

Modelling Potential in São Paulo

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3º SIMPÓSIO SÃO PAULO - LONDON - BEIJING

ReVISIONS PROJECT - Sustainable City Regions

18-21 de junho de 2012 - FAU Maranhão



“BR Symmetric Input-Output Table 2000”

based on UK Symmetric Input-Output Table 2000 (GRINEVICH et al. , October 2010)

	Industry	Intermediate Consumption						Final Consumption					Total use
		1	2	3	4	5	6						
		Agriculture and Mining	Mfg. EGW, Construction	Wholesale, Retail, Hotels, etc.	Real estate	Business Services	Defence, Edu and Health	Households	Govmnt and Non-profit Institutions	Gross capital formation	Exports	stock variation	
1	Agriculture and Mining	12.747	99.705	0	0	1.666	236	22.040	0	6.214	14.535	2.440	159.583
2	Mfg. EGW, Construction	33.015	374.562	13.474	4.071	102.890	27.678	345.988	0	189.153	87.506	14.666	1.193.003
3	Wholesale, Retail, Hotels, etc.	0	1.932	2.346	0	5	0	0	0	0	1.076	0	5.359
4	Real estate	1.351	4.059	6.241	290	10.578	2.096	112.168	0	2.176	1.024	0	139.983
5	Business Services	10.247	72.132	24.124	1.547	130.301	44.630	262.697	25.394	608	13.550	0	585.230
6	Defence, Edu and Health	0	0	0	0	0	0	0	216.739	0	0	0	216.739
	Total	57.360	552.390	46.185	5.908	245.440	74.640	742.893	242.133	198.151	117.691	17.106	2.299.897
1	Agriculture and Mining	272	14.369	0	0	16	1	620	0	10	0	156	15.444
2	Mfg. EGW, Construction	1.994	54.056	298	88	5.645	1.389	15.016	0	19.556	772	332	99.146
3	Wholesale, Retail, Hotels, etc.	0	296	427	0	1	0	0	0	0	0	0	724
4	Real estate	1.015	242	204	5	1.278	265	360	0	0	0	0	3.369
5	Business Services	427	2.753	887	122	5.893	900	8.827	0	0	0	0	19.809
6	Defence, Edu and Health	0	0	0	0	0	0	0	0	0	0	0	0
	Total Imported	3.708	71.716	1.816	215	12.833	2.555	24.823	0	19.566	772	488	138.492
	Net taxes on products	6.203	110.762	0	771	40.098	0						157.834
	Value Added	73.512	267.050	108.275	115.399	304.891	152.521						1.021.648
	Gross Operating Surplus	46.265	148.388	60.932	112.875	147.075	19.643						535.178
	Compensation of Employees	27.363	113.990	46.063	2.453	154.598	132.867						477.334
	Net taxes on production	-116	4.672	1.280	71	3.218	11						9.136
	Industry Output	140.783	1.001.918	156.276	122.293	603.262	229.716	767.716	242.133	217.717	118.463	17.594	3.617.871

R\$ (2000)

Source: IBGE

Tabela 4 - Oferta e demanda de produtos Importados - 2000

Consumo intermediário das atividades (valores correntes em 1 000 000 R\$)													
Código do produto Nível 12	Descrição do produto Nível 12	01 Agropecuária	02 Indústria extrativa mineral	03 Indústria de transformação	04 Produção e distribuição de eletricidade, gás e água	05 Construção	06 Comércio	10 Atividades imobiliárias e aluguel	07 Transporte, armazenagem e correio	08 Serviços de informação	09 Intermediação financeira, seguros e previdência complementar	11 Outros serviços	12 Administração, saúde e educação públicas
		1 Agriculture Mining		2 Mfg, EGW, Construction			3 Wholesale, Retail, Hotels	4 Real estate		5 Business Services			6 Gvmnt and Non-profit
01	Agropecuária	208	0	2 883	0	0	0	0	0	0	0	16	1
02	Indústria extrativa mineral	45	19	11 263	212	11	0	0	0	0	0	0	0
1	Agriculture and Mining	272		14 369			0	0		16			1
03	Indústria de transformação	1 257	737	48 582	1 056	2 483	298	88	2 172	955	247	2 271	1 389
04	Produção e distribuição de eletricidade	0	0	0	1 790	0	0	0	0	0	0	0	0
05	Construção	0	0	0	0	145	0	0	0	0	0	0	0
2	Mfg, EGW, Construction	1 994		54 056			298	88		5 645			1 389
06	Comércio	0	0	292	0	4	427	0	0	0	0	1	0
3	Wholesale, Retail and Hotel	0		296			427	0		1			0
10	Atividades imobiliárias e aluguel	0	1 015	129	7	106	204	5	302	438	25	513	265
4	Real estate	1 015		242			204	5		1 278			265
07	Transporte, armazenagem e correio	0	0	0	0	0	0	0	670	0	0	0	0
08	Serviços de informação	0	27	231	0	27	0	0	21	717	883	660	94
09	Intermediação financeira, seguros e pre	19	22	366	25	21	78	7	49	35	346	69	248
11	Outros serviços	0	359	1 596	324	163	809	115	143	651	748	901	558
5	Business Services	427		2 753			887	122		5 893			900
12	Administração, saúde e educação públi	0	0	0	0	0	0	0	0	0	0	0	0
6	Gvmnt and Non-profit	0		0			0	0		0			0
Total		1 529	2 179	65 342	3 414	2 960	1 816	215	3 357	2 796	2 249	4 431	2 555
		3 708		71 716			1 816	215		12 833			2 555

		Geography	
		UK-level	Zone-level
Time	Calibration year	I	II
	Future year	III	IV

Spatio-temporal dimensions of the extended input-output framework
(GRINEVICH et al. , October 2010)

“BR Symmetric Input-Output Table” – from data available for 2010*

	Industry	Intermediate Consumption						Final Consumption				Total use
		1	2	3	4	5	6					
		Agriculture and Mining	Mfg. EGW, Construction	Wholesale, Retail, Hotels, etc.	Real estate	Business Services	Defence, Edu and Health	Households	Govmnt and Non-profit Institutions	Gross capital formation	Exports	
1	Agriculture and Mining											
2	Mfg. EGW, Construction											
3	Wholesale, Retail, Hotels, etc.											
4	Real estate											
5	Business Services											
6	Defence, Edu and Health											
	Total							2.248.624	797.332	763.012	409.868	
1	Agriculture and Mining											
2	Mfg. EGW, Construction											
3	Wholesale, Retail, Hotels, etc.											
4	Real estate											
5	Business Services											
6	Defence, Edu and Health											
	Total Imported										448.752	
	Net taxes on products										542.904	
	Value Added	267.063	809.967	404.007	252.823	970.544	522.777				3.227.181	
	Gross Operating Surplus											
	Compensation of Employees											
	Net taxes on production											
	Industry Output											

* as for any year between 2000 and 2011

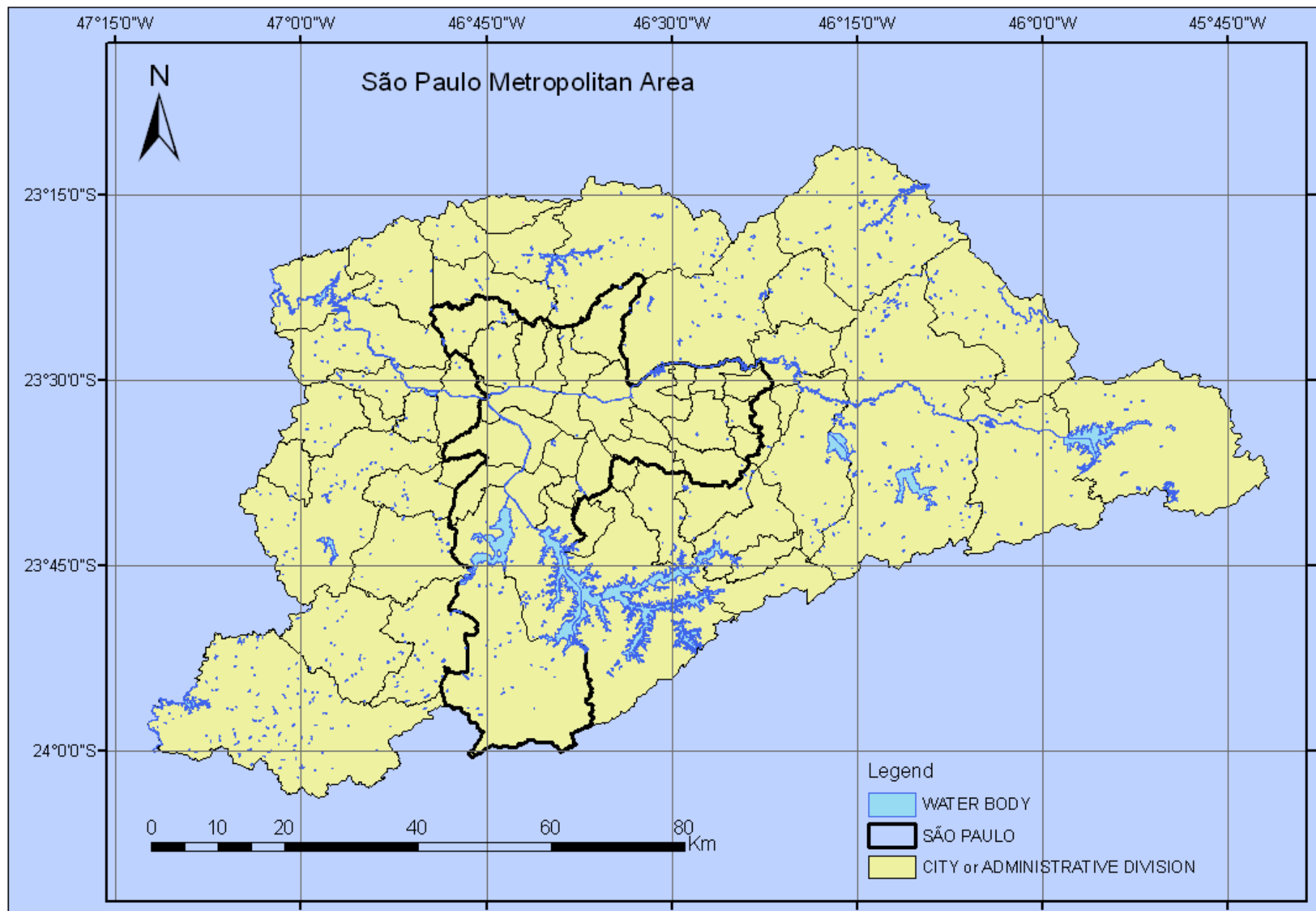
data for full table construction is available (from IBGE) only for 2000 and 2005

An Empirical Framework for International Comparisons (Vadim Grinevich – 2 June 2011)		Industries							Households			
		Agriculture and mining	Manufacturing, etc.	Wholesale, etc.	Retail, etc.	Real estate	Business services and transport	Defence, education, health, etc.	Higher managerial, etc.	Routine and semi-routine	Unemployed	Economically inactive
Table 3 – Socio-economic accounts												
Workplace labour	Higher managerial, etc.	employees										
	Routine and semi-routine											
Non-domestic floorspace	Retail premises	square meters										
	Offices											
	Factories											
	Warehouses											
Non-domestic land	Retail premisses	square meters										
	Offices											
	Factories											
	Warehouses											
	Agricultural											
Residential Population	Higher managerial, etc.								persons			
	Routine and semi-routine											
	Unemployed											
	Economically inactive											
Domestic floorspace	by # of rooms								dwellings			
Domestic land									square meters			

Socio-economic accounts as DIMENSIONS and DATA		Industries	Households
		DIMENSION industrial sector	DIMENSION socio-economic group
Workplace labour	DIMENSION socio-economic group	DATA Employees	
Non-domestic floorspace	DIMENSION floor space type	DATA square meters	
Non-domestic land	DIMENSION land use	DATA square meters	
Residential Population	DIMENSION socio-economic group		DATA Persons
Domestic floorspace	DIMENSION dwelling size (# of rooms)		DATA Dwellings
Domestic land – DIMENSION Land use			DATA square meters

+

GEOGRAPHY &
TIME dimensions



Dimensions:

- Geography: 31 zones within São Paulo city, +38 cities within the Metropolitan Area
- Time: ... 2001 ...
- Industrial: 6 - 7 (?) ReVISIONS Broad Industrial Sectors
- Socio-economic: 4 socio-economic groups
- Floor space type: Retail premises, Offices, Factories and Warehouses
- Land use: Retail premises, Offices, Factories, Warehouses and Agricultural
- Dwelling size (# of rooms): 1, 2, 3, 4, 5, 6+

Data:

- **Workplace labour - employees**
- **Non-domestic Floor Space – square meters**
- **Non-domestic Land – square meters**
- **Residential Population - persons**
- **Domestic Floor Space - dwellings**
- **Domestic Land – square meters**

Modelling Potential in São Paulo

Challenges & Issues

- **Available data ↓**
 - São Paulo city: 31 subdivisions
 - Metropolitan Area : +38 cities
 - Brazil
- **Local characteristics**
 - Informal housing – shanty towns & slums: ~11% of dwellings
 - Number of Rooms: 1..6+ ?
 - ReVISIONS Socio-economic groups x Income
 - classes A-E: household and individual
 - Land Use x Zoning system x Activity x Industry
 - x 39 cities
 - changes in legislations – Federal Law 10.257, July 10th, 2001

Available Data for São Paulo Metropolitan Area

Time → Data ↓		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Employees		1			2							1			2
Floor space	m ²				3, 4					3, 4					(3, 4)
	\$/m ²						3							3	
Land	m ²				3, 4		5			3, 4					(3, 4)
	\$/m ²						3							3	
Persons															
Dwellings															

1 – Industrial sectors are aggregated: (1..2), (3..5), 6, 7

2 – No workplace location 3 – São Paulo city (MSP) only

4 – Floor space categories differ:

- 6 Residential
- 8 Non-residential (*)

5 – some Land use categories are aggregated:

- (Factories + Warehouses),
- Urbanised = (Domestic + Retail premises + Offices + Lots)
- + Agriculture, Mining, Shanty town, Urban Equipment, Non-usable

() – not available yet

(*) urban only:

Commercial Horizontal

Commercial Vertical

Non-residential Prkng Garage

Industrial

Warehouse

Special: Hotel, Hospital, Public Office

School

Collective: Theatre, Club, Temple

Vacant (lot)

Available Data for BR

Data ↓ Time →		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Employees					2										2
Floor space	m ²														
	\$/m ²														
Land	m ²														
	\$/m ²														
Persons															
Dwellings															

2 – No workplace location

Available Data for São Paulo city

Time → Data ↓		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Employees		1			2							1			2
Floor space	m ²				4					4					(4)
	\$/m ²														
Land	m ²				4		5			4					(4)
	\$/m ²														
Persons															
Dwellings															

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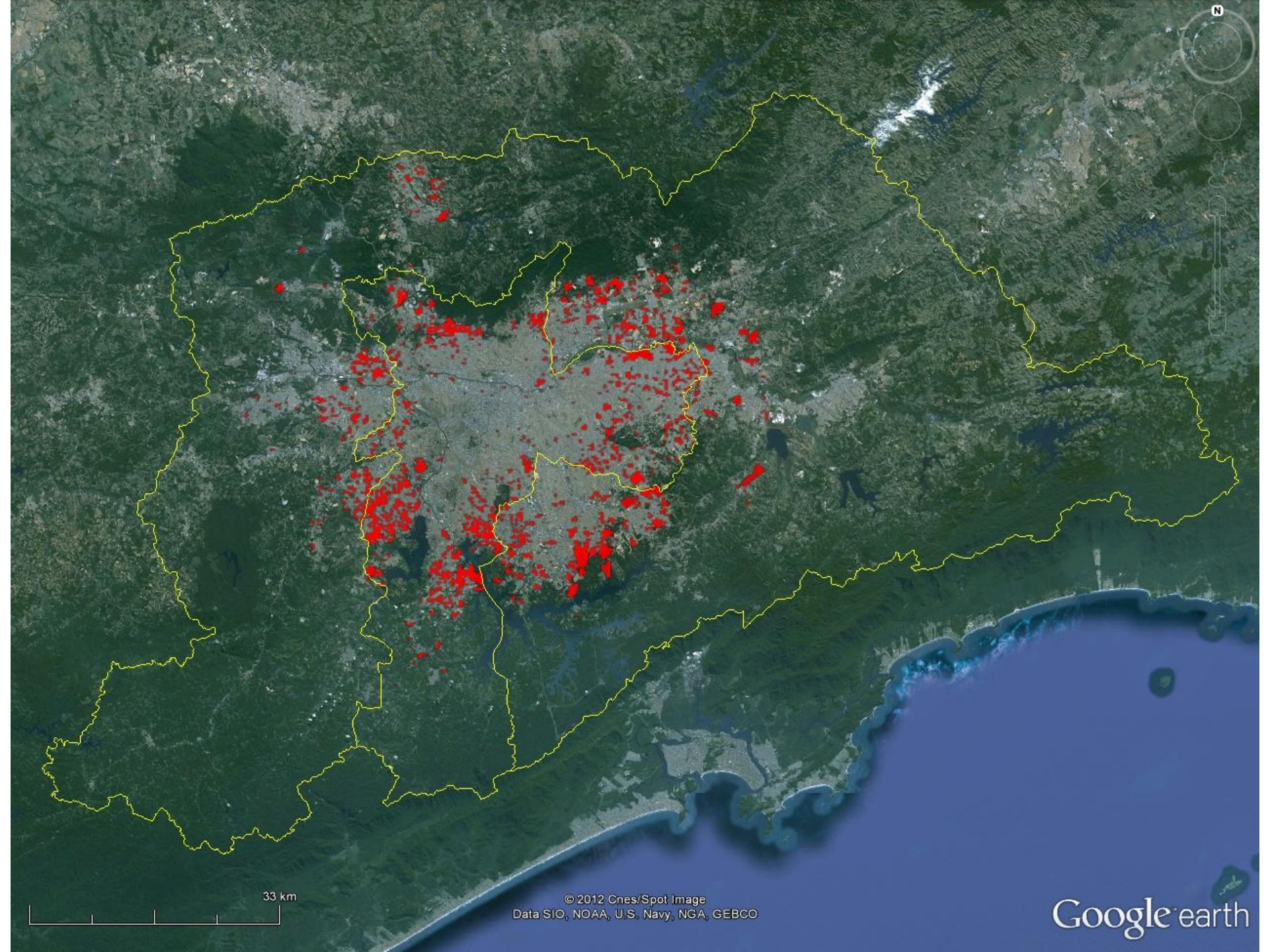
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Modelling Potential in São Paulo

Challenges & Issues

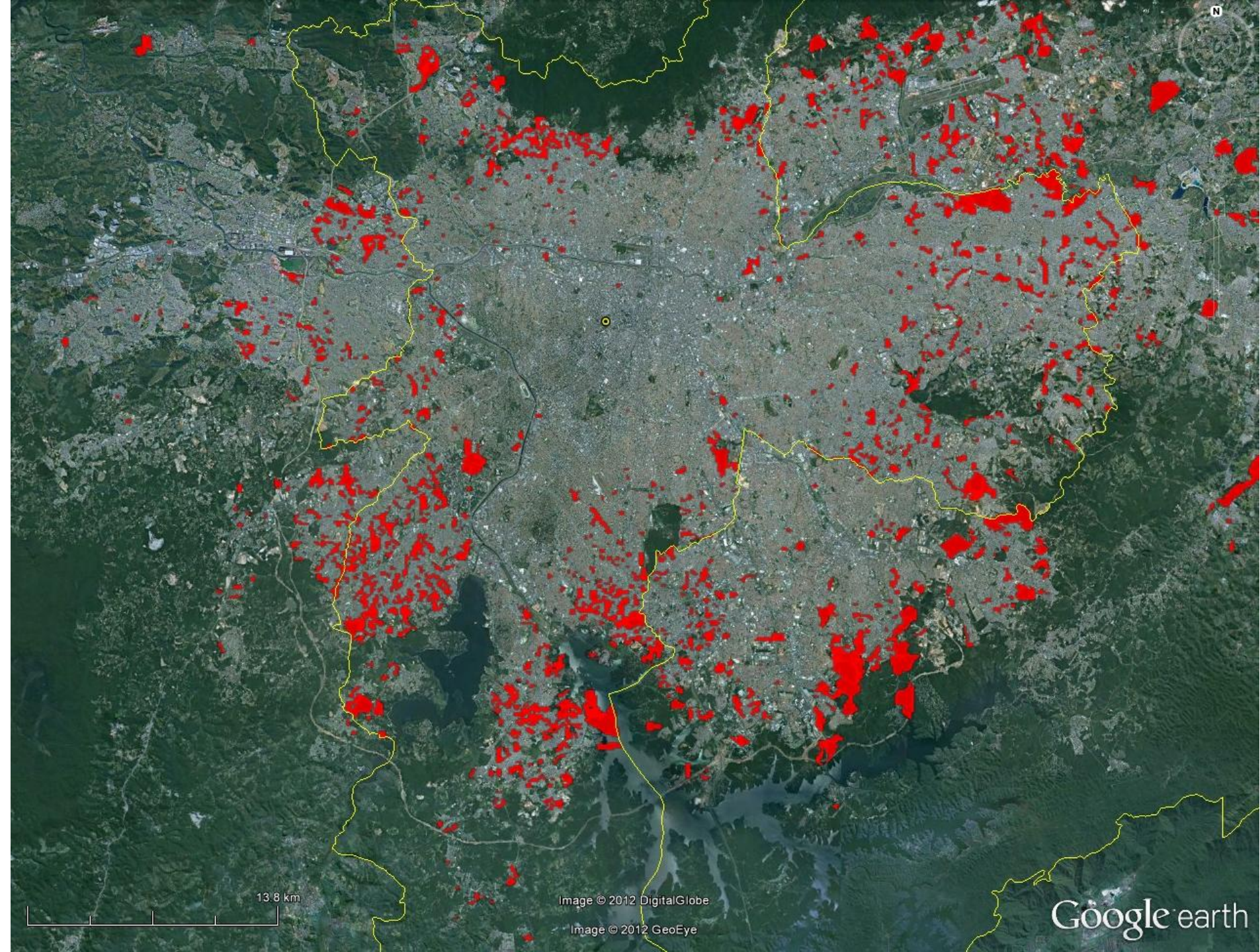
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33 km

© 2012 Cnes/Spot Image
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google earth



13.8 km

Image © 2012 DigitalGlobe

Image © 2012 GeoEye

Google earth



SEMAFÓRO VERDE
SEMAFÓRO DE
3 FASES



L.N.T.

S.C. CABELEIREIROS
MASCULINO-FEMININO-INFANTIL

São Bento

Diversa

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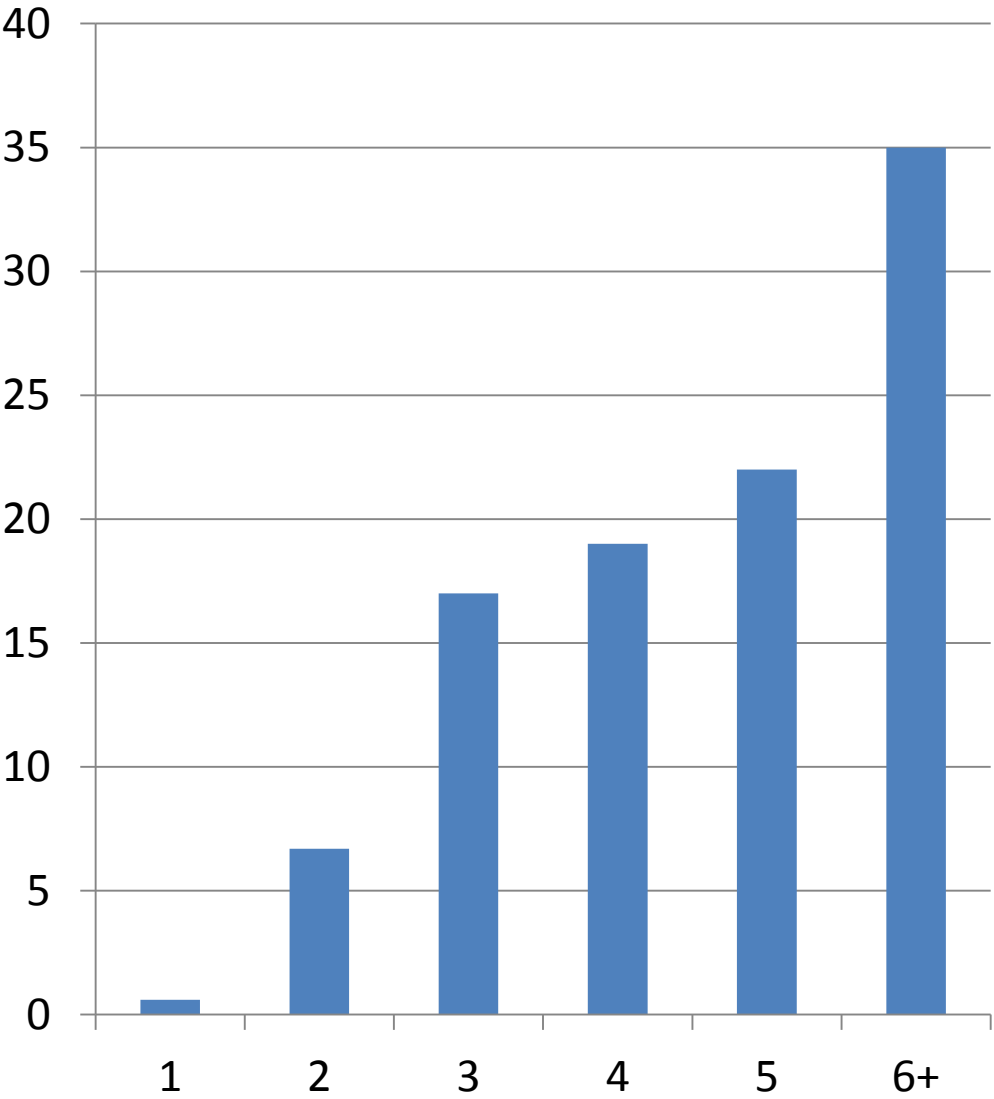
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Modelling Potential in São Paulo

Challenges & Issues

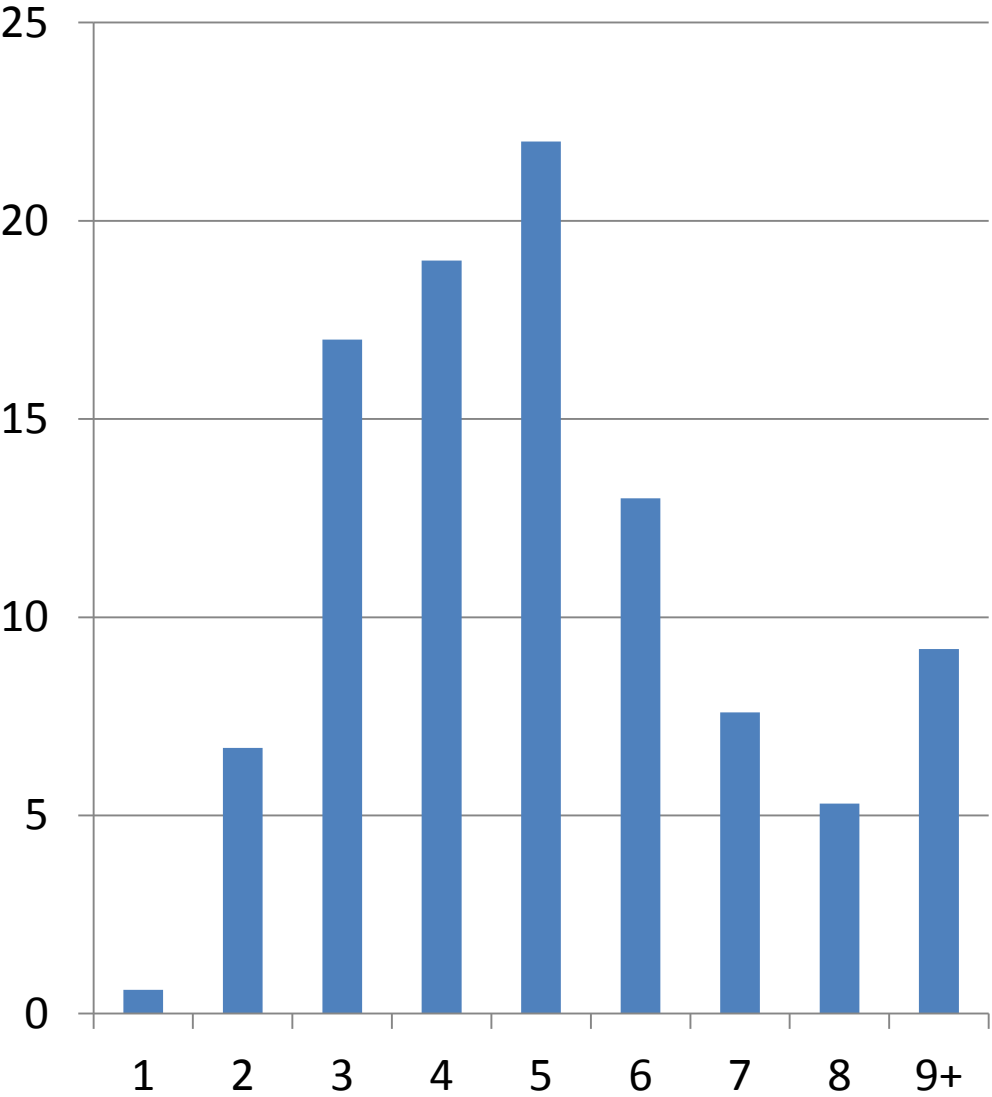
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% of Dwellings by Number of Rooms - y2000 – National Census



Rooms	Dwellings	%
1	30.659	0,6
2	332.336	6,7
3	858.425	17
4	953.264	19
5	1.078.918	22
6+	1.738.970	35

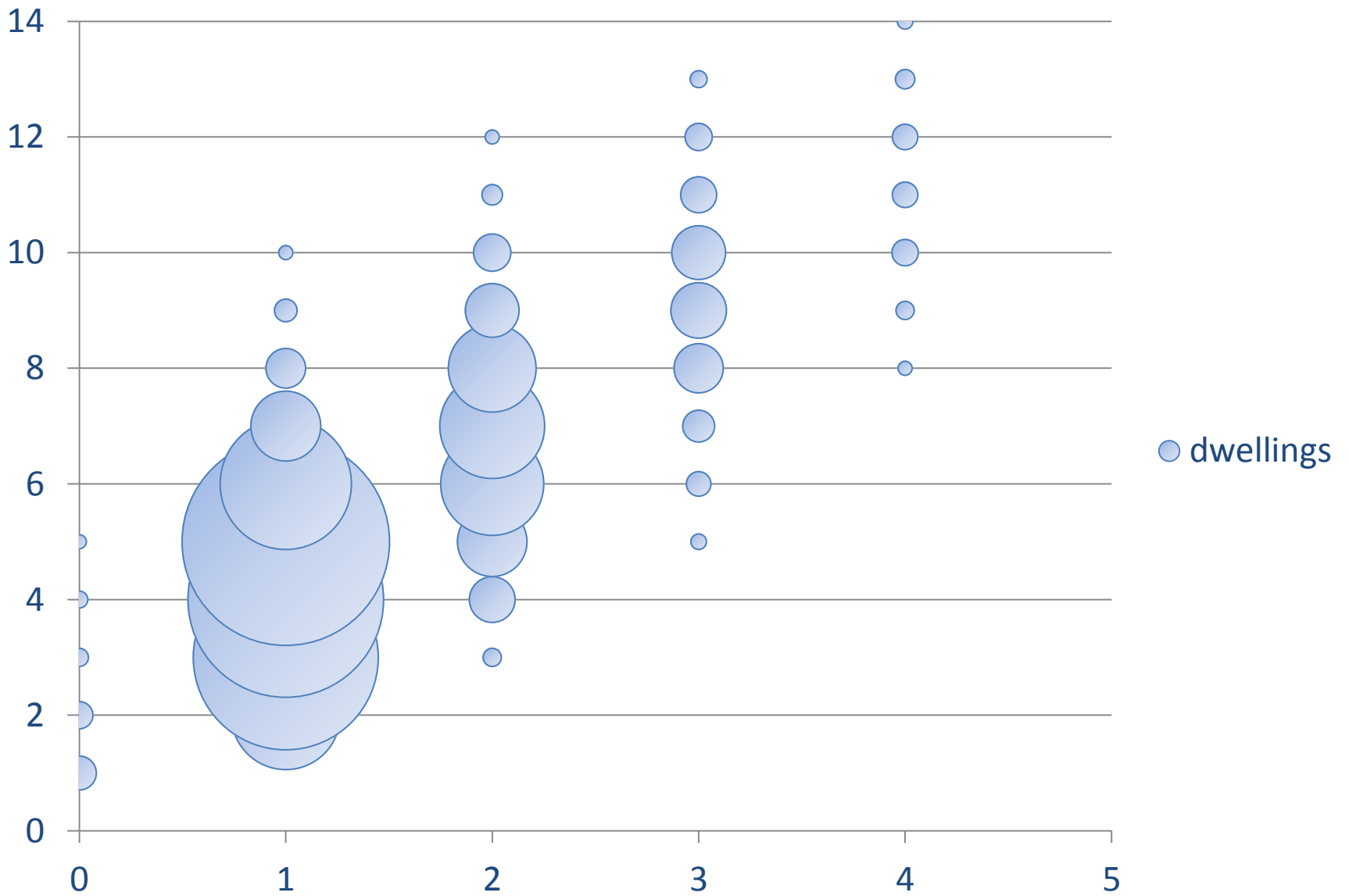
% of Dwellings by Number of Rooms - y2000 – National Census



Rooms	Dwellings	%
1	30.659	0,6
2	332.336	6,7
3	858.425	17
4	953.264	19
5	1.078.918	22
6	636.015	13
7	378.277	7,6
8	266.794	5,3
9+	457.884	9,2

Rooms : Bathrooms

y2000 National Census



Modelling Potential in São Paulo

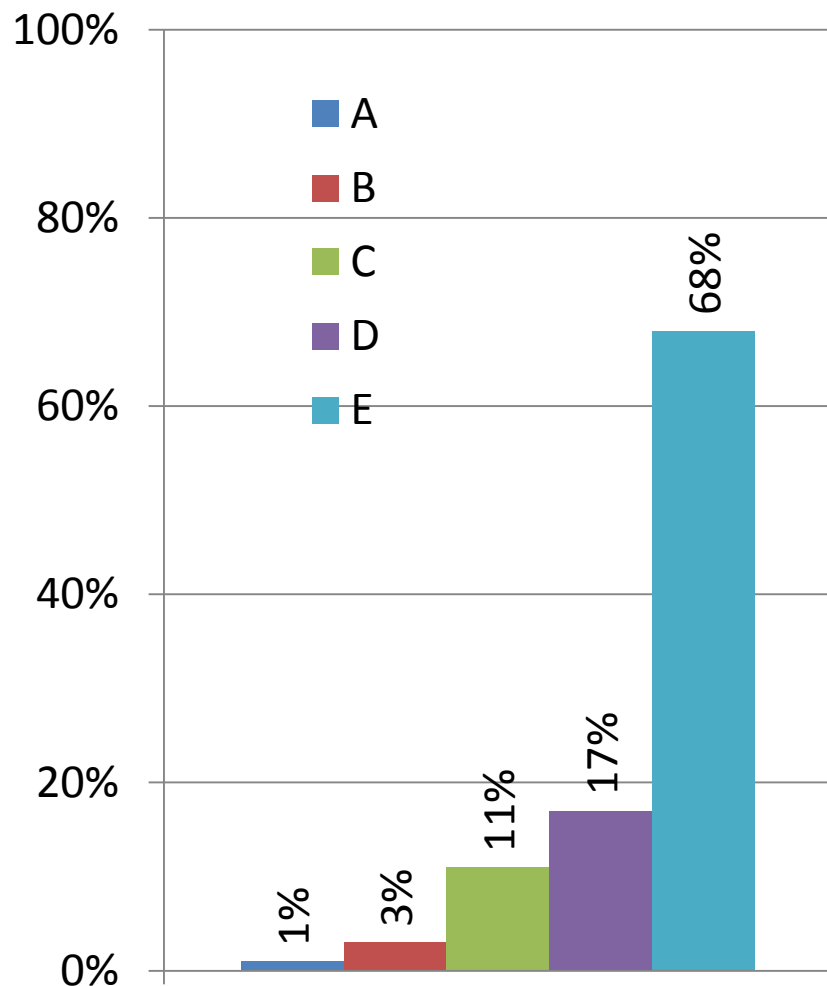
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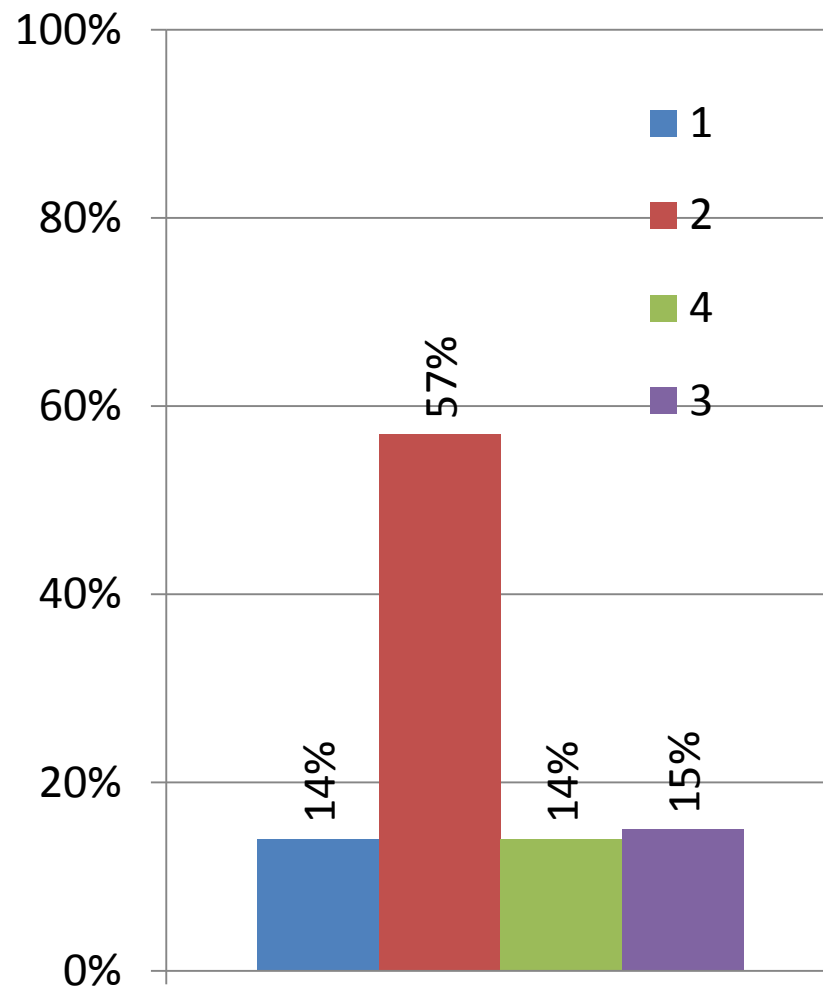
São Paulo Metropolitan Area – Household distribution criteria

source: based on y2010 National Census data

IBGE Household Per Capita Income classes



Socio-economic HRP types



Modelling Potential in São Paulo

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Zoning system x Land Use x Activity x ReVISIONS Ind. Sector

- São Paulo city

- Land Use type ↔ ReVISIONS Industrial Sector

Land Use type ↔ Activity group ↔ Revisions Industrial Sector

- Land Use type ↔ Zone → maximum utilization coefficient

Activity group ↔ maximum utilization coefficient

Land Use ↔ Activity Group

São Paulo city

Law 13.885, August 25th, 2004

nR1 – non-residential - compatible

- Local Retail only
- Personal Services
- Professional Services
- Service Shops
- Pre-school Education
- Social Services
- Local Community, Cultural, Sports associations
- Lodging (except motels)
- Business and Government Offices
- Parking - up to 40 slots

+ Ind. 1-a

Ind.1-a - Industrial – compatible

- Clothing and Apparel – no dying
- Paper articles – no noise/vibration
- Electronics and Precision Mechanical assembly – no transformation

Land Use ↔ Activity Group

São Paulo city

Law 13.885, August 25th, 2004

nR2 – non-residential - tolerable

- Food
- Retail and Wholesale
- Health
- Services (incl. repair and service shops)
- Education (formal and informal)
- Leisure, Culture, Sports centres
- Meeting and Events
- Parking
- Storage of goods

+ Ind.1-b & Ind.2

Ind.1-b - Industrial – tolerable

- Bakery, Rotisserie - up to 2000 m²
- Textile - no weaving or dyeing
- Leather – no tanning
- Plastics – forming only
- Auto parts – assembly only
- Wood and Furniture – up to 2000 m²

Ind.2 – Industrial - incommode

- Food, Beverage and Tobacco – no complex or costly treatment processes
- Printing, Recording, Editing
- Paper – no cellulose / pulp
- Chemical – no gas/vapour emission
- Metal – no ironwork / steelmaking
- Machinery and vehicle assembly
- Mining and quarrying

Land Use ↔ Activity Group

São Paulo city

Law 13.885, August 25th, 2004

nR3 – non-residential – incommode

- Restricted facilities
- Potentially hazardous facilities
- Traffic or infra-structure demanding facilities
- Correctional facilities

nR4 – non-residential – sustainable

- Environmental Research and Education
- Sustainable Farming
- Ecotourism
- Institutional – religious, theme park, farmers cooperatives etc.
- Rehabilitation facilities
- Food – leisure or tourism related
- Lodging

Ind. 3 – Industrial – special – are Not Permitted within São Paulo city

- Food – that require complex / costly treatment processes
- Leather tanning
- Cellulose and Pulp
- Petroleum Refinery
- Coke Fuel
- Nuclear Fuel
- Ironwork / Steelmaking and other hazardous metal processes
- Hazardous Chemicals and processes
- Rubber (vulcanisation)
- Non-metal mineral products – cement, tile baking furnaces

Industrial Sectors x UK SIC 1992 (Activity groups) x Land Use restrictions in São Paulo city

ReVISIONS	UK Standard Industrial Classification 1992		Permitted Land Use	Restriction
1. Agriculture and Mining	01	Agriculture, Farming and Hunting	nR4	sustainable only
	02	Forestry and Logging		
	05	Fishing and Fish Farms		
	13	Mining of metal ores	nR2	
	14	Other mining and quarrying		
	10	Mining of Coal and Lignite	#	
	11	Extraction of Natural Petroleum and Natural Gas		
	12	Mining of Uranium and Thorium ores		

Industrial Sectors x UK SIC 1992 (Activity groups) x Land Use restrictions in São Paulo city

ReVISIONS	UK Standard Industrial Classification 1992		Permitted Land Use	Restriction
2. Manufacturing, etc.	30	Mfg of office machinery and computers	nR1	assembly only
	32	Mfg of radio, television and communication equipment and apparatus		
	33	Mfg of medicinal, precision and optical instruments, watches and clocks		

ReVISIONS	UK Standard Industrial Classification 1992		Permitted Land Use
2. Manufacturing, etc.	23	Mfg of coke, refined petroleum products and nuclear fuel	#

Industrial Sectors x UK SIC 1992 (Activity groups) x Land Use restrictions in São Paulo city

ReVISIONS	UK Standard Industrial Classification 1992		Permitted Land Use
2. Manufacturing, etc.	16	Mfg of tobacco products	nR2
	20	Mfg of Wood and products of wood, cork, except furniture	
	22	Mfg of publishing, printing and reproduction of recorded media	
	28	Mfg of fabricated metal products	
	29	Mfg of machinery and equipment not elsewhere classified	
	31	Mfg of electrical machinery and apparatus not elsewhere classified	
	34	Mfg of motor vehicles, trailers and semi-trailers	
	36	Mfg of furniture; manufacturing not elsewhere classified	
	35	Mfg of other transport equipment	

Industrial Sectors x UK SIC 1992 (Activity groups) x Land Use restrictions in São Paulo city

ReVISIONS	UK Standard Industrial Classification 1992		Permitted Land Use
2. Manufacturing, etc.	37	Recycling	nR2
	40	Electricity, gas, steam and hot water supply	
	41	Collection, purification and distribution of water	

Industrial Sectors x UK SIC 1992 (Activity groups) x Land Use restrictions in São Paulo city

ReVISIONS	UK Standard Industrial Classification 1992		Permitted Land Use	Restriction
2. Manufacturing, etc.	15	Mfg of food products and beverages	nR2	no complex /costly treatment processes
	17	Mfg of textiles		no weaving
	18	Mfg of wearing apparel, dressing and dyeing of fur		no dyeing
	19	Mfg of luggage, handbags, saddlery, harness and footwear		no tanning
	21	Mfg of pulp, paper and paper products		no cellulose/pulp
	24	Mfg of chemicals and chemical products		no gas/vapour
	25	Mfg of rubber and plastic products		forming only
	26	Mfg of non-metal mineral products		no cement or tile baking furnaces
	27	Mfg of basic metals		no ironwork/steelmaking

Industrial Sectors x UK SIC 1992 (Activity groups) x Land Use restrictions in São Paulo city

ReVISIONS	UK Standard Industrial Classification 1992		Permitted Land Use	Restriction
3. Wholesale, etc.	50	Sale, maintenance and repair of motor vehicles and motorcycles; Retail sale of automotive fuel	nR2	
	51	Wholesale and commision trade, except of motor vehicles and motorcycles		
4. Retail, etc.	52	Retail trade, except of motor vehicles and motorcycles; repair of personal and hosehold goods	nR1	local retail only
	55	Hotels and restaurants	nR2	
5. Real Estate	70	Real estate activities	nR1	

Industrial Sectors x UK SIC 1992 (Activity groups) x Land Use restrictions in São Paulo city

ReVISIONS	UK Standard Industrial Classification 1992		Permitted Land Use
6. Business services and transport	63	Supporting and auxiliary transport activities; Activities of travel agent	nR1
	64	Post and telecommunications	
	65	Financial intermediation, except insurance and pension funding	
	66	Insurance and pension funding; except compulsory social security	
	67	Activities auxiliary to financial intermediation	
	71	Renting of machinery and equipment without operator and of personal and household goods	
	72	Computer and related activities	
	73	Research and development	
	74	Other business activities	
	60	Land Transport; transport via pipelines	
	61	Water Transport	
	62	Air Transport	

Industrial Sectors x UK SIC 1992 (Activity groups) x Land Use restrictions in São Paulo city

ReVISIONS	UK Standard Industrial Classification 1992		Permitted Land Use	Restriction
7. Defence, education, health, etc.	75	Public administration and defence; Compulsory social security	nR1	
	91	Activities of membership organisations		
	93	Other service activities		
	80	Education	nR1	pre-school only
	92	Recreational, cultural and Sporting activities		local associations only
	85	Health and social work		Social services only
	90	Sewage and refuse disposal; sanitation and similar activities	nR2	

Non-Residential uses permitted by Zone - São Paulo city – Law 13.885, August 25th, 2004

Urban Structure and Qualification Macro-Zone

Zones	min	basic	max	Uses	
ZER 1	0,05	1	1	-	
ZER 2	0,05	1	1		
ZER 3	0,05	1	1		
ZPI	0,1	1	1,5	nR1	Q/02h
ZM 1	0,2	1	1	nR2	Q/02d Q/02e Q/02f Q/02g
ZM 2	0,2	1	2	nR3*	
ZM 3a	0,2	1	2,5		
ZM 3b	0,2	2	2,5		

Zones	min	basic	max	Uses	
ZCPa	0,2	1	2,5	nR1 nR2 nR3*	Q/02c
ZCPb	0,2	2	4		
ZCLa	0,2	1	2,5		
ZCLb	0,2	2	4		
ZCLz-I	0,05	1	1	nR1	Q/02a
ZCLz-II				nR4	Q5b
					Q5c
				nR1	Q/02b
ZER-ZTLz-I ZER-ZTLz-II				-	

* subject to each administrative subdivision's (31) Strategic Plan

Non-Residential uses permitted by Zone - São Paulo city – Law 13.885, August 25th, 2004

Environmental Protection Macro-Zone

Zones	Uses	
ZCLp ZCPp	nR1 nR2	Q/02c
ZMp		Q/02d
		Q/02e
		Q/02f
	Q/02g	
ZEP ZLT ZPDS	nR4	Q5a
ZERp	-	

Special Zones - ZE

Zones	min	basic	Max	Uses	
ZEPAG				Agriculture Mining	
ZEPAM		0,2	0,2	nR4	Q5a
ZEIS 1 ZEIS 2	0,2	1	2,5	nR1 nR2	Q2i
ZEIS 3	0,3	1	4		
ZEIS 4	0,1	1	1		

Residential uses permitted by Zone - São Paulo city – Law 13.885, August 25th, 2004
Urban Structure and Qualification Macro-Zone

Zones	min	basic	max	Uses
ZER 1	0,05	1	1	R1 R2h IV
ZER 2	0,05	1	1	R1 R2h
ZPI	0,1	1	1,5	
ZER 3	0,05	1	1	R1 R2h R2v
ZM 1	0,2	1	1	
ZM 2	0,2	1	2	
ZM 3a	0,2	1	2,5	
ZM 3b	0,2	2	2,5	

Zones	min	basic	max	Uses
ZCPa	0,2	1	2,5	R1 R2h R2v
ZCPb	0,2	2	4	
ZCLa	0,2	1	2,5	
ZCLb	0,2	2	4	
ZCLz-I ZCLz-II ZER-ZTLz-I ZER-ZTLz-II	0,05	1	1	

Residential uses permitted by Zone - São Paulo city – Law 13.885, August 25th, 2004

Environmental Protection Macro-Zone

Zones	Uses
ZCLp	R1 R2h R2v
ZCPp	
ZMp	
ZEP	Smallholding
ZERp	R1 R2h IV
ZLT	R1 R2h
ZPDS	

Special Zones - ZE

Zones	min	basic	Max	Uses
ZEPAG				Smallholding
ZEPAM		0,2	0,2	R1
ZEIS 1 ZEIS 2	0,2	1	2,5	R1 R2h R2v
ZEIS 3	0,3	1	4	
ZEIS 4	0,1	1	1	

Zoning system x Land Use x Activity x ReVISIONS Ind. Sector

- São Paulo city

- Land Use type \leftrightarrow ReVISIONS Industrial Sector

Land Use type \leftrightarrow Activity group \leftrightarrow Revisions Industrial Sector

- Land Use type \leftrightarrow Zone \rightarrow maximum utilization coefficient

Activity group \leftrightarrow maximum utilization coefficient

- Changes in the Zoning System – 2003

- Zone : Prior \leftrightarrow Current

- Changes in the Land Use legislation – 2005

- Land Use type : Prior \leftrightarrow Current

São Paulo city

Zoning System	
Prior - 2002	Current
Z1	ZER
Z2	ZM
Z3	
Z4	
Z5	
Z6	ZPI*
Z7	
Z8-007/02	ZM
Z8-007/04	
Z8-007/05	
Z8-007/08	
Z8-007/10	
Z8-007/11	
Z8-007/12	
Z8-007/13	
Z8-060/01	
Z8-060/03	
Z8-200	ZEPEC
Z9	ZM
Z10	
Z11	
Z12	
Z13	
Z17	
Z18	
Z19	

Law 13.430, September 13th , 2002

* Law 13.885, August 25th, 2004

Land Use	
Prior - 2004	Current
R1	R1
R2.01	R2h I
R2.02	R2v
R2.03	R2h II
R3.01	R2v
R3.02	
R3.03	R2h IV*
C1	nR1
C2	nR2
C3	nR3
I1	nR1
I2	nR2
I3	nR3
S1	nR1
S2	nR2
S3	nR3
E1	nR1
E2	nR2
E3	nR3
E4	nR3
NI	
NRR	

Law 13.885, August 25th, 2004

*Decree 45.817, April 4th, de 2005

An Empirical Framework for International Comparisons (Vadim Grinevich – 2 June 2011)		Industries							Households			
		Agriculture and mining	Manufacturing, etc.	Wholesale, etc.	Retail, etc.	Real estate	Business services and transport	Defence, education, health, etc.	Higher managerial, etc.	Routine and semi-routine	Unemployed	Economically inactive
Table 3 – Socio-economic accounts												
Workplace labour	Higher managerial, etc.	employees: CENSUS – 2000/10 (no workplace) METRÔ O-D – 1997 / 2007 – Sectors aggregated : (1..2) , (3..5), 6, 7										
	Routine and semi-routine											
Non-domestic floorspace	Retail premises	square meters: TPCL - 2000/5 – São Paulo only										
	Offices											
	Factories											
	Warehouses											
Non-domestic land	Retail premisses	square meters: TPCL – São Paulo only - 2000/5 EMPLASA – 2002 - Factories + Warehouses Retail + Offices + Domestic land + Lot										
	Offices											
	Factories											
	Warehouses											
	Agricultural	square meters: EMPLASA – 2002										
Residential Population	Higher managerial, etc.								persons: CENSUS 2000/10			
	Routine and semi-routine											
	Unemployed											
	Economically inactive											
Domestic floorspace	by # of rooms								dwellings: CENSUS 2000/10			
Domestic land									square meters: TPCL S.P. only - 2000/5			

Floor Space – Domestic & Non-Domestic

Available data:

- **Floor space – square meters**
 - TPCL : 2000 - 2005 – **São Paulo city - Urban only**
 - vacant (lot)
 - floor space by use:
 - house - low standard
 - - average
 - - high standard
 - **flat - low standard**
 - - average
 - - high standard
 - commercial - horizontal
 - commercial - vertical
 - **industrial**
 - **warehouse**
 - special (hotel, hospital, public office, etc.)
 - school
 - collective (cinema, theatre, club, temple, etc.)
 - **non-residential parking garage**

Construction Type		Construction Type / Standard - for taxation						Floor space Value for taxation	
TPCL	Description	IPTU	Gross Area m²	Floors	Dwellings /floor	Bedrooms	Bathrooms	Dec 2002 £/m² 5,69 : 1	Dec 2009 £/m² 2,823 : 1
1	Residential Horizontal Low Standard	1-A	-.. 80	1		-.. 2		40	145
		1-B	-.. 120	-.. 2		-.. 3	1	48	177
2	Residential Horizontal Average	1-C	-.. 300	-.. 2			-.. 3	62	225
		1-D	-.. 500	1+			3+	79	303
3	Residential Horizontal High Standard	1-E	-.. 700	2+			several	101	372
		1-F	700+	3+		4+	private		453
14	Residential Vertical Low Standard	2-A	-.. 60	-.. 4				44	161
		2-B	-.. 85	3+		-.. 2	1	57	209
4	Residential Vertical Average	2-C	-.. 200	3+		-.. 3	-.. 2	75	273
		2-D	-.. 350	5+		3+	3+	97	358
5	Residential Vertical High Standard	2-E	-.. 600	5+	up to 2	4+	several	132	452
		2-F	600+	5+	up to 1	4+	private		551

Construction Type		Construction Type / Standard - for taxation		Floor space Value for taxation	
TPCL	Description	IPTU	Floors	Dec 2002 £/m²	Dec 2009 £/m²
6	Commercial Horizontal	3-A	-.. 2	44	156
		3-B	-.. 2	62	220
		3-C	-.. 2	79	278
		3-D	-.. 2	97	340
		3-E	-.. 2		414
7	Commercial Vertical	4-A	3	57	209
		4-B	3+	75	273
		4-C	3+	97	335
		4-D	3+	136	429
		4-E	3+		522
15	Non-residential Parking Garage	6-A	3+	40	136

Construction Type		Construction Type / Standard - for taxation		Floor space Value for taxation	
TPCL	Description	IPTU	Floors	Dec 2002 £/m²	Dec 2009 £/m²
8	Industrial	5-B	1	44	161
		5-C	-.. 2	57	195
		5-D	1+	83	285
		5-E	1+	123	388
9	Warehouse	5-B	1	44	161
		5-C	-.. 2	57	195
		5-D	1+	83	285
	Shed	5-A	1	35	112
		5-B	1	44	161
	Repair Shop	5-A	1	35	112
		5-B	1	44	161
		5-C	-.. 2	57	195
		5-D	1+	83	285
	Service Shop	5-B	1	44	161
		5-C	-.. 2	57	195
		5-D	1+	83	285

Construction Type		Construction Type / Standard - for taxation		Floor space Value for taxation	
TPCL	Description	IPTU	Floors	Dec 2002 £/m²	Dec 2009 £/m²
10	Special (Hotel, Hospital, Public Office, etc.)	6-B	usually 1	53	179
		6-C	1+	75	239
		6-D	1+	97	310
11	School	6-B	usually 1	53	179
		6-C	1+	75	239
		6-D	1+	97	310
12	Collective (Cinema, Theatre, Club, Temple, etc.)	6-B	usually 1	53	179
		6-C	1+	75	239
		6-D	1+	97	310

An Empirical Framework for International Comparisons (Vadim Grinevich – 2 June 2011)		Industries							Households			
		Agriculture and mining	Manufacturing, etc.	Wholesale, etc.	Retail, etc.	Real estate	Business services and transport	Defence, education, health, etc.	Higher managerial, etc.	Routine and semi-routine	Unemployed	Economically inactive
Table 3 – Socio-economic accounts												
Workplace labour	Higher managerial, etc.	employees: CENSUS – 2000 /10 (no workplace) METRÔ O-D – 1997 / 2007 – Sectors aggregated : (1..2) , (3..5), 6, 7										
	Routine and semi-routine											
Non-domestic floorspace	Retail premises	square meters: TPCL - 2000/5 – São Paulo only										
	Offices											
	Factories											
	Warehouses											
Non-domestic land	Retail premisses	square meters: TPCL – São Paulo only - 2000/5 EMPLASA – 2002 - Factories + Warehouses Retail + Offices + Domestic land + Lot										
	Offices											
	Factories											
	Warehouses											
	Agricultural	square meters: EMLASA – 2002										
Residential Population	Higher managerial, etc.								persons: CENSUS 2000/10			
	Routine and semi-routine											
	Unemployed											
	Economically inactive											
Domestic floorspace	by # of rooms								dwellings: CENSUS 2000/10			
Domestic land									square meters: TPCL S.P. only - 2000/5			

Workplace labour:

Available data:

- **(Workplace) labour – employees**
 - y 2000 - National Census
 - industrial sector : 1..7 (or BR SIC)
 - socio-economic group : 1..2 (or IBGE A..E Income Classes)
- **(Workplace = City) labour – employees**
 - y 2010 - National Census
 - industrial sector : 1..7 (or BR SIC)
 - socio-economic group : 1..2 (or IBGE A..E Income Classes)

Workplace labour:

Available data:

- **Workplace labour** – **employees**
 - y 1997 /2007 - Metropolitan O-D Survey
 - industrial sector : (1 + 2) (3 + 4 + 5) (6) (7)
 - socio-economic group : 1..2 (or IBGE A..E Income Classes)
 - workplace Zone (31 in São Paulo + 38 municipalities)

Metropolitan O-D Surveys 1997/2007	Revisions – Broad Industrial Sectors
01 - Agriculture	1 – Agriculture (and Mining)
02 - Construction	2 – Manufacturing, etc. (Construction only)
03 – Manufacturing and Mining	1 (Mining only) + 2 (except Construction)
04 – “Comércio”	3 – Wholesale, etc
04 – “Comércio”	4 – Retail, etc. (except Restaurants)
09 – Restaurants	4 – Retail, etc. (Restaurants only)
04 – “Comércio”	5 – Real Estate
05 – Transport (goods)	6 – (Business and) Transport
06 – Transport (people)	6 – (Business and) Transport
07 – Financial services	6 – Business (and Transport)
08 – Personal services	6 – Business (and Transport)
12 – Specialized services	6 – Business (and Transport)
14 - Other	6 – Business (and Transport)
10 – Health	7 – Defence, Education, Health, etc.
11 – Education	7 – Defence, Education, Health, etc.
13 – Public Administration	7 – Defence, Education, Health, etc.

Employees Industrial Sector		Metropolitan O-D Survey 1997 by trip to work by people		National Census 2000
Agriculture only	1	156.181	169.487	247.302
Construction				
Manufacturing, etc. and Mining	2	1.131.832	1.339.581	1.731.666
Wholesale, etc.	1	223.816	288.399	247.410
Retail, etc.				
Real Estate	2	1.119.837	1.374.339	1.658.749
Transport - goods	1	302.623	335.412	347.061
Transport – people				
Financial services				
Personal services	2	1.710.700	2.268.885	1.698.500
Specialized services				
Other				
Health	1	262.134	291.821	390.729
Education				
Defence, etc.	2	491.186	584.304	755.102
TOTAL	1	944.754	1.085.119	1.232.233
	2	4.453.555	5.567.108	5.844.016
		5.398.309	6.652.227	7.076.249

Workplace Labour:

Available data:

- Workplace labour – **firms**
 - y 2010 – Ministry of Labour – MTE Rais
 - industrial sector: 1..7
 - **firm size – in number of workplaces**
 - 1-4 | 5-9 | 10-19 | 20-49 | 50-99 | 100-249**
 - 25-499 | 500-999 | 1000+**
 - **formal market only**

An Empirical Framework for International Comparisons (Vadim Grinevich – 2 June 2011)		Industries							Households			
		Agriculture and mining	Manufacturing, etc.	Wholesale, etc.	Retail, etc.	Real estate	Business services and transport	Defence, education, health, etc.	Higher managerial, etc.	Routine and semi-routine	Unemployed	Economically inactive
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	Routine and semi-routine											
Non-domestic floorspace	Retail premises	square meters: TPCL - 2000/5 – São Paulo only										
	Offices											
	Factories											
	Warehouses											
Non-domestic land	Retail premisses	square meters: TPCL – São Paulo only - 2000/5 EMPLASA – 2002 - Factories + Warehouses Retail + Offices + Domestic land + Lot										
	Offices											
	Factories											
	Warehouses											
	Agricultural	square meters: EMPLASA – 2002										
Residential Population	Higher managerial, etc.								persons: CENSUS 2000/10			
	Routine and semi-routine											
	Unemployed											
	Economically inactive											
Domestic floorspace	by # of rooms								dwellings: CENSUS 2000/10			
Domestic land									square meters: TPCL S.P. only - 2000/5			

Residential Population & Domestic Floor Space:

Available data:

- **Residential Population – persons**
 - y 2000/10 – National Census
 - **by age** // by industrial sector : 1..7 (or BR SIC)
 - socio-economic group : 1..4 (or IBGE A..E Income Classes)
 - **Normal housing | Shantytown | Slum Tenements**
 - **Urban | Rural**
- **Domestic Floor Space - dwellings**
 - y 2000/10 – National Census
 - socio-economic group : 1..4 (or IBGE A..E Per Capita Income Classes)
 - dwelling size (rooms) : **1..9+**
 - **Normal housing | Shantytown | Slum Tenements**
 - **Urban | Rural**
 - **House | Flat / Room**
 - **Auto availability : 0..1+**

An Empirical Framework for International Comparisons (Vadim Grinevich – 2 June 2011)		Industries							Households			
		Agriculture and mining	Manufacturing, etc.	Wholesale, etc.	Retail, etc.	Real estate	Business services and transport	Defence, education, health, etc.	Higher managerial, etc.	Routine and semi-routine	Unemployed	Economically inactive
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	Routine and semi-routine											
Non-domestic floorspace	Retail premises	square meters: TPCL - 2000/5 – São Paulo only										
	Offices											
	Factories											
	Warehouses											
Non-domestic land	Retail premisses	square meters: TPCL – São Paulo only - 2000/5 EMPLASA – 2002 - Factories + Warehouses Retail + Offices + Domestic land + Lot										
	Offices											
	Factories											
	Warehouses											
	Agricultural	square meters: EMPLASA – 2002										
Residential Population	Higher managerial, etc.								persons: CENSUS 2000			
	Routine and semi-routine											
	Unemployed											
	Economically inactive											
Domestic floorspace	by # of rooms								dwellings: CENSUS 2000			
Domestic land									square meters: TPCL S.P. only - 2000/5			

Land – Domestic & Non-Domestic

Available data:

- Land – square meters
 - y 2002 - Emplasa
 - agriculture
 - industrial + warehouse
 - mining
 - not usable / non market
 - shantytown
 - urban : domestic + non-domestic
 - urban equipment

Emplasa Land uses– 2002		ReVISIONS Land uses +
Área urbanizada	URBANISED	URBAN
Aterro sanitário	LANDFILL	-
Campo	FIELD	AGRICULTURE
Capoeira	SECONDARY VEGETATION	-
Chácara	SMALLHOLDING	AGRICULTURE
Equipamento urbano	URBAN EQUIPMENT	URBAN EQUIPMENT
Espelho d'água	BODY OF WATER	-
Favela	SHANTY TOWN	SHANTY TOWN
Hortifrutigranjeiro	FARM	AGRICULTURE
Indústria	INDUSTRIAL	INDUSTRIAL
Lixão	UNCONTROLLED WASTE SITE	-
Loteamento desocupado	LAND LOT	VACANT
Mata	FOREST	-
Mineração	MINING	MINING
Mov. terra / Solo exposto	EXPOSED SOIL	VACANT
Outro uso	OTHER	-
Reflorestamento	REFORESTATION FOR HARVESTING	AGRICULTURE
Reservatório de retenção	RETENTION BASIN	-
Rodovia	MAIN ROAD	-
Vegetação de Várzea	SWAMP	-

São Paulo Metropolitan Area - Land Use - Emplasa 2002



23°15'0"S

23°30'0"S

23°45'0"S

24°0'0"S

47°15'0"W

47°0'0"W

46°45'0"W

46°30'0"W

46°15'0"W

46°0'0"W

45°45'0"W

0 10 20 40 60 80 Km

Legend

AGRICULTURE

WATER BODY

SÃO PAULO

CITY or ADMINISTRATIVE DIVISION

São Paulo Metropolitan Area - Land Use - Emplasa 2002



23°15'0"S

23°30'0"S

23°45'0"S

24°0'0"S

47°15'0"W

47°0'0"W

46°45'0"W

46°30'0"W

46°15'0"W

46°0'0"W

45°45'0"W

0 10 20 40 60 80 Km

Legend

- URBANISED
- WATER BODY
- SÃO PAULO
- CITY or ADMINISTRATIVE DIVISION

São Paulo Metropolitan Area - Land Use - Emplasa 2002



23°15'0"S

23°30'0"S

23°45'0"S

24°0'0"S

47°15'0"W

47°0'0"W

46°45'0"W

46°30'0"W

46°15'0"W

46°0'0"W

45°45'0"W

0 10 20 40 60 80 Km

Legend

- SHANTYTOWN (FAVELA)
- WATER BODY
- SÃO PAULO
- CITY or ADMINISTRATIVE DIVISION

São Paulo Metropolitan Area - Land Use - Emplasa 2002



23°15'0"S

23°30'0"S

23°45'0"S

24°0'0"S

47°15'0"W

47°0'0"W

46°45'0"W

46°30'0"W

46°15'0"W

46°0'0"W

45°45'0"W

0 10 20 40 60 80 Km

Legend

- INDUSTRIAL
- WATER BODY
- SÃO PAULO
- CITY or ADMINISTRATIVE DIVISION

São Paulo Metropolitan Area - Land Use - Emplasa 2002



23°15'0"S

23°30'0"S

23°45'0"S

24°0'0"S

47°15'0"W

47°0'0"W

46°45'0"W

46°30'0"W





46°15'0"W

46°0'0"W

45°45'0"W

0 10 20 40 60 80 Km

Legend

-  MINING
-  WATER BODY
-  SÃO PAULO
-  CITY or ADMINISTRATIVE DIVISION

São Paulo Metropolitan Area - Land Use - Emplasa 2002



23°15'0"S

23°30'0"S

23°45'0"S

24°0'0"S

47°15'0"W

47°0'0"W

46°45'0"W

46°30'0"W

46°15'0"W

46°0'0"W

45°45'0"W

0 10 20 40 60 80 Km

Legend

- LAND LOT
- WATER BODY
- SÃO PAULO
- CITY or ADMINISTRATIVE DIVISION

São Paulo Metropolitan Area - Land Use - Emplasa 2002



23°15'0"S

23°30'0"S

23°45'0"S

24°0'0"S

47°15'0"W

47°0'0"W

46°45'0"W

46°30'0"W

46°15'0"W

46°0'0"W

45°45'0"W

0 10 20 40 60 80 Km

Legend

- FOREST , SECONDARY VEGETATION , SWAMP
- WATER BODY
- SÃO PAULO
- CITY or ADMINISTRATIVE DIVISION

São Paulo Metropolitan Area - Land Use - Emplasa 2002



23°15'0"S

23°30'0"S

23°45'0"S

24°0'0"S

47°15'0"W

47°0'0"W

46°45'0"W

46°30'0"W

46°15'0"W

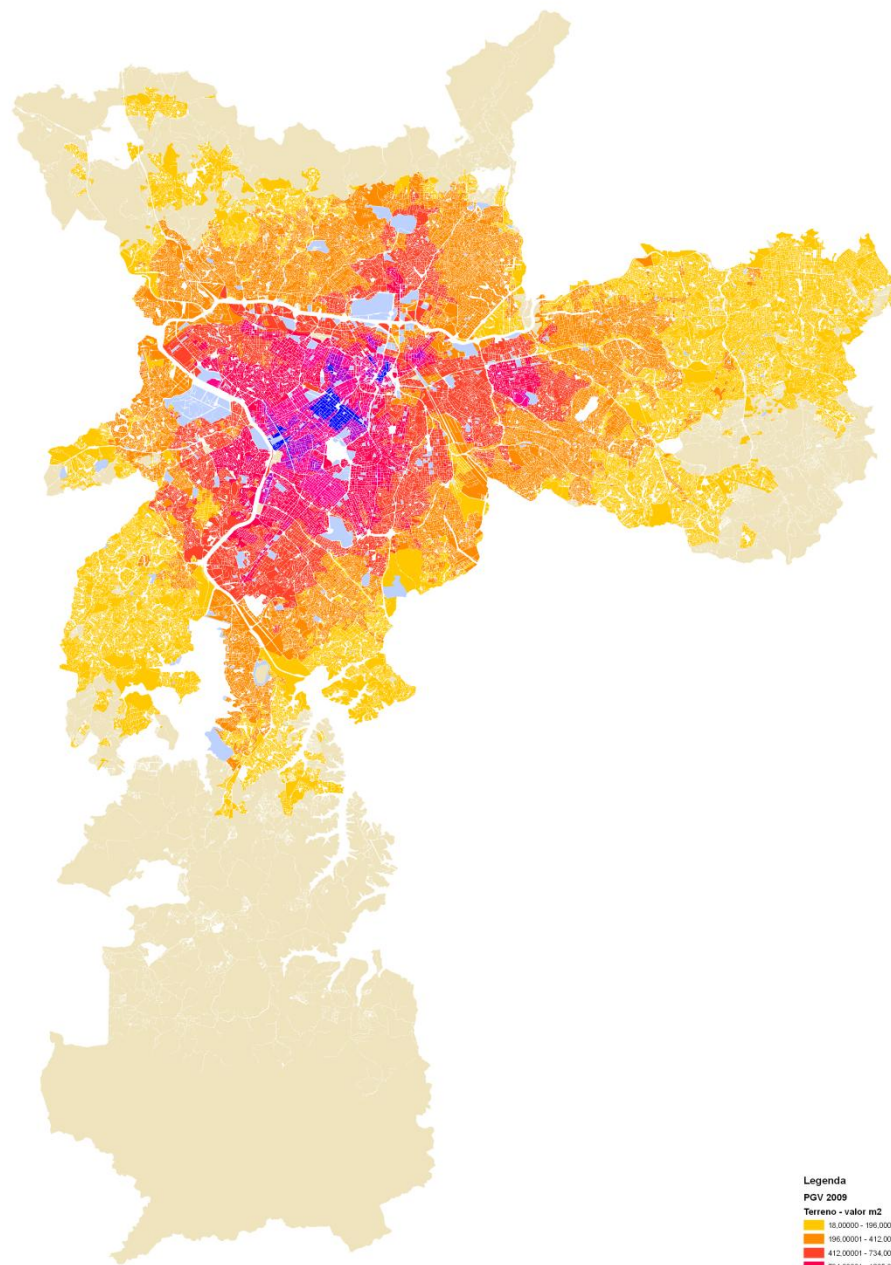
46°0'0"W

45°45'0"W

0 10 20 40 60 80 Km

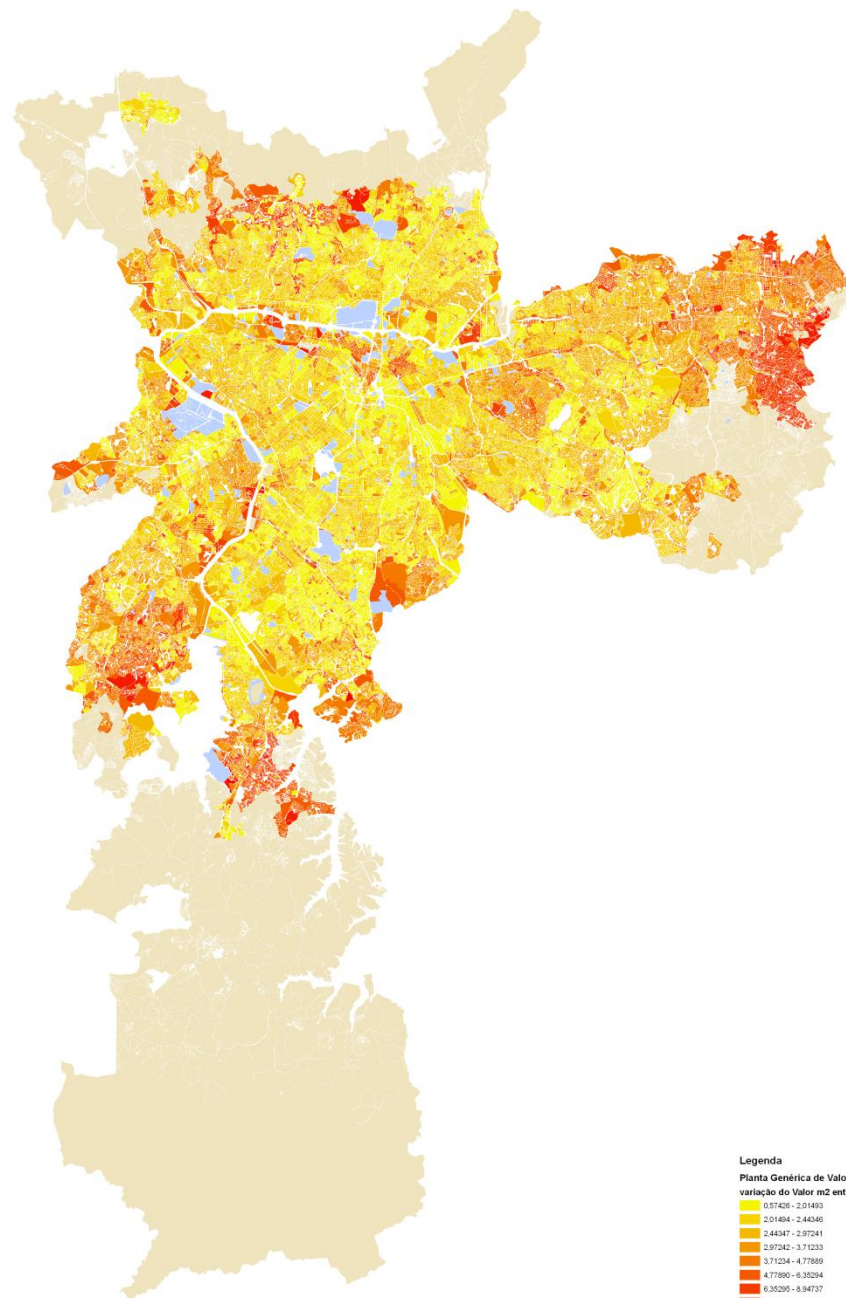
Legend

- OTHER NON DEVELOPABLE
- WATER BODY
- SÃO PAULO
- CITY or ADMINISTRATIVE DIVISION



Legenda
PGV 2008
Terreno - valor m²
18.00000 - 196.00000
196.00001 - 412.00000
412.00001 - 734.00000
734.00001 - 1205.00000
1205.00001 - 1794.00000
1794.00001 - 2608.00000
2608.00001 - 5064.00000
Uso Público
terreno sem indicação de valor m²

0 2 4 8 12 16 Km



Legenda
Planta Genérica de Valores - Terreno
variação do Valor m² entre 2010 / 2002

0,07426 - 2,01493
2,01494 - 2,44346
2,44347 - 2,97241
2,97242 - 3,71233
3,71234 - 4,77699
4,77699 - 6,35204
6,35205 - 8,94737
8,94738 - 14,22222
14,22223 - 29,14286
Uso Público
terreno sem indicação de valor m ²

Data:

- Workplace labour - employees
- Non-domestic Floor Space – square meters
- Non-domestic Land – square meters
- Residential Population - persons
- Domestic Floor Space - dwellings
- Domestic Land – square meters
- Trips - ?

Dimensions:

- Time: ... 2001 ...
- Geography: 31 zones within São Paulo city, +38 cities within the Metropolitan Area
- Industrial: 7 ReVISIONS Broad Industrial Sectors
- Socio-economic: 4 socio-economic groups
- Floor space type: Retail premises, Offices, Factories and Warehouses
- Land use: Retail premises, Offices, Factories, Warehouses and Agricultural
- Dwelling size (# of rooms): 1, 2, 3, 4, 5, 6+
- Auto availability: 0..1+
- Transport Mode: individual | collective | pedestrian
- Trip Motive: to | from / home | work | education | shop | health | ...

• Trips - ?

- 1997 – 2007 (Metropolitan OD Surveys)
- origin – destination (31 | 69 x 31 | 69 zones)
- bathrooms: 0,1,2,3,4+
- mode: 1-individual, 2-collective, 3-pedestrian
- auto availability: 0-no car; 1-household has 1+ car
- household
 - household income group: A-E
 - motive: any to services, shopping, health, etc.;
home to education; or
other to education
- work
 - individual income group: A-E
 - motive: home to work;
work to work; or
other to work

Modelling Potential in São Paulo

Marcelo E. Giacaglia

FAU USP



3º SIMPÓSIO SÃO PAULO - LONDON - BEIJING

ReVISIONS PROJECT - Sustainable City Regions

18-21 de junho de 2012 - FAU Maranhão



São Paulo city (MSP) : 10.896.639 people (2007 Metropolitan O-D Survey)

- work (only) within the Metropolitan Area (RMSP) : 4.610.286
 - work in a city other than MSP : 307.505
 - study (only) within the RMSP : 2.342.236
 - study in a city other than MSP: 63.984
 - work and study within the RMSP : 615.944
 - work and study in a city other than MSP : 10.821
 - work and study in different cities : 3.674
 - neither : 3.328.173
-
- **3,5% of the population of MSP work and/or study in cities other than MSP within the RMSP**
 - 5,1% of Revisions' socio-economic classes 1 and 2**

Other 38 cities in the Metropolitan Area (RMSP-MSP) : 8.640.367 people (2007 Metro O-D Survey)

- work (only) within the RMSP : 3.266.509
 - work in a city other than MSP or that of residence : 564.072
 - work at MSP : 798.921
- study (only) within the RMSP : 1.837.457
 - study in a city other than MSP or that of residence : 89.784
 - study in MSP : 90.822
- work and study within the RMSP : 462.677
 - work in a city other than MSP or that of residence ; study in the city of residence: 31.679
 - work in MSP ; study in a city other than MSP or that of residence : 64.307
 - work in MSP ; study in the city of residence : 44.267
 - study in a city other than MSP or that of residence ; work in the city of residence: 34.162
 - study in MSP ; work in a city other than MSP or that of residence : 44.033
 - study in MSP ; work in the city of residence : 30.113
 - work and study in MSP : 85.084
 - work and study in a city other than MSP or that of residence : 29.514
 - work and study in different cities : 9.640
- neither : 3.073.724
- **13,4% of the population work and/or study in MSP**
20,8% of Revisions' socio-economic classes 1 and 2

Other 38 cities in the Metropolitan Area (RMSP-MSP) : 8.640.367 people (2007 Metro O-D Survey)

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 - work and study in a city other than MSP or that of residence : 29.514
 - work and study in different cities : 9.640
- neither : 3.073.724
- **8,7% of the population work and/or study in a city other than MSP or that of residence**
13,5% of Revision's socio-economic classes 1 and 2

Top 10 - Soc. Econ. group 1		Avg. Mo. Income	
#	Job Description	min.Wages	£
1	Medical Doctors	79.2	14688
2	Judges	35.6	6602
4	Corporate Directors	29.4	5452
5	Specialisation Physicians	28.7	5323
6	Mining Co. Directors	23.3	4321
7	General Physicians	22.7	4210
8	Legislators	22.1	4099
9	Financial Directors	21.6	4006
10	Health Services Directors	20.2	3746
11	R&D Directors	19.5	3616

Top 10 - Soc. Econ. group 2		Avg. Mo. Income	
#	Job Description	min.Wages	£
3	Oil & Gas Drilling Operators	32.1	5953
13	Aircraft Pilots	18.9	3505
23	Beekeepers	15.9	2949
35	Tax Adm. Agents	13.4	2485
66	Oil & Gas Refinery Op.	9.60	1780
67	Social Security Adm. Agents	9.45	1753
70	Mechanographers	9.19	1704
75	Med. Diag. & Treat. Eq. Op.	8.77	1626
78	Qual. Farm Prod. & Workers	8.55	1586
86	Judiciary Secretaries	7.84	1454

Bottom 10 - Soc. Econ. group 1		Avg. Mo. Income	
#	Job Description	min.Wages	£
190	Other Health Professionals	4.10	760
199	Other Education Professionals	3.39	629
202	Artists (Fine Arts)	3.91	725
204	IT Instructors	3.88	720
206	Other Creat. & Interactive Artists	3.81	707
207	Educators for the Handicaped	3.81	707
211	Cult Ministers and Missionaries	3.73	692
213	Teachers of Fine Arts	3.71	688
229	Elementary School Teachers	3.43	636
293	Senior Citizens Care Servs. Directors	2.54	471

São Paulo Metropolitan Area
based on 2010 National Census

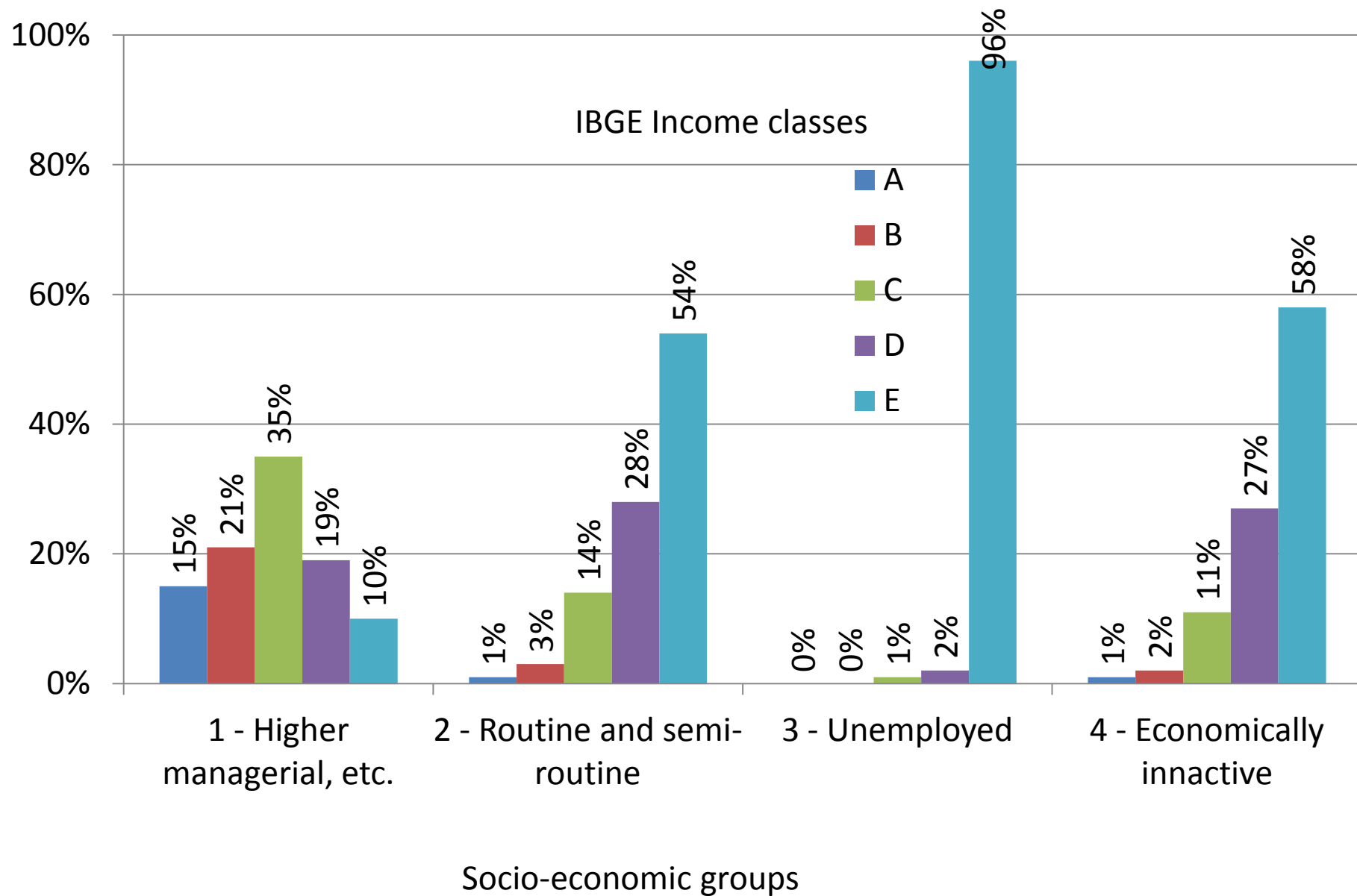
1 min. Wage = R\$ 510,00 = £ 185.45
1 £ = R\$2,75 (Jul 25-31, 2010)

Soc. Econ. group	Avg.Mo.Income
3	£ 41
4	£ 168 / 401

IBGE HRP Income classes x Socio-economic HRP types

São Paulo Metropolitan Area

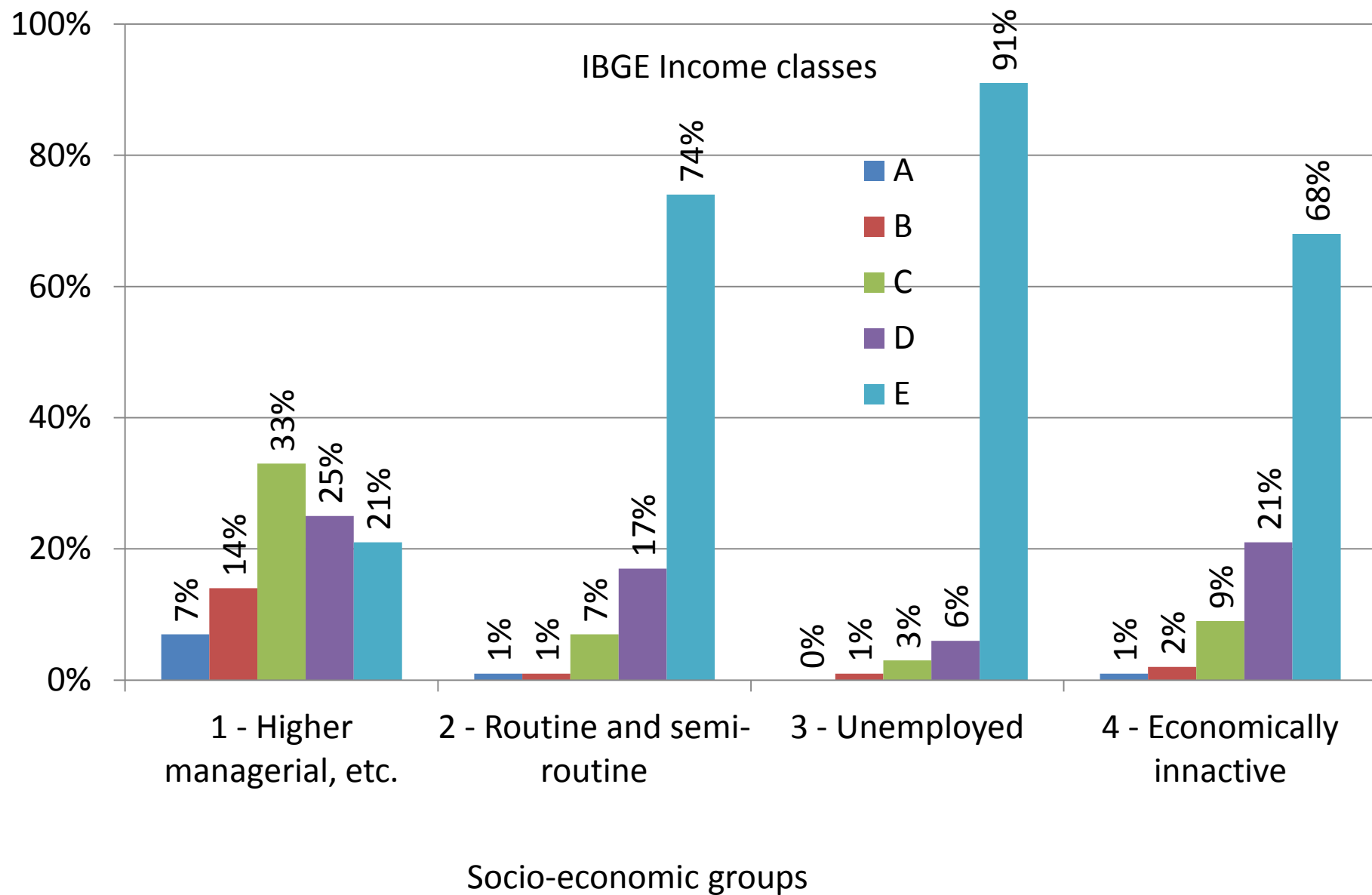
source: based on y2010 National Census data



IBGE Household Per capita Income classes x Socio-economic HRP types

São Paulo Metropolitan Area

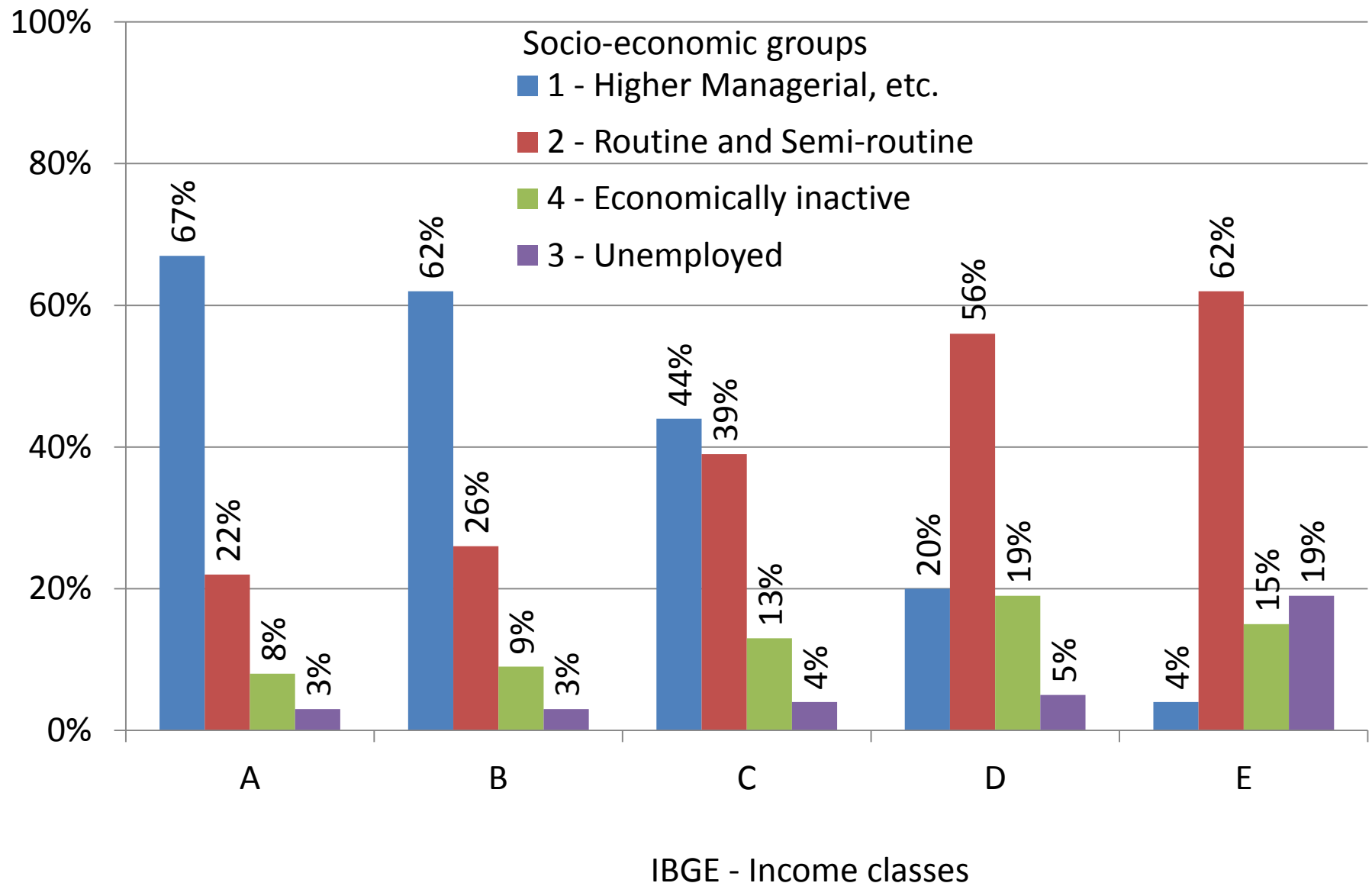
source: based on y2010 National Census data



Socio-economic HRP types x IBGE Per capita Household Income classes

São Paulo Metropolitan Area

source: based on y2010 National Census data



Employees Industrial Sector		Metropolitan O-D Survey 1997 by trip to work by people		National Census 2000
Agriculture only	1	92 %	169.487	146 %
Construction				
Manufacturing, etc. and Mining	2	85 %	1.339.581	129 %
Wholesale, etc.	1	78 %	288.399	86 %
Retail, etc.				
Real Estate	2	81 %	1.374.339	121 %
Transport - goods	1	90 %	335.412	103 %
Transport – people				
Financial services				
Personal services	2	75 %	2.268.885	75 %
Specialized services				
Other				
Health	1	90 %	291.821	134 %
Education				
Defence, etc.	2	84 %	584.304	129 %
TOTAL	1	87 %	1.085.119	114 %
	2	80 %	5.567.108	105 %
		81 %	6.652.227	106 %