Segmentation in communities with greatest health inequalities: so what for public health interventions?

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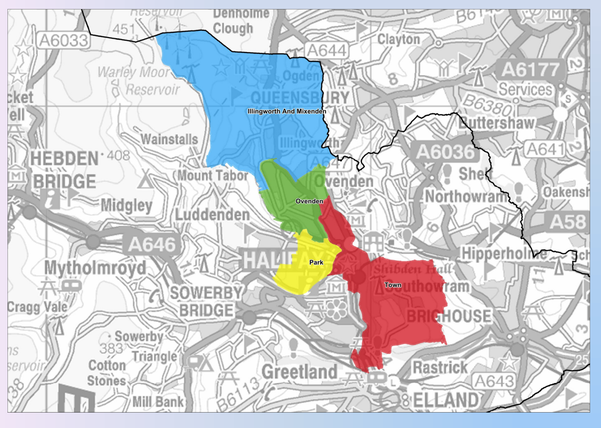


Source: Chew-Moulding, Calderdale Council, 2011.

1. Background

A lifestyle survey elicited baseline health data from four *Healthy Halifax* wards (pop:52,403), areas within the most deprived national quintile based on Indices of Multiple Deprivation (IMD) [1]. *Healthy Foundations* Lifestage segmentation model [2] was incorporated into survey design to categorise individuals into five attitudinal segments:

Hedonistic Immortal (HI)
- From deprived areas
- Likely to be younger
- Take risks for enjoyment
- Low concern for health
- Most likely to drink heavily and take drugs

Unconfident Fatalist (UF)
- From deprived areas
- Fewer in paid work
- Low motivation and control of health
- Most negative health behaviours and attitudes
- Feel depressed

Health Conscious Realist (HCR)
- From less deprived areas
- Motivated, feel in control of life/ health
- Positive health behaviours
- Low % smoking/drugs
- Low risk taking

Balanced Compensator (BC)
- Like looking after themselves
- Highest % in full time work
- Positive health behaviours
- Take some risks

Live for Today (LFT)
- From deprived areas
- Poor health behaviours
- Short term view of life
- More likely to smoke/ drink heavily
- Think healthy lifestyle is boring and difficult

All segments can be found across deprived and affluent social strata. Socio-economic deprivation is linked to poorer health attitudes, behaviours and outcomes [3]. Targeting resources where they are most needed may help reduce health inequalities. Research has mainly been nationally focused. Local application of the model is ongoing to inform public health interventions. Research within a population skewed in ethnicity and deprivation covers new ground and sheds light on some limitations in generalising the assumptions of the *Healthy Foundations* model.

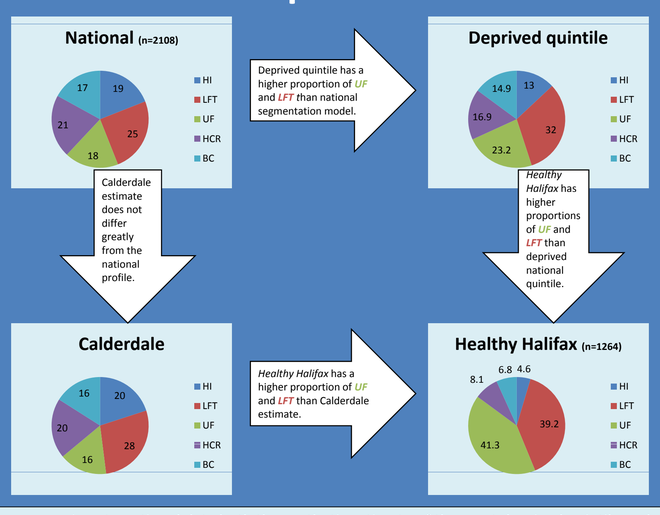
2. Aims

- ❖ Enhance understanding of health attitudes and behaviours in 4 local populations experiencing greatest health inequalities.
- ❖ Contrast findings with *Healthy Foundations* model and synthetic estimations.
- ❖ Interpret data for public health planning.

Methods

The instrument incorporated previously validated and standardised measures of nutrition, smoking, alcohol and exercise. Segmentation was generated using the *Healthy Foundations* algorithm based on responses to 19 questions from the *Healthy Foundations* toolkit [4]. Data was collected in two phases in March-May (random sample) and October-November (quota sample based on ward demographics), by locally recruited staff. Online completion was offered in addition to the paper.

5. *Healthy Halifax* segmentation profile differs from Calderdale, deprived quintile and national profiles

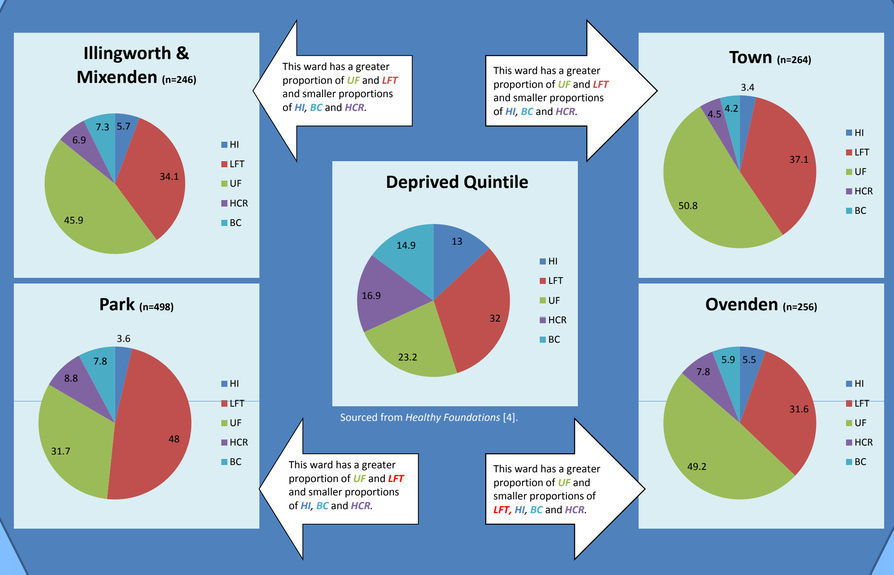


In comparison to national data both the synthetic estimate of the most deprived quintile and the *Healthy Halifax* sample have **higher proportions** of *Unconfident Fatalist* and *Live for Today* segments. *Health Conscious Realist*, *Hedonistic Immortal* and *Balanced Compensator* segments are under-represented in our sample by about 8 percentage points.

A one-sample χ^2 test for association demonstrated a significant result (χ^2 =405; p<0.001). We can therefore reject the null hypothesis that the proportions of our sample are the same as the synthetic estimates of the lowest quintile. A corresponding ϕ coefficient of 0.549 suggests a moderate to large effect.

National data and synthetic estimates for Calderdale and deprived quintile sourced from *Healthy Foundations* [4].

6. *Healthy Halifax* ward level segmentation profiles differ from deprived quintile



Sourced from *Healthy Foundations* [4].

7. Discussion

Healthy Halifax segmentation profile by gender differed to the national profile, suggesting the **gender biases assumed within the model cannot be generalised** to local populations. The high number of Live for Today and Unconfident Fatalists in **female respondents** could suggest poor family health in some **households** if the woman is the main decision maker [7].

Unconfident fatalist and Live for Today segments are significantly greater in the *Healthy Halifax* data compared to the estimated deprivation skewed segmentation profile. The synthetic estimates may **underrepresent deprivation and ethnicity** in the generated profiles.

Commissioning decisions and health intervention planning based on estimates may not reflect and meet the needs of a locality. Demographically representative local lifestyle surveys provide **more localised and specific profile**s.

The *Healthy Halifax* **ward level** segmentation profiles differ from one other, and from segmentation profiles of *Healthy Halifax, Healthy Foundations* national and estimates for Calderdale and the most deprivation quintile. Therefore generalising from national synthetic estimates and even a local sample to smaller specific populations may be an ecological fallacy and fail to capture the **specific local profile and local needs**.

Further analysis will involve augmenting segmentation profiles with postcode data to map and plan for local needs using **Geographic Information Systems** (GIS) technology [8]. This could offer greater precision for planning local social marketing and health interventions.

3. Respondent profile: is the data representative?

***Healthy Foundations* segmentation profile**
- **Final sample (n=2108).**
- Based on a random sample (n=4,928) aged 17-75 in England.
- Core sample (60%) **represented national demographics.**
- **Deprived boost sample** (40%) from deprived SOAs to ensure representation, then downweighted for analysis.
- **Ethnic minority boost sample**, downweighted to representative proportion.

Source: *Healthy Foundations* [4]

Synthetic estimates of the most deprived national quintile segmentation profile
- Synthetic estimates use **census** and ***Healthy Foundations*** data to model segmentation profiles in local populations or by deprivation [4].
- Modelled estimates offer a useful **like for like comparison** based on **deprivation**.
- Synthetic estimates are based on the original national data and **cannot capture change or complexity [6]**.

***Healthy Halifax* Lifestyle Survey Segmentation Profile**
- Total respondents aged 18+ (n=1339)
- Sample **representative of ward profiles** for gender, ethnicity and whether working age or retired.
- Park is overrepresented at 40% of the data, with other wards at 20% each.
- Park ward has an above average percentage of Asian population, creating **a skew towards Asian ethnicity**.

Deprivation: based on 7 Indices of Multiple Deprivation (IMD) domains: Income; employment; health & disability; education & training; barriers to housing & services; environment; crime. The worst effected areas are Super output areas (SOAs) [5]. The four target wards are SOAs indicating a skew towards deprivation [1].

Age profile

Segment	*Healthy Foundations* mean age	*Healthy Halifax* estimated mean age
HCR	47	42.4 (SD=16.5)
UF	47	47.8 (SD=17.3)
LFT	42	43.9 (SD= 15.5)
BC	41	43.9 (SD=15.7)
HI	36	35.6 (SD=17.4)

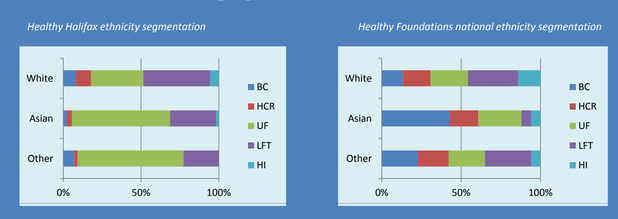
Household income profile

Over 60% of respondents in each ward reported a household income below £19,000.

Unconfident fatalists had the **highest proportion of respondents with an income less than £9999**, and also the highest with an income **below £19,999**.

This supports the *Healthy Foundations* model that *Unconfident Fatalists* and *Live for Todays* **tend to live in more deprived areas**.

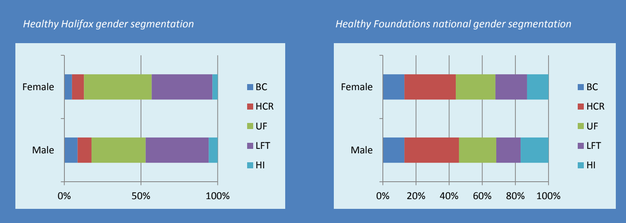
4. Ethnicity profile



A χ^2 test for goodness-of-fit shows a significant departure from the expected distribution ($\chi^2_{(2)}$ = 65.8; p<0.001). However, the effect is of small to moderate magnitude (ϕ = 0.240)

In comparison with the national sample, the *Healthy Halifax* sample shows a significant difference in the distribution of ethnic groups across the segments.

Gender profile



A χ^2 test for goodness-of-fit shows a significant departure from the expected distribution ($\chi^2_{(1)}$ = 123.5; p<0.001). However, the effect is of moderate magnitude (ϕ = 0.440).

In comparison with the national sample, the *Healthy Halifax* sample shows a significant difference in the distribution of males and females across the 5 segments.

References

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