

## Urban Logistics and e-Grocery: *Have Proximity Delivery Services A Positive Impact On Shopping Trips?*

# Agenda

- 1. Introduction**
- 2. Supply chain management in e-grocery**
- 3. e-Grocery: three main scenarios of distribution**
- 4. Interactions between e-grocery and city logistics**
- 5. Simulation as an evaluation tool for e-logistics**
- 6. Simulations results**
- 7. Conclusion and managerial implications**

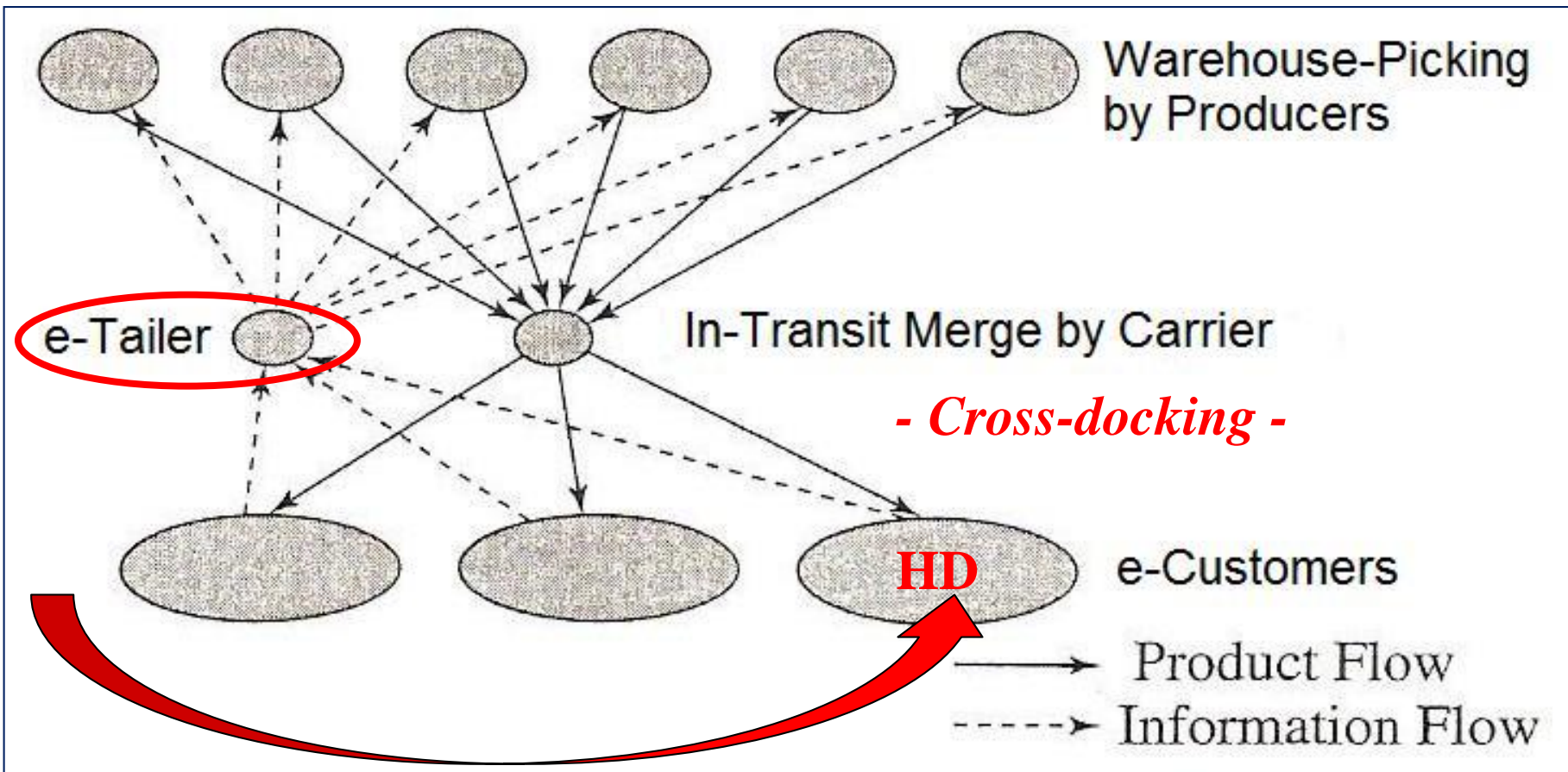
# 1. Introduction

- Real boom of **e-commerce**
  - ➔ Necessity to worry about **e-distribution**
- Which are the main logistics **alternatives**?
- Necessity to **simulate** logistics scenarios in **e-grocery**

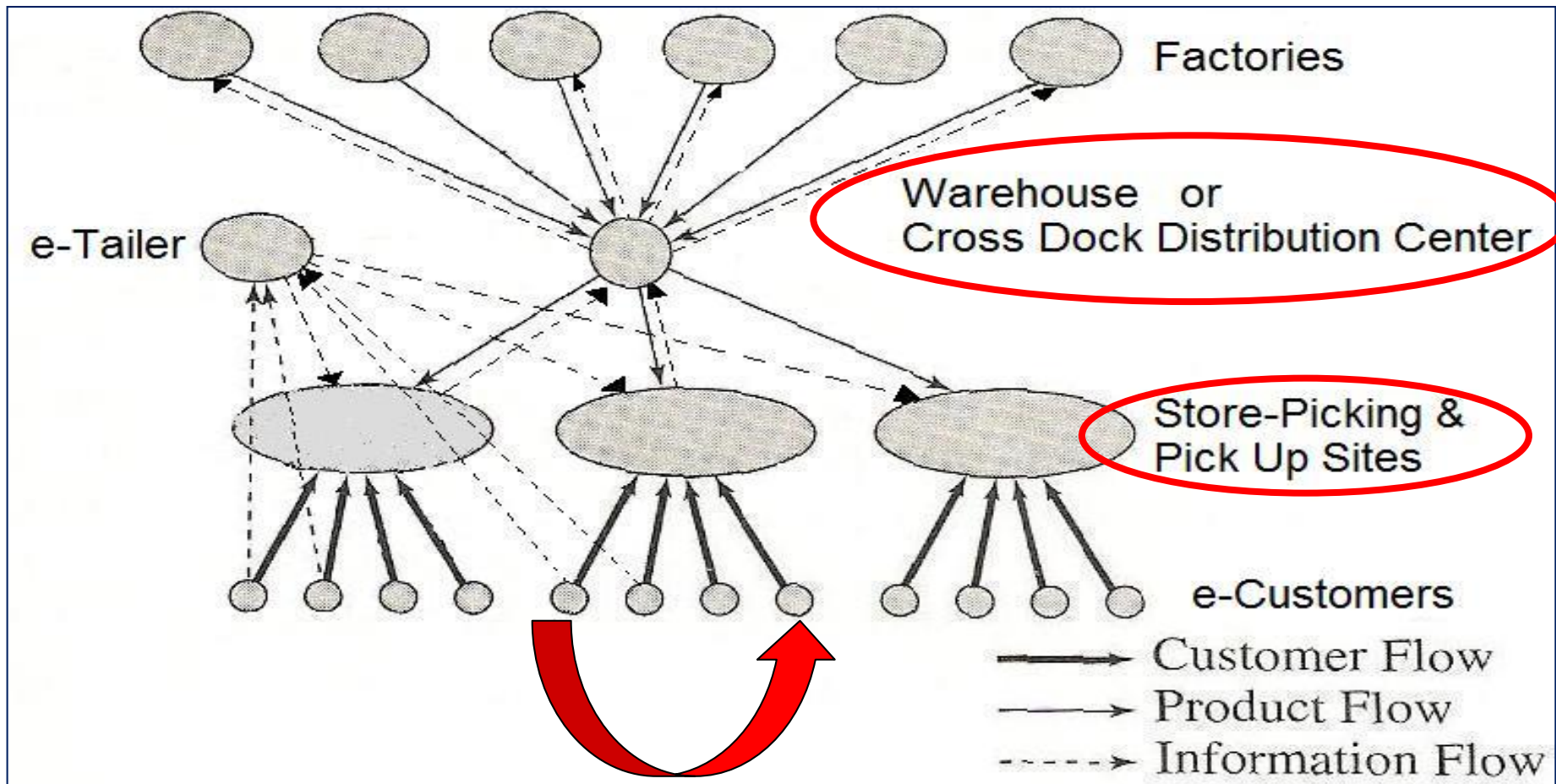
## 2. SCM in e-grocery

- **Order-picking: 2 main models**
  - **on dedicated site:**
    - *regional warehouse* (warehouse-picking)
    - *proximity depot* (depot-picking)
  - **in store** (store-picking)

## 2.1. Warehouse-picking model



## 2.2. Store-picking model



## 3. e-Grocery:

# 3 scenarios of distribution

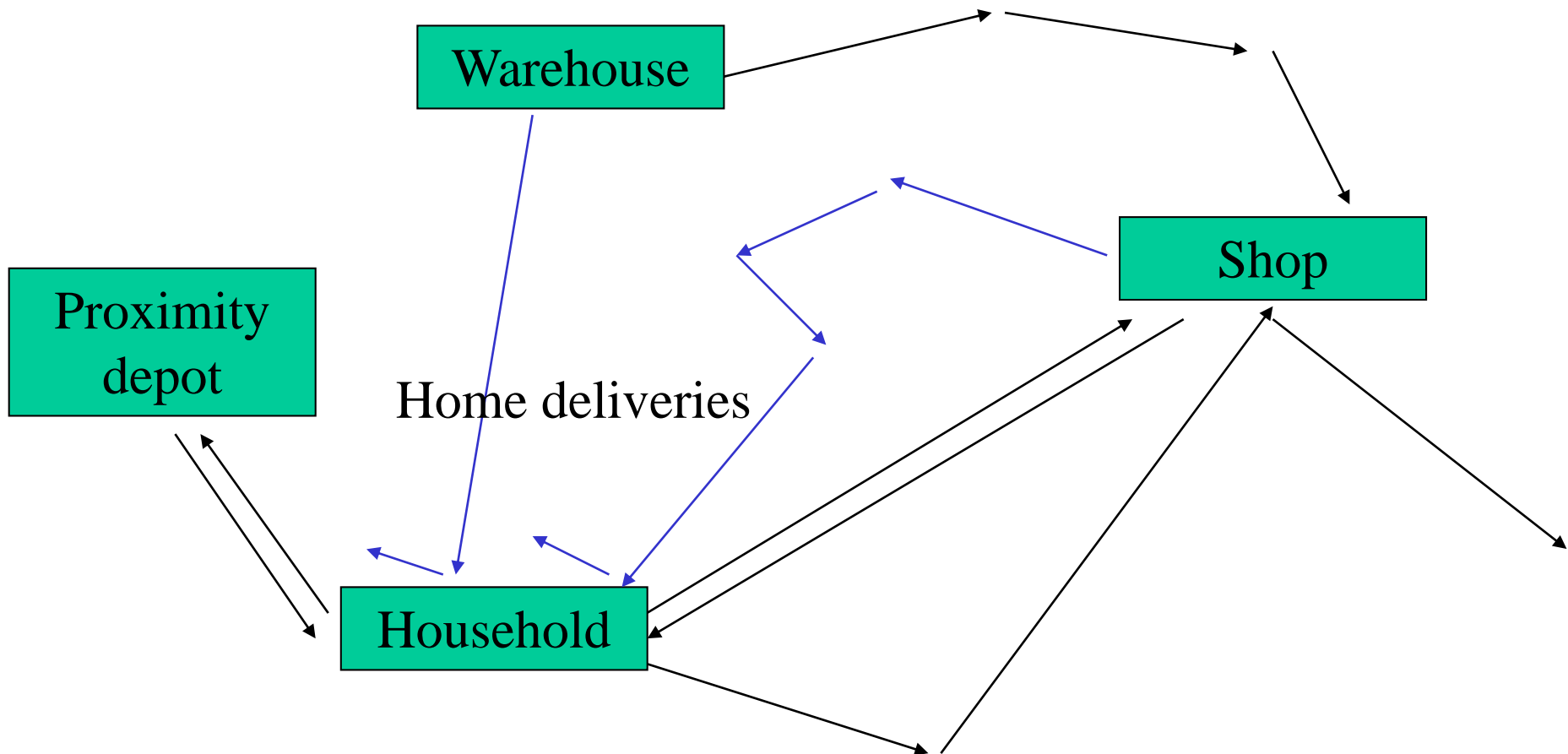
- Practises observed by French e-grocers :
  - ➔ **Store-picking with HDs & drive** (Expressmarché)
  - ➔ **Warehouse-picking with only HDs** (Auchandirect)
  - ➔ **Depot-picking with only OHDs**

## **4. Interactions between e-grocery and city logistics**

- **Relations between e-grocery and the related various urban goods movement flows**
- **City Logistics: a key factor in e-grocery development success or... failure**



# 4. Interactions between e-grocery and city logistics



## 4. Interactions between e-grocery and city logistics

	Central urban area	Near periphery	Far periphery	Average
Composition – individual housing	5%	25%	60%	30%
Composition – collective housing	95%	75%	40%	70%
Tour - Number of reception points	16	20	20	18
Tour - Average speed	11 km/h	16 km/h	25 km/h	17.3 km/h
Tour - Average distance	60 km	75 km	115 km	90 km

**Main characteristics of small grocery retailers last mile flows in each category of urban area (Gonzalez-Feliu et al., 2011a)**

## 4. Interactions between e-grocery and city logistics

Category of urban space	Trips on rounds where purchasing is the main activity			Trips on « only shopping » rounds		
	Total	No car	Car	Total	No car	Car
Central Urban Area	172 923	79,5%	20,5%	134 313	76,6%	23,4%
Near Periphery	206 543	36,3%	63,7%	158 128	45,3%	54,7%
Far Periphery	251 865	29,5%	70,5%	182 621	30,6%	69,4%
<b>Total</b>	<b>631 332</b>	<b>45,4%</b>	<b>54,6%</b>	<b>475 061</b>	<b>48,4%</b>	<b>51,6%</b>

Car usage in round shopping journeys (Gonzalez-Feliu et al., 2011b)

## 4. Interactions between e-grocery and city logistics

	Central urban area	Near periphery	Far periphery	Average
<b>Composition – individual housing</b>	<b>5%</b>	<b>25%</b>	<b>60%</b>	<b>30%</b>
<b>Composition – collective housing</b>	<b>95%</b>	<b>75%</b>	<b>40%</b>	<b>70%</b>
<b>Number of delivery points</b>	<b>15</b>	<b>21</b>	<b>20</b>	<b>18.1</b>
<b>Tour - Average distance</b>	<b>17 km</b>	<b>35 km</b>	<b>80 km</b>	<b>45 km</b>

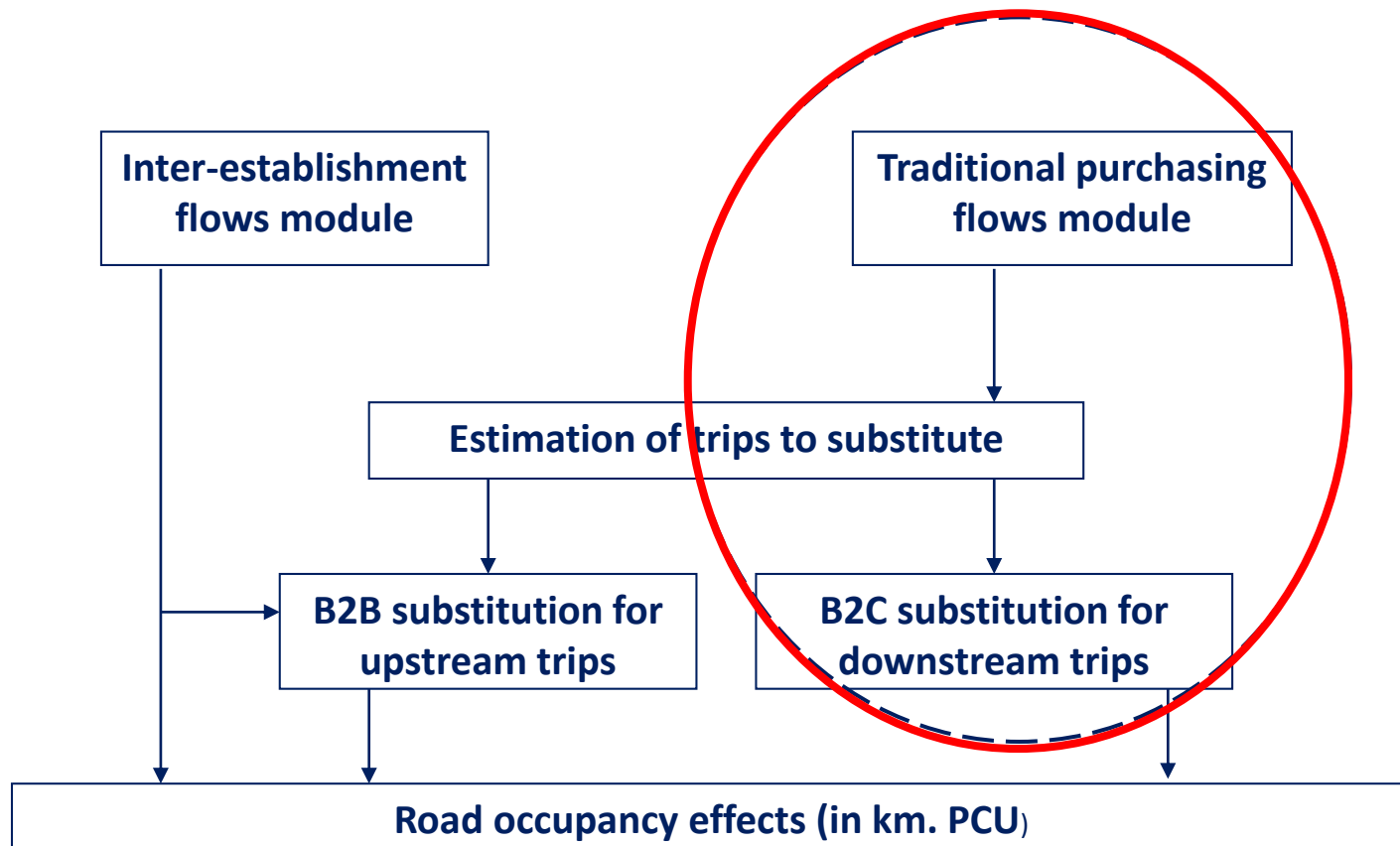
**Main characteristics of HD trips for store picking and depot picking routes in each category of urban zone (from Alligier, 2007 with results of Durand & Vlad, 2011)**

## 4. Interactions between e-grocery and city logistics

	All categories of urban space
Composition – individual housing	30%
Composition – collective housing	70%
Number of delivery points	40
Tour - Average distance	200 km

**Main characteristics of home delivery trips for warehouse picking routes  
(from Durand & Vlad, 2011)**

## 5. Simulation as an evaluation tool



## 6.1. Simulations results

Scenario		Home Deliveries & Pick-Up Oper.	Purchase Movements	Total	%
<b>Reference</b>		0	25 955 939	25 955 939	
<b>1</b>	10%	438 962	25 211 212	25 650 173	-1,2%
	20%	872 518	24 216 337	25 088 855	-3,3%
	30%	1 306 098	23 221 462	24 527 560	-5,5%
	40%	1 739 916	22 226 588	23 966 504	-7,7%
	50%	2 173 377	21 231 713	23 405 090	-9,8%
<b>2</b>	10%	475 829	24 547 962	25 023 791	-3,6%
	20%	956 676	22 889 837	23 846 513	-8,1%
	30%	1 460 859	21 231 713	22 692 572	-12,6%
	40%	1 992 586	19 573 588	21 566 174	-16,9%
	50%	2 548 331	17 915 464	20 463 795	-21,2%
<b>3</b>	10%	249 593	24 646 154	24 895 747	-4,1%
	20%	490 366	22 981 397	23 471 763	-9,6%
	30%	744 676	21 316 640	22 061 316	-15,0%
	40%	1 013 972	19 651 883	20 665 855	-20,4%
	50%	1 295 942	17 987 125	19 283 068	-25,7%

In Km / week on the Lyon urban area

## 6.2. Simulations results

Scenario		Home Deliveries & Pick-Up Oper.	Purchase Movements	Total	%
<b>Reference</b>		0	25 955 939	25 955 939	
<b>1</b>	10%	658 442	25 211 212	25 869 654	-0,3%
	20%	1 308 777	24 216 337	25 525 114	-1,7%
	30%	1 959 147	23 221 462	25 180 610	-3,0%
	40%	2 609 875	22 226 588	24 836 462	-4,3%
	50%	3 260 066	21 231 713	24 491 779	-5,6%
<b>2</b>	10%	713 744	24 547 962	25 261 706	-2,7%
	20%	1 435 014	22 889 837	24 324 851	-6,3%
	30%	2 191 289	21 231 713	23 423 001	-9,8%
	40%	2 988 879	19 573 588	22 562 467	-13,1%
	50%	3 822 496	17 915 464	21 737 960	-16,3%
<b>3</b>	10%	499 185	24 646 154	25 145 339	-3,1%
	20%	980 733	22 981 397	23 962 130	-7,7%
	30%	1 489 353	21 316 640	22 805 993	-12,1%
	40%	2 027 944	19 651 883	21 679 827	-16,5%
	50%	2 591 885	17 987 125	20 579 010	-20,7%

In Km.PCU / week on the Lyon urban area



# 7. Conclusion and managerial implications

- Nature of the logistics **operators** for **HDs** or **OHDs** ?
  - Retailers ?
  - LSPs ? Consolidation of deliveries ?

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