

# Happiness, social cohesion and income inequalities in Britain and Japan

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# Acknowledgements

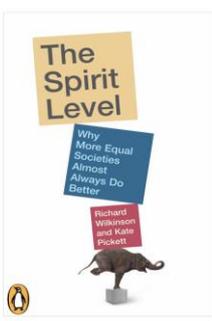
- The research presented here is based on joint work with **Danny Dorling** (University of Oxford), **Helena Tunstall** (University of Edinburgh), **Tomoki, Nakaya** (Ritsumeikan University), **Kazumasa Hanaoka** (Tohoku University) and **Tomoya Hanibuchi** (Chukyo University) which was supported by a *Daiwa Anglo-Japanese Foundation small grant*.
- The *Family Resources Survey* and *Household Below Average Income* microdata were made available through the UK Data Archive.
- The *National Survey of Family Income and Expenditure* microdata were made available through the Japanese Statistics Bureau.
- The *Japanese General Social Surveys (JGSS)* are designed and carried out at the Institute of Regional Studies at Osaka University of Commerce in collaboration with the Institute of Social Science at the University of Tokyo under the direction of Ichiro TANIOKA, Michio NITTA, Hiroki SATO and Noriko IWAI with Project Manager, Minae OSAWA. The project is financially assisted by Gakujutsu Frontier Grant from the Japanese Ministry of Education, Culture, Sports, Science and Technology for 1999-2003 academic years, and the datasets are compiled and distributed by SSJ Data Archive, Information Center for Social Science Research on Japan, Institute of Social Science, the University of Tokyo.

# Relevant publications

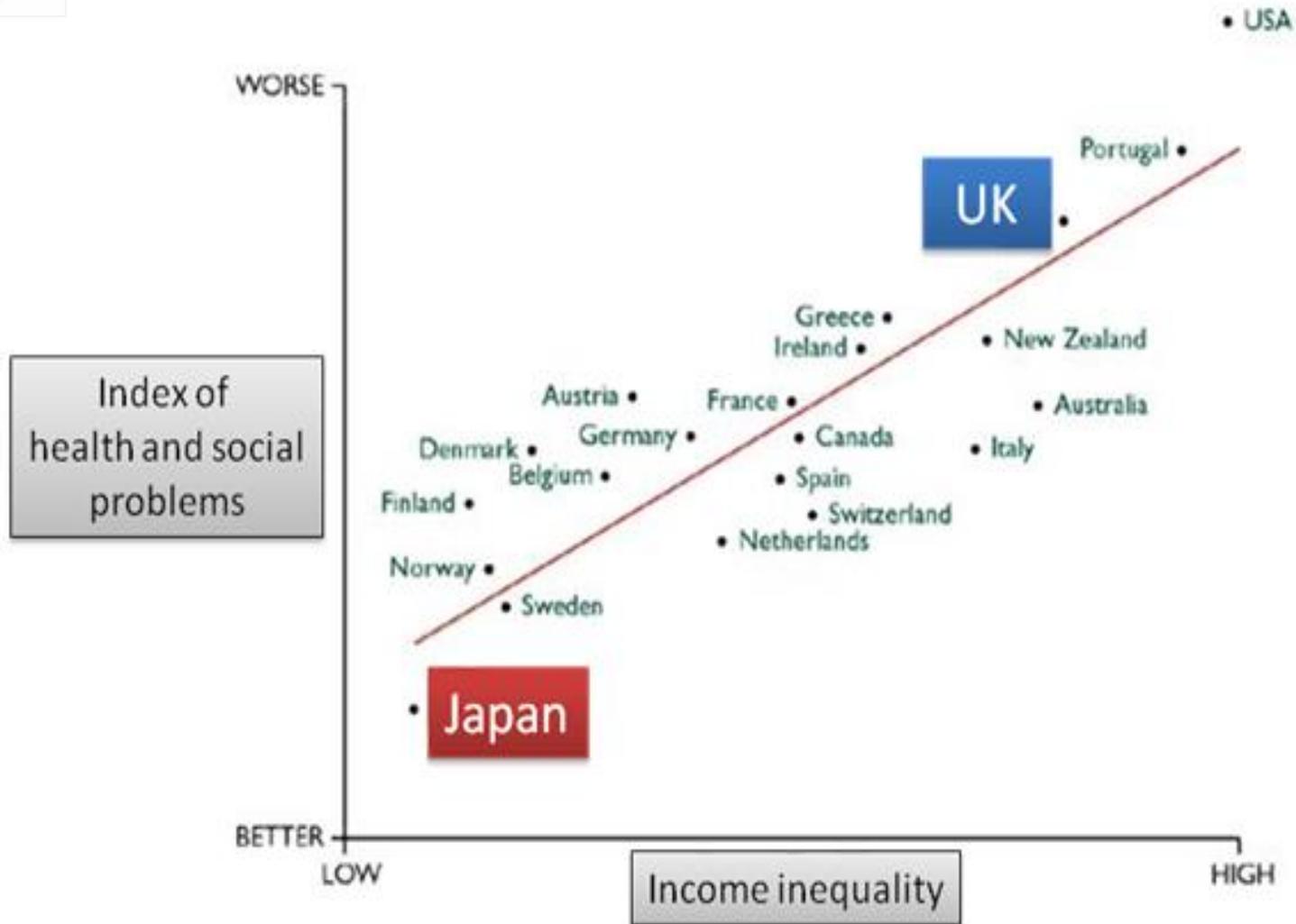
- Ballas, D, Dorling, D, Nakaya, T, Tunstall, H, Hanaoka, K (2014), Income inequalities in the UK and Japan: a comparative study of two island economies, *Social Policy and Society*, vol. 13, pp. 103-117.
- Ballas, D, (2013), What makes a 'happy city'?, *Cities*, vol. 32, s39 – s50.
- Ballas, D, Campbell, M, Clarke, G, Hanaoka, K, Nakaya, T, Waley, P (2012), A spatial microsimulation approach to small area income estimation in Britain and Japan, *Studies in Regional Science*, vol. 42, pp.163-187.
- Ballas, D, Dorling, D. (2013), The Geography of Happiness, in David, S, Boniwell, I, Conley Ayers, A (eds.), *The Oxford Handbook of Happiness*, Oxford University Press, Oxford, pp. 465-481.
- Ballas, D, Tranmer M (2012), Happy People or Happy Places? A Multi-Level Modelling Approach to the Analysis of Happiness and Well-Being, *International Regional Science Review*, vol. 35, pp. 70-102.

# Outline

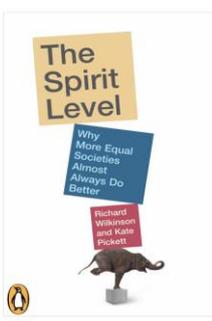
- The Spirit Level hypothesis
- Why compare Britain and Japan?
- Social cohesion, income inequalities and well-being in Britain and Japan
- Income inequality and poverty in Britain and Japan 1989 – 2009
- Happy people or happy places? Models of happiness and well-being in Britain and Japan
- Spatial microsimulation



# 'The Spirit Level' by Richard Wilkinson and Kate Pickett



<http://www.equalitytrust.org.uk>



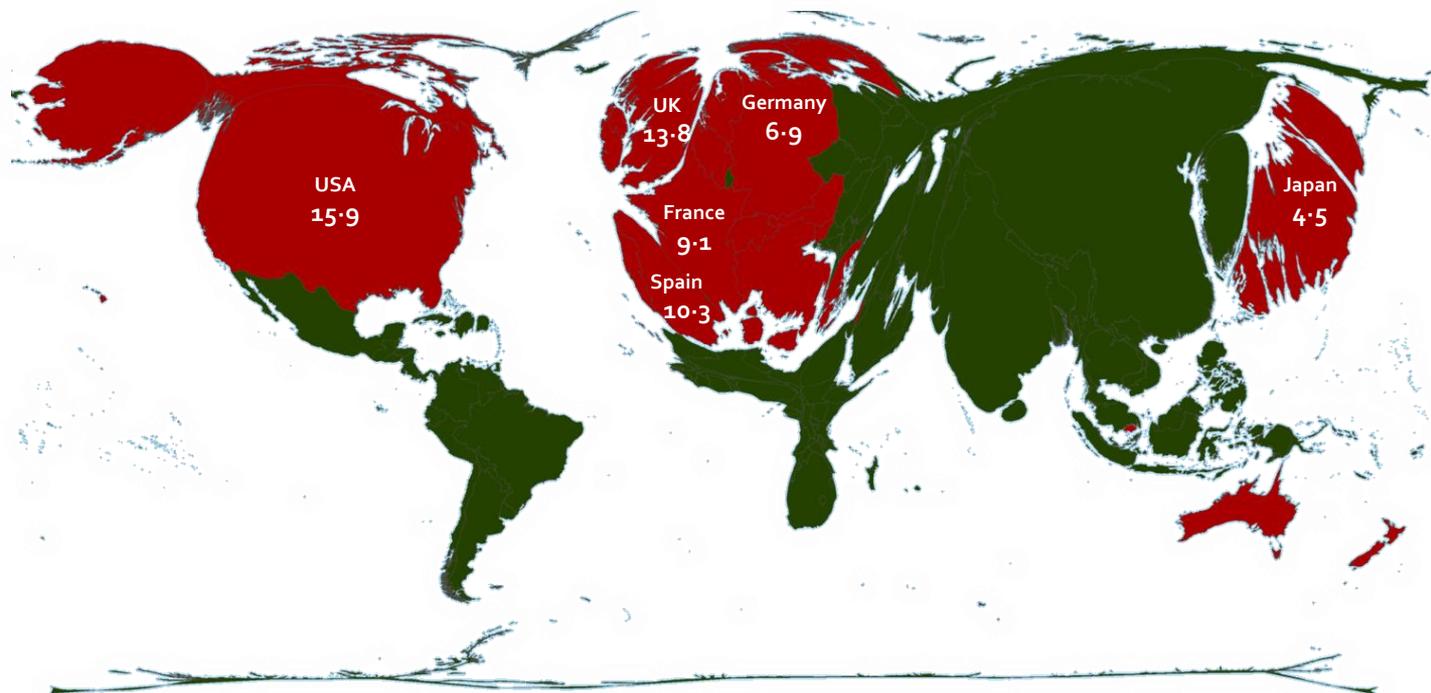
# ‘The Spirit Level’ by Richard Wilkinson and Kate Pickett

“Politics was once seen as a way of improving people’s social and emotional well-being by changing their economic circumstances. But over the last few decades the bigger picture has been lost. People are now more likely to see psychosocial well-being as dependent on what can be done at the individual level, using cognitive behavioural therapy – one person at a time – or on providing support in early childhood, or on the reassertion of religious or family values. However, **it is now clear that income distribution provides policy makers with a way of improving the psychosocial wellbeing of whole populations.** Politicians have an opportunity to do genuine good.”

(Wilkinson and Pickett, 2009: 233; my emphasis)

# Ratio of the income of the best-off tenth to worse of tenth of households

17.7	Singapore
15.9	United States
15.0	Portugal
13.8	United Kingdom
13.4	Israel
12.5	Australia
12.5	New Zealand
11.6	Italy
10.3	Spain
10.2	Greece
9.4	Canada
9.4	Ireland
9.2	Netherlands
9.1	France
9.0	Switzerland
8.2	Belgium
8.1	Denmark
7.3	Slovenia
6.9	Austria
6.9	Germany
6.2	Sweden
6.1	Norway
5.6	Finland
4.5	Japan



# The effects of inequality in affluence countries

Appear to be related to high:

Meat  consumption

Water  consumption

Waste  production

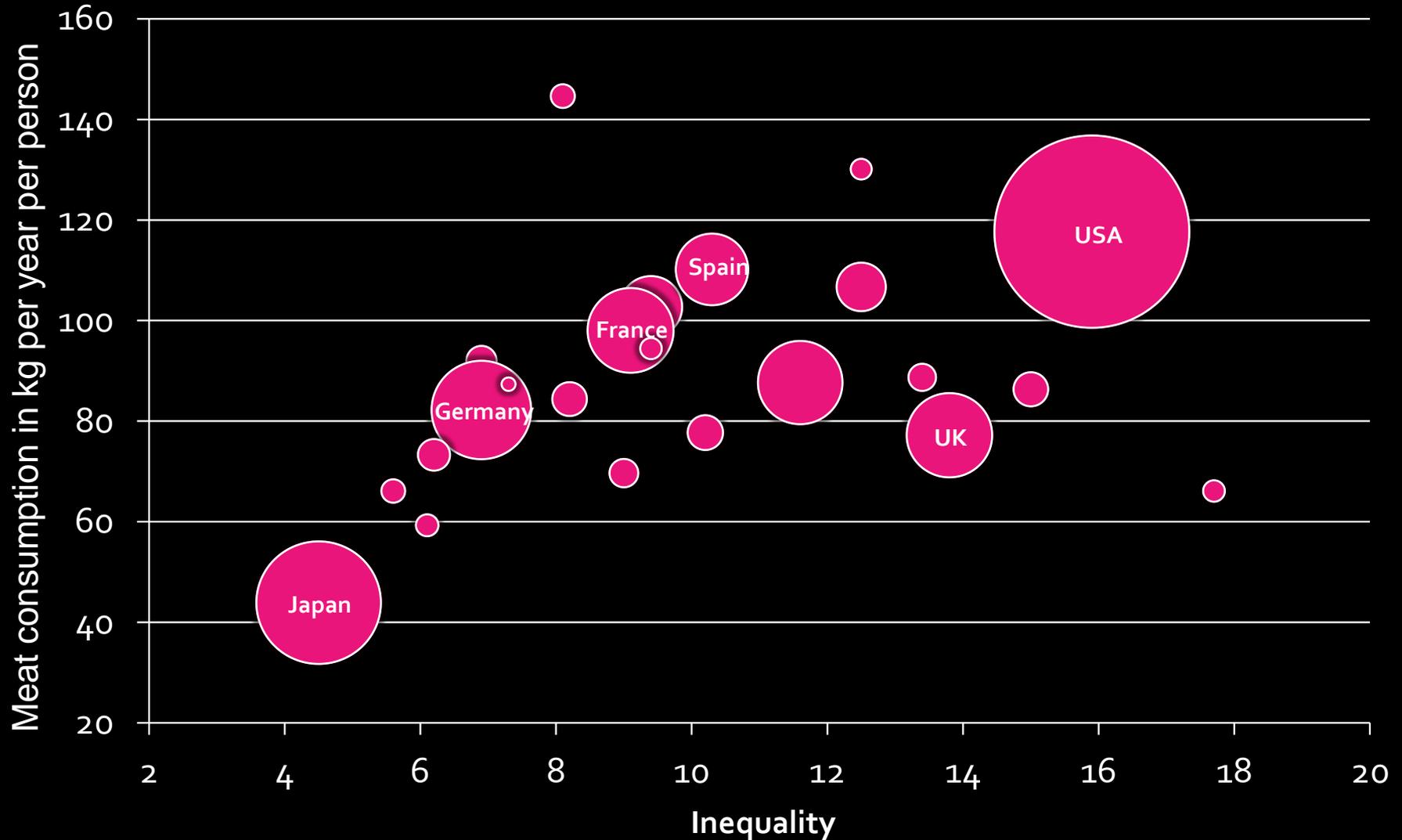
Number  of Flights

Ecological  impact

in each of the most unequal affluent countries compared to other less unequal rich nations

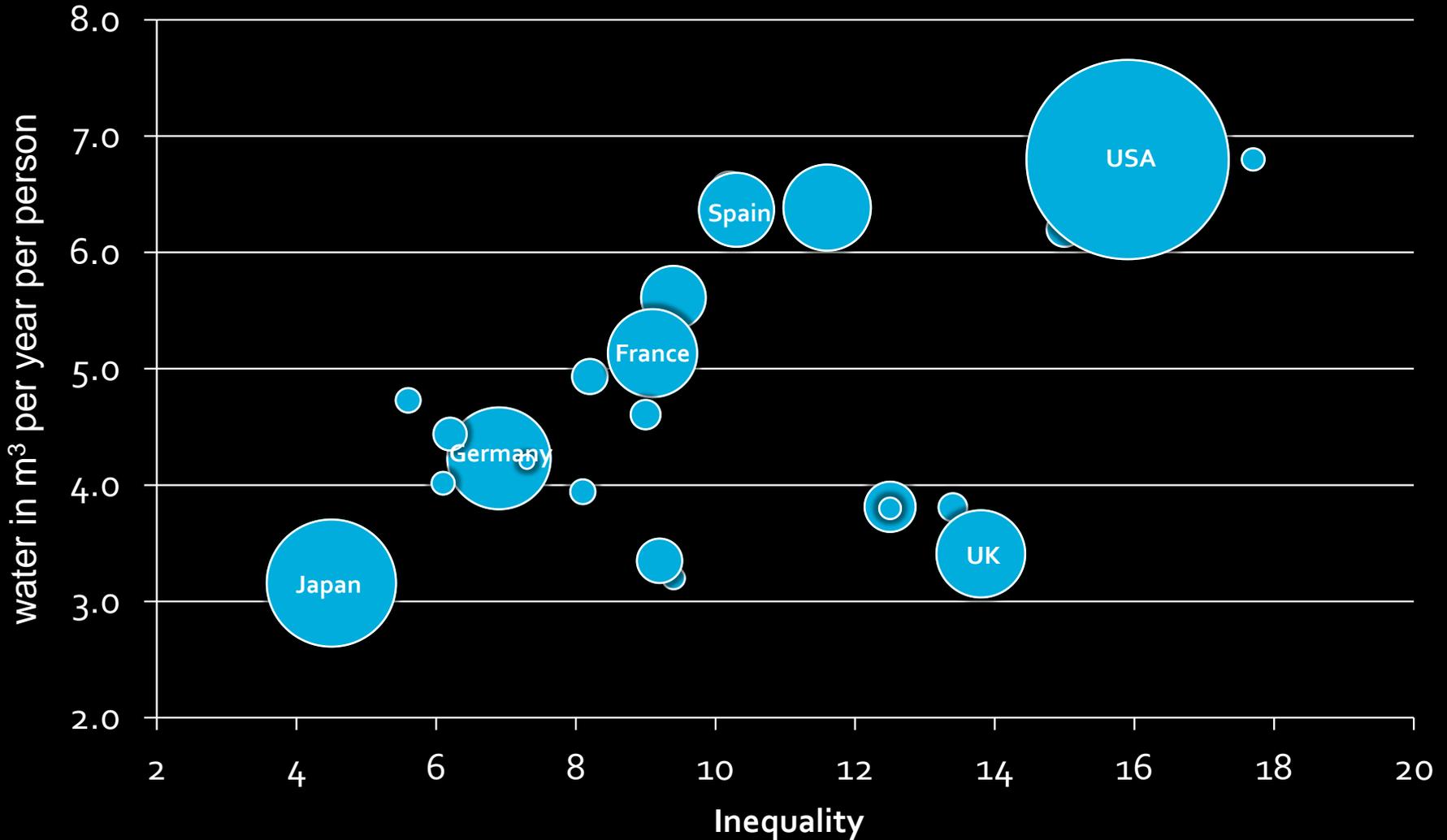
You might think: "Surely, if a few people hold most of the wealth we all consume less?"

# Inequality and meat



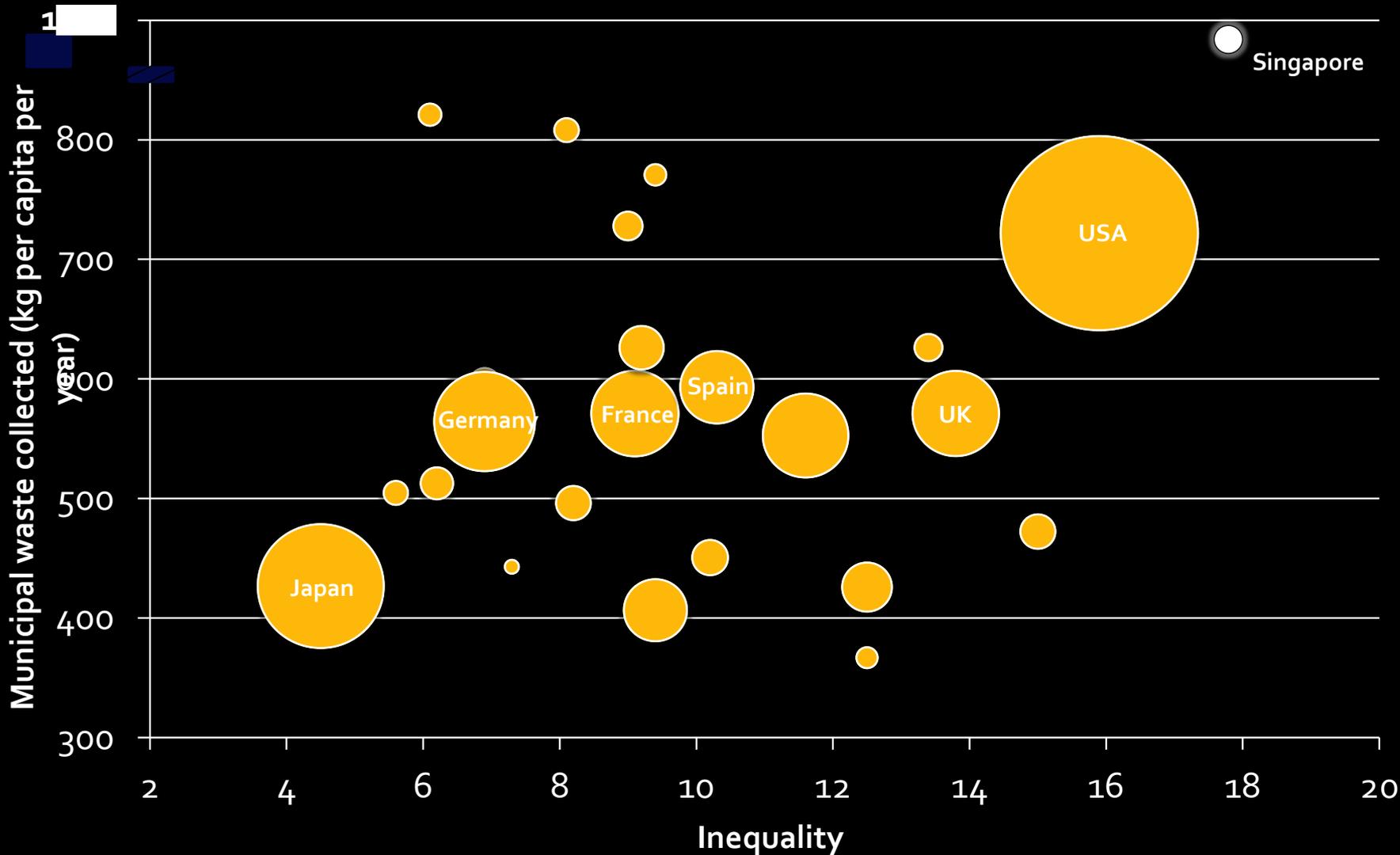
Not if you are concerned about how much meat we farm and consume

# Inequality and water



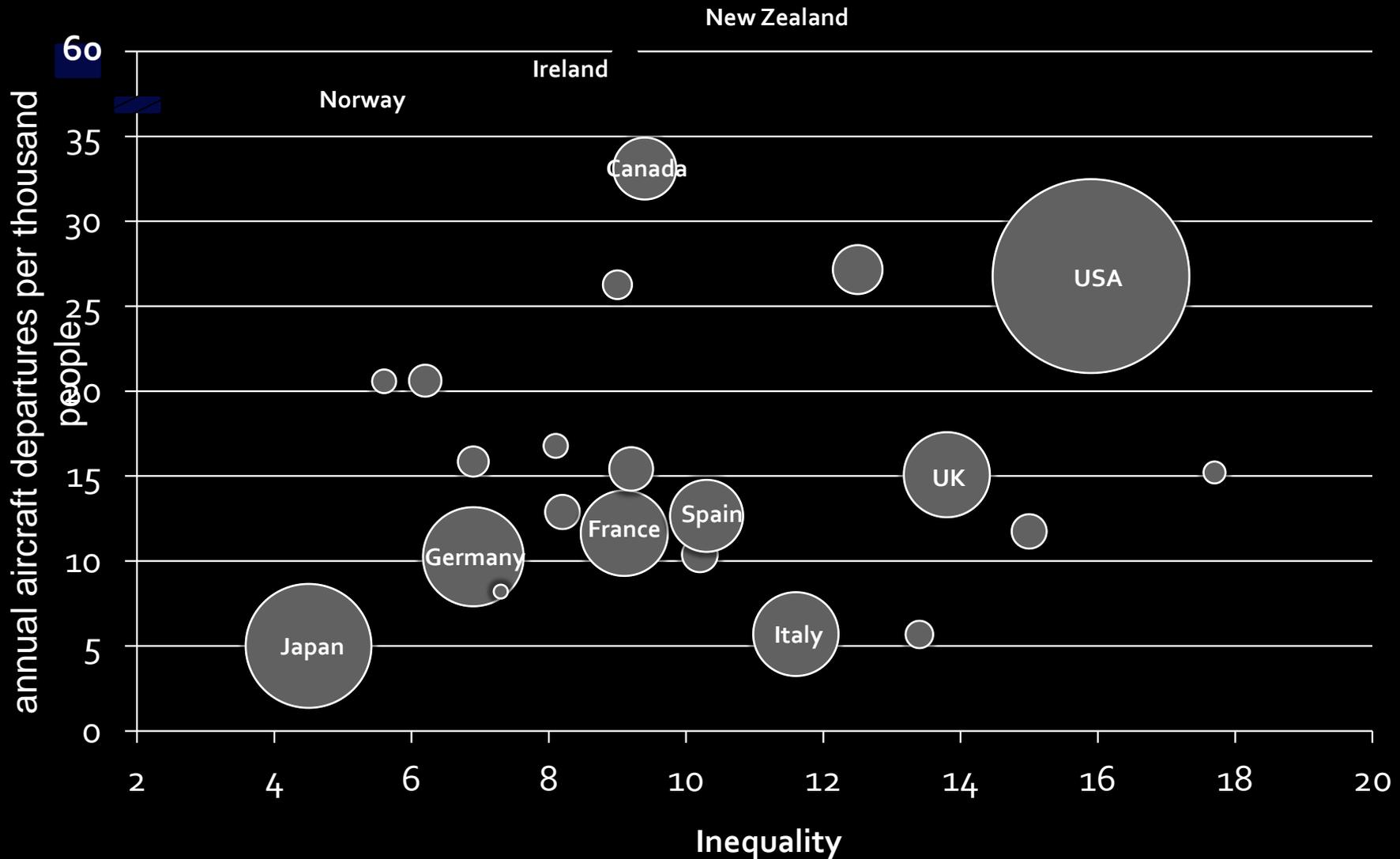
Not if you are concerned about how much water we use (apart from the UK!)

# Inequality and waste



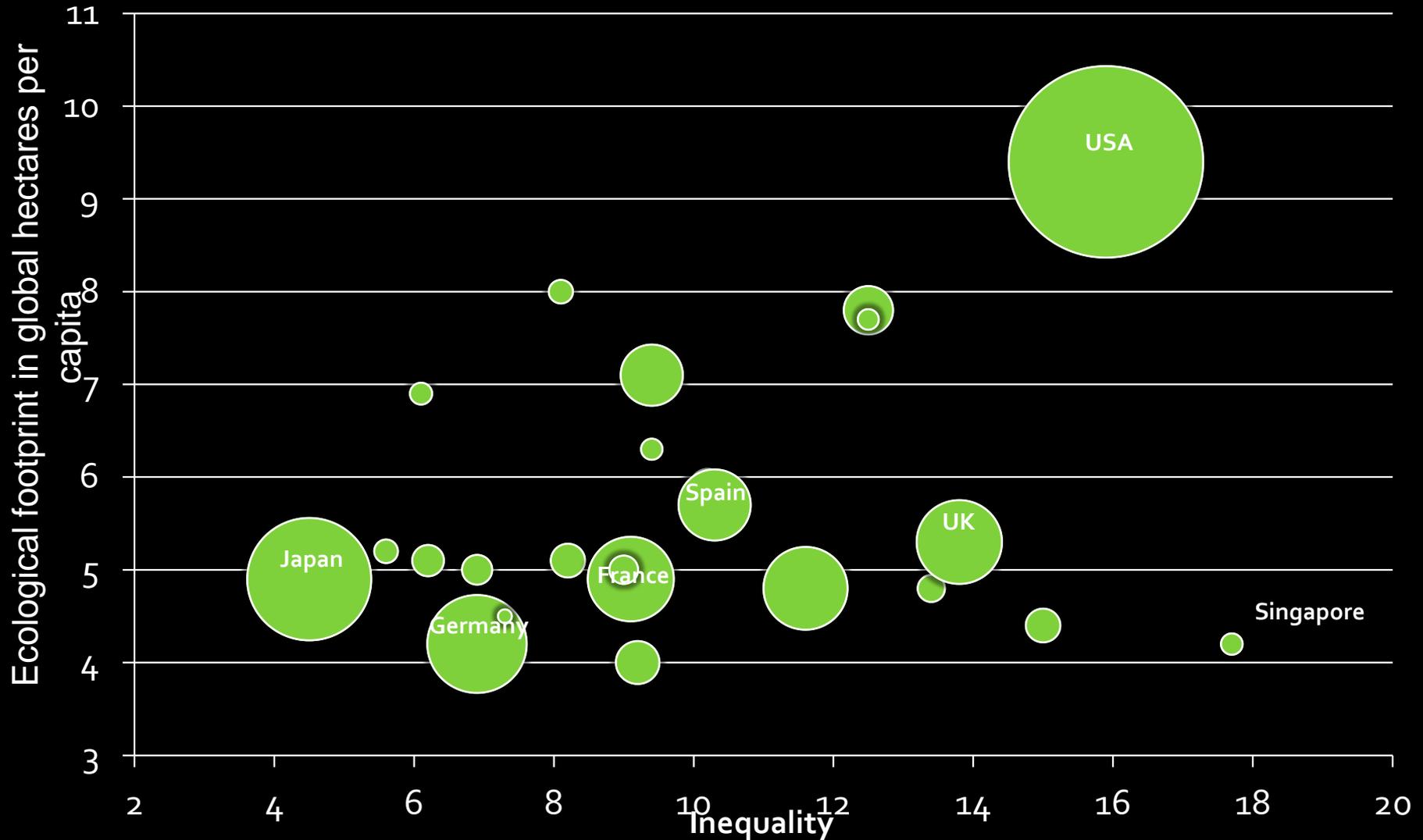
Not if you are concerned about how much waste we each produce

# Inequality and flights



Not if you are concerned about how many flights we each take (on average)

# Inequality and ecology



Not if you are concerned about how many planets we might need to exist:  
An Ecological Footprint of 2.1 global hectares per capita equals one-planet living

# Data sources

 **UNEP/FAO** <http://www.worldmapper.org/display.php?selected=126>

 **UNEP/LPR** <http://www.worldmapper.org/display.php?selected=104>

**UNSD** <http://unstats.un.org/unsd/ENVIRONMENT/qindicators.htm>

 **World Bank** World Development Indicators 2005 (IS.AIR.DPRT)

 **WWF** Living Planet Index 2008



More and more geographical data is becoming available, often for the first time.

# Why compare Britain and Japan?

- Japan is a world leader in health with currently the highest life expectancy of any country (United Nations, 2011). Life expectancy in Japan first overtook that in other countries in the 1970s and has retained this ranking ever since (Yanagishita and Guralnik, 1988). In addition, according to a recent study comparing self-rated health and socio-economic status in East Asia, Japan has relatively low levels of health inequality (Hannibuchi et al., 2010).
- Britain, in contrast, has a place near the bottom of the life expectancy rankings in comparison to other industrialised countries (Marmot and Davey Smith, 1989).

# Why compare Britain and Japan?

- Japan and Britain have, in different ways, been at the centre of recent international academic and political debate regarding health and social equality and wellbeing in industrialised countries.
- Comparisons of Japan and Britain pertinent to these recent debates because of their marked differences in death rates and social inequality.
- **These differences are of particular interest because of the characteristics that these countries have in common: both are high income, island nations, dominated by world cities whose populations benefit from universal health care.**

# Japan income data controversy

- Recent OECD reports suggested that income inequality in Japan is higher than suggested in the *Spirit Level* as well as above the OECD average
- A recent *New Scientist* report on what is described as ‘the age of inequality’ uses statistics according to which income inequality in Japan is higher than that of Denmark, Germany and Greece and only slightly lower than the UK.
- 2011 United Nations (UN) development report: Japan has the lowest quintile income ratio of all when compared to the same set of countries presented in the OECD reports.

# **Social cohesion, income inequalities, health and well-being in Britain and Japan**

- The distribution of income in Japan has often been discussed as a possible explanation for high life expectancy since the 1980s (Marmot and Davey Smith, 1989) and has formed the centre of much recent debate following the publication of “The Spirit Level”.
- Before World War Two Japan had a highly unequal income distribution but the differences between rich and poor declined in the post war period (Tachibanki, 2005).
- Income inequality was lower in Japan than in other industrialised countries in the 1970s and 1980s (Buss et al, 1989; Baur and Mason, 1992).

# **Social cohesion, income inequalities, health and well-being in Britain and Japan**

- But, social relationships and culture are often seen as direct causes of good health rather than mediating factors linking income distribution to health outcomes.
- Cultural tradition of strong 'group-orientation' promotes social cohesion and 'cultural equality', supporting psychological well being and good health among Japanese people (Marmot and Davey Smith, 1989; Horiuchi, 2011).
- **It has not been explained however why the suggested health benefits of these Japanese cultural traditions should have only become evident in the post war period.**

# **Social cohesion, income inequalities, health and well-being in Britain and Japan**

“Britain is an unequal country, more so than many other industrial countries and more so than a generation ago. This is manifest in many ways – most obviously in the gap between those who are well off and those who are less well off. But inequalities in people’s economic positions are also related to their characteristics – whether they are men or women, their ages, ethnic backgrounds, and so on”

(Hills et al., 2010)

# Research agenda

- revisiting the “Spirit Level” evidence according to which Japan is a more equitable and hence harmonious society than any other industrialised country, focusing on contrasts with a country such as Britain.
- comparing social and spatial inequalities, social cohesion and well-being between Britain and Japan at different geographical levels.

# Data

- The *Family Resources Survey* and *Household Below Average Income* (made available through the UK Data Archive).
- The *National Survey of Family Income and Expenditure* microdata (made available through the Japanese Statistics Bureau).

# Key terms (1)

- **The median quintile ratio:** this is the median income of the richest 20 percent of the population divided by the median income of the poorest 20 percent. This ratio is also known as the ratio of top to bottom quintile medians and is widely used in the analyses of HBAI datasets conducted by the DWP.
- **The mean quintile ratio:** this is the mean income of the richest 20 percent of the population divided by the mean income of the poorest 20 percent. This is also known as the ratio of top quintile share to bottom quintile share and it was the key measure used in the Spirit Level work (Wilkinson and Pickett, 2009)

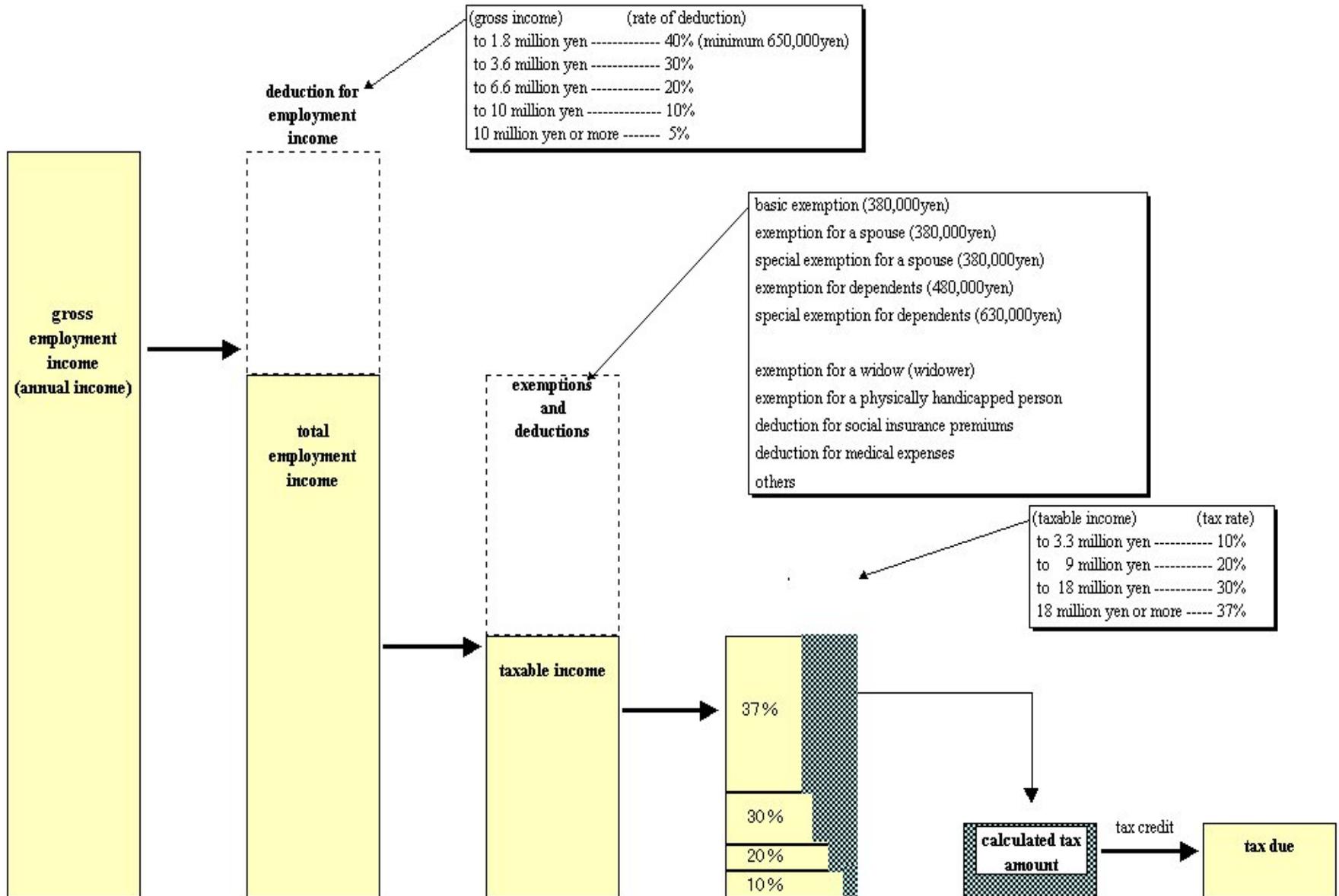
# Key terms (2)

- **People on incomes less than 50% of the median gross household income:** the number of individuals living on household incomes less than 50% the median gross household income as a proportion of the total population.
- **People on incomes less than 60% of the median gross household income:** the number of individuals living on household incomes less than 60% the median gross household income as a proportion of the total population.

**Comparing gross household income quintile ratios between Britain and Japan.**

<b>Inequality measure/ Year</b>	<b>1994</b>	<b>1999</b>	<b>2004</b>
<b>Median quintile ratio in Japan</b>	3.85	4.08	3.99
<b>Median quintile ratio in the UK</b>	5.09	5.23	4.99
<b><u>Difference</u></b>	<u>1.24</u>	<u>1.15</u>	<u>1.00</u>
<b>Mean quintile ratio in Japan</b>	4.56	4.74	4.67
<b>Mean quintile ratio in the UK</b>	6.65	7.13	6.93
<b><u>Difference</u></b>	<u>2.09</u>	<u>2.39</u>	<u>2.26</u>

# Calculating disposable income for Japan



**Estimated quintile group annual disposable income in Japan (in 10,000s Japanese Yen; Source: calculated by applying tax bands on National Survey of Family Income and Expenditure )**

	Quintile group medians						Median quintile ratio
Year	1	2	3	4	5*	Population mean*	
<b>2004</b>	191	287	365	463	655	401	3.42

	Quintile group means						Mean quintile ratio
Year	1	2	3	4	5*	Population mean*	
<b>2004</b>	179	286	365	465	712	401	3.97

\* incomes over 2,500 were top-coded

## Quintile group annual disposable income in Britain (GBP; source: Family Resources Survey/HBAI)

	Quintile group medians						Median quintile ratio
Year	1	2	3 (median)	4	5	Population mean	
<b>Income Before Housing Costs</b>							
<b>2008/09</b>	201	304	407	545	844	507	4.20
<b>2004/05</b>	177	262	350	465	704	426	3.98
<b>Income After Housing Costs</b>							
<b>2008/09</b>	139	243	343	474	745	433	5.4
<b>2004/05</b>	132	217	300	405	630	370	4.8

	Quintile group means						Median quintile ratio
Year	1	2	3	4	5	Population mean	
<b>Income Before Housing Costs</b>							
<b>2008/09</b>	180	304	409	550	1090	507	6.05
<b>2004/05</b>	161	262	350	468	890	426	5.53
<b>Income After Housing Costs</b>							
<b>2008/09</b>	110	243	344	478	988	433	9.0
<b>2004/05</b>	110	217	301	409	811	370	7.3

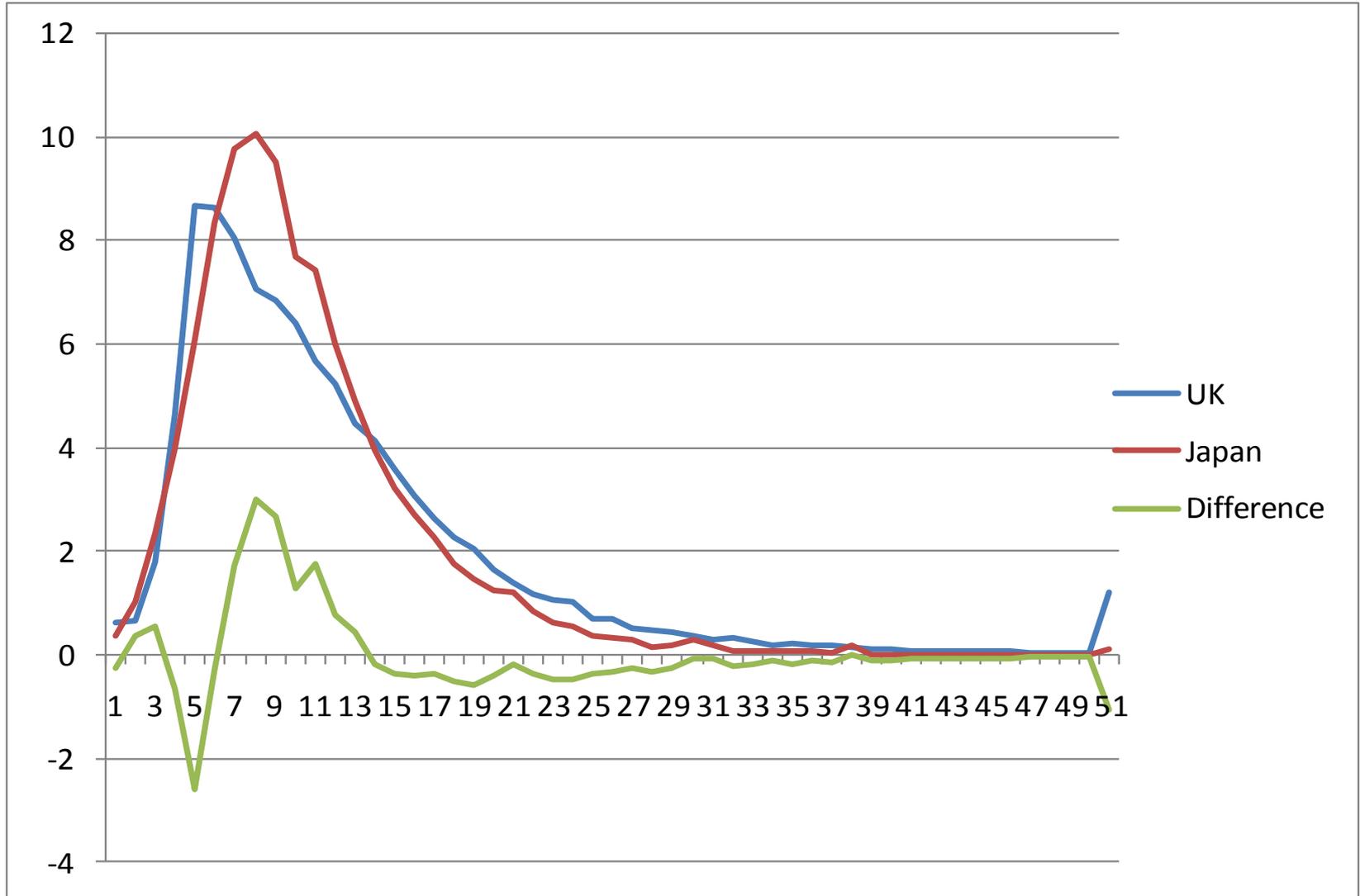
**Estimated poverty rates in Japan (based on gross income data from the Japanese National Survey of Family Income and Expenditure)**

	<b>50% below median</b>	<b>60% below median</b>
<b>2004</b>	10.3	16.4
<b>1999</b>	10.8	17.0
<b>1994</b>	10.2	16.3
<b>1989</b>	6.4	10.1

**Estimated poverty rates in Britain (based on gross income data from the UK Family Resources Survey)**

	<b>50% below median</b>	<b>60% below median</b>
<b>2008/09</b>	14.2	21.8
<b>2004/05</b>	14.0	22.2
<b>1999/00</b>	16.2	24.7
<b>1994/95</b>	15.5	24.9

# Income distributions in UK and Japan, 2004



# Happiness and social comparisons

“A house may be large or small; as long as the surrounding houses are equally small it satisfies all social demands for a dwelling. But if a palace arises beside the little house, the little house shrinks to a hovel... [and]... the dweller will feel more and more uncomfortable, dissatisfied and cramped within its four walls.”

(Marx, 1847)

# Happiness research questions:

- What are the factors that influence different types of individuals' happiness?
- Is the source of happiness or unhappiness purely personal or do contextual factors matter? (and if they do, to what extent?)
- If social comparisons are important, what is the spatial scale at which people make their social comparisons?
- Happy People or Happy Places?

# Social and Spatial inequalities in Japan

“...the conventional wisdom of more recent studies of Japanese cities is that they lack a 'social geography' (where this phrase is used to mean that there are no important differences from one area to another in wealth and social status)”

(Fielding 2004: 64)

“Mosaic Japan is a geodemographic segmentation. It classifies consumers according to the type of neighborhood in which they live, and is based upon the well established principle that when people are deciding where to live they naturally prefer to live amongst people with similar demographics, lifestyles and aspirations to their own”

(Mosaic Japan, 2011)

# Multilevel Analysis

World → Nation → Region →  
District → Electoral Wards → Neighbourhood  
→ Household → Individual

Multilevel modelling enables the analysis of data with complex patterns of variability – suitable to explore the variability of happiness at different levels

# Multilevel modelling happiness and well-being in Britain

1. “Null model” – extent of variation
2. Socio-economic variables and health – random intercepts
3. Social context – interaction variables

Ballas, D, Tranmer M (2012), Happy People or Happy Places? A Multi-Level Modelling Approach to the Analysis of Happiness and Well-Being, *International Regional Science Review*, vol. 35, 70-102.

([doi:10.1177/0160017611403737](https://doi.org/10.1177/0160017611403737))

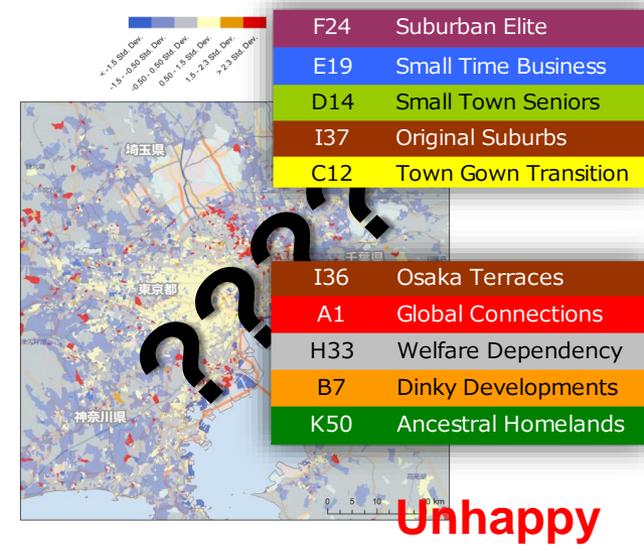
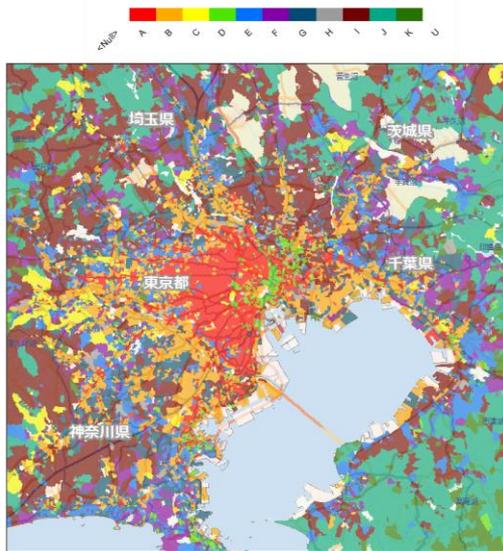
## Model 2 and 3 significant main effects (1)

<b>Happiness and well-being determinants</b>	<b>Model 2</b>	<b>Model 3</b>
Age	HLGHQ1(-),GHQL(-)	HLGHQ1(-),GHQL(-)
Female (Reference = Male)	HLGHQ1(-),GHQL(-)	HLGHQ1(-),GHQL(-)
Health good (reference = health excellent)	HLGHQ1(-),GHQL(-)	HLGHQ1(-),GHQL(-)
Health fair (reference = health excellent)	HLGHQ1(-),GHQL(-)	HLGHQ1(-),GHQL(-)
Health poor (reference = health excellent)	HLGHQ1(-),GHQL(-)	HLGHQ1(-),GHQL(-)
Health very poor (reference = health excellent)	HLGHQ1(-),GHQL(-)	HLGHQ1(-),GHQL(-)
Employment status: unemployed (reference = employed or self employed)	HLGHQ1(-),GHQL(-)	HLGHQ1(-),GHQL(-)
Employment status: family care (reference = employed or self employed)	HLGHQ1(-),GHQL(-)	
Employment status: sick/disabled (reference = employed or self employed)	HLGHQ1(-),GHQL(-)	

## Model 2 and 3 significant main effects (2)

Happiness and well-being determinants	Model 2	Model 3
Employment status: on maternity leave (reference = employed or self employed)		GHQL(+)
Employment status: on a government scheme (reference = employed or self employed)		GHQL(-)
Employment status: other job status (reference = employed or self employed)		
<b>Has lived at current address for more than 5 years (reference = lived at current address for less than one year)</b>	<b>HLGHQ1(+)</b>	<b>HLGHQ1(+)</b>
Household type: couple no children (reference = single)	HLGHQ1(+),GHQL(+)	GHQL(+)
Household type: lone parent with dependent child(ren) (reference = single)	HLGHQ1(-)	HLGHQ1(-)
Household type: lone parent with non dependent child(ren) (reference = single)		
Household type: other (reference = single)	GHQL(+)	
Household tenure: private renting (reference = owner occupier)		GHQL(+)
Household tenure: LA/HA renting (reference = owner occupier)	HLGHQ1(-)	
<b>Unemployment status (individual level) x unemployment rate (district level)</b>	<b>Not included</b>	<b>HLGHQ1(+),GHQL(+)</b>

# Data-linkage approach using Geodemographics (Nakaya and Hanibuchi, 2009)



Happy

Unhappy

Geodemographics  
“Mosaic Japan”  
(Neighbourhood Groups)

JGSS Survey microdata

Happiness Variations  
between  
neighbourhood  
groups

# Geodemographics: Mosaic Japan a small areal residential classification

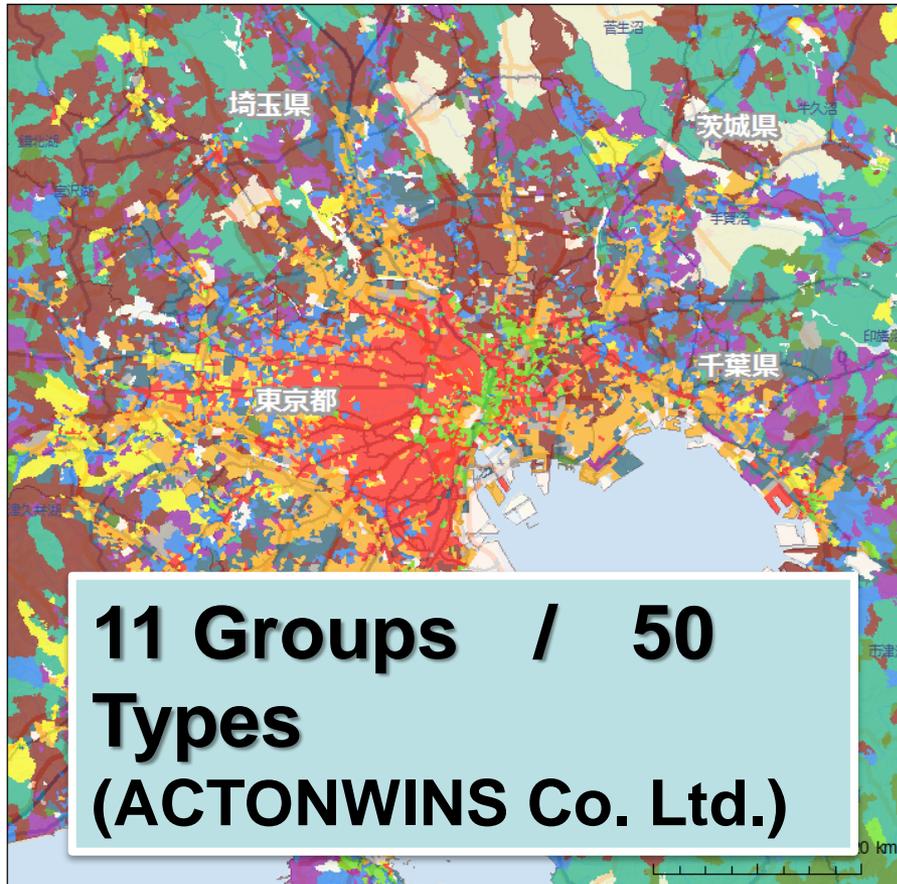
ACTONWINS Co. Ltd.



**A Metropolitan Careerists**  
tend to be under forty and  
earn a very high income.  
10.02% of Japanese  
households



**B Graduate Newcomers**  
Young families with  
children living in modern  
apartments in the new  
residential areas of small  
cities and the suburbs of  
large cities.  
8.11% of Japanese  
households



**11 Groups / 50  
Types  
(ACTONWINS Co. Ltd.)**

(Nakaya and Hanibuchi, 2009)



**F Corporate Success Story**  
Employees of well-  
established corporations,  
who have worked their way  
up the ranks and obtained  
a certain level of social



**H Social Housing Tenants**  
Low wage earners living in  
large cities in middle to  
large apartment blocks of  
social housing developed  
by local authorities.  
3.97% of Japanese  
households

**Well educated**

**Modern**

**Urban**



**C Campus Lifestyles**



**B Graduate Newcomers**



**A Metropolitan Careerists**

**Young**



**D Older Communities**



**F Corporate Success**



**E Middle Japan**

**Old**



**K Deeply Rural**



**G Burdened Optimists**



**J Rural Fringe**



**I Blue Collar**

**Owners**



**H Social Housing**

**Rural**

**Traditional**

**Poorly Educated**

Mosaic classifies households in Japan by allocating them to one of 50 types and 11 groups.

Group	Group Description	% HH	Types	Group Description	% HH
A	<b>Metropolitan Careerists</b> 	10.02	A01	Global Connections	2.59
			A02	Clever Capitalists	3.20
			A03	Inner City Tokyo	3.06
			A04	Corporative Trainees	1.17
B	<b>Graduate Newcomers</b> 	8.11	B05	Metro White Collar	3.70
			B06	Nest Making Families	2.14
			B07	Dinky Developments	1.89
			B08	Factory Accommodation	0.38
C	<b>Campus Lifestyles</b> 	4.07	C09	Rural Colleges	0.17
			C10	Centres of Learning	1.13
			C11	University Challenge	0.35
			C12	Town Gown Transition	2.42
D	<b>Older Communities</b> 	7.85	D13	Nagaya Housing	1.27
			D14	Old Town Seniors	2.32
			D15	Second Tier Downtown	1.74
			D16	Older Suburbs of Big Cities	2.26
			D17	Fishing Ports	0.26
E	<b>Middle Japan</b> 	19.97	E18	Small Service Centres	3.16
			E19	Small Time Business	3.55
			E20	Micro Communities	2.66
			E21	Small Town Periphery	4.23
			E22	Middle Ring Suburbs	3.33
			E23	Provincial Renters	3.04

(Nakaya and Hanibuchi, 2009)

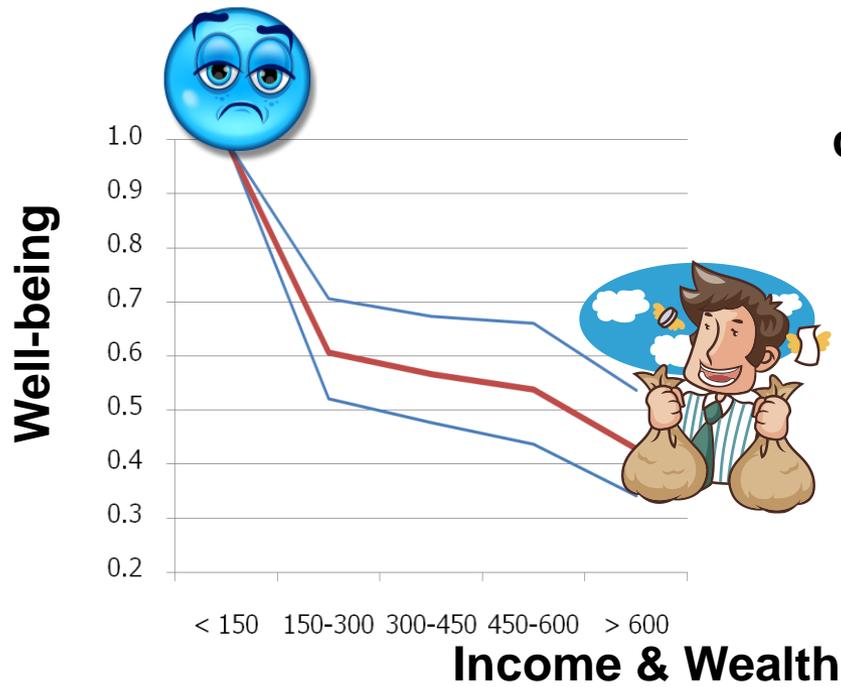
Source: <http://www.mosaicjapan.com/groups.htm>

F	Corporate Success Story 	5.76	F24	Suburban Elite	1.41
			F25	Conservative Comfort	2.47
			F26	Upper Echelons	1.03
			F27	Corporate Careerists	0.85
G	Burdened Optimists 	9.43	G28	Company Towns	1.34
			G29	Blue Collar Families	2.09
			G30	Small Town Strugglers	1.80
			G31	Low White Collar Commuters	2.78
			G32	80's Right to Buy/Mixed Tenure	1.42
H	Social Housing Tenants 	3.97	H33	Welfare Dependency	1.12
			H34	Low Income Public Housing	2.06
			H35	Public Rented Apartments	0.79
I	Blue Collar Owners 	18.64	I36	Osaka Terraces	2.65
			I37	Original Suburbs	5.13
			I38	Factory Towns	2.47
			I39	Sprawling Infill	3.23
			I40	New Collective Housing	2.12
			I41	Artisan Economy	3.04
J	Rural Fringe 	7.53	J42	Small Service Centres	1.38
			J43	Small Town Seniors	2.28
			J44	Lowland Rural Fringe	2.05
			J45	Rural Rejuvenation	1.82
K	Deeply Rural 	4.63	K46	Senior Citizen Houses	0.34
			K47	Non Farm Rural Areas	1.34
			K48	Rural Traditions	0.93
			K49	Coast and Mountain	1.58
			K50	Ancestral Homelands	0.44

Source: <http://www.mosaicjapan.com/groups.htm>

(Nakaya and Hanibuchi, 2009)

# Can composition of individual socio-economic status explain the geographic inequalities of well-being and happiness?



**Individual-level  
social gradient of well-being**

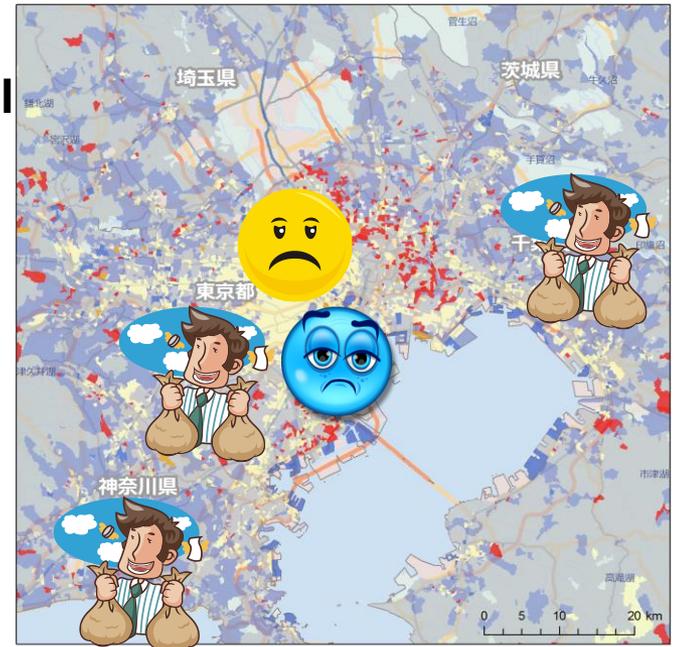
(Nakaya and Hanibuchi, 2009)

compositional



?

contextual



**Geographic  
social gradient of well-being**

# Spatial Microsimulation of Kyoto and Edinburgh



Source: <http://simcity.ea.com/>

# **Spatial Microsimulation**

- A technique aiming at building large scale data sets**
- Modelling at the microscale**
- A means of modelling real life events by simulating the characteristics and actions of the individual units that make up the system where the events occur**

# What is microsimulation?

PERSON	AHID	PID	AAGE12	SEX	AJBSTAT	...	AHLLT	AQFVOC	ATENURE	AJLSEG	...
1	1000209	10002251	91	2	4	...	1	1	6	9	...
2	1000381	10004491	28	1	3	...	2	0	7	-8	...
3	1000381	10004521	26	1	3	...	2	0	7	-8	...
4	1000667	10007857	58	2	2	...	2	1	7	-8	...
5	1001221	10014578	54	2	1	...	2	0	2	-8	...
6	1001221	10014608	57	1	2	...	2	1	2	-8	...
7	1001418	10016813	36	1	1	...	2	1	3	-8	...
8	1001418	10016848	32	2	-7	...	2	-7	3	-7	...
9	1001418	10016872	10	1	-8	...	-8	-8	3	-8	...
10	1001507	10017933	49	2	1	...	2	0	2	-8	...
11	1001507	10017968	46	1	2	...	2	0	2	-8	...
12	1001507	10017992	12	2	-8	...	-8	-8	2	-8	...

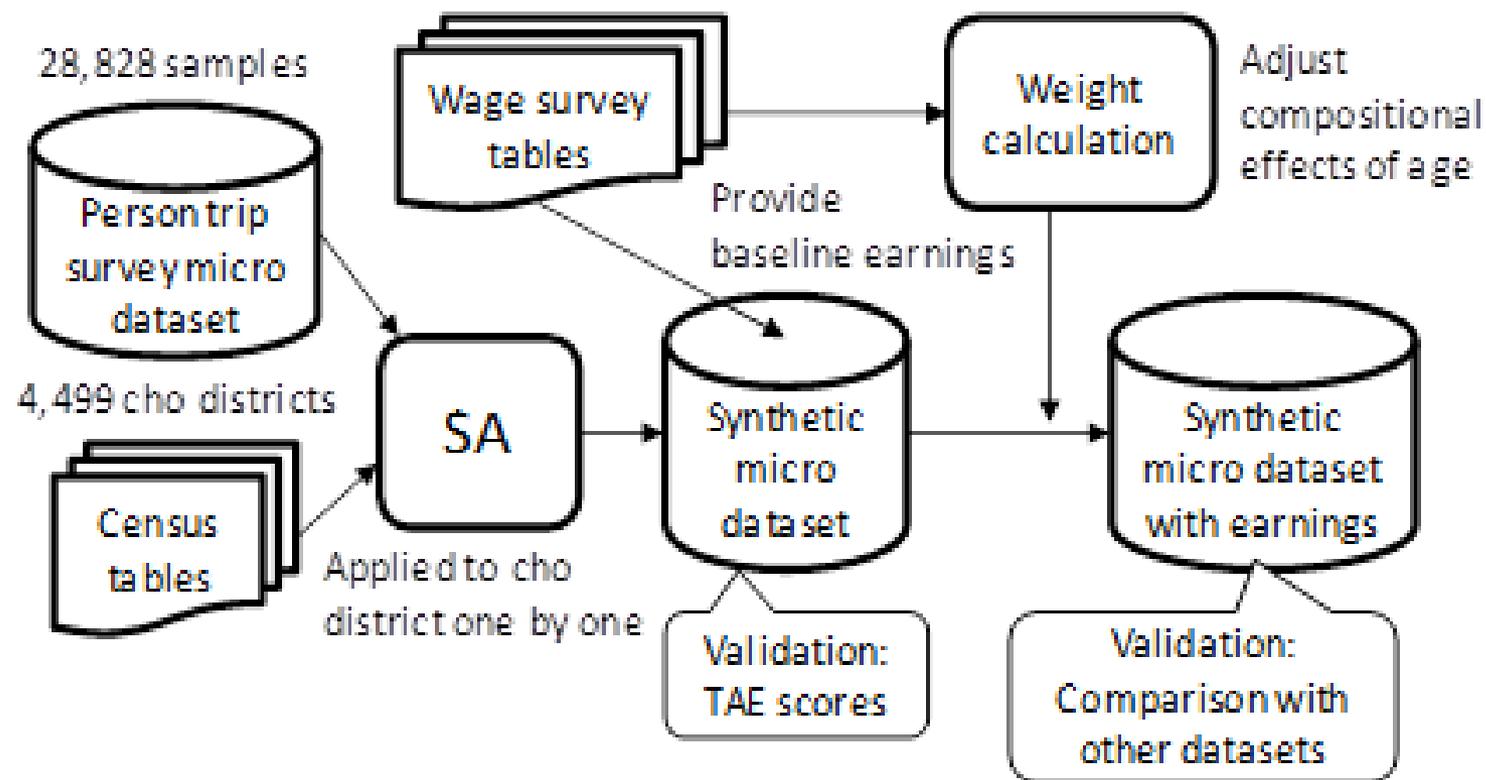
# ***Spatial microsimulation procedures***

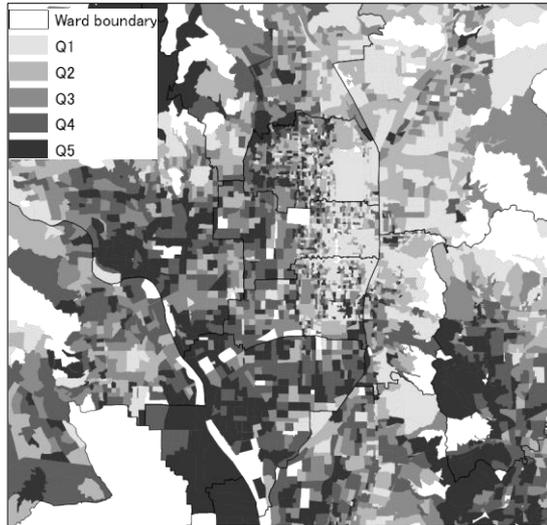
- The construction of a micro-dataset from samples and surveys
- ***Static What-if*** simulations, in which the impacts of alternative policy scenarios on the population are estimated: for instance if there is a taxation policy change today, what would be the “morning after” effect? Which areas would be most affected?
- Dynamic modelling, to update a basic micro-dataset and future-oriented *what-if* simulations: for instance if the current government had raised income taxes this year what would the redistributive effects have been between different socio-economic groups and between central cities and their suburbs by 2021?

# **Spatial microsimulation procedures**

- **Construction of small area microdata from using samples, surveys and small area data**
- **Static-what-if simulations**
- **Dynamic modelling to update the static microdata set and perform dynamic what-if micro-spatial policy analysis**

## Conceptual framework of the Kyoto model (Ballas et al., 2012; Hanaoka, 2011)





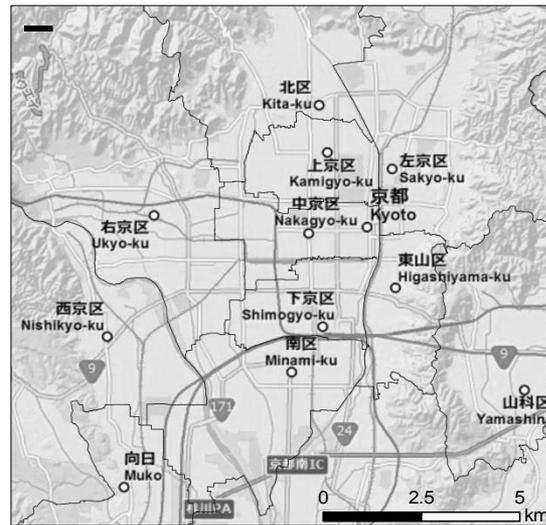
a. Production process and related workers (%)



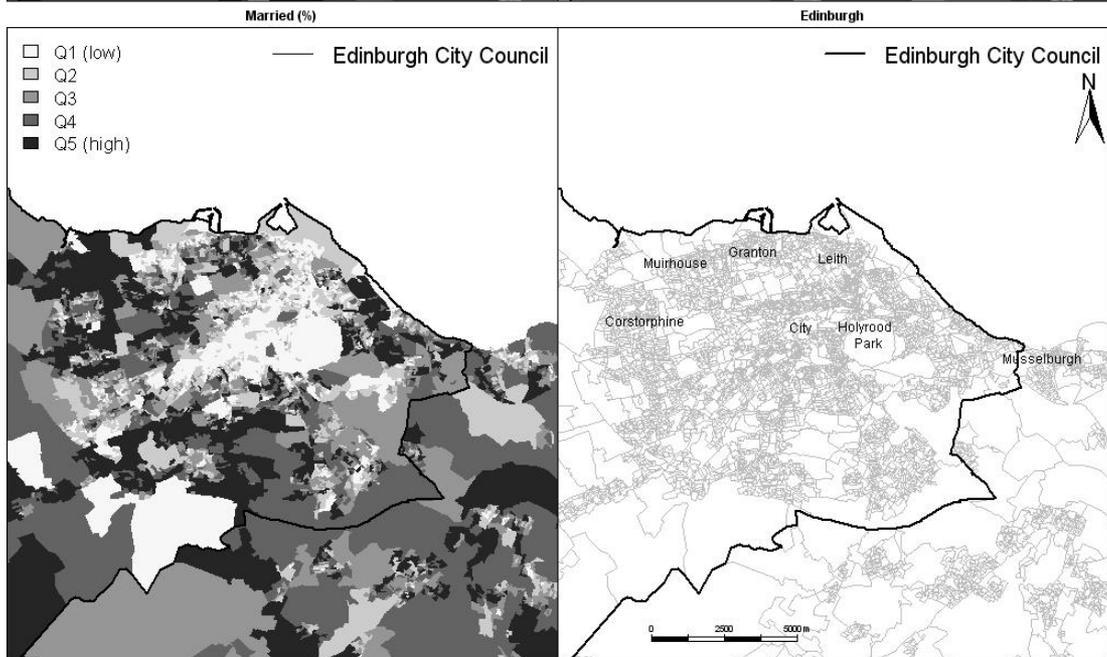
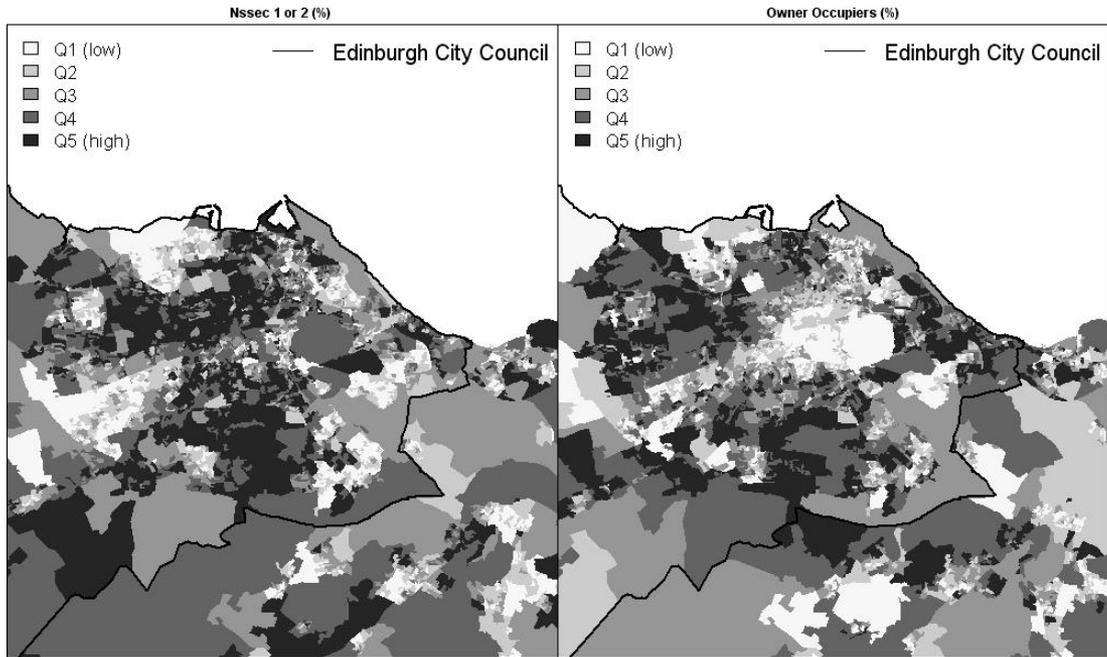
b. Professional & technical workers and managers & officials (%)



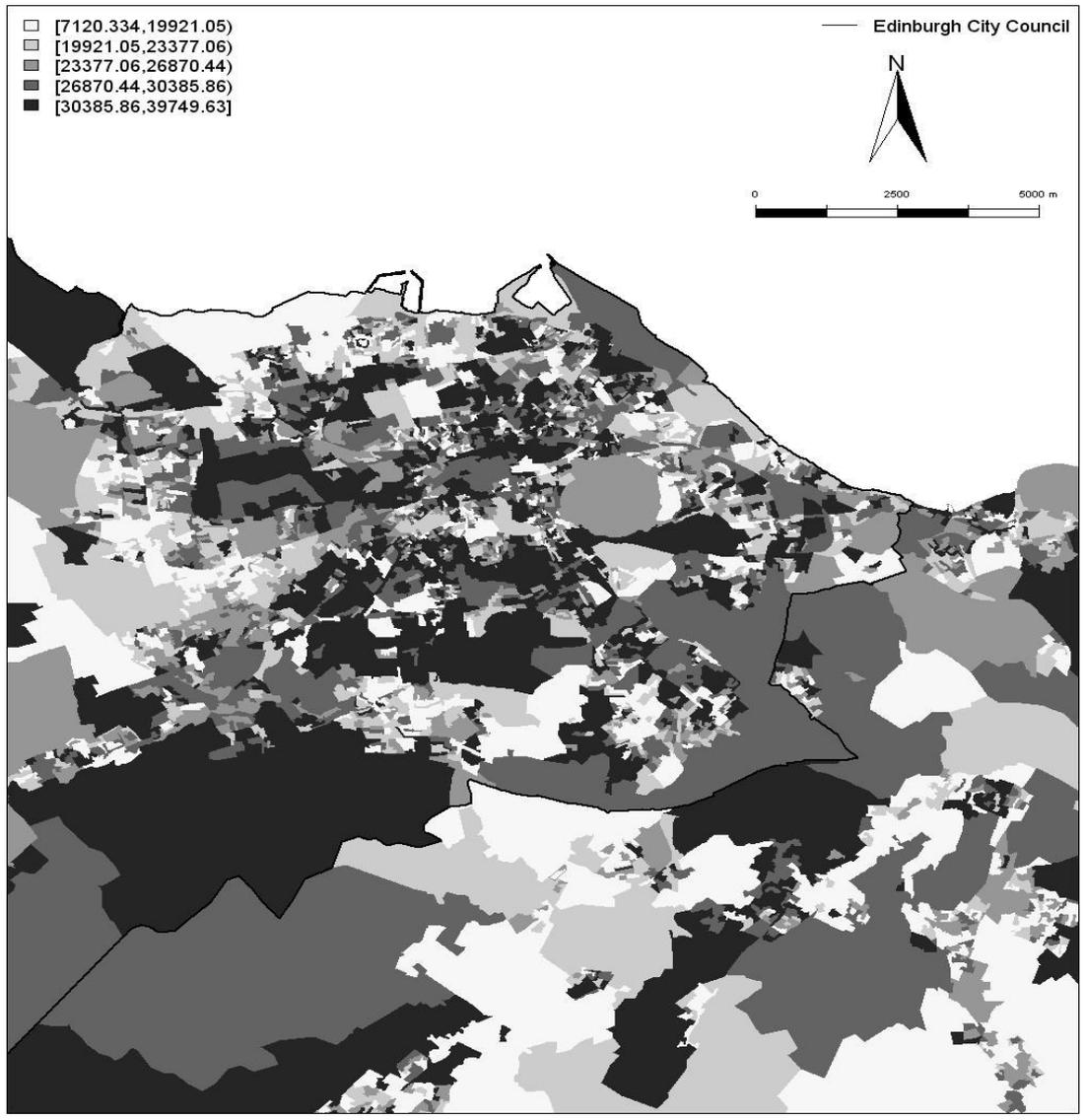
c. Average household size



d. Kyoto City, Japan



# Estimated spatial distribution of average equilivised household income in Edinburgh city



# Conclusions

- **Income inequality analysis consolidates the Spirit Level work.**
- **But need to obtain better quality disposable income data on both countries (instead of the estimates produced for Japan in the context of this project based on the assumption of a single earner in each household).**
- **Next steps and future possibilities:**
  - Further explore variations in happiness and well-being using secondary data from the UK Understanding Society and Japanese General Social Survey
  - Explore further the impact of interaction variables (e.g. unemployed x regional unemployment rate)
  - Explore additional geographical variations using multilevel and **spatial microsimulation modelling techniques**
  - Further analysis for finer geographical scales (spatial microsimulation and agent-based modelling)