

A new typology of Higher Education Institutions in Brazil¹

Simon Schwartzman, Departamento de Política Científica e Tecnológica, Instituto de Geociências, Universidade de Campinas, sschwartzman@icloud.com

André Correia Bueno, Departamento de Política Científica e Tecnológica, Instituto de Geociências, Universidade de Campinas, andrecbueno17@gmail.com

Second draft, May 12, 2023

¹ Paper prepared for presentation at the 35th annual conference of the Consortium of Higher Education Researchers (CHER), Vienna, August 30 -September 1, 2023. This article is a product of the project “Research on Research and Innovation: indicators, methods and evidence of impact”, carried on by the Department of Science and Technology Policy, Institute of Geosciences, State University of Campinas, with support from São Paulo Research Foundation – FAPESP (Processo FAPESP 2021/15091-8). We are grateful to FAPESP for providing access to the consolidated data bases of the Higher Education Census from INEP and the Graduate Education data from CAPES, as well as to the Web of Science publication data for Brazilian Institutions.

A new typology of Higher Education Institutions in Brazil

Abstract

This article proposes a typology of higher education institutions in Brazil as an alternative both to the implicit hierarchy in the country's existing quality assurance system and the official classification of institutions adopted by the Ministry of Education. We argue that a new typology is needed because the current official assessment and classification system of institutions foster unwanted hierarchies and fail to provide useful information of policy making the individual decisions about career choices and opportunities.

Purpose

This article proposes a typology of higher education institutions in Brazil as an alternative both to the implicit hierarchy in the country's existing quality assurance system and the official classification of institutions adopted by the Ministry of Education. We argue that a new typology is needed because the current official assessment and classification system foster unwanted hierarchies and fails to provide useful information for policy making, institutional strategies and individual decisions about career choices and opportunities (OECD 2018).

The main assumption behind this and other proposed typologies of this kind is that higher education institutions develop and change according to multiple motivations, incentives, and opportunities which may contradict each other, and may lead to a diffuse perception of their places and roles (Olsen 2001; Lane 1985). They are driven by the multiple stimuli provided by Clark's triangle of government, market, and the academic oligarchies (Clark 1983), to which they respond according to their internal organization, degrees of autonomy and access to public and private resources. Typologies or classifications are a first step for the recognition and legitimation of the plurality of cultures, purposes, and goals of different institutions, which should therefore be seen and assessed in terms of what they do, and not according to unidimensional external standards. This has been the rationale of the Carnegie Classification in the United States, as well as the proposals for a European classification and the adoption of multi-raking assessment systems, among others (McCormick 2013; Carnegie Foundation for the Advancement of Teaching 2011; van Vught 2009; Brunner 2013; Bernasconi and Clasing 2015; Clark 1983; Van Vught and Ziegele 2012; Shulman 2001; Reimer and Jacob 2011)

Background

Between 2010 and 2020, access to Brazilian higher education increased by about 30%, from 6.6 to 9 million students, adding those enrolled in undergraduate and regulated postgraduate courses. It was not a homogeneous growth: Brazilian higher education, as in the most of the world, is strongly differentiated, with public and private universities, large private higher education companies, and other types of tertiary/vocational institutions and schools (Schwartzman, Pinheiro, and Pillay 2015; Carvalhaes, Senkevics, and Ribeiro 2022). Compared with other middle-income countries, it has three striking peculiarities: the world's large proportion of students in the private sector, with more than $\frac{3}{4}$ of total enrolments; an extensive graduate sector with masters and doctoral programs, mostly in public institutions; and a large proportion of students in distant education programs, most in the private sector.

Brazil has a complex quality assurance system based on national exams and indicators that takes the classic research university model as the gold standard, publishing uniform rankings that reinforces the hierarchy of prestige in a highly differentiated system. At the same time, for regulation purposes, institutions are classified along two dimensions, their legal (public, private) and academic status (universities, university centres, schools, and technological institutions). Public institutions are free, and access to them is regulated by a National Exam and quotas. Private institutions are paid, can be either philanthropic or for profit. Undergraduate courses lead to bachelor, teaching or vocational degrees (ISCED 5 and 6) (there are no undergraduate schools in the English or American sense) and are regulated by the Ministry of Education. Master and doctoral programs (ISCED 7 and 8) are regulated by Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), a special agency also within the Ministry of Education. In addition, there is a large sector of unregulated post-graduation, providing MBA and other ISCED 7 specialization course programs. Table 1 gives a broad picture in terms of enrolment.²

² The total population for ages 18-24 was 23 million, which gives a gross enrolment rate at UNESCO's ISCED 5/7 of 27%.

Table 1- Brazil, enrolments in higher education, 2021

| Brazil, enrolments in higher education, 2021 | | | | |
|--|------------------|----------------|---------------|------------------|
| | Federal | State | Municipal | Private |
| Undergraduate (*) | | | | |
| Universities | 1,088,811 | 573,254 | 24,099 | 2,983,024 |
| University Centers | 7,966 | 4,099 | 8,211 | 2,799,068 |
| Schools | 6,444 | 81,962 | 11,739 | 1,173,944 |
| Technological institutes | 223,228 | | | |
| Total | 1,326,449 | 659,315 | 48,699 | 6,956,036 |
| Graduate (**) | | | | |
| Master | 150,155 | 57,814 | 1,583 | 42,041 |
| Doctoral | 91,739 | 42,783 | 312 | 19,005 |
| Total | 241,894 | 100,597 | 1,895 | 61,046 |
| Specialization (***) | | | | 1,363,675 |
| Total | 1,568,343 | 759,912 | 50,594 | 8,380,757 |
| (*) Source: INEP, Censo da Educação Superior, 2021 | | | | |
| (**) Source: CAPES, Plataforma Sucupira | | | | |
| (***) Source: IBGE, PNAD Contínua, 1 trimestre, 2021 | | | | |

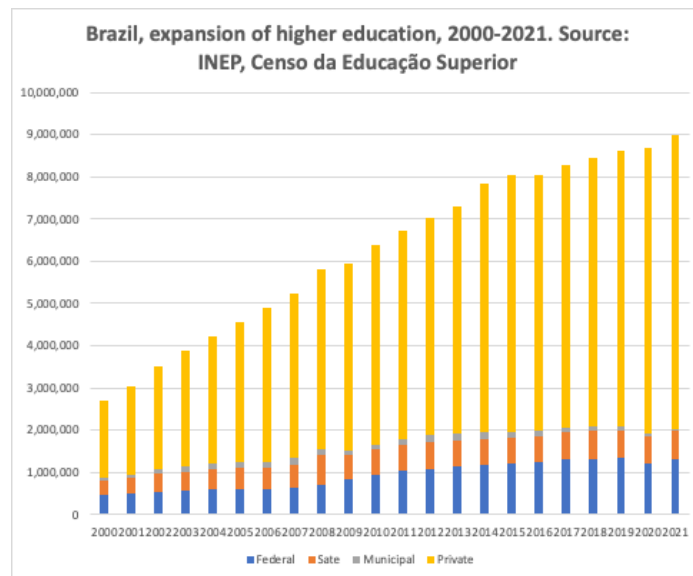
Traditionally, higher education in Brazil was mostly a system for the administration of access to the learned professions in medical, law and engineering schools (Coelho 1999). Starting in the 1930s, but with more intensity since the 1970s, the Brazilian government invested in the organization of a system of selective public universities with full-time staff, incentives for graduate education and research, which also became the standard bearers for education in the traditional and new liberal professions. One by-product of this drive was the growth of an academic profession composed mostly by university teachers, unionized and endowed with civil servant status and job stability, part of which were also qualified researchers (Schwartzman and Balbachevsky 2009; Schwartzman and Balbachevsky 1993). This resulted in two main public university networks, the federal system, with about 70 institutions, and the state system of São Paulo, with three major universities, as well as other state institutions in other parts of the country.

This was and is an expensive, selective system in a relatively poor country, which could not keep pace with the growing demand for higher education led by urbanization and the expansion of basic education. At first, government responded to this demand by tolerating it, while trying to make sure that it would follow the standards set by the public institutions. During the Fernando Henrique Cardoso presidency, 1995-2002, the Ministry of Education established a national exam for university graduates (Schwartzman 2010)

implemented the yearly national census of higher education, and a system of assessment and support for masters and doctoral programs, also in public universities. At the same time, private higher education was allowed to respond to market demand either as philanthropic or as for-profit institutions.

Starting with the Luiz Ignacio Lula da Silva government, since 2003, the emphasis switched from quality control to access, through a series of degrees and new legislation, including the programs *PROUNI* (“University for All”), in 2004, a creating a number of tuition free places in private institutions in exchange of tax exemption (Costa and Ferreira 2017); *REUNI*, in 2007, providing additional resources for federal universities do open up evening courses and expand enrolment (Paula and Almeida 2020); new legislation in 2009 upgrading an existing network of about 40 federal technical schools to university status (Nascimento, Cavalcanti, and Ostermann 2020); the creation, in 2010, of a national fund to sustaining an expanding student loans program for the private sector, with no limitations and fully guaranteed by the federal government (Souza 2022); the 2012 “quota law”, requiring that 50% of new entrants in federal universities should come from public schools or from black or indigenous races (French 2021); and the creation of 14 new federal universities. With these policies, enrolment in federal universities increased from about 500 thousand to 1.2 million between 2000 and 2015, but most of the expansion occurred in the private sector, from 1.8 to 6 million (Figure 1) (Schwartzman 2022c). To sustain these policies, public expenditures by the Federal Government for higher education went from to 10 to 23 billion dollars between 2008 to 2017 in real terms, while the accumulated debt of the student loan run out of control. (Secretaria do Tesouro Nacional 2018).

Figure 1- Brazil, expansion of higher education, 2000-2021



The emphasis on access was not enough to compensate for the inequalities that exist in Brazilian society and is reproduced throughout the education ladder (Balbachevsky, Sampaio, and Andrade 2019). Data on household income of students in higher education shows that those in private institutions are, on average, richer than those in the public sector, and both significant richer than the country’s average household (Table 2) ³.

Table 2 – Brazil, household income per capita, 2021

| Household income per capita, 2021 | | |
|--|------------|--------------------|
| | Mean | Standard Deviation |
| H Ed students in private institutions | \$2,093.31 | \$2,783.75 |
| H Ed students in public institutions | \$1,715.52 | \$1,935.30 |
| General population | \$1,358.20 | \$2,180.10 |
| Source: Tabulated from IBGE, PNAD Contínua, 2021 | | |

This data seems to contradict the usual notion that public institutions are more selective than private ones. There are two explanations for that. The first is that private higher education is much more prevalent in the country’s richest regions (83% in the State of São Paulo, for instance) than in the poorest (59% in the Northeast). The other explanation is that the expansion of federal universities, with the creation of evening courses. and the affirmative action programs, made it easier for poorer students to enter public institutions.

³ For a family of 4, a per capita income of 2,000 reais at the time meant about 1,600 US dollars in September of 2021.

The 2012 quotas legislation required that, by 2016, 50% of the places in federal universities should be reserved for students coming from public schools and non-white. Still, by 2021, only 30% of the enrolled students were admitted as quotas beneficiaries, and still had to achieve high grades in the National Exam or Secondary Schools (ENEM) to enter to the more prestigious universities and careers like medicine, engineering, or law.

During this period, there was an attempt to replace external assessments with self-evaluations. However, this attempt ultimately failed, resulting in the continuation of a system based on tests and quantitative indicators known as SINAES⁴, run by the Ministry of Education. In practice, this system only affected small institutions in the private sector (Ribeiro and Verhine 2012; Verhine 2015). Governance in public institutions remained under the control of rectors elected by teachers, students, and administrators. In contrast, the private sector benefited from tax exemptions and generous student loans, which favoured the creation of large conglomerates. These conglomerates attracted private investors, were listed on stock exchanges, and managed for maximum profit.

In terms of the Clark triangle, therefore, higher education in Brazil can be described by a large market for the private sector, strong professional and academic oligarchies controlling the internal life of public institutions, working in partnership with a large public bureaucracy providing resources and regulations. This arrangement was shattered first by economic depression, starting around 2004, and was aggravated by the hostility of the right-wing government of Jair Bolsonaro against the education sector between 2019 and 2022. With the return of Lula to the presidency in 2023, the good relations between government and the academic oligarchies were restored, without, however, the abundance of resources of the past.

Methodology and data

The first task for this project was to create an integrated data base with information about the country's higher education institutions⁵. The main source is the yearly National Census for Higher Education implemented by the National Institute for Education

⁴ SINAES – Sistema Nacional de Avaliação da Educação Superior

⁵ Microdata available on request, please get in touch with the authors.

Research (INEP), which, unfortunately, does not include information on graduate education. CAPES⁶ collects and publishes data on masters and doctoral programs but adopting different criteria to identify the institutions. For this study, we combined the two data sets for the period 2010-2020 in one integrated file, and added other information, as needed, on student flows, student socioeconomic status and scientific output. The creation of the integrated data file required intensive visual inspection, cleaning, and recoding work, given the inconsistencies between the data sets and among years. Unfortunately, Brazil lacks information of the labour market for higher education graduates at institutional level, which places a significant limitation in our analysis.

There are two ways of developing a typology, either by statistical approaches that allow entities to be grouped according to their similarities or differences, or by intentionally identifying the most significant dimensions. For this analysis, we decided to classify the institutions by combining their legal status (public, private); their size (larger than 30 thousand students or less); the relative proportion of students in graduate education; and the proportion of students in vocational education. In addition, for the private sector, we created a set of non-profit, community or religious-based institutions, and used their academic status as another differentiation criteria. This resulted in 9 types of institutions, a classification we used at first for analysing the data from 2018 (Schwartzman, Silva, and Coelho 2021), and, in this paper, for the 2010-2020 period.

The classification of higher education institutions

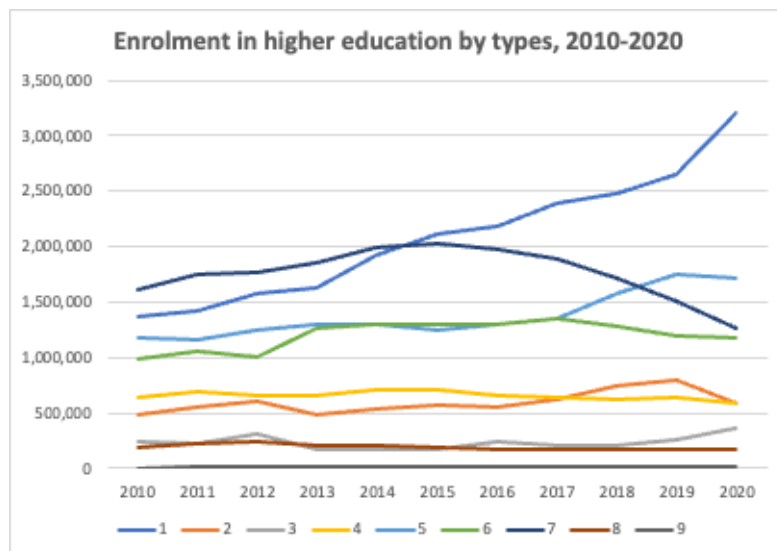
Table 3 lists the 9 types that resulted from this analysis, their definitions, and the number of institutions and students they enrolled in 2020, and Figure 2 shows the changes in the system between 2010 and 2020. The most notable feature is the large number of students enrolled in a few large private institutions of type I, and how they grew in those years, mostly at the expense of the smaller institutions of type VII.

⁶ CAPES – Coordenação de Aperfeiçoamento de Pessoal de Nível Superior

Table 3- A typology of higher education institutions for Brazil

| A typology of higher education institutions for Brazil | | | |
|---|--|-------------------------------|--|
| Type | Definition | Number of Institutions (2020) | number of graduate and undergraduate students (2020) |
| 1. Large private institutions | Private institutions with 30 thousand students or more | 22 | 3,203,804 |
| 2. Large, comprehensive public institutions with significant graduate education | Public institutions with 30 thousand students of more, 15% of which in graduate education programs | 13 | 587,480 |
| 3. Specialized or small public institutions with significant graduate education | public institutions with less than 30 thousand students, 15% of which in graduate education programs | 23 | 356,331 |
| 4. Selected community, religious and philanthropic private institutions | A selected list of private institutions not belong to other types | 88 | 594,073 |
| 5. Private universities and university centers | Private institutions with university or university centre status not belonging to types 1 or 4 | 302 | 1,707,020 |
| 6. Public, teaching institutions | Public institutions not belonging to types 2 or 3 | 153 | 1,174,833 |
| 7. Private schools or faculties | Private schools not belonging to other types | 1575 | 1,261,001 |
| 8. Vocational institutions | Institutions with 50% or more of the students in vocational courses | 275 | 167,557 |
| 9. Research and graduate education institutions | Institutions with 50% or more of the students in graduate programs | 74 | 11,894 |
| Total | | 2525 | 9,063,993 |

Figure 2 – Enrolment in higher education by types, 2010-2020



Type I – Large private institutions

Between 2010 and 2020, 33 private institutions had more than 30 thousand students in any given year. They are for-profit institutions, several of which are publicly traded, owned by companies that have gone through an intense process of mergers and acquisitions⁷. Among them, in 2020, they enrolled one third of the higher education

⁷ The main companies are Anima, Cogna Educação, Ser Educacional, and YDUQs.

students in the country (Table 4). Most of their students are working adults that can only study in evening or distance courses⁸. With the reduction of public support for student loans after 2014, they increased the number of students in distance education, while keeping their teaching staff small, and the tuition prices low. More than 60% the students are in the social professions (administration, law, economics) or education. Most of the teachers work part-time, and only a third holds a doctoral degree, which is nominally required for teaching in higher education.

Data on attrition rates are taken from a cohort analysis performed by the National Institute for Educational Studies – INEP – in which students that enter undergraduate each year, starting in 2010, are followed until they graduate or abandon their studies (INEP 2018)⁹. On average, of the students who entered higher education in 2010, one third had graduated in 2015, half have dropped out, and the remaining were still enrolled. Required completion time varies depending on the careers, but the typical duration is four years. The five-year attrition rate – the percentage that have dropped out - is highest for students in institutions type I and VIII (vocational institutions), and lowest, but still very high at 40%, for the elite universities of type II.

⁸ Data from PNAD Contínua for 2021 confirmed that 90% of those at age 30 enrolled in private higher education were in the labor force, and 81% were actually employed.

⁹ <https://www.gov.br/inep/pt-br/aceso-a-informacao/dados-abertos/indicadores-educacionais/indicadores-de-fluxo-da-educacao-superior>

Table 4 – Type I Institutions – main characteristics of students and teachers

| Type I institutions - Main characteristics of students and teachers | | | | | | |
|---|-----------|----------------------|----------------------------------|--|----------|-----------------------------|
| | enrolment | students per teacher | % students in distance education | % students in social professions and education | Mean age | Accumulated attrition rates |
| 2010 | 1,356,224 | 52.3 | 46.9% | 66.1% | 31.2 | |
| 2011 | 1,410,165 | 49.1 | 45.3% | 63.9% | 30.7 | 13.5 |
| 2012 | 1,567,121 | 58.4 | 50.0% | 64.3% | 31.0 | 28.6 |
| 2013 | 1,617,986 | 61.2 | 50.3% | 63.2% | 30.9 | 39.6 |
| 2014 | 1,923,493 | 68.0 | 51.6% | 62.6% | 30.8 | 48.9 |
| 2015 | 2,108,407 | 66.9 | 50.7% | 61.7% | 30.9 | 54.1 |
| 2016 | 2,171,825 | 73.9 | 54.3% | 62.9% | 31.1 | 58.8 |
| 2017 | 2,390,522 | 83.9 | 57.9% | 63.5% | 31.4 | 60.4 |
| 2018 | 2,476,504 | 95.7 | 63.8% | 63.3% | 32.1 | 60.6 |
| 2019 | 2,652,532 | 110.2 | 69.7% | 62.3% | 32.5 | 60.3 |
| 2020 | 3,197,925 | 153.4 | 76.8% | 60.1% | 32.6 | 63.2 |

Type II – Large, comprehensive, public universities with significant graduate education.

There are 18 public universities that, in several years, entered this classification, with more than 30 thousand students enrolled, among which 15% or more in postgraduate courses. These are comprehensive institutions that come closest to the ideal model of research university prescribed in Brazilian legislation. They combine undergraduate and graduate education, develop research, cover all major fields of knowledge, and serve a diverse public. They include the three public universities in São Paulo, USP, UNESP and Unicamp, and 15 federal universities. In 2019, they served nearly 800,000 students, less than 10% of the country's total enrolment; in 2020, because of the pandemic, this number had reduced to less than 600 thousand.

In contrast with the institutions of type I, the students in this group are younger, study on campus, and enjoy a very favourable student / teacher rate of about 15. We lack information on their socioeconomic status, but we can presume that many of them do not need to work and came from private schools and better educated families. In 2020, these institutions enrolled 48% of the doctoral students in the country, and 30% of those in regulated MA programs (Table 5). Most of the teachers have doctoral degrees, have full-time contracts and stable civil servant status.

Table 5 – Type II institutions – main characteristics of students and teachers

| Type II institutions - main characteristics of students and teachers | | | | | | | | | | | | |
|--|------------------|------------------------|------------------|---------------------|-----------------------|--------------------------|----------------|----------------|-------------------------|----------------------------|--|--|
| year | Students | | | | | | | teachers | | | | |
| | Total enrollment | % in doctoral programs | % in MA programs | student per teacher | in distance education | mean age (undergraduate) | attrition rate | Total teachers | % with doctoral degrees | % with full-time contracts | | |
| 2010 | 476,152 | 7.2% | 10.7% | 14.6 | 5.7% | 27.6 | | 32,599 | 76.1% | 71.5% | | |
| 2011 | 554,927 | 7.3% | 10.7% | 14.5 | 5.4% | 27.9 | 7.5 | 38,197 | 76.5% | 72.5% | | |
| 2012 | 613,968 | 7.4% | 10.6% | 14.7 | 5.6% | 28.4 | 19.2 | 41,660 | 78.3% | 73.5% | | |
| 2013 | 491,788 | 10.7% | 12.2% | 14.6 | 3.6% | 28.3 | 29.4 | 33,628 | 83.0% | 80.2% | | |
| 2014 | 528,602 | 10.9% | 12.2% | 14.0 | 3.8% | 28.5 | 38.5 | 37,839 | 82.2% | 80.1% | | |
| 2015 | 569,238 | 11.0% | 12.1% | 13.9 | 2.9% | 28.4 | 43.2 | 41,022 | 82.3% | 78.1% | | |
| 2016 | 550,271 | 11.3% | 12.6% | 14.5 | 2.2% | 28.4 | 47.2 | 37,927 | 84.9% | 81.5% | | |
| 2017 | 626,997 | 10.7% | 12.2% | 14.5 | 4.2% | 28.2 | 49.8 | 43,318 | 84.3% | 81.5% | | |
| 2018 | 740,443 | 10.8% | 12.6% | 14.8 | 4.2% | 28.3 | 53.2 | 50,174 | 84.7% | 80.3% | | |
| 2019 | 796,265 | 10.6% | 12.5% | 15.1 | 5.0% | 28.3 | 54.6 | 52,805 | 85.4% | 80.3% | | |
| 2020 | 587,480 | 12.0% | 13.0% | 15.1 | 3.6% | 28.4 | 55.0 | 38,978 | 89.9% | 81.9% | | |

These are also the main scientific research institutions in the country. One indicator is the number of scientific articles published in journals indexed in the Web of Science. Between 2010 and 2020, they published 44% of all articles by Brazilian authors in this set, and these articles were, on average, more cited than from those of other groups of institutions, except for the specialized ones in type VIII (Table 6). Compared with the global baseline, the citation rate is relatively low, an indication that Brazilian science, even at its best, does not meet the international average.

Table 6 – Scientific publications by Brazilian authors in Web of Science, 2010-2020

| Scientific publications by Brazilian authors in Web of Science, 2010-2020 | | | | |
|---|--------------------------|-------------|--------------------------|----------|
| | Web of Science Documents | Times Cited | citation per publication | % Brazil |
| 1. Large private institutions | 11,132 | 141,579 | 12.7 | 1.3% |
| 2. Large public institutions with significant graduate education | 389,175 | 6,479,619 | 16.6 | 44.4% |
| 3. Specialized or small public institutions with significant graduate education | 149,178 | 2,275,902 | 15.3 | 17.0% |
| 4. Selected community, religious and philanthropic private institutions | 33,319 | 495,724 | 14.9 | 3.8% |
| 5. Private universities and university centers | 20,637 | 309,199 | 15.0 | 2.4% |
| 6. public, teaching institutions | 175,513 | 2,275,096 | 13.0 | 20.0% |
| 7. Private schools or faculties | 6,011 | 121,846 | 20.3 | 0.7% |
| 8. Vocational institutions | 2,729 | 23,940 | 8.8 | 0.3% |
| 9. Research and graduate education institutions | 62,238 | 1,134,973 | 18.2 | 7.1% |
| other institutions | 27389 | 520664 | 19.0 | 3.1% |
| Total Brazil | 877,321 | 13,778,542 | 15.7 | 100.0% |
| Global baseline | 36,405,847 | 758,863,525 | 20.8 | |

Type III – Specialized or small public institutions

There are 38 institutions that met the criteria for this type between 2010 and 2020 – public institutions with less than 30 thousand students, with at least 15% in graduate education. They are like those of type II in terms of their students and teachers (Table 7). The main differences, besides the size, is that several of these in type III started as specialized institutions in specific areas and regions, and then added other fields of study to gain university status. Examples are the Federal University of São Paulo,

created in 1933 as a medical school, that became a federal university in 2005; the University of Viçosa, created in 1922 as an Agricultural School that became a federal university in 1969; and the Federal University of Itajubá, founded as early as 1913, as an Electric and Mechanical Institute, became a federal school of Engineering in 1968, and a University in 2002. Others started from the beginning as smaller, local institutions. Another difference is that they are more likely to be located outside the country's national or state capitals (Table 8). Finally, they have, proportionally, more graduate students in masters', and less in doctoral programs (

Table 9). In broad terms, these institutions could be described as a part of a drive to create a set of regional universities, in contrast to those in group 2, which tend to be nationally oriented, and with those in group 6, that are mostly teaching institutions. However, it is not clear they do have a regional orientation in terms of their research and teaching programs, and, in any case, they include just a minor part of the country's higher education enrolment.¹⁰

Table 7 - Type III Institutions – main characteristics of students and teachers

| Type III institutions - main characteristics of students and teachers | | | | | | | | | | |
|---|------------------|------------------------|------------------|---------------------|-----------------------|----------|-----------------------------|----------------|-------------------------|-------|
| year | Students | | | | | | teachers | | | |
| | Total enrollment | % in doctoral programs | % in MA programs | student per teacher | in distance education | mean age | accumulated attrition rates | Total teachers | % with doctoral degrees | |
| 2010 | 238148 | 5.5% | 9.8% | 12.7 | 6.3% | 26.0 | | 18684 | 69.1% | 76.0% |
| 2011 | 224790 | 5.6% | 9.8% | 12.7 | 7.8% | 26.5 | 8.3 | 17736 | 68.3% | 73.6% |
| 2012 | 318326 | 5.1% | 9.4% | 12.9 | 8.3% | 27.3 | 21.4 | 24682 | 67.6% | 73.2% |
| 2013 | 172432 | 9.8% | 12.9% | 11.8 | 6.7% | 26.8 | 32.9 | 14654 | 73.1% | 66.3% |
| 2014 | 176544 | 10.1% | 12.9% | 11.9 | 6.8% | 27.0 | 39.2 | 14774 | 78.0% | 72.8% |
| 2015 | 176813 | 10.1% | 13.6% | 11.7 | 5.1% | 27.1 | 44.4 | 15084 | 78.0% | 76.4% |
| 2016 | 242478 | 9.2% | 12.8% | 11.9 | 5.1% | 27.4 | 46.8 | 20399 | 79.5% | 79.9% |
| 2017 | 203666 | 10.1% | 13.1% | 12.4 | 6.6% | 27.3 | 47.1 | 16393 | 83.0% | 80.7% |
| 2018 | 209024 | 7.8% | 12.2% | 11.9 | 6.7% | 27.9 | 50.0 | 17588 | 80.0% | 76.4% |
| 2019 | 259482 | 7.5% | 11.8% | 12.3 | 5.8% | 27.8 | 51.9 | 21177 | 81.8% | 75.8% |
| 2020 | 356331 | 8.9% | 13.6% | 10.6 | 7.3% | 28.3 | 52.6 | 33613 | 81.0% | 78.6% |

Table 8 – Students by type of institution and location, 2020

| Students by type of institution and location, 2020 | | | | | | | | capital cities |
|---|-----------|-------|-----------|-----------|-------|------------|-------|----------------|
| | Total | North | Northeast | Southeast | South | CenterWest | | |
| 1. Large private institutions | 3,203,804 | 0.0% | 2.3% | 48.5% | 42.4% | 6.8% | 59.6% | |
| 2. Large public institutions with significant graduate education | 587,480 | 0.0% | 18.5% | 53.1% | 20.4% | 8.1% | 94.7% | |
| 3. Specialized or small public institutions with significant graduate education | 356,331 | 9.2% | 15.9% | 27.0% | 35.6% | 12.4% | 46.4% | |
| 4. Selected community, religious and philanthropic private institutions | 594,073 | 1.9% | 10.3% | 36.8% | 45.1% | 5.9% | 34.6% | |
| 5. Private universities and university centers | 1,707,020 | 7.0% | 22.5% | 48.5% | 13.6% | 8.4% | 52.3% | |
| 6. Other public institutions | 1,174,833 | 9.9% | 35.4% | 34.7% | 11.0% | 8.9% | 49.7% | |
| 7. Private schools or faculties | 1,261,001 | 9.3% | 28.7% | 40.3% | 10.0% | 11.6% | 35.5% | |
| 8. Vocational institutions | 167,557 | 0.6% | 9.8% | 67.8% | 13.5% | 7.6% | 48.3% | |
| 9. Research and graduate education institutions | 11,894 | 0.0% | 0.0% | 25.2% | 0.0% | 0.0% | 11.1% | |
| Total | 9,063,993 | 4.4% | 16.3% | 44.6% | 26.3% | 8.3% | 53.4% | |

¹⁰ The total number of students fluctuate along the years because of the institutions that enter or leave the group each year because of fluctuations in the number of students and the proportion in graduate programs.

Table 9 Proportion of doctoral and MA students by type of institution

| Proportion of Doctoral and MA students, by type, 2020 | | | |
|---|-------------------|------------|----------|
| | Graduate Students | % doctoral | % Master |
| 1. Large private institutions | 5,879 | 35.0% | 65.0% |
| 2. Large public institutions with significant graduate education | 146,579 | 48.1% | 51.9% |
| 3. Specialized or small public institutions with significant graduate education | 80,143 | 39.7% | 60.3% |
| 4. Selected community, religious and philanthropic private institutions | 32,087 | 35.5% | 64.5% |
| 5. Private universities and university centers | 16,395 | 21.6% | 78.4% |
| 6. Other public institutions | 84,079 | 24.4% | 75.6% |
| 7. Private schools or faculties | 7,196 | 17.8% | 82.2% |
| 8. Vocational institutions | 800 | 14.8% | 85.3% |
| 9. Research and graduate education institutions | 10,459 | 32.3% | 67.7% |
| Total | 383,617 | 37.7% | 62.3% |

Type IV – Selected community, religious and philanthropic private institutions

Besides the large distance higher education companies of type I, the private sector has other institutions with distinct characteristics, that we have tried to identify with types IV, V and VII. The growth of the private sector took place at first through community, religious and philanthropic institutions that wished to function autonomously from the State, but also to respond to a growing demand for access that the public system did not absorb (Durham and Sampaio 1995; Levy 1986; Sampaio 2000). Until 1996, the legislation did not allow for the existence of for-profit education institutions but, in practice, many private institutions made their profits by circumventing the legislation. The decision to authorize intended to clearly distinguish between effectively philanthropic and business institutions, with different rules on tax exemption or obligations. This formal distinction remains, but in practice, incentives such as the Student Loan Program and PROUNI, which exempt for-profit institutions from taxes in exchange for vacancies, ended up by making this difference less clear.

For this type, we sought to identify educational institutions that somehow maintain their philanthropic, community or religious objectives, either for profit or not. The list, of about 100 institutions, was produced by identifying institutions that are affiliated to the Brazilian Association of Community Institutions of Higher Education¹¹, Catholic universities, institutions of other religious denominations, and others. In terms

¹¹ <https://site.abruc.org.br/>

of enrolment, this group represents less than 10% of Brazilian higher education and has been decreasing in size over the years. Part of this decline is explained by the fact that the size of some of these institutions have been fluctuating, approaching, or remaining at the threshold of large private for-profit institutions (type I) such as Universidade Presbiteriana Mackenzie, Centro Universitário Internacional, and Centro Universitário de Maringá.

Table 10 – Type IV institutions – main characteristics of students and teachers

| Type IV institutions - Main characteristics of students and teachers | | | | | | | | | |
|--|-----------|---------------------------------------|-------------------------|--|---|----------|--|---|------------------------------------|
| | enrolment | % students in graduate programs | students per teacher | % students in distance education | % students in social professions and teaching | Mean age | Teachers with doctor's degree | Teachers with full- time contracts | Accumulate d attrition rates |
| 2010 | 648,926 | 4.4% | 22.9 | 8.7% | 21.3% | 27.6 | 25.2% | 32.2% | |
| 2011 | 699,583 | 4.3% | 23.3 | 12.1% | 22.6% | 27.8 | 25.8% | 32.2% | 12.9 |
| 2012 | 653,704 | 4.9% | 20.5 | 8.2% | 18.6% | 27.6 | 27.3% | 32.9% | 27.1 |
| 2013 | 664,115 | 3.7% | 26.7 | 8.6% | 18.8% | 27.8 | 27.9% | 32.9% | 37.1 |
| 2014 | 705,988 | 3.8% | 26.5 | 8.3% | 19.3% | 27.7 | 29.2% | 32.8% | 45.1 |
| 2015 | 718,174 | 4.0% | 25.3 | 9.1% | 19.1% | 27.3 | 30.9% | 33.0% | 50.9 |
| 2016 | 662,315 | 4.4% | 22.9 | 7.4% | 16.2% | 27.2 | 32.9% | 32.9% | 53.9 |
| 2017 | 637,338 | 4.6% | 21.7 | 8.1% | 15.1% | 27.3 | 34.8% | 32.8% | 56.0 |
| 2018 | 619,713 | 4.8% | 20.9 | 11.8% | 15.6% | 27.7 | 37.1% | 32.3% | 57.1 |
| 2019 | 644,241 | 4.8% | 20.9 | 17.0% | 18.3% | 28.1 | 39.1% | 33.1% | 58.0 |
| 2020 | 594,073 | 5.4% | 18.5 | 16.9% | 15.2% | 28.1 | 40.9% | 32.7% | 58.0 |

To some extent, these institutions are the counterpart, in the private sector, of those of type III in the public sector, as shown by the indicators on Table 10. Smaller institutions, trying to maintain a niche of better-quality education, but struggling with limitations of resources. They have resisted the onslaught of distance education, offer a broader menu of careers, maintain a reasonable ratio of students per teacher, and retain a significant team of teachers with doctoral degrees and full-time contracts. They seem also to be more locally oriented, with the higher proportion of students in the country's southern region, which has a tradition of local autonomy. They cannot compete with the large companies of type I in terms of tuition costs, nor with the public sector for the lack of subsidies. In recent years, however, many public institutions have started to suffer with budget cuts, the rigidity of civil service rules and internal political strife, creating opportunities for a small but growing segment of elite private institutions to grow and compete for qualified students that can pay, in fields like economics, public administration, engineering, medical education, and others.

Type V - Private universities and centres.

This category includes private universities and university centres that do not fit either

type I, large distance teaching companies, or type IV, community or differentiated institutions.

Brazilian legislation distinguishes universities, defined as comprehensive institutions that operate in all areas of knowledge, do research, and teach at undergraduate and graduate levels, from colleges, which are generally limited to providing undergraduate degrees in certain areas. Universities have the autonomy to create new course programs and open new vacancies that isolated colleges do not have. Public universities can be created by federal or state law, but private universities must go through a complex and costly authorization and recognition process. Of the 204 universities existing in Brazil in 2021, 113 were public and 91 were private. Due to pressure from the private sector, since the 1990s, Brazilian legislation has started to admit the existence of “university centres” which, in practice, have the same autonomy as universities, but less requirements, especially regarding research and postgraduate activities. Between 2010 and 2020, enrolment in these centres almost tripled, while enrolment in private universities stagnated (Figure 3).

Figure 3 – Type V institutions, 2010-2020

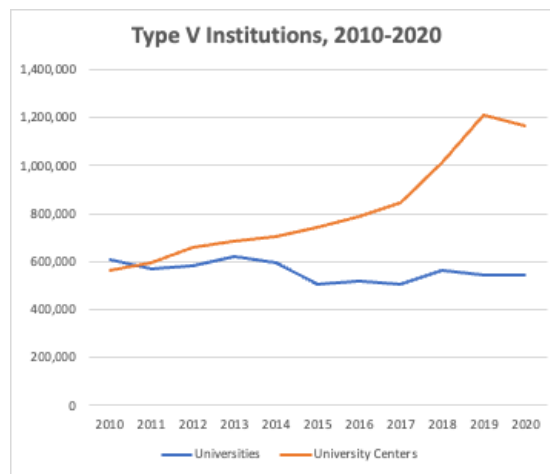


Table 11 presents the main characteristics of these institutions. They are like those in type IV, except for the larger concentration of students in teaching and social professional programs, and the almost non-existing graduate education, despite their university or semi-university status. The proportion of teachers with doctoral degrees is smaller, and the attrition rate, of 52% in 2015 for those admitted in 2000, is close to those of type I. With 1.7 million students in 2020, about 18% of total enrolment, these institutions seem to have remained in a middle ground between the large, massive

distance education institutions of type I and the more differentiated institutions of type IV.

Table 11- Type V institutions – main characteristics of students and teachers

| Type V institutions - main characteristics of students and teachers | | | | | | | | | |
|--|-----------|---------------------------------------|-------------------------|--|---|----------|--|--|------------------------------------|
| | enrolment | % students In graduate programs | students per teacher | % students in distance education | % students in social professions and teaching | Mean age | Teachers with doctor's degree | Teachers wiith full- time contracts | Accumulate d attrition rates |
| 2010 | 1,177,123 | 1.1% | 22.8 | 5.0% | 52.3% | 27.7 | 18.0% | 29.8% | |
| 2011 | 1,165,076 | 1.2% | 23.0 | 5.6% | 51.0% | 27.8 | 19.1% | 29.7% | 11.9 |
| 2012 | 1,246,735 | 1.2% | 23.9 | 5.9% | 48.9% | 27.8 | 19.8% | 30.1% | 27.7 |
| 2013 | 1,307,483 | 0.8% | 25.2 | 6.8% | 47.2% | 27.9 | 20.5% | 31.2% | 39.1 |
| 2014 | 1,295,530 | 0.9% | 24.4 | 6.5% | 44.8% | 27.9 | 22.2% | 30.2% | 46.9 |
| 2015 | 1,248,887 | 0.9% | 24.4 | 5.8% | 42.8% | 27.6 | 23.0% | 30.7% | 52.0 |
| 2016 | 1,303,230 | 1.0% | 24.7 | 6.0% | 41.5% | 27.6 | 24.6% | 31.6% | 55.9 |
| 2017 | 1,352,157 | 1.0% | 25.0 | 7.4% | 41.5% | 27.7 | 26.2% | 30.9% | 57.5 |
| 2018 | 1,581,378 | 1.0% | 26.1 | 9.9% | 41.1% | 28.1 | 27.4% | 31.7% | 59.9 |
| 2019 | 1,755,852 | 0.9% | 26.2 | 13.7% | 41.5% | 28.4 | 29.1% | 32.6% | 60.5 |
| 2020 | 1,707,020 | 1.0% | 25.2 | 16.0% | 40.5% | 28.8 | 29.8% | 31.0% | 59.8 |

Type VI – Public teaching institutions

This type brings together public institutions that are primarily dedicated to teaching, and do not have graduate students in a significant number. It includes federal, state, and municipal institutions, as well as most of the federal institutes of science and technology established in 2008. In all, 90 institutions are included in this classification at different times, with around one million students, just over half of the public sector in the country.

Table 12 shows the general characteristics of students in this group. In contrast to the other types of the public sector, 2 and 3, there are almost no postgraduate courses. The students are older, most are studying in the social professions, and few are in distance education courses. The proportion of teachers with doctoral degrees is growing, and the proportion with full-time contracts and civil-servant status is higher, and also growing. Despite the presence of the Federal Institutes in this group, enrolments in vocational courses are few, as well as in the areas of more technical training, or health. Courses are face-to-face, with about a third of students studying at night, and distance learning has not developed much. In general, what is observed throughout the decade is a certain stagnation, with enrolment oscillating around 1.2 million.

Table 12 – Type VI institutions – main characteristics of students and teachers

| Type VI institutions - Main characteristics of students and teachers | | | | | | | | | |
|--|-----------|---------------------------------------|-------------------------|--|---|----------|--|---|------------------------------------|
| | enrolment | % students in graduate programs | students per teacher | % students in distance education | % students in social professions and teaching | Mean age | Teachers with doctor's degree | Teachers with full- time contracts | Accumulate d attrition rates |
| 2010 | 981,571 | 6.6% | 14.1 | 9.7% | 58.1% | 27.6 | 36.2% | 78.0% | |
| 2011 | 1,055,201 | 6.8% | 14.8 | 9.6% | 57.4% | 27.9 | 37.6% | 79.9% | 7.5 |
| 2012 | 997,660 | 6.2% | 14.9 | 10.7% | 59.1% | 28.4 | 36.2% | 79.3% | 19.2 |
| 2013 | 1,268,827 | 6.3% | 14.1 | 10.4% | 55.1% | 28.3 | 44.3% | 83.5% | 29.4 |
| 2014 | 1,300,589 | 6.4% | 13.9 | 10.8% | 54.7% | 28.5 | 46.9% | 84.5% | 38.5 |
| 2015 | 1,293,437 | 6.9% | 13.7 | 9.8% | 52.5% | 28.4 | 48.7% | 84.5% | 43.2 |
| 2016 | 1,304,515 | 7.3% | 13.6 | 9.2% | 51.7% | 28.4 | 50.6% | 85.3% | 47.2 |
| 2017 | 1,359,386 | 7.4% | 14.1 | 11.9% | 51.8% | 28.2 | 53.3% | 85.8% | 49.8 |
| 2018 | 1,284,506 | 6.9% | 13.7 | 12.5% | 50.3% | 28.3 | 54.3% | 87.1% | 53.2 |
| 2019 | 1,189,407 | 6.7% | 13.3 | 11.3% | 51.2% | 28.3 | 54.7% | 86.7% | 54.6 |
| 2020 | 1,174,833 | 7.2% | 13.7 | 11.9% | 48.9% | 28.4 | 59.3% | 86.8% | 55.0 |

Type VII – Private schools or faculties

This type includes around 2,500 for-profit and non-profit private schools that appeared in the higher education census in the decade, in a constant process of opening, closing, or merging. Each year, around 1,600 are listed. It is a large group of small institutions, with around 600 students each, spread throughout Brazil. They offer just one or a couple of evening or teaching programs. As Table 13 shows, these institutions have not moved to distance education, have less students per teacher than in other segments of the private sector, and only a small percentage of the teachers hold doctoral degrees and have full-time contracts. They are, clearly, struggling to survive in a very competitive market environment, and this mainly explains why this segment is shrinking.

Table 13 - Type VII institutions – main characteristics of students and teachers

| Type VII institutions - Main characteristics of students and teachers | | | | | | | | | |
|---|-----------|---------------------------------------|-------------------------|--|---|----------|--|---|--------------------------------|
| | enrolment | % students in graduate programs | students per teacher | % students in distance education | % students in social professions and teaching | Mean age | Teachers with doctor's degree | Teachers with full- time contracts | Accumulated attrition rates |
| 2010 | 1,611,545 | 0.2% | 16.3 | 2.7% | 53.2% | 27.8 | 10.1% | 6.0% | |
| 2011 | 1,744,740 | 0.2% | 17.4 | 3.3% | 51.7% | 27.8 | 11.5% | 5.6% | 9.6 |
| 2012 | 1,759,524 | 0.2% | 17.7 | 2.6% | 50.8% | 27.7 | 12.9% | 5.5% | 24.7 |
| 2013 | 1,861,781 | 0.2% | 18.5 | 2.3% | 49.9% | 27.7 | 13.1% | 5.4% | 34.7 |
| 2014 | 1,996,125 | 0.2% | 19.2 | 2.2% | 47.8% | 27.7 | 15.0% | 5.0% | 43.0 |
| 2015 | 2,034,017 | 0.3% | 19.8 | 2.0% | 46.9% | 27.6 | 15.6% | 4.7% | 48.5 |
| 2016 | 1,967,528 | 0.3% | 20.1 | 2.6% | 45.7% | 27.5 | 16.9% | 4.5% | 53.9 |
| 2017 | 1,882,581 | 0.3% | 20.4 | 1.7% | 44.6% | 27.3 | 18.4% | 4.0% | 55.5 |
| 2018 | 1,719,057 | 0.4% | 19.0 | 2.8% | 44.0% | 27.4 | 20.2% | 4.7% | 56.0 |
| 2019 | 1,499,744 | 0.4% | 17.3 | 4.3% | 44.2% | 27.6 | 25.0% | 5.5% | 56.4 |
| 2020 | 1,261,001 | 0.6% | 16.8 | 6.9% | 44.3% | 27.8 | 27.0% | 4.1% | 56.3 |

Type VIII – Vocational Institutions

Type VIII institutions are those in which at least half of their students are in vocational programs, which means that this is the institutions' core activity. In Brazil, these two or three years, post-secondary course programs are called "technological", meaning that they are supposedly practical and applied. In most countries, the segment of vocational education is significant, similar or in some cases even larger than conventional higher education (United Nations Educational and Organization 2020). In Brazil, the segment is small, but growing. Between 2010 and 2020, the proportion of students in such programs increased from 12% to 18% of total enrolment. Most of these students are in large private institutions, from which they are just a small part of their operation.

Early in the decade, one in four of the students in vocational programs were in specialized institutions of type VIII. In 2020, they were just one in ten. One important difference between the course programs in specialized institutions and in large private ones is that the former gives more emphasis to technical fields, such as engineering and information technology, while the latter give more emphasis to business, administration, and law. However, in both the field of business, administration and law is the largest (Table 14). This shift from technical to administrative fields may be reflection of the recent changes in the Brazilian economy, in which the industrial sector is shrinking, and the services sector expanding. But it may also reflect the strategy of the private sector to provide cheaper courses that can be delivered at distance and do not require physical installations and equipment.

Table 14 – Fields of study, vocational students, 2020

| Fields of Study, vocational students, 2020 | | |
|--|---------------------------|------------------|
| | in type VIII Institutions | All Institutions |
| Business, administration and law | 36.5% | 65.1% |
| TIC | 25.5% | 19.3% |
| Engineering | 18.2% | 6.8% |
| others | 19.8% | 8.8% |
| Total | 166,619 | 1,223,851 |

Table 15 provides the main indicators about students and teaching staff of type VIII institutions. It is a small segment and getting smaller. Students are older, and the attrition rate is high – 48% of those entering 2010 have dropped out by 2014. The conditions of the teaching staff are like the private sector, in terms of teachers with doctoral degrees and full-time contracts, but the student / teacher rates are better. Distance education have not increased much, and almost half of the students are in technical careers.

Table 15 – Type VIII Institutions – main characteristics of students and teachers

| Type VIII institutions - Main characteristics of students and teachers | | | | | | | | | |
|--|-----------|----------------------|----------------------------------|-------------------------------------|----------|-----------------------------|--------------------------|-------------------------------|-----------------------------------|
| | Students | | | | | | teachers | | |
| | enrolment | students per teacher | % students in distance education | % students in technical careers (*) | Mean age | Accumulated attrition rates | total number of teachers | Teachers with doctor's degree | Teachers with full-time contracts |
| 2010 | 194,056 | 14.3 | 8.6% | 39.0% | 27.7 | | 13,581 | 11.9% | 39.0% |
| 2011 | 216,638 | 14.5 | 7.7% | 37.4% | 27.9 | 8.7 | 14,939 | 13.5% | 38.5% |
| 2012 | 233,164 | 14.9 | 5.2% | 37.8% | 27.9 | 26.7 | 15,668 | 15.2% | 38.9% |
| 2013 | 209,349 | 14.2 | 2.7% | 42.2% | 28.0 | 39.2 | 14,772 | 16.1% | 37.4% |
| 2014 | 201,299 | 13.8 | 3.2% | 44.3% | 28.1 | 48.3 | 14,585 | 19.0% | 41.4% |
| 2015 | 191,368 | 12.5 | 4.1% | 46.2% | 28.3 | 54.1 | 15,259 | 21.0% | 41.8% |
| 2016 | 176,735 | 12.3 | 4.2% | 46.2% | 28.2 | 60.2 | 14,325 | 23.1% | 43.3% |
| 2017 | 177,513 | 11.8 | 6.7% | 47.3% | 28.2 | 62.2 | 15,045 | 26.4% | 47.0% |
| 2018 | 175,528 | 14.0 | 9.4% | 45.6% | 28.6 | 62.1 | 12,529 | 26.0% | 38.0% |
| 2019 | 172,700 | 13.8 | 11.7% | 45.6% | 29.1 | 62.3 | 12,499 | 28.3% | 36.2% |
| 2020 | 167,557 | 13.9 | 15.4% | 45.2% | 29.4 | 61.3 | 12,049 | 29.7% | 36.0% |

(*) Science and mathematics, engineering, information technology

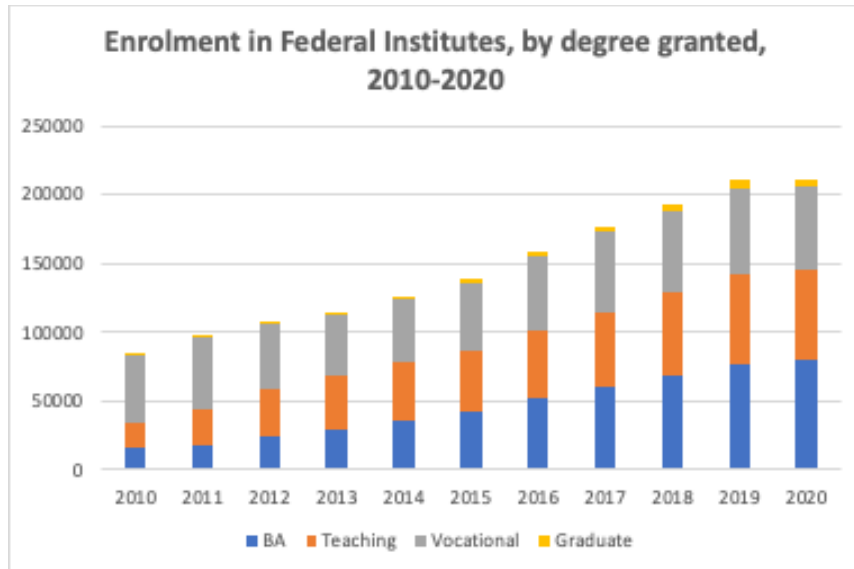
The two largest providers of vocational education in this group are the Centro Paula Souza, an agency of the São Paulo State government, and some institutions in the network of Federal Institutes of Education, Science and Technology. Paula Souza was established in 1969 to coordinate a network of vocational secondary, and in 2006 became responsible for a smaller network of “Faculties of Technology” (FATEC) (Schwartzman 2014). In 2020, Paula Souza had about 208 thousand students in secondary education, and about 94 thousand in the Fatecs.

The Federal Institutes were established in 2008 through a legislation that reorganized and granted university status to a previously existing network of federal centres of technical secondary education. The expectation was that they would become the main providers of public, vocational post-secondary education in the country, but they did not grow much, gave more emphasis to traditional BA and teaching degrees, and started to organize some graduate programs as well (Figure 4). In 2020, there were 35 such institutes enrolling about 327 thousand students in secondary, 90 thousand in undergraduate and 6 thousand in graduate degree programs¹². Compared with the state schools, which enrol the bulk of secondary education students in the country, the federal institutes are a privileged heaven, providing free full-time education in well-equipped installations and well-paid teachers. Students are selected through entrance examinations, and once graduated, they benefit from the quota system in public higher education for students coming from public

¹² Data on secondary school enrolments at the Paula Souza and Federal Institutes are from the 2020 School Census (Censo Escolar).

schools. They are, in short, a classic example of academic drift, with vocational institutions moving up the prestige ladder of university education (Schwartzman 2011).

Figure 4



Type IX – Research and graduate education institutions

This type includes institutions that have only graduate programs. They are listed in the databases from CAPES, but not in the higher education census. In total, 90 institutions appeared in this group in the last 10 years, 60 of which in 2020, with about 10 thousand students, most of which in MA programs (Table 16). They include federal institutions such as Fundação Oswaldo Cruz, Instituto Tecnológico da Aeronáutica, Escola Nacional de Ciências Estatísticas, Escola Militar de Engenharia, Escola Nacional de Administração Pública, Escola Superior de Guerra Escola de Guerra Naval and those associated with the Ministry of Science and Technology (Instituto de Matemática Pura e Aplicada, Centro Brasileiro de Pesquisas Físicas and Instituto de Pesquisa da Amazônia, among others); state institutions, such the Instituto de Pesquisa Tecnológicas, Instituto Butantã and Instituto Biológico in São Paulo; and several medical institutions such as Fundação Antônio Prudente do Hospital C. Camargo, Instituto Fernando Figueira, Instituto de Pesquisa da Santa Casa de Belo Horizonte, Sociedade Beneficente Israelita Albert Einstein and Instituto Nacional do Câncer.

Table 16 – Type IX institutions – main characteristics of students and teachers

| Type IX Institutions - Main characteristics of students and teachers | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Total number of students | 8312 | 8737 | 9338 | 9319 | 10050 | 10337 | 10799 | 11323 | 11435 | 11996 | 11894 |
| In doctoral programs | 19.9% | 20.3% | 20.3% | 26.2% | 25.6% | 26.6% | 26.4% | 26.4% | 27.1% | 26.9% | 28.4% |
| Total number of teachers / researchers | 2325 | 2622 | 2993 | 3336 | 3693 | 3757 | 3936 | 3831 | 3793 | 4051 | 3969 |
| Students per teachers | 3.6 | 3.3 | 3.1 | 2.8 | 2.7 | 2.8 | 2.7 | 3.0 | 3.0 | 3.0 | 3.0 |
| Main fields of study: (%) | | | | | | | | | | | |
| Agrarian sciences | 3.6% | 4.4% | 4.1% | 3.0% | 2.5% | 2.8% | 2.7% | 2.6% | 2.5% | 2.4% | 1.8% |
| Biological sciences | 10.2% | 10.5% | 11.5% | 10.2% | 10.1% | 11.0% | 10.7% | 10.9% | 10.8% | 10.8% | 11.1% |
| Health Sciences | 13.8% | 12.4% | 12.2% | 15.1% | 15.6% | 14.7% | 13.7% | 13.4% | 14.2% | 14.8% | 15.7% |
| Exact Sciences | 6.0% | 5.5% | 5.1% | 6.9% | 10.1% | 5.5% | 5.3% | 5.5% | 5.3% | 5.1% | 5.2% |
| Humanities | 2.4% | 1.4% | 1.0% | 1.5% | 1.9% | 2.3% | 2.8% | 3.1% | 3.8% | 4.2% | 4.4% |
| Applied social sciences | 2.6% | 2.3% | 2.3% | 2.5% | 2.2% | 3.2% | 4.3% | 5.9% | 6.8% | 9.3% | 6.9% |
| Engineering | 24.7% | 24.8% | 24.4% | 20.6% | 19.3% | 18.2% | 17.8% | 17.0% | 16.4% | 15.0% | 15.3% |
| Multidisciplinary | 8.1% | 8.8% | 9.3% | 9.2% | 10.6% | 10.9% | 11.5% | 12.0% | 11.6% | 10.5% | 11.4% |
| Medicine and dentistry | 13.1% | 15.4% | 16.2% | 16.8% | 16.4% | 17.6% | 17.7% | 16.3% | 16.7% | 16.6% | 16.1% |

The same as with type VIII, these institutions are just a small part of the much larger sector of graduate education in Brazil, dominated by the large, comprehensive universities of type 2 (Table 17). To get the full picture of graduate education in the country, it would be necessary to include the large but barely visible segment of MBA and specialization courses mentioned on table 1. The differences between the heavily subsidized graduate education sector concentrated in public universities and regulated by CAPES and the much larger MBA and specialization sector, unregulated and concentrated in the private sector, is clear on paper, but much less so in terms of what they in fact do, is a matter of public policy still to be addressed (Schwartzman 2022b)

Table 17

| Graduate education in Brazil - Main indicators, 2020 | | | | | | | | | | | |
|--|--------------------------------|--|--|-----------------------------------|------------------------------------|------------------------------|-----------------------|--------------------------------|-------------------------------------|---------|--|
| | I - Large private institutions | II - Large public institutions with significant graduate education | III - Specialized or small public institutions | IV - Selected private institution | V - Private university and centers | VI other public universities | VII - Private schools | VIII - Vocational institutions | IX - Specialized graduate education | Total | |
| Number of graduate students | 5,879 | 146,579 | 80,143 | 32,087 | 16,395 | 84,079 | 7,196 | 800 | 10,459 | 383,617 | |
| % in doctoral programs | 35.0% | 48.1% | 39.7% | 35.5% | 21.6% | 24.4% | 17.8% | 14.8% | 32.3% | 37.7% | |
| Teachers in graduate education | 1,216 | 37,522 | 22,220 | 6,164 | 4,307 | 27,418 | 1,566 | 243 | 3,969 | 104,625 | |
| Graduate students per teacher | 4.8 | 3.9 | 3.6 | 5.2 | 3.8 | 3.1 | 4.6 | 3.3 | 2.6 | 3.7 | |
| Total number of publications in Web of Science | 1,209 | 47,792 | 22,653 | 4,429 | 2,713 | 20,560 | 827 | 252 | 7,082 | 107,517 | |
| Publications per teacher | 1.0 | 1.3 | 1.0 | 0.7 | 0.6 | 0.7 | 0.5 | 1.0 | 1.8 | 1.0 | |
| Main fields of study: (%) | | | | | | | | | | | |
| Agrarian sciences | 0.6% | 8.8% | 7.9% | 2.0% | 4.8% | 5.9% | 0.2% | 0.0% | 12.6% | 7.1% | |
| Biological sciences | 7.4% | 12.3% | 11.2% | 8.7% | 10.0% | 8.3% | 6.0% | 5.0% | 17.9% | 10.7% | |
| Health Sciences | 3.9% | 8.9% | 8.2% | 2.9% | 1.9% | 8.9% | 3.5% | 3.4% | 6.0% | 7.7% | |
| Exact Sciences | 5.5% | 9.3% | 8.4% | 8.8% | 1.4% | 9.2% | 3.7% | 3.5% | 5.0% | 8.4% | |
| Humanities | 48.7% | 18.6% | 18.0% | 48.3% | 39.2% | 23.1% | 43.3% | 40.0% | 7.9% | 23.5% | |
| Applied social sciences | 5.8% | 15.4% | 9.7% | 8.5% | 9.9% | 10.0% | 1.2% | 7.3% | 17.4% | 11.8% | |
| Engineering | 4.9% | 7.0% | 6.5% | 4.4% | 2.5% | 7.8% | 0.9% | 0.0% | 0.0% | 6.3% | |
| Multidisciplinary | 9.8% | 4.9% | 7.8% | 11.0% | 16.7% | 13.2% | 12.7% | 10.1% | 12.9% | 8.8% | |
| Medicine and dentistry | 12.6% | 10.4% | 9.3% | 4.7% | 11.2% | 6.0% | 28.7% | 30.8% | 18.3% | 9.4% | |

Conclusions and policy implications

This typology corroborates the seminal intuitions of Martin Trow and Burton R. Clark on the transitions from elite to mass higher education, with growing institutional differentiation and the combined effects of government, market and oligarchies on the ways higher education systems are shaped (Trow 2007; Clark 1978). The term “academic capitalism” has been used recently to describe the dynamics of contemporary higher

education system, characterized by strong market orientation and entrepreneurial leadership, having the United States as the main reference. In Brazil, the private institutions of type I fit well this model, but all other types are bounded by the presence of state institutions, regulations and the influence of professional and academic oligarchies (Schwartzman 2022a; Brunner, Salmi, and Labraña 2022; Slaughter and Rhoades 2004). In spite of its expansion and differentiation, and, beyond its contribution for enhancing human capital, higher education remains a positional good which is demanded by the population, controlled or manipulated by a multiplicity of actors, and generates a competition for credentials that can be wasteful and harmful for those who are left behind on its trail (Collins 1979; Wolf 2002).

The effort to look at national higher education systems from the standpoint of a typology allows for a more complex view than any unidimensional approach, making it possible to see how different drives shape the peculiar features of each institutional type. The classification presented here suffered from the limitations of existing data and compatibility problems. At least three crucial pieces of information are absent, the costs involved, the socioeconomic conditions of students, and the dynamics of the labour market. Another missing information is how the professions are regulated, and the way these regulations impinge on the workings of the institutions.

From a policy point of view, the adoption of classifications of this kind by regulatory agencies could lead to a clearer identification of the specific niches of different institutional types, which could be regulated and supported according to their goals, the different segments of society they attend, and the different products they deliver. Ideally, this would make the higher education systems less hierarchical, with different institutions performing at their best in their specific niches.

But, at the same time, institutions and their constituencies may resent being pinned down to a specific type, given the implicit or explicit hierarchy that any classification can generate. In an environment of permanent competition for prestige and recognition, institutions may prefer to remain ambiguous and not very explicit about their roles, and this may explain why typologies of this type are not formally adopted by national governments.

The conclusion is that, for the researcher, for analysis and interpretation, there are strong reasons to move forward getting better data, making them more consistent, and

developing new classification methods. At the same time, one should be cautious in turn these results into official classifications.

References

- Balbachevsky, Elizabeth, Helena Sampaio, and Cibele Yahn de Andrade. 2019. "Expanding Access to Higher Education and Its (Limited) Consequences for Social Inclusion: The Brazilian Experience." *Social Inclusion* 7 (1). doi: 10.17645/si.v7i1.1672.
- Bernasconi, Andres, and Paula Clasing. 2015. "Legitimacy in University Government: A New Typology." *Education Policy Analysis Archives* 23:71.
- Brunner, José Joaquín. 2013. "On the Classification of Universities / Sobre la clasificación de universidades." *Pensamiento Educativo* 50 (1):115-29.
- Brunner, José Joaquín, Jamil Salmi, and Julio Labraña. 2022. *Enfoques de sociología y economía política de la educación superior: aproximaciones al capitalismo académico en América Latina*. Santiago, Chile: Ediciones Universidad Diego Portales.
- Carnegie Foundation for the Advancement of Teaching. 2011. *The Carnegie Classification of Institutions of Higher Education, 2010 edition*. Menlo Park: Carnegie Foundation for the Advancement of Teaching.
- Carvalhoes, Flavio, Adriano S Senkevics, and Carlos A Costa Ribeiro. 2022. "The intersection of family income, race, and academic performance in access to higher education in Brazil." *Higher Education*:1-26.
- Clark, Burton R. 1983. *The higher education system academic organization in cross-national perspective*. Berkeley: University of California Press.
- Clark, Burton R. 1978. "Academic Differentiation in National Systems of Higher Education." *Comparative Education Review* 22 (2):242-58.
- Coelho, Edmundo Campos. 1999. *As Profissões imperiais: advocacia, medicina e engenharia no Rio de Janeiro, 1822-1930*. Rio de Janeiro: Editora Record.
- Collins, Randall. 1979. *The credential society*. New York: Academic Press.
- Costa, Danielle Dias da, and Norma-Iracema de Barros Ferreira. 2017. "O PROUNI na educação superior brasileira: indicadores de acesso e permanência." *Avaliação: Revista da Avaliação da Educação Superior (Campinas)* 22 (1):141-63.
- Durham, Eunice Ribeiro, and Helena Sampaio. 1995. "O Ensino Privado no Brasil." In *Documento de Trabalho*, 18. Universidade de São Paulo, Núcleo de Pesquisas sobre Educação Superior - NUPES.
- French, Jan Hoffman. 2021. "Race, Racism, and Affirmative Action in Brazil and the United States." *Latin American Research Review* 56 (4):988-97.
- INEP, Diretoria de Estatísticas Educacionais. 2018. *Metodologia de Cálculo dos Indicadores de Fluxo da Educação Superior*. Brasília: Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Inep).

- Lane, Jan-Erik. 1985. "Academic Profession in Academic Organization." *Higher Education* 14 (3):241-68.
- Levy, Daniel C. 1986. *Higher education and the state in Latin America : private challenges to public dominance*. Chicago: University of Chicago Press.
- McCormick, Alexander C. 2013. "Classifying Higher Education Institutions: Lessons from the Carnegie Classification." *Pensamiento Educativo. Revista de Investigación: Educacional Latinoamericana* 50:65-75.
- Nascimento, Matheus Monteiro, Cláudio Cavalcanti, and Fernanda Ostermann. 2020. "Dez anos de instituição da Rede Federal de Educação Profissional, Científica e Tecnológica: o papel social dos institutos federais." *Revista Brasileira de Estudos Pedagógicos* 101:120-45.
- OECD. 2018. *Rethinking Quality Assurance for Higher Education in Brazil*. Paris: OECD.
- Olsen, Johan P. 2001. "Garbage Cans, New Institutionalism, and the Study of Politics." *The American Political Science Review* 95 (1):191-8.
- Paula, Camila Henriques de, and Fernanda Maria de Almeida. 2020. "O programa Reuni e o desempenho das Ifes brasileiras." *Ensaio: avaliação e políticas públicas em Educação* 28:1054-75.
- Reimer, David, and Marita Jacob. 2011. "Differentiation in higher education and its consequences for social inequality: introduction to a special issue." *Higher Education* 61:223-7.
- Ribeiro, Jorge Luiz Lordelo de Sales, and Robert Evan Verhine. 2012. "Implementação do Sinaes nas instituições brasileiras de educação superior: uma análise comparativa a partir de estudos de caso."
- Sampaio, Helena. 2000. *Ensino superior no Brasil - o setor privado*. São Paulo: FAPESP / Hucitec.
- Schwartzman, Simon. 2010. "The National Assessment of Courses in Brazil." In *Public Policy for Academic Quality – Analyses of Innovative Policy Instruments*, edited by David D. Dill and Maarja Beerkens, 293-312. Dordrech Heidelberg London New York: Springer.
- . 2011. "Academic Drift in Brazilian Education." *Pensamiento Educativo. Revista de Investigación Educacional Latinoamericana* 48 (1):14-26.
- . 2014. "O Centro Paula Souza e a Educação Profissional no Brasil." In *Educação Básica em São Paulo - avanços e desafios*, edited by Barjas Negri, Haroldo de Gama Torres and Maria Helena Guimarães de Castro, 187-216. São Paulo: SEADE / FDE.
- . 2022a. "Entre Berlin y la bolsa: capitalismo académico en Brasil?" In *Enfoques de sociología y economía política de la educación superior: aproximaciones al capitalismo académico en América Latina*, edited by José Joaquín Brunner, Jamil Salmi and Julio Labraña, 137-69. Santiago de Chile: Ediciones Universidad Diego Portales.
- . 2022b. "Pesquisa e Pós-Graduação no Brasil: duas faces da mesma moeda?" *Estudos Avançados* 36 (14):227-54.

- . 2022c. "Políticas de Expansão para a Educação Superior." In *Para não esquecer: políticas públicas que empobrecem o Brasil*, edited by Marcos Mendes, 516-43. Rio de Janeiro: Insper / Autografia.
- Schwartzman, Simon, and Elizabeth Balbachevsky. 2009. "The Academic Profession in a Diverse Institutional Environment: converging or diverging values and beliefs?" *RIHE International Seminar Reports - The Changing Academic Profession over 1992-2007: International, Comparative, and Quantitative Perspectives* 13.
- Schwartzman, Simon, and Elizabeth Balbachevsky. 1993. "The Academic Profession in Brazil." In *Documento de Trabalho*, 19. Universidade de São Paulo, Núcleo de Pesquisas sobre Ensino Superior - USP.
- Schwartzman, Simon, Rómulo Pinheiro, and Pundy Pillay. 2015. "Higher Education in the BRICS Countries - Investigating the Pact between Higher Education and Society." In *Higher Education Dynamics, Vol. 44*. Dordrecht: Springer.
- Schwartzman, Simon, Roberto Lobo Silva, and Rooney RA Coelho. 2021. "Por uma tipologia do ensino superior brasileiro: teste de conceito." *Estudos Avançados* 35:153-86. doi: <https://doi.org/10.1590/s0103-4014.2021.35101.011>.
- Secretaria do Tesouro Nacional. 2018. "Aspectos fiscais da educação no Brasil." In Brasília: Ministério da Fazenda.
- Shulman, Lee S. 2001. "The Carnegie classification of institutions of higher education." *Menlo Park: Carnegie Publication*.
- Slaughter, Sheila, and Gary Rhoades. 2004. *Academic capitalism and the new economy: Markets, state, and higher education*. Baltimore: Johns Hopkins University Press.
- Souza, Pedro Ivo. 2022. "Fundos Garantidores com Participação da União." In *Para não esquecer: políticas públicas que empobrecem o Brasil*, edited by Marcos Mendes, 143-73. Rio de Janeiro: Autografia Edição e Comunicação Ltda.
- Trow, Martin. 2007. "Reflections on the transition from elite to mass to universal access: Forms and phases of higher education in modern societies since WWII." In *International handbook of higher education*, 243-80. Dordrecht: Springer.
- United Nations Educational, Scientific, and Cultural Organization. 2020. "Global education monitoring report 2020: Inclusion and education: All means all." 92310038.
- van Vught, Frans. 2009. *Mapping the higher education landscape: Towards a European classification of higher education*. Vol. 28: Springer Science & Business Media.
- Van Vught, Frans A, and Frank Ziegele. 2012. *Multidimensional ranking: The design and development of U-Multirank*. Vol. 37: Springer Science & Business Media.
- Verhine, Robert E. 2015. "Avaliação e regulação da educação superior: uma análise a partir dos primeiros 10 anos do SINAES." *Avaliação: Revista da Avaliação da Educação Superior* 20 (3).
- Wolf, Alison. 2002. *Does education matter? myths about education and economic growth*. London: Penguin.