



# Exploring centre variation in RRT provision

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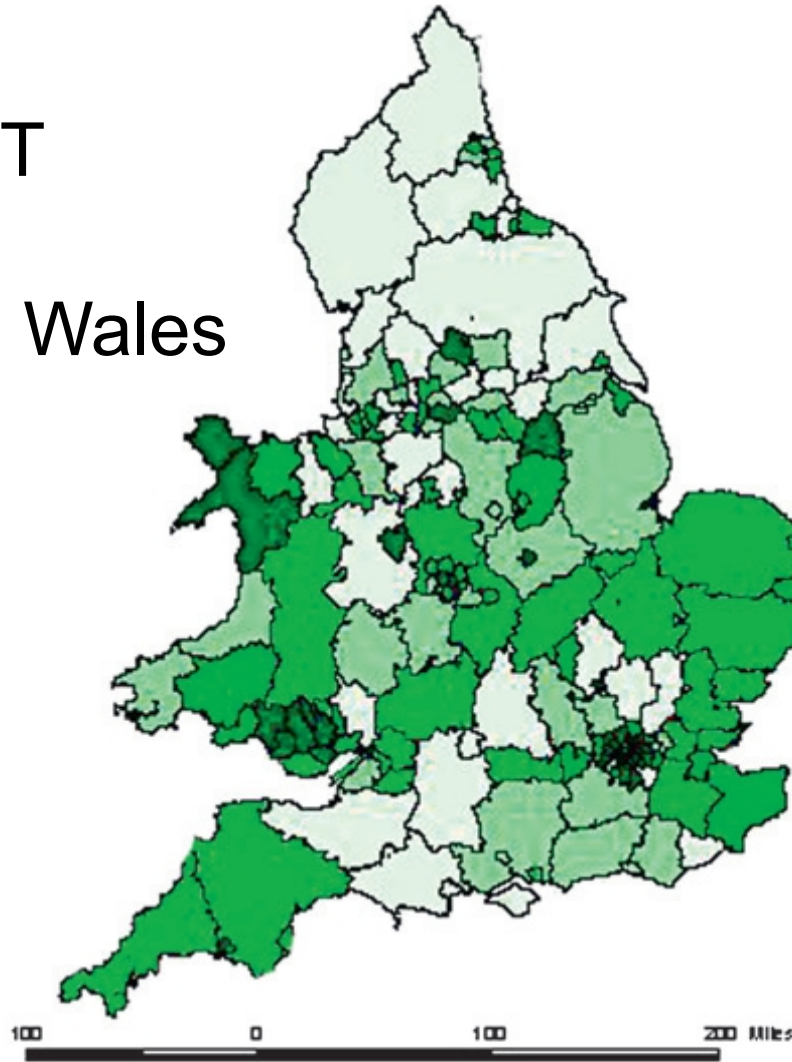


Aims:

1. Variation in RRT incidence
2. Variation in proportion on home dialysis modalities

(Peritoneal Dialysis and Home Haemodialysis)

# Variation in RRT incidence rate in England and Wales



Age-gender standardised rate of RRT per million population



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# Variation in RRT incidence rate in England and Wales



- After further adjustment for ethnicity and socio-economic deprivation...

Significantly higher rates in Wales

Significantly lower rates in Yorkshire  
and North West



# Next step

- Variation could be due to:
  - A) Differences
    - Demographic and health status of the population at risk
  - B) Disparities
    - Differences in availability/organisation of healthcare resources
  - C) Bias
    - Patients beliefs, physician beliefs

Rathore SS, Krumholz HM. Differences, Disparities, and Biases: Clarifying Racial Variations in Health Care Use .Ann Intern Med 2004 141:635-638



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# Next step

- Variation could be due to:
  - A) Differences
    - General population diabetes prevalence
    - General population hypertension prevalence
    - Life expectancy
    - Cardio-vascular mortality rates
    - Proportion of diabetics achieving good glycaemic control (HbA1c<7.5%)
    - Proportion hypertensive achieving moderate BP control (150/90)

# Next step



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# Next steps



- Variation could be due to:
  - B) Disparities
    - angioplasty/CABG rates
    - take up of mammography screening
    - hip replacement rates



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→ **National Renal Unit Survey**

# National Survey

- **Systematic literature search**
  - 11 variables identified relating to RRT incidence
  - 15 variables identified relating to modality mix
- **2 round Delphi consensus technique**
  - 14 additional variables suggested relating to RRT incidence
  - 12 additional variables suggested relating to modality mix
- **National Survey developed from:**
  - 10 highest ranking variables relating to RRT incidence
  - 10 highest ranking variables relating to PD penetrance
  - 10 highest ranking variables relating to HHD penetrance

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**Response rate so far...89%**



# Methods

- Ecological study
  - Measurement level PCT/Health Board (n=192)
  - Median population **250,000** (IQR184,000-390,000)
- RRT incidence for 2007 and 2008 for each PCT/Health Board
- Incident patients = 6642
  - Median rate : **112 pmp** (IQR 89-130 pmp)

General population	Number (N) observations	Median (IQR)
Townsend socio-economic deprivation score (SES)	192	+0.08 (-0.8- +1.4)
Ethnic origin (% non white)	192	5.5 (2.9-12.2)
Prevalence diabetes(%)	192	<b>3.96</b> (3.6-4.2)
Prevalence hypertension (%)	192	13.2 (11.9-14.5)
% achieving Hba1c <7.5%	188	59.6 (56.5-62.5)
% achieving BP<150/90	192	74.8 (73.2-76.2)
Life expectancy at birth (years)	192	79.3 years (78.3-80.4)
Cardiovascular mortality	192	2580 pmp (2156-2928)

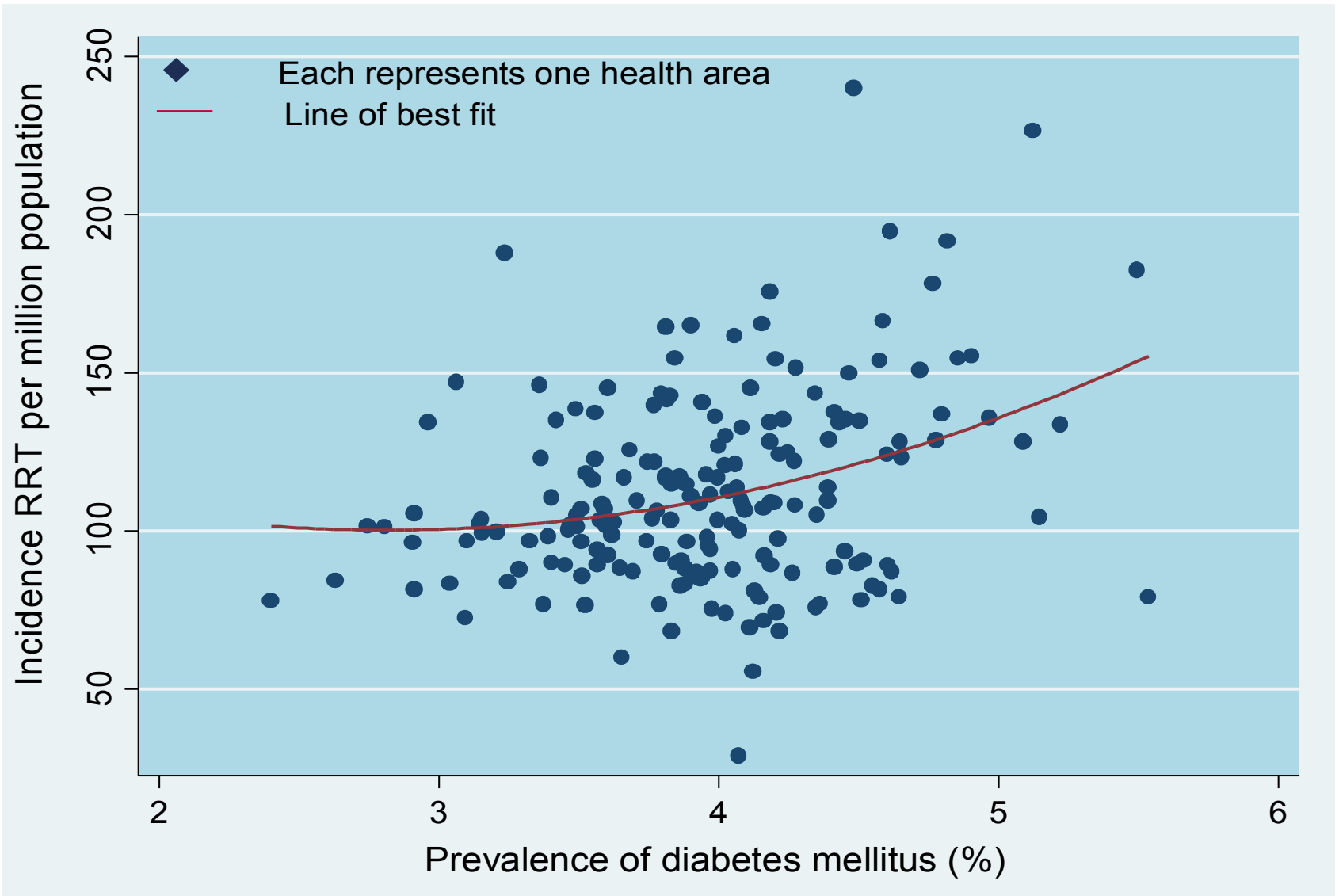
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# Univariate correlation diabetes prevalence and RRT incidence



# Results-diabetes prevalence

Poisson model adjustments	Incidence rate ratio of RRT Unadjusted (95% CI)	Incidence rate ratio of RRT Adjusted age, gender, ethnicity and SES (95% CI)
QOF diabetes prevalence	<b>1.20</b> (1.14-1.26 p<0.0001)	<b>1.08</b> (1.02-1.15 p=0.008)
Modeled diabetes prevalence	<b>1.24</b> (1.18-1.30 p<0.0001)	<b>1.11</b> (1.04-1.18 p=0.001)

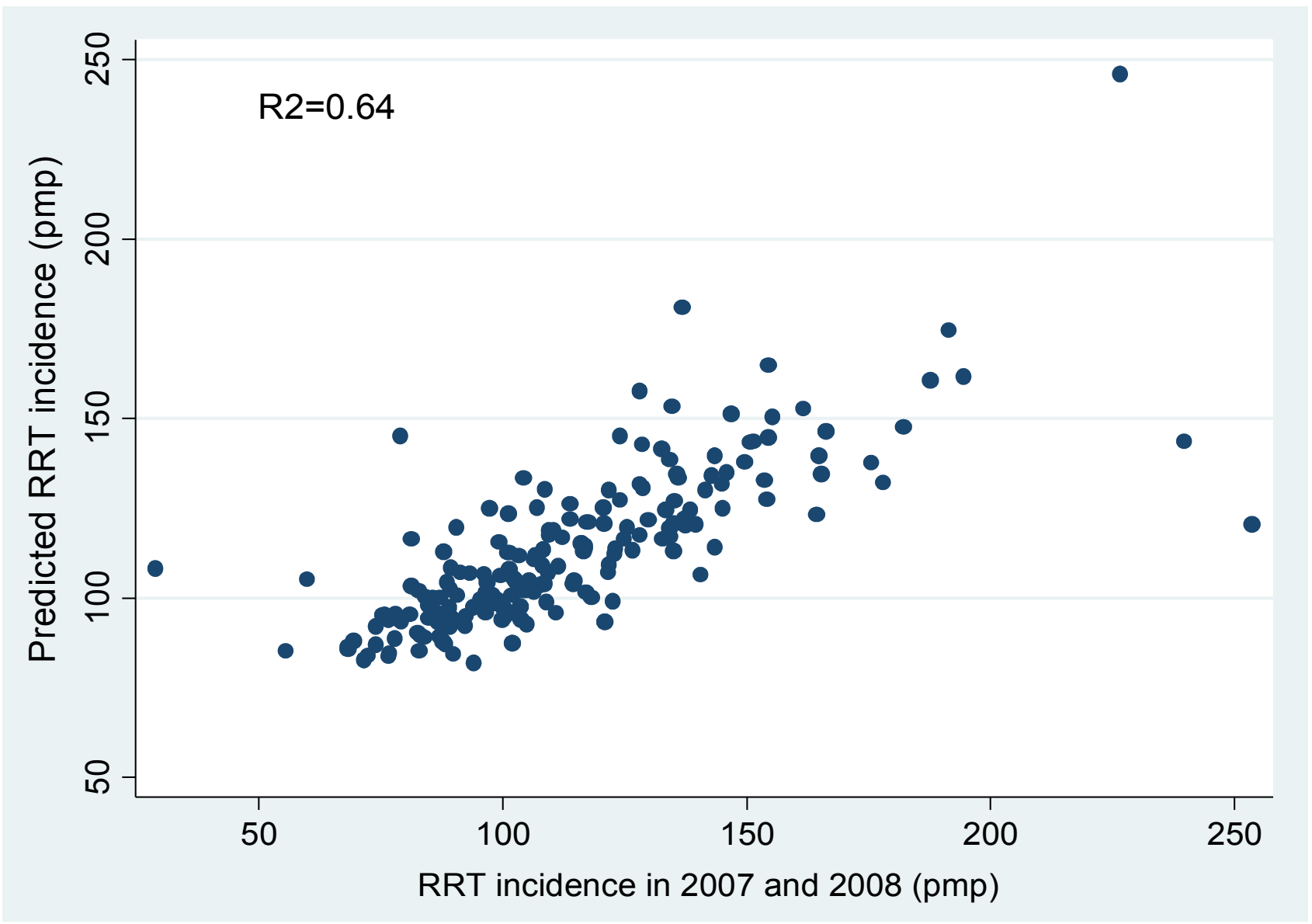
# Results-hypertension prevalence

Poisson model adjustments	Incidence rate ratio of RRT Unadjusted (95% CI)	Incidence rate ratio of RRT adjusted for age, gender, ethnicity and SES (95% CI)
QOF Hypertension prevalence	<b>0.98</b> (0.96-0.99 p=0.001)	<b>1.03</b> (1.00-1.05 p=0.023)
QOF hypertension control	<b>0.99</b> (0.98-1.00 p=0.026)	<b>1.00</b> (0.99-1.01 p=0.795)

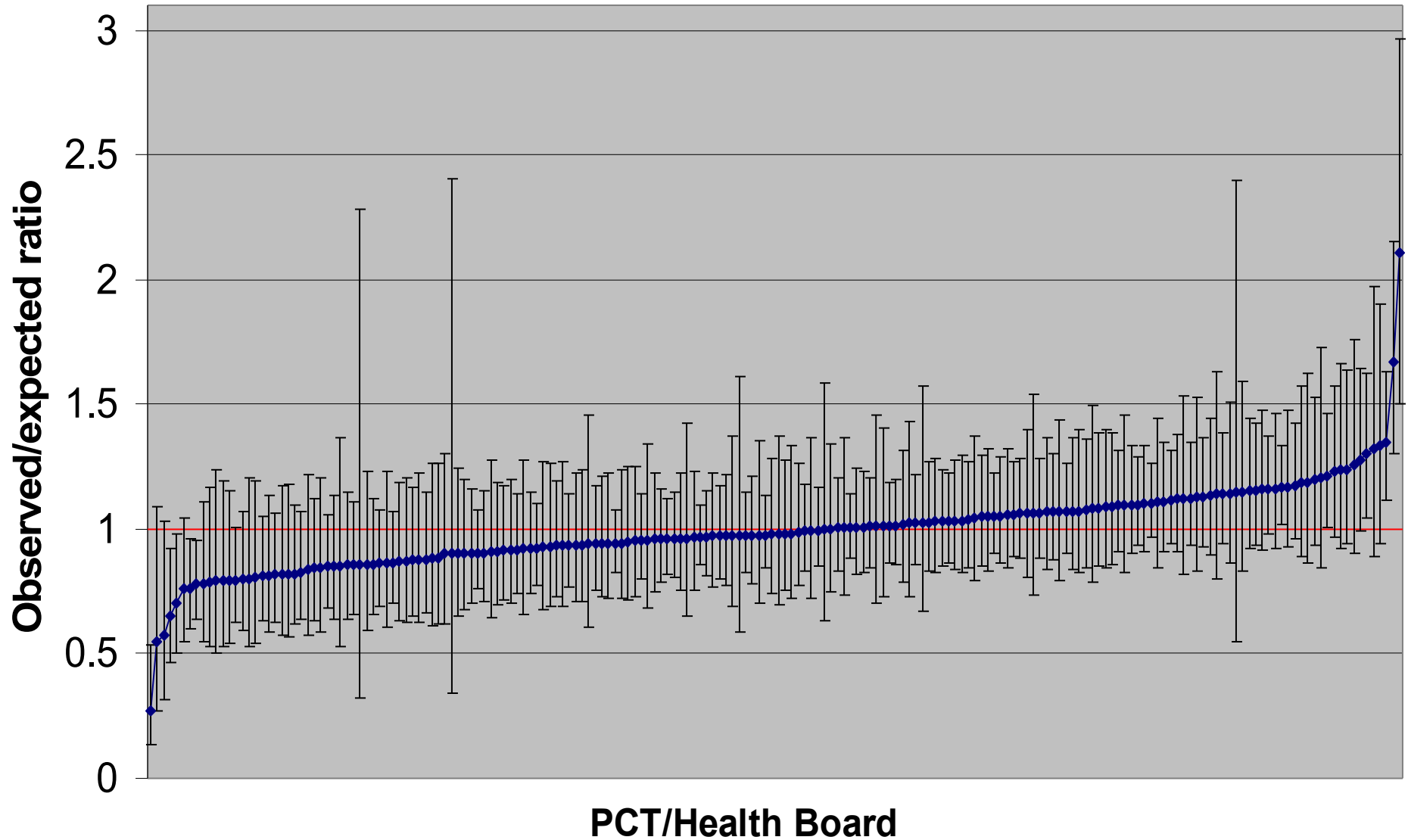
# Results

Poisson model adjustments	Incidence rate ratio of RRT Unadjusted (95% CI)	Incidence rate ratio of RRT adjusted for age, gender, ethnicity and SES (95% CI)
Life expectancy at birth	<b>0.91</b> (0.88-0.93 p<0.0001)	<b>0.95</b> (0.92-0.99 p=0.006)
Cardio-vascular mortality	<b>1.09</b> (1.07-1.12 p<0.0001)	<b>1.05</b> (1.01-1.08 p=0.017)

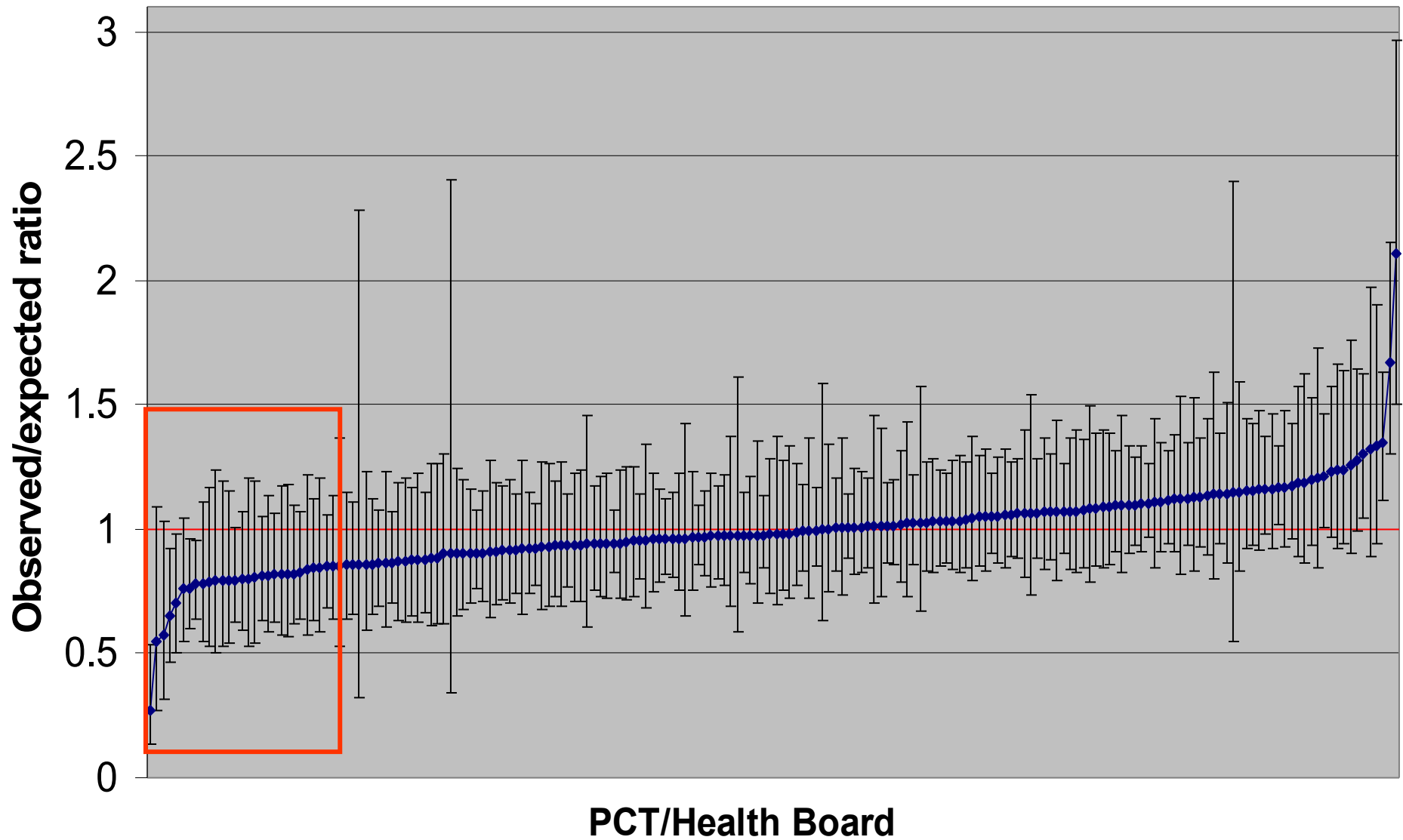
The correlation between the actual RRT incidence and the incidence predicted from the model



The observed/expected RRT incidence for each PCT/Health Board 2007 and 2008

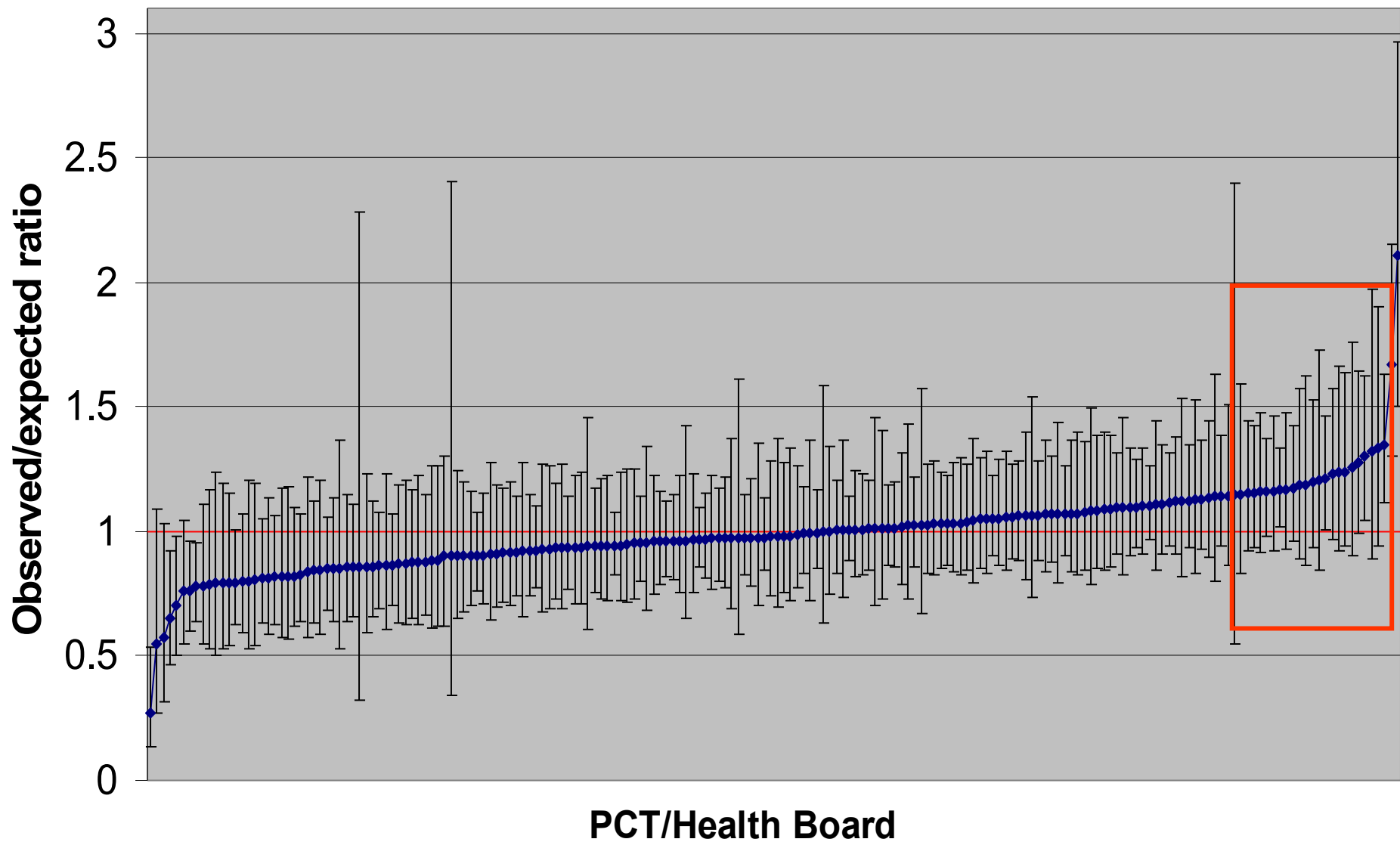


# The observed/expected RRT incidence for each PCT/Health Board 2007 and 2008





# The observed/expected RRT incidence for each PCT/Health Board 2007 and 2008



# Summary

- Each % point rise in **diabetes** in an area was associated with an **8% rise** in RRT rate
- Each % point rise in **hypertension** in an area was associated with a **3% rise** in RRT rate
- Each standard deviation higher **life expectancy** was associated with a **5% decrease** in RRT incidence rate
- Each standard deviation higher **CV mortality** in an area was associated with a **5% increase** in RRT incidence rate
  
- 64% variance explained with these health status and demographic factors.....the remaining with renal survey factors

# Acknowledgements

- Many thanks to:
  - Fergus Caskey
  - Julie Gilg
  - All the renal units and SRR for sending us data
  - Everyone who completed the survey