



UNIVERSITY OF
TORONTO



Mobility
Network



VREF'S CENTER OF EXCELLENCE FOR
SUSTAINABLE URBAN
FREIGHT SYSTEMS



The São Paulo night deliveries project:
Lessons learned from a practitioner point of view



i
urban
freight!

Prof. Hugo T. Y. Yoshizaki
Universidade de São Paulo

Smart Freight Centre – Leadership Seminar Series
University of Toronto, 3 March, 2023



USP
UNIVERSIDADE DE SÃO PAULO



CISLOG

1



UNIVERSITY OF
TORONTO



Mobility
Network



VREF'S CENTER OF EXCELLENCE FOR
SUSTAINABLE URBAN
FREIGHT SYSTEMS

Content

- The Project
- Results
- Learnt lessons
- References



USP
UNIVERSIDADE DE SÃO PAULO



CISLOG

2

VREFF'S CENTER OF EXCELLENCE FOR SUSTAINABLE URBAN FREIGHT SYSTEMS

The project

USP
UNIVERSIDADE DE SÃO PAULO

CISLOG

3

Background: São Paulo City, Brazil

VREFF'S CENTER OF EXCELLENCE FOR SUSTAINABLE URBAN FREIGHT SYSTEMS

12 million p
1,523 km²
6 MM 4-wheelers
1 MM 2-wheelers

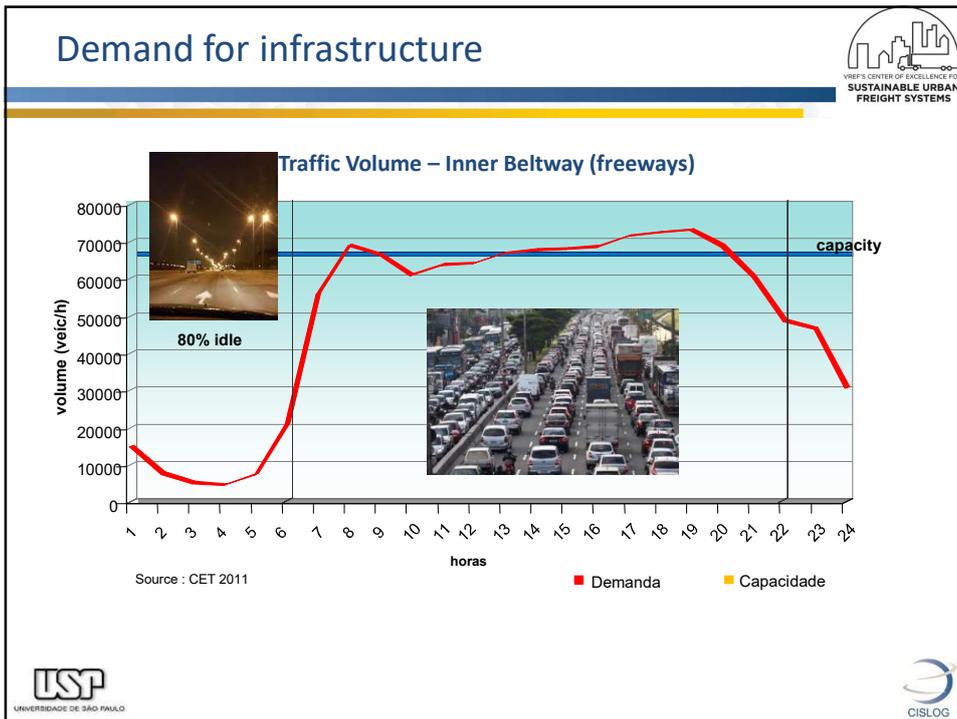
0 10 20 km

USP
UNIVERSIDADE DE SÃO PAULO

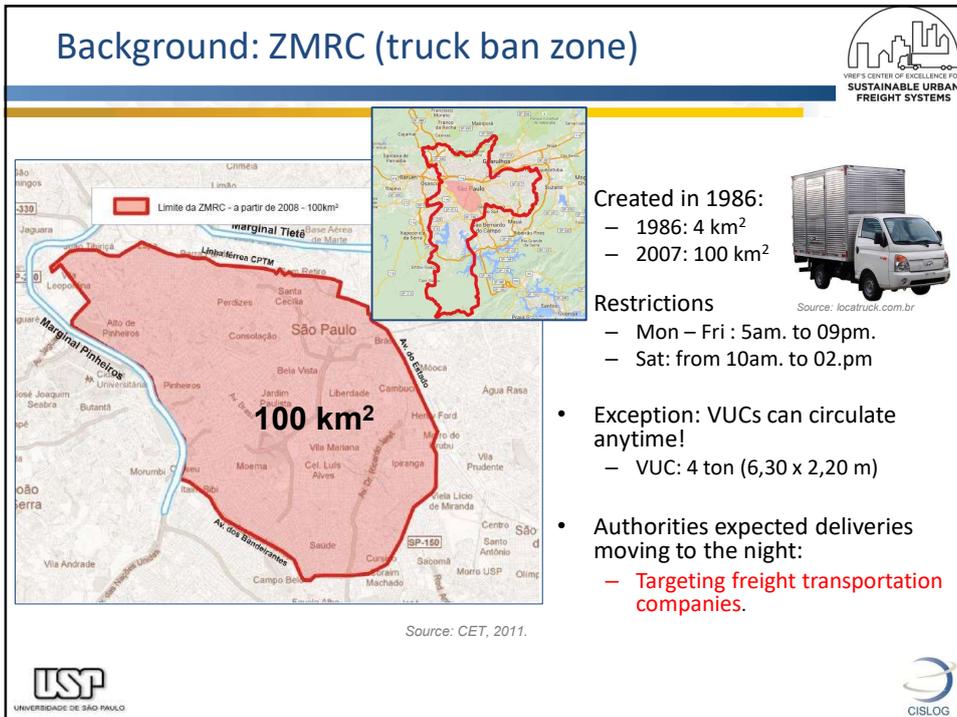
Source: GoogleMaps, IBGE, ANTT

CISLOG

4



5



6

Unintended consequences



- Congestion remains at high levels
- Fleet of small trucks and vans skyrockets
- Deliveries remain high during daytime hours



CISLOG 2012



7

Pilot timeline



TRANSPORTE URBANO DE CARGA: UMA PERSPECTIVA GLOBAL

Participação dos setores Privado e Público:

Participantes:

- Dr. José Roberto Serra

Participação dos setores Privado e Público:

- Grupo Pão de Açúcar
- ambev
- IBR
- SPFL
- CET

• Sistemas de transporte urbano de S. Paulo: necessidade

• Experiência Internacional: Londres, New York, Kyoto

• Futuro da pesquisa em sistemas de transporte em São Paulo

19 de julho de 2013

São Paulo, Brasil

www.cislog.usp.br

www.vref.usp.br

www.rpi.edu

Organização

Apoio

CISLOG

MLog

2013

- January: new Mayor
- July: Workshop CISLOG/USP VREF/SUFS

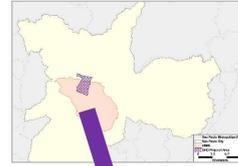


8

The pilot project in São Paulo City



- Evaluate **night deliveries** as a freight policy
- Mixed task force: SP traffic authority, carrier syndicate, retailer association, academia
- Main concerns
 - Safety (people, cargo, property)
 - Noise
 - Productivity and costs
- 11 volunteer companies (big retailers)
 - No cash incentives
 - 45 establishments (stores)
 - 3 waves, from Oct 2014 to Mar 2015
 - Extensive use of GPS data for evaluation



9

Participating companies



* 11 km²



10

CISLog: 4,800 H, 60+ routes, 45 establishments



Team:

- Dr. Hugo Yoshizaki
- Dr. Claudio Barbieri
- Dr. Flavio Vaz
- Dra. Iara Kako
- Msc. Celso Hino
- Msc. Joice Ribeiro
- Msc. Renato Arbex
- Msc. Tabata Bertazzo
- Patrícia Laranjeiro
- Ricardo Damis
- Pedro Parente Dias
- Ana Luísa Bernardo
- Beatriz Rigoletto
- Daniel Okane
- Gustavo Lopes
- Rayane Chechin
- Talita Lancha
- Henrique Watanabe
- Camila Shinohara
- Gabriel Francisco
- Arthur Pires
- Willian Suzuki






11

Remarks



- **Pilot was a qualified success:**
 - Safety and noise: no occurrences
 - Productivity: higher speeds and smaller delivery times at night
 - Cost trade offs: better for integrated supply chains
- **Mayor:**
 - “Freight should be treated as public transportation, both deal with the city economic lifeblood.”
 - Division of Freight Transportation created in August 2015
 - Official public policy
 - Larger, vertical companies (19)






12



Results




13



SAFETY

People and operation safety were top priority for all participants

- Facts: **no occurrences during the pilot** (official data from SP State Police)
 - Night patrol routes included participant stores.
 - Two companies used armed escorts.
- Differences between different receivers and supply chains
 - **Big stores, shopping malls** x **Small street stores**
 - **High risk** x **lower risk freight**

Risks are segmented by supply chain




Source: CISLOG 2015




14

NOISE: at least one solution for every source



Measuring and evaluating noise was fundamental

- Fact: **no complaints** during the pilot (official data SP Prefecture Noise Task Force)
 - No complaints does not mean no problems.
- Differences between operations and supply chains
 - **Covered delivery points** x **Street stores**
 - **Light** x **Heavy freight**

Noise should be treated individually

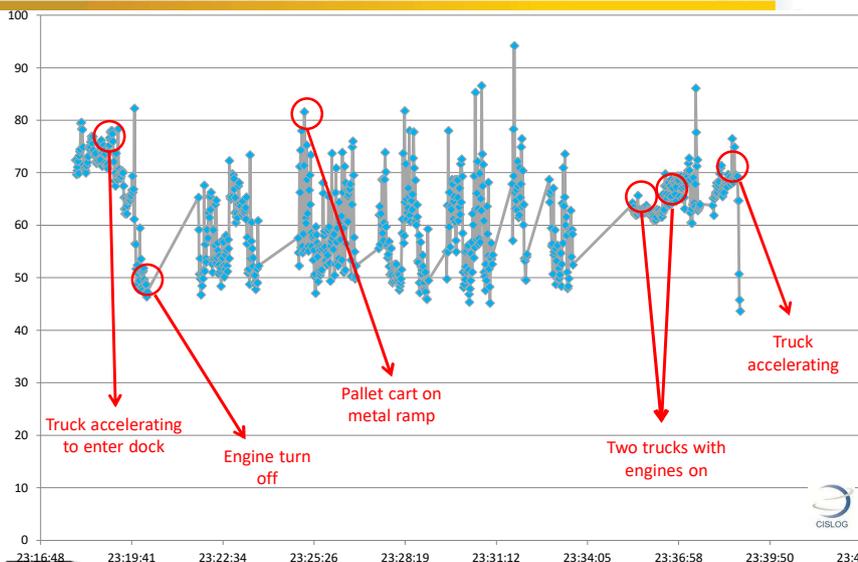


Source: CISLOG 2015

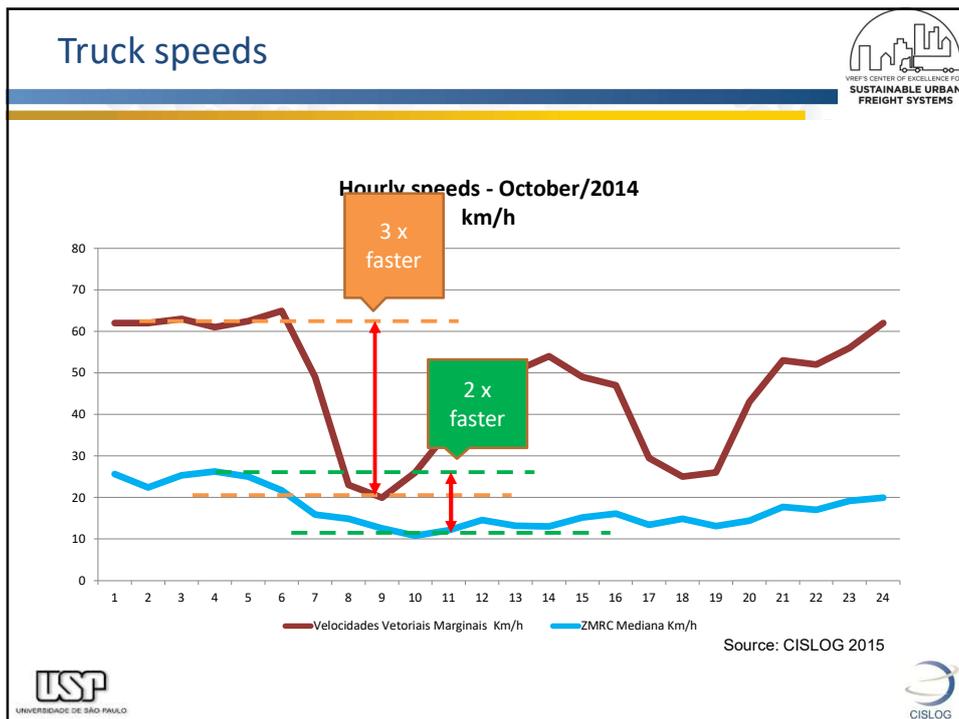


15

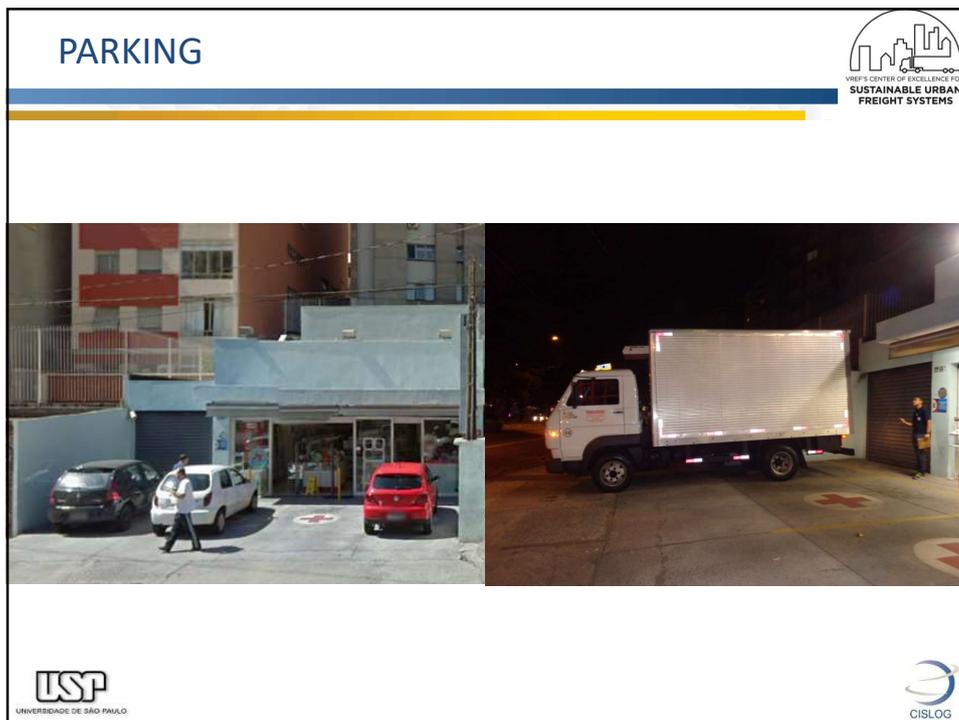
Noise (dBA) - grocery



16



17



18

OTHER ASPECTS



- Store staff.
 - Availability of public transportation at night.
 - 69 % prefer to receive merchandise at night.
 - 65% stated that trucks are more punctual at night.
 - 73% stated that it is easier to confer and organize merchandise at night.

- Drivers.
 - 70% prefer driving at night.
 - Safety is an issue.
 - Less stressed at night: scale from 1 (less) to 5 (very much):
 - **1,27** (night) vs **3,17** (day).



19

Lessons learnt



20

Incentives or volunteers?



- Vertical companies
 - Shipper is the carrier and the receiver
 - Distribution center
 - **Private fleet**
 - Mixes day and night operations
 - Homogeneous and heterogeneous fleet
 - **Stores**
 - Staffed (24/7)
 - Unstaffed
 - One vertical supply chain started implementation after pilot



21

Important lessons



- Public sector has a central role:
 - Regulation & Incentives
- Academia as mediator/technical support
- Necessity to consider all major stakeholders
 - Shippers/Manufacturers (IDV)
 - Carriers/Logistics service providers (SETCESP)
 - Receivers (consumers and companies)
 - Government
- There is no “one size fits all” solution
 - Each supply chain is different
 - Unassisted deliveries need investment in security devices
- There is a limit for volunteer participation
 - More (larger) companies are participating
 - Companies with vertical supply chains are natural candidates
 - Sharing gains and penalties of OHD along the supply chain



22



References




23

São Paulo OHD Pilot Project report



–Complete report (in Portuguese) at:

<http://www.antp.org.br/biblioteca-vitrine/cadernos-tecnicos.html>

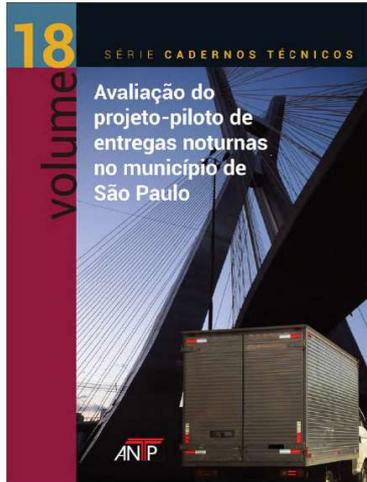


VREF CENTER OF EXCELLENCE FOR
SUSTAINABLE URBAN
FREIGHT SYSTEMS



THE WORLD BANK





24

References



- YOSHIZAKI, H. T. Y.; CUNHA, C. B.; RIBEIRO, J.C. ; ALMEIDA, F. G. V. ; KAKO, I. S. ; ANDRADE, P. F. L. ; HINO, CELSO . The São Paulo Off-Hour Delivery Pilot: Impacts for City Logistics. In: Josué C. Velázquez Martínez, Hugo Tsugunobu Yoshida Yoshizaki, Christopher Mejía Argueta. (Org.). *Supply Chain Management and Logistics in Latin America - A Multi-Country Perspective*. Emerald Publishing Limited, 2019, p. 131-148. <https://doi.org/10.1108/978-1-78756-803-720181009>
- DIAS, PEDRO A. P. ; Yoshizaki, Hugo ; FAVERO, PATRICIA ; VIEIRA, JOSE GERALDO VIDAL . Daytime or overnight deliveries? Perceptions of drivers and retailers in São Paulo City. *Sustainability*, v. 11, p. 6316, 2019. <https://doi.org/10.3390/su11226316>
- BERTAZZO, TÁBATA ; HINO, CELSO ; LOBÃO, TÁSSIA ; TACLA, DOUGLAS ; Yoshizaki, Hugo . Business case for night deliveries in the City of São Paulo during the 2014 World Cup. *Transportation Research Procedia*, v. 12, p. 533-543, 2016. <https://doi.org/10.1016/j.trpro.2016.02.009>
- BONTEMPO, AMANDA P. ; CUNHA, CLAUDIO B. ; BOTTER, DENISE A.; YOSHIZAKI, HUGO T.Y. . Evaluating restrictions on the circulation of freight vehicles in Brazilian cities. *Procedia: Social and Behavioral Sciences*, v. 125, p. 275-283, 2014. <https://doi.org/10.1016/j.sbspro.2014.01.1473>



25



Thank you!
Merci beaucoup!

Hugo Yoshizaki
hugo@usp.br



26