Growing up in the cold

A Research Paper on the Relationship Between Energy Poverty and Children's Health





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A report prepared by the Society of St Vincent de Paul

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1. Introduction

Background and Study Rationale

Light, heat and power are fundamental requirements to participate in society and a pre-requisite for social inclusion. However, many people in Ireland continue to experience energy poverty, which is defined as the inability of a household to attain an acceptable standard of warmth and energy services in the home at an affordable cost.¹ According to the Survey of Income and Living Conditions (SILC), in 2018, 43% of people living in consistent poverty went without heating at some stage in the previous year due to cost, and 29% could not afford to keep their house adequately warm. ² It is estimated that almost one in six households spend more than 10% of their income on energy which is the official measure of energy poverty in Ireland.³ The reality behind these figures are apparent to SVP's 11,000 members who meet families every week living in cold, damp and poorly insulated homes. Last year, the Society spent almost €5 million on direct assistance to households struggling with energy debt and costs – an increase of 20% on the previous year.⁴

In our 2014 research, "It's the Hardest Job in the World", energy poverty was a significant problem for almost all of the 61 one parent families interviewed and it was the initial reason for contacting SVP for assistance.⁵ Many of the parents were in debt and their incomes were inadequate in meeting their costs. Parents' stories also illustrated the link between energy poverty, poor housing conditions and thermal inefficiency in the private rented sector. Similar experiences were found in the 2018 study "Stories of Struggle", which was carried out by the

¹ Department of Communications, Energy and Natural Resources (2011) Warmer Homes – A Strategy for Affordable Energy in Ireland. Dublin: DCENR

² CSO (2018) Survey of Income and Living Conditions, Table 3.5c: Percentage of the population experiencing each type of deprivation by consistent poverty status. <u>https://www.cso.ie/en/releasesandpublications/ep/p-</u>silc/surveyonincomeandlivingconditionssilc2017/povertyanddeprivation/

³ Bercholz and Roantree (2019) Carbon Taxes and Compensation Options <u>https://www.esri.ie/system/files/publications/BP202001.pdf</u>

⁴ SVP Financial Statement 2017 <u>https://www.svp.ie/news-media/publications/svp-financial-statements.aspx</u>

⁵ Society of St Vincent de Paul (2014) "It's the hardest job in the world" An exploratory research study with one parent families being assisted by the Society of St Vincent de Paul. <u>https://www.svp.ie/getattachment/0dfc3b0e-9165-4792-946e-43f84199eb57/lt-s-The-Hardest-Job-in-The-World.aspx</u>

Vincentian Partnership for Social Justice (VPSJ) and explored the experiences of households with children living below a Minimum Essential Standard of Living (MESL). Families who were interviewed had recently gone without sufficient heating, and regularly did not have enough money to cover household bills. For some families in private rented accommodation, their homes were poorly insulated or the method of heating the home was wasteful. It also found that rural households particularly struggled with energy costs as they couldn't afford to fill the tank with oil and often had to resort to buying containers of kerosene which is unsafe and more expensive.

The combination of increased energy prices, poor quality housing and the persistence of low income increase the vulnerability of people to cold homes and the negative impacts on physical and mental health caused by living in a cold home are increasingly well recognised.⁶ Of concern, the number children living in inadequately heated homes increased significantly during the recession. Data from the Survey of Income and Living Conditions shows that there was a marked increase in the proportion of households with children who are unable to keep their home adequately warm – from 4.3% in 2009 to 11.5% in 2013. Year on year there has been a welcome decline in the rate to 4.6% in 2018.⁷ However, last year, over 10.5% of one parent households reported that they could not afford to adequately heat their home - the highest rate for all household types.

In 2018, households with children were more likely to be in arrears on their utility bills -11% of households with children were in arrears on their utility bills, compared to 8.6% of the total population, 3.3% of households with one adult over the age of 65 and 4.7% of all households without dependent children. ⁸

It is estimated that 12.3% of children in Ireland were living in homes that have a leaking roof, damp walls, floors or foundation, or rot in window frames or floors.⁹ The rate was the same for the population aged 18-64 and among the population over 65 the rate was 9% in 2018.

ESRI research found that lone parents stand out as a group experiencing high rates of energy poverty on both the subjective and official expenditure measures (at 23.4% and 31.1% respectively). ¹⁰ Similarly, children in lone parent households were almost twice as likely to live in

⁶ The Marmot Review Team (2011) The Health Impacts of Cold Homes and Fuel Poverty. London: Friends of the Earth and The Marmot Review Team.

https://friendsoftheearth.uk/sites/default/files/downloads/cold_homes_health.pdf

⁷ Source: Eurostat EU-SILC Survey[ilc_mdes01]

⁸ Source: Eurostat EU-SILC Survey [ilc_mdes07]

⁹ Source: Eurostat EU-SILC Survey [[ilc_mdho01c]

¹⁰ Bercholz and Roantree (2019) *Carbon Taxes and Compensation Option* <u>*htt*ps://www.esri.ie/system/files/publications/BP202001</u>

homes that had issues of damp, leaks and rot than other households with children in 2018 (19.6% compared to 6%). ¹¹ Therefore, children growing up in lone parent households are more at risk of exposure to energy poverty and the associated health risks.

This would mirror findings from other studies that show energy poverty is more common among younger people than those aged over 65 using subjective measures and using expenditure based measures after housing costs.¹² This indicates that children are among the most vulnerable to experiencing energy poverty than other groups.

Research conducted on behalf of SVP by VPSJ in 2014 illustrated that the private rented sector has higher proportions of E, F and G Building Energy Ratings (BERs) than either local authority or owner occupied homes.¹³ Between 2006 and 2016, the number of primary school aged children living in rented accommodation rose by over 75%.¹⁴ The current government strategy "Rebuilding Ireland" seeks to meet 60% of housing need through the private rented sector. Therefore, as more low income households are housed in the private rented sector through the Housing Assistance Payment scheme, it is increasingly likely that a growing number of children will experience energy poverty.

This is concerning as international research has documented that energy poverty negatively affects a child's physical and mental health.¹⁵ Evidence from the UK, which considered the health impacts of living in a cold home on children, showed significant adverse effects in terms of infants' weight gain, hospital admission rates, developmental status, and the severity and frequency of asthmatic symptoms.¹⁶ The review also found clear adverse effects of cold housing and energy poverty on the mental health of adolescents.¹⁷

¹⁴ CSO (2017) Census 2016 Profile 3 - Age Profile of Ireland. <u>https://www.cso.ie/en/csolatestnews/presspages/2017/census2016profile3-anageprofileofireland/</u>

¹¹ Source: Eurostat EU-SILC Survey [ilc_mdho01c]

¹² Scott el. al. (2008) Fuel Poverty in Ireland: Extent, Affected Groups and Policy Issues. <u>https://www.esri.ie/publications/fuel-poverty-in-ireland-extent-affected-groups-and-policy-issues</u>

¹³ Vincentian Partnership for Social Justice (2014) Minimum Household Energy Need. <u>https://www.budgeting.ie/download/pdf/vpsj_2014_technical_paper___minimum_household_energy_need.pdf</u>

¹⁵ Kimberly O'Sullivan *et al.* 'Child and Youth Fuel Poverty: Assessing the Known and Unknown' (2016) 10 People, Place and Policy 78.

¹⁶ Barnes et. al. (2016) The Dynamics of Bad Housing: The impact of bad housing on the living standards of children. London: National Centre for Social Research.

¹⁷ The Marmot Review Team (2011) The Health Impacts of Cold Homes and Fuel Poverty. London: Friends of the Earth and The Marmot Review Team. <u>https://friendsoftheearth.uk/sites/default/files/downloads/cold_homes_health.pdf</u>

Importantly, the Strategy to Combat Energy Poverty identifies households with children, in particular those headed by one parent, as a key target group for energy poverty alleviation measures. However, to date, in Ireland, research has focused almost exclusively on energy poverty among older people and relatively little is known about the nature of energy poverty in households with children. ¹⁸ The purpose of this study is to provide comprehensive data on the nature and impact of growing up in energy poor households on children. This can be used to inform the development of future evidence-based policy and practice, ultimately leading to a reduction in energy poverty, improved living standards for low income households, reduced health care costs, a more efficient and better-quality housing stock and climate change mitigation.

Research Objectives and Questions

The aim of this report is to provide nationally representative information on the nature and extent of energy poverty in households with children by analysing data on the impact of living in cold homes on Irish children's health.

While the link between energy poverty and child outcomes has been acknowledged in a number of studies, relatively little is understood about the nature of this relationship. This is partly because much of the evidence is based on small-scale studies that have difficulty isolating the "energy deprivation" from the impact of other factors that could cause negative child outcomes - such as low income and deprivation.

Within this context; this study seeks to answer the following research questions:

- a) What is the profile of children and families living in energy poor households?
- b) Do the risk factors for energy poverty differ from the risk factors for general household level deprivation?
- c) What is the relationship between energy poverty and other indicators of housing quality (damp, noise, overcrowding etc)?
- d) What is the risk of poor physical among children living in energy poor households, independent of the effects of income poverty and other dimensions of material deprivation?

¹⁸ Goodman et al. (2011) Fuel poverty, older people and cold weather: An all-island analysis. <u>https://www.publichealth.ie/sites/default/files/documents/files/Fuel%20Poverty%20Report%20December%202011.pdf</u>

e) Can policies which invest in actions indirectly related to children's health, such as energy efficiency schemes, be expected to deliver significant health impacts?

The results will be contextualised within current policy responses to energy poverty and used to identify policy levers that can reduce the incidence and impact of energy poverty in households where children live.

Report Outline

In the next section an overview of the policy context, including the key policy, implementation and practical challenges in addressing energy poverty is presented. Section 3 details the research methodology, including a description of the Growing up in Ireland data, and the analytical strategy. In section 4, the main findings are presented which includes a profile of households experiencing energy poverty, the links between energy poverty, poor housing, income and basic deprivation and an analysis of the relationship between energy poverty and the health of five-year olds. The report concludes with a number of recommendations for policy makers.

2. Policy Context

Strategy to Combat Energy Poverty 2016-2019

The Government Strategy to combat energy poverty,¹⁹ from the Department of Communications, Climate Action and the Environment, commits to address the issue for the following compelling social and economic reasons:

- assisting people to move out of poverty and reducing the burden on health services
- reducing the state's expenditure and reliance on imported fossil fuels
- supporting domestic employment through energy retrofitting of homes.

The objective of the Strategy is that everyone should be able to afford to adequately heat and power their home. In order to achieve this, the Government set out a number of key commitments regarding energy efficiency, with a particular emphasis on the private rented sector, and specific actions regarding meeting the cost of energy include the role of the regulator and income supports from the Department of Employment Affairs and Social Protection.

As the strategy comes to an end, the Minister for Communication, Climate Action and Environment recently highlighted progress in the following areas:

- €26.3m funding for the Warmth and Wellbeing Scheme which targets those suffering from chronic health conditions. To date, this funding has supported over 1,100 energy efficiency upgrades.
- The eligibility criteria for the Warmer Homes Scheme was expanded to capture more people suffering deprivation. Deeper measures are also now provided under the scheme. A total of €99.2m has been provided for this scheme between 2016 and 2019 supporting over 20,500 energy efficiency upgrades during that period.
- €82.3m in funding has been provided to the Better Energy Community Scheme which has supported innovative, community-led initiatives, some of which have helped to address energy poverty.

¹⁹ Department of Communications, Energy and Natural Resources (2016): A Strategy to Combat Energy Poverty 2016-2019, Dublin

• The Commission for Regulation of Utilities (CRU) has ensured that competitive energy markets are working for all consumers, including those in, or at risk of, energy poverty. ²⁰

However, despite this progress, a large proportion of the population continue to experience energy poverty and significant implementation gaps remain.

In the next section we outline in more detail the key policy and practice challenges in relation to energy income supports, energy pricing and energy efficiency schemes.

Key Policy and Practice Challenges

Rising energy prices and fixed costs

Electricity and gas prices have increased by over 29% since 2010. Data from Eurostat shows that Ireland is one of the most expensive countries for household electricity and gas prices in the European Union.²¹ At 21 cent per kilowatt hour, (kWh) Ireland has the fourth highest cost for electricity, while it is the second most expensive for gas usage at almost 10 cent per kWh. Some of the main driving factors in Ireland's high cost of energy is the overreliance on imported fossil fuels, in particular oil, the continued need for investment in the grid due to increased demand and the amount of taxes applied to customers' bills. ²²

Although the PSO levy on customer electricity bills decreased in the past two years, between 2012 and 2017, the levy increased by 231%. This coupled with the introduction of a carbon tax in 2010, means taxes make up a significant proportion of the average bill. Taking account of the Budget 2020 increase in the carbon tax, it will add €61 to the annual natural gas bill and the PSO levy adds €38.69 to the average electricity bill. It is also anticipated that ESB network standing charges will increase to fund the roll out of smart meter technology and infrastructural support required for the switch to more renewable forms of energy. Considering the Public

²⁰ Parliamentary Question, Written Answer Minister for Communication, Climate Action and Environment, 11th of July 2019 <u>https://www.kildarestreet.com/wrans/?id=2019-07-11a.2086&s=energy+poverty#g2087.q</u>

²¹ Irish Time Article, 7th August 2018, "Gas and Electricity Prices in Ireland Amongst the Highest in the EU", <u>https://www.irishtimes.com/news/ireland/irish-news/gas-and-electricity-prices-in-ireland-amongst-highest-in-eu-1.3588758</u>

²² RTE Brainstorm Article, 1st February 2018, "Why are Irish Electricity Prices so High", <u>https://www.rte.ie/brainstorm/2018/0201/937575-why-are-irish-electricity-prices-so-high/</u>

Service Obligation (PSO) levy, standing charges and VAT, the uncontrollable related costs of the average electricity bill in an urban area account for 37%. For rural areas, this increases to 39%.²³

Although the uptake in PAYG hardship meters have significantly reduced the number of disconnections among customers in financial difficulty, PAYG customers are often subjected to a "poverty premium" as they cannot avail on online offers or discounts for using direct debit or online billing. SVP price comparison of the main suppliers, carried out in November 2018, found that Pay-as-you-go (PAYG) customers can pay between €103 and €274 extra per year based on standard electricity consumption, when compared to a direct debit customer.²⁴ There is also a practice by which retail outlets surcharge top-ups, adding additional unnecessary charges to PAYG customers.²⁵ In "Stories of Struggle" while some participants recognised that this form of payment was more expensive than monthly billing, the prepaid method "gives control and peace of mind." A number referred to the increased expenditure required in severe weather conditions and the need to cut back on other basic expenditures.

Insufficient income supports

Research from the VPSJ found that improvements in energy efficiency alone will not enable vulnerable households afford their minimum energy needs. Even at the highest efficiency level examined, social welfare dependent households tended to remain in energy poverty due to income inadequacy.²⁶

At current levels Fuel Allowance is insufficient to meet the cost of energy for people on low incomes. An additional week of fuel allowance was introduced in Budget 2019 and an additional €2 per week was added in Budget 2020. This brought the payment to €686. However, the fuel allowance is still 17% lower than 2010 in terms of purchasing parity as cuts to Fuel Allowance and subsequent price increases have resulted in a significant loss of value in real terms. The Fuel Allowance may also not effectively target children who are experiencing energy poverty, as

²⁵ Stamp et. al. (2018) Left behind in the cold

https://www.mabs.ie/downloads/reports submissions/Left Behind in the Cold Dublin 10 an d 20 MABS Report.pdf

²³ SVP calculations based on an urban domestic average of 3600kWh and a rural domestic average consumption o 39000kWh. <u>https://www.cru.ie/wp-</u>

<u>content/uploads/2017/07/CER17042-Review-of-Typical-Consumption-Figures-Decision-Paper-1.pdf</u>

²⁴ SVP (2018) "Many households will be left in the cold this winter as a result of price hikes", <u>https://www.svp.ie/news-media/news/many-households-will-be-left-in-the-cold-this-wint.aspx</u>

²⁶ Vincentian Partnership for Social Justice (2014) Minimum Household Energy Need. <u>https://www.svp.ie/getattachment/716d46e2-e390-4fce-8e4e-cc3fb2297f62/Minimum-Household-Energy-Need-VPSJ-Research-report.aspx</u>

just 40% of children receiving an increase for a Qualified Child are living in a household in receipt of Fuel Allowance.²⁷ It is also only based on the income levels of the households and not the energy efficiency. This means that households with an income above the threshold for the Fuel Allowance but with very poor energy efficiency and who are unable to meet their energy needs will not receive any support.

Exceptional Needs Payments can be requested from the Department of Employment Affairs and Social Protection to help meet energy costs. However, the payment is discretionary and is not designed for persistent energy poverty alleviation. As well as being insufficient in meeting rising energy costs, energy income supports are not always directly spent on utility bills as they are generally paid to households that experience multiple types of poverty.

Limited scope of energy efficiency schemes

SVP is supportive of the *Warmer Home Scheme* which is available to social welfare recipients who own their own home and welcomed the additional funding for this scheme announced in Budget 2020. However, there are challenges in terms of access to and take up of these schemes. Data from the Department of Communications, Climate Action and Environment shows that 75% of applicants for the Warmer Home Scheme qualified based on being in receipt of Fuel Allowance— the majority of which were pensioners.²⁸ The remainder were in receipt of One Parent Family Payment, Carer's Allowance or Jobseekers. Therefore, this scheme may be a good option for older people but for low income households with children, it is more likely they are living in social housing or the private rented sector.

There is also a cohort of owner occupiers who may be experiencing energy poverty but do not meet the strict criteria for the *Warmer Home Scheme*. A key finding from research by the ESRI in 2018 was that there is a cohort of homeowners who are not eligible for the Warmer Homes Scheme but their circumstances, due to budget or credit constraints, preclude them from participating in the more general *Better Energy Homes* scheme as it requires upfront payment which can only be claimed back after the upgrade has been carried out.²⁹

A recent joint initiative between the Department of Health and the Department of Communications, Climate Action and Environment, seeks to upgrade the energy efficiency of

²⁷ Correspondence with the Department of Employment Affairs and Social Protection July 2019.

²⁸ Communication with the energy affordability section of the Department of Communications, Climate Action and Environment

²⁹ Collins, M., Dempsey, S., and Curtis, J.," Householder preferences for the design of an energy efficiency retrofit subsidy in Ireland", Economic and Social Review, 49(2) 145–172: <u>https://www.esr.ie/article/view/916</u>

households where occupants are experiencing respiratory problems. The scheme is available to children aged 0-12 and older people aged 65+ who are living with a chronic respiratory disease and have been referred to the programme by an HSE official. The scheme is open to owner occupier or social tenant households and the applicant (or applicants' parent) must be in receipt of Fuel Allowance or the One Parent Family Payment. Since 2016, 900 homes have been upgraded under this scheme and it is estimated that a further 240 homes will be upgraded by the end of 2019. ³⁰ However, just 30 households with children have received upgrades under the scheme, indicating that children are not been sufficiently targeted or that there are barriers to take up among one parent families. ³¹

The Department of Housing, Planning and Local Government has upgraded 68,000 local authority homes since 2014 with cavity wall and attic insulation and it is estimated that approximately 30% of social housing stock is more than 40 years old, which would equate to approximately 40,000 more units.³² The Government has committed a further €25 million for energy upgrades in 2019. There is also a welcome commitment to conduct deeper retrofits of Local Authority housing in the Climate Action Plan.

It is estimated that more than 55% of private rented dwellings have poor energy efficiency; with a Building Energy Rating (BER) between D and G.³³ The Housing Standards 2009 do not include measures to realise energy efficiency in private rented dwellings and while a BER rating is required in order to let a dwelling, there is no minimum BER threshold below which a dwelling is considered unfit for letting. The introduction of minimum energy efficiency standards in this sector would reduce our carbon emissions, reduce energy poverty and improve people's health and wellbeing. However, without proper implementation and resources, there could be potentially negative impacts on housing supply and rents. Currently, there are insufficient incentives and obligations for private landlords to consider upgrading and retrofitting their properties. Despite

³² Joint Oireachtas Committee on Climate Action <u>https://www.kildarestreet.com/committees/?id=2018-10-</u> <u>10a.5&s=retrofitting+social+housing#g7</u>

³⁰ Parliamentary Question, 9th of April 2019, Written Answer from the Minister for Communication, Climate Action and the Environment <u>https://www.kildarestreet.com/wrans/?id=2019-04-09a.1214&s=warmth+and+well-being#g1215.q</u>

³¹ Communication with officials from the Department of Communications, Climate Action and Environment, 21st of January 2019.

³³ Vincentian Partnership for Social Justice (2014) Minimum Household Energy Need. <u>https://www.svp.ie/getattachment/716d46e2-e390-4fce-8e4e-cc3fb2297f62/Minimum-Household-Energy-Need-VPSJ-Research-report.aspx</u>

these challenges however, there is an opportunity to move toward real security of tenure, upgrade the building stock and create a modern fit-for-purpose rental sector.

Conclusion

While much progress has been made in recent years regarding energy efficiency schemes, a lot more investment is required to further improve the energy performance of our entire housing stock, with a focus on the private rented sector. The Climate Action Plan commits to "review ways to improve how current energy poverty schemes target those most in need" and to "enhance the delivery model and supports for households with lower income to improve the energy efficiency and comfort of their homes".³⁴ However, in terms of supporting actions, the plan does not include enough detail on how low income households could upgrade and retrofit their homes. There is a risk that if grants are enhanced without examining eligibility criteria or measures to support take up across tenure type, it will not be an effective mechanism for reducing energy poverty, in particularly in households where children live. There is also evidence to suggest that children are not being sufficiently targeted through income supports aimed at alleviating energy poverty, as over half of the poorest children in households reliant of social welfare are not in receipt of the fuel allowance.

As the current Strategy to Combat Energy Poverty comes to an end, there is an opportunity to develop a new set of policy responses that will effectively reduce children's exposure to the potential negative impacts of growing up in energy poor homes. New initiatives and measures should be firmly rooted in a solid understanding on children's experiences of living in energy poverty and poor housing.

³⁴ Department of Communications, Climate Action and Environment (2019) Climate Action Plan 2019 <u>https://www.gov.ie/en/publication/5350ae-climate-action-plan/</u>

3. Methodology

Growing up in Ireland Data

Using nationally representative data from the Growing up in Ireland Study, this research profiles energy poor households and examines the relationship between living in a cold home and children's health. The Growing Up in Ireland Study is the national longitudinal study of children. It tracks the development of two cohorts of children over time: the Infant Cohort (born in 2008) and the Child Cohort (born in 1998). The main objective of the study is to contribute to the development of policies and services to support children in Ireland by collecting data on the health, well-being, family, care and school circumstances.³⁵ Data is collected from parents, teachers, childcare providers and from the study child once they reach 7 years old.

The present study analysed data from Wave 3 of the Infant Cohort (born 2008), when the study child was five years old. The Wave and Cohort of data has the most complete information on energy poverty and a number of indicators of accommodation suitable (e.g. issues with damp, too small, not child friendly). Wave 1 and Wave 2 don't contain information on whether the household were in arrears on their utility bills nor does it include information on overcrowding, and damp. The Child Cohort (born 1998), does not contain as much detailed information on accommodation conditions as the Infant Cohort. Therefore, as Wave 3 of the Infant Cohort is the most comprehensive in terms of the research objectives, it was chosen for the main analysis presented in this report.

At the first wave of data collection for the Infant Cohort (Born in 2008), 11,134 children aged nine months and their parents participated. These families were randomly selected from the child benefit register. When the families were interviewed again in 2011, the study children were three years old, and 9,793 families took part. At age five years, the home phase took place between March and September 2013 when the study children were five. There were 9,001 Study Children at age five years, representing a 91% response rate from the 9,793 who had been interviewed at age three years, or 81% of the 11,134 respondents who had participated at nine

³⁵ Murray et. al. (2019) Growing up in Ireland: The Lives of 5-Year-Olds <u>https://www.esri.ie/system/files/publications/SUSTAT71.pdf</u>

months of age.³⁶ The data was reweighted by the ESRI study team to ensure that it was nationally representative. The present analysis includes the 9001 families who responded in 2013. The large sample size, and the reweighting of the data to ensure representativeness means that the results can be generalised to the families of children in early childhood.³⁷

Measures and Indicators

Energy Poverty

It is widely accepted that energy poverty is a function of three factors: a person's income, the cost of energy and the energy efficiency of their home. The Department of Communications, Climate Action and Environment (DCCAE) use what is known as the expenditure method of measuring energy poverty, whereby a household that spends more than 10% of their income on energy is considered to be in energy poverty. A disadvantage of the expenditure measure is that it would categorise a low-income household spending less than 10% of its income on energy because it is living in the cold, as non-energy poor.³⁸ In practice, this may mean families are self-disconnecting from pre-pay meters, reducing the comfort level of their home by cutting back on heating due to cost, or experiencing spatial shrink by living in one or two rooms during the colder parts of the year. Another method of measuring energy poverty is based on self-reports by households of their capacity to afford to purchase the fuel and energy they need. ³⁹ The GUI contains subjective measures of energy poverty which will allow us to follow the same methodology used by the IPH (2009) who define energy poverty as: "living in a household experiencing at least one of these three types of deprivation: going without heating, unable to

³⁹ Ibid

³⁶ Murray et. al. (2019) Growing up in Ireland: The Lives of 5-Year-Olds <u>https://www.esri.ie/system/files/publications/SUSTAT71.pdf</u>

³⁷ Analysis of non-response showed that lone parents, low educated mothers and low income families were more likely to drop out of the study between wave 1 and 3. According to Quail et al "2014:9) "Inter-wave non response was not random. To account for this the Growing up in Ireland study team constructed weights. The first stage involved accounting for imbalance in the socio-demographic structure of the wave 2 sample. The second stage took account of the differential response in wave 1. The main variables used to make these adjustments for wave 1 and wave 2 imbalances were gender of the study child, family structure, primary caregiver's age, mothers' principal economic status, father's principal economic status, mother and father's social class, ethnicity and accommodation tenure status (Quail et. al. 2014). Thus, this weight accounted for the original population and sample differences at wave one and attrition between each waves."

³⁸ Watson and Maitre (2015) "Is Fuel Poverty in Ireland a Distinct Type of Deprivation?", The Economic and Social Review, Vol. 26, No. 2, Summer 2015, pp 267-291

afford adequate warmth and arrears on utility bills".⁴⁰ Therefore, for this analysis a household is considered to be experiencing energy poverty if they report at least one of these forms of energy deprivation.

Housing Indicators

As already outlined, people who are living in the private rented sector and social housing are more at risk of energy poverty than those in owner occupied dwellings. An important indicator included in the analysis is tenure type. This is a four-category variable of a) owner occupier, 2) rented from a Private Landlord, c) Rented from Local Authority or Voluntary body, d) Other. The other category refers to those who are living with their parents (the study child's grandparents) whether they are paying rent or living there rent free. It also includes families who a living rent free in housing provided by their employer. We also include information on whether the accommodation is a house or apartment/flat.

The GUI is advantageous over the SILC, which includes the same subjective measures of energy poverty, as it also collects indicators of housing quality and a wider range of health and wellbeing indicators. To capture the impact of poor housing standards we include a measure of "unsuitable accommodation". The survey asks the primary care giver whether they think their current accommodation (excluding location) is suitable for your family's needs? If they answered "No" they were asked to indicate which factors made their homes unsuitable. This includes a) Too small, b) Not a child-friendly layout, c) Too many steps, d) Poor conditions in the home (damp, drafts, leaks etc.), e) Too noisy, f) Problems with neighbours, g) Other

These indicators were recoded to create a new dichotomous variable. If parents were experiencing two or more of these indicators of unsuitable housing they were coded as 1. Parents who indicated they were experiencing no form of poor housing or just one type of unsuitable accommodation were coded as zero.

Child Health

The analysis includes two indicators of children's physical health that are thought to be related to energy poverty. The first indicator is whether the child has been diagnosed with asthma at age

⁴⁰ Watson and Maitre (2015) "Is Fuel Poverty in Ireland a Distinct Type of Deprivation?", The Economic and Social Review, Vol. 26, No. 2, Summer 2015, pp 267-291

five. The primary caregiver was first asked whether the child had a longstanding chronic, illness or disability. In total, 17.8% of the children in the sample were reported to have a longstanding illness and asthma was the most commonly reported at just over 8%.

The second measure of children's physical health that may be related to growing up in a cold home is antibiotic use. The question in GUI asks the primary caregiver how many courses of antibiotics the child has received in the past twelve months. In total, 43% didn't have a course of antibiotics in the past twelve months, 28% of the sample had received one course of antibiotics in the past 12 months, 14% had received two courses and 15% had three or more. As the average among the sample was one course of antibiotics in the past twelve months, the outcome variable was having two or more courses of antibiotics in the previous year.

Family and Household Characteristics

Family type

Data from Eurostat shows that one parent families are at greater risk of living in damp conditions and inadequately heated homes than households headed by two parents.⁴¹ This primarily due to a greater risk of poverty more generally. The analysis included the variable "whether the primary caregiver reports having a partner living in the household" to indicate if the family is headed by one parent. It does not distinguish by marital status (i.e. whether they are single, divorced, separated or widowed). The analysis also includes information on the number of people in the household and the number of co-resident siblings.

Socio-Economic Status

The analysis includes three indicators of a family's socio-economic status: income, maternal education, and the employment status of parents.

The anonymised microdata file (AMF) does not include the full information on household income. The variable used in this analysis is equivalised household income converted into quintiles. Equivalised income is a measure of household income that takes account of the differences in a household's size and composition, and thus is equivalised or made equivalent for all household sizes and compositions. An income quintile divides the population into five income groups (from lowest income to highest income) so that approximately 20% of the sample is in each group. For

⁴¹ Eurostat: EU-SILC Survey Indicators [ilc_mdes01] [ilc_mdes07] [ilc_mdho01c]

ease of analysis we created a dichotomous variable where households with income in the lowest 20% of the sample are coded as 1.

We do not include a measure of fathers' education (or any data on fathers) as data on nonresident parents is missing from the GUI data. Therefore, if fathers' education was included in the analysis it would automatically exclude data on lone parent households. As a result, maternal education is only included in the analysis. Despite this limitation, maternal education is a good proxy for a family's socioeconomic position and has the advantage of being, for the most part, stable across the child's life.⁴² The measure of maternal education in the GUI data was a sixcategory variable ranging from 'none/primary level education' to 'post-graduate education'. The education variable was recoded into three categories for easy of analysis - 'low' (none, primary and upper secondary: ISCED 1&2), 'medium' (upper secondary qualification, non-degree: ISCED 3&4) and 'high' (third level qualification, ISCED level 5 & 6).

To determine the employment status of parent's in the household we derive a new variable based on the Principal Economic Status of the primary and secondary caregiver. If a parent is described as 'at work' they are coded as 0, all other categories are coded as 1 (including students, full-time parents, and the unemployed). The recoding accounts for the family type, i.e. whether there are one or two parents in the household.

Analytical strategy

The analysis begins with a description of the sample outlining the proportion of households who are experiencing energy poverty. To examine whether the risk factors for energy poverty are distinct from the risk factors for deprivation more generally, multinomial regression was conducted. The dependent variable in this analysis is the overlap between energy poverty and basic deprivation. The third part of the analysis, examines the relationship between energy poverty and children's health (relative risk of asthma/the frequency of antibiotics use), using logistic regression. The data was analysed using STATA 15.

The findings of this analysis are outlined in the next section.

⁴² Ermisch et. al. 2012

4. Findings

Energy poverty among households with children

The previous section outlined that the field work for the Growing up in Ireland Survey took place in 2013, when the study children were aged five. Before presenting the results from the GUI data analysis, it is important to look at trends over time and consider the wider economic and social conditions at the time the data was collected. Figure 1 presents the proportion of children living in consistent poverty between 2007 and 2017. At the time of the GUI data collection, following the recession and five years of austerity, child poverty reached a high of 12.7% in 2013. From 2014 onwards, there has been a welcome decline in child poverty. In the proceeding years there was a spike in energy costs, due to rising oil prices, this was followed by colder winters in 2010 and 2011. It is likely that at the time of interview a larger proportion of families and children were experiencing economic and financial difficulties, and consequently energy poverty, than currently. Importantly, however, the main purpose of the present study is to examine the interlinkages between energy poverty, family circumstances, housing standards and children's health and wellbeing. Therefore, the main objective is to gain a better understanding of how growing up in a cold home impacts children's health and well-being, rather than to document the prevalence of energy poverty in households with children. However, the reduction in child poverty in recent years should be considered when interpreting the data and relating it to current policy and practices.



Figure 1: Trends in child poverty (2007-2017, Survey of Income and Living Conditions)

Table 1 presents the main indicators of energy deprivation used to derive the energy poverty variable used throughout the analysis in this report. As outlined in the methodology section, in this study a household is considered to be living in energy poverty if they are experiencing one or more of the following 1) arrears on utility bills, 2), had to go without heat in the past 12 months due to costs, and 3) are unable to keep the house adequately warm. Similar to Watson et. al (2015), the most common form of energy deprivation is utility arrears as 17% of households in the GUI sample were behind on their utility bills at the time of data collection. This is lower than the EU-SILC indicator which showed, in 2013, 21.8% of households with children were in arrears on their utility bills. ⁴³

These disparities may be related to the age of the children included in the GUI data. SILC includes all households with children under the age of 18, whereas the GUI data related to households where a least one child is aged five-year olds. This may mean the household size on average is smaller and therefore had less demand for energy. It also may relate to differences in how the questions are asked –the GUI survey filters parents from whether they indicated their family had been impacted by the recession. If the family chose "no", they were not asked if they were behind on their utility bills, but just 6% of the sample reported that the recession had not impacted their family. Similarly, when compared to SILC data on households with children from 2013, a smaller proportion of GUI participants reported they were unable to afford to keep their home adequately warm (10% compared to 3%) or had to go with heating in the past 12 months due to cost (15% compared to 12%).

Overall, 23% of the GUI sample were experiencing one or more forms of energy deprivation. The majority experienced one form of energy deprivation (16%), 6% experienced two forms and just 1% (n=96) were experiencing all three forms of energy deprivation. These results would mirror those found by Barnes et. al. (2008) who found that a relatively small proportion of households with children reported multiple forms of housing deprivation and energy inadequacy.⁴⁴

⁴³ Source: Eurostat EU-SILC Survey [ilc_mdes07]

⁴⁴ Barnes et. al. (2016) The Dynamics of Bad Housing: The impact of bad housing on the living standards of children. London: National Centre for Social Research.

Table 1: Energy poverty indicators (GUI data)

	Ν	%
Arrears on utility bills	1402	17
Had to go without heat in the past 12 months due to costs	1104	12
Unable to keep house adequately warm	234	3
Experiencing 1 or more forms of subjective energy poverty	2036	23

What are the Risk Factors for Energy Poverty?

Several studies have examined the risk factors for energy poverty among the general population in Ireland.⁴⁵ However, there is little or no information on the specific risk factors for children's exposure to energy poverty. This section profiles children who are living in energy poor households and examines whether there are distinctive factors that increase children's risk of growing up in an energy poor household.

It is well established that energy poverty is strongly related to income but that not all those experiencing energy poverty are in low income households.⁴⁶ Figure 2 confirms this was also the case for households with children as 6% of children who were experiencing energy poverty were living in high income families (top 20% of households in the sample) indicating that income isn't the sole determinant of energy poverty. Nevertheless, most five-year olds experiencing energy poverty were living in lower income households (76% were in the bottom 40% of earners) at the time of data collection.



Figure 2: Children's Experiences of energy poverty by income group

A study of children's experiences of poor-quality housing in the UK found that there is overlap between different types of housing deprivation, but this is very dependent on tenure type.⁴⁷ Barnes et. al (2016) found that very few (less then 2%) children in owner occupied

⁴⁵ Watson et. al. (2015); IPH (2009); Scott et. al. (2008)

⁴⁶ Scott et. al. (2008)

⁴⁷ Barnes et. al. (2016) The Dynamics of Bad Housing: The impact of bad housing on the living standards of children. London: National Centre for Social Research.

accommodation face two or more housing problems compared to over one in ten of children in rented accommodation.

Figure 3 shows that five-year olds in Ireland experiencing energy poverty were significantly more likely to experience poor and unsuitable housing (i.e. too small, not family friendly, issues with damp, noise etc.). In total, 10% of energy poor households reported other issues with their housing, this compared to 3% of non energy poor households. Although energy poverty was linked to other forms of housing deprivation, some children experienced poor housing quality, but their families were not struggling with energy costs or to keep their homes adequately heated. It is also important to note that the link between energy poverty and poor housing standards may be a function of wider issues of poverty and social disadvantage. This will be explored further in the multivariate analysis presented in the next sections.



Figure 3: Children's Experiences of energy poverty by housing suitability

As outlined above, research has shown that people living in the private rented sector and social housing are more likely to experience energy poverty.⁴⁸ This is largely attributed to the greater concentration of low income households in social and privately rented accommodation and poor energy efficiency standards of these tenure types when compared to owner occupied. Figure 4 shows the link between energy poverty and tenure type was also present for households with children. Children living in owner occupier households were significantly less likely to experience energy poverty – 17%. Over 40% living in the private rented sector were experiencing energy

⁴⁸ Vincentian Partnership for Social Justice (2014) Minimum Household Energy Need. <u>https://www.svp.ie/getattachment/716d46e2-e390-4fce-8e4e-cc3fb2297f62/Minimum-Household-Energy-Need-VPSJ-Research-report.aspx</u>

poverty. A similar increased risk of growing up in a cold home is found for children whose family were living in Local Authority or social housing.



Figure 4: Children's Experiences of energy poverty by tenure type

Table 2 shows children living in a household where no parent is in paid work, a one parent family, a household where someone has a chronic illness or disability are more likely to experience energy poverty. The risk of energy poverty is particularly pronounced for one parent families as 43% of children living in households headed by one parent were experiencing energy poverty, compared to 19% of children in other family types. The data also shows that energy poor households were much more likely to be struggling to make ends meet. This was not a surprising finding as the indicators that make up the energy poverty measure related to difficulties meet the cost of utility bills and being unable to afford to keep the house adequately warm. This suggests that the primary driver of energy poverty is inadequate resources as concluded by Watson et. al. 2015 study. The drivers of energy poverty are examined further in the next section.

	% who are energy poor
Family type	
One Parent Family	43%
Two Parent Family	19%
Parental Employment Status	
At least one parent in paid work	29%
No parent in paid work	21%
Parental Disability	
Parent does not have a disability	32%
At least one parent has a disability	21%

Table 2: Children's experiences of energy poverty by family characteristics

In their 2015 study, Watson and Maitre set out to examine whether energy poverty was a distinctive type of deprivation that warrants a fundamentally different policy response than poverty in general. They found that there was a significant overlap between energy poverty and basic deprivation, which are derived from the national indicator of basic deprivation and are used in the measurement of poverty for policy purposes as outlined in the methodology section. Table 3 shows a similar overlap among families with five-year olds. Most of the sample (70%) were not experiencing energy poverty or basic deprivation at the time. 1 in 10 children were significantly disadvantaged as they were experiencing both basic deprivation and energy poverty. Just 7% were experiencing deprivation only and a further 13% were experiencing energy poverty only. Overall, while there is an overlap between fuel poverty and basic deprivation, there are a significant proportion of children who experience "energy poverty only" and "deprivation only".

Table 3: Overlap	between energy	poverty and	basic deprivation
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	N	%
Experiencing energy poverty only	1166	13
Experiencing basic deprivation only	656	7
Experiencing both energy poverty and basic deprivation	870	10
Not experiencing energy poverty or basic deprivation	6302	70
Total	8994	100

In the multivariate analysis conducted by Watson et. al. (2015) concluded that the relationship between housing variables and energy poverty was not significantly different from the relationship between housing variables and basic deprivation. Their findings suggested that monetary resources rather than the cost of heating the dwelling or energy efficiency of the dwelling is the key driver of energy poverty.

The main purpose of the present study is to examine whether energy poverty has a distinct impact on children's health, or whether its impact is related to issues of low income and childhood deprivation more generally. Nevertheless, it was important to replicate the 2015 analysis to check whether the risk factors for energy poverty for children are distinct from those for basic deprivation.

To achieve this aim, we ran a multi-nominal logistic regression to examine whether the risk factors for growing up in an energy poor household are unique compared to the risk factor for basic deprivation. The dependent variable is the overlap between energy poverty and basic deprivation, with four categories: 'neither energy poor nor deprived' (the reference category); 'energy poor only', 'deprived only' and 'both energy poor and deprived'.

Table 4 shows, as expected, in terms of parent and family characteristics, the risk factors were most strongly and significantly associated with the group experiencing both energy poverty and deprivation. However, the work status of parents was not significantly related to experiencing energy poverty only but households where no parent was at work were 1.8 times more likely to experience deprivation only. This is similar to Watson et. al. (2015) findings who noted that those who experienced energy poverty only were somewhat less disadvantaged in terms of education and social class.

However, the analysis notes some important differences from the 2015 study which focuses on the total population. Children living in the private rented sector were 2.2 times more likely to experience energy poverty than those not experiencing deprivation or energy poverty. This contrasts to the "deprivation only" group where there was no link with living in the private rented sector. Similarly living in a rural area was a significant risk factor for energy poverty but not deprivation. These differences were not found in Watson et. al. (2015) and shows that living in the private rented sector or a rural area are distinct risk factors for children's exposure to energy poverty. This is an important consideration in the development of policy responses.

	Both	Energy poverty only	Deprivation only
	RR (SE)	RR (SE)	RR (SE)
Low income (bottom 20%)	3.3 (.31) ***	2.3 (.19) ***	2.7 (.30) ***
Parent(s) not in paid work	1.7(.19) ***	1.2 (.11)	1.8 (.21) ***
Maternal education			
Lower Secondary vs third level	4.1 (.63) ***	2.2 (.31) ***	2.9 (.48) ***
Upper Secondary vs third level	2.3 (.24) ***	1.7 (.13) ***	1.6 (.17) ***
More than 6 people in household	1.1 (.12)	1.1 (.10)	0.8 (.10)
Person in household has a disability	1.9 (.17) ***	1.4 (.12) ***	1.6 (.17) ***
Lone parent	2.9 (.34) ***	2.4 (.24) ***	1.9 (.28) ***
Unsuitable housing	3.5 (.54) ***	2.2 (.34) ***	2.6 (.47) ***
Rural area	1.2 (.10) *	1.2 (.09) *	1.1 (.10)
Tenure type			
Social Housing vs owner	1.8 (.20) ***	1.7 (.19) ***	1.3 (.19) *
Private renter vs owner	1.7 (.16) ***	2.2 (.19) ***	0.8 (.11)
Other vs owner	0.5 (.14) *	0.4 (.12) **	0.3 (.12) **
House vs apartment	1.2 (.25)	1.3 (.24)	1.0 (.23)
Ν	8557	8557	8557
Constant	.02 (.00) ***	.04 (.01) ***	.04 (.01) ***
Pseudo R ²	.099	.099	.099

Table (Dick	Factors	for	Energy	Doverty	(Multi Nominal	Logistic	Pagrassian)
Tuble 4:	KISK	ractors	JOF	Lnergy	Poverty	(Mulli-Nominal	LOGISTIC	Kegression)

*** p<=.001 , ** p < = .01, * p<=.05

How is Energy Poverty and the Health of Children Linked?

This section examines the link between energy poverty and children's health. As already outlined, while the link between energy poverty and child outcomes has been acknowledged in a number of studies, relatively little is understood about the nature of this relationship. This is partly because much of the evidence is based on small-scale studies that have difficulty isolating "energy deprivation" from the impact of other factors that could cause negative child outcomes - such as low income and deprivation. A key question to answer is whether the health impacts of energy poverty are distinct from the effects of income poverty and general childhood deprivation.

Figure 5 shows that for each indicator, there is a risk of poorer outcomes for five-year olds growing up in energy poor homes. Children living in energy poor homes had an increased risk of having asthma, and more frequent antibiotic use. The differences presented in figure 5 were statistically significant. However, these differences may be attributed to the fact that those children experiencing energy poverty were more socially disadvantaged than those who are not. Therefore, their poor health may be linked to social disadvantage more generally rather than energy poverty specifically. In the next section, the analysis examines the independent relationship between experience of energy poverty and children's health, controlling for other predictors of poor outcomes including low income and deprivation.



Figure 5: Energy Poverty and Indicators of Children's Health

Energy poverty and asthma among five-year olds

Table 5 shows the relationship between energy poverty and the incidence of asthma among fiveyear olds. The analysis included a number of models. Model 1 just included the energy poverty variable (living in an energy poor household =1) and the control variables (study child's gender, presence of siblings, whether they have been vaccinated, if they have started primary school, whether someone in the household smokes and whether they attend(ed) centre based childcare. Here we can see that odds of having asthma were 1.4 times higher for children living in energy poor homes. This association is statistically significant. Model 2 includes family characteristics. The association between energy poverty and asthma among five-year olds remained statistically significant even when controlling for the employment status of their parents, maternal education, and family type. Having no parent at work did not increase a child's risk of asthma, but low maternal education and living in a one parent household were associated with an increased risk. However, in model 3 once tenure type and poor housing standard were included in the model, children in lone parent households no longer had an increased likelihood of developing asthma compared to other family types. Poor housing standards did not increase the likelihood of a fiveyear old developing asthma.

The final two models (Model 4 & Model 5) add income and basic deprivation separately to establish whether the association between energy poverty and children's risk of asthma were independent from the effects of low income and other forms of deprivation on children's health. The results confirm that living in an energy poor household increases children's risk of developing asthma and that this risk is distinct from the association between child poverty more generally and children's health.

Dependent Variable	Study child has asthma						
	Model 1	Model 2	Model 3	Model 4	Model 5		
	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)		
Energy poverty	1.4(.13)***	1.3 (.13)**	1.3 (.13)**	1.3 (.13)**	1.3 (.13)*		
No one in paid work		0.9 (.11)	0.9 (.11)	0.9 (.11)	0.9 (.12)		
Maternal education							
Lower Secondary vs Third Level		1.5 (.25)**	1.5 (.25)*	1.6 (.26)**	1.5 (.26)**		
Upper Secondary vs Third Level		1.3 (.11)**	1.3 (.11)*	1.3 (.12) **	1.3 (.12)**		
Lone parent		1.3 (.16)*	1.3 (.16)	1.3 (.17)	1.3 (.17)		
Unsuitable housing			1.3 (.23)	1.3 (.24)	1.3 (.23)		
Tenure type							
Social Housing vs Owner			1.1 (.16)	1.1 (.17)	1.1 (.16)		
Private renter vs Owner			0.9 (.11)	0.9 (.11)	0.9 (.11)		
Other vs Owner			1.7 (.42)*	1.8 (.45)*	1.8 (.45)*		
House vs apartment			1.2 (.28)	1.2 (.28)	1.2 (.28)		
Rural vs urban			1.1 (.09)	1.1 (.09)			
Low income (bottom 20%)				0.8 (.04)*	0.8 (.09)*		
Basic deprivation					1.1 (.13)		
Ν	8372	8372	8372	8372	8372		
Constant	.13 (.04)	.12 (.03)	.09 (.04)	.10 (.04)	.10 (.03)		
	***	***	***	***	***		
Pseudo R ²	.013	.017	.019	.021	.021		

Table 5: Energy poverty and asthma among five-year olds (Logistic Regression)

All models control for the study child's gender, whether they have been vaccinated, whether someone in the household smokes, if they have siblings, if they have started primary school, and whether they attend centre-based childcare/afterschool. *** p<=.001, ** p <= .01, * p<=.05

Energy poverty and antibiotic use among five-year olds

Next, we examined the relationship between growing up in an energy poor household and the frequency of antibiotic use. The dependent variable in this analysis was whether the study child had two or more courses of antibiotics in the past 12 months. Table 6 shows similar results to the risk factors for asthma among five-year olds, as children living in energy poor homes were 1.3 times more likely to have more frequent antibiotic use and this association remained statistically significant when controlling for the effects of family and housing characteristics. In the final model (model 5) lower maternal education and living in social housing also increased children's exposure to greater antibiotic use.

One possible reason for greater antibiotic use among more socially disadvantaged children relates to access to health care and the medical card. Nolan and Layte (2017), using the same data set, found that children with free GP care (medical card holders and GP only cards) tended to use GP services more frequently.⁴⁹ Therefore, the association between energy poverty and antibiotic use may be explained by greater GP utilisation among this cohort. However, additional analysis showed that including medical/GP card status in the model did not alter the relationship between energy poverty and antibiotic use. However, living in social housing was no longer associated with antibiotic use. This means that medical card use among children living in social housing the higher incidence of antibiotic use.

Overall, the analysis shows that living in an energy poor household has a distinct impact on children's health outcomes, including the risk of asthma and greater antibiotic use, than from the impact of other factors that could cause negative child outcomes - such as low income and deprivation.

⁴⁹ Nolan and Layte (2017) Understating use of General Practitioner Services among Children in Ireland <u>https://www.growingup.ie/pubs/GUI-GP-report-web.pdf</u>

	Study child has had 2 or more antibiotics in the past 12 months							
	Model 1	Model 2	Model 3	Model 4	Model 5			
	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)			
Energy poverty	1.4 (.08)	1.3 (.08)	1.3 (.08)	1.3 (.08)	1.3 (.09)			
	***	***	***	***	***			
No one in paid work		1.0 (.07)	0.9 (.07)	0.9 (.07)	0.9 (.07)			
Maternal education								
Lower Secondary vs Third Level		1.5 (.15)	1.4 (.14)	1.4 (.15)	1.4 (.15)			
		***	***	***	***			
Upper Secondary vs Third Level		1.2 (.09)	1.3 (.07)	1.3 (.07)	1.3 (.07)			
		***	***	***	***			
Lone parent		1.2 (09) *	1.1 (.09)	1.1 (.09)	1.1 (.09)			
Poor housing			1.0 (.19)	1.0 (.13)	1.0 (.12)			
Tenure type								
Social Housing vs Owner			1.3 (.11)	1.2 (.11)	1.2 (12)			
			***	**	**			
Private renter vs Owner			1.0 (.07)	1.0 (.07)	1.0 (.07)			
Other vs Owner			1.0(.19)	1.1 (.20)	1.1 (.20)			
House vs apartment			0.9 (.12)	0.9 (.12)	0.9 (.12)			
Rural vs urban								
Low income				0.9 (.07)	0.9 (.07)			
Basic deprivation					1.0 (.07)			
Ν	8391	8391	8391	8391	8391			
Constant	.20 (.03)	.18 (.03)	.19 (.04)	.20 (.04)	.20 (.07)			
	***	***	***	***	***			
Pseudo R ²	.010	.014	.014	.015	.015			

Table	6: Energy	poverty	and a	antibiotic use	among	five-vear	olds	(Logistic	Regression)
	••• ±•••• y j	porcer			among	<i>Jtte Jeut</i>	0.40	(209.0000		

All models control for study child's gender, whether they have been vaccinated, if they have started primary school, whether someone in the household smokes and whether they attend centre-based childcare. *** $p \le 0.01$, ** $p \le 0.01$, * $p \le 0.01$, ** $p \le 0.01$, **

5. Conclusions & Recommendations

Key Findings

Using data from the Growing up in Ireland Study (GUI), we examined whether living energy poverty was linked to poor child health. It also sought to examine the specific risk factors for growing up in energy poverty.

Data collected in 2013, showed that 23% of the GUI sample (9,001 five-year olds and their families) were experiencing one or more forms of energy poverty. The majority experienced one form of energy poverty (16%), 6% experienced two forms and just 1% (n=96) were experiencing all three forms of energy poverty. Like SILC, the most common reported form of energy deprivation was being in arrears on utility bills (17%).

The GUI data shows that specific groups of children were at increased risk of energy poverty. The following differences were statistically significant:

- 29% of children living in households where no one was in paid work were experiencing energy poverty compared to 21% of children in households with at least one parent at work.
- 43% of children living in households headed by one parent were experiencing energy poverty, compared to 19% of children from two parent families.
- 32% of children whose parent(s) had a disability were experiencing energy poverty compared to 21% of children whose parent(s) did not have a disability.
- 76% of children living in the lowest income groups (bottom two income quintiles) were experiencing energy poverty compared to 6% of children in the highest income group. Indicating that income is not the sole determinant of energy poverty.
- 42% of children living in energy poverty were also experiencing other forms of basic deprivation (e.g. inability to afford nutritious food and suitable clothing), compared to just 9% of children in non-energy poor households.

In terms of tenure type, children experiencing energy poverty were significantly more likely to be living in the private rented sector or social housing; 42% of children in the private rented sector were experiencing energy poverty and 36% of children living in social housing. Just over 17% of children living in owner occupied housing were experiencing energy poverty.

To examine whether the risk factors for growing up in an energy poor household are unique compared to the risk factors for basic deprivation, multivariate analysis was conducted. Following the same analytical strategy as Watson and Maitre (2015), which assessed the risk factors for energy deprivation among the total population, a dependent variable which captured the overlap between energy poverty and basic deprivation was created. This variable had four categories: neither energy poor nor deprived (the reference category); energy poor only, deprived only and both energy poor and deprived.

The results showed that children living in the private rented sector (Odds: 2.2) were significantly more likely to experience energy poverty than those not experiencing deprivation or energy poverty. This contrasts to the 'deprived only' group where there is increased risk associated with living in the private rented sector. Similarly living in a rural area is a risk factor for energy poverty but not deprivation. These differences were not found in Watson and Maitre (2015) study and shows that living in the private rental sector or a rural area are distinct risk factors for children's exposure to energy poverty. This is an important consideration in the development of appropriate policy responses.

In terms of child health, the data analysis found that five-year olds living in energy poor homes had an increased risk of asthma (10% compared to 8%) and to have had two or more courses of antibiotics in the past twelve months (38% compared to 24%). The differences were statistically significant. This is inline with international experience on the effect of cold and damp on child health.

Multivariate analysis controlling for a range of child and family characteristics, including household income and basic deprivation, found that children living in energy poor households were 1.3 times more likely to have asthma and 1.4 times more likely to have two or more courses of antibiotics in the past twelve months. The findings show that although their causes are inter-related, the effects of energy poverty are distinct from the effects of income poverty. Therefore, this suggests that policy levers to alleviate energy poverty among children will lead to significant health benefits and a reduction in health expenditure in the future.

Conclusions

The combination of increased energy prices, poor quality housing and the persistence of low income increase the vulnerability of people to cold homes, and the negative impacts on physical and mental health caused by living in a cold home are increasingly well recognised. However, in Ireland less is known about the nature and extent of energy poverty among households with children.

This briefing clearly shows that children are a group most exposed to the risk of energy poverty and that growing up in an energy poor household has a distinct negative impact on children's health outcomes. However, despite this greater risk for children, current policies and schemes are failing to effectively target children and families experiencing energy poverty.

While much progress has been made in recent years regarding energy efficiency schemes, a lot more investment is required to further improve the energy performance of our entire housing stock, with a focus on the private rented sector. The Climate Action Plan commits to "review ways to improve how current energy poverty schemes target those most in need" and to "enhance the delivery model and supports for households with lower income to improve the energy efficiency and comfort of their homes". However, in terms of supporting actions, the plan did not include enough detail of how low-income households could upgrade and retrofit their homes. There is a risk that if grants are enhanced without examining eligibility criteria or measures to support take up across tenure type, it will not be an effective mechanism for reducing energy poverty, in particular in households where children live.

There is also evidence to suggest that children are also not being sufficiently targeted through income supports aimed at alleviating energy poverty, as over half of the poorest children in households reliant on social welfare are not in receipt of the Fuel Allowance.

As the current Strategy to Combat Energy Poverty comes to an end, there is an opportunity to develop a new set of policy responses that will effectively reduce children's exposure to the negative impacts of growing up in energy poor homes. New initiatives and measures should be incorporated into the Climate Action Plan and should be firmly rooted in a solid understanding of children's experiences of living in energy poverty and poor housing.

A greater emphasis on energy poverty among children within climate and energy policy will not only contribute to Ireland's child poverty reduction target, but will also improve the living standards for low income households, reduce health care costs, enable a more efficient and better quality housing stock and help address climate change.

Failure to adequately target energy poverty alleviation schemes and programmes towards households with children will lead to longer term social, health, environmental and economic costs in the future and result in thousands of children and families being left behind in the cold.

Recommendations

- Set a baseline for energy poverty reduction using the methodology outlined in the Strategy to Combat Energy Poverty updating to 2015-2016 HBS survey data and the 2016 Census data. Set an ambitious target to reduce energy poverty from this baseline to 5% or less by 2030. Monitor progress on an annual basis with complementary measures from the Survey of Income and Living Conditions (proportion of the population in utility arrears, unable to keep house adequately warm, and/or who went without heating due to cost). Like Ireland's Climate Action targets, poverty reduction targets should be made legally binding.
- Continue to invest in research to generate data at an individual level which links income, household energy expenditure/costs, energy related income support, dwelling type, BER rating and main heating fuel, to prioritise retrofitting and target income support.
- Publish a strategy for introducing minimum energy efficiency standards in the private rented sector which sets a target date by which all accommodation will meet an energy rating of a least C or higher by 2030. Minimum standards should be implemented alongside an awareness raising campaign, incentives for landlords that are conditional on enhanced security of tenure and increased funding for inspections and enforcement. Begin by delivering SEAI grants to enable landlords who provide their properties for HAP tenants to avail of energy efficiency upgrades, conditional on a minimum of a five-year lease.
- Commence a deep retrofit programme of Local Authority Housing, as it is estimated that approximately 30% of social housing stock is more than 40 years old, which would equate to approximately 40,000 units.
- Pilot an initiative of Community Energy Advisors working in partnership with the Sustainable Authority of Ireland to engage and inform hard to reach energy users who would most benefit from energy efficiency schemes across all housing tenures. This service should also provide information to households on how they can implement energy saving measures in their own homes.
- Enhance income supports for low income households to ensure everyone has an adequate income to meet their energy costs and future proof payments in the context of price increases.
- Expand eligibility to the Fuel Allowance to households in receipt of the Working Family Payment and remove the wait period for FA for those in receipt of Jobseekers Allowance.

• Strengthen the regulatory role of the State on price-setting and monitoring and conduct a feasibility analysis of introducing price caps or social tariffs into the Irish energy market. Encourage Local Authorities to facilitate group switching schemes so tenants can avail of discounted rates for new customers.