

Housing improvements and health – the results of a randomised trial

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Beginnings




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-  Community worker supported local people in social housing in Watcombe to complete a housing and health survey (including damp and respiratory illness) 1997
-  Results of survey presented to Torbay Council. Torbay Healthy Housing Group formed 1998

Torbay Healthy Housing Group

Watcombe Housing Project Instigated

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Baseline survey £25,000 Health Gain Initiative

Watcombe Housing Project

Collaborating organisations

Watcombe Housing Project

Collaborating organisations

-  Local residents
-  South & West Devon Health Authority
-  Plymouth & South Devon RDSU
-  Torbay Council Housing Department
-  Dept. of Environmental Sciences, University of Plymouth
-  South Devon Healthcare NHS Trust
-  Primary Care Teams
-  AC & T Ltd

Watcombe Housing Project

A Randomised controlled trial

Do housing improvements influence the quality of the indoor environment, the health and the expenditure of residents and costs to the NHS ?

Watcombe Housing Project

Intervention



Watcombe Housing Project

Intervention

-  Full gas fired central heating installed in all houses




Watcombe Housing Project

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-  Full gas fired central heating installed in all houses
-  Ventilation in kitchen and bathroom





Watcombe Housing Project

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-  Double glazed doors

Watcombe Housing Project

Intervention

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-  Ventilation in kitchen and bathroom
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-  Insulation of roof and cavity wall
-  Double glazed doors
-  Electrical upgrade

Watcombe Housing Project

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Population

Watcombe Housing Project



Population



Houses. 119 Council owned houses in the Watcombe area of Torbay

Watcombe Housing Project

Population

-  Houses. 119 Council owned houses in the Watcombe area of Torbay
-  Residents. c580 residents of these houses

Watcombe Housing Project

OUTCOMES

Watcombe Housing Project

OUTCOMES

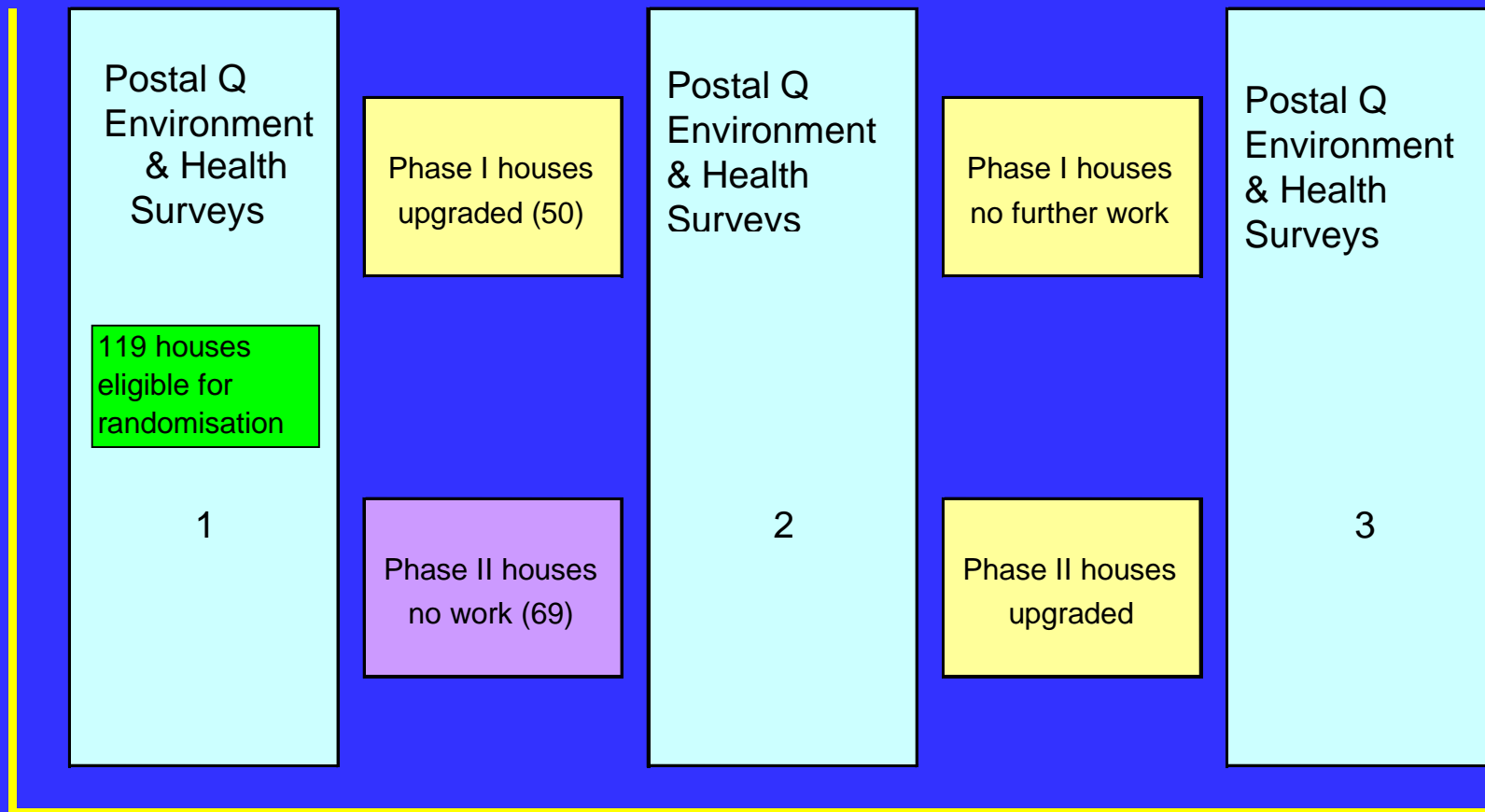
 HEALTH

 ECONOMIC

 ENVIRONMENTAL

Watcombe Housing Project

Project design



Watcombe Housing Project

Watcombe Housing Project

OUTCOMES HEALTH

Watcombe Housing Project

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 Postal questionnaire included:

Watcombe Housing Project

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Health and number of occupants, smokers and pets

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General health questionnaires - SF36 and GHQ 12

Watcombe Housing Project

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Questionnaire

Watcombe Housing Project

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I schaemic Heart Disease - the Rose Angina Questionnaire

Watcombe Housing Project

Outcome : Environmental

 humidity

 temperature

 damp

 house dust mite

Watcombe Housing Project

Outcome : Environmental

 humidity


 temperature

 damp

 house dust mite

 mould spores

 particulates

 carbon monoxide/
dioxide





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Outcome Economic

Watcombe Housing Project

Outcome Economic





To residents

-  heating costs
-  time lost from school/work
-  over the counter medicines
-  trips to GP/hospital

Watcombe Housing Project

Outcome Economic

To residents

-  heating costs
-  time lost from school/work
-  over the counter medicines
-  trips to GP/hospital

To NHS

-  prescriptions
-  contacts

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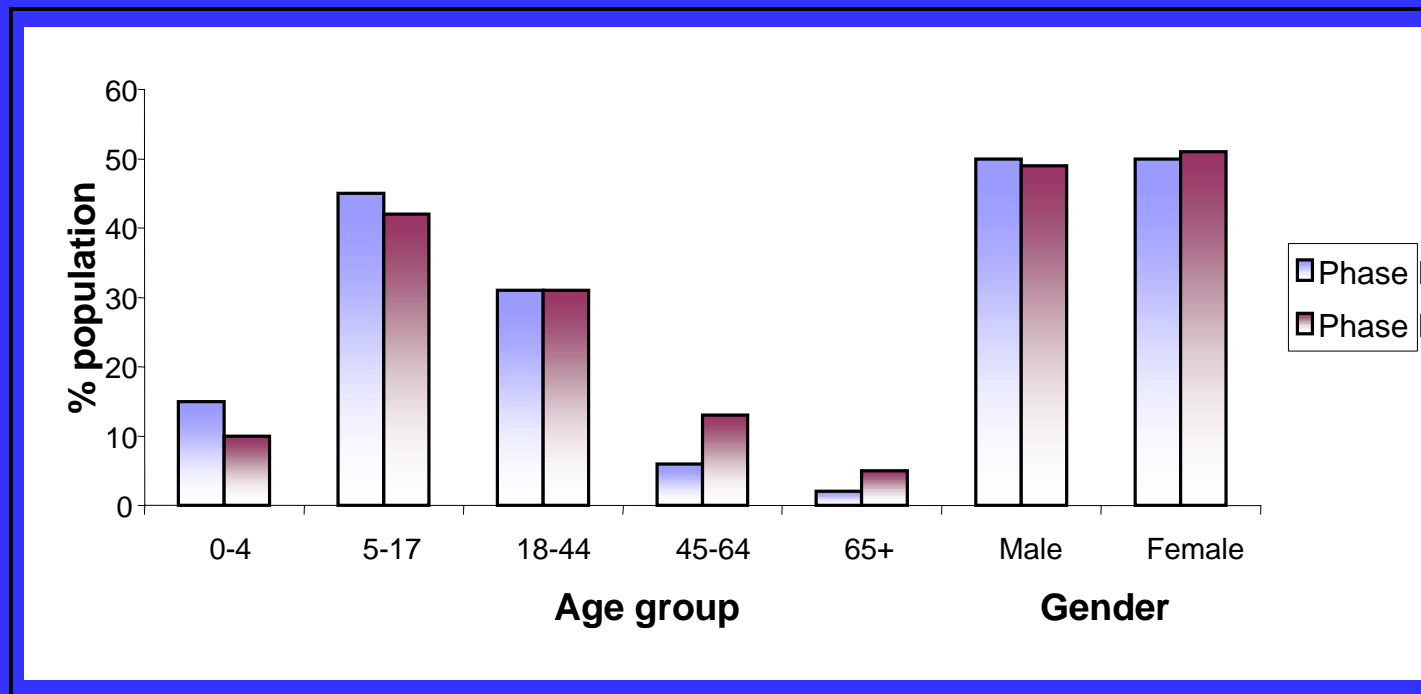
Response rates by Year and Instrument

	Year 1	Year 2	Year 3
Intention to treat 119 households			
Prevalence Survey	N=118 99%	N=115 97%	N=108 91%
Environmental Tests	N=115 97%	N=114 96%	N=105 88%
Health Interviews	N=102 86%	N=101 86%	N=78 66%

By the end of the third year 15 households had left the area

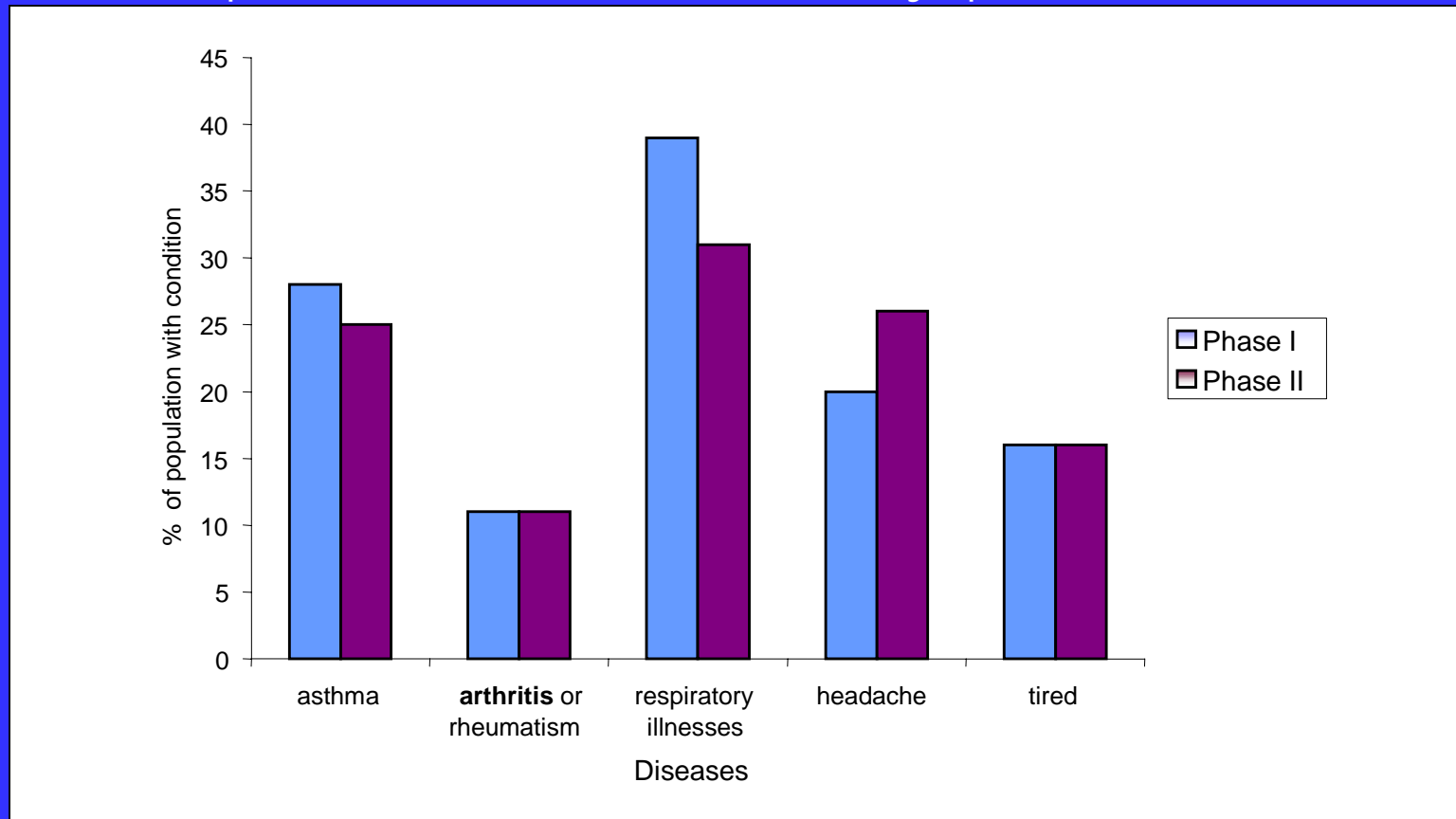
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Comparison between Phase 1 and Phase II households (119 houses randomised) by age group and gender.



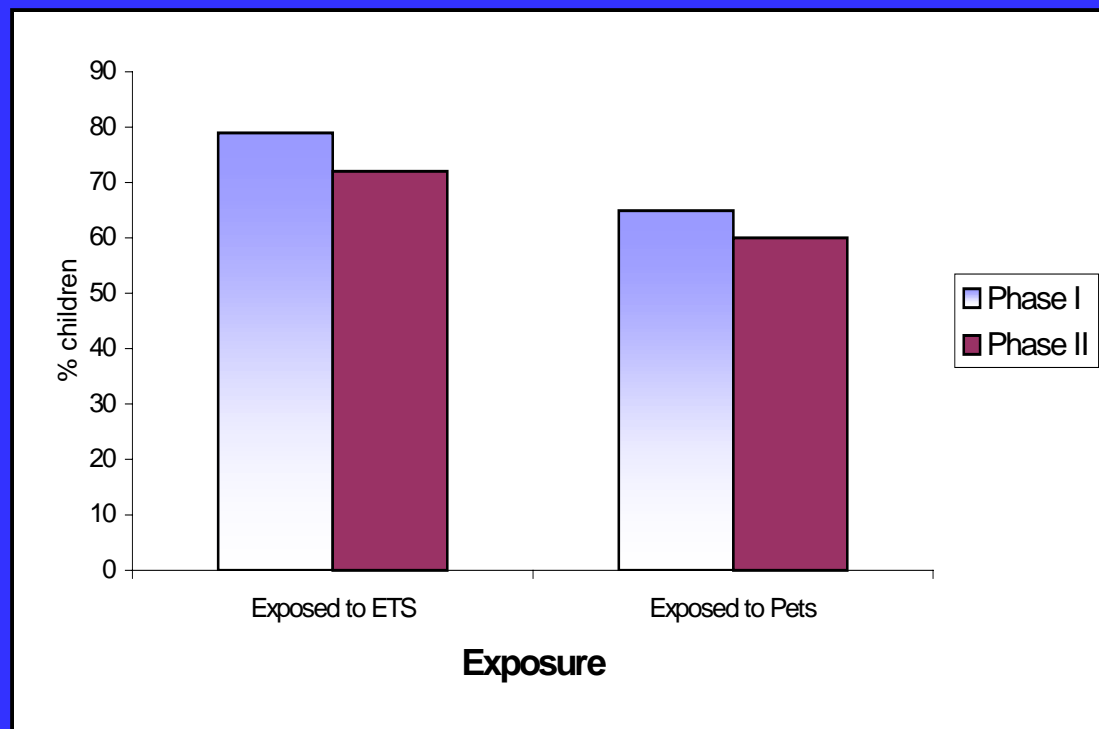
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Comparison between the two phases of the self reported incidence of illness and symptoms



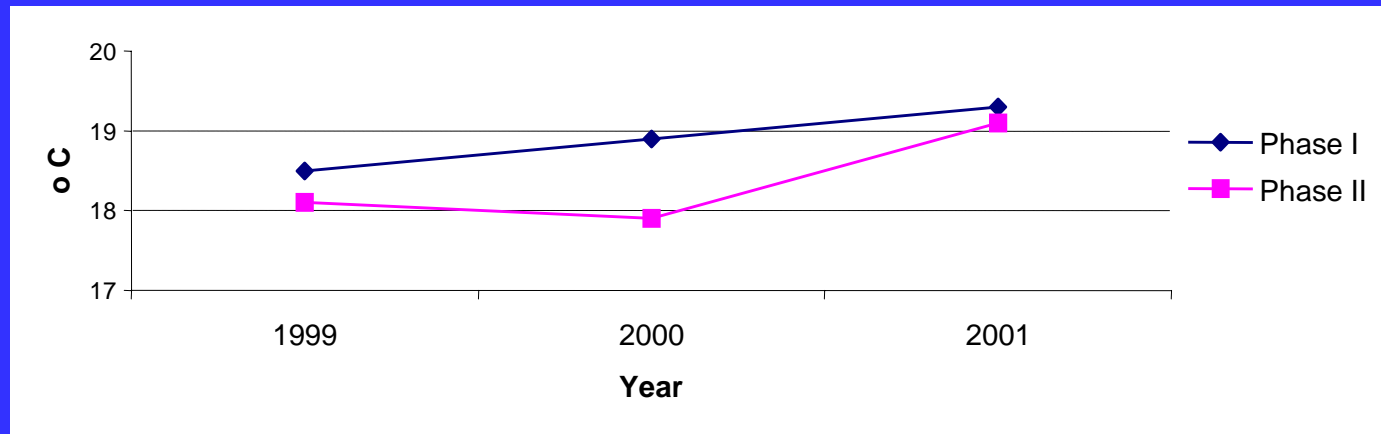
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Percentage of children exposed to animals and ETS by phase at start of the study



Watcombe Housing Project Results Environmental

Temperature, Living room ($^{\circ}\text{C}$)

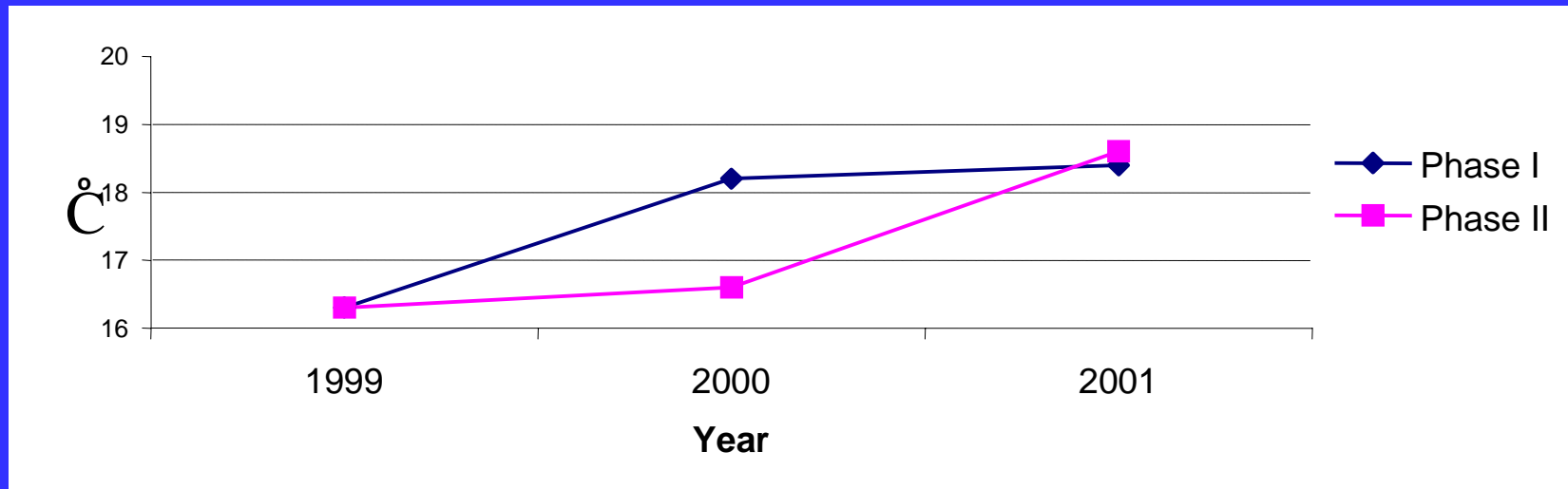


Between phase difference 1999–2000: $p=0.14$

Between phase difference 1999–2001: $p=0.67$

Watcombe Housing Project Results Environmental

Bedroom temperature ($^{\circ}\text{C}$)

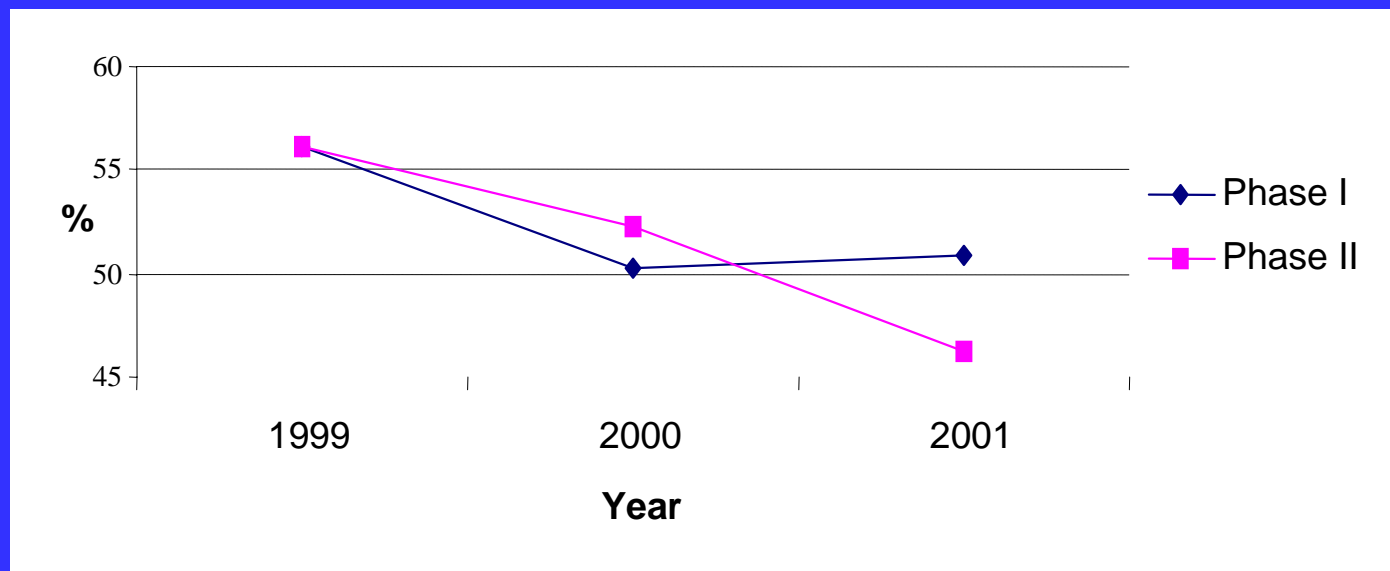


Between phase difference 1999 – 2000: $p=0.002$

Between phase difference 1999 – 2001: $p=0.89$

Watcombe Housing Project Results Environmental

Bedroom relative humidity (%)

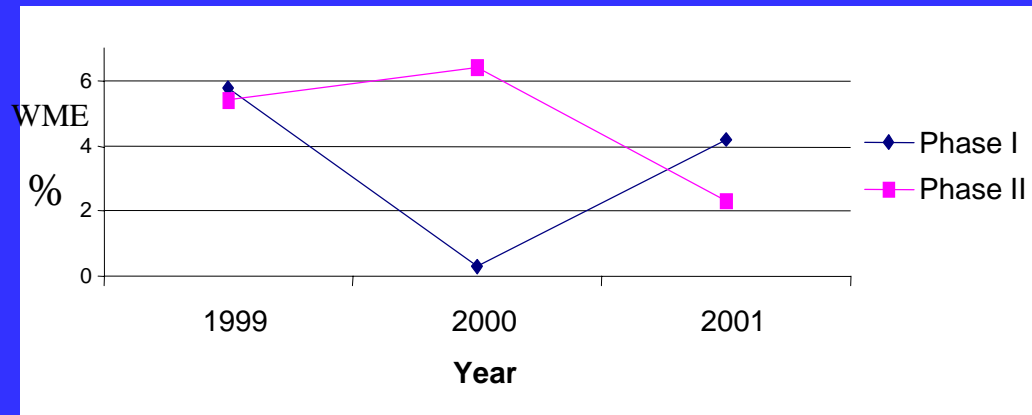


Between phase difference 1999 – 2000: $p=0.28$

Between phase difference 1999 – 2001: $p=0.03$

Watcombe Housing Project Results Environmental

Wall surface dampness (WME%)

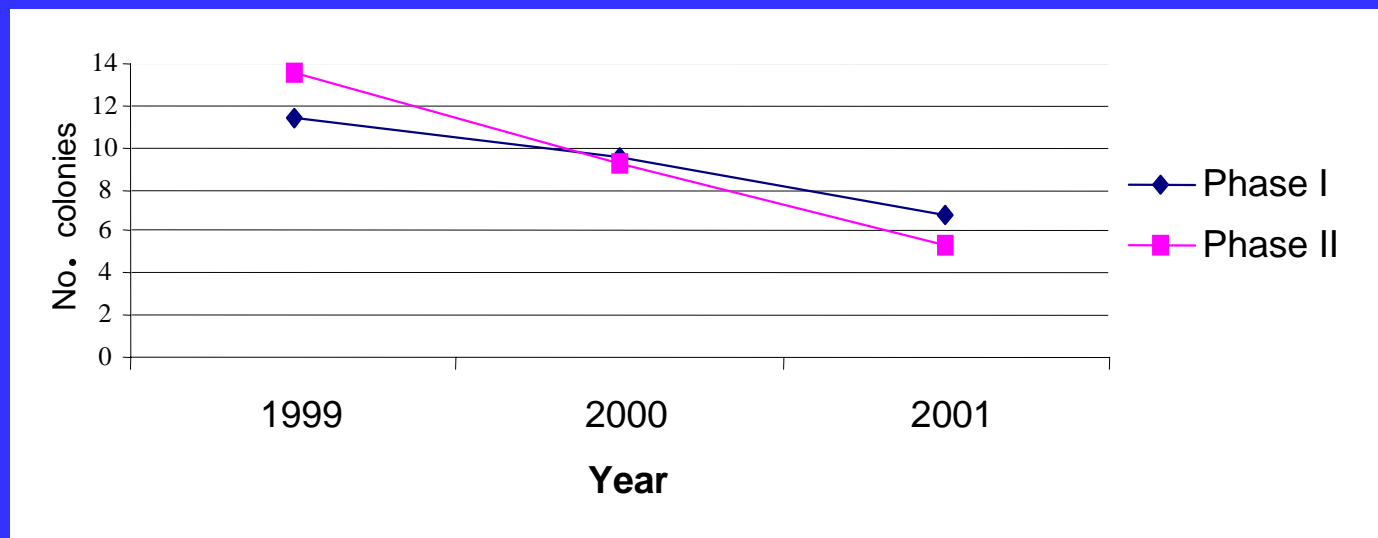


Between phase difference 1999 – 2000: $p=0.001$

Between phase difference 1999 – 2001: $p=0.51$

Watcombe Housing Project Results Environmental

Mould Count (Number of colonies)



Between phase difference 1999 – 2000: $p=0.60$

Between phase difference 1999 – 2001: $p=0.35$

Watcombe Housing Project Results Environmental

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Coarse Particles – due to human or animal activities .
There is no discernable pattern commensurate with house improvements in the living room or bedroom

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Between phase difference 1999 -2001:p=0.11

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Fine Particles – caused e.g. smoking, cooking

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Fine Particles – caused e.g. smoking, cooking

There is no detectable difference in the living room or bedroom following house improvements

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Between phase difference 1999 -2000:p=0.43

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Between phase difference 1999 -2000:p=0.19

Between phase difference 1999 -2001:p=0.11

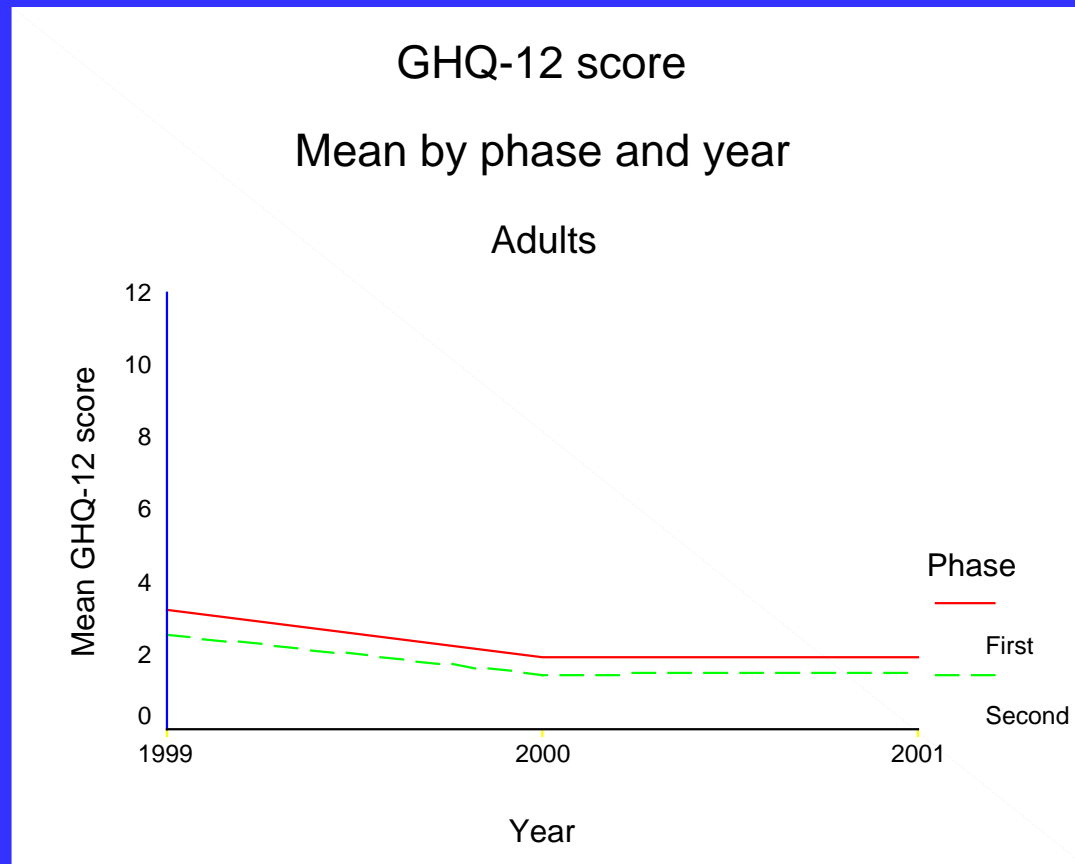
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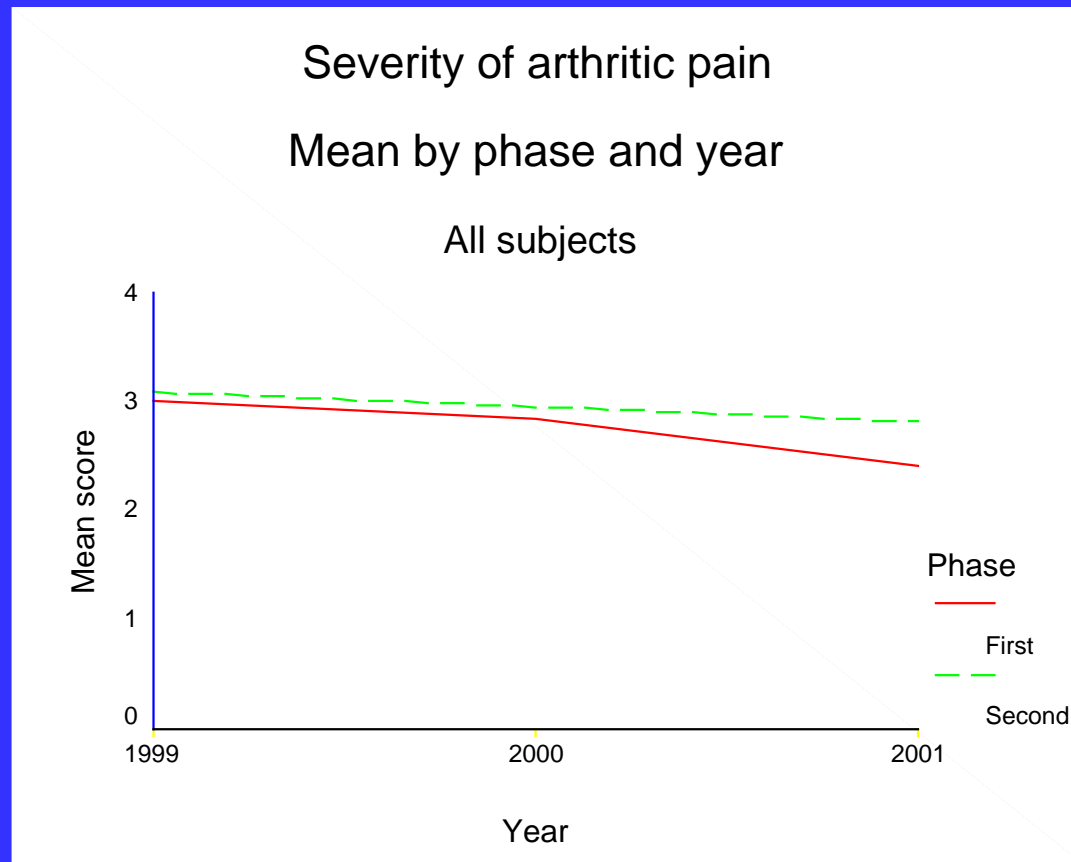
Between phase difference 1999 -2000:p=0.43

Between phase difference 1999 -2001:p=0.40

Watcombe Housing Project Results Health



Watcombe Housing Project Results Health



Watcombe Housing Project Results Health Respiratory

All respondents: Symptom score 6+ (with or without BTS)

	Total (%)	Phase I (%)	Phase II (%)
1999	125/479 (26.1%)	26.3%	25.9%
2000	92/453 (20.8%)	23.1%	19.0%
2001	84/430 (19.6%)	16.6%	21.8%

χ^2 for trend = 5.82, p = 0.016

All respondents: **BTS 1+ (with or without symptoms)**

	Total (%)	Phase I (%)	Phase II (%)
1999	83/479 (26.1%)	16.7%	17.8%
2000	53/453 (20.8%)	11.3%	12.0%
2001	39/430 (19.6%)	7.0%	9.1%

χ^2 for trend = 14, p = <0.001

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ECONOMIC EVALUATION

Indications are that overall there is a reduction in some health service costs but not in association with either study phase in particular

Watcombe Housing Project Results Environmental

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SAP (Standard Assessment Procedure) changes

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Increase of average SAP of 41 to a revised average of 74 = an increase of 33 SAP points

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Cost of providing both domestic hot water and heating

Watcombe Housing Project Results Environmental

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CO² emissions

Watcombe Housing Project Results Environmental

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CO² emissions



Reduced by over 2 tonnes per property per year.


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-  This study is the first randomised trial of house improvements and has demonstrated the feasibility of conducting sound scientific research on community wide interventions
-  It is gaining national recognition for the outstanding response rate and involvement of study participants
-  It is a positive example of partnership working in housing and health

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 The analysis demonstrates an improvement in some of the indoor environmental variables





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-  To date we have been unable to link this improvement to the health of residents but analysis is continuing
-  Qualitative feedback from residents has been positive
-  Five further studies on the relationship between housing and health care in progress