RESYST

RESILIENT & RESPONSIVE HEALTH SYSTEMS

Carrot, stick or competition? The relative effect of P4P schemes in health care

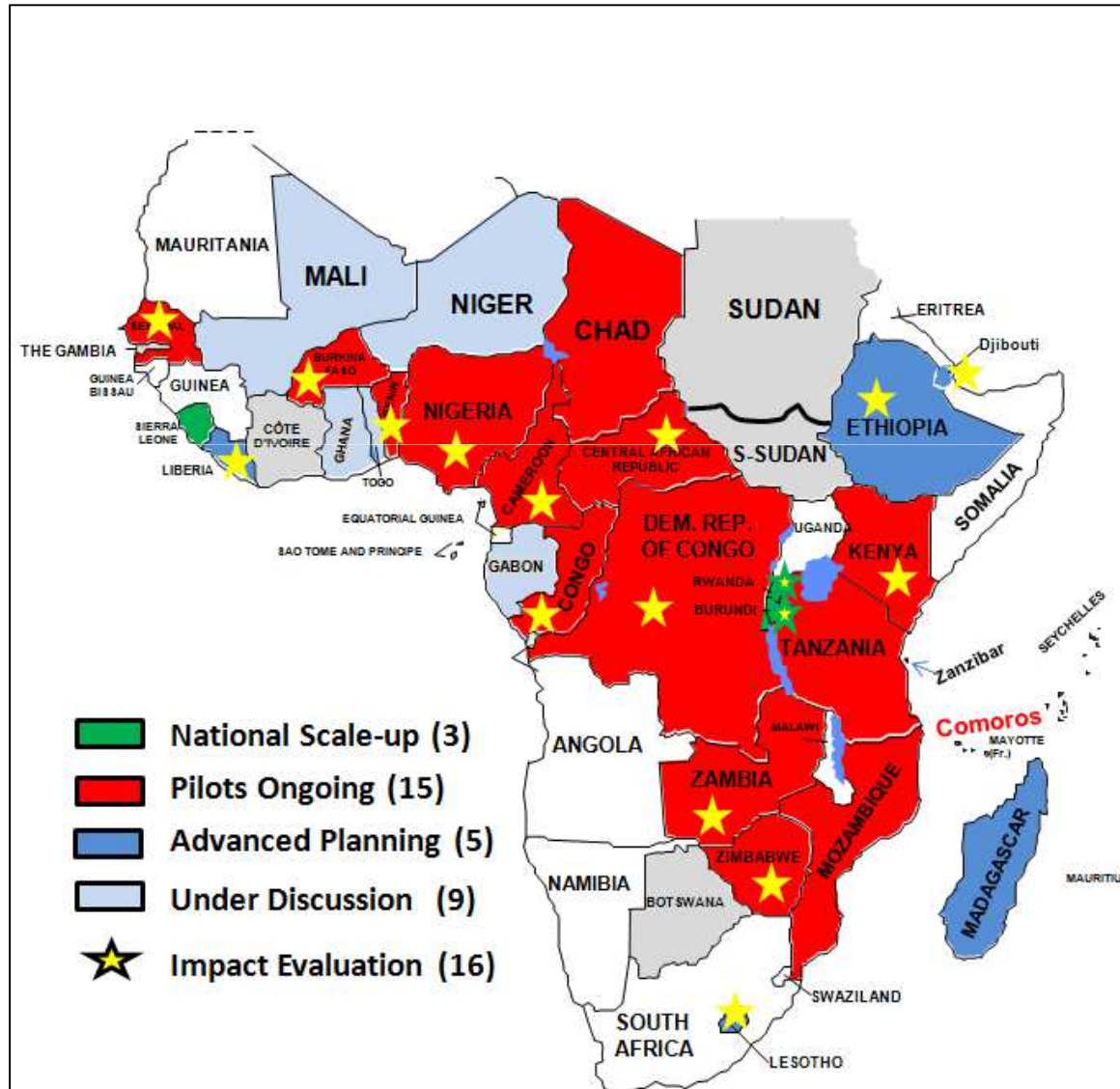Mylène Lagarde, London School of Hygiene & Tropical Medicine

Duane Blaauw, University of Witwatersrand

Introduction

- **Increasing interest in Pay for Performance**
  - Payment conditional on pre-specified performance measure (input or process indicator of quality or efficiency of care ; sometimes outcomes)
- **Currently in the UK:**
  - Quality Outcomes Framework – GPs (multiple target bonuses)
  - Best Practice Tariffs – hospitals (bonuses)
  - Advancing Quality – hospitals (tournament, then bonus)
  - Non-payment for undesired outcomes – hospitals (fine for acute readmissions within 30 days)
  - and many more…

- **Developing countries**

Introduction

National Scale-up (3)	
Pilots Ongoing (15)	
Advanced Planning (5)	
Under Discussion (9)	
⭐ Impact Evaluation (16)	

Motivation

- Lack of evidence on the relative impact of different designs of P4P schemes
    - Mixed evidence
    - Poor evaluations, lack of controls, self-selection, idiosyncratic context, etc.
    - Different levels of incentives
    - Complexity of P4P mechanisms

- Concerns about P4P in health
    - Intrinsic motivation
        - Altruistic physicians caring for patients
    - Type of tasks incentivised
        - Mechanical vs. creative/intellectual

P4P is not a unique intervention

- Basis for payment
  - Bonus
  - Fine
  - Tournament
  - Single, multiple targets

- Type of target
  - Absolute target
  - Relative improvement
  - One-off or thresholds

- Size of payment

Research questions

- What is the relative impact of tournaments, bonus and fine systems ?

  – On incentivised activity (quality of work – "mechanical" task)

  – On non-incentivised activity (diagnostic)?

- What is the impact of P4P scheme on the intellectual task?

Medical task

LABORATORY REPORT

REF. NUMBER	1

HAEMATOLOGY AND BIOCHEMISTRY RESULTS

Test	Result	Units	Reference Range
Full Blood Count			
RED BLOOD CELLS	3.2	x 10^{12}/L	4.5 - 6.5
HAEMOGLOBIN	9.4	g/dL	13.8 - 18.8
HAEMATOCRIT	28.5	%	40 - 56
MCV	89.1	fL	79 - 100
MCH	29.4	pg	27 - 35
MCHC	33.0	g/dL	29 - 37
WHITE BLOOD CELLS	4.5	x 10^9/L	4.0 - 12.0
PLATELETS	261	x 10^9/L	150 - 450
U&E			
SODIUM	142.0	mmol/L	135 - 150
POTASSIUM	5.1	mmol/L	3.5 - 5.1
CHLORIDE	102.3	mmol/L	98 - 107
BICARBONATE	23.1	mmol/L	21 - 29
UREA	2.5	mmol/L	2.1 - 7.1
CREATININE	88.1	μmol/L	80 - 115
Liver Function Test			
BILIRUBIN - TOTAL	17.1	μmol/L	2 - 26
BILIRUBIN - CONJUGATED	5.7	μmol/L	1 - 7
ALT	10.5	IU/L	0 - 40
AST	24.6	IU/L	15 - 40
ALKALINE PHOSPHATASE	106.4	IU/L	53 - 128
TOTAL PROTEIN	70.5	g/L	60 - 80
ALBUMIN	40.8	g/L	35 - 50
GLOBULIN	29.7	g/L	19 - 35

Medical task

Remaining time [sec]: 588

In this period, you will be paid R105 irrespective of your performance.
In addition, we will pay your chosen charity R0.20 for each number correctly entered and R1.50 for each diagnosis correctly identified.

Nb of correct entries so far: 0

Nb of correct diagnoses so far: 0

LAB REPORT - DATA ENTRY		REF. NUMBER:	2

HAEMAT

Full Blood Count		Data to be entered	Reference range
	RED BLOOD CELLS		4.5 - 6.5
	HAEMOGLOBIN		13.8 - 18.8
	HAEMATOCRIT		40 - 56
	MCV		79 - 100
	MCH		27 - 35
	MCHC		29 - 37
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	PLATELETS		150 - 450

Full Bloo

U&E			
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	UREA		2.1 - 7.1
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U&E

Liver Function Test			
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	ALT		0 - 40
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Liver Fun

RECORD DATA

Medical task

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LAB REPORT - DATA ENTRY		REF. NUMBER:	2

Full Blood Count — Data to be entered — Reference range

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U&E

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Liver Function Test

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RECORD DATA

1st step: DATA ENTRY

Simplified version of previous task
- Only one type of form (long)
- No opportunity for "over-servicing"

Medical task

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2nd step: FIND DIAGNOSIS corresponding to test results

- Choice of 13 diagnoses

Based on the haematology and biochemistry results available for this patient, what would be your diagnosis?

Choose one diagnosis in the list below:

- Normal
- Cholestasis
- Acute Hepatitis
- Chronic Hepatitis
- Normocytic Anaemia
- Macrocytic Anaemia
- Microcytic Anaemia
- Thrombocytopaenia
- Leucocytosis
- Pancytopaenia
- Hypokalaemia
- Acute Renal Failure
- Hyponatraemia

RECORD DIAGNOSIS and GO TO NEXT FORM

Within-subject design

3 mn	10 mn	10 mn
Train	Correct diagnosis Not incentivised	Correct diagnosis incentivised
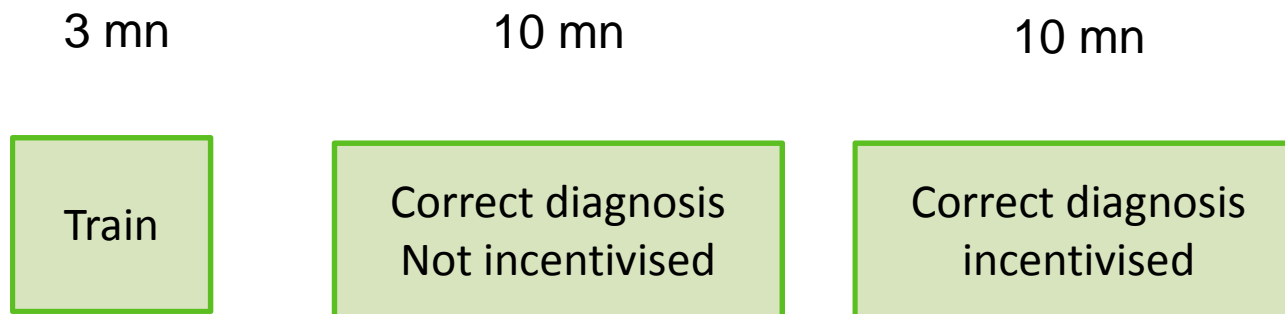
- Diagnosis bonus: R7.50 (USD 0.70)

- Benefits to patients:
  - Choice of 6 charities providing care to poor patients (Cancer, TB, HIV)
  - R0.20 (USD 0.02) for each correct entry
 - R1.50 (USD 0.14) for each correct diagnosis (both periods)

Between-subject design

Name	Fixed payment	P4P mechanism
Control	R105 (USD 9.9)	-
Bonus	R90 (USD 8.4)	R10 (USD 0.9) increments until R140
Fine	R140 (USD 13.1)	R10 (USD 0.9) increments down to R90
Tournament	R90 (USD 8.4)	R25 (USD 2.35) for top 20% performers

- Calibrating payments to make the different treatments income neutral
    - Based on analysis of average performance under salary in Medical Game
    - Recalibrated for 10mn task

Step functions for fine and bonus treatments
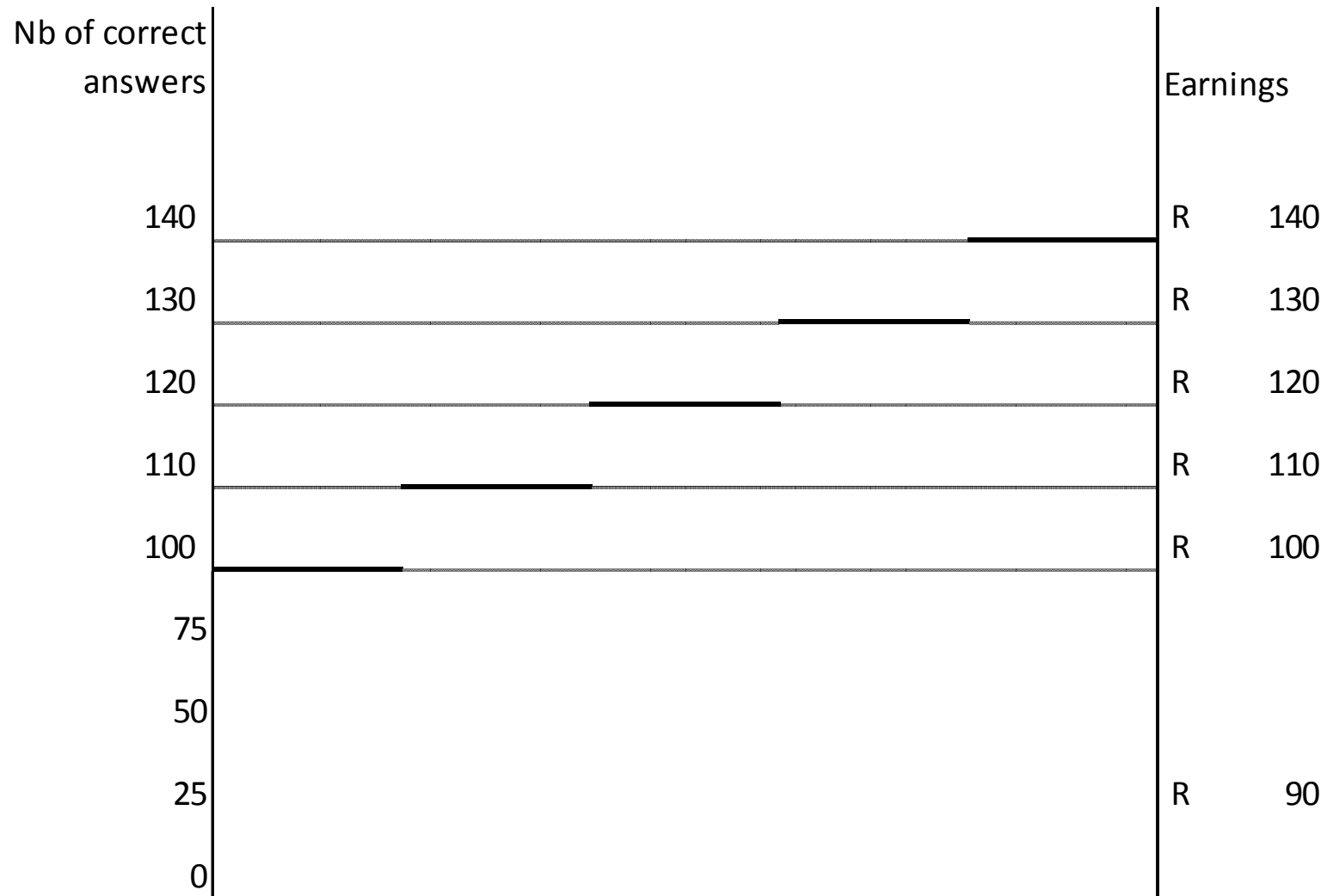
Subject characteristics

- 5th year Medical students (necessary for medical knowledge), University of Witwatersrand, Johannesburg

- 7 sessions run so far:

|	Sample
Fixed payment only	N=30
Fixed payment + bonus (sliding scale)	N=30
Fixed payment + fine (sliding scale)	N=30
Fixed payment + bonus for top 20% performers	N=30

- Average payout/participant: R114.33 (USD 10.74)
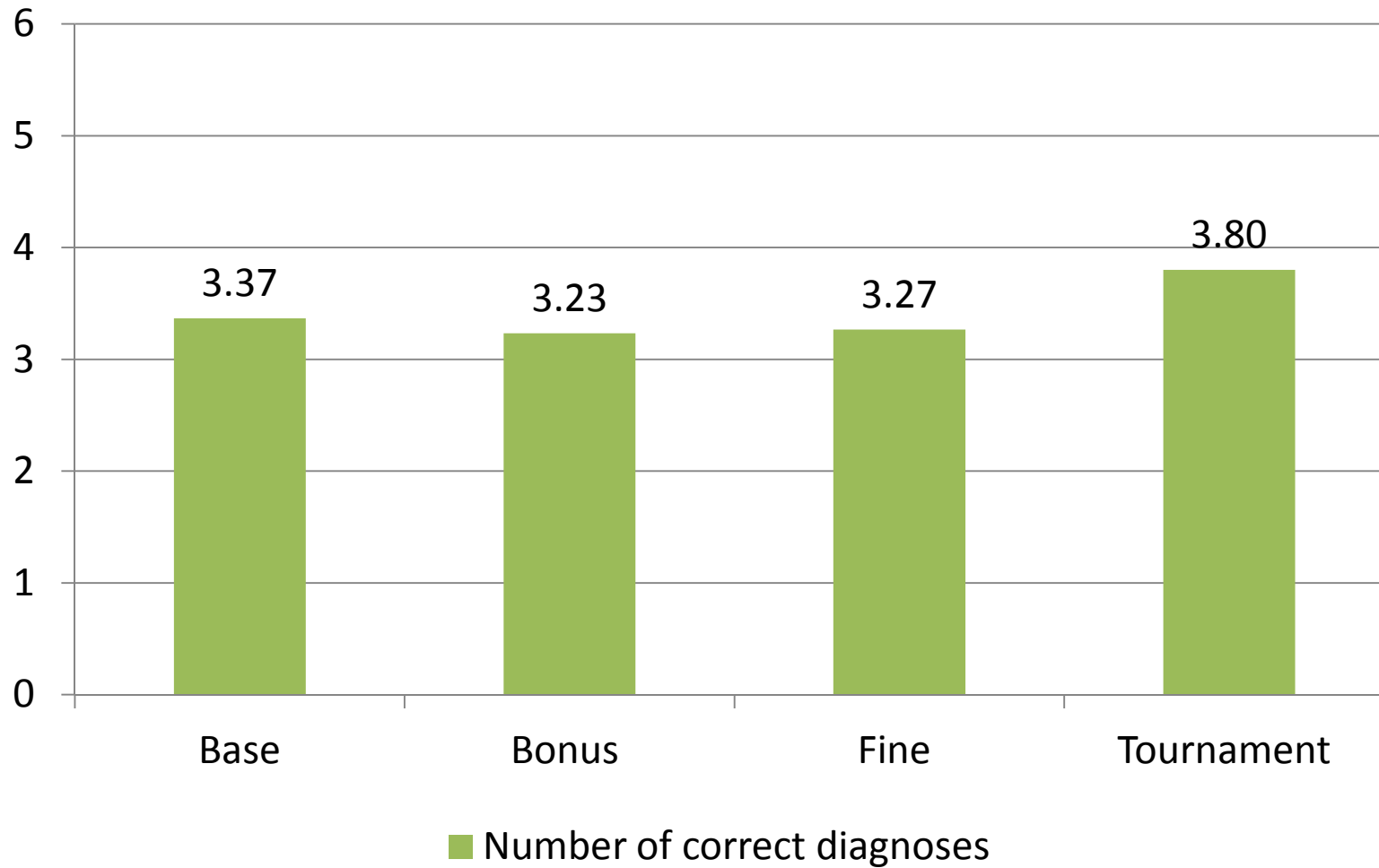
- Total to charities: R3,317.70 (USD312)

Hypotheses

1. Fine treatment more effective than bonus (loss aversion)
2. Tournament most effective?
3. Potential negative impact on non-incentivised activities
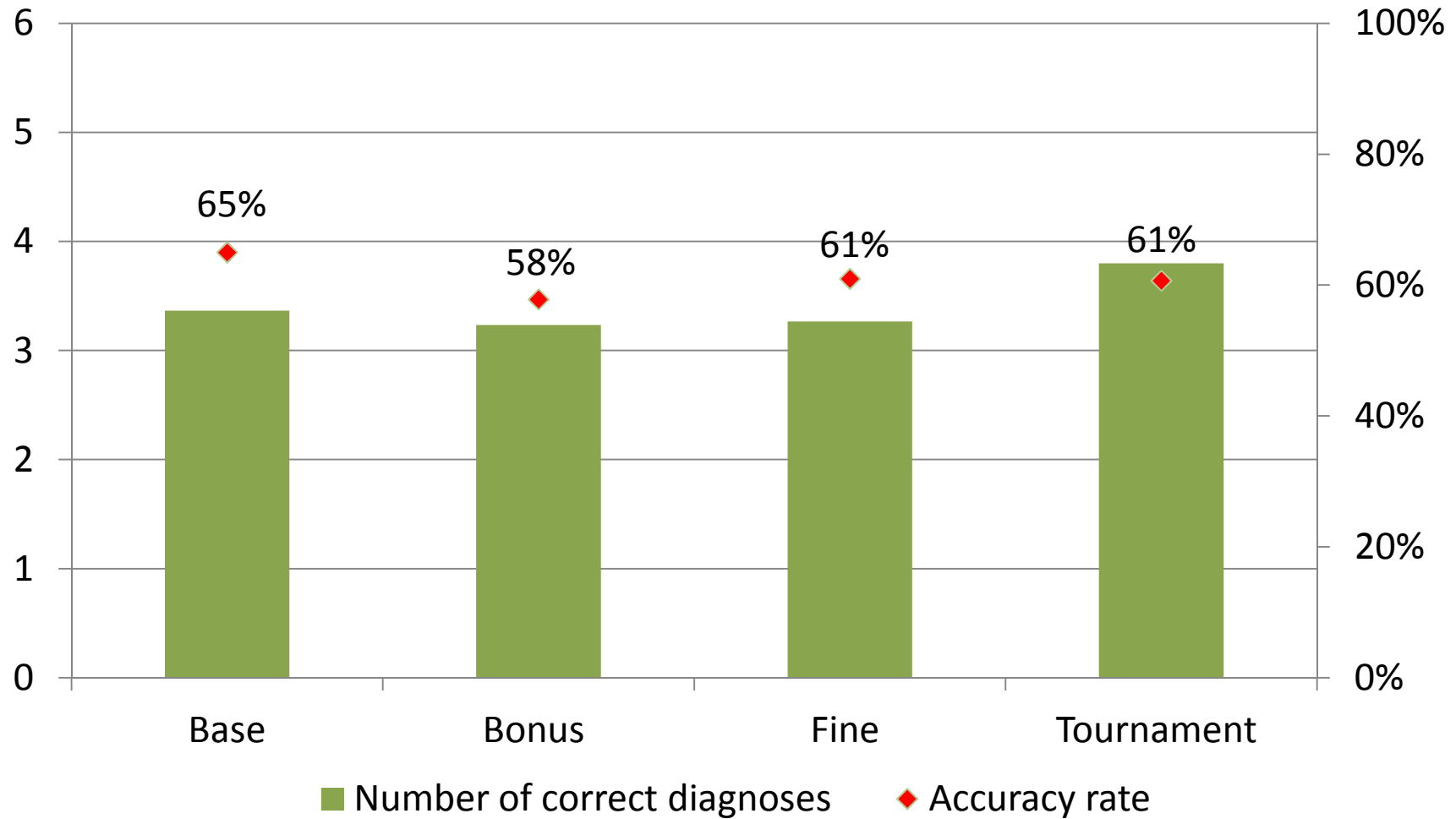4. Bonus not effective on intellectual task

Number of correct entries made
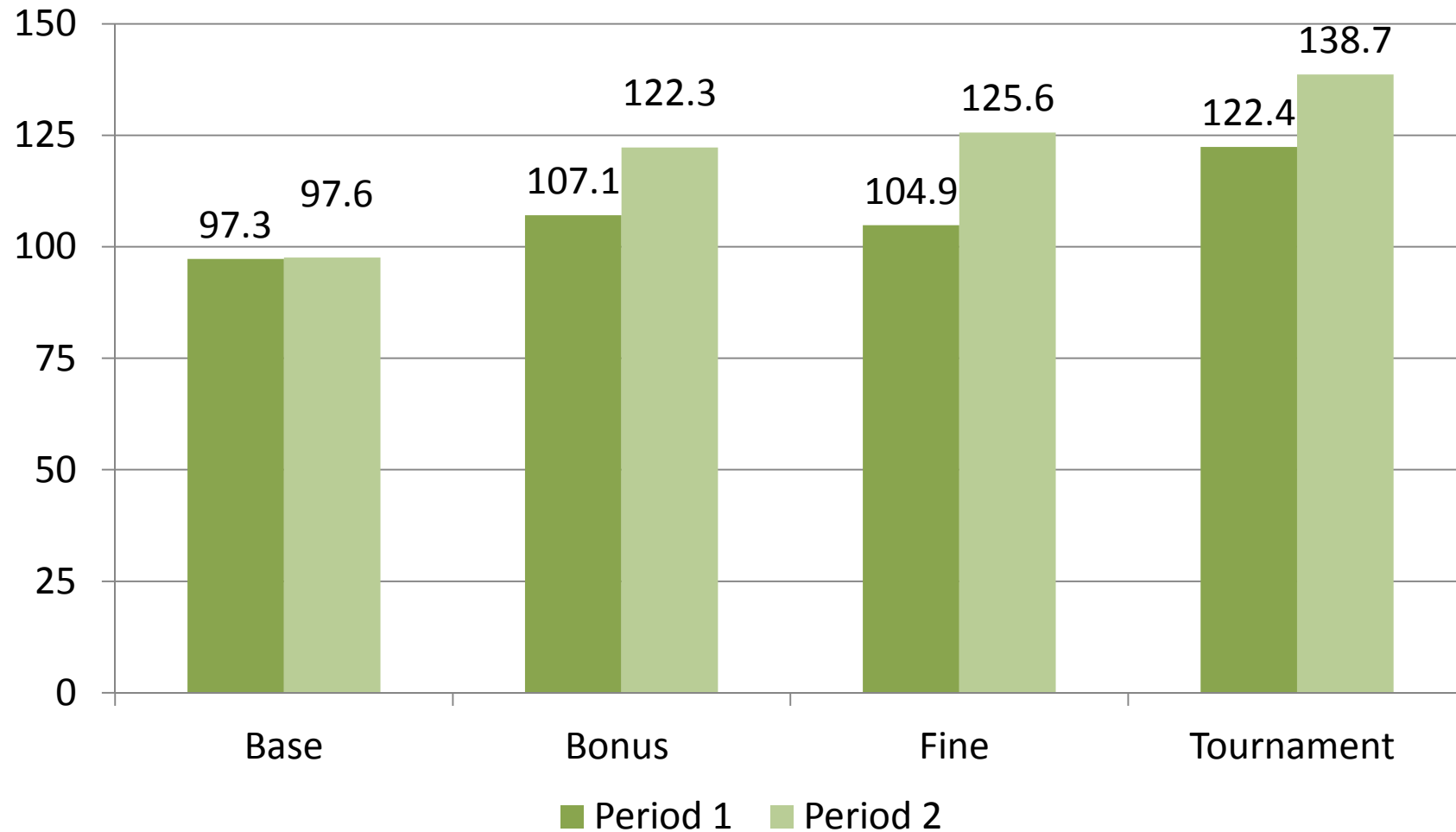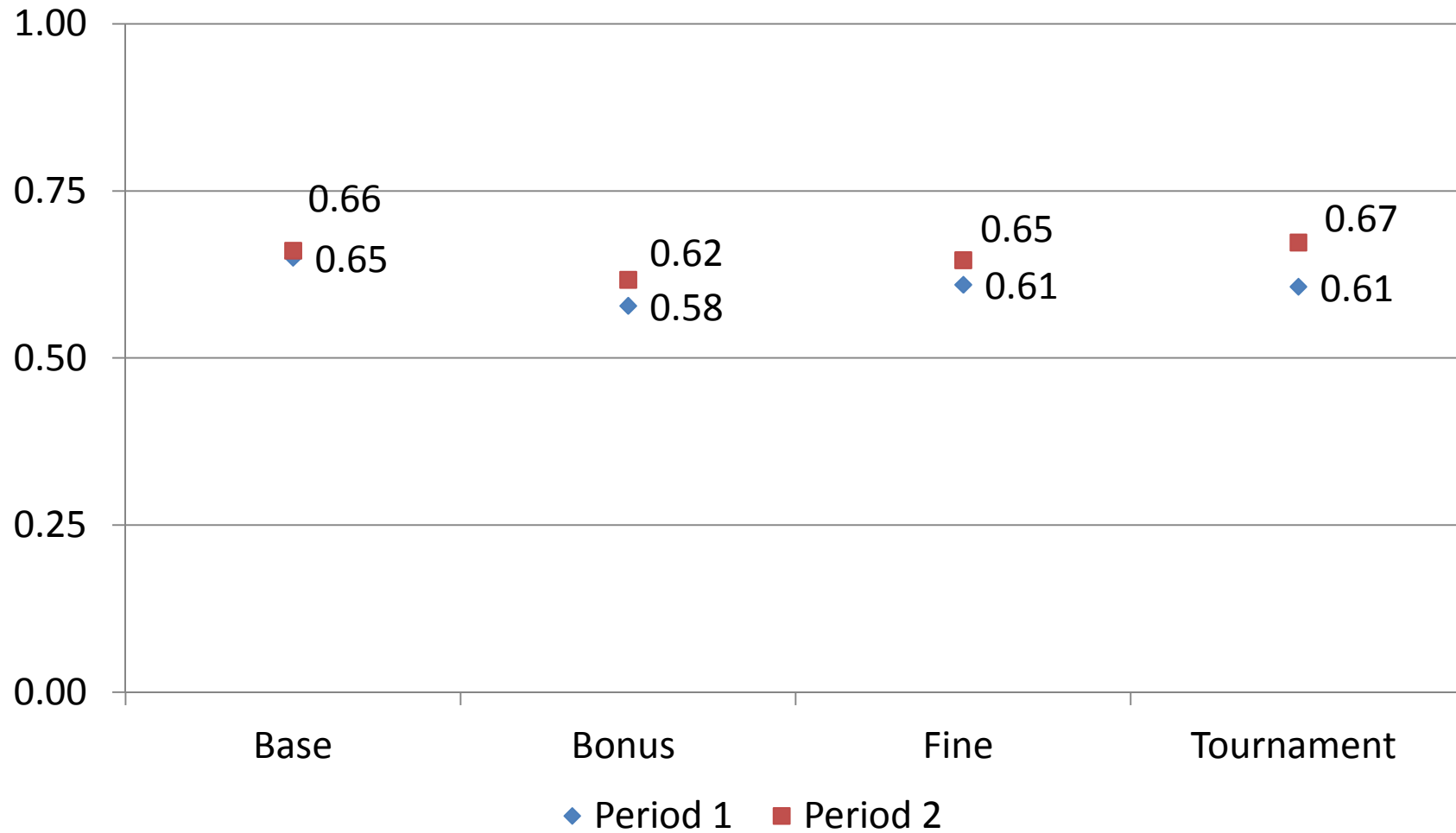
Impact on non-incentivised activities

Impact on non-incentivised activities

Impact of bonus on 'intellectual' task

Conclusions

1. Tournament most effective

   - Small setting, peer pressure and competition

2. No evidence that fine is more effective than bonus

   - Loss aversion not strong here

3. No evidence of detrimental effect on non-incentivised activities

   - Positive spill-out effect of effort? Intrinsic motivation?

4. Bonus effective on intellectual task

   - Not so "creative" task?

Thank you