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Building Fire and Disaster Resilience in Student Rental Housing: A University Social Responsibility Initiative for PG and Hostel Communities in Nagasandra, Bengaluru

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ABSTRACT

Paying guest housing (PG), hostels, and shared flats accommodate a significant number of students in Bengaluru, but not much is known about fire and disaster preparedness in this unregulated space. In this project, we conducted a survey of 103 students living in PGs, hostels, and shared flats in Nagasandra and nearby localities (Chikkabidarakallu, Dasarahalli) through a structured Likert-scale questionnaire assessing awareness, preparedness behavior, confidence in the management, peer influence, sustainability attitude, and institutional support expectation. The results of the survey show high awareness of basic safety provisions along with a huge preparedness gap: 90.3% of respondents said that there was never any fire drill held at their accommodation, while 65% had never seen any posted evacuation plan. Based on these results, we propose a University Social Responsibility (USR) project in the form of a Fire and Disaster Readiness Cell led by the students and linking university, PG/hostel owners, and civic fire authorities.

1. Background

1.1 The Community and the Problem

Nagasandra is a growing area located on the Tumkur Road corridor of Bengaluru towards the north-west of the city and has seen a rapid emergence of student rental housing due to its closeness to educational institutions as well as connectivity through the metro. This has resulted in a crowded, mostly informal, ecosystem of paying guests, hostels, and shared housing which accommodate hundreds of students and working young migrants who migrate to the area from other parts of the district or even the country and do not have any experience of living in such structures.

The paying guest and hostel housing market in India is one of the most loosely regulated markets in the urban housing market. Authorities like the Bruhat Bengaluru Mahanagara Palike (BBMP) have tried to strengthen licensing norms from time to time after accidents have occurred in the city. Nevertheless, estimates in the industry state that only a small percentage of the PGs (estimated at about 2,500 out of an estimated total of 10,000–20,000 PGs in the city) have been registered by the BBMP, while the fire safety NOC from the Karnataka Fire and Emergency Services Department is yet another requirement which often gets overlooked, being different from the occupancy certificate of the building. The fire hazard in such an environment is magnified by structural hazards typical of informal rentals, which include high room occupancy density, old and/or overloaded wiring, shared kitchen areas, and multistory buildings with only one means of exit. With the majority of people being transitory (six months to two years residency) and with little control over the building infrastructure, preparation for disaster in this community becomes not a matter of personal preparedness, but rather of institution-based systems which residents themselves cannot easily alter. Therefore, PG and hostels make a unique example of disaster risk reduction – the community is extremely vulnerable, yet accessible through the affiliation with the university.

1.2 Rationale and SDG Alignment

In this case, the student PGs and hostel clusters are considered as an informal urban settlement located next to the university, and the response strategy towards this problem is framed as that of University Social Responsibility (USR):

- SDG 11 (Sustainable Cities and Communities): improved resilience, safety, and inclusivity in housing for the vulnerable urban population – in this case, students living in informal rentals – by means of building safety practices.
- SDG 13 (Climate Action): improved preparedness systems for hazards, of which fire is considered here as one of the closest and most frequent disasters.
- SDG 17 (Partnerships for the Goals): the USR initiative requires participation in a partnership between the university, PG/hostel owners, resident students, and the BBMP and Fire and Emergency Services authorities.
- The selection of fire and disaster safety as a focus issue also corresponds to the prevalent value within the community itself: as shown in the survey results below, all of the students (100%) expressed readiness to be safer if the college gets involved in PG/hostel safety campaigns.

2. Survey Tool and Data Analysis

2.1 Survey Design

The questionnaire tool was designed in a structured format (Google Form). It was arranged in eight sections as per the criteria of the survey given in the assignment:

- Section A - Demographics: Accommodation type, Age group, Gender, Year of Study, Room Sharing status, Tenure period and Locality
- Section B - Awareness (6 items): Fire Extinguisher awareness, Awareness of alarm, Maintenance of equipment, Awareness of exits, Awareness of wiring and Awareness of emergency contact numbers.
- Section C - Preparedness & Behaviour (6 items): Being prepared in case of any emergency, Clear exit routes, Past experience of fire drill, Display of evacuation plan, Individual precautions and Confidence.
- Section D - Trust in Management (5 items): Responsiveness of the warden/owner, Maintenance, Compliance and Accountability.
- Section E - Community Support & Trust (4 items): Peer Support, Responsibility and Communication regarding safety among residents.
- Section F – Perception of Sustainability (4 items): attitudes about maintenance, willingness to participate in financing of equipment, and attitudes about safety audits being mandatory.
- Section G – Attitudes Towards Institutional Support (4 items): interest in university assistance, training, and cooperation with the civic authorities.
- Section H – Open-ended items: incidents witnessed, major problem related to safety identified, university assistance required, and recommendations.

All attitudinal items were measured using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The survey tool is shown in Section 8 (Supporting Materials).

2.2 Sample Profile

The survey received 103 valid responses from residents of PGs, hostels, and shared flats. The sample profile is summarised below.

Demographic variable	Category	n	%
Accommodation type	Hostel	38	36.9%
	Shared flat	33	32.0%
	PG	32	31.1%
Locality	Nagasandra	76	73.8%
	Chikkabidarakallu	14	13.6%
	Dasarahalli	13	12.6%

Demographic variable	Category	n	%
Age group	18–20 years	42	40.8%
	21–23 years	23	22.3%
	24–26 years	18	17.5%
	27 and above	20	19.4%
Gender	Male	48	46.6%
	Prefer not to say	26	25.2%
	Other	17	16.5%
	Female	12	11.7%
Year of study	1st year	37	35.9%
	2nd year	30	29.1%
	3rd year	14	13.6%
	4th year	12	11.7%
	Postgraduate	10	9.7%
Duration of stay	6 months – 1 year	52	50.5%
	1 – 2 years	27	26.2%
	Less than 6 months	21	20.4%
	Over 2 years	3	2.9%

Table 1. Sample profile of survey respondents (N = 103).

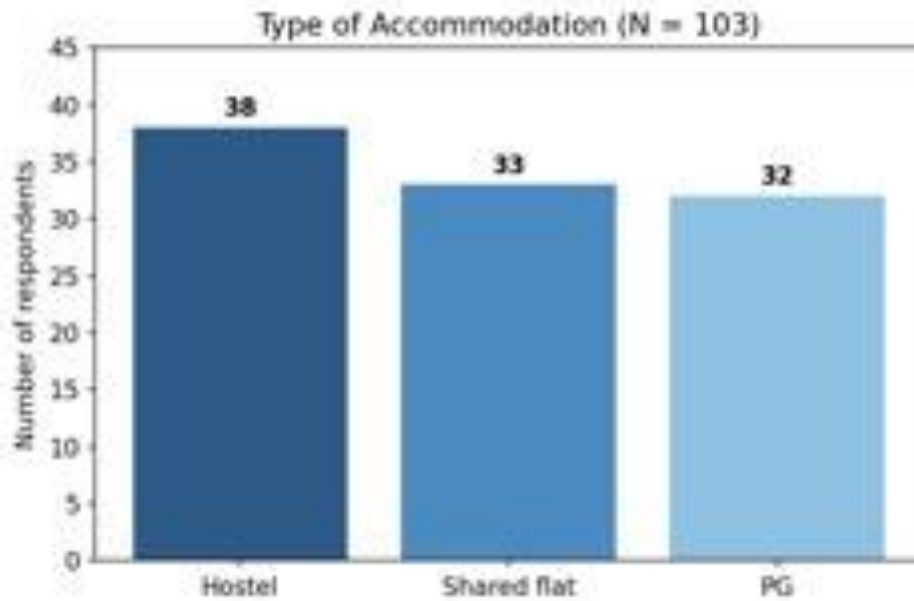


Figure 1. Distribution of respondents by type of accommodation.

The sample was mostly comprised of residents from Nagasandra only, is equally divided into the three types of accommodation, and is composed of first and second-year students that have been living in their accommodation for less than a year — the very people that know the least about the security features of their accommodation building.

2.3 Key Findings by Dimension

Mean scores were computed for each survey dimension by averaging item scores on the 1–5 scale.

Dimension	Mean score (1–5)	Interpretation
Awareness of safety infrastructure	3.93	Moderately high — most residents recognise basic safety features exist
Preparedness & behaviour	3.09	Lowest score — awareness does not translate into drills, plans, or confidence
Trust in PG/hostel management	3.42	Mixed — moderate trust, but low confidence that reported issues get fixed
Peer / community support	3.92	High — strong informal social safety net among residents
Personal sustainability commitment	4.55	Very high — residents are willing to sustain safety practices themselves
Desire for institutional (university) support	3.72	High overall, but uneven across specific forms of support

Table 2. Mean scores by survey dimension.

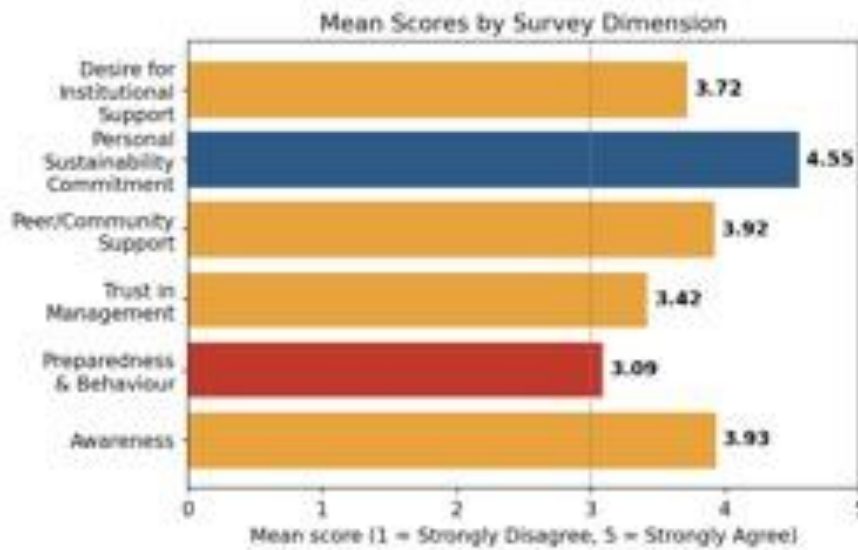


Figure 2. Mean scores across the six survey dimensions.

There is a high level of consistency among PG, hostel, and shared flat accommodation types in terms of awareness: the mean awareness score for PG accommodation was 3.98; the mean awareness score for hostel accommodation was 3.94, and the mean awareness score for shared flat accommodation was 3.86. The level of preparedness scores is even tighter (3.04-3.11). This suggests that the disparity in preparedness noted below is a systemic problem in the sector, and not an issue in any particular accommodation.

2.4 The Core Gap: Awareness Without Preparedness

The key observation is the clear distinction between passive awareness and proactive preparedness:

- 90.3% of survey participants disagreed or strongly disagreed that there has ever been at least one fire safety drill organized in their PG/hostel after they came there.
- 65.0% disagreed or strongly disagreed that any written emergency evacuation plan was posted in their building.
- Only 29.1% took any preparatory actions on their own, such as keeping a flashlight or learning about evacuation routes.
- Only 31.1% believed that they can behave properly in a situation of fire emergency – the majority (69 out of 103) were neutral.
- Only 29.1% could be sure that they know where the nearest emergency exit is; 20.4% actively disagreed.

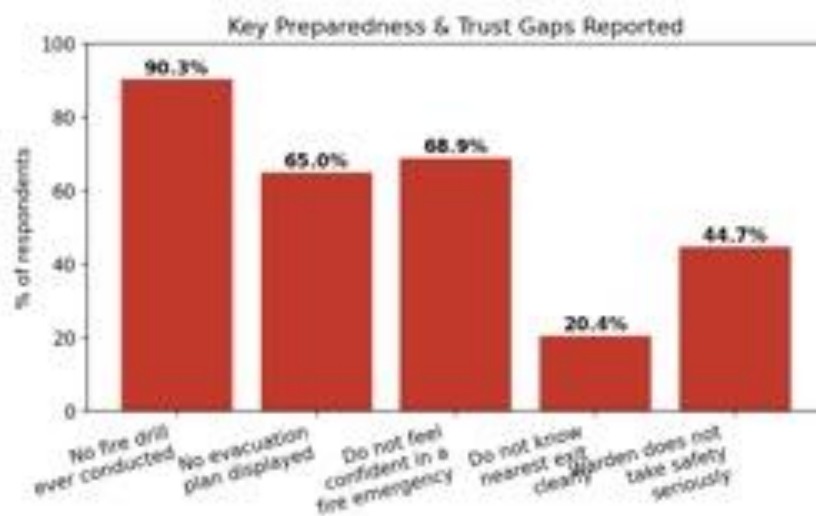


Figure 3. Key preparedness and trust gaps reported by residents.

On the other hand, the respondents were aware of the emergency contact numbers (84 out of 103 respondents strongly agreed to the question on whether they were aware of the fire services/campus security number), indicating that informational awareness is not the limiting factor – it is experiential preparedness.

2.5 Trust, Accountability, and Community Support

PG/hostel management trust was average and unequal: only 44.7% of the surveyed people disagree with their warden/owner taking their safety concerns seriously, and just 21.4% felt like their complaint about any safety hazard (like wiring fault) will be dealt with timely. On the other hand, 89.3% of the surveyed people agreed with the statement that landlord/PG owner must be made more responsible when it comes to safety compliance issues – it is clear that the participants perceived the former as the binding constraint here.

The trust between peers turned out to be significantly stronger than institutional trust: 76.7% of the surveyed people stated that the residents watch out for one another during emergencies, while 78.6% of them claimed that they would trust a fellow resident to help them if a fire occurs. However, only 36.9% of the surveyed people ever discussed fire/disaster safety precautions with their roommates and other residents.

2.6 Sustainability Attitudes and Appetite for University Involvement

The residents exhibited very high levels of support for continuous, as opposed to occasional, safety practices: 99% of the respondents agreed or strongly agreed that fire safety procedures should be maintained regularly rather than a one-time solution, 99% approved of the necessity of a compulsory safety check before any resident joins the PG/hostel, and 102 out of 103 residents indicated that they would continue practicing safety procedures even without reminders.

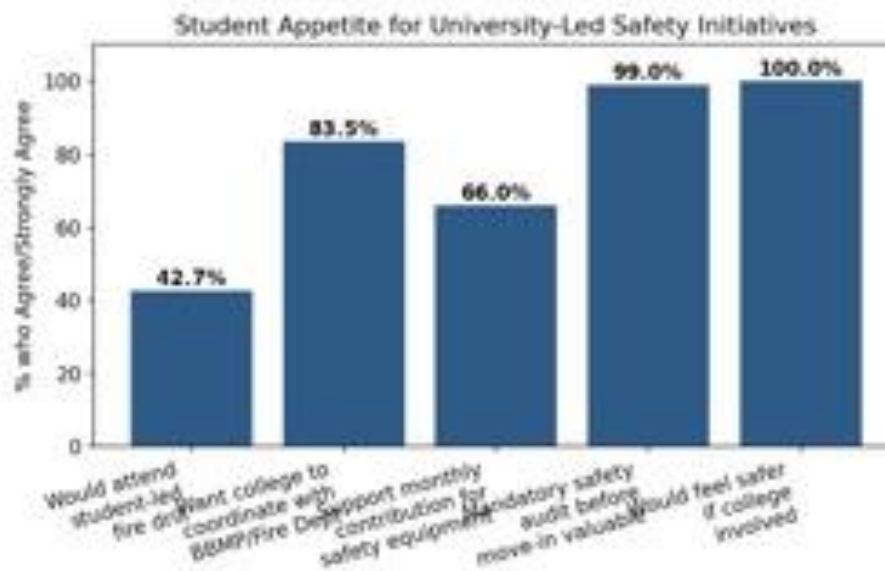


Figure 4. Student appetite for university-led safety initiatives.

The appetite for university intervention was high but varied with regards to what kind of help was provided. 103 out of 103 (100%) survey participants felt that they would be safer if their university had a role in increasing PG/hostel safety awareness, and 86.9% would like to see their universities coordinate directly with the city administration (BBMP, fire department) with respect to student housing safety. Only 42.7% said that they would attend a student-driven fire safety drill arranged by their university, and just 4.9% would want their university to provide assistance in selecting a safe PG or hostel. This clearly shows that the students are open to university intervention in the system and policy coordination sphere but are wary of university interventions in their housing choices.

2.7 Limitations of the Data

The questions related to experienced safety incidents, the largest single safety gap, support needed and additional suggestions were not answered in writing by any participant in this round of the survey, although these questions were included in the form. This means that the depth of qualitative analysis will be limited and that it is recommended (as mentioned in Section 7) to conduct a round of short interviews or focus group discussions as the next step in order to elicit participants' own stories about their safety gaps. The sample size is sufficient for conducting a localised needs assessment, but it is not random and cannot be generalized to the PG sector of Bengaluru as a whole.

3. USR Initiative Design

Based on the data, the core problem is not ignorance but the absence of rehearsed, institutionally-backed emergency systems, combined with weak accountability of PG/hostel management and under-used peer social capital. The proposed USR initiative is a student-led Fire and Disaster Readiness Cell (FDRC), anchored in the university's Community Engagement office and co-run with willing PG/hostel management and BBMP/Fire Department resource persons.

3.a. Objectives

- Conducting at least one practical fire evacuation drill for each participating PG/hostel cluster located in Nagasandra within an academic year, targeting the 90.3% of residents who have not been part of any such drills before.
- Having a basic but verified emergency evacuation plan and proper signs in all participating accommodations, addressing the issue of 65% of accommodations lacking these provisions.
- Transforming existing trust among peers (76%-79% of residents believe their fellow residents in case of emergency) to become a formal and properly trained Floor/Building Safety Buddy program.
- Creating a communication channel between residents, PG owners and BBMP/Fire Department so that problems like faulty wiring could be reported and taken care of by addressing the fact that only 21.4% believe in prompt problem-solving.
- Using a safety audit checklist designed by the students themselves as a pilot for the students to use while choosing their PG/hostels, in a way that addresses the issue that the students would prefer a more coordinated system (83.5%) than advisory service (4.9%).

3.b. Stakeholder Roles

Stakeholder	Role and Responsibility
University / Community Engagement Cell	Coordinates the initiative; trains student volunteers; liaises formally with BBMP and Karnataka Fire & Emergency Services; provides venue and modest seed funding for signage/equipment.
Student volunteers (FDRC members)	Undergo training-of-trainers; run cluster-level orientation sessions and drills; maintain the Floor/Building Safety Buddy roster; collect follow-up data.
Resident students (all PG/hostel/flat occupants)	Participate in orientation and at least one drill per cluster; nominate a Safety Buddy per floor; report hazards through the FDRC channel.
PG/hostel owners and wardens	Grant permission for drills and signage installation; commit to a basic maintenance schedule for extinguishers/wiring; respond to hazard reports within an agreed timeframe.
BBMP & Karnataka Fire and Emergency Services	Provide technical resource persons for drills and a simplified self-audit checklist; offer a fast-track inspection contact for the pilot cluster; share information on the fire-NOC process.
Faculty mentor / NSS-NCC or CE cell	Supervises ethical conduct, data handling, and academic reporting; signs off on stakeholder MoUs.

Table 3. Stakeholder roles and responsibilities.

3.c. Activities and Timeline

Phase	Timeline	Key Activities
Phase 1: Needs assessment & consent (completed)	Month 1	Survey administration (this report); identification of 3–5 pilot PG/hostel clusters based on willingness of owners and resident interest.
Phase 2: Partnership building	Month 2	MoU/consent discussions with pilot PG/hostel owners; formal outreach letter to BBMP and Fire & Emergency Services; recruitment and training of student FDRC volunteers.
Phase 3: Infrastructure baseline	Month 2–3	Volunteer-led walkthrough of pilot buildings using a simple safety checklist; low-cost fixes flagged (e.g., missing exit signage) shared with owners.
Phase 4: Orientation & Safety Buddy rollout	Month 3	Cluster-level orientation sessions; nomination of one Safety Buddy per floor/wing; distribution of a one-page emergency action card and QR-coded evacuation map.
Phase 5: First fire evacuation drill	Month 4	Announced, low-pressure drill conducted with Fire Department resource person present at each pilot cluster; feedback collected immediately after.
Phase 6: Accountability channel launch	Month 4–5	Hazard-reporting channel (shared form/WhatsApp group moderated by FDRC) piloted; response-time tracking begins.
Phase 7: Review, scale-up & handover	Month 6	Post-drill survey (repeat of Sections B–D of the instrument) to measure change; results shared with university and BBMP; plan drafted to expand from pilot clusters to the wider Nagasandra area in the following semester.

Table 4. Six-month activity timeline for the pilot phase.

3.d. Resources Required

- Human: 15-20 trained volunteers; one member of faculty/CE coordinator; one liaison officer from BBMP/Fire Department (part-time, for drills only).
- Financial: modest seed money for signage (evacuation maps), emergency action cards, training of volunteers (estimated at ₹15,000-₹25,000 for the pilot phase, from the university's CE/CSR budget).
- Institutional: introduction letters from the university to the BBMP/Fire Department; place for training volunteers; use of the university's infrastructure (NSS/NCC or CE) for outreach.
- Tech: simple shared form or messaging service for hazard reports; QR codes with a digital copy of the evacuation plan for each building.
- Provided by owner: permission to conduct drills and place signage; funding or facilitation for any repairs found that are beyond the scope of the student volunteers.

4. Sustainability and Ethical Safeguards

4.1 Sustainability (Social, Economic, Environmental)

Social sustainability: This model is made to be sustainable through individual students turning over each academic year, as 76.5% of residents have reported that they are responsible for each other's safety, thus this practice is simply formalizing an internal one rather than implementing an external norm and training incoming students by outgoing volunteers.

Economic sustainability: 66% of those surveyed stated that they would be willing to contribute a small monthly payment for improved safety equipment. It is proposed to do so by the initiative as an optional practice of residents only on the purchase of consumables such as flashlight batteries and maintenance of signs, but not as an obligatory fee, so as not to impose extra costs upon residents; all costs related to the structure itself (such as fire extinguisher servicing and wiring repair) stay as the responsibility of PG/hostel owners according to the accountability pathway.

Environmental sustainability: Signs and training material should be preferably digitalized (QR-linked evacuation maps), and equipment purchased by energy-efficient lighting.

5. Expected Measurable Outcomes

Outcome Area	Baseline (this survey)	Target after Pilot (6 months)
Fire drills conducted	9.7% of residents report at least one drill ever conducted	100% of pilot clusters complete at least one drill
Evacuation plans displayed	35.0% report a plan displayed	100% of pilot clusters display a verified plan
Personal preparedness steps taken	29.1% have taken personal precautions	≥60% of pilot residents adopt at least one precaution (target set below unanimous "continue safety practices" ceiling of 99%, reflecting realistic adoption)
Confidence in emergency response	31.1% feel confident	≥50% feel confident (post-drill survey)
Hazard reports resolved within agreed timeframe	21.4% currently trust prompt resolution	≥70% of logged hazard reports resolved or formally acknowledged within 14 days
Peer safety discussion	36.9% have discussed safety with roommates	≥65% following Safety Buddy rollout

Table 5. Baseline-to-target measurable outcomes.

Outcomes will be measured through (a) a repeat administration of the awareness/preparedness/trust sections of this survey instrument at the end of the pilot phase, (b) volunteer-logged drill attendance and hazard-report resolution records, and (c) a short participant feedback form after each drill.

6. Reflection and Recommendations

6.1 Reflection

Developing and carrying out this survey revealed a trend that the group did not fully anticipate at the outset: awareness does not mean institutional action in terms of drills, plans, or maintenance (the second highest score for awareness of all six dimensions). This altered our framing of the problem from one of informational inadequacy to one of a systems and accountability problem, which in turn shifted the focus of the USR design to systems and accountability (drills, accountability mechanisms, cooperation between university and BBMP) and away from pure information-gathering exercises like posters or lectures.

Secondly, the limitations of the survey itself are notable: the lack of qualitative input in response to the open questions was definitely a drawback of this round of data collection, and the group recognizes that the usefulness of quantitative Likert scale data lies in identifying trends (like the 90.3% no drill statistic), not in obtaining the actual details of the experience or suggestions for improvement.

In conclusion, interacting with this community meant being aware of the power imbalances involved: the student tenants are temporary and generally unwilling to bring up any issues regarding their safety with the owners because of the risk of losing their place, and this is illustrated in the mistrust they have regarding the resolution of the hazard reports, which motivated the group to insist on a mediated process.

6.2 Recommendations

- Conduct an anonymous qualitative survey on a very small scale to obtain incident stories and recommendations that the current open-ended questions could not gather.
- Focus the pilot in accommodation clusters that have the highest proportion of first-year and under-6-month residents because, among other factors, they will be most represented in the sample (61% of respondents have been living in their Stick to systemic university engagement through drills and BBMP coordination, as opposed to individual prescriptions, such as compiling an approved list of PGs (83.5% of respondents want institutional coordination but only 4.9% of them are interested in housing recommendations).
- Monitor the time of resolution of hazard reports openly from the start because the resident trust in management responsiveness (21.4%) will be the weakest element in the safety ecosystem.
- Look into establishing a longer-term relationship with BBMP in which results from the surveys conducted by this study and other similar studies are fed into the ongoing deliberations between BBMP and PG/hostel owners on licenses and fire-NOCs.

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