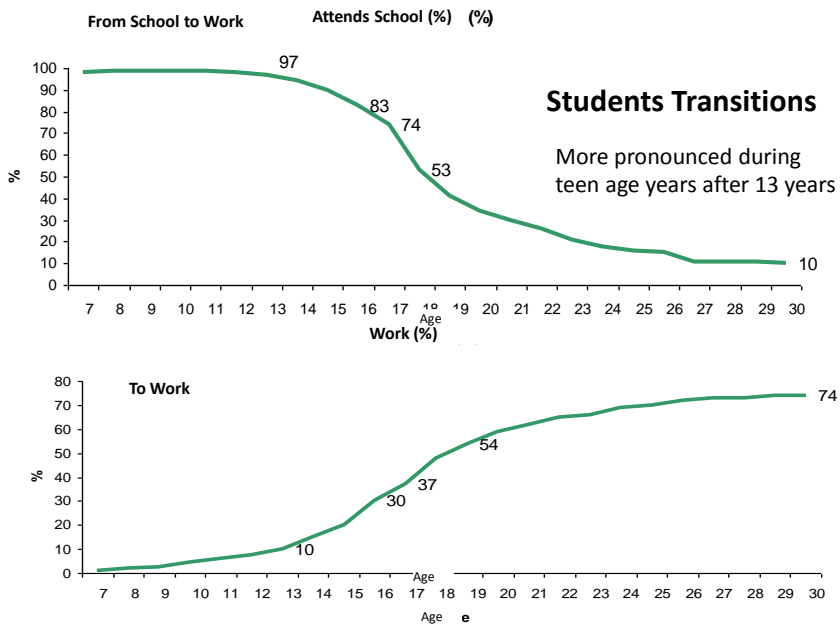


* EDUCATION RETURNS

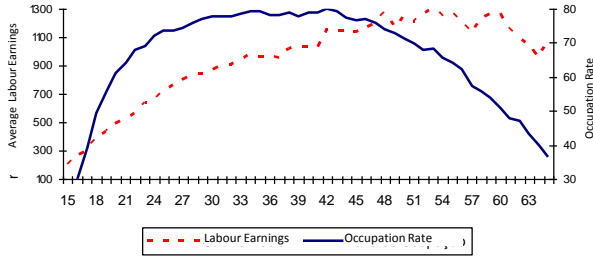
AND DEMAND (COVERAGE AND STUDENTS MOTIVATIONS)

**See small part in text [Education Policies](#)
 Schooling, Higher Education, Professional Education



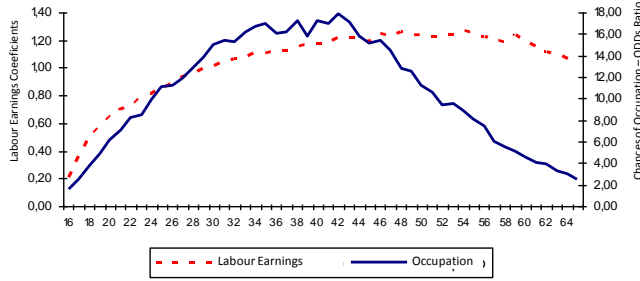
Source: FGV Social with PNAD/IBGE microdata

Labour Market Outcomes and Life Cycle



← Simple Bivariate Plot Opened by Years of Age

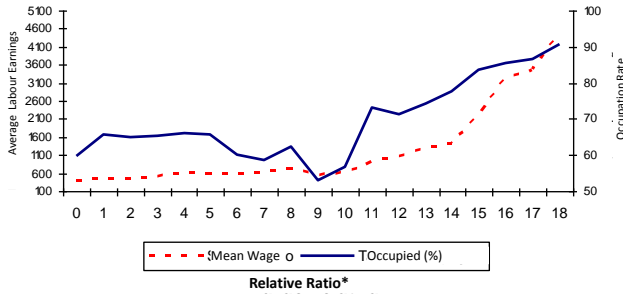
Relative Ratio*



← Mincerian Equation Coefficients and Logistic Regression Odds ratio Plot Opened by Years of Age

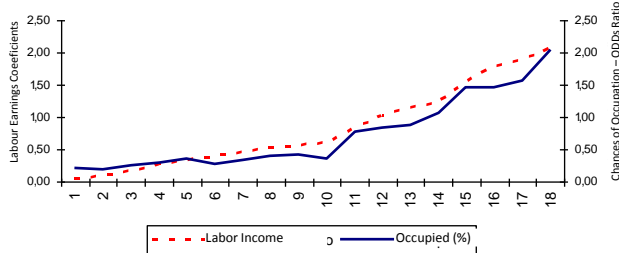
Source: CPS/FGV from PNAD/IBGE microdata * Basis: 15 years old

Educational Premium by Years of Study - 2007



← Simple Bivariate Plot Opened by Years of Schooling

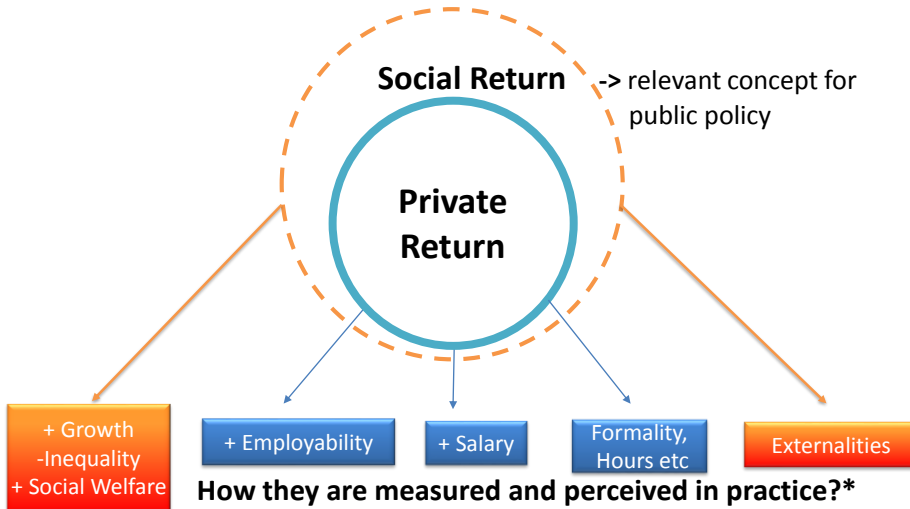
Relative Ratio*



← Mincerian Equation Coefficients and Logistic Regression Odds ratio Plot Opened by Years of Schooling

Source: CPS/FGV with PNAD/IBGE microdata * Basis: 0 years of study

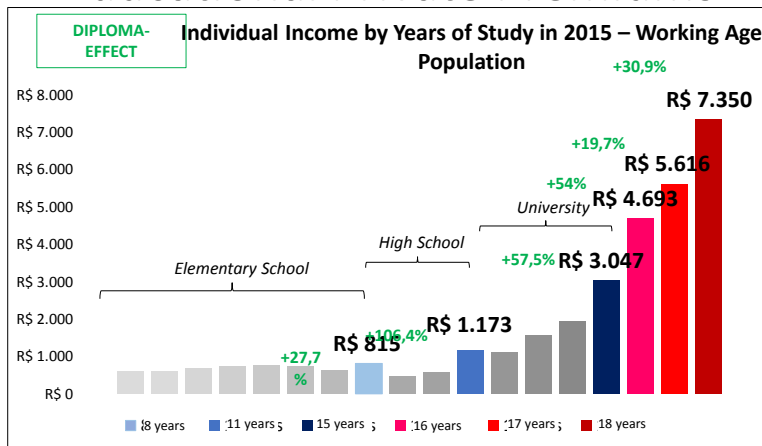
Returns from Education



Stepwise mincerian earnings equation shows that after own schooling, mean schooling in the community has the highest explanatory power pointing to externality effects.

#We will focus here on private returns which is the biggest chunk of social returns: 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

Educational Private Premiums

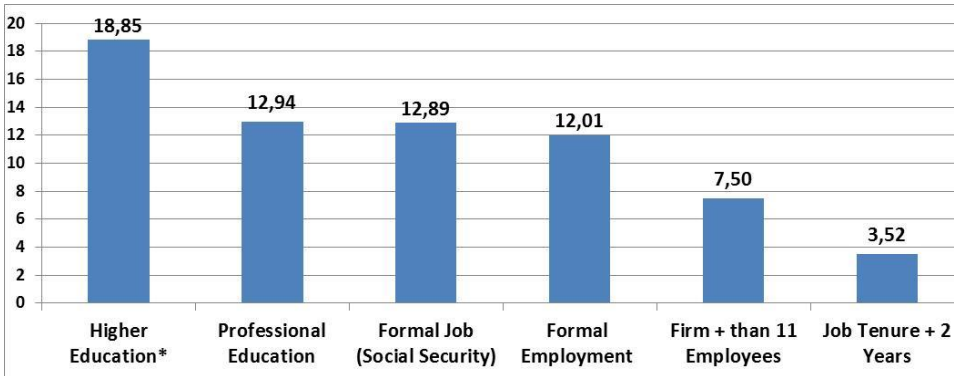


*Law n° 11.274 febr/2006 – Elementary School now has a nine-year duration, including 6 year old children, setting a deadline for the implementation in the entire system by the end of 2010.

Bivariated Evolution of Productive Attributes in Percentage Points

2003 to 2014

6 Main Metro Areas



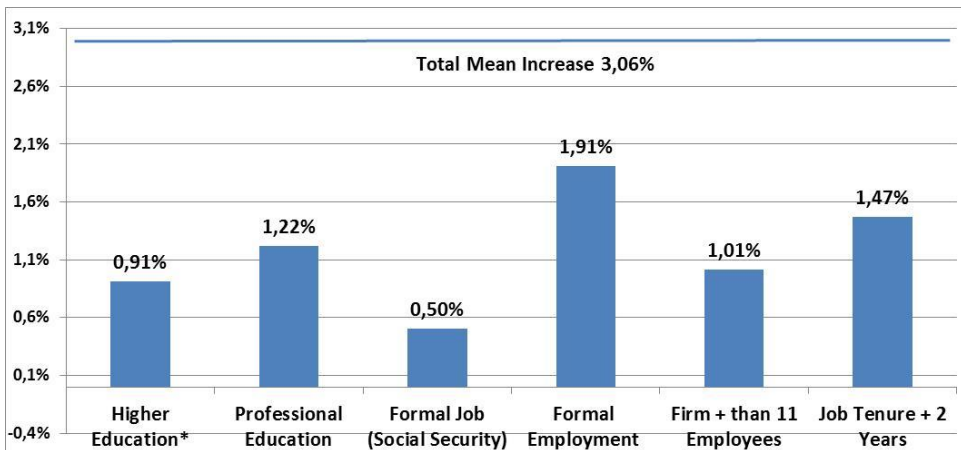
Cummulative Increase in the Occupied population share of those with given Productive Attributes = Other Equalization Force – Similar wrt Developed and Emerging countries

*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

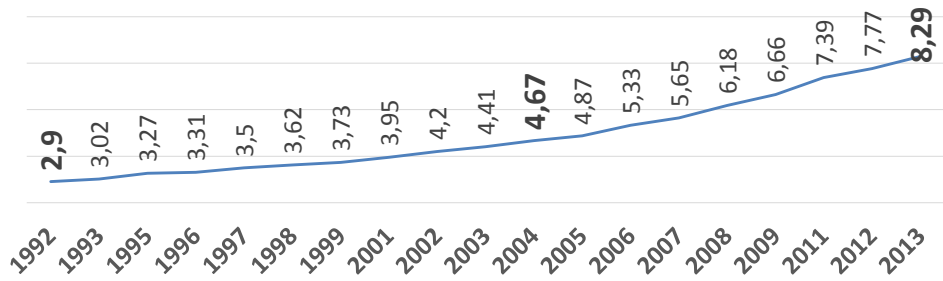
6 Main Metro Areas



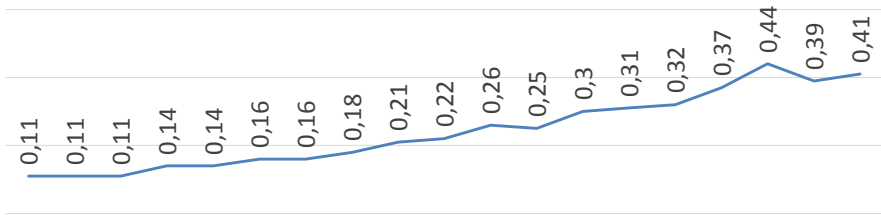
*Source: CPS/FGV from PME/IBGE microdata , data until February 2015 * at least incomplete level*

Earnings increase (per year) of those with better Productive Attributes increased less than the mean = Equalization of Returns – Opposite wrt Developed and Emerging countries (except Latin American Countries)

Share with Completed Higher Education (%)



Share with Graduates Completed (%)

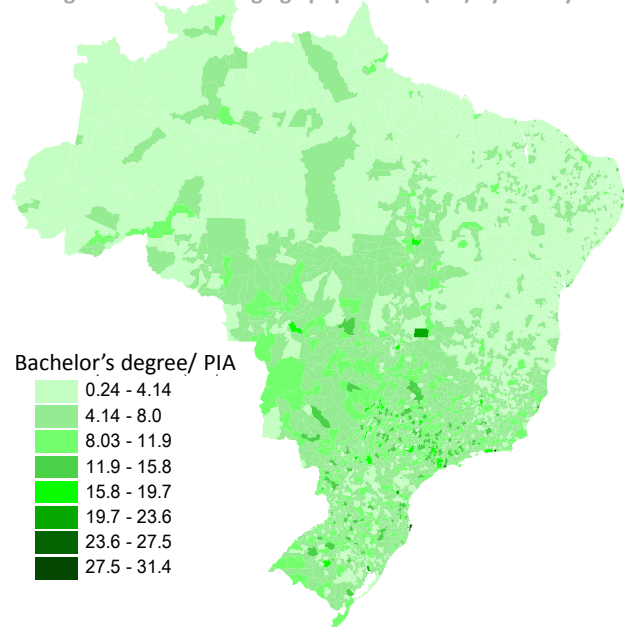


1992 1993 1995 1996 1997 1998 1999 2001 2002 2003 2004 2005 2006 2007 2008 2009 2011 2012 2013
 Source: CPS/FGV processing PNAD/IBGE microdata

Ranking 5500 Municipalities

Rank	County	BD/PIA (%)
	São Caetano	
1	do Sul	31,40
2	Niterói	29,55
3	Vitória	27,57
	Águas de São	
4	Pedro	27,14
5	Florianópolis	26,81
6	Santos	26,58
7	Curitiba	22,70
8	Porto Alegre	22,55
	Balneário	
9	Camboriú	22,26
10	Brasília	19,75
	Canápolis	
5565	(Bahia)	0,24

Higher Education Map 1 % with bachelor's degree within working age population (PIA) by county



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

Specific Careers Choices

Multivariate Ranking of University Careers by Labor Market Outcomes

Rank	University Career	Labor Market Outcomes			
		Salary	Working Hours	Occupation Rate	Social Security Coverage
1	MEDICIN	1	41	1	5
2	ODONTOLOGY	7	14	2	43
3	TRANSPORTATION	3	17	14	6
4	CIVIL ENGINEERING	5	44	3	28
45	TOURISM	36	32	43	34
46	PHYSICAL EDUCATION	42	15	47	37
47	PHILOSOPHY	47	7	48	35
48	RELIGION	48	21	46	46

25 Ocupações com maiores rendimentos declarados à Receita Federal	
Ocupação Principal do Declarante	Rendimentos mensais médios (tributável e não tributável), em reais
1 Titular de Cartório	87.427,91
2 Membro do Ministério Público (Procurador e Promotor)	40.682,27
3 Membro do Poder Judiciário e de Tribunal de Contas	39.886,97
4 Diplomata e afins	25.549,64
5 Médico	23.430,90
6 Advogado do setor público, Proc. Fazenda, Cons. Jurídico etc.	21.854,76
7 Servidor das carreiras do Banco Central, CVM e Susep	20.718,47
8 Servidor das carreiras de auditoria fiscal e de fiscalização	20.381,80
9 Piloto de aeronaves, comandante de embarc., oficiais de máq.	19.430,59
10 Atleta, desportista e afins	16.878,46
11 Ator, diretor de espetáculos	15.587,91
12 Engenheiro, arquiteto e afins	14.336,10
13 Jornalista e repórter	12.733,62
14 Servidor das carreiras do Poder Legislativo	12.725,21
15 Cenógrafo, decorador de interiores	12.689,46
16 Gerente ou superv. empresa pública e soc. de economia mista	12.204,45
17 Físico, químico, meteorólogo, geólogo, oceanógrafo e afins	12.178,68
18 Professor do ensino superior	12.126,11
19 Agrônomo e afins	11.882,82
20 Servidor das carreiras de gestão governamental, analista etc.	11.724,68
21 Servidor das carreiras do Poder Judiciário, Of. Justiça etc.	11.573,81
22 Membro do Poder Executivo	11.256,54
23 Advogado	11.036,70
24 Servidor das carreiras de ciência e tecnologia	10.948,62
25 Economista, administrador, contador, auditor e afins	10.916,64

Fonte: Grandes Números DIRPF (Receita Federal), Tabela 14 - 2015

[Simulador Retornos da Educação Superior](#)

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

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

You-Index (Higher Education)

Labour Earnings (R\$ monthly)

Estimated Model

Previous Scenario	Actual Scenario
498,45	888,00

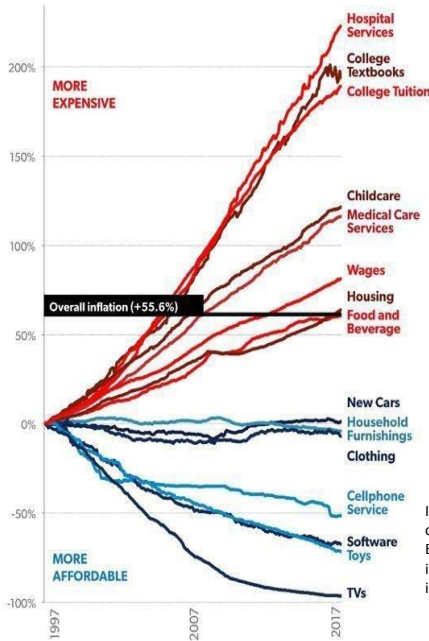
Source: CPS/FGV from microdata of Census 2010/IBGE.

Gender: Masculino	Gender:
Age: 45 a 49 anos	Age: 45 a 49 anos
Region: Urbana	Region: Urbana
Formation:	Formation:
State: UF São Paulo	State: UF São Paulo

<http://www.cps.fgv.br/cps/bd/censo/universidade.eng/index.htm>

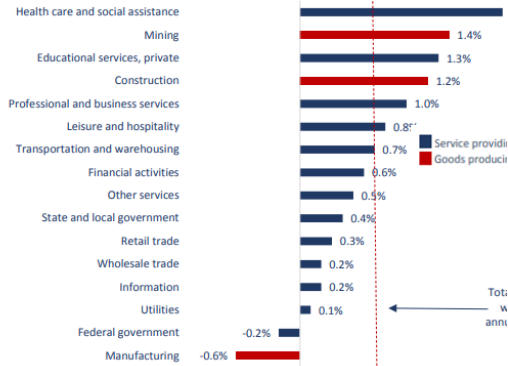
Price changes (Jan. 1997–Dec. 2017)

Selected US Consumer Goods and Services, and Wages



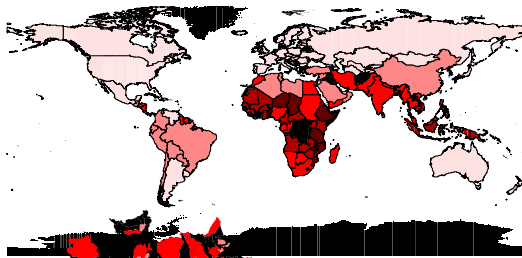
Retrospectively, the cost diseases of services -> in particular health and higher education plus a prospective rise in occupation in these areas given demand rise

Annual rate of change for wage and salary employment, projected 2016-26

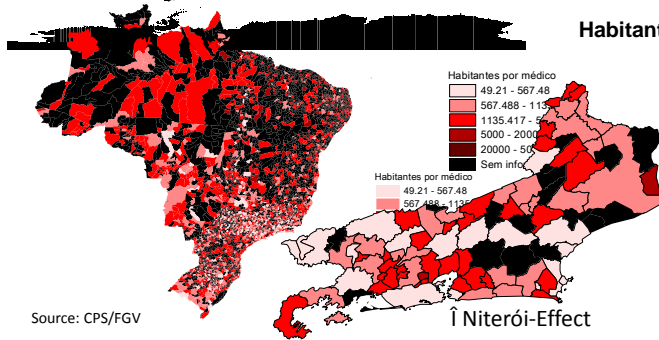


In Brazil population with a university degree grows at 4,8% per year against 0,8% of overall population. Education Expenses Income-Elasticity (among people with University degree) is 1,91 (elastic) and the odds of having this expenses is affected both by individual and family income

Specific Careers & Public Policies



Escassez de Médicos



Habitantes per Doctor zoom

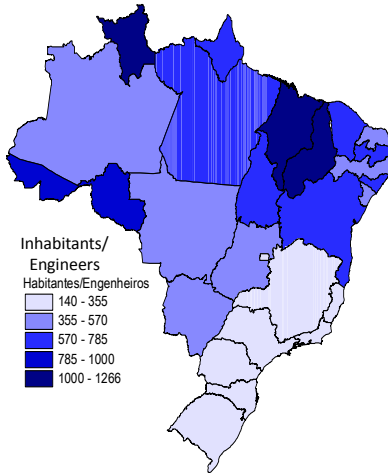
Source: CPS/FGV

Ê Niterói-Effect

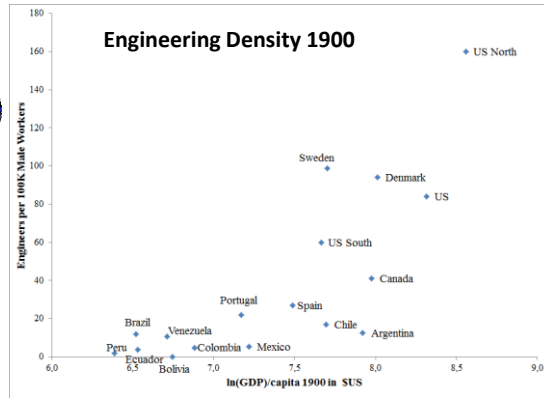
Habitantes per médico
49.21 - 567.48
567.488 - 1135.417
1135.417 - 5000
5000 - 20000
20000 - 50000
sem médicos

Number of inhabitants* by Engineers

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



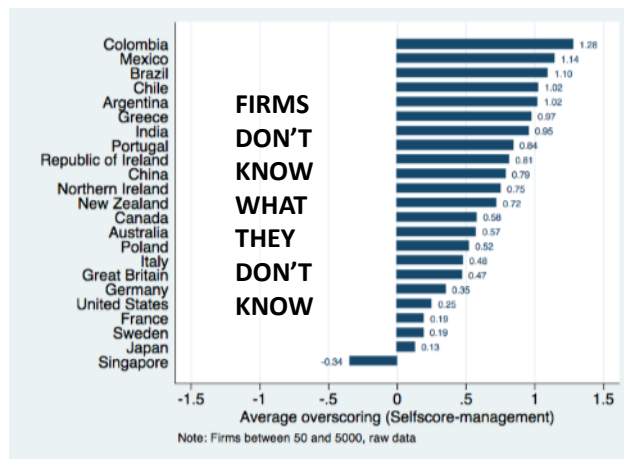
THE KEY: DIFFERENCES IN ABILITY TO ADOPT AND ADAPT NEW TECHNOLOGIES



Source: Maloney and Valencia, 2015

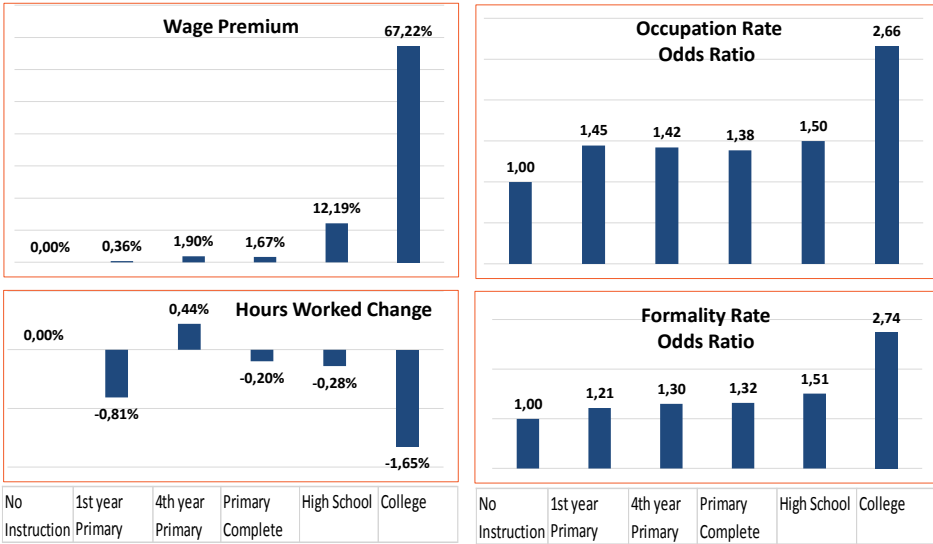
Inferences across Latin American Countries provinces suggests that a doubling the density of engineers is associated with a 60% rise in GDP (similar result across U.S. States)

Self-Perception - Reality = Gap



Source: Maloney, 2015

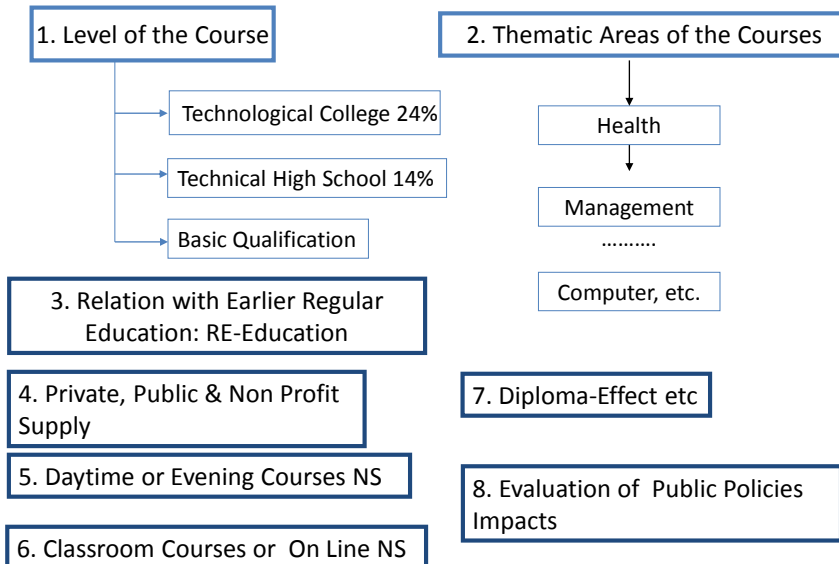
Professional Education Premium by Formal Education Requirement of the Course



Controlled by Years of schooling, year, gender, race, Age and Family size polynomial, Status in the Family, Capital/Suburbs of 6 main metro cities, Source: FGV Social from PME/IBGE microdata- 15 a 60 anos

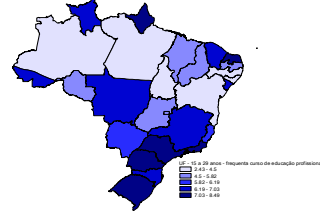
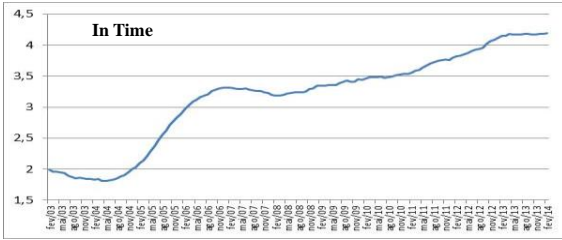


What is the Private Premium from Professional Education Attributes?



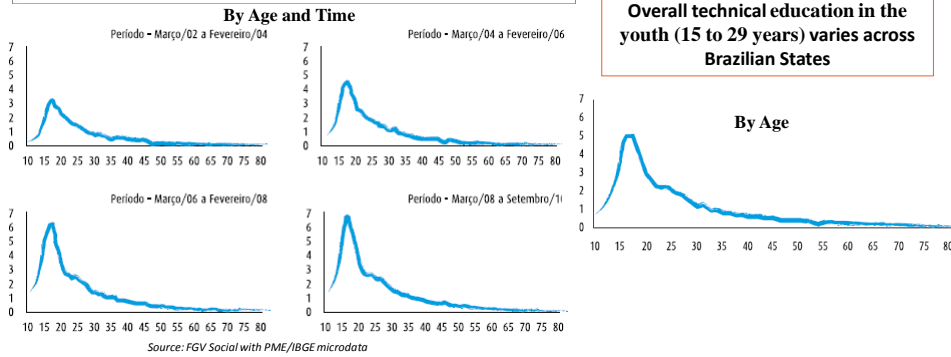
Source: Special supplement PNAD

Youth Wave in Professional Education - % Attends a Course

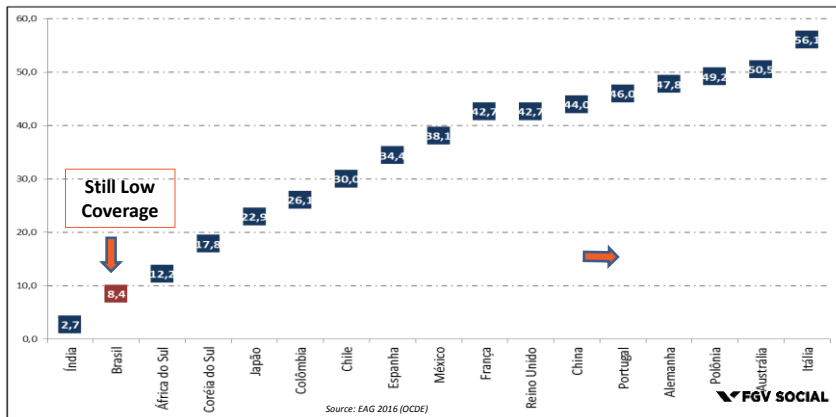


Source: FGV Social form PNAD/IBGE microdata

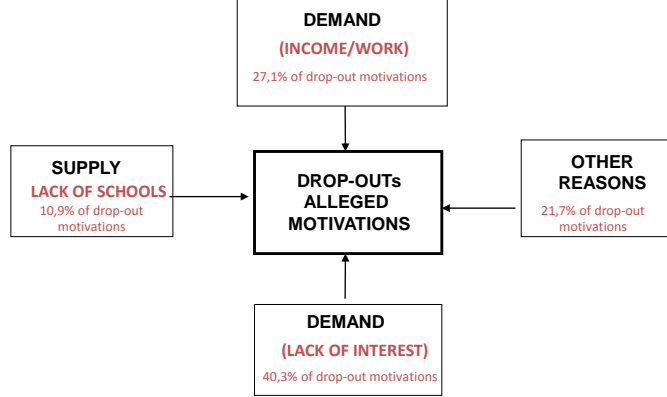
Overall technical education in the youth (15 to 29 years) varies across Brazilian States



TECHNICAL EDUCATION COVERAGE AT HIGH SCHOOL LEVEL %

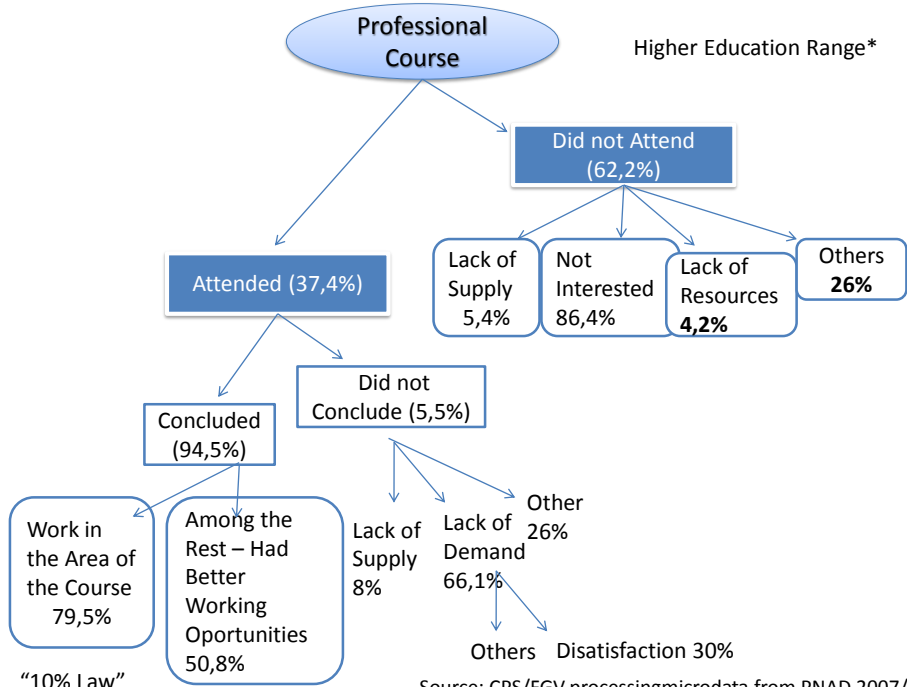


HIGH SCHOOL DROP-OUT MOTIVATION (15 to 17 years old)



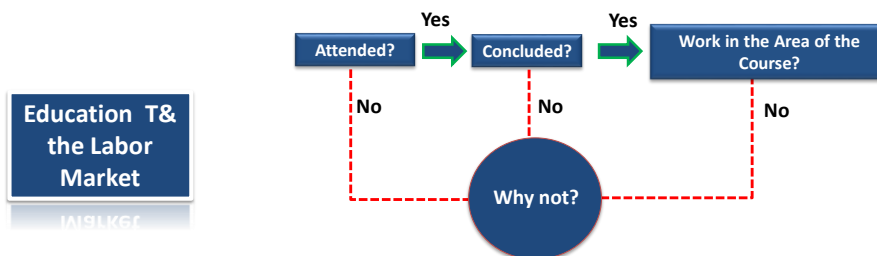
If education generates such a high private return, why do young Brazilians invest so little in it? Answer: the return to high school has fallen 54% in 18 years.

Source: FGV Social with PNAD/IBGE supplement microdata

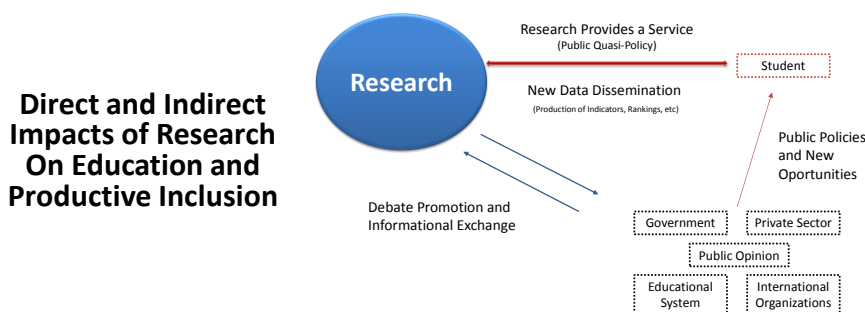


Source: CPS/FGV processing microdata from PNAD 2007/IBGE

It is Necessary to Understand Supply and Demand for Education



Estimate Models, Hear Different Actors Motivations and Communicate Results



Direct and Indirect Impacts of Research On Education and Productive Inclusion

Policy Proposals (Education and Labor)

- **Knowledge** – Provide information on the supply, demand and return of regular and professional education for potential students, companies and managers. The use of interactive internet devices, such as mobile applications (APPs) with games characteristics, in the case of young people, allows us to adapt to the context of each one and motivate them.
 - **Life Skills and Non Cognitive Human Capital** – Financial Literacy, Foreign Languages, CIT courses. To also recognize previous learning flaws. **Talent Attraction & Professional Education, Public-Private Interaction in Education**
- **Certification** – Investment in the formal recognition of talents and skills acquired during the professional exercise, the so-called on-the-job training (Apprenticeship Law).
- **Train +Workers (and -Unemployed) Demand driven courses** – Change the scope of the unemployed to the employed group. Split public costs with the worker and the company that employs it, in terms of dividing the cost of the course itself or exploiting the working time And leisure, such as making use of part of holiday period. This would make it possible to better reconcile the effective joint demand of all actors involved in the process.
- **Bolsa Jovem 2.0** – Extending the age range of Bolsa Familia beneficiaries, including their role in the choice of vocational courses and direct receipt of benefits, which are not necessarily monetary. Experiences in the states.
- **Circulation** – Flexibility in the design of courses aimed at young people, given the need for these to circulate and their consequent tendency towards greater drop-out of the courses initially chosen. Emphasize the offer of modular and short duration courses with the option of taking advantage of credits already taken in other courses, while valuing the search for higher professional levels. Allow more choice in High School (recent reform)