

ETable Supplement:
 Characteristics of participant and nonparticipant hospitals

Characteristic	Overall			High Performers			Low Performers			High Improvers		
	All Facilities (n=30)	Participant (n=12)	Non-Participant (n=18)	All Facilities (n=8)	Participant (n=4)	Non-Participant (n=4)	All Facilities (n=10)	Participant (n=4)	Non-Participant (n=6)	All Facilities (n=12)	Participant (n=4)	Non-Participant (n=8)
Length of stay for patients, Admitted (min)												
Mean (St Dev)	352.6 (146)	349.1 (150)	354.9 (148)	210.1 (64)	224.3 (77)	196 (55)	475 (112)	523.5 (93)	442.67 (119)	345.58 (123)	299.5 (62)	368.63 (143)
Median (Min-Max)	320 (124-655)	319.5 (158-609)	320.5 (124-655)	201.5 (124-329)	205 (158-329)	201.5 (124-257)	492 (295-609)	544 (397-609)	439.5 (295-578)	310.5 (195-655)	301 (222-374)	338.5 (195-655)
Boarding Time, Admitted patients (min)												
Mean (St Dev)	158.2 (105)	172.2 (104)	148.8 (108)	67.25 (34)	88.5 (38)	46 (13)	256.4 (105)	292 (74)	232.6 (122)	136.9 (64)	136 (52)	137.38 (73)
Median (Min-Max)	121 (31-384)	125.5 (46-362)	112.5 (31-384)	55.5 (31-130)	89 (46-130)	45 (31-63)	261 (102-384)	308.5 (189-362)	204 (102-384)	117 (80-308)	117 (97-213)	112.5 (80-308)
Length of stay for patients, Discharged (min)												
Mean (St Dev)	167.1 (44)	173.5 (48)	162.8 (43)	132.2 (37)	136.2 (37)	128.2 (43)	185.9 (38)	219.2 (32)	163.6 (22)	174.8 (44.1)	165.3 (38.0)	179.5 (48.5)
Median (Min-Max)	169 (76-262)	169 (87-256)	166 (76-262)	139.5 (76-180)	140 (87-178)	128.5 (76-180)	184 (127-256)	217.5 (186-256)	166 (127-187)	169 (110-262)	156 (130-219)	182 (110-262)
Waiting Time, Discharged (min)												
Mean (St Dev)	32.9 (18)	34.6 (23)	31.7 (14)	26.8 (9)	22.2 (3)	31.5 (12)	38.6 (20)	54.2 (25)	28.1 (8)	32.2 (20)	27.5 (24)	34.6 (20)
Median (Min-Max)	25.5 (10-84)	24.5 (11-84)	26.5 (10-65)	24.5 (16-44)	23.5 (17-25)	33 (16-44)	31.5 (20-84)	51.5 (30-84)	25.5 (20-42)	22.5 (10-65)	17.5 (11-64)	26.5 (10-65)
Median Time to Pain Management for Long Bone Fracture (min)												
Mean (St Dev)	60.6(20)	56.1 (18)	63.6 (22)	50.9 (16)	46.3 (15)	55.5 (17)	67.6(14)	76(11)	62(13)	61.2 (26)	46(11)	68.8 (29)
Median (Min-Max)	60 (34-121)	54 (34-92)	60.5 (36-121)	46 (34-78)	41 (34-69)	54 (36-78)	68 (46-92)	73.5 (65-92)	64 (46-76)	56 (36-121)	42 (38-62)	63 (36-121)

Percent left without being seen (%)

	2.3	2.3	2.4	1.6	1	2.2	2.8	5	1.8	2.4	1.5	2.9
Mean (St Dev)	(2.3)	(2.6)	(2.2)	(1.8)	(2)	(1.5)	(2.7)	(3.4)	(1.6)	(2.5)	(0.6)	(2.9)
Median (Min-Max)	2 (0-9)	2 (0-9)	1.5 (0-8)	1 (0-4)	0 (0-4)	2 (1-4)	2 (1-9)	3 (3-9)	1 (1-5)	2 (0-8)	1.5 (1-2)	2 (0-8)

Hospital Rating-Proportion of respondents giving a 9 or 10 score (%)

	66.7	69.2	65.1	70.4	70.5	70.3	62	64.3	60.5	68.2	72.7	65.9
Mean (St Dev)	(7.3)	(5.5)	(8.1)	(5.8)	(3.1)	(8.3)	(5.8)	(2.5)	(7.0)	(7.9)	(6.7)	(7.8)
Median (Min-Max)	67 (52-80)	68 (61-80)	65.5 (52-77)	70.5 (60-77)	70.5 (67-74)	72 (60-77)	64.5 (52-69)	64.5 (61-67)	60.5 (52-69)	70 (56-80)	73.5 (64-80)	67 (56-76)

Hospital Recommend- Proportion of respondents that would "Definitely Recommend" (%)

	68.1	70.8	66.3	71.1	71.8	70.5	63.1	66.8	60.7	70.2	73.8	68.5
Mean (St Dev)	(8.4)	(5.8)	(9.4)	(6.1)	(3.3)	(8.7)	(7.4)	(4.9)	(8.0)	(9.1)	(7.4)	(9.7)
Median (Min-Max)	69 (52-82)	71.5 (63-82)	65 (52-80)	71.5 (62-78)	71.5 (68-76)	71 (62-78)	63.5 (52-74)	65 (63-74)	58.5 (52-74)	73 (57-82)	74.5 (64-82)	71 (57-80)

30-day Hospital Wide Readmission (%)

	15.9	16.2	15.7	16.16	16.5	15.8	15.7	15.7	15.6	15.8	16.2	15.(0.3)
Mean (St Dev)	(0.9)	(1.3)	(0.4)	(1.4)	(1.9)	(0.6)	(0.8)	(1.2)	(0.5)	(0.63)	(0.9)	
Median (Min-Max)	15.7 (14.1-18.9)	16.1 (14.1-18.9)	15.6 (15.1-16.5)	16.1 (14.4-18.9)	16.4 (14.4-18.9)	15.8 (15.3-16.4)	15.7 (14.1-17)	15.9 (14.1-17)	15.7 (15.1-16.5)	15.6 (15.1-17.1)	16.4 (15.1-17.1)	15.6 (15.3-16.1)

Annual Occupancy

	0.7	0.7	0.6	0.5	0.6	0.5	0.7	0.7	0.7	0.7	0.7	0.7
Mean (St Dev)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.1)	(0.2)	(0.1)	(0.2)	(0.1)
Median (Min-Max)	0.7 (0.3-0.8)	0.7 (0.4-0.9)	0.7 (0.3-0.8)	0.5 (0.3-0.9)	0.7 (0.3-0.8)	0.4 (0.3-0.8)	0.7 (0.3-0.9)	0.7 (0.6-0.9)	0.7 (0.3-0.8)	0.7 (0.4-0.8)	0.7 (0.4-0.8)	0.7 (0.6-0.8)

Annual ICU Occupancy

	0.7	0.7	0.7	0.6	0.6	0.5	0.7	0.7	0.7	0.7	0.7	0.8
Mean (St Dev)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)
Median (Min-Max)	0.7 (0.3-1.0)	0.7 (0.4-0.9)	0.7 (0.3-1.0)	0.6 (0.3-0.9)	0.7 (0.4-0.9)	0.6 (0.3-0.7)	0.7 (0.4-1.0)	0.7 (0.4-0.9)	0.8 (0.5-1.0)	0.8 (0.6-0.9)	0.7 (0.6-0.8)	0.8 (0.7-0.9)

Annual ED Visits, in thousands

Mean (St Dev)	70 (44)	83 (55)	61 (35)	68 (69)	101 (84)	35 (31)	57 (35)	75 (43)	45 (26)	82 (31)	75 (40)	85 (29)
Median (Min- Max)	67 (10-19)	72 (19-187)	62 (10-138)	37 (10-187)	96 (24-187)	26 (10-77)	53 (19-122)	80 (19-122)	33 (20-86)	71 (29-138)	71 (29-126)	75 (60-138)
Annual Hospital Admission, in thousands												
Mean (St Dev)	19 (16)	25 (20)	14 (11)	19 (26)	31 (33)	8 (11)	15 (13)	25 (15)	8 (6)	21 (9)	20 (7)	22 (10)
Median (Min- Max)	15 (1-74)	24 (2-74)	14 (1-45)	6 (1-74)	23 (2-74)	4 (1-25)	8 (2-38)	29 (5-38)	6 (2-21)	20 (11-45)	19 (12-28)	20 (14-45)
CMS Case-Mix Index												
Mean (St Dev)	1.6 (0.3)	1.7 (0.3)	1.5 (0.3)	1.4 (0.3)	1.6 (0.2)	1.3 (0.3)	1.5 (0.4)	1.8 (0.4)	1.3 (0.1)	1.7 (0.2)	1.8 (0.1)	1.7 (0.3)
Median (Min- Max)	1.5 (1.0-2.3)	1.7 (1.37- 2.29)	1.4 (1.0-2.1)	1.4 (1.0-1.8)	1.5 (1.4-1.8)	1.3 (1.0-1.8)	1.4 (1.0-2.3)	1.8 (1.5-2.3)	1.3 (1.0-1.4)	1.7 (1.3-2.1)	1.7 (1.7-1.9)	1.7 (1.3-2.1)
Metro Location, n(%)	21 (70)	9 (75)	12 (67)	4 (50)	3 (75)	1 (25)	6 (60)	3 (75)	3 (50)	11 (92)	3 (75)	8 (100)
Region n(%)												
Midwest	2(7)	1(8)	1(5)	1(12)	0(0)	1(2)	0(0)	0(0)	0(0)	1(8)	1(25)	0(0)
Northeast	9(30)	4(33)	5(28)	2(25)	2(50)	0(0)	3(30)	0(0)	3(50)	4(33)	2(50)	2(25)
South	13(43)	3(25)	10 (56)	3(38)	1(25)	2(50)	5(50)	2(50)	3(50)	5(41)	0(0)	5(63)
West	6(20)	4(33)	2(11)	2(25)	1(25)	1(25)	2(20)	2(50)	0(0)	2(17)	1(25)	1(12)
Ownership, n(%)												
Not-For-Profit	22 (73)	10 (83)	12 (66)	6 (75)	4 (100)	2 (50)	7 (70)	3 (75)	4 (66)	9 (75)	3 (75)	6 (75)
Public	6 (20)	2 (16)	4 (22)	2 (25)	0 (0)	2 (50)	1 (10)	1 (25)	0 (0)	3 (25)	1 (25)	2 (25)
For-Profit	2 (6)	0 (0)	2 (11)				2 (20)	0 (0)	2 (33)			
Teaching Hospital, n(%)	9(30)	4(33)	5(27)	2(25)	1(25)	1(25)	2(20)	2(50)	0(0)	5(41)	1(25)	4(50)
Psychiatric Inpatient Services, n (%)												
Unknown	5(16)	1(8)	4(22)	1(12)	0(0)	1(25)	3(30)	0(0)	3(50)	1(8)	1(25)	0(0)

No	8(26)	3(25)	5(27)	2(25)	1(25)	1(25)	4(40)	1(25)	3(50)	2(16)	1(25)	1(12)
Yes	17(56)	8(66)	9(50)	5(62)	3(75)	2(50)	3(30)	3(75)	0(0)	9(75)	2(50)	7(87)

Psychiatric Consultation Services ,n (%)

Unknown	5(16)	1(8)	4(22)	1(12)	0(0)	1(25)	3(30)	0(0)	3(50)	1(8)	1(25)	0(0)
No	8(26)	1(8)	7(38)	4(50)	1(25)	3(75)	3(30)	0(0)	3(50)	1(8)	0(0)	1(12)
Yes	17(56)	10(83)	7(38)	3(37)	3(75)	0(0.0)	4(40)	4 (100)	0(0)	10(83)	3(75)	7(87)

Trauma Center, n (%)

Unknown	5(16)	1(8)	4(22)	1(12)	0(0)	1(25)	3(30)	0(0)	3(50)	1(8)	1(25)	0(0)
No	11(36)	3(25)	8(44)	4(50)	2(50)	2(50)	4(40)	1(25)	3(50)	3(25)	0(0)	3(37)
Level 1/2 TC	14(46)	8(66)	6(33)	3(37)	2(50)	1(25)	3(30)	3(75)	0(0)	8(66)	3(75)	5(62)

Identifying Hospital Practices to Reduce Emergency Department Crowding Interview Guide

Consent Process & Opening Script

A detailed information sheet covering the critical elements of consent will be emailed to all participants prior to the interview. Please have a copy of the information sheet with you. Hand this to the study participant, give them a moment to review it, and ask them if they have any questions. Below is a summary of the consent information to be conveyed to the participant before conducting the interview.

- *Thank you so much for your time today and for agreeing by email to participate in this interview. You have been invited to be in this research study because you have been identified as being a key member of your hospital's efforts to reduce emergency department (ED) crowding. The purpose of this study is to learn about how to reduce ED crowding. From this information we will develop a survey tool to measure hospital practices aimed at reducing ED crowding.*
- *You will be asked about your role and experiences in reducing ED crowding at your hospital. The interview will last approximately one hour.*
- *Do you have any questions about the information on the information sheet?*
- *We would like to record this interview for the purpose of data analysis. Having a recording allows us have the interview professionally transcribed and helps study what participants say so that we can identify important concepts.*
- *We will not be collecting identifiable information so there is little chance of breach of confidentiality. The information you give us is completely confidential.*
- *You do not have to participate in this or any research study. If you do decide to participate, and later change your mind, you may quit at any time. If you refuse to participate or withdraw early from the study, there will be no penalty or loss of any benefits to which you are otherwise entitled.*
- *Is it okay to record this interview?*
- If the participant says yes, please explain that you will also ask for the participant's verbal consent to record the interview once you have turned on the recorder. Turn on the audio recording device and ask: "Is it okay to record this interview" and have the participant confirm. Then you can begin the interview.

Lead interviewee: Please introduce yourself to the participant. Tell them about your background, the institution where you work, what your role is at OHSU, how long you have worked at OHSU and have been doing your job, and what other places you have worked. Then, introduce the second interviewer and have this person do the same introduction.

1. Please tell me about yourself and your role with the emergency department?

Probes:

- *What are your responsibilities?*
- *How long have you worked here?*
- *How long have you been doing this type of job?*

We're going to start by talking a bit about your specific department's experiences with emergency department crowding.

2. Can you tell me about a recent experience with a crowded emergency department?

Please walk me through this experience telling me as much as you can about what happened and why.

Interviewer: Please let the interviewee finish. Then, probe as needed to get a full understanding of the ED crowding experience.

3. How does your department define a crowded emergency department?

4. How does your department measure crowding?

5. Does your department have set targets for ED crowding metrics? If yes...

Probes:

- *How are these targets set?*
- *How are these targets monitored?*
- *When your ED is outside of these targets, how does your department respond?*

Now, I'd like to shift gears a little bit and talk about the strategies the hospital uses to manage ED crowding.

6. What strategies does your hospital use to reduce emergency department crowding?

Probes:

- *How was the protocol developed?*
- *How was the protocol implemented?*
- *What were the steps or sequence in the change process*
- *Who led that change effort?*

Some examples may include lean methodology or variance control

7. How does your hospital know if these strategies are being implemented?

8. How does your hospital know if these strategies are working?

9. Does your hospital have set targets for ED crowding metrics? If yes...

Probes:

- *How are these targets set?*
- *How are these targets monitored?*
- *When your ED is outside of these targets, how does your hospital respond?*
- *How were the effects of this change monitored?*

10. What techniques does your hospital use to incentivize follow-through on these strategies?

Probes:

- *When your ED is outside of these targets, how does your institution respond?*
- *Probe about:*
- *Provider incentives*
- *Pay for performance*

Our final few questions come back to your experiences with the emergency department crowding.

11. What lessons have you learned about trying to reduce emergency department crowding?

12. What factors shape your efforts to reduce emergency department crowding?

Probes:

- *Probe about each factor & their role in ED crowding*
- *What other internal factors shape efforts to reduce emergency department crowding?*
 - *Responsiveness of the lab*
 - *Responsiveness of imaging*
 - *Responsiveness of consult*
 - *Bed availability*
 - *Scheduled medical admissions*
 - *Scheduled surgical admissions*
 - *Outside hospital transfers*
 - *Outside hospital referrals*
 - *Home health services*
 - *Triage process*
 - *Inpatient boarding*
 - *Hospital level coordination of inpatient bed availability*
- *What other external factors shape efforts to reduce emergency department crowding?*
 - *Local geography*
 - *Market*
 - *Outpatient services*
 - *Patient demand*

- 13. Our goal is to understand the strategies that hospitals use to reduce emergency department crowding. What else is important to understanding how your hospital manages emergency department crowding?**

- 14. Is there anything specific you think could be or should be done to reduce ED crowding?**

- 15. Are there other staff members involved in efforts to reduce emergency department crowding who we should speak with? [Interviewer: If yes, please get the name of these people.]**

Thank you so much for your time.