

**Evaluating Occupant Load Factors for  
Ambulatory Health Care Facilities**

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## **Acknowledgements**

The Fire Protection Research Foundation expresses gratitude to those who assisted with the development and review of the information contained in this report. The Research Foundation appreciates the guidance provided by the Project Technical Panel:

Chad Beebe, ASHE

Phil Hoge, US Army Corps. of Engineers

David Klein, US Department of Veteran's Affairs

Bill Koffel, Koffel Associates (MD)

Robert Salomon, NFPA

Rachel Miller, ARA

Ron Cote, NFPA Staff Liaison (MA)

Special thanks are expressed to the National Fire Protection Association (NFPA) for funding this project through the annual Code Fund.

The authors of this report would like to thank the collaboration of the Health Care Services of Cantabria and Madrid, the Marqués de Valdecilla University Hospital, the Santa Clotilde Hospital, and the University of Cantabria. They also express their gratitude to Dr. Arturo Cuesta and Dr. Orlando Abreu for their contributions and support of this project.

## Abstract

The NFPA 101 Life Safety Code and NFPA 5000 Building Construction and Safety Code apply the occupant load factor for business occupancies of 9.33 m<sup>2</sup>/person (100 feet<sup>2</sup>/person) to ambulatory health care facilities. It has been questioned whether this use is appropriate. As a result, we collected and analyzed data on ambulatory health care facilities in order to provide more information to the Technical Committee on Healthcare Occupancies of NFPA.

## 1. Introduction

Occupant load factor is essential to determining and calculating the means of egress required in a facility. NFPA Standards (NFPA 101, Life Safety Code and NFPA 5000, Building Construction and Safety Code) establish a unique value for an occupant load factor of 9.33 square meters/person (100 square feet/person) of gross floor area for ambulatory health care use, based on business occupancies. It has been questioned whether the occupant load factor for business occupancies is appropriate for ambulatory health care facilities. Additionally, there is an interest in making the ambulatory health care occupancy chapter completely independent of the business occupancy chapter.

According to NFPA Standards, ambulatory health care occupancy is that *used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following: (1) treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others; (2) anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others; (3) emergency or urgent care for patients who, due to the nature of their injury or illness, are incapable of taking action for self-preservation under emergency conditions without the assistance of others.* It should be noted that inside an ambulatory health care facilities there are areas very similar to those found in business facilities, such as offices, administration rooms, and even consultation rooms. However, there are also other areas that are completely different, such as operating rooms, adult day care rooms, and waiting rooms.

The goal of this project was to collect and process data regarding actual occupant loads specifically in outpatient health care environments. For this purpose, site surveys were conducted in two types of ambulatory health care environments (primary health and urgent /treatment) in the city of Santander, Spain.

## 2. Objectives

The specific objectives of the project were:

1. To develop a questionnaire to be used in any type of ambulatory health care facility. These documents should be useful for future work or new stages of this project.
2. To collect a significant amount of data through site surveys and visits to ambulatory health care facilities.
3. To statistically analyze the information.
4. To evaluate the real occupant load factor for ambulatory health care facilities.

## 3. Methodology

The methodology is divided into the following stages:

1. Contacts
2. Questionnaire
3. Data collection: Site surveys

### 3.1. Contacts

We contacted three private health care institutions and three public health care institutions in the cities of Santander and Madrid (Spain). We sent a letter to their presidents or managers explaining the aim of the project to support the NFPA Technical Committee in evaluating the current occupant load factor. After the initial contact by mail, further contact was by email and telephone. In some cases, we also had meetings with the person responsible for the facility or institution to explain in detail the scope, methodology, and required information (CAD drawings, number of staff, etc.).

The selected sample covered a wide range of different health care facilities. The response of these institutions was positive, as long as we did not disrupt the normal operation in the facility and we did not increase staff workload. One private and three public institutions agreed to participate.

The final sample consisted of 21 health care facilities of which 18 were mainly dedicated to primary health care activities and 3 to urgent/treatment care activities. In terms of area, we obtained a sample of 53 floors and 109657.49 m<sup>2</sup>. Although this report does not include data from Madrid, we look forward to collecting data in facilities in Madrid to increase the total sample.

### 3.2. Questionnaire

Originally, the questionnaire was designed to obtain an occupant load factor for each area of the ambulatory health care facility, distinguishing among common areas, consulting rooms, administration areas, emergency areas and other areas. Therefore, the questionnaire identified the gross area and number of occupants in each of these areas. Occupants were classified into different categories: medical staff, patients, companions, administrative staff, and service staff. The questionnaire also took into account age, gender, and disability of the patients.

There were various contacts between the members of the Project Technical Panel (PTP) and the GIDAI project team (via conference call and email). During a conference call, we presented the first draft of this questionnaire and preliminary results from a trial site survey. The definition of ambulatory health care facility was discussed, as well as the need to consider the total gross floor area. Later, panel members sent their comments by email, indicating that this first draft was very ambitious and that it could be impractical during the on-site surveys. Thus, the questionnaire was simplified and adjusted.

Three drafts of the questionnaire were created by GIDAI prior to settling on the final questionnaire. Figure 1 shows this document, which was approved by the members of the PTP. It is expected that this questionnaire can be used universally. Before the site survey, the questionnaire was sent to the contact person at each health care facility to provide them with an overview of data collection. However, the questionnaire was only completed by researchers of the GIDAI Group during visits. Figure 2 shows the instructions for completing the questionnaire. As Figure 2 shows, the questionnaire includes information regarding the building and the occupants per floor:

- General building information. The first part contains contact information and general data from the health care facility.
  - Name. The name of the person performing the survey.
  - Position. The position of the person performing the survey.
  - City. The city where the health care facility is located.
  - Phone. The contact telephone number.
  - E-mail. The contact email.
  - Health Care Facility name. The name of the health care facility.
  - Number of Floors. The total number of floors in the building.
  - Floor Height. The height from the ground to the ceiling (in meters).
  - Internal code. GIDAI Group used an internal code for each building/office to ensure privacy of the data.

- Date. The date the survey was completed.
- Time. The time the survey was completed.
- Occupant load density. This part of the survey collected data regarding the area of each floor and its occupancy (number of persons), discriminating between staff, companions, and patients.
  - Floor Number. The number of the floor being analyzed and its type (i.e., Basement, 1<sup>st</sup> floor, 2<sup>nd</sup> floor, etc.).
  - Gross Floor Area (GFA). The floor area in square meters according to the NFPA definition: *The floor area within the inside perimeter of the outside walls of the building under consideration with no deduction for hallways, stairs, closets, thickness of interior walls, columns, elevator and building services shafts, or other features.*
  - N° of staff. Total number of people working in the area under consideration, including medical, administrative, and service staff.
  - N° of visitors (companions). Total number of people accompanying or visiting patients in the area under consideration.
  - N° of patients. Total number of patients in the area under consideration, including both capable and incapable patients.
  - N° of capable patients. This is the number of patients capable of evacuation by themselves.
  - N° of incapable patients. This is the number of patients incapable of evacuation by themselves.
  - Type of disability. The most common type of impairment of incapable patients in the area under consideration. This is labelled as (1) physical, (2) sensory) or (3) cognitive.

This questionnaire allows collection of additional information about means of evacuation as well. It should be noted that this data and the type of disability of the incapable patients are not relevant for the occupant load factor and they are not included in this report; however, these could be useful for future projects.

- Information regarding means of evacuation:
  - N° of exits. The total number of floor exits.
  - Exit width (m).
  - Maximum evacuation distance (m).
- Remarks. This space is for including other important or relevant information.

Building General Information										
Name:.....					Health Care Facility name: .....					
Position: .....					Nº of Floors: .....		Floor Height (m): .....		Internal code: <input type="text"/>	
City: .....			Phone: .....		E-mail: .....			Date: .....		
Time: .....										
Occupant load density										
Floor Number										
Gross Floor Area										
Nº of Staff										
Nº of Visitors (companions)										
Nº of Patients										
Nº of Capable Patients										
Nº of Incapable Patients										
Type of Disability										
Nº of exits: ...	Exit 1 width (m): .....				Maximum travel distance (m): .....			Exit 2 width (m): .....		Maximum travel distance (m): .....
	Exit 3 width (m): .....				Maximum travel distance (m): .....			Exit 4 width (m): .....		Maximum travel distance (m): .....
Remarks										

Fig. 1. Questionnaire for data collection.

## METHODOLOGY TO COMPLETE THE QUESTIONNAIRE

Building General Information		
<b>Name:</b> The name of the person who is performing the survey	<b>Health Care Facility name:</b> Indicate the name of the Health Care Facility	
<b>Position:</b> Indicate which is his/her position in the company	<b>Nº of Floors:</b> Indicate the total number of floors in the building	
<b>City:</b> city in which the building is located	<b>Floor Height (m):</b> Indicate the floor height	
<b>Phone :</b> contact phone	<b>Internal code:</b> An internal code that will be filled by GIDAI	
<b>E-mail :</b> contact e-mail	<b>Date:</b> Indicate the date when the survey has been filled	
<b>Time:</b> Indicate the time when the survey has been filled		
Occupant load density		
<b>Floor Number</b>	Indicate the floor number and its type, for example basement, 1 <sup>st</sup> floor, 2 <sup>nd</sup> floor, etc.	
<b>Gross Floor Area.-</b>	Indicate the floor area within the inside perimeter of the outside walls of the building floor under consideration with no deductions for hallways, stairs, closets, thickness of interior walls, columns, elevator and building services shafts, or other features	
<b>Nº of Staff</b>	Indicate the number of people who works in the floor (medical, administrative and service staff)	
<b>Nº of visitors (companions)</b>	Indicate the number of people who goes with the patients	
<b>Nº of Patients</b>	Indicate the total number of patients on the floor	
<b>Nº of Capable Patients</b>	Indicate the number of patients capable for evacuation by themselves	
<b>Nº of Incapable Patients</b>	Indicate the number of patients incapable for evacuation by themselves	
<b>Type of Disability</b>	Indicate the most common type of impairment of incapable patients: 1 – physical, 2 – sensory, or 3 - cognitive	
<b>Nº of exits:</b> Indicate the number of building exits	<b>Exit width:</b> Indicate the width of each floor exit	<b>Maximum travel distance (m):</b> Indicate the maximum distances to each since
<b>Remarks:</b> Indicates any other information about that may be considered important or relevant		
Indicate the <b>Name and Surname</b> of the person who has signed this survey	Indicate the <b>date</b> when the survey has been signed	<b>Signature</b> of the person who has signed the survey

Fig. 2. Instructions to complete the questionnaire.



### 3.3. Data collection: Site surveys

Once the contact person accepted the requested collaboration, a date for the visit and data collection was arranged between November 2013 and February 2014.

Before the visit, the CAD/pdf drawings were ordered to facilitate the tasks of the researcher. In some cases, access to this information involved a long administrative process due to security issues and requests for signed confidentiality agreements from GIDAI. Fortunately, GIDAI Group was able to obtain CAD/pdf drawings for all facilities included in the sample. In order to obtain detailed information about the sample, the health care facilities were asked to distinguish, identify, and define the different areas and types of medical care in the CAD/pdf drawings.

The gross floor areas were analyzed according to the NFPA definition “*The floor area within the inside perimeter of the outside walls of the building under consideration with no deduction for hallways, stairs, closets, thickness of interior walls, columns, elevator and building services shafts, or other features*” (see Figure 3).

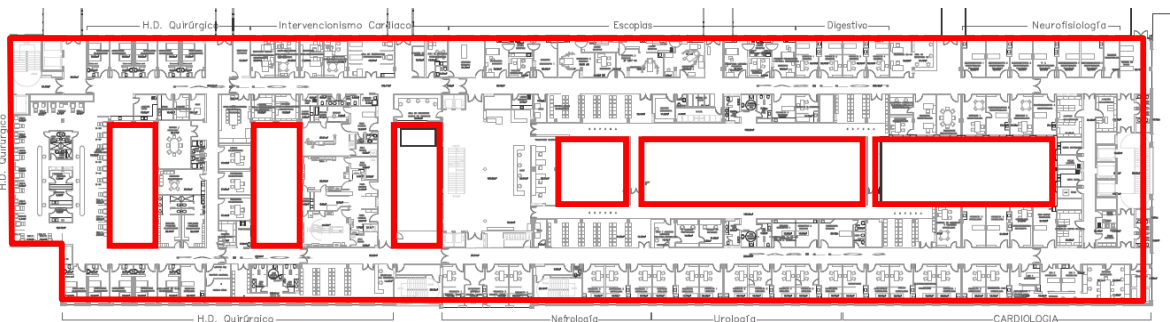


Fig. 3. Analysis of gross floor areas.

During some of the site surveys, it was necessary to use a laser meter in order to measure the actual dimensions and/or to have a reference measure.

GIDAI researchers completed the site surveys by observing different areas of the ambulatory health care facilities. They manually counted the number of people in the common areas. For private areas, such as consultation and restricted areas (treatment departments, theaters, etc.), the building coordinator or staff members were asked for the occupancy data. Sometimes, the GIDAI researchers were accompanied by a staff member, who guided them through the facility explaining the most relevant information (layout, uses, busiest days, peak hours, number of staff in each area, etc.).

In the majority of the analyzed facilities there were two or more floors dedicated to health care.

- 1 facility with one floor
- 14 facilities with 2 floors
- 4 facilities with 3 floors
- 1 facility with 4 floors
- 1 facility with 8 floors

The GIDAI researchers visited each of the selected facilities and completed the questionnaires by floor, breaking down the total occupancy in terms of staff and visitors/companions. In addition, data for each floor were collected at different times (twice or three times), when a higher number of people were forecasted to be present. These data were used later for statistical analysis, to obtain a real occupant load factor by ambulatory health care floor and time.

## 4. Results

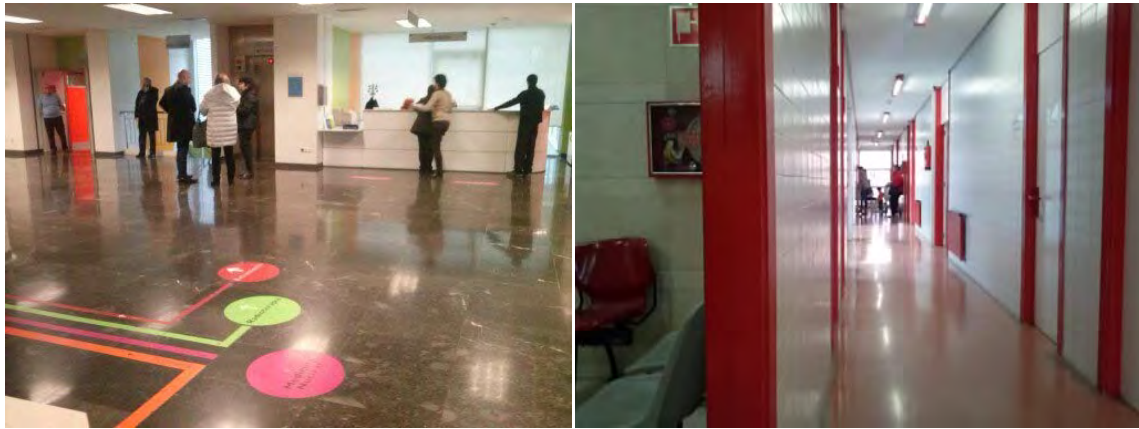
The main objective of the project was to collect and analyze data regarding the current occupant loads, specifically in ambulatory health care facilities.

### 4.1. Data collected

Data for 21 health care facilities and 53 floors at different times of the morning (twice or three times for each floor) were analyzed from site surveys. Data regarding the real number of people and gross floor area were collected. Table 5 in the Appendix shows the occupant load factors and number of people for the 148 site surveys that formed the sample.

During data collection, the Spanish population suffered a flu epidemic that caused eight deaths in Cantabria. It is likely that this epidemic precipitated an increase of people in the health care facilities, especially from vulnerable populations (children, older people, and people with breathing and heart problems).

In the ambulatory health care facilities, the researchers also observed people who required assistance for evacuation, such as older people with canes, people with crutches or wheelchairs, pregnant women, children and babies, and blind people.



*Fig.4. Data collection in health care facilities.*

Furthermore, Table 5 in the Appendix includes the main activity of the facilities, distinguishing between primary care and urgent/treatment care, both on an outpatient basis. The first offers family medicine and physiotherapy (consultation) services, and therefore can offer services to patients who access the facility with an injury or illness (physical, sensory, or cognitive), although they do not receive specialty care. The second corresponds to facilities where many patients simultaneously receive medical treatment, anesthesia, or urgent care.

Figure 5 represents the occupant load factors in  $m^2/person$  and  $feet^2/person$  of the 148 data points of the sample. The blue and red columns are the values obtained for primary and urgent/treatment health care respectively. Most of these occupant load factors are higher than the value established by NFPA Standards; only nine values are lower (6.08%).

For primary health care facilities, some data points are much higher than the rest of the data, exceeding some of them by  $60 m^2/person$  (e.g., samples 74, 78, 79, 82, and 97). The rest of the values vary approximately between 10 and  $40 m^2/person$ . This dispersion is due to some of the analyzed floors containing unoccupied enclosures (machine rooms, multi-use rooms, libraries, etc.), which resulted in higher occupant load factors.

In the case of ambulatory health care facilities, the values varied approximately between 10 and  $90 m^2/person$ . The highest values of the occupant load factor reached 140 to 144. These values correspond with an ambulatory health care facility where urgent care, medical treatment, and surgery are provided and they require more area per person. In contrast, the rest of the values correspond to ambulatory health care facilities where there are also specialist consultations, making the occupancy density higher.

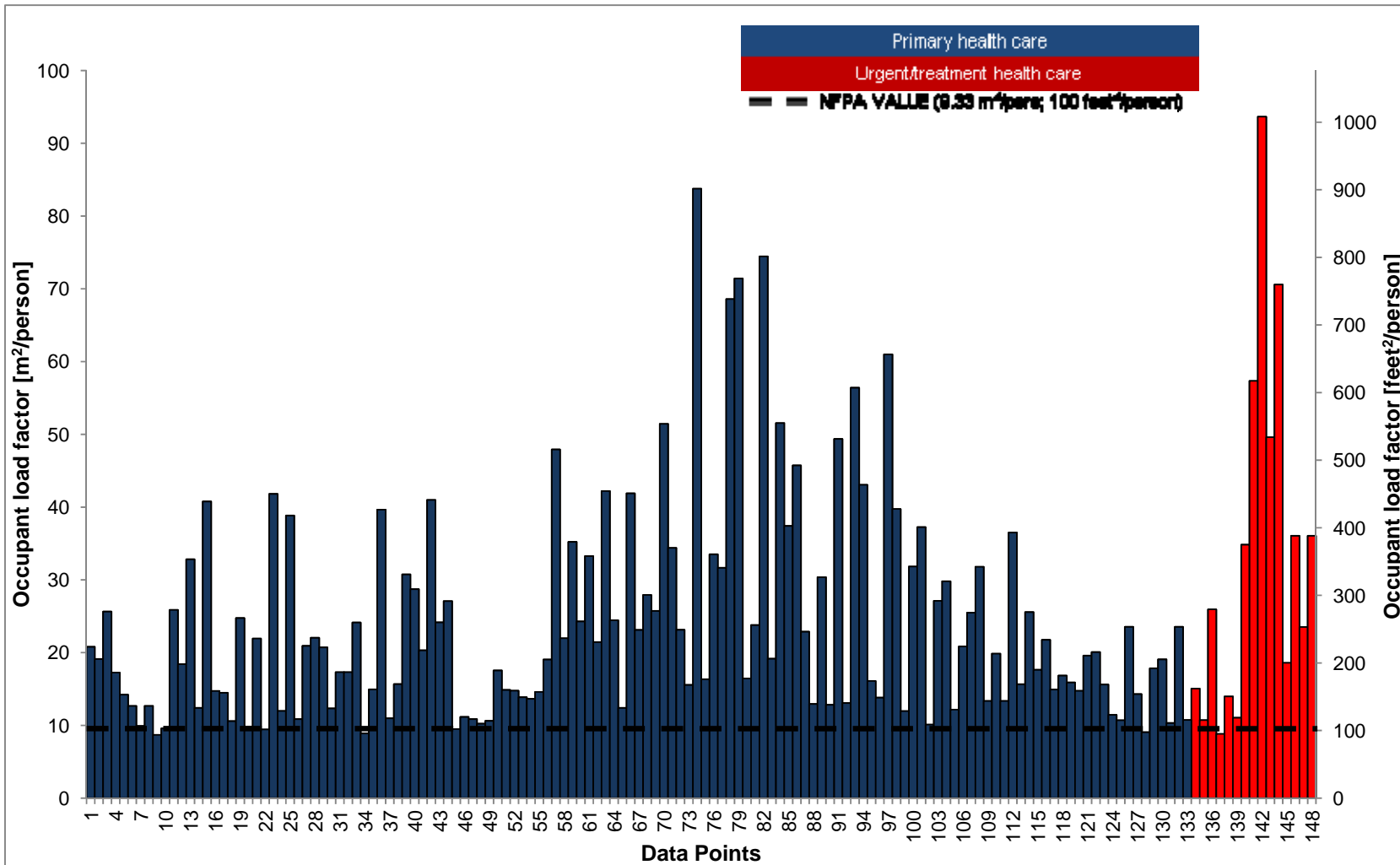


Fig. 5. Occupant load factor for ambulatory health care floors.

## 4.2 Occupant Load Factor

Two different analyses were conducted for the occupant load factor calculation. First, occupant load factors in primary health care and urgent/treatment health care were analyzed separately. Second, we examined whether the distributions of the two types of facilities came from the same population. If so, then they had the same probability distribution and could be combined and statistically analyzed to obtain an overall occupant load factor.

### Occupant Load Factor in Primary Health Care Facilities

By statistically analyzing sample numbers 1 to 132 in Table 5 of the Appendix the following Occupant Load Factor was obtained for the floors of the primary health care facilities.

OCCUPANT LOAD FACTOR (m <sup>2</sup> /person)		OCCUPANT LOAD FACTOR (feet <sup>2</sup> /person)	
Mean	Standard deviation	Mean	Standard deviation
23.93	14.45	257.58	155.54

Table 1. Occupant load factor in primary health care facilities for gross floor area.

As we can see in Table 1, the mean occupant load factor is clearly higher than the current value established by NFPA (9.33 m<sup>2</sup>/person). However, it should be noted that there is a high variability in the results (a standard deviation of 14.45 m<sup>2</sup>/person).

### Occupant Load Factor in Urgent/Treatment Health Care Facilities

A similar statistical analysis was carried out for data from the floors of the urgent/treatment health care facilities (sample numbers 133 to 148 in Table 5 of the Appendix), registering the following Occupant Load Factor (see Table 2).

OCCUPANT LOAD FACTOR (m <sup>2</sup> /person)		OCCUPANT LOAD FACTOR (feet <sup>2</sup> /person)	
Mean	Standard deviation	Mean	Standard deviation
32.28	23.80	347.46	256.18

Table 2. Occupant load factor in urgent/treatment health care facilities for gross floor area.

A higher mean occupant load factor and standard deviation were observed than in the primary health care facilities. This is reasonable given that these facilities provide medical treatment, anesthesia, and urgent care, where access is restricted and more area is necessary per person.

### Overall Occupant Load Factors

The Mann-Whitney and Kolmogorov-Smirnov tests were used to check whether the two samples came from the same population (hypothesis  $H_0$ ) or if the values of one tended to exceed the values of the other (hypothesis  $H_1$ ). The results of both tests confirmed hypothesis  $H_0$  with a level of statistical significance of 0.05. This meant that the empirical cumulative distribution functions of the two samples did not differ by location nor by shape with the given degree of certainty. This permitted the analysis of all values of the occupant load factors recorded in the site surveys as a single sample, to obtain the overall occupant load factor (see Table 3).

OCCUPANT LOAD FACTOR (m <sup>2</sup> /person)		OCCUPANT LOAD FACTOR (feet <sup>2</sup> /person)	
Mean	Standard deviation	Mean	Standard deviation
24.84	15.95	267.37	171.68

Table 3. Overall occupant load factor for gross floor area.

The results indicated that the 9.33 m<sup>2</sup>/person occupant load factor could be a conservative value compared with the mean occupant load factor of 24.84 m<sup>2</sup>/person obtained for the complete sample. Once again the standard deviation was very high (15.95 m<sup>2</sup>/person).

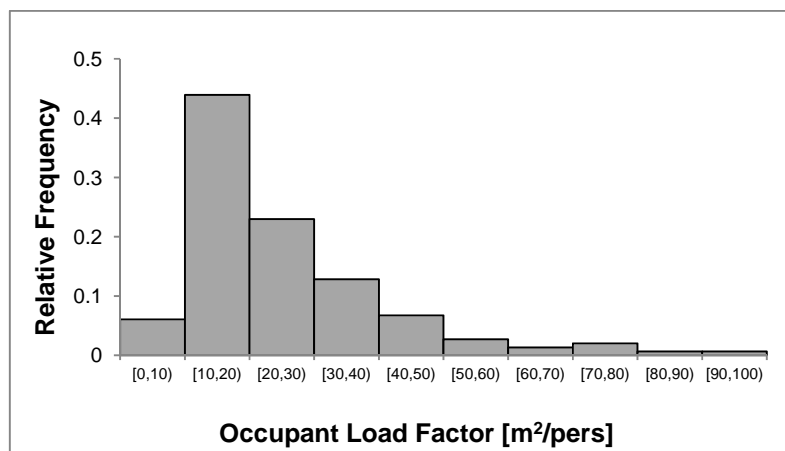
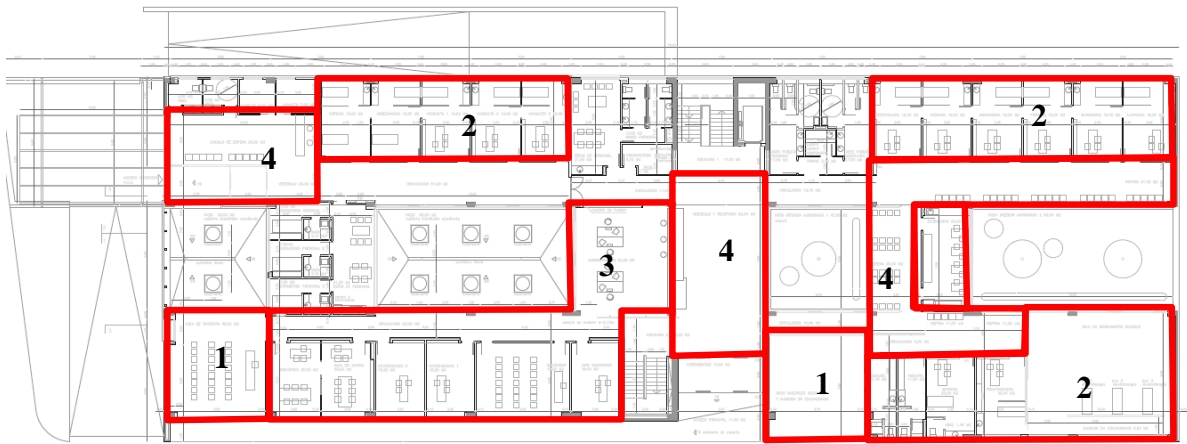


Fig. 6. Relative frequency for the occupant load factors.

Figure 6 shows the relative frequency of the occupant load factors registered. The data points are grouped in ten intervals with a wide range of 10 m<sup>2</sup>/person (107 feet<sup>2</sup>/person). We noticed that 50 percent of the data were lower than 20 m<sup>2</sup>/person (214 feet<sup>2</sup>/person), and 73 percent were lower than 30 m<sup>2</sup>/person (321 feet<sup>2</sup>/person).

## 5. Future Work

The visits to health care facilities permitted the researchers to examine the different areas that exist in a typical health care facility. Some of these areas are always empty during site surveys, such as machine rooms and multi-use rooms. (Number 1 in Figure 7), while others hold a fairly constant number of people, such as medical consultation, day care hospitals, and theaters (Number 2 in Figure 7), others are devoted to administrative use, such as admissions, and offices (Number 3 in Figure 7), and finally there are others where the number of people can be more variable and a higher occupant density is possible, such as waiting rooms and common areas (Number 4 in Figure 7).



*Fig.7. PDF drawing of a primary health care floor.*

The above findings suggest we should study the occupant load factor by considering the use of each area of the floor. With the data collected, we can obtain the patient-to-consultation ratio or visitors/companions-to-patient ratio, which would allow us to estimate the occupancy in waiting rooms and common areas.

On the other hand, it should be noted that the occupant load factors obtained for health care facilities in the collection data are real values. Therefore, there would be a lower occupant load factor if we considered all enclosures are occupied and all medical services are working a totally capacity.

## 5.1 Methodology

In most of the provided CAD drawings for each facility there is detailed information about dimensions and different uses. During visits, the researcher verified this information. The researcher also counted the number of people in each area, distinguishing between patients, companions and staff, and made note of the number of active care positions (see Figure 8).



Fig.8. Data collection in waiting rooms.

The following formulas calculate the patients-to-consultation ratio or visitors/companions-to-patient ratio for each data point in our sample. The number of patients in waiting rooms per consultation (the patients-to-consultation ratio) corresponds with Formula 1, dividing the number of patients in waiting rooms ( $N_{\text{Patients-Waiting}}$ ) by the number of active care positions ( $N_{\text{Active-Services}}$ ).

$$\text{Ratio}_{\text{Patients / Consultation}} = \frac{N_{\text{Patients-Waiting}}}{N_{\text{Active-Services}}} \quad (1)$$

Formula 2 provides the companions-to-patient ratio dividing the total number of companions ( $N_{\text{Total-Companions}}$ ) by the total number of patients ( $N_{\text{Total-Patients}}$ ) for the floor of the facility.

$$\text{Ratio}_{\text{Companion / Patient}} = \frac{N_{\text{Total-Companions}}}{N_{\text{Total-Patients}}} \quad (2)$$

These parameters can be very useful to obtain an estimate of the occupancy in areas where this can change because companions can access the patient.



## 5.2 Results

Table 6 in the Appendix presents the total number of patients in the common areas and the waiting rooms, as well as the total number of active care positions registered for each health care facility for the site surveys at different times (59 data points). With these data, we obtained the patients-to-consultation ratio ( $\text{Ratio}_{\text{Patients/Consultation}}$ ) for each item of the sample.

Similarly, the relation between the total number of companions and the total number of patients ( $\text{Ratio}_{\text{Companions/Patient}}$ ) was calculated, although in this case the sample was formed using each floor of the health care facility during site surveys (see Table 7 of the Appendix).

Table 4 shows the statistical analysis of these data, including the mean and standard deviation for each ratio.

$\text{Ratio}_{\text{Patients / Consultation}}$		$\text{Ratio}_{\text{Companions / Patient}}$	
Mean	Standard deviation	Mean	Standard deviation
1.21	0.71	0.44	0.27

Table 4. Statistical results for patient- to-consultation ratio and companions-to-patient ratio.

## Conclusions

Data were collected using site surveys for several health care floors in order to analyze the occupant load factor for ambulatory health care facilities. Two types of outpatient activities were considered: primary care and urgent/treatment care. The first corresponds to facilities where the patients do not necessarily receive special care, although patients with an injury or illness that makes them incapable of evacuation by themselves can access these facilities. The second corresponds to facilities where the patients receive medical treatment, anesthesia, or urgent care, rendering them incapable of taking action for self-preservation under emergency conditions without the assistance of others.

Data analysis showed that the samples from the two types of facilities came from the same population and therefore could be treated as a single sample. The overall occupant load factor was obtained, resulting in a mean value of  $24.84 \text{ m}^2/\text{person}$  ( $267.37 \text{ feet}^2/\text{person}$ ). This is higher than the current occupant load factor of  $9.33 \text{ m}^2/\text{person}$  ( $100 \text{ feet}^2/\text{person}$ ) required by NFPA Standards. However, the results were highly variable with a standard deviation of  $15.95 \text{ m}^2/\text{person}$  ( $171.68 \text{ feet}^2/\text{person}$ ) Furthermore, 50% of the data were lower than  $20 \text{ m}^2/\text{person}$  ( $214 \text{ feet}^2/\text{person}$ ).

It should be noted that this data collection corresponds with real values of occupant load factors in ambulatory health care facilities by gross floor area. Each gross floor area can contain enclosures with different uses or activities, such as auxiliary services (machine rooms, multi-use rooms, cafeterias, etc.), medical services (consultations, surgeries, day care hospitals, etc.), administrative services (admissions, offices, etc.) and common areas (waiting rooms, halls, etc.), where the occupant load density is very different.

This implies that there may be a lower occupant load factor for ambulatory health care facilities when all services operate, called the maximum occupant load factor. For this, the maximum number of people within different enclosures is easily obtained if the total number of medical services is known. However, the maximum number of people in common areas is not so easily obtained because of the variability in the number of companions and the number of patients waiting for assistance.

We also obtained the patients-to-consultation ratio and visitors/companions-to-patient ratio. The results were a mean value of 1.21 and 0.44 respectively. These parameters can be useful to calculate the total number of people in the areas where companions can access the patient.

## Appendix

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	Number of People				Gross Floor Area (m <sup>2</sup> )	Occupant Load Factor (m <sup>2</sup> /pers)	Occupant Load Factor (feet <sup>2</sup> /pers)
					Total	Pat.	Comp.	Staff			
1	1	0	Primary	10.30	69	27	22	20	1435.39	20.80	223.92
2		1	Primary		74	33	12	29	1415.36	19.13	205.88
3		0	Primary	12.00	56	25	15	16	1435.39	25.63	275.90
4		1	Primary		82	37	17	28	1415.36	17.26	185.79
5	2	0	Primary	9.00	55	28	10	17	782.56	14.23	153.15
6		1	Primary		56	31	10	15	709.74	12.67	136.42
7		0	Primary	10.30	79	36	25	18	782.56	9.91	106.63
8		1	Primary		56	32	9	15	709.74	12.67	136.42
9		0	Primary	12.00	90	49	21	20	782.56	8.70	93.59
10		1	Primary		74	49	13	12	709.74	9.59	103.24
11	3	0	Primary	9.00	52	27	8	17	1345.50	25.88	278.52
12		1	Primary		68	37	8	23	1252.72	18.42	198.30
13		0	Primary	10.30	41	16	10	15	1345.50	32.82	353.24
14		1	Primary		108	61	22	25	1252.72	11.60	124.85
15		0	Primary	12.00	33	11	6	16	1345.50	40.77	438.88
16		1	Primary		85	45	17	23	1252.72	14.74	158.64
17	4	0	Primary	9.00	53	27	10	16	767.44	14.48	155.86
18		1	Primary		66	33	23	10	698.08	10.58	113.85
19		0	Primary	11.00	31	17	1	13	767.44	24.76	266.47
20		1	Primary		71	33	20	18	698.08	9.83	105.83
21		0	Primary	13.00	35	18	3	14	767.44	21.93	236.02
22		1	Primary		74	34	22	18	698.08	9.43	101.54
23	5	0	Primary	10.00	26	11	1	14	1087.27	41.82	450.13
24		1	Primary		68	37	11	20	815.16	11.99	129.03
25		0	Primary	11.00	28	13	3	12	1087.27	38.83	417.97
26		1	Primary		75	40	15	20	815.16	10.87	116.99
27	6	0	Primary	10.00	99	51	9	39	2072.00	20.93	225.28
28		0	Primary	12.00	94	46	12	36	2072.00	22.04	237.26
29		0	Primary	13.00	100	49	14	37	2072.00	20.72	223.03
30	7	0	Primary	8.45	45	27	5	13	555.14	12.34	132.79
31		1	Primary		48	24	10	14	658.08	13.71	147.57
32		2	Primary		38	20	7	11	658.08	17.32	186.41

Table 5. Data collected from 148 ambulatory health care floors.

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	Number of People				Gross Floor Area (m <sup>2</sup> )	Occupant Load Factor (m <sup>2</sup> /pers)	Occupant Load Factor (feet <sup>2</sup> /pers)
					Total	Pat.	Comp.	Staff			
33	7	0	Primary	12.00	23	12	0	11	555.14	24.14	259.80
34		1	Primary		74	45	16	13	658.08	8.89	95.72
35		2	Primary		44	19	12	13	658.08	14.96	160.99
36		0	Primary	13.15	14	2	2	10	555.14	39.65	426.82
37		1	Primary		60	32	14	14	658.08	10.97	118.06
38		2	Primary		42	13	11	18	658.08	15.67	168.66
39	8	0	Primary	10.30	36	9	11	16	1106.69	30.74	330.90
40		1	Primary		37	17	3	17	1063.00	28.73	309.24
41		2	Primary		12	5	3	4	243.75	20.31	218.64
42		0	Primary	12.00	27	6	5	16	1106.69	40.99	441.20
43		1	Primary		44	22	8	14	1063.00	24.16	260.05
44		2	Primary		9	1	2	6	243.75	27.08	291.52
45	9	0	Primary	8.30	94	55	16	23	891.77	9.49	102.12
46		-1	Primary		77	40	17	20	859.65	11.16	120.17
47		0	Primary	12.45	82	35	20	27	891.77	10.88	117.06
48		-1	Primary		84	41	17	26	859.65	10.23	110.16
49		0	Primary	13.30	84	37	25	22	891.77	10.62	114.27
50		-1	Primary		49	26	7	16	859.65	17.54	188.84
51	10	0	Primary	8.45	54	25	10	19	803.62	14.88	160.19
52		1	Primary		49	27	9	13	723.64	14.77	158.96
53		0	Primary	12.30	58	21	20	17	803.62	13.86	149.14
54		1	Primary		53	30	11	12	723.64	13.65	146.97
55		0	Primary	13.00	55	20	16	19	803.62	14.61	157.27
56		1	Primary		38	18	8	12	723.64	19.04	204.98
57	11	0	Primary	9.00	25	7	4	14	1197.90	47.92	515.76
58		1	Primary		42	20	6	16	922.51	21.96	236.42
59		0	Primary	11.30	34	12	8	14	1197.90	35.23	379.24
60		1	Primary		38	18	6	14	922.51	24.28	261.31
61		0	Primary	12.00	36	13	10	13	1197.90	33.28	358.17
62		1	Primary		43	21	7	15	922.51	21.45	230.93
63	12	0	Primary	8.30	22	9	5	8	928.51	42.21	454.29
64		1	Primary		35	20	0	15	855.66	24.45	263.15
65		2	Primary		70	39	12	19	855.66	12.22	131.57
66		3	Primary		16	5	2	9	670.14	41.88	450.83
67		4	Primary		29	9	5	15	670.14	23.11	248.74

Table 5. Data collected from 148 ambulatory health care floors (cont.).

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	Number of People				Gross Floor Area (m <sup>2</sup> )	Occupant Load Factor (m <sup>2</sup> /pers)	Occupant Load Factor (feet <sup>2</sup> /pers)	
					Total	Pat.	Comp.	Staff				
68	12	5	Primary	8.30	24	12	5	7	670.14	27.92	300.56	
69		6	Primary		16	5	4	7	411.54	25.72	276.86	
70		8	Primary		8	3	3	2	411.54	51.44	553.72	
71		0	Primary	11.30	27	17	4	6	928.51	34.39	370.16	
72		1	Primary		37	16	7	14	855.66	23.13	248.93	
73		2	Primary		55	24	14	17	855.66	15.56	167.46	
74		3	Primary		8	5	0	3	670.14	83.77	901.67	
75		4	Primary		41	18	8	15	670.14	16.34	175.93	
76		5	Primary		20	8	5	7	670.14	33.51	360.67	
77		6	Primary		13	3	3	7	411.54	31.66	340.75	
78		8	Primary		6	2	2	2	411.54	68.59	738.30	
79		0	Primary		13.00	13	4	1	8	928.51	71.42	768.80
80		1	Primary			52	26	12	14	855.66	16.46	177.12
81		2	Primary	36		17	5	14	855.66	23.77	255.84	
82		3	Primary	9		5	0	4	670.14	74.46	801.48	
83		4	Primary	35		15	7	13	670.14	19.15	206.10	
84		5	Primary	13		6	2	5	670.14	51.55	554.87	
85		6	Primary	11		4	2	5	411.54	37.41	402.71	
86		8	Primary	9		5	2	2	411.54	45.73	492.20	
87		13	0	Primary	8.00	60	37	9	14	1372.83	22.88	246.28
88	0		Primary	11.30	106	63	15	28	1372.83	12.95	139.41	
89	-1		Primary		13	8	3	2	394.89	30.38	326.97	
90	0		Primary	12.30	107	57	22	28	1372.83	12.83	138.10	
91	-1		Primary		8	6	0	2	394.89	49.36	531.32	
92	0		Primary	13.00	105	55	22	28	1372.83	13.07	140.73	
93	-1		Primary		7	4	1	2	394.89	56.41	607.22	
94	14		-1	Primary	9.00	17	6	4	7	731.95	43.06	463.45
95		0	Primary	37		24	5	8	596.04	16.11	173.40	
96		1	Primary	52		23	7	22	717.90	13.81	148.60	
97		-1	Primary	10.00	12	3	2	7	731.95	61.00	656.55	
98		0	Primary		15	6	1	8	596.04	39.74	427.71	
99		1	Primary		60	26	12	22	717.90	11.96	128.79	
100		-1	Primary	11.00	23	10	6	7	731.95	31.82	342.55	
101		0	Primary		16	5	3	8	596.04	37.25	400.98	
102		1	Primary		71	33	16	22	717.90	10.11	108.84	

Table 5. Data collected from 148 ambulatory health care floors (cont.).

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	Number of People				Gross Floor Area (m <sup>2</sup> )	Occupant Load Factor (m <sup>2</sup> /pers)	Occupant Load Factor (feet <sup>2</sup> /pers)	
					Total	Pat.	Comp.	Staff				
103	14	-1	Primary	12.00	27	11	9	7	731.95	27.11	291.80	
104		0	Primary		20	9	3	8	596.04	29.80	320.79	
105		1	Primary		59	29	8	22	717.90	12.17	130.97	
106	15	0	Primary	9.00	61	35	10	16	1271.55	20.85	224.37	
107		1	Primary		43	18	6	19	1095.86	25.49	274.32	
108		12.00	0	Primary	40	15	7	18	1271.55	31.79	342.17	
109			1	Primary	82	23	9	50	1095.86	13.36	143.85	
110		13.00	0	Primary	64	21	10	33	1271.55	19.87	213.86	
111			1	Primary	82	23	9	50	1095.86	13.36	143.85	
112		16	0	Primary	8.30	28	13	1	14	1022.35	36.51	393.02
113			1	Primary		62	43	6	13	970.23	15.65	168.44
114	11.30		0	Primary	40	20	4	16	1022.35	25.56	275.11	
115			1	Primary	55	29	8	18	970.23	17.64	189.88	
116	12.30		0	Primary	47	26	5	16	1022.35	21.75	234.14	
117			1	Primary	65	35	12	18	970.23	14.93	160.67	
118	17		0	Primary	9.30	56	24	11	21	943.54	16.85	181.36
119		1	Primary	58		32	11	15	920.96	15.88	170.92	
120		11.00	0	Primary	64	29	13	22	943.54	14.74	158.69	
121			1	Primary	47	26	6	15	920.96	19.59	210.92	
122		12.00	0	Primary	47	21	6	20	943.54	20.08	216.09	
123			1	Primary	59	34	9	16	920.96	15.61	168.02	
124		18	0	Primary	9.00	45	25	5	15	514.89	11.44	123.16
125	1		Primary	55		28	11	16	588.58	10.70	115.19	
126	2		Primary	25		15	1	9	588.58	23.54	253.42	
127	10.00		0	Primary	36	15	6	15	514.89	14.30	153.95	
128			1	Primary	65	34	15	16	588.58	9.06	97.47	
129			2	Primary	33	17	6	10	588.58	17.84	191.98	
130	11.00		0	Primary	27	11	1	15	514.89	19.07	205.27	
131			1	Primary	57	28	13	16	588.58	10.33	111.15	
132			2	Primary	25	11	4	10	588.58	23.54	253.42	
133			19	0	Urgent/Treat.	9.30	490	242	129	119	5260.64	10.74
134	1	Urgent/Treat.		360	133		92	135	5418.60	15.05	162.01	
135	2	Urgent/Treat.		506	245		117	144	5421.54	10.71	115.33	
136	3	Urgent/Treat.		149	74		41	34	3866.15	25.95	279.29	
137	0	Urgent/Treat.		12.30	596	310	158	128	5260.64	8.83	95.01	

Table 5. Data collected from 148 ambulatory health care floors (cont.).

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	Number of People				Gross Floor Area (m <sup>2</sup> )	Occupant Load Factor (m <sup>2</sup> /pers)	Occupant Load Factor (feet <sup>2</sup> /pers)
					Total	Pat.	Comp.	Staff			
138	19	1	Urgent/Treat.	12.30	388	160	96	132	5418.60	13.97	150.32
139		2	Urgent/Treat.		491	225	126	140	5421.54	11.04	118.85
140		3	Urgent/Treat.		111	44	21	46	3866.15	34.83	374.91
141	20	0	Urgent/Treat.	9.00	519	158	178	183	29758.41	57.34	617.18
142		-1	Urgent/Treat.		208	66	48	94	19479.90	93.65	1008.08
143		0	Urgent/Treat.	11.30	600	222	216	162	29758.41	49.60	533.86
144		-1	Urgent/Treat.		276	82	63	131	19479.90	70.58	759.71
145	21	0	Urgent/Treat.	10.00	129	57	36	36	2399.21	18.60	200.19
146		1	Urgent/Treat.		18	15	0	3	649.01	36.06	388.10
147		0	Urgent/Treat.	12.00	97	38	29	30	2399.21	24.73	266.24
148		1	Urgent/Treat.		18	15	0	3	649.01	36.06	388.10

Table 5. Data collected from 148 ambulatory health care floors (cont.).

Data Points	Code of Health Care Facility	Main Health Care Activity	Time	N <sub>Patients-Waiting</sub>	N <sub>Active-Services</sub>	Ratio <sub>Patients / Consultation</sub>
1	1	Primary	10.30	25	44	0.57
2		Primary	12.00	30	39	0.77
3	2	Primary	9.00	38	26	1.46
4		Primary	10.30	43	28	1.54
5		Primary	12.00	56	22	2.55
6	3	Primary	9.00	35	33	1.06
7		Primary	10.30	36	35	1.03
8		Primary	12.00	33	33	1.00
9	4	Primary	9.00	43	27	1.59
10		Primary	11.00	30	25	1.20
11		Primary	13.00	30	26	1.15
12	5	Primary	10.00	23	28	0.82
13		Primary	11.00	29	26	1.12
14	6	Primary	10.00	28	32	0.88
15		Primary	12.00	28	29	0.97
16		Primary	13.00	24	29	0.83
17	7	Primary	8.45	47	29	1.62
18		Primary	12.00	47	30	1.57
19		Primary	13.15	29	29	1.00
20	8	Primary	10.30	15	31	0.48
21		Primary	12.00	13	30	0.43
22	9	Primary	8.30	63	37	1.70
23		Primary	12.45	41	43	0.95
24		Primary	13.30	34	33	1.03
25	10	Primary	8.45	33	25	1.32
26		Primary	12.30	29	23	1.26
27		Primary	13.00	19	24	0.79
28	11	Primary	9.00	9	25	0.36
29		Primary	11.30	17	23	0.74
30		Primary	12.00	12	23	0.52
31	12	Primary	8.30	63	67	0.94
32		Primary	11.30	47	60	0.78
33		Primary	13.00	49	51	0.96
34	13	Primary	8.00	29	6	4.83
35		Primary	11.30	45	23	1.96
36		Primary	12.30	37	22	1.68

Table 6. Patients-to-consultation ratio for each facility in the sample at different times.



Data Points	Code of Health Care Facility	Main Health Care Activity	Time	N <sub>Patients-Waiting</sub>	N <sub>Active-Services</sub>	Ratio <sub>Patients / Consultation</sub>
37	13	Primary	13.00	34	22	1.55
38	14	Primary	9.00	29	31	0.94
39		Primary	10.00	16	31	0.52
40		Primary	11.00	26	31	0.84
41		Primary	12.00	26	31	0.84
42	15	Primary	9.00	33	26	1.27
43		Primary	12.00	12	27	0.44
44		Primary	13.00	12	27	0.44
45	16	Primary	8.30	44	22	2.00
46		Primary	11.30	30	27	1.11
47		Primary	12.30	38	29	1.31
48	17	Primary	9.30	33	30	1.10
49		Primary	11.00	26	31	0.84
50		Primary	12.00	31	30	1.03
51	18	Primary	9.00	44	33	1.33
52		Primary	10.00	41	34	1.21
53		Primary	11.00	28	34	0.82
54	19	Urgent/Treat.	9.30	430	210	2.05
55		Urgent/Treat.	12.30	398	210	1.90
56	20	Urgent/Treat.	9.00	85	153	0.56
57		Urgent/Treat.	11.30	121	153	0.79
58	21	Urgent/Treat.	10.00	27	10	2.70
59		Urgent/Treat.	12.00	20	8	2.50

Table 6. Patients-to-consultation ratio for each facility in the sample at different times (cont.).

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	N <sub>Total-Companions</sub>	N <sub>Total-Patients</sub>	Ratio <sub>Companions / Patient</sub>
1	1	0	Primary	10.30	27	22	0.81
2		1	Primary		33	12	0.36
3		0	Primary	12.00	25	15	0.60
4		1	Primary		37	17	0.46
5	2	0	Primary	9.00	28	10	0.36
6		1	Primary		31	10	0.32
7		0	Primary	10.30	36	25	0.69
8		1	Primary		32	9	0.28
9		0	Primary	12.00	49	21	0.43
10		1	Primary		49	13	0.27
11	3	0	Primary	9.00	27	8	0.30
12		1	Primary		37	8	0.22
13		0	Primary	10.30	16	10	0.63
14		1	Primary		61	22	0.36
15		0	Primary	12.00	11	6	0.55
16		1	Primary		45	17	0.38
17	4	0	Primary	9.00	27	10	0.37
18		1	Primary		33	23	0.70
19		0	Primary	11.00	17	1	0.06
20		1	Primary		33	20	0.61
21		0	Primary	13.00	18	3	0.17
22		1	Primary		34	22	0.65
23	5	0	Primary	10.00	11	1	0.09
24		1	Primary		37	11	0.30
25		0	Primary	11.00	13	3	0.23
26		1	Primary		40	15	0.38
27	6	0	Primary	10.00	51	9	0.18
28		0	Primary	12.00	46	12	0.26
29		0	Primary	13.00	49	14	0.29
30	7	0	Primary	8.45	27	5	0.19
31		1	Primary		24	10	0.42
32		2	Primary		20	7	0.35
33		0	Primary	12.00	12	0	0.00
34		1	Primary		45	16	0.36
35		2	Primary		19	12	0.63

Table 7. Companions-to-patient ratio for each health care facility floor in the sample.

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	N <sub>Total-Companions</sub>	N <sub>Total-Patients</sub>	Ratio <sub>Companions / Patient</sub>
36	7	0	Primary	13.15	2	2	1.00
37		1	Primary		32	14	0.44
38		2	Primary		13	11	0.85
39	8	0	Primary	10.30	9	11	1.22
40		1	Primary		17	3	0.18
41		2	Primary	12.00	5	3	0.60
42		0	Primary		6	5	0.83
43	9	1	Primary	12.00	22	8	0.36
44		2	Primary		1	2	2.00
45		0	Primary	8.30	55	16	0.29
46		-1	Primary		40	17	0.43
47		0	Primary	12.45	35	20	0.57
48		-1	Primary		41	17	0.41
49		0	Primary	13.30	37	25	0.68
50	-1	Primary	26		7	0.27	
51	10	0	Primary	8.45	25	10	0.40
52		1	Primary		27	9	0.33
53		0	Primary	12.30	21	20	0.95
54		1	Primary		30	11	0.37
55		0	Primary	13.00	20	16	0.80
56		1	Primary		18	8	0.44
57	11	0	Primary	9.00	7	4	0.57
58		1	Primary		20	6	0.30
59		0	Primary	11.30	12	8	0.67
60		1	Primary		18	6	0.33
61		0	Primary	12.00	13	10	0.77
62		1	Primary		21	7	0.33
63	12	0	Primary	8.30	9	5	0.56
64		1	Primary		20	0	0.00
65		2	Primary		39	12	0.31
66		3	Primary		5	2	0.40
67		4	Primary		9	5	0.56
68		5	Primary		12	5	0.42
69		6	Primary		5	4	0.80
70		8	Primary		3	3	1.00

Table 7. Companions-to-patient ratio for each health care facility floor in the sample (cont.).

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	N <sub>Total-Companions</sub>	N <sub>Total-Patients</sub>	Ratio <sub>Companions / Patient</sub>
71	12	0	Primary	11.30	17	4	0.24
72		1	Primary		16	7	0.44
73		2	Primary		24	14	0.58
74		3	Primary		5	0	0.00
75		4	Primary		18	8	0.44
76		5	Primary		8	5	0.63
77		6	Primary		3	3	1.00
78		8	Primary		2	2	1.00
79		0	Primary	13.00	4	1	0.25
80		1	Primary		26	12	0.46
81		2	Primary		17	5	0.29
82		3	Primary		5	0	0.00
83		4	Primary		15	7	0.47
84		5	Primary		6	2	0.33
85		6	Primary		4	2	0.50
86		8	Primary		5	2	0.40
87	13	0	Primary	8.00	37	9	0.24
88		0	Primary	11.30	63	15	0.24
89		-1	Primary		8	3	0.38
90		0	Primary	12.30	57	22	0.39
91		-1	Primary	13.00	6	0	0.00
92		0	Primary		55	22	0.40
93		-1	Primary		4	1	0.25
94	14	-1	Primary	9.00	6	4	0.67
95		0	Primary		24	5	0.21
96		1	Primary		23	7	0.30
97		-1	Primary	10.00	3	2	0.67
98		0	Primary		6	1	0.17
99		1	Primary		26	12	0.46
100		-1	Primary	11.00	10	6	0.60
101		0	Primary		5	3	0.60
102		1	Primary		33	16	0.48
103		-1	Primary	12.00	11	9	0.82
104		0	Primary		9	3	0.33
105		1	Primary		29	8	0.28

Table 7. Companions-to-patient ratio for each health care facility floor in the sample (cont.).

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	N <sub>Total-Companions</sub>	N <sub>Total-Patients</sub>	Ratio <sub>Companions / Patient</sub>
106	15	0	Primary	9.00	35	10	0.29
107		1	Primary		18	6	0.33
108		0	Primary	12.00	15	7	0.47
109		1	Primary		23	9	0.39
110		0	Primary	13.00	21	10	0.48
111		1	Primary		23	9	0.39
112	16	0	Primary	8.30	13	1	0.08
113		1	Primary		43	6	0.14
114		0	Primary	11.30	20	4	0.20
115	16	1	Primary	11.30	29	8	0.28
116		0	Primary	12.30	26	5	0.19
117		1	Primary		35	12	0.34
118	17	0	Primary	9.30	24	11	0.46
119		1	Primary		32	11	0.34
120		0	Primary	11.00	29	13	0.45
121		1	Primary		26	6	0.23
122		0	Primary	12.00	21	6	0.29
123		1	Primary		34	9	0.26
124	18	0	Primary	9.00	25	5	0.20
125		1	Primary		28	11	0.39
126		2	Primary		15	1	0.07
127		0	Primary	10.00	15	6	0.40
128		1	Primary		34	15	0.44
129		2	Primary		17	6	0.35
130		0	Primary	11.00	11	1	0.09
131		1	Primary		28	13	0.46
132		2	Primary		11	4	0.36
133		0	Urgent/Treat.		9.30	242	129
134	1	Urgent/Treat.	133	92		0.69	
135	2	Urgent/Treat.	245	117		0.48	
136	3	Urgent/Treat.	12.30	74	41	0.55	
137	0	Urgent/Treat.		310	158	0.51	
138	1	Urgent/Treat.		160	96	0.60	
139	2	Urgent/Treat.		225	126	0.56	
140	3	Urgent/Treat.		44	21	0.48	

Table 7. Companions-to-patient ratio for each health care facility floor in the sample (cont.).

Data Points	Code of Health Care Facility	Floor Number	Main Health Care Activity	Time	N <sub>Total-Companions</sub>	N <sub>Total-Patients</sub>	Ratio <sub>Companions / Patient</sub>
141	20	0	Urgent/Treat.	9.00	158	178	1.13
142		-1	Urgent/Treat.		66	48	0.73
143		0	Urgent/Treat.	11.30	222	216	0.97
144		-1	Urgent/Treat.		82	63	0.77
145	21	0	Urgent/Treat.	10.00	57	36	0.63
146		1	Urgent/Treat.		15	0	0.00
147		0	Urgent/Treat.	12.00	38	29	0.76
148		1	Urgent/Treat.		15	0	0.00

*Table 7. Companions-to-patient ratio for each health care facility floor in the sample (cont.).*