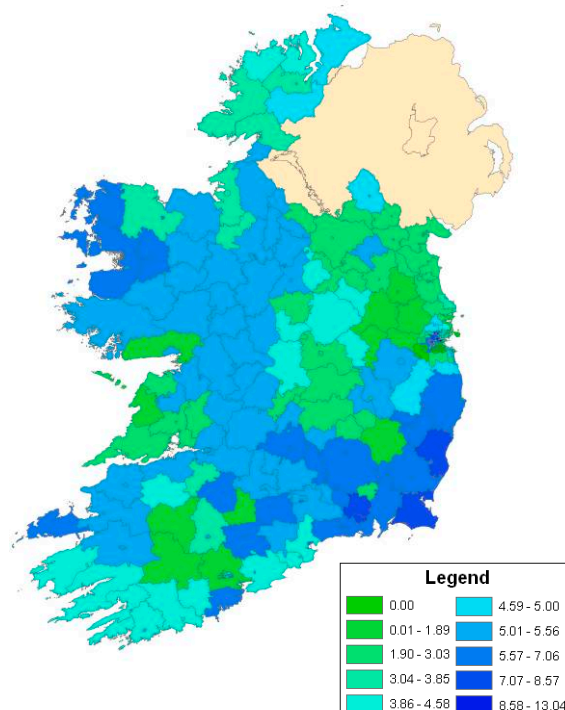
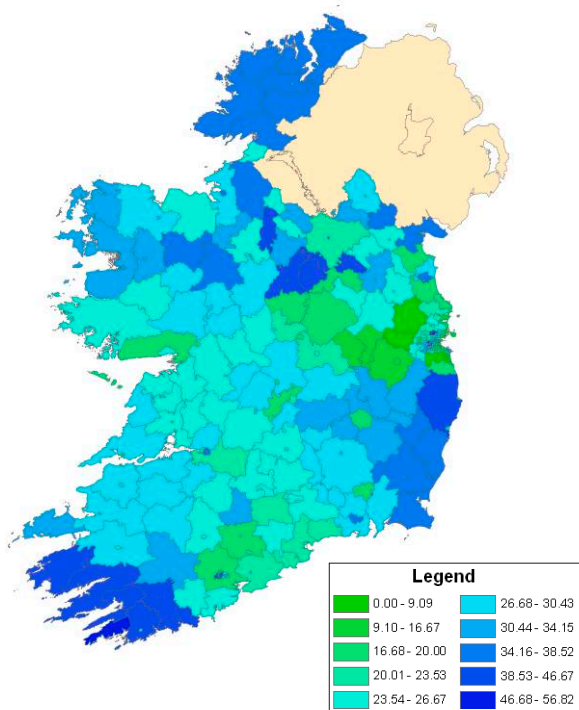


Appendix 1 Exposure data from the SLÁN survey¹

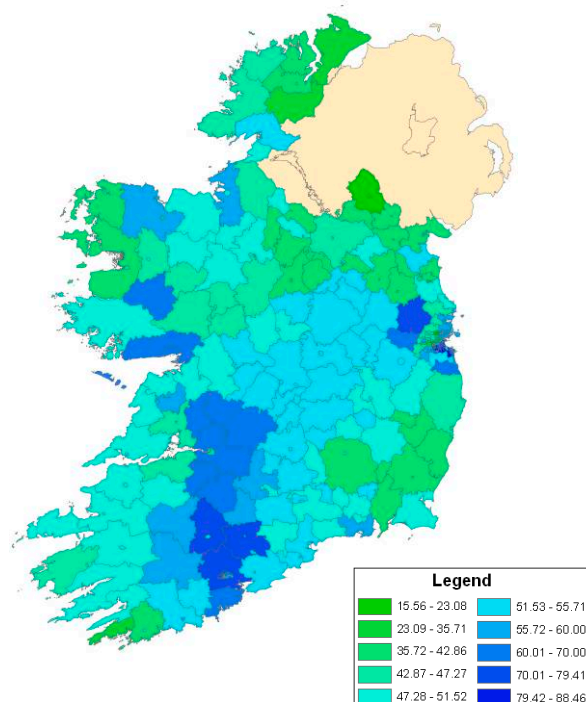
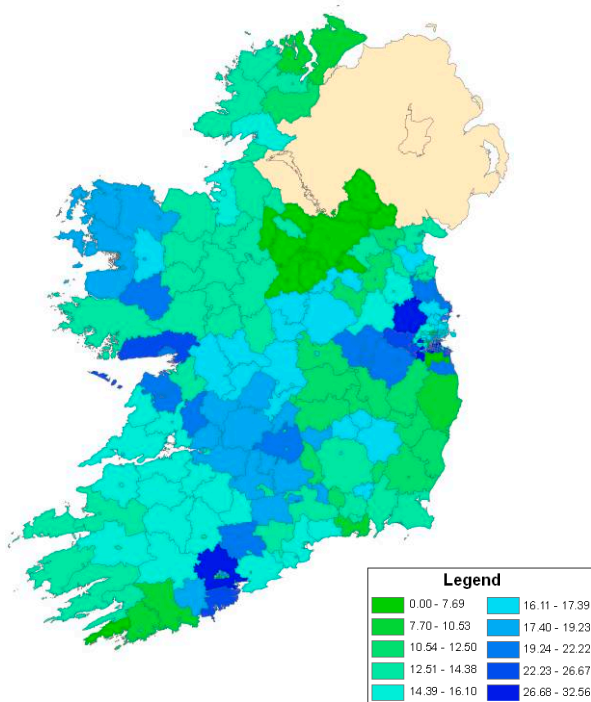
Map APP1.1 Percentage of population below 60% of median equivalised income

Map APP1.2 Percentage of population in social class 6



Map APP1.3 Percentage of population in highest quintile of household equivalised income²

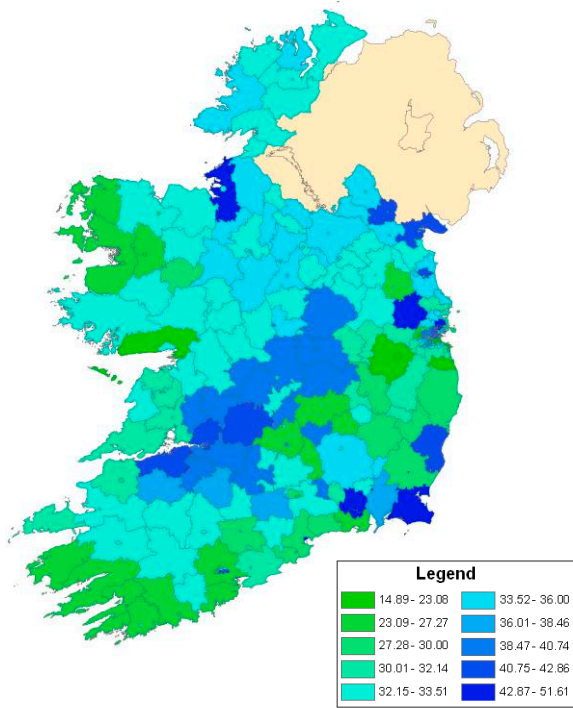
Map APP1.4 Percentage of population covered by private health insurance



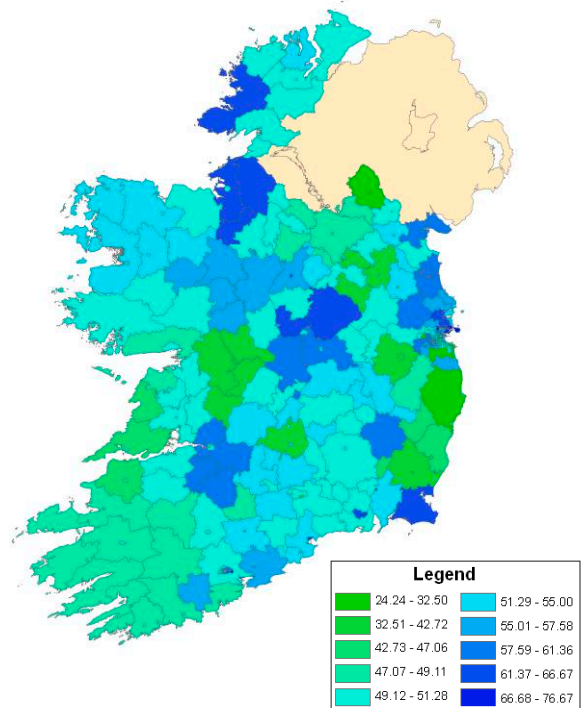
¹ Data kindly provided by the SLÁN research group (<http://www.slan06.ie/team.htm>; Morgan et al, 2008)

² Modified OECD equivalence scale

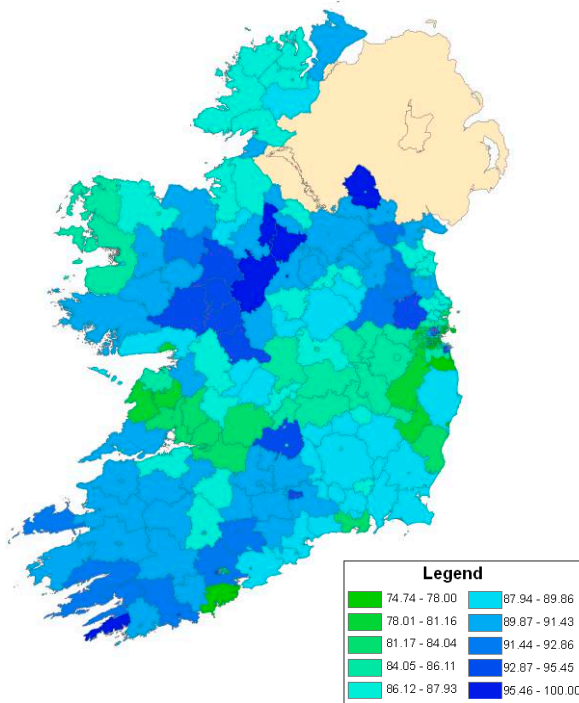
Map APP1.5 Percentage of population with low fruit and vegetable intake (<5 servings daily)



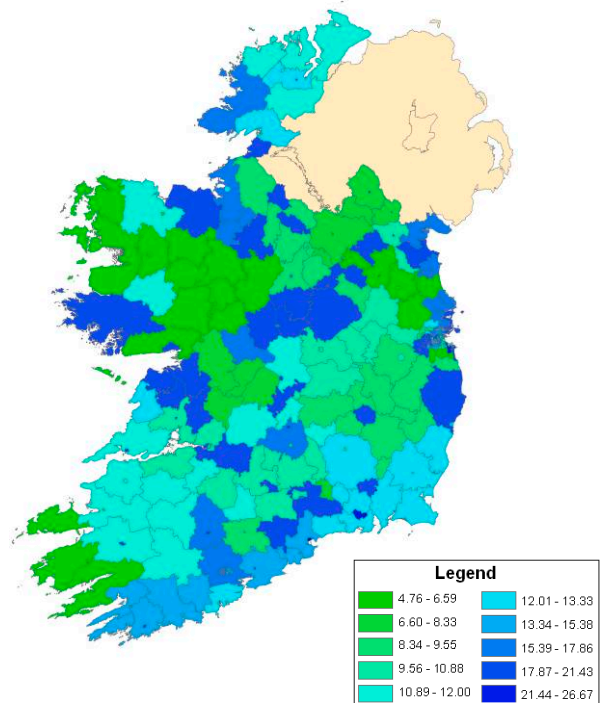
Map APP1.6 Percentage of population with low fibre intake (<25g fibre daily)



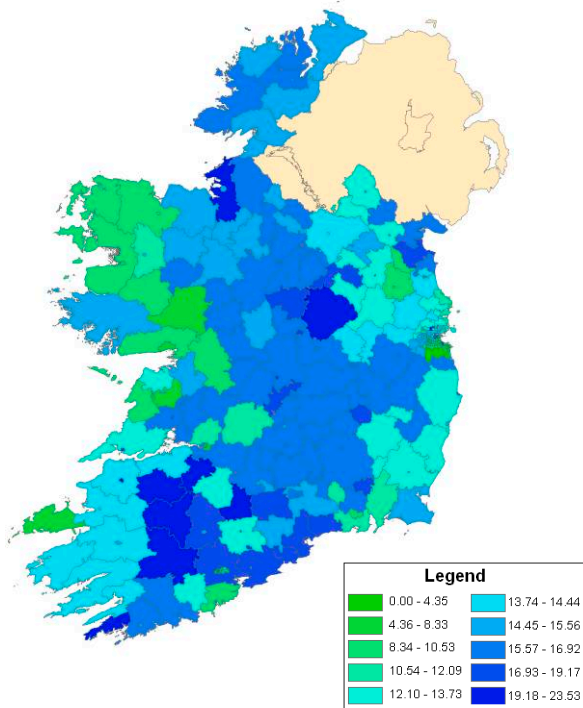
Map APP1.7 Percentage of population with high intake of red and processed meat (>300g/week)



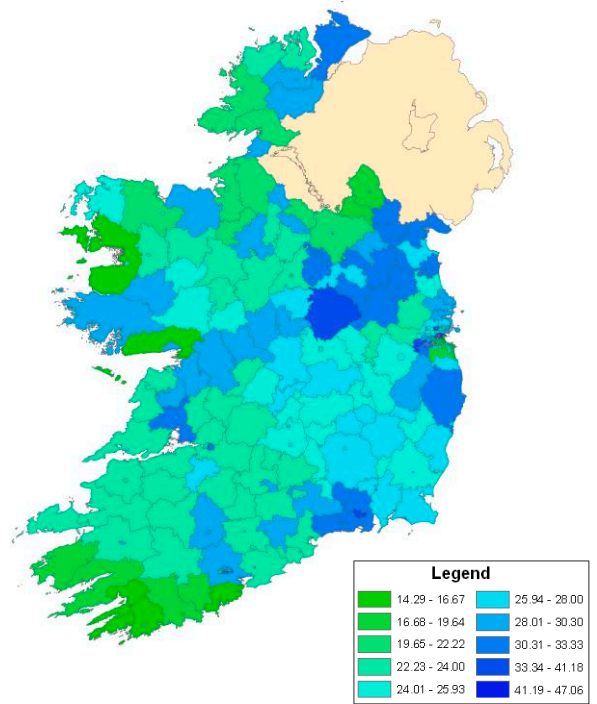
Map APP1.8 Percentage of population who have heavy alcohol consumption (≥14 units per week)



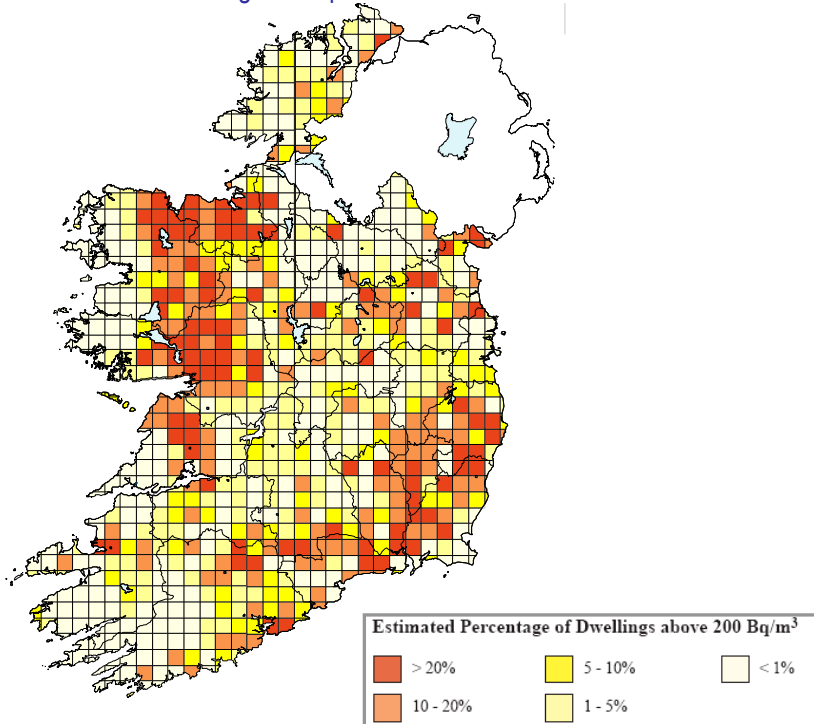
Map APP1.9 Percentage of population who are obese (body mass index >30 kg/m²)



Map APP1.10 Percentage of population who are current smokers (daily or occasional smokers)



Map APP1.11 Predicted percentage of houses with radon levels exceeding 200 Bq/m³



Source: Fennell et al, 2002

Appendix 2 ED characteristics and cancer incidence: summary tables

Tables APP2.1 and APP2.2 summarise, for males and females separately, the results of the modelling of the associations between ED characteristics and cancer incidence, by site of cancer. The modelling methods are described in section 2.2.3.

Table APP2.1 Summary relative risks, with 95% confidence intervals, by area characteristic and cancer site - males

	all ¹	non-melanoma skin	colorectal	lung	prostate	stomach	bladder	melanoma	head and neck	oesophagus
deprivation ²	1.12* (1.09,1.14)	0.80* (0.77,0.83)	1.06* (1.00,1.12)	1.72* (1.63,1.83)	0.85* (0.81,0.89)	1.28* (1.16,1.42)	1.09 (0.99,1.20)	0.66* (0.58,0.76)	1.78* (1.60,1.98)	1.22* (1.07,1.39)
population density ³	1.23* (1.20,1.25)	1.15* (1.12,1.19)	1.22* (1.16,1.28)	1.62* (1.53,1.71)		1.45* (1.32,1.58)	1.39* (1.28,1.52)	1.21* (1.06,1.39)	1.26* (1.11,1.42)	1.21* (1.09,1.35)
% unemployed ⁴								0.87 (0.72,1.05)		
% early school leavers ⁴			0.99 (0.93,1.06)	1.21* (1.12,1.30)		1.37* (1.20,1.56)		0.69* (0.57,0.83)		
% lower social class ⁴	1.05* (1.02,1.08)	0.86* (0.82,0.90)			0.88* (0.83,0.93)		1.13* (1.02,1.25)		1.35* (1.16,1.58)	
% overcrowded ⁴	1.05* (1.02,1.08)	0.82* (0.79,0.86)		1.34* (1.26,1.43)	0.91* (0.86,0.96)	1.11 (0.99,1.24)		0.87 (0.73,1.03)	1.16* (1.03,1.30)	
% local authority housing ⁴				1.26* (1.17,1.36)						
% with no car ⁴					0.90* (0.85,0.95)				1.41* (1.19,1.66)	
% aged 65+ living alone ⁴	1.15* (1.13,1.18)	1.10* (1.06,1.14)	1.15* (1.09,1.22)	1.23* (1.16,1.30)	1.14* (1.08,1.20)	1.11* (1.00,1.24)	1.12* (1.00,1.24)	1.16* (1.00,1.35)	1.23* (1.09,1.39)	1.28* (1.12,1.47)
% agricultural workers ⁴	0.79* (0.77,0.80)	0.78* (0.76,0.80)	0.79* (0.75,0.84)	0.52* (0.49,0.55)		0.63* (0.56,0.70)	0.64* (0.58,0.71)	0.85* (0.76,0.94)	0.77* (0.68,0.86)	0.78* (0.71,0.86)
% non-manual workers ⁴					1.21* (1.14,1.27)					

¹ all malignant cancers (excluding non-melanoma skin cancer); ² Relative risk of cancer in the most compared to the least deprived areas adjusted for population density; ³ Adjusted relative risks for areas with the highest density (>20 pa/ha) compared to areas with the lowest density (<1 pa/ha); ⁴ Adjusted relative risks for areas in the highest quartile compared to the lowest quartile; *p<0.05

15 Geographical distribution of other cancers

Maps 15.1-15.7 show the smoothed relative risks for seven other cancer sites. For cancers of the brain and central nervous system, no clear geographical variation was evident. Cancers of the pancreas, corpus uteri and leukaemia had a slightly higher incidence in the southwest, lymphoma and cancers of the kidney were more common in the east and incidence of ovarian cancer was slightly higher in the southeast. However, all of these patterns were weak and no inference can be drawn from them.

Appendix 3 Summary statistics for the maps

Table APP3.1 provides summary statistics for the maps for each cancer site, for males and female separately where relevant. The average number of cases per ED and the mean crude and smoothed RRs are shown, together with the minimum and maximum values, to give some idea of the range of risk estimates observed.

Table APP3.1 Summary statistics for each cancer site mapped: number of cases per ED, crude and smoothed RRs, with mean, minimum and maximum values

Cancer site	no. of cases per ED				crude RR				Smoothed RR			
	mean		(min-max)		mean ²		(min-max)		mean ²		(min-max)	
	females	males	females	males	females	males	females	males	females	males	females	males
all malignant cancers ¹	17.5	18.4	(0 - 358)	(0 - 351)	0.96	0.96	(0 - 5.76)	(0 - 3.42)	0.96	0.97	(0-1.35)	(0-1.52)
non-melanoma skin	6.5	7.2	(0 - 194)	(0 - 175)	0.88	0.94	(0 - 5.90)	(0 - 5.47)	0.90	0.94	(0-2.16)	(0-1.85)
breast	5.1	-	(0 - 113)	-	0.93	-	(0 - 6.79)	-	0.96	-	(0-1.28)	-
colorectal	2.2	2.9	(0 - 46)	(0 - 54)	0.99	0.94	(0 - 9.28)	(0 - 7.81)	0.98	0.97	(0-1.46)	(0-1.44)
lung	1.6	2.9	(0 - 37)	(0 - 46)	0.81	0.91	(0 - 11.20)	(0 - 10.73)	0.86	0.92	(0-2.49)	(0-2.73)
prostate	-	4.2	-	(0 - 80)	-	0.99	-	(0 - 6.80)	-	0.99	-	(0-1.61)
lymphoma	0.7	0.8	(0 - 15)	(0 - 17)	1.03	1.00	(0 - 36.82)	(0 - 15.17)	0.99 ³	-	(0-1.37)	-
stomach	0.5	0.8	(0 - 13)	(0 - 11)	0.96	0.96	(0 - 30.16)	(0 - 19.70)	0.94	0.95	(0-2.25)	(0-1.79)
bladder	0.4	0.9	(0 - 10)	(0 - 19)	0.98	0.90	(0 - 29.18)	(0 - 11.39)	0.97	0.95	(0-1.29)	(0-1.4)
melanoma of the skin	0.7	0.4	(0 - 16)	(0 - 16)	0.97	0.87	(0 - 18.40)	(0 - 5.66)	0.95	0.95	(0-1.78)	(0-1.9)
leukaemia	0.4	0.6	(0 - 12)	(0 - 12)	1.04	1.02	(0 - 34.42)	(0 - 17.60)	1.01 ³	-	(0-1.14)	-
head and neck	0.3	0.8	(0 - 9)	(0 - 16)	0.88	0.91	(0 - 28.22)	(0 - 17.69)	0.96	0.93	(0-1.24)	(0-2.8)
pancreas	0.5	0.5	(0 - 20)	(0 - 11)	1.00	1.04	(0 - 34.85)	(0 - 22.85)	1.01 ³	-	(0-1.14)	-
ovary	1.0	-	(0 - 18)	-	1.00	-	(0 - 30.49)	(0 - 6.80)	1.01	-	(0-1.06)	-
brain and other CNS	0.4	0.5	(0 - 10)	(0 - 10)	0.96	1.00	(0 - 31.98)	(0 - 21.78)	1.00 ³	-	(0-1.04)	-
kidney	0.3	0.5	(0 - 6)	(0 - 13)	0.94	0.95	(0 - 29.97)	(0 - 17.79)	0.98 ³	-	(0-1.15)	-
oesophagus	0.3	0.5	(0 - 7)	(0 - 15)	1.00	0.99	(0 - 32.15)	(0 - 25.51)	0.97	0.98	(0-1.38)	(0-1.36)
corpus uteri	0.7	-	(0 - 12)	-	1.04	-	(0 - 31.97)	-	1.01	-	(0-1.18)	-
cervix uteri	0.5	-	(0 - 19)	-	0.88	-	(0 - 23.75)	-	0.96	-	(0-1.75)	-

¹ excludes non-melanoma skin cancer; ² mean relative risk (RR) across EDs, not weighted by population distribution (mean RR weighted by population is always 1.0); ³ smoothed RRs computed for males and females combined

Appendix 4 County and district council boundaries in Ireland



References

- Abnet C C, Fredman N D, Kamangar F, Leitzmann M F, Hollenbeck A R, Schatzkin A. Non-steroidal anti-inflammatory drugs and risk of gastric and oesophageal adenocarcinomas: Results from a cohort study and a meta-analysis. *Br J Cancer* 2009; 100 (3): 551-7.
- Agredano Y Z, Chan J L, Kimball R C, Kimball A B. Accessibility to air travel correlates strongly with increasing melanoma incidence. *Melanoma Res* 2006; 16 (1): 77-81.
- Anderson L A, Murphy S J, Johnston B T, Watson R G, Ferguson H R, Bamford K B, Ghazy A, McCarron P, McGuigan J, Reynolds J V, Comber H, Murray L J. Relationship between helicobacter pylori infection and gastric atrophy and the stages of the oesophageal inflammation, metaplasia, adenocarcinoma sequence: Results from the FINBAR case-control study. *Gut* 2008; 57 (6): 734-9.
- Antoniou A C, Easton D F. Risk prediction models for familial breast cancer. *Future Oncol* 2006; 2 (2): 257-74.
- Armstrong B K, Kricger A. The epidemiology of UV induced skin cancer. *J Photochem Photobiol B* 2001; 63: 8-18.
- Best N, Richardson S, Thomson A. A comparison of Bayesian spatial models for disease mapping. *Stat Methods Med Res* 2005; 14 (1): 35-59.
- Boffeta P, Tubiana M, Hill C, Boniol M, Aurengo A, Masse R, Valleron A J, Monier R, de Thé G, Boyle P, Autier P. The causes of cancer in France. *Ann Oncol* 2009; 20 (3): 550-5.
- Boffetta P, Hecht S, Gray N, Gupta P, Straif K. Smokeless tobacco and cancer. *Lancet Oncol* 2008a; 9 (7): 667-75.
- Boffetta P, van der Hel O, Kricger A, Nieters A, de Sanjosé S, Maynadié M, Cocco P L, Staines A, Becker N, Font R, Manette A, Goumas C, Brennan P. Exposure to ultraviolet radiation and risk of malignant lymphoma and multiple myeloma-a multicentre European case-control study. *Int J Epidemiol* 2008b; 37 (5): 1080-94.
- Boffetta P. Infection with helicobacter pylori and parasites, social class and cancer. In *Social inequalities and cancer*. IARC Scientific Publications No. 138. IARC, Lyon, 1997, pp 325-9.
- Bolton-Smith C, Smith W C S, Woodward M, Tunstall-Pedoe H. Nutrient intakes of different social-class groups: Results from the Scottish Heart Health Study (SHHS). *Br J Nutr* 1991; 65 (3): 321-35.
- Bosch F X, Burchell A N, Schiffman M, Giuliano A R, de Sanjose S, Bruni L, Tortolero-Luna G, Kjaer S K, Muñoz N. Epidemiology and natural history of human papillomavirus infections and type-specific implications in cervical neoplasia. *Vaccine* 2008; 26 (Suppl 10): K1-K16.
- Bosch F X, Lorincz A, Muñoz N, Meijer C J, Shah K V. The causal relation between human papillomavirus and cervical cancer. *J Clin Pathol* 2002; 55 (4): 244-65.
- Bosetti C, Gallus S, La Vecchia C. Aspirin and cancer risk: An updated quantitative review to 2005. *Cancer Causes Control* 2006; 17 (7): 871-88.
- Boyle P and Levin B (eds). *World Cancer Report 2008*. IARC, Lyon, 2008.
- Bray F, Loos A H, McCarron P, Weiderpass E, Arbyn M, Møller H, Hakama M, Parkin D M. Trends in cervical squamous cell carcinoma incidence in 13 European countries: Changing risk and the effects of screening. *Cancer Epidemiol Biomarkers Prev* 2005; 14 (3): 677-86.
- Bray F, McCarron P, Parkin D M. The changing global patterns of female breast cancer incidence and mortality. *Breast Cancer Res* 2004; 6 (6): 229-39.

Brennan P, Bogillot O, Cordier S, Greiser E, Schill W, Vineis P, Lopez-Abente G, Tzonou A, Chang-Claude J, Bolm-Audorff U, Jöckel K H, Donato F, Serra C, Wahrendorf J, Hours M, T'Mannetje A, Kogevinas M, Boffetta P. Cigarette smoking and bladder cancer in men: A pooled analysis of 11 case-control studies. *Int J Cancer* 2000; 86 (2): 289-94.

Brennan P, Bogillot O, Greiser E, Chang-Claude J, Wahrendorf J, Cordier S, Jöckel K H, Lopez-Abente G, Tzonou A, Vineis P, Donato F, Hours M, Serra C, Bolm-Audorff U, Schill W, Kogevinas M, Boffetta P. The contribution of cigarette smoking to bladder cancer in women (pooled European data). *Cancer Causes Control* 2001; 12 (5): 411-7.

Breslow N E. Extra-poisson variation in log-linear models. *Appl Stat* 1984; 33: 38-44.

British Heart Foundation. Socio-economic differences in diet. British Heart Foundation Statistics Website. Available at URL <http://www.heartstats.org/datapage.asp?id=928> [Accessed July 2009]

Buckley M J, O'Shea J, Grace A, English L, Keane C, Hourihan D, O'Morain C A. A community-based study of the epidemiology of helicobacter pylori infection and associated asymptomatic gastroduodenal pathology. *Eur J Gastroenterol Hepatol* 1998; 10 (5): 375-9.

Buschemeyer W C 3, Freedland S J. Obesity and prostate cancer: Epidemiology and clinical implications. *Eur Urol* 2007; 52 (2): 331-43.

Carstairs V, Morris R. Deprivation and health in Scotland. Aberdeen University Press, Aberdeen, 1991.

Castellsagué X, Muñoz N. Chapter 3: Cofactors in human papillomavirus carcinogenesis - role of parity, oral contraceptives, and tobacco smoking. *J Natl Cancer Inst Monogr* 2003; 31: 20-8.

Central Statistics Office Ireland. Births Deaths and Marriages. Principal Statistics. Deaths from principal causes in the years 1998 to 2006. Available at URL <http://www.cso.ie/statistics/principalcausesofdeath.htm> [Accessed July 2009]

Central Statistics Office. Census 2002. Volume 1. Population classified by area. CSO, Cork, 2003.

Clayton D, Kaldor J. Empirical Bayes estimates of age-standardized relative risks for use in disease mapping. *Biometrics* 1987; 43 (3): 671-81.

Coleman M P, Babb P, Damiecki P, Grosclaude P, Honjo S, Jones J, Knerer G, Pitaro A, Quinn M, Sloggett A, De Stavola B. Cancer survival trends in England and Wales 1971-1995. Deprivation and NHS region. Series SMPS No.61. The Stationery Office, London, 1999.

Coleman M P, Babb P, Sloggett A, Quinn M, De Stavola B. Socioeconomic inequalities in cancer survival in England and Wales. *Cancer* 2001; 91 (1 Suppl): 208-16.

Coleman M P, Rachet B, Woods L M, Mitry E, Riga M, Cooper N, Quinn M J, Brenner H, Estève J. Trends and socioeconomic inequalities in cancer survival in England and Wales up to 2001. *Br J Cancer* 2004; 90 (7): 1367-73.

Collaborative Group on Hormonal Factors in Breast Care. Breast cancer and breastfeeding: Collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. *Lancet* 2002; 360 (9328): 187-95.

Colleran G, McInerney N, Rowan A, Barclay E, Jones A M, Curran C, Miller N, Kerin M, Tomlinson I, Sawyer E. The TGFBR1*6A/9A polymorphism is not associated with differential risk of breast cancer. *Breast Cancer Res Treat* 2009 Apr 24; [Epub ahead of print]

Cook S, Poole M A, Pringle D G, Moore P A. Comparative spatial deprivation in Ireland. A cross-border analysis. Oak Tree Press, Dublin, 2000.

- Crew K D, Neugut A I. Epidemiology of gastric cancer. *World J Gastroenterol* 2006; 12 (3): 354-62.
- Curado M P, Edwards B, Shin H R, Storm H, Ferlay J, Heanue M et al. Cancer incidence in five continents, vol. IX. IARC scientific publications no. 160. IARC, Lyon, 2007.
- Dal Maso L, Polesel J, Serraino D, Lise M, Piselli P, Falcini F, Russo A, Intrieri T, Vercelli M, Zambon P, Tagliabue G, Zanetti R, Federico M, Limina R M, Mangone L, De Lisi V, Stracci F, Ferretti S, Piffer S, Budroni M, Donato A, Giacomini A, Bellù F, Fusco M, Madeddu A, Vitarelli S, Tessandori R, Tumino R, Suligoi B, Franceschi S, Cancer and AIDS Registries Linkage (CARL) Study. Pattern of cancer risk in persons with AIDS in Italy in the HAART era. *Br J Cancer* 2009; 100 (5): 840-7.
- Dalton S O, Laursen T M, Ross L, Mortensen P B, Johansen C. Risk of hospitalization with depression after a cancer diagnosis: A nationwide, population-based study of cancer patients in Denmark from 1973 to 2003. *J Clin Oncol* 2009; 27 (9): 1440-5.
- Dalton S O, Schüz J, Engholm G, Johansen C, Kjaer S K, Steding-Jessen M, Storm H H, Olsen J H. Social inequality in incidence of and survival from cancer in a population-based study in Denmark, 1994-2003: Summary of findings. *Eur J Cancer* 2008; 44 (14): 2074-85.
- Damber J E, Aus G. Prostate cancer. *Lancet* 2008; 371 (9625): 1710-21.
- Danaei G, Vander Hoorn S, Lopez A D, Murray C J, Ezzati M, Comparative Risk Assessment collaborating group (Cancers). Causes of cancer in the world: Comparative risk assessment of nine behavioural and environmental risk factors. *Lancet* 2005; 366 (9499): 1784-93.
- de Sanjosé S, Bosch F X, Muñoz N, Shah K. Social differences in sexual behaviour and cervical cancer. In *Social inequalities and cancer*. IARC Scientific Publications No. 138. IARC, Lyon, 1997, pp 309-17.
- Dejardin O, Remontet L, Bouvier A M, Danzon A, Trétarre B, Delafosse P, Molinié F, Maarouf N, Velten M, Sauleau E A, Bourdon-Raverdy N, Grosclaude P, Boutreux S, De Pourville G, Launoy G. Socioeconomic and geographic determinants of survival of patients with digestive cancer in France. *Br J Cancer* 2006; 95 (7): 944-9.
- Devesa S S, Bray F, Vizcaino A P, Parkin D M. International lung cancer trends by histologic type: male:female differences diminishing and adenocarcinoma rates rising. *Int J Cancer* 2005; 117 (2): 294-9.
- Doescher M P, Jackson J E. Trends in cervical and breast cancer screening practices among women in rural and urban areas of the United States. University of Washington Rural Health Research Center Final Report #121. University of Washington, Seattle, WA, 2008.
- Dolan C, O'Halloran A, Bradley D G, Croke D T, Evans A, O'Brien J K, Dicker P, Shields D C. Genetic stratification of pathogen-response-related and other variants within a homogeneous caucasian Irish population. *Eur J Hum Genet* 2005; 13: 798-806.
- Doll R, Peto R. The causes of cancer: Quantitative estimates of avoidable risks of cancer in the United States today. *J Natl Cancer Inst* 1981; 66 (6): 1191-308.
- Donnelly D W, Gavin A T, Comber H. Cancer in Ireland 1994-2004: A comprehensive report. Northern Ireland Cancer Registry/National Cancer Registry, Ireland, 2009
- dos Santos Silva I, Beral V. Socioeconomic differences in reproductive behaviour. In *Social inequalities and cancer*. IARC Scientific Publications No. 138. IARC, Lyon, 1997, pp 285-308.
- Downing A, Forman D, Gilthorpe M S, Edwards K L, Manda S O. Joint disease mapping using six cancers in the Yorkshire region of England. *Int J Health Geogr* 2008; 7: 41.
- Drummond F J, Carsin A E, Sharp L, Comber H. Trends in prostate specific antigen testing in Ireland: Lessons from a country without guidelines. *Irish J Med Sci* 2009a Jun 27. [Epub ahead of print]

Drummond F J, Carsin A E, Sharp L, Comber H. Factors prompting PSA-testing of asymptomatic men in a country with no guidelines: A national survey of general practitioners. *BMC Fam Pract* 2009b; 10: 3.

Easton D F, Eeles R A. Genome-wide association studies in cancer. *Hum Mol Genet* 2008; 17 (R2): R109-15.

Eklund G, Malec E. Sunlight and incidence of cutaneous malignant melanoma. effect of latitude and domicile in Sweden. *Scand J Plast Reconstr Surg* 1978; 12 (3): 231-41.

Elliott P, Cuzick J, English D, Stern R (eds), on behalf of the World Health Organization Regional Office for Europe. Geographical and environmental epidemiology. Methods for small-area studies. Oxford University Press, Oxford, 1996.

Environmental Systems Research Institute, Inc. 2007. ArcGIS 9.2 Desktop help. available at URL: [http://webhelp.esri.com/arcgisdesktop/9.2/index.cfm?TopicName=Natural_breaks_\(Jenks\)](http://webhelp.esri.com/arcgisdesktop/9.2/index.cfm?TopicName=Natural_breaks_(Jenks)) [Accessed August 2009]

Erens B. The Scottish Health Survey 1998: Volume 1: Chapter 9. Alcohol consumption. The Scottish Executive Department of Health, Edinburgh, 2000.

Estève J, Benhamou E, Raymond L. Statistical methods in cancer research volume IV. Descriptive epidemiology. IARC Scientific Publications No 128. IARC, Lyon, 1994.

Faggiano F, Partanen T, Kogevinas M, Bofetta P. Socioeconomic differences in cancer incidence and mortality. In Social inequalities and cancer. IARC Scientific Publications No. 138. IARC, Lyon, 1997, pp 65-176.

Fennell S G, Mackin G M, Madden J S, McGarry A T, Duffy J T, O'Colmain M, Colgan P A, Pollard D. Radon in dwellings - the Irish National Radon Survey. Report 02/01. Radiological Protection Institute of Ireland, Dublin, 2002.

Ferlay J, Bray F, Pisani P, Parkin D M. GLOBOCAN 2002: Cancer incidence, mortality and prevalence worldwide. IARC CancerBase No.5. Version 2.0. IARC, Lyon, 2004.

Ferlay J, Burkhard C, Whelan S, Parkin D M. Check and conversion programs for cancer registries IARC/IACR tools for cancer registries. Technical Report No. 42. IARC, Lyon, 2005.

FitzGerald S C, Al Sahaf M, Furlong H, Pennycooke K, Healy C, Walsh T N. Lack of awareness of oesophageal carcinoma among the public in Ireland. *Ir J Med Sci* 2008; 177 (2): 151-4.

Gallagher R P, Spinelli J J, Lee T K. Tanning beds, sunlamps, and risk of cutaneous malignant melanoma. *Cancer Epidemiol Biomarkers Prev* 2005; 14 (3): 562-6.

Gandini S, Sera F, Cattaruzza M S, Pasquini P, Abeni D, Boyle P, Melchi C F. Meta-analysis of risk factors for cutaneous melanoma: I. Common and atypical naevi. *Eur J Cancer* 2005a; 41 (1): 28-44.

Gandini S, Sera F, Cattaruzza M S, Pasquini P, Picconi O, Boyle P, Melchi C F. Meta-analysis of risk factors for cutaneous melanoma: II. Sun exposure. *Eur J Cancer* 2005b; 41 (1): 45-60.

Gandini S, Sera F, Cattaruzza M S, Pasquini P, Zanetti R, Masini C, Boyle P, Melchi C F. Meta-analysis of risk factors for cutaneous melanoma: III. Family history, actinic damage and phenotypic factors. *Eur J Cancer* 2005c; 41 (14): 2040-59.

Gilthorpe M S, Wilson R C. Rural/urban differences in the association between deprivation and healthcare utilisation. *Soc Sci Med* 2003; 57 (11): 2055-63.

Giovannucci E, Michaud D. The role of obesity and related metabolic disturbances in cancers of the colon, prostate, and pancreas. *Gastroenterol* 2007; 132 (6): 2208-25.

- Giovannucci E. An updated review of the epidemiological evidence that cigarette smoking increases risk of colorectal cancer. *Cancer Epidemiol Biomarkers Prev* 2001; 10 (7): 725-31.
- Hagel E, Garmo H, Bill-Axelsson A, Bratt O, Johansson J E, Adolfsson J, Lambe M, Stattin P. PCBaSe Sweden: a register-based resource for prostate cancer research *Scand J Urol Nephrol* 2009 Jun 1:1-8. [Epub ahead of print]
- Harewood G C, Murray F, Patchett S, Garcia L, Leong W L, Lim Y T, Prabakaran S, Yeen K F, O'Flynn J, McNally E. Assessment of colorectal cancer knowledge and patient attitudes towards screening: Is Ireland ready to embrace colon cancer screening? *Ir J Med Sci* 2009; 178 (1): 7-12.
- Hashibe M, Brennan P, Chuang S C, Boccia S, Castellsague X, Chen C, Curado M P, Dal Maso L, Daudt A W, Fabianova E, Fernandez L, Wünsch-Filho V, Franceschi S, Hayes R B, Herrero R, Kelsey K, Koifman S, La Vecchia C, Lazarus P, Levi F, Lence J J, Mates D, Matos E, Menezes A, McClean M D, Muscat J, Eluf-Neto J, Olshan A F, Purdue M, Rudnai P, Schwartz S, Smith E, Sturgis E M, Szeszenia-Dabrowska N, Talamini R, Wei Q, Winn D M, Shangina O, Pilarska A, Zhang Z F, Ferro G, Berthiller J, Boffetta P. Interaction between tobacco and alcohol use and the risk of head and neck cancer: Pooled analysis in the international head and neck cancer epidemiology consortium. *Cancer Epidemiol Biomarkers Prev* 2009; 18 (2): 541-50.
- Hawkins N J, Ward R L. Sporadic colorectal cancers with microsatellite instability and their possible origin in hyperplastic polyps and serrated adenomas. *J Natl Cancer Inst* 2001; 93 (17): 1307-13.
- Haynes R, Gale S. Deprivation and poor health in rural areas: Inequalities hidden by averages. *Health Place* 2000; 6 (4): 275-85.
- Health Service Executive. Looking for health services in your area? How to use Health Atlas. Available at URL <http://www.hse.ie/eng/HealthAtlas/> [Accessed July 2009]
- Helicobacter and Cancer Collaborative Group. Gastric cancer and helicobacter pylori: A combined analysis of 12 case control studies nested within prospective cohorts. *Gut* 2001; 49 (3): 347-53.
- Hill E W, Jobling M A, Bradley D G. Y-chromosome variation and Irish origins: A pre-neolithic gene graduation starts in the near east and culminates in western Ireland. *Nature* 2000; 404: 351-2.
- Huisman M, Kunst A E, Mackenbach J P. Inequalities in the prevalence of smoking in the European Union: Comparing education and income. *Prev Med* 2005; 40 (6): 756-64.
- Iliffe S, Kharicha K, Harari D, Swift C, Gillmann G, Stuck A E. Health risk appraisal in older people 2: The implications for clinicians and commissioners of social isolation risk in older people. *Br J Gen Pract* 2007; 57 (537): 277-82.
- International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans: Overall evaluation of carcinogenicity. An Updating of IARC Monographs Volumes 1 to 42. Supplement 7. IARC, Lyon, 1987.
- International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans. Volume 55. Solar and ultraviolet radiation. IARC, Lyon, 1992.
- International Agency for Research on Cancer. IARC working group on the evaluation of carcinogenic risks to humans. Volume 61. Schistosomes, liver flukes and helicobacter pylori. Summary of data reported and evaluation. IARC, Lyon, 1994 (Updated 08/26/1997)
- International Agency for Research on Cancer. IARC handbooks of cancer prevention. Non-steroidal anti-inflammatory drugs. IARC, Lyon, 1997.
- International Agency for Research on Cancer. IARC handbooks of cancer prevention. Sunscreens. IARC, Lyon, 2001.

International Agency for Research on Cancer. IARC handbooks of cancer prevention. Volume 6. Weight control and physical activity. IARC, Lyon, 2002.

International Agency for Research on Cancer. IARC handbooks of cancer prevention. Volume 8. Fruit and vegetables. IARC, Lyon, 2003.

International Agency for Research on Cancer. IARC working group on the evaluation of carcinogenic risks to humans. Some drinking-water disinfectants and contaminants, including arsenic. Summary of data reported and evaluation. Volume 84. IARC, Lyon, 2004a.

International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans. Volume 83. Tobacco smoke and involuntary smoking. IARC, Lyon, 2004b.

International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans. Volume 90. Human papillomaviruses. IARC, Lyon, 2007a.

International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans. Volume 91. Combined estrogen-progestogen contraceptives and combined estrogen-progestogen menopausal therapy. IARC, Lyon, 2007b.

International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans. Volume 89. Smokeless tobacco and some tobacco-specific N-nitrosamines. IARC, Lyon, 2007c.

International Agency for Research on Cancer. IARC working group reports: Attributable causes of cancer in France in the year 2000. IARC, Lyon, 2007d.

International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans. Volume 96. Consumption of alcoholic beverages. Summary of data reported. IARC, Lyon, in press.

Ireland-Northern Ireland-National Cancer Institute Cancer Consortium. Science serving people: enhancing cancer care through education & research. Activities report 2008. NIH, Bethesda, MD, 2009.

Islami F, Kamangar F. Helicobacter pylori and esophageal cancer risk: A meta-analysis. *Cancer Prev Res (Phila Pa)* 2008; 1 (5): 329-38.

Jarup L, Briggs D, de Hoogh C, Morris S, Hurt C, Lewin A, Maitland I, Richardson S, Wakefield J, Elliott P. Cancer risks in populations living near landfill sites in Great Britain. *Br J Cancer* 2002; 86 (11): 1732-6.

Johns L E, Houlston R S. A systematic review and meta-analysis of familial colorectal cancer risk. *Am J Gastroenterol* 2001; 96 (10): 2992-3003.

Karagas M R, Stannard V A, Mott L A, Slattery M J, Spencer S K, Weinstock M A. Use of tanning devices and risk of basal cell and squamous cell skin cancers. *J Natl Cancer Inst* 2002; 94 (3): 224-6.

Keegan H, Ryan F, Malkin A, Griffin M, Lambkin H. Human papillomavirus prevalence and genotypes in an opportunistically screened Irish female population. *Br J Biomed Sci* 2007; 64 (1): 18-22.

Kelly A, Teljeur C. A new national deprivation index for health and health services research - short report. Small Area Health Research Unit, Trinity College Dublin, Dublin, 2004.

Key T J, Verkasalo P K, Banks E. Epidemiology of breast cancer. *Lancet Oncol* 2001; 2 (3): 133-40.

Kharicha K, Iliffe S, Harari D, Swift C, Gillmann G, Stuck A E. Health risk appraisal in older people 1: Are older people living alone an "at-risk" group? *Br J Gen Pract* 2007; 57 (537): 271-6.

- Khoury M J, Davis R, Gwinn M, Lindegren M L, Yoon P. Do we need genomic research for the prevention of common diseases with environmental causes? *Am J Epidemiol* 2005; 161 (9): 799-805.
- Kogevinas M, Pearce N, Susser M, Boffetta P. Social inequalities and cancer. IARC Scientific Publications No. 138. IARC, Lyon, 1997.
- Kogevinas M, Porta M. Socioeconomic differences in cancer survival: A review of the evidence. In *Social inequalities and cancer*. IARC Scientific Publications No. 138. IARC, Lyon, 1997, pp 177-206.
- Larsson S C, Orsini N, Brismar K, Wolk A. Diabetes mellitus and risk of bladder cancer: A meta-analysis. *Diabetologia* 2006; 49 (12): 2819-23.
- Lawson A B, Biggeri A B, Boehning D, Lesaffre E, Viel J F, Clark A, Schlattmann P, Divino F. Disease mapping models: An empirical evaluation. *disease mapping collaborative group. Statist Med* 2000; 19 (17-18): 2217-41.
- Layte R, McGee H, Rundle K, Leigh C. Does ambivalence about becoming pregnant explain social class differentials in use of contraception? *Eur J Public Health* 2006; 17 (5): 477-82.
- Levine M, Moutquin J M, Walton R, Feightner J. Chemoprevention of breast cancer. A joint guideline from the Canadian task force on preventive health care and the Canadian breast cancer initiative's steering committee on clinical practice guidelines for the care and treatment of breast cancer. *CMAJ* 2001; 164 (12): 1681-90.
- Lichtenstein P, Holm N V, Verkasalo P K, Iliadou A, Kaprio J, Koskenvuo M, Pukkala E, Skytthe A, Hemminki K. Environmental and heritable factors in the causation of cancer-analyses of cohorts of twins from Sweden, Denmark, and Finland. *N Engl J Med* 2000; 343 (2): 78-85.
- Lindbohm M L, Sallmén M, Kyrrönen P, Kauppinen T, Pukkala E. Risk of liver cancer and exposure to organic solvents and gasoline vapors among Finnish workers. *Int J Cancer* 2009; 124(12): 2954-9.
- Liu L, Cozen W, Bernstein L, Ross R K, Deapen D. Changing relationship between socioeconomic status and prostate cancer incidence. *J Natl Cancer Inst* 2001; 93 (9): 705-9.
- Løkkegaard E, Lidegaard O, Møller L N, Agger C, Andreasen A H, Jørgensen T. Hormone replacement therapy in Denmark, 1995-2004. *Acta Obstet Gynecol Scand* 2007; 86 (11): 1342-51.
- Lunn D J, Thomas A, Best N, Spiegelhalter D. WinBUGS - a Bayesian modelling framework: Concepts, structure, and extensibility. *Statistics Computing* 2000; 10: 325-37.
- Mackenbach J P, Stirbu I, Roskam A J, Schaap M M, Menvielle G, Leinsalu M, Kunst A E, European Union Working Group on Socioeconomic Inequalities in Health. Socioeconomic inequalities in health in 22 European countries. *N Engl J Med* 2008; 358 (23): 2468-81.
- Maheswaran R, Pearson T, Jordan H, Black D. Socioeconomic deprivation, travel distance, location of service, and uptake of breast cancer screening in north Derbyshire, UK. *J Epidemiol Community Health* 2006; 60 (3): 208-12.
- Matakidou A, Eisen T, Houlston R S. Systematic review of the relationship between family history and lung cancer risk. *Br J Cancer* 2005; 93 (7): 825-33.
- McInerney J, Pilkington L, Keegan H, Ring M, Bolger N, Sheils O, O'Leary J, Martin C. Human papillomavirus prevalence and genotype distribution in the Irish cervical screening population. *J Cytopathol* 2008; 19 (Suppl 2): 13.
- McMenamin M, Barry H, Lennon A M, Purcell H, Baum M, Keegan D, McDermott E, O'Donoghue D, Daly L, Mulcahy H. A survey of breast cancer awareness and knowledge in a western population: Lots of light but little illumination. *Eur J Cancer* 2005; 41 (3): 393-7.

Møller H, Tønnesen H. Alcohol drinking, social class and cancer. In *Social inequalities and cancer*. IARC Scientific Publications No. 138. IARC, Lyon, 1997, pp 251-64.

Morgan K, McGee H, Watson D, Perry I, Barry M, Shelley E, Harrington J, Molcho M, Layte R, Tully N, van Lente E, Ward M, Lutomski J, Conroy R, Brugha R. *SLÁN 2007: Survey of lifestyle, attitudes & nutrition in Ireland*. Main Report. Department of Health & Children, Dublin, 2008.

Morgenstern H. Ecologic studies in epidemiology: Concepts, principles, and methods. *Ann Rev Public Health* 1995; 16: 61-81.

Murray L J, McCrum E E, Evans A E, Bamford K B. Epidemiology of helicobacter pylori infection among 4742 randomly selected subjects from Northern Ireland. *Int J Epidemiol* 1997; 26 (4): 880-7.

National Cancer Intelligence Network. *Cancer incidence by deprivation, England, 1995-2004*. NCIN, 2008. Available at URL http://www.ncin.org.uk/docs/081202-NCIN-Incidence_by_Deprivation_95_04.pdf. [Accessed July 2009]

National Cancer Registry. *Cancer in Ireland, 1994 to 1998: Incidence, mortality, treatment and survival*. NCR, Cork, 2001. Available at URL <http://www.ncr.ie/pubs/report-1998.shtml> [Accessed July 2009]

National Cancer Registry. *Cancer in Ireland 1994-2002*. NCR, Cork, 2003.

National Cancer Registry. *Cancer projections 2005-2035*. NCR, Cork, 2008. Available at URL <http://www.ncr.ie/pubs/pubfiles/CancerProjections2010-2035v4.pdf> [Accessed July 2009]

Office of Tobacco Control. *Annual report 2008*. OTC, Naas, 2009. Available at URL <http://www.otc.ie/uploads/OTCAnnualReport2008.pdf> [Accessed July 2009]

O'Hare A, Whelan C T, Commins P. The development of an Irish census-based social class scale. *Economic Social Rev* 1991; 22 (2): 135,135-156.

O'Reilly G, O'Reilly D, Rosato M, Connolly S. Urban and rural variations in morbidity and mortality in Northern Ireland. *BMC Public Health* 2007; 7: 123.

Parazzini F, Progetto Menopausa Italia Study Group. Trends of determinants of hormone therapy use in Italian women attending menopause clinics, 1997-2003. *Menopause* 2008; 15 (1): 164-70.

Pascutto C, Wakefield J C, Best N G, Richardson S, Bernardinelli L, Staines A, Elliott P. Statistical issues in the analysis of disease mapping data. *Statist Med* 2000; 19: 2493-519.

Pera M, Manterola C, Vidal O, Grande L. Epidemiology of esophageal adenocarcinoma. *J Surg Oncol* 2005; 92 (3): 151-9.

Peto R, Darby S, Deo H, Silcocks P, Whitley E, Doll R. Smoking, smoking cessation, and lung cancer in the UK since 1950: Combination of national statistics with two case-control studies. *BMJ* 2000; 321 (7257): 323-9.

Phillimore P, Beattie A, Townsend P. Widening inequality of health in northern England, 1981-91. *BMJ* 1994; 308 (6937): 1125-8.

Pitard A, Brennan P, Clavel J, Greiser E, Lopez-Abente G, Chang-Claude J, Wahrendorf J, Serra C, Kogevinas M, Boffetta P. Cigar, pipe, and cigarette smoking and bladder cancer risk in European men. *Cancer Causes Control* 2001; 12 (6): 551-6.

Polasek O, Kolcic I, Voncina L, Strnad M, Vuletic S, Kern J. Breast, colon, and prostate screening in the adult population of Croatia: Does rural origin matter? *Rural Remote Health* 2007; 7 (3): 749.

- Quinn M, Wood H, Cooper N, Rowan S. Cancer atlas of the United Kingdom and Ireland 1991-2000. ONS SMPS No. 68. Palgrave MacMillan, Basingstoke, 2005.
- Reeve B B, Potosky A L, Smith A W, Han P K, Hays R D, Davis W W, Arora N K, Haffer S C, Clauser S B. Impact of cancer on health-related quality of life of older Americans. *J Natl Cancer Inst* 2009; 101(12): 860-8.
- Reulen R C, Kellen E, Buntinx M, Brinkman M, Zeegers M P. A meta-analysis on the association between bladder cancer and occupation. *Scand J Urol Nephrol Suppl* 2008; 218 (64): 78.
- Richardson S, Thomson A, Best N, Elliott P. Interpreting posterior relative risk estimates in disease-mapping studies. *Environ Health Perspect* 2004; 112 (9): 1016-25.
- Roewert-Huber J, Lange-Asschenfeldt B, Stockfleth E, Kerl H. Epidemiology and aetiology of basal cell carcinoma. *Br J Dermatol* 2007; 157 ((Suppl 2)): 47-51.
- Rokkas T, Pistiolas D, Sechopoulos P, Robotis I, Margantinis G. Relationship between helicobacter pylori infection and esophageal neoplasia: A meta-analysis. *Clin Gastroenterol Hepatol* 2007; 5 (12): 1413-7.
- Rowan S. Trends in cancer incidence by deprivation, England and Wales, 1990-2002. *Health Stat Q* 2007; 36: 24-35.
- Russi M B, Borak J B, Cullen M R. An examination of cancer epidemiology studies among populations living close to toxic waste sites. *Environ Health* 2008; 7: 32.
- Sabates R, Feinstein L. The role of education in the uptake of preventative health care: the case of cervical screening in Britain. *Soc Sci Med* 2006; 62 (12): 2998-3010.
- Saladi R N, Persaud A N. The causes of skin cancer: A comprehensive review. *Drugs Today (Barc)* 2005; 41 (1): 37-53.
- Scélo G, Brennan P. The epidemiology of bladder and kidney cancer. *Nat Clin Pract Urol* 2007; 4 (4): 205,217 Review.
- Segnan N. Socioeconomic status and cancer screening. In *Social inequalities and cancer*. IARC Scientific Publications No. 138. IARC, Lyon, 1997, pp 369-76.
- Shack L G, Rachet B, Brewster D H, Coleman M P. Socioeconomic inequalities in cancer survival in Scotland 1986-2000. *Br J Cancer* 2007; 97 (7): 999-1004.
- Shack L, Jordan C, Thomson C S, Mak V, Møller H, UK Association of Cancer Registries. Variation in incidence of breast, lung and cervical cancer and malignant melanoma of skin by socioeconomic group in England. *BMC Cancer* 2008; 8: 271.
- Shah S, Harris T J, Cook D G. Differences in hormone replacement therapy use by social class, region and psychological symptoms. *BJOG* 2001; 108 (3): 269-75.
- Singh G K, Miller B A, Hankey B F, Edwards B K. Area socioeconomic variations in U.S. cancer incidence, mortality, stage, treatment, and survival, 1975-1999. NCI Cancer Surveillance Monograph Series, Number 4 NIH Publication No. 03-0000. National Cancer Institute, Bethesda, MD, 2003
- Small Area Health Research Unit (SAHRU). A national deprivation index for health and health services research. Technical report no.2. SAHRU, Dublin, 1997.
- Tetsche M S, Dethlefsen C, Pedersen L, Sorensen H T, Norgaard M. The impact of comorbidity and stage on ovarian cancer mortality: a nationwide Danish cohort study. *BMC Cancer* 2008; 8: 31.

Thygesen L C, Mikkelsen P, Andersen T V, Tønnesen H, Juel K, Becker U, Grønbaek M. Cancer incidence among patients with alcohol use disorders--long-term follow-up. *Alcohol Alcohol* 2009; 44(4): 387-91.

US Department of Health and Human Services. Report on carcinogens 11th edition. National Toxicology Program, Research Triangle Park, NC, 2005.

van der Aa M A, Siesling S, Louwman M W, Visser O, Pukkala E, Coebergh J W. Geographical relationships between sociodemographic factors and incidence of cervical cancer in the Netherlands 1989-2003. *Eur J Cancer Prev* 2008; 17 (5): 453-9.

Veronesi U, Boyle P, Goldhirsch A, Orecchia R, Viale G. Breast cancer. *Lancet* 2005; 365 (9472): 1727-41.

Villanueva C M, Cantor K P, Cordier S, Jaakkola J J, King W D, Lynch C F, Porru S, Kogevinas M. Disinfection byproducts and bladder cancer: A pooled analysis. *Epidemiology* 2004; 15 (3): 357-67.

Villanueva C M, Cantor K P, King W D, Jaakkola J J, Cordier S, Lynch C F, Porru S, Kogevinas M. Total and specific fluid consumption as determinants of bladder cancer risk. *Int J Cancer* 2006; 118 (8): 2040-7.

Weller D, Coleman D, Robertson R, Butler P, Melia J, Campbell C, Parker R, Patnick J, Moss S. The UK colorectal cancer screening pilot: Results of the second round of screening in England. *Br J Cancer* 2007; 97 (12): 1601-5.

Wickerham D L, Costantino J P, Vogel V G, Cronin W M, Cecchini R S, Ford L G, Wolmark N. The use of tamoxifen and raloxifene for the prevention of breast cancer. *Recent Results Cancer Res* 2009; 181: 113-9.

Winer R L, Koutsky L A. The epidemiology of human papillomavirus infections. In *Cervical Cancer: From Etiology to Prevention*. Rohan T E & Shah KV (eds). Kluwer Academic Publishers, Dordrecht, 2004, pp 143-87.

Wood A W. How dangerous are mobile phones, transmission masts, and electricity pylons? *Arch Dis Child* 2006; 91 (4): 361-6.

World Cancer Research Fund / American Institute for Cancer Research. *Food, nutrition and the prevention of cancer: A global perspective*. AICR, Washington DC, 1997.

World Cancer Research Fund / American Institute for Cancer Research. *Food, nutrition, physical activity, and the prevention of cancer: A global perspective*. AICR, Washington DC, 2007.

Yu X Q, O'Connell D L, Gibberd R W, Armstrong B K. Assessing the impact of socio-economic status on cancer survival in New South Wales, Australia 1996-2001. *Cancer Causes Control* 2008; 19 (10): 1383-90.