



CAOS
PLANE
JADO

**Verticalização e
Densidade**

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“A cidade precisa ser mais...”

**VERTICALIZADA:
prédios mais altos**

**DENSA:
mais gente no mesmo espaço**

“A cidade precisa ser mais...”

**VERTICALIZADA:
prédios mais altos**

**DENSA:
mais gente no mesmo espaço**

VERTICALIZAÇÃO x DENSIDADE

habitantes/km²

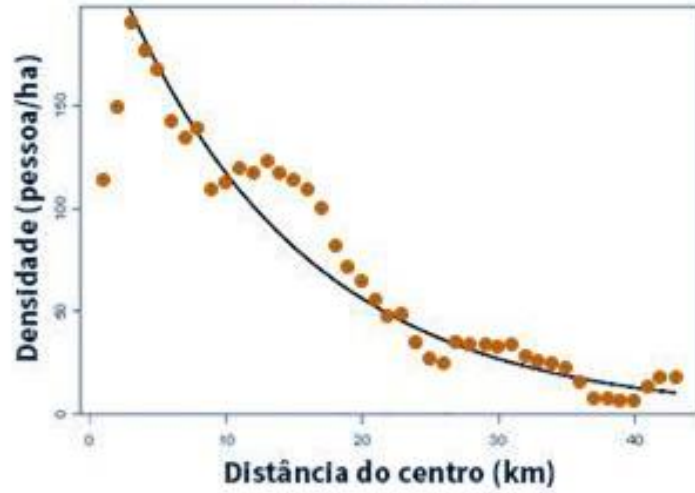
MUNDO

ITAIM BIBI	9000
LONDRES / TÓQUIO	9000
PARIS	20000
HONG KONG	26000
MANHATTAN	27000
MUMBAI	32000
BARCELONA	36000

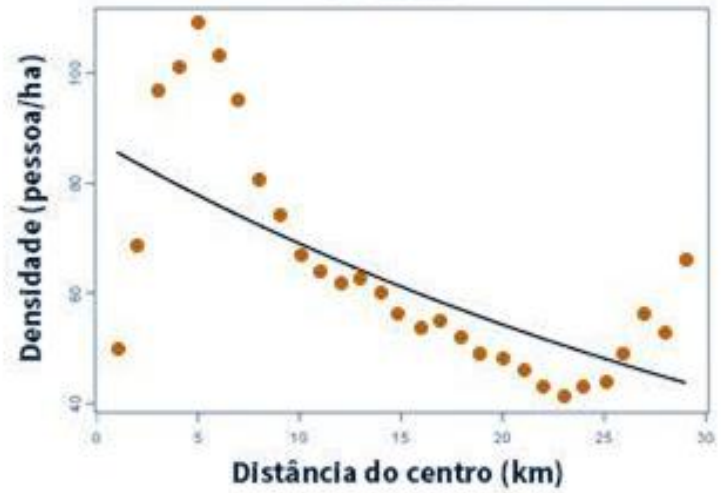
RIO

CENTRO	8000
COSME VELHO	8000
IPANEMA	14000
PILARES	15000
MARÉ	30000
JACAREZINHO	40000
COPACABANA	49000

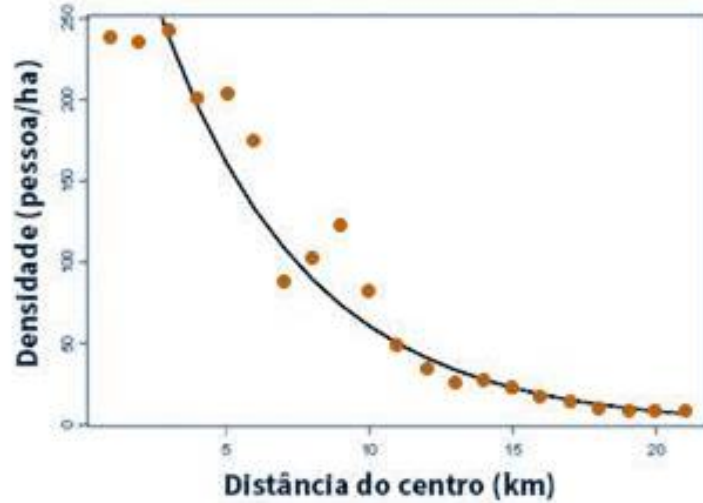
NOVA YORK



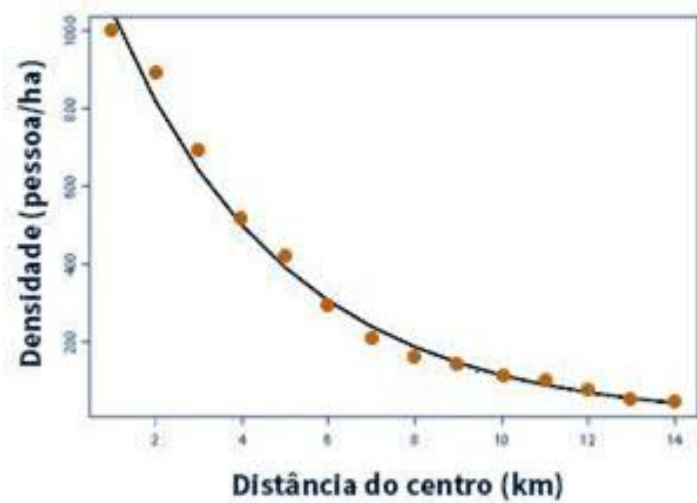
LONDRES

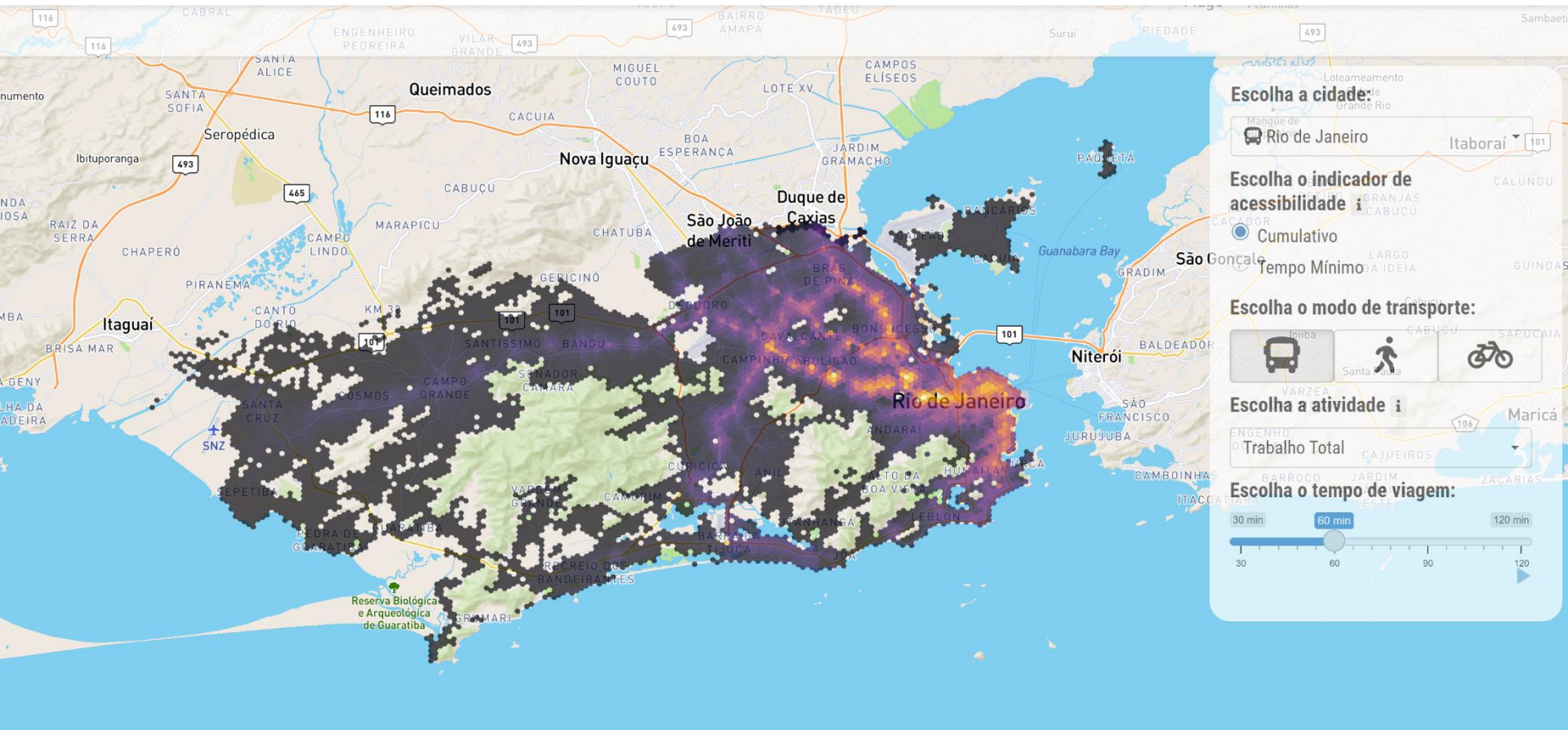


CINGAPURA



XANGAI





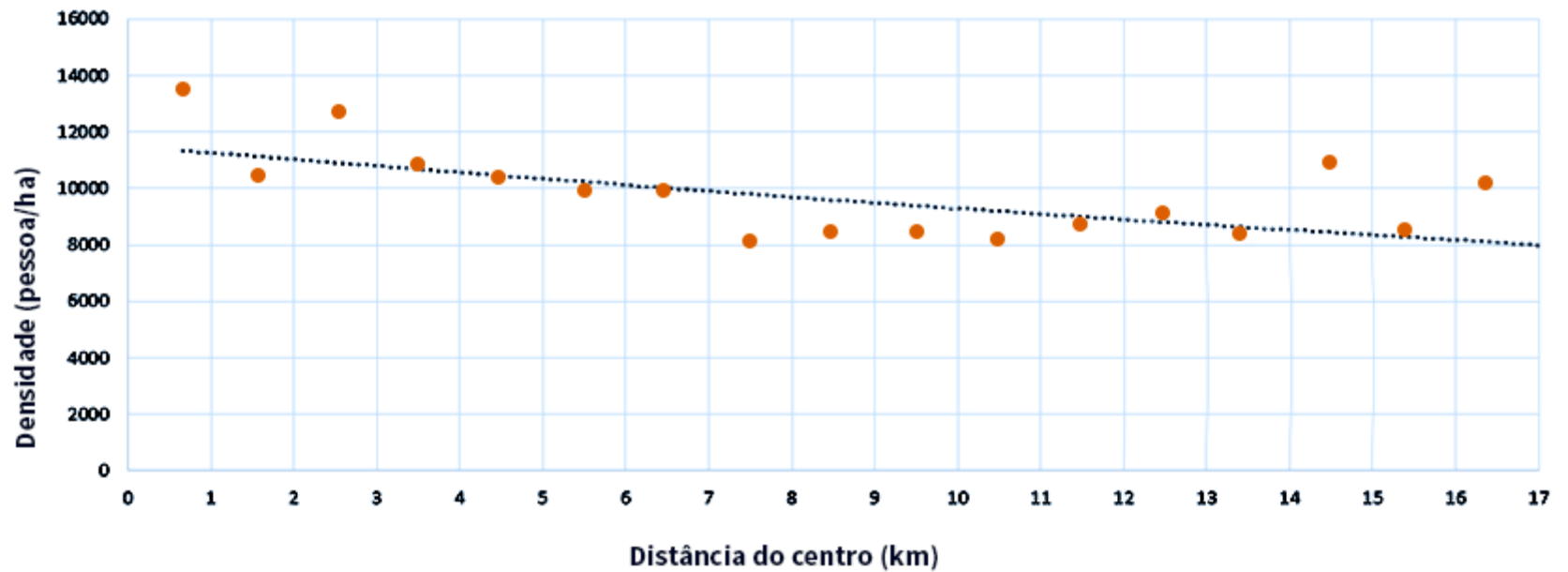
Densidade sem verticalização



Verticalização sem densidade



BELO HORIZONTE



Fonte: Thiago Jardim com base no Censo 2010 (IBGE)



Não há densidade ideal...

Ribeirão das Neves

Areias

Caracóis

Santa Luzia

VENDA NOVA

PAMPULHA

Sabará

Contagem

Belo Horizonte

FUNCIONÁRIOS

Betim

Raposos

Nova Lima

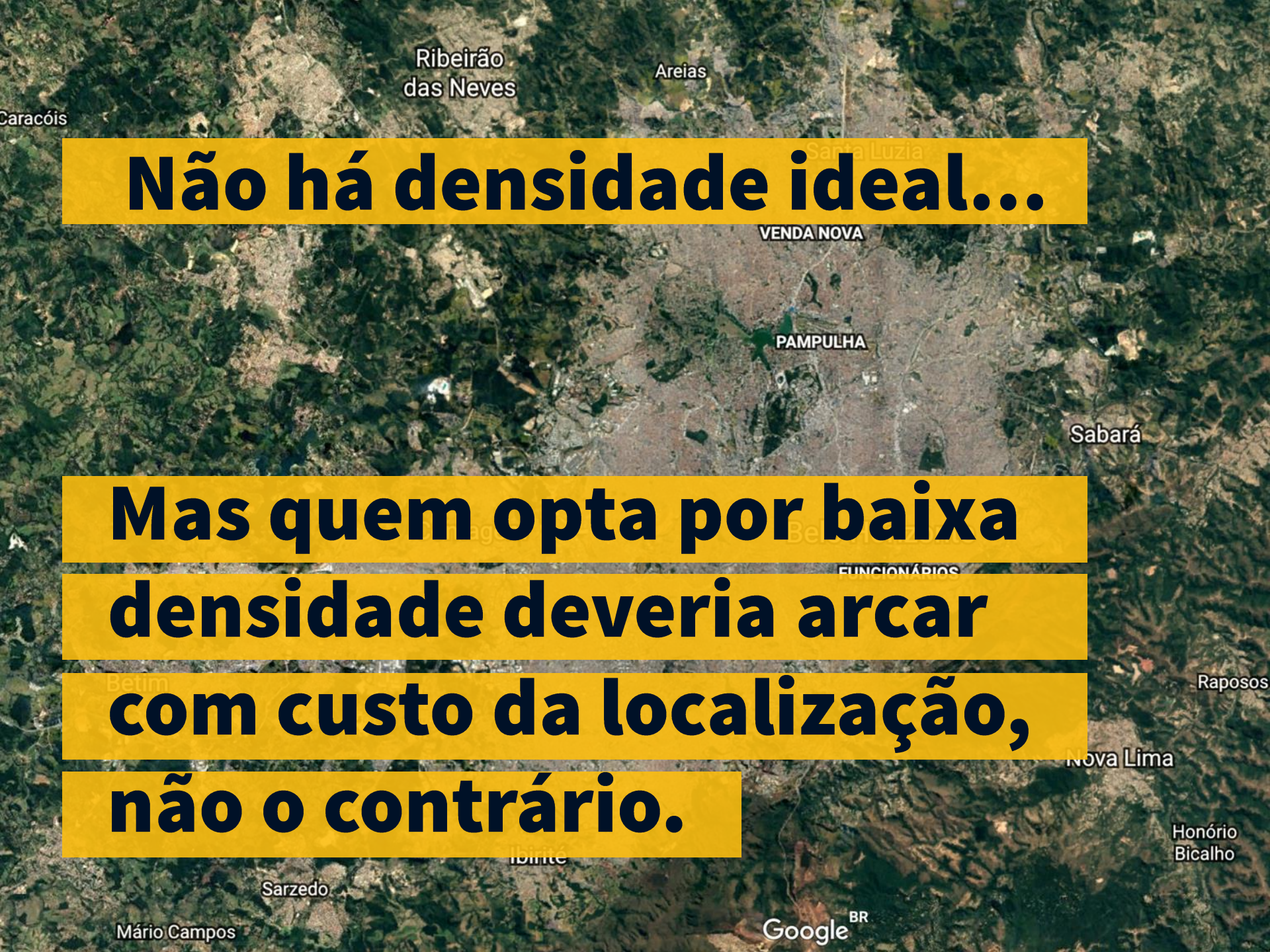
Honório Bicalho

Ibirité

Sarzedo

Mário Campos

Google BR



Não há densidade ideal...

Mas quem opta por baixa densidade deveria arcar com custo da localização, não o contrário.

ESPRAIAMENTO URBANO



Ribeirão das Neves

Areias

Santa Luzia

VENDA NOVA

PAMPULHA

Sabará

Contagem

Belo Horizonte

FUNCIONÁRIOS

Raposos

Betim

Nova Lima

Honório Bicalho

Ibirité

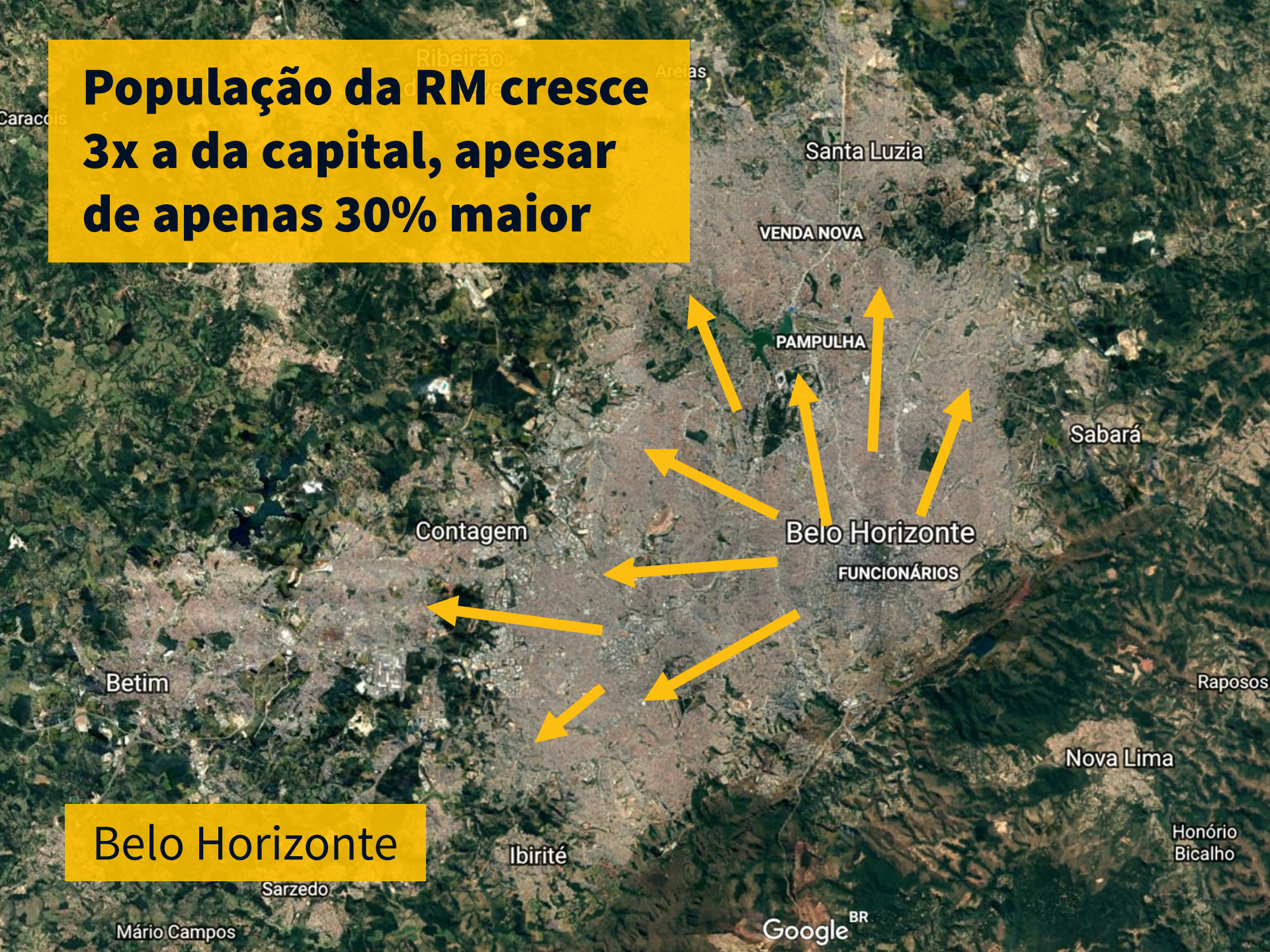
Sarzedo

Mário Campos

Google BR

Belo Horizonte

**População da RM cresce
3x a da capital, apesar
de apenas 30% maior**



Belo Horizonte



Ribeirão das Neves

Areias

Caracóis

Urbanização dispersa

Santa Luzia

Alto custo infraestrutura

Ocupação território natural

Sabará

Contagem

Belo Horizonte

FUNCIONÁRIOS

Raposos

Betim

Nova Lima

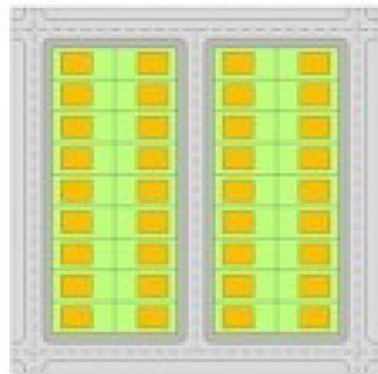
Honório Bicalho

Ibirité

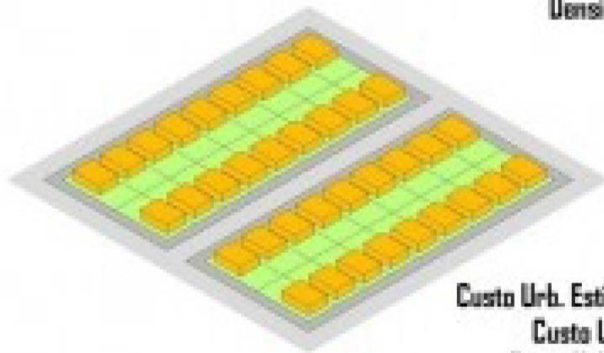
Sarzedo

Mário Campos

Google BR



36 unidades/ha
 Db=122 hab/ha



Custo Urb. Estimado Total = US\$ 260 mil
 Custo Urb./Habitante = US\$ 2.131
 Custo Urb./Residência = US\$ 7.222

unifamiliar

1ha | 10.000m²
 Área Construída Total = 2.520m²
 Área Loteável Total = 7.708m²
 Área Const. Unidade = 70m²
 Taxa de Ocupação = 2.520m²
 Área de Vias = 2.285m²
 Área Verde Pública = 0m²
 Área Verde Privada = 5.188m²
 Área de Estacionamento. = 00m²

Nº de Residências = 36
 Nº de Habitantes = 122

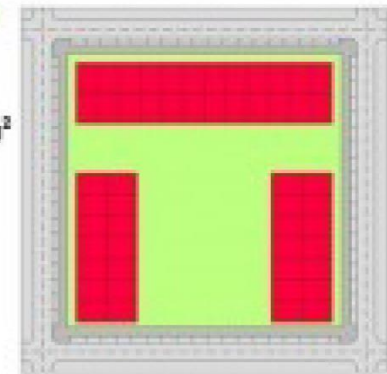
Densidade Bruta = 122 hab/ha
 Densidade Líquida = 158 hab/ha

multifamiliar

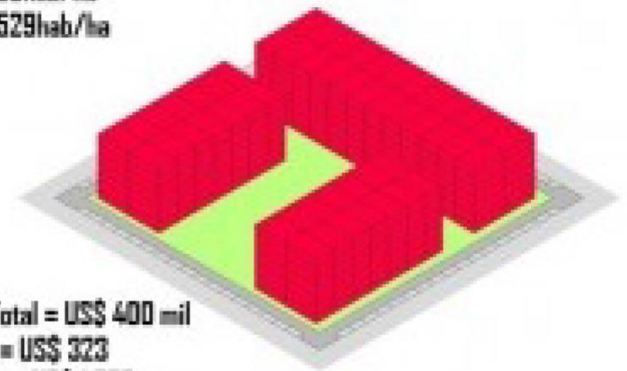
1ha | 10.000m²
 Área Construída Total = 25.480m²
 Área Loteável Total = 8.100m²
 Área Const. Unidade = 70m²
 Taxa de Ocupação = 3.640m²
 Área de Vias = 1.192m²
 Área Verde Pública = 4.460m²
 Área Verde Privada = 00m²
 Área de Estacionamento. = 704m²

Nº de Residências = 364
 Nº de Habitantes = 1.238

Densidade Bruta = 1.238hab/ha
 Densidade Líquida = 1.529hab/ha



(52x7)
364 unidades/ha
 Db=1.238 hab/ha



Custo Urb. Estimado Total = US\$ 400 mil
 Custo Urb./Habitante = US\$ 323
 Custo Urb./Residência = US\$ 1.099

Densidade, dispersão e forma urbana: Dimensões e limites da sustentabilidade habitacional
 Geovany Jessé Alexandre da Silva, Samira Elias Silva e Carlos Alejandro (2016)

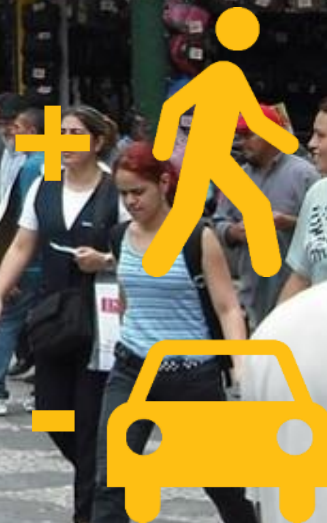


Rua Direita, São Paulo

S.P.T.L. R.C. N.º 607
RUA DIREITA
CITY OF S. PAULO

20,000 hab/km²

Rua Direita, São Paulo



27,000 hab/km²

Manhattan, Nova York



20,000 hab/km²



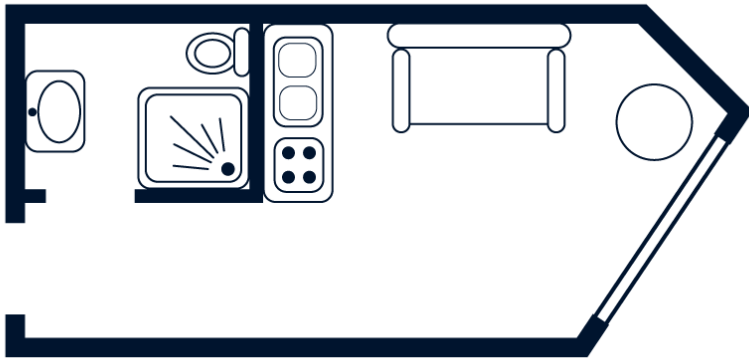
Le Marais, Paris, França

An aerial photograph of a dense urban area in Paris, France, showing a grid of multi-story buildings with grey roofs and narrow streets. A yellow banner at the top right contains the text '20,000 hab/km2'. In the upper left, a blue location pin icon points to a church, with the text 'Catholic Church', 'Église', and 'Saint-Leu-Saint-Gilles' below it. A yellow banner at the bottom left contains the text 'Paris, França'.

20,000 hab/km²

Catholic Church
Église
Saint-Leu-Saint-Gilles

Paris, França



Studio em Paris: 8m² por R\$2000



+ população

+ renda

An aerial photograph of a city street grid, viewed from a high angle. The image is heavily filtered with a dark blue color. In the center, there is a bright yellow rectangular box containing bold black text. The text reads "A cidade precisa oferecer mais espaço".

**A cidade precisa
oferecer mais espaço**

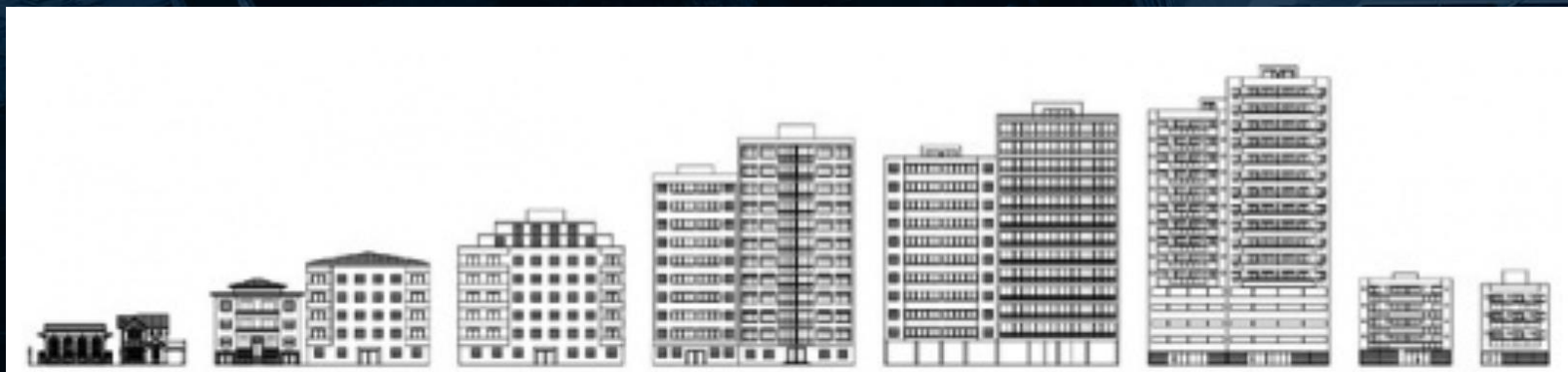


“São Paulo **não pode** parar”

- Adhemar de Barros (-1960)

“São Paulo **precisa** parar”

- Figueiredo Ferraz (1970-)



1941

1951

1976

1990

Evolução das edificações de Copacabana

“Rio de Janeiro nas alturas” – Rogério Cardeman

Regulation and informal settlements in Brazil: a quasi-experiment approach



Visualizar/Abrir

[📄 CEPESP_Biderman_Regulation and informal density and scattered development.pdf](#)
(173.8Kb)

Data

2008

Autor

Biderman, Ciro

This paper discusses the relation between urban norms and informality and presents some evidence for Brazil using a quasi-experimental approach. Using a theoretical framework that relates the supply of house elasticity with the urban norms I argue and give some evidence that in developing countries a more stringent urban regulation would generate more informality while in developed countries it is expected to generate higher housing prices. But not all norms have equal impact. Zoning and land parceling norms seem to have a large impact on informal housing formation while the urban perimeter and building codes have small or no effect. This conclusion is strong and there are some important consequences to land policy issues. The findings are consistent with the dual market model presented in the paper and refute the notion that the formal and informal market are completely independent, since in this case we would expect no impact from regulation on the informal market. Also the idea that urban norms are not enforced in Brazil is very much questioned in this study by exactly the same argument.

URI

<http://hdl.handle.net/10438/19943>

Regulation and informal settlements in Brazil: a quasi-experiment approach

“...em países em desenvolvimento, um zoneamento restritivo gera mais informalidade”

 [CEPESP_Biderman_Regulation](#)

[and informal density and scattered development.pdf](#)
(173.8Kb)

Data

2008

Autor

Biderman, Ciro

URI

<http://hdl.handle.net/10438/19943>

This paper discusses the relation between urban norms and informality approach. Using a theoretical framework that relates the supply of house elasticity with the urban norms, we give some evidence that in developing countries zoning regulations tend to generate more informality while in developed countries it is expected to generate higher building prices. But not all norms have equal impact. Zoning and urban perimeter seem to have a large impact on informal housing formation while the urban perimeter and building codes have small or no effect. This conclusion is strong and there are some important consequences to land policy issues. The findings are consistent with the dual market model presented in the paper and refute the notion that the formal and informal market are completely independent, since in this case we would expect no impact from regulation on the informal market. Also the idea that urban norms are not enforced in Brazil is very much questioned in this study by exactly the same argument.

The Impact of Zoning Ordinances on the Housing Market: Evidence for a Developing Country

Ricardo Carvalho de Andrade Lima - PIMES/UFPE

Raul da Mota Silveira Neto - PIMES/UFPE

RESUMO:

Com a recente urbanização e aumento da densidade demográfica em torno das grandes cidades brasileiras, o mercado imobiliário do país sofreu uma grande valorização. Além de fatores relacionados à demanda, mecanismos com potencial para limitar a oferta de casas também podem ter afetado o aumento de preços nesse mercado. O objetivo do presente trabalho é investigar o impacto das ordens de zoneamento (restrições de uso do solo) sobre a média do preço de alugueis e sobre o crescimento do estoque de casas. Através de uma análise entre cidades e utilizando algoritmos de matching, observou-se que o zoneamento gera um incremento que varia de 5,4% a 6,3% no preço médio de aluguéis, mas não afeta o crescimento de casas. Além disso, conduzimos análises de sensibilidade que sugerem que esse resultado não é simplesmente guiado por confounders não observáveis. Nossa evidência sugere que mesmo sendo uma política bem intencionada, o zoneamento tende a gerar custos sociais que precisam ser considerados.

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The Governance of Land Use

Policy Highlights



Restrictive zoning regulation and single-use zoning should be avoided

Restrictive zoning rules and in particular single-use zoning are among the most important factors contributing to inflexible planning regulations. Zoning should be sufficiently flexible to give private actors leeway to shape development and to allow neighbourhoods to change over time. The same considerations apply to planning decisions in countries that employ more discretionary systems of planning and do not rely on zoning regulations. In these countries, the possibilities to obtain planning permissions should become more flexible.

To allow more flexibility, zoning regulation and planning decisions should target nuisance levels. In general, all uses that create fewer nuisances than the maximum level specified for a zone should be permitted.



The Governance of Land Use

Policy Highlights

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Restrictive zoning rules and in particular single-use zoning are among the most important factors contributing to inflexible planning regulations. Zoning should be flexible to give private actors leeway to shape development and to allow neighbourhoods to change over time. The same is true for countries that employ more discretionary regulations. In these countries, the possibilities to obtain planning permissions should become more flexible. In general, zoning regulation and planning decisions should target nuisance levels. In general, all uses that create fewer nuisances than the maximum level specified for a zone should be permitted.

“Zoneamento deveria ser suficientemente flexível para permitir atores privados guiarem o desenvolvimento e permitir que bairros mudam com o tempo.”



The Impact of Zoning on Housing Affordability

Edward L. Glaeser & Joseph Gyourko

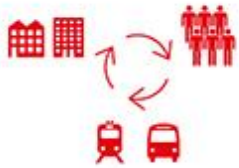
SHARE   

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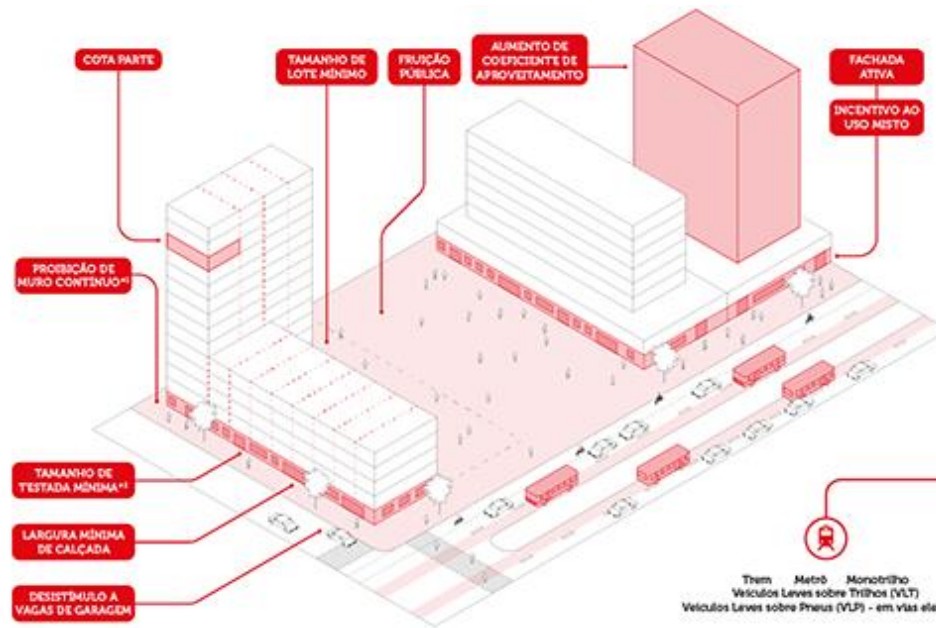
DOI 10.3386/w8835

ISSUE DATE March 2002

Plano Diretor e Lei de Uso e Ocupação do Solo, São Paulo



--- = Eixo da via



• = Acessos às estações



Estimating the Economic Value of Zoning Reform*

Santosh Anagol

Fernando Ferreira

Jonah Rexer

August 9, 2021

Abstract

We develop a framework to estimate the economic value of housing regulations, and apply it to a 2016 zoning reform in the city of São Paulo, which altered maximum permitted construction to land area at the city-block level. Using a spatial regression discontinuity design, we find that developers swiftly reacted to the reform by filing for more multi-family construction permits in blocks with higher allowable densities. We incorporate these micro-estimates of developer responses to zoning reforms into an equilibrium model of housing supply and demand to estimate the long term impact of zoning changes on construction, house prices, residential location decisions and resident welfare. Supply responses from the reform produce a 1.4 percent increase in the total housing stock, leading to a 0.4-0.9% reduction in prices. Consumer welfare gains increase 4.5-fold once we account for equilibrium changes in the built environment, since higher neighborhood density and newer buildings are features highly valued by households. There is also substantial heterogeneity, with neighborhoods with the largest increases in permitted density receiving more construction (13.8%) and consequently ending up with lower house prices (4.4%). Moreover, college-educated and higher income households gain the most from the reform, because more of those families can now move from the suburbs to the more central parts of the city. However, nominal house price losses faced by existing homeowners and landlords overshadow all housing consumption gains, which may explain opposition to higher densification in many cities. Finally, counterfactual simulations of more aggressive zoning reforms - e.g. doubling allowed densities - produce much larger welfare gains.

Estimating the Economic Value of Zoning Reform*

Santosh Anagol

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“As respostas de oferta da reforma [do zoneamento] produziram um aumento de 1,4% no estoque habitacional, levando à redução de 0,4-0,9% nos preços”

We develop a framework to estimate the economic value of housing regulations, and apply it to a 2014 zoning reform in the city of São Paulo, which lowered maximum permitted construction density in blocks with lower allowable densities. Using a spatial regression discontinuity design, we find that developers swiftly reacted to the reform by filing for more multi-family construction permits in blocks with higher allowable densities. We incorporate these micro-estimates of developer responses to zoning reforms into an equilibrium model of housing supply and demand to estimate the long term impact of zoning changes on construction, house prices, residential location decisions and resident welfare. Supply responses from the reform produce a 1.4 per-

“reformas de zoneamento mais agressivas – e.g. dobrando as densidades permitidas – produzem ganhos sociais muito maiores.”

The Effect of New Market-Rate Housing Construction on the Low-Income Housing Market

Upjohn Institute Working Paper 19-307

Evan Mast

W.E. Upjohn Institute for Employment Research

email: mast@upjohn.org

July 2019

ABSTRACT

Increasing supply is frequently proposed as a solution to rising housing costs. However, there is little evidence on how new market-rate construction—which is typically expensive—affects the market for lower quality housing in the short run. I begin by using address history data to identify 52,000 residents of new multifamily buildings in large cities, their previous address, the current residents of those addresses, and so on. This sequence quickly adds lower-income neighborhoods, suggesting that strong migratory connections link the low-income market to new construction. Next, I combine the address histories with a simulation model to estimate that building 100 new market-rate units leads 45-70 and 17-39 people to move out of below-median and bottom-quintile income tracts, respectively, with almost all of the effect occurring within five years. This suggests that new construction reduces demand and loosens the housing market in low- and middle-income areas, even in the short run.

The Effect of New Market-Rate Housing Construction on the Low-Income Housing Market

“...novas construções reduzem a demanda e flexibilizam o mercado habitacional em áreas de baixa e media renda, mesmo no curto prazo.”

Increasing supply is frequently proposed as a solution to rising housing costs. However, there is little evidence on how new market-rate construction—which is typically expensive—affects the market for lower quality housing in the short run. I begin by using address history data to identify 52,000 residents of new multifamily buildings in large cities, their previous address, the current residents of those addresses, and so on. This sequence quickly adds lower-income neighborhoods, suggesting that strong migratory connections link the low-income market to new construction. Next, I combine the address histories with a simulation model to estimate that building 100 new market-rate units leads 45-70 and 17-39 people to move out of below-median and bottom-quintile income tracts, respectively, with almost all of the effect occurring within five years. This suggests that new construction reduces demand and loosens the housing market in low- and middle-income areas, even in the short run.

City-wide effects of new housing supply: Evidence from moving chains

Cristina Bratu

Oskari Harjunen

Tuukka Saarimaa*

August 2021

Abstract

We study the city-wide effects of new, centrally-located market-rate housing supply using geo-coded total population register data from the Helsinki Metropolitan Area. The supply of new market rate units triggers moving chains that quickly reach middle- and low-income neighborhoods and individuals. Thus, new market-rate construction loosens the housing market in middle- and low-income areas even in the short run. Market-rate supply is likely to improve affordability outside the sub-markets where new construction occurs and to benefit low-income people.

JEL: R31, R21, R23

Keywords: Housing supply, Housing affordability, Filtering.

City-wide effects of new housing supply:
Evidence from moving chains

“A oferta de novas unidades a preços de mercado disparam um efeito em cascata que rapidamente atinge bairros e indivíduos de média e baixa renda.”

reach middle- and low-income neighborhoods and individuals. Thus, new market-rate construction loosens the housing market in middle- and low-income areas even in the short run. Market-rate supply is likely to improve affordability outside the sub-markets where new construction occurs and to benefit low-income people.

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Keywords: Housing supply, Housing affordability, Filtering.

CAOS
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Obrigado!

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