

HIGHER

EDUCATION

RETURNS

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Vídeo of the presentation - <http://cps.fgv.br/videos/higher-education-perspectives-and-international-experiences>

Higher Education (HE)

Key Questions

**1. What are the Private and the Social
Returns of Higher Education (HE) in Brazil?**

2. What is the potential role of HE related Immigration?

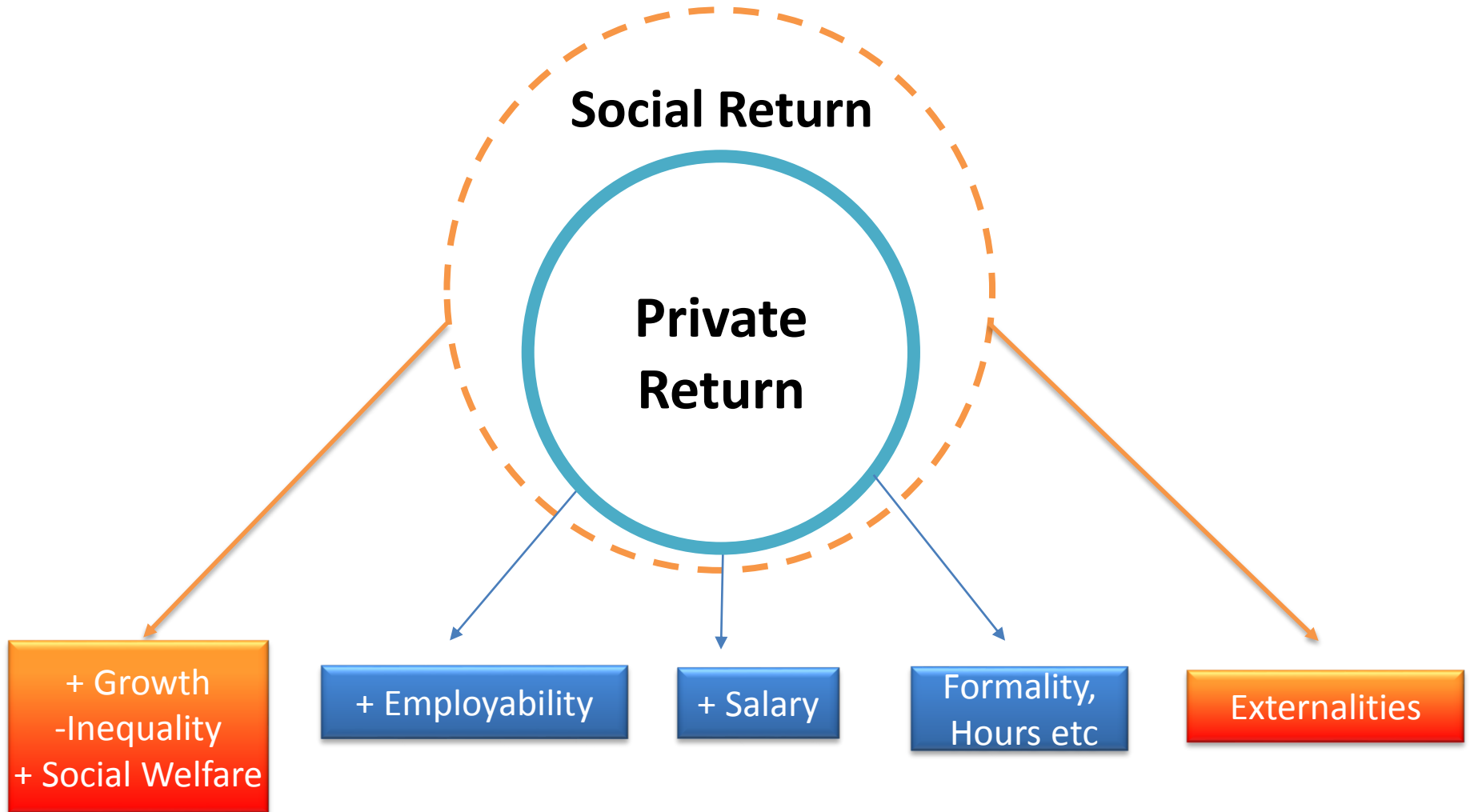
3. How these Questions are faced by Students and Firms?

**4. How these Answers can Help Education Suppliers and
the Government (public policy aspects)?**

Outline:

- **Equality, Efficiency & Education Evolution**
 - **Labor Market Premiums from Overall HE**
 - **Ranking Specific Undergraduate Careers Premiums**
 - **Attracting Talents - Immigration HE related Policies**
 - **Engineers, Doctors and Specific Public Policies**
 - **Management, Professional HE Courses & Demand**
 - **Plus Doctors**
 - **Science Without Borders**
- HE Access Policies (FIES, SISU)**
HE Evaluation Systems

Returns from Education

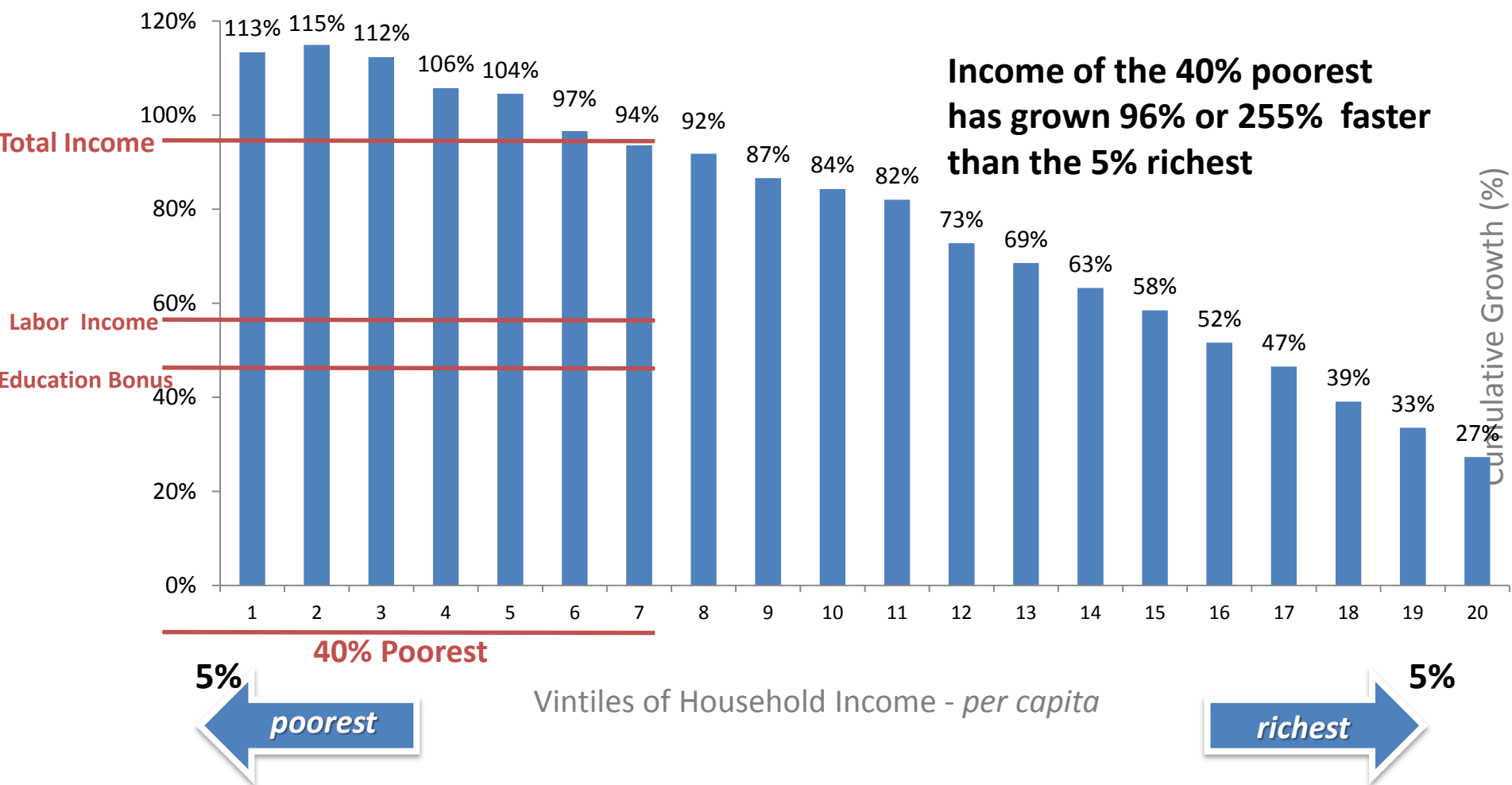


How they are measured and perceived in practice?*

*For example, the choice between different university careers regarding salary or understanding the impact of a master's degree versus a pure bachelor's degree

Changes in Income Distribution 2001 -2013

Cumulative Growth Rate of Per Capita Income by Vintiles 2001-2013(%)



What is the ability of each Real spent, public or private, to reach a poor Student?

How much each course Cost? Ex: private H.E. courses cost per Brazilian more than all other private courses

| Education Inclusiveness Index | | |
|--|---|-----------------------------|
| By Grade | Same Weight to Each Poor – P ¹ | + Pro-Poor – P ² |
| Childcare | 1.08 | 1.14 |
| Pre-School | 1.46 | 1.56 |
| Alphabetization – adults | 1.73 | 1.90 |
| Elementary Education – regular | 1.53 | 1.57 |
| Elementary Education – regular public | 1.68 | 1.73 |
| Elementary Education – regular private | 0.27 | 0.23 |
| Adult Education – elementary education | 1.09 | 1.04 |
| Secondary Education – regular | 0.73 | 0.63 |
| Secondary Education – regular public | 0.83 | 0.72 |
| Secondary Education – regular private | 0.10 | 0.09 |
| Adult Education – secondary education | 0.52 | 0.44 |
| College Entrance Exam (Pré-Vestibular) | 0.19 | 0.15 |
| Tertiary Education | 0.07 | 0.07 |
| Tertiary Education – public | 0.12 | 0.10 |
| <i>Tertiary Education – private</i> | <i>0.05</i> | <i>0.06</i> |
| Graduate | 0.00 | 0.00 |

Source: CPS/FGV processing microdata from PNAD e POF 2003/IBGE

What are the Impacts of Education on Labor Market Outcomes? Overall HE Premiums

| | | | in Relation to Illiterates* | |
|-----------------------|------------|-------------|-----------------------------|----------------|
| Highest Level Studied | % Employed | Hourly Wage | Probability of Employment* | %Wage Premium* |
| Illiterates | 60.65 | 1.97 | 1 | 0 |
| Primary | 63.73 | 2.99 | 1.36 | 40.05 |
| Secondary | 68.11 | 4.31 | 2.29 | 125.23 |
| Undergraduate | 78.16 | 10.31 | 3.80 | 318.76 |
| Graduate | 81.48 | 18.22 | 4.08 | 540.42 |

* controlled by gender, color or race, age, migration, city size, type of sector and State

Source: CPS/FGV based on PNAD 2005/IBGE microdata.

Education

*Model With
Interaction*

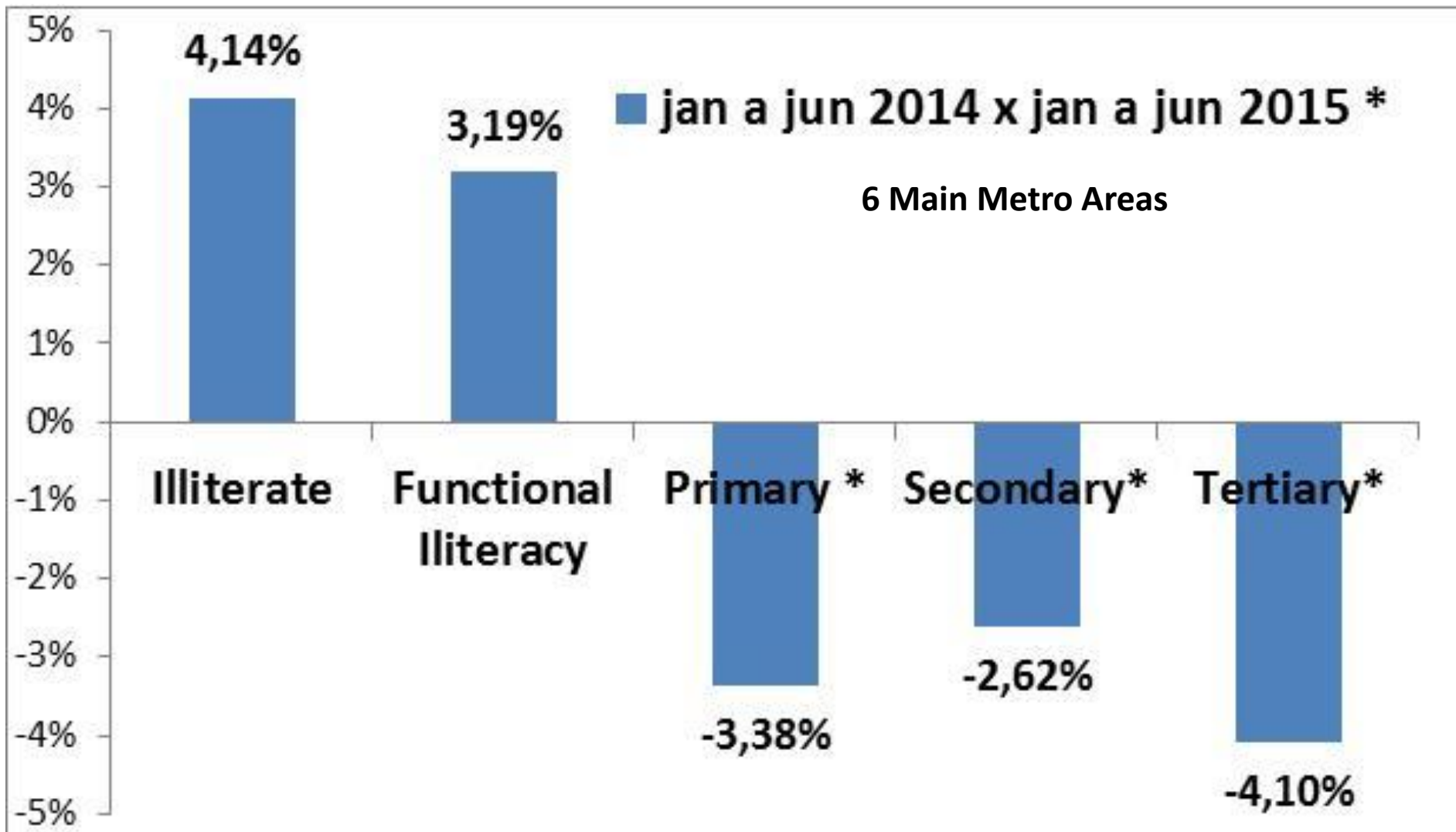
Returns from Higher Education

Change in Higher Education Premium (Diff in Diff)

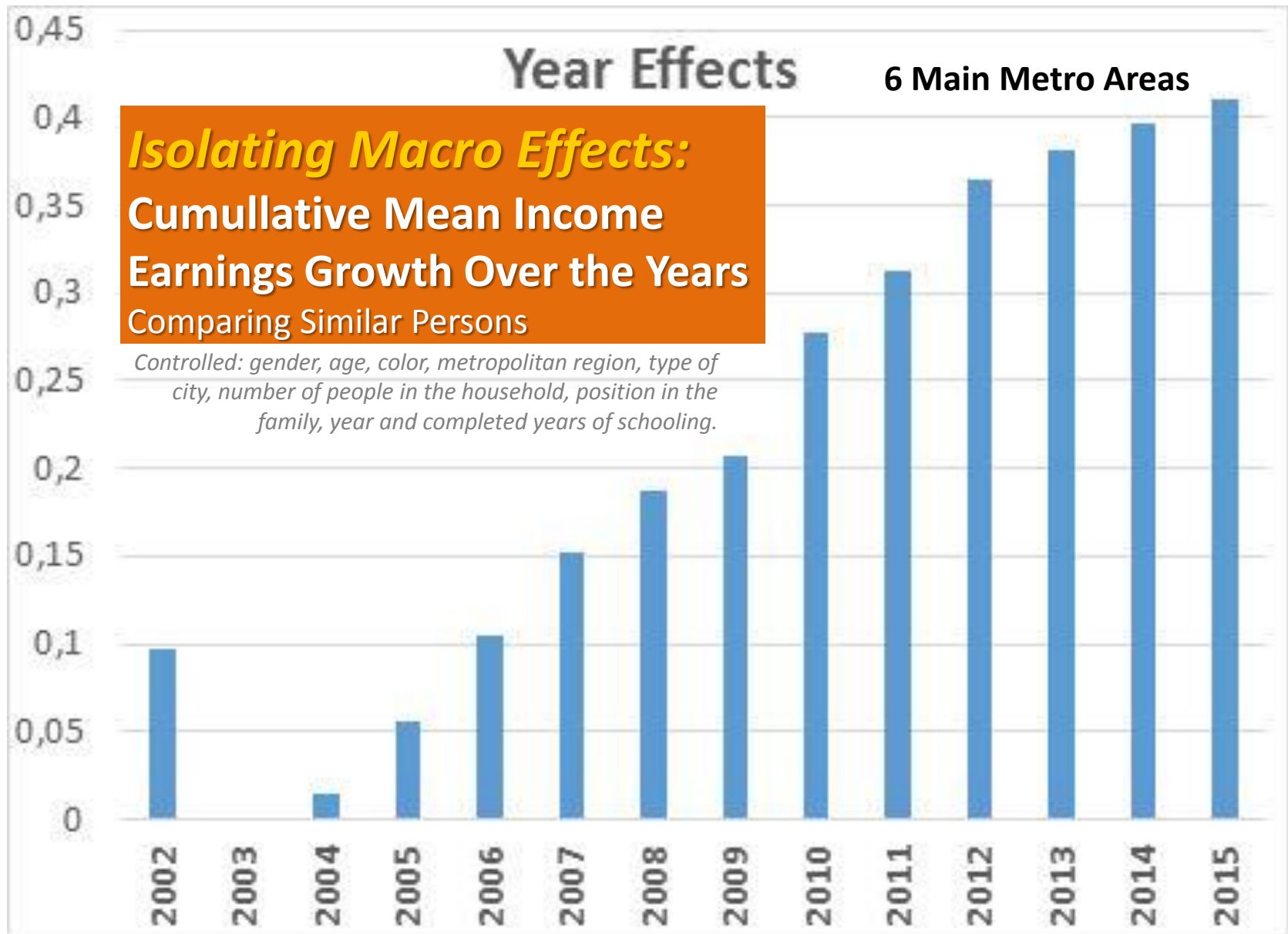


Recent Bivariated Evolution of Earnings

Jan-July 2014 to Jan-July 2015



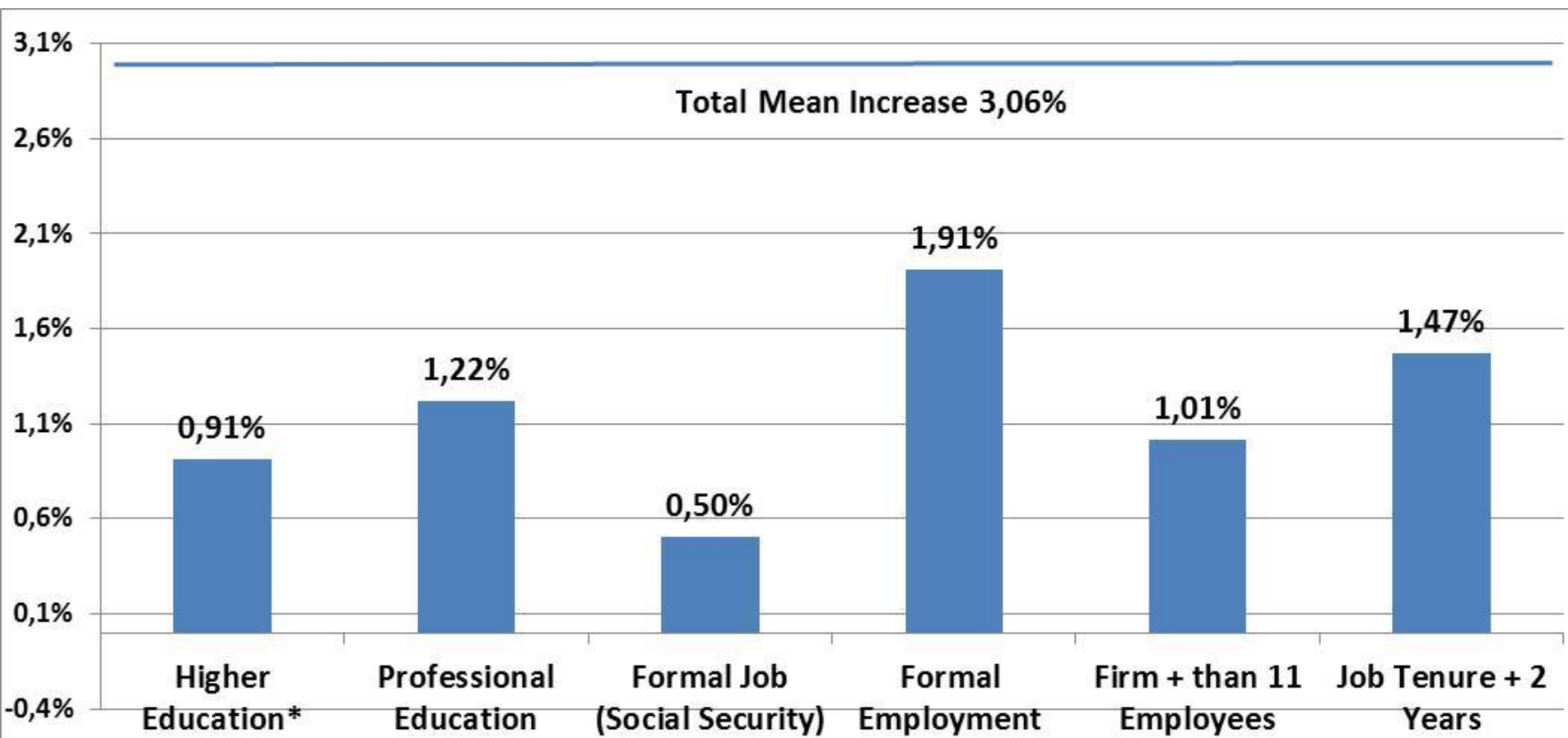
Source: CPS/FGV from PME/IBGE microdata , data until February 2015 * at least incomplete level



Bivariated Evolution of Earnings By Productive Attributes

2003 to 2014

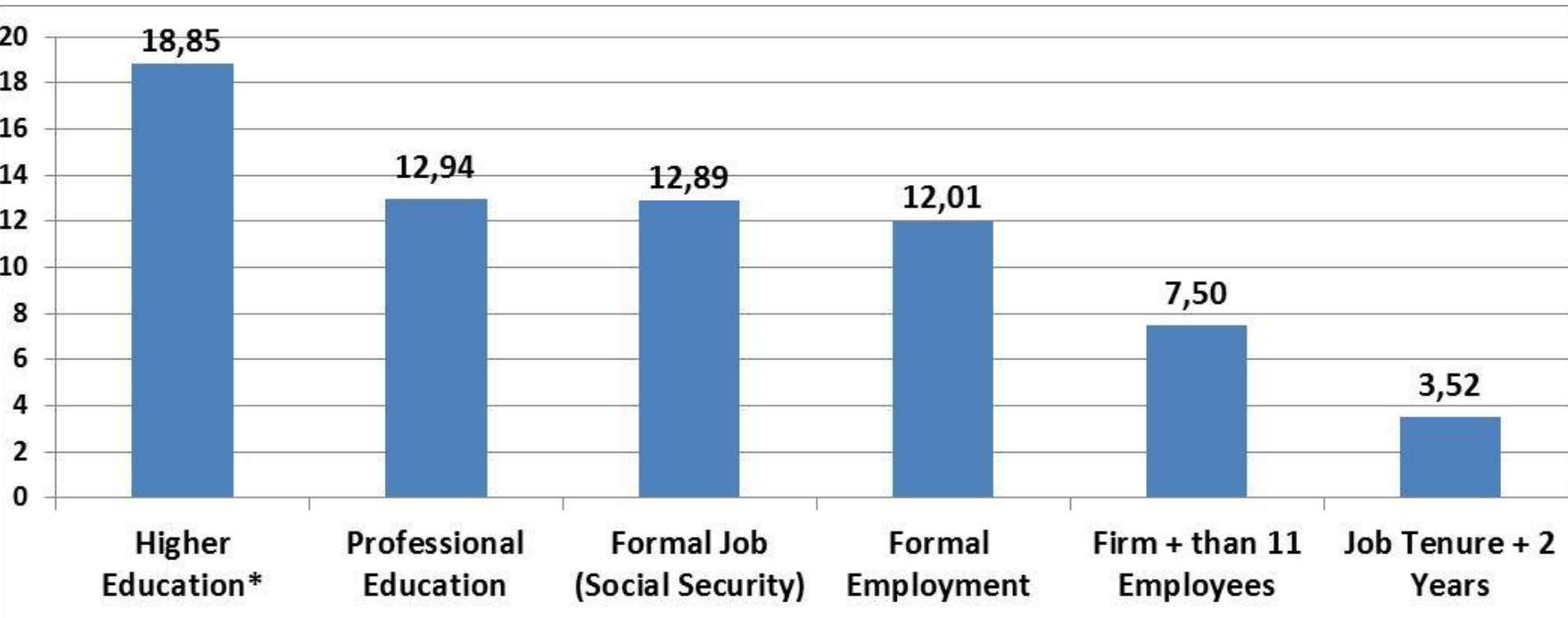
6 Main Metro Areas



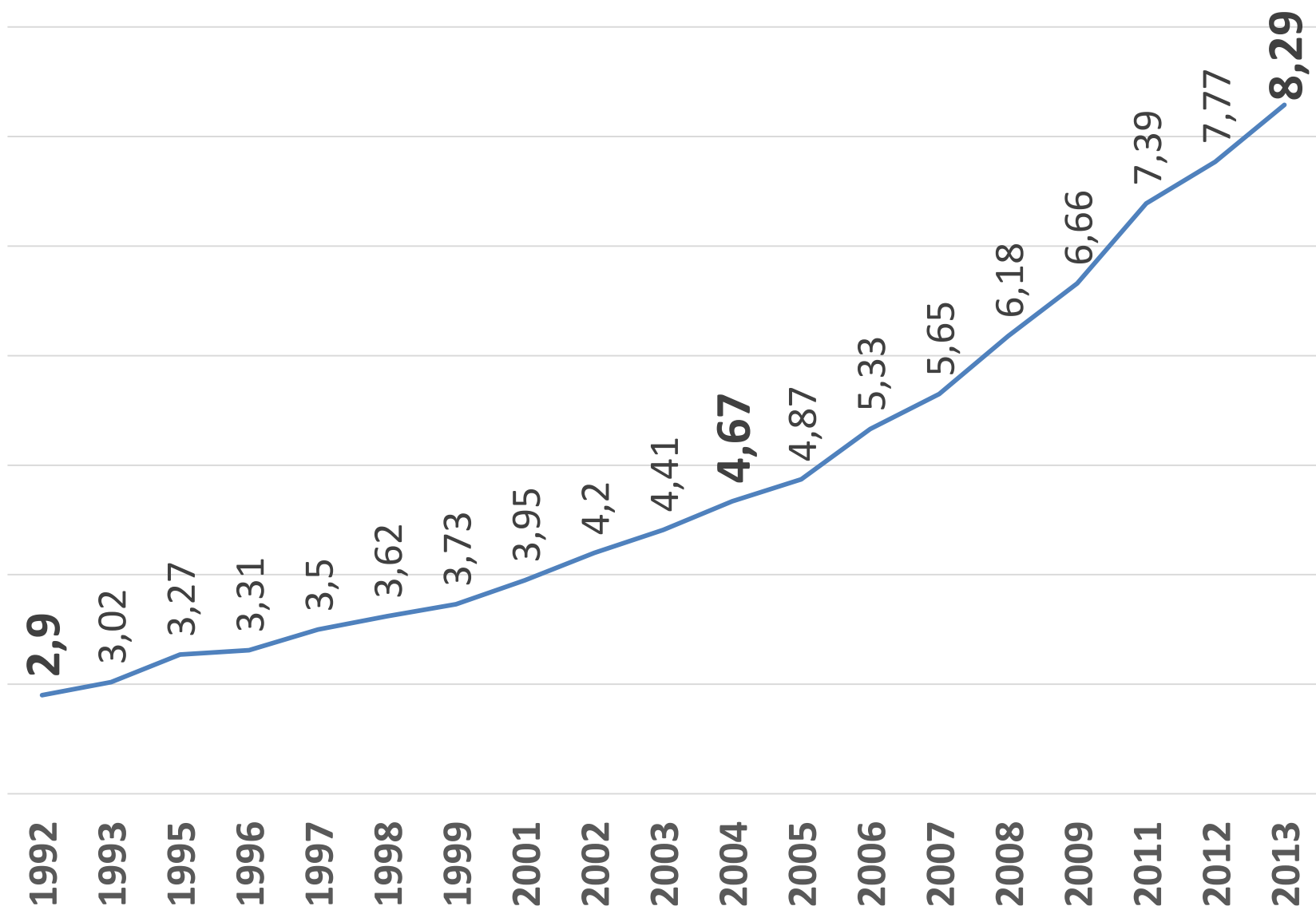
Bivariated Evolution of Productive Attributes in Percentage Points

2003 to 2014

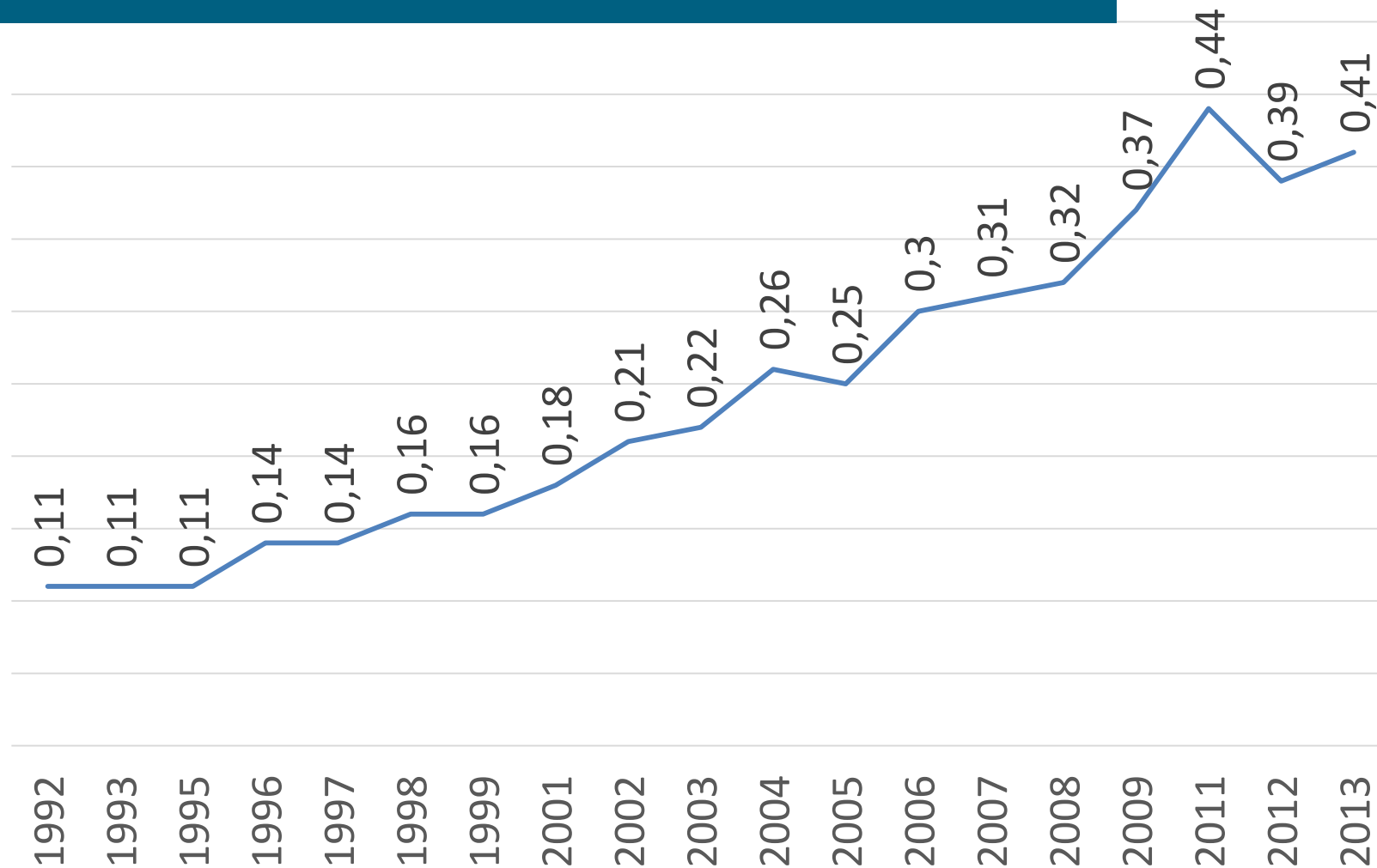
6 Main Metro Areas



Share with Completed Higher Education (%)

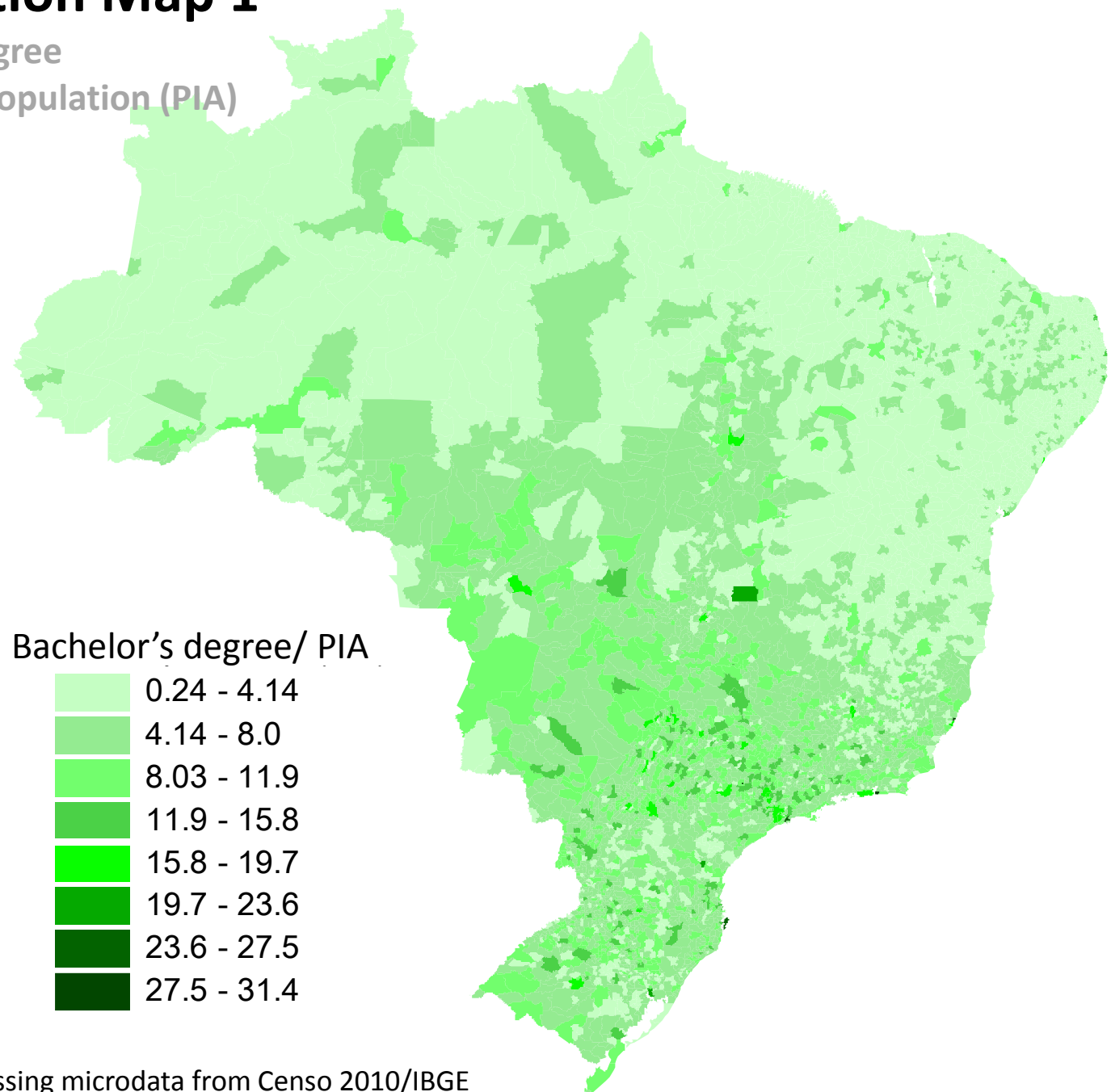


Share with Graduates Completed (%)



Higher Education Map 1

% with bachelor's degree
within working age population (PIA)
by county



Source: CPS/FGV processing microdata from Censo 2010/IBGE

Higher Education Ranking Among 5500 Municipalities

10 Highest % with bachelor's degree (BD) within working age population (PIA) by county

| Rank | UF | County | BD/PIA (%) |
|------|-------------------|--------------------|------------|
| 1 | São Paulo | São Caetano do Sul | 31,40 |
| 2 | Rio de Janeiro | Niterói | 29,55 |
| 3 | Espírito Santo | Vitória | 27,57 |
| 4 | São Paulo | Águas de São Pedro | 27,14 |
| 5 | Santa Catarina | Florianópolis | 26,81 |
| 6 | São Paulo | Santos | 26,58 |
| 7 | Paraná | Curitiba | 22,70 |
| 8 | Rio Grande do Sul | Porto Alegre | 22,55 |
| 9 | Santa Catarina | Balneário Camboriú | 22,26 |
| 10 | Distrito Federal | Brasília | 19,75 |
| 5565 | Bahia | Canápolis | 0,24 |

Source: CPS/FGV processing microdata from Censo 2010/IBGE

Bivariate Ranking of University Careers by Labor Market Outcomes

| Career | Salary | | Working Hours | | Occupation Rate | | Social Security Coverage | |
|---|-------------|----------|---------------|-----------|-----------------|----------|--------------------------|-----------|
| | R\$ monthly | Rank | Hr week | Rank | Rate (%) | Rank | Rate (%) | Rank |
| 1 MEDICINE | 6940 | 1 | 42 | 45 | 91,8 | 1 | 90,7 | 10 |
| 2 DENTISTRY | 4238,65 | 8 | 37,46 | 12 | 89,96 | 3 | 78,63 | 43 |
| 3 CIVIL ENGINEERING | 4604 | 3 | 41,7 | 43 | 90,1 | 2 | 88 | 28 |
| 4 MECHANICAL AND METALLURGICAL ENGINEERING | 4258,69 | 7 | 40,96 | 32 | 89,17 | 5 | 90,53 | 11 |
| 5 MOBILITY SERVICES | 4460,89 | 5 | 41,91 | 44 | 89,14 | 6 | 91,47 | 6 |
| 6 STATISTIC | 5416,10 | 2 | 39,05 | 20 | 81,82 | 31 | 89,70 | 16 |
| 7 ELECTRICAL ENGINEERING AND AUTOMATION | 3734,10 | 15 | 41,73 | 42 | 88,07 | 7 | 90,92 | 8 |
| 8 ENGINEERING (OTHERS) | 4168,05 | 10 | 41,01 | 34 | 85,74 | 14 | 89,48 | 19 |
| 9 MILITARY AND DEFENCE SECTOR | 4433,67 | 6 | 42,46 | 47 | 83,63 | 20 | 97,15 | 1 |
| 10 COMPUTING | 2886,57 | 28 | 40,73 | 30 | 89,61 | 4 | 90,50 | 12 |
| 11 CHEMISTRY ENGINEERING | 4549,12 | 4 | 41,53 | 40 | 83,39 | 22 | 91,07 | 7 |
| 12 ARCHITECTURE AND URBANISM | 4206,01 | 9 | 39,78 | 24 | 86,84 | 9 | 74,31 | 47 |
| 13 SECURITY SERVICES | 2785,47 | 32 | 41,41 | 38 | 87,23 | 8 | 94,57 | 2 |
| 14 LAW | 4104,84 | 11 | 38,94 | 18 | 83,28 | 25 | 79,71 | 42 |
| 15 PHARMACY | 2964,38 | 26 | 40,88 | 31 | 85,53 | 16 | 92,54 | 4 |

Source: CPS/FGV processing microdata from Censo 2010/IBGE

Multivariate Ranking of University Careers by Labor Market Outcomes

| | | <i>Salary</i> | | <i>Working Hours</i> | | <i>Occupation Rate</i> | | <i>Social Security Coverage</i> | |
|-----------|---|--------------------|-------------|----------------------|-------------|------------------------|-------------|---------------------------------|-------------|
| | | <i>R\$ monthly</i> | <i>Rank</i> | <i>Hr week</i> | <i>Rank</i> | <i>Rate (%)</i> | <i>Rank</i> | <i>Rate (%)</i> | <i>Rank</i> |
| 1 | MEDICINE | 8459 | 1 | 41,9 | 41 | 97,1 | 1 | 93,4 | 5 |
| 2 | DENTISTRY | 5367,31 | 7 | 38,24 | 14 | 96,22 | 2 | 83,23 | 43 |
| 3 | MOBILITY SERVICES | 6053 | 3 | 38,9 | 17 | 93,6 | 14 | 93,3 | 6 |
| 4 | CIVIL ENGINEERING | 5768,19 | 5 | 42,12 | 44 | 95,72 | 3 | 90,7 | 28 |
| 5 | MILITARY AND DEFENCE SECTOR | 7695,84 | 2 | 41,91 | 39 | 90,63 | 44 | 97,13 | 1 |
| 6 | MECHANICAL AND METALLURGICAL ENGINEERING | 5500,30 | 6 | 42,89 | 48 | 94,36 | 6 | 92,93 | 8 |
| 7 | ENGINEERING (OTHERS) | 5242,91 | 8 | 40,74 | 29 | 93,11 | 19 | 92,11 | 14 |
| 8 | CHEMISTRY ENGINEERING | 5815,28 | 4 | 41,91 | 40 | 92,58 | 31 | 92,57 | 10 |
| 9 | MATHEMATICS | 2811,40 | 40 | 38,00 | 12 | 94,39 | 5 | 93,15 | 7 |
| 10 | STATISTIC | 4780,29 | 10 | 40,43 | 26 | 93,08 | 21 | 92,57 | 11 |
| 11 | EDUCATION AND TEACHER TRAINING | 2420,73 | 46 | 36,36 | 4 | 94,13 | 8 | 92,32 | 13 |
| 12 | ELECTRICAL ENGINEERING AND AUTOMATION | 4835,37 | 9 | 41,47 | 35 | 93,37 | 17 | 92,69 | 9 |
| 13 | PHARMACY | 4067,68 | 17 | 42,65 | 47 | 94,30 | 7 | 93,72 | 4 |
| 14 | LITERATURE, LANGUAGES AND CULTURES | 2654,21 | 44 | 37,08 | 6 | 93,66 | 12 | 92,02 | 15 |
| 15 | ARCHITECTURE AND URBANISM | 4744,30 | 11 | 40,36 | 25 | 94,69 | 4 | 78,12 | 47 |

Source: CPS/FGV processing microdata from Censo 2010/IBGE

Multivariate Ranking of University Careers by Labor Market Outcomes

| | | <i>Salary</i> | | <i>Working Hours</i> | | <i>Occupation Rate</i> | | <i>Social Security Coverage</i> | |
|----|---|----------------|-------------|----------------------|-------------|------------------------|-------------|---------------------------------|-------------|
| | | <i>R\$</i> | | <i>Hr</i> | | <i>Rate</i> | | <i>Rate</i> | |
| | | <i>monthly</i> | <i>Rank</i> | <i>week</i> | <i>Rank</i> | <i>(%)</i> | <i>Rank</i> | <i>(%)</i> | <i>Rank</i> |
| 34 | JORNALISM | 3758,46 | 23 | 39,23 | 19 | 92,58 | 30 | 85,87 | 38 |
| 35 | ECONOMICS | 4301,66 | 15 | 41,08 | 31 | 92,06 | 36 | 89,92 | 30 |
| 36 | NURSING | 3495,07 | 28 | 41,27 | 33 | 92,56 | 32 | 91,73 | 17 |
| 37 | BIOLOGY AND LIFE SCIENCES | 2848,95 | 39 | 38,20 | 13 | 92,12 | 35 | 90,35 | 29 |
| 38 | ARTS | 3055,59 | 35 | 36,82 | 5 | 92,52 | 33 | 81,56 | 45 |
| 39 | VETERINARY | 4314,48 | 14 | 41,44 | 34 | 92,86 | 24 | 81,70 | 44 |
| 40 | PRODUCTION AND PROCESSING ENGINEERING | 3950,60 | 19 | 42,51 | 46 | 92,22 | 34 | 90,95 | 26 |
| 41 | SOCIOLOGY AND POLITICAL SCIENCE | 3638,39 | 24 | 38,93 | 18 | 91,21 | 42 | 88,93 | 31 |
| 42 | AGRONOMY, LIVESTOCK AND FISHING | 3933,85 | 20 | 41,95 | 43 | 91,92 | 39 | 85,20 | 40 |
| 43 | OTHER SOCIAL SCIENCES | 3099,39 | 32 | 37,68 | 10 | 90,35 | 45 | 88,66 | 32 |
| 44 | OTHER PERSONAL SERVICES (BEAUTY AND DOMESTIC) | 2786,87 | 41 | 40,00 | 23 | 92,85 | 25 | 71,59 | 48 |
| 45 | TOURISM, TRAVEL AND LEISURE | 3043,14 | 36 | 41,25 | 32 | 90,70 | 43 | 87,18 | 34 |
| 46 | PHYSICAL EDUCATION AND SPORTS | 2786,31 | 42 | 38,75 | 15 | 89,74 | 47 | 86,24 | 37 |
| 47 | PHILOSOPHY AND ETHICS | 2340,35 | 47 | 37,33 | 7 | 89,17 | 48 | 86,97 | 35 |
| 48 | RELIGION | 2175,79 | 48 | 39,43 | 21 | 89,94 | 46 | 78,89 | 46 |

Source: microdata from Censo 2010/IBGE

You-Index (Higher Education)

University Careers and Labor Market Outcomes

Gender: Male ▾

Age: 45 to 49 years ▾

Region: Urban ▾

State: UF São Paulo ▾

University Careers:

ECONOMICS ▾

Simulate

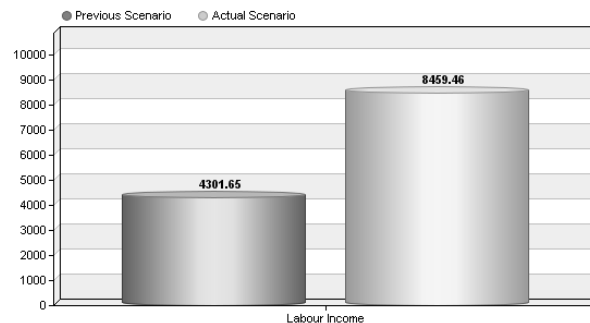
Reset

Source: CPS/FGV from microdata of Census 2010/IBGE.

You-Index (Higher Education)

Labour Earnings (R\$ monthly)

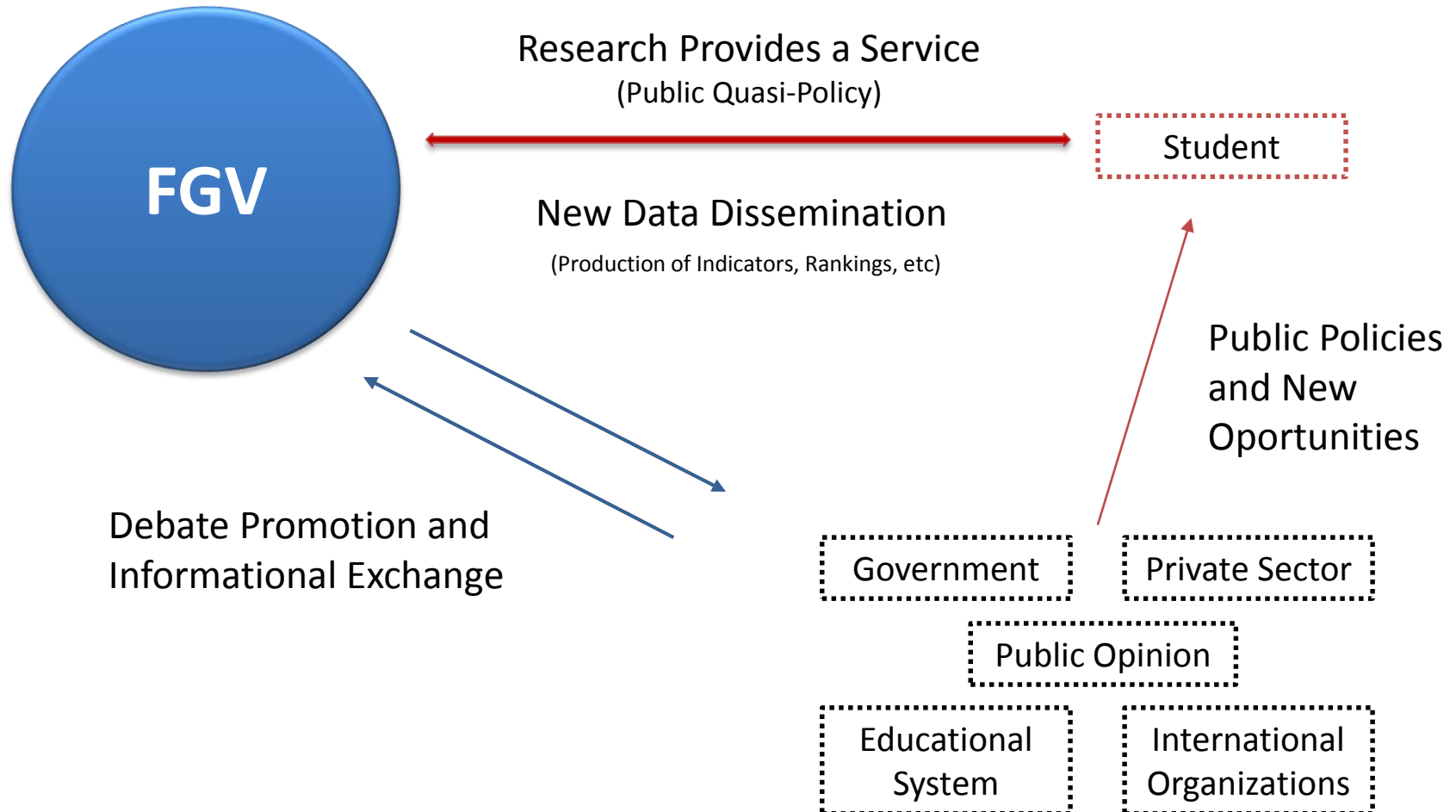
Estimated Model



Source: CPS/FGV from microdata of Census 2010/IBGE.

| Previous Scenario | Cenário Atual |
|---------------------|---------------------|
| Gender: Masculino | Gender: |
| Age: 46 a 49 anos | Age: 46 a 49 anos |
| Region: Urbana | Region: Urbana |
| Formation: | Formation: |
| State: UF São Paulo | State: UF São Paulo |

Direct and Indirect Impacts of HE Research



H E

I M M I G R A T I O N

Immigrants in Brazil and in the World

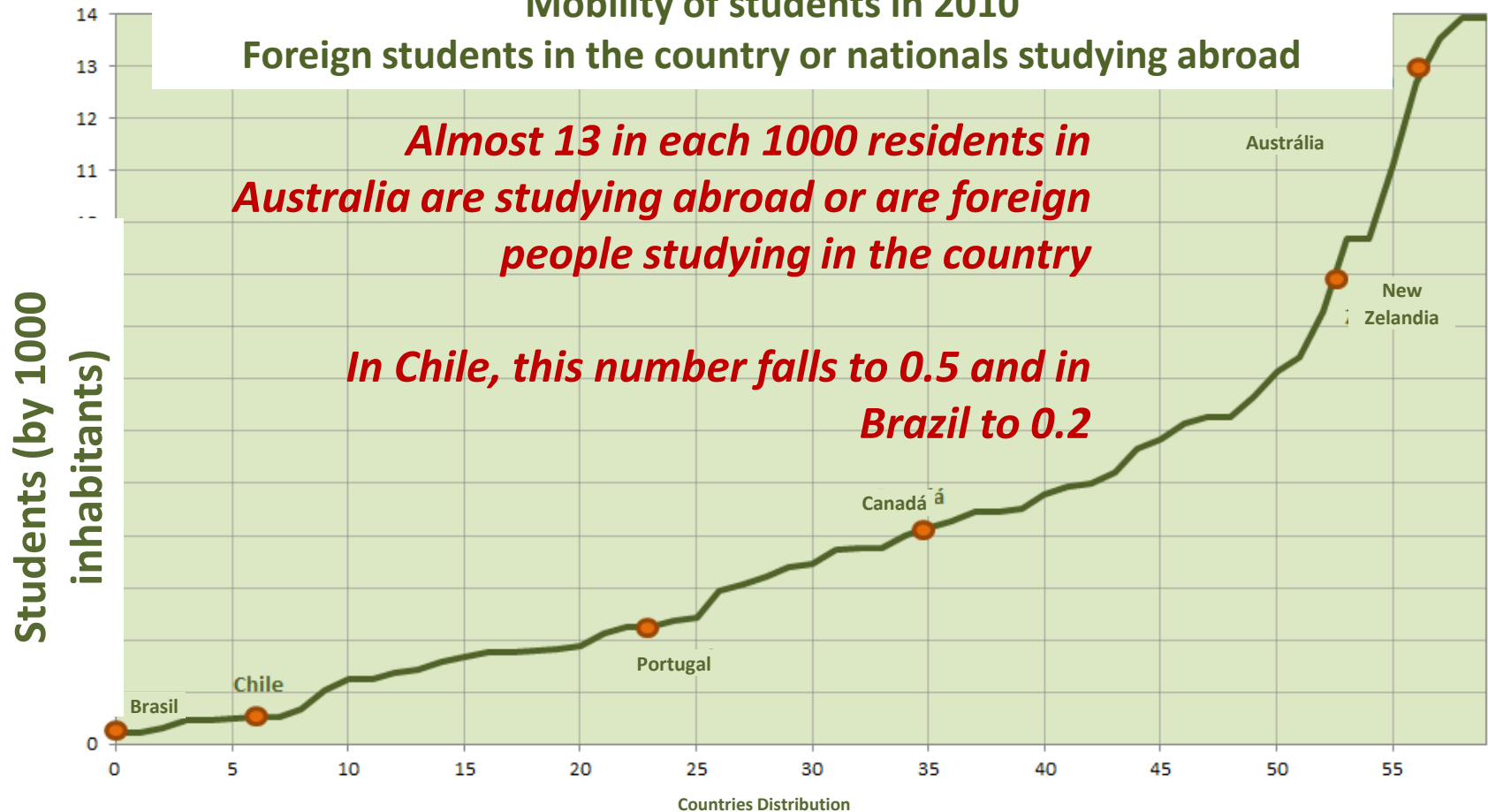
Brazil need **5 times** more immigrants to reach South-America mean, **10 times** more immigrants to reach the World mean and **50 times** more immigrants to reach the North America and Oceania mean

| Region | Population (by million) | Immigrants (by million) | Percentage of Immigrants within Population |
|--------------------------------|----------------------------|----------------------------|---|
| World | 6909 | 214 | 3,1 |
| Africa | 1033 | 19 | 1,9 |
| Asia | 4167 | 61 | 1,5 |
| Europe | 733 | 70 | 9,5 |
| North America | 352 | 50 | 14,2 |
| South America and Caribbean | 589 | 7 | 1,3 |
| Oceania | 36 | 6 | 16,8 |
| Brazil | 196 | 0,6 | 0,3 |

Besides the low mobility of people, there is little mobility of knowledge

Mobility of students in 2010

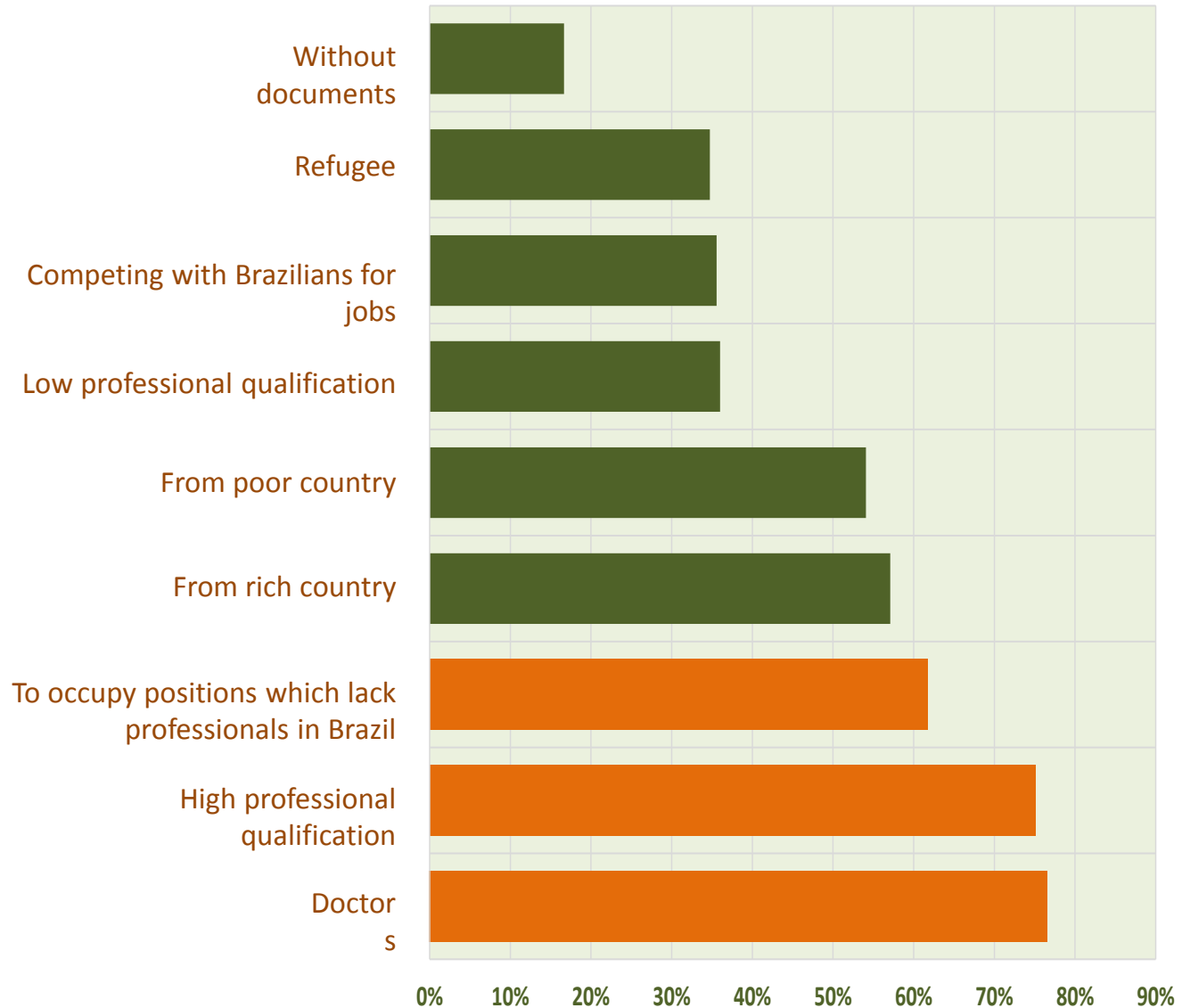
Foreign students in the country or nationals studying abroad



Source: Global Education Digest 2012 – Comparing Education Statistics Across The World (UNESCO) – Total of 60 países

© IMD WORLD COMPETITIVENESS ONLINE 1995- 2013

Percentage of individuals favorable to Immigration by type of Immigrants



Brazilians are favorable to the coming of High Qualifies Immigrants



73,7%

FAVORABLE TO THE COMING
OF IMMIGRANTS WITH HIGH
PROFESSIONAL
QUALIFICATION



66,9%

CONSIDER THAT THE COMING
OF IMMIGRANTS WITH HIGH
PROFESSIONAL
QUALIFICATION CAUSES
FAVORABLE IMPACTS IN THE
COUNTRY

AMONG THOSE WHO CONSIDER THAT
THE COMING OF IMMIGRANTS WITH
HIGH PROFESSIONAL QUALIFICATION
CAUSES FAVORABLE IMPACTS IN THE
COUNTRY



70,8%

BELIEVE THAT THEIR PRESENCE RISES
COUNTRY'S PRODUCTIVITY AND
ENABLES KNOWLEDGE TRANSFERS TO
BRAZILIAN WORKERS



81,3%

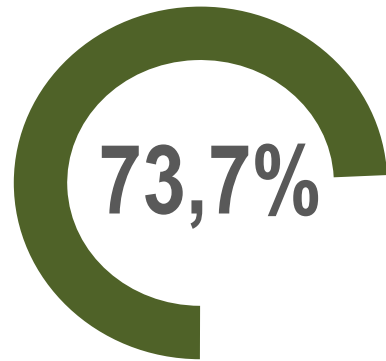
WOULD BE RECEPTIVE TO
A FOREIGNER WHO
MOVED TO HIS
NEIGHBORHOOD



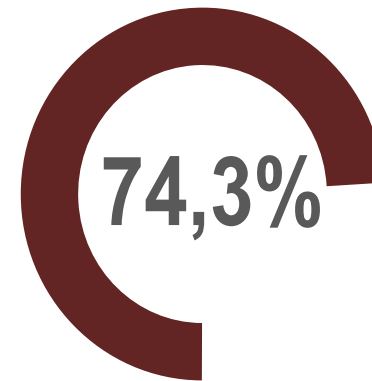
84,2%

WOULD BE RECEPTIVE TO A
FOREIGNER WHO MOVED TO
HIS OWN COMPANY

ABOUT IMMIGRANTS FOREIGNERS COMING TO BRAZIL

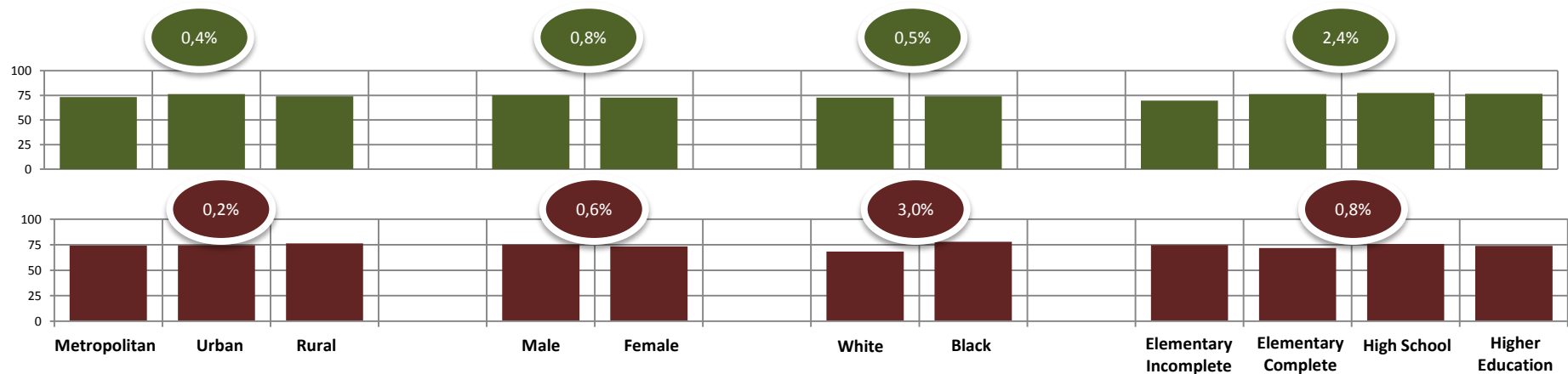


FAVORABLE TO THE COMING
OF IMMIGRANTS WITH HIGH
PROFESSIONAL
QUALIFICATION



OPPOSE THE COMING OF
IMMIGRANTS WITHOUT
DOCUMENTATION

Degree of Disagreement



NOTE: Population with 16 years or more

SOURCE: SAE/PR and IPEA/SIPS-Immigration; Brazil, 2013.

A digital display consisting of three vertical panels. The left panel shows the letter 'H' and the right panel shows the letter 'E'. The middle panel is blank. The letters are white and bold.

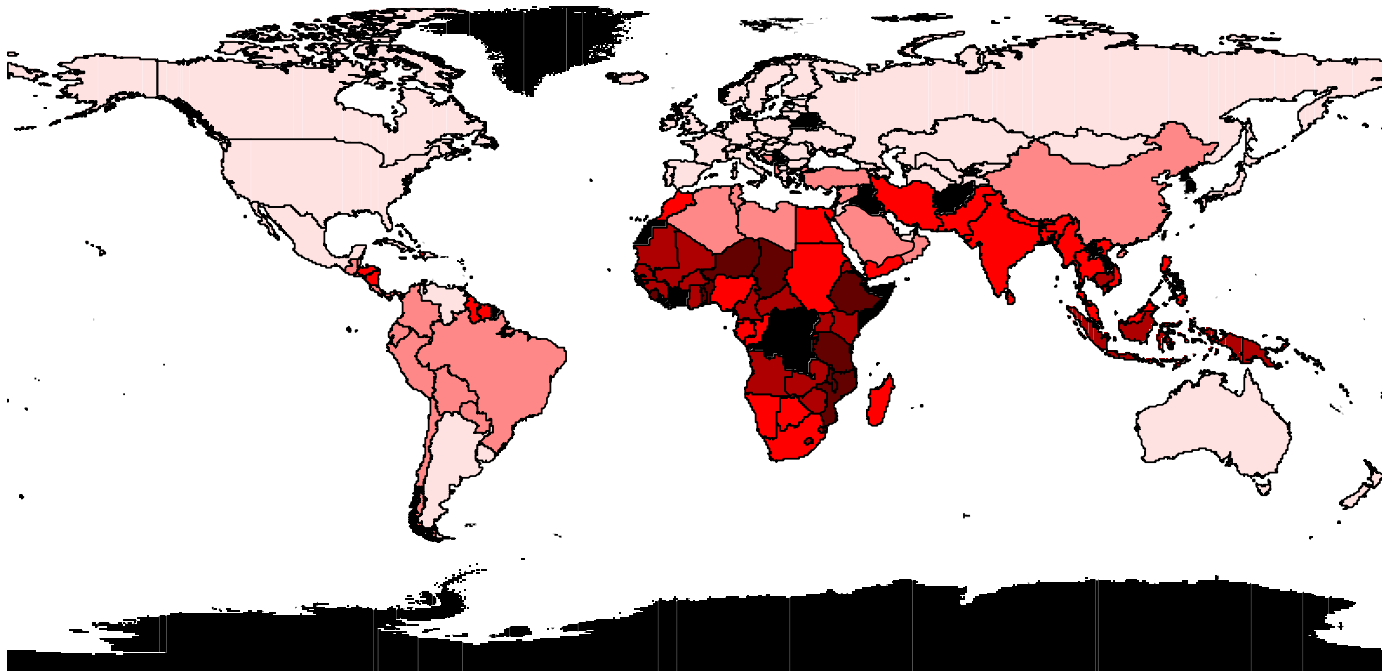
Specific Careers & Public Policies

A digital display consisting of seven vertical panels, each showing a letter of the word 'RETURNS'. The letters are white and bold.

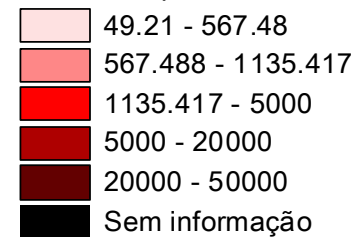
Escassez de Médicos



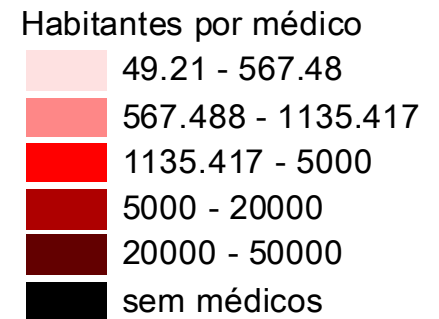
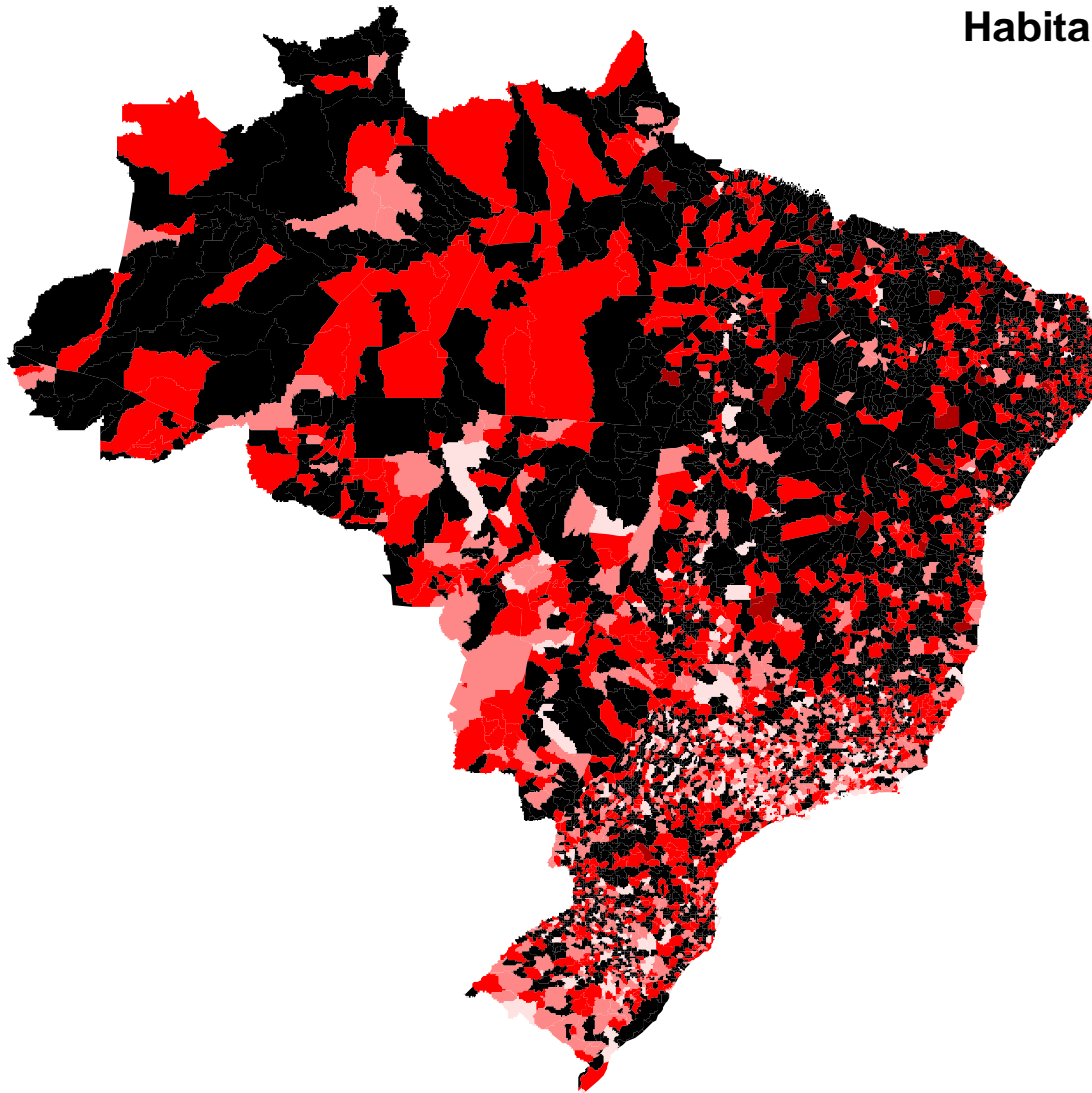
Habitants per Doctor *zoom*



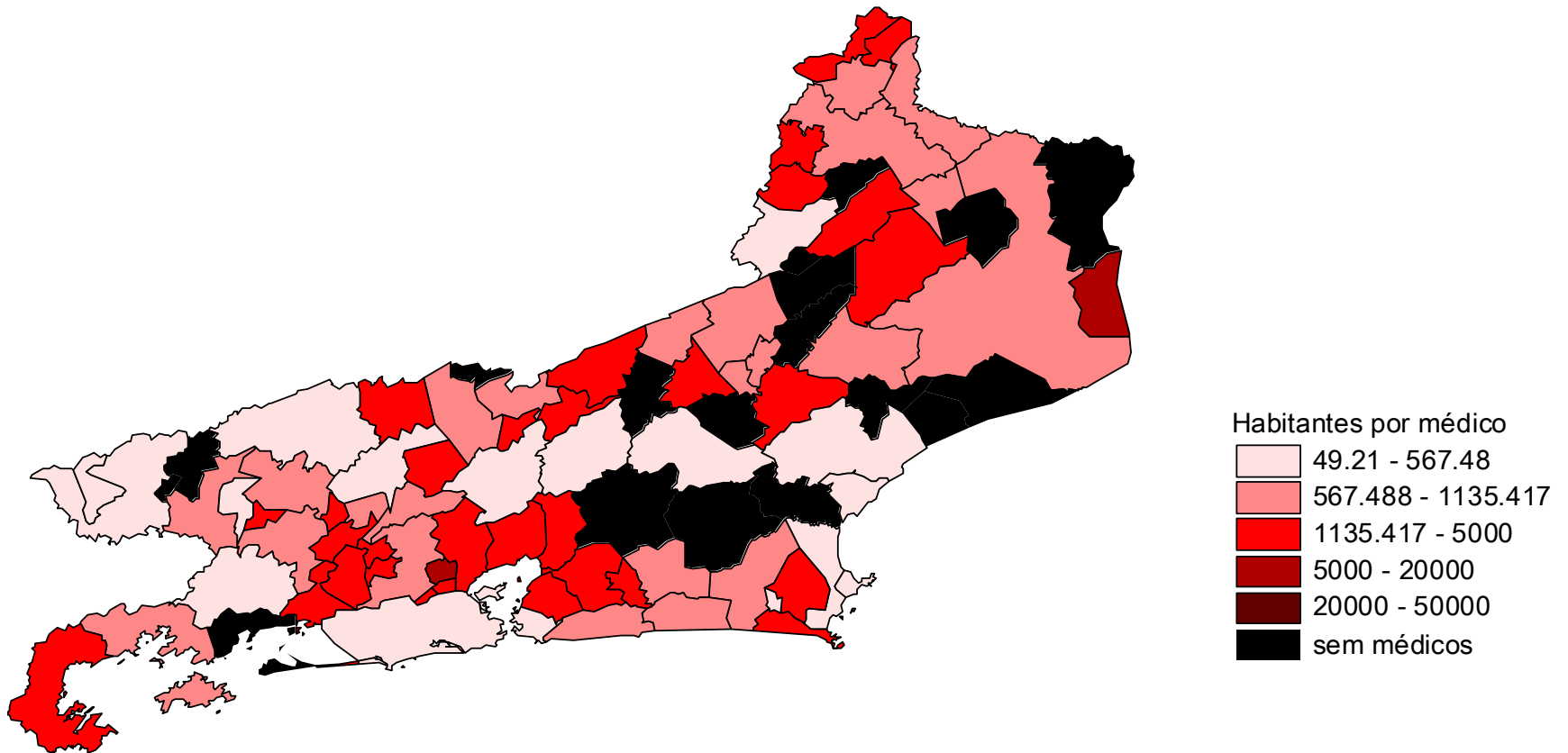
Habitantes por médico



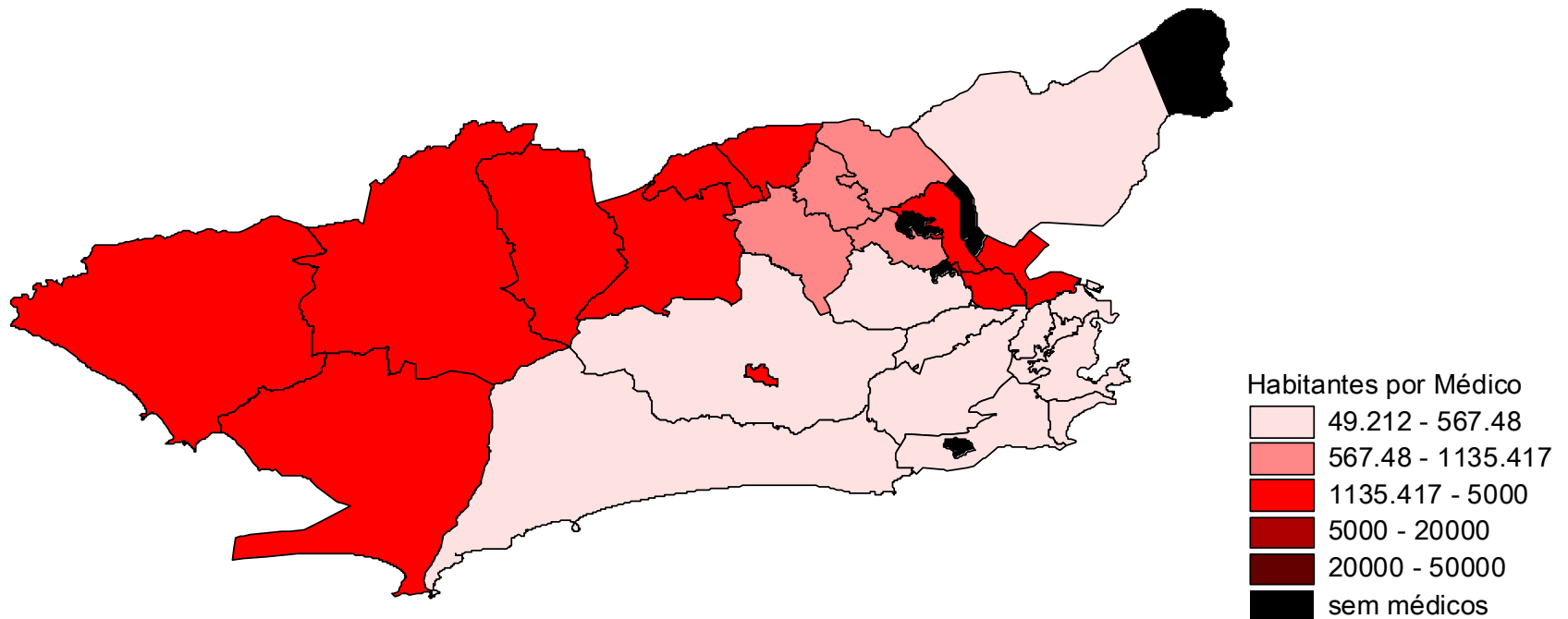
Habitantes por Médico *zoom*



Habitants per Doctor *zoom*

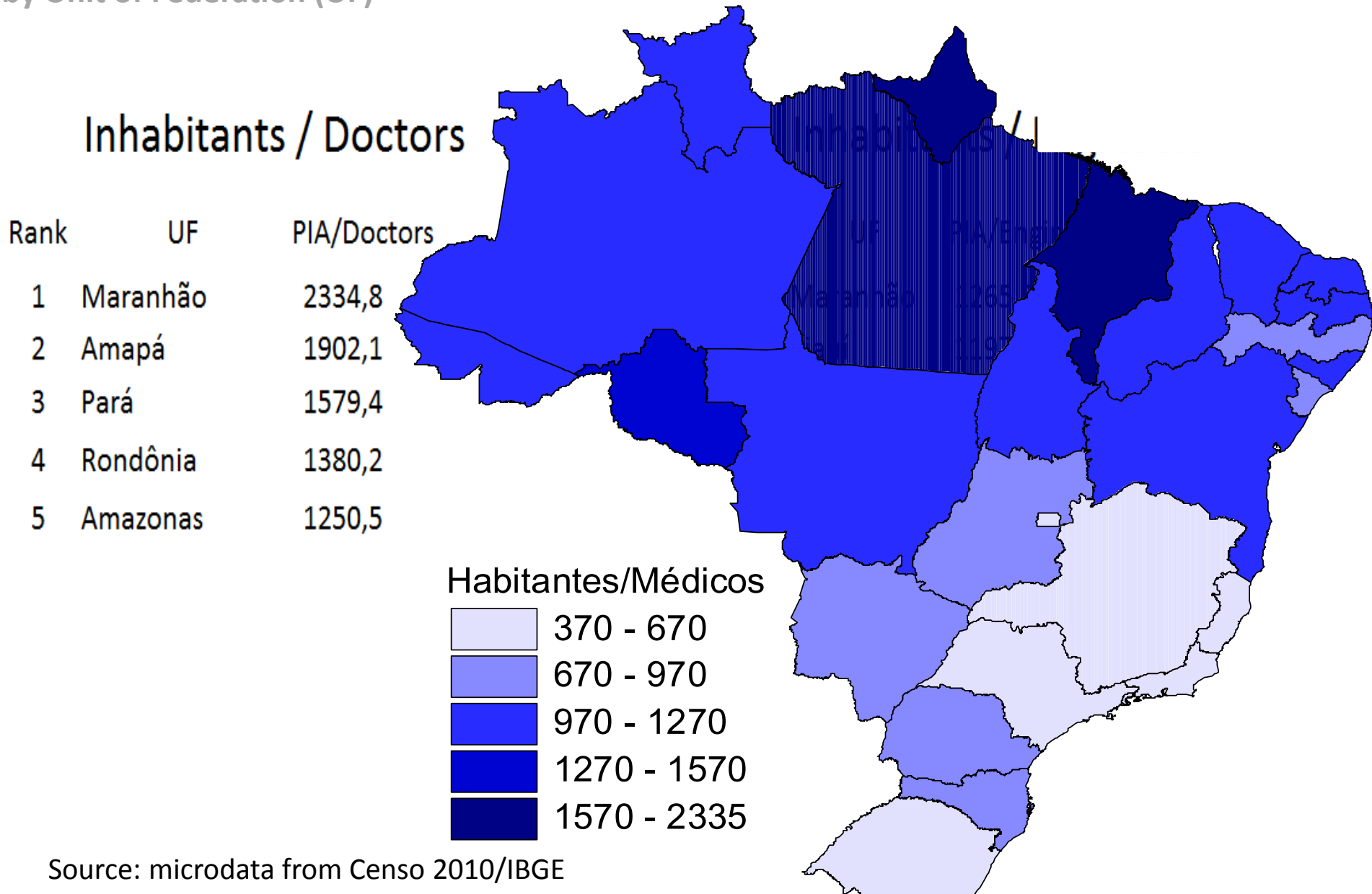


Habitants per Doctor *zoom*



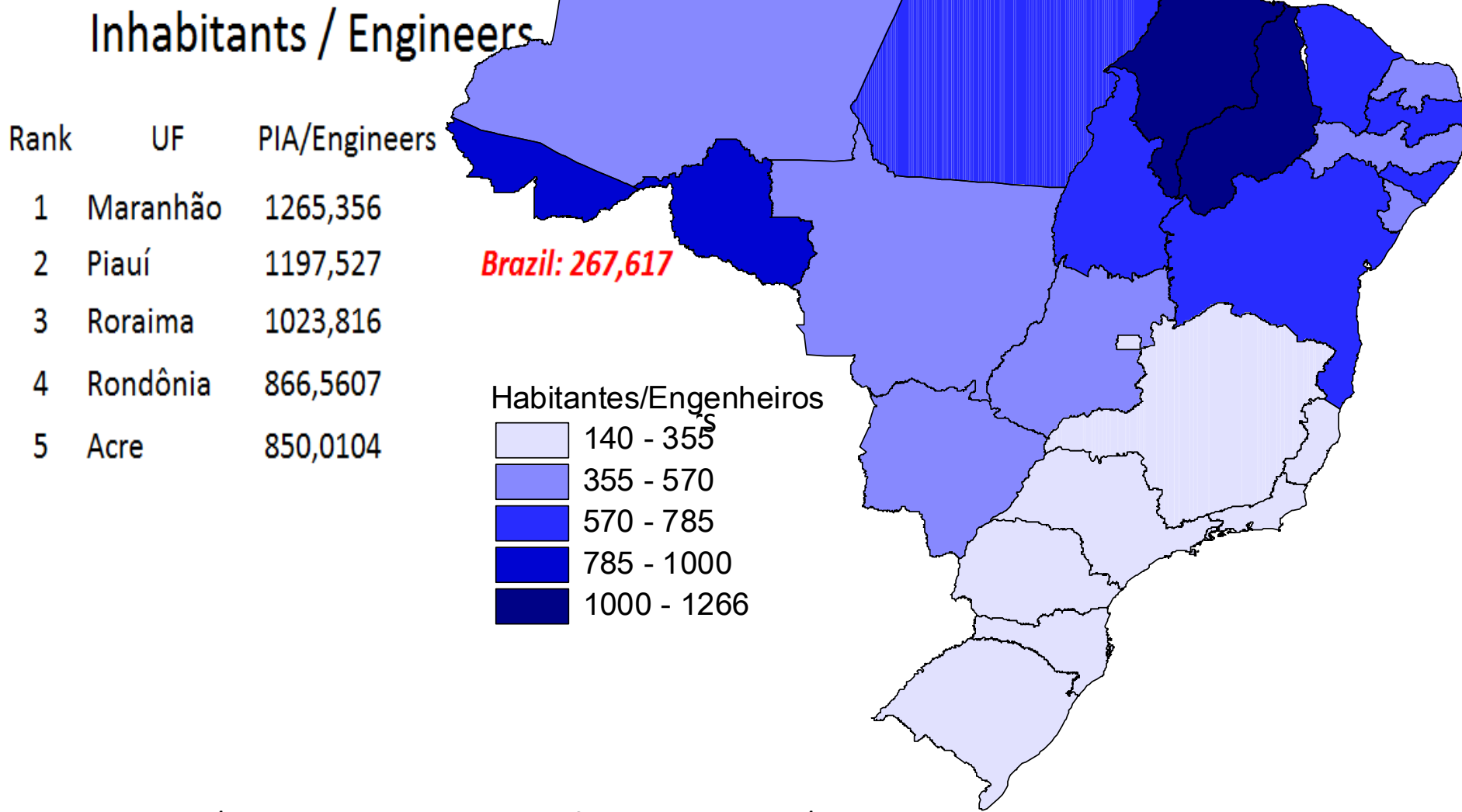
Number of inhabitants* by Doctors

*within working age population
by Unit of Federation (UF)



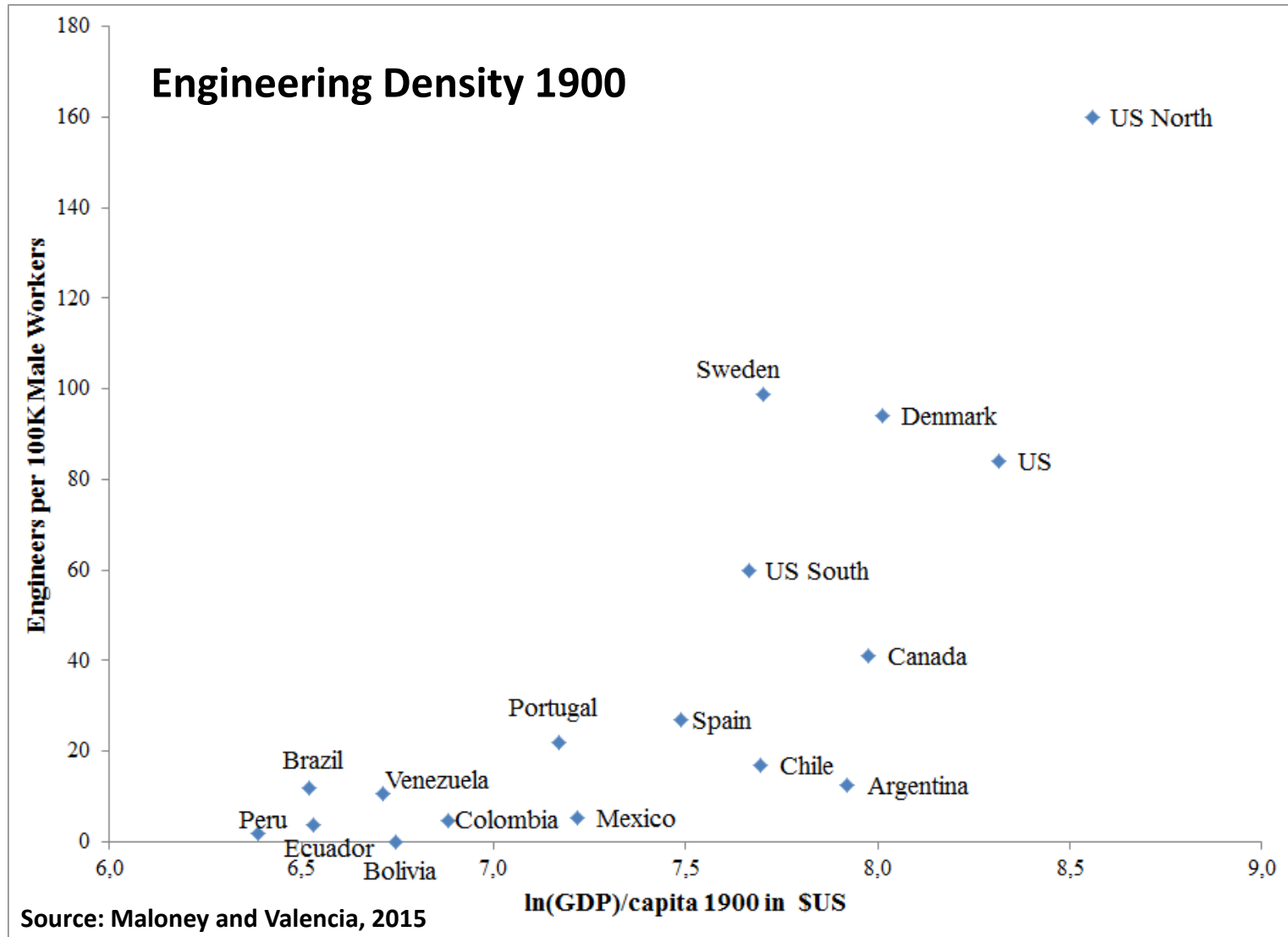
Number of inhabitants* by Engineers

*within working age population
by Unit of Federation (UF)



THE KEY: DIFFERENCES IN ABILITY TO ADOPT AND ADAPT NEW TECHNOLOGIES

Inferences across Latin American Countries provinces (does not include Brazil) suggests that a doubling the density of engineers is associated with a 60% rise in GDP (similar result across U.S. States)



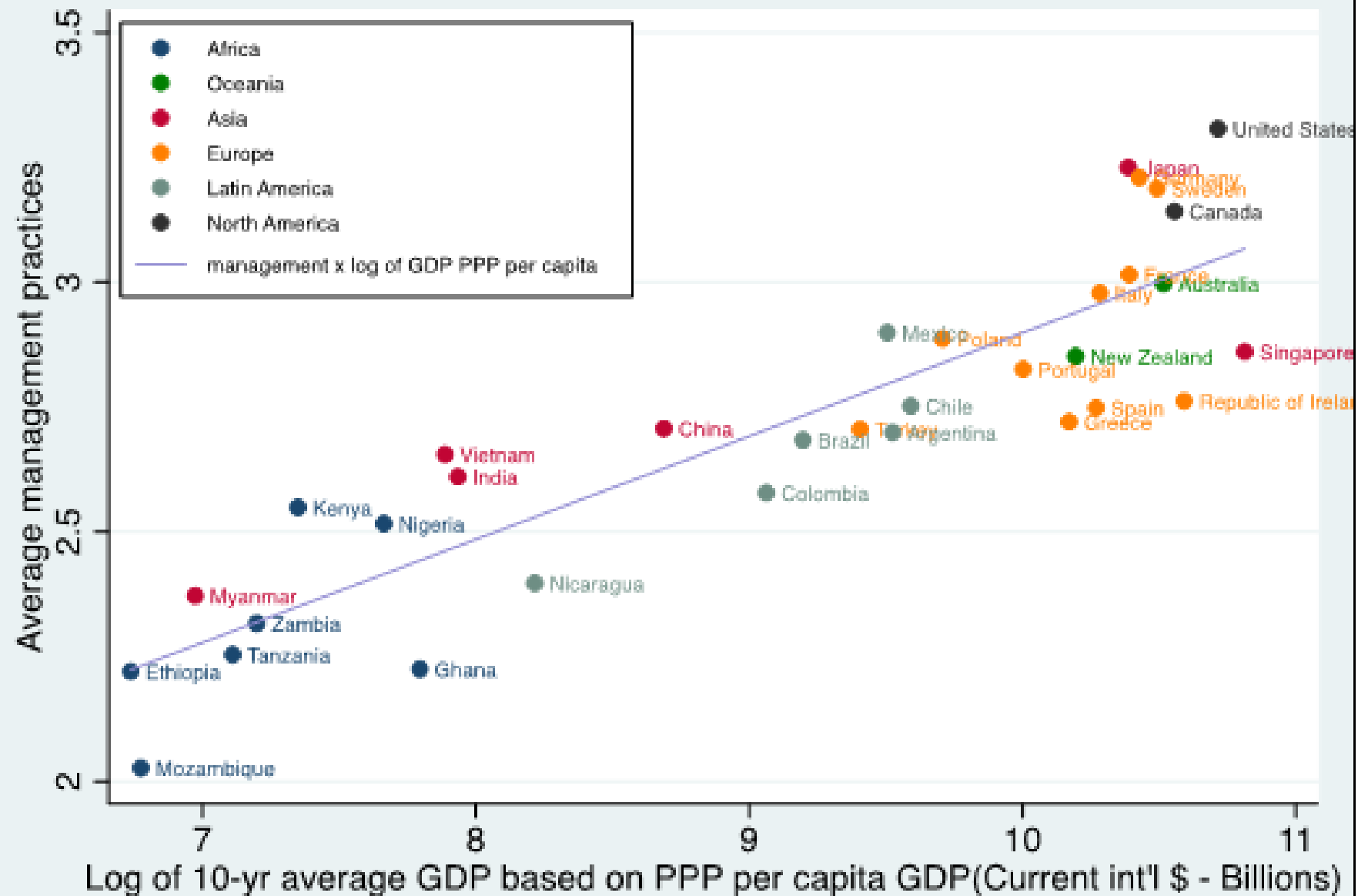
SAME BUSINESS AND INSTITUTIONAL CLIMATE, DIFFERENT ENTREPRENEURIAL OUTCOMES

Table 9: Relative Contribution to Industrialization of Locals vs. Immigrants

| Country | Year | % Owners | % Pop. | Ratio | |
|-------------------------|-----------|------------|------------|-------|------|
| | | Immigrants | Immigrants | All | Men |
| Argentina | 1900 | 80 | 30 | 2.7 | 1.3 |
| Brazil (Sao Paulo) | 1920-1950 | 50 | 16.5 | 3.0 | 1.5 |
| Brazil (Minas Gerais) | 1870-1900 | 3.6 | 1.5 | 2.4 | 1.2 |
| Chile | 1880 | 70 | 2.9 | 24.1 | 12.1 |
| Colombia (Antioquia) | 1900 | 5 | 4.7 | 1.1 | 0.5 |
| Colombia (Barranquilla) | 1888 | 60 | 9.5 | 6.3 | 3.2 |
| Colombia (Santander) | 1880 | 50 | 3 | 16.7 | 8.3 |
| Mexico | 1935 | 50 | 0.97 | 51.5 | 25.8 |
| US (5% census sample) | 1900 | 31 | 13.6 | 2.3 | 1.1 |
| US (Fortune 500) | various | 18 | 10.5 | 1.7 | 0.7 |

Notes: Table tabulates the share of industries owned by immigrants, their share in the population, their contribution relative to their share in the population and their contribution assuming all immigrants and entrepreneurs are male. Source: Industrial Surveys, both official and academic. See text.

LAC AND BRAZIL: WEAK MANAGEMENT SKILLS



Source: World Management Survey(2015)

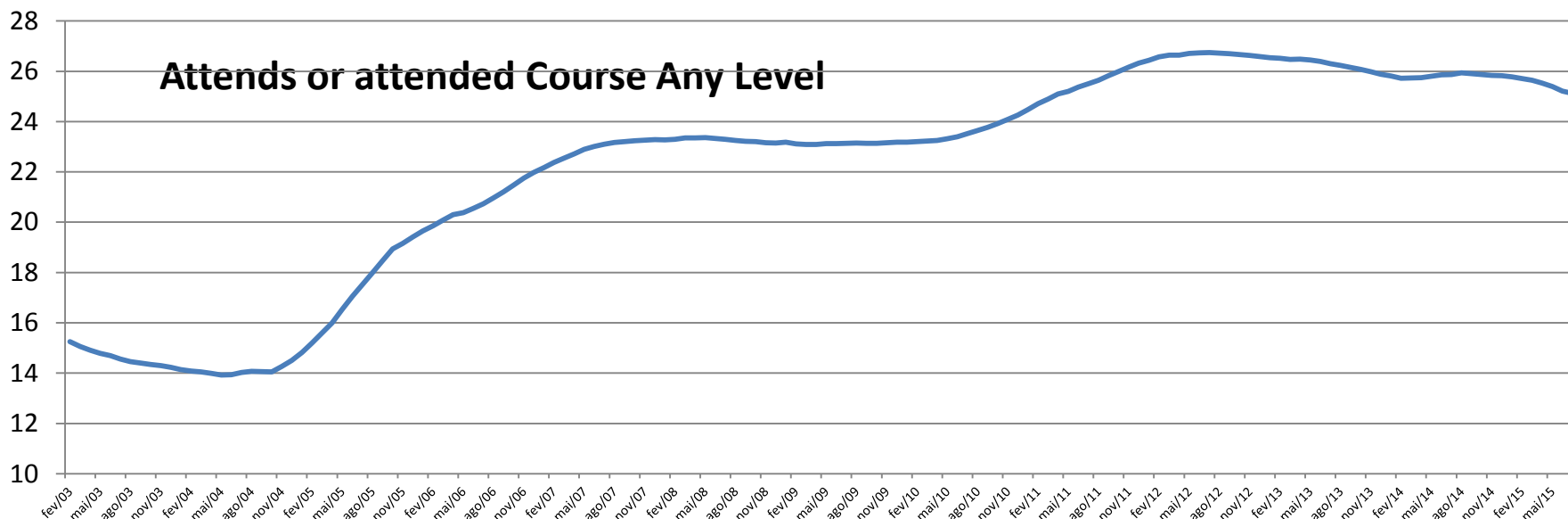
(Self-Perception – Reality) Gap



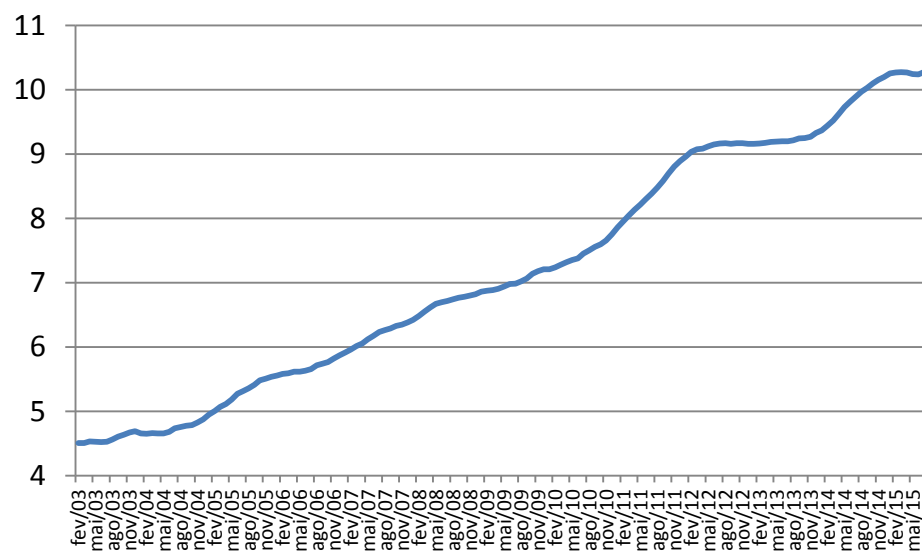
Note: Firms between 50 and 5000, raw data

Technical Course – Higher Education (%)

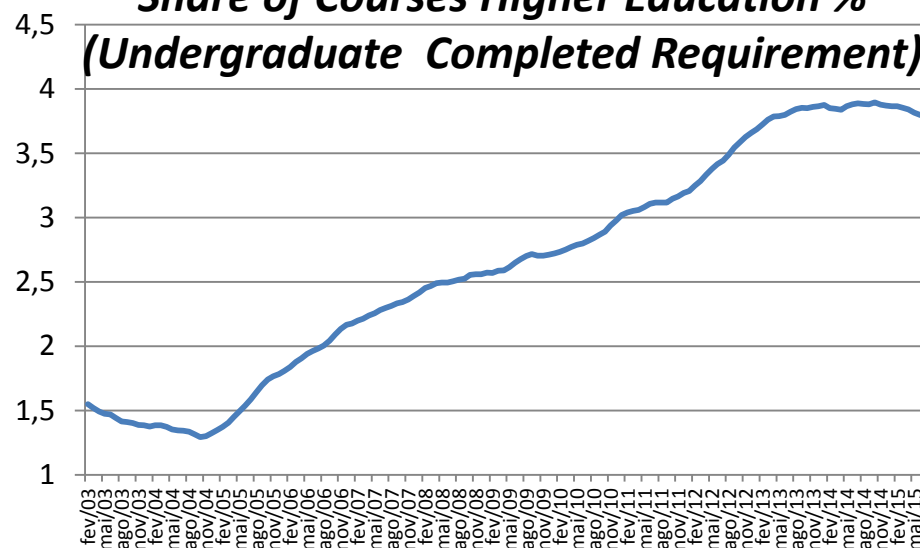
Attends or attended Course Any Level



Share of Courses Higher Education %

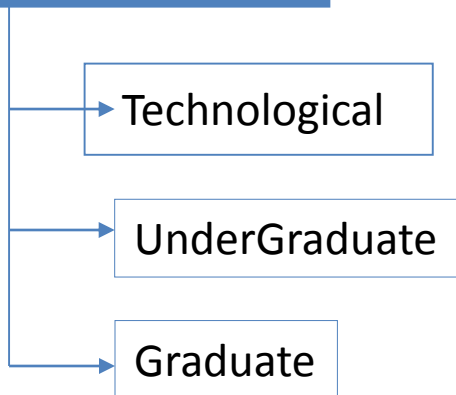


**Share of Courses Higher Education %
(Undergraduate Completed Requirement)**

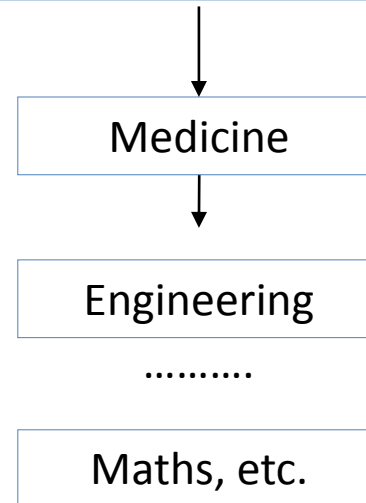


What is the Private Premium from HE Courses Attributes?

1. Level of the Course



2. Thematic Areas of the Courses



3. Relation with Earlier Regular Education: RE-Education

4. Private, Public & Non Profit Supply

5. Daytime or Evening Courses

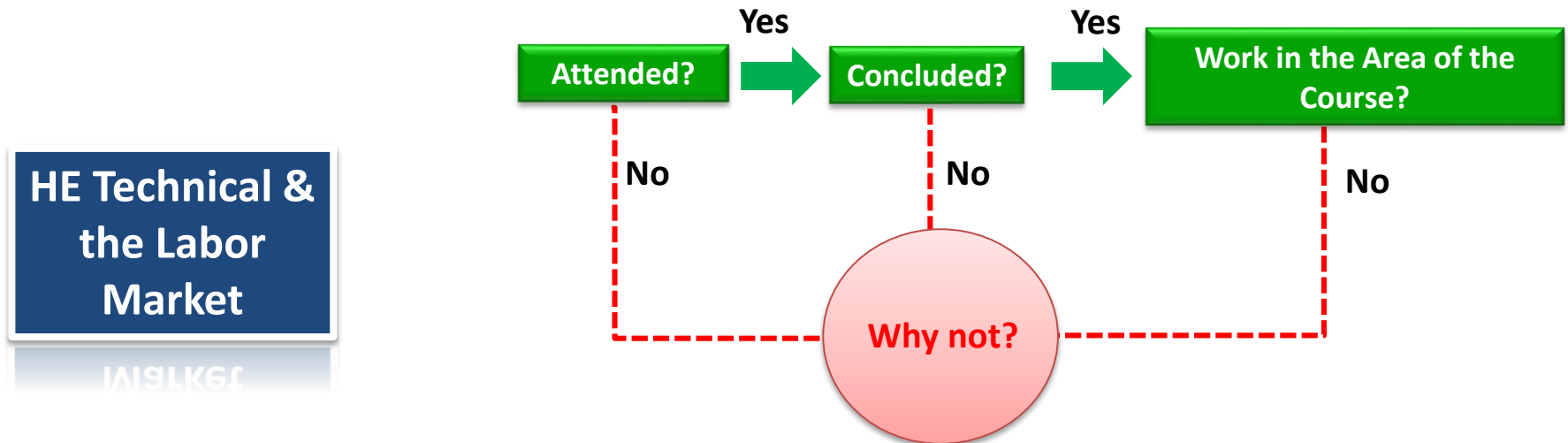
6. Classroom Courses or On Line

7. HE Meets the Labour Markets (Diploma-Effect etc)

8. Evaluation of Public Policies Impacts

It is Necessary to Understand Supply and Demand for Higher Education

Estimate Models & Hear Different Actors Motivations



Higher Education Range*

Professional Course

Attended (37,4%)

Did not Attend
(62,2%)

Lack of
Supply
5,4%

Not
Intereste
d 86,4%

Lack of
Resources
4,2%

Others
26%

Concluded
(94,5%)

Did not
Conclude (5,5%)

Work in
the Area of
the Course
79,5%

Among the
Rest – Had
Better
Working
Oportunities
50,8%

Lack of
Supply
8%

Lack of
Demand
66,1%

Other
26%

Others Disatisfaction 30%

“10% Law”

Source: CPS/FGV processing microdata from PNAD 2007/IBGE

Map of Public Available Databases Used

Household Surveys Microdata

PNAD (100,000 households per year)
Annual Cross-section (1976 -2012); IBGE
Incomes, Residential Capital

POF (48,000 families per year) 1974; 2002;
2008 ; *Details: Incomes, Spending and Taxes*

Mapping

CENSUS (18 million individuals) 1960 - 2010
IBGE, Long Run Income and Detailed Maps

Monitoring

PME (36 thousand dwellings month) 1980-
2014, *IBGE Monthly Labor with a two month*
lag, 6 Metrocities, Longitudinal Aspect

Administrative Records

National Accounts IBGE (Hybrid)

PIT Personal Income Tax -IRPF
25 million individuals; 2007 -2012
Top Incomes and Assets

Unified Register for Social Programs – MDS
CadÚnico (60 million individuals) Bottom
Incomes & Household Characteristics

Subjective Surveys National*

PPPP (3800 Interviews. 215 cities), Ipea
Population Perceptions on Public Policies,
Well-Being; Individuals 15 years or older

Subjective Surveys International*

Gallup World Poll (more than 150 countries &
200.000 yearly interviews) 2006 to 2014
Subjective and Objective Data, Individuals 15
years or older

H I G H E R

E D U C A T I O N

R E T U R N S

Thanks!