

PPP FOR CITIES CASE STUDIES

BARCELONA TELECARE PROGRAM (SPAIN)



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Francesc Trillas, Joan Enric Ricart & Jordi Salvador

With the collaboration of Ajuntament de Barcelona

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Quick Facts

Highlights

The Barcelona City Council telecare program was set up in 2013 to replace the state telecare program developed by the Imserso,^a which was expiring.

The objective of this program is to improve elderly people's living standards by providing users with telematic and face-to-face care. With this care, the program tries to reduce the problems caused by any delays in providing help when there is a health emergency.

Each telecare user has a device at home that directly calls the telecare provider's headquarters at the press of a button. Telecare professionals answer any calls, evaluate the situation and arrange a response. The service has a team of mobile units available that can be sent to the user's house to evaluate the situation or even solve the emergency, if it is not very serious. The telecare worker calls emergency services if he or she detects that the problem is serious or if this is considered necessary after the mobile unit's evaluation.

Location: Barcelona, Spain

^a The Imserso (Instituto de Mayores y Servicios Sociales, or Institute for the Elderly and Social Services) is a Spanish government body in charge of elderly and dependent people.

Characteristics of the public-private partnership (PPP) contract

Type of project: Supply and operation of services

Size and scope: Active monitoring of elderly people living alone in Barcelona (around 90.000)

Delivery mode: Operations and maintenance (O&M)

Maximum budget for contracted service: €0.55 per person per day (€20,075,000 for 2013 and 2014)^a

Maximum budget for provision of terminals: €1,170,372.50 per year^b

Award amount: €0.4576 per person per day (€20,075,000 for 2013 and 2014)^c

Estimated value of the contract: €42,474,769.24

Contract announced: September 21, 2012

Contract awarded: November 21, 2012

Start of operation: January 1, 2013

End of contract: December 31, 2016

Payment method: The daily service is paid monthly

Duration: Two years after contract has been signed plus year-long extensions up to a maximum of two years

Contracting authorities: Area of Social Rights. Barcelona Municipal Institute of Social Services

^a The contract was signed for two years (2013 and 2014), with the possibility of an extension for two more years (2015 and 2016). In the case of an extension, the total maximum budget of the service would be €40,150,000.

^b The budget for 2013 and 2014 is €2,340,745, with the amount being the same for 2015 and 2016 in the case of an extension. The total annual budget would remain the same in the bidding but the number of telecare devices would increase by 1,200.

^c The maximum expenditure remains the same because the contract sets the price per user but not the number of users. Initially it was thought there would be around 50,000 users of the devices but, with the fall in cost per user, Social Services decided to increase the number of users.

Bid-winning company

Bid-winning company: UTE Televida-Tunstall (a UTE is a “unión temporal de empresas,” an ad hoc tendering consortium or temporary joint venture)

1. Background of the Project

2. Overview

The main objective of the telecare program is to increase the well-being of elderly people. The program tries to achieve this objective by reducing the delay between when an accident happens and when help arrives.

The telecare system provides users with two communication devices. All users have a landline phone device with which, at the press of a button, they can call the telecare service headquarters directly. They also have a remote control unit (RCU), with which they can activate the landline device to get this to call the telecare service headquarters. Thanks to this system, the Barcelona telecare service headquarters is immediately aware of a user's emergency call for help and is able to coordinate a suitable response. This response may involve sending a mobile telecare unit to the user's home.

The main objective, when the program was designed, was to improve the living standards of elderly people by reducing the delay in getting them help. However, an unexpected externality appeared: users' mental health improved thanks to the sense of safety that telecare gave them.

The tasks assigned to the telecare program concessionary were:

- Installing the devices in users' homes
- Carrying out maintenance calls to users to ensure everything works well
- Attending to calls received from the terminals
- Sending a mobile unit to a user's house if necessary
- Looking after the house keys of users who ask for this. This service allows the telecare professionals to enter without delay to the users' homes without delay in emergencies

From the point of view of Department of Social Services of the Ajuntament de Barcelona, there were several benefits to using this framework:

- The capacity of the private companies to grow quickly and to be flexible in dealing with increasing numbers of people in a few years
- The capacity of private companies to innovate in new technology
- The dynamism of private companies in tackling different scenarios

The history of telecare services in the city of Barcelona can be divided into two different periods. The first started in 2005, when the Barcelona City Council decided to join the Imserso telecare program, and ended in 2012, when the Imserso, under the pressure of economic conditions, decided to stop contributing to the program. This marked the beginning of the second period, in which the Barcelona City Council started the Barcelona telecare program.

In 2012, the city council announced a two-year telecare contract with a possible extension of up to two years, to start a program for Barcelona. This contract, won by the joint venture UTE Televida-Tunstall, started in 2013 and finished at the end of 2016 after the two-year extension. During the final year of the contract, the city council announced a new contract for three years plus an extension of up to two years. This new contract was won by Tunstall Televida, the result of a merger of the two firms that made the UTE Televida-Tunstall.

This study focuses on the contract awarded to the UTE Televida-Tunstall in 2012 for the period from 2013 to 2016. This was the first one to be done completely by the city council and, as a result, it was designed specially to fulfill the particular needs of Barcelona residents.

Despite the inconvenience caused by the Imserso program ending, the decentralization of the service could be seen as an opportunity. The decentralization of the program would allow each region to develop its own telecare program, specially designed to fulfill the needs of its residents. Such needs differ, depending on the size of the city, the time it takes the telecare mobile units to arrive at a user's house and the time it takes to reach the nearest hospital.

In big cities, elderly people do not have problems with the time needed for help to arrive nor with the time needed to travel to the hospital. In sparsely populated rural areas, however, the main problem is the time it takes for help to arrive and the time needed to travel to the hospital.

Therefore, with the decentralization of the service, we would expect the telecare to be adapted to users' specific needs. Then we would expect increased monitoring of users who live in a big city such as Barcelona. In rural areas, meanwhile, we would expect the telecare mobile units to be spread out throughout the territory, in order to minimize the intervention time. Therefore, the new decentralized system could be regarded as an opportunity to better map out the specific needs of each population group.

The Barcelona telecare system is the successor of the Imsero program, so the conditions for joining the Barcelona service follow the Imsero guidelines. Users must be in one of the following categories:

- Those aged at least 75 and living alone
- Those aged at least 75 and living with someone who is also 75 or older
- Those aged at least 75 who spend most of the day alone
- People with a health problem that means Social Services regard them as requiring special care

The Barcelona telecare system has three different types of user, depending on the service they receive and the user's physical and psychological condition:

- Service account holder: This is the first person in the house who joins the program, having fulfilled the conditions
- User with a remote control unit: Once one of the occupants of the house is in the program, when a second person fulfills the conditions for joining the program, the second person receives another remote control unit for use with the previously installed landline device

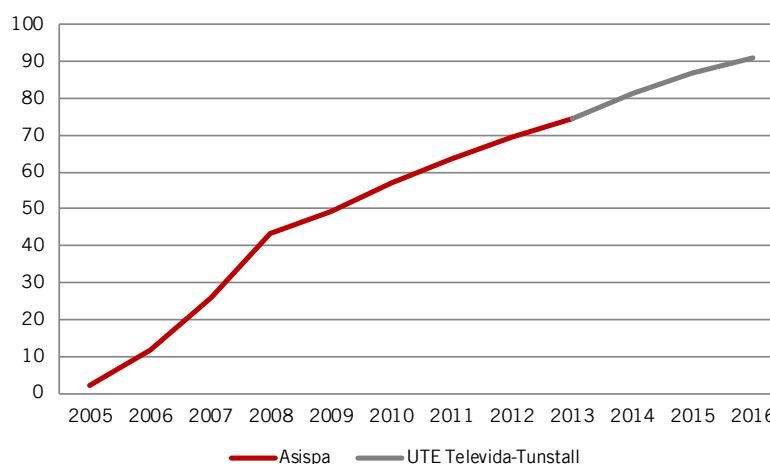
- Users with no remote control unit: These are users who live with a service account holder and fulfill the conditions for being in the program but not for having a remote control unit. They are generally people with mental health problems

Therefore, every user has in his or her home a landline device and at least one remote control unit. The landline device is designed so the user simply presses the help button to call the telecare service headquarters directly. The remote control unit is a small device carried around the user's neck and its main function is to get the landline device to call the telecare service. Once the button on the unit is pressed, the landline device calls the telecare professionals, alerting them to the emergency.

As the remote control unit lacks a speaker or microphone, it may appear to be a problem when the user needs help while in a room other than the one where the landline device is installed. In that case, when the device calls the telecare central services, the microphone and speaker of the landline device start working immediately. This allows the professionals to listen to what is happening in the house and try to find out what the emergency is. If no response is heard from the user's house, the telecare workers send a mobile unit to clarify what is happening.

Looking first at how the service has evolved, we can see in Figure 1 how the number of users has continued to increase between 2005 and 2016.¹

Figure 1. Number of users (thousands)



Source: Document provided by the Ajuntament de Barcelona

¹ The service provider counts the number of users as being the number of different Barcelona residents who have received the service, not the daily average number of users during the year.

In 2005, when Barcelona joined the Imsero telecare program, the institute chose the NGO Asispa as the concessionaire for the city of Barcelona. This NGO, founded in 1980 and specializing in care for the elderly, started the program in the middle of 2005 with 1,904 users. The number of users grew very quickly, totaling 69,586 users in 2012. The period from 2005 to 2012 can be divided into two subperiods. In the first one, from 2005 to 2008, the annual growth rates were especially high.² In the second subperiod, from 2009 to 2012, the annual growth rates were mostly in double figures³ – still high but lower than in the first subperiod.

In 2013, the UTE Televida-Tunstall, after winning the tender process, started to provide the service, taking over all the resources of Asispa. At this time, the number of users continued to grow.⁴

² The growth rate was 525% for 2005 to 2006, 116.5% for 2006 to 2007 and 68.4% for 2007 to 2008. (The average annual growth rate from 2006 to 2008 was 236.61%.)

³ In this subperiod, the growth rates were 13.6% between 2008 and 2009, 15.5% between 2009 and 2010, 11.6% for 2010 to 2011 and 9.6% for 2011 to 2012. (The average annual growth rate from 2008 to 2012 was 12.56%.)

⁴ The growth rate was 6.9% from 2012 to 2013, 9.2% from 2013 to 2014, 6.8% from 2014 to 2015, and 6.79% from 2015 to 2016. (The average annual growth rate from 2012 to 2016 was 6.95%.)

With the new concessionaire, the growth rates were reduced from an annual average of 12.56% in the 2008-2012 period to 6.95% in the 2013-2016 period. This could be due to the departure of the project founder Imsero or because the project reached a saturation point when the growth in users meant there was a reduction in potential beneficiaries.

3. Tender Process

In September 2012, the Barcelona City Council published the project specifications and the tender process documentation.

Three firms, which fulfilled all the necessary conditions, made an offer. Those firms were the UTE SARquavita-e-Eulen Servicios, the UTE Televida-Tunstall and the NGO Asispa.

The bidding was evaluated as shown in Table 1, divided into two parts. Objective criteria represented 60% and value judgment criteria the remaining 40%.

Table 1

| POINT DISTRIBUTION | | |
|-------------------------|---|------------|
| Objective criteria | Mobile unit response | 10 |
| | Additional devices | 7 |
| | Additional remote control units | 1 |
| | Financial offer | 42 |
| Value judgment criteria | Improvement to the devices at no cost ^a | 10 |
| | Improvements to the transfer process ^b | 10 |
| | Improvements to communication between Social Services and the concessionaire ^c | 6 |
| | Improvements to the home visit procedure ^d | 4 |
| | Improvements to the monitoring mechanisms ^e | 6 |
| | Improvements to the security and safeguarding of keys ^f | 4 |
| TOTAL | | 100 |

^a This criterion took into account improvements to the telecare devices whereby, at no additional cost to the city council, they would be adapted for users with special problems.

^b This refers to improvements to the plan for transferring from the old concessionaire to the bid-winning firm.

^c This criterion considers improvements to communication between Social Services and the telecare service headquarters.

^d The telecare service coordinators have to visit users considered to be at greater risk. So this criterion considers the increase in the number of visits and the topics to discuss with users during those visits.

^e This relates to improvements to the city council's connection to the telecare service database.

^f The telecare concessionaire's duties include looking after the keys of users who ask for this. Points are given for improvements to the system's security.

Source: Document provided by the Ajuntament de Barcelona.

Table 2

| OBJECTIVE CRITERIA | | |
|---------------------------------|--|--------|
| | Mobile unit response time | Points |
| Standard | 60 | |
| UTE SARquavitae-Eulen Servicios | 30 | 10 |
| UTE Televida-Tunstall | 30 | 10 |
| Asispa | 40 | 6.67 |
| | Free additional devices | Points |
| UTE SARquavitae-Eulen Servicios | 1,200 | 7 |
| UTE Televida-Tunstall | 1,200 | 7 |
| Asispa | 1,200 | 7 |
| | Free additional devices for communication difficulties | Points |
| UTE SARquavitae-Eulen Servicios | 50 | 1 |
| UTE Televida-Tunstall | 50 | 1 |
| Asispa | 50 | 1 |
| | Financial offer | Points |
| Standard | €0.55 | |
| UTE SARquavitae-Eulen Servicios | €0.47 | 37.27 |
| UTE Televida-Tunstall | €0.46 | 42 |
| Asispa | €0.48 | 32.55 |

Source: Document provided by the Ajuntament de Barcelona.

As can be seen in Table 2, the most important criterion was the financial offer. The bidding started at €0.55 per user per day, from which point the bidders had to propose lower prices. The bidder with the lowest price got 42 points and the others received points in proportion to the difference between their offers and the best one.

In the mobile unit response section, the bidders had to bid down the time needed to arrive at the user's house – down from the tender's initial response time of 60 minutes. As with the financial offer criterion, the lowest

bid got the maximum points and the others a proportional amount. For example, Asispa bid a time that was 33% higher than Televida-Tunstall's and so Asispa got 33% fewer points.

The city council added two sections to increase the number of devices available. So, a bidder would get seven points for a bid involving the administration of 1,200 normal devices at no extra cost to the council and one point for a bid including 50 special devices for people with communication problems.

Table 3

| POINT DISTRIBUTION OF THE VALUE JUDGMENT CRITERIA | | | |
|--|-----------------------|--------|-----------------------|
| | UTE Televida-Tunstall | Asispa | UTE SARquavitae-Eulen |
| Improvements to the devices at no cost | 7.5 | 6.3 | 5.5 |
| Improvements to the transfer process | 9.25 | 9.75 | 8.5 |
| Improvements to communication between Social Services and the concessionaire | 2.5 | 5.75 | 4 |
| Improvements to the home visit procedure | 1.75 | 4 | 2.75 |
| Improvements to the monitoring mechanisms | 5 | 4 | 4.25 |
| Improvements to the security and safeguarding of keys | 3 | 3.75 | 1.5 |
| | 29 | 33.55 | 26.5 |

Source: Document provided by the Ajuntament de Barcelona.

Likewise, the bidding firms got points for subjective improvements to the contract conditions. The two most important parts were improving the functionality of the devices and improving the transfer of the service from the old to the new concessionaire, at no extra cost to the council. Each of those criteria provided a possible 10 points. Thanks to its experience in building telecare devices, the UTE Televida-Tunstall won the most points for the criterion of improving the devices. Asispa won the most points for the service transfer criterion. This

was probably because it was already providing the service and so it was not necessarily much of a transfer.

When the points for the subjective criteria were added up, Asispa was the firm with the most points. This was principally thanks to the higher number of points that it obtained compared with the UTE Televida-Tunstall for the criterion of improvements to communication with Social Services as well as the user visit plan.

The final point ratings for the projects were:

Table 4

| TOTAL POINTS | | | |
|----------------------------------|----------------|--------------------|-------|
| | Value judgment | Objective criteria | Total |
| UTE SARquavita-e-Eulen Servicios | 26.5 | 55.27 | 81.77 |
| UTE Televida-Tunstall | 29 | 60 | 89 |
| Asispa | 33.55 | 47.22 | 80.77 |

Source: Document provided by the Ajuntament de Barcelona.

Despite the fact that Asispa, which had been providing the service during the Imsero period, had more points for the value judgment criteria, it was the UTE Televida-Tunstall that won the bidding thanks to its better financial offer.

this technology to provide telecare services. The first bidding process in which this new pairing appeared – at that time in the form of the UTE Televida-Tunstall (a special-purpose vehicle or SPV with 95% of its capital being from Televida and 5% from Tunstall) – was for the Barcelona telecare contract.

4. Internal Project Characteristics

4.1. Members of the Bid-Winning Team

Televida has been a leading company in the sector of telecare and elderly care in Spain since 1994. Before the merger, the company had 1,000 clients, taking into account autonomous communities, Imsero and city councils, and it helped 125,000 users throughout Spain 24 hours per day, 365 days per year.

Tunstall is part of the Tunstall Healthcare group, a top global firm for the provision of services, software development and the manufacturing of telecare hardware and communication systems for hospitals. Tunstall Healthcare has more than 3.6 million users and has a presence in 51 countries.

In 2011, following its internationalization and vertical integration strategy, Tunstall Healthcare – a leader in the provision of telecare technology – started the merger with Televida, a firm specializing in using

Driven by the good results of the Televida-Tunstall pairing and the business possibilities that were opening up in the telecare field, the merger process concluded in 2013, leading to the setting up of Tunstall Televida, the new national leader in the provision of telecare services and technology.

Tunstall Televida has a 32% share of the Spanish telecare market, with more than 245,000 users. Tunstall Televida has 1,200 employees, 540 of whom are home care professionals and 350 of whom have a university degree.

In the telecare technology market, Tunstall Televida is the leader in Spain, where it provides 60% of the technology used for telecare. This includes the provision of services and that of the technology to users using another company's services in Andalusia.

4.2. Payment Method

The telecare program is completely funded by the city council. Through Social Services, it pays €0.44 per day per user to the UTE Televida-Tunstall. This amount is paid monthly to the concessionaire, which, in line with how the project is run, accepts the charge.

4.3. Finance

The UTE Televida-Tunstall was created in 2012 to provide a telecare service to the city of Barcelona. In this SPV, Tunstall Healthcare represented 5% of the capital and Televida the remaining 95%.

The UTE was set up with capital of €3,000 and a factoring contract with La Caixa, a leading Spanish financial institution.

Finally, the main source of financing of the SPV was intercompany loans and factoring. The latter was particularly important due to the special requirements of the telecare service, such as the vehicles for the mobile units and the office tools needed to deal with the users.

4.4. Risk Transfer

The theory of public-private partnerships (PPP) states that proper risk assessment and distribution are crucial factors to ensure success in the provision of service when using this kind of contract. The scholarly literature⁵ has often argued that risk should be transferred to the party that can manage it best. Conversely, risk should not be transferred to an agent if that agent has no ability to reduce it or manage it.

However, optimal risk transfer in a PPP contract requires a prior evaluation of each of the parties incentives – often monetary incentives – to carry out the tasks assigned to it.

- **Design of the service risk:** This risk was mainly assumed by UTE Televida-Tunstall, which in the bidding process improved the functionality of the devices and monitoring mechanism at no extra cost

to the administration. Any responsibility derived from that, either in terms of extra cost or service-related problems, would be borne by the concessionaire.

- **Financing risk:** This risk was assumed by the Area of Social Rights and UTE Televida-Tunstall. The former was in charge of buying the electronic devices. The latter had to buy the necessary equipment (including mobile units), design the key storage system, and adapt the facilities to provide the services according to the requirements of the contract.
- **Operations and maintenance risk:** This risk was borne by both the public authority and the concessionaire. The concessionaire had to provide the service as detailed in the contracts, including response time, and any deviation from that could lead to penalties. Moreover, the public authority was responsible for both the maintenance and proper functioning of the devices.
- **Demand risk:** This risk was shared between the public authority and the concessionaire. The concessionaire was paid a fixed rate per user, regardless of whether the users were urban or rural (though these represented different provision costs) and irrespective of their actual use of the service. The company bid according to estimates of actual use of the service. Any deviations from these estimates, in terms of actual use or area of use, could affect the concessionaire's business estimates.
- **Political risk:** Political risk was borne by the private concessionaire, as there was a risk of public sector intervention, such as changes in regulations or in the service provision conditions, which could affect profitability of the project.

Table 5

| RISK ALLOCATION | |
|------------------------|---------------------------------------|
| Type of risk | Allocation |
| Design of the service | UTE Televida-Tunstall |
| Financing | Social Rights / UTE Televida-Tunstall |
| Operation & management | Social Rights / UTE Televida-Tunstall |
| Demand | Social Rights / UTE Televida-Tunstall |
| Political | UTE Televida-Tunstall |

Source: Document provided by the Ajuntament de Barcelona.

⁵ Contract theory studies how economic actors manage the clauses of contracts, usually in the presence of asymmetric information. This theory states that risk should be allocated to the party that can control the source of the risk and therefore is better able to absorb it (Engel, Fischer, and Galetovic, 2014)

4.5. Governance

Three agents are involved in the project. On the one hand, there are the public authorities. These comprise the city council – which is founding the project – and

Social Services, the contracting authority. On the other hand, there is the concessionaire, the UTE Televida-Tunstall, which is providing the service. This structure is represented in the illustration below.

Figure 2



Source: Prepared by the authors

The key relationship in this contract is that between Social Services, as the city council department in charge of the service, and the concessionaire. This relationship has two main components:

- **Payment.** Social Services pays the concessionaire every month according to the number of daily users of the service. The payment is €0.44 per day per user.
- **Monitoring.** Social Services has access to the concessionaire's intranet in order to find out how the service is working in real time. In addition, Social Services carries out surveys to find out if the data supplied by the concessionaire are correct and to discover what the users think in order to find possible ways of improving the service.

To clarify possible problems and stay informed about the progress of the service, Social Services and the concessionaire have monthly meetings. It is at those meetings that possible breaches of the contract are dealt with. The relationship does not involve any external authority or board, as is common in a PPP.

4.6. Future contract

The analyzed contract was ending in the fall of 2016. In February 2016, Barcelona Social Services started a new tender process for a three-year contract with an extension of up to two more years. This contract was awarded to Televida Servicios Sociosanitarios ("Televida Public Health Services"), the SVP created by Tunstall Televida, the result of the merger of Televida and Tunstall Healthcare. As the new contract has started when preparing this case of study, it seems logical to introduce some of the characteristics of this new contract that improves the quality of the service.

4.6.1. Features of the New Contract

The new contract had two main innovations compared to the one for the 2013-2016 period. The new contract introduced the provision of telecare devices and the segmentation of the user population depending on people's particular needs.

With the introduction of device provision in the tender process, Social Services transferred the risk of the devices to the concessionaire. Thanks to this change, now the concessionaire had more of an incentive to build more robust devices and to carry out proper maintenance.

Social Services also decided to create three different user segments:

- **Segment 1:** Users have basic telecare assistance with the device and the mobile unit and receive a telecare call every 45 days to monitor their developments.
- **Segment 2:** Users have basic assistance plus a peripheral device, such as a smoke detector, which will depend on each user's needs. In addition, due to their greater monitoring needs, these users receive a call from the telecare provider's headquarters every 30 days.
- **Segment 3:** Users have basic assistance plus two peripheral devices and a monitoring call every 15 days. In addition, to assess their needs better, they have a yearly visit from telecare professionals.

Thanks to this segmentation of the user population, the service can be adapted to the specific needs of each group.

4.6.2. Tender Process

Six firms took part in the tender process. In the first round, the firms had to demonstrate they had enough experience and financial capabilities to carry out the service. In the second round, the bidders had to present an offer.

The offer was divided into two parts:

- **The financial offer:** The bidders had to offer a daily care price per user and a price for each of the different devices that were going to be used by the telecare users. This part of the offer was to be evaluated in the objective criteria.
- **Road map:** The bidders had to set out a proposed program of visits to each user's home, the subjects to be dealt with in those meetings and in phone calls, a transfer plan for the service, etc. These factors were to be evaluated using the value judgment criteria.

In Table 6, we can see the points awarded for the objective criteria. Those criteria represent 51% of the points in the tender process. To obtain the most points, bidders had to bid down the cost of daily care and of the devices. The appendix contains a detailed explanation of the criteria.

We can see that the winner was Televida with 46.83 points for the objective criteria.

In addition to the financial offer, the bidders had to set out a road map for the project. This involved seven different criteria. The points obtained by each bidder for these criteria are shown in Table 7. Explanations of all the criteria are in the appendix.

The bidder with the most points was Televida, which also got the most points for the objective criteria. It obtained the most points in six out of the seven value judgment criteria.

Table 6. Points awarded for objective criteria

| BIDDER | SERVICE | FIXED DEVICE | RCU | DETECTORS ^a |
|------------------------------------|---------|--------------|------|------------------------|
| Televida Serv. Sociosanitarios SLU | 42.5 | 0.65 | 0.6 | 3.08 |
| UTE Asispa Igon CEE SL | 39.23 | 0.65 | 0.18 | 2.31 |
| UTE SARquavitae Eulen | 29.81 | 1.33 | 0.6 | 5 |
| Servicios de Teleasistencia SA | 27.79 | 2.5 | 0.6 | 5.4 |
| Ilunió Sociosanitario SA | 24.33 | 0.26 | 0.24 | 1.23 |
| Spanish Red Cross | 0 | 0 | 0 | 0 |

^a To simplify matters, we have included the bid proposals for detectors such as smoke, gas and motion detectors in a single category.

Source: Document provided by the Ajuntament de Barcelona.

Table 7. Points awarded for value judgment criteria

| BIDDER | 2A | 2B | 2C | 2D | 2E | 2F | 2G | TOTAL |
|------------------------------------|-------|-----|------|-----|------|------|------|-------|
| Televida Serv. Sociosanitarios SLU | 15 | 12 | 6 | 6 | 4 | 4 | 1.75 | 48.75 |
| UTE Asispa Igon CEE SL | 9.75 | 9.6 | 4.91 | 4.5 | 2.25 | 1.75 | 2 | 34.76 |
| UTE SARquavitae Eulen | 12.25 | 7.2 | 6 | 4 | 2.25 | 2 | 1.25 | 34.95 |
| Servicios de Teleasistencia SA | 6.75 | 6 | 3 | 2.5 | 2 | 1.75 | 0.25 | 22.25 |
| Ilunió Sociosanitario SA | 9.5 | 6 | 4.09 | 2.5 | 2.75 | 2.25 | 0.75 | 27.84 |
| Spanish Red Cross | 6 | 3.6 | 2.73 | 1.5 | 1.5 | 2 | 0.5 | 17.83 |

Source: Document provided by the Ajuntament de Barcelona.

Therefore, Televida was the bidder with the most points in both sets of criteria. Table 8 shows the point totals obtained by the bidders in both sections.

With 95.58 points – 18.46 points more than the second-place bidder – Televida won the tender process

and with it the 2017-2019 contract. In July 2016, Televida was awarded the new contract, which took effect on January 1, 2017. The contract is due to end on December 31, 2019, with the possibility of a two-year extension.

Table 8. Points awarded for both sets of criteria

| TENDERS | VALUE JUDGMENT | OBJECTIVE | TOTAL |
|------------------------------------|----------------|-----------|-------|
| Televida Serv. Sociosanitarios SLU | 48.75 | 46.83 | 95.58 |
| UTE Asispa Igon CEE SL | 34.76 | 42.36 | 77.12 |
| UTE SARquavita Eulen | 34.95 | 36.74 | 71.69 |
| Servicios de Teleasistencia SA | 22.25 | 32.89 | 55.14 |
| Ilusión Sociosanitario SA | 27.84 | 26.06 | 53.9 |
| Spanish Red Cross | 17.83 | 0 | 17.83 |

Source: Document provided by the Ajuntament de Barcelona.

5. External Project Characteristicss

5.1. Economic Conditions

The Spanish economy was hit by the financial crisis that started in 2007 but, in the beginning, the effects on the Spanish economy seemed to be relatively superficial. However, all this changed in 2008 when Spanish financial institutions started having problems. The situation became even worse when European institutions decided to change the strategy to confront the crisis, changing from Keynesian expansive measures to expansionary fiscal contraction ones, starting with an austerity program.

This change in monetary and fiscal policy affected the telecare project in 2012 when Spain's newly elected government decided to develop a shock austerity plan. Among the budget cuts, the government decided to reduce the Imsero budget. At the same time, the Imsero decided, in line with its priorities, to focus on other programs that it considered more important, so it ended its involvement in the telecare program.

5.2. Legal / Legislative Conditions

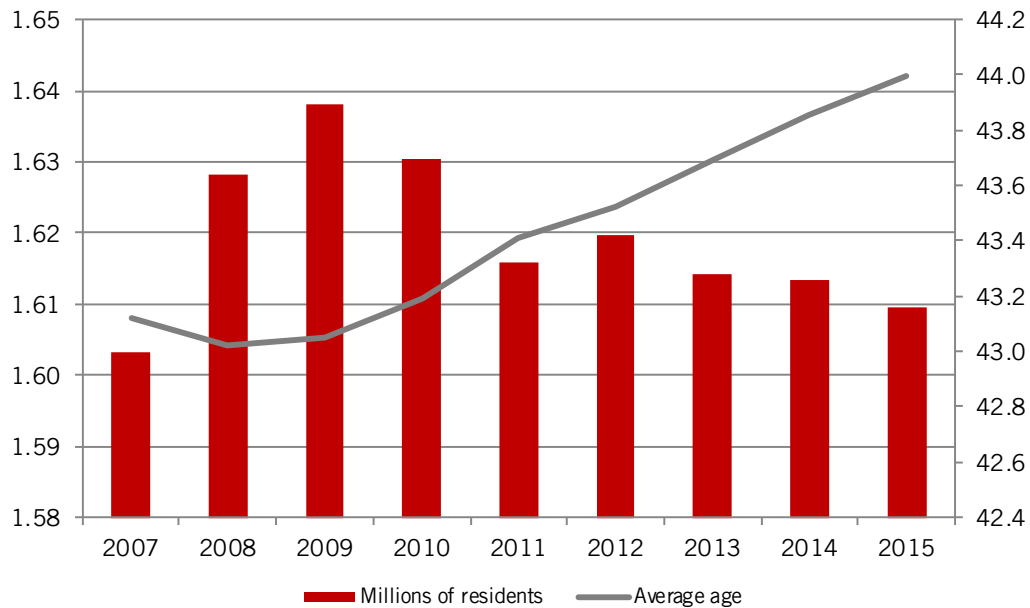
The contract is governed by the regulations applying to Barcelona City Council's public-sector contracts and general administrative clauses.

The tender deal was set out as a special contract in accordance with article 19.1 b) of Royal Decree/Law 3/2011, of November 14, By Which the Consolidated Text of the Public-Sector Contract Law Is Adopted.

5.3. Social / Civil Conditions

Barcelona is the second largest city in Spain, with around 1.6 million residents. In Figure 3, we can observe a clear growth trend in the average age of the population. In the period between 2008 and 2015, the population's average age rose by about a year.

Figure 3. Evolution of the Barcelona population



Source: Document provided by the Ajuntament de Barcelona.

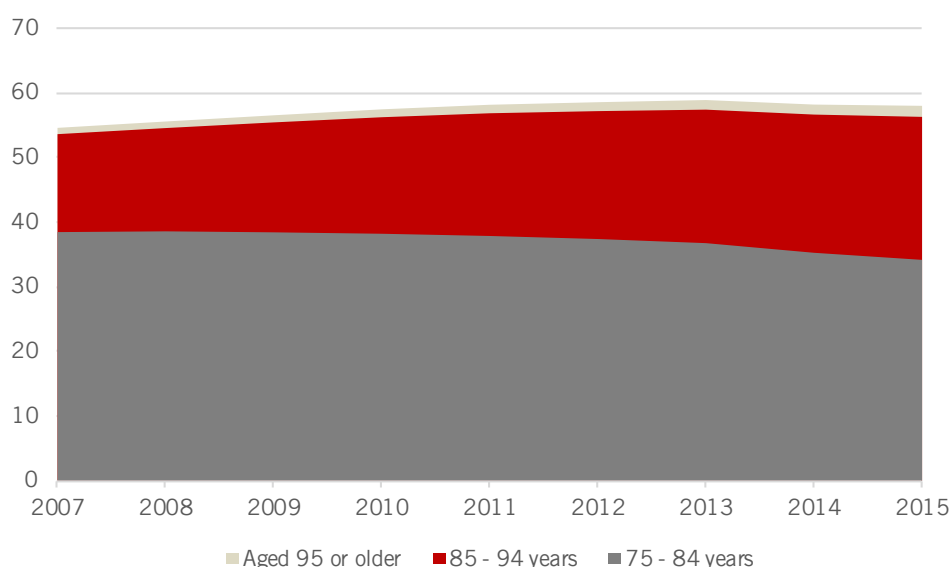
In Figure 4, we can see how the number of elderly people who live alone has grown in the past few years. This makes a public response to this new demographic situation even more necessary.

Analyzing the graph, we can see that the number of people living alone and aged between 75 and 84 fell between 2007 and 2015. In the same period, the number of people aged 85 or older and living alone grew. So, we can see that the growth in the number

of older residents living alone has been produced by the growth in the older strata of the population more generally.

Those in the second age group, aged 85-94, are the most likely to have some kind of problem. Usually, such people start living alone because they have been widowed, so they feel alone. In addition, due to their advanced age, they start needing more and more help.

Figure 4. Number of residents who live alone (thousands)



Source: Document provided by the Ajuntament de Barcelona.

5.4. Political Conditions

The contract was awarded on November 21, 2012, and operations started on January 1, 2013, under a city government led by the CiU (a conservative liberal, Catholic and Catalan nationalist alliance). On May 24, 2015, there were local elections, which were won by Barcelona en Comú (Barcelona in Common), a social-democratic platform. The change of government, however, had no effect on the contract performance due to the stable institutional framework existing in Spain. The strong institutions and existing rule of law in the country allowed for a smooth transition of the city government.

improved users' daily lives. The survey conclusion is that users' feelings of security and families' peace of mind increase as feelings of loneliness decline thanks to this service.

The telecare service has improved the quality of life of users' families. To analyze the benefits of the service, we will use data from the Social Services surveys of 2013, 2014, 2015 and 2016. In the 2015 survey, 86.6% of the questions were answered directly by users, 9.6% by the users' families and the remaining 3.8% by others outside the families.

We have pointed out that improving users' health and their feelings of security was one of the most important points when it came to starting this service. We can see in Figure 5 how this objective has been fulfilled.

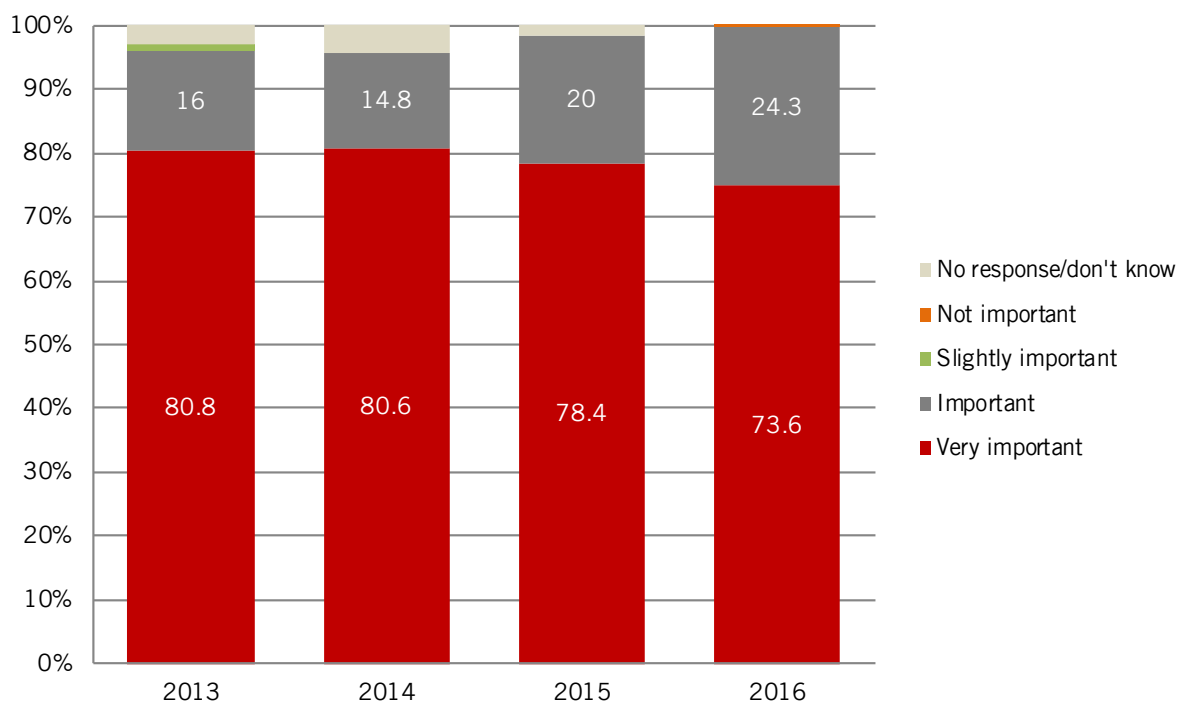
6. Benefits of the Project

6.1. For the City's Residents

Thanks to the survey carried out annually by Barcelona Social Services, we can observe how the service has

Users were asked the question: How important to you is feeling secure? As can be seen in Figure 5, more than 95% of users consider this outcome to be important or very important. Most users consider this the most important part of the service.

Figure 5. Importance of feeling secure

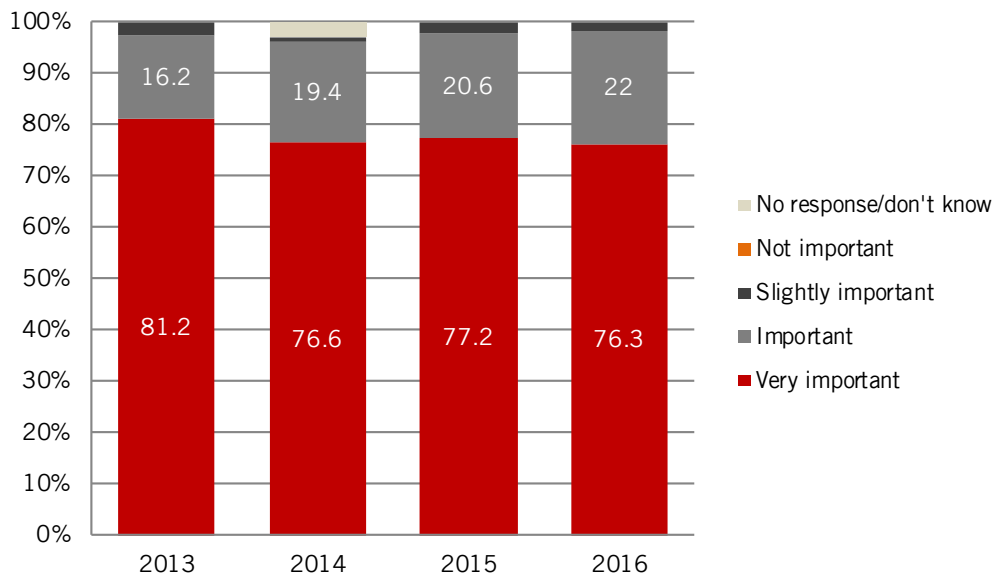


Source: Document provided by the Ajuntament de Barcelona.

There was a similar result with the question about the peace of mind provided to users' families. When those interviewed were asked about the importance they

gave to the peace of mind that the service provided to their families, 90% of them said they considered it to be important or very important.

Figure 6. Families' peace of mind



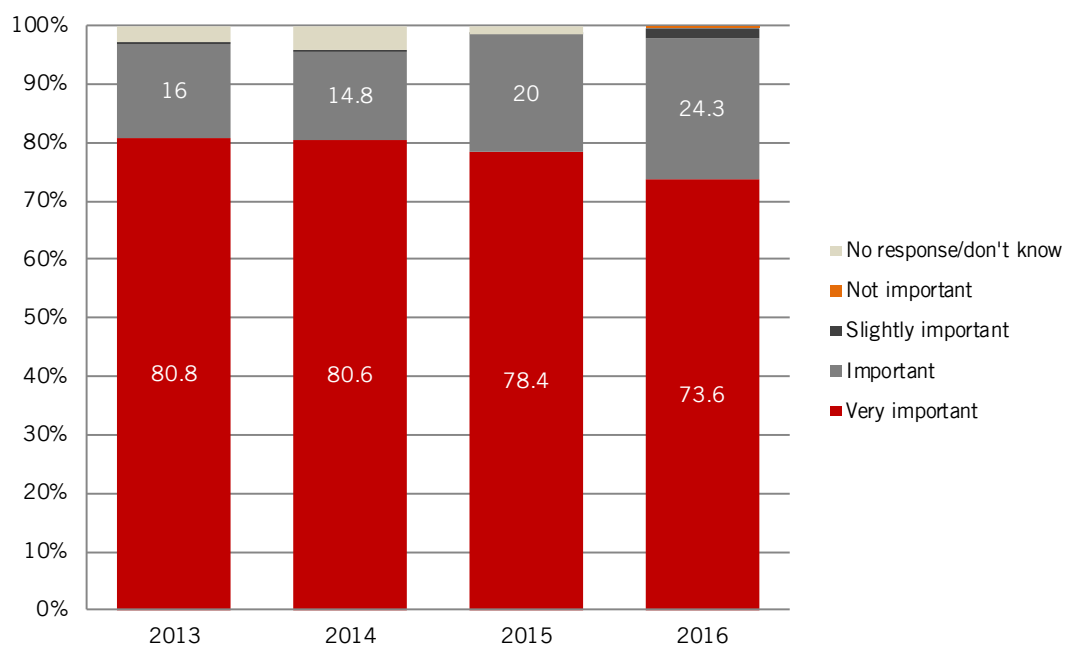
Source: Document provided by the Ajuntament de Barcelona.

Therefore, two of the main objectives of the service have been accomplished. Unfortunately, no study has been done on the telecare program's influence on reducing health problems among the elderly.

We spoke earlier about the service leading to improved mental health due to reduced feelings of loneliness. When asked about the importance that they gave to the

reduction of feelings of loneliness due to the service, 90% of them considered it to be important or very important. However, in contrast to the cases discussed previously, the proportion of those interviewed who considered it to be very important fell seven points during the period studied.

Figure 7. Feelings of loneliness



Source: Document provided by the Ajuntament de Barcelona.

Therefore, we could interpret the survey results as showing that users are very satisfied with the service and that the project's initial measurable objectives have been achieved. In addition, when people were asked what they would like to improve, the most

common answer was nothing in the 2013, 2015 and 2016 surveys and no response/don't know in the 2014 one. We can draw the conclusion that users are happy with the current service as they see *no need* to improve any part of it.

Table 9. What users would change

| | 2013 | 2014 | 2015 | 2016 |
|--|-------|-------|-------|-------|
| No response/don't know | 35.4% | 47.0% | 40.8% | 37.0% |
| Nothing | 52.8% | 42.4% | 47.4% | 49.9% |
| Something else | 1.4% | 3.4% | 3.2% | 1.3% |
| Better information about the service | 0.6% | | | |
| The doctor would come instead of family | 1.2% | 0.4% | 0.8% | 0.4% |
| Changed design of the remote control unit | 0.8% | 0.4% | 0.6% | 0.5% |
| Being accompanied on the visit to the doctor | | | 0.2% | 0.5% |
| More frequent calls | 2.2% | 0.4% | 1.8% | 0.6% |
| Professional care | | | | 0.8% |
| Improved remote control unit functionality | | | | 0.8% |
| The ring produced by the device | 0.8% | 0.2% | 1.0% | 1.0% |
| Receiving more visits | | 0.8% | 0.6% | 1.6% |
| Faster care | 2.0% | 2.8% | 1.2% | 2.5% |
| Coverage outside the home | 2.8% | 2.2% | 2.4% | 3.1% |

Source: Document provided by the Ajuntament de Barcelona.

6.2. For the Contracting Authority

The contracting authority (Social Services) took advantage of a private partnership structure instead of a direct service. This structure was expected to be more dynamic and have a greater capacity for innovation than a publicly owned firm. This view has been confirmed by the service provider's capacity to grow quickly and the introduction of software and

organizational innovations that have allowed the firm to reduce its unit cost. This cost reduction was passed on to the contracting authority in the new contract, signed in the fall of 2016 and due to take effect on January 1, 2017. In the new contract, the assistance price has fallen from €0.46 per user per day to €0.2826 per user per day (including VAT). This is a reduction for Social Services of almost 40% of the daily user cost.

Table 10. Number of users looked after, by district and year

| | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|--------|--------|--------|--------|--------|
| Ciutat Vella | 3,728 | 3,720 | 4,042 | 4,173 | 4,275 |
| Eixample | 11,672 | 11,904 | 13,251 | 14,137 | 14,798 |
| Sants-Montjuïc | 7,658 | 8,184 | 8,870 | 9,450 | 9,890 |
| Les Corts | 3,216 | 3,720 | 3,965 | 4,305 | 4,433 |
| Sarrià | 3,856 | 4,464 | 4,595 | 5,107 | 5,499 |
| Gràcia | 5,123 | 5,208 | 6,071 | 6,405 | 6,656 |
| Horta-Guinardó | 7,706 | 8,184 | 9,213 | 9,943 | 10,510 |
| Nou Barris | 9,707 | 10,416 | 11,166 | 11,804 | 12,374 |
| Sant Andreu | 6,247 | 6,696 | 7,501 | 8,068 | 8,542 |
| Sant Martí | 10,673 | 11,904 | 12,632 | 13,449 | 14,020 |
| Total City | 69,586 | 74,400 | 81,306 | 86,841 | 90,997 |

Source: Document provided by the Ajuntament de Barcelona.

In Table 10, we can see how the number of users grew in all districts of the city in the period considered. Remember that 2012 was the final year using Asispa, the old concessionaire, so this is a reference period that can be used to test the behavior of the UTE Televida-Tunstall as the concessionaire. The small increase in the Ciutat Vella district is noteworthy, with the number of users growing by 14.67% between 2012 and 2016. The next lowest increase was in the Eixample district, with a 26.78% increase between 2012 and 2016.

On the other hand, the districts with the highest growth in the number of users were Horta-Guinardó (36.39%), Sant Andreu (36.74%), Les Corts (37.84%) and Sarrià (42.61%).

In Table 11, we can see how the increase in the number of users has been distributed across age groups.

Despite the fact that being 75 or older is the main requirement for joining the program, usually the entry

Table 11. Number of users by age

| | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|--------|--------|--------|--------|--------|
| Below 60 years | 1,263 | 1,289 | 1,484 | 1,587 | 1,655 |
| 60-64 years | 987 | 684 | 841 | 893 | 985 |
| 65-69 years | 2,106 | 1,689 | 2,128 | 2,160 | 2,179 |
| 70-74 years | 5,386 | 4,462 | 5,520 | 5,508 | 5,871 |
| 75-79 years | 13,708 | 10,820 | 13,063 | 13,680 | 13,448 |
| 80-84 years | 21,107 | 21,381 | 24,024 | 25,105 | 26,010 |
| 85 or older | 25,029 | 34,075 | 34,246 | 37,908 | 40,849 |
| TOTAL | 69,586 | 74,400 | 81,306 | 86,841 | 90,997 |

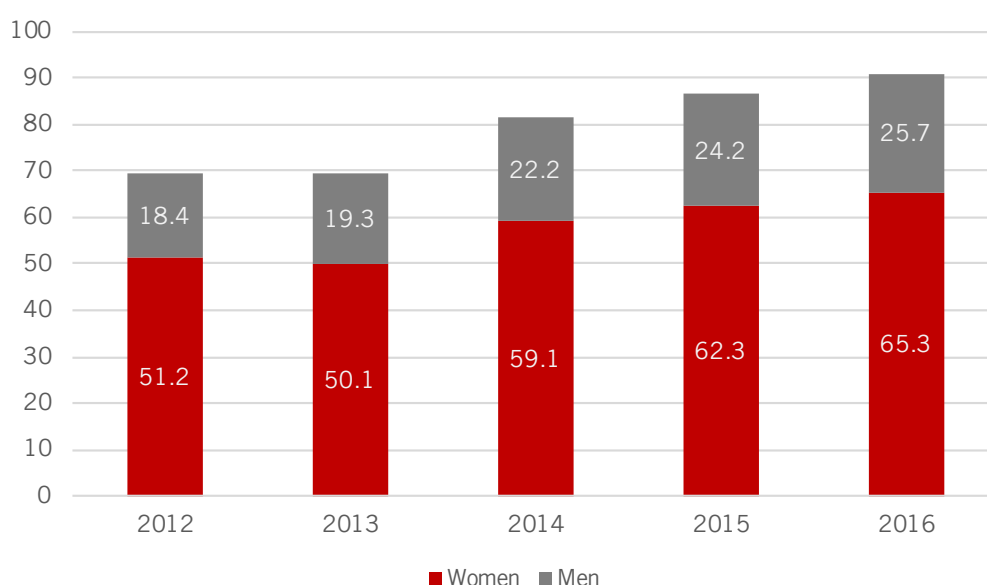
Source: Document provided by the Ajuntament de Barcelona.

age is considerably higher. This can be explained by people still feeling safe at the age of 75 and it not being until some years later that they start thinking about systems such as telecare. So, it is normal for between 86% and 89% of users to be older than 75. In this age group, the highest growth is among users aged 85 or older, where the number of users grew by 63.21% between 2012 and 2016. It is important to note the growth in users below 60 years of age. Those users represent only between 1.7% and 1.8% of total users but the number grew by 31.04% during the period in question. The least numerous group, that of users aged between 60 and 64 years old, fell by 0.2% in the

period considered. It is important to note that users younger than 75 are introduced to the service at the special request of Social Services.

Finally, probably because of the asymmetric life expectancy between genders, the users of the telecare service are principally women. Women make up between 72% and 74% of total users of the service, leaving men at around a quarter of total users. As can be seen in Figure 8, these proportions were maintained during the period studied.

Figure 8. Number of users by gender (thousands)



Source: Document provided by the Ajuntament de Barcelona.

Table 12 shows the evolution of the number of calls and the reasons for them.

Table 12. Reasons for alarm calls

| | 2012 | 2013 | 2014 | 2015 | 2016 |
|--------------------|---------|---------|---------|---------|---------|
| Asking for help | 60,321 | 49,480 | 70,713 | 80,074 | 87,627 |
| Communicating data | 348,464 | 212,924 | 408,183 | 407,955 | 396,777 |
| Tracing | 266,403 | 312,178 | 190,716 | 160,301 | 156,556 |
| TOTAL | 675,188 | 574,582 | 669,612 | 648,330 | 640,960 |

Source: Document provided by the Ajuntament de Barcelona.

Calls asking for help in the period considered comprised around 10% of total calls. Calls for communicating data were the most numerous in 2012, 2014, 2015 and 2016.

In 2013, however, the most numerous type was tracing calls, made to find out whether the service was working properly.

When a user calls asking for help, the telecare worker who takes the call has to analyze the situation and

coordinate the response to the emergency. The telecare service has mobile units available to attend to a user's emergency if it is not very serious. However, if the telecare worker sees that the situation is serious, he or she will call medical services directly and, if necessary, send the mobile unit with the house keys. Table 13 shows the evolution of the number of mobile unit interventions during the period of interest.

Table 13. Mobile unit interventions

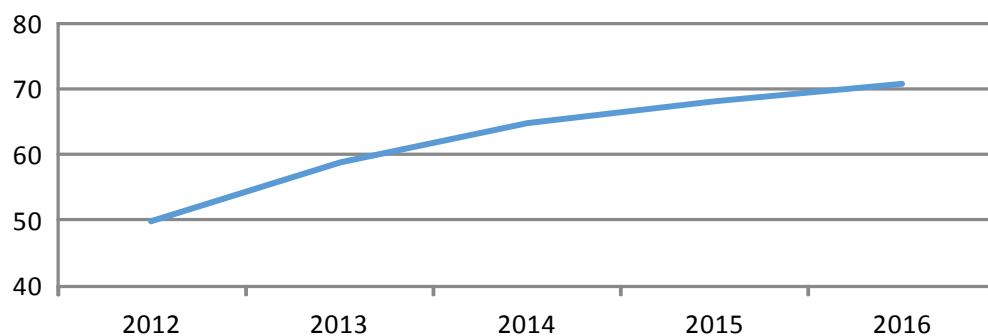
| 2012 | 2013 | 2014 | 2015 | 2016 |
|-------|-------|--------|--------|--------|
| 4,594 | 6,484 | 10,759 | 11,510 | 11,117 |

Source: Document provided by the Ajuntament de Barcelona.

As we can see by comparing tables 12 and 13, only a small proportion of calls for help result in the mobile units being sent out. Such interventions happened in 7.62% of cases in 2012, 13.1% in 2013, 15.22% in 2014, 14.37% in 2015 and 13.27% in 2016.

Finally, we have plotted the evolution of the number of devices in the Barcelona telecare service. In 2012, when the UTE Televida-Tunstall started providing the service, there were 49,869 devices in the service. Then the number of devices grew by 41.86% between December 31, 2012, and the same date in 2016.

Figure 9. Telecare devices (thousands)



Source: Document provided by the Ajuntament de Barcelona.

6.3. For the Bid-Winning Companies

The bid-winning company produces the devices used in the service and provides the service in many of Catalonia's cities and towns. This means the company has two synergies. Firstly, it has a synergy because it both produces and uses the machines. So it can produce devices that better fit with its objectives and the needs of its telecare service. Secondly, as it is providing the service in a large part of Catalonia, it has a synergy because the same logistics center that it uses for Barcelona can be used for the towns close to the city. So it can reduce its infrastructure costs and carry out the same service at a lower price.

7. Evaluation

7.1. PPP Methodology

This PPP is the result of a contract between Barcelona City Council's Social Services and a special-purpose vehicle resulting from the joint venture of a Spanish firm specializing in elderly care and a multinational firm. The objective of the contract is to provide and operate a service involving devices that make immediate contact possible between old people who live on their own and Social Services. The current operator won a contract in 2012 for the period from 2013 to 2016 and it won the concession again in 2016. Prior to 2013, the service had been provided by a project involving the city council, the Spanish central government social services organization Imserso and an NGO that operated the contract.

Compared to other PPPs, this is a short contract. The reason is probably that the amount to be invested is a small proportion of the project's overall cost, which is mostly a management cost. However, there is a bundling component, in the sense that the devices that make communication possible between the elderly and Social Services are also provided by the operator. So the operator has an interest in developing and providing devices that will later facilitate the maintenance and operation of the project. Incentive theory principles suggest that contract provisions should enable the operator to take a whole-life approach to minimize the joint costs of developing the fixed assets (in this case, the devices) and operating the service.

However, it must be taken into account that the project (elderly telecare) is not new as such. What changed in 2012 was that the Spanish government's

agency Imserso ended its involvement in the project for budgetary reasons. These reasons related to the austerity measures taken as a result of the financial and sovereign debt crisis of 2008 to 2011. In the years before this change, the operator of the service was an NGO, which also submitted a bid when the project moved to being provided locally in 2012. However, the new project's tender was won by a new for-profit operator.

It would be interesting to compare the performance of a PPP involving the city council and a joint venture between a Spanish firm and a multinational (which later merged), on the one hand, and a project that involved the city council, the central government and an NGO. For such a comparison, we would need data going back further than 2012 and probably would need to wait for further years of evidence in the future. In principle, an NGO contributes its intrinsic preferences, which may be useful in a sector where the profit motive may provide perverse incentives in the trade-off between cost minimization and service quality. However, a well-run for-profit firm with a multinational dimension may have access to better technology. This may be the main advantage of the for-profit operator. It is not a convincing argument to say that a private for-profit operator will be more dynamic for certain and better able to react in emergencies or to unforeseen circumstances, because firefighters, armies and ambulances are typically in the public sector and seem to be very dynamic and able to react quickly in emergencies.

One strength of the project is that, despite its short experience so far, it has already survived two important political changes in the Barcelona City Council, which changed its mayor in 2011 and again in 2015. The project change in 2012 does not seem to be related to local changes but to budget changes at the central government level. However, there are apparent governance deficits, to the extent that, although the project seems to have good supervisory mechanisms, it lacks a unit or board of public control that meets regularly and transparently in the presence of diverse stakeholders.

There is also perhaps room for improvement in the tender process. It seems that, after a prequalifying phase, the accepted project bids are simultaneously evaluated according to a number of objective parameters (mainly, the price) and several parameters that are judged or evaluated by the public body. Since the type of service that is provided is very self-contained and easy to define and monitor, perhaps it would be more appropriate to include all the criteria that are subjective and based on judgment in the prequalifying bid and leave all the

objective criteria for the final phase. Since there is the risk that only one firm will make it to the final phase, a possible option would be to open the bidding again to new firms if this scenario were to materialize.

Overall, it is a very interesting project that has been functioning for a while. Its structure has evolved in accordance with budget conditions and the identity of available bidders but has always been based on the participation of several public and private units.

Table 14

| BARCELONA GIX | | |
|--|-----------------------|---------------------------|
| PPP METHODOLOGY | EXISTING | DETAILS |
| 1. Procurement method and bidding process | | |
| 1.1. Value for money analysis or cost-benefit analysis | | |
| 1.2. Real competition for the contract | Yes | 3 bidders |
| 1.3. Tender evaluation committee | Yes | Internal |
| 2. Contractual issues and incentives | | |
| 2.1. Bundling | Yes | DBFOT |
| 2.2. Quality verifiable | Yes | Via surveys |
| 2.3. Externalities | Yes | Positive |
| 2.4. Duration | | 2 + 2 years |
| 3. Risk, finance and payments | | |
| 3.1. Construction and operation risk | Not transferred | |
| 3.2. Demand risk | Transferred | |
| 3.3. Policy and macroeconomic risk | Partially transferred | Renovations |
| 3.4. Payment mechanism | | Number of users + devices |
| 3.5. Special-purpose vehicle (SPV) | Yes | UTE Televida-Tunstall |
| 4. Governance | | |
| 4.1. Transparency | Yes | |
| 4.2. Participatory decision-making process | Yes | |
| 4.3. International/external monitoring | Partially | Monthly |
| 4.4. Legal framework | Yes | |
| 4.5. Distribution of tasks | No | |
| 5. Construction process | | |
| 5.1. Cost overrun | No | |
| 5.2. Delayed deadlines | No | |
| 6. Potential Benefits | | |
| 6.1. Possible price certainty | Yes | |
| 6.2. Transfer of responsibilities to private sector | Yes | |
| 6.3. Scope and incentives for innovation | Yes | |
| 6.4. Savings in public payments | | |
| 6.5. Life-cycle approach | | |
| 6.6. Incentive to be on time | | |

Source: Prepared by the authors.

7.2. United Nations Sustainable Development Goals

If we try to link this social service program with the UNSDG we can find that some of the goals can be achieved thanks to it. Therefore, Goals 3 (Good health & well-being), 10 (Reduction of inequalities), 11 (Sustainable communities) and 17 (partnerships) can clearly be related to this social program.

Starting the analysis with Goal 17, it is clear that without a private partner, this service will be hard to implement, due to the complexity of the services (a hybrid service with a call center and social services workers are crucial), and due to the use of technology. Both realities cannot be faced by the public sector by itself, and probably, the private sector is more efficient in providing the call center and the technology services.

In general terms, Goals 3 & 10 are reached by the essence of the public services related to that project. By deploying a service that guarantees a fast reaction to injuries suffered by elderly people, it clearly increases their health and well-being (goal 3). Moreover, the free of service clearly reduces the inequality of the elderly.

A derivative or a consequence of those goals is the reinforcement of the communities where this service

is deployed, as, the elderly that are in risk of social exclusions can be reintegrated in their communities, therefore improving a more sustainable community.

Besides these high impacts, the telecare service has a moderate impact in other UNSDG, such as Goals 1 (No poverty), 5 (Gender equality), 8 (Decent work and economic growth) or 9 (Industry, innovation & infrastructures).

Goals 1 & 5 can be a consequence of reaching goal 10, as thanks to reducing inequalities, the telecare service can detect situations of risk of poverty, for the case of Goal 1. For Goal 5, as the majority of the users of this service are women, it clearly improves gender equality.

Goal 8 can be reached due to the fact that the workers included in the telecare services are hired by a company that is hired by the City Hall, who demands correct conditions for the workers hired by outsourcing companies (such as Televida-Tunsall). Of course, the stability of work increases the consumption of the workers, therefore, increases economic growth.

Finally, Goal 9 is reached thanks to the improvements on the devices used for the telecare service. As seen in the oncoming contract, the use of ICT in the devices has improved the services, and can be replicated to other services.

Table 15

| SUSTAINABLE DEVELOPMENT GOALS | BARCELONA TELECARE SERVICE | |
|--|----------------------------|-----------------|
| | HIGH IMPACT | MODERATE IMPACT |
| 1. No poverty | | ✓ |
| 2. Zero hunger | | |
| 3. Good health and well-being | ✓ | |
| 4. Quality education | | |
| 5. Gender equality | | ✓ |
| 6. Clean water and sanitation | | |
| 7. Affordable and clean energy | | |
| 8. Decent work and economic growth | | ✓ |
| 9. Industry, innovation and infrastructure | | ✓ |
| 10. Reduced inequalities | ✓ | |
| 11. Sustainable cities and communities | ✓ | |
| 12. Responsible consumption and production | | |
| 13. Climate action | | |
| 14. Life below water | | |
| 15. Life on land | | |
| 16. Peace, justice and strong institutions | | |
| 17. Partnership for the goals | ✓ | |

Source: Prepared by the authors.

7.3. City Strategy

There is a clear need for this service as the population of older people living alone in Barcelona is slowly increasing and this service provides good value to increase social cohesion in the city. Furthermore, we have seen that PPP is a good instrument for this project and have been used in an effective way. Finally, the deployment has been quite effective starting with an NGO financially supported by the State and moving into a private provision when public sources dried up with the crisis. Of course not all has been perfect in these dimensions but the overall evaluation is positive. Perhaps the right question is what can be improved as a city project?

1. This project is well defined and requires low levels of investment. Therefore the controls is relatively simple, not needing a complex

governance structure, contracts are short in time and innovations can be incorporate with each new tender. However, to use well this control mechanism it could be useful to define some measures of final performance really measuring not just general satisfaction but incorporating measures of real impact beyond people connected. Time of service, life saved, emergencies effectively solved, other conflicts detected, etc. The idea is to stablish measure that allow us to learn and develop a better service in the next tender.

2. With the adequate measures one can evaluate different things and create proposals. For instance, does it make sense to move to mobile technology so that elderly people can be connected always at home or in the streets, as well as being able to communicate with the central point in any circumstance?

3. Can we connect this service with others for the same segment of population, for instance Vincles? Can we get better integration with complementary services as health or social services? All this means focusing with the elder people as the center of connected services.
4. Other type of integration can facilitate the operation of the service, for instance connecting with traffic

of Barcelona or the weather service, special events in the city,... All this can help efficiency in the back office of the service while previous point focuses on the front office of it.

The combination of points above could allow a smart learning, but requires and contributes to the smart governance of the city.

Table 16

| SMART CITY EVALUATION | BARCELONA TELECARE SERVICE | |
|--------------------------------|----------------------------|-----------------|
| | HIGH IMPACT | MODERATE IMPACT |
| 1. Human capital | | ✓ |
| 2. Social cohesion | ✓ | |
| 3. Economy | | ✓ |
| 4. Public management | | ✓ |
| 5. Governance | | ✓ |
| 6. Mobility and transportation | | |
| 7. Environment | | |
| 8. Urban planning | | |
| 9. International impact | | |
| 10. Technology | | ✓ |

Source: Prepared by the authors.

8. Conclusions

We could say that the project as a whole has been successful, as has the relationship between the private firm and the public service in particular. The only flaw in the contract is in the part about the production and maintenance of the devices used in the service. The current structure could provide the firm with the wrong incentives because the same firm that supplies the devices is the one in charge of maintenance. So, it has no incentive to improve the devices in order to increase their life expectancy. This weakness has been reduced in the new contract, where the Public authority has introduced the device provision in the tender process, therefore transferring the risk of the devices to the concessionaire. Thanks to this change, now the concessionaire has more incentive to build more robust devices and to carry out a proper maintenance.

The success of the services can also be seen by the number of beneficiaries, that has increase largely since the beginning of the services. This length on the contract has also given wisdom to the public authority, that has been able to reduce by 41% the daily price per user in the new contract (2017-2019) with respect to the price of the previous contract (2013-2016), without reducing the quality of the services.

Besides these contractual specifications, we can consider this PPP contract as a People-First PPP, as it has a clear added value in the living conditions of elderly people living in loneliness in urban areas. As the forecast point that the 21st century will be the century of cities, with almost 70% of world's inhabitants living in cities, PPPs such as the telecare services are crucial to maintain the quality of life and the cohesion and sustainability of communities where fragile citizens with risk of social exclusion, such as lonely elderly people live.

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10. Appendix

In the objective criteria of Table 6:

- Payment. Social Services pays the concessionaire every month according to the number of daily users of the service. The payment is €0.44 per day per user.
- The criterion with the highest point value is the daily care price. In this case, Social Services set a maximum price of €0.3159 per user per day and the bidders had to bid the price down. The highest number of points went to Televida, which reduced the cost by 13.99%, submitting an offer of €0.2717 per user per day.
- The telecare fixed device bid price was €107 plus VAT for each device. Servicios de Teleasistencia SA submitted the best offer, reducing the bid price by 38.56%. So it got 2.5 points for this criterion.
- The bid price of the remote control unit was €21.40 plus VAT. Three bidders reduced the price by 10%, leading to a tie between them. These three tenders each got this criterion's maximum points, 0.6 points, and the other bidders got points in proportion to how far their offers were from the winning one.
- Finally, we have included the remaining criteria under the umbrella of detectors. The detectors were divided into the following categories:
 - Smoke detectors: These had an initial price of €85.60 plus VAT. The best offer was from Servicios de Teleasistencia SA and the UTE SARquavitae Eulen, which each offered €59.92 plus VAT, thus obtaining the 3.4 points for this criterion.
 - Gas detector: The initial bid price was €85.60 plus VAT. The best offer was €77.04 plus VAT, which was submitted by Televida Servicios Sociosanitarios SLU, the UTE SARquavitae Eulen and Servicios de Teleasistencia SA.
 - Motion detector: The bid price was €69.55 plus VAT. The winning offer was €62.60 plus VAT, submitted by the same three bidders that had the best bid for gas detectors.
 - Door movement sensor: The initial price of this device was €58.85 plus VAT. The best offer was submitted by Televida Servicios Sociosanitarios SLU and Servicios de Teleasistencia SA, which each bid €52.97 plus VAT.

- Devices for users with communication problems: The initial price was €160.50 plus VAT. The best one was €144 plus VAT, submitted by the UTE SARquavitae Eulen and Servicios de Teleasistencia SA, which each obtained 0.1 points.
- Mobile telecare: The initial bid price was €160.50 plus VAT. The UTE SARquavitae Eulen and Servicios de Teleasistencia SA submitted the best bids, offering a price of €144 plus VAT.

The points for the value judgment criteria in Table 7 are divided as follows:

- 2A. This criterion evaluated improvements to how the service would be provided, depending on the special social and health needs of each user. The bidder that submitted the best road map, in this case Televida, obtained the maximum points, and the remaining bidders' points were awarded proportionally.
- 2B. This section evaluated technological improvements that were better tailored to users with special needs. Televida obtained the most points and the remaining offers got points in proportion.
- 2C. The criterion for improvements to the care and performance process evaluated the mobile units' mobilization protocols, the maintenance of the telecare devices and the handling of keys.
- 2D. Improvements to the process of taking over the service from the previous operator at the beginning of the contract and handing it over to the next operator at the end.
- 2E. This criterion evaluated improvements to support for the carers. In this respect, Social Services would try to help and inform the people providing daily care to the users of the telecare service.
- 2F. For improvements to help guarantee that users operate the remote control units appropriately.
- 2G. Finally, we have improvements to plans for mass information campaigns in response to general emergency situations or catastrophes. This criterion was the only one where Televida did not obtain the most points. The bidder with the most points for this criterion was Asispa, the first concessionaire of the Barcelona telecare service.

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