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Register Number: 24BECS196.

Course / Subject: Design Thinking / Problem Discovery and Need Identification Lab.

Institution: Garden City University.

Semester: 4th semester.

Topic : Metro stations experience overcrowding during rush hours.

1.Introduction.

Urban metro systems play a vital role in daily transportation. With increasing population and dependence on public transport, metro stations often experience overcrowding, especially during peak hours. This study aims to understand commuter experiences, identify major pain points, analyze root causes, and explore possible improvements.

2. Methodology.

A Google Form survey titled “**Survey on Metro Station Overcrowding During Rush Hours**” was created.

The form included six sections:

- Basic details of respondents
- Metro usage patterns
- Overcrowding experience
- Emotional and safety impact
- Root causes and suggestions
- Consent for participation

Responses were collected from regular metro users.

3. Key Observations.

- Majority of commuters travel during peak hours (morning and evening).
- Heavy congestion observed at entry gates, platforms, and inside trains.
- Interchange stations experience maximum crowding.
- Long waiting times and difficulty boarding trains are common.
- Movement becomes slow and uncomfortable during rush hours.

4. Pain-Point Analysis.

Category	Identified Pain Points
Functional	Difficulty boarding, long waiting time, congestion
Emotional	Stress, fear, irritation
Systemic	Poor scheduling, limited infrastructure

5. Root Cause Identification.

- Why is overcrowding common?
→ Too many commuters travel simultaneously.
- Why do commuters travel at the same time?
→ Similar office and school timings.
- Why can't current services manage this demand?
→ Limited train frequency and capacity.
- Why hasn't capacity increased?
→ Budget and infrastructure constraints.
- Why do these constraints exist?
→ Rapid urban growth and slow expansion planning.

6. Wicked Problem Understanding.

Overcrowding in metro stations qualifies as a wicked problem because:

- It involves multiple stakeholders with different priorities.
- No single solution can solve it completely.
- Infrastructure improvements require large investments.
- Commuter behavior is difficult to change.
- Demand increases continuously with urban growth.

For instance, increasing train frequency improves comfort but raises operational costs, while infrastructure expansion takes several years.

7. Reflection.

1. What surprised you during the survey?

Many commuters face severe overcrowding daily during rush hours.

2. Which assumption was wrong?

Overcrowding is not only due to passenger numbers but also system issues.

3. How did empathy change your understanding?

It helped understand commuter stress and safety concerns.

4. How will this affect your approach?

I will analyze problems deeply before suggesting solutions.

5. What skills were developed?

Observation, communication, and problem analysis skills.

Survey Report:

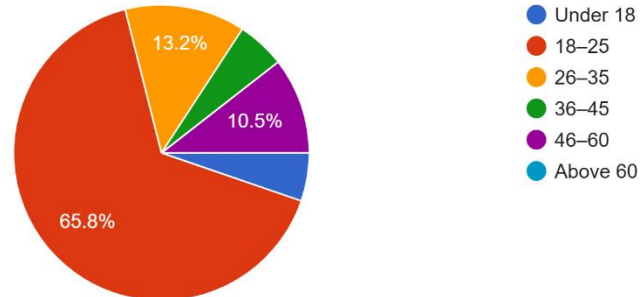
Station	Line	Platform	Time	Observed	Notes
1. Platform 1	Line 1	Platform 1	08:00	10	Peak hour, crowded
2. Platform 2	Line 2	Platform 2	08:15	15	Peak hour, crowded
3. Platform 3	Line 3	Platform 3	08:30	20	Peak hour, crowded
4. Platform 4	Line 4	Platform 4	08:45	25	Peak hour, crowded
5. Platform 5	Line 5	Platform 5	09:00	30	Peak hour, crowded
6. Platform 6	Line 6	Platform 6	09:15	35	Peak hour, crowded
7. Platform 7	Line 7	Platform 7	09:30	40	Peak hour, crowded
8. Platform 8	Line 8	Platform 8	09:45	45	Peak hour, crowded
9. Platform 9	Line 9	Platform 9	10:00	50	Peak hour, crowded
10. Platform 10	Line 10	Platform 10	10:15	55	Peak hour, crowded
11. Platform 11	Line 11	Platform 11	10:30	60	Peak hour, crowded
12. Platform 12	Line 12	Platform 12	10:45	65	Peak hour, crowded
13. Platform 13	Line 13	Platform 13	11:00	70	Peak hour, crowded
14. Platform 14	Line 14	Platform 14	11:15	75	Peak hour, crowded
15. Platform 15	Line 15	Platform 15	11:30	80	Peak hour, crowded
16. Platform 16	Line 16	Platform 16	11:45	85	Peak hour, crowded
17. Platform 17	Line 17	Platform 17	12:00	90	Peak hour, crowded
18. Platform 18	Line 18	Platform 18	12:15	95	Peak hour, crowded
19. Platform 19	Line 19	Platform 19	12:30	100	Peak hour, crowded
20. Platform 20	Line 20	Platform 20	12:45	105	Peak hour, crowded
21. Platform 21	Line 21	Platform 21	13:00	110	Peak hour, crowded
22. Platform 22	Line 22	Platform 22	13:15	115	Peak hour, crowded
23. Platform 23	Line 23	Platform 23	13:30	120	Peak hour, crowded
24. Platform 24	Line 24	Platform 24	13:45	125	Peak hour, crowded
25. Platform 25	Line 25	Platform 25	14:00	130	Peak hour, crowded
26. Platform 26	Line 26	Platform 26	14:15	135	Peak hour, crowded
27. Platform 27	Line 27	Platform 27	14:30	140	Peak hour, crowded
28. Platform 28	Line 28	Platform 28	14:45	145	Peak hour, crowded
29. Platform 29	Line 29	Platform 29	15:00	150	Peak hour, crowded
30. Platform 30	Line 30	Platform 30	15:15	155	Peak hour, crowded
31. Platform 31	Line 31	Platform 31	15:30	160	Peak hour, crowded
32. Platform 32	Line 32	Platform 32	15:45	165	Peak hour, crowded
33. Platform 33	Line 33	Platform 33	16:00	170	Peak hour, crowded
34. Platform 34	Line 34	Platform 34	16:15	175	Peak hour, crowded
35. Platform 35	Line 35	Platform 35	16:30	180	Peak hour, crowded
36. Platform 36	Line 36	Platform 36	16:45	185	Peak hour, crowded
37. Platform 37	Line 37	Platform 37	17:00	190	Peak hour, crowded
38. Platform 38	Line 38	Platform 38	17:15	195	Peak hour, crowded
39. Platform 39	Line 39	Platform 39	17:30	200	Peak hour, crowded
40. Platform 40	Line 40	Platform 40	17:45	205	Peak hour, crowded
41. Platform 41	Line 41	Platform 41	18:00	210	Peak hour, crowded
42. Platform 42	Line 42	Platform 42	18:15	215	Peak hour, crowded
43. Platform 43	Line 43	Platform 43	18:30	220	Peak hour, crowded
44. Platform 44	Line 44	Platform 44	18:45	225	Peak hour, crowded
45. Platform 45	Line 45	Platform 45	19:00	230	Peak hour, crowded
46. Platform 46	Line 46	Platform 46	19:15	235	Peak hour, crowded
47. Platform 47	Line 47	Platform 47	19:30	240	Peak hour, crowded
48. Platform 48	Line 48	Platform 48	19:45	245	Peak hour, crowded
49. Platform 49	Line 49	Platform 49	20:00	250	Peak hour, crowded
50. Platform 50	Line 50	Platform 50	20:15	255	Peak hour, crowded
51. Platform 51	Line 51	Platform 51	20:30	260	Peak hour, crowded
52. Platform 52	Line 52	Platform 52	20:45	265	Peak hour, crowded
53. Platform 53	Line 53	Platform 53	21:00	270	Peak hour, crowded
54. Platform 54	Line 54	Platform 54	21:15	275	Peak hour, crowded
55. Platform 55	Line 55	Platform 55	21:30	280	Peak hour, crowded
56. Platform 56	Line 56	Platform 56	21:45	285	Peak hour, crowded
57. Platform 57	Line 57	Platform 57	22:00	290	Peak hour, crowded
58. Platform 58	Line 58	Platform 58	22:15	295	Peak hour, crowded
59. Platform 59	Line 59	Platform 59	22:30	300	Peak hour, crowded
60. Platform 60	Line 60	Platform 60	22:45	305	Peak hour, crowded
61. Platform 61	Line 61	Platform 61	23:00	310	Peak hour, crowded
62. Platform 62	Line 62	Platform 62	23:15	315	Peak hour, crowded
63. Platform 63	Line 63	Platform 63	23:30	320	Peak hour, crowded
64. Platform 64	Line 64	Platform 64	23:45	325	Peak hour, crowded
65. Platform 65	Line 65	Platform 65	24:00	330	Peak hour, crowded
66. Platform 66	Line 66	Platform 66	24:15	335	Peak hour, crowded
67. Platform 67	Line 67	Platform 67	24:30	340	Peak hour, crowded
68. Platform 68	Line 68	Platform 68	24:45	345	Peak hour, crowded
69. Platform 69	Line 69	Platform 69	25:00	350	Peak hour, crowded
70. Platform 70	Line 70	Platform 70	25:15	355	Peak hour, crowded
71. Platform 71	Line 71	Platform 71	25:30	360	Peak hour, crowded
72. Platform 72	Line 72	Platform 72	25:45	365	Peak hour, crowded
73. Platform 73	Line 73	Platform 73	26:00	370	Peak hour, crowded
74. Platform 74	Line 74	Platform 74	26:15	375	Peak hour, crowded
75. Platform 75	Line 75	Platform 75	26:30	380	Peak hour, crowded
76. Platform 76	Line 76	Platform 76	26:45	385	Peak hour, crowded
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81. Platform 81	Line 81	Platform 81	28:00	410	Peak hour, crowded
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88. Platform 88	Line 88	Platform 88	29:45	445	Peak hour, crowded
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92. Platform 92	Line 92	Platform 92	30:45	465	Peak hour, crowded
93. Platform 93	Line 93	Platform 93	31:00	470	Peak hour, crowded
94. Platform 94	Line 94	Platform 94	31:15	475	Peak hour, crowded
95. Platform 95	Line 95	Platform 95	31:30	480	Peak hour, crowded
96. Platform 96	Line 96	Platform 96	31:45	485	Peak hour, crowded
97. Platform 97	Line 97	Platform 97	32:00	490	Peak hour, crowded
98. Platform 98	Line 98	Platform 98	32:15	495	Peak hour, crowded
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28. Platform 28	Line 28	Platform 28	14:45	145	Peak hour, crowded
29. Platform 29	Line 29	Platform 29	15:00	150	Peak hour, crowded
30. Platform 30	Line 30	Platform 30	15:15	155	Peak hour, crowded
31. Platform 31	Line 31	Platform 31	15:30	160	Peak hour, crowded
32. Platform 32	Line 32	Platform 32	15:45	165	Peak hour, crowded
33. Platform 33	Line 33	Platform 33	16:00	170	Peak hour, crowded
34. Platform 34	Line 34	Platform 34	16:15	175	Peak hour, crowded
35. Platform 35	Line 35	Platform 35	16:30	180	Peak hour, crowded
36. Platform 36	Line 36	Platform 36	16:45	185	Peak hour, crowded
37. Platform 37	Line 37	Platform 37	17:00	190	Peak hour, crowded
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58. Platform 58	Line 58	Platform 58	22:15	295	Peak hour, crowded
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66. Platform 66	Line 66	Platform 66	24:15	335	Peak hour, crowded
67. Platform 67	Line 67	Platform 67	24:30	340	Peak hour, crowded
68. Platform 68	Line 68	Platform 68	24:45	345	Peak hour, crowded
69. Platform 69	Line 69	Platform 69	25:00	350	Peak hour, crowded
70. Platform 70	Line 70	Platform 70	25:15	355	Peak hour, crowded
71. Platform 71	Line 71	Platform 71	25:30	360	Peak hour, crowded
72. Platform 72	Line 72	Platform 72	25:45	365	Peak hour, crowded
73. Platform 73	Line 73	Platform 73	26:00	370	Peak hour, crowded
74. Platform 74	Line 74	Platform 74	26:15	375	Peak hour, crowded
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76. Platform 76	Line 76	Platform 76	26:45	385	Peak hour, crowded
77. Platform 77	Line 77	Platform 77	27:00	390	Peak hour, crowded
78. Platform 78	Line 78	Platform 78	27:15	395	Peak hour, crowded
79. Platform 79	Line 79	Platform 79	27:30	400	Peak hour, crowded
80. Platform 80	Line 80	Platform 80	27:45	405	Peak hour, crowded
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SECTION 1: Basic Details.

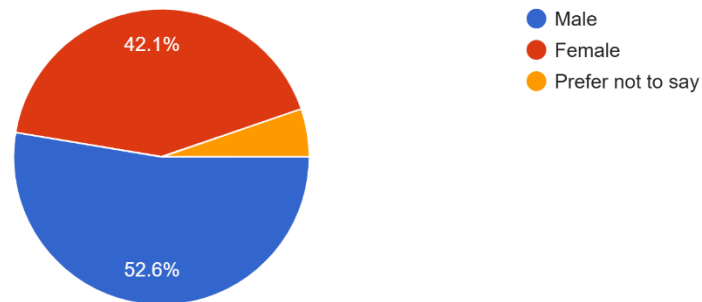
Age Group

38 responses



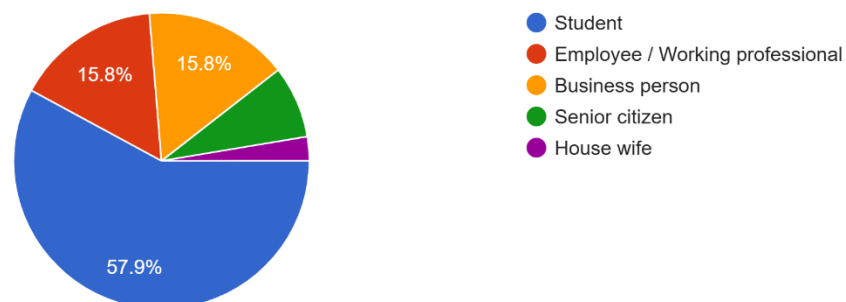
Gender

38 responses



Your Primary Role

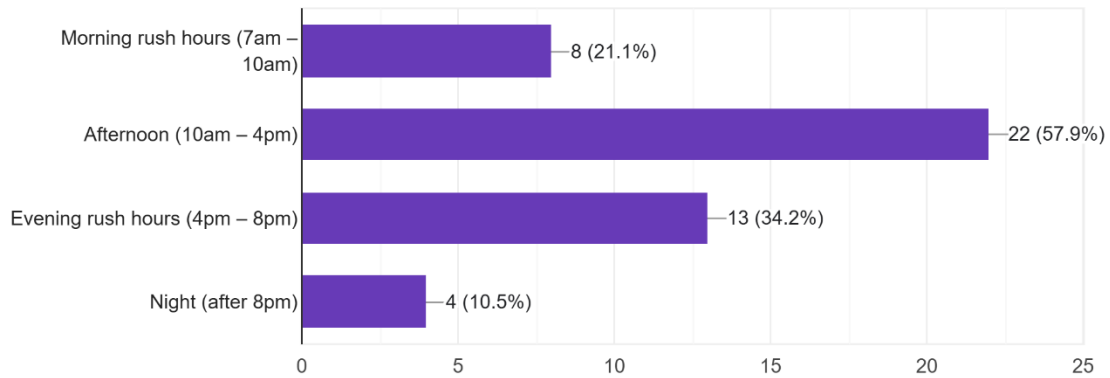
38 responses



SECTION 2: Metro Usage.

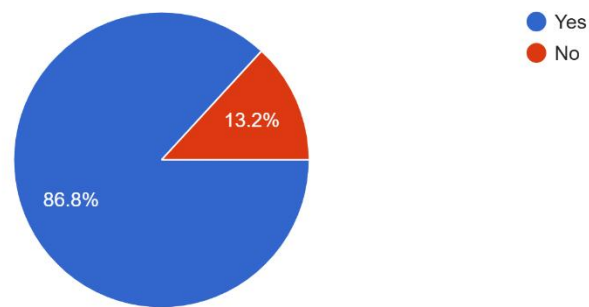
When do you mostly travel?

38 responses



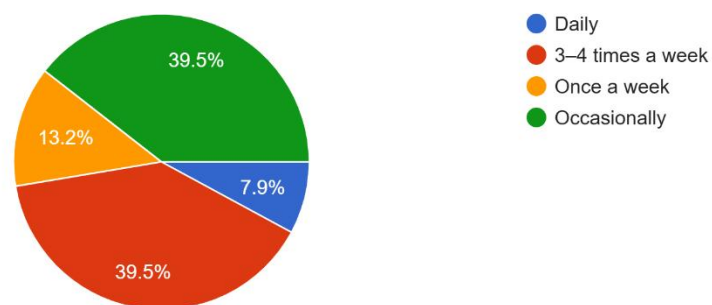
Do you use metro services?

38 responses



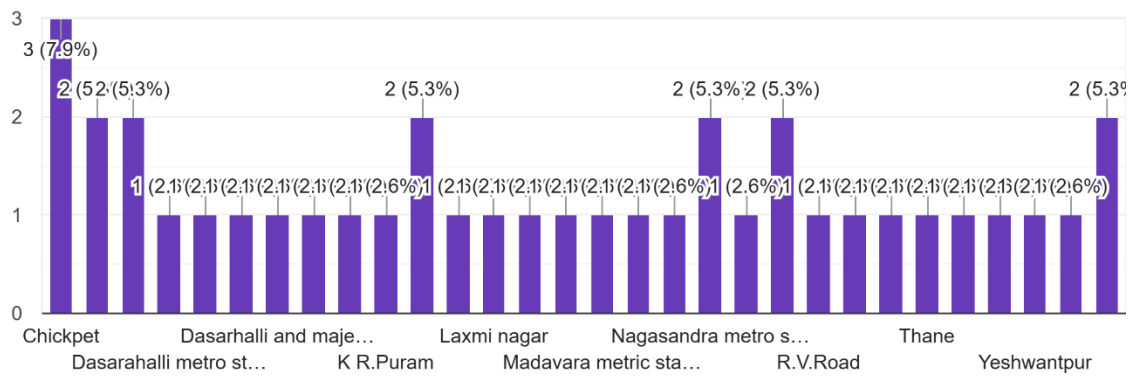
How often do you use metro?

38 responses



Which metro station do you use frequently?

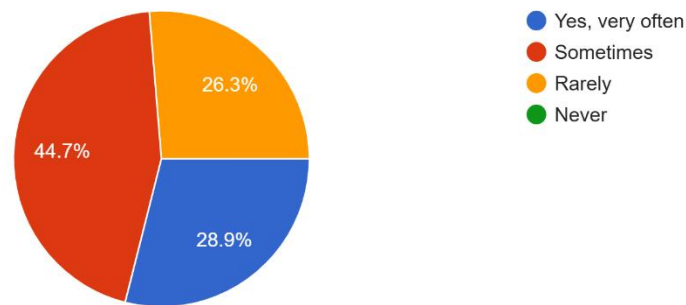
38 responses



SECTION 3: Overcrowding Experience.

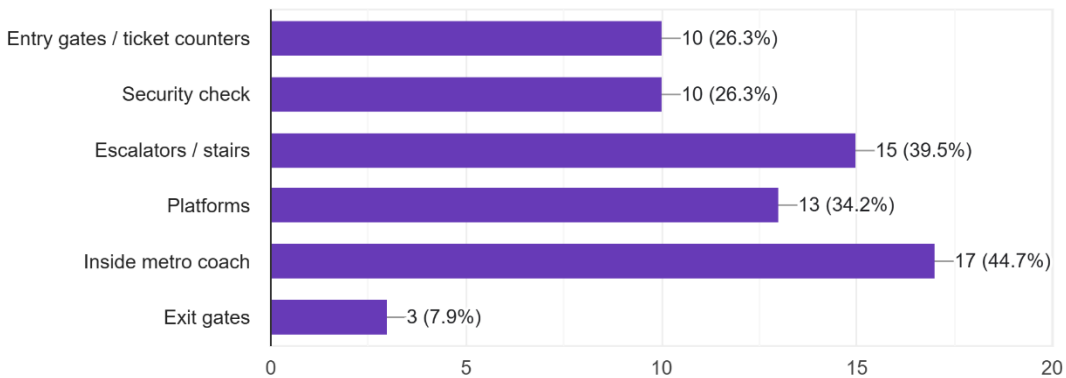
Have you experienced overcrowding in metro stations?

38 responses



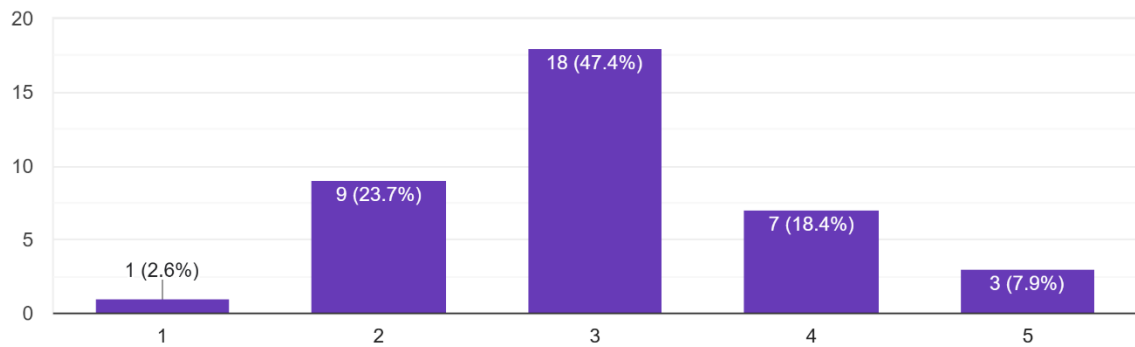
Where do you face maximum crowding?

38 responses



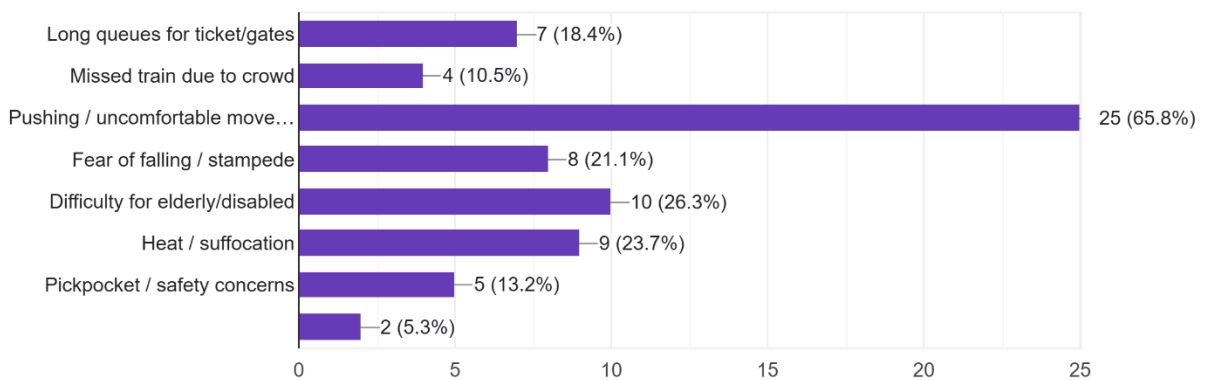
Rate overcrowding severity during rush hours

38 responses



What problems do you face due to overcrowding?

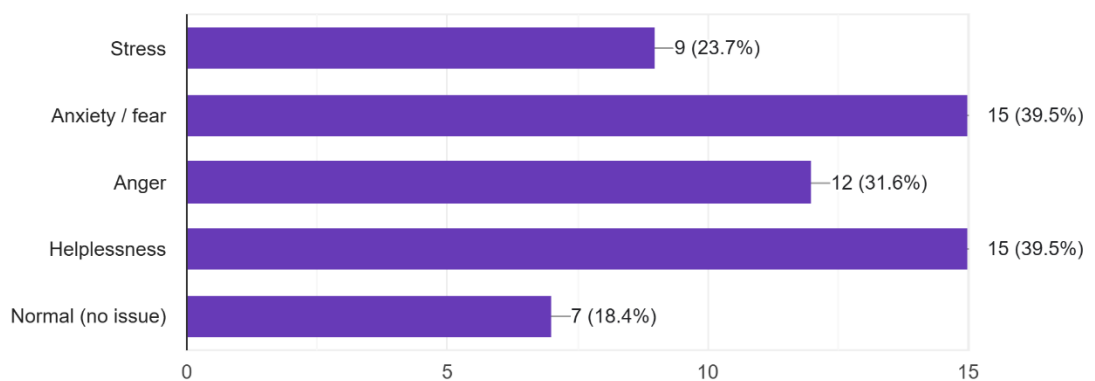
38 responses



SECTION 4: Emotional & Safety Impact.

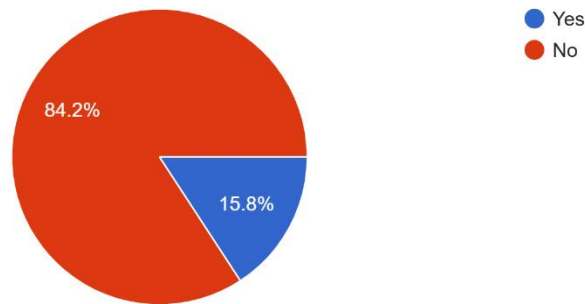
How do you feel during overcrowding?

38 responses



Have you ever faced a safety incident due to crowd?

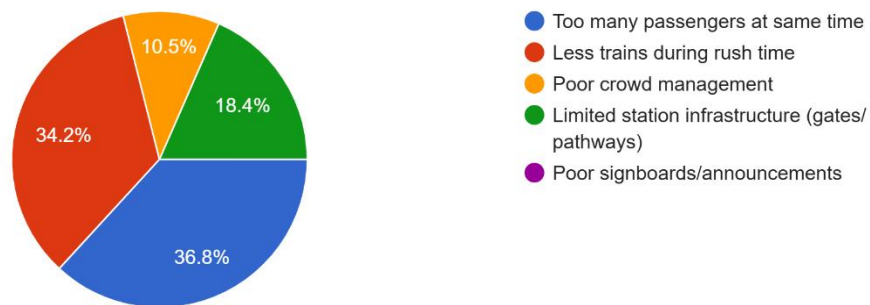
38 responses



SECTION 5: Root Cause & Suggestions.

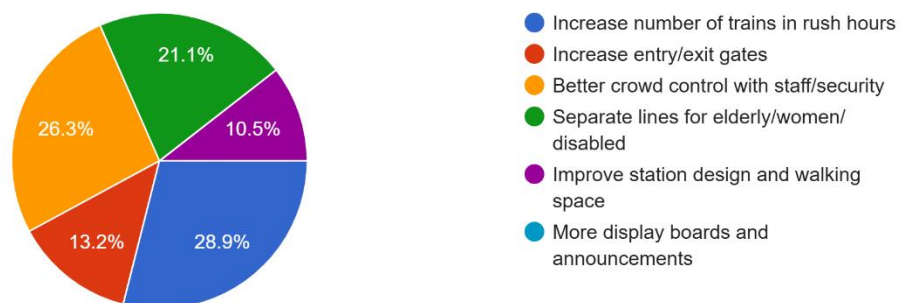
What do you think is the major reason for overcrowding?

38 responses



Which improvement will reduce overcrowding the most?

38 responses



SECTION 6: Consent.

Do you agree to share your response for academic research purposes?

38 responses

