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Household resource usage and its drivers: a highly socio-economically disaggregated model

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Abstract

Addressing materially intensive consumption patterns and lifestyles is vital in the struggle to reduce the impact of modern society on the environment. The sustainable consumption agenda not only needs to be based on robust evidence of the scale of current resource usage but also on an understanding of the drivers behind consumption. The subject of this paper is a quantitative household metabolism model that addresses both of these requirements.

The model describes household resource demand at high levels of socio-economic and geographical disaggregation based on consumer expenditure data in conjunction with Census data. Case study areas of extreme relative deprivation and affluence, and neighbourhoods representing typical examples of the UK National Classification of Census Output Areas are studied. The demand of these localities for selected material goods, such as household appliances, carpets and clothing is examined; the resource flows are related to the socio-demographic structure and institutional infra-structure. This approach has the ability to identify consumption inequalities at the level of commodity groups, and to reveal trends in inequality over time.

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1 Introduction

Addressing materially intensive consumption patterns and lifestyles is vital in the struggle to reduce the impact of modern society on the environment. The sustainable consumption agenda not only needs to be based on robust evidence of the scale of current resource usage but also on an understanding of the drivers behind consumption if we are to successfully move towards a more resource lean society.

Households can be considered major drivers of consumption and the associated environmental degradation (European Environment Agency 2005). In economic terms, household expenditure is the largest final demand category in most countries (Hertwich 2005), and household expenditure represented 49% of total final demand in 2002 in the UK (Office for National Statistics 2002). In terms of environmental impacts, published studies, which focus on energy usage and associated carbon dioxide emissions, have found that over 70% of the total energy demand in the UK economy is attributable (directly and indirectly) to household goods and services (Jackson and Papathanasopoulou 2004).

Many strategies aimed at reducing resource demand are best pursued at the level of geographical areas or social communities. For example the UK Sustainable Development Strategy proposes that behaviour change towards more sustainable lifestyles can be approached by focusing on policies that *enable*, *encourage*, and *engage* people and communities towards more sustainable behaviour (HM Government 2005). Strategies for *enabling* pro-environmental choice include providing facilities such as convenient recycling provisions and good public transport, and a move towards provision of services to consumers instead of goods (Femia et al. 2001; Jackson 1996). Strategies for *encouraging* people in initiatives to help themselves include incentive schemes, such as road pricing, grants for home insulation, and the promotion and celebration of successful community action schemes. Strategies for *engaging* consumers in a more resource lean lifestyle include support through the provision of opportunities for community involvement in local action plans (Sustainable Consumption Roundtable 2006). The UK Sustainable Development Strategy also proposes that government needs to lead by example (i.e.

“*exemplify*”) with clear and consistent messages, for example through its Vision for Sustainable Communities.

The subject of this paper is a model that estimates the consumption demands of households grouped by small socio-economically homogenous geographical areas. Results from the model contribute to the evidence-base concerning current resource usage and trends, at both household and neighbourhood level; this evidence can feed into sustainable development policy-making. The model quantifies the average annual weight of various commodities, such as clothing and household appliances, purchased by the households of a neighbourhood. It provides a link between the socio-economic and demographic characteristics of the households that make up each small area and the area’s resource demands, and hence gives us information about the relative resource demands of different socio-economic and demographic groups for various consumer goods.

When devising sustainable development policies, specific strategies may be required for different income groups; in particular, it is important to ensure that lower-income groups are not disproportionately disadvantaged (Dresner and Ekins 2004; Herendeen 1974; Papathanasopoulou 2005). Studies concerning levels of inequality have been carried out on the basis of monetary income and expenditure (Brewer et al. 2006; Goodman and Oldfield 2004), and on the basis of direct and indirect energy demand (Herendeen 1974; Kok et al. 2003; Papathanasopoulou 2005). This paper contributes to the evidence-base by presenting a methodology for estimating inequalities in material demand for consumer commodities, for example, a measure of inequality in the material consumption of refrigerators and freezers. This is done on the basis of inequalities between areas, and is able to reveal the extent to which there are “pockets of deprived areas” in England and Wales for specific material commodities.

The paper is constructed as follows: in Section 2 the model is introduced and the methodology briefly described, section 2.2 explains the choice of case study areas, and Section 2.3 looks at how the model is used to explore inequalities in resource demand. Results are contained in Section 3; material flows of selected case study neighbourhoods for selected commodities (household appliances; carpets and rugs; clothing) are presented in sections 3.1 and 3.2 and the results of the inequality

investigations are shown in Section 3.3. Section 3.4 discusses data availability issues. The paper concludes by synthesizing the contribution the model makes to the evidence base for policy-making, and includes recommendations concerning data provision. A glossary of terms is placed after the conclusion.

2 Methodology

The subject of this paper is a model that quantifies the annual material demand of small geographical areas in England and Wales by calculating the weight of commodities purchased by each area's households in the years 1996/97 to 2003/04. The model is called NoRA (Neighbourhood Resource Analysis model). The study uses accredited, national, regularly updated data-sources and is therefore replicable for other commodities and areas, and can be updated for future years.

In this paper direct resource flows, which are the flows that are physically demanded by the households of neighbourhoods under study, are modelled; upstream resource flows associated with the production of these materials, known as indirect flows, are excluded (Eurostat 2001; Rosenblum et al. 2000). Thus, for example, the model will include the materials and packaging concerned with the demand for a carpet, but will not consider resources used by the supply chain to produce it. The methodology can in principle be used to model both direct and indirect household resource flows; the results presented in this paper represent the first stages of a full resource model that is under development, in which all resource flows (direct and indirect) will be considered.

The next section describes the methodology employed within NoRA. A more detailed description of the methodology, including discussions concerning its assumptions and limitations, can be found in Druckman et al. (2006).

2.1 Neighbourhood Resource Analysis model (NoRA)

NoRA analyses the material demand of households in neighbourhood areas; neighbourhood areas are defined as Output Areas (OAs) used in the UK 2001 Census. Use of OAs gives the highest level of geographical detail available from the 2001 Census. OAs are small areas of approximately 124 households on average, that are as

socially homogenous as possible, based on tenure of household and dwelling type² (Office for National Statistics 2006). NoRA uses the 2001 Census definition of a household unit, which defines a household as “one person living alone, or, a group of people living at the same address with common housekeeping – that is, sharing either a living room or at least one meal a day” (Office for National Statistics 2001).

The approach adopted in NoRA is to compute average annual household spending of a neighbourhood area (OA); this expenditure is converted into material demand using price/weight conversion data. A system diagram is shown in Figure 1. The diagram illustrates the cross-sampling methodology where the socio-economic and demographic characteristics of households in each small geographical OA (from the Census) is combined with the average expenditure of households with matching socio-economic characteristics (from the Family Expenditure Survey³). This gives the average household expenditure of each neighbourhood on consumer commodities. Using UK Trade Data⁴, which give the average price per unit weight for consumer commodities, the average material demand for consumer commodities is computed from the expenditures already calculated.

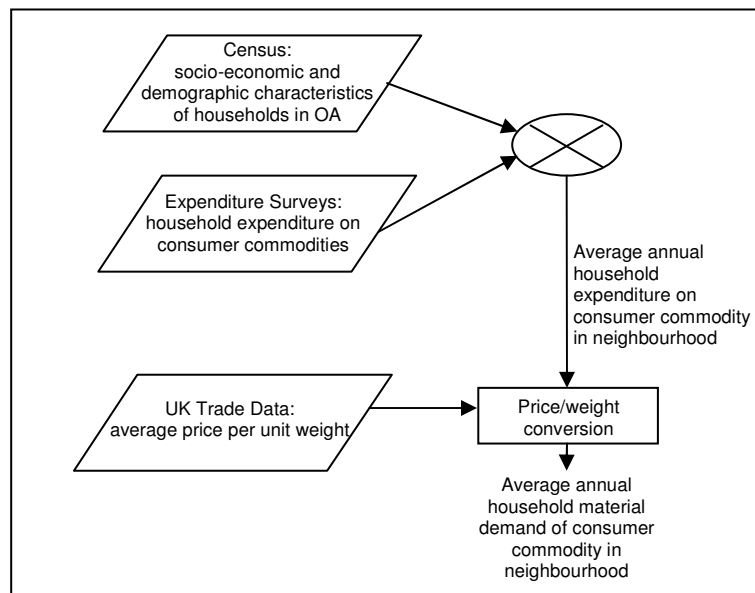


Figure 1. NoRA system diagram

² In England and Wales there are 175,434 OAs (Office for National Statistics 2006)

³ The Family Expenditure Survey provides detailed household expenditure for a sample of 7,000 households per annum (Office for National Statistics 2005).

⁴ Available from /www.uktradeinfo.com/

2.2 Choice of case study areas

NoRA is applicable to every small geographical OA in England and Wales. In order to facilitate analysis and discussion concerning the material flows in areas of varying socio-economic and demographic composition, specific case study areas were selected for scrutiny. It was decided to select two sets of case study areas: the first set is of “typical” areas representative of neighbourhoods in England and Wales (see below for an explanation of the meaning of “typical” in this context); the second set looks at areas of extreme relative deprivation.

The first set, “typical” areas representative of neighbourhoods in England and Wales, are chosen using the UK National Output Area Classification (OAC) system. The OAC system classifies OAs into 7 super-groups, 21 groups and 52 sub-groups (Vickers et al. 2005)⁵. The names of the 7 super-groups are shown in Table 1; in this paper one neighbourhood area is chosen to illustrate the resource demands of each super-group.

Table 1. OAC Super-Groups

OAC Super-Group Number	OAC Super-Group Name
1	<i>Blue Collar Communities</i>
2	<i>City Living</i>
3	<i>Countryside</i>
4	<i>Prospering Suburbs</i>
5	<i>Constrained by Circumstances</i>
6	<i>Typical Traits</i>
7	<i>Multicultural</i>

The second set of case study areas enables the material demands of areas of extreme deprivation and affluence area to be analysed. The Index of Multiple Deprivation (IMD) 2004 is used as a basis for selecting areas for this analysis. The IMD measures

⁵ OAC classifies Census 2001 Output Areas (OAs) based on cluster analysis; it uses 41 variables that are chosen to represent the main dimensions of the Census 2001 data with the minimum number of variables (Vickers et al. 2005). OAC is a fully documented, robust and transparent classification methodology; it is publicly accessible, is free at point of use for researchers, policy-makers and public, and has been awarded status of a “National Statistic” as of August 2005 (Vickers et al. 2005). It is comparable to commercially available systems such as ACORN (CACI Ltd 2005) or MOSAIC (Experian 2003), but offers significant advantages with respect to transparency and cost.

deprivation based on performance in seven domains: income; employment; health and disability; education, skills and training; barriers to housing and services: living environment; and incidence of recorded crime in the area (Office of the Deputy Prime Minister 2003). Case study OAs are selected that are within the lowest and highest 1% on the IMD scale.

In addition to analysis of the two sets of case study areas, inequalities in material demand for consumer commodities are explored. This analysis requires material flows to be calculated for every neighbourhood in England and Wales, as explained below.

2.3 Exploration of inequalities

The aim of this part of the project is to use NoRA to explore inequalities in material demand for consumer commodities, such as household appliances. This is done by comparing across every neighbourhood in England and Wales to identify the extent to which “pockets of deprivation” occur for specific commodities. This is performed by calculating an Area-based Material Gini (AM-Gini) coefficient; this is a measure of material inequalities by area.

The AM-Gini is based on the conventional Gini coefficient which is a measure of income inequality⁶. The AM-Gini differs from the conventional Gini coefficient in two ways. First it is a measure of inequality in terms of mass of materials instead of being a monetary measurement; in other words, it reflects material inequalities in society. The second way in which the AM-Gini differs from the conventional Gini is that it is calculated on an area-basis, giving a measure of inequality by comparing the demands of neighbourhoods, whereas the conventional Gini compares household or per capita incomes or expenditures.

To calculate the AM-Gini the material demand must be calculated for every OA in England and Wales. However, at the time of writing, a comprehensive dataset covering every OA in England and Wales was not available, and therefore the method is demonstrated on a restricted area basis. The basis used for the following analysis is

⁶ The Gini coefficient is measured as “*half of the arithmetic average of the absolute differences between all pairs of relative incomes, the total being normalized on mean income*” (Barr 1998: page 151).

areas covering the whole of England and Wales that are larger than OAs and that are not socio-economically homogenous⁷. Using this area basis means that the details of pockets of extreme deprivation and extreme affluence are lost, and therefore the results show lower levels of inequality than if calculated on the basis of OAs. Future work, assuming data become available, will calculate the AM-Gini on the OA area level basis.

3 Results and Discussions

3.1 Commodity demand in typical OAC areas

In this section the results obtained from NoRA for average household material demand of selected consumer commodities (household appliances; carpets and rugs; and clothing) in the set of case study areas representing OAC super-groups are presented and discussed. In the discussion names of OAC super-groups are written in italics. The locations of the selected case study areas are shown in Table 2.

Table 2. Locations of OAC case study areas

OAC Super-Group Number	OAC Super-Group Name	OA Code	Postcode	Location (town/Government Office Region)
1	<i>Blue Collar Communities</i>	00CRFL0006	B63 2DS	Dudley, West Midlands.
2	<i>City Living</i>	00FNNU0018	LE2 2AB	Leicester, East Midlands
3	<i>Countryside</i>	46UFGX0003	BA14 6BR	West Wiltshire, South West
4	<i>Prospering Suburbs</i>	35UGFU0001	NE22 6HH	Wansbeck, North East
5	<i>Constrained by Circumstances</i>	00CHFF0002	NE9 6LY	Gateshead, North East
6	<i>Typical Traits</i>	31UCHG0004	LE7 2JD	Charnwood, East Midlands
7	<i>Multicultural</i>	00FNNN0002	LE5 4AD	Leicester, East Midlands

Figure 2 shows the demand for each of the OAC case study areas averaged over years 2000/01-2003/04 for three commodity groups: ‘Household Appliances’, ‘Carpets and Rugs’, and ‘Men’s and Boys’ Clothing’. The demand for all three commodity groups is highest in the area representing OAC super-group *Prospering Suburbs*. *Prospering Suburbs* are areas with above average proportions of detached houses and 2+ car

⁷ The methodology is demonstrated at Ward level. There are 8,800 Wards in England and Wales compared to 175,434 OAs.

households, and, as the name implies, are relatively prosperous areas⁸. It is therefore not surprising that this case study area has the highest demand. The lowest demand shown by the case study areas is shown by *City Living* for ‘Carpets and Rugs’ and *Constrained by Circumstances* for ‘Household Appliances’ and ‘Men’s and Boys’ Clothing’. *City Living* represents areas with above average proportions of single person households who are not pensioners, and above average proportions of heads of households holding a Higher Education (HE) qualification; the areas have above average proportions of flats, and below average proportions of detached houses. *Constrained by Circumstances* are areas with below average proportions of heads of households holding a HE qualification, and above average proportions of flats and properties that are social rented. As the name implies, this group is relatively deprived.

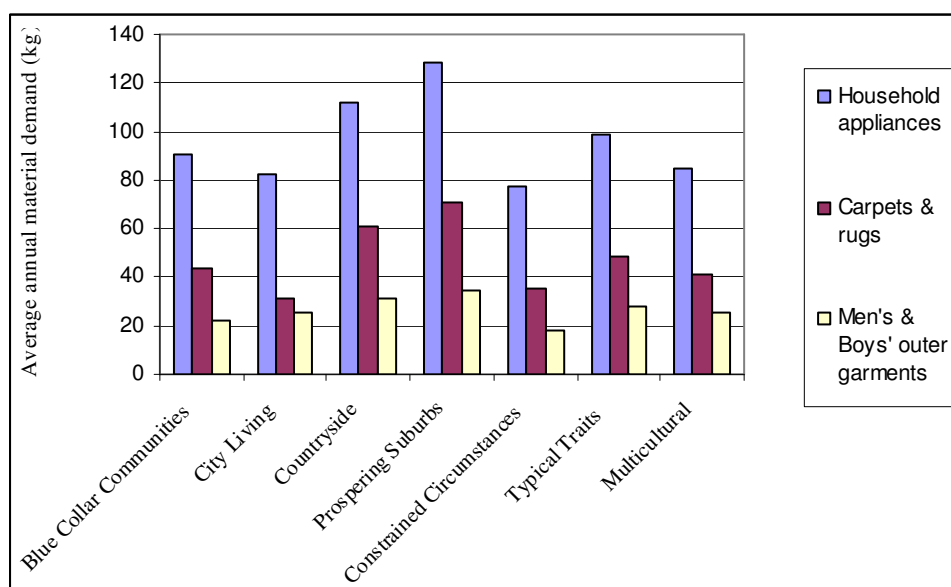


Figure 2. Demand for selected commodities in typical OAC study areas 2000-04

The relative demand for ‘Household Appliances’ may be related to the institutional infrastructure, and the way in which the inhabitants of neighbourhoods use facilities provided. For example, it is probable that nearly all households in *Prospering Suburbs* own their own clothes washing machine, whereas it is probable that some inhabitants of *Constrained by Circumstances* and *City Living* areas use laundrettes. Reasoning such as this may explain the greater demand for ‘Household Appliances’ in the area

⁸ A more detailed description of the characteristics of the OAC super-group areas is given in Appendix 1.

representing *Prospering Suburbs* compared to the area representing *Constrained by Circumstances*.

It is interesting that the case study area representing *City Living* shows a lower demand for 'Carpets and Rugs' than the area representing *Constrained by Circumstances*; this may perhaps indicate a preference for 'Hard Floor Coverings' instead of 'Carpets and Rugs' by the socio-economic group that make up *City Living* areas. This demonstrates the ability of NoRA to identify the diversity of demand in neighbourhoods according to different socio-economic and demographic composition.

NoRA reveals the relative contribution of each commodity category to total direct household material throughput in each neighbourhood. Figure 2 shows the weight of 'Men's and Boys' Clothing' is lower than that of 'Household Appliances' and 'Carpets and Rugs' in all cases. Similarly, in every area the weight of 'Carpets and Rugs' is less than the weight of 'Household Appliances'. The relative contribution of commodities to total material throughput varies. For example, in the *Prospering Suburbs* case study area the material demand of 'Carpets and Rugs' is far higher in relation to the demand for 'Household Appliances' than in the *City Living* case study area. This type of information is of especial interest to household waste management planners; in future work, the results from NoRA will be mapped using a Graphical Information System (GIS) to give a visual representation of neighbourhood material flows, which could then be used to track waste arisings.

NoRA has the ability to reveal trends in the demand for commodities, and to explore whether trends vary across the study areas. Figure 3 shows the trend for clothing demand in two OAC case study areas, *Prospering Suburbs* and *Multicultural*. *Multicultural* areas are characterised by residents that are more likely than average to have been born outside the UK, and higher than average proportion of rented properties and flats. The first point to note about Figure 3 is that the demand is always higher in the *Prospering Suburbs* study area than in the *Multicultural* study area; this result is expected due to the higher affluence of *Prospering Suburbs*.

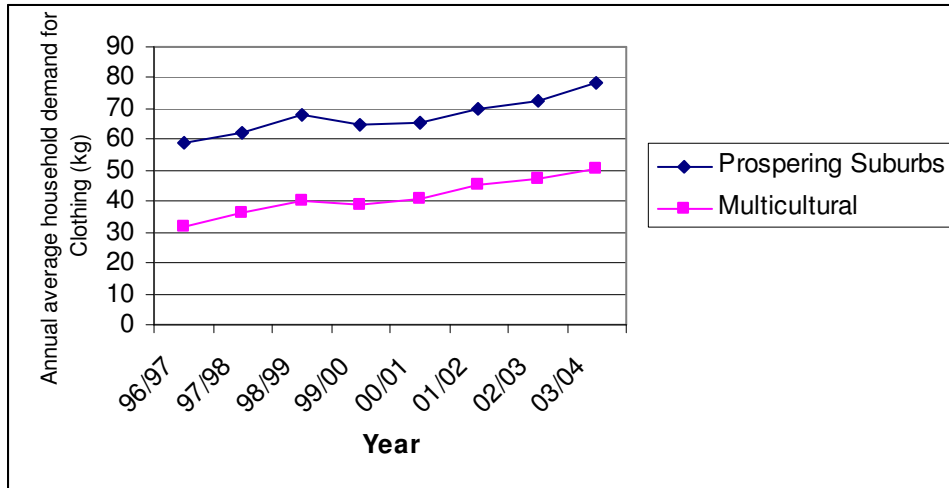


Figure 3. Trends for clothing demand in two case study areas

The second point to note about Figure 3 is that a trend of increased clothing demand is shown in both the *Prospering Suburbs* and the *Multicultural* study areas. The relative demand, however, changes with time. Figure 4 shows that the relative demand in the *Multicultural* case study area compared to *Prospering Suburbs* case study area is 54% in 1996/97 whereas it is 65% in 2003/04. This means that the increase in clothing demand is relatively greater in the *Multicultural* case study area than the *Prospering Suburbs* case study area. This result probably reflects conditions in the consumer market for clothing. The Consumer Price Index for Garments fell from 172.9 in 1996 to 100 in 2005 (on 2005=100 basis), implying an increasing availability of cheaper clothing with time; this is likely to be the reason behind the increased relative level of demand in the less affluent *Multicultural* neighbourhood compared to that in the more affluent *Prospering Suburbs* neighbourhood.

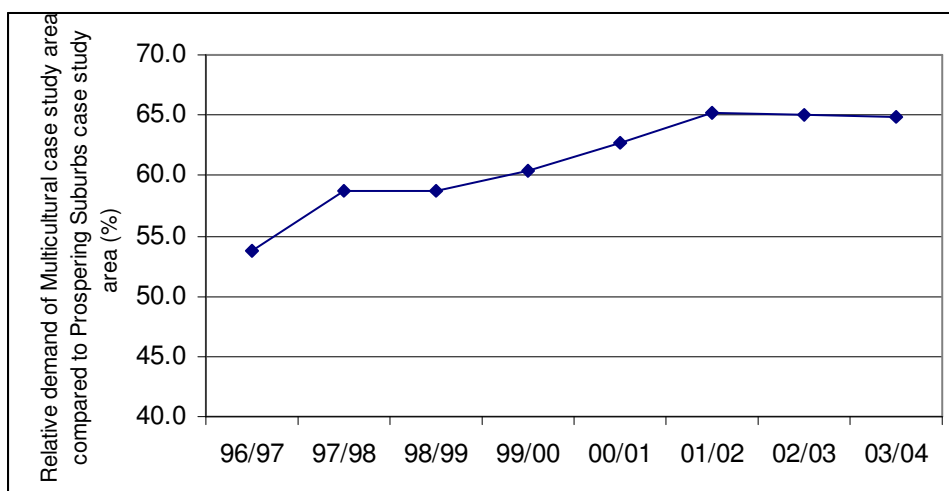


Figure 4. Relative demand for clothing in the *Multicultural* case study area compared to *Prospering Suburbs* case study area.

3.2 Commodity demand in areas of extreme relative deprivation and affluence

The locations of the case study areas chosen to represent extreme deprivation and extreme affluence are shown in Table 3.

Table 3. Location of case study areas representing extremes of deprivation

Deprivation level	OA Code	Postcode	Location (town/Government Office Region)
Extreme deprivation	00BYFE0010	L8 0RP	Liverpool, North West
Extreme affluence	21UHHX0002	TN225NE	Uckfield, South East

Results from NoRA show that, as expected, the mass of material demand is higher in extremely affluent areas and lower in severely deprived areas than the mean for England and Wales. This is demonstrated in Figure 5 which compares the demand for ‘Household Appliances’ and ‘Carpets and Rugs’ for the two case study areas with the mean household demand in England and Wales.

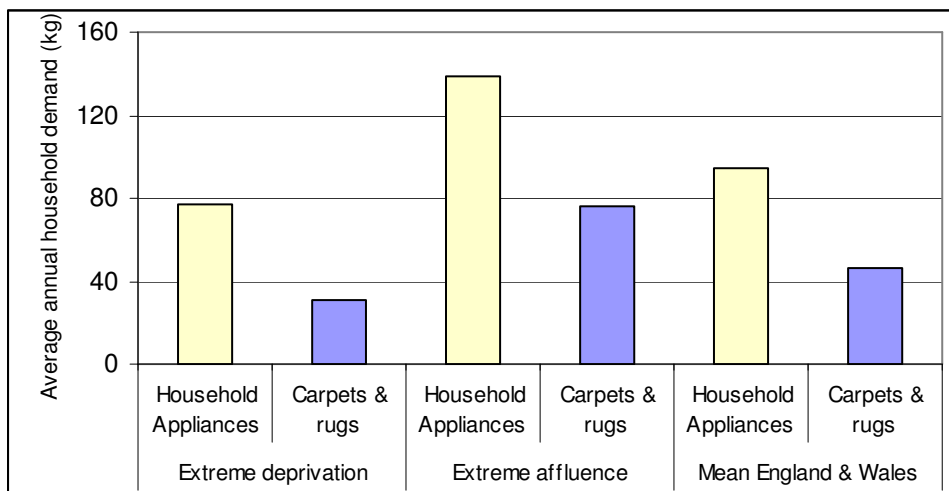


Figure 5. Household durable demand in areas of contrasting relative deprivation 2000-04

Figure 5 shows that there is a greater disparity between the consumption of deprived communities and highly affluent communities for ‘Carpets and Rugs’ than for ‘Household Appliances’. In the case of ‘Carpets and Rugs’ the demand in the deprived case study area is 33% below the mean for England and Wales, whereas for ‘Household Appliances’ the demand is 18% below the mean. In the extremely affluent case study area the demand for ‘Carpets and Rugs’ is 65% above the mean

for England and Wales, and just 48% above the mean for ‘Household Appliances’. The reasons behind this disparity are not known; they might be due to cultural differences, lifestyle choices or affordability, or due to a combination of various factors. Such a discussion is beyond the remit of this paper. However, the results show that there are more likely to be high levels of inequality with regard to ‘Carpets and Rugs’ than for ‘Household Appliances’, and that when considering policies to reduce resource demand, it is relatively more important to consider income-specific strategies in the case of ‘Carpets and Rugs’, than for ‘Household Appliances’. This analysis looks at extremes of deprivation and gives no information about how equitable the distribution of material commodities is across England and Wales between these extremes. The findings give an indication of which commodities should be the focus of further exploration of inequalities, using, for example, the AM-Gini Coefficient (see Sections 2.3 and 3.3).

3.3 Assessing inequality in the material demands of areas

One of the aims of this paper is to demonstrate how the results from NoRA can be used to calculate the AM-Gini (a measure of material inequalities by area, see Section 2.3) for a variety of consumer commodities. Figure 6 shows trends in the Gini expenditure coefficient for ‘Total Expenditure’, calculated on a household basis, compared to the AM-Gini calculated for ‘Total Expenditure’⁹ and ‘Mens’ and Boys’ Clothing’, both calculated on an area basis, as explained above. The coefficients are indexed to 1.0 at year 1996/7 as the absolute values of Gini’s calculated on different bases (area or household) are not directly comparable. When looking at total expenditure the AM-Gini coefficient shows greater variation over time than the Gini coefficient due to accumulated inaccuracies in the modelling process. A Gini or AM-Gini coefficient of zero represents perfect equality and a coefficient of one represents perfect inequality.

⁹ This is not strictly speaking an AM-Gini as it covers all consumer purchases, many of which are services not commodities.

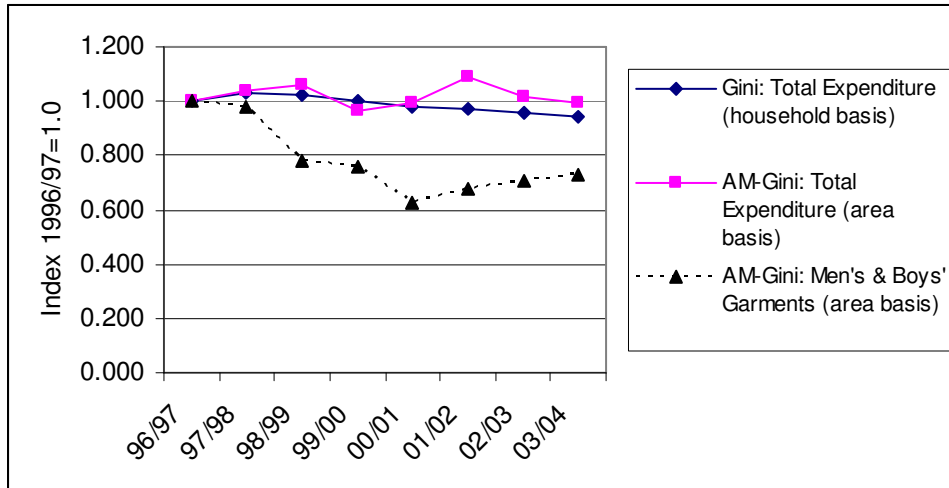


Figure 6. Trends in Gini and AM-Gini coefficients (Index 1996/97=1.00)

Figure 6 shows an overall downward trend for the AM-Gini for ‘Mens’ and Boys’ Clothing’, indicating an overall increase in equity with time, with a slight small reversal in the final three years of the study. As stated above, the Consumer Price Index for Garments fell from 172.9 in 1996 to 100 in 2005 (on 2005=100 basis) implying increasing availability of cheaper clothing; this is likely to be the reason for lower inequity in this demand category over time, and may account for the overall downward trend.

Table 4 shows the AM-Gini for selected commodities averaged over years 2000/01-20003/04; the figures indicate higher inequality for ‘Carpets and Rugs’ than for other commodities such as ‘Clothes Washing and Drying Machines’, and ‘Refrigerators, Freezers and Fridge Freezers’, and ‘Men’s and Boys’ Garments’; this is in line with the analysis carried out in Section 3.2, which showed a greater disparity in the demand for ‘Carpets and Rugs’ than for ‘Household Appliances’. These results indicate that policy interventions should take possible exclusion issues into account more with respect to policies concerning floor coverings than household appliances and male clothing.

Table 4. AM-Gini coefficient for selected commodities (2000-04)

Commodity	AM-Gini Coefficient (2000-04)
Carpets & rugs	0.085
Clothes washing & drying machines	0.050
Refrigerators, freezers & fridge freezers	0.053
Men's and boys' outer clothing	0.064
Total expenditure ¹⁰	0.073

3.4 Data availability

It should be noted that Figures 2 and 5 show the demand averaged over years 2000/01-2003/04; the results using NoRA have been averaged over this time-period because the sample size of the Expenditure Survey is not large enough to give reliable data for each year individually at this level of commodity detail. The survey size particularly limits analysis of relatively infrequently purchased commodities such as hard floor coverings, whereas analysis of more frequently purchased commodities, such as clothing, is less limited. In order to provide meaningful results for a wide range of commodities at a highly socio-economically disaggregated level, and for highly disaggregated commodity categories, the sample size of the Expenditure Survey needs to be considerably larger.

4 Conclusions and future recommendations

In order to devise effective policies to reduce resource usage, and to monitor progress, we need to know what kinds of consumption patterns and lifestyles are associated with more (and less) resource consumption, and what is the relative contribution to resource demand from different socio-economic and demographic groups or lifestyle types. We also need to know about current trends in consumption, and the role played by the institutional infrastructure. NoRA, the model described in this paper, provides some answers to these questions; NoRA estimates the household resource demand for consumer commodities at high levels of socio-economic and geographical

¹⁰ This is not strictly speaking an AM-Gini as it covers all consumer purchases, many of which are services not commodities.

disaggregation, using national, accredited, regularly updated databases. The ability of NoRA to analyse at very fine disaggregation levels is constrained by lack of adequate data; in particular, the sample size in the Expenditure Surveys is too small. One outcome of this study is our recommendation that the sample size in the Expenditure Survey should be increased.

In this paper NoRA has been applied to case study areas that are representative of 'typical' OAC neighbourhoods in the UK, and also to areas of extreme relative deprivation for selected consumer commodities. The case study demonstrates which types of areas are responsible for the highest mass flow of goods, and shows the relative contribution of selected commodities to total material throughput. A time-series of material flows is also analysed to demonstrate trends in material demand that vary according to the socio-economic/demographic characteristics of the neighbourhoods. In future work neighbourhood material demands estimated using NoRA will be mapped using GIS. This will give a better visual representation of material flows and can be used to facilitate waste management planning and resource reduction policies, both of which often focus on neighbourhood level initiatives.

Striving towards greater equality is a fundamental principle in sustainable development, and it is important that resource reduction policies do not disproportionately disadvantage deprived communities. NoRA is a tool that can be used for calculating the AM-Gini, an area-based measure of material inequality. The AM-Gini provides a basis for the broadening of the debate on fuel poverty and food deserts by identifying the extent of "clothing beaches", "household appliance wildernesses" and "carpet outbacks"! Many strategies to reduce resource demand are best pursued at neighbourhood level, and therefore a tool, such as NoRA, that can be used to estimate inequalities across areas, will be of use to policy-makers in devising strategies and monitoring progress.

Acknowledgements

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Glossary of abbreviations

OA	Census Output area consisting of approximately 124 households on average. In England and Wales there are 175,434 OAs (Office for National Statistics 2006).
OAC	UK National Classification of Census Output Areas. This paper considers the 7 super-groups of this classification system.
AM-Gini	Area-based Material Gini coefficient
NoRA	Neighbourhood Resource Analysis model

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Appendix 1. Characteristics of OAC super-groups

OAC Cluster	Number of OAs in cluster	% OAs in cluster	Variables with proportions far below national average ¹¹	Variables with proportions close to national average ¹²	Variables with proportions far above national average ¹³
1: Blue Collar Communities	35,837	16.0	All flats HE Qualification	Age 25-44 Age 45-64 Age 65+ Health & social work employment Agriculture/fishing employment Provide unpaid care	Terraced housing Rent (public)
2: City Living	16,638	7.5	Detached housing Households with non-dependent children Age 5-14	Single pensioner household People per room Work from home Two adults no children Unemployed Divorced	HE qualification Single person household (not pensioner) Born outside UK Rent (private) All flats
3: Countryside	27,743	12.4	Population density Public transport to work All flats	Health & social work employment Single pensioner household Age 5-14 Hotel & catering employment Working part-time	2+ car household Work from home Agriculture/fishing employment Detached housing
4: Prospering Suburbs	47,251	21.2	Rent (public) Rent (private) Terraced housing All flats No central heating	Population density Age 65+ Wholesale/retail trade employment Mining/quarrying/construction employment Health & social work employment Manufacturing employment Students (full-time)	2+ car household Detached housing
5: Constrained by Circumstances	33,166	14.8	Detached housing 2+ car household HE qualification	Age 45-64 No central heating Provide unpaid care Health & social work employment Wholesale/retail employment	All flats Rent (public)
6: Typical Traits	40,769	18.3	Rent (public)	Single pensioner household Provide unpaid care Hotel & catering employment	Terraced housing

¹¹ For a variable to be “far below average” it must have a difference of more than 0.15 below the UK mean.

¹² For a variable to be “close to the average” it must have a difference of within 0.015 below or above the UK mean.

¹³ For a variable to be “far above average” it must have a difference of more than 0.15 above the UK mean.

				People per room Rooms per household Indian, Pakistani or Bangladeshi Born outside UK Lone parent household Students (full-time) Age 5-14 Age 45-64 All flats Work from home Health & social work employment Wholesale/retail trade employment Routine/semi routine occupation Mining/quarrying/construction employment Manufacturing employment	
7: Multicultural	21,721	9.7	Detached housing	Routine/semi routine employment Health & social work employment Wholesale/retail employment Work from home	Rent (private) Rent (public) Public transport to work All flats Born outside UK Indian, Pakistani or Bangladeshi Black African, Caribbean or other black

Source information from Vickers (2005)