



The Society for Location Analysis



Sponsored by **CBRE**

Location analysis for service delivery planning in the public sector

Birmingham City Council, 12th November 2013

Adapting retail location planning techniques for the public sector

Dr Steve Scholey

Customer Intelligence

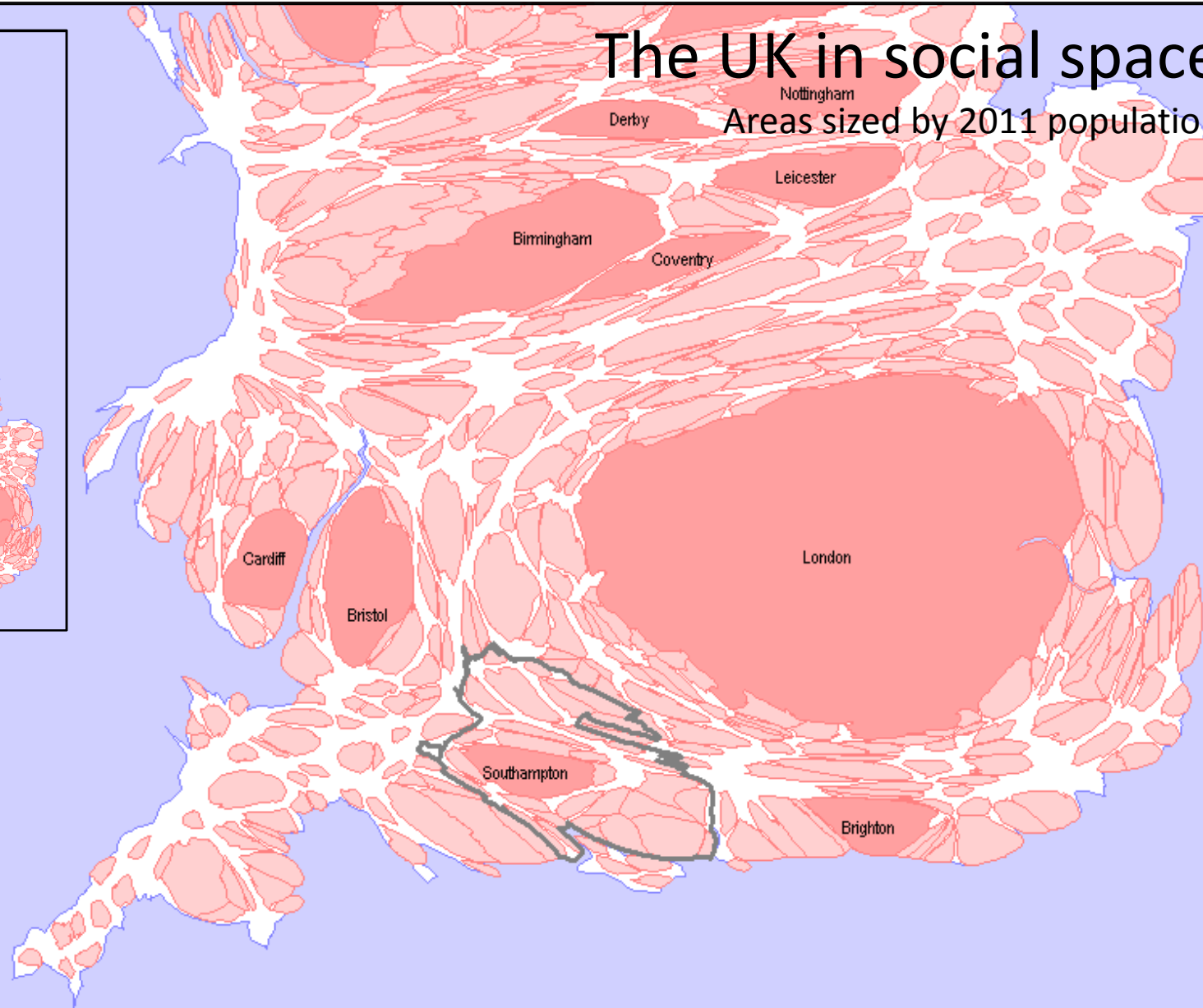
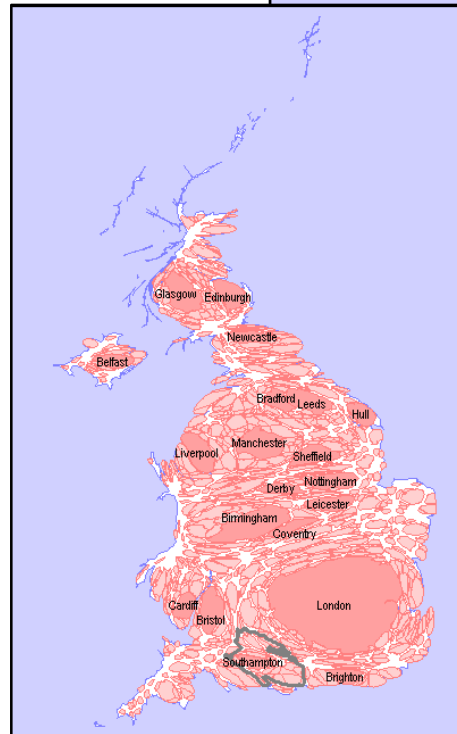
Hampshire County Council



Hampshire
County Council

The UK in social space

Areas sized by 2011 population

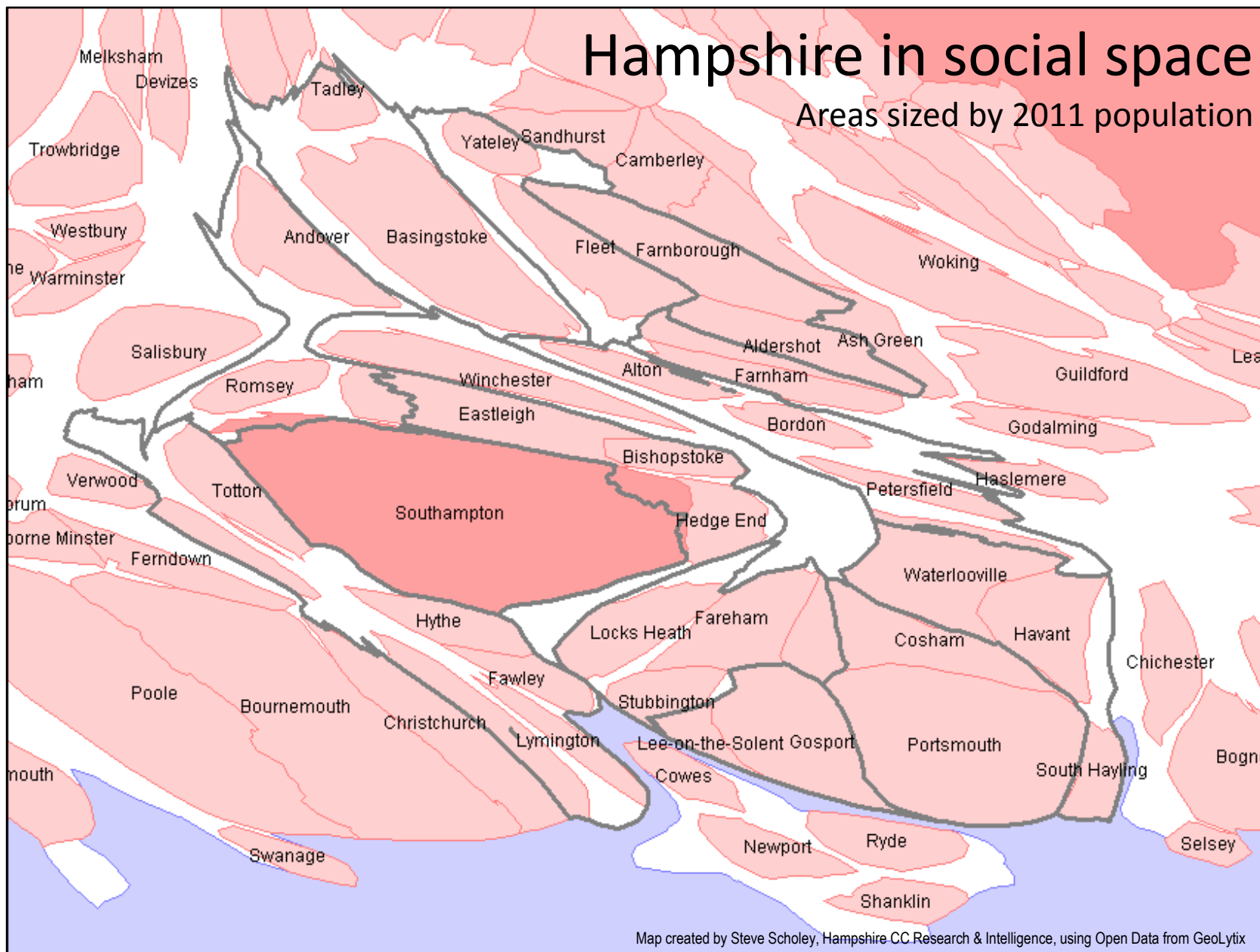


Map created by Steve Scholey, Hampshire CC Research & Intelligence, using Open Data from GeoLytx

- Top 20 cities
- Urban sprawl
- Hampshire

Hampshire in social space

Areas sized by 2011 population



- Top 20 cities
- Urban sprawl
- Hampshire LAs

customers / service users / visitors

1. Where are they from?

location analytics

2. Who are they?

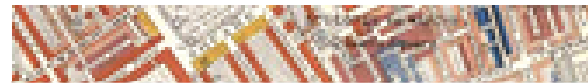
customer insight -
geodemographic
segmentation

Starting point for both
is typically address / postcode

A geodemographic segmentation...

- is based on the '*birds of a feather*' principle
- has groups generated from *cluster analysis* of customer data
(a model of statistical likelihood, not a certainty)

- can be *visualised* on maps...
...and through pen portraits

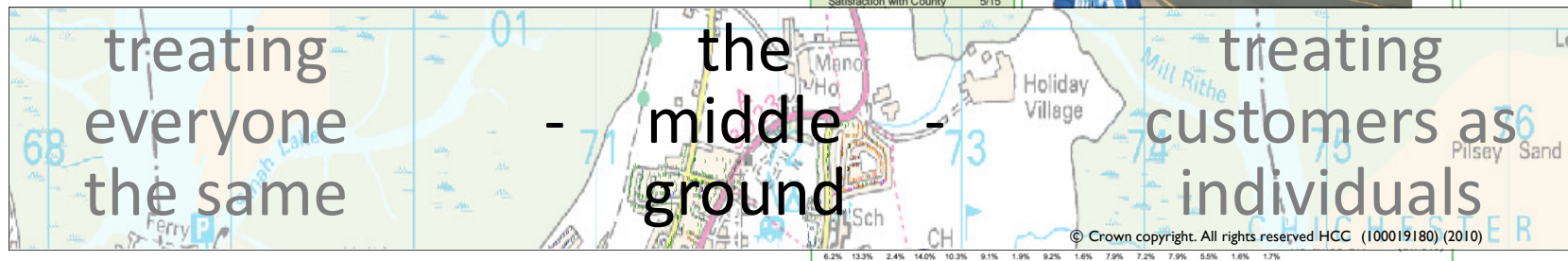


- provides a manageable basis for understanding the needs, interests, behaviour and choices of individuals in each group...

...and for targeting communications and resources

Group B: Residents of small and mid-sized towns with strong local roots

Key features	Might look like	Communication channels
<ul style="list-style-type: none"> Strong local roots Lower incomes Varying ages Home ownership Good quality housing Small towns Traditional Mid-market papers Grandchildren 		<p>Most likely to respond to:</p> <ul style="list-style-type: none"> Brand face-to-face This Group prefer to engage with suppliers face-to-face as they like to feel they have a personal relationship with their doctors, opticians, local police and other service providers. They have a strong loyalty to each other and their community. They favour face-to-face interaction for both acquiring information and accessing service channels. Local newspapers Readership of local newspapers within Group B is high and local papers are viewed as a valuable source of information, making this a potential low-cost contact option. Magazines This Group are likely to read magazines and can be expected to respond to information consumed through this media.



Hampshire
and Isle of Wight
improvement
and efficiency
customer insight partnership



Case study: Early Years Planning

- Government target to increase places for 2 year olds –
from <1,000 up to 2,100 in 2013, 4,200 in 2014
- Qualification based on eligibility for Free School Meals (FSM)
- About 10% of pupils eligible for FSM (Jan 2012)
– so of ca. 16,000 2 year olds, only 1,600 qualify – short of target
 - **Demand:** Who? Where?
 - **Supply:** Enough places, in the right places?



Demand – who? Compare with other indicators



Area profile, Mosaic Public Sector 2011 (Household level)

Version 11.3, May 2012

Troubled Families

Pupil exclusions

FSM eligible

Mosaic Group (Public Sector 2011)

	Index	Representation	Target size
A	21		
B	62		
C	12		
D	27		
E			
F			
G			
H			
I			
J			
K			
L			
M			
N	14		
O	78		
u			

Index

Representation

Target size

Index

Representation

Target size

Index

Representation

Target size

Index

Representation

Target size

Group N



Group K



Group I



Group O



Total

Demand – where?

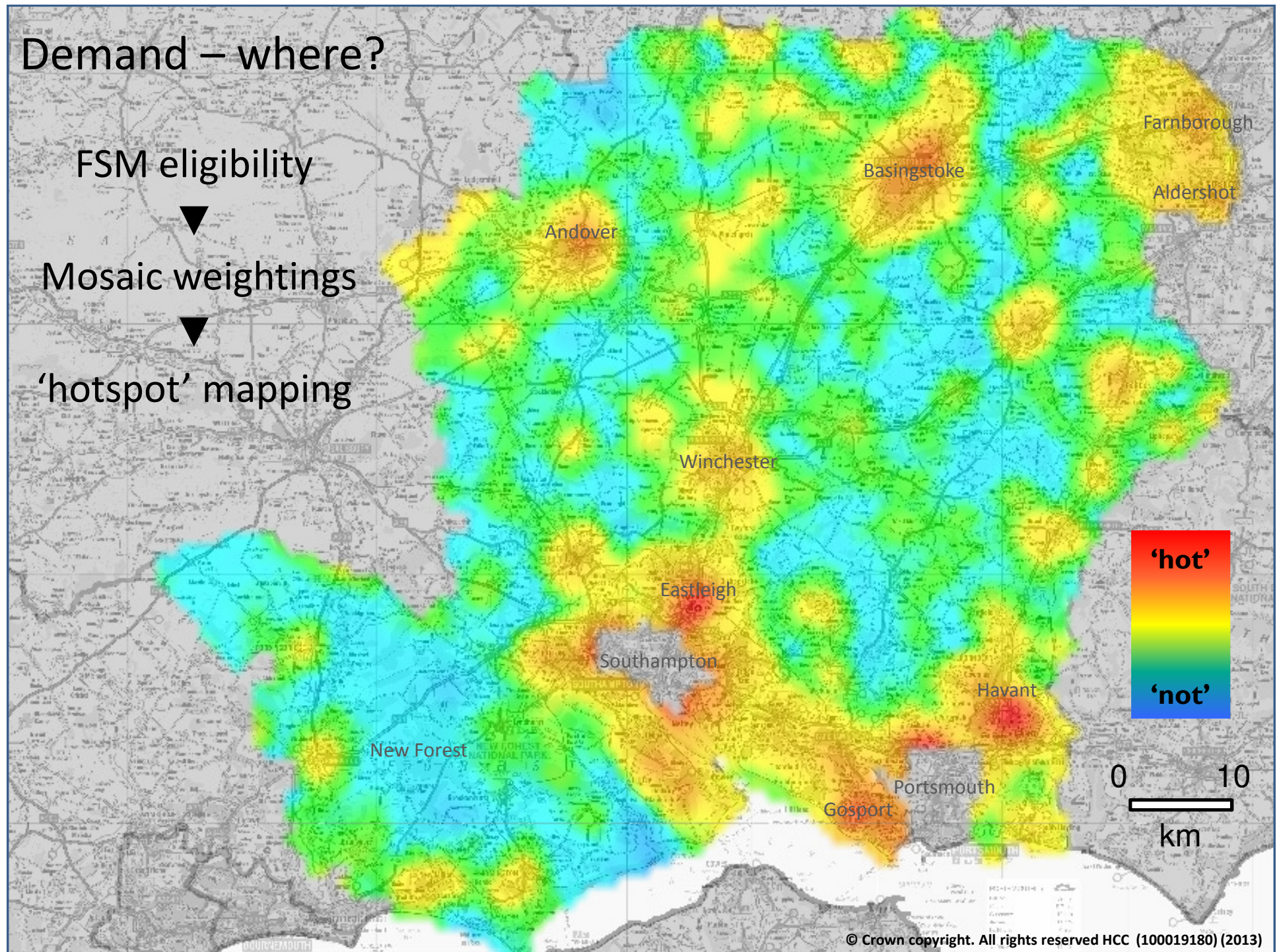
FSM eligibility



Mosaic weightings

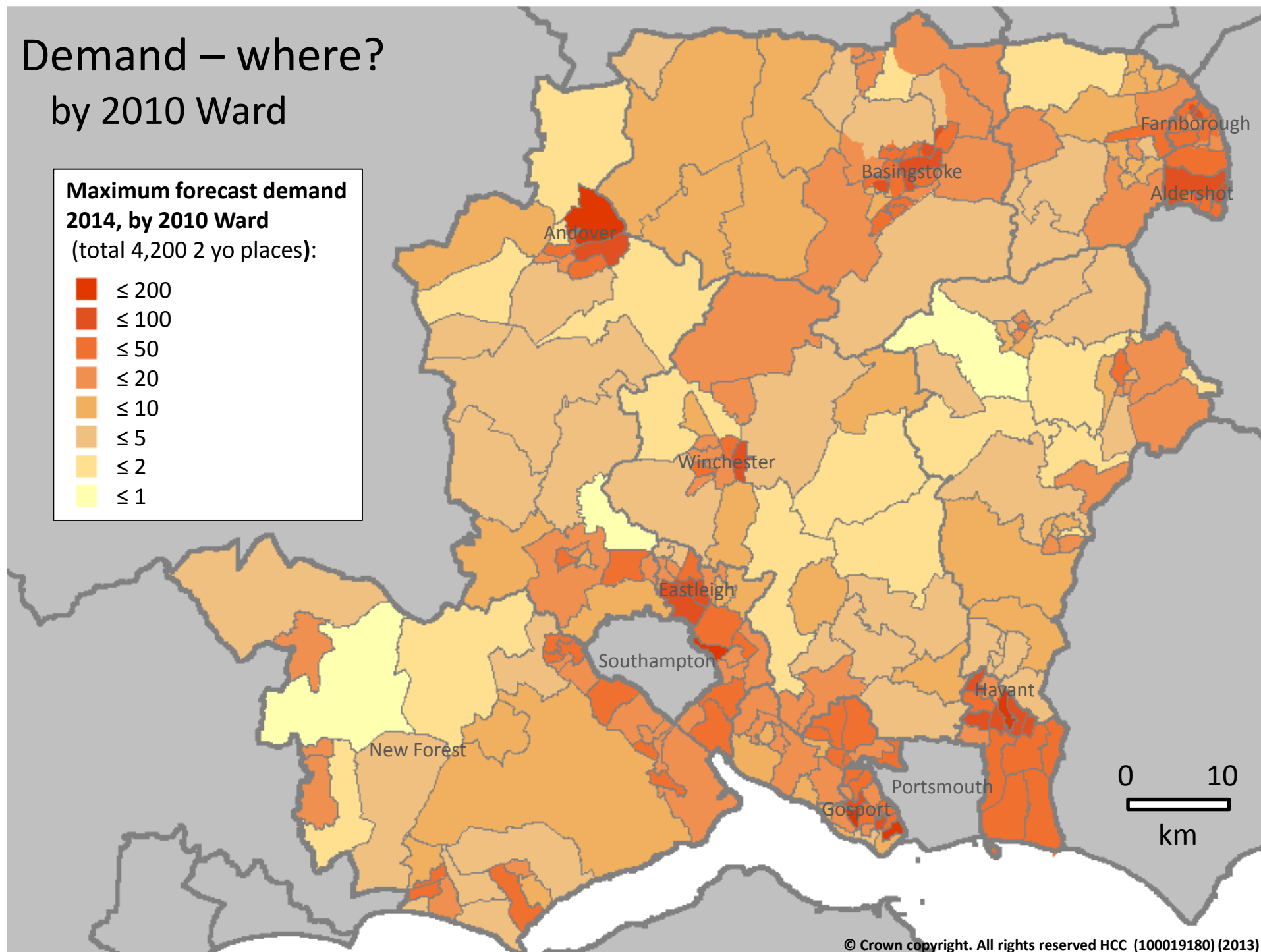
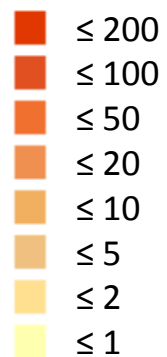


'hotspot' mapping



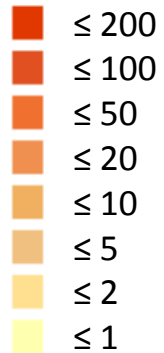
Demand – where? by 2010 Ward

**Maximum forecast demand
2014, by 2010 Ward**
(total 4,200 2 yo places):

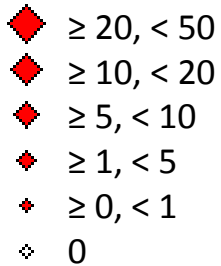


To meet forecast **Demand**, **Supply** needs to double

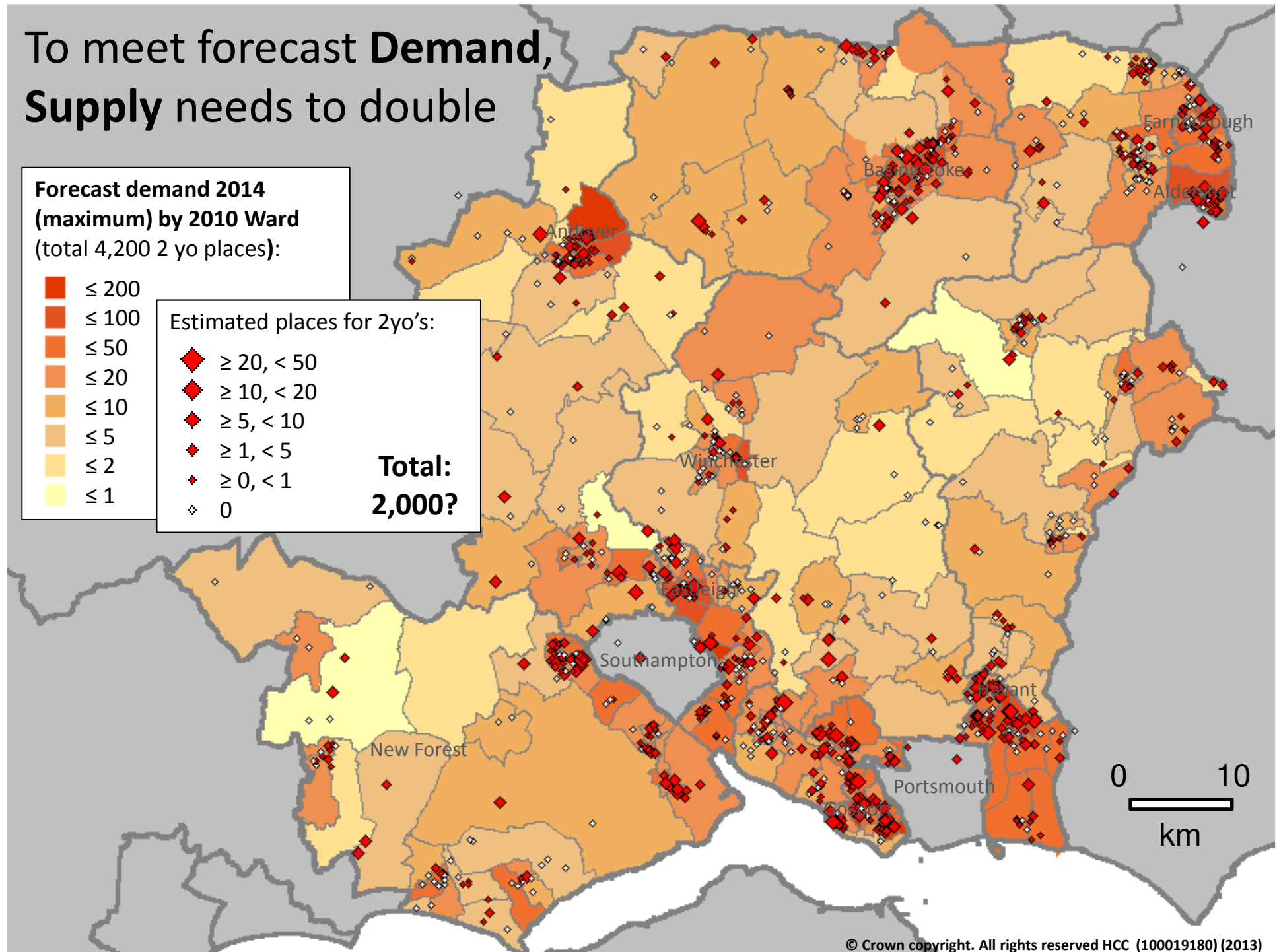
**Forecast demand 2014
(maximum) by 2010 Ward
(total 4,200 2 yo places):**



Estimated places for 2yo's:



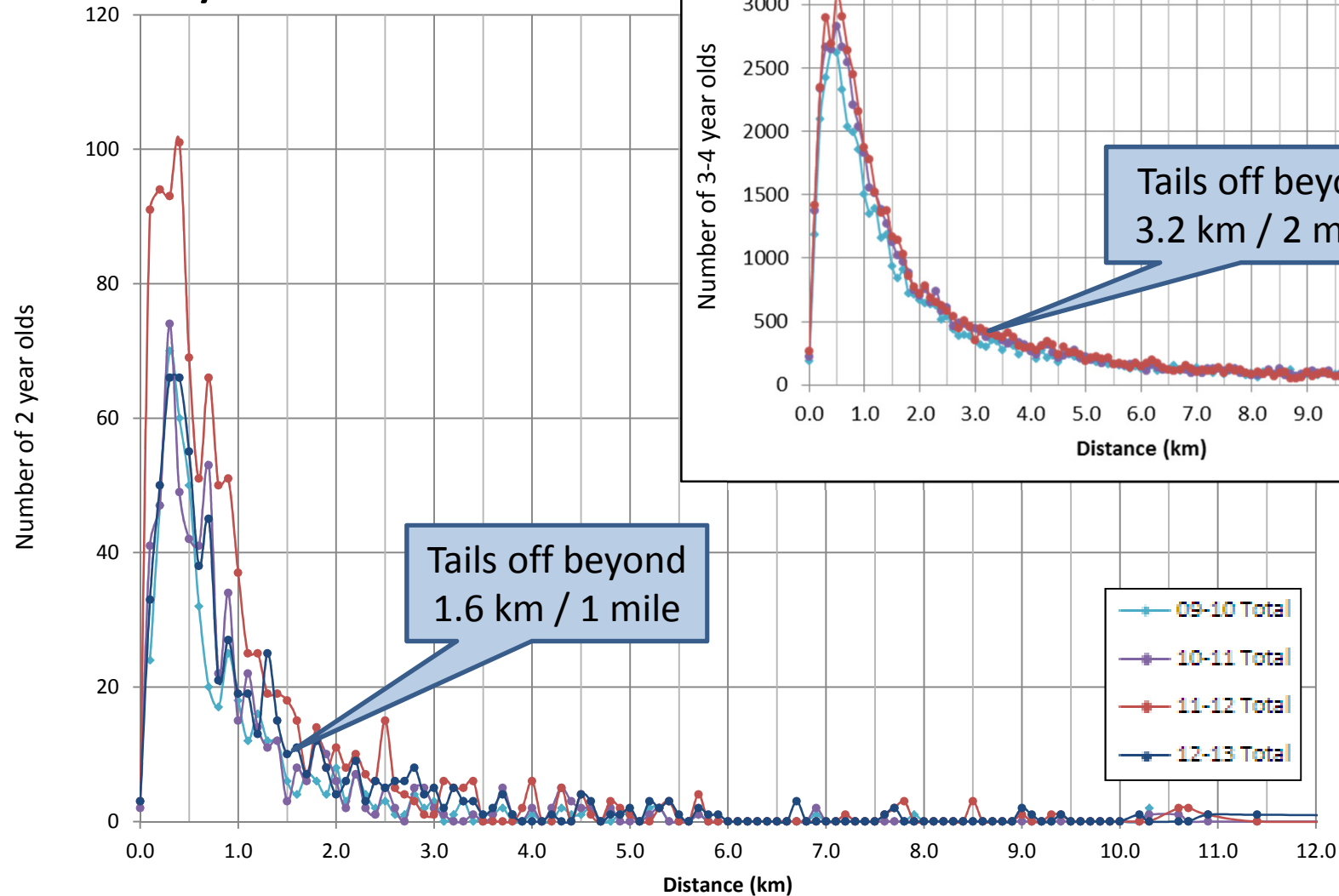
**Total:
2,000?**



How far will parents travel?

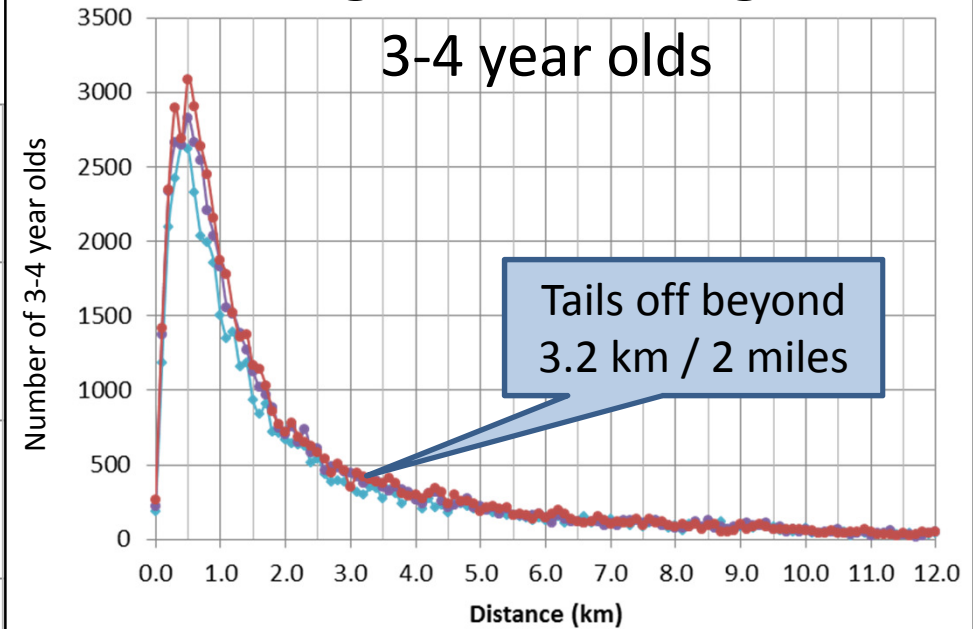


2 year olds



Might this change?

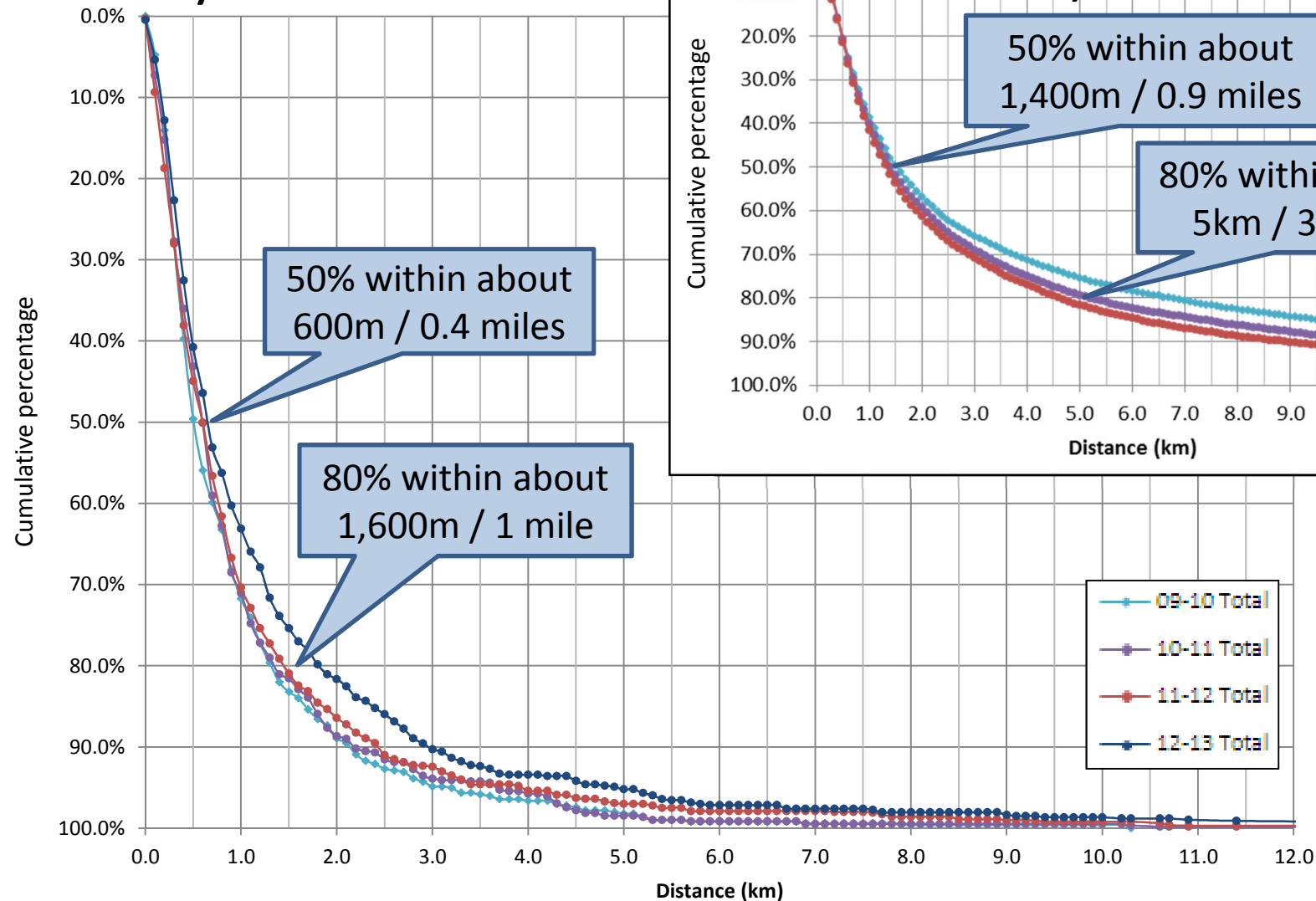
3-4 year olds



How far will parents travel?

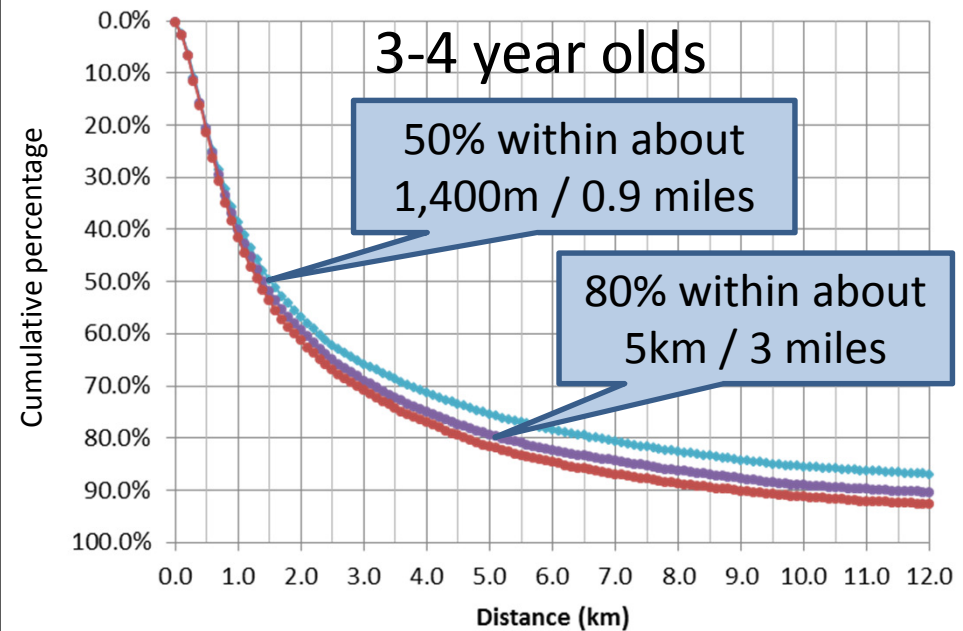


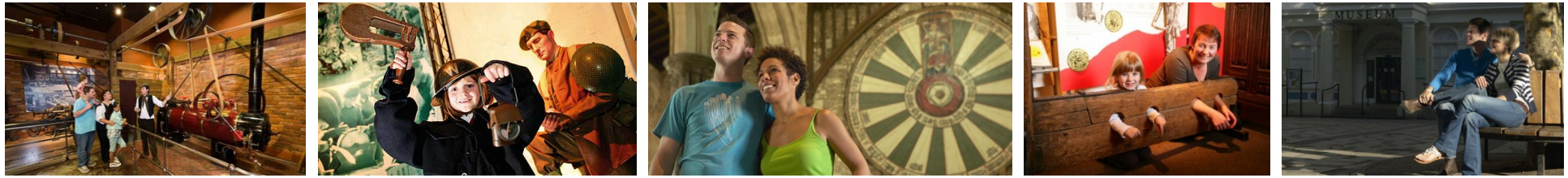
2 year olds



Might this change?

3-4 year olds

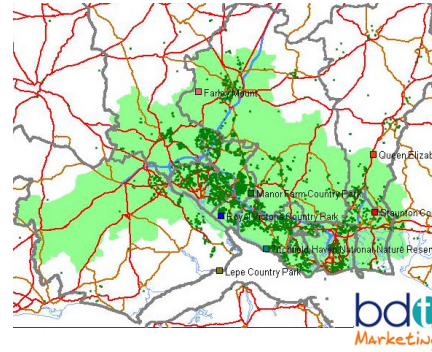




Case study: Visitors to Museums and Country Parks

1. Where are they from?

location analytics



Starting point for both
= address / postcode

2. Who are they?

customer insight -
geodemographic
segmentation

Experian

B. Professional Rewards

F. Suburban Mindsets

D. Small Town Diversity

G. Careers and Kids

M. Industrial Heritage

I. Ex-Council Community

H. New Homemakers

O. Liberal Options

C. Rural Solitude

N. Terraced Meeting Point

E. Active Retirement

A. Alpha Territory

L. Liberty Needs

More on Experian's Mosaic UK Groups at:
http://www.experian.co.uk/assets/business-strategies/Business/Mosaic_UK_2009_brochure.pdf

	A	B	C	D	E
1	TW10	RG278JB	RG9JU	U.S.A	
2	P061AA	GU322DJ	RG213ET	SO321DB	
3	GU1AA	GU322DJ	RG213ET	GU4EY	
4	RG217RU	RG224TB	HP19IBG	GUS2OYE	
5	SO30451	PO14IEW	NR210LX	RG87BV	
6	SO509PS	RG264QE	NG82WX	RG9FB	
7	RG23 7DHGU146LS	SO506AD	RG237JQ	RG263AT	
8	RG1 5EX	RG237B7	19150 (France)	GU17 0EP	
9	PO144JL	ST47HH	RG23 5NPSO5QY	SO22 4QS	
10	SW1W9JJSO515QY		RG24B7G	RG8LZ	
11	RG18UT	Canada	RG213ET	DMT 7AJ	
12	RG247ET	EX239LZ	RG225HD	RG247EF	
13	S053 1HD	S055 3GG	SO30 2RX	GU51 5TA	
14	BH23 2RU	RG7 2PY	SO12 1TT	RG22 5BA	
15	RG24 8XB	BH23 1AA	SP11 8HH	RG26 4ET	
16	RG22 4RZ	RG22 5EN	RG269SG	GU2 9SW	
17	RG24 TBY	RG21 4BQ	RG24 9PY	GU14 7EZ	
18	RG8 8RY	RG23 7JZ	RG22 6RJ	RG1 5EX	
19	P06 2UH	RG21 5LA	RG5 3JA	GU10 4LA	
20	RG17 0JZ	PO11 0JT	RG24 7BB	S011 3RL	
21	TW18 1BL	RG73VT	DE3 0TH	EX16 7UA	
22	PO6 3SH	PO4 9UQ	RG24 822	B60 1AB	
23	RG20 5RY	2051 7QY	PO14 4PT	S051 7SP	



POSTCODE / ADDRESS MATCHING

- ☐ LLPG / NLPG
- ☐ OS ADDRESSPOINT / CODEPOINT
- ☐ ROYAL MAIL'S PAF
- ☐ ADDRESSBASE
 - 'the definitive address and location dataset'



TIPS:

- There are rarely enough
 - need at least 1,000 to be statistically robust
- At least 10% of customer-provided postcodes will be incorrect
- Formats are a nightmare, both in customer data and in address database:
 - use `=trim(clean())`
 - replace `'` with `;`
 - watch out for Flat # / Apartment # / #
 - avoid using suburb / locality names
 - allow for abbreviations: Elm St / Street



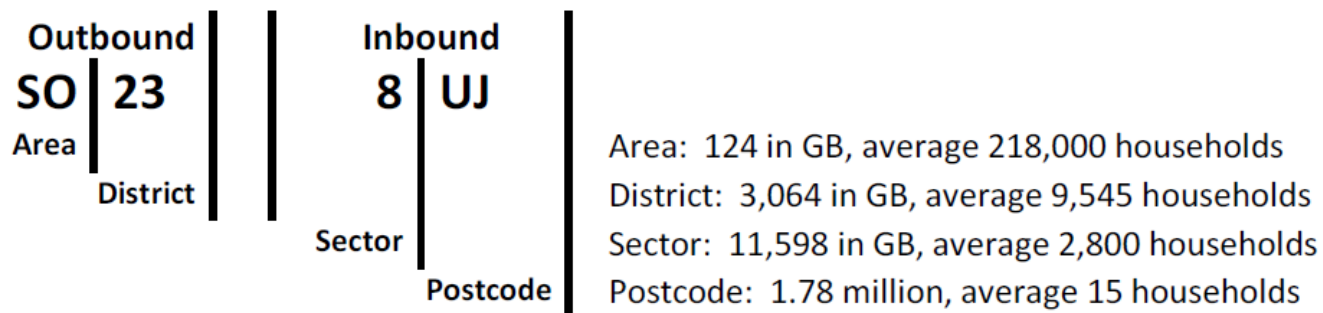
- Provide guidance for those collecting visitor / customer postcodes:

Capturing visitor postcodes

Please if necessary reassure visitors that their postcode:

- will not identify them as an individual, since each covers on average 15 households
- will not in any case be used to attempt to contact visitors for any purpose.

It might help to know that UK postcodes are built up as follows:



To help you capture postcodes more accurately:

- **Always** write postcodes using **UPPER CASE** (capital) letters, with a **space** separating the **outbound** and **inbound** parts of the code
- **Table 1** below lists all **124 Postal Areas** covering Great Britain, to use as a check-list
- **Table 2** lists valid **Postal Districts** within the six Postal Areas covering Hampshire
- The single **digit** identifying the **sector** can include **0** (zero)
- Note that the **last two characters** in the inbound part of the postcode will **never** include **C, I, K, M, O** or **V**, since these may be easily confused with other characters.

For **non-UK residents**, please write down instead their **country** of residence.

BH22 BH21 BH24 BH14 BH12 BH11 BH10 BH09 BH08 BH07 BH06 BH05 BH04 BH03 BH02 BH01
PO14 PO13 PO12 PO11 PO10 PO09 PO08 PO07 PO06 PO05 PO04 PO03 PO02 PO01
SO31 SO30 SO29 SO28 SO27 SO26 SO25 SO24 SO23 SO22 SO21 SO20 SO19 SO18 SO17 SO16 SO15 SO14 SO13 SO12 SO11 SO10 SO09 SO08 SO07 SO06 SO05 SO04 SO03 SO02 SO01
SP6 SP5 SP4 SP3

PO12 PO16 PO17 PO18 PO19 PO20 PO21 PO22 PO23 PO24 PO25 PO26 PO27 PO28 PO29 PO30 PO31
SO22 SO21 SO20 SO19 SO18 SO17 SO16 SO15 SO14 SO13 SO12 SO11 SO10 SO09 SO08 SO07 SO06 SO05 SO04 SO03 SO02 SO01
SO31 SO30 SO29 SO28 SO27 SO26 SO25 SO24 SO23 SO22 SO21 SO20 SO19 SO18 SO17 SO16 SO15 SO14 SO13 SO12 SO11 SO10 SO09 SO08 SO07 SO06 SO05 SO04 SO03 SO02 SO01

SO51 SO50 SO49 SO48 SO47 SO46 SO45 SO44 SO43 SO42 SO41 SO40 SO39 SO38 SO37 SO36 SO35 SO34 SO33 SO32 SO31 SO30 SO29 SO28 SO27 SO26 SO25 SO24 SO23 SO22 SO21 SO20 SO19 SO18 SO17 SO16 SO15 SO14 SO13 SO12 SO11 SO10 SO09 SO08 SO07 SO06 SO05 SO04 SO03 SO02 SO01
PO12 PO13 PO14 PO15 PO16 PO17 PO18 PO19 PO20 PO21 PO22 PO23 PO24 PO25 PO26 PO27 PO28 PO29 PO30 PO31

GUI1 GUI2 GUI3 GUI4 GUI5 GUI6 GUI7 GUI8 GUI9 GUI10 GUI11 GUI12 GUI13 GUI14 GUI15 GUI16 GUI17 GUI18 GUI19 GUI20 GUI21 GUI22 GUI23 GUI24 GUI25 GUI26 GUI27 GUI28 GUI29 GUI30 GUI31 GUI32 GUI33 GUI34 GUI35 GUI36 GUI37 GUI38 GUI39 GUI40 GUI41 GUI42 GUI43 GUI44 GUI45 GUI46 GUI47 GUI48 GUI49 GUI50 GUI51 GUI52 GUI53 GUI54 GUI55 GUI56 GUI57 GUI58 GUI59 GUI60 GUI61 GUI62 GUI63 GUI64 GUI65 GUI66 GUI67 GUI68 GUI69 GUI70 GUI71 GUI72 GUI73 GUI74 GUI75 GUI76 GUI77 GUI78 GUI79 GUI80 GUI81 GUI82 GUI83 GUI84 GUI85 GUI86 GUI87 GUI88 GUI89 GUI90 GUI91 GUI92 GUI93 GUI94 GUI95 GUI96 GUI97 GUI98 GUI99 GUI100

SO45 SO44 SO43 SO42 SO41 SO40 SO39 SO38 SO37 SO36 SO35 SO34 SO33 SO32 SO31 SO30 SO29 SO28 SO27 SO26 SO25 SO24 SO23 SO22 SO21 SO20 SO19 SO18 SO17 SO16 SO15 SO14 SO13 SO12 SO11 SO10 SO09 SO08 SO07 SO06 SO05 SO04 SO03 SO02 SO01

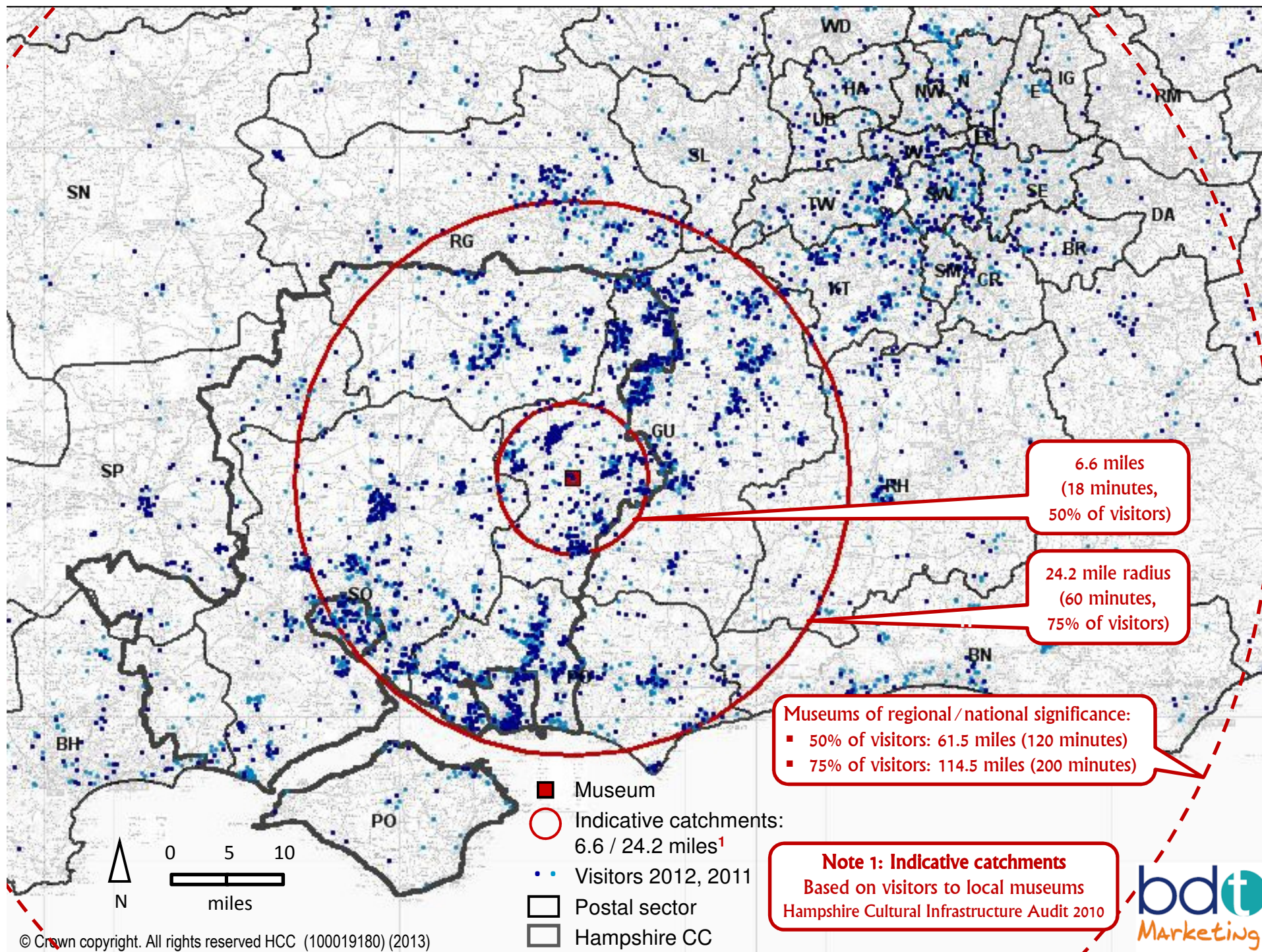
SO18 SO19 SO20 SO21 SO22 SO23 SO24 SO25 SO26 SO27 SO28 SO29 SO30 SO31 SO32 SO33 SO34 SO35 SO36 SO37 SO38 SO39 SO40 SO41 SO42 SO43 SO44 SO45 SO46 SO47 SO48 SO49 SO50 SO51 SO52 SO53 SO54 SO55 SO56 SO57 SO58 SO59 SO60 SO61 SO62 SO63 SO64 SO65 SO66 SO67 SO68 SO69 SO70 SO71 SO72 SO73 SO74 SO75 SO76 SO77 SO78 SO79 SO80 SO81 SO82 SO83 SO84 SO85 SO86 SO87 SO88 SO89 SO90 SO91 SO92 SO93 SO94 SO95 SO96 SO97 SO98 SO99 SO100

PO19 PO15 PO16 PO17 PO18 PO19 PO20 PO21 PO22 PO23 PO24 PO25 PO26 PO27 PO28 PO29 PO30 PO31 PO32 PO33 PO34 PO35 PO36 PO37 PO38 PO39 PO40 PO41 PO42 PO43 PO44 PO45 PO46 PO47 PO48 PO49 PO50 PO51 PO52 PO53 PO54 PO55 PO56 PO57 PO58 PO59 PO60 PO61 PO62 PO63 PO64 PO65 PO66 PO67 PO68 PO69 PO70 PO71 PO72 PO73 PO74 PO75 PO76 PO77 PO78 PO79 PO80 PO81 PO82 PO83 PO84 PO85 PO86 PO87 PO88 PO89 PO90 PO91 PO92 PO93 PO94 PO95 PO96 PO97 PO98 PO99 PO100

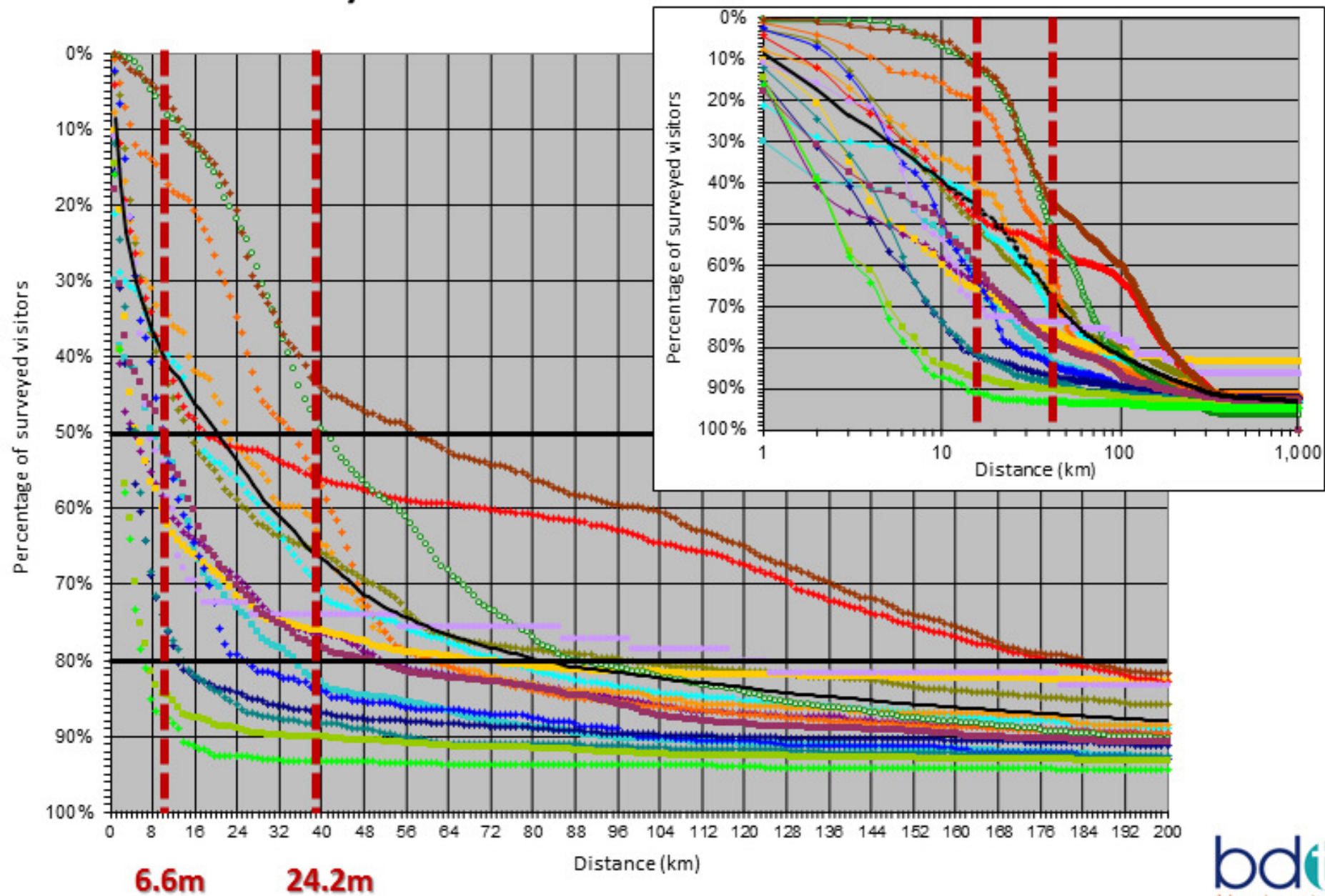
GU34 GU33 GU32 GU31 GU30 GU29 GU28 GU27 GU26 GU25 GU24 GU23 GU22 GU21 GU20 GU19 GU18 GU17 GU16 GU15 GU14 GU13 GU12 GU11 GU10 GU09 GU08 GU07 GU06 GU05 GU04 GU03 GU02 GU01

SO19 SO18 SO17 SO16 SO15 SO14 SO13 SO12 SO11 SO10 SO09 SO08 SO07 SO06 SO05 SO04 SO03 SO02 SO01

SO23 SO22 SO21 SO20 SO19 SO18 SO17 SO16 SO15 SO14 SO13 SO12 SO11 SO10 SO09 SO08 SO07 SO06 SO05 SO04 SO03 SO02 SO01
RG26 RG25 RG24 RG23 RG22 RG21 RG20 RG19 RG18 RG17 RG16 RG15 RG14 RG13 RG12 RG11 RG10 RG09 RG08 RG07 RG06 RG05 RG04 RG03 RG02 RG01



Distance decay – how far do visitors travel?



Where:

x_1, y_1 is the grid reference of the site, and
 x_2, y_2 is the grid reference of a visitor,

then:

Straight-line distance = round $\left(\left((x_1 - x_2)^2 + (y_1 - y_2)^2 \right)^{0.5} / 1000, 0 \right)$
(to nearest kilometre)

(unless x_2, y_2 are unknown,
in which case, call it 999 km)

Drive-time: SO31 3BH, 30 minutes

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Arts Council Area Profile Defined Area Overview Report

CACI

Area: Drive-Time, SO31 1BH, 30.0 minutes
Base: Great Britain

Data Item

Data for area

Data as % for area

Index as 100

Population (2001 Census)

2001 Total Pop

1,062,130

100.0

100

Total Population

1,062,130

100.0

100

Total Adults (15+)

867,765

81.2

101

Total Adults (15+)

2001 Ad 15+

867,765

100.0

100

Total Adult Female

445,633

51.4

93

Total Adult Male

422,132

48.6

101

15 - 19

70,115

8.1

106

20 - 24

76,391

8.8

113

25 - 34

144,631

16.7

95

35 - 44

151,501

17.3

99

45 - 54

158,488

18.1

98

55 - 64

103,624

11.9

97

65 - 74

88,410

10.2

98

75 +

82,605

9.5

103

(15 - 24)

(146,506)

(16.9)

(112)

(25 - 44)

(302,132)

(34.8)

(97)

(45 - 64)

(248,112)

(28.6)

(97)

(65 +)

(171,015)

(19.7)

(100)

Social Grade (2001 Census)

2001 Ad 16-64

665,536

100.0

100

AB

181,229

27.2

109

C1

203,233

30.5

103

C2

125,550

18.9

103

D

123,237

18.5

90

E

32,287

4.9

72

(ABC1)

(384,462)

(57.8)

(106)

(C2DE)

(281,074)

(42.2)

(93)

Ethnic Group* (2001 Census)

2001 Total Pop

1,061,643

100.0

100

White

1,022,312

96.3

105

Mixed (White/Black Caribbean or Africa)

3,374

0.3

61

Black or Black British

4,433

0.4

21

Mixed White and Asian

3,051

0.3

67

Asian or Asian British

17,036

1.6

39

Other Mixed Group*

2,471

0.2

85

Chinese

5,113

0.5

113

Other Ethnic Group

3,035

0.3

73

Economic Activity (2001 Census)

2001 Ad 16-74

771,593

100.0

100

All economically active

532,438

69.0

104

Economically inactive - Retired

103,019

13.4

98

Economically inactive - All other

136,046

17.6

98

Students (economically active and inactive)

68,561

8.9

122

Disability/Illness (2001 Census)

2001 Ad 16-74

771,593

100.0

100

Unable to work due to Disability/Illness

23,303

3.0

68

Disabled and Economically Active (Work FT or PT)

33,500

4.3

105

Occupation (2001 Census)

2001 Ad 16-74 in employment

511,308

100.0

100

Managers and senior officials

74,047

14.5

98

Professional occupations

50,118

9.8

102

Associate professional & technical occupations

74,051

14.5

106

Administrative and secretarial occupations

70,238

13.7

103

Skilled trades occupations

60,207

11.8

101

Personal service occupations

34,826

6.8

98

Sales and customer service occupations

41,441

8.1

104

Other employed

37,580

7.4

93

*For Scotland 'Other Mixed Group' includes all 'Mixed' combinations

Source: Target Group Index, © 1999 CACI Ltd

01 of 03

Source: 1991 Census Data, © 1991 Census Copyright 1991 All rights reserved
1991 © CACI Ltd, 2010 All rights reserved 19 Feb 12

Demographic reporting: key census data

qualifications

Higher Qualifications (2001 Census)

2001 Ad 16-74

771,593

100.0

100

Higher Educational/Vocational Qualification

150,060

19.4

95

dependants

Dependents

Households with

care

Care/Voice

Households with

Households with

Households with

Welsh language

Welsh Speaking

Understands or

Speaks but does

Speaks and reads

Speaks, reads &

Combination of

No knowledge

arts/museum etc. attendees

Attendees (T)

Physio

Opera

Ballet

Contemporary

Classical Music

Jazz

Art Galleries/A

Any performance

Any of the prev

Cinema

Pop/Rock

Any of the prev

Museum visit in

Museum visit in

Other museum

Stately Home or

Archaeological

Any performance

Physio or m

Art Galleries/A

Any of the 8 art

Due to small cell adjustments in the census
the census. Tables are internally additive

02 of 03

newspaper readership

Newspaper Readership (TGI)

2001 Ad 15+

952,825

100.0

100

Guardian/ObsERVER/Independent/Indep. on Sun

25,708

2.7

78

The Times/Sunday Times/Financial Times

65,323

6.9

125

Daily Telegraph/Sunday Telegraph

67,870

7.1

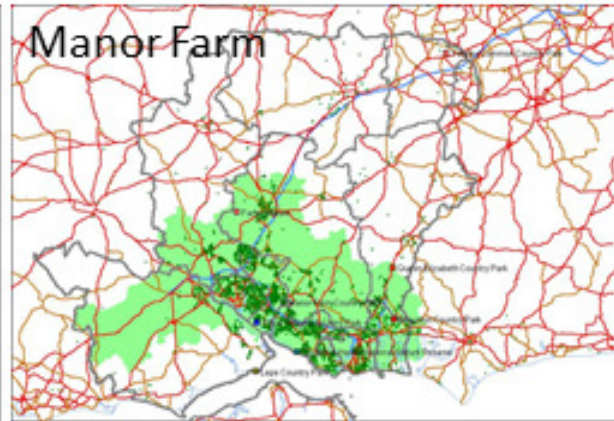
</

Where from?

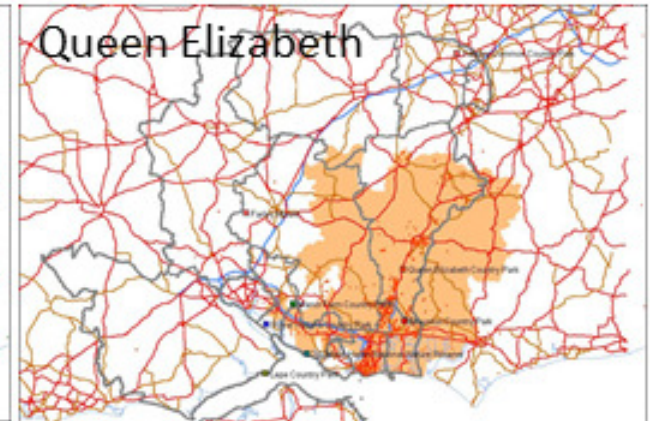
Distribution of surveyed visitors 2009-13 compared to postal sectors approximating to 30 minute drive-time



49% of 1,645 surveyed visitors



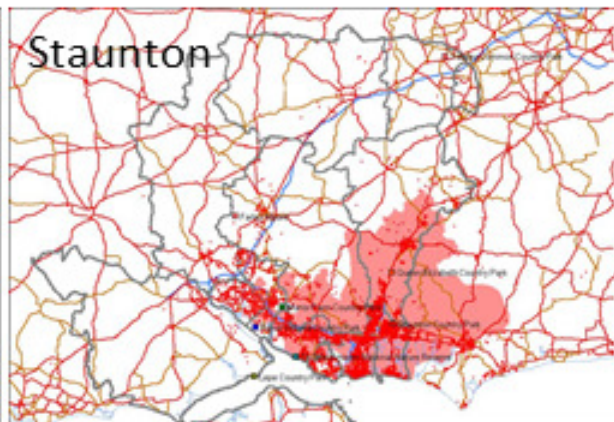
79% of 4,305 surveyed visitors



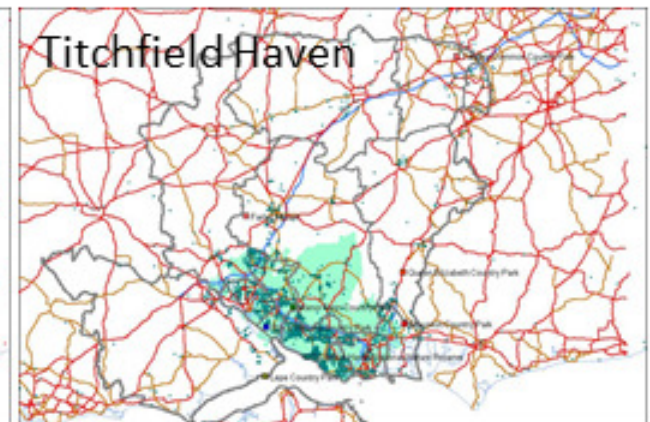
69% of 1,417 surveyed visitors



73% of 797 surveyed visitors



79% of 6,779 surveyed visitors



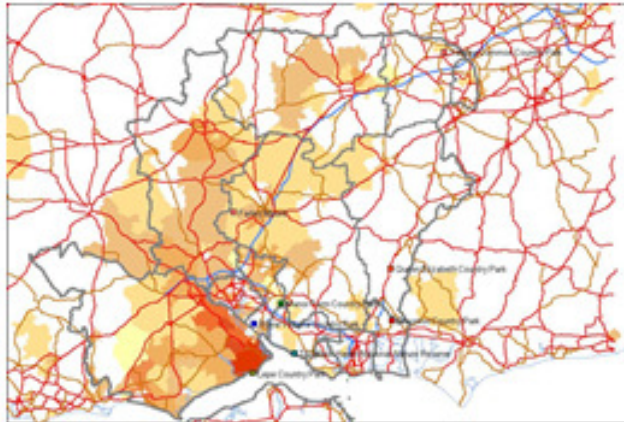
60% of 6,480 surveyed visitors

Limitations:

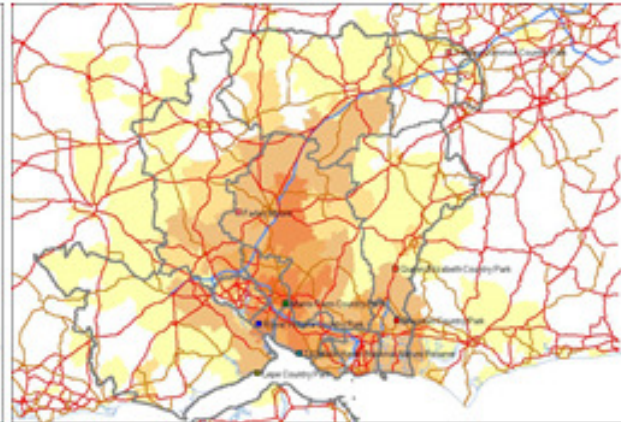
- Visualisation dependent on number of dots
- Drive-times not necessarily a good indicator of the catchment area

Where from?

Distribution of surveyed visitors 2009-13 by postal sector



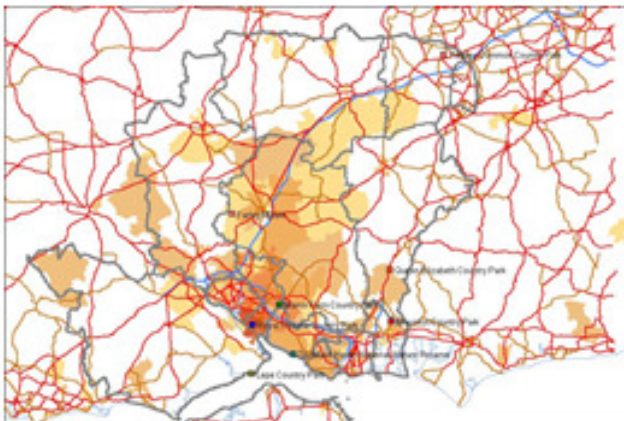
Lepe (1,645 surveyed visitors)



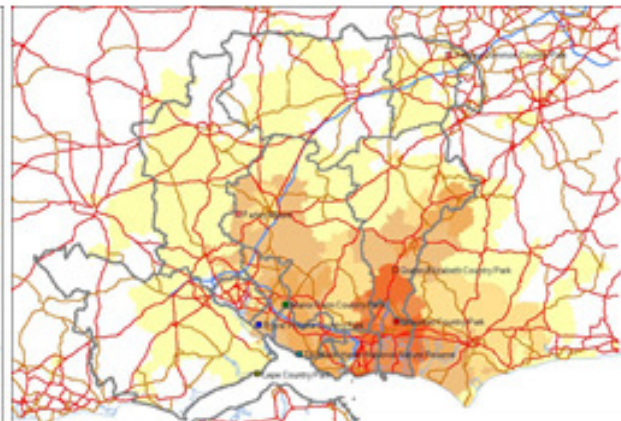
Manor Farm (4,305 surveyed visitors)



Queen Elizabeth (1,417 surveyed visitors)



Royal Victoria (797 surveyed visitors)



Staunton (6,779 surveyed visitors)



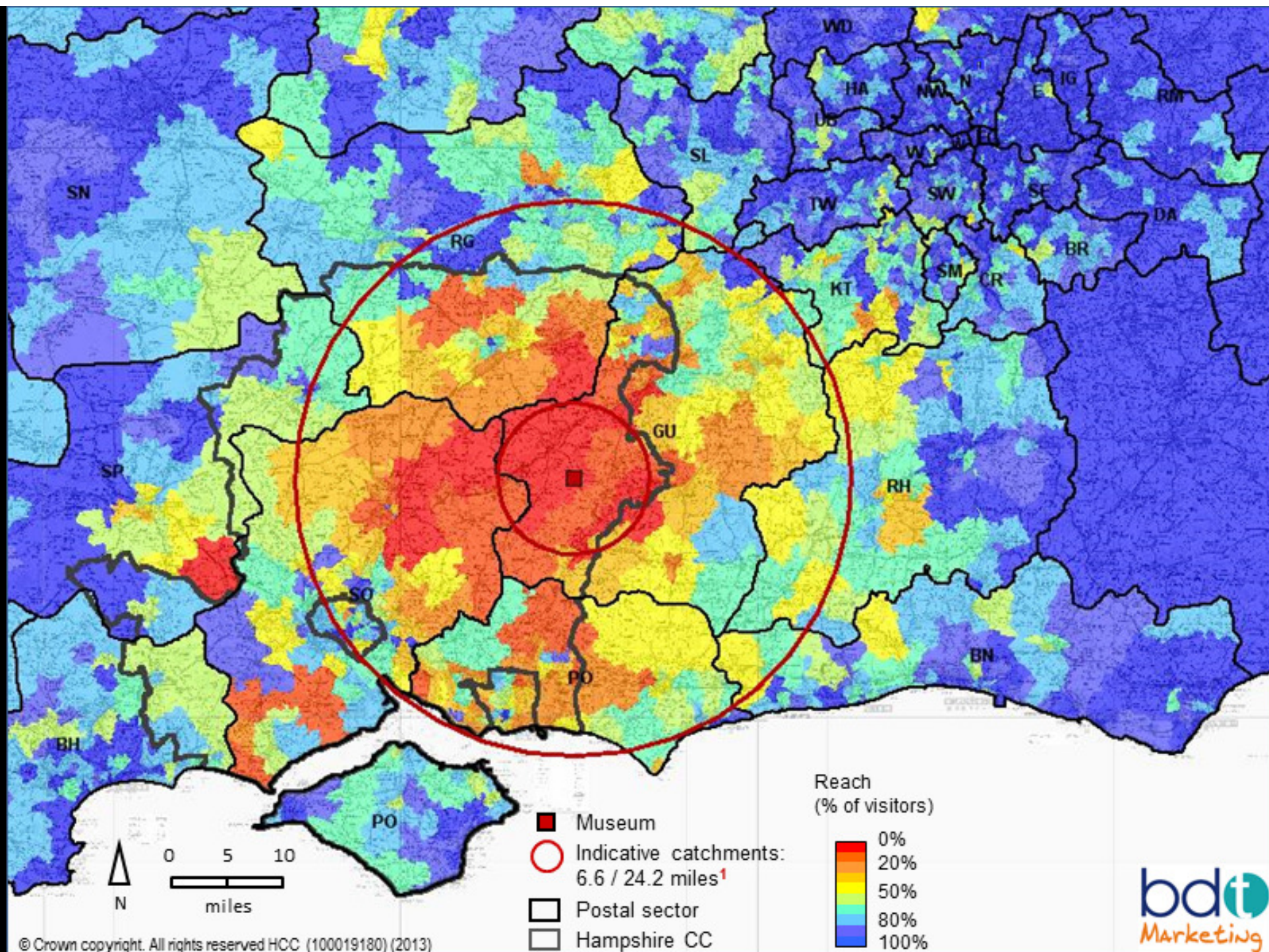
Titchfield Haven (6,480 surveyed visitors)

Limitation:

- More processing required

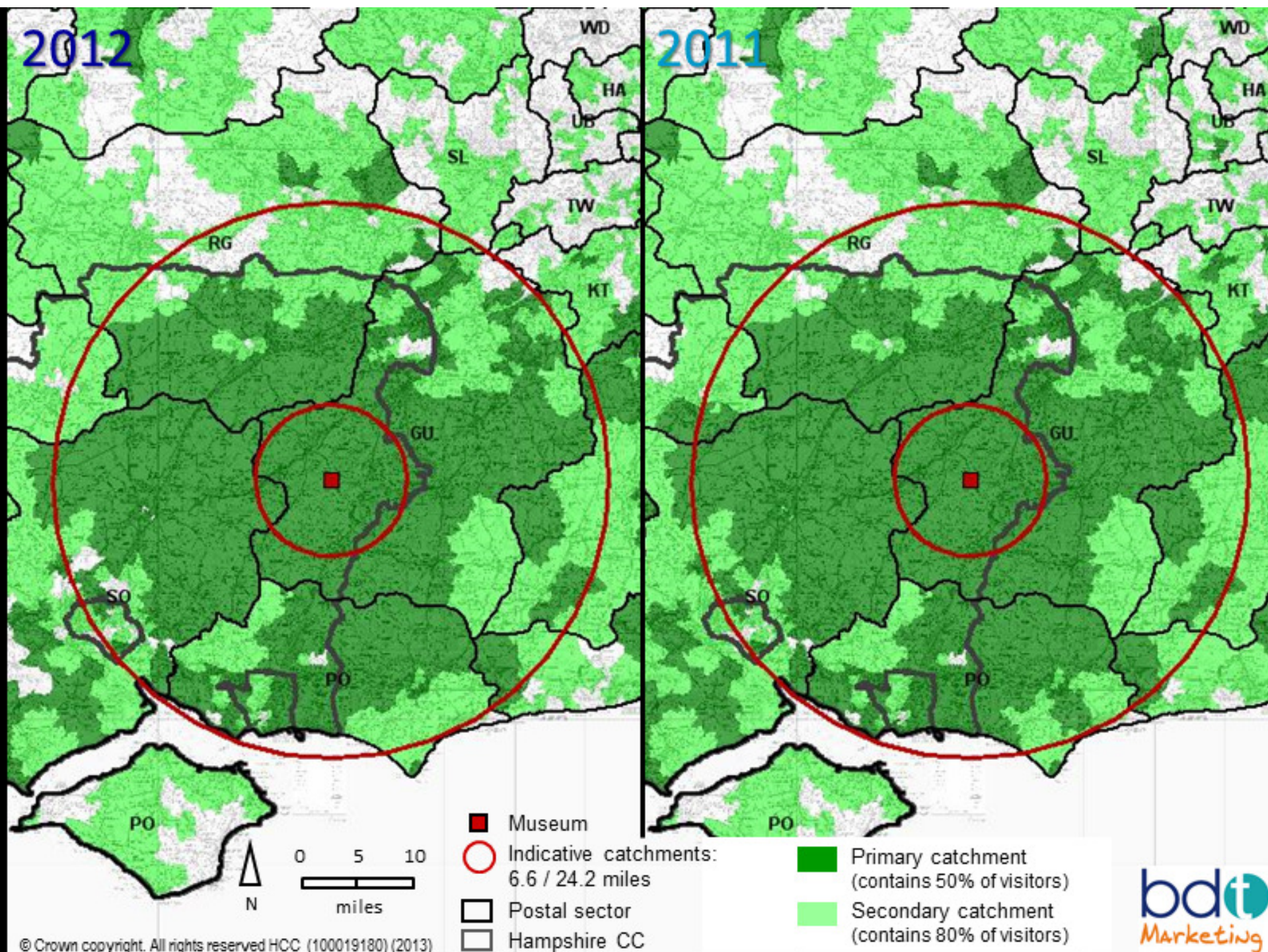
Advantage:

- Better comparison between sites



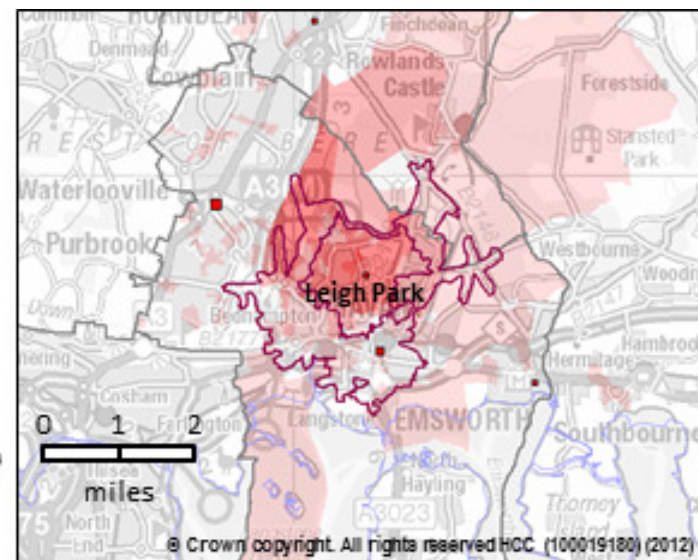
2012

2011





Case study: Library review – Leigh Park



Leigh Park

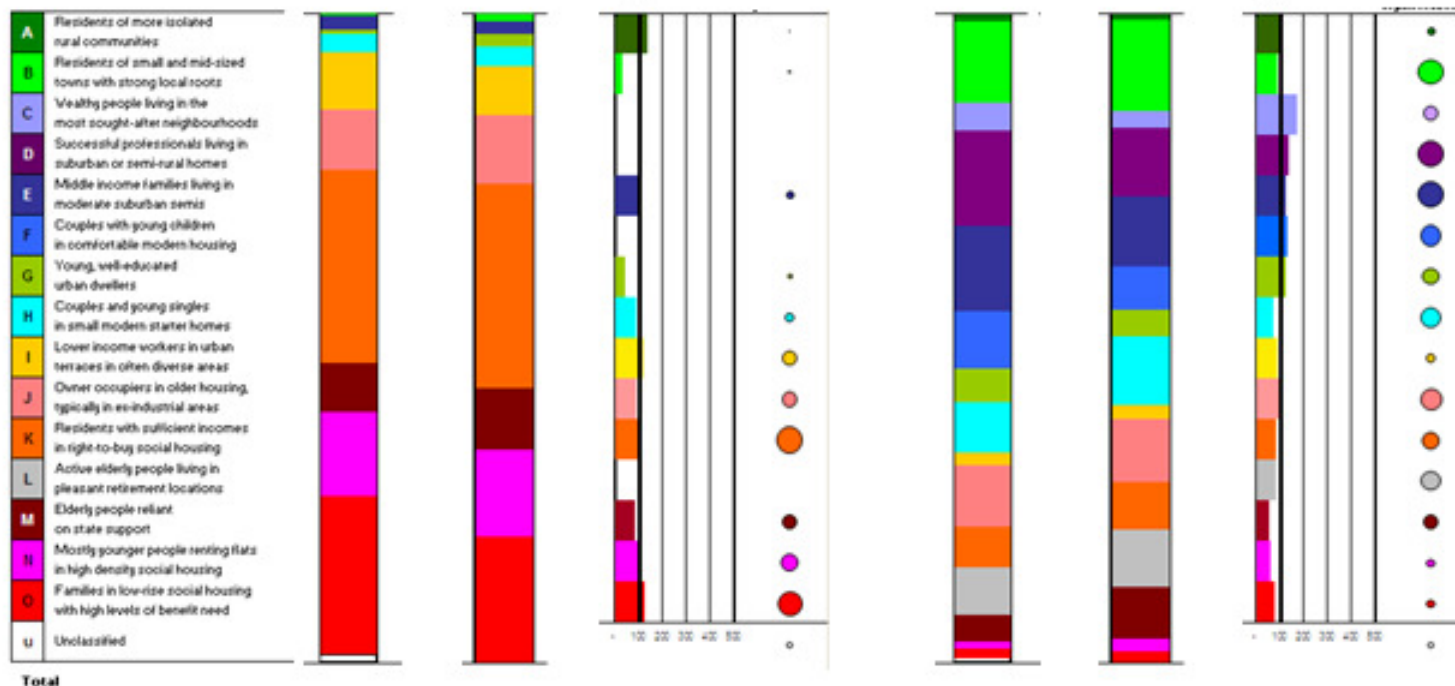
Mosaic Group
Public Sector 2012

Borrowers (%) Households (%) Index $\frac{B\%}{H\%} \times 100$ Borrowers (count)

All HCC Libraries

Borrowers (%) Households (%) Index $\frac{B\%}{H\%} \times 100$ Borrowers (count)

Active borrowers
within a 1 mile
walking distance:
Participation by
Mosaic Group





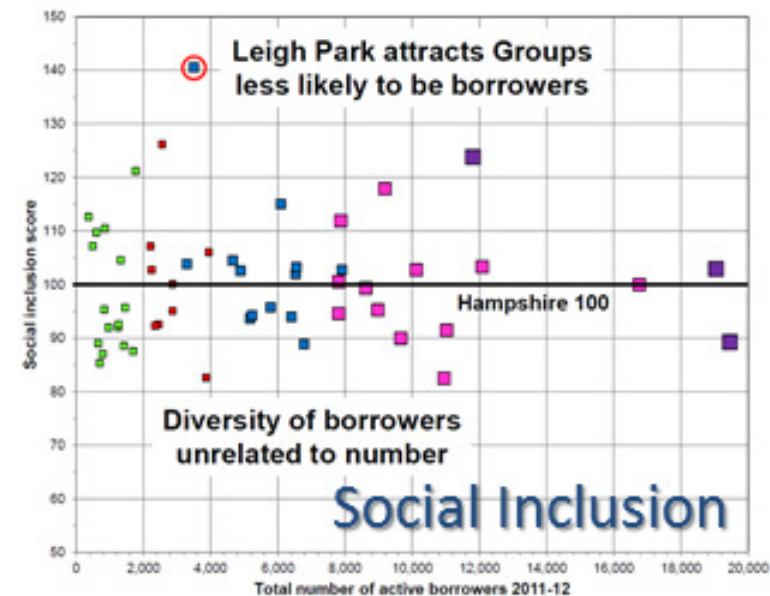
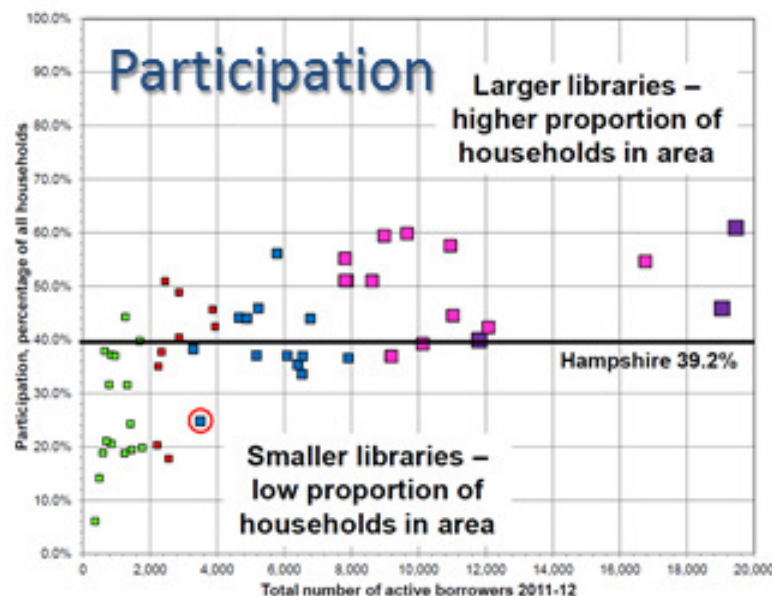
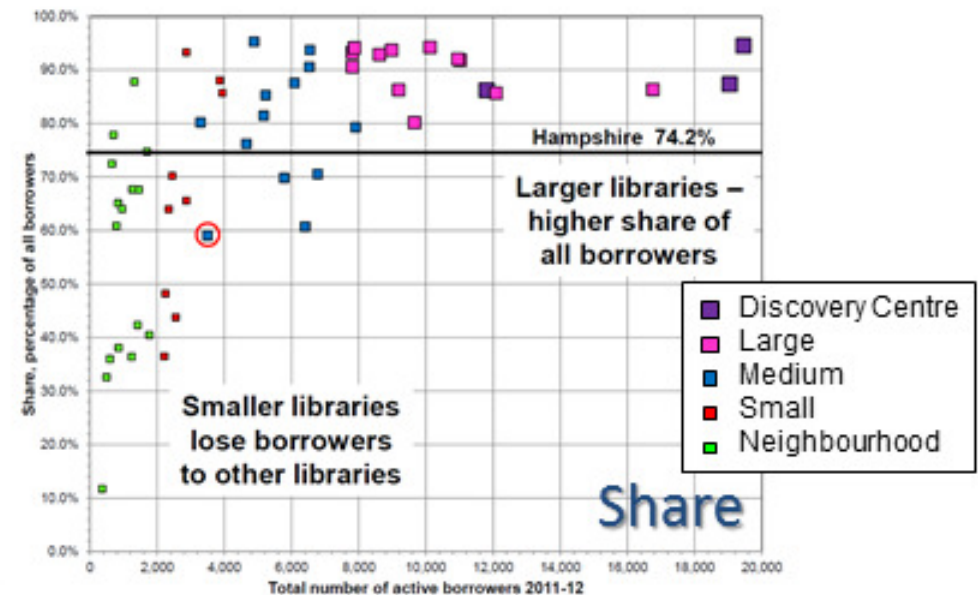
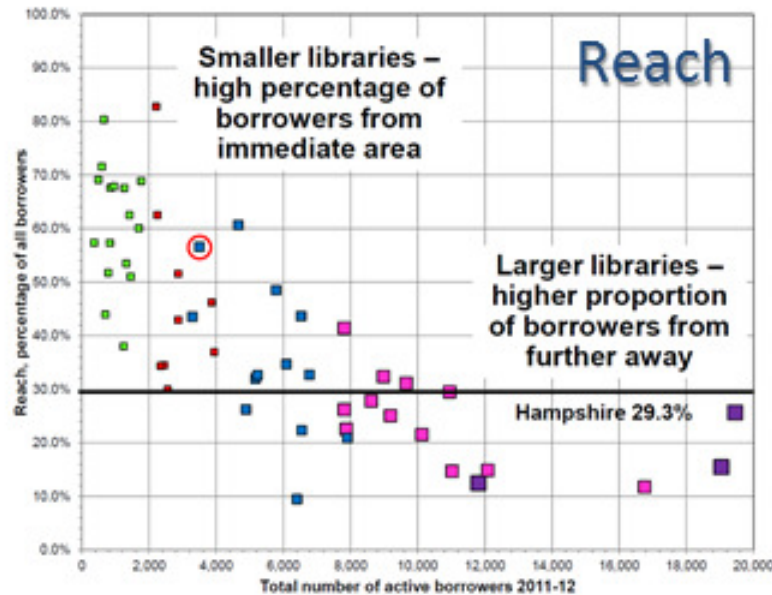
Hampshire libraries active borrowers: Market penetration (count by Output Area)





Proportion of library borrowers within a mile

Location analytics enables more objective comparisons





Approach

- ~ can be seen as an 'art', but important to add the 'science'
- ~ build 'tool set' to support site assessment
- ~ keep it simple, consistent
- ~ be pragmatic
- ~ be innovative
- ~ learn from feedback / mistakes



Data

- ~ think beyond PSMA / ONS / internal data
- ~ ensure all data is spatially referenced
- ~ maintain quality and currency
- ~ interact intelligently with data
 - to gain insight and support decisions
- ~ strong visualisation is essential to 'sell' to decision-makers



"People are everything"

- ~ build a community of analysts
 - and communicate with each other



The Society for Location Analysis

Location analysis for service delivery planning in the public sector

Birmingham City Council, 12th November 2013



Sponsored by **CBRE**

Adapting retail location planning techniques for the public sector

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