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Volcanic Eruption and Disruption: Youth Well-being After the Grindavík Evacuation in Iceland

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In November 2023 seismic activity prompted the evacuation of Grindavík, dispersing school-aged children across about 70 schools across Iceland. This displacement disrupted social ties, housing stability and schooling continuity, while creating ongoing uncertainty about community re-inhabitation. This first study of the well-being of children from Grindavík examines how disaster-driven displacement affected the well-being of students aged 12–16 years using data from the 2025 Icelandic Youth Study (15–17 months post-evacuation), which included a dedicated Grindavík module. We compared students evacuated after the eruption (n = 235), students who had moved away from Grindavík before the eruption (n = 148) and a national reference group (n = 17,315), allowing us to separate evacuation-specific experiences from those associated with relocation more generally. Regression models adjusting for subjective socioeconomic status, grade, gender and non-Icelandic background showed that evacuees reported lower life satisfaction (β = −0.26, CI [−0.43, −0.09]) and school belonging (β = −0.41, CI [−0.55, −0.27]), along with higher psychosomatic symptoms (β = 0.24, CI [0.10, 0.39]) than the national reference group. Prior movers did not differ in life satisfaction or belonging, but showed more psychosomatic complaints, absenteeism, substance use and bullying victimisation. Direct comparisons revealed that evacuees had lower life satisfaction (β = −0.27, CI [−0.50, −0.04]) and school belonging (β = −0.34, CI [−0.56, −0.13]) than prior movers, indicating evacuation-specific differences. Moderation analyses suggested that well-being differences for evacuees were broadly consistent across socioeconomic and grade levels, but gender differences were notable: negative effects on life satisfaction and school belonging were substantially larger among girls than boys. Overall, the results indicate that forced evacuation was consistently associated with weaker psychosocial well-being, largely irrespective of family background or age, but with stronger socio-emotional impacts among girls. Comparisons with prior movers highlight that disaster-driven displacement carries distinctive consequences beyond the challenges of relocation, underscoring the need for targeted educational and welfare responses.

Keywords: Natural disasters, Displacement, Children's well-being, Schooling

Introduction

After several years of increasing geological instability on the Reykjanes Peninsula, seismic activity intensified dramatically in late 2023. While the region had experienced recurrent seismic activity in the years leading up to the eruption (De Pascale et al., 2024; Toro, 2023), a major escalation in October 2023 ultimately forced authorities to evacuate the town of Grindavík on November 10, 2023 (Parks et al., 2024). On that dramatic day, a powerful earthquake shook the ground as a

magma-filled crack formed underneath the whole town within a few hours. Approximately 3,790 residents, including school-aged children, were forced to relocate, and in the ensuing weeks and months it became evident that this natural disaster and the threat of future eruptions would likely prevent most Grindavík families from returning to their homes (Alþingi, 2024). According to the civil protection authorities, Grindavík continues to be classified as a high-risk area for families with children (Almannavarnir, 2026).[1]

Immediately following the evacuation, local authorities made arrangements to provide Grindavík students with continued access to education. Four schools in the Reykjavik area were selected to set up temporary school facilities for students from the Grindavík elementary school. Efforts were also made to ensure that some teachers from the Grindavík schools would relocate and support the displaced students at these schools. However, students were also offered the opportunity to attend the neighbourhood school in the area to which they had relocated. Initially, roughly half of the Grindavík students continued their schooling in temporary Grindavík schools hosted at four locations in Reykjavik. These schools were closed by June 2024, and children were redirected to attend schools near their new residence (Alþingi, 2024). Many of the displaced Grindavík students thus first started at their respective new school at the beginning of the 2024/2025 school year – a few months before the survey on which this article is based was conducted.

As of spring 2025 children from Grindavík were enrolled in at least 68 different elementary schools across Iceland.[2] Although nearby schools in the Reykjanes peninsula have absorbed relatively large numbers of these students, the scale of dispersal and disruption is profound. The evacuation – combined with long-lasting uncertainty about whether Grindavík will be re-inhabited – has likely affected children in multiple ways: loss of social ties, disruptions in schooling continuity, changes in housing and family economic situations as well as transitions into unfamiliar environments. In fact, between 10 November 2023 and April 2024, it is estimated that the families from Grindavík moved between homes about three times on average (Hrólfsson, 2024).

The Icelandic welfare state has supported families with material aid, and children's continued access to education and social services was prioritised. The so-called Grindavík Committee, which was formed to support the Grindavík evacuees, organised access to psychosocial support through counselling services, and both guidance to parents and educational programmes on trauma-informed care were provided for schools hosting Grindavík students. For example, a call-out project informed parents about available services and efforts were made to connect children and families with well-being and integrated services, and schools hosting displaced students were contacted to support their transition and provide school administrators with necessary information.[3]

Yet, the psychosocial consequences of displacement for children remain poorly understood. To this day, there has been no systematic scientific effort to assess how Grindavík children have fared after the evacuation – even if a recent report provides preliminary evidence of emotional and social problems among students in their new schooling environment (Framkvæmdanefnd Grindavíkur, 2025). Similarly, a recent survey among evacuated adults from Grindavík found that a majority of respondents (66%) reported worse mental health compared to before the evacuation, and close to half (46%) considered their current housing situation as a temporary and not permanent solution (Forsætisráðuneytið, 2025).

Against such a background, this study addresses a critical gap by presenting empirical evidence on the well-being of displaced youth, while also assessing the influence of social, educational and familial support structures in mitigating the effects of their post-displacement experiences.

[1] Despite this, based on nightly counts conducted by the local fire brigade, approximately 300–400 individuals currently stay overnight in town (J. L. Birgisdóttir, personal communication, March 22, 2026).
[2] This number is based on the number of students in our survey who reported that they moved from Grindavík after the eruption. Numbers reported by the Executive Grindavík Committee (Framkvæmdanefnd Grindavíkur, 2025) indicate a dispersion of students across 73 schools in 2024.
[3] In August 2024 the Grindavík Committee took over governmental responsibility for the provision of school services (Framkvæmdanefnd Grindavíkur, 2025).

Youth well-being under disruption

The well-being of school children has received increasing attention in recent years (e.g. Choi, 2018; OECD, 2017). This is not least because students' well-being is closely linked to their learning progress in school. From a developmental resilience perspective, well-being reflects the capacity to maintain adaptive functioning when facing stressors across key life domains (Masten & Narayan, 2012). Students who feel good in their schooling environment and at home tend to have better learning outcomes (Bücker et al., 2018).

A well-established body of research shows that major disruptions to children's schooling, such as natural disasters (Kousky, 2016; Lai et al., 2018; Osofsky et al., 2009; for a review see Auðardóttir & Gísladóttir, 2024), wars (Bürgin et al., 2022; El-Khodary & Aboudagga, 2025; Schwartz et al., 2022; Sennersten et al., 2025) or the recent Covid-19 pandemic (Betthäuser et al., 2023; Repo et al., 2025) have negative effects on students' well-being and learning outcomes. Within resilience and risk-accumulation frameworks, displacement is considered particularly consequential because it represents a non-normative, multi-domain stressor, simultaneously disrupting peer relations, schooling continuity, family routines and perceptions of safety (Andrade et al., 2023; Masten & Narayan, 2012).

Building on this perspective, the present study focuses on several key dimensions of adolescent well-being that are especially sensitive to disruption: life satisfaction, school belonging, psychosomatic complaints, absenteeism, bullying victimisation and substance use. Reviews of displaced adolescents show that these domains capture central developmental tasks – belonging, managing stress and regulating risk behaviours – while schools, families and peers constitute key protective systems that can buffer the impact of displacement (Abdi et al., 2023; Masten & Narayan, 2012).

At the same time, resilience theory emphasises heterogeneity in response to stress. Adolescents differ in their vulnerability and adaptive capacity depending on individual, social and contextual factors. Consistent with this, disaster research indicates that psychosocial responses vary by gender and age, with girls often showing stronger psychosocial reactions than boys (Pfefferbaum et al., 2015). Evidence from residential mobility further shows that students from disadvantaged backgrounds are especially vulnerable to negative effects and that relocations to new neighbourhoods in early adolescence can be particularly disruptive (Cotton, 2016). Furthermore, an Icelandic study on the effects of avalanche disaster in childhood indicates that lingering PTSD symptoms may negatively influence socioeconomic development in adulthood (Thórdardóttir et al., 2016).

The case of Grindavík

While the displacement of the Grindavík community has parallels in other natural disasters or wars, there are numerous elements that are unique. First, compared to most natural disasters that happen at a single point in time, the volcanic eruptions in the Grindavík area happened over a long time period, creating uncertainty about the situation in Grindavík for a long time prior to the evacuation in November 2023. Geological activity on the Reykjanes peninsula increased drastically in 2019. A number of volcanic eruptions occurred in the peninsula during 2021–23, geographically localised away from the town of Grindavík (Parks et al., 2024). However, the continued disruptions raised concerns and uncertainty (and continues to do so) about the future of the town of Grindavík as a safe residential area. Second, compared to war refugees, for example, children of Grindavík could continue their schooling in their own native language in schools that were comparatively close in proximity (see Figure S1 and S2 in the appendix) and followed a curriculum that was the same or at least very similar to that of their prior schooling. Third, while many families from Grindavík suffered negative economic consequences such as job loss of one or even both parents, the Icelandic welfare state, much like other Nordic countries (Eydal et al., 2016), provides provisions and support likely surpassing those available to other refugee groups in an international context. The targeted support services

provided by the Grindavík Committee should be considered in this context (Framkvæmdanefnd Grindavíkur, 2025).

Nonetheless, the dispersal of Grindavík children across many schools marked a major break in social and educational continuity. Broader evidence from migration research shows that relocation alone can generate emotional and behavioural difficulties for children (Andrade et al., 2023), which underscores the importance of distinguishing general mobility from evacuation-specific impacts in the Grindavík case. In this context, the present study provides new evidence on how disaster-driven displacement has affected the psychosocial well-being of adolescents.

Current study

This study provides the first systematic evidence on how the Grindavík evacuation has shaped adolescent well-being. Using nationally representative data from the 2025 Icelandic Youth Study, with a dedicated Grindavík module, we compare three groups: (1) evacuees displaced after the November 2023 eruption, (2) students who had moved away from Grindavík before the eruption and (3) a national reference group. This design makes it possible to separate evacuation-specific effects from those more generally associated with residential mobility.

We examine six domains central to adolescent well-being: life satisfaction, school belonging, psychosomatic symptoms, school absenteeism, bullying victimisation and substance use. Based on prior research, we expect evacuees to report lower well-being, more health complaints and greater risk behaviours compared with peers nationally.

Finally, we test whether evacuation effects vary by students' subjective socioeconomic status (SES), grade and gender, expecting stronger disadvantages for lower-SES students and for girls, who tend to report more psychosomatic symptoms and decline in well-being under stress.

Together, the study offers novel evidence on the psychosocial consequences of disaster-driven displacement in a high-income welfare state, with implications for both Icelandic support systems and broader debates on child well-being in crisis contexts.

Method

Data

Data were drawn from the 2025 wave of the Icelandic Youth Study, an annual nationwide school survey administered in all Icelandic elementary schools and managed by the Educational Research Institute at the University of Iceland. The study received approval from the University of Iceland Science Ethics Committee. Participation was voluntary and students could skip any question. For a detailed description of the data-protection measures and consent procedures, see Guðjohnsen et al. (2025) or consult the homepage of the study (https://iae.is).

Data collection took place between 5 February and 3 April 2025 – approximately 15–17 months after the evacuation. The survey was administered electronically during school hours and school staff oversaw the administration.

Of the 173 invited schools, 155 participated with a response rate 82.3% (Guðjohnsen et al., 2025). Our analytic subsample from 152 schools comprised students in grades 6–10 (ages 12–16 years). After excluding cases with missing data on all well-being indicators (n = 45) or on the Grindavík displacement item (n = 68), the final analytic sample comprised 17,665 Icelandic adolescents (48.8% boys, 48.1% girls and 3.1% non-binary; average age ≈ 14 years, based on grade). Given that the total number of pupils in grades 6–10 in Iceland was 24,881 in 2024, our analytic sample represents about 71% of the full population (Statistics Iceland, n.d.).

We focused on the 2025 survey wave because it uniquely included a special module on Grindavík displacement (requested by the Icelandic Directorate of Health). This enabled us to identify students who had lived in Grindavík and whether they had relocated before or after the November 2023 eruption. Based on these items, we defined three groups:

1. Evacuees (n = 235): students who lived in Grindavík and relocated after the November 2023 eruption (n = 175) as well as those who still reported residing in Grindavik[4] (n = 60).

2. Prior movers (n = 148): students who lived in Grindavík but moved before the eruption.[5]

3. Reference group (n = 17,315): students who had never lived in Grindavík.

Our primary comparison was between evacuees and the national reference group, with prior movers retained as an additional comparison group to help distinguish disaster-driven displacement from voluntary mobility. According to official statistics, Grindavík's only school enrolled 278 students in grades 4–8 in 2023 (Statistics Iceland, n.d.). Assuming this cohort approximates the population of Grindavík students in grades 6–10 by 2025, our evacuee sample corresponds to a minimum response rate of about 85%, which can be considered high.

Measures

The Icelandic Youth Study questionnaire includes several measures of students' well-being and experiences. For the present study we prioritised validated well-being scales that were consistently available across all grades.

Indicators of student well-being

Life satisfaction was measured using a single item: "Here you see a scale. At the top is the number '10' which represents the best possible life you could have, and at the bottom is the number '0' which represents the worst possible life you could have. Where on this scale is your life now? Check the number that best describes your life." Possible answers ranged from 10 ("Best possible life") to 0 ("Worst possible life"), with higher scores reflecting higher life satisfaction. The single-item measure is commonly used in large-scale surveys and has been shown to have strong criterion validity compared to multi-item scales (Cheung & Lucas, 2014).

School belonging was measured using a 3-item scale with four response options ranging from "strongly agree" to "strongly disagree". Items were: "I feel like I belong at school"; "Other students seem to like me"; and "I feel lonely at school" (reverse-coded). After recoding the reversed items, higher scores on the combined index indicated higher levels of school belonging. In terms of reliability, Cronbach's alpha in the full sample was .69.

Bullying victimisation was assessed with six items adapted from the Olweus Bully/Victim Questionnaire. Students were asked how often in the past two months they had experienced behaviours such as exclusion, violence and verbal abuse (e.g. "In the past two months, how often has it happened in school that you were left out?"). Response options ranged from 1 (I haven't felt that for the past two months) to 5 (A few times a week). The scale showed good internal consistency (α = .81). These items were collected only from students in grades 8–10.

Psychosomatic symptoms were assessed with eight items adapted from the HBSC Symptom Checklist (e.g. "In the last 6 months, how often have you had a headache?"). The items covered both psychological (feeling sad, irritated, anxiety, trouble falling asleep) and somatic (headaches, stomach-aches, backaches, feeling dizzy) complaints. Response options ranged from 1 (just about every day) to

[4] Although some families technically retain a house there, everyday life and schooling in Grindavík have not been possible since the eruption. These students are therefore treated as evacuees.

[5] The timing of prior movers' relocation is unknown, meaning that this group may include both recent and earlier movers. However, only five students from these cohorts left Grindavík in the two school years before the 2023 evacuation (J. L. Birgisdóttir, personal communication, December 1, 2025), suggesting that most relocations occurred earlier and were likely unrelated to the eruption.

6 (never). Items were inverted so that higher scores indicate more symptoms. The scale showed good internal consistency (α = .87).

Substance use was assessed with six items on alcohol, nicotine (cigarettes, e-cigarettes, nicotine pouches) and cannabis. Respondents indicated the number of days they had used each substance in the past 30 days (e.g. "How many days (if any) have you drunk alcohol in the last 30 days?"), with response options: Never; 1–2 days; 3–5 days; 6–9 days; 10–19 days; 20–29 days; and 30 days or more. Items were combined into a scale (Cronbach's α = .82). Due to strong skewness, the scale was dichotomised to reflect any use versus no use in the past 30 days (0 = no use, 1 = any use).

School absenteeism was measured with two items asking about unexcused absence during the previous two weeks: skipping a whole school day and skipping a class. Response options ranged from 1 (never) to 4 (more than three times). The items were summed into a scale (α = .63). Due to skewed distribution, the scale was also dichotomised to reflect any versus no absenteeism (0 = no absenteeism, 1 = any absenteeism).

Background variables

Subjective SES was measured with the item "How well do you think your family is doing financially?" with response options ranging from "Very well" (1) to "Very bad" (5). Items were reversed so that higher values indicate higher SES.

Grade level ranged from 6 to 10 and served as a proxy indicator of age.

Non-Icelandic background was assessed using the item "What language is spoken in your home?", with the response option "Icelandic" coded as 0 ("No") and all other options coded as 1 ("Yes").

Gender was measured with the item "How do you define your gender?", with response options: Boy (1), Girl (2) and Non-binary (3). Although the proportion of non-binary respondents was non-negligible, cell sizes particularly within the evacuee group (n = 15, 6.3%) were too small to permit reliable subgroup analyses without compromising confidentiality and statistical power. Gender was therefore modelled as a binary variable in adjusted analyses.

Analytic plan

The analysis began with descriptive statistics to assess comparability of evacuees, prior movers and the national reference group on background characteristics. Continuous covariates were summarised with means and standard deviations and with categorical covariates with proportions.

For the main analyses outcomes were modelled according to their measurement level. Continuous outcomes were standardised to facilitate comparison across measures and analysed using linear regression. Binary outcomes (school absenteeism and substance use) were analysed using logistic regression.[6] All models adjusted for students' grade, gender and non-Icelandic background, with heteroskedasticity-robust (HC2) standard errors clustered at the school level. Subjective SES was not included in the main analyses because it may itself be influenced by evacuation-related experiences and thus constitute a post-treatment variable. Sensitivity analyses were conducted with subjective SES.

Analyses focused on three group comparisons: evacuees versus the national reference group, prior movers versus the national reference group and evacuees versus prior movers. For continuous outcomes, both unadjusted Welch mean differences and adjusted standardised contrasts are reported with 95% confidence intervals. For binary outcomes, both univariable and adjusted odds ratios are reported with 95% confidence intervals. Because multiple outcomes were examined, we applied a

[6] Several outcomes were measured using ordinal response scales but analysed with parametric models, a common approach in large-scale survey research when multi-category scales approximate underlying continuous constructs and linear models are typically robust to modest violations of interval-scale assumptions (Norman, 2010).

Holm–Bonferroni correction across the twelve primary comparisons (six outcomes × two contrasts: evacuees vs. reference and prior movers vs. reference) to control the family-wise error rate.

Further, we examined moderation by subjective socioeconomic status (SES), gender and grade for outcomes selected based on the strongest adjusted group differences. For each outcome we estimated linear models with an interaction between group (evacuees or prior movers vs. reference) and the moderator. Subjective SES and grade were treated as continuous moderators, and we report adjusted standardised simple effects at -1 SD and +1 SD of SES and at grades 7 and 9, along with the interaction t statistic. Gender was modelled as a binary moderator (0 = boys, 1 = girls), and we report adjusted standardised simple effects separately by gender together with the interaction t statistic. All models were adjusted for the remaining covariates.

For missing values we used listwise deletion within each analysis. Because rates of missingness were low (<2% on all variables; see Table 1 and S1), no imputation was applied. All data were pseudonymised and participants' consent procedures align with Icelandic school research policy and national standards. To ensure full and transparent methods reproducibility we conducted all data preparation and analysis in R. The analytic code is available at our OSF repository (https://doi.org/10.17605/OSF.IO/2UD3N). The data are not publicly available but can be requested from the Educational Research Institute at the University of Iceland.

Results

Descriptive statistics

Table 1 reports descriptive statistics for background variables by group. The three groups did not differ significantly in mean grade level or in the proportion of students with a non-Icelandic family background. Yet, among prior movers, the proportion of students with non-Icelandic background seems to be somewhat larger (21.8%) compared with the national reference group (17.1%). Prior movers reported lower subjective SES than the reference group (M = 4.03 vs. M = 4.21; t = –2.65, p < .01), whereas evacuees did not differ from the reference group in subjective SES. The proportion of females was lower in both the prior mover and evacuee groups compared to the reference group even though only the latter contrast reached statistical significance. Supplementary Table S1 shows raw descriptive statistics for the outcome variables.

Table 1

Descriptive Statistics and Group Comparisons of Background Variables

Variable	Range	NA%	Reference (N = 16,752)	Prior movers (N = 142)	Evacuees (N = 220)	Prior movers vs. Ref	Evacuees vs. Ref
Subjective SES	1–5	0.6	4.21 (0.75)	4.03 (0.83)	4.27 (0.80)	***t* = –2.65**	t = 1.03
Grade	6–10	0.0	8.02 (1.41)	8.06 (1.41)	8.04 (1.41)	t = 0.35	t = 0.19
Gender (female)		3.1	49.8% (8336)	42.3% (60)	42.3% (93)	χ^2 = 2.88	**χ^2 = 4.58**
Non-Icelandic		0.1	17.1% (2961)	21.8% (32)	18.8% (44)	χ^2 = 1.88	χ^2 = 0.34

Note. Values are M (*SD*) for continuous variables and % (*n*) for categorical variables. NA% = percentage of missing values. Test statistics are t tests for continuous variables and χ^2 tests for categorical variables. Statistically significant results in ***bold*** (p < .05).

In order to contextualise evacuation experiences we mapped the regional distribution of evacuees relative to both the national reference group and prior movers (see Supplementary Figure S1 and S2). Evacuated students were disproportionately concentrated in the Reykjanes Peninsula (where Grindavík is located) with nearly one quarter residing there (24%, *n* = 352), compared with 16% of prior movers and 4% of the national reference group. Both evacuees and prior movers were less concentrated in the capital area than the reference group (62% and 66% vs. 71%, respectively). Prior movers were more likely than evacuees to reside in the north (10% vs. 4%), while differences between groups were small in the south and in the west and Westfjords.

Differences in well-being between evacuees and other students

Table 2 presents unadjusted and regression-adjusted comparisons of evacuees and prior movers against the national reference group. After adjusting for grade, gender and non-Icelandic background, evacuees reported lower life satisfaction (β = −0.23, CI [−0.41, −0.06]) and school belonging (β = −0.39, CI [−0.53, −0.24]), as well as more psychosomatic symptoms (β = 0.24, CI [0.10, 0.38]) compared with the national reference group. Evacuees also showed higher odds of school absenteeism (OR = 1.26, CI [1.09, 1.46]) but did not differ significantly in bullying victimisation or substance use once covariates were included.

Prior movers did not differ from the reference group in life satisfaction or school belonging. However, they reported more psychosomatic symptoms (β = 0.30, CI [0.12, 0.47]), substance use (OR = 1.48, CI [1.16, 1.88]) and absenteeism (OR = 1.34, CI [1.11, 1.62]). They also experienced more bullying victimisation (β = 0.41, CI [0.11, 0.71]).

Table 2

Evacuees and Prior Movers Compared to Reference Group: Unadjusted and Adjusted Effects

Outcome	Evacuees vs. Reference		Prior movers vs. Reference	
	Unadjusted Estimate [95% CI]	Adjusted Estimate [95% CI]	Unadjusted Estimate [95% CI]	Adjusted Estimate [95% CI]
Continuous outcomes (linear regression; standardised mean difference)				
Life satisfaction	**-0.38 [-0.71, -0.05]**	**-0.23 [-0.41, -0.06]**	-0.14 [-0.50, 0.22]	-0.07 [-0.25, 0.11]
School belonging	**-0.21 [-0.29, -0.13]**	**-0.39 [-0.53, -0.24]**	-0.07 [-0.17, 0.02]	-0.12 [-0.30, 0.05]
Victim of bullying	-0.01 [-0.14, 0.12]	0.03 [-0.16, 0.22]	**0.24 [0.04, 0.44]**	**0.41 [0.11, 0.71]**
Psychosomatic symptoms	**0.24 [0.08, 0.40]**	**0.24 [0.10, 0.38]**	**0.35 [0.15, 0.55]**	**0.30 [0.12, 0.47]**
Categorical outcomes (logistic regression; odds ratios)				
Substance use	**1.85 [1.24, 2.76]**	1.17 [0.99, 1.37]	**2.77 [1.79, 4.27]**	**1.48 [1.16, 1.88]**
Absenteeism	**1.74 [1.33, 2.27]**	**1.27 [1.09, 1.46]**	**2.00 [1.44, 2.79]**	**1.34 [1.11, 1.62]**

Note. Continuous outcomes are standardised mean differences from linear regression models; categorical outcomes are odds ratios from logistic regression models. Values are estimates with 95% confidence intervals in brackets. Adjusted models include controls for grade, gender and non-Icelandic background. Holm–Bonferroni correction for p-values was applied across the twelve primary comparisons. Statistically significant results in **bold** ($p < .05$).

Table 3 compares evacuees with prior movers, providing a more direct test of evacuation-specific effects. After adjusting for background covariates, evacuees reported lower school belonging (β = −0.26, CI [−0.49, −0.04]) than prior movers. Evacuees also reported lower life satisfaction (β = −0.16), although the confidence interval included zero (CI [−0.42, 0.09]), indicating greater uncertainty around this estimate. In contrast, prior movers reported higher levels of bullying victimisation than evacuees (β = -0.38, CI [-0.73, -0.02]). Differences between evacuees and prior movers in psychosomatic symptoms, substance use and absenteeism were small.

Taken together, these results indicate that while both evacuees and prior movers showed elevated risks relative to the national reference group, the evacuation was uniquely associated with lower school belonging and suggestive declines in life satisfaction.

Table 3

Evacuees Compared to Prior Movers: Unadjusted and Adjusted Effects

Outcome	Unadjusted Estimate [95% CI]	Adjusted Estimate [95% CI]
Continuous outcomes (linear regression; standardised mean difference)		
Life satisfaction	-0.24 [-0.72, 0.25]	-0.16 [-0.42, 0.09]
School belonging	**-0.14 [-0.26, -0.01]**	**-0.26 [-0.49, -0.04]**
Victim of bullying	**-0.26 [-0.49, -0.02]**	**-0.38 [-0.73, -0.02]**
Psychosomatic symptoms	-0.11 [-0.37, 0.15]	-0.06 [-0.28, 0.16]
Categorical outcomes (logistic regression; odds ratios)		
Substance use	0.67 [0.37, 1.20]	0.58 [0.30, 1.12]
School absenteeism	0.87 [0.57, 1.32]	0.89 [0.57, 1.40]

Note. Continuous outcomes are standardised mean differences from linear regression models; categorical outcomes are odds ratios from logistic regression models. Values are estimates with 95% confidence intervals in brackets. Statistically significant results in bold ($p < .05$).

Group differences by subjective socioeconomic status, gender and age

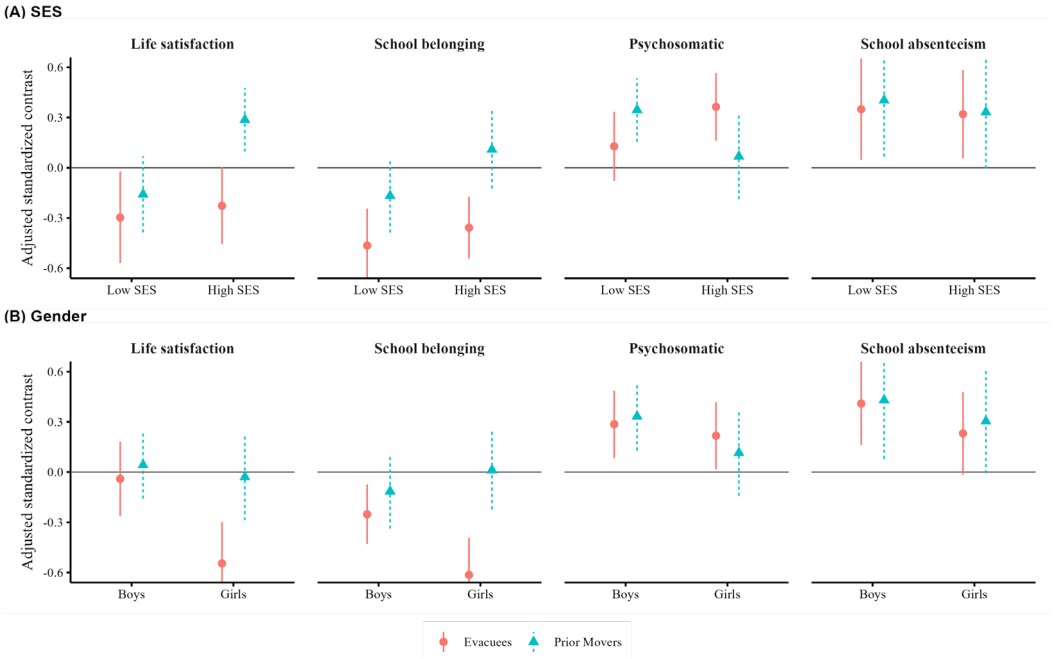
Key results of the moderation analyses are shown in Figure 1 (full results are presented in Supplementary Table S2 and S3). For evacuees, well-being differences were consistent across family backgrounds: life satisfaction and school belonging were lower and absenteeism and psychosomatic symptoms were higher, regardless of subjective SES. By contrast, prior movers showed more SES variation. At low subjective SES (–1 SD) movers' life satisfaction was slightly below the reference group ($\beta = -0.13$, CI [–0.36, 0.10]), whereas at high subjective SES (+1 SD) movers reported higher life satisfaction than the reference group ($\beta = 0.30$, CI [0.10, 0.50]), yielding a significant interaction ($t = 2.69$, $p < .01$; Table S3). The latter finding suggests that the impact of moving for life satisfaction is socially stratified whereas a disaster-related evacuation affects all students negatively irrespective of their SES. For psychosomatic symptoms, evacuees and prior movers showed SES-related differences in opposite directions, but these interactions were not statistically significant. For school belonging and absenteeism, SES-related differences were also nonsignificant.

Gender differences were more evident for evacuees than for prior movers: declines in life satisfaction and school belonging were substantially stronger among girls than boys (e.g. life satisfaction $\beta = -0.55$, CI [–0.79, –0.30] vs. $\beta = -0.04$, CI [–0.26, 0.18]; interaction $t = -2.97$, $p < .01$). These contrasts compare evacuees with their same-gender peers in the reference group; our models do not test gender differences within the evacuee group itself. In contrast, for prior movers, well-being outcomes were broadly similar across gender, with no significant interactions.

Grade-related differences were minimal and showed no consistent or statistically significant pattern (Table S2 and S3).

Figure 1

Adjusted Effects of Evacuation and Prior Mobility Compared with the Reference Group, Conditional on Socioeconomic Status (SES) and Gender



Note. Points show adjusted standardised contrasts (Group – Reference) with 95% confidence intervals from linear models with HC2 robust standard errors. Panel A displays SES contrasts are estimated at low (–1 SD) and high (+1 SD) levels, adjusting for grade, gender and non-Icelandic background. Panel B displays gender contrasts are estimated separately for boys and girls, adjusting for SES, grade and non-Icelandic background. Positive values indicate higher well-being (or more symptoms/absenteeism) relative to the reference group.

Sensitivity analysis

As a sensitivity check, we repeated all analyses excluding the 53 students who reported still living in Grindavík from the evacuees group. We also re-estimated the main regression models with additional adjustment for subjective SES. Across both checks results showed similar patterns, with no substantive differences.

Discussion

This study investigates the consequences of the forced evacuation of an entire town following a volcanic eruption for students' well-being approximately one and a half years after displacement. Using a nationwide youth survey and comparing evacuees with both a national reference group and students who had relocated from the same town prior to the disaster, we were able to identify patterns uniquely associated with forced displacement, as distinct from those more generally linked to ordinary relocation. Importantly, the evacuation occurred after an extended period of uncertainty and perceived imminent danger, which may have amplified stress responses and contributed to longer-term impacts on adolescents' well-being.

Well-being differences between evacuees and other students

Evacuation was linked with marked differences in socio-emotional well-being. Compared with the national reference group, evacuees reported lower life satisfaction and substantially lower school belonging, alongside higher psychosomatic complaints and school absenteeism. Prior movers, in turn,

showed higher psychosomatic complaints, absenteeism, substance use and bullying victimisation relative to the reference group, but no substantial differences in life satisfaction or school belonging. Together, these patterns point to both shared and distinct well-being challenges among displaced youth.

Direct comparisons between evacuees and prior movers sharpen this distinction and strengthen causal interpretation, despite the cross-sectional design. Evacuees reported lower school belonging, indicating a disruption to school integration that is difficult to attribute to relocation alone. From a developmental resilience perspective this suggests a disruption to relational and institutional anchors that normally support adaptive functioning during adolescence (Masten & Narayan, 2012). This pattern aligns with evidence from refugee populations showing that school well-being is particularly sensitive to social and relational stressors rather than socioeconomic disadvantage per se (Will et al., 2025). Evacuees also showed directionally lower life satisfaction, although this estimate was less precise, likely reflecting limited statistical power for this contrast.

Prior movers reported higher levels of bullying victimisation than evacuees, consistent with research showing that victimisation often clusters with broader, pre-existing psychosocial vulnerabilities and discrimination rather than reflecting a discrete causal exposure (Bowes, 2025; Will et al., 2025). In this sense, bullying among prior movers may be better understood as an indicator of accumulated vulnerability contexts associated with earlier mobility, rather than as an outcome of relocation itself. Differences between evacuees and prior movers in psychosomatic symptoms, substance use and absenteeism were comparatively small.

These evacuee–mover contrasts should therefore be interpreted as conservative estimates of evacuation-specific effects. Prior movers reported lower subjective socioeconomic status and higher levels of bullying victimisation – characteristics typically associated with poorer well-being. That evacuees nonetheless reported lower school belonging, and directionally lower life satisfaction, suggests that the observed differences are unlikely to be explained by pre-existing disadvantage alone. Rather, the pattern of group differences points to evacuation-related disruption, while likely understating rather than exaggerating its psychosocial impact. It is important to note that the timing of school transitions varied among evacuees: some entered neighbourhood schools soon after the evacuation, whereas others attended temporary Grindavík schools until the end of the school year and transitioned only a few months before data collection. This variation may particularly affect school belonging, which is sensitive to time spent integrating into a new school. Consequently, the observed differences likely reflect both displacement and early-stage integration processes. To the extent that temporary Grindavík schools potentially buffered disruption for some students, these estimates may understate evacuation-related effects at the time of measurement.

The magnitude of these differences becomes clearer when set against international benchmarks. Across 64 countries, Katsantonis et al. (2024) found that one standard deviation increase in bullying victimisation was linked to a reduction of about 0.37 points in life satisfaction on the Cantril ladder (0–10). The evacuation-related difference in life satisfaction (–0.23 SD) is broadly comparable in magnitude, given the similarity in measurement.[7] For school belonging, Li et al. (2025) reported bullying effects of -0.25 to -0.33 SD on PISA's standardised belonging index, whereas the evacuee–reference difference on our 1–4 scale was -0.39 SD, exceeding these benchmarks. As both sets of estimates are regression-adjusted, the comparisons are methodologically aligned. Although the bullying predictor is continuous and our evacuation contrast is binary, both estimates are expressed on the same 0–10 life satisfaction scale, so they provide a useful benchmark for the magnitude of evacuation-related declines. Although derived from different predictors and designs, these benchmarks provide a useful reference for the substantive size of the evacuation-related declines in socio-emotional well-being.

[7] Katsantonis et al. (2024) reported a standardised effect of -0.143 SD. Using the reported SD of life satisfaction in the PISA sample (SD = 2.64), this corresponds to ≈ –0.37 points on the Cantril ladder. The evacuee–reference gap of -0.39 points in our study reflects the observed raw mean difference between groups (Table S1). Converting the adjusted standardized effect (β = -0.26, Table 2) using the reference group SD (1.85) yields a somewhat larger adjusted gap of ≈ -0.48 points.

Because evacuees varied in how long they had been exposed to new school environments prior to data collection, the observed differences may reflect both evacuation-related disruption and early-stage integration processes, limiting conclusions about longer-term persistence.

Variation by family background, gender and age

The moderation analyses further clarify how disaster-driven evacuation differs from ordinary mobility. Among prior movers, well-being outcomes were socially stratified: higher perceived family resources were associated with better well-being, whereas lower subjective SES was linked to greater difficulties. In contrast, evacuees showed broadly similar reductions in school belonging and life satisfaction across socioeconomic backgrounds. This pattern suggests that forced evacuation constitutes a largely socially non-stratified disruption, unlike voluntary relocation where family resources can buffer adjustment challenges. Conceptually, this challenges models that treat relocation effects as primarily SES-driven and instead points to evacuation as a stressor that operates through relational and institutional pathways.

This interpretation is reinforced by the finding that evacuees did not report lower subjective SES than the national reference group. Despite not perceiving themselves as economically worse off on average, evacuees reported lower well-being, indicating that the observed differences are unlikely to be driven by economic disadvantage alone. Rather, they point to the disruptive effects of evacuation on social integration and emotional security.

Gender differences further underscore the distinctiveness of evacuation-related stressors. Compared with their same-gender peers in the reference group, evacuee girls experienced larger declines in school belonging and life satisfaction than boys, whereas gender differences among prior movers were minimal. This pattern is consistent with theories emphasising gendered stress internalisation and the centrality of peer relationships for girls' well-being during adolescence, rendering them particularly vulnerable to disruptions in social belonging (Abdi et al., 2023; Masten & Narayan, 2012; Pfefferbaum et al., 2015). Together, these findings underline the importance of relational and school-based support for adolescents in post-disaster contexts.

Conceptual implications

Taken together, the findings suggest that disaster-driven evacuation should be theorised not merely as residential mobility under extreme conditions, but as a compound developmental disruption that simultaneously destabilises social, institutional and temporal anchors during adolescence. Unlike voluntary relocation, its psychosocial consequences appear less socially stratified and more tightly linked to relational contexts, particularly school belonging. This distinction has implications for how displacement is conceptualised in developmental and educational research, and for the design of post-disaster interventions that prioritise social integration alongside material support.

Future research

The annual Icelandic Youth Study offers a unique opportunity to track Grindavík evacuees over time. Continued inclusion of relevant items in future waves, and use of earlier survey years as pre-evacuation baselines, would enable stronger designs to assess the longer-term consequences of disaster-driven displacement (see for example Lai et al., 2018). Such evidence could clarify recovery trajectories and the role of support from family, friends, schools and the counselling and guidance initiatives provided via the Grindavík Committee. The findings could guide future initiatives to further support the affected students and help inform future post-disaster interventions. Additionally, in-depth qualitative research, such as focus groups and interviews with displaced Grindavík youth, as well as their parents and teachers, would yield further insight into the unique experiences of becoming an evacuee and dealing with the integration process at new schools.

Conclusion

Taken together, the findings highlight the disruptive nature of forced displacement. Evacuation was associated with clear and persistent differences in students' socio-emotional well-being that were evident 15–17 months after displacement, largely unaffected by family background or age. These results suggest that disaster-driven displacement constitutes a qualitatively different experience from ordinary mobility, with broader and less socially stratified consequences for young people's well-being. Even in light of otherwise favourable circumstances in the context of the Icelandic welfare state, students experienced considerable declines in well-being. The results of this study can be used to inform policies and the continued strategic support for the school-aged children who lost their homes and school community following the evacuation of their hometown of Grindavík.

Strengths and limitations

A key strength of this study is the unique design: the sudden evacuation of an entire town provided a rare natural context, and the nationally representative large-scale youth survey enabled meaningful comparisons with both a national reference group and peers who had relocated before the disaster, helping to distinguish difficulties more specific to evacuation from those linked to relocation in general. At the same time, several limitations should be noted. The cross-sectional design limits causal inference, and the lack of pre-evacuation baseline data prevents direct assessment of change over time. Particularly, the reliance on the sample of prior movers as a point of comparison might pose problems as the reasons for moving might also affect students' well-being. We tried to account for this problem to some extent by adjusting for differences between groups in terms of relevant sociodemographic control variables, but important unobserved group differences might still be an issue. The proportion of students identifying as non-binary (3.1% overall; 6.3% among evacuees) was higher than in some earlier international studies but broadly consistent with recent Nordic youth surveys showing increasing prevalence of gender-diverse identities among adolescents.

Reliance on self-reports may also introduce bias, and despite the high response rate, disadvantaged students from Grindavík may have been less likely to participate, potentially leading to underestimated effects. Further limitations concern the use of subjective SES. Adolescents' perceptions of family economic status may themselves be affected by disaster-related narratives, housing instability or perceived losses following the evacuation. As such, subjective SES may partly reflect an outcome of displacement rather than a purely exogenous background characteristic. Finally, statistical power for subgroup interactions was constrained by the relatively small sample size.

Eldgos og samfélagsleg röskun: Velferð barna í kjölfar rýmingarinnar í Grindavík á Íslandi

Tímabil jarðhræringa sem hófst á Reykjanesskaga í lok árs 2019 leiddi til endurtekinna jarðskjálftahrina og eldgosa sem sköpuðu ákveðið hættuástand í Grindavíkurbæ og nágrenni. Það var þó ekki fyrr en undir lok 2023 þegar kraftur jarðhræringanna færðist nær bænum að ljóst varð að íbúum Grindavíkur stafaði verulega hætta af þeim (De Pascale o.fl., 2024; Toro, 2023). Í kjölfar kraftmikilla jarðhræringa á Reykjanesskaga tóku stjórnvöld ákvörðun um að bærinn skyldi rýmdur þann 10. nóvember 2023. Á þeim degi reið yfir öflugur jarðskjálfti og kvikufylltur gangur myndaðist á nokkrum klukkustundum undir Grindavík. Um 3.800 íbúar, þar á meðal fjölmörg skólabörn, voru fluttir frá heimilum sínum. Ljóst varð að óvissa um framtíð Grindavíkur og áframhaldandi hætta af eldgosum myndi í lengri tíma hamla því að fjölskyldur gætu snúið aftur heim (Alþingi, 2024). Enn í dag telst bærinn óöruggur til búsetu, ekki síst fyrir fjölskyldur með börn (Almannavarnir, 2026).

Strax eftir rýminguna gripu yfirvöld til aðgerða til að tryggja að börn héldu áfram námi. Sérstakir safnskólar fyrir nemendur Grindavíkur voru settir upp í fjórum skólum á höfuðborgarsvæðinu, þar sem einnig voru ráðnir kennarar frá Grindavík til að styðja við börnin. Rúmlega helmingur barnanna nýtti þessa lausn í fyrstu, en frá og með júní 2024 voru safnskólarnir lagðir niður og nemendur færðust yfir í hverfisskóla þar sem þau bjuggu nú (Alþingi, 2024). Um vorið 2025 voru börn frá Grindavík skráð í að minnsta kosti 68 grunnskóla víðs vegar um landið, sem sýnir umfang dreifingarinnar (Framkvæmdanefnd Grindavíkur, 2025).

Íslenska velferðarkerfið hefur veitt grindvískum fjölskyldum margvíslegan stuðning og sett var á laggirnar þjónustumiðstöð þar sem hægt var að nálgast upplýsingar um stuðningsúrræði. Sérstök Grindavíkurnefnd var sett á fót til að samhæfa aðgerðir og veita foreldrum, börnum og skólum sálfélagslegan stuðning (Framkvæmdanefnd Grindavíkur, 2025). Nýleg könnun stjórnvalda á viðhorfum brottfluttra Grindvíkinga sýndi að meirihluti svarenda (66%) taldi andlega heilsu sína verri en fyrir brottflutning og tæpur helmingur (46%) taldi núverandi heimili tímabundið en ekki framtíðarheimili (Forsætisráðuneytið, 2025). Ekki hefur áður verið safnað gögnum með kerfisbundnum hætti um afleiðingar brottflutnings á líðan barna frá Grindavík. Þó eru vísbendingar um að ýmis vanlíðan og skólaforðun hafi aukist meðal grindvískra barna (Framkvæmdanefnd Grindavíkur, 2025). Rannsóknin sem hér er kynnt er því fyrsta markvissa greiningin á áhrifum neyðarflutnings á líðan og velferð barna frá Grindavík.

Fyrri rannsóknir á seiglu sýna að persónubundnir og félagslegir þættir, s.s. aldur, kyn, fyrri reynsla og félagslegar aðstæður, geti haft veruleg áhrif á viðbrögð barna við áföllum af völdum náttúruhamfara (Pfefferbaum o.fl., 2015). Börn sem upplifa öryggi og vellíðan í skóla og heima gengur betur í námi og farnast betur félagslega (Bücker o.fl., 2018). Rannsóknir á hamförum, stríðum og heimsfaraldri Covid-19 sýna að slíkir atburðir veikja félagsleg tengsl, auka kvíða og hafa neikvæð áhrif á skólagöngu (Betthäuser o.fl., 2023; Kousky, 2016; Osofsky o.fl., 2009). Sérstaklega er flutningur barna milli byggðarlaga áfall sem getur rofið vinatengsl, fjölskyldustöðugleika og námsframvindu (Andrade o.fl., 2023). Þessi þekking styður þá tilgátu að Grindavíkurbörn hafi orðið fyrir víðtækum áhrifum.

Það sem gerir atburðina í Grindavík sérstaka er að óvissan stóð yfir í langan tíma áður en rýming fór fram. Íbúar lifðu mánuðum saman í óvissu um framtíð bæjarins og hvort hann myndi verða endurbyggður. Jafnframt gátu börnin haldið áfram námi á íslensku í nálægum skólum, ólíkt börnum á flótta frá stríðsátökum. Þá hefur norrænt velferðarkerfi

veitt fjölskyldum stuðning sem margir aðrir flóttahópar fá ekki (Eydal o.fl., 2016). Engu að síður skiptir miklu máli að rýna í þá félagslegu og sálfélagslegu þætti sem hafa áhrif á börnin (Framkvæmdanefnd Grindavíkur, 2025).

Rannsóknin byggir á gögnum úr Íslensku æskulýðsrannsókninni 2025 sem aflar árlegra upplýsinga um velferð og líðan barna og ungmenna í grunnskólum (Ragný Þóra Guðjohnsen o.fl., 2025). Þátttakendur voru grunnskólanemar í 6.–10. bekk úr 152 skólum sem svöruðu spurningakönnun á skólatíma þegar 15–17 mánuðir voru liðnir frá rýmingu Grindavíkur. Í rannsókninni voru skilgreindir þrír hópar: (1) börn sem fluttust frá Grindavík eftir rýminguna (n = 235), (2) börn sem höfðu flust þaðan fyrir eldgosið (n = 148), og (3) samanburðarhópur á landsvísu (n = 17.315). Þessi uppsetning gerir kleift að aðgreina áhrif neyðarrýmingar frá almennum flutningum. Svörin benda til þess að brottflutningur vegna jarðhræringanna hafi haft sérstök og víðtæk áhrif á börn.

Niðurstöður sýna að börn sem urðu að yfirgefa Grindavík upplifðu minni lífsánægju, veikari tengsl við skóla sinn, fleiri líkamlega og andlega kvilla og meiri skólasóknarvanda en jafnaldrar þeirra annars staðar á landinu. Þessi áhrif birtust óháð félagslegum bakgrunni, sem bendir til þess að nauðflutningar slái á verndandi áhrif fjárhagsstöðu. Jafnframt kom kynjamunur skýrt fram; stúlkur sýndu meiri viðkvæmni fyrir félagslegu tjóni, minni ánægju og fleiri sálfélagsleg einkenni en drengir. Þetta samræmist fyrri rannsóknum sem sýna að stúlkur reiða sig meira á félagsleg tengsl og eru viðkvæmari fyrir rofi þeirra (Abdi o.fl., 2023; Pfefferbaum o.fl., 2015).

Þrátt fyrir stuðning velferðarkerfisins og sértæk úrræði Grindavíkurnefndarinnar er ljóst að rýmingin hafði djúpstæð áhrif. Niðurstöður sýna að neyðarbúferlaflutningar eru annars eðlis en hefðbundinn búferlaflutningur barna og hafa víðtækari félagslegar og sálfræðilegar afleiðingar (Masten og Narayan, 2012). Rannsóknin leggur áherslu á mikilvægi þess að fylgjast áfram með líðan barna, bæði með reglulegum könnunum og eigindlegum rannsóknum á reynslu þeirra og fjölskyldna þeirra.

Í heild sinni varpar þessi rannsókn ljósi á mikilvægi skólans, fjölskyldunnar og félagslegra tengsla sem verndandi þátta fyrir börn í hamförum. Hún bendir til þess að Ísland geti lært af reynslu Grindavíkur til að styrkja viðbragðsáætlanir og stuðning við börn í framtíðarkrísum. Hún undirstrikar jafnframt að velferð barna sé í forgrunni þegar gripið er til aðgerða í kjölfar náttúruhamfara.

Efnisorð: náttúruhamfarir, brottflutningur, velferð barna, skólaganga

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Appendix – Supplementary Tables

Table S1

Descriptives by Group on Study Outcomes

Variable	Range	NA%	Reference (*N* = 17,282)	Prior movers (*N* = 148)	Evacuees (*N* = 235)
Life satisfaction	1–11	1.2	8.66 (1.85)	8.51 (2.19)	8.27 (2.53)
School belonging	1–4	0.6	3.12 (0.55)	3.05 (0.59)	2.91 (0.62)
Bullying	1–5	41.4	1.55 (0.68)	1.80 (0.91)	1.54 (0.75)
Psychosomatic symptoms	1–6	0.9	3.16 (1.13)	3.51 (1.23)	3.40 (1.25)
Substance use	1–2	0.8	1.03 (0.11)	1.07 (0.18)	1.07 (0.21)
School Absenteeism	1–4	0.1	1.28 (0.59)	1.55 (0.88)	1.51 (0.85)

Note. NA% = percentage of missing values. Bullying victimisation was measured only in grades 8–10.

Table S2

Moderation by Socioeconomic Status, Gender and Grade; Evacuees vs Reference

	SES			Gender			Grade		
Outcome	Low (-1 *SD*)	High (+1 *SD*)	*t*	Boys	Girls	*t*	Grade 7	Grade 9	*t*
Life satisfaction	**-0.30 [-0.57, -0.02]**	-0.23 [-0.46, 0.00]	0.37	-0.04 [-0.26, 0.18]	**-0.55 [-0.79, -0.30]**	**-2.97**	**-0.34 [-0.56, -0.12]**	-0.18 [-0.37, 0.01]	1.31
School belonging	**-0.46 [-0.69, -0.24]**	**-0.36 [-0.54, -0.17]**	0.71	**-0.25 [-0.43, -0.07]**	**-0.61 [-0.84, -0.39]**	**-2.50**	**-0.34 [-0.52, -0.17]**	**-0.47 [-0.63, -0.30]**	-1.31
Psychosomatic symptoms	0.13 [-0.08, 0.33]	**0.36 [0.16, 0.57]**	1.59	**0.29 [0.09, 0.49]**	**0.22 [0.02, 0.42]**	-0.48	**0.30 [0.13, 0.48]**	**0.21 [0.03, 0.39]**	-0.87
School absenteeism	**0.35 [0.05, 0.65]**	**0.32 [0.06, 0.58]**	-0.13	**0.41 [0.16, 0.66]**	0.23 [-0.01, 0.48]	-1.00	**0.43 [0.21, 0.66]**	**0.24 [0.03, 0.45]**	-1.49

Note. Cells show adjusted standardised contrasts (Evacuees – Reference) at moderator values from linear models with HC2 cluster-robust SEs. SES simple effects shown at -1 SD and +1 SD; Gender at 0 = boys and 1 = girls; Grade at 7 and 9. The rightmost column in each block reports the interaction t statistic for interaction. Statistically significant results in **bold** ($p < .05$).

Table S3

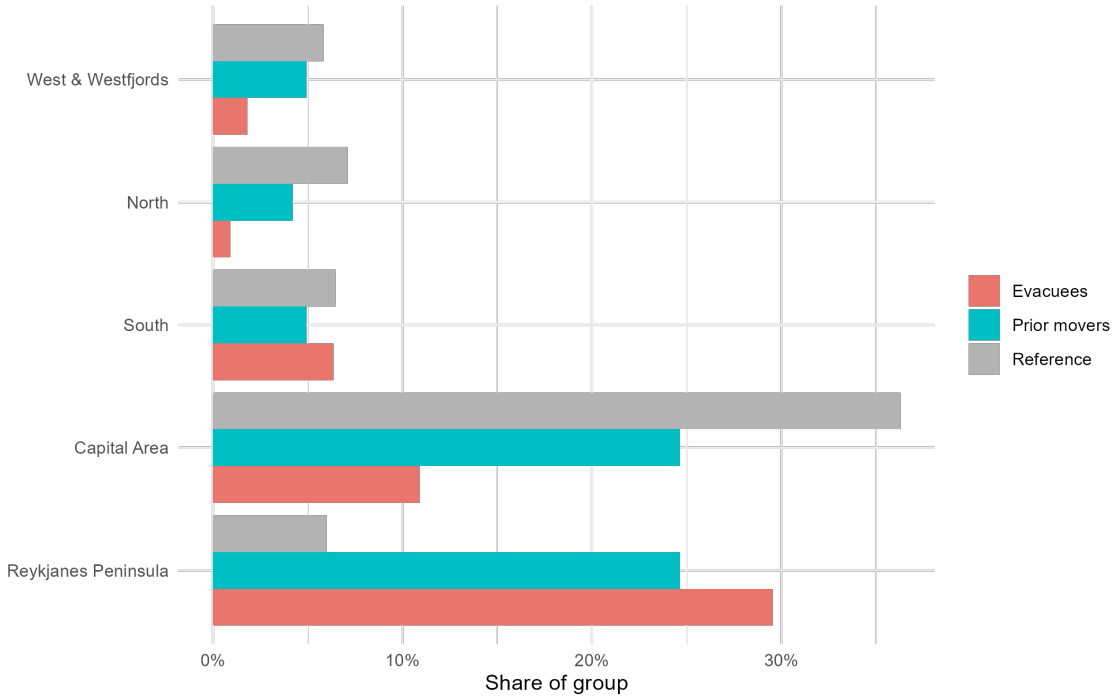
Moderation by Socioeconomic Status, Gender and Grade; Prior movers vs Reference

	SES			Gender			Grade		
Outcome	Low (-1 *SD*)	High (+1 *SD*)	*t*	Boys	Girls	*t*	Grade 7	Grade 9	*t*
Life satisfaction	-0.16 [-0.38, 0.07]	**0.29 [0.10, 0.47]**	**2.88**	0.04 [-0.16, 0.24]	-0.03 [-0.29, 0.23]	-0.43	0.01 [-0.19, 0.21]	0.01 [-0.18, 0.20]	-0.04
School belonging	-0.17 [-0.39, 0.05]	0.11 [-0.12, 0.34]	1.68	-0.11 [-0.34, 0.11]	0.01 [-0.22, 0.24]	0.77	0.04 [-0.17, 0.25]	-0.15 [-0.33, 0.04]	-1.59
Psychosomatic symptoms	**0.34 [0.15, 0.54]**	0.07 [-0.19, 0.32]	-1.79	**0.33 [0.13, 0.54]**	0.11 [-0.14, 0.37]	-1.30	**0.25 [0.05, 0.46]**	**0.22 [0.04, 0.41]**	-0.28
School absenteeism	**0.40 [0.07, 0.73]**	0.33 [-0.00, 0.66]	-0.29	**0.43 [0.08, 0.78]**	0.30 [-0.01, 0.61]	-0.53	**0.46 [0.14, 0.78]**	**0.30 [0.03, 0.57]**	-0.89

Note. Cells show adjusted standardised contrasts (Prior movers – Reference) at moderator values from linear models with HC2 cluster-robust SEs. SES simple effects at -1 SD and +1 SD; Gender at 0 = boys and 1 = girls; Grade at 7 and 9. Rightmost column in each block reports the interaction t statistic. Statistically significant results in **bold** ($p < .05$).

Figure S1

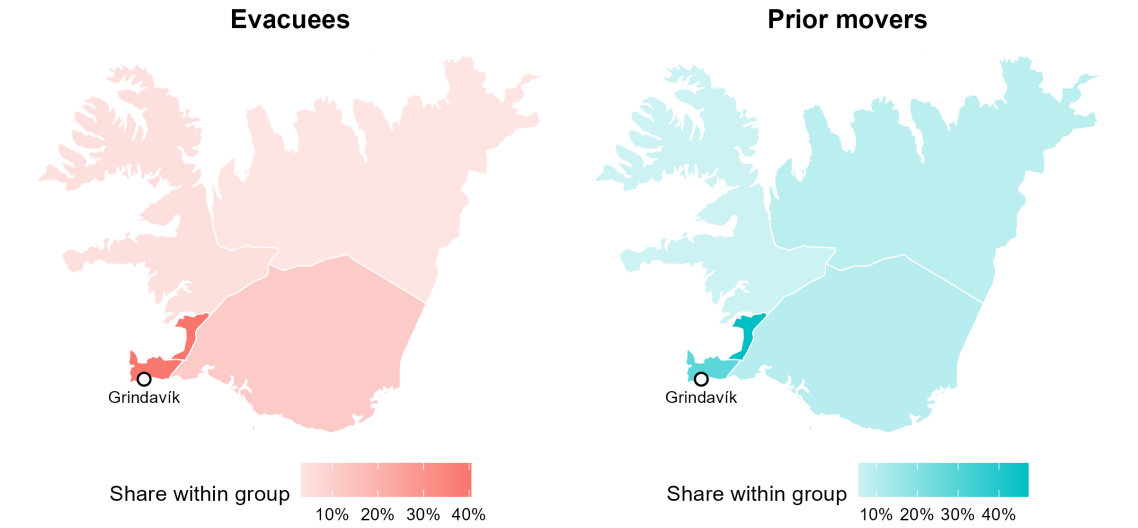
Regional Distribution by Study Group



Note. Share of evacuated students, prior movers and the national reference group residing in five aggregated regions at the time of the 2025 survey. Regions reflect functional settlement areas; Reykjavík and surrounding metropolitan municipalities are combined into a single Capital Area category.

Figure S2

Residential Distribution of Evacuated Students and Prior Mover



Note. Geographic distribution of evacuated students and prior movers across Iceland. Maps show the share of each group residing in aggregated regions at the time of the 2025 survey. Darker shading indicates a higher within-group share. The location of Grindavík is marked for reference.