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URGENCHE WP4 Deliverable 4.1

Report on indoor environment quality (IEQ) for health impact assessment and building related well-being output requirements

From Heande
URGENCHE_WP4_Deliverable_4.1

Contents

1 Introduction

Urgenche-project studies the effects of climate policies on health and well-being. Indoor environment quality (IEQ) is one aspect that should be acknowledged in this context in order to find policies most beneficial for people's health. Placement of indoor environment quality in the wholeness of Urgenche assessment is shown in Annex 1 (Summary of Urgenche WP4 Conceptual model, 2012).

2 Dynamic database on indoor environment quality (IEQ) factors

The core of this deliverable is a dynamic database on exposure-response functions (ERFs) for several IEQ factors (http://en.opasnet.org/w/Indoor_environment_quality_(IEQ)_factors; Annex 2), which can be directly used in Opasnet by anyone in order to calculate the health impacts of various indoor exposures in given conditions. Health impact calculations are carried out in Health impact assessment (HIA) page of Opasnet (http://en.opasnet.org/w/HIA; Annex 3). Currently the data in the IEQ database are of different levels of completeness as the idea is to gradually, cumulatively and according needs increase the database.

3 Current status of city-level IEQ work in Urgenche

The most well-known IEQ factors affecting health and well-being are air quality (influenced by dampness/mold, smokes, chemical compounds, air exchange rate etc.), thermal comfort, and noise. In addition, so called “perceived ambient environment” including aspects like neighborhood, physical, natural, social, aesthetic and psychological factors may affect well-being. E.g. dwelling size, degree of crowding and access to green space belong to latter type of IEQ factors (WP6 Wellbeing progress report, 2012 [1]). All these building related aspects may be affected by climate policies. For example, increasing insulation may increase houses´ susceptibility to dampness and mold, whereas encouraging dwellings with reduced size may increase overcrowding problems. Climate policies may affect people differentially depending on their socioeconomic status (SES), as people with higher SES are generally more able to choose good-quality housing compared to people with lower SES.

In Urgenche, the idea is to collect data of the participant cities in order to find out the healthiest ways to carry out effective climate policies in these cities. The attached questionnaire on building data has been sent to the cities in May 2012 (Annex 4: Questionnaire on building stock data requirements, 2012). Obviously, data on the above-mentioned (or any) IEQ determinants is available very varyingly in Urgenche cities. For example the Chinese city Suzhou has announced not to have city-level IEQ data; if it is needed, a survey should be done (Wang, 2012 [2]). Most probably this applies to Xi’an as well (Wang, 2012 [2]).

Currently we have received some IEQ data only for Kuopio. It is in aggregated form (a presentation; Kallunki, 2011 [3]) and its main points are shortly summarized below. The current idea is to use Kuopio as an example in constructing the model and ask more specified questions from the other cities again later.

3.1 Case Kuopio

In Kuopio, there are about 50,000 dwellings. About 26 500 inhabitants live in noise areas (Pärjälä, 2012 [4]). There are about 110-140 suspected health problems related to housing in Kuopio yearly (Kallunki, 2011 [3]). Dampness/mold problems make up the most of them (about 70). Thermal conditions, tobacco smoke, noise, air exchange problems and untidiness make up the rest. Problems are found in all building types (apartment, row and detached houses), both in old and new, owned and rented dwellings. Thus it could be concluded that in this case the problems are affecting people quite independently of their SES.

The identified IEQ factors underlying the suspected health problems in Kuopio have effects on many health parameters (Kallunki, 2011 [3]). The only purely well-being parameter was comfort of housing; sleep disturbance might be another. Issues of depression/mental health or children removed from their homes was not mentioned in the data (Kallunki, 2011 [3]), implying that apparently these responses have not been studied in context of housing-related health problems in Kuopio.

4 Conclusions

Dynamic database on IEQ factors and HIA-tool in Opasnet enable straightforward health impact calculations in a given population.

It would be valuable to get at least similar level of data from all cities as Kuopio has delivered in order to characterize what are the most important building related well-being issues in each city. This knowledge would be used as an input to the policy model when finding the most advantageous climate policies for each city with least negative effects on health.

5 References

1. ↑ WP6 Wellbeing progress report, 2012. File:WP6 Wellbeing progress report Aug12.doc
2. ↑ 2.0 2.1 Wang, 2012. File:WP7 Suzhou City.pdf Presentations of the 1st Urgenche workshop. Stuttgart, 2012.
3. ↑ 3.0 3.1 3.2 3.3 Kallunki, 2011. File:Ympäristöterveys asuminen 23.11.11.ppt
4. ↑ Pärjälä, 2012. File:WP10 Kuopio City.pdf Presentations of the 1st Urgenche workshop. Stuttgart, 2012.

6 Annexes

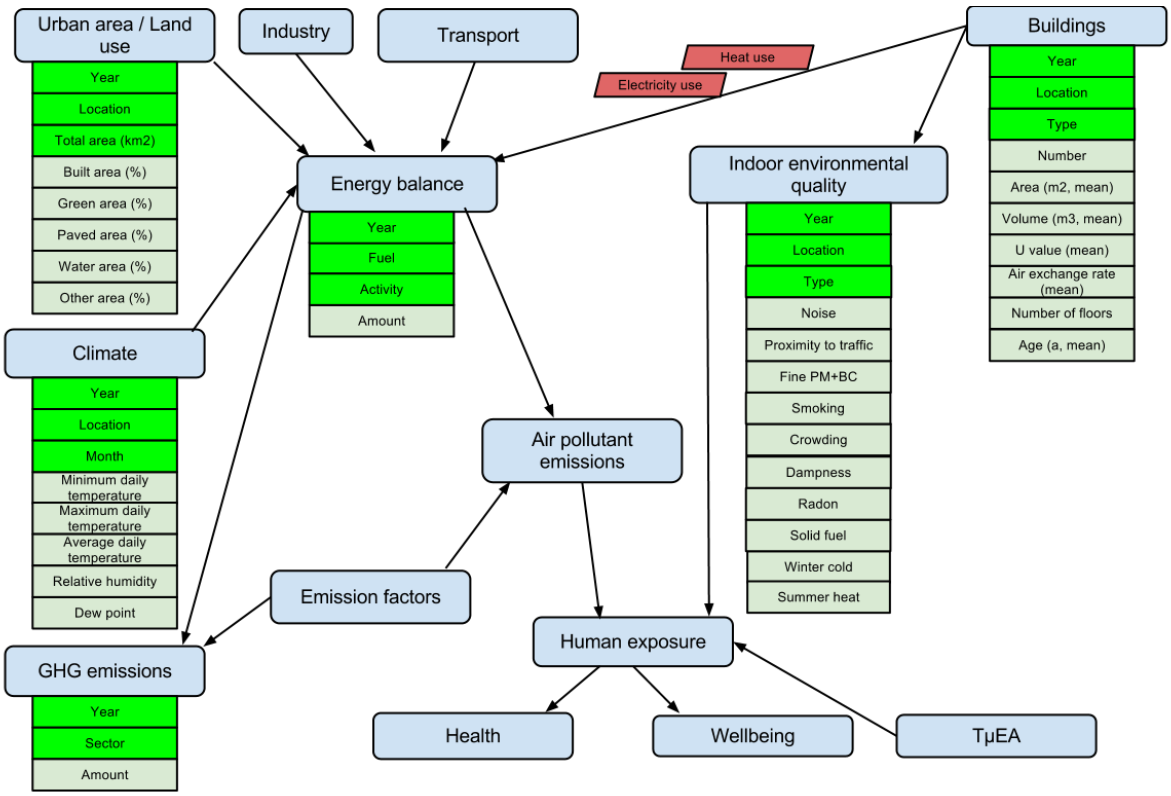
Annex 1 Summary of Urgenche WP4 Conceptual model [1]

Annex 2 Indoor environment quality (IEQ) factors - a dynamic database [2]

Annex 3 Health impact assessment -tool [3]

Annex 4 Questionnaire on building stock data requirements, 2012. [4]

Annex 1 Summary of Urgenche WP4 Conceptual model



Annex 2 Indoor environment quality (IEQ) factors - a dynamic database

Indoor environment quality (IEQ) factors

From Opasnet: IEQ factors

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This page is a stub. You may improve it into a full page, and then a rating bar will appear here.
Upload data Show results

Contents

Question

What established or possible indoor environment quality (IEQ) factors exist? What kind of exposure-response functions have been defined for them?

Answer

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
1	Visible dampness and/or mold or mold odor	Respiratory health effect		Inhalation	yes/no	OR	several, see Note 1		Note 1
2	Dampness or mold, minimal	Mental health problems	Prevalence		yes/no	OR	1.39 (1.02-1.89)		Shenassa et al. 2007
3	Dampness or mold, moderate	Mental health problems	Prevalence		yes/no	OR	1.44 (1.08-1.92)		Shenassa et al. 2007
4	Dampness or mold, extensive	Mental health problems	Prevalence		yes/no	OR	1.34 (0.97-1.85)		Shenassa et al. 2007
5	Dampness and/or mold	Mental health problems	Prevalence		yes/no	OR	1.76 (1.17-2.66)	0.0056	Hopton and Hunt 1996
6	Dampness and/or mold	Self-assessed health poorer							Note 2
7	Living in a low income household	Mental health problems	Prevalence		yes/no	OR	1.61 (1.06-2.44)	0.0231	Hopton and Hunt 1996
8	Respondent unemployed	Mental health problems	Prevalence		yes/no	OR	1.55 (0.99-2.42)	0.0483	Hopton and Hunt 1996
9	Living in flat instead of	Morbidity	Morbidity		yes/no	RR	1.57		Fanning 1967

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
	house								
10	Floor of living	Psychoneurotic disorder	Incidence		1st vs. ground	RR	1.06		Fanning 1967 (RR calculated from Table 8)
11	Floor of living	Psychoneurotic disorder	Incidence		2nd vs. ground	RR	1.74		Fanning 1967 (RR calculated from Table 8)
12	Floor of living	Psychoneurotic disorder	Incidence		3rd vs. ground	RR	2.02		Fanning 1967 (RR calculated from Table 8)
13	Environmental tobacco smoke	Lung cancer	Morbidity	Inhalation	yes/no	RR	1.21 (1.13-1.30)		Note 7
14	Environmental tobacco smoke	Ischaemic heart disease	Mortality	Inhalation	yes/no	RR	1.27 (1.19-1.36)		Note 7
15	Environmental tobacco smoke	Asthma	Morbidity	Inhalation	yes/no	RR	1.97 (1.19-3.25)		Age >21; Note 7
16	Environmental tobacco smoke	Asthma	Morbidity	Inhalation	yes/no	RR	1.32 (1.24-1.41)		Age <14; Note 7
17	Environmental tobacco smoke	Lung infections	Morbidity	Inhalation	yes/no	RR	1.55 (1.42-1.69)		Age <2; Note 7
18	Environmental tobacco smoke	Middle ear inflammation	Morbidity	Inhalation	yes/no	RR	1.38 (1.21-1.56)		Age <3; Note 7

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
19	Environmental tobacco smoke	Irritation of eyes and mucosa							
20	Environmental tobacco smoke	Odour problems		Inhalation					
21	Environmental tobacco smoke	Comfort of housing							
22	Environmental tobacco smoke	Chronic infections		Inhalation					
23	Wood smoke	Respiratory health effect		Inhalation					Note 3, Note 4
24	Wood smoke	Irritation of eyes and mucosa							
25	Wood smoke	Respiratory health effect		Inhalation					
26	Wood smoke	Odour problems		Inhalation					
27	Wood smoke	Comfort of housing							
28	Wood smoke	Chronic infections		Inhalation					
29	Wood smoke	Cancer		Inhalation					
30	VOCs	Irritation symptoms							

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
31	CO2	Headache		Inhalation					
32	CO2	Tiredness		Inhalation					
33	CO	Headache		Inhalation					
34	CO	Tiredness		Inhalation					
35	Insufficient air exchange	Headache							
36	Insufficient air exchange	Tiredness							
37	Insufficient air exchange	Decreased ability to concentrate							
38	Insufficient air exchange	Feeling of fug							
39	Thermal conditions; heat	Tiredness							
40	Thermal conditions; heat	Decreased ability to concentrate							
41	Thermal conditions; heat	Increased respiratory symptoms							
42	Thermal conditions; heat	Feeling of dryness							

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
43	Thermal conditions; heat	Comfort of housing							
44	Thermal comfort (draught or cold)	Mental health problems							Note 2
45	Thermal comfort (heat or cold)	Depression							Note 2
46	Thermal comfort (heat or cold; general perception of thermal problems)	Self-assessed health poorer							Note 2
47	Thermal conditions (cold)	Feeling of draught							
48	Thermal conditions (cold)	Comfort of housing							
49	Noise	Hearing injury							
50	Noise	Sleep disturbance							
51	Noise	Stress							
52	Noise	Comfort of housing							
53	Proximity to traffic	Mortality							

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
54	Radon	Lung cancer							Note 5
55	Relative humidity								
56	PM2.5	Mortality							Note 3
57	PM2.5	Chronic bronchitis							
58	PM2.5	Lung cancer							
59	Reduced space (house/flat)	Depression							Note 2
60	Reduced space (house/flat)	Mental health problems							Note 2
61	Reduced space (house/flat)	Self-assessed health poorer							Note 2
62	Access to garden	Depression							Note 2
63	Floor level	Mental health problems							Note 2
64	Overcrowding	Mental health problems							Note 2
65	Overcrowding	Self assessed health poorer							Note 2
66	Sensory IAQ	Various health and well-being parameters							

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
67	Maternal employment	Maltreatment of children	Prevalence		no/yes	OR	2.82 (1.59-5.00)		Sidebotham et al. 2002
68	No. of house moves in previous 5 years	Maltreatment of children	Prevalence		2-3 vs. 0-1	OR	1.32 (0.77-2.27)		Sidebotham et al. 2002
69	No. of house moves in previous 5 years	Maltreatment of children	Prevalence		4 or more vs. 0-1	OR	2.81 (1.59-4.96)		Sidebotham et al. 2002
70	Overcrowded accomodation	Maltreatment of children	Prevalence		yes/no	OR	2.16 (1.27-3.70)		Sidebotham et al. 2002
71	Accomodation	Maltreatment of children	Prevalence		Council vs. owned/mortgarged	OR	7.65 (3.30-17.75)		Sidebotham et al. 2002
72	Accomodation	Maltreatment of children	Prevalence		Rented vs. owned/mortgarged	OR	4.47 (1.82-10.98)		Sidebotham et al. 2002
73	Social Network Score < 21	Maltreatment of children	Prevalence		yes/no	OR	3.09 (1.84-5.19)		Sidebotham et al. 2002
74	Paternal employement	Maltreatment of children	Prevalence		no/yes	OR	2.33 (1.43-3.77)		Sidebotham et al. 2002
75	Car use	Maltreatment of children	Prevalence		no/yes	OR	2.33 (1.41-3.83)		Sidebotham et al. 2002

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
76	No. of deprivation indicators	Maltreatment of children	Prevalence		1 vs. 0	OR	9.58 (2.64-34.81)		Note 6; Sidebotham et al. 2002
77	No. of deprivation indicators	Maltreatment of children	Prevalence		2 vs. 0	OR	23.44 (6.61-83.15)		Note 6; Sidebotham et al. 2002
78	No. of deprivation indicators	Maltreatment of children	Prevalence		3 vs. 0	OR	59.30 (17.52-200.76)		Note 6; Sidebotham et al. 2002
79	No. of deprivation indicators	Maltreatment of children	Prevalence		4 vs. 0	OR	111.36 (32.31-383.801)		Note 6; Sidebotham et al. 2002
80	House dampness	Problems in energy (according Nottingham Health Profile)	Prevalence		yes/no	OR	2.13		Packer et al. 1994 (OR calculated from Table 8)
81	House dampness	Social isolation (according Nottingham Health Profile)	Prevalence		yes/no	OR	2.04		Packer et al. 1994 (OR calculated from Table 8)
82	House dampness	Problems in sleep (according Nottingham Health Profile)	Prevalence		yes/no	OR	1.50		Packer et al. 1994 (OR calculated from Table 8)
83	House dampness	Problems in emotional reactions (according Nottingham Health Profile)	Prevalence		yes/no	OR	1.27		Packer et al. 1994 (OR calculated from Table 8)

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
84	House dampness	Problems in physical mobility (according Nottingham Health Profile)	Prevalence		yes/no	OR	1.37		Packer et al. 1994 (OR calculated from Table 8)
85	House dampness	Perception of pain (according Nottingham Health Profile)	Prevalence		yes/no	OR	1.28		Packer et al. 1994 (OR calculated from Table 8)
86	Smoking	Chronic respiratory disease	Prevalence	Inhalation	yes/no	OR	4.36 (2.46-7.74)	0.000	Blackman et al. 2001
87	Dampness	Chronic respiratory disease	Prevalence	Inhalation	yes/no	OR	2.10 (1.36-3.50)	0.004	Blackman et al. 2001
88	Unwaged household	Chronic respiratory disease	Prevalence		yes/no	OR	1.73 (1.24-2.41)	0.001	Blackman et al. 2001
89	Unsafe neighborhood	Mental health problems	Prevalence		yes/no	OR	2.35 (1.41-3.92)	0.001	Blackman et al. 2001
90	Draughts	Mental health problems	Prevalence		yes/no	OR	2.28 (1.41-3.69)	0.001	Blackman et al. 2001
91	Rehousing	Palpitations/breathlessness	Prevalence		yes/no	OR	0.71		Pettricrew et al. 2009 (OR calculated from Table 5)
92	Rehousing	Persistent cough	Prevalence		yes/no	OR	0.89		Pettricrew et al. 2009 (OR calculated from Table 5)
93	Rehousing	Painful joints	Prevalence		yes/no	OR	0.70		Pettricrew et al. 2009 (OR calculated from

Indoor environment quality (IEQ) factors(-)

Obs	Exposure agent	Response	Response metric	Exposure route	Exposure unit	ERF parameter	ERF	Significance	Description/Reference
									Table 5)
94	Rehousing	Faints/dizziness	Prevalence		yes/no	OR	0.68		Pettricrew et al. 2009 (OR calculated from Table 5)
95	Rehousing	Difficulty in sleeping	Prevalence		yes/no	OR	0.49		Pettricrew et al. 2009 (OR calculated from Table 5)
96	Rehousing	Sinus trouble/catarh	Prevalence		yes/no	OR	0.79		Pettricrew et al. 2009 (OR calculated from Table 5)
97	Housing tenure	Poor self-rated health	Prevalence		renter vs. owner	OR	1.48 (1.31-1.68)		Pollack et al. 2004

Note 1 ERF of indoor dampness on respiratory health effects

Note 2 WP6 well-being report (password-protected)

Note 3 ERF of PM2.5 on mortality in general population

Note 4 Concentration-response to PM2.5

Note 5 Health impact of radon in Europe

Note 6 Indicators of deprivation: overcrowded accommodation, accomodation ownership, paternal employment, car use

Note 7 ERF of several environmental pollutions

Rationale

Precision and plausability of Hopton and Hunt (1996)

- Reporting bias: Perhaps ít´s difficult to use subjective data due to reporting bias. This is because people may answer in different ways or they don´t answer at all. In addition, people experience household conditions differently.

- Possible confounding variables such as sociodemographic and economic variables, e.g. age and income, were controlled.

- Selection bias: The sample is clearly not representative of the general population and therefore the analysis focuses on differences within the sample. Thus it´s worth considering whether the results can be generalized to whole population.

Precision and plausability of Sidebotham et al. (2002)

- Maltreatment is defined and measured as registration for physical injury, neglect, sexual abuse, emotional abuse. Therefore those maltreatments which are not registered are not taken into account.

- The measurement of the social class is not too accurate, because no allowance for nonworking mothers and no parental social class allocated for single mothers can be applied.

- The nature of relationship with child maltreatment is complex (confounder, cultural values, etc). That causes problems in finding an association or causality between an exposure factor and maltreatment. Moreover, maltreatment has different definition in different cultural groups.

- The parental income is not measured directly, but car ownership as a proxy indicator and the receipt of welfare payment are used.

- Controlling for social factors was done.

- Large amount of prospectively collected data are used in in the study, which is a clear strength.

- The participation is lower among the maltreated group, which might influence the outcome of the statistical analysis or bias the results of the study.

- The risk of social bias and no way of measuring the effect of such bias. A social bias can be defined as a prejudgment of a specific social group. In this case those who collected the data might have expectations that parents with lower or higher social background are more prone to maltreat their child and this expectation might influence their interpretation of the results. This is not very likely here, though, because all parameters which were used for the analysis can be measured and there is not much freedom for interpretation.

Precision and plausability of Packer et al. (1994)

- health problems: possibility of headache, mental problems, emotional reactions, social isolation and pain.

- social factors: unemployment, single parent, lone adult and unemployment with sickness or disability

- lifestyle: consumption of alcohol and smoking

Precision and plausability of Blackman et al. (2001)

- Bias in respondents answers to realistically evaluate their and family members health

- Some housings that where targets of the first survey were demolished during second survey.

- No data from comparison neighborhood without renewal to back up observed health changes after renewal program.

- Relationship between dampness, draughts and mental health is uncertain, because the mechanism is unknown.

- Multivariate analysis using regression model was used to control variables, such as economic, housing, respiratory and mental health, which increases the plausibility of ERF.

Precision and plausability of Fanning (1967)

- The study is quite old. Probably today many other parameters in addition to those used in the article would be measured when conducting this kind of study.

- The study has considered the difference between children and adults.

- The study has not considered the differences between different flats and houses. They have only categories for houses and flats but the differences between houses are not considered. This may cause bias to the study.

Precision and plausability of Petticrew et al. (2009)

- Data collection at the three occasions in the intervention group before moving, one year after moving and 2 years after moving to the social housing gives strength to the study in analyzing changes in the housing circumstances and in neighborhood.

- Recruitment into the study was discussed by the landlord to the tenant once they have accepted the housing offer which doesn’t gives the RSL direct contact with the participant though this serves as a way of good recruitments. However it does not guarantee the authenticity of the data collected. e.g. RSL couldn't supply the number of people who refuse to participate in the study to the SHARP research team.

- Broad range of adult household categories in the intervention group which was used as a base for recruiting the comparison group strengthens the study. Households consisted of family households with children under age of sixteen years, older households where the respondents and adult members of the households were of pensionable age, and adult households with a combination of relationships, including parents with children at least 16 years of age, people unrelated to one and another and couples.

- Qualitative and quantitative findings were only presented for 1 year (wave 2) in the study which does not proof if the effects are sustained and probably if differences in health outcomes occur at two years in the intervention and comparison groups.

- Recollection bias may occur during interview if participants cannot recall adequately past occurrences related to health, housing and neighborhood (after one year and two years of movement to the new house).

- Bias in subsequent analysis can also occur if there are any significant changes in the groups associated with self-reported health.

Precision and plausibility of Pollack et al. (2004)

The study controls some factors which can potentially cause bias in the result, like socioeconomic factors, relation to the neighbors and pollution of the local environment. However, the potential effects of working conditions on the health of the study subjects have not been addressed. In addition, it should be found out whether life style, diet, smoking, and use of alcohol are included in socioeconomic factors.

Dependencies

Formula

See also

Keywords

References

Related files

<mfanonymousfilelist></mfanonymousfilelist>

Indoor environment quality (IEQ) factors. Opasnet . [1]. Accessed 25 Mar 2013.

Annex 3 Health impact assessment -tool

Health impact assessment

Health impact assessment is an assessment method that is used to estimate the health impacts of a particular event or policy. In Europe, it is most widely used in UK, Finland, and the Netherlands.

This page is a method.
The page identifier is Op_en2261
Moderator:Nobody (see all)
Click here to sign up.

Give your opinion to the **peer rating** of the content of this page.

Scientific Quality
Avg vote: - (0 votes)
Your vote: -
Usefulness
Avg vote: - (0 votes)
Your vote: -

From Opasnet: HIA

Contents

Question

How to calculate health impacts based on information about exposure, population, disease, and exposure-response function?

Answer

For simple calculations, you can use the concept of attributable fraction. This is presented here. For more complex and comprehensive methods, you may want to consider these:

- Multistage model
- Life table

Which exposure data do you want to use?:

Do you want to see intermediate results?:

Number of iterations:
1000

+ Show code

Inputs

If you are able to describe your data in the format similar to the tables below, you can use ready-made tools in Opasnet and things are quite straightforward. The example tables show data about radon in indoor air.

Exposure

- The table has an index Observation with four locations: Exposed fraction, Background, Exposure, and Description.

Pollutant	Exposure route	Exposure metric	Exposure parameter	Population	Exposure unit	Exposed fraction	Background	Exposure	Description
Radon	Inhalation	Annual average concentration	Population average	Finland	Bq/m3	1	5	100	Kurttio Päivi, 2006: STUK otantatutkimus 100 (95 – 105); background 5 (4 – 9)
Radon	Inhalation	Annual average concentration	Guidance value for new apartments	Finland	Bq/m3	1	0	200	STM decision 944/92 for new apartments [1]
Radon	Inhalation	Annual average concentration	Guidance value for old apartments	Finland	Bq/m3	1	0	400	STM decision 944/92 for old apartments

									[2]

Disease response

- The table has index Observation with two locations: Response and Description.

Disease	Response metric	Population	Unit	Response	Description
Lung cancer	Incidence	Finland	1/100000 py	38.058	2020/5307690*100000 [3]
Lung cancer	Burden of disease	Finland	DALY	14000	Olli Leino 2010: Includes trachea, bronchus, and lung cancers. [4]

Exposure-response function

Pollutant	Disease	Response metric	Exposure route	Exposure metric	Exposure unit	Threshold	ERF parameter	ERF	Description
Radon	Lung cancer	Incidence	Inhalation	Annual average concentration	Bq/m3	0	RR	1.0016	Darby 2004: 1.0016 (1.0005 – 1.0031)

Population

Population	Year	Sex	Age	Amount	Description
Finland	2010	Total	All	5307690	[5]

Rationale

These are the equations you should use:

RR for exposure = EXP(LN(RR)*(Exposure Result - MAX(Exposure Background, Exposure-response function threshold)))

Attributable fraction in the whole population = Exposed fraction * (RR for exposure – 1) / (Exposed fraction *(RR for exposure – 1)+1)

Extra cases per year =Disease incidence * Population * attributable fraction

Burden of disease of exposure = Burden of disease of the disase * attributable fraction

Personal lifetime risk = Extra cases per year * life expectancy * population

Calculations

See also Seturi: Excel file, [6]

+ Show code

The code above is based on these input variables:

- ERF of several environmental pollutions
- Disease risk (case-spacific data)
- Exposures in Finland (case-specific data)
- Burden of disease in Finland
- Disability weights (not used yet)
- Duration of morbidity (not used yet)

See also

- Converting between exposure-response parameters
- The effectiveness of health impact assessment. WHO 2007
- Ihmisiin kohdistuvien vaikutusten arviointi (käsikirja) (in Finnish)
- Ihmisiin kohdistuvien vaikutusten arviointi (sivusto) (in Finnish)
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- Health Impact Assessment. Community knowledge wiki
- IMPACT - International Health Impact Assessment Consortium
- Health Impact Assessment page by WHO
- ISO 31000:2009 Risk management -- Principles and guidelines
- Risk Observatory, based in the European Agency for Safety and Health at Work
- Health-EU Portal
- STM: Hyvinvointi (Well-being, in Finnish)
- John Kemm, Jayne Parry, Stephen Palmer: Health impact assessment: concepts, theory, techniques, and applications

- Interdepartmental Liaison Group on Risk Assessment in UK
- Life cycle assessment
- Four-step impact assessment by HSPH.

Annex 4 Questionnaire on building stock data requirements, 2012

From: Niittynen Marjo
Sent: 14. toukokuuta 2012 14:52
To: Denis Sarigiannis; Denis Sarigiannis Alt.; Ulrich Reuter; Sef Van Den Elshout; willemjan.okkerse@dcmr.nl; Stephan Trueb; Laura Perez; Andrea Von Kaenel; Jinyu Zhao; Junhan Liu (liujunhanpku@163.com); Shi Wang; Shi Wang Alt.; Haikun Wang
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Subject: RE: WP4 Building Stock requirements

Dear All,

This message has been delayed as based on observations in Stuttgart workshop, buildings data are available very differently in different cities. However, for modeling the health effects of various climate policies, obviously the following is needed:

- **Energy consumption/demand of buildings** (at least total per year; if possible specified by building type, source of energy, consumption type, consumption per month, expectations how it will change in the future… whatever you have and consider relevant)

- **General information of the building types** (e.g. number, types, age, area, volume, location, etc.)

- **Information of the land use** (e.g. fractions of built, road, green and water areas)

- **Information (e.g. fraction) of the buildings suffering from moisture, noise, cold, heat, indoor smoking or any other problem possibly affecting health or wellbeing and you have data on**

At the moment, please collect the above data **in the form you easily can have**. If you have very scarce data, please deliver that. If you have very specified and extensive data collections, you may either deliver them or maybe you already have a summary/report of them for some other purpose and would like to deliver that. Please tell also which of the above data you do not have, if that is the case.

For example in Kuopio, data on most of the above-mentioned issues is available in some form; the problem is that these data mostly are not easily inter-compatible.

If you have any questions or suggestions, please let me know.

Best regards,

Marjo

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