Inequalities in Healthy Active Life Expectancy

## Inequalities in disability free life expectancy and healthy life expectancy between ethnic groups in England and Wales in 2001

Pia Wohland<sup>1</sup>, Phil Rees<sup>2</sup> and Carol Jagger<sup>1</sup>

<sup>1</sup>Institute for Ageing and Health, Newcastle University; <sup>2</sup>School of Geography, University of Leeds

InHALE -

Inequalities in Healthy Active Life Expectancy: the role of time, place, person and methods ESRC Research Fund RES-062-23-2970 1 October 2011 - 30 September 2014 http://research.ncl.ac.uk/InHALE







## Overview

- Research question
- Methods and Data
- Results
- Conclusions
- Outlook

## **Research question**

 How do health expectancies vary for ethnic groups in England and Wales and are the observed differences significant?

## Method

Two health expectancies

 disability free life expectancy (DFLE) and
 healthy life expectancy (HLE)

Sullivan method

- need of information: mortality to calculate a standard life table and
- prevalence rate of health variable in the population disaggregated by gender and age

## Data

- Mortality estimates for ethnic groups in England and Wales (Rees et al. 2009)
- Health data, commissioned table M203, M204 and M204a from Census 2001, ONS for ethnic groups by

#### age and gender

11 Over the last twelve months would you say your health has on the whole been:



Fairly good?

Not good?

13 Do you have any long-term illness, health problem or disability which limits your daily activities or the work you can do?

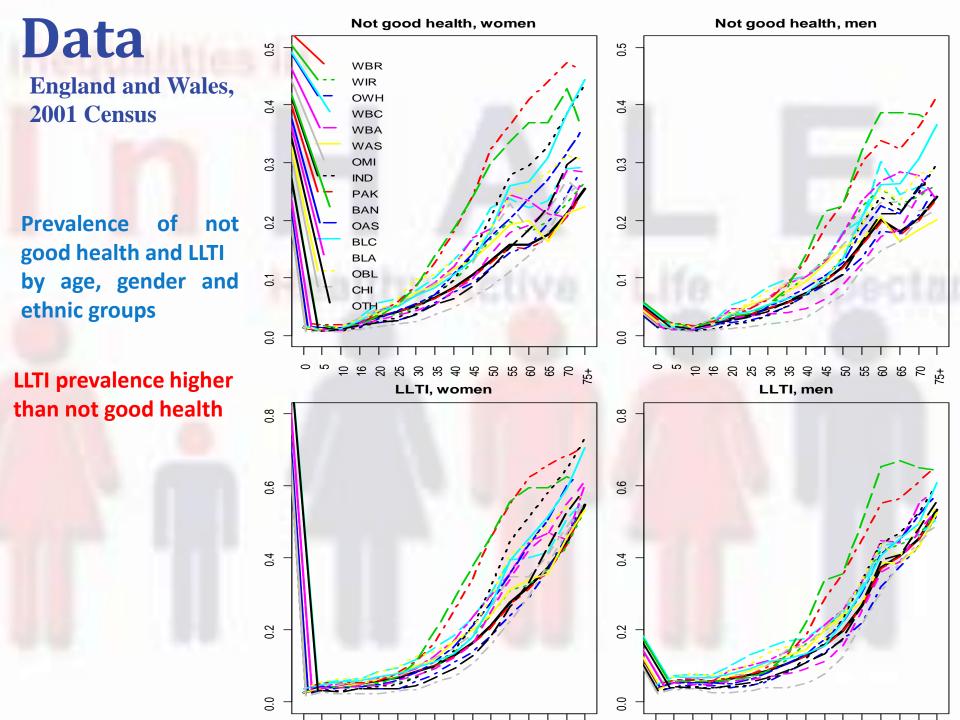
Include problems which are due to old age.

Yes

No

## Data

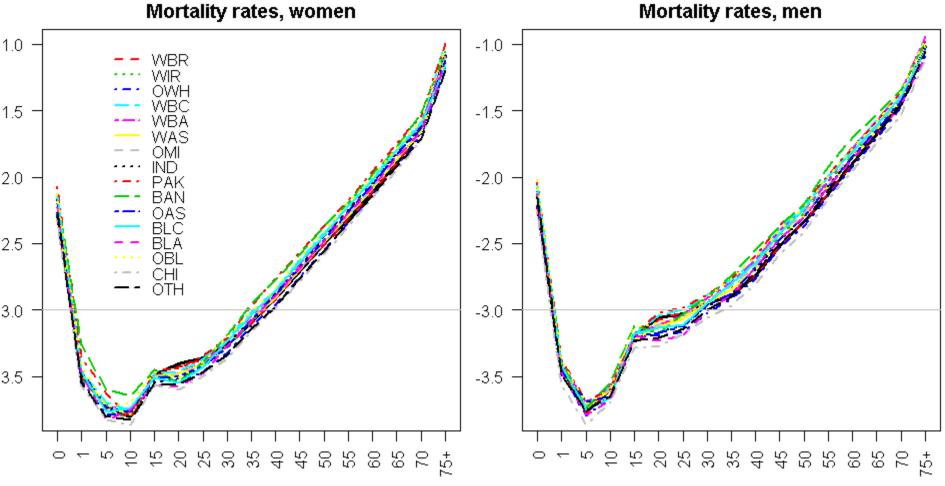
- Disability-free life expectancy (DFLE) is an estimation of length of time that an individual can expect to live free from a limiting long standing illness or disability
- Healthy life expectancy (HLE) the length of time an individual can expect to live in very good or fairly good health

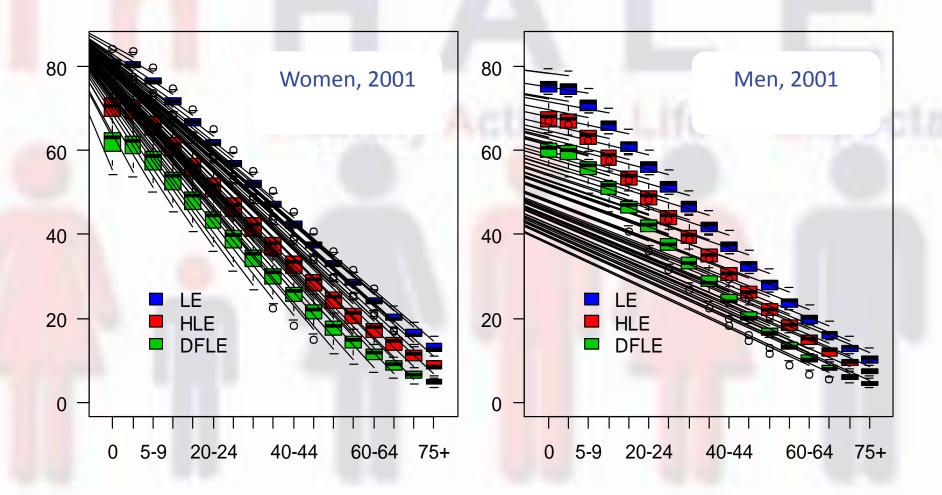


Data

**Estimated mortality rates, 2001** 

Mortality rates, men





# **O** at birth

Highest LE, DFLE and HLE for Chinese men, lowest for in Pakistani and Bangladeshi group. Even though LE of Wh.&BI.C'bean and Other Black similar low, more time spend without disability and in good/fair health.

			DFLE %	DF	LE					HLE % GH		
Other			62.9.81	1.8%	76.9	Other				69.2 89.%		1
Chinese			66.9 84	4.2%	79.4	Chinese			6	73.3 92.46		
Other Black			58.3 7	/9%	73.7	Other Black				65.6 89%		
BI.African			63.5 82	2.3%	77.2	BI.African				70.5 91.3%		
BI.C'bean			59.478	3.9%	75.3	BI.C'bean				66.3 87.9%		
Other Asians			60.7 8	30%	75.9	Other Asians				68 89.6%		
Bangladeshi			54.2 7	4%	73.2	Bangladeshi				62 84.7%		
Pakistani			55.5 76	5.3%	73.7	Pakistani				62.6 85%		
Indian			60.978	3.8%	76.3	Indian				68.2 89. <b>5</b> 6		
Other Mixed			59.3 79	9.3%	74.8	Other Mixed				66.7 89.2%		
Wh.&Asian			61 80	0.5%	75.8	Wh.&Asian				68.6 90. <b>5</b> 6		
Wh.&BI.African			58 78	3.7%	73.8	Wh.&BI.African				65.1 88.3%		
Wh.&BI.C'bean			57.7 78	3.46	73.5	Wh.&BI.C'bean				64.7 88%		
Wh.Other			64.3 82	2.3%	78.1	Wh.Other				70.8 90.7%		
W.Irish			60 79	9.46	75.6	W.Irish				66.8 88.4%		
Wh.British			61.7 80	0.8%	76.4	Wh.British				69.3 90.7%		
All			61.6 80	0.7%	76.4	All				69.2 90.6%		
		1	1	l			Г			1		4
	0	20	40	60	80		0	20	2	10	60	80

Age

White Other, Black African, Chinese and Other groups have significantly higher DFLE and HLE Compared to the White British group. Especially Bangladeshi and Pakistani groups have Significantly health expectancies.

		Diff.	p						Diff.	р		1
Other		1.3	<0.01		]	Other	$\mathbf{O}$		-0.1	>0.20		
Chinese		5.2	<0001			Chinese			4	<0.001		
Other Black		-3.4	<0.001			Other Black			-3.7	<0.001		
BI.African		1.8	<0.001			BI.African			1.2	<0.001		
BI.C'bean		-2.3	<0.001			BI.C'bean			-3	<0.001		
Other Asians		-1	<0.01			Other Asians			-1.3	<0.001		
Bangladeshi		-7.5	<0.001			Bangladeshi			-7.3	0.001		
Pakistani		-6.2	0.001			Pakistani			-6.7	-0.001		
Indian		-0.8	<0.001			Indian			-1.1	<0.001		
Other Mixed		-2.4	<0.001			Other Mixed			-2.6	<0.001		
Wh.&Asian	0	-0.6	>0.20			Wh.&Asian	$\mathbf{O}$		-0.7	<0.20		
Wh.&BI.African		-3.6	<0.001			Wh.&BI.African			-4.2	<0.001		
Wh.&BI.C'bean		-4	<0.001			Wh.&BI.C'bean			-4.6	<0.001		
Wh.Other		2.6	<0.001			Wh.Other			1.5	<0.001		
W.Irish		-1.7	<0.001			W.Irish			-2.5	<0.001		
Wh.British		0	>0.20			Wh.British			0	>0.20		
All						All						
					_							
	I I	I	I		I		I	I	I		I	
	0 20	) 40	60	)	80		0	20	40		60	

Age

Age

80

**O** at birth



Women have higher LE, DFLE and HLE compared to men. Pattern of variation between Groups are similar to the once observed in men. Women spend more time with disability/ Not good health compared to men.

			DFLE %	6DF	1	LE				HLE %	GH	
Other			66.47	9.2%		83.8	Other			74.1 88	.46	
Chinese			68.2 8	0.96		<b>84.3</b>	Chinese			76.1 90	.36	
Other Black			59.5 79	5.9%		78.4	Other Black			67.7 86	.46	
BI.African			63.47	7.6%		81.8	BI.African			72.7 8	9%	
BI.C'bean			60.2 7	74%		81.4	BI.C'bean			68.1 83	.7%	
Other Asians			61 7	5.4%		80.9	Other Asians			69.9 86	.3%	
Bangladeshi			55.7 7	1.2%		78.3	Bangladeshi			64.5 82	.36	
Pakistani			54.3 7	0.45		1.17	Pakistani			61.9 80	.36	
Indian			59.3 73	3.3%		81	Indian			68 8	4%	
Other Mixed			63 7	8.2%		80.5	Other Mixed			70.7 87	.86	
Wh.&Asian			63.5 7	8.5%		80.9	Wh.&Asian			71.7 88	.6%	
Wh.&BI.African			61.47	6.5%		80.3	Wh.&BI.African			70.2 87	.5%	
Wh.&BI.C'bean			59.7 70	6.6%		77.9	Wh.&BI.C'bean			67.486	.56	
Wh.Other			66.3 7	9.6%		83.3	Wh.Other			74 88	.9%	
W.Irish			64.5 7	8.7%		82	W.Irish			72.3 88	. 16	
Wh.British			64.2 7	9.46		80.8	Wh.British			72.5 89	.7%	
All			64 79	9.3%		80.7	All			72.2 89	.5%	
		I						Г				
	0	20	40	60	80			0	20	40	60	80
	0	20	40	00	00			0	20	40	00	00

Similar to men, great differences between the White British (WBR) group and the Pakistani and Bangladeshi group. No significant difference between the White Irish (WIR) women and WBR women, whereas WIR men have sig. lower health expectancies.

			Diff.	p	1				Diff. K	0	
Other			2.2 <0	.001		Other			1.6 <0.0	001	
Chinese			4 🔊	.001		Chinese			3.7 <0.0	001	
Other Black			-4.7 <0	.001		Other Black			-4.7 <0.0	DO1	
BI.African	0		-0.7 <0	0.01		BI.African	Ο		0.3 >0.	.20	
BI.C'bean			-4 <0	.001		BI.C'bean			-4.4 <0.0	001	
Other Asians			-3.2 <0	.001		Other Asians			-2.6 <0.0	001	
Bangladeshi			-8.4 0	.001		Bangladeshi			-8 49.0	001	
Pakistani			-9.9 50	.001		Pakistani			-10.5 0.0	001	
Indian			-4.8 <0	.001		Indian			-4.4 <0.0	DO1	
Other Mixed			-1.2 <(	0.01		Other Mixed			-1.8 <0.0	001	
Wh.&Asian	0		-0.6 <(	0.10		Wh.&Asian	$\mathbf{O}$		-0.8 <0.	.20	
Wh.&BI.African			-2.7 <0	.001		Wh.&BI.African			-2.2 <0.	.02	
Wh.&BI.C'bean			-4.4 <0	.001		Wh.&BI.C'bean			-5.1 <0.0	DO1	
Wh.Other			2.1 <0	.001		Wh.Other			1.6 <0.0	001	
W.Irish			0.4 <(	D.10		W.Irish	$\bigcirc$		-0.2 >0.	.20	
Wh.British			0 >(	0.20		Wh.British			0 >0.	.20	
All						All					
	0	20	40					20	40	eo	
	0	20	40	60	80		0	20	40	60	80

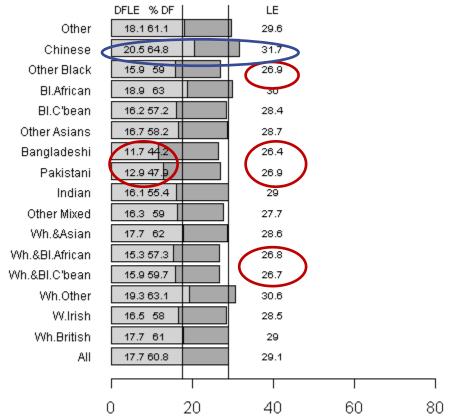
Age

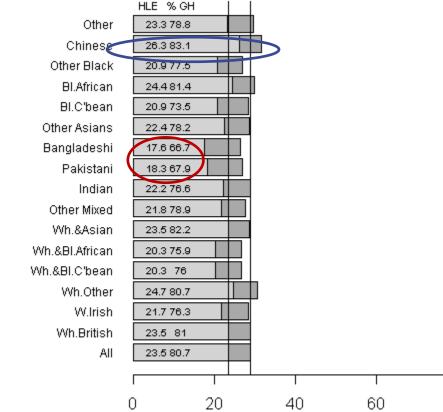
Age

**Q** at birth

# dage 50

Several groups have similar low LE, but Pakistani and Bangladeshi groups have lowest health expectancies.



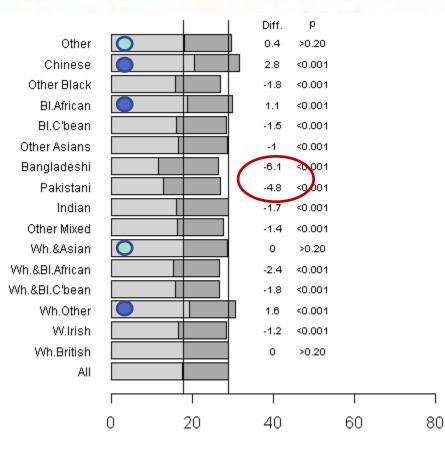


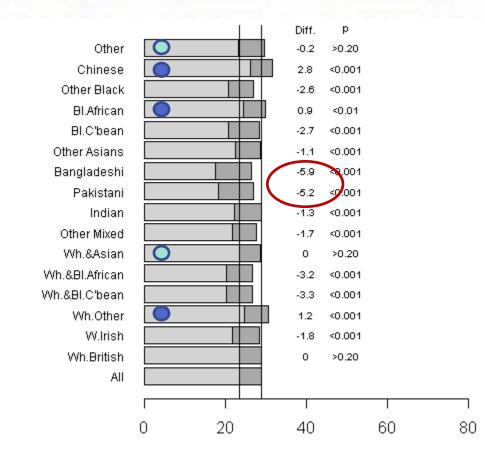
Age

Age

80

By far the largest difference in DFLE and HLE are seen in Bangladeshi men, followed by Pakistani men.





Age

Age

**O** age 50

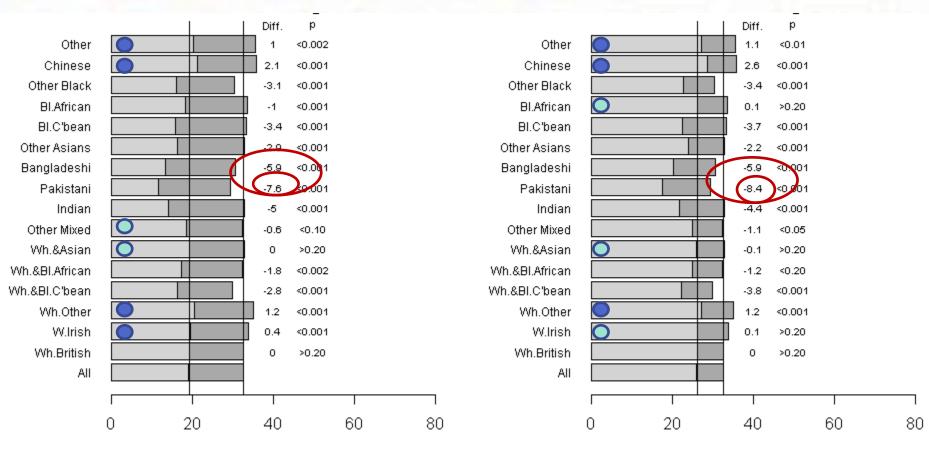


Here as well, several groups have similar LE, but Pakistani women in particular have lower health expectancies compared to other groups. Bangladeshi and Indian women can expect to spend similar %time disability free/in good and fair health.

	DFLE %[	F	LE				HLE %	GH	1	
Other	20.2 56.9	9	35.6			Other	27.2.7	6.5		
Chinese	21.4 59.6	5	36			Chinese	28.8	80		
Other Black	16.1 52.8	3	30.5			Other Black	22.7 7	4.5		
BI.African	18.3 54.3	2	33.7			BI.African	26.2.7	7.8		
BI.C'bean	15.9 47.3	3	33.5			BI.C'bean	22.4	87		
Other Asians	16.4 49.3	7	32.9			Other Asians	24 7	2.8		
Bangladeshi	13.4 43.6		30.6			Bangladeshi	20.2	66	]	
Pakistani	11.7 39/		29.5			Pakistani	17.7 6	0.1		
Indian	14.2 43.1	1	33			Indian	21.8	66		
Other Mixed	18.7 57.8	5	32.5			Other Mixed	25.17	7.2		
Wh.&Asian	19.3 58.6	3	32.9			Wh.&Asian	26.17	9.4		
Wh.&BI.African	17.4 54		32.3			Wh.&BI.African	24.97	7.1		
Wh.&BI.C'bean	16.5 54.9	9	30			Wh.&BI.C'bean	22.47	4.6		
Wh.Other	20.5 58.4	1	35.1			Wh.Other	27.37	7.9		
W.Irish	19.6 57.9	)	33.9			W.Irish	26.2 7	7.2		
Wh.British	19.3 59		32.7			Wh.British	26.1	80		
All	19,1 58,6	3	32.6			All	26 7	9.6		
	<b></b>						<b></b>			
	0	20	40	60	80		0	20	40	60
	Ŭ.	20	-0	00	00		Ŭ.	20	-0	

Age

Indian women 5 years lower DFLE compared to White British women. Similar to the Difference observed at birth, relative increase.



Age

Age

age 50

Age

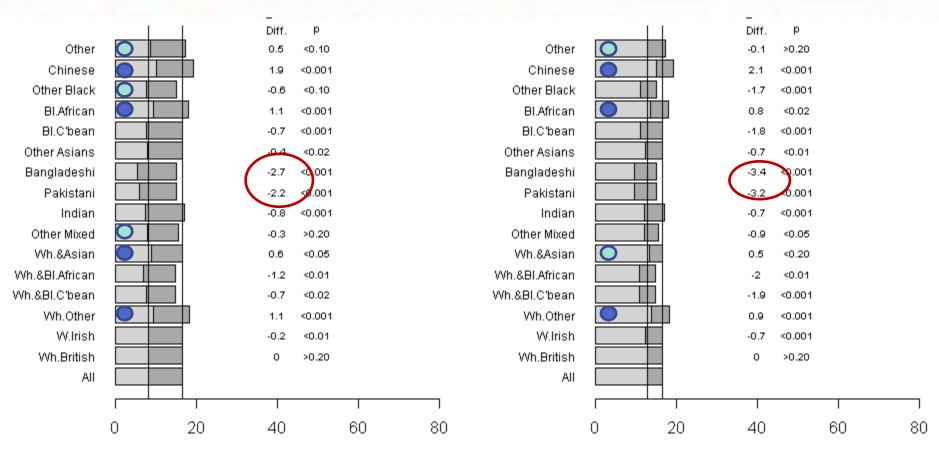
## dage 65

White & Black African and White & Black Caribbean have lowest LE.

Men age 65 DFLE/LE Men age 65 HLE/LE HLE % GH DFLE % DF LE Other Other 12.8 73.7 8.8 50.6 17.4 10.3 53.2 Chinese 19.3 Chinese 15.1 78.1 Other Black 7.7 50.9 15.1 Other Black 11.2 74.2 BLAfrican 9.4 52.3 18 BLAfrican 13.7 76.1 BI.C'bean BI.C'bean 7.8 45.5 16.7 11.2 66.9 123742 Other Asians Other Asians 7.9 47.4 16.6 Bangladeshi 5.6 37.2 15 Bangladeshi 9.6 63.8 Pakistani 15.2 Pakistani 9.8 64.2 6.1 40.1 Indian 7.5 44.3 17 Indian 12.3 72.3 Other Mixed Other Mixed 8.1 51.6 15.6 12 77.1 Wh.&Asian Wh.&Asian 8.9 54 16.5 13.5 81.8 Wh.&BI.African 7.1 47.9 14.8 Wh.&BI.African 10.9 74 Wh.&BI.C'bean 7.7 51.8 14.8 Wh.&BI.C'bean 11 74.3 9.4 51.4 18.3 Wh.Other Wh.Other 13.9 76.1 W.Irish 8.1 49.2 16.5 W.Irish 12.3 74.3 Wh.British Wh.British 8.3 49.8 16.7 13 77.7 All All 8.3 49.7 16.7 12.9 77.4 20 40 60 80 20 40 60 80 0 0

**O** age 65

Other Black men and White & Asian men: variation in significance of differences between DFLE and HLE.



Aqe

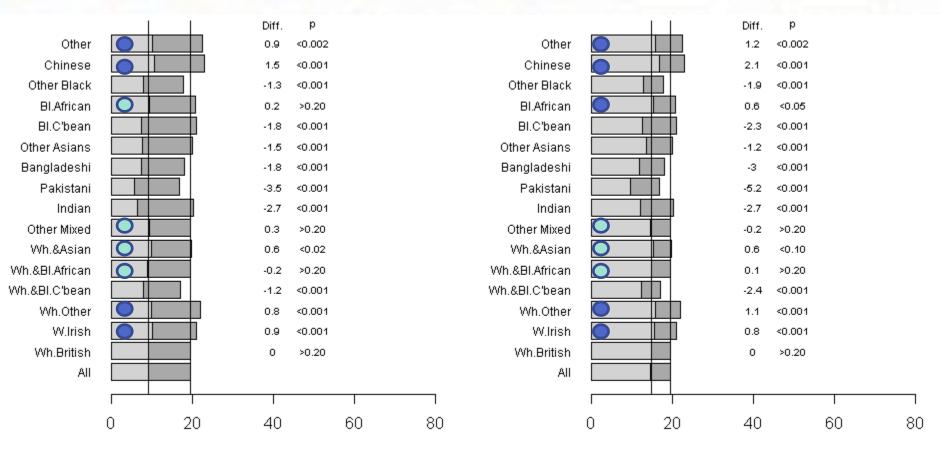


Lowest LE, DFLE and HLE for Pakistani women. Even though Indian women have higher LE and DFLE, they spent only ~32% without LLTI.

	I	D	FLE % DF LI				1	T	HLE % GH		
Other			10.1 44.8 22	.6		Other			16 70.6		
Chinese			10.8 47 22	.9		Chinese			16.9 73.9		
Other Black			7.9 44.4 17	.8		Other Black			12.9 72.1		
BI.African			9.4 45 20	.9		BI.African			15.4 73.9		
BI.C'bean			7.4 35.4 2	1		BI.C'bean			12.5 59.8		
Other Asians			7.7 38.1 20	.2		Other Asians			13.6 67.3		
Bangladeshi			7.4 41.1 18	.1		Bangladeshi			11.8 65.3		
Pakistani		<u> </u>	5.7 33.7 16			Pakistani		]   (	9.6 56.9		
Indian			6.5 31.9 20	.3		Indian			12.1 59.7		
Other Mixed			9.5 48.8 19	.5		Other Mixed			14.6 74.7		
Wh.&Asian			9.9 49.4 19	.9		Wh.&Asian			15.4 77.5		
Wh.&BI.African			9 46.1 19	.5		Wh.&BI.African			14.9 76.5		
Wh.&BI.C'bean			8 46.8 17	.1		Wh.&BI.C'bean			12.4 72.2		
Wh.Other			10.1 45.6 22	.1		Wh.Other			15.9 72		
W.Irish			10.2 48.2 21	.1		W.Irish			15.6 73.8		
Wh.British			9.2 47.1 19	.6		Wh.British			14.8 75.5		
All			9.2 46.8 19	.6		All			14.7 75.1		
		<u> </u>									
	0	20	40	60	80		0	20	40	60	80
	0	20	40	00	00		0	20	40	00	00

Age

Older ages, White Irish Women sig. better health expectancy than White British Women. Black African, Other Mixed, White & Asian and White & Black African women no difference to White British women DFLE and HLE as well (except Black African).



Age

Age

age 65

## Conclusions

- Life and health expectancies differ considerably between ethnic groups
- For men at birth
  - highest LE is for Chinese men 79.4
- lowest for Bangladeshi men (73.2) closely followed by Pakistani men (73.7)
- This pattern is similar for health expectancies, where Chinese men can expect to live most years without a disability and in fair / good health and Pakistani and Bangladeshi men the fewest years.
- Similar patterns are seen at other ages and in women.

## Conclusions

- In most instances the observed differences between a minority ethnic group and the White British group are significant.
- Differences are in both directions
- Mostly differences in DFLE and HLE between an ethnic group and the White British group follow the same direction with the exception of White Irish and Black African Women
- DFLE and HLE do not always follow the pattern of LE, groups with same/similar LE can vary considerably in health expectancy
- Women have higher LE and health expectancies compared to men, but can expect to spend more % of their life time with a limiting long term illness or in not good health. This difference is more pronounced in some Asian groups compared to other groups or the total population.

## **Outlook** How can differences be explained

- Socioeconomic status/Deprivation
- Country of Origin?
- Healthy migrant effect?
  - immigrant generation composition
- Bias in reporting health/illness?

## References

- Data source: Adapted from data from the Office for National Statistics licensed under the Open Government Licence v.1.0.
- R Core Team (2012). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <a href="http://www.R-project.org/">http://www.R-project.org/</a>.
- Rees PH, Wohland PN, Norman PD: The estimation of mortality for ethnic groups at local scale within the United Kingdom. Soc Sci Med; 2009 Dec;69(11):1592-607. PMID: 19781840.
- Sullivan DF. A single index of mortality and morbidity. HSMHA Health Rep 1971;86:347-354. 11
- Jagger, C., B. Cox, S.L. Roy and THE EHEMU TEAM. 2007. Health expectancy calculation by the Sullivan method: a practical guide, 3rd edition [online]. EUROPEAN HEALTH EXPECTANCY MONITORING UNIT, France. <u>http://www.ehemu.eu/pdf/Sullivan\_guide\_final\_jun2007.pdf</u>

### Thanks!

 Workshop tomorrow on how to calculate and interpret health expectancies

Project webpage :<u>http://research.ncl.ac.uk/InHALE</u>