
Country of birth, ethnicity and race: providing insights into the causes and consequences of (cardiovascular) disease

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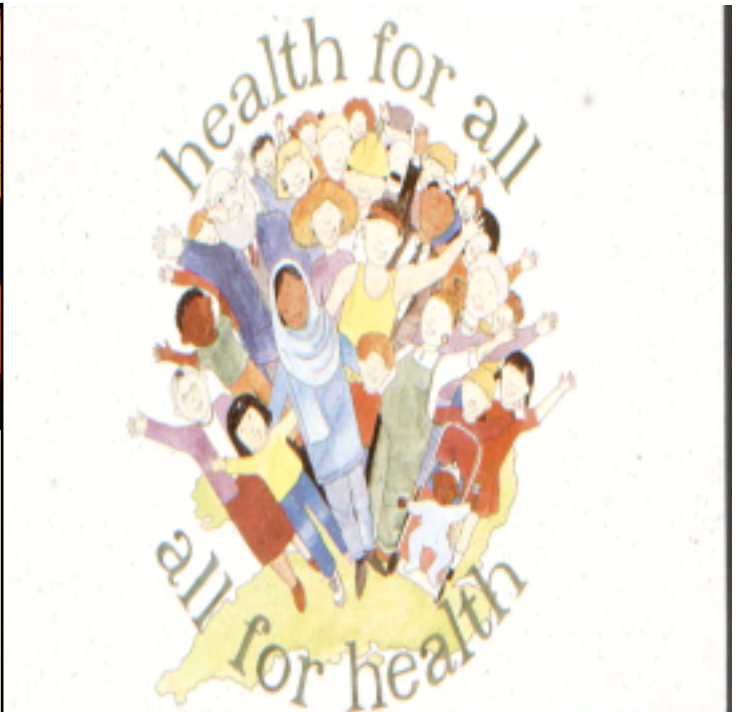
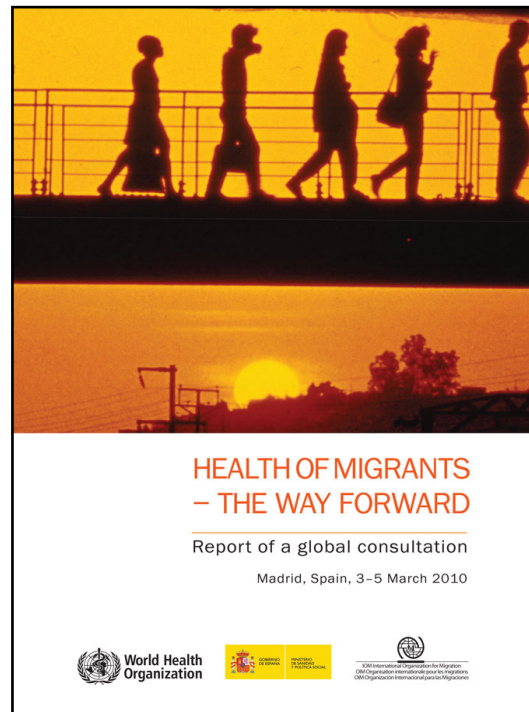
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European perspective on migration, ethnicity and race: present



First principles thinking on CVD in South Asians (pre-1984)

- South Asians (Indians, Pakistanis, Sri Lankans, Nepalese) *should* have low rates of coronary heart disease, and maybe stroke
 - Reason:
 - low smoking prevalence (especially women),
 - much vegetarianism,
 - low blood pressure especially in Bangladeshis and Pakistanis etc
 - Wrong!
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Data contradicting first principles

CVD

- Adelstein (1963, South Africa)
- Marmot 1984; Balarajan 1991; Wild & McKeigue 1997; Bhopal 1999; Rafnsson 2012; Bansal 2013

Diabetes

- Mather and Keen for diabetes (Southall 1985) and New Delhi, 1986)
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European Migrant Ethnic Health Observatory: cross-country analysis

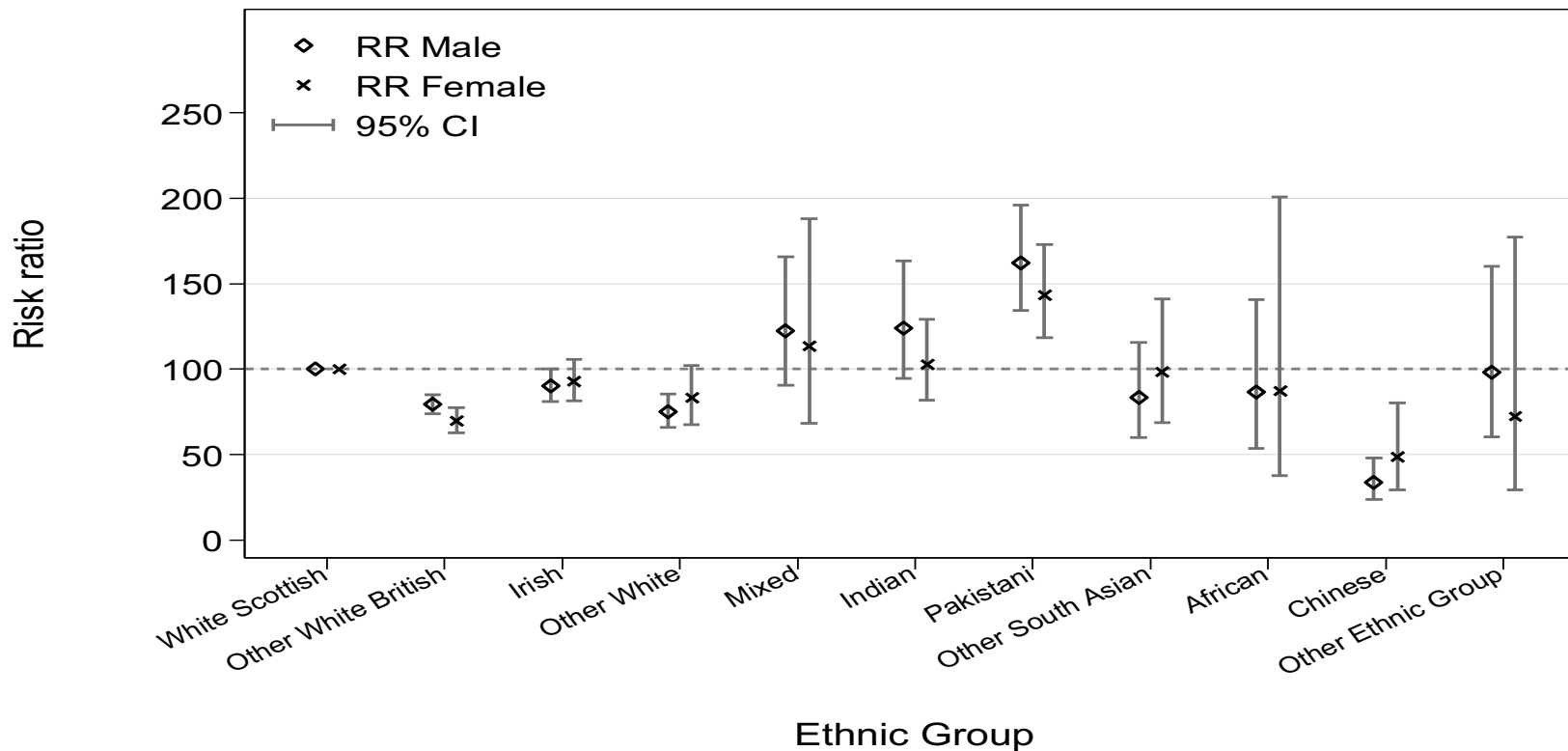


Total circulatory disease mortality (rate per 100,000 person years) by country of birth in 35-74 years old men

Country of birth	Scotland	E & W	France	Sweden	Netherlands	Denmark
	Europe - born	372.4	278.6	137.2	284.8	238.0
China	145.4	-	46.9	154.4	-	-
<i>India</i>	<i>372.8</i>	<i>355.7</i>	-	<i>244.5</i>	-	-
<i>Pakistan</i>	<i>353.1</i>	<i>422.2</i>	-	-	-	<i>518.9</i>

Scottish Health and Ethnicity Linkage Study: Census linkage to health service and mortality databases

First myocardial infarction age and education adjusted risk ratios with 95% CI, 01/05/2001 – 30/04/2008 (Bansal et al BMJ Open 2013 September 1;3(9))



Explanations on why South Asians at greater risk compared to Europeans?

- Artefacts / Inappropriate diagnostic criteria
- Genetic/evolutionary hypotheses e.g. *thrifty genotype*, *mitochondrial efficiency*, *Adipocyte tissue distribution*, *Soldier to diplomat*
- Thrifty phenotype (developmental/fetal origins hypothesis)
- Social and economic deprivation
- Psychosocial e.g. stress of migration
- Lifestyle factors e.g. physical inactivity and eating patterns
- Culture e.g. cuisine

Classic migration study: risk factors in Indians and their siblings in Punjab (Bhatnagar, Lancet 1995)

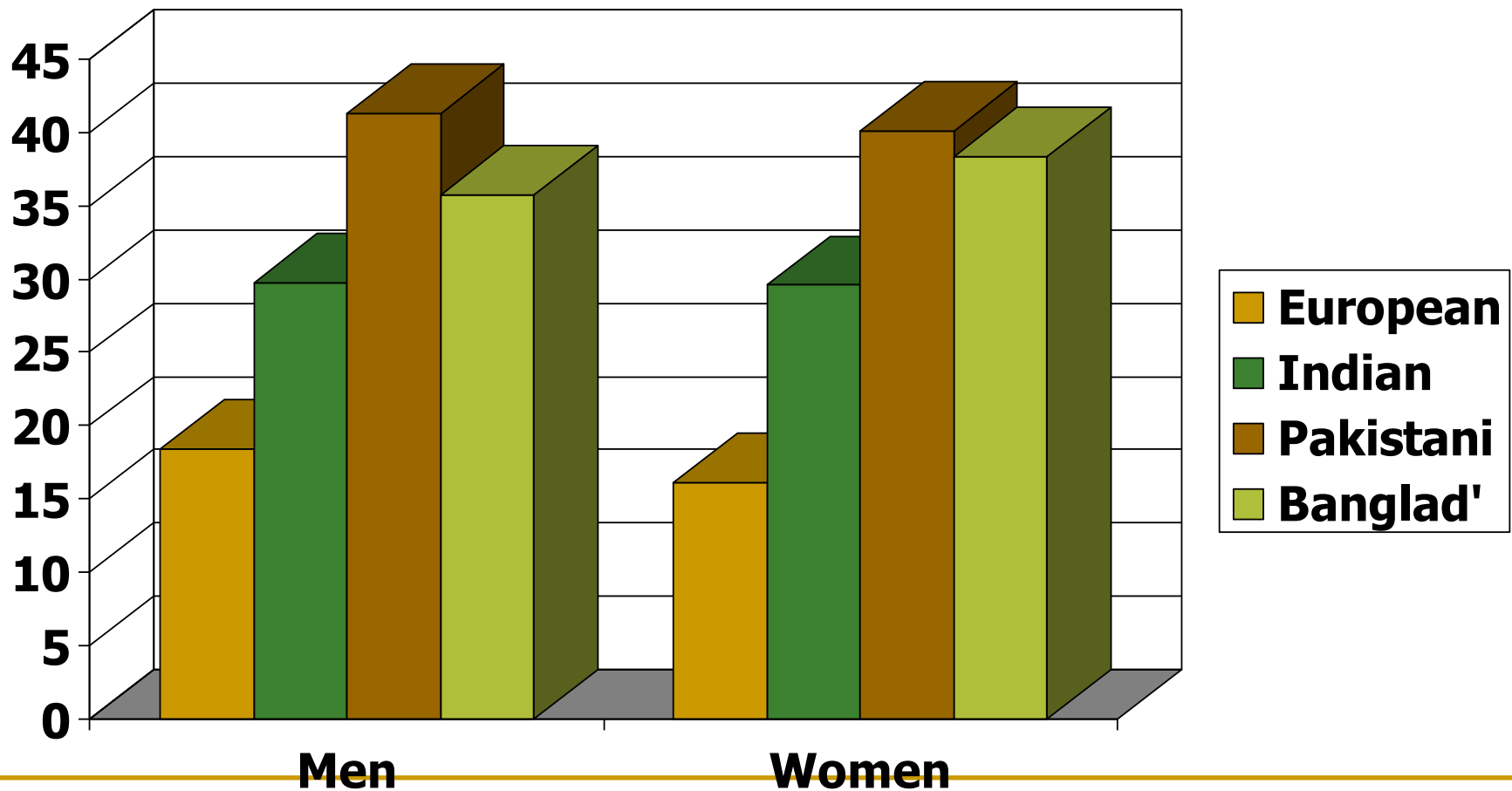
Which column is the London one?

Serum cholesterol (mmol/l)	6.5	4.9
HDL cholesterol (mmol/l)	1.1	1.2
Systolic blood pressure (mm Hg)	146	132

Also higher blood glucose...

Multi-ethnic Newcastle Heart Project (Bhopal et al, BMJ 1999;319:215-220)

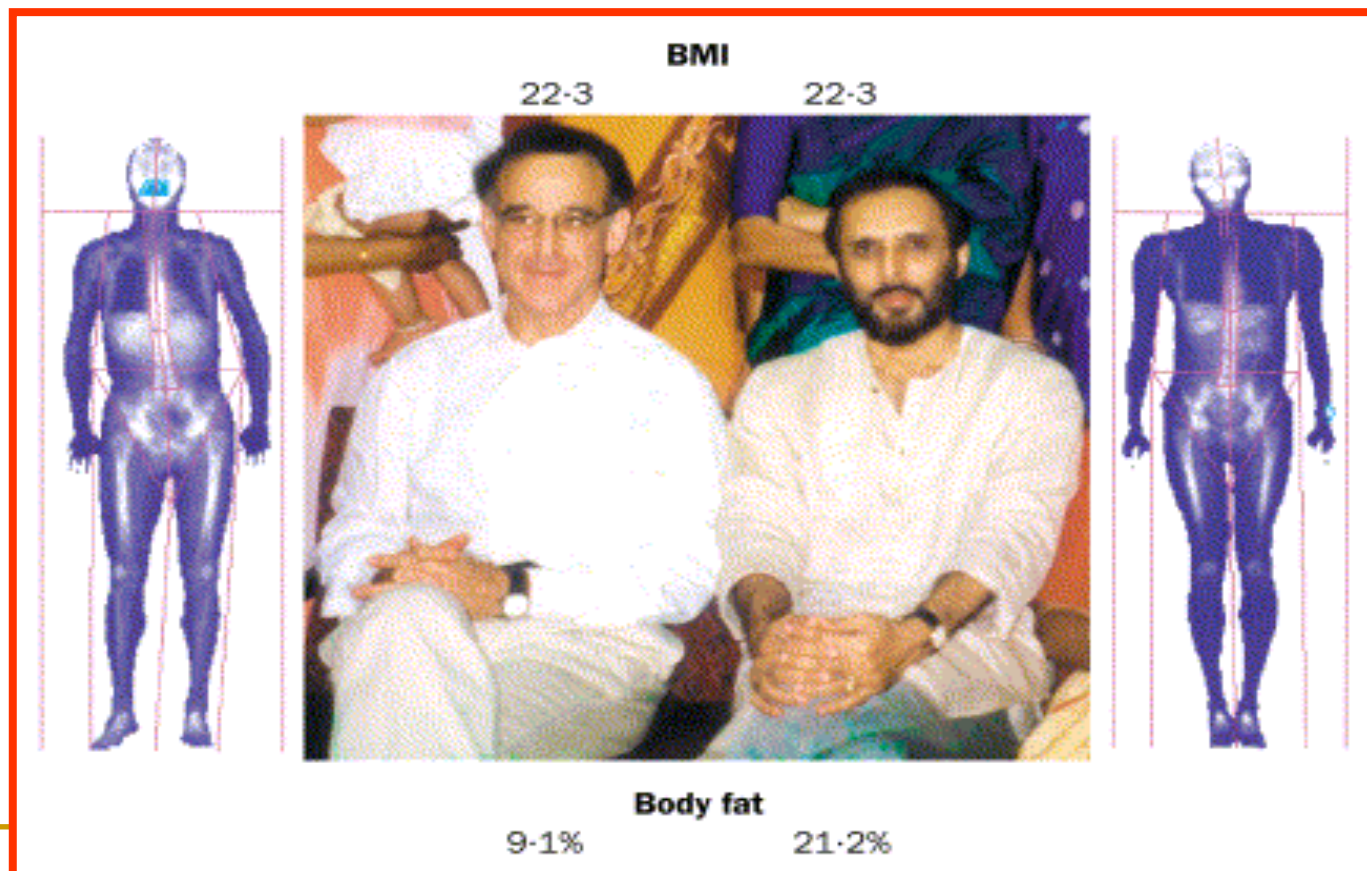
Diabetes & impaired glucose intolerance(%) (25-74 years)



Why so much diabetes? Adiposity?

Yudkin has 9% and Yajnik 21% fat – same BMI of 22.3

Adipose tissue or muscle?

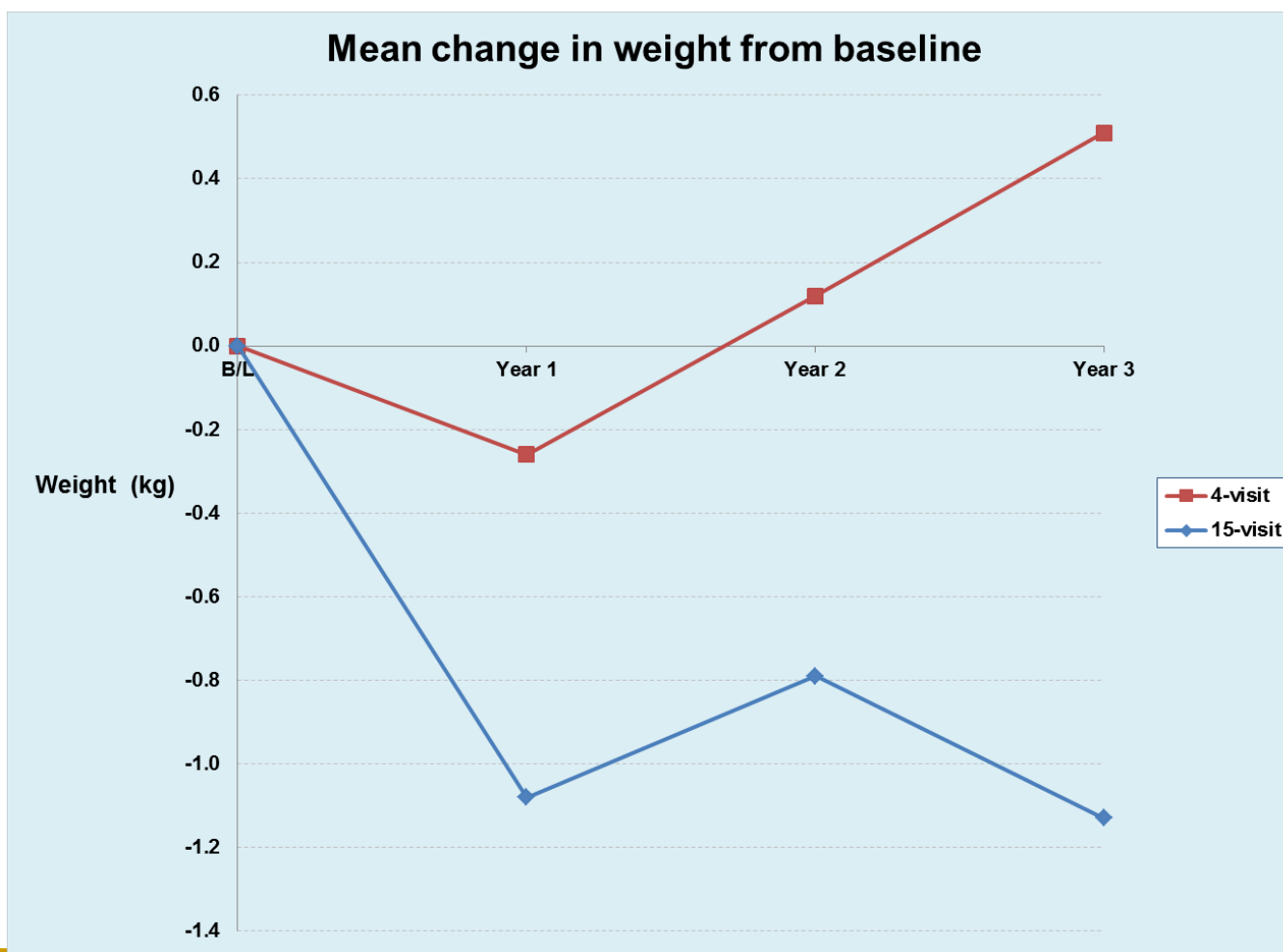


Services developing e.g. cardiovascular risk control project for South Asians (Matthews et al JPH, 2007)

- The '*Khush Dil*' Project - Edinburgh 2002
 - Culturally sensitive service for South Asians
 - 140 people had screening 6 months after baseline
 - Risk factor profiles improved, e.g. reduction in cholesterol, and reported changes in behaviour
 - Amazingly, these are still among the best data in the world in South Asians

 - It is time for major trials
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Prevention of diabetes and obesity in South Asians (PODOSA) in Scotland (Lancet Diabetes and Endocrinology 2013)



Stimulus to research: major cohort studies of migrant and ethnic health

- Bradford Birth Cohort
 - London adolescents' health
 - West of London CVD cohort (LOLIPOP)

 - Amsterdam CVD study

 - US now following Europe
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New opportunities and ideas - high heat cooking (Kakde et al Nutrition 2017)

Cooking at >170 degrees centigrade (338 F) accelerates production of neoformed contaminants

South Asian Indian and Chinese cuisines

“While traditional South Asian food preparation techniques produce large quantities of advance glycation end products and trans-fatty acids, this is further exacerbated by the increased consumption of fast foods.”

Transference of knowledge

- What happened in the UK in the 1980s is happening in South Asia now and is being demonstrated in the US
 - International collaboration to tackle the South Asian pandemic of CVD and type 2 diabetes is needed
 - Studies of minorities can also help the population as a whole
 - Very low cancer rates in South Asian populations
 - Very low cardiovascular rates in Chinese populations
 - Catalyses new studies, data, scientific hypotheses and advancement of knowledge
 - Grasp the opportunity!
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