

# Environmental Health Inequalities in Malta



Department for  
Health Regulation  
Ministry for Health



Environmental  
Health  
Directorate



REGIONAL OFFICE FOR

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# ABSTRACT

It is well recognised that the unequal distribution of people's exposure to environmental conditions and the potential of resulting disease is strongly related to a range of socio-demographic determinants. This report presents the first national assessment of the magnitude and distribution of environmental health inequalities in the Maltese Islands, in line with national commitments made at the Fifth Ministerial Conference on Environment and Health in Parma, Italy in 2010 and the implementation of Health 2020, adopted in Malta in 2012.

The assessment is based on a set of 14 core inequality indicators related to housing, injuries and the environment developed by the WHO Regional Office for Europe. National data has provided a good snapshot of the current distribution of environmental risk factors, indicating that environmental health inequalities are a reality in Malta. However, further detailed information is still needed to enable in-depth assessments of the distribution of environmental exposures and outcomes and more reliable identification of the most vulnerable population groups.

Intersectoral collaboration by ministries and other entities to mitigate and reduce risk exposure in the most affected populations is required for coordinated targeted interventions focusing on the most exposed or vulnerable risk groups. Universal actions to improve the general environment for all are also necessary.

## Keywords

ENVIRONMENTAL EXPOSURES  
INEQUALITIES IN HEALTH  
ENVIRONMENTAL HEALTH INEQUALITIES  
SOCIAL DETERMINANTS

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# **ENVIRONMENTAL HEALTH INEQUALITIES IN MALTA**

*Assessment Report*

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The participation of national stakeholders at the workshop in November 2012 was greatly appreciated.

## FOREWORD

*In recent times, concerns about environmental influences on health and well-being have often taken centre-stage, earning the attention of the public, the media and politicians alike. Similarly, disparities in health and life expectancy are also a frequent topic for discussion, and have long been linked to societal inequalities. This national report, a first of its kind, brings these two aspects together by considering various environmental exposures in relation to a number of socioeconomic, sociodemographic and other determinants.*

*Malta was among the European Member States at the Parma Ministerial Conference on Environment and Health in 2010 declaring its commitment to act on 'socioeconomic and gender inequalities in the human environment and health, amplified by the financial crisis', identified amongst 'the key environment and health challenges of our time'.*

*Our contribution to the WHO 2012 European Region assessment report on inequalities in environmental health was the first step towards the consideration of a national assessment in this regard. This is our response to the WHO call in the same report, for national assessments using national databases to identify the most vulnerable population groups for targeted action.*

*A high level national stakeholders meeting held in November 2012 in collaboration with the WHO European Centre for Environment and Health, set the local scene for the development of this detailed report.*

*This report has identified a number of environmental health inequalities where targeted action is required. An effective response will only be possible through further research, shared responsibility and continued inter-ministerial and inter-sectoral commitment to collaborative action towards the reduction of inequalities affecting the most vulnerable groups in our society.*

*I take this opportunity to invite all sectors to respond to this challenge and re-affirm my support in this regard.*

*A word of thanks to the WHO Regional Office for Europe for their valuable support of this project through the Biennial Collaborative Agreement 2012-2013 and to the Environmental Policy Coordination Unit, Department for Health Regulation for the initiative.*

*Hon. Dr. Godfrey Farrugia, M.D., M.M.C.F.D., M.P.  
Minister for Health*

## FOREWORD

*In 2008, the final report of the WHO Commission on Social Determinants of Health concluded that inequalities in health are a major challenge for both development and overall progress in countries. This acknowledgement strongly contributed to the development of the Health 2020 policy as the new framework for the WHO European Region. Health 2020 was adopted in 2012 at the WHO Regional Committee for Europe in Malta and strongly focuses on the reduction of inequalities in health.*

*Inequalities in health can often be traced back to basic causes, such as unemployment, low levels of education and income, and the marginalization of disadvantaged groups. Inadequate living conditions arise from these societal disparities, making environmental conditions one of the mechanisms linking social determinants with health outcomes.*

*Back in 2010, the Member States of the WHO European Region declared their commitment to act on socioeconomic and gender inequalities in the human environment and health at the Fifth Ministerial Conference on Environment and Health held in Parma, Italy, in March 2010. WHO published a Region-wide assessment of environmental health inequalities (WHO 2012a), indicating that environmental health inequalities exist in all subregions and in all countries of the WHO European Region, including high-income and developed countries. The report also confirmed the expectation that often, although not exclusively, exposure to environmental risks is more frequently suffered by disadvantaged population groups.*

*The assessment report on environmental health inequalities in Europe called on Member States to prepare national reports on environmental health inequalities and the distribution of environmental exposures within their populations, and proposed the use of national databases to identify the most disadvantaged population subgroups for targeted action.*

*This report from Malta is the first national report to respond to this request and presents a more detailed analysis of environmental health disparities on a national scale. I truly hope that the evidence it provides will not only assist national policy-makers to develop adequate responses and interventions, but also support the development of intersectoral actions implemented by a variety of actors. Health equity, as well as environmental and social justice, cannot be considered the duty of one sector alone, and the data presented by this report show that decision-makers from social, environment, health, employment, education, transport, and housing/urban planning sectors need to join forces in responding to this challenge. The development and implementation of adequate interventions would prove that Member States not only are able to identify inequalities in environmental risk, but also possess the political will to address these inequalities – as they committed to in the Parma Declaration of 2010.*

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# 1. INTRODUCTION

In 2012, Malta together with the other Member States of the WHO European Region adopted Health 2020 as the new European value- and evidence-based health policy framework (WHO, 2013a). Health 2020 aims to support action across governments and society to “*significantly improve the health and well-being of populations, reduce health inequalities, strengthen public health and ensure people-centred health systems that are universal, equitable, sustainable and of high quality*”.

With supportive environments being one of the priority areas for action, the challenge of environmental exposure inequalities, their impact on health, and their potential contribution to health inequalities also become a key issue. Consequently, the evidence report supporting the Health 2020 policy framework provides a wide range of evidence on the relevance of healthy environments for all, and identifies a variety of environmental health inequalities as challenges to be tackled (WHO, 2013b).

At the Fifth Ministerial Conference on Environment and Health in Parma, Italy in 2010, it was agreed that interventions to tackle such environmental health inequalities need to be based on an assessment of their magnitude and on the identification of population groups that are most exposed or most vulnerable to environmental risks (WHO, 2010a-c).

To accomplish this task and to follow up on the commitments made at the Fifth Ministerial Conference on Environment and Health in Parma, Italy in 2010, the WHO Regional Office for Europe carried out a baseline assessment of environmental health inequalities in the European Region, based on a core set of 14 inequality indicators, covering the aspects of housing conditions, injuries and environmental risks (Table 1) (WHO, 2012a).

**Table 1: Environmental health inequality indicators (WHO, 2012a)**

Housing-related inequalities	Environment-related inequalities	Injury-related inequalities
<ul style="list-style-type: none"> <li>• Inadequate water supply</li> <li>• Lack of a flush toilet</li> <li>• Lack of a bath or shower</li> <li>• Overcrowding</li> <li>• Dampness in the home</li> <li>• Inability to keep the home adequately warm</li> </ul>	<ul style="list-style-type: none"> <li>• Noise exposure at home</li> <li>• Lack of access to green/recreational areas</li> <li>• Second-hand smoke exposure at home</li> <li>• Second-hand smoke exposure at work</li> </ul>	<ul style="list-style-type: none"> <li>• Work-related injuries</li> <li>• Fatal road traffic injuries</li> <li>• Fatal poisonings</li> <li>• Fatal falls</li> </ul>

In the WHO report, national data were used for the development of national environmental health inequality fact sheets and practice examples (WHO, 2012a). These national contributions indicated that more detailed assessments of environmental health inequalities can be provided at national and subnational levels using existing data, and that there are already some national experiences of the assessment of a number of indicators. Acknowledging that national reports can provide much more detailed assessments of environmental health inequalities, the WHO report calls for the development of national assessments based on national and more targeted data.

In recent years, *National Environment and Health Action Plans* (NEHAPs) have provided the main national policy framework for tackling environmental health issues in the Maltese Islands through an intersectoral approach. The recently published *National Environment Policy* (NEP) document has also identified the NEHAP, which is being revised, as a primary tool towards the achievement of one of Malta’s six main objectives of the Plan – safeguarding environmental health in the Maltese Islands (MTEC, 2012a). The *Environment and Health Performance Review* (EHPR) for Malta, conducted by the WHO Regional Office for Europe in 2009, further highlights the main environment and health issues in Malta (WHO, 2009). The prevention of disease through the safeguarding of environmental health has been given due importance in recent health policy documents. ‘*A Healthy Weight for Life: A National Strategy for Malta 2012-2020*’, which looks at the role of the environment in obesity prevention, also refers to the clear link between socioeconomic determinants and obesity (MHEC, 2012). Environmental health aspects are also considered in the 2010 *Strategy for the Prevention and Control of Non-communicable Diseases in Malta* (MHEC, 2010) and the *National Cancer Plan 2011-2015* (MHEC, 2011).

Against this background, this report presents the first national assessment of the environmental health inequality situation in the Maltese Islands. This was conducted by the Environmental Health Policy Coordination Unit within the Directorate for Health Regulation, in collaboration with the European Centre for Environment and Health of the WHO Regional Office for Europe, as a follow-up to the WHO European assessment report. This report is based on the 14 indicators applied by WHO for the European assessment; however, it provides further details on national information when available, adding on to the WHO indicators. For various inequality indicators, comparisons with the average values for the 27 European Union countries (EU-27) were made to put the data in context.

The results displayed in this report represent statistical data documenting environmental inequalities in relation to environmental exposure and risk. In this context, “*inequalities*” are defined as any differences and disparities, without distinguishing whether they are natural and unavoidable (such as consequences of age) or avoidable and unfair. Although in many cases the described inequalities may indicate “*inequities*” or differences and disparities that are avoidable, unjust or unfair, the term “*inequalities*” is applied throughout the whole report. This is due to the fact that the evidence presented is based on quantitative statistical data, while the decision regarding avoidability and fairness of the respective exposure distribution is a qualitative judgment that must consider the specific context of each exposure situation. Therefore, this report limits itself to presenting the statistical evidence on exposure variations and differences within the Maltese population, leaving the evaluation and judgment in terms of justice and fairness to the reader.

The Maltese archipelago lies in the centre of the Mediterranean Sea, approximately 93 km south of Sicily and nearly 300 km north of Africa. It consists of three main inhabited islands Malta, Gozo and Comino.

The total population in 2011 was 416,110 (207,219 males and 208,891 females). Covering a total area of 316 km<sup>2</sup>, Malta has one of the highest population densities in the world (1,317 persons per km<sup>2</sup>). The overall average population density for the EU is 117 persons per km<sup>2</sup>. Furthermore, approximately 1.4 million tourists visit Malta each year (NSO, 2012a).

The shift in the age composition towards an older population has been evident in Malta for the past years. The average age of the Maltese population increased from 38.5 years in 2005 to 40.5 years in 2011. In 2011, persons aged 65 and over represented 16.3% of the total population, compared to 13.7% in 2005. In contrast, 14.8% of the population were persons aged 14 and under, compared to 17.25% in 2005. In 2011, the average age in Gozo and Comino (41.6 years) was higher than that observed for Malta. Life expectancy for Maltese residents is 78.4 years for males and 82.6 years for females (total 80.5 years).

A total of 119,479 private households were enumerated in the 2011 national census of population and housing. 5,475 persons were resident in a number of institutional homes, the majority in homes for the elderly (NSO, 2012b).

The at-risk-of-poverty rate in Malta stood at 15% in 2011, 21% of this population were children under 18 years of age who remained at a higher risk of being poor, as was similarly observed in 2010. The rate for persons aged 65 and over was 18%. Both rates are distinctly higher than the at-risk-of-poverty rate estimated for the 18-64 age cohorts, at 13%. Single parent households with one or more dependent children<sup>2</sup> were most at-risk-of-poverty (47% accounting for 4511 individuals) (NSO, 2012c). The unemployment rate in Malta in 2011 stood at 6.5% (NSO, 2012d).

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<sup>2</sup> A person is defined as a dependent child if he/she is under 18 years or; 18-24 years old and is inactive and living with at least one parent.

## 2. METHODS

This report brings together available national data on the distribution of environmental exposures by socio-demographic, socioeconomic and spatial factors. Where possible, the main dimensions by which the exposure to environmental risks is stratified are age, gender, income and relative poverty, and household composition. For some environmental exposures, additional information on more specific population subgroups has also been included.

The report draws from the following data sources:

- The National Office of Statistics (NSO) is the executive arm of the Malta Statistics Authority and covers a wide range of national statistical information and related matters (NSO, 2013a). Data from this source included census data regarding housing and living conditions; transport-related injuries; and national social and living conditions.
- The Directorate for Health Information and Research (DHIR) within the Ministry for Health leads the collection, analysis and delivery of health related information in Malta, providing epidemiological information and indicators on the health of the population and health services. Data and information was obtained from published reports by the Directorate including the 2008 Health Interview Survey and the national mortality register held by this entity. Further information was obtained by means of requests for specific data by means of personal communication.
- The WHO European Health for All Database (HFA-DB), which covers a variety of mortality and morbidity data as reported by the Member States of the WHO European Region, was used to describe injury data and household water supply, and the inequalities in relation to age and gender. Unfortunately, this database does not provide data on economic or social circumstances (European Health for All database, 2013).
- The Eurostat Survey of Income and Living Conditions (EU-SILC) is an annual population survey covering a wide range of housing and environment-related information (EU-SILC, 2013). This was used for assessing age-, gender- and income-related inequalities in relation to housing and environmental exposures. The EU-SILC data is based on self-reported information provided by randomly selected households, based on a consistent questionnaire developed by Eurostat and applied by all EU Member States. However, EU-SILC data does not include institutional households (e.g. homes for elderly, prisons etc), since these are often characterized by particular building features and/or income and expenditure patterns that do not necessarily conform to those of private households. A major feature of the EU-SILC is the distinction of the population having an income below or above 60% of the national median equivalised income, which determines the “at-risk-of-poverty threshold”. The minimum sample size for the Maltese SILC survey is 3000 households and 7000 persons aged 16 and older.
- The European Quality of Life Survey (EQLS, 2012) compiles data on social and environmental aspects of life quality and the latest report was carried out in late 2011 and early 2012 (Eurofound, 2013). The EQLS dataset was acquired by the WHO European Centre for Environment and Health. These data were used to shed further light on social dimensions of housing and environmental quality and for the assessment of the association between inequalities in these and health outcomes. EQLS data is collected using a questionnaire applied to private households and therefore, like the EU-SILC, does not represent other life or residential settings. The sample size for the Maltese EQLS 2012 survey was 1001 residents.

This report uses international data to put the national data into context. In this regard, the following subregions are used:

- EU-27: all EU Member States at the year for which the respective data is provided (mainly referring to the year 2011 and therefore refers to the 27 EU members not including Croatia).
- EU-15: the EU Member States that joined the EU before 2004
- WHO European Region: all 53 Member States of the WHO Regional Office for Europe

## 3. HOUSING-RELATED INEQUALITIES

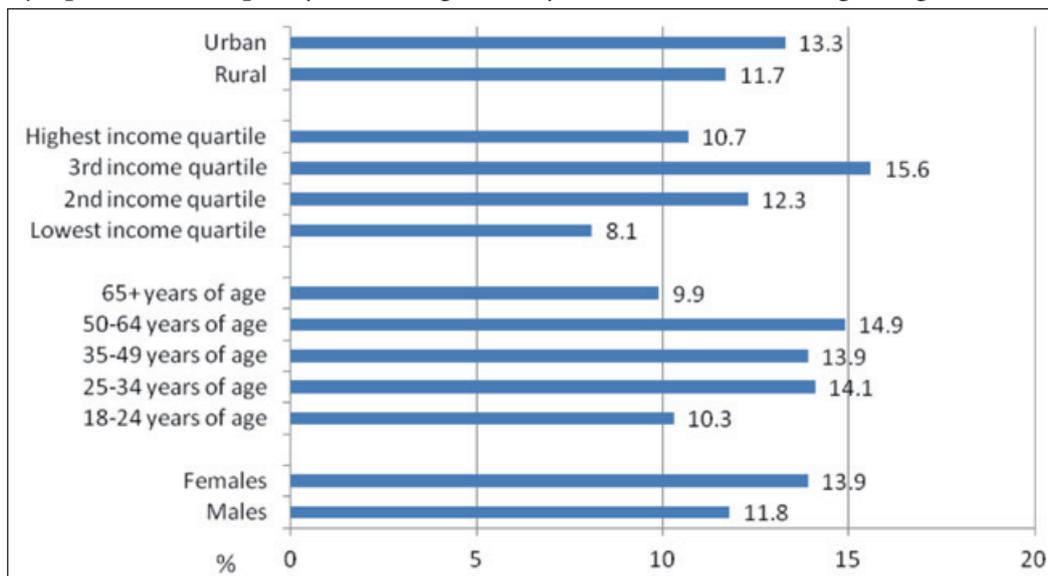
### Inadequate water supply

As reported in the WHO Health for All Database for 2008 and 2010, there were no houses in Malta with an inadequate water supply; that is, 100% of the Maltese population lived in homes that were connected to a water supply system (European Health for All Database, 2013). The EU-27 rate for these years was 96%.

The 3<sup>rd</sup> European Quality of Life Survey (EQLS, 2013b) investigated whether respondents had major, moderate or no problems with drinking-water quality. The results indicate that 12.9% of the surveyed Maltese population reported having major problems with drinking-water quality, while 29.1% reported having moderate problems with the water. This is significantly higher than the results for the EU-27 (5.1% and 15.5% respectively). While there are modest variations by gender, larger differences are found for age and income (Fig. 1). The population quartile with the lowest income reported the lowest level of drinking-water problems. This result may be related to awareness and perception and not to the actual water quality.

In contrast to the WHO European report, which shows large variations in water supply between urban and rural areas in various countries, there is no large difference in Malta, with a slightly higher percentage of the population reporting major problems with quality of drinking-water in urban areas (13.3%) than in rural areas (11.7%).

**Fig. 1: Major problems with quality of drinking-water by urbanization, income, age and gender in 2011/2012**



Source: Data from EU-SILC, 2013

#### Key message

Presently, the supply of drinking-water is not a problem in Malta. However, the perception of water quality varies between population groups.

### Lack of a flush toilet for sole use in the household

According to EU-SILC data, the share of the total Maltese population reporting lack of an indoor flushing toilet<sup>3</sup> for the sole use of their household in 2005 was 0.2%. In 2011, this figure decreased to less than 0.1%. This was much lower than the EU-27 average of 3.1%.

<sup>3</sup> It should be noted that the lack of a flush toilet for sole use of the household does not directly indicate the absence of a toilet, as other sanitary installations may be present that also provide adequate health protection.

Although in 2011, there was almost no difference between genders in availability of a flush toilet for sole use, a gradient was present across age groups, with mainly adults and young people lacking this facility in 2011, as opposed to previous years when the elderly population was most affected (Table 2).

**Table 2: Percentage population not having a flush toilet for sole use in the household by age groups, 2005-2011**

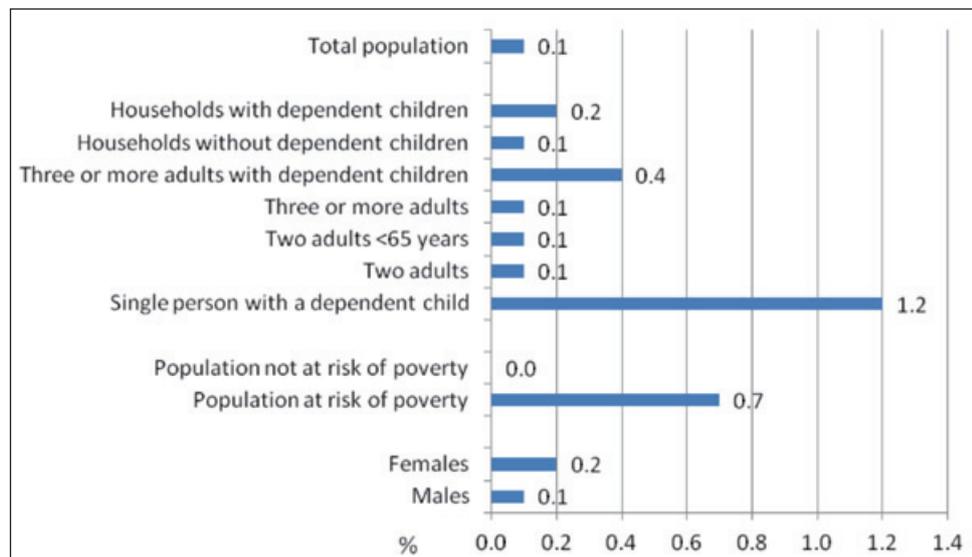
Age Groups	2005	2006	2007	2008	2009	2010	2011
Less than 18 years	-	-	-	-	-	-	0.2
From 18 to 64 years	0.1	0.1	-	-	-	0.1	0.2
65 years or over	0.9	0.4	0.2	0.2	0.1	0.3	-
<b>Total</b>	0.2	0.1	-	-	-	0.1	0.1

Source: Data from EU-SILC, 2013

The percentage of people at-risk-of-poverty lacking a flush toilet for sole use in their household increased slightly from 0.6% in 2005 to 0.7% in 2011, compared to no reported lack of flush toilet in the population not at-risk-of-poverty. However, the percentage of people at-risk-of-poverty not having access to a private flush toilet is much lower than in the EU-27 (8%).

With respect to household type, households with one single person with a dependent child had the highest percentage reporting the lack of a flush toilet for sole use (1.2%), significantly more than in all other household types (Fig. 2).

**Fig. 2: Percentage of population not having a flush toilet for the sole use of their household by gender, income and household type, 2011**



Source: Data from EU-SILC, 2013

Data from the EQLS 2012 (using the definition 'lack of indoor flushing toilet') suggest that 2.4% of the Maltese population lack an indoor flush toilet, and that there is a gradient by income, with individuals in the lowest income quartile being five times more likely to lack an indoor flush toilet (5.4%) than those within the quartile of highest incomes (1.1%). Also, persons with low education status and households living in more rural areas report a lack of an indoor flush toilet more often (4.3% and 3.6% respectively).

#### **Key message**

Supply of flush toilets has improved in recent years and only few households are not equipped with this necessity. The risk of not having a flush toilet is distributed unequally: single parents with a dependent child, persons with low education status, large households, low-income households and households in more rural areas are more likely to lack a flush toilet for sole use in their household.

## Share of the total population having neither bath nor shower, for the sole use of their household

The percentage of the Maltese population having neither bath nor shower for the sole use of their household, decreased from 0.8% in 2005 to 0.2% in 2011 but remains a problem in dwellings<sup>4</sup> occupied by the elderly (Table 3).

**Table 3: Percentage population having neither bath nor shower, for the sole use of their household, by age groups, 2005-2011**

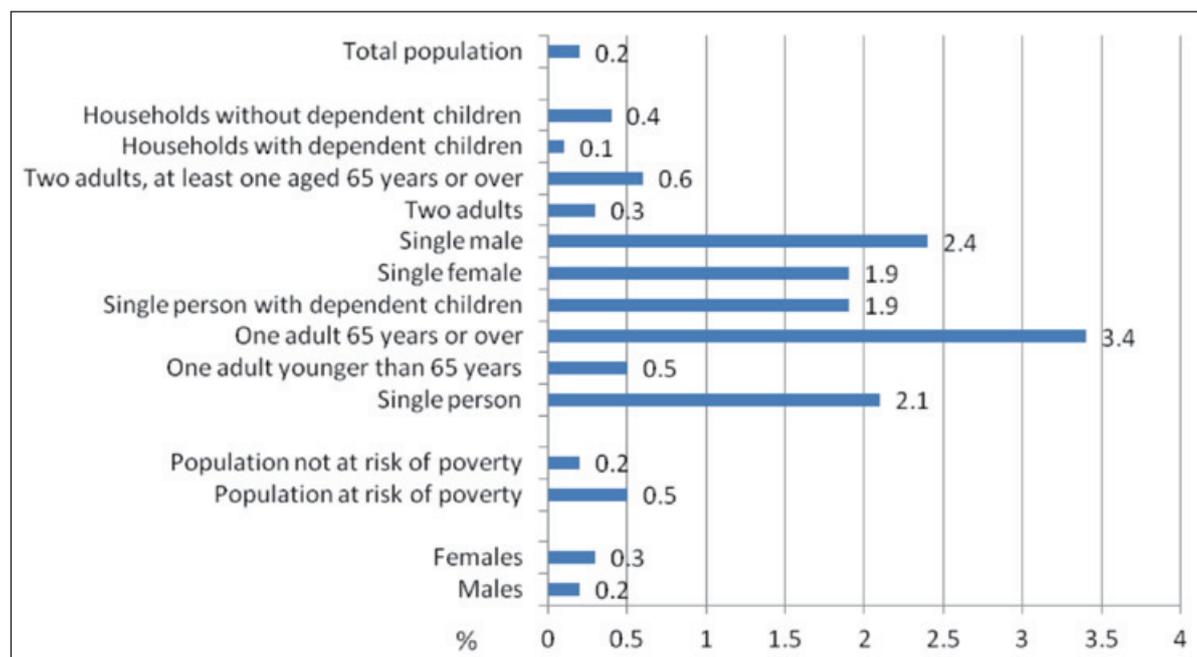
Age Groups	2005	2006	2007	2008	2009	2010	2011
Less than 18 years	0.1	-	-	-	-	-	0.1
From 18 to 64 years	0.3	0.2	0.2	0.2	0.2	0.1	-
65 years or over	4.6	4.6	2.3	1.3	0.8	1.4	1.2
<b>Total</b>	<b>0.8</b>	<b>0.7</b>	<b>0.4</b>	<b>0.3</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>

Source: Data from EU-SILC, 2013

Differences were also noted between the different income groups, with households at-risk-of- poverty being affected more than twice as often (Fig. 3). However, the percentage of poor persons exposed is much lower (0.5%) than for the EU-27 (7.5%). Data from the EQLS 2012 suggest that the lower-income households in Malta are three to four times more affected than high-income households, and that lack of bath or shower occurs twice as often in rural than in urban settings.

Compared to other household types, single households seem to be much more affected, with single adults over 65 years of age constituting the highest percentage reporting having neither bath nor shower (3.4%).

**Fig. 3: Percentage of population having neither bath nor shower, for the sole use of their household by gender, income and household type, 2011**



Source: Data from EU-SILC, 2013

Notes: Household types not mentioned did report 100% coverage with bath or shower

<sup>4</sup> A dwelling is a room or suite of rooms - including its accessories, lobbies and corridors - in a permanent building or a structurally separated part thereof which, by the way it has been built, rebuilt or converted, is designed for habitation by one private household all year round. A dwelling can be either a one-family dwelling in a stand-alone building or detached edifice, or an apartment in a block of flats. Dwellings include garages for residential use, even when apart from the habitation or belonging to different owners. (EU-SILC, 2013)

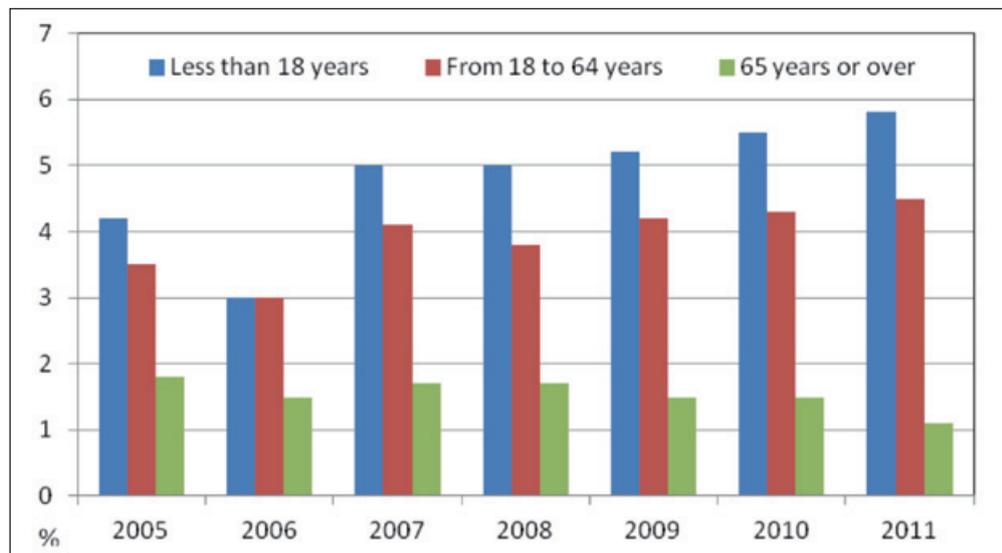
**Key message**

Elderly people living alone and single households in general are more likely than their counterparts to have neither bath nor shower for the sole use of their household. Income also plays a role, with low-income groups being more affected by lack of bath or shower. Lack of bath or shower occurs more frequently in households in the more rural areas.

**Overcrowding**

The overcrowding rate is defined as the percentage of the population living in an overcrowded household. The proportion of the total Maltese population living in overcrowded households<sup>5</sup> has increased gradually from 3.5% in 2005 to 4.2% in 2011. However, this is still lower than the 2011 average for EU-15 (10.1%) and EU-27 (16.9%). Those mostly affected by this problem are persons below 18 years of age, as can be seen in Fig. 4.

**Fig. 4: Percentage of the population living in overcrowded households, by age groups, 2005-2011**



Source: Data from EU-SILC, 2013

Since children and teenagers are affected, it is likely that the number of children is directly related to crowding. Therefore, specific attention should be paid to children and teenagers. Detailed data for this age group indicates that since 2005, the highest proportion of people living in overcrowded households was the 12 to 17 year age group, except in 2010 when the 6 to 11 year olds were the most affected (Table 4). However, as these children live with their parents, in pragmatic terms the focus would need to be on households with children. This is further justified by more detailed age data from the EQLS 2012, showing that reported shortage of space within the dwelling is highest amongst adults aged 25-34 (16.8%) and adults aged 35-49 (17.7%), covering the life course period where children live at home with their parents. The problem occurs much less frequently in adults aged 50-64 years (6.4%).

Compared to young people, the elderly (65 years and over) show a consistently low and even further decreasing rate of overcrowding, indicating that social isolation may be an emerging problem in this group.

<sup>5</sup> A person is considered as living in an overcrowded household if the household does not have at its disposal a minimum number of rooms equal to:

- one room for the household;
- one room per couple in the household;
- one room for each single person aged 18 or more;
- one room per pair of single people of the same gender between 12 and 17 years of age;
- one room for each single person between 12 and 17 years of age and not included in the previous category;
- one room per pair of children under 12 years of age (EU-SILC, 2013)

**Table 4: Percentage of the population less than 18 years of age, living in overcrowded households, 2005-2011**

Age Groups	2005	2006	2007	2008	2009	2010	2011
Less than 6 years	5.2	3.2	4.7	3.8	4.2	4	4.7
From 6 to 11 years	4	2.4	3.2	4.5	4.2	6.3	5.7
From 12 to 17 years	3.8	3.5	6.8	6.3	6.6	5.9	6.8

Source: Data from EU-SILC, 2013

**Table 5: Percentage of population living in overcrowded households by socio-demographic category, 2011**

Household type	Malta	EU-27
Single person	0.6	9.8
One adult <65 years	1	12.5
One adult >65 years	0.3	6
Single person with a dependent child	6.8	24.3
Single female	0.6	8.1
Single male	0.7	12.2
Two adults	0.3	4
Two adults <65 years	0.2	4.7
Two adults, at least 1 aged 65 years and over	0.5	3.2
Two adults with one dependent child	1	14.7
Two adults with two dependent children	0.8	15.4
Two adults with three or more dependent children	3.2	28.3
Three or more adults	2.7	19.6
Three or more adults with dependent children	15.7	45.8
Households without dependent children	1.5	9.4
Households with dependent children	6.4	24.1
Total	4.2	16.9

Source: Data from EU-SILC, 2013

**Table 6: Distribution of household size by district, 2008**

District	1	2	3	4	5+	Total
Southern Harbour	25.0	24.9	21.9	17.7	10.6	100.0
Northern Harbour	19.2	29.3	20.8	20.6	10.1	100.0
South Eastern	14.8	23.5	26.1	23.9	11.6	100.0
Western	14.4	22.2	24.5	24.4	14.4	100.0
Northern	13.8	25.2	22.7	27.3	11.0u	100.0
Gozo and Comino	25.1	23.9	18.1	22.5	10.5u	100.0
Total	18.8	25.7	22.3	22.1	11.1	100.0

Source: NSO, 2008

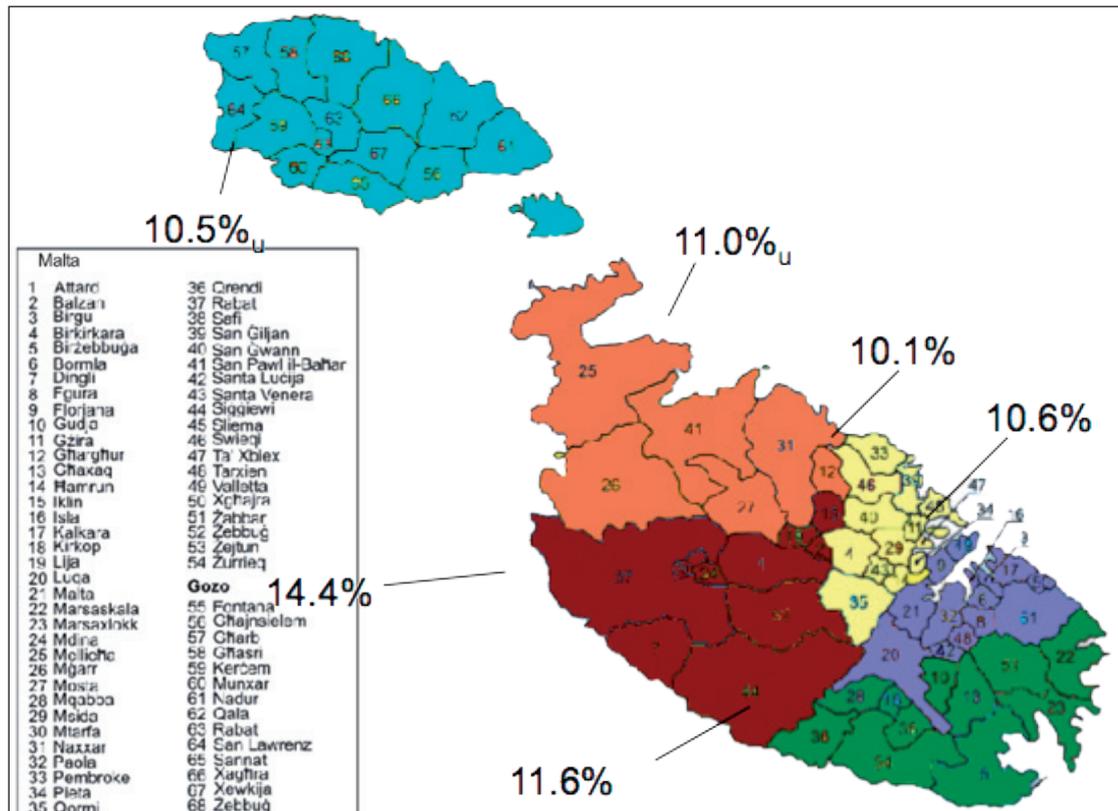
Notes: u - Under represented: estimate based on 20-50 counts

While only minor differences were present between the two genders, there is a significant difference by income. Using the European SILC data set from 2011, the population at-risk-of-poverty is affected almost twice as often (6.9%) than the population with higher income levels (3.8%) (EU-SILC, 2013). On asking residents about shortage of space, the EQLS 2012 indicated that 13.8% of the lowest income quartile population reported having this problem, compared to 8.4% of the population with the highest income quartile.

As expected, household size has a large impact on crowding and, as households with children tend to be larger, children are mostly affected as a group, as identified above. The most frequently overcrowded household type was that composed of 3 or more adults with dependent children (15.7%), followed by households composed of a single person with a dependent child (6.8%) and households with dependent children (6.4%) in general (Table 5). EQLS 2012 data confirm this finding, showing an increase of reported problems with space with increasing household size and in households with children.

Using the national data SILC data set from 2008, a closer look at the distribution of households in each district revealed that the Western region (brown area on the map) was the region with the highest percentage of households composed of five persons or more (14.4%) (Table 6, Fig. 5). On the other hand, Gozo and Comino constituted the district with the highest proportion of single person households (25.1%). Data from the EQLS 2012 indicate that space challenges are most frequent in densely populated areas (13.7%), while areas of intermediate or low population density are less affected (7.7% and 6.6% respectively).

Fig. 5: District map of Malta



Source: Malta Administrative Division, 2012

Due to lack of data, this report does not look at ethnic groups although crowding and inequalities in crowding are likely to be a problem.

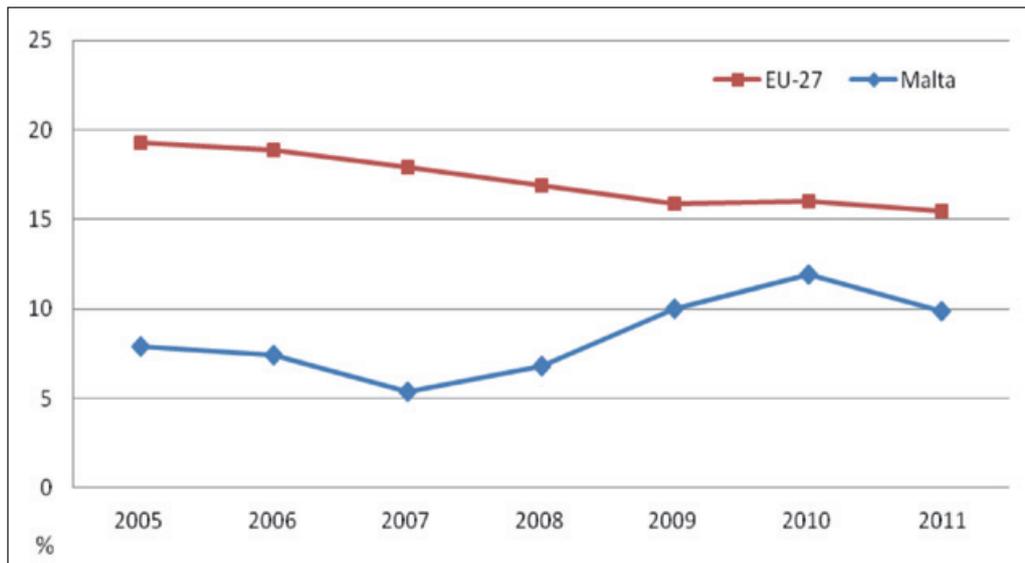
**Key message**

The population groups most affected by overcrowding are (a) large families with children followed by households with children in general and (b) low income earners. In geospatial terms, the Western district of Malta has the highest share of large households and may thus be at highest risk for overcrowding.

### Share of total population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in the window frames

The proportion of the Maltese population living in homes with humidity problems such as a leaking roof, damp walls, floors or foundation, or rot in the window frames decreased from 7.9% in 2005 to 5.4% in 2007, but increased again since then, going up to 11.9% in 2010 and 9.9% in 2011. These percentages are below the EU-27 average (Fig. 6).

**Fig. 6: Percentage of population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in the window frames, 2005- 2011**



Source: Data from EU-SILC, 2013

Notes: EU-27 values for 2005, 2006 and 2011 are Eurostat estimates

Those aged 65 years and over constitute by far the highest proportion of people living in households with humidity problems (23.8%) (Table 7). This could be due to their residence in older buildings with architectural or structure features predisposing the building to dampness and/or lack of maintenance.

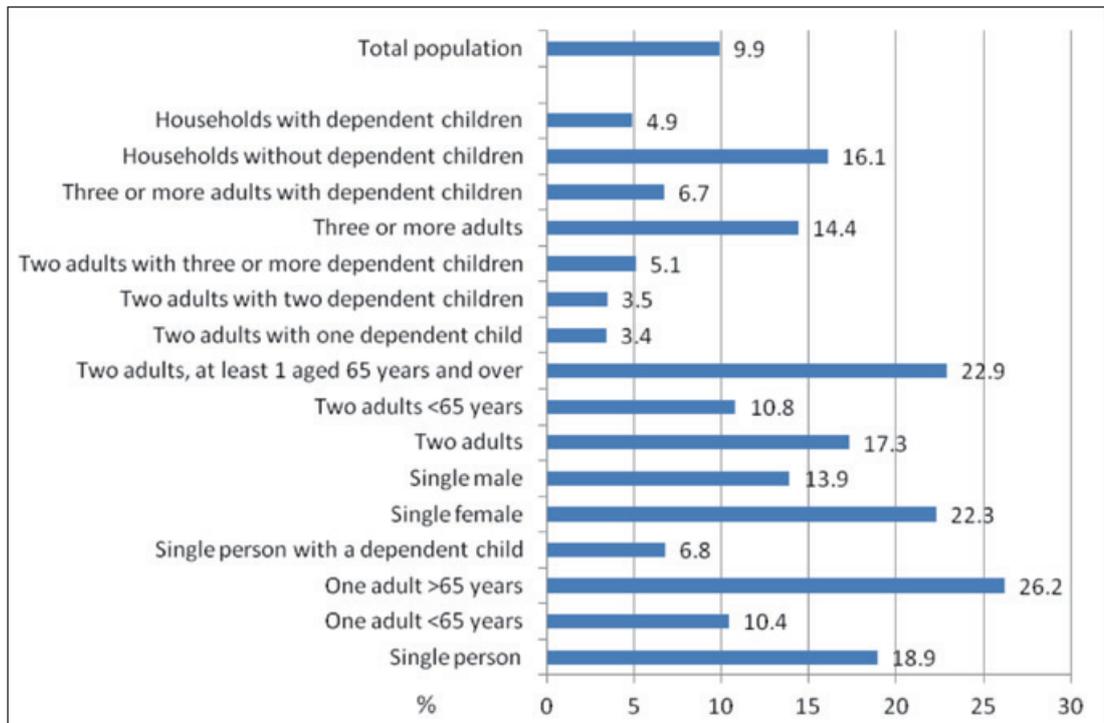
**Table 7: Percentage of population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in the window frames, by age group, 2005-2011**

Age Groups	2005	2006	2007	2008	2009	2010	2011
Less than 18 years	7.1	6.8	5	6.7	8.7	11.1	4.6
From 18 to 64 years	7.2	6.9	4.9	6.5	9.3	10.8	8.4
65 years or over	12.5	10.9	8.4	8.4	14.8	17.9	23.8
<b>Total</b>	<b>7.9</b>	<b>7.4</b>	<b>5.4</b>	<b>6.8</b>	<b>10</b>	<b>11.9</b>	<b>9.9</b>

Source: Data from EU-SILC, 2013

While there was a small difference between genders, the difference by income level is more obvious; although still far from the income variations observed within the EU (Table 8). However, larger variations are observed in relation to the household type and size, as the most disadvantaged households (single elderly, single females and households with elderly residents) report problems with dampness more than twice as often as the general population (Fig. 7). Again, the age profile of the household seems to play a role here which may be linked to the age and condition of the buildings older persons tend to live in.

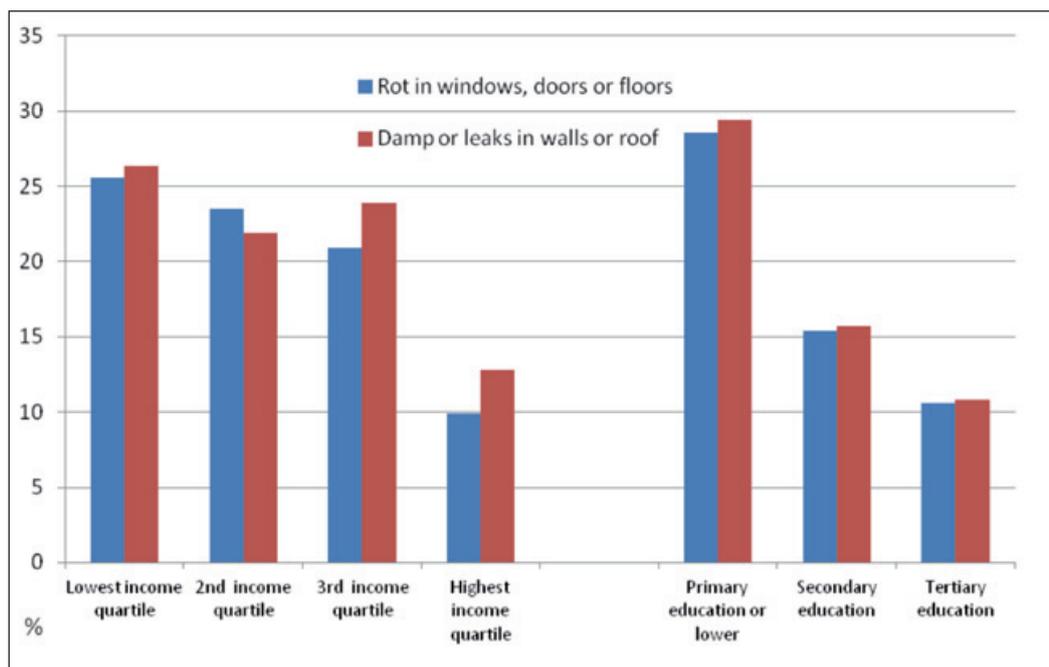
Fig. 7: Percentage of population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames by household type, 2011



Source: Data from EU-SILC, 2013.

A set of similar questions was asked in the EQLS 2012, with results presented by income quartiles and education, indicating that the poorest residents are much more affected by humidity problems in their home than the residents with high incomes, and that low education is strongly associated with increased reporting of humidity problems (Fig. 8).

Fig. 8: Percentage of population living in a dwelling with humidity problems by income quartile and education level, 2011-2012 (EQLS, 2013b).



Source: Data from EQLS, 2013b

**Table 8: Percentage of population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames by gender and income, 2011**

	Malta	EU-27
<b>Gender</b>		
Males	9.3	15.4
Females	10.5	15.6
<b>Income Group</b>		
Population at-risk-of-poverty	11.4	24.2
Population not at-risk-of-poverty	9.6	13.8

Source: Data from EU-SILC, 2013

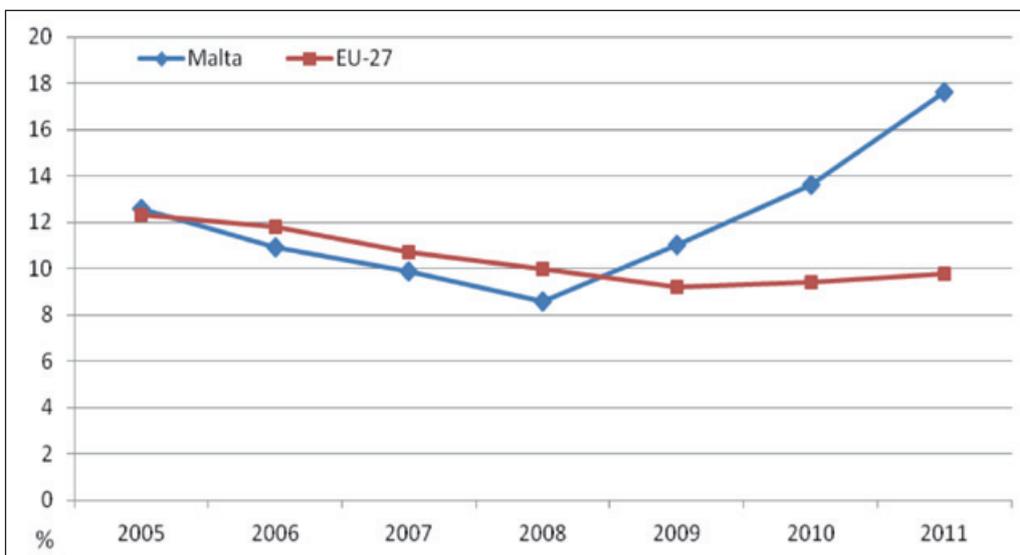
#### Key message

Humidity problems are on the increase and are distributed unequally. The highest percentage of households reporting dampness problems are those composed of single elderly persons. In general, households with older residents seem to be more affected than other households. Income levels and education are also associated with humidity problems, with persons with lower income and education level more likely to be affected.

#### Inability to keep the dwelling adequately warm

The share of the total Maltese population reported to be unable to keep their dwelling adequately warm decreased from 12.6% to 8.6% between 2005 and 2008 but then, as opposed to the EU-27, showed a sharp increase to 17.6% in 2011 (Fig. 9).

**Fig. 9: Percentage of population unable to keep the home adequately warm, 2005-2011**

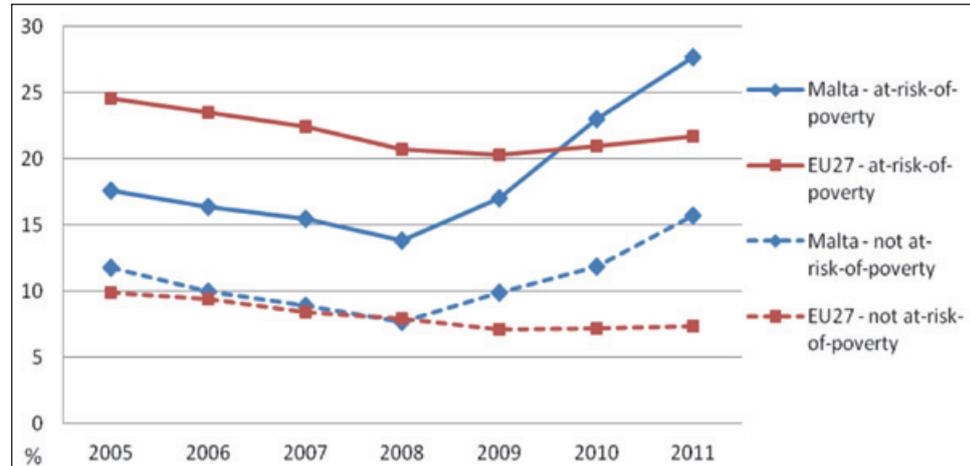


Source: Data from EU-SILC, 2013

Notes: EU-27 values for 2005 and 2006 are Eurostat estimates

Problems with keeping the home warm are often related to economic constraints with low income population being much more affected (Fig. 10) This figure also shows that the increase of the population at-risk-of-poverty reporting this problem since 2008 (from 13.8% to 27.7%) was more evident than the increase observed in the rest of the population (7.7% to 15.7%). This suggests stronger inequalities by income and indicates that energy-related expenses may be a specific threat for low-income households.

**Fig. 10: Percentage of population unable to keep the home adequately warm by income, 2005-2011**

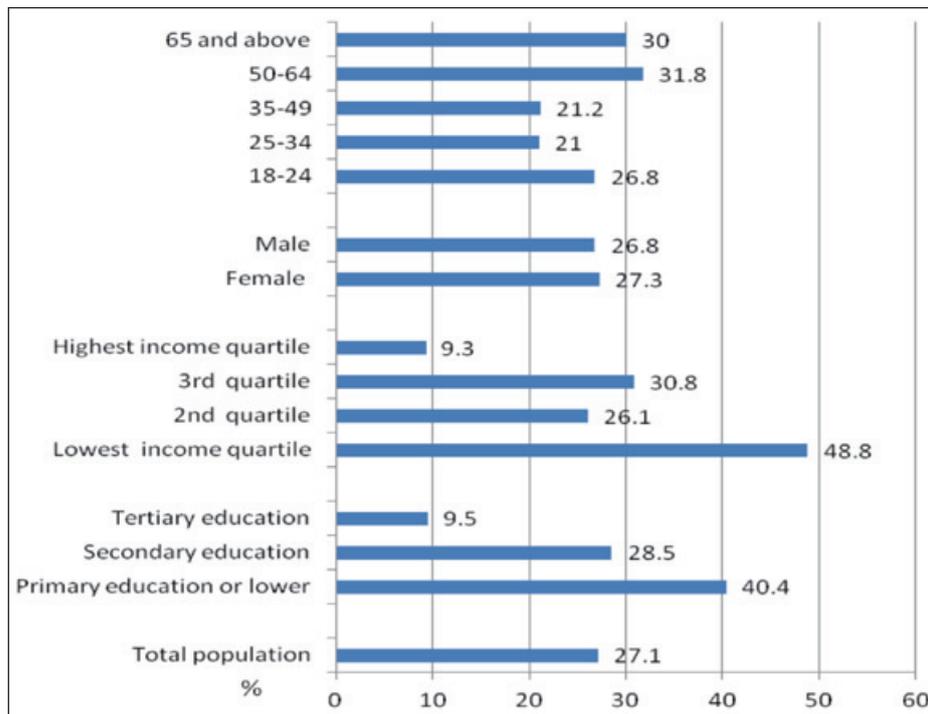


Source: Data from EU-SILC, 2013

The upward trend shown in Fig. 10 seems to be the same for all income groups. A possible explanation for this increasing problem is the drastic rise in fuel prices since 2008 due to the removal of subsidies. Electricity prices increased significantly from 2007 to 2010 (Eurostat, 2012a). Similarly, in April 2009 there was also a steep increase in the price of heating fuels, for example, the price of a 12kg cylinder of liquefied petroleum gas, commonly used for heating purposes by many households, increased by more than threefold over the span of 3 years, between 2009-2012 (MRA, 2010; MRA, 2012). The price increases, although affecting the whole population may have a greater impact on the poor.

Age and gender were not found to be associated with the population groups' ability to keep the home warm (EU-SILC, 2013). This was also confirmed by data from the EQLS 2012, indicating that income and education are more relevant than gender and age in determining ability to keep the dwelling adequately warm. However, the elderly population is more prone to perceived thermal discomfort (Fig. 11). The impact of income and education on perceived thermal comfort is very strong with persons in the lowest educational category and income quartile being four to five times more often affected by problems with being able to afford adequate heating.

Fig. 11: Percentage of population not able to afford keeping the home adequately warm by age, gender, income quartile and education, 2011/2012



Source: Data from EQLS, 2013b

Apart from the income dimension, strong variations in thermal comfort are also observed by household type and size, which may partially be related to income levels. Households occupied by a single person with a dependent child most often reported that they are unable to keep their dwelling warm (28.1%), and in general terms the thermal comfort questions seemed to be of relevance in single households (Table 9).

Table 9: Percentage of population unable to keep their home adequately warm, by household type, 2011

Household type	Malta	EU-27
Single person	22	12
One adult <65 years	25.2	11.5
One adult >65 years	19.1	12.8
Single person with a dependent child	28.1	14.8
Single female	22.6	13.3
Single male	21	10.3
Two adults	15.4	7.6
Two adults <65 years	14.1	7
Two adults, at least 1 aged 65 years and over	16.5	8.2
Two adults with one dependent child	12.7	8.1
Two adults with two dependent children	13.6	6.9
Two adults with three or more dependent children	16.1	10.2
Three or more adults	17	11.6
Three or more adults with dependent children	24.2	14.4
Households without dependent children	17.1	9.7
Households with dependent children	17.9	9.9
<b>Total Population</b>	<b>17.6</b>	<b>9.8</b>

Source: Data from EU-SILC, 2013

However, large households may also be strongly affected, as e.g. almost every fourth household with three and more adults with dependent children also reported having affordability problems to keep the home warm. Also, comparison with the EU-27 data shows that the problem of thermal comfort in winter is expressed more strongly in Malta than in other EU countries.

Similar data from the EQLS 2012 also indicated that single households experience the most difficulty with keeping the home warm, with a third of the Maltese single households reporting having this problem in winter time.

It is important to note that for the specific issue of keeping the home warm, there is a strong relationship between income and household type. If the data from Table 9 is broken down by being at-risk-of-poverty, the percentage of single person households with a dependent child reporting problems with heating their home ranges from 19.7% (population not at-risk-of-poverty) to 37.6% (population at-risk-of-poverty). A similar inequality is apparent for large households of three or more adults with dependent children, where the problem of heating the home was reported by 39.8% of the respective households at-risk-of-poverty.

#### Key message

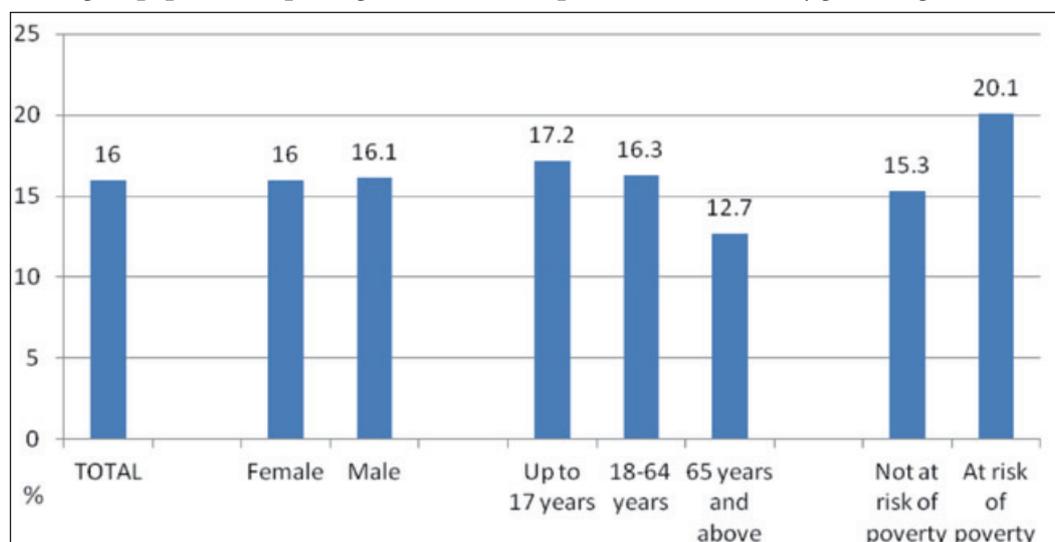
The highest proportion of the population reporting difficulty with keeping their dwelling warm is found within the population with low income and/or at-risk-of-poverty, persons with low education level, single persons with children, and large households. However, the combination of economic vulnerability (low income) and demographic vulnerability (single households or large households with children) provides the highest risk for thermal comfort problems as in such cases, up to 4 in 10 households can be affected.

#### Keeping a cool dwelling during the summer time

In contrast to the previous section on keeping the home warm, there is also increasing concern on summer temperatures and heat waves which have been shown to have a considerable impact on health. Data from the EU-SILC 2007 ad-hoc module on housing conditions (extending the standard set of EU-SILC questions on housing conditions) include the question on thermal comfort during summer, defined as “a comfortably cool dwelling”.

The results, displayed in Fig. 12 below, show that (compared to other southern European countries including Cyprus, Greece, Italy, Portugal and Spain) the general perception of thermal problems in summer is low at 16% of the total population reporting problems. Also, there is no strong inequality in indoor thermal comfort during the summer period, as the differences between the population subgroups are limited to a few percent. However, unlike with gender (no effect) and age groups (minor variations), the income dimension shows the strongest impact, with the population at-risk-of-poverty being the subgroup most affected (20.1%).

Fig. 12: Percentage of population reporting thermal comfort problems in summer by gender, age and income, 2007



Source: Data from EU-SILC, 2013

In this context, it is also interesting to note that as of 2007, 58% of the population not at-risk-of-poverty reported their dwelling to be equipped with an air conditioning system, while only 42.2% of the population at-risk-of-poverty had such a system in their home (EU-SILC). This may partially explain the increased frequency of thermal issues during summer within the poverty-affected population subgroup.

***Key message***

Compared to other southern European countries with hot summers, Malta has a rather low rate of persons reporting problems with too high indoor temperatures in summer. However, persons at-risk-of-poverty are most affected and building quality and equipment may play a role in this.

## 4. ENVIRONMENT-RELATED INEQUALITIES

### Noise exposure at home from the neighbours or from the street

In 2011 a draft Noise Action Plan for Malta, was prepared. Following this, in February 2012, a white paper on the 'Prevention, Abatement and Control of Neighbourhood Noise' was issued by the responsible ministry (MEPA, 2011). In this white paper, neighbourhood and neighbour noise is defined as noise arising from within the community, such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street. It does not include noise from general transport, which falls under the definition of environmental noise as defined in EU Environmental Noise Directive 2002/49/EC (MTEC, 2012b).

The need for action to regulate noise exposure is clear; in 2011, 30.4% of the Maltese population reported being exposed to noise in their home, which originated from the neighbours or from the street. This was much higher than the EU-27 average of 19.9%; the difference between the noise exposure in the EU-27 and Malta has been constantly increasing since 2007, as can be seen in Table 10.

**Table 10: Percentage of population exposed to noise in their home, 2005-2011**

	2005	2006	2007	2008	2009	2010	2011
<b>EU-27</b>	24.0 (s)	23.8 (s)	23.1	21.8	22.2	20.6	19.8
<b>Malta</b>	23.8	25.9	23.8	24.6	27.8	27.1	30.4

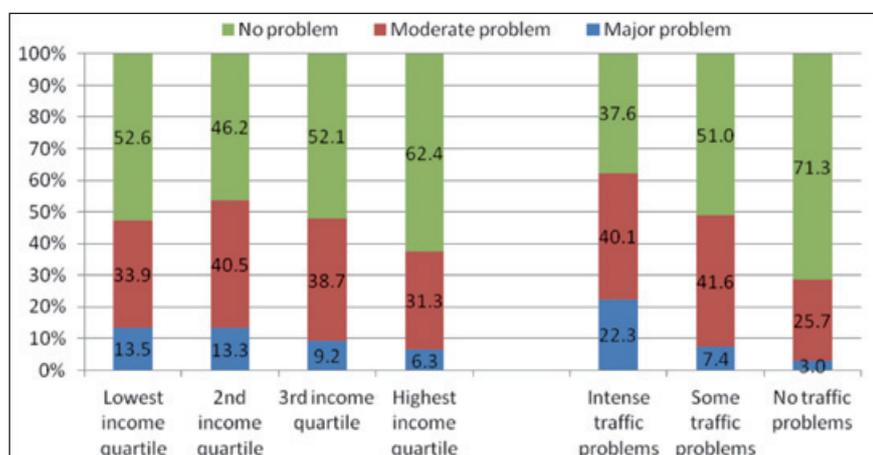
Source: Data from EU-SILC, 2013

Notes: (s) - Eurostat estimate

For 2011, EU-SILC data suggest only minor noise exposure differences by poverty risk, with people at-risk-of-poverty actually reporting a slightly lower frequency of being exposed to noise in their home (29.6%) compared to those not at-risk-of-poverty (30.6%). As this finding might not be in line with expected results and recent evidence indicating that noise is often experienced more strongly by the less wealthy population subgroups, further insight into the distribution of noise by income is necessary. In this context, more details as provided by the EQLS 2012, which stratifies perceived noise exposure by income quartiles and indicates that within the lowest income quartile 13.5% of the population report major problems with noise in the immediate neighbourhood, while this problem is only mentioned by 6.3% of persons within the highest income quartile. On the other hand, moderate noise problems are most often reported by the middle income quartiles, making high-income households the only population group where a large majority does not report noise problems at all (Fig. 13).

Similar findings resulted from an analysis of noise perception by level of education and urbanization levels, indicating that lower education levels are associated with more severe noise exposure, and that severe noise exposure is much more frequently reported in urban and densely populated areas. Unsurprisingly, the data also suggests that traffic is a major source of noise complaints, as persons reporting heavy traffic close to their home were much more likely to report major noise problems (22.3% compared to a population average of 9.3%) while persons living in less trafficked residential locations only reported major noise complaints in 3% of all cases (Fig. 13).

**Fig. 13: Percentage of population reporting noise problems in the neighbourhood by income quartiles and traffic intensity in 2011/2012**



Source: Data from EQLS, 2012

Age-related differences in the perception of noise as a major neighbourhood problem are strong as well, with a steady increase of noise problems being reported with increasing age (from 5.9% for young adults aged 18-24 years, to 13.7% for the elderly above 65 years). The extent to which this is a result of higher vulnerability or more exposure to noise unfortunately cannot be clarified with the available data. There was no gender variation in the perception of noise as a major neighbourhood problem.

The population living in households occupied by two adults, where at least one was aged 65 years and over, had the highest proportion of people exposed to noise within their home (35.8%). This could be because these household types are more likely to live in old houses situated in busy city/town centres. Nevertheless, although the variation of noise exposure by household type is modest, it is also obvious that for any household type, the problem is more strongly expressed than in other EU countries (Table 11).

**Table 11: Percentage of population reporting noise exposure in their home by household type, 2011**

Household type	% population exposed to noise in their home	
	Malta	EU-27
Single person	32.6	22.5
One adult <65 years	32.2	26.5
One adult >65 years	32.9	16.8
Single person with a dependent child	27.6	26.6
Single female	32.5	22.4
Single male	32.7	22.7
Two adults	34	20.1
Two adults <65 years	32	22.1
Two adults, at least 1 aged 65 years and over	35.8	17.7
Two adults with one dependent child	29.6	20.3
Two adults with two dependent children	27.6	17.4
Two adults with three or more dependent children	25.3	18.4
Three or more adults	33.1	19.2
Three or more adults with dependent children	28.5	18.7
Households without dependent children	33.4	20.5
Households with dependent children	28	19.3
<b>Total Population</b>	<b>30.4</b>	<b>19.8</b>

Source: Data from EU-SILC, 2013

**Key message**

Noise is identified as a general public health challenge in Malta, more so as the proportion of the population complaining about noise is increasing. However, noise is also confirmed to be an equity issue in relation to socioeconomic status (income and education), age and place of residence, indicating that the poor, the old and those living in dense places exposed to heavy traffic are most affected.

**Lack of access to green or recreational areas**

Amongst other aspects of quality of life, the EQLS 2012 reports on the quality of access to green and recreational areas, measured on a four item scale. According to the EQLS 2012 data, access problems to green or recreational areas have been decreasing strongly in Malta (from 43.8% in 2003 and 26.7% in 2007 to 18.3% in 2012), however, this still remains a challenge when one compares to EU-27 averages, which are considerably lower (13.4% in 2012) (EQLS, 2013b).

Looking at inequalities in access to green and recreational areas in Malta, the data indicate that the age patterns vary between the surveys but the differences tend to be limited. In 2012, the 35-49 year old age-group had the highest percentage of individuals (23.9%) complaining about this problem while for gender, there was almost no difference, with slightly more females complaining about this problem than males (Table 12). This could be due to the fact that women may spend more time outdoors with their children and would therefore be more aware of the presence of green or recreational areas which are easy to access.

When considering income levels, the data suggest that there are only slight variations without a clear direction, indicating that financial aspects do not play a major role in relation to provision of green and recreational areas (Fig. 14). Equally, urban–rural differences as well as variations by residential density seem to play no role in access to green and recreational areas in Malta. This is consistent with Malta’s small size and its high population density.

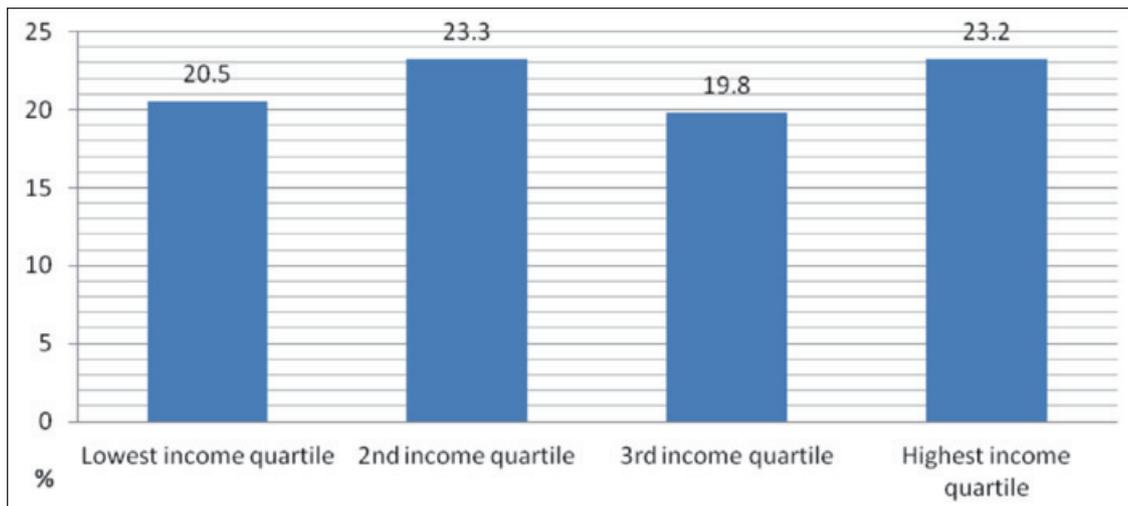
**Table 12: Percentage of the total population complaining about lack of access to green or recreational areas by gender and age groups in 2003, 2007 and 2011/2012**

	2003	2007		2011/2012
<b>Gender</b>				
Males	45	24.9		18.1
Females	42.6	28.4		18.6
<b>Age Groups (Years)</b>			18-24 years	17.2
0-29	36.9	25.4	25-34 years	17.2
30-44	47.8	26.5	35-49 years	23.9
45-64	46.3	26.9	50-64 years	15.4
65+	43.9	28.1	65+ years	16.2
<b>Total Population</b>	43.8	26.7		18.3

Source: Eurofound, 2013

Notes: For 2003 and 2007, data represents share of population reporting to have “very many reasons” or “many reasons” to complain about the lack of access to recreational or green areas. For 2012, the data represents the share of the population reporting “great difficulty” or “some difficulty” in accessing recreational or green areas. Age categories were also modified in 2012.

**Fig. 14: Percentage of population reporting great or some difficulty to access recreational or green areas by income in 2011/2012**



Source: Data from EQLS, 2013b

#### **Key message**

Although access to green and recreational spaces has significantly increased in the last decade for the benefit of the whole population, this remains a public health challenge, since almost a fifth of the population still has difficulty accessing these areas. However, disparities in access are rather small for all socio-demographic domains such as gender, age and income, as well as residential location.

#### **Second-hand smoke exposure at home**

Passive smoking can contribute to various illnesses such as heart disease, sudden infant death syndrome, ear disease, asthma attacks and lung cancer. In addition, tobacco smoke is a cause of discomfort and irritation to many people. In January 2010, a subsidiary legislation was enforced in Malta to ban smoking from enclosed public areas.

The European Health Interview Survey of 2008 (DHIR, 2008) showed that almost a quarter (23%) of the total resident Maltese population aged 15+ at the time of the survey was exposed to second-hand smoke at home (Table 13). With respect to age, people aged 15 to 24 years have the highest share of their population being exposed to second-hand smoking at home (30%), when compared to older age groups. No data was available on the exposure to second-hand smoke at home in children and teenagers, but it is likely that exposure would also be considerable in these vulnerable individuals.

Over a quarter (27%) of people who stopped their education after secondary school reported being exposed to second hand smoking, while only 16.6% of those that received tertiary education, were exposed to second-hand smoking (DHIR, 2008). A slight gradient was also seen across the different income groups, with higher incomes being associated with a bit less exposure to second-hand smoke, as can be seen in Table 13. Stronger results were obtained for labour status, with permanently disabled persons (36.7%) and the unemployed (33.1%) reporting the highest levels of exposure to second-hand smoking within the European Health Interview Survey 2008 study population (DHIR, 2008). However, based on these data, it is not possible to identify whether the increased exposure is caused by increased smoking levels within the household, or by the fact that disabled and unemployed persons are likely to spend much more time at home and thus are more affected by any home-related exposure.

**Table 13: Percentage of the total study population (Maltese residents aged 15+) exposed to second-hand smoking at home by age group, gender, education, labour status and household income, 2008**

Age groups in years		Labour Status	
15-24	30%	Working for pay or profit	25%
25-34	24%	Unemployed	33%
35-44	23%	Student	29%
45-54	26%	Retired	18%
55-64	22%	Permanently disabled	37%
65-74	16%	Fulfilling domestic tasks	20%
75+	11%		
Household Income		Level of Education	
<=€579	25%	Primary Education	21%
€580 - €929	25%	Secondary Education	27%
€930 - €1395	24%	Post-Secondary Education	23%
€1396 - €1978	23%	Tertiary Education	17%
>=€1979	19%		
Gender			
Male	23%		
Female	23%		

Source: Data from DHR, 2008

#### Key message

Exposure to second-hand smoke in the private home is a health risk for almost a fourth of the population in Malta. Differences by socio-demographic determinants show that exposure is most frequent in young persons, those with secondary education, and unemployed and disabled persons. Low income also increases the risk of exposure to second-hand smoking at home.

#### Second-hand smoke exposure at work

In 2004, a smoking ban was introduced in Malta as part of the 2003 Smoking in Public Places Regulations. The amendments to the law listed a number of public areas where smoking became prohibited including workplaces.

In 2008, 28% of the workforce reports exposure to second-hand smoking at the workplace (DHIR, 2008). Those aged between 15 and 24 years (35.5%) and those that had stopped at a secondary level of education (31.9%) had the highest share of the workforce exposed to second hand smoking. In addition, many more males reported being exposed to second-hand smoke at the workplace than females (Table 14). This could be due to the existing differences between the occupations chosen by the different genders, which range from reported exposure rates of 16% to 42%.

Higher incomes were associated with a much lower rate of second-hand smoking exposure (19%), while there was little difference between the middle and lower incomes with an exposure range between 29-34%. With respect to occupation in different sectors, craft and related trades workers (42%) and people with an elementary occupation (38.7%) were the ones most exposed to second-hand smoking at the workplace. The reason for these differences could be due to different levels of enforcement of the regulations in the various workplaces and also due to the fact that the law applies to enclosed workplaces, excluding persons who work outdoors and in open environments, such as those working in the construction industry.

**Table 14: Percentage of the total study population exposed to second-hand smoking at work by age group, gender, education, household income and occupation, 2008**

Age groups in years		Occupation	
15-24	35%	Armed Forces	31%
25-34	25%	Legislators, senior officials and managers	16%
35-44	27%	Professionals	17%
45-54	27%	Technicians and associate professionals	31%
55-64	27%	Clerks	24%
65-74	21%	Service Workers and market and sales workers	29%
75+	25%	Skilled agricultural and fishery workers	17%
		Craft and related trades workers	42%
Household Income		Plant and machine operators and assemblers	36%
<=€579	32%	Elementary occupations	39%
€580 - €929	33%		
€930 - €1395	34%	Level of Education	
€1396 - €1978	29%	Primary Education	27%
>=€1979	19%	Secondary Education	32%
		Post-Secondary Education	31%
Gender		Tertiary Education	17%
Male	32%		
Female	22%		

Source: Data from DHR, 2008

It is worth noting that there has been little improvement since 2008, as a Eurobarometer survey on tobacco use and perceptions has shown that 27% of the working population was still exposed to second-hand smoke at work in 2012 (EC, 2012).

#### Key message

A good quarter of the Maltese workforce reports being exposed to tobacco smoke at the workplace. Variations of occupational second-hand smoke exposure can be found by all demographic, socioeconomic and occupational dimensions. However, the strongest variations are observed by occupation, indicating that working conditions and legal enforcement are key issues for occupational health.

#### Problems with air quality<sup>5</sup>

Air pollution is a major environmental problem causing a range of diseases. Especially in urban settings, air pollution can be a significant challenge due to the diversity of pollution sources, such as transport, energy production, industry and businesses, and household heating. As no equity-sensitive air pollution data were available, perceived air pollution from the EQLS 2012 was used to identify potential disparities in air pollution. However, it must be noted that these data are subjective and may not reflect objective air quality well.

In Malta, 13.9% of the population report major problems with air quality in their neighbourhood, while 31.9% report moderate problems (Table 15). Only slightly more than half (54.3%) of the residents report no air quality problems at all. This represents a perception of air quality that is much worse than the EU-27 average, where only 5.2% report major problems with air quality while three quarters of the population (75.6%) report having no problem.

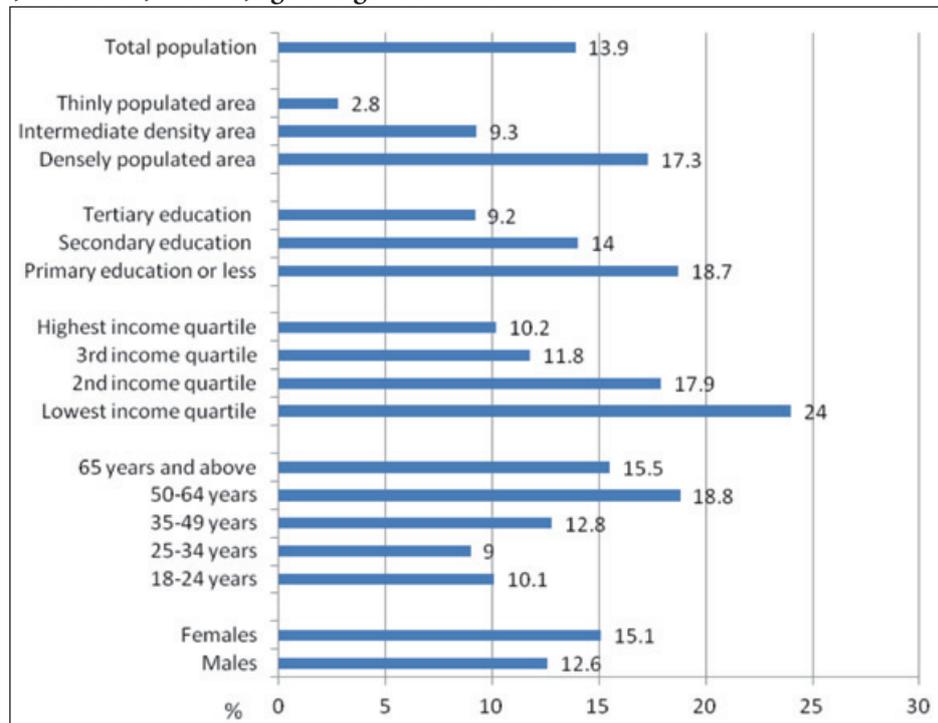
<sup>5</sup> The WHO assessment report on environmental health inequalities in Europe did not include air quality as little reliable and internationally comparable data was available. The expert group, however, recommended that perceived air pollution data would be useful and valid for national assessments where international issues of comparability are less relevant, and differences are more likely to reflect exposure disparities rather than cultural or perception-related differences.

**Table 15: Percentage of population reporting air pollution problems in the neighbourhood in 2011/2012, Malta and EU-27**

Air pollution perception	Malta	EU-27
Major problems	13.9	5.2
Moderate problems	31.9	19.1
No problems	54.3	75.6
Total	100	100

Source: Data from EQLS, 2013b

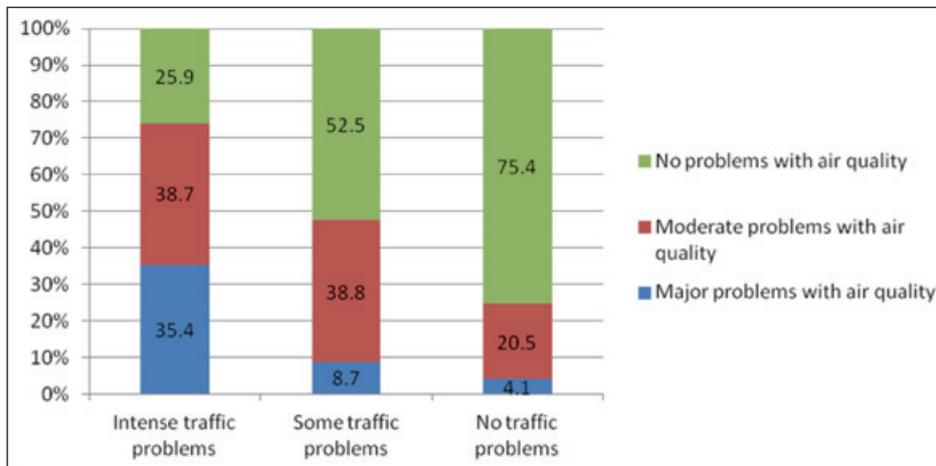
Air pollution is often highest in specific areas where especially traffic and industry are intense, and therefore different neighbourhoods tend to have different exposure levels affecting the residential population. Fig. 15 shows that these perceived exposure inequalities are most expressed for income, where persons with a low income (24% reporting major problems with air quality) have an almost 2.5 times higher exposure likelihood than persons with high income (10.2%). This disparity is most likely explained by residential location in disadvantaged and more polluted neighbourhoods.

**Fig. 15: Percentage of population reporting major problems with air quality in their neighbourhood by urbanization, education, income, age and gender in 2011/2012**

Source: Data from EQLS, 2013b

Differences by age are also apparent but there is no linear pattern. Still, the highest exposure level (18.8%) reported by residents at the age of 50-64 years is about double that reported by young adults. Compared to the income and educational differences, the gender-related differences seem modest; this could be due to the fact that exposure is caused by residential location rather than individual factors. This is confirmed when looking at the impact of traffic issues on perceived air quality, indicating that the by far highest reporting of major air pollution problems (35.4%) occurred in residents who complained about the traffic situation within their local neighbourhood. Fig. 16 also shows that within residential areas suffering intense traffic, only a quarter of the population reported no problems with air quality, as opposed to three quarters of the population residing in neighbourhoods with no traffic issues. The impact of traffic as a determinant for perceived air pollution is therefore stronger than for any of the other determinants mentioned above.

Fig. 16: Percentage of population reporting major problems with air quality by traffic problem intensity in 2011/2012



Source: Data from EQLS, 2013b

#### **Key message**

Perceived air pollution is a priority issue in Malta and is especially reported by the low-income population. Increased perception of air pollution exposure is also reported by persons with lower educational level and increasing age. However, spatial issues regarding location of neighbourhoods in dense and/or highly trafficked neighbourhoods play a significant role, indicating that residence in less busy (and probably more expensive) neighbourhoods makes one less vulnerable to air pollution exposure.

## 5. INJURY-RELATED INEQUALITIES

National data on inequalities related to unintentional injuries and accidents is mostly restricted to information on age and gender of the victims, and to the occupational sectors for work injuries. There is no reliable data available to assess inequalities in exposure terms; such as increased risk of accidents or presence of toxic compounds in homes related to falls and poisoning as outcomes; unsafe road conditions related to transport injuries; or specific work-related threats leading to occupational injuries. The data presented, therefore, identify the magnitude of inequalities in terms of outcomes, but shed little light on the causes and the priorities for action to mitigate these inequalities.

### Work-related injuries (ISCO-88 classification)

In 2011, 3024 work-related injuries were reported. More than a third of these injuries (37.3%) were sustained by workers in elementary occupations<sup>6</sup>, followed by 19.1% in craft and related trade workers and 13.3% in plant and machine operators and assemblers; this is likely to be attributed to the nature of these jobs (NSO, 2012a).

Most of the reported injuries occurred in males (84.6%), five times more frequently than in females (15.4%) (NSO, 2012a). When considering accidents at work leading to loss of more than three working days (possibly indicating accidents resulting in more severe injuries), the discrepancy was even larger, with 89.7% of such reported injuries occurring in males in 2010 (Eurostat, 2013). In certain sectors, however, such as in the professional occupations<sup>7</sup>, service workers and shop and market sales workers<sup>8</sup>, more women than men were reported to have suffered work-related injuries; however, more occupational injuries were reported to have occurred in men than in women in the elementary occupations, armed forces, craft and related trades, agriculture and fishery, in plant and machine operators and assemblers (Table 16). The variations are likely to be partly due to the fact that more men than women are employed in the labour force; this may also mirror the gender profiles within the various occupational sectors.

**Table 16: Percentage of work-related injuries by occupational sector and gender, 2011**

Occupation (ISCO-88)	Males	Females	Total
Armed forces	0.8	-	0.7
Legislators, senior officials and managers	1.7	1.3	1.6
Professionals	2.8	21.9	5.8
Technicians and associate professionals	6.3	2.4	5.7
Clerks	2.5	9.2	3.5
Service workers and market and sales workers	8.9	24.9	11.4
Skilled agricultural and fishery workers	1.9	-	1.6
Craft and related trades workers	22.4	1.3	19.1
Plant and machine operators and assemblers	14.1	9	13.3
Elementary occupations	38.6	30	37.3
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Data from NSO, 2012a

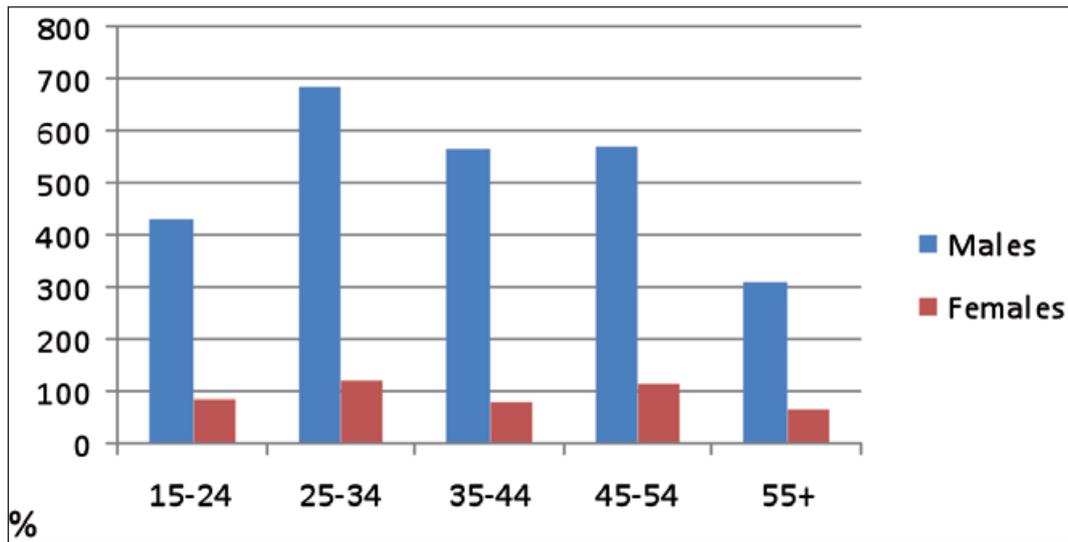
In 2011, the highest proportion of work related injuries occurred in persons aged between 25 and 34 years, with significant gender differences in all age groups. The largest gender difference occurred within the 25-34 year age group. In both genders, there was no clear trend by age (Fig. 17).

<sup>6</sup> Includes cleaners and helpers, food preparation assistants, street and related sales and services workers, refuse workers and other elementary workers (ISCO-88)

<sup>7</sup> Includes physical, mathematical and engineering science professionals; life science and health professionals; teaching professionals and other professionals (ISCO-88)

<sup>8</sup> Includes personal and protective services workers and models, salespersons and demonstrators (ISCO-88)

Fig. 17: Number of work-related injuries by age and gender, 2011

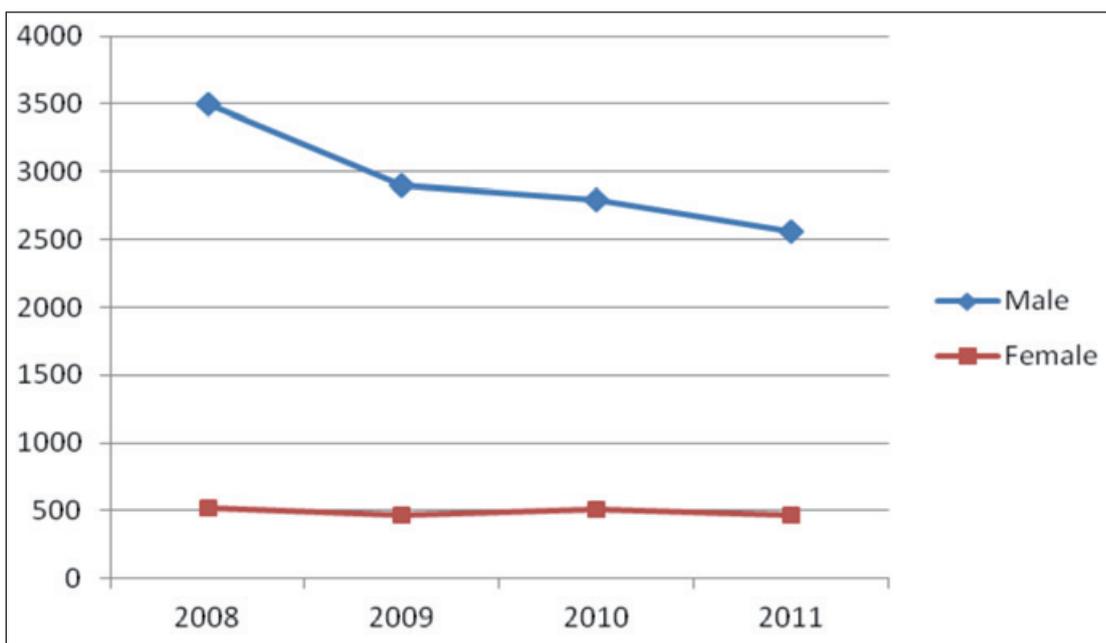


Source: Data from NSO, 2012a

When looking at the occupational injury data for the years 2008 through to 2011, although there was a 25% decrease in overall work injuries in Malta over this period (NSO 2012a), the benefits of these reductions were not equally shared throughout the workforce. The number of reported accidents decreased by 46.6%; however, a 24.6% increase of injuries was noted in service workers and market and sales workers.

In similar terms, the reduction in injuries was not evenly distributed by gender (Fig. 18). For the same time period, between 2008 and 2011, there was a 27% decrease in occupational injuries in males, whilst in females, although actual injuries occurred much less frequently, the numbers remained relatively stable. Once again, although this data is based on total numbers of reported injuries and would need to be compared with total employment data to be validated, it does point to a potential inequality.

Fig. 18: Number of accidents at work by year and gender, 2008-2011



Source: Data from NSO, 2012a

The highest incidence of fatal accidents at work in Europe in 2009 was recorded in Malta at 5.0 deaths from accidents at work per 100 000 persons employed as compared to 2 deaths per 100 000 persons employed in the EU-27 (Eurostat 2012b). The actual number of deaths from accidents at work is shown in Table 17. As indicated in the table, the numbers of fatalities in Malta are small and are, therefore, subject to substantial annual fluctuation, making statistical, especially trend analysis, difficult.

**Table 17: Fatal accidents at work, 2008-2011**

Year	Number
2009	8
2010	3
2011	1
2012	6

Source: Data from NSO, 2013b

#### Key message

Inequalities in work related injuries are related mostly to gender and occupational sector. This report shows that male workers have a higher incidence rate of work-related injury than females at all ages and this is related to type of occupation. However, although the rate of occupational injuries in males decreased substantially between 2008 and 2011, the rate in females remained stable. Injury rates in workers are highest in the elementary occupations.

#### Road transport accidents (ICD-10 classification: V01-V99)

Since the 1980s, the number of licensed motorized vehicles per capita has risen steadily, from 0.67 in 2004 (NSO, 2005) to 0.75 in 2011 (NSO, 2012a). The number of road casualties per 1,000 inhabitants was 3.0 in 2003 (NSO, 2005) and 3.8 in 2011 (NSO, 2012a).

According to the WHO Regional Office for Europe's Health for All Database, the Age Standardised Death Rate (SDR) for motor vehicle traffic accidents (all ages) for the EU-27 region in 2011 stood at 8.56 while that for Malta was 4.27 (WHO 2013c). Table 18 shows the SDR for motor vehicle traffic accidents in (all ages) for the EU-27 region and for Malta for the years 2008 to 2011. Numbers for Malta are small and, therefore, subject to substantial annual fluctuation.

**Table 18: SDR for motor vehicle traffic accidents (all ages) by year**

	2008	2009	2010	2011
Malta	4.39	4.66	3.61	4.27
EU 27	12.28	10.04	8.39	8.56

Source: Data from WHO 2013c

In 2012, for all ages, 58% of slight injuries occurred in males. The rate of grievous injuries in males (68%) was double that in female (32%). The majority of slight and grievous injuries caused by road traffic accidents occurred in individuals aged between 18 and 60 years.

Further breakdown of the data (Table 19) indicates that 22% of grievous injuries in males occurred in the 18-25 year age group, 24% in the 26-40 year age group, and 24% in the 41-60 year old age group. In females, the rates were 22%, 17.5% and 18.5% for the 3 age categories respectively. However, 21% of grievous injuries in females were sustained in the 66+ years age group, possibly indicating that elderly females may be particularly vulnerable to grievous injuries caused by road traffic accidents.

In the year 2012, 3 out of a total of 9 fatal accidents occurred in the over 66 year olds; all three deaths occurred in males. This statistic must be interpreted with care since numbers involved are small and subject to annual variation (NSO, 2013c).

Table 19: Road traffic casualties by severity of injury, age and gender, 2012

	Slight	Grievous	Fatal	Total
<b>Total</b>	<b>1,290</b>	<b>300</b>	<b>9</b>	<b>1,599</b>
<b>0-10 years</b>	74	12	0	86
<b>11-17 years</b>	72	17	0	89
<b>18-25 years</b>	295	66	2	363
<b>26-40 years</b>	378	67	1	446
<b>41-60 years</b>	317	68	1	386
<b>61-65 years</b>	67	25	2	94
<b>66+ years</b>	83	43	3	129
<b>Age unknown</b>	4	2	0	6
<b>Male (total)</b>	<b>743</b>	<b>203</b>	<b>7</b>	<b>953</b>
<b>0-10 years</b>	43	8	0	51
<b>11-17 years</b>	34	12	0	46
<b>18-25 years</b>	160	45	2	207
<b>26-40 years</b>	213	50	1	264
<b>41-60 years</b>	202	50	0	252
<b>61-65 years</b>	40	14	1	55
<b>66+ years</b>	49	23	3	75
<b>Age unknown</b>	2	1	0	3
<b>Female (total)</b>	<b>547</b>	<b>97</b>	<b>2</b>	<b>646</b>
<b>0-10 years</b>	31	4	0	35
<b>11-17 years</b>	38	5	0	43
<b>18-25 years</b>	135	21	0	156
<b>26-40 years</b>	165	17	0	182
<b>41-60 years</b>	115	18	1	134
<b>61-65 years</b>	27	11	1	39
<b>66+ years</b>	34	20	0	54
<b>Age unknown</b>	2	1	0	3

Source: Data from NSO, 2013c

As indicated in Table 20, in 2012 the majority of grievous injuries caused by road traffic accidents occurred in passenger cars, reflecting the most common mode of motorised transport on Maltese roads. The 2010 National Household Travel Survey reported that 59.4% of recorded trips during the survey day were made by car drivers, 15.25% by car passengers, 11.3% using public transport and 7.6% on foot (NSO, 2010).

Fig. 19 shows the age distribution for grievous injuries according to type of vehicle involved. Although such injuries in passenger cars occurred most commonly in persons aged 18 to 60 years, the figure shows another peak in the 66+ age group (amounting to 16% of grievous injuries occurring in road traffic accidents involving passenger cars). In the case of motorcycles, grievous injury rates were 25% for the 18-25 year age group, 31% for the 26-40 year age group and 29% for the 41-60 year age group.

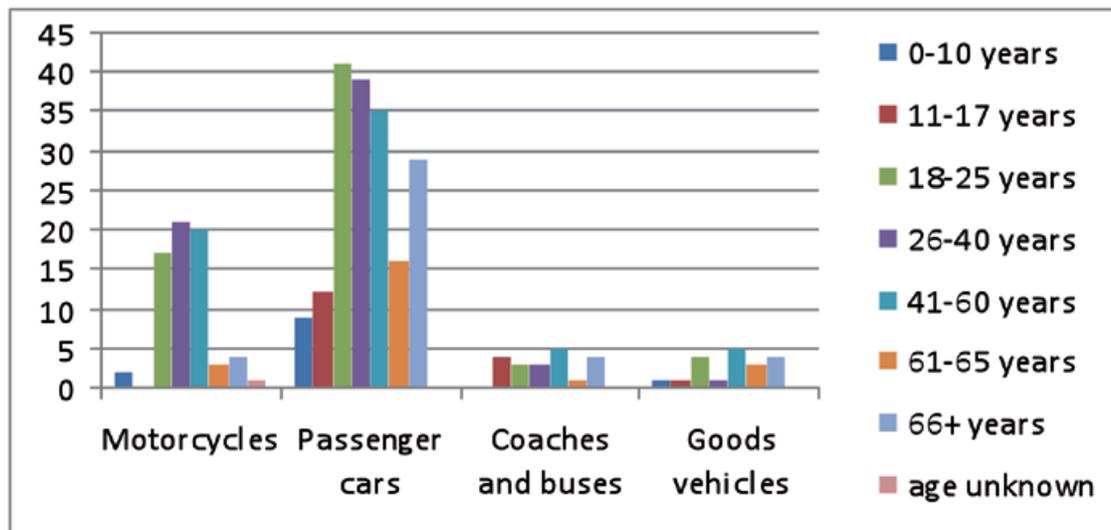
In 2012, the rate of grievous accidents per 1000 licensed motor vehicles (number of licensed motorcycles 15,815, number of licensed passenger cars 249,612 at end of 2012) stood at 4.3 for motorcycles and 0.7 for passenger cars.

Table 20: Road traffic casualties (grievous and fatal) by type of transport and age, 2012

		Motorcycles	Passenger cars	Coaches and buses	Goods Vehicles	Unknown
0-10 years	Grievous	2	9	0	1	0
	Fatal	0	0	0	0	0
11-17 years	Grievous	0	12	4	1	0
	Fatal	0	0	0	0	0
18-25 years	Grievous	17	41	3	4	1
	Fatal	0	2	0	0	0
26-40 years	Grievous	21	39	3	1	3
	Fatal	0	1	0	0	0
41-60 years	Grievous	20	35	5	5	3
	Fatal	0	1	0	0	0
61-65 years	Grievous	3	16	1	3	2
	Fatal	1	0	0	1	0
66+ years	Grievous	4	29	4	4	3
	Fatal	1	1	0	1	0
Age unknown	Grievous	1	0	0	0	0
	Fatal	0	0	0	0	0
Total	Grievous	68	181	20	19	12
	Fatal	2	5	0	2	0

Source: Data from NSO, 2013c

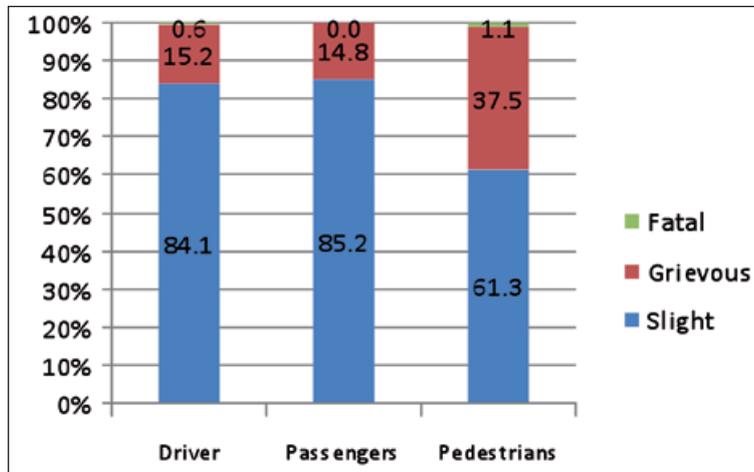
Fig. 19: Grievous road traffic injuries by type of transport and age, 2012



Source: Data from NSO, 2013c

Most injuries of slight nature were sustained by passengers and drivers, once again reflecting the most common mode of transport. However, as Fig. 20 indicates, pedestrians have a much higher rate of grievous and fatal injuries. This figure indicates that, in case of an accident, pedestrians are more vulnerable than vehicle occupants (drivers and passengers) are to grievous or even fatal outcomes.

Fig. 20: Injuries sustained in road traffic accidents by severity of injuries and type of road user, 2012



Source: Data from NSO, 2013c

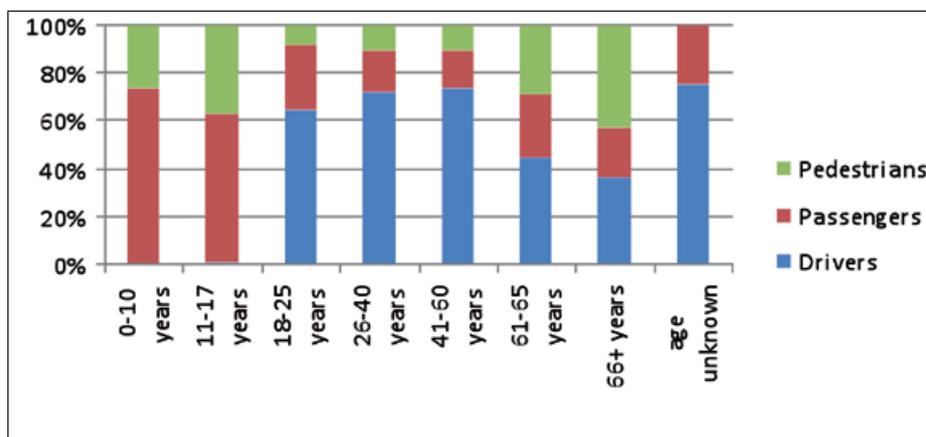
Drivers sustaining road traffic accidents (slight, grievous and fatal) were more likely to be between the ages of 18 and 60 years. All ages were affected within the passenger group, but it was noted that for pedestrians, the highest rate (21%) occurred in the 66+ age group (Table 21 and Fig. 21).

Table 21: Road traffic accidents (all outcomes) by age and means of transport, 2012

	Drivers	Passengers	Pedestrians	Total
0-10 years	0	63	23	86
11-17 years	1	55	33	89
18-25 years	234	98	31	363
26-40 years	320	78	48	446
41-60 years	285	58	43	386
61-65 years	42	25	27	94
66+ years	48	27	56	131
Age unknown	3	1	0	4
<b>Total</b>	<b>933</b>	<b>405</b>	<b>261</b>	<b>1599</b>

Source: Data from NSO, 2013c

Fig. 21: Road traffic accidents (all outcomes) by age and means of transport, 2012



Source: Data from NSO, 2013c

**Key message**

Males are twice as likely to succumb to or suffer from grievous injuries caused by road traffic accidents than are females. Most injuries and fatalities occurred within the 18-60 years age group; however, one fifth of grievous injuries in females occurred in the 66+ years age group. Pedestrians, especially those aged 66 years and over, and users of motorcycles, are at a greater risk of being involved in road traffic accidents.

**Fatal accidental poisoning (ICD-10 classification: X40-X49)**

Very little information beyond age and gender is available nationally and internationally with respect to poisoning events within specific population subgroups. Tables 22 and 23 show the actual numbers and crude mortality rates of fatal poisonings in the Maltese islands between 2008 and 2012, with no reported deaths from this cause in 2012. There seems to have been a downward trend within this period. However, numbers are small and subject to annual fluctuation.

Between the years 2008 and 2010, fatal accidental poisoning was more frequent in males than in females. There was just one death, occurring in a male in 2011 and no reported deaths in 2012.

**Table 22: Fatal accidental poisonings by age group, year and gender**

Age Group	2008			2009			2010			2011			2012		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
0-17	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
18-64	6	1	7	6	1	7	5	1	6	0	0	0	0	0	0
65+	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>7</b>	<b>1</b>	<b>8</b>	<b>6</b>	<b>1</b>	<b>7</b>	<b>5</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>

Source: Data from DHIR, 2013a

Notes: M=males, F=Females, T= Total

**Table 23: Crude mortality rate (per 100 000 population) for fatal accidental poisonings by age group, year and gender**

Age Group	2008			2009			2010			2011			2012		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
0-17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	1.3	0.0	0.0	0.0
18-64	14.3	2.5	8.6	14.6	2.6	8.7	12.4	2.6	7.6	0.0	0.0	0.0	0.0	0.0	0.0
65+	2.4	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>16.7</b>	<b>2.5</b>	<b>9.8</b>	<b>14.6</b>	<b>2.6</b>	<b>8.7</b>	<b>12.4</b>	<b>2.6</b>	<b>7.6</b>	<b>2.5</b>	<b>0.0</b>	<b>1.3</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

Source: Data from DHIR, 2013a

Notes: M=males, F=Females, T= Total

**Key message**

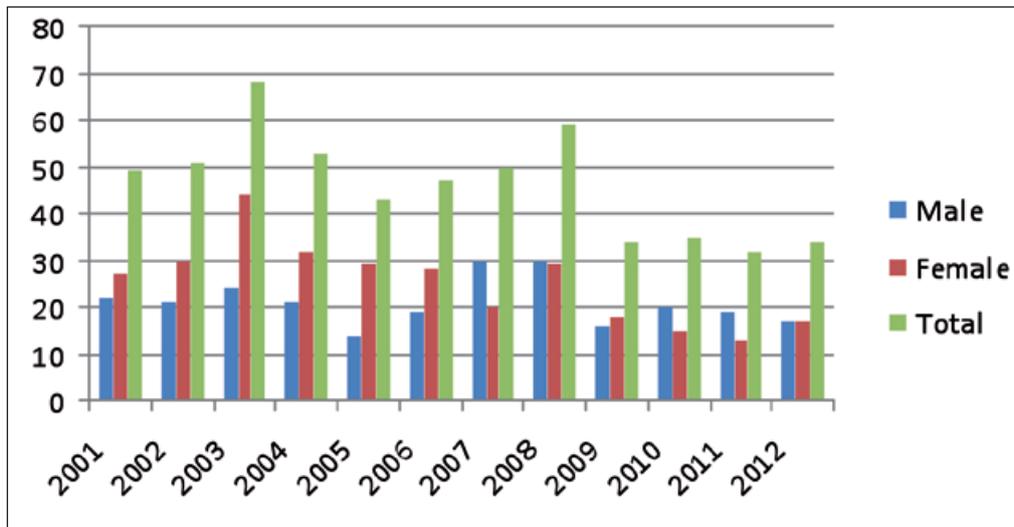
Fatalities from accidental poisoning occur more frequently in males; and there seems to be an overall downward time trend for this cause of mortality over the period considered. However, given the scarcity of information and small numbers available for the Maltese islands, data interpretation for this cause of death is to be done with caution. It is, therefore, difficult to reach any definite conclusions regarding inequalities in this regard.

### Fatal falls (ICD-10 classification: W00-W19)

Although falls are the second leading cause of accidental or unintentional injury deaths worldwide (WHO, 2012b), there is little information on the distribution of falls within the Maltese population. As for poisonings, available data is mostly restricted to gender and age considerations.

The number of deaths due to falls during the years 2001 to 2011 averaged 49 deaths per year (22 males, 27 females) (DHIR, 2001-2011). The number of deaths from falls for the years 2009 to 2012 is less than in previous years (Fig. 22).

Fig. 22: Number of deaths from falls by year and gender



Source: Data from DHIR, 2001–2010

According to the WHO European detailed mortality database (DMDB), the crude death rate per 100,000 population in Malta in the year 2011 was 7.7 (9.18 in males, 6.23 in females) (WHO 2013d). The actual number of deaths during this particular year was 32, accounting for 0.89% of all deaths (males 1.14%, females 0.81%). Deaths from falls accounted for the highest number of deaths due to external causes for both males and females (except for deaths from intentional self harm in males) (DHIR 2013b).

The average age at death caused by falls in 2011 was reported to be 78.8 years for males and 87 years for females (average 82.1 years). In both the 65-84 and over 85 years age groups, deaths from falls accounted for 1.8% of all deaths during the year 2011 (DHIR, 2013b).

Table 24 shows the crude mortality rates (per 100,000) for the years 2008 to 2012 by age and gender. As expected, deaths due to falls increase with age. This is due both to the increased frequency of falls in the elderly and the increased likelihood of complications leading to death. For the period considered, there is a higher rate of fatalities from falls in males in the 18-64 year age group compared with female rates, possibly resulting from falls due to occupational factors. In comparison, few deaths were reported for in this age group in females.

Table 24: Crude mortality rate (per 100,000) from fatal falls by age group, year and gender among Maltese residents

Total Population					
Age Group	2008	2009	2010	2011	2012
0-17	2.5	1.2	0.0	0.0	0.0
18-64	8.6	5.0	8.9	2.6	9.2
65+	61.3	36.2	35.7	38.8	35.3
<b>Total</b>	<b>72.3</b>	<b>42.5</b>	<b>44.6</b>	<b>41.4</b>	<b>44.5</b>
Males					
Age Group	2008	2009	2010	2011	2012
0-17	4.8	2.4	0.0	0.0	0.0
18-64	16.7	9.7	12.4	5.0	15.3
65+	50.0	26.7	37.1	42.8	28.0
<b>Total</b>	<b>71.5</b>	<b>38.8</b>	<b>49.5</b>	<b>47.8</b>	<b>43.3</b>
Females					
Age Group	2008	2009	2010	2011	2012
0-17	0.0	0.0	0.0	0.0	0.0
18-64	0.0	0.0	5.2	0.0	2.7
65+	73.2	46.3	34.1	34.6	43.1
<b>Total</b>	<b>73.2</b>	<b>46.3</b>	<b>39.4</b>	<b>34.6</b>	<b>45.8</b>

Source: Data from DHIR, 2013a

**Key message**

Falls are an important cause of morbidity and mortality in the elderly. Mortality from falls is clearly higher in males in the younger age groups, but higher in females in the over 84 year old age group.

## 6. ENVIRONMENTAL RISKS AND HEALTH

The environmental health inequalities considered in this report are based on risk exposures and injuries that have significant impact on health and well-being. Still, data on the exposure to environmental threats does not directly provide evidence of the association of environmental exposure and health outcomes and on the potential increase of negative health effects associated with increasing environmental exposure. Therefore, the WHO report on Environmental health inequalities in Europe called for an increased use of better and more detailed national data which could also provide an indication of the potential health impacts of the unequal distribution of environmental exposure (WHO, 2012a).

For this report on environmental health inequalities in Malta, EQLS 2012 data were used to show the associations of environmental exposure as reported by the survey population with health outcomes covered within EQLS 2012, such as self-reported health status<sup>9</sup> or the self-reported prevalence of chronic conditions (defined as physical or mental health problem, illness or disability). As these health outcomes are very generic, and influenced by a variety of aspects beyond environmental conditions, they can only provide a very rough idea on the health status associated with environmental exposures and their distribution.

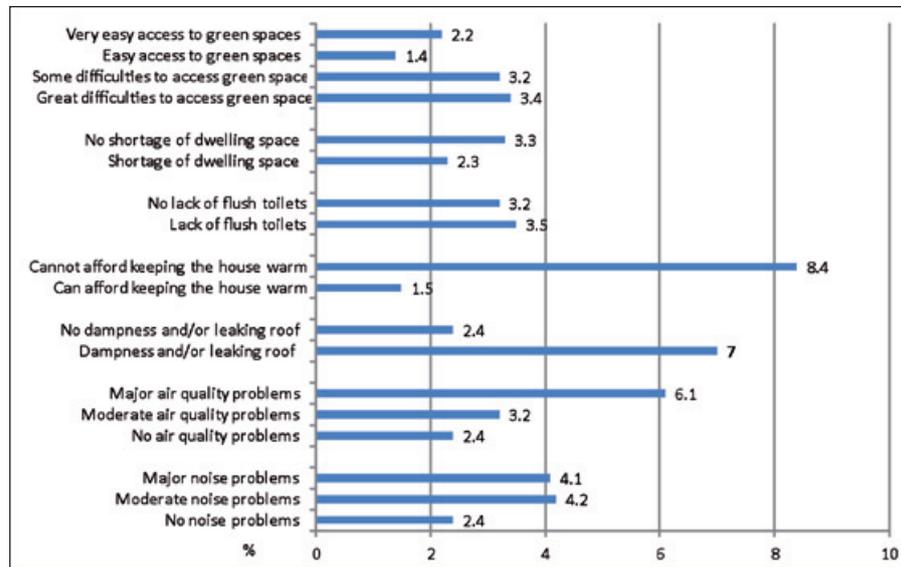
The EQLS 2012 data covers most of the environmental health inequality indicators presented in this report except for (a) keeping the home cool in summer, (b) all injury indicators and (c) second-hand smoking at home and at work. Fig. 23 shows that for most of the environmental stressors considered, self-reported health status is strongly associated with environmental conditions and that an increase in environmental exposure is associated with a proportional increase of low self-reported health status. For example, people who reported being unable to afford keeping their homes adequately warm reported bad or very bad health five times more often than those without this problem. The same trend can be seen for air quality and dampness at home, for which exposed persons reported having bad and very bad health at least twice as often. Yet, these associations do not represent causal relationships.

At the same time, Fig. 23 shows that for some environmental stressors there is no clear association or gradient with health outcomes. For example, access to green recreational areas is strongly dependent on the lifestyle of the population and may have little direct impact on general health perception; also, people in poor health might have easy access to green space but are not able to use it because of their health. There is no variation in self-reported health status whether one has access to a flush toilet within the dwelling or not, indicating that a lack of a flush toilet may be an inconvenience but not necessarily a health risk. When considering shortage of space, the results indicate a small increase of self-reported bad health when there is no problem with dwelling space. However, this result is strongly affected by 60% of all single person households being elderly persons whose health status is less than average – resulting in lower health status results for individuals reporting no problems with lack of dwelling space. Finally, when reporting on noise problems, the major difference is between those with no perceived noise problems and those with any magnitude of noise problem; there is almost no difference between persons reporting moderate or major noise problems and thus no linear gradient for bad health perception as found to be associated with reporting of perceived air quality problems.

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<sup>9</sup> Self-reported health is measured on a five-point scale from 1 (very good) to 5 (very bad)

Fig. 23: Percentage of population reporting bad or very bad health by environmental exposure in Malta, 2011/2012

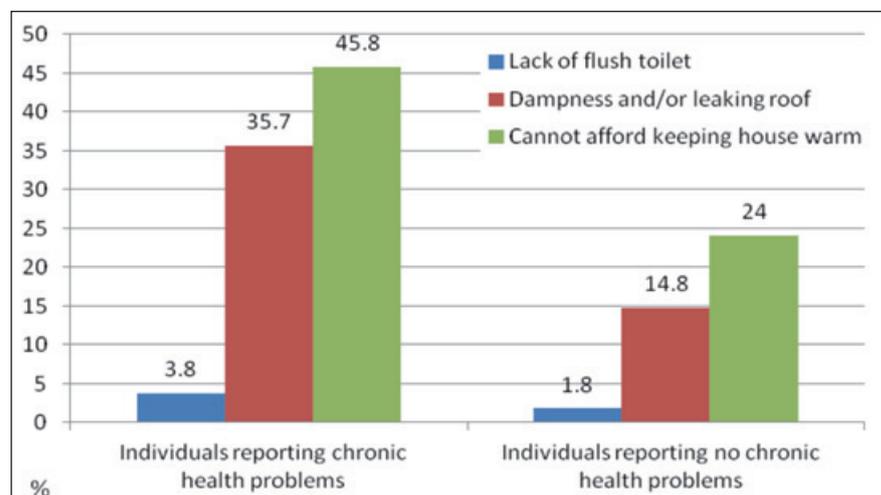


Source: Data from EQLS, 2012

It is difficult to assess whether this association represents a causal link between environmental stressors and perceived health status (as e.g. the lack of a flush toilet does not exclude access to other acceptable sanitary options, and problems with damp and heating do not directly translate into cold and mouldy environments), or whether the presence of these problems simply indicates less fortunate living conditions which predominantly affect less wealthy and possibly also less healthy population groups.

Besides self-reported health status, the EQLS 2012 also provides information on self-reported chronic health conditions. Fig. 24 below shows that persons reporting that they suffer from chronic health conditions are much more likely to report infrastructural problems in their home environment, with sanitation problems, temperature problems or potential problems with damp and mould being reported about twice as often. Similar findings are made for self-reported health status: self-reported bad health is associated with a two to three times higher prevalence of such infrastructural shortcomings, which are not likely to be affected much by perception or preference. Therefore, the results suggest that persons in vulnerable health conditions tend to be exposed to environmental risks much more often than their more healthy fellow citizens.

Fig. 24: Percentage of the population reporting infrastructural housing problems by chronic health conditions, 2011/2012



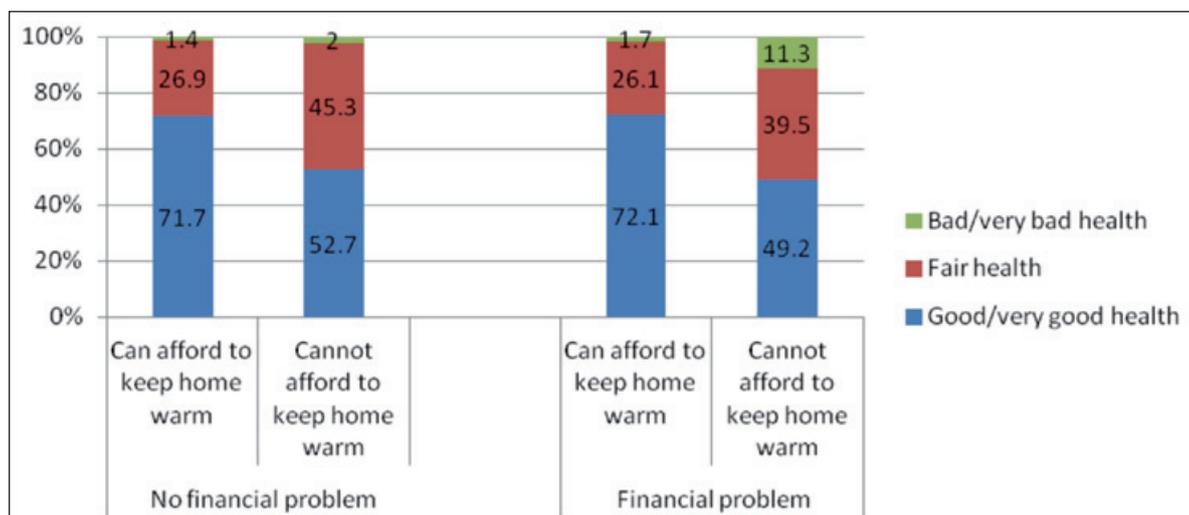
Source: Data from EQLS, 2012

For environmental exposures that operate more on a basis of perception or preference, such as noise, air pollution or access to green and recreational areas, exposure differences by self-reported chronic health conditions are much less expressed than in Fig. 24 which covers infrastructural problems of a more objective nature.

Clearly, the association of specific environmental problems with self-reported health and chronic conditions is a rather weak indication of the potential impacts, and cannot provide a causal relationship. The extent of the reliability and validity of the perception of environmental problems as an estimate of harmful exposure is also debatable. Nevertheless, the results show that low health status is more frequently found in populations exposed to environmental problems, indicating that environmental risks over-proportionally affect the vulnerable population groups that would most need protection.

Contributing first insights into the health disparities associated with environmental inequality, the EQLS 2012 data for Malta enables the assessment of the association of environmental exposure with health outcomes that is independent of the influence of socioeconomic determinants. Fig. 25 below provides such an example, looking at the impact of not being able to afford home heating on self-rated health separately for the population that reported having no financial problems, and for the population that reported having financial problems. The results show that despite the financial situation, the two population subgroups are very similar in terms of self-reported health when keeping the home warm is not a problem. However, once home heating is difficult to afford, the impacts on self-reported health are much more severe within the population subgroup reporting financial problems. For the respondents without financial concerns, the main difference is an increase of fair health and a reduction of good health, but there is only a small increase of bad health when compared to respondents with financial problems who report a strong increase in bad health (1.7% to 11.3%) and a significant reduction of good health in parallel. The findings therefore suggest that both the socioeconomic situation and the environmental exposure have an independent impact on the health status of the population, with the health status of the vulnerable subgroups (those suffering from combined social and environmental pressures) being most affected.

**Fig. 25: Self-reported health status by financial capacity and ability to afford home heating in Malta, 2011/2012**



Source: Data from EQLS, 2012

However, it is important to note that the contribution to health and health inequalities is different for the individual environmental risks, and also depends on the socio-demographic determinant considered (age, gender, income, at-risk-of-poverty etc.). Although the example displayed above cannot be considered as representative of all associations between social, environmental and health dimensions, it proves that environmental exposure disparities can potentially affect health and contribute to health inequalities.

## 7. CONCLUSION

This report presents a detailed analysis of inequalities in environmental health on a national scale. It presents available data for a number of environmental health indicators by socio-demographic, socioeconomic and spatial factors, based on environmental health inequality indicators used in the WHO European Report on Environmental Health Inequalities; and explores further areas of relevance to Malta, such as the consideration of data relating to problems with keeping the dwelling cool in summer, data for all reported road traffic accidents apart from fatal accidents, and data related to the perception of problems with air quality. When possible, exposures to environmental risks are stratified by age, gender, income and relative poverty, and household composition.

### **Inequalities related to demographic aspects (age, sex, household type)**

The report concludes that out of the few households in Malta lacking these facilities, single elderly person households are more likely to have no bath/shower for sole use of the household and are more exposed to dampness in the home. Single parents with dependent children are more likely to lack a flush toilet, bath/shower in the dwelling for sole use of the household, and have difficulty keeping the dwelling warm in winter. Large households, especially those with dependent children, are most prone to suffer overcrowding and inability to keep the home warm in winter.

The elderly, especially those over 65 years of age are more vulnerable to the effects of noise. Elderly females are particularly prone to suffer grievous and fatal road traffic injuries, especially pedestrians. Fatal falls are most likely to occur in elderly females above 84 years of age. On the contrary, occupational injuries, road traffic accidents and fatal falls are most likely to occur in males, especially in the younger age groups for fatal falls.

Young persons aged 15-24 years, are more likely to be exposed to second hand smoke at home and in the workplace. Although no data was available at the time of study, one would expect similar findings in children exposed to second hand smoke in the home.

### **Inequalities related to socioeconomic aspects (income, poverty, education, occupation)**

Low income plays a large role in inequalities with respect to lack of flush toilet, bath/shower for sole use of the household, overcrowding and dampness in the home. Those at-risk-of-poverty are more often unable to keep the dwelling warm in winter and cool in summer. Low income also affects exposure to noise and second-hand smoke at home. In addition, the unemployed and the disabled are more exposed to second hand smoke at home.

A low education status is also associated with a lack of flush toilet for sole use of the household, dampness and inability to keep the dwelling warm in winter, noise pollution and exposure to second hand smoke at home and at work.

Those in elementary occupations are more at risk of suffering a work-related injury; motorcycle users are most prone to road traffic accidents. It is noted that although the supply of drinking-water is not a problem in Malta, perception of water quality varies between population groups.

### **Inequalities related to spatial aspects (urban-rural, regions)**

Geographical differences are noted, with rural dwellings more frequently lacking a flush toilet, bath or shower for sole use of the household. Overcrowding is most frequent in the Western region, which also happens to be the more densely populated part of the island; and noise exposure at home is more of a problem in city and town centres.

For many of the environmental stressors, self-reported health status is strongly associated with environmental conditions; on the other hand, for some environmental exposures, such as noise, air pollution or access to green and recreational areas, there is no clear association or gradient with health outcomes. On assessing the association of environmental exposure with health outcomes independently of the influence of socioeconomic determinants, it is suggested that both the socioeconomic situation and the environmental exposure have an independent impact on the health status of the population, with the health status of the vulnerable subgroups suffering from combined social and environmental pressures being most affected. However, this report

indicates that, although income has repeatedly been identified as a major social determinant for a number of environmental exposures, other social or demographic determinants – especially household type – also play a role for the assessment and mitigation of inequalities in environmental exposure.

In a nutshell, environmental health inequalities are a reality in Malta. This report is a first step towards the identification of the population groups that are most likely to suffer these inequalities, and calls for further discussion and targeted intersectoral action to mitigate and reduce risk exposure in the most affected populations, focusing on the most exposed or vulnerable risk groups. However, the report also indicates that despite the relevance of the findings presented, more detailed information is still needed to enable more in-depth assessments with respect to environmental exposure data (such as injury and air pollution data) and certain risk groups (such as the elderly), which would aid the targeting of specific interventions to the more vulnerable subpopulations.

In line with the recommendations of the WHO European report on environmental health inequalities, both targeted actions (focusing on specific disadvantaged groups) and universal actions for the general improvement of environmental conditions, need to be considered and tailor-made to national needs. The sharing of experiences and case studies on successful interventions tackling environmental health inequalities, the review and modification of relevant national intersectoral policies in relation to environmental health inequalities as well as the monitoring of environmental health inequalities using a standard set of inequality indicators are also recommended.

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## ANNEX 1: ABBREVIATIONS

DHIR	Directorate for Health Information and Research
DMDB	European Detailed Mortality Database
EC	European Commission
EHPR	Environmental Health Performance Review
EQLS	European Quality of Life Survey
ESAW	European Statistics on Accidents at Work
EU-SILC	Eurostat Survey of Income and Living Conditions
HFA-DB	European Health for All Database
ICD-10	International Classification of Diseases Tenth Revision
ILO	International Labour Organization
ISCO	International Standard Classification of Occupations
MEPA	Malta Environment and Planning Authority
MHEC	Ministry for Health, the Elderly and Community Care
MRA	Malta Resources Authority
MTEC	Ministry for Tourism, the Environment and Culture
NEHAP	National Environment and Health Action Plan
NEP	National Environmental Policy
NSO	National Statistics Office
SDR	Standardised Death Rate
WHO	World Health Organization

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