



## **Using OAC as a tool to help inform health insight planning in Yorkshire and the Humber**

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## How do they add value?

- Population health profiling:
  - Understanding the characteristics of small geographical areas.
  - Mapping and visualisation.
- Targeting health interventions by identifying areas with excess expected prevalence/incidence etc.
- Measurement of health inequalities by:
  - Explaining variation in health determinants, outcomes or services.
  - Providing a more granular measure of health inequality.
- Social marketing and communications
- Support data linkage, and non-disclosable data sharing.
- As a base for generating additional insight - on top of the off-the-shelf descriptions.

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Understanding the characteristics of small geographical areas.

Mapping and visualisation.

Targeting health interventions by identifying areas with excess expected prevalence/incidence etc.

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## YHPHO What geodemographics can not tell us.

- Analysis of the profiles is usually based on probabilities, rather than hard data.
- Not really intended to be used as a trend monitoring tool.
- Geodemographics in themselves do not provide the answer. They are simply one of a range of tools and approaches that can be used to generate insight and health intelligence to support social marketing decisions.

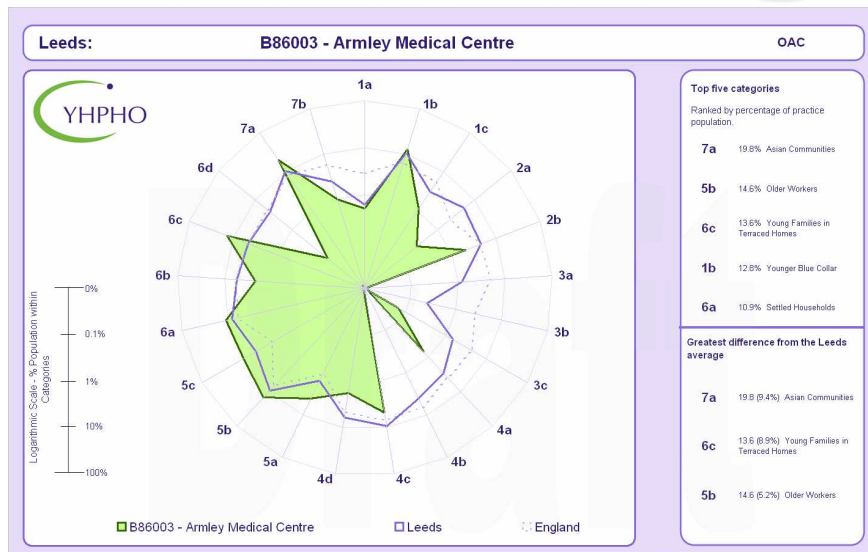
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Not really intended to be used as a trend monitoring tool (**clusters groups may be changed over time to better fit new data or methods**).

Analysis of the profiles is usually based on probabilities, rather than hard data (**for example cluster A may have a greater tendency to suffer from diabetes than cluster B**).

Geodemographics in themselves do not provide the answer. They are simply one of a range of tools and approaches that can be used to generate insight and health intelligence

# YHPHO General Practice Profiles



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This is an ongoing project to attempt to create a tool where the basic registered population profile (using NSTS data) can be created for any practice and for any of the main segmentation tools.

We chose a radar plot to display the data as this visually seemed to be the clearest method.



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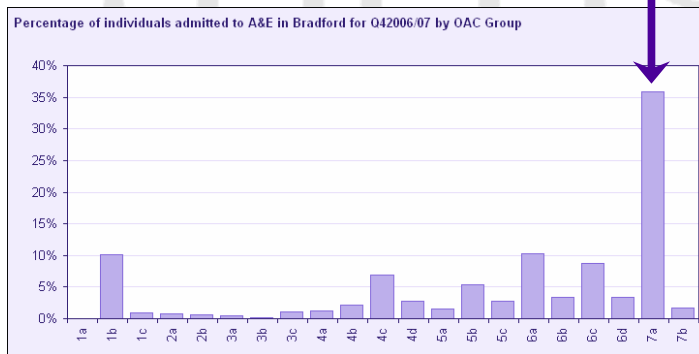
## SHA Social Marketing Programme

- **West Yorkshire Unplanned Care Project:**
  - The goal being to help make the most efficient use of available A&E services and resources within West Yorkshire.
  - To be achieved by investigating available data from A&E departments in West Yorkshire both on its own and along with a variety of geo-demographic segmentation tools, in order to produce information that can then be used through social marketing to help optimise patient access to unplanned care.

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## Example of Profiling A&E admissions for the Bradford District:



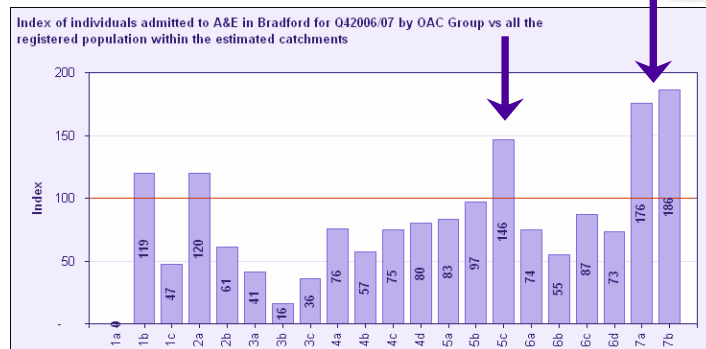
<b>1 Blue Collar Communities</b>	<b>1a</b>	Terraced Blue Collar	<b>4 Prospering Suburbs</b>	<b>4a</b>	Prospering Younger Families	<b>6 Typical Traits</b>	<b>6a</b>	Settled Households
	<b>1b</b>	Younger Blue Collar		<b>4b</b>	Prospering Older Families		<b>6b</b>	Least Divergent
	<b>1c</b>	Older Blue Collar		<b>4c</b>	Prospering Semis		<b>6c</b>	Young Families in Terraced Homes
<b>2 City Living</b>	<b>2a</b>	Transient Communities		<b>4d</b>	Thriving Suburbs	<b>6d</b>	Aspiring Households	
	<b>2b</b>	Settled in the City	<b>5 Constrained by Circumstances</b>	<b>5a</b>	Senior Communities	<b>7 Multicultural</b>	<b>7a</b>	Asian Communities
<b>3 Countryside</b>	<b>3a</b>	Village Life		<b>5b</b>	Older Workers		<b>7b</b>	Afro-Caribbean Communities
	<b>3b</b>	Agricultural		<b>5c</b>	Public Housing			
	<b>3c</b>	Accessible Countryside						

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Highest Group 7a Asian Communities



## Example of Profiling A&E admissions for the Bradford District:



1 Blue Collar Communities	1a	Terraced Blue Collar	4 Prospering Suburbs	4a	Prospering Younger Families	6 Typical Traits	6a	Settled Households
	1b	Younger Blue Collar		4b	Prospering Older Families		6b	Least Divergent
	1c	Older Blue Collar		4c	Prospering Semis		6c	Young Families in Terraced Homes
2 City Living	2a	Transient Communities	5 Constrained by Circumstances	4d	Thriving Suburbs	7 Multicultural	6d	Aspiring Households
	2b	Settled in the City		5a	Senior Communities		7a	Asian Communities
3 Countryside	3a	Village Life	5b	Older Workers	7b	7b	Afro-Caribbean Communities	
	3b	Agricultural	5c	Public Housing				
	3c	Accessible Countryside						

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## Index

### 7a Asian Communities

### 5c Public Housing

### Other Schemes:

## Rotherham

Radar charts. We created profiles for Health ACORN and OAC using the practice profiling tool for nine selected Rotherham practices.

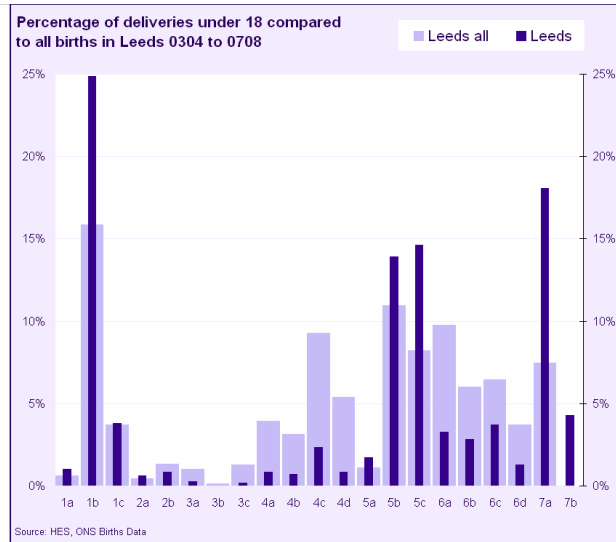
## Doncaster Early Detection of Lung Cancer Project

### Objective

To improve life expectancy and reduce health inequalities by increasing the early identification of lung cancer within the most disadvantaged and high risk areas of Doncaster.



# Leeds – Under 18 Deliveries



OAC	
Category	Group
1 Blue Collar Communities	1a Terraced Blue Collar
	1b Younger Blue Collar
	1c Older Blue Collar
2 City Living	2a Transient Communities
	2b Settled in the City
3 Countryside	3a Village Life
	3b Agricultural
	3c Accessible Countryside
4 Prospering Suburbs	4a Prospering Younger Families
	4b Prospering Older Families
	4c Prospering Semis
	4d Thriving Suburbs
6 Constrained by Circumstances	5a Senior Communities
	5b Older Workers
	5c Public Housing
6 Typical Traits	6a Settled Households
	6b Least Divergent
	6c Young Families in Terraced Homes
	6d Aspiring Households
7 Multicultural	7a Asian Communities
	7b Afro-Caribbean Communities

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Under 18 Deliveries within Leeds NHS Hospitals for 0304 to 0708 profiled, compared to all births

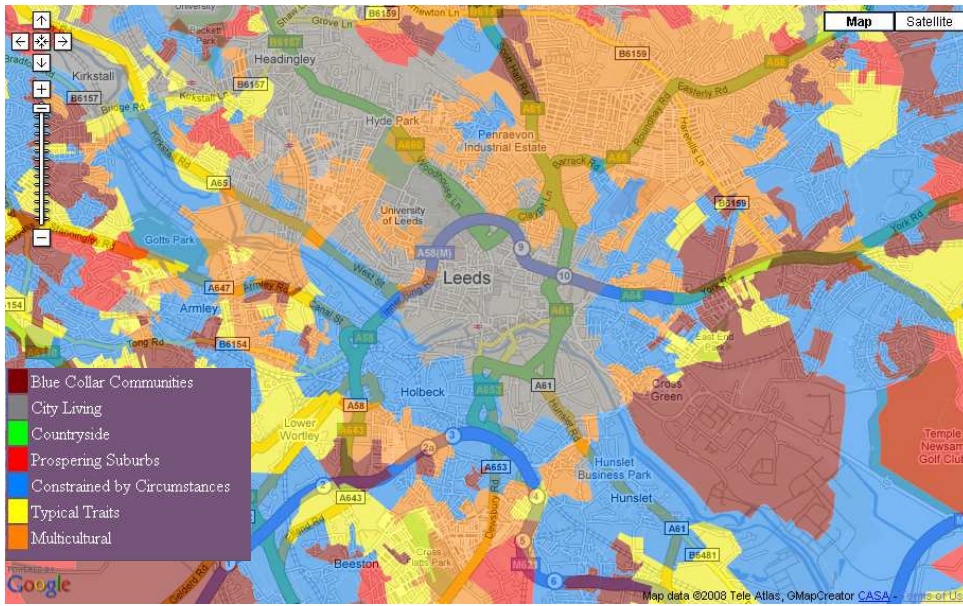
Most dominant groups in baseline population Younger Blue Collar, Settled Households.

Under 18 Over indexes in Younger Blue Collar, & all Groups in Constrained by circumstances higher. Could Older Workers represent teenage daughters?

Also Asian Communities (could tie in with c-card).



# YHPHO Map of Leeds Using OAC Supergroups

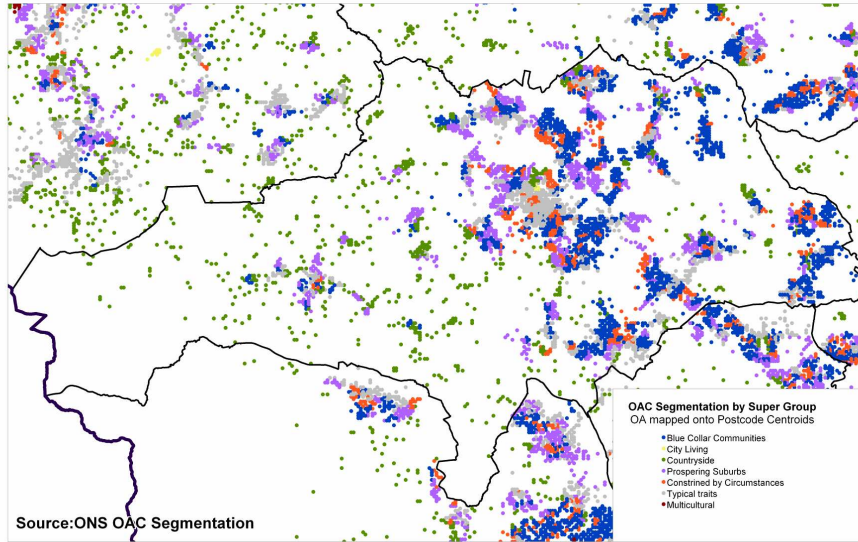


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## YHPHO Map of Barnsley Using OAC Supergroups

Map of OAC SuperGroups in Barnsley:  
Output Area mapped onto Postcode Centroids to Determine Population Centres



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## Other Investigation

- Currently investigating methods to both quantitatively and qualitatively benchmark the various geodemographic segmentation tools available.
  - Discriminatory power using the Gini Coefficient (work undertaken by Ade Ojo from the University of Sheffield).
  - Predictive power using Hospital Episode Statistics (HES) data

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### Discriminatory power using the Gini Coefficient

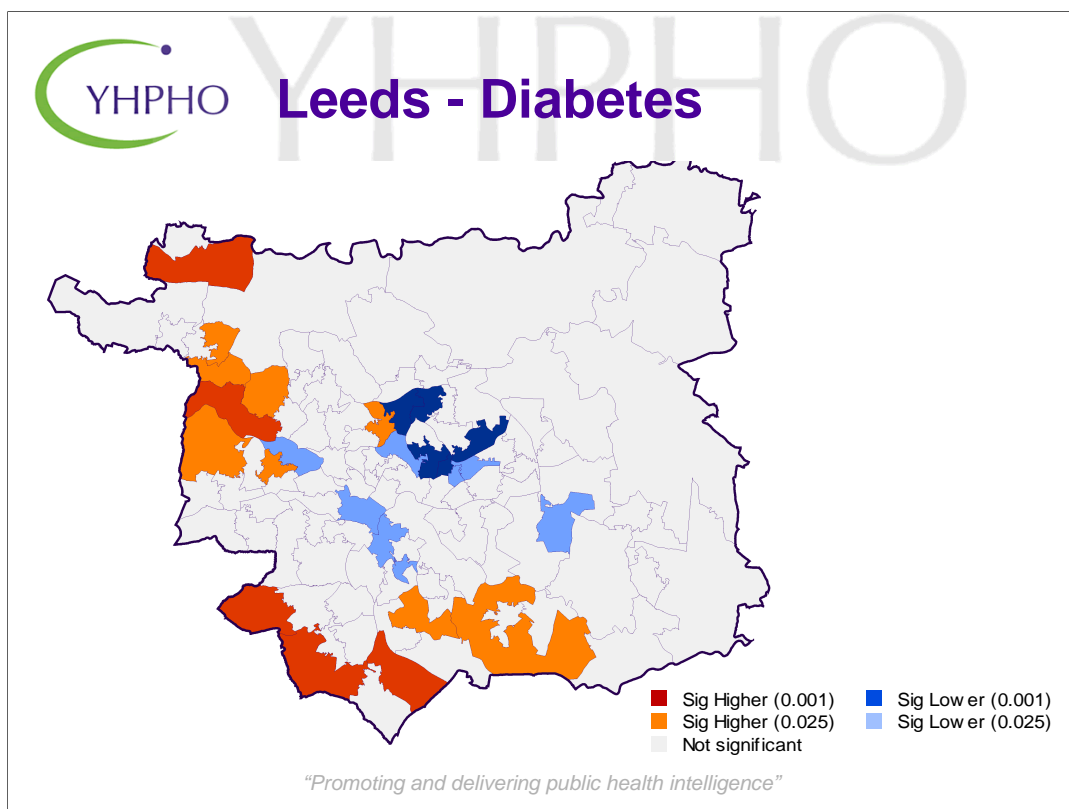
### Predictive power using HES data

One approach we're investigating is how effectively each tool can predict the occurrence of a certain variable, such as admittance to hospital. Using HES data for each of the segmentation tools, we've attempted to create an estimate of admittance for variety of conditions such as COPD, CHD and asthma.

This was achieved by creating a profile based at a regional level (Yorkshire and the Humber), showing for each cluster the percentage of admittance by total population (figure x).

These percentages were then multiplied by the LSOA populations for Yorkshire and the Humber as a whole to create estimated admission counts for each LSOA. The estimated and actual counts could then be compared.

One method of showing difference between estimated and actual figures was to use the Poisson distribution to find if the difference were significant or not. As admission counts at a LSOA level can be small, this mapping work used Middle Super Output Areas (MSOA) aggregated up from the LSOAs. Figure x shows a map of Leeds for COPD admissions using OAC. It can be seen that the centre of Leeds tends to be over estimates, whilst the more rural areas to the North West are underestimated. Currently this method seems to show that most tools predict a similar pattern for the conditions as each other, but rarely predict exactly the pattern of actual admissions



HES admissions data for alcohol related conditions, asthma, COPD, CHD, Diabetes, Lung Cancer and Stroke aggregated over a five year period (2002 to 2006).

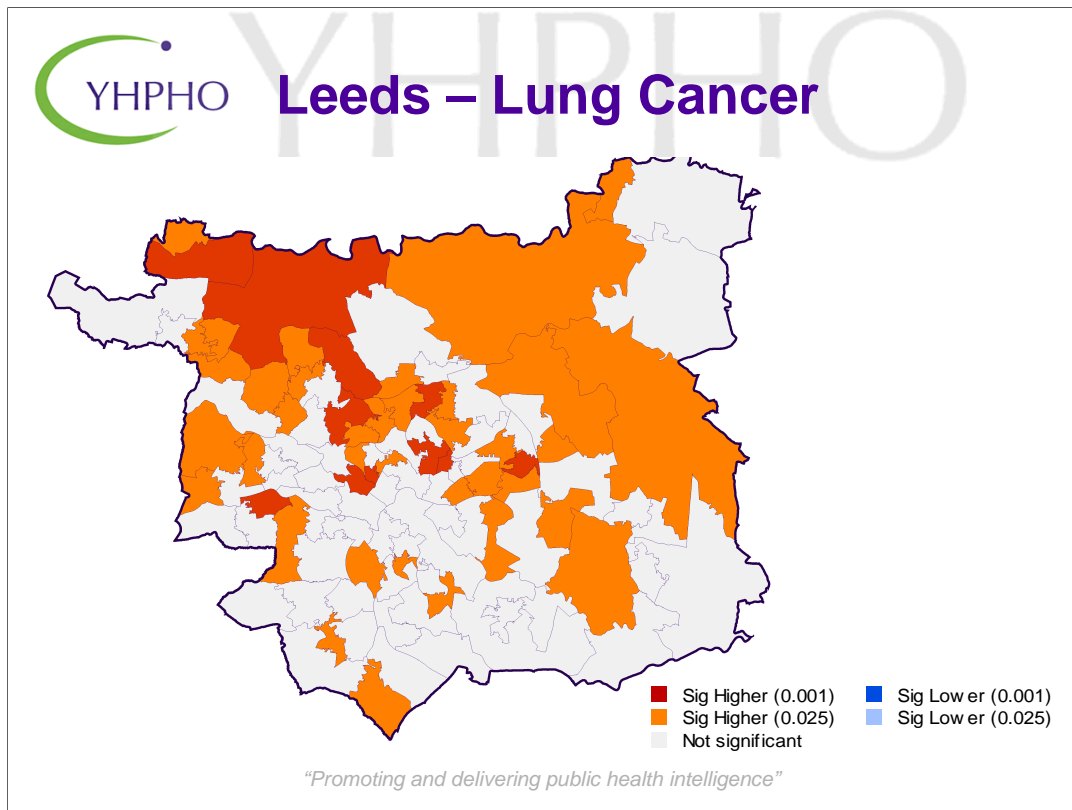
For every condition selected HES data is combined with population data for each of the segmentation tools to produce a regional admissions profile, in this case Yorkshire and the Humber.

The profiles consist of percentage of admissions by population count for each category in the tool being examined.

These percentages are then applied to population counts for each MSOA in the region to create an estimated count of admissions for each geodemographic tool by category by MSOA.

The Poisson distribution is then used to determine if the estimated counts are significantly lower or higher than the actual counts for each MSOA.

The intention is to see if for each condition if the estimates differ greatly from the actual admission numbers, and if there are any differences between the distribution for the various segmentation tools.



Initial results suggest that the number of areas where the estimates are significantly different to actual admissions varies depending on the condition examined.

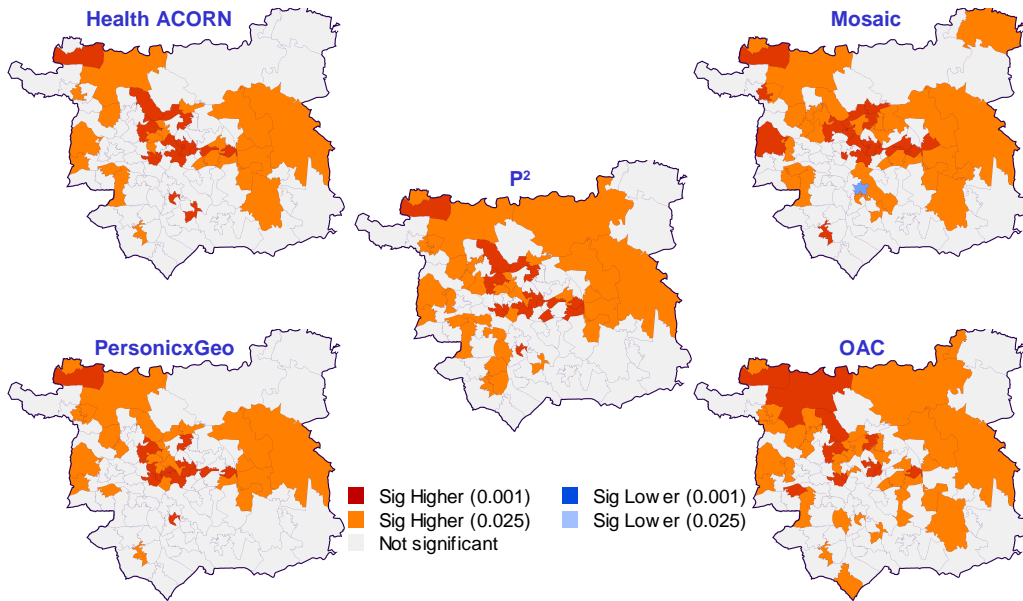
For example using OAC in the Leeds PCT 48 of the 108 MSOAs were significantly higher or lower for Lung Cancer, but for diabetes only 27 MSOAs have a significant difference.

This difference may be due to patterns in the demography of the area such as an older population or ethnicity.

Also patterns of significance are general similar across the geodemographic segmentation tool used (see below), although numbers of significantly different MSOAs can vary.



## Admissions 2002 to 2006 for Lung Cancer (ICD10 C33 – C34) – Leeds MSOAs



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## Advantage & Disadvantages of OAC

### Disadvantage

- Currently does not have additional data attached to it (such as shopping habits etc.) that can prove useful to social marketers.

### Advantage

- It's freely available
- It's method of construction is easily available

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**Currently does not have additional data attached to it such as shopping habits etc. that can prove useful to social marketers.**

The again not many other tools have health data attached



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## A regional insight model?

- Purchase and maintain a range of geodemographic databases – use most appropriate system as required based on agreed quantitative and qualitative comparative criteria
- Gather and build insight based around regional and locally collected data
- Ensure geodemographic coding of all health surveys undertaken locally
- Feed back and support local projects by supplementing local analysis and projects with other linked insight
- Links with regionally led social marketing programmes



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