

Seminario Universidad de Murcia, 4 de mayo de 2009

**Patients' self-interest bias:  
Empirical evidence from a priority-setting  
experiment**

**Begoña Álvarez**

**Eva Rodríguez\***

**(Universidad de Vigo)**

\* E-mail address: [emiguez@uvigo.es](mailto:emiguez@uvigo.es)



## 1. MOTIVATION

There is a growing interest in the measurement of patient and general public preferences for health care allocation.

### Empirical evidence:

Patients and general public assign different values to hypothetical health status or health programs.

### Theoretical explanations:

- Experience of illness: more information about what means to be in a certain health state, adapt to health related restrictions, etc.

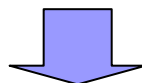
- Patients' values might be subject to self-interest and strategic biases. In this case the patients does not show their true preferences

# 1. MOTIVATION

## IN THIS PAPER WE INVESTIGATE TO WHAT EXTENT ....

- Individuals' true preferences may be distorted by self-interest to improve the resources they expect to receive in the future.

The study is based on a choice experiment to determine a priority system for patients on a waiting list?

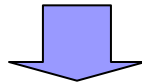


Do the patients assign higher priority to those scenarios more similar to their own situation?

- Self-interest bias may explain the irrational answers of the participants.

## 2. THE CHOICE EXPERIMENT

- The first step is to obtain a point system to prioritize patients on a waiting list for a non-urgent surgical intervention



**Prostatectomy intervention on patients with Benign Prostatic Hyperplasia (BPH)**

- Participants in the experiment had to rank a set of hypothetical candidates for BPH according to the degree of priority they should be given on a waiting list.

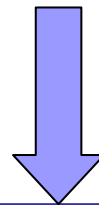
## 2. THE CHOICE EXPERIMENT: Design

	STAGE 1 Selection of attributes	STAGE 2 Levels	STAGE 3 Scenarios to be ranked
METHOD	Focus groups: - Patients (n=7) - Health professionals (n=8) - General population (n=7)	Interviews with experts in Urology	Fractional factorial design
RESULTS	1. Discomfort due to BPH 2. Severity of illness 3. Limitations for work activities 4. Limitations in ADL 5. Other illnesses	Moderate Severe Low Intermediate No Yes No Yes No Yes	8 scenarios

## 2. THE CHOICE EXPERIMENT: Survey

### SAMPLES :

- **Patients:** 85 men recruited from the waiting lists for BPH at 3 hospitals in Galicia.
- **General public:** 220 individuals from Galician population.



Each respondent was asked to rank the 8 scenarios according to the priority that they considered should be given on the waiting list.



### 3. PRIORITY POINT SYSTEM: Methods

- Linear additive model of preferences
  
- Rank-ordered logit model:
  - **Dependent variable:** Rankings obtained from participants
  - **Explanatory variables:** Levels of the attributes displayed in each scenario.

### 3. PRIORITY POINT SYSTEM: Estimation results

Table 1: PRIORITY POINT SYSTEM FOR BPH. Rank-Ordered Logit Estimates

ATTRIBUTES	GENERAL PUBLIC		PATIENTS (Model I)	
	Coeff. (Std. error)	Relative importance (%)	Coeff. (Std. error)	Relative importance (%)
Discomfort	0.937*** (0.064)	21.4	0.764*** (0.097)	38.7
Severity	1.822*** (0.0789)	41.6	0.198** (0.090)	10.0
Limitations in ADL	0.659*** (0.059)	15.0	0.443 *** (0.091)	22.4
Others diseases	0.487*** (0.064)	11.1	0.312*** (0.091)	15.8
Limitations for work	0.474*** (0.058)	10.8	0.257*** (0.093)	13.0
Respondents (Obs.)	220 (1760)		85 (680)	
Log likelihood	-1843.678		-849.3831	

\*\*\* Significant at the 1% level, \*\*significant at the 5% level

## 4. SELF-INTEREST BIAS

### HYPOTHESIS 1

Patients' true perception of what is fair may be distorted by self-interest behaviour to improve their position on the waiting list.

- **TEST:** Effect of a new explanatory variable that captures the degree of similarity between each hypothetical scenario and the patient's own situation.

#### Patients' questionnaire offers information on:

- Working status (*working/ not working*)
- Limitations in ADL (*yes /no*)
- Other illnesses (*yes /no*)

New variable

**EQUAL**

Number of similarities (0 to 3)

## 4. SELF-INTEREST BIAS

Table 1: PRIORITY POINT SYSTEM FOR BPH. Rank-Ordered Logit Estimates

ATTRIBUTES	GENERAL PUBLIC		PATIENTS (Model I)		PATIENTS (Model II)	
	Coeff. (Std. error)	Relative importance (%)	Coeff. (Std. error)	Relative importance (%)	Coeff. (Std. error)	Relative importance (%)
Discomfort	0.937*** (0.064)	21.4	0.764*** (0.097)	38.7	0.770*** (0.098)	33.4
Severity	1.822*** (0.0789)	41.6	0.198** (0.090)	10.0	0.201** (0.090)	8.7
Limitations in ADL	0.659*** (0.059)	15.0	0.443 *** (0.091)	22.4	0.501*** (0.094)	21.7
Others diseases	0.487*** (0.064)	11.1	0.312*** (0.091)	15.8	0.440*** (0.105)	19.1
Limitations for work	0.474*** (0.058)	10.8	0.257*** (0.093)	13.0	0.392*** (0.107)	17.0
EQUAL					0.175*** (0.070)	
Respondents (Obs.)	220 (1760)		85 (680)		85 (680)	
Log likelihood	-1843.678		-849.3831		-846.2414	

\*\*\* Significant at the 1% level, \*\*significant at the 5% level

## 4. SELF-INTEREST BIAS

### HYPOTHESIS 2

Self-interest may explain the “irrational” answers of the participants.

Since there is a clear ordering of the levels on all attributes, failures in dominance tests identify “irrational” rankings

- ✓ Failure in dominance test: A clearly dominant scenario is ranked in a lower position than another one which should be ranked below it.

#### A (Dominated)

- Low Severity
- Moderate Discomfort
- **No limitations in ADL**
- **No work or no limitations**
- Has not other illnesses

#### EXAMPLE

#### B (Dominant)

- Low Severity
- Moderate Discomfort
- **Limitations in ADL**
- **Limitations for work**
- Has not other illnesses

## 4. SELF-INTEREST BIAS

### HYPOTHESIS 2

Self-interest may explain the “irrational” answers of the participants.

- **TEST:** We estimate a *Random Effects Probit* model to analyze the reasons underlying “rationality” failures.

Does self-interest behaviour play a role?

Dependent variable =  $\begin{cases} 1 & \text{if the respondent fails the dominance test} \\ 0 & \text{otherwise} \end{cases}$

Eight observations per individual

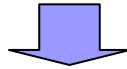
Table 4: The determinants of the “irrational” responses: random-effects probit estimates

Independent Variables	Model I All dominances Coeff. (Std. error)
Constant	-2.967*** (0.439)
Age	0.010** (0.005)
Sex (female)	-0.214 (0.159)
Education [ref: below primary]	
Primary	0.069 (0.174)
Secondary and university	0.054 (0.226)
Comprehension of the survey	0.465** (0.190)
Duration of the interview	-0.026*** (0.008)
# Identical attributes	0.550*** (0.089)
Respondent [ref: GP]	
Patient	0.849*** (0.190)
Respondents <sup>2</sup>	296
N	2368

\*\*\* Significant at the 1% level, \*\*significant at the 5% level and \* significant at the 10% level.

## 4. SELF-INTEREST BIAS

Is it possible that self-interest behaviour can explain this result?



We showed that patients assign a higher priority to those scenarios more similar to their characteristics.

**Then it could be that patients choose dominated scenarios because these scenarios are very similar to their personal situation.**

**TEST:** For each pair of dominances, we identify if the participant patient is more similar to dominated scenario or no.

We test if there is significant differences within both kinds of patients in order to explain the inconsistencies.

## 4. SELF-INTEREST BIAS

### Example

#### Scenario A (dominated)

- Low Severity
- Moderate Discomfort
- No limitations in ADL
- No work or no limitations
- Has not other illnesses

#### Scenario B (dominant)

- Low Severity
- Moderate Discomfort
- Limitations in ADL
- Limitations for work
- Has other illnesses

#### Respondent's characteristics

- ?
- ?
- Limitations in ADL
- No work or no limitations
- Has not other illnesses

The respondent is more similar to dominated scenario

## 4. SELF-INTEREST BIAS

### Example

#### Scenario A (dominated)

- Low Severity
- Moderate Discomfort
- No limitations in ADL
- No work or no limitations
- Has not other illnesses

#### Scenario B (dominant)

- Low Severity
- Moderate **Severe** Discomfort
- Limitations in ADL
- Limitations for work
- Has other illnesses

#### Respondent's characteristics

- ?
- ?
- Limitations in ADL
- No work or no limitations
- Has not other illnesses

¿Is the respondent more similar to dominated scenario?

UNKNOWN

Table 4: The determinants of the “irrational” responses: random-effects probit estimates

Independent Variables	Model I	Model II	Model III
	All dominances Coeff. (Std. error)	Four dominances Coeff. (Std. error)	Four dominances Coeff. (Std. error)
Constant	-2.967*** (0.439)	-3.249*** (0.634)	-3.317* (0.007)
Age	0.010** (0.005)	0.011* (0.007)	0.011* (0.004)
Sex (female)	-0.214 (0.159)	-0.281 (0.218)	-0.268 (0.225)
Education [ref: below primary]			
Primary	0.069 (0.174)	0.239 (0.232)	0.261 (0.233)
Secondary and university	0.054 (0.226)	0.247 (0.284)	0.284 (0.298)
Comprehension of the survey	0.465** (0.190)	0.522** (0.244)	0.510** (0.228)
Duration of the interview	-0.026*** (0.008)	-0.024** (0.010)	-0.023** (0.010)
# Identical attributes	0.550*** (0.089)	0.562*** (0.125)	0.575*** (0.120)
Respondent [ref: GP]			
Patient	0.849*** (0.190)	0.693*** (0.229)	---
Patient more similar to the the dominated scenario	---	---	0.823*** (0.242)
Others patients	---	---	0.494* (0.256)
Respondents <sup>2</sup>	296	296	296
N	2368	1184	1184

\*\*\* Significant at the 1% level, \*\*significant at the 5% level and \* significant at the 10% level.



## 5. CONCLUSIONS

Our study suggests that self-interest behaviour affects patients' elicited preferences for health resource allocation:

- 1) Patients assign higher priority to those scenarios that mimic their situation.
- 2) Patients have a higher probability of failing dominance tests than the general public participants. The degree of similarity between the patients and the dominated scenario partially explains this finding.



## 6. SOME EXTENSIONS

1. **Respect to the sample.** To obtain more information about the patients' characteristics. Note that to test the self-interest behaviour we only had information about 3 out of 5 attributes showed in the scenarios.
2. **Respect to the design of the experiment.** To increase the number of scenarios ranked to estimate a model with interaction effects.

## Appendix A

Attribute and levels to prioritise patients in the waiting list for BPH intervention

Attribute	Definition	Levels
<i>Discomfort</i>	Symptoms or troubles the patient may be experiencing in his daily life (difficulty to urinate, frequent need to urinate during the day and the night, problems for urinary retention, sensation of not having a fully emptied bladder, etc.)	<ul style="list-style-type: none"> <li>- <i>Moderate discomfort</i>: Some bothers less 15 times at month</li> <li>- <i>Severe discomfort</i>: A lot of bothers almost daily</li> </ul>
<i>Severity of health condition</i>	Medical complications which the patient on waiting may be experiencing (blood in urine, urine retention, urinary infection, etc.)	<ul style="list-style-type: none"> <li>- <i>Low severity</i>: No presence of this problems or a infrequently presence (one or two time at year)</li> <li>- <i>Intermediate severity</i>: presence of this problems frequently (more than 3 times at year)</li> </ul>
<i>Limitations for non-work activities</i>	Degree to which the patient is limited to carry out social, family activities which he had always carried out before the illness.	<ul style="list-style-type: none"> <li>- <i>Few limitations to carry out non-work activities</i></li> <li>- <i>Many limitations to carry out non-work activities</i></li> </ul>
<i>Limitations for work activities</i>	Degree to which the patient is limited by his illness to carry out work activities	<ul style="list-style-type: none"> <li>- <i>Patient does not work or his medical condition does not limit his work activities.</i></li> <li>- <i>Patient's medical condition limit his work activities (only patients within the legal working age)</i></li> </ul>
<i>Having other illnesses</i>	This refers to whether or not the patient has any other medical incapacity (visual problems, mobility problems, dementia, etc.) which makes his medical condition less bearable	<ul style="list-style-type: none"> <li>- <i>The patient does not have other diseases which make his condition worse.</i></li> <li>- <i>The patient has other diseases which make his condition worse.</i></li> </ul>