

Customer profiling to target service delivery

Abstract

This report describes techniques of customer profiling to help target the delivery of services in the public sector. It gives preliminary results from work performed in the UK and describes some advantages and shortfalls of the approach.

1 Document information

1.1 Author(s) and Institution(s)

Mike Thacker is Systems Director of Porism Limited, which is the technical partner in the UK local government esd-toolkit programme. He has worked with UK local authorities on esd-toolkit since 2002 and before that on the Life Events Access Project. He has experience developing online service directories and standards registries for the UK public sector and worked with Experian Limited and Professor Richard Webber of Kings College London on geodemographics.

1.2 Intended audience

Within Smart Cities, to 'this research brief is specifically aimed at members of Smart Cities Regional Academic Network /WP 2 – Methodology and the leaders of WP 3 – Customer Services and WP 5 – Channel Swap. More generally, it is of relevance to Service Managers and officers responsible for service delivery strategies and Business Process Re-engineering (BPR) in local and regional government.

1.3 Critical issues addressed

There is a practical evidence-based approach to understanding the customers for each public sector service, the channels through which those customers can be served and how they can be targeted. This approach relies on use of standard definitions of customer profiles, services and channels. The approach has some shortfalls, which can be addressed in later work to refine targeting of customers.



2 Means of Profiling Citizens and Customers

For the purposes of this report:

- Citizens are defined as the residents of a municipality at whom services are normally aimed to improve outcomes (typically aspects of quality of life) according to political objectives. Businesses and their employees are for the most part excluded, although similar techniques for profiling might be applied.
- Customers are the consumers of services from amongst the citizens

Citizens may be segmented by a myriad of different profile characteristics including: age, ethnicity, sexual orientation, ability/disability, gender, level of affluence and state of health.

Sophisticated service delivery models use algorithms which relate service need to a mix of profile characteristics in order to target services at the citizens for whom those services might have most impact. For example targeting domestic care, home insulation and financial support to recent widows with certain health profiles in private accommodation might have a significant impact in reducing the need to take these citizens into municipal residential accommodation.

A detailed profile of citizens can be gleaned from a comprehensive Customer Relationship Management (CRM) system spanning the records of agencies. However such information is normally not available and more 'broad brush' profiling techniques are more practical and feasible within local government.

Composite profiles are abstract categorisations used to define sets of characteristics that commonly coincide within groups of individuals. Characteristics that can be combined and that are normally similar for a large proportion of the population in a neighbourhood include:

- Affluence
- Tenure (ie accommodation type and ownership)
- Age
- Ethnicity

Using statistical clustering techniques broad profile groups which sub-divide into more specific profile types are defined for combinations of such characteristics. The characteristics are gathered from national censuses and disparate other records from the public and private sector.

Commercial organisations who define such profile groups and types and attribute them to specific geographic locations (as defined by postal codes or household addresses) include:

- CACI International, which defines profiles within its "Acorn" products
- Experian Group, which defines profiles within its "Mosaic" products

Figure 1 (*opposite, top*), shows the Mosaic Global profile groups (from "A" to "J") illustrating the level of affluence they represent and whether they reflect more urban or rural dwelling.

For each group other likely characteristics are defined under headings such as:

- Channel preference
- Responsiveness to different types of marketing
- Susceptibility to different health conditions

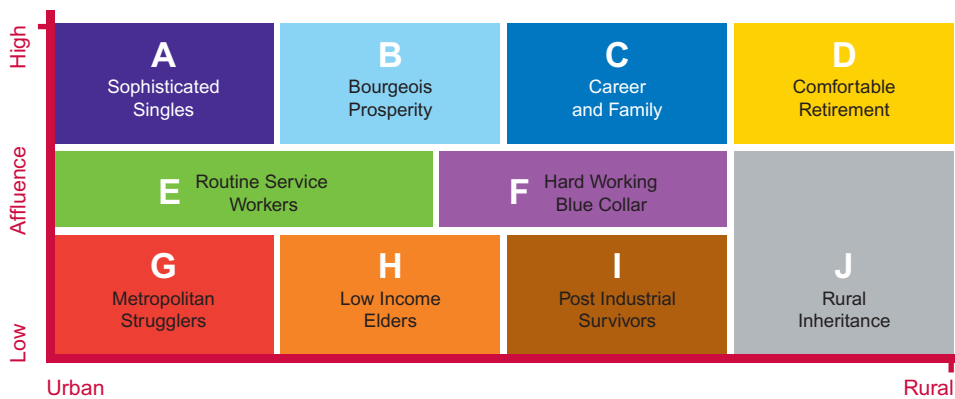


Figure 1

Experian Mosaic global profile groups

From data giving the profile group/type associated with each household and service transaction records with customer household addresses, it is possible to profile customers for each service, as illustrated by Figure 2 below.

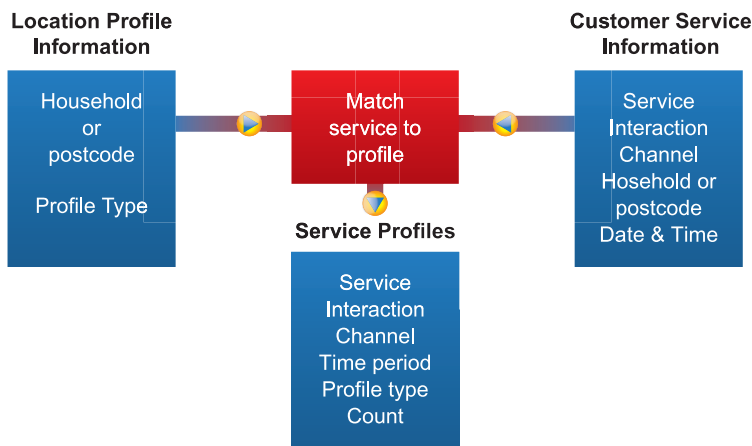


Figure 2

The service profiling process

As well as profiling 'service', these other variables may be taken into account to get a better picture of customers:

- Interaction type (eg request for information, application for service)
- Channel for the service request/transaction (eg telephone, face-to-face, web)
- Date and time – to identify seasonal trends or difference in demand at different times of the day, week or month

The result of the service profiling process is a profile for a particular combination of service, interaction, channel and time period, as illustrated in Figure 3 below.

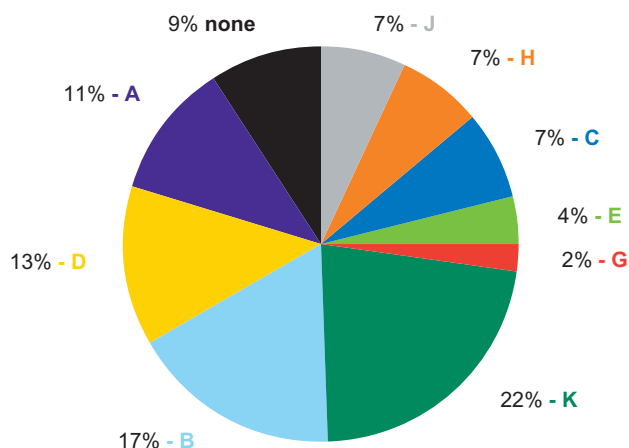


Figure 3

A service profile by profile group

The service profile for citizens within one geographic area shows the absolute levels of demand by each profile group and type for that area's population.

The propensity of citizens of a particular profile group/type to demand a service is given by an index calculated as follows

Service propensity index for a profile group / type =

$$100 \times \frac{(\text{Proportion of the population demanding the service in the profile group/type})}{(\text{Proportion of the total population in the profile group/type})}$$

The resultant propensity index is greater than 100 if demand for the service is more than proportionate its make-up of the population. Propensity graphs for all profile groups/types for a service illustrate the customer profile. Figure 4 below illustrates the propensity index calculation and a propensity graph for residential planning applications (requesting permission for building alterations) according to Experian's Mosaic UK Public Sector profile groups.

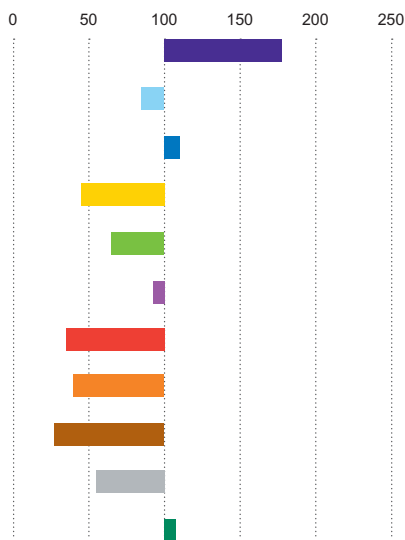


Figure 4

Propensity calculation & graph for residential planning applications

Mosaic Public Sector Groups	Target	%	Base	%	Pen %	Index
A - Symbols of Success	2,789	40.71	32,065	22.99	8.70	177
B - Happy Families	1,092	15.94	26,150	18.75	4.18	85
C - Suburban Comfort	1,206	17.63	21,984	15.76	5.49	112
D - Ties of Community	376	5.49	16,501	11.83	2.28	46
E - Urban Intelligence	153	2.23	4,907	3.52	3.12	63
F - Welfare Borderline	22	0.32	494	0.35	4.45	91
G - Municipal Dependency	35	0.51	1,891	1.36	1.85	38
H - Blue Collar Enterprise	238	3.47	10,557	7.57	2.25	46
I - Twilight Subsistence	53	0.77	3,597	2.58	1.47	30
J - Grey Perspectives	235	3.43	9,007	6.46	2.61	53
K - Rural Isolation	650	9.49	12,302	8.82	5.28	108
TOTAL	6,851	100	139,455	100	4.91	100

If reliable service profiles can be built up from large samples of services delivered by a broad range of municipalities, it is possible to predict service profiles for other municipalities based purely on their citizen profiles. In other words, service demand in one municipality can be predicted on the basis of customer behaviour in other municipalities.

3 Initial findings from UK work

From April to September 2007, the UK local government esd-toolkit profiled 1.7 million service transactions across a range of consistently defined services delivered by twelve English local authorities.



Propensity graphs are illustrated below for groups of service:

• Social services

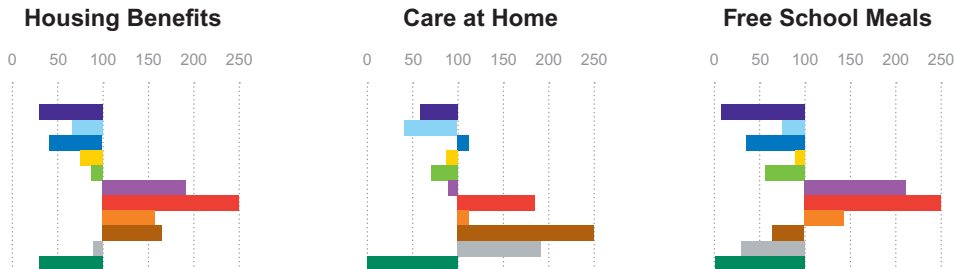


Figure 5
Propensity graphs by UK profile group for social services

• Environmental services

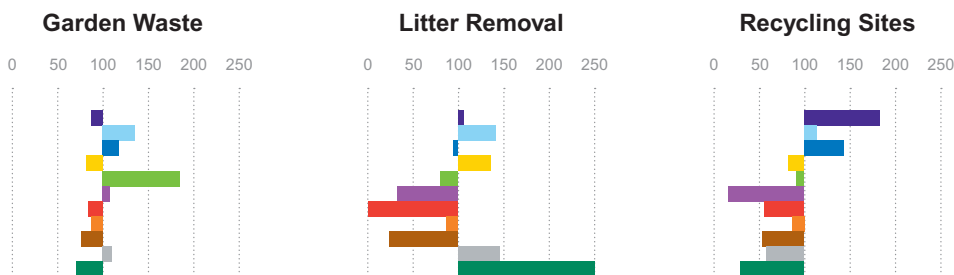


Figure 6
Propensity graphs by UK profile group for environmental services

Findings support the broad generalisation that more affluent groups have greater demand for environmental services and less affluent groups have greater demand for social services, which typically have a higher unit cost.

Profiles for other services are more complex. The data given in Figure 7 for enquiries and applications for older person bus passes supports the hypothesis that amongst older people, the more affluent are more likely to claim their entitlements.

Mosaic Public Sector Groups	Target	%	Base	%	Pen %	Index
■ A - Symbols of Success	5,581	9.58	12,749	4.63	43.78	207
■ B - Happy Families	3,049	5.23	22,899	8.32	13.31	63
■ C - Suburban Comfort	24,481	42.00	58,778	21.34	41.65	197
■ D - Ties of Community	6,209	10.65	58,050	21.08	10.70	51
■ E - Urban Intelligence	3,078	5.28	42,905	15.58	7.17	34
■ F - Welfare Borderline	3,273	5.62	29,032	10.54	11.27	53
■ G - Municipal Dependency	389	0.67	3,397	1.23	11.45	54
■ H - Blue Collar Enterprise	5,979	10.26	29,615	10.75	20.19	95
■ I - Twilight Subsistence	2,799	4.80	8,835	3.21	31.68	150
■ J - Grey Perspectives	3,293	5.65	8,763	3.18	37.58	178
■ K - Rural Isolation	151	0.26	350	0.13	43.14	204
TOTAL	58,282	100	275,373	100	21.16	100

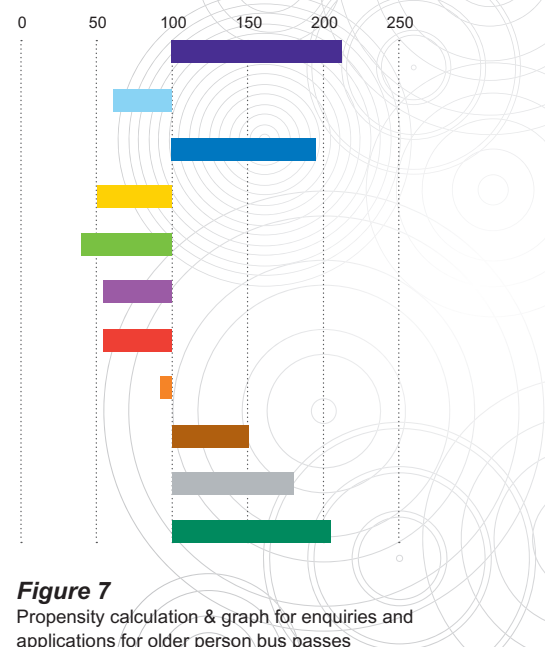


Figure 7
Propensity calculation & graph for enquiries and applications for older person bus passes

4 Targeting service delivery based on service profiles

Customer Profiling forms part of the wider Customer Insight activity of municipalities aiming to gain a better understanding of customers using techniques which are more mature in the private sector. Some of the customer targeting decisions influenced by profiles are given below.

4.1 Which services do we web enable next?

The decision to invest in putting a service transaction online is influenced by:

- The feasibility of transactions being made online
- The cost of web enabling
- The relative cost of transacting via the web rather than other channels
- Customer preferences for the web compared with other channels

The final one of these factors (customer channel preferences for a service) is indicated by service profiling.

Channel profiling of services which are web enabled can be used to indicate the propensity of each profile group/type to use each channel. Profiling of customers for the service under consideration for web enabling shows if those customers are likely to use the web channel if it were available.

Accurate channel propensities by profile group/type are available for parts of the private sector (eg banking). Work underway by esd-toolkit aims to provide web channel preferences for public sector services.

4.2 How do we market our services?

Data accrued on the characteristics of each profile group/type indicates:

- The structure and format of messages to which citizens of the group/type they respond
- The types of media which citizens of the group/type respond to (eg particular news papers, radio stations, posters)

Where marketing work is geographically specific, it can be concentrated on the locations where specific groups live or travel through.

4.3 Where do we place our contact centres?

The location of contact centres that citizens visit in person to perform service transactions is influenced by the location of citizens of the profile groups/types that prefer the face-to-face channel over others (telephone, web etc).

If a municipality wishes to reduce the number of contact centres, it can minimise any negative impact by optimally placing those which remain.

4.4 Are we reaching our potential customers?

If a municipality compares its customer profiles for a service with the average profiles for a number of other municipalities, it can identify differences which may indicate it is failing to reach certain groups.

A municipality may also have policy objectives to target specific groups.

Targeting can be achieved by understanding the profiles of customers, where they live and how they can be reached by marketing activity.

4.5 How can we have the biggest impact on an outcome?

Services are aimed at improving specific outcomes. For example:

- “Reduced teenage pregnancy” can be improved by a “Sex advice” service
- “Cleaner streets” can be improved by a service to allow “Reporting fly tipping”

So where policy objectives are expressed in terms of outcomes, services can be seen as levers to meet those objectives. Service delivery strategies can be devised to improve the take-up and impact of services relevant to desired outcomes. For example:

- Sex advice can be aimed at households with the target demographic; particularly where actual take-up is currently disproportionately low for that demographic
- Marketing that encourages reporting of fly tipping and advises how to do it can be focussed on areas of greatest fly-tipping where it is currently not reported. Marketing should be via channels to which the target population is most responsive. Reporting should be enabled through channels (eg SMS texting) which the target population is likely to use.

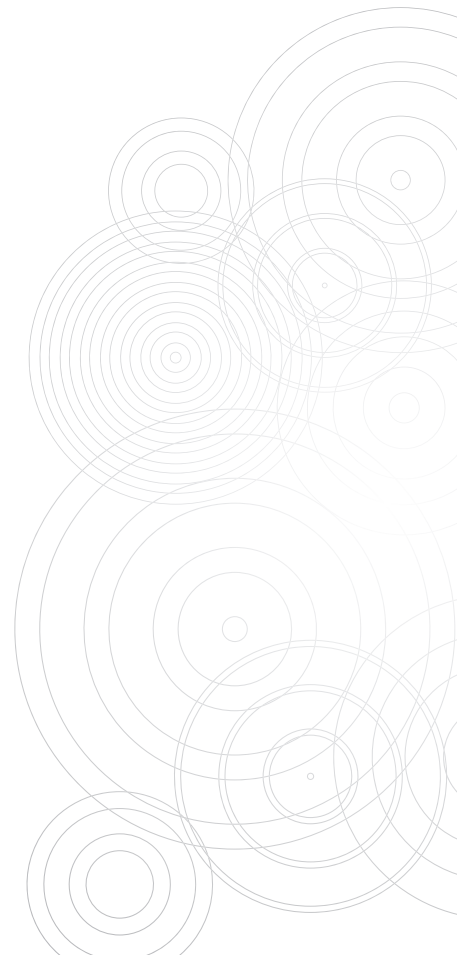
5 Other factors for consideration

The approach described above is aimed at targeting services for which take-up by channel can be profiled according to composite profiles that apply to geographic neighbourhoods. As such the approach has some limitations.

Firstly, such composite profiles are not suitable for identifying certain population segments. For example, people with disabilities are usually split between multiple neighbourhood profiles. Like wise gender segmentation is rarely associated with neighbourhood. For other factors such as age and ethnicity, composite profiles can only support broad generalities.

Secondly, measures of service take-up are not necessarily measures of service demand, as certain high demand groups may not have the means or motivation to take up services.

Thirdly, for greatest impact on desired outcomes it is better to have an understanding of the needs of profile groups/types rather than their demands. Services can then be introduced, removed or tailored to meet certain needs or to avoid needs arising (eg preventative medicine amongst groups prone to certain ailments). This is a more effective way of improving outcomes than simply better targeting of an existing mix of services.



6 Further information

6.1 Related reading

- Customer profiling for UK local government:
<http://www.esd.org.uk/profiling>
- Customer Insight in public services “A Primer”, UK Cabinet Office
Oct 2006 - http://www.cabinetoffice.gov.uk/upload/assets/www.cabinetoffice.gov.uk/publications/delivery_council/pdf/cust_insight_primer061128.pdf
- Richard Harris, Peter Sleight, Richard Webber (2005)
Geodemographics, GIS and Neighbourhood Targeting:
Neighbourhood Targeting and GIS. John Wiley and Sons

6.2 Contacts with expertise within Smart Cities partnership

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6.3 Document history

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www.smartcities.info

www.epractice.eu/community/smartcities

The Smart Cities project is creating an innovation network between cities and academic partners to develop and deliver better e-services to citizens and businesses in the North Sea Region. Smart Cities is funded by the Interreg IVB North Sea Region Programme of the European Union.

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