

# Incentives and the Quality of Primary Care in Australia:

## Do Divisions of General Practice Make a Difference?

**Anthony Scott**

Melbourne Institute of Applied Economic and Social Research  
The University of Melbourne

**Bill Coote**

Coote Practice Pty Ltd.



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of Applied Economic and Social Research

# Outline

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- Regional Primary Care Organisations and Divisions
- Aims of study
- Data and methods of the empirical study
- Results
- Conclusions

# Regional Primary Care Organisations

- UK – Primary Care Trusts
- NZ – Primary Health Organisations
- Australia – Divisions of General Practice
  - Only structural reform to health system
  - Established in 1992
  - Covered all of Australia by 1998
  - Major reviews in 1998 and 2004

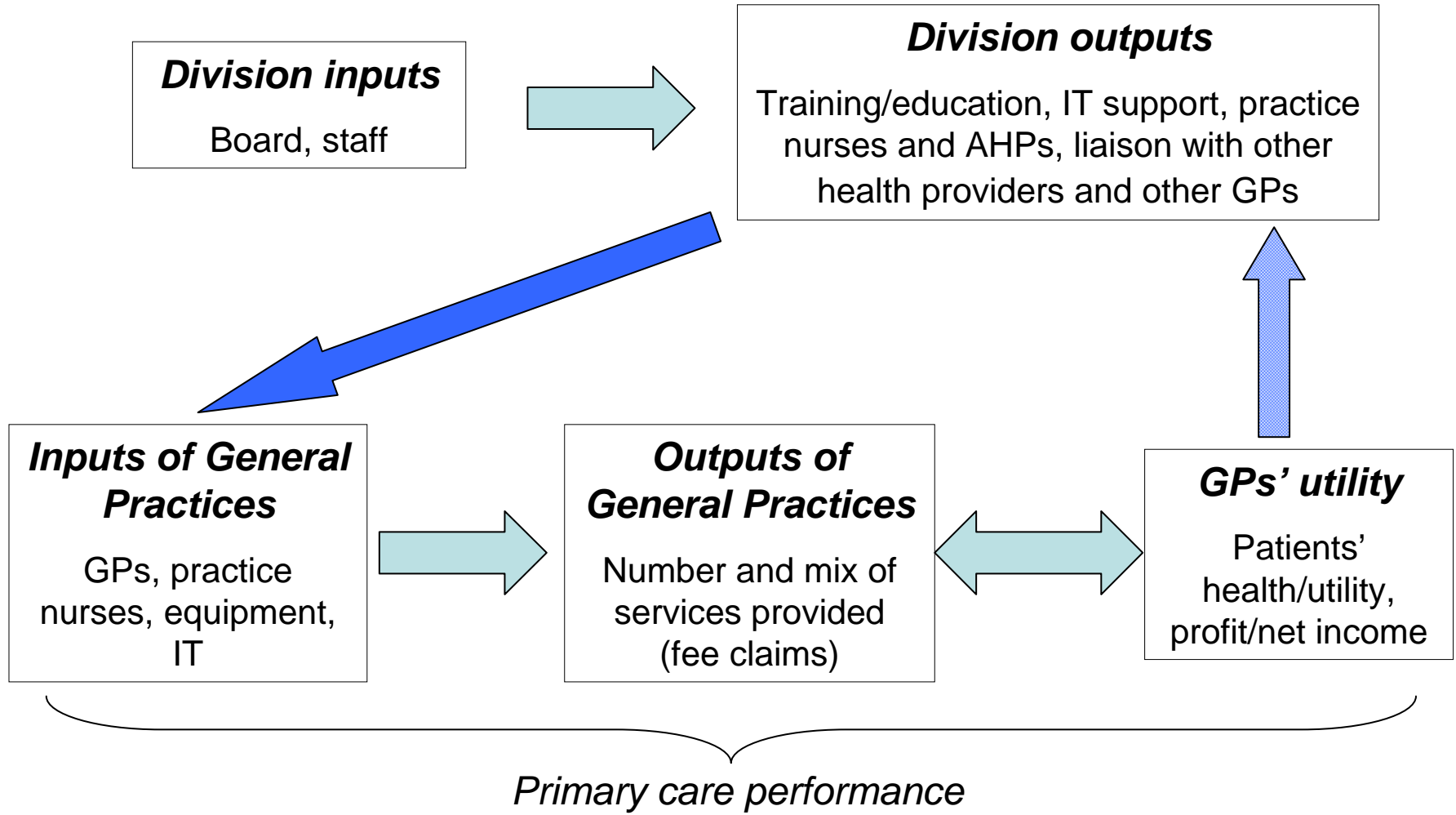
# Divisions – key features

- Membership of GPs in voluntary: 94% of GPs are members
- Number of Divisions: 120
- Mean pop: 167,000 (16,993 – 608,451)
- Median number of GPs: 157 (15 – 747)
- Median number of general practices: 53 (7 – 215)
- Mean FTE staff: 10.6 (1 – 46)
- Mean funding: \$1.18m per Division (\$8 per capita)

# What do Divisions do?

- Networks
  - Trust, peer support, social norms, ‘strength’ of network, network externalities
- Providing in-kind resources and support to GPs and general practices
  - Training/education, IT support, practice nurses and AHPs, liaison with other health providers and other GPs
- Divisions as service providers in primary and community care
  - National programs (GP11, Aged Care GP panels, Better Outcomes in Mental Health, More Allied Health Services)

# Simple model



# Previous evidence of the effect of Divisions

- The two government reviews included no evaluation component
- Only two academic studies
  - Georgiou et al (2004)
    - Division activities in diabetes not associated with diabetes fee claims, controlling for other factors
  - Morely et al (2007)
    - Found that direct employment of AHPs by Divisions and direct referral from GP to AHP were associated with higher health outcomes

# Aims

- To examine the effect of Divisions on measurable areas of primary care performance, whilst controlling for the effects of population and GP characteristics
- To improve on the methods of previous studies by:
  - using longitudinal data and associated panel data methods to control for unobserved factors
  - examining multiple areas of primary care performance

# Data

- Merged a number of Division-level longitudinal datasets
  - Quarterly admin claims data on performance
    - Medicare Australia website
  - GP, general practice and population/area characteristics
    - Various sources
  - Division inputs and activities (outputs)
    - Annual Survey of Divisions

# Measures of Primary Care Performance (dependent variables)

- Quarterly administrative data on payments and fee claims for specific activities at Division level
- Practice Incentive Program
  - % of PIP practices per Division
  - \$ value of service incentive payments (SIPs) per signed-on PIP practice for:
    - Diabetes
    - Asthma
    - Cervical screening

# Independent variables

- All variables measured annually at Division level
  - Access and health needs
    - Remoteness; socio-economic disadvantage; standardised mortality rate; % of population indigenous; % of population over 65 years old; State
  - GP and practice characteristics
    - Patients per GP; GPs per practice; % GPs working part time; % of female GPs; % of GPs over 55 years old

# Division characteristics and activities

- Division inputs
  - number on board of Directors
  - % of GPs on board
  - number of FTE staff employed by the division
  - whether division has a manual of operating procedures/governance
  
- Division outputs and activities
  - whether Division provided support for:
    - IM/IT, disease registers & recall systems
    - practice nurses
  - whether Division had a focus on:
    - asthma, diabetes, or cervical screening programs and activities.

# Econometric models

- Estimation of Division fixed/random effects (Mundlak approach)

$$y_{it} = \alpha + \beta x_{it} + u_i + v_{it}$$

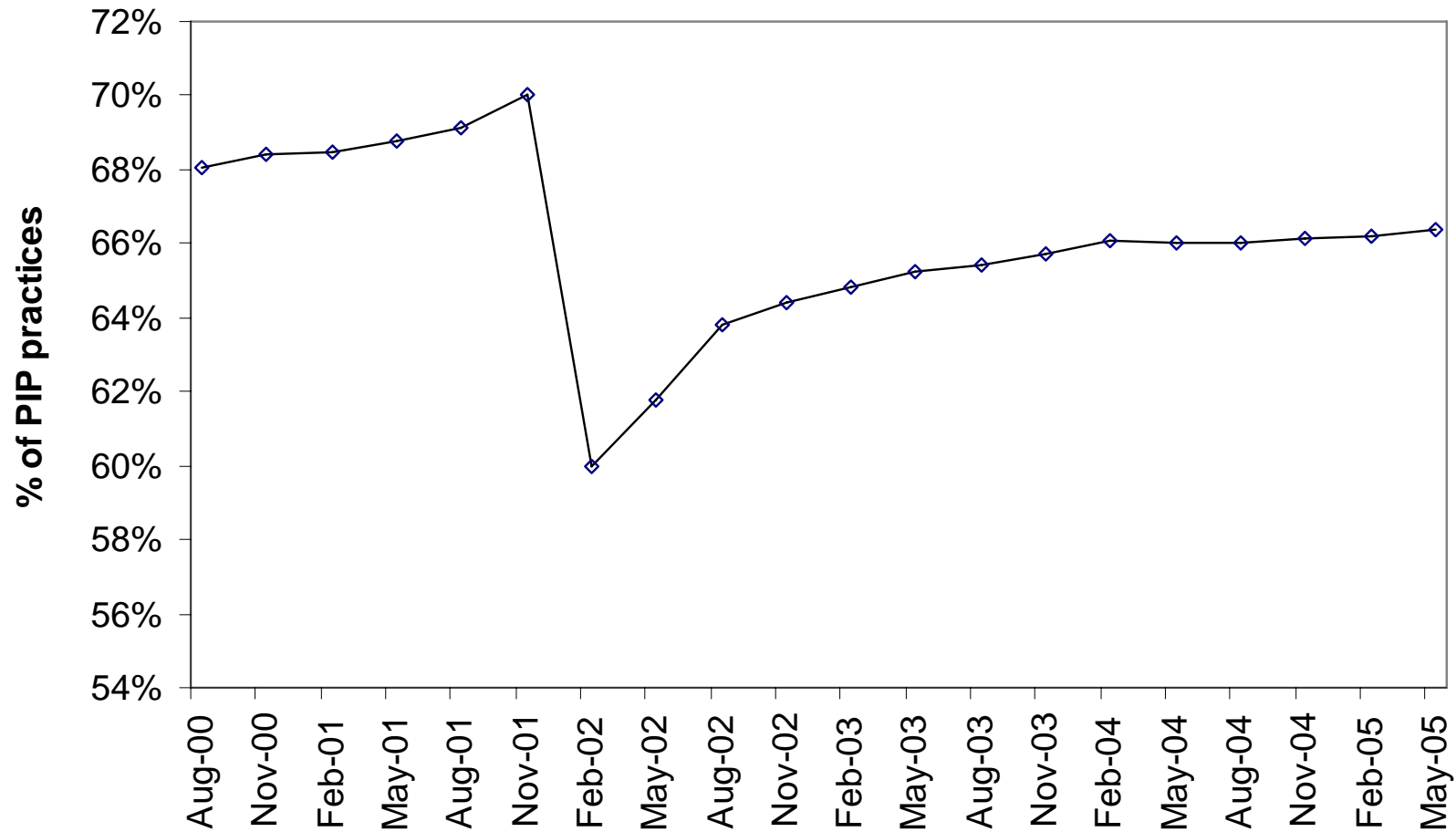
- $\text{var}(u_i) / \text{var}(y_{it})$

- Dynamic panel estimation (system GMM)

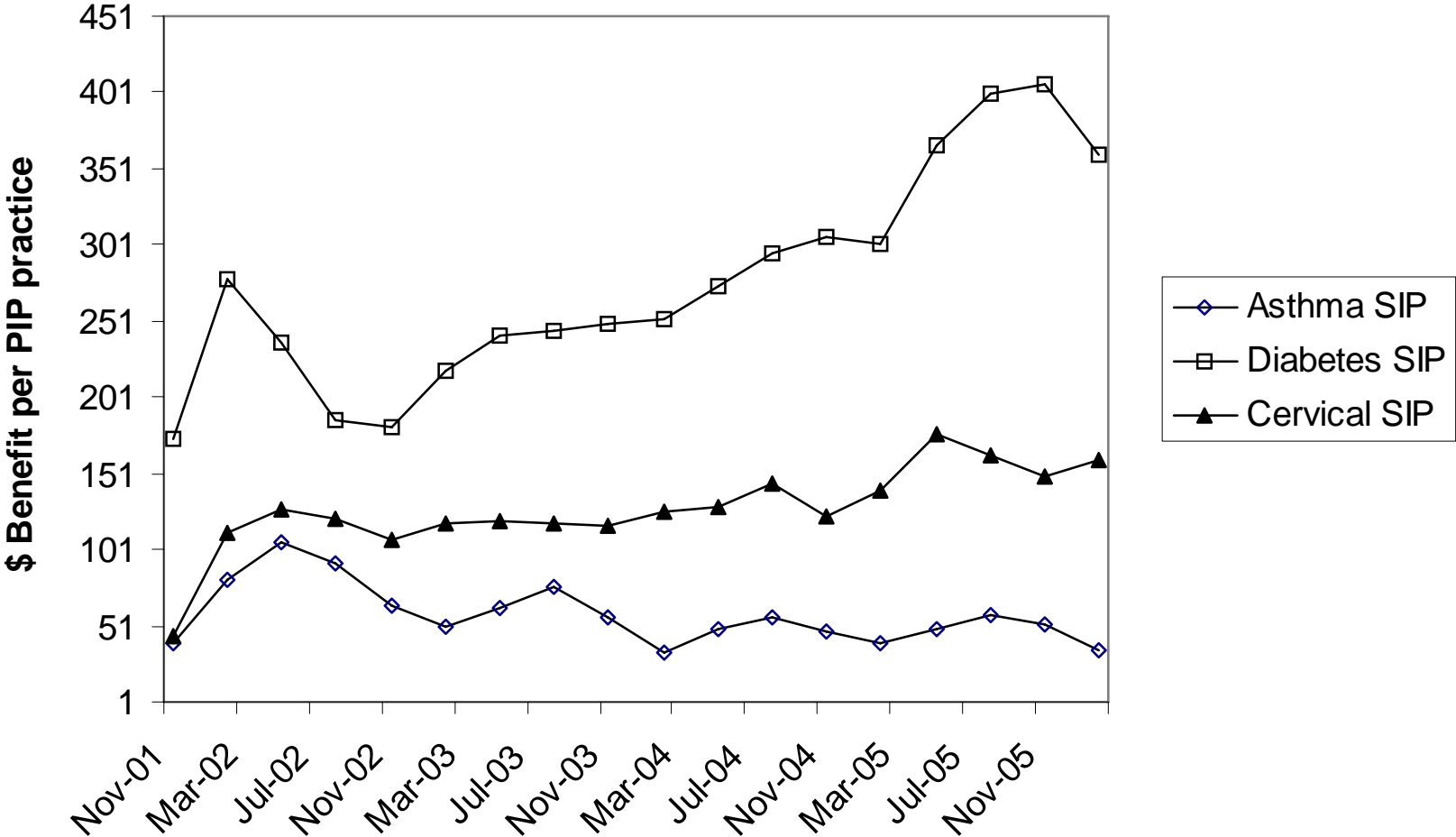
$$y_{it} = \alpha \hat{y}_{i,t-1} + \beta x_{it} + \theta \hat{q}_{it} + u_i + v_{it}$$

- accounts for endogeneity of Division outputs
- uses lags of  $y_{it-1}$  and  $q_{it-1}$  as valid instruments

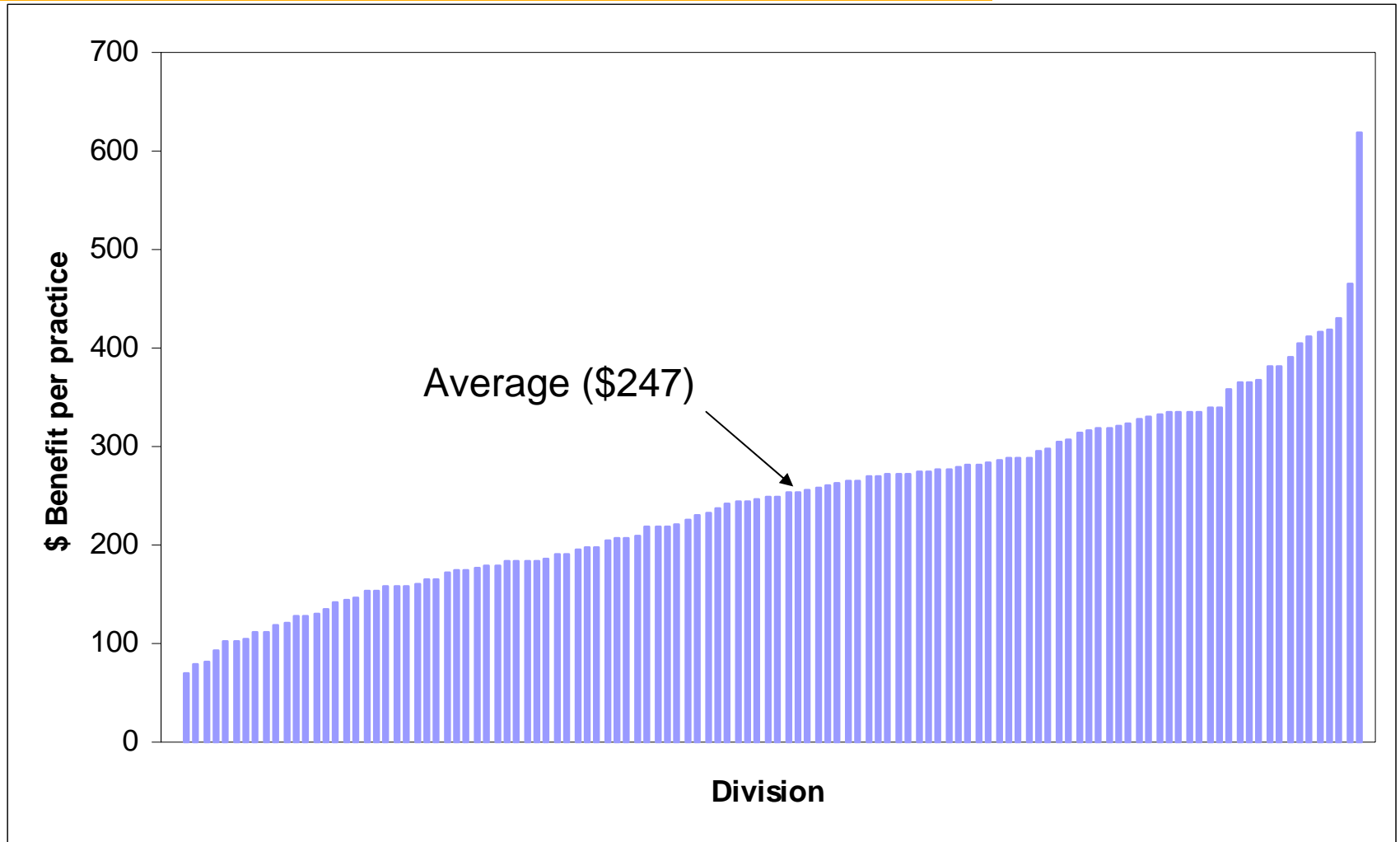
# % of PIP practices, All Divisions



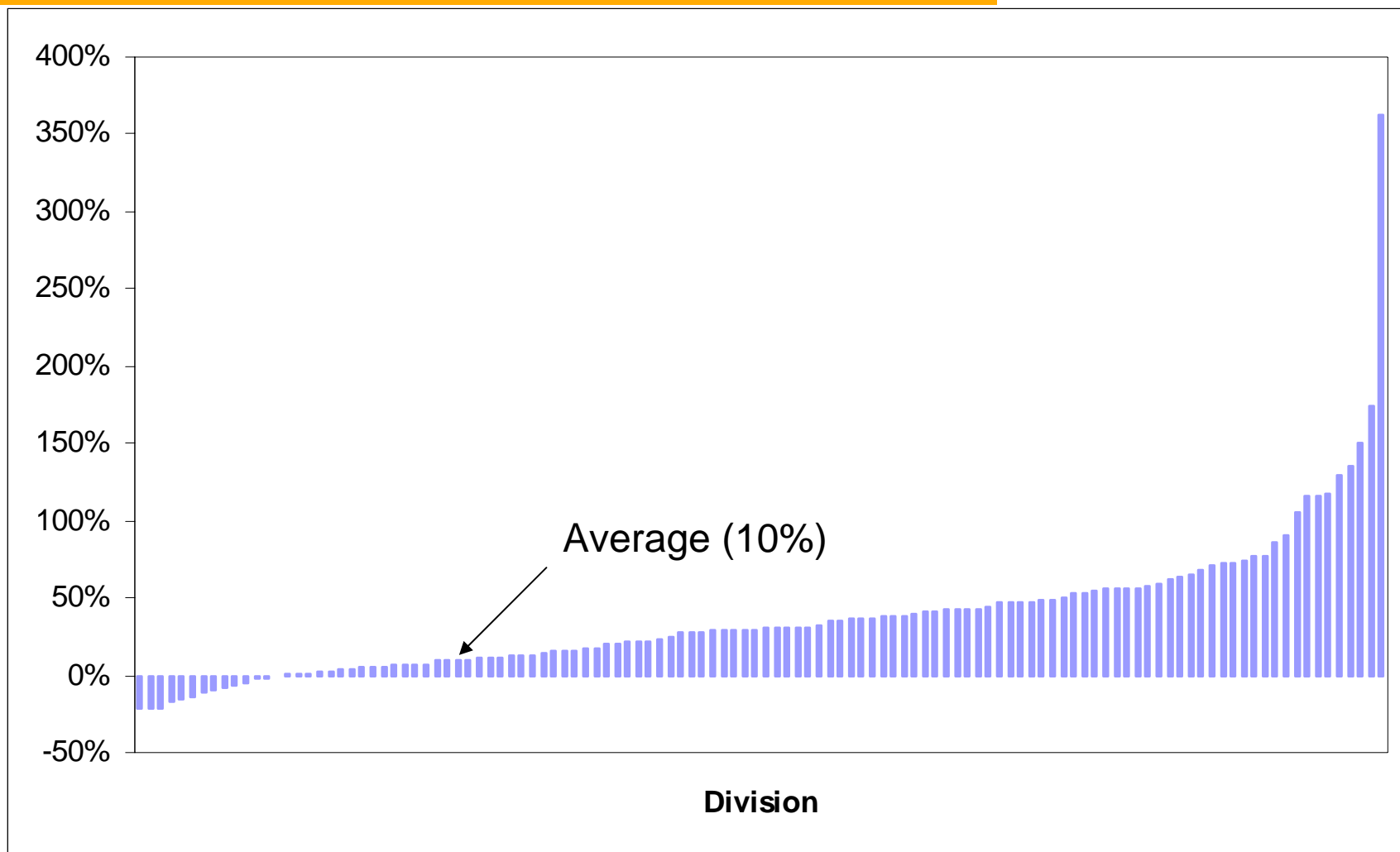
# Service Incentive Payments per PIP practice, All Divisions



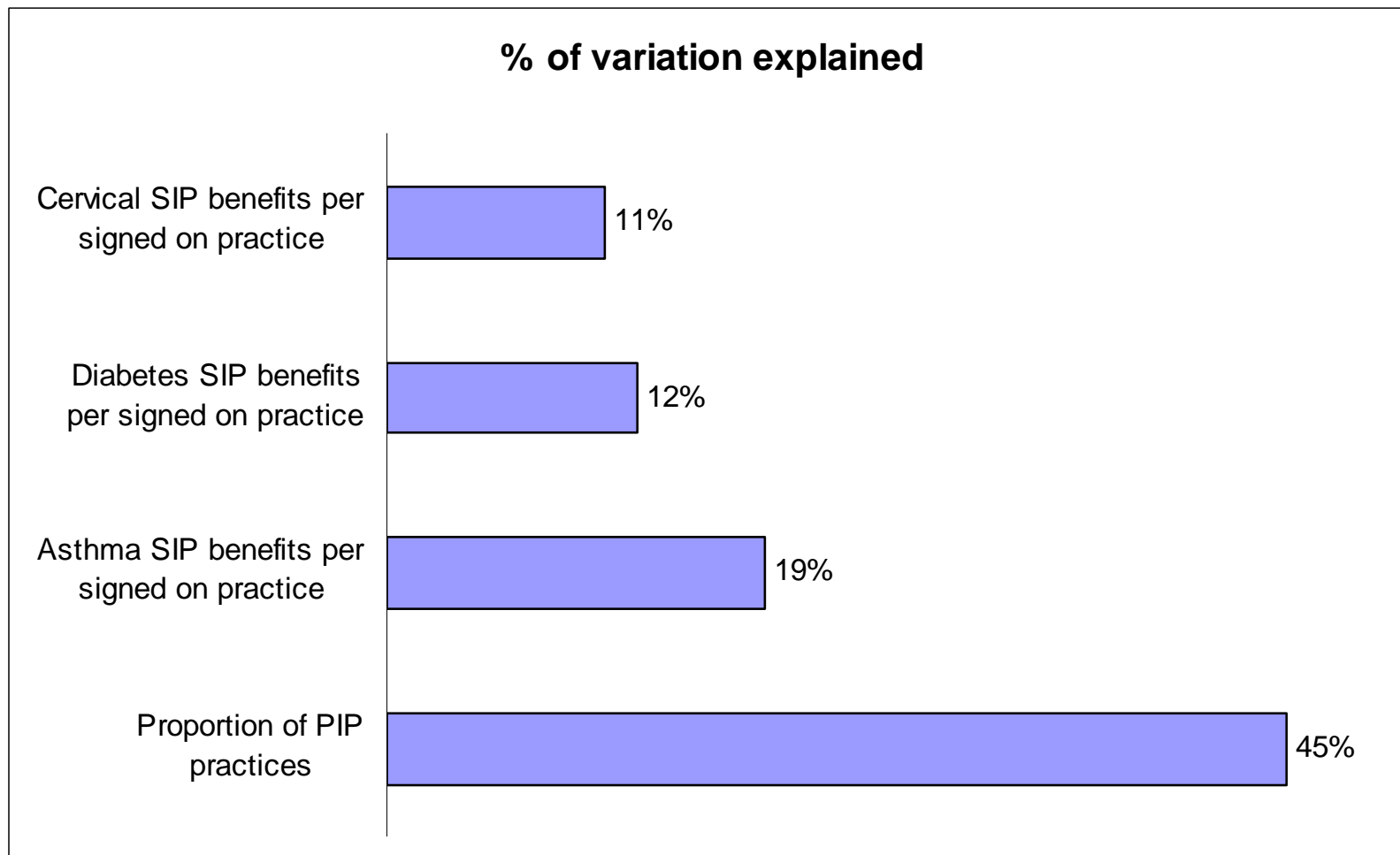
## Variations across Divisions: Average diabetes SIP payment per signed on PIP practice per quarter (by Division, 2002-2004)



## Variations in growth over time: percentage growth in diabetes SIP payments per signed on PIP practice (by Division, 2002-2004)



## Network effects: percentage of total variation in performance explained by Division random effect (2002 to 2004)



# Effect of Division activities on the % of PIP practices

Variable	System GMM			
	OLS	Fixed effects	(without instruments for $q$ )	(with instruments for $q$ )
constant	-0.0054	-0.2114**	-0.0172	0.0005
$y_{it-1}$	0.9279***	0.6470***	0.9521***	0.9684***
Remote area	0.0161**	-	0.014	0.0103
Outer regional area	0.0099**	-	0.0092	0.0076
Inner regional area	0.0051*	-	0.0042	0.0043
IRSD	1.45E-05	-	1.77E-05	9.35E-06
Mortality rate	-1.20E-05	-	-7.24E-06	2.30E-05
Patients per GP	-0.001	0.0265**	-0.0048	-0.0064
Patients per GP squared	0.0001	-0.001	0.0002	0.0003
GPs per practice	0.0299***	0.1558***	0.0297*	0.0283**
Practice size squared	-0.0039***	-0.0158***	-0.0037*	-0.0036**
Part time GPs	0.0018	-0.0195	0.0085	0.0103
Female GPs	-0.0096	-0.0354*	-0.0051	-0.0022
GPs aged >55 years old	-0.0118	0.0889**	0.0034	0.0052
IT support	0.0008	0.0009	0.0002	-0.004
Practice nurse support	0.0065**	0.003	0.0046*	-0.0015
Sample size	2168	2168	2168	2168
Number of Divisions		119	119	119

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# Effect of Division activities on the \$ value of diabetes SIP payments

Variable	OLS	System GMM		
		Fixed effects	(without instruments for $q$ )	(with instruments for $q$ )
constant	1.4409***	5.4439***	2.3403**	1.5222**
$y_{it-1}$	0.6447***	0.2264***	0.5629***	0.7445***
Remote area	-0.1838**	-	-0.2336**	-0.1159*
Outer regional area	-0.0696**	-	-0.1093*	-0.0539
Inner regional area	-0.0174	-	-0.0282	-0.0146
IRSD	-0.0007**	-	-0.0008*	-0.0004
Mortality rate	0.0004*	-	0.0004	0.0002
Patients per GP	0.0856*	-0.1005	0.1152*	0.0599
Patients per GP squared	-0.003	0.0017	-0.0043	-0.0017
GPs per practice	0.2498***	-0.0625	0.2791**	0.2065**
Practice size squared	-0.0338***	0.0125	-0.0385**	-0.0295**
Part time GPs	-0.2144*	0.0542	-0.2551	-0.1949
Female GPs	0.0066	0.1891	0.0062	-0.0266
GPs aged >55 years old	-0.0946	-0.2763	-0.2072	-0.1871
Diabetes activities	0.075	0.0321	0.0620**	-0.0363
Practice nurse support	0.0114	-0.0195	0.0074	-0.0792**
Sample size	1552	1552	1552	1552
Number of Divisions		117	117	117

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IRSD	-0.0007**	-	-0.0008*	-0.0004
Mortality rate	0.0004*	-	0.0004	0.0002
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GPs per practice	0.2498***	-0.0625	0.2791**	0.2065**
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Part time GPs	-0.2144*	0.0542	-0.2551	-0.1949
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Practice nurse support	0.0114	-0.0195	0.0074	-0.0792**
Sample size	1552	1552	1552	1552
Number of Divisions		117	117	117

# Effect of Division activities on Cervical screening SIPs

Variable	OLS	Fixed effects	System GMM (without instruments for $q$ )	System GMM (with instruments for $q$ )
constant	1.2470**	3.8660***	2.2792	2.0971*
$y_{it-1}$	0.6371***	0.2159***	0.4611*	0.4939**
Remote area	-0.1793**	-	-0.1993	-0.1658
Outer regional area	-0.1519***	-	-0.1763	-0.1741*
Inner regional area	-0.0439*	-	-0.0549	-0.046
IRSD	0.0005*	-	0.0005	0.0007
Mortality rate	0.0003	-	0.0002	0.0003
Patients per GP	-0.0685	-0.1221	-0.0777	-0.0921
Patients per GP squared	0.0028	0.0049	0.0031	0.0038
GPs per practice	0.1237**	-0.1	0.1627	0.1493
Practice size squared	-0.0081	0.0321**	-0.0094	-0.0089
Part time GPs	-0.2561**	0.4397	-0.4337	-0.4387**
Female GPs	0.2952**	0.0915	0.4406	0.4061
GPs aged >55 years old	0.3168**	0.9091**	0.5389	0.5413
Cervical screening activities	0.0195	0.0237	0.0265	-0.019
Practice nurse support	0.032	0.0722**	0.036	0.0195
Sample size	1467	1467	1467	1467
Number of Divisions		117	117	117

# Effect of Division activities on Asthma SIPs

Variable	OLS	Fixed effects	System GMM	System GMM
			(without instruments for $q$ )	(with instruments for $q$ )
constant	0.5141	2.6131	0.194	0.0271
$y_{it-1}$	0.6199***	0.2765***	0.5494***	0.5581***
Remote area	0.067	-	0.1092	0.0477
Outer regional area	0.0006	-	-0.0061	-0.0282
Inner regional area	0.0613	-	0.0521	0.02
IRSD	0.0010**	-	0.0014*	0.0015**
Mortality rate	0.0005	-	0.0004	0.0006
Patients per GP	0.0392	0.078	-0.0493	-0.0356
Patients per GP squared	-0.0021	-0.005	0.0022	0.0015
GPs per practice	0.1921**	0.1485	0.2282*	0.2548**
Practice size squared	-0.0204	-0.0069	-0.0259	-0.0297*
Part time GPs	-0.5995**	-0.9111	-0.7245*	-0.7148*
Female GPs	0.1584	-0.0002	-0.0105	-0.0096
GPs aged >55 years old	0.4469**	0.4954	0.3534	0.3367
Asthma activities	0.1176**	0.1629**	0.1337**	-0.0037
Practice nurse support	0.0043	0.052	0.0109	0.038
Sample size	1388	1388	1388	1388
Number of Divisions		115	115	115

# Some limitations

- Results focus on a narrow range of measurable performance
- Complexities and range of Division activities and outcomes not fully captured
- Use of claims data to measure performance
- Self-report ASD data
- ASD data not good on specifics
- Weak instruments / over-identification
- Simultaneous estimation of models?

# Conclusions

- Statistically significant ‘network’ effects of Divisions
- Little evidence of more direct effects of specific Division activities on infrastructure or performance in diabetes, asthma, and cervical screening.
- Time period (2002 to 2004)
  - early impact of Divisions already happened
  - Phillips review of Divisions
  - Red Tape review
  - Workforce shortage and reductions in bulk-billing rates
  - Before ‘Strengthening Medicare’ initiatives