

# MORTALITY, TEMPERATURE AND HOUSING

NILS - 02

Chris Morris  
Ulaidh Research Consulting

- ▣ Started in 2007 when the Minister of Department for Social Development promised research into excess winter mortality
  
- ▣ Two strands:
  - ▣ A) The long run of death and temperature back to 1981
  
  - ▣ B) The NILS project

- ▣ NLS Project combined
- ▣ Deaths 2001-2006
- ▣ Census 1991 data
- ▣ Census 2001 data
  
- ▣ but

- ▣ Also added:
  
- ▣ NI mean temperature in month of death
- ▣ Mean altitude of Census Output Area of residence (OSNI)
- ▣ Settlement type of residence (NISRA)
- ▣ Proximity to sea, Lough Neagh, Lough Erne
  
- ▣ To correct for heat island, maritime influence and altitude effect on temperature

- ▣ NI Housing Executive:
- ▣ provided an estimate of average housing conditions for postcodes visited by 2001 and 2004 House Conditions Survey
- ▣ NILS matched with deaths by postcode
- ▣ Gave an estimate of the local housing environment, but not necessarily the experience of the deceased
- ▣ Census information on actual housing was quite limited

Analysis of 65,000 deaths showed that likelihood of circulatory or respiratory death was linked to

In East

Age

Temperature

Death reporting (2004 leap)

Local housing quality

Property central heating

In West

Age

Death reporting

Temperature

Property Valuation

Results published in 2007

- ▣ There was scope to take matters further
- ▣ More deaths had occurred
- ▣ NILS had access to the full valuation list details of properties – age, type, size, value, central heating (accuracy of the central heating record is questionable – the rating people were often not notified of improvements)
- ▣ NIHE had completed the 2006 House Conditions Survey and made data available

- ▣ More importantly:
- ▣ we obtained daily temperatures for 18 Northern Ireland weather stations for the period 2001-2008
- ▣ By averaging these together, giving greater weight to nearer stations and adjusting for altitude and heat island effects, we estimated daily temperatures for each of the 5022 Census Output Areas



- ❑ NLS matched this massive database to the deaths, by COA and date, to give the estimated local temperature on day of death, as well as 3, 7 and 10 days previously
- ❑ Housing data, local and property of residence, was added
- ❑ 2001 Census data on tenure and social class was added
- ❑ 1991 Census was not added as it seemed unlikely to be helpful and had not been used

- ▣ Information was added concerning other things which impact on risk of death:
- ▣ atmospheric pollution (data not as precise as temperature)
- ▣ influenza outbreaks (a NI measure of GP consultations – some evidence that epidemics don't spread uniformly. Different outbreaks have different risk)
- ▣ social deprivation

- ▣ The data on nearly 100,000 deaths was subjected to logistic regression,
- ▣ using causes of death other than circulatory and respiratory as a bench mark
- ▣ (there is relatively little evidence for temperature being a major factor for such deaths)

# Odds Ratios for cause of death

Characteristic	Circulatory	Characteristic	Respiratory
<i>Young</i>	.509	<i>Young</i>	.405
<i>Pre-Shipman</i>	1.209	<i>Not Married</i>	1.214
<i>Female</i>	.897	<i>Country Detached</i>	.783
<i>Not Married</i>	1.108	<i>Social Class 1-3</i>	.832
<i>Temperature Shortfall</i>	1.010	<i>Settlement Detached</i>	.806
<i>Social Class 1-3</i>	.936	<i>Not Autumn</i>	1.184
<i>No Central Heating</i>	1.111	<i>Female</i>	.888
<i>Lo Black Smoke</i>	.927	<i>No Central Heating</i>	1.205
<i>Settlement Detached</i>	.930	<i>Lo flu consultations</i>	.874
<i>1965 onwards</i>	.957	<i>Temperature Shortfall</i>	1.016
<i>SOA not deprived</i>	1.063	<i>SOA not deprived</i>	.909
<i>Lo flu consultations</i>	1.036	<i>Lo Black Smoke</i>	.946
<i>Country Detached</i>	1.031	<i>Pre-Shipman</i>	1.013
<i>Not Autumn</i>	1.027	<i>1965 onwards</i>	1.003

- ▣ The results suggest that:
  
- ▣ Young people less likely to die of respiratory or circulatory causes (no surprise there)
  
- ▣ Also at lower risk:  
Higher social class, women, married, occupants of detached houses in settlements

- ▣ The results also show that (when flu epidemics are taken out of the picture)

Autumn has a relatively low risk of death being respiratory

Residence in country detached property has a relatively low risk of death being respiratory

- ▣ The results suggest that:
- ▣ Temperature shortfall of 1 degree increases chance of a death being circulatory by 1.0% and respiratory by 1.6%
- ▣ Risk of respiratory cause is less in non-flu epidemic months
- ▣ Lack of central heating increases chance of death being circulatory by 10% and respiratory by 20%

- ❑ Because the HCS has not been carried out locally for two-thirds of deaths, analyses of significance of local housing conditions are less robust
- ❑ The precision of appended data is variable
- ❑ The database is, nonetheless, a powerful tool – the more data that can be added, the better.