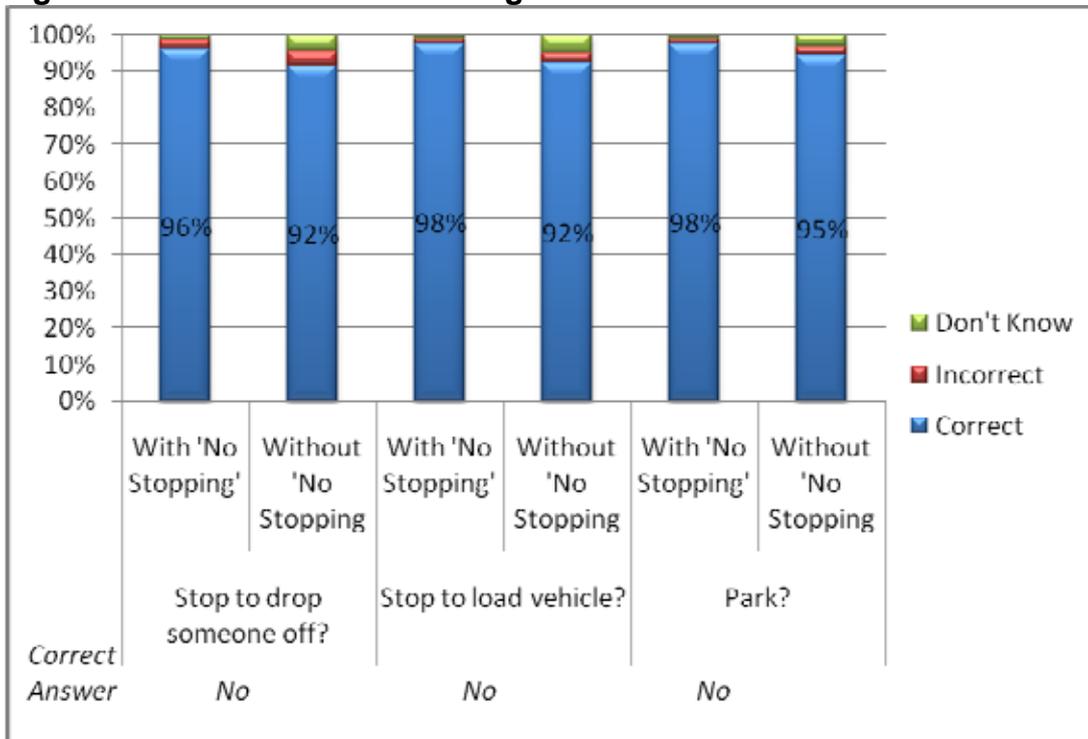
To test comprehension of the sign, respondents were asked if they thought they could:

- Stop to drop someone off?
- Stop to load vehicle?
- Park?

Almost all of respondents got all comprehension question correct with the words ‘no stopping’ (94%) and without (90%).

Capabilities on project:
Transportation

Figure 45 Where You See This Sign Can You....



Base: all respondents shown sign; 201 (No stopping), 224 (no words)

Regardless of whether the sign had the words 'no stopping' or not, almost all respondents understood that they could not:

- Stop to drop someone off (96% and 92% respectively);
- Stop to load (92% and 92% respectively); or
- Park (98% and 95% respectively).

5.4.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Almost all respondents thought the sign was easy to understand (97% with 'no stopping and 88% without). This difference is not significant.

5.4.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; just 5% (n=10) of respondents who saw the sign with the words 'no stopping' thought the sign could be improved and suggested the following:

- Needs more information (n=4); and
- Make sign bigger (n=3).

Capabilities on project:
Transportation

Of those who saw the sign without the words 'no stopping' 13% (n=29) thought it could be improved and suggested the following:

- Add words 'no stopping' (n=21);
- Make it clearer (add 'no stopping'/'no loading' (n= 6);
- Needs more explanation what clearway means (n=5); and
- Have more education on the sign (n=2).

Recommendations

- None

5.5 Summary

There was a high level of understanding that only when vehicles were travelling straight on could they enter a box junction when their exit was clear (94% static & 95% dynamically).

However, respondents were less clear as to the rules about turning right with less than half (36% and 38% respectively) answering correctly that vehicles turning right could enter the area if another vehicle is stopped in front of you that is also turning right and is prevented from doing by oncoming traffic.

Although, most respondents living outside London were not familiar with Red Routes there was a very high level of understanding of meaning of the road markings and signs.

- Double red lines (85% answered all comprehension question correctly); and
- Red Route clearway (94% with words 'no stopping' and 90% without answered all comprehension questions correctly).

6 Bus Lanes and Gates

Capabilities on project:
Transportation

6 Bus Lanes and Gates

6.1 Introduction

In total, three Bus Lane and Gate signs were included in the survey. Each sign was shown statically and in a video (dynamic) presentation that simulated a driving situation, thus allowing any difference in interpretation to be observed.

6.2 Bus Lanes and Gates B1: 959 / 961

<p>Key Findings</p> <ul style="list-style-type: none"> - Across all respondents there was a clear unprompted understanding of most aspects of the sign. - There was a significant difference in prompted understanding of the sign between respondents who saw the static version and those who saw the dynamic version. - Almost nine out of ten respondents regardless of whether they saw the static or dynamic version of the sign found it easy to understand. - The most frequently mentioned improvement to the sign was to make it bolder/ bigger/ more visible. 	
<p>Meaning of Sign as Read to Respondents</p> <p><i>“The left hand lane is for local buses, cyclists and taxi only Monday to Friday from 7am to 10am and 4pm to 7pm. Other vehicles are allowed in this lane at other times.”</i></p>	

6.2.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Across the respondents who saw either the static or the dynamic signs, all but six respondents got at least one aspect of the sign correct relating to it being a bus/ cycle/ taxi lane and that there were time restrictions when this applied.

When drawing a comparison between whether respondents saw the static or dynamic versions of the sign, 78% of respondents who saw the static sign correctly identified it was a bus/ cycle/ taxi lane during the times specified, compared to only 58% of those who saw the dynamic sign. Respondents who saw the dynamic sign identified that it was a bus/ cycle/ taxi lane but were less likely to identify the times associated with this restriction.

6.2.2 Level of Understanding: Prompted

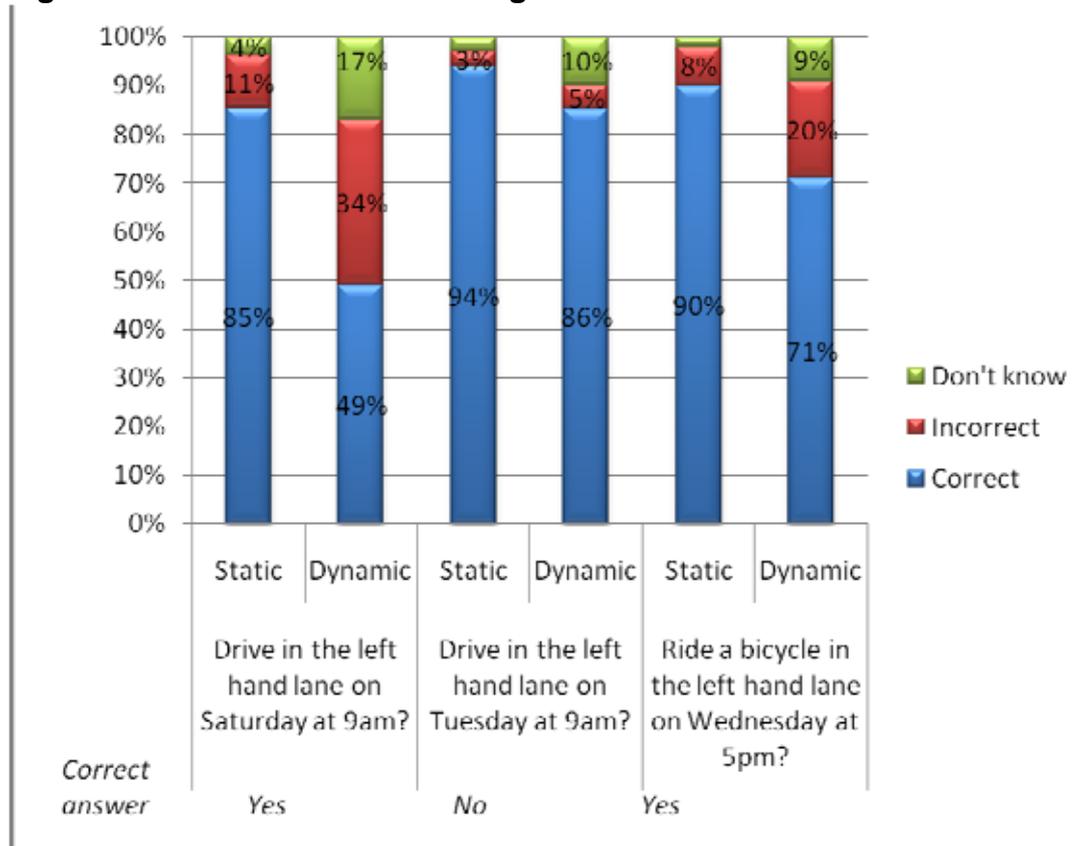
To test comprehension of the sign, respondents were asked if they thought they could:

- Drive in the left hand lane on Saturday at 9am?
- Drive in the left hand lane on Tuesday at 9am?
- Ride a bicycle in the left hand lane on Wednesday at 5pm?

Over three quarters (78%) who saw the sign statically answered all statements correctly however, just 42% of those who saw it dynamically did.

Capabilities on project:
Transportation

Figure 46 Where You See This Sign Can You....



Base: all respondents shown sign; 212 (static), 201 (dynamic)

At least 85% of respondents who saw the static sign gave the correct response to each question, showing that the sign was well understood and observed. However, the sign was not so well understood by those who saw the dynamic sign. For the question ‘Can you drive in the left hand lane on Saturday at 9am?’ and the question ‘Can you ride a bicycle in the left hand lane on Wednesday at 5pm?’, significantly fewer respondents were able to answer them correctly on viewing the dynamic sign (49% compared to 85% for static sign, and 71% compared to 90% for static sign). This supports the unprompted findings that although respondents clearly understood the concept of the bus/ cycle lane, they were unable to see the specific timings on the signs when travelling.

6.2.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost all respondents (88% for both static and dynamic) thought that the sign was easy (37% and 43% respectively) or very easy (51% and 45% respectively) to understand.

Capabilities on project:
Transportation

6.2.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 13% (n=27) who saw the static sign and 12% (n=24) who saw the dynamic sign thought that it could, suggesting:

- Make it bigger/ bolder/ more visible (n=12) ¹
- Make it clearer (particularly times; what allowed on Saturday) (n=11);
- Needs more information (n=7);
- Too much writing (n=4); and
- Needs rewording (n=3).

Recommendations

- Larger text for time restrictions
- And/or
- Repeater signs
 - Standardised hours for bus lanes

¹ NB For all signs shown in both static and dynamic versions, improvements are stated as n= total number of respondents who gave that response for on seeing either the static or the dynamic sign

Capabilities on project:
Transportation

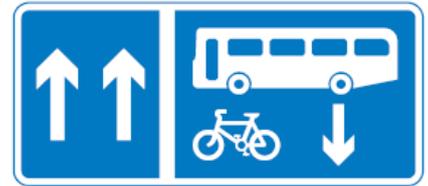
6.3 Bus Lanes and Gates B2/DB2: 960

Key Findings

- Thirty two percent and forty six percent of respondents who saw the static or dynamic sign respectively, correctly identified the bus/ cycle lane shown on the sign.
- Almost all respondents correctly understood the meaning of the sign when prompted, regardless of whether it was seen statically or dynamically.
- Ninety one percent of respondents (static and dynamic) felt the sign was easy to understand.

Meaning of Sign as Read to Respondents

“The left two lanes contain general traffic going in the direction of the arrows. Traffic in the right hand lane is coming in the opposite direction and only buses and bicycles are allowed in this lane.”



6.3.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Sixty five percent of respondents who saw the static sign correctly mentioned all aspects of it, demonstrating a full understanding, whereas significantly fewer respondents who viewed the dynamic sign correctly mentioned all aspects of it (49%).

Thirty two percent of respondents who saw the static sign, and forty six percent of respondents who saw the dynamic sign correctly identified that the sign showed that the lane on the far right was a bus/ cycle lane, whereas only 1% of respondents seeing the static sign and 2% seeing the dynamic sign mentioned that the car lanes were travelling in the opposite direction.

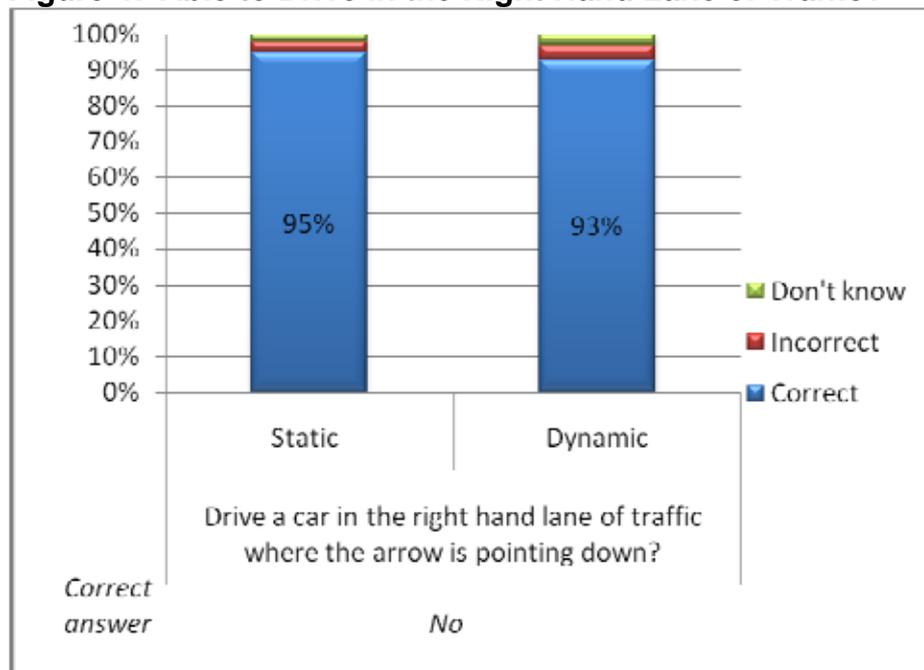
6.3.2 Level of Understanding: Prompted

To further test whether respondents fully understood the sign and were not just ‘reading’ what was written on the sign, respondents were asked if they thought:

- They could drive a car in the right hand lane of traffic where the arrow is pointing down?

Capabilities on project:
Transportation

Figure 47 Able to Drive in the Right Hand Lane of Traffic?



Base: all respondents shown sign; 183 (static), 224 (dynamic)

Almost all respondents gave the correct response to each question regardless of whether they saw the static or dynamic version of the sign, showing that the sign was well understood and observed.

6.3.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost all respondents (91% for both static and dynamic presentations) though that the sign was easy (41% and 45% respectively) or very easy (50% and 46% respectively) to understand.

6.3.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 8% (n=14) who saw the static sign and 7% (n=16) who saw the dynamic sign did, suggesting:

- Use words (n=6);
- Make it clearer/ simpler/ to understand (n=5);
- Needs more information (n=3); and
- Add more colours/ use colours (n=2).

Recommendations

- None

Capabilities on project:
Transportation

6.4 Bus Lanes and Gates B3a/b: 953 Bus Only

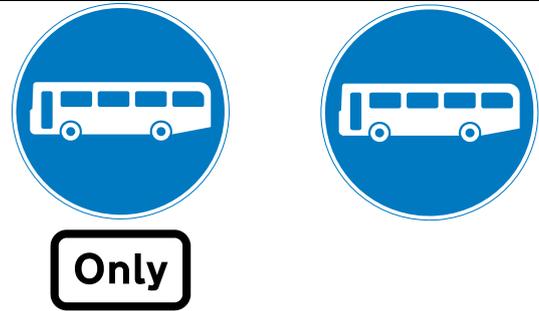
Respondents were shown this sign either with or without word ‘only’ on a text plate underneath the blue information sign.

Key Findings

- The majority of respondents viewing the static or dynamic versions of the sign with or without the plate were able to correctly identify its meaning both prompted and unprompted.
- Almost all respondents found all the variants of the sign easy to understand.
- The most frequently mentioned improvement was to use words/ writing, and this was specifically mentioned more frequently by those viewing the option without the plate.

Meaning of Sign as Read to Respondents

“Only buses are allowed past this point.”



6.4.1 Level of Understanding: Unprompted

For this sign, respondents were shown the bus lane sign either with or without the word ‘only’

All except eight respondents stated unprompted (across both static and dynamic signs with and without the plate) that the sign meant a bus lane. Four stated that it was the sign for a bus stop.

6.4.2 Level of Understanding: Prompted

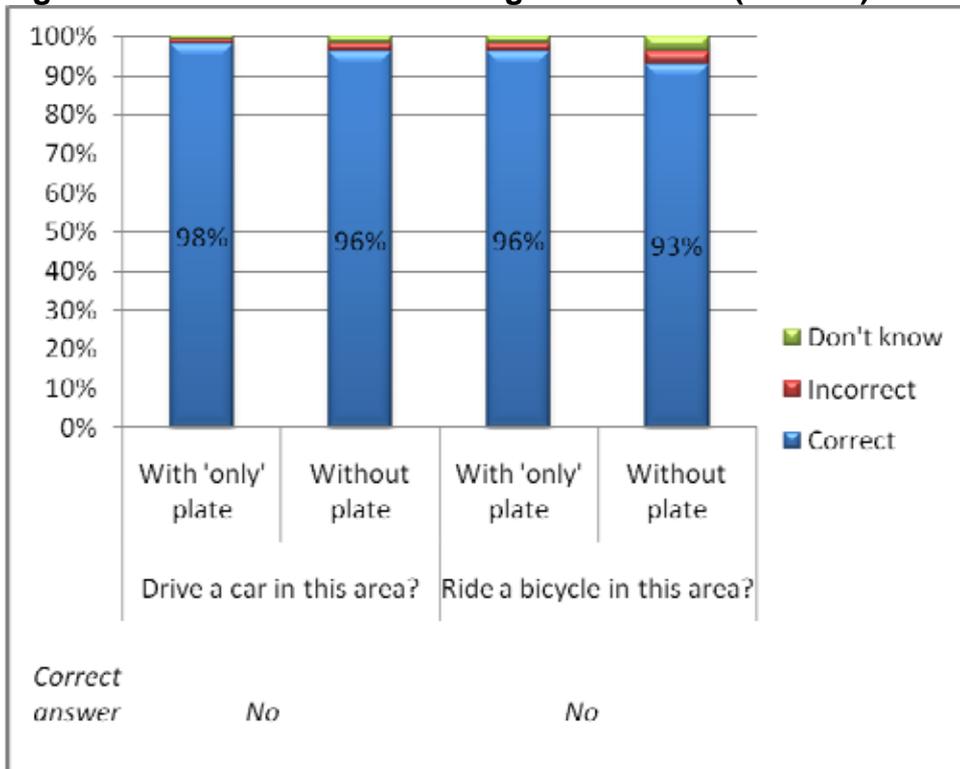
To test comprehension of the sign, respondents were asked if they thought you could:

- Drive a car in this area?
- Ride a bicycle in this area?

Almost all respondents correctly answered both comprehension questions regardless of whether the word ‘only’ was present or the sign was viewed statically or dynamically (95% for both) or not (92% & 88% respectively).

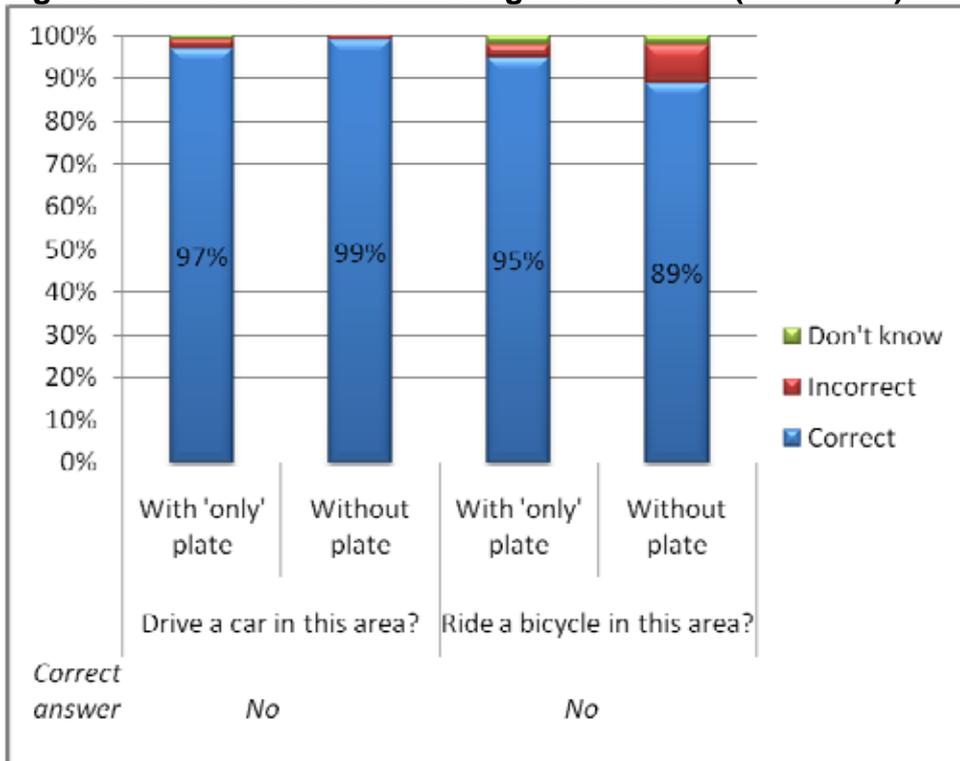
Capabilities on project:
Transportation

Figure 48 Where You See This Sign Can You.... (STATIC)



Base: all respondents shown sign; 201 (for signs with plate) and 224 (for signs without plate)

Figure 49 Where You See This Sign Can You.... (DYNAMIC)



Base: all respondents shown sign; 183 (for signs with plate) and 212 (for signs without plate)

Capabilities on project:
Transportation

Across both signs, the majority of respondents gave the correct response to each question, showing that the sign was well understood and observed.

6.4.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost all respondents for both sign options (in the static and dynamic versions) thought that the sign was easy or very easy to understand (at least 97%).

6.4.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; only 2% of respondents (static, n=3 and dynamic, n=4) who were shown the sign with the 'only' plate underneath thought that it could, compared to 7% (n=16) and 5% (n=11) respectively for the respondents shown the bus lane sign without the plate. The most frequently suggested improvement by the respondents seeing the second sign was to add the words buses only (n=17). For each sign respondents suggested the improvement of more explanation (n=11 in total).

Recommendations

- None

6.5 Summary

There was an extremely high level of understanding for signs depicting bus lanes and gates.

- B2: Contra-flow bus lane: Almost all respondents answered the comprehension questions correctly regardless of whether they were shown it statically (95%) or dynamically (93%).
- B3a: Buses only: Almost all respondents answered the comprehension questions correctly regardless of whether they were shown the sign with or without the word 'only, and statically (95%) or dynamically (92% and 88% respectively).

There was also a high level of understanding of B1: Bus lane with time restrictions when it was shown statically (78%). However, this sign was shown dynamically, the number of people answering all comprehension questions correctly dropped to less than half (42%), showing respondents were unable to assimilate the time information shown when travelling.

7 Height and Weight Restrictions

Capabilities on project:
Transportation

7 Height and Weight Restrictions

7.1 Introduction

Three height, weight and width signs were included in the survey. An additional sign, about suitability of the road ahead for HGVs, was shown to truck drivers only (100).

7.2 Sign H1: 629.2A Height Restrictions

Key Findings

- At least nine out of ten respondents understood the height restriction shown on the sign and felt it was easy to understand.
- The most frequently mentioned improvement was to place signs further in advance of the hazard.

Meaning of Sign as Read to Respondents

"No vehicles can pass this sign if their maximum height is more than 4.4m/ 14ft 6."



7.2.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. All but two respondents recognised that the sign meant there was a height restriction ahead. Over two thirds of respondents (68%) knew that the sign meant no vehicles over 4.4m or 14'6" high could pass.

7.2.2 Level of Understanding: Prompted

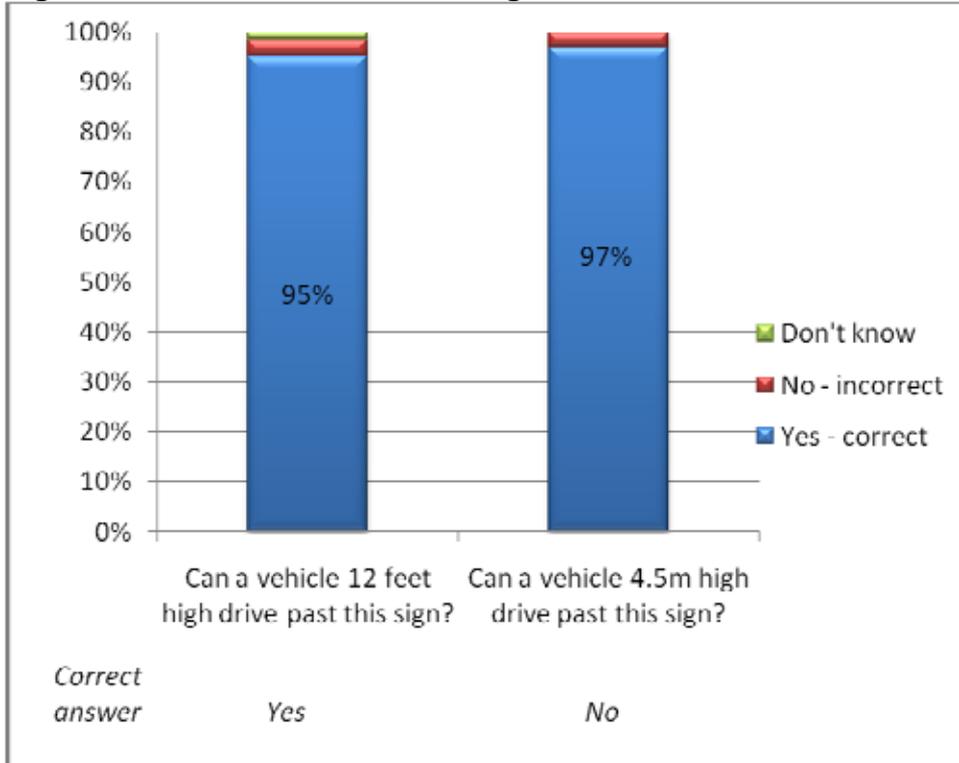
To test comprehension of the sign, respondents were asked if they thought:

- A vehicle 12 feet high could drive past this sign?
- A vehicle 4.5m high could drive past this sign?

Almost all (94%) answered both comprehension questions correctly.

Capabilities on project:
Transportation

Figure 50 Where You See This Sign Can You....



Base: all respondents shown sign; 212

Almost all respondents gave the correct response to each question, showing that the sign was well understood and observed. There were no differences in understanding between foreign drivers and those with difficulty understanding English, compared to other groups.

7.2.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition, and then state how easy they felt the sign was to understand.

Overall, almost all respondents (98%) thought that the sign was easy (23%) or very easy (75%) to understand.

7.2.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 5% (n=10) thought that it could, suggesting:

- Give plenty of advance notice of bridge (n=5);
- Needs more explanation (n=2);
- Make it bigger/ bolder/ more visible (n=1); and
- Showing both metres and feet is confusing (n=1).

Recommendations
None

Capabilities on project:
Transportation

7.2.5 Comparison with 2004 Traffic Signs Study

In the previous survey carried out by TPI the Height Sign (629.2A) was shown along with a Maximum Headroom available at Hazard Sign (530) and respondents were asked to say how different they were. Only 3% gave an answer that was ‘Totally Right’.

When asked directly in the current study what they could do when seeing the Height Sign (629.2A) 94% correctly answered both comprehension questions.

7.3 Sign H2: 6221.A Weight Restriction

<p>Key Findings</p> <ul style="list-style-type: none"> Almost all respondents understood the height restriction shown on the sign and felt it was easy to understand. 	
<p>Meaning of Sign as Read to Respondents</p> <p><i>“No vehicles can pass this sign if their maximum gross weight is more than 7.5 tonnes.”</i></p>	

7.3.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. All but eight respondents knew that the sign meant a weight restriction ahead. Over four fifths of respondents (83%) knew that the sign meant no vehicles over a maximum gross weight of 7.5 tonnes could pass.

Again, there were no differences between foreign drivers and those who have difficulty understanding English, and other groups.

7.3.2 Level of Understanding: Prompted

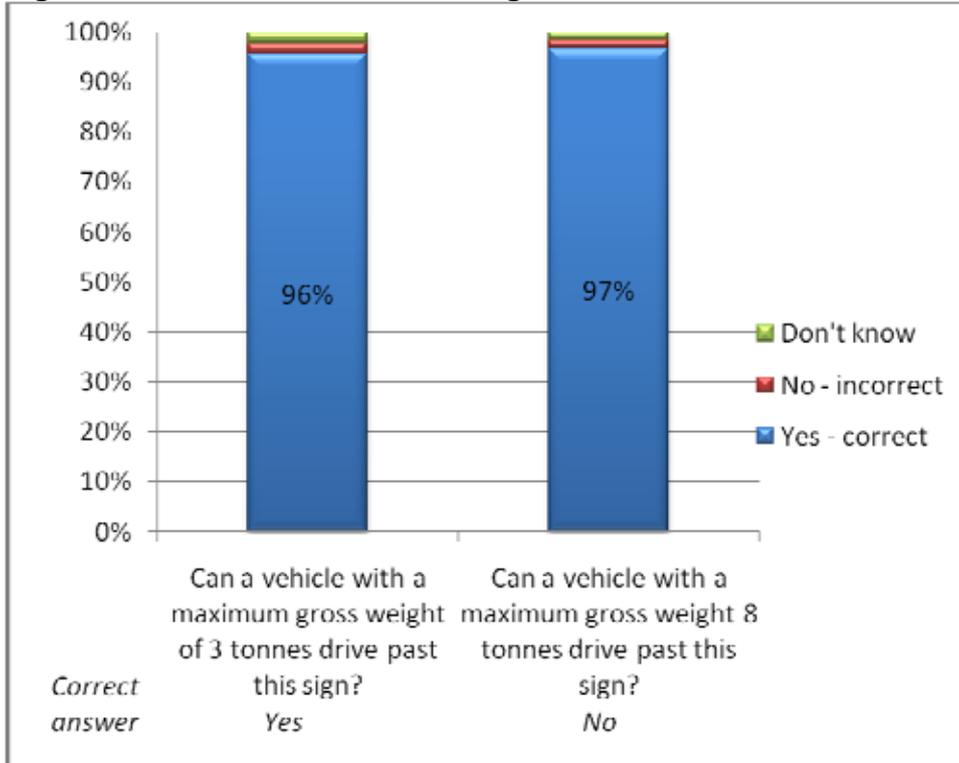
To further test whether respondents fully understood the sign and were not just ‘reading’ what was written on the sign, respondents were asked if they thought:

- A vehicle with a maximum gross weight of 3 tonnes could drive past this sign?
- A vehicle with a maximum gross weight of 8 tonnes could drive past this sign?

Almost all (96%) answered both comprehension questions correctly.

Capabilities on project:
Transportation

Figure 51 Where You See This Sign Can You....



Base: all respondents shown sign; 183

Almost all respondents gave the correct response to each question, showing that the sign was well understood and observed.

7.3.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Overall, almost all respondents (99%) thought that the sign was easy (24%) or very easy (75%) to understand.

7.3.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 5% (n=9) thought that it could, suggesting:

- Use words(e.g. maximum/ no access) (n=5);
- Should have a line through it (n=3); and
- Make it clearer how far can have access (n=1).

Recommendations

- None

Capabilities on project:
Transportation

7.4 Sign H3: 629 Width Restriction

Key Findings

- Almost all respondents understood the height restriction shown on the sign and felt it was easy to understand.

Meaning of Sign as Read to Respondents

“No vehicle can pass this sign if they are wider than 6 feet and 6 inches wide.”



7.4.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Only ten respondents did not know that this sign meant a width restriction ahead. Over two thirds of respondents (69%) knew that the sign meant no vehicles over 6'6" wide could pass.

As with the previous two signs for height and weight, there were no differences in understanding between foreign drivers and those who had difficulty understanding English, compared to other groups.

7.4.2 Level of Understanding: Prompted

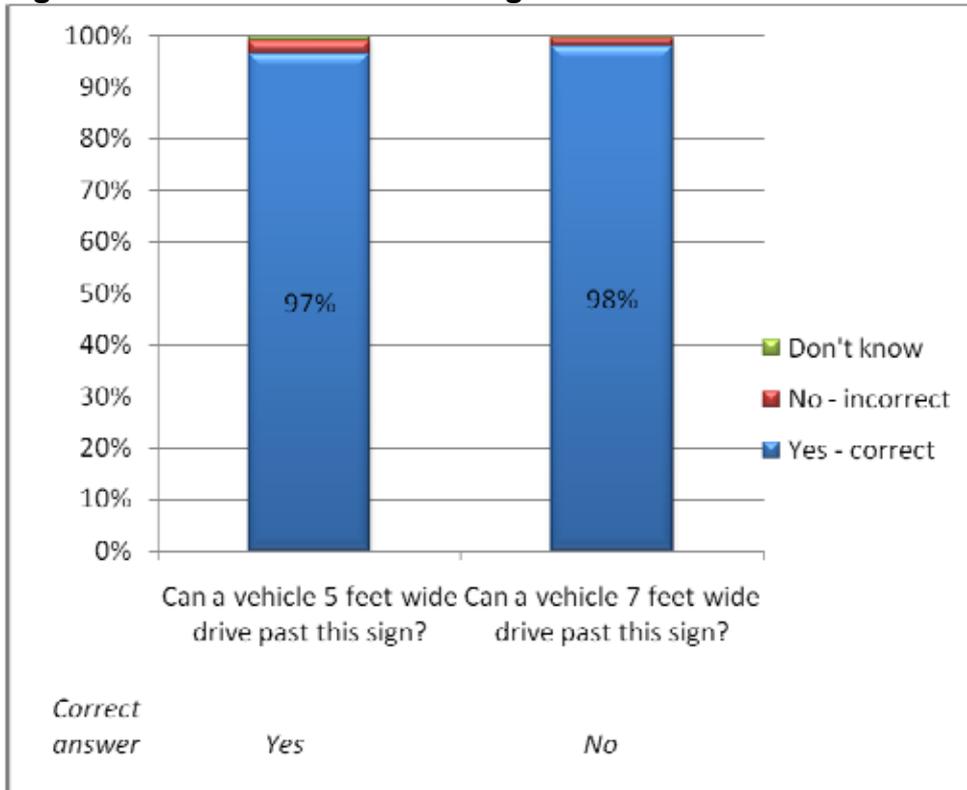
To test comprehension of the sign, respondents were asked if they thought:

- A vehicle 5 feet wide could drive past this sign?
- A vehicle 7 feet high could drive past this sign?

Almost all (96%) answered both comprehension questions correctly.

Capabilities on project:
Transportation

Figure 52 Where You See This Sign Can You....



Base: all respondents shown sign; 201

Almost all respondents gave the correct response to each question, showing that the sign was well understood and observed.

7.4.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Overall, almost all respondents (94%) though that the sign was easy (23%) or very easy (71%) to understand.

7.4.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 10% (n=19) thought that it could, suggesting:

- Sign should be in metric as well (n=6, two of these respondents were HGV drivers);
- Use words as well (n=6);
- Needs more information (n=5); and
- Put the sign further away from the hazard/ give more notice (n=2).

Recommendations
None

Capabilities on project:
Transportation

7.5 Sign H4: NP820A Unsuitable for Heavy Goods

Key Findings

- Almost all respondents understood that this sign showed the road ahead was not suitable for lorries or HGVs, and felt it was easy to understand.
- There was a clear awareness among HGV drivers that although the sign was not enforceable, they would not choose to drive down it.

Meaning of Sign as Read to Respondents

Advisory sign "Road is unsuitable for heavy goods vehicles"



7.5.1 Level of Understanding: Unprompted

This sign was shown to HGV drivers only. Respondents were asked unprompted what they thought the sign meant. All respondents knew that this sign meant that the road would not be suitable for lorries/ trucks/ HGV drivers.

7.5.2 Level of Understanding: Prompted

To test comprehension of the sign, respondents were asked:

- If they drove an HGV past the sign would they be breaking the law?
- If they had a SatNav and it directed them down a road with this sign on, would they follow their SatNav?

Just over three fifths (62%) gave the correct response to the first question, showing that the sign was generally well understood and observed.

The second question had no right or wrong answer but was included in order to assess the common sense and judgement of HGV drivers with regards to this sign. Eighty three percent of respondents said that they would not drive down this road if their SatNav told them too. This demonstrates that while respondents are aware that the sign is not enforceable, they are responsive to the message it presents.

Capabilities on project:
Transportation

Figure 53 If You Drove An HGV Past This Sign Would You Be Breaking The Law?

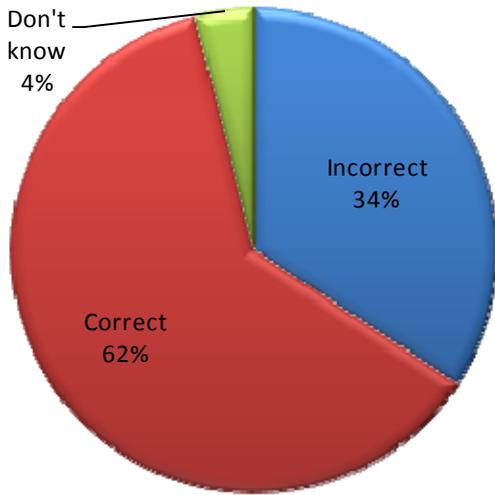


Figure 54 If you had a SatNav and it Directed You Down a Road With This Sign On, Would You Follow It?



Base: all respondents shown sign; 102

Capabilities on project:
Transportation

7.5.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

All respondents (100%) thought that the sign was easy (19%) or very easy (81%) to understand.

7.5.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 8% (n=8) thought that it could, suggesting:

- Needs more information (n=5);
- Make it bigger (n=2);
- Should have a red cross on it (n=1); and
- Make it clearer (n=1).

Recommendations

- None

7.6 Summary

The height weight and width restriction signs were understood correctly by virtually all respondents (over 9 in 10), with almost all feeling they were easy to understand.

8 Miscellaneous Signs

Capabilities on project:
Transportation

8 Miscellaneous Signs

8.1 Introduction

Three additional signs and signals were covered in the survey; public transport information; wig wags and VMS.

8.2 Sign M1: Public Transport Information

Key Findings

- The majority of respondents understood the general meaning of the sign.
- Although almost half of respondents did not object to signs being used in this way, the majority did not feel that seeing a sign like this would make them more likely to use public transport.

Meaning of Sign as Read to Respondents

This sign is giving information about using the train as an alternative to using the motorway



8.2.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Almost three quarters of respondents understood the general meaning of the sign and got one or more elements of it correct (72%). However, no respondents got all the elements correct, and a third (35%) did not understand the meaning of the sign on any level.

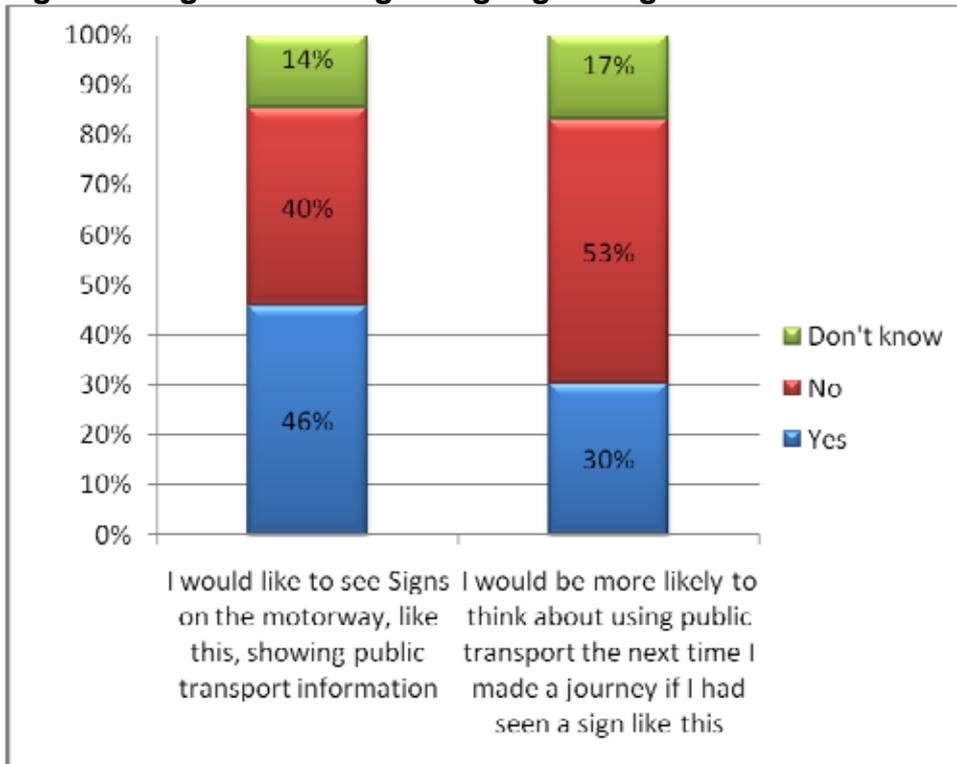
8.2.2 Level of Agreement regarding Sign Usage: Prompted

Respondents were asked about the usage and effectiveness of signs like these through the two statements below.

- I would like to see signs on the motorway, like this, showing public transport information; and
- I would be more likely to think about using public transport the next time I made the journey if I had seen a sign like this.

Capabilities on project:
Transportation

Figure 55 Agreement Regarding Sign Usage and Effectiveness



Base: all respondents shown sign; 201

Just under half of respondents said they would like to see more signs like the above on the motorway (46%). However, over half (53%) of respondents said that seeing these signs would not make them more inclined to use public transport the next time they made a similar journey; showing that although people may not disapprove of the signs, they are unlikely to have a major impact on them.

8.2.3 Ease of Understanding

Respondents were given an explanation of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Over three quarters of respondents (86%) thought that the signs was easy (42%) or very easy (44%) to understand.

8.2.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 17% (n=35) thought that it could, suggesting:

- Make message clearer (n=11);
- Get rid of the sign (n=9);
- Use more contrasting colours (n=9);
- Needs more information (n=7); and
- Needs rewording (n=1).

Capabilities on project:
Transportation

Recommendations

- None

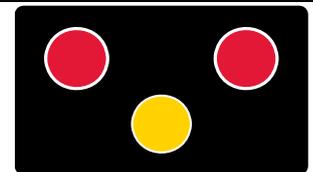
8.3 Sign M2: Wig Wags at Tunnel Portal

Key Findings

- The majority of respondents understood what this sign meant and found it easy to interpret.
- The most frequently mentioned improvement to this sign was to add text/ words to explain the meaning.

Meaning of Sign as Read to Respondents

“Stop. Do not proceed.”



8.3.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Four fifths of respondents (80%) knew that the sign meant they should stop and not carry on. Sixty four percent of respondents explicitly stated that this sign meant ‘stop’, with another 15% stating it meant no entry/ tunnel ahead blocked or not in use.

Twelve percent of respondents thought the sign meant ‘caution’ showing awareness that the sign was warning them but not that it was issuing a direct instruction. Another 12% also related the sign to level crossings and that a train is coming, indicating although the sign was misinterpreted in this instance, respondents should apply the same logic i.e. stopping, when seeing the same sign in a different context.

Forty three respondents did not understand its meaning.

8.3.2 Level of Understanding: Prompted

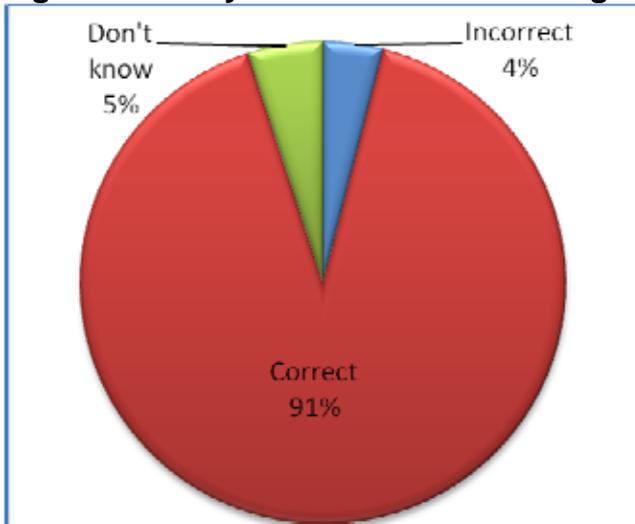
To test comprehension of the sign, respondents were asked:

- Can you proceed past the lights?

Ninety one percent of respondents gave the correct response to the question, showing that the sign was well understood and observed.

Capabilities on project:
Transportation

Figure 56 Can you Proceed Past the Lights?



Base: all respondents shown sign; 224

8.3.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

The majority of respondents (88%) though that the sign was easy (30%) or very easy (58%) to understand.

8.3.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 18% (n=41) thought that it could, suggesting:

- Use words (n=24), including 15 respondents who specifically mentioned having the word 'STOP' flashing instead;
- Use traffic lights instead (n=8);
- Have a red light/ bright red/ continuous light (n=5);
- Use a different type of signal (n=1);
- Audible alarm (n=1); and
- Have a barrier that comes down (n=1).

Recommendations

- None

Capabilities on project:
Transportation

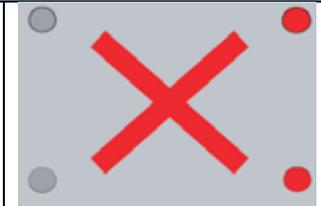
8.4 Sign M3: VMS 6031.1

Key Findings

- The majority of respondents understood the meaning of this sign and found it easy to understand.
- Using words/ writing to explain the sign was the most frequently stated improvement.

Meaning of Sign as Read to Respondents

“Lane closed. Do not proceed past this point.”



8.4.1 Level of Understanding: Unprompted

Respondents were asked unprompted what they thought the sign meant. Ninety two percent of respondents knew that the sign meant lane closed/ do not pass or proceed. Only 9% respondents did not make any correct reference to the actual meaning of the sign and 4% did not know, unprompted, what it meant.

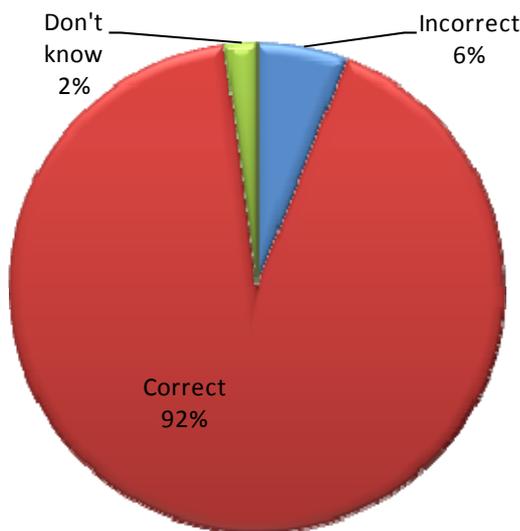
8.4.2 Level of Understanding: Prompted

To test comprehension of the sign, respondents were asked:

- Can you proceed past the sign in the lane with the cross above it?

The majority of respondents (92%) gave the correct response to the question, showing that the sign was generally well understood.

Figure 57 Can You Proceed Past the Sign in the Lane With the Cross Above it?



Base: all respondents shown sign; 212

Capabilities on project:
Transportation

8.4.3 Ease of Understanding

Respondents were given a definition of the sign (see beginning of this section).

They were then asked to bear in mind both the answers they had already given and this definition and state how easy they felt the sign to understand.

Almost all respondents (93%) thought that the sign was easy (29%) or very easy (64%) to understand.

8.4.4 Improvements

Respondents were asked, unprompted, if they thought the sign could be improved; 17% (n=35) thought that it could, suggesting:

- Use words (n=20), including two foreign drivers and one driver who had difficulty understanding English. Suggestions for text to be used included lane closed (n=6), change lane (n=3) and no entry (n=1);
- Make it bigger (n=7);
- Make it easier to understand (n=5); and
- Needs more information (n=4).

Recommendations

- None

8.4.5 Summary

Respondents generally understood the purpose of the Public Traffic Information Sign but less than half (46%) of respondents wanted to see signs like this on the motorway and only 30% thought it would influence their travel behaviour.

Wig Wags were understood by most (91%) of respondents as were VMS lane closed signals (92%).

9 Cyclists Consultation Questions

Capabilities on project:
Transportation

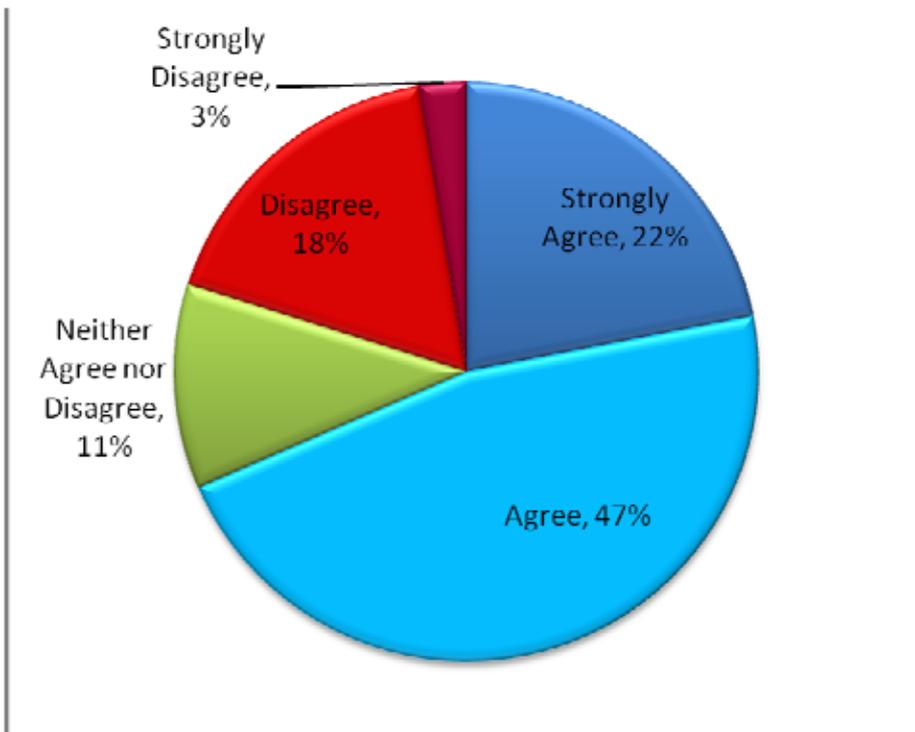
9 Cyclists Consultation Questions

9.1 Introduction

The 114 respondents who cycled were asked whether they agreed or disagreed with a series of statements relating to the signage for cyclists. The responses are detailed below.

9.2 Low Headroom

Figure 35 Agree or Disagree That There Should be 'Low Headroom' Signs Provided Specifically for Cyclists Where Appropriate



Over two thirds (69%) of cyclists agreed that there should be 'low headroom' signs provided specifically for cyclists.

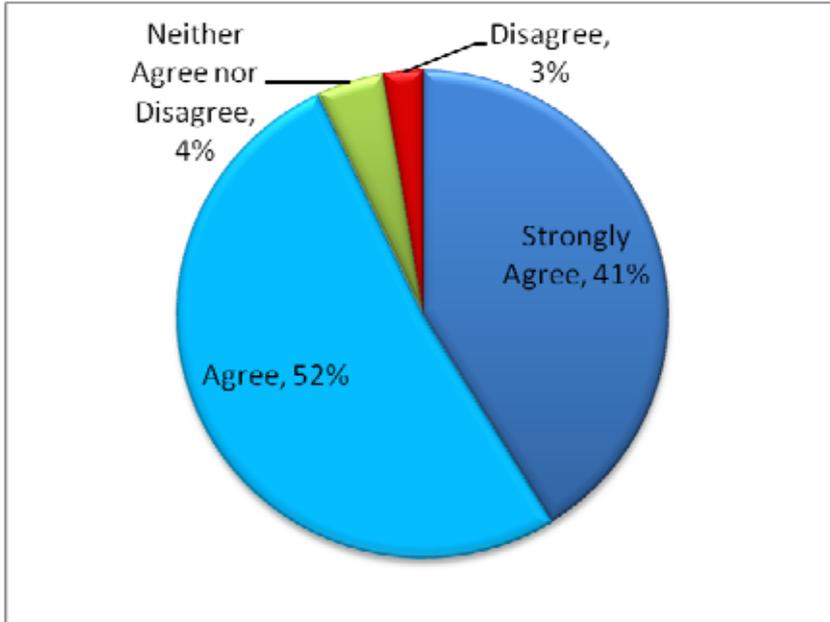
Only a fifth (21%) did not think there should be 'low headroom' signs provided for cyclists.

Base: all cyclists 114

Capabilities on project:
Transportation

9.3 Pedestrian Signs

Figure 36 Agree or Disagree That in Pedestrian Zones Where Cyclists Are Allowed the Signage Should Show That Cyclists are Allowed in the Zone

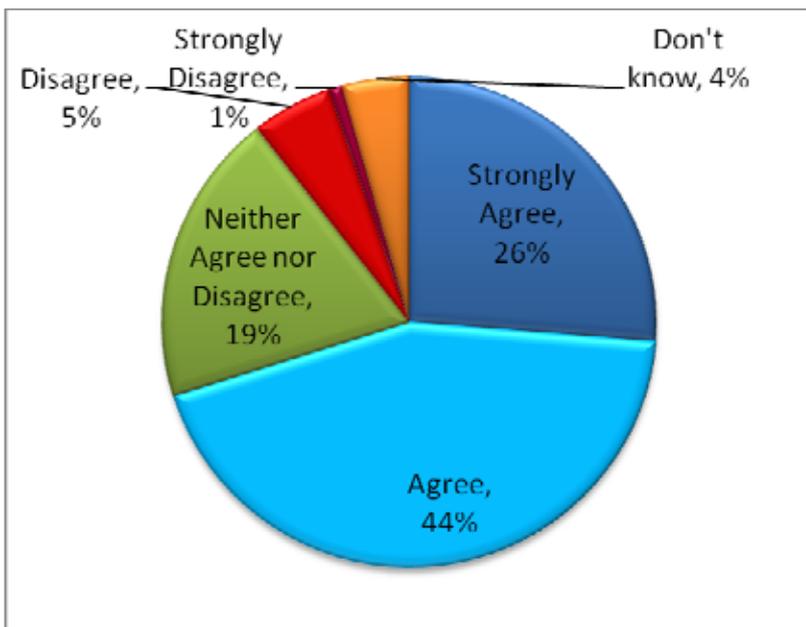


Almost all cyclists (93%) agreed that signs in pedestrian zones where cyclists are allowed should show this explicitly.

Base: all cyclists 114

9.4 Branding

Figure 37 Agree or Disagree That Cycle Routes Should be Given Their Own Route Name and Associated Logo



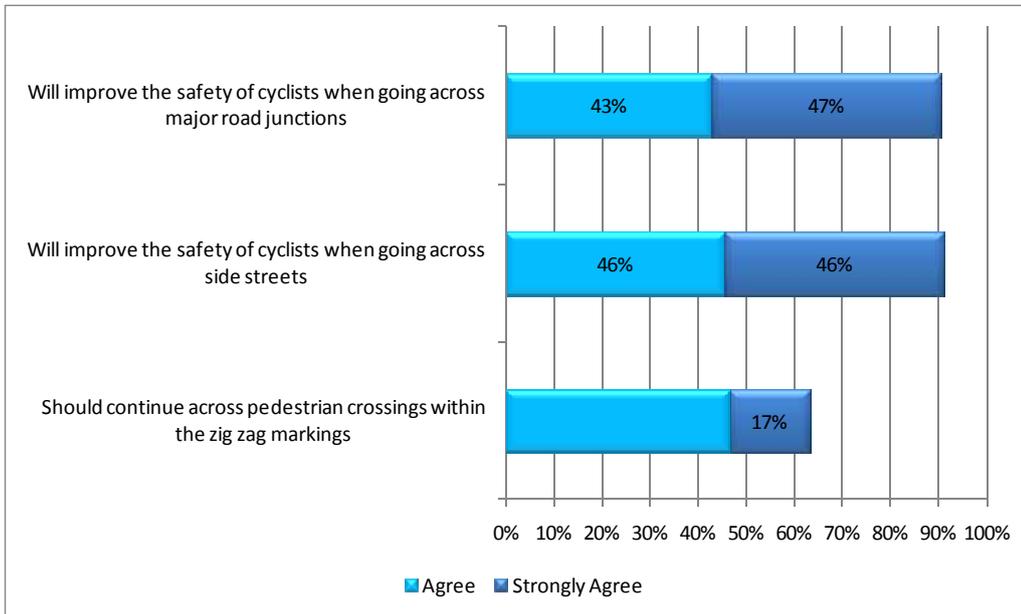
Over two thirds (70%) of respondents agreed that cycle routes should be branded.

Base: all cyclists 114

Capabilities on project:
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9.5 Cycle Routes Across Pedestrian Crossings and Junctions

Figure 38 Agree or Disagree that Cycle Lane Markings



Base: all cyclists 114



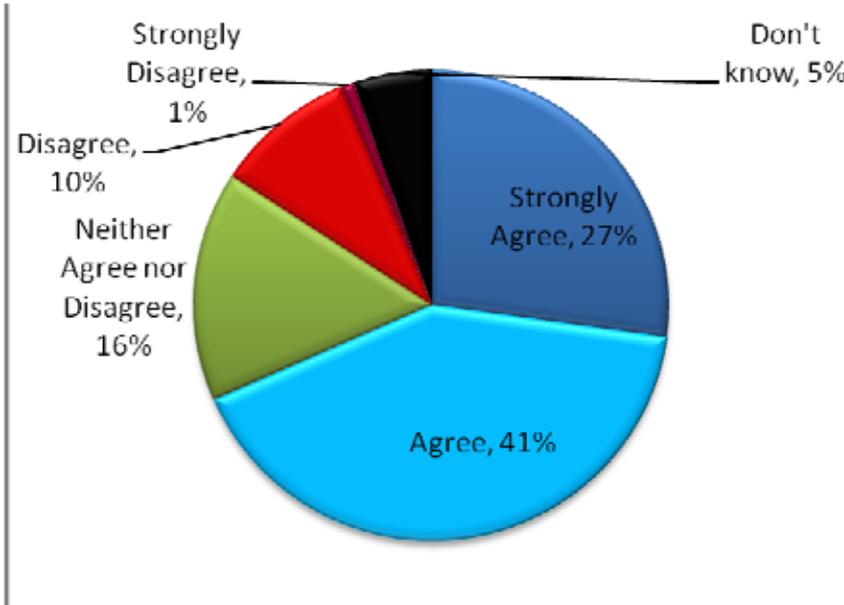
Almost all cyclists felt that cycle lane markings across major road junctions (90%) and side streets (92%) would improve the safety of cyclists.

Almost two thirds (64%) agreed that cycle lanes should continue across pedestrian crossings within the zig zag markings.

Capabilities on project:
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9.6 Direction Signs on Road

Figure 39 Cyclist Direction Signs Should be Painted on the Road Itself

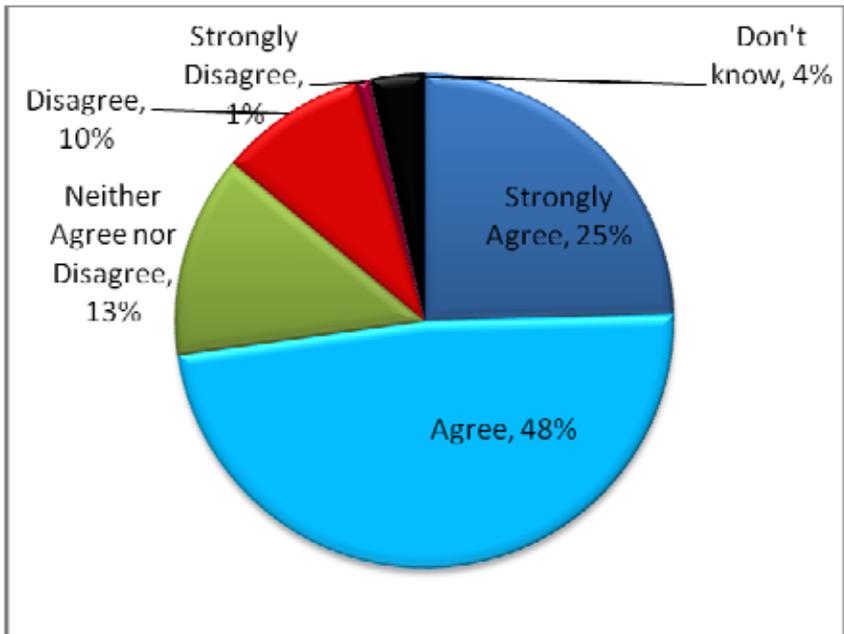


Two thirds (68%) of cyclists agreed that cycle direction signs should be painted on the road itself. Just 11% disagreed.

Base: all cyclists 114

9.7 Cycle Route Diversions Signs

Figure 40 Temporary Cycle Route Signs Should be Placed at Road Works or Other Diversions



Almost four fifths (73%) of cyclists agrees that temporary cycle route signs should be placed at roadworks or other diversions.

Base: all cyclists 114

Capabilities on project:
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9.8 Summary

There was general agreement that the signs and road markings outlined in this section should be provided.

Capabilities on project:
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10 Sign Clutter

Capabilities on project:
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10 Sign Clutter

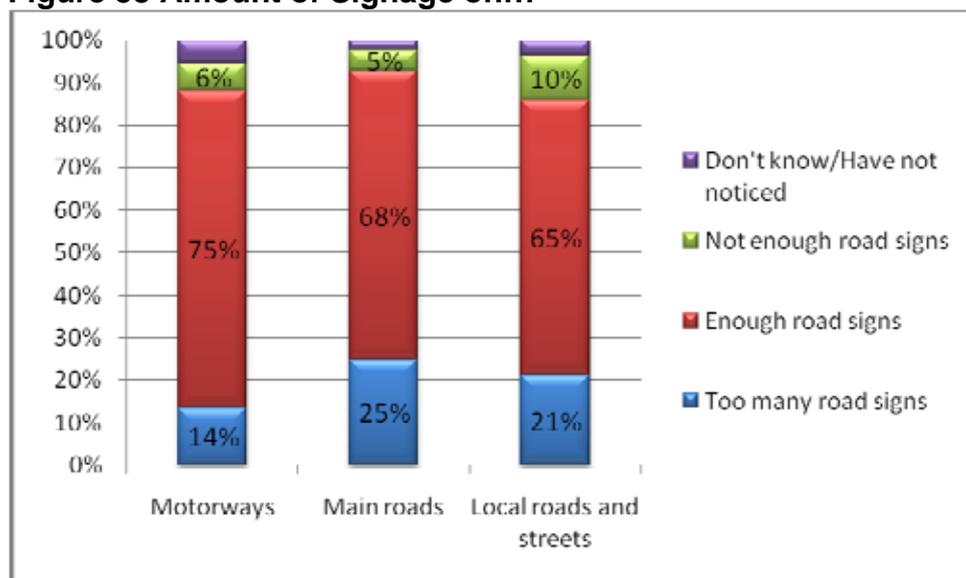
Key Findings

- Overall respondents thought there were enough road signs on motorways (75%) Main roads (68%) and local roads (65%).
- Men, Foreign drivers and drivers who have difficulty reading or understanding English were more likely to feel there are too many road signs.
- Those living in the South East and West were more likely to feel there are too many road signs.

Three questions were asked to ascertain respondents' views on sign clutter on Motorways, Main Roads, Local Road and Streets. Over two thirds of respondents thought there were enough signs on the roads particularly motorways (75%).

A quarter (25%) thought there were too many signs on main roads and a fifth (21%) thought there were too many road signs on local roads and streets. 14% said there were too many signs on motorways. A minority thought there were not enough road signs.

Figure 58 Amount of Signage on...



Base: all respondents (820)

Foreign drivers and drivers who have difficulty reading or understanding English were more likely than others to feel there is too much signage on:

- Motorways (32% each)
- Main roads (44% each)
- Local roads (48% and 44% respectively)

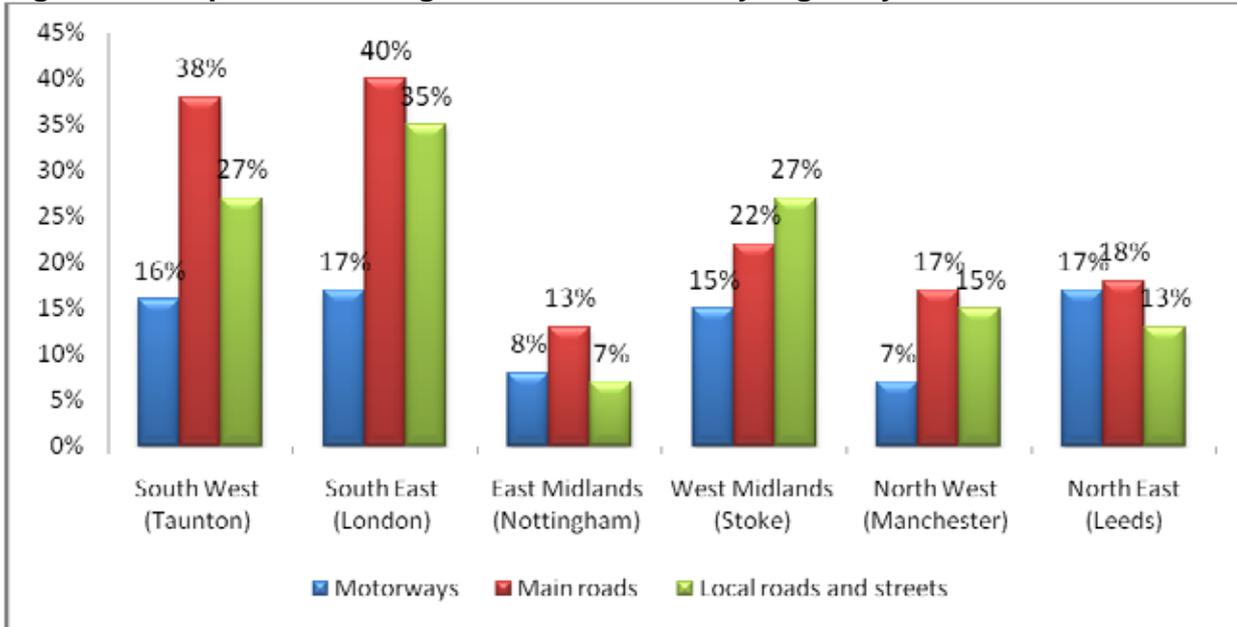
Men were also more likely to feel there are too many signs than women on:

- Motorways (17% & 7% respectively)
- Main roads (29% & 18% respectively)
- Local roads (24% & 16% respectively)

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The largest difference in response was by location. Those living in the South West and South East were more likely to feel there are too many signs particularly on Main Roads (38% and 40% respectively) and those living in East Midlands were the least likely to feel there are too many signs.

Figure 59 Proportion Stating There Are Too Many Signs by Location



Base: all respondents: South West (Taunton), 98; South East (London), 156; East Midlands (Nottingham), 110; West Midlands (Stoke) 117; North West (Manchester), 142; North East (Leeds), 115

11 Conclusions and Recommendations

Capabilities on project:
Transportation

11 Conclusions and Recommendations

11.1 Conclusions

This study has shown that many of the signs under consideration were generally well understood.

Detailed analysis has shown that there are few significant differences in comprehension for different segments of the population. Where there are differences these have been highlighted in the main body of the report.

Respondents showed a good basic level of understanding as to what different types of traffic sign meant. Nine out of ten knew a red triangle sign gave a warning, seven out of ten knew a blue circular sign gave a positive instruction and six out of ten knew a red circular sign generally forbidding an action.

In the context of sign clutter, a minority thought there were too many road signs. A quarter thought there were too many road signs on main roads, One in five thought there were too many on local roads.

Respondents tend to have most difficulty with Parking Signs which are generally complex and wordy, covering different messages

However the study has shown that a number of common issues emerging which affect sign comprehension.

- **Unwritten Information:** Respondents tend to be unsure about what they can do outside the conditions shown on the sign. For example where a sign shows times, there tends to be uncertainty about what is permitted outside these hours. Where a sign relates to motorised modes, there is less certainty about whether cyclists or pedestrians are allowed.
- **Sign Complexity:** Where signs are complex and cover a number of different elements, respondents' comprehension drops. This is particularly the case where there are different time restrictions as in the case of many parking signs. The level of comprehension from dynamically presented signs which contain information about time of operation is generally lower than the static presentation. The difference in comprehension between static and dynamic presentations for signs which do not have times of operation is less pronounced thus highlighting the difficulty of capturing more than a small amount of information when moving past a sign. Simple signs are more easily understood.
- **No Waiting/Stopping/Parking:** There is general confusion as to the differences between these terms which tend to be used interchangeably by respondents.
- **No waiting:** Generally, respondents did not recognise the no waiting symbol unprompted. However; their comprehension was enhanced by the use of the words 'No waiting' on the restricted zone signs that were examined in this study; if this sign is used without wording prompts however people may not be aware of what this sign means.
- **Use of Bar on Signs forbidding particular behaviour:** Where it has been possible to compare the level of comprehension using a red circle with and without a bar (in the case of no pedestrians or no motor vehicles), it was found that although the addition of the bar does increase comprehension the level of comprehension without the bar is already very high (understood by at least 8 in 10). This would suggest that a bar may not necessary.

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11.2 General Recommendations

Specific recommendations for each sign can be found in the appropriate sections however; we would recommend the following, in general, when drafting road signs:

- **Be Explicit:** don't leave the public to 'second guess' any unwritten information. On parking signs many respondents were confused about what is allowed outside the times shown on the sign. On other signs respondents were confused as to what was allowed to pass.
- **Keep signs simple;** a large number of time zones or types of restrictions confused respondents and/or meant they could not be bothered to read it. This resulted in respondents not assimilating the information provided. The qualitative interviews showed respondents would rather have more onerous restrictions than multiple time bands.
- **Use words where commonly misunderstood symbols are used:** respondents generally preferred symbols to be used however; in the instance on some particularly 'no waiting' where there is a high level of misunderstanding words should be used.