

Presentation by

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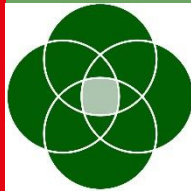
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15<sup>th</sup> December 2017

# City Logistics: drivers and barriers to the implementation of urban freight sharing systems, from the user perspective

**UWE  
Bristol**

University  
of the  
West of  
England

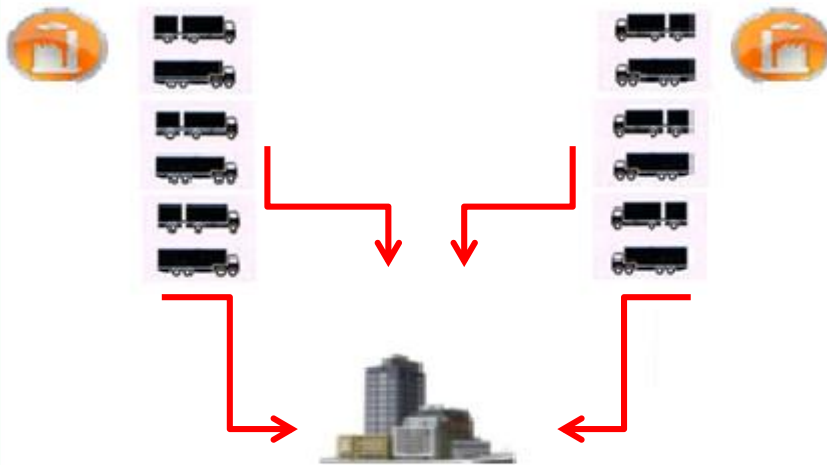


Centre for  
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Society

# Background and Motivations

# Urban Consolidation Centres

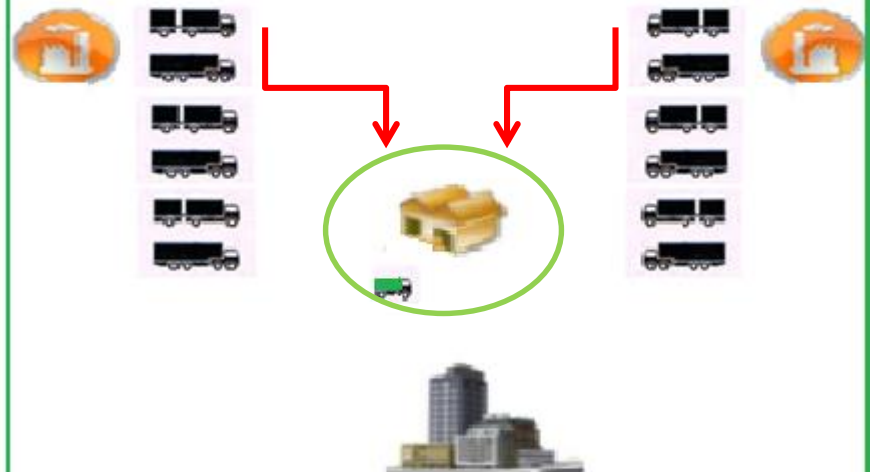
**Traditional supply chain**



Multiple vehicles deliver independently to a retail centre with individual retail units receiving multiple small deliveries during opening hours.

Causing vehicle congestion, security issues, take up of retail staff time and pollution

**Consolidation centre supply chain**



Suppliers deliver to strategically located warehouse on city periphery with 24 hour availability & assisted deliveries.

Product is consolidated to maximise vehicle utilisation on "final mile", making fewer deliveries at agreed times with assistance given all the way to the retailer's stock room or shop floor

# Urban Consolidation Centres

## Types of UCCs

- (a) serving all or part of an **urban area** (e.g. Bristol and Bath)
- (b) serving large sites with a **single landlord** (e.g. Heathrow airport)
- (c) **Construction** project UCC (e.g. London Construction Consolidation Centre)

## Business Model

- **Initial** public funding (feasibility studies and trials; specially for the (a))
- **Less** financial issues for the (b) and (c) UCC (contractual conditions/site access)

### Who benefits from the UCC

#### Suppliers

- Time savings
- n. of vehicles is reduced
- Money savings

#### Retailers

- Security of delivery
- - storage/+ selling space
- Additional services

#### Citizens

- Reduction in pollution and noise
- Increase in pedestrian/cyclist safety
- Increase in quality of life

# Limitations of UCCs

- Not financially viable in a **small urban area** due to a lack of sufficient demand for freight transport (Kin et al., 2016).
- Despite the potential to make a contribution to urban sustainability and economic vitality, many **local authorities** in EU countries still **do not treat** urban freight transport as a **priority** (Kiba-Janiak et al., 2015), and the **involvement** of potential users is quite **hard** (Verlinde et al., 2012)
- In order to make urban freight distribution more sustainable and efficient, the stakeholders involved must **change their “behaviour”** (Verlinde et al., 2012).
- UCCs that are still operative, due it to **solid coordination among stakeholders** and the will to work together (Gonzales -Feliu et al., 2014).

# Methodology

## Research question

“What **drivers** and **barriers** are related to the implementation of **sharing logistics and urban freight transport policies**, which involve **multi-stakeholders**, such as **urban freight consolidation centres (UCCs)**?”

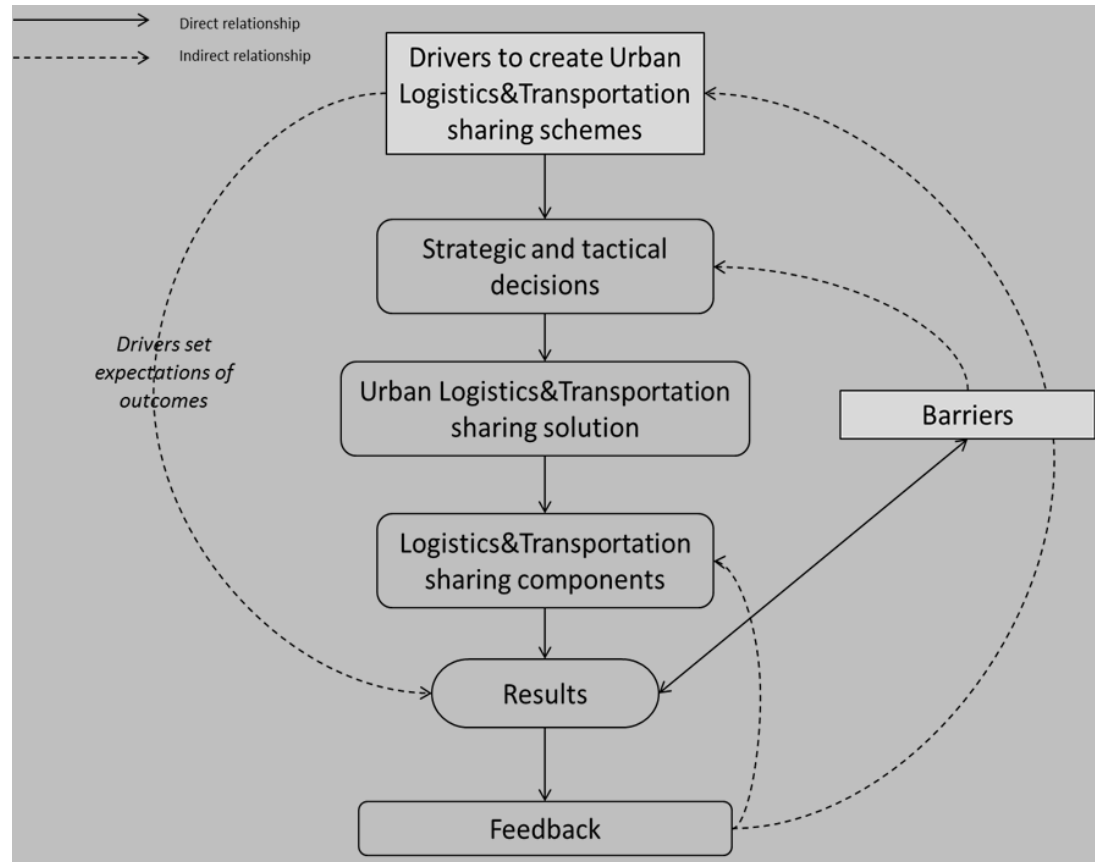
## Observations

The point of view and perception of the **RECEIVERS** is investigated, because the literature highlighted they assume a **key role** in the success of the implementation of UCCs.

## Methodological approach

### Case Study approach:

- Bristol (UK), UCC operating since 2002;
- Cagliari (Italy), UCC is not operating yet.



Conceptual model for sharing solutions applied to the urban freight distribution environment [Based on the model proposed by Gonzales-Feliu and Morana (2011)]

# Results



# Case study 1 – The Bristol and Bath Urban Consolidation Centre (BBUCC)

## BBUCC Projects Overview:

- 2002-2006 CIVITAS VIVALDI - 53 outlets located in the city centre of Bristol;
- 2006-2008 START – 70 outlets located in the city centre of Bristol ;
- 2009-2013 CIVITAS RENAISSANCE - **106 outlets: 81 in Bristol and 25 in Bath**

HGVs that make the deliveries to the BBFC are classified in:

- **Articulated vehicles;**
- **18-tonne vehicles;**
- **7.5-tonne vehicles;**
- **Vans.**

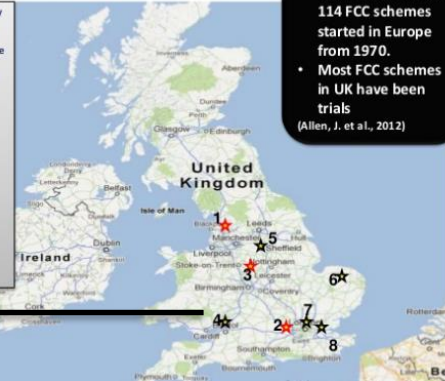
The BBUCC was the **FIRST** consolidation centre in the UK serving 2 cities (Bristol and Bath)

## **Stakeholders:**

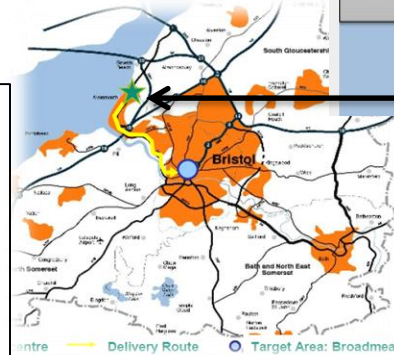
- Bristol City Council;
- Bath&North East Somerset Council;
- DHL;
- Retailers (Bristol=81; Bath=25)

## UFCC distribution in UK

1. Manchester Airport is served by a consolidation centre in Bury
2. Heathrow Airport in London is served by a consolidation centre in Stockley Park
3. East Midlands Airport is served by a consolidation centre at a local warehousing facility
4. Bristol (serving Broadmead / Cabot Circus shopping centre and, in the more recent project Renaissance, Bath city centre)
5. Sheffield (serving Meadowhall shopping centre)
6. Snetterton in Norfolk (serving Norwich city centre)
7. Brimsdown in Enfield (serving Regent Street)
8. Greenhithe (serving Bluewater shopping centre in Kent)



- UK alone accounts for one-third of the 114 FCC schemes started in Europe from 1970.
- Most FCC schemes in UK have been trials (Allen, J. et al., 2012)



- Delivery bay
- Participating retailers
- Pedestrianised area
- Broadmead expansion
- Front door deliveries only
- Road Network



Figure 2: Broadmead, the demonstration area in Bristol



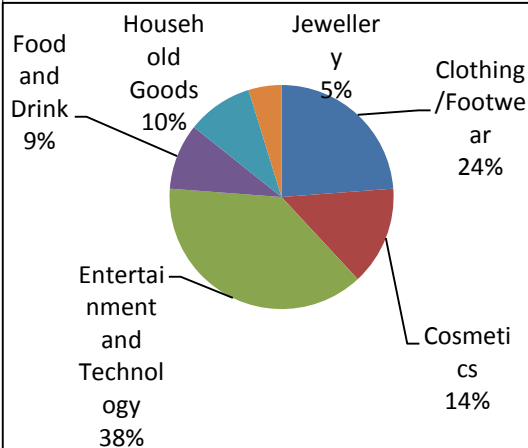
# Case study 1 – The Bristol and Bath Urban Consolidation Centre (BBUCC)

## The SURVEY

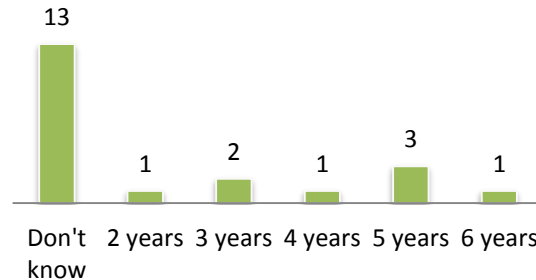
Population = 81; Sample = 21

### Data Collection

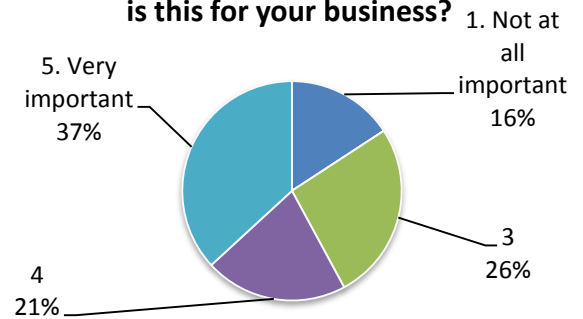
1. Questionnaire project and choice of the questionnaire administration;
2. Pilot questionnaire;
3. Administration and collection of the questionnaire (PA.PI. - Paper and Pencil Interviewing):
  - Administration with DHL (during the deliveries to the outlets);
  - Administration by own interviewer (independently visits);



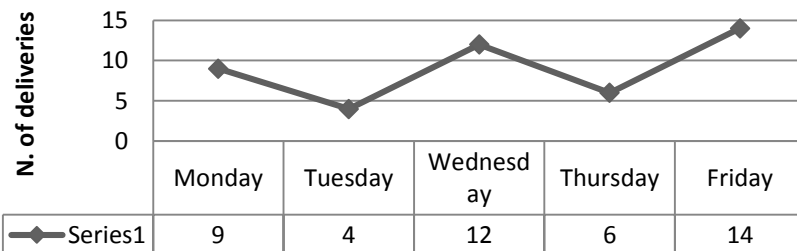
How long have you been using the Bristol Consolidation Centre for your deliveries?



Deliveries made by electric vehicles: on a scale from 1 to 5, how important is this for your business?



Weekly delivery frequency flow



Advantages to the business

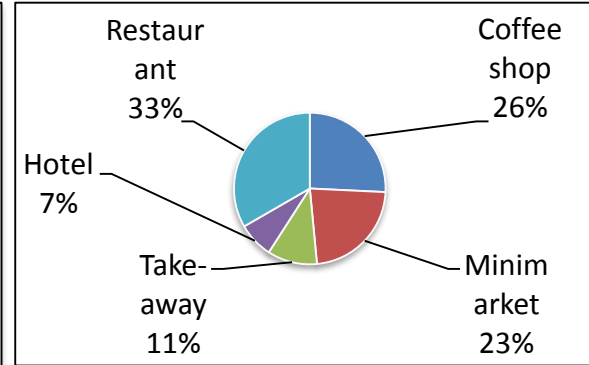
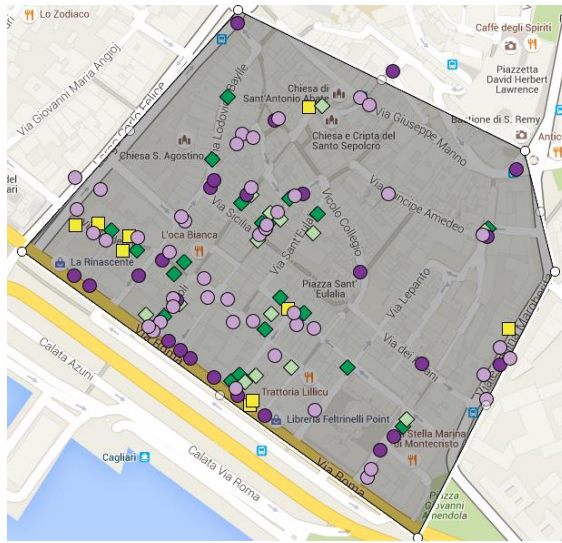


# Case study 2 - The potential Urban Consolidation Centre in Cagliari

**Surveyed area:** "Marina"  
district, city centre of Cagliari;  
**Total area size** (sq meters):  
16,000;

**Population:** 127 commercial activities;

**Sample:** 66 commercial activities (57% of the whole population)



Due to the **different nature** of the products analysed, it was decided to group goods in two main groups:

## 1. Perishable goods (fresh food)

- **F&V** = fruits and vegetables;
- **CM&C** = cured meat and cheese;
- **M** = meat;
- **F** = fish;
- **OFF** = other fresh food;

## 2. Non-perishable goods (no fresh food)

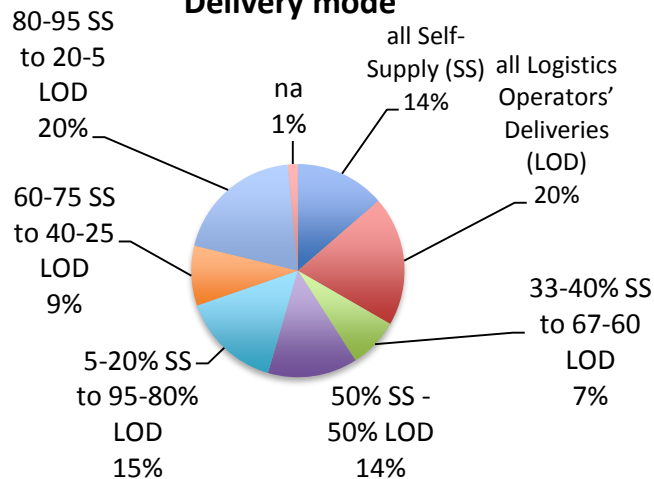
- **B** = fresh bakery goods;
- **Bv** = beverage;
- **ODG** = other non perishable products;
- **O** = Other.

# Case study 2 - The potential Urban Consolidation Centre in Cagliari

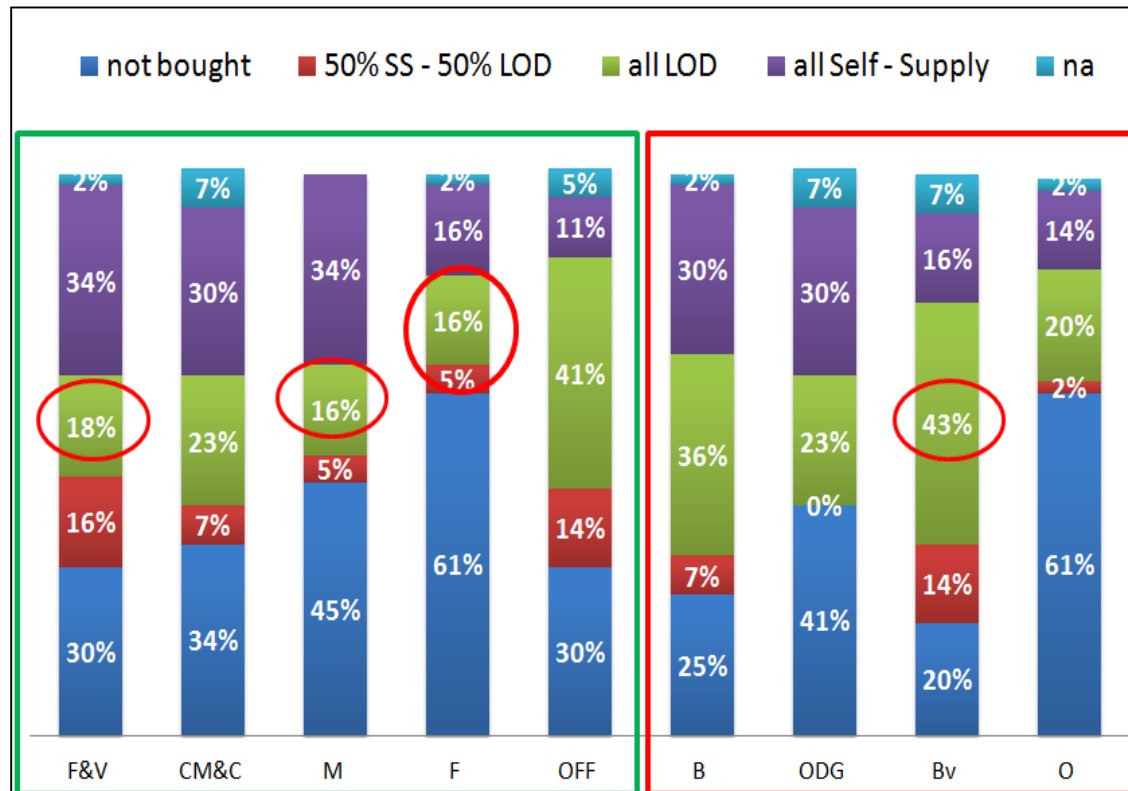
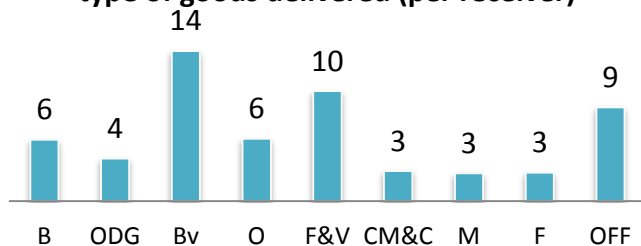
## Data Collection

1. Identification of the area to be surveyed;
2. Census of the commercial activities in the area and classification of the shops;
3. Questionnaire project: LONG questionnaire (37 questions) / SHORT questionnaire (8 questions);
4. Choice of the questionnaire administration and Pilot questionnaire;
5. Administration and collection of the questionnaire (PA.PI. - Paper and Pencil Interviewing)

**Delivery mode**



**Average number of boxes per week per type of goods delivered (per receiver)**

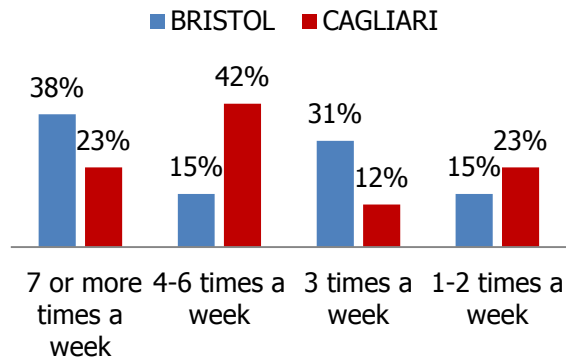


# Summary of the main differences between Bristol and Cagliari

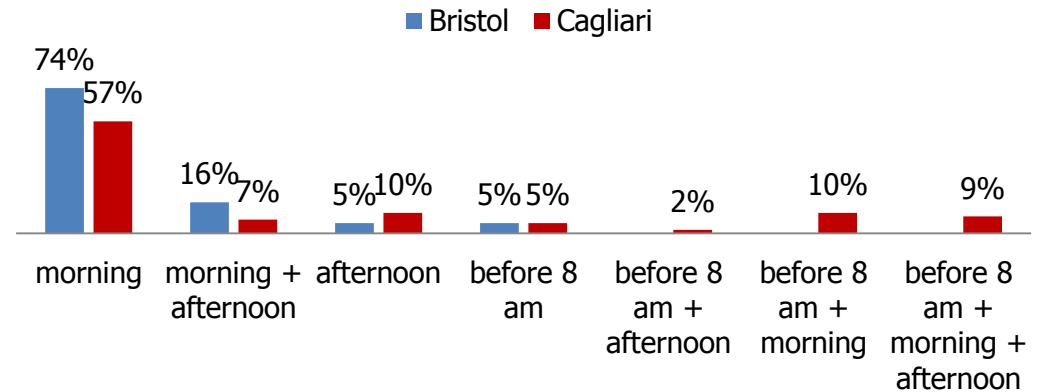
	<b>Bristol</b>	<b>Cagliari</b>
<b>Year (survey)</b>	2013	2015
<b>UCC</b>	Yes	No
<b>Nature of business</b>	Multiple Retailers	SME
<b>Category of shop</b>	Clothing/Footwear, Entertainment and Technology, Household Goods, Cosmetics, Jewellery, Food and drink (Chocolate)	Ho.Re.Ca. sector: Hotels, Restaurants, Coffee shops, Minimarkets, Take away
<b>Category of product</b>	Non-perishable; no food (except for chocolate).	Perishable and non-perishable food
<b>N. surveyed shops</b>	21 (Bristol) + 16 (Bath) = 37	66

# Summary of the main differences between Bristol and Cagliari

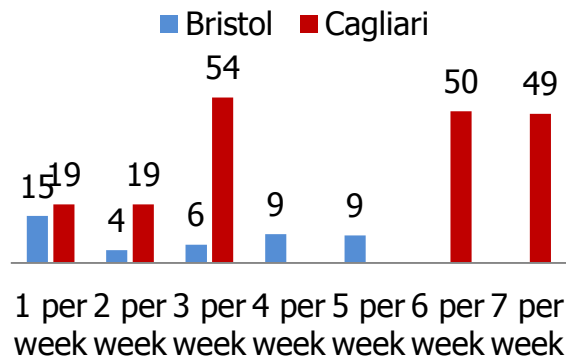
**Overall weekly deliveries (delivery frequency)**



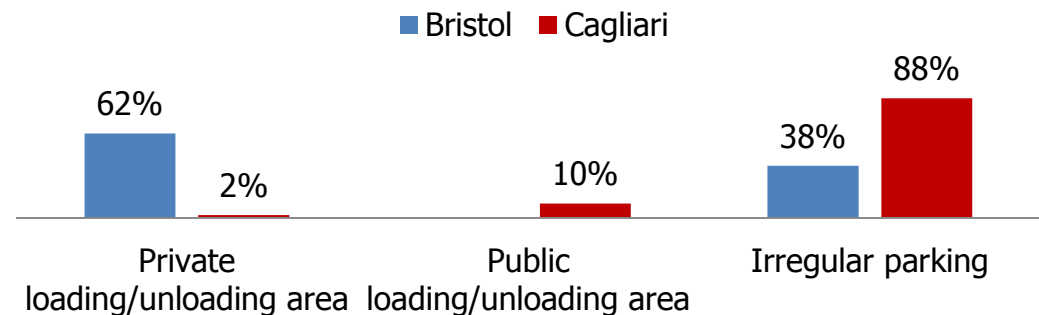
**Delivery time**



**Delivery size**



**Where do they park? Loading/unloading operations**

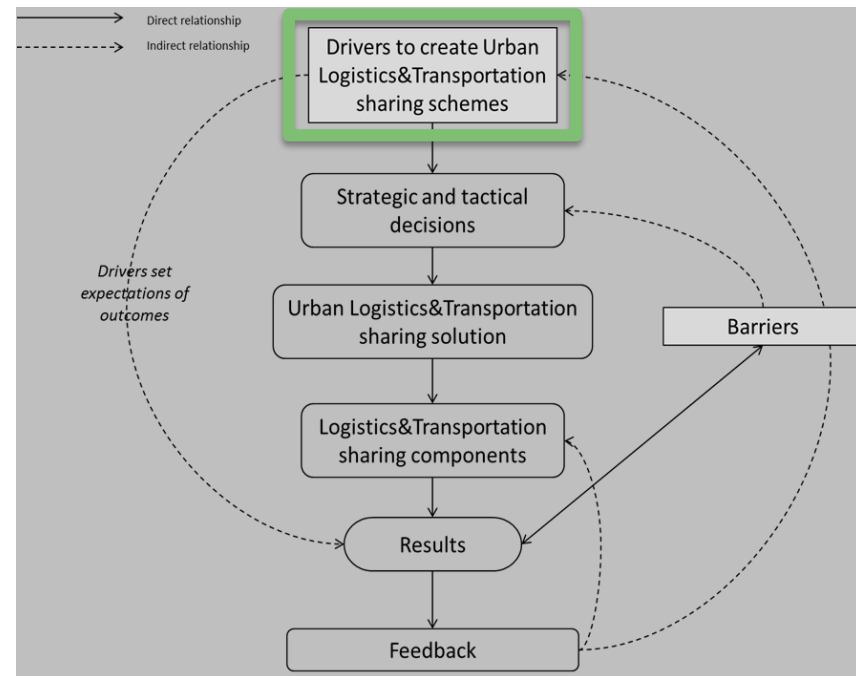


# Identification of DRIVERS and BARRIERS



# DRIVERS

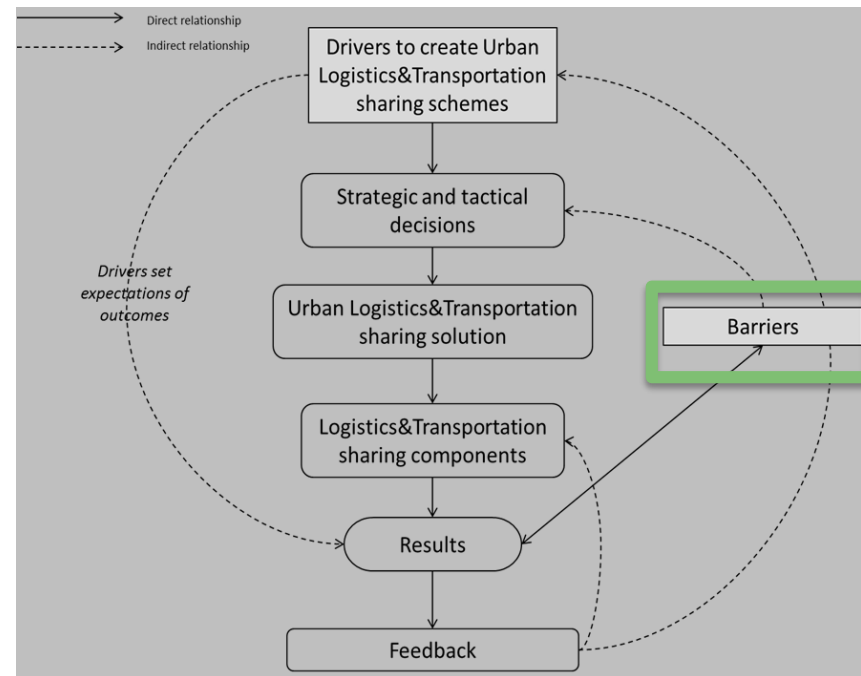
- Drivers related to **ECONOMIC** advantages:
  - time savings
  - space savings
  - additional services
  - access regulation and public subsidies.
- Drivers related to **PRACTICAL** advantages:
  - time savings
  - setting delivery times
- Drivers related to the protection of the **ENVIRONMENT**:
  - marketing ("Green Image" – multiple retailers)
  - ethical principles of the company



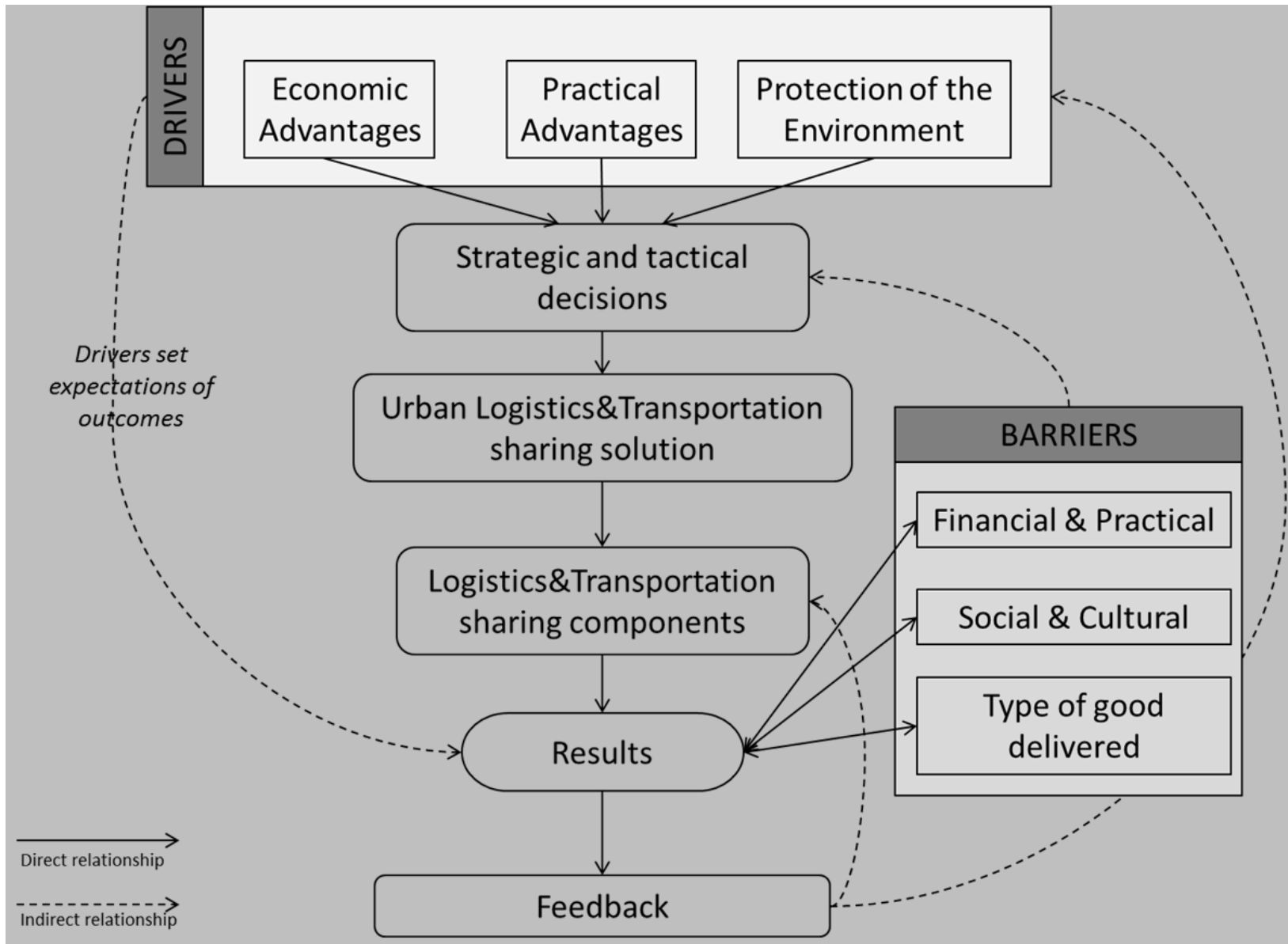


# BARRIERS

- **FINANCIAL** and **PRACTICAL** barriers:
  - initial funds needed to start
  - minimum demand
  - (social) benefits not monetized
- **SOCIAL** and **CULTURAL** barriers:
  - scepticism to new delivery systems
  - big companies (Bristol) might be more willing to participate than SME (Cagliari)
  - competitiveness (not willing to share resources with competitors)
  - carriers do not want to lose direct contact with customers (marketing)
- Barriers related to the **TYPE OF GOOD** to be delivered
  - perishable vs non-perishable goods (food/no food)
  - retailers want to be sure products meet quality standards



# Urban Sharing Logistics And Transportation Model



# Conclusion

- By sharing logistics facilities and delivery vehicles, stakeholders can **benefit** from the UCC in terms of **cost and time savings** and **added value services**. However, stakeholders involved in the urban system have different needs and expectations.

- Results in Bristol:
  - **High reduction** rates of **polluting emissions**;
  - Retailers are **very satisfied** with the delivery service and the added services provided by the UCC (economic and practical benefits);
  - However, Most of the receivers **were not aware** of the UCC and to be part of the scheme
  - Significant problems related to the **economic sustainability** of BBUCC, which probably represents the most important barrier to UCC implementation.

- **Cost allocation** is another issue related to the success of a sharing logistics system. It is not easy to solve. “**Who pays what**” should be clear for all the stakeholders involved and costs should be allocated proportionally with how each stakeholder benefits from the sharing system: **who benefits more, pays more.**
- Another important barrier is related to the **propensity to change**. The survey showed retailers are not going to change if they are not ready or willing to. However, **big companies** may be willing to participate to sharing logistics schemes due to the “**green image**” they provide to their firm.
- Finally, the **type of good** to be delivered can represent a major barrier to the feasibility of a shared logistics scheme.

- For effective operations, there must be a **sufficiently large pool** of freight recipients that **recognize the benefits** of UCC participation. Generally, the value of these benefits is to some extent marketised through participants' **willingness to pay** additional delivery costs.
- **Carriers** benefit from time and fuel cost savings by not entering the city. In fact, last mile represents the shortest part of supply chain, but 28% of the total delivery cost (Goodman, 2005) for carriers (due to traffic congestion and lack of unloading/loading areas, etc.).
- To be successful, the services provided by the shared system should be adequately **promoted** and **benefits** coming from it should be highlighted in **quantitative terms**.
- Results pointed out that sharing logistics and transport activities, which is the fundamental statement of city logistics measures, can be possible **ONLY IF AN ACTOR TAKES RESPONSIBILITY** for establishing a UCC scheme with the aim of reaching a **common-shared benefits/costs** due to the system.

# Thank you!

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