

Does Swedish language acquisition pay off for labour market integration? A geographical perspective

Samaneh Khaef

Samaneh.khaef@humangeo.su.se

Stockholm University

Abstract

This study examines the impact of acquiring Swedish language skills through participation at *Swedish for Immigrants* (SFI) program on immigrants' integration into the labor market and how such effects vary across regions. Using Swedish register data and focusing on all foreign-born individuals aged 16 and older who arrived between 2000 and 2012 and following them over a ten-year period, the analysis employs propensity score matching, to account for selection bias, and cox proportional hazards models to estimate time to first employment. Results show that participation in SFI significantly accelerates labor market entry: participants are 15 percent more likely to obtain their first job than non-participants. Geographical context further conditions these effects. SFI participation offers the greatest payoff in metropolitan and larger city regions, where employment tends to require language proficiency, but has weaker effects in small towns and sparsely populated areas dominated by low-skill occupations. These findings highlight the geographical component of language payoffs and underscore that immigrants benefit from language acquisition differently depending on where they live. By integrating spatial perspectives, this study contributes to the understanding of where language acquisition via SFI most effectively promotes immigrants' economic integration in Sweden.

Keywords: language acquisition, Swedish for immigrants (SFI), labor market integration, regional variations, Swedish register data

Introduction

The integration of immigrants is a central issue in political and academic debates across Europe. This is particularly salient in Sweden, which has received a substantial influx of immigrants—primarily refugees and their families—raising questions about their economic impact and labor market participation (EU, 2020).

Sweden has one of the largest employment gaps between native and foreign-born individuals among OECD countries (OECD, 2021), which is attributed to various factors, among which language proficiency stands out as a key barrier to integration. Unlike countries like Canada, France, and the United Kingdom where many immigrants already speaking one of the official languages, knowledge of Swedish is relatively uncommon among newly arrived migrants in Sweden, except those from neighbouring countries (OECD, 2016). Yet, even low-skilled jobs in Sweden typically require a high level of Swedish proficiency, making labor market integration especially challenging for newly arrived immigrants. According to the OECD Survey of Adult Skills (PIAAC), literacy skills are strongly linked to employment outcomes in Sweden. This association is more pronounced among foreign-born individuals than among Swedish-born individuals of similar age and education, suggesting that language proficiency is a central driver of this disparity (OECD, 2018; Pareliussen, 2019).

Given the importance of language for employment and broader social participation, Swedish for Immigrants (*svenska för invandrare*, SFI) has become a cornerstone of Sweden's integration policy. Substantial public resources are allocated to SFI (196 million SEK in 2025; Swedish Ministry of Education, 2024) to strengthen immigrants' language skills and facilitate their integration.

Since 1986, SFI course became permanent program to equip newcomers with linguistic skills for active participation in society and the labor market (Ahlgren & Rydell, 2020; Lindberg & Sandwall, 2007). Participants in SFI can combine their studies with work, internships, or other programs. However, in practice, balancing both full-time work and SFI participation can be challenging (Öbrink Hobzová, 2020). SFI courses are public funded language programs which are organized and overseen by municipalities, creating a decentralized system that results in considerable regional variation in access, quality, and implementation. Evidence indicates that combining SFI with vocational training strengthens labour market outcomes (Karlsdóttir et al., 2017), but such combined opportunities are only available in a few municipalities, particularly Stockholm (Swedish Public Employment Service, 2017).

While extensive international research demonstrates that host-country language proficiency enhances immigrants' employment and earnings prospects (e.g., Chiswick & Wang, 2016 in the Netherlands; Delaporte & Piracha, 2018 in Australia; Foged et al., 2024; Foged & van der Werf, 2023 in Denmark; Ispording, 2013 in Spain; Schaeffer & Bukenya, 2014 in Germany), empirical evidence for Sweden remains surprisingly limited. Despite substantial public investment in language courses, it is still unclear whether participation in SFI, as the main formal channel for learning Swedish, actually accelerates entry into the labor market. Previous research confirms that proficiency in Swedish is crucial for labor market participation (Carlsson et al., 2023; Eriksson & Rooth, 2022), but these studies focus on language skills in general rather than on the role of SFI as a formal public course designed to build those skills. Understanding whether and to what extent SFI participation translates into improved employment outcomes is therefore essential for assessing the effectiveness of SFI as important component of Sweden integration policy and for identifying where and for whom language training yields the greatest returns.

Moreover, the role of geography in shaping language payoffs has received little attention. Previous studies emphasize that regional contexts matter for individual's integration: prosperous and diverse economies create opportunities, whereas regions facing unemployment or population decline pose barriers (Adserà et al., 2022; Van Ham et al. 2012; Glick Schiller & Çağlar 2009; Bevelander & Lundh, 2007; Backman et al., 2021). However, whether language proficiency yields similar benefits across regions with distinct demographic and economic structures remains an open question.

This paper argues that the returns to language acquisition are inherently contextual for three reasons. First, the decentralized system of SFI means that its effectiveness likely depends on local institutional capacity, priorities, and resources (Engdahl et al., 2023; Farchy & Liebig, 2014; Righard et al., 2019). Second, regional differences in immigrant population size may condition how language supports integration. Research shows that rural areas with relatively few immigrants can facilitate integration through closer contact with natives and stronger bridging networks (Waters & Jiménez, 2005; Hugo & Morén-Alegret, 2008). By contrast, immigrant-dense areas may provide co-ethnic support but also channel newcomers into ethnic labour markets with limited interaction with natives (Åslund & Rooth, 2007; Damm, 2009; Edin et al., 2003; Godøy, 2017; Musterd et al., 2008). This suggests that the local context shapes the role and outcomes of SFI participation. In smaller or less ethnically diverse areas, language training may more translate into opportunities for social contact and labour market entry, whereas in immigrant-dense areas, the benefits of SFI may be mitigated by stronger reliance on co-ethnic networks and reduced exposure to Swedish-speaking environments. Third, regional labor markets differ in their occupational structure and skill composition. Jobs demanding high education and skill are often concentrated in large urban areas, whereas service-oriented occupations that demands less host-country-specific human capital are mainly located in smaller towns and rural areas (Atalay et al., 2024; Rouwendal & Koster, 2025).

These spatial sorting of occupations that require varying levels of human capital may influence how and where language proficiency translates into employment opportunities.

Taken together, these regional differences in institutional capacity, demographic composition, and labour market structure suggest that the benefits of language acquisition vary across Sweden. While both language proficiency and regional context are key to integration, their interaction remains insufficiently explored.

Empirically, evaluating the economic impact of SFI is complicated by selective enrolment. Recent research shows that participation in SFI is very selective, and participants are disproportionately women, refugees, family migrants, the unemployed, younger adults, and individuals with lower education (Khaef, 2025a). As a result, simple comparisons between participants and non-participants risk conflating program effects with pre-existing characteristics.

To address this issue, the present study applies propensity score matching to balance participants and non-participants on observable characteristics, thereby reducing selection bias. The analysis follows individuals for ten years after arrival, using Cox proportional hazards models to estimate how SFI participation influences the speed of labor market entry. Additionally, it examines whether these effects vary geographically by interacting SFI participation with region of settlement (metropolitan areas, large cities, small towns, and sparsely populated areas). This study contributes to the literature by offering a spatially nuanced evaluation of SFI's role in labor market integration. By focusing on time-to-employment, and incorporating regional variation, it provides insight into where language training is most effective. Specifically, this paper addresses three research questions:

- To what extent does participation in SFI courses accelerate the transition into first employment compared to non-participation?
- Do the effects of SFI participation vary across regions?

Materials and method

This paper draws on a compilation of Swedish administrative registers managed by Statistics Sweden, which contain a wide array of individual-level information on demographic, socioeconomic, housing, and geographic domains and are updated annually.

Information on participation in SFI—key variable in this study—is available in the register data from 1990 to 2022. SFI courses are available only to foreign-born individuals aged 16 or older who reside in Sweden and lack sufficient knowledge of Swedish. Accordingly, individuals under the age of 16, as well as those from Norway and Denmark, are not eligible to participate in the program (Swedish National Agency for Education, 2025).

The analysis focuses on complete cohorts of immigrants, defined as all foreign-born individuals aged 16 and older upon arrival (excluding those from Norway and Denmark) who arrived in Sweden between 2000 and 2012 and are followed over a ten-year period (N = 414,916). Table 1 presents the characteristics of the study population at the year of arrival. A large share of immigrants arriving in this period are family migrants and refugees, account for more than half of the population. The largest regions of origin are Middle east & north Africa (31%), Europe (26%) and other Asia (21%). Substantial share of immigrants, 67%, attended SFI early after arrival, and notably, more than a third, 33%, never participated in SFI. Around 44% of immigrants in the study initially settled in metropolitan areas and about a third settled in larger cities.

Table 1 Characteristics of immigrant population (aged over 16), measured at year of arrival in Sweden.

	Freq.	Percent
Gender		
Men	226,406	54.57
Women	188,510	45.43
Highest educational attainment level		
Missing information	110,359	26.60
Primary & lower secondary	80,988	19.52
Upper secondary	71,961	17.34
Tertiary	151,608	36.54
Mode of legal entry		
Family migrants	184,767	44.53
Refugees	82,612	19.91
EU migrants, without residence permit	54,767	13.20
Labour migrants	41,477	10.00
Student	35,869	8.64
Born outside EU, without residence permit	15,424	3.72
Region of origin		
Middle east & north Africa	130,472	30.85
Europe	98,665	26.48
Other Asia and Oceania	89,568	20.87
Other Africa	50,752	10.38
America	24,429	6.38
Russia and former USSR	19,183	4.59
Unknown or stateless	1,847	0.45
Age at arrival (mean)	31.55	
Region of settlement		
Metropolitan areas	181,990	43.86
Larger cities	135,533	32.67
Small towns	82,819	19.96
Sparsely populated areas	14,574	3.51
Participation at SFI		
Yes	279,441	67
No	135,475	33
Year of immigration		
2000-2006	168,175	40.54
2007-2012	246,741	59.46
Total	414,916	100.00

Note: “Other Africa” includes all African countries except North Africa. “Other Asia and Oceania” refers to all Asian countries except those in the Middle East.

Analytical strategy

This study applied Cox regression models to estimate how SFI participation as well as regional context and other control variables, influence immigrants’ likelihood of entering first employment in Sweden.

In Swedish register data, individuals’ employment situation is recorded every year in November. An individual is at risk of becoming employed in a given year if she/he had never

been employed or owned a business in November the preceding year. For immigrants, they entered the risk set the year following their immigration year. All immigrants who do not find job, emigrated, or died at some point during the observation period are right censored.

Because participation in SFI is not random, it is essential to account for potential selection bias. To do this, I apply propensity score matching (PSM) to reduce selection bias. It estimates the probability that an individual receives a particular treatment or participates in a program, given a set of observed characteristics. Individuals with similar propensity scores, that have similar values for the variables used in the propensity score calculation, are then matched across treatment and control groups, creating balanced samples that are comparable in terms of observable attributes (Rosenbaum & Rubin, 1983). In this study, the propensity score is estimated based on background characteristics known to influence SFI participation including gender, presence of small children, age at arrival, highest educational attainment, mode of legal entry to Sweden, and employment status (see Khaef, 2025a). By matching participants and non-participants who share similar characteristics, it is possible to create a more balanced comparison group. This approach reduces bias arising from non-random selection into SFI and provides a more reliable estimate of the program's effect on labor market outcomes.

Following propensity score matching, survival functions were created to describe the occurrence and timing of this event for immigrants. As final step, Cox regression models were estimated based on a person-year dataset to explore the effect of SFI participation and regional context on the likelihood of transition to employment. Individuals who find employment before starting SFI contribute only unexposed person-time and are therefore treated as “never exposed before the event”; their later attendance cannot influence the already observed first job.

Regions are classified according to the typology developed by the Swedish Association of Local Authorities and Regions (SKL), which originally distinguished ten categories of municipalities. For analytical clarity, these categories are regrouped into four broader categories: (1) metropolitan areas, (2) larger cities, (3) small towns, and (4) sparsely populated areas (including municipalities in sparsely populated regions).

The models are also control for other variables including arrival cohort, region of birth, mode of legal entry to Sweden, gender, age at immigration, and highest educational level (measured two years after arrival for higher coverage, Khaef, 2022).

Results

Timing to first employment

To describe the timing of immigrants' entry into their first employment after arrival, Kaplan–Meier survival function curves are plotted separately by SFI participation, and region of residence. The first observation is that immigrants who participated in SFI experienced faster transitions into employment compared to those who never attended. The gap between the two groups increases over time, indicating a sustained advantage for SFI participants.

Figure 2 illustrates regional differences in the transition to first employment. Immigrants in sparsely populated areas entered employment the fastest, as indicated by their lower survival rates. By contrast, those in larger cities and metropolitan areas experienced slower transitions, with larger cities showing the highest survival rates. Immigrants in small towns displayed patterns very close to those in metropolitan regions and larger cities. These differences are examined in the regression analysis.

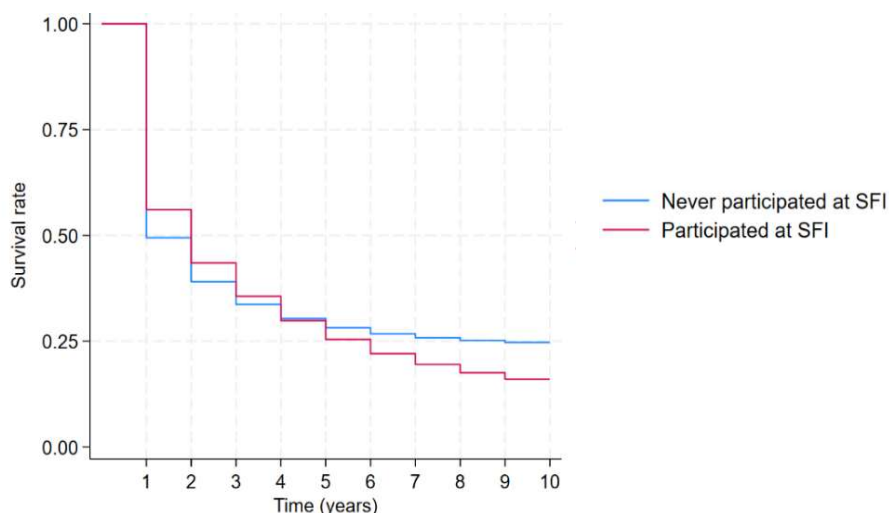


Figure 1 Transition into first employment, by years in Sweden and participation in SFI course (Kaplan-Meier survival functions with 95% confidence intervals).

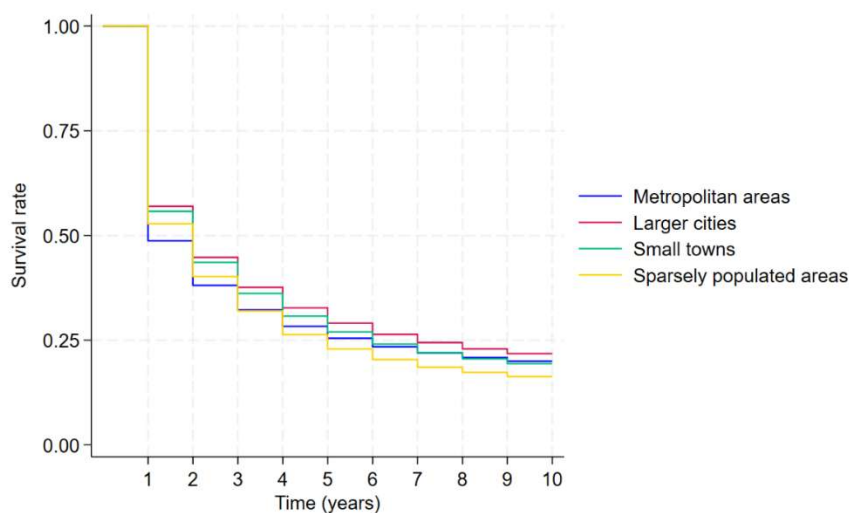


Figure 2 Transition into first employment, by years in Sweden and region of settlement (Kaplan-Meier survival functions, 95% confidence intervals).

Transition to the first employment: Region of settlement and participation at SFI

To determine the effect of attending SFI, and regions of settlement on transition to first employment, two Cox regression models are carried out and results are displayed in Table 2.

Table 2 Results from Cox regression models on immigrants' entry into first employment

	Model 1		Model 2	
	HR	SE	HR	SE
Participation at SFI (never attend SFI as ref)	1.153	0.004	1.039	0.008
Region of settlement (small towns as ref)				
Metropolitan areas	1.004	0.005	0.921	0.008
Larger cities	0.957	0.005	0.906	0.008
Sparsely populated areas	1.089	0.010	1.100	0.018
Interaction between attending SFI and region of settlement				
Attending SFI × Metropolitan areas			1.176	0.011
Attending SFI × Larger cities			1.107	0.011
Attending SFI × Sparsely populated areas			0.975	0.018

	Model 1		Model 2	
	HR	SE	HR	SE
Gender (men as ref)	0.714	0.002	0.715	0.003
Mode of legal entry (Born outside EU, without residence permit as ref)				
EU no permit	1.187	0.011	1.185	0.011
Family migrants	1.289	0.009	1.286	0.009
Labour market	1.927	0.015	1.921	0.015
Refugees	1.166	0.009	1.165	0.009
Student	0.830	0.007	0.829	0.007
Highest educational level (primary and lower sec as ref)				
Missing	0.661	0.661	0.662	0.004
Upper sec	1.158	0.007	1.158	0.007
Tertiary	1.149	0.006	1.151	0.006
Region of origin (Other Africa as ref)				
Europe	1.217	0.009	1.212	0.009
America	1.175	0.010	1.172	0.010
Middle east & north Africa	0.927	0.005	0.923	0.005
Other Asia and Oceania	1.122	0.007	1.118	0.007
Russia and former USSR	1.296	0.011	1.290	0.011
Unknown or stateless	1.229	0.031	1.222	0.031
Age at arrival	0.976	0.000	0.976	0.000
Immigration cohorts	1.005	0.000	1.005	0.000

Notes: All hazard ratios are statistically significant at $p < 0.001$ unless otherwise indicated. Values shown in **bold** are not statistically significant.

Initial results from Model 1 show that immigrants who attend SFI have a 15.3% higher hazard of entering their first employment compared to those who never attend, underscoring the importance of language acquisition for labor market entry as being suggested by other studies in many countries (Schaeffer & Bukenya 2014; Isphording 2013; Chiswick & Wang 2016; Delaporte & Piracha 2018; Foged & van der Werf 2023, Foged et al., 2024; Carlsson et al., 2023; Eriksson & Rooth, 2022).

In Models 1 and 2, the region of settlement continues to matter for labor market entry, though in different ways. Immigrants in larger cities show lower hazards compared with those in small towns, indicating slower transitions into employment. By contrast, immigrants in sparsely populated areas display consistently higher hazards, suggesting faster labor market entry relative to small towns. The coefficients for metropolitan areas, however, is different in Model 1 and 2. In Model 1, immigrants in metropolitan areas have higher hazard compared to small towns while it is not statistically significant whereas in Model 2, hazard is smaller than one, meaning slower transitions into employment in such areas. Taken together, the results suggest that sparsely populated areas offer the most favorable conditions for rapid employment integration, while larger cities pose the greatest barriers. This pattern aligns with earlier research (Khaef, 2025b; Bevelander & Lundh, 2007; Backman et al., 2021), emphasizes the advantages of such areas for immigrants' labor market entry.

Given the diversity in labor market structures across Sweden, variations in the share of the immigrant population across regions, and the decentralized system of SFI courses, Model 2 introduces interactions between SFI participation and regions of settlement in Sweden. This allows to examine whether the effect of language acquisition depends on local labor market context. Since the hazard ratios for interaction terms only provide the multiplicative effect of interactions, they do not directly show the overall hazard ratio for all 8 combinations of time

of attending SFI and region of settlement. For better and easier interpretation, Figure 3 displays the full hazard ratios for all 8 combinations of SFI participation and region type (metropolitan, larger cities, small towns, sparsely populated areas), relative to the reference category of never attending SFI in small towns. All estimates are adjusted for covariates.



Figure 3 Hazard ratios for time to first job by SFI participation and region of settlement (Cox regression with interactions)

According to Figure 3, the benefits of SFI participation are clearly shaped by regional context. In metropolitan and larger city regions, immigrants who never attend SFI have much lower hazards of entering employment compared with the small-town reference group, suggesting slower integration into the labor market. Participation in SFI, however, substantially offsets this disadvantage: immigrants who have attended SFI show notably higher hazards of entering employment, particularly in metropolitan areas, where SFI participation increases the likelihood of labor market entry.

In small towns, the difference between SFI participants and non-participants is minimal, indicating that language acquisition plays a somewhat smaller role in facilitating employment where local labor markets are less competitive, and networks may be more accessible. By contrast, in sparsely populated areas, immigrants—whether or not they attend SFI—find jobs relatively quickly, implying that language training provides less of an advantage in these contexts.

To better understand these geographical payoffs to SFI participation, Figure 4 presents the distribution of occupations by required education across different regions, expressed as location quotients (LQ) relative to the national average, based on the Swedish Standard Classification of Occupations 2012 (SSYK 2012)¹. The results reveal distinct occupational structures. Metropolitan areas are specialized in high-skill employment, with above-average shares of jobs requiring tertiary (1.14) and research-oriented tertiary education (1.21), and below-average shares of jobs requiring only upper-secondary education (0.82). By contrast, large cities mirror the national average across all education levels, showing no clear specialization. Small towns and sparsely populated areas display the opposite pattern to

¹ Since the values of the location quotients are correlated with regions, they are excluded from the model to avoid collinearity and are instead used descriptively to interpret the results shown in Figure 3.

metropolitan regions: both are strongly overrepresented in jobs requiring upper-secondary education but underrepresented in tertiary and research-oriented occupations.

These patterns suggest that metropolitan regions concentrate high-skill, potentially language-intensive occupations. This may explain why, in such areas, acquiring Swedish through SFI improves employment prospects, as shown in Figure 3. In contrast, small towns and rural areas are dominated by jobs requiring lower levels of education and, likely, less advanced language skills—implying that participation in SFI yields smaller labor market returns in these regions. Taken together, these findings are consistent with the spatial sorting of occupations and skills (Atalay et al., 2024; Rouwendal & Koster, 2025), implying that the payoff from language acquisition in Sweden is highly context-dependent. Participation in SFI courses yields the clearest returns in metropolitan and larger-city regions, while in sparsely populated areas, its economic value is limited.

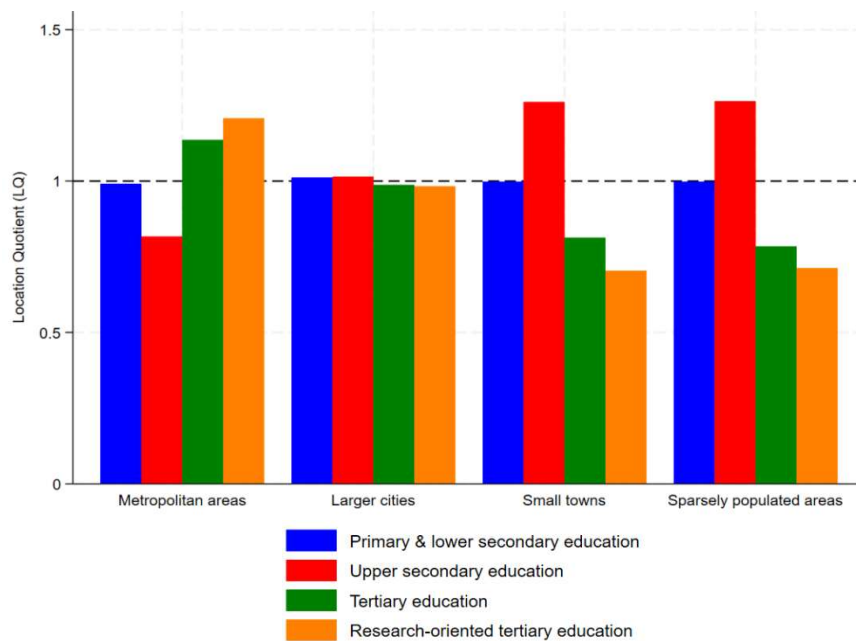


Figure 4 Regional specialization in jobs by educational requirements, year 2023

Source: Author’s elaboration based on statistics Sweden:

https://www.statistikdatabasen.scb.se/pxweb/en/ssd/START_AM_AM0208_AM0208D/YREG58BAS/

Preliminary conclusion

SFI participation significantly accelerates immigrants’ entry into the labor market, confirming that host-country language acquisition is a vital component of integration. However, the benefits of SFI depend on where immigrants reside. This supports the argument that language payoffs are contextual, shaped by regional labor markets, institutional capacity, and demographic composition.

The strongest effects of SFI are observed in metropolitan and larger city regions, where most jobs potentially tend to require advanced communication skills and higher education. In contrast, small towns and sparsely populated areas show weaker returns, likely due to more low-language-requirement occupations. These findings reveal that language skills interact with the spatial distribution of economic opportunities.

Additionally, this regional variations in pays to SFI may be due to the decentralized nature of SFI provision which may amplify or limit program effectiveness.

These findings underscore that one-size-fits-all integration policies may be inefficient; and integrating SFI with vocational and employment programs—especially in metropolitan areas and larger cities—could magnify returns.

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