

Rethinking stratification:

Building an equitable, sustainable subsidy system to fund utilities in Colombia

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This brief argues that provision of Colombia's utilities should be funded by a tax-progressive mechanism that identifies the appropriate beneficiaries of subsidies and the taxpayers who should fund them. It outlines the weaknesses of the country's current inaccurate stratification system and proposes a more sustainable and equitable alternative.

Introduction

A system for providing utilities forms part of the broader discussion around reduction of inequalities in developing countries, and can act as a useful policy tool that contributes to citizen welfare improvement strategies. The socio-economic profile of developing countries makes it particularly important to assign the limited proceeds from taxes to those who need them most. The correct identification of beneficiaries and contributors supports the provision, sustainability and tax-progressiveness of the system. Conversely, inaccurate identification of the different groups wrongly benefits certain individuals, jeopardising the system's long-term financial stability.

The Colombian approach to allocating subsidies for utilities (electricity, water and sewers) identifies different populations' payment capacities based on the exterior physical characteristics of their homes and on the conditions of the immediate surrounding areas. This approach, commonly known as "stratification", classifies population into six groups from the lowest level (strata 1) to the highest level (strata 6).

Almost three decades after its conception, various evaluations of the stratification system have found important weaknesses, concluding the system is obsolete and unable to achieve its intended goals. Changes to the stratification system can only be made by the central government, due to the legal framework. However, academia, non-governmental organisations and some local governments remain involved, advocating for change and keeping the issue on the political agenda, given the pressing need to address the negative effects of the current system.

Key findings

This research identified key lessons from a system that measures households' payment capacity exclusively from their observable physical characteristics:

- 1. Stratification promotes a mismatch between households' payment capacities and their classification, thereby creating excessive inclusion of taxpayers among the beneficiaries. This means there are too many households classified as low-income or vulnerable, making them eligible for receiving a subsidy even though they have the capacity to pay the full rate for utilities.**
- 2. The incorrect identification of taxpayers as beneficiaries causes cities to reach the maximum permitted threshold for subsidies in each stratification category, jeopardising local governments' financial stability. As a result, expenditures surpass the resources collected to fund the system, creating a financial imbalance.**
- 3. The system has strongly influenced the emergence and persistence of spatial segregation within cities.**

Consequently, we recommend implementing a system based on a multi-dimensional assessment of household characteristics, instead of exclusively on their external features.

The Colombian stratification system promotes a substantial mismatch between households' payment capacities and their classification

Households' external physical characteristics are an incomplete criterion to classify payment capacity

The existing stratification system is unable to classify households' payment capacities

accurately over time, which undermines its financial stability. Colombia's economic growth and poverty reduction in recent decades are not reflected in the population strata generated by the system. This is primarily because homeowners decide to keep the external characteristics of their housing unchanged, even though their payment capacity improves over time. As result, the system does not capture upward income mobility, which occurs mainly among lower-income groups. The system was not designed to adapt to a changing economic environment, resulting in a high percentage of wrongly identified beneficiaries.

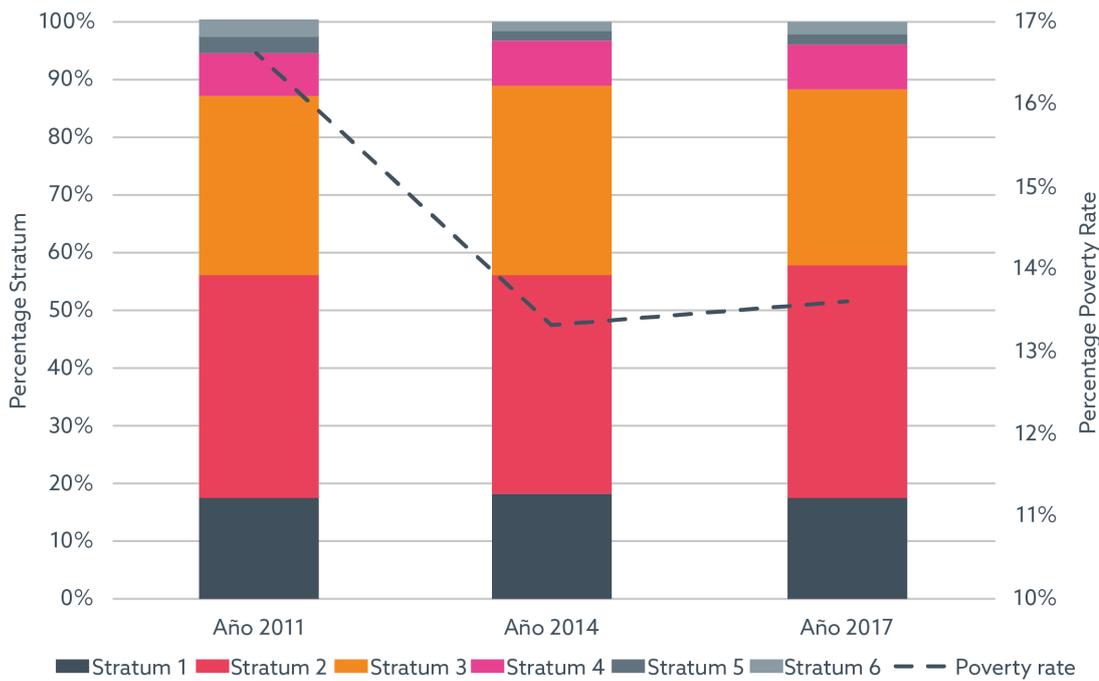


Figure 1. Percentage of households per stratum and percentage of household poverty based on national measures, 2011, 2014 and 2017. Source: GEIH-MESEP 2017; authors' calculations.

Figure 1 shows that the reduction in household poverty does not translate to substantial changes in strata. The percentage of households per strata remains virtually the same, highlighting

the main weakness of the stratification system: its inability to reflect improvements in population welfare as macroeconomic changes occur.

Stratification and local governments' long-term financial stability

A deficit covered by central government

The stratification system involves different levels of subsidies for beneficiaries and different charges for contributors. Once subsidies

and contributions are calculated, any deficit to cover subsidies must be paid by the local government. A long-lasting deficit jeopardises local governments' financial stability, which is the most likely scenario in a context of persistent mismatch between households' payment capacity and their stratification. For example, as households become wealthier, they consume higher levels of utilities, which under the current scheme continue to be subsidised.

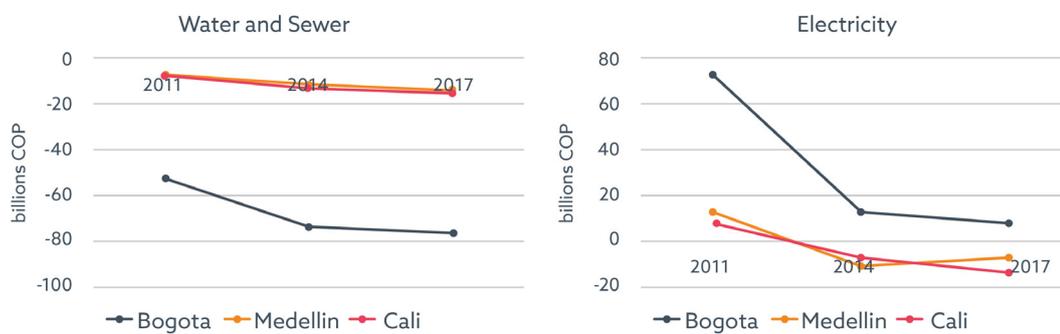


Figure 2. Deficit (-) or surplus (+) balance of contributions vs. subsidies in billions of Colombian pesos (current prices) for water, sewers and electricity, 2011, 2014 and 2017. Source: SUI 2018; authors' calculations.

Figure 2 shows trends in three cities for deficit or surplus in the balance of contributions and subsidies for water and sewers, and electricity. In all cases, the downward trends suggest that

in the medium term, cities reach and maintain a negative balance, paying a higher level of subsidies than the contributions they receive from taxpayers.

The system has strongly influenced the emergence and persistence of spatial segregation

Invisible barriers hinder equitable development

Cities worldwide have unique spatial clustering and segregation distributions. In Colombia, stratification has strongly influenced the

emergence and persistence of these phenomena, given that the stratification system distorts motives and incentives for residents' housing location decisions. For example, people opt to live in houses and neighbourhoods that place them in a lower stratum, so they can benefit from the higher subsidy rates. This perpetuates the clustering and segregation of dilapidated neighbourhoods in the city fringes. Figure 3 shows the pronounced clustering of households by strata in three Colombian cities. of utilities, which under the current scheme continue to be subsidised.

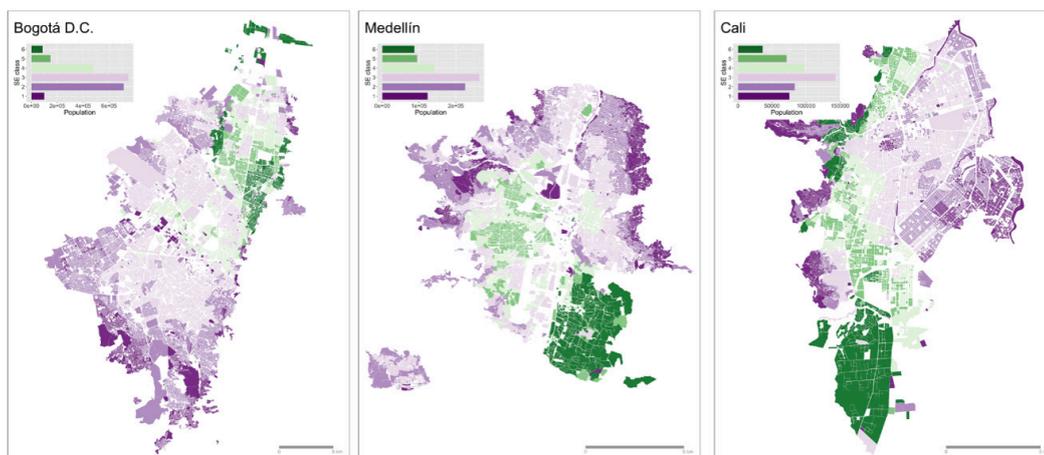


Figure 3. Spatial distribution of strata by census block in Colombia's three main cities. Source: Colombian Census 2018

Reshaping utility subsidies to reduce inequality

Providing an accurate policy tool for local governments

Colombia needs a tax-progressive system for utility provision that reflects families' capacity to pay – meaning they pay more as they are able. There is no single scheme that can perfectly identify payment capacity, although some approaches are more successful than others. Payment capacity is best identified via a multi-dimensional index, with the physical characteristics of housing included as just one of the relevant factors. Other important dimensions include employment, demographic composition, non-property-based wealth, and vulnerability. Taking into account all these aspects when placing any given household individual in a stratum will inevitably yield more accurate results. Nonetheless, a long-term goal aims to create a score and thresholds but not necessarily categories. The approach leverages large administrative databases and big data processing techniques to focus accurately on individuals and their characteristics. Although its implementation is more demanding in terms of infrastructure than the current system, its greater accuracy delivers benefits in terms of both local government finance and equitable distribution of household utility subsidies.

Conclusions

After 27 years of implementation, Colombia's stratification policy is currently being redesigned, in a process led by the national government, with the participation of experts from academia, non-governmental organisations and former public servants. Such discussion of policies for utility provision is part of a larger debate on designing comprehensive strategies to reduce inequality in developing countries. Colombia shares with other developing countries characteristics such as high levels of inequality, considerable internal diversity, low levels of tax resources, and practical challenges in policy implementation. The lessons learned from its policy providing cross-subsidies to fund utilities are therefore useful to policymakers in similar countries trying to improve equality and service provision, within a financially sustainable system.

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¹ Florida, R. and Mellander, C. 2015; Tammaru, T., Van Ham, M., Marcińczak, S. and Musterd, S. 2015.

² Bogliacino, F., Jiménez, L. and Reyes-Galvis, D. 2015; Bogliacino, F., Lozano, L. J. and Reyes, D. 2018.

³ Maluendas, A. 2014; Meléndez, M. 2008; UN-Habitat. 2016.

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1. Generating new research grounded in the logic of urban complexity;
2. Fostering the next generation of leaders that draw on different perspectives and backgrounds to address the greatest urban challenges of the 21st century;
3. Growing the capacity of cities to understand and plan their own futures;

In PEAK Urban, cities are recognized as complex, evolving systems that are characterised by their propensity for innovation and change. Big data and mathematical models will be combined with insights from the social sciences and humanities to analyze three key arenas of metropolitan intervention: city morphologies (built forms and infrastructures) & resilience; city flux (mobility and dynamics) and technological change; as well as health and wellbeing.

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Our framework



The PEAK Urban programme uses a framework with four inter-related components to guide its work.

First, the sciences of **Prediction** are employed to understand how cities evolve using data from often unconventional sources.

Second, **Emergence** captures the essence of the outcome from the confluence of dynamics, peoples, interests, and tools that characterize cities, which lead to change.

Third, **Adoption** signals to the choices made by states, citizens and companies, given the specificities of their places, its resources and the interplay of urban dynamics resulting in changing local power and influence dynamics.

Finally, the **Knowledge** component accounts for the way in which knowledge is exchanged or shared and how it shapes the future of the city.

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