Quantification of the impact of indoor dampness and mould on asthma onset in children and hospital spells due to respiratory problems in children and adults in Wirral PCT

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Damp housing and respiratory health in Wirral

Dampness, moisture and mould in the living environment have been associated with adverse respiratory health outcomes (Antova et al 2008, Fisk et al. 2007, WHO 2009, Fisk et al. 2010, IOM 2004). While the evidence is considered not to be strong enough to establish a causal relationship, World Health Organisation (WHO) (2009, page 71) concluded it to be sufficient to establish an association between indoor dampness related agents and asthma exacerbation, upper respiratory tract symptoms, cough, wheeze, asthma development, dyspnoea, current asthma and respiratory tract infections. This is supported by the findings of two recent meta analyses by Fisk et al. (2007 and 2010) who reported increased risks of 1.34-1.7 for asthma, asthma development, current asthma, wheeze, cough, upper respiratory tract symptoms, bronchitis and respiratory infections for people living in damp houses.

Studies have also looked at quantifying the health and financial impacts of inadequate housing at population levels. WHO recently published a method guide to the quantification of health effects of selected housing risks in the WHO European Region (WHO 2011). Among others, indoor dampness and mould are risk factors considered in the methodology. The outcome measure used in the analysis is asthma onset in children.

In this analysis we estimate the impact of damp housing on health in Wirral by
a.) applying the methodology outlined by WHO (2011) to estimate the contribution of damp housing to asthma onset in children in Wirral b.) estimating the number of hospital spells attributable to damp housing in Wirral.

Methods

For the estimation of the contribution of damp housing to asthma onset in children and hospital admissions in the whole population we used the formula for the population attributable fraction (PAF) as described by WHO (2011).

$$PAF = \frac{p(RR-1)}{p(RR-1)+1}$$

where p = proportion of exposed; RR = relative risk for the health outcome under investigation.

Exposure data

Exposure data for all calculations was taken from the English Housing Survey (DCLG 2011a-d and DCLG 2012) (table A1). The survey consists of two parts a.) an interview and b.) a subsample of houses which are assessed by a qualified building inspector. The results of the physical inspection are summarised in the housing stock survey. Dampness is assessed in the interview part of the survey as well as in the physical inspection. We used the exposure scenarios outlined in table 1 for our calculations. All of these are based on national data. Scenarios 1-3 are based on the housing stock survey 2009 and 2010 and scenario 5 was derived from the 2009 interview data excluding dampness due to window condensation. Scenario 4 was chosen as an intermediate between scenario 3 and 5.

Table 1: Exposure scenarios used in the analysis.

Exposure	Percent	Source
1	6.2	2010 English Housing Stock Survey
2	7.9	2009 English Housing Stock Survey
3	9.2 < 60 years and 5.5 > 60 years	2009 English Housing Stock Survey
4	15	Defined as intermediate between scenario 3 and 5
5	20	2009-2010 English Housing Survey interview data

Calculation of the contribution of damp housing to asthma onset in children

For the estimation of the contribution of damp housing to asthma onset in children we adopted the methodology outlined by WHO (2011). For the association of damp housing with asthma onset in children we used the same RR of 2.2 (1.3-4.0) (Pekkanen et al. 2007) as the WHO (2011). The PAF derived from these calculations was then applied to the estimated number of children with asthma in Wirral. Asthma prevalence data was taken from the 2010 Health Survey for England (HSE) (HSCIC 2011). The HSE 2010 reported Asthma prevalence in children to be 17% in boys and 12% in girls in England (HSCIC 2011).

Calculation of contribution of damp housing to hospital admissions in Wirral

Health outcomes included in the analysis of hospital admissions due to damp housing were: Asthma, upper respiratory symptoms, bronchitis and respiratory infections as defined in the meta analyses by Fisk et al. (Fisk et al. 2007, Fisk et al 2010) (table A2-A5). Relative risks (RRs) estimates for the calculations are listed in table 2.

Table 2: Relative risk ratios used for calculations of hospital spells attributable to damp and mould housing in 0-19 year olds.

	RR	Source
Asthma	1.56 (1.3-1.86)	Fisk et al. 2007
Upper resp. symptoms	1.7 (1.4-2.0)	Fisk et al. 2007
Bronchitis	1.45 (1.32-1.59)	Fisk et al 2010
Respiratory infections	1.48 (1.33-1.65)* 1.49 (1.14-1.95)	Fisk et al 2010

***RR used for calculation of PAF in 0-19 year olds (including otitis media)

To adjust for the strong association between smoking and chronic bronchitis in adults, we carried out a separate analysis in which we subtracted the estimated number of smoking attributable hospital spells from the total number of spells due to chronic bronchitis. To calculate the smoking attributable hospital spells we used RRs of 10.6 in male and 13.1 in female as reported in the "Cigarette Use in Cancer Prevention Studies I and II" (CPS I and II) (Thun et al. 1997). Smoking prevalence data for these calculations was taken from the NHS Information Centre, Lifestyles Statistics (The NHS Information Centre 2011) (table A6).

Data on hospital spells for Wirral was derived from Hospital Episode Statistics (HES) for Wirral for 2008-2011.

Results

Contribution of damp housing to asthma onset in children

Based on the assumptions outlined above and applying national estimates for asthma prevalence in children of 17% in boys and 12% in girls, around 918 cases of childhood asthma might be associated with exposure to dampness in the living environment in Wirral (table 3). Applying higher exposure values of 15% and 20% in the calculations resulted in estimates of 1384 and 1744 cases of childhood asthma attributable to damp housing respectively.

Table 3: Estimated rate and number of cases of new asthma in children (0-16 years) attributable to exposure to damp housing in Wirral.

Exposure	Rate **per 1000**	Number
6.2%	11.6 (0.9-32.3)	636.9 (49.1-1769.6)
9.3%	16.8 (1.3-43.6)	917.8 (73.4-2387.4)
15%	25.3 (2.2-59.5)	1384.0 (117.8-3255.7)
20%	31.9 (2.9-69.8)	1744.4 (156.4-3821.0)

Hospital spells attributable to damp housing in Wirral

Based on the assumptions outlined above and the exposure scenario of 9.2% of under 60 year olds and 5.5% of over 60 year olds living in damp housing, between 91 (adjusted for smoking) to 108 hospital spells might be attributable to damp housing in adults in Wirral per year (table 4 and 5). Applying higher exposure scenarios of 15 and 20% resulted in estimates of 178-215 and 232 to 280 hospital spells in adults associated with damp housing in Wirral per year.

Table 4: Average annual number of hospital spells (2008-2011) attributable to damp housing in adults (20+ years) in Wirral.

	Exposure				
	6.2%	**7.9%**	**9.2<60&5.5>60**	**15%**	**20%**
Asthma	9.0 (4.9-13.6)	11.4 (6.2-17.1)	12.0 (6.6-18)	20.8 (11.6-30.7)	27.0 (15.2-39.4)
Bronchitis	37.5 (26.9-48.8)	47.5 (34.1-61.6)	41.2 (29.5-53.4)	87.4 (63.3-112.4)	114.2 (83.2-145.9)
Respiratory infections	42.2 (12.3-79.7)	53.4 (15.7-99.9)	49.9 (14.6-93.4)	98.1 (29.5-178.6)	127.8 (39.0-228.7)
Upper resp. symptoms	3.7 (2.3-5.2)	4.6 (3.0-6.5)	5.0 (3.2-6.9)	8.4 (5.5-11.5)	10.8 (7.1-14.7)
Total number	92.4	116.8	108.0	214.7	279.9

Table 5: Average annual number of hospital spells (2008-2011) attributable to damp housing in adults (20+ years) in Wirral; chronic bronchitis adjusted for smoking.

	Exposure				
	6.2%	**7.9%**	**9.2<60&5.5>60**	**15%**	**20%**
Asthma	9.0 (4.9-13.6)	11.4 (6.2-17.1)	12.0 (6.6-18)	20.8 (11.6-30.7)	27.0 (15.2-39.4)
Bronchitis	21.6 (15.5-28.1)	27.4 (19.6-35.5)	24.2 (17.3-31.4)	50.4 (36.5-64.8)	65.8 (47.9-84.1)
Respiratory infections	42.2 (12.3-79.7)	53.4 (15.7-99.9)	49.9 (14.6-93.4)	98.1 (29.5-178.6)	127.8 (39.0-228.7)
Upper resp. symptoms	3.7 (2.3-5.2)	4.6 (3.0-6.5)	5.0 (3.2-6.9)	8.4 (5.5-11.5)	10.8 (7.1-14.7)
Total number	76.5	96.7	91.0	177.6	231.5

The number of hospital spells attributable to damp housing in children was comparably lower with an estimated 19 spells per year for an exposure of 9.2%. Exposures of 15 and 20% resulted in 30 and 39 attributable spells per year respectively (table 6).

Table 6: Average annual number of hospital spells (2008-2011) attributable to damp housing in children (0-19 years) in Wirral.

	Exposure				
	6.2%	**7.9%**	**9.2**	**15%**	**20%**
Asthma	1.8 (1.0-2.7)	2.2 (1.2-3.4)	2.6 (1.4-3.9)	4.1 (2.3-6.0)	5.3 (3.0-7.7)
Bronchitis	2.5 (1.8-3.2)	3.1 (2.2-4.0)	3.6 (2.6-4.7)	5.7 (4.2-7.4)	7.5 (5.5-9.6)
Respiratory infections	8.5 (5.9-11.4)	10.8 (7.5-14.4)	12.5 (8.7-16.6)	19.8 (13.9-26.2)	25.8 (18.3-33.9)
Upper resp. symptoms	0.1 (0.1-0.2)	0.1 (0.1-0.2)	0.1 (0.1-0.2)	0.2 (0.1-0.3)	0.3 (0.2-0.4)
	12.8	**16.2**	**18.8**	**29.8**	**38.9**

Discussion

Damp housing might be attributable to the onset of 918 cases of asthma in children in Wirral and might also attribute to around 110 hospital spells due to respiratory diseases each year. The comparable higher contribution of damp housing to hospital spells in adults was due to the higher number of hospital spells in this age group. There are considerable differences between self reported dampness and those reported by surveyors in the English housing survey. Applying the higher exposure values of self reported problems with dampness or a medium value of 15% would result in considerable higher estimates of 1384-1744 attributable cases of childhood asthma and 208-270 attributable hospital spells per year.

There are uncertainties around these calculations. While studies have shown a strong positive association between damp housing and adverse respiratory health effects, the evidence is not considered strong enough to establish a causal relationship (WHO 2009). For this reason the extension of the analysis to hospital data needs to be considered with caution. We only used national exposure data in our analysis as the time frame did not allow for more specific local analysis. However, definition of different exposure scenarios gives an insight into the potential impact of higher local exposure. Smoking and passive smoking will influence hospital admissions due to respiratory diseases. We adjusted for active smoking in the analysis of chronic bronchitis, but could not consider passive smoking in our analysis.

The analysis clearly shows the negative health effect of damp housing in Wirral. The total burden of inadequate housing is considerably bigger as damp housing only contributes a part to the total burden of ill health attributable to inadequate housing.

Literature

Antova T, Pattenden S, Brunekreef B, Heinrich J, Rudnai P, Forastiere F, Luttmann-Gibson H, Grize L, Katsnelson B, Moshammer H (2008): Exposure to indoor mould and children's respiratory health in the PATY study. Journal of Epidemiology and Community Health, 62:708.

Department for Communities and Local Government (2011a): English Housing Survey Headline report 2009–10. http://www.communities.gov.uk/documents/statistics/pdf/1851086.pdf

Department for Communities and Local Government (2011b): English Housing Survey. Housing Stock Report 2009. http://www.communities.gov.uk/documents/statistics/pdf/1937212.pdf

Department for Communities and Local Government (2011c): English Housing Survey Housing Stock Summary Statistics 2009. http://www.communities.gov.uk/documents/statistics/pdf/19372481.pdf

Department for Communities and Local Government (2011d), *English Housing Survey, 2009-2010: Household Data* [computer file]. Colchester, Essex: UK Data Archive [distributor], July 2011. SN: 6805, http://dx.doi.org/10.5255/UKDA-SN-6805-1

Department for Communities and Local Government (2012): English Housing Survey Headline report 2010–11. http://www.communities.gov.uk/documents/statistics/pdf/2084179.pdf

Fisk W.J., Eliseeva E.A., Mendell M.J. (2010): Association of residential dampness and mold with respiratory tract infections and bronchitis: a meta analysis. Environmental Health 9:72. www.ehjournal.net/content/9/1/72.

Fisk WJ, Lei-Gomez Q, Mendell MJ (2007): Meta-analyses of the associations of respiratory health effects with dampness and mould in homes. Indoor Air, 17:284-296.

Institute of Medicine (IOM) 2004: Damp Indoor Spaces and Health. Washington, D.C.: National Academies Press.

Pekkanen J, Hyvärinen A, Haverinen-Shaughnessy U, Korppi M, Putus T, Nevalainen A. (2007): Moisture damage and childhood asthma: a population-based incident case-control study. *European Respiratory Journal,* 29:509-515.

The Health and Social Care Information Centre (HSCIC) (2011): Health Survey for England - 2010: Respiratory health. Respiratory symptoms and asthma in children. http://www.ic.nhs.uk/webfiles/publications/003_Health_Lifestyles/HSE2010_REPORT/HSE2010_Ch4_Respiratory_symptoms_and_asthma_in_children.pdf

The NHS Information Centre, Lifestyles Statistics (2011): Statistics on Smoking: England, 2011. The Health and Social Care Information Centre.

Thun MJ, Day-Lally C, Myers DG et al (1997): Trends in tobacco smoking and mortality from cigarette use in Cancer Prevention Studies I (1959 through 1965) and II (1982 through 1988). In: Burns DM, Garfinkel L, Samet JM (eds). Changes in Cigarette-Related Disease Risks and their Implications for Prevention and Control, Smoking and Tobacco Control. Smoking and Tobacco Control Monograph No. 8 NIH Publication. Q7 No. 97–4213. Bethesda, MD, 305–82.

World Health Organization Regional Office for Europe (2009): WHO Guidelines for Indoor Air Quality: Dampness and Mould. WHO Guidelines for Indoor Air Quality Bonn, Germany. http://www.euro.who.int/__data/assets/pdf_file/0017/43325/E92645.pdf

Appendix

Table A1: Damp and mould households in the 2009 English Housing Survey (English Housing Survey 2009).

all households

	any damp	rising damp	penetrating damp	condensation mould	**all households in group (000s)**	*sample size (unweighted)*
household composition						
couple under 60	7.1	2.2	3.0	3.6	**3,973**	*2,582*
couple 60 or over	3.6	1.7	1.6	1.1	**3,608**	*2,574*
couple with children	8.5	2.5	2.7	5.4	**4,727**	*3,306*
lone parent	10.2	3.7	3.5	6.2	**1,688**	*1,483*
multi-person household	13.9	5.2	3.9	8.0	**1,527**	*1,181*
one person under 60	10.3	2.9	4.9	4.7	**2,941**	*1,965*
one person 60 or over	6.3	2.8	2.5	2.2	**3,072**	*2,421*
age of oldest person						
under 60 years	9.2	2.8	3.4	5.1	**13,808**	*9,734*
60 years or more	5.5	2.4	2.2	2.1	**7,727**	*5,778*
75 years or more	5.9	3.0	2.2	1.9	**2,722**	*2,081*
age of youngest person						
under 5 years	10.8	3.3	3.5	6.8	**2,740**	*2,108*
under 16 years	9.2	2.8	3.0	5.8	**6,125**	*4,591*
16 years or more	7.3	2.6	3.0	3.3	**15,410**	*10,921*
income groups						
1st quintile (lowest)	11.4	4.2	4.2	6.2	**4,264**	*3,526*
2nd quintile	8.7	3.0	2.9	4.8	**4,467**	*3,678*
3rd quintile	8.4	2.9	2.9	4.5	**4,230**	*3,026*
4th quintile	5.8	1.8	2.4	2.8	**4,075**	*2,646*
5th quintile (highest)	5.0	1.5	2.6	1.8	**4,499**	*2,636*
living in poverty						
in poverty	11.7	4.4	4.3	6.3	**3,755**	*3,061*
not in poverty	7.0	2.3	2.7	3.6	**17,780**	*12,451*
workless households						
workless	11.1	3.5	4.0	6.1	**2,954**	*2,757*
not workless	8.1	2.6	3.1	4.5	**13,464**	*8,879*
long term illness or disability						
yes	7.9	2.8	3.1	4.0	**6,319**	*5,222*
no	7.7	2.6	3.0	4.0	**15,216**	*10,203*
ethnicity of HRP						
white	7.1	2.6	2.7	3.4	**19,530**	*14,024*
black	17.1	2.6	8.8	11.9	**627**	*514*
Asian	13.8	3.6	4.1	10.7	**857**	*578*
other	14.0	4.5	4.8	8.1	**521**	*396*
all minority	14.9	3.5	5.8	10.4	**2,005**	*1,488*
length of residence						
less than 1 year	9.2	4.0	3.1	4.3	**1,938**	*1,526*
1-4 years	8.7	2.6	3.5	4.9	**5,606**	*4,091*
5-9 years	8.5	2.3	3.2	5.2	**4,137**	*2,955*
10-19 years	6.7	2.1	2.7	3.4	**4,270**	*3,062*
20-29 years	6.9	2.4	2.5	3.6	**2,743**	*1,909*
30 or more years	7.0	3.7	**2.7**	**2.0**	**2,841**	*1,969*
all households	**7.9**	**2.7**	**3.0**	**4.0**	**21,535**	*15,512*

Source: English Housing Survey 2009, household sub-sample

Table A2: Health outcomes used in meta analyses by Fisk et al. (2007); adopted from Fisk et al. (2007).

Category in meta-analysis	Outcomes from individual studies included in each category
Upper respiratory tract symptoms	Irritated, stuffy, or runny nose; nasal symptoms; nasal congestion; nasal congestion or runny nose; nasal excretion; nose irritation; rhinitis; sinusitis; allergic rhinitis; allergy; hay fever
Cough	Cough; cough with phlegm; cough without phlegm; day or night cough; dry cough; morning cough; long-term cough; chronic cough; cough on most days for 3 months; night cough with wheeze; persistent cough; nocturnal cough; cough 3 months of year apart from colds
Wheeze	Wheeze; persistent wheeze; wheeze apart from cold; wheeze including shortness of breath and asthma; wheeze/breathlessness; wheezing or whistling in the chest; wheeze in last year; wheeze apart from colds on most days; wheeze after exercise
Ever diagnosed with asthma	Positive response to – has a doctor ever diagnosed mother (father) to have attacks of shortness of breath (asthma)[a]; Positive response to– did a doctor ever diagnose your having attacks of shortness of breath or asthma?; Physician-diagnosed asthma; Physician-diagnosed asthma, ever (atopic and non-atopic); Physician diagnosis of asthma since age >16; Self-reported physician-diagnosed or nurse-diagnosed asthma
Current asthma	Current physician-diagnosed asthma, defined as diagnosis plus symptoms in last 12 months; Ever doctor-diagnosed asthma, plus asthma symptoms or medication in past 12 months; Current asthma defined as combination of bronchial hyper-responsiveness and at least one of wheeze or breathlessness in last 12 months; Subjective symptoms of asthma plus one or more of the following: doctor-diagnosed asthma attack and the disappearance of wheezing; doctor diagnosed asthma attack and >15% decrease in PEF or FEV1; >15% decrease in PEF or FEV1 in exercise test; >20% daily variation in PEF at least 2 days per week in 4 weeks of tracking; >15% rise in PEF or FEV1 in a bronchodilating test; Asthma – current and diagnosed by physician; Current asthma diagnosed by a doctor – text implies that current refers to last 12 months; Asthma currently present and reported to be confirmed by a physician; Occurrence of doctor-diagnosed asthma in past year; Positive response to following two questions – has your doctor ever said your child has asthma? does he or she still have asthma? Doctor-diagnosed asthma and attendance of asthma clinic in 4-month period prior to study
Asthma development	Newly doctor-diagnosed cases of asthma in past 2.5 years; Physician diagnosis of asthma at age >16; First-time diagnosis of asthma New doctor-diagnosed asthma between baseline study and follow-up study after 6 years

[a]The question's wording reflects the fact that the study assessed the risk of asthma in mothers and fathers of school children as a function of dampness in the home as part of a broader study focusing on children's asthma symptoms.

Table A2: Relative risk estimates from meta analysis by Fisk et al. (2007); adopted from Fisk et al. (2007).

Outcome	Participants	No. of studies	Odds ratio (95% CI)	Estimated % increase in outcome in houses with visible dampness, mould or mould odour
Upper respiratory tract symptoms	All	13	1.70 (1.44–2.00)	52
Cough	All	18	1.67 (1.49–1.86)	50
	Adults	6	1.52 (1.18–1.96)	–
	Children	12	1.75 (1.56–1.96)	–
Wheeze	All	22	1.50 (1.38–1.64)	44
	Adults	5	1.39 (1.04–1.85)	–
	Children	17	1.53 (1.39–1.68)	–
Current asthma	All	10	1.56 (1.30–1.86)	50
Ever-diagnosed asthma	All	8	1.37 (1.23–1.53)	33
Asthma development	All	4	1.34 (0.86–2.10)	30

Note. CI, confidence interval

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Table A3: Health outcomes used in meta analyses by Fisk et al. (2010); adopted from Fisk et al. (2010).

Category in Meta-Analysis	Number of studies	Outcomes from Individual Studies Included in Each Category
Bronchitis (all: acute or chronic)	13	bronchitis, bronchitis in the prior year, current bronchitis, obstructive bronchitis, chronic bronchitis; doctor diagnosed bronchitis in the past year; bronchitis indicated by cough and phlegm ≥ 3 months for at least two consecutive years, bronchitis times per year
Respiratory infection group	19	airway infection last month; sinus or ear infection with antibiotic use; cold; common cold; > 4 (or > 6) colds in last 12 months; frequent childhood respiratory infections; sinusitis; tonsillitis; acute upper respiratory tract infection in past 12 months; tonsillopharyngitis, croup, bronchitis, or bronchiolitis diagnosed by doctor; chest cold; consulting general practitioner for acute respiratory tract infection (with wheeze); sum of episodes of tonsillitis, sinusitis, otitis, bronchitis; one or more episodes of bronchitis or pneumonia; tonsillitis, otitis media, sinusitis, bronchitis, or pneumonia at least once; chest cold with wheeze; otitis media; pneumonia; bronchitis times per year
Respiratory infections excluding otitis media	17	same as listed in cell above excluding otitis media
Respiratory infection group excluding nonspecific upper respiratory infection	15	sinus or ear infection with antibiotic use; sinusitis; tonsillitis; tonsillopharyngitis, croup, bronchitis, or bronchiolitis diagnosed by doctor; sum of episodes of tonsillitis, sinusitis, otitis, bronchitis; one or more episodes of bronchitis or pneumonia; tonsillitis, otitis media, sinusitis, bronchitis, or pneumonia at least once; otitis media; pneumonia; bronchitis times per year

Table A4: Relative risk estimates from meta analysis by Fisk et al. (2010); adopted from Fisk et al. (2010).

Health Outcome	All Studies		Studies Controlling for All Four Key Confounders		
	Summary Estimate OR (95% CI)	p-Value Hetero-geneity	Summary Estimate OR (95% CI)	p-Value Hetero-geneity	Attributable Risk Proportion[#]
Bronchitis	1.45 (1.34 - 1.56)	<0.0001	1.45 (1.32 - 1.59)	0.12	8.3 - 18.4%
Respiratory infection group	1.44 (1.32 - 1.58)	<0.0001	1.44 (1.31 - 1.59)	<0.0001	
Respiratory infections excluding otitis media	1.43 (1.31 - 1.56)	<0.0001	1.40 (1.29-1.52)	<0.0001	
Respiratory infections excluding common cold and nonspecific upper respiratory infections	1.42 (1.26 - 1.60)	0.01	1.50 (1.32 - 1.70)	0.07	9.1 - 20%
Common cold or acute upper respiratory infection	1.38 (1.21 - 1.57)	0.009	1.38 (1.13 - 1.67)	0.002	
Respiratory infections (children or infants)	1.48 (1.34 - 1.62)	0.16	1.48 (1.33 - 1.65)	0.09	8.8 - 19.4%
Respiratory infections (adults)	1.50 (1.22 - 1.83)	<0.0001	1.49 (1.14 - 1.95)	<0.0001	

[#] estimated for findings restricted to studies controlling for four key confounders and assuming a range of 20-50% of houses with dampness or mold; provided only for estimates with p-value for heterogeneity >0.05.

Table A6: Smoking prevalence in England 2009 (The NHS Information Centre, Lifestyles Statistics 2011).

Age	Men	Women
all	21.80	19.67
16-19	26.52	26.53
20-24	24.79	30.85
25-34	26.69	22.99
35-49	26.52	21.69
50-59	21.10	19.15
60 and over	13.84	13.30