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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; Wijegunarathna 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; Wijegunarathna 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.

$$\underline{x} = \frac{\sum_{i=1}^{n} xi}{n} \qquad (1)$$

Keterangan:

$\underline{x}$ = 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.

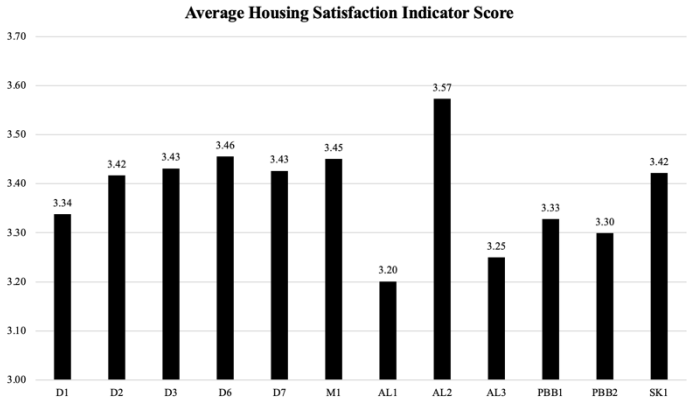

Figure 2. Average Housing Satisfaction Indicator Score

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.

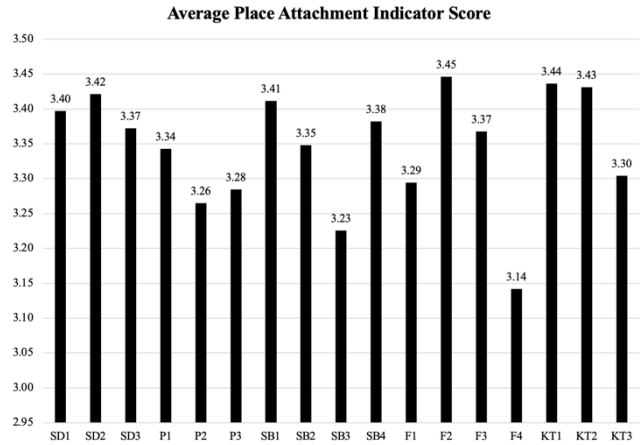

Figure 3. Average Place Attachment Indicator Score
Source: Author's Analysis, 2025

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.

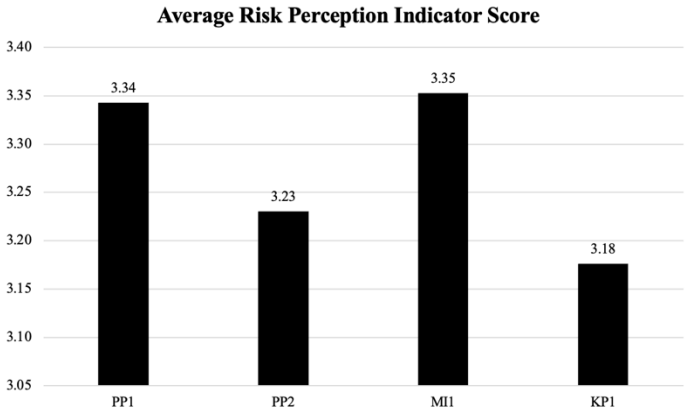

Figure 4. Average Risk Perception Indicator Score

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.

References

Adie, B. A. (2020). Place attachment and post-disaster decision-making in a second home context: a conceptual framework. *Current Issues in Tourism*, *23*(10), 1205–1215. https://doi.org/10.1080/13683500.2019.1600475

Adit, A. (2021, December). *Berapa Kerugian Akibat Erupsi Gunung Semeru? Ini Analisis Mahasiswa IPB*. https://www.kompas.com/edu/read/2021/12/31/181048571/berapa-kerugian-akibat-erupsi-gunung-semeru-ini-analisis-mahasiswa-ipb

Afacan, Y., & Demirkan, H. (2016). The influence of sustainable design features on indoor environmental quality satisfaction in Turkish dwellings. *Architectural Science Review*, *59*(3), 229–238. https://doi.org/10.1080/00038628.2015.1056768

Akaishi, T., Suzuki, T., Nemoto, H., Utsumi, Y., Seto, M., Usukura, H., Kunii, Y., Sugawara, Y., Nakaya, N., Nakamura, T., Tsuchiya, N., Narita, A., Kogure, M., Hozawa, A., Tsuji, I., Ishii, T., & Tomita, H. (2021). Five-year Psychosocial Impact of Living in Post-Disaster Prefabricated Temporary Housing. *Disaster Medicine and Public Health Preparedness*, 1–31. https://doi.org/10.1017/DMP.2021.212

Alananga Sanga, S. (2015). Intra-urban residential mobility and tenants' workplace choices in Kinondoni municipality. *Habitat International*, *49*, 45–55. https://doi.org/10.1016/J.HABITATINT.2015.05.006

Alawadi, K. (2016). Place attachment as a motivation for community preservation: The demise of an old, bustling, Dubai community. *Https://Doi.Org/10.1177/0042098016664690*, *54*(13), 2973–2997. https://doi.org/10.1177/0042098016664690

Almira, A. W., Malahayati, N., & Fachrurrazi, F. (2023). Tingkat Kepuasan Pemilik Rumah Bantuan Pasca Bencana Gempa di Kabupaten Pidie Jaya dengan Rekonstruksi Berbasis Masyarakat. *Journal of The Civil Engineering Student*, *5*(1), 43–49. https://doi.org/10.24815/JOURNALCES.V5I1.23828

Anam, K. (2022). *Hunian Tetap Warga Terdampak Erupsi Garapan HK Masuk MURI*. https://www.cnbcindonesia.com/news/20220928150558-4-375657/hunian-tetap-warga-terdampak-erupsi-garapan-hk-masuk-muri

Ananta, B., Wiranegara, H. W., & Supriyatna, Y. (2023). FAKTOR YANG MEMPENGARUHI PLACE ATTACHMENT PENGHUNI PERMUKIMAN KUMUH DI RW 04 KELURAHAN KEBON MANGGIS, JAKARTA TIMUR. In *OPEN ACCESS* (Vol. 6, Issue 1).

Anton, C. E., & Lawrence, C. (2014). Home is where the heart is: The effect of place of residence on place attachment and community participation. *Journal of Environmental Psychology*, *40*, 451–461. https://doi.org/10.1016/J.JENVP.2014.10.007

Arifianto, H. (2023). *Cak Thoriq Ajak Warga Terisolasi Lahar Gunung Semeru Pindah, Apa Responsnya?* Surabaya Liputan6.Com. https://www.liputan6.com/surabaya/read/5248230/cak-thoriq-ajak-warga-terisolasi-lahar-gunung-semeru-pindah-apa-responsnya

Arslan, H., & Unlu, A. (2016). Perception of Environmental Change: Reconstruction of Place after Post Disaster Relocation. *Modern Environmental Science and Engineering*, *2*(05), 327–343. https://doi.org/10.15341/MESE(2333-2581)/05.02.2016/006

Asfaw, H. W., McGee, T., & Christianson, A. C. (2019). The role of social support and place attachment during hazard evacuation: the case of Sandy Lake First Nation, Canada. *Environmental Hazards*, *18*(4), 361–381. https://doi.org/10.1080/17477891.2019.1608147

Bakhshian, E., & Martinez-Pastor, B. (2023). Evaluating human behaviour during a disaster evacuation process: A literature review. *Journal of Traffic and Transportation Engineering (English Edition)*, *10*(4), 485–507. https://doi.org/10.1016/J.JTTE.2023.04.002

Balachandran, B., Olshansky, R. B., & Johnson, L. A. (2022). Planning for Disaster-Induced Relocation of Communities. *Journal of the American Planning Association*, *88*(3), 288–304. https://doi.org/10.1080/01944363.2021.1978855

Baniya, J. (2021). Disaster, Deceptions, Dislocations: Reflections from an Integrated Settlement Project in Nepal. *Epicentre to Aftermath*, 110–134. https://doi.org/10.1017/9781108991636.005

Barclay, J., Few, R., Armijos, M. T., Phillips, J. C., Pyle, D. M., Hicks, A., Brown, S. K., & Robertson, R. E. A. (2019). Livelihoods, Wellbeing and the Risk to Life During Volcanic Eruptions. *Frontiers in Earth Science*, *7*, 462435. https://doi.org/10.3389/FEART.2019.00205/BIBTEX

Bernstein, Stephen., & Bernstein, Ruth. (1999). *Schaum's outline of theory and problems of elements of statistics II : inferential statistics*. 451. https://books.google.com/books/about/Schaum_s_Outline_of_Theory_and_Problems.html?hl=id&id=IswqyAEACAAJ

Binder, S. B., Baker, C. K., Ritchie, L. A., Barile, J. P., & Greer, A. (2023). "Upheaval": Unpacking the dynamic balance between place attachment and social capital in disaster recovery. *American Journal of Community Psychology*, *72*(3–4), 378–394. https://doi.org/10.1002/AJCP.12697

Bird, D. K., & Gísladóttir, G. (2018). Responding to volcanic eruptions in Iceland: from the small to the catastrophic. *Palgrave Communications 2018 4:1*, *4*(1), 1–13. https://doi.org/10.1057/s41599-018-0205-6

Bird, D. K., Gísladóttir, G., & Dominey-Howes, D. (2011). Different communities, different perspectives: Issues affecting residents' response to a volcanic eruption in southern Iceland. *Bulletin of Volcanology*, *73*(9), 1209–1227. https://doi.org/10.1007/S00445-011-0464-1/TABLES/3

Bluman, A. G. (2018). *EBOOK : Elementary Statistics : A step By Step Approach, 10th Edition*. //opaclib.inaba.ac.id%2Findex.php%3Fp%3Dshow_detail%26id%3D2604%26keywords%3D

Bonaiuto, M., Alves, S., De Dominicis, S., & Petruccelli, I. (2016). Place attachment and natural hazard risk: Research review and agenda. *Journal of Environmental Psychology*, *48*, 33–53. https://doi.org/10.1016/J.JENVP.2016.07.007

Campbell, A., Converse, P., & Rodgers, W. (1976). *The quality of American life: Perceptions, evaluations, and satisfactions*. https://books.google.com/books?hl=id&lr=&id=h_QWAwAAQBAJ&oi=fnd&pg=PR9&ots=gNC9oyQqGz&sig=AqOjIlTyS6I3UPtIeBaGkOXr0yA

Chamlee-Wright, E., & Storr, V. H. (2009). "There's No Place like New Orleans": Sense of Place and Community Recovery in the Ninth Ward after Hurricane Katrina. *Journal of Urban Affairs*, *31*(5), 615–634. https://doi.org/10.1111/J.1467-9906.2009.00479.X

Chen, Y., He, L., & Zhou, D. (2020). Consequences of post-disaster policies and relocation approaches: two communities from rural China. *Disaster Prevention and Management*, *30*(3), 340–353. https://doi.org/10.1108/DPM-11-2019-0347

Connie, C., & Risdianto, E. (2022). MOOCs and Trello Based Blended Learning to Increase Student Involvement. *AL-ISHLAH: Jurnal Pendidikan*, *14*(1), 1001–1008. https://doi.org/10.35445/ALISHLAH.V14I1.1378

Costa, R., Wang, C., & Baker, J. W. (2022). Integrating Place Attachment into Housing Recovery Simulations to Estimate Population Losses. *Natural Hazards Review*, *23*(4), 04022021. https://doi.org/10.1061/(ASCE)NH.1527-6996.0000571

Cotton, S., & Ackerman, R. (2019). *Caring for livestock during disaster*.

Cui, K., & Han, Z. (2019). Association between disaster experience and quality of life: the mediating role of disaster risk perception. *Quality of Life Research*, *28*(2), 509–513. https://doi.org/10.1007/S11136-018-2011-4

Davina, D. (2021). *Tempat Relokasi Dinilai Masih Belum Aman, Warga Korban Semeru Gelar Aksi Protes!* Kompas TV. https://www.kompas.tv/regional/242989/tempat-relokasi-dinilai-masih-belum-aman-warga-korban-semeru-gelar-aksi-protes

De Bélizal, É., Lavigne, F., Gaillard, J. C., Grancher, D., Pratomo, I., & Komorowski, J. C. (2012). The 2007 eruption of Kelut volcano (East Java, Indonesia): Phenomenology, crisis management and social response. *Geomorphology*, *136*(1), 165–175. https://doi.org/10.1016/J.GEOMORPH.2011.06.015

Depari, C. D. A. (2017). Sustainability and vulnerability: Understanding the anomaly from disaster perspectives. Case study: Glagaharjo Village in Mount Merapi. *IOP Conference Series: Earth and Environmental Science*, *70*(1). https://doi.org/10.1088/1755-1315/70/1/012035

Detik. (2021, December 16). *Korban Meninggal di Gunung Semeru Kini 48 Orang, Ini Info Terbarunya*. https://news.detik.com/berita/d-5857734/korban-meninggal-di-gunung-semeru-kini-48-orang-ini-info-terbarunya

Devine-Wright, P. (2013). Think global, act local? The relevance of place attachments and place identities in a climate changed world. *Global Environmental Change*, *23*(1), 61–69. https://doi.org/10.1016/J.GLOENVCHA.2012.08.003

Dikmen, N., & Elias-Ozkan, S. T. (2016). Housing after disaster: A post occupancy evaluation of a reconstruction project. *International Journal of Disaster Risk Reduction*, *19*, 167–178. https://doi.org/10.1016/J.IJDRR.2016.08.020

Donovan, A., Ayala, I. A., Eiser, J. R., & Sparks, R. S. J. (2018). Risk perception at a persistently active volcano: warnings and trust at Popocatépetl volcano in Mexico, 2012-2014. *BVol*, *80*(5), 47. https://doi.org/10.1007/S00445-018-1218-0

Duncan, O. D., & Stenbeck, M. (1987). Are Likert scales unidimensional. *Social Science Research*, *16*(3), 245–259. https://doi.org/10.1016/0049-089X(87)90003-2

Erinsel Önder, D., Köseoğlu, E., Bilen, Ö., & Der, V. (2010). *The Effect of User Participation in Satisfaction: Beyciler After-Earthquake Houses in Düzce*. http://acikerisim.fsm.edu.tr/xmlui/handle/11352/1849

Fadly. (2023). *PORTAL BERITA KABUPATEN LUMAJANG*. https://portalberita.lumajangkab.go.id/main/baca/aXGMfJVp

Farbotko, C., & McMichael, C. (2019). Voluntary immobility and existential security in a changing climate in the Pacific. *Asia Pacific Viewpoint*, *60*(2), 148–162. https://doi.org/10.1111/APV.12231

Fisher, M. J., & Marshall, A. P. (2009). Understanding descriptive statistics. *Australian Critical Care*, *22*(2), 93–97. https://doi.org/10.1016/J.AUCC.2008.11.003

Fornara, F., Scopelliti, M., Carrus, G., Bonnes, M., & Bonaiuto, M. (2020). Place attachment and environment-related behavior. *Place Attachment*, 193–207. https://doi.org/10.4324/9780429274442-12

Gao, M., Liu, Y. J., & Shi, Y. (2020). Do People Feel Less at Risk? Evidence from Disaster Experience. *ERN: Other Microeconomics: Decision-Making under Risk & Uncertainty (Topic)*, *138*(3), 866–888. https://doi.org/10.1016/J.JFINECO.2020.06.010

Gieling, J., Haartsen, T., & Vermeij, L. (2019). Village facilities and social place attachment in the rural Netherlands. *Rural Sociology*, *84*(1), 26–27. https://doi.org/10.1111/RUSO.12213

Greer, A., Trainor, J., & McNeil, S. (2019). Voluntary Household Relocation Decision Making in the Wake of Disaster: Re-interpreting the Empirical Record. *Https://Doi.Org/10.1177/028072701903700206*, *37*(2), 197–226. https://doi.org/10.1177/028072701903700206

Hadlos, A. (2021). Determining the depth of households' participation influencing the level of their residential satisfaction in a post-Haiyan resettlement. *International Journal of Disaster Risk Reduction*, *64*, 102490. https://doi.org/10.1016/J.IJDRR.2021.102490

Han, Z., Hu, X., & Nigg, J. (2011). How Does Disaster Relief Works Affect the Trust in Local Government? A Study of the Wenchuan Earthquake. *Risk, Hazards & Crisis in Public Policy*, *2*(4), 1–20. https://doi.org/10.2202/1944-4079.1092

Han, Z., Lu, X., Hörhager, E. I., & Yan, J. (2017). The effects of trust in government on earthquake survivors' risk perception and preparedness in China. *Natural Hazards*, *86*(1), 437–452. https://doi.org/10.1007/S11069-016-2699-9

Han, Z., Wang, L., & Cui, K. (2021). Trust in stakeholders and social support: risk perception and preparedness by the Wenchuan earthquake survivors. *Environmental Hazards*, *20*(2), 132–145. https://doi.org/10.1080/17477891.2020.1725410

Haney, J., & Havice, C. (2019). Factors Influencing Evacuation Behavior in Kīlauea Eruptions: An Examination of Residents in the Puna District, Hawai ʻi. *Natural Hazards Center Quick Response Research Reports Series.* .

He, L., Mao, Y., & Kinoshita, T. (2023). Place attachment among rural migrants and returnees: case of Shuangfeng County, China. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/FPSYG.2023.1279679/PDF

Hernández, B., Carmen Hidalgo, M., Salazar-Laplace, M. E., & Hess, S. (2007). Place attachment and place identity in natives and non-natives. *Journal of Environmental Psychology*, *27*(4), 310–319. https://doi.org/10.1016/J.JENVP.2007.06.003

Hidalgo, M. C., & Hernández, B. (2001). PLACE ATTACHMENT: CONCEPTUAL AND EMPIRICAL QUESTIONS. *Journal of Environmental Psychology*, *21*(3), 273–281. https://doi.org/10.1006/JEVP.2001.0221

Hikichi, H., Sawada, Y., Tsuboya, T., Aida, J., Kondo, K., Koyama, S., & Kawachi, I. (2017). Residential relocation and change in social capital: A natural experiment from the 2011 Great East Japan Earthquake and Tsunami. *Science Advances*, *3*(7). https://doi.org/10.1126/SCIADV.1700426

Hosseini, S. M. A., Yazdani, R., & Fuente, A. de la. (2020). Multi-objective interior design optimization method based on sustainability concepts for post-disaster temporary housing units. *Building and Environment*, *173*. https://doi.org/10.1016/J.BUILDENV.2020.106742

Huda, M., & Hartik, A. (2023, July). *Warga Terdampak Banjir Lahar Gunung Semeru Enggan Direlokasi*. https://surabaya.kompas.com/read/2023/07/09/203505478/warga-terdampak-banjir-lahar-gunung-semeru-enggan-direlokasi

Indayani, M. (2021). PENGARUH KETERIKATAN TEMPAT TERHADAP KETANGGUHAN KOMUNITAS KOTA DALAM MENGHADAPI BENCANA (Kasus Komunitas Masyarakat di Kelurahan Tallo, Kota Makassar). *Unhas*.

Iuchi, K., & Mutter, J. (2020). Governing community relocation after major disasters: An analysis of three different approaches and its outcomes in Asia. *Progress in Disaster Science*, *6*, 100071. https://doi.org/10.1016/J.PDISAS.2020.100071

Jamali, M., Nejat, A., Hooper, R., Greer, A., & Binder, S. B. (2018). Post-disaster place attachment: A qualitative study of place attachment in the wake of the 2013 Moore tornado. *Journal of Emergency Management*, *16*(5), 289–310. https://doi.org/10.5055/JEM.2018.0379

Joshi, A., & Nishimura, M. (2016). Impact of disaster relief policies on the cooperation of residents in a post-disaster housing relocation program: A case study of the 2004 Indian Ocean Tsunami. *International Journal of Disaster Risk Reduction*, *19*, 258–264. https://doi.org/10.1016/J.IJDRR.2016.08.018

Kamalipour, H., Yeganeh, A. J., & Alalhesabi, M. (2012). Predictors of Place Attachment in Urban Residential Environments: A Residential Complex Case Study. *Procedia - Social and Behavioral Sciences*, *35*, 459–467. https://doi.org/10.1016/J.SBSPRO.2012.02.111

Karyantoni. (2023). *RRI.co.id - Warga Di Sekitar Lereng Semeru Menolak Direlokasi*. https://www.rri.co.id/jember/daerah/200914/warga-di-sekitar-lereng-semeru-menolak-direlokasi

Khachadourian, V., Armenian, H. K., Demirchyan, A., & Goenjian, A. (2015). Loss and psychosocial factors as determinants of quality of life in a cohort of earthquake survivors. *Health and Quality of Life Outcomes*, *13*(1). https://doi.org/10.1186/S12955-015-0209-5

Lan Oo, B. (2019). Post-disaster permanent housing: user participation and long-term satisfaction. *IOP Conference Series: Materials Science and Engineering*, *601*(1), 012019. https://doi.org/10.1088/1757-899X/601/1/012019

Landeros-Mugica, K., Urbina-Soria, J., & Alcántara-Ayala, I. (2016). The good, the bad and the ugly: on the interactions among experience, exposure and commitment with reference to landslide risk perception in México. *Natural Hazards*, *80*(3), 1515–1537. https://doi.org/10.1007/S11069-015-2037-7

Lawther, P. M. (2009). Community involvement in post disaster re-construction - case study of the British red cross Maldives recovery program. *International Journal of Strategic Property Management*, *13*(2), 153–169. https://doi.org/10.3846/1648-715X.2009.13.153-169

Lee, K. Y., & Jeong, M. G. (2021). Residential environmental satisfaction, social capital, and place attachment: the case of Seoul, Korea. *Journal of Housing and the Built Environment*, *36*(2), 559–575. https://doi.org/10.1007/S10901-020-09780-2

Lentera. (2024). *Derita dan Trauma Akibat Bencana Semeru Terkikis Sinergitas Bersama - Lentera Today | LMedia Group*. https://lenteratoday.com/derita-dan-trauma-akibat-bencana-semeru-terkikis-sinergitas-bersama/

Lestari, W. M., & Sumabrata, J. (2018). The influencing factors on place attachment in neighborhood of Kampung Melayu. *IOP Conference Series: Earth and Environmental Science*, *126*(1), 012190. https://doi.org/10.1088/1755-1315/126/1/012190

Lewicka, M. (2010). What makes neighborhood different from home and city? Effects of place scale on place attachment ☆. *Journal of Environmental Psychology*, *30*(1), 35–51. https://doi.org/10.1016/J.JENVP.2009.05.004

Lewicka, M. (2011). Place attachment: How far have we come in the last 40 years? *Journal of Environmental Psychology*, *31*(3), 207–230. https://doi.org/10.1016/J.JENVP.2010.10.001

Li, T. E., & Chan, E. T. H. (2018). Connotations of ancestral home: An exploration of place attachment by multiple generations of Chinese diaspora. *Population Space and Place*, *24*(8). https://doi.org/10.1002/PSP.2147

Likert, R. (1932). *A technique for the measurement of attitudes: Vols. 22 140, 55*. Archives of Psychology.

Lim, A. Y., Yoon, M., Kim, E. H., Kim, H. A., Lee, M. J., & Cheong, H. K. (2021). Effects of mechanical ventilation on indoor air quality and occupant health status in energy-efficient homes: A longitudinal field study. *The Science of the Total Environment*, *785*. https://doi.org/10.1016/J.SCITOTENV.2021.147324

Liu, Z., & Ma, L. (2021). Residential experiences and satisfaction of public housing renters in Beijing, China: A before-after relocation assessment. *Cities*, *113*, 103148. https://doi.org/10.1016/J.CITIES.2021.103148

López-Vázquez, E. (2009). Risk perception and coping strategies for risk from Popocatépetl Volcano, Mexico. *Geofisica Internacional*.

Low, S. M., & Altman, I. (1992). Place Attachment. *Place Attachment*, 1–12. https://doi.org/10.1007/978-1-4684-8753-4_1

Macagba, S. F. A., Eligue, J. C., & Marasigan, S. M. (2018). Exploring Social Construct of Place Attachment among Settlers in Disaster-prone Areas. *International Journal of Sciences: Basic and Applied Research*.

Mafuko Nyandwi, B., Kervyn, M., Muhashy Habiyaremye, F., Kervyn, F., & Michellier, C. (2023). To go or not to go when the lava flow is coming? Understanding evacuation decisions of Goma inhabitants during the 2021 Nyiragongo eruption crisis. *Journal of Volcanology and Geothermal Research*, *444*, 107947. https://doi.org/10.1016/J.JVOLGEORES.2023.107947

Manatunge, J. M. A., Abeysinghe, U., Manatunge, J. M. A., & Abeysinghe, U. (2017). Factors Affecting the Satisfaction of Post-Disaster Resettlers in the Long Term: A Case Study on the Resettlement Sites of Tsunami-Affected Communities in Sri Lanka. *Journal of Asian Development*, *3*(1), 94–124. https://EconPapers.repec.org/RePEc:mth:jad888:v:3:y:2017:i:1:p:94-124

Manzo, L. C. (2005). For better or worse: Exploring multiple dimensions of place meaning. *Journal of Environmental Psychology*, *25*(1), 67–86. https://doi.org/10.1016/J.JENVP.2005.01.002

Marcillia, S. R., & Ohno, R. (2018). Importance of Social Space in Self-built and Donated Post-disaster Housing after Java earthquake 2006. *Asian Journal of Environment-Behaviour Studies*, *3*(6), 111–119. https://doi.org/10.21834/AJE-BS.V3I6.241

Mishra, S., Mazumdar, S., & Suar, D. (2010). Place attachment and flood preparedness. *Journal of Environmental Psychology*, *30*(2), 187–197. https://doi.org/10.1016/J.JENVP.2009.11.005

Morin, J., Lavigne, F., Bachelery, P., Finizola, A., & Villeneuve, N. (2019). Insitutional and social responses to hazards related to Karthala volcano, Comoros: Part I: Analysis of the May 2006 eruptive crisis. *The International Journal of Research into Island Cultures*, *3*, 2009–2042.

Muir, J. A., Cope, M. R., Jackson, J. E., & Angeningsih, L. R. (2019). To move home or move on? Investigating the impact of recovery aid on migration status as a potential tool for disaster risk reduction in the aftermath of volcanic eruptions in Merapi, Indonesia. *International Journal of Disaster Risk Reduction*. https://doi.org/10.31235/OSF.IO/QCM58

Nejat, A., Cong, Z., & Liang, D. (2016). Family Structures, Relationships, and Housing Recovery Decisions after Hurricane Sandy. *Buildings*, *6*(2). https://doi.org/10.3390/BUILDINGS6020014

Nikrahei, B. (2015). *MODELING PLACE ATTACHMENT IN TWO NEIGHBORHOODS OF COLUMBUS, OHIO*.

Nishihara, M., Nakamura, Y., Fuchimukai, T., & Ohnishi, M. (2018). Factors associated with social support in child-rearing among mothers in post-disaster communities. *Environmental Health and Preventive Medicine*, *23*(1). https://doi.org/10.1186/S12199-018-0747-7

Oliver-Smith, A. (1991). Successes and Failures in Post-Disaster Resettlement. *Disasters*, *15*(1), 12–23. https://doi.org/10.1111/J.1467-7717.1991.TB00423.X

Önaç, A. K., & Sütçüoğlu, G. G. (2021). Effect of urban change on place attachment: evidence from two locations from a city in Turkey with similar historical landscape values. *Arabian Journal of Geosciences*, *14*(11), 1–17. https://doi.org/10.1007/S12517-021-07318-6/TABLES/9

Paek, H.-J., & Hove, T. (2017). Risk Perceptions and Risk Characteristics. *Oxford Research Encyclopedia of Communication*. https://doi.org/10.1093/ACREFORE/9780190228613.013.283

Palagi, S., & Javernick-Will, A. (2020). Pathways to livable relocation settlements following disaster. *Sustainability (Switzerland)*, *12*(8). https://doi.org/10.3390/SU12083474

Papathoma-Köhle, M., Zischg, A., Fuchs, S., Glade, T., & Keiler, M. (2015). Loss estimation for landslides in mountain areas – An integrated toolbox for vulnerability assessment and damage documentation. *Environmental Modelling & Software*, *63*, 156–169. https://doi.org/10.1016/J.ENVSOFT.2014.10.003

Parahoo, K. (2006). Nursing Research: Principles, Process and Issues. Second Edition. *Uniwersytet Śląski*, 343–354. https://books.google.com/books/about/Nursing_Research.html?hl=id&id=x_rIQAAACAAJ

Perera, T., Weerasoori, I., & Karunarathne, H. (2012). An Evaluation of Success and Failures in Hambantota, Siribopura Resettlement Housing Program: Lessons Learned. *Journal of Real Estate Studies*, *6*. https://journals.sjp.ac.lk/index.php/SLJRE/article/view/1060

Plaimo, P. E., & Wabang, I. L. (2022). Persepsi Masyarakat Terhadap Wisata Mangrove di Desa Pante Deere, Kecamatan Kabola, Kabupaten Alor. *Barakuda 45: Jurnal Ilmu Perikanan Dan Kelautan*, *4*(1), 73–85. https://doi.org/10.47685/BARAKUDA45.V4I1.206

Rahardjo, J., Kwanda, T., & Wibowo, B. R. (2003). ANALISIS KEPUASAN PENGHUNI RUMAH SEDERHANA TIPE 36 DI KAWASAN SIDOARJO BERDASARKAN FAKTOR KUALITAS BAGUNAN LOKASI DESAIN SARANA DAN PRASARANA. *DIMENSI (Journal of Architecture and Built Environment)*, *31*(2). https://doi.org/10.9744/DIMENSI.31.2

Rahman, M. R. (2022). *Kementerian PUPR: 300 Huntap di Lumajang siap huni saat Idul Fitri - ANTARA News*. https://www.antaranews.com/berita/2856405/kementerian-pupr-300-huntap-di-lumajang-siap-huni-saat-idul-fitri

Raker, E. J., & Woods, T. (2023). Disastrous Burdens: Hurricane Katrina, Federal Housing Assistance, and Well-Being. *RSF*, *9*(5), 122–143. https://doi.org/10.7758/RSF.2023.9.5.06

Rand, E. C., Hirano, S., & Kelman, I. (2011). Post-tsunami housing resident satisfaction in Aceh. *International Development Planning Review*, *33*(2), 187–211. https://doi.org/10.3828/IDPR.2011.8

Rianto, T., & Widyatmoko, M. R. D. S. (2009). *Spatial analysis of volcanic risk perception : Case study in local community at Merapi volcano dangerous zones*.

Richard Eiser, J., Bostrom, A., Burton, I., Johnston, D. M., McClure, J., Paton, D., van der Pligt, J., & White, M. P. (2012). Risk interpretation and action: A conceptual framework for responses to natural hazards. *International Journal of Disaster Risk Reduction*, *1*(1), 5–16. https://doi.org/10.1016/J.IJDRR.2012.05.002

Rieger, K. (2021). Multi-hazards, displaced people's vulnerability and resettlement: Post-earthquake experiences from Rasuwa district in Nepal and their connections to policy loopholes and reconstruction practices. *Progress in Disaster Science*, *11*, 100187. https://doi.org/10.1016/J.PDISAS.2021.100187

Rishbeth, C., & Powell, M. (2013). Place Attachment and Memory: Landscapes of Belonging as Experienced Post-migration. *Landscape Research*, *38*(2), 160–178. https://doi.org/10.1080/01426397.2011.642344

Rofiq, M. (2021). *Korban Erupsi Semeru di Kajar Kuning dan Curah Kobokan Tolak Lokasi Relokasi*. https://news.detik.com/berita-jawa-timur/d-5862675/korban-erupsi-semeru-di-kajar-kuning-dan-curah-kobokan-tolak-lokasi-relokasi

Rozaki, Z., Rahmawati, N., Wijaya, O., Khoir, I. A., Senge, M., & Kamarudin, M. F. (2021). Perception of agroforestry adopter and non-adopter on volcano risk and hazard: a case in Mt. Merapi, Java, Indonesia. *Biodiversitas Journal of Biological Diversity*, *22*(9), 3829–3837. https://doi.org/10.13057/BIODIV/D220928

Sadri, A. M., Ukkusuri, S. V., & Ahmed, M. A. (2021). Review of social influence in crisis communications and evacuation decision-making. *Transportation Research Interdisciplinary Perspectives*, *9*, 100325. https://doi.org/10.1016/J.TRIP.2021.100325

Sararit, T., Tamiyo, K., & Maly, E. (2018). Resident's satisfaction to relocated Houses after 2004 Indian Ocean Tsunami, Thailand. *Procedia Engineering*, *212*, 637–642. https://doi.org/10.1016/J.PROENG.2018.01.082

Scannell, L., & Gifford, R. (2010). Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology*, *30*(1), 1–10. https://doi.org/10.1016/J.JENVP.2009.09.006

Scannell, L., & Gifford, R. (2017). The experienced psychological benefits of place attachment. *Journal of Environmental Psychology*, *51*, 256–269. https://doi.org/10.1016/J.JENVP.2017.04.001

Shipley, N. J., van Riper, C. J., Stewart, W., Chu, M., Stedman, R. C., & Dolcos, F. (2023). Pride and guilt as place-based affective antecedents to pro-environmental behavior. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/FPSYG.2022.1084741/PDF

Shrestha, B., Uprety, S., & Pokharel, J. R. (2023). Factors Influencing Housing Satisfaction in Post-Disaster Resettlement: A Case of Nepal. *Sustainability*, *15*(17), 1–26. https://ideas.repec.org/a/gam/jsusta/v15y2023i17p12755-d1223220.html

Singgih, B. A., & Asano, J. (2019). Study on Impact of Relocating Settlement as a Post-Disaster Mitigation. *Urban and Regional Planning Review*, *6*(0), 111–124. https://doi.org/10.14398/URPR.6.111

Song, Z., & Soopramanien, D. (2019). Types of place attachment and pro-environmental behaviors of urban residents in Beijing. *Cities*, *84*, 112–120. https://doi.org/10.1016/J.CITIES.2018.07.012

Sphere, A. (2011). 2011 edition of the sphere handbook humanitarian charter and minimum standards in humanitarian response. *Sphere Association: Geneva, Switzerland*, *1*. https://www.ennonline.net/fex/41/edition

Spoon, J., Gerkey, D., Chhetri, R. B., Rai, A., & Basnet, U. (2020). Navigating multidimensional household recoveries following the 2015 Nepal earthquakes. *World Development*, *135*, 105041. https://doi.org/10.1016/J.WORLDDEV.2020.105041

Spoon, J., Hunter, C. E., Gerkey, D., Chhetri, R. B., Rai, A., Basnet, U., & Dewan, A. (2020). Anatomy of disaster recoveries: Tangible and intangible short-term recovery dynamics following the 2015 Nepal earthquakes. *International Journal of Disaster Risk Reduction*, *51*, 101879. https://doi.org/10.1016/J.IJDRR.2020.101879

Surjono, S., Wardhani, D. K., Yudono, A., & Muluk, M. R. K. (2021). Residential Preferences of Post Great Disaster in Palu City, Indonesia. *Evergreen*, *8*(4), 706–716. https://doi.org/10.5109/4742114

Swapan, M. S. H., & Sadeque, S. (2021). Place attachment in natural hazard-prone areas and decision to relocate: Research review and agenda for developing countries. *International Journal of Disaster Risk Reduction*, *52*, 101937. https://doi.org/10.1016/J.IJDRR.2020.101937

Syamsidik, S., Safitri, Z., & Izziah, I. (2022). Tsunami Resettlement Program and Survivor Satisfaction Fifteen Years After the 2004 Tsunami in Aceh, Indonesia. *KnE Social Sciences*, *7*(16), 59-76–59–76. https://doi.org/10.18502/KSS.V7I16.12153

Tafti, M. T. (2015). Housing assistance distribution after disasters: does it enable affected households to recover? *Environmental Hazards*, *14*(4), 361–377. https://doi.org/10.1080/17477891.2015.1080655

Tas, N., Cosgun, N., & Tas, M. (2007). A qualitative evaluation of the after earthquake permanent housings in Turkey in terms of user satisfaction—Kocaeli, Gundogdu Permanent Housing model. *Building and Environment*, *42*(9), 3418–3431. https://doi.org/10.1016/J.BUILDENV.2006.09.002

Thaler, T., & Fuchs, S. (2020). Financial recovery schemes in Austria: how planned relocation is used as an answer to future flood events. *Environmental Hazards*, *19*(3), 268–284. https://doi.org/10.1080/17477891.2019.1665982

Tharim, A. H. A., Ahmad, A. C., Mohamed Saraf, M. H., & Muhammad Nasir, N. A. (2021). SATISFACTION ANALYSIS OF FLOOD VICTIMS TOWARDS HOUSING RELOCATION SCHEME DURING POST OCCUPANCY AT KUALA KRAI, KELANTAN. *PLANNING MALAYSIA*, *19*(16), 48–59. https://doi.org/10.21837/PM.V19I16.951

Triola, M. F. (2017). *ELEMENTARY STATISTICS : books a la carte edition.*

Varolgunes, F. K. (2021). SUCCESS FACTORS FOR POST-DISASTER PERMANENT HOUSING: EXAMPLE OF TURKISH EARTHQUAKES. *TURKISH ONLINE JOURNAL OF DESIGN ART AND COMMUNICATION*, *11*(1), 115–130. https://doi.org/10.7456/11101100/007

Venable, C., Javernick-Will, A., & Liel, A. B. (2020). Perceptions of Post-Disaster Housing Safety in Future Typhoons and Earthquakes. *Sustainability*, *12*(9). https://doi.org/10.3390/SU12093837

Vinnell, L. J., Hudson-Doyle, E. E., Johnston, D. M., Becker, J. S., Kaiser, L., Lindell, M. K., Bostrom, A., Gregg, C., Dixon, M., & Terbush, B. (2021). Community preparedness for volcanic hazards at Mount Rainier, USA. *Journal of Applied Volcanology*, *10*(1), 1–20. https://doi.org/10.1186/S13617-021-00110-X/TABLES/10

Wachinger, G., Renn, O., Begg, C., & Kuhlicke, C. (2013). The Risk Perception Paradox—Implications for Governance and Communication of Natural Hazards. *Risk Analysis*, *33*(6), 1049–1065. https://doi.org/10.1111/J.1539-6924.2012.01942.X

Wallis, A., Fischer, R., & Abrahamse, W. (2021). Place Attachment and Disaster Preparedness: Examining the Role of Place Scale and Preparedness Type. *Https://Doi.Org/10.1177/00139165211064196*, *54*(3), 670–711. https://doi.org/10.1177/00139165211064196

Widayanti, B. H., Yuniarman, A., Lestari, S. A. P., & Yunianti, S. R. (2020). The level of satisfaction in construction of post-earthquake houses in Tanjung Sub-district, North Lombok Regency. *IOP Conference Series: Earth and Environmental Science*, *447*(1). https://doi.org/10.1088/1755-1315/447/1/012028

Widodo, D. R., Nugroho, S. P., & Asteria, D. (2018). Analisis Penyebab Masyarakat Tetap Tinggal di Kawasan Rawan Bencana Gunung Merapi (Studi di Lereng Gunung Merapi Kecamatan Cangkringan, Kabupaten Sleman Daerah Istimewa Yogyakarta). *Jurnal Ilmu Lingkungan*, *15*(2), 135. https://doi.org/10.14710/JIL.15.2.135-142

Wijegunarathna, E. E., Wedawatta, G., Prasanna, L. J., & Ingirige, B. (2018). Long-Term Satisfaction of Resettled Communities: An Assessment of Physical Performance of Post-Disaster Housing. *Procedia Engineering*, *212*, 1147–1154. https://doi.org/10.1016/J.PROENG.2018.01.148

Xu, D., Peng, L., Liu, S., Su, C., Wang, X., & Chen, T. (2017). Influences of Sense of Place on Farming Households' Relocation Willingness in Areas Threatened by Geological Disasters: Evidence from China. *International Journal of Disaster Risk Science*, *8*(1), 16–32. https://doi.org/10.1007/S13753-017-0112-2

Xue, K., Guo, S., Liu, Y., Liu, S., & Xu, D. (2021). Social Networks, Trust, and Disaster-Risk Perceptions of Rural Residents in a Multi-Disaster Environment: Evidence from Sichuan, China. *International Journal of Environmental Research and Public Health*, *18*(4), 1–25. https://doi.org/10.3390/IJERPH18042106

Zhang, Y., Yu, Y., Xu, W., & Hu, J. (2019). Differentiation and integration: off-site resettlement planning practice in New Beichuan after 5.12 Wenchuan Earthquake. *Natural Hazards*, *104*(1), 77–99. https://doi.org/10.1007/S11069-019-03649-6/TABLES/4

Zheng, C., Zhang, J., Guo, Y., Zhang, Y., & Qian, L. (2019). Disruption and reestablishment of place attachment after large-scale disasters: The role of perceived risk, negative emotions, and coping. *International Journal of Disaster Risk Reduction*, *40*, 101273. https://doi.org/10.1016/J.IJDRR.2019.101273