

In search of “good jobs”: the social services labour market in Brazil

Celia Lessa Kerstenetzky, Valéria Pero,
Graciele Pereira Guedes and Marcela Nogueira Ferrario

Received: 23/06/2023
Accepted: 05/08/2024

Abstract

This article investigates the extent to which the public social services sector, and particularly the areas of education and healthcare, could help to mitigate inequality and improve employment conditions in the Brazilian service sector. Drawing on the Continuous National Household Sample Surveys between 2012 and 2023, we explore descriptive statistics for jobs, the wage structure and employee profiles in this sector and conduct a counterfactual simulation to analyse how wage disparities in the education and healthcare sectors would be affected if the wage distribution in the public sector were the norm. The results indicate that public sector jobs are superior in respect of employment conditions, the inclusion of women and non-white people and the wage distribution profile. Lastly, the small share of total service sector employment accounted for by public education and health services represents an underexploited opportunity in the country.

Keywords

Employment, labour market, social services, public sector, education, health, equality, working conditions, income, Brazil

JEL classification

J45, I30, D63

Authors

Celia Lessa Kerstenetzky is a professor in the Institute of Economics at the Federal University of Rio de Janeiro (UFRJ) (Brazil). Email: celia.lessa@ie.ufrj.br.

Valéria Pero is an associate professor in the Institute of Economics at the Federal University of Rio de Janeiro (UFRJ) (Brazil). Email: vpero@ie.ufrj.br.

Graciele Pereira Guedes holds a doctorate in Economics from the Fluminense Federal University (Brazil). Email: gracielepguedes@yahoo.com.br.

Marcela Nogueira Ferrario is an associate professor in the Latin American Institute of Economics, Society and Politics (ILAESP) at the Federal University for Latin American Integration (UNILA) (Brazil). Email: marcela.ferrario@unila.edu.br.

I. Introduction

The debate about an “employment crisis” has drawn attention both to major shifts in the structure of employment in today’s economy and to the existence of recessionary trends. Everything seems to indicate that the most important development in recent decades has been the concentration of employment in the service sector (Organisation for Economic Co-operation and Development [OECD], 2015; Elfring, 1989), which now accounts for more than 80% of jobs in advanced economies. This concentration is also considered responsible for a growing (and disturbing) polarization of employment, owing to the increasing shares accounted for by high- and low-productivity services (Barany and Siegel, 2015; Autor and Dorn, 2013). Brazil is no outlier internationally when it comes to employment concentration: the service sector already accounts for more than 70% of jobs in the Brazilian economy, having experienced substantial growth, both absolute and relative, over the last 20 years. The second shift noted in the literature is, in some quarters, the expectation of change in the form of job losses or at best a deterioration of employment conditions, already under way with the spread of platformization (International Labour Organization [ILO], 2021), as a result of digitalization and automation (Autor, 2022).

The present article analyses the public social services sector against this backdrop. Its objective, exploring a hypothesis put forward by Kerstenetzky and Machado (2018), is to observe the extent to which the public social services sector, given the characteristics of its labour market, is helping or could help to mitigate the inequality and poor conditions of employment in the service sector labour market. The article documents and analyses the characteristics of employment in the public social services sector, with a particular focus on the areas of public education and healthcare. The descriptive statistics compiled and analysed, which run from 2012 (when the Continuous National Household Sample Survey began) to 2023, are intended to characterize the sector in relation to other sectors of the economy, other service subsectors and the private social services sector. The characteristics analysed include the profile of workers (gender, colour, educational level) and employment characteristics such as formalization, remuneration and wage distribution. Lastly, a counterfactual simulation is carried out to analyse how inequality in social services employment would be affected if the income structure in private education and healthcare were similar to that in the public sector. The results suggest that employment in the public social services sector is of higher quality and less unprotected, as well as having a more equitable wage distribution. It also has a relatively high base wage, but its share of the employment structure in Brazil is still modest, suggesting untapped potential for growth. In fact, the simulation indicates that the distributional results associated with education and healthcare provision in the country would be better if the earnings structure in the private sector replicated that of the public sector, especially in the area of health. The findings reveal greater wage differences in private health services than in private education, since earnings at the top of the distribution are higher.

The rest of the article is organized as follows. Section II relates the article’s research question to a broader research agenda. Section III presents the methodology and the results of the empirical exercise. Section IV analyses the results, presents final considerations and suggests questions for future research.

II. Literature review

Interest in the potential of the public social services sector to address contemporary problems such as rising inequality, the climate crisis and the looming employment crisis is relatively recent. Standard references, such as Kerstenetzky (2012, 2016, 2021, 2022), Atkinson (2015), Coote (2021) and Wray et al. (2018), variously advocate for equitable and sustainable development strategies supported by public social services, such as public investment in social services (Atkinson, 2015) or in public

works and community services (Wray et al., 2018) to generate employment and deal with the risks of automation, and for a decisive shift towards fair, low-carbon consumption patterns, with an emphasis on public consumption, as an appropriate alternative in the face of the climate crisis (Coote, 2021; Kerstenetzky, 2021). However, there has been little empirical research on the characteristics of the labour market in the sector, especially in Brazil, with the leading contributions being those of Kerstenetzky and Machado (2018) and, more recently, Marques et al. (2022).

Kerstenetzky and Machado (2018) examine the evolution of the Brazilian labour market between 2002 and 2014 and single out progress with the formalization of employment, in the service sector as elsewhere, as the most important development during the period. They point out that jobs in the developed world and Brazil alike are increasingly concentrated in the service sector¹ and draw attention to the great internal heterogeneity of that sector, not only in the long-standing polarization between low-productivity and high-productivity sectors and low-wage and high-wage sectors, but in other respects as well. The authors note the existence of four subsectors already documented in the specialist literature (personal, distributive, social and business services)² and go on to discuss differences between countries in the distribution of employment between these subsectors, suggesting the existence of employment “regimes” in the service sector.³ In advanced economies, social services are usually the subsector that accounts for the largest share of total service sector employment (40% on average),⁴ while in peripheral economies it is the distributive services subsector, which includes retail and wholesale commerce. This is the case in Brazil, for example, where employment in the distributive services subsector represents 37% of the service sector total. Personal services employment, which has the highest informality rate and the lowest average and base pay, also accounts for a particularly large share in Brazil (23%). In analysing the characteristics of social services employment in Brazil, the authors point out that while the subsector accounts for only a minority share of total service sector employment (25%), it has qualitative advantages over distributive and personal services, such as a high rate of formalization, higher average and minimum pay, a lower incidence of long working hours and strong representation of women. Although the article refers to specific advantages in the public social services sector, it does not analyse the characteristics of employment within this in any detail.

Social services are a means of providing welfare. Accordingly, one justification for taking a particular interest in the public segment of social services is its ability to prevent the segregation of welfare that would occur if only market services were available. In the latter case, the availability and quality of provision would depend on ability to pay, and the greater the disparity of incomes, the greater the segregation of welfare. In particular, interest in a high-quality public sector providing universal services is justified by the expectation that, if it were able to attract individuals and families who were in a position to use the private sector, the universality of provision would legitimize the fiscal effort necessary to provide high-quality services in their eyes and thus effectively ensure greater welfare equity.

From the perspective of the labour market, the stylized fact is that the public sector is the “model” employer, being governed by labour legislation that guarantees employment rights and social protection and by the principles of equity or equality of opportunity (Gottschall and Tepe, 2021). Public employment

¹ Guedes (2020) analyses the determinants of growth in this type of employment in the developed world and in Latin America and notes that the explanations do not entirely match in the two cases. Her explanatory hypotheses include factors on the demand side (such as increased per capita income and mass consumption) and the supply side (such as productivity differentials between industry and services and Baumol and Bowen’s (1965) cost disease), sociodemographic factors (such as urbanization and the feminization of employment) and political and institutional factors (such as labour market regulations and the existence of welfare State regimes).

² See OECD (2001) and Gadrey (2005).

³ The authors use a classification similar to that of Esping-Andersen (1990) for welfare States and add in emerging economies and the countries of Latin America and the Caribbean. Gadrey (2005) suggested a differentiation between advanced countries similar to Esping-Andersen’s.

⁴ In countries with more robust and universal welfare States, such as the Nordic countries, the share rises to an average of 44%. However, Argentina and Uruguay, with 31% and 29%, respectively, and China and South Africa, with 55% and 34%, also outperform Brazil on this metric.

is also a model because it acts as a stabilizer of economic cycles. Kerstenetzky and Machado (2018) and Marques et al. (2022) provide evidence of these attributes in relation to the Brazilian public sector for the period 2002–2014 and the year 2015, respectively. Kerstenetzky and Machado (2018) document the greater degree of formalization and presence of women and the resilience of employment in social services (most of them provided by the public sector) as unemployment rose in late 2014. Marques et al. (2022) use the input-output matrix of the Brazilian Institute of Geography and Statistics (IBGE), data from the Annual Social Information Report (RAIS) and racial and gender profiling to assess the employment impact of autonomous spending on public education and healthcare and document the greater representation of women and of non-white men and women in the workforce, compared to equivalent spending on physical infrastructure.

This article aims to provide a broad overview of the Brazilian labour market over the last 10 years as a backdrop for analysing the comparative performance of employment in public education and health services by considering a number of selected variables. Engaging with previous studies, it extends and updates the time frame and the range of variables considered, within the limitations of the database. The motivation is to understand the effects that employment in public education and health services might have on labour market inequality and the poor employment conditions typical of the service economy (informality, base wages below the minimum, long working hours) and on the economic integration of women and non-white people. With a view to testing the potential of the public sector to reduce economic inequalities, the empirical exercise also includes a simulation of how wage disparities would be affected if the private social services sector had the same wage structure as the public sector.

III. Data presentation and analysis

1. General information about the labour market

An overview of the evolution of the Brazilian labour market between 2012 and 2023 shows an absolute increase in employment until 2019, when it reached 93.3 million people, followed by a significant contraction that brought the figure down to 86 million in 2020, the first year of the coronavirus disease (COVID-19) pandemic, followed by a rise to 99 million by 2023.

The positive trend up to 2019 was almost entirely due to the expansion of employment in the service sector, which was able to ride out the 2016 recession, while employment in agriculture and construction declined. Furthermore, although service sector employment fell during the COVID-19 pandemic, with the worst performance of any of the four economic sectors (agriculture, industry, construction, services), it recovered in 2023 (see table 1).

Table 1
Brazil: sectoral distribution of employment, 2012 to 2023
(Millions of employed persons and percentages)

Sector	2012		2016		2019		2020		2023	
	Employed	Percentage	Employed	Percentage	Employed	Percentage	Employed	Percentage	Employed	Percentage
Agriculture	10.27	11.50	9.12	10.10	8.48	9.10	8.27	9.60	8.25	8.30
Industry	12.40	13.90	10.95	12.20	11.31	12.10	10.50	12.20	12.23	12.31
Construction	7.44	8.40	7.27	8.10	6.70	7.20	5.86	6.80	7.24	7.29
Services	58.92	66.20	62.63	69.60	66.86	71.60	61.40	71.40	71.63	72.09
Total	89.03	100.00	89.97	100.00	93.36	100.00	86.03	100.00	99.35	100.00

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

The predominance of the service sector in the generation and dynamism of jobs in Brazil seems well established: the sector accounted for 66.2% of total employment in 2012, a figure that then grew steadily to more than 72% in 2023.

When the evolution of average labour income during this period is considered, it transpires that all sectors except construction experienced virtually uninterrupted growth despite two recessions (in 2016 and 2020) and a period of low economic growth (2019). As can be seen in table 2, the service sector was the best performer again, as its earnings were the highest in all years, significantly exceeding the average for the industrial sector.⁵

Table 2
Brazil: average real earnings by sector, 2012 to 2023
(Reais)

Sectors	2012	2016	2019	2020	2023
Agriculture	1 567.75	1 601.38	1 743.23	1 812.13	1 922.40
Industry	2 895.20	2 952.30	3 047.05	3 242.38	2 923.15
Construction	2 366.23	2 406.83	2 303.93	2 346.00	2 347.08
Services	2 966.70	3 028.68	3 092.25	3 254.23	3 117.20

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

The service sector, a major employer and good payer in terms of average earnings, is the second-worst performer after agriculture when it comes to wage distribution: it has the second-highest wage Gini index (around 0.49) and also ranks second for inequality as measured by the ratio between the incomes of the richest and poorest 10% of the distribution (P90P10), which ranged between 7.8 and 11.2 to 1 in the different subsectors in 2023 (see table 3). With regard to the average income in the tenth percentile (P10), the service sector yielded the second-worst place to civil construction in 2020, during the pandemic, and in 2023.

Table 3
Brazil: earnings and inequality indicators by sector, 2012 to 2023
(Earnings in reais, ratios and Gini index values)

Sectors	2012	2016	2019	2020	2023
Agriculture					
P10	211.5	218.7	248.8	253.8	307.8
P90P10	13.9	13.3	13.3	12.9	11.2
Gini	0.529	0.525	0.537	0.522	0.517
Industry					
P10	975.7	892.9	746.7	825.3	974.5
P90P10	5.5	6.0	7.1	7.4	5.3
Gini	0.460	0.453	0.475	0.486	0.436
Construction					
P10	804.3	729.0	655.1	634.4	679.8
P90P10	4.9	5.3	6.0	6.0	6.0
Gini	0.405	0.409	0.416	0.417	0.414
Services					
P10	731.0	729.0	655.1	745.3	795.1
P90P10	8.1	8.0	9.9	8.5	7.8
Gini	0.501	0.485	0.499	0.497	0.489

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

Note: P10 is the poorest 10% of the distribution and P90P10 the income ratio between the richest and poorest 10%.

⁵ As will be seen below, the social and “productive” services subsectors are responsible for this superiority.

2. The heterogeneity of the service sector

The unfavourable distributional outcome in the service sector, like its good results for average earnings, partly reflects the marked internal heterogeneity of the sector.

By dividing the sector into four subsectors, following the usual classification in the literature, we can see, for example, that the jobs with the lowest average incomes are concentrated in the subsectors of distributive services (such as retail and wholesale commerce and transport) and personal services (including catering, hospitality and domestic services). These two subsectors between them accounted for about 59% of service sector jobs, a share that fell to 57% in the year of the pandemic (when sanitary measures led to a significant contraction in employment, especially in personal services) before returning to its previous level in 2023. In 2012, social services (which include educational, healthcare and public administration activities, among others) and productive services (business services) accounted for about 26.5% and 13.5%, respectively. The only notable change was a jump to 28.7% in the employment share of social services in the year of the pandemic (see table 4).

Table 4
Brazil: distribution of employment in service subsectors, 2012 to 2023
(Millions employed and percentages)

Service subsector	2012		2016		2019		2020		2023	
	Employed	Percentage	Employed	Percentage	Employed	Percentage	Employed	Percentage	Employed	Percentage
Distributive	22.4	38.0	23.6	37.6	24.5	36.6	22.4	36.4	26.9	37.5
Social	15.6	26.5	16.7	26.7	17.6	26.3	17.6	28.7	18.9	26.4
Productive	8.2	13.9	8.4	13.4	9.2	13.7	8.8	14.3	10.3	14.4
Personal	12.7	21.5	13.9	22.3	15.6	23.3	12.6	20.5	15.5	21.7
Total	58.9	99.9	62.6	100.0	66.9	99.9	61.4	99.9	71.6	99.9

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

Note: In 2012, 2019, 2020 and 2023, a portion equivalent to 0.1% of the population employed in the service sector fell into the group of poorly defined activities, which is not shown in the table.

In absolute terms, all subsectors grew rapidly between 2012 and 2023, easily weathering the 2016 recession and retreating only in 2020. The one exception to the 2020 decline was the social services subsector, which saw virtually no reduction in its number of employees and proved to be the most resilient of the four subsectors.

The subsectors with the highest average earnings, which together employ some 40% of the service sector workforce, are social services and productive services. In these subsectors, average earnings rose steadily until 2020 but fell back in 2023 to levels close to those of 2016 and 2019, respectively (see table 5).

Table 5
Brazil: average real incomes in service subsectors, 2012 to 2023
(Reais)

Service subsector	2012	2016	2019	2020	2023
Distributive	2 708.98	2 664.00	2 670.55	2 736.73	2 762.25
Social	3 915.03	4 115.43	4 378.23	4 510.35	4 164.55
Productive	3 925.18	4 112.20	4 122.23	4 226.53	4 129.48
Personal	1 605.73	1 654.88	1 665.03	1 683.63	1 760.75

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

Besides the internal heterogeneity of the service sector, average earnings conceal inequalities within the subsectors themselves (see table 6). The social and productive services subsectors, which have the highest average earnings and the smallest shares of sectoral employment, also have the

highest wage Gini indices. However, they are also the subsectors with the highest earnings in the tenth percentile (P10) of the wage distribution, which contains those earning the least in the years studied. Furthermore, although social and productive services both have relatively high P10 earnings, the combination of base pay and the Gini index suggests that the social services subsector has the best distributional outcomes.

Table 6
Brazil: earnings and inequality indicators by service subsector, 2012 to 2023
(Earnings in reais, ratios and Gini index values)

Service subsector	2012	2016	2019	2020	2023
Distributive					
P10	780.53	747.08	655.08	761.33	820.68
P90P10	6.53	6.15	7.55	6.70	6.28
Gini	0.462	0.437	0.445	0.443	0.446
Social					
P10	1 187.80	1 283.03	1 307.58	1 324.05	1 344.83
P90P10	6.55	6.75	7.00	7.20	6.28
Gini	0.498	0.483	0.500	0.485	0.473
Productive					
P10	1 202.73	1 283.03	1 307.58	1 311.55	1 321.48
P90P10	7.25	6.80	6.03	6.65	6.30
Gini	0.507	0.500	0.511	0.508	0.505
Personal					
P10	390.23	437.38	539.40	619.30	410.33
P90P10	7.45	6.70	6.95	7.90	7.50
Gini	0.430	0.399	0.416	0.424	0.436

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

Note: P10 is the poorest 10% of the distribution and P90P10 the income ratio between the richest and poorest 10%.

In addition to the number of employees, earnings and their distribution, the characteristics of employment and workers in the service subsectors were also investigated (see table 7).

Table 7
Brazil: employment characteristics and profiles of workers in service subsectors, 2023
(Percentages)

Characteristics	Service subsector ^a			
	Distributive	Productive	Social	Personal
Of jobs				
Formal private sector	47.4	56.4	24.7	14.8
Civil service	0.7	2.9	60.7	0.3
Unprotected	34.3	21.0	13.0	58.2
Below minimum wage	19.4	10.8	8.6	42.3
Long working day	25.9	14.2	9.3	20.0
Low wage	5.7	2.2	1.3	16.1
Of workers				
Female	33.8	44.3	62.9	71.9
Young	20.3	16.6	11.7	17.0
Incomplete basic education	14.4	7.7	4.9	24.5
Higher education	23.1	52.4	62.4	13.4
Non-white	54.3	46.0	50.5	61.9

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

^a Percentage of total employees in each subsector.

Focusing on the context of 2023, the most recent year with data available, and also the first to be unaffected by the pandemic, the aim is to investigate the quality of these jobs, identifying the most protected situations (such as employment in the formal private sector and the civil service) and the least protected (such as jobs for which no social security contributions are paid), and the incidence of people being paid less than the minimum wage or a third of the median wage (low wage) and working long hours (more than 44 hours per week). The ranking of jobs from lowest to highest quality is topped by personal services, with 58.2% of jobs unprotected and 42.3% of workers paid below the minimum wage, followed by distributive services (34.3% and 19.4%, respectively) and productive services (21.0% and 10.8%, respectively). Social services close the ranking with 13.0% of jobs unprotected and 8.6% of workers paid below the minimum wage. These indicators not only corroborate the superiority of social services, followed by productive services, but also confirm the poorer quality of personal and distributive services employment, already captured by the results showing how low average and minimum earnings in these subsectors are.

If this analysis is supplemented with data on the profiles of workers, it can be seen that youth are more concentrated in subsectors other than the social subsector, women are overrepresented in both personal services (71.9% of employees) and social services (62.9%), and non-white people are concentrated in the services with the poorest employment conditions, namely personal services (61.9%) and distributive services (54.3%). As expected, employees with lower levels of education are concentrated in distributive services (14.4%) and personal services (24.5%), while productive and social services account for 52.4% and 62.4% of workers with complete higher education, respectively (see table 7).

In summary, social services and productive services, while not accounting for the bulk of employment in the service sector (in marked contrast to the situation in rich and emerging countries), possess the attributes of good jobs in respect of pay and its distribution, employment conditions, highly educated workforces and the strong participation of women. The poor representation of non-white people in these sectors is a negative. This picture will now be completed with an analysis of the activities with the highest employment rates in social services: education and healthcare.

3. Education and healthcare

In 2023, public sector activities accounted for more than 65% of employment within the social services subsector. Table 8 shows that the activities with the highest employment shares include public administration (24.9% of the total), public education (22.5%) and private healthcare (20.8%). The characteristics of the labour market in the public education and healthcare sectors are explored below, with particular reference to the comparable characteristics of private education and healthcare.

Between them, public education and healthcare account for 32.7% of social services employment and 6.2% of total employment in Brazil. By way of comparison, overall employment in social services accounts for 26.4% of total service sector employment in Brazil but for some 40% in advanced economies, with much of that being public sector employment, and a large portion of this in turn being in education and healthcare activities. Private education and healthcare, meanwhile, account for 30.6% of social services employment (see table 8).

As regards earnings, these are higher on average in the healthcare sector than in education, with the highest wages being paid in the private healthcare industry (see table 8). In education, the situation is reversed, with the highest averages being in public education.

With regard to income distribution in social services, table 9 shows that most social service activities have high average incomes in the poorest percentile (P10) and a low Gini index, with the exception of the category of other educational activities and private education, which have a low P10 average, and public administration and private healthcare and education, which have high Gini index values.

Table 8
Brazil: distribution of employees in activities within the social services subsector, 2023
(Employees in thousands and percentages, earnings in reais)

Characteristics	Employees (Thousands)	Employees (Percentages)	Average earnings
Public administration	4 697	24.9	5 134.48
Defence	340	1.8	5 317.30
Compulsory social security	44	0.2	7 476.40
Social assistance services	62	0.3	2 359.75
Public education	4 257	22.5	3 724.78
Private education	1 851	9.8	3 081.75
Other education activities	688	3.6	3 306.19
Public healthcare	1 925	10.2	4 073.25
Private healthcare	3 936	20.8	4 368.78
Veterinary services	166	0.9	6 865.23
Water, sewerage, waste management and decontamination activities	488	2.6	3 130.21
Associative activities	441	2.3	3 672.82

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

Table 9
Brazil: classification of social services activities by P10 earnings and Gini index values, 2023

	Low Gini	High Gini
Low P10	Compulsory social security Private education Associative activities Water, sewerage, waste management and decontamination	Other education activities
High P10	Public education Public healthcare Defence Social assistance services Veterinary services	Private healthcare Public administration

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

Note: High and low values are relative. Low Gini = less than 0.449 (average of public and private education and healthcare values); low P10 = less than 1,311.00 reais (average minimum wage in 2023).

Table 10, which presents the values of the inequality indicators for education and healthcare, shows that the public sector has the lowest levels of inequality as measured by the Gini index, especially in education, while the highest Gini index value is found precisely in the sector with the highest average income and the highest P90P10 ratio, namely private healthcare. Observing P10 earnings, the basis for this analysis, reveals that the base value in all sectors is the minimum wage (or a value close to it), with the exception of private education, which has a lower base. In summary, the only indicator on which the private sector outperforms the public sector is average earnings in private healthcare, while public education and healthcare perform better on the distributional indicators used here.

Table 10
Brazil: earnings and inequality indicators for employees in the education and healthcare sectors, 2023
(Earnings in reais, ratios and Gini index values)

Category	Education		Healthcare	
	Public	Private	Public	Private
P10	1 344.83	1 102.42	1 349.45	1 344.30
P90P10	5.38	5.49	6.27	7.05
Gini	0.392	0.445	0.437	0.521
Average earnings	3 724.78	3 081.75	4 073.25	4 368.78

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

Note: P10 is the poorest 10% of the distribution and P90P10 the income ratio between the richest and poorest 10%.

When the characteristics of education and healthcare jobs are examined (see table 11), the following aspects stand out: first, the proportion of unprotected workers is lower in the public sector than in the private sector, as are the proportion of workers with incomes below the minimum wage and below a third of median income and the proportion of people with long working hours. These differences are even more pronounced in the healthcare sector, with the private sector having a much higher percentage of unprotected workers (17.4%) and workers with long working hours (14.6%) than the public sector (7.7% and 11.2%, respectively). The private sector is notable for its high level of informality, especially in healthcare, with a figure exceeding 38% in 2023.

Table 11

Brazil: employment characteristics and profiles of workers in education and healthcare, 2023
(Percentages)

Characteristics	Education ^a		Healthcare ^a	
	Public	Private	Public	Private
Of jobs				
Formal private sector		78.04		61.21
Civil service	100		100	
Unprotected	8.67	14.72	7.77	17.43
Below minimum wage	6.79	15.38	4.01	8.74
Part-time	37.66	32.38	22.31	21.83
Long working day	3.67	6.57	11.25	14.65
Low wage	0.90	2.00	0.31	1.34
Of workers				
Female	76.94	75.69	72.63	74.96
Young	6.86	16.53	7.54	15.62
Incomplete basic education	3.53	4.48	2.67	2.75
Higher education	75.73	67.90	56.23	59.33
Non-white	53.58	49.08	55.25	43.21

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

^a Percentage of total employees in each subsector.

As regards worker profiles, education and healthcare, taken together, have a low proportion of youth (although this is higher in the private sector than in the public sector) and of workers with low educational levels, these characteristics being more common in the other service subsectors. At the same time, while the education system as a whole has a relatively high proportion (the highest in the whole service sector) of workers with complete higher education, the figure is much greater in the public sector (75.7%) than in the private sector (67.9%), with private healthcare (59.3%) and public healthcare (56.2%) following behind. Two other noteworthy aspects are the participation of women, which is much higher than that of men, at over 70% in all sectors and as much as 76.9% in public education, and of non-white workers. In the latter case, the public sector is found to outperform the private sector: the share of non-white workers is 53.5% in public education and only 49% in the private sector, while in public and private healthcare the percentages are 55.2% and 43.2%, respectively. These figures are higher than the average for the productive and social subsectors, while the share of non-white workers is similar in the healthcare and distributive subsectors. However, these shares are still lower than in the personal services subsector, where non-white workers (especially black women) predominate, representing 61.9% of employees in 2023.

These analyses show the positive performance of the education and healthcare systems where female employment is concerned, especially in the public sector (education in particular), and the better results of the public than the private sector for the employment of non-white people, although this group of workers continues to be most prevalent in the service subsector with the poorest employment conditions in Brazil.

4. Counterfactual simulation

What would happen to income disparities in the service sector if all employees received remuneration similar to that of public sector employees?

To investigate this, the propensity score matching (PSM) method proposed by Rosenbaum and Rubin (1983) was used. This method is widely employed in the analysis of non-experimental or observational data to create an artificial control group and match it with the treatment group in order to analyse the impact of a given policy on a variable of interest (Guo and Fraser, 2010). In the case of this study, the matching was between employed persons with positive incomes belonging to the private healthcare and education sectors and employed persons with positive incomes belonging to the public healthcare and education sectors. The former were taken as the treatment group and the latter as the control group. The impact that the public sector earnings structure would have on income disparities in the education and healthcare sectors as a whole was simulated after matching individuals from the private and public sectors with common characteristics.

The first step in matching is to estimate a logistic regression, where the dependent variable is a vector $D_i = 1$ when the individual is employed in the private sector and $D_i = 0$ when the individual is employed in the public sector, based on a matrix of covariates X_i of the observed characteristics of the individuals. In this analysis, the characteristics considered were sex, skin colour, hours actually worked in the main job, region of residence and years of education. The match between groups is scored using the conditional probability, $p(X_i/D_i)$, as defined by Rosenbaum and Rubin (1985), Becker and Ichino (2002) and Guo and Fraser (2010):

$$p(X_i) \equiv \Pr(D_i = 1 | X_i) = E(X_i) \quad (1)$$

After calculating the propensity score, the next step is to match individuals between the groups using the estimates of $p(X_i/D_i)$, which will create a new sample consisting of individuals in the public sector whose likelihood of possessing certain characteristics in the aggregate is similar to that of individuals employed in the private sector (Becker and Ichino 2002; Guo and Fraser 2010). A number of algorithms can be used to carry out matching.⁶ K nearest-neighbour matching was used for this study, with the five nearest neighbours, Nn(5), being taken.

$$C(i) = \min_j \| p_i - p_j \| \quad (2)$$

Given that the set of individuals in the control group (public sector) is matched with the treated units i (private sector), the idea is that the difference ($C(i)$) between the estimated propensity score of the treated group (p_i) and the control group (p_j) should be minimal.

Thus, the calculated probability of an individual belonging or not to the public sector is ranked according to certain characteristics. On the basis of this ranking, five individuals from the sample belonging to the control group (public sector) are sought who have a probability equal to or very similar to that of a given individual from the treatment group (private sector). Once this ranking has been carried out, an average income is obtained for the five individuals in the control group. This average wage will be attributed to the individual in the treatment group who is similar to the five individuals in the control group. After matching employed individuals with similar characteristics from the two sectors, the income structure of the private sector is replaced by that of the public sector. This process is carried out separately for education and healthcare activities, creating an artificial situation in which the incomes of individuals employed in the two areas are standardized (on average and with the public sector as the base).

⁶ See Becker and Ichino (2002) for further details.

Table 12 presents the estimates for the simulated Gini index, calculated on the basis of the earnings for the main job arrived at by replacing private sector earnings by public sector earnings between individuals with similar characteristics, and for the observed Gini index in 2012, 2019 and 2023. As can be seen in the simulation, income disparity would decrease substantially, declining by 36.2% in education and by as much as 48.4% in healthcare in 2023.

Table 12
Brazil: simulated and observed Gini index values, 2012, 2019 and 2023

Sector	2012		2019		2023	
	Simulated Gini	Observed Gini	Simulated Gini	Observed Gini	Simulated Gini	Observed Gini
Private education	0.2872	0.4686	0.2872	0.4838	0.2707	0.4246
Total education ^a	0.3852	0.4371	0.3792	0.4233	0.3620	0.4089
Private healthcare	0.2750	0.5338	0.2773	0.5421	0.2689	0.5208
Total healthcare ^a	0.3460	0.5032	0.3475	0.4966	0.3311	0.4798

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

^a The total Gini index was calculated by taking simulated earnings in the private sector and observed earnings in the public sector.

These results, however, stem from different patterns of earnings distribution in the education and healthcare sectors. Table 13 can be used to carry out a quantile analysis of the distribution of employee earnings in education and healthcare. In the case of education, the table reveals that income distribution is more balanced in the public sector, with higher base and median wages and, most importantly, with a smaller difference between base wages and the highest wages. The substantial difference in the Gini index between the private and public sectors seems to be due to this characteristic. However, merely equalizing the base wage in education with the base wage in the public sector would reduce the disparity in this sector by 11.9% in 2012, 10.4% in 2019 and 11.5% in 2023.

Table 13
Brazil: earnings and inequality indicators for public and private education and healthcare, 2023
(Earnings in reais, ratios and Gini index values)

	Education		Healthcare	
	Public	Private	Public	Private
P10	1 344.83	1 102.42	1 349.45	1 344.30
P50	2 923.00	1 989.78	2 666.58	2 256.25
P90	7 231.55	6 051.33	8 459.95	9 484.03
P99	16 665.15	20 631.03	23 074.98	30 775.50
P99/P50	5.70	10.37	8.65	13.64
P90/P40	3.10	3.69	3.59	4.72
P90/P50	2.47	3.04	3.17	4.20
Gini	0.392	0.445	0.437	0.521

Source: Prepared by the authors, on the basis of the Continuous National Household Sample Surveys conducted by the Brazilian Institute of Geography and Statistics (IBGE).

As was seen earlier, by contrast with the situation in education, average wages are higher in the private healthcare sector than in the public sector. A quantile distribution analysis shows that this higher average is due exclusively to the presence of much higher incomes in the upper percentiles of the distribution (P90 and especially P99), since base pay (mainly) and median pay did not differ so markedly. The distribution measures most sensitive to the gap with the highest incomes, such as the P90/P50 ratio, reveal a value in excess of 4.2 in the private sector, compared to 3.17 in the public

sector, with both these being higher than the values in education (3.04 and 2.47, respectively). In any event, despite having lower average pay, the public healthcare sector has a more balanced income distribution than the private sector.

It should also be noted that the highest-earning 1% of employees in the private sector receive wages up to 13.64 and 10.37 times as great than those of employees in the middle of the distribution in healthcare and education, respectively. This difference is much smaller in the public sector, at 8.65 and 5.70 times, respectively.

Lastly, these results are related in some degree to differences in the distribution of occupations in education and healthcare and of the incomes of the professionals most directly connected to the areas studied. In the light of data from the 2023 Continuous National Household Sample Survey, certain points can be made. First, the distribution of occupations is less dispersed in the education sector than in the healthcare sector: whereas the 10 occupations employing the most people in education account for 76% of total employment in the private sector and 86% in the public sector, in healthcare the proportions are lower, at 63% and 64%, respectively. Second, the number of professions accounting for 90% of total employment is higher in healthcare than in education, in both the public and private sectors: in education, 90% of total employment is accounted for by 12 professions or occupations in the public sector and 23 in the private sector; in healthcare, the figures are 23 in the public sector and 37 in the private sector. These indicators reflect a greater diversity of professions and occupations in the healthcare sector. Lastly, when the differences in average earnings are considered, teaching staff in higher education are paid 2.8 and 2.3 times as much as teachers in early childhood education in the public and private sectors, respectively, while specialist doctors are paid 4.4 and 7.6 times as much as mid-level nursing professionals in the public and private sectors, respectively.⁷

IV. Final considerations

Given the importance of service sector employment, this study highlights the clear relative advantages of public sector employment in education and healthcare, which between them are the largest source of employment in Brazil's social services sector. Public education and healthcare provide jobs with higher average earnings and base wages, a more equitable income distribution and better indicators of employment quality as regards informality, the incidence of employees with incomes below the minimum wage or below one third of median incomes, and the incidence of long working hours. Again, these jobs are more inclusive of women and non-white people, groups that have traditionally been more disadvantaged in the labour market. They are also more resilient to crises.

Lastly, the counterfactual simulation shows that if the income structure of the public sector matched the income structure of jobs in public and private education and healthcare, the wage disparity in these activities could be virtually halved. This would largely be because the base wage and the mean of the distribution would be higher, but also and mainly because the differences caused by very high incomes would be reduced. This indicates that the redistributive potential of public education and healthcare extends to their labour markets.

In a context where the public and private social services sectors coexist, a more robust public sector, with its higher-quality jobs, could exert pressure for improvement in the poorer employment conditions of the private sector. In particular, a lack of regulation mainly affects jobs in the healthcare sector, where, by contrast with the more homogeneous and much more highly regulated education system, only two occupations have a set base wage (since 2023), out of the dozens making up the sector.

⁷ The authors may be consulted for quarterly data covering 2023.

Bibliography

- Atkinson, A. B. (2015). *Inequality: What Can Be Done?* Harvard University Press.
- Autor, D. (2022). The labor market impacts of technological change: from unbridled enthusiasm to qualified optimism to vast uncertainty. *Working Paper* (30074). National Bureau of Economic Research.
- Autor, D. and Dorn, D. (2013). The growth of low-skill service jobs and the polarization of the US labor market. *American Economic Review*, 103(5).
- Barany, Z. and Siegel, C. (2015). Job polarization and structural change. *Sciences Po Economics Discussion Papers* (2015-07). Sciences Po.
- Becker, S. O. and Ichino, A. (2002). Estimation of average treatment effects based on propensity scores. *The Stata Journal*, 2(4).
- Coote, A. (2021). Universal basic services and sustainable consumption. *Sustainability: Science, Practice and Policy*, 17(1).
- Elfring, T. (1989). New evidence on the expansion of service employment in advanced economies. *Review of Income and Wealth*, 35(4).
- Esping-Andersen, G. (1990). *The Three Worlds of Welfare Capitalism*. Princeton University Press.
- Gadrey, J. (2005). Les quatre “mondes” des économies de services développées. *Économies et Sociétés: Économie et Gestion des Services*, 11(7).
- Gottschall, K. and Tepe, M. (2021). The welfare State as employer. In D. Béland, S. Leibfried, K. J. Morgan, H. Obinger and C. Pierson (Eds.), *The Oxford Handbook of the Welfare State*. Oxford University Press.
- Guedes, G. P. (2020). *Determinantes do crescimento da participação do setor de serviços no emprego latino-americano no período 1980–2014* [Doctoral thesis in economic sciences]. Fluminense Federal University.
- Guo, S. and Fraser, M. K. (2010). *Propensity Score Analysis: Statistical Methods and Applications*. Sage.
- International Labour Organization. (2021). *World Employment and Social Outlook 2021: The Role of Digital Labour Platforms in Transforming the World of Work*.
- Kerstenetzky, C.L. (2012). *O estado de bem-estar social na idade da razão: A reinvenção do estado social no mundo contemporâneo*. Elsevier.
- Kerstenetzky, C. L. (2016). Consumo social e crescimento redistributivo: notas para se pensar um modelo de crescimento para o Brasil. *Brazilian Journal of Political Economy*, 36(1).
- Kerstenetzky, C. L. (2021). Why we need an allocative (and resourceful) welfare state. *Brazilian Journal of Political Economy*, 41(4).
- Kerstenetzky, C. L. (2022). Investimento público em serviços sociais como componente central de uma agenda de desenvolvimento. *Discussion Paper* (003/2022). Institute of Economics, Federal University of Rio de Janeiro.
- Kerstenetzky, C. L. and Machado, D. C. (2018). Labor market development in Brazil: formalization at last? In E. Amann, C. R. Azzoni and W. Baer (Eds.), *The Oxford Handbook of the Brazilian Economy*. Oxford University Press.
- Marques, P. R., Pires, L. N., Passos, L. and Taioka, T. (2022). Gênero e raça no mercado de trabalho brasileiro: a importância do gasto social em saúde e educação pública para a redução de desigualdades. *Notas de Política Econômica* (022). MADE/USP.
- Organisation for Economic Co-operation and Development. (2001). *OECD Employment Outlook 2001*. OECD Publishing.
- Organisation for Economic Co-operation and Development. (2015). *OECD Employment Outlook 2015*. OECD Publishing.
- Rosenbaum, P. R. and Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1).
- Wray, L. R., Dantas, F., Fullwiler, S., Tcherneva, P. R. and Kelton, S. A. (2018). *Public Service Employment: A Path to Full Employment*. Levy Economics Institute of Bard College.