

# THE IMPACT OF COMPETITION ON MANAGEMENT QUALITY: EVIDENCE FROM ENGLISH HOSPITALS

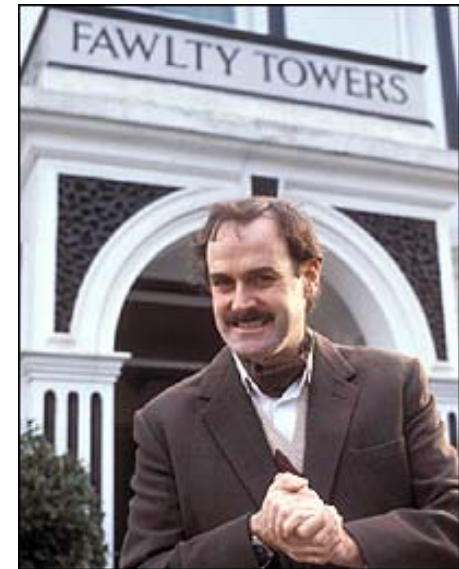
April 30th 2010, CMPO Bristol University

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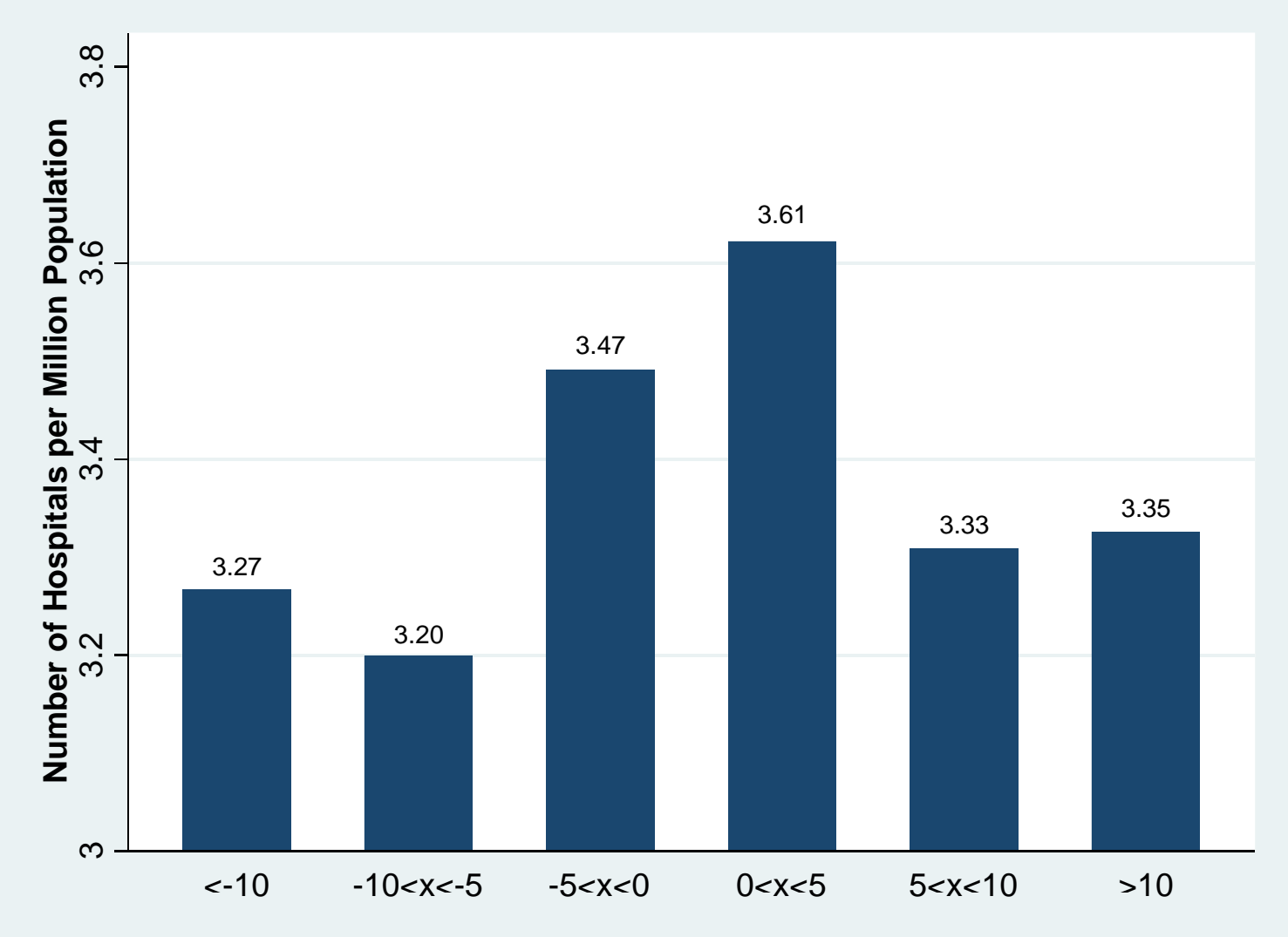
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# MOTIVATION

- The difficult healthcare debate on funding has focused even more attention on trying to increase healthcare productivity
- One potential way to do this is increasing competition – but the prior literature on this is ambiguous (Gaynor, 2006 FTC)
- This is partly due to the difficulty in obtaining causal estimates, and partly due to the difficulty of evaluating the mechanism
- We attempt to address this by looking at the English NHS:
  - **Identification:** Government control over hospital entry & exit yields an instrument (political marginality) for hospital numbers
  - **Mechanism:** Adapt Bloom and Van Reenen (2007, QJE) management practice survey technique for healthcare

# IN THE UK THERE ARE MORE HOSPITALS IN (POLITICALLY) MARGINAL CONSTITUENCIES



Labour party's winning % margin (1997)

# SUMMARY OF OUR PAPER

1. Survey 61% of UK acute public hospitals (NHS), and find a very large spread of management practices
2. Patient health outcomes – e.g. death rates from heart-attacks – are robustly *correlated* with management scores
3. Competition measured by density of local hospitals is also robustly correlated with better management and health outcomes
4. When we instrument with political marginality we find much larger causal effect of competition on management and health outcomes

# OUTLINE

**1. “Measuring” management practices**

2. Evaluating the reliability of this measure

3. Describing management across hospitals

4. Impact of competition on management practices

# THE MANAGEMENT SURVEY METHODOLOGY

## 1) Developing management questions

- 18 practice scorecard: operations, monitoring, targets & incentives
- Interview of managers and doctors in orthopaedics and cardiology for about 60 minutes

## 2) Obtaining unbiased comparable responses (“Double-blind”)

- Interviewers do not know the hospital's performance
- Interviewees are not informed (in advance) they are scored

## 3) Getting hospitals to participate in the interview

- All performance indicators from external sources (not in interview)
- Endorsement letter from Department of Health
- Run by 4 MBA-types (loud, assertive & experienced)

# Q1 OPERATIONS – layout of the patient flow

Can you briefly describe the patient journey for a typical episode?  
How closely located are the wards, theatres and consumables?  
Has the patient flow and the layout of the hospital changed in recent years? How frequently do these changes occur and what are they driven by?

<b>Score</b>	<b>(1): Lay out of hospital and organisation of workplace is not conducive to patient flow, e.g., ward is on different level from theatre, or consumables are often not available in the right place at the right time</b>	<b>(3): Lay out of hospital has been thought-through and optimised as far as possible; but work place organisation is not regularly challenged (and changed)</b>	<b>(5): Hospital layout has been configured to optimize patient flow; workplace organization is challenged regularly and changed whenever needed</b>
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## Q5 MONITORING – Performance review

How do you review your departments performance? Tell me about a recent meeting. Who is involved in these meetings? Who gets to see the results. What is the follow-up plan? Can you tell me about the recent follow-up plan?

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Score	<b>(1): Performance is reviewed infrequently or in an un-meaningful way e.g. only success or failure is noted</b>	<b>(3): Performance is reviewed periodically with both successes and failures identified. Results are communicated to senior staff. No clear follow up plan is adopted.</b>	<b>(5): Performance is continually reviewed, based on the indicators tracked. All aspects are followed up to ensure continuous improvement. Results are communicated to all staff.</b>
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## **Q15 INCENTIVES - Removing poor performers**

If you had a clinician or a nurse who could not do his job, what would you do? Could you give me a recent example? How long would underperformance be tolerated? Do some individuals always just manage to avoid being re-trained/fired?

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**Score**

**(1): Poor performers are rarely removed from their positions**

**(3) Suspected poor performers stay in a position for a few years before action is taken**

**(5): We move poor performers out of the hospital/department or to less critical roles as soon as a weakness is identified**

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# HOSPITAL MANAGEMENT SURVEY SAMPLE

- 161 respondents in 100 public acute hospitals (a 61% response rate from the population of 164 hospitals in England and Wales)
  - Response rates uncorrelated with observables (table B2)
- Collect data on many “noise” controls:
  - Interviewer fixed effects
  - Interview characteristics (e.g. duration, day, time)
  - Interviewee characteristics (e.g. tenure, job)
- Match to performance and detailed demographics data from the Department of Health

# OUTLINE

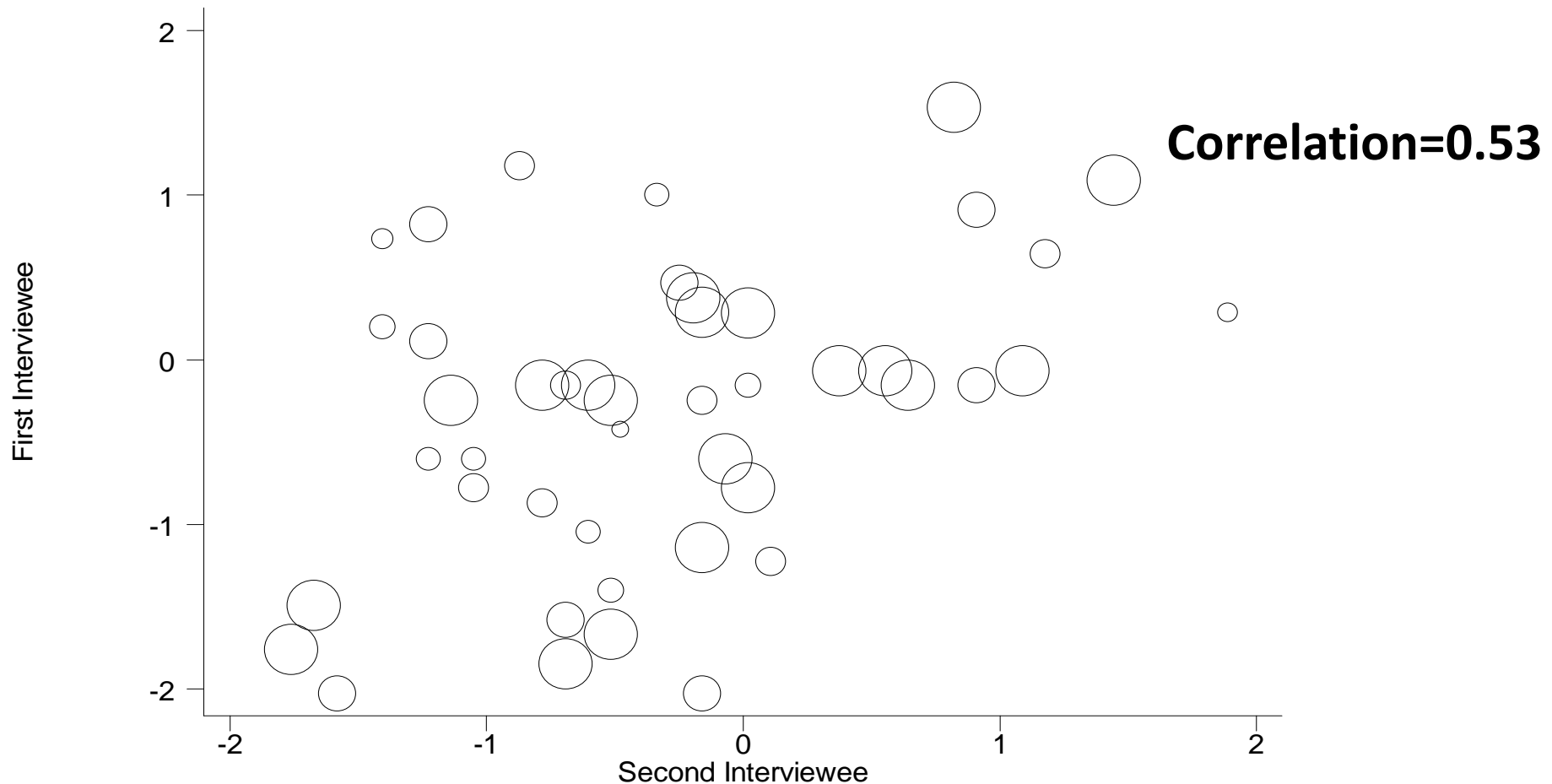
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# “INTERNAL VALIDATION”: CORRELATION BETWEEN FIRST AND SECOND INTERVIEWEE IN SAME HOSPITAL



**Notes:** standardized management score for hospitals where there where 2+ interviews. 45 hospital trusts. Weight is inverse of number of sites (unweighted correlation is 0.40). Only trusts where all answers by managers (clinicians)

# “EXTERNAL VALIDATION” OF THE SCORING

Performance measure,  $k$ , in hospital  $i$

$$y_i^k = \alpha M_{ij} + \beta' x_{ij} + u_{ij}$$

management (average z-scores)  
for respondent  $j$  in hospital  $i$

other controls: **casemix**,  
size, noise controls

- Performance data taken from external sources (NHS databases)
- Note – **not a causal estimation**, only an association
- Cluster SE by hospital

## TAB 2: HOSPITAL PERFORMANCE & MANAGEMENT

	(1)	(2)	(3)	(4)	(5)	(7)	(8)
Dependent Variable (all with mean 0 and SD=1)	Mortality rate from emergency AMI	Mortality rate from emergency surgery	Total waiting list	MRSA infection rate	Operating Margin (costs)	Health Care Commission rating	Pseudo HCC rating
<b>Management Practices Score</b>	-0.044* (0.026)	-0.015** (0.007)	-0.070** (0.034)	-0.175* (0.096)	0.168 (0.108)	0.167** (0.070)	0.268*** (0.098)
<b>Observations</b>	140	157	160	160	161	161	161

**Notes:** All columns control for casemix, interviewer dummies, respondent's tenure and if manager or clinician, region dummies, # sites, % managers with clinical degree, dummy for joint decision-making. Dependent variables all normalized to have a standard deviation of 1.

# TYPICAL MANAGEMENT IMPROVEMENT (BEFORE)

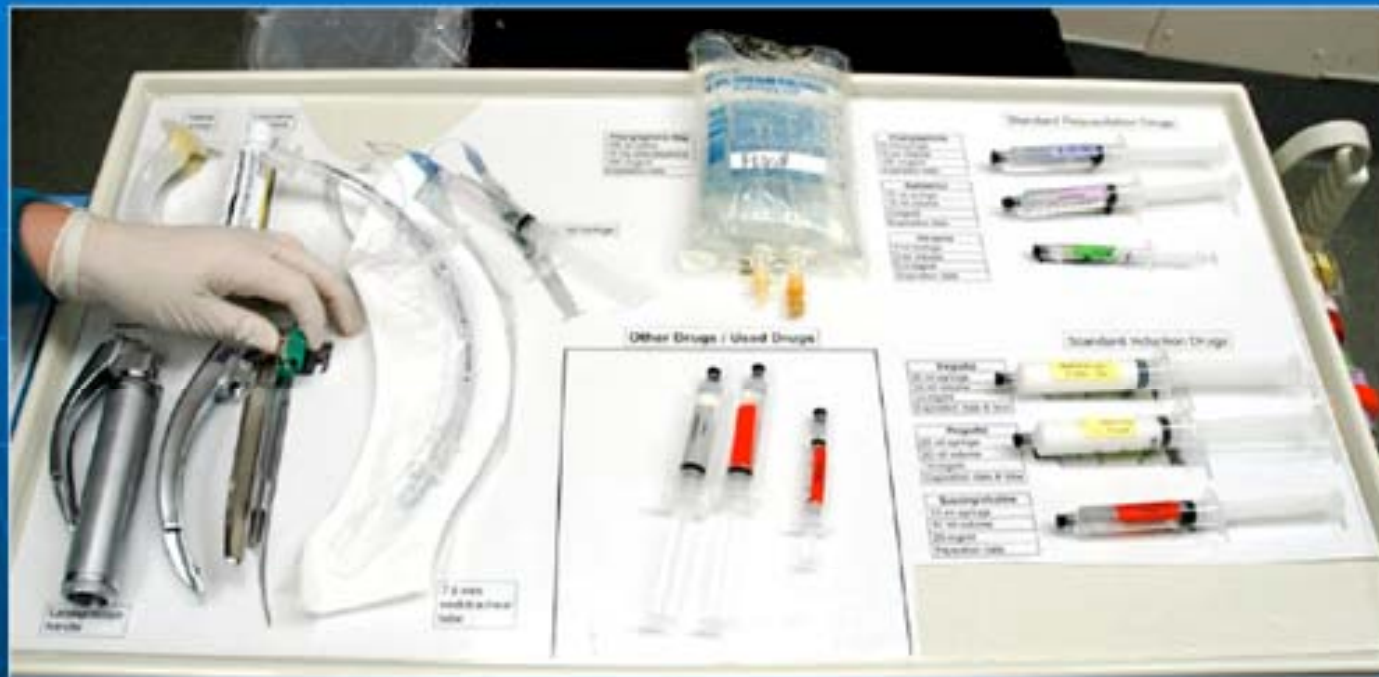
## Visual Control for Safety



5S Anesthesia "Shadow Board" - Before

# TYPICAL PROCESS IMPROVEMENT (AFTER)

## Visual Control for Safety



5S Anesthesia Shadow Board - After

# OUTLINE

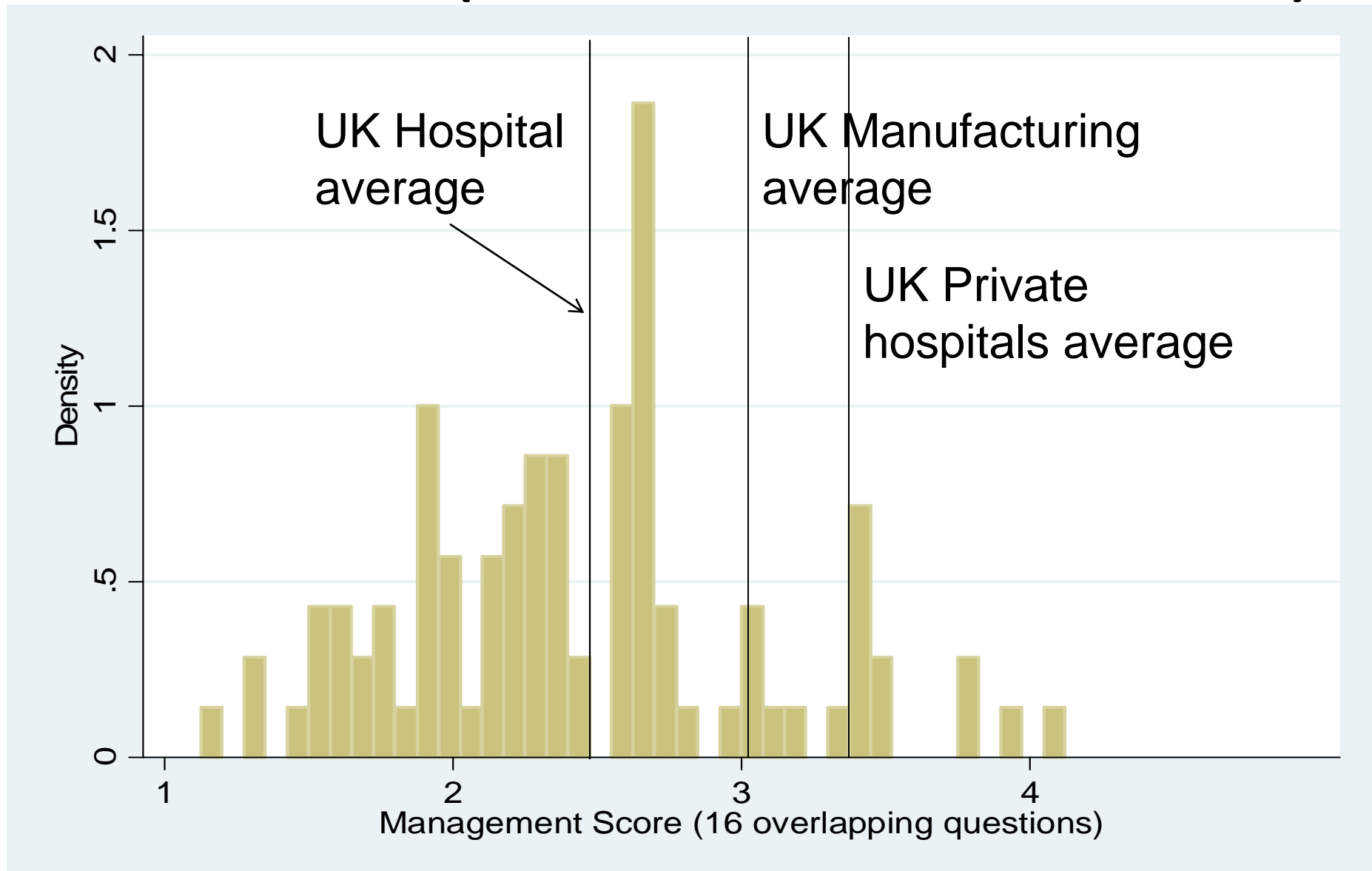
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# FIG 3: PUBLIC HOSPITAL MANAGEMENT SCORES ARE VERY DISPERSED (LIKE HOSPITAL OUTCOME DATA)



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# A NUMBER OF ROUTES FOR GREATER NUMBERS OF HOSPITALS TO IMPROVE MANAGEMENT

*Classical competition:* Payment By Results (money follows patient) creates incentives to improve quality

*CEO careers:* CEO's pay and promotions within the NHS are based on the performance on their hospitals

*Yardstick competition:* More local hospitals enables more effective regulation

*Omitted Variables? Need IV strategy*

# OBTAIN AN INSTRUMENT FOR COMPETITION BY EXPLOITING THE POLITICS OF UK HEALTH PROVISION

- In the UK hospital openings and closures all centrally controlled
- These are politically very sensitive – e.g. Dr. Richard Taylor in Kidderminster 2001



- “He defeated a sitting government minister (David Lock - Labour - Lord Chancellor's Department) in 2001 to take Wyre Forest after campaigning on a single issue - saving the local Kidderminster Hospital which the government planned to downgrade”

<http://www.doctortaylor.info/>

# DEFINING MARGINALITY FOR A HOSPITAL

- Use the share of marginal labor constituencies (5% margin) in 1997 within 30km of each hospital as an IV for hospital numbers
- Control for overall Labour vote share and demographics, to identify only from marginality
- Show results are robust to varying these thresholds and controls

## TABLE 3: COMPETITION IMPROVES MANAGEMENT QUALITY

	OLS	IV: 1 <sup>ST</sup> Stage	IV: 2 <sup>ND</sup> Stage	OLS	IV: 1 <sup>ST</sup> Stage	IV: 2 <sup>ND</sup> Stage
<b>Dependent variable</b>	<b>Management</b>	<b># Rival Hospitals</b>	<b>Management</b>	<b>Management</b>	<b># Rival Hospitals</b>	<b>Management</b>
<b># rival hospitals within 30km</b>	0.121** (0.058)		0.361* (0.215)	0.120** (0.068)		0.543** (0.220)
<b>% Labour marginals within 30km</b>		5.850*** (1.553)			5.156*** (1.398)	
<b>F-statistic</b>		14.18			13.60	
<b>Full Controls</b>	No	No	No	Yes	Yes	Yes
<b>Observations</b>	161	161	161	161	161	161

**Notes:** All columns control for interviewer dummies, population density & age profile (11 dummies) . “Full” = # admissions, casemix (age/gender), Foundation trust status, respondent’s tenure and if manager or clinician, region dummies, # sites, % managers with clinical degree, dummy for joint decision-making, # constituencies & Labour share of vote in catchment area

**TABLE 3 – CONT.: COMPETITION IMPROVES MANAGEMENT AND REDUCES AMI DEATH RATES**

	IV: 1 <sup>ST</sup> Stage	IV: 2 <sup>ND</sup> Stage	OLS	IV: 2 <sup>ND</sup> Stage
<b>Dependent variable</b>	<b># Rival Hospitals</b>	<b>Management</b>	<b>AMI deaths</b>	<b>AMI deaths</b>
# rival hospitals within 30km		0.475** (0.202)	-0.073** (0.023)	-0.122** (0.069)
% Labour marginals within 30km	5.296*** (1.416)			
% NonLabour marginals within 30km	1.245 (1.015)			
<b>F-statistic</b>	7.36			
<b>Observations</b>	161	161	161	161

**Notes:** All columns control for interviewer dummies, population density & age profile (11 dummies) . “Full” = # admissions, casemix (age/gender), Foundation trust status, respondent’s tenure and if manager or clinician, region dummies, # sites, % managers with clinical degree, dummy for joint decision-making, # constituencies & Labour share of vote in catchment area

# ROBUSTNESS – GENERAL MODEL, IV

Experiment	Baseline (30km; 5% thresh- hold)	% Labour marginals within 40km	% Labour marginals within 20km	3% threshold	7% threshold
# rival hospitals within 30km	0.475** (0.202)	0.849** (0.337)	0.548* (0.294)	0.321** (0.158)	1.068** (0.482)
Full controls	Yes	Yes	Yes	Yes	Yes
Observations	161	161	161	161	161

**Notes:** All columns control for interviewer dummies, population density & age profile (11 dummies) . “Full” = # admissions, casemix (age/gender), Foundation trust status, respondent’s tenure and if manager or clinician, region dummies, # sites, % managers with clinical degree, dummy for joint decision-making, # constituencies & Labour share of vote in catchment area

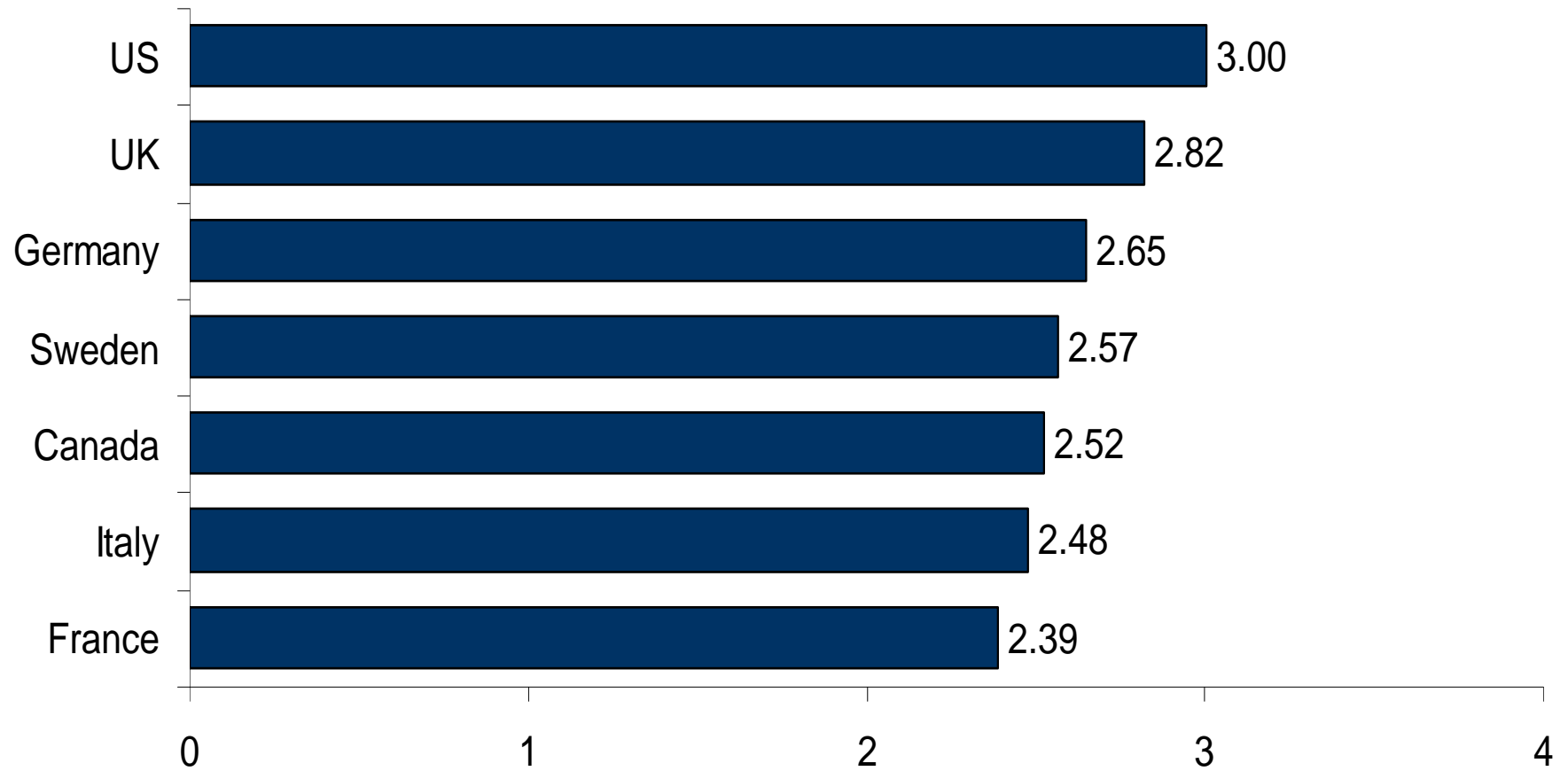
## Other Robustness Tests

- Squared and cubic terms for Labour's vote share
- Drop London hospitals
- Expenditure per patient controls
- Building age
- Doctor vacancies (proxy for human capital)
- Ran a placebo using private hospitals

# CONCLUSIONS

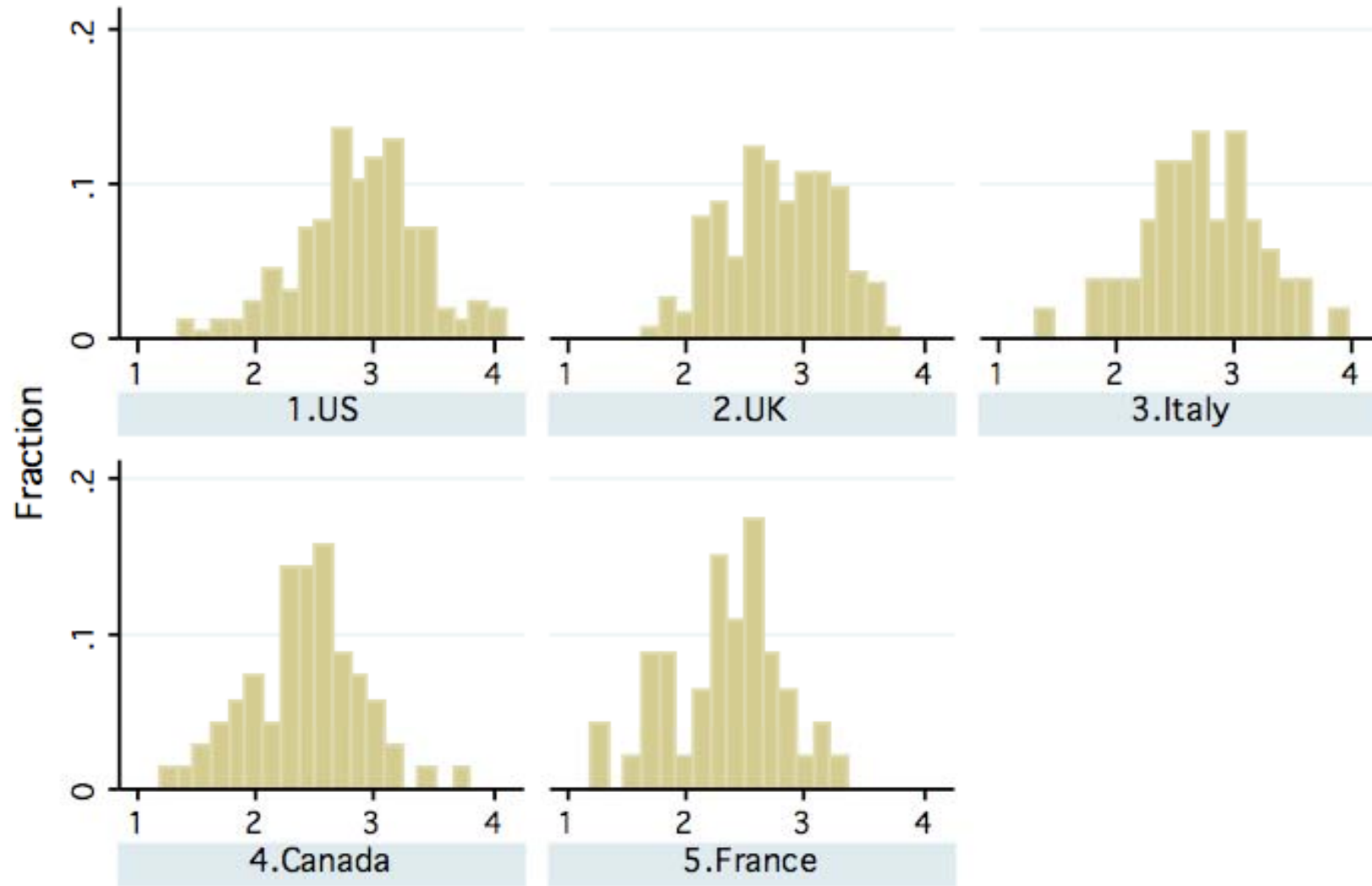
- Find large variation in management practices in hospitals & better management associated with better health outcomes
- Competition improves management and clinical outcomes
- Next steps
  - What lies behind competition result?
  - Cross country comparisons

# Management scores for hospitals across countries



Average management score (hospitals)

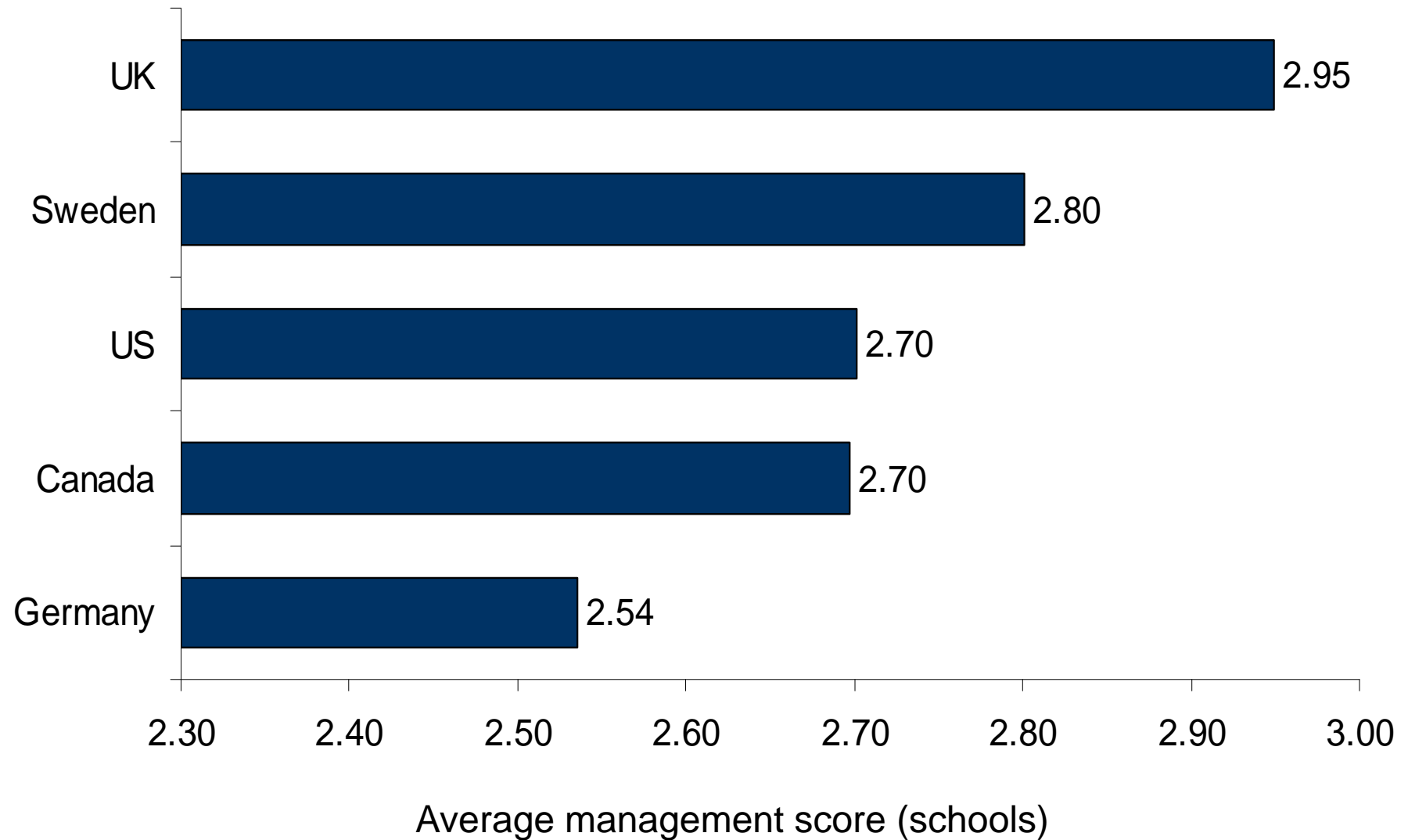
# There is also considerable variation in the scores even within countries



Hospitals - Management Scores Distribution

Graphs by c

# Management scores for public high-schools across countries – note the US does not lead



# MY FAVOURITE QUOTE:

## Don't get sick in Britain

*Interviewer* : “Do staff sometimes end up doing the wrong sort of work for their skills?”

*NHS Manager*: “You mean like doctors doing nurses jobs, and nurses doing porter jobs? Yeah, all the time. Last week, we had to get the healthier patients to push around the beds for the sicker patients”