



UNIVERSITY OF LEEDS

School of Computing
Faculty of Engineering

Assessed Coursework Header/Feedback Sheet

This form should be
completed and
submitted with each
piece of assessed
coursework.

To be completed by the student submitting work
(please make sure that you complete ALL fields)

Module Code

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Module Title

Information Visualisation

Coursework
Number

Coursework 2

Name of Lecturer
Marking Work

Roy Ruddle

****You must fill this in****

Deadline Date

05/12/19

Date Handed In

05/12/19

My signature here confirms acceptance of the
declaration of academic integrity printed
overleaf.

**Student
Name:**

Martin Efuk 201382271

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Fotis Mitsigkas 201150259

Signature:

M. Efuk

S. Ghelich

Luca Sas

F. Mitsigkas

**SID
Number:**

You must make sure that you have
read the declaration of
academic integrity.

Feedback section to be completed by the marker

Section	Marks Available	Marks Awarded	Comments on sections
Total			
Late Penalty (marks to be deducted)			

General Comments on Work

Declaration of academic integrity

Further information about plagiarism, fraudulent or fabricated coursework and malpractice in University assessments is available at:

<http://www.leeds.ac.uk/aaandr/cpff.htm>

I am aware that the University defines plagiarism as **presenting someone else's work, in whole or in part, as your own**. Work means any intellectual output, and typically includes text, data, images, sound or performance.

*(On the understanding that other members of the group have made contributions to the attached submission,)** I promise that in the attached submission I have not presented anyone else's work, in whole or in part, as my own and I have not colluded with others in the preparation of this work. Where I have taken advantage of the work of others, I have given full acknowledgement. I have not resubmitted my own work or part thereof without specific written permission to do so from the University staff concerned when any of this work has been or is being submitted for marks or credits even if in a different module or for a different qualification or completed prior to entry to the University. I have read and understood the University's published rules on plagiarism and also any more detailed rules specified at School or module level. I know that if I commit plagiarism I can be expelled from the University and that it is my responsibility to be aware of the University's regulations on plagiarism and their importance.

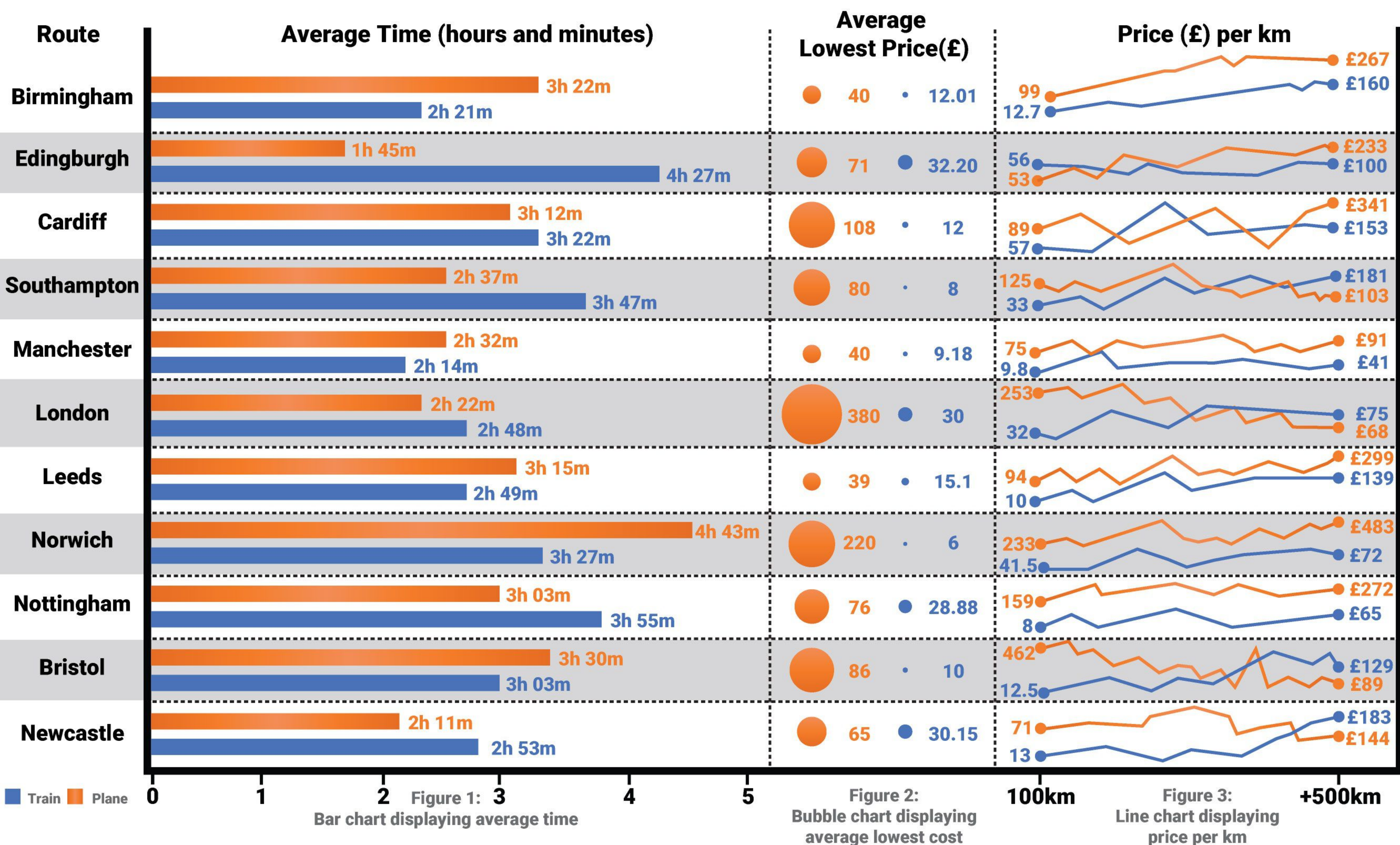
I re-confirm my consent to the University copying and distributing any or all of my work in any form and using third parties (who may be based outside the EU/EEA) to monitor breaches of regulations, to verify whether my work contains plagiarised material, and for quality assurance purposes.

I confirm that I have declared all mitigating circumstances that may be relevant to the assessment of this piece of work and that I wish to have taken into account. I am aware of the University's policy on mitigation and the School's procedures for the submission of statements and evidence of mitigation. I am aware of the penalties imposed for the late submission of coursework.

**For the submission of group work*

Penalties for late submission

University rules on penalties for late submission of coursework require 5% of the total marks available to be deducted for each calendar day that passes after the date of required submission. The deduction will be applied to the grade/mark for the coursework component concerned before any conflation with other grades/marks to give the overall result for the module. If coursework is not submitted by the end of 14 calendar days following the prescribed deadline, a grade/mark of zero should be returned for that component.



Data was collected to investigate how Travel Time and Cost vary between train and plane. From a summary of the data provided, it can be calculated that, *on average*, train travel time peaks in Edinburgh while plane travel time is highest from Norwich – as shown in Figure 1. Upon further investigation it was evident, as shown in Figure 5, that plane journeys from Norwich were also the most expensive on average. However, this finding must be interpreted with caution. After examining train costs from Edinburgh, it became apparent that there were no *strong* correlations between travel time and travel cost – both seemed to fluctuate amongst the regions.

Data on the lowest average price implies that train travel is almost always cheaper, as shown in Figure 2, there is great disparity amongst the two modes. It is key to consider overnight flights, such journeys increased the overall ticket price for a journey – includes accommodation etc. Figure 3 indicates the opposite, 4 of the 11 price results show that train journeys can in fact be more expensive than flight. Flights from London and Bristol start at high prices and then decrease drastically as the journey gets further from the origin – while for regions such as Cardiff and Edinburgh, this happens the opposite way.

Origin	Destinations										
	Birmingham	Bristol	Cardiff	Edinburgh	Leeds	London	Manchester	Newcastle	Norwich	Nottingham	Southampton
Birmingham		56.6	59.1	100.0	31.8	35.0	43.5	115.9	45.5	34.2	80.6
Bristol	57.8		6.0	129.5	60.1	35.4	36.2	124.0	165.1	74.0	12.5
Cardiff	59.1	11.0		56.0	65.1	47.3	42.5	179.3	183.3	105.2	21.0
Edinburgh	41.0	92.1	92.1		100.8	47.0	15.5	12.7	72.5	65.0	153.7
Leeds	58.4	107.2	42.5	36.4		65.0	10.8	20.1	104.0	18.5	139.6
London	7.0	80.0	91.5	73.0	29.0		44.0	56.5	10.0	47.0	32.4
Manchester	41.0	92.3	42.5	20.5	9.8	81.0		22.7	99.9	20.1	123.7
Newcastle	115.9	171.8	163.6	13.5	22.9	165.0	22.7		55.0	40.0	177.0
Norwich	45.5	165.1	183.3	72.5	41.5	45.0	39.4	67.5		23.4	116.9
Nottingham	32.4	81.3	105.2	65.0	8.0	47.0	14.4	40.0	23.4		143.3
Southampton	89.7	16.0	23.0	181.0	130.1	33.4	123.7	160.4	86.1	98.2	

Figure 4 - heat map of average price for train trips

	Destinations										
	Birmingham	Bristol	Cardiff	Edinburgh	Leeds	London	Manchester	Newcastle	Norwich	Nottingham	Southampton
Birmingham		40	99	99	378	197	40	267	267	157	251
Bristol	85		462	94	119	216	70	93	522	99	220
Cardiff	341	110		89	296	278	317	348	312	219	320
Edinburgh	127	78	148		97	233	76	323	233	154	153
Leeds	311	76	166	299		152	91	257	500	98	157
London	298	40	99	68	297		144	195	428	39	253
Manchester	44	40	101	91	75	145		289	238	157	89
Newcastle	300	114	150	174	71	226	119		560	297	144
Norwich	483	591	312	233	477	278	221	328		552	261
Nottingham	60	55	134	159	88	211	60	272	418		286
Southampton	359	111	347	103	157	125	231	278	296	227	

Figure 5 - heat map of average price for plane trips