#### "Regulating on-street delivery spaces: gaining new knowledge from Barcelona's areaDUM app"

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#### Barcelona's SUMP: 2013-2018



# Regulated On-Street system (AREA)

AREA is an integral regulation system for on-street parking where all the spaces are regulated through rules and fees. It is operated by B:SM (municipal agency): centre 1983, expanded post 2000



# Regulated On-Street system (AREA)

Pay & Display 9,000 parking spaces

Resident 44,000 parking spaces

#### **Delivery space, AREADUM**

8,500 parking spaces



*3,000* parking meters



**300** supervisors



New technology implemented



<sup>cities for</sup> mobility

**PROJECT DEPLOYMENT ON STREET** 



#### areaDUM DEVELOPMENT

| 8 | Anonymous User / Unknown usage |
|---|--------------------------------|
|   |                                |
| 8 | No time alerts for customers   |
|   |                                |
| 0 | Permanently visible.           |
| 8 | Easy cheatable                 |
| 8 | More indiscipline / Noise      |
| 0 | Strong enviromental impact     |
|   |                                |



Information available online and personally through supervisors.

Data management, enables track information.



User-friendly, easy-to-use APP.

Efficient customer service +99% incidences and support response ratio in <24h.

Direct communication between user &on street operator.

Infringement prevention through inapp programmable alarm system.

Less indiscipline

Less noisy city and improved environment

Better, smarter city for residents and foreign visitors.

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Press «Stop parking» and leave parking space

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NIF: P-0801900-B

SCOPE OF THE REGULATION SYSTEM



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# **area**DUM, delivery pattern: time of day for different months



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#### areaDUM, on-street configuration

• 8500 spaces arranged in 1,973 ZONES distributed in 564 streets, mostly located in the Eixample district.



### areaDUM, operations at DUM zones

- The average n<sup>o</sup> of operations per zone is 20.7 operations / day.
- The most used zones, 64 with more than 50 operations/day, are located in Eixample district which is equal to 69% (of all operations over the day).



| Operations<br>/ Area | N. Areas |  |  |
|----------------------|----------|--|--|
| <10                  | 392      |  |  |
| 10 - 20              | 667      |  |  |
| 20 - 30              | 463      |  |  |
| 30 - 40              | 280      |  |  |
| 40 - 50              | 107      |  |  |
| >50                  | 64       |  |  |
|                      | 1.973    |  |  |

## areaDUM, number of vehicles using zones

- The 40,915 daily operations are realized by 12,516 vehicles / day, equivalent to 3.27 operations / vehicle / day
- Of the 8,496 vehicles that perform 3 or less operations per day, 49% only make one operation a day.



| N.<br>Operations | N. Vehicles |
|------------------|-------------|
| 3 o less         | 8.496       |
| 4-6              | 2.504       |
| 7-9              | 948         |
| 10-12            | 359         |
| 13-15            | 167         |
| > 15             | 42          |
|                  | 12.516      |

#### areaDUM, streets with highest demand

- Streets with more un/loading operations are located in the Eixample, where there is a greater concentration of tertiary activities and where most of the un/loading areas are located. It is noteworthy that 7 streets realise more than 800 operations per day.
- Around 84% of streets where DUM areas are located (472) have registered less than 100 operations a day.

| Streets with more operations of un/ loading |               |            |            |            |          |  |  |  |  |
|---|---------------|------------|------------|------------|----------|--|--|--|--|
| 1000 - 800                                  | 800 - 600     | 600 - 400  | 400 - 200  | 200 - 100  | < de 100 |  |  |  |  |
| CÒRSEGA                                     | GRÀCIA        | MARINA     | 31 STREETS | 43 STREETS | 472      |  |  |  |  |
| PROVENÇA                                    | CASANOVA      | BAILÉN     |            |            |          |  |  |  |  |
| ARAGÓ                                       | ONSELL DE CEN | C. BORRELL |            |            |          |  |  |  |  |
| VALÈNCIA                                    | ARIBAU        | BRUC       |            |            |          |  |  |  |  |
| MALLORCA                                    | CATALUNYA     | CALÀBRIA   |            |            |          |  |  |  |  |
| DIPUTACIÓ                                   |               | MUNTANER   |            |            |          |  |  |  |  |
| ROSSELLÓ                                    |               |            |            |            |          |  |  |  |  |



# areaDUM, 2016 cf. 2017 operations by day of the week

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#### areaDUM, some observations

Implementing APP-based regulation has facilitated the operation of goods un/loading in the City of Barcelona.

Data analysis is a specialised task:

- Different data sub-sets
- Data protection issues can complicate data assembly

The APP data analyses identify general patterns

- some may be "known" from other datasets (e.g.: intensity of operations by time of day) – but by generating big data the APP adds details (e.g. aids selection of month to examine)
- and some are new (e.g.: each day, one third of the delivery vehicles only make one delivery operation)

Additional insights were achieved by including the user type (from the registration profile) in the dataset.

#### areaDUM, some observations

- The digitalization of the process has generated large amounts of data that facilitates a quantification of an activity that was, previously, largely unknown.
- In a dense city like Barcelona public space is a premium. It is very helpful to know which zones are hardly used (space that could be dedicated to other mobility users) as well as those zones where operators' demand exceeds service supply.
- The consultant was not able to compute values of average stay duration. Until the system can do this, it is difficult to see how a reservation service could be implemented.
- Other value-added services are configurable: changes in stay by time of day, restrictions during pollution episodes... and work on this is expected to form part of SUMP 2019-24.

### Thank you for your attention!

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