

Re-Migration Decision Making: An Analysis of Push and Pull Factors Influencing People's Decision to Return to High Disaster Risk Areas

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Abstract: The provision of post-disaster relocation programs aims to provide adequate shelter and ensure the safety of the community. In Lumajang, after eruption of Mount Semeru, many disaster-affected residents chose to return to their areas despite the high risks involved. Those who returned assumed that the government's relocation had not fully met their expectations and had an impact on various aspects. In addition, emotional attachments are one of the reasons for the return of the community. This shows that there are complex factors between push and pull that influence their decision to return to high disaster risk area. Using the push-pull migration framework, this study aims to analyze the factors that influence people's decision to return to their area of origin post-eruption of Mount Semeru. In this study, push factors are analyzed through housing satisfaction, while pull factors are analyzed through place attachment and risk perception. The analysis method used is descriptive statistical analysis. The results show that the factors encourage people to return to area of origin are caused by several things such as proximity to work locations (3.57), availability of integrated livestock (3.46), and availability of home utilities (3.45). Meanwhile, the pull factors that influence people's decisions are employment opportunities (3.45), availability of income sources (3.44), biodiversity of biological resources (3.43), and limited disaster information (3.35). In general, the high mean value of these indicators has the potential to encourage reluctance to stay in the new relocation location and become one of the reasons for people to consider returning to their home areas that have a higher level of disaster risk.

Keywords: Mount Semeru Eruption, Push Pull Migration, Relocation, Permanent Housing

1. Background

A global survey by Barclay et al. (2019) highlighted that >44% of deaths from volcanic disasters are caused by residents who resist relocation and decide to return to disaster-prone zones. This can occur due to push factors such as poor shelter conditions that can be seen through people's housing dissatisfaction with their new homes and pull factors such as risk perception and place attachment (Barclay et al., 2019). Housing dissatisfaction is the gap between existing housing conditions and residents' expectations (Campbell et al., 1976). Meanwhile, place attachment is a complex phenomenon arising from the relationship between humans and physical places (Fornara et al., 2020; Low & Altman, 1992). It includes affective (feelings), cognitive (thoughts), and behavioral (actions) aspects connected with a particular place (Hidalgo & Hernández, 2001; Low & Altman, 1992). A person who has lived in a place for a long time tends to be strongly attached to that place (Devine-Wright, 2013; Lewicka, 2011). Strong attachments often influence one's actions and perceptions, for example when making migration-related decisions in the face of threats (Farbotko & McMichael, 2019).

Based on information obtained from the Center for Volcanology and Geological Hazard Mitigation, on December 4, 2021 there was an eruption of Mount Semeru which caused 50 deaths, 18 serious injuries, 12 minor injuries, and 9,977 people displaced (Detik, 2021). Other impacts of this disaster include damage to infrastructure, residents' housing, and other public facilities, which has a total loss value of IDR 500 billion (Adit, 2021). Responding to this, the central government through the Directorate General of Housing of the Ministry of PUPR RI built 1,951 permanent housing in Sumbermujur Village, Candipuro District, Lumajang Regency (Anam, 2022). This decision was strengthened through the instruksi Dirjen Perumahan Kementerian PUPR through letter Number RU.0203-Dr/34, Nota Dinas Number 878/ND/Rb9/2022, and Nota Dinas Number 879/ND/Rb9.4.2/2022 to be able to start the implementation of the construction of permanent housing due to the Mount Semeru eruption disaster in Lumajang Regency. The decision related to the provision of permanent housing for residents affected by the Semeru disaster is carried out in accordance with the standards and provisions in the Peraturan Menteri PUPR Nomor 20/PRT/M/2017 about penyediaan Rumah Khusus.

Furthermore, people living in Bumi Semeru Damai (BSD) permanent housing are not only given assistance in the form of physical houses but also other assistance, such as home furnishings, basic necessities, water, electricity, and so on (Rahman, 2022). But in fact, the great efforts given by the government in the form of assistance and other facilities do not make all people in BSD permanent housing agree and want to relocate. In 2023, out of 1,951 available dwellings, around 151 families decided to return to their areas of origin (Fadly, 2023; Lentera, 2024). Those who decided to return to their areas of origin thought that the relocation carried out by the government was still not in accordance with expectations and had an impact on several things, such as a disrupted economy and new environmental conditions that changed (Davina, 2021; Rofiq, 2021). Not only that, the existence of deep emotional feelings such as a feeling of comfort living in the original residence and the social attachment that has been established is one of the reasons for the return of the community to their original area (Arifianto, 2023; Huda & Hartik, 2023; Karyantoni, 2023). This indicates that there are indications of strong pull and push factors that cause people to return to their original areas (high disaster risk areas).

The push pull migration theory that includes push factors in the form of housing satisfaction and pull factors in the form of risk perception and place attachment with a person's decision to return to a disaster area has indeed been discussed by some researchers separately. However, until now there has been no research that specifically explains the relationship between the two as part of the push-pull migration framework sequentially in the same case. Good relocation governance includes not only the reconstruction of houses, but also the rebuilding of social life (Balachandran et al., 2022; Iuchi & Mutter, 2020). Therefore, further research is needed that examines these aspects in more depth to ensure the success of a relocation that is not only physical, but also sustainable in terms of social, economic, environmental and community preferences.

2. Method

2.1. Research Area

The scope of this study is Supiturang Village, Pronojiwo Sub-district, Sumberwuluh Village and Sumbermujur Village, Candipuro Sub-district, Lumajang District. The administrative boundaries of the area are as follows:

- North : Pasrujambe village, Pasrujambe sub-district
- East : Penanggan village, Sumberejo village, and Candipuro village, Candipuro sub-district
- South : Jugosari Village, Candipuro Subdistrict
- West : Oro-Oro Ombo Village, Pronojiwo Sub-district



Figure 1. Regional Scope
Source: Author's Analysis, 2025

2.2. Research Variables

In determining key indicators and variables related to the concept of push-pull migration, particularly for push factors in the form of housing satisfaction and pull factors in the form of place attachment and risk perception, a literature review was used to ensure that each indicator selected was relevant and appropriate to the research context. Each indicator and variable was reviewed in depth to understand how previous researchers defined concepts, formulated hypotheses and found research results. This includes identifying findings that are consistent, contradictory, or provide a new perspective.

By integrating these findings, it can be concluded that push factors in the form of low satisfaction with housing conditions often encourage individuals to leave, while pull factors in the form of perceived risk and attachment to a place can be a strong pull in deciding on a destination location. Thus, from the literature synthesis that has been carried out, the following variables and indicators are found.

Table 1. Research Variables and Indicators

Variables	Indicator	Code	Source
Design	Residential Layout	D1	(Erinsel Önder et al., 2010; Sararit et al., 2018; Shrestha et al., 2023; Tas et al., 2007; Tharim et al., 2021; Varolgunes, 2021; Zhang et al., 2019)
	Design Flexibiity	D2	(Almira et al., 2023; Dikmen & Elias-Ozkan, 2016; Erinsel Önder et al., 2010; Hosseini et al., 2020; Oliver-Smith, 1991; Shrestha et al., 2023; Tas et al., 2007; Tharim et al., 2021; Varolgunes, 2021; Wijegunarathna et al., 2018; Zhang et al., 2019)
	Occupancy Size (Area)	D3	(Almira et al., 2023; Hadlos, 2021; Shrestha et al., 2023; Tharim et al., 2021; Varolgunes, 2021; Wijegunarathna et al., 2018; Zhang et al., 2019)
	Ventilation	D4	(Afacan & Demirkan, 2016; Almira et al., 2023; Lim et al., 2021; Wijegunarathna et al., 2018)

Variables	Indicator	Code	Source
	Lighting	D5	(Afacan & Demirkan, 2016; Almira et al., 2023; Shrestha et al., 2023; Sphere, 2011; Wijegunaratna et al., 2018)
	Availability of integrated farming	D6	(Chen et al., 2020; Cotton & Ackerman, 2019; Shrestha et al., 2023)
	Community involvement in design and layout	D7	(Lawther, 2009; Perera et al., 2012)
Residential Quality	Availability of home utilities	M1	(Almira et al., 2023; Palagi & Javernick-Will, 2020; Shrestha et al., 2023)
	Quality of houses that meet earthquake standards	M2	(Almira et al., 2023; Shrestha et al., 2023; Widayanti et al., 2020)
	Quality of construction materials	M3	(Almira et al., 2023; Baniya, 2021; Lan Oo, 2019; Rahardjo et al., 2003; Shrestha et al., 2023; Syamsidik et al., 2022; Venable et al., 2020; Wijegunaratna et al., 2018)
	Quality of house fittings	M4	(Almira et al., 2023; Rand et al., 2011; Shrestha et al., 2023)
Residential Site Accessibility	Proximity to city center	AL1	(Lan Oo, 2019; Palagi & Javernick-Will, 2020; Surjono et al., 2021)
	Proximity to the workplace	AL2	(Alananga Sanga, 2015; Lan Oo, 2019; Rieger, 2021; Shrestha et al., 2023; Singgih & Asano, 2019; Spoon, Gerkey, et al., 2020; Spoon, Hunter, et al., 2020)
	Proximity to public facilities	AL3	(Lan Oo, 2019; Liu & Ma, 2021; Singgih & Asano, 2019; Tharim et al., 2021)
Disaster Relief	Provision of material and financial assistance	PBB1	(Almira et al., 2023; Joshi & Nishimura, 2016; Khachadourian et al., 2015; Muir et al., 2019; Thaler & Fuchs, 2020)
	Smooth disbursement process	PBB2	(Almira et al., 2023; Raker & Woods, 2023; Tafti, 2015; Thaler & Fuchs, 2020)
Socio-cultural Environmental Conditions	Proximity to relatives and friends	SK1	(Hikichi et al., 2017; Lan Oo, 2019; Nejat et al., 2016)
	Interaction between communities	SK2	(Akaishi et al., 2021; Almira et al., 2023; Lan Oo, 2019; Manatunge et al., 2017; Nishihara et al., 2018; Singgih & Asano, 2019)
	Availability of space for religious, social and cultural events	SK3	(Marcillia & Ohno, 2018; Shrestha et al., 2023)
Socio-Demographic Attachment	Duration of stay	SD1	(Anton & Lawrence, 2014; Indayani, 2021; Kamalipour et al., 2012; Lestari & Sumabrata, 2018b; Lewicka, 2010; Önaç & Sütçüoğlu, 2021; Xu et al., 2017)
	Asset ownership	SD2	(Adie, 2020; Anton & Lawrence, 2014; Indayani, 2021; Kamalipour et al., 2012; Lestari & Sumabrata, 2018; Önaç & Sütçüoğlu, 2021; Xu et al., 2017)
	Resident status (native/migrant)	SD3	(Anton & Lawrence, 2014; Hernández et al., 2007; Lestari & Sumabrata, 2018; Song & Soopramanien, 2019)
Personal Attachment	Sense of happiness/comfort	P1	(Lee & Jeong, 2021; Scannell & Gifford, 2010, 2017)
	A sense of pride	P2	(Chamlee-Wright & Storr, 2009; Scannell & Gifford, 2010; Shipley et al., 2023)
	People's memory	P3	(Arslan & Unlu, 2016; Depari, 2017; Jamali et al., 2018; Manzo, 2005; Rishbeth & Powell, 2013; Scannell & Gifford, 2010; Zheng et al., 2019)
Socio-cultural Attachment	Presence of family and relatives	SB1	(Asfaw et al., 2019; Indayani, 2021; Lestari & Sumabrata, 2018; Macagba et al., 2018; Mishra et al., 2010)
	Interactions and bonds formed between residents	SB2	(Alawadi, 2016; Ananta et al., 2023; Binder et al., 2023; Indayani, 2021; Jamali et al., 2018; Nikrahei, 2015; Widodo et al., 2018)
	Cultural characteristics	SB3	(Bonaiuto et al., 2016; Indayani, 2021; Macagba et al., 2018)

Variables	Indicator	Code	Source
	House inherited from generations	SB4	(Lestari & Sumabrata, 2018; Li & Chan, 2018; Mishra et al., 2010)
Physical Attachment	Availability of public facilities	F1	(Ananta et al., 2023; Chamlee-Wright & Storr, 2009; Gieling et al., 2019; Kamalipour et al., 2012; Lestari & Sumabrata, 2018)
	Proximity to the workplace	F2	(Adie, 2020; Ananta et al., 2023; Jamali et al., 2018; Kamalipour et al., 2012)
	Feeling safe to stay	F3	(Chamlee-Wright & Storr, 2009; Indayani, 2021; Kamalipour et al., 2012; Xu et al., 2017)
	aesthetic quality of the environment and housing	F4	(Adie, 2020; Arslan & Unlu, 2016; Lewicka, 2011)
Place Dependence	Availability of income sources	KT1	(Greer et al., 2019; He et al., 2023; Lestari & Sumabrata, 2018; Mishra et al., 2010; Swapan & Sadeque, 2021; Widodo et al., 2018; Xu et al., 2017)
	Biodiversity of biological resources	KT2	(Ananta et al., 2023; Lestari & Sumabrata, 2018; Li & Chan, 2018; Mishra et al., 2010; Swapan & Sadeque, 2021; Widodo et al., 2018; Xu et al., 2017)
	Affordability of living costs	KT3	(Ananta et al., 2023; Costa et al., 2022; Lestari & Sumabrata, 2018; Li & Chan, 2018)
Personal experience	Experience during disasters	PP1	(Cui & Han, 2019; Donovan et al., 2018; Gao et al., 2020; Landeros-Mugica et al., 2016; López-Vázquez, 2009; Rianto & Widyatmoko, 2009; Richard Eiser et al., 2012; Rozaki et al., 2021; Vinnell et al., 2021; Wachinger et al., 2013)
	Frequency of exposure	PP2	(Papathoma-Köhle et al., 2015; Vinnell et al., 2021; Wachinger et al., 2013)
Information Media	Limited disaster information	MI1	(Bakhshian & Martinez-Pastor, 2023; Bird & Gísladóttir, 2018; López-Vázquez, 2009; Mafuko Nyandwi et al., 2023; Paek & Hove, 2017; Richard Eiser et al., 2012; Sadri et al., 2021; Xue et al., 2021)
Trust in Government	The level of individual confidence in the government in managing disaster risk	KP1	(Bird et al., 2011; De Bélizal et al., 2012; Han et al., 2011, 2017, 2021; Haney & Havice, 2019; Morin et al., 2019; Xue et al., 2021)

Sumber: Synthesis, 2025

2.3. Data Collection Methods

Data collection method is a systematic process of obtaining relevant and valid information from various sources to answer research questions, support hypotheses, or achieve research objectives. In this study, the data collection method consists of primary methods, which is the process of obtaining data directly from original sources, such as individuals, groups, or the environment under study. This data is collected by researchers through direct interaction or observation of research subjects. The primary data collection method was conducted through structured questions to respondents of Bumi Semeru Damai permanent housing beneficiaries in Lumajang Regency who decided to move or return to their areas of origin (high disaster risk areas). The questionnaires were distributed through direct distribution at the study location.

2.4. Analysis Method

This research uses descriptive statistics analysis method through input assessment of push factors in the form of the level of satisfaction of Disaster Affected Residents (DAPs) with their new housing and pull factors in the form of risk perception and the level of attachment of DAPs to their original area in the research location. Descriptive statistical analysis is a method in statistics used to describe or summarize data from a particular group or sample (Bernstein & Bernstein, 1999). The main purpose of this analysis is to provide a description or summary of the data so that patterns or trends can be recognized without making inferences or predictions about the wider population (Parahoo, 2006).

In measuring the variables that have been determined above, the descriptive statistical measurement scale used is an ordinal scale to classify something (size or quality) into several classifications. One form of ordinal scale is the Likert scale (Fisher & Marshall, 2009). Likert scale is a type of rating scale commonly used in surveys to measure the level of agreement or disagreement of respondents to certain statements (Likert, 1932). In this study, the scale range used is 1 to 4. The use of a Likert scale with a range of 1-4 is done to get more assertive response data and avoid the tendency of respondents to choose neutral answers. In the absence of a neutral option, respondents are encouraged to express a more assertive attitude, either agreeing or disagreeing with the statements submitted. This helps avoid the so-called “neutral choice bias,” where less motivated respondents tend to choose neutral answers to avoid more in-depth decisions or considerations (Connie & Risdianto, 2022; Duncan & Stenbeck, 1987; Plaimo & Wabang, 2022). The definition of using a 1-4 scale to assess the pull and push factors in this study is 1: Strongly disagree; 2: Disagree; 3: Agree; 4: Strongly agree.

To assess the tendency of respondents' perceptions of the indicators assessed, the mean is used. Mean in statistics refers to the average value of a set of collected data (Bluman, 2018; Triola, 2017). The formula for finding the mean is as follows.

$$\bar{x} = \frac{\sum_{i=1}^n xi}{n} \quad (1)$$

Keterangan:

\bar{x} = Mean

xi = The i-th data

n = Data frequency

3. Result and Discussion

3.1. Validity and Reliability Test

Before conducting a descriptive statistical analysis of the results, a validity test and reliability test will be conducted on 204 samples of BSD permanent housing beneficiaries who decided to return to their areas of origin (high disaster risk areas) either permanently or nomadically using SPSS software. The validity test is conducted to ensure that each research instrument used is really able to measure the intended construct, namely the push and pull factors that influence the decision of affected residents to return to their area of origin. With a significance level of 0.05 and the minimum r-count limit for each indicator set at 0.1367, the validity test results show that there are 7 indicators that are not significant (>0.05) so they are declared invalid and not continued in the next analysis. These indicators are ventilation, lighting, quality of houses that meet earthquake standards, quality of construction materials, quality of house fittings, interaction between communities, and availability of space for religious, social and cultural events.

Table 2. R-Count Analysis Result

Indikator	R-hitung	Sig	Ket	Indikator	R-hitung	Sig	Ket
D1	0.8672	<.001	Valid	SD2	0.7922	<.001	Valid
D2	0.8256	<.001	Valid	SD3	0.7965	<.001	Valid
D3	0.7768	<.001	Valid	P1	0.7312	<.001	Valid
D4	-0.0115	0.870	Rejected	P2	0.7082	<.001	Valid
D5	0.0168	0.811	Rejected	P3	0.7727	<.001	Valid
D6	0.8590	<.001	Valid	SB1	0.8064	<.001	Valid
D7	0.7229	<.001	Valid	SB2	0.7507	<.001	Valid
M1	0.8680	<.001	Valid	SB3	0.6932	<.001	Valid
M2	0.0689	0.327	Rejected	SB4	0.8145	<.001	Valid
M3	0.1028	0.143	Rejected	F1	0.7474	<.001	Valid

M4	0.0651	0.355	Rejected	F2	0.8052	<.001	Valid
AL1	0.7146	<.001	Valid	F3	0.7777	<.001	Valid
AL2	0.7009	<.001	Valid	F4	0.7541	<.001	Valid
AL3	0.7802	<.001	Valid	KT1	0.8343	<.001	Valid
PBB1	0.7773	<.001	Valid	KT2	0.8268	<.001	Valid
PBB2	0.8283	<.001	Valid	KT3	0.8219	<.001	Valid
SK1	0.8220	<.001	Valid	PP1	0.7910	<.001	Valid
SK2	0.1258	0.073	Rejected	PP2	0.8050	<.001	Valid
SK3	0.1204	0.086	Rejected	MI1	0.7795	<.001	Valid
SD1	0.7878	<.001	Valid	KP1	0.7422	<.001	Valid

Source: Author's Analysis, 2025

Based on the results of the validity test, the indicators that have procedural suitability (feasible) and can be continued for analysis are a total of 33 indicators which are then subjected to reliability testing. The reliability test aims to measure the internal consistency of the research instrument, so that the resulting data can be trusted and stable if the measurement is carried out again under similar conditions. The reliability test results show a Cronbach's Alpha value of 0.980. This figure is greater than the minimum reliability limit of 0.600 so it can be concluded that the 33 research indicators are reliable. The results of filling out questionnaires from 13 variables and 33 indicators were used to conduct descriptive statistical analysis.

3.2. Result

3.2.1. Housing Satisfaction

From the results of descriptive statistical analysis using SPSS software, it is known that the average score of all indicators in this study is classified in the high category (>3). This indicates that respondents simultaneously agreed that the indicators of the study influenced their decision to return to the area of origin (high disaster risk area). In this study, the housing satisfaction variable is measured through several indicators that represent the physical, social, and accessibility aspects of the permanent housing provided to affected residents. Descriptive statistical analysis is used to see the tendency of respondents' perceptions of housing satisfaction.

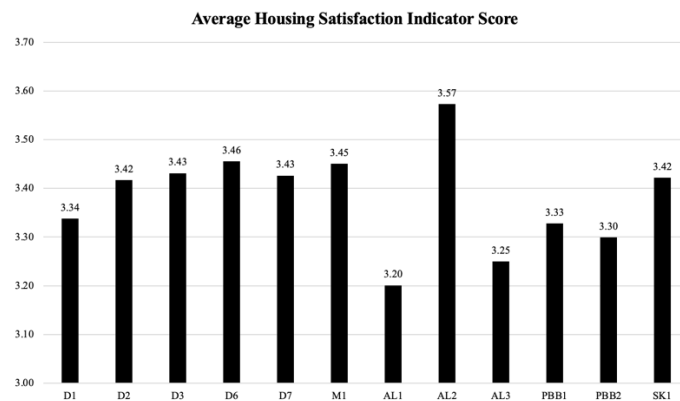


Figure 2. Average Housing Satisfaction Indicator Score

Source: Author's Analysis, 2025

Based on the figure above, it can be seen that the average score on the housing satisfaction indicators varies between 3.20 to 3.57 on a Likert scale of 1-4. In general, all indicators show an average value in the high category. This indicates that the level of community dissatisfaction with the relocated housing is also quite high. The indicators with the highest average scores are proximity to the workplace, with a score of 3.57, the availability of integrated farms with an average score of 3.46, and the availability of home utilities that have a dissatisfaction score of 3.45. Meanwhile, the indicator with the lowest average score is proximity to the city

center at 3.20, followed by the smooth process of disbursement and assistance (3.30) and proximity to public facilities (3.25).

3.2.2. Place Attachment

In this section, a descriptive statistical analysis of the indicators of the place attachment construct is conducted to understand the level of people's attachment to their home region. The assessment is carried out using a Likert scale of 1-4, where the higher the mean value obtained, the stronger the respondent's sense of attachment to their home region. The following is a graph of the results of the mean analysis of place attachment indicators.

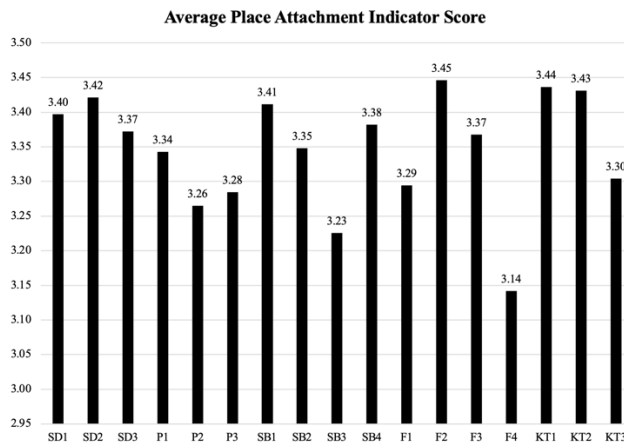


Figure 3. Average Place Attachment Indicator Score

Source: Author's Analysis, 2025

Based on the figure above, the average scores on the place attachment indicators vary from 3.14 to 3.45. In general, all indicators show high mean scores, indicating that people's attachment to their home region is strong (>3). The indicator with the highest mean score is proximity to the workplace with a score of 3.45. Other indicators with high scores are availability of income sources (3.44), biodiversity of biological resources (3.43), and asset ownership (3.42). In contrast, the indicators with the lowest mean scores are the aesthetic quality of the environment and housing with a score of 3.14, a sense of pride (3.26) and cultural characteristics (3.23). Although emotional attachment remains, its influence on relocation decisions tends to be smaller than functional daily needs such as livelihood.

3.2.3. Risk Perception

Risk perception reflects how individuals perceive and assess threats from disasters in their living environment. Assessments were made using a Likert scale of 1-4, where the higher the mean score the higher the level of dissatisfaction, distrust or vulnerability of the respondent's perceived risk.

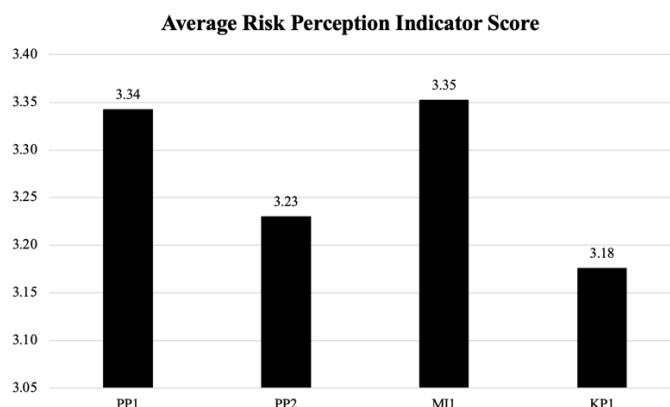


Figure 4. Average Risk Perception Indicator Score

Source: Author's Analysis, 2025

Based on the figure above, the average score on the risk perception indicators varies between 3.18 and 3.35. In general, the average scores of all indicators are high, indicating that the community has a fairly low level of risk perception of disaster threats in the area of origin. The indicator with the highest average score is limited disaster information with a score of 3.35. Furthermore, the indicators of experience during disasters (3.34) and frequency of exposure (3.23) also show high mean values. This shows that direct experience during disasters, as well as the frequency of exposure to disaster threats, make people accustomed to and underestimate future risks. Meanwhile, indicators related to the level of individual confidence in the government in managing disaster risk show a lower mean value than other indicators (3.18).

3.3. Discussion

Based on the results of the analysis, it is known that all indicators in the concept of push and pull migration are proven to have the power to influence people's decisions to return to their areas of origin (high disaster risk areas). The push factor in the form of dissatisfaction with relocation housing is the main trigger for this decision, especially due to several obstacles such as the distance of the relocation location from the workplace, inadequate supporting facilities such as integrated farms, and limited access to clean water. The majority of disaster-affected communities were dissatisfied with the distance of permanent housing to their work locations. Most of the people who chose to return to their areas of origin are informal sector workers such as miners and farmers whose livelihoods depend on certain geographical locations in the area of origin. The distance of permanent housing from agricultural land and mining areas is the main driving factor for the decision to migrate back. Proximity to the workplace is an important indicator affecting resident satisfaction in post-disaster relocation settlements, as easier access to the workplace can reduce travel time and costs, and improve residents' quality of life (Lan Oo, 2019; Singgih & Asano, 2019). This includes proximity to agricultural land for households whose work depends on farming (Rieger, 2021; Spoon, Gerkey, et al., 2020; Spoon, Hunter, et al., 2020).

Furthermore, another indicator with a high level of dissatisfaction is the availability of integrated farms. Integrated farms in permanent housing areas have actually been provided, but the management is paid, which raises objections from the community. The security level of the farms is also very low. Many people complained that their livestock disappeared without any clear cause. In addition, the location of integrated farms is also quite far from residential areas, which reduces the ease of access and utilization as an alternative source of livelihood. This is in line with research in Nepal which shows that facilities such as livestock pens are a significant factor in increasing relocation residents' satisfaction as they support the economic and lifestyle needs of the community (Shrestha et al., 2023). In addition, a study in China after the Wenchuan earthquake showed that access to land for livestock and agriculture not only helped people maintain their livelihoods but also increased their sense of connection to their traditional lifestyle, which played an important role in long-term relocation satisfaction (Y. Chen et al., 2020).

Another indicator that falls into the high dissatisfaction category is the availability of home utilities. This indicator occupies the third position in terms of dissatisfaction because the shelter community still feels that basic needs, especially clean water, have not been fully met properly. Many people still have difficulties in accessing clean water to meet their daily needs. Adequate utilities greatly affect the comfort of life, the continuity of daily activities, and the health of residents. Research in Nepal shows that the availability of home utilities is a significant factor that increases residents' satisfaction with post-disaster housing (Shrestha et al., 2023). This is in line with a study in Tacloban, Philippines, after Typhoon Haiyan, which showed that the absence of access to basic utilities such as clean water and electricity significantly lowered residents' satisfaction levels in the relocation program. Moreover, the inability to provide stable utilities at the relocation site will also cause additional hardship to the community, especially in terms of their well-being and survival after the disaster (Palagi & Javernick-Will, 2020). Overall, these results indicate that the main dissatisfaction of affected residents with permanent housing is mostly influenced by economic factors (access to jobs and livelihoods) and inadequate supporting infrastructure. Therefore, in efforts to improve or formulate relocation programs in the future, attention to the strategic location of shelters to livelihoods and improving the quality of basic facilities

are very important to reduce the tendency of residents to return to areas of origin that are at high risk of disasters.

Meanwhile, in the pull factor seen through place attachment, all indicators show high average values, indicating that people's attachment to the area of origin is relatively strong. The indicator with the highest average value is proximity to the workplace. This finding is in line with the assessment of dissatisfaction in terms of housing satisfaction, which shows that access to job locations in the area of origin is the main factor that strengthens community attachment. The majority of affected residents depend on work locations in their area of origin, such as the agriculture, livestock and mining sectors. The majority of people whose livelihoods are derived from agricultural products own their own paddy fields. This is the reason why there is a great desire for the community to return to their area of origin and plant their own rice fields rather than planting in the shelter area which has a monthly payment system. This is in line with research by Jamali et al. (2018) who found that place attachment in the post-disaster context is also influenced by aspects such as accessibility and ease of travel to work or local economic centers. Residents who feel more comfortable with these conveniences in their place of origin are more likely to want to return after relocation. Furthermore, Adie (2020) also notes in the context of post-disaster relocation that place attachment related to economic opportunities plays an important role in the decision to return to the area of origin.

Furthermore, other indicators with high scores are the availability of income sources, biodiversity and asset ownership. This reinforces the finding that economic factors, especially livelihood sustainability and land or property ownership play a major role in shaping people's attachment to their place of origin. People who have legal ownership of land and property tend to feel more emotionally and economically attached to their place of origin. Asset ownership provides a sense of security, control and stability that reinforces the decision to stay or return to a place they have invested in for the long term. This is in line with research from Adie (2020) which also highlights that asset owners often choose to return or adapt to the environment after a disaster as part of a recovery strategy due to the emotional connection formed through ownership of the asset. In addition, the availability of income sources and the diversity of biological resources reflect the high potential for economic sustainability in the area of origin, so people feel more confident that they can maintain or improve their welfare than in the relocation site. This is in line with research by Xu et al. (2017) showed that farmers in disaster-prone areas in China have a lower willingness to leave their area if they have a strong economic dependence on local land and resources. Continued access to farm income makes them more attached to the place despite disaster risks. Another study by Greer et al. (2019) highlighted that after a disaster, the decision to stay or return is often influenced by local employment opportunities and the economic stability that the place can provide. In many cases, families prefer to return to their area of origin if they are confident that they can continue or rebuild their previous careers and businesses. Overall, the results of this analysis confirm that people's decisions to return to their areas of origin are more influenced by practical factors, such as economic sustainability and proximity to work locations. This finding is important to be used as a basis in the preparation of permanent housing development strategies and post-disaster recovery programs that consider the socio-economic aspects of the community.

Finally, the pull factor seen through risk perception shows that limited disaster information is the main factor influencing people's decision to return to their area of origin. The Semeru community has a problem of limited information related to potential disasters which increases their uncertainty and knowledge of the risks that may occur. The majority of people affected by Semeru admitted that they often get information related to disasters by word of mouth (neighbors, relatives, and the surrounding environment). This inadequacy of information can exacerbate perceptions and underestimate disaster threats. This is in line with research by Xue et al. (2021) showed that lack of access to credible information regarding disaster threats reduces people's risk awareness, which can lead to suboptimal decisions in responding to post-disaster situations. In general, the high mean value of the main indicators shows that the perception of risk among the community tends to be low. This condition has the potential to encourage reluctance to stay in the new relocation location and become one of the reasons why people consider returning to their home areas that have a higher level of disaster risk.

4. Conclusions and Recommendations

4.1. Conclusions

Based on the results of the mean analysis of the indicators, it is important to conclude that the average score of all indicators in this study is in the high category (>3). This indicates that respondents simultaneously agreed that the indicators of the study influenced their decision to return to their area of origin (high disaster risk areas). In the push migration construct, it is known that proximity to work (3.57), availability of integrated livestock (3.46), and availability of utilities (3.45) are the highest indicators that encourage people to return to their area of origin. The distance of permanent housing away from agricultural land and mining areas is the main driving factor in the decision to migrate back. Not only that, many people still have difficulties in accessing clean water to meet their daily needs is also the reason behind the community's decision to return to their area of origin. Meanwhile, the pull factors that influence people's decisions are employment opportunities (3.45), availability of income sources (3.44), biodiversity of biological resources (3.43), and limited disaster information (3.35). Overall, based on the results of the analysis of the indicators in the constructs of housing satisfaction, place attachment, and risk perception, it can be concluded that these three aspects play an important role in influencing people's decisions to return to their areas of origin (high disaster risk areas). The level of dissatisfaction with the new housing, emotional and social attachment to the home environment, and perception of disaster risk are interrelated factors that need to be considered thoroughly in planning sustainable relocation policies.

4.2. Recommendations

It is hoped that the findings of this research can be a constructive input for the government and stakeholders in designing relocation policies that do not only focus on physical aspects, but also consider the economic, psychological and social dimensions of disaster-affected communities. The success of the relocation program is not simply measured by the availability of new infrastructure, but also by the extent to which the community is able to rebuild their lives in a decent, empowered and sustainable manner after occupying permanent housing. One important aspect that needs to be considered is access to livelihoods. The government needs to consider accessibility to the community's main source of livelihood in determining the relocation location. The provision of economic facilities such as integrated farms, productive agricultural land, and formal and informal employment opportunities must be prioritized so that people do not lose their livelihoods. Local governments together with relevant ministries need to ensure that the design of permanent housing is in accordance with the needs and comfort of residents, including layout, design flexibility, and availability of clean water. Relocation should also be designed to maintain the social closeness of affected communities, for example by grouping residents according to their initial position in the area of origin. Furthermore, the government also needs to improve disaster literacy so that people have adequate risk perception, not only as a form of awareness but also to strengthen their preparedness for future disasters. Finally, the entire relocation process from planning to evaluation needs to involve the active participation of the community so that the policies taken are truly in accordance with local needs and are able to encourage a sense of belonging and empowerment in the new residential environment. By accommodating the real needs of affected communities in the relocation policy, it is expected that the post-disaster recovery process will be more sustainable and accepted by the community. The government can use these findings as a basis for evaluating and updating relocation policies in the future.

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