



*Documentos de Trabajo*

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**A PILOT INQUIRY ON INCENTIVES AND INTRINSIC  
MOTIVATION IN HEALTH CARE: THE MOTIVATIONAL  
CAPITAL EXPLAINED BY DOCTORS**

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Ekonomia Saila

# A Pilot Inquiry on Incentives and Intrinsic Motivation in Health Care: the Motivational Capital Explained by Doctors\*†

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March 6, 2014

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\*We are grateful to the sixteen doctors who were interviewed in this study for their disinterested participation, their collaborative attitude and for the time they spent helping us in doing this work.

†Thanks also to the Spanish Ministry of Science and Innovation for financial support of this project (Project ECO2009-12836)

## Abstract

Where the contracts are incomplete, the resulting co-ordination problems may be attenuated if workers are intrinsically motivated to do the work.

It is established by theoretical and empirical literature that workers within public organizations are intrinsically motivated to exert effort doing the job and have a strong sense of social agents with the mission of providing collective goods to citizens and tax payers.

This paper is an empirical pilot study in the health care sector using methods of Qualitative Analysis research. We run semistructured interviews *à-la-Bewley* to sixteen physicians of Navarre's health Care *Servicio Navarro de Salud-Osasunbidea* (SNS-O). The objective of the work is twofold: first, to find empirical evidence about doctors' non-monetary motives and second, to find evidence about how these non-monetary motives shape doctors' behavior. We formulate several testable hypotheses: (1) Doctors are intrinsically motivated agents, (2) Economic incentives and control policies may crowd-out intrinsic motivation and (3) Well designed incentives may crowd-in agents intrinsic motivation.

Results confirm the hypotheses formulated above and coming from our theoretical findings [11], [12]. Finally, we also found empirical evidence of conflict between political advisors or health managers (principals) and physicians (agents). Results are a step forward in the optimal design of incentive schemes and policies which crowd in doctors' intrinsic motivation.

*Keywords:* qualitative research, interviews, intrinsic motivation, crowding effects.

*JEL Codes:* D03, D86.

Here is the truth: if you want people to do something, you really need to understand what motivates them. That is the key: once you understand what people value, then you can use incentives to work in predictable ways, and you can get people (including yourself) to behave in ways that you want them to.

[*The Way Axis*. Uri Gneezy and John A. List, 2013, p. 31.]

## 1 Introduction

Recent theoretical and empirical literature in economics has shown that economic agents act beyond the self-interest and have other motivations than the pure monetary. Contrary to the standard economic model starred by the *homo economicus*, a vast experimental, empirical and theoretical literature on *Behavioral Economics*<sup>1</sup> has shown that motives like social preferences<sup>2</sup>, intrinsic motivation<sup>3</sup>, or corporate culture (identity, social norms, values and ethics)<sup>4</sup> among others, play a key role in the economic decisions of economic agents.

However, mainstream contract theory and the theory of incentives have neglected the role of such motivations [34]. The study of contract incompleteness and optimal incentives has rested on the standard economic assumptions of economic behavior. Thus economic theory on adverse selection and moral hazard in organizations has generated a wide range of results many of which failed in their predictions in contexts where motivations beyond the maximization of the economic profits emerge<sup>5</sup>.

It is well established that social organizations<sup>6</sup> pursue goals and objectives which are not necessarily profitable in monetary terms [58]. Moreover, usually the motivation of agents who work for these organizations goes beyond the expected monetary gain. They

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<sup>1</sup>For a depth review see [19], [20], [35] and [37].

<sup>2</sup>See for instance [8], [17] and [36].

<sup>3</sup>See [7], [18], [28], [31] and [38].

<sup>4</sup>See [1],[21], [24], [41], [42], [44], [53], [54] and [56].

<sup>5</sup>See for instance [36], [39], [45] and [49].

<sup>6</sup>We will refer as social organizations to those organizations which are state or publicly owned and whose goal is to provide a collective good like health, education, social services, civil safety, emergency services.

are social agents, intrinsically motivated for work and with a strong self view as pro-social agents. They enjoy from simply doing the work and view themselves as a part of a whole system that seeks to maximize the social welfare providing education, health care, public services and so on. Thus monetary incentives implemented in accordance with the standard economic theory might not work properly because agents' behavior is also shaped by other motives in addition to the monetary and material ones.

However, despite the huge amount of theoretical and experimental work, the lack of empirical and field research and also the lack of natural experiments leave *behavioral economics* unbalanced in its approach to the Economics of Organizations and Incentives. There are some works that approach the topic empirically<sup>7</sup>; but, as a discipline, there is a lack of empirical support of the new theoretical predictions, and also of the experimental findings. Our work is aimed at throwing some light in this empirical test of theoretical implications on the topic. Specifically, we aim to test the theoretical implications drawn from our previous work [11, 12]. Given the inherent difficulty to obtain data about intrinsic motivation, identity and related concepts, we relied upon *Qualitative Research* methods.

The objective of this work is to seek empirical evidence from the field with the goal of improving the existing theories and/or developing new theory on *Behavioral Economics* and *Behavioral Contract Theory*. More precisely, the objective is twofold: first, we aim to find evidence in the field about intrinsic motivation and second, we aim to find evidence about how these motivations affect agents' decisions and attitudes towards work through crowding effects. We frame the research into health care organizations where, presumably, agents (physicians) are intrinsically motivated to work in the provision of health. More precisely, the hypotheses that we are seeking to test in this application to the health care are the following: (1) Doctors are intrinsically motivated agents, (2) Economic incentives and control and command policies may crowd out doctors' intrinsic motivation and (3)

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<sup>7</sup>See [55], [5] or [43]

There are other incentives that may crowd in agents intrinsic motivation.

Finding confirmatory evidence on the above hypotheses may help us to inform decision makers about the optimal design of incentives, regulations and policies which will lead to better outcomes. Borrowing the words of Gnezy and List (2013) “*Once we understand what people value and why, we can develop effective incentives and use them to [...], motivate employees*” (doctors). We forecast that in the case of health this better outcomes could be an improvement in the efficiency and the effectiveness with which health services are provided and an improvement in the quality of health services.

The paper is organized as follows. Section 2 introduces the methods. Section 2.1. describes the interviews. Section 2.2. describes the analysis of the data. Section 3 shows the results. In section 3.1. we describe results on intrinsic motivation. In section 3.2. we describe results on crowding-out. In section 3.3. we describe results on crowding-in. Section 3.4. incorporates some additional results. Finally section 4 offers concluding remarks.

## 2 Methods

### 2.1 Interviews

We performed in-depth semi-structured interviews *à-la-Bewley* [13] to physicians at *Sistema Navarro de Salud* (SNS) (n=16). Interviews were undertaken over a sixteen-month period starting in February 2010. The questions addressed were open-ended and were written based on new theories coming from Behavioral Economics Literature: intrinsic motivation and crowding effects, identity, corporate culture and economics of information.

The place, date and time of the interview were always agreed with the interviewees. Fixing date process is very important in order to obtain high-quality data. Our main goal in dating always was to agree on a day and a time when the interviewee would have enough time and no other commitments (professional, family duties, or other) waiting. We first started

performing the interviews at the Department of Economics at Public University of Navarre. We met with the interviewee in a quiet, calm and comfortable room in order to create a welcoming atmosphere that will facilitate the natural course of the interview. But soon we realized that moving to the respondents' workplace would be a better strategy. Thus, we performed the rest of interviews at doctors' workplace, usually in their personal offices. This strategy eased the dating process and resulted in a more natural and spontaneous behavior from doctors during the interviews. Anyway, in all cases doctors, themselves, decided on location, time and day of the interview.

Doctors were invited to take part in the research through a formal invitation letter<sup>8</sup>. The letter briefly informed on the contents of the meeting although no details about the research goals were given to avoid biasing doctors' answers. Letter was sent jointly with a document of anonymity and confidentiality commitment<sup>9</sup>. We asked doctors openly talk and judge the health care and the health organization for which they were working and therefore we guaranteed anonymity in order to get sincere and honest reviews. We allowed doctors a great deal of freedom in answering to our questions. Doctors were keen on participating in the research and they were happy to have the opportunity to openly give their view about the state of the question. They openly showed their opinion in relation to the health care managers and their management practices. We believe that the main reason why they cooperated was the pleasure of talking to external academics about what they do day after day in their jobs. Most people like to talk about themselves. This is a fact from which is important to take advantage making interviews fun and interesting.

The duration of the interviews ranged from a minimum of 57 minutes to a maximum of 1 hour and 44 minutes. All interviews were performed by two of the authors (MB and JMC) and were recorded using a mp4 recorder/player<sup>10</sup>. Despite it is very time consuming,

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<sup>8</sup>Available from the authors upon request.

<sup>9</sup>Available from the authors upon request

<sup>10</sup>Samsung YP-T10

we personally did the interviews because it is very important to take notes at the field. As long as the interviews progress, interviewees make gestures, show emotions or feelings through face expressions, change their voice tone and volume in relation with the question they are exposing and transmit changes in their mood. To capture all these details improves significantly the quality of data but requires the researchers presence in the interview in order to take notes. After the field work done at the moment of the interview, we transcribed the recorded audio to text document sentence by sentence. We typed all transcriptions as soon as possible after the interview. This allowed us to remember, with the help of all notes taken at field, all the details of the interview. This way we loss the minimun relevant information and keep as high as possible the quality of obtained data.

All interviewees were doctors working at SNS-O. Our selection criteria was to meet with highly qualified professionals, in high responsibility positions, and with long tenure within health care system. Consequently all but one were experienced senior staff, mostly men (fourteen out of sixteen), from a wide range of services. All but three were working at hospitals. The remaining were working or have worked to a private health care organization under public concertation, and in primary care centers.

## 2.2 Analysis

Analysis stacks the information within categories and codes [23]. By category we mean *“the higher-level concepts under which analysts group other lower level concepts according to shared properties”*, [23]. Categories represent the relevant phenomena that enables the analyst to group within them the data coming from the qualitative concepts or evidence from field. Categories are the dependent variables in the work. Categories are the outcomes produced and explained by qualitative data. We ordered the categories involved in this work as follows: (i) Intrinsic Motivation, (i.a) Crowding out, (i.b) Crowding in, (ii) Identity, (ii.a) Socialization and (ii.b) Conflict.



Codes are labels used to concentrate and homogenize interviewees' statements or quotes. In each code homogeneous statements are grouped and all of them refer to a concept which is related to a category. Each statement belonging to a given code is an observation. Taken together, all observations belonging to a given code determine the strength with which such a code serves as evidence for a given category.

Codes are of two types: deductive and inductive. Deductive codes are those which have been defined and labelled on the basis of existing theories and literature on the topic (category) that it is being analyzed. Think for instance in a code labeled as *autonomy*. *Self Determination Theory* (SDT) [31], [28], [29] has established that autonomy (decision and action) acts as a fuel for intrinsic motivation. Thus, we use a code labelled *autonomy* to group under it all statements which allude to autonomy in relation to intrinsic motivation or other category. Analogously, when the code emerged spontaneously from respondents' statements, then we classify it as inductive code. For instance, doctors frequently say that economic incentives are effective only in the short run: “[...] people adapt to extra money [...]”, “[...] internalize extra earnings [...]”, “[...] game the system and want more and more [...]”,.... Then, we label a code with the word “Short run” to group under it all the statements which deal with the short-termed effectiveness of economic incentives.

Sometimes inductive codes are called “*In-vivo*” [15]. This is so when we label a code with a word that is of widespread use by informants in the course of the research to refer to one specific fact or circumstance. For instance, doctors often use the expression “*Café para todos*”<sup>11</sup> to point out that some incentives implemented in the SNS neither discriminate, nor differentiate and, consequently, do not recognize doctors who work at high level effort, interest and quality from those who simply meet the minimum. Then, we label the code with the exact words used by respondents to caught and count all those statements and other ones with the same meaning.

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<sup>11</sup>For the remaining of the work, the translation to English of such an expression, *coffee for all* will be used to refer to the mentioned code

A descriptive analysis and some quantification are shown within each category. We explore the number of times and the frequency by which a given code appears into the respondents' discourse, the number of respondents who refer to a given code in relation to a given category, or the observed pairwise correlation between codes in reference to a given category. Some tables, figures and diagrams showing quantification will be displayed to support results from the qualitative analysis. Some additional analysis has been done and more conclusions drawn from the classification of all the statements into *Positive* or *Normative*.

We organized data using two kinds of documents: a set of commented transcriptions and a set of spreadsheets. In the first, we add notes at the margin of each transcription document. In each note we emphasize a quote from the transcription. We label the selected quote with codes. We relate those codes with categories to underline the connection between the informants' statements and categories. We point out the code and the category each quote belongs to. Figure 1 shows a piece of a commented transcription. These commented transcription documents are the first step in the data analysis.

[...] cambiamos un poco el modelo ¿no? en vez de hacer... o sea hasta ahora lo clásico eran las peonadas ¿no? pues tu tienes lista de espera y te proponen hacer peonadas ¿no? para intentar bajar la lista de espera. Entonces bueno pues tu, simplemente haces la peonada y si luego la lista de espera baja o no... no es problema tuyo. Te da lo mismo. Se supone que va a bajar ¿no? pero, pero... si tu en una tarde en una peonada ves a veinte pacientes, si los ves rápidamente, los vuelves a recitar ¿no? les resuelves el problema, la lista de espera habrá bajado ¿no? porque... tu has visto a esos pacientes que estaban en la lista de espera, pero lo que has hecho igual es trasladar el problema a dentro de tres meses ¿no? entonces bueno. Nosotros un poco cambiamos el modelo ¿no? Lo que hacía era la dirección nos planteaba una serie de objetivos ¿no? y nos decía pues bueno, si al final de año cumplís estos objetivos, os pagaremos esto, que venía a ser un poco el equivalente a lo que los otros años nos habían pagado en peonadas, ¿no? Entonces bueno pues un poco,... vale,... pues lo planteamos ¿no? había objetivos que eran cuantitativos ¿no? reducción de lista de espera etc., etc. Y otros eran cualitativos ¿no? de... pues de sistemas de mejora etc., etc.

Mikel Berdud 16/1/14 14:54  
**Comentario:** Motivación  
 Intrínseca/Crowding out: Incentivo económico; peonadas.

Mikel Berdud 16/1/14 14:54  
**Comentario:** Identidad/Conflicto:  
 Distancia; conflicto de interés; Si la lista de espera no baja... no es problema tuyo.

Mikel Berdud 16/1/14 14:54  
**Comentario:** Identidad/Socialización:  
 Compartir objetivos; Sentirse parte/Pactar objetivos; la dirección nos planteaba una serie de objetivos ¿no? y nos decía pues bueno, si al final de año cumplís estos objetivos, os pagaremos esto...

Mikel Berdud 16/1/14 14:54  
**Comentario:** Motivación  
 Intrínseca/Crowding In: Incentivo económico+Autonomía; Autonomía/pactar objetivos; la dirección nos planteaba una serie de objetivos ¿no? y nos decía pues bueno, si al final de año cumplís estos objetivos, os pagaremos esto.

**Figure 1:** An example of a commented transcription document.

Next, we transfer all these data from commented transcriptions to spreadsheets. A

first spreadsheet contains an individual sheet per respondent. We sort quotes in rows, and categories and codes in columns. For every quote we proceed filling with 1 the cells corresponding with the codes and the category present in it and we fill with a 0 the remaining. This way we generate a 0-1 matrix for each respondent that allows us to quantify and collect information from interviews.

A second spreadsheet is built to analyze the data and the quantification provided by first one. A single sheet is built for each category in which we develop a general 0-1 matrix for this category. This allows us to count the times that each code appears in the course of interviews related to a given category and also to set interconnections between codes counting the number of times that emerge jointly in reference to a given category. Using these inter-code relationships we establish a simple hierarchy between codes. Finally, we generate other sheet in which we do calculations with all the quantified data. For each category, we develop a series of tables showing the probability of appearance of a given category conditional to the positive or normative nature. This sheet also shows lists – one for each code – with the number of respondents who mention at least one time a given codes in relation to a given category.

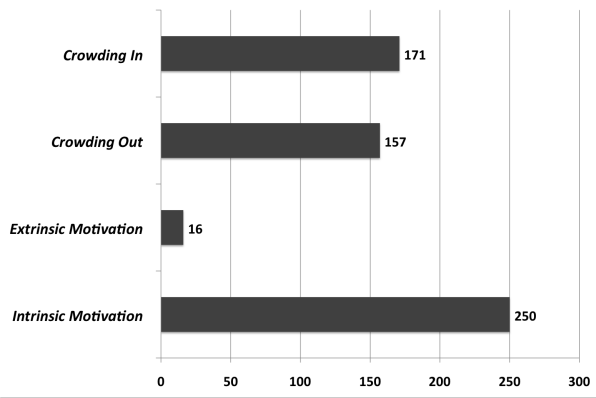
We define 37 codes which are briefly explained in the glossary. As we said before, we classify each quote as positive or normative. In the case of a respondent's statement is a descriptive answer about health organization, conditions at workplace, or the health care sector, we classify it as positive. Contrary, if the statement has to do with the subjective view that respondent has about how the work, health organization and health care should be managed and organized, then we classify it as normative. If a code appears almost all times as normative in the interviewees discourses, then we interpret this as a signal showing which changes should be implemented within the health care organizations from the point of view of the physicians. Analogously, if a given code appears almost all times as positive, then we interpret this as a signal of the actual state of the picture concerning health care

organizations at the moment in which the research was done.

We analyze data seeking evidence about physicians' intrinsic motivation and evidence of crowding effects: crowding-in and crowding-out. In the case of intrinsic motivation we want to answer if doctors are intrinsically motivated professionals. However, for crowding effects we are interested in setting which of the current policies, incentives or regulations implemented in the health care organization of health can be considered of being crowding-out or crowding-in. Analyzing informants' proposals and experiences we also try to suggest ideas and proposals of innovative and implementable crowding in incentives, policies and regulations.

### 3 Results

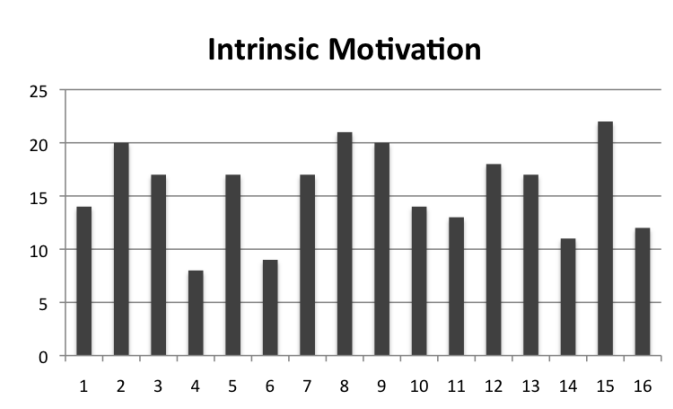
A total number of 594 statements concerning to intrinsic motivation and crowding effects were drawn from interviews. Figure 2 shows the distribution of all these statements by categories.



**Figure 2:** Crowding Out and economic incentives: distribution respondent by respondent.

### 3.1 Intrinsic Motivation

All interviewed physicians reported directly or indirectly intrinsically motivated actions and/or behaviors. Figure 3 shows the distribution of the number of intrinsic motivation arguments mentioned by each interviewee.



**Figure 3:** Number of intrinsic motivation statements distribution respondent by respondent.

Table 1 shows in the first column the codes which capture doctors’ statements when they refer to intrinsic motivation. The second column shows the number of doctors who mention at least once statements referring to each code joint with the percentage between brackets. Third column shows the number and the percentage of statements belonging to each code.

All interviewees made statements showing their joy from practicing medicine. We capture all these statements into the code *like/enjoy*. Almost all doctors pointed out that *vocation* drove them to medical practice. *Humanity*, or being effective in alleviating human suffering was also pointed out as an inherent reward by almost all doctors. Other medical specific tasks also appeared frequently in interviews as attractive for doctors: *service*, *science*, *research* or *help*. Finally, there are arguments caught by codes that are important although to a lesser extent. However, all of them share in common that physicians have inner motivations beyond the monetary which encourage them for work. From doctors’

Table 1:  
Are Physicians Intrinsically Motivated Professionals?

Code	Respondents 16 (%)	Statements 250 (%)
Like/Enjoy	16 (100,00%)	192 (76,80%)
Vocation	15 (93,75%)	48 (19,20%)
Humanity	15 (93,75%)	77 (30,80%)
Attractive profession	15 (93,75%)	91 (36,40%)
Service	13 (81,25%)	64 (25,60%)
Science	13 (81,25%)	61 (34,40%)
Technical knowledge	11 (68,75%)	27 (10,80%)
Further education	10 (62,50%)	26 (10,40%)
Recognition	10 (62,50%)	15 (6,00%)
Professional Development	9 (56,25%)	10 (4,00%)
Research	8 (50,00%)	21 (8,40%)
Challenge	8 (50,00%)	18 (7,20%)
Effort	8 (50,00%)	16 (6,40%)
Relatedness	7 (43,75%)	15 (6,00%)
Prestige	7 (43,75%)	10 (4,00%)
Passion	6 (37,50%)	12 (4,80%)
Empathy	6 (37,50%)	11 (4,40%)
Help	5 (31,25%)	12 (4,80%)
Pro-social	5 (31,25%)	7 (2,80%)
Dedication	5 (31,25%)	10 (4,00%)
Altruism	4 (25,00%)	6 (2,40%)
Teaching	4 (25,00%)	5 (2,00%)

**Table 1:** the number of respondents who reported at least one statement of each code and the percentage of respondents who reported statements of each code. Also the number of statements within each code and their percentage of appearance relative to the total number of statements.

statements we conclude that they are intrinsically motivated agents who like the medical practice or enjoy just from working as physicians.

*Like/enjoy* group doctors' explanations which show their interest or joy towards the medical practice. All respondents mentioned at least one time a statement related with this code.

*"...medical practice... is a practice in which... intellectual profits, affective profits are obtained quickly."*

Respondent 1

*"I find it very enjoyable to learn medicine and practice medicine when [...] working as a physician. You do the things that attract you and if you like windsurfing [...] you are cold but you don't feel it because you are doing windsurf. "*

Respondent 13

*Vocation* is another inner motivation that doctors feel. Doctors perceive themselves as innerly and innately oriented to medical practice.

*"within emergency, I am not looking for anyone to thank me anything, is my work and is what I want to do, then, I am happy just because I am doing it, what I have chosen."*

Respondent 8

*"I remember going into a hospital and it was a feeling... you feel that this is your place."*

Respondent 15

*Humanity* is a key feature that characterizes doctors. Doctors report that they enjoy and/or are vocationally driven to improve humans welfare and health. Humans and their wellbeing are what almost all physicians feel to be a fundamental motivation who encourages good work and is beyond money. They have a sense of being public servants who contribute to people's welfare.

*"I have experienced that people suffer much more with psychological things than with physical pain. Whereupon... I want to be physician to relieve suffering and given that the greatest suffering that there exist is the psychological suffering I dedicate myself to this."*

Respondent 11

*Service* reflect the experienced joy from treating patients and helping them, is another reason of being intrinsically motivated behaviors drew from doctors explanations. We frequently found such reasons in their words.

*“it is a global system ehm, so... that is... precisely the service... I understand it unseparable from teaching and from research, clinical... where you see the problems that you have read, that you have seen, you think about them and you research on them... is very attractive.”*

Respondent 14

*Science* and *research*, also seems to be key factors in the non-monetary motivations of doctors.

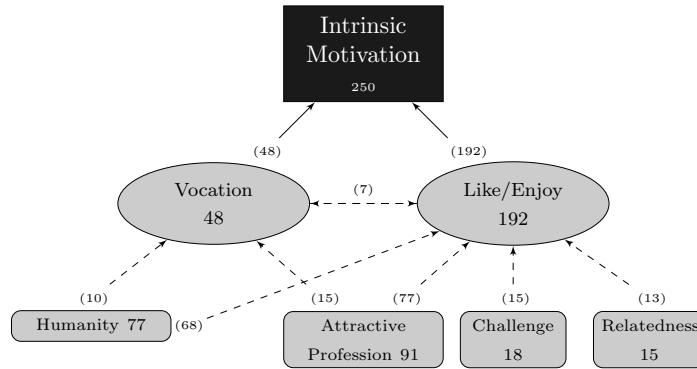
*“I like also what I can do in research [...] this overeffort, what I do because I like it also, right? because actually this do not... that is, I do not gain anything, or little, from that [...] prestige or so if you want or open doors toward [...] new worlds, new perspectives”*

Respondent 2

Doctors’ reported evidence about intrinsic motivation can be classified into two families of codes: a first family having to do with psychological determinants that predispose doctors toward medical practice, and a second family including codes that encompass those tasks and features of the medical profession that doctors like most to perform. We treat the first family of codes as the main psychological and personal causes of doctors’ intrinsic motivation toward medical practice, that is, internal rewards that keep doctors motivated for work. On the other hand, we treat the second family as the means to display, apply and keep high that intrinsic motivation. In other words, the ways to perform in medical practice feeling joy from working at the field.

Figure 4 displays the first family of codes and their interconnections. This family includes six codes classified into two levels. A first level containing *like/enjoy* and *vocation*, the two main codes which explain doctors’ intrinsic motivation, and a second level containing the other four codes which are closely related with the main two: *humanity*, *attractive profession*, *relatedness*, and *challenge*. In the second family we include codes which encompass the specific tasks and/or features liked to perform by doctors: *service*, *help*, *dedication*,





**Figure 4:** Numbers within nodes represent the number of quotes of the code. Numbers between brackets displayed in arrows represent the number of times that the codes connected by the arrow are quoted jointly. Dashed arrows connect codes. Continuous arrows connect the two main codes with the Intrinsic Motivation category.

*empathy, research, science, technical knowledge, professional development, further education or teaching, among others.*

Table 2: Intrinsic Motivation.

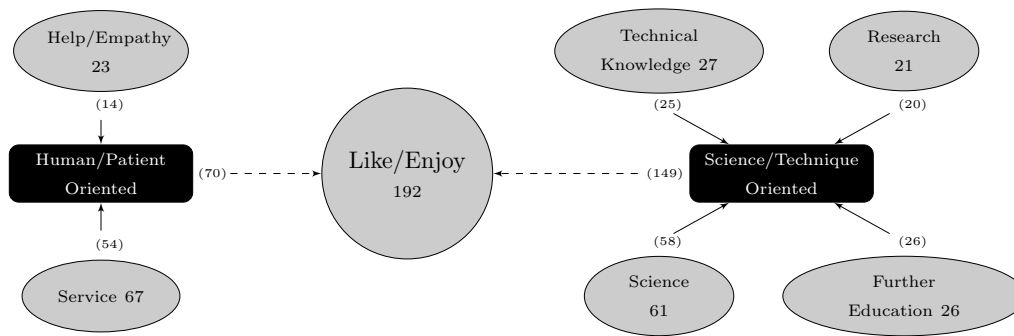
Which are the Determinants of Physicians' Intrinsic Motivation?

Code	Like/Enjoy (192)	Percentage
Science	58	30,21%
Service	54	28,12%
Further Education	26	13,54%
Technical knowledge	25	13,02%
Research	20	10,42%
Help/Empathy	18	9,37%

**Table 2:** the number of times and the frequency with which Like/Enjoy code appear jointly with other codes referring to tasks and/or features of the medical practice.

Next we analyze the connections that these first family of codes (determinants) have with the second one. Attending to *like/enjoy*, some interesting relationships with other codes are drawn. We summarize the most significative ones in table 2.

As seen in table 2, there seems to be two main dimensions of the medical practice which jointly form doctor's intrinsic motivation: the human centered or patient oriented part of the



**Figure 5:** Codes are shown in the circle and ellipse nodes. Rectangle nodes show the dimensions of intrinsic motivation. Connected with such dimensions the figure shows the codes that emerge in each case. Numbers between brackets displayed within each node represent the number of quotes of each code. Numbers between brackets displayed in arrows represent the number of times that codes allude to each source and the number of times each source explain doctors' like/enjoy of medical practice.

profession, and the technical knowledge or scientific advance oriented part of the profession. Figure 5 shows how these two dimensions relate with the different statements of interviewed doctors and the codes under these statements.

Doctors reported they enjoy or like medical practice because they help people who suffer from illness and emphasize with them.

*"[...] doing something that you like... medicine actually has a part... of helping people who are... therefore has a portion of reward. "*

Respondent 3

*"Not only the technical or the scientific aspect of the profession of the medicine, but also the human relation. To check that things are going well with some patients and wrong or very wrong with others... to live such a, such a respect that life gives, right? the death, the birth, etcetera... eh... anyway, all the affective and emotional delights that may have... that may have the human relation."*

Respondent 10

Doctors expressed also their joy by practicing medicine, specifically when they face science oriented medical activities and tasks like research, further education or teaching.

*"[...] I think that medicine is extraordinary, there is a beast of a knowledge in a current moment, the divulgation is tremendous, the advance... is of a such magnitude that..."*

Respondent 9

Table 3: Intrinsic Motivation.  
Which are the Determinants of Physicians' Intrinsic Motivation?

Code	Vocation (48)	Percentage
Service	12	25,00%
Help/Empathy	11	22,91%
Dedication	10	20,83%
Effort	7	14,58%
Pro-social/Altruism	7	14,58%

**Table 3:** Codes closely related with vocation. Columns show the number of times and the frequency with which the codes appear jointly with vocation.

*“Like a personal challenge, because difficult things attract me more than easy things and, then I also like the professional challenge, of be able to advance and discover new things, I like that very much.”*

Respondent 6

*Vocation*, as explained before in this work, also was reported frequently by interviewees when speaking about the motives which lead them to become doctors. *Vocation* is a difusse concept that we use as a code because many times respondents speak about it using this word literally. However we try to overcome this vagueness of the vocation with other more precise concepts which jointly appear with it: *dedication*, *effort*, *service* and *help* among others. Table 3 shows codes (features and tasks) closely related with *vocation*.

Table 3 shows that *vocation* is mainly determined by patient and/or human orientation. Despite some codes like *science* or *technical knowledge* also appear with vocation, we have omitted them because their frequency of appearance is very low. Therefore, vocation is a code mainly related with the human or patient oriented part of the medical practice.

Attitudes towards work and the willingness to work out of hours in favor of patients without any associated payment, are frequently reported statements which have to do with vocation. Doctors speak not only about their actions and ways to behave but also about their beliefs on how an ideal physician should behave and the sense of duty she should has.

“[...] Further, I do things out of my work hours. So well, that doesn't count [...]. I think that I work too much. And then, I eat (deal with) all the nasty things that I have. I mean, if all the patients fall into problems, I go to solve them, right? And yesterday, at the evening I was (working) until very late, and the day before until eleven at night, fighting with my things, which are my problems [...]”

Respondent 1

“the doctor should be empathetic, overall empathetic, empathetic...he must have a huge capacity to be empathetic, because you have to put your feet in the shoes of who is suffering, eh...and above of all, I think that you have to be a great communicator.”

Respondent 16

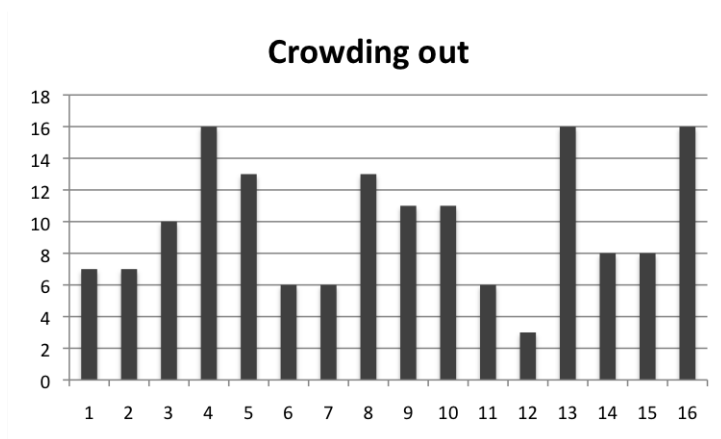
Summing up, we conclude that doctors are intrinsically motivated to practice medicine. They are professionals moved by intrinsic motives. Their professional rewarding system goes beyond the external and expected monetary gain. From their reporting we can also draw that they experience pleasure from practicing medicine. Interviews show that doctors chose medicine moved by a feeling of *vocation*.

Another interesting finding is that doctors intrinsic motivation seems to be determined by two separable dimensions: the patient or human oriented professional activity and the scientific or technique oriented professional activity. In the first dimension, tasks like service or patient care out of hours and features like help others or be empathetic with patients seems to be the most important ones. In the second dimension, research activities, teaching, further education or acquiring technical skills are the most important determinants.

Medical practice is subject to a great amount of responsibility which combines with the necessity to make decisions with celerity in order to avoid negative health consequences. Performing in tasks like *service* or *research* produce effective results (*relatedness*) in saving lives, alleviate suffering, improve patients' quality of life and/or extend survival years of most severe pathologies. Doctors *help* patients and also be empathetic with patients and their relatives. They have a strong sense of duty toward performing at high *effort* level in their work. All of these ways to behave, emerged in the course of interviews, are shared by almost all interviewed doctors despite they will not be recognized with any explicit reward as a consequence.

## 3.2 Crowding Out

Evidence about the importance and the causes of the crowding-out effect was also found. Interviewees made 157 arguments pointing out crowding-out. Figure 6 shows the distribution of the number of crowding out arguments mentioned by each interviewee.



**Figure 6:** Crowding-out statements distribution respondent by respondent.

An observed regular fact that saturates<sup>12</sup> rapidly is the crowding out nature of the economic incentives. Despite respondents in their statements described multiple channels through which economic incentives may cause crowding out, the fact that money hurts doctors' intrinsic motivation was shared by all.

Table 4, shows the number and the percentage of doctors who reported at least once the codes shown in the first column. For instance, all doctors – sixteen or hundred percent – reported that economic incentives cause crowding out. Other codes also shown in the table are: *task meaning change*, *lack of recognition*, *'coffee for all'*, *bureaucratization*, *'peonada'*<sup>13</sup> and *control*, among others. The third column shows the total number and the percentage

<sup>12</sup>Saturation is a concept of widespread use in Qualitative Analysis Research literature [23]. A code is saturated when it emerges repeatedly in almost all interviews, and always in the same explanatory or causal direction.

<sup>13</sup>The name with which an extra payment scheme implemented by SNS-O is commonly known. This payment scheme consists in a *Fee-For-Service* (FFS) payment that is offered to physicians for working out of hours. The goal of this FFS payment scheme is to reduce waiting lists under a previously determined threshold.

Table 4: Crowding out  
Do Monetary Incentives and other Command and Control Policies  
Crowd out Physicians' Intrinsic Motivation?

Code	Respondents 16 (%)	Statements 157 (%)
Economic Incentives	16 (100%)	144 (91,72%)
Task Meaning Change	15 (93,75%)	68 (43,03%)
Lack of Recognition	14 (87,5%)	45 (28,48%)
'Coffee for All'	12 (75%)	31 (19,62%)
Bureaucratization	11 (68,75%)	31 (19,62%)
'Peonada' (FFS)	11 (68,75%)	23 (14,55%)
Control	11 (68,75%)	21 (13,29%)
Professional career	9 (56,25%)	13 (8,23%)
Opportunistic Behavior	8 (50%)	21 (13,29%)
Market Transaction	8 (50%)	17 (10,75%)
Lack of Autonomy	7 (43,75%)	12 (7,59%)
Damage to prosocial image	5 (31,25%)	10 (6,32%)

**Table 4:** The frequency with which respondents indicated the different codes that point out the existence of crowding out effect and its causes.

of quotes related to each code. For instance, *lack of recognition* was quoted 68 times out of the 157 – a 28,48%. As we shall see, most codes shown in table 4 are closely related with *economic incentives* and the reasons by which *economic incentives* cause crowding-out.

Doctors expressed many statements referring to the crowding-out nature of economic incentives.

*“[...] you get used that to develop a given task you need a given economic incentive... and it is likely to arrive to perverse situations... that I can tell you.”*

Respondent 4

*Residents (Physicians) leave very early... they don't work extra hours or if they do, they call these hours overtime... when we did extra hours, these were, were, were... well done. I never thought to claim for overtime to nobody... then there are people who, I think they start to working exactly like past times but by reasons that would be they throw the towel (give up) earlier and, and there is a higher percentage of people who say, well, this is going to become in a, in a work rather than a vocation.*

Respondent 13

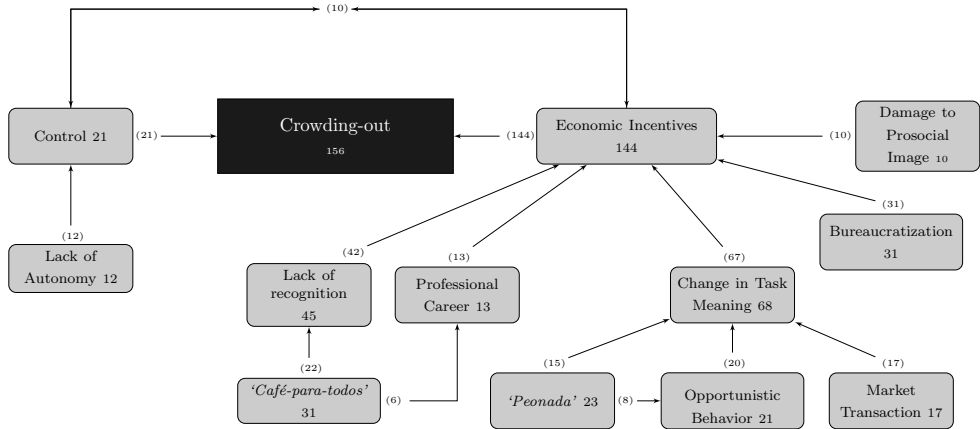
*Economic incentives* were mentioned as a cause of crowding-out – 144 out of 157 times.

Having a statement that points out the existence of crowding out, the probability that this

statement refers to some kind of economic incentive is high and close to 1. This is not surprising and it is consistent with what the theory in economics and psychology predicts ([18], [38], [26] and [30]).

Besides *economic incentives*, *control* is the other main code related with crowding out. We consider these two because all the times that any statement belonging to one of them emerges in the course of an interview, it directly points out to crowding out. Furthermore, the jointly appearance ratio of *economic incentives* (10/144) and *control* (10/21) is very low. We interpret this low frequency in co-occurrence as an evidence of being independent explanations or causes of crowding out.

Other codes which explain crowding out emerge jointly with *economic incentives* or *control* frequently in the course of interviews. This is the case for instance of *lack of autonomy*, *‘peonada’*, *market transaction*, *profesional career*, *damage to prosocial image* or *bureaucratization*.



**Figure 7:** Relations Between Codes Referring to Crowding Out.

Figure 7, shows how the different codes related to crowding out interact between them. Numbers within nodes refer to the number of statements belonging to the code of such a node. Numbers between brackets out of nodes refer to the number of statements which belong either to the code of the node and to the code connected by the arrow. For instance,

Table 5: Crowding out.  
Are there other reasons in combination of economic incentives  
that reinforce the crowding out effect?

Code	Economic incentives (144)	Percentage
Task Meaning Change	67	46,52%
‘Peonada’	15	(22,05%)
Opportunistic Behavior	20	(29,85%)
Market Transaction	17	(25%)
Lack of Recognition	42	29,17%
‘Coffee for all’	22	(48,89%)
Bureaucratization	31	21,52%
Professional Career	13	9,02%
Damage to Prosocial Image	10	6,94%

**Table 5:** The number of times and the frequency with which the different codes appear jointly with the main code of economic incentives and referring to crowding out. The codes showed in the table below of *task meaning change* and *lack of recognition*, and justified to the right, are those which appears most times joint with the code just above of them.

in the figure it can be seen that there are 45 statements showing *lack of recognition*, and, at the same time, 42 out of these 45 also refer to economic incentives at the same time.

Table 5 displays how *economic incentives* combine with other codes in explaining crowding-out. Two of these combinations are particularly interesting. The first is when *economic incentives* combines with *task meaning change*. *Task meaning change* is present in 68 statements and combines with *economic incentives* in 67 times out of the 144. The second is when *economic incentives* combines with *lack of recognition*. *Lack of recognition* is present in 45 statements and combines with *economic incentives* in 42 times out of 144.

From Social Psychology we know that recognition is one of the main determinants of the intrinsic motivation ([28] and [30]). In the course of interviews doctors frequently showed feelings about being poorly recognized by the actual effort they exert in medical practice. They consider that the current system of rewards in SNS-O is far from recognizing their work and effort as it should be. We capture such feeling with the code *lack of recognition*.



The combination of *lack of recognition* and *economic incentives* seems to be an important cause of crowding-out.

Other important cause in the explanation of crowding-out that combines with *economic incentives* is *task meaning change*. Behavioral Economics [18] shows that incentives frame the decision situation so as to suggest the appropriate behavior. When economic monetary incentives are offered to doctors, they may change their subjective view towards work and move their mind into an economic interaction frame behaving like an economic agent would do, leaving out intrinsic motives.

In table 5, there are other codes containing information about the causes and the determinants of *task meaning change* and *lack of recognition*. The first is related with ‘*peonada*’, *opportunistic behavior* and *market transaction*. The second is related with ‘*coffee for all*’<sup>14</sup>.

Doctors frequently report about *opportunistic behavior*. *Opportunistic behavior* occurs when agents act seeking her maximum monetary payoff regardless whether their behavior contributes or not to the goal of the principal. More precisely respondents underline many cases of *opportunistic behavior* in relation with ‘*peonada*’.

*Market transaction* – that refers to the change in the perception of the task from social act to pure job – joint with ‘*peonada*’ and *opportunistic behavior*, are the three codes under the *change in task meaning* that results from *economic incentives*. These codes explain mainly crowding-out effect in SNS-O.

Finally, *damage to prosocial image* occurs when intrinsically motivated agents feel that being monetarily rewarded may change the image that they project to the society and they start to feel that society view them as greedy agents or, even worse, they start to view themselves as greedy agents [40].

The mixing of *economic incentives* with *task meaning change* or *lack of recognition* are the most explicative reasons for crowding out.

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<sup>14</sup>A common expression used to describe situations where a group of individuals or institutions are treated equally irrespective of their individual efforts, necessities or results.

*‘I perhaps don’t generate intentionally that waiting list. But there exists. As a consequence I must be paid for two afternoons, that it is a gift and is money. I have no incentive to make the waiting list to dissappear, and,... and I should have that incentive (incentive to reduce the waiting list) because it would be a good thing that the waiting list would dissappear... is a good thing, that means that we are working better.*

Respondent 13

*“[...] waiting lists are absolutely overgrowth, and generate waiting list is very easy also [...] ‘peonada’, as an incentive? the problem is, rather than icentive I think that it can be a perversion... of the issue.”*

Respondent 3

In table 6 there are two other interesting codes. *Bureaucratization* on the one hand, and *professional career* on the other. The first, reveals that the current contractual frame under which the labor relationship between health professionals and health organizations is established, is by itself a cause of crowding-out of economic nature. The second reflects the fact that the SNS-O’s implemented incentive scheme called *professional career*, causes crowding-out.

Related to *bureaucratization* doctors frequently referred to this process pointing out that agents loss their interest towards medical profession and accomodate themselves and behave as salaried public workers. Doctors describe *bureaucratization* as a process resulting from treating all agents equally. The result of working in an environment without receiving any incentive – neither monetary, nor non-monetary – which rewards professional excellence or other merits.

In the case of *professional career*, however, doctors pointed out that *professional career* fails as an incentive mechanism because its requisiteses are reached by all without doing any effort (by the mere passage of time) and therefore, neither serve to recognize professional achievements. Then the *professional career* currently implemented in SNS-O is viewed by doctors as an economic complement that neither incentivize nor motivate and even worse, may crowd out the intrinsic motivation of the highly motivated professionals.

*“[...] in the system that we are, I say... we are all equal and the equality is to go below. That is, the equality is achieved down, never up. Then, when you spent some years, we all*

*are paid the same, we leave the work with the same timetable, and you start to realize that whether you view forty patients and you write a research project, and you study, and you publish... doesn't matter, you are treated equal than the guy who is working besides you, the same that you watch arriving to workplace at quarter to nine, that at quarter past two is leaving, that shirks to assist patients..."*

Respondent 15

*...now, the professional career we have is also rubbish, because you seat at your chair for fourteen years, and you advance [...] I don't go out of my office for a period of fourteen years and I advance, [...] Apart from the fact that if I go up of professional category is rewarded by a infimum or mediocre economic incentive, which, at the end, you don't do for that.*

Respondent 13

Table 6: Crowding out  
Control causes crowding-out.

Code	Control (21)	Percentage
Lack of Autonomy	12	57,14%

**Table 6:** the number of times and the frequency with which *lack of autonomy* emerges joint with *control* referring to crowding out.

*Control* is the other main cause of crowding-out in SNS-O's health organizations. However, it is of less importance than economic incentives. This minor importance of *control* relative to *economic incentives* has to do with the fact that it is hard to control physicians and their practice because they own a high amount of complex private information. Doctors told that in many cases they perceived control from managers in some of their medical practice. They often perceive the incentives or the policies implemented as ways to drive the doctors towards managerial goals without taking into account doctors' ones. Interviewees also informed about a high degree of unilateralism in the decision making processes (setting objectives, future planning,...) of health care and health organizations. This unilateralism was felt as a *lack of autonomy* (12) that demotivates them.

*"At the end of the year budgets are cut off... "there is not so much freedom ..." perhaps "to do do many surgeries", because the manager gives the order to control, and "cut off the expenses."*

Respondent 6

*“[...] in our culture to be tough, tough, and... to control... to be ‘controller’ authorizes you more than other models of management of higher uncertainty. [...] that kind of management, I think that generates much resistance in collectives like this, in such qualified people, who don’t want to hear from you what they must do and who they want that you leave them margin to act. Then, there, there is a point of friction.*

Respondent 16

Finally, we are going to put our results in relation to the crowding-out literature. Behavioral Economics [18] and Social Psychology [31], establish several mechanisms through which economic incentives may cause crowding-out of agents’ intrinsic motivation. The results of this work fit with three of them: (i) incentives provide information about the principal who implemented them, (ii) incentives frame the decision situation so as to suggest appropriate behavior and (iii) incentives compromise control averse individual’s sense of autonomy.

Our results are consistent with the first mechanism. Doctors shape beliefs about the type of management they are dealing with using incentive and payment schemes implemented in SNS-O as informative signals. In the course of the interviews the *lack of recognition* (45), *professional career* (13), *‘coffe-for-all’* (31) and *‘peonada’* (23) throw confirmatory evidence about the first mechanism. Information provided by pay structures and incentives help doctors to ascertain management’s goals. We observe that doctors view health management distant, disinterested, far from the doctors’ objectives and focused only in their own goals (reduce waiting lists, reduce health expenditure, projecting a good image to the electorate showing great interventions through the media and so on).

Doctors often made statements which evidence this first mechanism:

*“Professional career is a... well is an overpay... that management invents to compensate, to compensate a little. Then, is made without any criteria of quality...”*

Respondent 14

*“The major priority is the cost adjustment... as a function of the numeric valuation... nobody questions himself if you are doing the things well or if you are doing the things wrong...”*

Respondent 4

*“[...] complementary activity earned (professional career) by category. And thus I am in a hospital and thus I am... but here all is... here to extinguish the waiting list is all of the picture. ”*

The second mechanism refers to how the incentive can frame the health management-doctor relation in a pure economic principal-agent interaction. When dealing with an economic incentive, intrinsically motivated agents may change their mind starting to see the activity or the task in which they are performing as an economic transaction. Such change is what we capture with the codes *task meaning change* (67) and *bureaucratization* (31). Rewarded to do extra effort or granted with fixed secure positions, doctors, might start perceiving the social valuable task of helping others as a commodity subject to the labor market rules, with wages and payments being the market price. This change in the perception may disappoint them hurting their intrinsic motivation. This reason also lead us to include *market transaction* (17) as another code with explanatory power. Codes like *opportunistic behavior* (21) or *'peonada'* (23) also provide evidence about this second mechanism.

Doctors told that in many cases colleagues start to behave following pure economic motives in reaction to incentives or payment schemes:

*"[...] you just do the 'peonada' and after that if the waiting list fall or not... is not your problem [...] the problem is the waiting list by per se and no that the activity grows just because. Of course if they tell you, 'your activity have to increase', you think, 'ok, ok, it will increase but I can operate people who maybe do not... who is in the limit of the necessity to be operated or not"*

Respondent 2

*"I don't make 'peonadas' because I don't believe... I don't view myself in... that issue of money. There are people, physicians, and no physicians, nurses, auxiliars and all the people, who, given that 'peonadas' are so well paid, they start o think that to do one or two 'peonadas' per week compensates because are very well paid, and doing these is usefull for your expenses, for your son's university, or for any other thing. And that, perverts... perverts the system. Perverts the system."*

Respondent 8

Self Determination Theory ([31], [30]) establishes that this mechanism may occur in strategic situations where incentives convey the desire of a principal to control the agent. From this third mechanism we would expect that incentives may compromise control averse doctors' sense of autonomy. As doctors often told in the course of interviews, they view

'peonadas', professional career or other managerial decisions as tools, designed unilaterally by management, to drive doctors actions.

In doctors' words, incentives, pay structures and managerial decisions which constraint doctors' autonomy or which were perceived as controlling may cause crowding-out :

*"when we did 'peonadas', many of my mates... 'but if I don't want to do 'peonadas', after be at work in the morning, I don't want to be also at work in the afternoon"*

Respondent 2

*"'Peonada'? within our unit, nobody wants to do. Because there are units that they want to do. This also strongly depends on the units, But our unit, is a unit of women, practically, there are two men only. And this, you know? women, children, married, anything else,... that is... is different from men, eh. And they don't want to do 'peonadas'. They don't want. Young people, that we talked about they before, I have some young people in the unit who what they want to do is to research, to study, to do anything else... and they don't want to spend the afternoon here looking reviews which don't add anything to you. Because reviews does not add anything to me.*

Respondent 15

### 3.3 Crowding In

The last category we test in this work is crowding-in. Interviewees made 172 statements pointing out crowding-in. Figure 8 shows the distribution of these statements respondent by respondent.

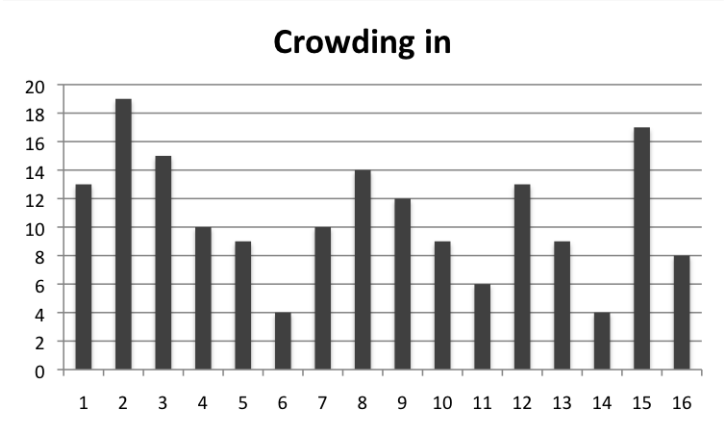


Figure 8: Crowding-out statements distribution respondent by respondent.

Table 7: Crowding In  
 Are there incentives schemes, pay schedules or other non-economic rewards  
 which may cause crowding in?

Code	Respondents 16 (%)	Statements 172 (%)
Non-economic Incentives	16 (100%)	157 (91,28%)
Recognition	16 (100%)	49 (28,49%)
Autonomy	13 (81.25%)	50 (29,06%)
Professional Development	14 (87.5%)	38 (22,09%)
Research	10 (62.5%)	37 (21,51%)
Further Education	10 (62.5%)	29 (16,86%)
Economic Incentives	9 (56.25%)	15 (8,72%)
Service	8 (50%)	10 (5,81%)
Auto-Organization	8 (50%)	22 (12,79%)
Relatedness	7 (43.75%)	12 (6,98%)
Professional Career	7 (43.75%)	12 (6,98%)
Science	6 (37.5%)	17 (9,88%)
Flexibility	6 (37.5%)	16 (9,3%)
Teaching	4 (25%)	13 (7,56%)
Agree Objectives	4 (25%)	10 (5,81%)

**Table 7:** codes of crowding-in. The number of doctors who at least make one statement related to each code and the percentage is shown in the second column. The third column shows the number of statements referring to each code and the percentage.

Respect to crowding-in a fact that saturates rapidly is that it is mainly caused by *non-economic incentives*. In the course of interviews just a few experiences of crowding-in were explained. However a lot of proposals and ideas of crowding-in were proposed. This imbalance offers a precise picture of the current state of health organizations in SNS-O.

Table 7 shows the codes related to crowding-in. The main code explaining this category is *non-economic incentives*. Under this code all the statements which expressed proposals or experiences of *non-economic incentives* were included. *Non-economic incentives* is also related with almost all the other codes. That is, almost all statements included in it emerged jointly with other codes among which *recognition*, *autonomy*, *professional development*, *research* or *further education* seem to be the most important ones. All these codes or labels

refer to incentive methods alternative to the economic incentives. Therefore all of these methods should be considered in the design of new incentive schemes.

*Recognition* appears frequently in doctors explanations with the meaning of being a potential and an effective incentive. In some cases also emerged jointly with *economic incentives* as a way to complement these in order to change their nature from crowding-out to crowding-in. Usually doctors claim for new incentives which will be useful to differentiate or positively discriminate physicians following quality, excellence or other merit based criteria.

*“we all are different, each one have his capabilities, his motivations, and that has to be reflected, right? that is no, no... uniformity doesn't stimulate, right? to... to the people, right? that is... you have to recognize the differences.”*

Respondent 2

*“Sometimes is preferable to be pated on the back and be told what well you have done, this year you operate a lot... and results have been excellent. [...] that is, being told what well you have done, being told, ‘hey!... do you want to go to this place to learn a new technique?’.”*

Respondent 5

Giving more *autonomy* to professionals seems to be potentially another good *non-economic incentive*. Doctors frequently asked for more *autonomy* to manage their work at workplace and adjust the work burden to their personal circumstances and interests. To offer this possibility as much as possible, could motivate physicians for work and encourage their intrinsic motivation.

*“... in the scope of the... of the autonomy... more freedom in management... in the management of your activity, that would be at professional's level, as it is. Or at organization's level, you know? of how you manage yourself...”*

Respondent 4

*“be able to manage the unit of service, that is to be able to deal managerial agreements with the hospital management, in which you can make a proposal of this year plan, ‘we are going to do that, with...’ right?with this kind of incentives.”*

Respondent 15

*Research* is another incentive which appears often in the course of interviews. Some doctors refer to basic *research* others to applied clinical *research*, and a few told about the



need for linking hospitals to the university as one big policy which would result in a better quality of *research*, technical advance and scientific knowledge. Doctors refer to these issues as ways different to the economic which could motivate them.

*“It would not be necessarily monetary... instead of being told that they say to me, we are going to disappear the waiting list and you will see all patients the next day, right? if you achieve that goal, eh... we organize a unit of clinical trials, equiped with three nurses, two data managers, and in addition we release the fifty per cent of two of your assistants... I watch such a big carrot...”*

Respondent 13

Finally the last code that we shall analyze from table 7 is *professional development*. This code reveals the limited possibilities that doctors have to develop a professional career, to grow as physicians, expand their activities and knowledge and promote. In the interviews they consider the expansion of these possibilities as a potential incentive which may boost their intrinsic motivation.

*...from that money a fifteen percent was extracted for the institution, and twenty percent for the ‘residents’ fund’. That was a thing...that...that was, because the ‘residents’ fund’, what stimulates was that residents published, and present things. And then, there was a congress, then what you present were watched and the interest in... travel expenses were paid to him.”*

Respondent 12

Remaining codes of the table 7 also explain many crowding-in features and also propose many crowding-in incentives design. However we will analyze relations between codes to establish which of them are catching the same or similar phenomenon. The first remarkable thing is the prevalence of the *non-economic incentives* as the main cause of crowding-in. The second is that the combination of *economic incentives* with *recognition*, also may cause crowding in. Finally, we want to remark also that the redesign of the *professional career* could transform this crowding-out incentive scheme into a crowding-in one.

Table 8 shows between codes relationships. That is, which codes appear at the same time with a given statement in the course of interviews and also how many times appear jointly and relative to the times that they emerge in total.

Table 8: Crowding In  
 Are there incentives schemes, pay schedules or other non-economic rewards which may  
 cause crowding in?

Code	Crowding-in (172)	Percentage
Non-Economic Incentives	157	91,28%
Autonomy	45	28,66%
Self-management	21	46,67%
Recognition	43	27,39%
Research	36	22,93%
Science	13	36,11%
Professional development	36	22,93%
Further education	13	16,11%

**Table 8:** relations between crowding-in codes. The second column show the number of statements of each code which appeared jointly with the code just above in the cases in which they are more justified to the right. If the table show two codes equally justified, both relate to the code less justified to the right which is above them. In the third column, percentages are expressed relative to the code just in the row above, except the cases in which the just above row code is equally justified. Then it is expressed relative to the code above it which is less justified.

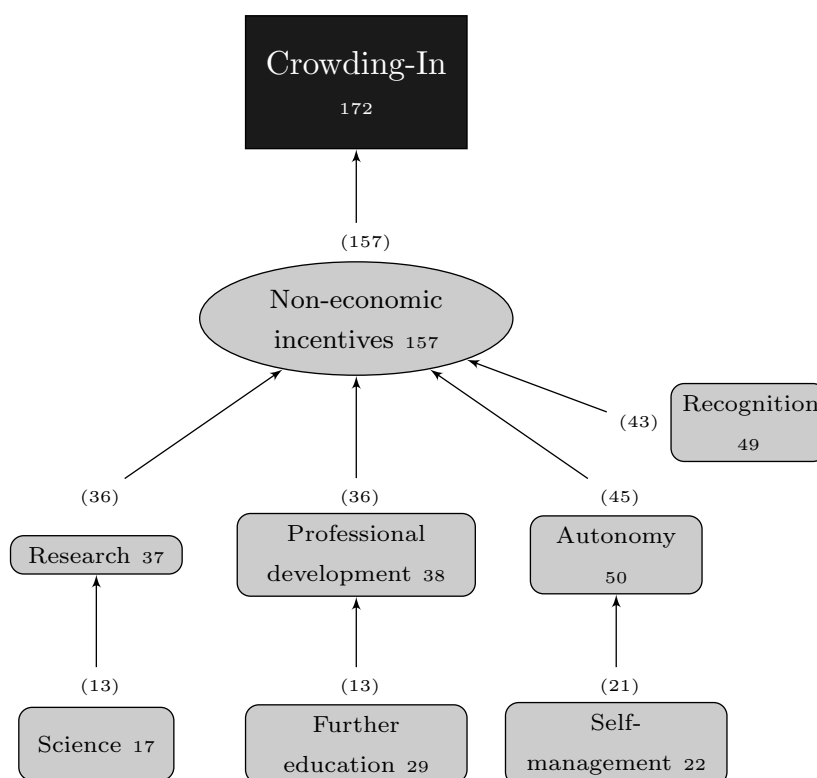
Looking at table 8 we first say that the main code that may be on the basis of crowding-in is *non-economic incentives*. From all statements referring to crowding-in, 91,28% of them are pointing out to some kind of non-economic incentives. The rest of the codes which appear in table 8 can be considered alternative ways to incentivize doctors without money.

*Autonomy* was quoted 45 times (28,66%) to be a *non-economic incentive* which may cause crowding-in. Leaving professionals acting at the workplace with more freedom and with a sense of behaving with *autonomy* seems to be a way to foster doctors' intrinsic motivation. More precisely, when doctors claimed for more *autonomy* often they claim to *self-management* of time, task schedule or work goals and objectives.

*Research* activities also emerge often (22,39%) in the course of interviews as a potential *non-economic incentive*. *Research* include the interest through *science* that share many of the doctors. When they claim more *research* activities, sometimes they speak about clinical trials, or facilities to spend research visits in other institutions, facilities to collaborate with other research groups and to publish, research assistance or time to do research within hospitals at working time.

Another form of *non-economic incentive* that doctors report is *professional development* (22,93%). In doctors' words, currently the possibility to develop a career into SNS-O is very low and there are no facilities to *professional development*. In their view to set some criteria in order to give opportunities to develop a career and push up doctors to grow as professionals is crucial to motivate physicians. Frequently, when they speak about *professional development* they point out to *further education*.

*Recognition* is also something that doctors' claim. Being recognized could be a good *non-economic incentive* looking at doctors' explanations. As we saw in the previous section of this work, *professional career* is, in its current design, an incentive scheme that fails to recognize the merits and/or the excellence of the professionals. Is an incentive that treat equally all doctors: the "goods" and the "bads". This lack of recognition is perceived



**Figure 7:** Codes are shown in ellipse form nodes. Rectangle form node show the category: crowding-in. Connected with the category the figure shows *non-economic incentives*. Numbers displayed within each node represent the number of quotes of each code. Numbers between brackets displayed in arrows represent the number of times that a given code appears jointly with the other code that is connected with it by the arrow.

negatively and hurts professionals' intrinsic motivation. However, almost all respondents believe that a well designed *professional career*, which will recognize the effort, the excellence and quality, would do a lot in motivating doctors and pushing all the staff toward a norm of good practice at high quality standards.

All the relevant relationships between crowding-in category and *non-economic incentives* in their different forms is captured in figure 7.

### 3.4 Crowding-in in the field: what it is and what it should be

More insights can be drawn analyzing the normative or positive nature of statements and the information that this classification provides to evaluate the degree of crowding-out within SNS-O. As we explained above, all the statements drawn from the interviews were classified into normative and positive. As normative we labelled hypothetical statements referring to how things should be or could be in the SNS-O. As positive we labelled descriptive statements that refer directly to the actual state of the SNS-O. We use this information to determine if current management in SNS-O is causing crowding-out or not. Our approach is as follows: if the fraction of all statements referring crowding-out that were classified as positive is close to one, then it can be interpreted as evidence of management caused crowding-out. This result will be more consistent if comparing with crowding-in if the reverse happens.

We calculate the probability of having a positive (normative) statement knowing that it is a statement referring to crowding-in for each respondent  $i = 1, 2, \dots, 16$ , using the following expression:

$$P_j(p|ci) = \frac{P_j(ci|p) \cdot P_j(p)}{P_j(ci|p) \cdot P_j(p) + P_j(ci|n) \cdot P_j(n)}$$

Where the  $p$  means positive,  $n$  normative and  $ci$  crowding-in. Then  $P_j(ci|n)$  will be the probability for any normative statement of the respondent  $i$  of referring also to crowding-out and  $P_i(n)$  will be the probability for any statement of respondent  $i$  of being normative<sup>15</sup>.

We also calculate respondent specific weights,

$$W_{ci}^i = \frac{s_{ci}^i}{S_{ci}}$$

Where  $s_{ci}^j$  refers to the number of crowding-in statements made by the respondent  $j$ ,

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<sup>15</sup>Analogously we have the other probabilities of the expression:  $P_i(ci|p)$  will be the probability for any positive statement of the respondent  $i$  that refers to crowding-out and  $P_j(p)$  will be the probability for any statement of respondent  $i$  of being positive.

Table 9: Crowding in  
Measuring crowding-in degree in the SNS-O through probabilities.

Respondents	Weight	Probability positive ( <i>weighted</i> )	Probability normative ( <i>weighted</i> )
1	0.0606	0.0071 ( <i>0.0005</i> )	0.9928 ( <i>0.0750</i> )
2	0.0774	0.2551 ( <i>0.02818</i> )	0.7448 ( <i>0.0822</i> )
3	0.0723	0.1185 ( <i>0.0103</i> )	0.8814 ( <i>0.0768</i> )
4	0.0572	0.5000 ( <i>0.0290</i> )	0.5000 ( <i>0.0290</i> )
5	0.0690	0.0745 ( <i>0.0039</i> )	0.9254 ( <i>0.0484</i> )
6	0.0336	0.1000 ( <i>0.0023</i> )	0.9000 ( <i>0.0209</i> )
7	0.0555	0.0588 ( <i>0.0034</i> )	0.9412 ( <i>0.0547</i> )
8	0.0808	0.1997 ( <i>0.0162</i> )	0.8003 ( <i>0.0651</i> )
9	0.0740	0.1000 ( <i>0.0069</i> )	0.9000 ( <i>0.06279</i> )
10	0.0639	0.0986 ( <i>0.0051</i> )	0.9013 ( <i>0.04716</i> )
11	0.0454	0.5000 ( <i>0.0174</i> )	0.5000 ( <i>0.0174</i> )
12	0.0572	0.8105 ( <i>0.0612</i> )	0.1895 ( <i>0.0143</i> )
13	0.0707	0.1358 ( <i>0.0071</i> )	0.8642 ( <i>0.0452</i> )
14	0.0387	0.1000 ( <i>0.0023</i> )	0.9000 ( <i>0.0209</i> )
15	0.0808	0.5671 ( <i>0.0560</i> )	0.4329 ( <i>0.04278</i> )
16	0.0622	0.9140 ( <i>0.0425</i> )	0.0859 ( <i>0.0039</i> )
<b>TOTAL</b>		<b>0.2837 (<i>0.2929</i>)</b>	<b>0.7162 (<i>0.7071</i>)</b>

**Table 9:** Respondent by respondent weighted probabilities of having a positive/normative statement conditional to being a crowding-in statement.

and  $S_{ci}$  refers to the total number of crowding-in statements drawn from the interviews. Using weights we have the weighted probability of a positive statement conditional to be crowding-in. Table 9 shows the probability of being positive/normative for any statement or quote which refers to crowding-in. With these probabilities we want to measure the crowding-in degree of the current management in SNS-O. Probabilities are calculated for each interviewee, and then added to obtain the total probability weighting by respondent or calculating the average.

Probabilities in table 9 show that crowding-in is, in words of the respondents, predominantly a normative phenomenon. The probability for a crowding-in statement to be normative is  $P(p|ci) \approx 0.7$ . That is, when doctors make an statement pointing out crowding-in the probability of such an statement of being some advice or opinion about how things should be is near 70%. In other words, there is more work to do in fostering doctors' intrinsic motivation than is currently being done.

But fortunately this is not the whole of the picture. Looking the table 9 doctor by doctor some remarkable numbers jump to our view. More precisely the probabilities corresponding to respondents 11, 12, 15 and 16. The first two corresponds to two senior doctors who speak openly about their experiences rather than of their ideas or ideals. Having spent long time in positions with managerial responsibilities they were inclined to speak about successful actions, organizative changes they implemented.

The case of respondents 15 and 16, however, is particularly interesting. During a period of time, one of them held a management position at hospital and the other was head of a unit. During this period they start to bargain and agree upon unit objectives and goals. They were successful in reducing waiting lists without making '*peonadas*'. In words of the respondent who was the head of that unit that was the result of giving to professionals more autonomy and extend their working hours possibilities. Also, it was a consequence of organizing autonomous teams and mutidisciplinary workgroups. These teams worked on

each case at a high cooperation rate from a multidisciplinary approach. These changes, change the mind and mood of the medical staff, they start to feel themselves part of the picture because they also participate in objectives and goal setting process. Among these objectives also managerial specific ones were included (waiting lists, reducing costs,...) and doctors commit on them, but in exchange they perceived more facilities to work in their research projects, to attend conferences and courses or to publish papers. Many of their statements described this.

The following quotes took from respondent 15 and respondent 16 may help to illustrate this last case.

*"... there where people who, eh... , that I knew that they were able to offer more from the research point of view, or grants, or... and I gave to them more hours... to that. While other people, were attending more patients. 'You don't want to do research. You don't want to apply for aid, so you will attend more patients. I am going to give more time to the ones for that to the other. To give him more chances to do his things', right? There I discriminated".*

Respondent 15

*"What I try to do in the unit... is to offer to people much ability for, for... that is, to strengthen the development, right? the professional development... within the unit, there are also non-economic incentives, but within the pathologies of, of... to give conferences, attend to places (conferences) congresses, of... right?"*

Respondent 15

*"Free time is starting to appear joint with the work-life balance. Once the profession is feminized, there is a new... even in men also, the issue of enjoying from... more auto-organization (self-management) is starting to come. Is becoming a very important question."*

Respondent 16

## 4 Concluding Remarks

Doctors are intrinsically motivated toward medical practice because they express to like and enjoy medicine. They are willing to put extra effort in professional performance even in absence of external rewards or in exchange of low ones. Vocation is another determinant of doctors' intrinsic motivation. Despite its incidence is lower than the like or the joy felt from practicing medicine, vocation also makes doctors feel good from performing at health care.



Doctors' intrinsic motivation seems to have two dimensions. Doctors like or enjoy from technical or scientific oriented tasks and also like or enjoy human or patient oriented tasks of medical practice. Related with the former, doctors consider medicine as an attractive profession because it involves activities like research, learning to acquire further education or technical skills, improving methods and drugs, teaching and so on. With the latter doctors express that they like or enjoy their work because they help people, they have to empathize with patients in trouble or they work providing a social valuable good. To dedicate to such activities at high effort lead them to develop a self-view of prosocial agents.

With respect to intrinsic motivation, we conclude that doctors motives to work well go beyond the purely economic ones. Therefore the design of optimal incentive schemes should take into account these internal motives which form doctors' intrinsic motivation.

Intrinsic motivation and extrinsic motivation are not independent. Then neglecting the role played by the inner motivations of individuals in their behavior can lead to set perverse incentives and unexpected outcomes. Monetary rewards, economic incentives or other extrinsic consequences like sanctions, or regulations, may hurt intrinsic motivation. This is the so called crowding-out effect that it is well established by behavioral and experimental economics [18], [30] and [38].

In our study, doctors, in general, value economic incentives as negative, specially when these come joint with a notorious absence of recognition. The current professional career –an incentive scheme implemented in SNS-O– is considered demotivating by almost all doctors in the interviews mainly because it fails to recognize good work and excellence from other opportunistic behaviors. ‘*Peonada*’, another *Fee-For-Service* payment scheme implemented in SNS-O is also considered demotivating because it sends a bad signal to doctors about the type of principal and it changes the frame of the medical act and is a source of opportunistic behavior. Furthermore, it clearly fails in the goal of reducing waiting lists. ‘*Peonada*’ is also perceived as an attempt to control the professional activity.

Control is the other main cause of crowding-out. Doctors are highly qualified professionals with a high private information. These features make doctors control averse. Incentives, or organizational issues may demotivate doctors because they often perceive them as controlling or constraining their autonomy.

On the other face of the picture we have the crowding-in effects. Actions or external rewards –mainly non-monetary but also monetary– which properly designed may boost agents’ intrinsic motivation. In the study we find few experiences and a lot of proposals of crowding-in.

We sum up in two the most remarkable experiences. Measures and changes that provide with more autonomy, more possibilities for doctors to self-manage their own activity, more participation on the design of objectives and agree upon them, were the common features of these experiences. In both they stopped making ‘*peonadas*’ and fixed the rewards to real objectives that involved challenge. Other interesting characteristics of these experiences were that the decision structure becomes less hierarchical and more participative and that incentives –often non-economic rewards– were agreed between doctors and taking into account their hopes, wishes and professional goals.

We sum up some proposals of changes and incentives made by doctors:

- i.- Facilities to engage in scientific and researching activities: clinical trials, infrastructure, technical assistance, conferences attendance and so on.
- ii.- Activities involving professional development: further education, stays in centers or institutions of excellence to learn new and useful specific knowledge, teaching and the like.
- iii.- More autonomy to organize own work, to self-manage and to set and agree objectives joint with colleagues and management.

iv.- Recognition at workplace: the necessity of a renewed professional career designed with clear criteria to reward professional excellence.

The last point above might need more exploration. The current professional career implemented in SNS-O fails to recognize the good work, professional development, excellence or quality of doctors outcomes. It is a source of dissatisfaction because it rewards equally to all professionals independently of their effort, merits or results. It demotivates doctors because they feel an absolute lack of recognition. But a widely shared claim of doctors is to design a new professional career which fulfill this objective of rewarding –not necessarily only with money– the merits, the professional development and quality of outcomes.

Finally, we want to underline that a very common claim from doctors is the need for politically independent professional managers. If politically designed, managers have goals far from doctors' goals. Managers have short term goals, not beyond the legislature length and politically focused. Contrary, doctors are career oriented agents intrinsically motivated for work, with stable who have long term goals. This divergence lead to management to design incentives that although may be well designed to meet its own objectives, are far from being an incentive for doctors. This might be a source of doctors demotivation and medical staff dissatisfaction.

## A Codification

Codes related with intrinsic motivation and crowding effects are explained. Several tables in this section show a list of codes concerning to Intrinsic motivation, Crowding-out and Crowding-in including the code name, the category the code is related to, the code type: deductive, inductive and in-vivo. Finally a brief explanation of the code and some argumentation about why the code is related with the proposed category is shown.

Intrinsic Motivation and Crowding Effects: codes.

Code	Related Category	Type of Code	Explanation of Code
Agree objectives	Crowding in	Inductive	A form of autonomy. Setting organizational goals jointly between agents and principal motivates for work.
Altruism	Intrinsic motivation	Deductive/Inductive	The willingness to help others although this carries a cost. A theoretical concept but also emerged from situations described by doctors.
Attractive profession	Intrinsic motivation	inductive	Doctors' statements mostly shown some perception about medical practice as an attractive activity, profession or task. We consider all those statements as evidence of intrinsic motivation and we capture all of them into attractive profession code.
Autonomy	Crowding in	Deductive	In [25] the need for autonomy is considered, joint with the need for competence, the basis for intrinsic motivation. Research on intrinsic motivation [31], [30], have shown the benefits of supporting autonomy for motivated persistence, performance, and wellbeing.
Bureaucratization	Crowding out	Inductive/In-vivo	Emerged from participants. 'Bureaucratization' reflect the idea that there is a proportion of accommodated doctors with high degree of conformism. Suffering from bureaucratization doctors give up in the pursuit of their professional goals. The consequence of achieving a safe position ironcladed by a bulletproof contract. The result of being polluted by the absence of professional incentives.

Code	Related Category	Type of Code	Explanation of Code
Challenge	Intrinsic motivation	Deductive	SDT in [31], [28], [29] and [30] show that intrinsically motivated people is moved to act for the fun or challenge entailed rather than because of external prods, pressures, or rewards. Intrinsic motivation is in part the human inherent tendency to seek out challenges, to develop one's capacities to explore and to learn.
'Coffee for all'	Crowding out	Inductive/In-vivo	Emerges from respondents. ' <i>Coffee for all</i> ' is a cliché used by doctors to refer to the equal treatment received for all professionals independently of their individual effort, merits or professional excellence. It is used in a pejorative sense to explain the lack of recognition suffered by doctors from management. Closely related with crowding out.
Control	Crowding out	Deductive	The opposite of autonomy. Rewards and external regulation in general act as extrinsic motivators which externally control people's behavior. People behave to attain a desired consequence such as tangible rewards or to avoid a threatened punishment. This type of extrinsic motivation has been extensively examined and found to be undermining of intrinsic motivation [30].
Damage to pro-social image	Crowding out	Deductive	MCT [37], [38] and Behavioral economics [16], [18], establish that reputation is a non-economic motivation when people act following their intrinsic motives. In the provision of social valuable goods agents wish to view themselves as a social goal oriented. Money and rewards can hurt this self-view undermining people intrinsic motivation.

Code	Related Category	Type of Code	Explanation of Code
Dedication	Intrinsic motivation	Inductive	Dedication label situations in which good medical practice involves personal costs. Doctors refer to some of this situations. Explicitly and also implicitly.
Economic Incentives	Crowding out	Deductive	Literature from economic theory [7], [18], [38], and from psychology [26], [30] has shown that the use of monetary or material rewards to incentive workers undermine intrinsic motivation.
Effort	Intrinsic motivation	Inductive	Doctors frequently underline situations in which they have to put extra effort, out of hours and without any reward linked. They commit to do that following some sense of duty or ethical values. They describe these situations as inherent to the medicine and something that one know before becoming doctor.
Empathy	Intrinsic motivation	Inductive	Empathy and the ability to empathize is a crucial characteristic that all physicians consider a good doctor should have and from which they get satisfaction. This characteristic refers to the ability to put yourself (doctor) in the shoes of others (patients) and feel their problems or discomfort as own.
Flexibility	Crowding-in	Inductive	More flexible rules at workplace, in work and tasks organization, or in the management of the organization in general and of the consultation in particular.
Further education	Intrinsic motivation/ Crowding in	Inductive	Respondents when openly talk about the features and dimensions of the medical practice that they enjoy the most they point out some specific aspects. Further education and the possibility to acquire and learn new knowledge was quoted by almost all of them.

Code	Related Category	Type of Code	Explanation of Code
Help	Intrinsic motivation	Inductive	This code emerges from respondents' statements. They view themselves as people who help others and contribute this way to the social welfare. This way to behave and feeling to be effective in doing so is considered an internal reward inherent to the medical practice.
Humanity	Intrinsic motivation	Inductive	Often mostly respondents, when speaking about their likings and their expectatives from becominng and being doctors, said that service and the human touch involved by the profession is one of the most valuable reward inherent to medical practice. We capture these statements under humanity code.
Lack of autonomy	Crowding out	Deductive	SDT[28], [30], establish that autonomy in work decision taking is an important source of intrinsic motivation. Whenever management practices and implemented incentives and command and control policies are autonomy constraining, they may cause crowding out.
Lack of recognition	Crowding out	Deductive	SDT [30] establish that recognition or being recognized by ones effort or achievement is a more effective incentive than the monetary for activities that individuals perform by the mere fact of enjoyment. Analogously the lack of any recognition undermines individuals intrinsic motivation to perform in any activity.

Code	Related Category	Type of Code	Explanation of Code
Like/Enjoy	Intrinsic motivation	Deductive	Classical definitions of intrinsic motivation [31], [29], say that individuals are intrinsically motivated when they get satisfaction (utility) from the very act of doing a given activity or performing in a task. Intrinsically motivated activities were defined as those that individuals find interesting and would do in the absence of operationally separable consequences.
Non-economic incentives	Crowding in	Inductive	Emerged from respondents and data collection. This code collects all mentioned forms of non-monetary rewards which would be welcomed by physicians to improve their work.
Market transaction	Crowding out	Deductive	Coming from MCT and SDT. Closely related with Change in task view. After being rewarded with money people start to understand their work activity and effort as a commodity that trade by a price. Once they shift this view of the activity intrinsic motivation is undermined.
Opportunistic behavior	Crowding out	Deductive	Coming from <i>Game Theory</i> opportunistic behavior is an expression conventionally used to refer such player's actions driven by the goal of seeking his own maximum material benefit by gaming the system or the rules, [16], [38], [45]. This kind of behaviors in health is considered as a consequence of crowding out of doctors intrinsic motivation plus the huge amount of the private information they have performing in their positions.



Code	Related Category	Type of Code	Explanation of Code
Passion	Intrinsic motivation	Inductive	Doctors in many of their explanations explicitly. Other times passion is implicitly present in the discourse when they passionately talk about something related to their work: a new treatment or a surgery technique for instance.
'Peonada'	Crowding out	Inductive/In vivo	Emerged from respondents and data collection. The code <i>Peonada'</i> refers to a certain <i>Fee-For-Service</i> (FFS) incentive practice implemented in the <i>Sistema Navarro de Salud-Osasunbidea</i> . Is considered an 'In vivo' code because its name exactly matches with the expression used by interviewees. This code appears closely related to crowding out.
Prestige	Intrinsic motivation	Inductive	Often, in the course of interviews, doctors speak about prestige matters emerge as internal rewards different from money.
Professional development	Intrinsic motivation/ Crowding in	deductive	Asked about what they expect from medical practice, doctors often point out the possibility to develop a professional career. Career concerns, prestige and professional recognition also are shown as incentives by physicians. This fact keeps consistent with the model of career concerns proposed by citedht, [33].

Code	Related Category	Type of Code	Explanation of Code
Professional Career	Crowding out/in	Inductive	Professional career is an existing incentive scheme in the <i>SNS</i> . Although it is a non-economic incentive, doctors perceive consider it to cause crowding out. They view professional career as a disguised wage increase very easy to achieve for every doctor. An element that no recognizes neither merit nor effort. In these cases appears as an evidence of crowding out and also as a positive code. Other times doctors' mention professional career as it should be. As a normative code. in these cases they say that professional career should differentiate professionals who work hard and accumulate merits from the rest.
Pro-social	Intrinsic motivation	Deductive	Pro-social behavior and social preferences have been object of research within behavioral economics [8], [19] and [36]. Prosocial behavior often involves internal non-material rewards and material costs as doctors describe to frequently happen in public health service.
Recognition	Crowding in	Deductive	[26], [31] pointed out that giving people unexpected positive feedback on a task increases people's intrinsic motivation to do it. This was because the positive feedback was fulfilling people's need for competence. Recognition (social, patient, or employer) was claimed by respondents in the study as a non-material reward that enforce professionals' sense of competence and encourage physicians to high effort and high quality standars.

Code	Related Category	Type of Code	Explanation of Code
Relatedness	Intrinsic motivation/Crowding in	Deductive	Theory and research suggest that relatedness, joint with competence and autonomy, plays a role in the maintenance of intrinsic motivation [28]. Relatedness captures the idea that people's effort and achieved outcome is strongly correlated. SDT hypothesizes that intrinsic motivation will be more likely to flourish in contexts characterized by a sense of secure relatedness [51].
Research	Intrinsic motivation/ Crowding in	Inductive	This code captures all the statements that point out the importance that research has for doctors. Research is considered of very importance by physicians because new medical knowledge improves quality of service, patients expectations of sanitation, citizens health and social welfare. Further doctors consider research as a challenge overcoming activity and they find it enjoyable by its own. Then facilitating research is viewed as a non-economic reward that highly motivates for work.
Science	Intrinsic motivation/Crowding in	Inductive	Respondents frequently mentioned that scientific knowledge, scientific advance, and science related issues are in the basin of their interest and likings toward medical profession. Under science we have captured all these doctors' motives. Scientific advance oriented incentives also are asked by respondents and considered as crowding in in many times.

Code	Related Category	Type of Code	Explanation of Code
Service	Intrinsic motivation	inductive	<p>Doctors mostly affirm that service and patient care were one of the main motives at the moment they decide to become physicians. After they spent many years of medical practice they confirm this view and they still believe that patient care is one of the most interesting and emotional dimension of being a doctor.</p> <p><i>Self determination Theory</i> (SDT) [31], [28], [29], and <i>Motivation Crowding Theory</i> (MCT), [37], [38], [18], both establish that one main reason for crowding out is that once the money enter as an exyternal reward for the performed activity, people switch their perception of performing in this task from the pure joy to a mean of achievement of material rewards. After that change of perception people only are willing to effort in the activity when some reward is expected as a consequence.</p>
Task Meaning Change	Crowding out	Deductive	<p>Respondents when openly talk about the motives by which they decide to become doctors, they point out some aspects of the medical practice. One of the most quoted of these was the technical dimension of medicine.</p>
Technical knowledge	Intrinsic motivation	Inductive	<p>Emergded from interviews and data collection. It was frequently highlighted by respondents as key factor oin the choice of proffession.</p>
Vocation	Intrinsic motivation	Inductive	

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