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Supplementary Materials: Microdata selection for estimating household consumption-based emissions

1 Appendices

Appendix A. Table: Output Area Classification levels and descriptions from the year 2011.

Supergroup		Group		Subgroup	
1	Rural Residents	1A	Farming Communities	1A1	Rural Workers and Families
				1A2	Established Farming Communities
				1A3	Agricultural Communities
				1A4	Older Farming Communities
		1B	Rural Tenants	1B1	Rural Life
				1B2	Rural White-Collar Workers
				1B3	Ageing Rural Flat Tenants
		1C	Ageing Rural Dwellers	1C1	Rural Employment and Retirees
				1C2	Renting Rural Retirement
				1C3	Detached Rural Retirement
2	Cosmopolitans	2A	Students Around Campus	2A1	Student Communal Living
				2A2	Student Digs
				2A3	Students and Professionals
		2B	Inner-City Students	2B1	Students and Commuters
				2B2	Multicultural Student Neighbourhoods
		2C	Comfortable Cosmopolitans	2C1	Migrant Families
				2C2	Migrant Commuters
				2C3	Professional Service Cosmopolitans
		2D	Aspiring and Affluent	2D1	Urban Cultural Mix
				2D2	Highly-Qualified Quaternary Workers
				2D3	EU White-Collar Workers
3	Ethnicity Central	3A	Ethnic Family Life	3A1	Established Renting Families
				3A2	Young Families and Students
		3B	Endeavouring Ethnic Mix	3B1	Striving Service Workers
				3B2	Bangladeshi Mixed Employment
				3B3	Multi-Ethnic Professional Service Workers
		3C	Ethnic Dynamics	3C1	Constrained Neighbourhoods
				3C2	Constrained Commuters
		3D	Aspirational Techies	3D1	New EU Tech Workers
				3D2	Established Tech Workers
				3D3	Old EU Tech Workers
4	Multicultural Metropolitans	4A	Rented Family Living	4A1	Social Renting Young Families
				4A2	Private Renting New Arrivals
				4A3	Commuters with Young Families
		4B	Challenged Asian Terraces	4B1	Asian Terraces and Flats
				4B2	Pakistani Communities
		4C	Asian Traits	4C1	Achieving Minorities
				4C2	Multicultural New Arrivals
				4C3	Inner City Ethnic Mix
5	Urbanites	5A	Urban Professionals and Families	5A1	White Professionals
				5A2	Multi-Ethnic Professionals with Families
				5A3	Families in Terraces and Flats
		5B	Ageing Urban Living	5B1	Delayed Retirement
				5B2	Communal Retirement
				5B3	Self-Sufficient Retirement
6	Suburbanites	6A	Suburban Achievers	6A1	Indian Tech Achievers
				6A2	Comfortable Suburbia

				6A3	Detached Retirement Living
				6A4	Ageing in Suburbia
		6B	Semi-Detached Suburbia	6B1	Multi-Ethnic Suburbia
				6B2	White Suburban Communities
				6B3	Semi-Detached Ageing
				6B4	Older Workers and Retirement
7	Constrained City Dwellers	7A	Challenged Diversity	7A1	Transitional Eastern European Neighbourhoods
				7A2	Hampered Aspiration
				7A3	Multi-Ethnic Hardship
		7B	Constrained Flat Dwellers	7B1	Eastern European Communities
				7B2	Deprived Neighbourhoods
				7B3	Endeavouring Flat Dwellers
		7C	White Communities	7C1	Challenged Transitionaries
				7C2	Constrained Young Families
				7C3	Outer City Hardship
		7D	Ageing City Dwellers	7D1	Ageing Communities and Families
				7D2	Retired Independent City Dwellers
				7D3	Retired Communal City Dwellers
				7D4	Retired City Hardship
8	Hard-Pressed Living	8A	Industrious Communities	8A1	Industrious Transitions
				8A2	Industrious Hardship
		8B	Challenged Terraced Workers	8B1	Deprived Blue-Collar Terraces
				8B2	Hard-Pressed Rented Terraces
		8C	Hard-Pressed Ageing Workers	8C1	Ageing Industrious Workers
				8C2	Ageing Rural Industry Workers
				8C3	Renting Hard-Pressed Workers
		8D	Migration and Churn	8D1	Young Hard-Pressed Families
				8D2	Hard-Pressed Ethnic Mix
				8D3	Hard-Pressed European Settlers

Appendix B. UK Geographies

The UK Statistics Authority divides the UK into a nested hierarchy of geographic zones for the dissemination of census and population data at various spatial scales. Output Areas (OAs) provide the highest level of geographic detail in the 2011 census, followed by Lower Super Output Areas (LSOAs), and Middle Super Output Areas (MSOAs) in England and Wales (ONS, n.d.), and by Data Zones (DZs) and Intermediate Geographies (IGs) in Scotland (Scotland's Census, 2013). In the Northern Irish census, OAs are introduced in 2001, and not redefined in 2011. The 2011 census introduces Small Areas (SAs), which combine the 5,022 OAs to 4,537 SAs and are followed by Super Output Areas (SOAs) in Northern Ireland (NISRA, 2013). Population sizes of these areas are shown in Table 1. Municipality level geographies, in the UK, are referred to as Local Authority Districts (LADs). The UK is made up of 434 LADs, which are also contained in this nested hierarchy, such that LADs can be subdivided into unique MSOAs, LSOAs, or OAs.

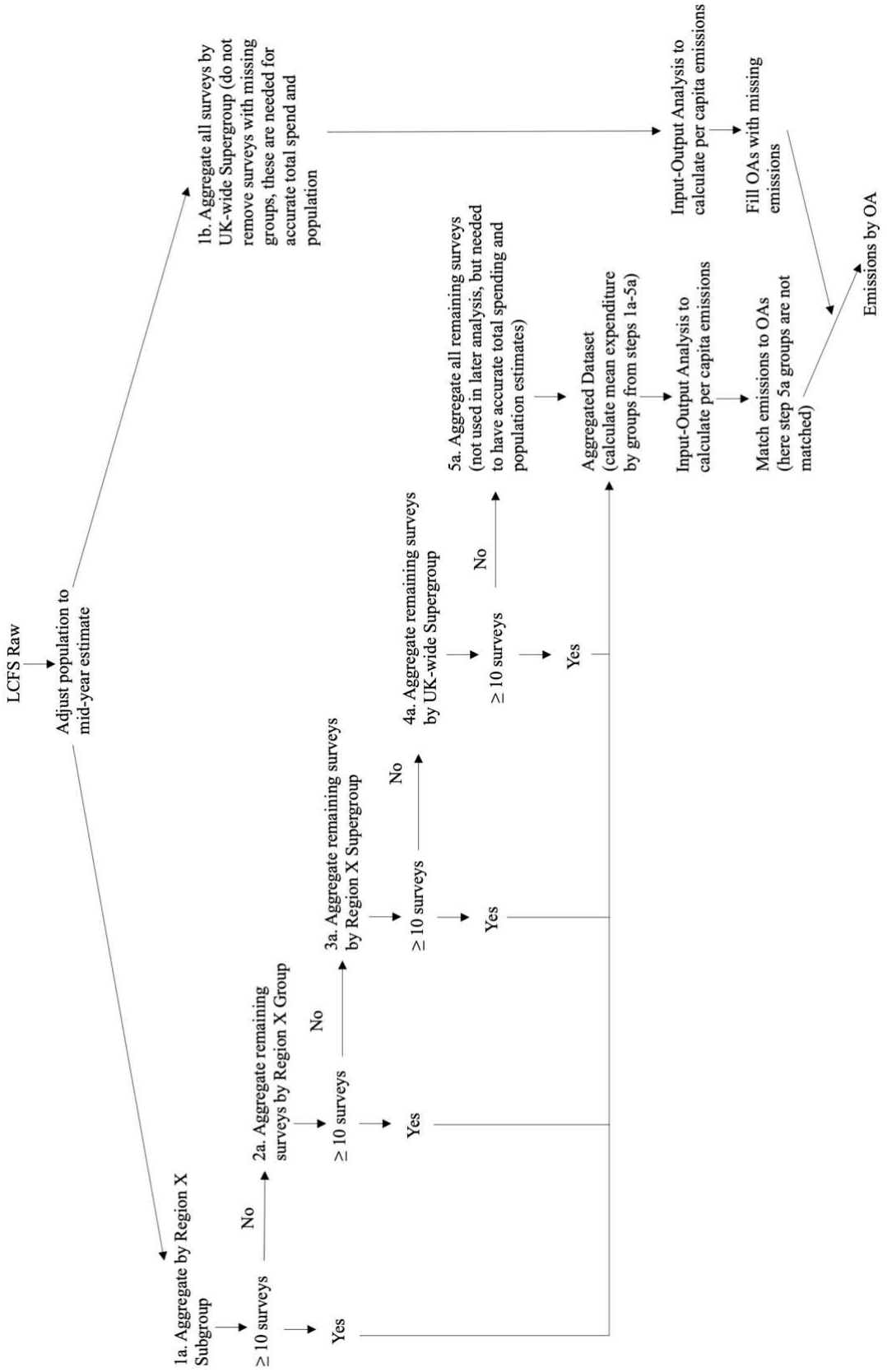
Table 1. Population ranges of 2011 UK census geographies.

Territory	Geography	Minimum	Maximum
England, Wales	OA	100	625
	LSOA	1,000	3,000
	MSOA	5,000	15,000
Northern Ireland	OA (2001 census)	100	700
	SA	100	1,500
	SOA	800	4,000
	Ward	950	9,000
Scotland	OA	50	500
	DZ	400	1,500
	IG	1,900	7,500

** Note: To round and remove extreme outliers, <1% of values are removed. Sources: ONS (n.d.), NISRA (2013b), and Scotland's Census (2013).

OAs are built from neighbouring postcode which are within the same ward. In Scotland OAs depend only on geography, while in England, Wales, and Northern Ireland levels of socio-demographic homogeneity and levels of rural- and urbanity are also considered (ONS, n.d.). Higher level geographies are clusters of OAs, and thus have lower levels of socio-demographic homogeneity. They are made to fit within SOAs (ONS, n.d.). Whereas Scottish DZs and IGs are roughly equivalent to English and Welsh LSOAs and MSOA, respectively, Northern Irish SOAs are comparable to LSOAs. Where MSOA level aggregation is done, therefore, this research uses ward level data for Northern Ireland as an additional, higher-level geography.

Appendix C. Figure: Aggregation of the LCFS into groups representing geographic areas.



Appendix D. Table: COICOP Codes and Descriptions

Food and non-alcoholic beverages (1)

COICOP 2		COICOP 3	
1.1	Food	1.1.1	Bread, rice, and cereals
		1.1.2	Pasta products
		1.1.3	Buns, cakes, biscuits etc
		1.1.4	Pastry (savoury)
		1.1.5	Beef (fresh, chilled, or frozen)
		1.1.6	Pork (fresh, chilled, or frozen)
		1.1.7	Lamb (fresh, chilled, or frozen)
		1.1.8	Poultry (fresh, chilled, or frozen)
		1.1.9	Bacon and ham
		1.1.10	Other meat and meat preparations
		1.1.11	Fish and fish products
		1.1.12	Milk
		1.1.13	Cheese and curd
		1.1.14	Eggs
		1.1.15	Other milk products
		1.1.16	Butter
		1.1.17	Margarine, other vegetable fats and peanut butter
		1.1.18	Cooking oils and fats
		1.1.19	Fresh fruit
		1.1.20	Other fresh, chilled, or frozen fruits
		1.1.21	Dried fruit and nuts
		1.1.22	Preserved fruit and fruit-based products
		1.1.23	Fresh vegetables
		1.1.24	Dried vegetables
		1.1.25	Other preserved or processed vegetables
		1.1.26	Potatoes
		1.1.27	Other tubers and products of tuber vegetables
		1.1.28	Sugar and sugar products
		1.1.29	Jams, marmalades
		1.1.30	Chocolate
		1.1.31	Confectionery products
		1.1.32	Edible ices and ice cream
		1.1.33	Other food products
1.2	Non-alcoholic beverages	1.2.1	Coffee
		1.2.2	Tea
		1.2.3	Cocoa and powdered chocolate
		1.2.4	Fruit and vegetable juices (inc. fruit squash)
		1.2.5	Mineral or spring waters
		1.2.6	Soft drinks (inc. fizzy and ready to drink fruit drinks)

Alcoholic beverages, tobacco, and narcotics (2)

COICOP 2		COICOP 3	
2.1	Alcoholic beverages	2.1.1	Spirits and liqueurs (brought home)
		2.1.2	Wines, fortified wines (brought home)
		2.1.3	Beer, lager, ciders and perry (brought home)
		2.1.4	Alcopops (brought home)
2.2	Tobacco and narcotics	2.2.1	Cigarettes
		2.2.2	Cigars, other tobacco products and narcotics

Clothing and footwear (3)

COICOP 2		COICOP 3	
3.1	Clothing	3.1.1	Men's outer garments
		3.1.2	Men's under garments
		3.1.3	Women's outer garments
		3.1.4	Women's under garments
		3.1.5	Boys' outer garments (5-15)
		3.1.6	Girls' outer garments (5-15)
		3.1.7	Infants' outer garments (under 5)
		3.1.8	Children's under garments (under 16)
		3.1.9	Accessories
		3.1.10	Haberdashery, clothing materials and clothing hire
		3.1.11	Dry cleaners, laundry and dyeing
3.2	Footwear	3.2	Footwear

Housing, water, electricity, gas and other fuels (4)

COICOP 2		COICOP 3	
4.1	Rentals for housing	4.1.1	Actual rentals
		4.1.2	Imputed rent
4.2	Maintenance, repair, and security of the dwelling	4.2	Maintenance, repair, and security of the dwelling
4.3	Water supply and miscellaneous services relating to the dwelling	4.3	Water supply and miscellaneous services relating to the dwelling
4.4	Electricity, gas, and other fuels	4.4.1	Electricity
		4.4.2	Gas
		4.4.3	Other fuels

Furnishings, household equipment and routine household maintenance (5)

COICOP 2		COICOP 3	
5.1	Furniture, furnishings, and loose carpets	5.1.1	Furniture and furnishings
		5.1.2	Floor coverings
5.2	Household textiles	5.2	Household textiles
5.3	Household appliances	5.3	Household appliances
5.4	Glassware, tableware, and household utensils	5.4	Glassware, tableware, and household utensils
5.5	Tools and equipment for house and garden	5.5	Tools and equipment for house and garden
5.6	Goods and services for routine household maintenance	5.6.1	Cleaning materials
		5.6.2	Household goods and hardware
		5.6.3	Domestic services, carpet cleaning, hire of furniture/furnishings

Health (6)

COICOP 2		COICOP 3	
6.1	Medicines and health products	6.1.1	Medicines, prescriptions, and healthcare products
		6.1.2	Spectacles, lenses, accessories, and repairs
6.2	Outpatient care services	6.2	Hospital services

Transport (7)

COICOP 2		COICOP 3	
7.1	Purchase of vehicles	7.1.1	Purchase of new cars and vans
		7.1.2	Purchase of second hand cars or vans
		7.1.3	Purchase of motorcycles and other vehicles
7.2	Operation of personal transport equipment	7.2.1	Spares and accessories
		7.2.2	Petrol, diesel, and other motor oils
		7.2.3	Repairs and servicing
		7.2.4	Other motoring costs
7.3	Passenger transport services	7.3.1	Rail and tube fares
		7.3.2	Bus and coach fares
		7.3.3	Combined fares
		7.3.4	Other travel and transport

Information and communication (8)

COICOP 2		COICOP 3	
8.1	Postal services	8.1	Postal services
8.2	Telephone and telefax equipment	8.2	Telephone and telefax equipment
8.3	Telephone and telefax services	8.3	Telephone and telefax services
8.4	Internet subscription fees	8.4	Internet subscription fees

Recreation, sport and culture (9)

COICOP 2		COICOP 3	
9.1	Recreational durables	9.1.1	Audio equipment and accessories, CD players
		9.1.2	TV, video, and computers
		9.1.3	Photographic, cine and optical equipment
9.2	Other major durables for recreation and culture	9.2	Other major durables for recreation and culture
9.3	Hobbies and pets	9.3.1	Games, toys, and hobbies
		9.3.2	Computer software and games
		9.3.3	Equipment for sport, camping and open-air recreation
		9.3.4	Horticultural goods, garden equipment and plants
		9.3.5	Pets and pet food
9.4	Recreational services	9.4.1	Sports admissions, subscriptions, leisure class fees
		9.4.2	Cinema, theatre, and museums
		9.4.3	TV, video, satellite rental, cable subscriptions
		9.4.4	Miscellaneous entertainments
		9.4.5	Development of film, deposit for film development
		9.4.6	Gambling payments
9.5	Newspapers, books and stationery	9.5.1	Books
		9.5.2	Diaries, address books, cards etc
		9.5.3	Diaries, address books, cards etc
		9.5.4	Newspapers
		9.5.5	Magazines and periodicals

Education services (10)

COICOP 2		COICOP 3	
10.1	Education fees	10.1	Education fees
10.2	Payments for school trips, other ad-hoc	10.2	Payments for school trips, other ad-hoc

Restaurants and accommodation services (11)

COICOP 2		COICOP 3	
11.1	Food and beverage serving services	11.1.1	Restaurant and café meals
		11.1.2	Alcoholic drinks (away from home)
		11.1.3	Take away meals eaten at home
		11.1.4	Other take-away and snack food
		11.1.5	Contract catering (food) and canteens
11.2	Accommodation services	11.2.1	Holiday in the UK
		11.2.2	Holiday abroad
		11.2.3	Room hire

Other Miscellaneous Products and Services (12)

COICOP 2		COICOP 3	
12.1	Personal care	12.1.1	Hairdressing, beauty treatment
		12.1.2	Toilet paper
		12.1.3	Toiletries and soap
		12.1.4	Baby toiletries and accessories (disposable)
		12.1.5	Hair products, cosmetics, and related electrical appliances
12.2	Other personal effects	12.2	Personal effects
12.3	Social protection	12.3	Social protection
12.4	Insurance	12.4.1	Household insurances - structural, contents
		12.4.2	Medical insurance premiums
		12.4.3	Vehicle insurance including boat insurance
		12.4.4	Non-package holiday, other travel insurance
12.5	Other Products and Services	12.5.1	Moving house
		12.5.2	Bank, building society, post office, credit card charges
		12.5.3	Other services and professional fees

2 Appendix References

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