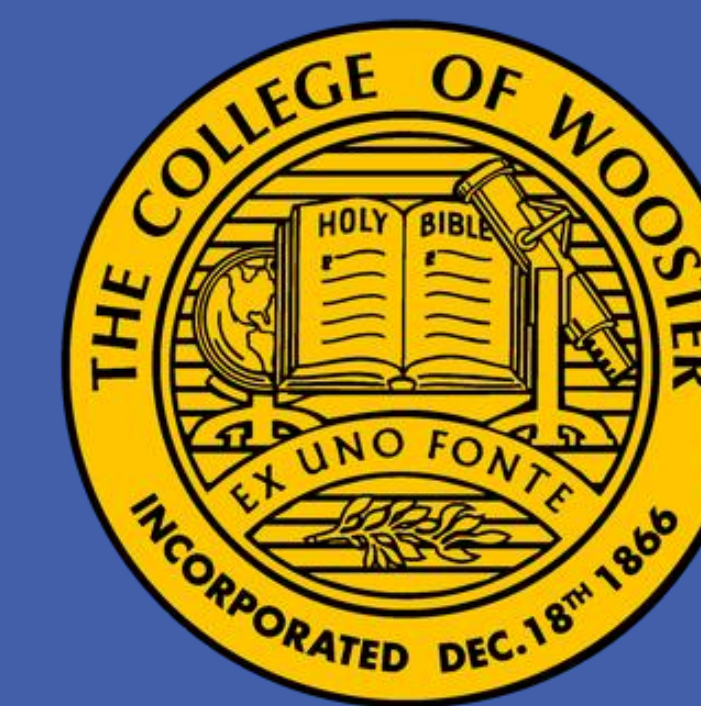




# Crossing the Rubicon: Brazilian Water Access from Public Provision to Privatization

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## Abstract

This thesis focuses on the impact privatization has on water access between two cities in Brazil. The goal of this research is to determine if privatization impacts access to water which could help states address water scarcity and access issues in the future. I hypothesize that an increase in privatization will increase water access for higher income individuals but will have little impact on lower income individuals. This hypothesis is tested by utilizing a comparative case study approach which will allow me to compare one state that has partially privatized, Campo Grande, and one state that has not privatized, Goiânia. In order to contextualize this research, I engaged in an examination of historical literature surrounding the topics of land and water access in Brazil before turning to a primary source analysis which studied rhetoric surrounding privatization in the last two decades of the twentieth century. Data was gathered by analyzing government records, on the ground interviews, legal documents, scientific studies, NGO research, and news archives. My findings indicate that the private company, AG in Campo Grande, provide better access to water than Saneago in Goiânia on three of the four criteria studied, with little difference noted on the fourth, quantity, criterion. This research should prove beneficial for scholars and governments questioning the impacts of privatization and provides a framework to study water access.

## Research Question and Hypothesis

### Research Question:

What impact does privatization have on water access?

### Variables:

Independent Variable: Type of water provisioning

Dependent Variables: Water access

### Hypothesis:

I hypothesize that an increase in privatization will lead to an increase in water access for higher income individuals, but will have little impact on lower income individuals.

## Literature Reviewed

### Two Major Fields Studied

#### 1. Privatization

- Privatization conceptually
  - The tragedy of the commons
- Public versus private debates
  - Benefits and drawbacks of each type of provisioning
- Why states and cities privatize
  - Perception of efficiency and cost saving
- Who privatizes
  - Cities and states with pro-privatization leaders
- Repercussions and compounding factors
  - Urbanization and migration

#### 2. Water Access

- Water access conceptually
  - Public good versus economic commodity
- Why water is accessed
  - Irrigation, industry, consumption
- Water access challenges
  - Access better in formal, upper class areas
  - Access is more than physical infrastructure

## Methods and Case Studies

### Methods

#### Approach

- Comparative case study
- Method of difference

#### Materials Utilized in Research

- Government records
- In-person interviews
- Scientific studies
- News archives
- Legal documents
- NGO reports

#### Measurements

- Four criteria of water access
  1. Quantity of water
  2. Quality of water
  3. Physical infrastructure and utility performance
  4. Cost to consumers and utility economic performance



### Case Studies

#### Goiânia

- Public case with a mixed economy
- Serviced by Saneamento de Goiás (Saneago)
- Capital of Goiás
- Population: 1,555,626 (2021)

#### Campo Grande

- Private case with a concession contract signed in 2000
- Serviced by Águas Guaririba (AG)
- Capital of Mato Grosso do Sul
- Population: 916,001 (2021)

## Results

### Criterion 1: Quantity

	Goiânia	Campo Grande
Volume of Water Produced (1,000m <sup>3</sup> )	125,143	90,970
Volume of Water Consumed (1,000m <sup>3</sup> )	97,544	52,160
Volume of Water Billed (1,000m <sup>3</sup> )	98,106	50,763

### Criterion 3: Physical infrastructure and utility performance

	Goiânia	Campo Grande
Total Water Connections	598,615	293,536
Physical Infrastructure Extension (km)	7,651	4,006
Urban Water Index (%)	99.55	100
Total Water Index (%)	99.18	98.66
Sewage Index (%)	92.67	82.88
Distribution Loss (%)	21.69	19.97
Average Loss Per Connection (l/connection/day)	132.52	119.85
Investment in Water System (R\$)	6,457,374	52,949,091
Investment in Sewage System (R\$)	15,950,577	25,986,861
Total Investments (R\$)	46,534,219	105,428,493
Total Water Stoppages	622	63
Duration of Water Stoppages (hours)	10,137	435
Economies Impacted by Water Stoppages	11,922,144	20,525
Systematic Outages	2	0
Duration of Systematic Outages	436	0
Sewage Overflows	6,840	9,470
Duration of Sewage Overflows (hours)	79,383	9,470
Complaints/Service Requests	530,856	220,203
Services Performed	529,967	218,764
Service Execution Time (hr)	19,616,944	176,812

### Criterion 2: Quality

	Goiânia	Campo Grande
Fluoridation Rate (%)	99.39	97.3
Irregular Chlorine Tests (%)	2.03	0.79
Irregular Turbidity Tests (%)	3.24	0.19
Irregular Coliform Bacteria Tests (%)	0.49	0.28

### Criterion 4: Cost to consumers and utility economic performance

	Goiânia	Campo Grande
Average Water Cost per m <sup>3</sup> (R\$)	6.1	6.94
Average Sewage Cost per m <sup>3</sup> (R\$)	5.99	4.92
Average Tariff (R\$)	6.05	5.93
Evasion Rate (%)	2.36	3.4
Total Employees	2,362	636
Average Cost per Employee (R\$)	54,945	35,268
Employees per 1,000 Connections	4.24	2.09
Spending on Imported Water (R\$)	1,299,740	0
Revenue from Water (R\$)	495,249,376	352,098,895
Total Revenue (R\$)	907,264,074	524,558,055
Total Expenses (R\$)	683,539,171	384,972,848

All information in these tables is from the Brazilian Ministério das Cidades and Secretaria Nacional de Saneamento Ambiental (2019)

## Conclusions

- Findings indicate that the private utility, AG, outperformed the public utility, Saneago, on three of the four criteria in 2019
- Little difference was noted on the quantity criterion
- These findings support my hypothesis by indicating that private companies may be able to provide better access to water than public utilities
- However, the data I collected did not contain economic class records, so conclusions cannot be drawn on the second portion of my hypothesis
- The data points to the notion that private companies can provide better access to water at a similar cost to public companies
- This contradicts much of the research on this topic outside of Galiani et al. (2005)
- This contradiction points to the need for future research on this topic

## Future Research

### Future research should:

- Utilize the four criteria framework to analyze the different facets of water access in different cities or states
- Study these cities, or other cities, over a longer time period, perhaps 3-5 years, to better gauge trends and changes
- Conduct interviews with community members to gain a better sense of the lived experiences of water access
- Compare different types of privatization to see if one type performs better than other types
- Collaborate with other disciplines, such as environmental studies or chemistry, to conduct water testing

## Selected References

- Galiani, Sebastian, Paul Gertler, and Ernesto Schargrofsky. 2005. "Water for Life: The Impact of the Privatization of Water Services on Child Mortality." *Journal of Political Economy* 113(1): 83-120. doi:10.1086/426041.
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### Map of Brazil from:

Stanton, Michael et al. 2010. "RNP: A Brief Look at the Brazilian NREN."

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