

PAINEL 5 - GEOINFORMAÇÃO & CIDADES

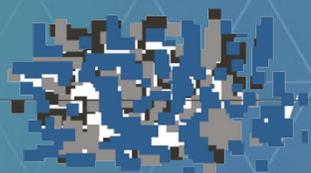
INJUSTIÇAS URBANAS IDENTIFICADAS EM ANÁLISES DE ACESSIBILIDADE E MOBILIDADE (COM BIGDATA, IA E DADOS ABERTOS)

Mariana Giannotti

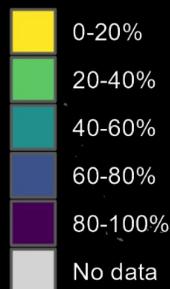
Escola Politécnica

Centro de Estudos da Metrópole

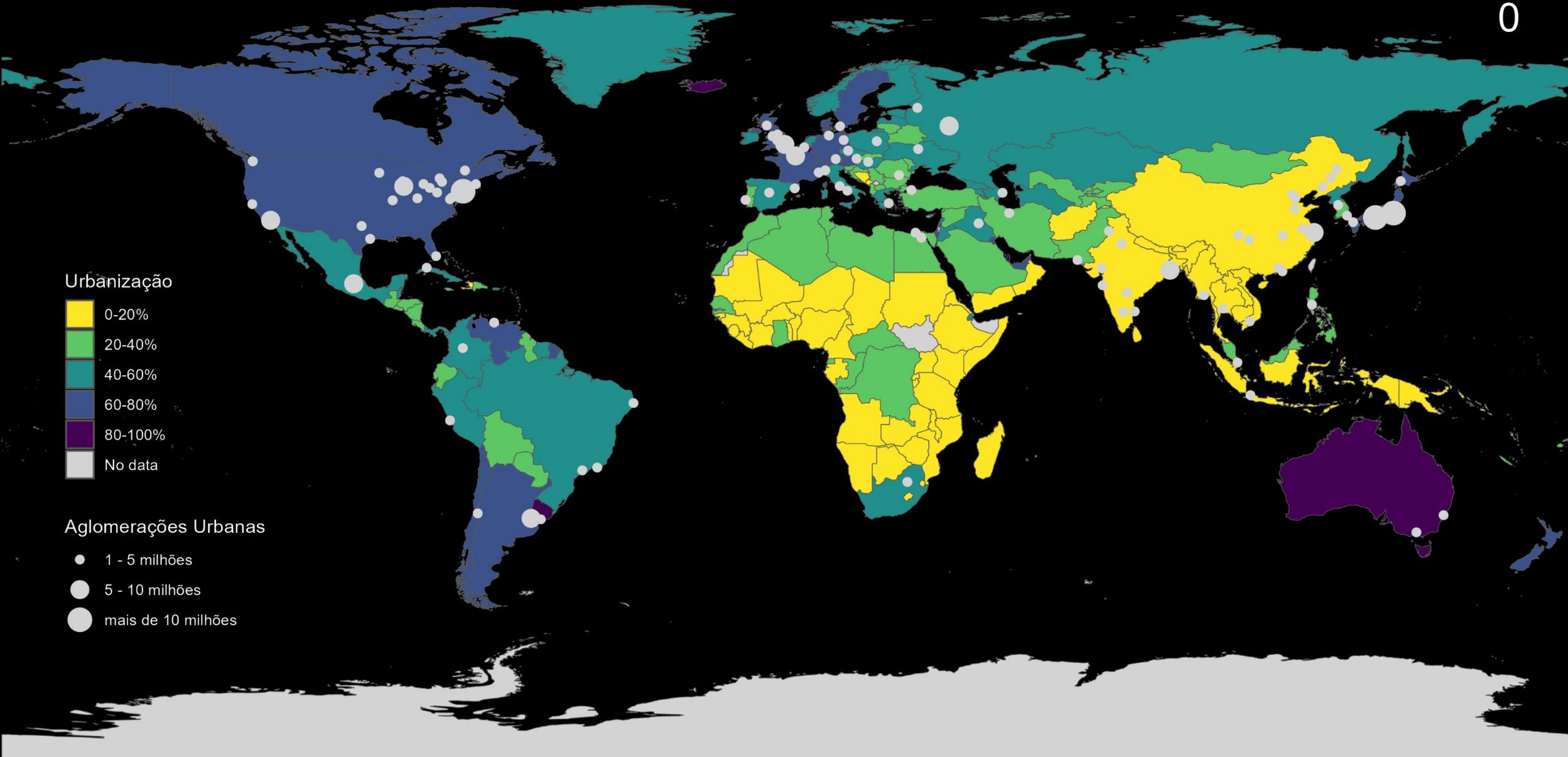
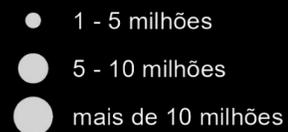
USP



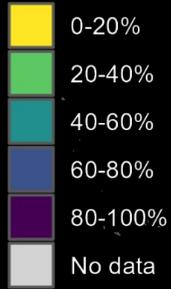
Urbanização



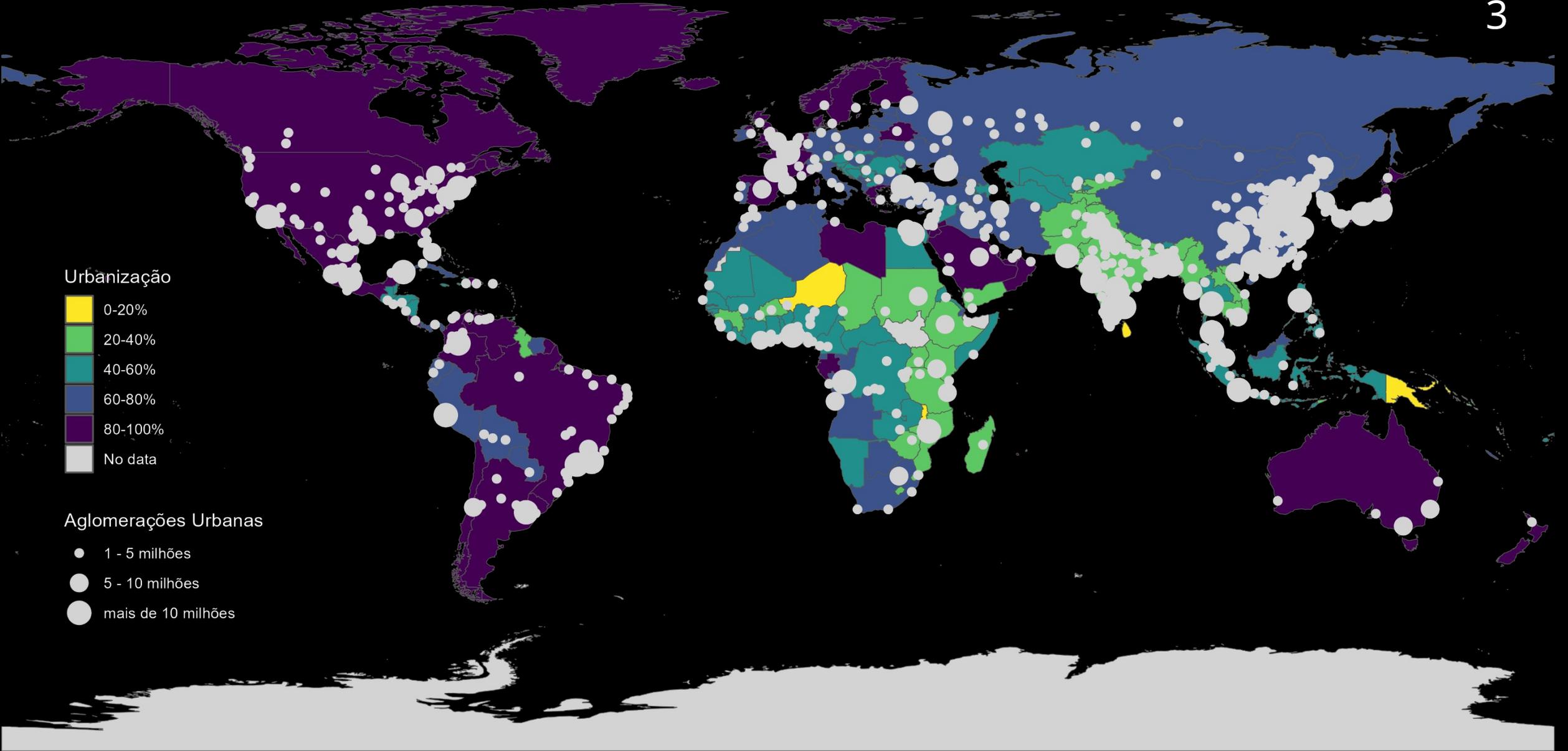
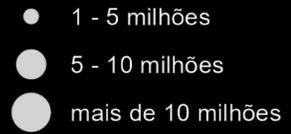
Aglomerações Urbanas



Urbanização



Aglomeracões Urbanas





Fica à Paragem +2,70

www.scrats.com.br
7046 Paraisópolis
10 Pinheirópolis
R. B. P. A.

DE



Jane Jacobs

“As cidades são sistemas complexos cujos componentes infraestruturais, econômicos e sociais estão fortemente inter-relacionados e, portanto, difíceis de entender isoladamente.”

Jacobs, J.
The Death and Life of Great American
Cities
(1961)

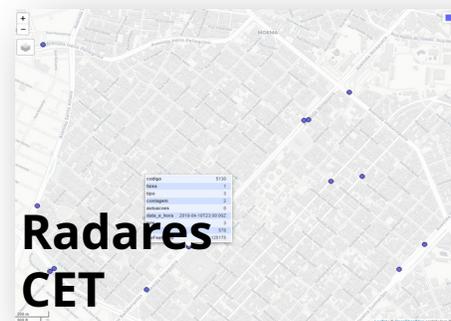
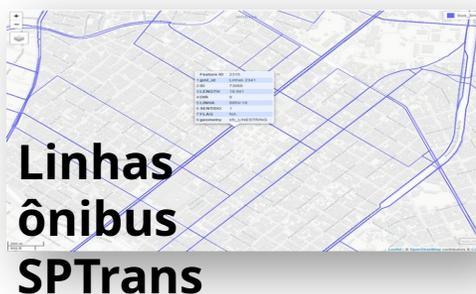
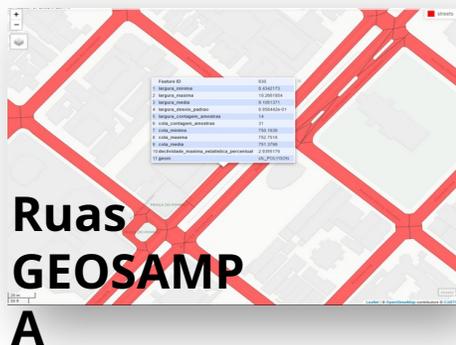
$$\text{Infra Pedestres (m}^2\text{)} = \sum \text{ calçadas (m}^2\text{)}$$

$$\text{Infra Bike (m}^2\text{)} = \sum \text{ ciclovias (m}^2\text{)} + \text{ciclofaixas (m}^2\text{)}$$

$$\text{Infra TP (m}^2\text{)} = \sum \text{ corredores (m)} * 3,5\text{m} + \sum \text{ faixa exclusiva (m)} * 3,5\text{m}$$

$$\text{Mix Infra - TP and TI (m}^2\text{)} = \sum \text{ ruas com linhas de TP PT (m}^2\text{)} - \text{Infra TP (m}^2\text{)} - \text{bike ruas comp (m}^2\text{)}$$

$$\text{TI Infra (m}^2\text{)} = \sum \text{ ruas (m}^2\text{)} - \text{Infra TP (m}^2\text{)} - \text{Mix Infra (m}^2\text{)} - \text{bike ruas compartilhadas (m}^2\text{)}$$





BANCO MUNDIAL
BIRD • AID | GRUPO BANCO MUNDIAL



FGV CEPESP
CENTRO DE POLÍTICA
E ECONOMIA DO
SETOR PÚBLICO

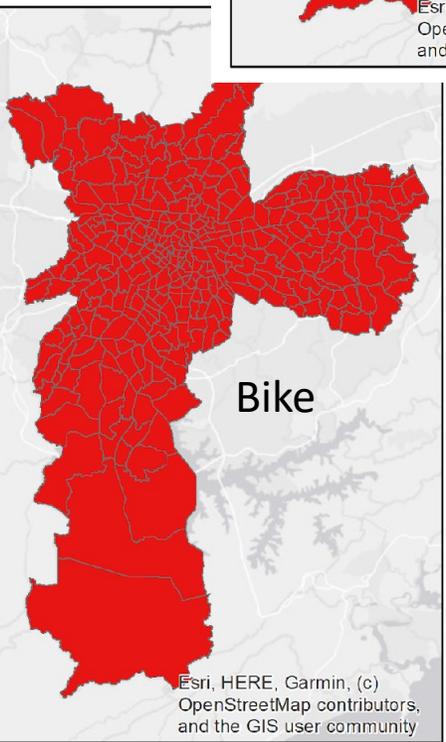
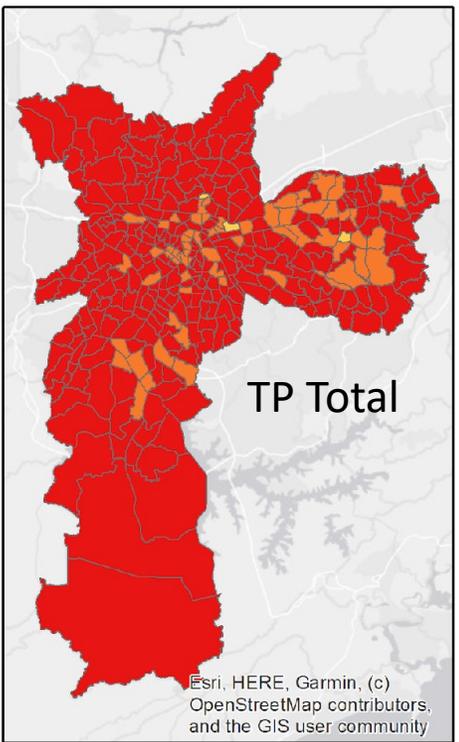
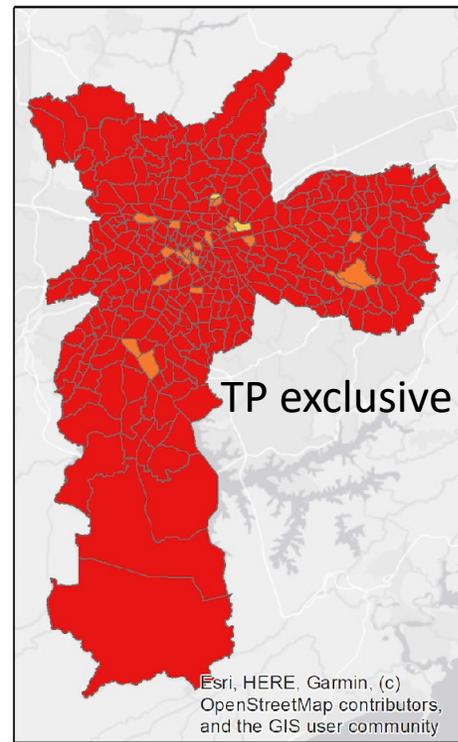
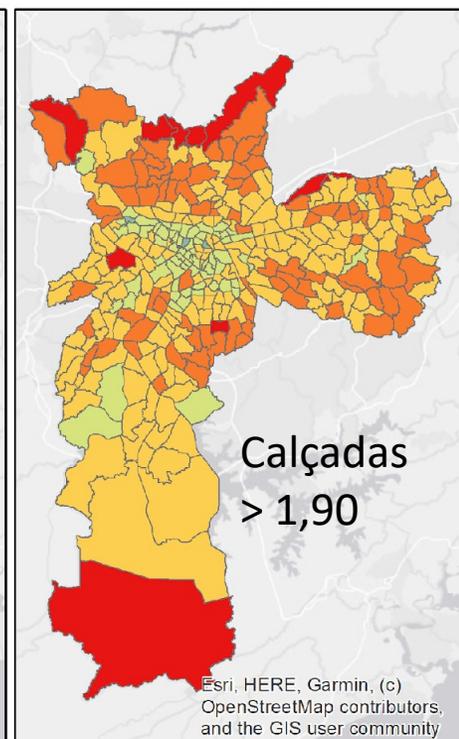
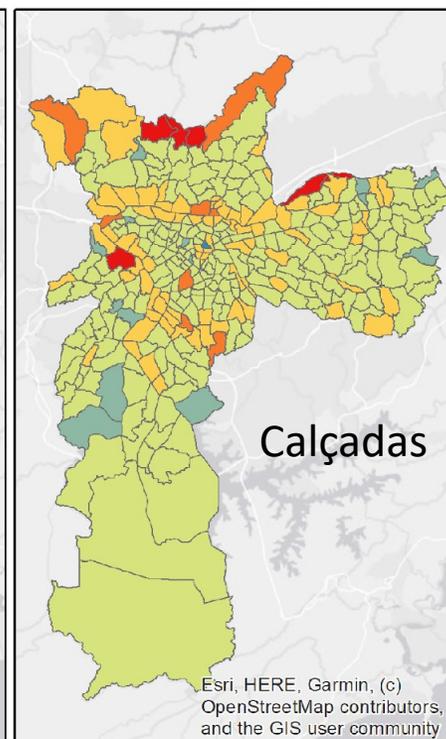
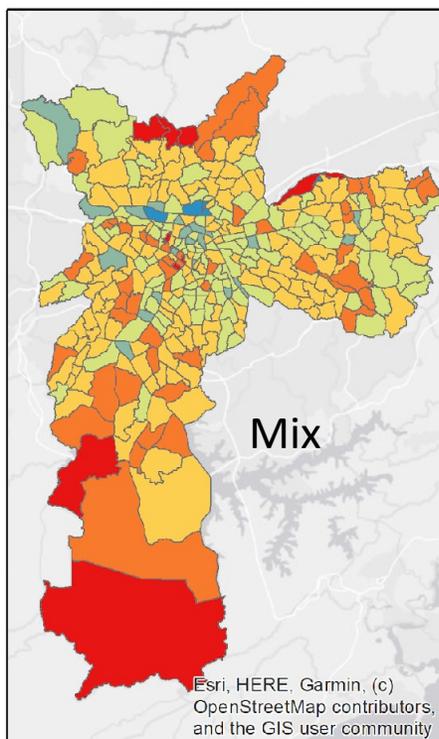


**Vital
Strategies**

GREAT for **PARTNERSHIP**

BRITAIN & NORTHERN IRELAND

REDES
Planejamento e Política Pública
em Mobilidade Urbana



%



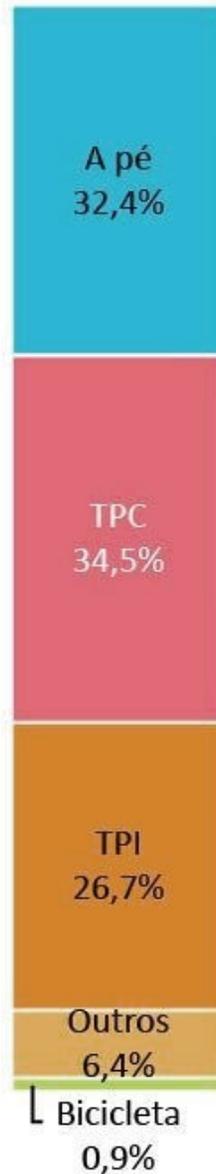
SHARED STREETS



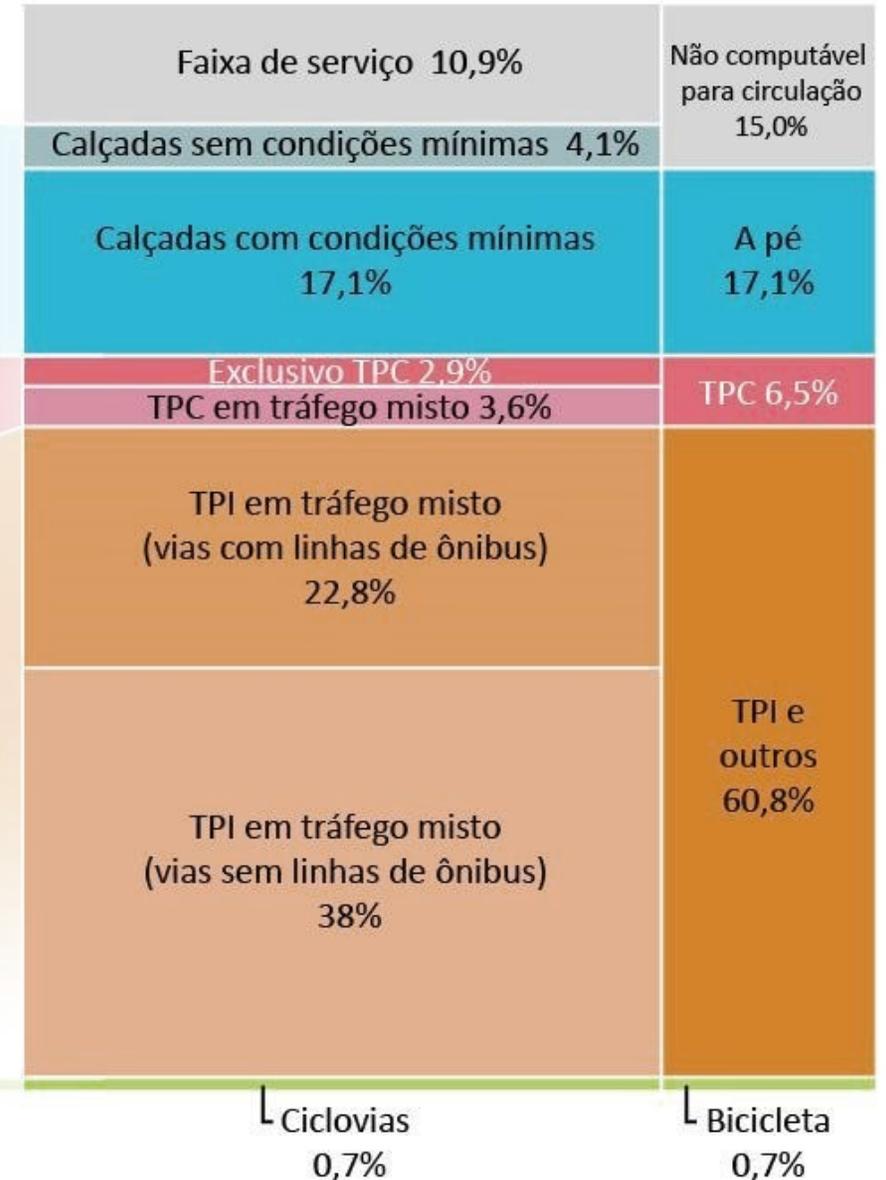
WORLD BANK GROUP



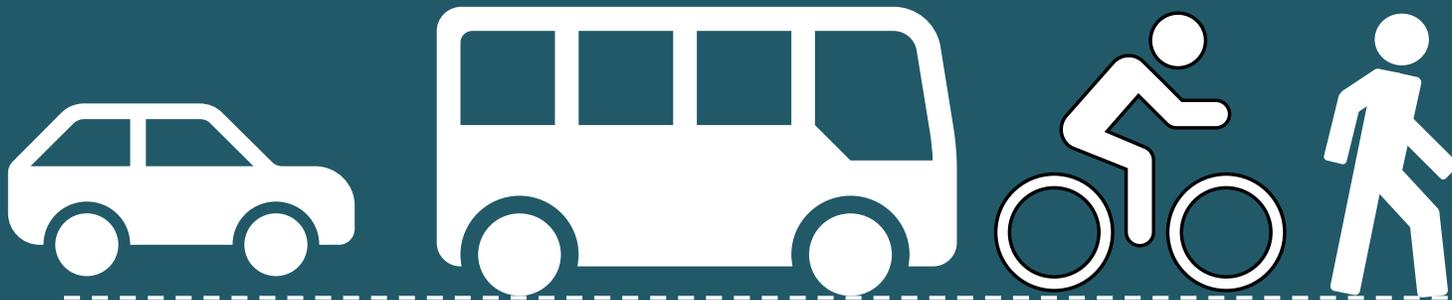
Demanda de viagens



Distribuição do espaço viário



Mobilidade urbana e big data



BIG DATA TELEFONIA

Anonimização, inferência de local de residencia e de atividades, análise especial 10 ERBs, ~30 milhões de registro de CDR, 3.600 usuários únicos



Habitat International 110 (2021) 102346

Contents lists available at ScienceDirect

Habitat International

journal homepage: <http://www.elsevier.com/locate/habitatint>



Measuring mobility inequalities of favela residents based on mobile phone data

André Leite Rodrigues^{a,d,*}, Mariana Giannotti^{a,b}, Matheus H.C. Cunha Barboza^{a,c}, Bianca Bianchi Alves^c

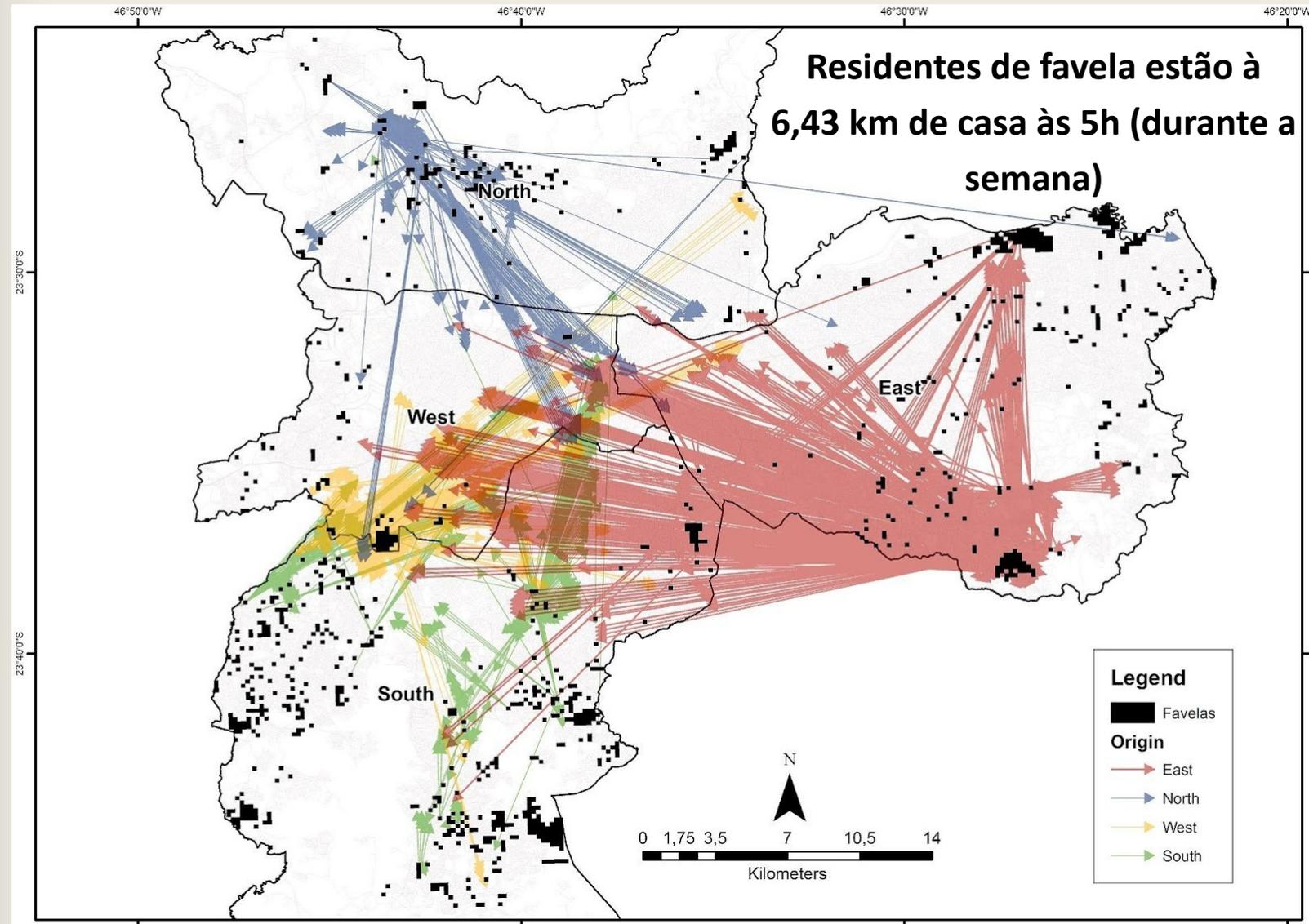
^a Polytechnic School of the University of São Paulo (Poli-USP), São Paulo, Brazil

^b Center for Metropolitan Studies (CEM), São Paulo, Brazil

^c World Bank Group, Washington, USA

^d Institute of Geography and Spatial Planning of the University of Lisbon (IGOT/UL), Lisbon, Portugal

* Center for the Study of the Politics and Economics of the Public Sector, Getúlio Vargas Foundation (CEPESP/PGV), São Paulo, Brazil



RODRIGUES, A. L.; GIANNOTTI, M.; BARBOZA, M. H.C.; ALVES, B. B. Measuring mobility inequalities of favela residents based on mobile phone data. **Habitat International**, v.110, p.102346 - , 2021.

BIG DATA SMART CARD

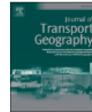
Integração com dados de GPS dos ônibus, enriquecimento semântico, machine learning, 77 dias, 9,5 milhões de cartões, 803 milhões de transações



Contents lists available at ScienceDirect

Journal of Transport Geography

journal homepage: www.elsevier.com/locate/jtrangeo



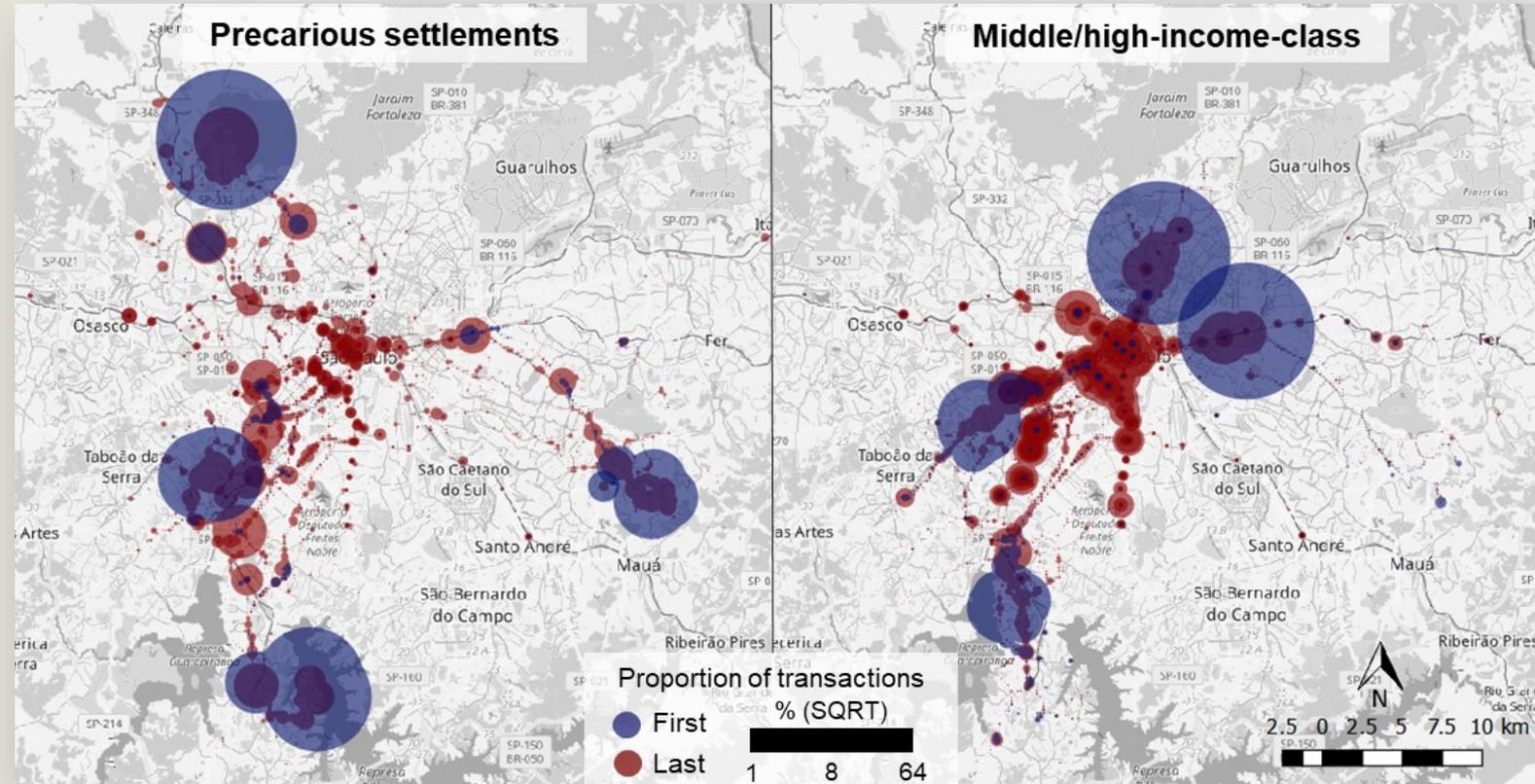
Big data for big issues: Revealing travel patterns of low-income population based on smart card data mining in a global south unequal city

Caio Pieroni^{a,*}, Mariana Giannotti^{a,b}, Bianca B. Alves^c, Renato Arbex^d

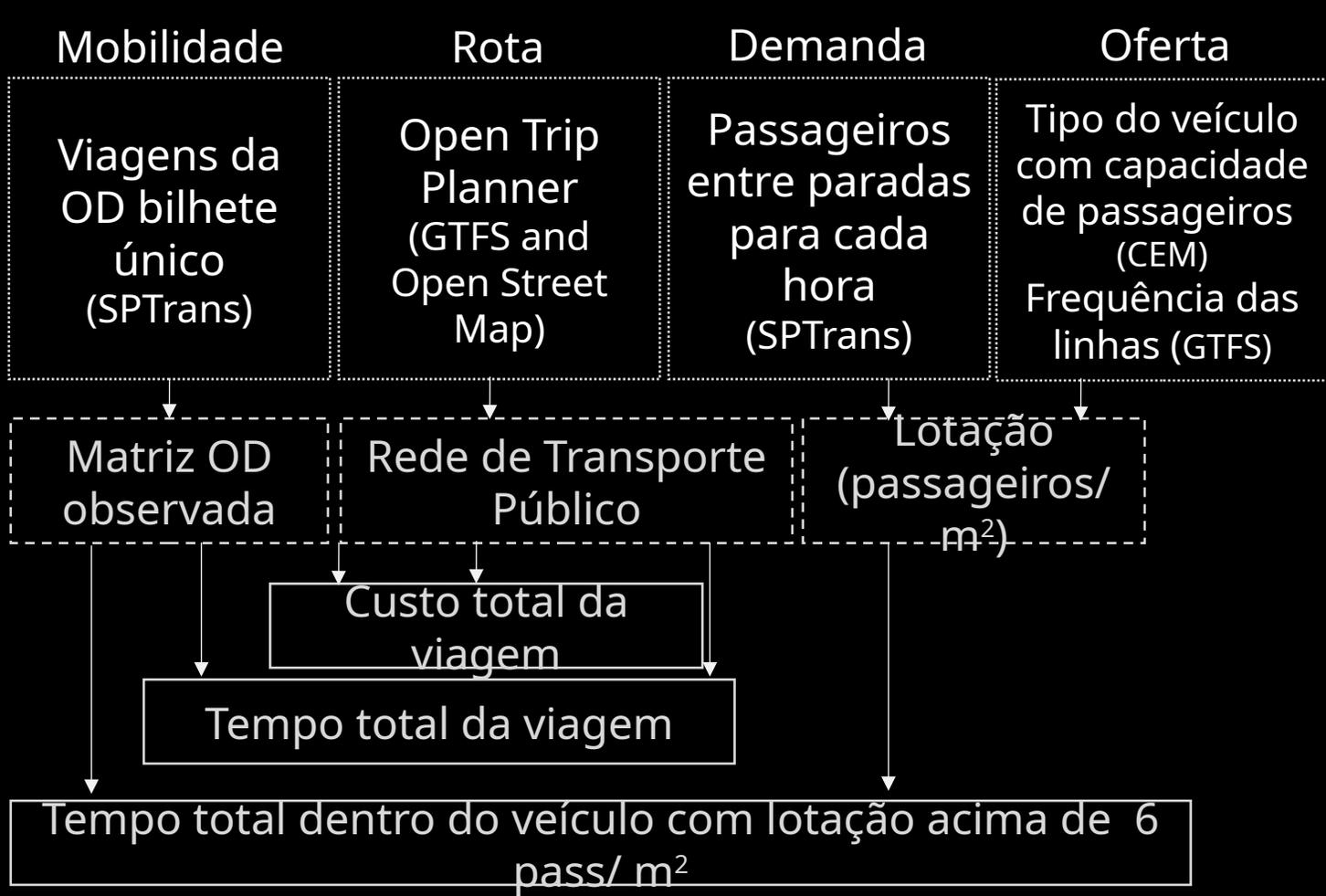
^a Department of Transport Engineering, Polytechnic School at University of São Paulo, São Paulo 05508-070, SP, Brazil
^b Center for Metropolitan Studies and Laboratory for Geospatial Analysis at Polytechnic School at University of São Paulo, São Paulo 05508-070, SP, Brazil

5h- 7h

7h- 9h

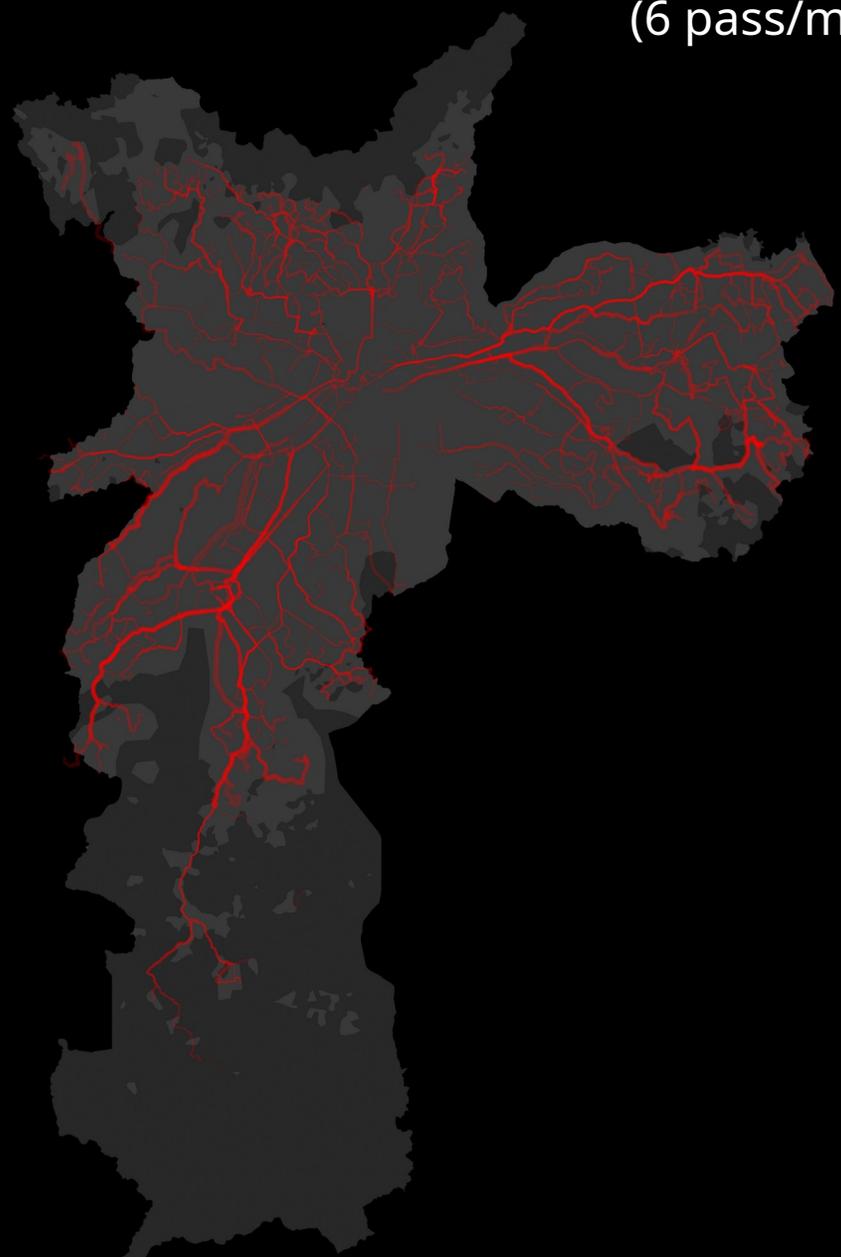


PIERONI, C.; GIANNOTTI, M.; ALVES, B. B.; ARBEX, R. Big data for big issues: Revealing travel patterns of low-income population based on smart card data mining in a global south unequal city. *Journal of Transport Geography*, v.96, p.103203, 2021.

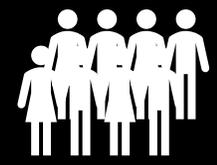


0 horas

Crowding
(6 pass/m²)



14,000 ônibus
1,300 linhas
20,000 paradas
10 mi usuários
13 mi de viagens TP

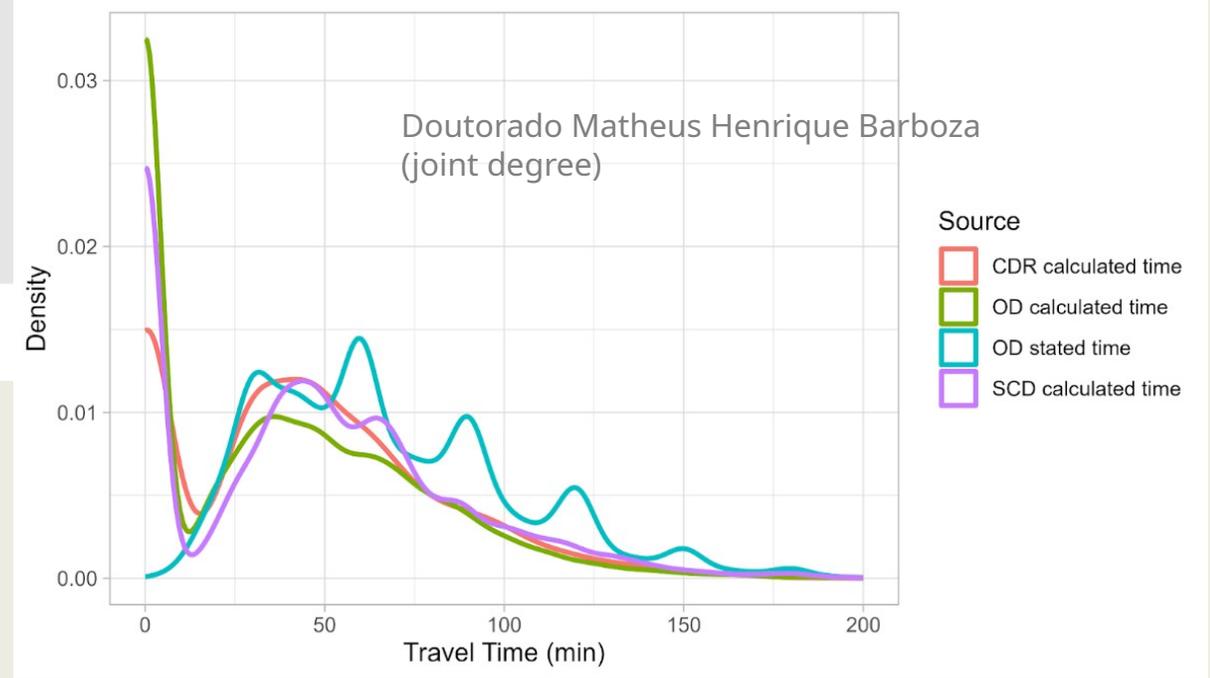
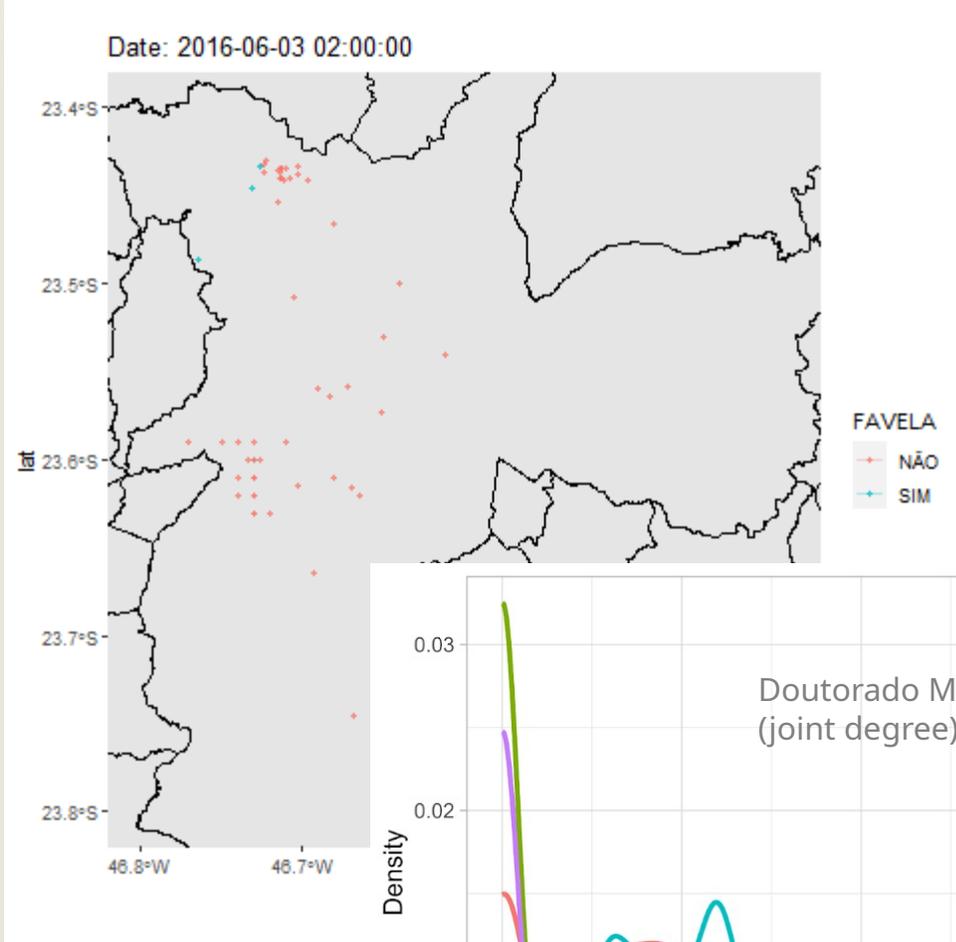


0 min branco média - alta classe
 > 30 min branco / negro - baixa classe

< 9 BRL branco - alta classe
 > 18 BRL negro - baixa classe

BIG DATA TELEFONIA

72,5% dos moradores de favelas enfrentam barreiras de acesso a devido aos custos, não apenas o tempo!



Journal of Transport Geography 128 (2025) 104395

Contents lists available at ScienceDirect

Journal of Transport Geography

journal homepage: www.elsevier.com/locate/jtrangeo



Transit fares and space-time accessibility: measuring inequalities in park accessibility for São Paulo favela residents using mobile phone and smart card data

Matheus Barboza ^{a,b,*}, Mariana Giannotti ^a, Anna Grigolon ^b, Karst Geurs ^b

^a Center for Metropolitan Studies, Laboratory for Geospatial Analysis, Polytechnic School, University of São Paulo, Brazil, Av. Prof. Almeida Prado, Travessa 2, no. 85, São Paulo, SP 05508-070, Brazil

^b University of Twente, Faculty of Engineering Technology, Horst Complex 2212, P.O. Box 217, 7500 AE Enschede, the Netherlands

BARBOZA, M., GIANNOTTI, M., GRIGOLON, A., & GEURS, K. (2025). Transit fares and space-time accessibility: measuring inequalities in park accessibility for São Paulo favela residents using mobile phone and smart card data. *Journal of Transport Geography*, 128, 104395.

TRANSPORTE PÚBLICO ÔNIBUS BEonTIME-SP



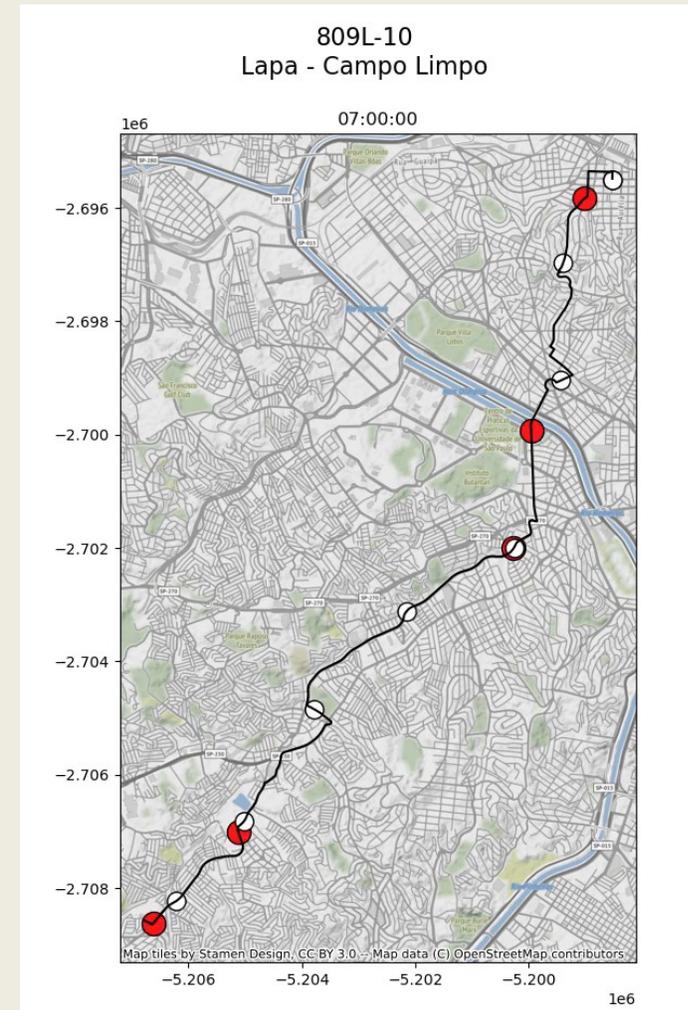
centro de estudos da metrópole



UNIVERSIDAD
COMPLUTENSE
MADRID



Proyecto CAS21/00281 (BEonTIME-SP),
movilidad de jóvenes doctores "José
Castillejo" 2021, Ministerio de
Universidades (Spain)



white – theory
red - reality

GÓMEZ, B., M.; GIANNOTTI, M. Open Data for Evaluating Transit Systems. Challenges in Converting Real-Time Data into GTFS?. CIT 2023 XV Congreso de Ingeniería del Transporte., La Laguna, Tenerife, 2023.

TRANSPORTE PÚBLICO ÔNIBUS

BEonTIME-SP



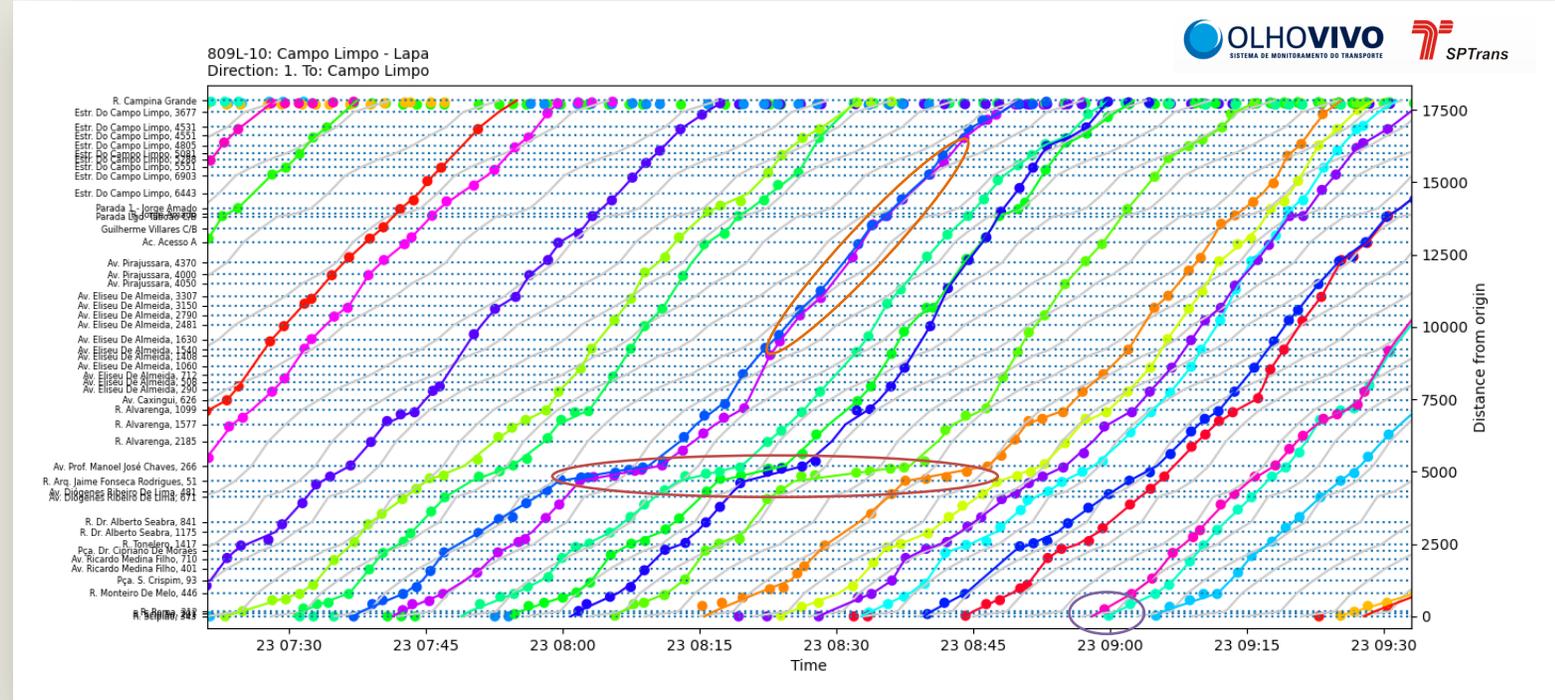
centro de estudos da metrópole



UNIVERSIDAD COMPLUTENSE
MADRID



Proyecto CAS21/00281 (BEonTIME-SP),
movilidad de jóvenes doctores "José
Castillejo" 2021, Ministerio de
Universidades (Spain)



grey: theoretical trajectories
colored: reality (by bus)

GÓMEZ, B., M.; GIANNOTTI, M. Open Data for Evaluating Transit Systems. Challenges in Converting Real-Time Data into GTFS?. CIT 2023 XV Congreso de Ingeniería del Transporte., La Laguna, Tenerife, 2023.



Mimi Sheller

“A Justiça da Mobilidade preocupa-se com a forma como o poder e a desigualdade informam a governança e o controle do movimento, moldando os padrões de mobilidade e imobilidade desiguais nas circulações de pessoas, recursos e informações.”

(Sheller, 2018)

“A mobilidade urbana permite medir os padrões revelados e condições de como as pessoas se movem quando interagem com a cidade” (Martens, 2012)

“A acessibilidade urbana é uma estimativa do potencial de interação nas atividades da cidade” (Hansen, 1959)

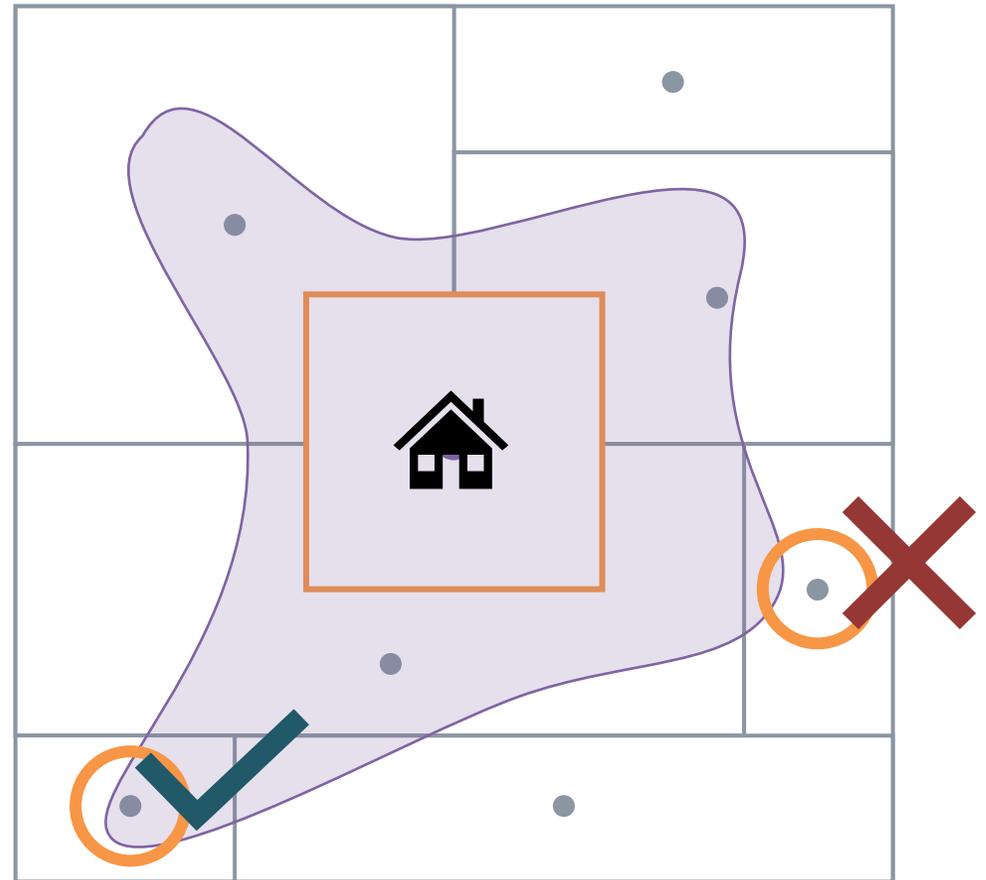
Acessibilidade urbana



$$A_i = \sum_{j=1}^n O_j \text{ if } c_{ij} < c_{max}$$

Acessibilidade cumulativa

(Wachs & Kumagai, 1973)



ACESSO A CIDADE? TRABALHO

ASTRID PROJECT
Accessibility, Social Justice and
Transport Emission Impacts of
TOD Strategies



UNIVERSITY
OF TWENTE.



Netherlands Organisation for Scientific Research

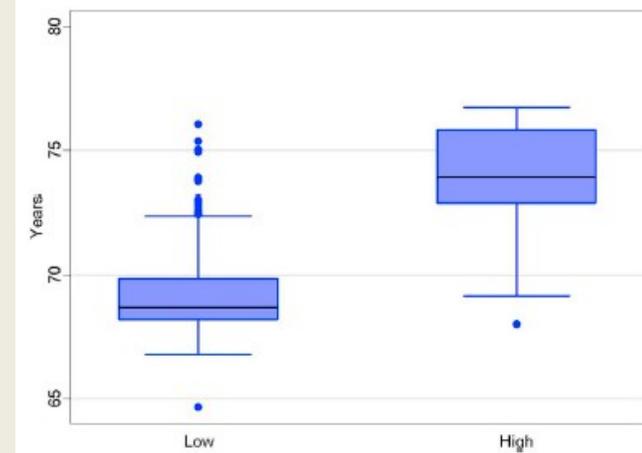
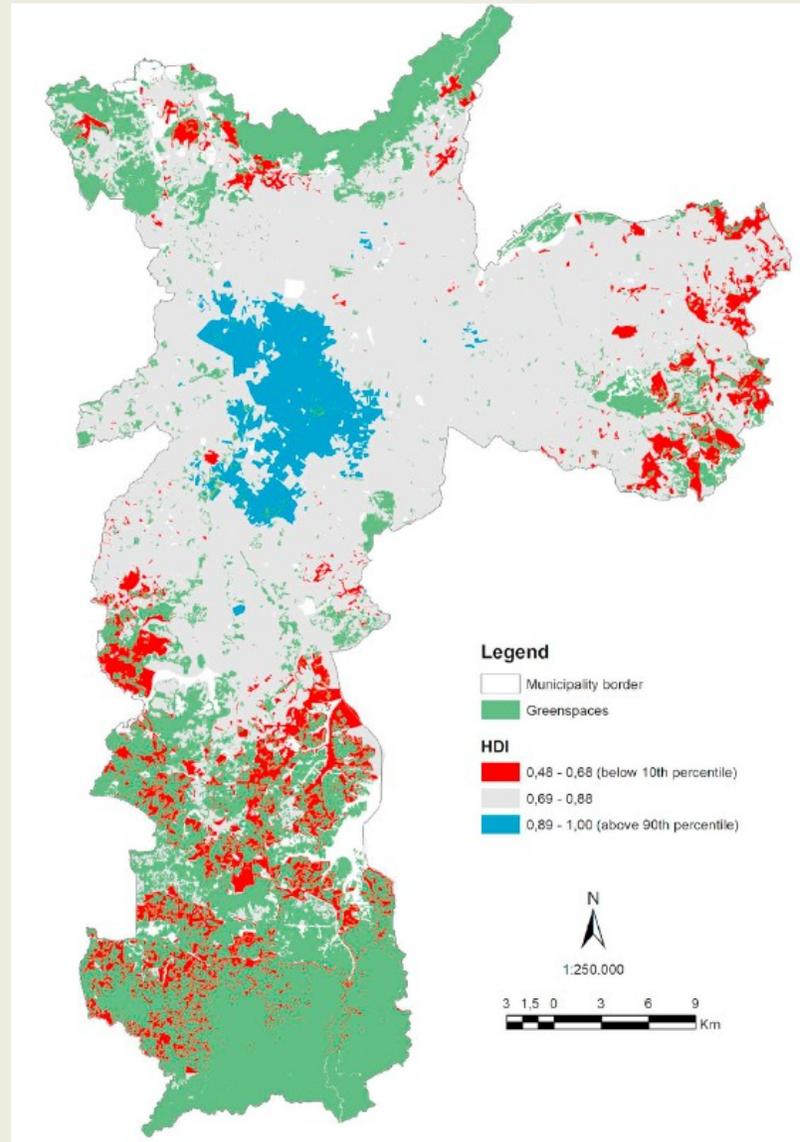
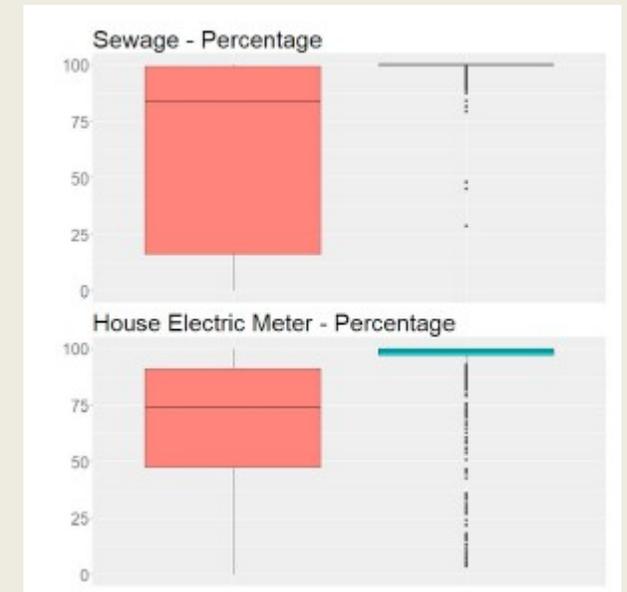


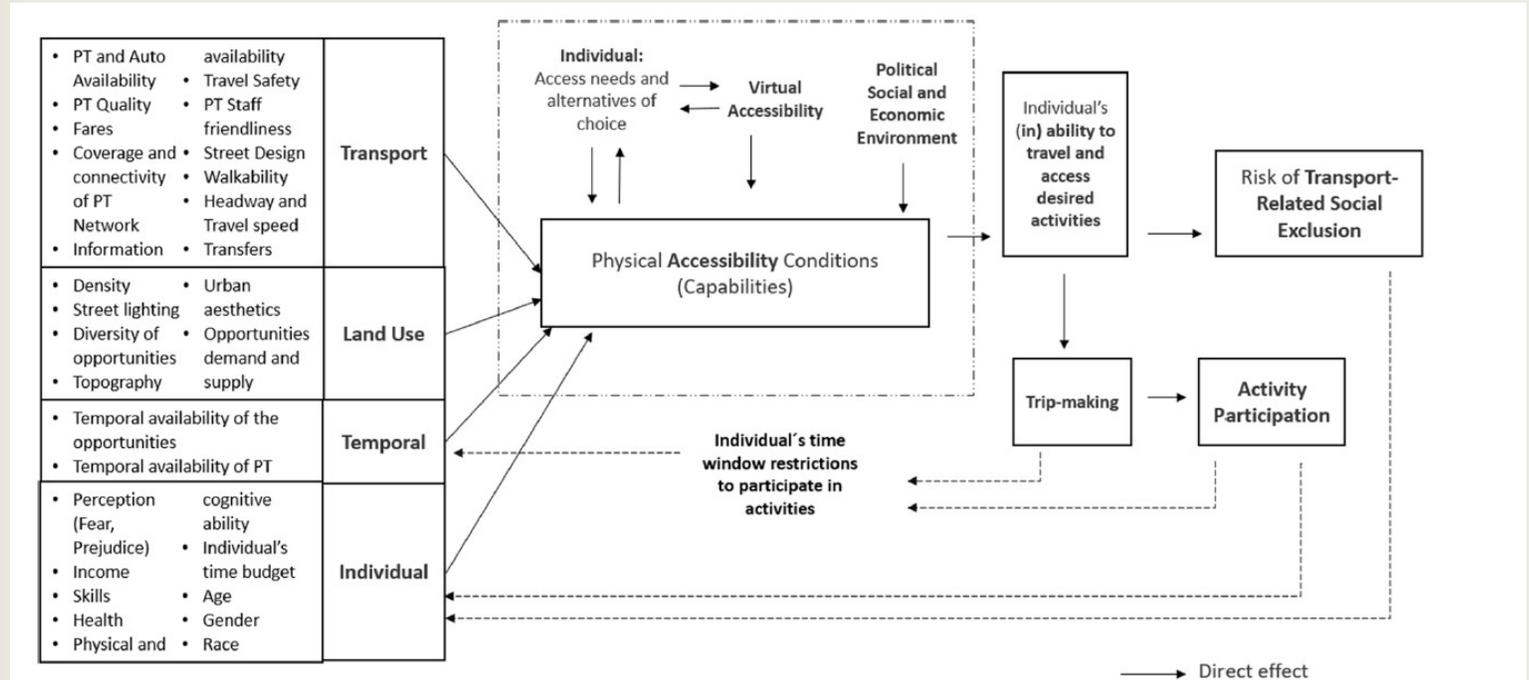
Fig. 5. Life expectancy according to the lowest and highest MHI percentile.



SLOVIC, A. D.; TOMASIELLO, D. B.; **GIANNOTTI**, M.; ANDRADE, M. F.; NARDOCCI, A. C. The long road to achieving equity: Job accessibility restrictions and overlapping inequalities in the city of São Paulo. *Journal of Transport Geography*, v.78, p.181 - 193, 2019.

ACESSO A CIDADE? RELAÇÃO CAUSAL COM ATIVIDADES

Método de inferência causal a partir de variável instrumental



$$\lambda_i = \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3)$$

where,

λ_i – Number of activities in which the individual participated..(i = Total, mandatory, discretionary)

β_0 – Intercept.

X_1 – Accessibility by public transport variable calculated from the CUM measure with a 90-minute threshold.

X_2 – Vector of variables with individual sociodemographic information.

X_3 – Vector of variables with information regarding the urban environment of the individual's residence.

$\beta_1, \beta_2, \beta_3$ – Coefficients or coefficient vectors of the respective independent variables.



Does better accessibility help to reduce social exclusion? Evidence from the city of São Paulo, Brazil

Gregório Luz ^{a,b,*}, Matheus H.C. Barboza ^{c,d}, Licinio Portugal ^a, Mariana Giannotti ^e, Bert van Wee ^e

^a Transport Engineering Program, Alberto Luis Coimbra Institute for Graduate Studies and Research in Engineering (COPPE), Federal University of Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil

^b Center for the Study of the Politics and Economics of the Public Sector, Getulio Vargas Foundation (CEPES/POV), São Paulo, Brazil

^c Polyztechnic School, University of São Paulo (USP), São Paulo, Brazil

^d Department of Civil Engineering, University of Twente, The Netherlands

^e Transport and Logistics Group, Faculty Technology, Policy and Management, Delft University of Technology, Delft, The Netherlands

LUZ, G., BARBOZA, M. H., PORTUGAL, L., GIANNOTTI, M., & van WEE, B. (2022). Does better accessibility help to reduce social exclusion? Evidence from the city of São Paulo, Brazil. Transportation research part A: policy and practice, 166, 186-217.

ACESSO A CIDADE? EDUCAÇÃO

Inclusão de parâmetro de
qualidade das escolas



Acessibilidade às escolas
(LISA Map)

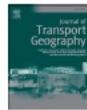
-  Baixa acessibilidade
-  Alta acessibilidade
-  Alta/Baixa
-  Baixa/Alta

Journal of Transport Geography 96 (2021) 103199

Contents lists available at ScienceDirect

Journal of Transport Geography

journal homepage: www.elsevier.com/locate/jtrangeo



ELSEVIER

Qualifying accessibility to education to investigate spatial equity

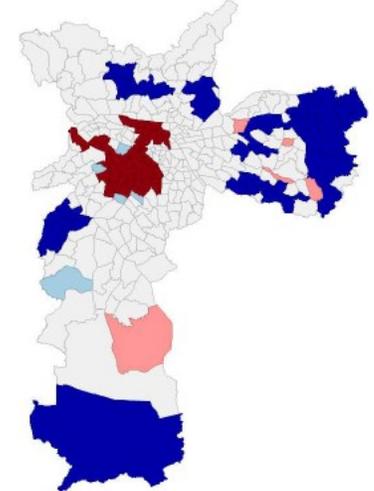
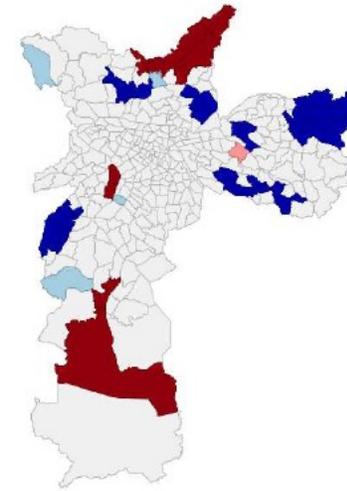
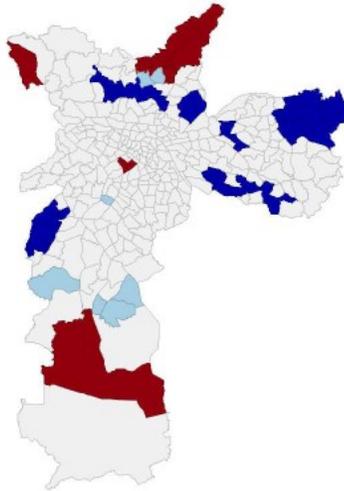
Bruna Pizzol^{a,*}, Mariana Giannotti^b, Diego Bogado Tomasiello^b

^a Department of Transportation Engineering Polytechnic School, University of São Paulo, São Paulo, Brazil

^b Center for Metropolitan Studies and Laboratory for Geospatial Analysis at Polytechnic School, University of São Paulo, São Paulo, Brazil



Accessibility to the
three nearest schools



PIZZOL, B.; GIANNOTTI, M.; TOMASIELLO, D. B. Qualifying accessibility to education to investigate spatial equity. *Journal of Transport Geography*, v.96, p.103199, 2021.

ACESSO A CIDADE? EDUCAÇÃO

Inclusão de parâmetro de
qualidade das escolas



Acessibilidade às escolas
(LISA Map)

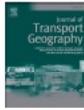
-  Baixa acessibilidade
-  Alta acessibilidade
-  Alta/Baixa
-  Baixa/Alta

Journal of Transport Geography 96 (2021) 103199

Contents lists available at ScienceDirect

Journal of Transport Geography

journal homepage: www.elsevier.com/locate/jtrangeo



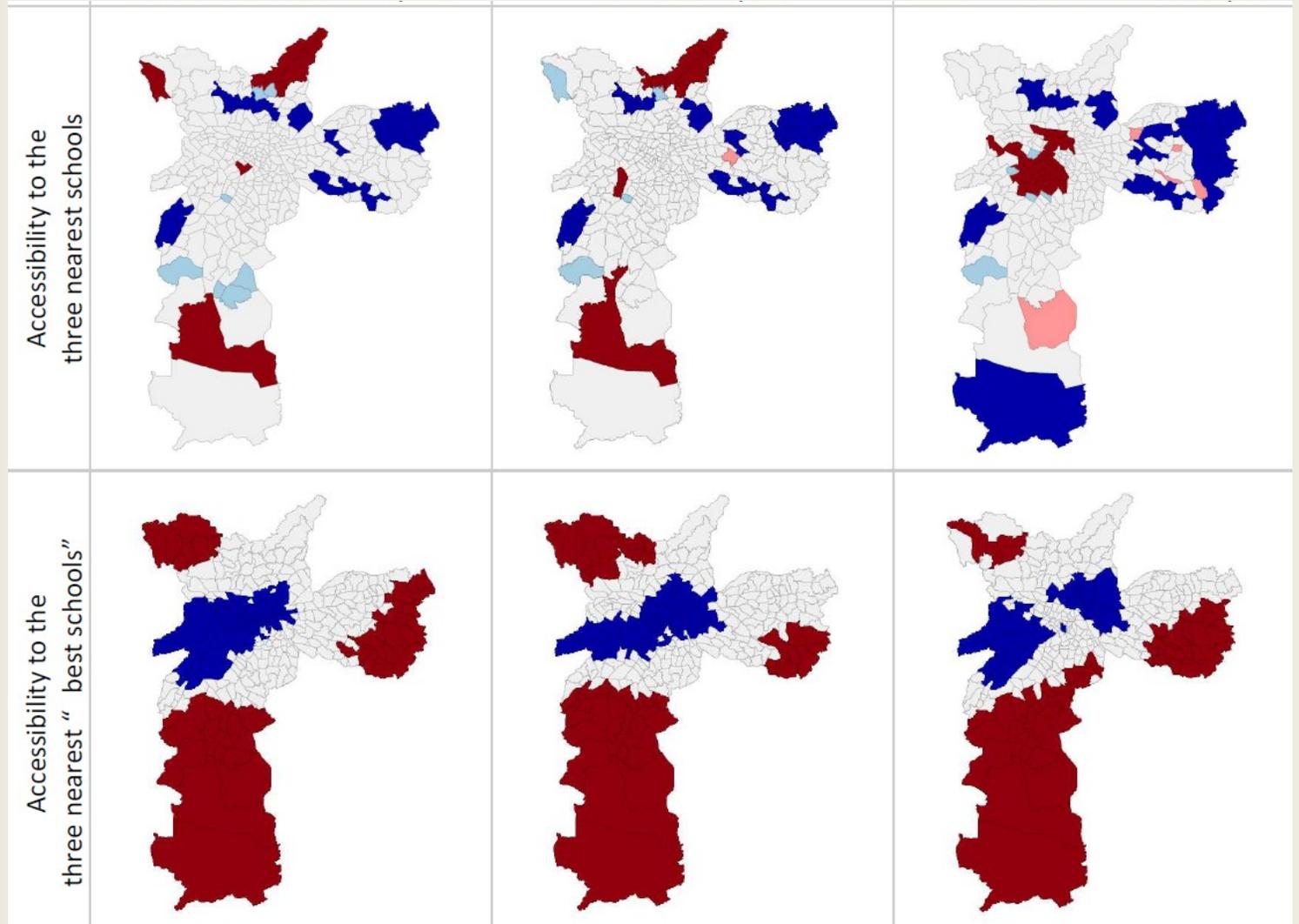
ELSEVIER

Qualifying accessibility to education to investigate spatial equity

Bruna Pizzol ^{a,*}, Mariana Giannotti ^b, Diego Bogado Tomasiello ^b

^a Department of Transportation Engineering Polytechnic School, University of São Paulo, São Paulo, Brazil

^b Center for Metropolitan Studies and Laboratory for Geospatial Analysis at Polytechnic School, University of São Paulo, São Paulo, Brazil



PIZZOL, B.; GIANNOTTI, M.; TOMASIELLO, D. B. Qualifying accessibility to education to investigate spatial equity. *Journal of Transport Geography*, v.96, p.103199, 2021.

ACESSO A CIDADE? SAÚDE

OPTIMIZATION- BASED ACCESSIBILITY

Mensuração e
localização da demanda

Transportation Research Part A 177 (2023) 103833

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Transportation Research Part A

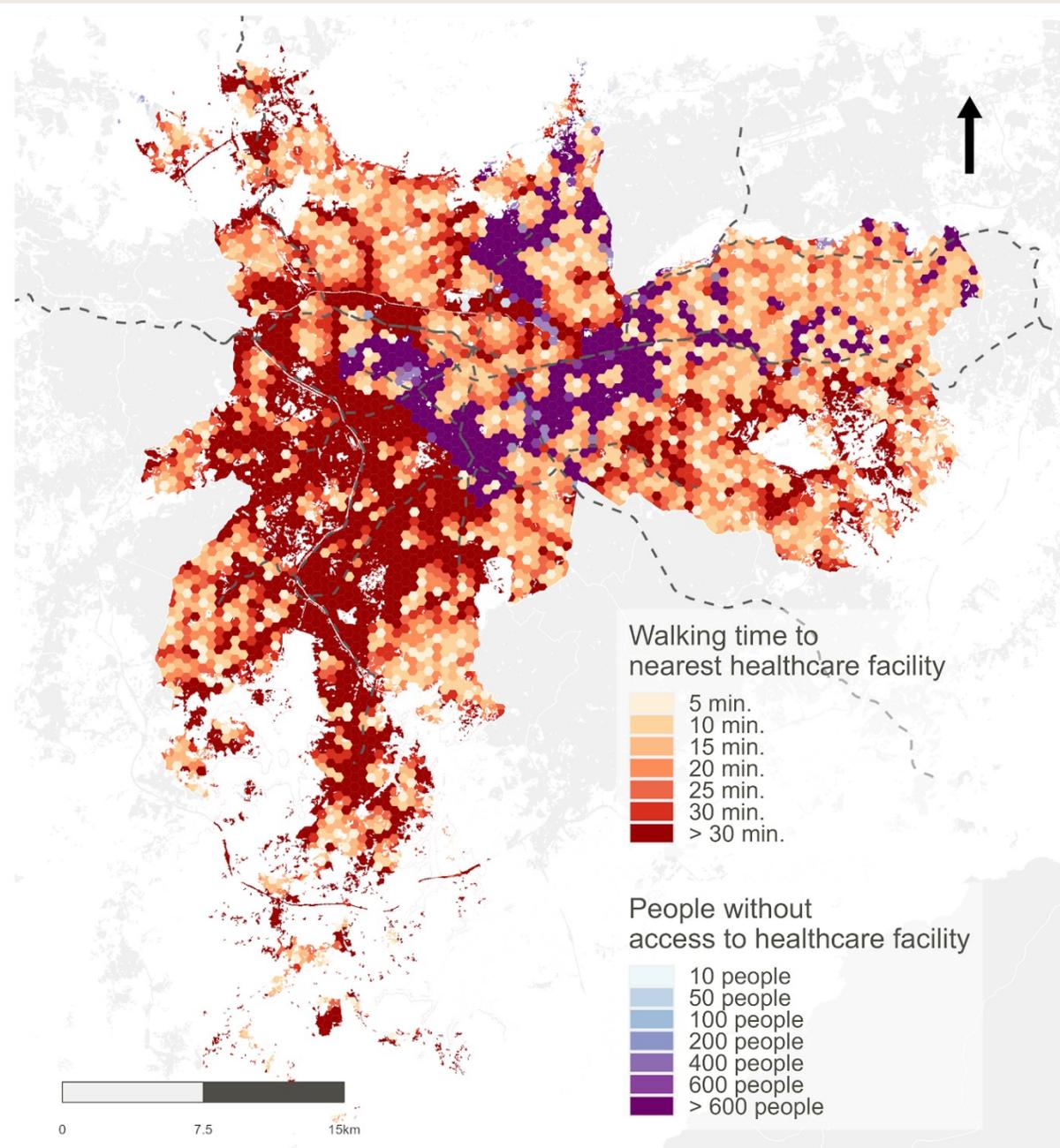
journal homepage: www.elsevier.com/locate/tra



Evaluating the accessibility and availability of public services to reduce inequalities in everyday mobility

Tainá A. Bittencourt*, Mariana Giannotti

Polytechnic School and Center for Metropolitan Studies, University of São Paulo, Brazil



ACESSO A CIDADE? LAZER

Dados da Tom Tom, Uber, GTFS,
redes do OpenStreetMap,
GeoSampa, CEM



Special Issue: Data Science for Developing Cities

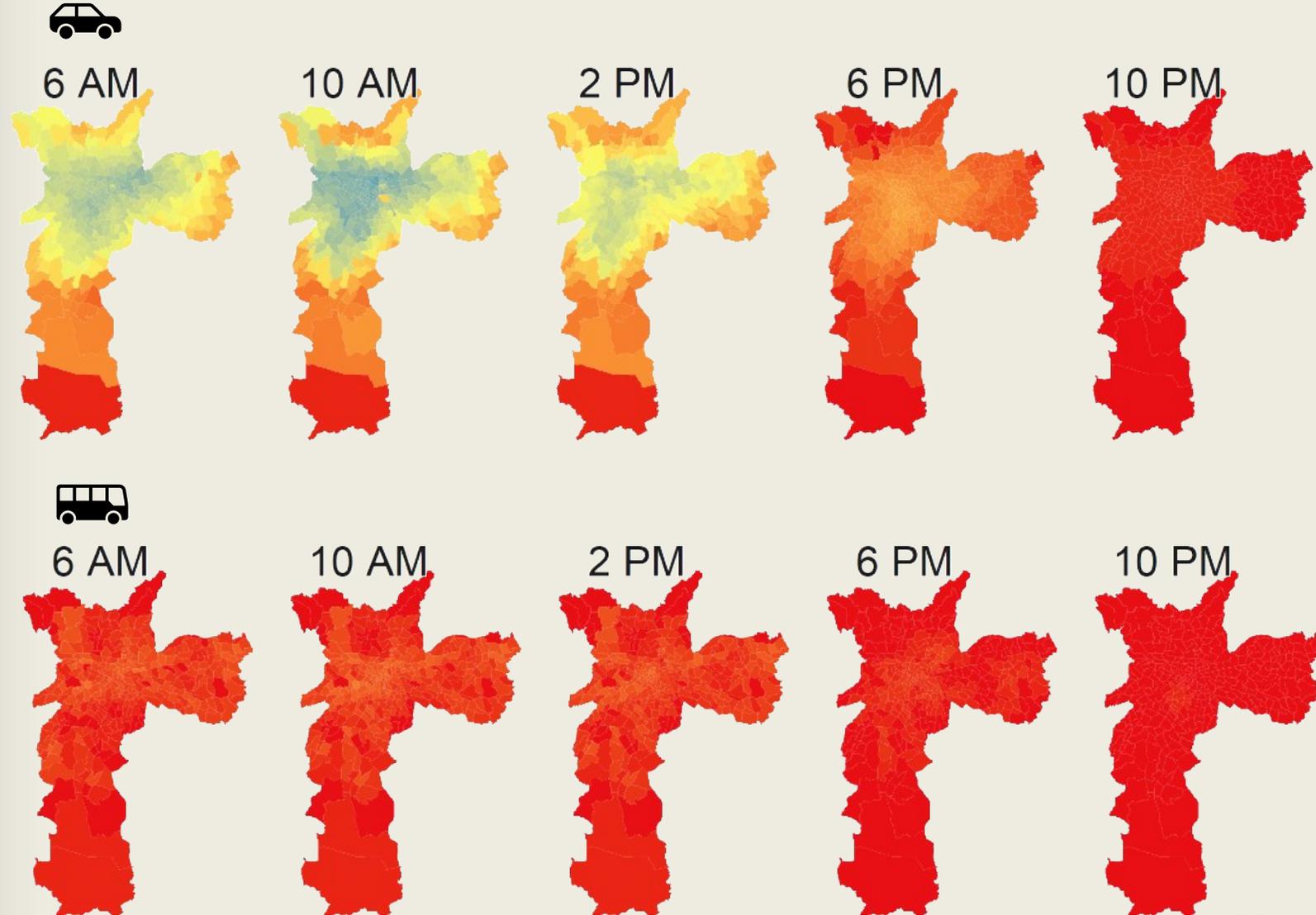
Urban Analytics and
City Science

Unfolding time, race and class inequalities to access leisure

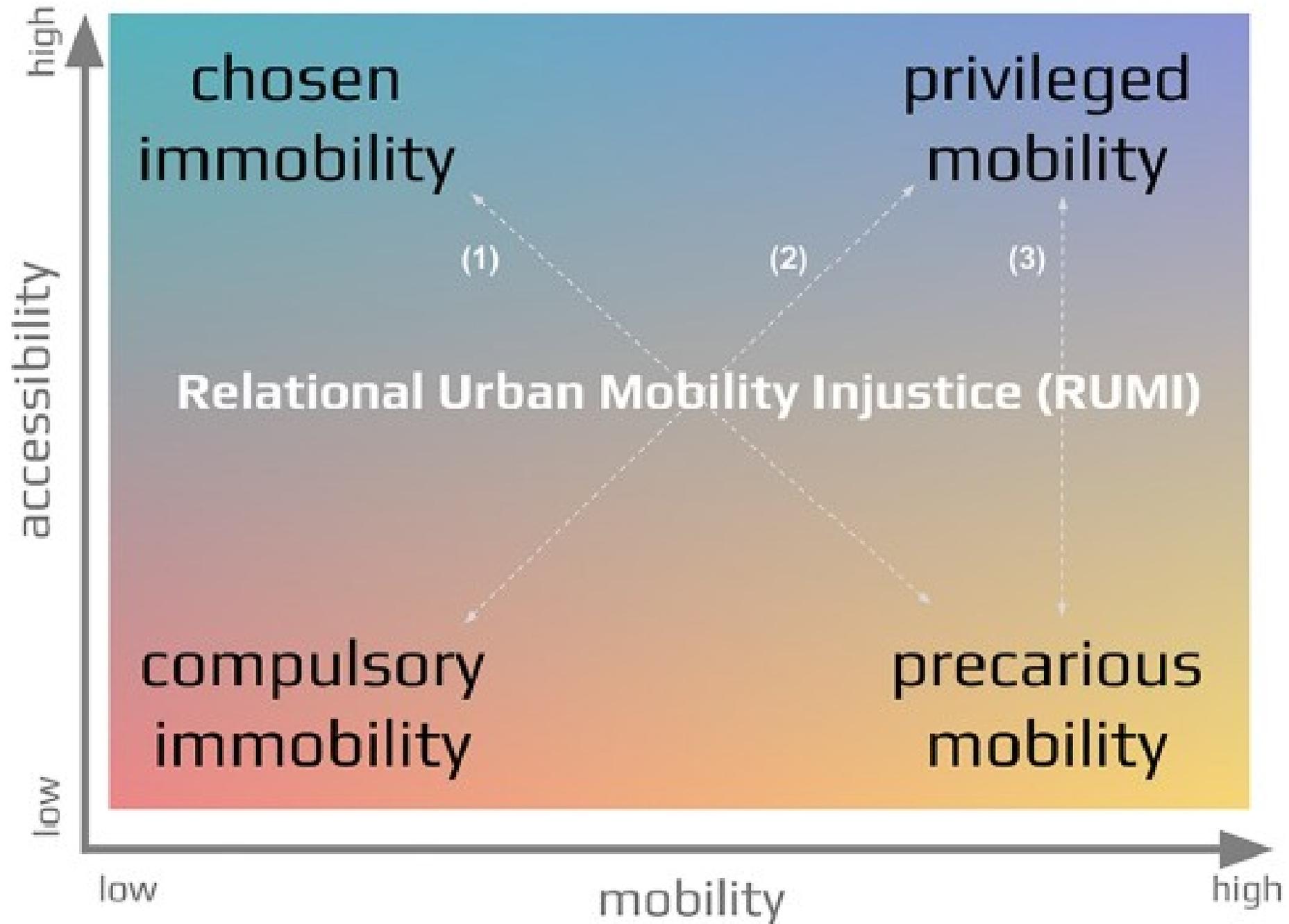
EPB: Urban Analytics and City Science
2022, Vol. 0(0) 1–15
© The Author(s) 2022
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/23998083221111405
journals.sagepub.com/home/epb
SAGE

Diego Bogado Tomasiello and Mariana Giannotti

Center for Metropolitan Studies and Laboratory for Geospatial Analysis at Polytechnic School, University of São Paulo, São Paulo, SP, Brazil



TOMASIELLO, D. B.; GIANNOTTI, M. Unfolding time, race and class inequalities to access leisure. *Environment and Planning B: Urban Analytics and City Science*. Special Issue: Data Science for Developing Cities, p. 1–15, 2022.



Framing urban mobility injustice from the Global South

Pedro da Cunha Rego Logiodice 

Center for Metropolitan Studies (CEM) and Laboratory for Geospatial Analysis at School, University of São Paulo, Brazil

Mariana Giannotti 

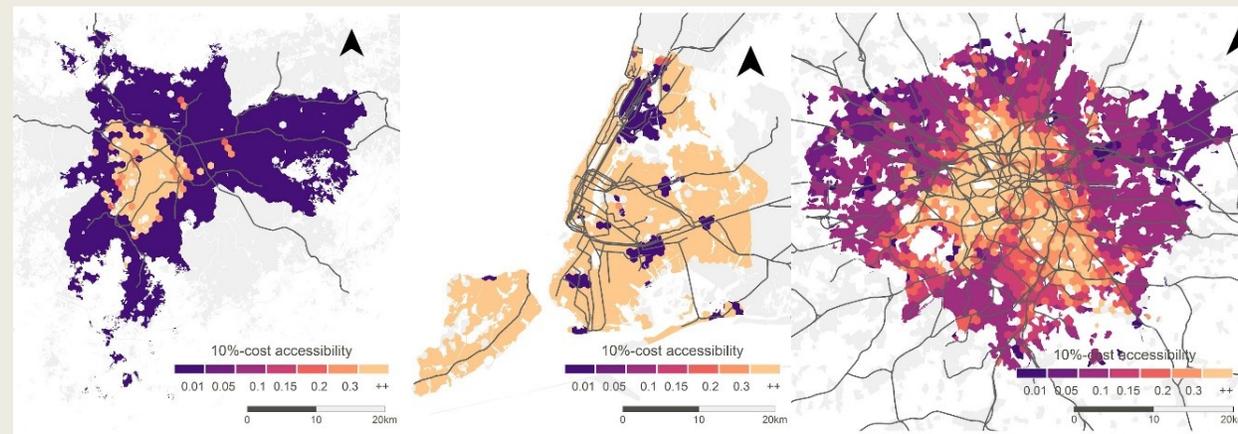
Center for Metropolitan Studies (CEM) and Laboratory for Geospatial Analysis at School, University of São Paulo, Brazil



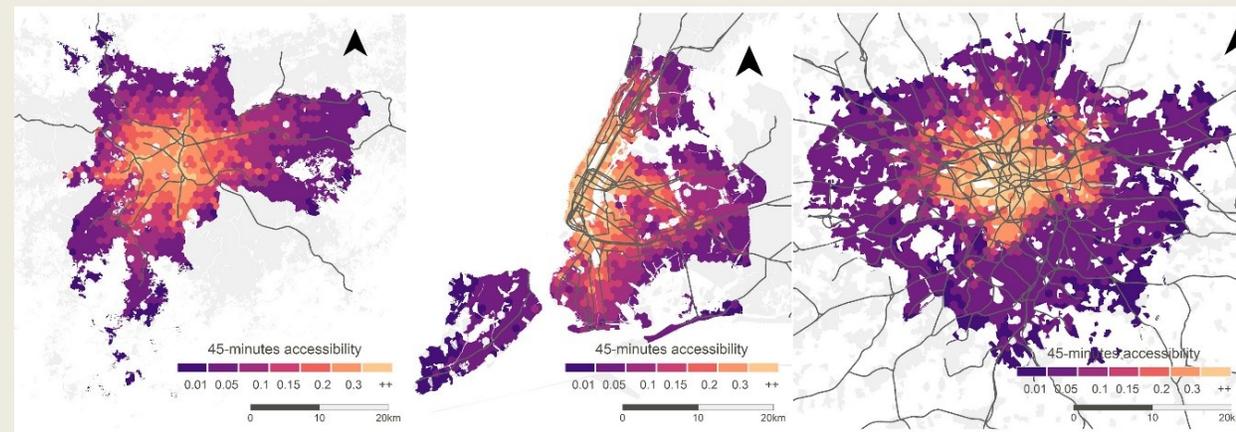
AVALIAÇÃO DE POLÍTICA TARIFÁRIA

São Paulo, New York, London

Cost 30-40 % x 5-10%



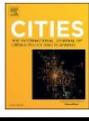
Time



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Cities

journal homepage: www.elsevier.com/locate/cities


The unequal impacts of time, cost and transfer accessibility on cities, classes and races

Tainá A. Bittencourt^{*}, Mariana Giannotti

Polytechnic School and Center for Metropolitan Studies, University of São Paulo, Brazil

BITTENCOURT, T. A.; GIANNOTTI, M. The unequal impacts of time, cost and transfer accessibility on cities, classes and races. **Cities.** , v.116, p.103257, 2021.

POLÍTICAS PÚBLICAS E PRÁTICAS URBANAS

TRANSPORTE ATIVO

Diagnóstico do impacto potencial da integração



Netherlands Organisation for Scientific Research



UNIVERSITY OF TWENTE.



ELSEVIER

Contents lists available at ScienceDirect

Transportation Research Part A

journal homepage: www.elsevier.com/locate/tra

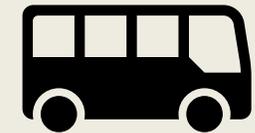
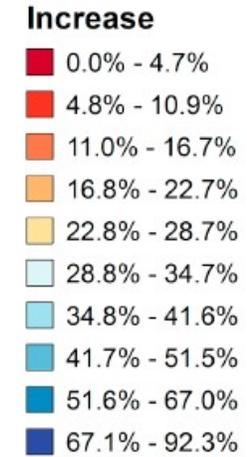
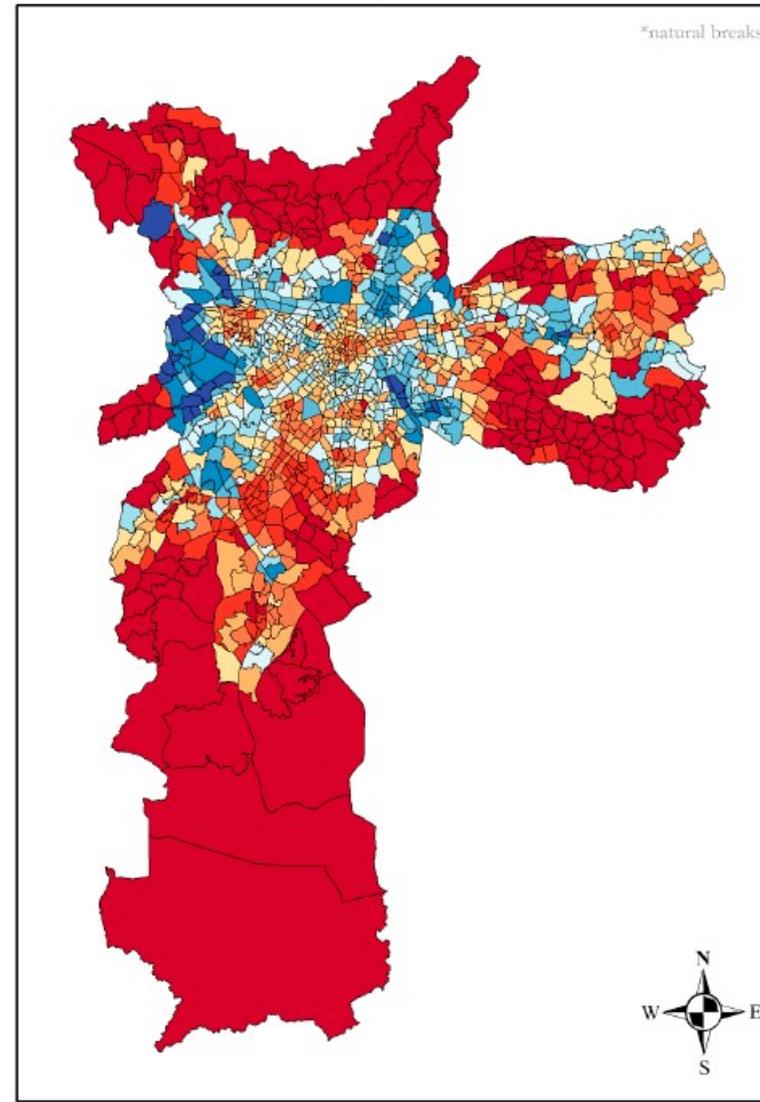


Potential impacts of bike-and-ride on job accessibility and spatial equity in São Paulo, Brazil

John P. Pritchard^{a,*}, Diego Bogado Tomasiello^b, Mariana Giannotti^b, Karst Geurs^a

^aCentre for Transport Studies, University of Twente, 7500 AE Enschede, the Netherlands
^bPolytechnic School, University of São Paulo, São Paulo, Brazil

Percentage increase of accessibility due to bike-and-ride - 7:00 a.m.



Paul, Jan, Ruetger e Koen

PRITCHARD, J. P.; TOMASIELLO, D. B.; **GIANNOTTI, M.**; GEURS, K. Potential impacts of bike-and-ride on job accessibility and spatial equity in São Paulo, Brazil.

Transportation Research Part A-Policy and Practice. , v.121, p.386 - 400, 2019.

POLÍTICAS PÚBLICAS E PRÁTICAS URBANAS

TRANSPORTE ATIVO

Avaliação de desigualdades de gênero a partir de dados da Tembici



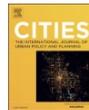
Cities 148 (2024) 104822



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Cities

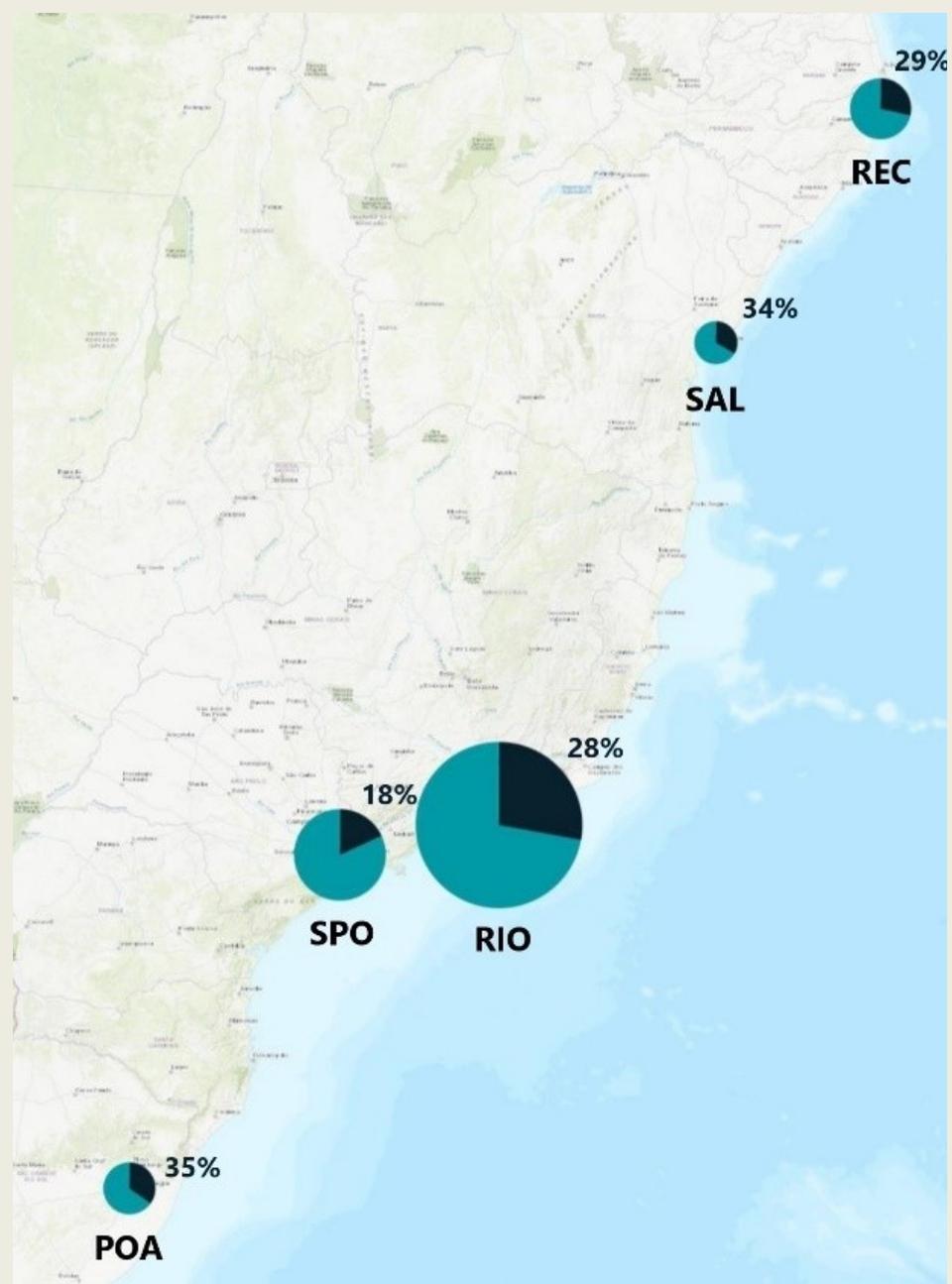
journal homepage: www.elsevier.com/locate/cities



Gender, class and race uneven access to bike systems across five Brazilian cities

Laura M. Fortes^{*}, Mariana Giannotti, Flavio Soares de Freitas

Center for Metropolitan Studies and Laboratory for Geospatial Analysis at Polytechnic School, University of São Paulo, São Paulo 05508-070, SP, Brazil



FORTES, L.;; GIANNOTTI, M, SOARES F. Gender, class and race uneven access to bike systems across five Brazilian Cities. *Cities*, 148, 104822.

POLÍTICAS PÚBLICAS E PRÁTICAS URBANAS

TRANSPORTE ATIVO

PEDESTRES

Indicadores para políticas públicas (Capabilities Approach)

Journal of Human Development and Capabilities, 2020
 Vol. 21, No. 2, 183–204, <https://doi.org/10.1080/19452829.2020.1745163>



Investigating the Mobility Capabilities and Functionings in Accessing Schools Through Walking: A Quantitative Assessment of Public and Private Schools in São Paulo (Brazil)

MATEUS HUMBERTO [✉]*, BRUNA PIZZOL**, FILIPE MOURA*,
 MARIANA GIANNOTTI** & MARCOS PAULO DE LUCCA-SILVEIRA†

*CERIS, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal

**Escola Politécnica, Universidade de São Paulo, São Paulo, Brazil

†Center for Metropolitan Studies, Universidade de São Paulo, São Paulo, Brazil

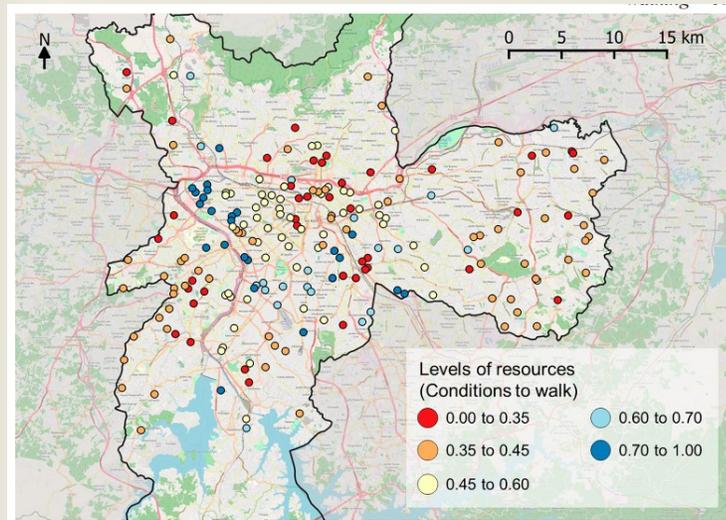
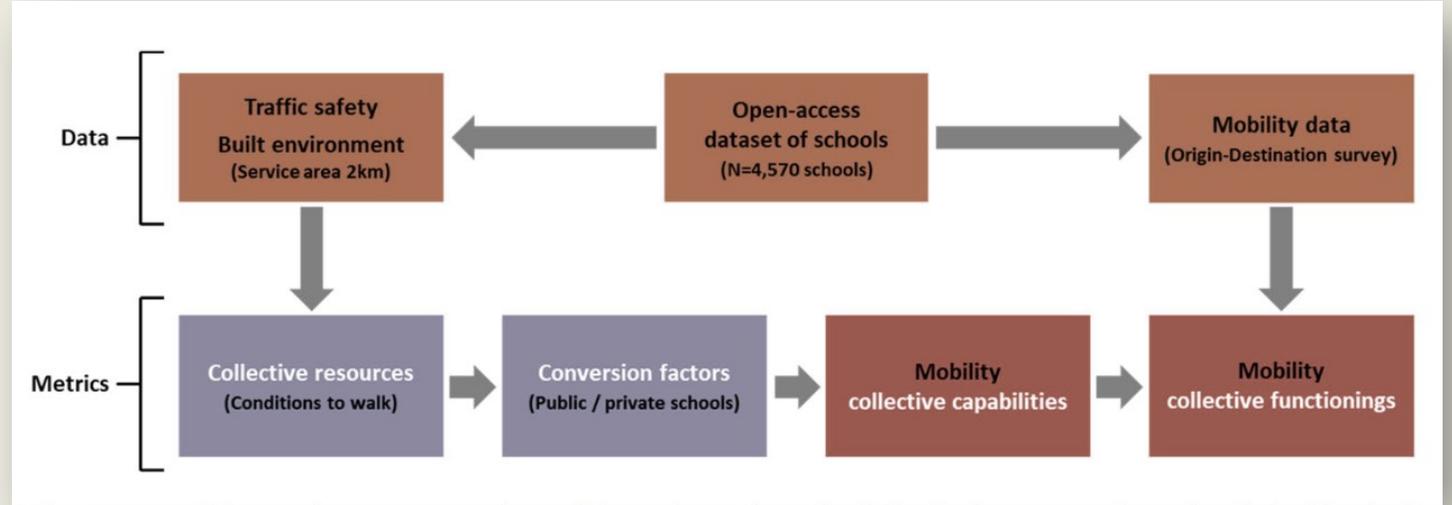


Figure 4. Levels of resources (conditions to walk) of schools.

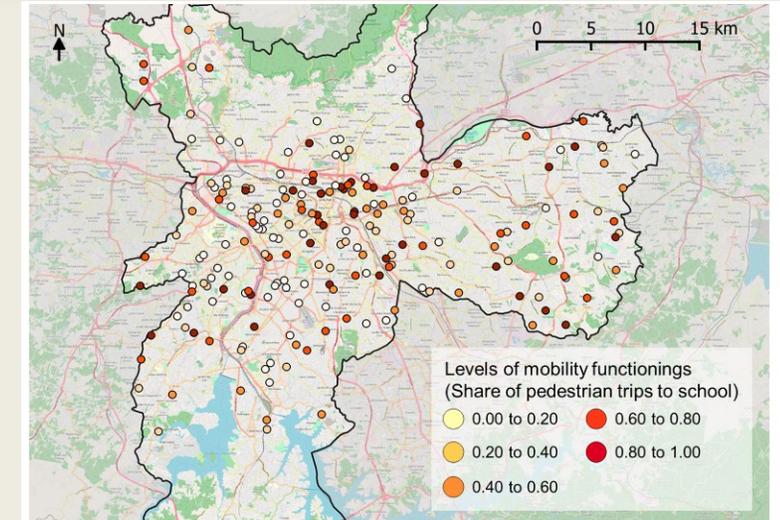


Figure 3. Levels of mobility functionings (share of pedestrian trips to school).

HUMBERTO, M., PIZZOL, B., MOURA, F., GIANNOTTI, M., & DE LUCCA-SILVEIRA, M. P. (2020). Investigating the mobility capabilities and functionings in accessing schools through walking: a quantitative assessment of public and private schools in São Paulo (Brazil). *Journal of Human Development and Capabilities*, 21(2), 183-204..

AVALIAÇÃO DE POLÍTICAS PÚBLICAS HABITAÇÃO DE INTERESSE SOCIAL

Avaliação ex-post do Programa
Minha Casa Minha Vida



ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Habitat International

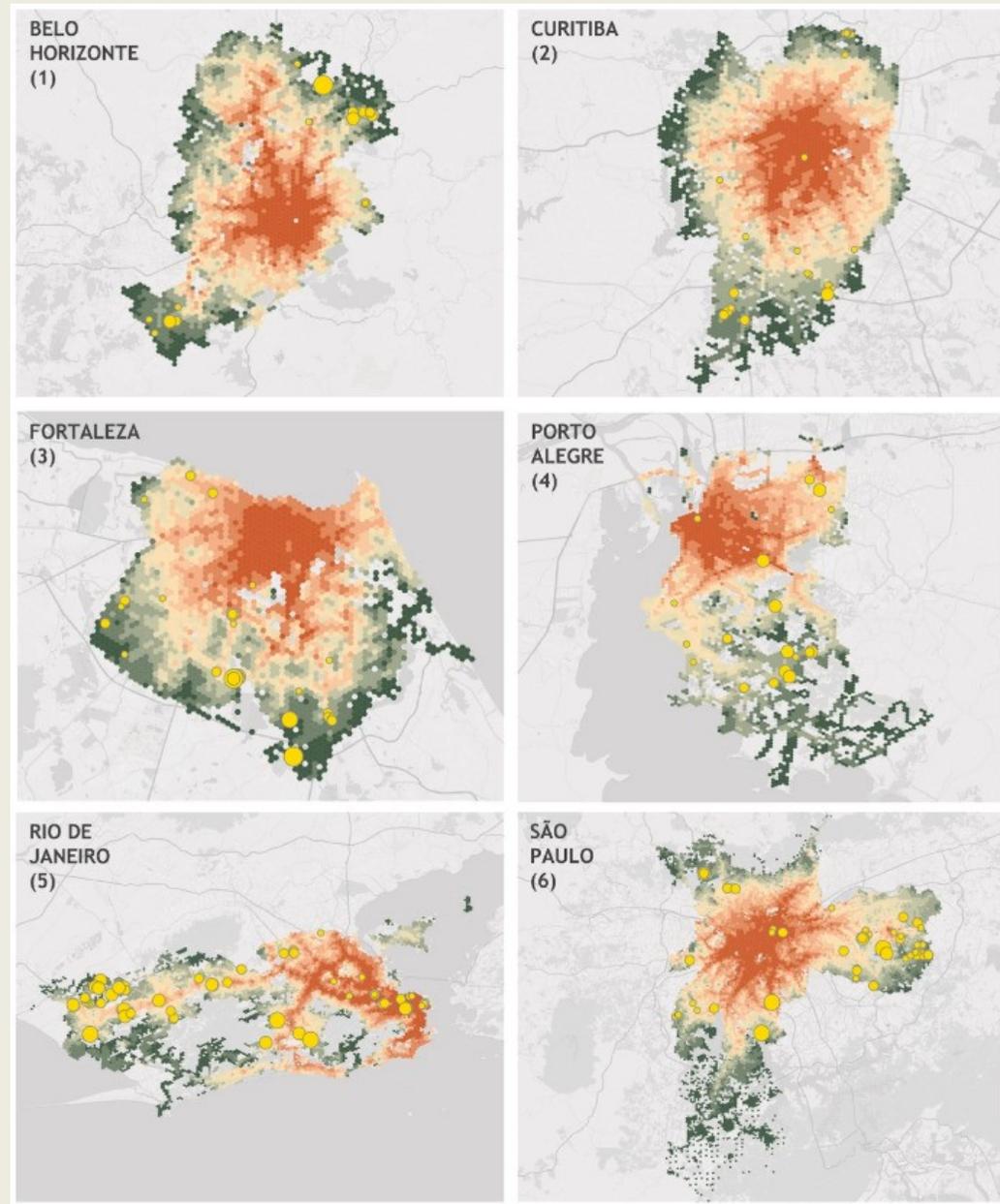
journal homepage: www.elsevier.com/locate/habitatint



Social housing and accessibility in Brazil's unequal cities

Camila Cardoso Leite, Mariana Giannotti*, Gilmara Gonçalves

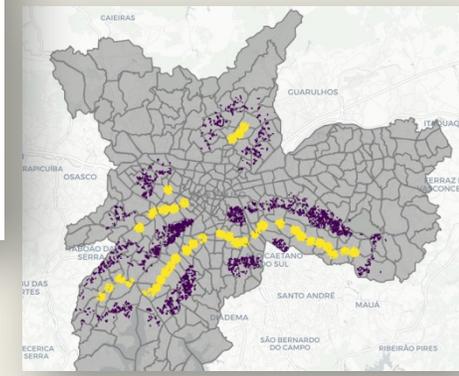
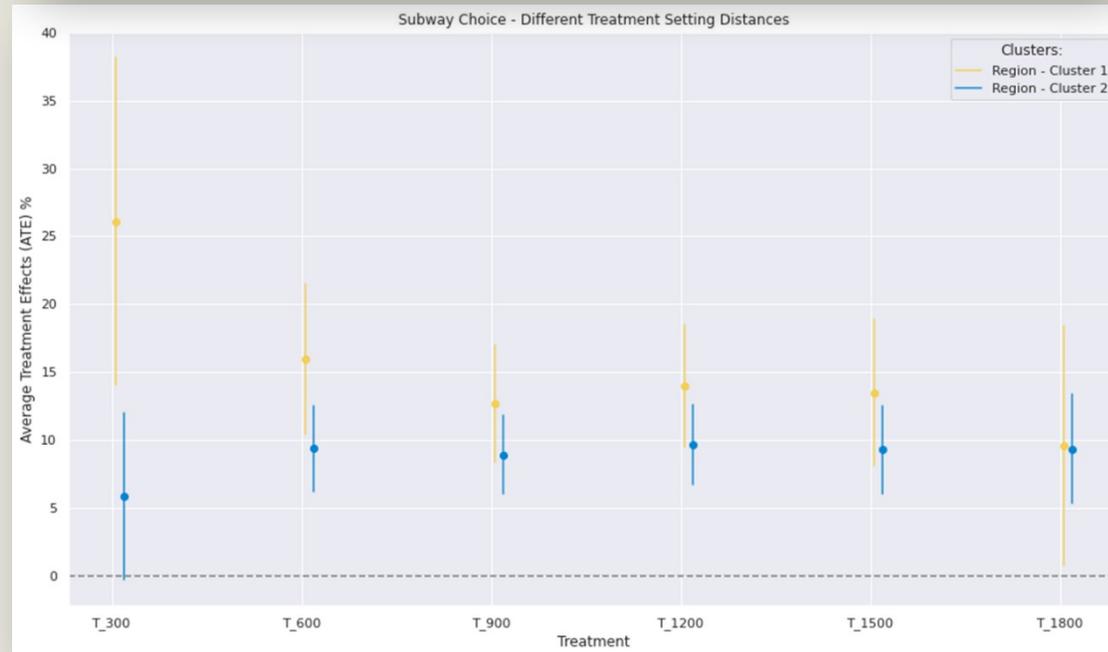
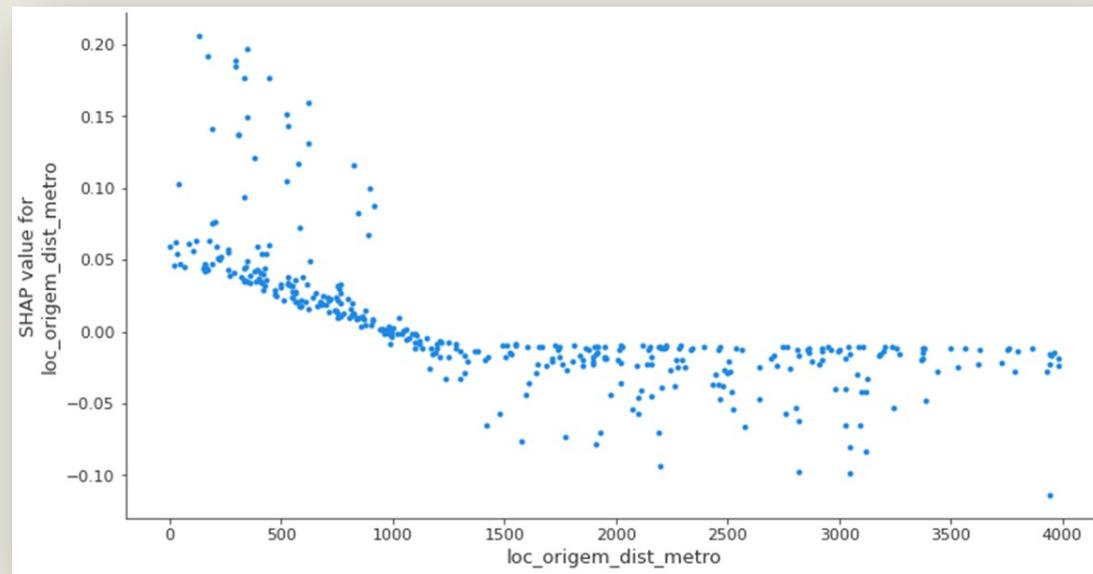
Center for Metropolitan Studies and Laboratory for Geospatial Analysis at Polytechnic School, University of São Paulo, São Paulo, 05508-070, SP, Brazil



LEITE, C. C., GIANNOTTI, M., & GONÇALVES, G. (2022). Social housing and accessibility in Brazil's unequal cities. *Habitat International*, 127, 102628.

AVALIAÇÃO DE POLÍTICAS PÚBLICAS REDE METROFERROVIÁRIA

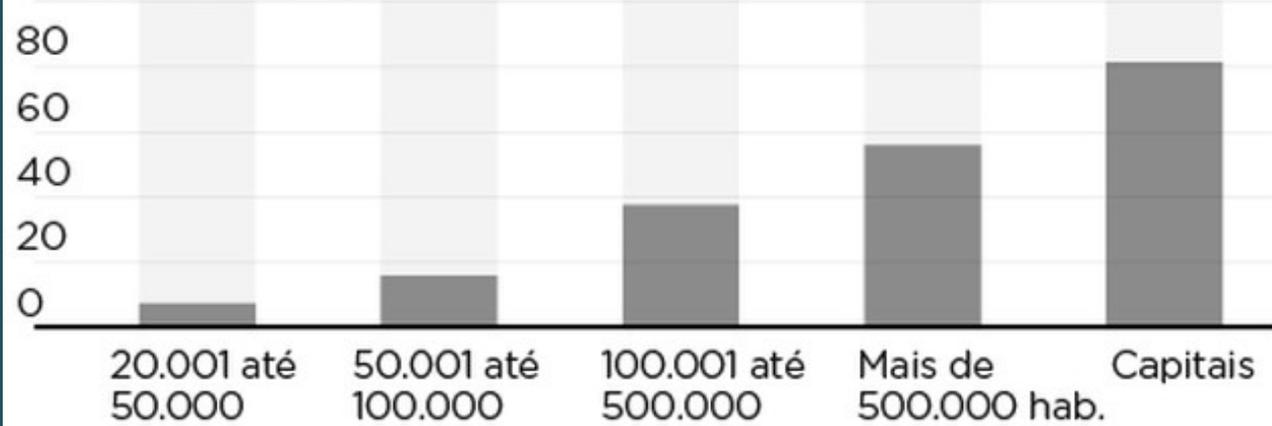
INTELIGÊNCIA ARTIFICIAL E INFERÊNCIA CAUSAL



Mestrados Rafael Yoshio e Rodrigo Labossiere

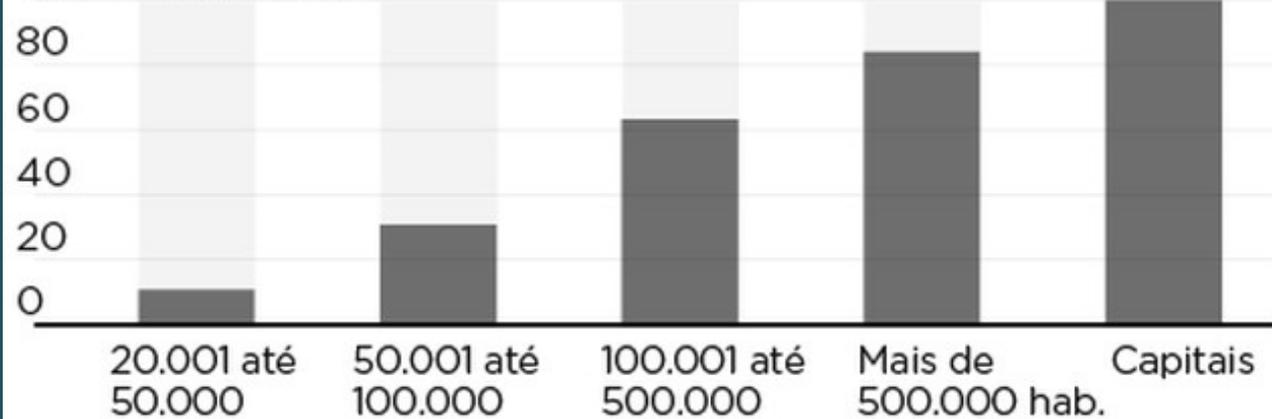
GPS

100% de presença



BILHETAGEM

100% de presença



LOGIODICE, P., BITTENCOURT, T., **GIANNOTTI**, M. O uso de dados para garantir o direito de facto ao transporte. Portal de Políticas Públicas Nexo, 2021



Acesso a infraestrutura cicloviária

Proporção (%) da população que reside em um raio de até 300 metros de distância de infraestruturas cicloviárias (ciclovias e ciclofaixas), por Zona OD e por distrito



MELHOR/PIOR VALOR

100,0

Pari

0

VÁRIOS [9]

Média de São Paulo **41,0**

DESIGUALTÔMETRO

88x

LEGENDA:

- 75 - 100
- 25 - 75
- 0 - 25
- 0
- não aplicável



ANO-BASE: 2017

FÓRMULA: População residente no raio de até 300 metros de distância de infraestruturas cicloviárias ÷ População total do distrito x 100

FONTE(S): Pesquisa OD 2017; IBGE

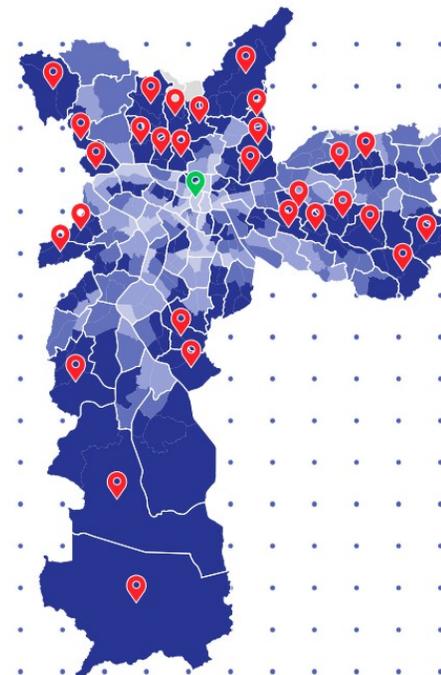
ELABORAÇÃO: CEM

OBSERVAÇÕES: Dados populacionais do Censo Demográfico de 2010. Este indicador foi criado pelo ITDP (Instituto de Políticas de Transporte e Desenvolvimento) e seu nome original, em inglês, é PNB (People Near Bikes).



Acesso a transporte de massa

Proporção (%) da população que reside em um raio de até 1 km de estações de sistemas de transporte público de alta capacidade (trem, metrô e monotrilho), por Zona OD e por distrito



MELHOR/PIOR VALOR

88,0

República

0

VÁRIOS [29]

Média de São Paulo **18,1**

DESIGUALTÔMETRO

194x

LEGENDA:

- 75 - 100
- 25 - 75
- 0 - 25
- 0
- não aplicável



ANO-BASE: 2017

FÓRMULA: População residente no raio de até 1 km das estações de sistemas de transporte público de média e alta capacidade ÷ População total do distrito x 100

FONTE(S): Pesquisa OD 2017; IBGE

ELABORAÇÃO: CEM

OBSERVAÇÕES: Dados populacionais do Censo Demográfico de 2010. Este indicador foi criado pelo ITDP (Instituto de Políticas de Transporte e Desenvolvimento) e seu nome original, em inglês, é PNT (People Near Transit).



Educação 2022

Parque infantil INEP (CENSO ESCOLAR 2022)

Quadra de esportes INEP (CENSO ESCOLAR 2022)

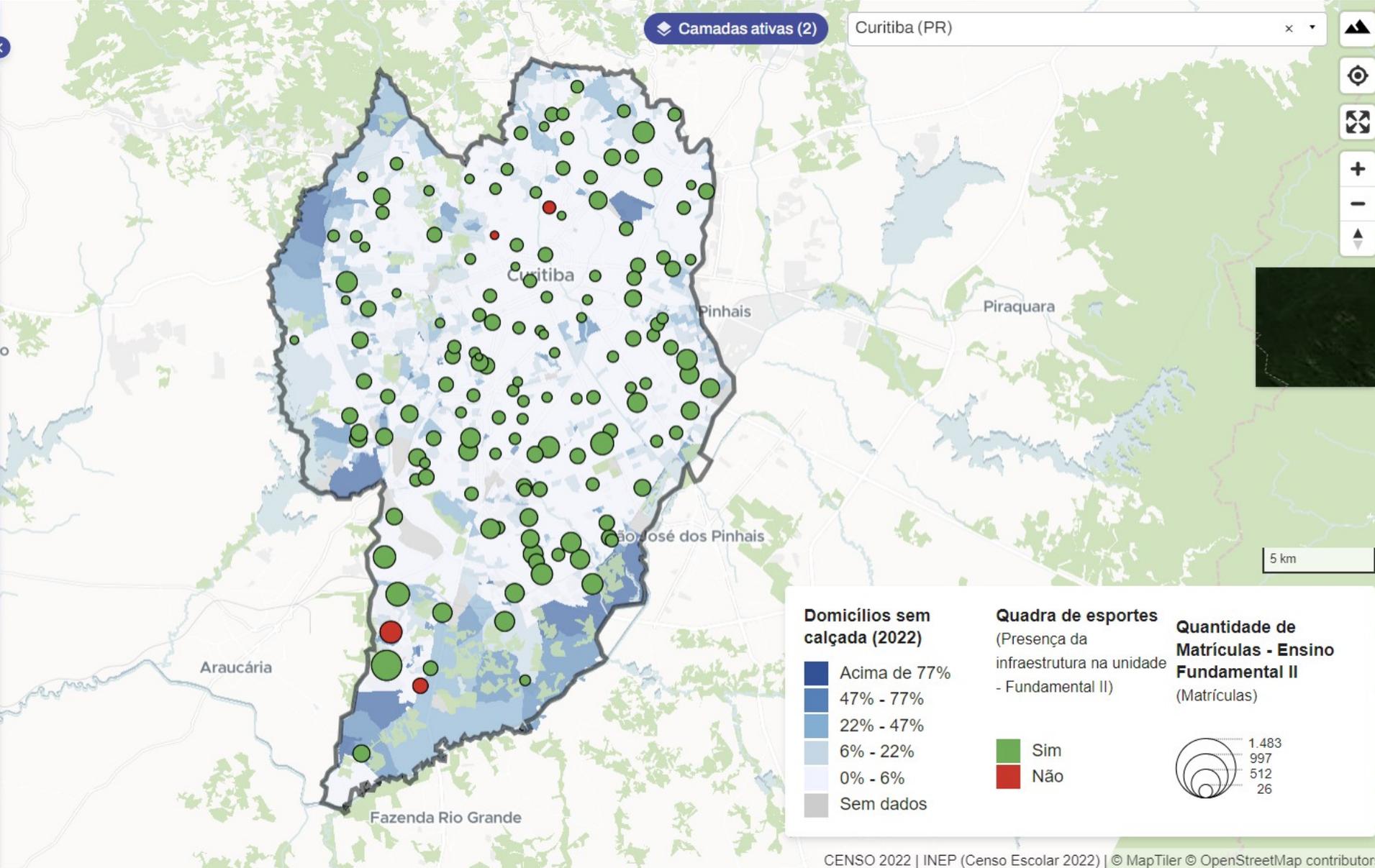
Rede de ensino: Todas

Matrículas Tamanho proporcional à quantidade de matrículas

Área de influência Visualizar área de influência

Laboratório de ciências INEP (CENSO ESCOLAR 2022)

Laboratório de informática



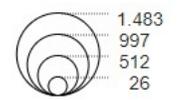
Domicílios sem calçada (2022)

- Acima de 77%
- 47% - 77%
- 22% - 47%
- 6% - 22%
- 0% - 6%
- Sem dados

Quadra de esportes (Presença da infraestrutura na unidade - Fundamental II)

- Sim
- Não

Quantidade de Matrículas - Ensino Fundamental II (Matrículas)



Educação

2022

Parque infantil
INEP (CENSO ESCOLAR 2022)

Quadra de esportes
INEP (CENSO ESCOLAR 2022)

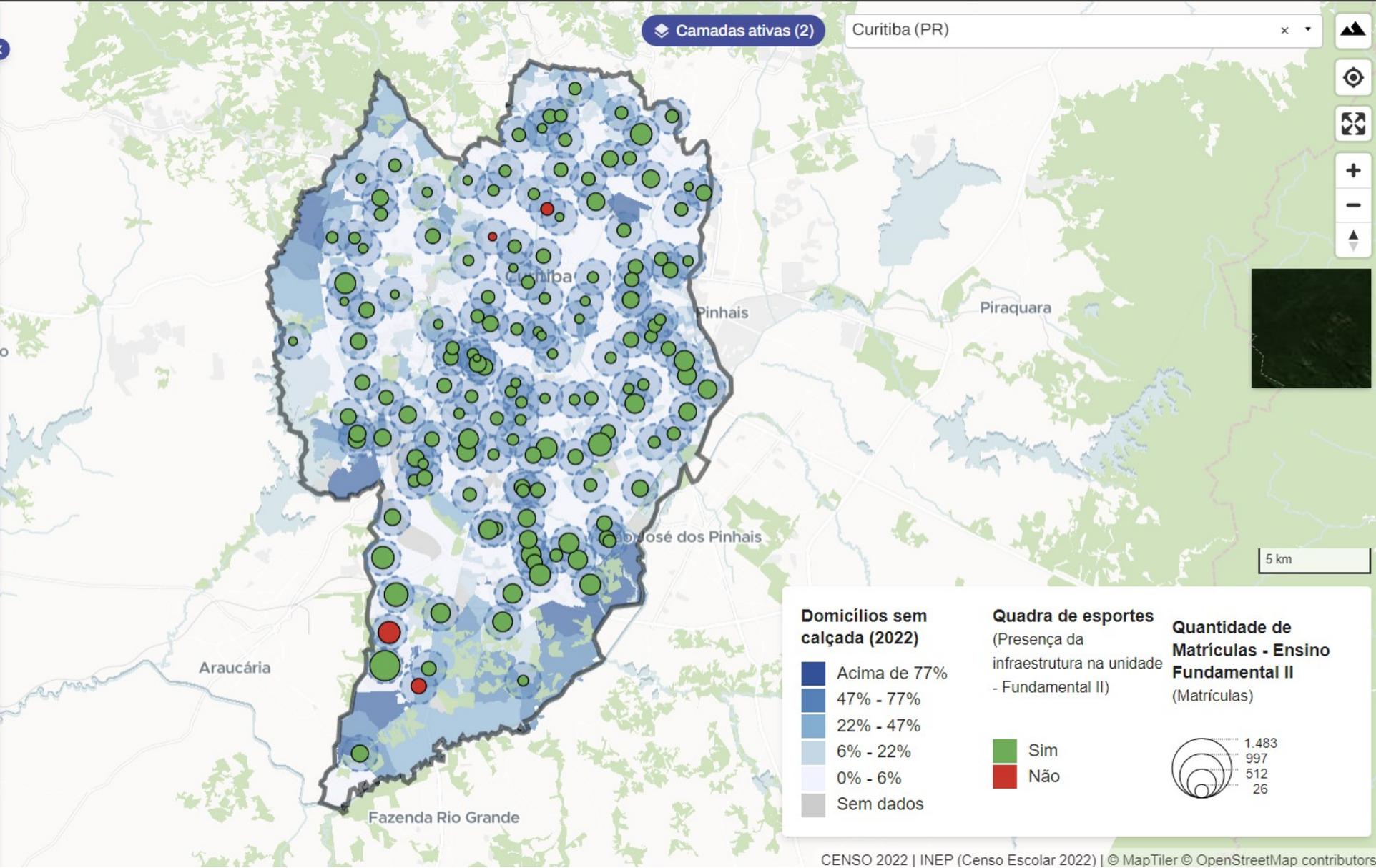
Rede de ensino:
Todas

Matrículas
 Tamanho proporcional à quantidade de matrículas

Área de influência
 Visualizar área de influência

Raio de influência (800m)
Configure um raio de influência do equipamento

Dissolver geometrias
 Unir geometrias sobrepostas



Geo ReDUS

Educação 2022

Parque infantil
INEP (CENSO ESCOLAR 2022)

Quadra de esportes
INEP (CENSO ESCOLAR 2022)

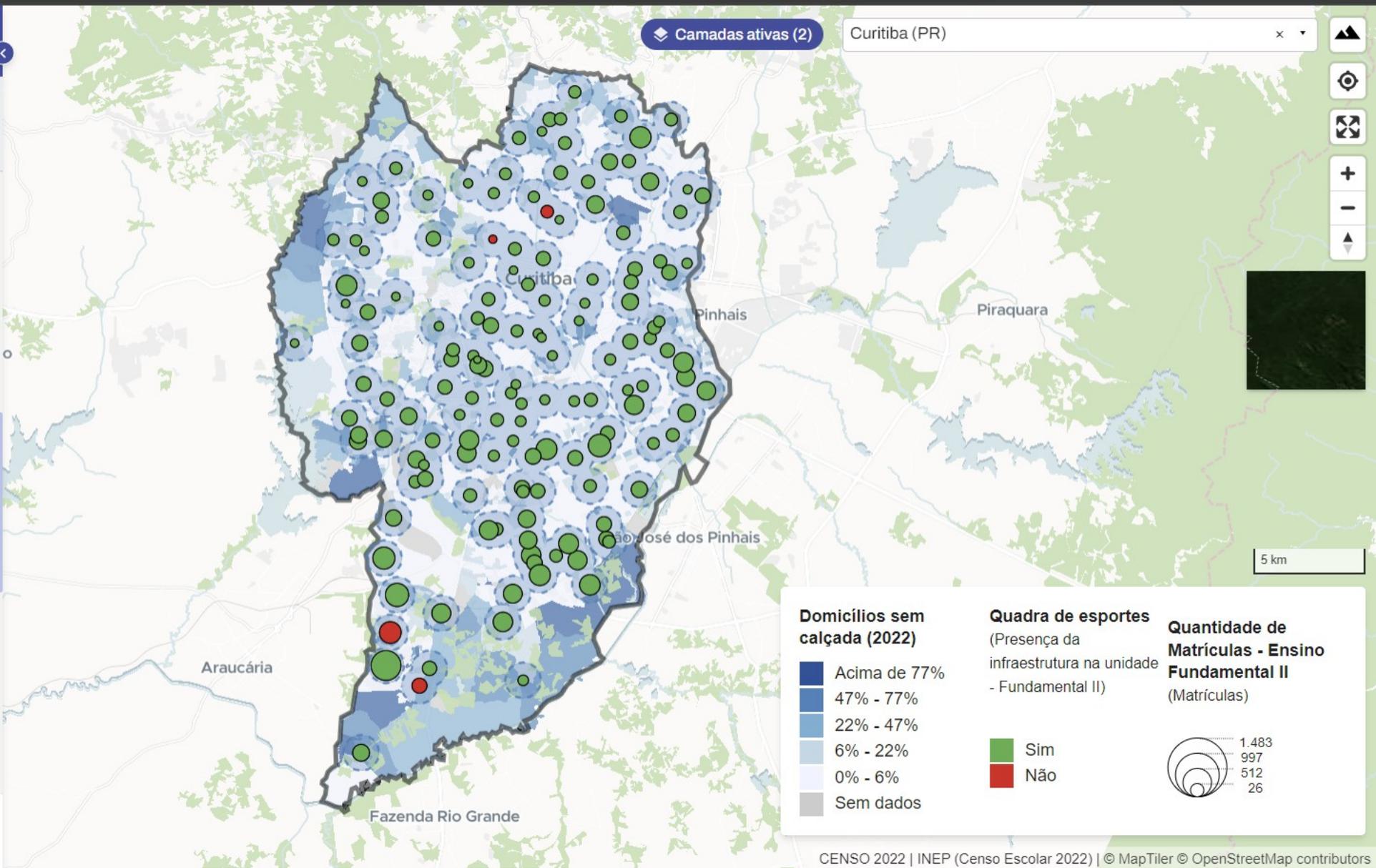
Rede de ensino:
Todas ▾

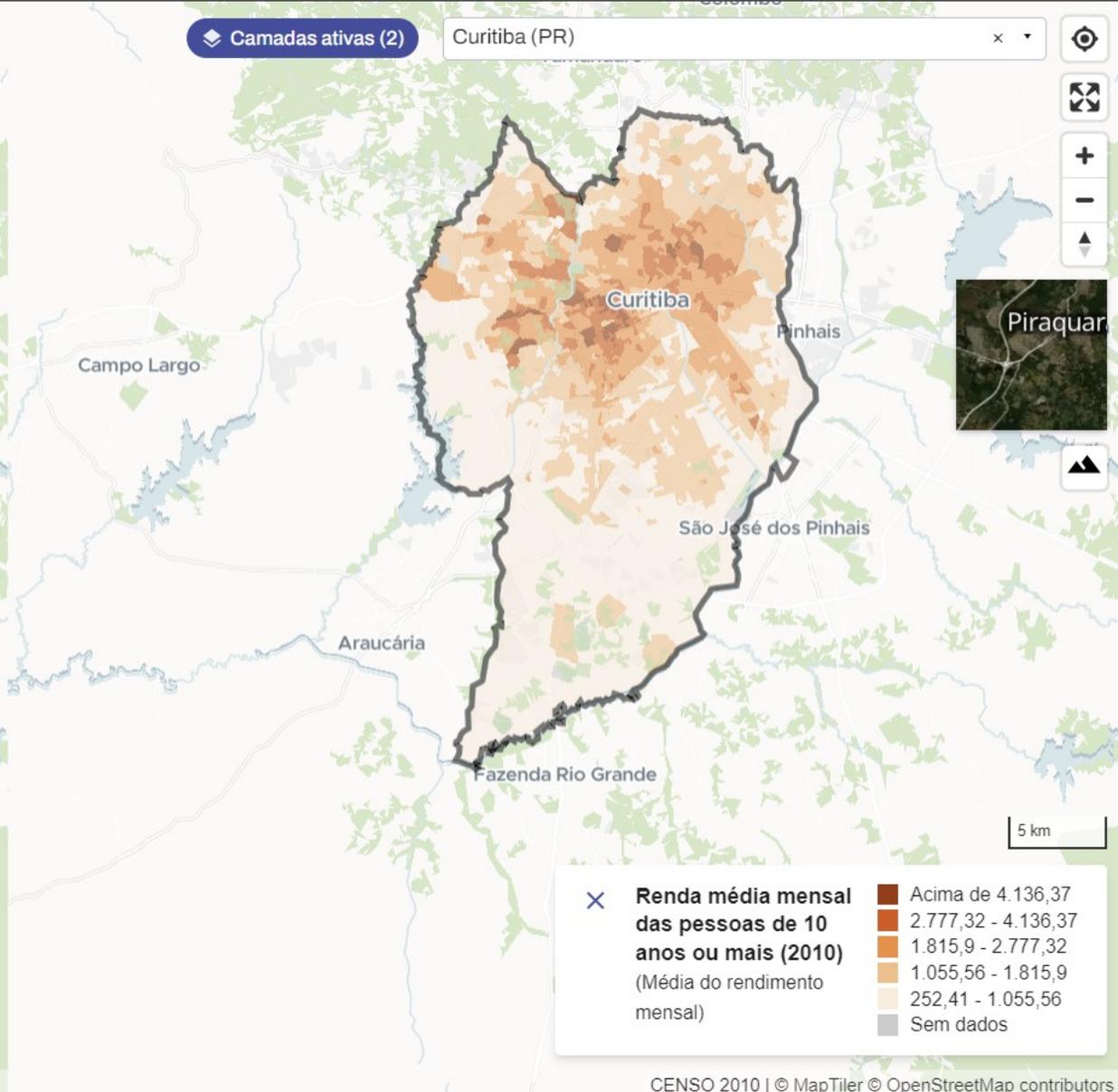
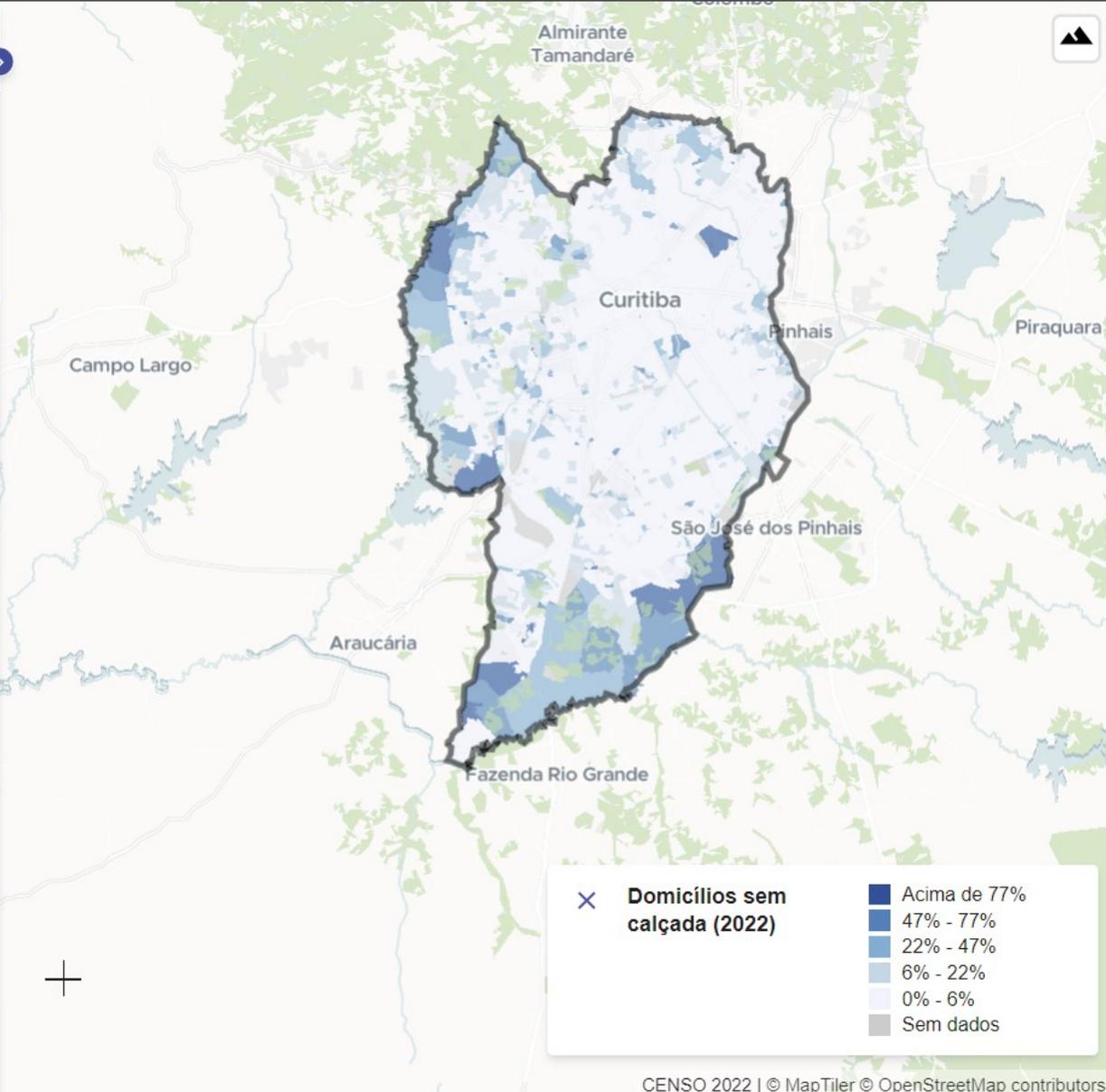
Matrículas
 Tamanho proporcional à quantidade de matrículas

Área de influência
 Visualizar área de influência

Raio de influência (800m)
Configure um raio de influência do equipamento

Dissolver geometrias
 Unir geometrias sobrepostas





 Pesquise por indicadores digitando termos de interesse, ou navegue pelos temas nas abas à esquerda.





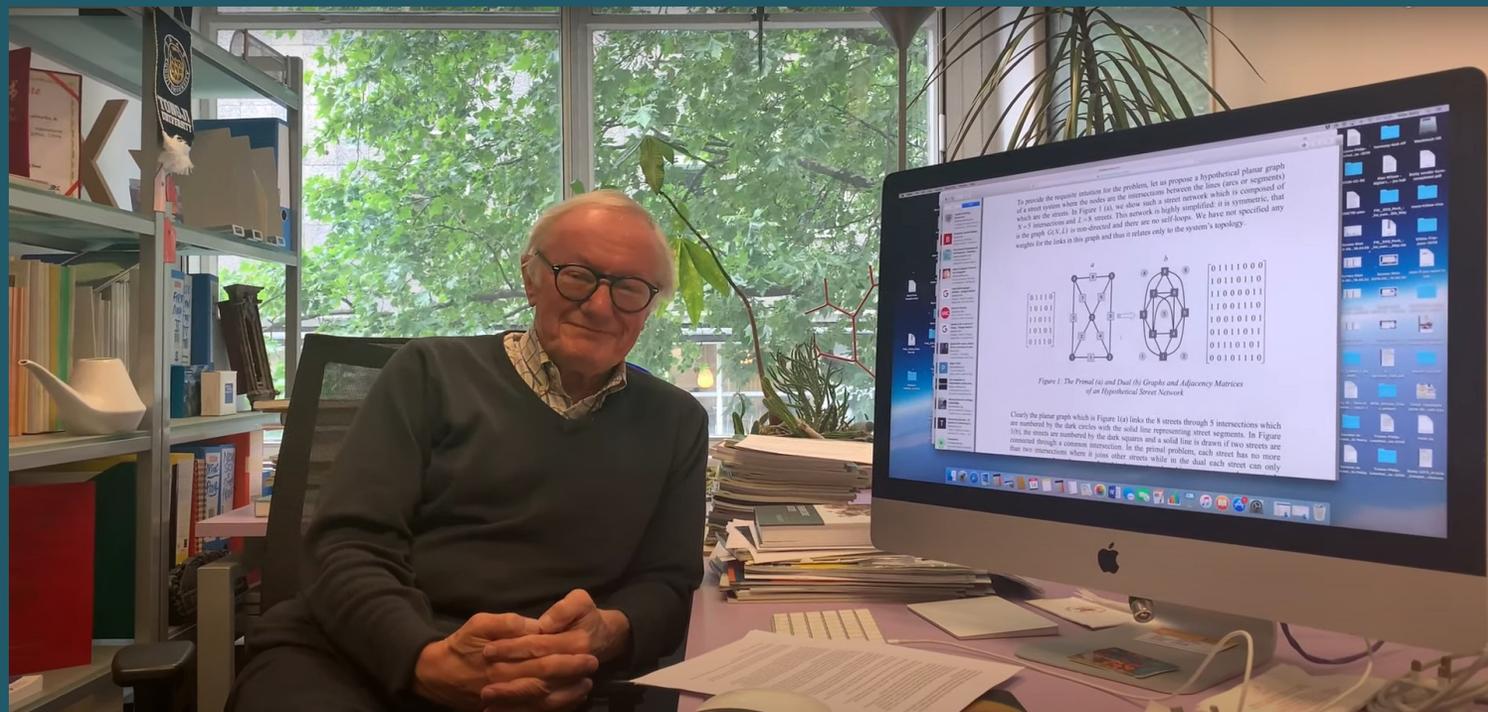




“Integrar todas as formas de dados (rápidos e lentos, grandes e pequenos, quantitativos e qualitativos) será um passo essencial nas aplicações promissoras de big data em políticas e planejamento urbano.”



Kandt and Batty (2021)



Michael Batty

Center for Advanced Spatial Analysis
University College London



Geopública 2025



SotM BR 2025
STATE OF THE MAP BRASIL

1

Big data gera novas hipóteses

2

Teoria fica mais importante e não menos

3

Bases de dados “pequenas” ficam mais importantes e não menos

4

Insights estratégicos dependem de evidências de longo prazo

5

Insights do big data dependem de análise de contexto

6

Precisamos avançar no compartilhamento de dados abertos



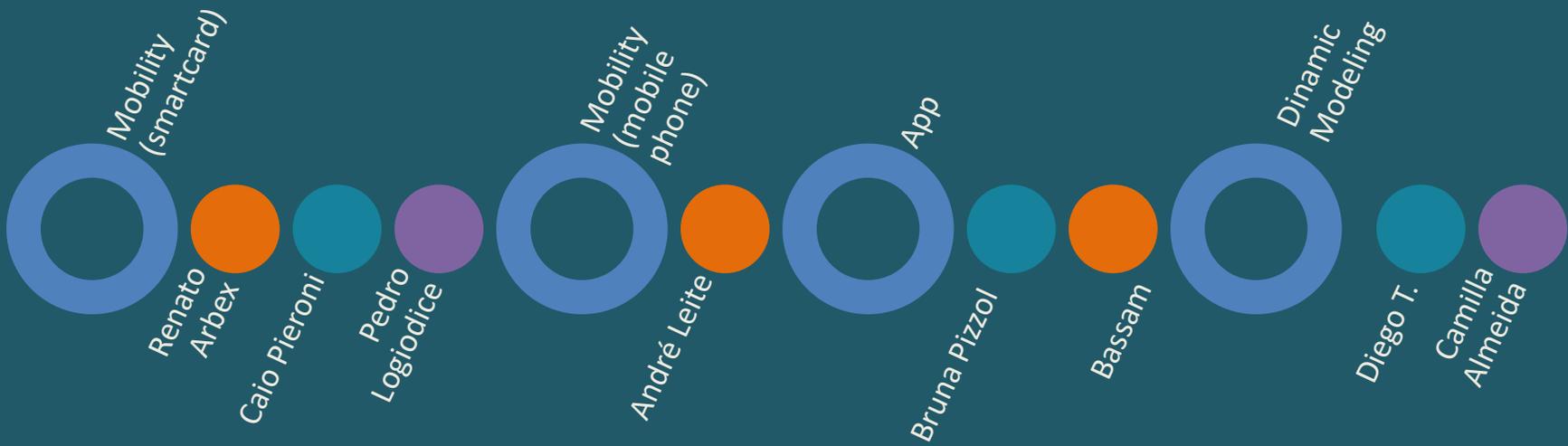
Rosa Parks

“ O ônibus foi uma das primeiras maneiras pelas quais percebi que havia um mundo negro e um mundo branco ”

(Rosa Parks)



... e mais...



OBRIGAD

A!
mariana.giannotti@usp



Centro de Estudos da Metrópole

