

My project The experience Reflections

MSc in Data Science Birkbeck College London



2 Years 7 Modules 1 project





Where did you come from, where did you go, where should you go to treat that broken elbow: A tool exploring proximity to and demand on health services.

Author: Katie Davidson Supervisor: Alessandro Provetti

Report submitted in partial fulfilment of the requirement for the MSc in Data Science

Birkbeck, University of London
Department of Computer Science and Information Systems
September 2018

This report is substantially the result of my own work, expressed in my own words, except where explicitly indicated in the text. I give my permission for it to be submitted to a Plagiarism Detection Service.

This report may be freely copied and distributed provided the source is explicitly acknowledged.



30 pages 6,580 words

Contents

10. Appendices

A. Additional functionality considered in Phase 1
 B. Variables from Hospital Episode Statistics
 C. Unnecessary attendance filters

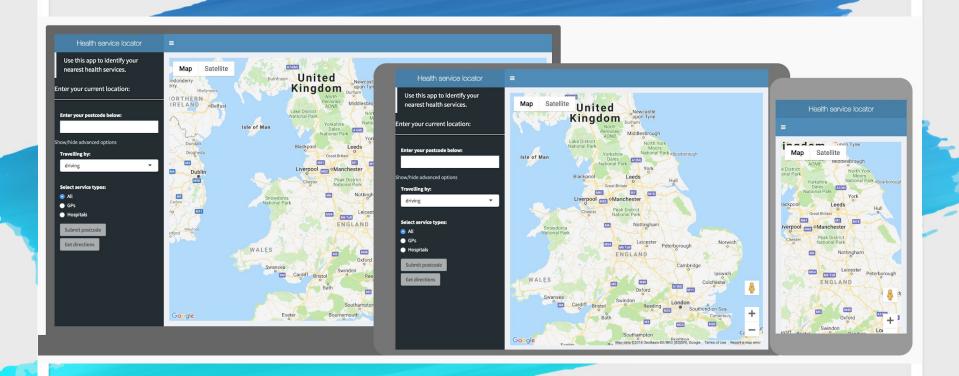
Abstract	2
1. Background	5
1.1. Demand on National Health Service	5
1.1.1. Demand on emergency care	5
1.1.2. Defining and quantifying inappropriate demand	6
1.1.3. The issue of accessibility and convenience	6
2. Problem statement	7
3. Project identification	7
3.1. Project aims	7
3.2. Project deliverables	8
4. Literature review	8
4.1. Related Analysis	8
4.1.1. Defining Unnecessary Attendances	8
4.1.2. Exploring access to services and GPs specifically	9
4.2. Existing solutions review	9
4.2.1. England's SHA locator	10 10
4.2.2. NHS choices service search4.2.3. Zambian web based GIS for health facilities mapping, monitoring and	10
reporting:	12
4.2.4. Barrow in furness map of travel distance from GPs and hospitals	13
5. Solution Design	13
5.1. Proposed System architecture	13
5.2. The travel time and nearest point algorithms	14
5.2.1. Travel times	14
5.2.2. Detailed route directions	15
5.2.3. The shortlist algorithm	15
5.3. User interface	15
5.4. The proximity analysis	16
6. Technical implementation	17
6.1 The map generation	17
6.2. Data access, transformations and storage 6.2.1. Hospital Episode Statistics	17 17
6.2.1.1. Data limitations	17
6.2.1.2. Mitigation of limitations	18
6.2.1.3. Building patient location	18
6.2.1.4. Defining unnecessary	18
6.2.2. Health services location data	18
6.2.3. Building travel time data	18
6.3. Platforms and languages assessment	19
6.3.1. Phase 1 - nearest service application	19
6.3.1.1 Pros and cons comparison of the two options	19
6.3.2. Phase 2 - proximity analysis	20
6.4. Testing	20
7. Project management	20
7.1. Delivery methodology	20
7.1.1. Methodology selected and rationale	20
7.2. Stages	21
7.3. Project timeline	22
7.3.1. Indicative sprint cycle	22
7.3.2. Indicative sprint timeline	22 23
7.3.3. Example sprint structure for phase 1 7.4. Risk register	23
8. Glossary:	24
9. Bibliography	25

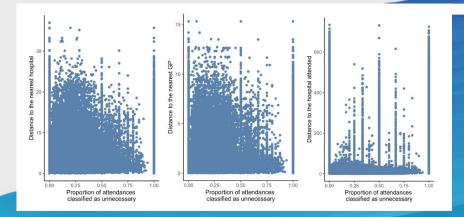
Public facing health service locator tool.

Analysis of historic A&E attendances data to explore the relationship between proximity to and demand on A&Es.

Abstract

Exploring the impact of distance from health services on demand. This project has two phases, the creation of a public facing health service locator tool and an analysis of historic A&E attendance data to explore the relationship between proximity to and demand on A&Es. This analysis aimed to further the understanding of why people unnecessarily attend A&E. Specifically looking at the impact of distance travelled in the hope of adding to existing research on the general public's interaction with local health services. The public facing tool provides travel time and distance estimates from a specified location to a range of local health services via different modes of transport. The aim of the tool is to better inform potential patients of the range of services available to them to minimise unnecessary attendances at A&E.





lm(formula = prop_unnec ~ act_dist_hosp + dist_hosp +
nearest_hosp_att, data = HES_comb_w)

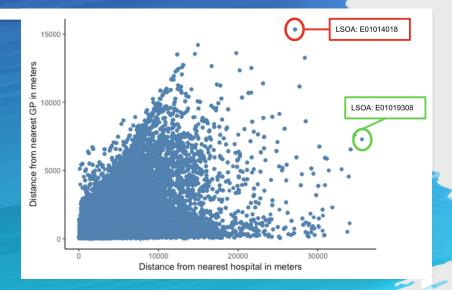
Coefficients:

Estimate Std. Error t value Pr(>|t|)
(Intercept) 2.322e-01 1.210e-03 191.942 < 2e-16 ***
act_dist_hosp 3.401e-04 7.493e-06 45.382 < 2e-16 ***
dist_hosp -1.533e-03 2.124e-04 -7.219 5.26e-13 ***
nearest_hosp_attTRUE 1.877e-02 5.144e-03 3.648 0.000264 ***

Residual standard error: 0.3659 on 227797 degrees of freedom
Multiple R-squared: 0.009052, Adjusted R-squared: 0.009039

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

F-statistic: 693.6 on 3 and 227797 DF, p-value: < 2.2e-16





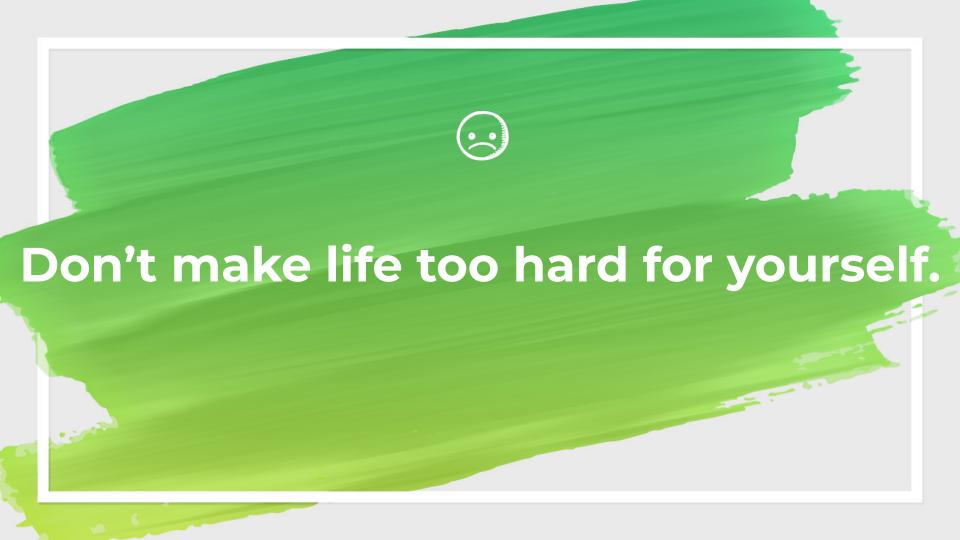


Don't sprint when you are running a marathon.









Reflections



What's most important isn't always what's most interesting to you.







Don't be upset with the results you didn't get with the work you didn't do.





