



Measles and MMR statistics

Standard Note: SN/SG/2581
Last updated: 10/02/2009
Author: Gavin Thompson
Section: Social and General Statistics

This note summarises the latest statistics on measles incidence and rates of immunisation. It also discusses the effect of media coverage on public confidence in the MMR triple vaccine, and compares the UK's immunisation rates with the rest of the OECD.

Contents

1	Measles notifications and deaths	2
1.1	Historical data	2
1.2	Measles surveillance	3
1.3	Measles incidence since 1995	3
2	Measles, Mumps and Rubella (MMR) vaccine uptake	5
3	Public opinion and the MMR vaccine	8
4	Measles immunisation rates: international comparisons	10

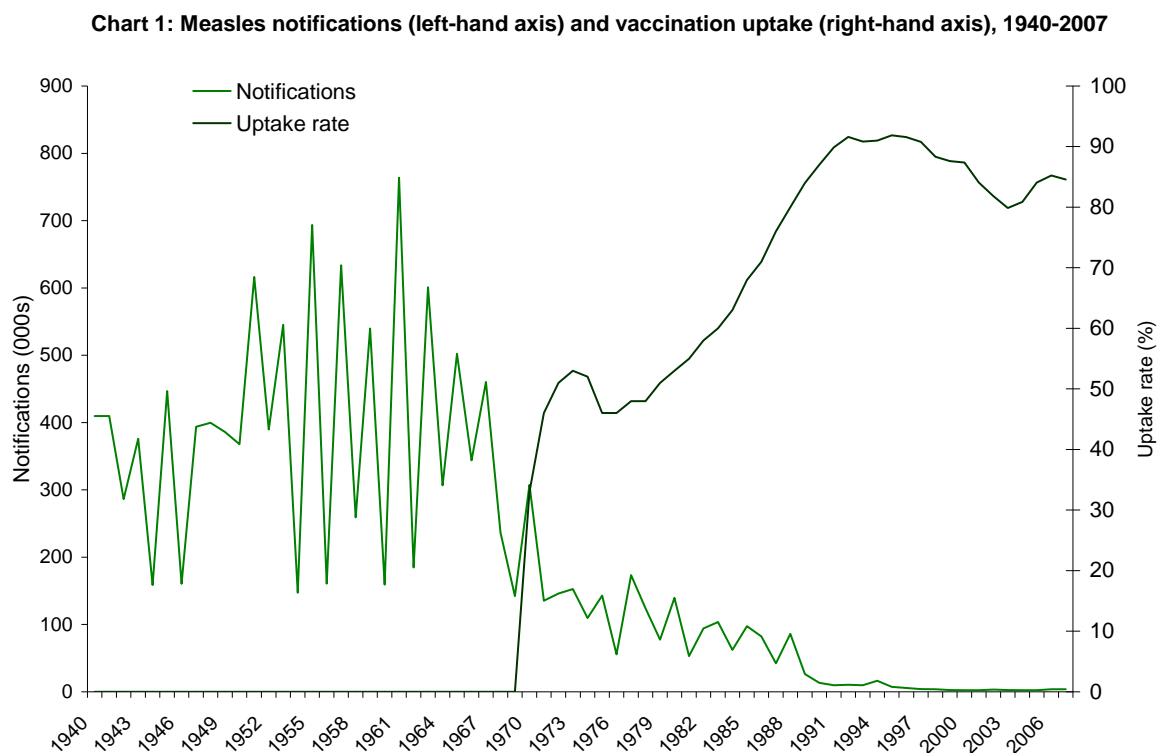
This information is provided to Members of Parliament in support of their parliamentary duties and is not intended to address the specific circumstances of any particular individual. It should not be relied upon as being up to date; the law or policies may have changed since it was last updated; and it should not be relied upon as legal or professional advice or as a substitute for it. A suitably qualified professional should be consulted if specific advice or information is required.

This information is provided subject to [our general terms and conditions](#) which are available online or may be provided on request in hard copy. Authors are available to discuss the content of this briefing with Members and their staff, but not with the general public.

1 Measles notifications and deaths

1.1 Historical data

Chart 1 below shows numbers of measles notifications since 1940 and vaccination rates since 1970.



Source: Health Protection Agency (HPA) epidemiological data

The highly infectious nature of measles meant that before vaccination became widespread, the UK was subject to regular epidemics, with cases frequently exceeding half a million in a single year.

The first vaccination against measles was licensed in 1963, and immunisation has been available in the UK since 1970. Increased uptake of measles vaccines has coincided with a dramatic decline in prevalence of the illness. Annual measles notifications have not exceeded 4,000 since 1996, and have not exceeded 100,000 since 1983.

Deaths from measles since 1990 have never exceeded 4 in a single year, and these have typically occurred in older individuals suffering from the late effects of measles infections contracted in the 1980s, or before. In 2006 there was one measles death in a 13 year-old male who had an underlying lung condition and was taking immunosuppressive drugs. Prior to 2006, the last death from acute measles was in 1992¹.

¹ Source: HPA epidemiological data

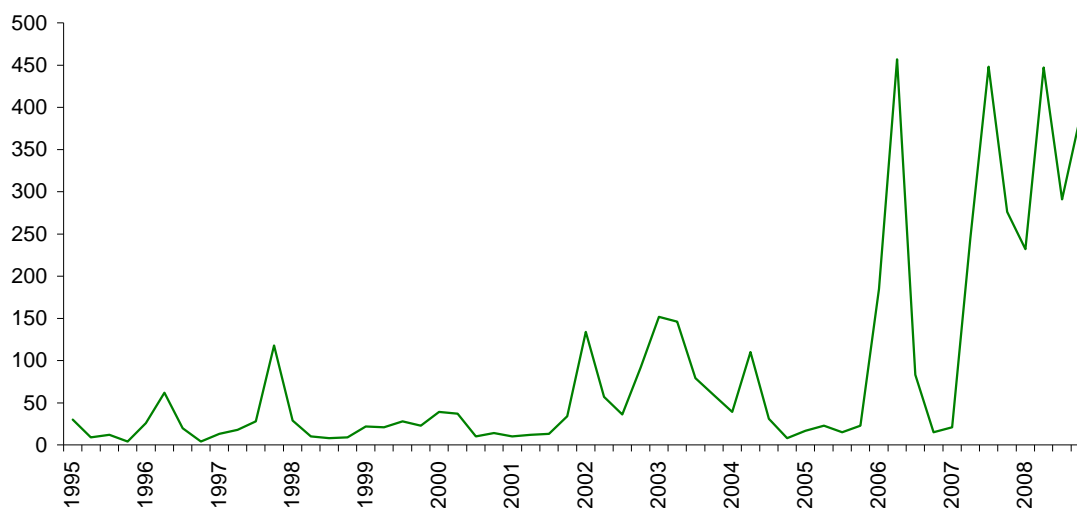
1.2 Measles surveillance

If there is a clinical suspicion of measles, GPs are encouraged to notify their local Health Protection Agency (HPA) unit. All such notifications are recorded and published², providing a consistent time-series back to 1940. Widespread vaccination made measles a relatively rare disease by the 1990s, and clinical diagnosis became correspondingly less reliable. As such, since 1995, each notified case has been sent an oral fluid testing kit, which is returned to a central laboratory to confirm measles diagnosis. Until recently, a comparatively small proportion of suspected measles cases turned out to be true measles following laboratory confirmation; for instance, of the 1,853 cases tested in 2005, only 3 per cent were confirmed as measles. However, since mid-2007, over 20 per cent of notified (suspected) measles cases were confirmed as such by laboratory testing.

1.3 Measles incidence since 1995

The chart below shows trends in numbers of laboratory-confirmed measles notifications in England and Wales since 1995:

Quarterly laboratory-confirmed measles cases, Q1 1995 to Q4* 2008



*Figures for the final quarter of 2008 are provisional

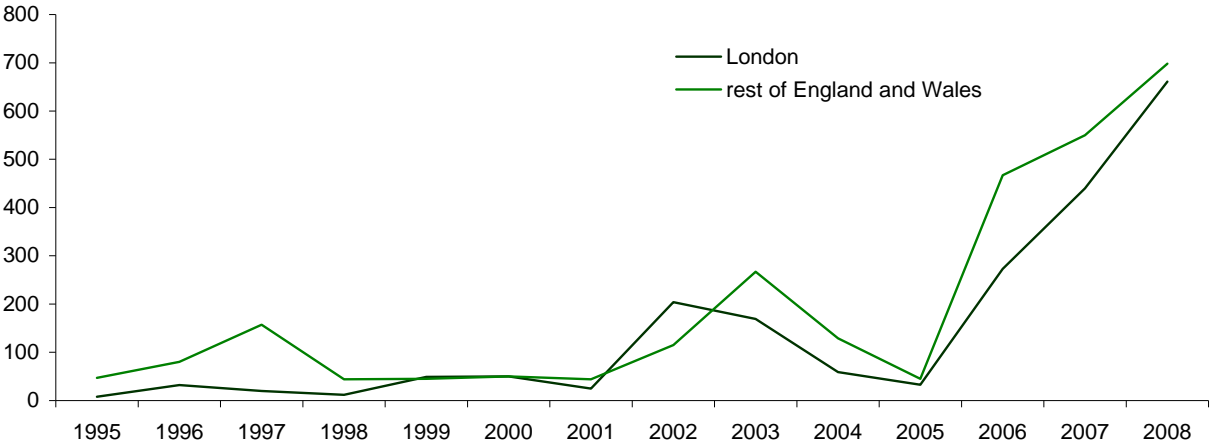
Source: HPA epidemiological data

Measles incidence has increased dramatically in recent years: the total number of confirmed cases over the eight quarters of 2007-08 (2,349) was roughly equal to the combined total for the previous eleven years (2,424).

² See, for example, http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1195733802298.

The chart below compares annual measles notifications in London with the rest of England and Wales.

Chart 3: Annual laboratory-confirmed measles cases, London and the rest of England and Wales, 1995-2008*



*Figure for 2008 is provisional
 Source: HPA epidemiological data

Numbers of measles cases have increased at a rapid rate for four consecutive years, in both London and the rest of England and Wales. As an urban centre with high population density, London is more vulnerable to epidemics, and it has always experienced a disproportionately high incidence of measles³. Trends in other areas can be affected significantly by individual outbreaks. In 2008, the North West, South East, and West Midlands were the most heavily affected regions, with 180, 127 and 109 cases respectively. To lend context to the figures from recent years, it is worth noting that in no year between 1995 and 2001 did measles cases for the whole of England and Wales exceed 177.

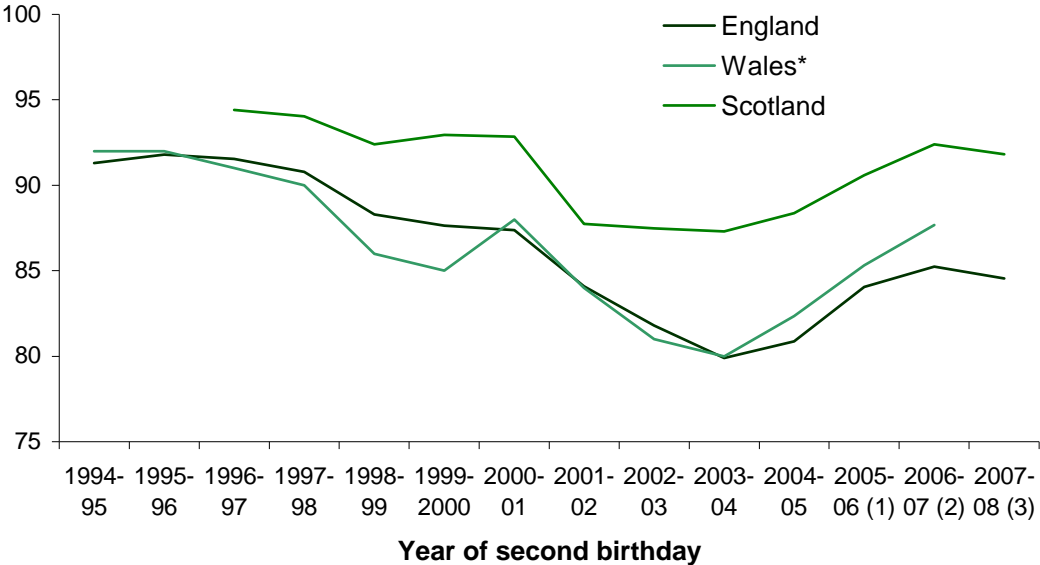
³ Arguably, another contributory factor is its comparatively low rate of MMR vaccine uptake (see Table 1, Section 2).

2 Measles, Mumps and Rubella (MMR) vaccine uptake

The MMR triple vaccine was first licensed in the US in 1963 and has been used in the UK since 1988. Over 100 countries now use MMR, and it is estimated that more than 500 million doses have been administered⁴.

The chart below shows trends in the proportion of children in England, Scotland and Wales immunised against MMR by their second birthday (i.e. receiving the primary course)⁵.

Chart 4: % of two year-olds receiving MMR vaccine - England, Wales and Scotland 1994-2008



*2007-08 data for Wales not yet available
 (1), (2), (3) - see footnotes for Table 1

Vaccination rates fell year-on-year in England between 1995-96 and 2003-04. A particularly significant decline was observed between 2000 and 2004, which can arguably be attributed to deterioration in public confidence about the safety of MMR. This is discussed in more detail in Section 3.

More recently, vaccination rates have begun to recover; however, immunisation rates against measles remain lower than they were in 1990.

The table below shows MMR vaccination rates between 2001 and 2008 amongst Strategic Health Authorities (SHAs) in England.

⁴ Centers for Disease Control and Prevention, 2004
⁵ Sources: England – NHS Information Centre immunisation statistics 2007/08; Scotland – ISD Scotland childhood immunisation statistics 2007/08; Wales – NHS Wales immunisation statistics 2006/07

Table 1: MMR vaccination rates by SHA, 2001-08

Year of 2nd birthday	England	North East	North West	Yorkshire and the Humber	East Midlands	West Midlands	East of England	London ⁽¹⁾⁽²⁾⁽³⁾	South East Coast	South Central	South West
MMR											
2001-02	84.1	87.0	86.4	86.4	88.4	85.5	85.4	74.8	83.3	84.5	86.2
2002-03	81.8	85.3	83.9	84.4	86.8	84.0	83.0	72.5	81.6	81.4	83.4
2003-04	79.9	83.5	82.8	84.1	85.5	82.2	79.7	70.0	77.4	81.6	81.1
2004-05	80.9	85.2	84.0	83.2	86.3	82.8	81.4	71.4	79.6	83.0	80.5
2005-06 ⁽²⁾	84.1	87.2	86.3	85.6	87.6	84.8	84.3	73.5	82.8	86.0	86.2
2006-07 ⁽³⁾	85.2	88.8	87.7	87.0	87.9	87.6	85.6	74.9	84.5	88.1	87.0
2007-08 ⁽⁴⁾	84.6	88.5	86.7	85.0	88.8	88.1	84.2	74.2	82.9	86.2	88.4

⁽¹⁾ In London for 2005/06 9 out of 31 PCTs were unable to submit data due to problems relating to the implementation of a new child health system

⁽²⁾ In London for 2006/07 7 out of 31 PCTs were unable to provide reliable annual data due to ongoing problems relating to the implementation of a new child health system.

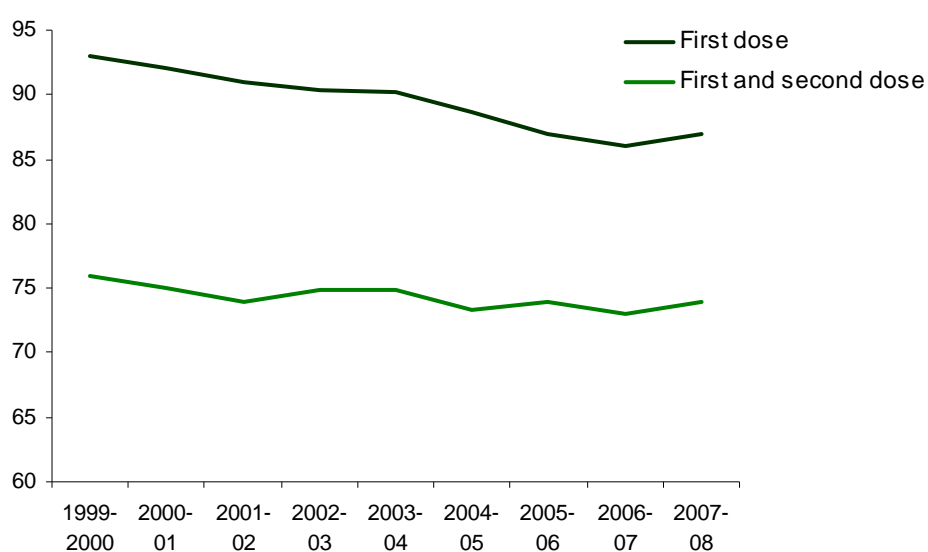
⁽³⁾ In London for 2007/08 6 out of 31 PCTs were unable to provide reliable annual data due to ongoing problems relating to the implementation of a new child health system. 1 out of 14 PCTs in South West SHA was unable to provide data due to a major problem with the child health computer system.

Source: NHS IC immunisation statistics 2007/08

Vaccination rates in London are 10% lower than other SHA,.

According to the Department of Health's September 2006 immunisation schedule, the primary course of MMR should be administered at age 13 months, with a secondary booster between the ages of 3 years 4 months and five years of age. The chart below shows the proportion of five year-olds receiving the first dose, and both first and second doses.

Chart 5: % of five year-olds receiving MMR vaccine, England 1999-2008



Source: NHS IC immunisation statistics 2007/08

87% of five-year olds in England in 2007-08 had received the primary MMR course, and 74% had received both courses. The proportion receiving both courses has remained fairly steady, whilst uptake rate of the primary course has fallen, suggesting that 'drop-out' between first and second courses has declined.

The table below shows data for Primary Care Trusts with the ten highest and lowest MMR immunisation rates⁶.

Of the ten PCTs with the highest immunisation rates, four are in Scotland; meanwhile, nine of the ten PCTs with the lowest immunisation rates are in the Greater London area.

PCT (England), Health Board (Scotland), Local Health Board (Wales)	Vaccination Rate	Rank
Dumfries & Galloway	95.2	1
Wiltshire PCT	93.4	2
North Staffordshire PCT	93.2	3
Heart of Birmingham Teaching PCT	93.2	4
Grampian	93.1	5
Walsall Teaching PCT	93.1	6
Torfaen	92.8	7
Medway PCT	92.6	8
Ayrshire & Arran	92.6	9
Borders	92.5	10
Surrey PCT	74.9	170
Enfield PCT	74.2	171
Barnet PCT	73.7	172
Bexley Care Trust	71.5	173
Newham PCT	69.7	174
Islington PCT	68.9	175
Southwark PCT	65.4	176
Greenwich Teaching PCT	64.4	177
Camden PCT	63.4	178
Lewisham PCT	61.1	179

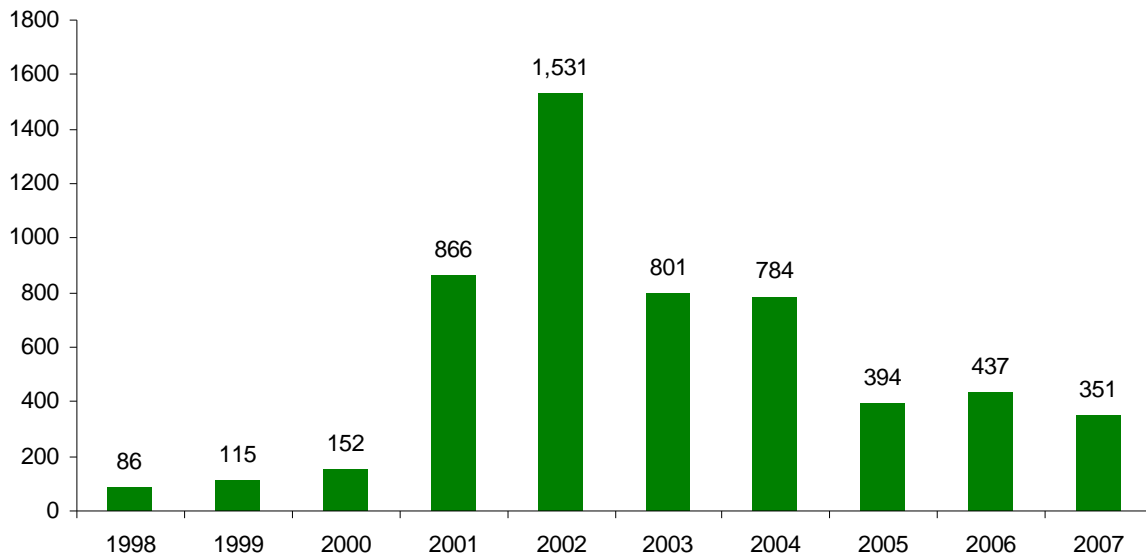
Sources: see footnote 2

⁶ PCTs in England, Health Boards in Scotland, and Local Health Boards in Wales are treated here as comparable administrative units.

3 Public opinion and the MMR vaccine

In February 1998, a group led by Andrew Wakefield published a paper in *The Lancet* suggesting a link between the MMR vaccine and the development of autistic spectrum disorders in children⁷. Initially, the findings were largely ignored by the media; however, by 2002 controversy about the safety of MMR had escalated to the point where it was the most heavily discussed science story in the opinion, editorial and letters pages of the UK national press.

Chart 6: Articles mentioning MMR in UK national press, 1998-2007



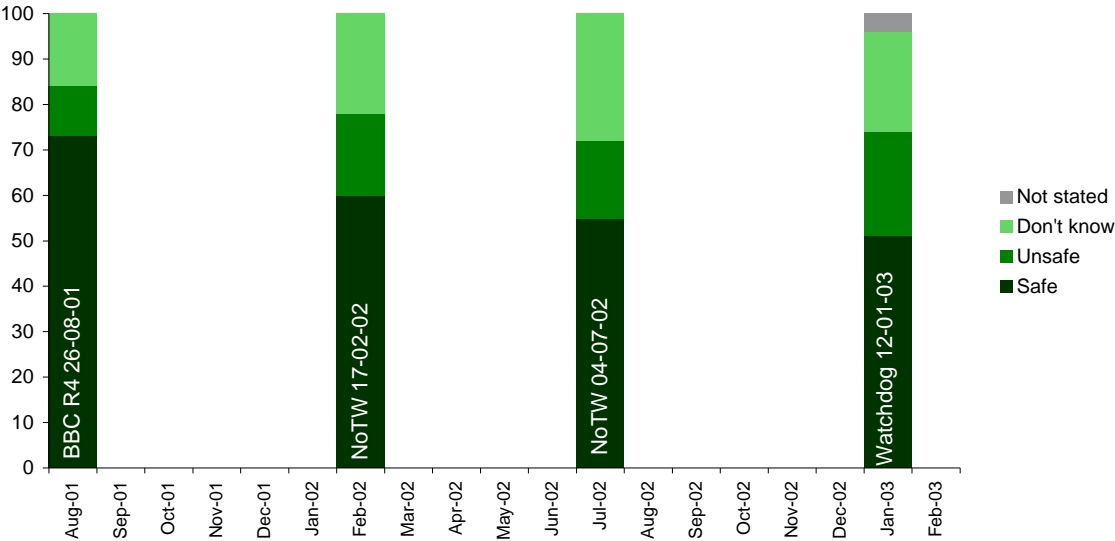
Source: Factiva full article searches of 'MMR' in UK national papers for each year specified

As media coverage intensified, public perceptions of the MMR vaccine shifted. Opinion polls over the period showed increasing levels of public distrust and confusion over the safety of MMR. The change in attitudes may be reflective of the tone of the news stories during this period, which commonly echoed and elaborated upon the Wakefield link: between January and September 2002, less than a third of news stories about MMR pointed to scientific evidence that it was safe⁸.

⁷ *Lancet* 2004;363:750

⁸ Source: Economic and Social Research Council survey (2003): *Towards a better map: science, the public and the media*

Chart 7: results of opinion polls on MMR safety⁹, Aug 2001- Jan 2003



Sources: ICM and Ipsos/MORI

More importantly, the controversy appeared to affect parental decision-making. Uptake rates for MMR in England fell from 87.4% in 2000-01 to 79.9% in 2003-04, the lowest figure at any time since the widespread introduction of the triple vaccine in 1990-91. The decrease was especially significant given that the single vaccines alternative was only available from private medical clinics, at a cost of around £200¹⁰.

The Wakefield study has been widely discredited, and MMR uptake has recovered to an extent: in 2007 vaccination rates stood at 84.6%. Meanwhile, measles notifications in 2006 and 2007 were the highest for almost a decade.

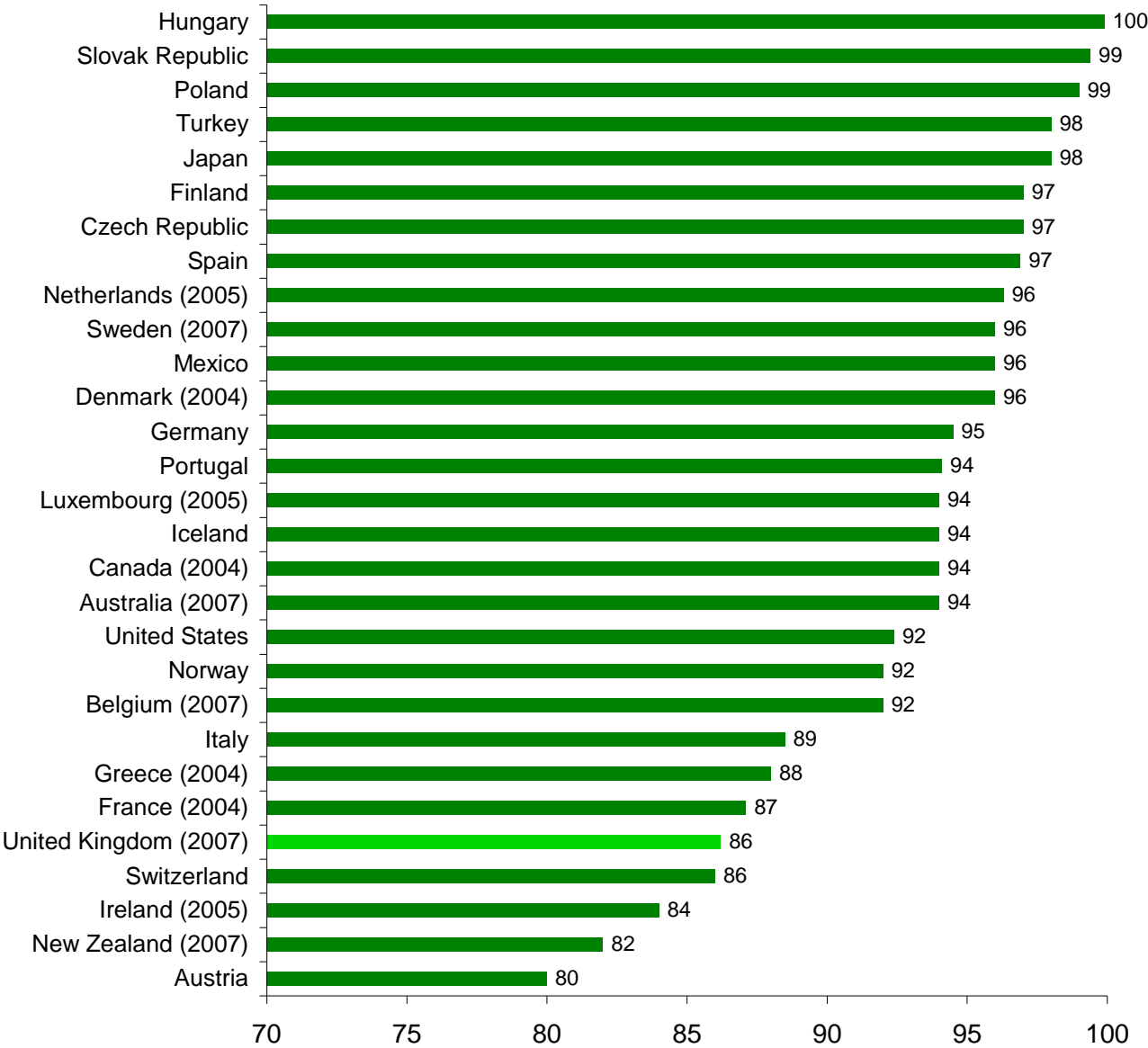
⁹ The three ICM polls posed the question 'From what you have seen, heard or experienced, do you think the combined MMR vaccine, that is Mumps, Measles and Rubella is safe or unsafe to use on small babies?'. The 2003 MORI poll posed the question 'Do you think it is safe or unsafe for parents to choose the MMR vaccine for their children?' The MORI poll also made provision for a choice of 'not stated', which applied to 4% of respondents.

¹⁰ The Observer, 11-07-2004

4 Measles immunisation rates: international comparisons

The chart below shows the proportion of children immunised against measles in each OECD country. Figures are for 2006 except where stated.

Chart 8: Measles immunisation, per cent of children vaccinated, OECD 2006 (unless stated)



Source: OECD Health Data 2008

The UK's immunisation rate of 86 percent placed it 25th of the 29 OECD countries.