

# BCIS Audit Returns Adult Interventional Procedures

Jan 2012 to Dec 2012



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BCIS National Audit Lead

On behalf of

British Cardiovascular Intervention Society

Cambridge 4<sup>th</sup> October 2013

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  - NSTEMI (direct v IHT)
  - Primary PCI DTB / CTB
  - IHT versus Direct admission
  - Length of stay
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  - MACCE
  - Peri-procedural complications and by access
  - Tracked 30 day mortality
    - Outcome by syndrome
    - Outcome by lesion subset
  - Risk adjusted outcome
  - Operator reported outcomes
- Adult non coronary intervention
  - Septal ablation for HOCM
  - Mitral valvuloplasty
  - Mitraclip / PFO / ASD closure / LAA occlusion
  - Para-prosthetic leak closure
  - Renal Denervation
  - Percutaneous Pulmonary valve
- TAVI
  - Activity by centre
  - Demographics
  - Valve types
  - Delivery approaches by valve type
  - Pacing
  - Complications
- Conclusions and summary

# Data Sources

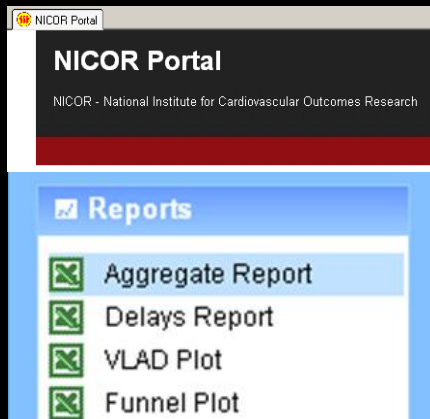


2012 data: Ludman

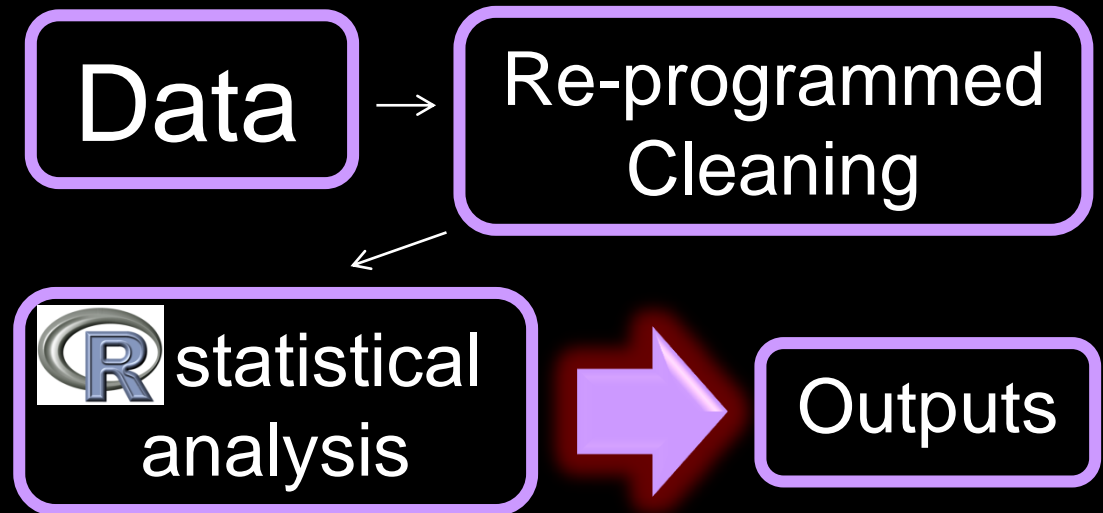
1. Emailed form replaced by:



2.



&



# Structure



2012 data: Ludman



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# Angiography Only Centres 2012

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2012 data: Ludman

## Angio Centres Stopped

Hope Hospital, Salford

# PCI Centres 2012

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2012 data: Ludman

## PCI Centres from existing angiography units

None

## New PCI Centres

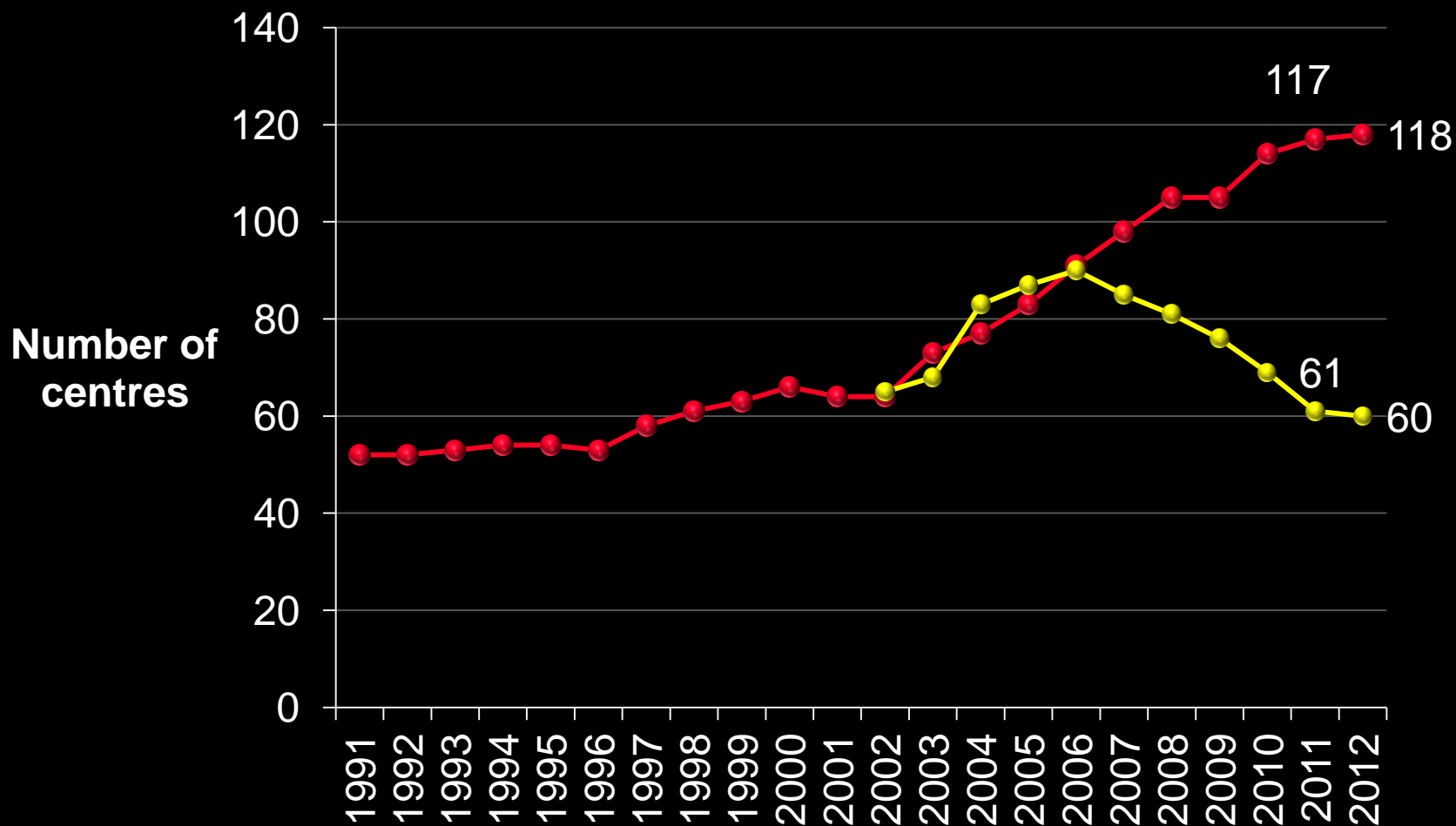
Spire Bristol Hospital

# UK Centres 2012



2012 data: Ludman

● PCI ● Angio only



# 2012



2012 data: Ludman

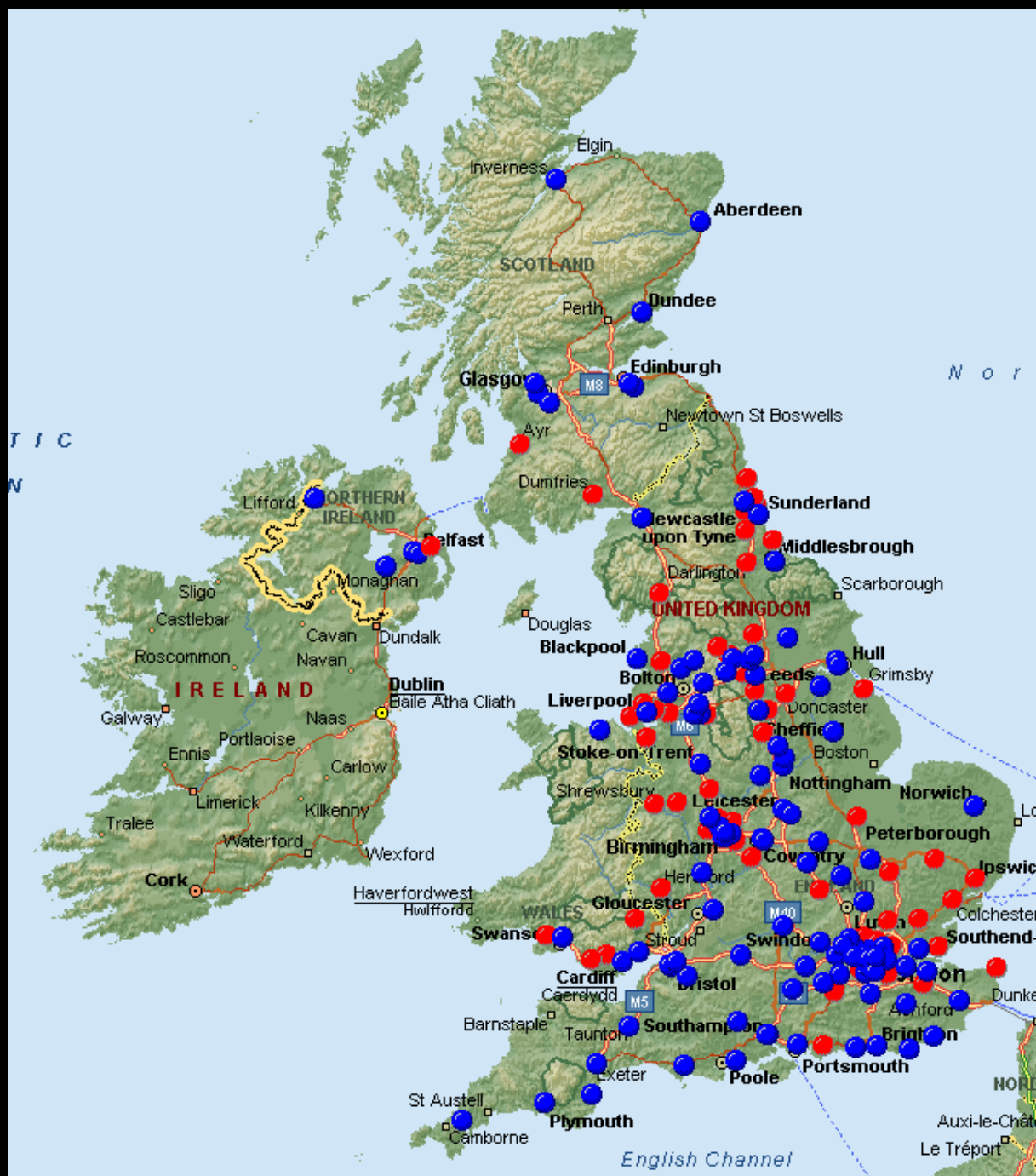


- Angiography (60)
- PCI (118)

# 2012



2012 data: Ludman



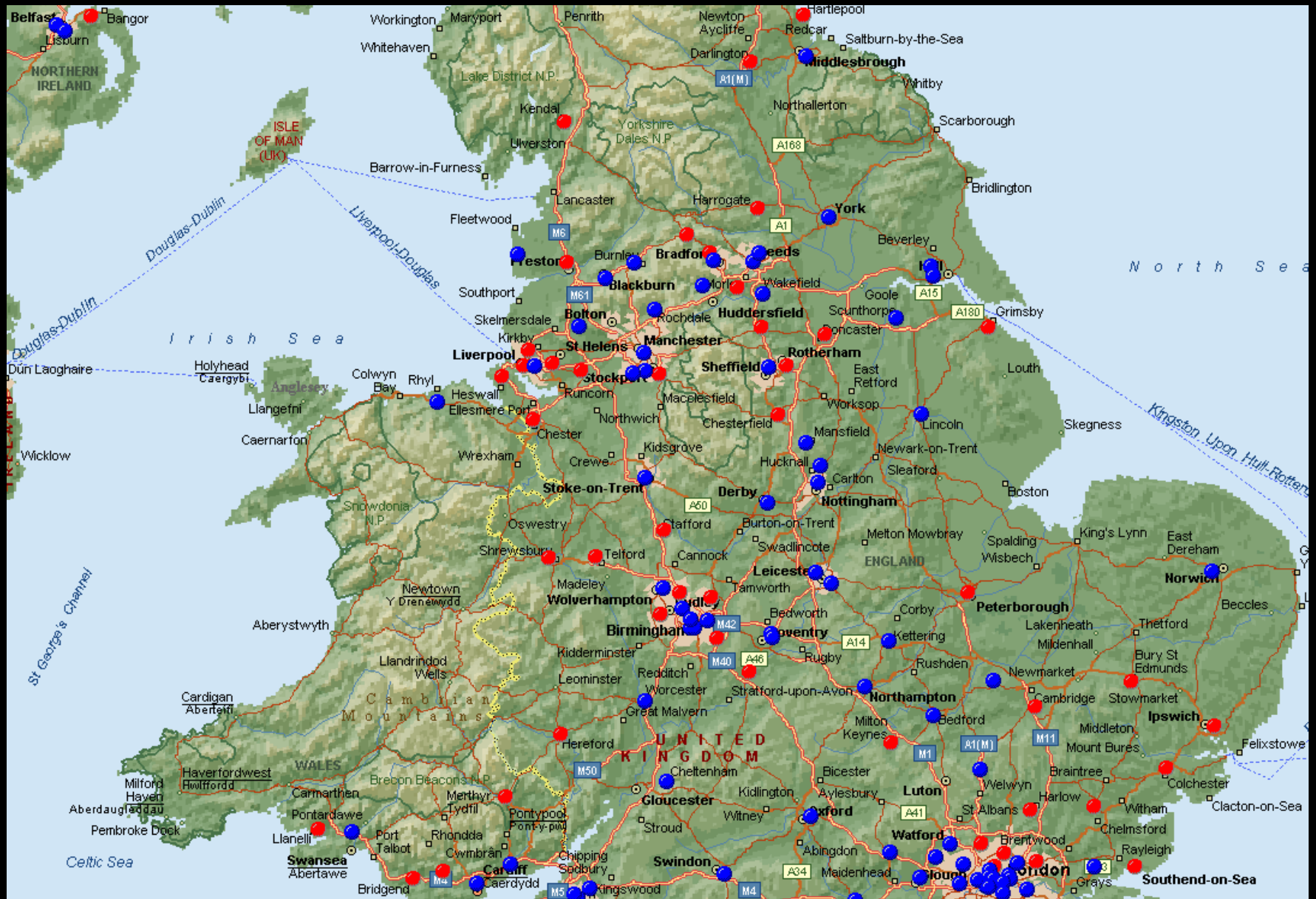
● Angiography (60)

● PCI (118)

# 2012



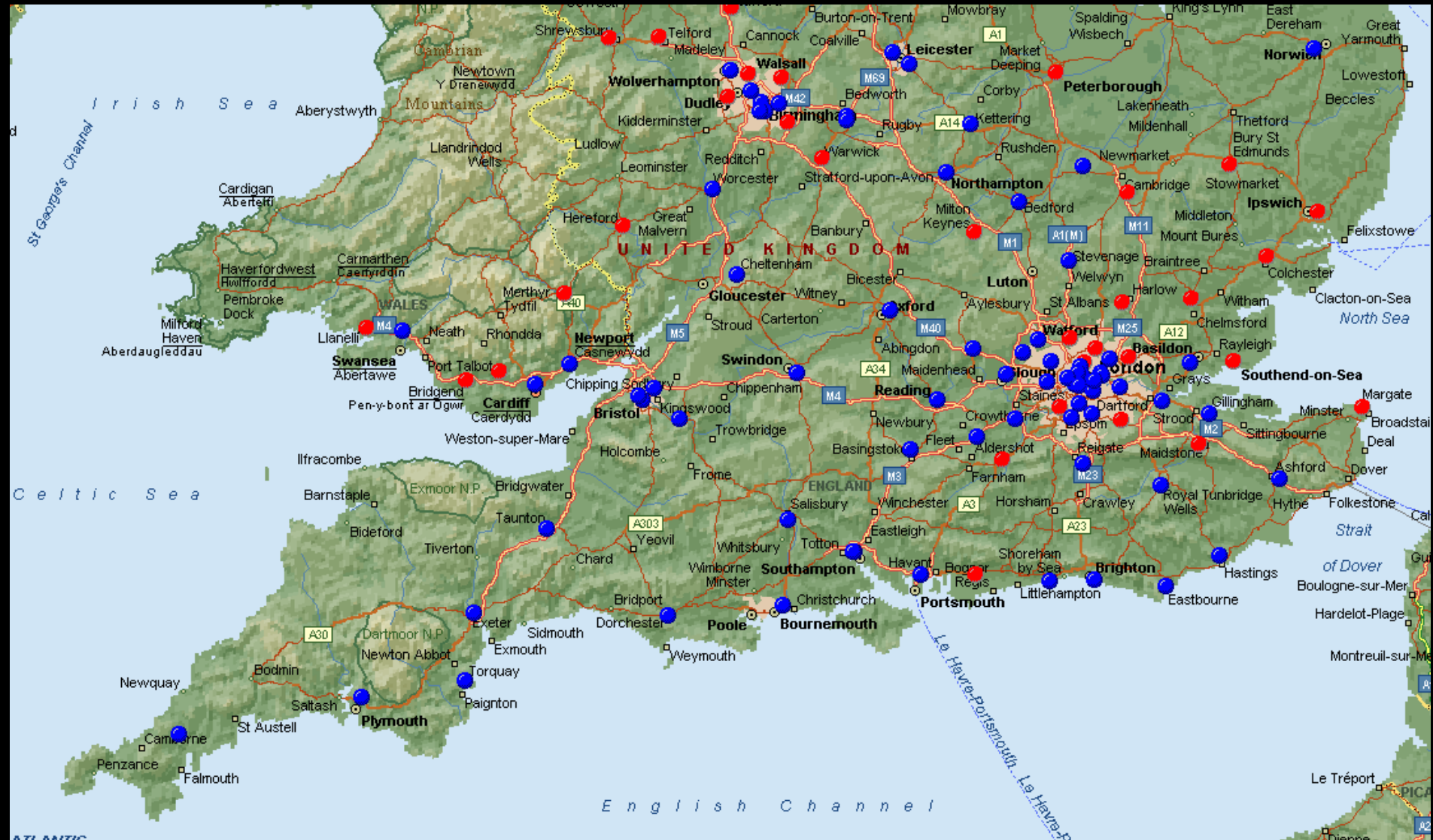
# 2012



# 2012



2012 data: Ludman

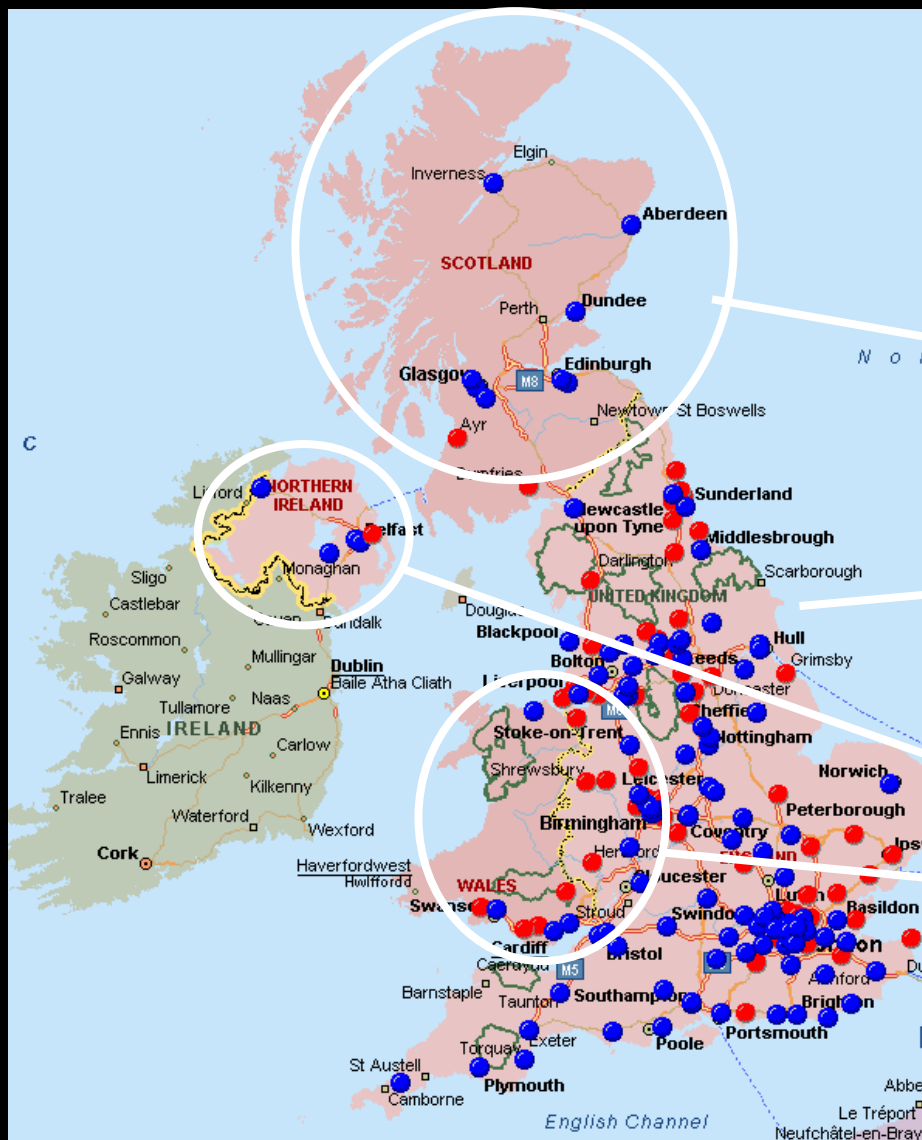


# PCI Centres in 2012

## UK Countries



2012 data: Ludman



Scotland

NHS

6



England

Private

2

NHS

85

Private

17

N Ireland

4



Wales

4

**Total**

**118**

# UK Interventional and Diagnostic centres 2012



2012 data: Ludman

	No.	No cath data	No PCI data	Caths	PCIs
NHS Interventional	99	0	0		
Private Interventional	19	0	0		
Diagnostic only	60	1	-		
<b>TOTAL</b>	<b>178</b>				

# UK Interventional and Diagnostic centres 2012



2012 data: Ludman

	No.	No cath data	No PCI data	Caths	PCIs
NHS Interventional					
Private Interventional					
Diagnostic only	60	1	-		
<b>TOTAL</b>	<b>178</b>				

**Data too late from Diana Princess of Wales, Grimsby 2011 data used**

# UK Interventional and Diagnostic centres 2012



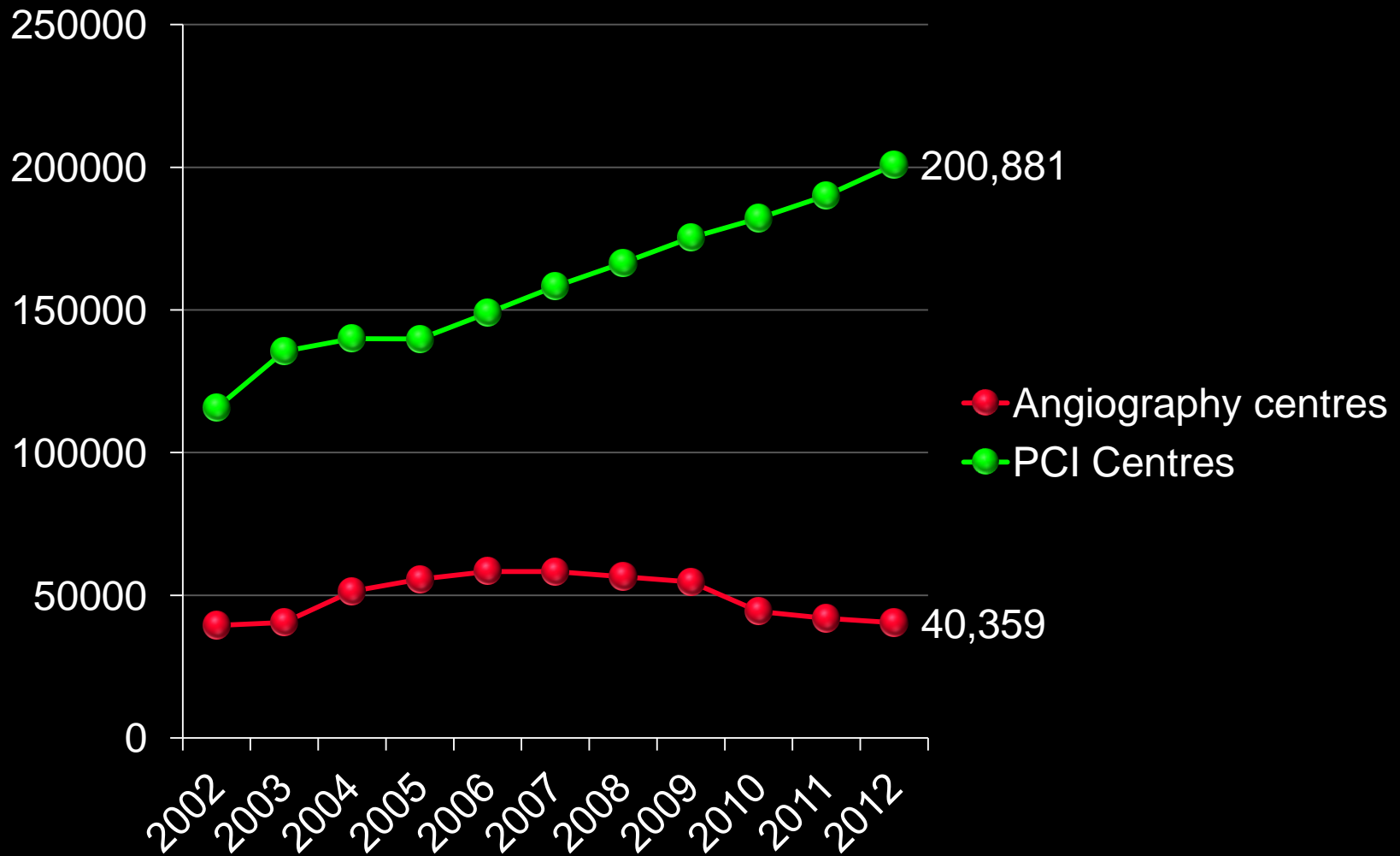
2012 data: Ludman

	No.	No cath data	No PCI data	Caths	PCIs
NHS Interventional	99	0	0	199,868	91,098
Private Interventional	19	0	0	4,653	1,347
Diagnostic only	60	1	-	40,359	-
<b>TOTAL</b>	<b>178</b>			<b>244,880</b>	<b>92,445</b>

# Angiography In PCI and Angio only centres



2012 data: Ludman



# Population estimates

Mid 2012



2012 data: Ludman



**Total UK: 63.705 m**

**Scotland 5.314 m**

**Northern Ireland 1.824 m**

**England 53.494 m**

**est: N. Welsh pop 0.7m**

**0.45m served locally**

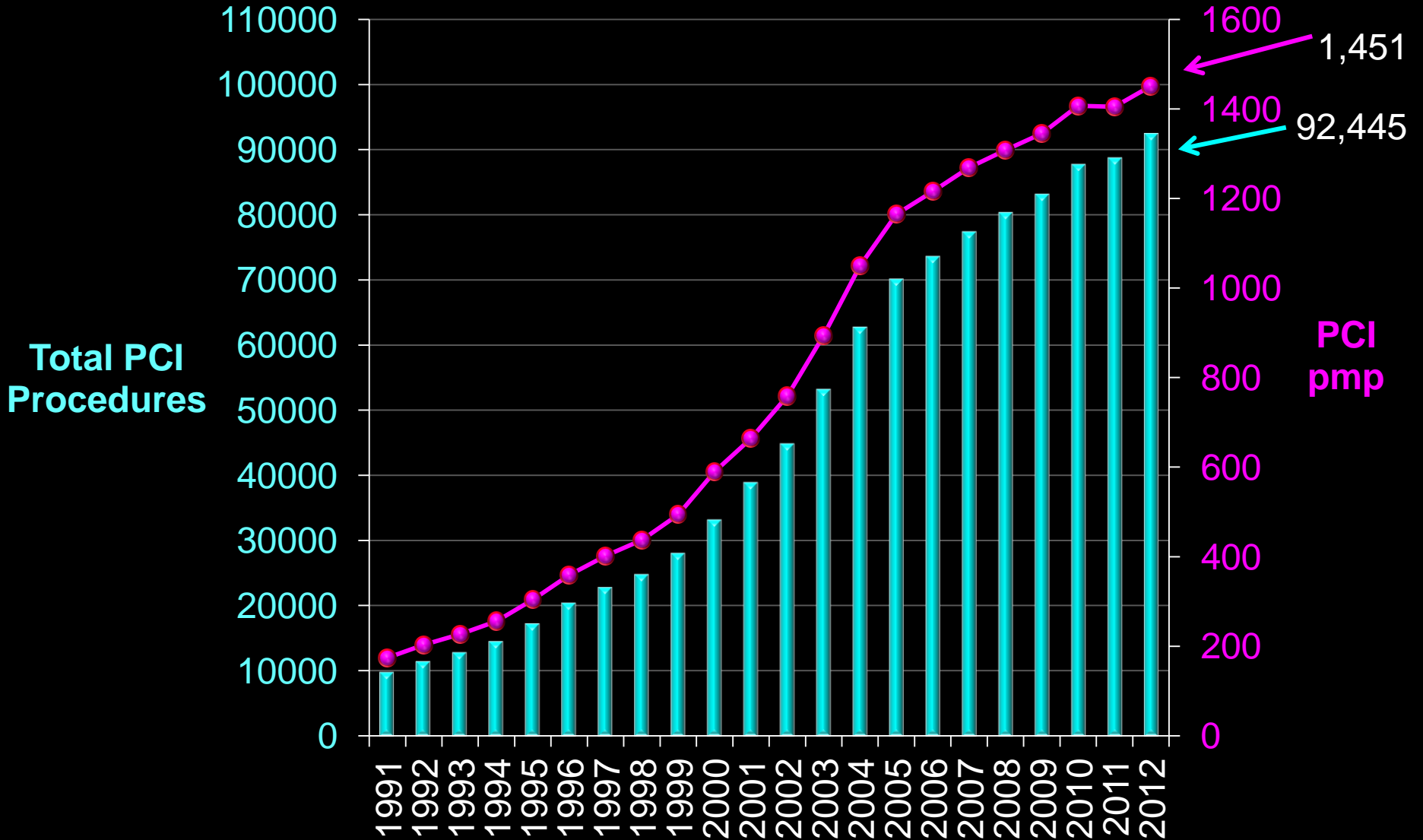
**0.25m Rx in England**

**Total Rx in England 53.744 m**

**Wales 3.074 m**

**est: Rx in Wales: 2.824 m**

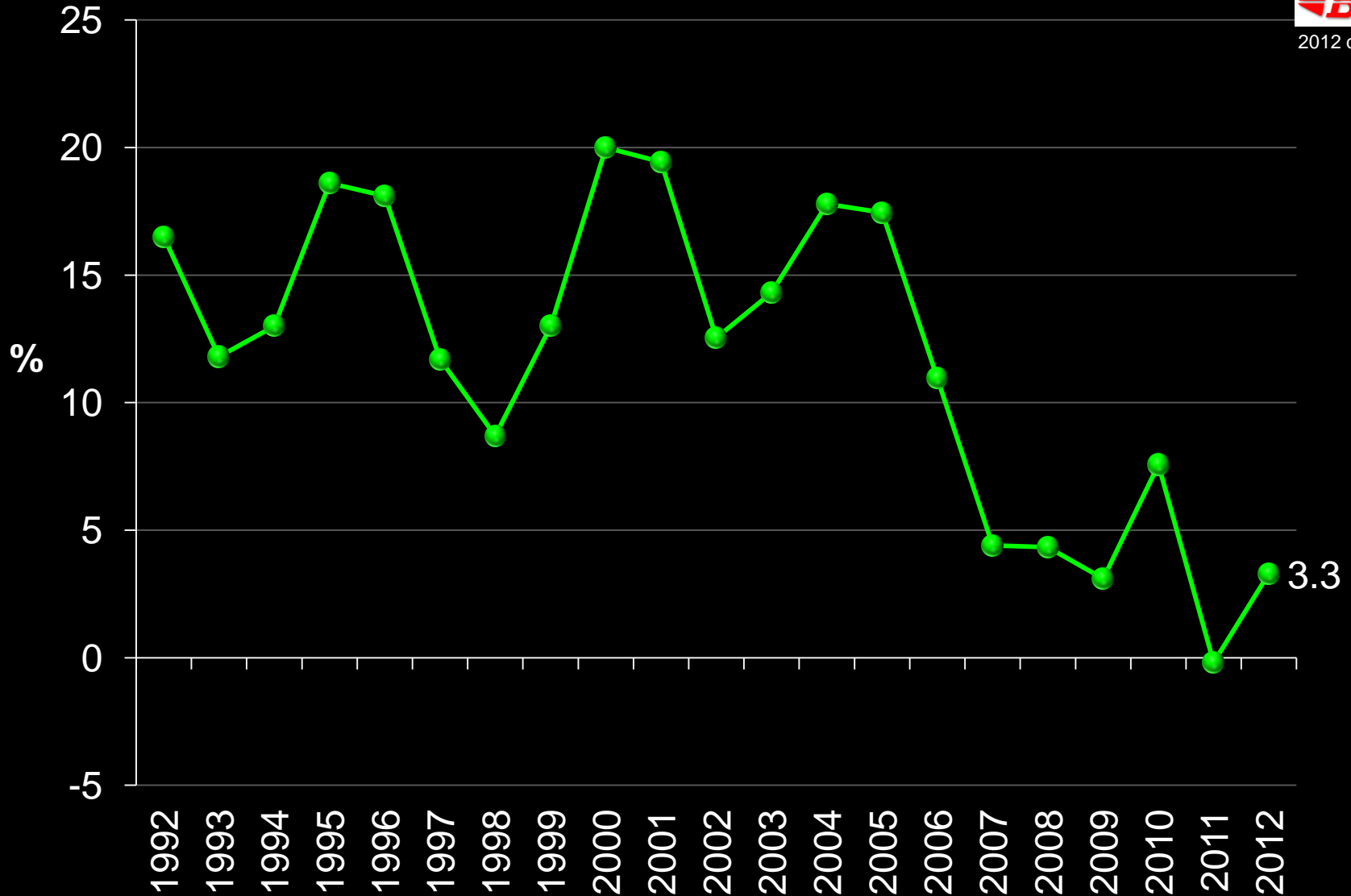
# Total PCI activity to 2012 (UK)



# Rate of Increase in PCI Procedures pmp



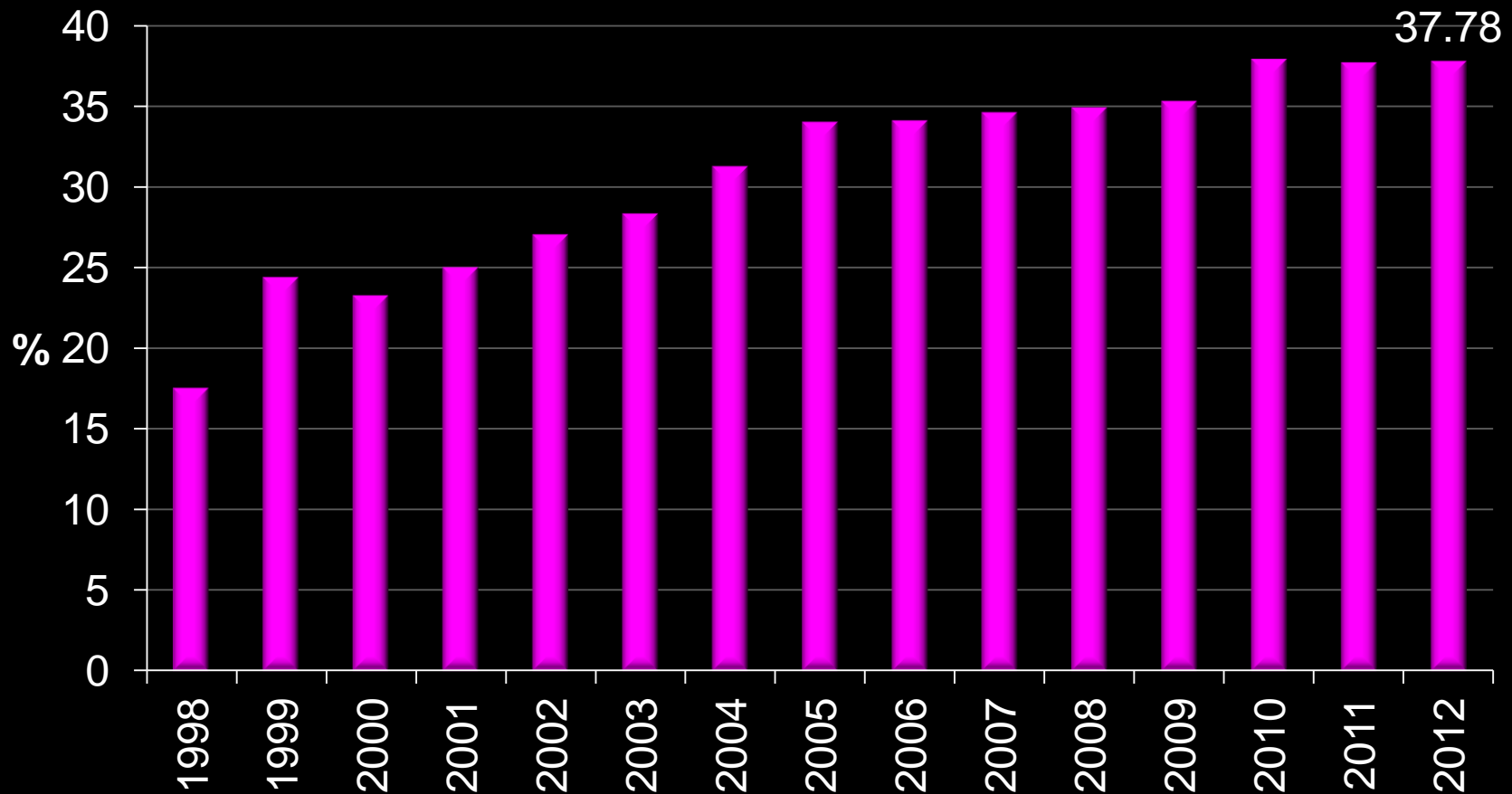
2012 data: Ludman



# PCI per Angiogram ratio



2012 data: Ludman

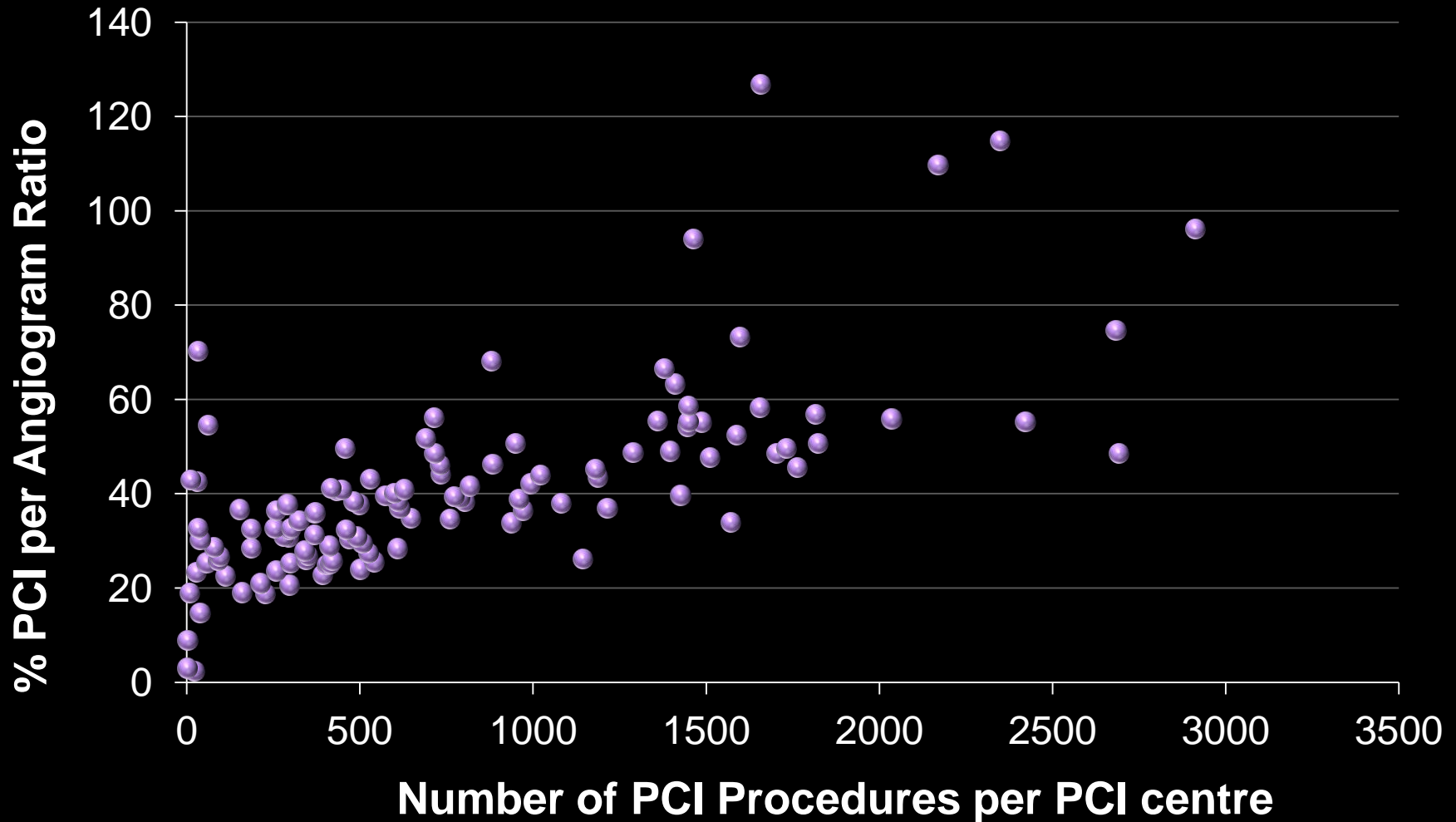


# PCI per Angiogram ratio

## By Individual PCI Units



2012 data: Ludman

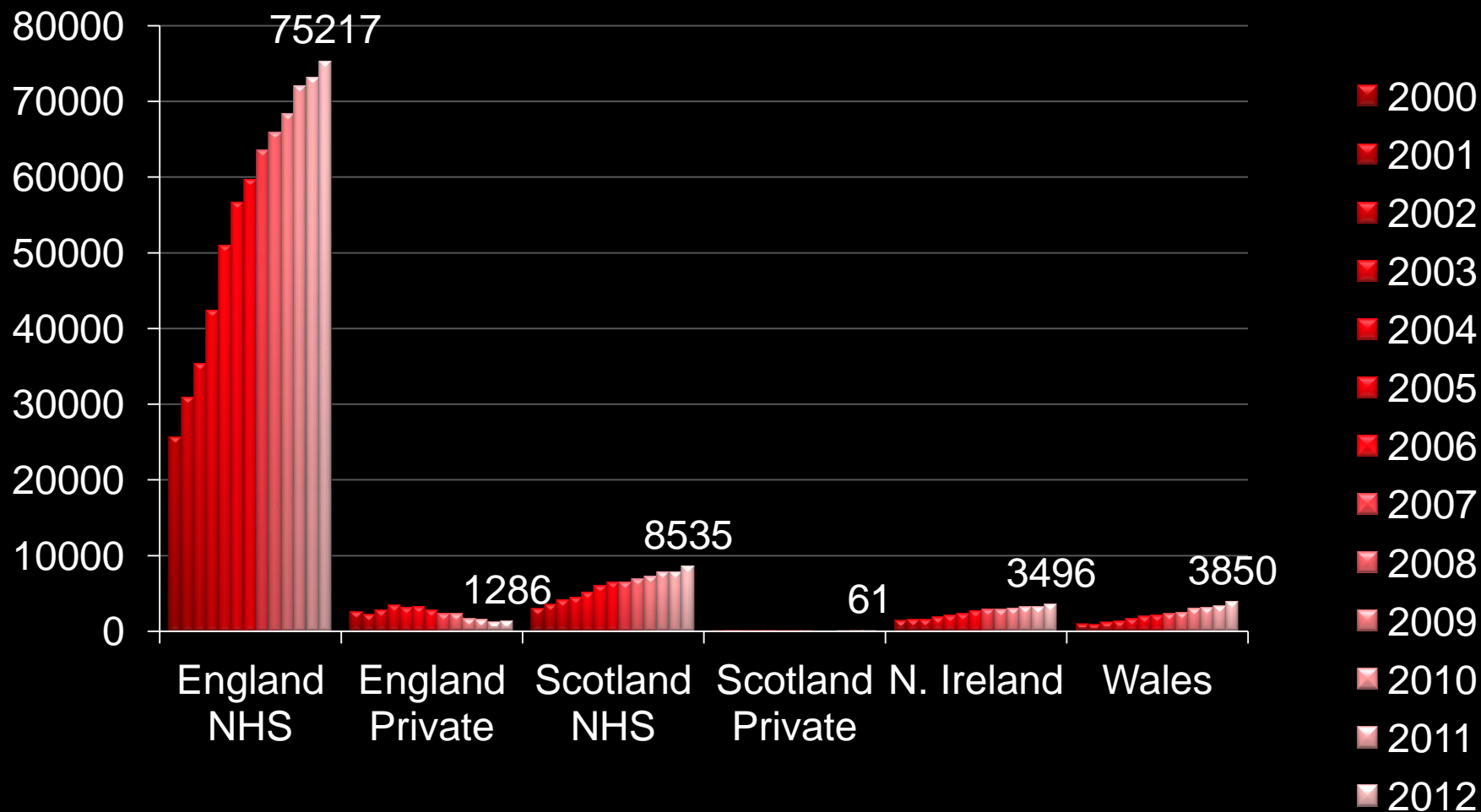


# Total PCIs in the UK Countries

## by Type of Institution



2012 data: Ludman

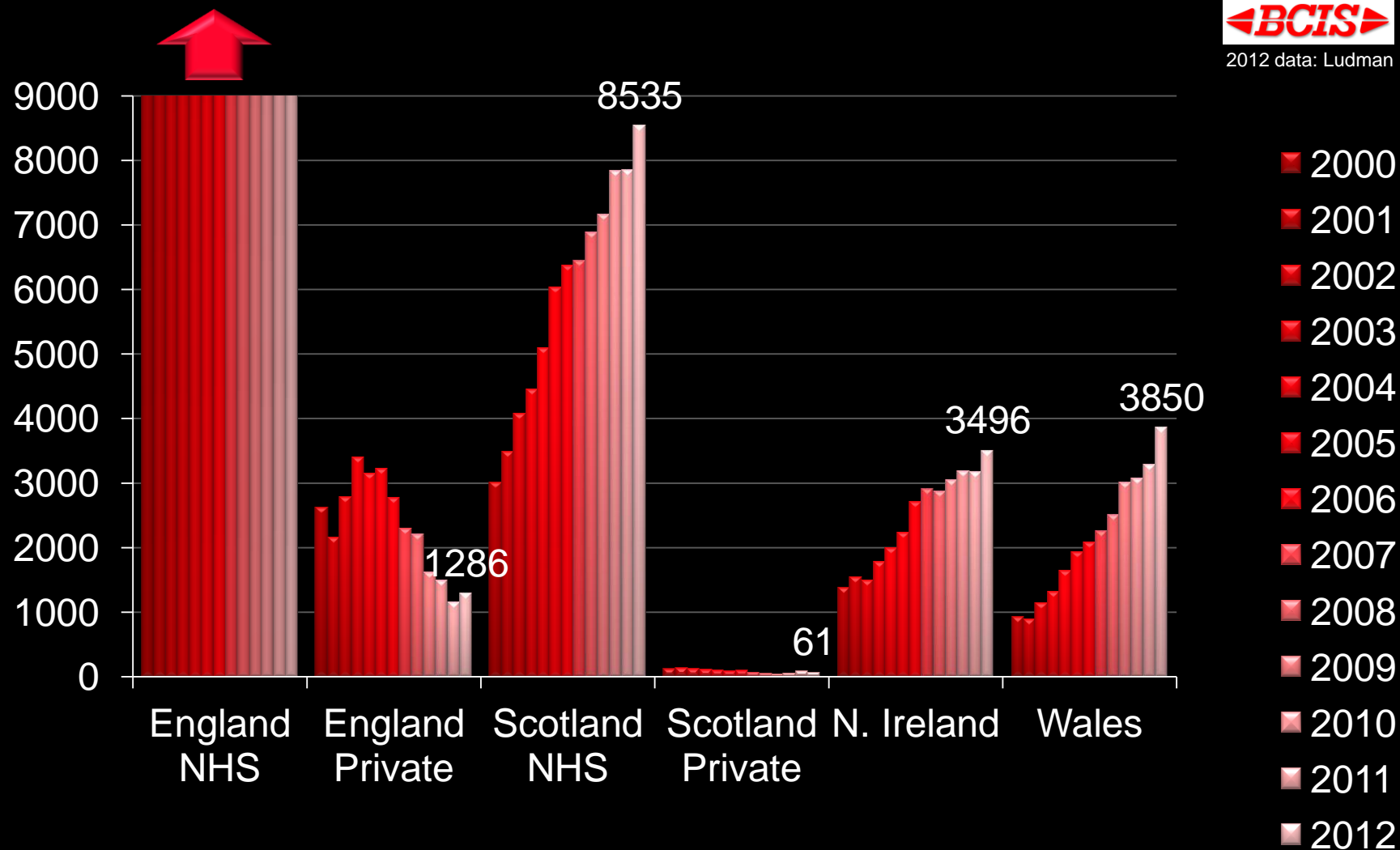


# Total PCIs in the UK Countries

## by Type of Institution



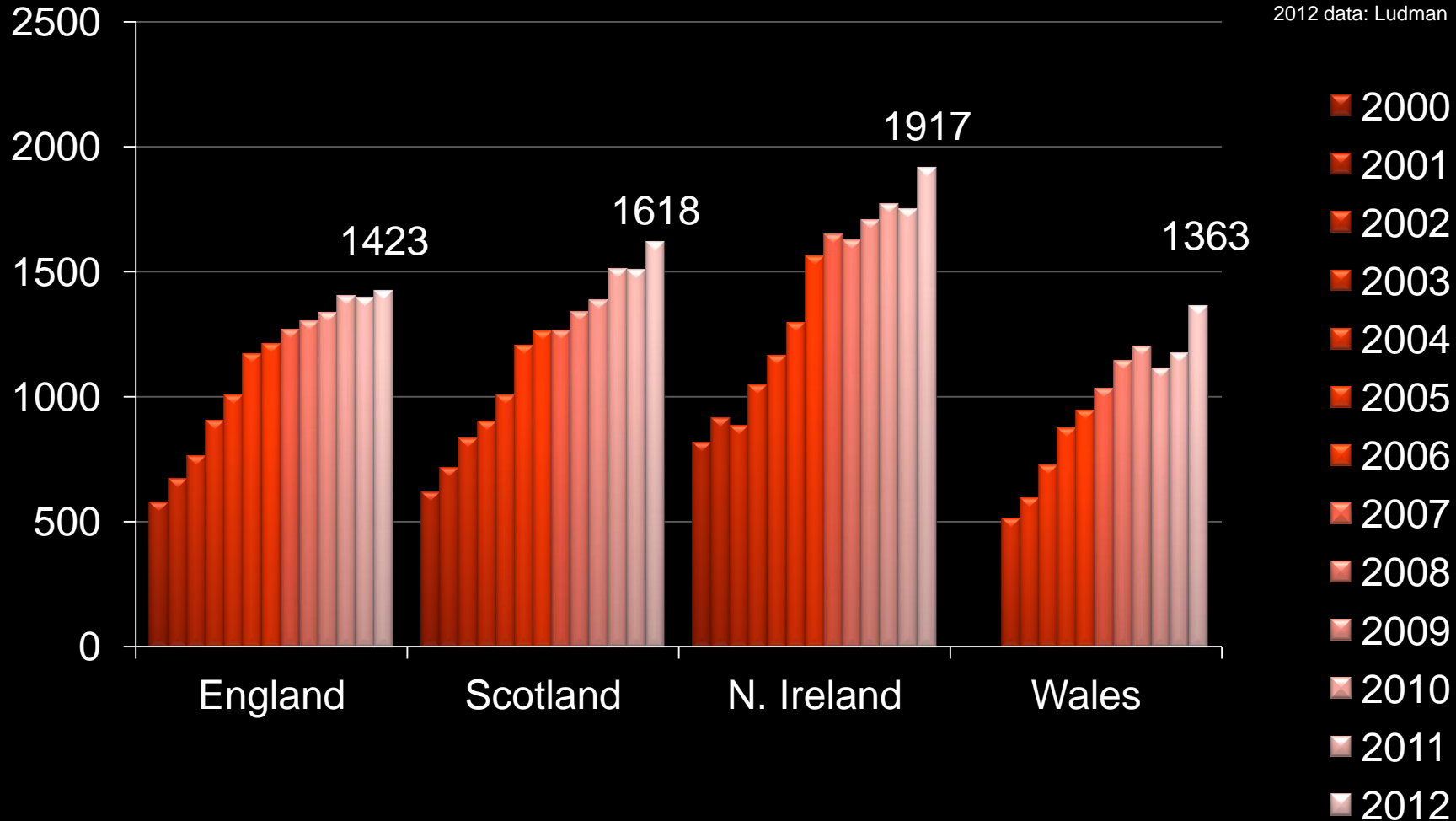
2012 data: Ludman



# PCI pmp in the UK Countries



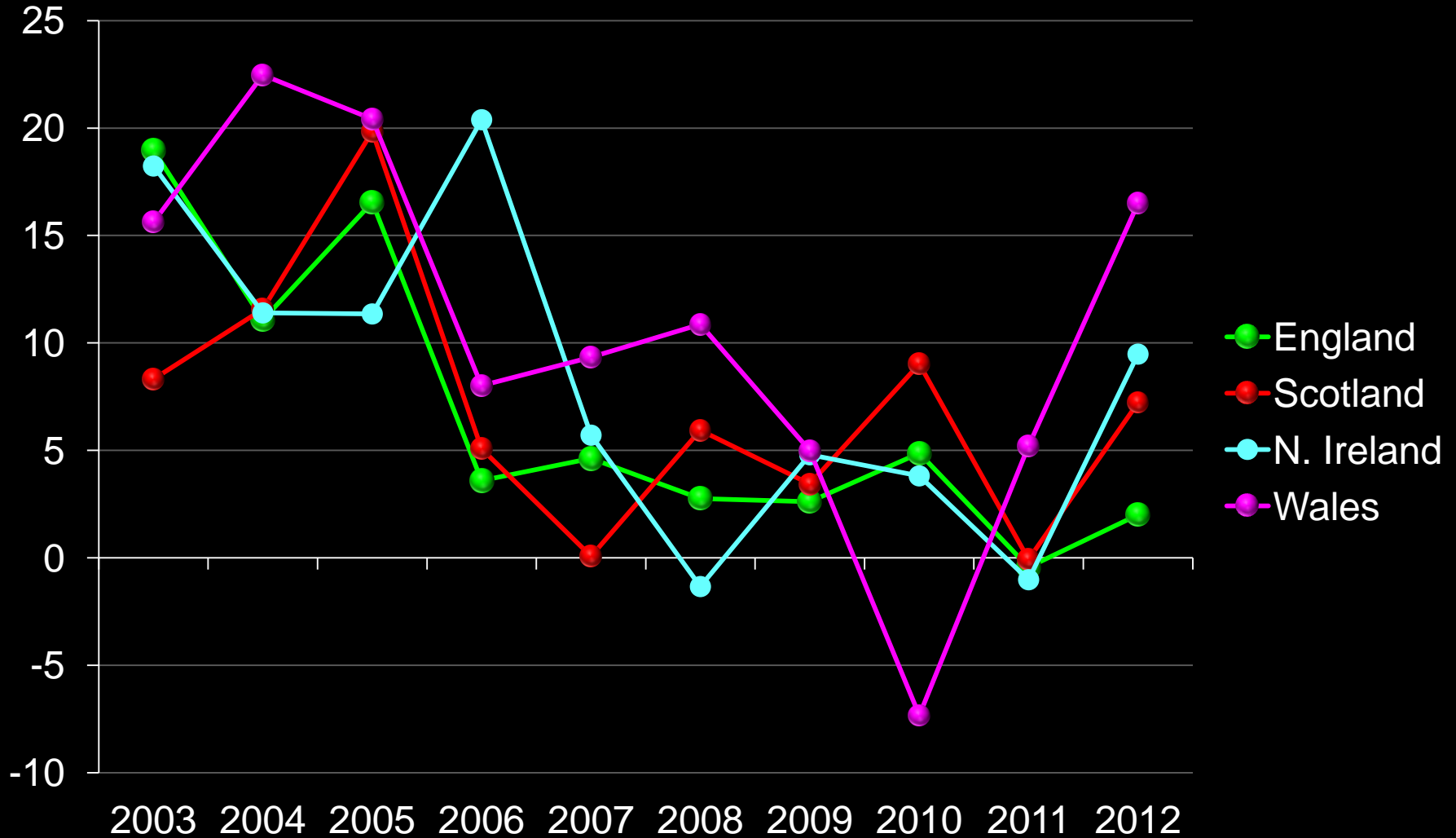
2012 data: Ludman



# Rate of Increase in PCI Procedures pmp



2012 data: Ludman

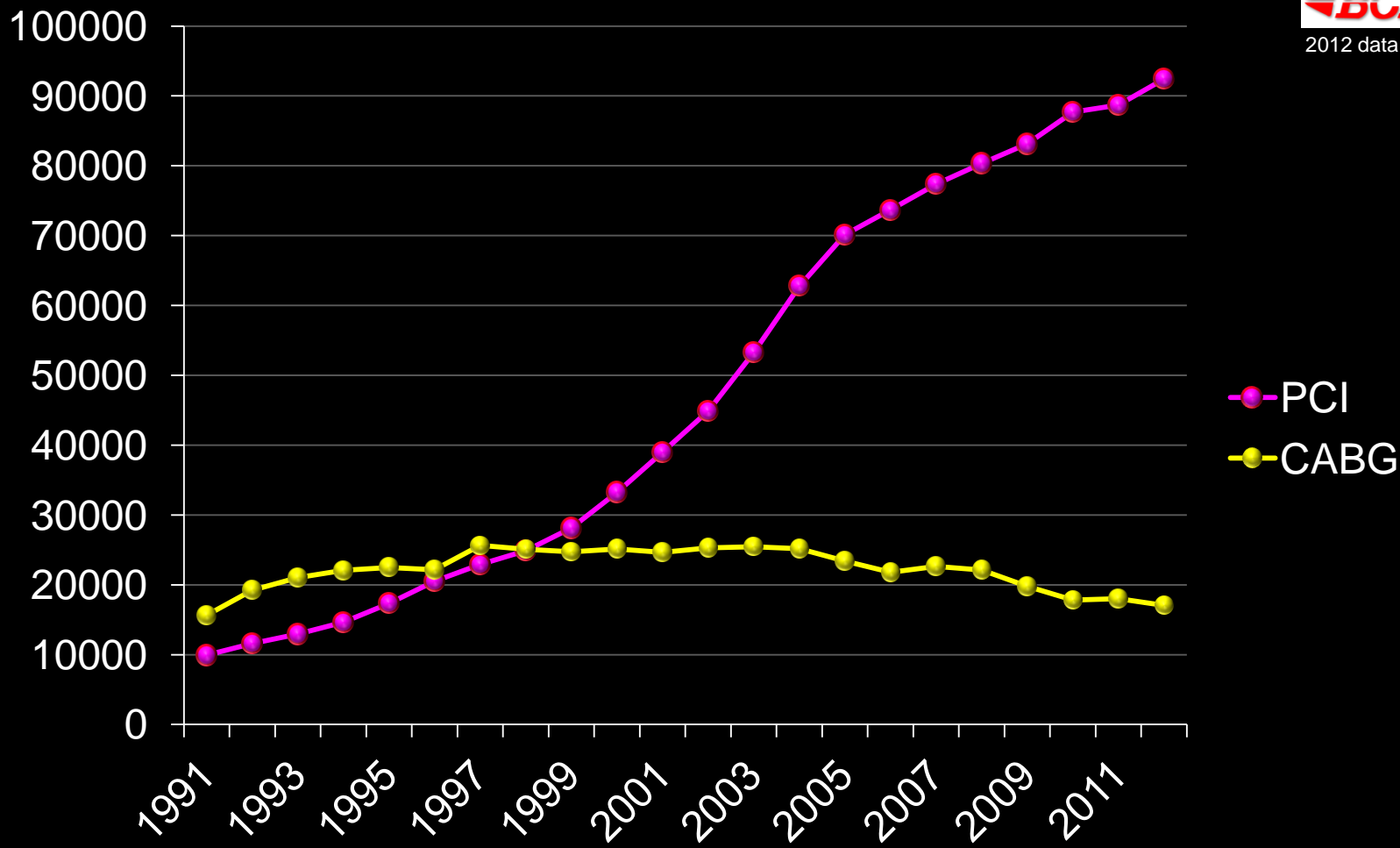


# PCI vs Isolated CABG Numbers (UK)

1991 to 2012



2012 data: Ludman



Note: CABG data to 2008 for financial yr  
CABG from 2006 from SCTS database

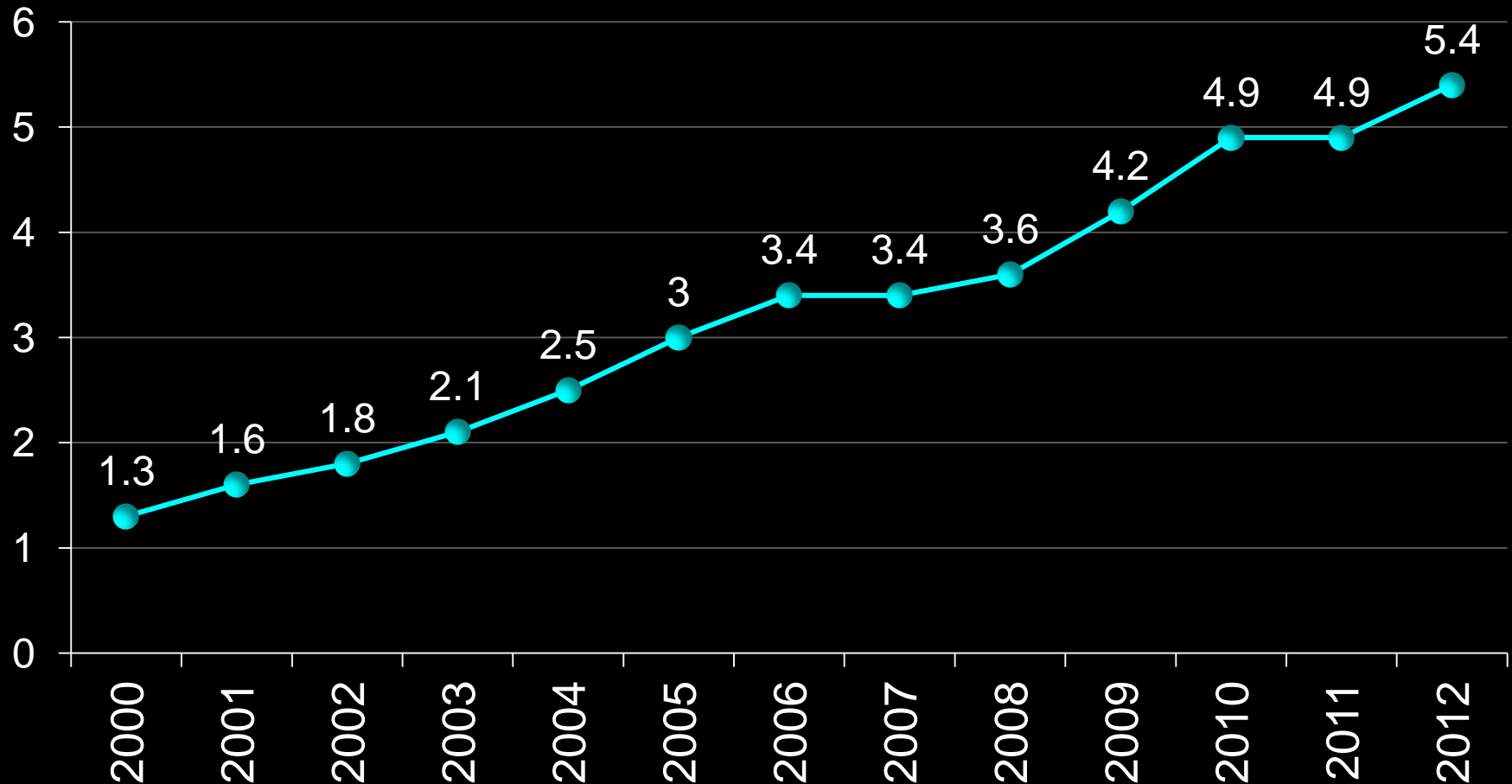
Survey Monkey and SCTS data

# PCI vs Isolated CABG Ratio (UK)

2000 to 2012



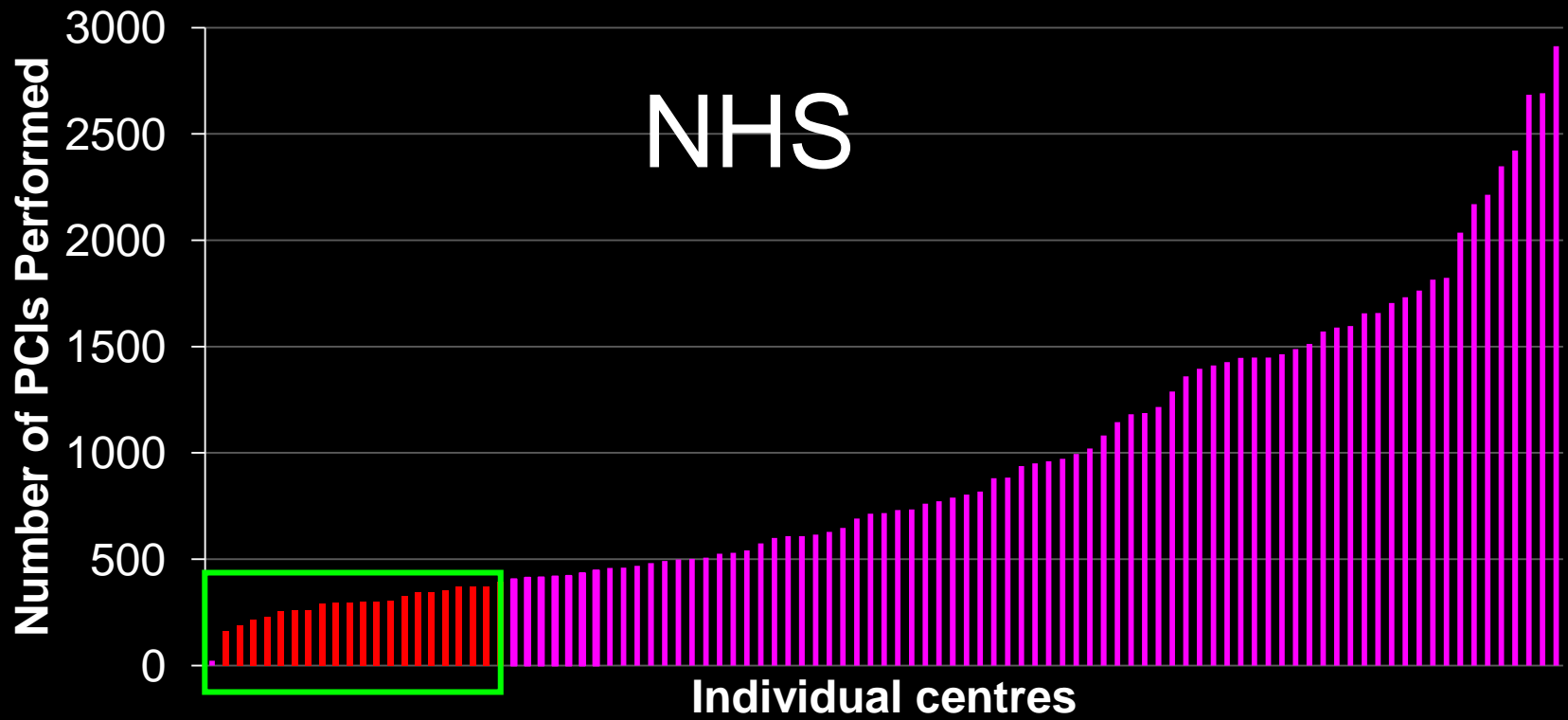
2012 data: Ludman



# Number of PCIs performed in 2012



2012 data: Ludman

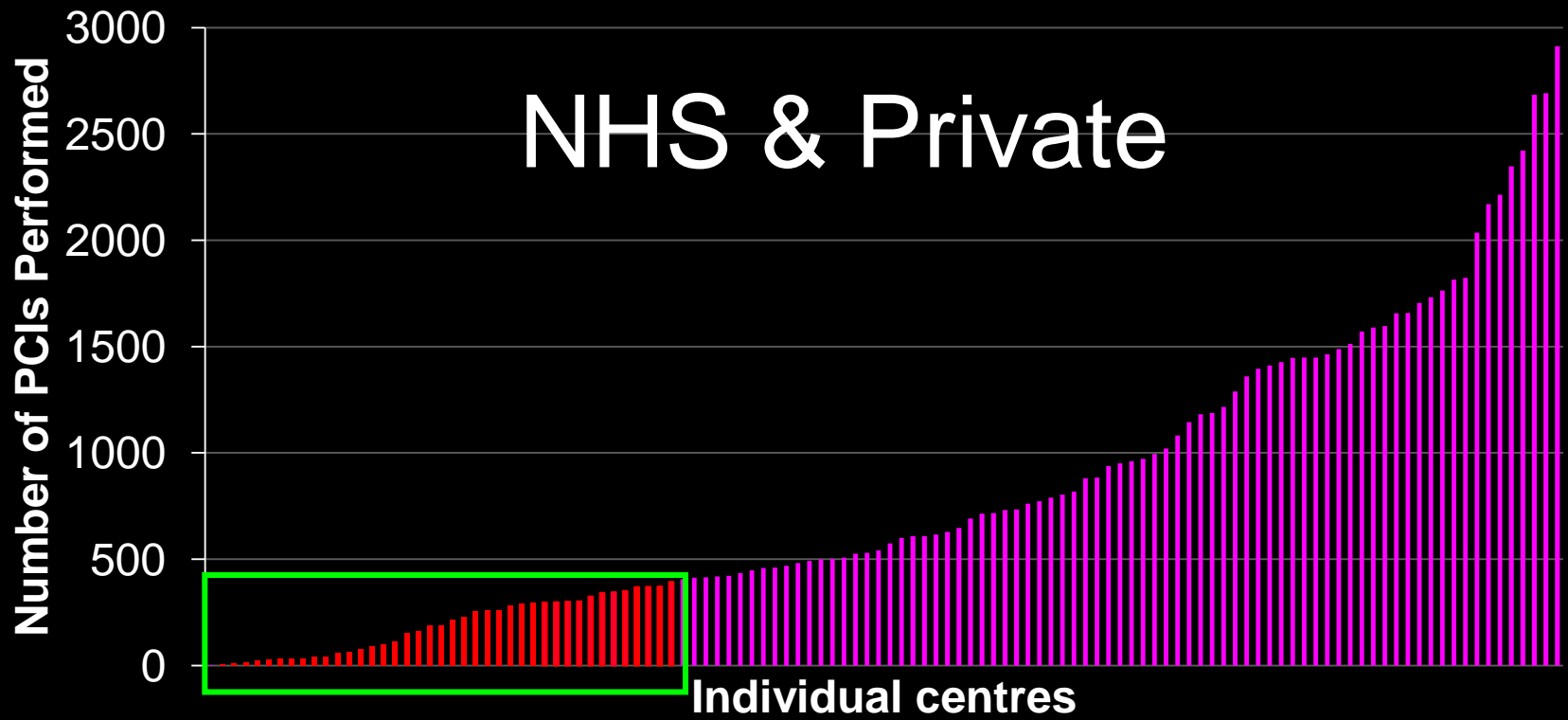


22 Centres performing < 400 cases (22%)

# Number of PCIs performed in 2012



2012 data: Ludman

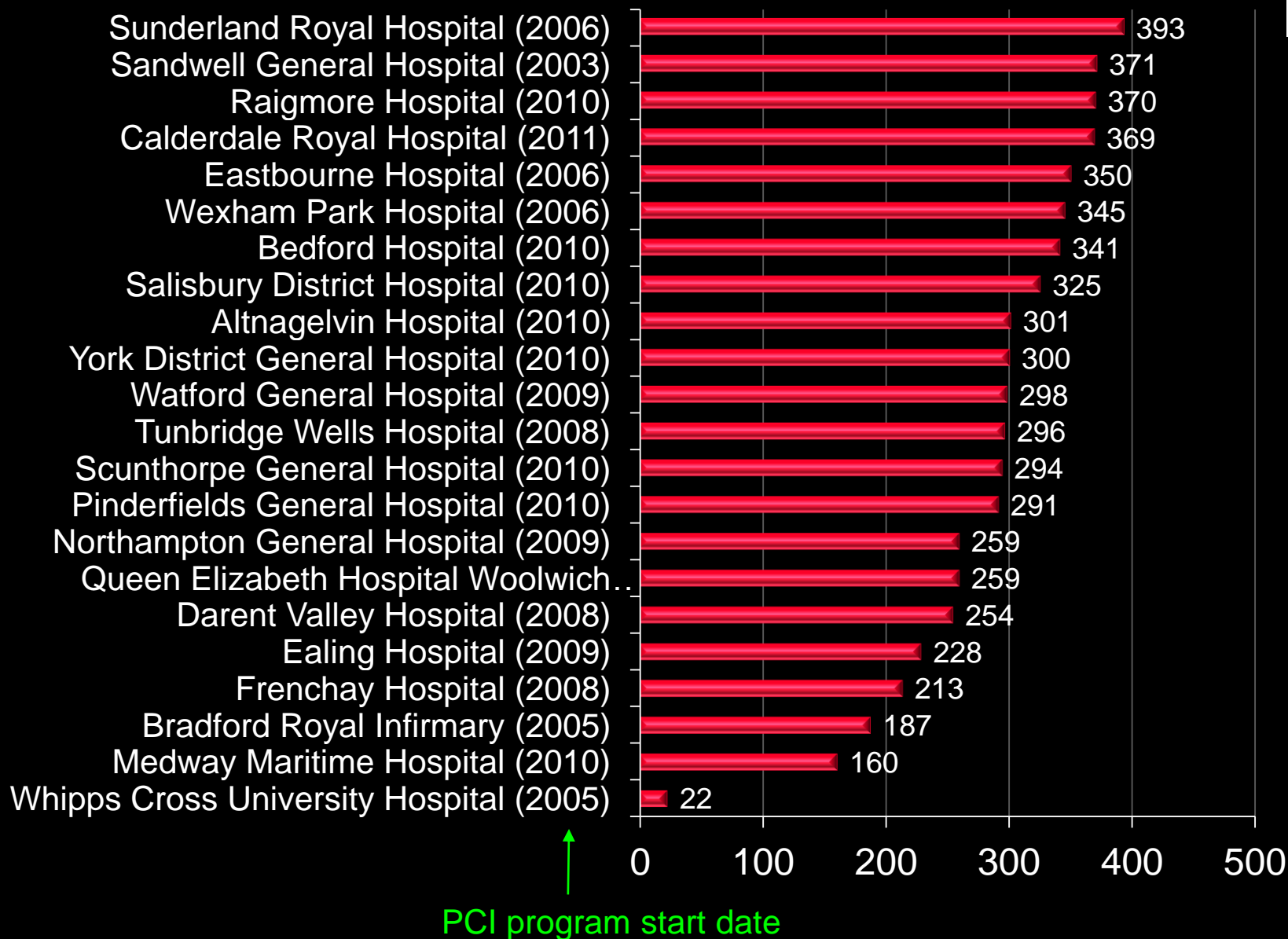


41 Centres performing < 400 cases (35%)

# NHS Centres performing < 400 PCIs



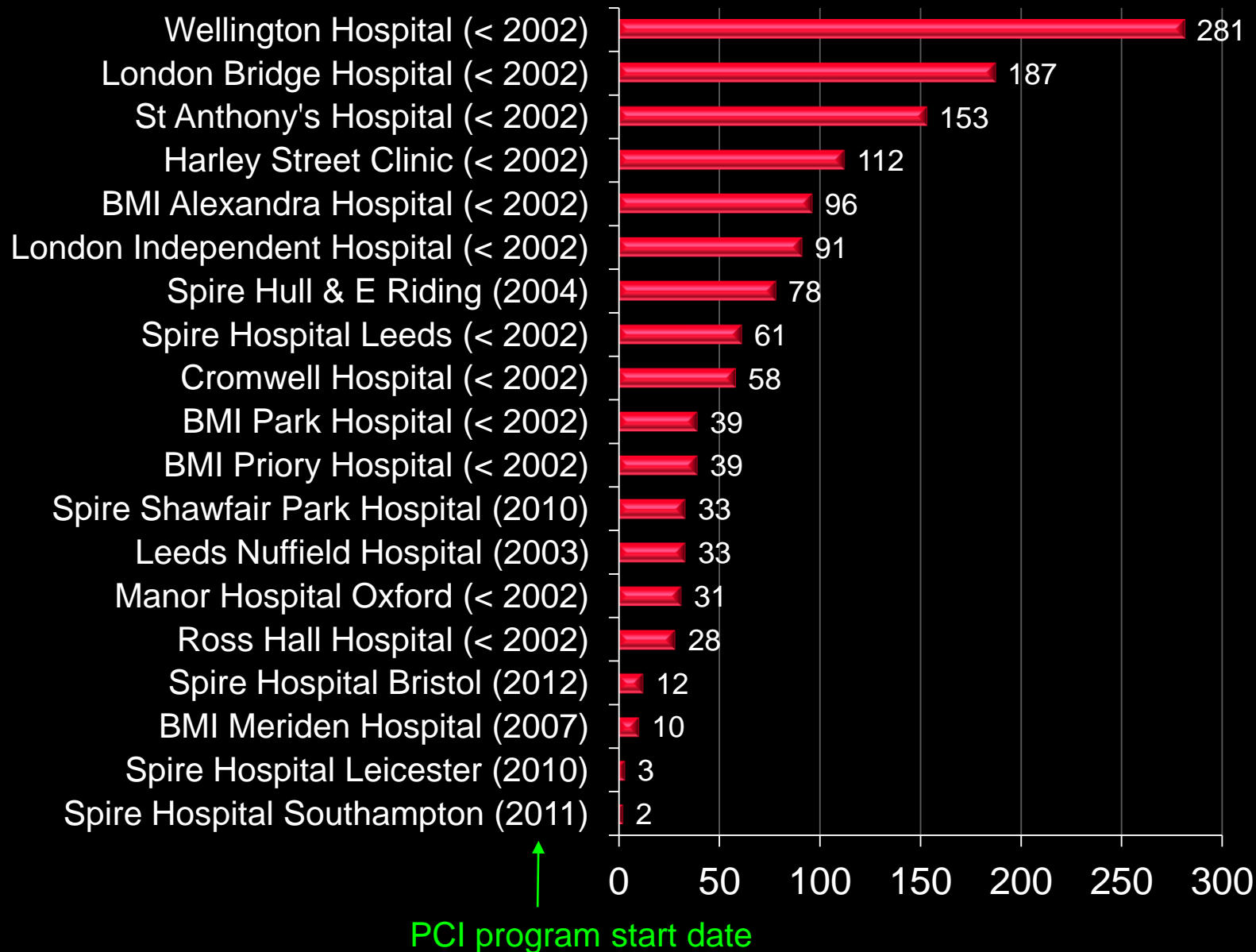
2012 data: Ludman



# Private Centres performing < 400 PCIs



2012 data: Ludman



# Centres performing < 200 PCIs

In either 2010, 2011 or 2012



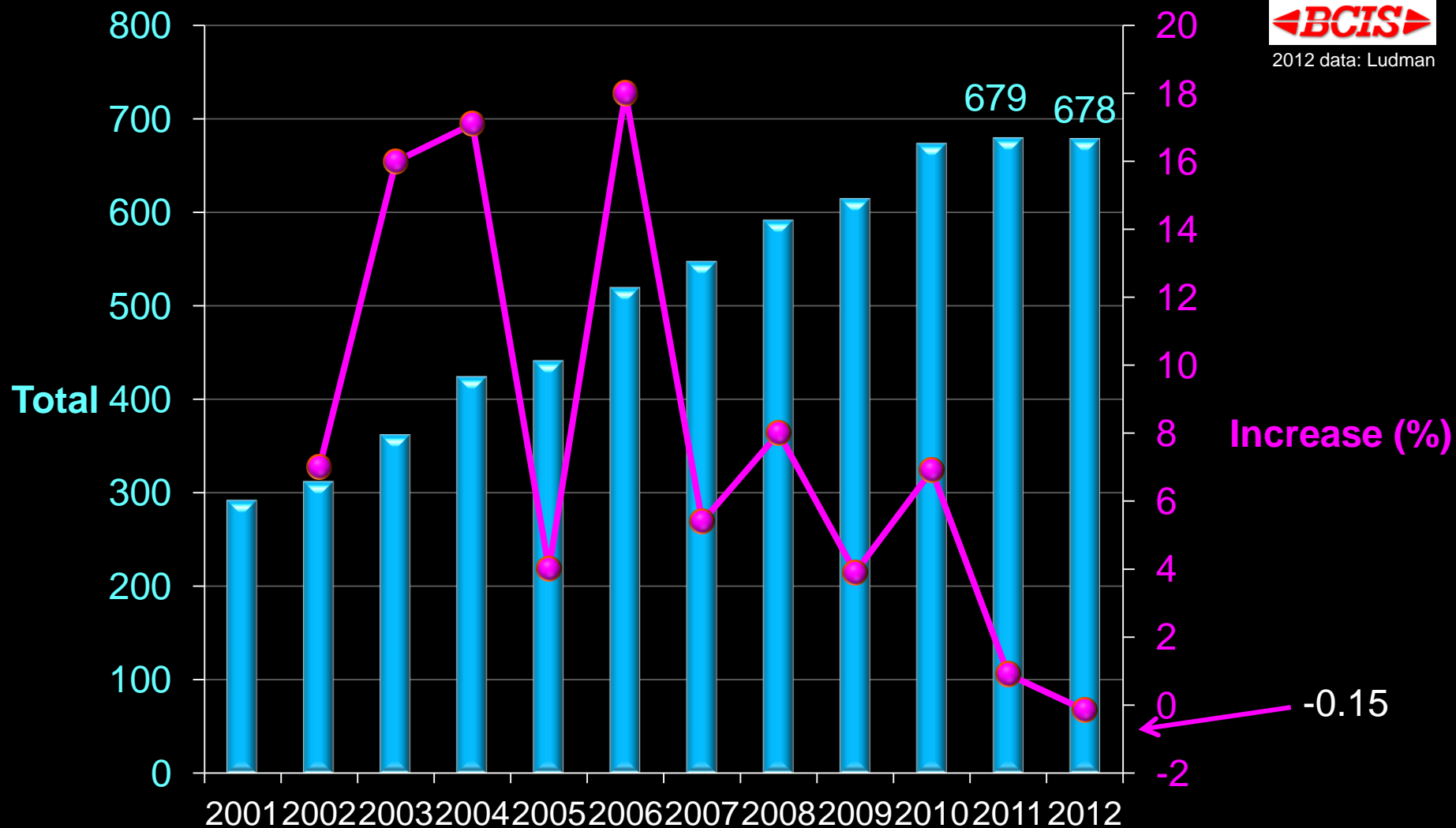
2012 data: Ludman

full names		2010	2011	2012
BUPA Hospital Leicester (Spire) (2010)	LBP	3	2	3
Manor Hospital Oxford (<2002)	MHO	17	28	31
Spire Shawfair Park Hospital (2010)	SSP	19	44	33
BMI Meriden Hospital (2007)	BMI	21	10	10
Bedford Hospital NHS Trust (2010)	BED	29	299	341
Salisbury District Hospital (2010)	SAL	30	295	325
Ross Hall Hospital (<2002)	RHH	35	36	28
BMI Priors Hospital (< 2002)	PHB	36	16	39
Cromwell Hospital (<2002)	CRO	45	54	58
BMI Park Hospital (< 2002)	PHN	51	36	39
Spire Hospital Leeds (< 2002)	LEB	54	59	61
Scunthorpe General Hospital (2010)	SCU	66	365	294
BMI Alexandra Hospital (< 2002)	AHM	92	22	96
Spire Hospital Hull and East Riding (2004)	HBP	93	82	78
Leeds Nuffield Hospital (2003)	LNH	103	20	33
Pinderfields General Hospital (2010)	PIN	104	279	291
Harley Street Clinic (< 2002)	HSC	119	138	112
London Independent Hospital (< 2002)	IND	151	103	91
Frenchay Hospital (2008)	FRY	174	172	213
Darent Valley Hospital (2008)	DVH	182	245	254
Ealing Hospital (2009)	EAL	182	252	228
Queen Elizabeth Hospital Woolwich (2007)	GWH	185	220	259
St Anthony's Hospital (< 2002)	ANT	186	123	153
London Bridge Hospital (< 2002)	LBH	186	170	187
Whipps Cross University Hospital (2005)	WHC	201	125	22
Medway Maritime Hospital (2010)	MDW	210	165	160
Bradford Royal Infirmary (2005)	BRD	241	222	187
Spire Hospital Southampton (2011)	CBS	0	6	2
Cumberland Infirmary (2011)	CMI	0	24	507
Spire Hospital Bristol (2012)	GHB	0	0	12
Calderdale Royal Hospital (2011)	RHI	0	142	369

## < 200 for 3 years

BUPA Hospital Leicester (Spire) (2010)
Manor Hospital Oxford (<2002)
Spire Shawfair Park Hospital (2010)
BMI Meriden Hospital (2007)
Ross Hall Hospital (<2002)
BMI Priors Hospital (< 2002)
Cromwell Hospital (<2002)
BMI Park Hospital (< 2002)
Spire Hospital Leeds (< 2002)
BMI Alexandra Hospital (< 2002)
Spire Hospital Hull and East Riding (2004)
Leeds Nuffield Hospital (2003)
Harley Street Clinic (< 2002)
London Independent Hospital (< 2002)
St Anthony's Hospital (< 2002)
London Bridge Hospital (< 2002)

# No. of Interventional Consultants (NHS centres)



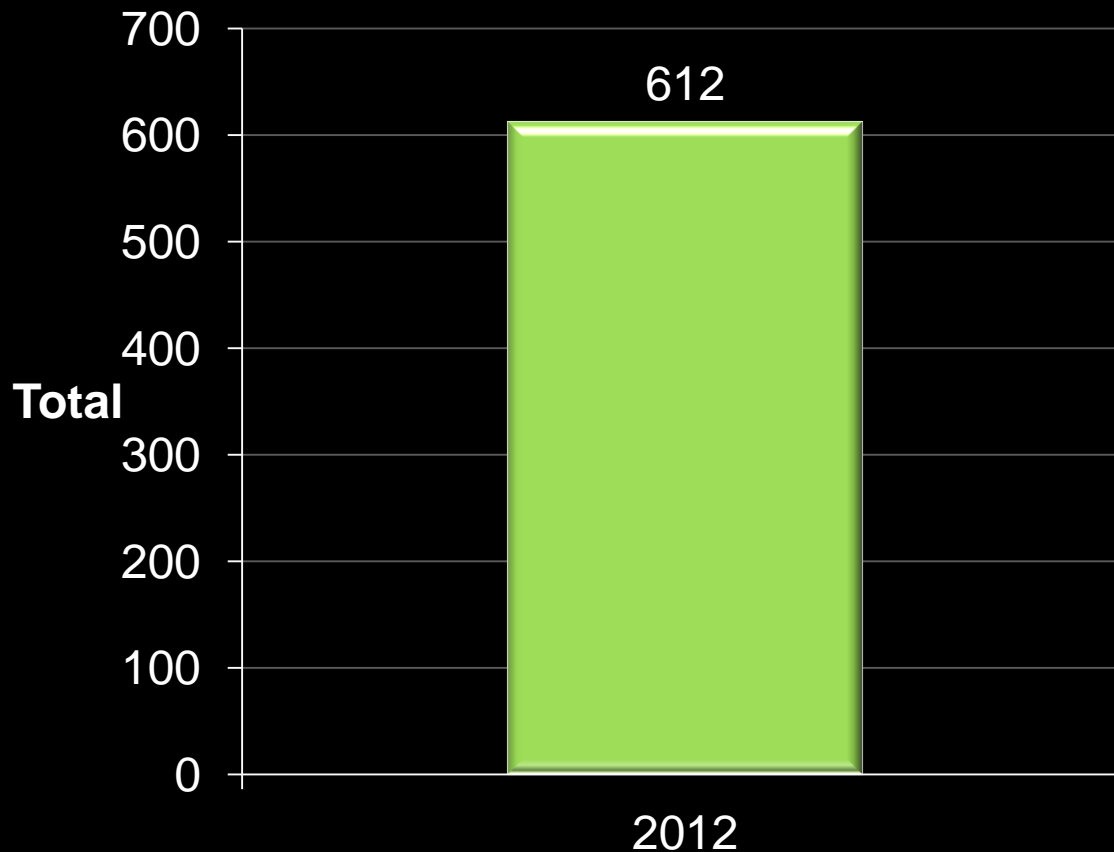
Note: if work at two NHS centres will be counted twice  
Includes cardiologists and radiologists

# No. of Interventional Consultants

- Actual number of PCI operators by GMC number
- NHS and private
- No double counting if work on more than one site



2012 data: Ludman





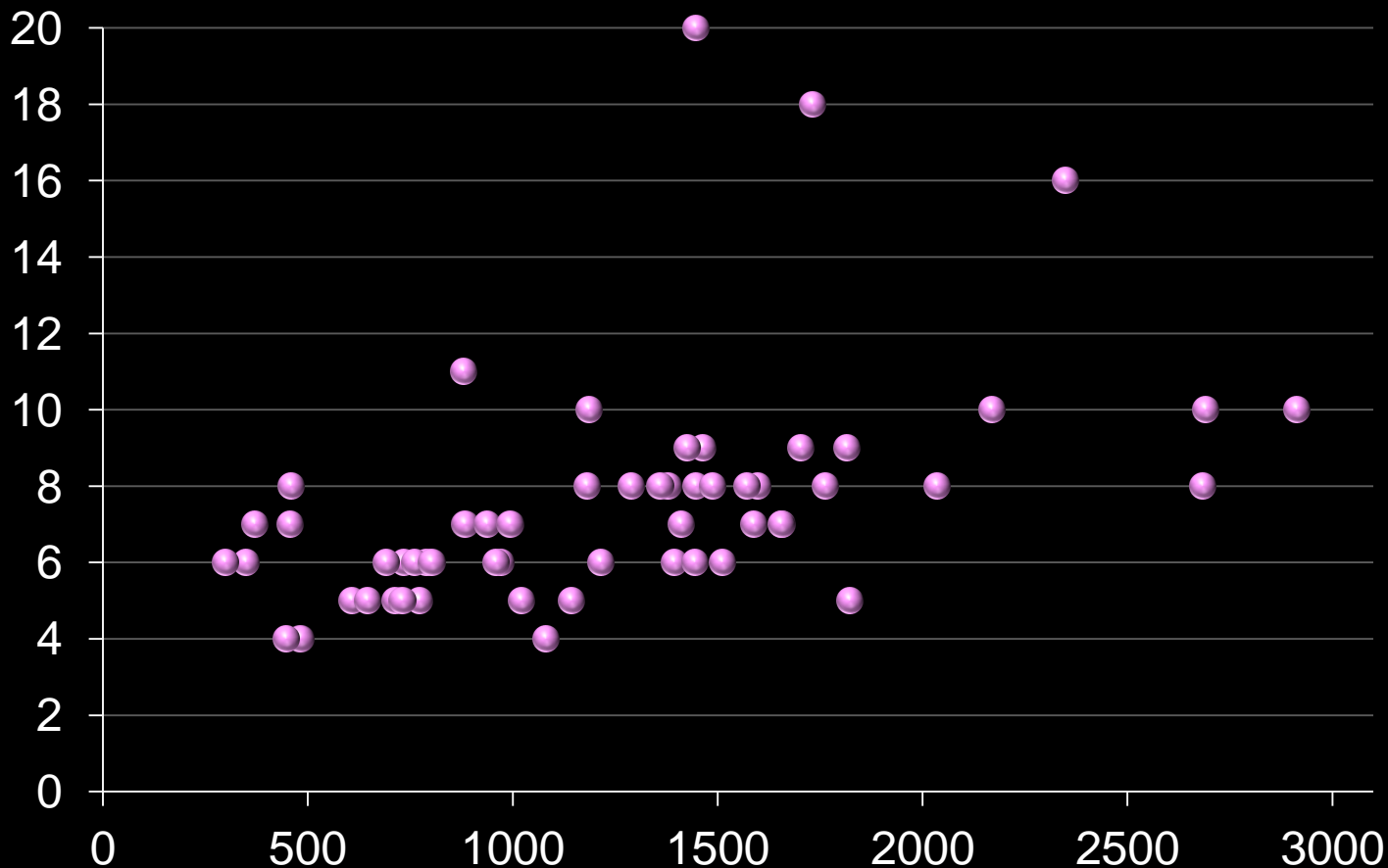
# On call rota

## 24/7 PPCI Centres – Weekdays



2012 data: Ludman

Rota 1 in ...



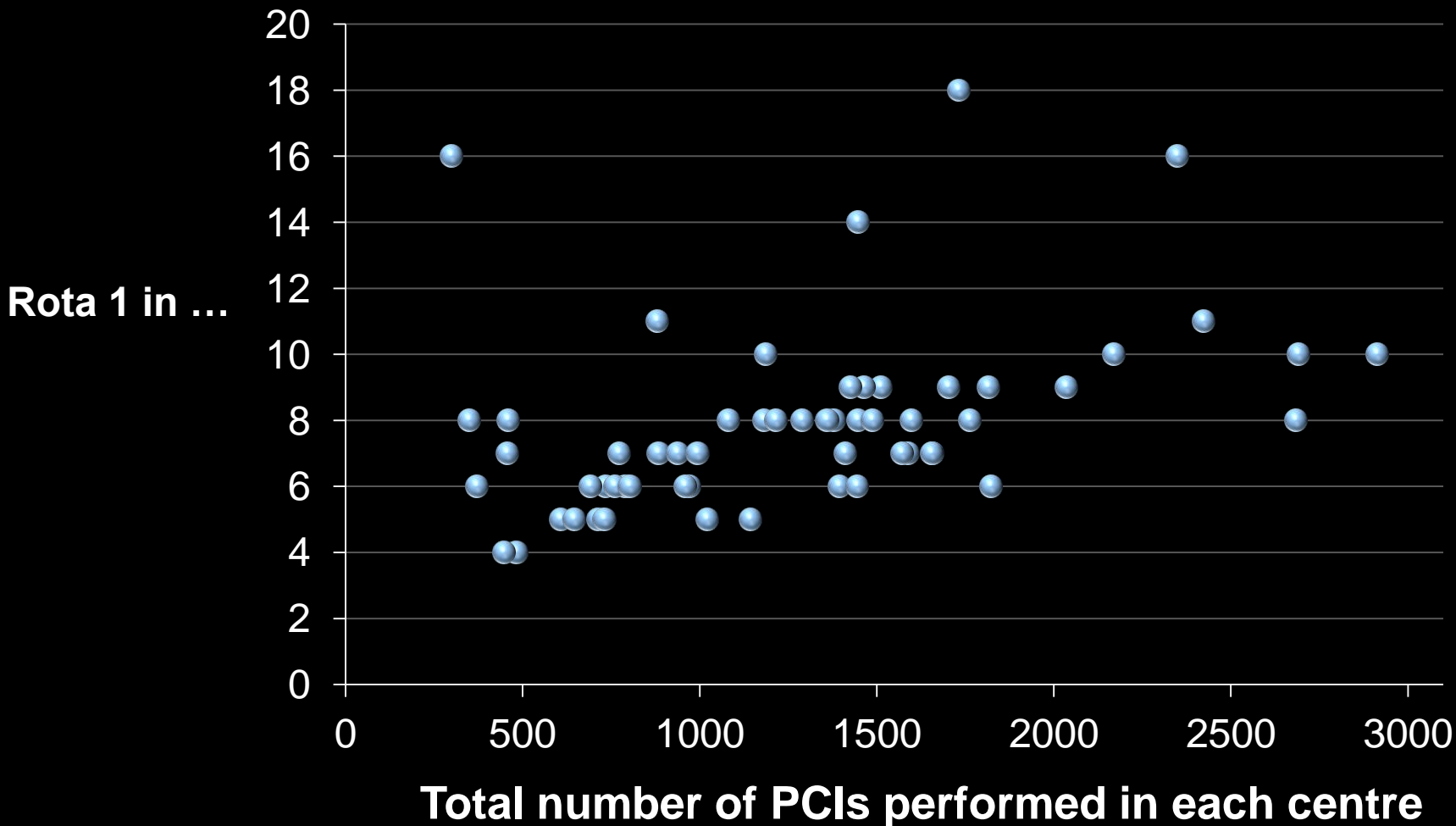
Total number of PCIs performed in each centre

# On call rota

## 24/7 PPCI Centres - Weekends



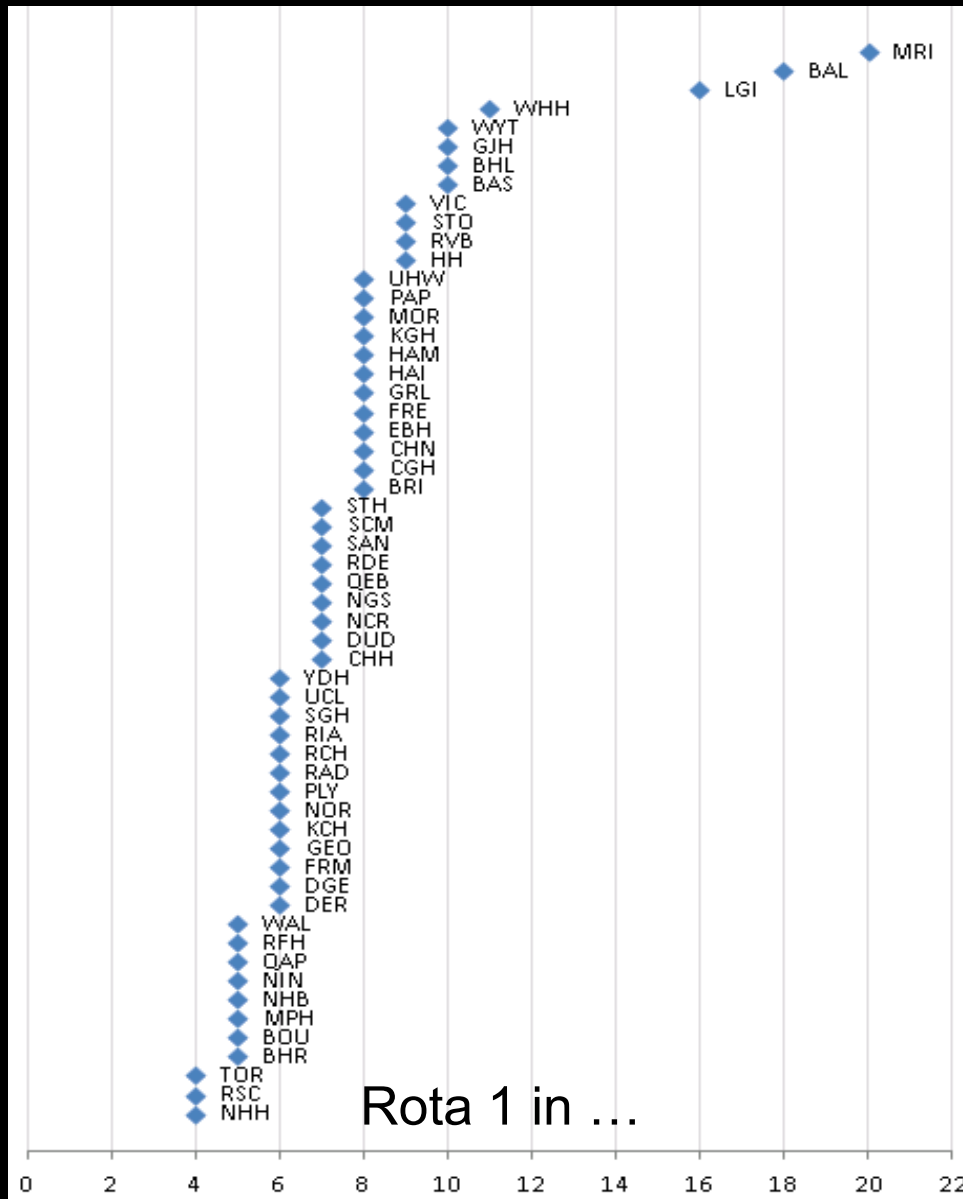
2012 data: Ludman



# On call rota – Weekdays

Centres with  
PPCI as main  
Rx for STEMI

Alphabetical  
order in each  
rota group

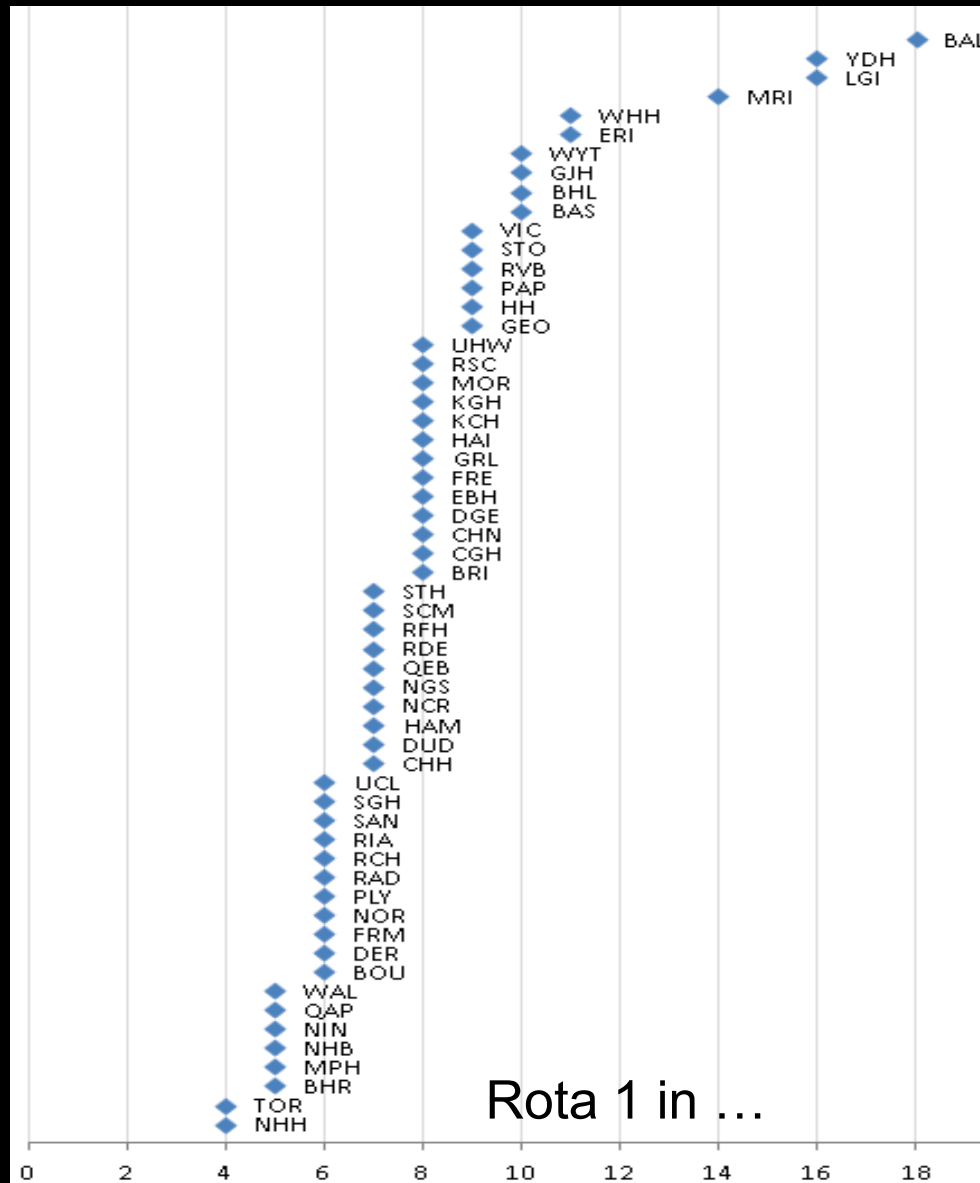


2012 data: Ludman

# On call rota - Weekends

Centres with  
PPCI as main  
Rx for STEMI

Alphabetical  
order in each  
rota group



2012 data: Ludman

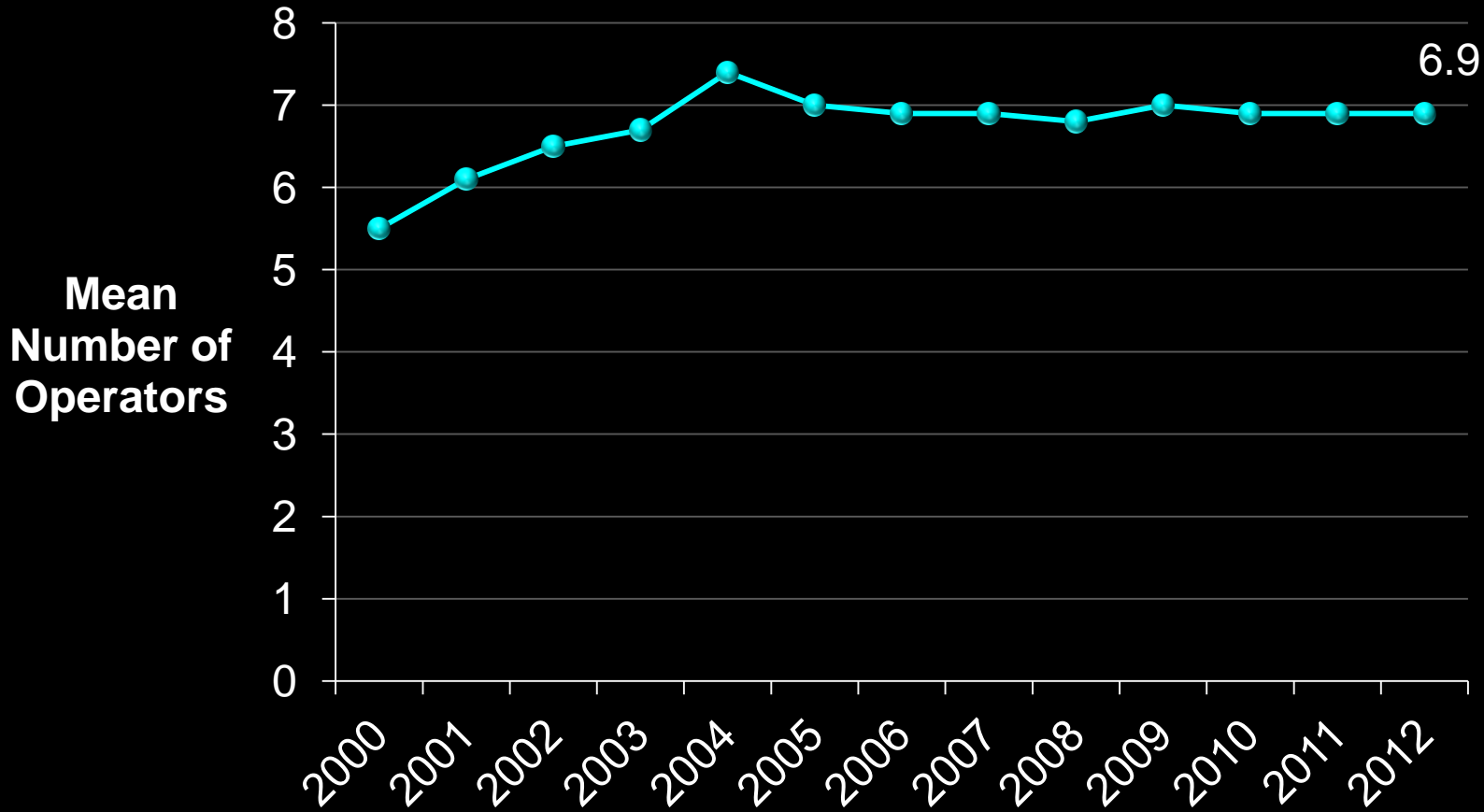
Rota 1 in ...

# No. of Consultant in each unit

## (NHS Centres 2012)



2012 data: Ludman



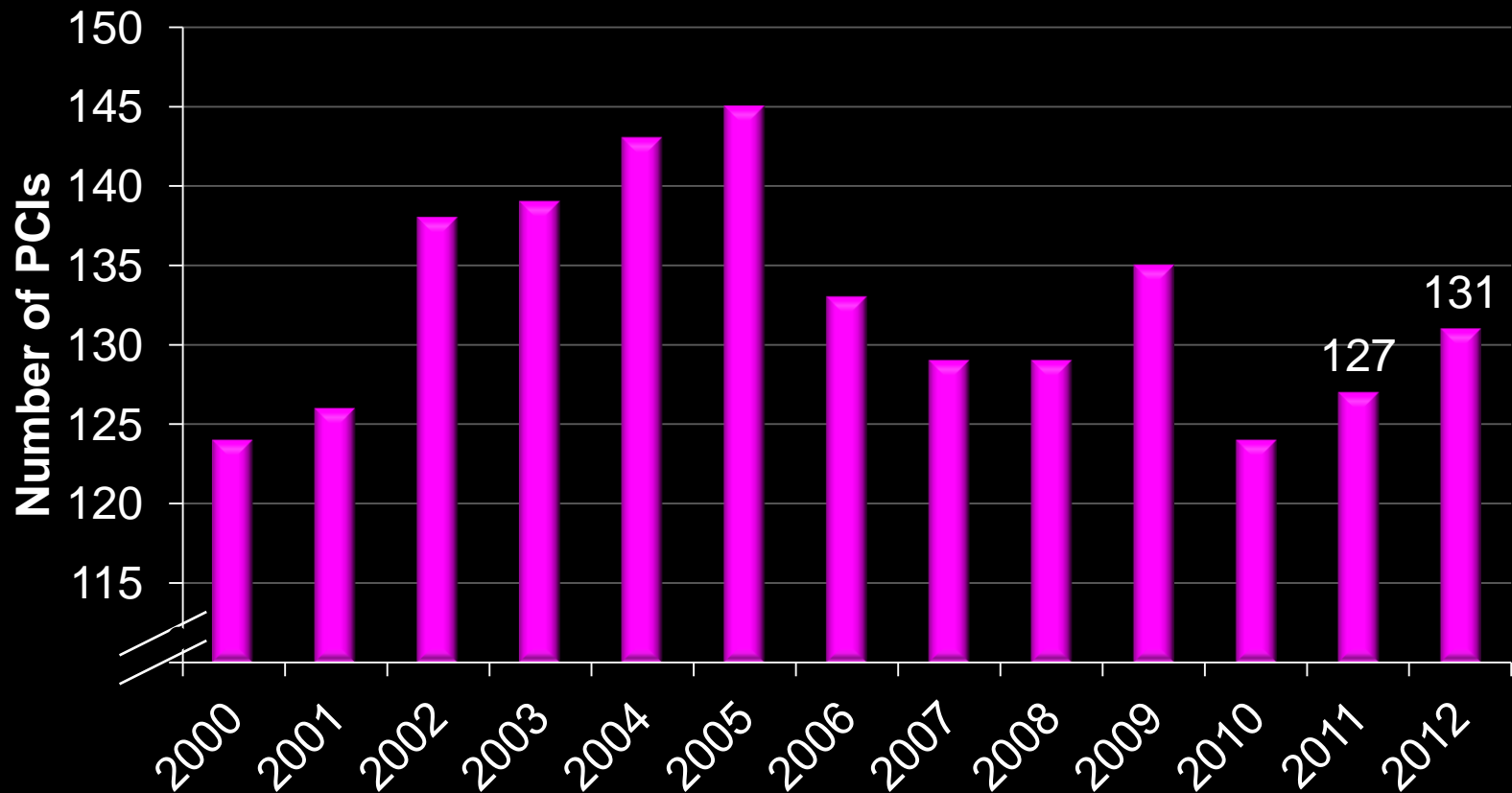
Note: if work at two NHS centres will be counted twice

# PCI per Consultant

## PCI Centre case volume / Number of operators



2012 data: Ludman

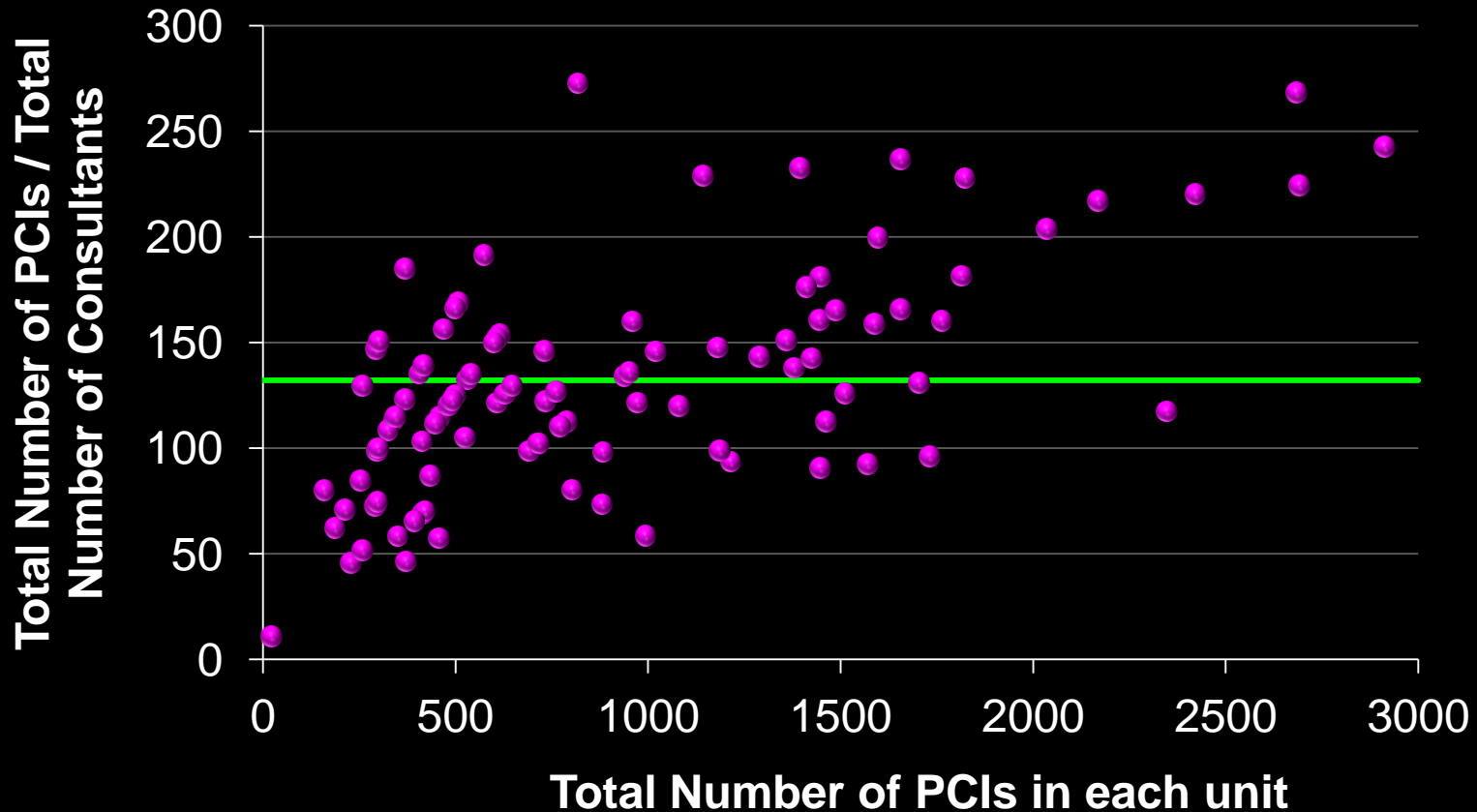


# No. of PCIs per Consultant

(NHS Centres 2012)



2012 data: Ludman



Note:

Data from institutional volume divided by No operators per institution

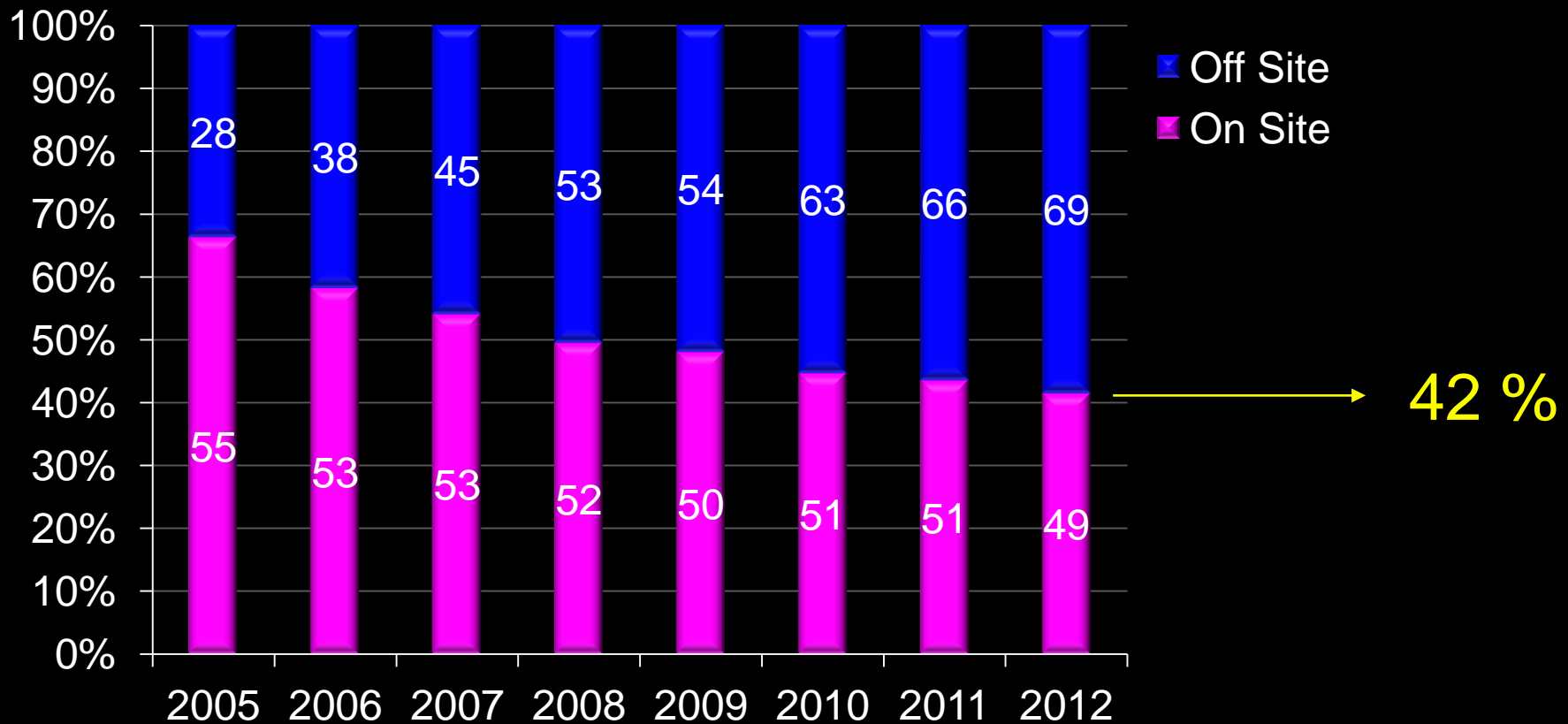
Some consultants work in multiple institutions

# On v Off Site Surgery

All Centres (NHS and private)



2012 data: Ludman

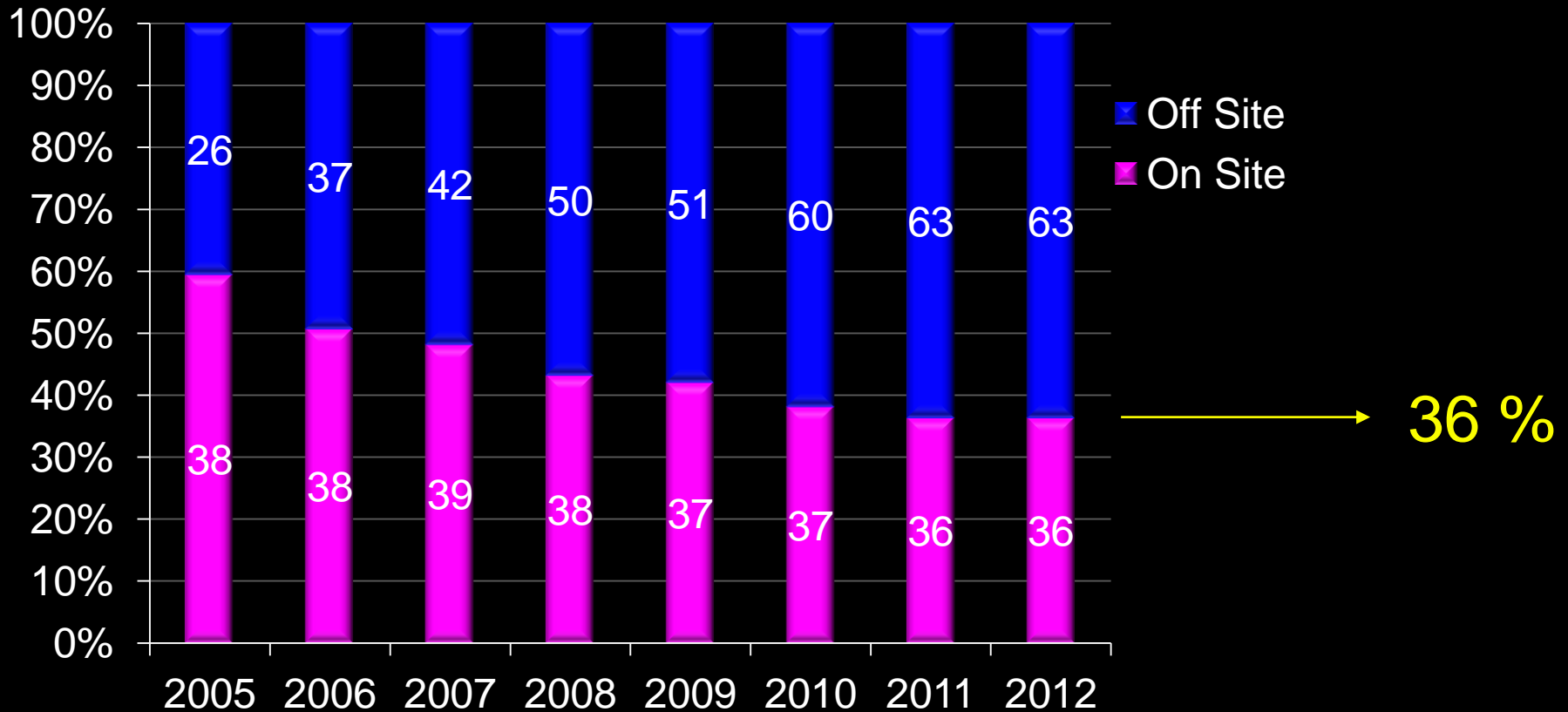


# On v Off Site Surgery

## NHS Centres Only



2012 data: Ludman



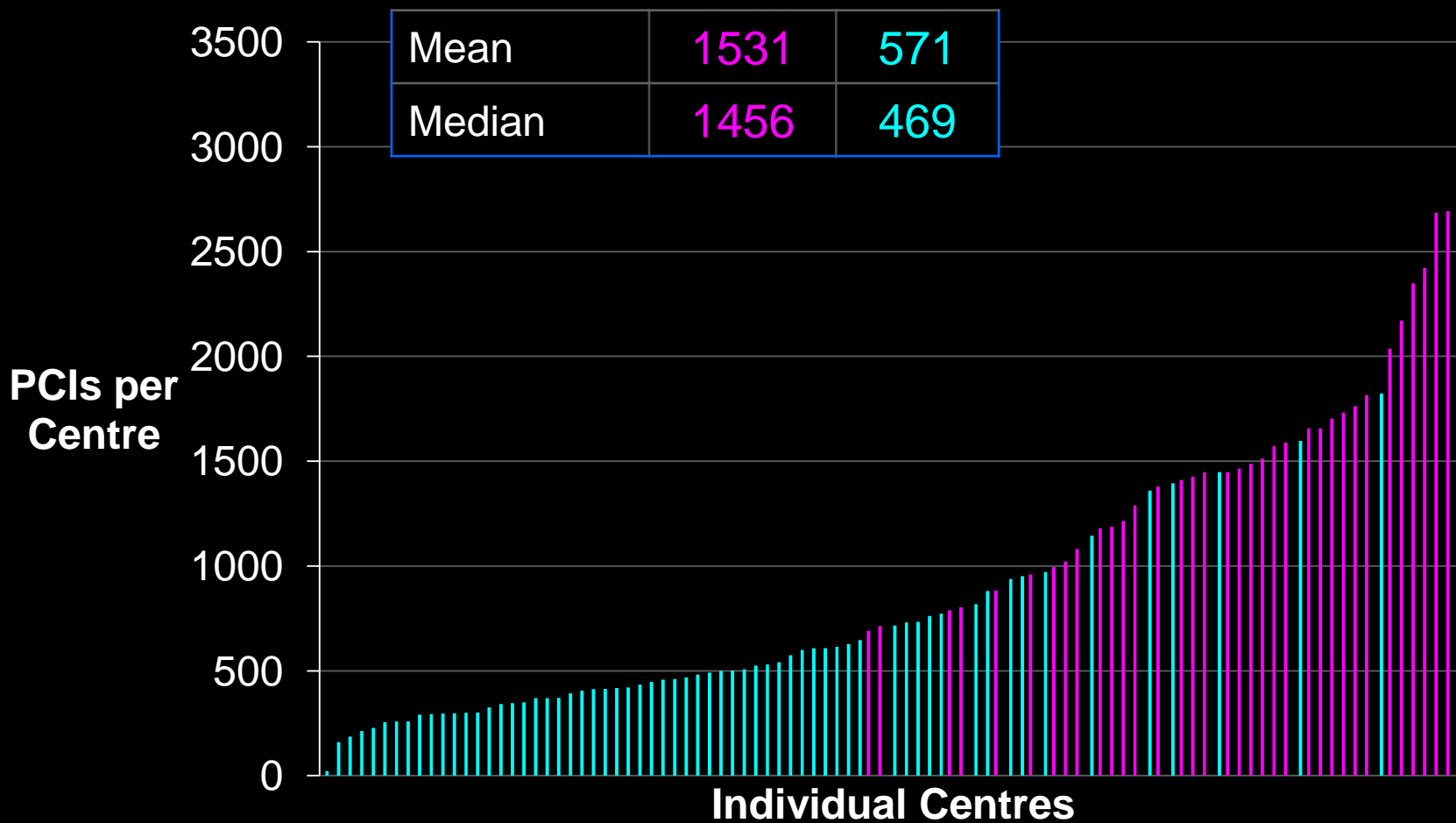
# Surgical Cover

(NHS centres only)



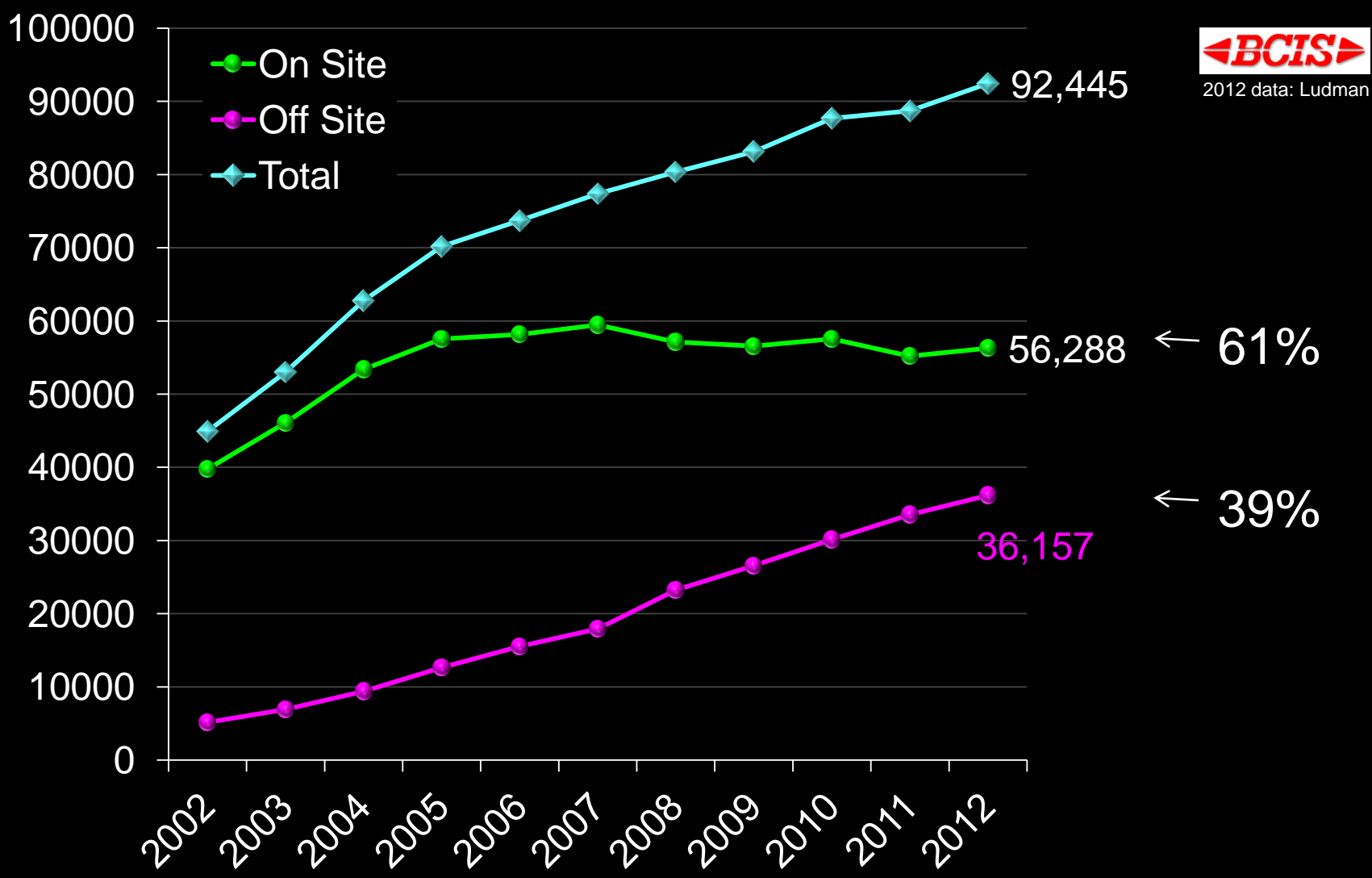
2012 data: Ludman

■ On site   ■ Off site



# Total Number of PCIs

## Surgical cover on site v off site

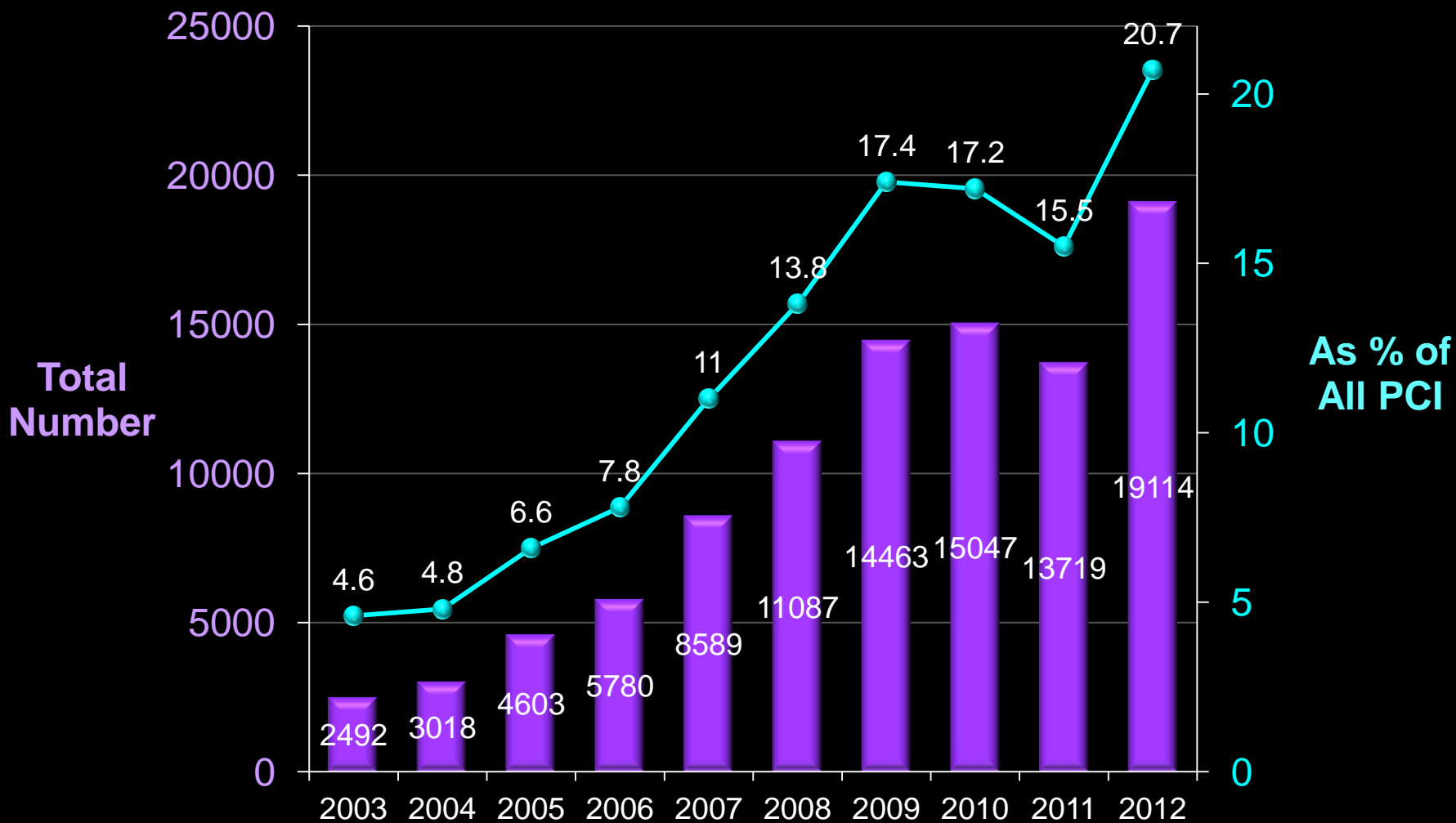


# Day Case PCI

- 78 of 118 Units performing day case PCI



2012 data: Ludman



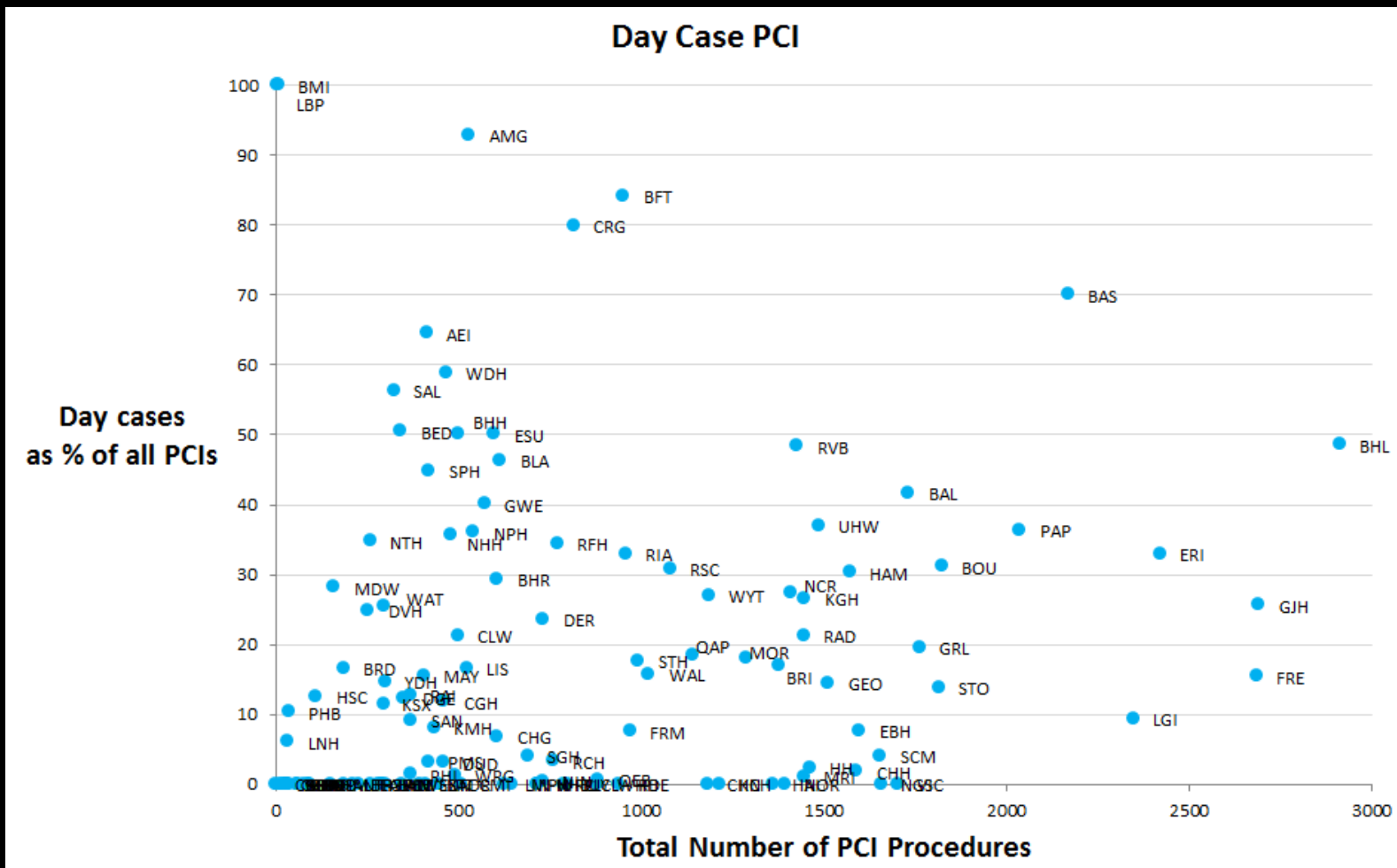
Data from: 106 of 118 centres

# Day Case PCI

## As Percentage of all PCI activity



2012 data: Ludman



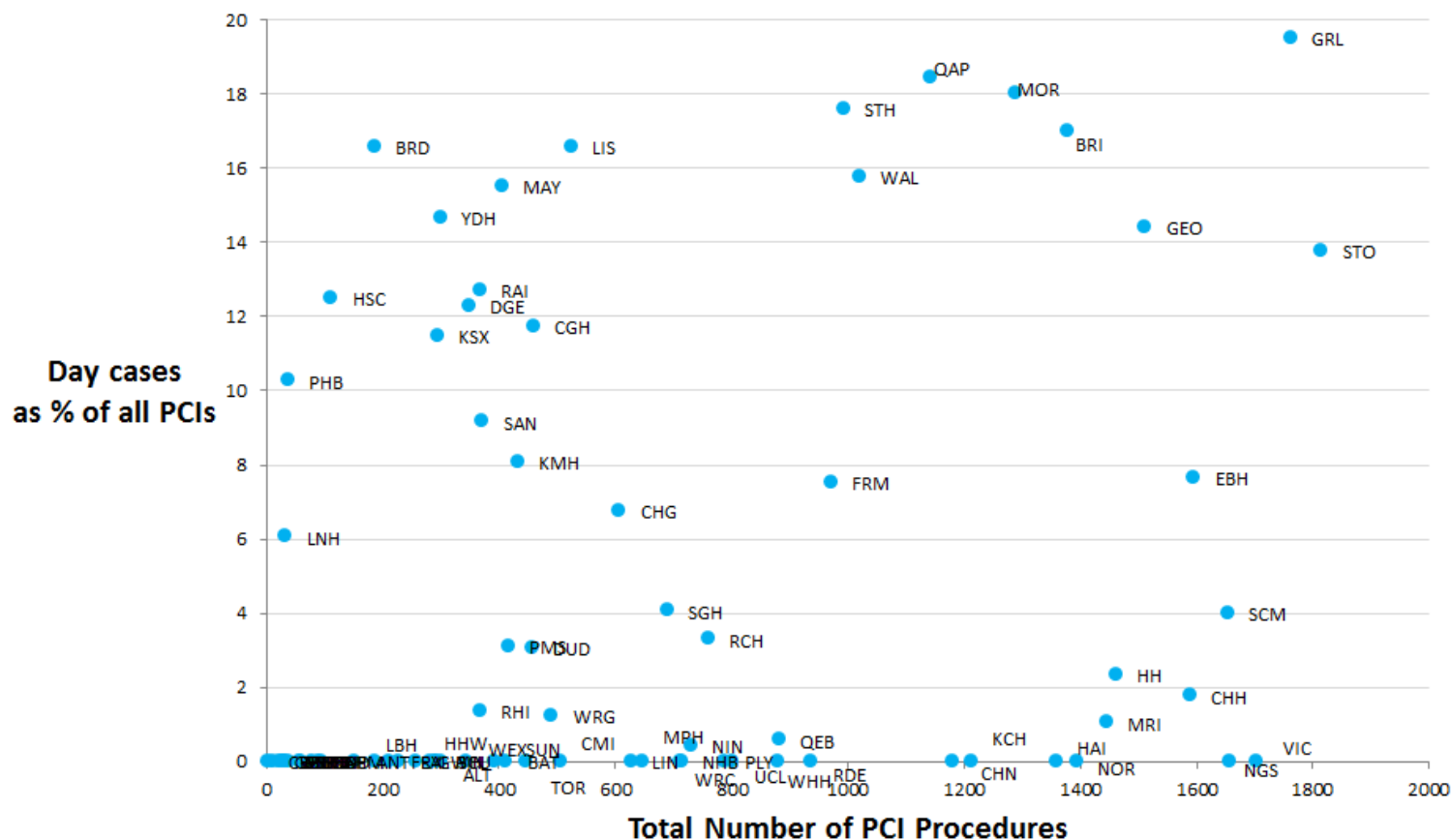
# Day Case PCI

## As Percentage of all PCI activity



2012 data: Ludman

Day Case PCI



# Primary PCI

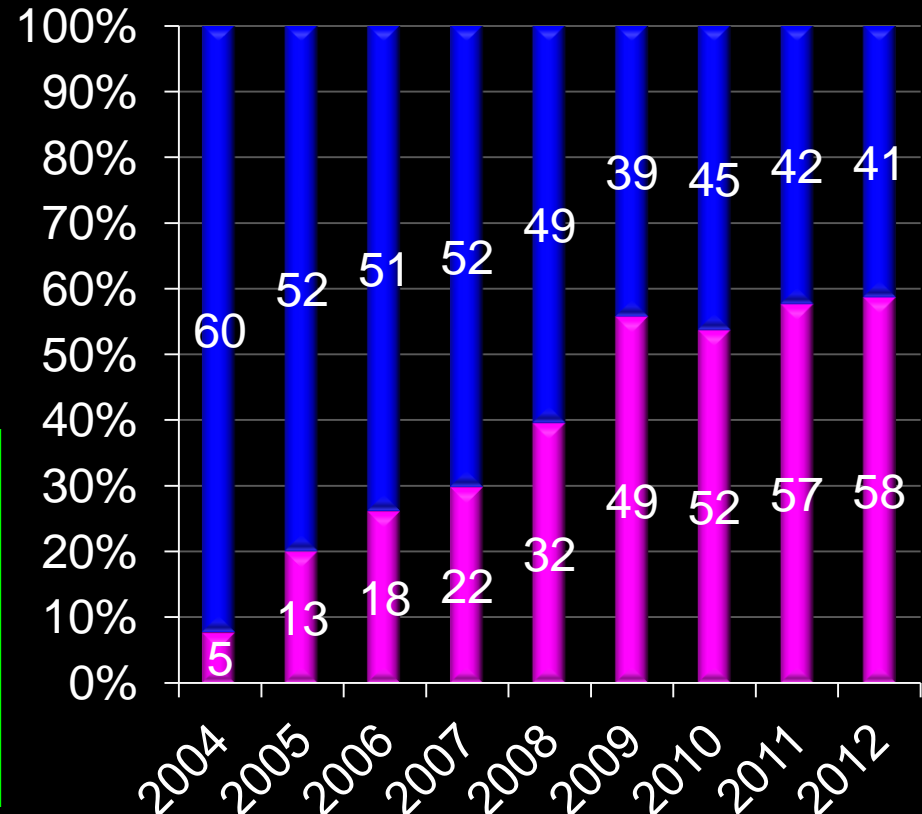
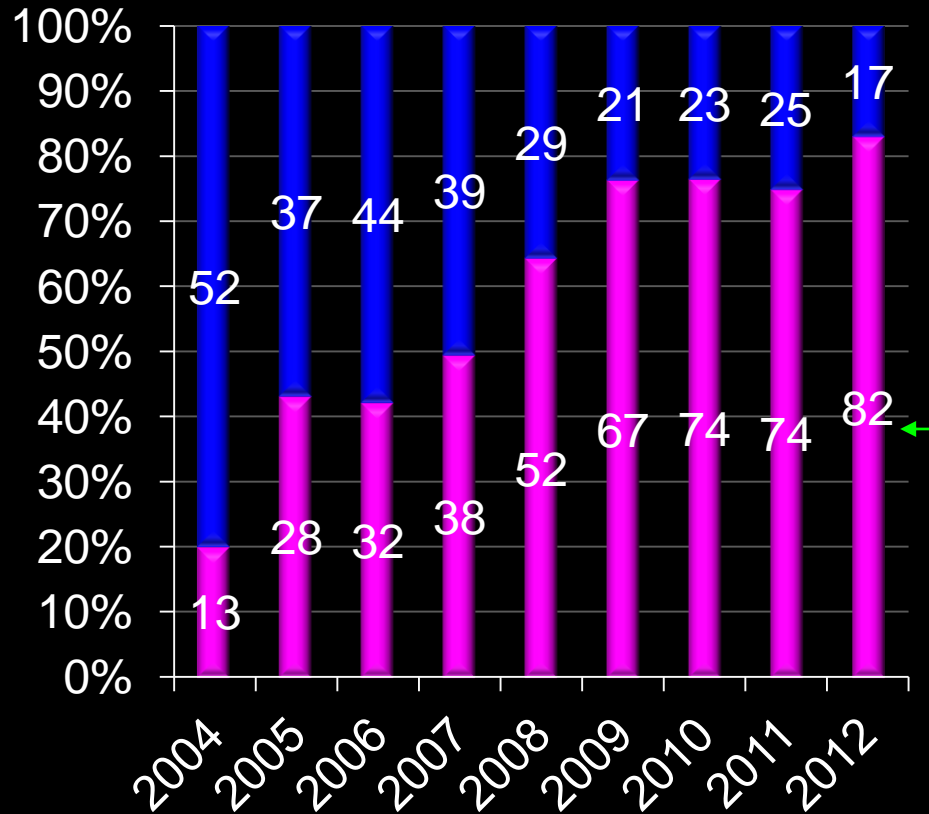
## % of Centres using PPCI as default for STEMI



2011 data: Ludman

### Working Hours

### 24/7



### Number of centres

NHS Centres only  
Working Hrs includes all 24/7 sites

# PPCI 2012



2012 data: Ludman



- No PPCI
- PPCI day
- PPCI 24/7

# PPCI 2012

- No PPCI
- PPCI day
- PPCI 24/7



# PPCI 2012

- No PPCI
- PPCI day
- PPCI 24/7



# PPCI 2012



2012 data: Ludman

- No PPCI
- PPCI day
- PPCI 24/7



# PPCI 2012

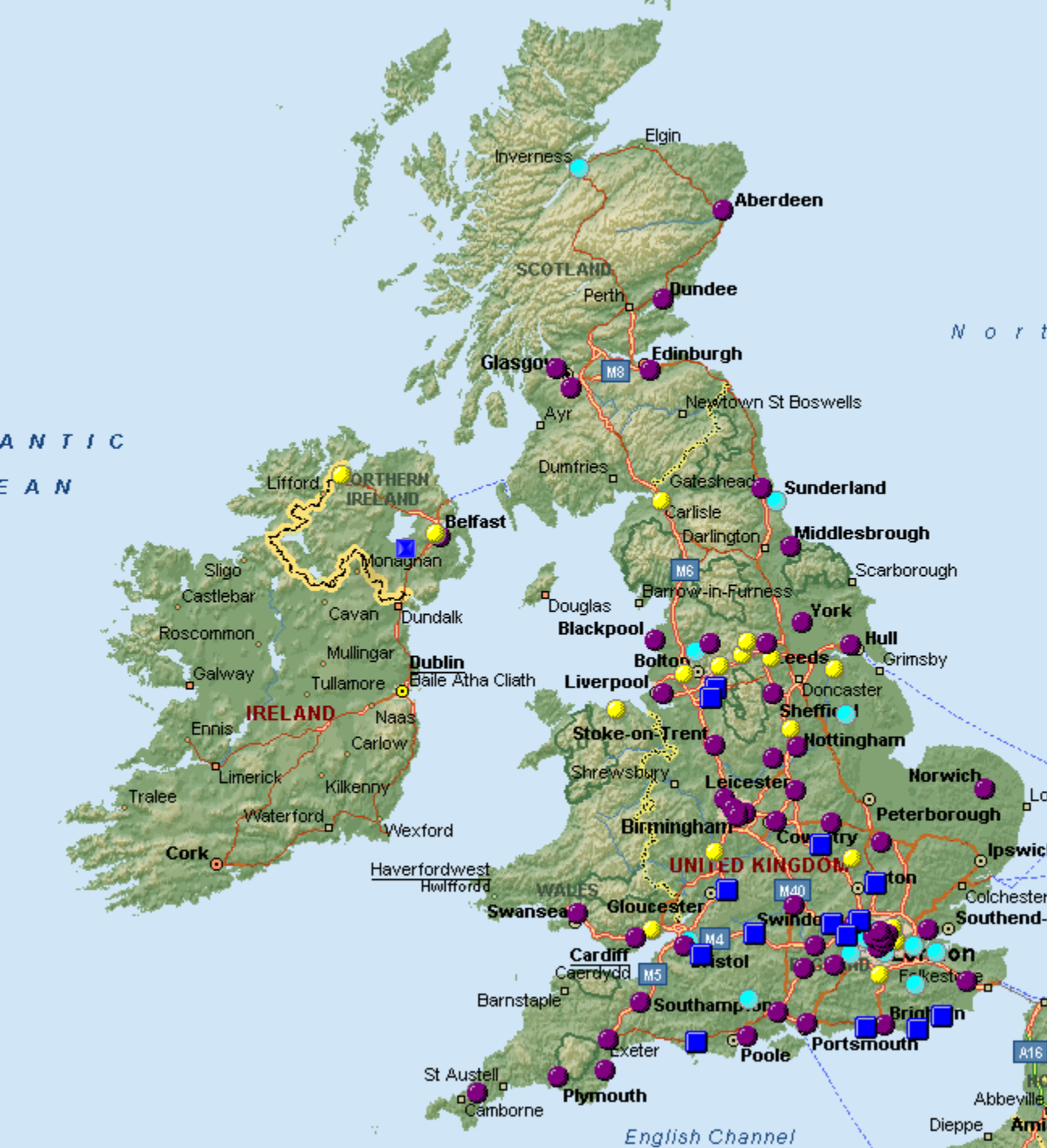
- No PPCI
- PPCI day
- PPCI 24/7



# PPCI 2012



2012 data: Ludman



- No PPCI
- PPCI day
- PPCI 24/7
- PPCI Hybrid

# PPCI 2012

- No PPCI
- PPCI day
- PPCI 24/7
- PPCI Hybrid



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- Appropriateness

- Demographics
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- Atherectomy
- Stents (BMS and DES)
- Adjunctive pharmacotherapy
- LV support and shock
- Primary PCI for > 80 yrs
- Additional interventional techniques, devices
- Arterial access (routes)

- Process of care

- Delays to treatment
- NSTEMI (direct v IHT)
- Primary PCI DTB / CTB
- IHT versus Direct admission
- Length of stay

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- MACCE
- Peri-procedural complications and by access
- Tracked 30 day mortality
  - Outcome by syndrome
  - Outcome by lesion subset
- Risk adjusted outcome
- Operator reported outcomes

- Adult non coronary intervention

- Septal ablation for HOCM
- Mitral valvuloplasty
- Mitraclip / PFO / ASD closure / LAA occlusion
- Para-prosthetic leak closure
- Renal Denervation
- Percutaneous Pulmonary valve

- TAVI

- Activity by centre
- Demographics
- Valve types
- Delivery approaches by valve type
- Pacing
- Complications

- Conclusions and summary

Appendix: PCI Centre NICOR / CCAD Centre codes

# Patient specific Data Collection

# NICOR

The screenshot shows the NICOR Portal web application running in a Lotus Notes browser window. The page title is "NICOR Portal" and the subtitle is "NICOR - National Institute for Cardiovascular Outcomes Research". The user is logged in as Peter Ludman (QEB) with a connection to the NICOR2 server. The interface includes a navigation menu with buttons for "Change User", "Set Password", "Send / Receive Data (replication)", "Tools", "Help", "NICOR N3 Setup", "NICOR Internet Setup", and "Switch Location".

**Main Databases**

- BCIS
- CCAD Local Values
- CCAD Reference Values

If you are finding your access to databases slow, you can try changing servers. [more info](#)

If your connection is still slow, you can create a local replica/ copy of your desired database. [more info](#)

**Support Databases**

- CCAD Local Values
- CCAD Reference Values
- Drop Box

**News Items**

Subject	Category	Date	Action
Sending Patient Identifiable Information	General News	17/09/2012	double click to read
Important Announcement about Life Status Information	General News	11/09/2012	double click to read

**Contact**

For **Technical Help** please contact the NICOR Helpdesk:-

- [nicor-helpdesk@ucl.ac.uk](mailto:nicor-helpdesk@ucl.ac.uk)
- 0203 108 1978
- [www.ucl.ac.uk/nicor](http://www.ucl.ac.uk/nicor)

**Tip of the day...** To close any properties box, press ALT+ENTER

NICOR Portal version 1.0    nicor-helpdesk@ucl.ac.uk    020 3108 1978    NICOR - National Institute for Cardiovascular Outcomes Research

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# Patient Specific Data Analysis

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- Data
  - Centre participation
  - Case ascertainment
  - Data completeness
  - Data quality

# Procedure Specific Analysis

## Participation in NICOR



2012 data: Ludman

		Total No. of Centres	Data to NICOR	Missing
England	NHS	85	85	0
	Private	17	6	8
Wales		4	4	0
N Ireland		4	3	1
Scotland	NHS	6	5	1
	Private	2	1	1

# Procedure Specific Analysis

## Participation in NICOR



2012 data: Ludman

		Total No. of Centres	Data to NICOR	Missing
England	NHS	85	85	0
	Private	17	6	8
Wales		<b>Altnagelvin</b>		0
<b>N Ireland</b>		4	3	<b>1</b>
Scotland	NHS	6	5	1
	Private	2	1	1

# Procedure Specific Analysis

## Participation in NICOR



2012 data: Ludman

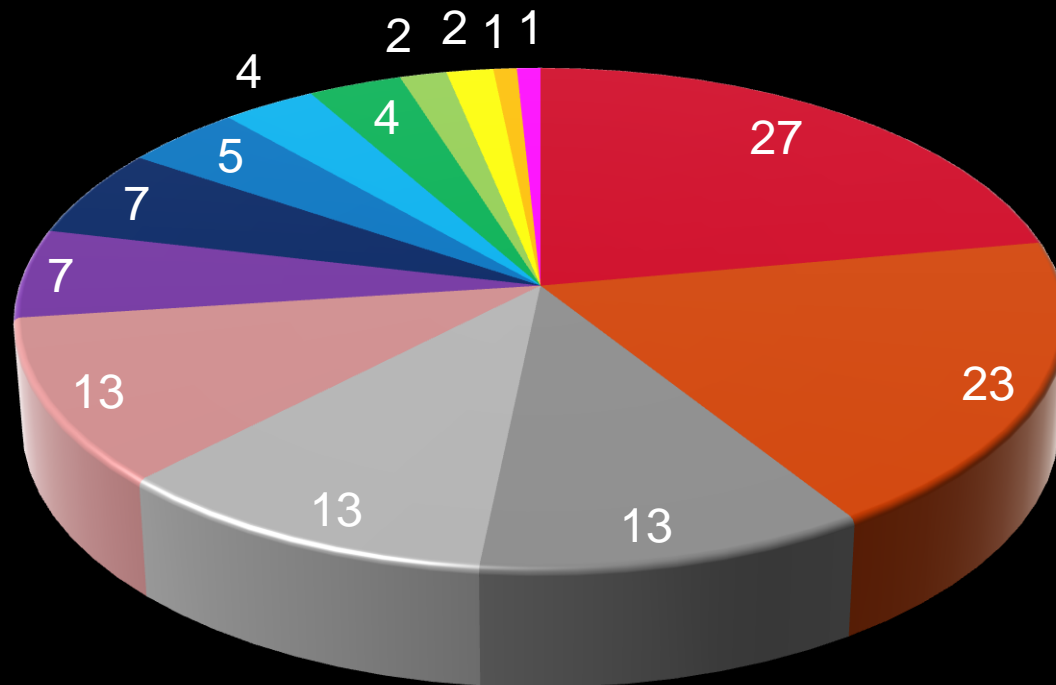
		Total No. of Centres	Data to NICOR	Missing
England	NHS	85	85	0
	Private	17	6	8
Wales		4	4	0
N Ireland		<b>Hairmyres Hospital</b>		1
Scotland	NHS	6	5	1
	Private	2	1	1

# 'Front end' Database used

## 2012



2012 data: Ludman



- Tomcat
- Access database from BCIS
- Bespoke in house database
- Cardaas
- Medcon
- Dendrite
- PATS
- Lotus Notes
- Datacam
- Prism
- Minerva
- Infoflex
- Cardex
- Cardiobase (Magnus)

Bespoke includes manual collection by some

# Patient Specific Data Analysis

---

- Data
  - Centre participation
  - Case ascertainment
  - Data completeness
  - Data quality

# Case Ascertainment

BCIS Aggregate Audit for Adult Percutaneous Interventional Procedures  
(1st January 2012 to 31st December 2012)

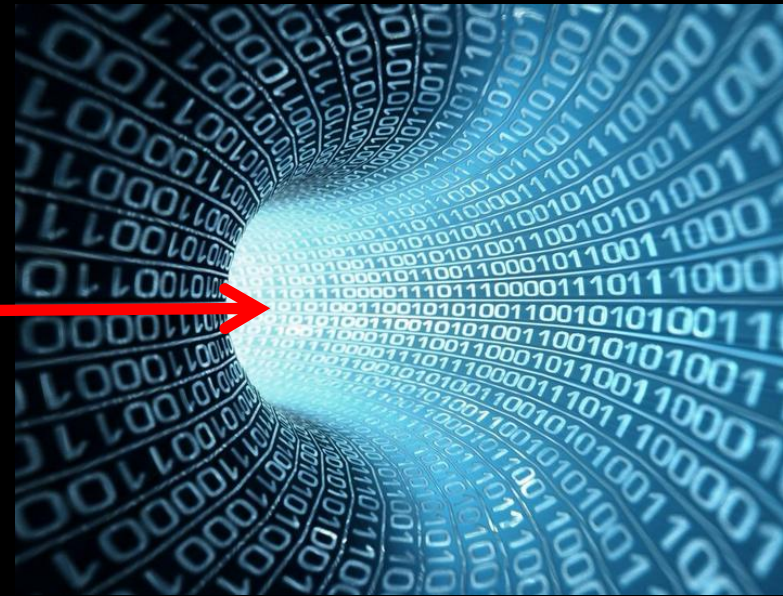


Q31

\*31. Overall Total Number of PCI procedures in Calendar Year 2012

#### Note

1. This does not include procedures where ONLY a pressure wire / IVUS or OCT study has taken place.
2. This number will be compared with the number of cases uploaded to CCAD / NICOR in order to assess case ascertainment.



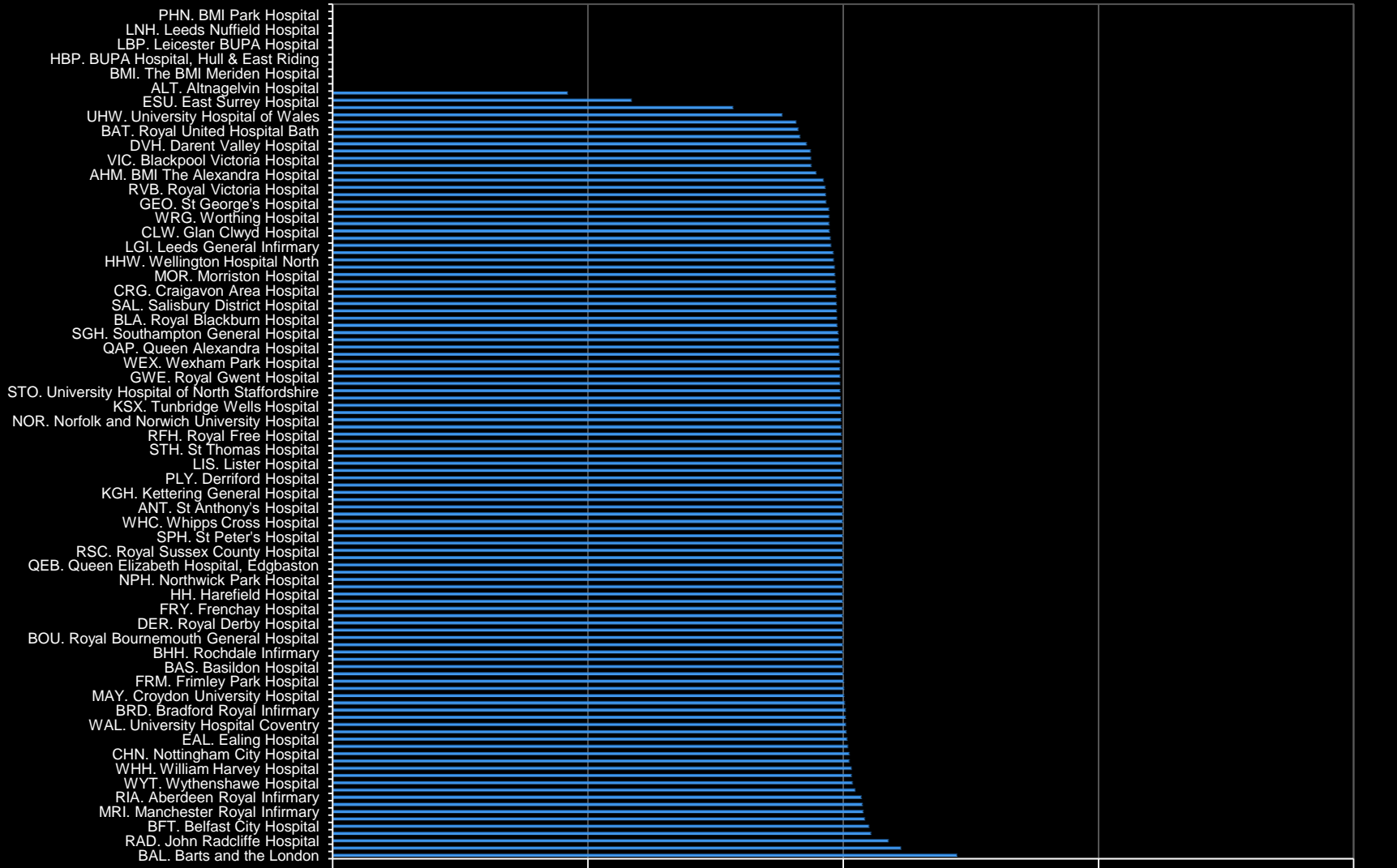
NICOR  
Data warehouse

# NICOR Case Ascertainment



2012 data: Ludman

## UK PCI data in NICOR as % of Reported Totals



As August 2013

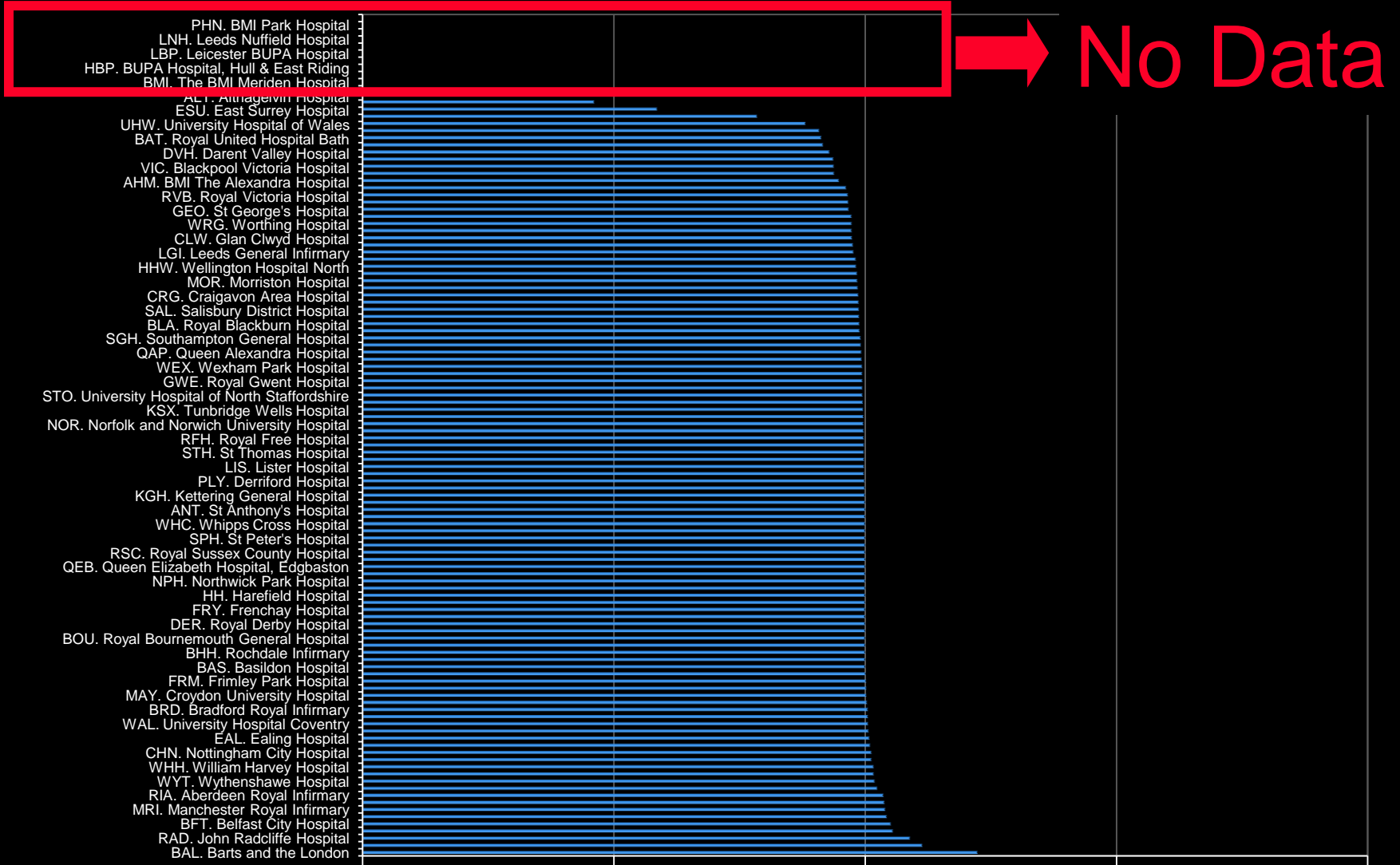
0 50 100 150 200

# NICOR Case Ascertainment



2012 data: Ludman

## UK PCI data in NICOR as % of Reported Totals



No Data

As August 2013

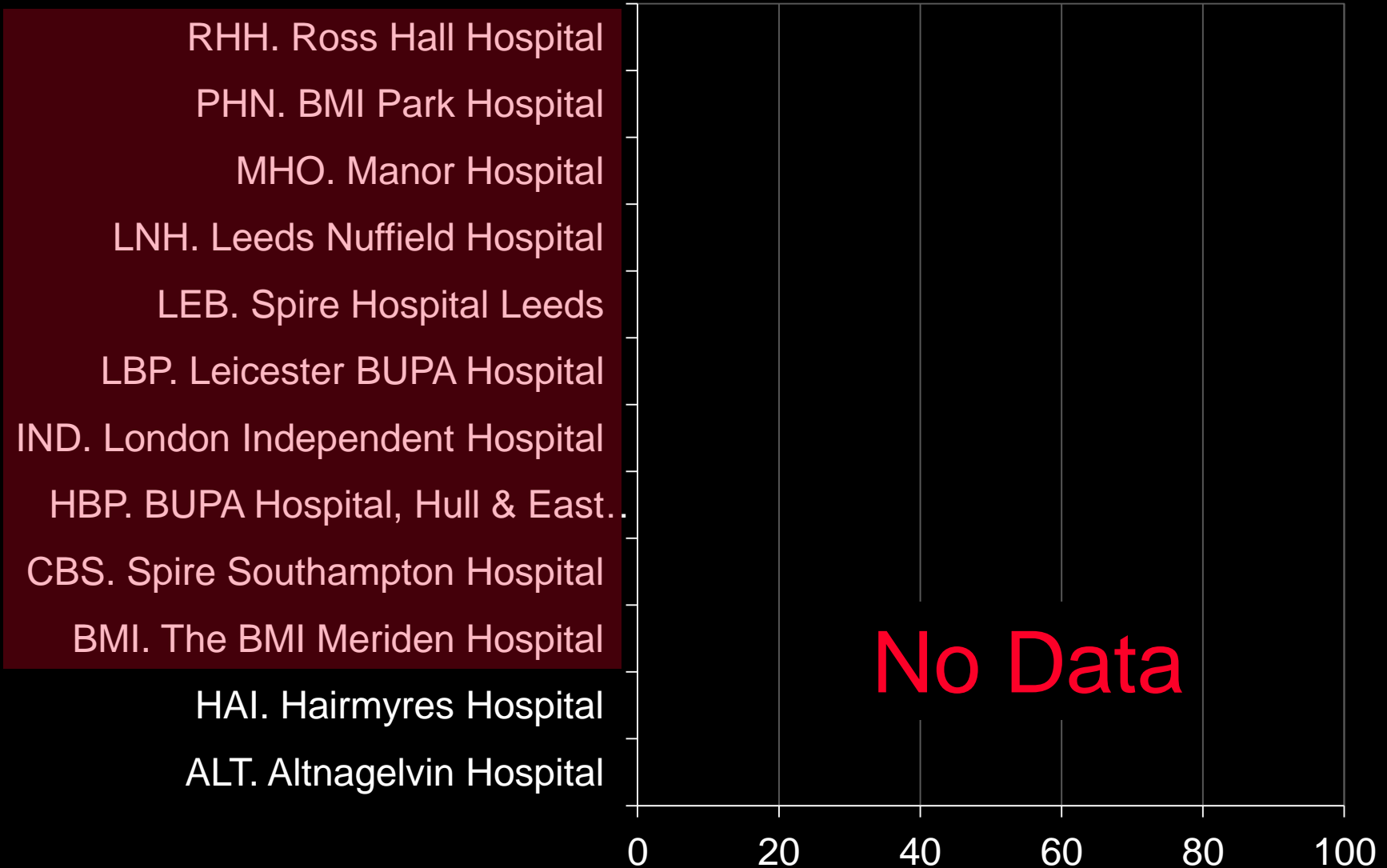
0 50 100 150 200

# NICOR Case Ascertainment



2012 data: Ludman

## UK PCI data in NICOR as % of Reported Totals



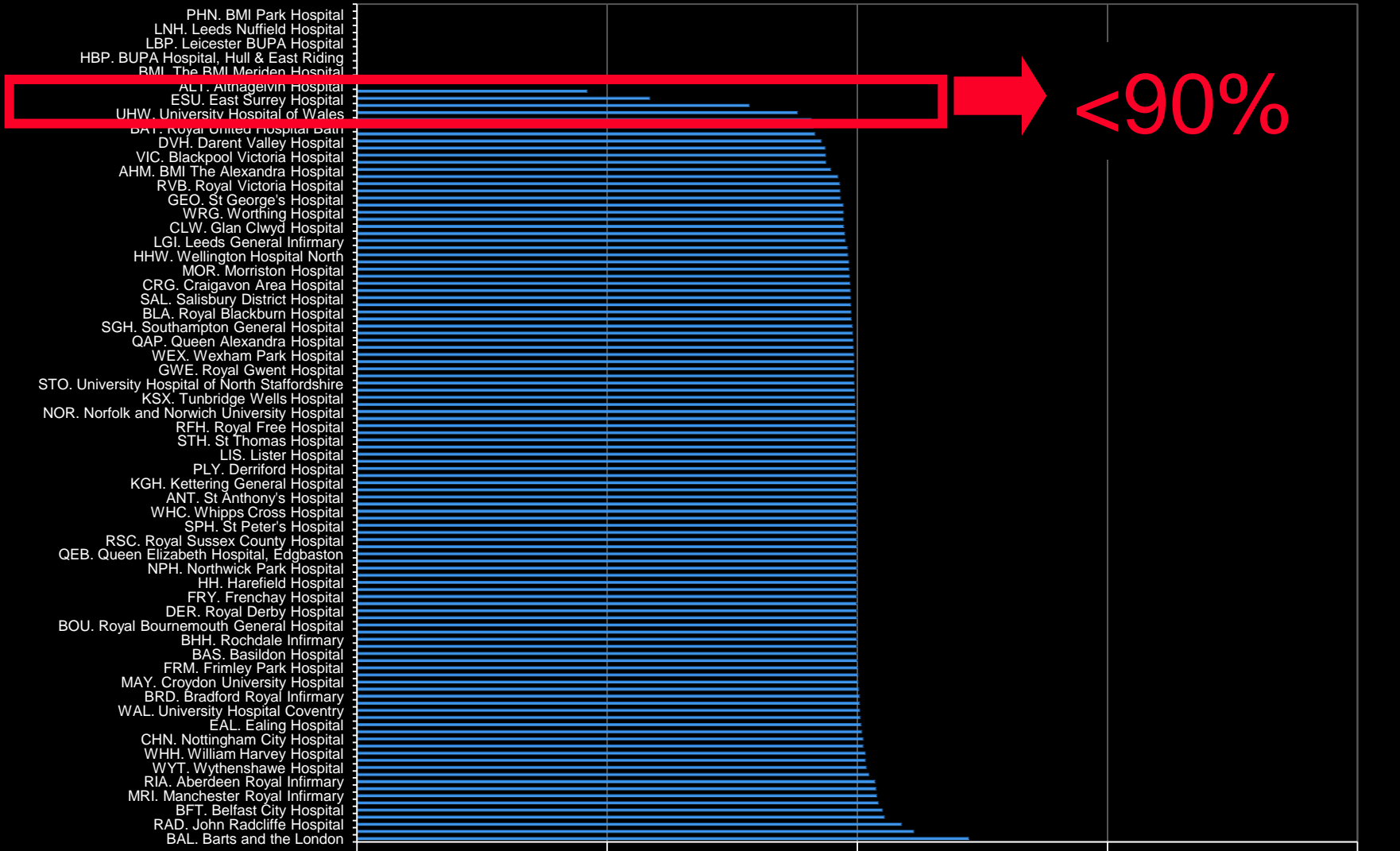
As August 2013

# NICOR Case Ascertainment



2012 data: Ludman

## UK PCI data in NICOR as % of Reported Totals



As August 2013

0

50

100

150

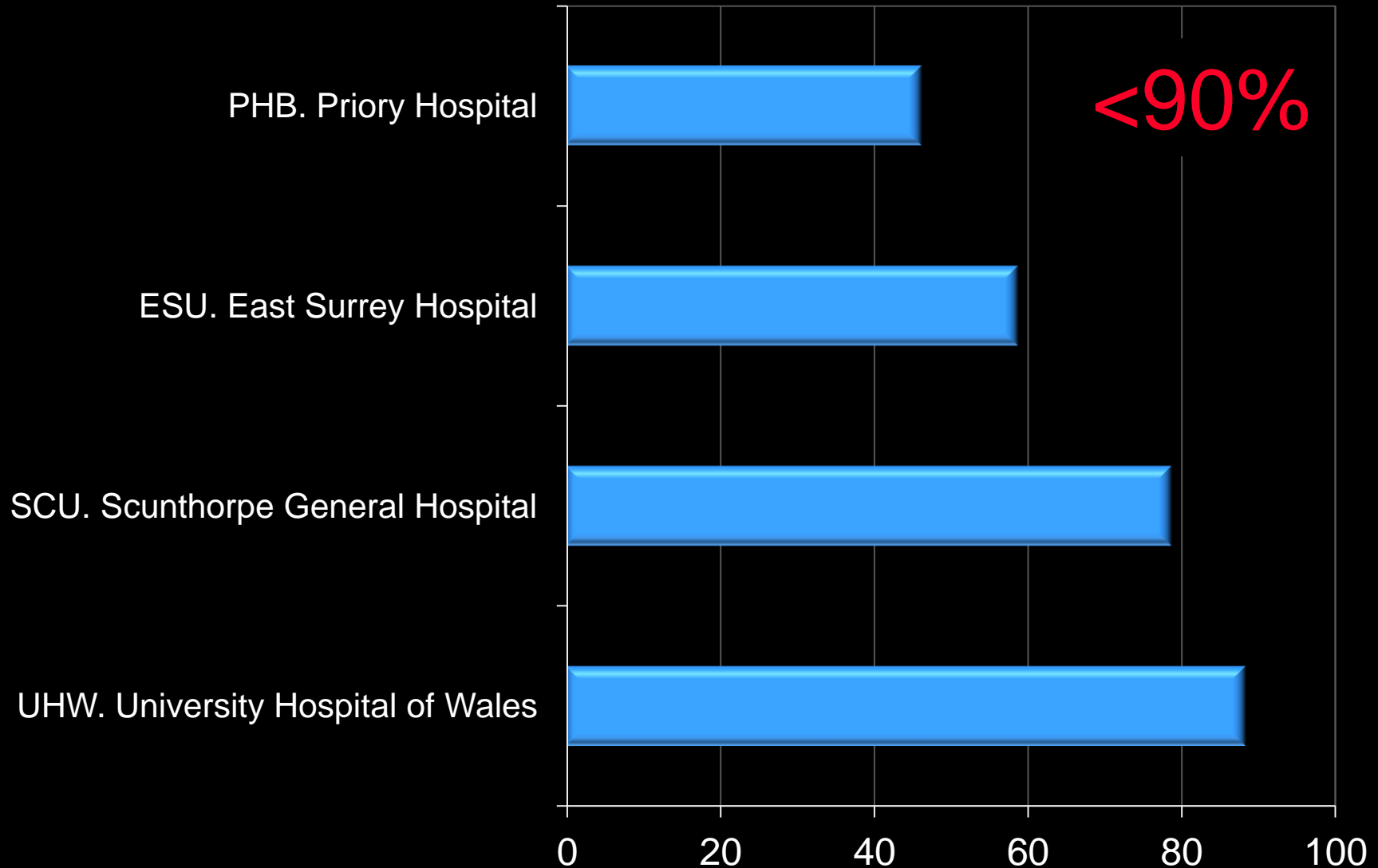
200

# NICOR Case Ascertainment



2012 data: Ludman

## UK PCI data in NICOR as % of Reported Totals



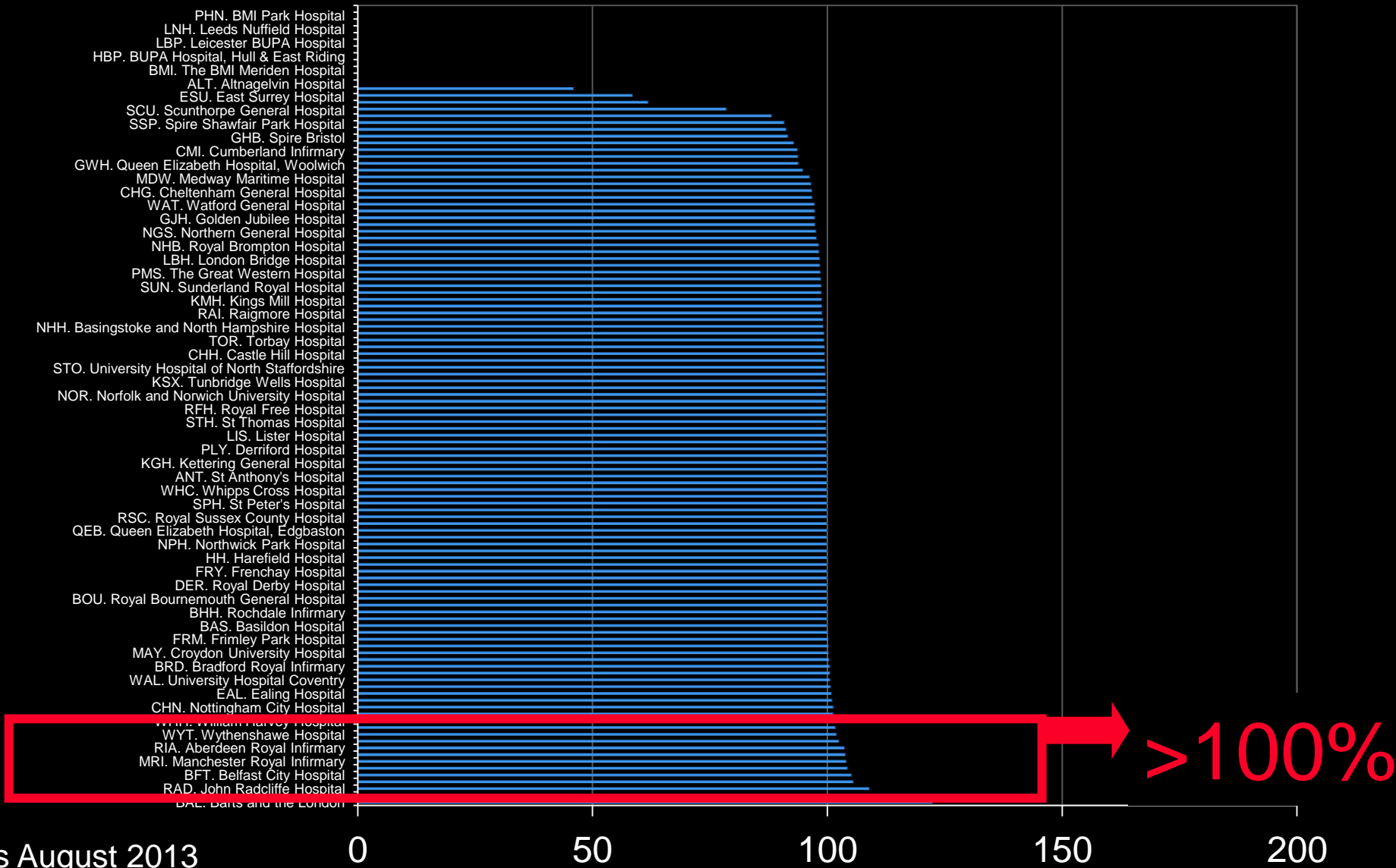
As August 2013

# NICOR Case Ascertainment



2012 data: Ludman

## UK PCI data in NICOR as % of Reported Totals



# NICOR Case Ascertainment



2012 data: Ludman

## UK PCI data in NICOR as % of Reported Totals



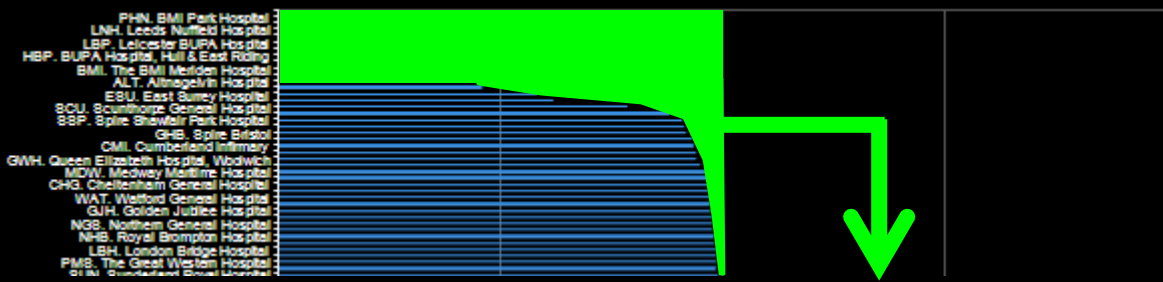
As August 2013

# NICOR Case Ascertainment



2012 data: Ludman

## UK PCI data in NICOR as % of Reported Totals



	UK	E&W (NHS)	Scotland (NHS)	N. Ireland
Declared PCIs	92,445	79,067	8,535	3,496
In NICOR	90,269	78,924	7,227	3,184
Missing	3010	143	1,308	312
% Missing	<b>2.4 %</b>	0.18 %	15.3 %	8.9 %

Note: As August 2013  
Analysis does not account for extra counts from duplicates

# Patient Specific Data Analysis

---

- Data
  - Centre participation
  - Case ascertainment
  - Data completeness
  - Data quality

# Patient Specific Data Analysis



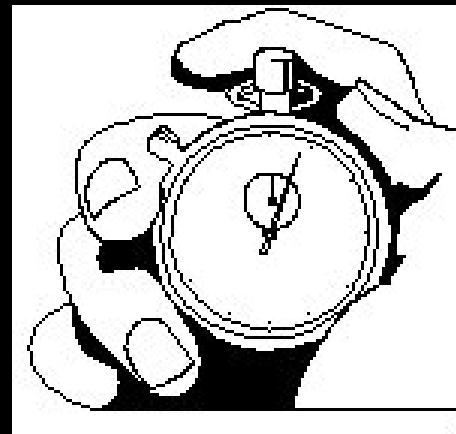
2012 data: Ludman

- Data

- Centre participation
- Case ascertainment
- Data completeness
- Data quality

Risk Adjusted Outcomes

Age 70–79 years  
Age  $\geq$ 80 years  
Female sex  
Cerebrovascular disease  
Cardiogenic shock  
Urgent PCI  
Emergent PCI  
LMS lesion treated  
Graft lesion treated



# NICOR Minimum Data Standard

- > 90% completeness

	<b>All PCI</b>
1.06	Birth date
1.07	Sex
5.05	Medical History
2.04	Pre-procedure shock
2.03	Procedure urgency
3.09	Vessels treated
5.06	History of renal disease
2.16	Diabetes
4.04	Discharge date
4.03	Status at discharge
4.01	PCI Hospital outcome
1.03	NHS number

	<b>Primary PCI</b> (in community at symptom onset)
2.07	Date/time of symptom onset
5.27	Date/time of call for help
2.08	Date/time of arrival at first hospital
5.26	Date/time of arrival at PCI hospital
3.26	Date/time of first balloon inflation

# NICOR Minimum Data Standard

---

- > 90% completeness

	<b>Additions for 2012 data</b>
5.31	Consultant responsible for procedure GMC Number
3.02	Consultant responsible for procedure (name)
5.30	Location of Patient at onset of STEMI
5.35	Creatinine
2.17	Height
2.18	Weight

# % Completeness

## 12 fields required for risk adjusted outcome NWQIP

Hospital	DOB	Sex	Medical History	Shock	Urgency	Vessels treated	Renal disease	Diabetes	Discharge date	Discharge status	PCI hospital outcome	NHS number	TOTAL
a	98.9	99.6	94.7	100	100	83.9	92.4	98.5	99.6	99.6	94.6	99.6	1161.4
b	100	100	63.6	100	100	100	99.1	98	94	94	100	99.8	1148.5
c	100	100	75.4	0	100	100	91.3	97.1	99.3	99.3	99.3	89.9	1051.6
d	100	99.9	93.7	97.1	99.9	99.3	90.7	98	93.7	92.8	91.4	76.1	1132.6
e	100	100	84.1	98.9	99.9	100	97.2	95.5	72.2	92.5	100	93.6	1133.9
f	100	100	36.4	100	100	100	87.9	75.1	45.6	45.9	100	59	949.9

Top score potential = 1200↑

< 90%

< 50%

# % Completeness



2012 data: Ludman

## England NHS

				Date of birth	Sex	Medical history	Pre-procedure shock	Procedure urgency	Vessels treated	Renal disease	Diabetes	Discharge date	Discharge status	PCI hospital outcome	NHS number
Conquest Hospital	CGH	Non-private	England	100	100	100	100	100	100	100	100	100	100	100	99.57
Eastbourne DGH	DGE	Non-private	England	100	100	100	100	100	100	100	100	100	100	100	99.72
Frimley Park Hospital	FRM	Non-private	England	100	100	100	100	100	100	100	100	100	100	100	100
Frenchay Hospital	FRY	Non-private	England	100	100	100	100	100	100	100	100	100	100	100	96.71
Queen Elizabeth Hospital, Edgbaston	QEB	Non-private	England	100	100	100	100	100	100	100	100	100	100	100	98.87
Royal Devon & Exeter Hospital	RDE	Non-private	England	100	100	100	100	100	100	100	100	100	100	100	99.15
Wexham Park Hospital	WEX	Non-private	England	100	100	100	100	100	100	100	100	100	100	100	95.76
Kettering General Hospital	KGH	Non-private	England	100	100	100	100	100	100	100	100	99.93	100	100	99.65
Liverpool Heart and Chest Hospital	BHL	Non-private	England	100	100	100	100	100	100	100	100	99.94	99.97	100	99.74
Worcestershire Royal Hospital	WRC	Non-private	England	100	100	100	100	100	100	99.86	100	100	100	100	100
Sunderland Royal Hospital	SUN	Non-private	England	100	100	100	100	100	100	100	100	99.75	100	100	95.93
Wythenshawe Hospital	WYT	Non-private	England	100	100	100	100	100	100	99.66	100	100	100	100	99.66
New Cross Hospital	NCR	Non-private	England	100	100	99.61	100	100	100	99.68	100	100	100	100	100
St Peter's Hospital	SPH	Non-private	England	99.76	100	100	100	100	100	100	99.76	100	100	99.76	95.04
Torbay Hospital	TOR	Non-private	England	100	100	99.78	100	100	100	99.55	100	99.78	100	100	99.78
Castle Hill Hospital	CHH	Non-private	England	100	100	98.58	100	100	100	100	100	100	100	99.94	99.82
Northampton General Hospital	NTH	Non-private	England	100	100	100	99.4	100	99.62	100	100	99.62	99.62	100	99.23
Queen Alexandra Hospital	QAP	Non-private	England	99.65	99.91	100	100	100	99.47	100	99.56	100	99.56	100	99.03
Derriford Hospital	PLY	Non-private	England	100	100	99.62	99.82	100	99.87	99.24	99.75	99.87	99.87	99.62	99.24
Southampton General Hospital	SGH	Non-private	England	99.48	99.87	99.87	100	100	98.98	99.74	99.61	100	100	100	99.73
Royal Free Hospital	RFH	Non-private	England	100	99.14	99.88	100	100	97.53	100	100	100	100	99.87	96.42
James Cook University Hospital	SCM	Non-private	England	100	100	98.79	100	100	100	98.01	99.28	100	100	100	99.76
York District Hospital	YDH	Non-private	England	100	100	100	99.47	100	99.67	99.67	97.71	99.67	99.67	100	99.35
St Thomas Hospital	STH	Non-private	England	100	100	99.4	100	100	100	98.69	97.69	100	100	100	98.04
Freeman Hospital	FRE	Non-private	England	100	100	98.67	98.89	100	99.01	99.39	99.76	100	100	100	99.52
Blackpool Victoria Hospital	VIC	Non-private	England	100	99.67	100	100	99.87	97.93	99.89	99.94	98.24	100	99.87	98.07
Royal Berkshire Hospital	BHR	Non-private	England	99.84	100	100	100	100	100	100	95.4	100	100	100	98.36
Norfolk and Norwich University Hospital	NOR	Non-private	England	100	100	99.64	99.67	100	100	96.7	98.35	100	100	99.93	99.07
Royal Cornwall Hospital	RCH	Non-private	England	100	100	99.34	100	100	100	95.13	99.47	100	100	100	99.74
Croydon University Hospital	MAY	Non-private	England	100	100	98.93	100	100	100	97.22	97.65	100	100	100	99.14
Rochdale Infirmary	BHH	Non-private	England	100	100	98.81	97.23	100	99.8	99.8	99.8	98.61	99.8	99.6	99.8
Cheltenham General Hospital	CHG	Non-private	England	99.67	100	95.11	100	100	99.49	99.18	99.18	100	100	99.49	99.51
Royal Blackburn Hospital	BLA	Non-private	England	100	100	100	100	97.02	100	97.7	98.68	99.18	99.34	99.83	94.74
Glenfield Hospital	GRL	Non-private	England	100	100	98.64	100	100	100	98.59	94.63	99.94	99.94	99.77	99.83
Lister Hospital	LIS	Non-private	England	100	92.41	99.84	100	100	100	99.84	99.84	99.84	99.84	99.81	96.61
Kings Mill Hospital	KMH	Non-private	England	100	99.77	100	99.61	99.53	96.74	98.14	99.77	98.6	98.83	100	98.37
Royal Derby Hospital	DER	Non-private	England	100	100	94.14	99.63	100	99.86	98.64	98.5	100	99.86	99.86	98.23
Leeds General Infirmary	LGI	Non-private	England	100	99.96	97.31	100	100	97.47	97.05	97.74	99.96	100	99.87	99.7

Excellent

# % Completeness



2012 data: Ludman

## England NHS

				Date of birth	Sex	Medical history	Pre-procedure shock	Procedure urgency	Vessels treated	Renal disease	Diabetes	Discharge date	Discharge status	PCI hospital outcome	NHS number	
Leeds General Infirmary	LGI	Non-private	England	100	99.96	97.31	100	100	97.47	97.05	97.74	99.96	100	99.87	99.7	
John Radcliffe Hospital	RAD	Non-private	England	99.94	100	100	100	100	100	100	89.33	100	100	100	92.73	
The Great Western Hospital	PMS	Non-private	England	100	99.76	93.95	100	99.76	100	97.34	100	99.03	99.03	100	99.76	
University College Hospital	UCL	Non-private	England	100	100	97.47	100	100	100	98.43	99.16	95.78	96.51	100	97.08	
Sandwell General Hospital	SAN	Non-private	England	100	100	100	100	100	96.38	95.47	99.52	100	100	95.87	99.52	
Basilston Hospital	BAS	Non-private	England	100	100	93.64	98.31	100	100	98.76	96.37	99.83	100	99.95	99.79	
Hammersmith Hospital	HAM	Non-private	England	99.94	100	100	99.9	98.66	98.28	98.09	95.36	98.35	100	98.09	97.84	
Royal Brompton Hospital	NHB	Non-private	England	100	100	98.74	100	100	98.86	90.78	97.91	100	100	98.86	93.02	
Pinderfields General Hospital	PIN	Non-private	England	100	100	100	99.54	100	100	99.66	85.57	100	100	100	100	
Barts and the London	BAL	Non-private	England	98.5	98.54	91.27	99.79	99.91	99.58	99.44	99.53	99.01	99.72	98.68	85.9	
Royal Sussex County Hospital	RSC	Non-private	England	100	100	94.91	100	100	100	99.88	97.96	100	99.63	97.78	99.53	
Bedford Hospital	BED	Non-private	England	100	100	83.87	100	100	100	99.41	98.83	100	100	100	100	
Birmingham City Hospital	DUD	Non-private	England	100	99.8	100	100	100	98.03	91.88	97.03	99.8	100	94.97	97.82	
St George's Hospital	GEO	Non-private	England	100	100	93.95	93.1	100	100	95.71	99.46	99.59	99.59	99.73	92.84	
Bradford Royal Infirmary	BRD	Non-private	England	99.53	100	99.53	100	100	93.7	92.8	99.07	99.53	99.53	84.57	96.26	
King's College Hospital	KCH	Non-private	England	100	100	94.59	100	100	96.56	95.18	99.27	95.18	99.6	99.59	95.43	
Worthing Hospital	WRG	Non-private	England	100	99.38	86.46	100	100	100	94.58	99.79	99.17	99.79	100	99.58	
Dorset County Hospital	WDH	Non-private	England	99.63	99.07	87.76	100	99.58	98.53	98.89	99.26	97.77	98.7	98.32	90.17	
Whipps Cross Hospital	WHC	Non-private	England	100	100	100	100	100	100	100	77.27	100	100	100	100	
Bristol Royal Infirmary	BRI	Non-private	England	100	99.86	86.18	99.91	100	99.27	95.46	96.83	99.86	99.93	99.85	99.64	
Birmingham Heartlands Hospital	EBH	Non-private	England	100	100	96.91	98.31	99.94	96.8	90.17	94.86	99.83	99.54	99.69	96.38	
University Hospital of North Staffordshire	STO	Non-private	England	99.95	99.95	99.79	100	100	97.29	91.43	98.77	99.3	98.02	91.36	99.57	
Watford General Hospital	WAT	Non-private	England	100	100	100	98.55	100	100	100	97.24	95.17	84.48	100	98.25	
Salisbury District Hospital	SAL	Non-private	England	100	100	100	100	100	94.7	93.61	98.63	97.95	97.95	92.21	92.2	
Harefield Hospital	HH	Non-private	England	100	100	96.52	100	100	97.68	85.25	96.24	99.93	100	98.7	97.55	
Queen Elizabeth Hospital Woolwich	GWH	Non-private	England	100	100	100	90.67	99.18	98.77	96.31	90.98	97.95	99.18	100	91.39	
Medway Maritime Hospital	MDW	Non-private	England	100	99.35	100	85.71	100	99.35	94.16	92.86	100	100	99.35	70.13	
Cumberland Infirmary	CMI	Non-private	England	100	100	95.21	100	97.46	93.64	94.17	96.25	97.71	97.08	98.31	96.88	
Basingstoke and North Hampshire Hospital	NHH	Non-private	England	100	100	100	100	100	100	100	64.02	100	100	100	99.37	
Darent Valley Hospital	DVH	Non-private	England	100	100	98.89	99.24	100	100	100	70.48	99.63	94.46	96.31	100	98.88

Almost Excellent

# % Completeness



2012 data: Ludman

## England NHS

### Room for Improvement

### Room for Improvement

	Date of birth	Sex	Medical history	Pre-procedure shock	Procedure urgency	Vessels treated	Renal disease	Diabetes	Discharge date	Discharge status	PCI hospital outcome	NHS number
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Royal Bournemouth General Hospital	BOU	Non-private	England	100	100	83.33	100	100	100	86.03	94.02	94.34	99.86	100	99.82
Calderdale Royal Hospital	RHI	Non-private	England	100	100	83.25	99.65	100	96.35	91.26	98.06	100	87.38	100	99.76
University Hospital Coventry	WAL	Non-private	England	100	100	93.28	100	100	100	95.68	99.62	99.62	100	62.8	97.98
Musgrove Park Hospital	MPH	Non-private	England	99.72	99.58	78.75	100	100	84.39	99.29	100	99.58	99.58	84.7	99
Lincoln County Hospital	LIN	Non-private	England	100	100	99.84	86.74	100	99.68	85.21	76.15	99.84	95.87	99.84	100
Manchester Royal Infirmary	MRI	Non-private	England	100	100	100	99.82	100	98.8	86.56	92.82	100	100	64.48	94.18
Tunbridge Wells Hospital	KSX	Non-private	England	100	100	86.58	99.28	100	100	99.68	86.26	84.03	84.66	100	98.4
Nottingham City Hospital	CHN	Non-private	England	99.75	99.67	81.4	100	99.83	100	74.98	85.15	99.25	99.33	100	98.91
William Harvey Hospital	WHH	Non-private	England	100	100	83.22	96.52	99.89	98.88	77.44	87.78	97.67	97.78	97.99	97.78
Scunthorpe General Hospital	SCU	Non-private	England	100	100	83.92	96.15	100	100	88.42	80.39	82.96	94.53	100	99.68
Royal Albert Edward Infirmary	AEI	Non-private	England	100	98.62	99.54	63.35	90.65	98.32	95.39	97	87.79	94.47	99.04	87.79
Ealing Hospital	EAL	Non-private	England	100	99.13	100	59.17	100	100	96.52	69.13	97.83	96.96	99.13	92.98
Wycombe Hospital	AMG	Non-private	England	100	99.48	87.09	99.22	100	100	97.21	97.38	67.54	67.54	99.82	100
Royal United Hospital Bath	BAT	Non-private	England	100	100	44.44	99.62	100	100	78.04	76.19	94.97	94.97	100	98.93
Northern General Hospital	NGS	Non-private	England	99.94	100	93.63	100	100	100	96.84	98.24	69.42	65.78	56.9	99.88
Northwick Park Hospital	NPH	Non-private	England	100	99.63	99.82	100	98.15	94.44	50.18	63.65	68.82	88.75	100	94.27
East Surrey Hospital	ESU	Non-private	England	100	100	100	57.87	100	81.25	69.32	51.42	100	99.72	100	99.43
Spire Bristol	GHB	Non-private	England	100	100	50	0	100	100	83.33	91.67	100	100	100	0
Papworth Hospital	PAP	Non-private	England	100	99.9	63.71	100	100	100	89.91	14.64	37.76	39.08	100	99.71







# % Completeness

For next year

Creatinine	Height	Weight	STEMI Onset location
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	Code			Date of birth	Sex	Medical history	Pre-procedure shock	Procedure urgency	Vessels treated	Renal disease	Diabetes	Discharge date	Discharge status	PCI hospital outcome	NHS number	Creatinine	Height	Weight	STEMI Onset location
Conquest Hospital	CGH	NHS	E	100	100	100	100	100	100	100	100	100	100	100	99.5	23.06	92.89	92.24	59.09
Eastbourne DGH	DGE	NHS	E	100	100	100	100	100	100	100	100	100	100	100	99.7	19.66	91.01	89.89	72.16
Frimley Park Hospital	FRM	NHS	E	100	100	100	100	100	100	100	100	100	100	100	100	50.82	27	45.07	100
Frenchay Hospital	FRY	NHS	E	100	100	100	100	100	100	100	100	100	100	100	96.7	100	99.06	100	100
Queen Elizabeth Hospital, Edgbaston	QEB	NHS	E	100	100	100	100	100	100	100	100	100	100	100	98.8	99.89	99.89	99.89	100
Royal Devon & Exeter Hospital	RDE	NHS	E	100	100	100	100	100	100	100	100	100	100	100	99.1	76.65	98.93	99.47	95.93
Wexham Park Hospital	WEX	NHS	E	100	100	100	100	100	100	100	100	100	100	100	95.7	50.53	97.35	96.83	6.82
Kettering General Hospital	KGH	NHS	E	100	100	100	100	100	100	100	100	99.93	100	100	99.6	46.2	57.8	61.6	69.04
Liverpool Heart and Chest Hospital	BHL	NHS	E	100	100	100	100	100	100	100	100	99.94	99.97	100	99.7	11.16	9.39	9.29	86.24
Worcestershire Royal Hospital	WRC	NHS	E	100	100	100	100	100	100	99.86	100	100	100	100	100	97.39	100	100	98.6
Sunderland Royal Hospital	SUN	NHS	E	100	100	100	100	100	100	100	100	99.75	100	100	95.9	50.89	85.5	82.44	96.15
Wythenshawe Hospital	WYT	NHS	E	100	100	100	100	100	100	99.66	100	100	100	100	99.6	98.7	3.15	3.84	98.54
New Cross Hospital	NCR	NHS	E	100	100	99.61	100	100	100	99.68	100	100	100	100	100	94.42	37.7	37.96	99.62
St Peter's Hospital	SPH	NHS	E	99.76	100	100	100	100	100	100	99.76	100	100	99.76	95.0	93.4	17.92	19.34	100
Torbay Hospital	TOR	NHS	E	100	100	99.78	100	100	100	99.55	100	99.78	100	100	99.7	97.54	74.94	88.59	97.18
Castle Hill Hospital	CHH	NHS	E	100	100	98.58	100	100	100	100	100	100	100	99.94	99.8	99.58	93.65	97.98	97.69
Northampton General Hospital	NTH	NHS	E	100	100	100	99.4	100	99.62	100	100	99.62	99.62	100	99.2	50	27.69	91.54	100
Queen Alexandra Hospital	QAP	NHS	E	99.65	99.91	100	100	100	99.47	100	99.56	100	99.56	100	99.0	98.78	44.06	71.24	98.62
Derriford Hospital	PLY	NHS	E	100	100	99.62	99.82	100	99.87	99.24	99.75	99.87	99.87	99.62	99.2	8.49	1.14	2.41	48.95
Southampton General Hospital	SGH	NHS	E	99.48	99.87	99.87	100	100	98.98	99.74	99.61	100	100	100	93.7	99.61	99.48	99.48	97.95
Royal Free Hospital	RFH	NHS	E	100	99.14	99.88	100	100	97.53	100	100	100	100	99.87	96.4	9.71	4.67	5.53	95.2



# Time fields

## Data completeness

---

	<b>Primary PCI</b> (in community at symptom onset)
2.07	Date/time of symptom onset
5.27	Date/time of call for help
2.08	Date/time of arrival at first hospital
5.26	Date/time of arrival at PCI hospital
3.26	Date/time of first balloon inflation

 > 90% completeness in each

# Time fields

2012



2012 data: Ludman

BRD. Bradford Royal Infirmary	100	100	100	100	100	100
CLW. Glan Clwyd Hospital	100	100	100	100	100	100
DVH. Darent Valley Hospital	100	100	100	100	100	100
FRM. Frimley Park Hospital	100	100	100	100	100	100
KMH. Kings Mill Hospital	100	100	100	100	100	100
PIN. Pinderfields General Hospital	100	100	100	100	100	100
SPH. St Peter's Hospital	100	100	100	100	100	100
WEX. Wexham Park Hospital	100	100	100	100	100	100
SCM. James Cook University Hospital	100	100	100	100	99.8	100
RCH. Royal Cornwall Hospital	100	100	100	100	99.4	100
QEB. Queen Elizabeth Hospital, Edgbaston	100	100	100	100	99.2	100
HH. Harefield Hospital	100	100	99.1	99.1	100	100
NCR. New Cross Hospital	100	100	99.1	99.1	99.3	100
CHH. Castle Hill Hospital	99.8	99	99.4	99.8	99.4	100
DUD. Birmingham City Hospital	100	100	99	99	99	100
SGH. Southampton General Hospital	100	98.4	99.2	99.2	99.6	100
KGH. Kettering General Hospital	99.6	100	98.7	99.1	98.7	100
MPH. Musgrove Park Hospital	100	100	99.7	99.4	99.4	99.4
QAP. Queen Alexandra Hospital	98.1	99.4	99.4	99.4	99.4	100
NDR. Norfolk and Norwich University Hospital	98.2	98.9	99.1	99.8	99.3	100
SAN. Sandwell General Hospital	100	100	98	98	99	100
KCH. King's College Hospital	100	100	99	99	99.3	97.6
WYT. Wythenshawe Hospital	98.8	97.2	99	99	100	100
DER. Royal Derby Hospital	100	99.1	98.7	98.7	97.4	100
WDH. Dorset County Hospital	100	100	100	100	100	93.9
PMS. The Great Western Hospital	100	100	96.8	96.8	100	100
GRL. Glenfield Hospital	99.7	96.3	97.9	98.7	100	100
RSC. Royal Sussex County Hospital	99.6	100	96.8	96.8	99.3	100
BHR. Royal Berkshire Hospital	100	97	97.6	97.6	100	100
LGI. Leeds General Infirmary	97	99.7	97.9	98.3	99.1	100
EBH. Birmingham Heartlands Hospital	94.7	99.6	99.2	99.2	99.6	99.6
NTH. Northampton General Hospital	100	100	100	100	91.7	100
LIS. Lister Hospital	100	98.8	96.3	96.3	98.8	100
STH. St Thomas Hospital	100	100	95	95	99	100
FRE. Freeman Hospital	99.2	94.8	96.3	98.7	98.8	100
PLY. Derriford Hospital	99.4	100	95.5	95.5	97.4	100

Excellent

# Time fields

## Data completeness

Room for  
Improvement  
Improvement  
Room for

	2.07 Date/time of symptom onset	5.27 date/time of call for help	2.08 Date/time of arrival at first hospital	5.26 Date/time of arrival at PCI hospital	3.26 Date/time of first balloon inflation	4.04 Discharge date
CMI. Cumberland Infirmary	<b>85.7</b>	100	100	100	100	100
CGH. Conquest Hospital	100	98.5	<b>89.7</b>	97.1	98.5	100
CHN. Nottingham City Hospital	99	94.5	96.5	97.3	98.5	98
WRC. Worcestershire Royal Hospital	98.3	98.3	97.4	97.4	91.3	100
TOR. Torbay Hospital	<b>86.2</b>	99.2	100	100	96.9	100
BOU. Royal Bournemouth General Hospital	100	100	95.7	95.7	100	90.6
RDE. Royal Devon & Exeter Hospital	<b>87.8</b>	100	98.8	99.6	94.9	100
BHL. Liverpool Heart and Chest Hospital	99.3	97.5	92.4	92.8	98.5	100
BRI. Bristol Royal Infirmary	98.2	99.5	90.2	93.8	98.7	100
STO. University Hospital of North Staffordshire	96.5	97	93.8	94.9	97.9	99.8
BAS. Basildon Hospital	99.6	96.8	<b>89.6</b>	94.7	98.9	100
RIA. Aberdeen Royal Infirmary	100	100	96.5	96.5	<b>84.9</b>	100
SUN. Sunderland Royal Hospital	100	100	<b>88.9</b>	<b>88.9</b>	100	100
WRG. Worthing Hospital	100	100	<b>88.9</b>	<b>88.9</b>	100	100
HAM. Hammersmith Hospital	99.4	<b>89.7</b>	95.1	97	97.6	96.4
UHW. University Hospital of Wales	99.7	100	96.6	96.6	<b>88.8</b>	92.4
VIC. Blackpool Victoria Hospital	99.5	99.4	<b>88.9</b>	<b>88.9</b>	99.1	98.3
DGE. Eastbourne DGH	100	100	<b>84.1</b>	<b>88.9</b>	100	100
WAL. University Hospital Coventry	99.7	99.7	<b>86.2</b>	<b>86.2</b>	100	99.7
RFH. Royal Free Hospital	96.4	93.9	<b>89.7</b>	93.9	97	100
RVB. Royal Victoria Hospital	99.5	98	<b>85.3</b>	<b>86.8</b>	98.5	99.5
SAL. Salisbury District Hospital	100	100	100	100	<b>66.7</b>	100
BFT. Belfast City Hospital	100	100	<b>83.3</b>	<b>83.3</b>	100	100
ERI. Royal infirmary of Edinburgh	99.2	<b>87.5</b>	<b>87.5</b>	<b>89.1</b>	99.2	100
KSX. Tunbridge Wells Hospital	100	100	<b>87.5</b>	100	100	<b>75</b>
RAD. John Radcliffe Hospital	91.8	92.2	<b>88.8</b>	<b>89.9</b>	99.6	100
BAL. Barts and the London	93.7	99	<b>85.2</b>	<b>86.5</b>	98.2	99.2
UCL. University College Hospital	96.8	96.8	<b>83.2</b>	<b>85.6</b>	100	97.6
MRI. Manchester Royal Infirmary	96.3	<b>84.8</b>	<b>86.1</b>	<b>87.2</b>	99.3	100
CRG. Craigavon Area Hospital	100	100	97.4	97.4	100	<b>57.9</b>
GEO. St George's Hospital	<b>84.4</b>	<b>89.1</b>	90.5	92.9	94.3	99.8
NGS. Northern General Hospital	100	97.6	90.5	90.5	97.6	<b>71.7</b>

# Time fields

## Data completeness



2012 data: Ludman

Room for  
Improvement

	2.07 Date/time of symptom onset	5.27 date/time of call for help	2.08 Date/time of arrival at first hospital	5.26 Date/time of arrival at PCI hospital	3.26 Date/time of first balloon inflation	4.04 Discharge date
GJH. Golden Jubilee Hospital	91.7	<b>84.7</b>	<b>74.8</b>	97.8	100	96.7
BAT. Royal United Hospital Bath	100	92.5	<b>77.4</b>	<b>77.4</b>	100	98.1
WAT. Watford General Hospital	95	100	<b>77.5</b>	<b>77.5</b>	100	<b>90</b>
AMG. Wycombe Hospital	100	100	<b>83</b>	<b>83</b>	100	<b>73.6</b>
MOR. Morriston Hospital	99.2	97.4	<b>81.3</b>	<b>62.4</b>	99	100
PAP. Papworth Hospital	98.8	93.6	<b>83.2</b>	<b>87.1</b>	98.6	<b>75.2</b>
MAY. Croydon University Hospital	100	100	<b>66.7</b>	<b>66.7</b>	100	100
WHH. William Harvey Hospital	<b>88.7</b>	99.7	<b>79.4</b>	<b>82.2</b>	<b>71.5</b>	96
LIN. Lincoln County Hospital	95.1	<b>54.3</b>	<b>82.7</b>	<b>84</b>	100	100
NHB. Royal Brompton Hospital	95	<b>80</b>	<b>70</b>	<b>75</b>	95	100
BED. Bedford Hospital	100	<b>0</b>	100	100	100	100
FRY. Frenchay Hospital	100	<b>0</b>	100	100	100	100
MDW. Medway Maritime Hospital	100	<b>87.5</b>	<b>62.5</b>	<b>62.5</b>	<b>62.5</b>	100
GWE. Royal Gwent Hospital	<b>66.7</b>	100	100	100	<b>0</b>	100
BLA. Royal Blackburn Hospital	100	<b>40</b>	<b>90</b>	<b>90</b>	<b>40</b>	100
NHH. Basingstoke and North Hampshire Hospital	95.1	<b>38.8</b>	<b>19.4</b>	<b>21.4</b>	100	100
ESU. East Surrey Hospital	<b>33.3</b>	<b>33.3</b>	<b>66.7</b>	<b>66.7</b>	<b>66.7</b>	100
GWH. Queen Elizabeth Hospital, Woolwich	100	<b>0</b>	<b>0</b>	<b>0</b>	100	100
NPH. Northwick Park Hospital	<b>58.3</b>	<b>50</b>	<b>33.3</b>	<b>33.3</b>	<b>25</b>	<b>66.7</b>

# Contents



2012 data: Ludman

- Structure

- Angio and PCI centres and maps
- Total angio and PCI numbers
- No of PCIs per centre and per angio
- PCI pmp and by country and v CABG
- Centre PCI volumes
- PCI operators, by centre, by PPCI
- On call rotas for PPCI
- On site v off site surgical cover
- Day case activity
- Primary PCI units

- NICOR data collection

- Centre participation
- Databases used
- Case ascertainment
- Data completeness

- Appropriateness

- Demographics
- Indication for PCI / Clinical syndrome
- PPCI activity (by unit, pmp, by vessel)
- PCI for out of hospital arrest
- PCI territories / vessels / lesions
- Atherectomy
- Stents (BMS and DES)
- Adjunctive pharmacotherapy
- LV support and shock
- Primary PCI for > 80 yrs
- Additional interventional techniques, devices
- Arterial access (routes)

- Process of care

- Delays to treatment
- NSTEMI (direct v IHT)
- Primary PCI DTB / CTB
- IHT versus Direct admission
- Length of stay

- Outcome

- MACCE
- Peri-procedural complications and by access
- Tracked 30 day mortality
  - Outcome by syndrome
  - Outcome by lesion subset
- Risk adjusted outcome
- Operator reported outcomes

- Adult non coronary intervention

- Septal ablation for HOCM
- Mitral valvuloplasty
- Mitraclip / PFO / ASD closure / LAA occlusion
- Para-prosthetic leak closure
- Renal Denervation
- Percutaneous Pulmonary valve

- TAVI

- Activity by centre
- Demographics
- Valve types
- Delivery approaches by valve type
- Pacing
- Complications

- Conclusions and summary

Appendix: PCI Centre NICOR / CCAD Centre codes

# Appropriateness

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# Demographics

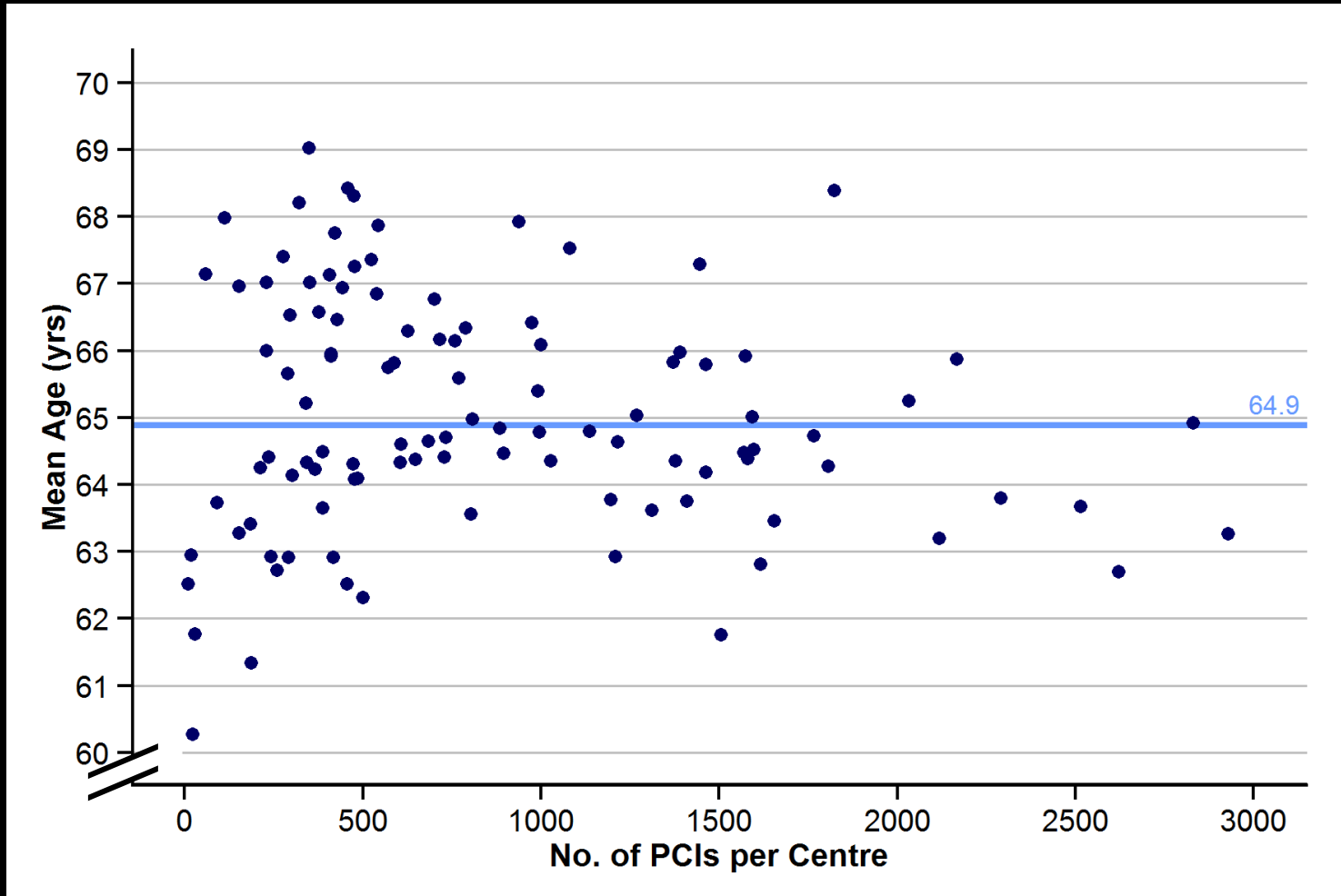
	2007	2008	2009	2010	2011	2012
Age (mean)	64.3	64.4	65.0	65.1	65.3	64.9
Sex (male)	73.6%	73.8%	73.9%	74.0%	74.0%	74.1%
Diabetic	17.5%	18.0%	18.2%	18.7%	19.5%	20.2%
Previous CABG	8.5%	9.1%	8.6%	8.4%	7.9%	8.9%
Previous PCI	18.6%	21.1%	22.3%	22.6%	22.7%	23.5%
Previous MI	29.5%	30.2%	28.8%	28.4%	27.6	26.8%
Current smoker				26.0%	26.1%	25.4%
Ex smoker				39.0%	37.0%	36.9%
Never smoked				35.1%	37.0%	37.7%



# Demographics - Age



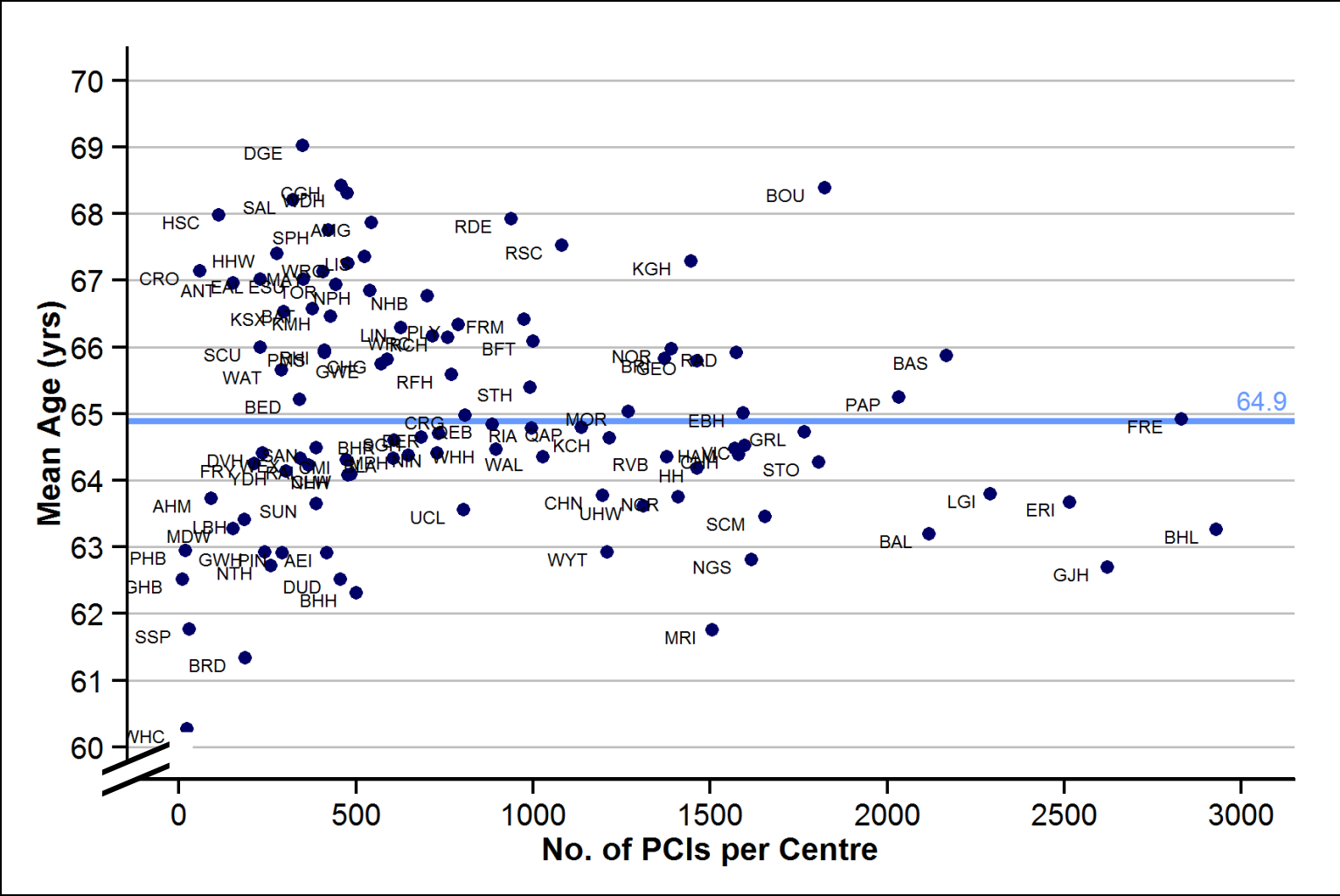
2012 data: Ludman



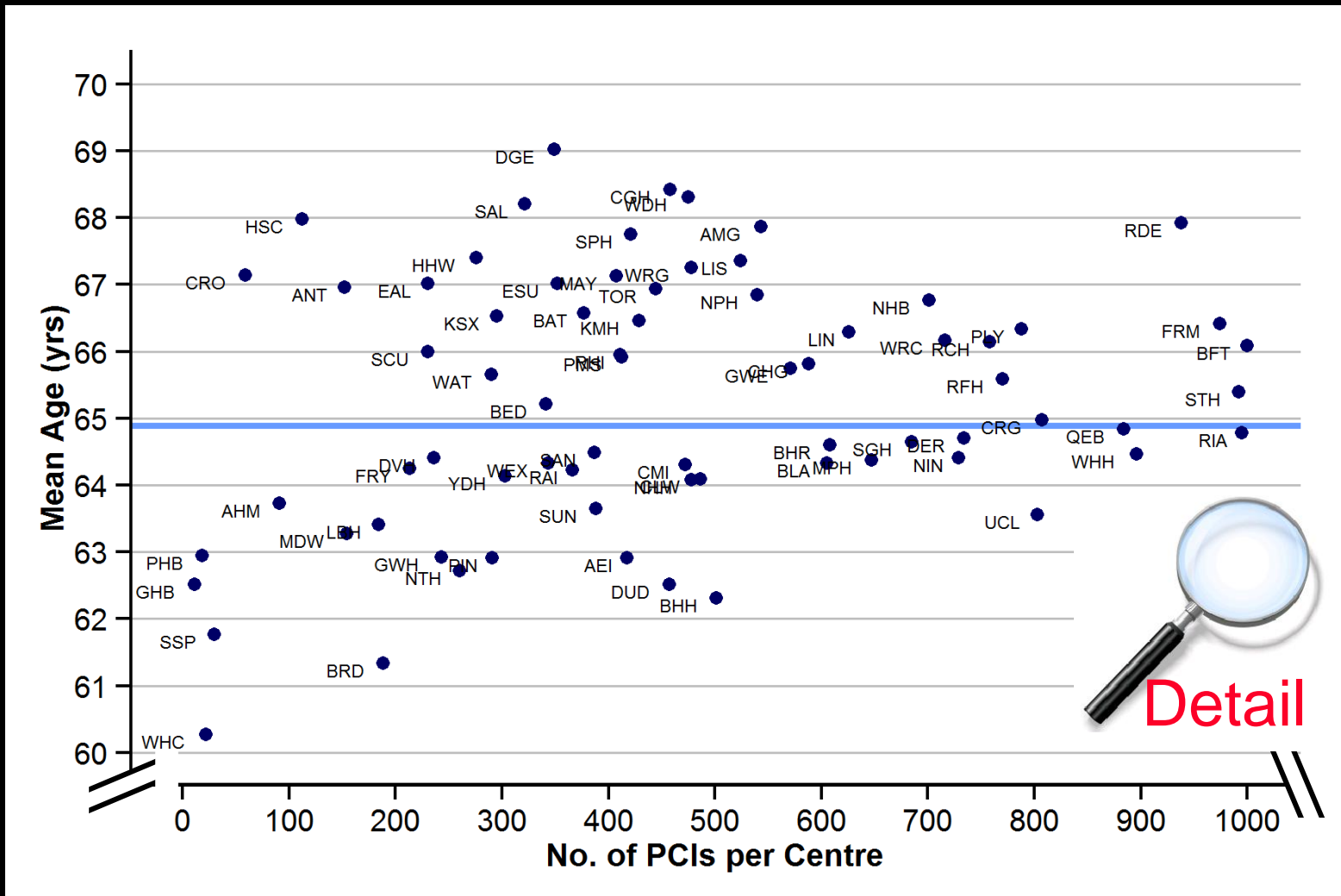
# Demographics - Age



2012 data: Ludman



# Demographics - Age



# Demographics



2012 data: Ludman

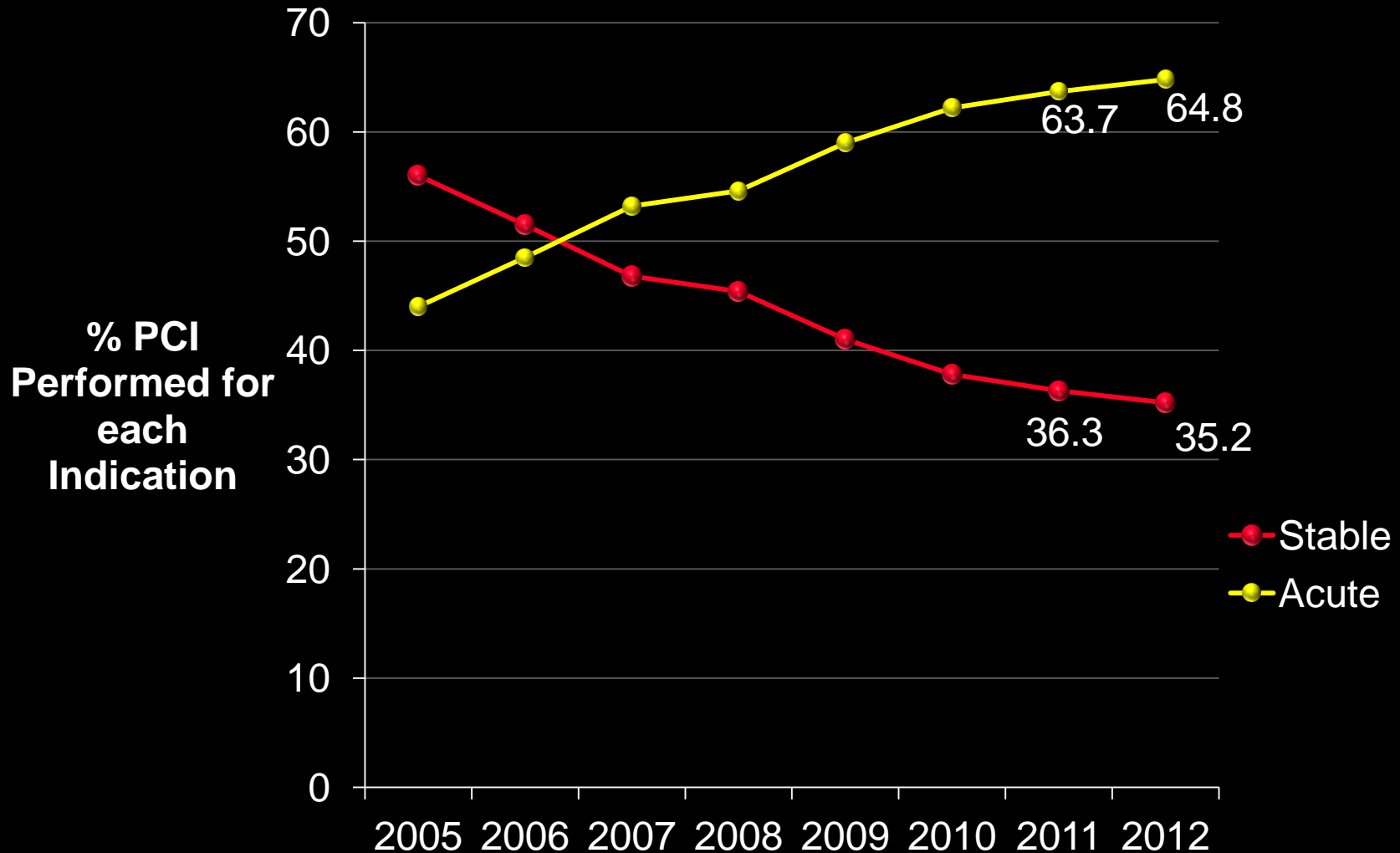
## Ethnic Origin

Year	2007	2008	2009	2010	2011	2012
Data available	43,929	48,581	57,733	63,592	62,993	66,589
European	92.3%	92.0%	93.0%	92.3%	91.8%	92.1%
Asian	6.7%	7.1%	6.16%	6.77%	7.2%	6.9%
Black	0.83%	0.72%	0.71%	0.79%	0.83%	0.79%
Oriental	0.2%	0.17%	0.15%	0.17%	0.17%	0.14%

# Clinical Syndrome



2012 data: Ludman

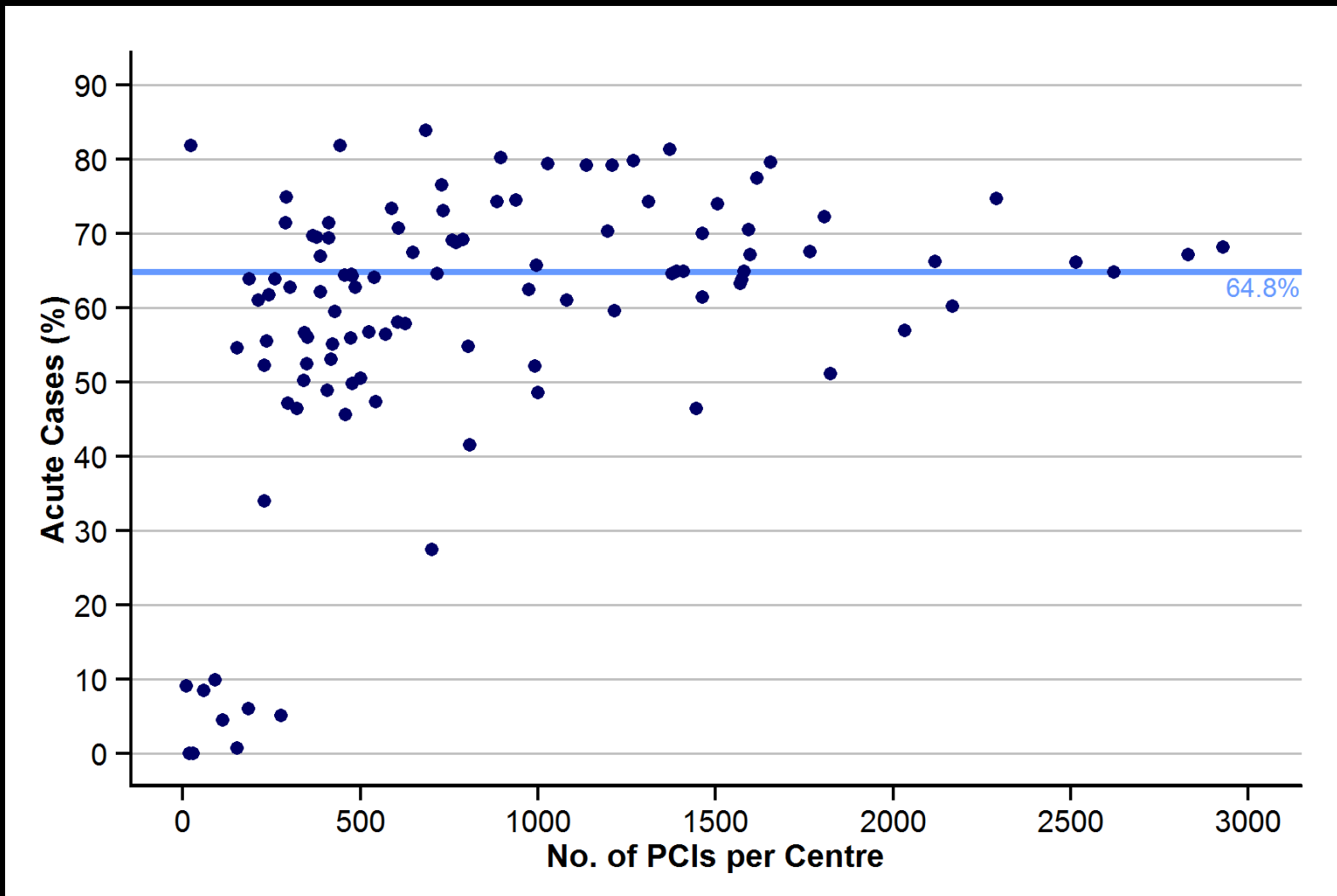


# Clinical Syndrome

- PCI in patients with Acute Syndromes (%)



2012 data: Ludman

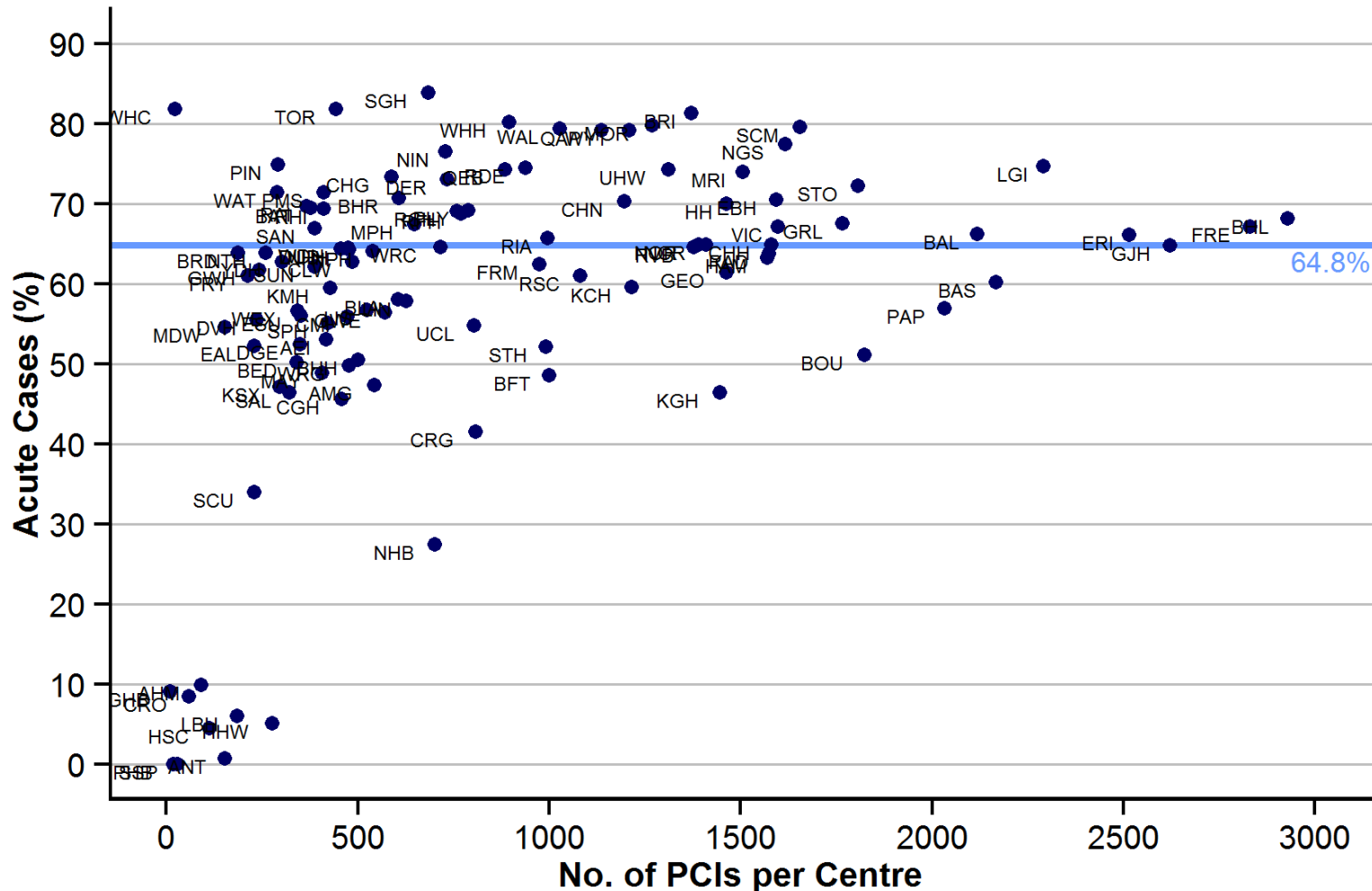


# Clinical Syndrome

- PCI in patients with Acute Syndromes (%)



2012 data: Ludman

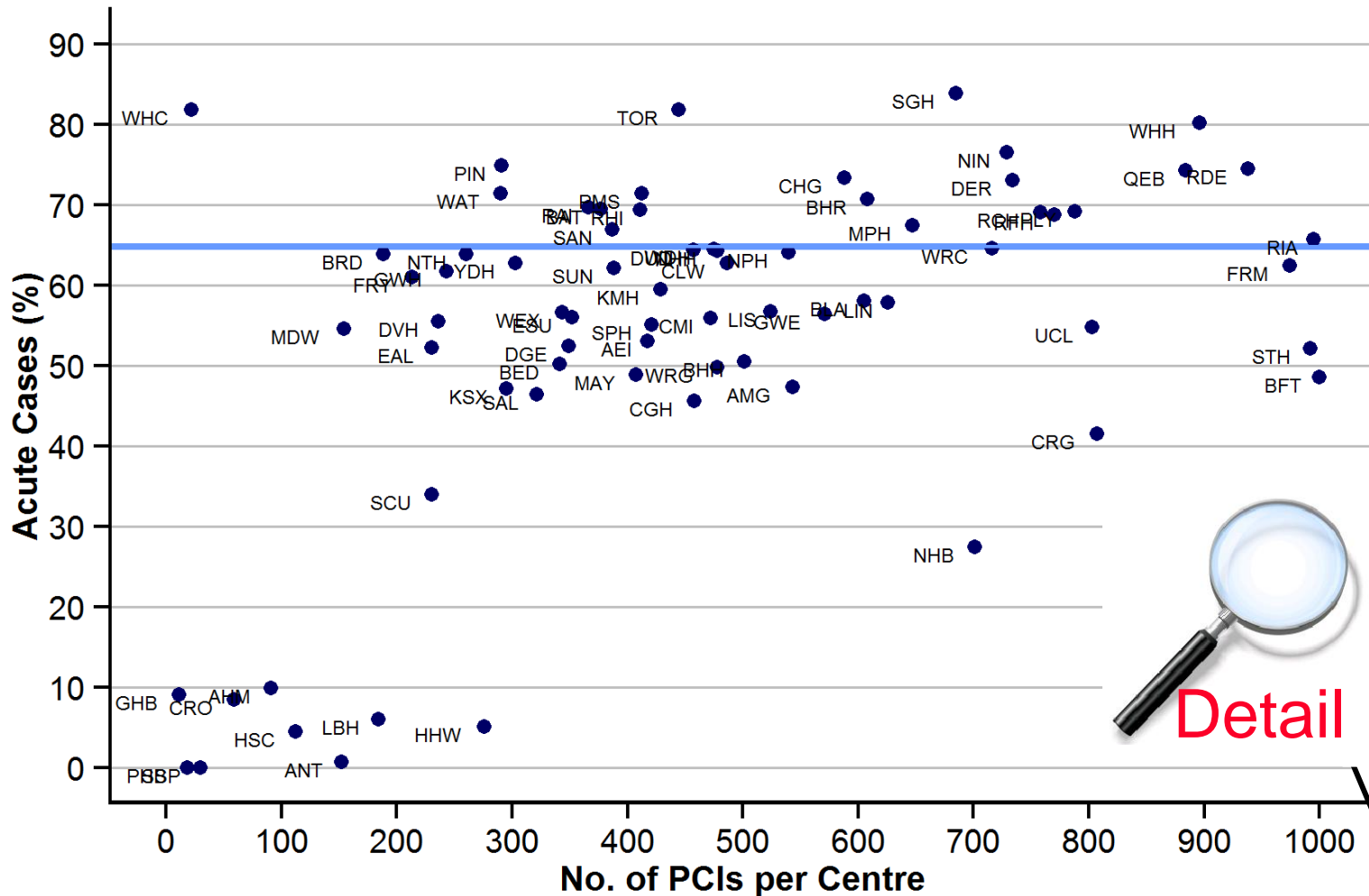


# Clinical Syndrome

- PCI in patients with Acute Syndromes (%)



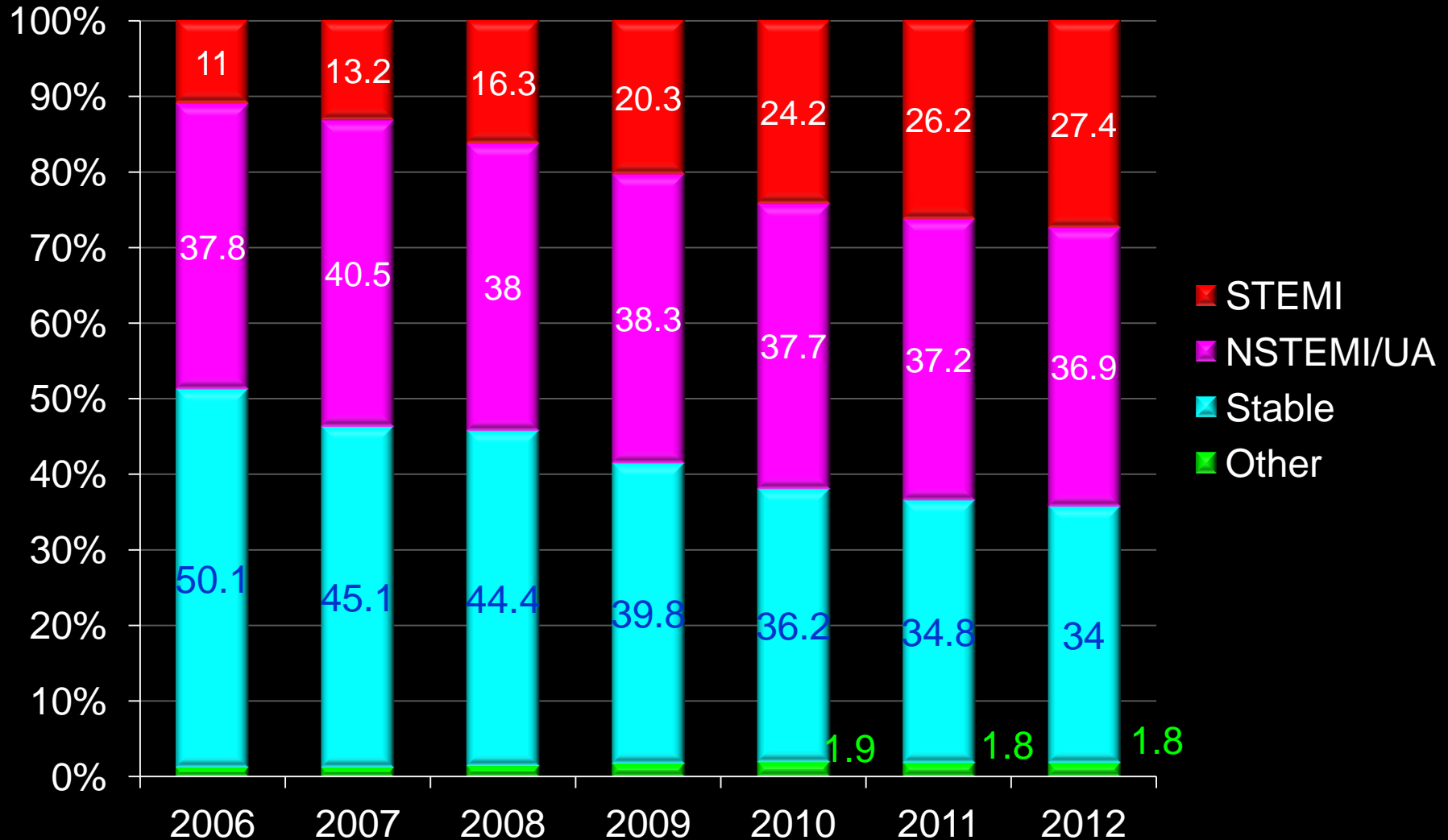
2012 data: Ludman



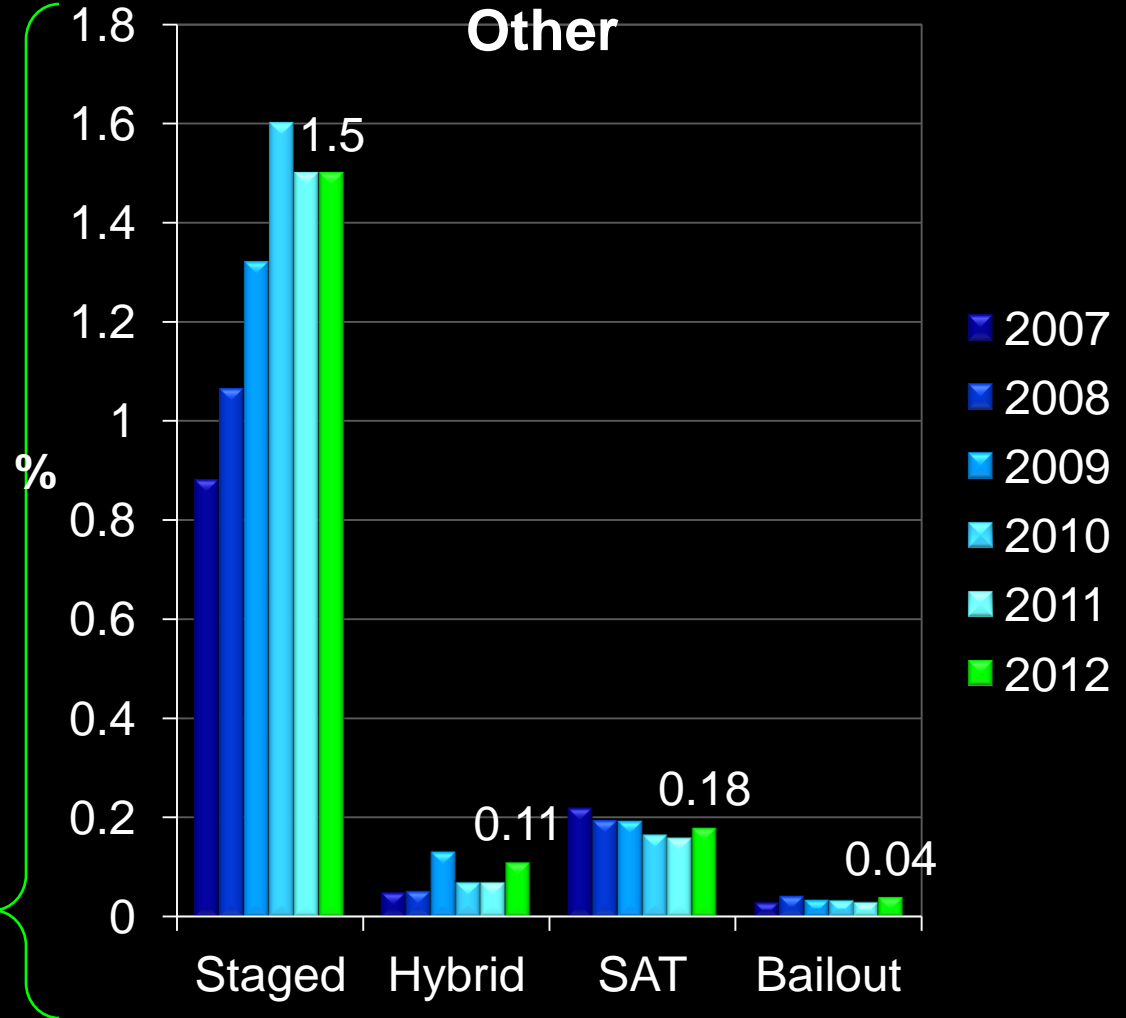
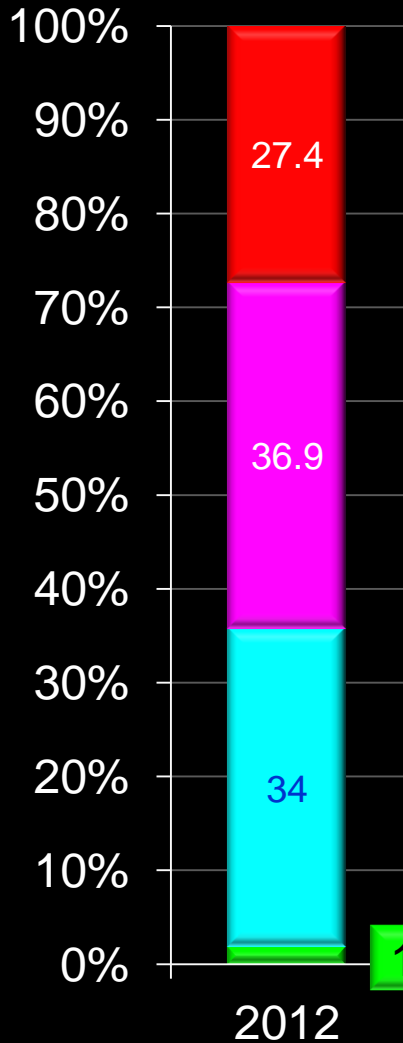
# Indication for PCI



2012 data: Ludman



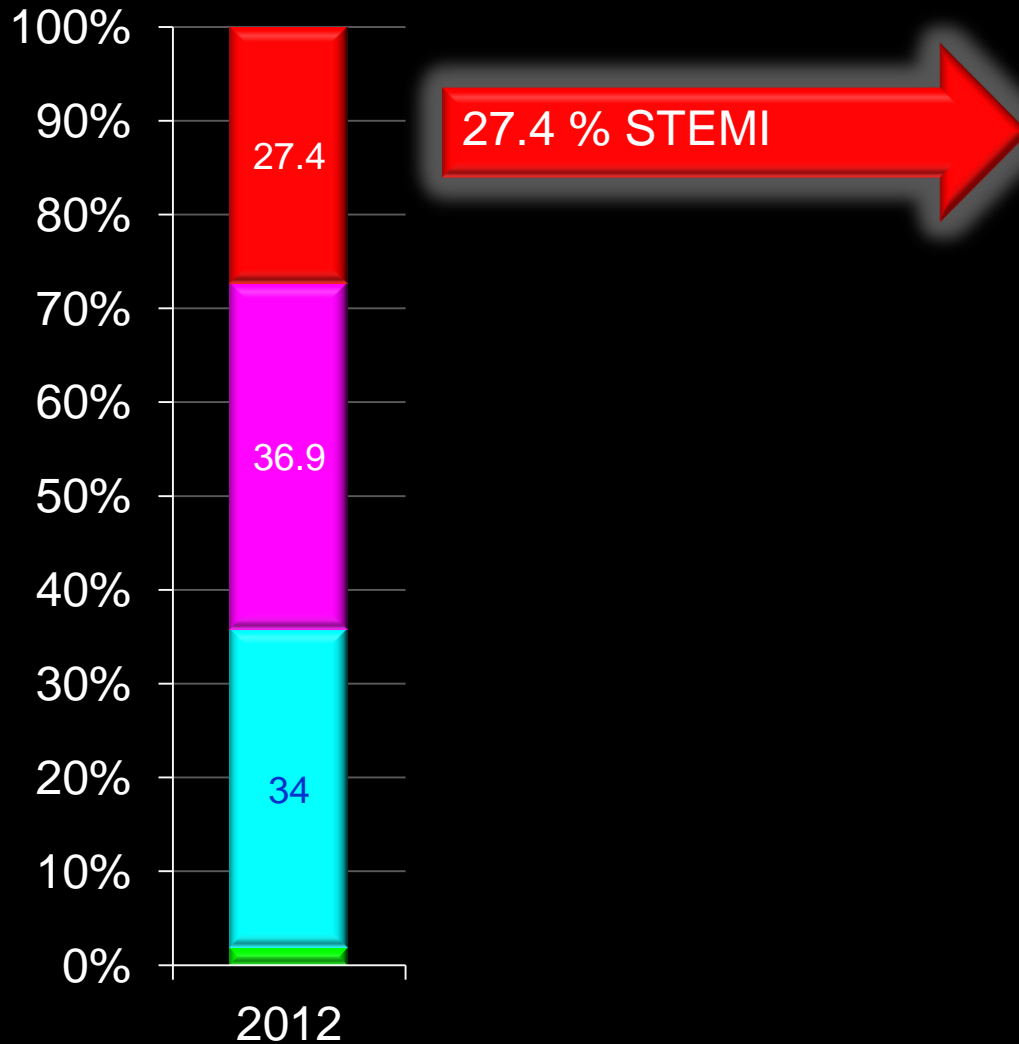
# Indication for PCI



# Indication for PCI



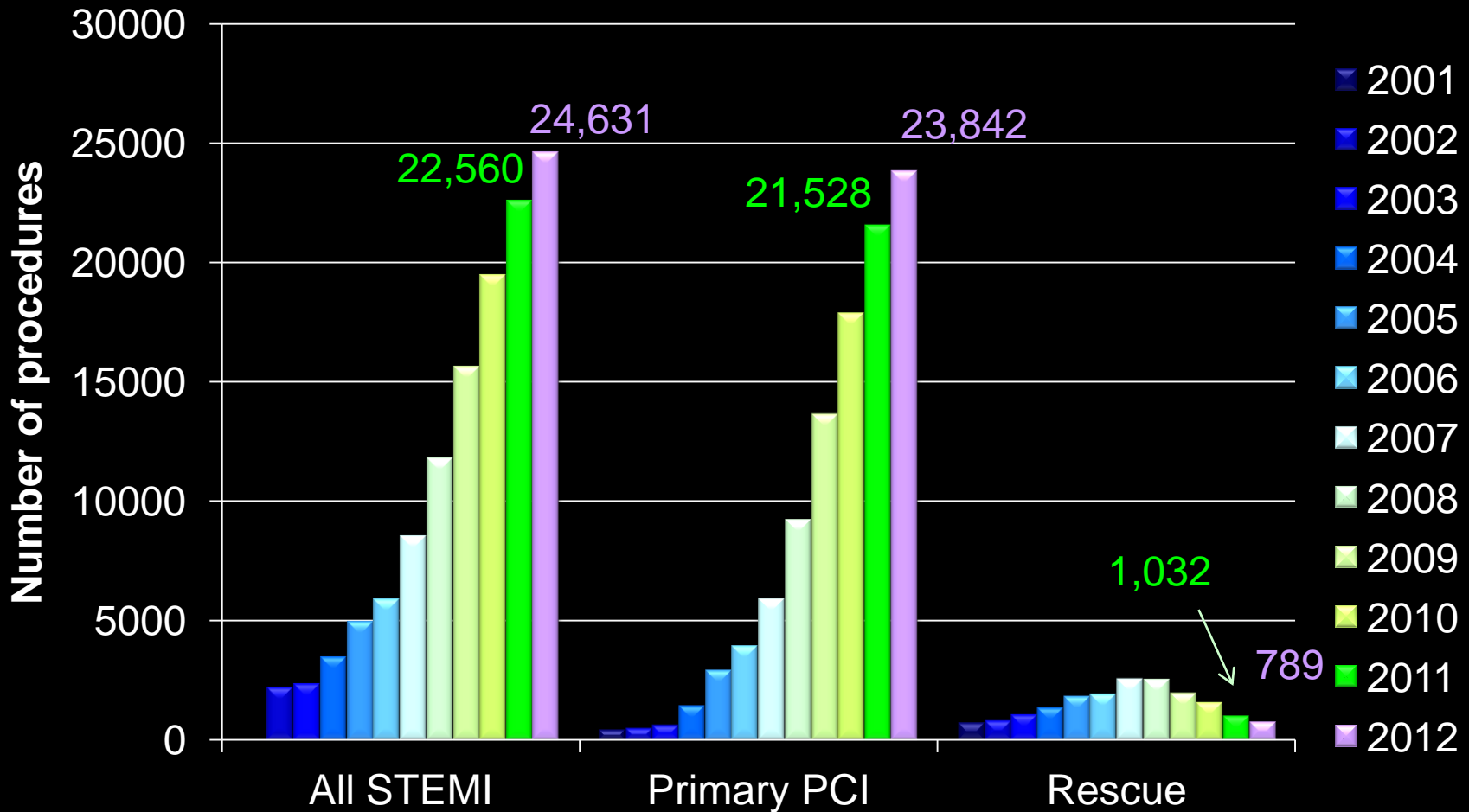
2012 data: Ludman



# PCI for STEMI



2012 data: Ludman

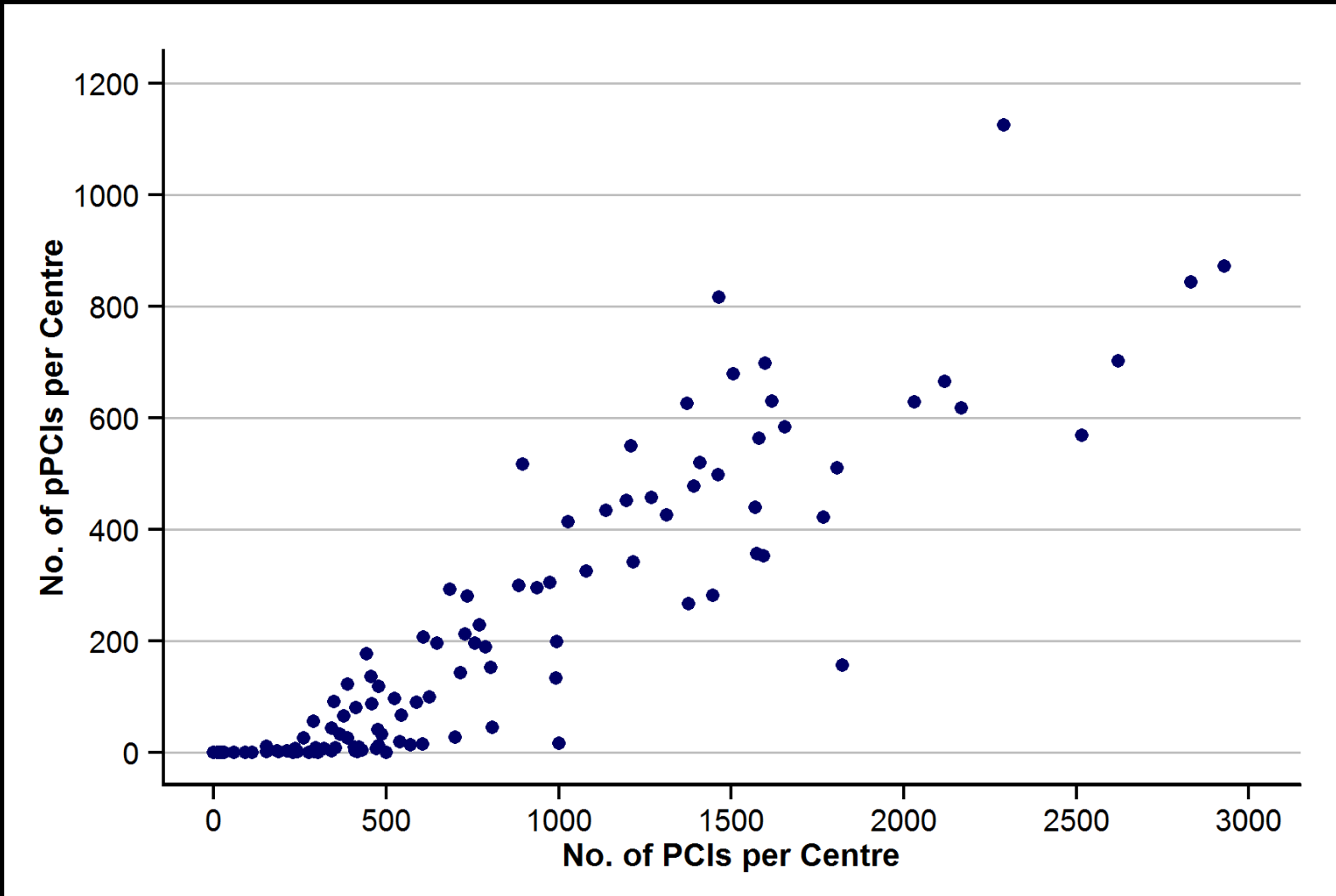


# Primary PCI for STEMI

Absolute number PPCI (2012)



2012 data: Ludman

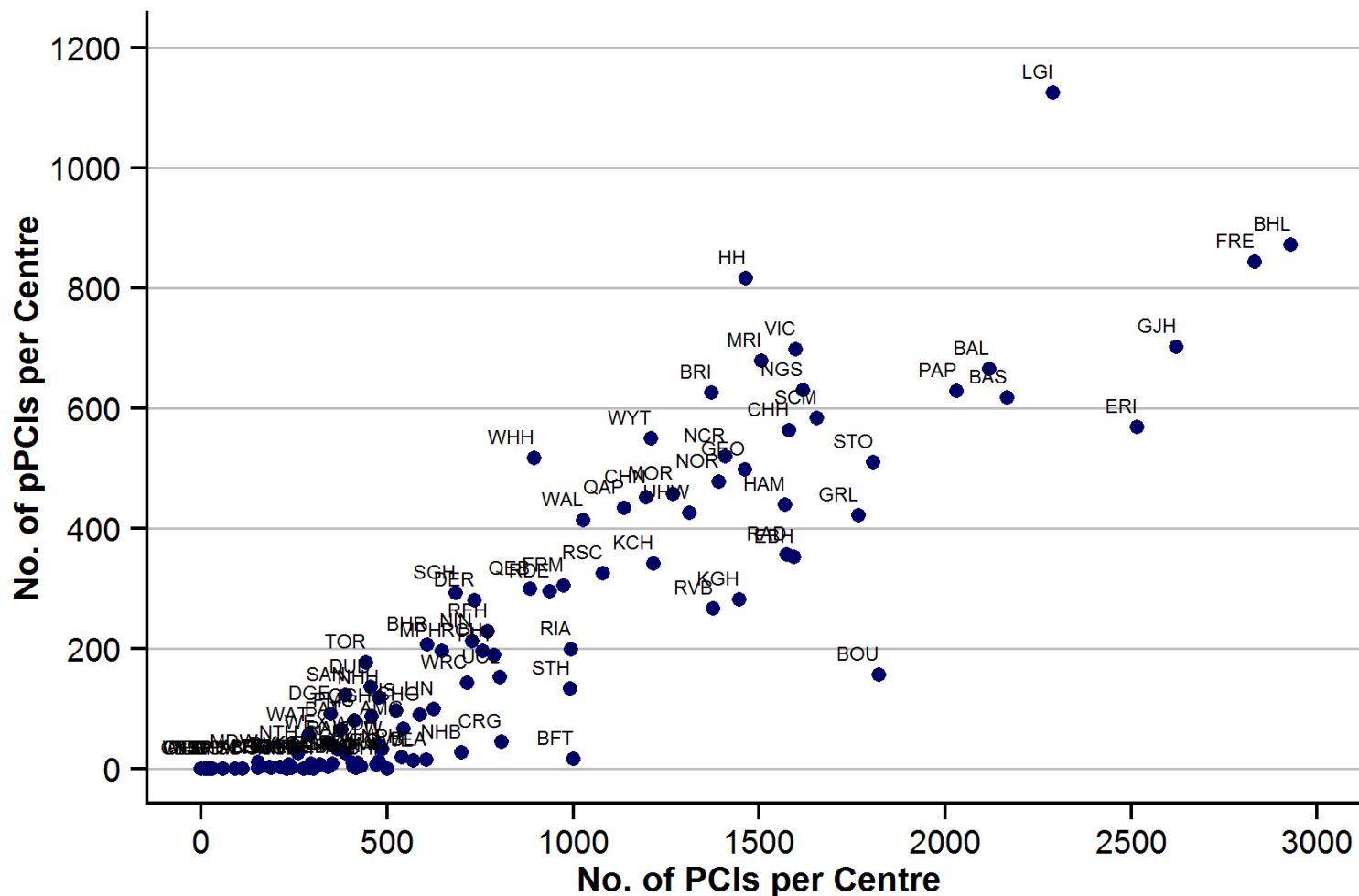


# Primary PCI for STEMI

Absolute number PPCI (2012)



2012 data: Ludman

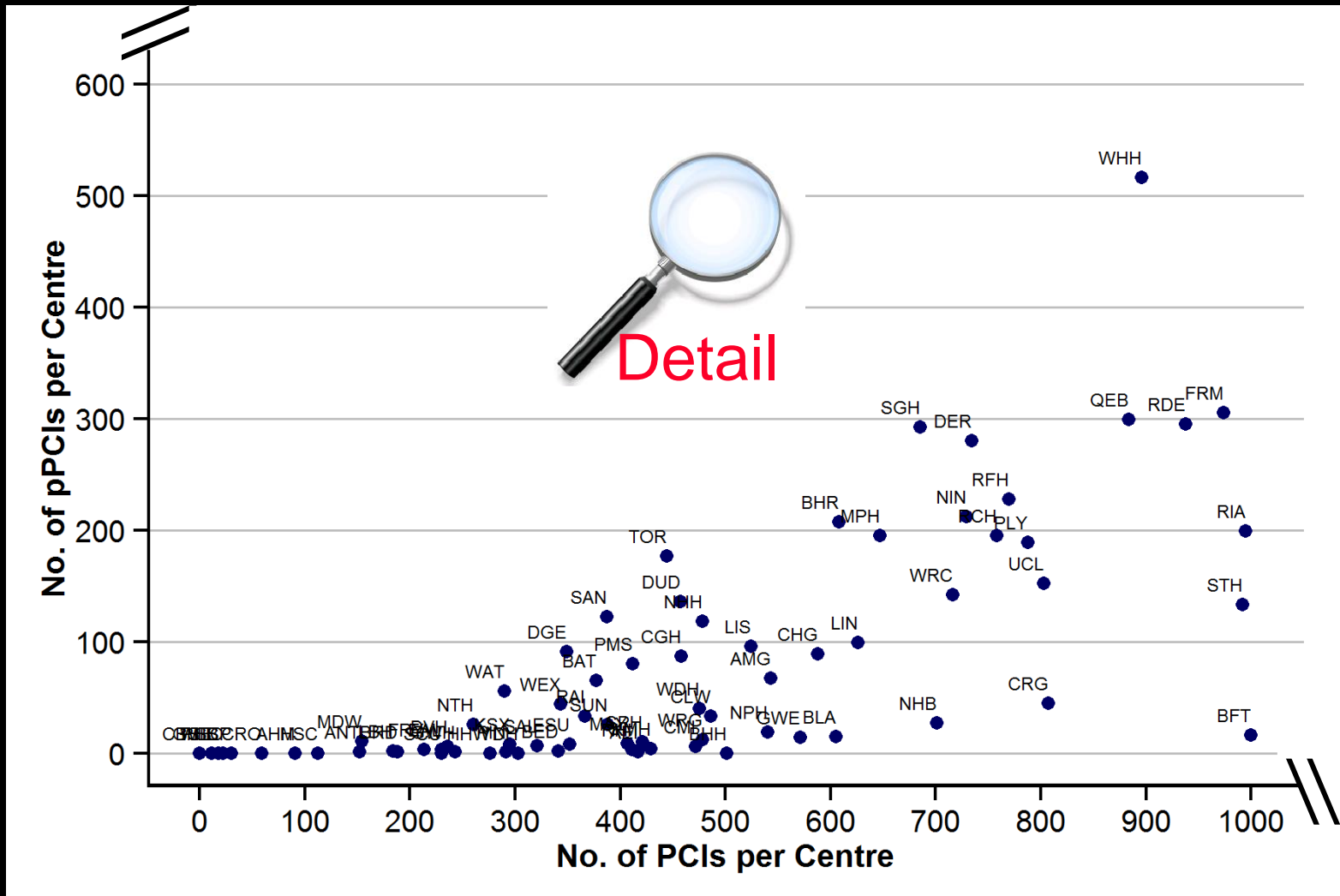


# Primary PCI for STEMI

Absolute number PPCI (2012)



2012 data: Ludman

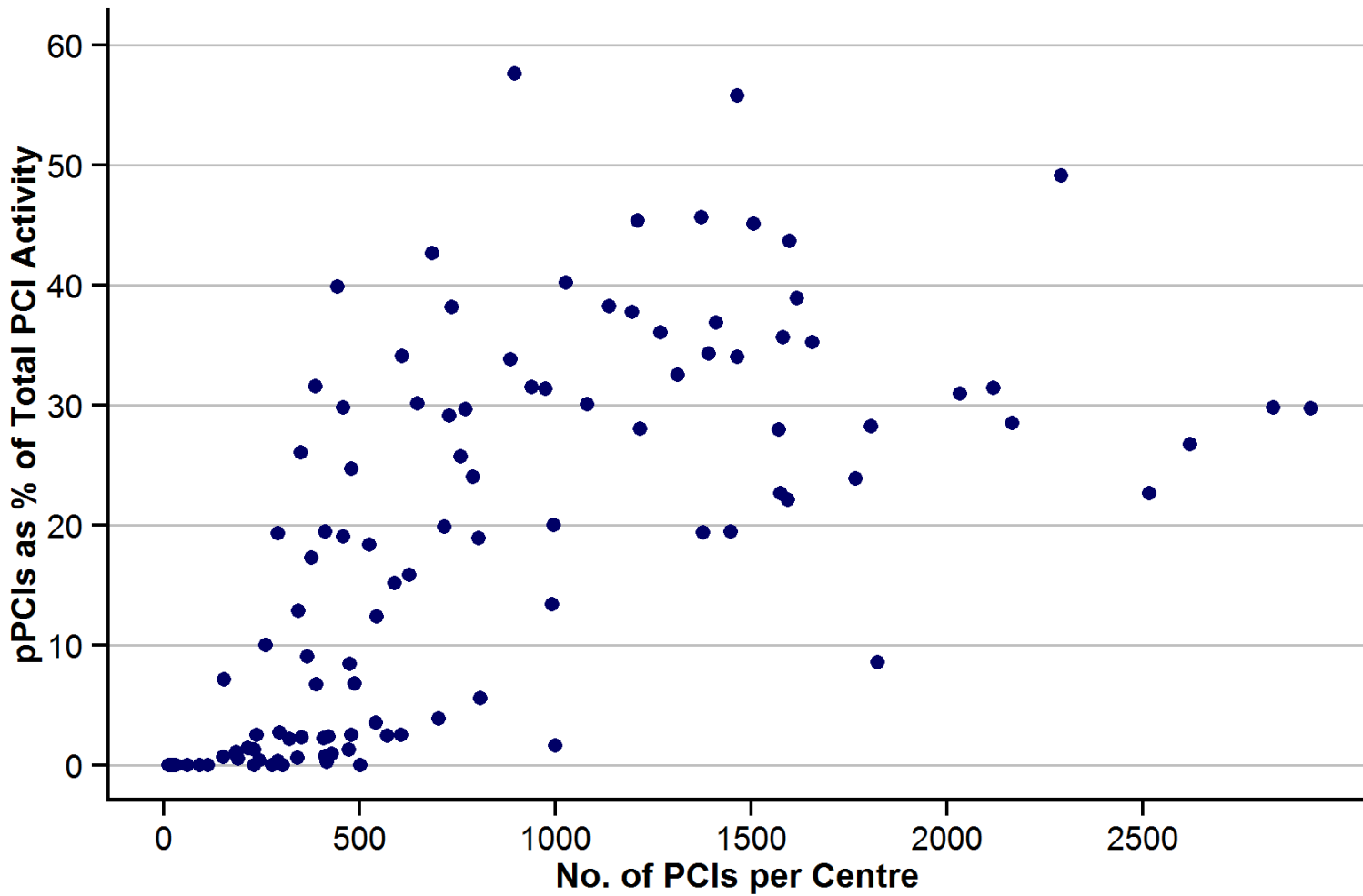


# Primary PCI for STEMI

% PPCI of total activity (2012)



2012 data: Ludman

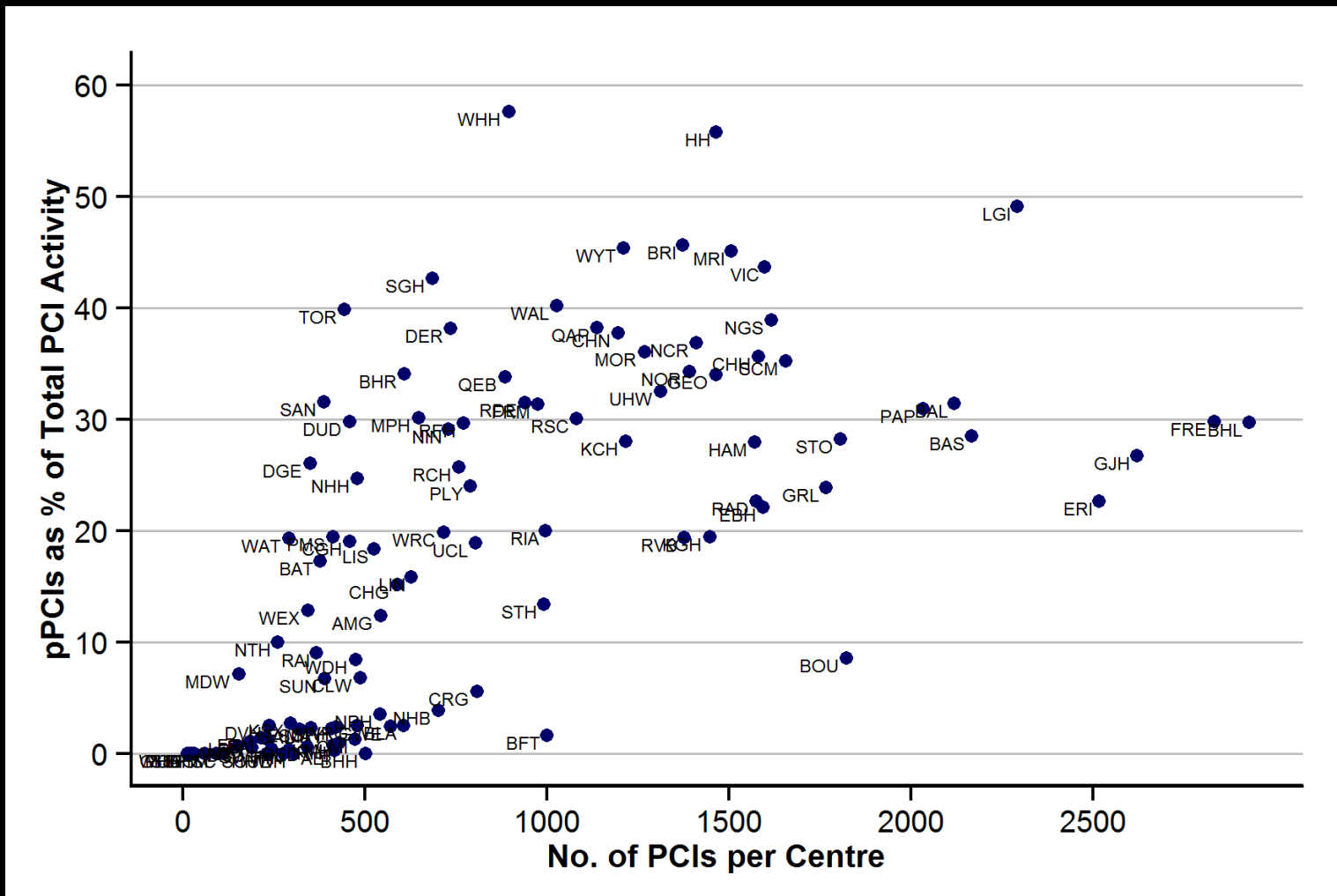


# Primary PCI for STEMI

% PPCI of total activity (2012)



2012 data: Ludman

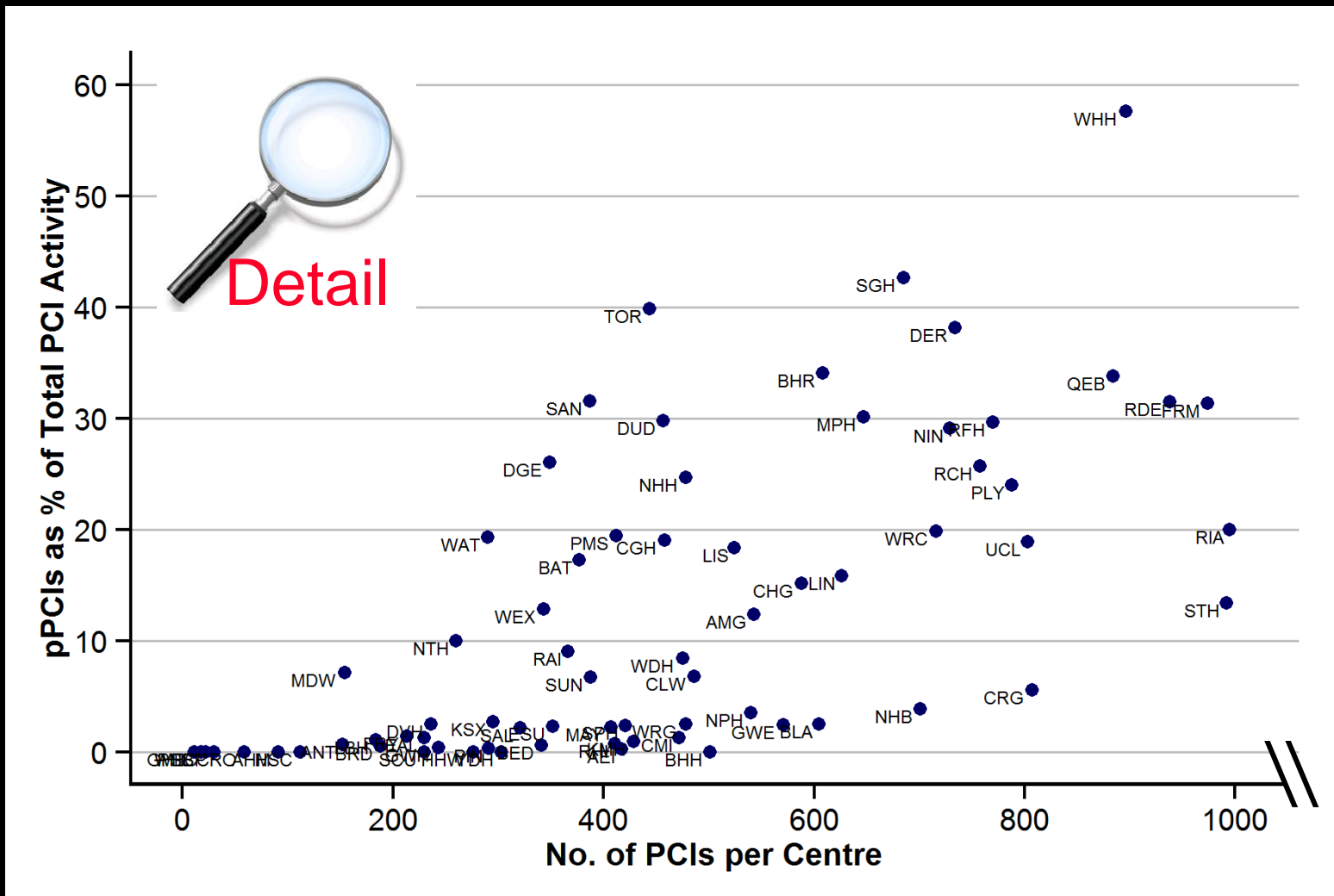


# Primary PCI for STEMI

% PPCI of total activity (2012)



2012 data: Ludman

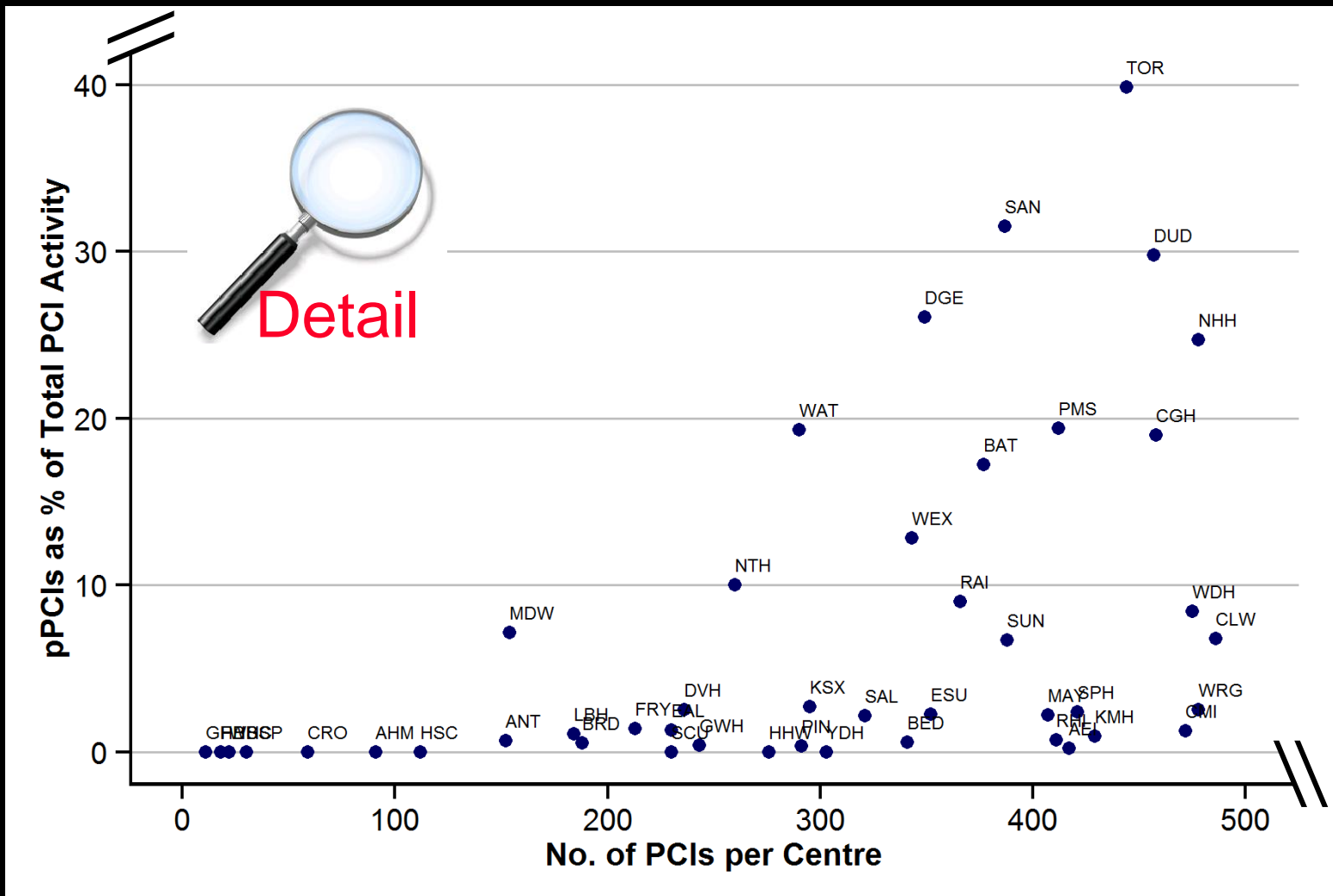


# Primary PCI for STEMI

% PPCI of total activity (2012)



2012 data: Ludman



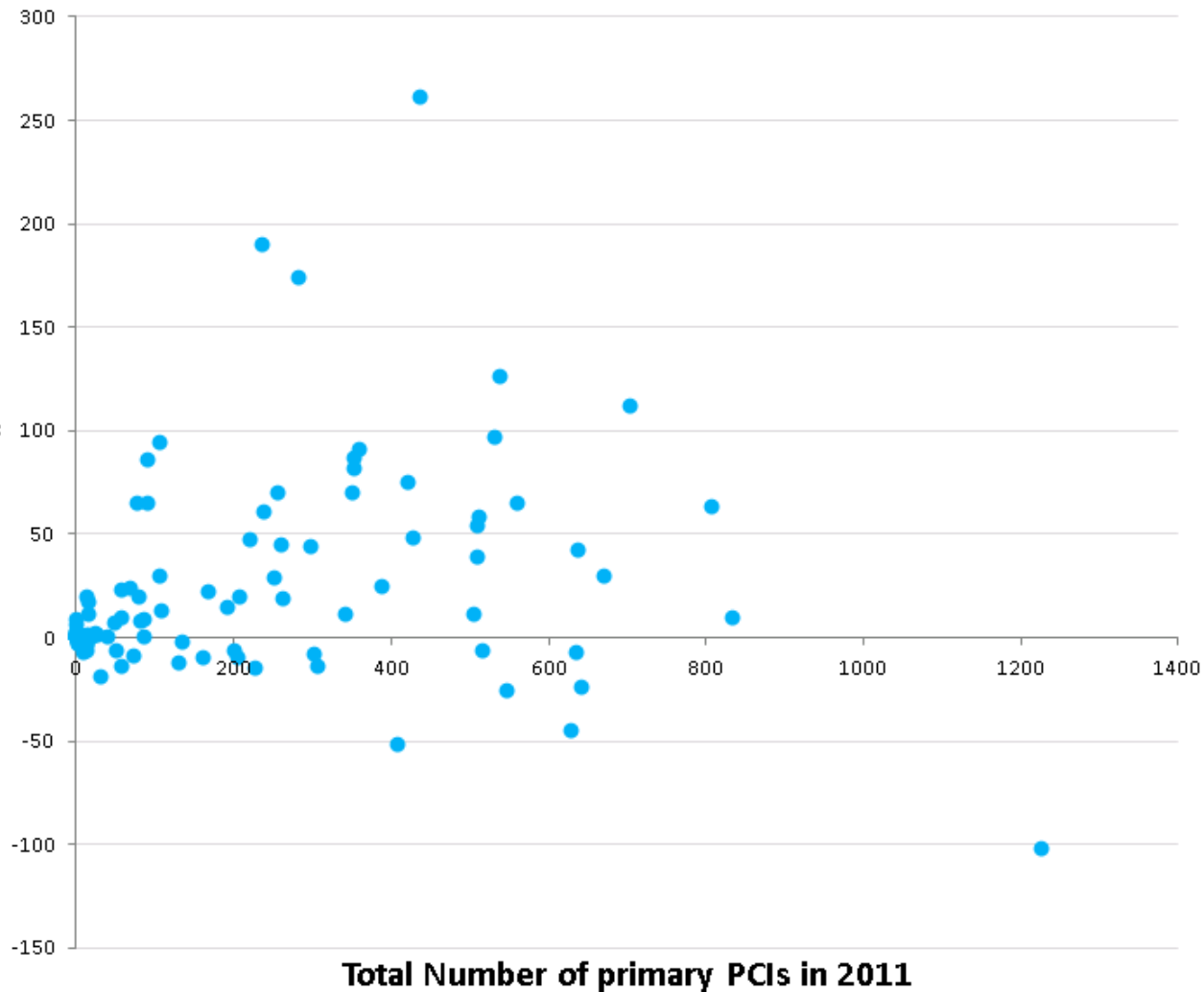
# Primary PCI for STEMI



2012 data: Ludman

## Change in Primary PCI Activity

Increase in No. of  
Primary PCI in  
2012 from 2011



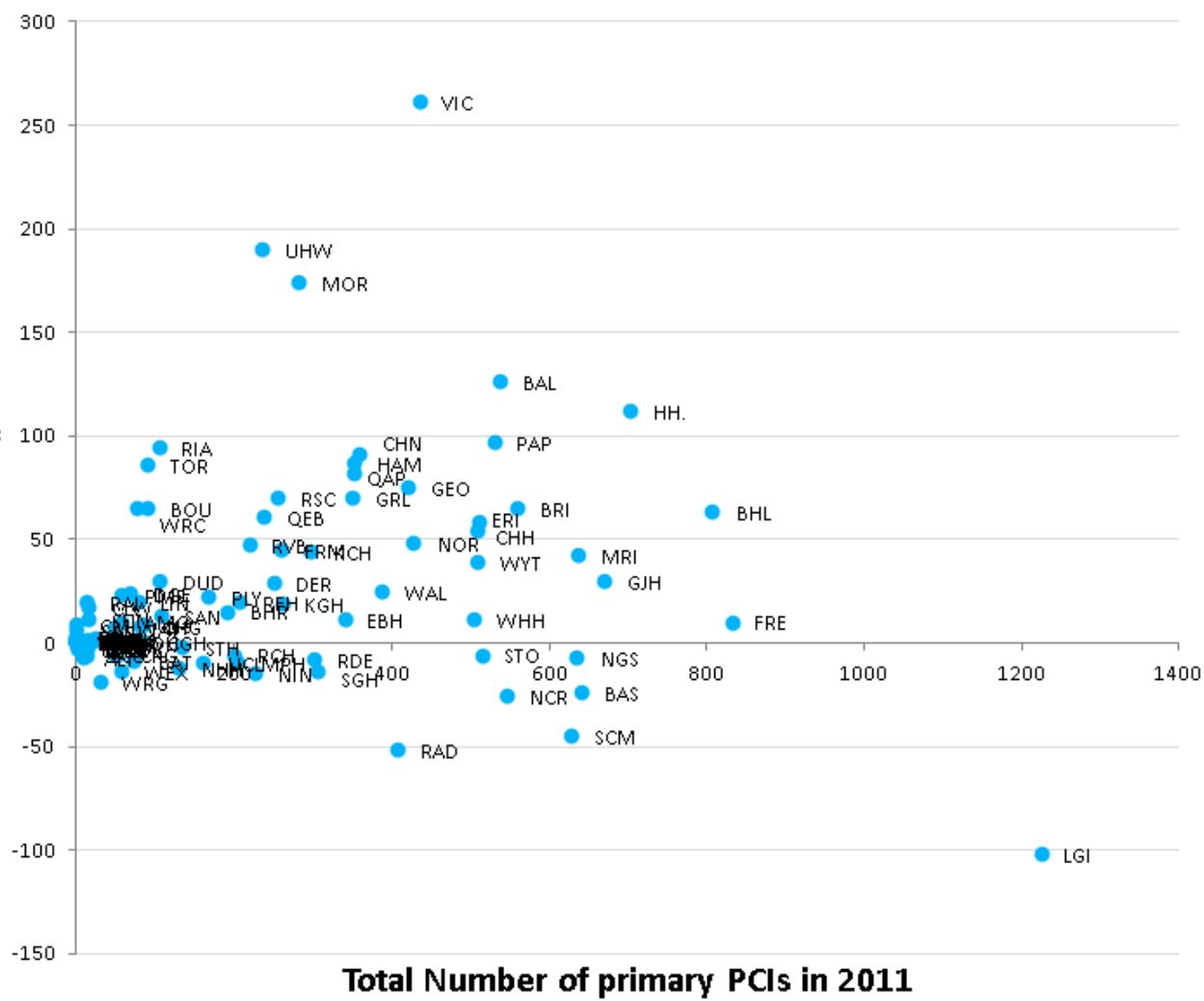
# Primary PCI for STEMI



2012 data: Ludman

## Change in Primary PCI Activity

Increase in No. of Primary PCI in 2012 from 2011



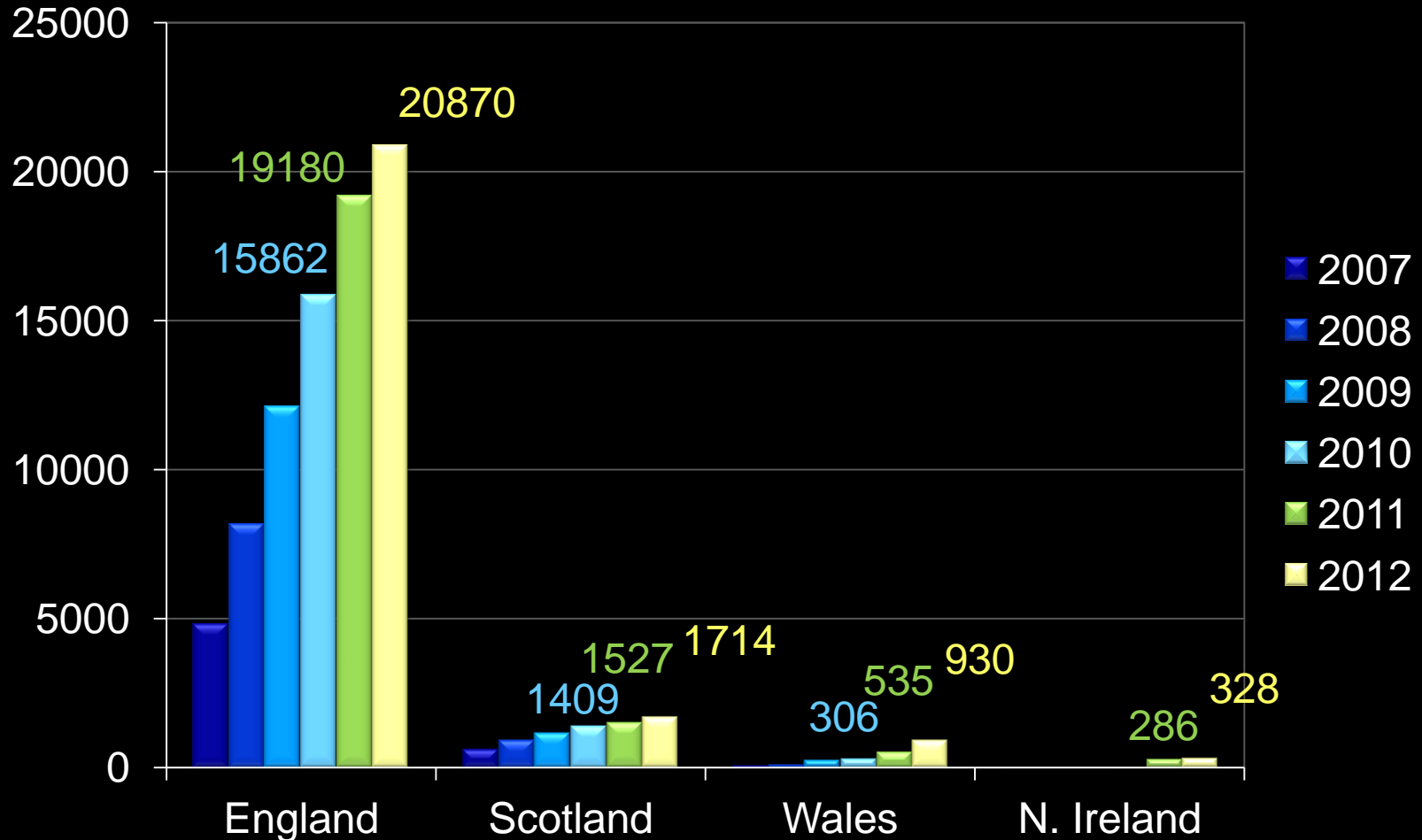
# Primary PCI

## UK Countries

### Total Number of PPCI Procedures



2012 data: Ludman



NB: Scotland - no data from Hairmyres Hospital

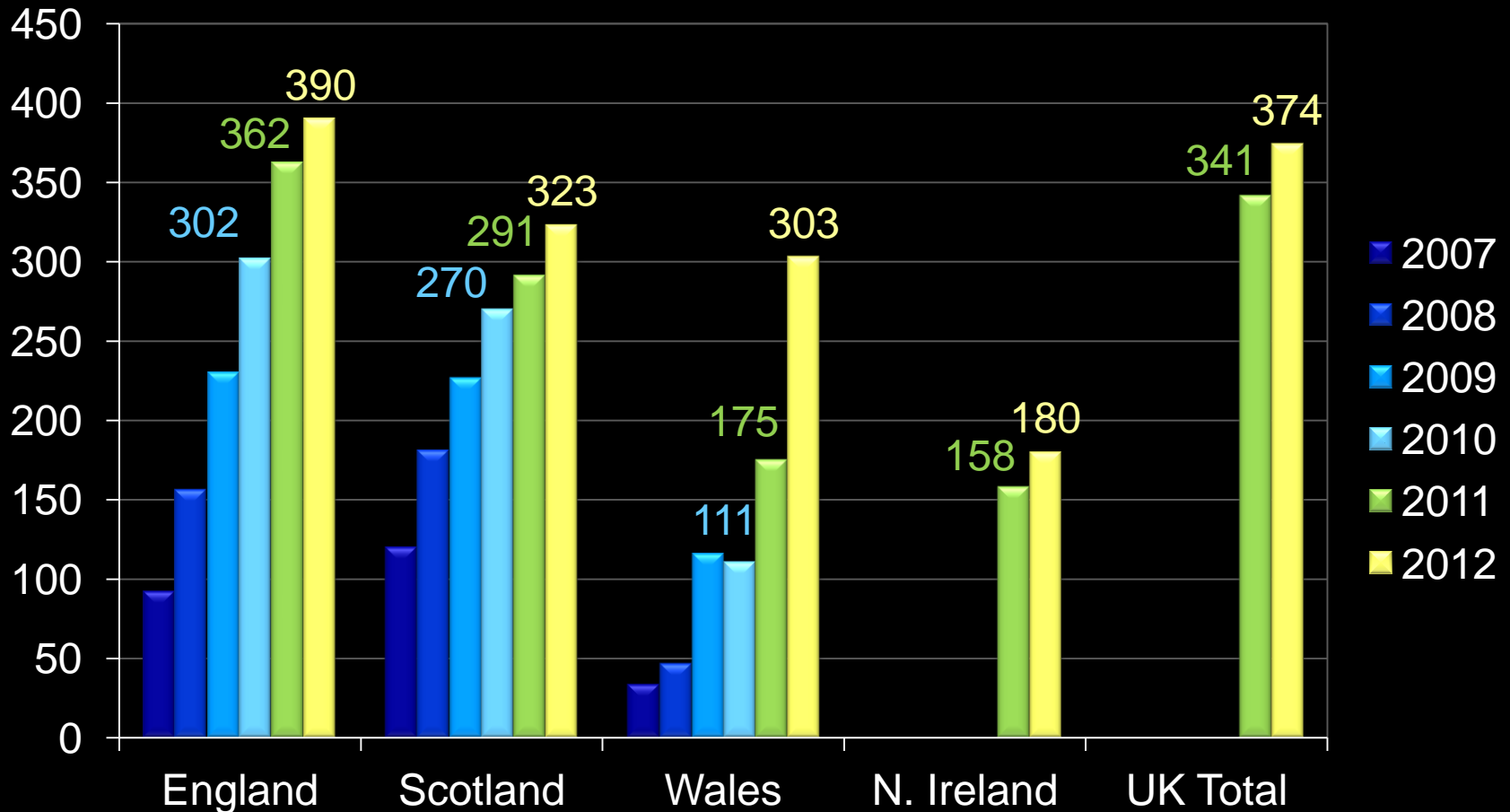
# Primary PCI

## UK Countries



2012 data: Ludman

### PPCI Procedures pmp



#### Notes:

Population estimates assume all Welsh to be treated in Wales

Scotland data missing from Hairmyres Hospital

Data from NI available from 2011, therefore UK wide data quoted from then on

# Primary PCI pmp

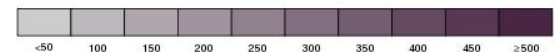
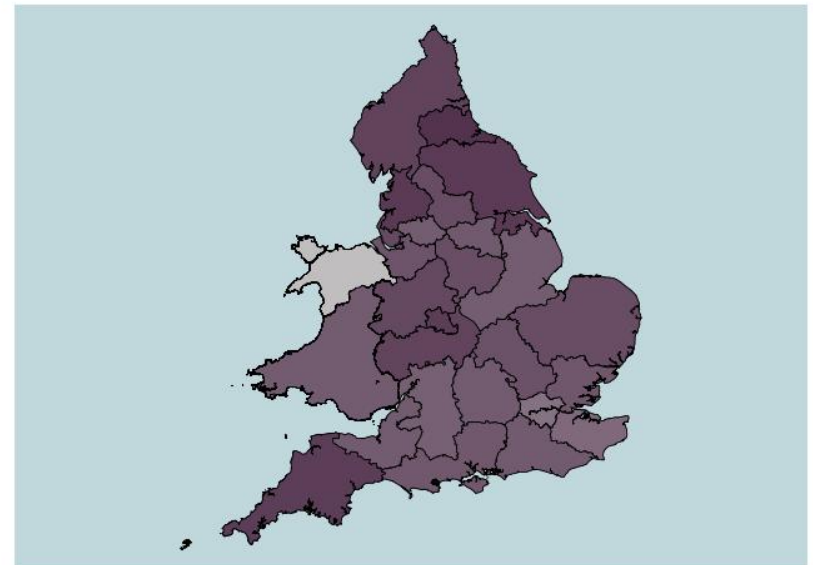
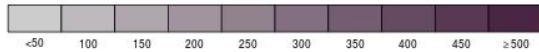
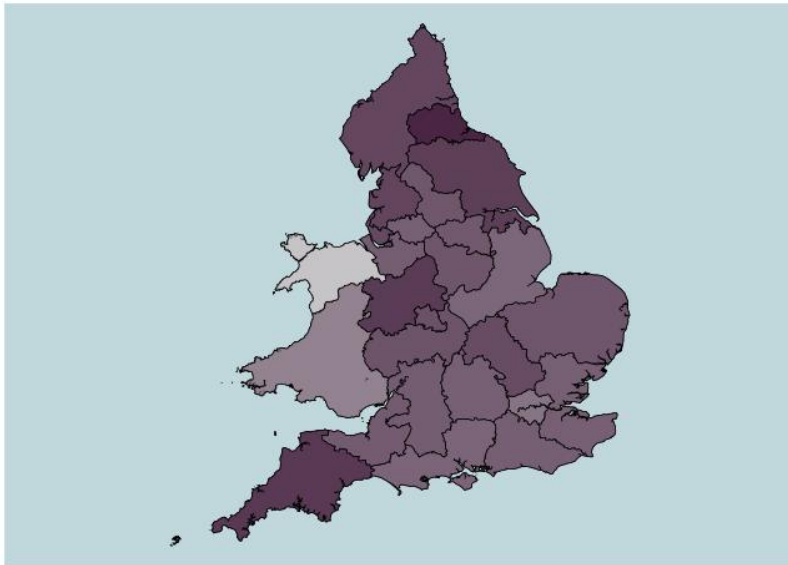
UK



2012 data: Ludman

Financial year 2011-2012

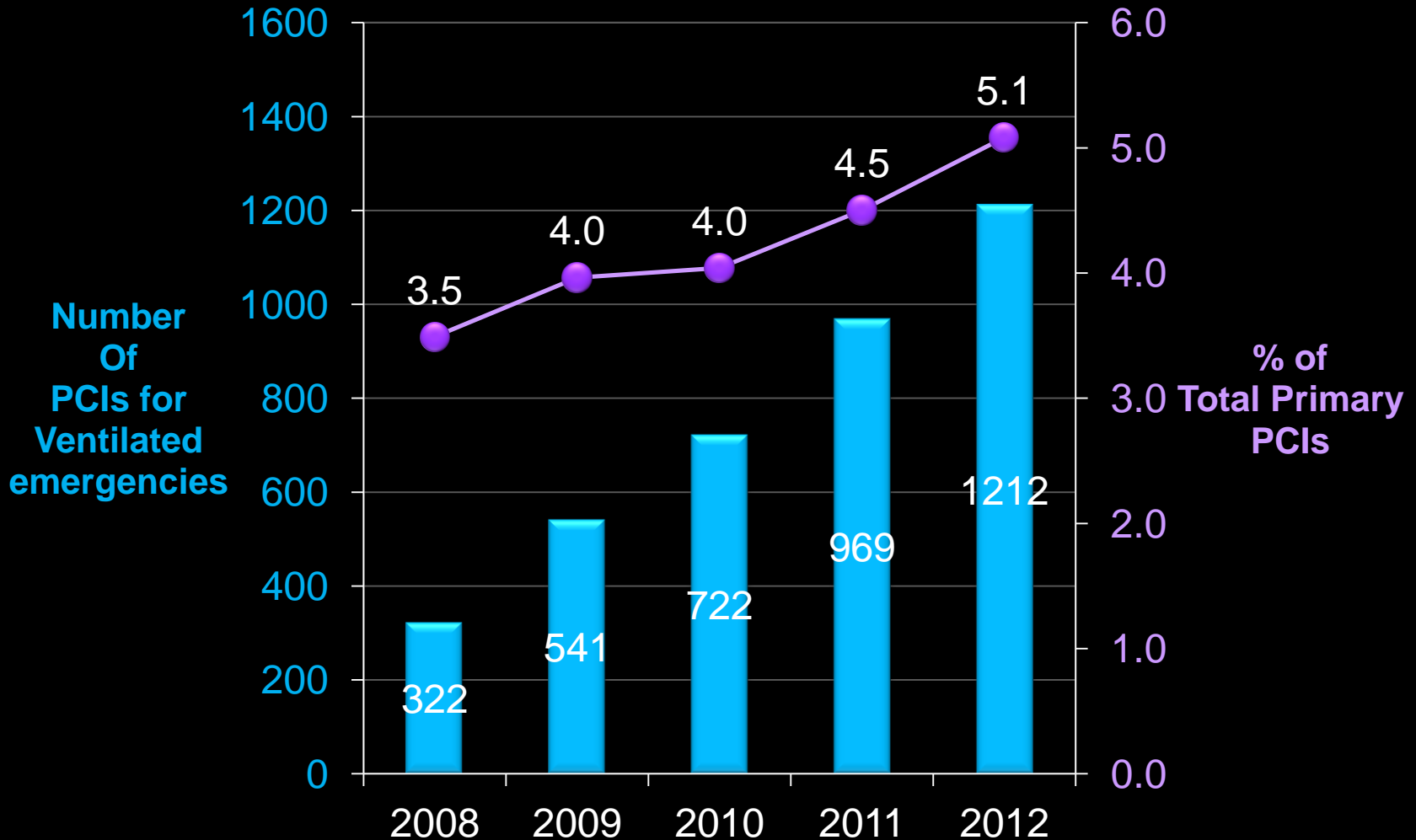
Financial year 2012-2013



Not age adjusted

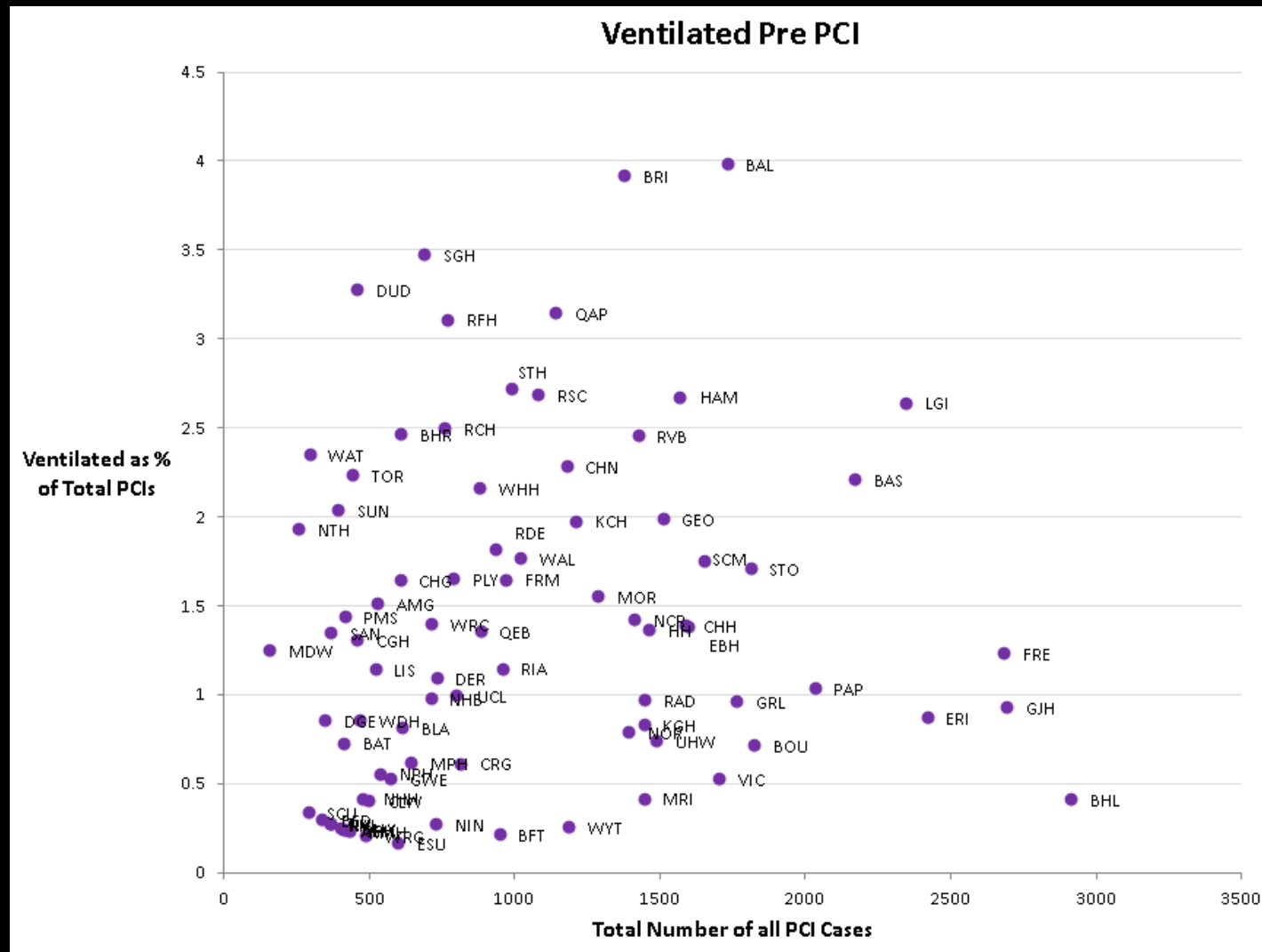
# Pre PCI Ventilation

- Total Number of emergency cases with Pre PCI ventilation
  - Subset of out of hospital cardiac arrest



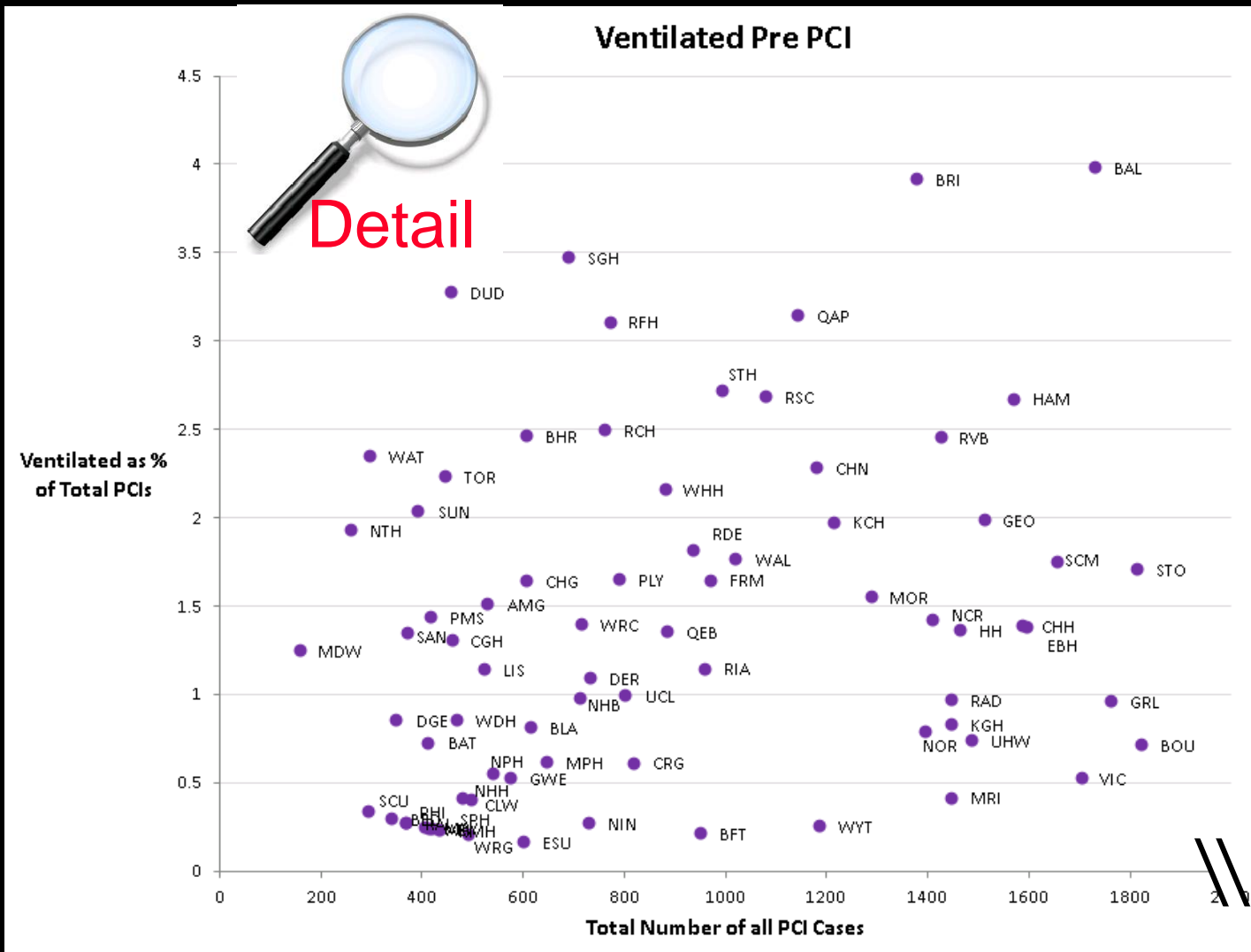
# Pre PCI Ventilation

- As % of ALL PCI activity



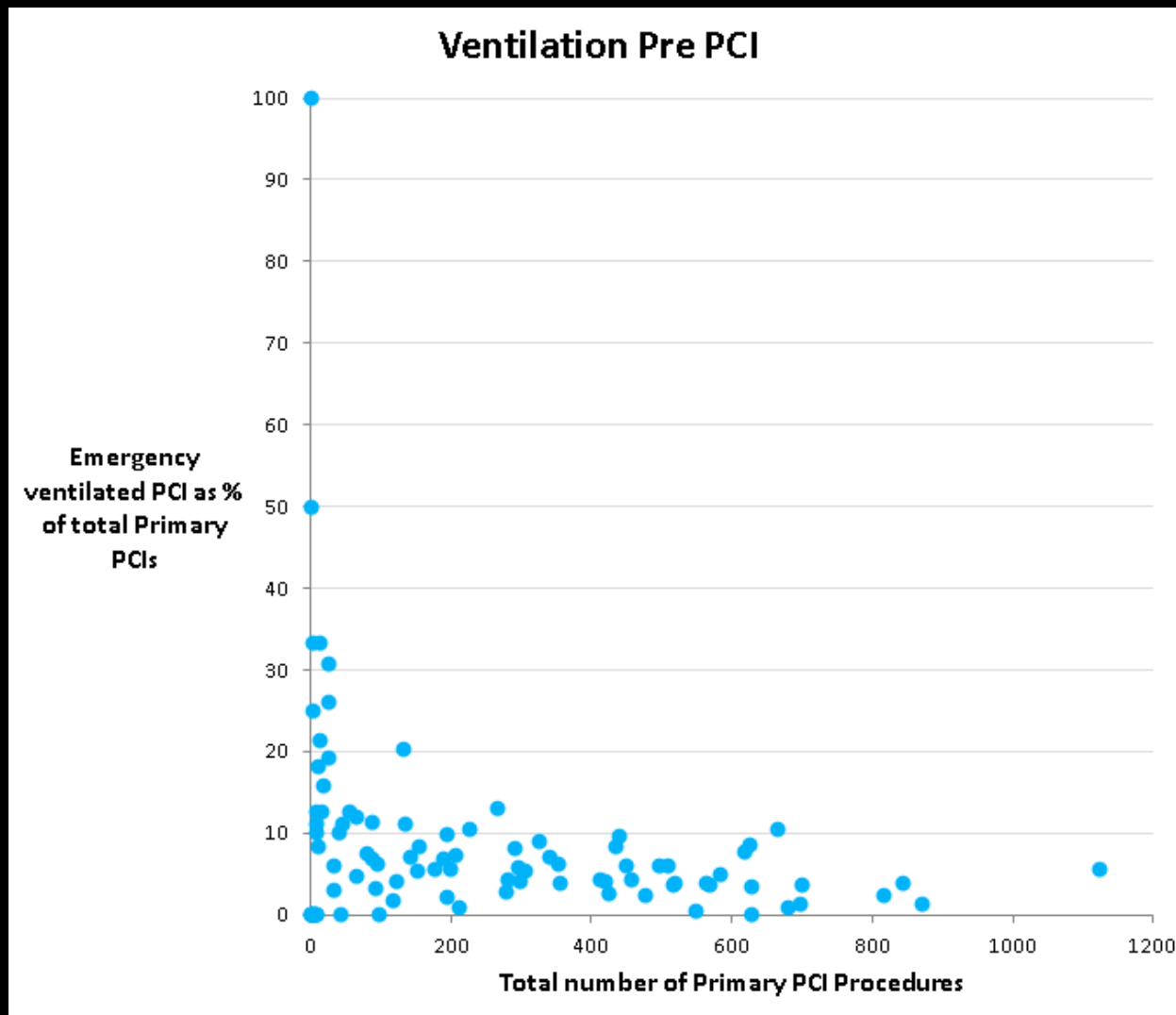
# Pre PCI Ventilation

- As % of ALL PCI activity



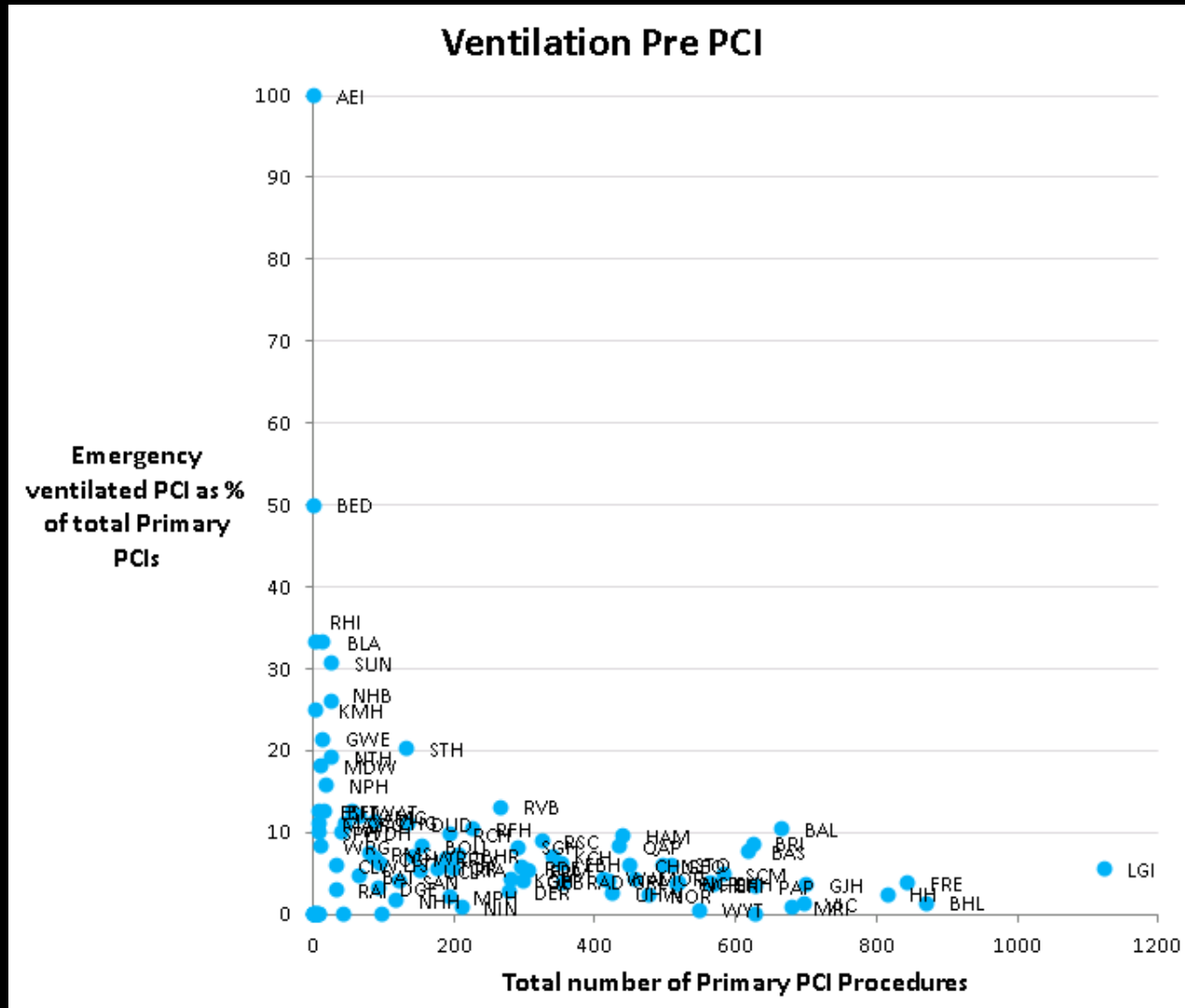
# Pre PCI Ventilation

- As % of Primary PCI cases



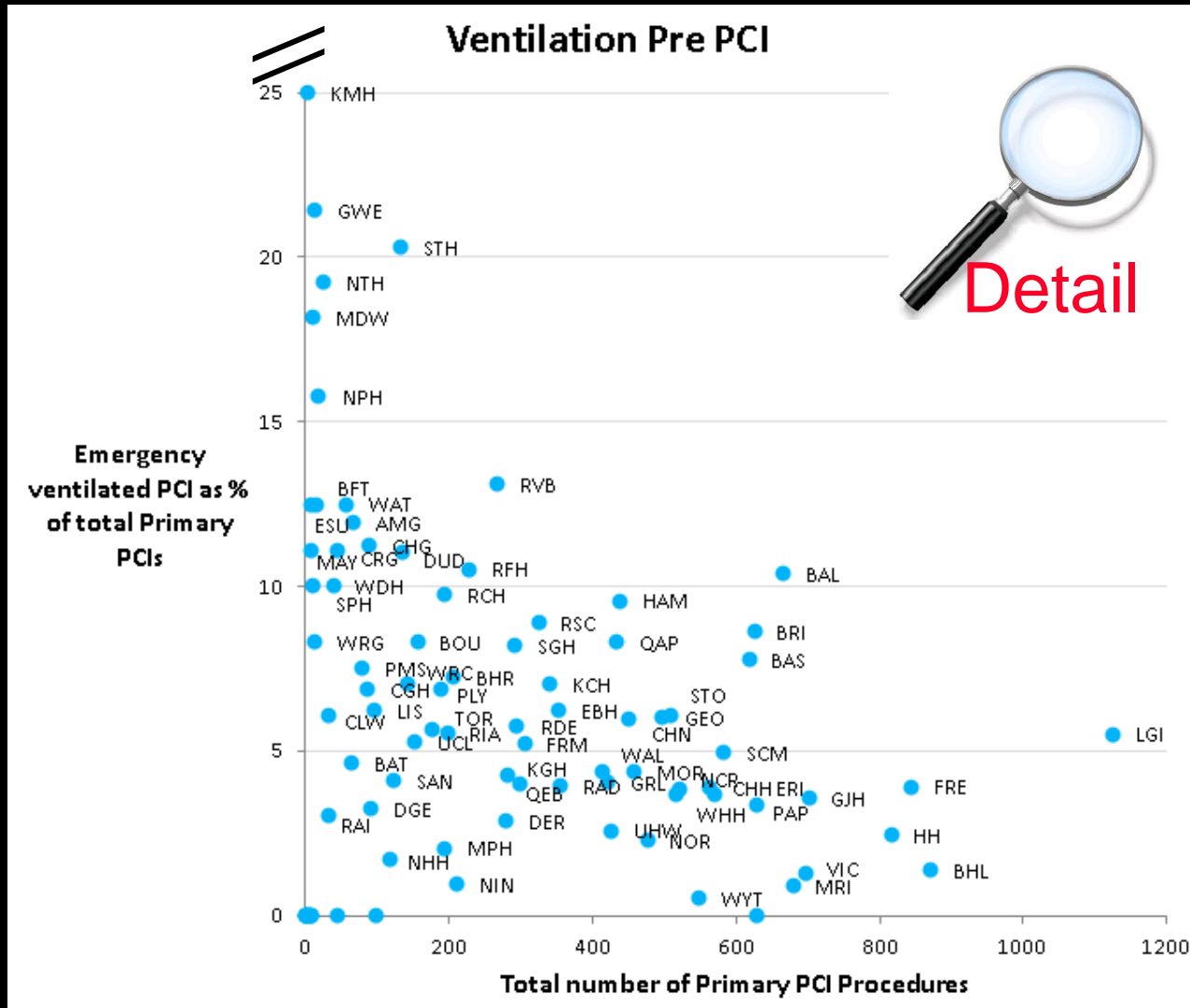
# Pre PCI Ventilation

- As % of Primary PCI cases

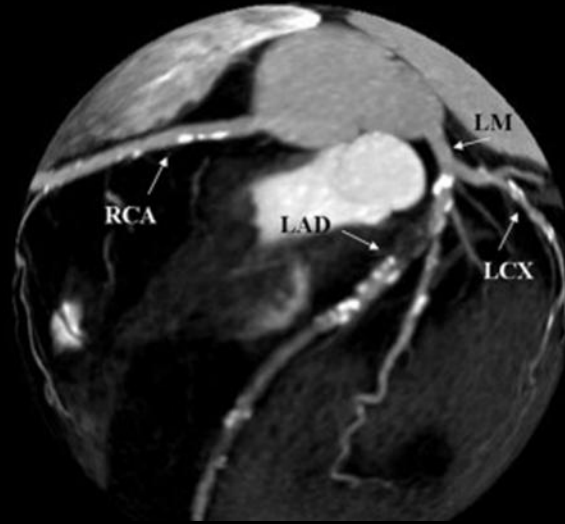
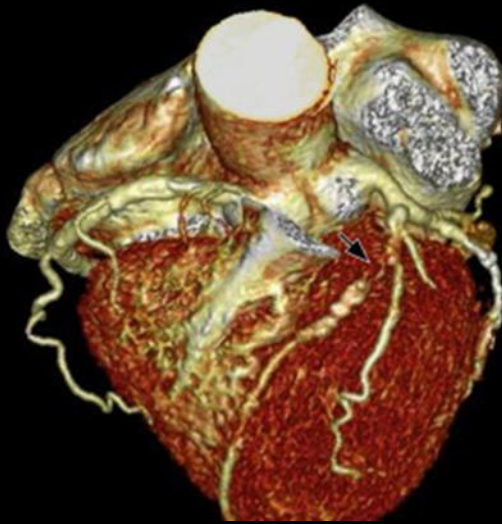


# Pre PCI Ventilation

- As % of Primary PCI cases



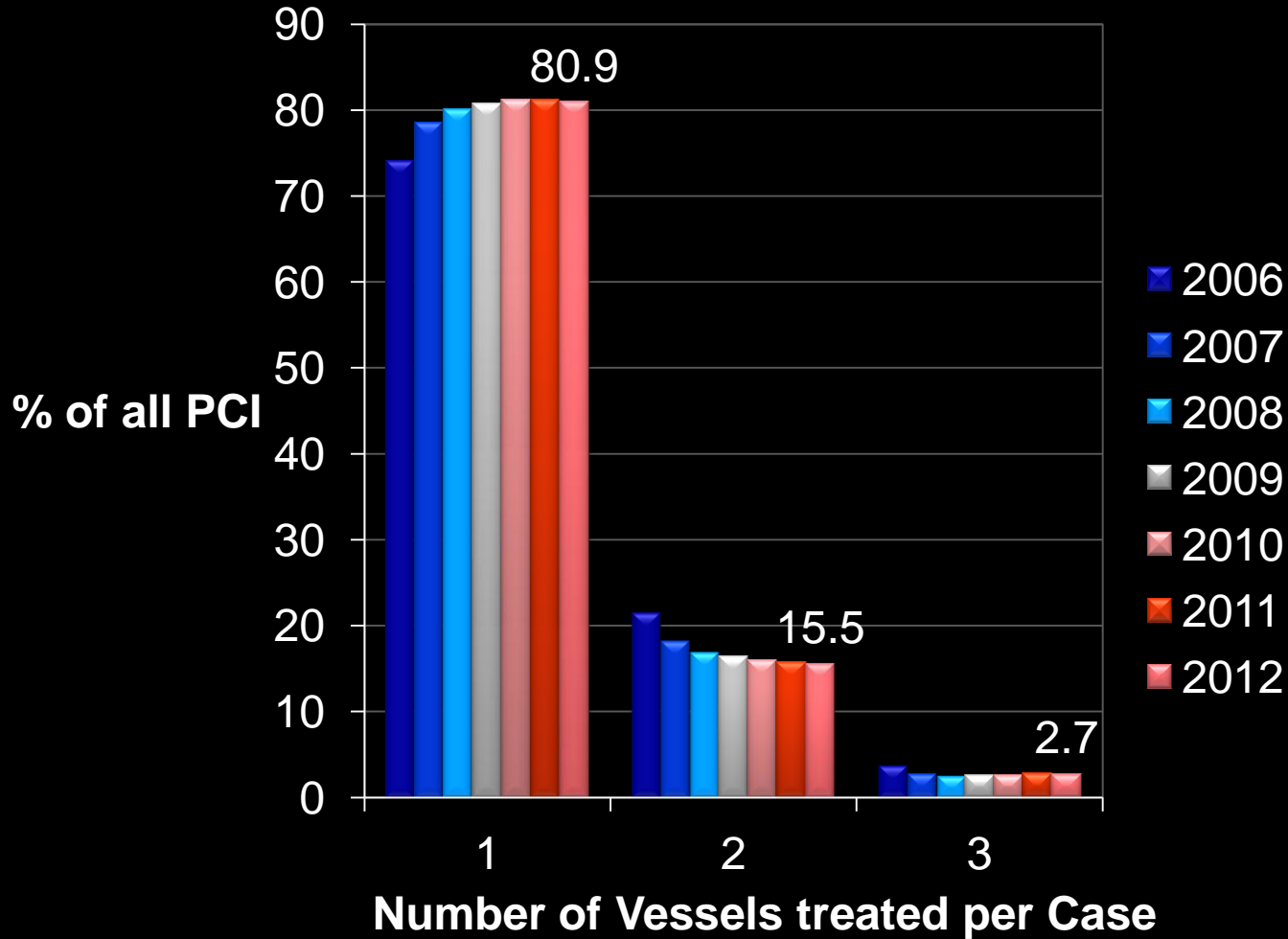
# Multi-vessel Disease



# Multi-vessel Treatment



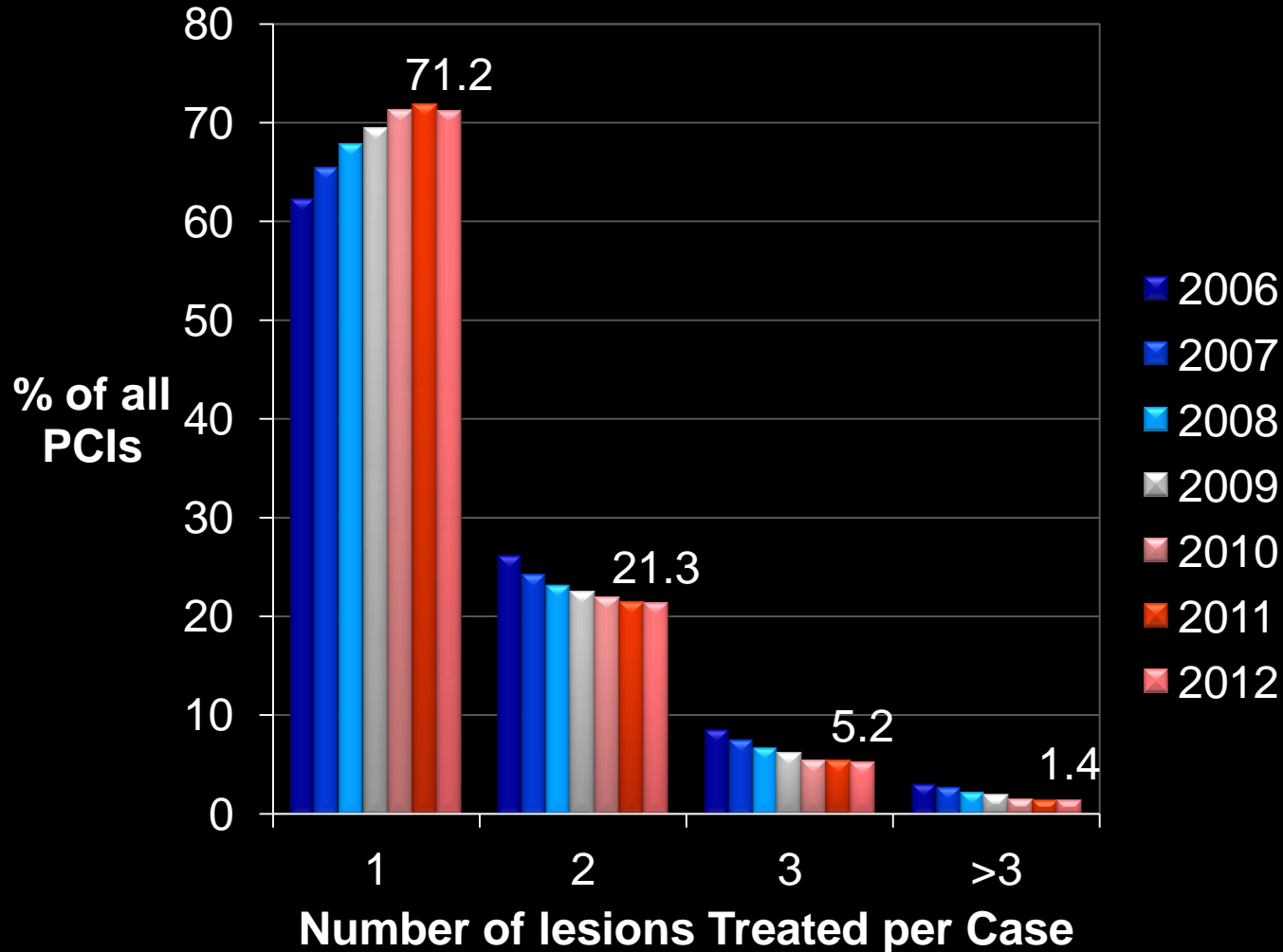
2012 data: Ludman



# Multi-Lesion Treatment



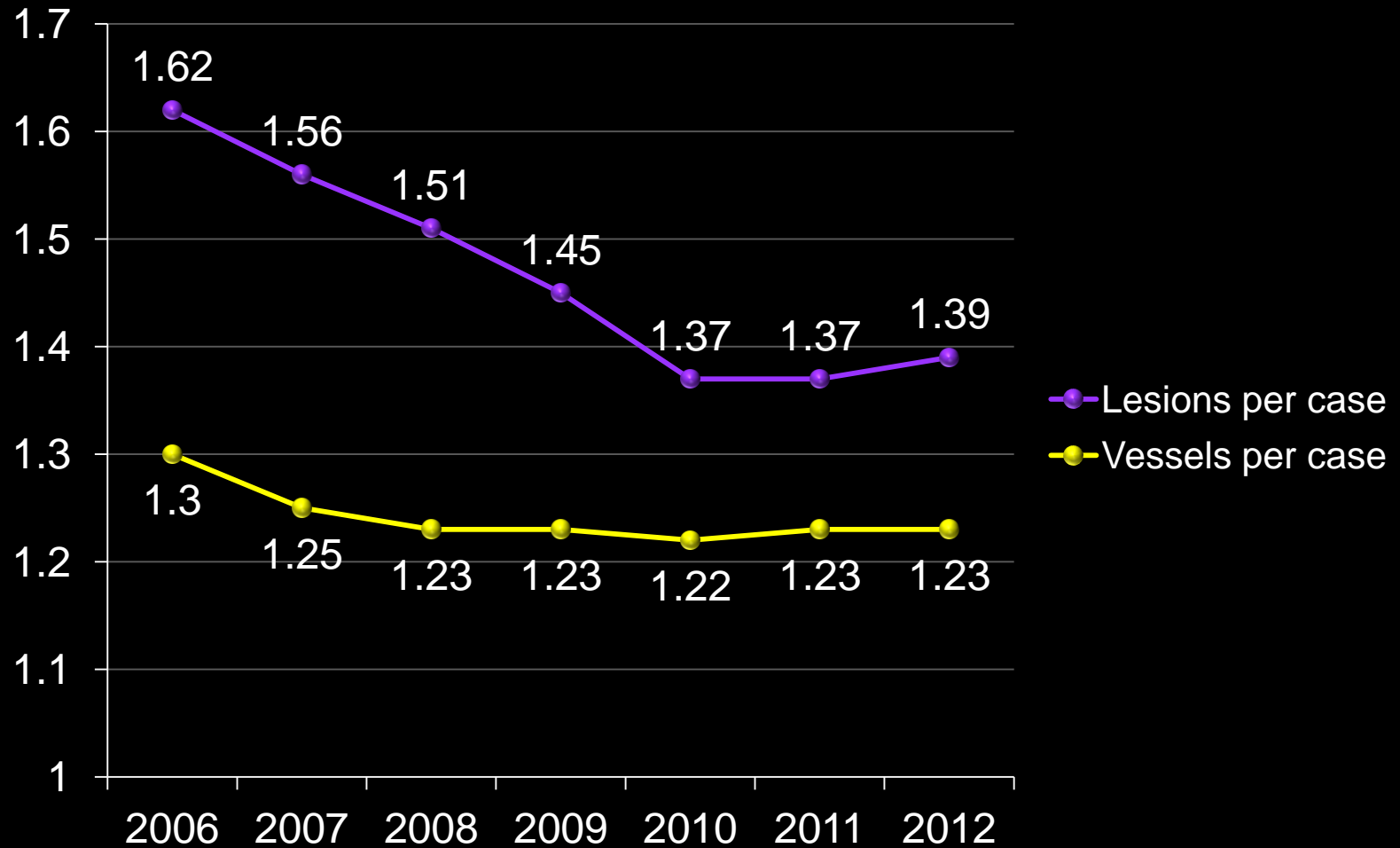
2012 data: Ludman



# Multi-Lesion and vessel Treatment



2012 data: Ludman



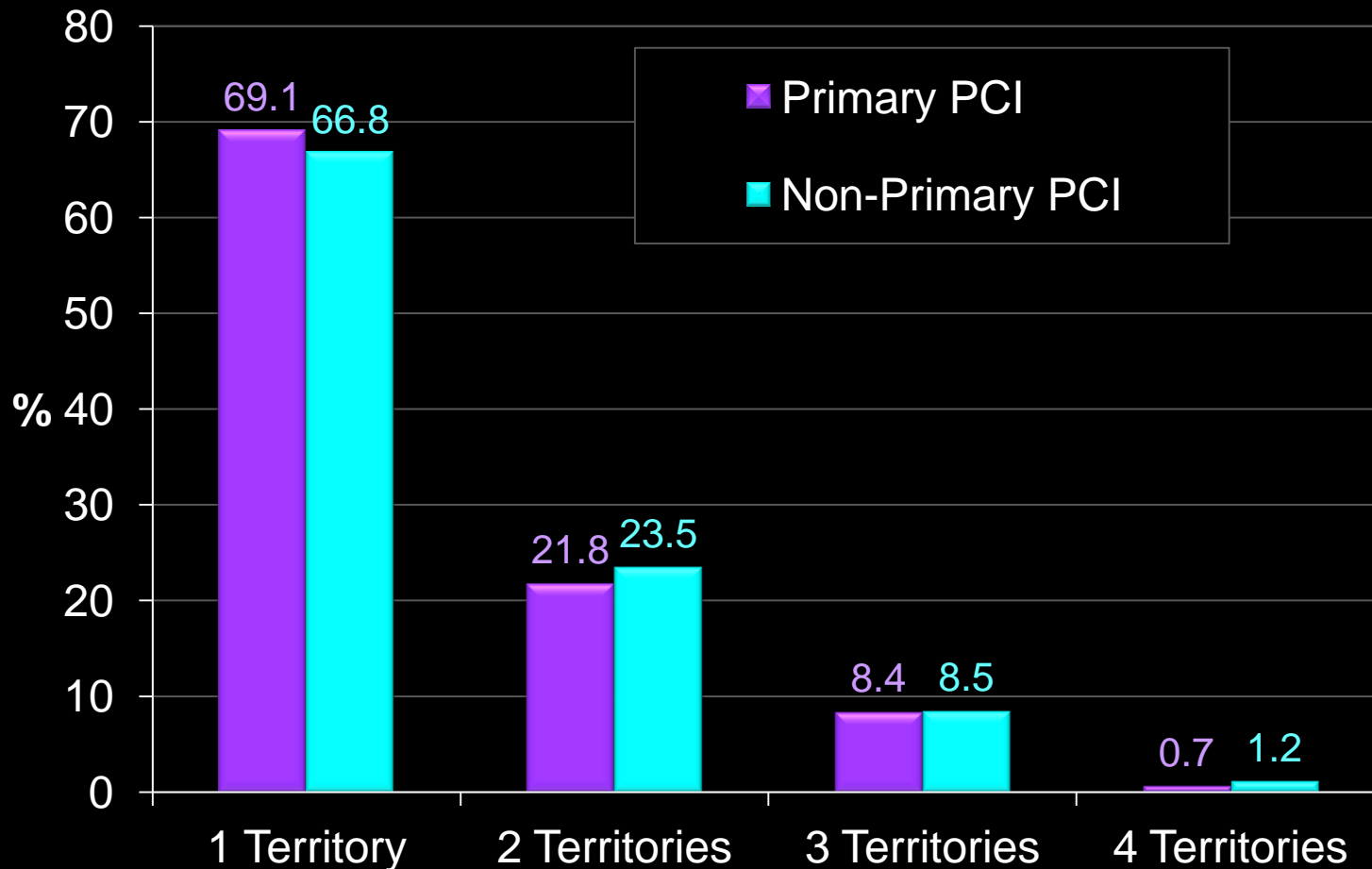
# Disease Burden

## Primary PCI v Non-Primary PCI Cases



2012 data: Ludman

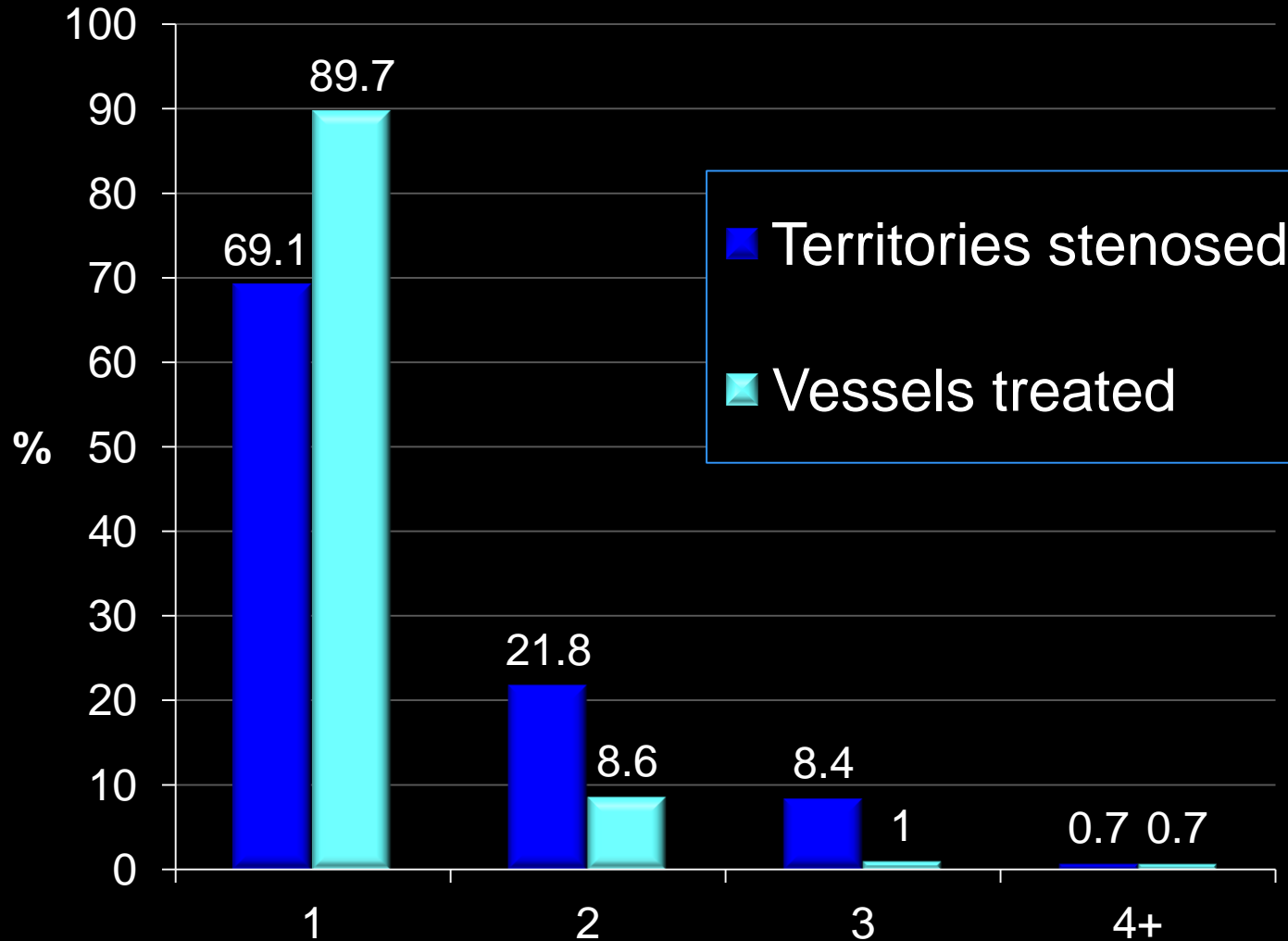
Epicardial Territories with > 75% stenoses



# Primary PCI Multi-vessel Rx



2012 data: Ludman

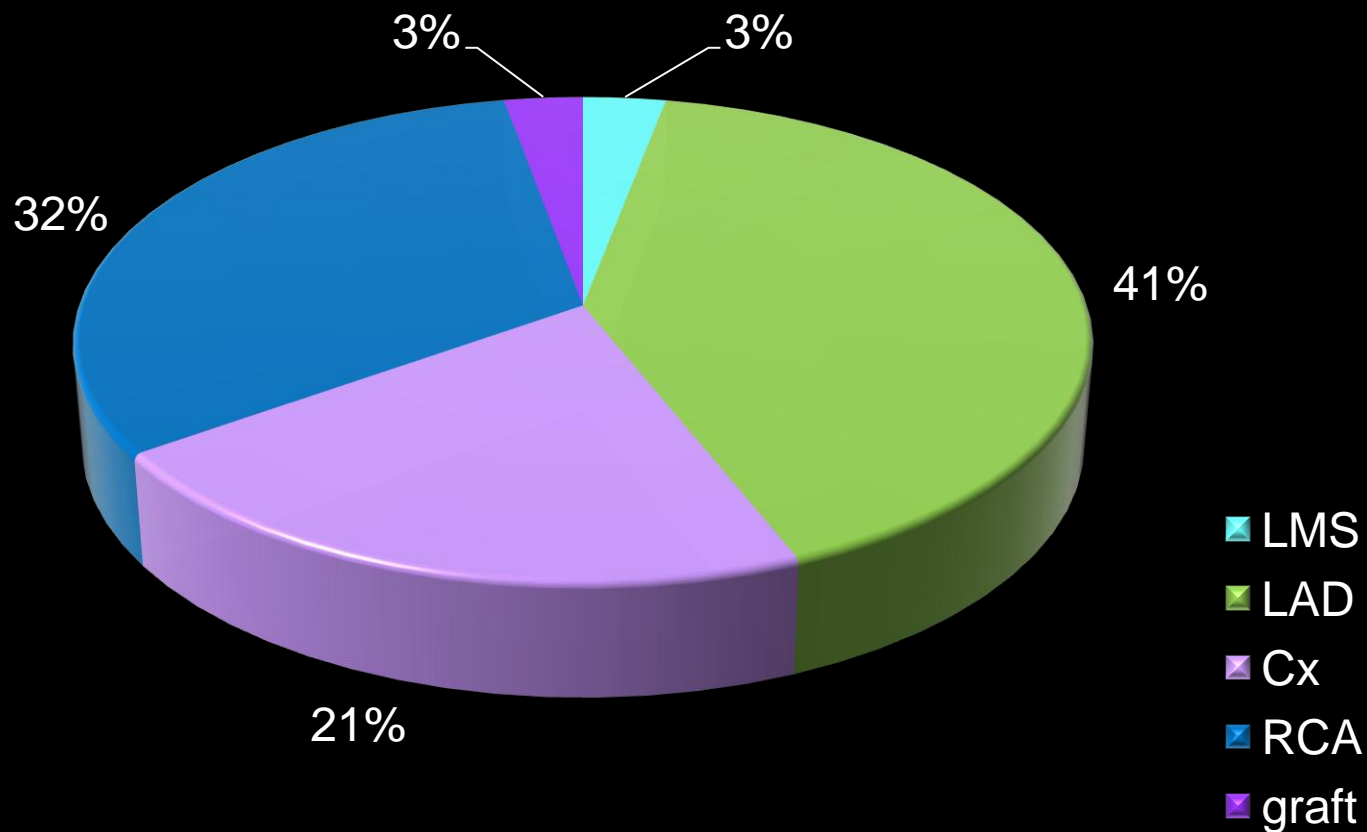


# All PCI

## Epicardial Territory Treated



2012 data: Ludman



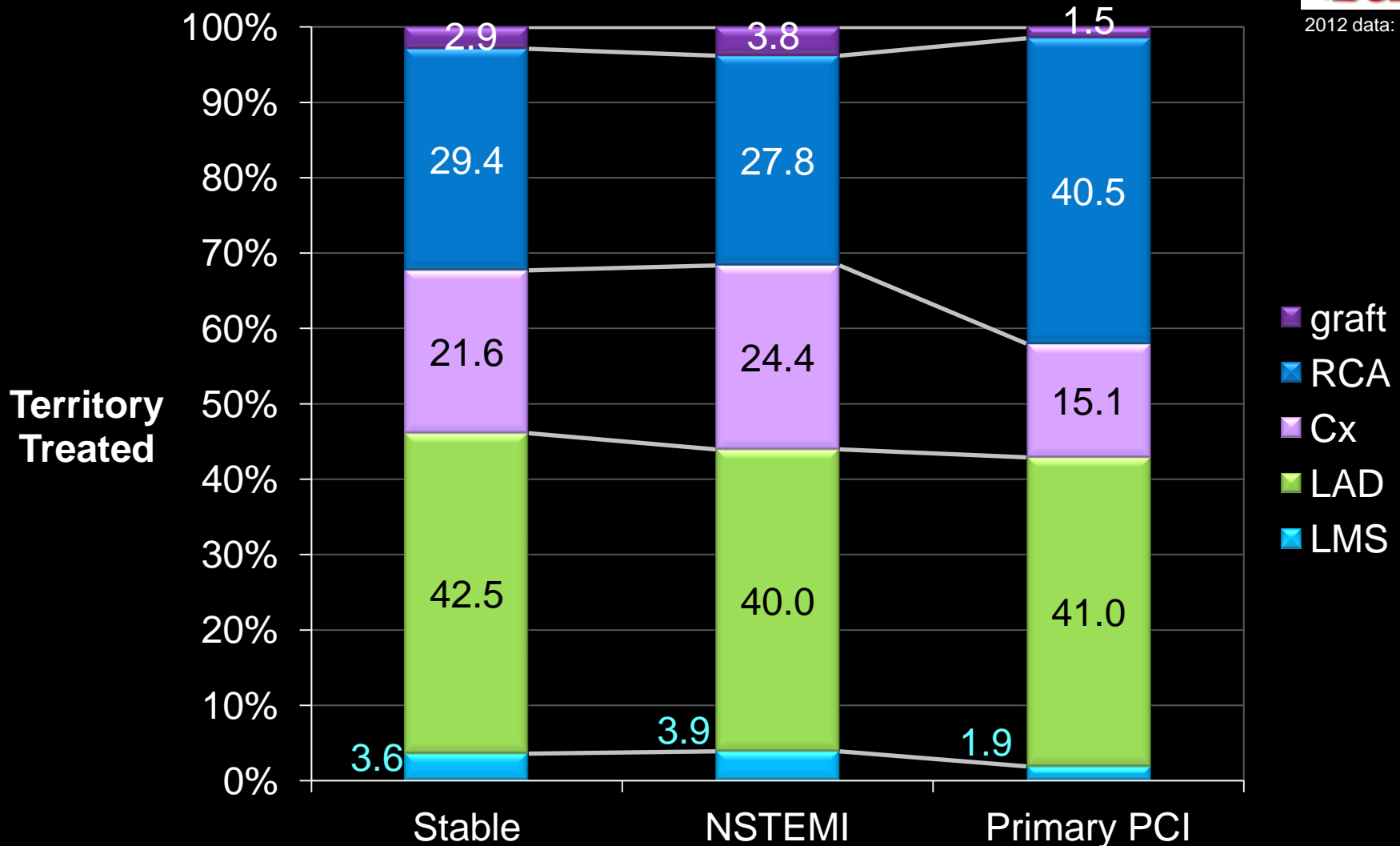
Proportions unchanged from 2011

# Treated Epicardial Territory

## By Presenting Syndrome

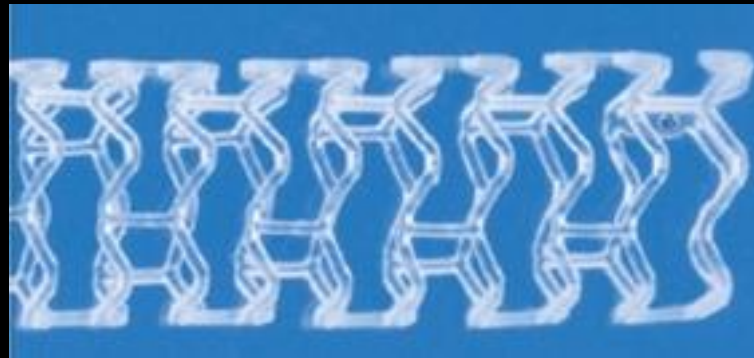


2012 data: Ludman



# Stents

---

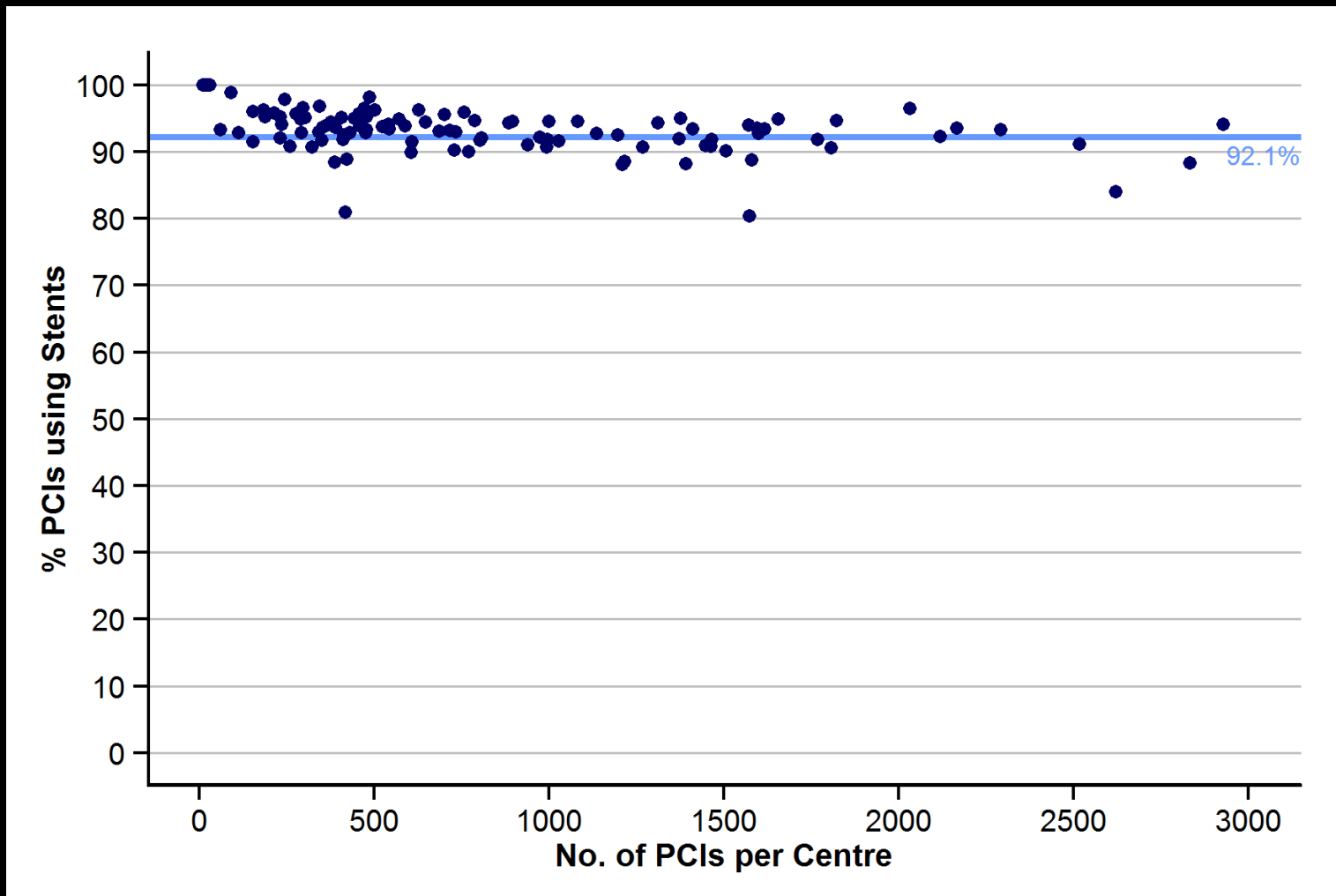


# Procedures using Stents

Mean = 92.1%



2012 data: Ludman

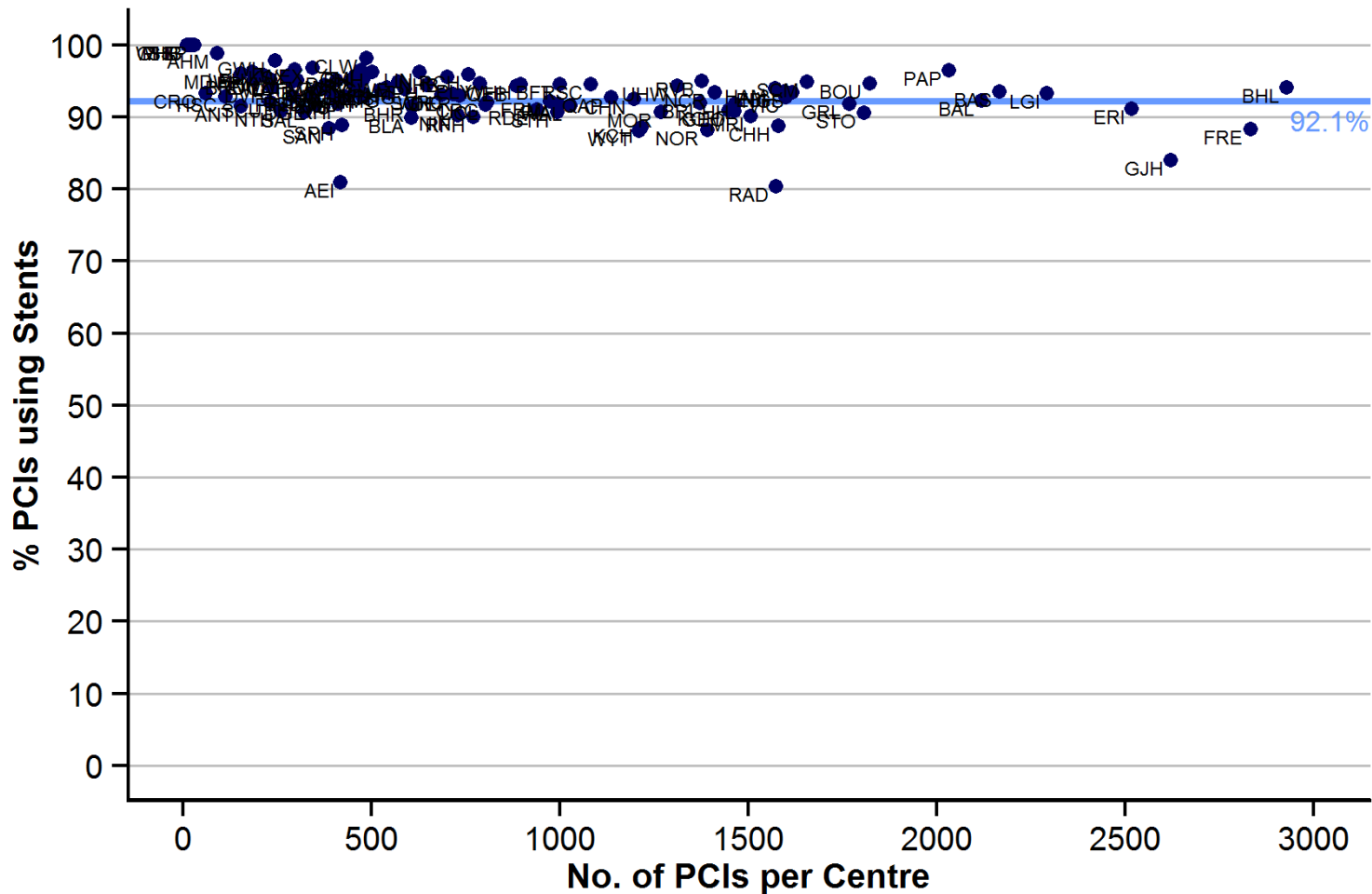


# Procedures using Stents

Mean = 92.1%



2012 data: Ludman

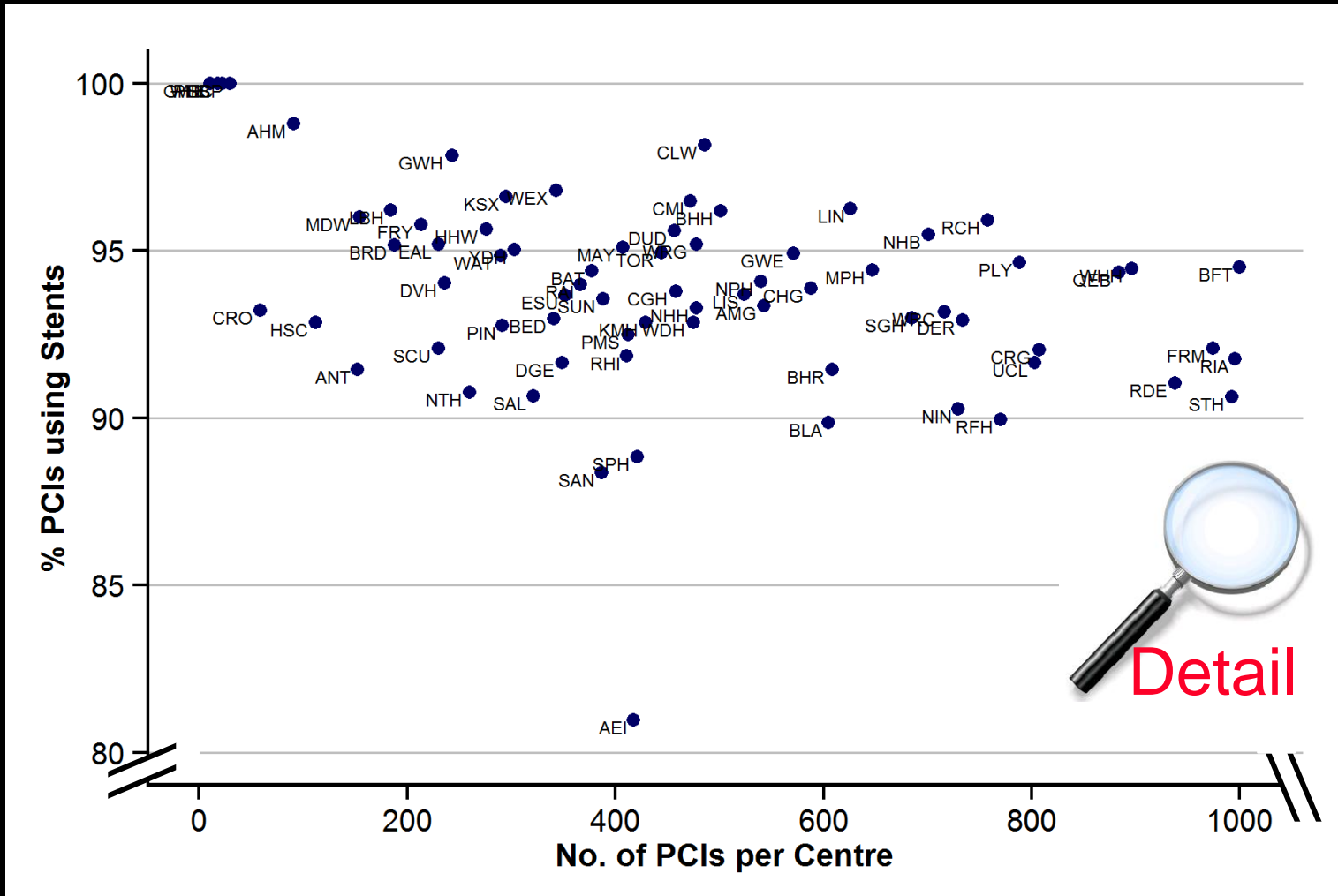


# Procedures using Stents

Mean = 92.1%



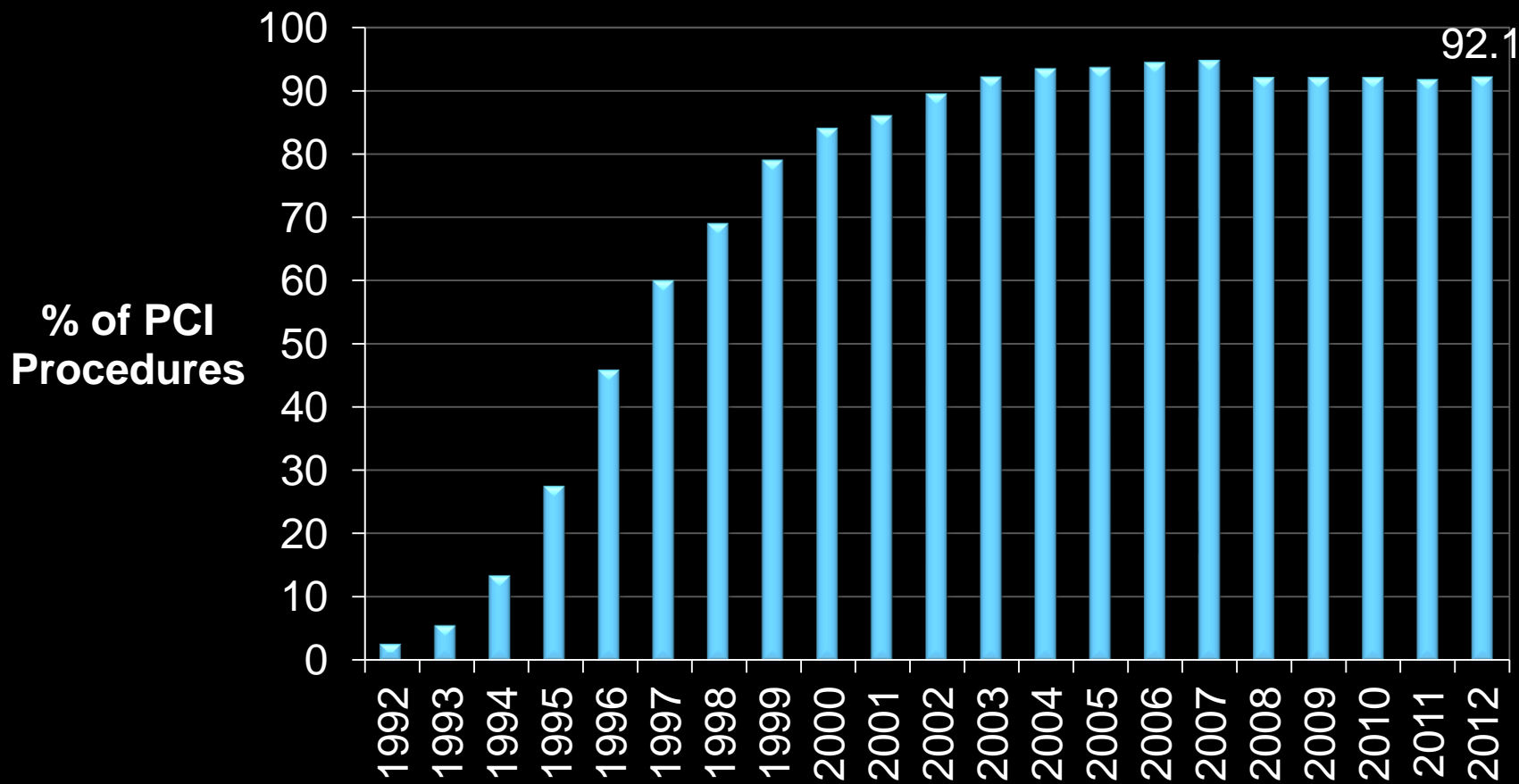
2012 data: Ludman



# Procedures using Stents



2012 data: Ludman



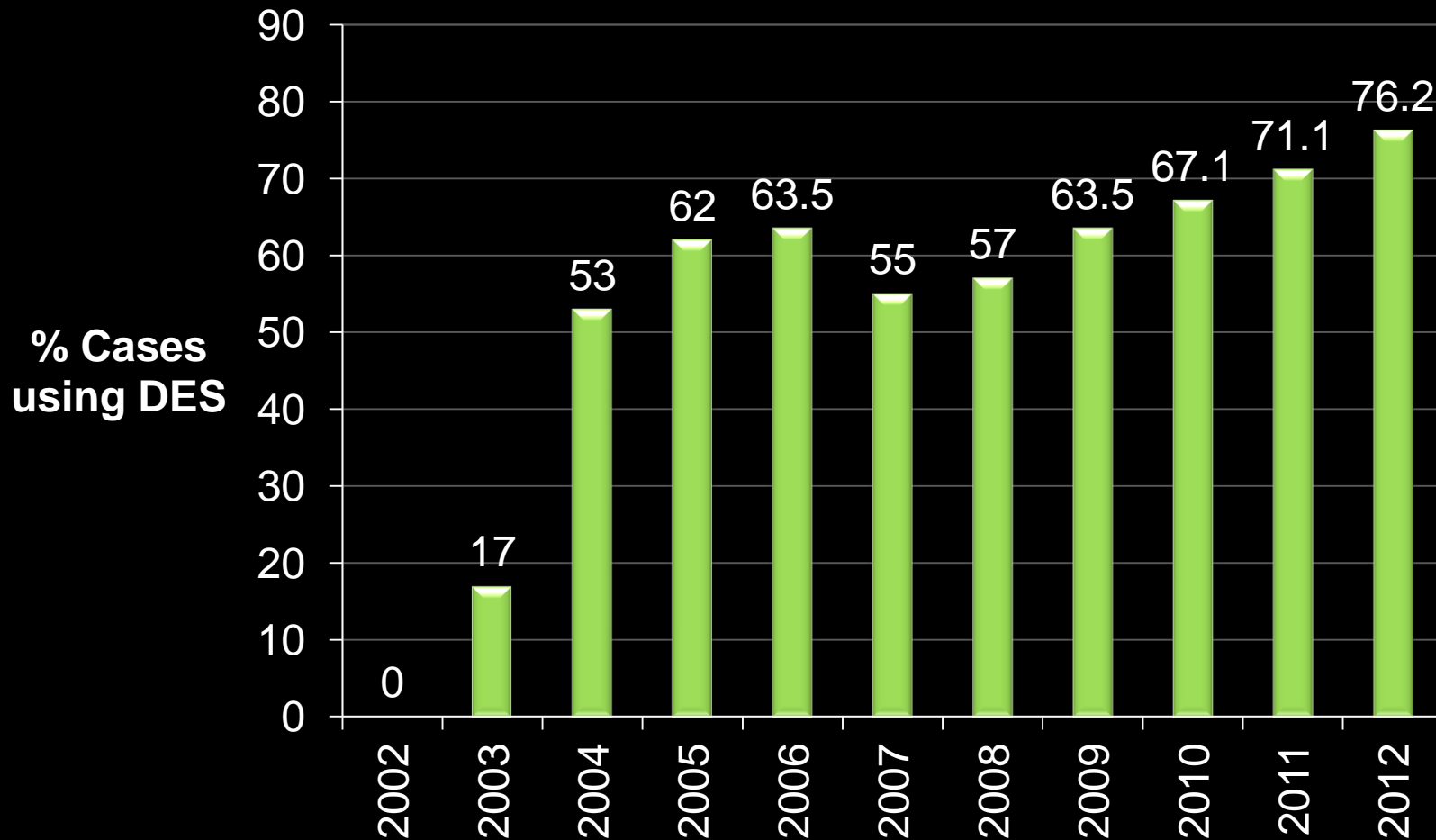
aggregate data up to 2007, NICOR for 2008 on

# PCI with Drug Eluting Stents

Mean of % use by Centres



2012 data: Ludman

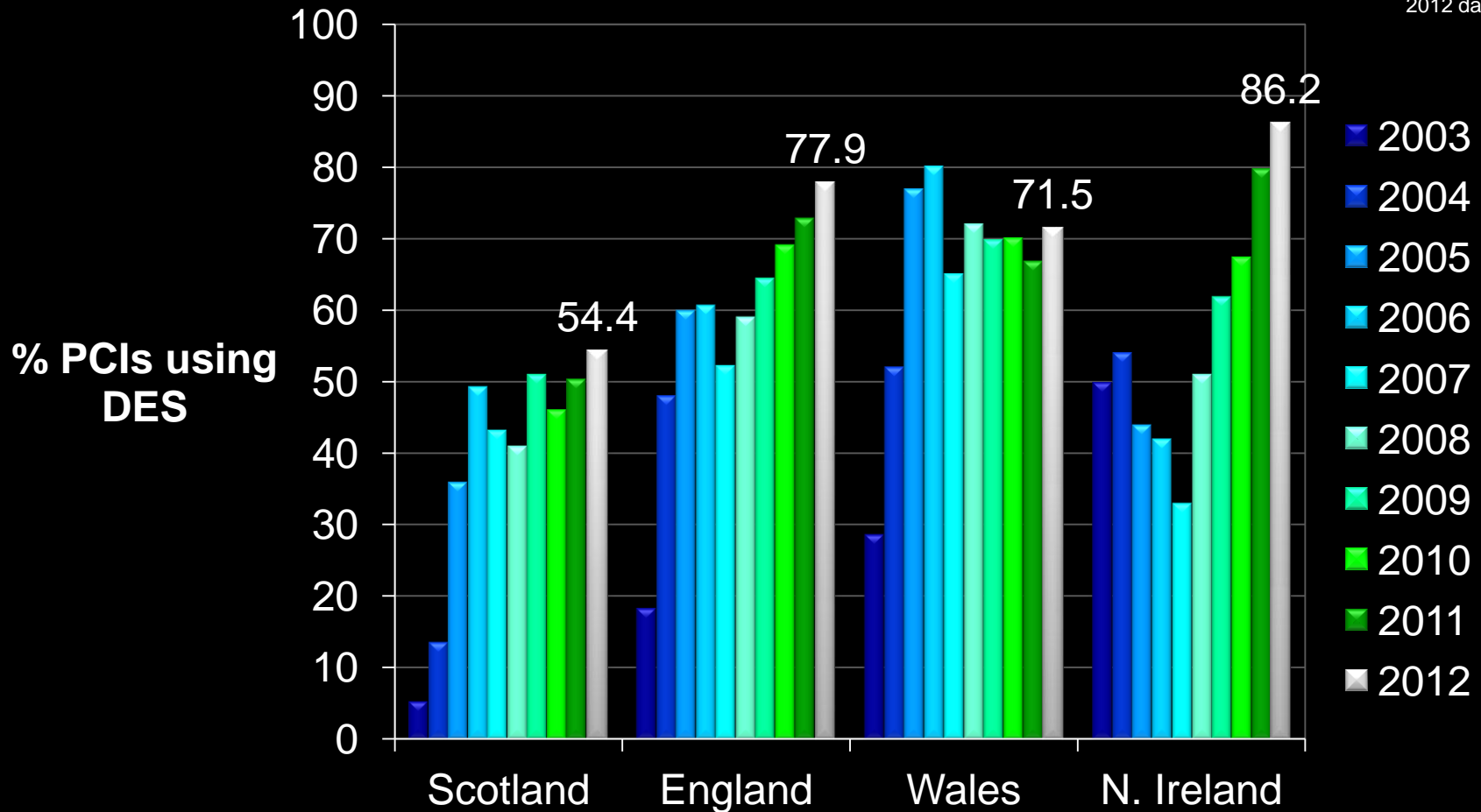


# Drug Eluting Stent

## % PCI with DES



2012 data: Ludman



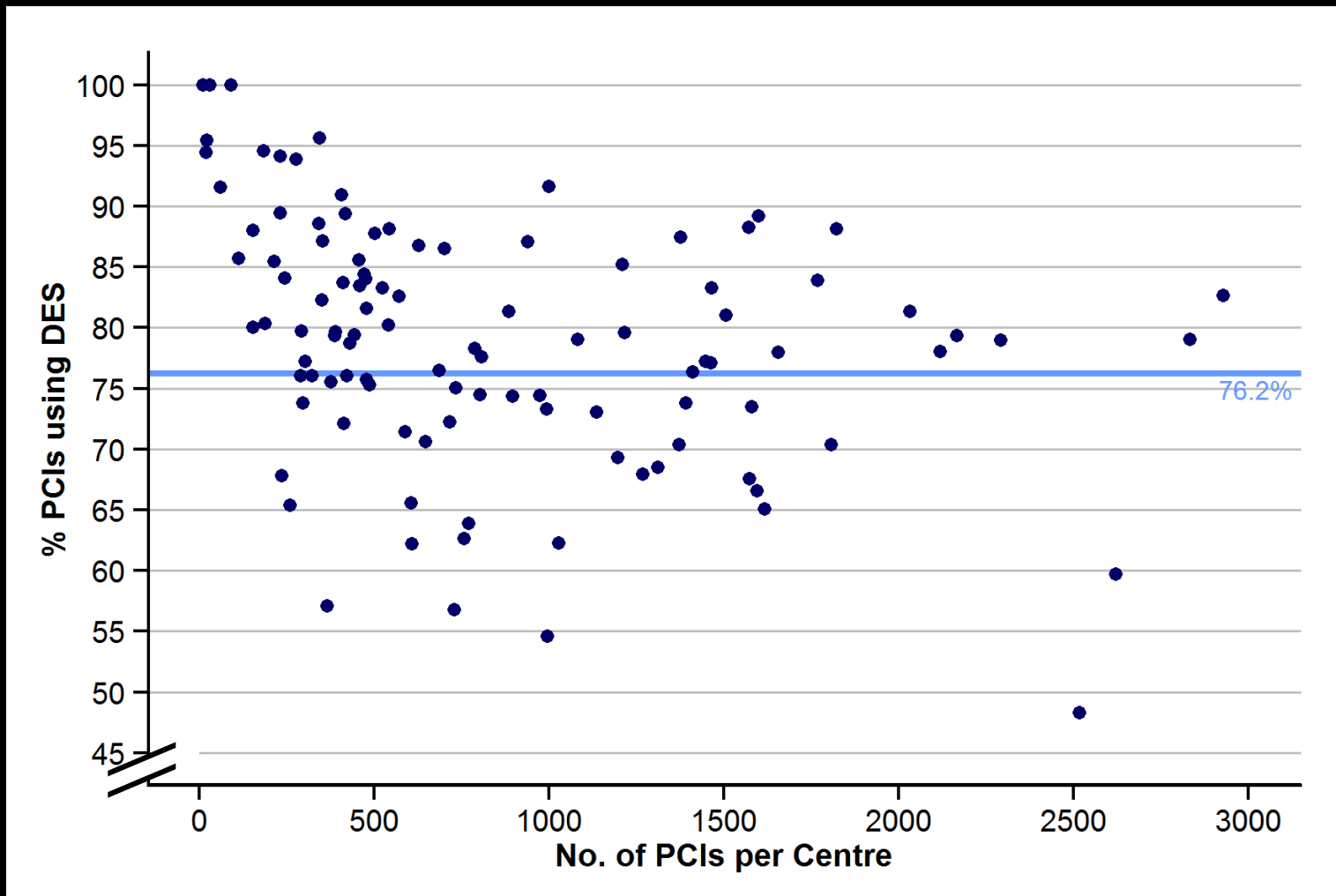
Data to 2007 NHS only  
Data for 2008 to present all units from NICOR

# PCI with Drug Eluting Stents

Mean = 76.2 %



2012 data: Ludman

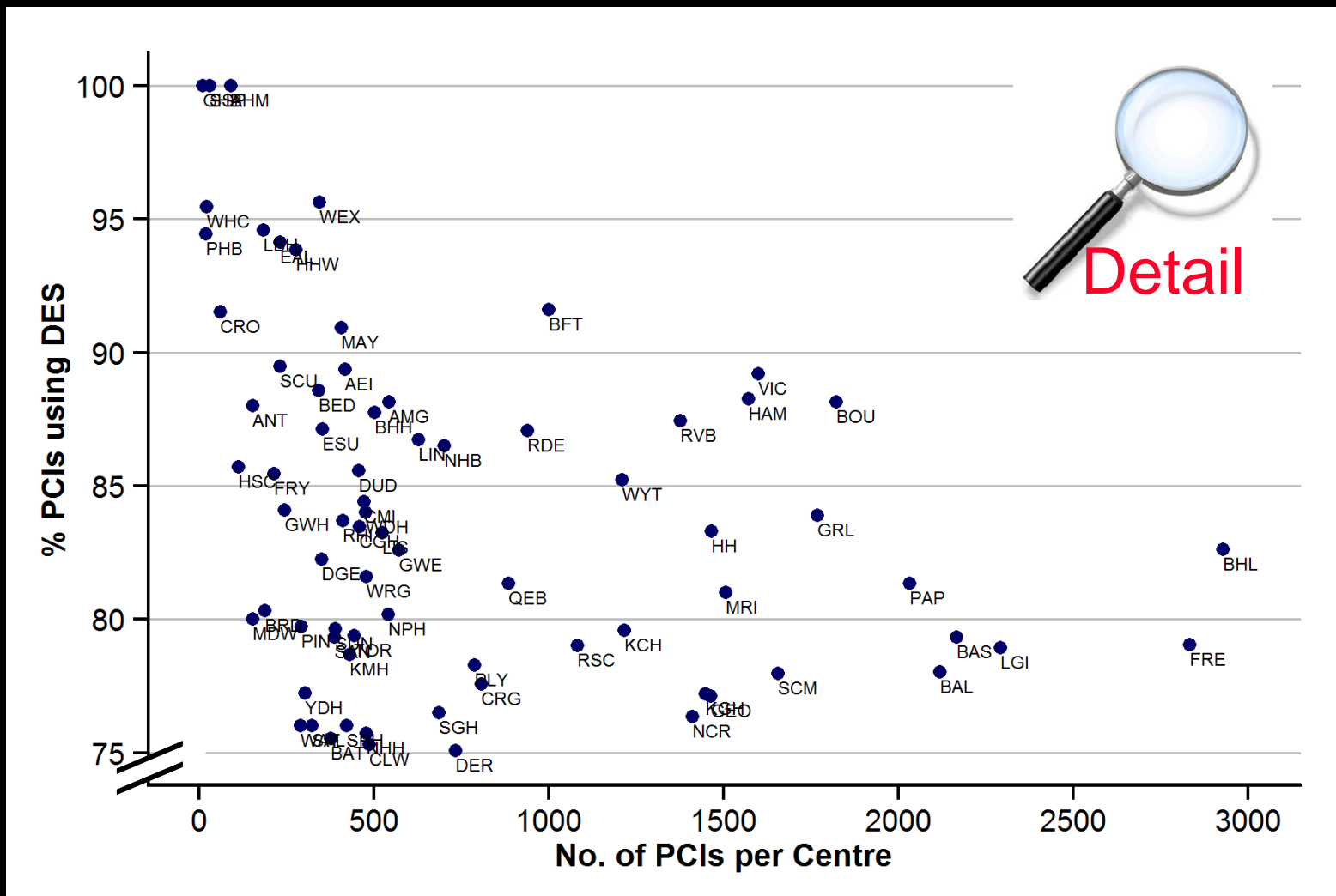




# PCI with Drug Eluting Stents



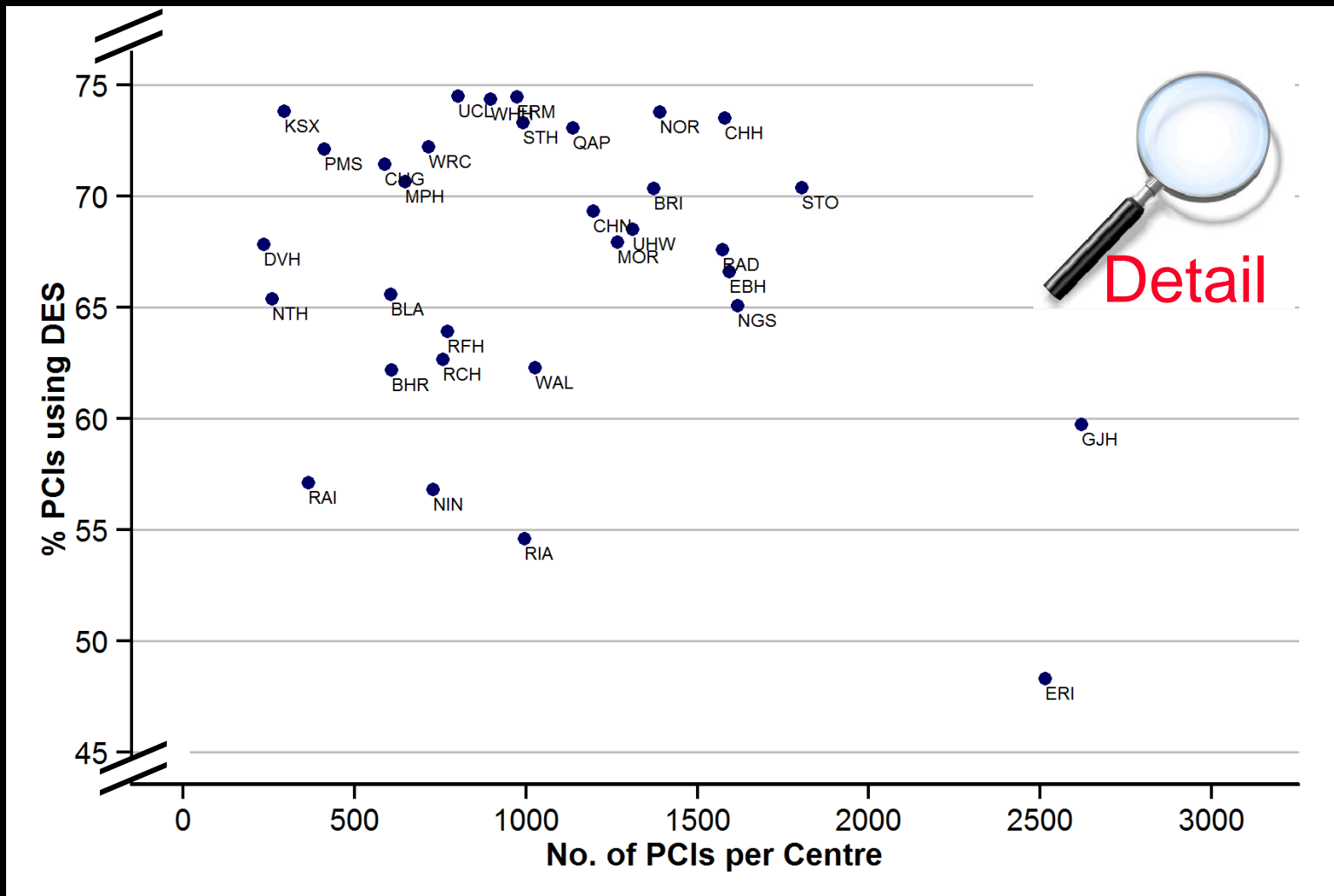
2012 data: Ludman



# PCI with Drug Eluting Stents



2012 data: Ludman

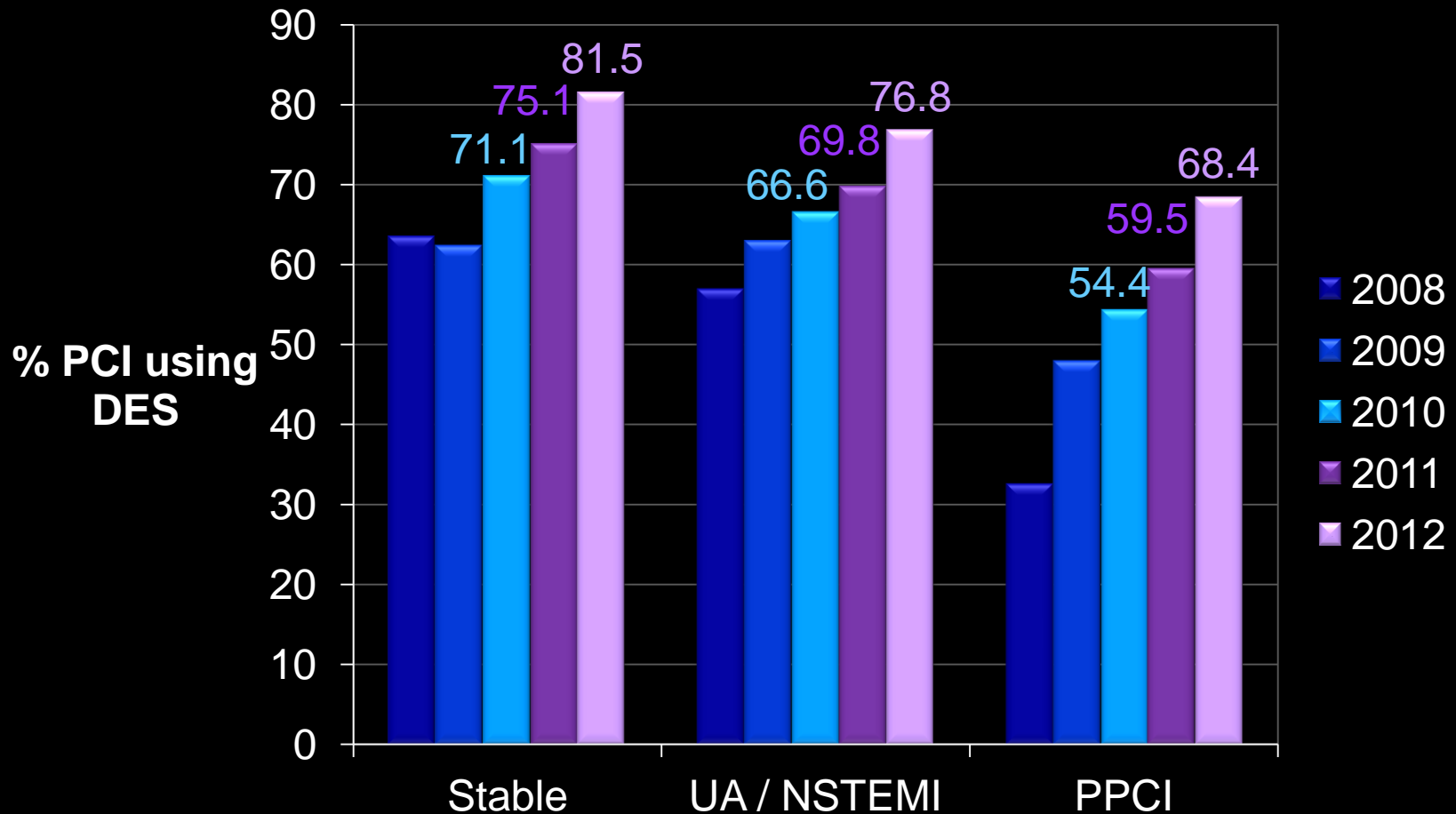


# PCI with Drug Eluting Stents



2012 data: Ludman

## By Syndrome

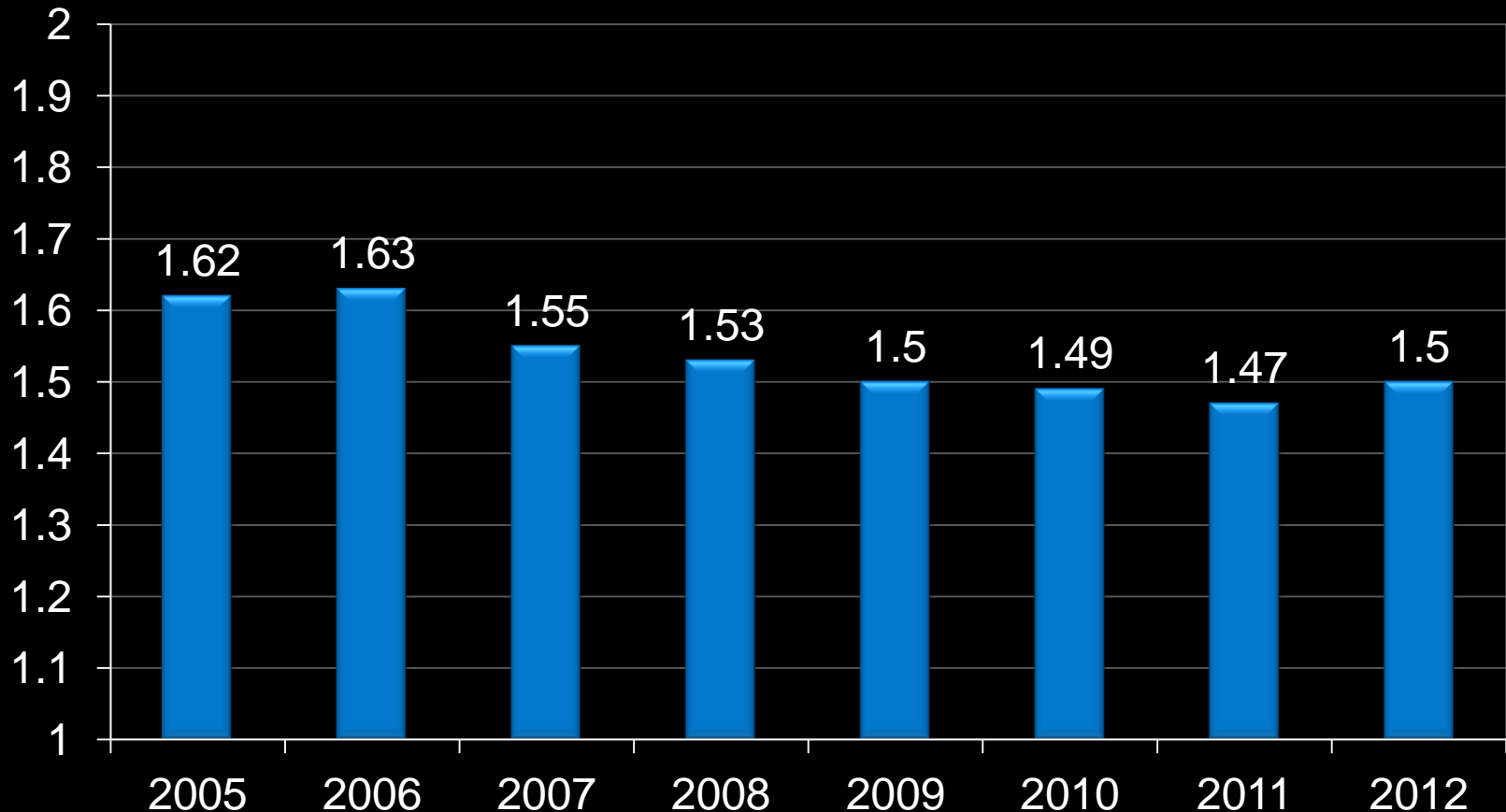


# Stents per Case

- Mean number of stents per case



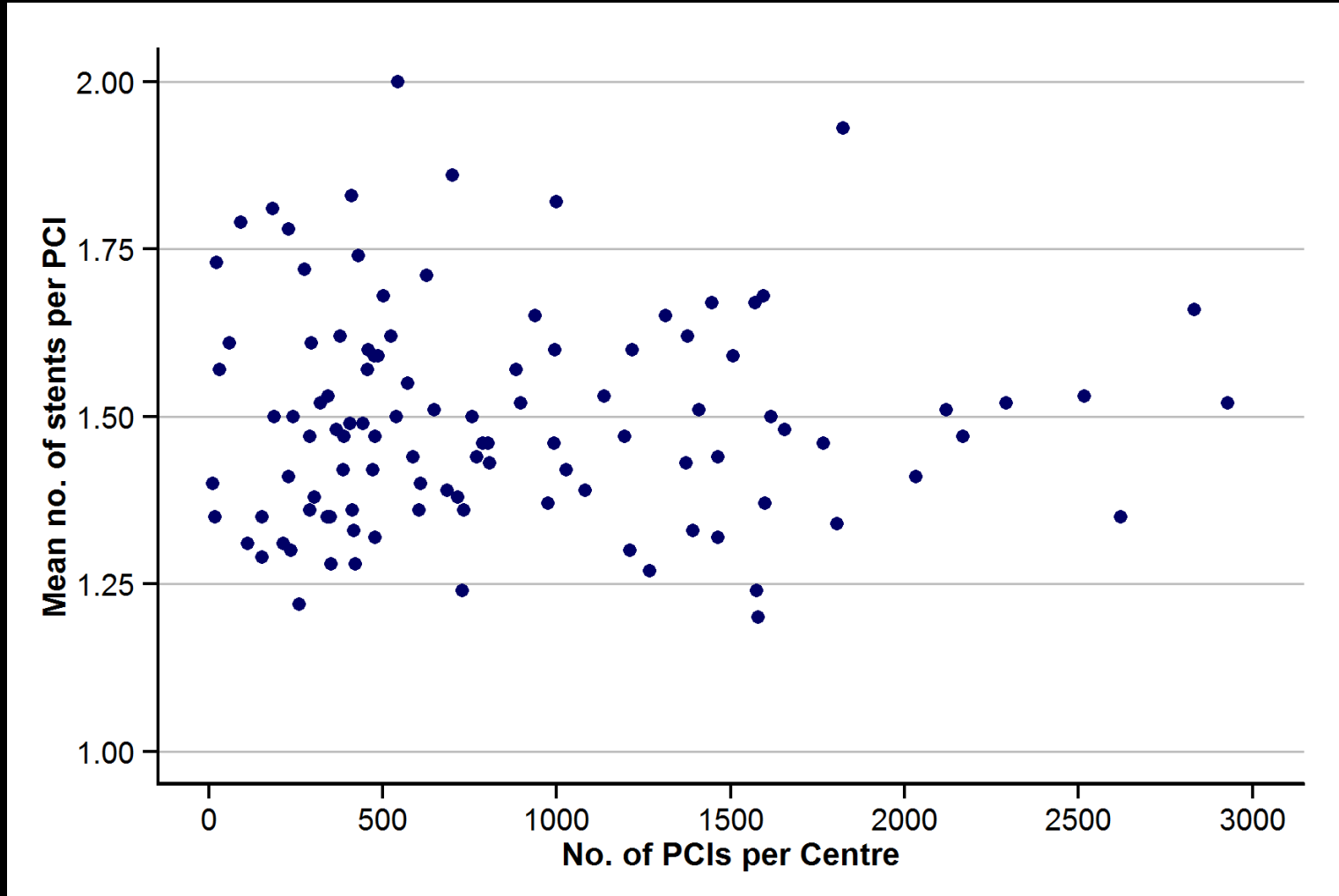
2012 data: Ludman



# Mean Stents per Case (by PCI unit)



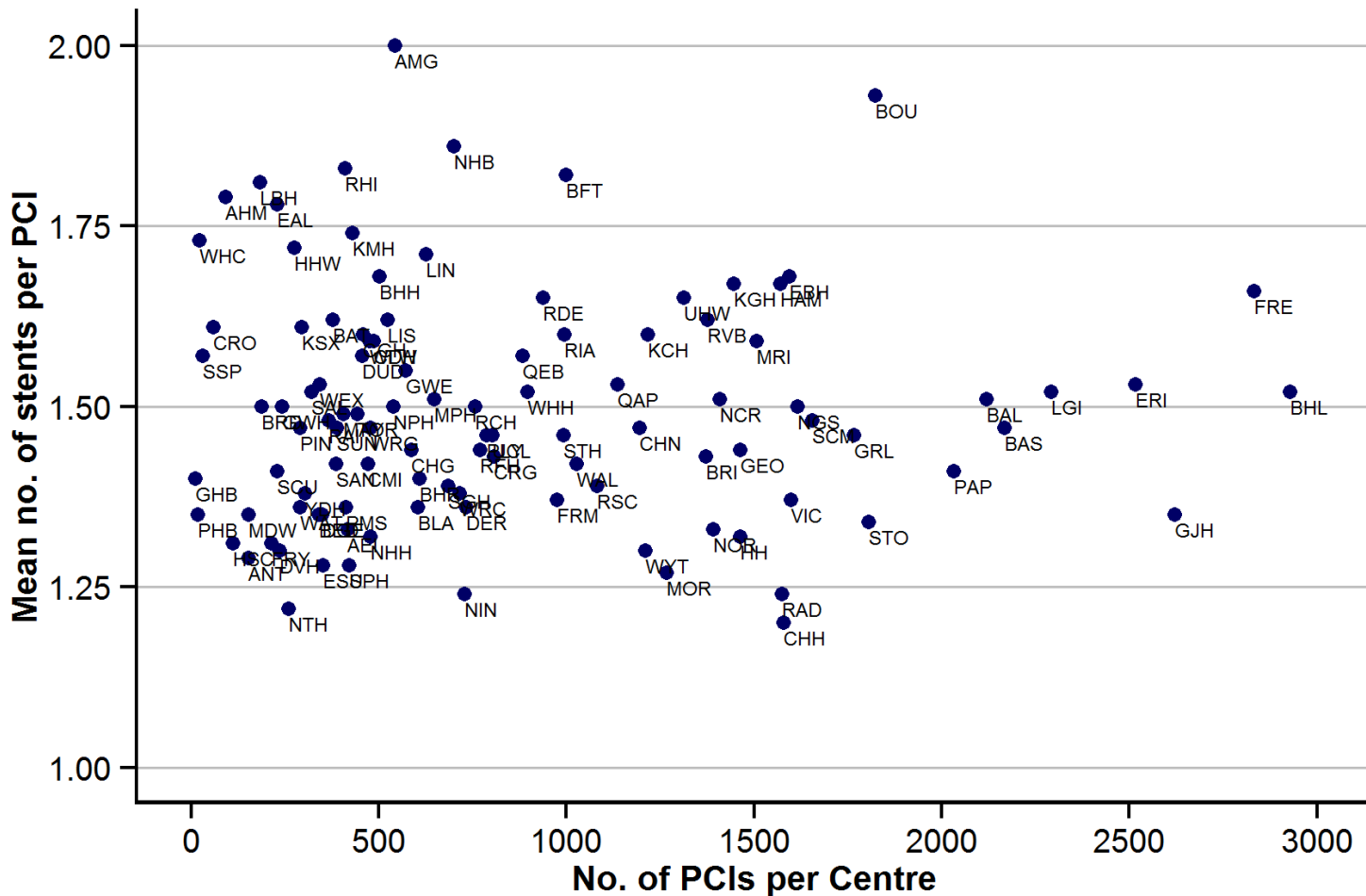
2012 data: Ludman



# Mean Stents per Case (by PCI unit)



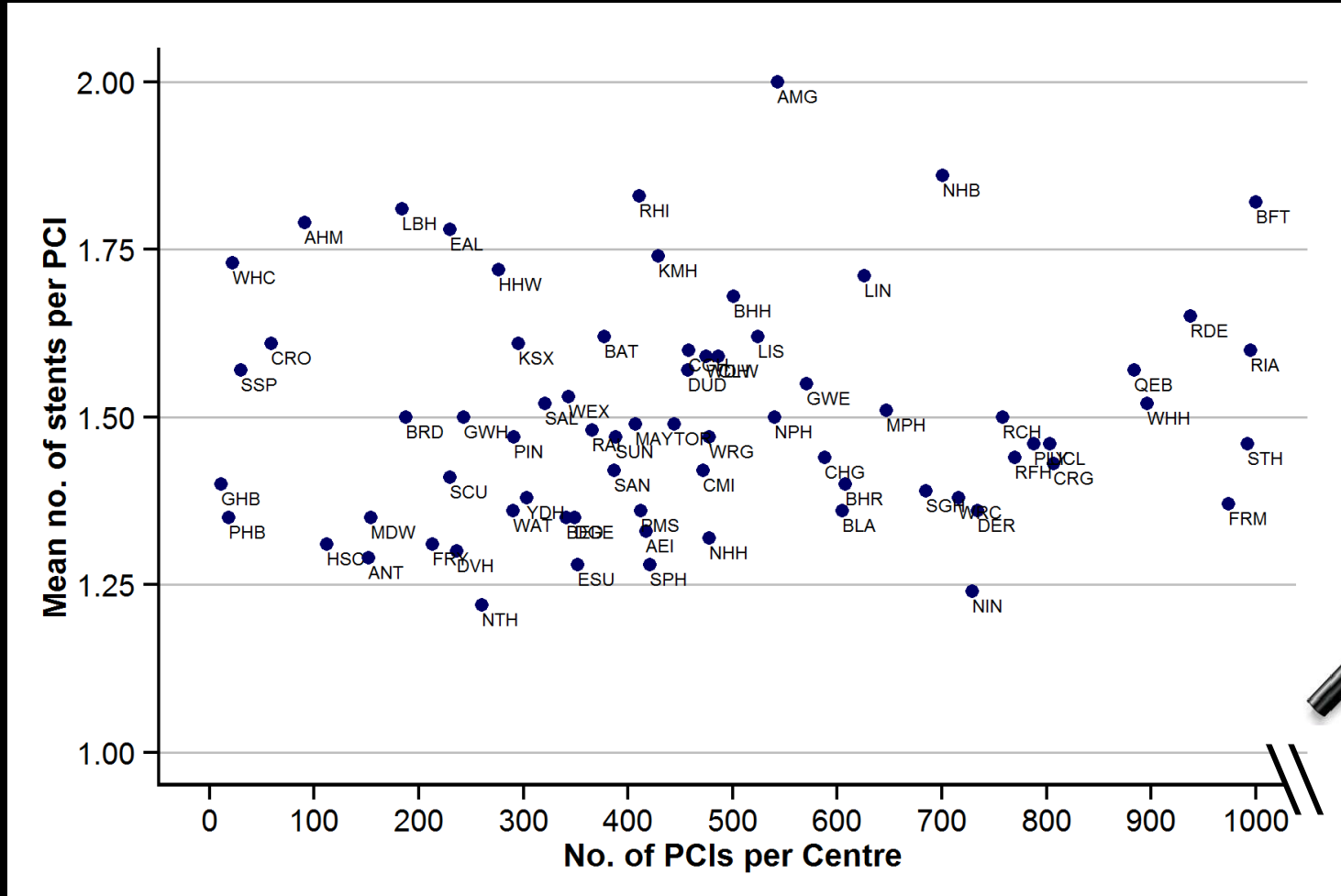
2012 data: Ludman



# Mean Stents per Case (by PCI unit)



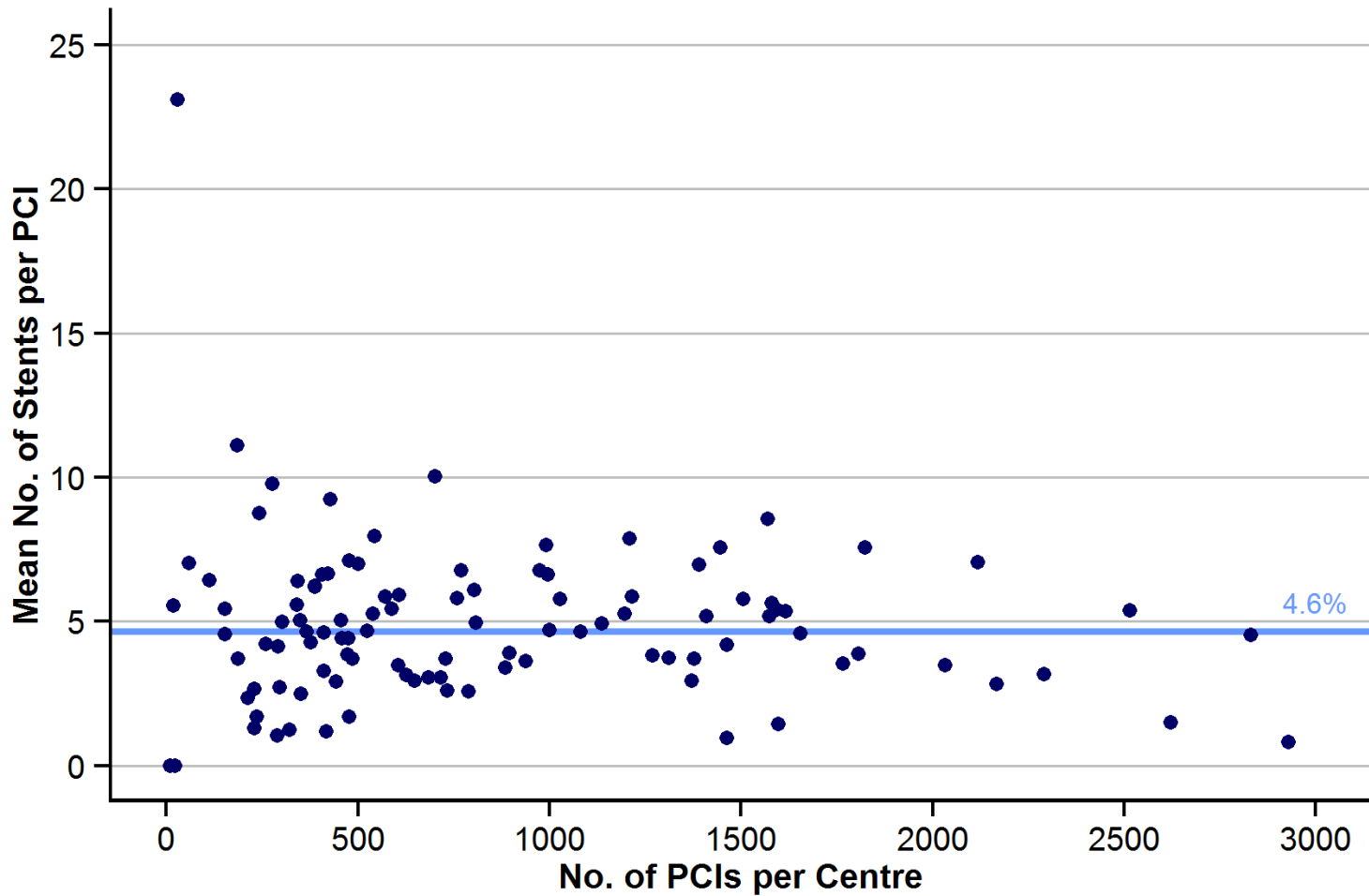
2012 data: Ludman



# Procedures for Restenosis



2012 data: Ludman



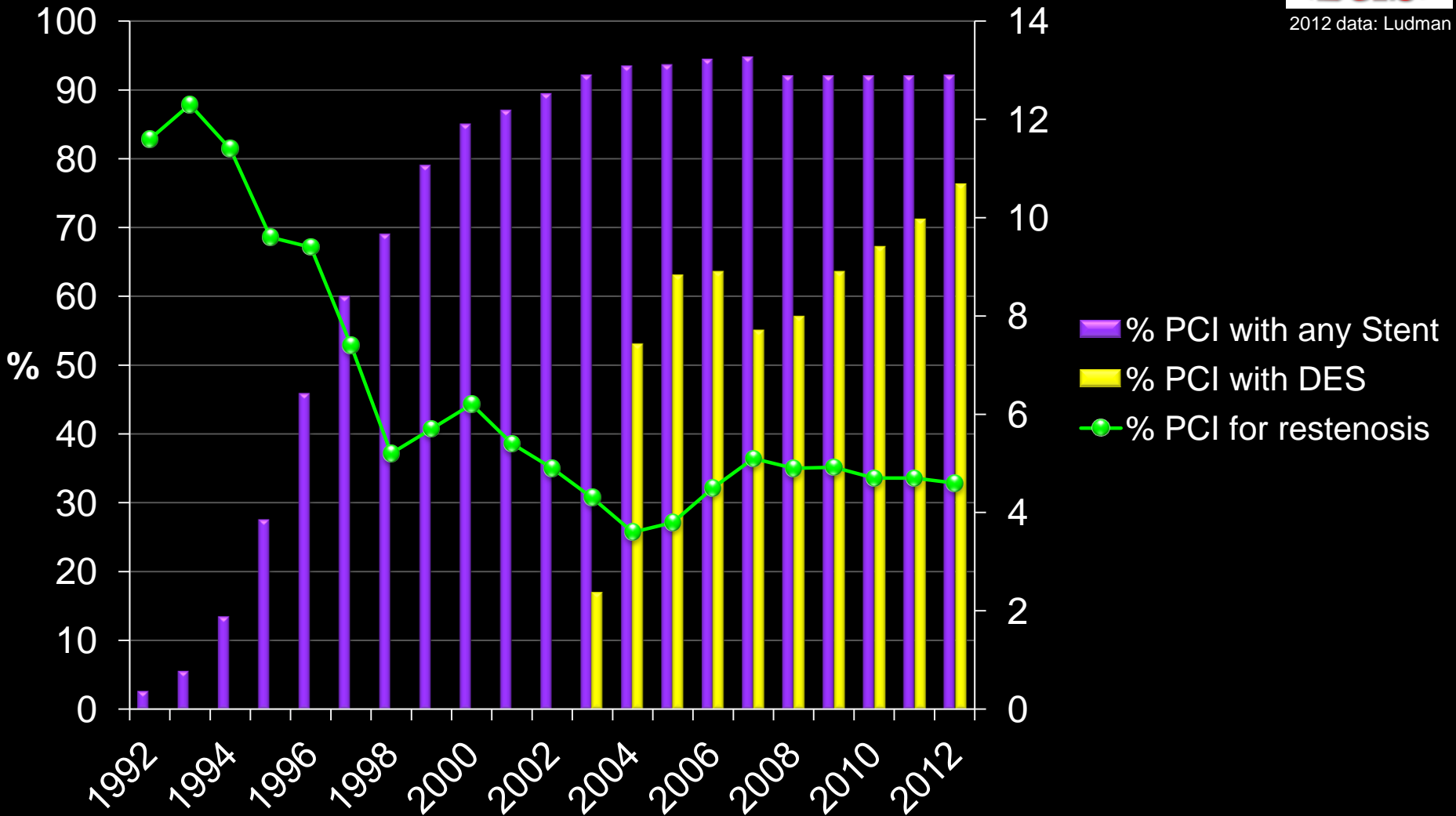




# BMS and DES use v PCI for Restenosis



2012 data: Ludman

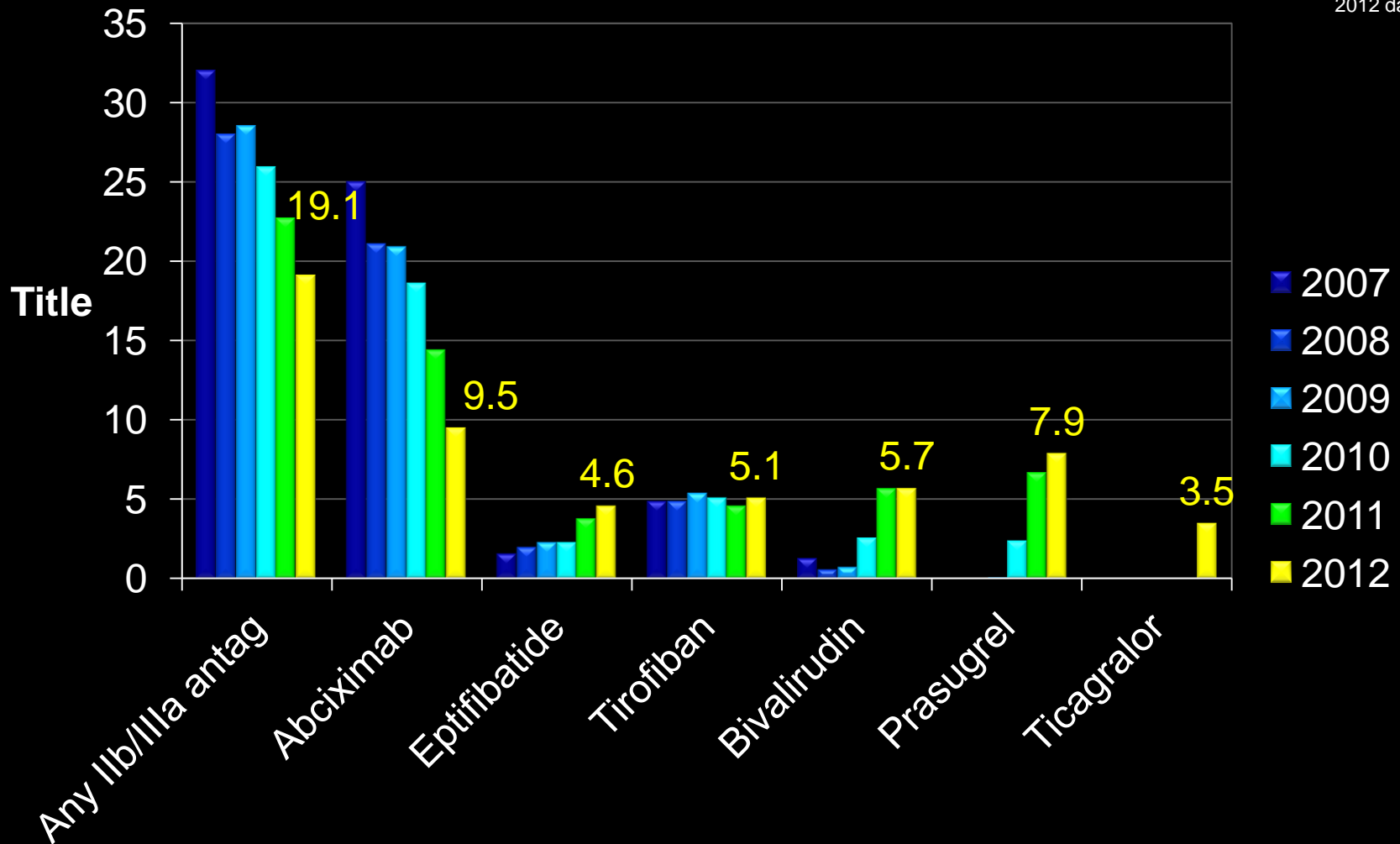


# Adjunctive therapy

## All PCI Indications



2012 data: Ludman

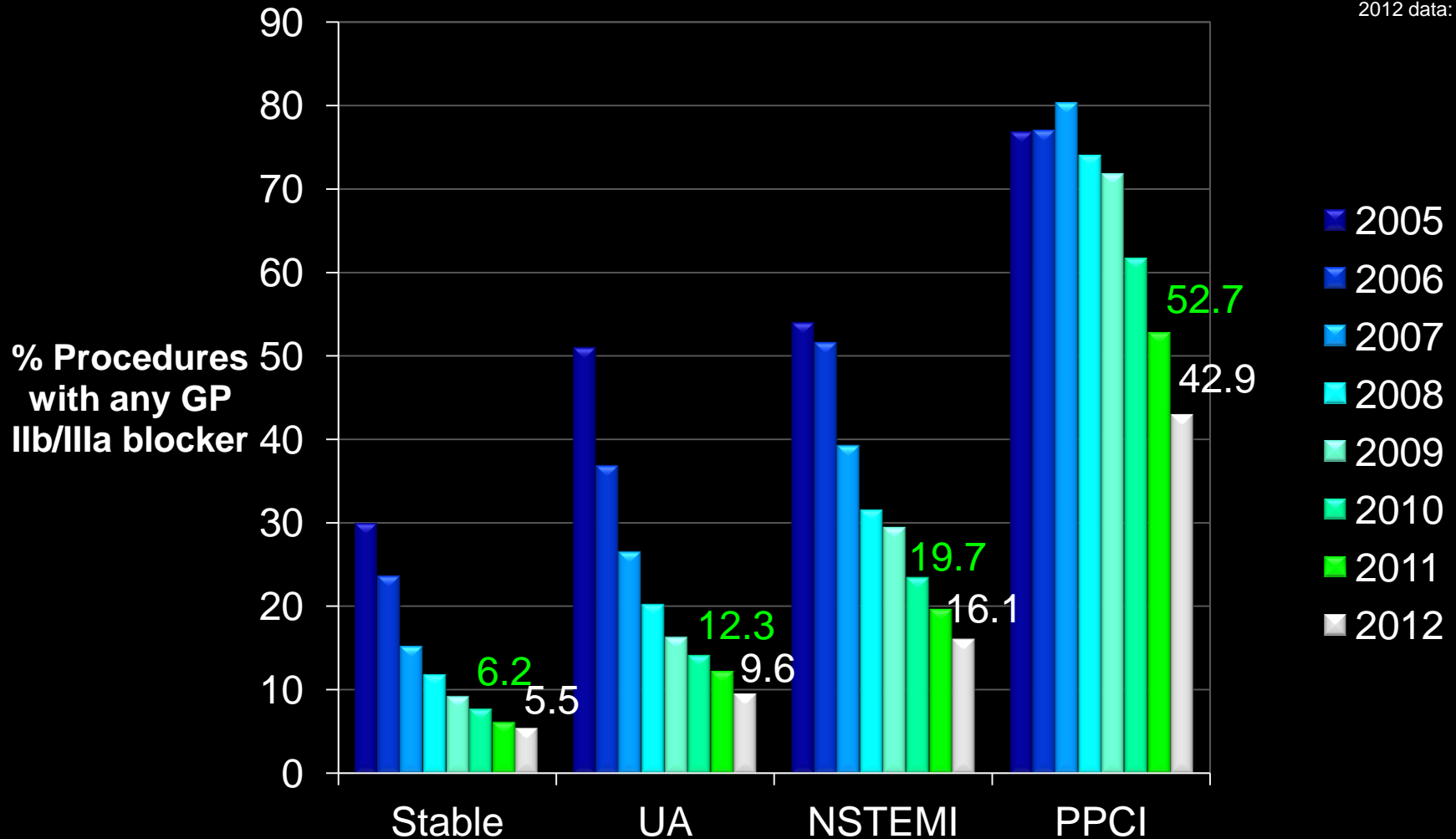


# GP IIb/IIIa Antagonists

## Use by Syndrome



2012 data: Ludman

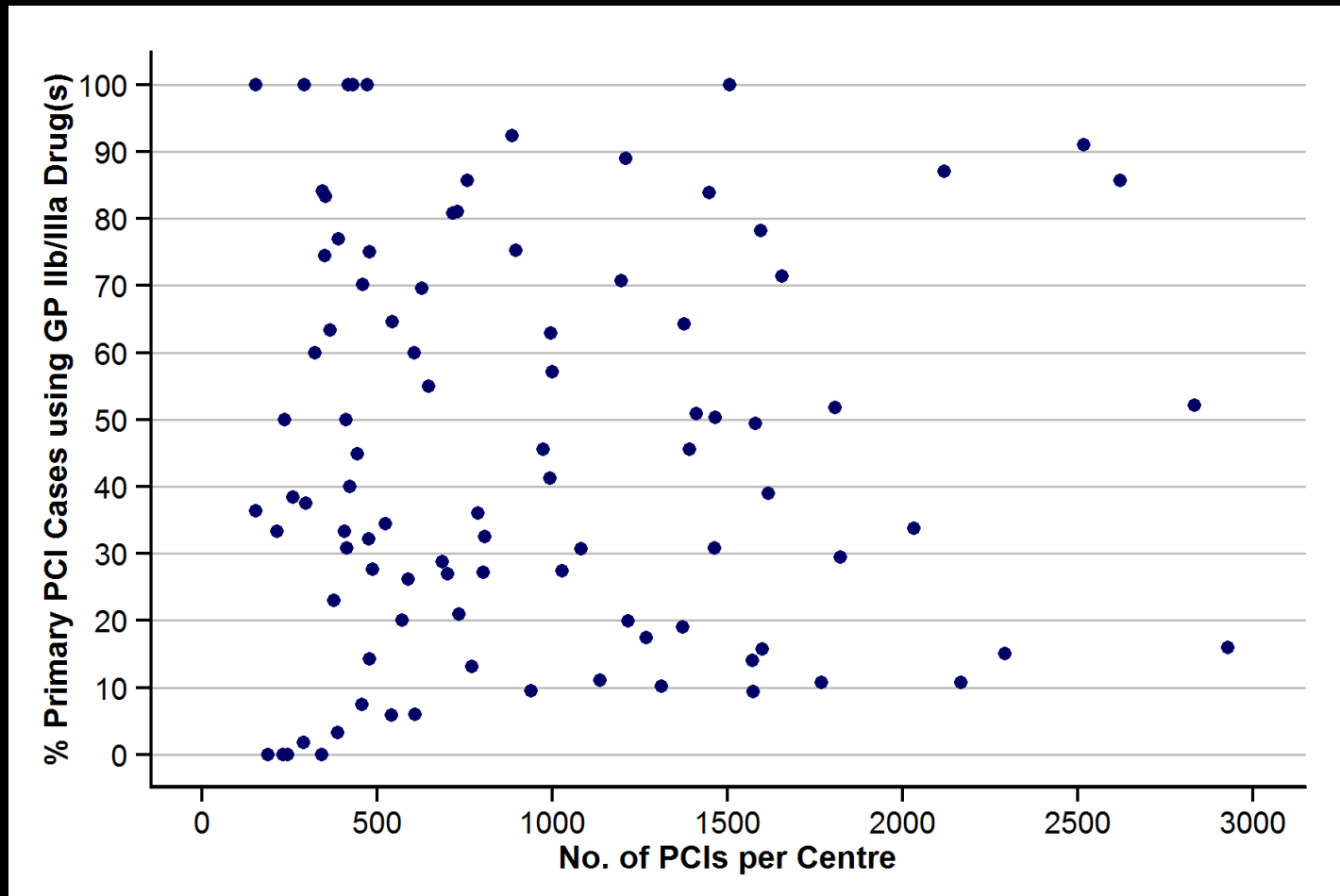


# Any IIb/IIIa Receptor Antagonist

## Use in Primary PCI v activity per unit



2012 data: Ludman

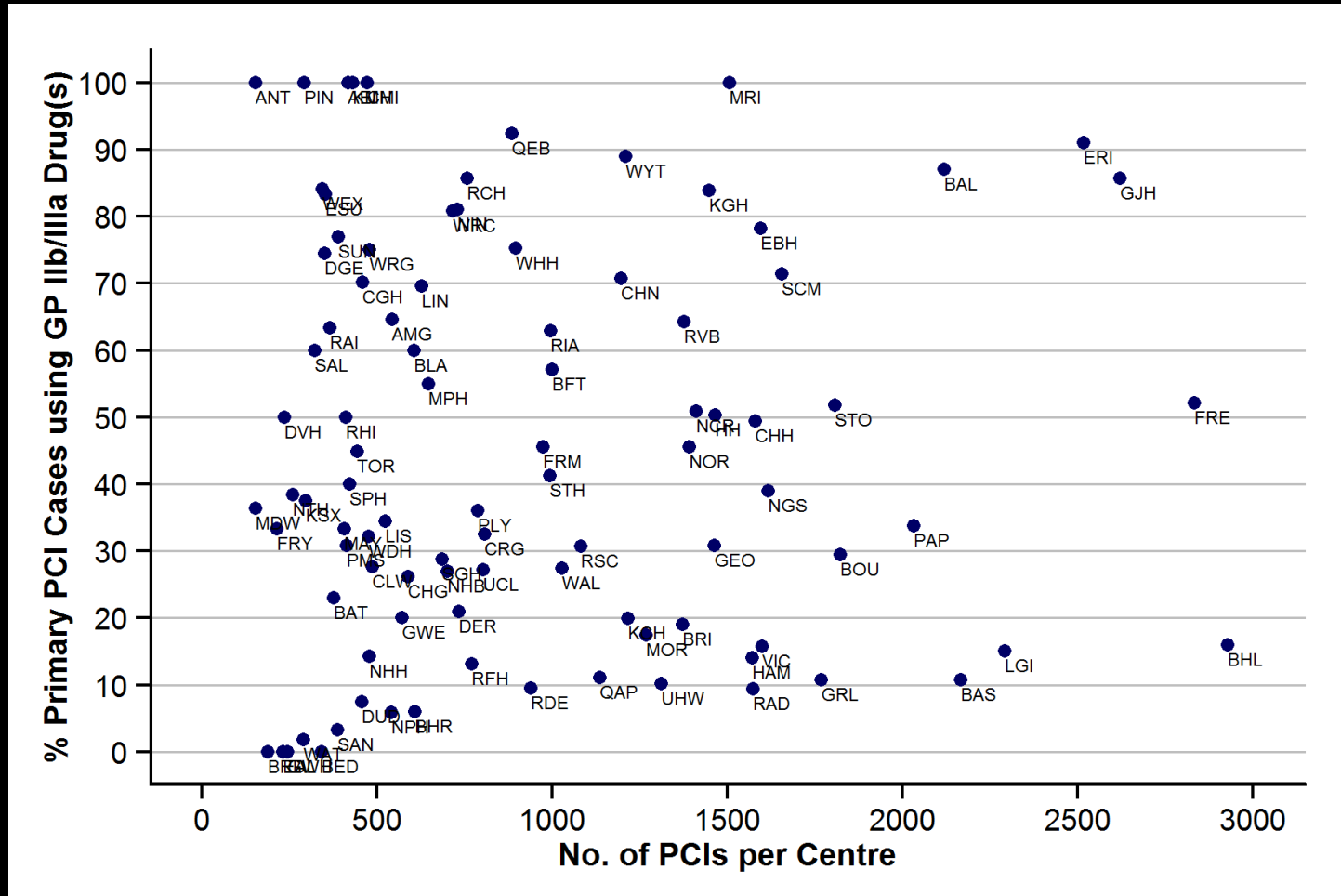


# Any IIb/IIIa Receptor Antagonist

## Use in Primary PCI v activity per unit



2012 data: Ludman

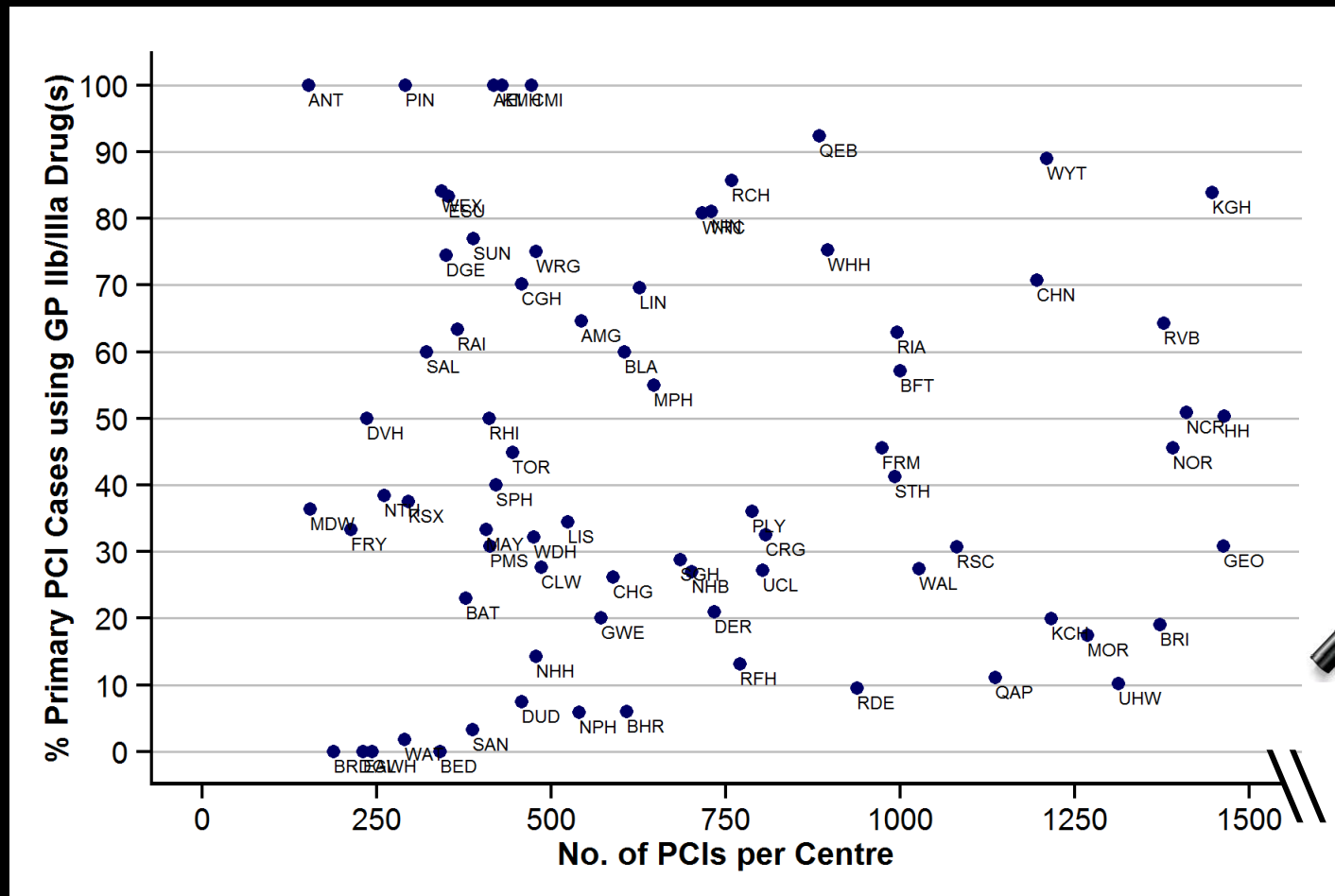


# Any IIb/IIIa Receptor Antagonist

## Use in Primary PCI v activity per unit



2012 data: Ludman



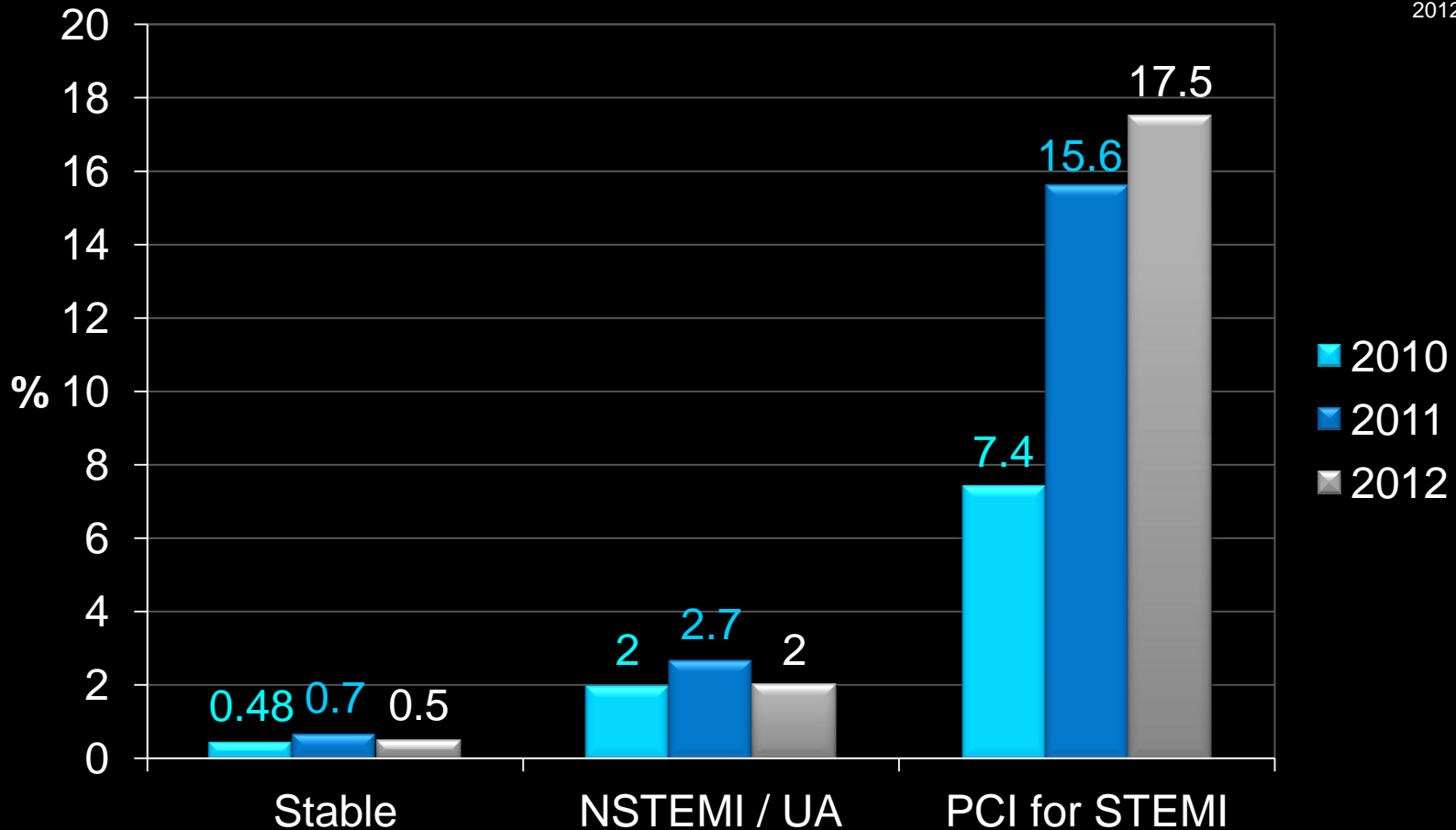
Detail

# Bivilirudin

## Use by Indication for PCI



2012 data: Ludman



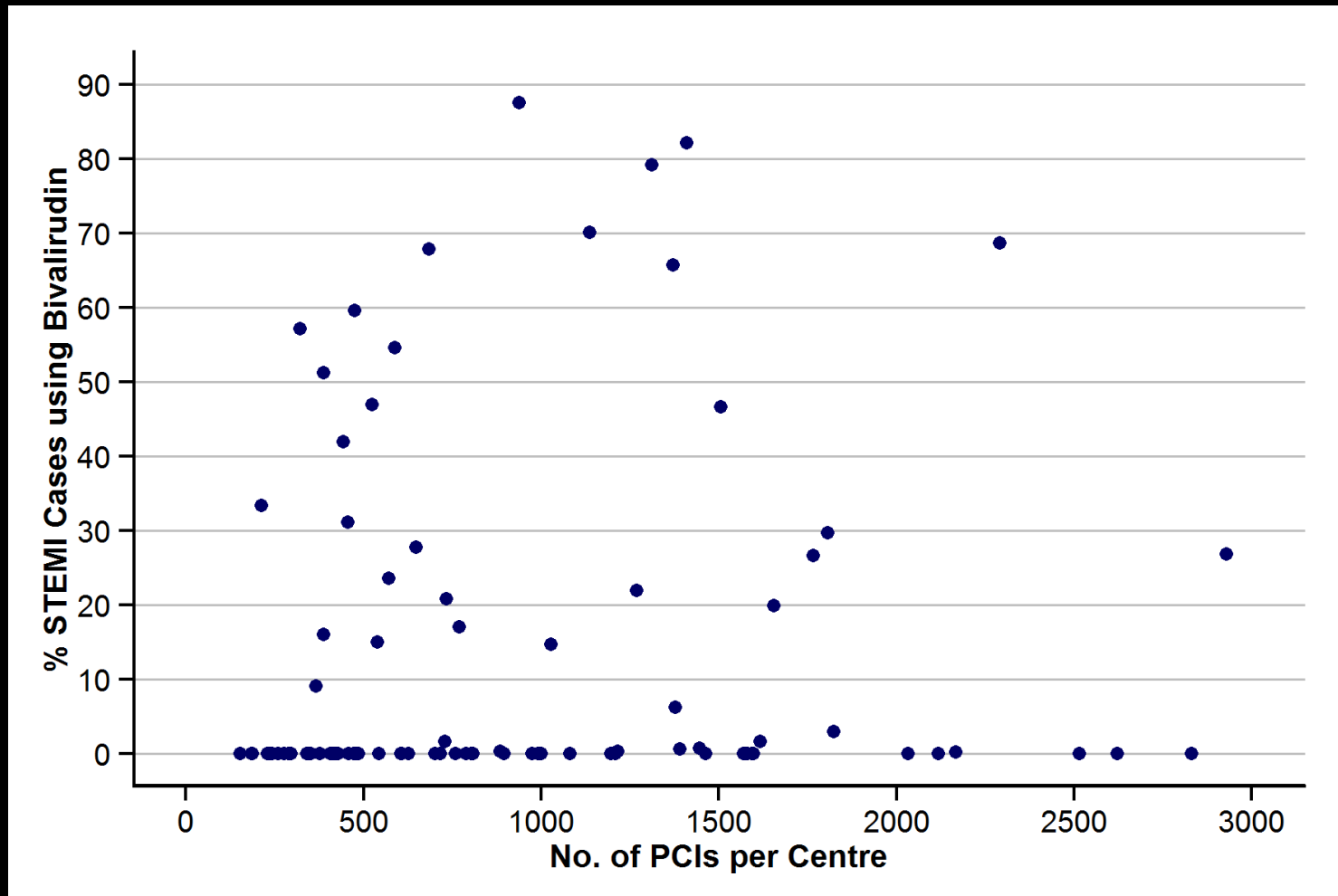
Note: PCI for STEMI includes all indications including rescue

# Bivalirudin

## Use in PCI for STEMI v activity per unit



2012 data: Ludman

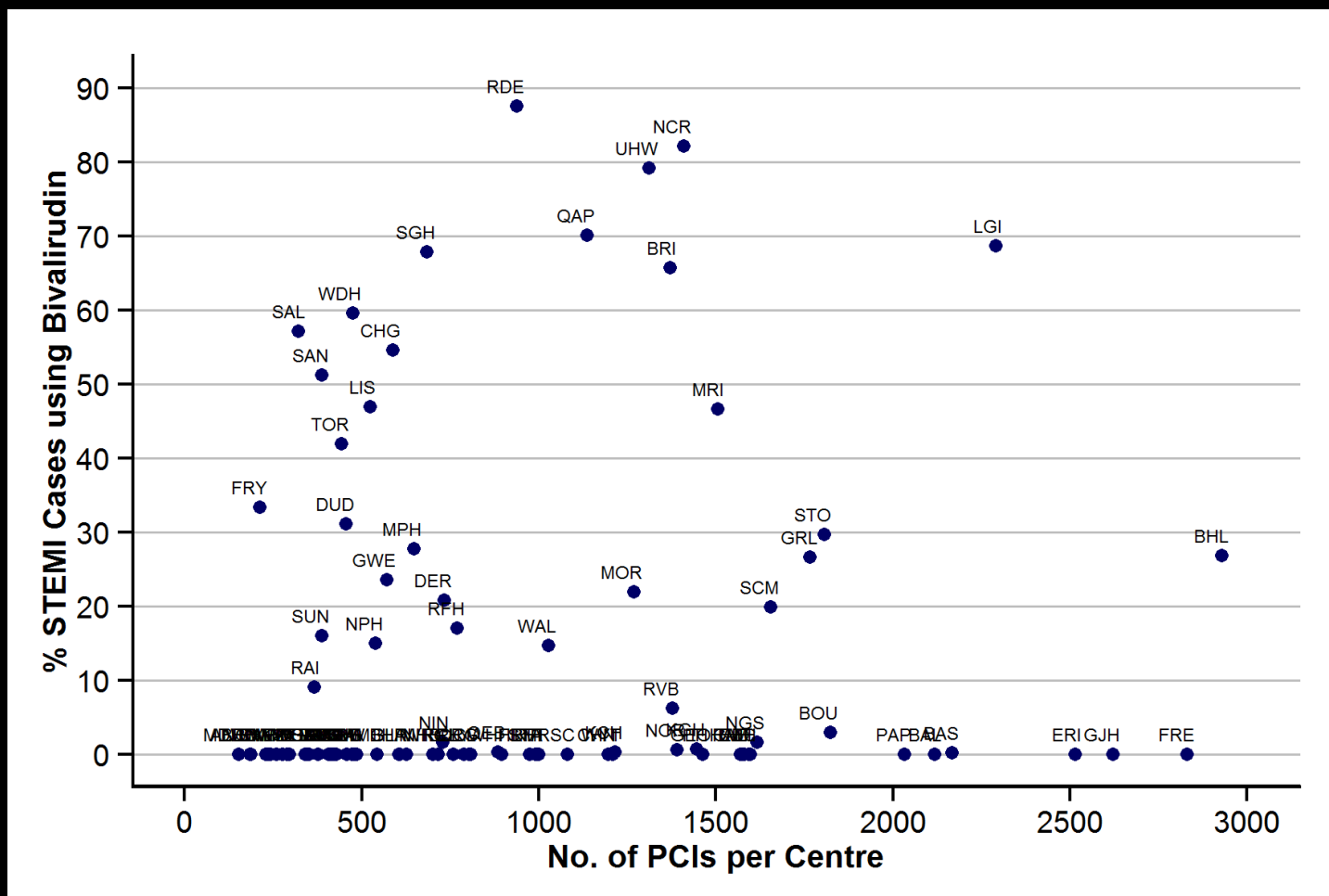


# Bivalirudin

## Use in PCI for STEMI v activity per unit



2012 data: Ludman



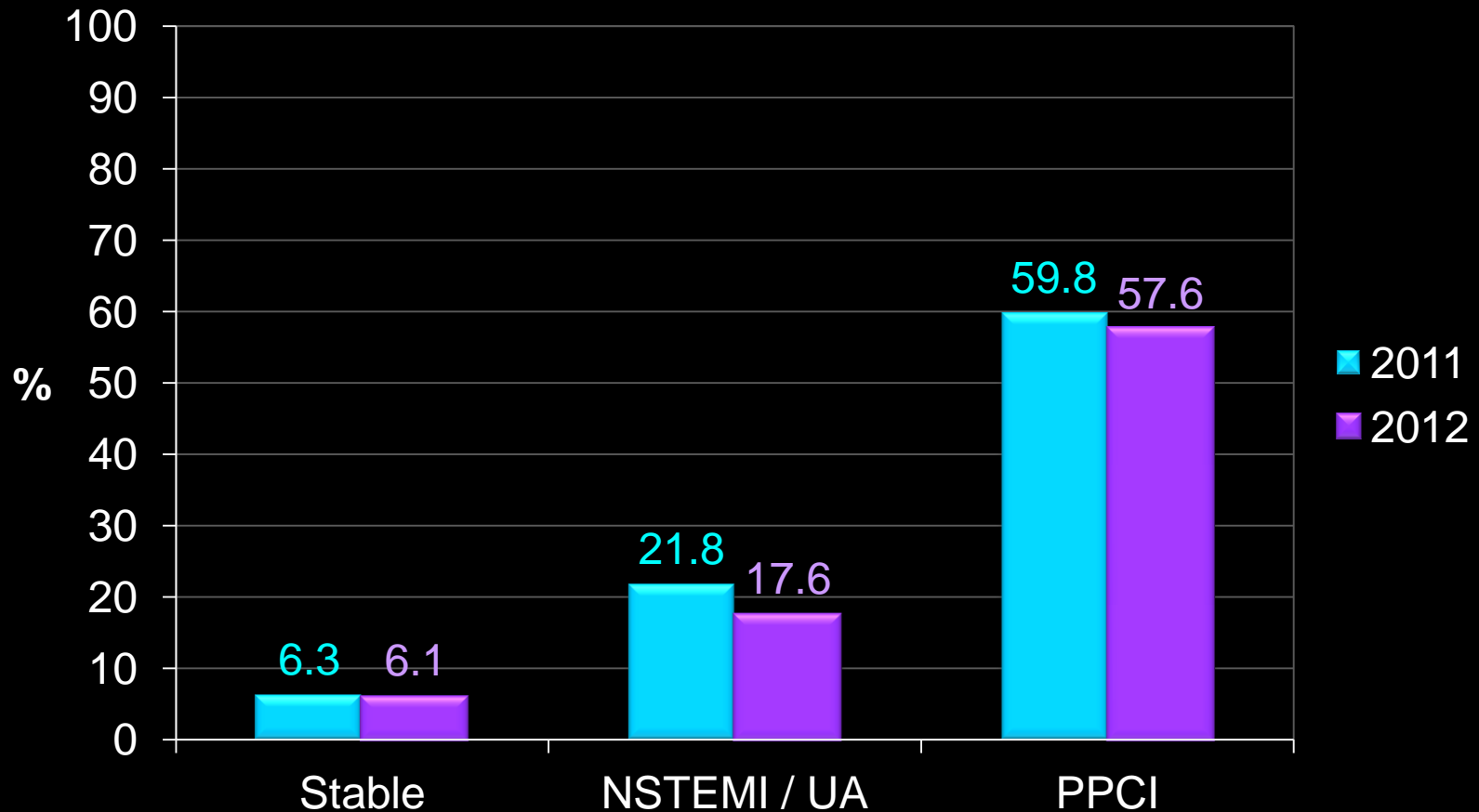
Note: PCI for STEMI includes all indications including rescue

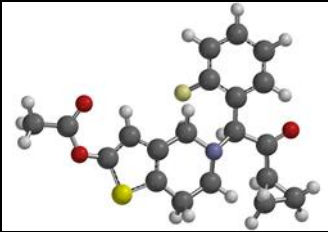
# Bivilirudin or Any GP IIb/IIIa Blocker

## Use by Indication for PCI



2012 data: Ludman



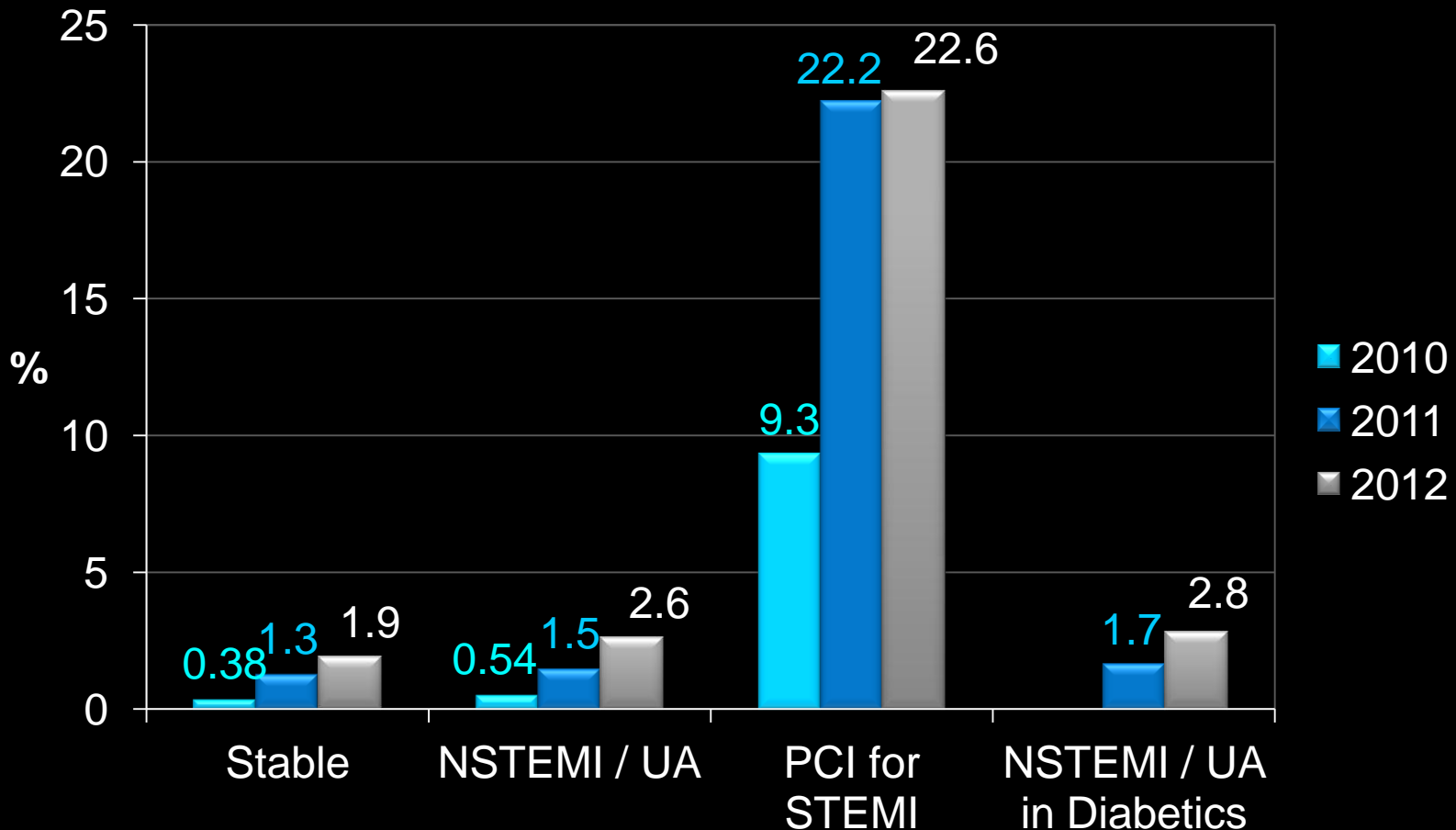


# Prasugrel

## Use by Indication for PCI



2012 data: Ludman



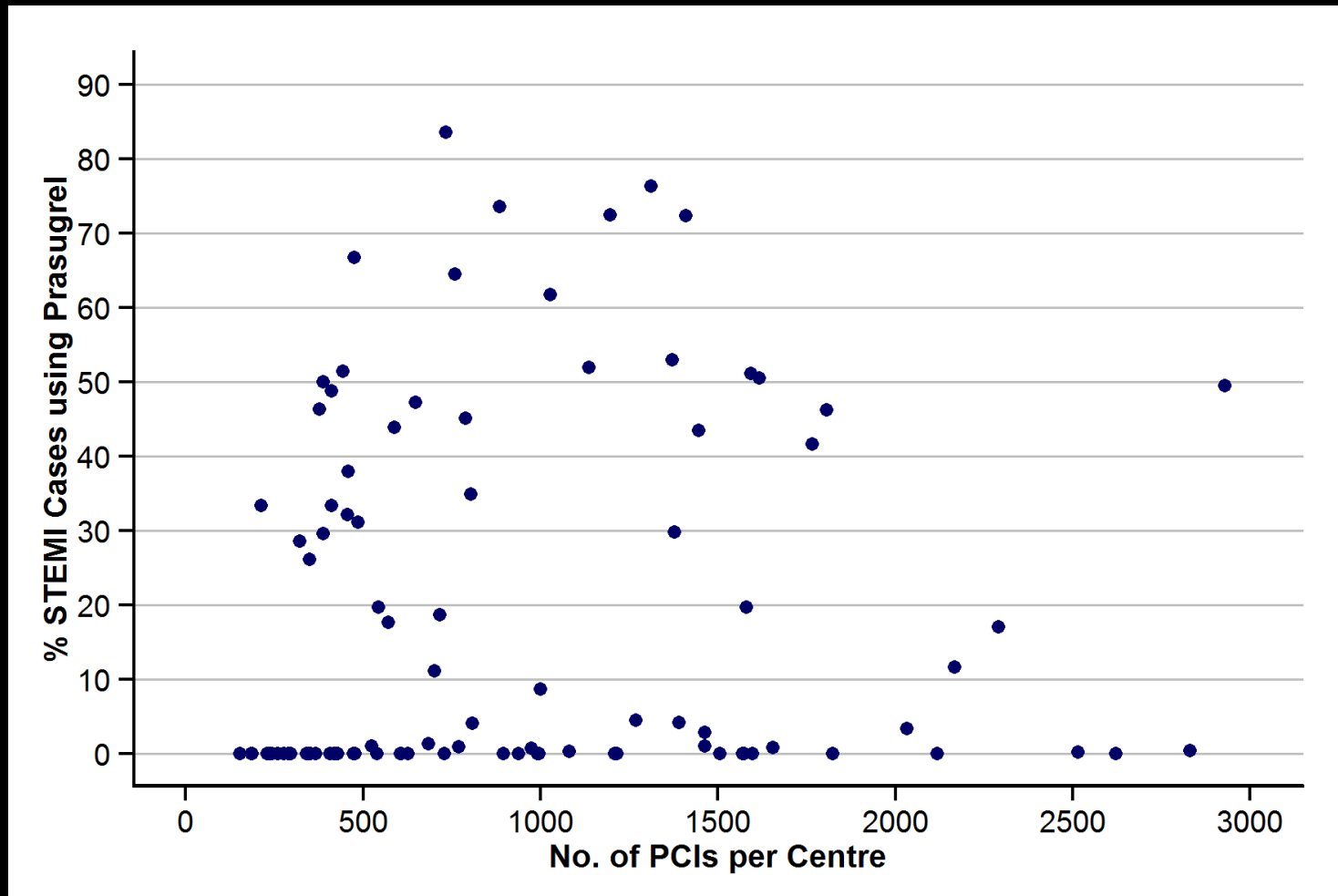
Note: PCI for STEMI includes all indications including rescue

# Prasugrel

## Use in PCI for STEMI v activity per unit



2012 data: Ludman

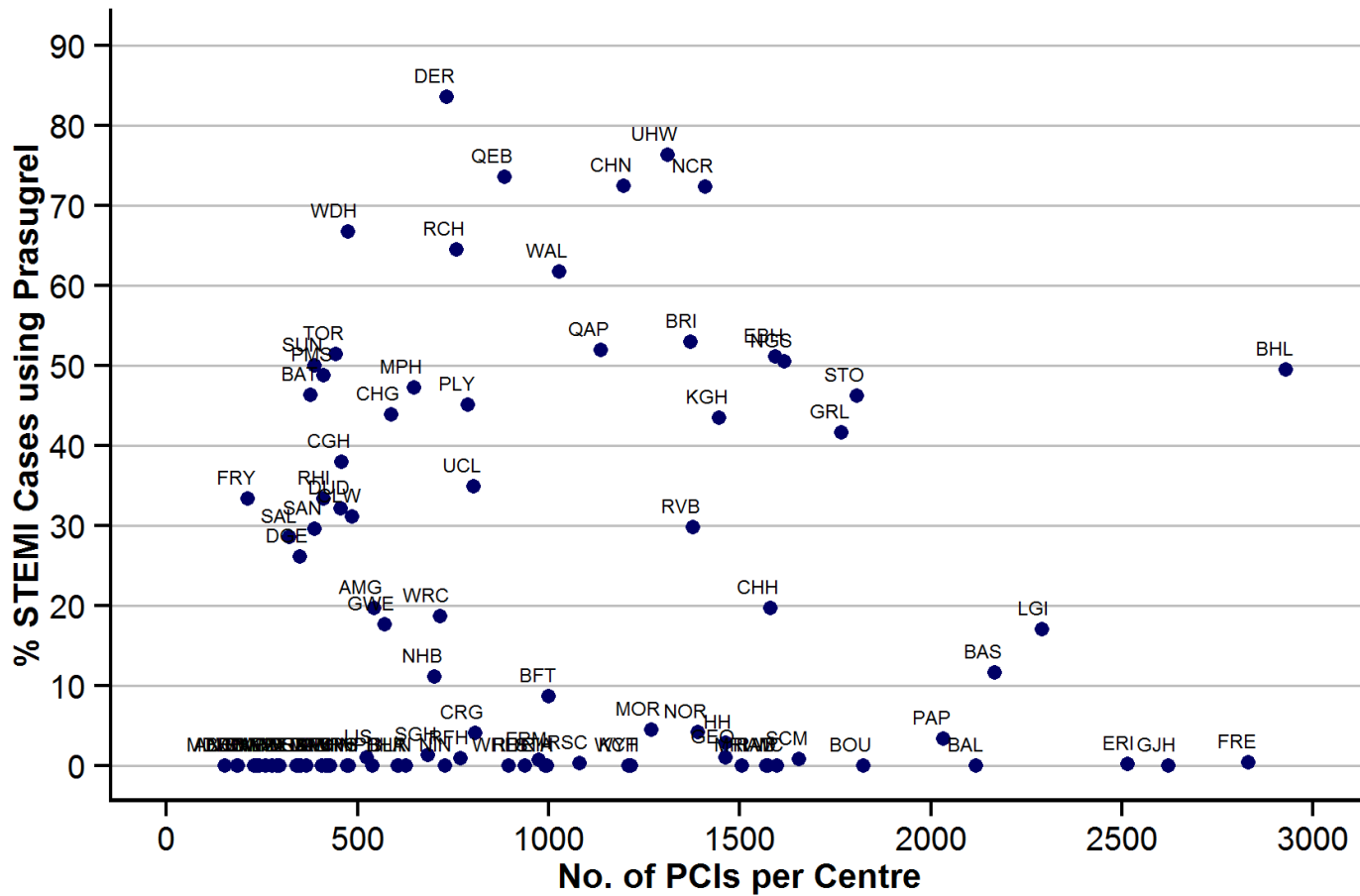


# Prasugrel

## Use in PCI for STEMI v activity per unit



2012 data: Ludman



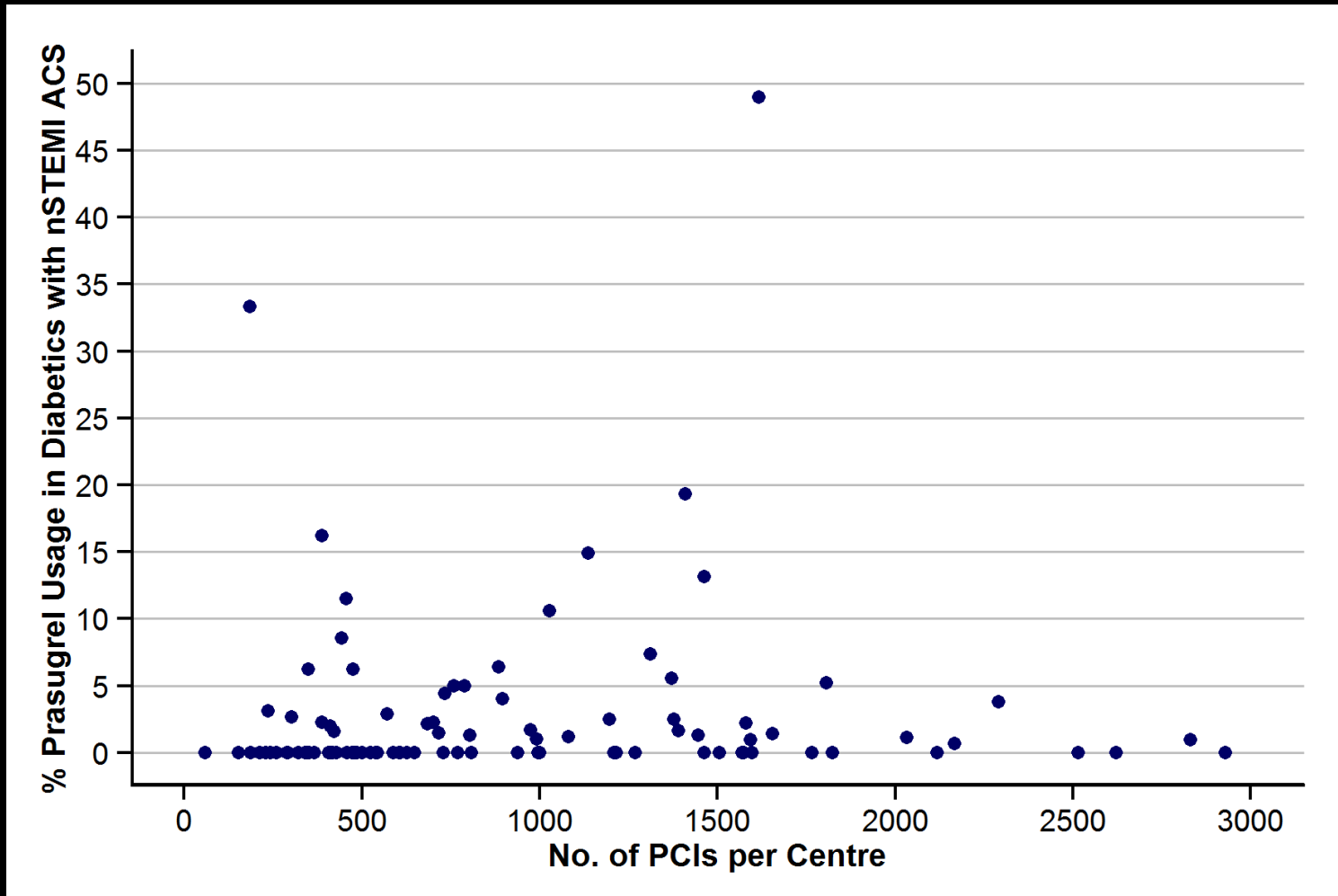
Note: PCI for STEMI includes all indications including rescue

# Prasugrel

## Use in Diabetics with NSTEMI by centre



2012 data: Ludman

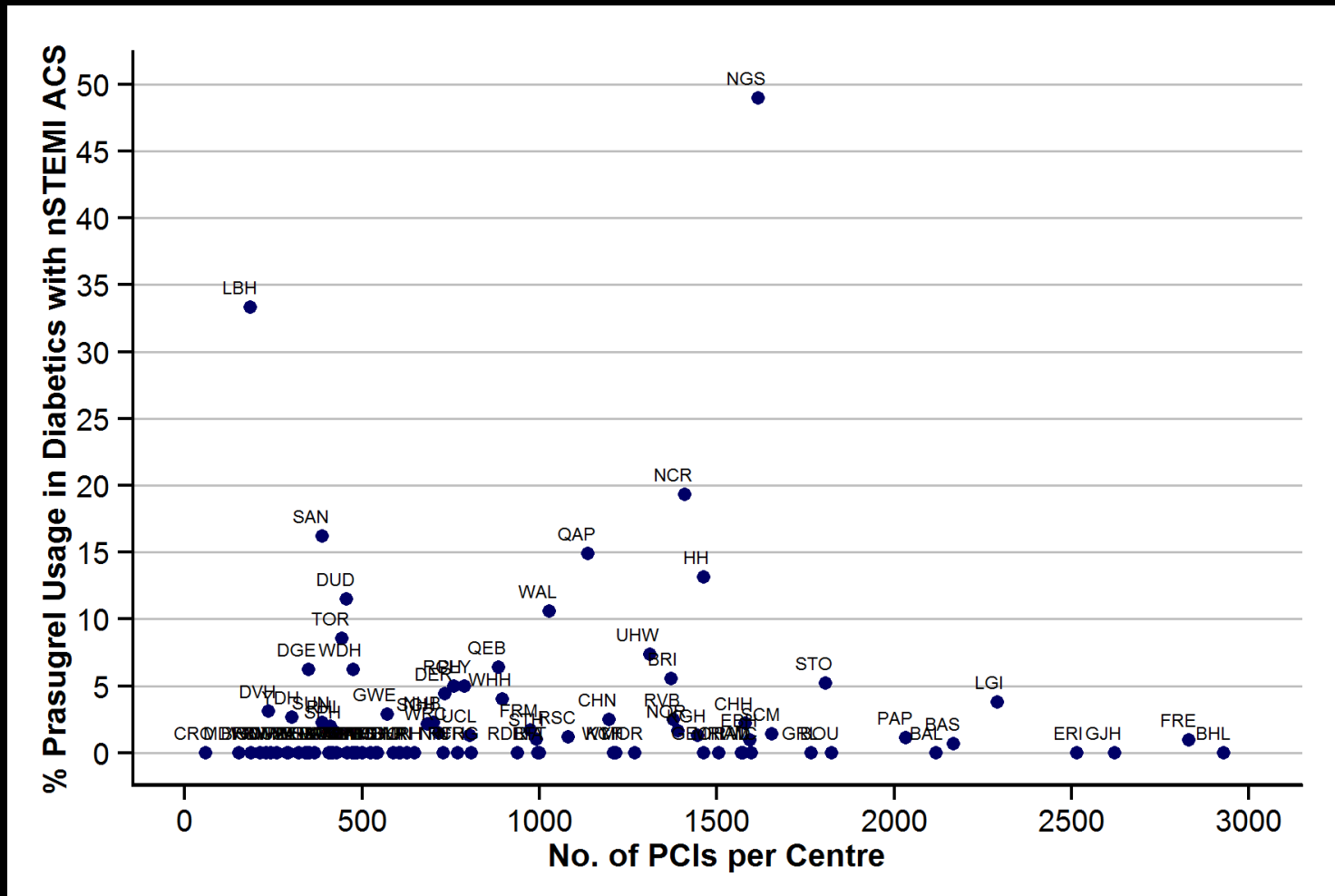


# Prasugrel

## Use in Diabetics with NSTEMI by centre



2012 data: Ludman



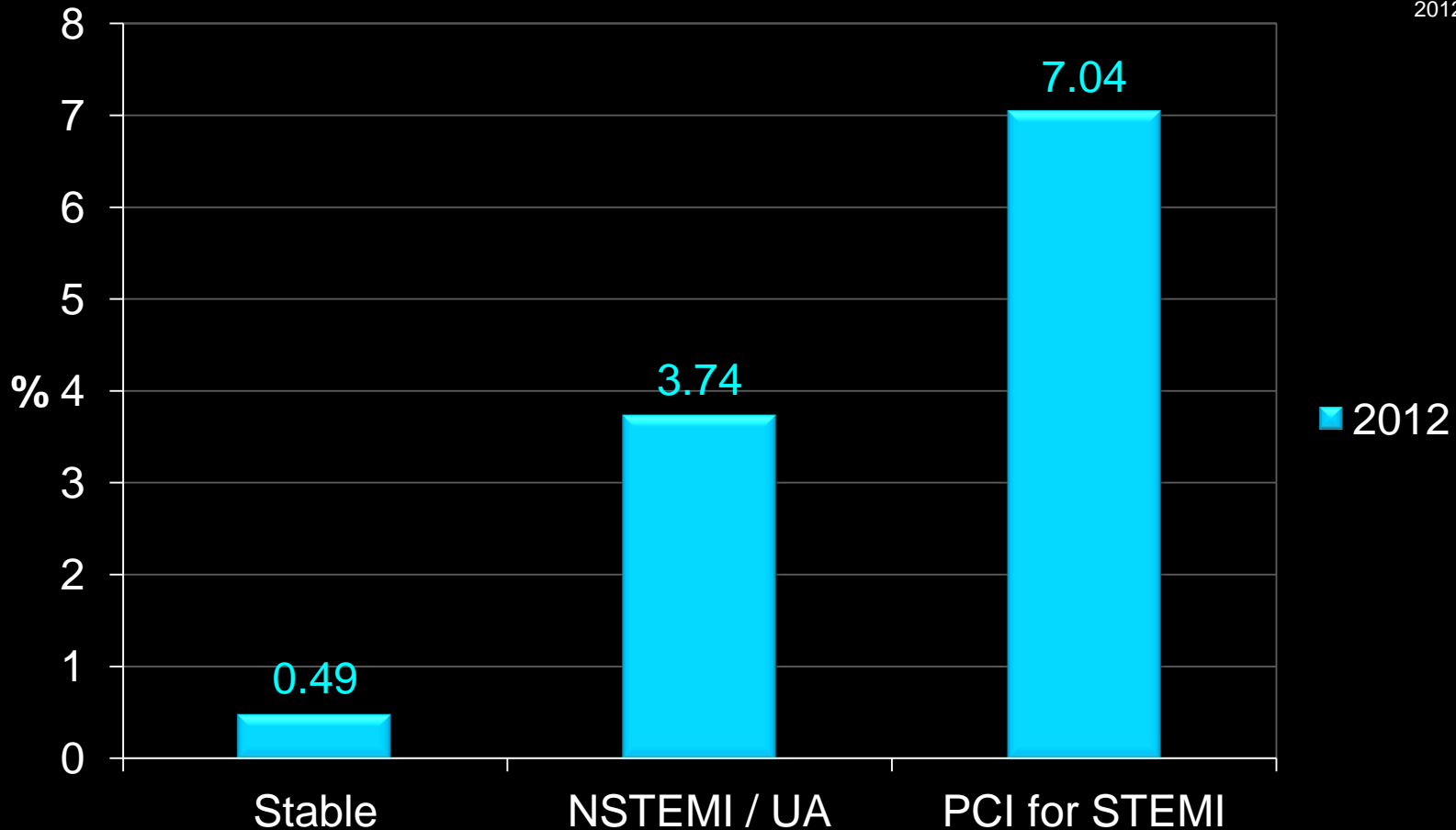


# Ticagrelor

## Use by Indication for PCI



2012 data: Ludman



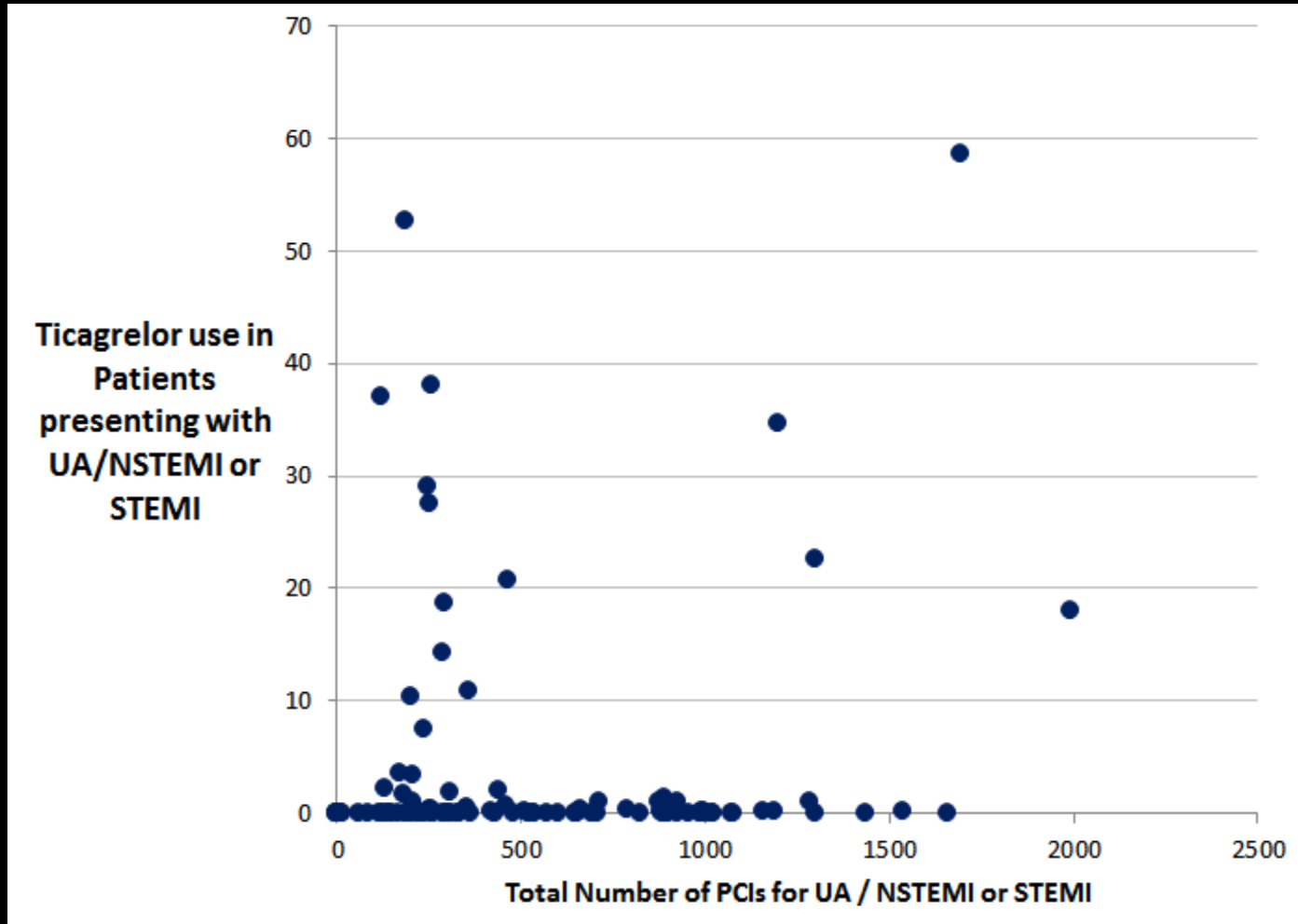
Note: PCI for STEMI includes all indications including rescue

# Ticagrelor

## Use in all NSTEMI and STEMI by Centre



2012 data: Ludman



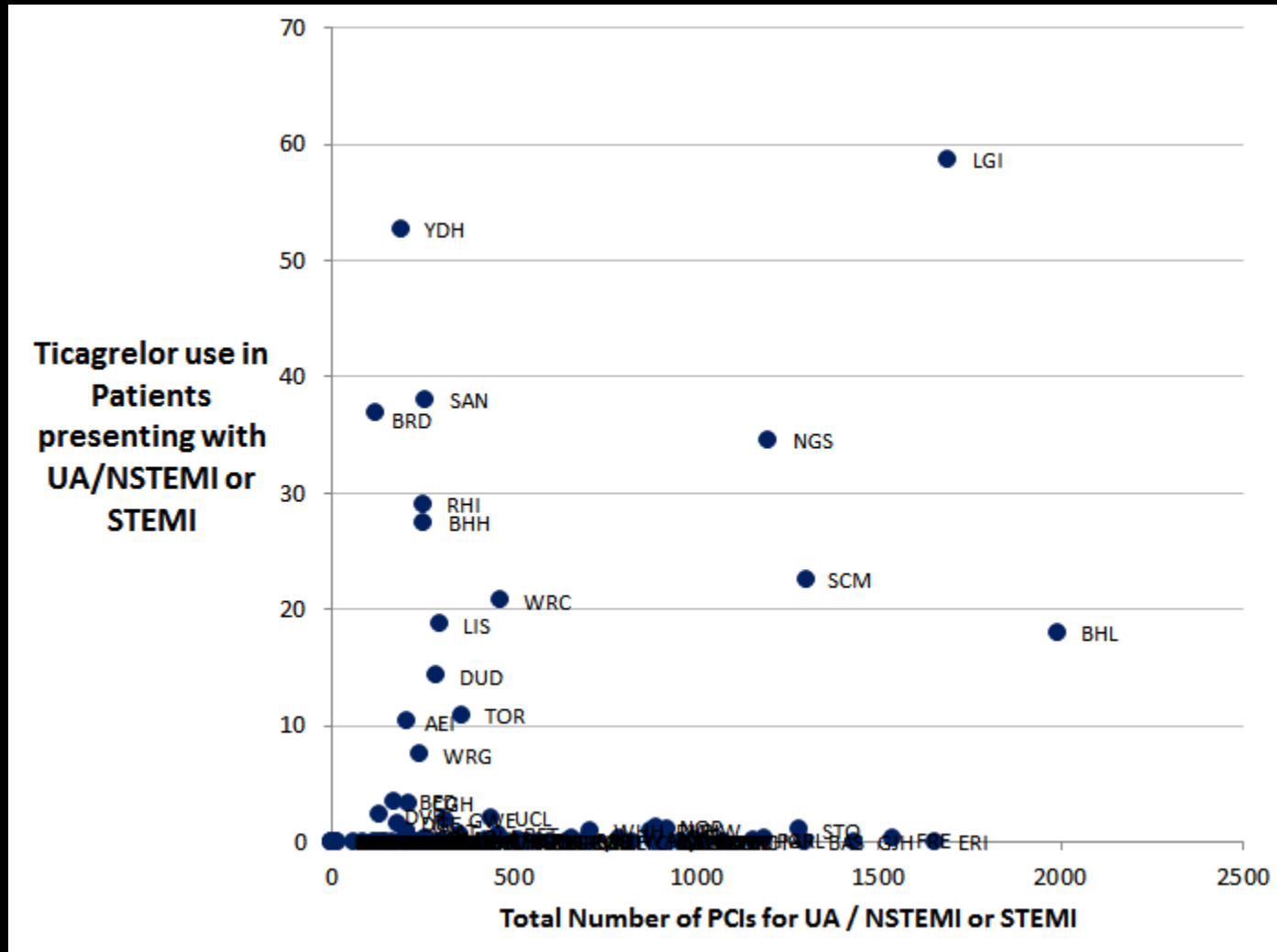
Note: PCI for STEMI includes all indications including rescue

# Ticagrelor

## Use in all NSTEMI and STEMI by Centre



2012 data: Ludman

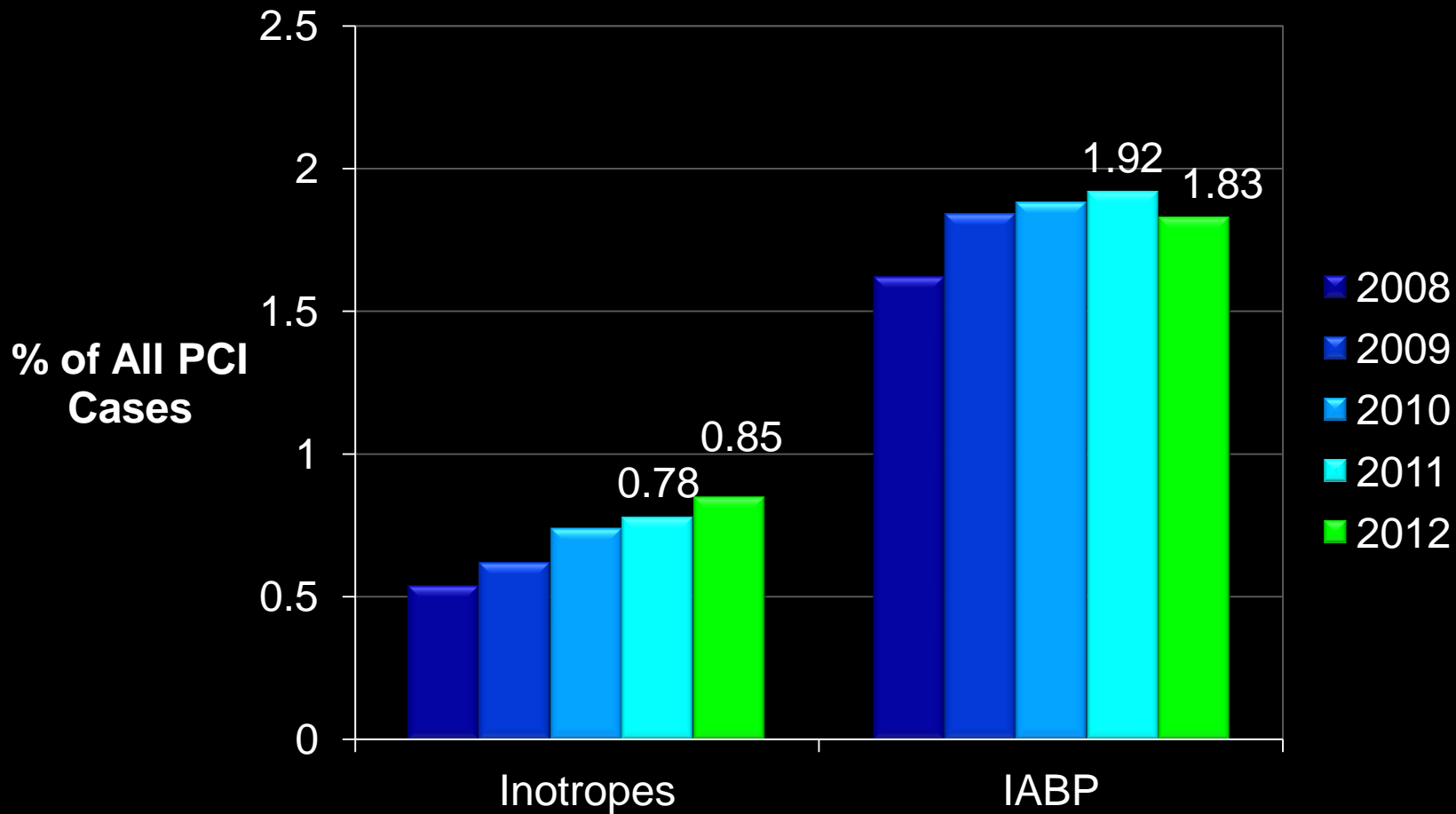


Note: PCI for STEMI includes all indications including rescue

# LV Support



2012 data: Ludman



# LV Support



2012 data: Ludman

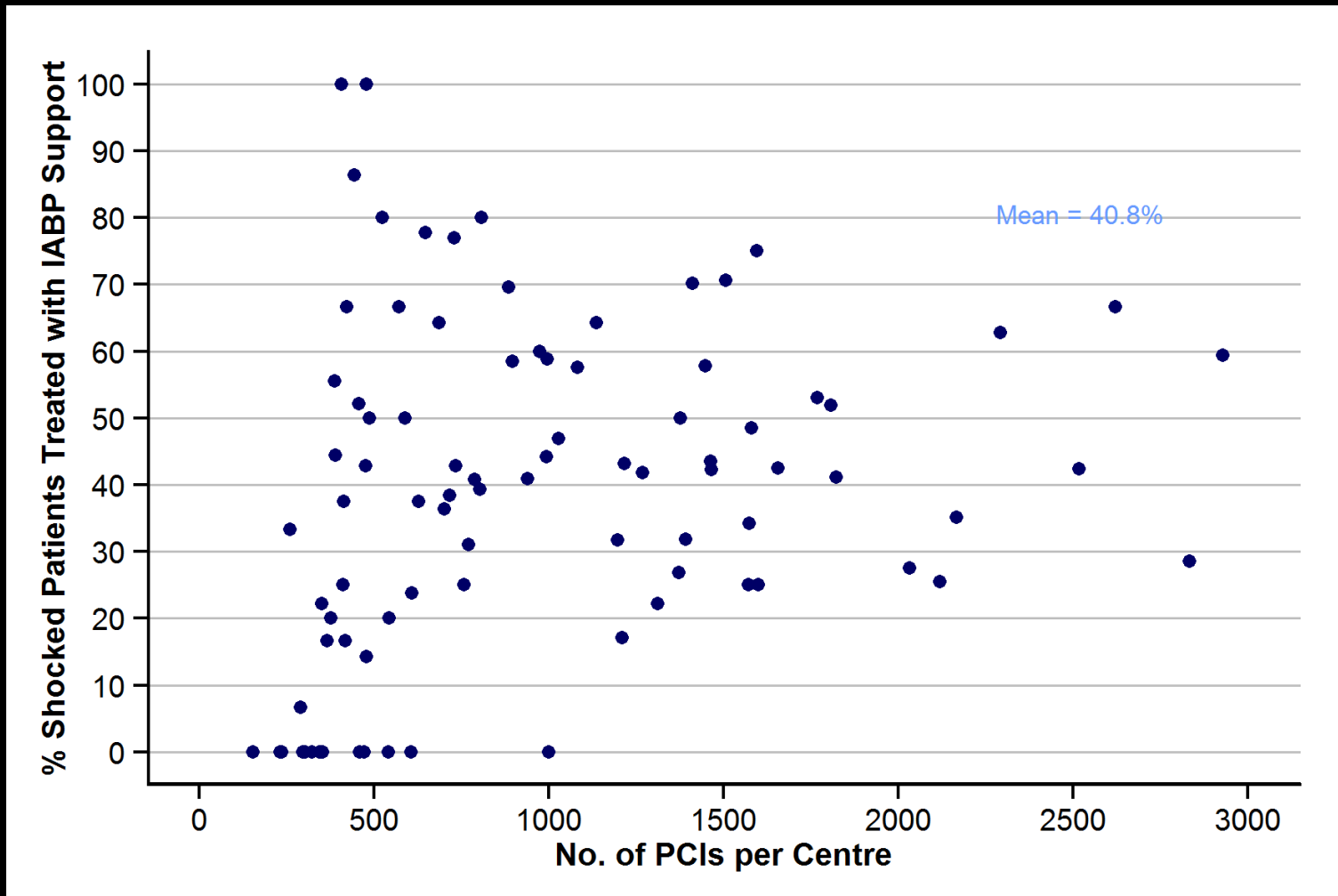
Circulatory support	existing field 3.24
additions to library in red	
	0 None
	1 Inotropes
	2 IABP
	3 CPS
	4 Impella
	5 Lucas
	6 Autopulse
	7 ECMO
	99 Unlisted

# Shock Cases Treated with IABP support

Mean = 40.8%



2012 data: Ludman



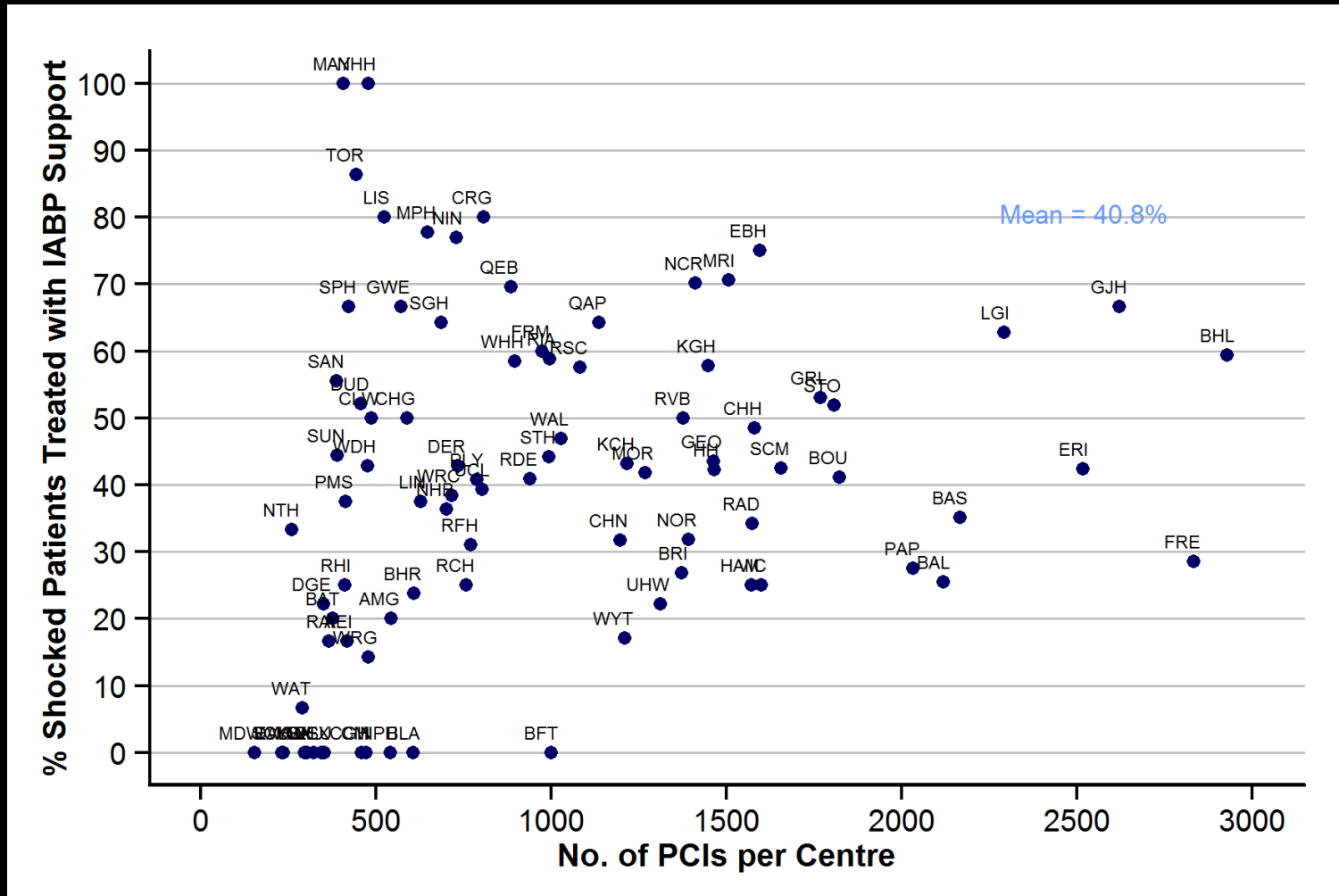
Does not include Impella use

# Shock Cases Treated with IABP support

Mean = 40.8%



2012 data: Ludman



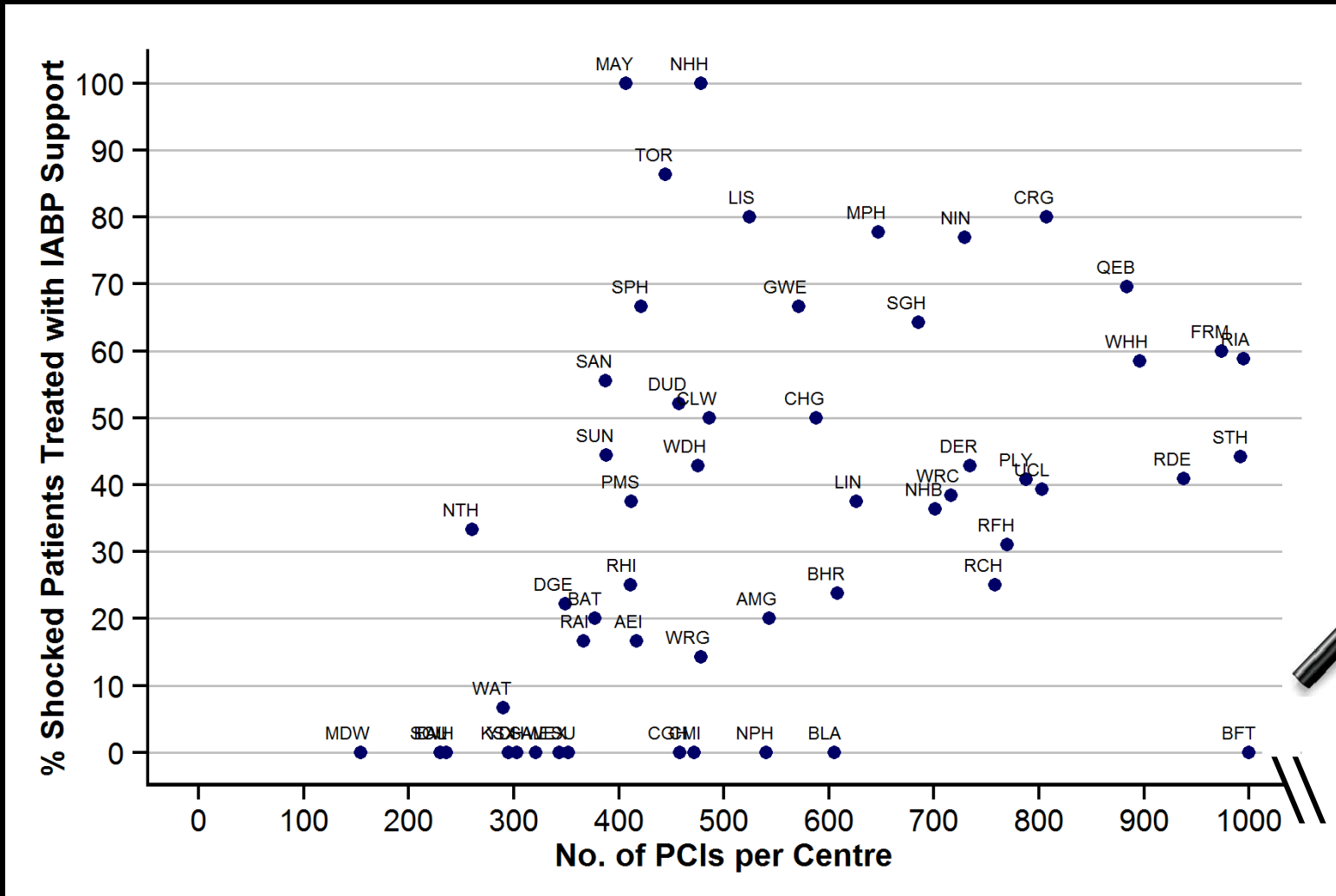
Does not include Impella use

# Shock Cases Treated with IABP support

Mean = 40.8%



2012 data: Ludman



Detail

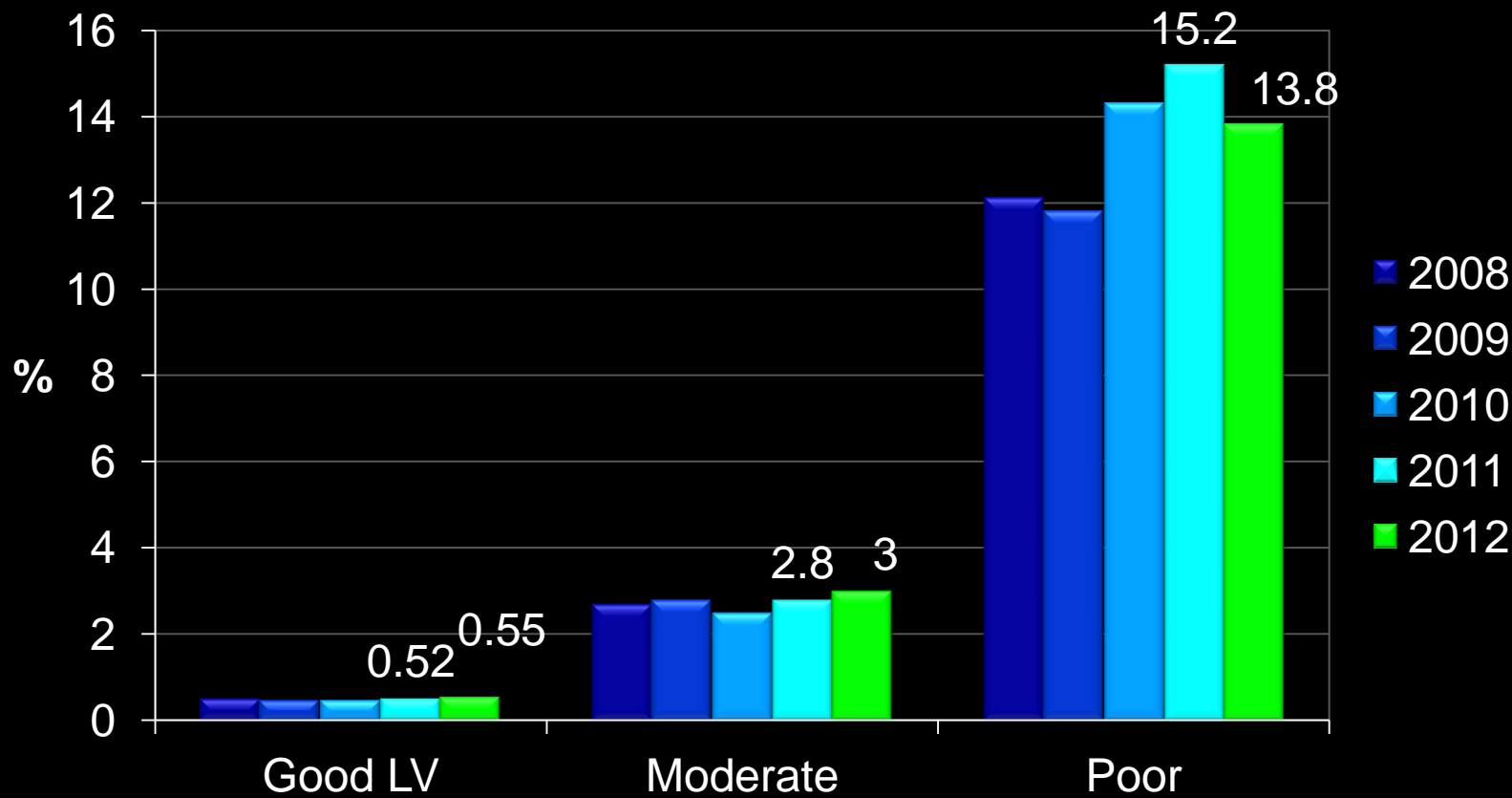
Does not include Impella use

# LV Support

## % Cases using IABP v LV function



2012 data: Ludman

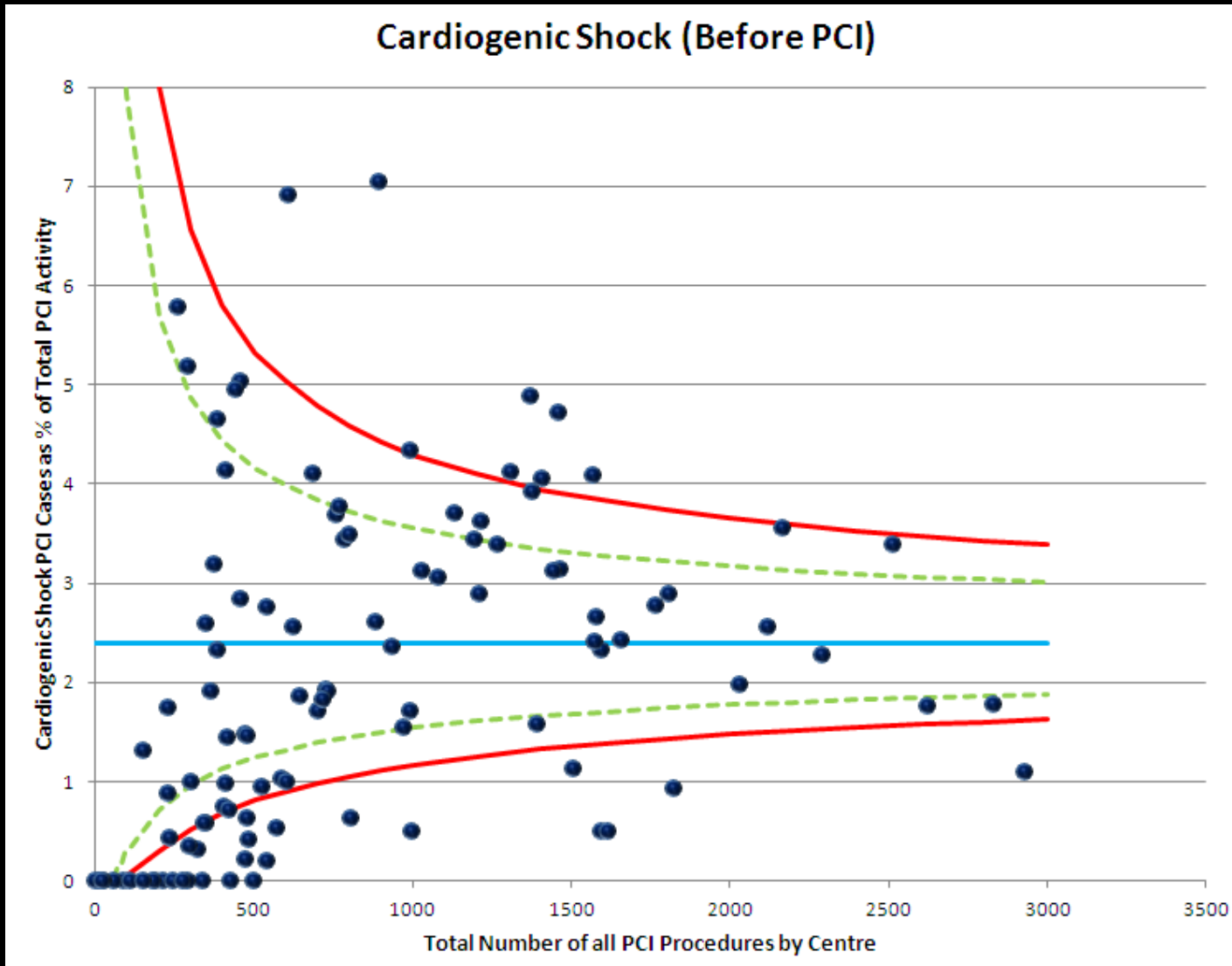


# Cardiogenic Shock

## % Cases with shock by PCI unit



2012 data: Ludman



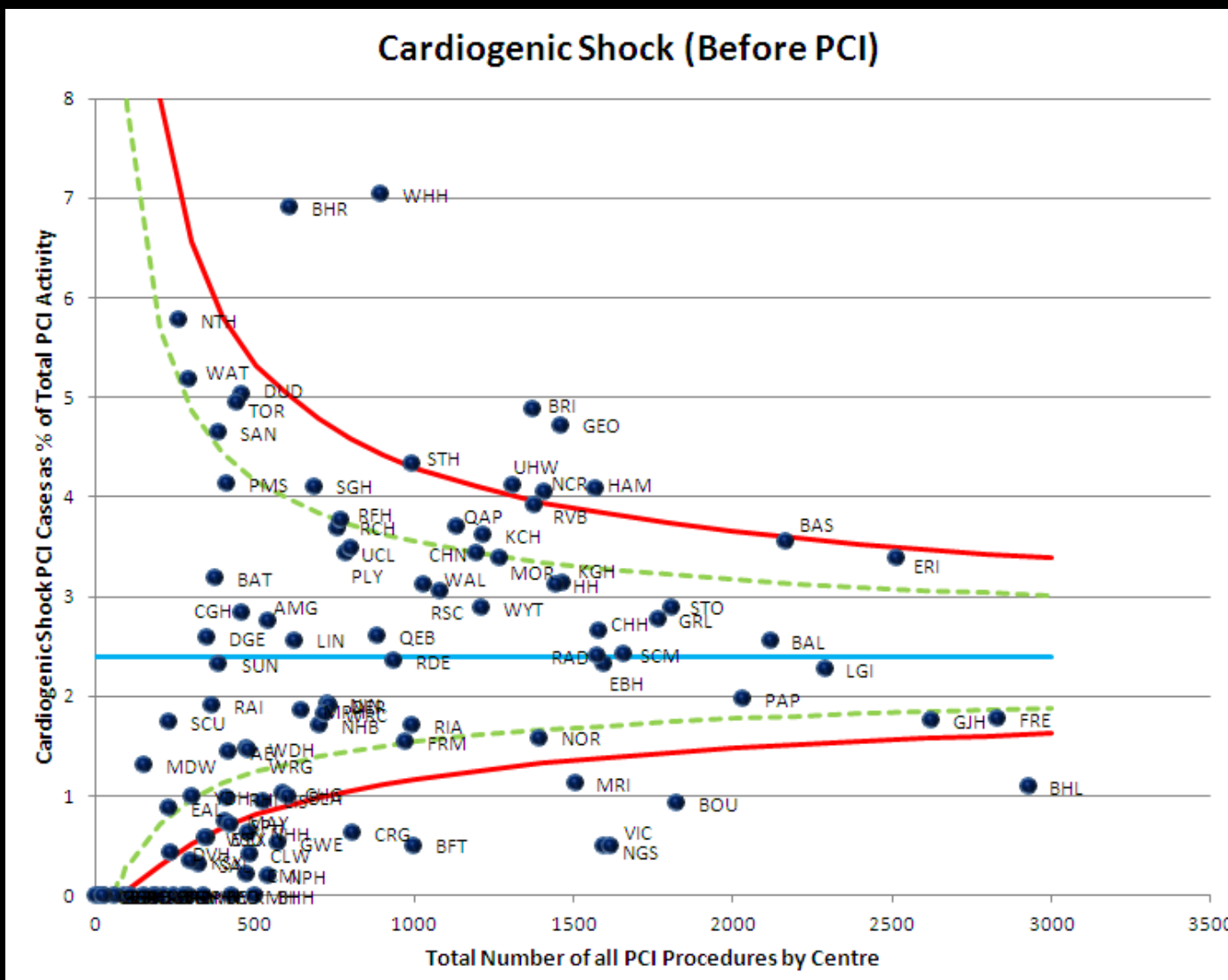
2.4 %

# Cardiogenic Shock

## % Cases with shock by PCI unit



2012 data: Ludman



2.4 %

# Cardiogenic Shock

## % Cases with shock by PCI unit

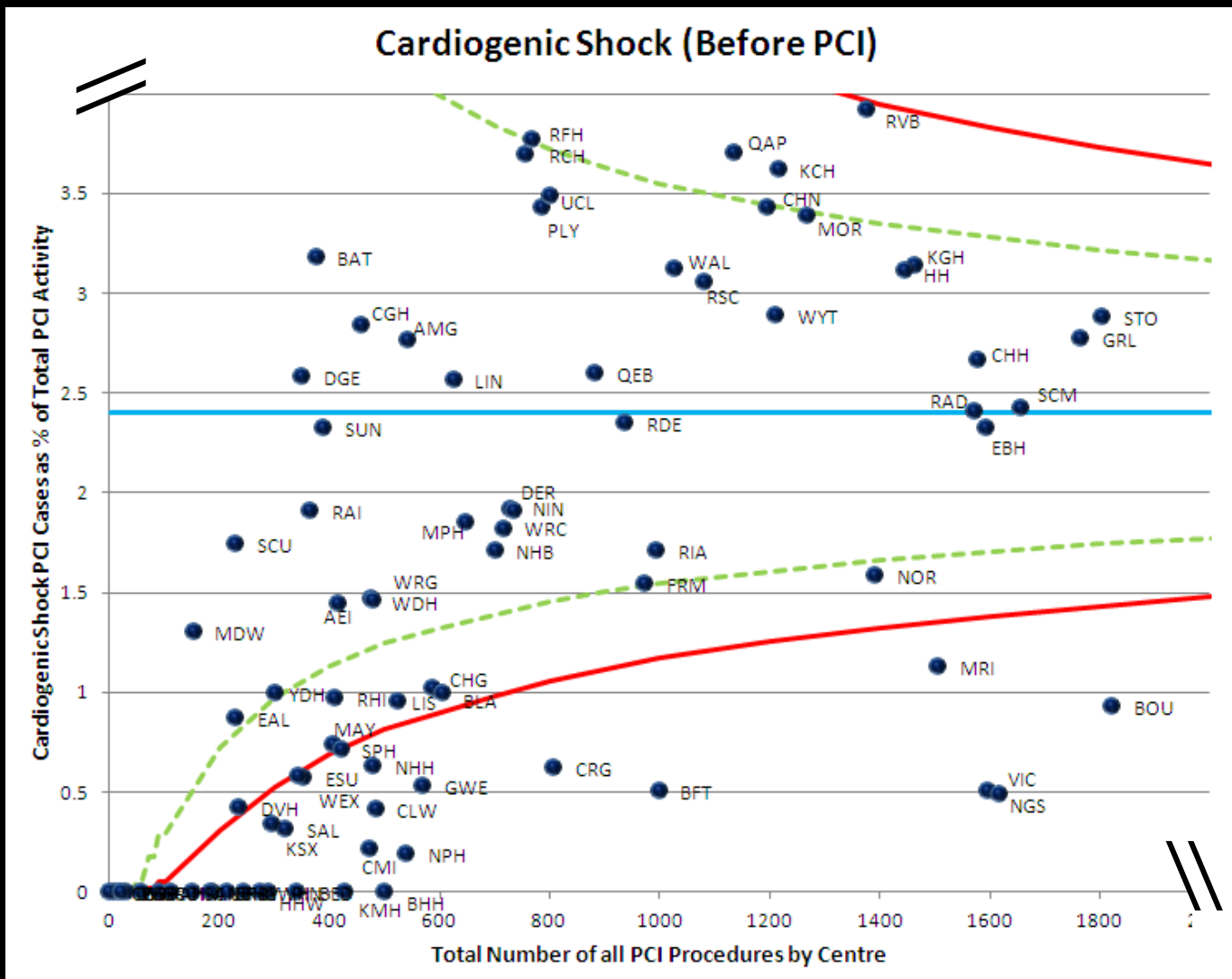


2012 data: Ludman



Detail

2.4 %



# Primary PCI

% cases over 80

Case selection for PPCI?



2011 data: Ludman

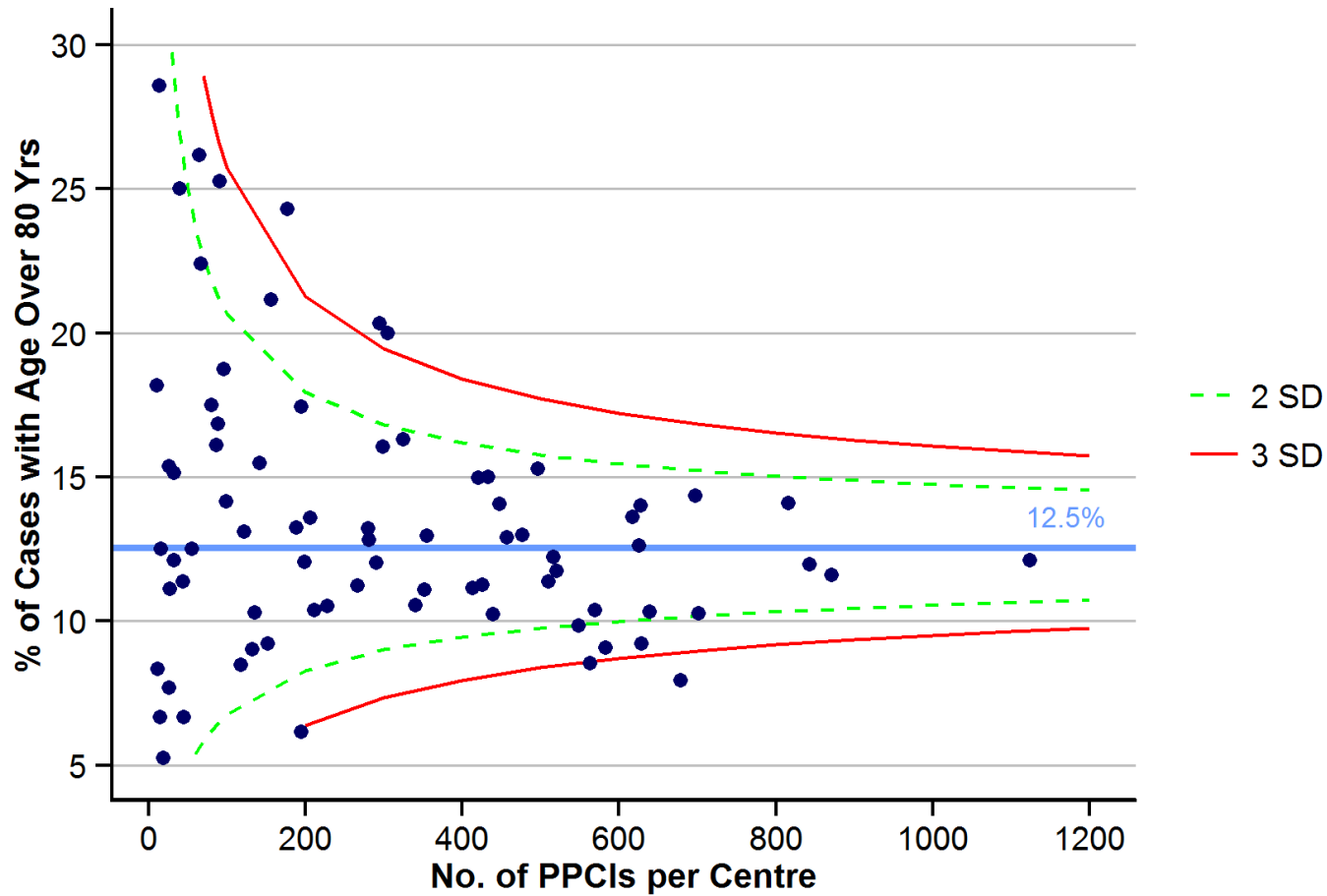


# Primary PCI

## % cases over 80



2012 data: Ludman

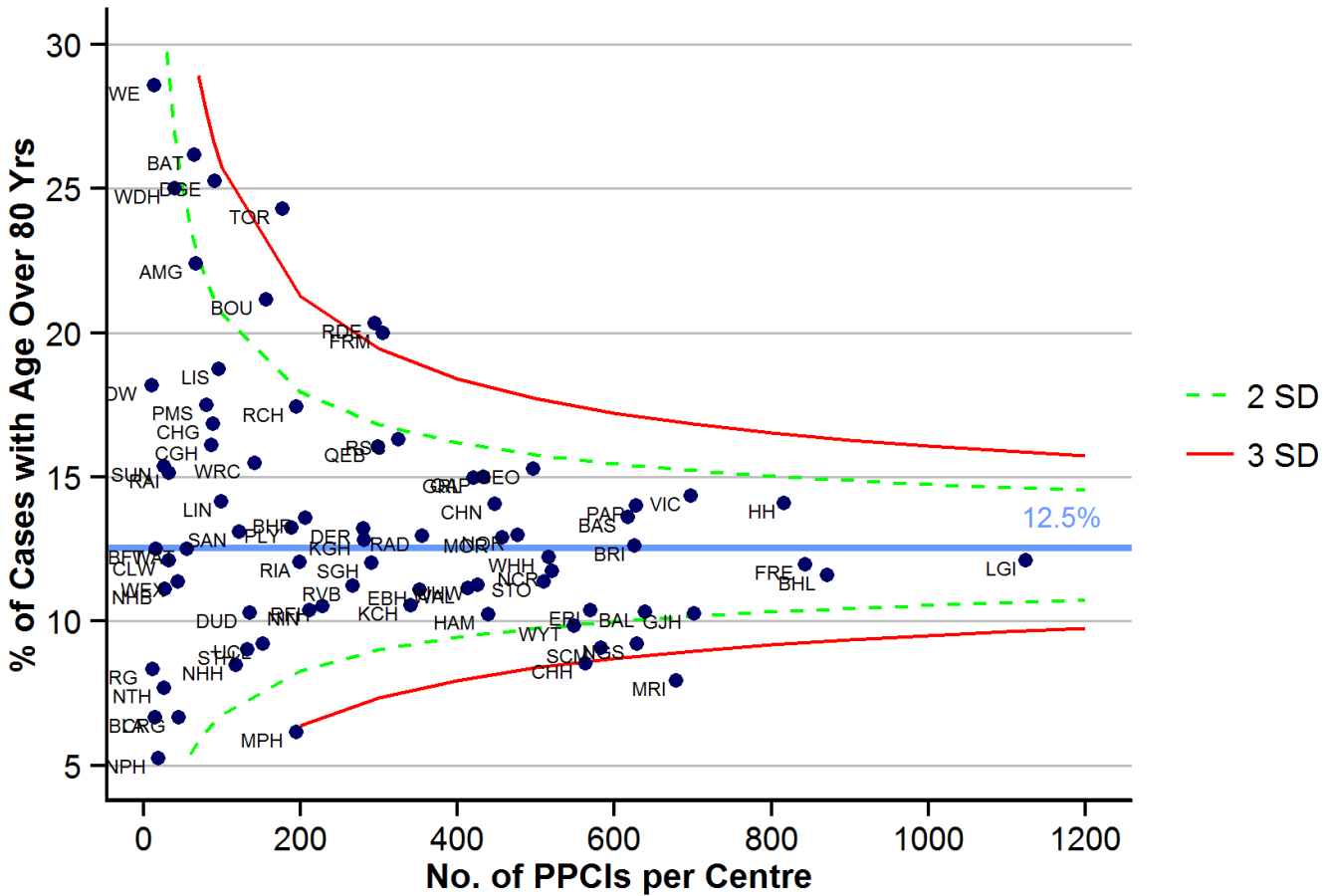


# Primary PCI

## % cases over 80



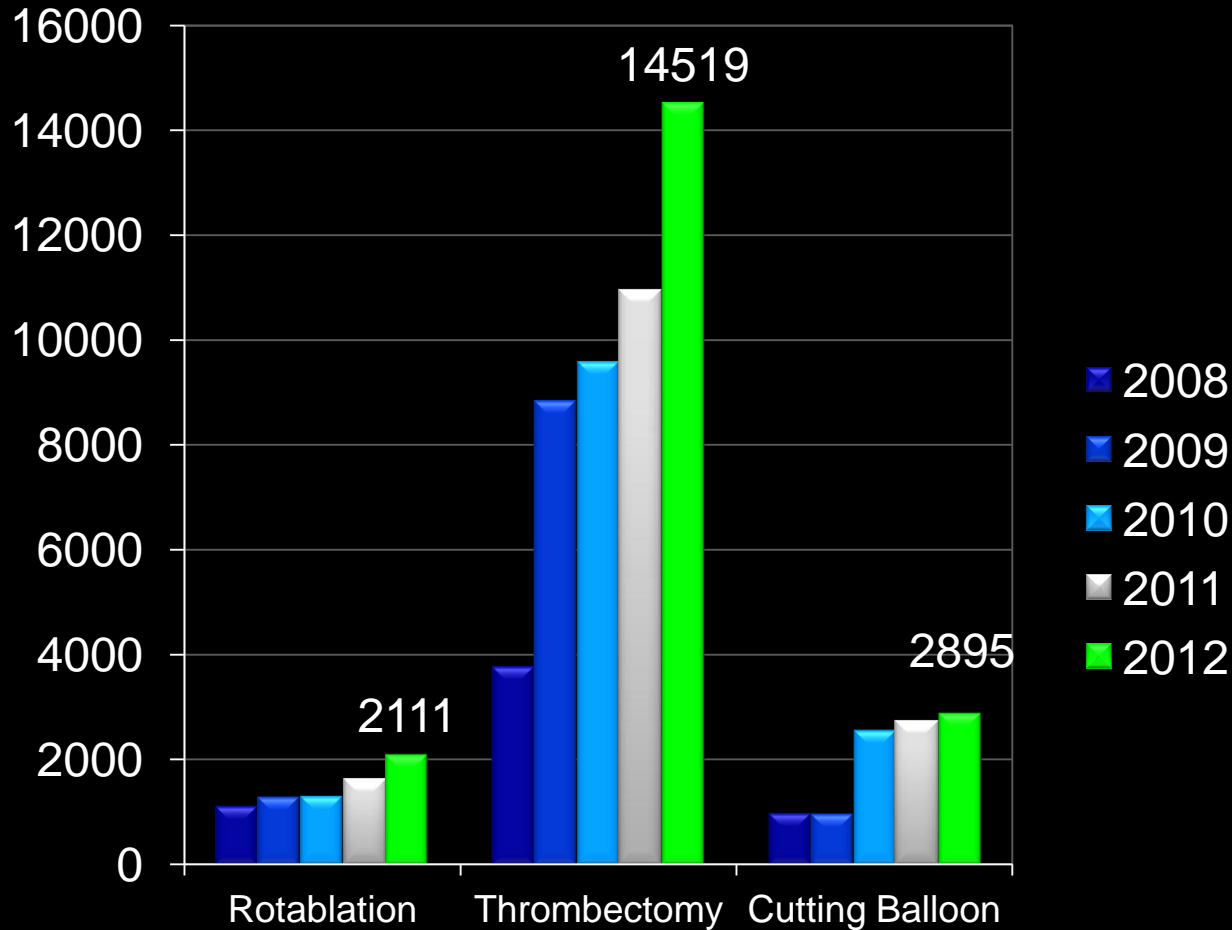
2012 data: Ludman



# Additional Interventional Coronary Techniques



2012 data: Ludman



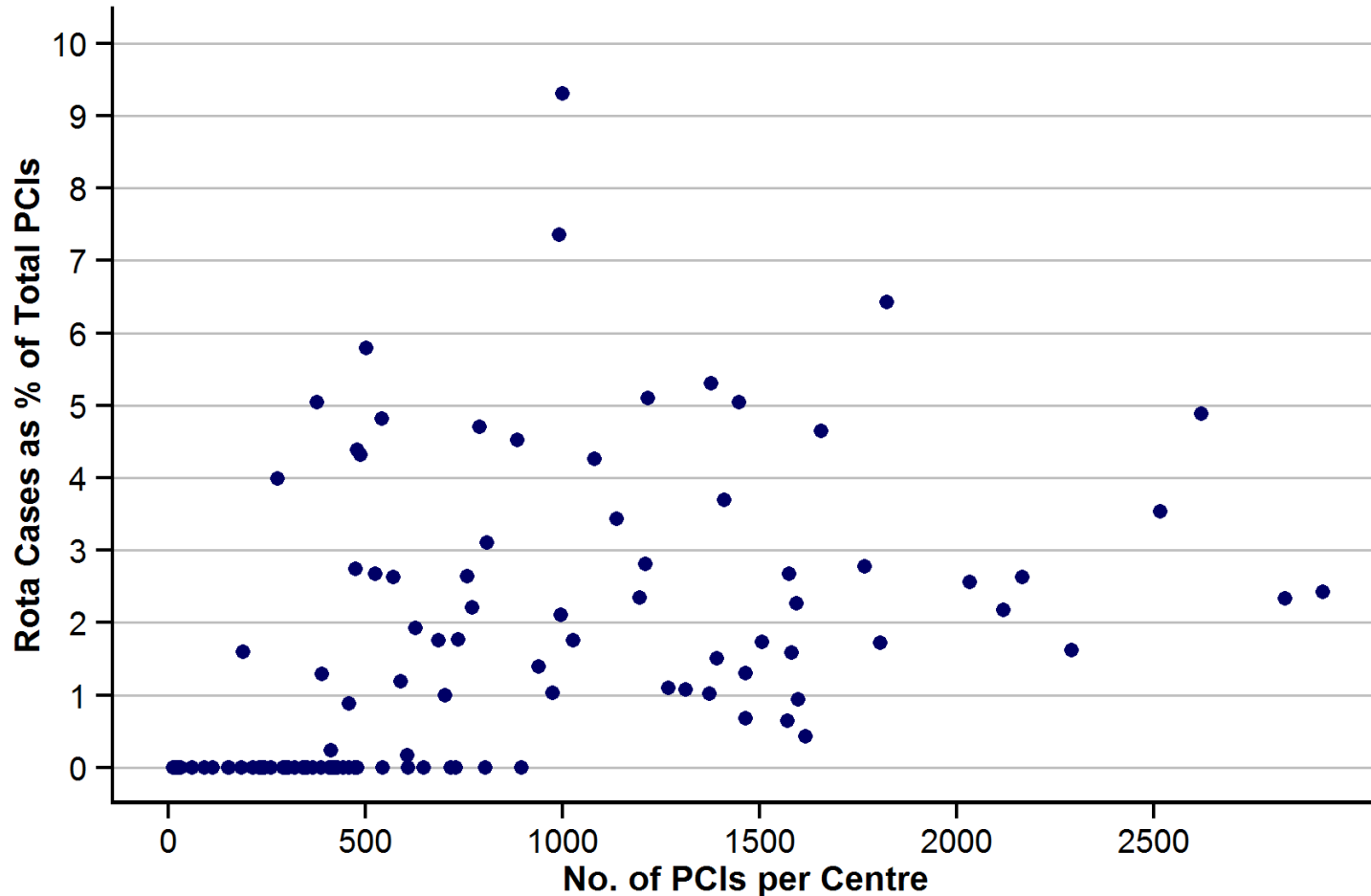
## Notes:

2010 onward data from NICOR

Assume DCA usually is actually rota, therefore DCA and Rota summed to give 'Rotablation'

Laser wire and laser angioplasty summed to give 'laser'

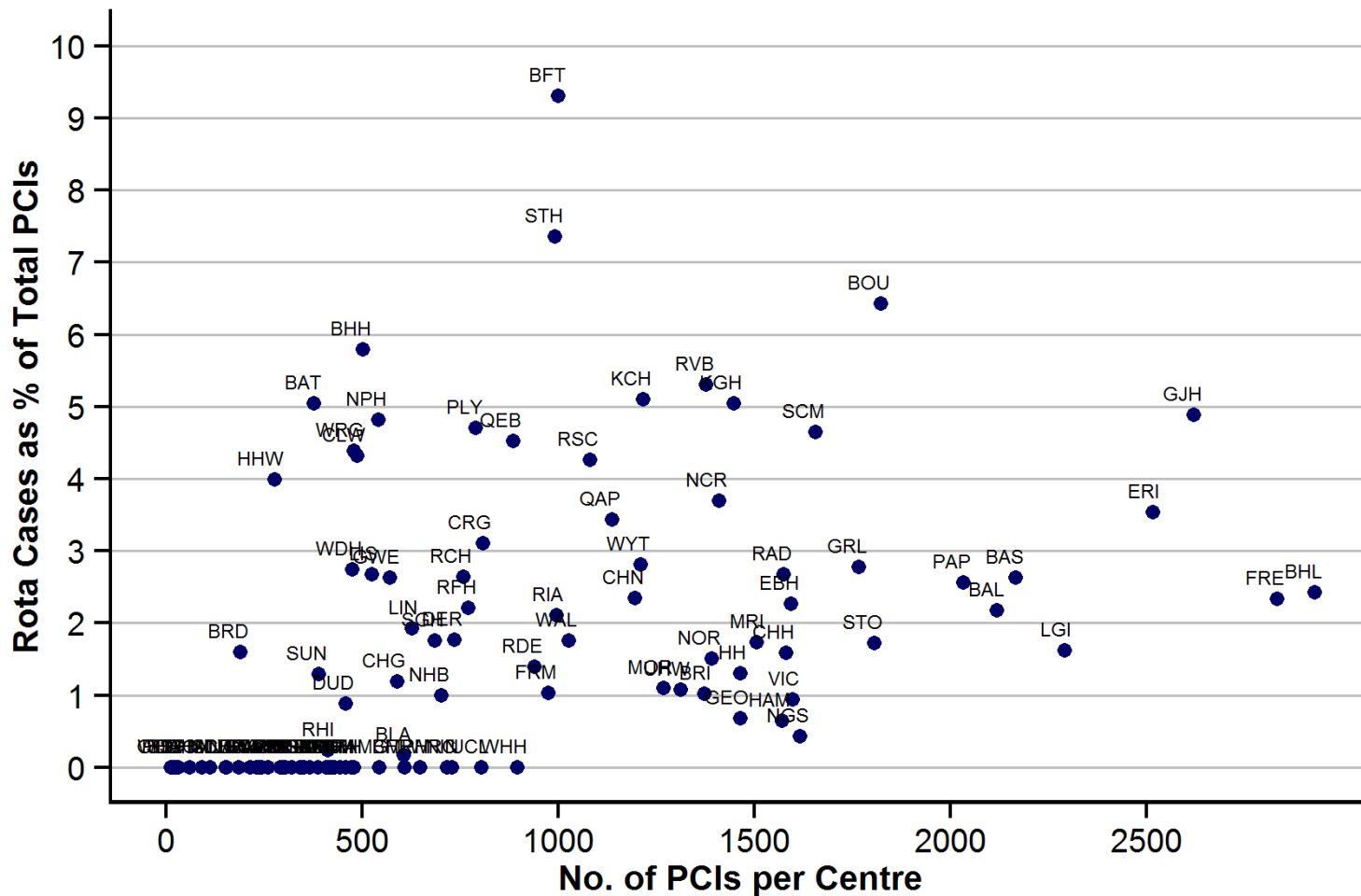
# Rotational Atherectomy



# Rotational Atherectomy



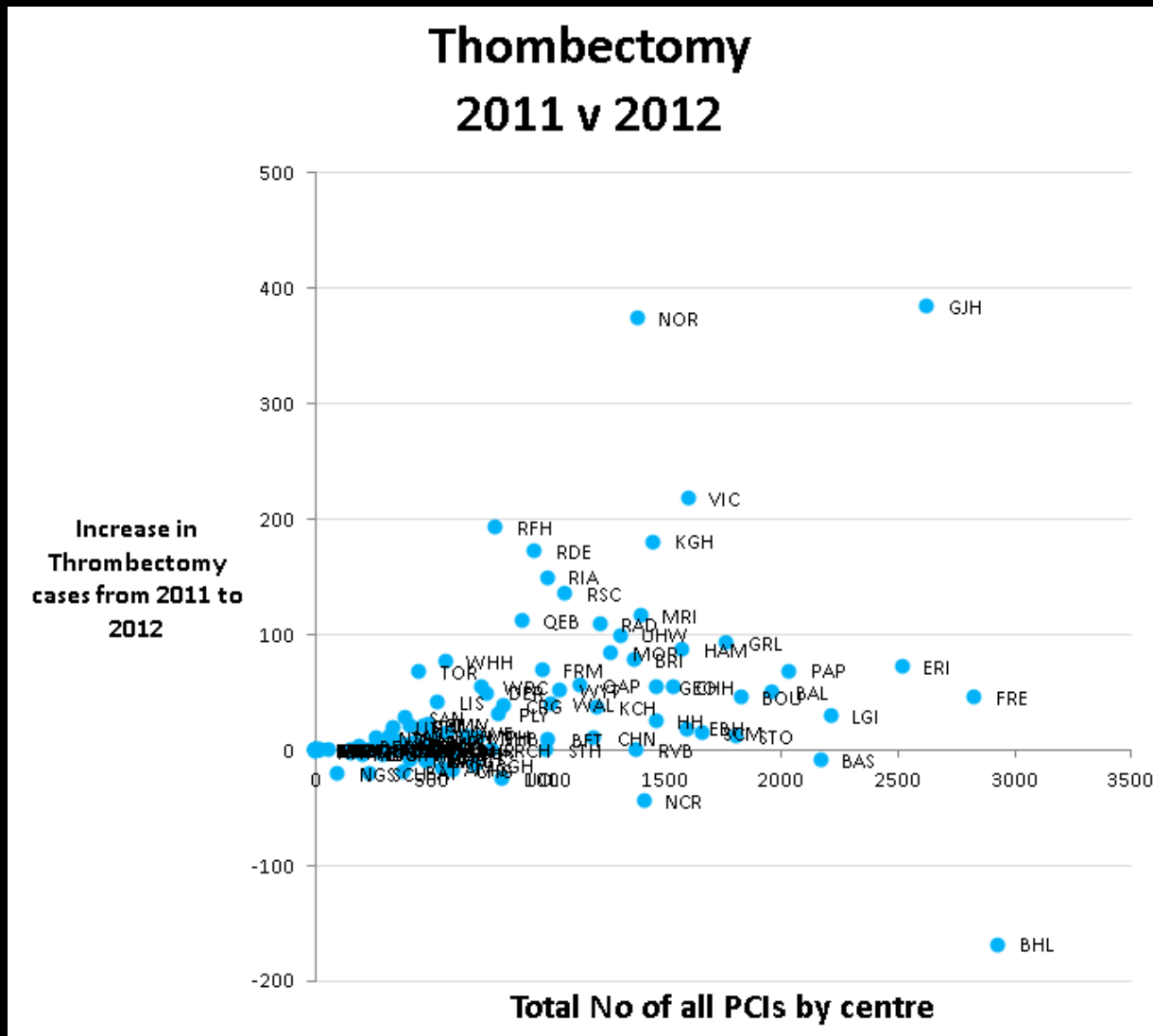
2012 data: Ludman



# Increase in Thrombectomy 2011 to 2012



2012 data: Ludman



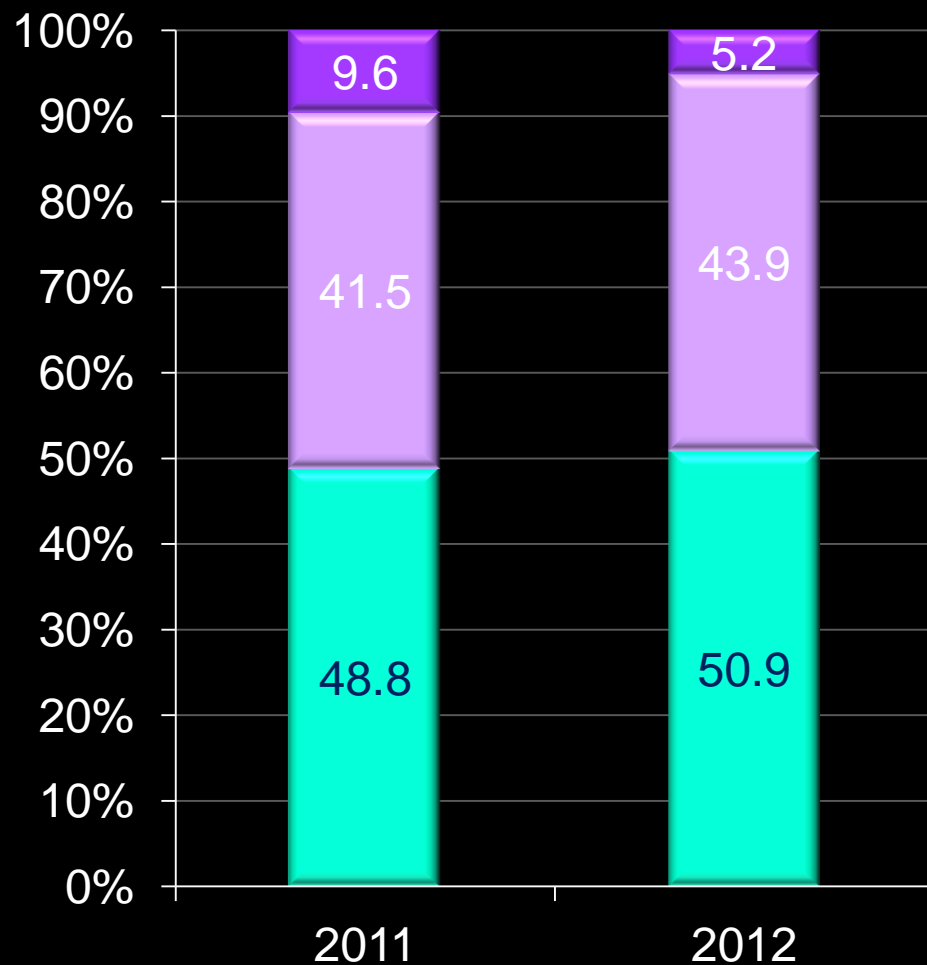
? Big increase in GJH and NOR accurate

# Primary PCI

## Extraction Atherectomy



2012 data: Ludman



Unknown (%)

No Device Used (%)

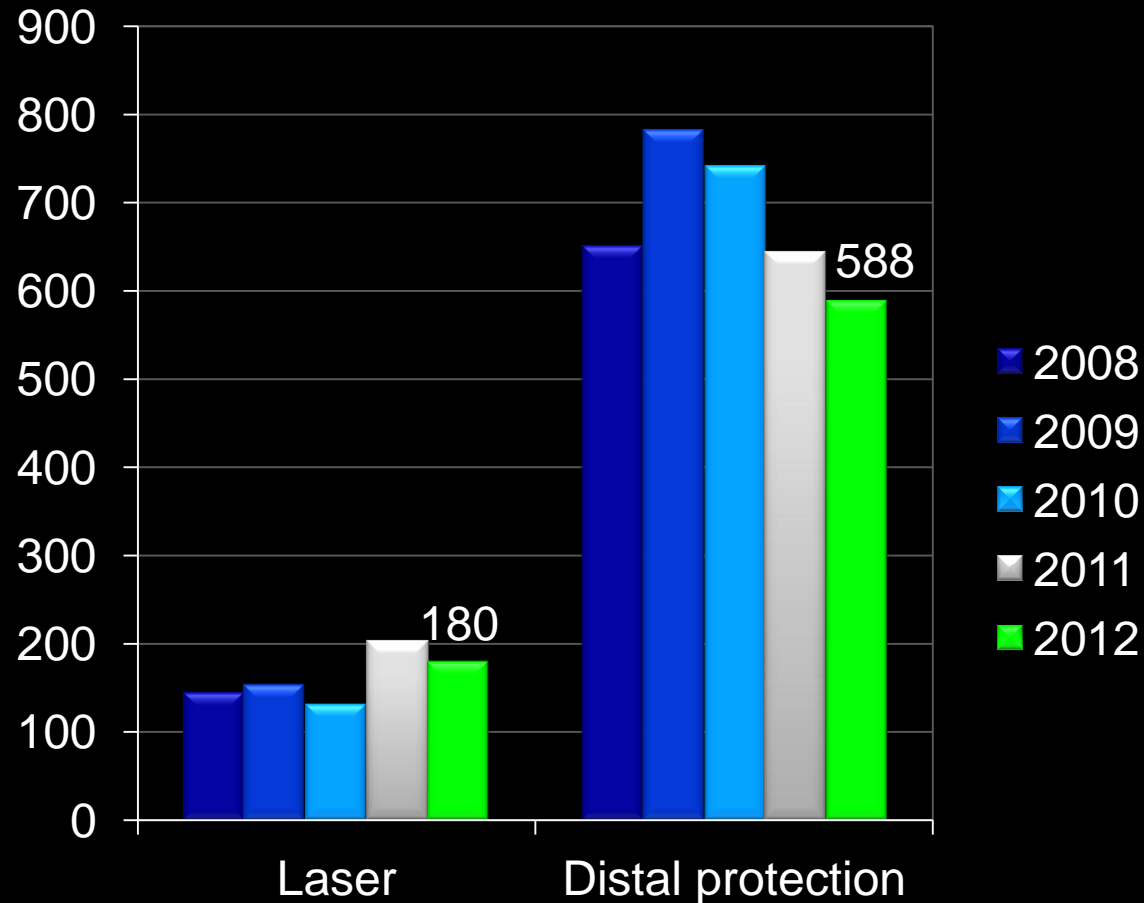
Device Used (%)



# Additional Interventional Coronary Techniques



2012 data: Ludman



## Notes:

2010 onwards data from NICOR

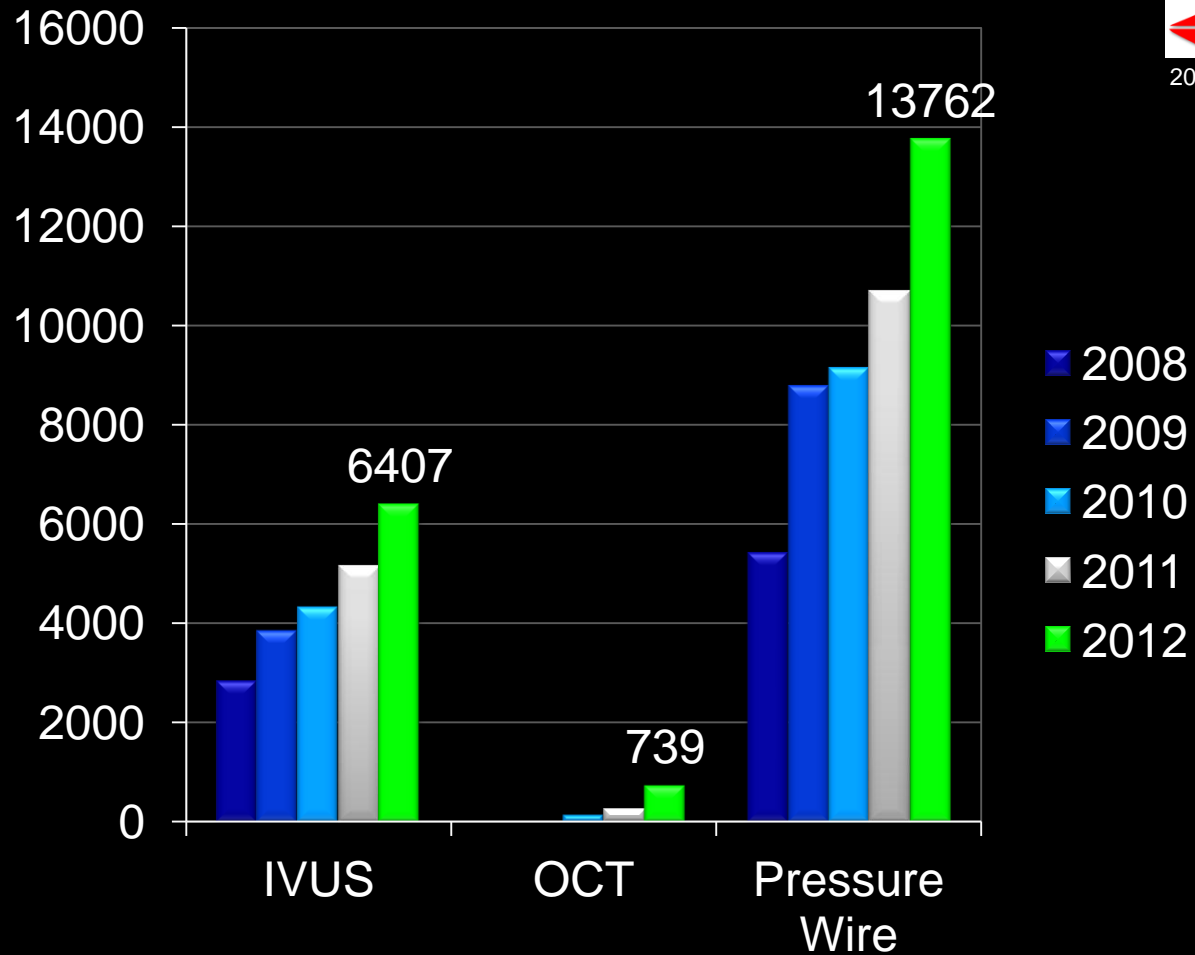
Assume DCA usually is actually rota, therefore DCA and Rota summed to give 'Rotablation'

Laser wire and laser angioplasty summed to give 'laser'

# Additional Interventional Coronary Techniques



2012 data: Ludman



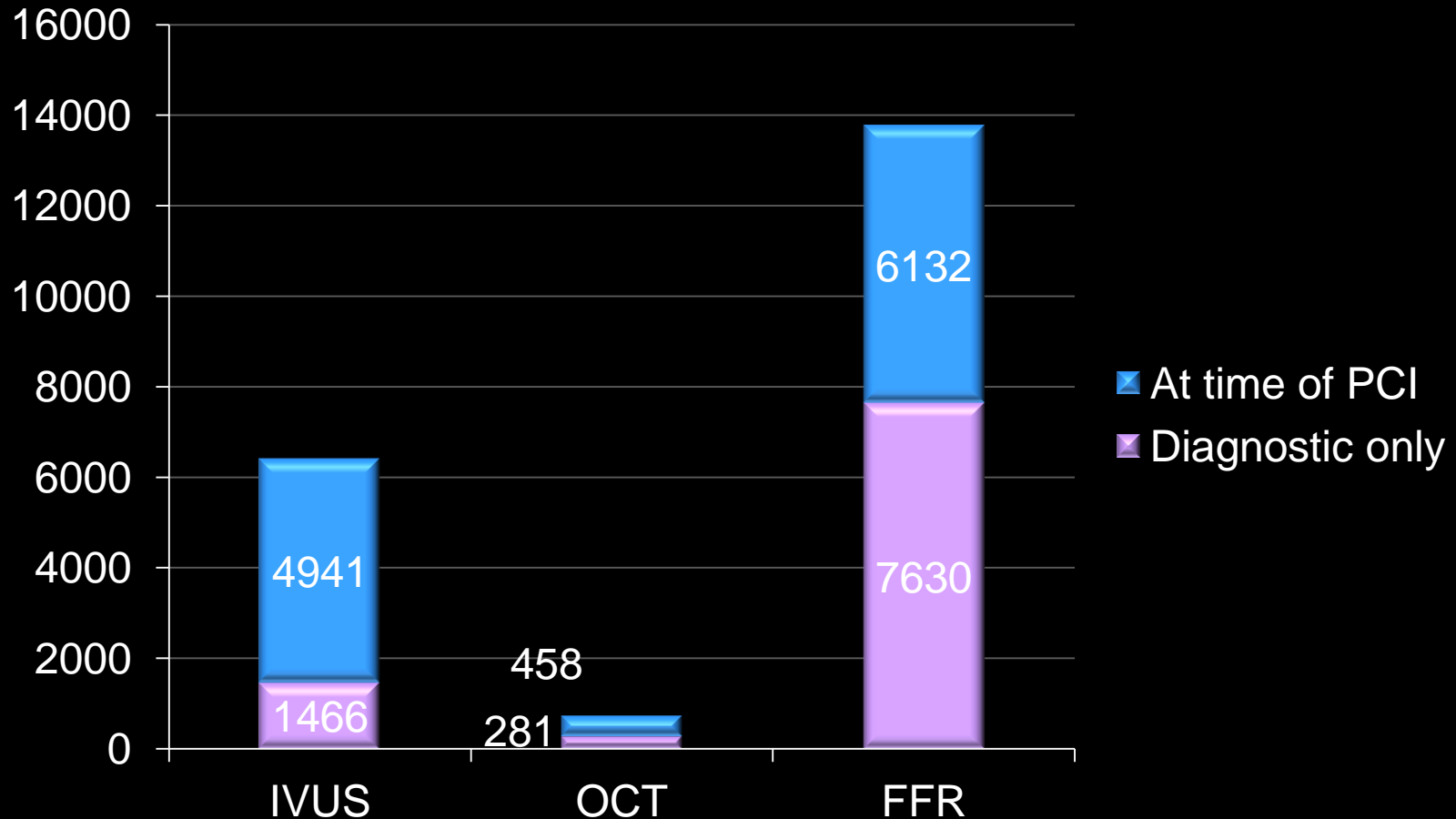
No. of Centres using device	95	26	113
-----------------------------	----	----	-----

All cases: Diagnostic only + when part of a PCI procedure

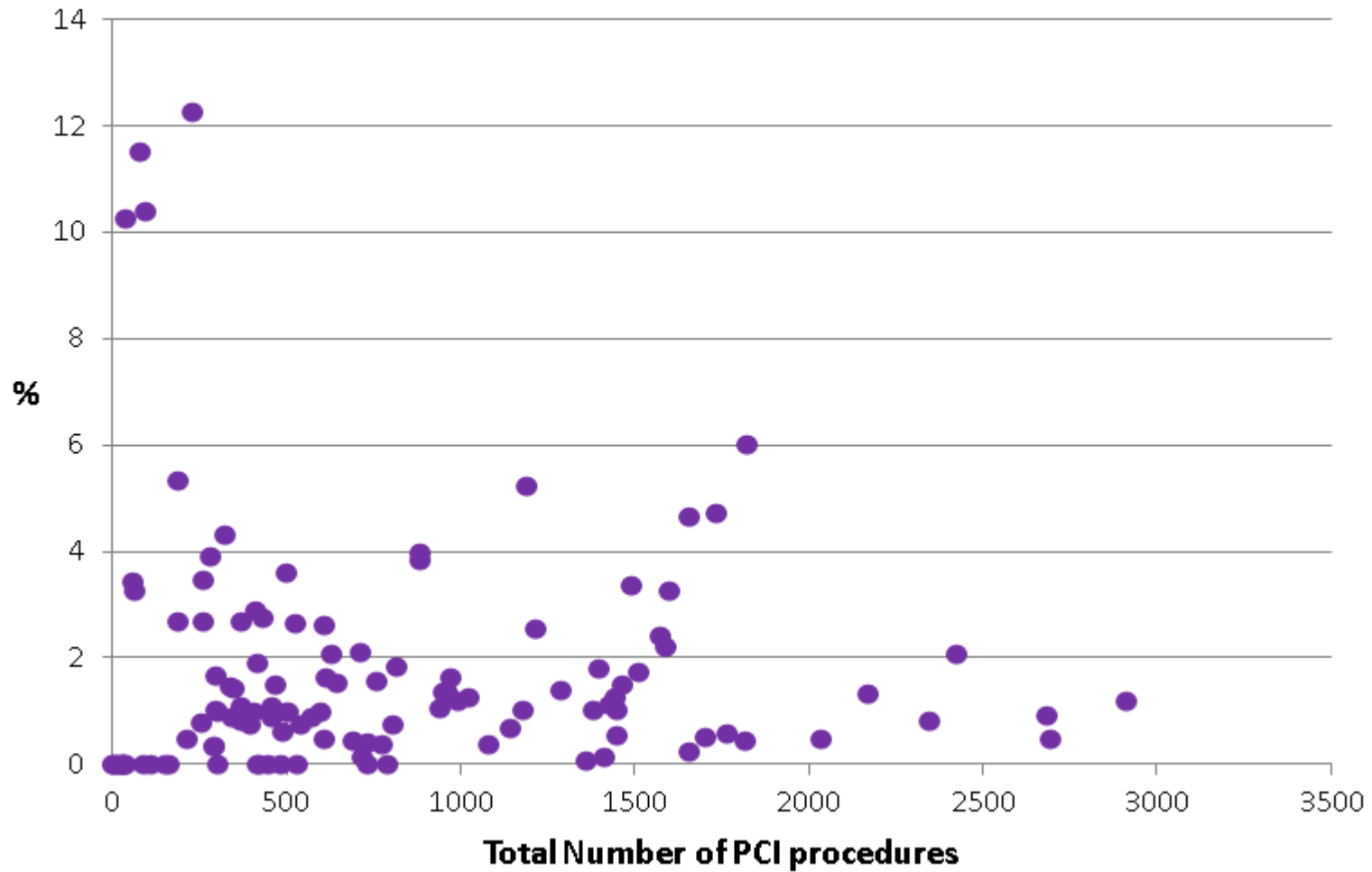
# Additional Interventional Coronary Techniques



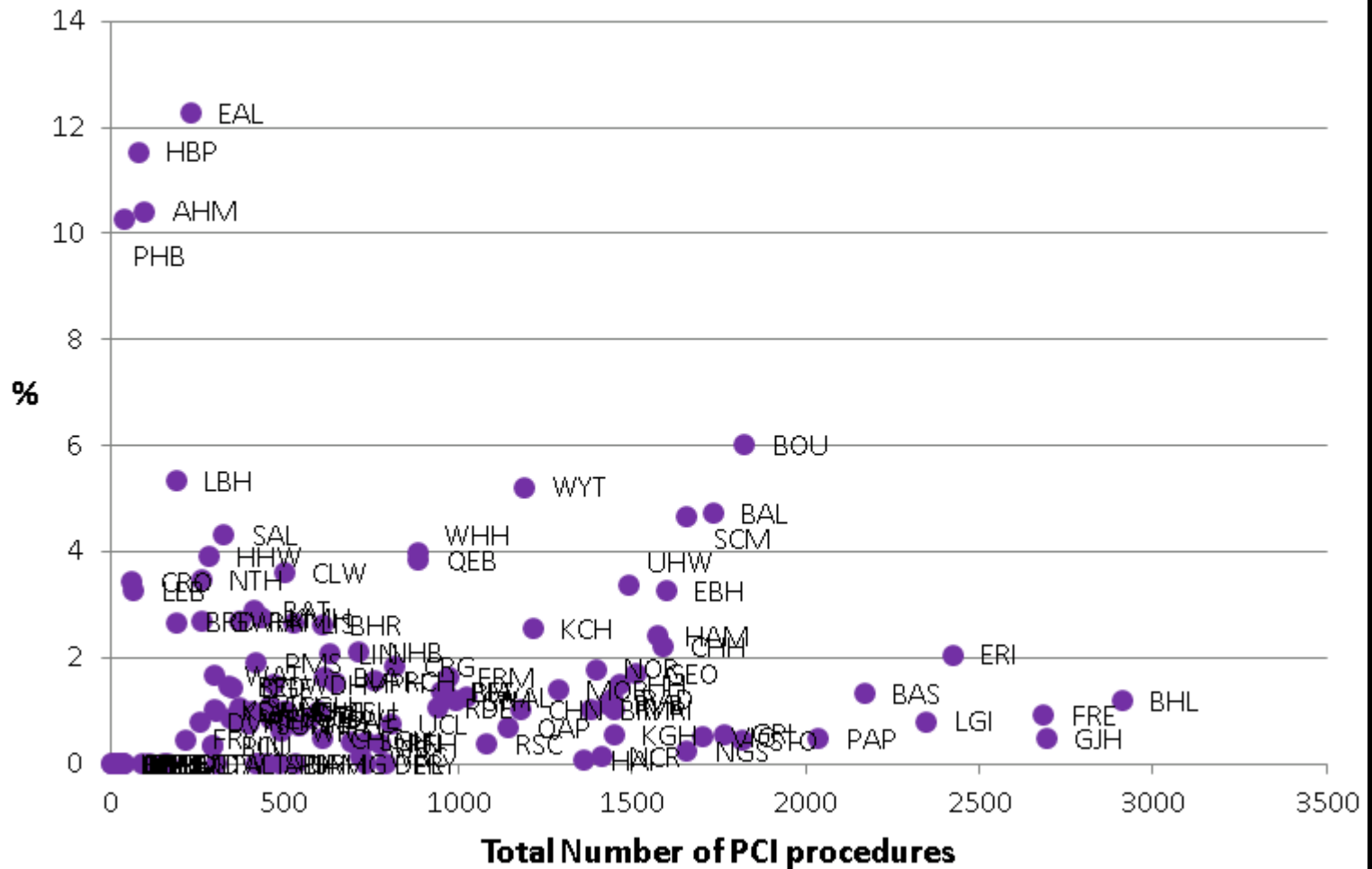
2012 data: Ludman



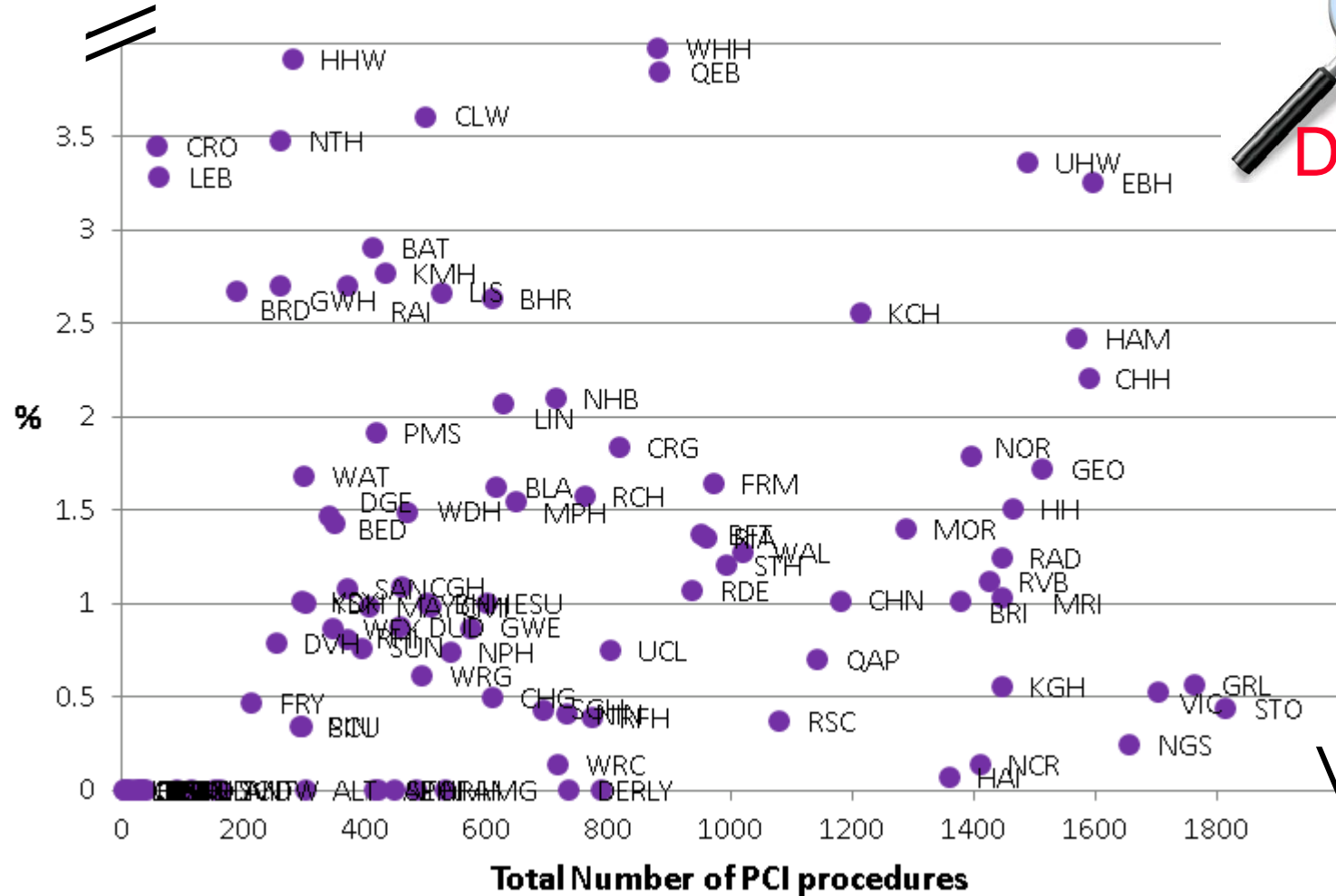
## IVUS: Diagnostic ONLY as % of all PCI



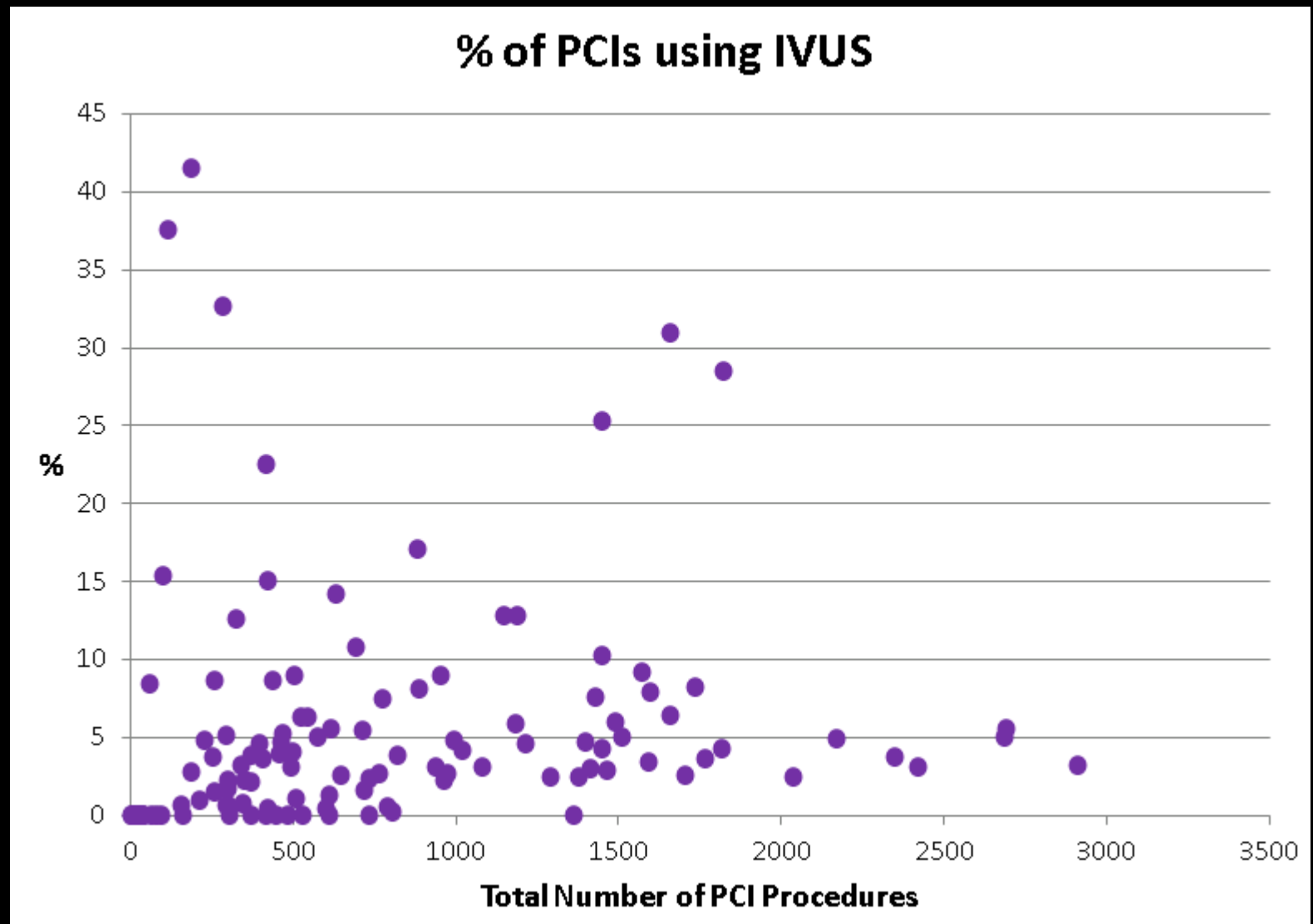
## IVUS: Diagnostic ONLY as % of all PCI



## IVUS: Diagnostic ONLY as % of all PCI

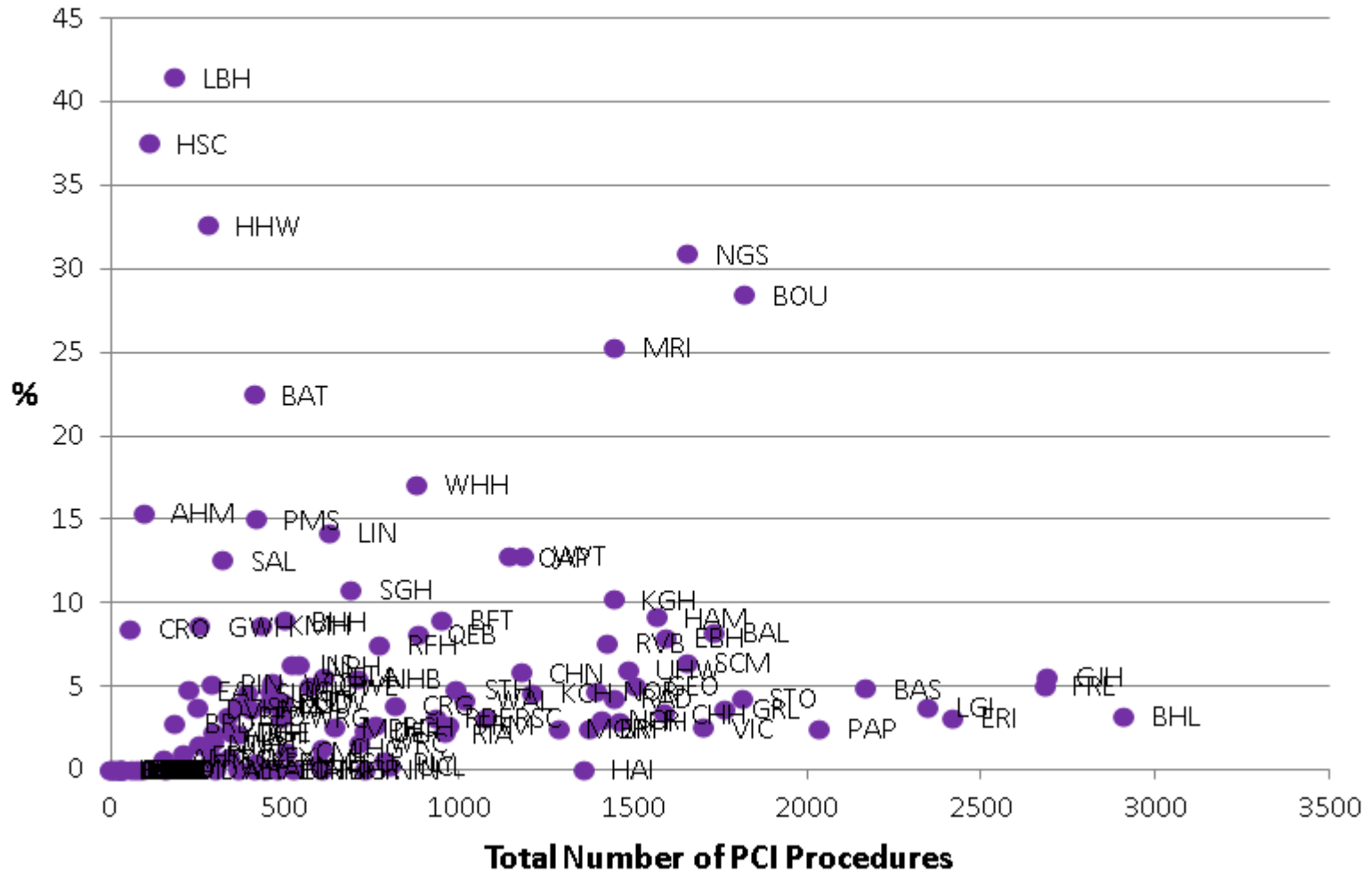


# IVUS

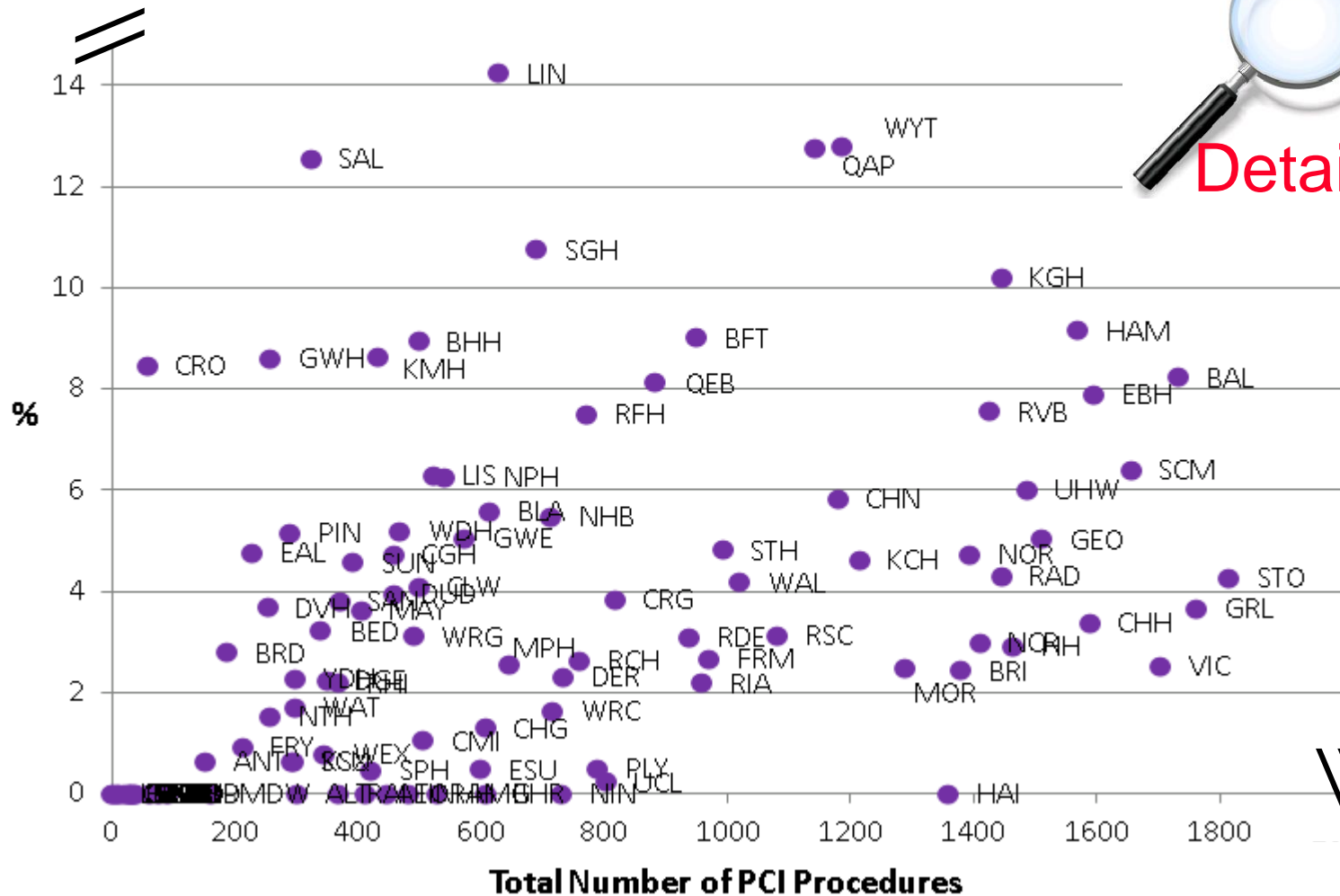


# IVUS

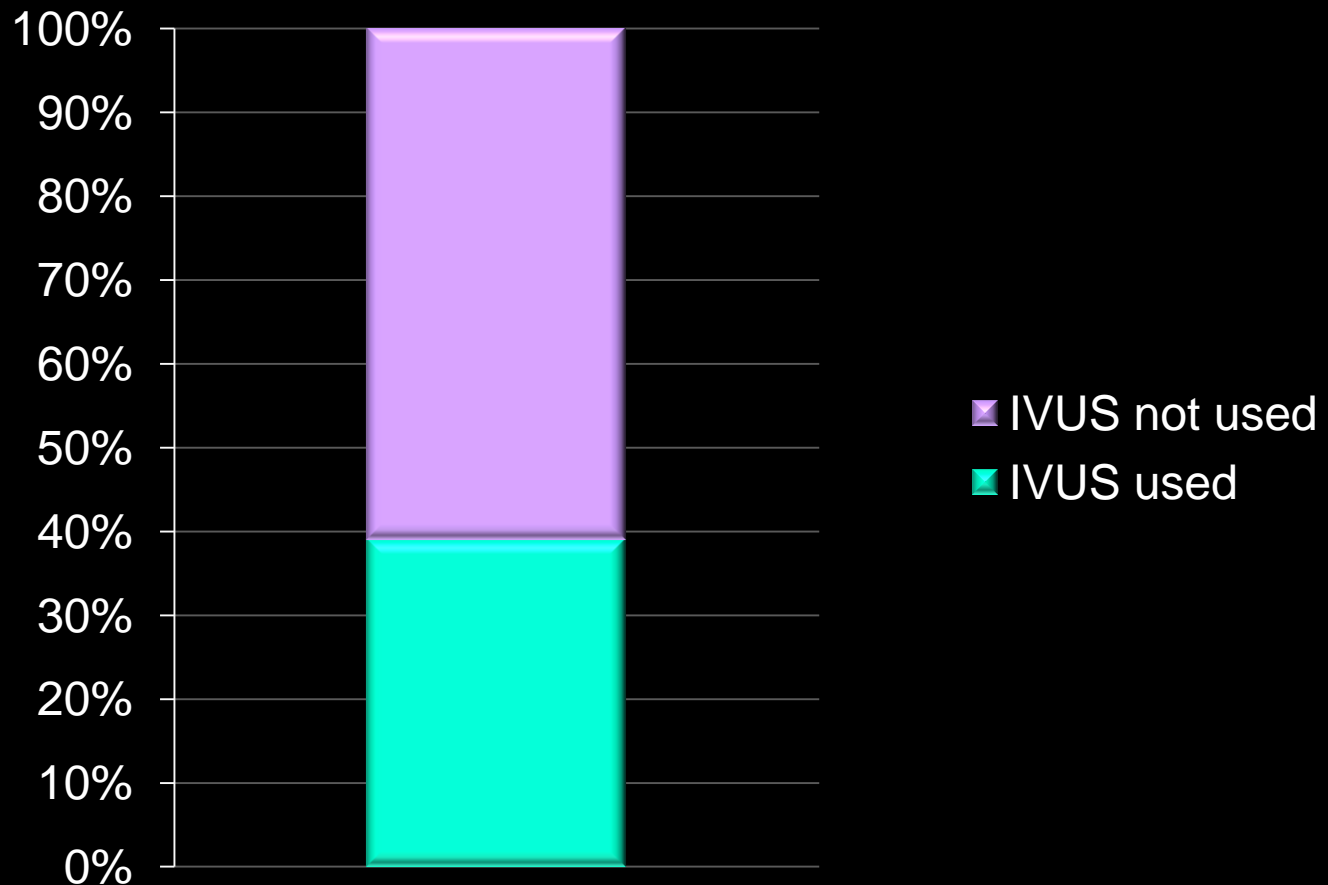
## % of PCIs using IVUS



## % of PCIs using IVUS

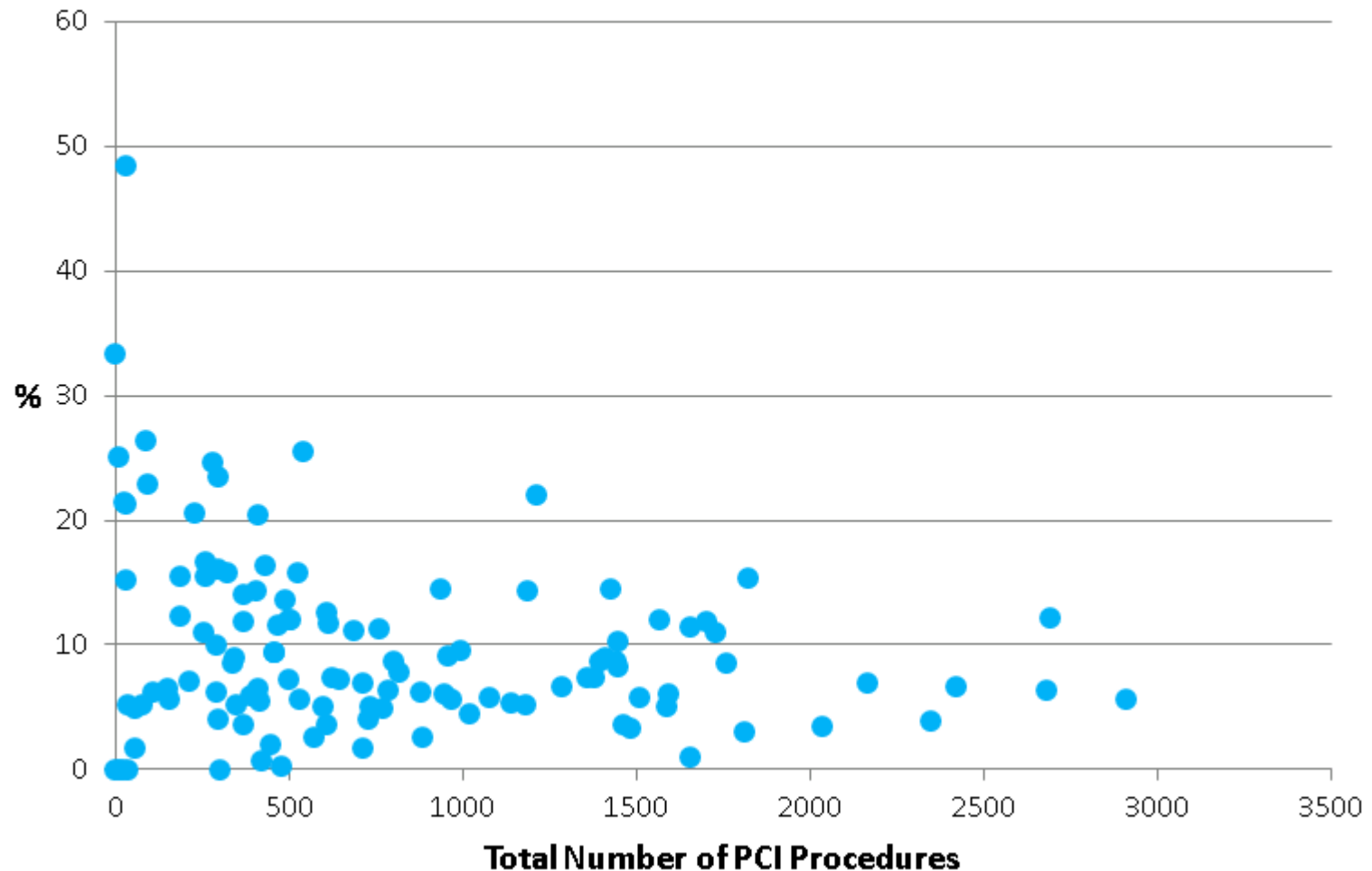


## PCI to unprotected LMS



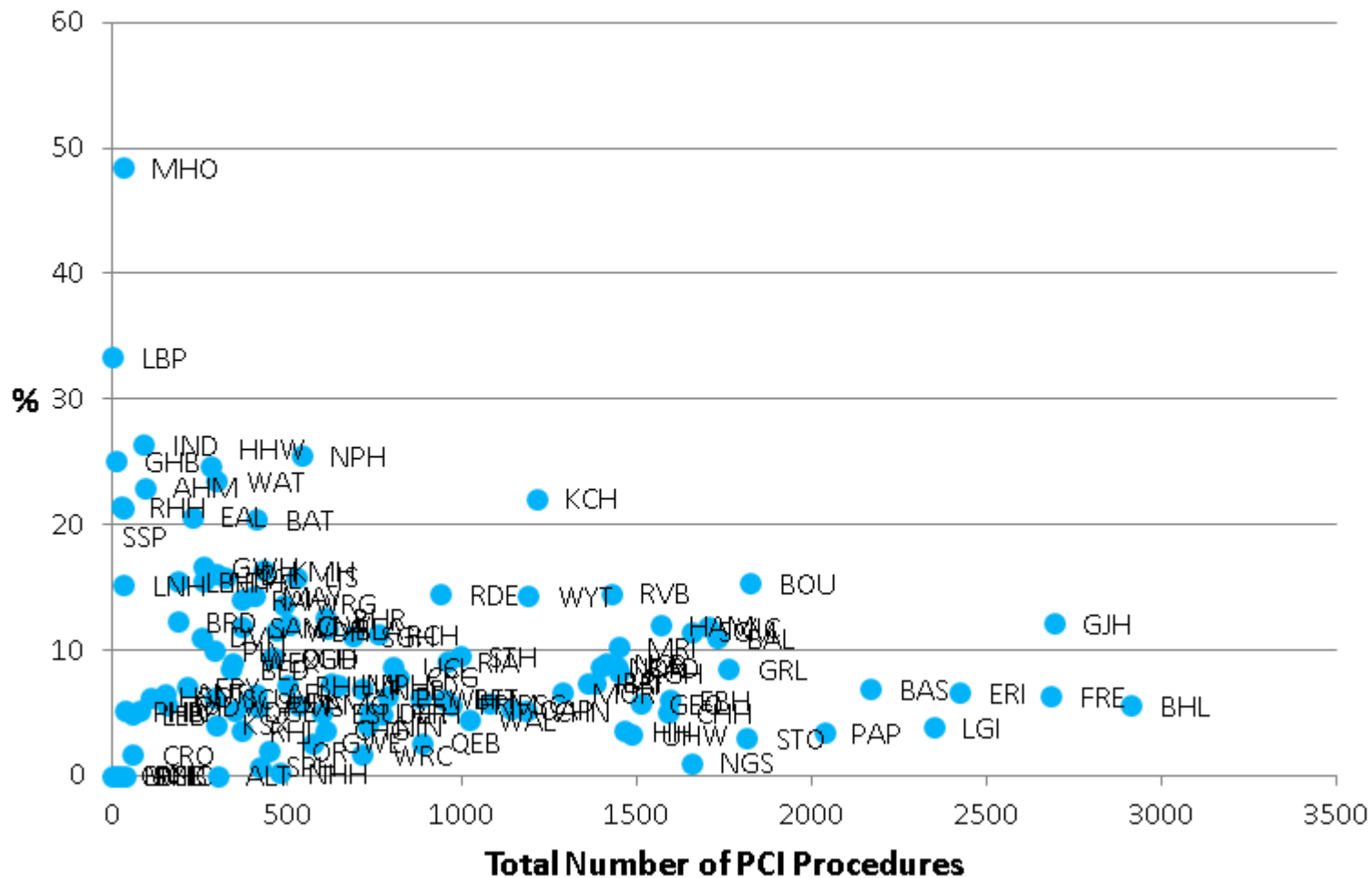
# Pressure Wire

## FFR: Diagnostic ONLY as % of all PCI



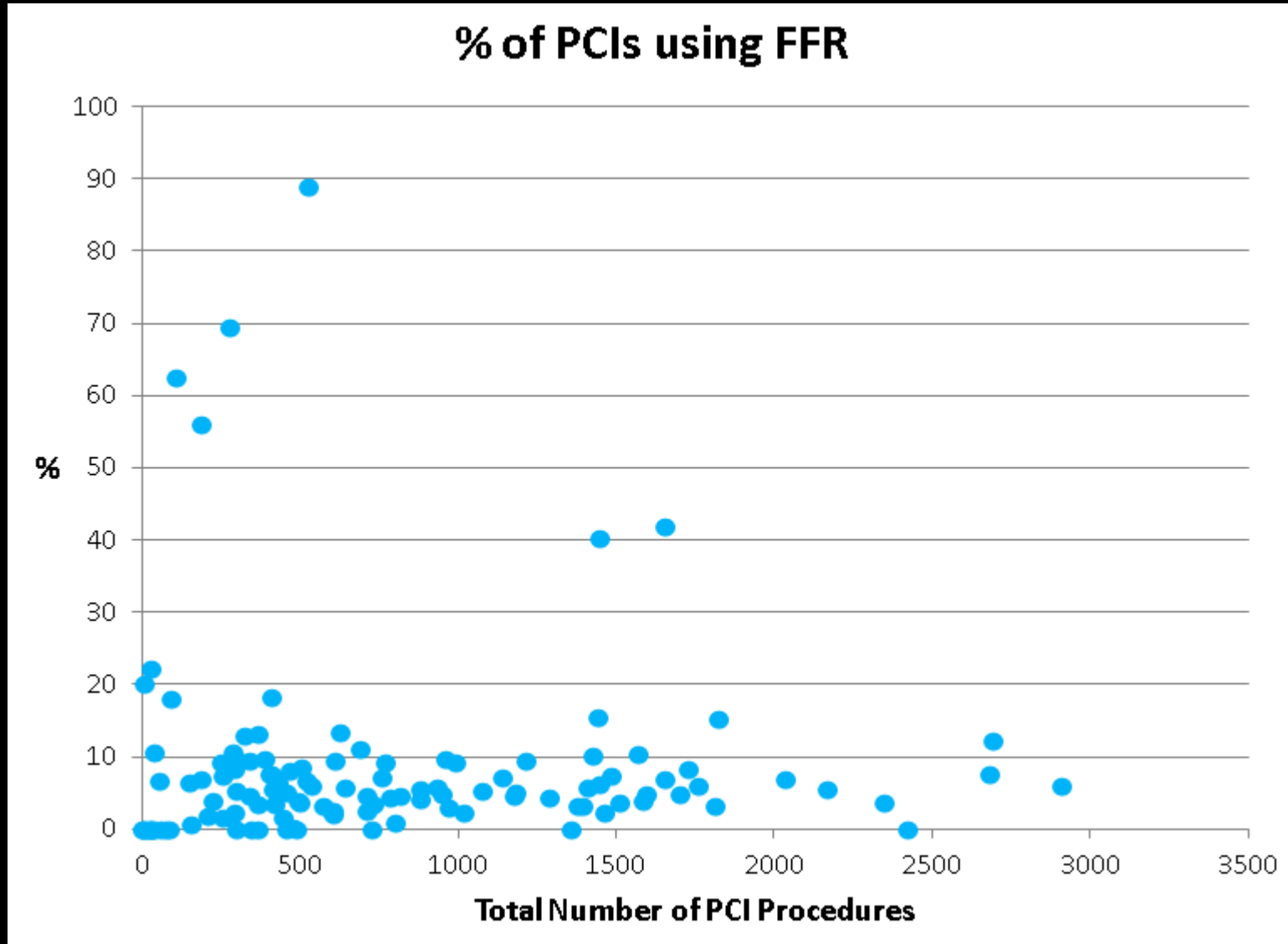
# Pressure Wire

## FFR: Diagnostic ONLY as % of all PCI

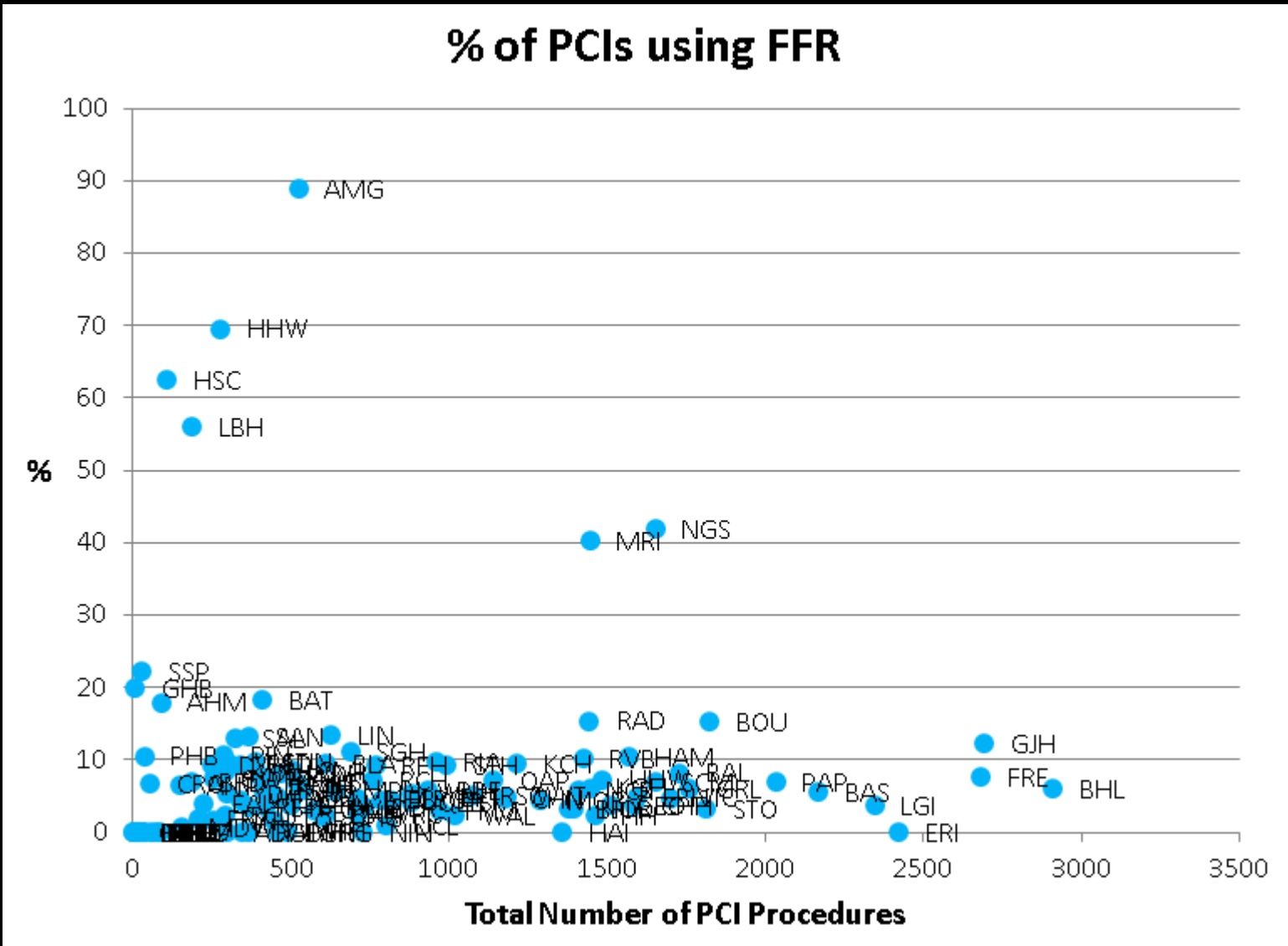




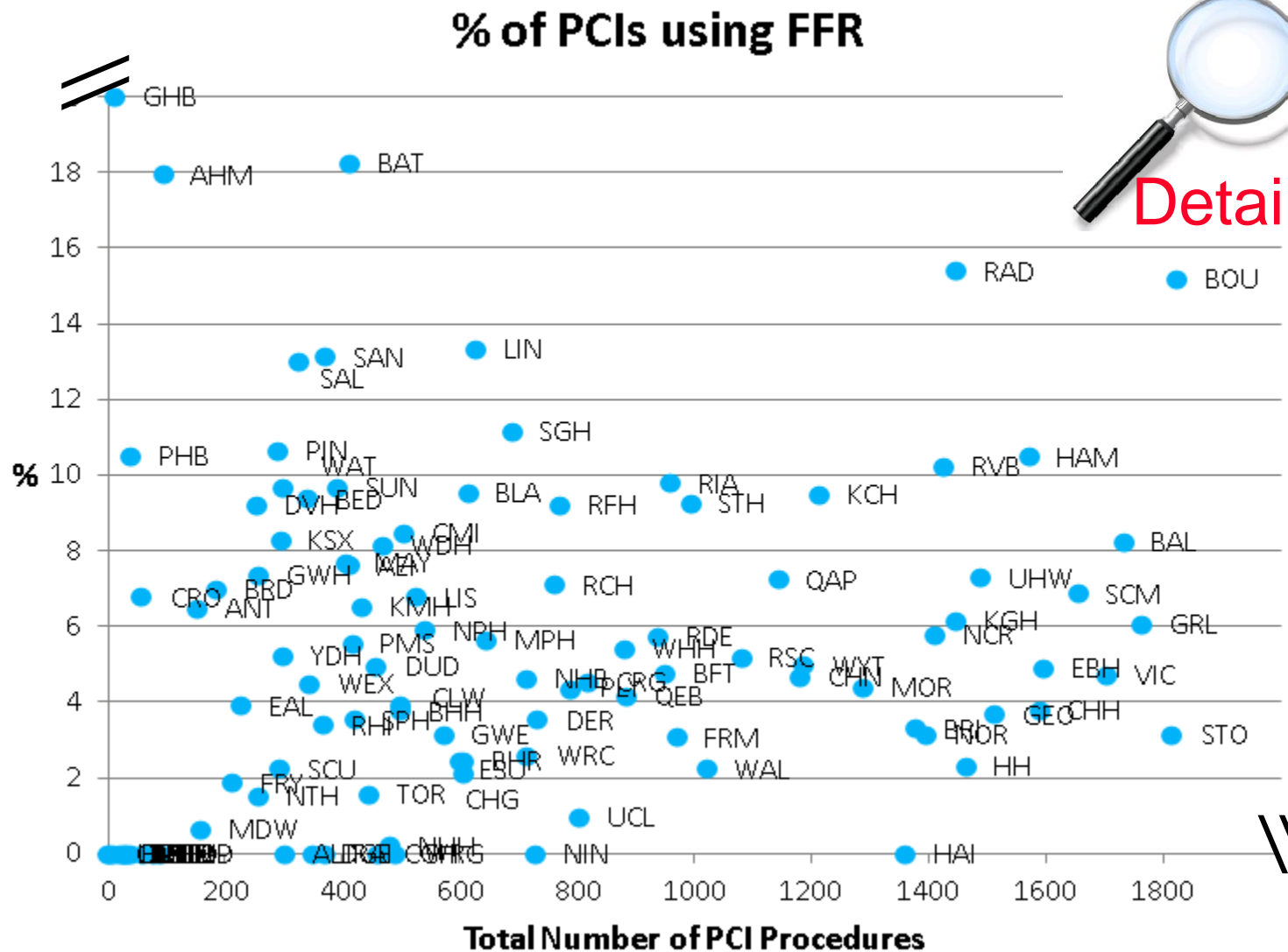
# Pressure Wire



# Pressure Wire



# Pressure Wire



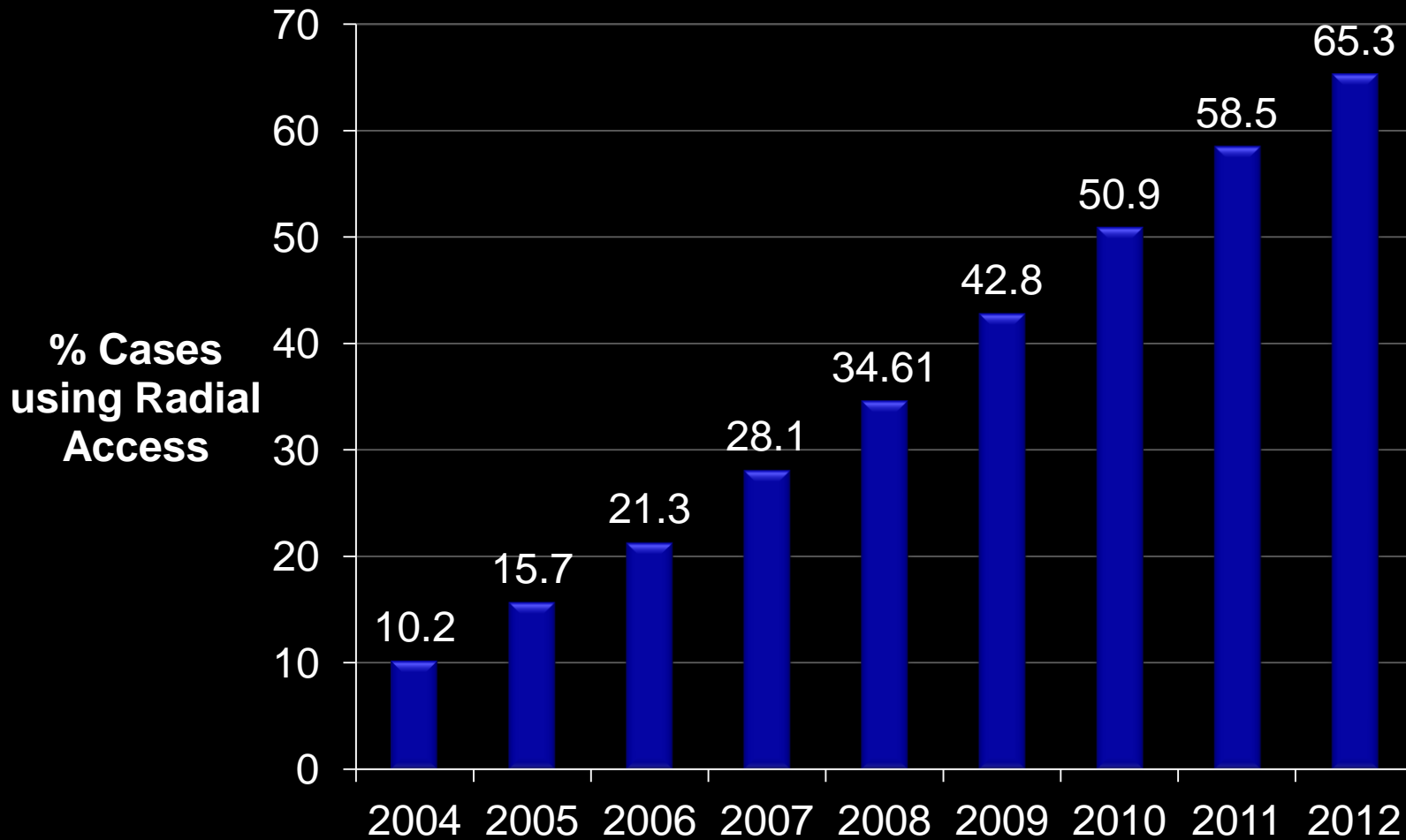
# Arterial access



# Radial Artery Access



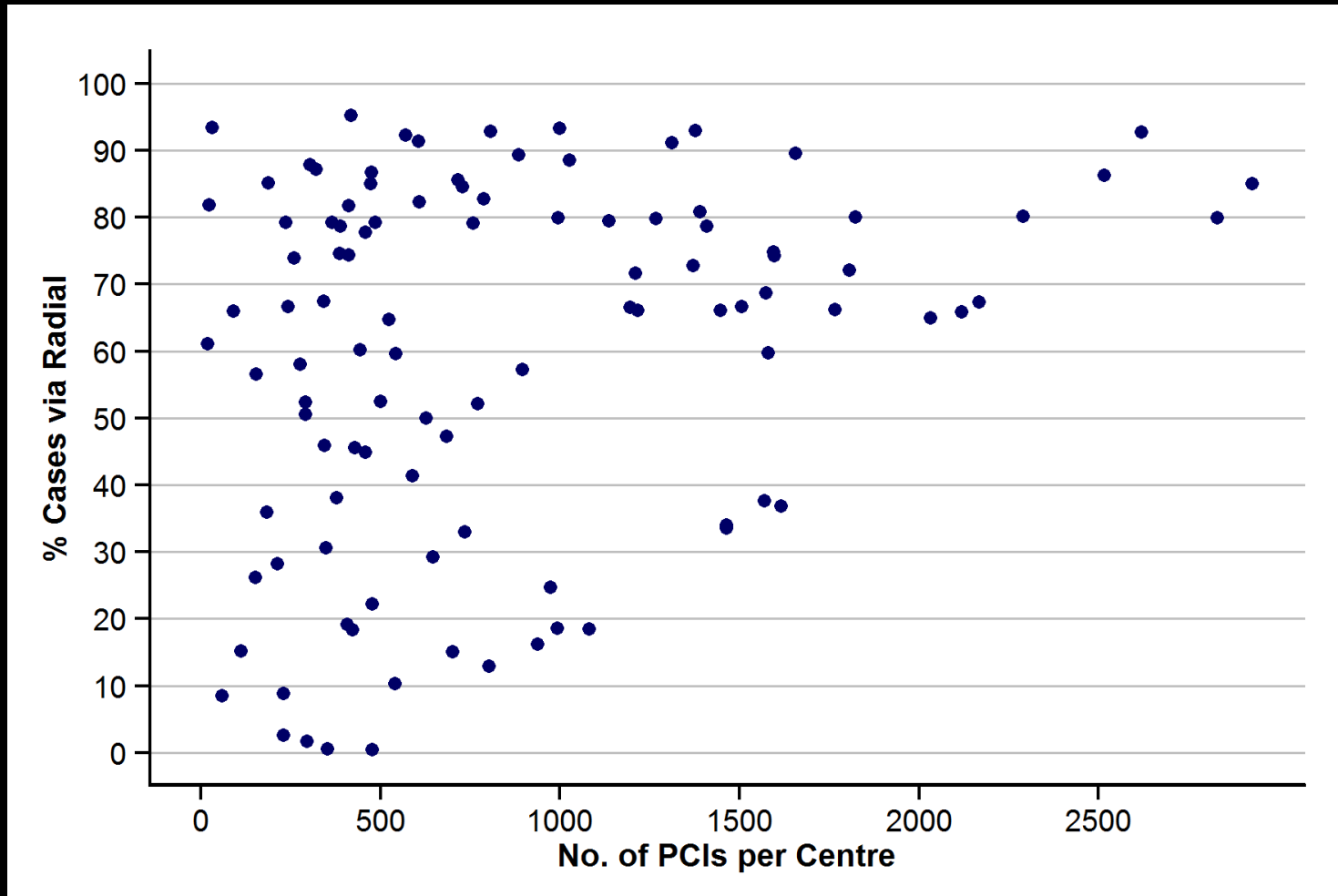
2012 data: Ludman



# Radial Artery Access



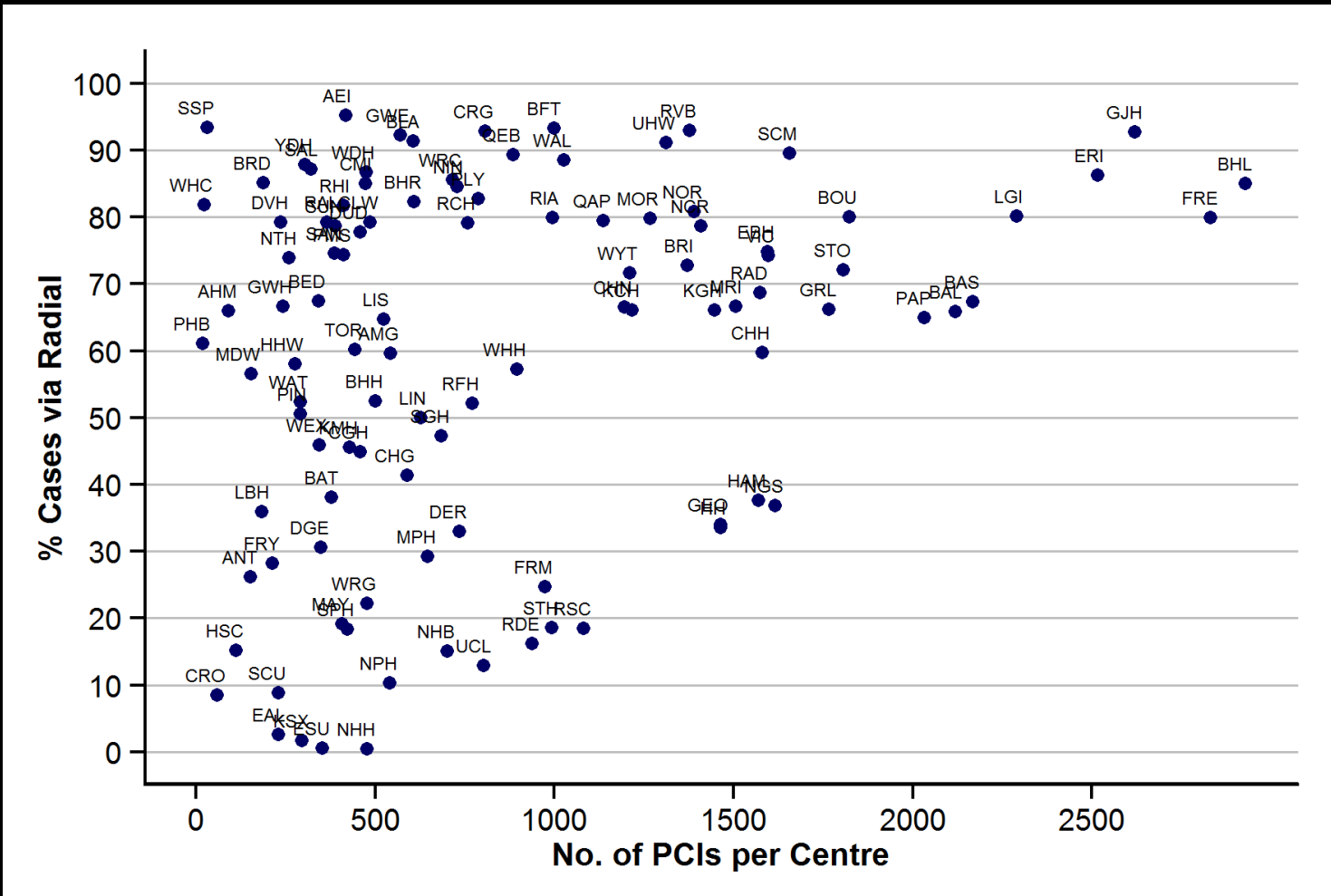
2012 data: Ludman



# Radial Artery Access



2012 data: Ludman



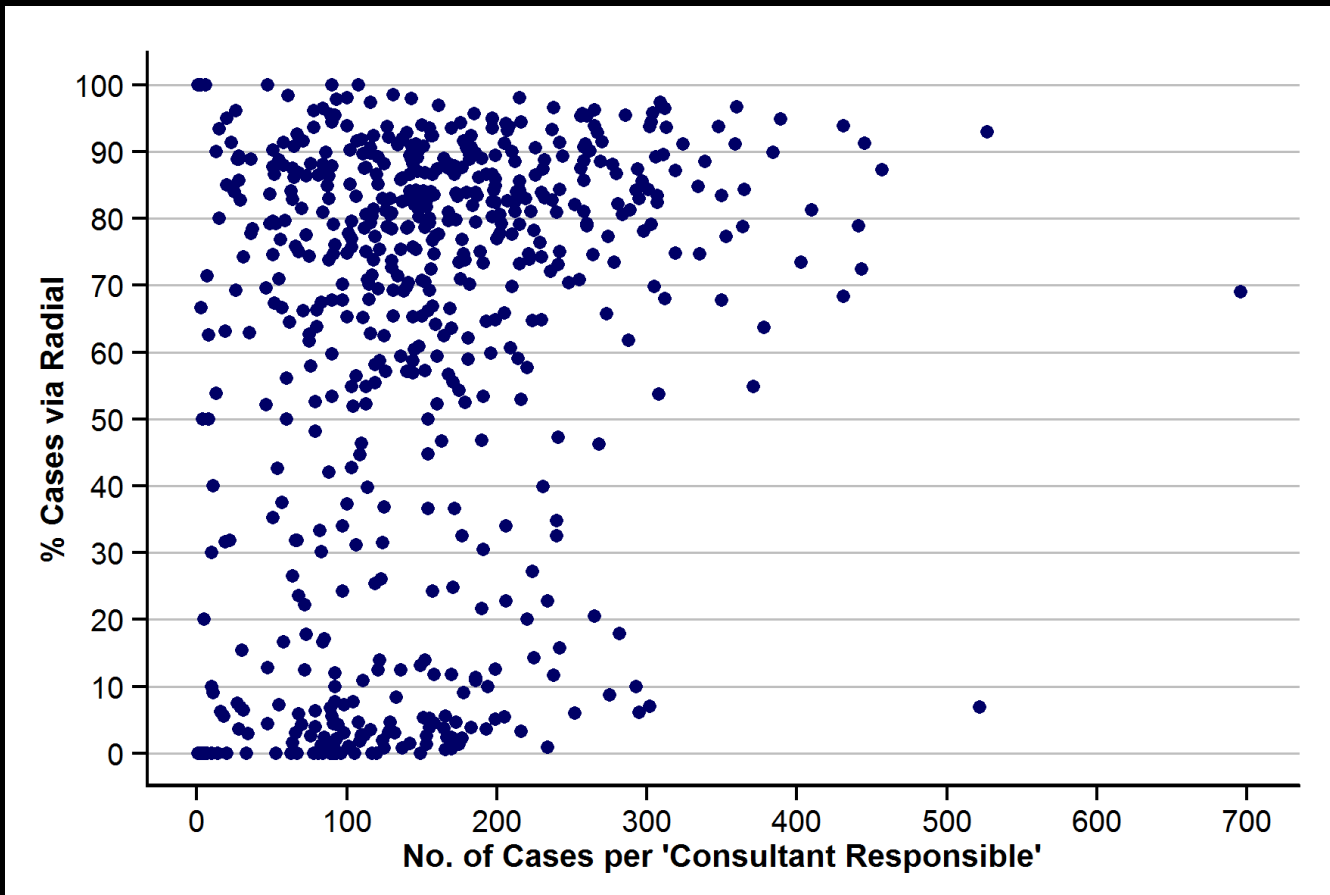
# Radial Artery Access

## By operator



2012 data: Ludman

- % Radial by 'Consultant Responsible for PCI' in 2012
- Any case with any radial (including multiple access)

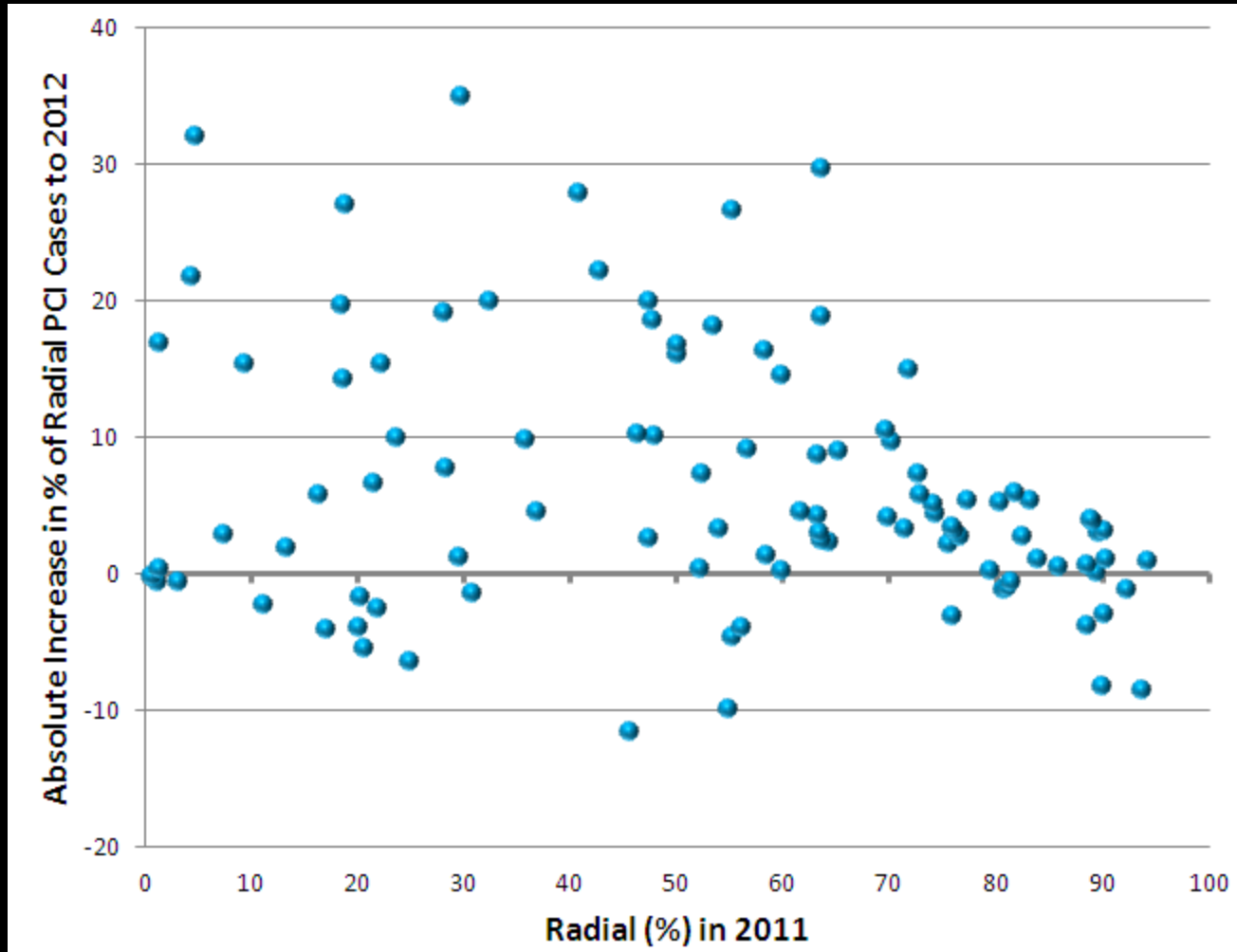


# Radial Artery Access



2012 data: Ludman

## 2012 versus 2011

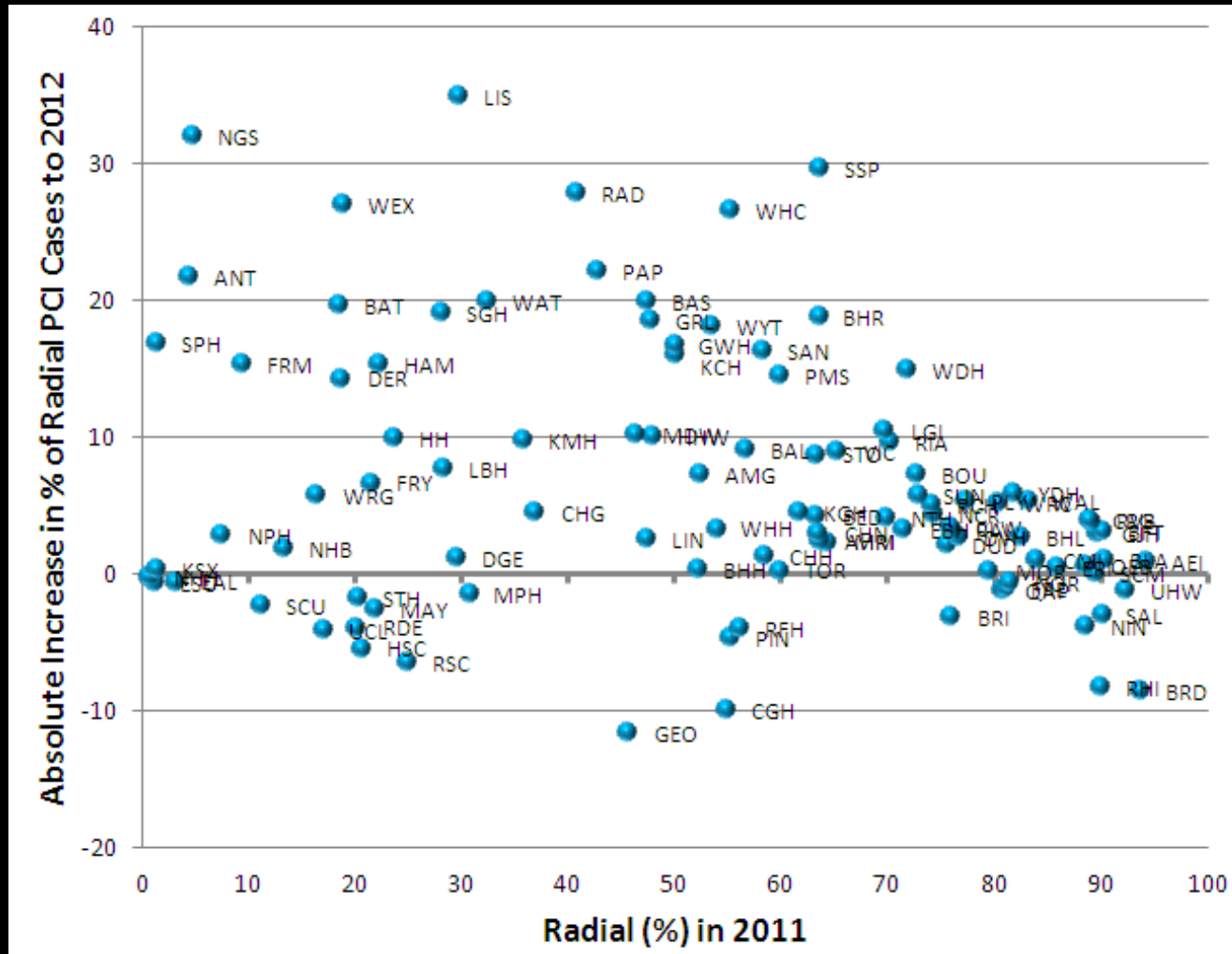


# Radial Artery Access



2012 data: Ludman

## 2012 versus 2011

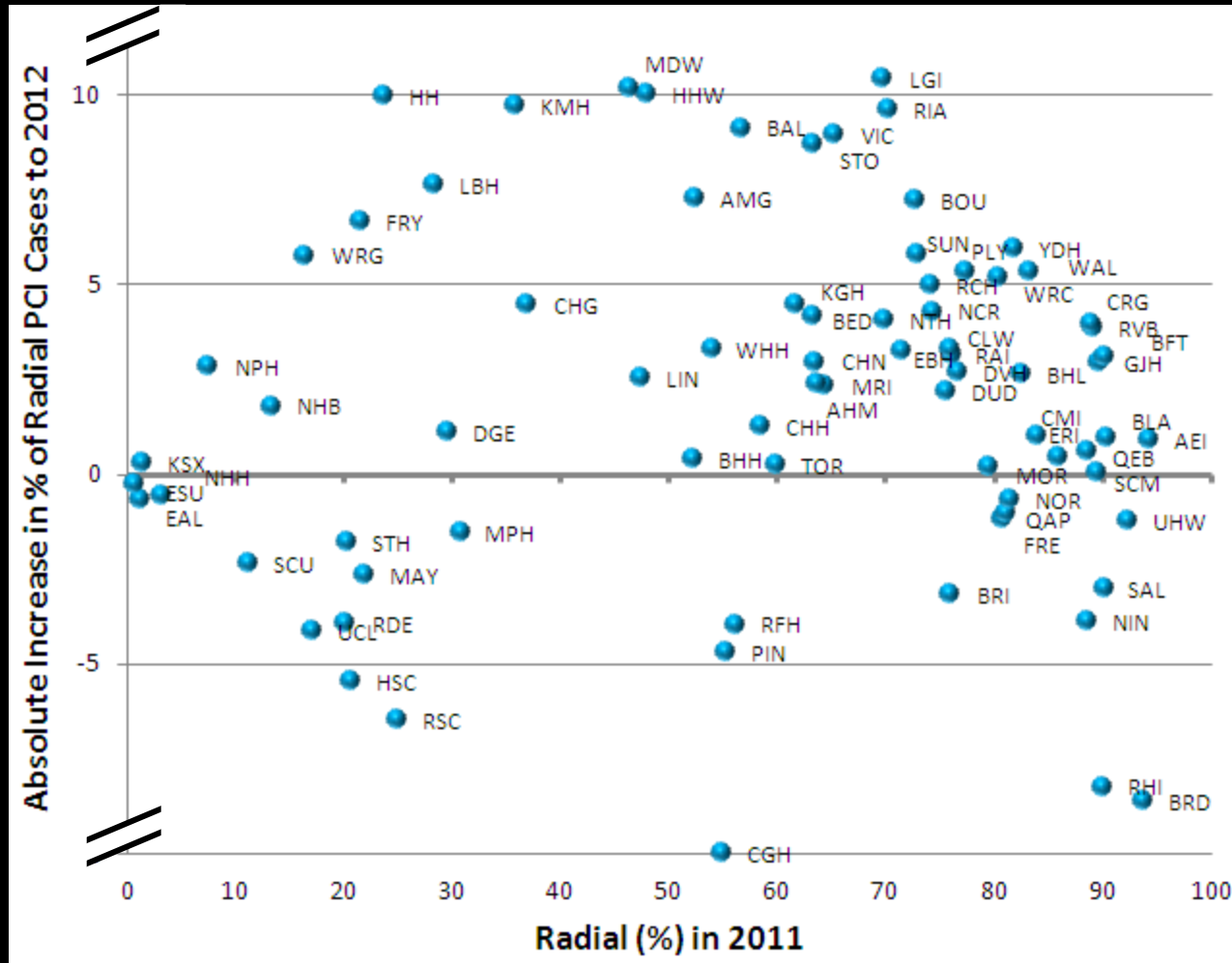


# Radial Artery Access



2012 data: Ludman

## 2012 versus 2011

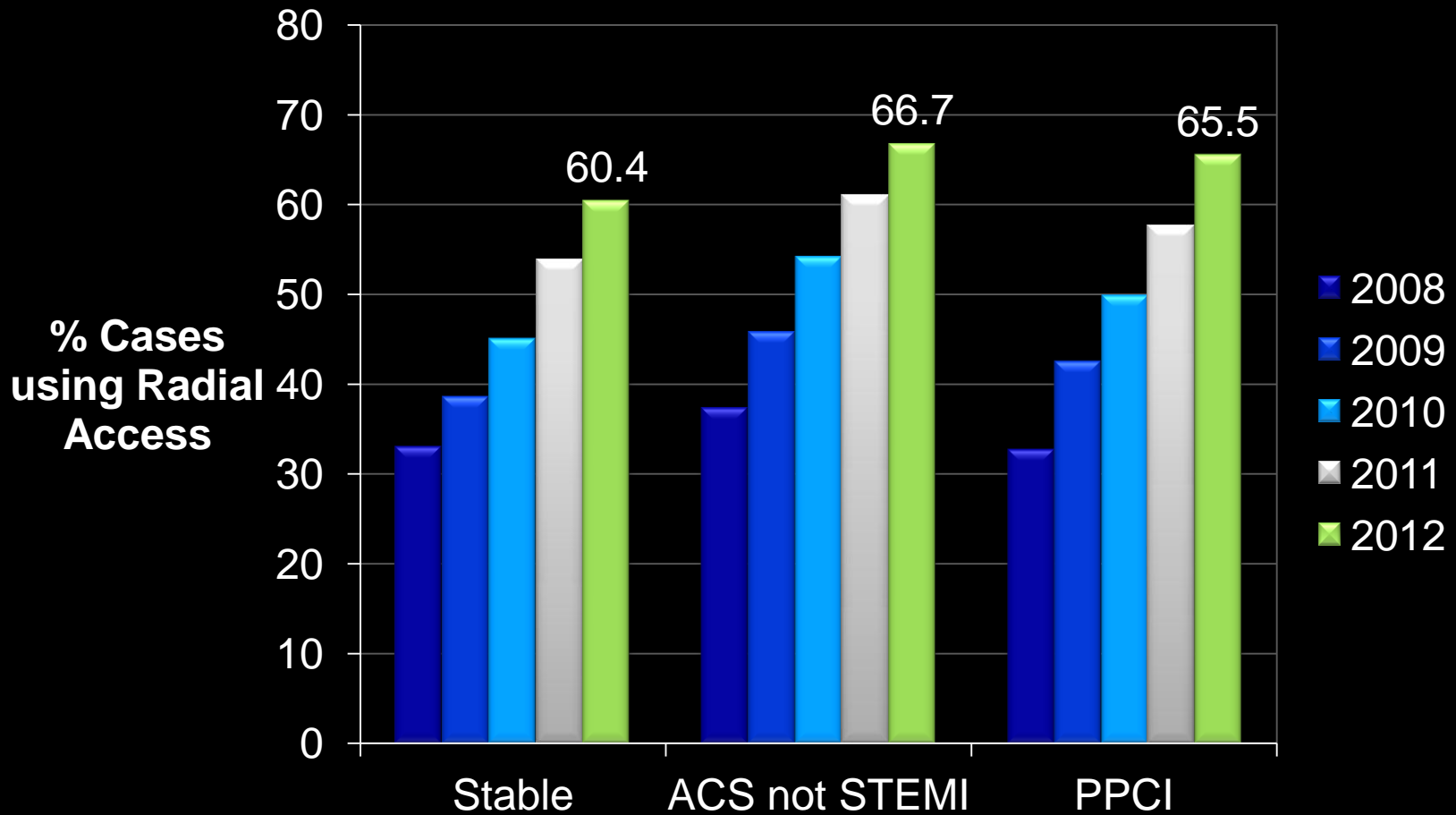


# Radial Artery Access

## Clinical Syndrome



2012 data: Ludman

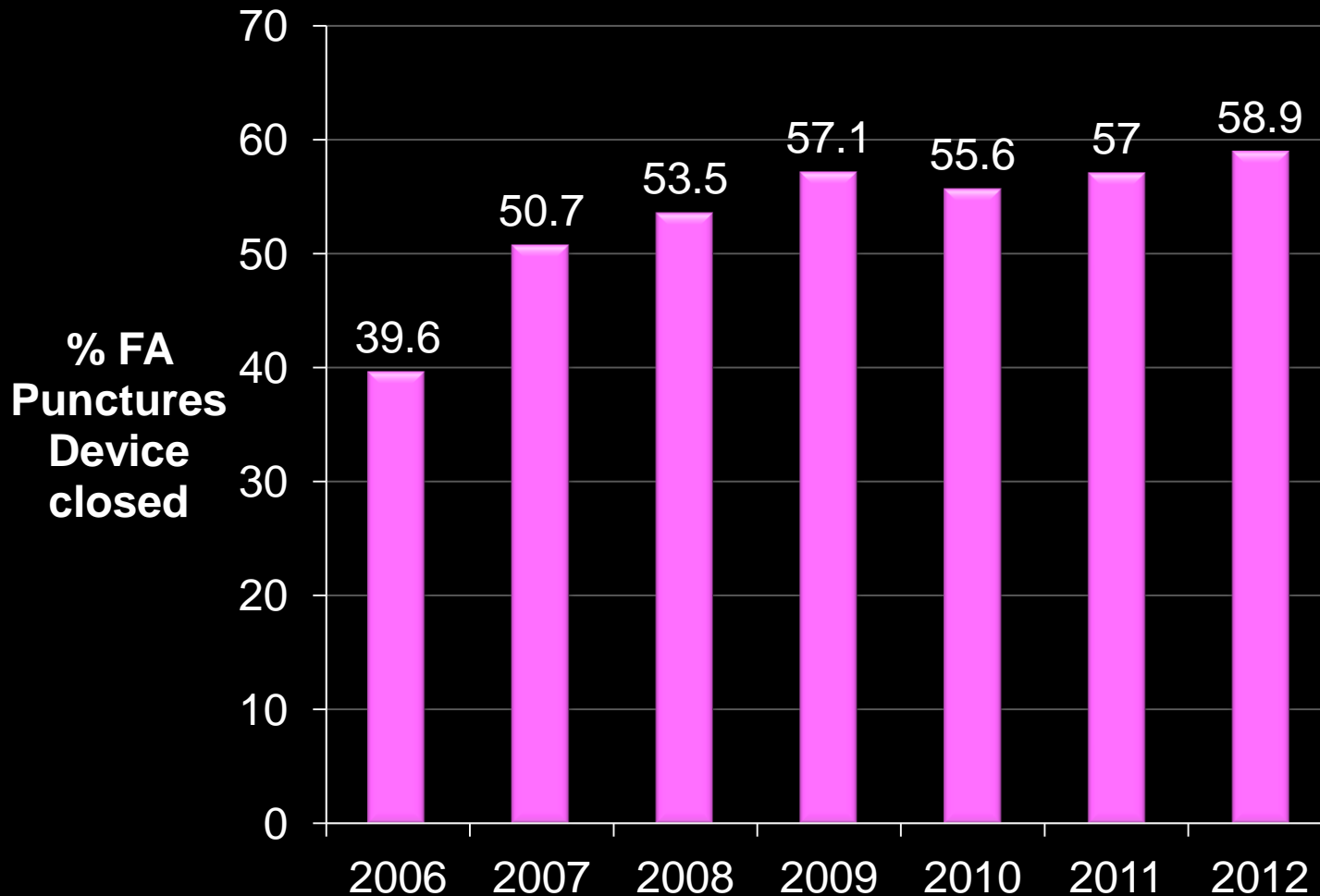


# Femoral closure devices

Of PCI via FA - % punctures closed with a device



2012 data: Ludman



# Contents



2012 data: Ludman

- Structure

- Angio and PCI centres and maps
- Total angio and PCI numbers
- No of PCIs per centre and per angio
- PCI pmp and by country and v CABG
- Centre PCI volumes
- PCI operators, by centre, by PPCI
- On call rotas for PPCI
- On site v off site surgical cover
- Day case activity
- Primary PCI units

- NICOR data collection

- Centre participation
- Databases used
- Case ascertainment
- Data completeness

- Appropriateness

- Demographics
- Indication for PCI / Clinical syndrome
- PPCI activity (by unit, pmp, by vessel)
- PCI for out of hospital arrest
- PCI territories / vessels / lesions
- Atherectomy
- Stents (BMS and DES)
- Adjunctive pharmacotherapy
- LV support and shock
- Primary PCI for > 80 yrs
- Additional interventional techniques, devices
- Arterial access (routes)

- Process of care

- Delays to treatment
- NSTEMI (direct v IHT)
- Primary PCI DTB / CTB
- IHT versus Direct admission
- Length of stay

- Outcome

- MACCE
- Peri-procedural complications and by access
- Tracked 30 day mortality
  - Outcome by syndrome
  - Outcome by lesion subset
- Risk adjusted outcome
- Operator reported outcomes

- Adult non coronary intervention

- Septal ablation for HOCM
- Mitral valvuloplasty
- Mitraclip / PFO / ASD closure / LAA occlusion
- Para-prosthetic leak closure
- Renal Denervation
- Percutaneous Pulmonary valve

- TAVI

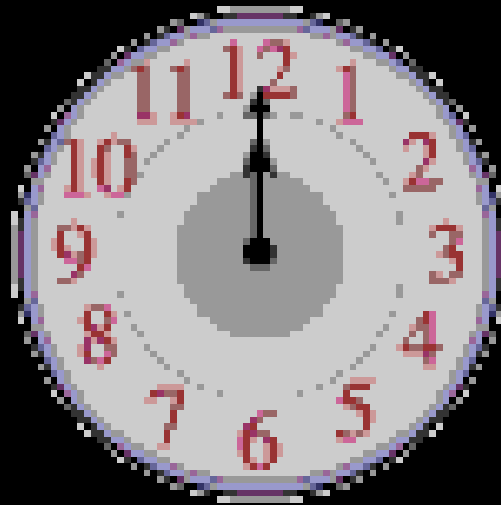
- Activity by centre
- Demographics
- Valve types
- Delivery approaches by valve type
- Pacing
- Complications

- Conclusions and summary

Appendix: PCI Centre NICOR / CCAD Centre codes

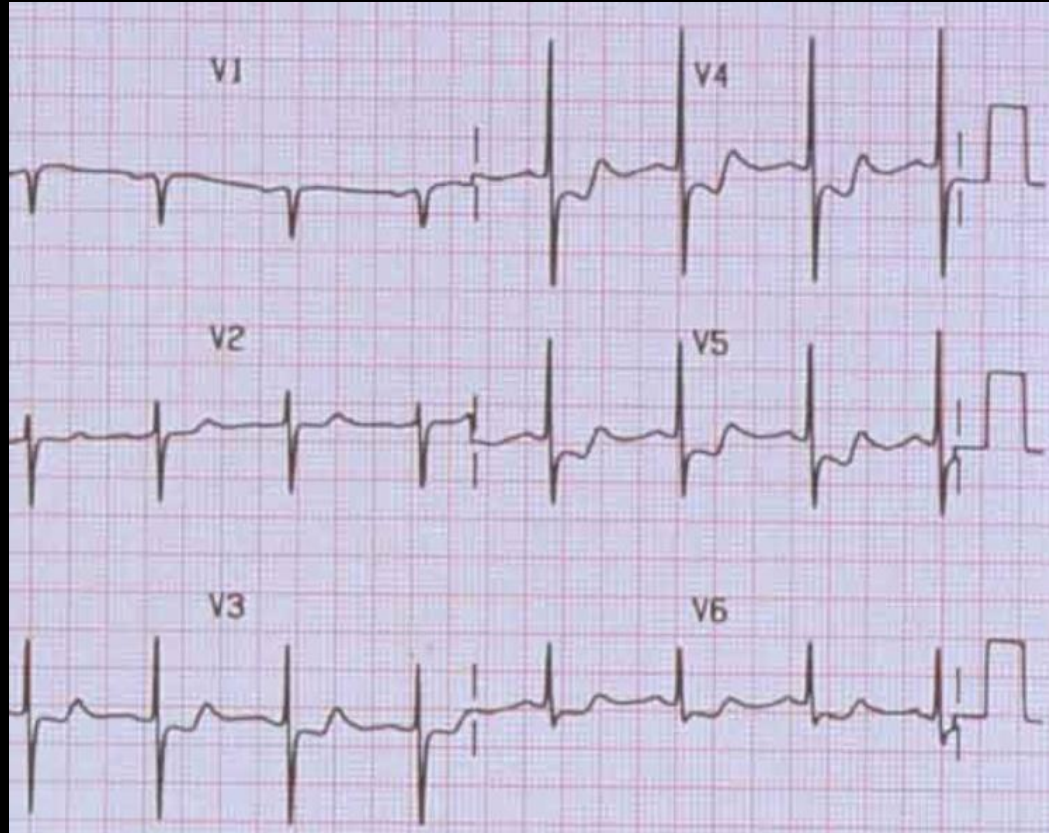
# Time Delays to Treatment

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[Back to contents](#)

# Delays to PCI in NSTEMI



# Delays to PCI in NSTEMI



2012 data: Ludman

## Note:

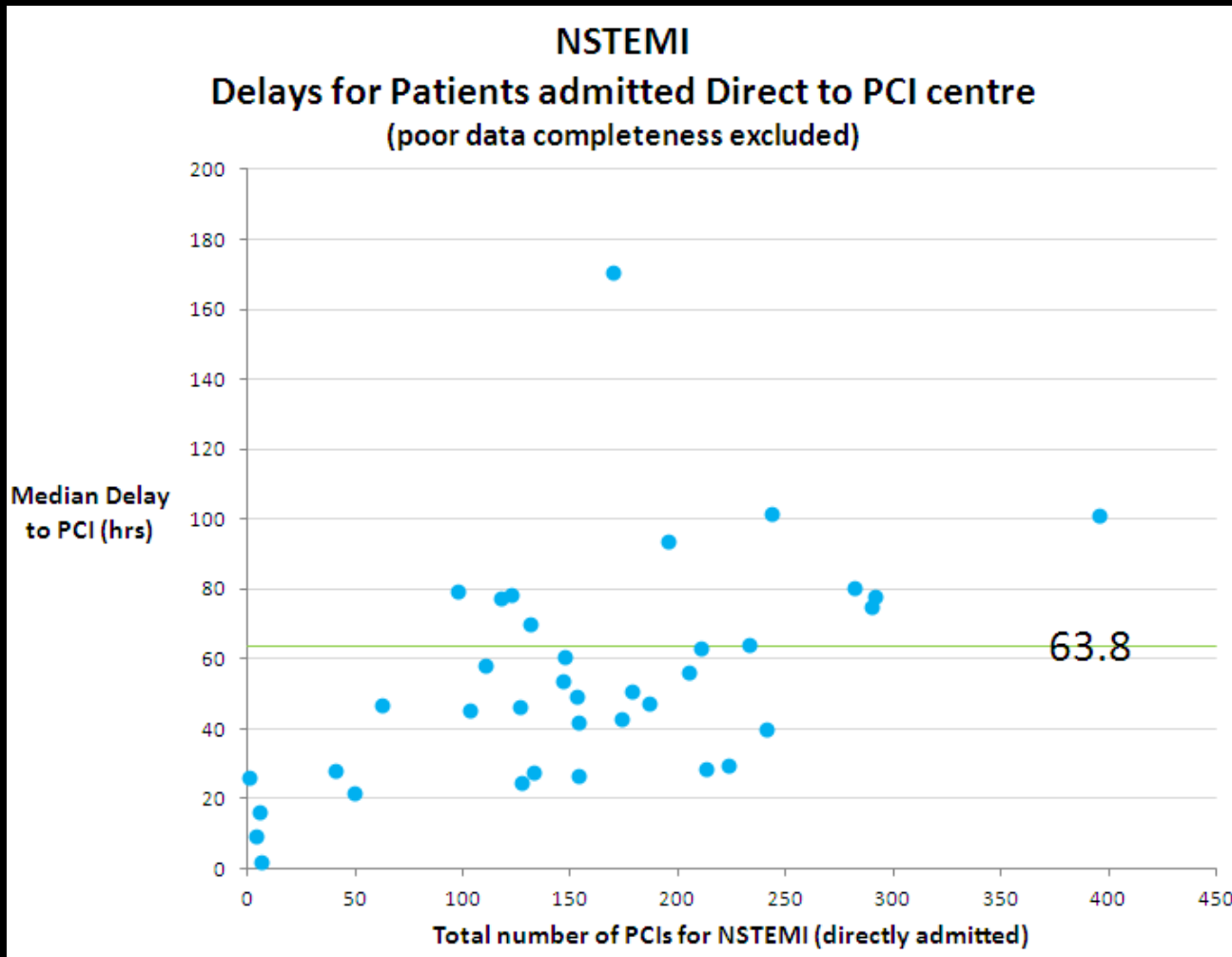
- For NSTEMI overall delays are calculated from FIRST hospital arrival to treatment
- For PPCI the timing for the 'Direct' admissions is from PCI door (which in transferred patients is door 2)

# Delays to PCI in NSTEMI

## Admission Route – Direct to PCI Centre



2012 data: Ludman



Note: IHD Delays are from Door 1 to PCI Centres with < 90% data completeness excluded

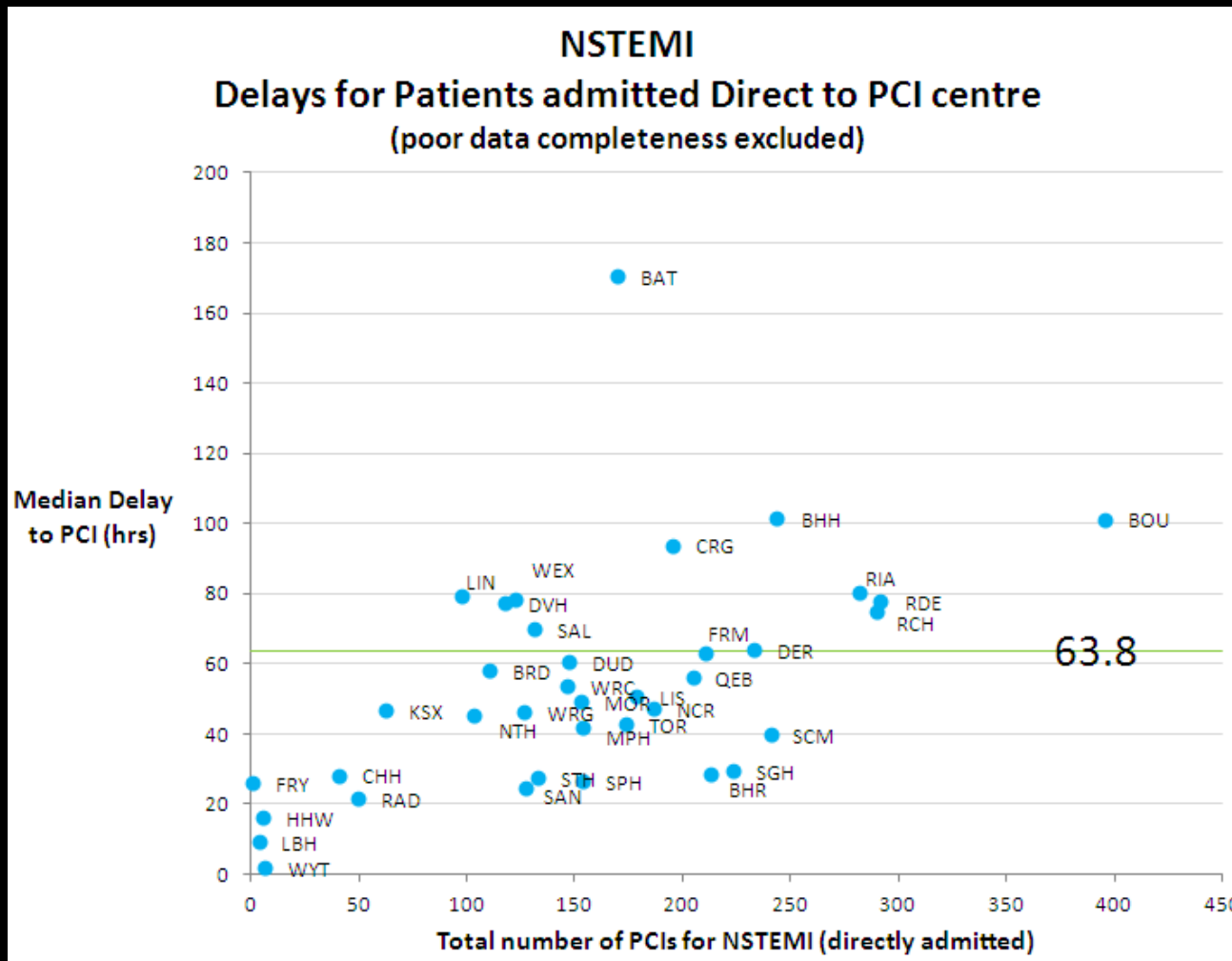
Better

# Delays to PCI in NSTEMI

## Admission Route – Direct to PCI Centre



2012 data: Ludman



2.6 days

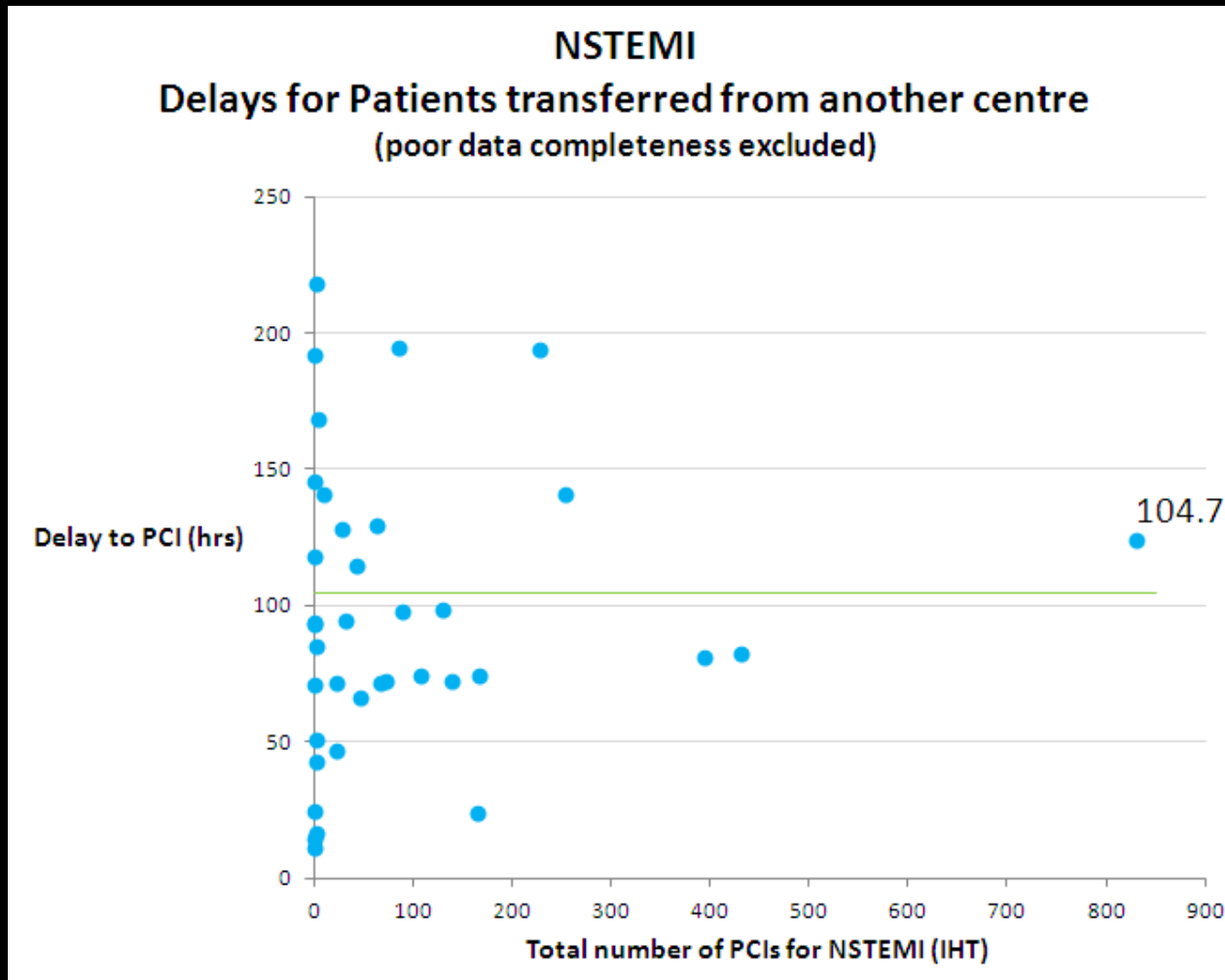
Note: IHD Delays are from Door 1 to PCI Centres with < 90% data completeness excluded

# Delays to PCI in NSTEMI

## Admission Route – IHT



2012 data: Ludman



Note: IHD Delays are from Door 1 to PCI  
Centres with < 90% data completeness excluded

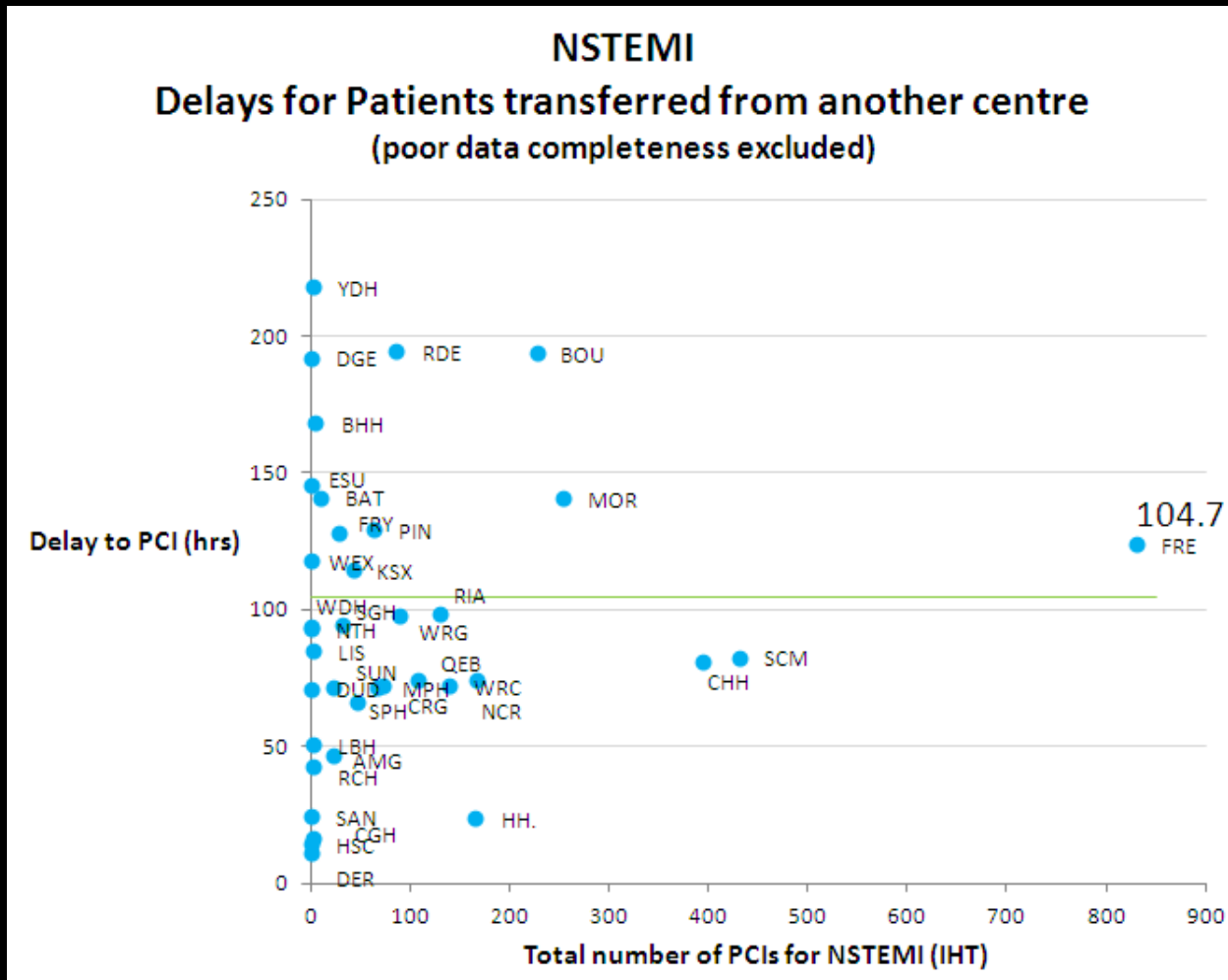
Better

# Delays to PCI in NSTEMI

## Admission Route – IHT



2012 data: Ludman



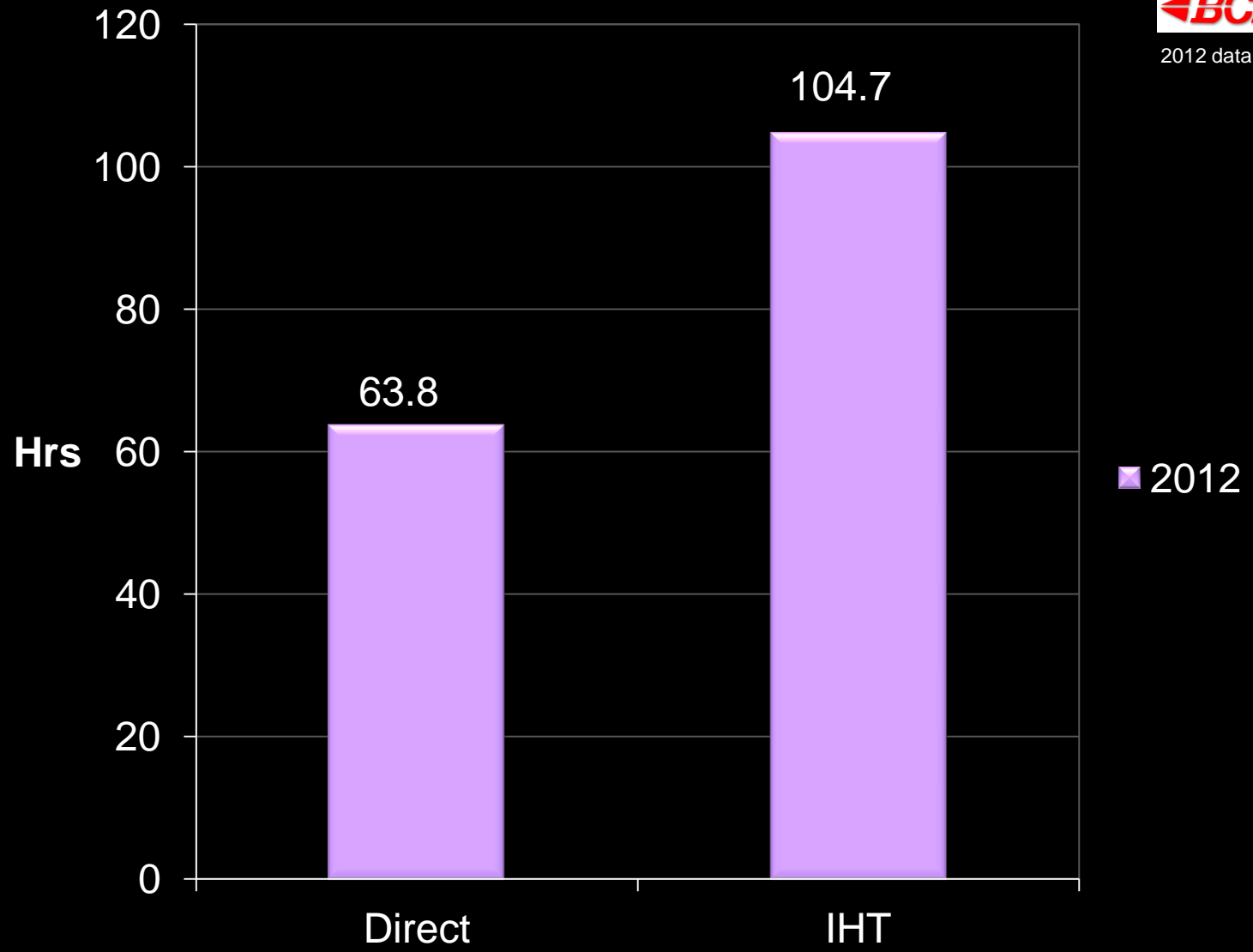
4.3 days

Note: IHD Delays are from Door 1 to PCI  
Centres with < 90% data completeness excluded

# Delays to PCI in NSTEMI



2012 data: Ludman

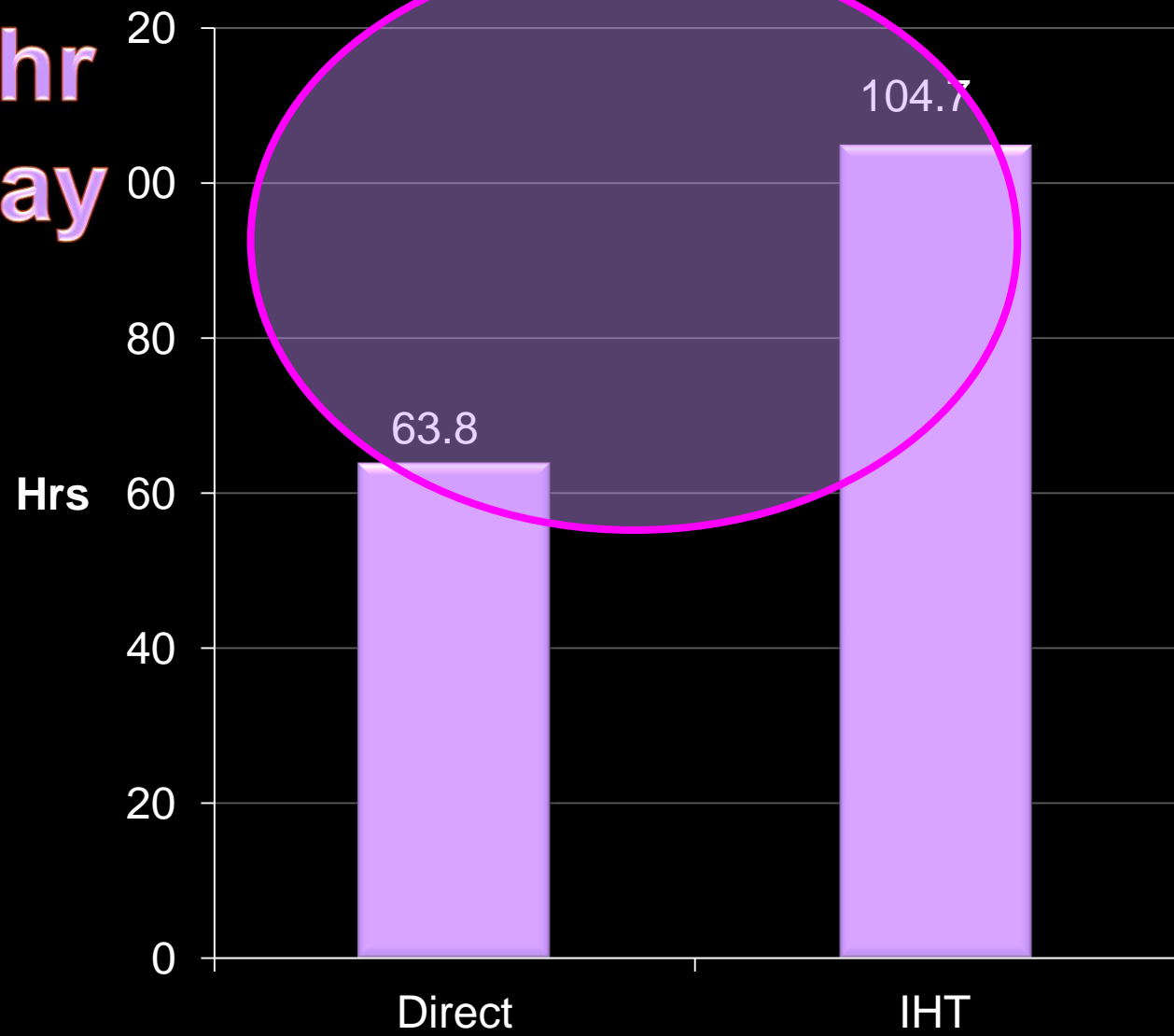


# Delays to PCI in NSTEMI



2012 data: Ludman

40 hr  
Delay

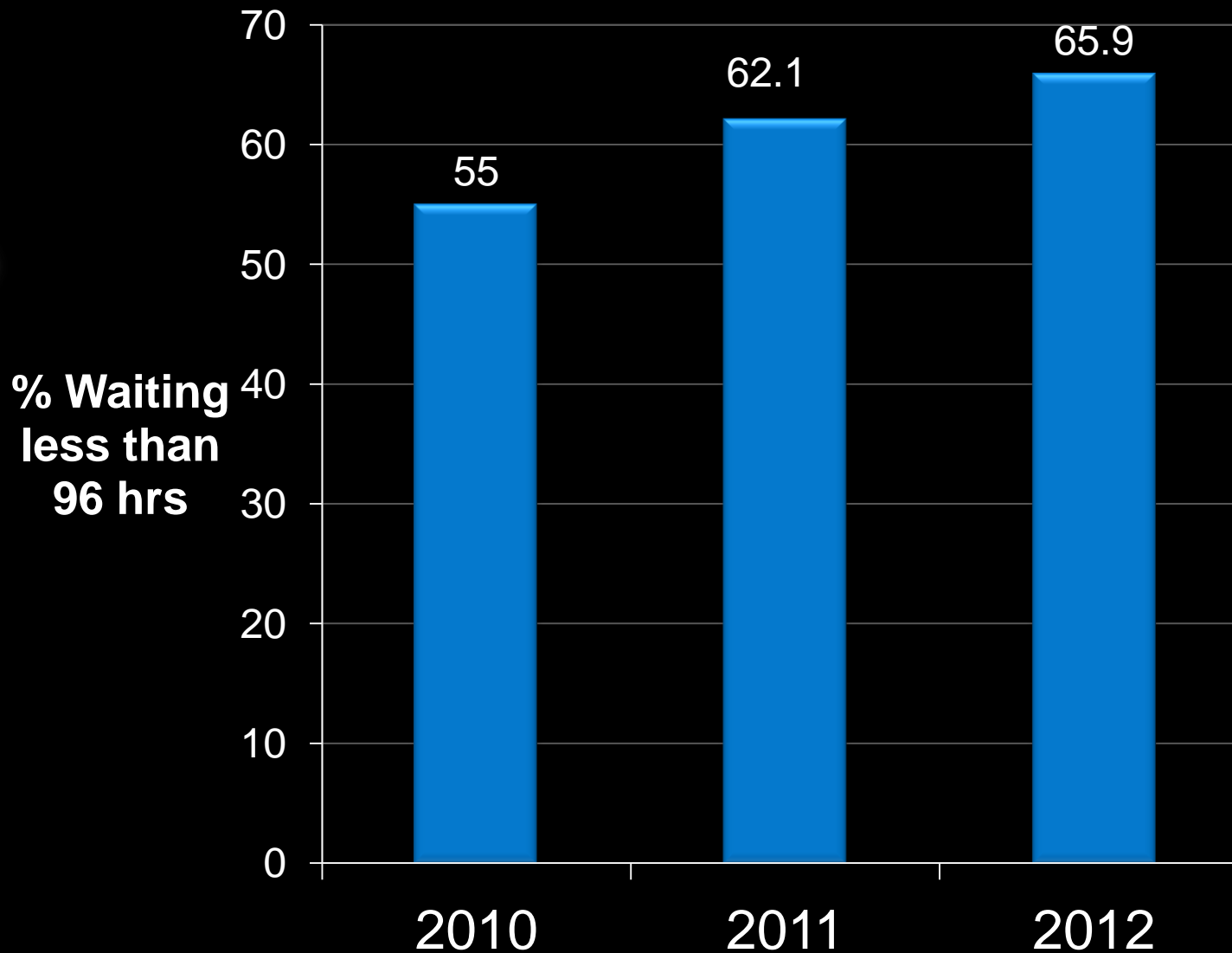


■ 2012

# Delays to PCI in NSTEMI (% < 96hr)



2012 data: Ludman



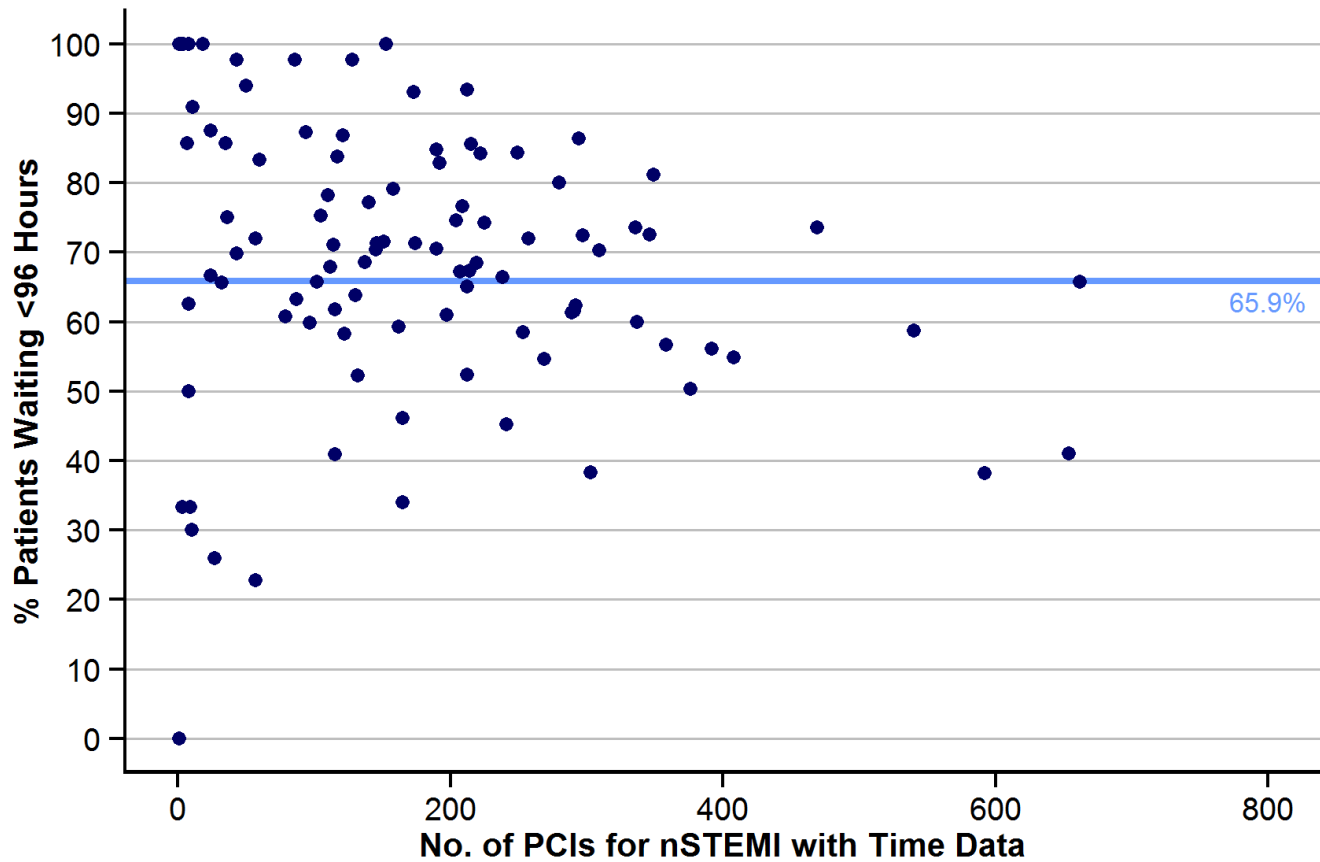
Better

% Waiting less than 96 hrs

# Delays to PCI in NSTEMI (% < 96hr)



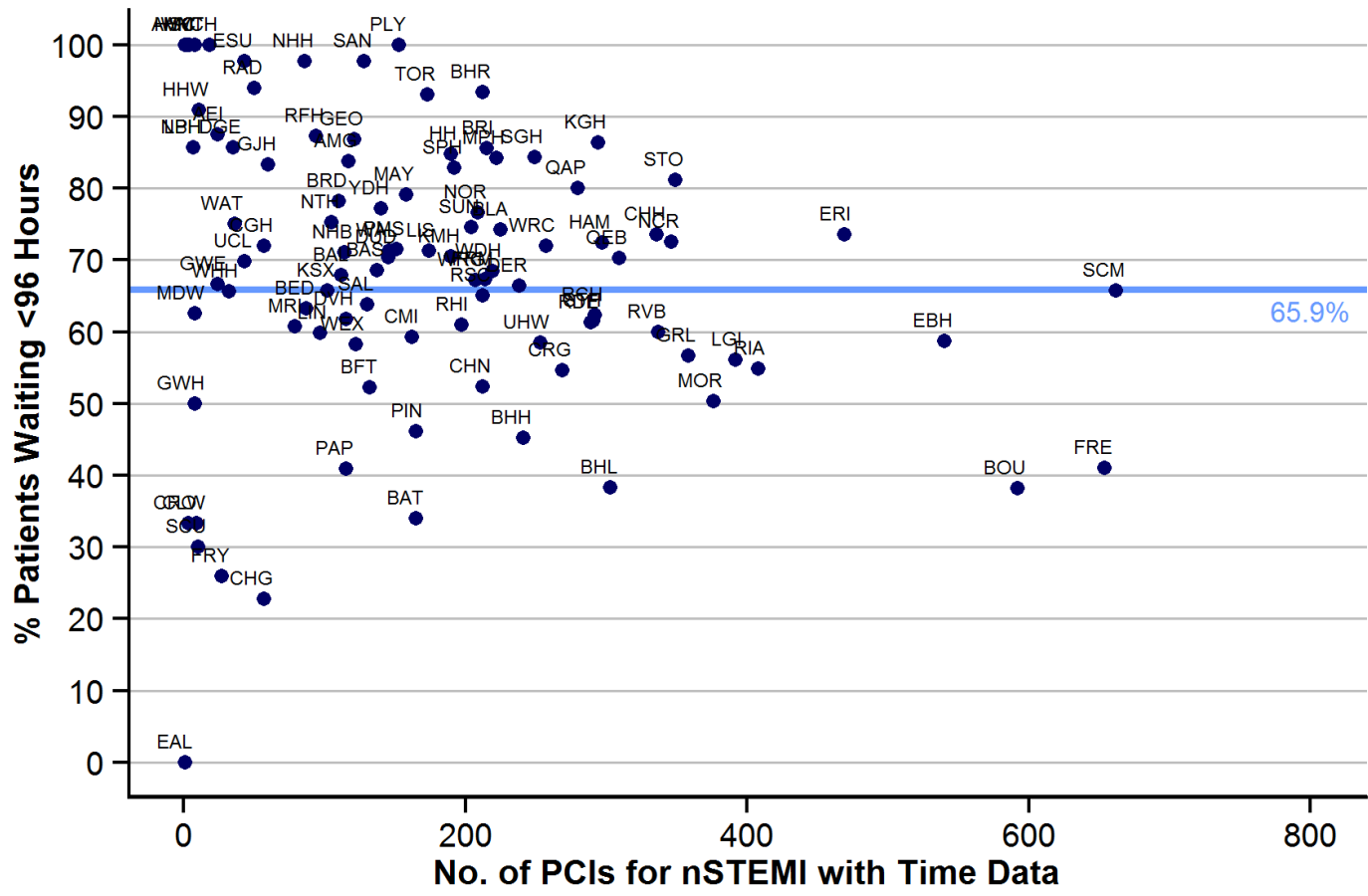
2012 data: Ludman



# Delays to PCI in NSTEMI (% < 96hr)



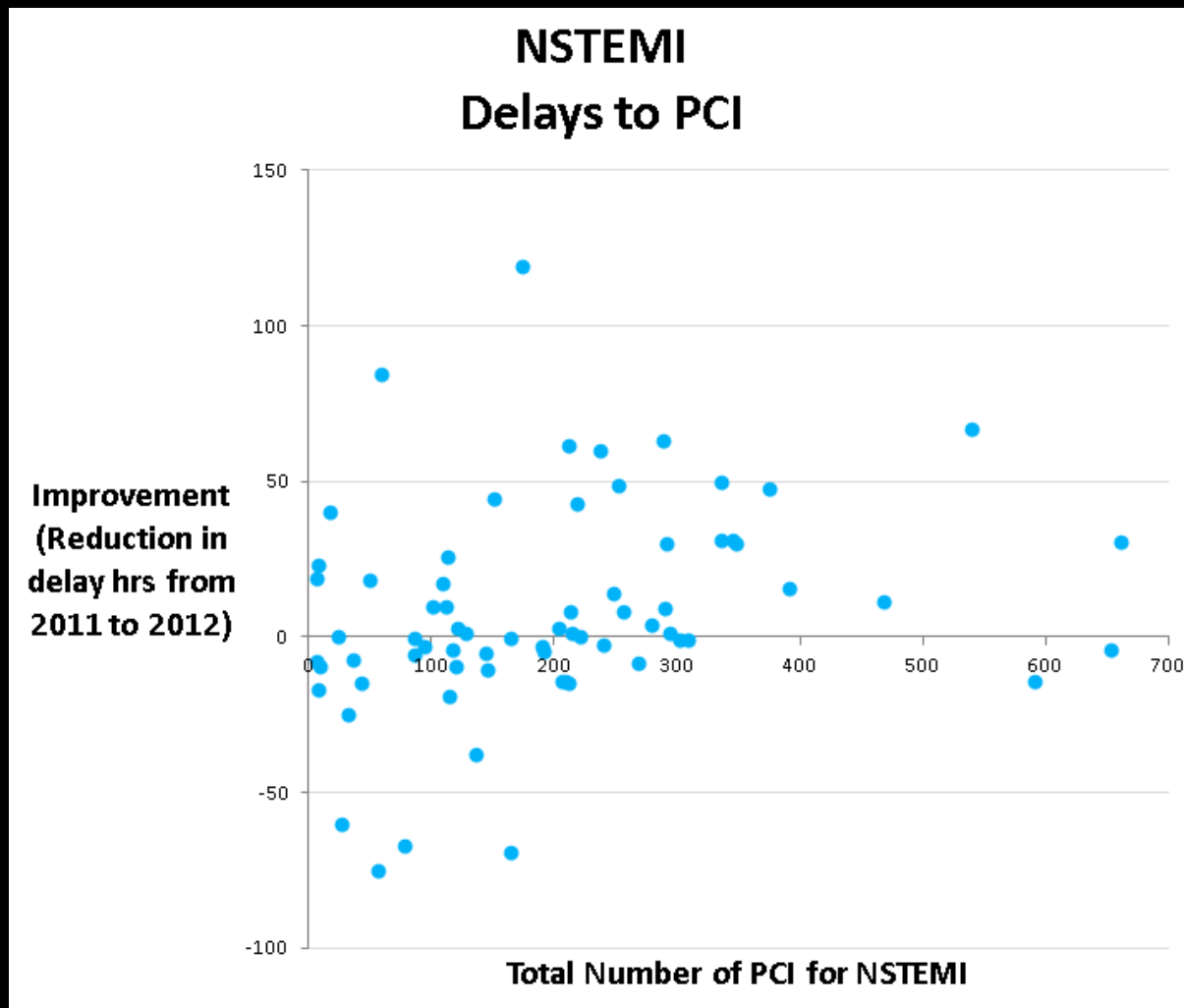
2012 data: Ludman



# Delays to PCI in NSTEMI

## Direct and IHT combined

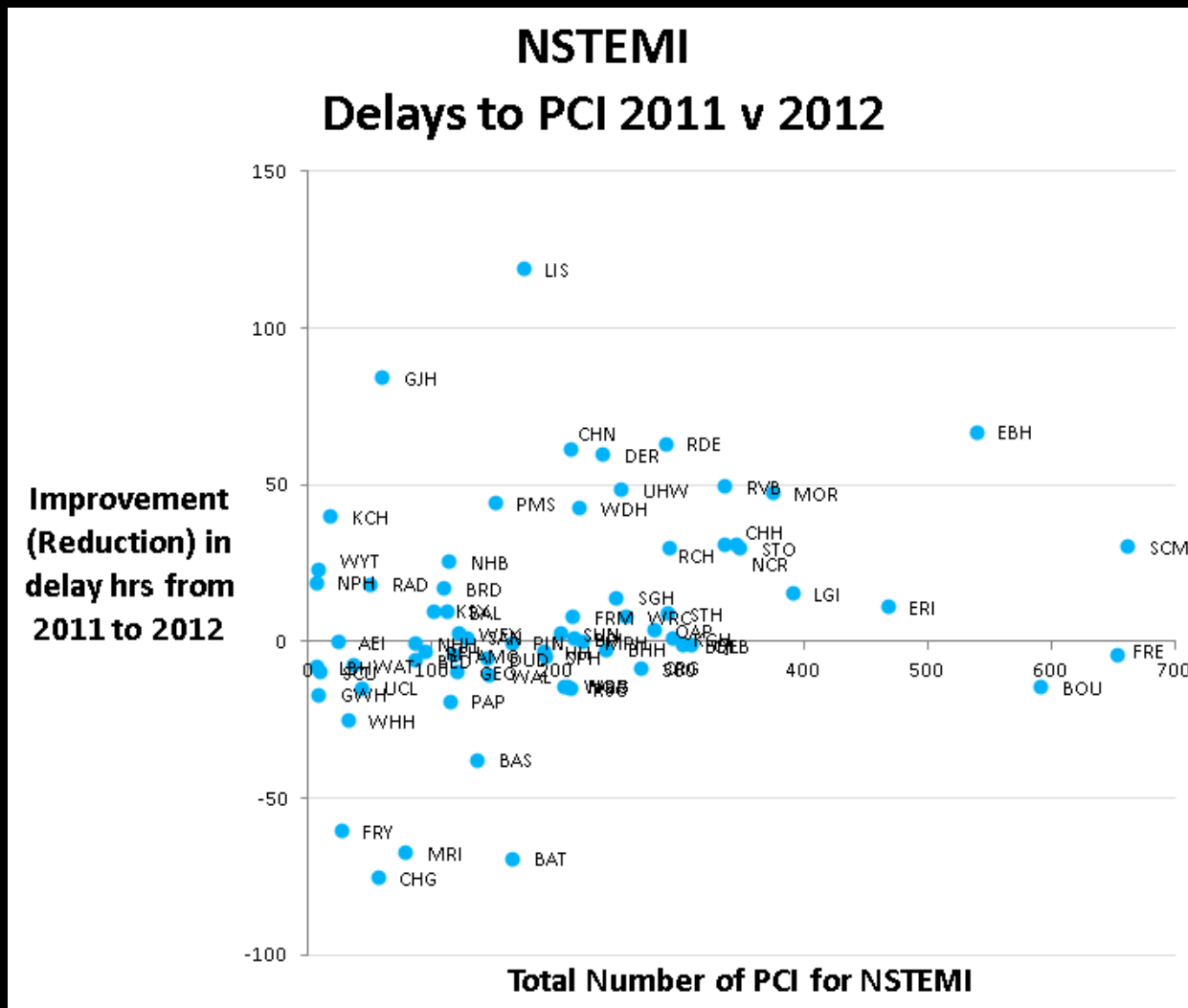
↑ Shorter delay  
↓ Longer delay



# Delays to PCI in NSTEMI

## Direct and IHT combined

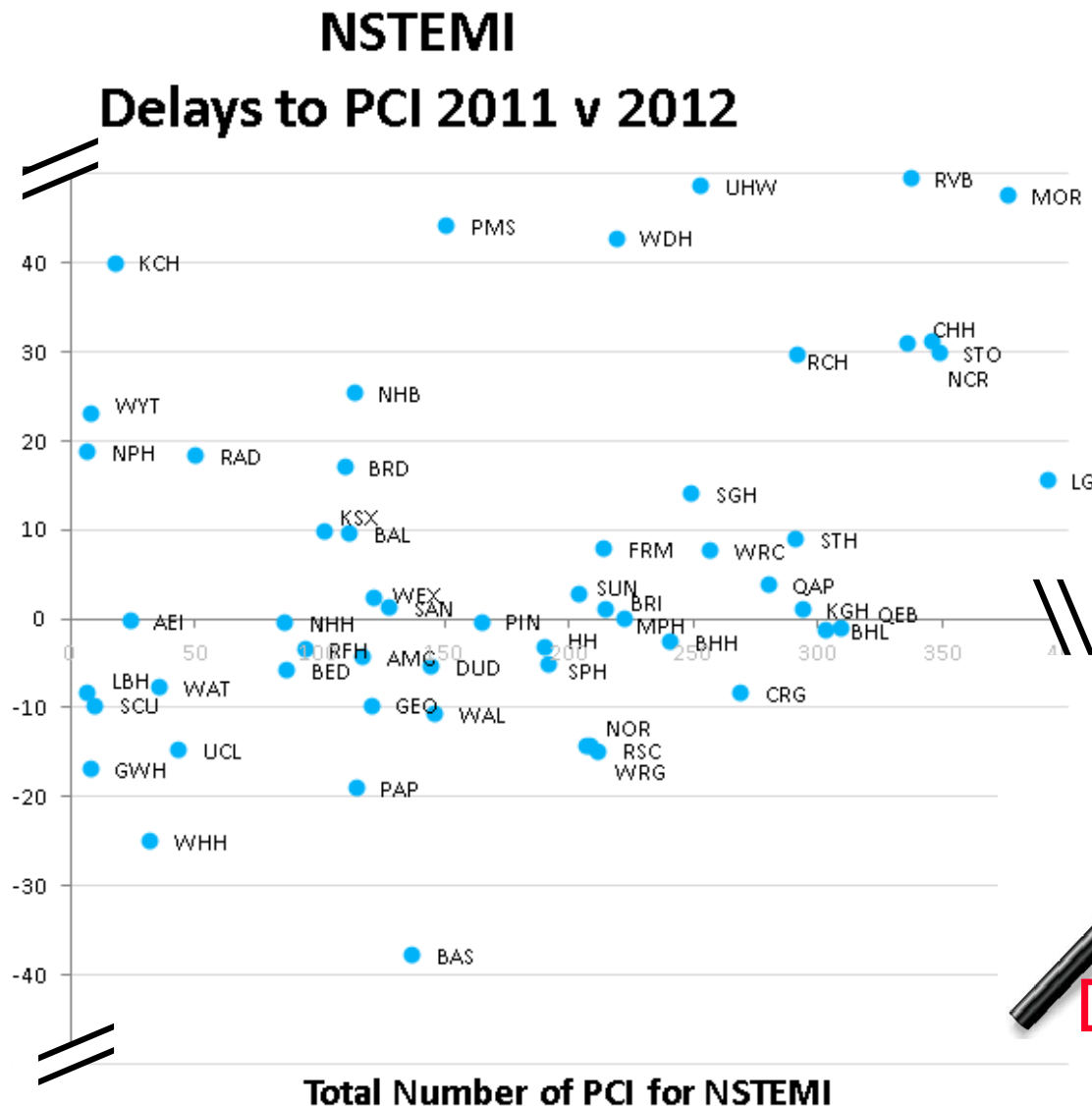
↑ Shorter delay  
 ↓ Longer delay



# Delays to PCI in NSTEMI

↑ Shorter delay  
 ↓ Longer delay

Improvement  
(Reduction) in  
delay hrs from  
2011 to 2012



Detail

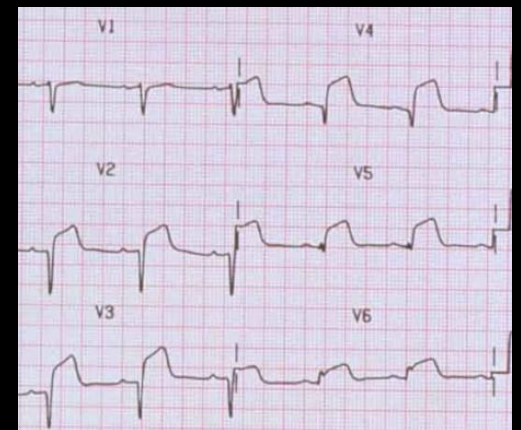
# Delays to PCI in NSTEMI



2012 data: Ludman

- Caveats
  - Time delay is from First hospital admission to PCI
    - NOT admission to angiography
  - Centres have differing proportions of patients treated after inter-hospital transfer versus direct admission
  - This proportion changes over time
  - Only procedures with time / date data are displayed. For 2012 centres with < 90% timing data for NSTEMI pathway are excluded from analysis

# Primary PCI



# Primary PCI

## Rx for STEMI (NHS centres)

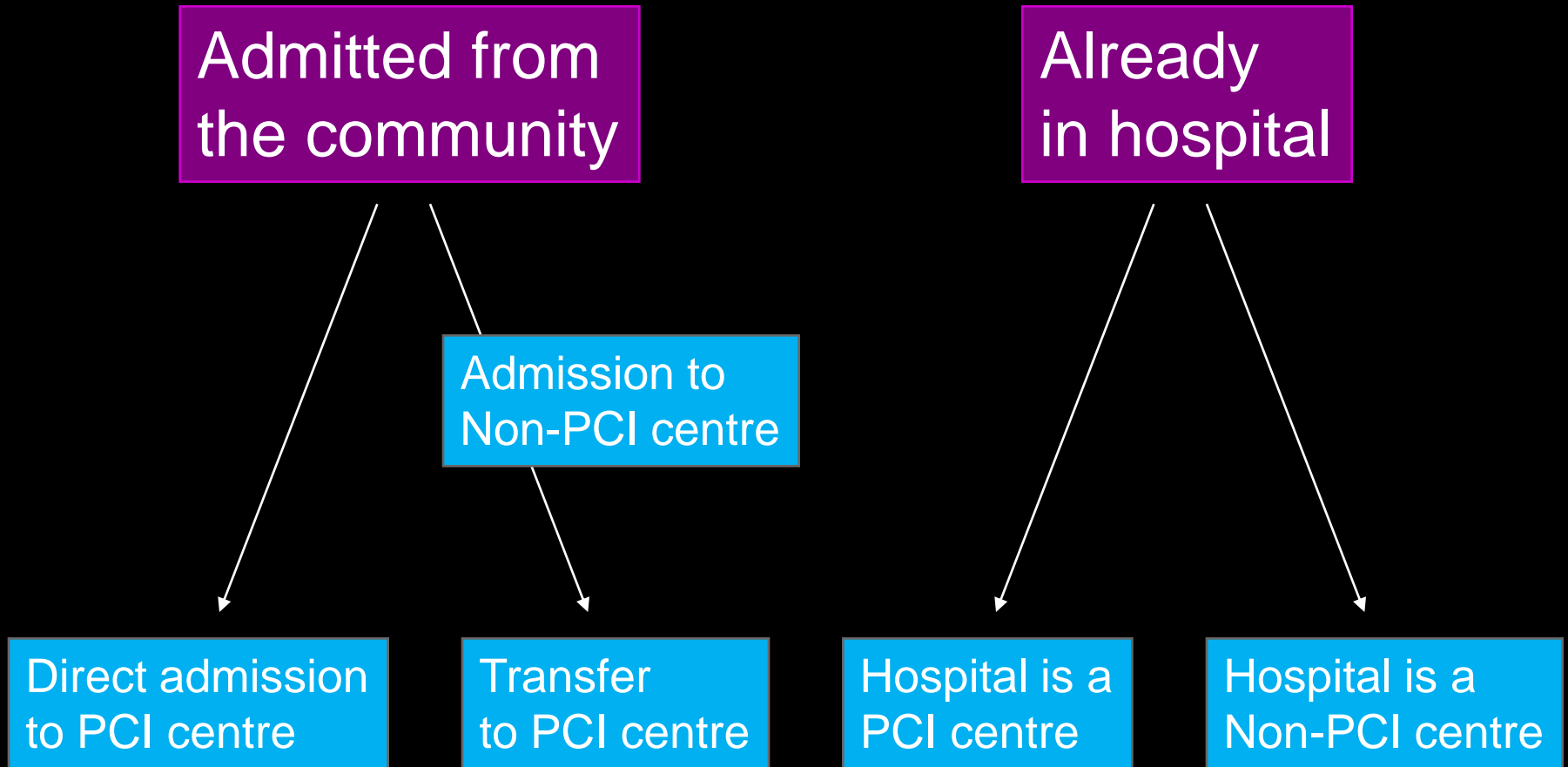
---

- Funnel analysis for **TIMING DELAYS**
  - All units performing > 10 cases of PPCI
  - Patients with onset of symptoms in the community
  - Excludes patients in cardiogenic shock
  - Excludes those needing pre-PCI ventilation

# PCI for Acute Sx

## Four admission scenarios

---



# PCI for Acute Sx

## Four admission scenarios

---

Admitted from  
the community

Admission to  
Non-PCI centre

Direct admission  
to PCI centre

Transfer  
to PCI centre

# PCI for Acute Sx

## Four admission scenarios

---

Admitted from  
the community

Admission to  
Non-PCI centre

Direct admission  
to PCI centre

Transfer  
to PCI centre

CTB



D1

D2

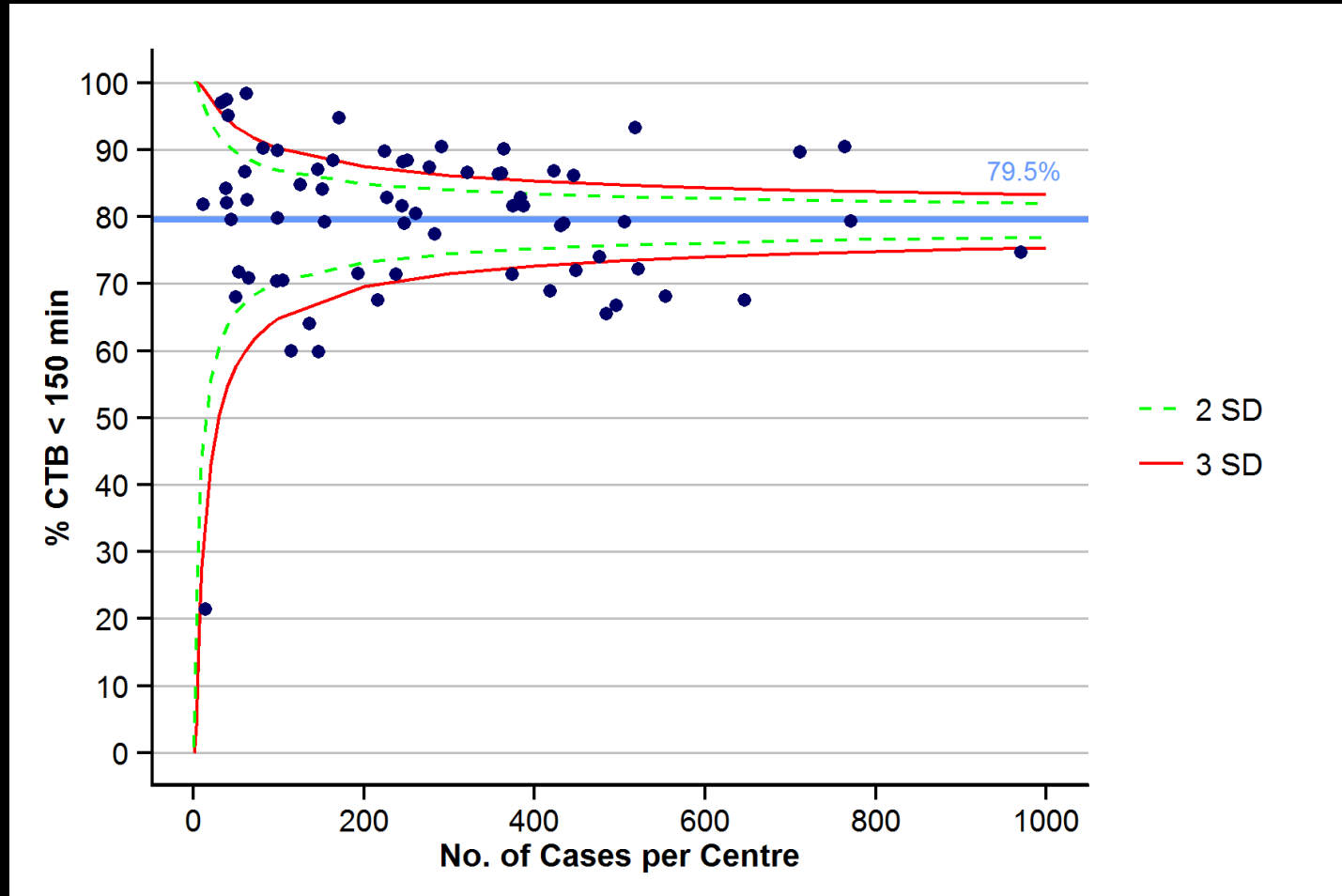
device

# Primary PCI (excl shock/vent)

Direct and IHT: Call to Balloon times < 150 min



2012 data: Ludman

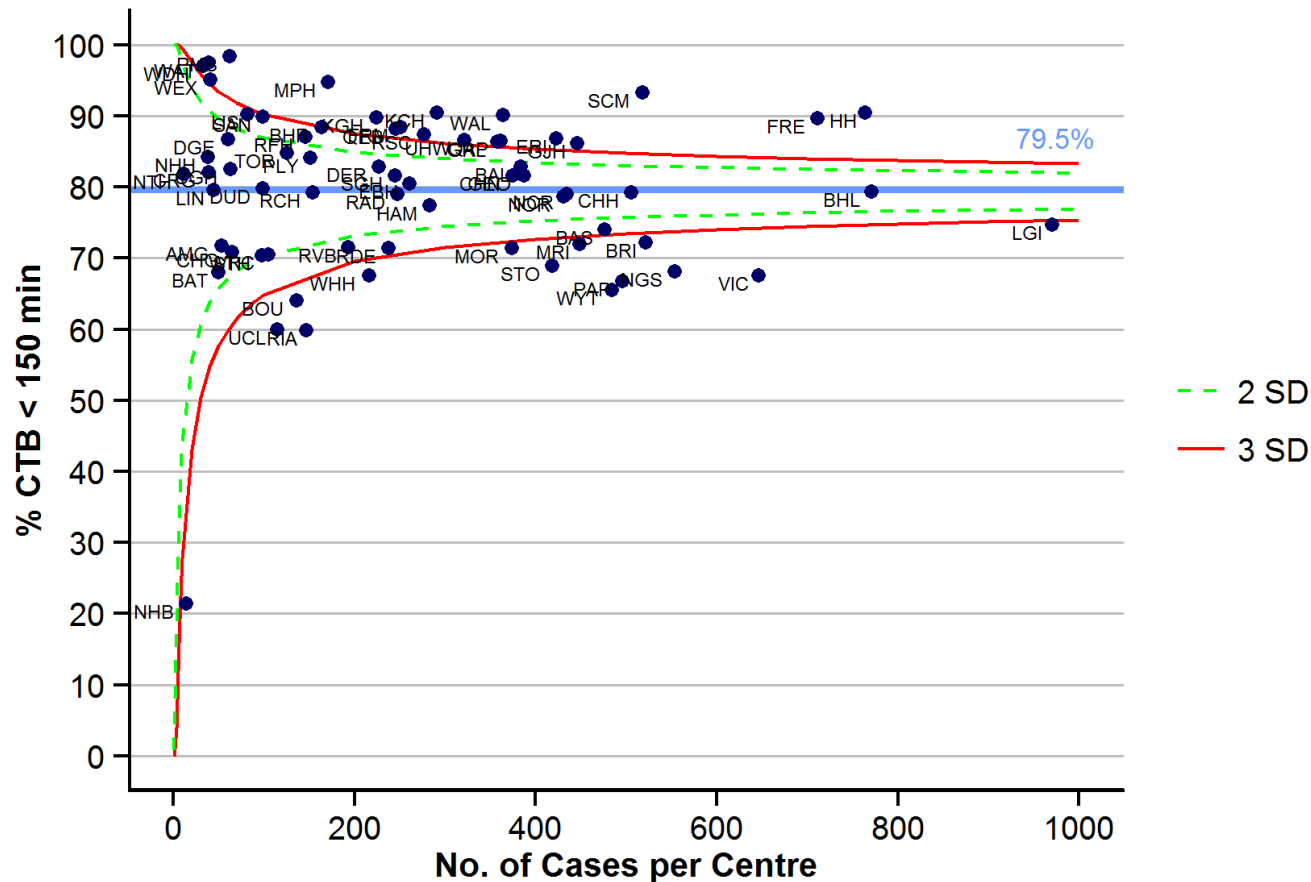


# Primary PCI (excl shock/vent)

Direct and IHT: Call to Balloon times < 150 min



2012 data: Ludman

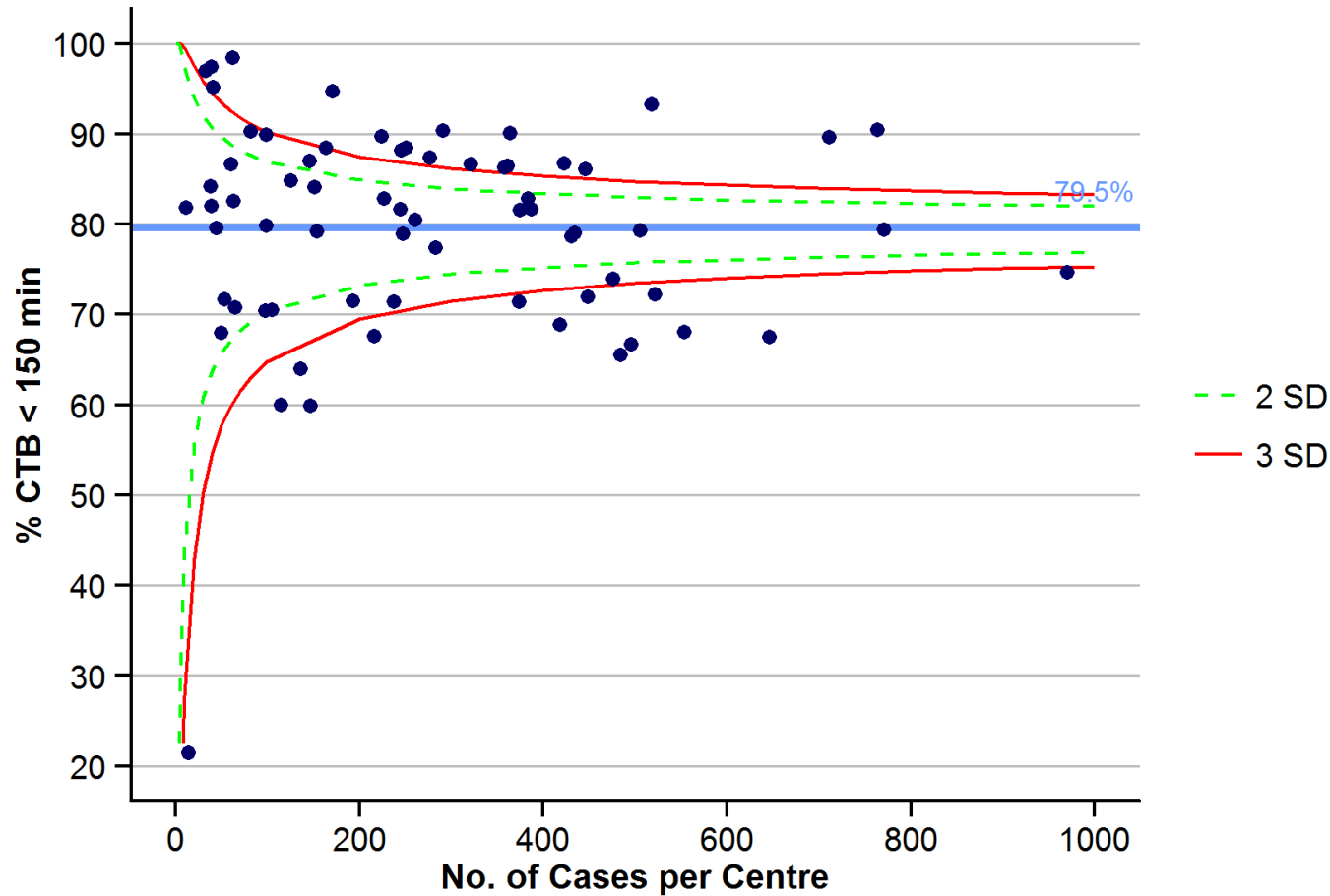


# Primary PCI (excl shock/vent)

Direct and IHT: Call to Balloon times < 150 min



2012 data: Ludman

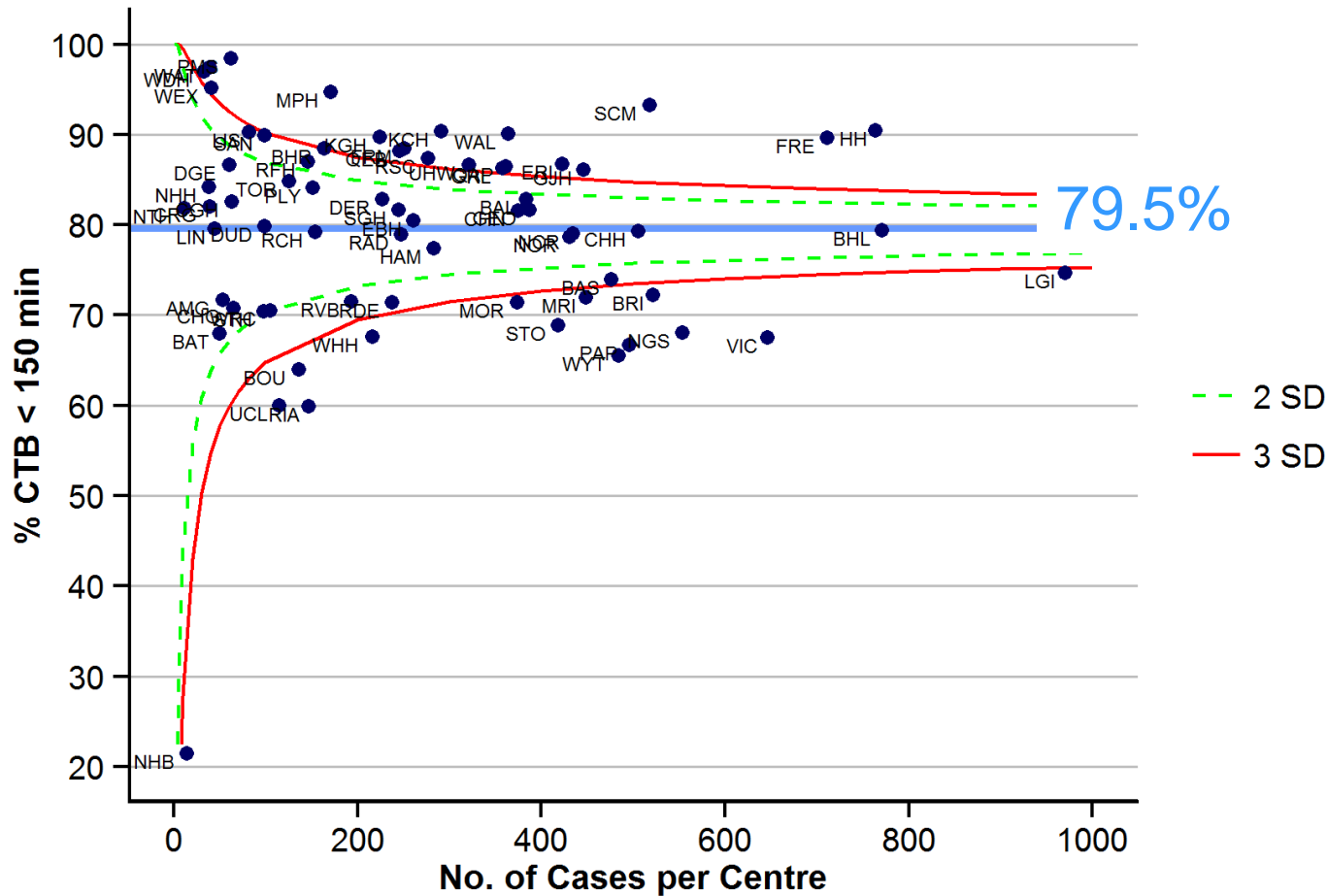


# Primary PCI (excl shock/vent)

## Direct and IHT: Call to Balloon times < 150 min



2012 data: Ludman



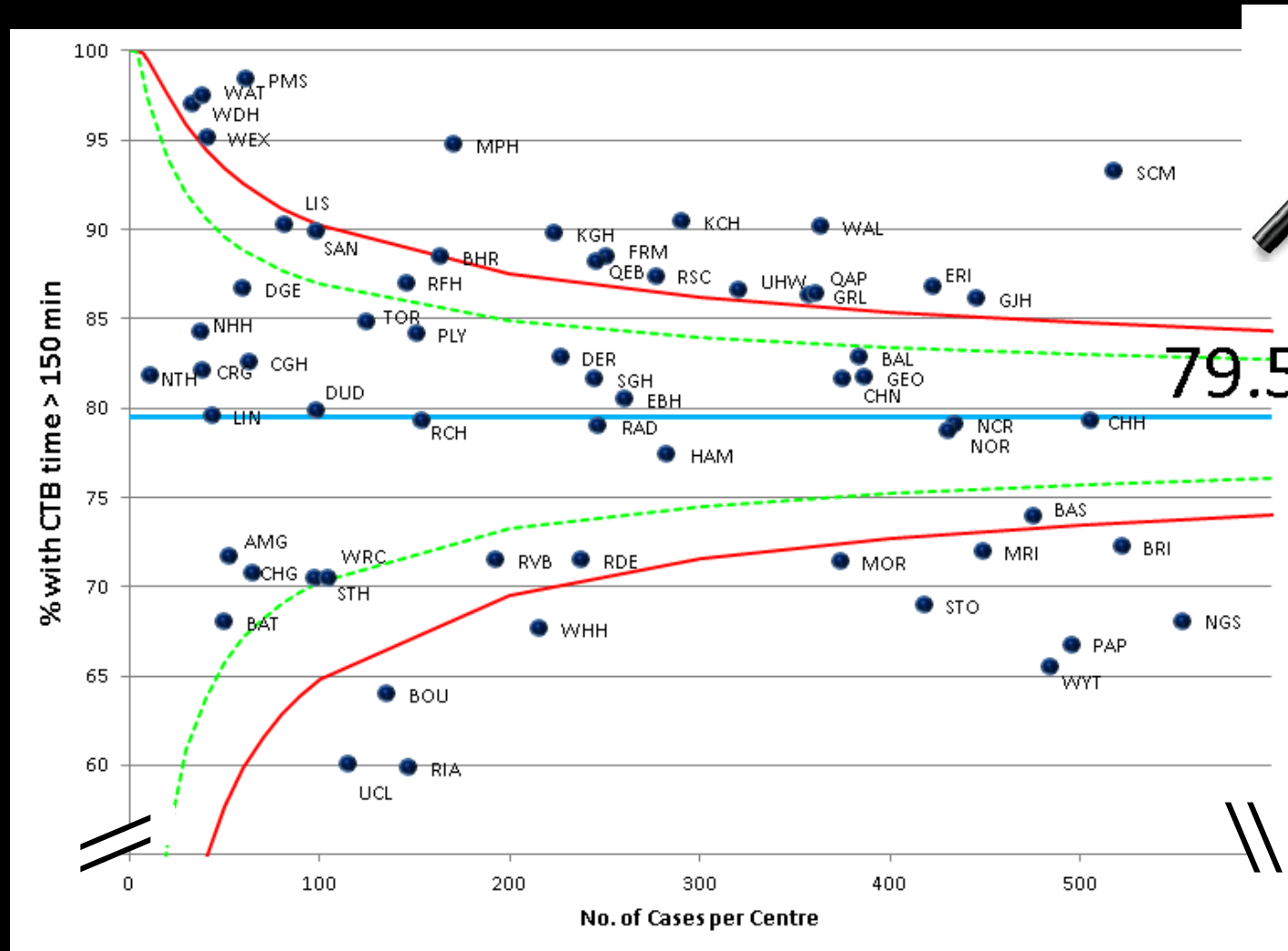
Better

79.5%

-- 2 SD  
-- 3 SD

# Primary PCI (excl shock/vent)

## Direct and IHT: Call to Balloon times < 150 min



# Primary PCI (excl shock/vent)



2012 data: Ludman

## Direct and IHT: Call to Balloon times < 150 min

	X	Y	HospitalCode
Royal Albert Edward Infirmary			AEI
BMI The Alexandra Hospital			AHM
Wycombe Hospital	53	71.7	AMG
St Anthony's Hospital			ANT
Barts and the London	384	82.81	BAL
Basildon Hospital	476	73.95	BAS
Royal United Hospital Bath	50	68	BAT
Bedford Hospital			BED
Belfast City Hospital			BFT
Rochdale Infirmary			BHH
Liverpool Heart and Chest Hospital	771	79.38	BHL
Royal Berkshire Hospital	164	88.41	BHR
Royal Blackburn Hospital			BLA
Royal Bournemouth General Hospital	136	63.97	BOU
Bradford Royal Infirmary			BRD
Bristol Royal Infirmary	522	72.22	BRI
Spire Southampton Hospital			CBS
Conquest Hospital	63	82.54	CGH
Cheltenham General Hospital	65	70.77	CHG
Castle Hill Hospital	506	79.25	CHH
Nottingham City Hospital	375	81.6	CHN
Glan Clwyd Hospital			CLW
Cumberland Infirmary			CMI
Craigavon Area Hospital	39	82.05	CRG
Cromwell Hospital			CRO
Royal Derby Hospital	227	82.82	DER
Eastbourne DGH	60	86.67	DGE
Birmingham City Hospital	99	79.8	DUD
Darent Valley Hospital			DVH
Ealing Hospital			EAL
Birmingham Heartlands Hospital	261	80.46	EBH
Royal Infirmary of Edinburgh	423	86.76	ERI
East Surrey Hospital			ESU
Freeman Hospital	711	89.59	FRE
Frimley Park Hospital	251	88.45	FRM
Frenchay Hospital			FRY
St George's Hospital	387	81.65	GEO
Spire Bristol			GHB
Golden Jubilee Hospital	446	86.1	GJH

Glenfield Hospital	358	86.31	GRL
Royal Gwent Hospital			GWE
Queen Elizabeth Hospital Woolwich			GWH
Hammersmith Hospital	283	77.39	HAM
Harefield Hospital	764	90.45	HH
Wellington Hospital North			HHW
Harley Street Clinic			HSC
King's College Hospital	291	90.38	KCH
Kettering General Hospital	224	89.73	KGH
Kings Mill Hospital			KMH
Tunbridge Wells Hospital			KSX
London Bridge Hospital			LBH
Leeds General Infirmary	970	74.64	LGI
Lincoln County Hospital	44	79.55	LIN
Lister Hospital	82	90.24	LIS
Croydon University Hospital			MAY
Medway Maritime Hospital			MDW
Morrison Hospital	374	71.39	MOR
Musgrove Park Hospital	171	94.74	MPH
Manchester Royal Infirmary	449	71.94	MRI
New Cross Hospital	434	79.03	NCR
Northern General Hospital	554	68.05	NGS
Royal Brompton Hospital	14	21.43	NHB
Basingstoke and North Hampshire Hospital	38	84.21	NHH
Ninewells Hospital			NIN
Norfolk and Norwich University Hospital	431	78.65	NOR
Northwick Park Hospital			NPH
Northampton General Hospital	11	81.82	NTH
Papworth Hospital	496	66.73	PAP
Priory Hospital			PHB
Pinderfields General Hospital			PIN
Derriford Hospital	151	84.11	PLY
The Great Western Hospital	62	98.39	PMS
Queen Alexandra Hospital	361	86.43	QAP
Queen Elizabeth Hospital, Edgbaston	246	88.21	QEB
John Radcliffe Hospital	247	78.95	RAD

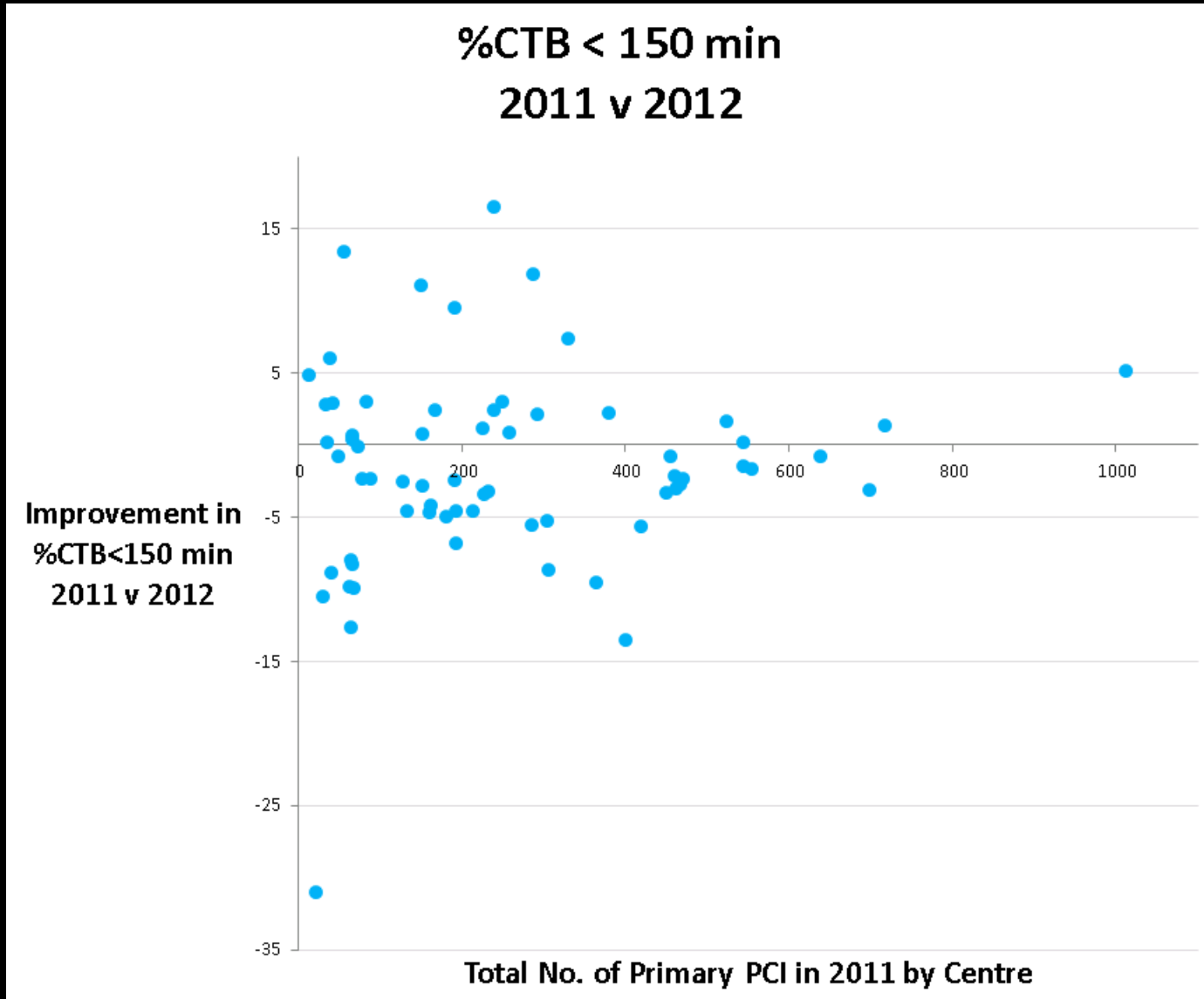
Raigmore Hospital			RAI
Royal Cornwall Hospital	154	79.22	RCH
Royal Devon & Exeter Hospital	238	71.43	RDE
Royal Free Hospital	146	86.99	RFH
Calderdale Royal Hospital			RHI
Aberdeen Royal Infirmary	147	59.86	RIA
Royal Sussex County Hospital	277	87.36	RSC
Royal Victoria Hospital	193	71.5	RVB
Salisbury District Hospital			SAL
Sandwell General Hospital	99	89.9	SAN
James Cook University Hospital	518	93.24	SCM
Scunthorpe General Hospital			SCU
Southampton General Hospital	245	81.63	SGH
St Peter's Hospital			SPH
Spire Shawfair Park Hospital			SSP
St Thomas Hospital	98	70.41	STH
University Hospital of North Staffordshire	418	68.9	STO
Sunderland Royal Hospital			SUN
Torbay Hospital	125	84.8	TOR
University College Hospital	115	60	UCL
University Hospital of Wales	321	86.6	UHW
Blackpool Victoria Hospital	646	67.49	VIC
University Hospital Coventry	364	90.11	WAL
Watford General Hospital	39	97.44	WAT
Dorset County Hospital	33	96.97	WDH
Wexham Park Hospital	41	95.12	WEX
Whipps Cross Hospital			WHC
William Harvey Hospital	216	67.59	WHH
Worcestershire Royal Hospital	105	70.48	WRC
Worthing Hospital			WRG
Wythenshawe Hospital	484	65.5	WYT
York District Hospital			YDH

# Primary PCI 2011 v 2012 (excl shock/vent)

Direct and IHT: CTB < 150 min



2012 data: Ludman



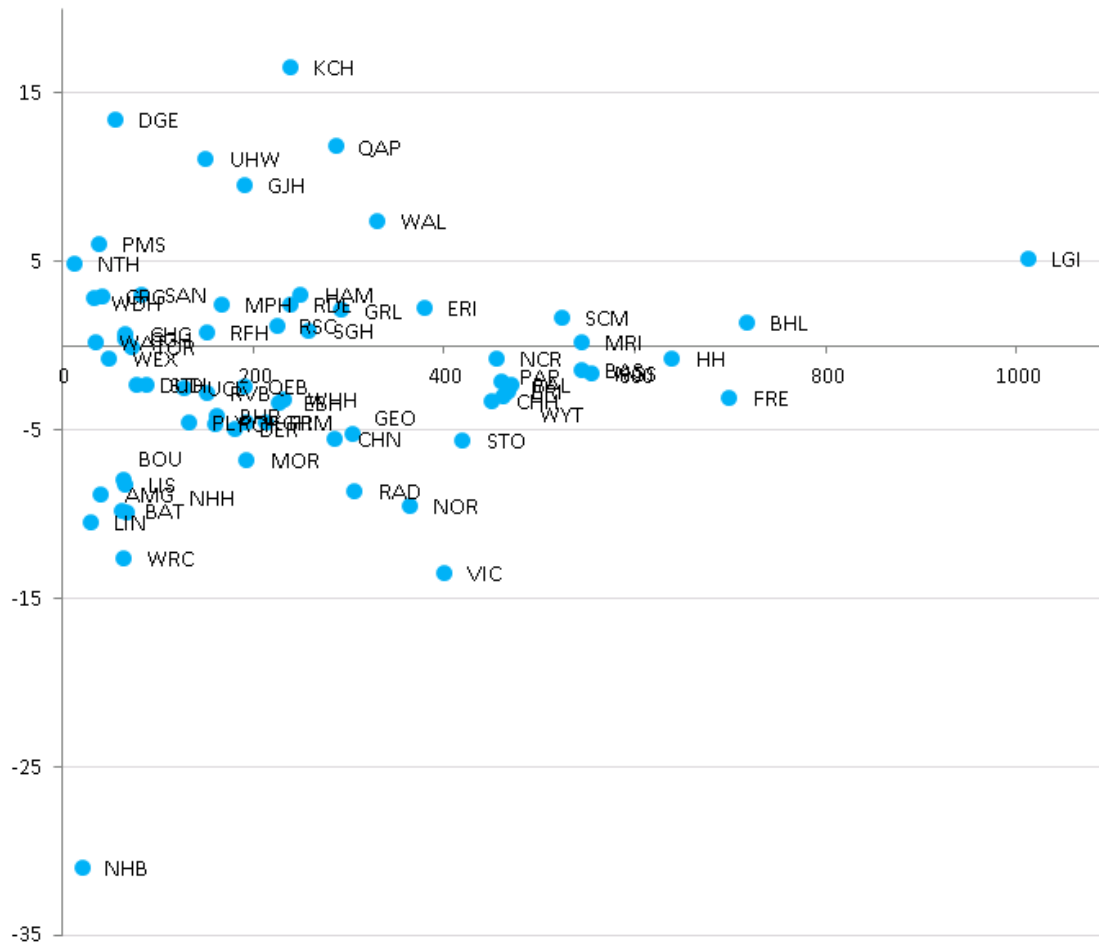
# Primary PCI 2011 v 2012 (excl shock/vent)

## Direct and IHT: CTB < 150 min



2012 data: Ludman

**%CTB < 150 min  
2011 v 2012**



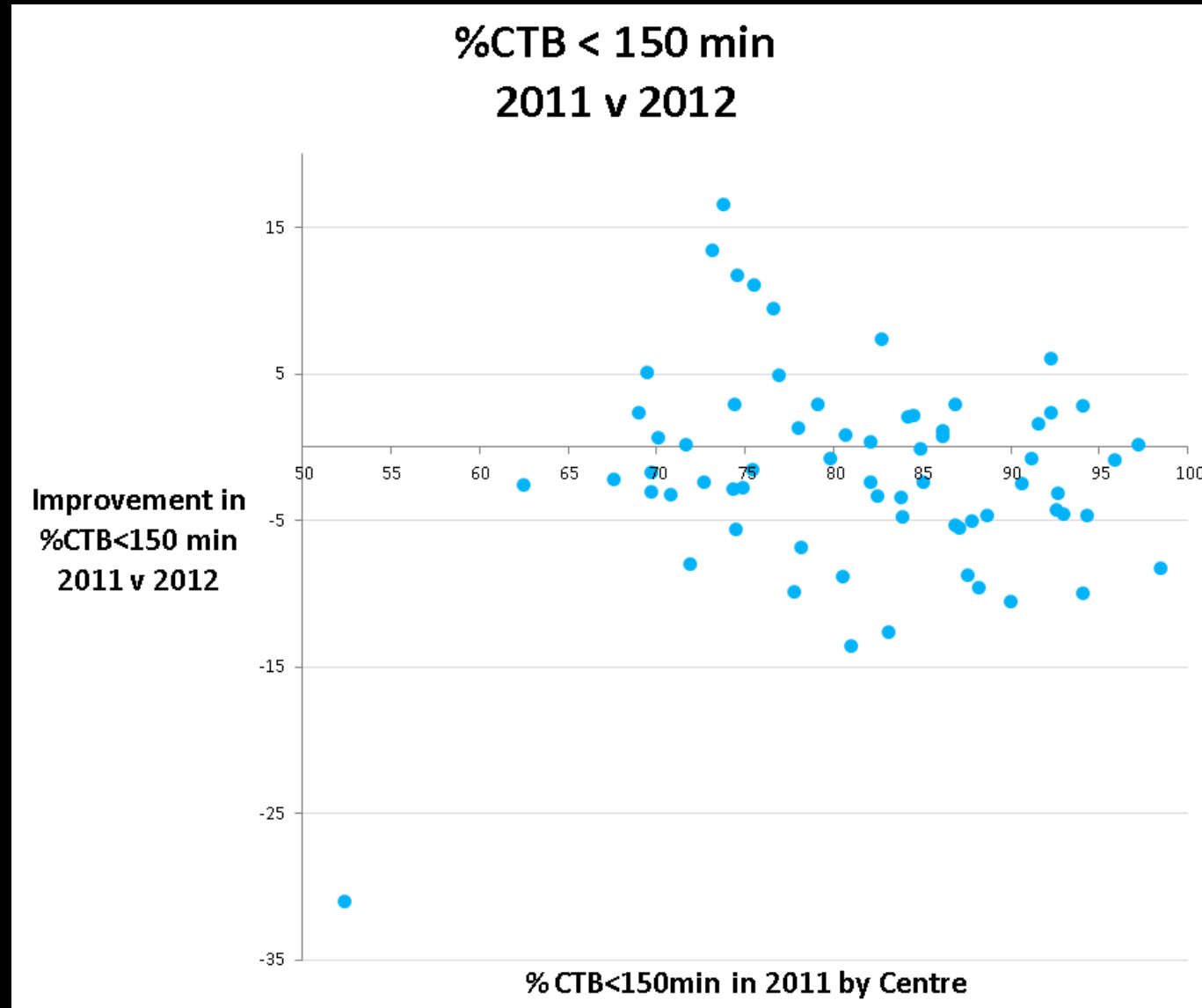
**Improvement in  
%CTB < 150 min  
2011 v 2012**



**Total No. of Primary PCI in 2011 by Centre**

# Primary PCI 2010 v 2011 (excl shock/vent)

## Direct and IHT: CTB < 150 min



2012 data: Ludman

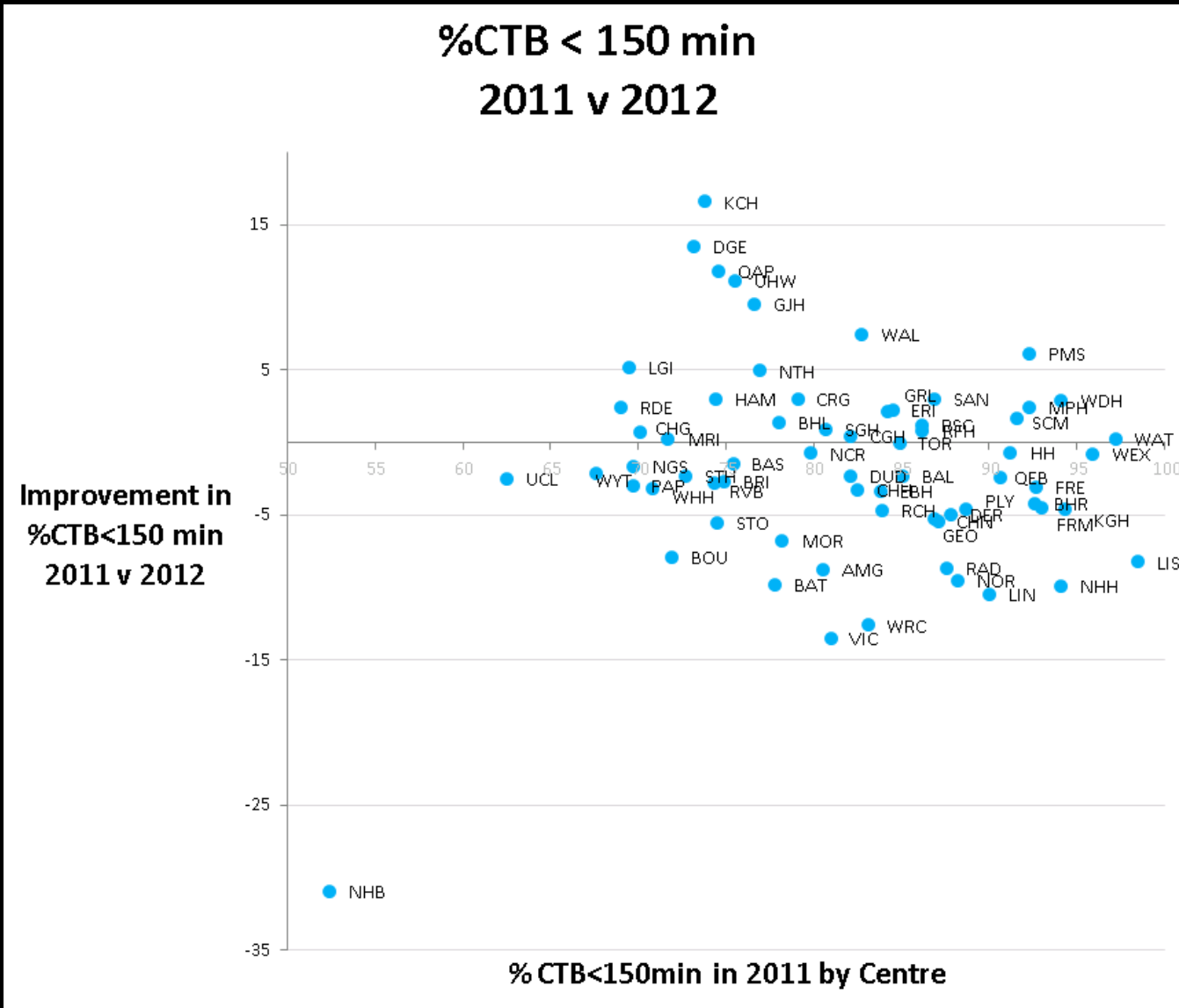


# Primary PCI 2010 v 2011 (excl shock/vent)

## Direct and IHT: CTB < 150 min



2012 data: Ludman



# PCI for Acute Sx

## Four admission scenarios

Admitted from the community

Admission to Non-PCI centre

Direct admission to PCI centre

Transfer to PCI centre

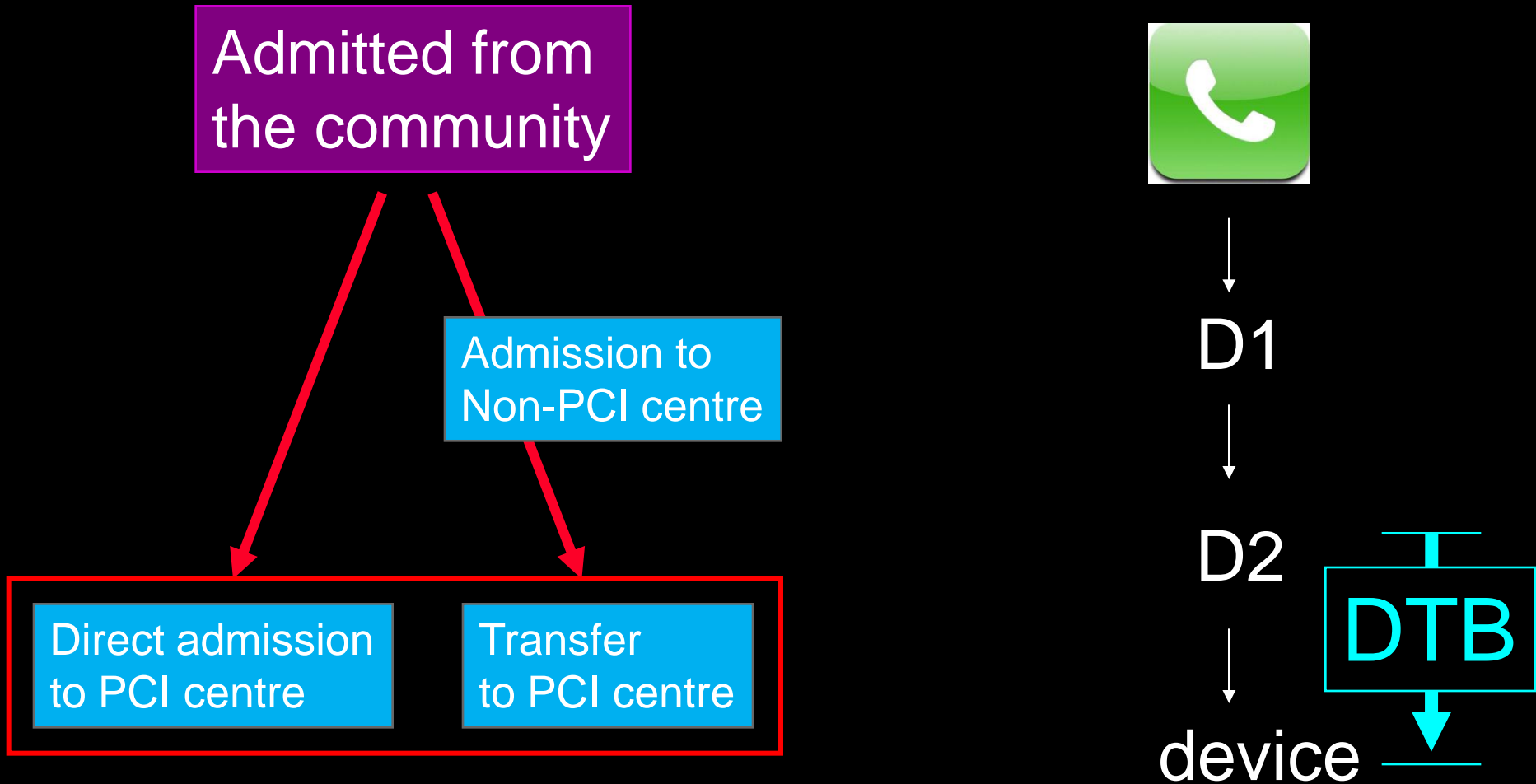


D1

D2

device

DTB

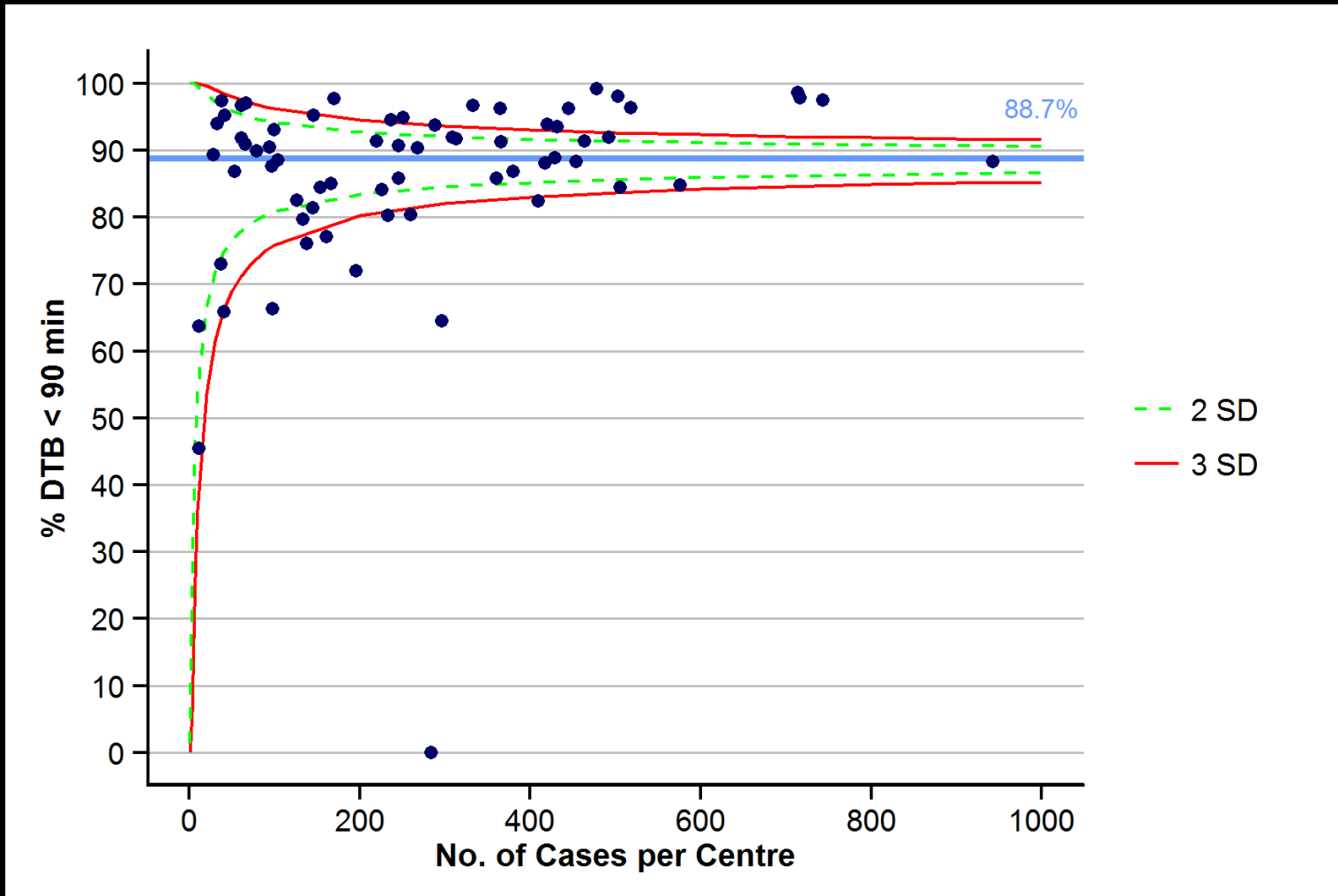


# Primary PCI (excl shock/vent)

## Direct and IHT: PCI Door to Balloon < 90 min



2012 data: Ludman

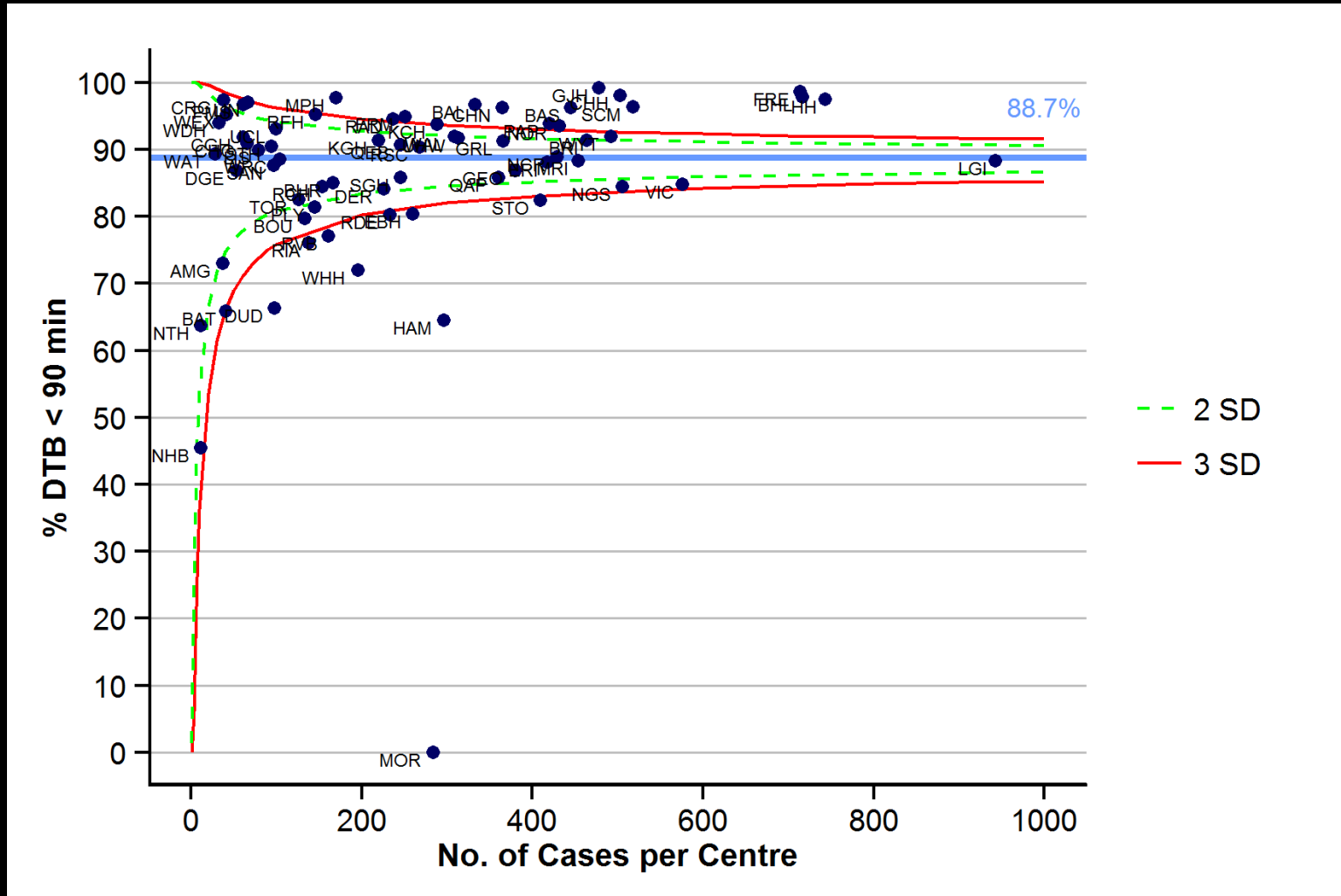


# Primary PCI (excl shock/vent)

## Direct and IHT: PCI Door to Balloon < 90 min



2012 data: Ludman

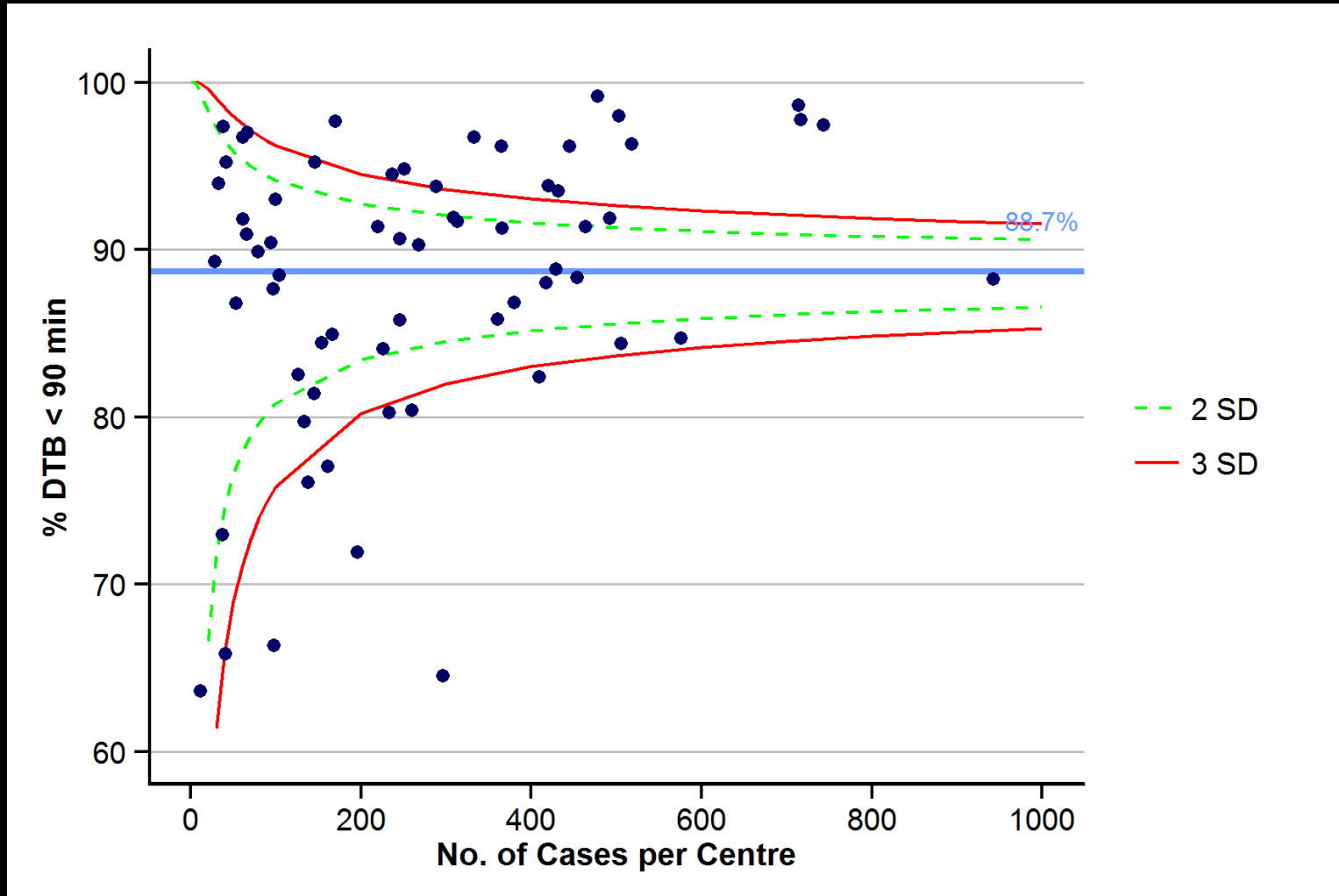


# Primary PCI (excl shock/vent)

## Direct and IHT: PCI Door to Balloon < 90 min



2012 data: Ludman

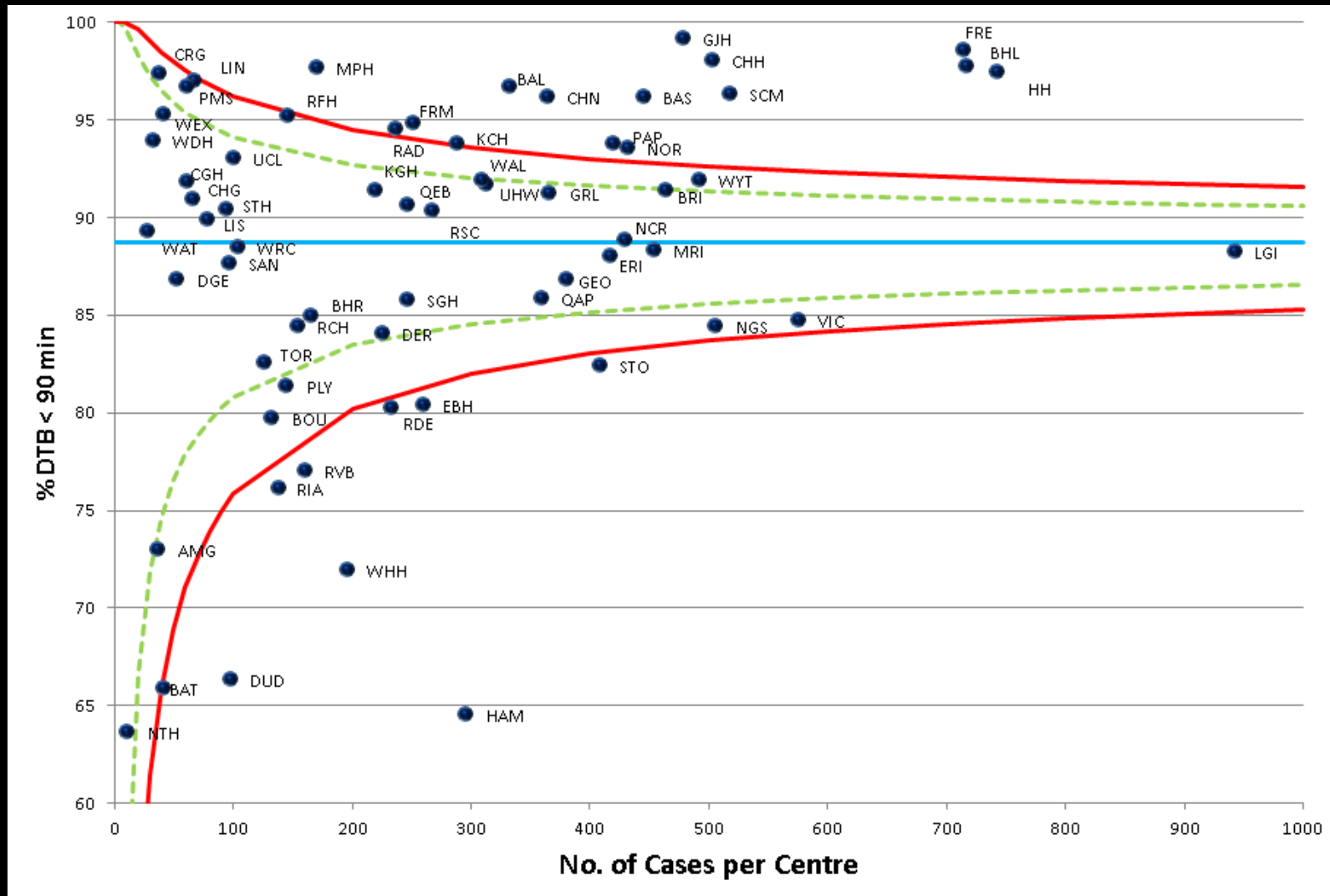


# Primary PCI (excl shock/vent)

## Direct and IHT: PCI Door to Balloon < 90 min



2012 data: Ludman



# Primary PCI (excl shock/vent)

## Direct and IHT: PCI Door to Balloon < 90 min



2012 data: Ludman

	X	Y	HospitalCode
Wycombe Hospital	37	72.97	AMG
Barts and the London	333	96.7	BAL
Basilidon Hospital	445	96.18	BAS
Royal United Hospital Bath	41	65.85	BAT
Liverpool Heart and Chest Hospital	717	97.77	BHL
Royal Berkshire Hospital	166	84.94	BHR
Royal Bournemouth General Hospital	133	79.7	BOU
Bristol Royal Infirmary	464	91.38	BRI
Conquest Hospital	61	91.8	CGH
Cheltenham General Hospital	66	90.91	CHG
Castle Hill Hospital	503	98.01	CHH
Nottingham City Hospital	365	96.16	CHN
Craigavon Area Hospital	38	97.37	CRG
Royal Derby Hospital	226	84.07	DER
Eastbourne DGH	53	86.79	DGE
Birmingham City Hospital	98	66.33	DUD
Birmingham Heartlands Hospital	260	80.38	EBH
Royal Infirmary of Edinburgh	417	88.01	ERI
Freeman Hospital	714	98.6	FRE
Frimley Park Hospital	251	94.82	FRM
St George's Hospital	380	86.84	GEO
Golden Jubilee Hospital	478	99.16	GJH
Glenfield Hospital	366	91.26	GRL
Hammersmith Hospital	296	64.53	HAM
Harefield Hospital	743	97.44	HH
King's College Hospital	288	93.75	KCH
Kettering General Hospital	220	91.36	KGH
Leeds General Infirmary	943	88.23	LGI
Lincoln County Hospital	67	97.01	LIN
Lister Hospital	79	89.87	LIS
Morrison Hospital	284	0	MOR
Musgrove Park Hospital	170	97.65	MPH
Manchester Royal Infirmary	454	88.33	MRI

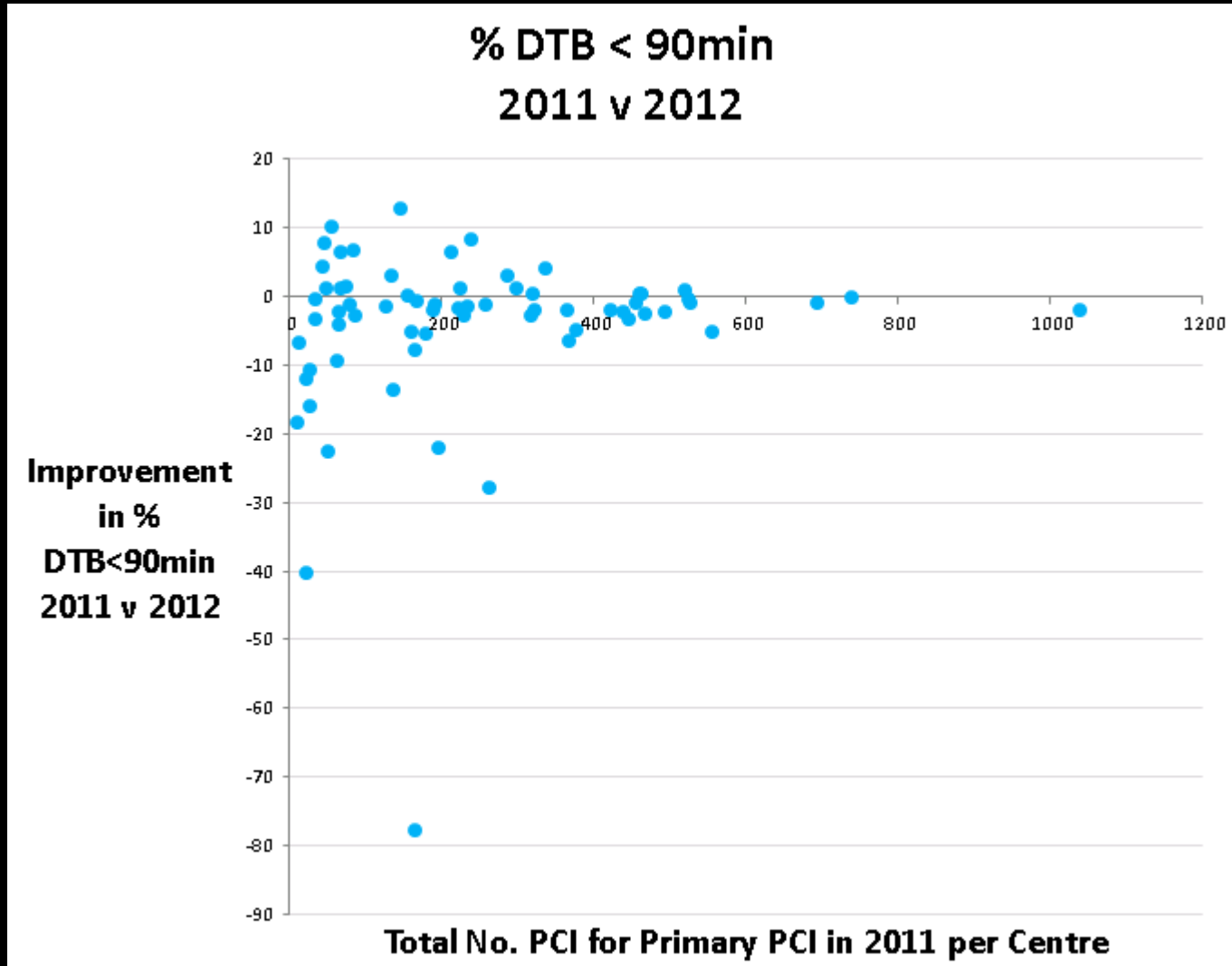
New Cross Hospital	429	88.81	NCR
Northern General Hospital	506	84.39	NGS
Royal Brompton Hospital	11	45.45	NHB
Norfolk and Norwich University Hospital	432	93.52	NOR
Northampton General Hospital	11	63.64	NTH
Papworth Hospital	420	93.81	PAP
Derriford Hospital	145	81.38	PLY
The Great Western Hospital	61	96.72	PMS
Queen Alexandra Hospital	360	85.83	QAP
Queen Elizabeth Hospital, Edgbaston	246	90.65	QEB
John Radcliffe Hospital	237	94.51	RAD
Royal Cornwall Hospital	154	84.42	RCH
Royal Devon & Exeter Hospital	233	80.26	RDE
Royal Free Hospital	146	95.21	RFH
Aberdeen Royal Infirmary	138	76.09	RIA
Royal Sussex County Hospital	268	90.3	RSC
Royal Victoria Hospital	161	77.02	RVB
Sandwell General Hospital	97	87.63	SAN
James Cook University Hospital	518	96.33	SCM
Southampton General Hospital	246	85.77	SGH
St Thomas Hospital	94	90.43	STH
University Hospital of North Staffordshire	409	82.4	STO
Torbay Hospital	126	82.54	TOR
University College Hospital	100	93	UCL
University Hospital of Wales	313	91.69	UHW
Blackpool Victoria Hospital	576	84.72	VIC
University Hospital Coventry	309	91.91	WAL
Watford General Hospital	28	89.29	WAT
Dorset County Hospital	33	93.94	WDH
Wexham Park Hospital	42	95.24	WEX
William Harvey Hospital	196	71.94	WHH
Worcestershire Royal Hospital	104	88.46	WRC
Wythenshawe Hospital	492	91.87	WYT

# Primary PCI 2010 v 2011

Direct and IHT: DTB < 90 min



2012 data: Ludman



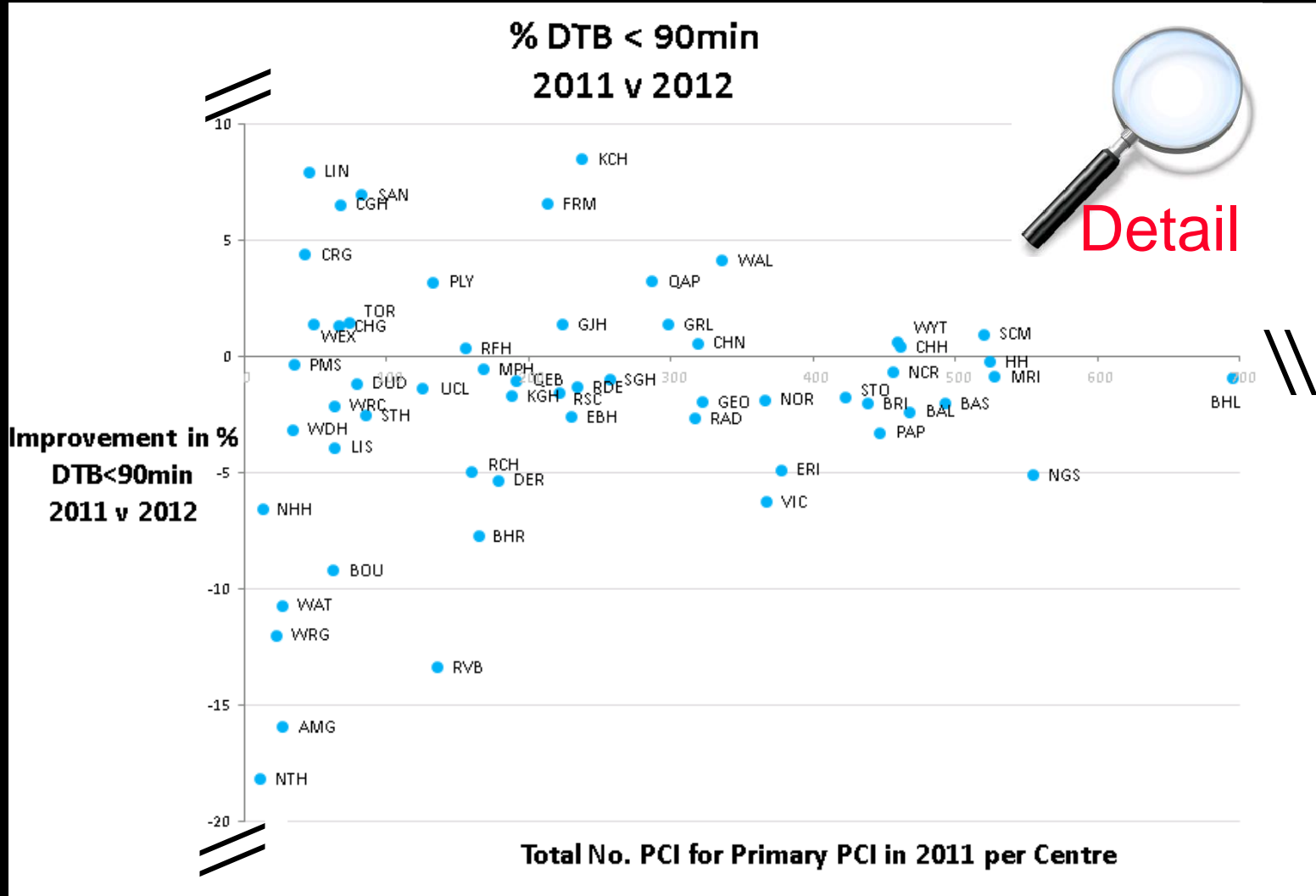


# Primary PCI 2010 v 2011

## Direct and IHT: DTB < 90 min



2012 data: Ludman





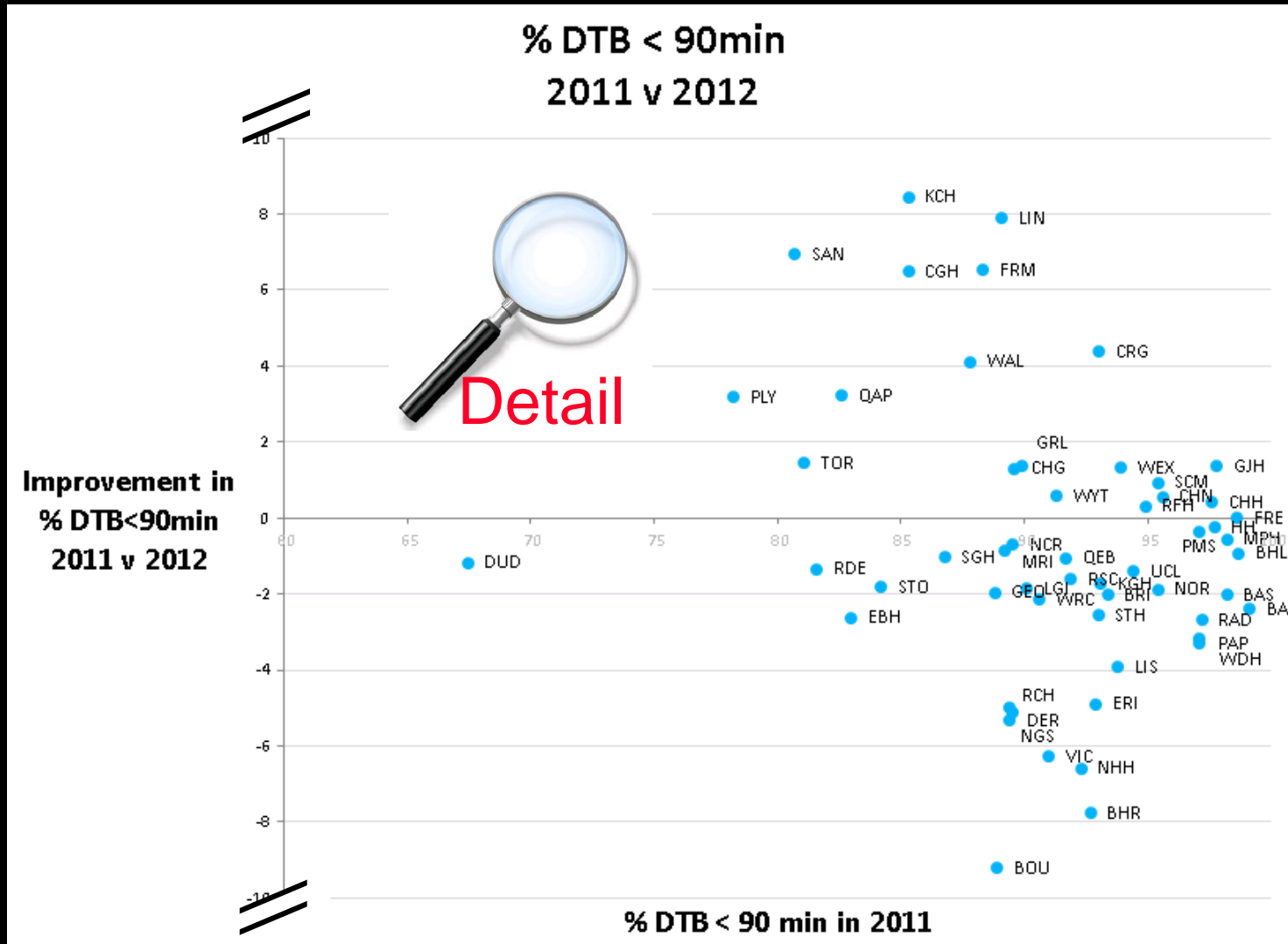


# Primary PCI 2010 v 2011

## Direct and IHT: DTB < 90 min



2012 data: Ludman



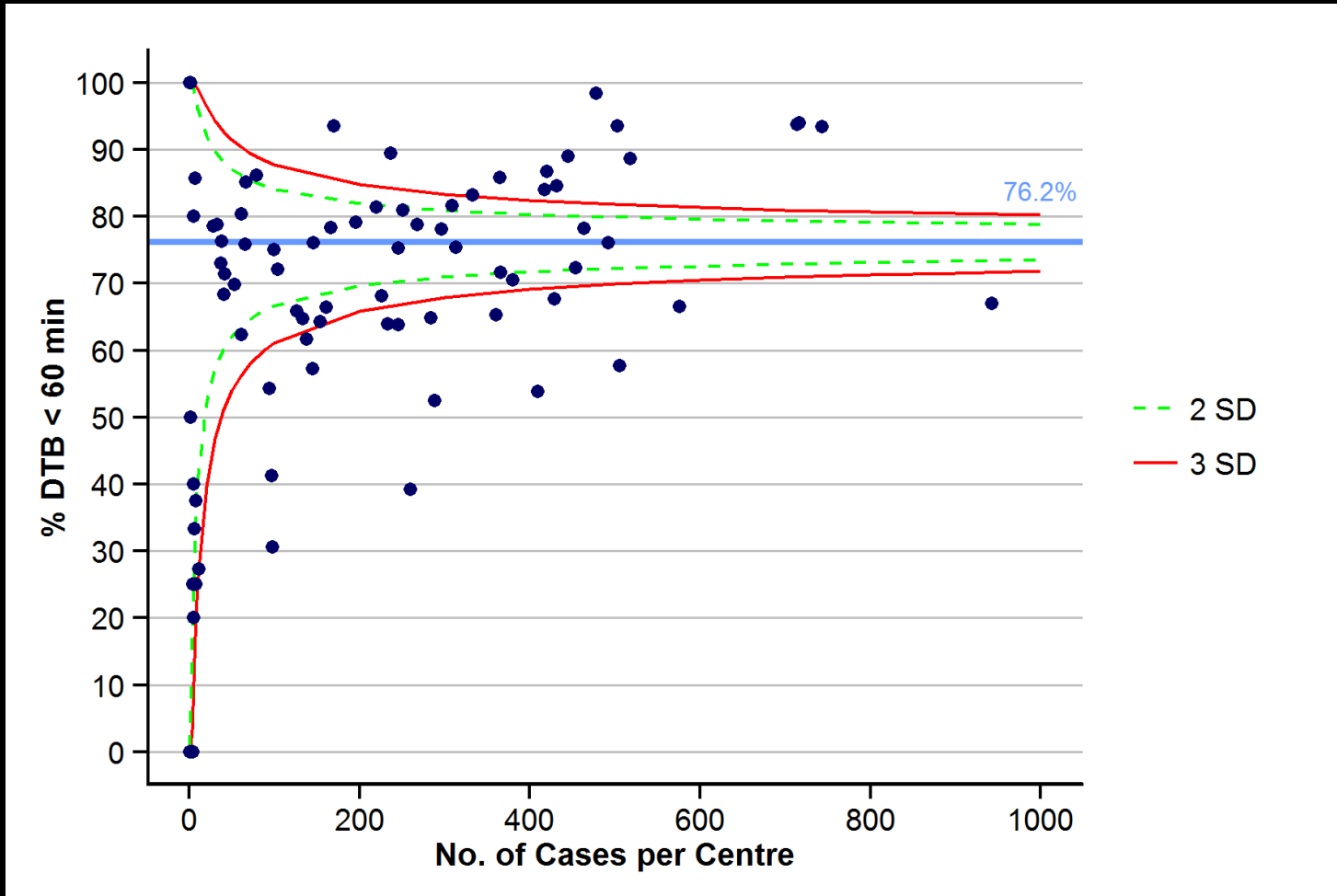
Better

# Primary PCI (excl shock/vent)

Direct and IHT: **PCI Door to Balloon < 60 min**



2012 data: Ludman

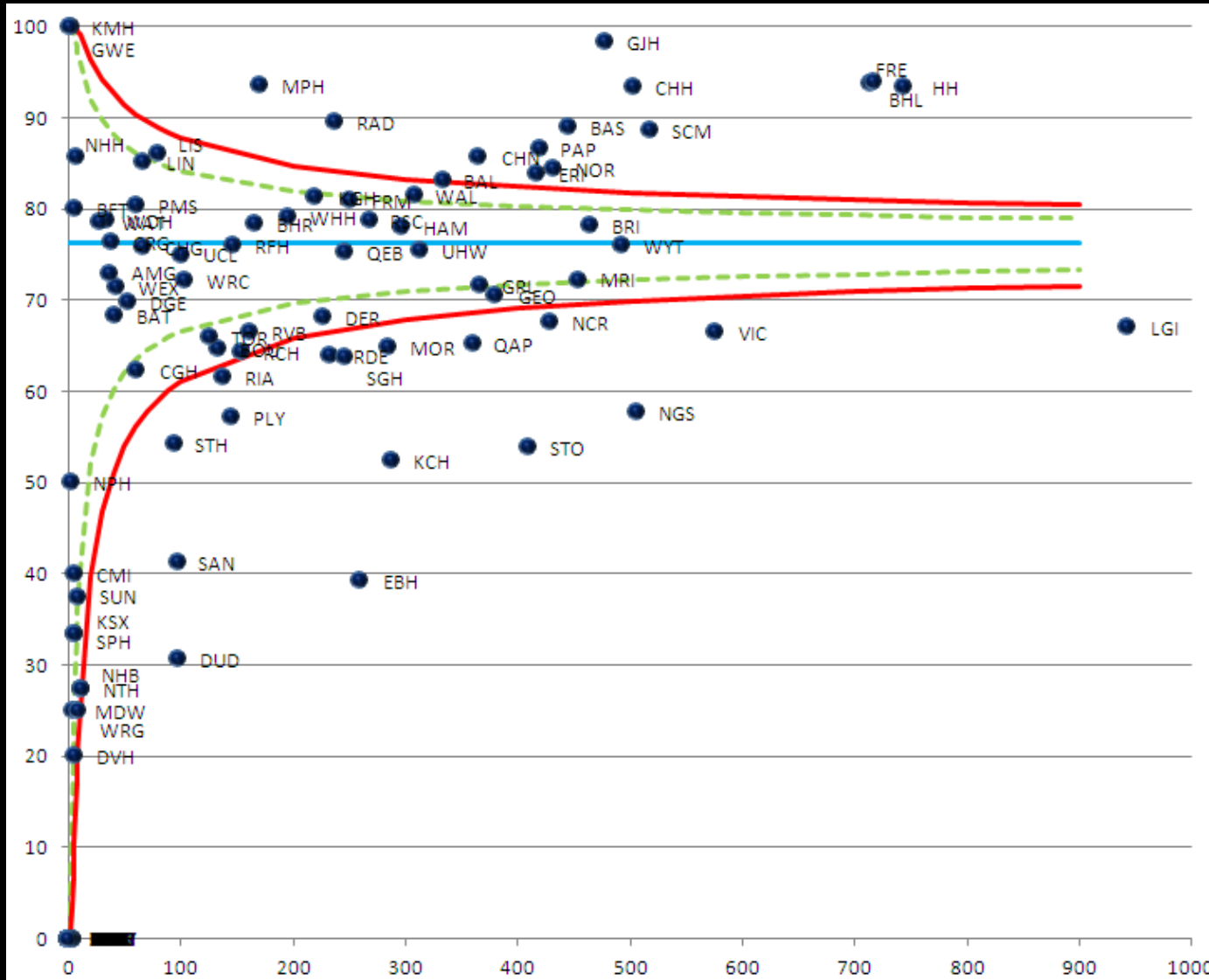


# Primary PCI (excl shock/vent)

Direct and IHT: **PCI Door to Balloon < 60 min**



2012 data: Ludman

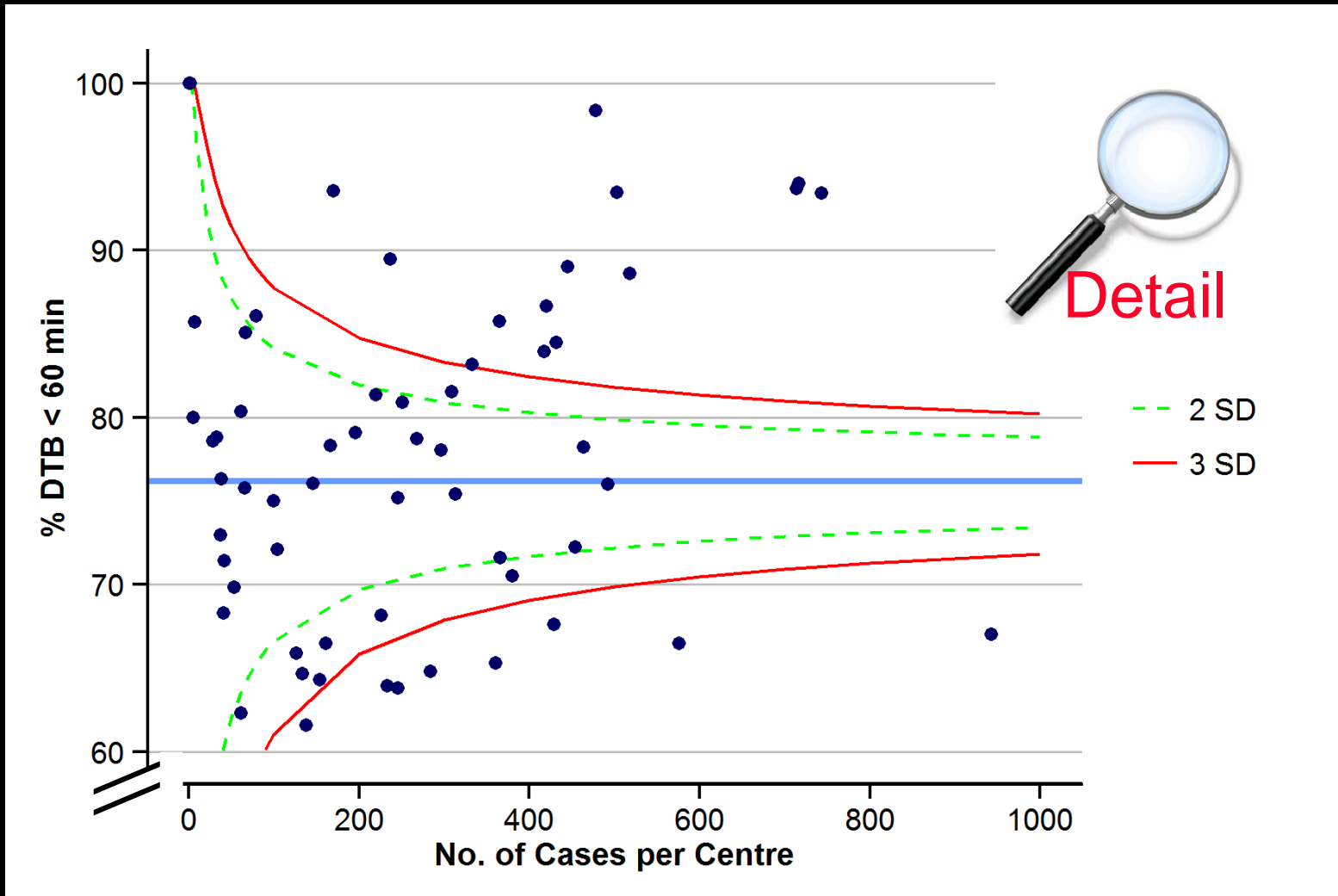


# Primary PCI (excl shock/vent)

## Direct and IHT: PCI Door to Balloon < 60 min



2012 data: Ludman

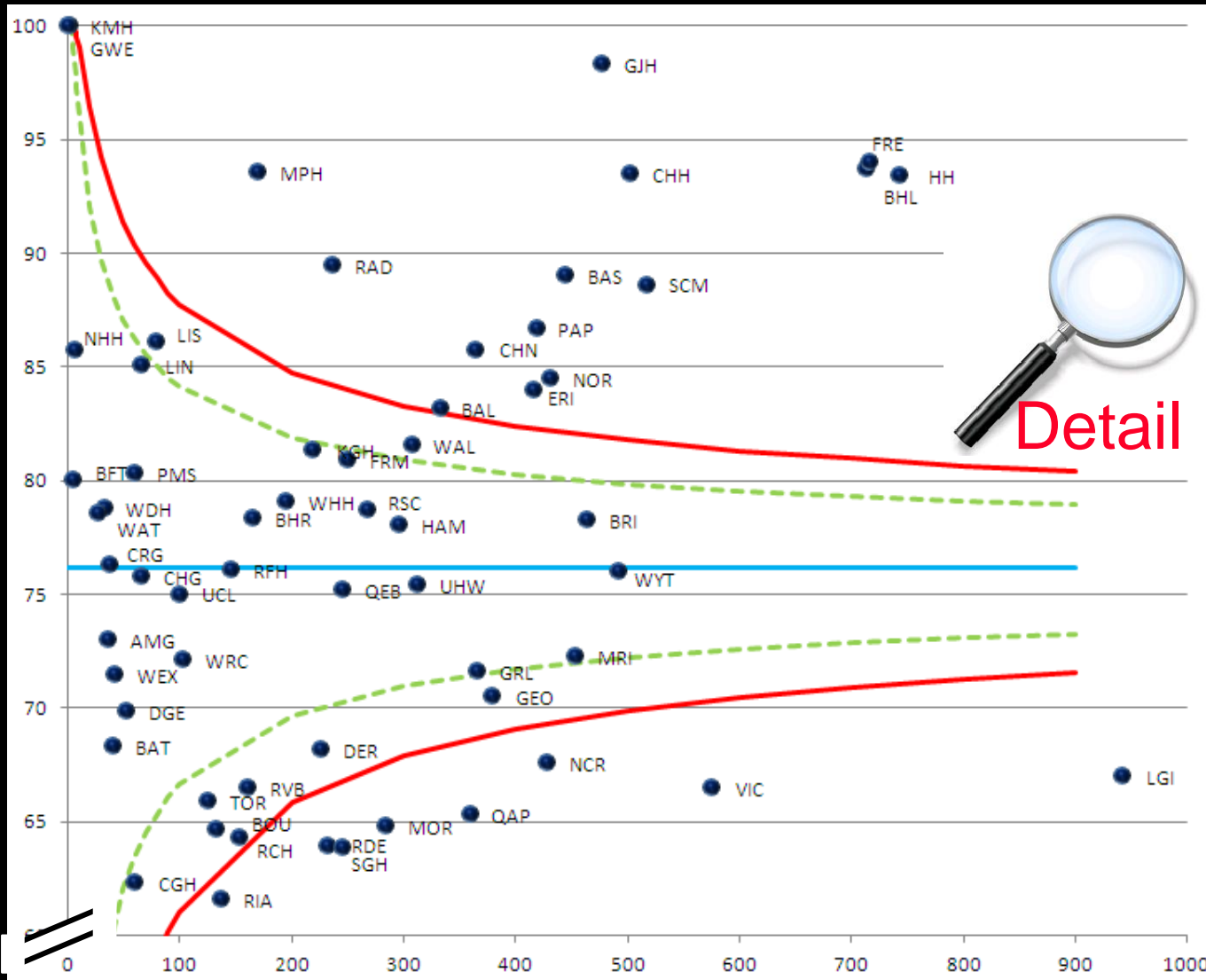


# Primary PCI (excl shock/vent)

## Direct and IHT: PCI Door to Balloon < 60 min



2012 data: Ludman



Better

# Primary PCI (excl shock/vent)

## Direct and IHT: PCI Door to Balloon < 60 min

	HospitalCode	X	Y
Wycombe Hospital	AMG	37	72.97
Barts and the London	BAL	333	83.18
Basildon Hospital	BAS	445	88.99
Royal United Hospital Bath	BAT	41	68.29
Belfast City Hospital	BFT	5	80
Liverpool Heart and Chest Hospital	BHL	717	94
Royal Berkshire Hospital	BHR	166	78.31
Royal Blackburn Hospital	BLA	4	0
Royal Bournemouth General Hospital	BOU	133	64.66
Bradford Royal Infirmary	BRD	1	0
Bristol Royal Infirmary	BRI	464	78.23
Conquest Hospital	CGH	61	62.3
Cheltenham General Hospital	CHG	66	75.76
Castle Hill Hospital	CHH	503	93.44
Nottingham City Hospital	CHN	365	85.75
Glan Clwyd Hospital	CLW	3	0
Cumberland Infirmary	CMI	5	40
Craigavon Area Hospital	CRG	38	76.32
Royal Derby Hospital	DER	226	68.14
Eastbourne DGH	DGE	53	69.81
Birmingham City Hospital	DUD	98	30.61
Darent Valley Hospital	DVH	5	20
Birmingham Heartlands Hospital	EBH	260	39.23
Royal Infirmary of Edinburgh	ERI	417	83.93
Freeman Hospital	FRE	714	93.7
Frimley Park Hospital	FRM	251	80.88
Frenchay Hospital	FRY	1	0
St George's Hospital	GEO	380	70.53
Golden Jubilee Hospital	GJH	478	98.33
Glenfield Hospital	GRL	366	71.58
Royal Gwent Hospital	GWE	1	100
Hammersmith Hospital	HAM	296	78.04
Harefield Hospital	HH	743	93.41
King's College Hospital	KCH	288	52.43
Kettering General Hospital	KGH	220	81.36
Kings Mill Hospital	KMH	2	100
Tunbridge Wells Hospital	KSX	6	33.33
Leeds General Infirmary	LGI	943	67.02
Lincoln County Hospital	LIN	67	85.07

Lister Hospital	LIS	79	86.08
Croydon University Hospital	MAY	4	0
Medway Maritime Hospital	MDW	4	25
Morrison Hospital	MOR	284	64.79
Musgrove Park Hospital	MPH	170	93.53
Manchester Royal Infirmary	MRI	454	72.25
New Cross Hospital	NCR	429	67.6
Northern General Hospital	NGS	506	57.71
Royal Brompton Hospital	NHB	11	27.27
Basingstoke and North Hampshire Hospital	NHH	7	85.71
Norfolk and Norwich University Hospital	NOR	432	84.49
Northwick Park Hospital	NPH	2	50
Northampton General Hospital	NTH	11	27.27
Papworth Hospital	PAP	420	86.67
Pinderfields General Hospital	PIN	1	0
Derriford Hospital	PLY	145	57.24
The Great Western Hospital	PMS	61	80.33
Queen Alexandra Hospital	QAP	360	65.28
Queen Elizabeth Hospital, Edgbaston	QEB	246	75.2
John Radcliffe Hospital	RAD	237	89.45
Royal Cornwall Hospital	RCH	154	64.29
Royal Devon & Exeter Hospital	RDE	233	63.95
Royal Free Hospital	RFH	146	76.03
Aberdeen Royal Infirmary	RIA	138	61.59
Royal Sussex County Hospital	RSC	268	78.73
Royal Victoria Hospital	RVB	161	66.46
Salisbury District Hospital	SAL	2	0
Sandwell General Hospital	SAN	97	41.24
James Cook University Hospital	SCM	518	88.61
Southampton General Hospital	SGH	246	63.82
St Peter's Hospital	SPH	6	33.33
St Thomas Hospital	STH	94	54.26
University Hospital of North Staffordshire	STO	409	53.79
Sunderland Royal Hospital	SUN	8	37.5
Torbay Hospital	TOR	126	65.87
University College Hospital	UCL	100	75
University Hospital of Wales	UHW	313	75.4
Blackpool Victoria Hospital	VIC	576	66.49
University Hospital Coventry	WAL	309	81.55
Watford General Hospital	WAT	28	78.57
Dorset County Hospital	WDH	33	78.79
Wexham Park Hospital	WEX	42	71.43
William Harvey Hospital	WHH	196	79.08
Worcestershire Royal Hospital	WRC	104	72.12
Worthing Hospital	WRG	8	25
Wythenshawe Hospital	WYT	492	76.02



2012 data: Ludman

# PCI for Acute Sx

## Four admission scenarios

Admitted from the community

Admission to Non-PCI centre

Direct admission to PCI centre

Transfer to PCI centre

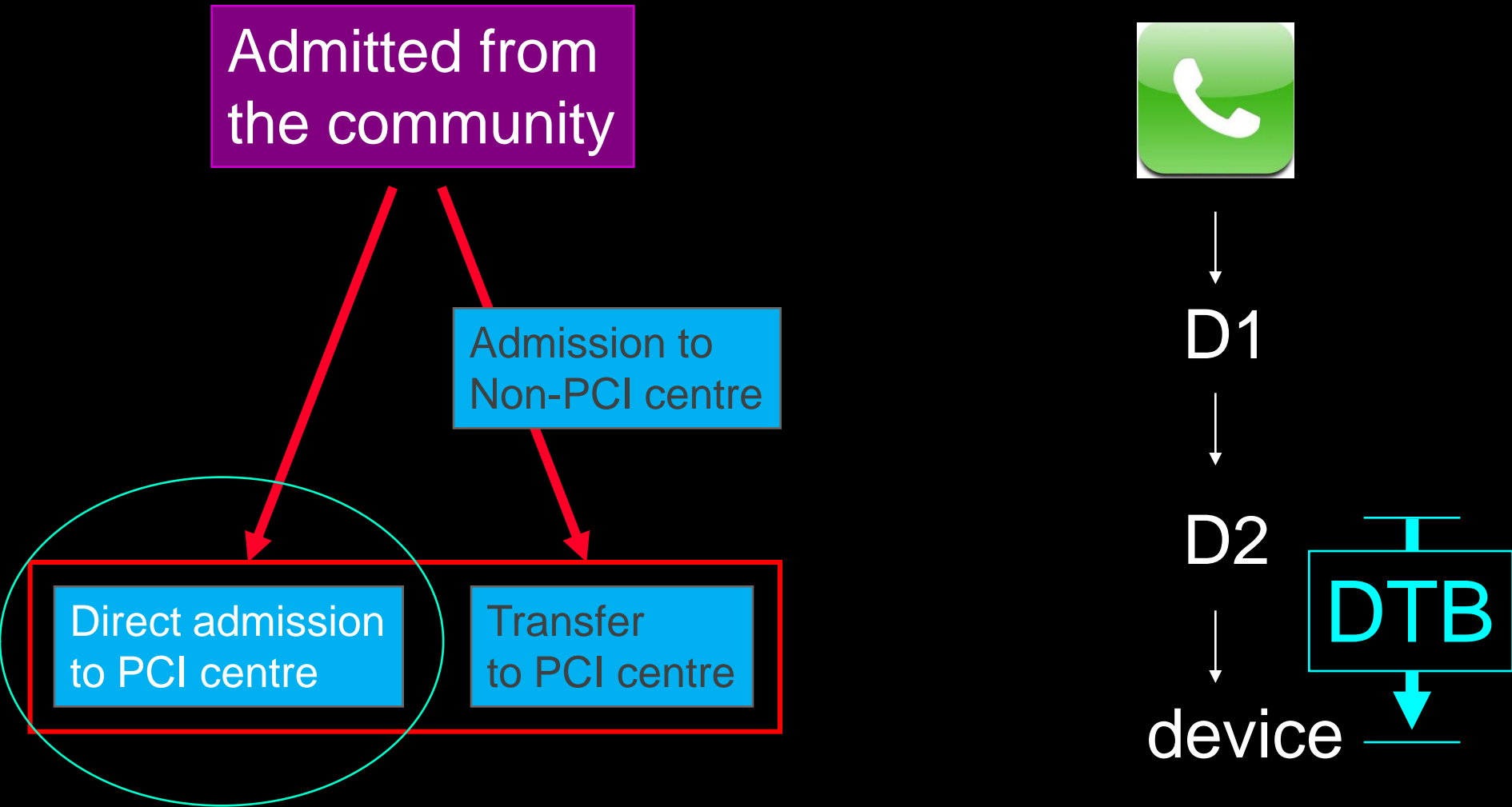


D1

D2

device

DTB

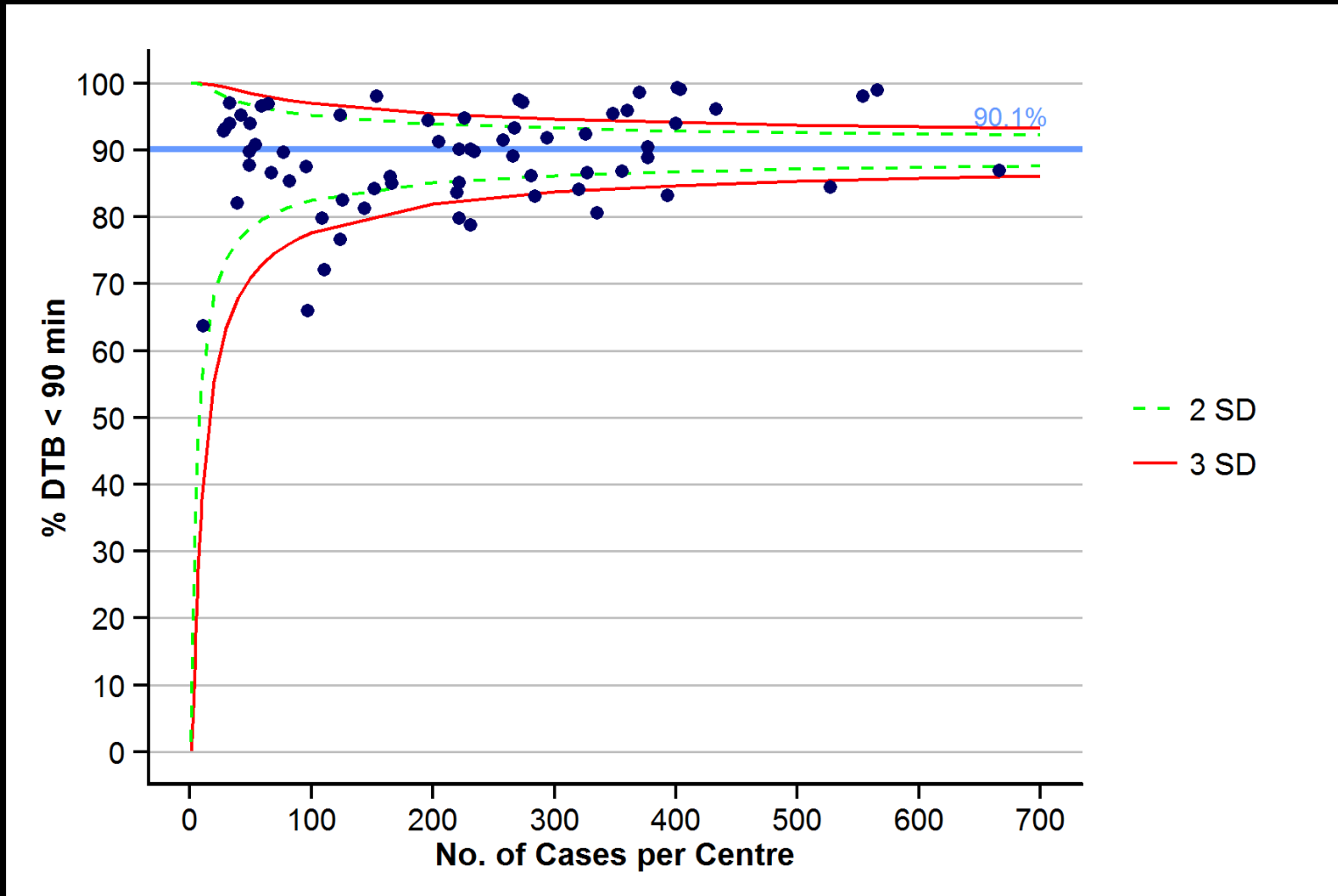


# Primary PCI (excl shock/vent)

Direct ONLY: PCI Door to Balloon < 90 min



2012 data: Ludman

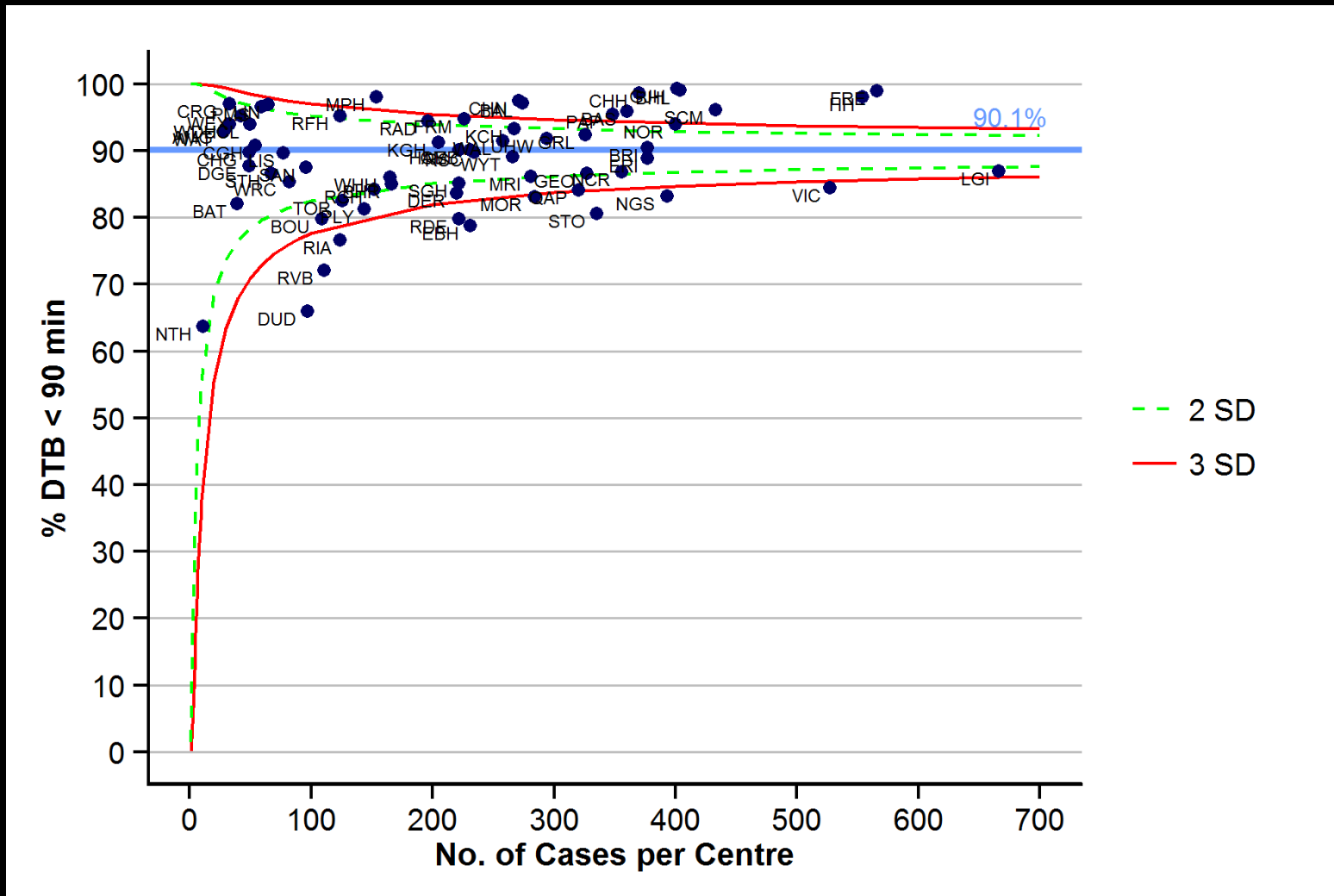


# Primary PCI (excl shock/vent)

**Direct ONLY: PCI Door to Balloon < 90 min**



2012 data: Ludman

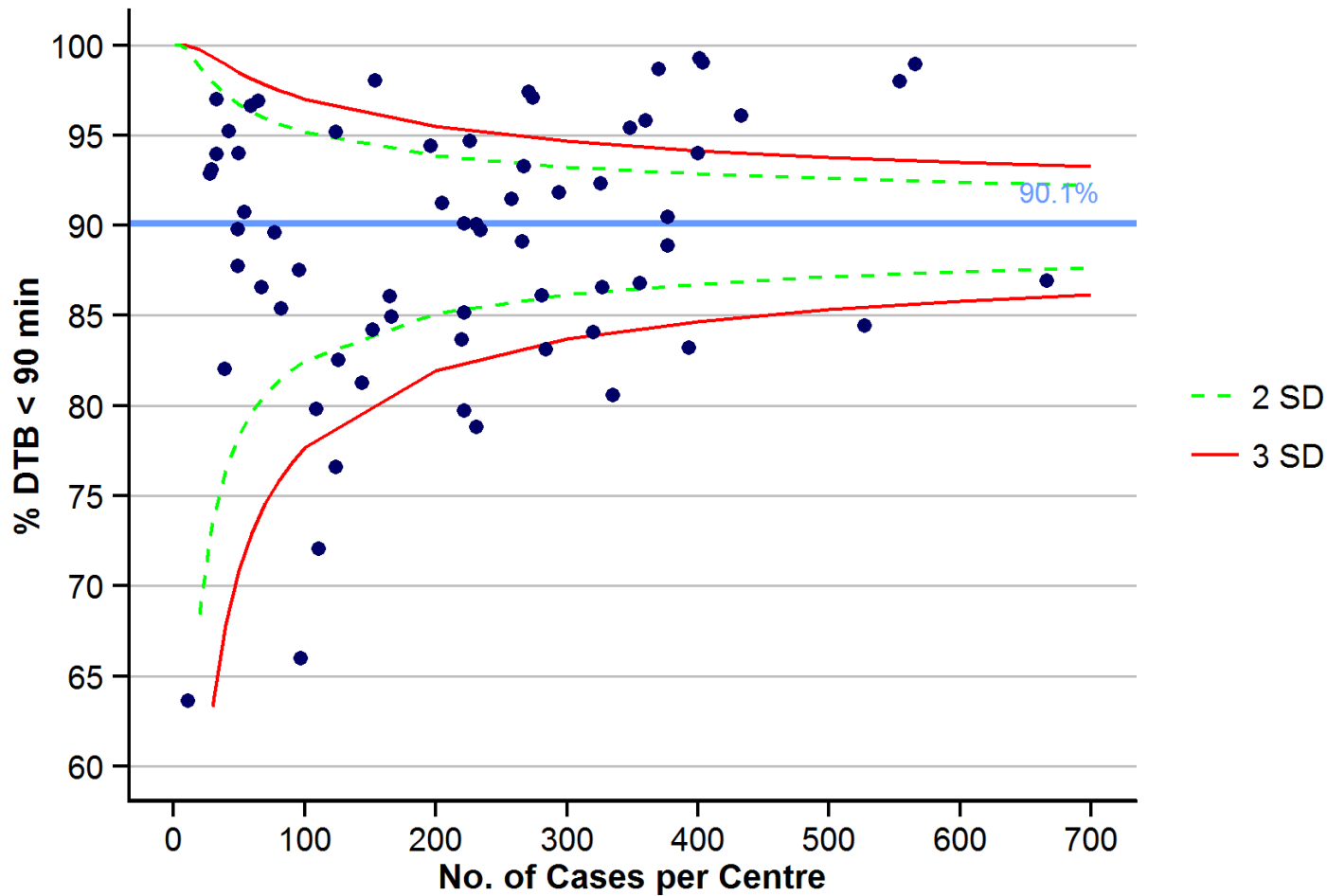


# Primary PCI (excl shock/vent)

Direct ONLY: PCI Door to Balloon < 90 min



2012 data: Ludman

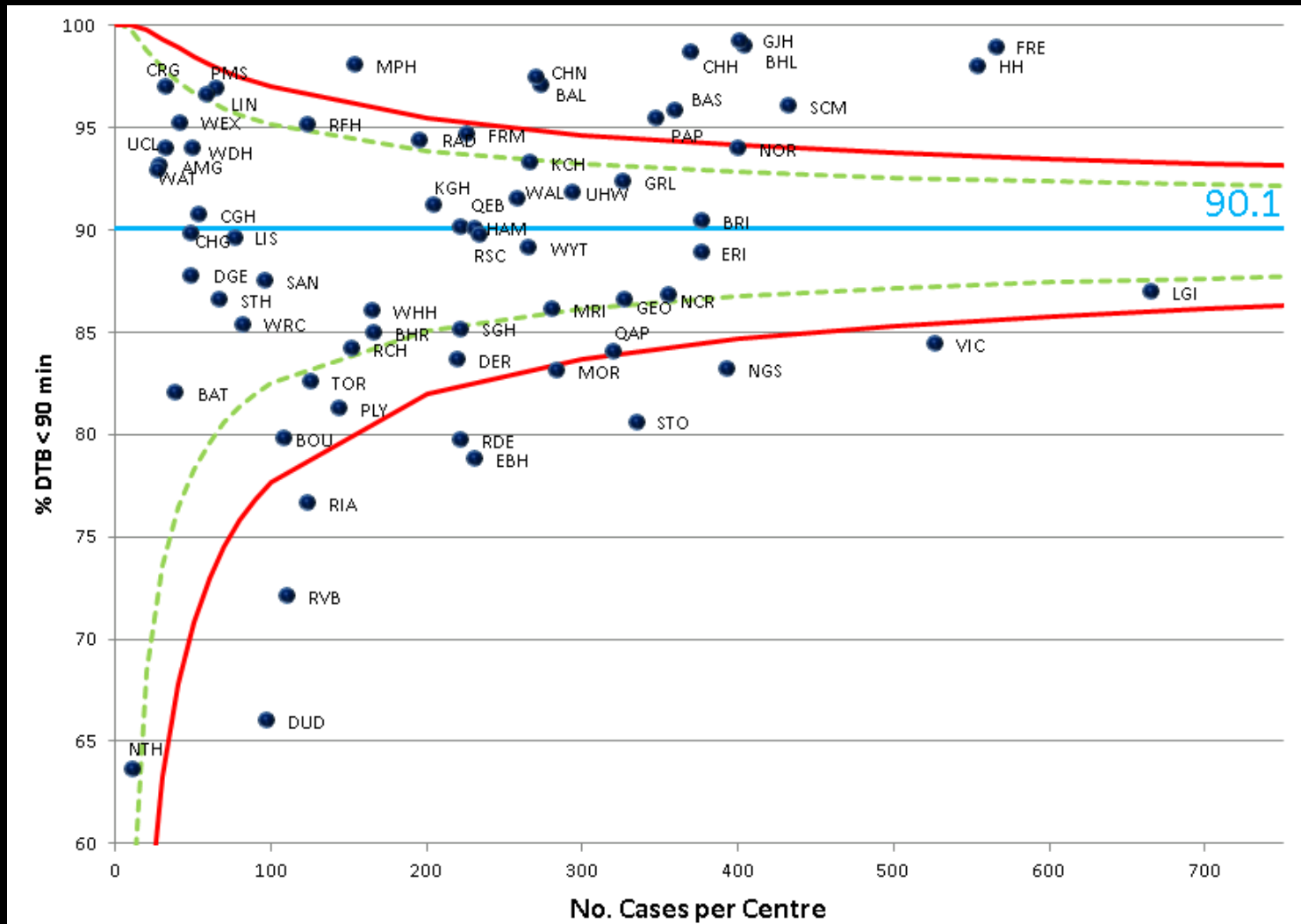


# Primary PCI (excl shock/vent)

## Direct ONLY: PCI Door to Balloon < 90 min



2012 data: Ludman



# Primary PCI (excl shock/vent)

## Direct ONLY: PCI Door to Balloon < 90 min



2012 data: Ludman

	X	Y	HospitalCode
Wycombe Hospital	29	93.1	AMG
Barts and the London	274	97.08	BAL
Basildon Hospital	360	95.83	BAS
Royal United Hospita	39	82.05	BAT
Liverpool Heart and C	404	99.01	BHL
Royal Berkshire Hosp	166	84.94	BHR
Royal Bournemouth C	109	79.82	BOU
Bristol Royal Infirmar	377	90.45	BRI
Conquest Hospital	54	90.74	CGH
Cheltenham General	49	89.8	CHG
Castle Hill Hospital	370	98.65	CHH
Nottingham City Hos	271	97.42	CHN
Craigavon Area Hospi	33	96.97	CRG
Royal Derby Hospital	220	83.64	DER
Eastbourne DGH	49	87.76	DGE
Birmingham City Hos	97	65.98	DUD
Birmingham Heartlar	231	78.79	EBH
Royal Infirmary of Ed	377	88.86	ERI
Freeman Hospital	566	98.94	FRE
Frimley Park Hospital	226	94.69	FRM
St George's Hospital	327	86.54	GEO
Golden Jubilee Hospi	401	99.25	GJH
Glenfield Hospital	326	92.33	GRL
Hammersmith Hospi	222	90.09	HAM
Harefield Hospital	554	98.01	HH
King's College Hospi	267	93.26	KCH
Kettering General Ho	205	91.22	KGH
Leeds General Infir	666	86.94	LGI
Lincoln County Hospi	65	96.92	LIN
Lister Hospital	77	89.61	LIS
Morrison Hospital	284	83.1	MOR
Musgrove Park Hospi	154	98.05	MPH
Manchester Royal Inf	281	86.12	MRI
New Cross Hospital	356	86.8	NCR

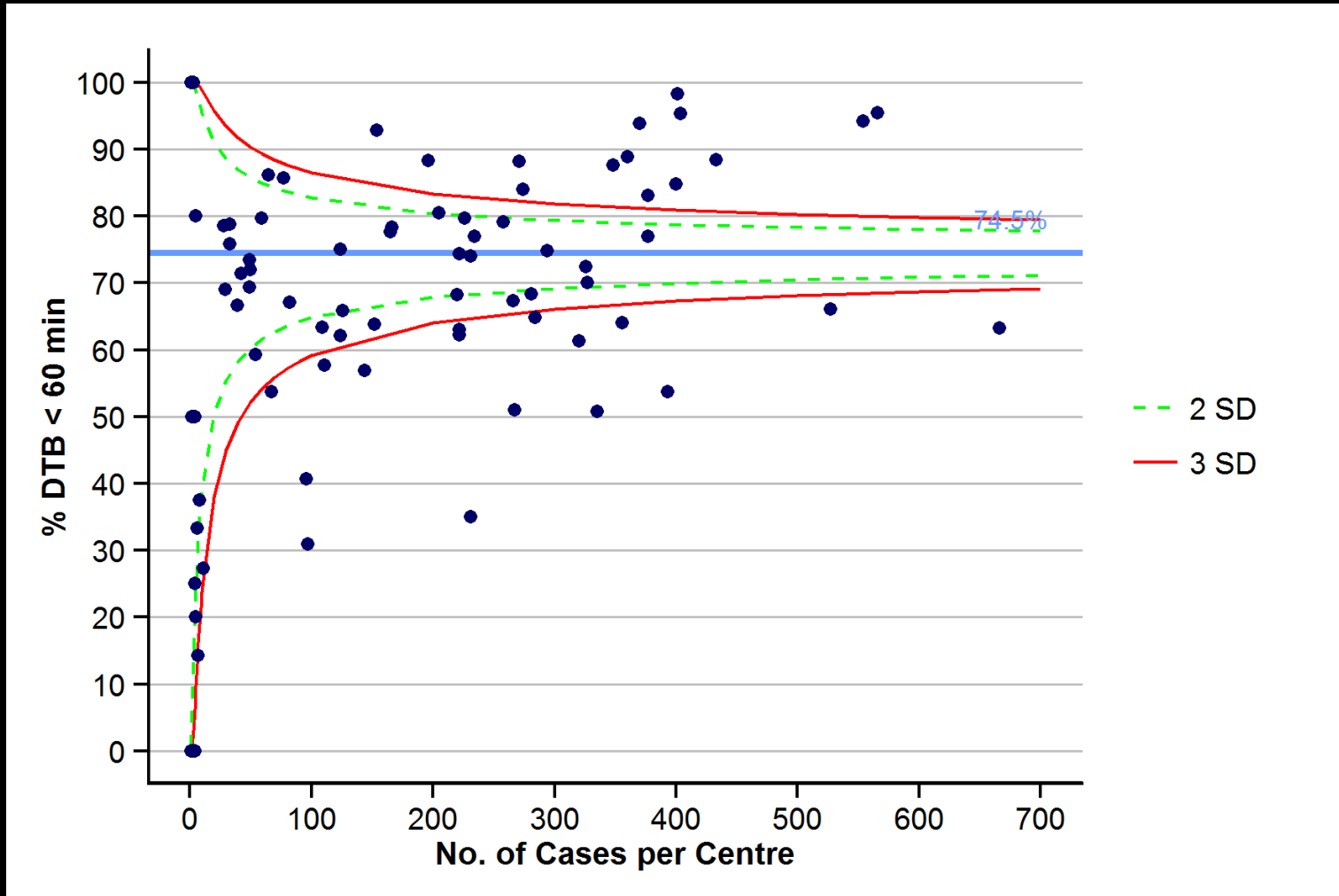
Northern General Ho	393	83.21	NGS
Norfolk and Norwich	400	94	NOR
Northampton Genera	11	63.64	NTH
Papworth Hospital	348	95.4	PAP
Derriford Hospital	144	81.25	PLY
The Great Western H	59	96.61	PMS
Queen Alexandra Ho	320	84.06	QAP
Queen Elizabeth Hos	231	90.04	QEB
John Radcliffe Hospit	196	94.39	RAD
Royal Cornwall Hospi	152	84.21	RCH
Royal Devon & Exete	222	79.73	RDE
Royal Free Hospital	124	95.16	RFH
Aberdeen Royal Infir	124	76.61	RIA
Royal Sussex County	234	89.74	RSC
Royal Victoria Hospit	111	72.07	RVB
Sandwell General Ho	96	87.5	SAN
James Cook Universit	433	96.07	SCM
Southampton Genera	222	85.14	SGH
St Thomas Hospital	67	86.57	STH
University Hospital o	335	80.6	STO
Torbay Hospital	126	82.54	TOR
University College Hc	50	94	UCL
University Hospital o	294	91.84	UHW
Blackpool Victoria Hc	527	84.44	VIC
University Hospital C	258	91.47	WAL
Watford General Hos	28	92.86	WAT
Dorset County Hospit	33	93.94	WDH
Wexham Park Hospit	42	95.24	WEX
William Harvey Hosp	165	86.06	WHH
Worcestershire Roya	82	85.37	WRC
Wythenshawe Hospit	266	89.1	WYT

# Primary PCI (excl shock/vent)

Direct only : PCI Door to Balloon < 60 min



2012 data: Ludman

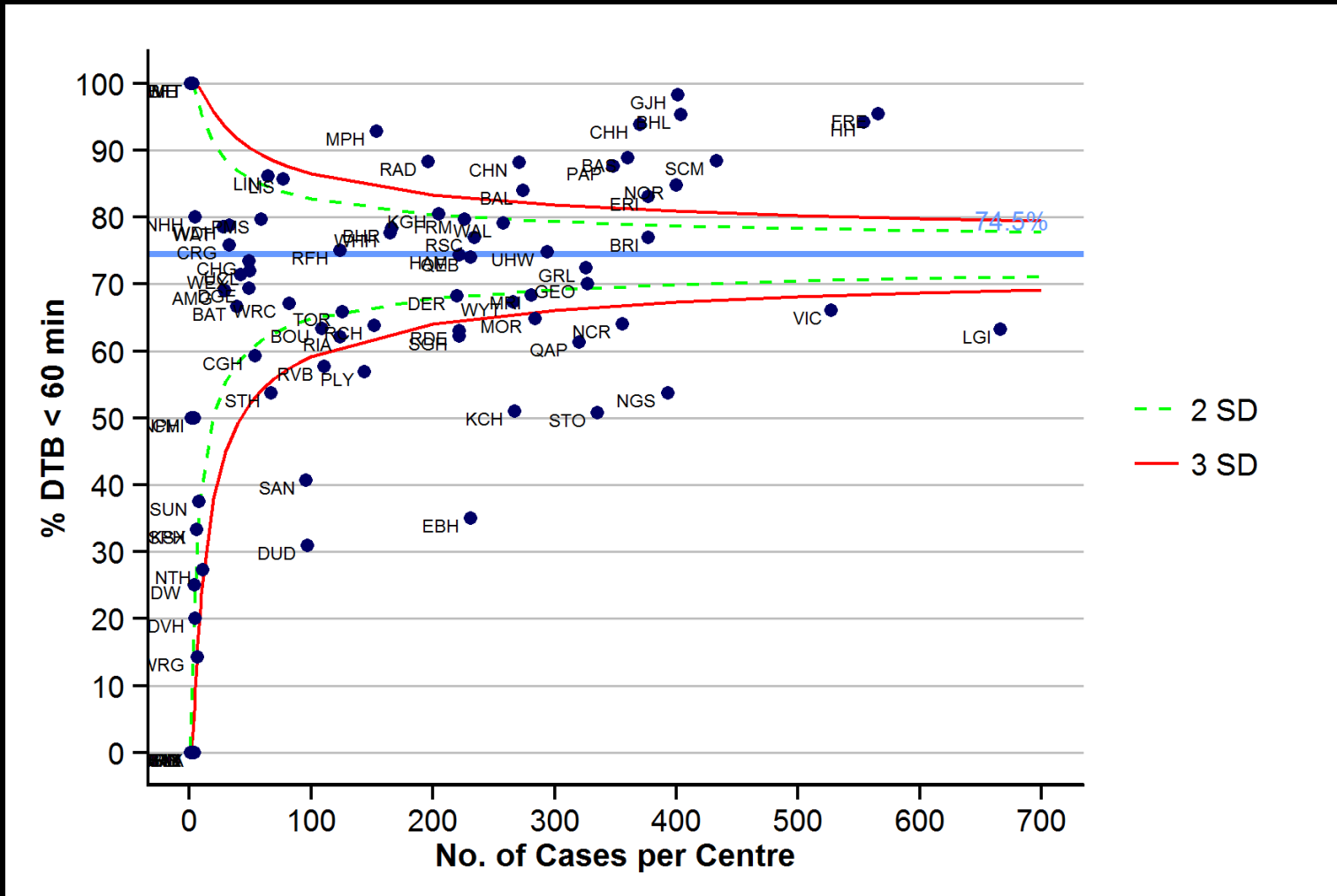


# Primary PCI (excl shock/vent)

## Direct only : PCI Door to Balloon < 60 min



2012 data: Ludman

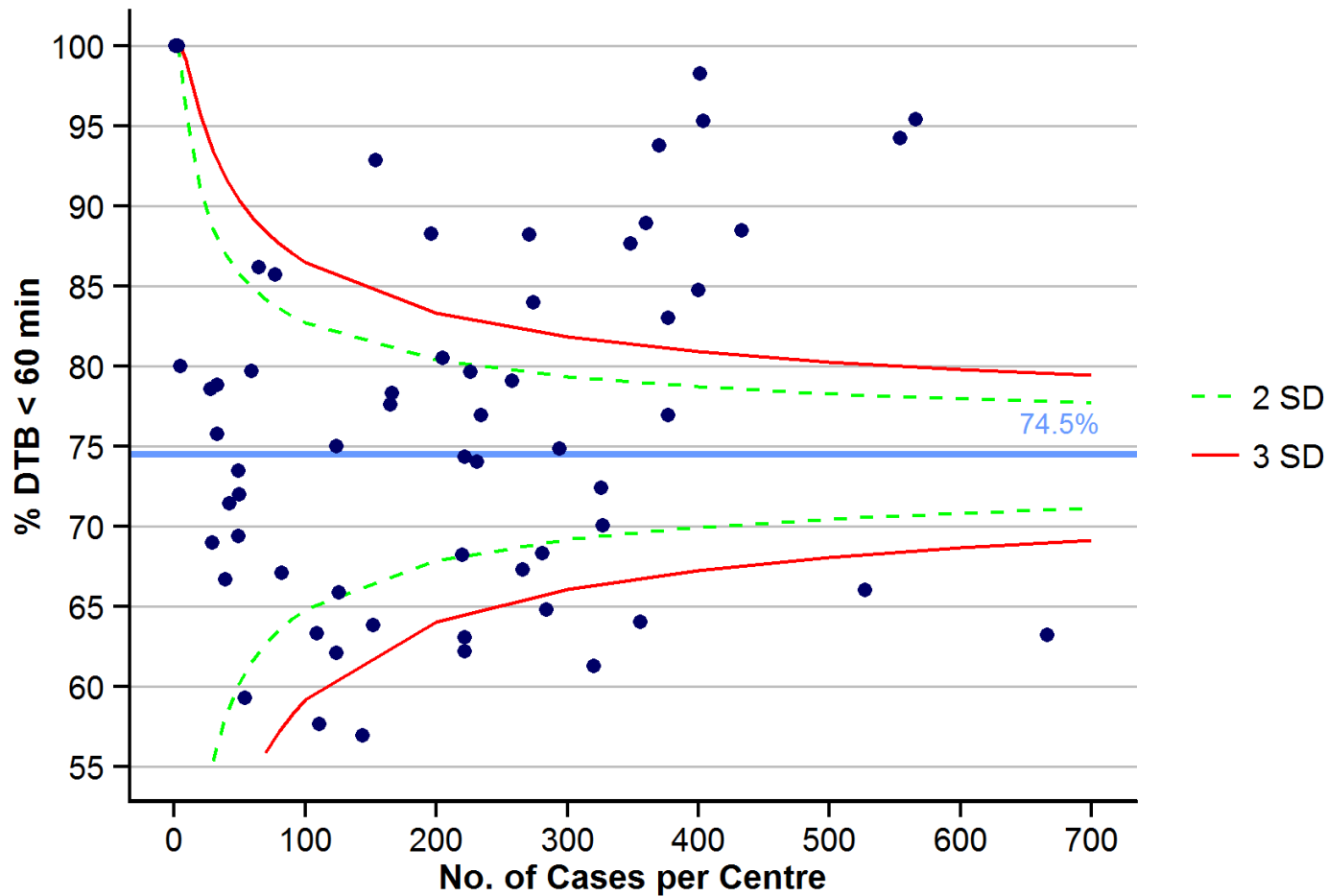


# Primary PCI (excl shock/vent)

## Direct only : PCI Door to Balloon < 60 min



2012 data: Ludman

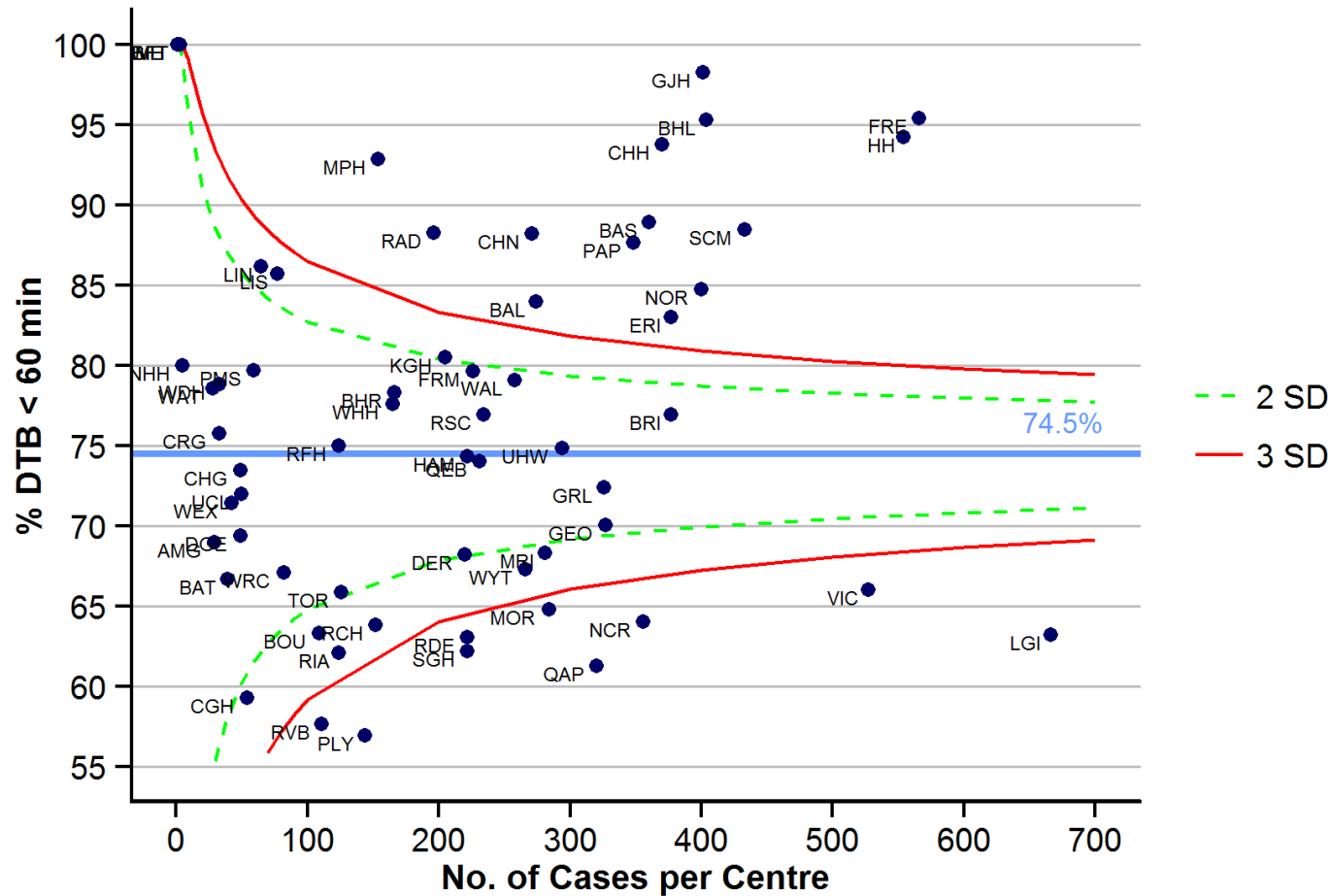


# Primary PCI (excl shock/vent)

## Direct only : PCI Door to Balloon < 60 min



2012 data: Ludman



# Primary PCI (excl shock/vent)

## Direct only : PCI Door to Balloon < 60 min



2012 data: Ludman

	X	Y	HospitalCode	Type	Country
Royal Albert Edward Infirmary	0	NA	AEI	Non-private	England
BMI The Alexandra Hospital	0	NA	AHM	Private	England
Wycombe Hospital	29	68.97	AMG	Non-private	England
St Anthony's Hospital	0	NA	ANT	Private	England
Barts and the London	274	83.94	BAL	Non-private	England
Basildon Hospital	360	88.89	BAS	Non-private	England
Royal United Hospital Bath	39	66.67	BAT	Non-private	England
Bedford Hospital	0	NA	BED	Non-private	England
Belfast City Hospital	3	100	BFT	Non-private	Northern Ireland
Rochdale Infirmary	0	NA	BHH	Non-private	England
Liverpool Heart and Chest Hospital	404	95.3	BHL	Non-private	England
Royal Berkshire Hospital	166	78.31	BHR	Non-private	England
Royal Blackburn Hospital	4	0	BLA	Non-private	England
Royal Bournemouth General Hospital	109	63.3	BOU	Non-private	England
Bradford Royal Infirmary	1	0	BRD	Non-private	England
Bristol Royal Infirmary	377	76.92	BRI	Non-private	England
Spire Southampton Hospital	0	NA	CBS	Private	England
Conquest Hospital	54	59.26	CGH	Non-private	England
Cheltenham General Hospital	49	73.47	CHG	Non-private	England
Castle Hill Hospital	370	93.78	CHH	Non-private	England
Nottingham City Hospital	271	88.19	CHN	Non-private	England
Glan Clwyd Hospital	0	NA	CLW	Non-private	Wales
Cumberland Infirmary	4	50	CMJ	Non-private	England
Craigavon Area Hospital	33	75.76	CRG	Non-private	Northern Ireland
Cromwell Hospital	0	NA	CRO	Private	England
Royal Derby Hospital	220	68.18	DER	Non-private	England
Eastbourne DGH	49	69.39	DGE	Non-private	England
Birmingham City Hospital	97	30.93	DUD	Non-private	England
Darent Valley Hospital	5	20	DVH	Non-private	England
Ealing Hospital	0	NA	EAL	Non-private	England
Birmingham Heartlands Hospital	231	35.06	EBH	Non-private	England
Royal Infirmary of Edinburgh	377	83.02	ERI	Non-private	Scotland
East Surrey Hospital	0	NA	ESU	Non-private	England
Freeman Hospital	566	95.41	FRE	Non-private	England
Frimley Park Hospital	226	79.65	FRM	Non-private	England
Frenchay Hospital	1	0	FRY	Non-private	England
St George's Hospital	327	70.03	GEO	Non-private	England
Spire Bristol	0	NA	GHB	Non-private	England
Golden Jubilee Hospital	401	98.25	GJH	Non-private	Scotland
Glenfield Hospital	326	72.39	GRL	Non-private	England
Royal Gwent Hospital	1	100	GWE	Non-private	Wales

Queen Elizabeth Hospital Woolwich	0	NA	GWH	Non-private	England
Hammersmith Hospital	222	74.32	HAM	Non-private	England
Harefield Hospital	554	94.22	HH	Non-private	England
Wellington Hospital North	0	NA	HHW	Private	England
Harley Street Clinic	0	NA	HSC	Private	England
King's College Hospital	267	50.94	KCH	Non-private	England
Kettering General Hospital	205	80.49	KGH	Non-private	England
Kings Mill Hospital	1	100	KMH	Non-private	England
Tunbridge Wells Hospital	6	33.33	KSX	Non-private	England
London Bridge Hospital	0	NA	LBH	Private	England
Leeds General Infirmary	666	63.21	LGI	Non-private	England
Lincoln County Hospital	65	86.15	LIN	Non-private	England
Lister Hospital	77	85.71	LIS	Non-private	England
Croydon University Hospital	4	0	MAY	Non-private	England
Medway Maritime Hospital	4	25	MDW	Non-private	England
Morriston Hospital	284	64.79	MOR	Non-private	Wales
Musgrove Park Hospital	154	92.86	MPH	Non-private	England
Manchester Royal Infirmary	281	68.33	MRI	Non-private	England
New Cross Hospital	356	64.04	NCR	Non-private	England
Northern General Hospital	393	53.69	NGS	Non-private	England
Royal Brompton Hospital	2	0	NHB	Non-private	England
Basingstoke and North Hampshire Hospi	5	80	NHH	Non-private	England
Ninewells Hospital	0	NA	NIN	Non-private	Scotland
Norfolk and Norwich University Hospital	400	84.75	NOR	Non-private	England
Northwick Park Hospital	2	50	NPH	Non-private	England
Northampton General Hospital	11	27.27	NTH	Non-private	England
Papworth Hospital	348	87.64	PAP	Non-private	England
Prion Hospital	0	NA	PHB	Private	England
Pinderfields General Hospital	1	0	PIN	Non-private	England
Derriford Hospital	144	56.94	PLY	Non-private	England
The Great Western Hospital	59	79.66	PMS	Non-private	England
Queen Alexandra Hospital	320	61.25	QAP	Non-private	England
Queen Elizabeth Hospital, Edgbaston	231	74.03	QEB	Non-private	England
John Radcliffe Hospital	196	88.27	RAD	Non-private	England
Raigmore Hospital	0	NA	RAI	Non-private	Scotland
Royal Cornwall Hospital	152	63.82	RCH	Non-private	England
Royal Devon & Exeter Hospital	222	63.06	RDE	Non-private	England
Royal Free Hospital	124	75	RFH	Non-private	England
Aberdeen Royal Infirmary	124	62.1	RIA	Non-private	Scotland
Royal Sussex County Hospital	234	76.92	RSC	Non-private	England
Royal Victoria Hospital	111	57.66	RVB	Non-private	Northern Ireland
Salisbury District Hospital	2	0	SAL	Non-private	England
Sandwell General Hospital	96	40.62	SAN	Non-private	England
James Cook University Hospital	433	88.45	SCM	Non-private	England
Scunthorpe General Hospital	0	NA	SCU	Non-private	England
Southampton General Hospital	222	62.16	SGH	Non-private	England
St Peter's Hospital	6	33.33	SPH	Non-private	England
Spire Shawfair Park Hospital	0	NA	SSP	Private	Scotland
St Thomas Hospital	67	53.73	STH	Non-private	England
University Hospital of North Staffordshire	335	50.75	STO	Non-private	England
Sunderland Royal Hospital	8	37.5	SUN	Non-private	England
Torbay Hospital	126	65.87	TOR	Non-private	England
University College Hospital	50	72	UCL	Non-private	England
University Hospital of Wales	294	74.83	UHW	Non-private	Wales
Blackpool Victoria Hospital	527	66.03	VIC	Non-private	England
University Hospital Coventry	258	79.07	WAL	Non-private	England
Watford General Hospital	28	78.57	WAT	Non-private	England
Dorset County Hospital	33	78.79	WDH	Non-private	England
Wexham Park Hospital	42	71.43	WEX	Non-private	England
Whipps Cross Hospital	0	NA	WHC	Non-private	England
William Harvey Hospital	165	77.58	WHH	Non-private	England
Worcestershire Royal Hospital	82	67.07	WRC	Non-private	England
Worthing Hospital	7	14.29	WRG	Non-private	England
Wythenshawe Hospital	266	67.29	WYT	Non-private	England
York District Hospital	0	NA	YDH	Non-private	England

# PCI for Acute Sx

## Four admission scenarios

Admitted from the community

Admission to Non-PCI centre

Direct admission to PCI centre

Transfer to PCI centre



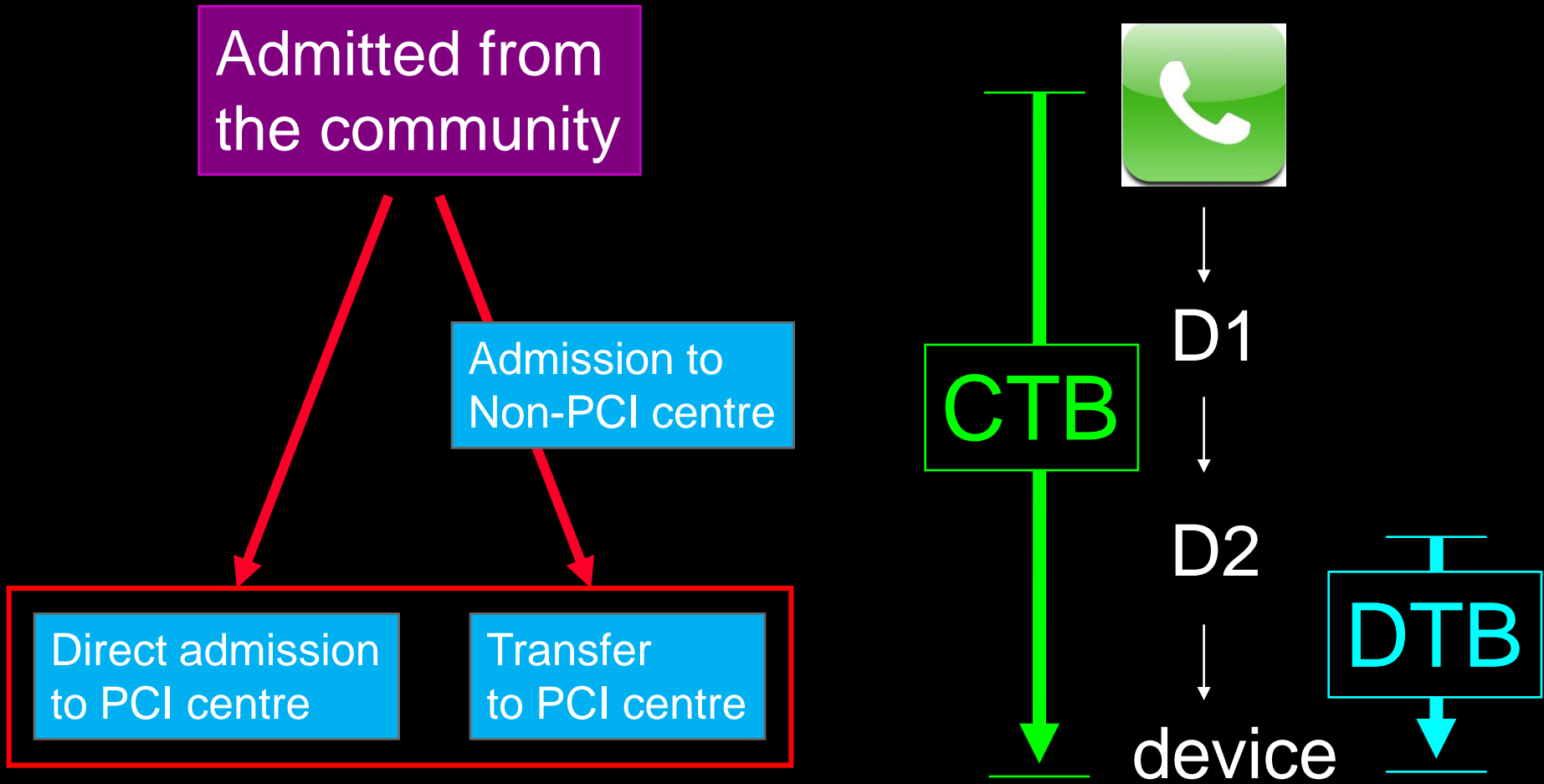
CTB

D1

D2

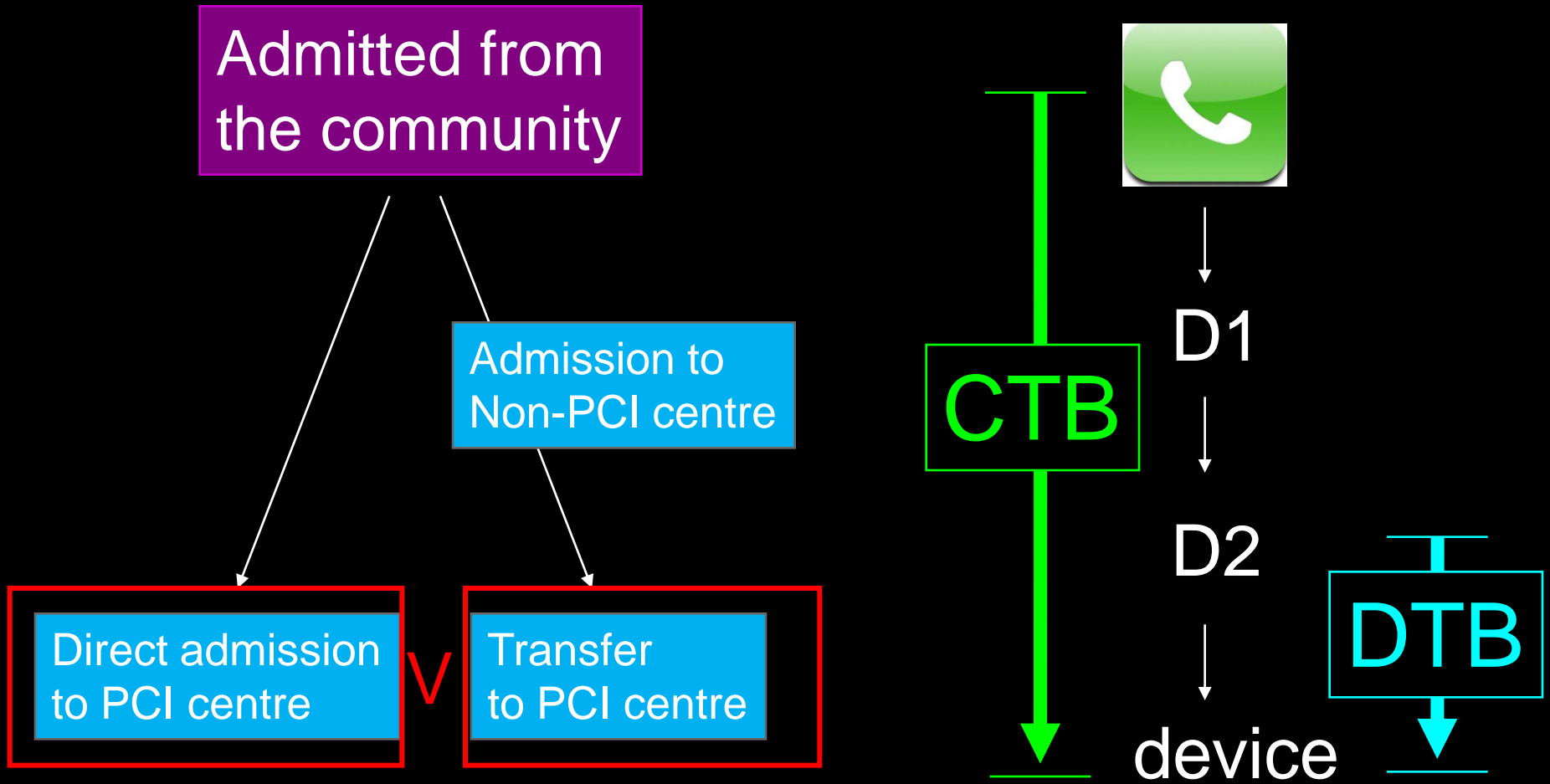
DTB

device



# PCI for Acute Sx

## Four admission scenarios

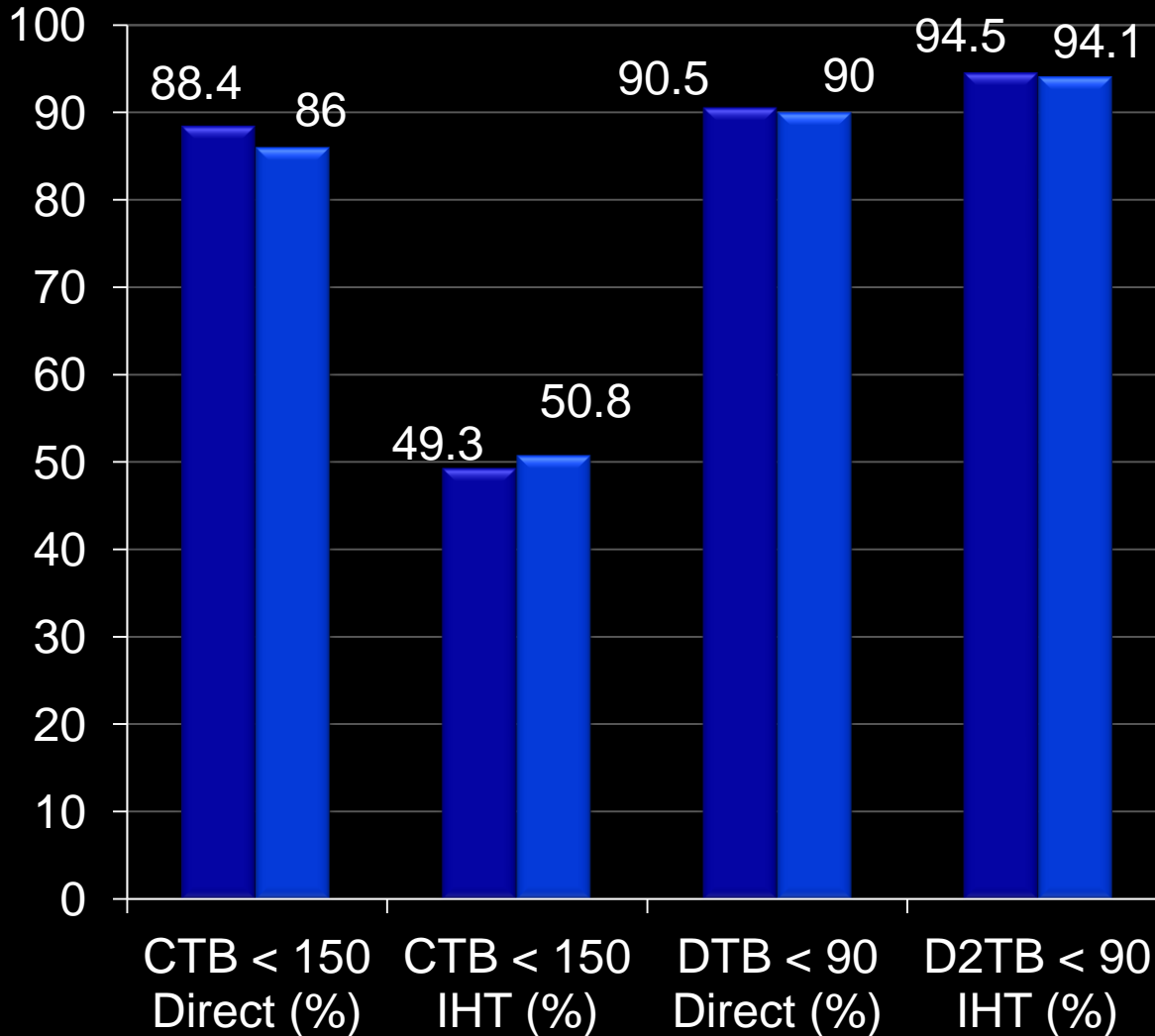


# Primary PCI (excl'd shock/vent)

## According to admission route



2012 data: Ludman

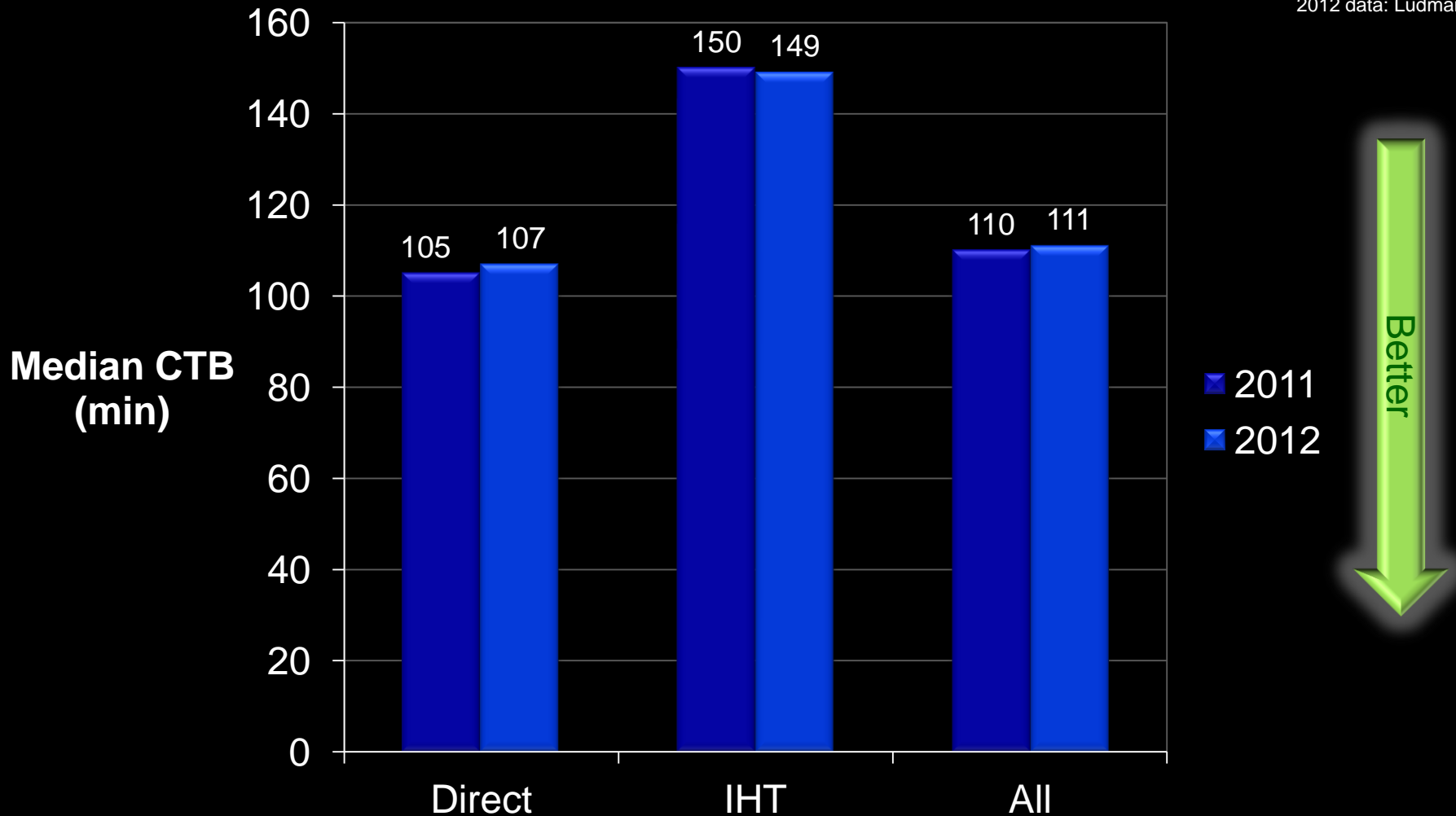


# PPCI Call to Balloon time (excl'd shock/vent)

## By Admission Route



2012 data: Ludman



Calculated on overall means

# PPCI Call to Balloon time (excl'd shock/vent)

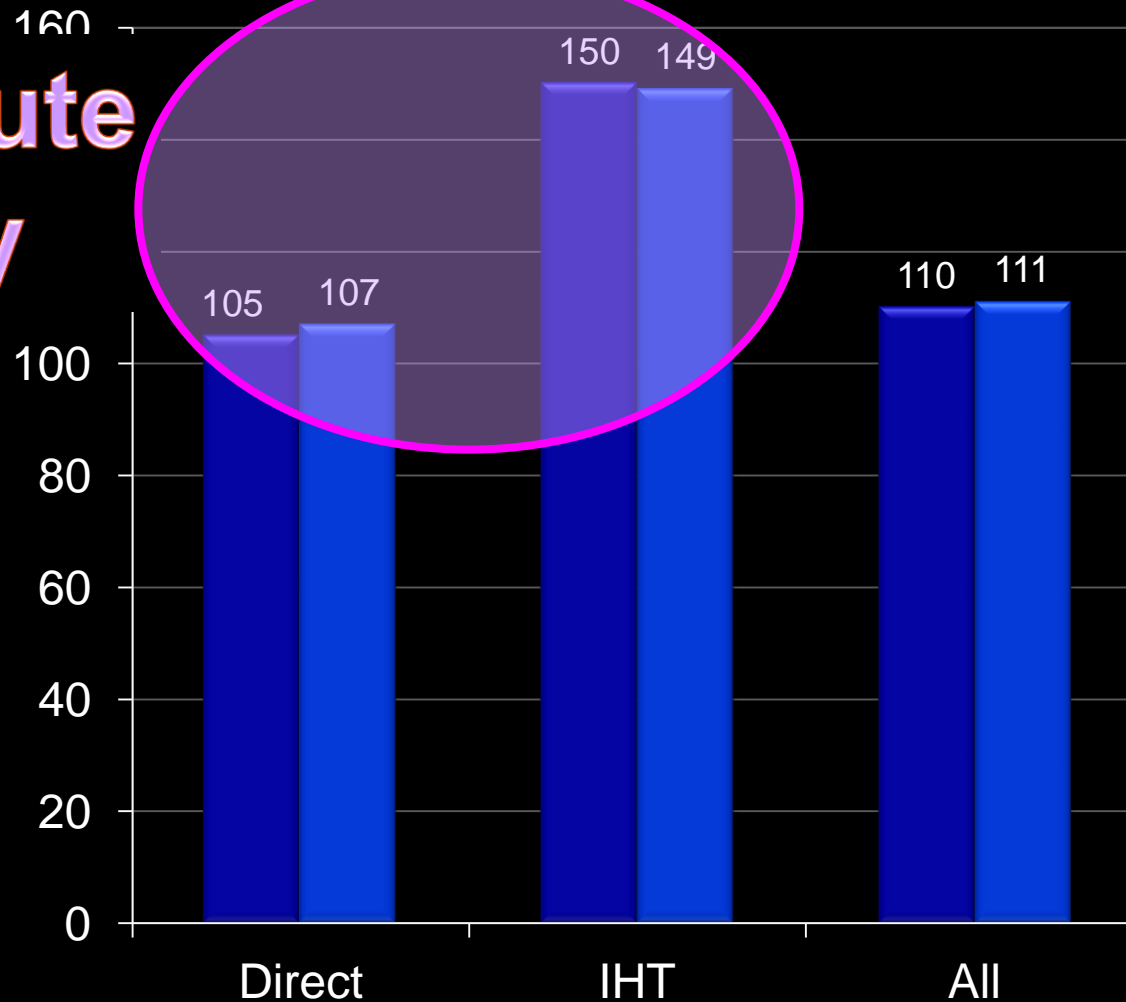
## By Admission Route



2012 data: Ludman

40 minute delay

Median CTB (min)



2011  
2012



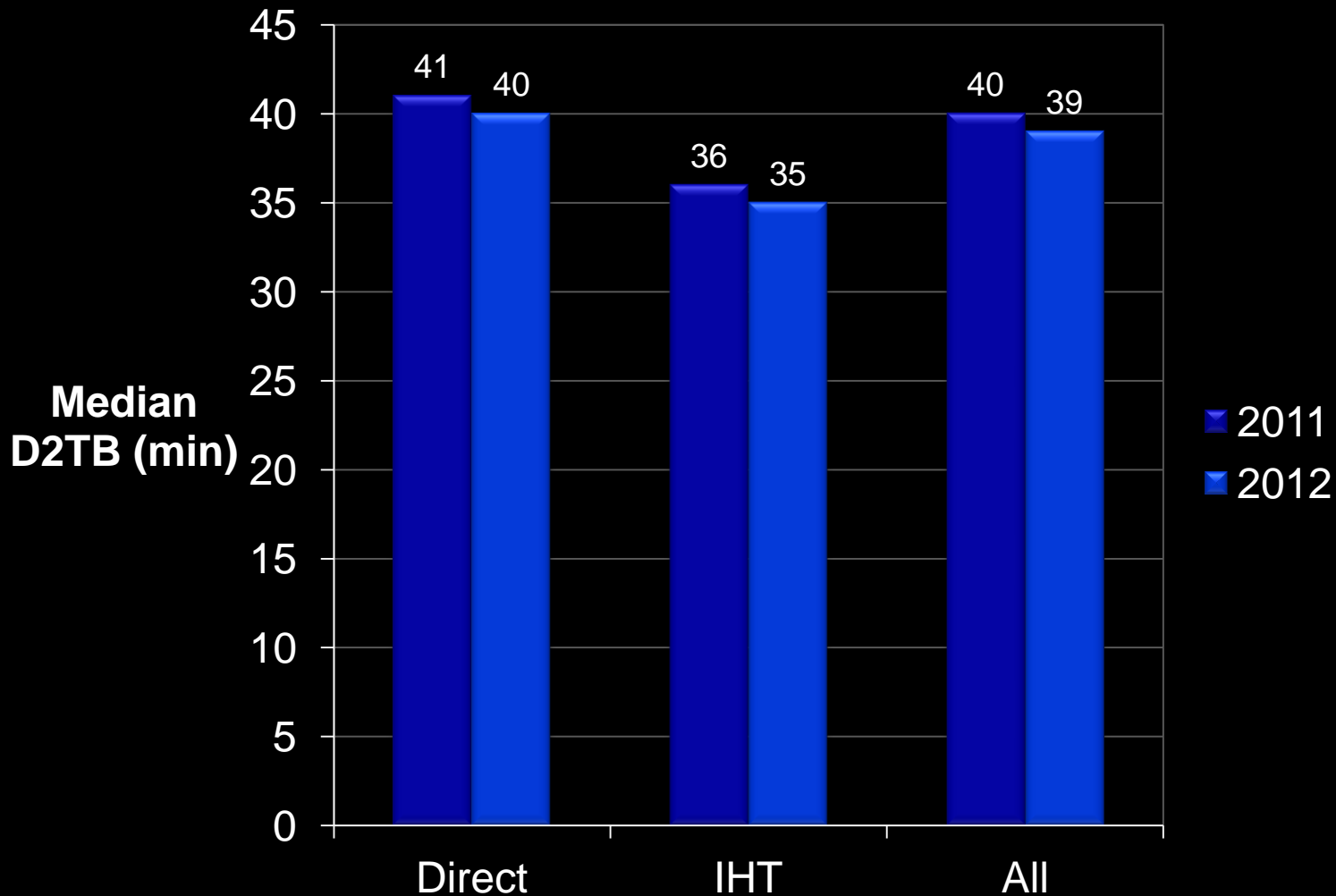
Calculated on overall means

# PPCI Door to Balloon time (excl'd shock/vent)

## By Admission Route



2012 data: Ludman



Calculated on overall means

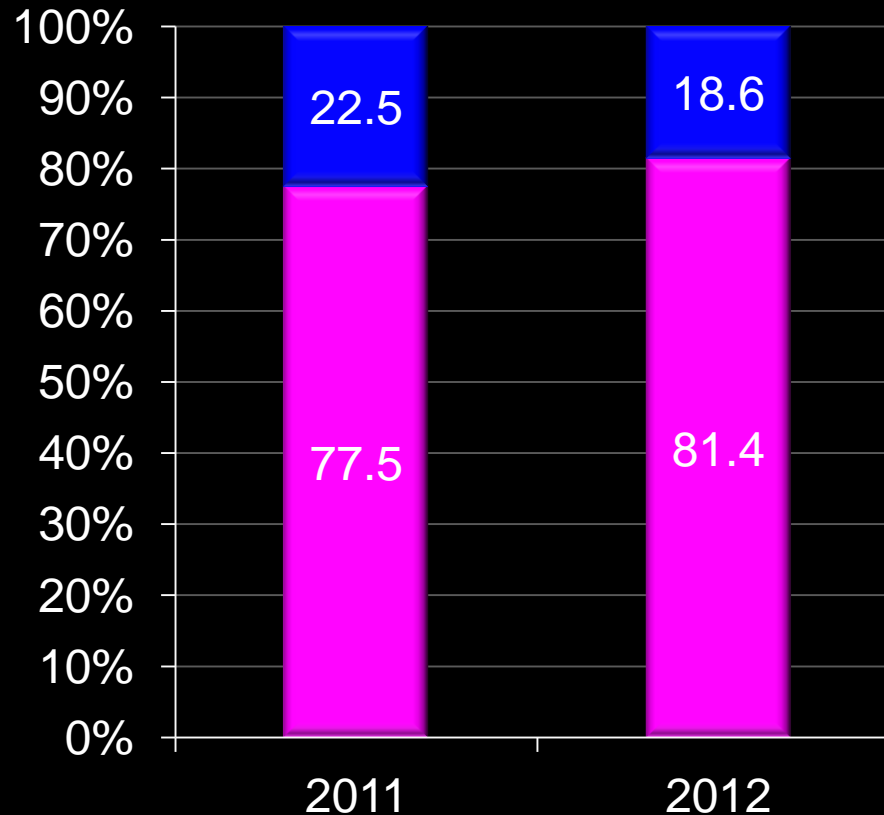
# Primary PCI

## Admission routes

% Patients admitted directly or by IHT for PPCI



2012 data: Ludman

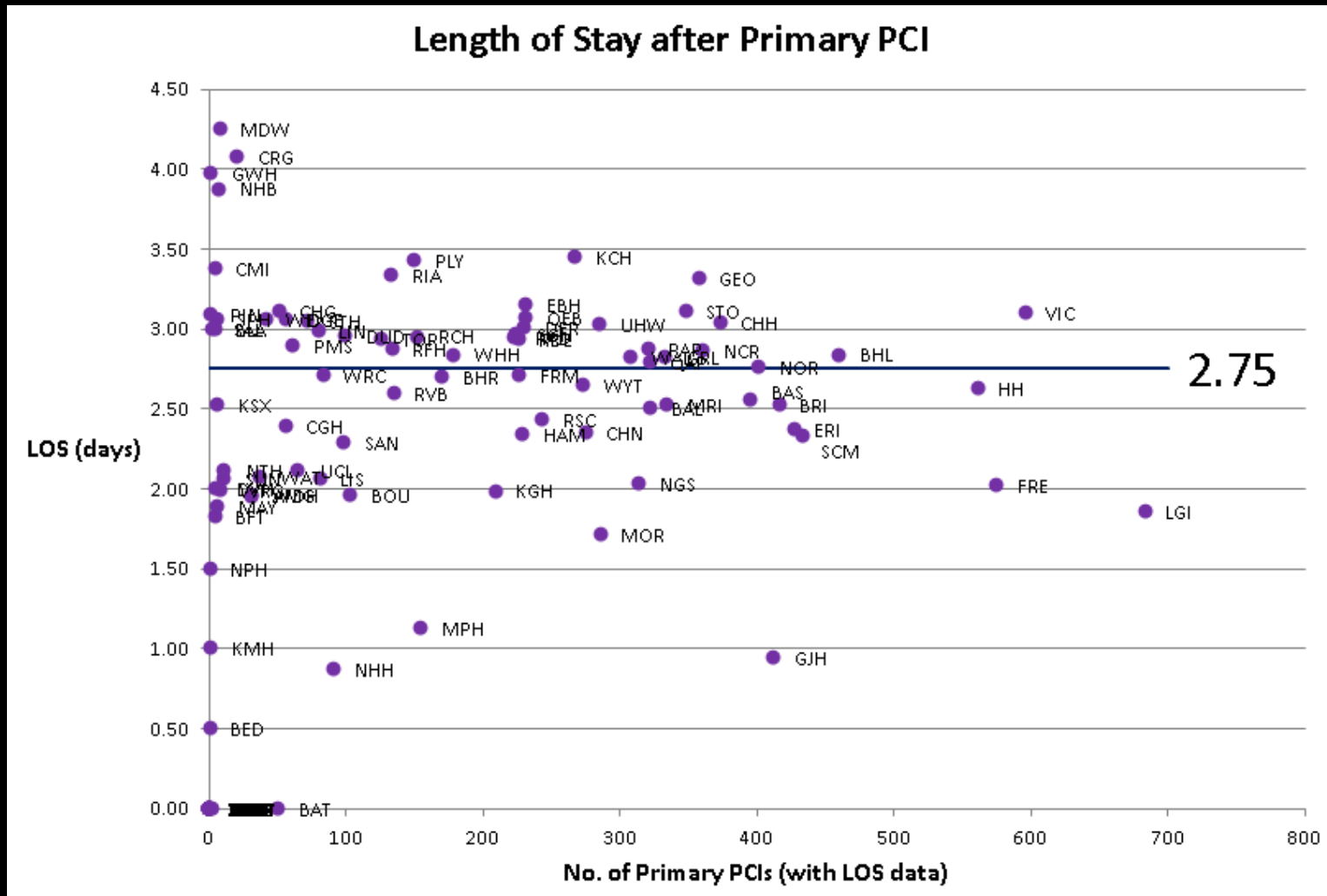


# PPCI Direct from Community

Median Length of stay in PCI Centre (exc shock and vent)



2012 data: Ludman



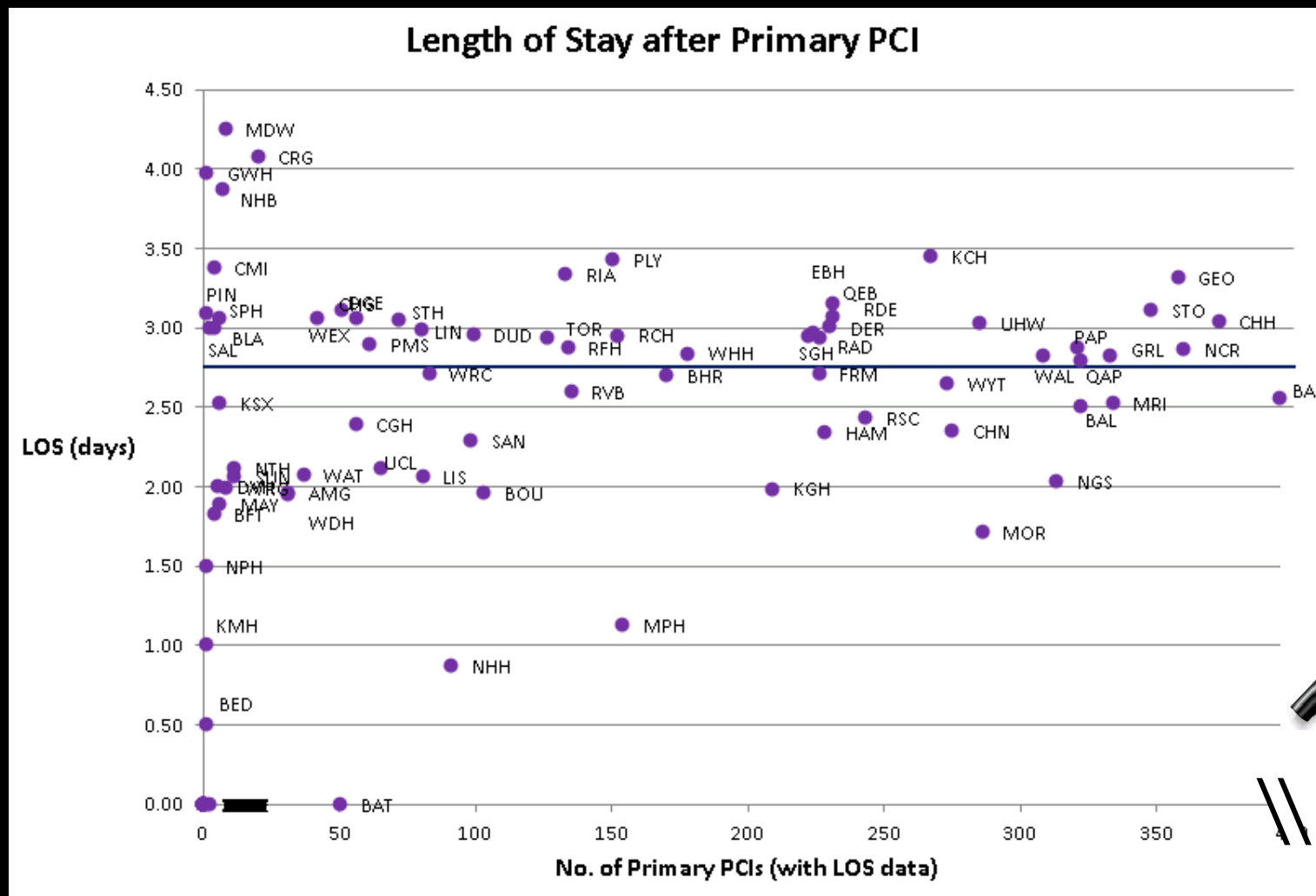
LOS = First device time to discharge (assuming discharge at midday)

# PPCI Direct from Community

Median Length of stay in PCI Centre (exc shock and vent)



2012 data: Ludman



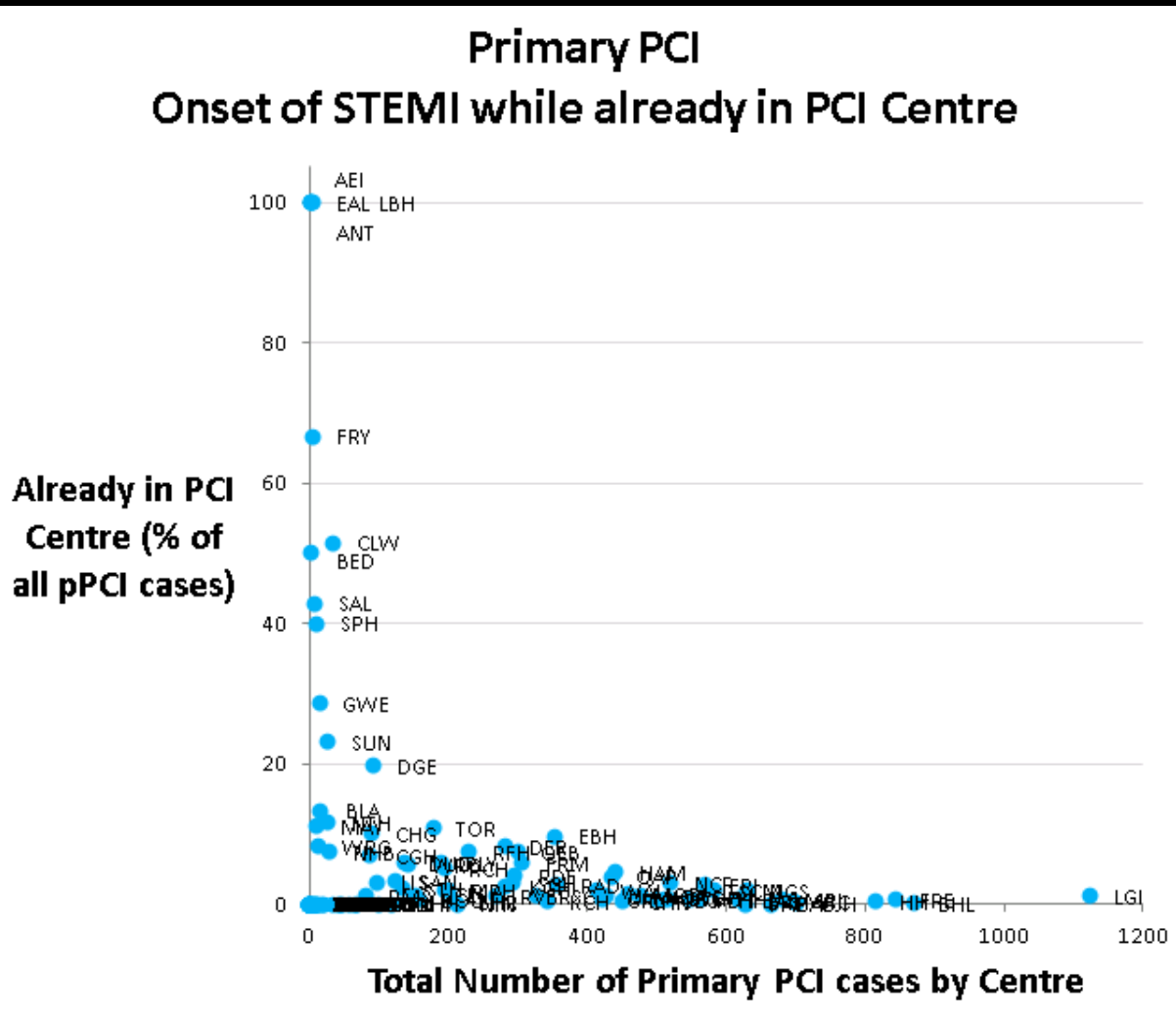
LOS = First device time to discharge (assuming discharge at midday)



# STEMI occurred while ALREADY in PCI Centre

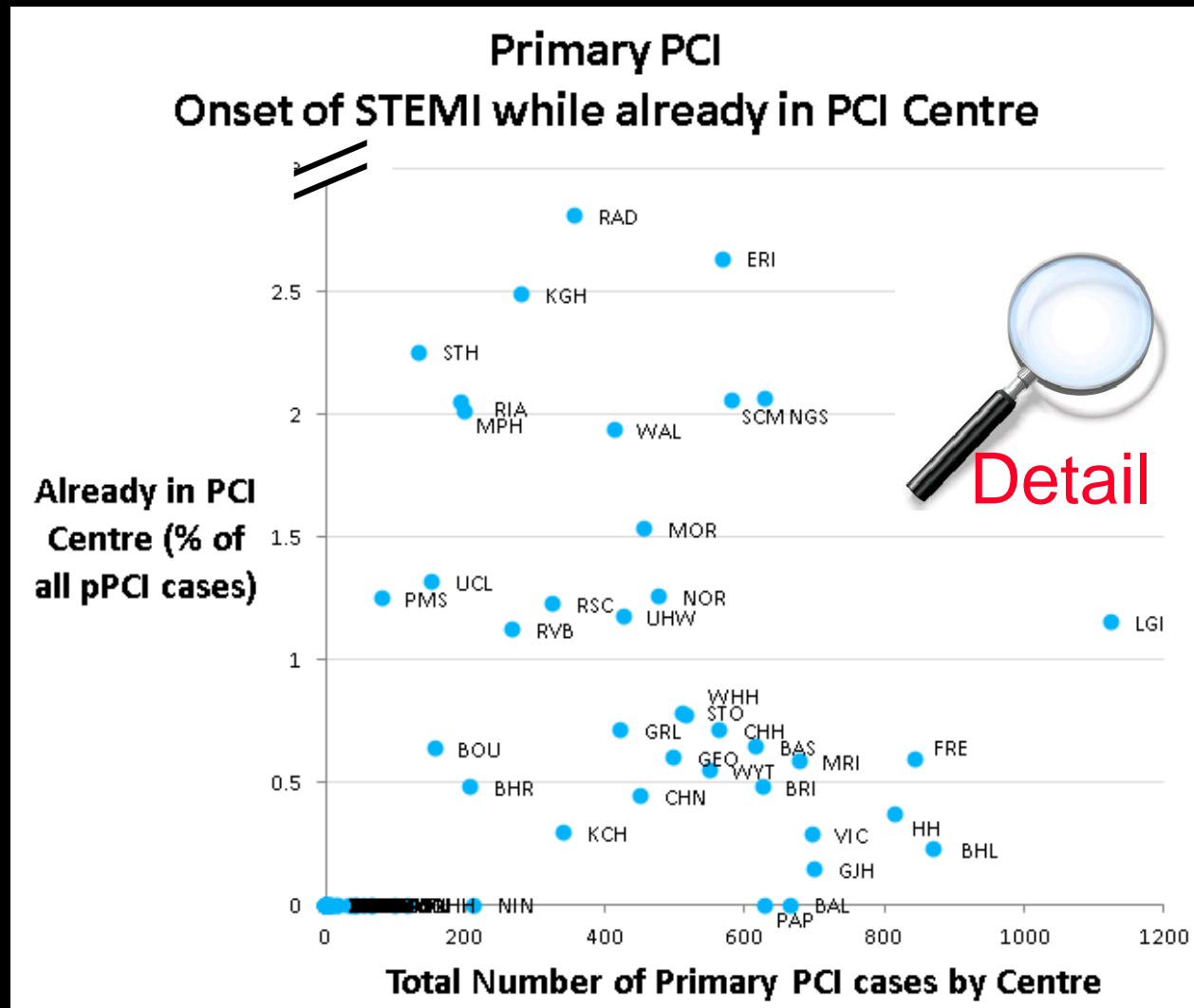


2012 data: Ludman





# STEMI occurred while ALREADY in PCI Centre



# Contents



2012 data: Ludman

- Structure

- Angio and PCI centres and maps
- Total angio and PCI numbers
- No of PCIs per centre and per angio
- PCI pmp and by country and v CABG
- Centre PCI volumes
- PCI operators, by centre, by PPCI
- On call rotas for PPCI
- On site v off site surgical cover
- Day case activity
- Primary PCI units

- NICOR data collection

- Centre participation
- Databases used
- Case ascertainment
- Data completeness

- Appropriateness

- Demographics
- Indication for PCI / Clinical syndrome
- PPCI activity (by unit, pmp, by vessel)
- PCI for out of hospital arrest
- PCI territories / vessels / lesions
- Atherectomy
- Stents (BMS and DES)
- Adjunctive pharmacotherapy
- LV support and shock
- Primary PCI for > 80 yrs
- Additional interventional techniques, devices
- Arterial access (routes)

- Process of care

- Delays to treatment
- NSTEMI (direct v IHT)
- Primary PCI DTB / CTB
- IHT versus Direct admission
- Length of stay

- Outcome

- MACCE
- Peri-procedural complications and by access
- Tracked 30 day mortality
  - Outcome by syndrome
  - Outcome by lesion subset
- Risk adjusted outcome
- Operator reported outcomes

- Adult non coronary intervention

- Septal ablation for HOCM
- Mitral valvuloplasty
- Mitraclip / PFO / ASD closure / LAA occlusion
- Para-prosthetic leak closure
- Renal Denervation
- Percutaneous Pulmonary valve

- TAVI

- Activity by centre
- Demographics
- Valve types
- Delivery approaches by valve type
- Pacing
- Complications

- Conclusions and summary

Appendix: PCI Centre NICOR / CCAD Centre codes

# Outcome



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# Data sources

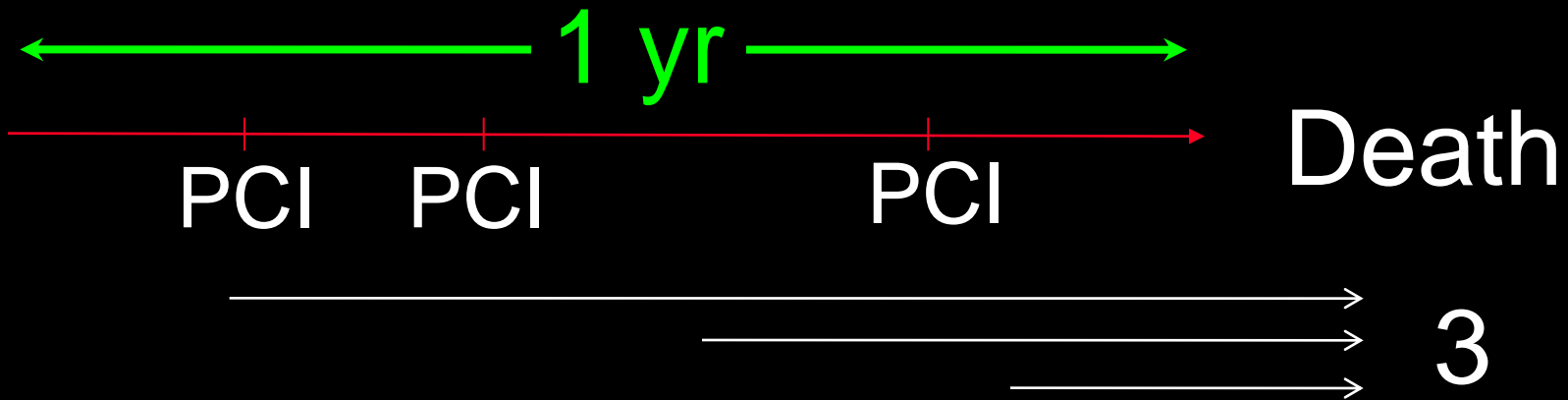
---

- Success, Mortality CVA and Emergency CABG
- QMI
  - Denominator: Total PCI procedures except PCI for STEMI
- NQMI
  - Denominator: Total PCIs for stable symptoms

# Methodology

---

- Multiple procedures → mortality



NICOR mortality counts

Identifies multiple procedures and only counts one death

# MACCE - All PCIs



2012 data: Ludman

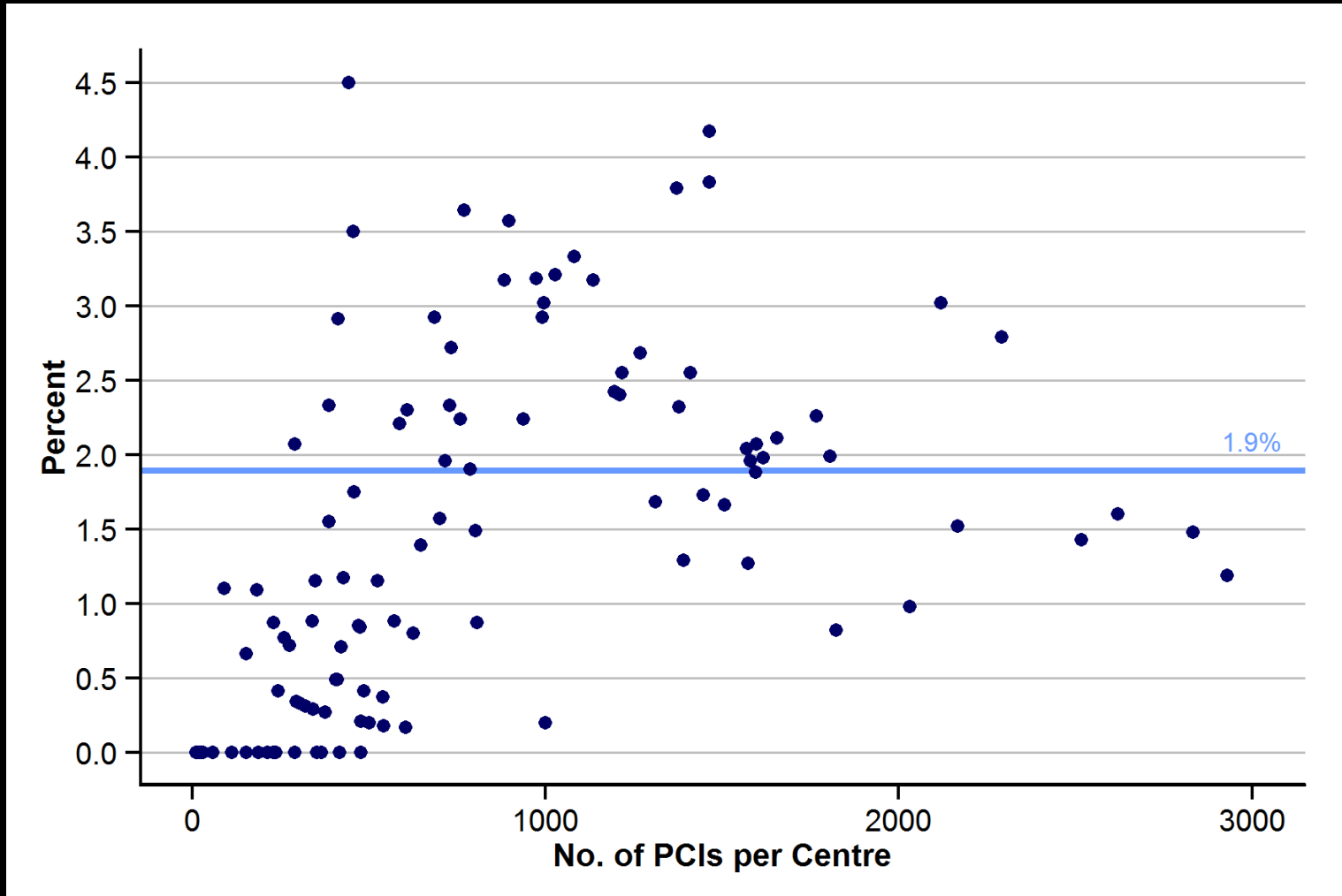
Year	Procedure Success (%)	QMI %	NQMI (stable) (%)	Em CABG (%)	CVA (%)	Mortality (%)	30 day Mortality (%) (Tracked)
1997	92	1.2		1.1		0.89	
1998	92	0.8		0.7		0.80	
1999	90	0.57		0.48		0.61	
2000	92	0.6		0.4		0.64	
2001	94	0.5		0.4		0.75	
2002	92	0.57		0.28		0.54	
2003	92	0.36		0.29		0.53	
2004	93.5	0.30		0.21		0.56	
2005	90.2	0.24		0.12		0.59	
2006	95.5	0.15	0.74	0.09		0.74	
2007	92.1	0.14	0.62	0.08		0.89	
2008	91.8	0.25	0.51	0.07	0.08	1.03	
2009	91.3	0.13	0.47	0.08	0.08	1.21	2.0
2010	92.0	0.17	0.56	0.05	0.12	1.6	2.1
2011	91.9	0.13	0.36	0.05	0.07	1.6	2.4
2012	90.6	0.11	0.34	0.05	0.09	1.9	2.6

# Adverse Outcomes - Death

- Mortality to Discharge (self reported)



2012 data: Ludman



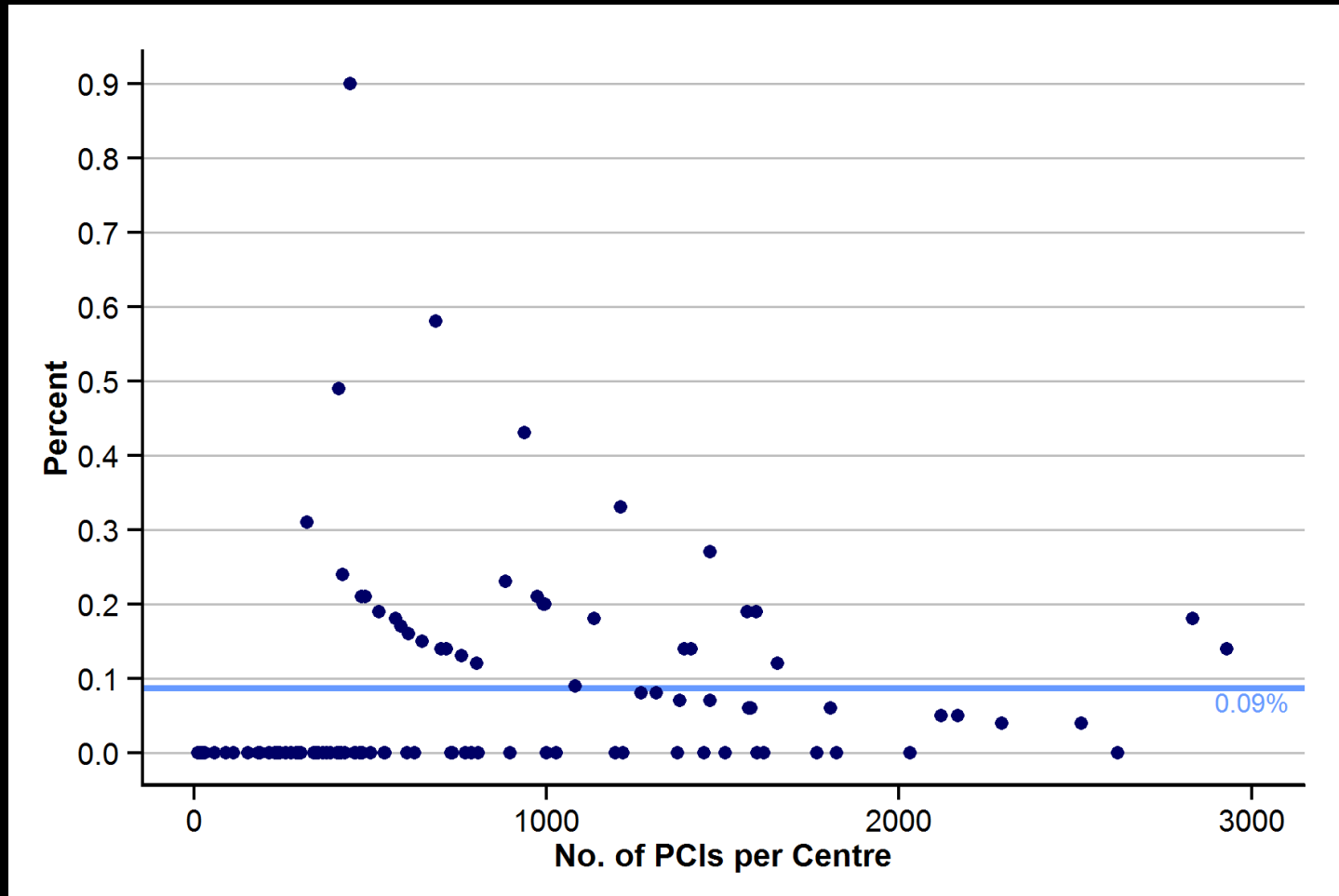


# Adverse Outcomes - CVA



2012 data: Ludman

- % of all cases with CVA (not TIA)

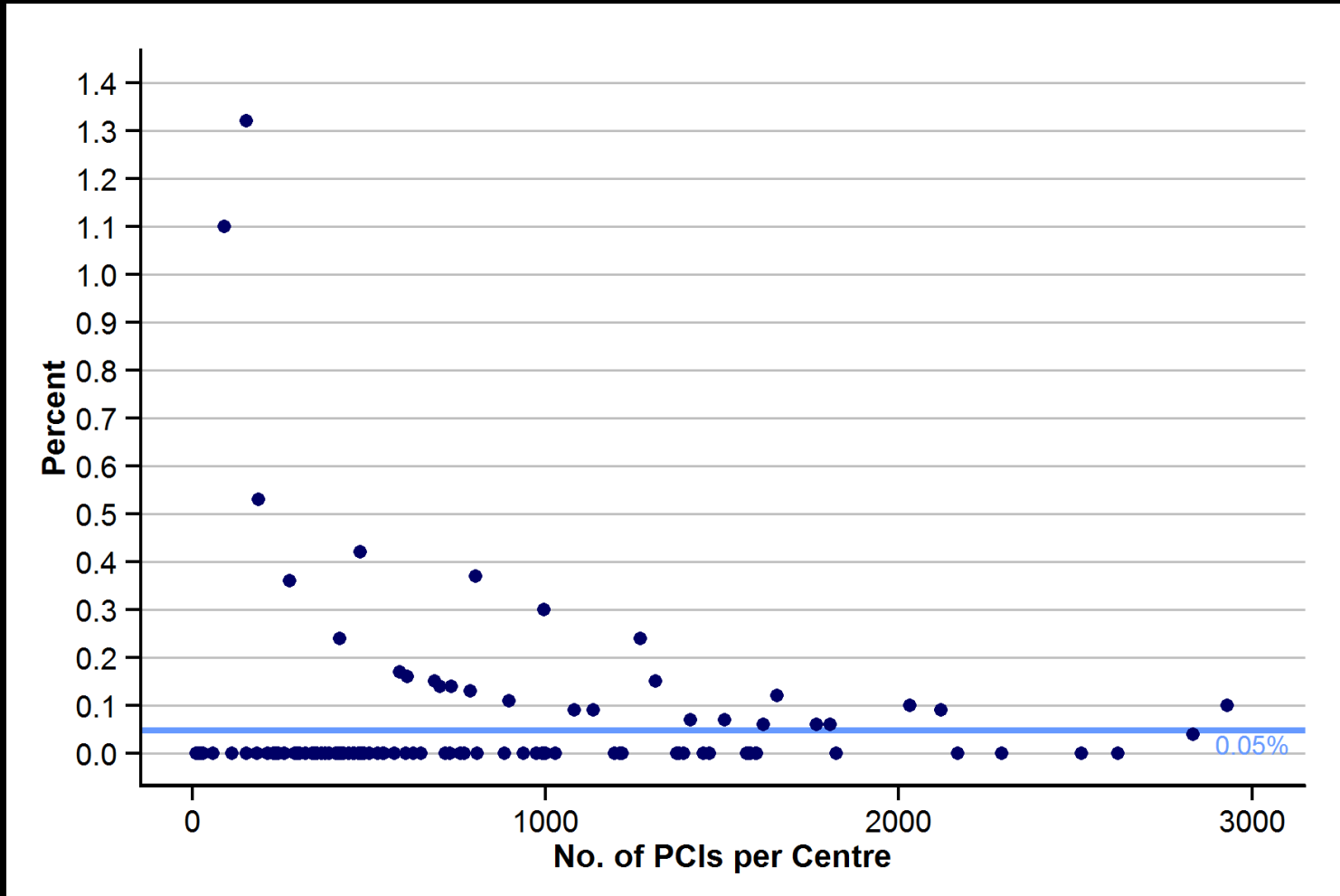


# Adverse Outcomes – CABG

- % of all cases needing emergency CABG



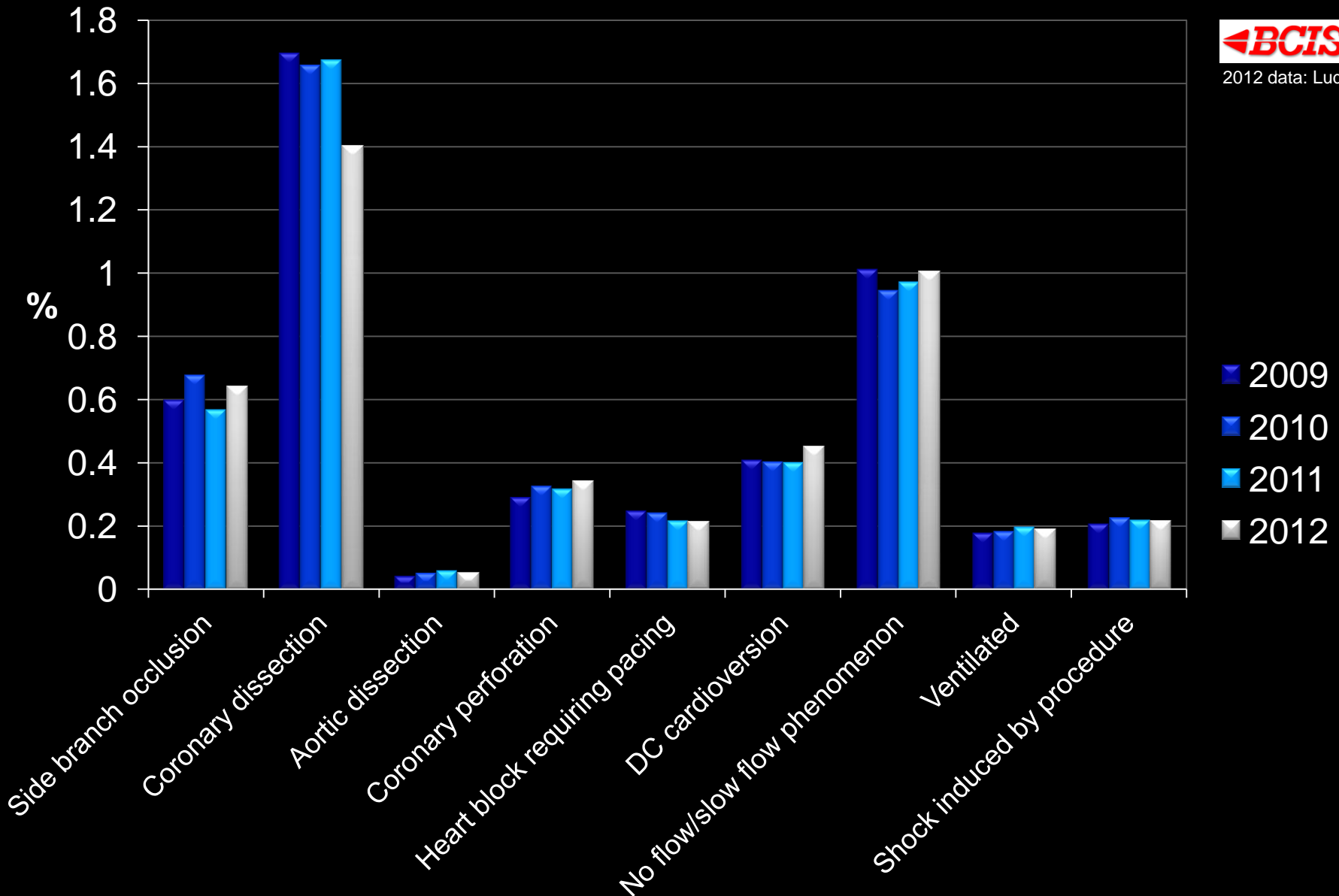
2012 data: Ludman



# Peri-procedural Complications



2012 data: Ludman

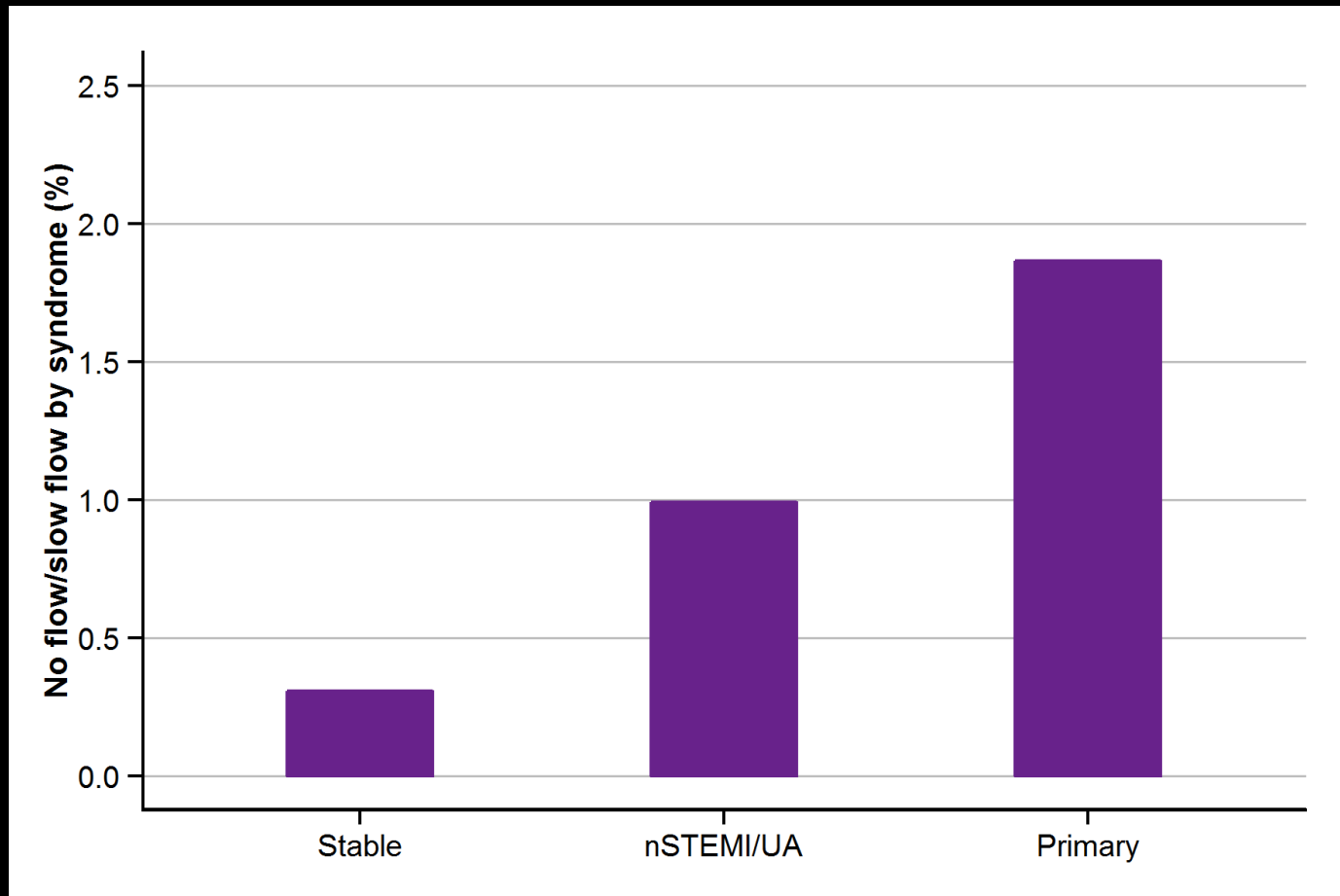


# Peri-procedural Complications



2012 data: Ludman

## No flow / Slow flow by syndrome



# Access site complications

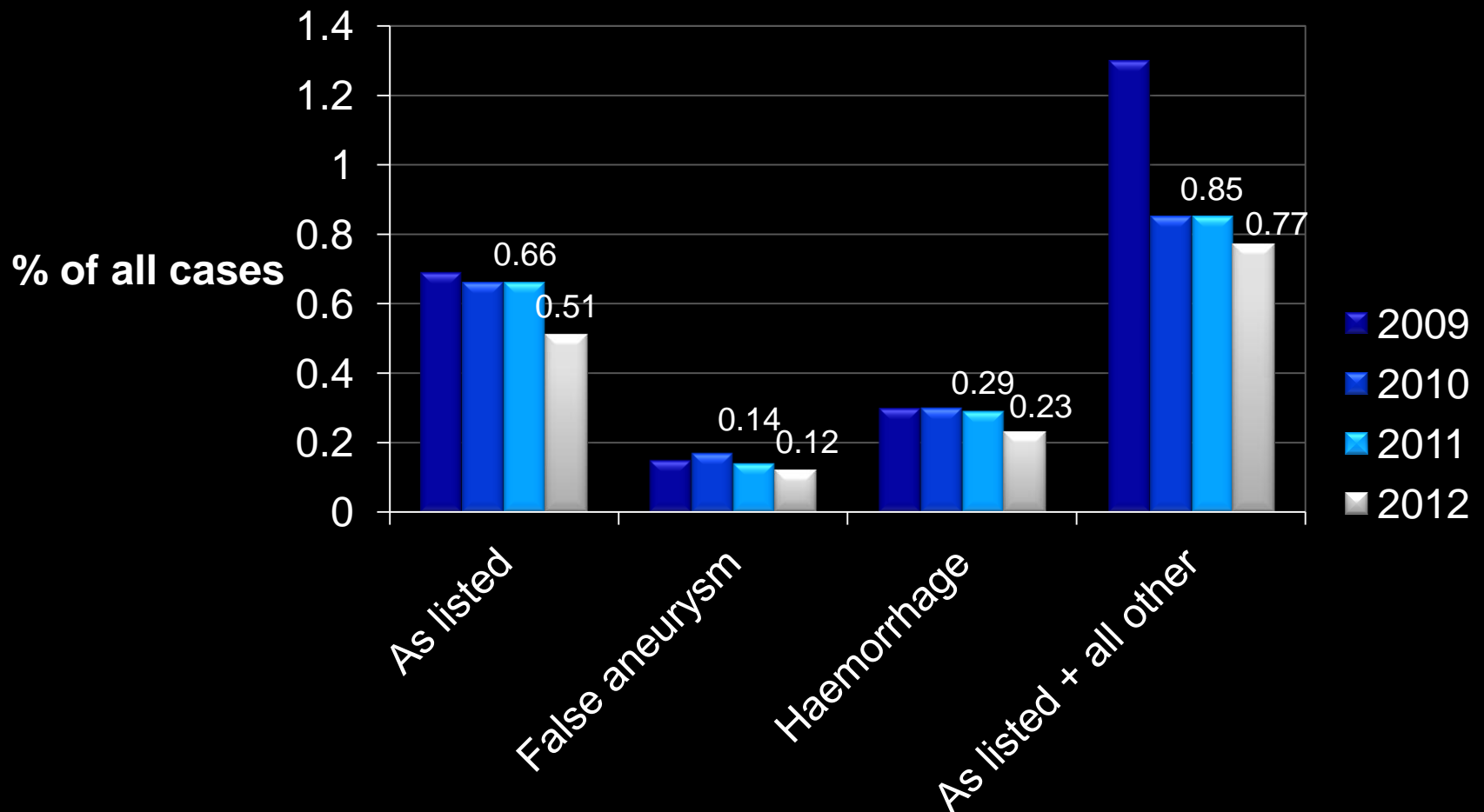
Complications to hospital Dx:

False aneurysm, haemorrhage, arterial occlusion / dissection

Any other surgical intervention



2012 data: Ludman



# Complication by Access route

Complications to hospital Dx:

False aneurysm

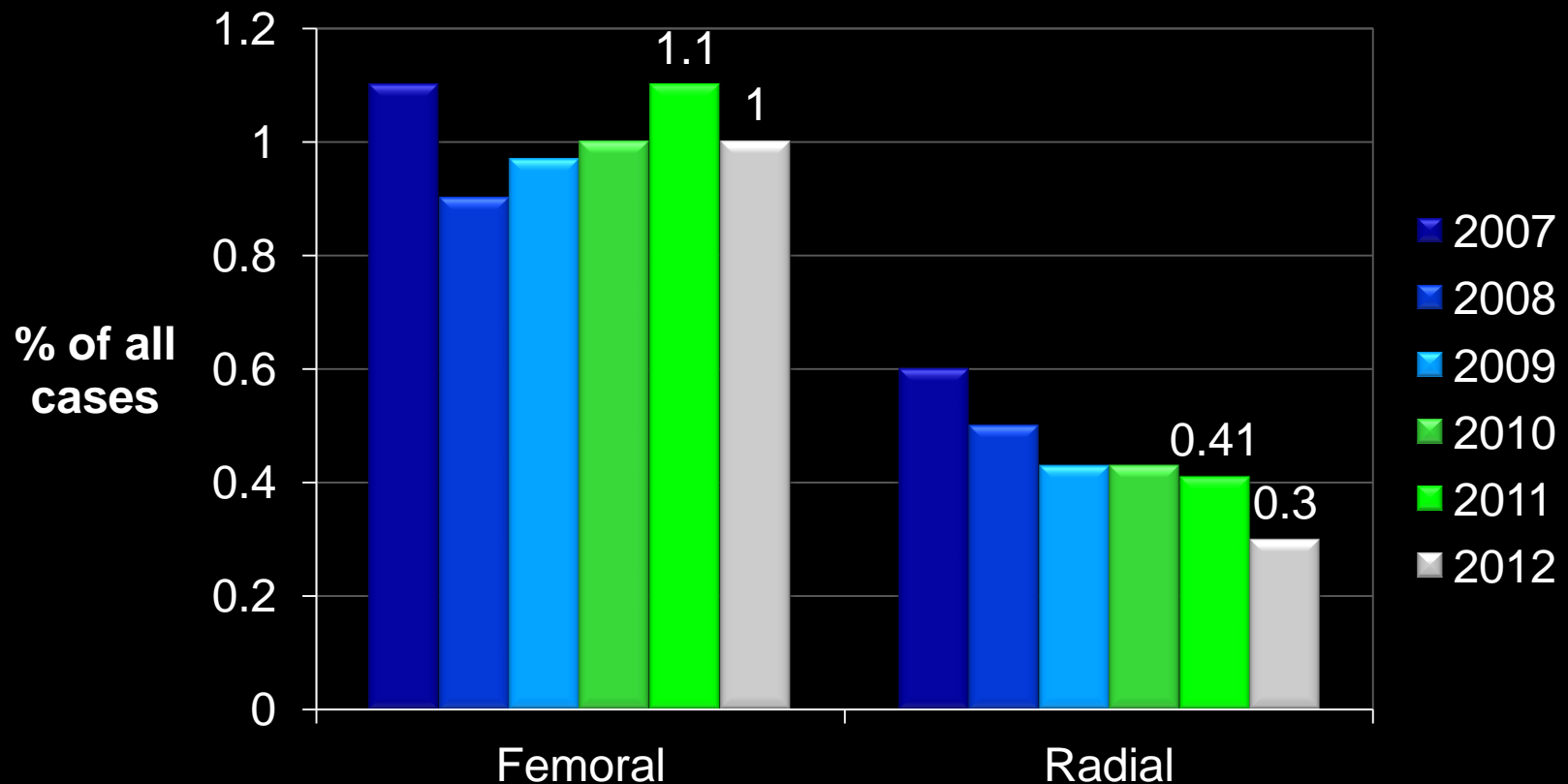
Haemorrhage (retroperitoneal, delay Dx, surgery)

Art occlusion / dissection

Any need for surgery



2012 data: Ludman

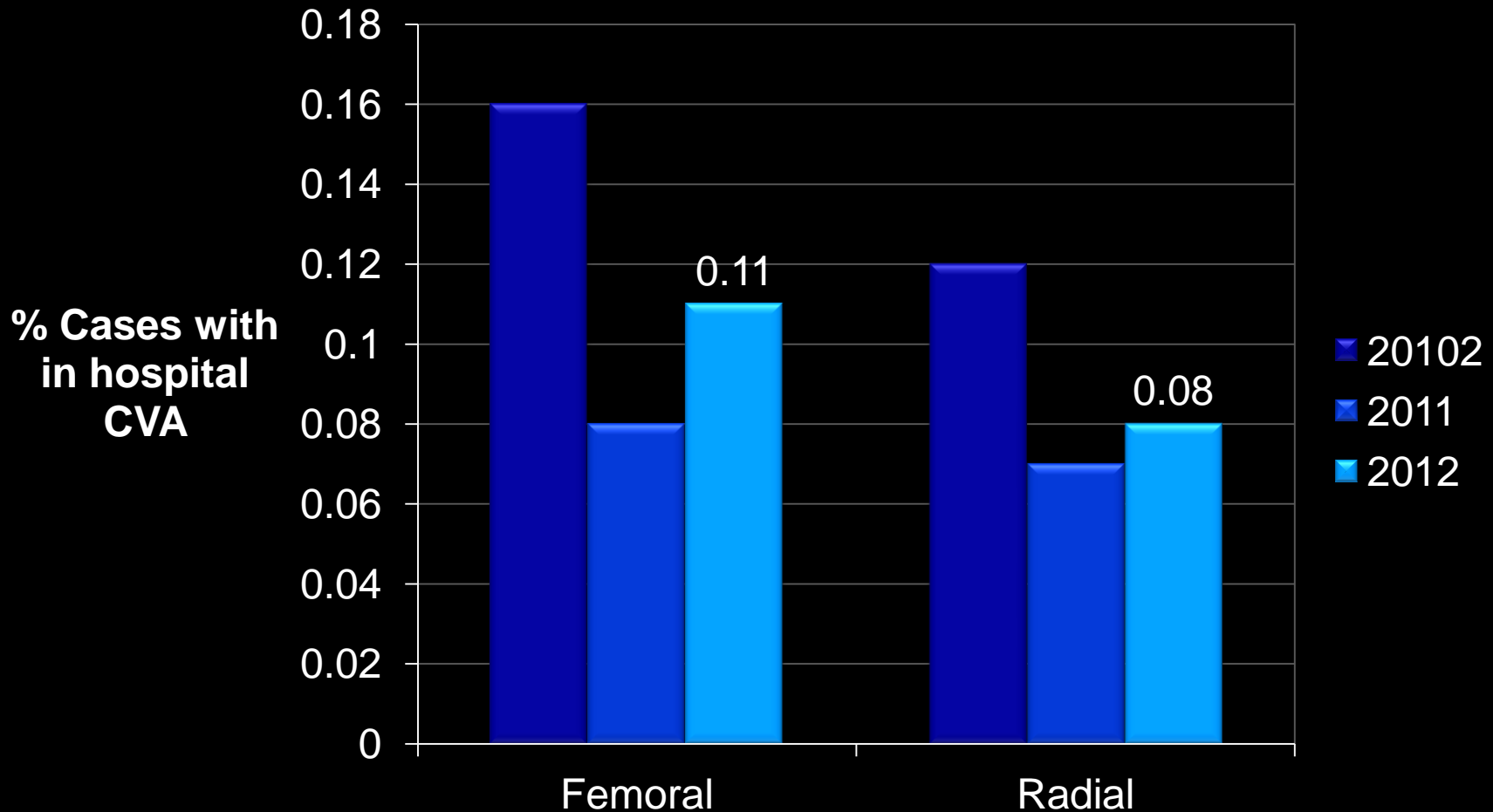


# Complication by Access route

## CVA



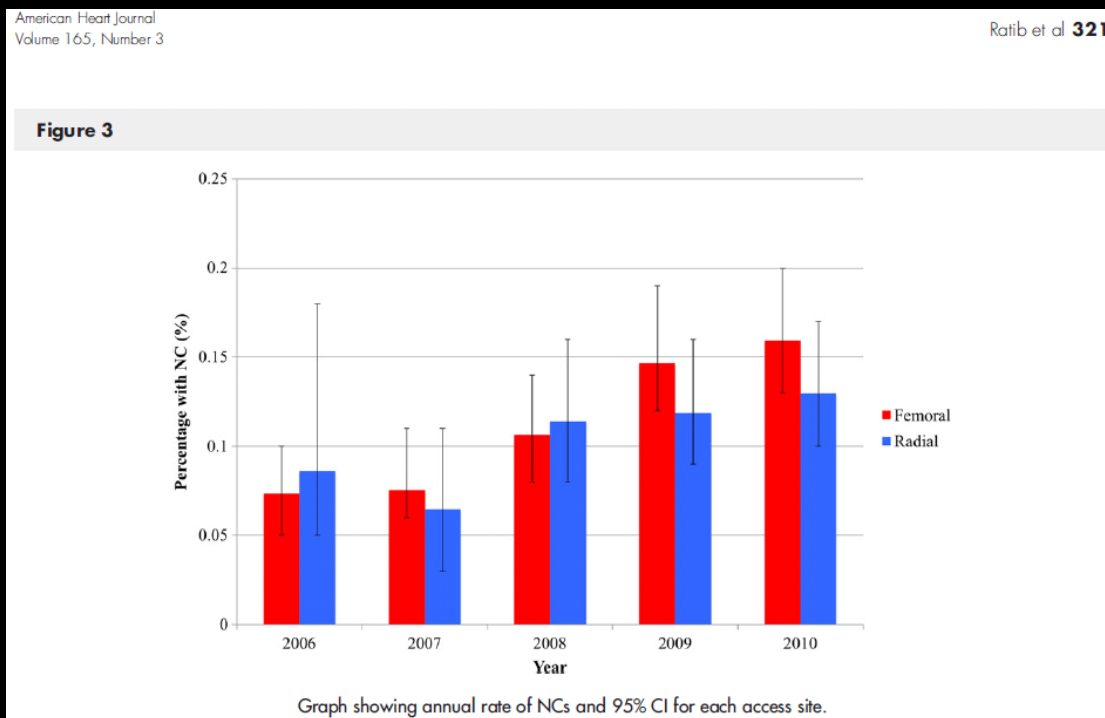
2012 data: Ludman



# Influence of access site choice on incidence of neurologic complications after percutaneous coronary intervention

Karim Ratib, MB, ChB,<sup>a,c</sup> Mamas A. Mamas, MD,<sup>b,c</sup> Helen C. Routledge, MD,<sup>c,e</sup> Peter F. Ludman, MD,<sup>d,e</sup> Douglas Fraser, MD,<sup>b,c</sup> and James Nolan, MD<sup>a,c</sup> *Stoke-on-Trent, Manchester, Worcester, and Birmingham, United Kingdom*

Ratib Am Heart J 2013;165:317

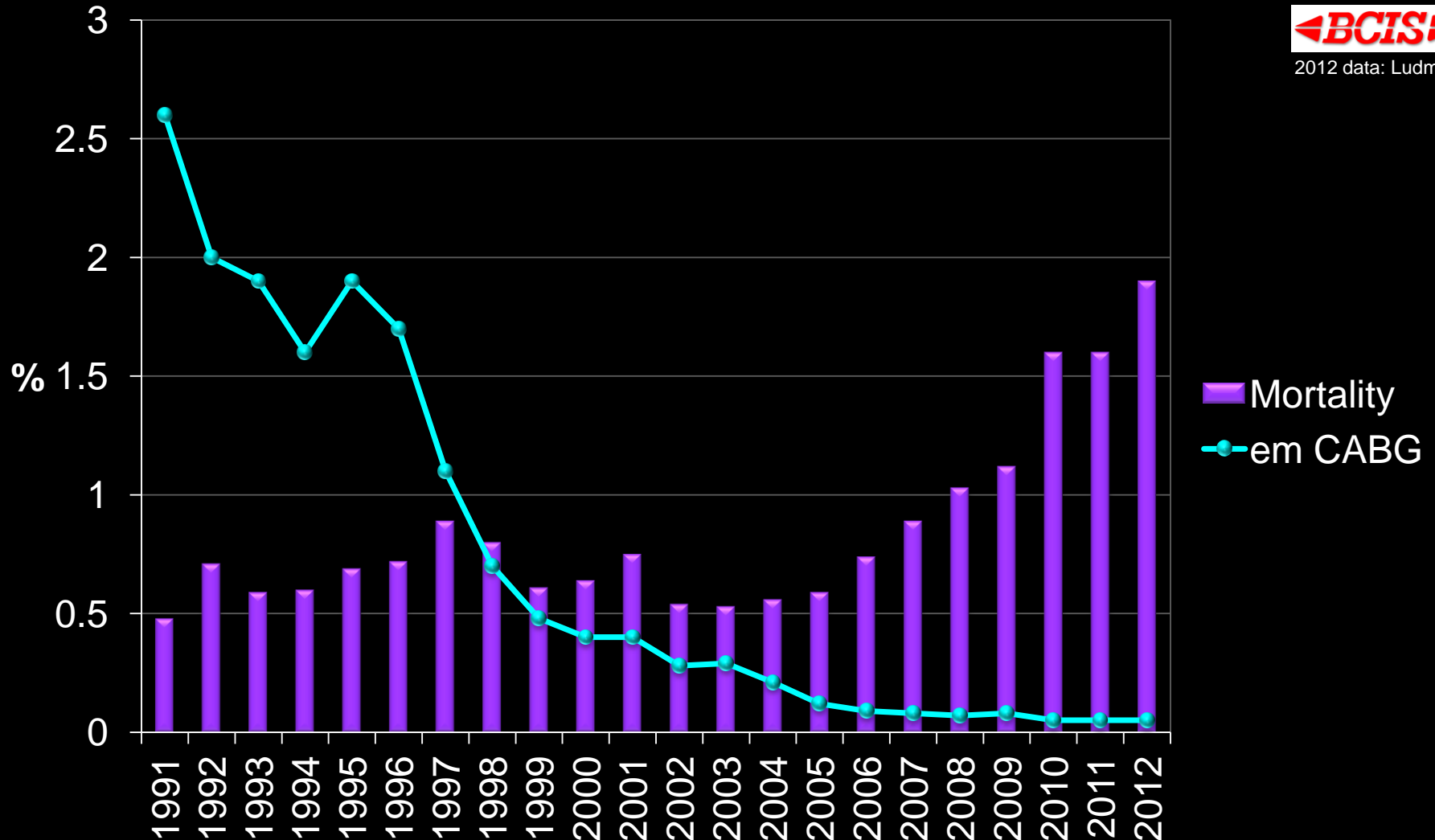


# Adverse Outcome

## Death and emergency CABG



2012 data: Ludman



# Outcome 2012



2012 data: Ludman

## Elective Patients

All as %	No. cases	Success	Partial success	Fail no comp	Re-PCI	QMI	Em CABG	CVA	Death In Hosp	Death 30/7 Track
Stable SV (no CTO)	18,867	95.0		3.0	0.15	0.11	0.04	0.03	0.09	
MV (no CTO)	5,724	92.9	5.5	1.1	0.16	0.04	0.05	0.02	0.25	
SV CTO	3,159	69.7		27.4	0.29	0.06	0.1	0	0.13	
MV CTO	967	77.5	18.4	3.2	0.21	0.10	0.10	0.10	0.62	
<b>OVERALL STABLE</b>										
All Stable	28,909	91.2		5.3	0.17	0.09	0.05	0.03	0.14	0.32

# Outcome 2012



2012 data: Ludman

All as %	No.	Success	Partial success	Fail no comp	Re-PCI	QMI	Em CABG	CVA	Death In hosp	Death 30/7 CR
NSTEMI / UA no shock	31,933	92.2	3.5	3.4	0.3	0.12	0.04	0.06	0.77	1.5
All STEMI no shock	22,520	91.5	2.6	2.8	0.6		0.05	0.19	2.8	4.0
*Primary PCI	23,698	89.2	2.6	2.8	0.5		0.05	0.2	5.2	6.4
*Rescue PCI	492	89.5	1.2	2.5	0.2		0	0.41	6.6	9.2
Shock	2,199	57.7	3.7	2.9	0.5		0.05	0.41	35.0	39.8

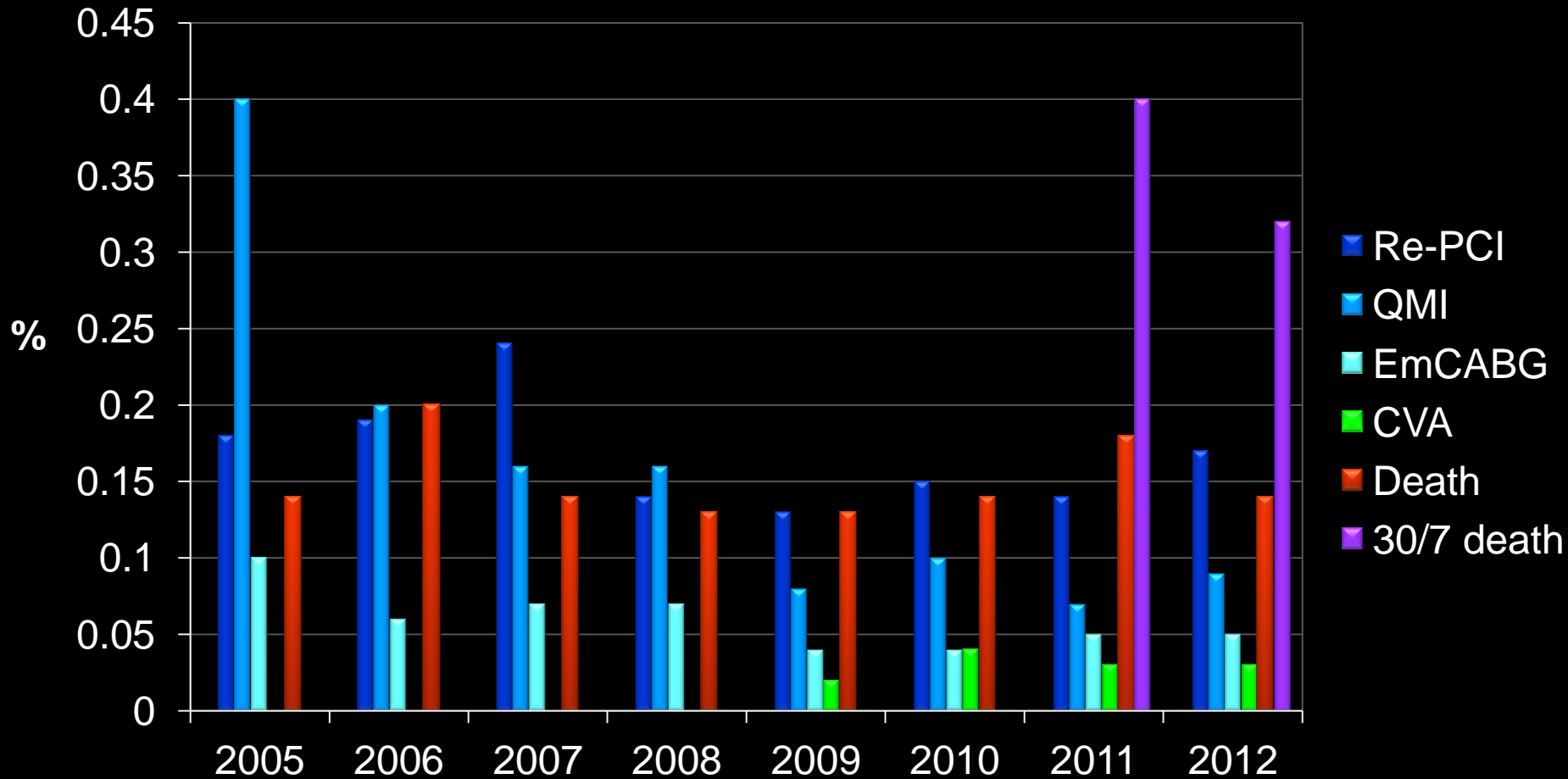
\*all PPCI (includes shock / ventilation and onset in community or in hospital)

# All Elective Stable Cases

SV no CTO, MV no CTO, SV CTO, MV CTO



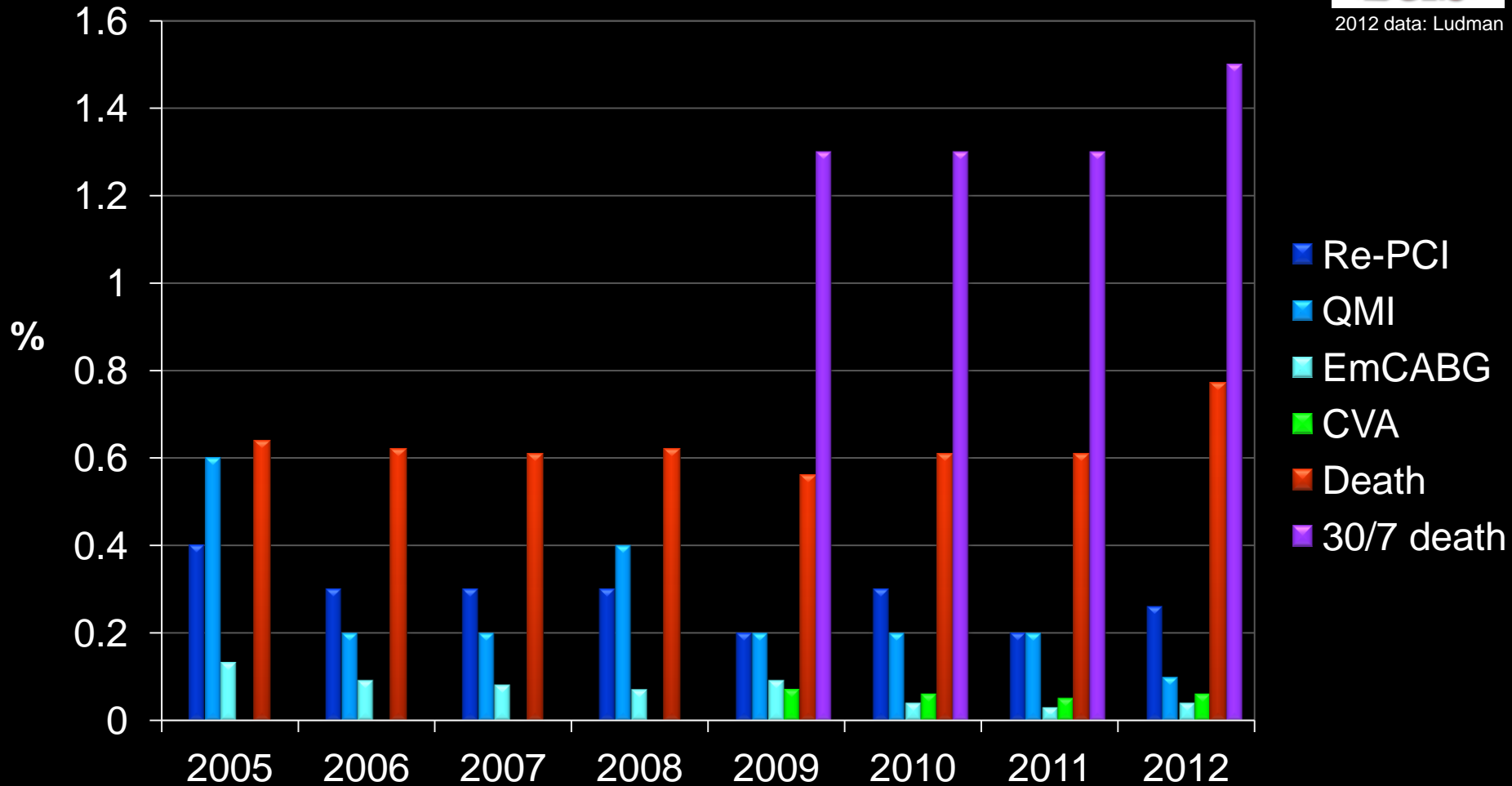
2012 data: Ludman



# NSTEMI, no Shock



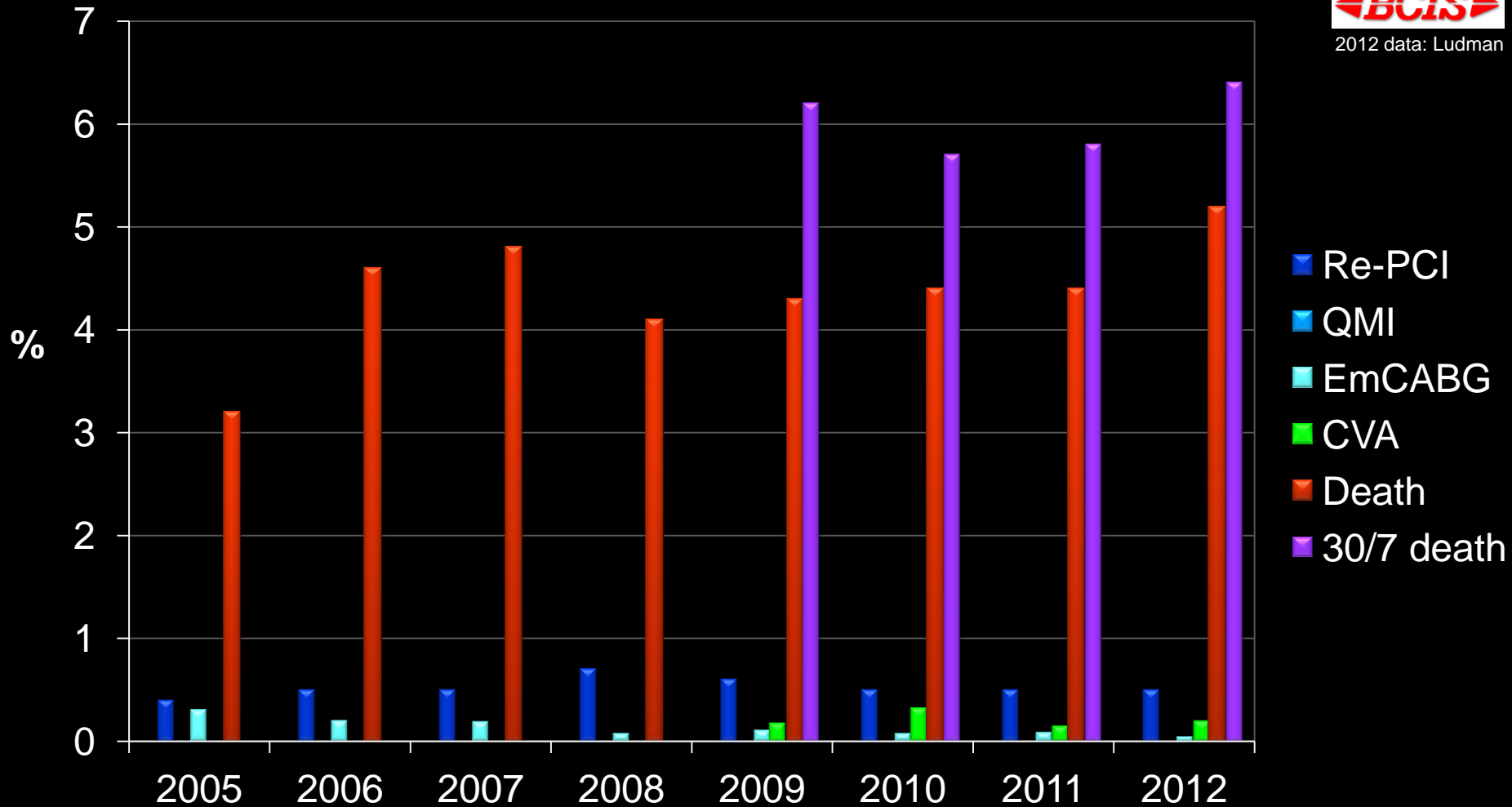
2012 data: Ludman



# All Primary PCI



2012 data: Ludman

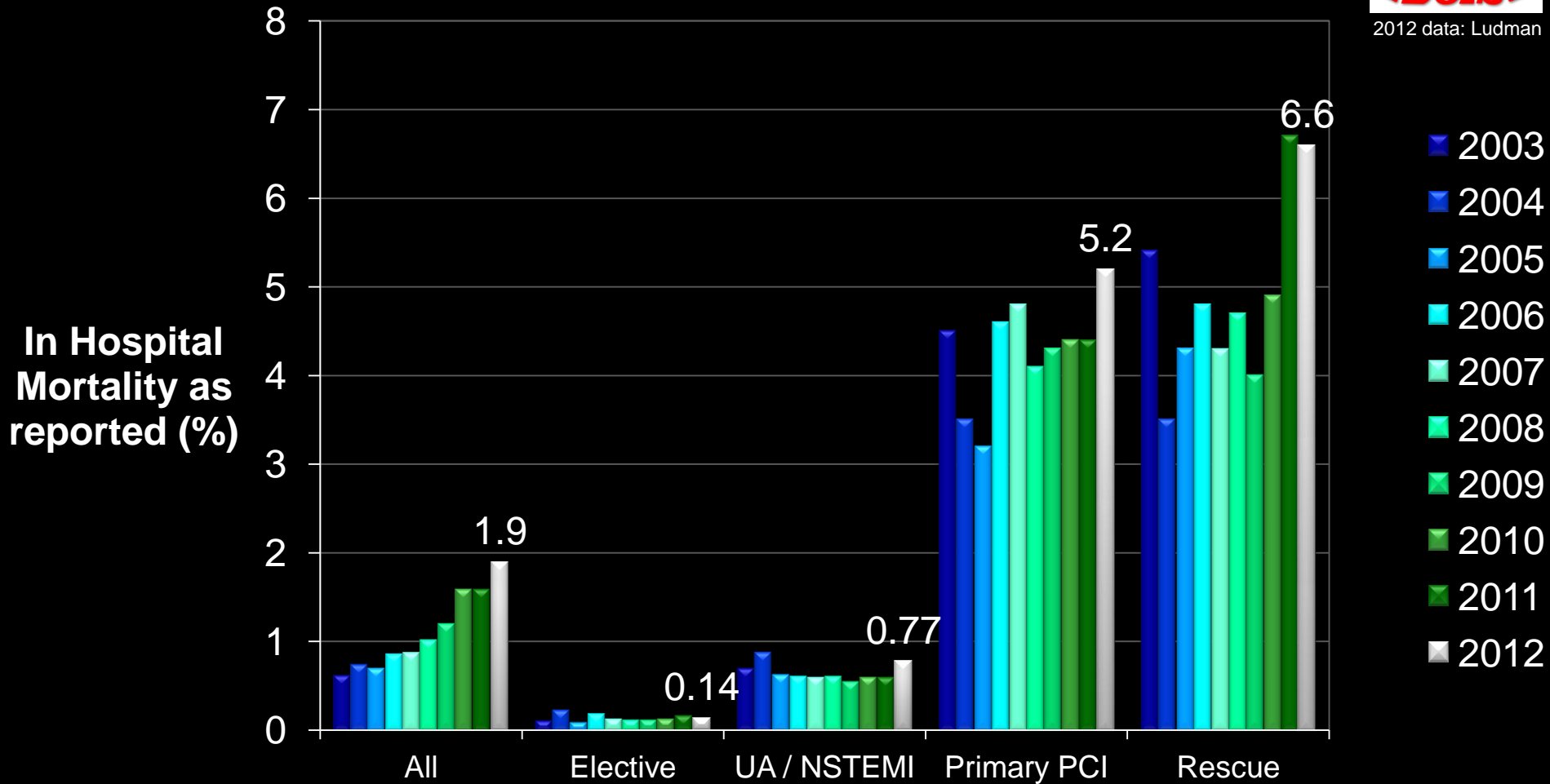


# Summary: Mortality

## Risk Stratified by Syndrome



2012 data: Ludman

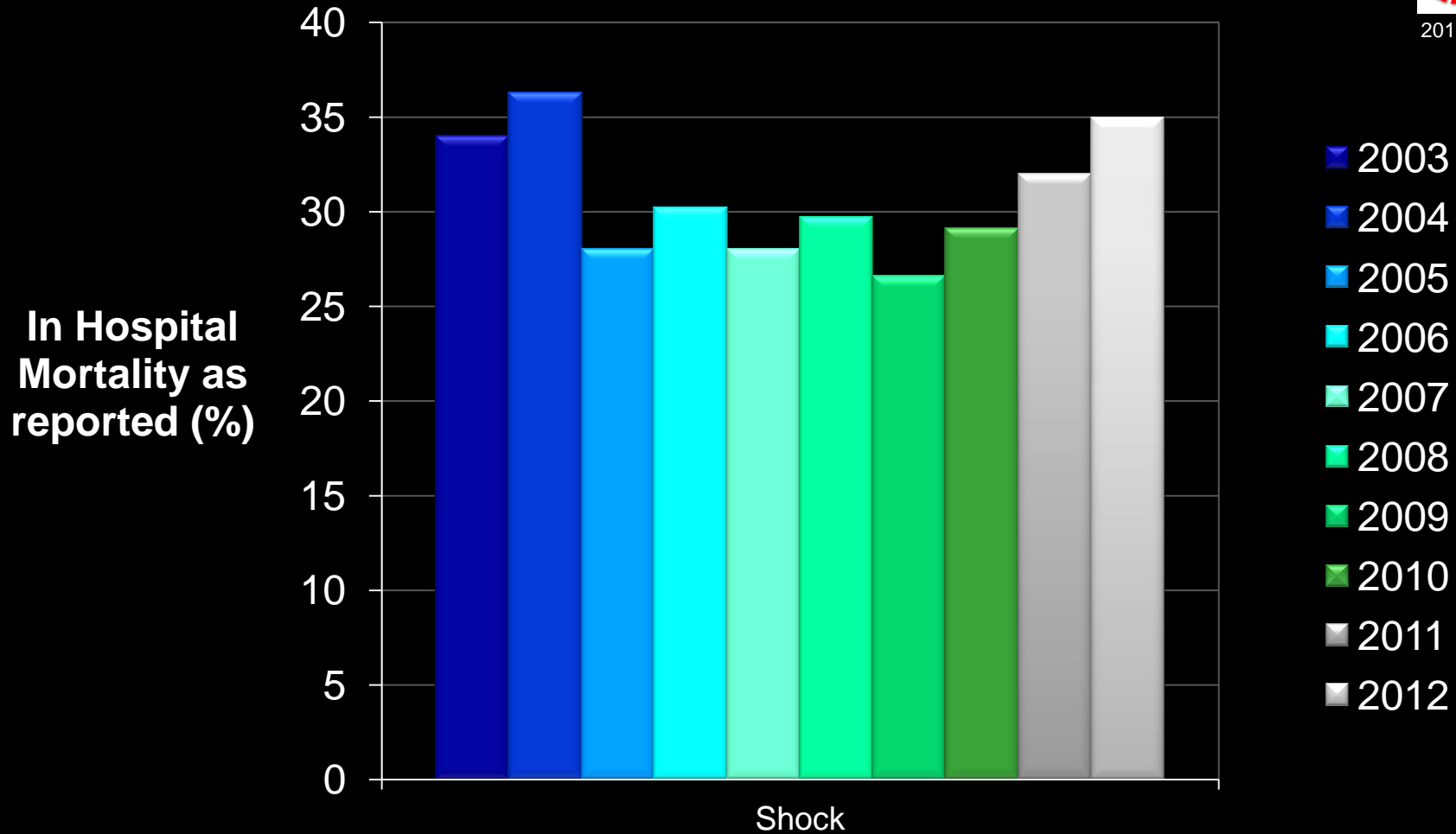


# Summary: Mortality

## Risk Stratified by Syndrome



2012 data: Ludman



# Primary PCI (shock/vent EXCLUDED)

## 30 day Tracked Mortality

---



2012 data: Ludman

Due to delay in linking the BCIS dataset with the ONS tracked data this year, the analysis in this slide is awaiting validation. It will be available in the near future

# Primary PCI - Direct admission

(excl shock/vent)

---



2012 data: Ludman

Due to delay in linking the BCIS dataset with the ONS tracked data this year, the analysis in this slide is awaiting validation. It will be available in the near future

# Primary PCI (shock/vent INCLUDED)

## 30 day Tracked Mortality

---



2012 data: Ludman

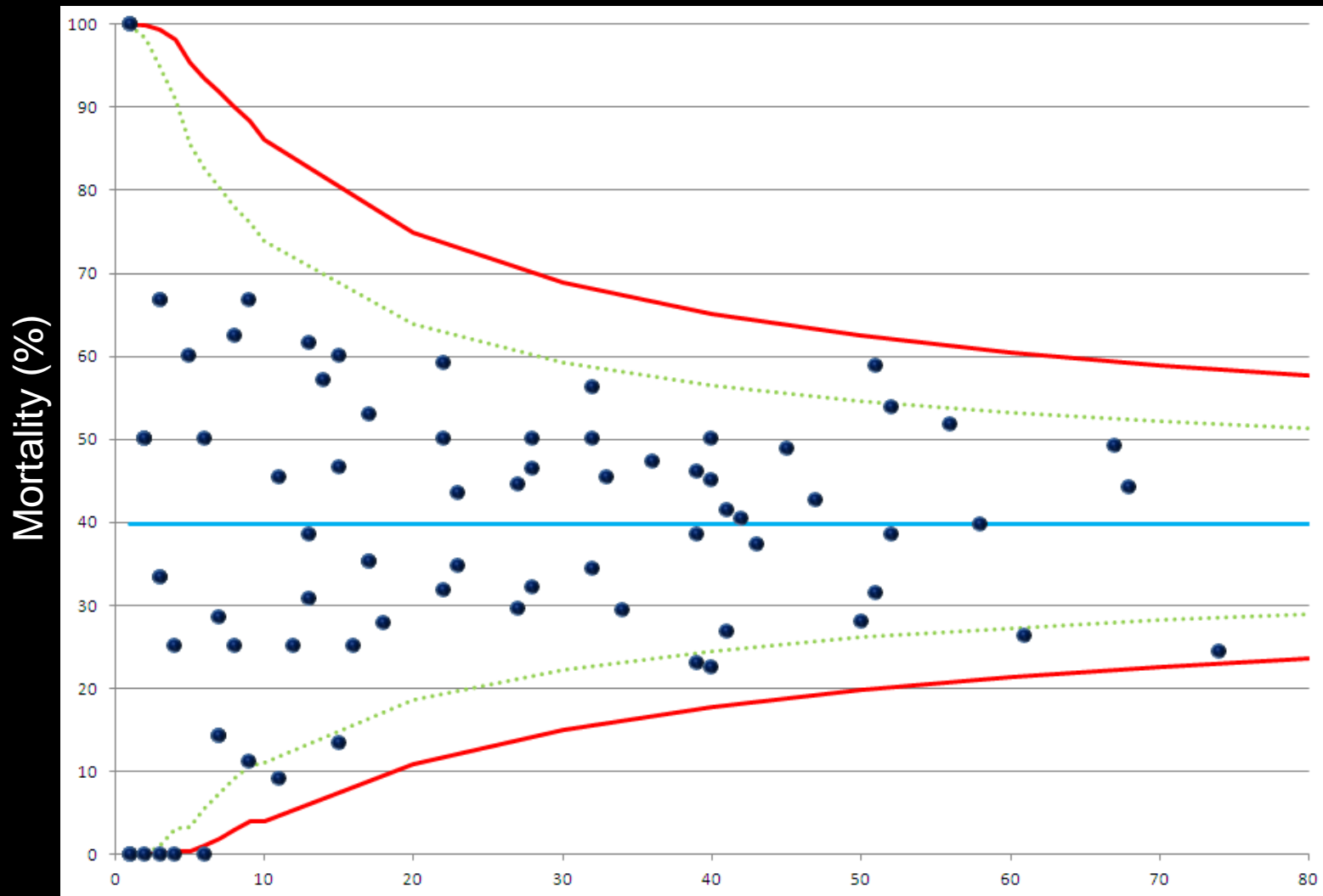
Due to delay in linking the BCIS dataset with the ONS tracked data this year, the analysis in this slide is awaiting validation. It will be available in the near future

# Cardiogenic Shock

## 30/7 Tracked Mortality by Centre



2012 data: Ludman



39.7 %

Number of All PCI Procedures in Shock



# Bypass grafts

## PCI of SVG and Arterial



2012 data: Ludman

All as %	No.	Success	Partial success	Fail no comp	Re-PCI	QMI	Em CABG	In Hosp Death	30/7 Death (CR)
2006	1486	91.6	3.2	3.8	0.1	0.27	0	1.2	
2007	5008	89.6	2.6	6.8	0.2	0.18	0	0.90	
2008	4308*	91.0	3.2	5.2	0.3	0.16	0.02	0.56	
2009	2506	88.9	3.8	6.0	0.2	0.2	0	1.3	1.7
2010	2645	89.3	2.6	5.4	0.2	0.2	0	0.95	1.5
2011	2802	87.8	3.7	6.7	0.5	0.4	0	1.4	2.7
2012	2956	88.8	4.7	4.6	0.2	0.07	0.07	1.8	2.5

\*Centre x = 1860 of 2111 cases in 2008

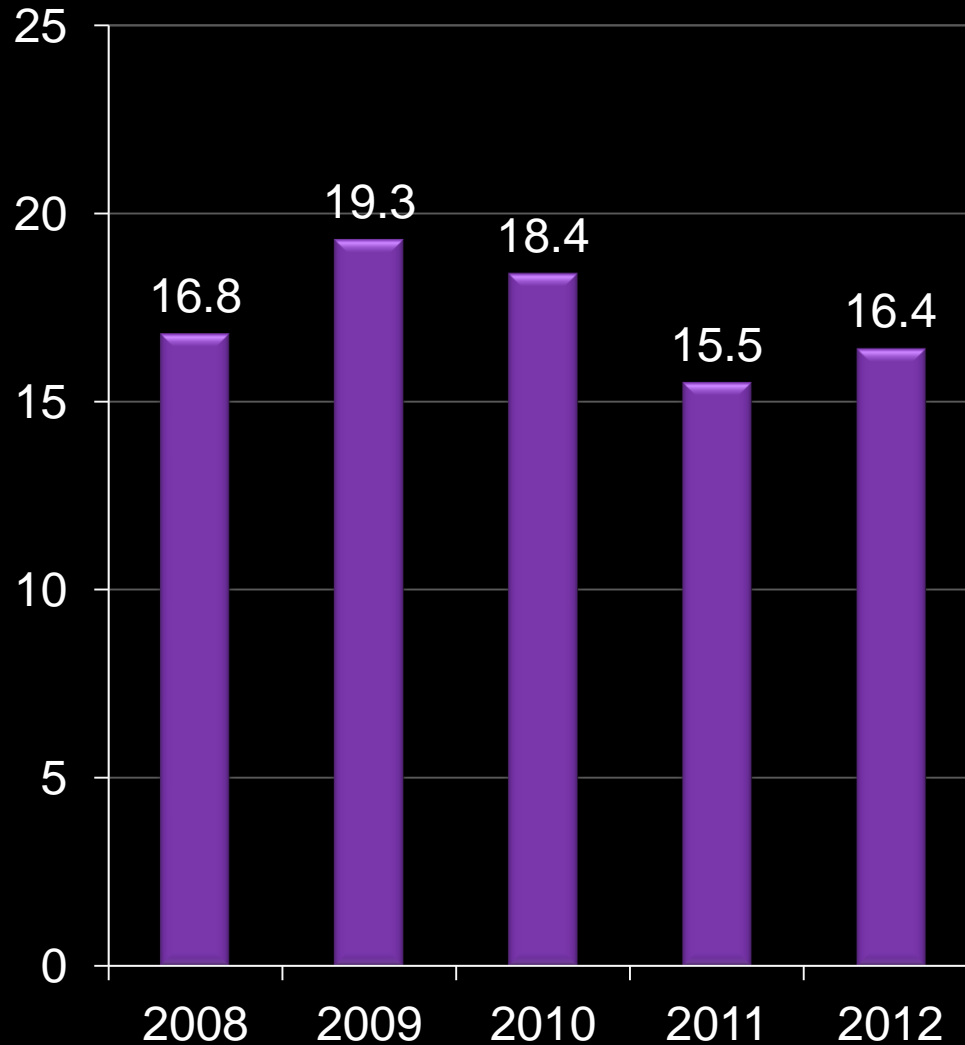
# Bypass Grafts

(all types - SVG and IMA etc)



2012 data: Ludman

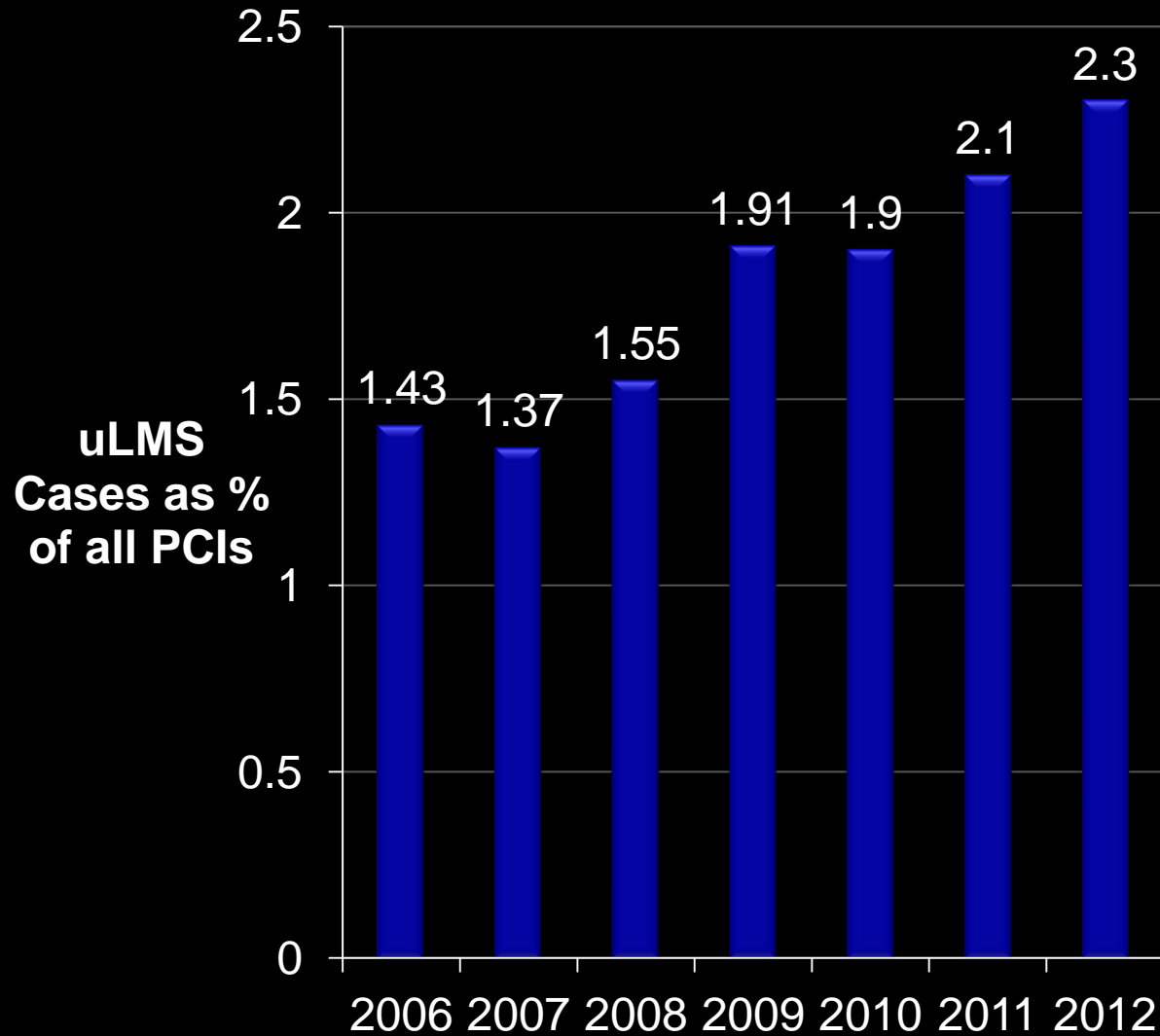
**Grafts  
treated  
using distal  
protection  
as % of all  
grafts  
treated**



# Unprotected LMS



2012data: Ludman



# Unprotected LMS

## Including Shock and STEMI



2012 data: Ludman

All as %	No.	Success	Partial success	Fail no comp	Re- PCI	QMI	Em CABG	In Hosp Death	Death 30/7 (CR)
2006	583	86.8	4.5	0.9	0.3	0.51	0.17	7.0	
2007	842	83.8	7.4	2.6	0.1	0.48	0.7	7.0	
2008	1084	83.9	5.3	2.6	0.6	0.46	0.5	8.0	
2009	1462	84.9	4.0	3.4	0.3	0.27	0.31	7.5	9.2
2010	1516	85.3	4.1	2.2	0.5	0.13	0.07	8.0	9.6
2011	2009	86.0	3.9	2.3	0.3	0.4	0.20	7.4	10.0
2012	2398	85.3	4.8	1.3	0.4	0.2	0.08	8.2	11

# Chronic Total Occlusion

## Stable only



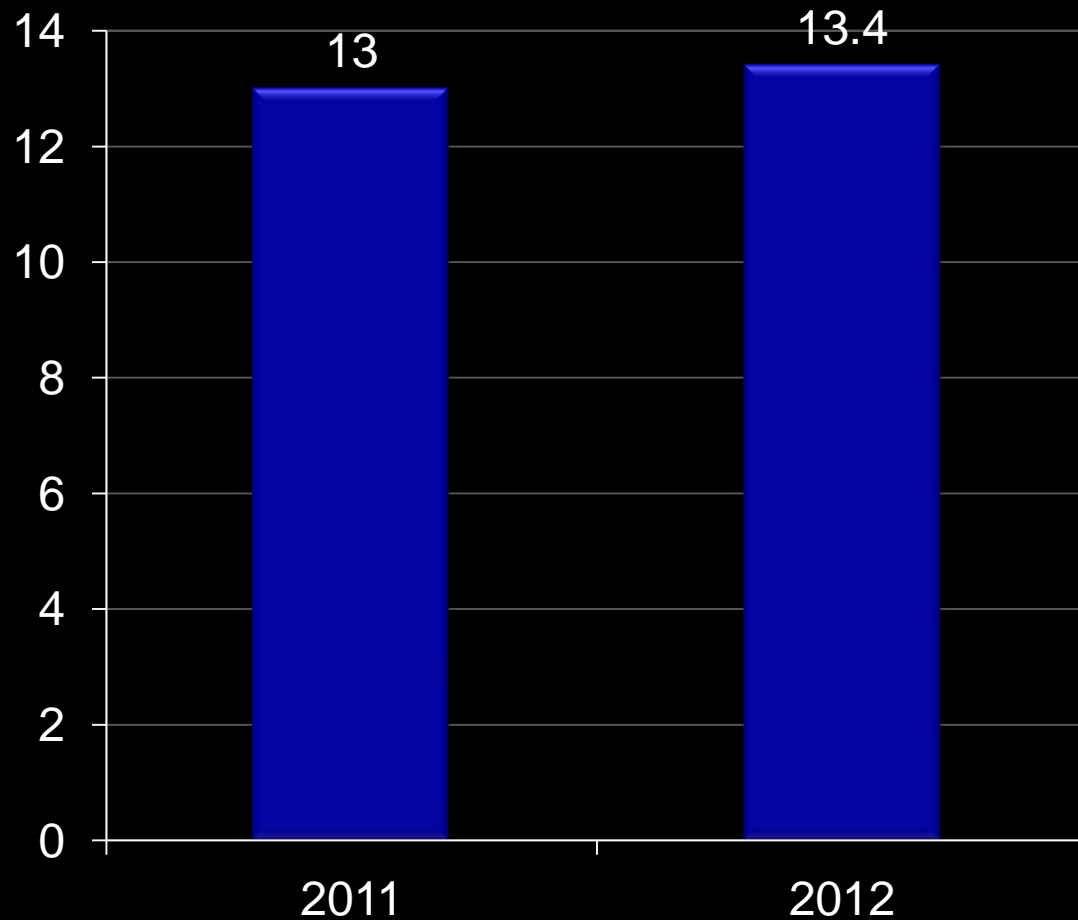
2012 data: Ludman

All as %	No.	Success	Partial success	Fail no comp	Re- PCI	QMI	Em CABG	In Hosp Death	Death 30/7 (CR)
2011	4069	69.8	6.1	22.3	0.1	0.03	0.05	0.25	0.42
2012	4273	71.4	6.23	21.2	0.3	0.07	0.09	0.23	0.44

# Chronic Total Occlusion

## Stable only

Number of  
CTO cases  
as % of all  
PCI for  
stable  
coronary  
syndromes



# Risk Adjusted Outcome



# Everyone Counts

- 17<sup>th</sup> December 2012

**NHS**  
Commissioning Board

**EVERYONE COUNTS:  
PLANNING FOR  
PATIENTS 2013/14**

**1** NHS SERVICES  
7 DAYS  
A WEEK  
SUNDAY  
*every day  
health service*

**2** MORE  
TRANSPARENCY  
MORE CHOICE

**3** MORE PATIENT  
PARTICIPATION  
AND  
BETTER  
CUSTOMER SERVICE

**4** BETTER  
DATA  
+  
INFORMED  
COMMISSIONING  
IMPROVED  
OUTCOMES

**5** HIGHER  
STANDARDS  
#1  
SAFER CARE

**THE NHS  
CONSTITUTION**  
The NHS belongs to us all

## OFFER 2: MORE TRANSPARENCY, MORE CHOICE

1.16 It is critical that patients and commissioners understand the quality of services being delivered within hospitals and other healthcare settings. To enable

this, with oversight from our National Medical Director, the Healthcare Quality Improvement Partnership (HQIP)<sup>5</sup> will develop methodologies for casemix comparison and, in conjunction with NHS Choices, publish activity, clinical quality measures and survival rates from national clinical audits for every consultant practising in the following specialties:

- adult cardiac surgery;
- interventional cardiology;
- vascular surgery;
- upper gastro-intestinal surgery;
- colorectal surgery;
- orthopaedic surgery;
- bariatric surgery;
- urological surgery;
- head and neck surgery; and
- thyroid and endocrine surgery.



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## BCIS Autumn Meeting 2013

**BCIS AUTUMN MEETING**...*hosted by Cambridge*

**Friday 4th October 2013**  
**Cambridge City Hotel, Cambridge, UK**



[www.bcis.org.uk](http://www.bcis.org.uk)



Friday 4th October 2013, Cambridge City Hotel, Cambridge.

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## Patient Information (cont)

### 2. Number of Procedures Split by Clinical Syndrome

Number of Procedures Split by Clinical Syndrome (link to help file):

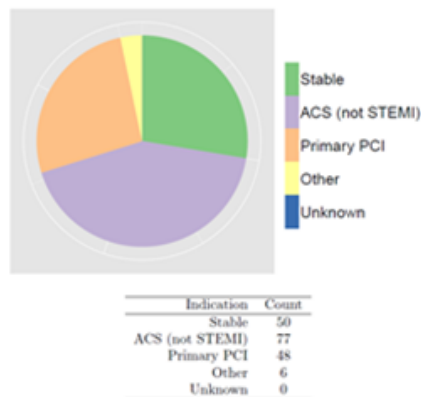


Figure: example of operator data

Patients need PCI for a variety of different reasons called 'syndromes' and these are called the 'Indications for PCI'. The indications for PCI in each operator's practice are shown. Below is an explanation of each of these indications.

#### a) Stable:

Stable angina occurs when a coronary artery becomes progressively narrowed and blood supply to the heart muscle becomes

# New web pages 'Information for Patients'



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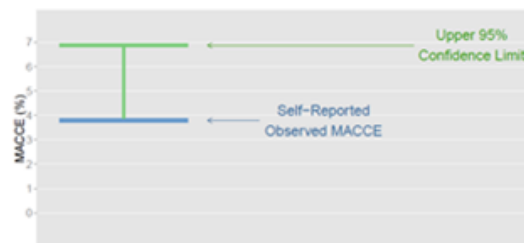
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## Patient information (cont)

### 3. Risk adjusted MACCE

Major Adverse Cardiac and Cerebrovascular Event (MACCE) Rate (link to help file):



	Rate Per 100 Procedures
Self-Reported Observed MACCE	3.87
Upper 95% Confidence Limit	6.87

Figure: Example of operator data. Provided that the blue 'self reported MACCE' line is below the the green 'Upper 95% Confidence Limit' (as in this example) then there is no concern about the observed MACCE rates. No other conclusions or comparisons can be drawn from these data

MACCE stands for major adverse cerebrovascular or cardiovascular event. It includes death, stroke, myocardial infarction caused by PCI and the need for emergency cardiac surgery because of a complication of PCI. In this analysis events up to the time of hospital discharge are included.

A patient's outcome free from MACCE is dependent on several interacting factors which include the general well being of the patient, death, the severity of the coronary artery condition, and the time taken to receive medical treatment, the skills of the medical team, and the quality of the medical care.

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#### Lister Hospital

East England

#### Norfolk and Norwich University Hospital

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#### Papworth Hospital

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#### Watford General Hospital

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## Individual operator information

### Papworth Hospital

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#### East England

Number of eligible PCI operators: **10**

[Denise Braganza](#)

[Sarah Clarke](#)

[John Cooper](#)

[Cameron Densem](#)

[Stephen Hoole](#)

[Duncan McNab](#)

[Michael O'Sullivan](#)

[Peter Schofield](#)

[Leonard Shapiro](#)

[Nick West](#)

### Patient Area



British Cardiovascular Intervention Society

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[Which operators are included](#)

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[Total numbers](#)

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### Individual operator information

#### Papworth Hospital

East England

Click



Number of eligible operators: 10

[Denise Braganza](#)

[Sarah Clarke](#)

[John Cooper](#)

[Cameron Densem](#)

[Stephen Hoole](#)

[Duncan McNab](#)

[Michael O'Sullivan](#)

[Peter Schofield](#)

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[View all hospitals](#)

### Patient Area

# NWQIP Model

---

Patient	Setting	Predicted MACCE %
61 yr male	Elective	0.64
61 yr male	NSTEMI	1.03
61 yr male	PPCI for STEMI	2.47
61 yr male	PPCI for STEMI with shock	39.86
61 yr male	PPCI for STEMI with shock and LMS PCI	77.53

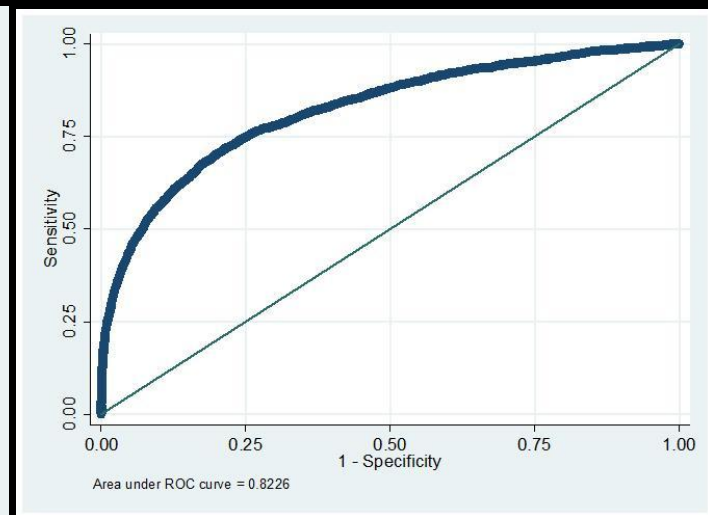
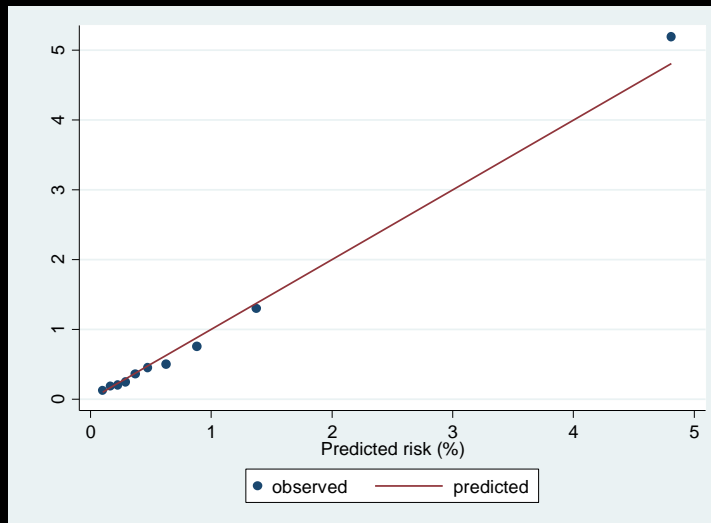
But.....

Previous era

Out of hospital arrest not included

# Risk Models

- New Model
  - 1 or 2 models? (split pPCI)
  - Pre-procedural ventilation as surrogate for OOHA



H-L p val	0.0005
ROC area	0.8226

# Dataset Changes

- Dataset updates for 2013 data collection

Ventilation	Pick most appropriate option to describe clinical scenario
	0 None
	1 Ventilated before PCI: Established - Intensive care patient
	2 Ventilated before PCI: Established - Patient from other GA intervention
	3 Ventilated before PCI: Acute - following arrest event – initiated before arrival to PCI team
	4 Ventilated before PCI: Acute - following arrest event – initiated by PCI team
	5 Ventilated during PCI: Acute – after start of PCI procedure
	6 Ventilated after PCI: Acute – after completion of PCI procedure
	9 Not applicable

Arterial blood gas on arrival in cath lab	pH
	Lactate
	Base excess

Glasgow Coma Scale on arrival in cath lab	0-15
---	------

Therapeutic Hypothermia	0. None
	1. Femoral vein catheter
	2. Cold intravenous fluid
	3. Nasal
	4. External cooling pads / blankets / wraps
	5. Cooling caps
	8. Other
	if other enter value

# Dataset Changes

- Dataset updates for 2013 data collection

Stent thrombosis as stand alone field	
PCI for stent thrombosis	0 No
	1 Yes - acute
	2 Yes - late
	3 Yes - very late
Circulatory support <span style="float: right;">existing field 3.24</span>	
additions to library in red	
	0 None
	1 Inotropes
	2 IABP
	3 CPS
	4 Impella
	5 Lucas
	6 Autopulse
	7 ECMO
	99 Unlisted

# Public Reports for 2014 (2013 data)

---

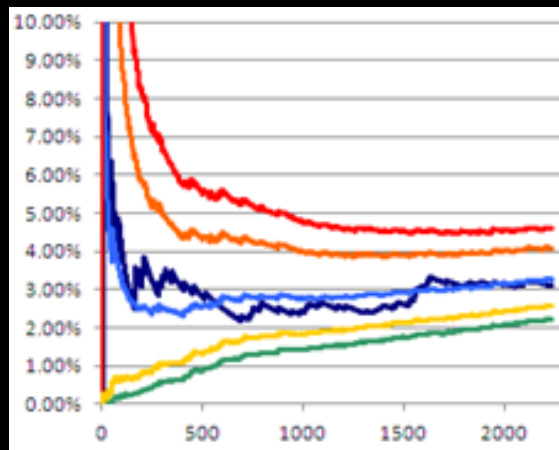
## Provisional plans:

- Total activity by presenting syndrome
  - to include numbers of cases of shock and OOHA
- Risk adjusted outcomes with 30 day mortality model
  - Test model in shock and OOHA
  - If inadequate – exclude cases from risk adjusted reports
- Consider
  - personal DTB times
  - Number of Interventional diagnostic procedures

# Appraisal / Revalidation Reports

---

- Personal log based on GMC number to generate personal reports
  - Complex breakdown of clinical activity including mortality tracked outcomes
  - Cumulative funnel plots of risk adjusted MACCE
  - Roll out to start October 2013

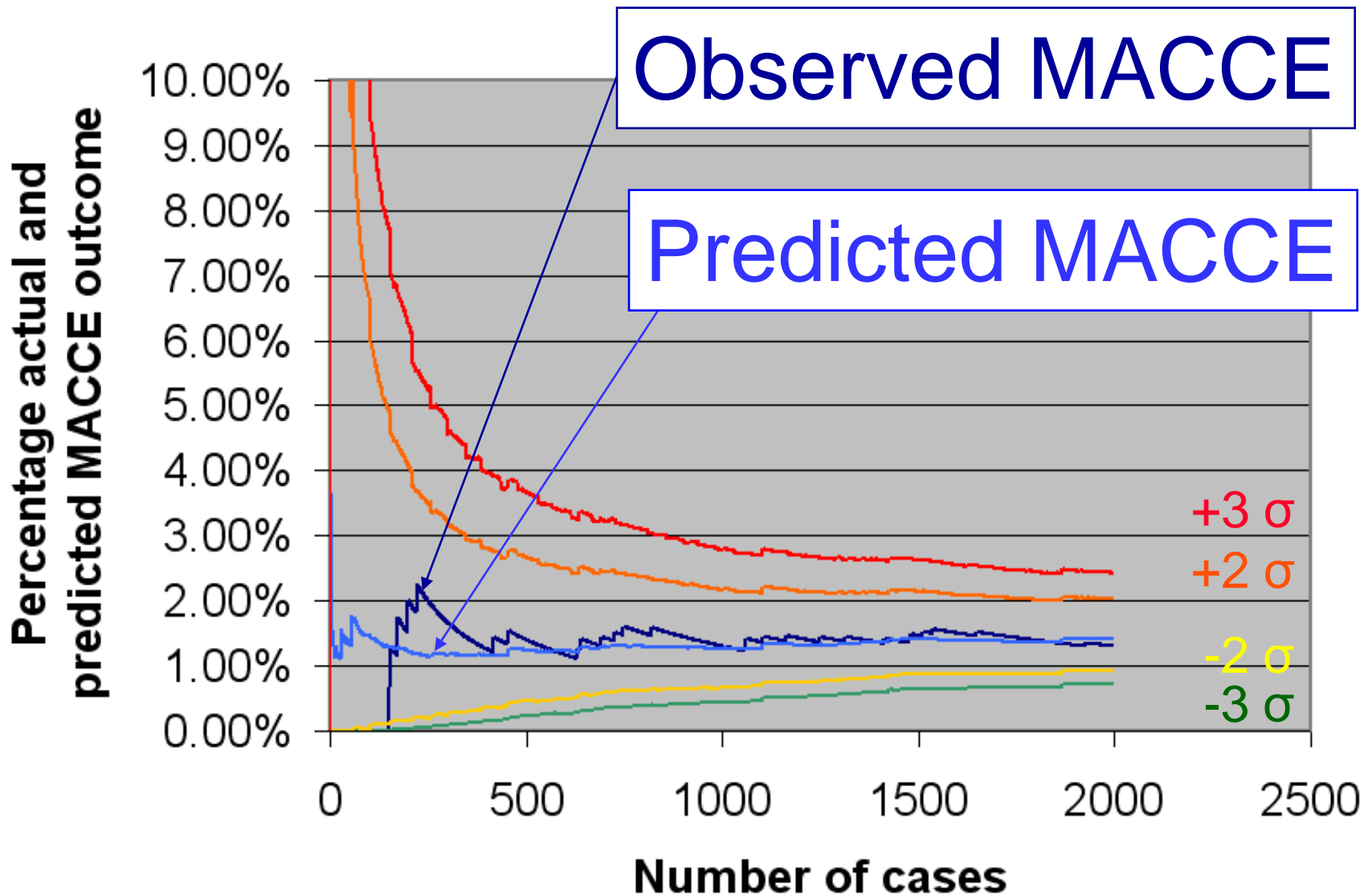


# Inclusion of Interventional Diagnostic Procedures in Data collection

---

- "A **percutaneous coronary intervention (PCI)** is deemed to have taken place if any coronary device approaches, probes or crosses one or more coronary lesions, with the intention of performing a coronary intervention. Usually this device will be a guide wire. The only exception to this will be patients who have an adverse cardiac event (during an attempted PCI) that necessitates procedure termination prior to the introduction of a coronary device. This rare type of case will also be defined as a PCI and therefore this will classify as a complication."
- An **Interventional Diagnostic Procedure** is defined as invasive coronary angiography with the use of adjunctive invasive diagnostic equipment such that a coronary device approaches, probes or crosses one or more coronary lesions (including - but not limited to – a pressure wire, intravascular ultrasound and swept laser imaging), before the intention to treat by mechanical revascularisation has been decided. Interventional diagnostic cases should be performed by interventional cardiologists in intervention capable centres.

# NWQIP Model



# Outcome

## MACCE for 2010, 2011 and 2012

---

After all PCIs for 2010, 2011 and 2012

Risk Adjusted MACCE (for unit x) =

$$\text{Observed MACCE (all UK cases)} \times \frac{\text{Observed MACCE (for unit x)}}{\text{Predicted MACCE}}$$

# Risk Adjusted Outcome

---

- 3 year overall 'Spiegelhalter' funnel
  - Individual cumulative funnels
- 1 year overall 'Spiegelhalter' funnel
  - Individual cumulative funnels

# BCIS Data Monitoring and Analysis Group DMAG

- Development of analyses of audit data
- > 30 studies on going
  - details on BCIS web site
- Use of audit data for research

Applications from NICOR web site [www.ucl.ac.uk/nicor](http://www.ucl.ac.uk/nicor)



The screenshot displays the NICOR website interface. At the top, it reads "NICOR: NATIONAL INSTITUTE FOR CARDIOVASCULAR OUTCOMES RESEARCH". Below this is a search bar labeled "Search UCL" and a "GO" button. A navigation bar contains links for "UCL Home", "NICOR", and "Data applications for Research".

The main content area is divided into two columns. The left column, titled "NICOR", contains a vertical list of links: Home, About, Audits, Publications, Data applications for Research, Data Management, Contact us, and NICOR and data.gov.uk. Below this is a "QUICK LINKS" section with a link to "School of Life and Medical Sciences".

The right column is titled "Data applications for Research" and contains the following text: "NICOR's policy for data sharing, in addition to audit specific data application forms, can be found here:". Below this is a section titled "Data Sharing Agreements" with a list of links: NICOR data application process, NICOR data application form, NICOR data sharing policy, NICOR data user's agreement, Appendix 1 MINAP data application, Appendix 2 Adult cardiac surgery data application, Appendix 3 Adult cardiac intervention data application, and Appendix 4 National Heart Failure Audit data application.



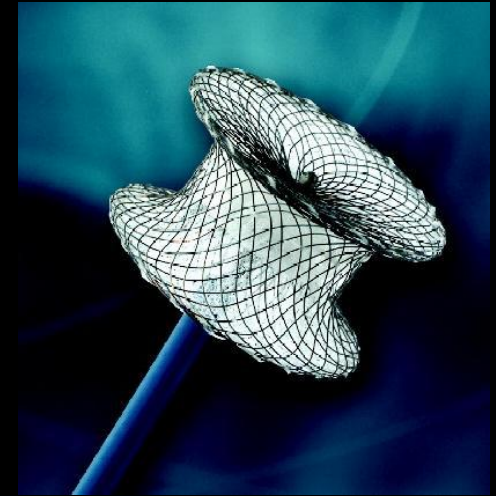
# Contents



2012 data: Ludman

- Structure
  - Angio and PCI centres and maps
  - Total angio and PCI numbers
  - No of PCIs per centre and per angio
  - PCI pmp and by country and v CABG
  - Centre PCI volumes
  - PCI operators, by centre, by PPCI
  - On call rotas for PPCI
  - On site v off site surgical cover
  - Day case activity
  - Primary PCI units
- NICOR data collection
  - Centre participation
  - Databases used
  - Case ascertainment
  - Data completeness
- Appropriateness
  - Demographics
  - Indication for PCI / Clinical syndrome
  - PPCI activity (by unit, pmp, by vessel)
  - PCI for out of hospital arrest
  - PCI territories / vessels / lesions
  - Atherectomy
  - Stents (BMS and DES)
  - Adjunctive pharmacotherapy
  - LV support and shock
  - Primary PCI for > 80 yrs
  - Additional interventional techniques, devices
  - Arterial access (routes)
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  - Delays to treatment
  - NSTEMI (direct v IHT)
  - Primary PCI DTB / CTB
  - IHT versus Direct admission
  - Length of stay
- Outcome
  - MACCE
  - Peri-procedural complications and by access
  - Tracked 30 day mortality
    - Outcome by syndrome
    - Outcome by lesion subset
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  - Mitral valvuloplasty
  - Mitraclip / PFO / ASD closure / LAA occlusion
  - Para-prosthetic leak closure
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- TAVI
  - Activity by centre
  - Demographics
  - Valve types
  - Delivery approaches by valve type
  - Pacing
  - Complications
- Conclusions and summary

# Adult Non Coronary Intervention

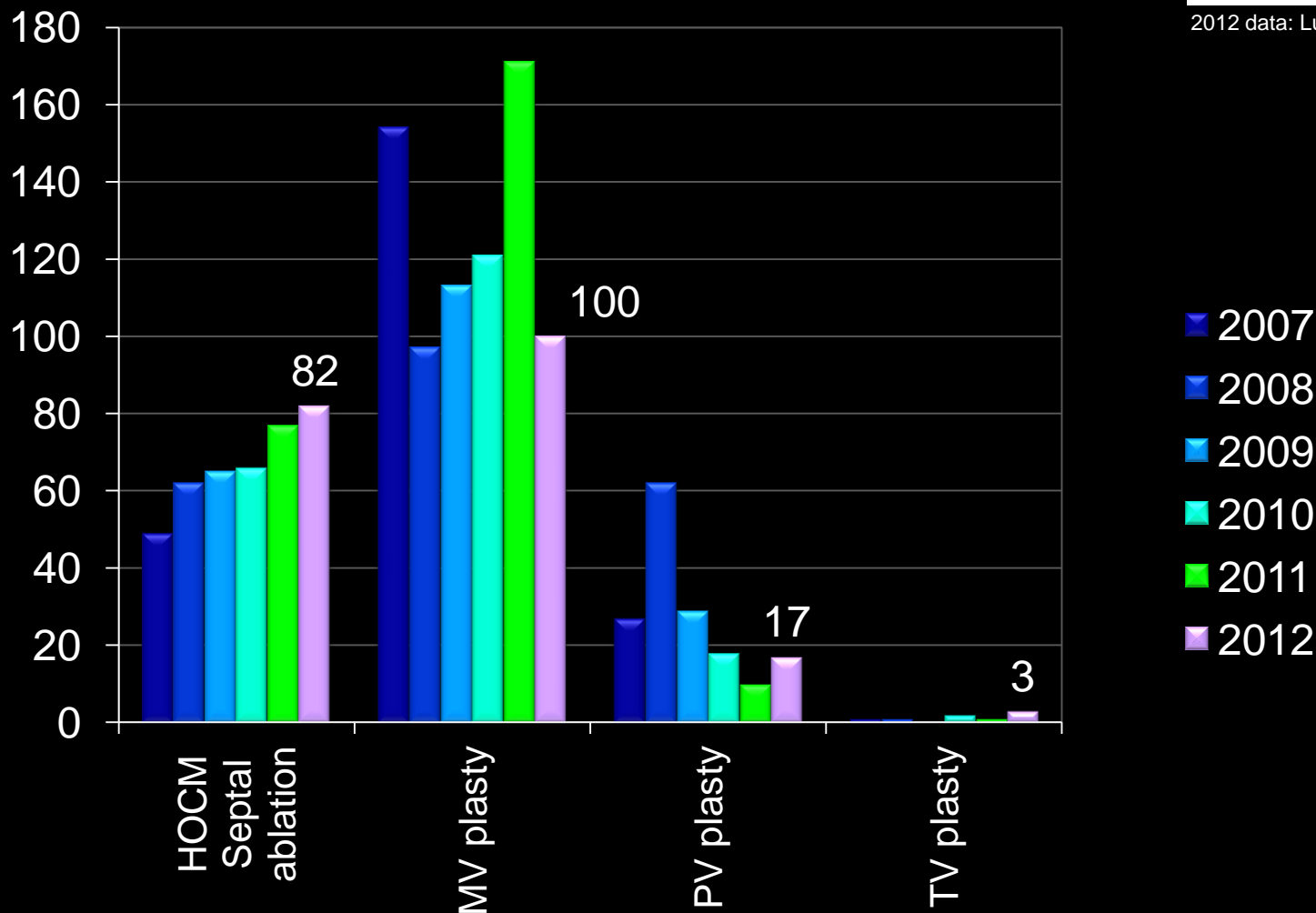


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# Adult Non-Coronary Intervention



2012 data: Ludman

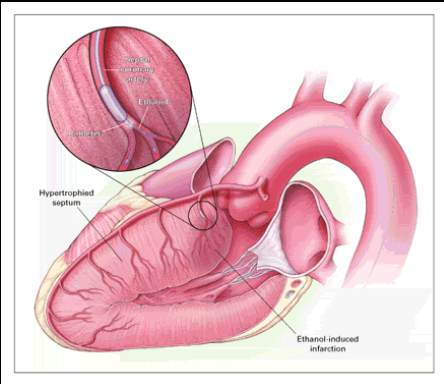


Note: PV plasty NOT as part of valve implantation procedure

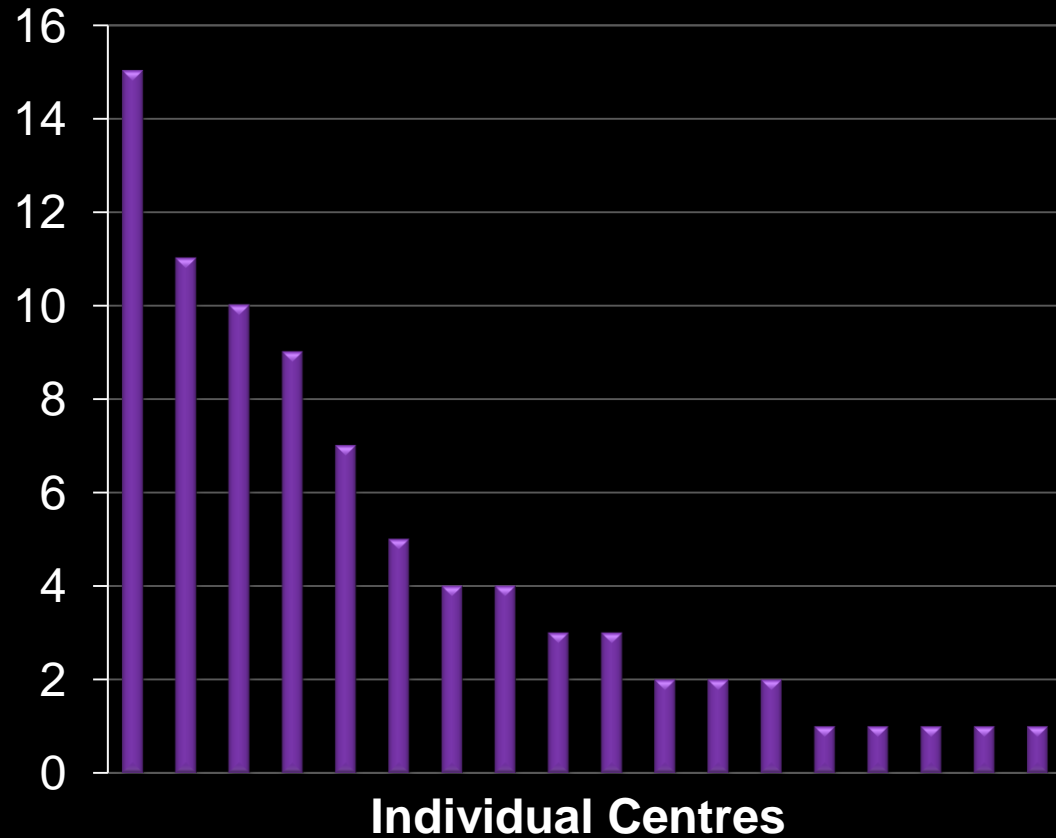
# Alcohol Mediated Septal Ablation



2012 data: Ludman



Number of  
procedures  
2012

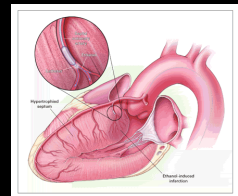
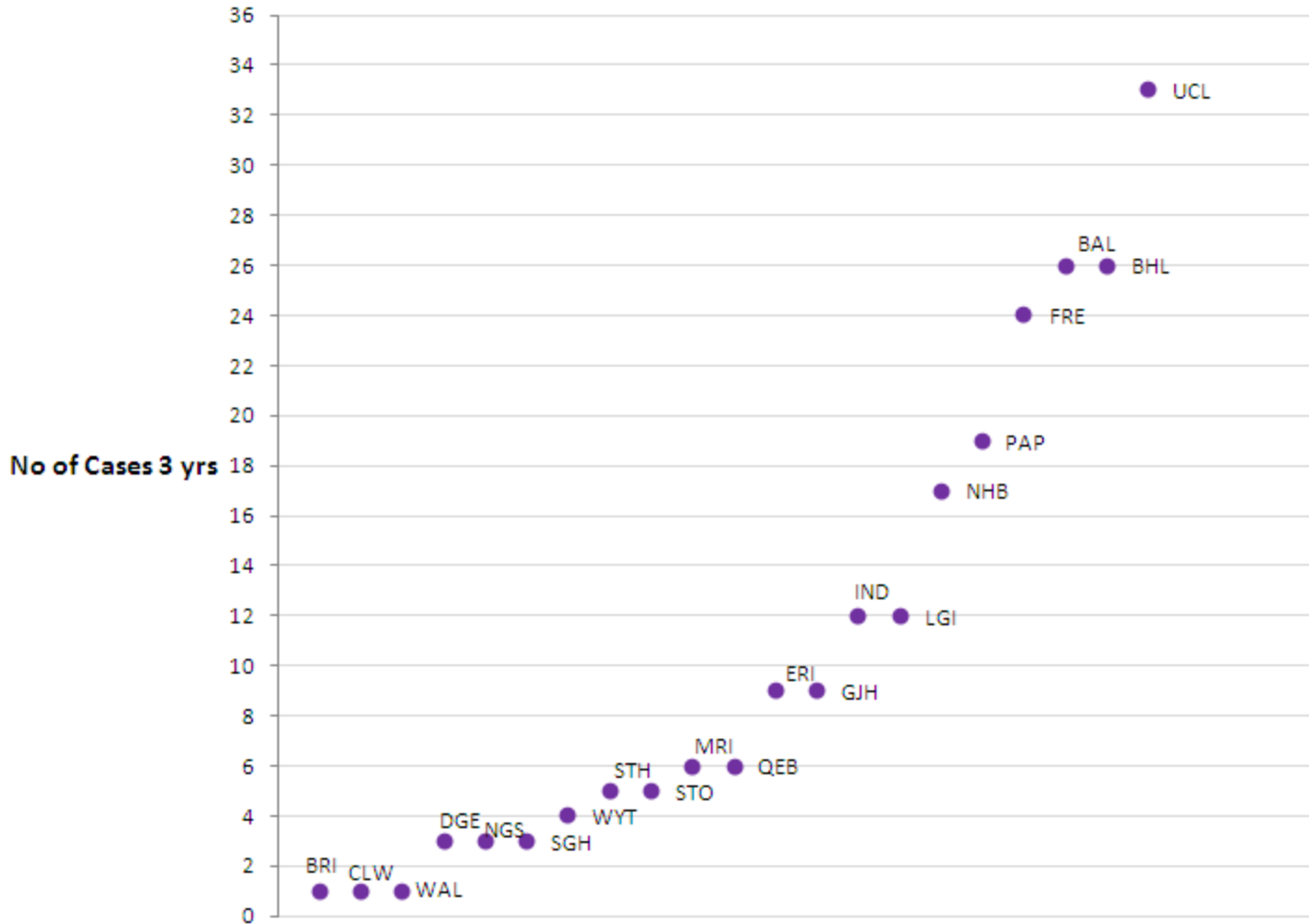


# Alcohol Mediated Septal Ablation



2012 data: Ludman

### Alcohol Septal ablation (2010, 2011 and 2012)



# Mitral Balloon Valvuloplasty



2012 data: Ludman

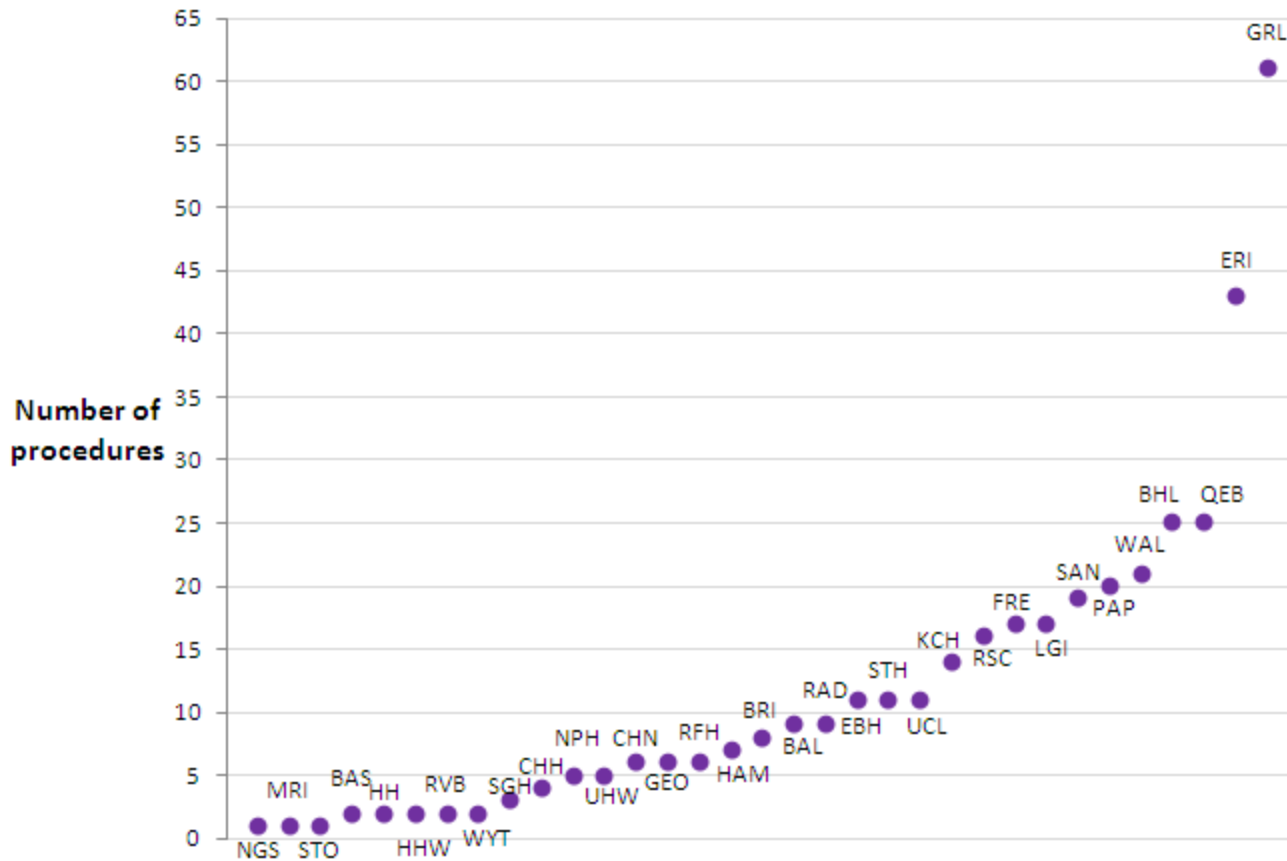


# Mitral Balloon Valvuloplasty



2012 data: Ludman

## Mitral Balloon valvuloplasty (2010, 2011 and 2012)

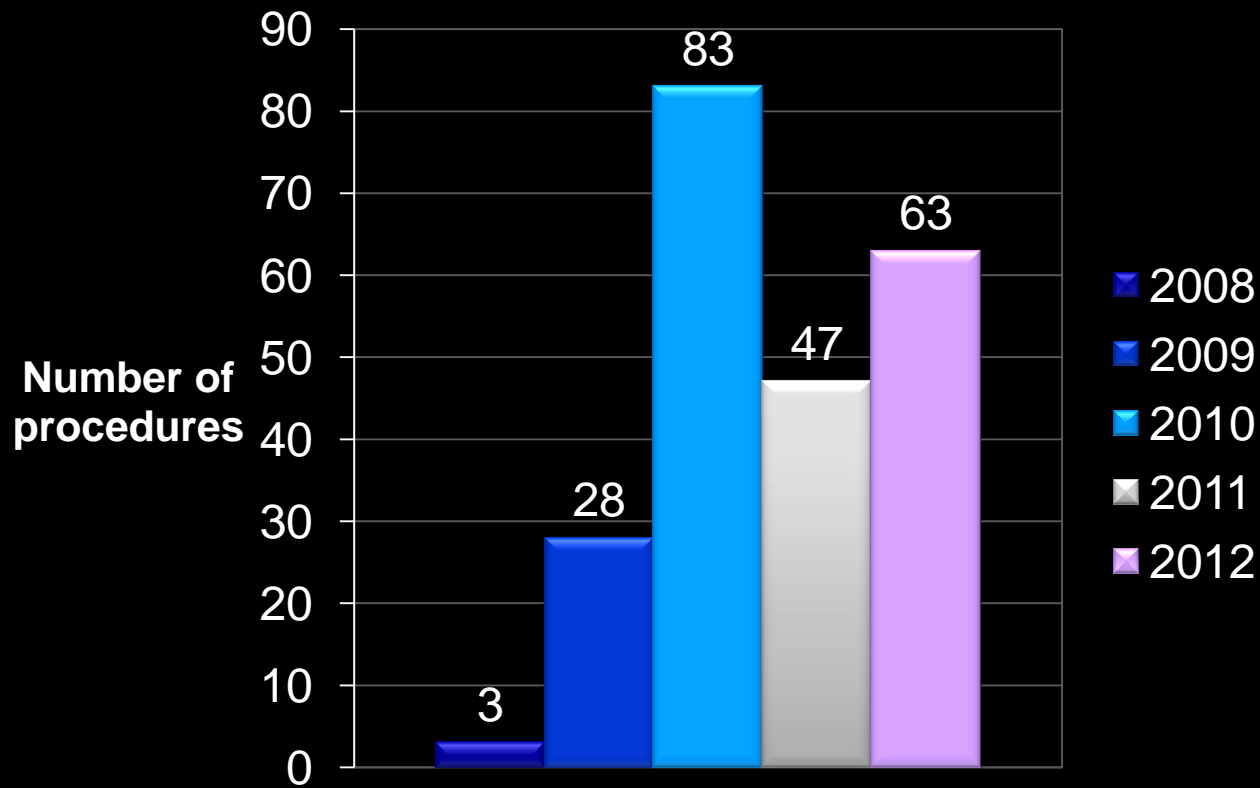


# Percutaneous Valves

## Mitra-Clip



2012 data: Ludman

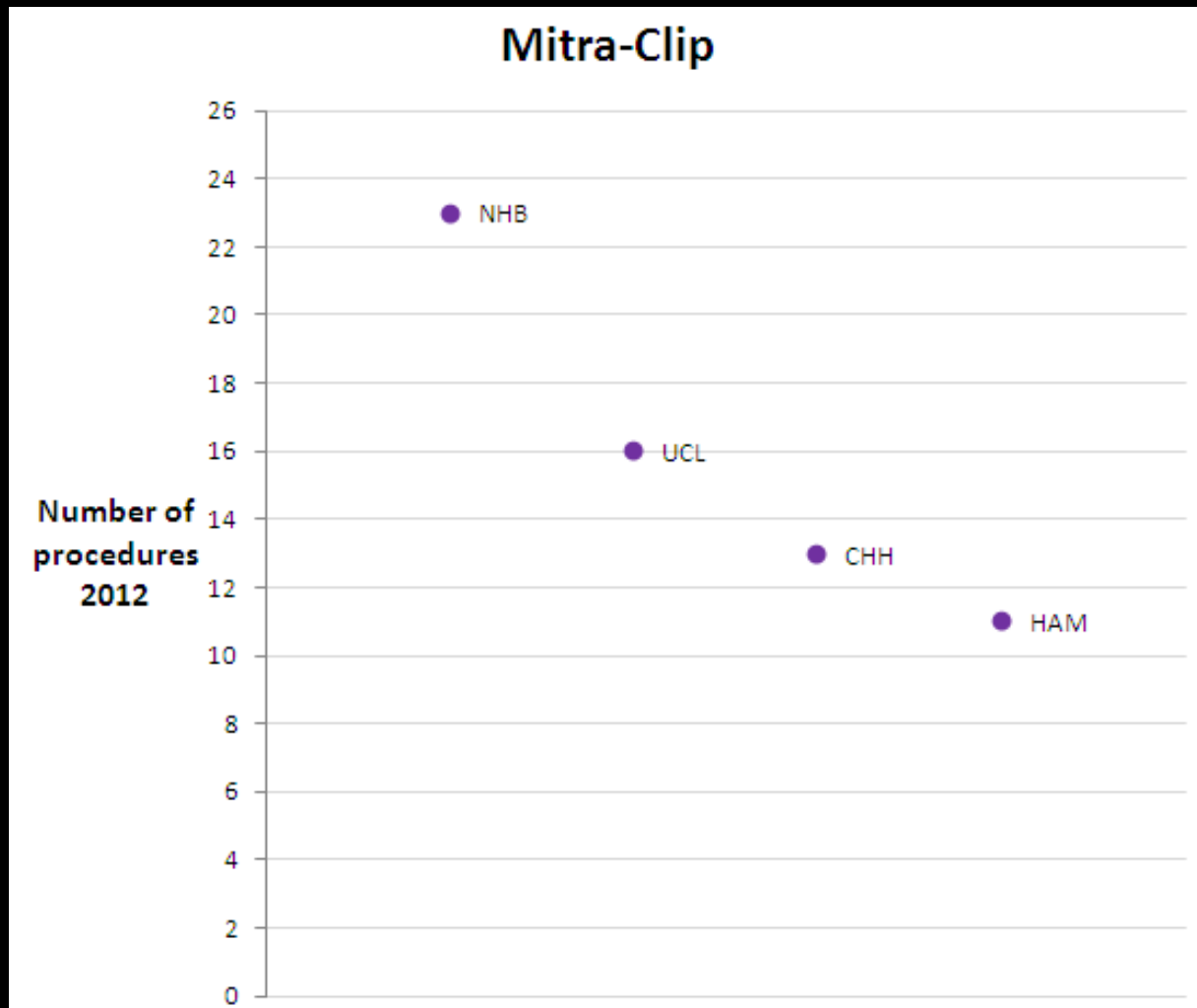


# Percutaneous Valves

## Mitra-Clip



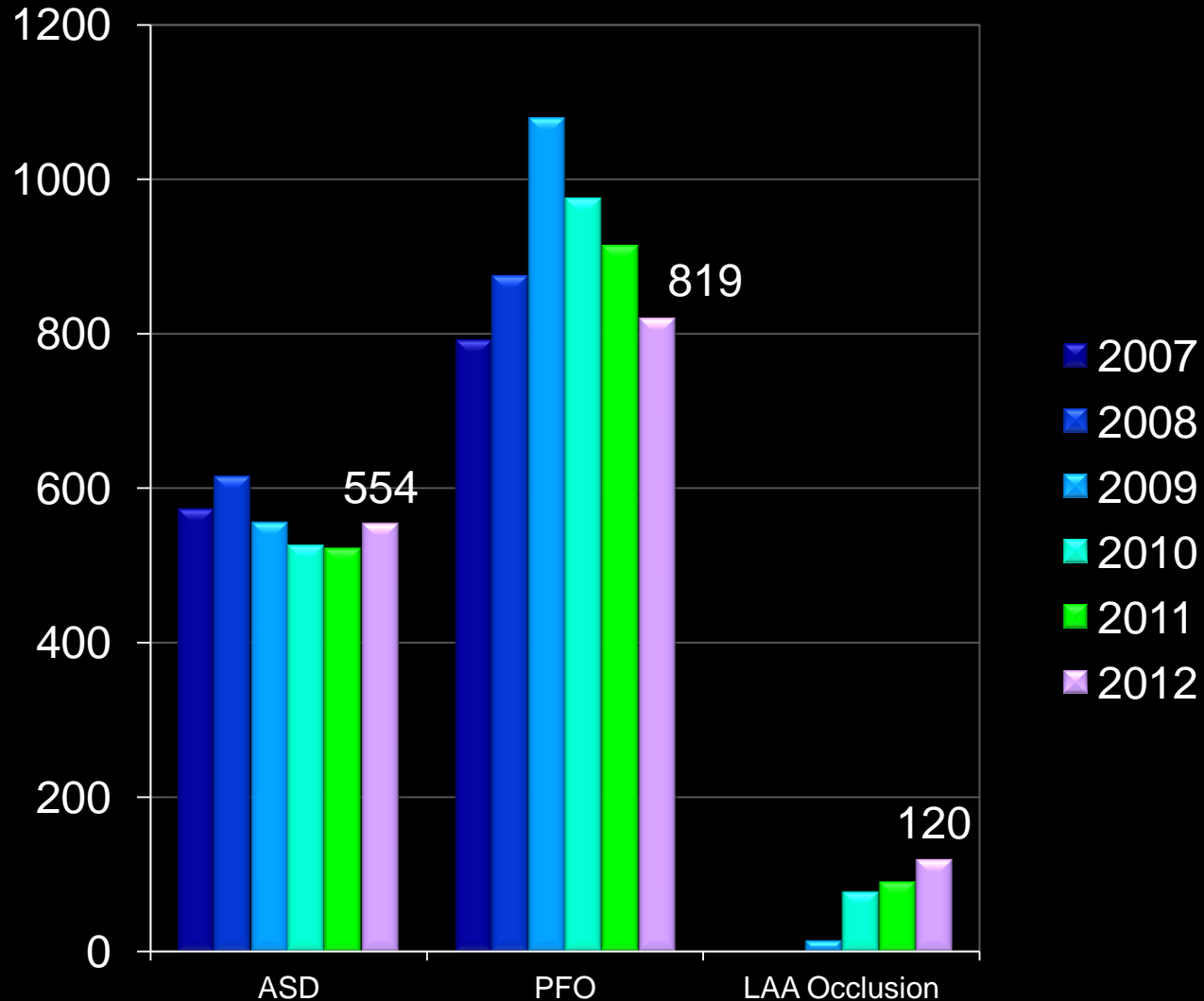
2012 data: Ludman



# Adult Non-Coronary Intervention



2012 data: Ludman

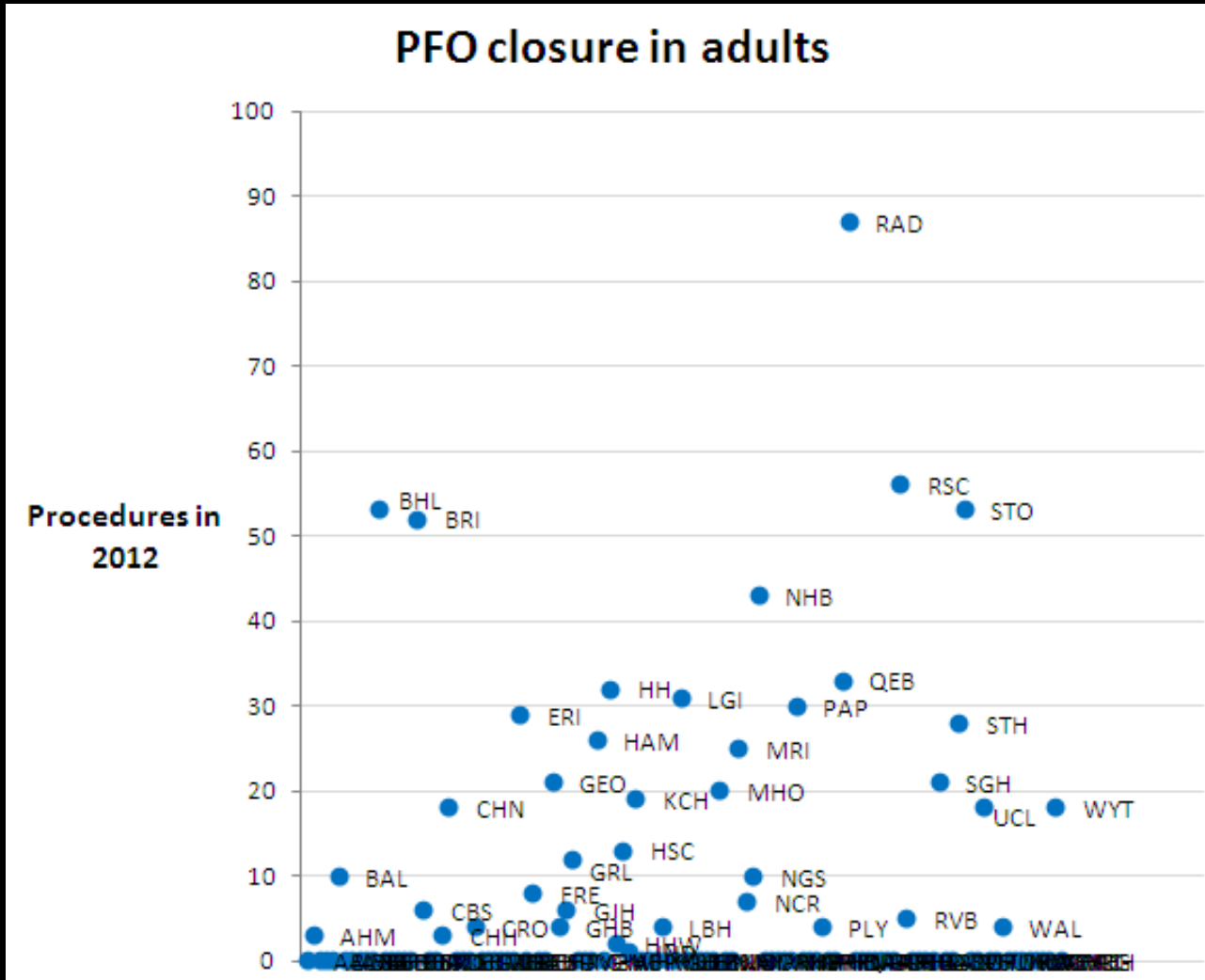




# PFO Closure

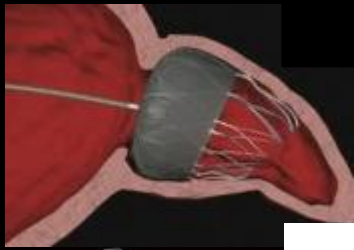


2012 data: Ludman



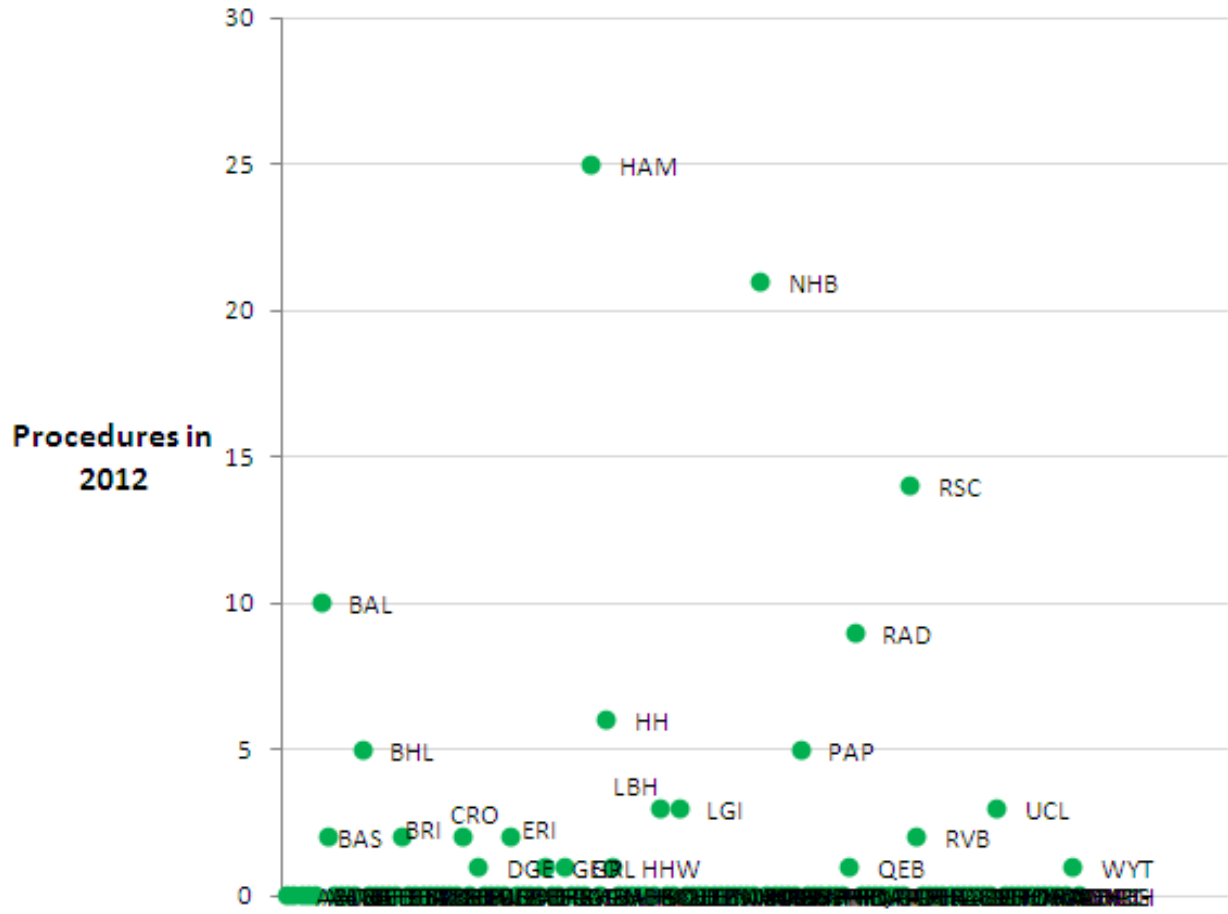
Units ordered alphabetically

# LAA Closure



2012 data: Ludman

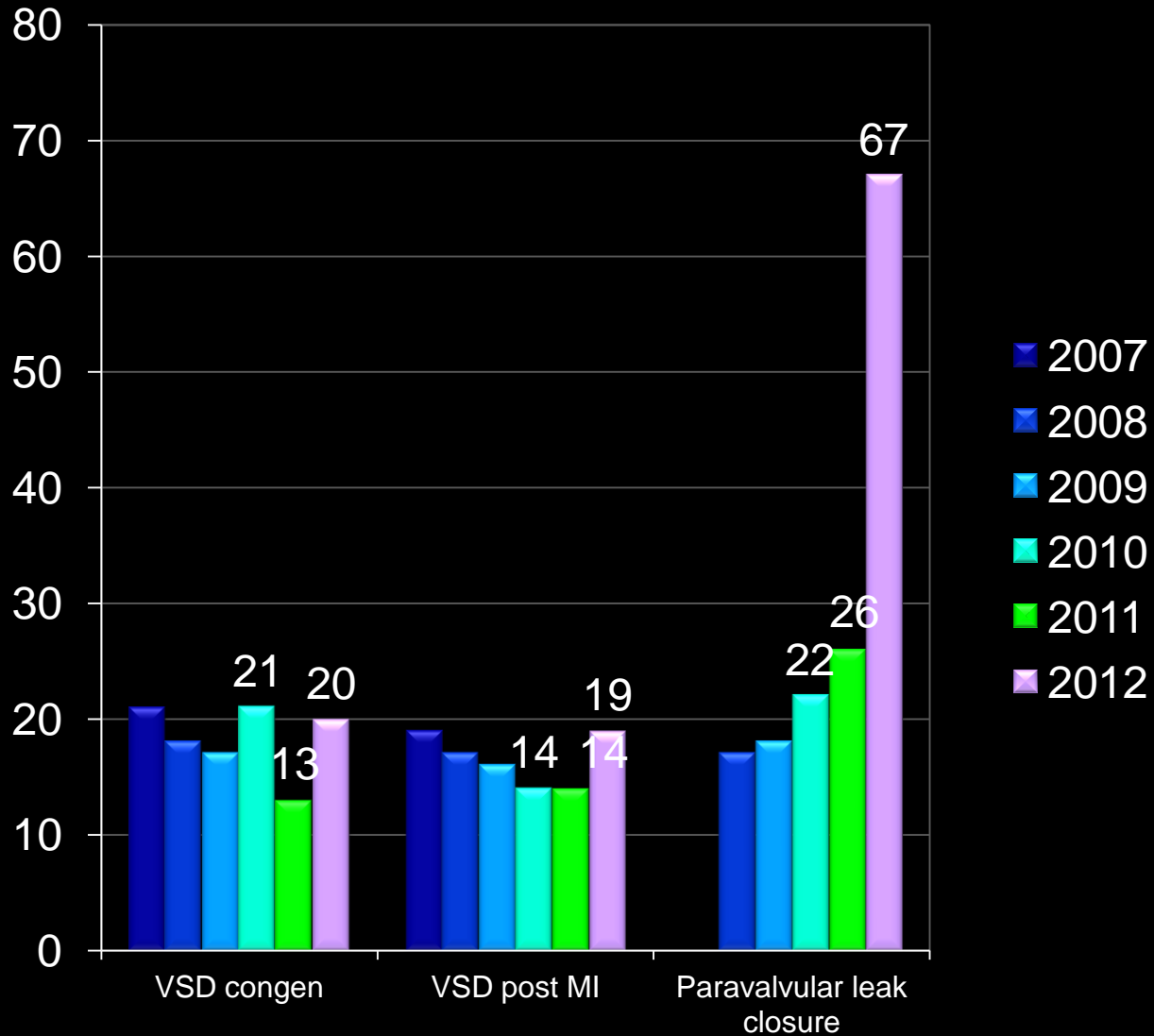
## Left Atrial Appendage Occlusion



# Adult Non-Coronary Intervention



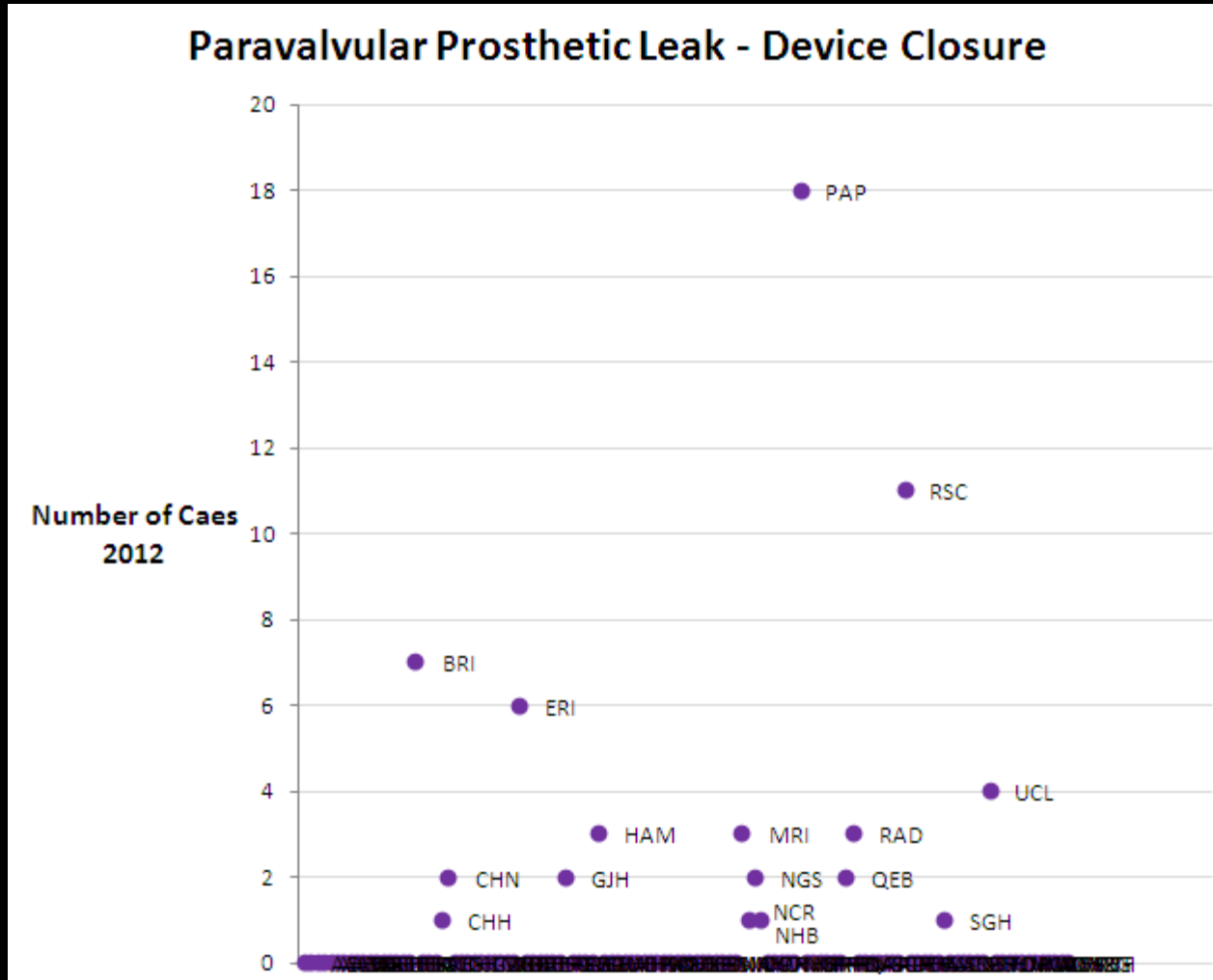
2012 data: Ludman



# Prosthetic paravalvular leak closure



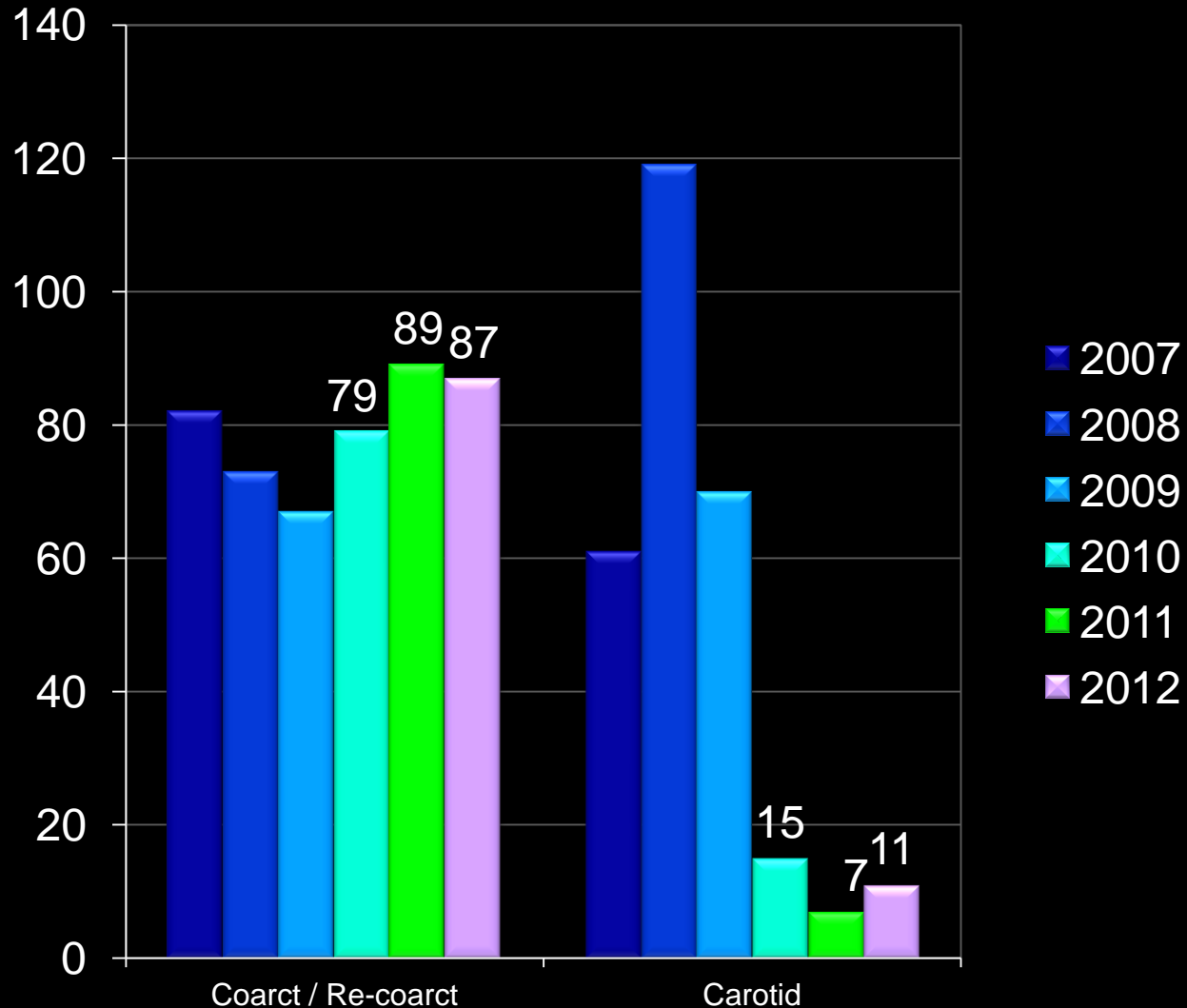
2012 data: Ludman



# Adult Great Vessel Intervention



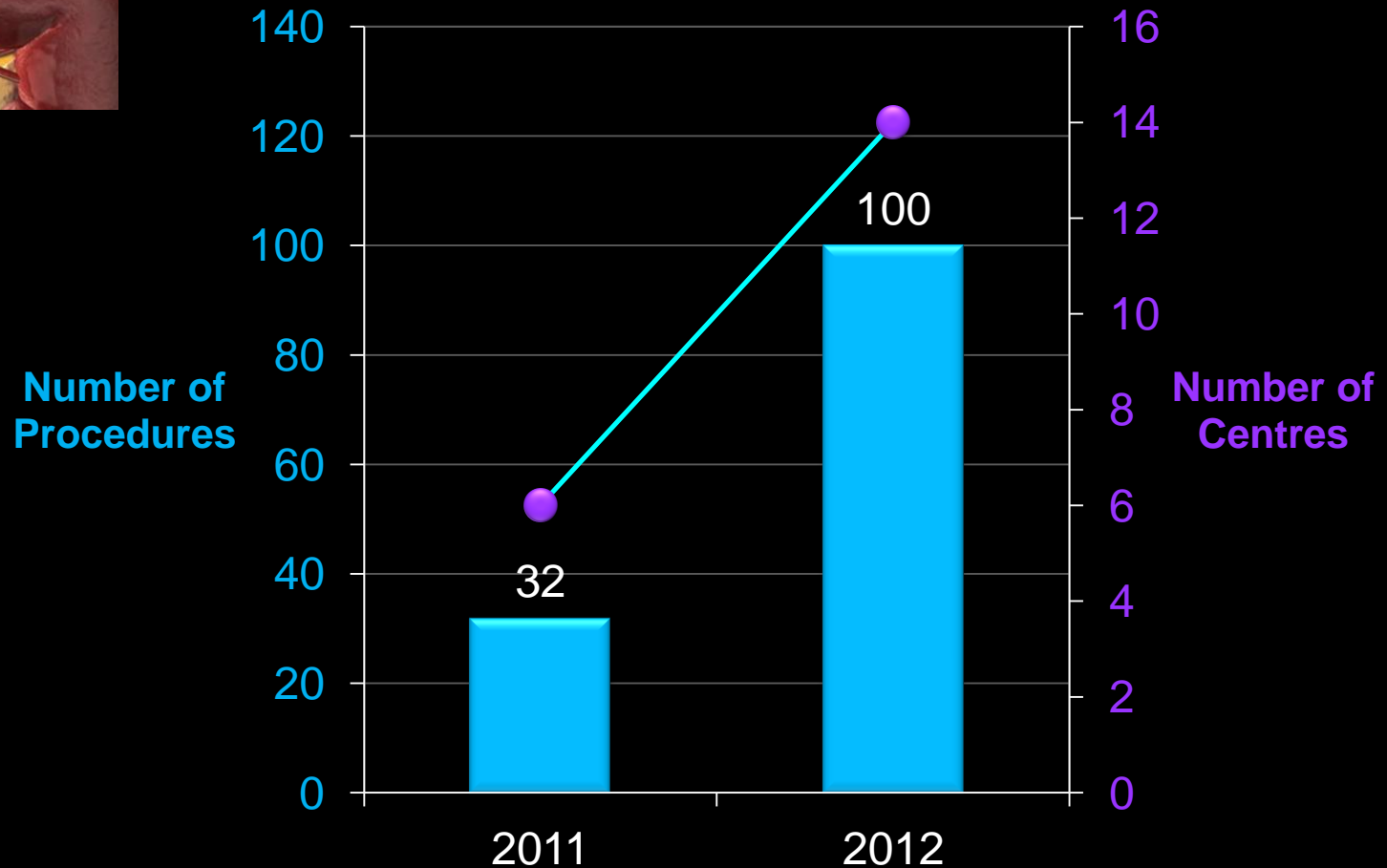
2012 data: Ludman



# Renal Denervation



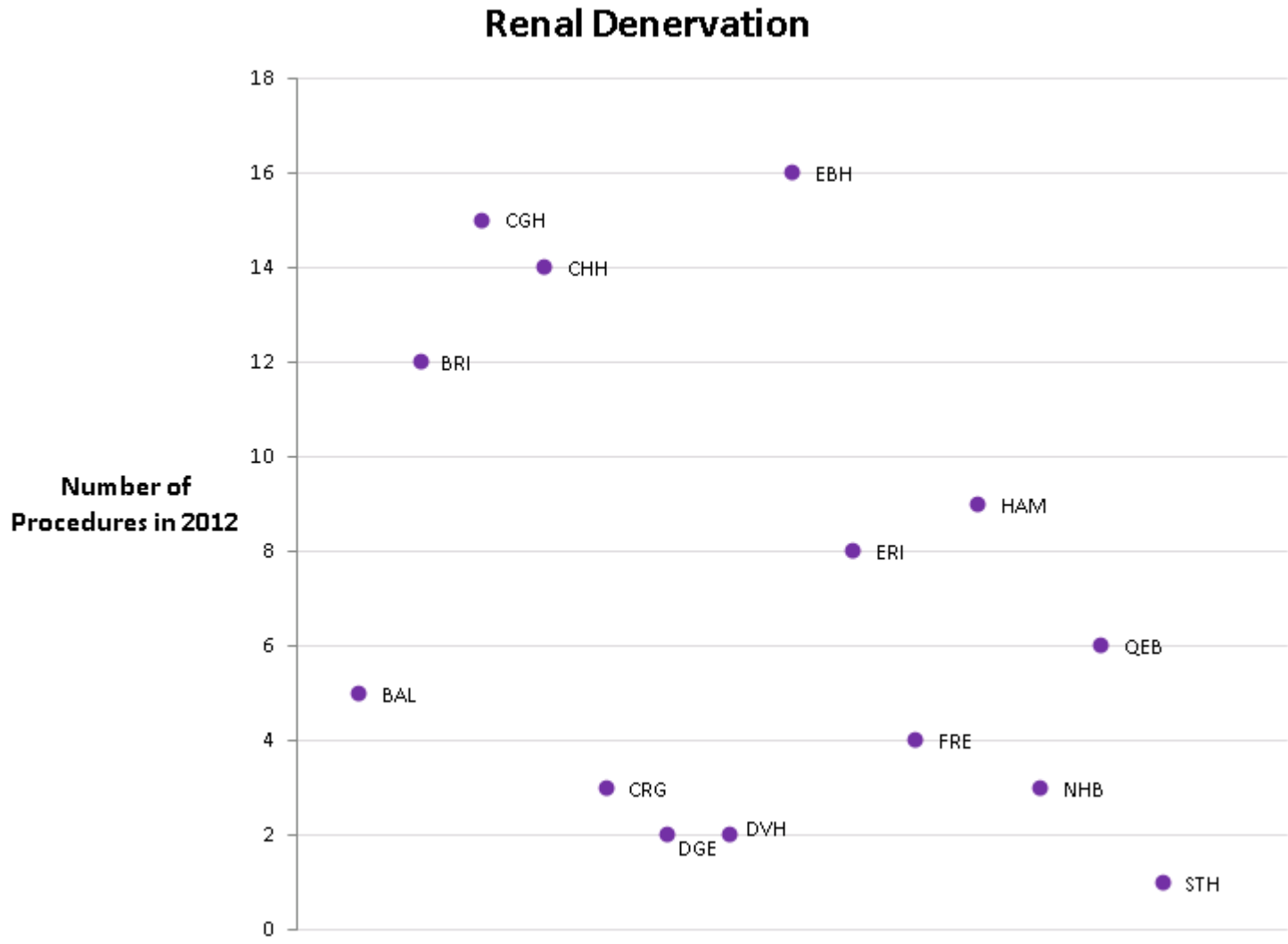
2012 data: Ludman



# Renal Denervation



2012 data: Ludman

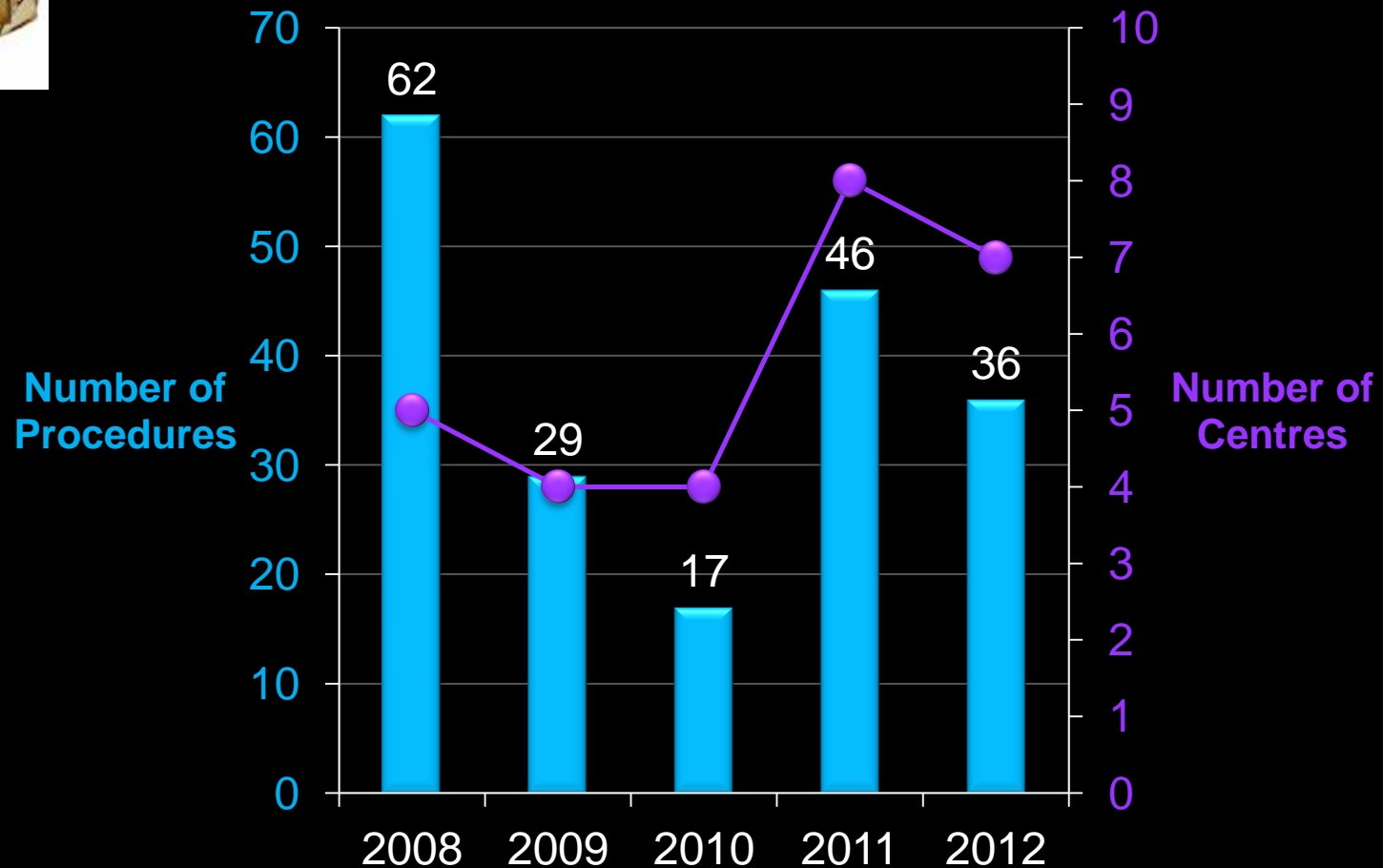


Units ordered alphabetically

# Percutaneous Pulmonary Valves



2012 data: Ludman



# Contents

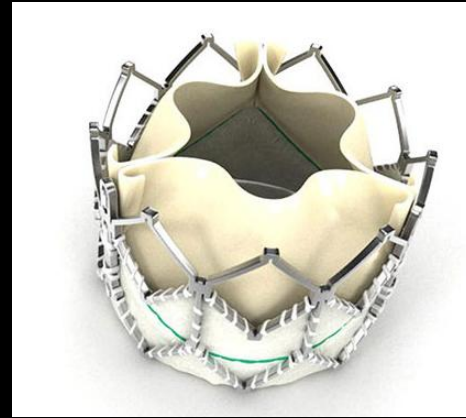


2012 data: Ludman

- Structure
  - Angio and PCI centres and maps
  - Total angio and PCI numbers
  - No of PCIs per centre and per angio
  - PCI pmp and by country and v CABG
  - Centre PCI volumes
  - PCI operators, by centre, by PPCI
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# TAVI

---



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# Transcatheter Valves

Data from Survey Monkey

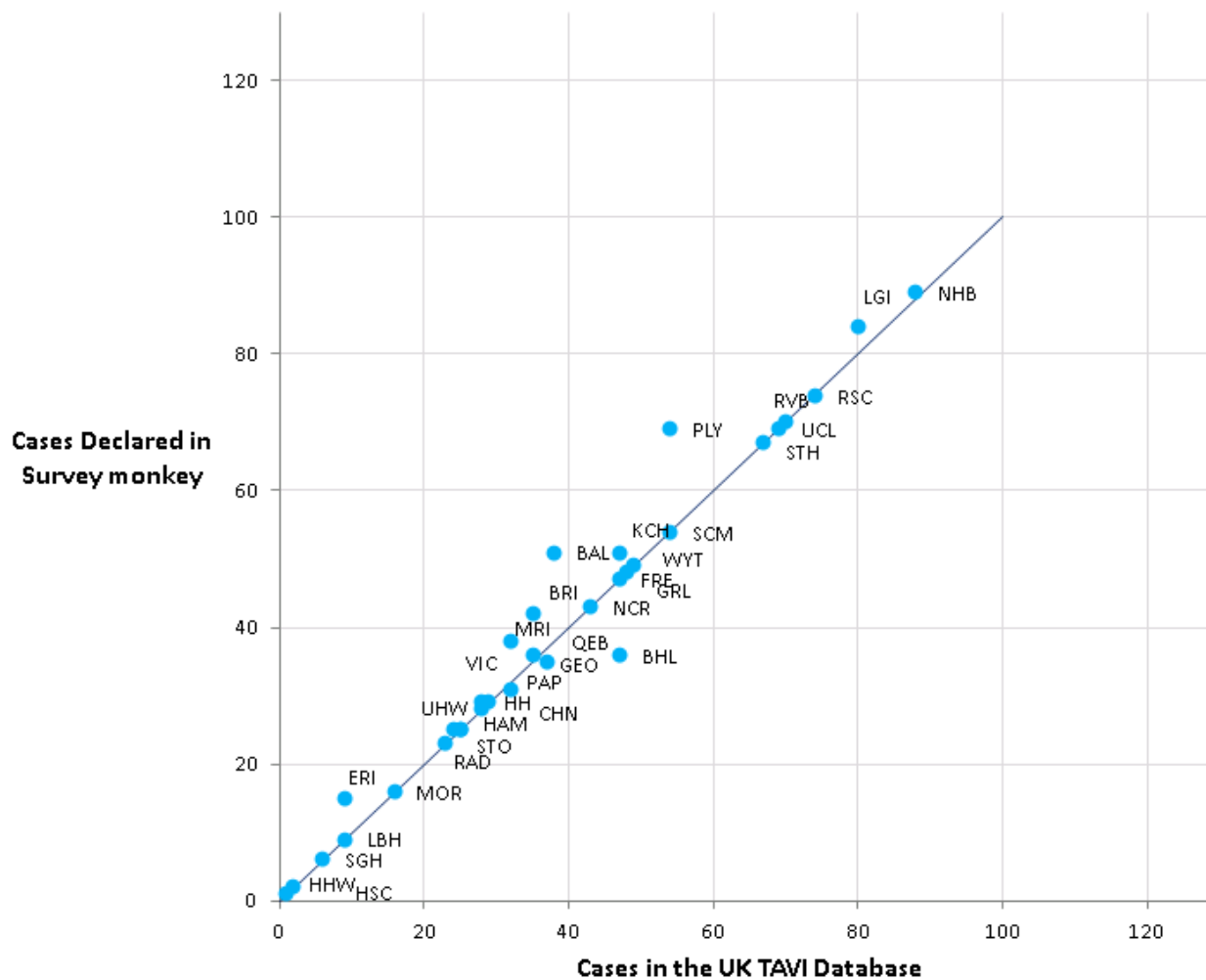
	Centres	No	Max Cases
Medtronic CoreValve: Femoral	16	425	71
Subclavian	12	41	10
Direct Aortic	10	42	12
Other (6 Carotid , 2 TA)	4	8	4
Edwards Sapien: Femoral	24	487	61
Apical	21	191	29
Direct aortic	10	93	39
Other (subclavian)	1	1	1
SJM, Portico	3	22	8
Direct Flow Medical	2	3	2
JenaValve	1	3	3
Total = 1316			

# Transcatheter Valves



2012 data: Ludman

TAVI - Case Ascertainment  
Cases performed in 2012

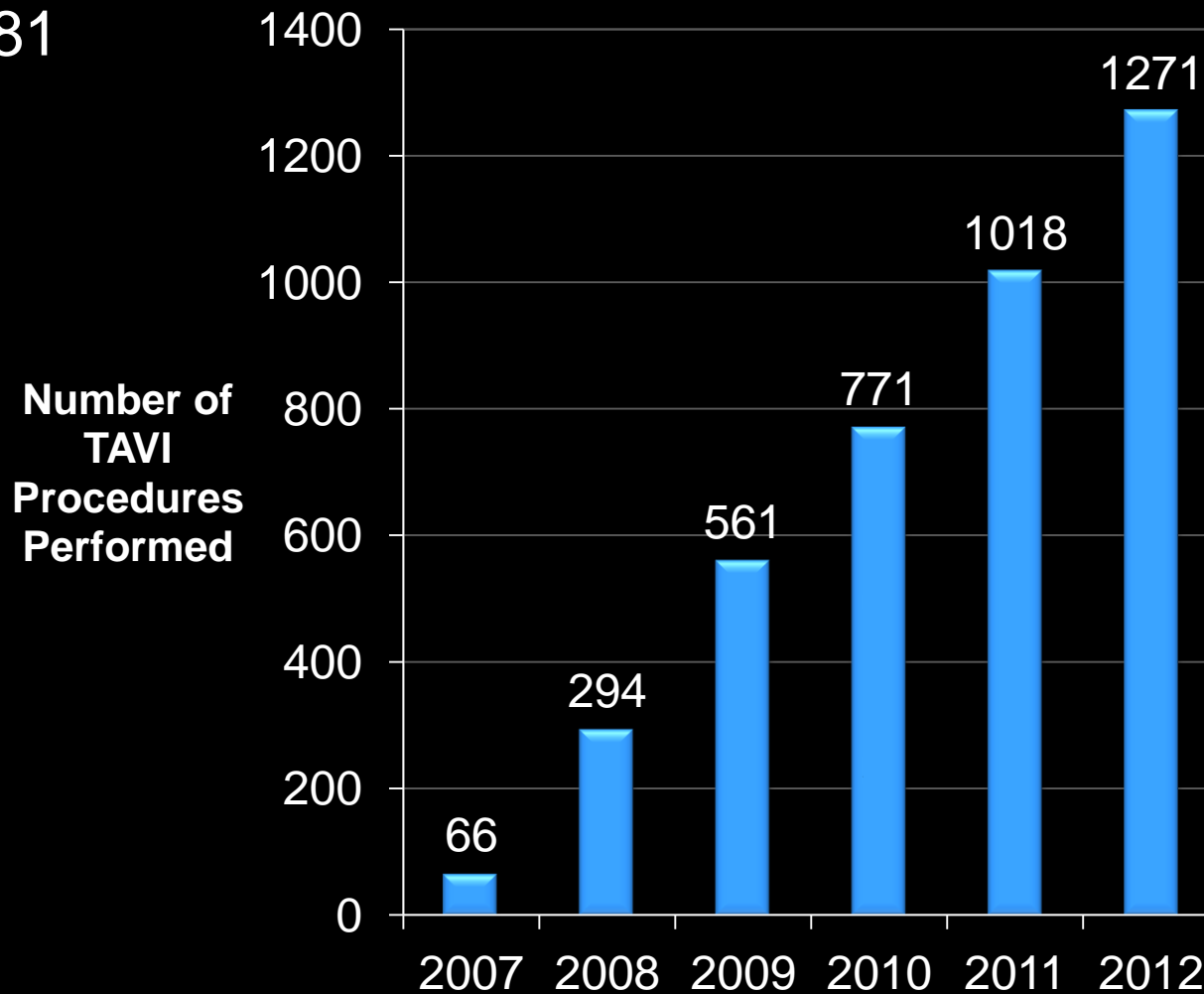


# TAVI



2012 data: Ludman

Total = 3981

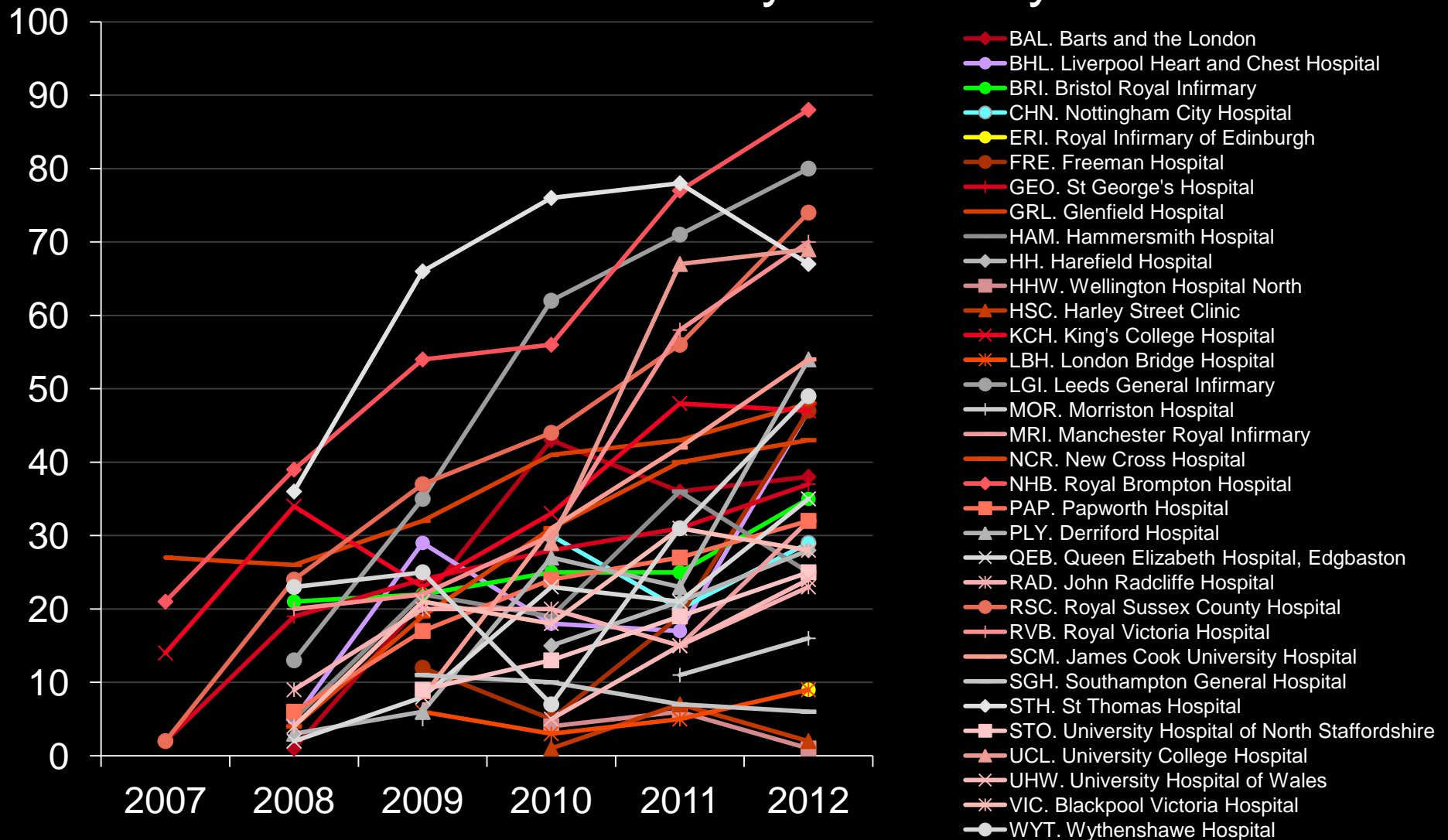


# TAVI



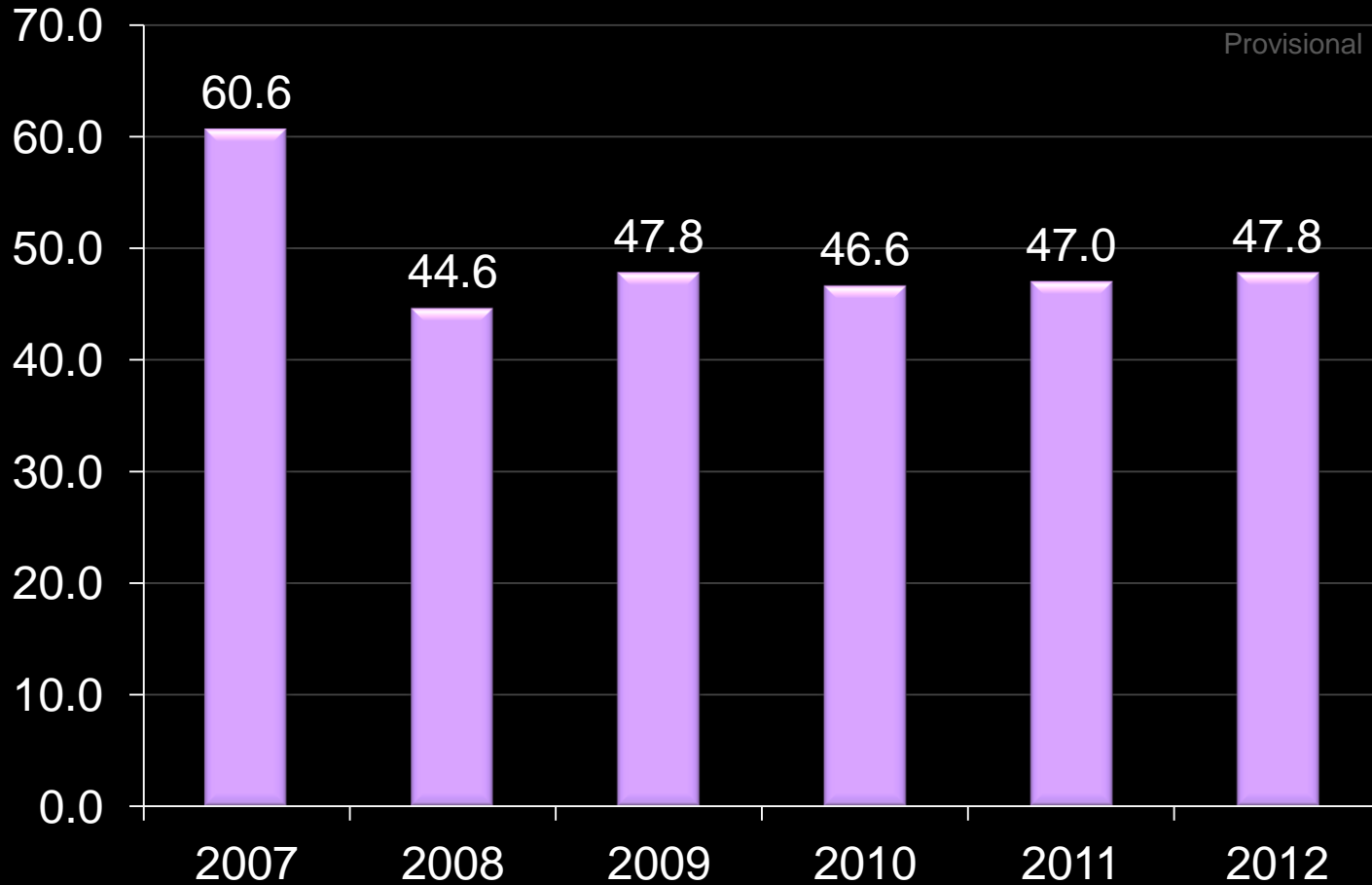
2012 data: Ludman

## Total Procedures by unit and year



From TAVI registry as September 2013

## Female (%)

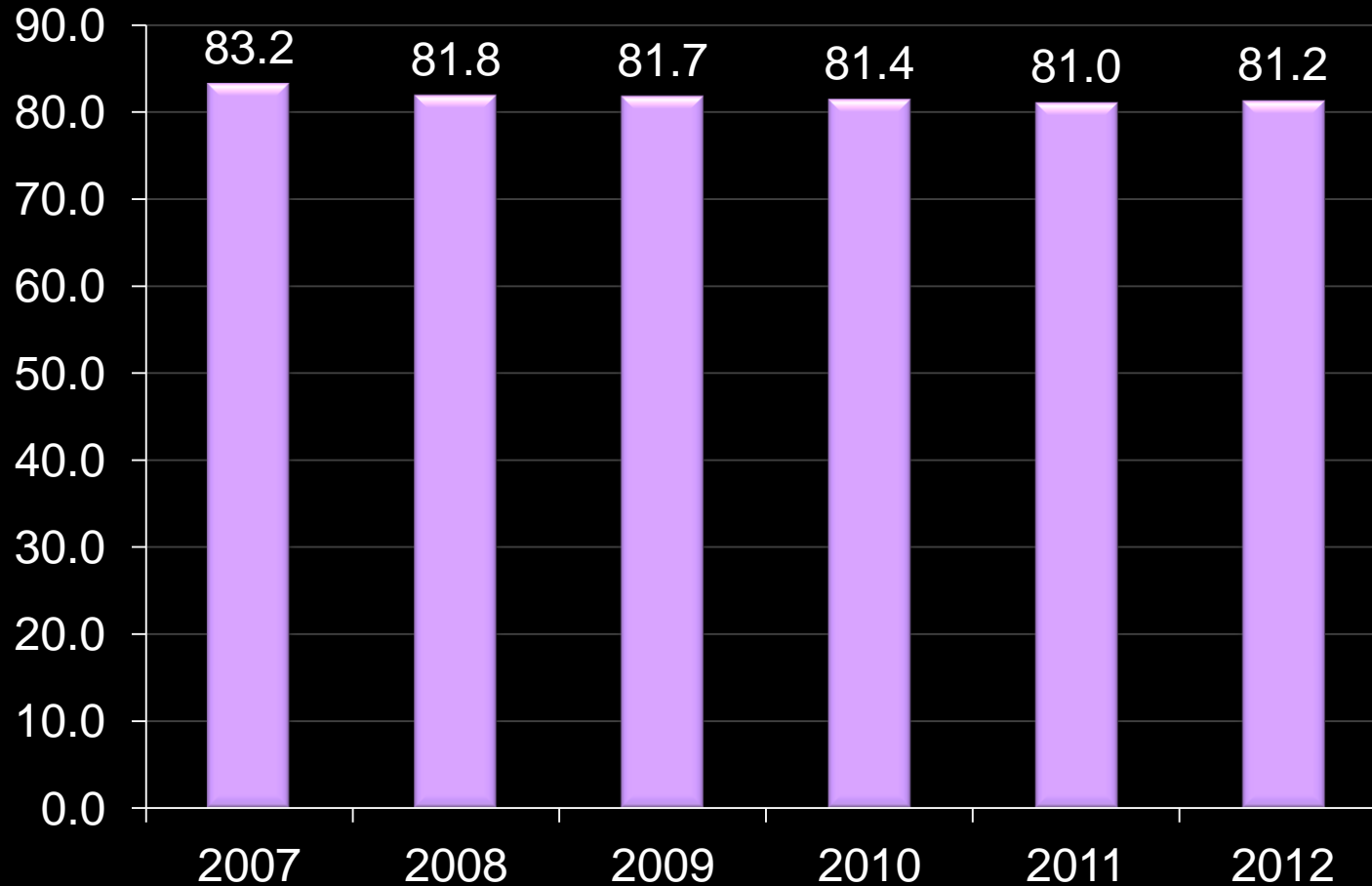


# TAVI



2012 data: Ludman

## Mean Age (yrs)

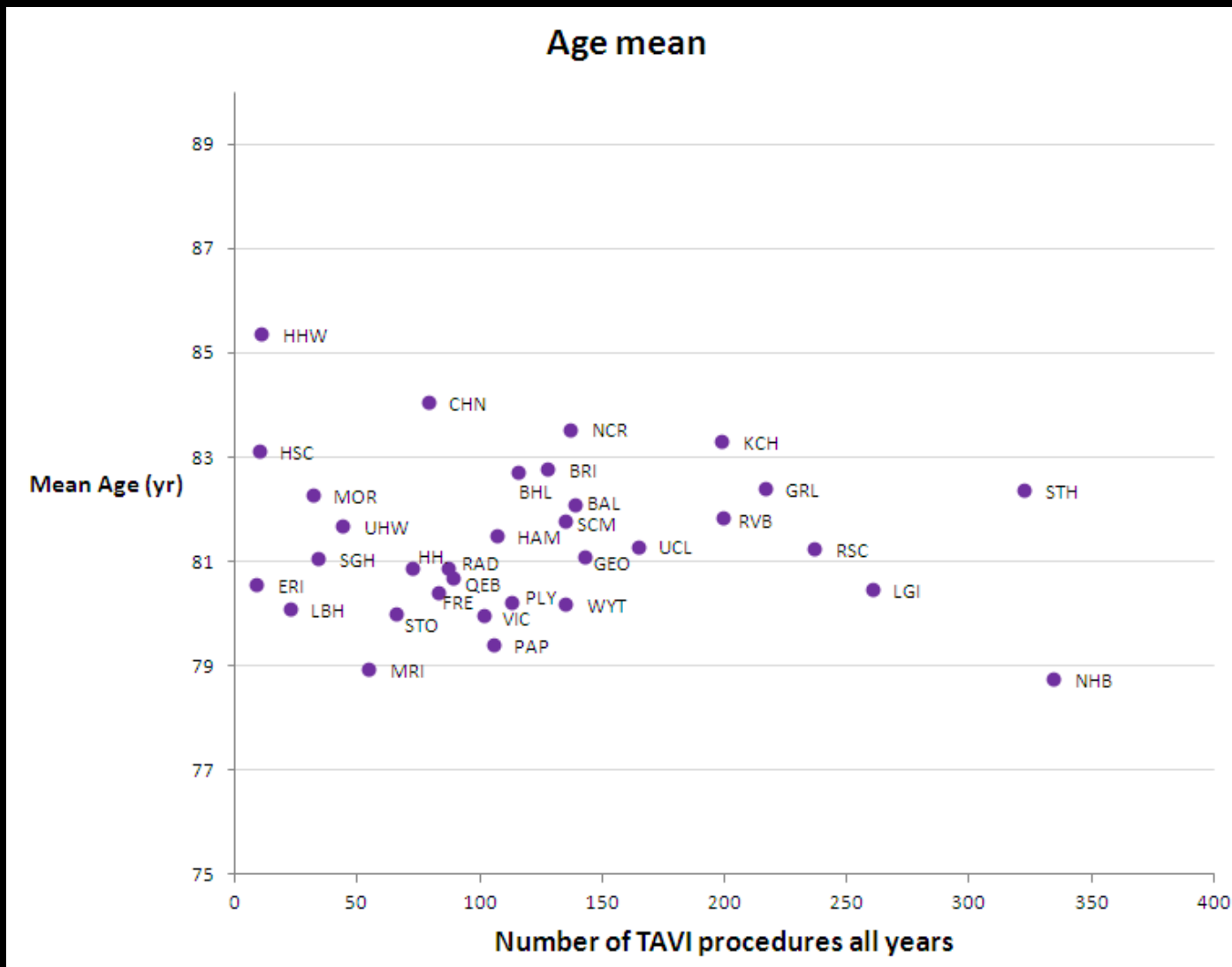


From TAVI registry as September 2013

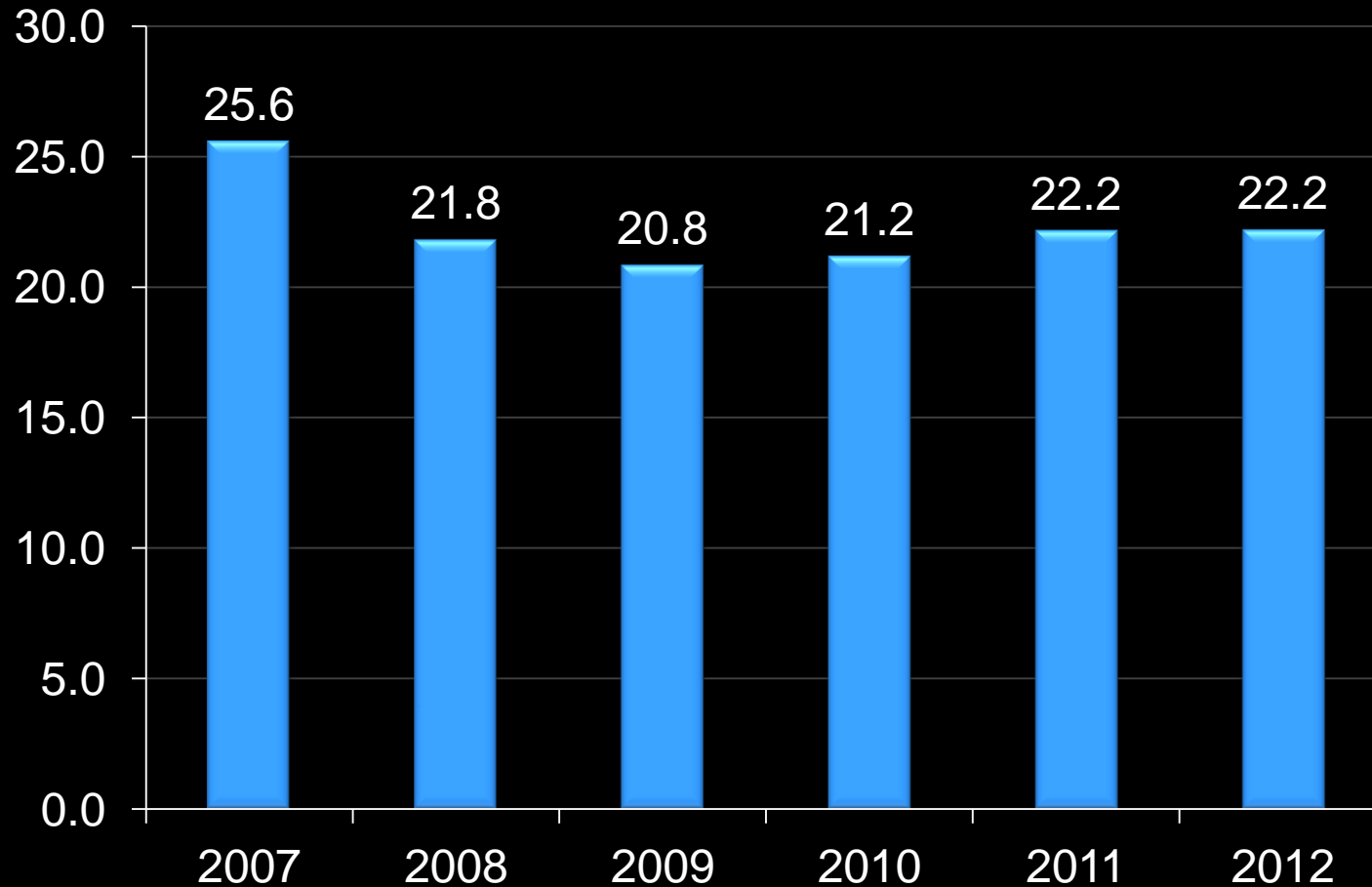
# TAVI



2012 data: Ludman



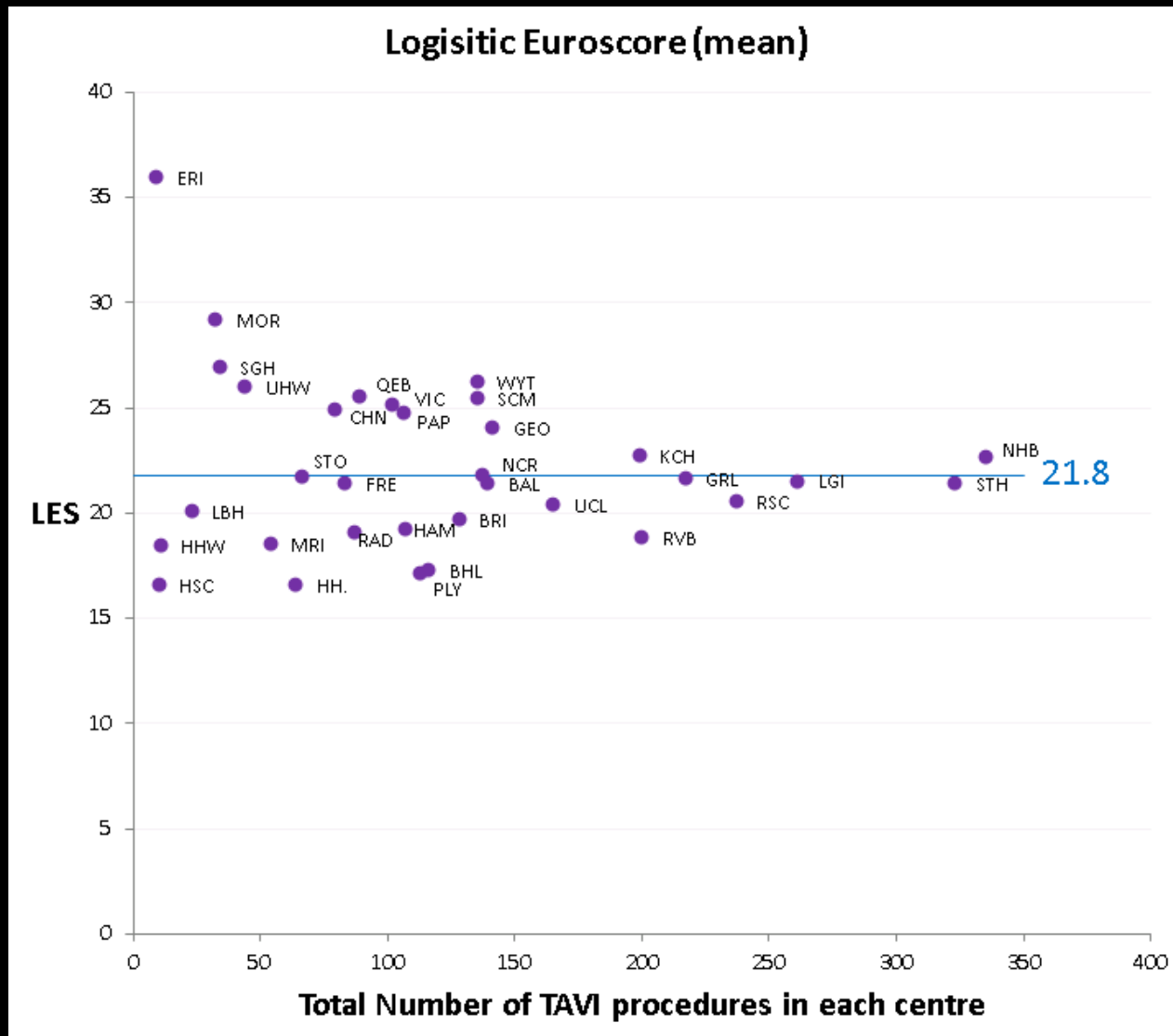
## Mean Logistic Euroscore



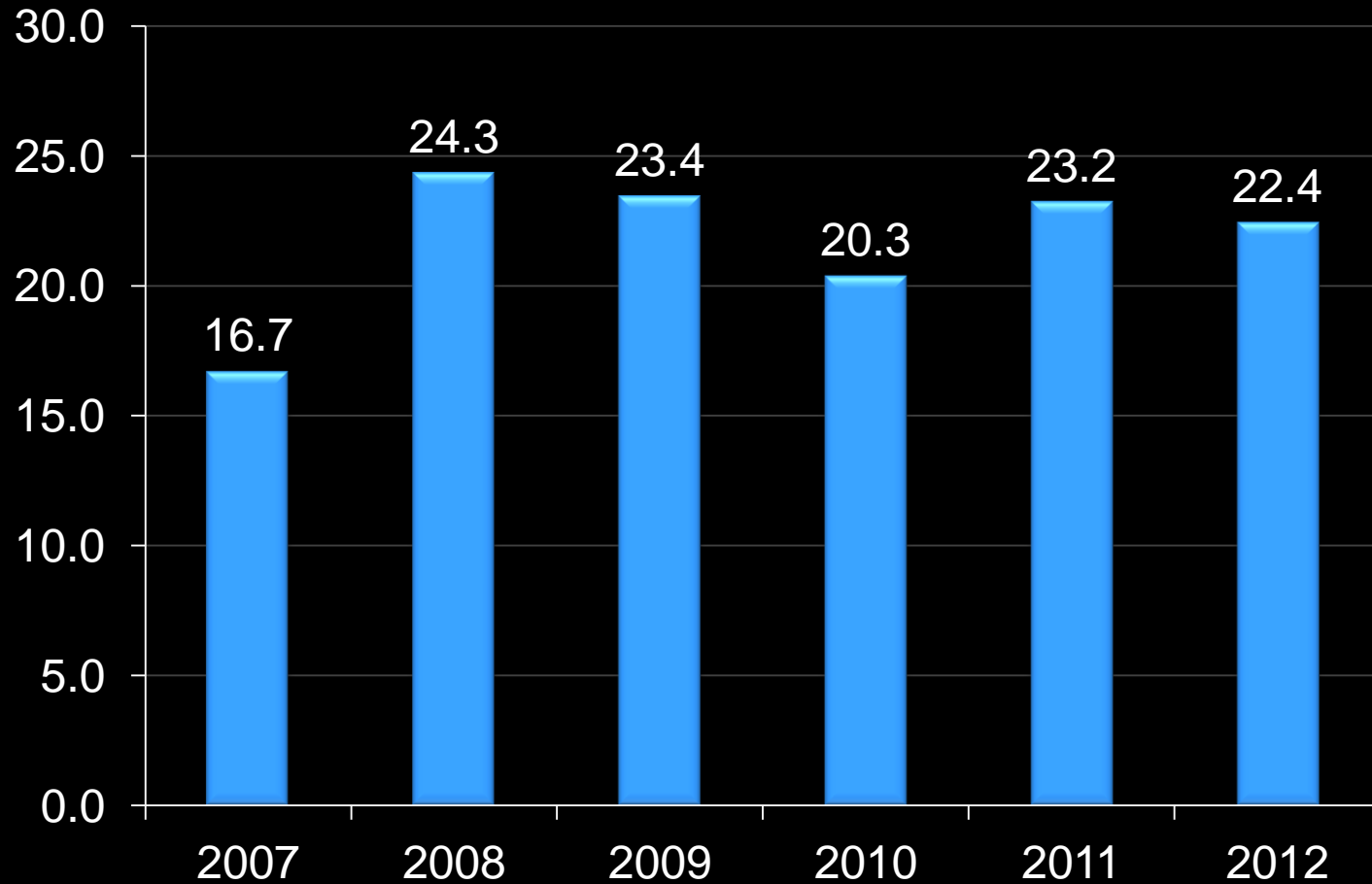
# TAVI



2012 data: Ludman



## Diabetic (%)



# TAVI



2012 data: Ludman

## Renal failure (%)



Definition: creatinine > 200, and/or on dialysis

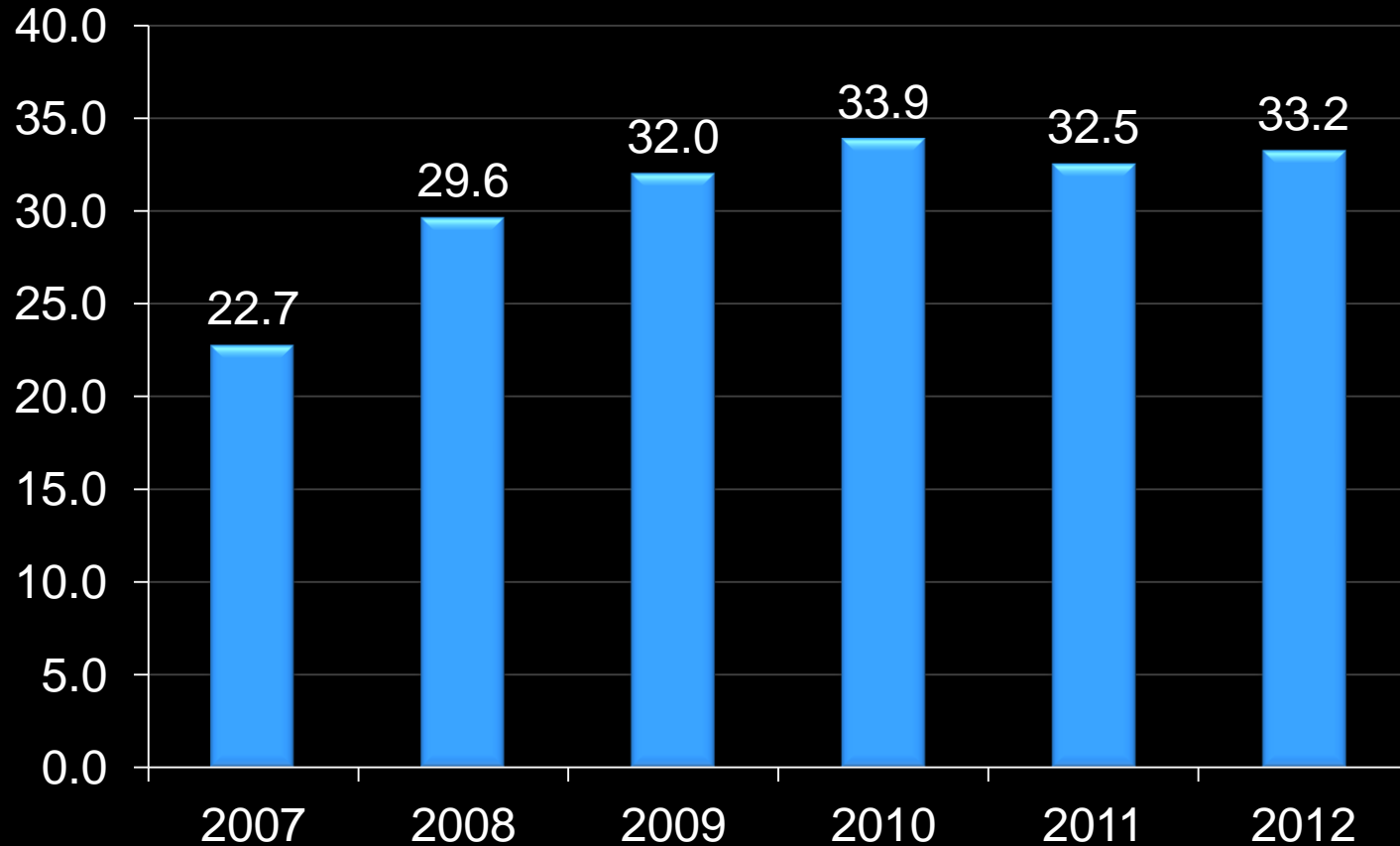
TAVI registry as September 2013

# TAVI



2012 data: Ludman

## Previous cardiac surgery (%)

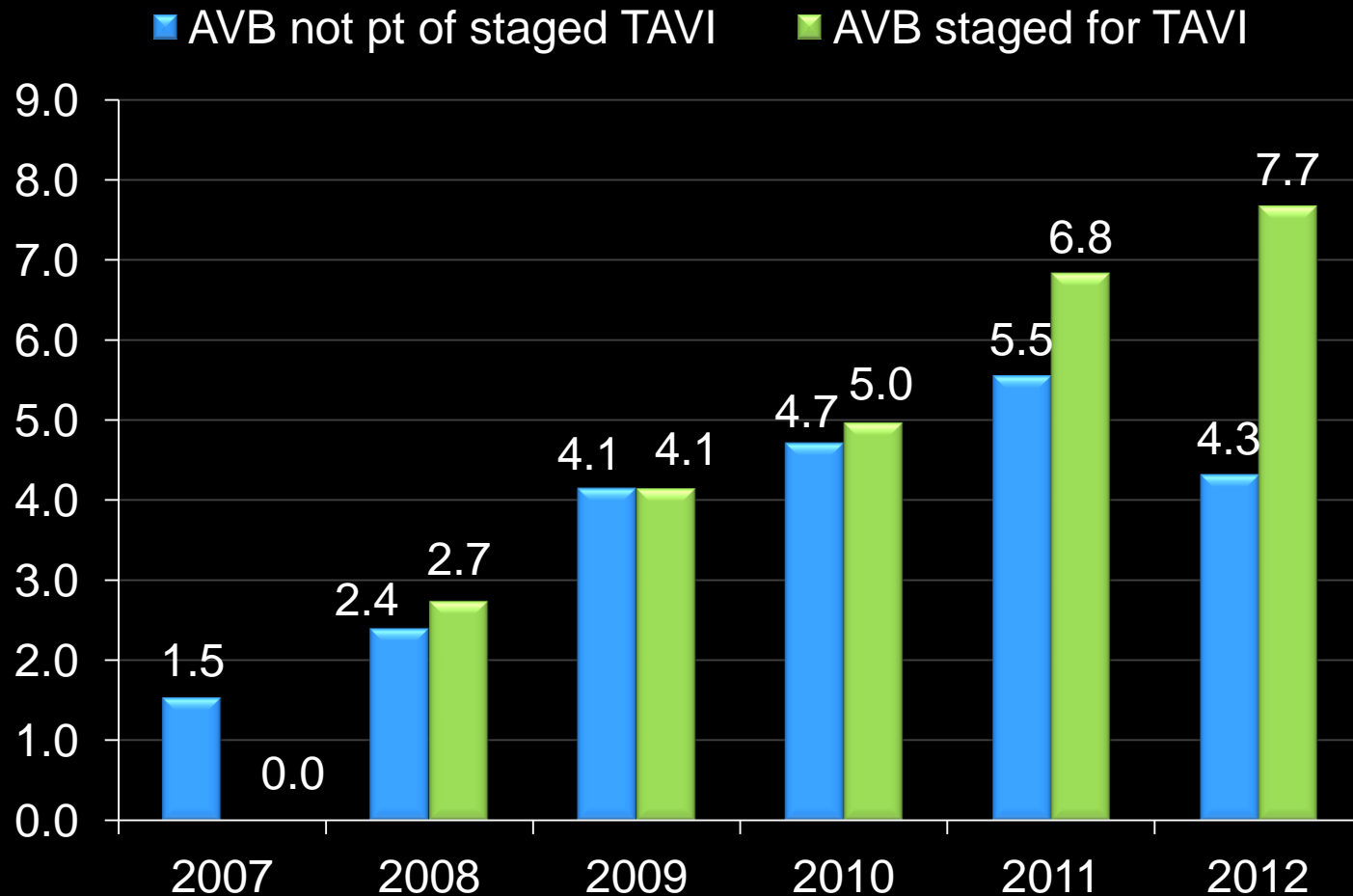


# TAVI



2012 data: Ludman

Of patients treated by TAVI:

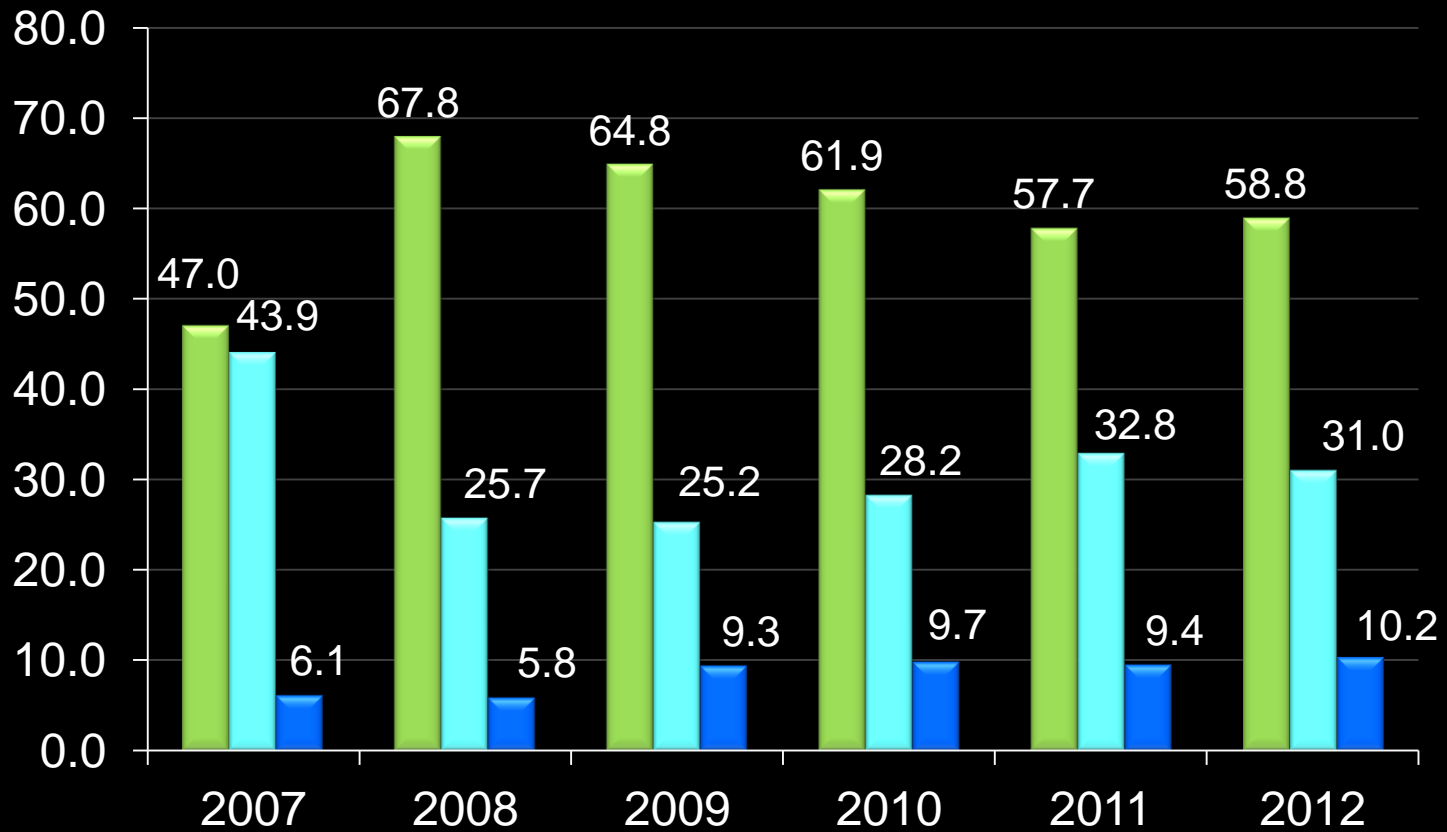


# TAVI



2012 data: Ludman

- Good (LVEF  $\geq$ 50%) as %
- Fair (LVEF = 30-49%) as %
- Poor (LVEF <30%) as %

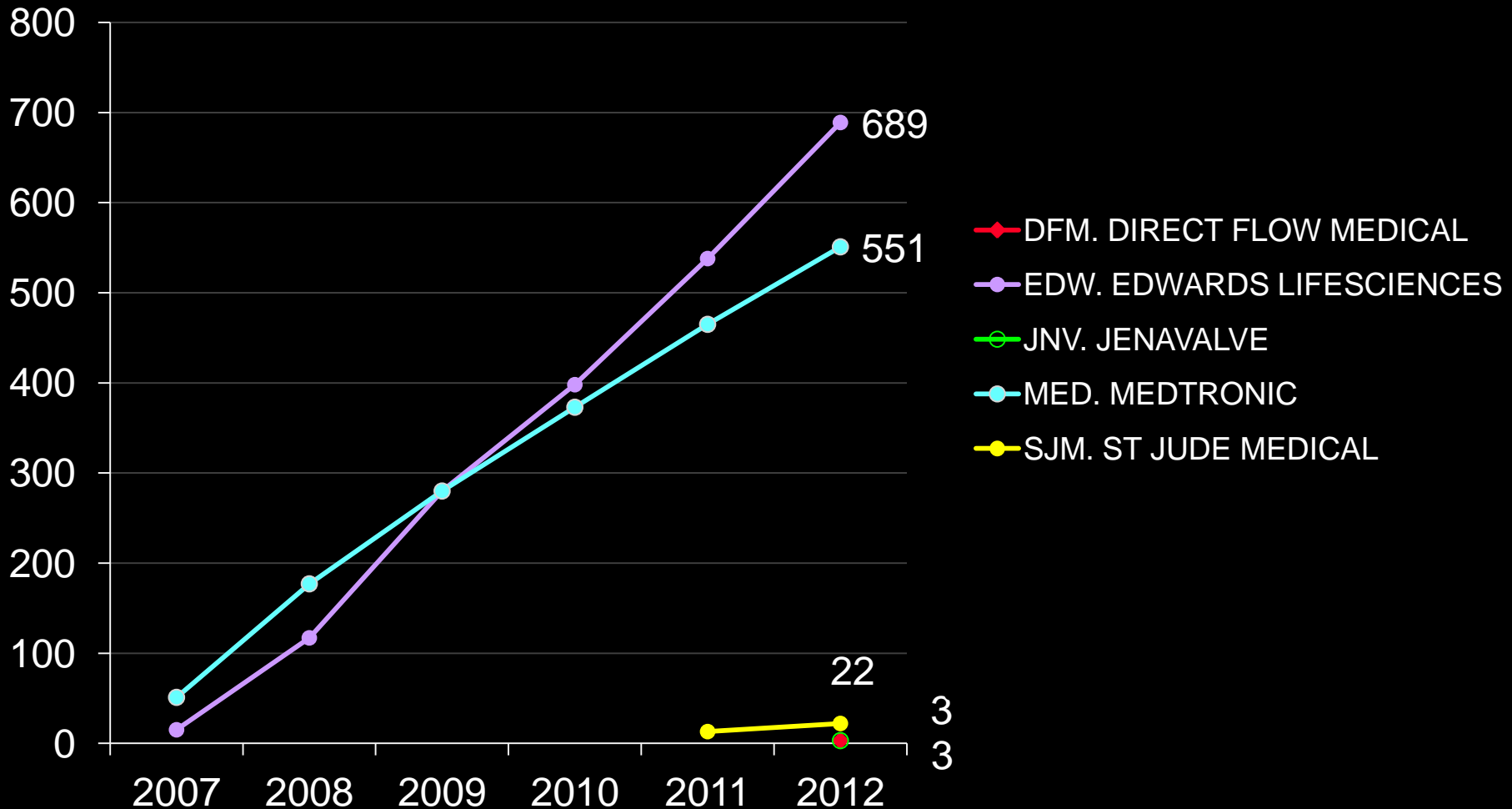


# TAVI



2012 data: Ludman

## Valve Type



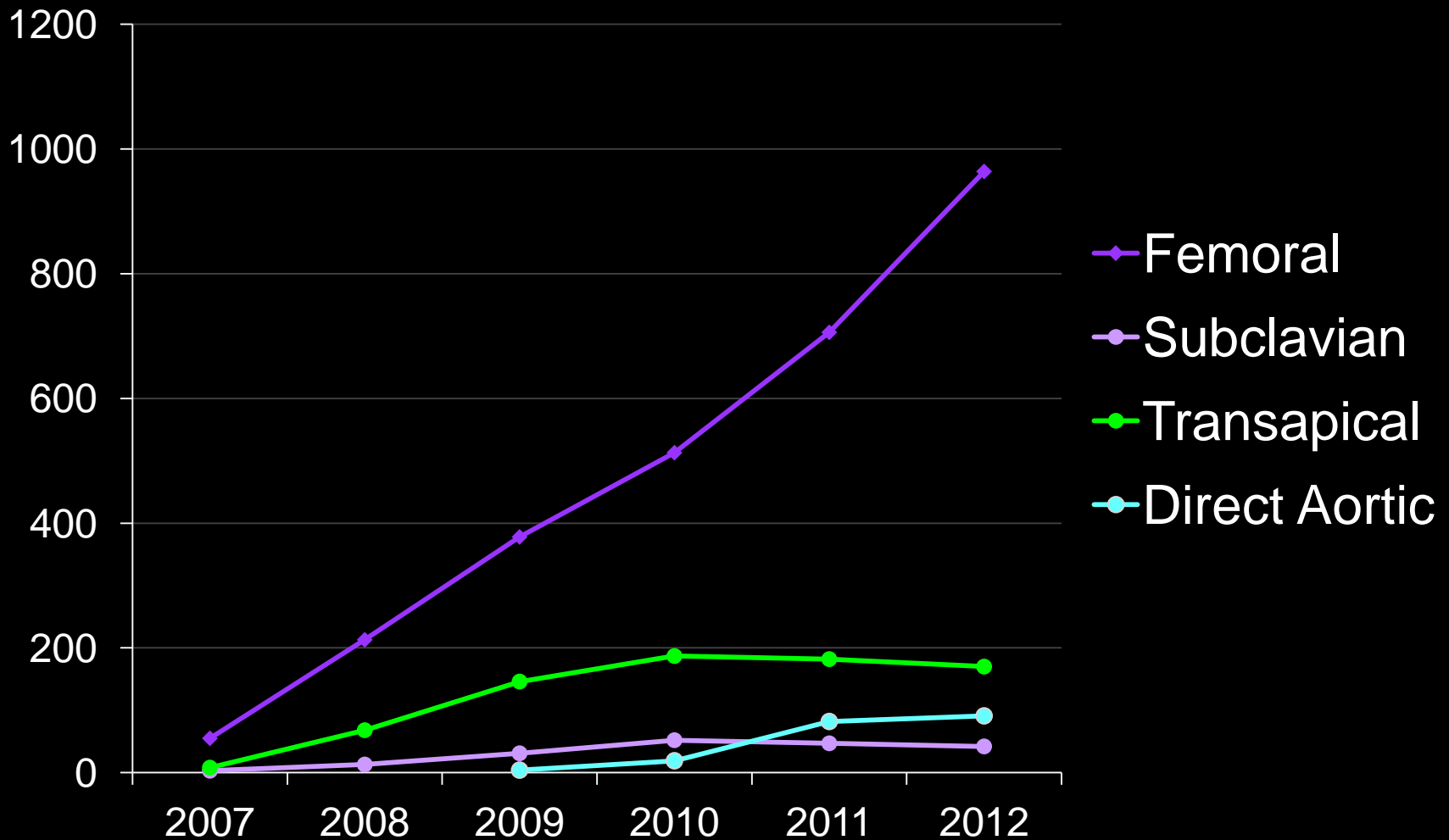
Provisional: from TAVI registry as September 2013

# TAVI



2012 data: Ludman

## Delivery Approach

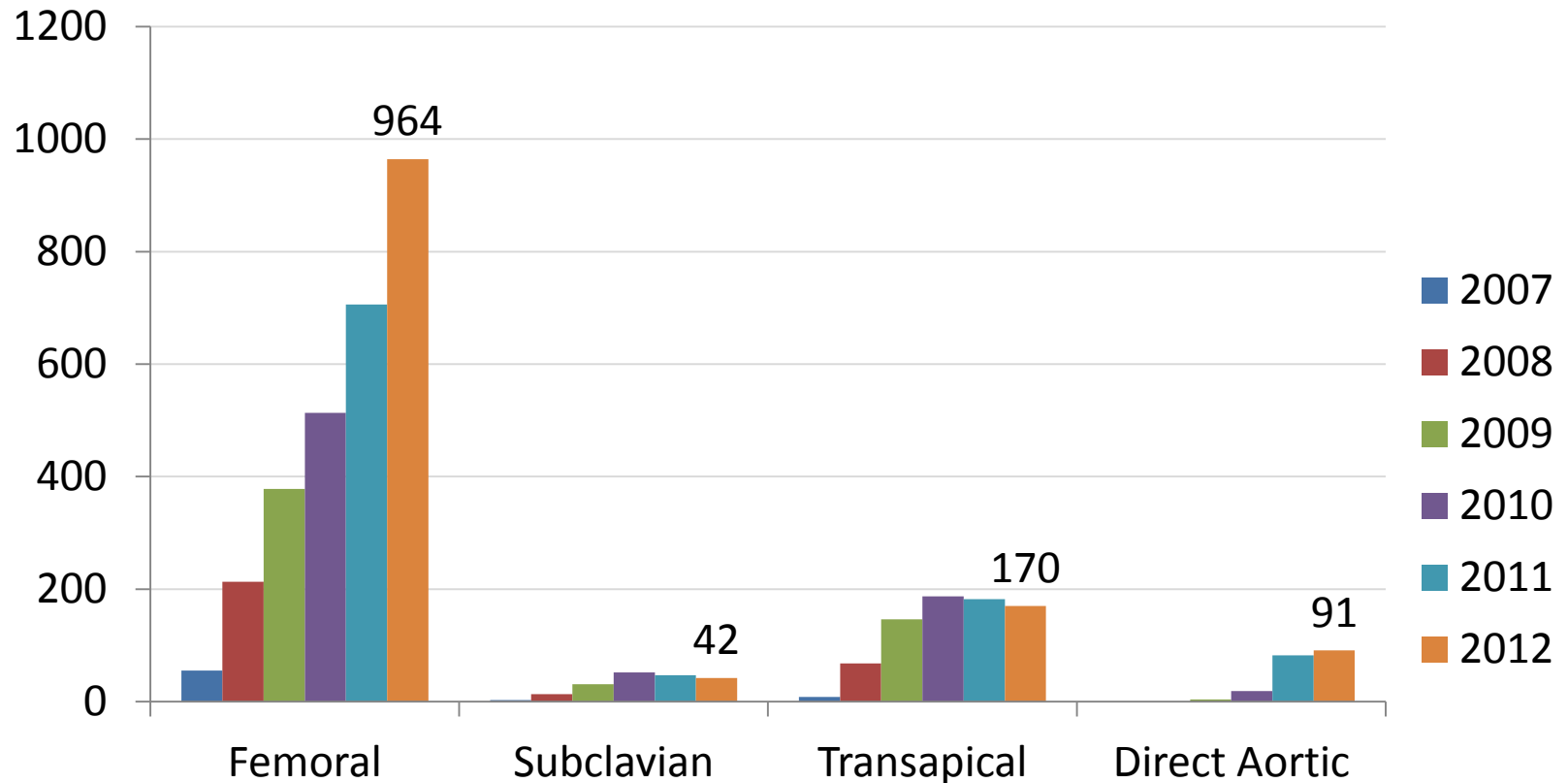


# TAVI



2012 data: Ludman

## Delivery Approach

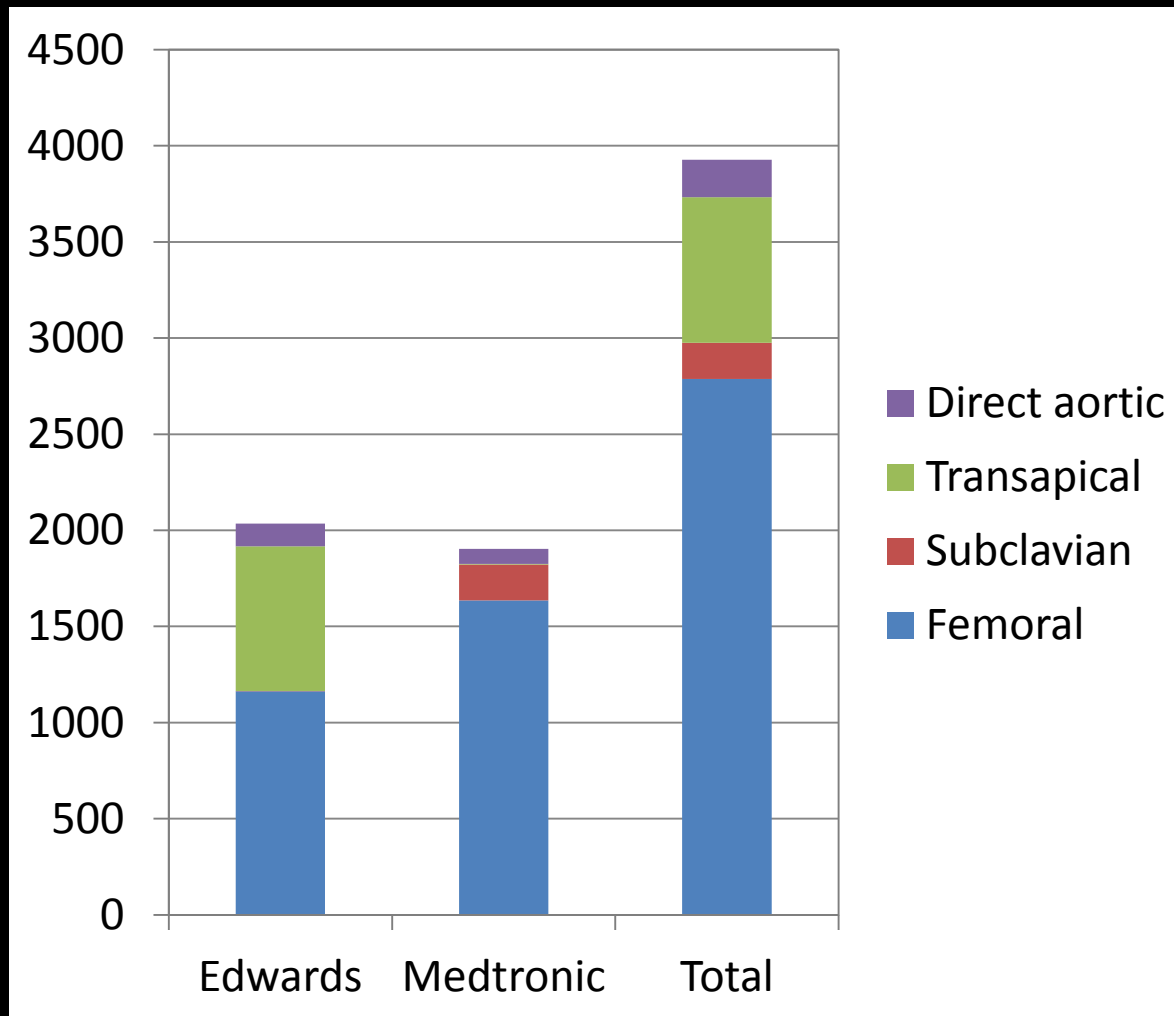


# TAVI



2012 data: Ludman

## Delivery Approach

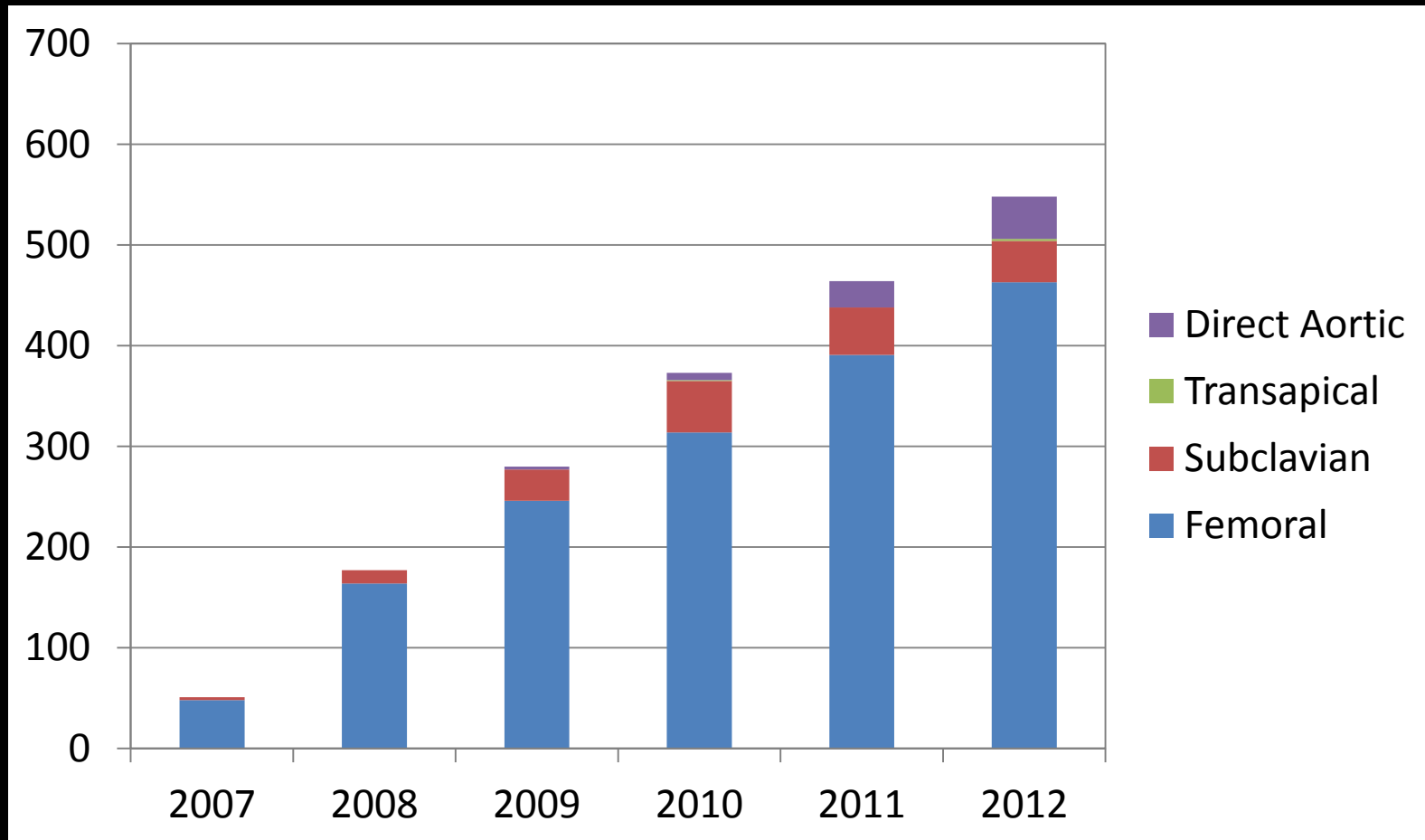


# TAVI

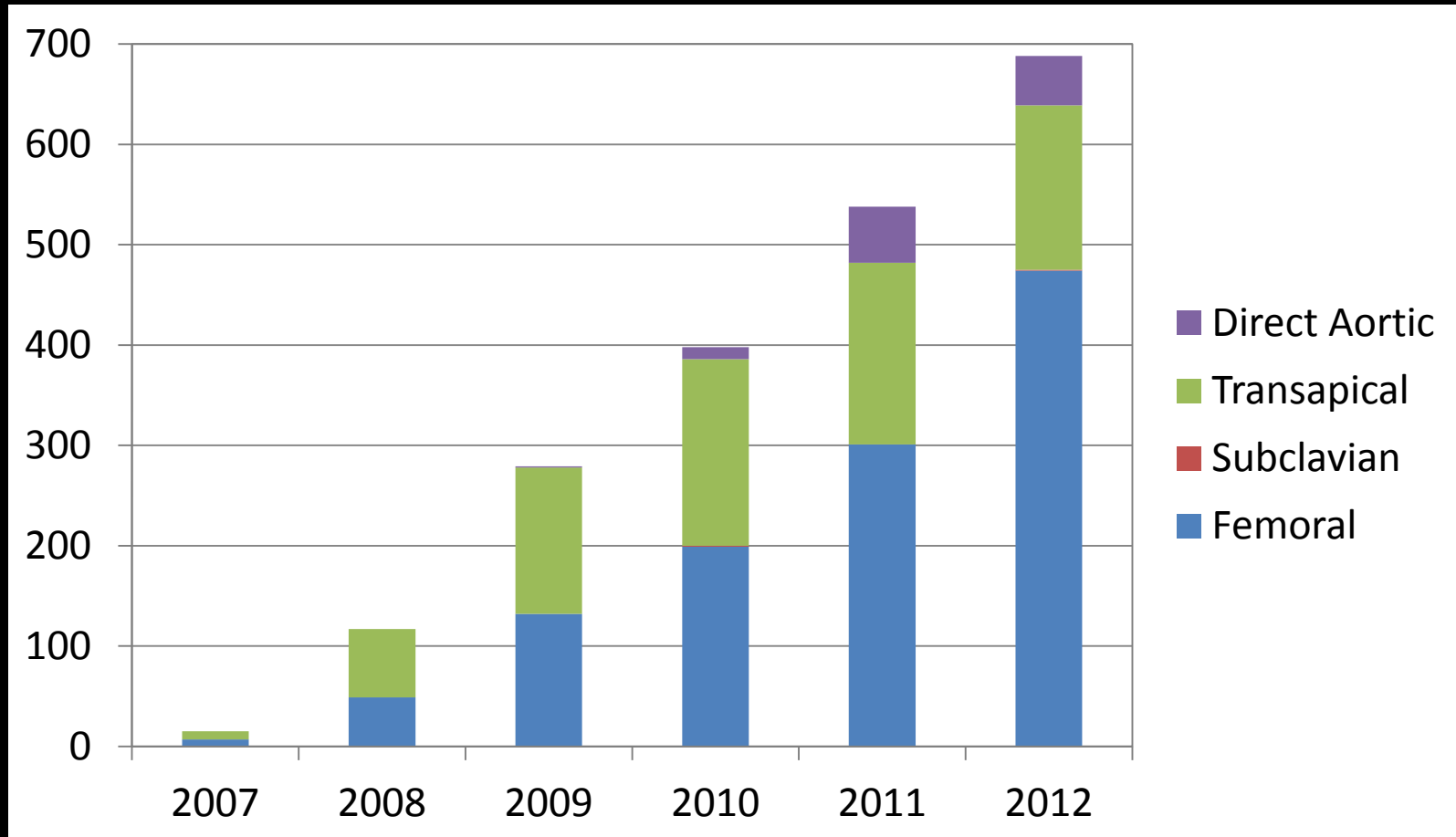


2012 data: Ludman

## Delivery Approach – Medtronic CoreValve



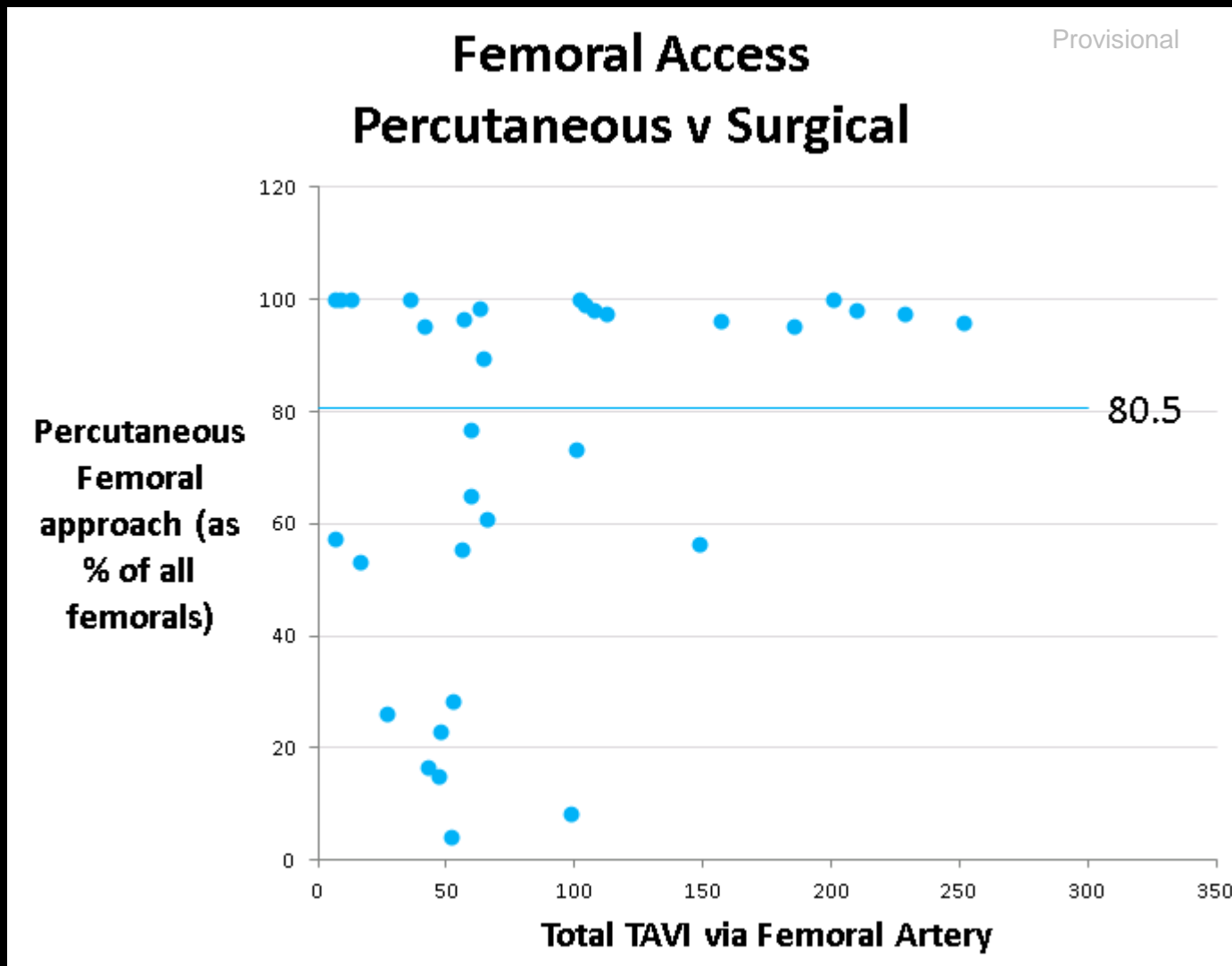
## Delivery Approach – Edwards Sapien



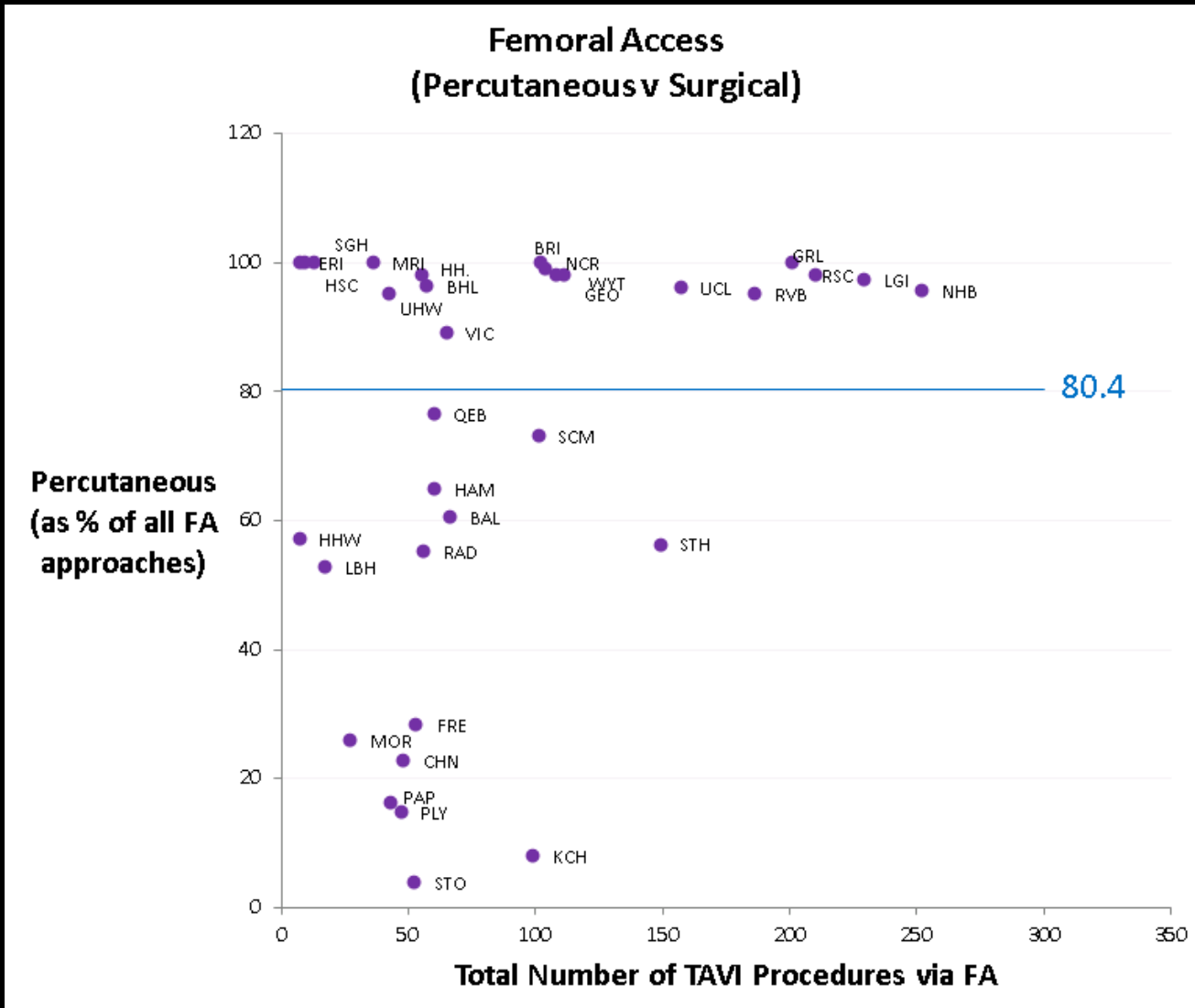
# TAVI



2012 data: Ludman



Provisional: from TAVI registry as September 2013

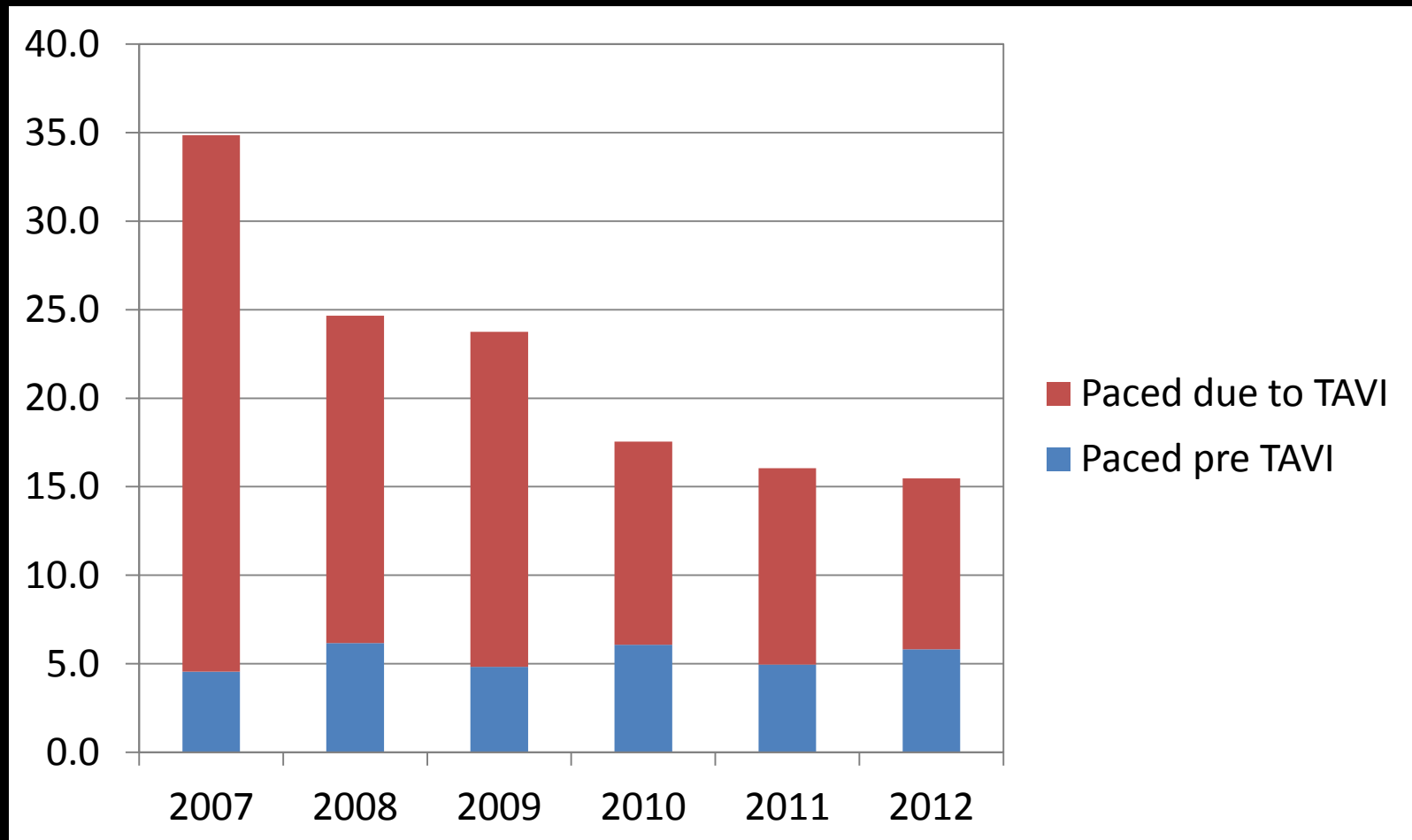


# TAVI



2012 data: Ludman

## Pacing

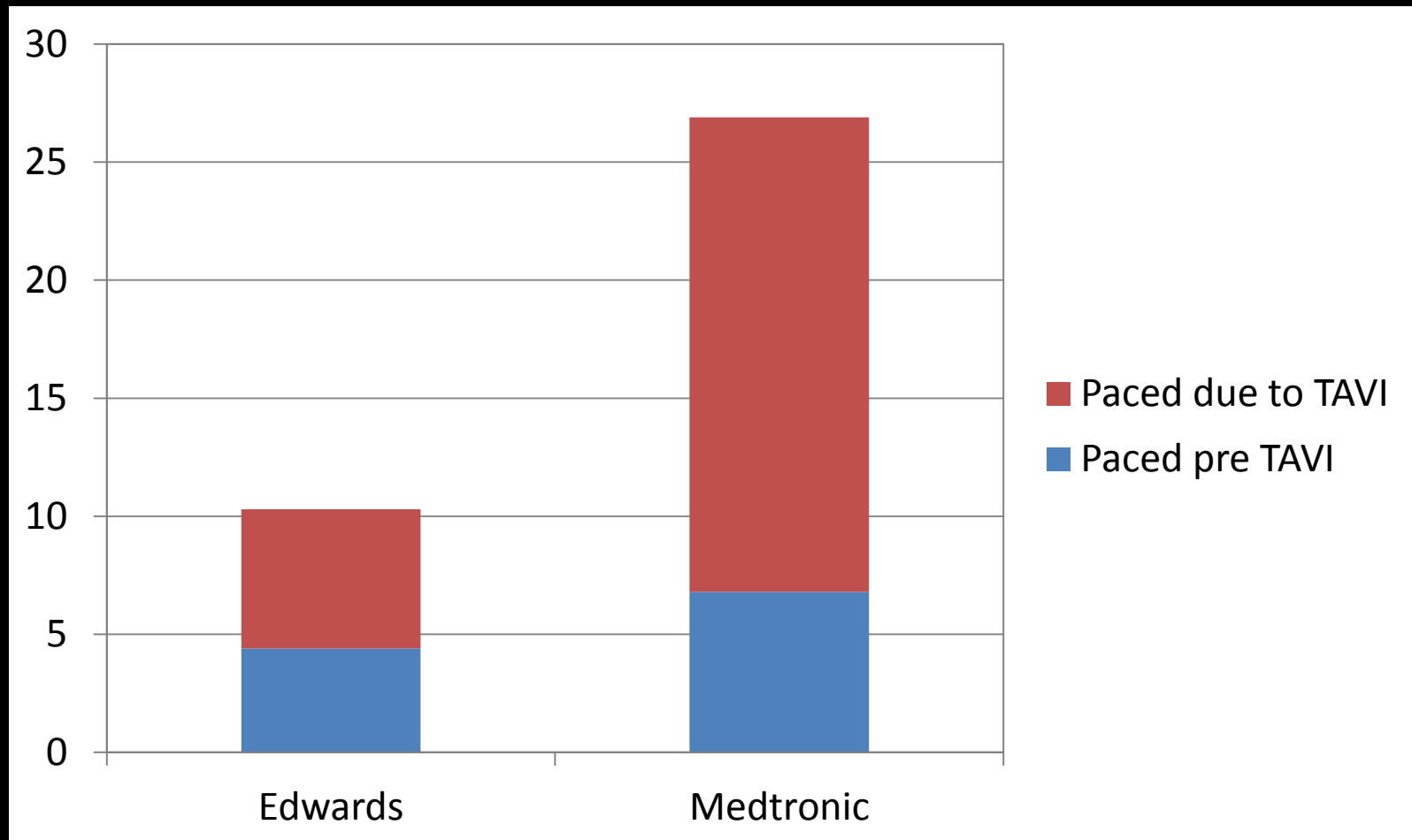


# TAVI



2012 data: Ludman

## Pacing

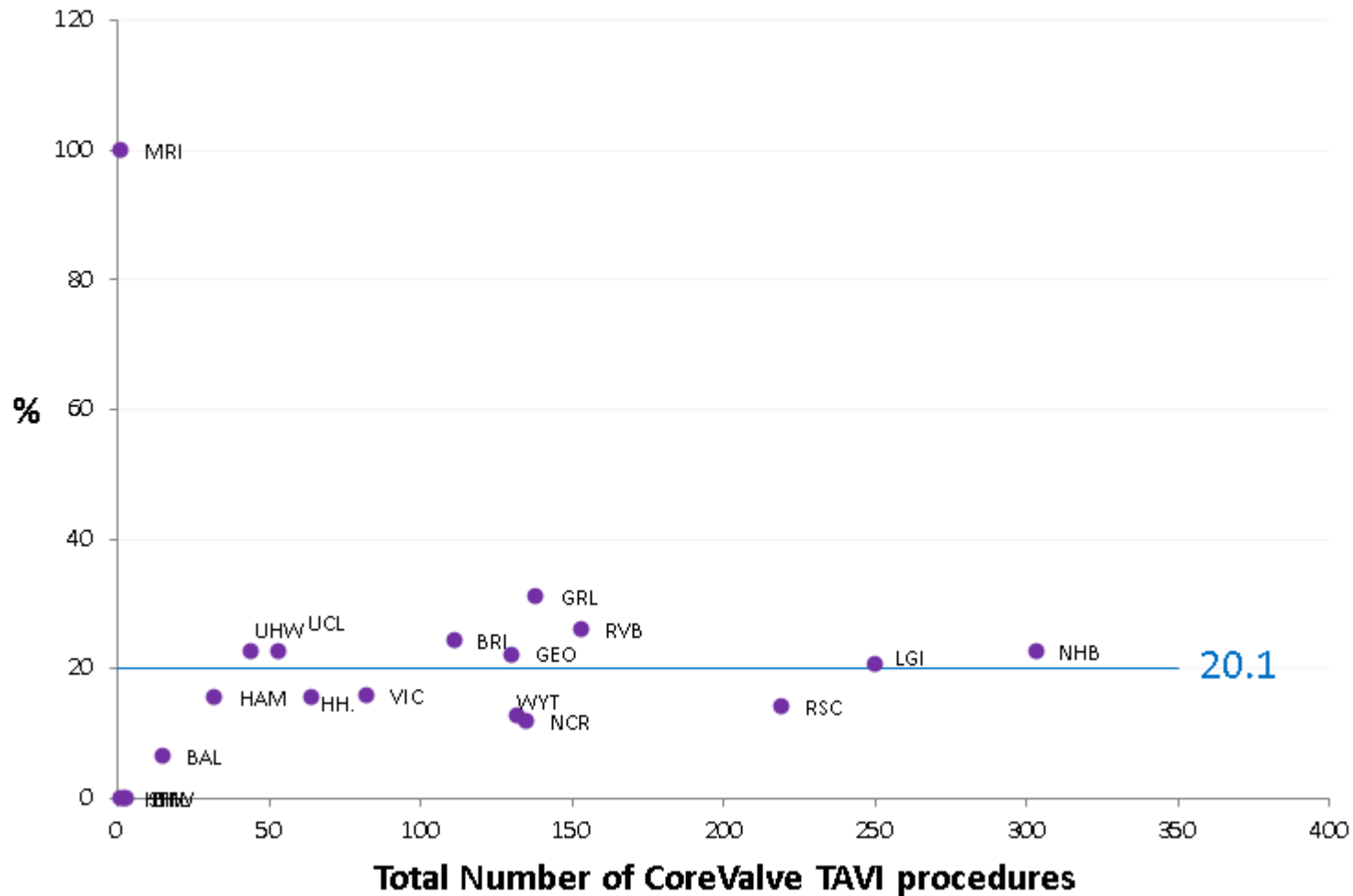


# TAVI

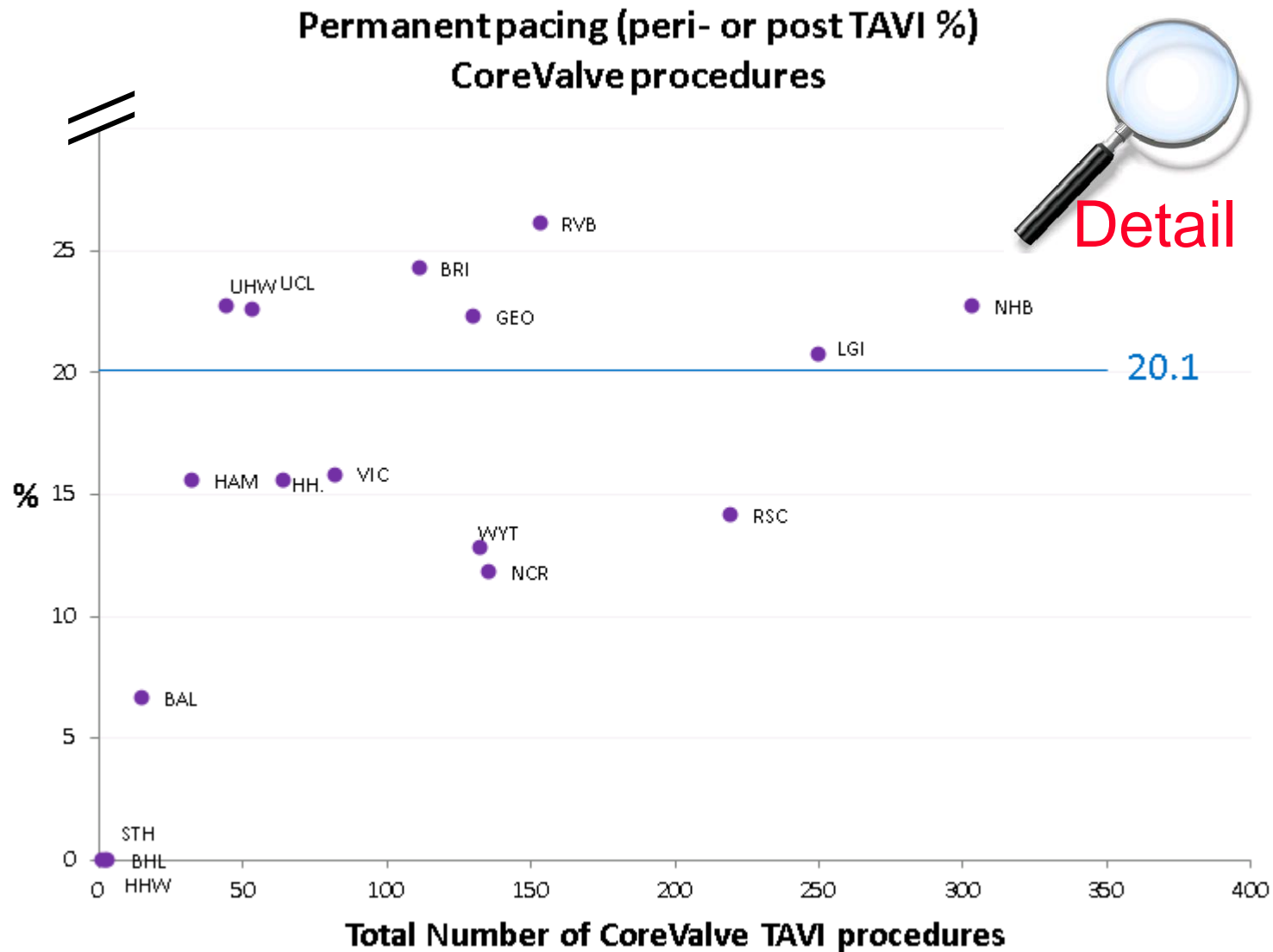


2012 data: Ludman

## Permanent pacing (peri- or post TAVI %) CoreValve procedures



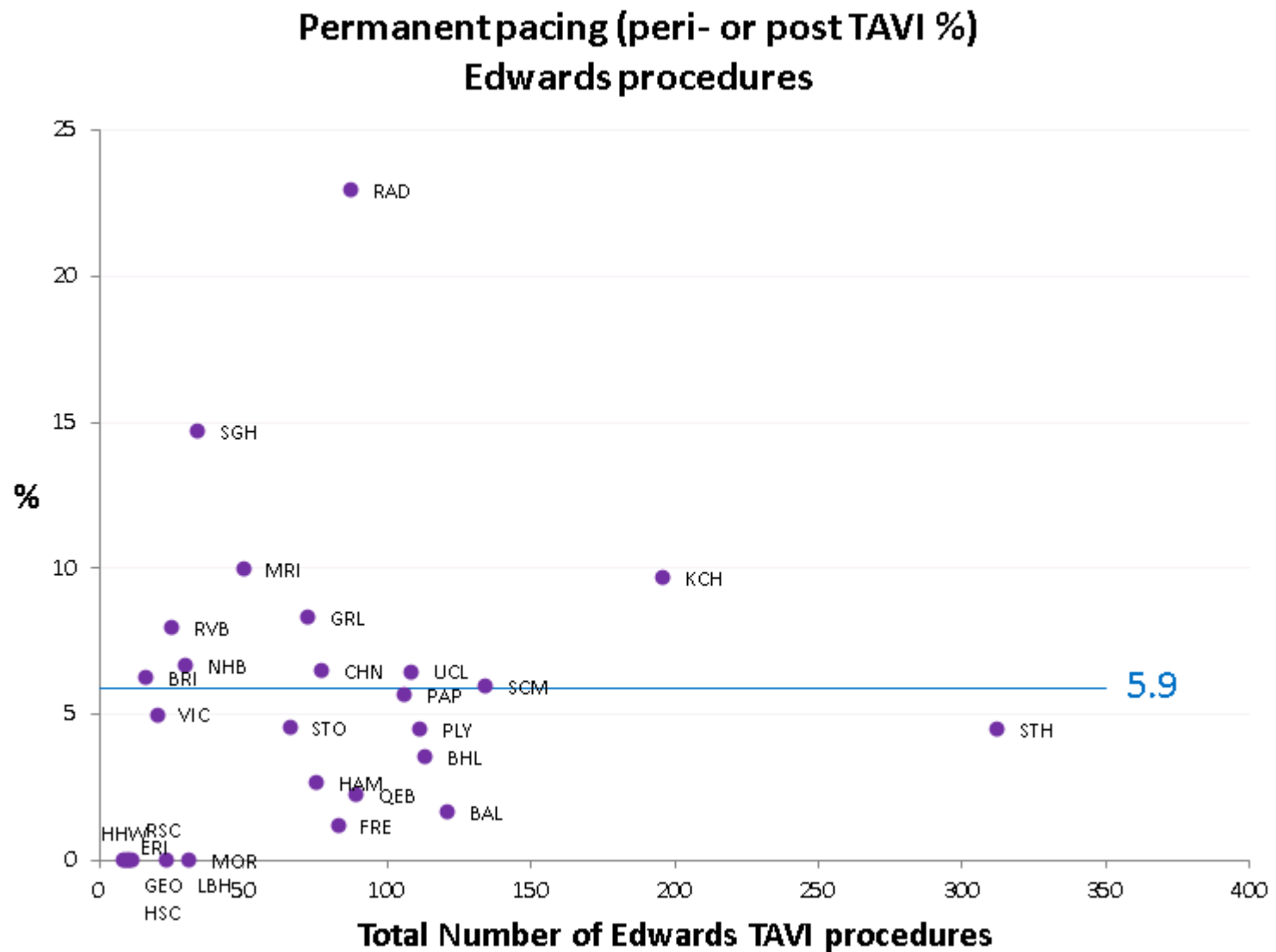
# TAVI



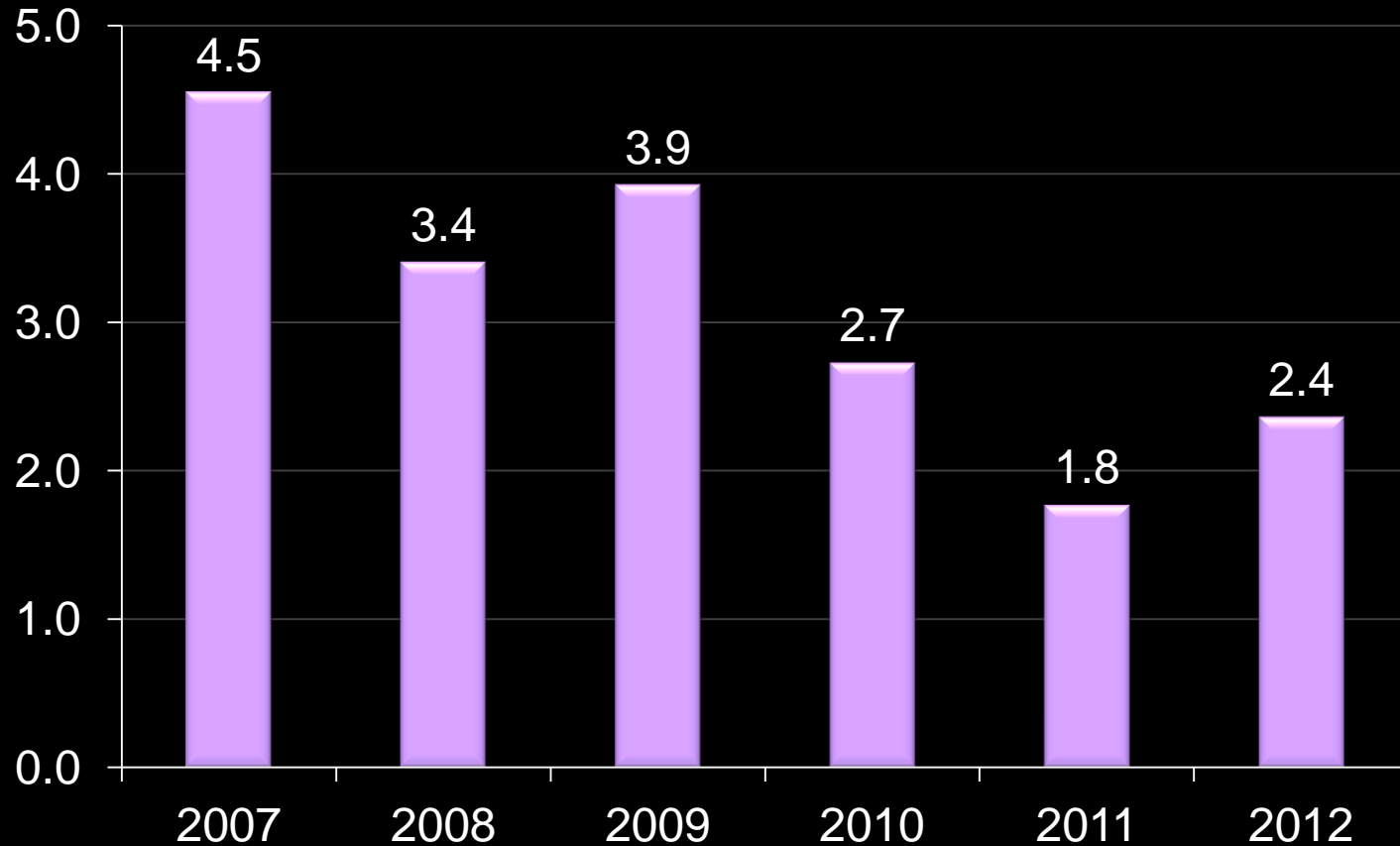
# TAVI



2012 data: Ludman



## Complication of CVA (%)

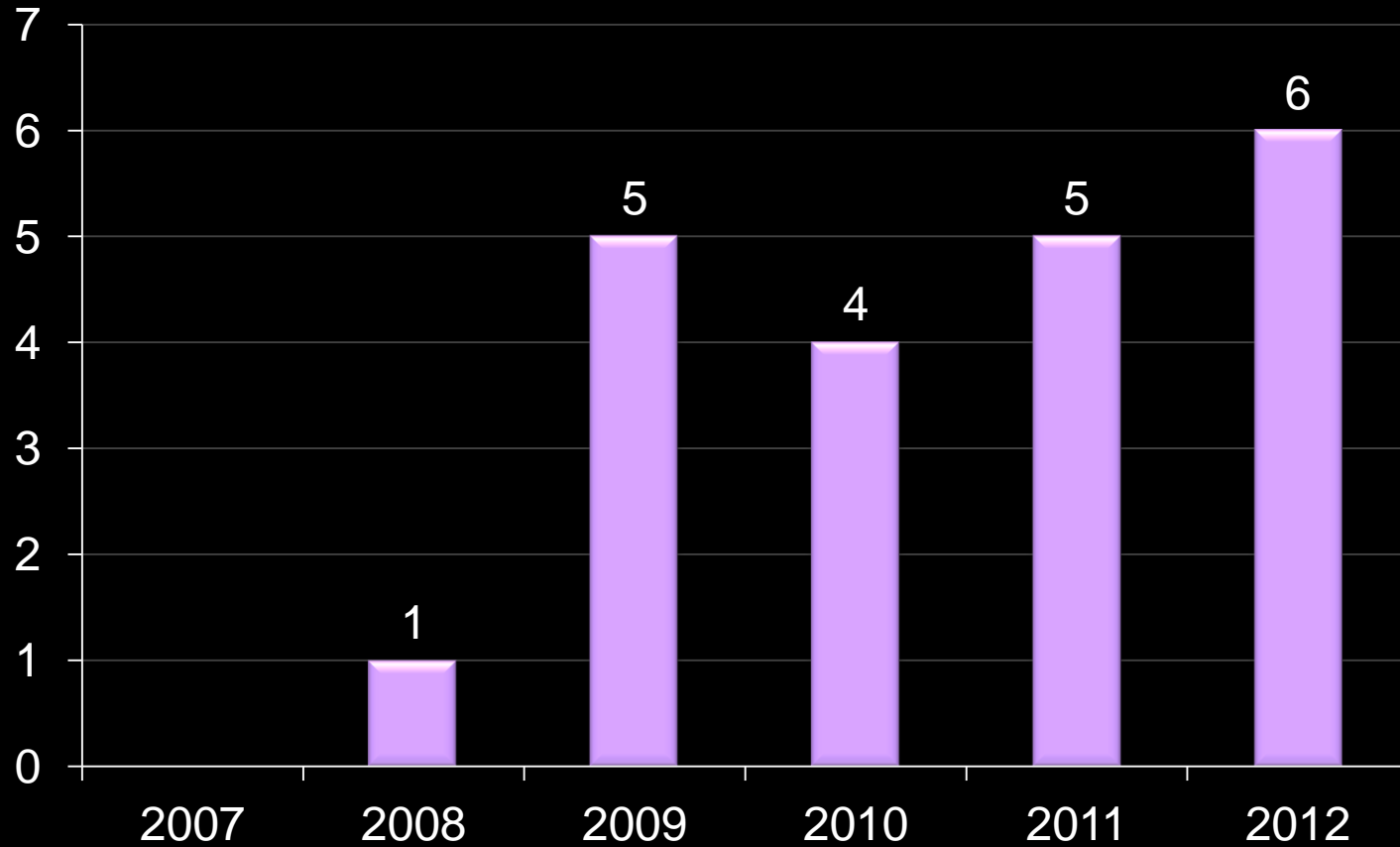


# TAVI



2012 data: Ludman

## Conversion to surgery in the Lab (n)

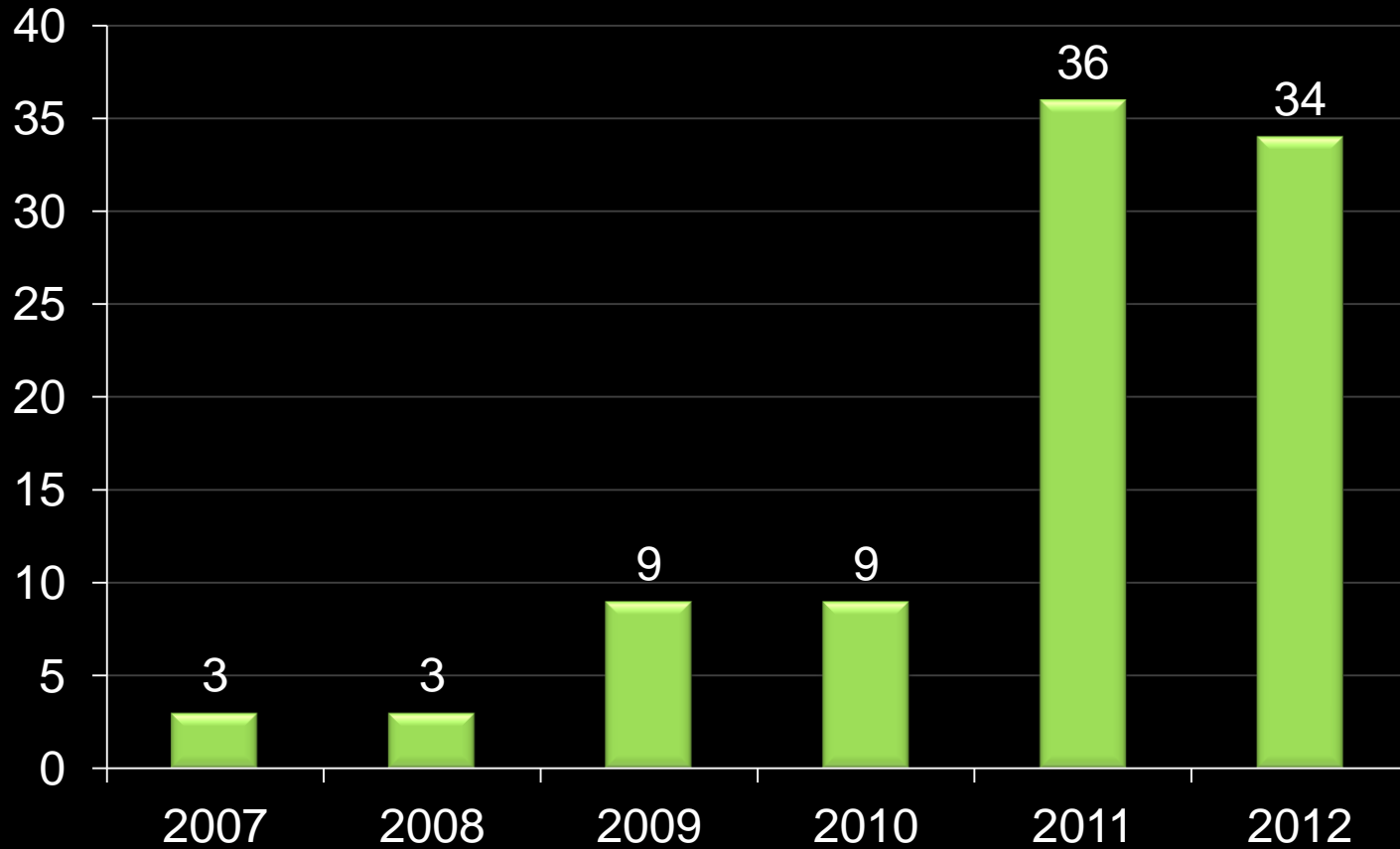


# TAVI

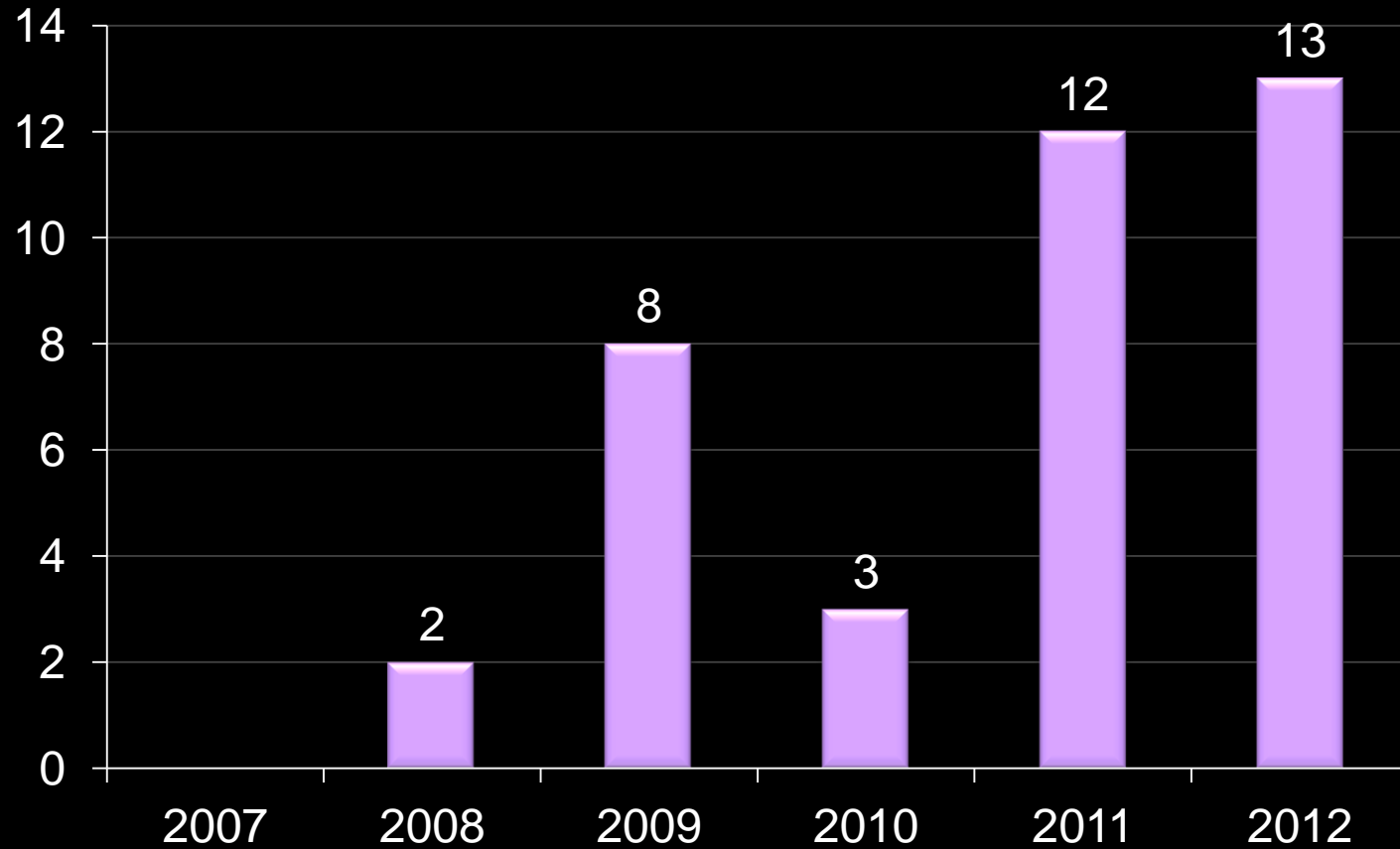


2012 data: Ludman

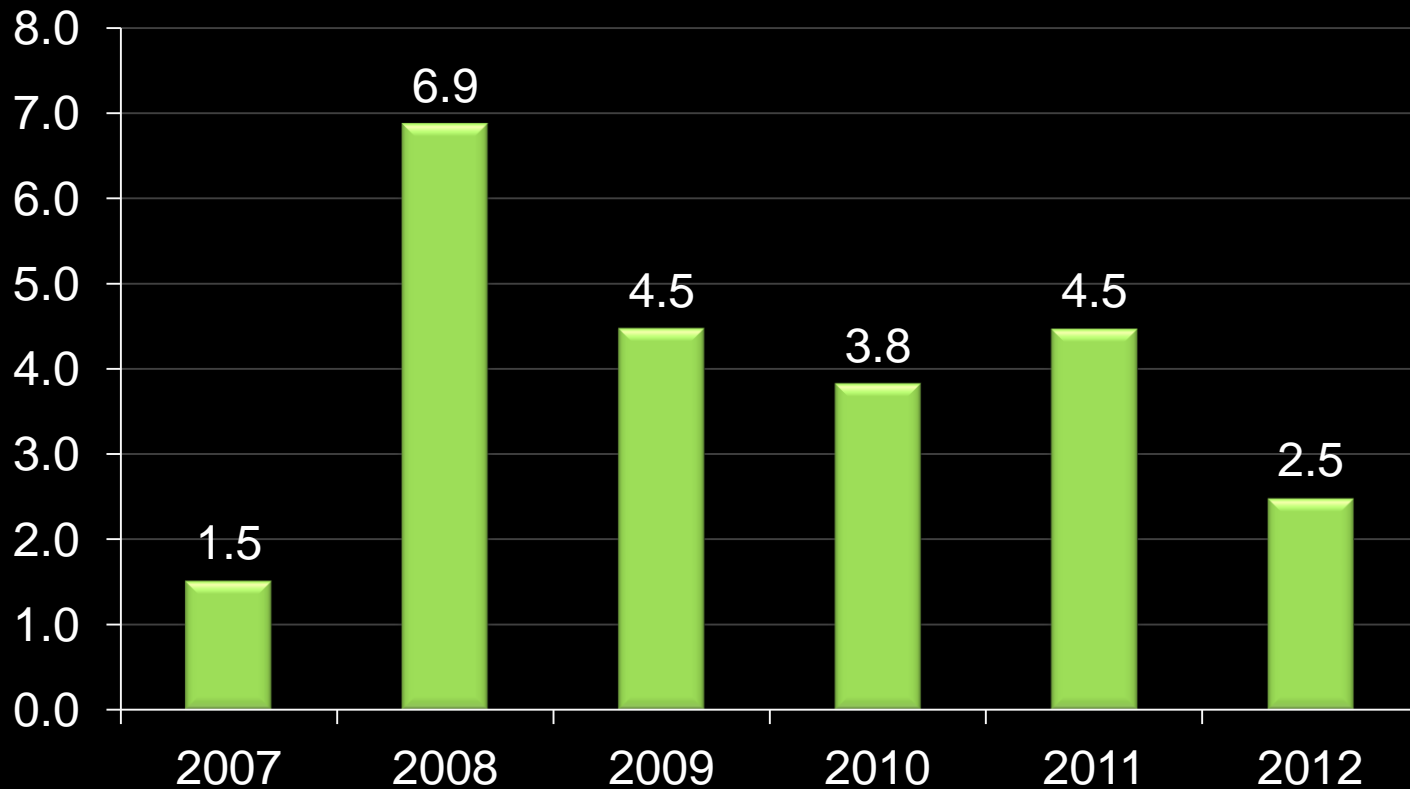
## Emergency Valve-in-Valve in lab (n)



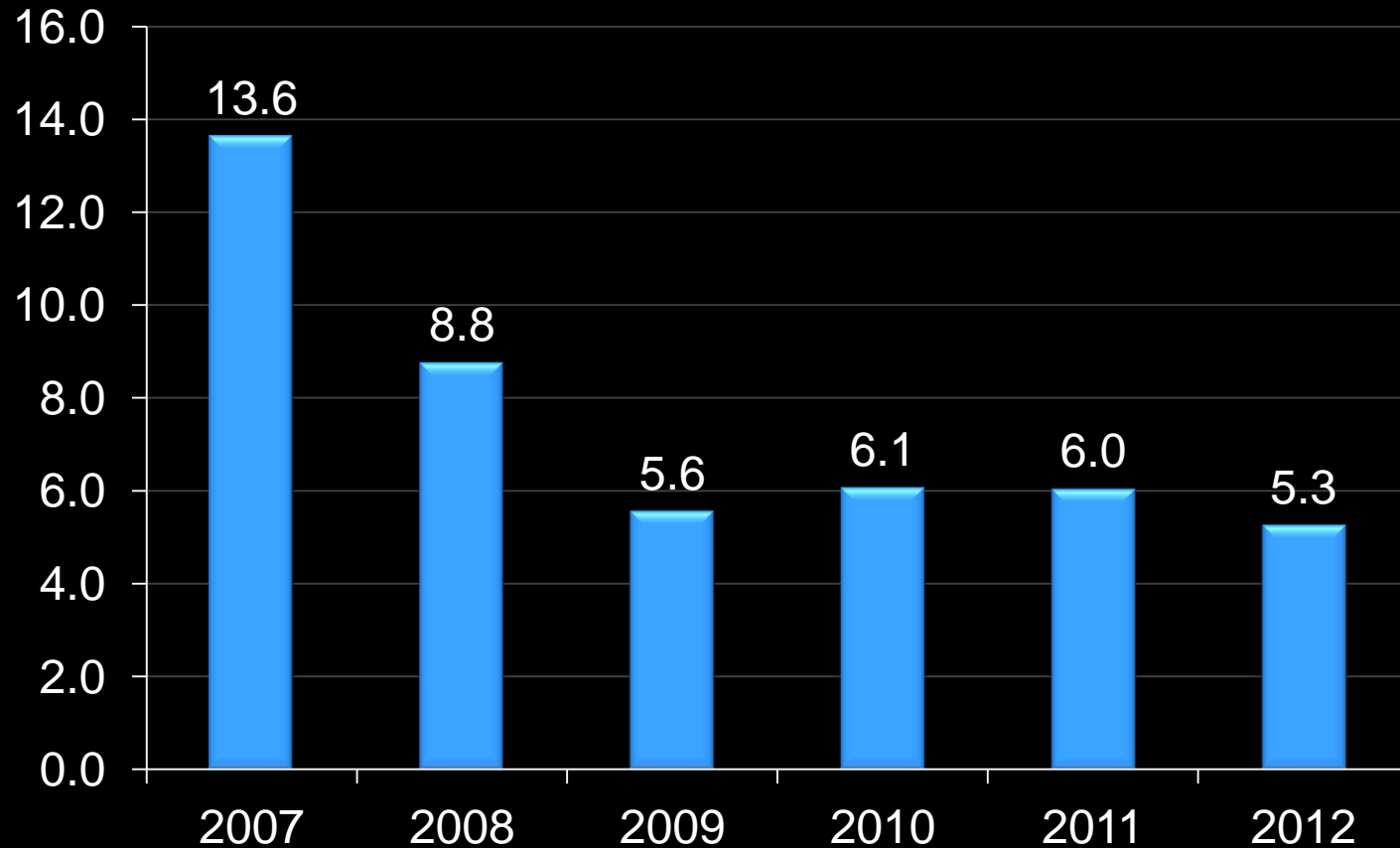
## Device Embolisation in lab (n)



## New Haemofiltration or dialysis post procedure (%)



## Mortality (Tracked at 30 days as %)



# TAVI to treat other valves



2012 data: Ludman

	Units	No	Max Cases
Degenerate Prosthetic Mitral Valve	4	6	2
Degenerate Prosthetic Tricuspid Valve	2	3	2

# Summary 2012

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- 118 PCI centres in UK
  - 92,445 PCIs (1,451 PCI pmp)
- NSTEMI delays improved
- PPCI delays largely unchanged
- Non coronary intervention developing
- TAVI practice patterns explored
- Future plans
  - PCI dataset update
  - New PCI model to be tested
  - Reports for revalidation
  - Public reports evolve
  - Focus on data completeness increased



# The End



# UK PCI Centre Codes 2012

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# UK PCI Centre Codes 2012

AEI. Royal Albert Edward Infirmary	CHG. Cheltenham General Hospital	GHB. Spire Bristol
AHM. BMI The Alexandra Hospital	CHH. Castle Hill Hospital	GJH. Golden Jubilee Hospital
ALT. Altnagelvin Hospital	CHN. Nottingham City Hospital	GRL. Glenfield Hospital
AMG. Wycombe Hospital	CLW. Glan Clwyd Hospital	GWE. Royal Gwent Hospital
ANT. St Anthony's Hospital	CMI. Cumberland Infirmary	GWH. Queen Elizabeth Hospital, Woolwich
BAL. Barts and the London	CRG. Craigavon Area Hospital	HAI. Hairmyres Hospital
BAS. Basildon Hospital	CRO. Cromwell Hospital	HAM. Hammersmith Hospital
BAT. Royal United Hospital Bath	DER. Royal Derby Hospital	HBP. BUPA Hospital, Hull & East Riding
BED. Bedford Hospital	DGE. Eastbourne DGH	HHW. Wellington Hospital North
BFT. Belfast City Hospital	DUD. Birmingham City Hospital	HH. Harefield Hospital
BHH. Rochdale Infirmary	DVH. Darent Valley Hospital	HSC. Harley Street Clinic
BHL. Liverpool Heart and Chest Hospital	EAL. Ealing Hospital	IND. London Independent Hospital
BHR. Royal Berkshire Hospital	EBH. Birmingham Heartlands Hospital	KCH. King's College Hospital
BLA. Royal Blackburn Hospital	ERI. Royal infirmary of Edinburgh	KGH. Kettering General Hospital
BMI. The BMI Meriden Hospital	ESU. East Surrey Hospital	KMH. Kings Mill Hospital
BOU. Royal Bournemouth General Hospital	FRE. Freeman Hospital	KSX. Tunbridge Wells Hospital
BRD. Bradford Royal Infirmary	FRM. Frimley Park Hospital	LBH. London Bridge Hospital
BRI. Bristol Royal Infirmary	FRY. Frenchay Hospital	LBP. Leicester BUPA Hospital
CBS. Spire Southampton Hospital	GEO. St George's Hospital	LEB. Spire Hospital Leeds

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# UK PCI Centre Codes 2012

LGI. Leeds General Infirmary	PHN. BMI Park Hospital	SGH. Southampton General Hospital
LIN. Lincoln County Hospital	PIN. Pinderfields General Hospital	SPH. St Peter's Hospital
LIS. Lister Hospital	PLY. Derriford Hospital	SSP. Spire Shawfair Park Hospital
LNH. Leeds Nuffield Hospital	PMS. The Great Western Hospital	STH. St Thomas Hospital
MAY. Croydon University Hospital	QAP. Queen Alexandra Hospital	STO. University Hospital of North Staffordshire
MDW. Medway Maritime Hospital	QEB. Queen Elizabeth Hospital, Edgbaston	SUN. Sunderland Royal Hospital
MHO. Manor Hospital	RAD. John Radcliffe Hospital	TOR. Torbay Hospital
MOR. Morrision Hospital	RAI. Raigmore Hospital	UCL. University College Hospital
MPH. Musgrove Park Hospital	RCH. Royal Cornwall Hospital	UHW. University Hospital of Wales
MRI. Manchester Royal Infirmary	RDE. Royal Devon & Exeter Hospital	VIC. Blackpool Victoria Hospital
NCR. New Cross Hospital	RFH. Royal Free Hospital	WAL. University Hospital Coventry
NGS. Northern General Hospital	RHH. Ross Hall Hospital	WAT. Watford General Hospital
NHB. Royal Brompton Hospital	RHI. Calderdale Royal Hospital	WDH. Dorset County Hospital
NHH. Basingstoke and North Hampshire Hospital	RIA. Aberdeen Royal Infirmary	WEX. Wexham Park Hospital
NIN. Ninewells Hospital	RSC. Royal Sussex County Hospital	WHC. Whipps Cross Hospital
NOR. Norfolk and Norwich University Hospital	RVB. Royal Victoria Hospital	WHH. William Harvey Hospital
NPH. Northwick Park Hospital	SAL. Salisbury District Hospital	WRC. Worcestershire Royal Hospital
NTH. Northampton General Hospital	SAN. Sandwell General Hospital	WRG. Worthing Hospital
PAP. Papworth Hospital	SCM. James Cook University Hospital	WYT. Wythenshawe Hospital
PHB. Priory Hospital	SCU. Scunthorpe General Hospital	YDH. York District Hospital

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# Acknowledgments

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- Database and programming
  - Andrew Donald
  - Darragh O'Neill
- Administrative support
  - Tracy Whittaker
  - Sam McAlister

# Version

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- 04-10-2013
  - Moratlity at 30/7 funnels not complete
- 14-10-2013
  - Slide 375 – previously incorrect version updated