

# The medical school: opportunities offered and the affirmative action

## *A faculdade de medicina: oportunidades oferecidas e as ações afirmativas*

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### ABSTRACT

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**Introduction:** education produces positive effects for everyone, although it may raise or soften the structures of existing inequalities through the power of individual skills that it originates. **Objectives:** to assess whether college attendance brings improvements in socioeconomic conditions, highlights which opportunities are created by the University, traces the socioeconomic profile of Medical school students after the introduction of quotas, and elucidates if the program's objectives are achieved. **Methods:** original retrospective cohort. The sample was composed of UFJF medical school students approached during the entrance board exams between 2006 and 2010 and during graduation, contemplating students from the 1st to 9th semesters. EPI INFO 3.5.1 was used in the statistical analyses. **Results:** entrance into the academic life was associated with significant increase in the knowledge of foreign languages, participation in student exchange programs, use of PCs for homework and internet access, high family incomes, homeownership, and maternal education. Parts of these advances are directly due to the University. The increase in available slots for minorities (affirmative action) was proportionally related to increased entrance of public schools students, who did not use computer/internet, and came from low income families and low parental education. **Conclusion:** the entrance into Medical school triggers real improvements in living conditions and the high rates of opportunities usage originates progress not only in the student's individual skills but also for their families. The quota system, in turn, caters to its primary function of inclusion of under-prepared students, graduates of public schools, with less accessibility, family income, and parents' education. **Key words:** Socioeconomic Analysis; Education; Social Inequity; Education, Higher; Higher Education Policy.

### RESUMO

**Introdução:** a educação produz efeitos positivos para todos, embora possa elevar ou suavizar as estruturas de desigualdades existentes, pela força das habilidades individuais que origina. **Objetivos:** avaliar se o ingresso na Faculdade traz melhoras nas condições socioeconômicas, evidenciar quais oportunidades criadas pela Universidade, traçar o perfil socioeconômico dos ingressos em Medicina após a introdução das cotas e elucidar se os objetivos desse programa são alcançados. **Métodos:** coorte retrospectiva original. Amostra composta de acadêmicos da Medicina da UFJF abordados durante as realizações dos vestibulares dos anos 2006 a 2010 e na graduação, contemplando alunos do 1º ao 9º períodos. **EPI INFO 3.5.1 nas estatísticas dos dados. Resultados:** o fato de o vestibulando ter se tornado acadêmico associou-se a significativo aumento no conhecimento de línguas estrangeiras, na realização de intercâmbios, no uso de PC para trabalhos e no acesso à internet, além de ascensão da renda familiar, aquisição da casa própria e educação materna. Partes desses avanços se devem diretamente à Universidade. Proporcionalmente ao aumento das vagas

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*destinadas às cotas, evidenciou-se elevação dos ingressos da rede pública, que não utilizavam computador/internet, que possuíam baixas renda e escolaridade paternas.*

*Conclusão: o ingresso no curso de Medicina desencadeia melhorias reais na condição de vida e os altos índices de utilização das oportunidades originam progressos, não somente nas competências individuais dos alunos, como também de suas famílias. O sistema de cotas, por sua vez, atende à sua função precípua de inclusão dos alunos hipossuficientes, egressos de escolas públicas, com menos acessibilidade, renda familiar e escolaridade dos pais.*

*Palavras-chave: Análise Socioeconômica; Educação; Iniquidade Social; Educação Superior; Política de Educação Superior.*

## INTRODUCTION

Higher education, as an instrument of social promotion, provides the best performance and professional recognition to those who reach it. Those most highly qualified almost invariably will occupy the best jobs. In a broader analysis, the growth and development of a country are linked to education. Advances in areas of technology and health are fruits of research in universities, which generates returns to economy mobilization and increasing investments.<sup>1</sup>

Education produces positive effects for everyone, although it may raise or soften the structures of existing inequalities, by the force of individual skills that it originates. Accordingly, access to the University tends to be easier for those who already occupy the highest economic positions because in general, they have already received elementary and secondary education of better quality. Conversely, for the less fortunate, a vicious cycle of cumulative disadvantages emerges, thus stigmatizing their severely low socioeconomic condition.<sup>2</sup>

Even in the face of all these features and even being a constitutional right, graduating in college in Brazil is still a benefit restricted to few and, according to some authors, it is strongly related to the maintenance of privileges, showing a strong elitist character.<sup>3</sup>

In an attempt to change this reality, higher education has been suffering major modifications and the government, through social inclusion policies, seeks to elevate social groups historically considered to be in disadvantage.<sup>4</sup> Thus, as early as 1968, the Ministry of Labor has expressed itself in favor of compulsory hiring blacks by private companies. But only in 1980, in times of re-democratization, the Bill relating to “compensatory actions” for centuries of discrimination suffered by Afro-Brazilians was formulated by Mr. Abdias Nascimento.<sup>5</sup>

Pleadings to these projects, the affirmative action programs began to take effect in some universities, and the quota system is the main one. In keeping with the personal merit and fairness of chances, these actions propose an inequality of treatment between classes to restore the equality that never existed or was broken over time.<sup>6</sup> Thus, the affirmative action can be understood as measures aimed at the democratization of access to fundamental resources such as education and employment.<sup>7</sup> Social inclusion, through higher education, is thus being addressed more realistically.<sup>8</sup>

Regarding the quota system, a measure that prioritizes inclusion through the reservation of slots,<sup>7</sup> the Rio de Janeiro State University (UERJ) and University of Norte Fluminense (UENF) were the first to adopt it, followed by the Bahia State University (UNEB) and Mato Grosso do Sul State University of (UEMS) in 2002. The first federal institution to adopt this system was the University of Brasília (UnB) in 2003, followed by the Federal University of Bahia (UFBA), University of Alagoas (UFAL), and Federal University of Paraná.<sup>9</sup>

In order to regulate this situation, the Bill 3627/2004 established the Special System of Slot Reservation for students graduating from public schools, particularly blacks and native Brazilians, at federal public institutions of higher education. It states that all federal public institutions of higher education should reserve in their selection processes, at least 50% of the slots for students who have attended public high schools. In addition, 50% of these slots must be filled by blacks, browns, and native Brazilians in the proportion in which they are represented in the population, concerning the Federation unit where the institution is located.<sup>10</sup>

In addition to the quotas, the current federal government has been instituting various measures to enhance social democracy in universities, as for example: University for All Program (PROUNI) – that develops affirmative policies in private higher education; Student Financing Fund in Higher Education (FIES) – that enables the financing of tuition not covered by the PROUNI scholarship; expansion of federal universities with the creation of new campuses; community pre-board exams for examples, the Pre-board exam for blacks and needy (PVNC) and Community Pre-board exams Network, and Education for Afro-descendants and Needy (EDUCAFRO).<sup>4</sup>

The Support to Restructuring Plans Program and Expansion of Federal Universities (REUNI), in turn, was created by the Decree 6096 from April 24, 2007 with the objective of creating conditions for the ex-

pansion of access and retention in higher education and better use of the physical structure and existing human resources in federal universities.<sup>4</sup>

Following the national trend and considering the inequality of the Brazilian society as justification and foundation, the Board of Governors at the Federal University of Juiz de Fora (UFJF) approved on November 4, 2004, the quota system for blacks and graduates from public schools. The Resolution 16/2004 entered into force from the 2006 selection process; it is scheduled for a 10 years duration and evaluation after three years of its implementation. It established, for the 2006 board exam, the reservation of 30% of slots in all courses for graduates from public schools; 40% for 2007; and 50% for 2008, to those who follow until the deadline. Moreover, 25% of quota slots shall be reserved to those who are self-declared blacks.<sup>11</sup>

In spite of this implementation, specific studies about enrolled medical students have not been performed over the post implementation years, nor researches that generally deal with what the real impact that a college degree can generate in the life of a subject.

Therefore, the objective of this study was to assess whether entry into Medical School brings effective improvements in socioeconomic conditions of students still during the graduating period, as well as to highlight what real opportunities are being created by the University to improve the quality of life of its students and if these are used by the students. The socioeconomic profile of medical school students after the introduction of the quota system was also evaluated, assessing possible changes in the sampled group over time. Thus, we sought to elucidate if the objectives that prompted the design of this program of inclusion are being met such as the entering of under prepared students and reduction in ethnic disparities.

## METHODS

This was an applied, original, exploratory, quantitative, and retrospective cohort study developed between May of 2010 and July of 2012.

The data were collected in a sample of Medical School students from UFJF in two distinct phases:

- during the board exams from 2006 to 2010, a period when the quota system was adopted: through a questionnaire with 41 closed questions applied by the Standing Committee of Selection from UFJF

(COPESE) to 400 students recently approved to enter the 1<sup>st</sup> semester;

- during graduation, contemplating 244 academics enrolled in the 1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, or 9<sup>th</sup> periods, students approved in the cited selective processes: through a questionnaire adapted from the original format provided by COPESE with 33 multiple-choice questions.

This sample spectrum rigorously meets the criteria and statistical requirements, being considered a +4.5% -4.5% error.

Before the interview, participants were informed about the guaranteed anonymity; data were compiled individually and not identified.

The inclusion criteria were: being a medical student at UFJF and be enrolled in the 1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, or 9<sup>th</sup> periods. As sample loss: interrupted interview for any reason, incomplete data, and the non-return of the signed Volunteer and Informed Term of Consent (VITC).

The EPI INFO 3.5.1<sup>®</sup> program was used to build the database and statistical analysis, raising possible justifications for the collected data. The analysis of the obtained results considered 95% confidence interval and p-value < 0.05.

Because this was a longitudinal study, the obtained measure of occurrence was incidence. The Chi-square statistical test without correction ( $\chi^2$ ) and the Fischer's exact test were used to verify associations between variables.

Participation in the study entailed minimal risk to participants, i.e. there was no interference in any aspect of their physical, psychological, and social well-being; privacy was respected according to resolution 196/96 from the National Council of Health/Ministry of Health, which rules on research involving humans. The project was approved by the Committee of Ethics in Human Research-UFJF-under opinion number: 121/2010, protocol: 2050.109.2010, FR: 334338, and CAAE: 0078.0.180.000-10.

## RESULTS

The research included the participation of 400 recently approved students in the board selective processes between 2006 and 2010 and 244 students enrolled in the 1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, or 9<sup>th</sup> periods at the Medical School at UFJF, students approved in the years previously cited.

Out of the 244 interviewed students 51.2% were male, 78% were white, and 50.4% were 21 years old or younger (Table 1).

**Table 1 - Socioeconomic characteristics of students**

Variables		n	%
Age	≥ 21 years	114	49.6
	≤ 21 years	116	50.4
Skin color	White	188	78.0
	Non-white	53	22.0
Gender	Male	124	51.2
	Female	118	48.8
Middle school	Completely in private network	102	41.8
	Completely in public network	72	29.5
	Part in one, part in the other	70	28.7
High school	Completely in private network	156	63.9
	Completely in public network	70	28.7
	Part in one, part in the other	18	7.4

n: absolute frequency; %: percentage.  
Source: the authors (2010).

The fact of being approved as a Medical School student, regardless of the currently attended period, was associated to the significant increase of 7.6% in the number of those who read one or more foreign languages (p-value of 0.021) and 4.9% among those who had participated in exchange programs (p-value of 0.0035), in addition to an increase of 39.8% with regard to use of computers for performing work (p-value < 0.00000001), and 11.2% in the number of those who had internet access (p-value of 0.0012) (Table 2).

It was also observed that after entering medical school there was a significant rise of 11.8% of households who received more than 2,000 reais per month (p-value of 0.0006); of 8.58% among those who lived in their own home (p-value of 0.0019);

increase of 10.09% of mothers who had higher education in progress or already completed (p-value = 0.0119); and increase of 19.1% in the number of students who exercised remunerated activities (p-value < 0.00000) (Table 3).

No significant differences were observed between students at the time of entry and those already attending school when the following items were analyzed: health care plan, participation in extra-curricular activities (artistic, cultural, sports, religious, and political), and father's education (Table 4).

While investigating which fraction of benefits should be granted to the institution's participation to evidence the effective participation of the University, it was observed that out of the 244 participants 81.5% (198 people) claimed having access to foreign language courses after entering the medical course. Of these, 114 (57.57%) had access to language courses offered by the University.

Among 7.8% of the students who participated in exchange programs after entering the University, 10.5% (two individuals) did it through academic programs.

In regards to digital inclusion provided by the institution, 11.6% (27) of all participants stated that their primary source of access to the network was through the university.

The performance of remunerated activity linked to the University was highlighted in 24.6% (60) of the total number of participants (244), which corresponded to 80% of the 75 people who claimed to execute some type of paid work. The evaluation of types of performed tasks showed that 8.33% (5) did it through internships, 15% (nine) through extension activities, 51.67% (31) through teaching assisting jobs, 20% (12) through scientific initiation projects, and 1.2% (three) in other ways.

**Table 2 - Activities performed before and after entering the University**

Variables	Analyzed Groups								p-value	RR
	Approved students*				Academics**					
	Yes		No		Yes		No			
	n	%	n	%	n	%	n	%		
Read one or more foreign languages	304	76.9	91	23.1	207	84.5	38	15.5	0.0211	1.02-1.18
Participated in exchange programs	11	2.9	384	97.1	19	7.8	224	92.2	0.0035	1.36-5.80
Use of computers for homework	202	51.2	193	48.8	221	91	22	9	0.0000	1.6-1.97
Home access to the internet	280	71.1	115	28.9	200	82.3	43	17.7	0.0011	1.07-1.27

n: absolute frequency; %: percentage; RR: relative risk.  
Source: \*COPESE/UFJF (2010); \*\*the authors (2010).

**Table 3 - Socioeconomic characteristics before and after entering the University**

Variables	Analyzed Groups								p-value	RR
	Approved students*				Academics**					
	Yes		No		Yes		No			
	n	%	n	%	n	%	n	%		
Family income over 2,000 reais	275	69.9	119	30.1	196	81.7	43	18.3	0.0006	1.08-1.28
Home owner	243	61.5	152	38.5	169	70.1	72	29.9	0.0019	1.07-1.32
Mother with high education in progress or completed	217	54.9	178	45.1	158	65.1	85	34.9	0.0119	1.04-1.35
Performance of remunerated activity by the student	46	11.6	349	88.4	75	30.7	169	69.3	0.0000	1.90-3.67

n: absolute frequency; %: percentage; RR: relative risk.  
Source: \*COPESE/UFJF (2010); \*\*the authors (2010).

**Table 4 - Socioeconomic characteristics before and after entering the University**

Variables	Analyzed Groups								p-value	RR
	Approved students*				Academics**					
	Yes		No		Yes		No			
	n	%	n	%	n	%	n	%		
Health care plan	290	73.4	105	26.6	169	68.9	76	31.1	0.5441	0.92-1.16
Participation in extracurricular activity	314	79.4	81	20.6	179	73.7	63	26.3	0.1055	0.85-1.02
Father with high education in progress or completed	200	50.6	195	49.4	134	55.8	106	44.2	0.2031	0.95-1.28

n: absolute frequency; %: percentage; RR: relative risk.  
Source: \*COPESE/UFJF (2010); \*\*the authors (2010).

Among the subjective aspects of personal development and life improvement, and to identify what are the main expectations of students towards college and the achievement of these expectations, 69.1% wished to find vocational training directed to the job market in college, which had been achieved by 72.8% of the students. Regarding the acquisition of broad culture, this was longed for 13.3% of students and achieved by 6.3% (Table 5).

**Table 5 - Expectations from entering students and achievements by academics**

Expectations and Achievements	Approved students*		Academics**	
	n	%	n	%
Professional training towards work life	258	69.1	174	72.8
Acquisition of knowledge to improve education	13	4.6	18	7.5
Acquisition of general and broad culture	50	13.3	15	6.3
Theoretical education	26	6.8	13	5.4
Academic education to improve activity already performed	1	0.3	10	4.2
Acquisition of knowledge for better understanding the world	25	6.6	9	3.8

n: absolute frequency; %: percentage; RR: relative risk.  
Source: \*COPESE/UFJF (2010); \*\*the authors (2010).

In order to trace the socio-economic profile of Medical School students after entering the quota system, to elucidate possible changes in this pattern and learn if the goals that prompted the design of this program would be reached, in-depth analyses and comparisons were carried out between the students entering in 2006 and 2010.

Proportionally to the increase in the number of slots reserved to shareholders between 2006 and 2010, it was observed an increase of 22.8% (p-value of 0.001) in those who attended middle school and 44.30% (p-value < 0.000001) in those who attended high school in the public network. There was also an increase of 34.20% in those who have attended at least seven years in government schools (p-value of 0.0000015); of 13.90% in those who did not use computers or internet (p-value of 0.016); and 26.60% in those whose family income was below five minimum wages (p-value of 0.0005). There was also a growth of 27.80% and 16.47% in those whose father or mother had completed middle school (p-value < 0.000001 and p-value of 0.0045), respectively (Table 6).

Conversely, significant elevation was not observed between students who were self-declared blacks (p-value of 0.088), who did not had fluency in foreign languages (p-value of 0.16), or exerted remunerated activity (p-value = 0.065) (Table 6).

**Table 6** - Socioeconomic characteristics of entering students in 2006 compared to those in 2010

Variables	Selective process				p-value	Odds Ratio
	2006					
	n	%	n	%		
High school completed in public schools	21	26.6	41	49.4	0.001	1.45-6.14
Middle school completed in public schools	15	19.0	50	63.3	0.0000	3.37-16.28
Studied 7 years or more in public schools	26	32.9	53	67.1	0.0000	2.03-8.55
Did not use computers or the internet	7	8.9	18	22.8	0.016	1.10-8.64
Family income < 5 minimum wages	18	22.8	39	49.4	0.0005	1.58-6.97
Father graduated from high school	7	8.9	29	36.7	0.0000	2.26-16.32
Mother graduated from high school	12	15.2	25	31.6	0.0045	1.12-6.05
Self-declared black*	1	2.5	8	11.8	0.088	0.62-115.1
No knowledge on foreign languages	18	22.8	25	31.6	0.16	0.77-3.54
Performance of remunerated activity	3	3.8	9	11.4	0.065	0.76-15.88

n: absolute frequency; %: percentage; RR: relative risk.  
Source: \*COPESE/UFJF (2010); \*\*the authors (2010).

## DISCUSSION

In the book “What is education,” the author Carlos Rodrigues Brandão writes:

*Education helps to think types of men, more than that, it helps to create them, through passing knowledge to each other that constitutes and legitimizes education. It produces the set of beliefs and ideas, skills and specialties that involve the exchange of symbols, goods, and powers that together build types of societies.*

Imagine, then, the impact that a college education can represent in the life of a subject, in building a community and a country.<sup>12</sup>

Research suggests that each completed cycle of study can raise the income of a person from 30 to 100%, which suggests that quality education associated with an economic policy that generates skilled jobs is the most powerful existing social project, undoubtedly overcoming social assistance programs that foster the vicious cycle of poverty.<sup>13</sup> Nevertheless, the vast majority of the population, especially the neediest, is still excluded from higher education in the country where only 7.9% of the population possess college graduate diplomas.<sup>14,15</sup>

The problem shows a bigger dimension among lower economic classes because the socioeconomic variables and family origin have great influence on academic success. A study conducted at the Federal University of Bahia indicates that the number of candidates per slot in a given course is proportional to the status of those approved.<sup>16</sup> If not enough, under a more global

perspective, some authors claim that the role of repairing injustices that should be exercised by colleges reach minimum levels in the, de facto needy society, due to lower education and are not affected by increasing access to higher education.<sup>3</sup> Therefore, the importance of investing in basic levels of education is evident before an emergency policy of access to higher education.

In our study, corroborating the view that access to universities presents a strong elitist character,<sup>17</sup> we highlighted that only 28.7% of all participants fully attended high school at public schools despite the growth of 44.30% in that number when comparing students between the 2006 and 2010 selection processes, when 50% of slots were already reserved for graduates from the public network. However, the significant growth in the number of blacks approved was not statistically demonstrated, which is possibly explained by the fact that the sample of this research was composed primarily of students approved for the first semester and the cutoff point for Group A (blacks) has less value compared to others.

In the more specific analysis of the improvements that education promotes in the lives of students, the fact of becoming a college student was associated to a significant increase of 7.6% between those who read one or more foreign languages. Of these, more than half had access to language courses offered by the University. It was found that 84.5% of graduates dominated one or more foreign languages, a number in line with 87% obtained in a study conducted with graduates at the Federal University of Minas Gerais (UFMG).<sup>18</sup>

No difference was observed in the performance of extra curriculum activities (artistic, cultural, sports,

religious, political) between entering students and academics, although both performed those activities with great frequency. These characteristics are partially opposed to those observed in Belo Horizonte, in which 7 and 8% of seniors admitted going to the theater or concerts monthly, respectively. The probable explanation for this discrepancy is due to a more comprehensive evaluation in this study.<sup>18</sup> Thus, a study conducted at the Federal University of Espírito Santo reveals that 79% of students complain about the overload of activities due to a very extensive curriculum, which provides few free hours dedicated to leisure.<sup>19</sup> Similarly, at the University of São Paulo, 62% of students had difficulties reconciling recreation and college academic activities.<sup>20</sup>

On the other hand, the performance of remunerated activity linked to the University was detected in approximately 25% of participants, half of whom through teaching assistant jobs and 20% through scientific initiation projects. When comparing with UFMG, a superior value was observed with regard to initiation into teaching, however, inferior in regards to contact with research activities.<sup>18</sup> These issues suggest the importance of strengthening research funding programs at UFJF in order to promote this university to the same conditions as the best in the country.

## CONCLUSIONS

The admission in the Medicine course triggers real improvements in the life conditions of students, and the high rates of utilization of opportunities, offered during the six years of graduating classes, provide progress not only on the individual skills set but also in relation to their families. It broadens their personal experiences in activities such as exchange programs in Brazil and abroad, fluency in foreign languages, digital inclusion, family income, access to housing, and advancement in maternal schooling.

The period during Medicine studies offers opportunities of insertion and social rise through workshops and research projects with specific scholarships as well as to teaching in private institutions of education, and carrying out monitoring services in hospitals and doctors' offices among others. Therefore, it also provides students with what they hoped to find when entering college: professional training geared to work life, although initially lacking general and broad culture.

The quota system, in turn, implemented in 2006 and in full activity in 2008 at the Medical School at UFJF, caters to its principal function, which is the inclusion of under-prepared students, graduates from public schools, with less accessibility to the internet and family income, and parents with low education level. Hence, the government should not only ensure access but also the permanence of these students in college through programs of assistance, maintenance grants, and the use of university support for housing, restaurants, well-equipped libraries, and internet access.

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