Immigrant Special Visas and Local Employment: Evidence from South African

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Immigrant Special Visas and Local Employment: Evidence from South African Metropoles

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Abstract

This paper sought to investigate why immigrant special permits can have different impacts on the local employment outcomes in locations within the same country. The paper specifically investigated the association between the Zimbabwe Exemption Permit (ZEP) and local employment outcomes and formalization of foreign labour in Cape Town and eThekwini, cities in South Africa that have different industrial specializations and labour demand. Bivariate maps and the event study model were used to investigate whether the increase in the foreign employment share was at the expense of local employment and whether the ZEP reinforced old spatial structures or new patterns emerged to suggest the formalization of foreign labour. The Ordinary Least Squares (OLS) interaction model was used to investigate the association between foreign employment and local employment in the CBD and along transport corridors as well as changes to the local person living at the average distance from the CBD and the main transport corridors. The results show that ZEP was associated with formalization of labour and a lot of complementarities between local and foreign labour in eThekwini and Cape Town, although in Cape Town, local labour lost jobs to immigrants in the CBD in 2018.

Keywords:

Zimbabwe Exemption Permit; Local Employment, Foreign Employment, Bivariate maps, Difference-in-Differences, Ordinary Least Squares; Cape Town; eThekwini, South Africa

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1 Introduction

South Africa hosts the largest number of immigrants in Africa because they are attracted to its average wages that are higher than most African countries (Gao, 2022). This influx has generated local tension with locals accusing immigrants of taking their jobs, which has often led to anti-immigrant sentiments and xenophobic episodes in South Africa, (Gao, 2022). Populist political rhetoric often blames immigrant workers for socio-economic problems, thereby intensifying social tensions and undermining policy measures designed to integrate migrants into the labour market (Neocosmos, 2016). Moreover, undocumented migrants, who will accept low-wage formal positions, are often blamed for exacerbating unemployment, particularly in low-wage sectors (Dlamini *et al.,* 2020).

South Africa is also one of the few countries that sought to absorb undocumented immigrants into its formal labour market by issuing them permits, such as the Lesotho Special Permit (LSP) in 2015 and the Zimbabwe Exemption Permit (ZEP) in 2017 (Chivige & Alfaro-Velcamp, 2023). South Africa granted permits such as the LSP and ZEP to undocumented migrants, as most were low-skilled and struggled to legally enter the mainstream labour market (South African Government, 2022). The ZEP was a sudden and unanticipated policy-driven expansion of legal work rights for Zimbabweans (Nyakabawu, 2022). This change introduced exogenous variation in immigrant labour supply across spatial units, allowing the policy to be treated as a natural experiment. The ZEP allows 178,000 Zimbabweans to live, work and study in South Africa.

Very few studies have been conducted to explore the impact of immigrants on local labour market outcomes in South Africa. One such study, the World Bank (2018), investigated the impact of immigrants on local employment in South Africa, and it focused on the national level and used census data between 1996 and 2011. Yet no studies have been conducted to examine the potential impact of the ZEP on local employment (Department of Home Affairs, 2017). Since South Africa's current unemployment crisis entrenches poverty and inequality (Saba *et al.,* 2022), an investigation of the effect that the contentious ZEP policy has had on local employment will go a long way in helping achieve Sustainable Development Goal (SDG) 10 of eradicating inequality by 2030.

Due to data unavailability, most studies focused on the association between immigration and employment outcomes across countries (World Bank, 2018; OECD & ILO, 2018; Brell *et al.,* 2020; Fasani *et al.,* 2021). However, since migration studies require finer spatial units, there is a research gap about the association between immigrants and local employment at sub-geographic units (Glitz & Rapoport, 2024). We seek to complement current literature by

investigating the association between the ZEP and local employment outcomes in Cape Town and eThekwini, coastal cities in South Africa that have different industrial specializations, using the location-specific and highly granular level Cities Support Programme (CSP) data.

Cape Town's economy is diversified, although it has a bias towards the tertiary sector and has relatively low-skilled occupations such as hotel and catering and agriculture (Visagie & Turok, 2023). These sectors traditionally absorb mostly low-skilled migrant workers who are pushed out of their home economies. The implication is that in Cape Town, more foreign labour is expected to be demanded. On the other hand, eThekwini's economy is mainly constituted by manufacturing (Visagie & Turok, 2023). In eThekwini, firms primarily demand skilled labour, while low-skilled labour is poorly absorbed into the formal labour market (Economic Development and Growth in eThekwini, EDGE 2017). The implication is that since most ZEP holders are low-skilled, less foreign labour is expected to be demanded in eThekwini.

The labour market effect of the in-migration of foreign employees on receiving economies depends on whether foreign and local employees have skills that substitute or complement each other (Viseth, 2020). Borjas (2017) argues that in some settings, immigrants and locals have the same labour supply skills, so that they may substitute each other. However, most studies have found that immigrants and locals do not substitute each other because they have different skills, specialization and language competency even if they possess similar education (Card, 2009; Cattaneo *et al.,* 2015; D'Amuri & Peri, 2014). If locals and immigrants[4] possess substitute skills, immigration broadens the labour supply, thus depressing the employment and wages of local employees. On the other hand, if immigrants and locals have complementary skills, immigration stimulates labour demand, leading to greater wages and employment of local employees (Viseth, 2020). Although empirical findings are mixed, there is a common belief that immigration has adverse impacts on the locals' labour market outcomes (Edo, 2015). However, the impact of immigrants on local employment outcomes may differ within a receiving country because of location-specific differences in available skillsets of local and migrant workers, language barriers and the migrants' degree of motivation to find work (Organisation for Economic Cooperation and Development, OECD & International Labour Organization, ILO, 2018).

Studies that investigate the impact of in-migrants on local employment outcomes have largely focused on developed countries, and findings have been mixed and context-specific (OECD & ILO, 2018; Brell *et al.,* 2020; Fasani *et al.,* 2021). Local employment outcomes

[4] In this paper, immigrants and foreigners are used interchangeably and both refer to foreign migrants.

depend on whether immigrants are economic migrants or refugees. Economic migrants are attracted to the host country because of relatively better economic opportunities compared to the sending country. Therefore, economic migrants select into locations with better labour market outcomes and compete for jobs with locals (Brell *et al.,* 2020; Yu, 2022). On the other hand, refugees are pushed away from their home countries by harsh economic and political conditions. Refugees are less likely to have positive selection on skills relative to other economic migrants. Refugees who migrate to host countries tend to have less human capital, such as language and employment skills, as compared to locals (Yu, 2022). Therefore, they tend to have lower wages and employment opportunities than locals in the host country (Brell *et al.,* 2020).

OECD and ILO (2018) find that immigrants in Costa Rica, the Dominican Republic and Thailand (who were largely uneducated but considerably experienced) were more likely to be employed in low-skilled sectors and posed a low threat to local employment outcomes. Therefore, refugees (such as most Zimbabweans in South Africa) may be employed in low-skilled sectors.

In the case of complementarity, an increase in the supply of immigrants would improve the productivity of locals and increase demand for local employment (Rozhkov *et al.,* 2021). The World Bank (2018) concurs with Rozhkov *et al.* (2021) after finding a positive association between the immigrant stock and local employment in South Africa, with two local jobs generated for every additional immigrant. The study found that locals and immigrants tend to specialize in different tasks. Instead of competing, they perform complementary tasks, thus boosting efficiency (World Bank, 2018).

However, except for a very few studies at the national level (such as the World Bank, 2018), there is a big research gap in emerging economies, although their labour markets differ from those in developed countries that have high levels of formal employment (Krafft *et al.,* 2022; Peitz *et al.,* 2023). In contrast, labour markets in emerging countries are characterised by pronounced informality, underemployment and stiff competition for jobs. Integration of immigrants into labour markets is contentious in host countries, and immigrants are blamed for taking local jobs (Peitz *et al.,* 2023).

One approach to integrating immigrants into local labour markets is to grant them work permits under so-called “amnesty schemes”, and several countries, such as the United States, Canada, Germany, Singapore, and South Africa, have implemented this practice. The purpose of the permits is to allow immigrants to be formally employed in jobs they previously held informally or illegally. However, theory is ambiguous about the impact of work permits to

immigrants on formalization of labour and on local labour market outcomes (Elias *et al.,* 2024). Also, outcomes might vary from the theory's predictions in emerging countries because of high informality and weak enforcement against the recruitment of undocumented immigrants (Peitz *et al.,* 2023).

Outcomes might also vary because of spatial mismatch between where jobs are located and where employees reside. Kain (1968) came up with the spatial mismatch hypothesis, which contends that there is high minority unemployment in Central Business Districts (CBDs) of metropoles. It is thus imperative to explore the association between urban spatial features and employment outcomes for locals and foreigners, as there is a spatial mismatch between where locals and immigrants are located and accessibility to employment, leading to a possibility of different labour market outcomes for locals and migrants (Painter *et al.,* 2007). Immigrants are more likely to be segregated in peripheral locations away from the CBD (Painter *et al.,* 2007). However, theoretical predictions about how spatial mismatch affects immigrants are ambiguous while empirical studies are mixed (Painter *et al.,* 2007).

However, South Africa is different, where spatial mismatch may affect locals more severely than migrants. Considering that residential segregation is historically pronounced in South Africa, proximity to the CBD and access to roads could indicate access to employment centres (Shilpi *et al.,* 2018). In South Africa, about 70 percent of immigrants are concentrated in the tertiary sector, such as hotel and catering, retail and wholesale and finance (Yu, 2022). Tertiary sectors such as retail outlets, banks, restaurants and entertainment facilities are usually located in the CBD (CRE Daily Staff, 2023), where immigrants are likely to be employed. For instance, of the 3,302 firms located in Cape Town's CBD in 2023, 1,305 (39.5 percent) were retail and the hospitality industry (Cape Town Central City Improvement District, 2024), where immigrants are usually concentrated in South Africa (African Centre for Migration and Society, 2017). On the other hand, blue-collar industries are usually located on the periphery, where skilled labour is demanded and hence where locals have a greater likelihood of being employed than immigrants in South Africa. Therefore, employment outcomes between locals and migrants may differ in the CBD and on the outskirts because of different labour demand requirements.

In this paper, we investigate whether local and immigrant employment were positively or negatively associated in Cape Town and eThekwini and whether the growth and losses happened where the initial foreign share was high, or whether a new pattern emerged where the initial share was low. If a new pattern emerged, this would suggest that there was formalization of labour. We also investigate the CBD and transport corridor effects on local and foreign

employment because employment outcomes between locals and immigrants may differ in the CBD and on the outskirts because of different labour demand requirements. In the CBD, immigrants tend to concentrate in low-skilled occupations such as hotel and catering (African Centre for Migration and Society, 2017; Yu, 2022).

To answer these questions, we use within-municipal administrative spatial data and show how foreign and local employment have been changing post ZEP. We also conduct an event study estimation to find the association of the policy and local and foreign employment after the permit amnesty was updated. To the best of our knowledge, this paper is the first to investigate the impact of the immigrant work permit on local employment between and within two cities that have different industrial specializations and labour demand structures. Location-specific differences in the skillsets of local and migrant workers, language barriers, and migrants' motivation to find work can cause labour outcomes to vary between locations (Organization for Economic Cooperation and Development [OECD] & International Labour Organization [ILO], 2018). Therefore, this research will help determine whether immigrant work permits are associated with job creation or job displacement effects, as well as the location-specific conditions influencing these outcomes. The findings will contribute to debates on immigration and employment while guiding policymakers in developing immigration and labour policies that safeguard local employment.

2 Literature Review

The impacts of migration on the labour market are heterogeneous (Statistics South Africa, Stats SA, 2024). Immigrant employees may displace the locals' employment rates at the national level (Biavaschi *et al.,* 2018) but the effects may be concentrated in specific regions or even in some parts of cities (Stats SA, 2024). This section discusses theoretical and empirical literature review on migration and labour market outcomes. One strand of literature investigated the association between documentation of immigrants and local labour market outcomes (see for example, Elias *et al.*, 2024 and Signorelli, 2024).

Elias *et al.* (2024) developed a formal and informal local labour market model that assumes upward sloping employee labour supply schedules, giving employers a certain level of market power. High and low skilled employees imperfectly substitute each other in production and employees endowed with low skills can supply their labour to either the formal or the informal labour market. In informal labour occupations, employees and firms pay only a proportion of labour regulation taxes. Considering the formal and informal market conditions, low-skilled employees legally authorized to work choose whether to work in formal or informal occupations. On the other hand, undocumented immigrants are restricted to work in the

informal labour market. Given the undocumented immigrants' labour supply constraints, the model assumes that their labour supply is inelastic. The model further assumes that formal and informal labour are imperfect substitutes.

Elias *et al.*'s (2024) model considers that an amnesty program by the host country that seeks to absorb undocumented immigrants into the formal labour market by granting them work permits enlarges the labour supply choices of previously undocumented immigrants and increases the costs of employing undocumented immigrants due to increased inspections to enforce immigration policies. Although formal employment increases, the growth is less than the number of documented immigrants. This is because some of the documented workers still choose to remain in the informal labour market given their imperfect substitutability with formal workers. There is an ambiguous theoretical prediction about the impact of an immigrant permit policy on the employment of low and high skilled locals. On one hand, the documentation of illegal migrants erodes the employers' market power, which results in the employment of low-skilled local and immigrant workers. On the other hand, the labour supply shock resulting from formalization of labour exerts downward pressure on low-skilled local wages and employment (Elias *et al.,* 2024). Furthermore, due to costs that are associated with hiring both local and immigrant low-skilled employees from the informal to formal occupations, firms may substitute high-skilled employees for low-skilled employees (Elias *et al.,* 2024).

Upon testing their model, they discovered that the documentation of illegal migrants in Spain was associated with a decline in informal sector employment and an increase in low-skilled formal occupations. However, this employment rise was less than the total number of documented immigrants. This situation arises from two factors: some immigrants have opted to remain within the informal sector, while firms in the formal sector could not absorb all the documented workers because they would have to pay more payroll taxes. Meanwhile, employment in highly skilled formal occupations has also experienced an increase. Bahar *et al.* (2021) also found that the work permits granted to immigrants in Colombia were associated with a rise in wages in the formal sector but a low formalization rate among documented employees.

Based on the proceeding, we anticipate that the impact of ZEP in Cape Town was associated with formalization of labour, and this led to employment of both locals and immigrants in the low-skilled sectors such as hotel and catering, tourism and agriculture. However, in eThekwini, we anticipate that the policy was associated with the recruitment of high-skilled local employees in line with the existing high-skilled labour demand in eThekwini

(EDGE, 2017) given the imperfect substitutability of labour between the low-skilled informal ZEP holders (Mutambara & Naidu, 2023) and locals and the high-skilled formal employees (who are predominantly locals). Also, in South Africa, anti-immigrant sentiments lead immigrants to select into the informal job sector since it is relatively easy for undocumented workers to enter as compared to the formal job market (Institute for Economic Justice, 2018). Furthermore, KwaZulu-Natal is one of the South African provinces with the least tolerance for immigrants (Gordon *et al.,* 2015; Dzvuka, 2017). Therefore, lack of documentation might be associated with little formalization.

On the other hand, Signorelli (2024) argues that immigrants and locals can be imperfect substitutes in production even if they are employed in the same occupation. Issuing permits such as the ZEP to foreigners would increase the likelihood of recruiting a foreigner because employers will utilize the opportunity to recruit immigrants at lower wages due to the relatively lower bargaining power due to their lack of outside option as compared to locals (Signorelli, 2024). On the one hand, immigrants and locals are less likely to substitute each other within occupations that involve diverse activities where there is greater scope for specialization in different tasks. On the other hand, they are more likely to replace each other in the context of concentrated monopsony power, where labour is less occupationally mobile. In that event, there would be a restriction on the outside options for both locals and immigrants (Signorelli, 2024).

Some studies corroborate the theory that immigrants and locals do not perfectly substitute one another even though they may have similar education and experience because they may specialize in different jobs within the same industry (Manacorda *et al.,* 2012; Albert, 2021; Albert *et al.,* 2021). Those tasks tend to be communication intensive for locals and physically intense for foreigners (Peri & Sparber, 2009). This would suggest co-occurrence of local and immigrant employment in Cape Town with labour demand for immigrants being in the labour-intensive occupations and labour demand for locals being in the communication-intensive occupations. However, in eThekwini, since labour-intensive sectors such as agriculture and mining have a relatively small contribution to the local economy (EDGE, 2017), demand for formal immigrant labour would be anticipated to be low.

Other studies found a negative impact of immigrant inflow on local employment outcomes in the short run with newly arriving foreigners displacing locals in the lowly skilled sectors (Edo & Özgüzel, 2023). The less educated locals are, the more adverse the impact (Sparreboom *et al.,* 2019). However, the adverse impact is weaker in countries where there is strong unionism and programs that support local employment (Edo & Özgüzel, 2023). Western Cape province (where Cape Town is) is on average 4.36 percentage points more unionized than

KwaZulu-Natal province (where eThekwini is) (Kerr *et al.,* 2020) which would imply that the adverse impact of the ZEP would be relatively more mitigated in Cape Town than in eThekwini. However, eThekwini also has vibrant local empowerment programs such as community participation (that builds locals' entrepreneurial skills and capacity building) and women empowerment programs, that would help cushion the adverse impacts of the ZEP (eThekwini Municipality, 2024).

The other strand of literature explored how spatial mismatch can lead to different labour market outcomes between immigrants and locals. The spatial mismatch theory argues that low-skilled groups realize poor labour market outcomes in the CBD because of their spatial disconnection from job opportunities (Kain, 1968). In South Africa, locals are located a considerable distance away from employment centers such as CBDs due to spatial segregation. As such, locals experience high transaction costs to access employment in the CBD. On the other hand, immigrants tend to locate in informal housing nearer to employment centers such as the CBD and hence have better employment opportunities than locals (Todes, 2012; Crush & Tawodzera, 2017).

Spatial mismatch is particularly important in Cape Town and eThekwini. For instance, Todes and Houghton (2021) argue that in eThekwini, employment access in the CBD for low-income employees is severely constrained since firms in the CBD such as industry logistics, warehousing, commercial, retail and financial services require skilled labour. This implies that since most ZEP holders and some locals are low-skilled, they will likely face poor formal employment outcomes in eThekwini's CBD. On the other hand, in Cape Town, although spatial mismatch is less concerning as compared to eThekwini due to strong social networks, the distance to employment centers is still a significant determinant of unemployment (Crankshaw, 2014).

3 Background

3.1 Context

South Africa has granted three special permits to Zimbabwean migrants after the turn of the century: the Dispensation of Zimbabweans Project (DZP) in 2009, the Zimbabwe Special Dispensation Permit (ZSP) in 2014 and the Zimbabwe Exemption Permit (ZEP) in 2017 (Horn, 2019). The purpose of the permits was to regularize Zimbabwean migrants who were irregularly staying in South Africa as well as reduce deportations (Horn, 2019; Nyakabawu, 2020).

The DZP was issued to 245,000 Zimbabweans out of the 295,000 who had applied and was scheduled to expire in December 2014 (Horn, 2019; Nyakabawu, 2022). The permits allowed holders to secure more permanent formal employment instead of the insecure part-time

jobs they used to hold (Nyakabawu, 2020). However, the permits were non-renewable, and holders were ineligible to apply for permanent residence (Nyakabawu, 2022). When the DZP expired, the South African government introduced the ZSP as successor to the DZP and only those migrants who had previously held the DZP were eligible to apply (Nyakabawu, 2022). The ZSP came with more stringent requirements as applicants needed to pay R1,350 application fee, hold valid Zimbabwean passports and police clearance certificates. 197,941 Zimbabweans were issued with the ZSP, and this entitled them to work, study and do businesses in South Africa until 2017 when the ZSP would expire (Pokroy-Rietveld, 2015). It was also emphasized to the media by the Ministry of Home Affairs that once the ZSP expired, it would not be renewed (Pokroy-Rietveld, 2015; Washinyira, 2016). Thus, both employers and employees were uncertain about what would happen once the special permits expired in 2017, incentivising temporary rather than permanent job matches (Pokroy-Rietveld, 2015).

In September 2017, the South African government unexpectedly introduced the ZEP as successor to the ZSP and it provided an opportunity for employers to retain existing workers, recruit new workers who were permit holders and to convert employment contracts to more permanent and formal arrangements rather than informal and temporary (Nyakabawu, 2022). To be eligible for the permit, Zimbabwean migrants needed to have valid passports and proof of employment, study, or business. New applicants were ineligible to apply but only those Zimbabweans who had previously held the ZSP were able to do so. 178,000 individuals were issued with the ZEP permits (Department of Home Affairs, 2017).

South Africa's Immigration Act prohibits the employment of undocumented immigrants. ZEP holders are documented and are mainly employed in the retail, transport and hospitality sectors (CDH, 2023). Although South Africa has introduced new visa regimes to attract skilled immigrants, a substantial number of ZEP holders are low-skilled and do not qualify for the "usual" visas (Chivige & Alfaro-Velcamp, 2023; Masuku, 2023; Mutambara & Naidu, 2023). The ZEP holders thus face an uncertain future since employers are disincentivized from recruiting them since they face an imposition of a fine or custodial sentence for retaining immigrants whose ZEP permits would have expired (CDH, 2023).

In South Africa's labour-intensive hospitality industry, locals and immigrants are employed in low-paying and often temporary jobs (Vettori, 2017). In Cape Town, there is competition for jobs between locals and immigrants in the low to semi-skilled agricultural, construction, and hospitality sectors, with some owners preferring to recruit immigrants to locals because of their perceived hard work and desperation to work at low wages (Vettori, 2017; Chirima, 2022). Some restaurant owners in Cape Town also prefer employing immigrants

in general and Zimbabweans in particular to locals because immigrants are perceived to be more educated and skilled and offer better services than locals (Vettori, 2017).

Furthermore, the Western Cape province (where Cape Town is located) employs local and foreign teachers although immigrants experience lack of job tenure, challenges in acquiring and renewing permits, failure to be paid on time and the possibility of being fired for failing to speak local languages (Chiware, 2024). Particularly ZEP holders have short-term job contracts due to the uncertainty of the policy, and this causes a few months of employment to be followed by several months of unemployment as employers are uncertain about the future of the policy (Chiware, 2024). Moreover, foreign contract educators in the province are often marginalized at the workplace due to discriminatory policies as well as their failure to belong to trade unions that can represent them (Chiware, 2024).

In KwaZulu-Natal province (where eThekwini is located), locals' intolerance towards immigrants from Sub-Saharan Africa, especially Zimbabweans, Nigerians and Somalians is high (Gordon *et al.,* 2015). In eThekwini, Zimbabwean migrant employees especially teachers mostly have short-term contracts and feel unwelcome due to xenophobic tendencies at the workplace and in communities (Dzvuka, 2017). Furthermore, they are discriminated against due to their failure to speak the local Zulu language (Dzvuka, 2017). A substantial number of ZEP holders in eThekwini are unskilled and semi-skilled and end up working in the informal sector (Mutambara & Naidu, 2023).

4 Data

We used the Cities Support Program (CSP) panel data for the tax years 2014 to 2022 (for firm and employee characteristics) (Nell & Visagie, 2023), satellite data (for nightlights) and geospatial data (for continuous distances between the hexagon's centroid and the CBD and the shortest distance between a hexagon's centroid and the nearest major road). Nightlights data was extracted from Colorado School of Mines (2023) website. The log of the mean of the aggregate local nightlights for year 2016 was used. Visible Infrared Imaging Radiometer Suite (VIIRS) nightlights capture variations in local productivity (Gibson, 2020). Other variables used are described below.

5 Methodology

This study utilized two methodological approaches: descriptive (descriptive statistics and bivariate maps) and Ordinary Least Squares and event study regression. The approaches are described below.

5.1 Descriptives

5.1.1 Bivariate maps

To investigate whether local and immigrant employment were positively or negatively related in various parts of the city, we plotted bivariate maps for local employment growth relative to the base year (2016) versus foreign employment growth relative to the base year as follows:

Local employment change = $\Delta y_{it} = \left(\frac{y_{it} - y_{i2016}}{y_{i2016}}\right) * 100$ where y_{it} is the local employment in hexagon *i* in year *t* (2017 to 2022) and y_{i2016} is local employment in hexagon *i* in the base year before the ZEP was implemented, 2016.

Foreign employment change = $\Delta Fore_{it} = \left(\frac{Fore_{it} - Fore_{i2016}}{Fore_{i2016}}\right) * 100$ where $Fore_{it}$ is the foreign employment in hexagon *i* in year *t* (2017 to 2022) and $Fore_{i2016}$ is foreign employment in location *i* in the base year, 2016.

We then investigated whether the growth and losses happened where the initial foreign share was high or low. We do so to assess whether the ZEP reinforced old spatial patterns of foreign employment or whether new spatial clusters of foreign employment growth emerged in the parts of Cape Town and eThekwini where foreign employment was initially low. We did this by plotting the initial foreign employment share in 2016 against local employment growth, where:

Initial foreign employment share = $Share_{i2016} = \left(\frac{Fore_{i2016}}{Empl_{i2016}}\right)$ where $Fore_{i2016}$ is the number of foreign employees in location *i* in the base period and $Empl_{i2016}$ is total employment (local + foreign) in location *i* in 2016.

5.2 Regression

5.2.1 Ordinary Least Squares

We proceeded to investigate the association between foreign employment and local employment in Cape Town and eThekwini, differentiated by whether firms were located in central business districts or not. We conducted this analysis to assess the possible differential association between foreign and local employment in the CBD and along main transport routes, and the average distance from the CBD and the main transport routes. This approach is informed by the literature, which suggests that immigrants tend to concentrate near employment centers, such as the CBD and main roads, whereas in spatially segregated countries such as South

Africa, locals often live farther from the CBD and main roads (Todes, 2012; Crush and Tawodzera, 2017). We utilized the Ordinary Least Squares (OLS) model by regressing local employment growth on foreign employment growth interacted with continuous distance to the CBD and by regressing local employment growth on foreign employment growth interacted with continuous distance to the nearest main road. We do so (to capture whether access to main roads could lead to favourable or worse employment outcomes for locals and immigrants. The effect is estimated for individual years as follows:

Local employment growth versus foreign employment growth interacted with continuous logged distance to CBD

$$\Delta y_{it} = \beta_0 + \beta_1 \Delta Fore_{it} + \beta_2 CBD_{it} + \beta_3 \Delta Fore_{it} x CBD_{it}\ x\ \lambda_t\ + \varepsilon_{it} \quad (1)$$

Where CBD_{it} is the logarithm of the continuous distance between a location's centroid and the CBD.

Local employment growth versus foreign employment growth interacted with continuous logged distance to transport corridor

$$\Delta y_{it} = \beta_0 + \beta_1 \Delta Fore_{it} + \beta_2 Corri_{it} + \beta_3 \Delta Fore_{it} x Corri_{it} x\ \lambda_t + \varepsilon_{it} \quad (2)$$

Where $Corri_{it}$ is the logarithm of the continuous distance between a location's centroid and the nearest major road network.

We then investigated how exposure to the ZEP was associated with local and foreign employment growth in Cape Town and eThekwini. Since the ZEP was extended only to existing permit holders, our proxy for the intensity of treatment in each hexagon is the share of formal employment that was already occupied by foreigners in 2016. Our event study model therefore estimates whether these areas with initial exposure experienced growth in foreign and local employment.

5.2.2 Non-Spatial Event Study

We estimate the impact of the Zimbabwe Exemption Permit (ZEP) on local employment using a continuous-dose Event Study design. The analysis exploits variation in baseline exposure to foreign workers across all spatial units (Harasztosi & Lindner, 2019).

For each hexagon *i*, we define the treatment intensity as:

$$fore\_base_i = \frac{Foreign\ Employment_{i,2016}}{Total\ Employment_{i,2016}},$$

which measures the intensity of potential ZEP exposure in the base year (2016).

We do not impose a categorical split of treated and control groups. Each hexagon enters the regression with its own value of $fore\_base_i$. Hexagons with near-zero foreign share serve as the closest possible empirical analogue to a "control," but all hexagons contribute to identification based on their position along the exposure gradient.

Our identification strategy relies on a continuous-treatment parallel-trends assumption. Formally, let y_{it} be the employment outcome in hexagon *i* at time *t*, and let fore_base be the 2016 foreign employment share (the treatment intensity). For the impact between the ZEP and local employment changes, the event-study specification is:

$$\frac{y_{it}-y_{i2016}}{y_{i2016}} = \alpha_t + \beta_t fore\_base_i + \rho x_{i,2016} + \varepsilon_{it} \quad (4)$$

Where $x_{i,2016}$ comprises logarithm of establishments in the base year (2016) as well as the logarithm of nightlights in the base year, 2016. We weigh by total employment in the base year and cluster-robust the standard errors.

Identification of β_t as the "effect" of a one unit increase in fore_base at time *t* requires that, in the absence of the ZEP, all hexagons, regardless of their 2016 foreign employment share, would have experienced the same underlying local employment growth path. In essence, this implies that before the ZEP (2014 – 2016), the relationship between the $fore\_base_i$ and local employment changes must have no pre-trend. Under this assumption, the observed differences in post-ZEP employment growth across hexagons of varying fore_base can be attributed to the policy exposure (Harasztosi & Lindner, 2019). However, due to potential endogeneity, we interpret the estimates as associational rather than causal.

For the impact between ZEP and foreign employment changes, we estimate:

$$\frac{Fore_{it}-Fore_{i2016}}{Fore_{i2016}} = \alpha_t + \beta_t fore\_base_i + \rho x_{i,2016} + \varepsilon_{it} \quad (5)$$

In this case, the identification of β_t as the "effect" of a one unit increase in fore_base at time *t* requires that, in the absence of the ZEP, all hexagons, regardless of their 2016 foreign employment share, would have experienced the same underlying foreign employment growth path. This implies that before the ZEP (2014 – 2016), the relationship between the $fore\_base_i$ and foreign employment changes must have no pre-trend. Under this assumption, the observed

differences in post-ZEP employment growth across hexagons of varying fore_base can be attributed to the policy exposure (Harasztosi & Lindner, 2019).

One of the limitations of an event study design is that while it mitigates concerns about unchanging omitted factors (Angrist & Pischke, 2009), it does not eliminate time-varying omitted variables, worker sorting, omitted spatial spillovers and residual autocorrelation (Bertrand *et al.,* 2004). Therefore, the results are associational rather than strictly causal, even with valid pre-trends since the estimated ZEP effects may be biased.

5.2.3 Robustness Check: Spatial Econometric Analysis

To address concerns about omitted spatial spillovers and residual autocorrelation, we re-estimate our event-study specifications using three canonical spatial regression models: the Spatial Lag Model (SAR), the Spatial Error Model (SEM), and the General Spatial (SAC) Model. Below we first present the technical formulations.

Let y_{it} = the outcome of interest (in our case, local and foreign employment growth in hexagon *i*, year *t*).

x_{it} = the vector of covariates (baseline foreign employment share interacted with year dummies, logarithm of establishments in year 2016 (base year) and logarithm of nightlights in year 2016).

w = a row-standardised queen-contiguity spatial weights matrix, and

ε_{it} = idiosyncratic error term

The Spatial Lag Model (SAR) is expressed as follows:

$$y_{it} = \rho \sum_j w_{ij}\, y_{jt} + x'_{it}\beta + \varepsilon_{it}$$

where ρ captures how neighbours' outcomes spillover to *i*. The SAR allows each hexagon's outcome to depend on the average outcomes of its neighbours. Thus, it captures true "spillover" effects such as job losses in one location diffusing to neighbouring areas.

The Spatial Error Model (SEM) is expressed as follows:

$$y_{it} = x'_{it}\beta + u_{it},\ u_{it} = \lambda \sum_j w_{ij}\, u_{jt} + \varepsilon_{it}$$

where λ absorbs unobserved shocks that are spatially correlated. The SEM adjusts for omitted factors that are clustered.

The General Spatial (SAC) Model, which comprises the SAR and the SEM, is expressed as follows:

$$y_{it} = \rho \sum_j w_{ij}\, y_{jt} + x'_{it}\beta + u_{it},\ u_{it} = \lambda \sum_j w_{ij}\, u_{jt} + \varepsilon_{it}$$

6 Results

6.1 Descriptive results

This section presents descriptive findings including descriptive statistics and bivariate maps for Cape Town and eThekwini.

6.1.1 Descriptive Statistics for Cape Town and eThekwini

Table 1: Descriptive Statistics for Local Employment and Foreign Share in Cape Town

Variables	2014 (N = 323)	2015 (N = 323)	2016 (N = 323)	2017 (N = 323)	2018 (N = 323)	2019 (N = 323)	2020 (N = 323)	2021 (N = 323)	2022 (N = 323)
Local Employment	3822.33 (7835.32)	4014.34 (8284.48)	4165.17 (8623.31)	4277.49 (8774.69)	4347.31 (8795.73)	4402.33 (8861.74)	4550.37 (9130.76)	4394.11 (8842.00)	4380.62 (8869.07)
Foreign Share	0.037 (0.019)	0.039 (0.019)	0.043 (0.021)	0.044 (0.021)	0.045 (0.020)	0.048 (0.022)	0.050 (0.023)	0.051 (0.024)	0.052 (0.027)
Night Lights	17.98 (17.53)	18.40 (17.59)	18.41 (17.28)	18.30 (16.54)		17.02 (15.16)	16.31 (14.06)	15.19 (12.91)	
Establishments	200.95 (253.29)	211.84 (267.91)	218.32 (277.50)	219.64 (278.92)	227.42 (289.46)	236.08 (292.98)	249.06 (304.17)	247.02 (296.20)	236.08 (279.44)

Source: Author's own calculations from the CSP data

Table 1 shows descriptive statistics for Cape Town and highlights that the proportion of foreign employment increased by 40.54 percent from 3.7 percentage points in 2014 to 5.2 percentage points in 2022. Average local employment also increased by 14.61 percent between 2014 and 2022. This suggests there is a positive time series association between foreign and local employment.

Table 2: Descriptive Statistics for Local Employment and Foreign Share in eThekwini

Variables	2014 (N = 364)	2015 (N = 364)	2016 (N = 364)	2017 (N = 364)	2018 (N = 364)	2019 (N = 364)	2020 (N = 364)	2021 (N = 364)	2022 (N = 364)
Local Employment	2604.434 (7536.530)	2637.718 (7598.876)	2632.414 (7365.541)	2564.229 (6423.890)	2860.683 (9146.985)	2833.841 (8013.959)	2834.090 (7713.575)	2782.062 (7322.062)	2806.016 (7140.953)
Foreign Share	0.013 (0.005)	0.014 (0.004)	0.014 (0.004)	0.015 (0.004)	0.015 (0.004)	0.016 (0.005)	0.015 (0.005)	0.016 (0.005)	0.015 (0.005)
Night Lights	9.377 (11.620)	9.391 (11.580)	9.378 (11.529)	9.521 (11.309)		9.524 (10.588)	9.315 (10.413)	9.059 (9.910)	
Establishments	130.514 (209.623)	135.282 (216.403)	140.664 (223.367)	140.200 (222.360)	143.416 (225.075)	148.360 (230.680)	154.885 (243.213)	157.497 (246.782)	146.189 (220.184)

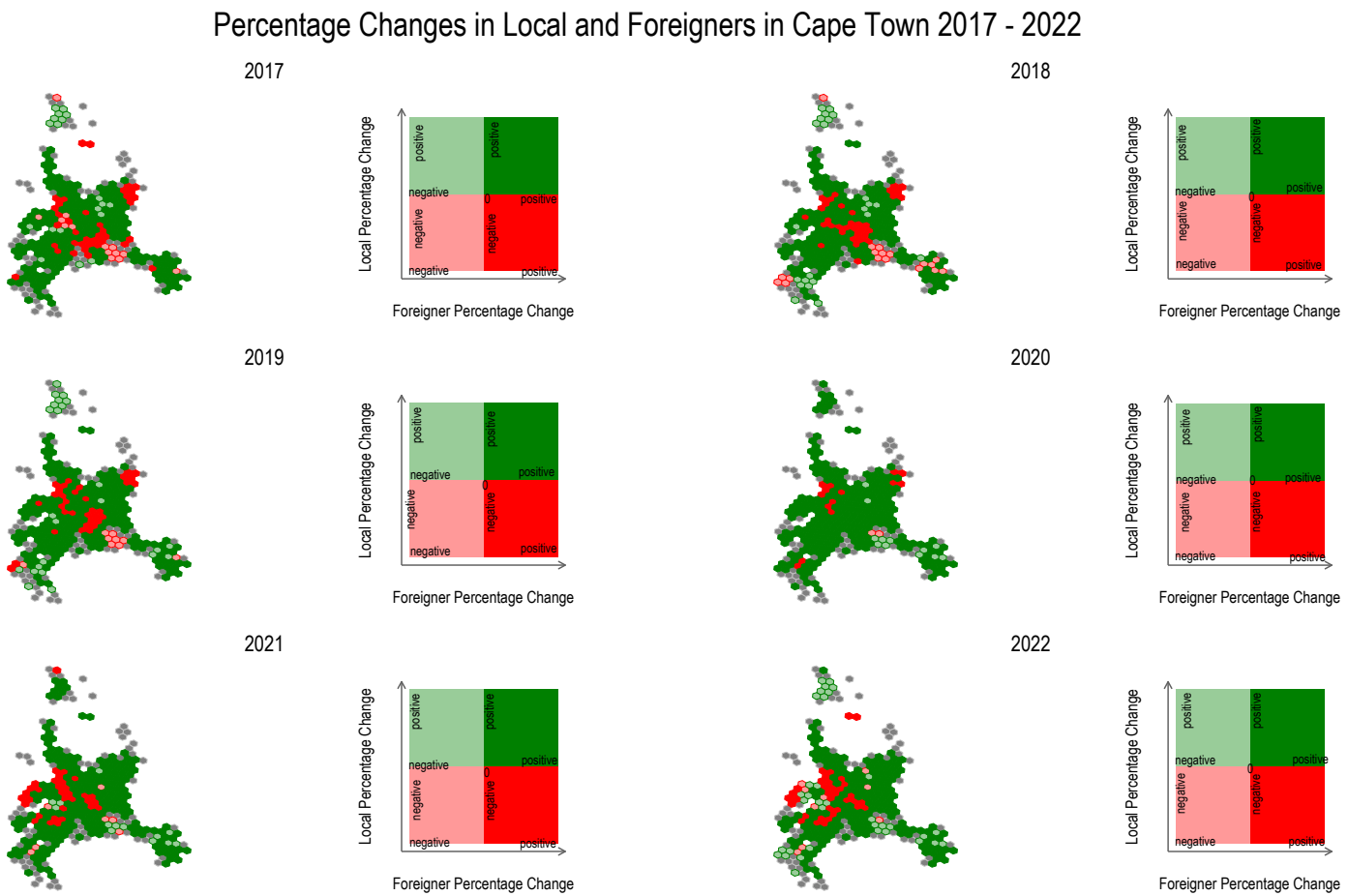
Source: Author's own calculations from the CSP data

Table 2 shows descriptive statistics for eThekwini and highlights that the foreign employment share increased by 15.38 percent between 2014 and 2022. Average local employment also increased by 7.74 percent, suggesting a positive time series association between foreign and local employment.

For both Cape Town and eThekwini, the foreign employment share increased. We now investigate using bivariate maps whether the increase in the foreign employment was associated with higher or lower local employment in the cross section spatial dimension.

Figure 1 and 2 show percentage changes in local and foreign employment in Cape Town and eThekwini, respectively.

Figure 1: Percentage Changes in Local and Foreigner Employment in Cape Town 2017 - 2022



Note: Figure 1 shows local employment growth relative to local employment in the base year versus foreign employment growth relative to foreign employment in the base year in Cape Town from 2017 to 2022. The light red colour shows locations that experienced negative local and foreign employment whereas the dark red colour shows locations that experienced a trade-off between local and foreign employment jobs with locals losing jobs to foreigners. The light green colour illustrates locations where foreigners lost jobs to locals whereas the dark green shade shows areas where there was complementarity of local and foreign employment.

Source: Author's own calculations from the CSP data

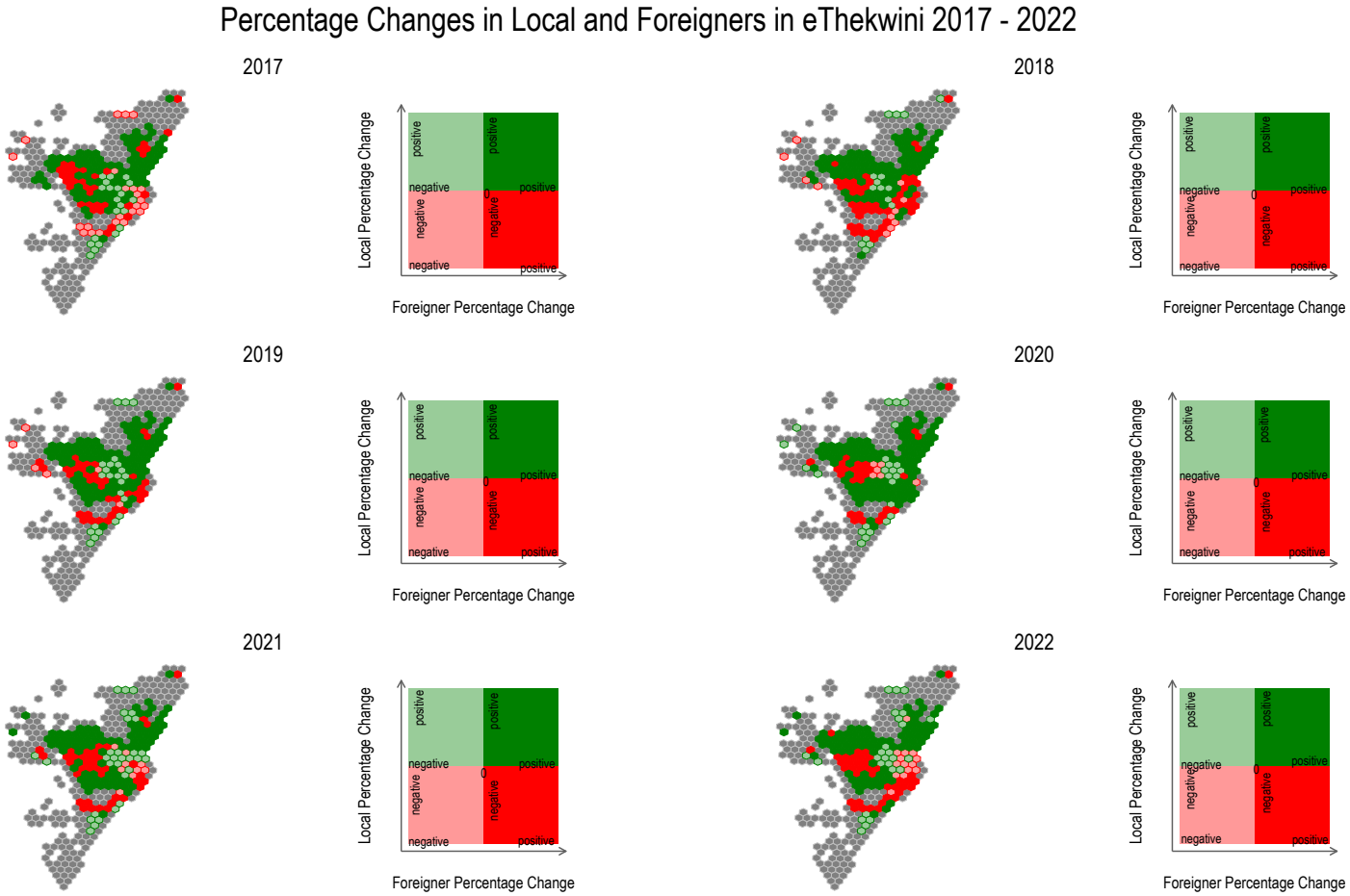
Figure 1 shows that in Cape Town local and foreign employment grew in the same direction in most locations, suggesting that they are dominantly complementary rather than substitutes. However, around the CBD and transport corridors, locals lost jobs to foreigners and in the periphery, there was substitution of local jobs for foreign employment in these selected areas.

This is in line with the hypothesis that introduction of permits to immigrants tends to result in the substitution of immigrants for locals because employers tend to utilize the opportunity to recruit them at relatively lower wages as compared to locals because of their relatively lower bargaining power due to limited outside option (Signorelli, 2024).

This is more so dominant in the CBD where immigrants are more likely to be employed than locals because of the concentration of the low-skilled service sectors such as hotel and catering, wholesale and retailing. This is also consistent with Vettori (2017) who found that in Cape Town, restaurant owners prefer recruiting immigrants to locals because of their desperateness to work at lower wages as compared to locals.

The pattern of locals losing jobs to immigrants in the CBD will be investigated further in the regression section.

Figure 2: Percentage Changes in Local and Foreigner Employment in eThekwini 2017 – 2022



Note: Figure 2 shows local employment growth relative to local employment in the base year versus foreign employment growth relative to foreign employment in the base year in eThekwini from 2017 to 2022. The light red colour illustrates locations that experienced negative local and foreign employment whereas the dark red colour shows locations that saw locals losing jobs to immigrants. The light green shade shows locations where immigrants lost jobs to locals whereas the dark green shade shows areas where there was co-occurrence of local and foreign employment.

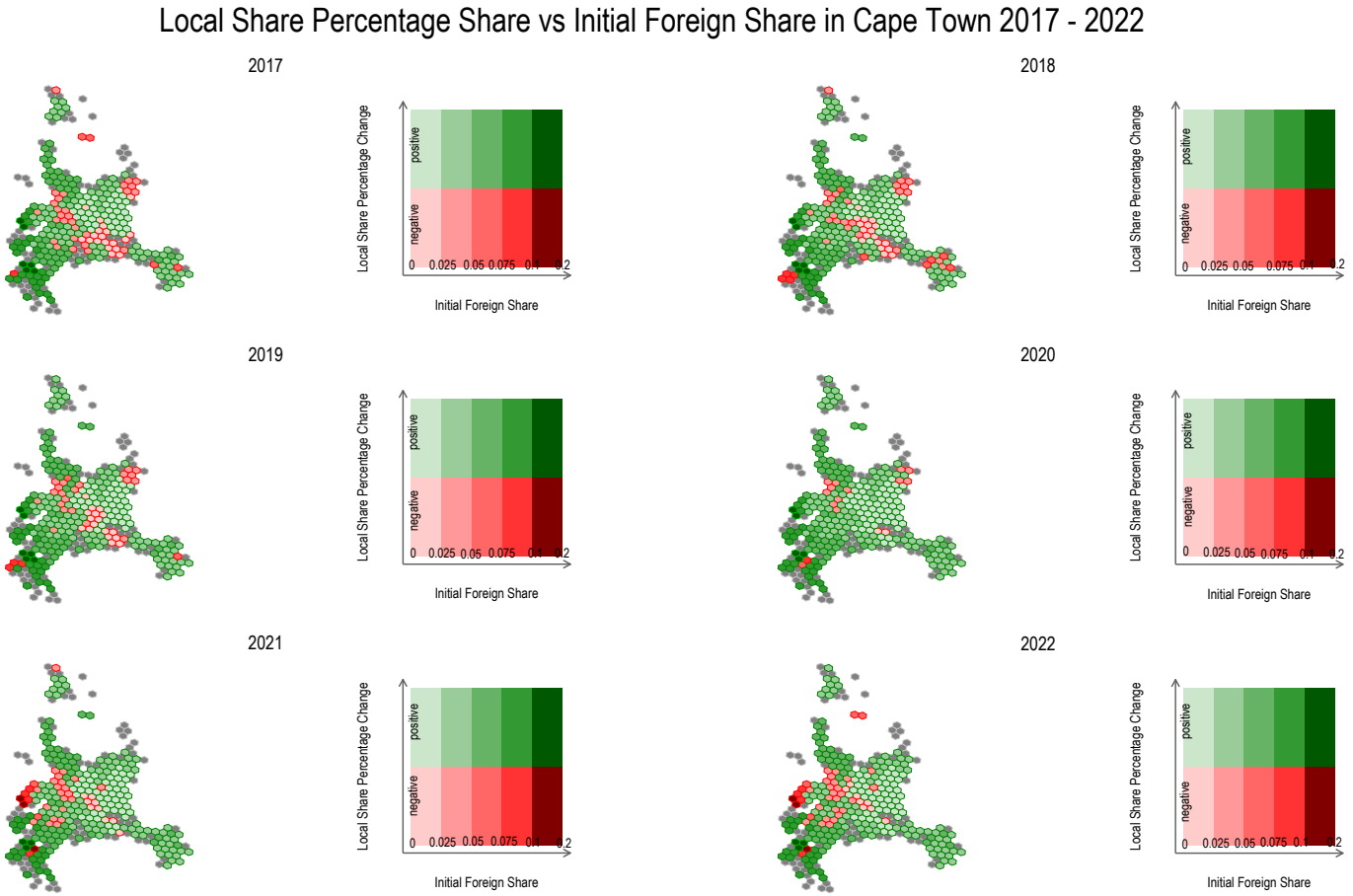
Source: Author's own calculations from the CSP data

Figure 2 shows that in eThekwini like in Cape Town, local and foreign employment grew in the same direction in most locations, suggesting that they are dominantly complementary rather than substitutes. However, around the CBD and transport corridors, locals lost jobs to immigrants and in the periphery, there was substitution of local jobs for foreign employment. This will be further investigated in the regression section.

The next question we sought to investigate was whether the growth and loss we saw in Figures 1 and 2 happened where the initial foreign employment share was high or low, or whether a new pattern of changes in local employment was emerging in parts of the cities where foreigners were initially not in the formal labour market. We answered this using another set of bivariate maps below that mapped initial foreign employment share against local employment growth.

Figures 3 and 4 show local share percentage change versus the initial foreign employment share in Cape Town and eThekwini, respectively.

Figure 3: Local Share Percentage Change vs Initial Foreign Employment Share in Cape Town 2017 – 2022

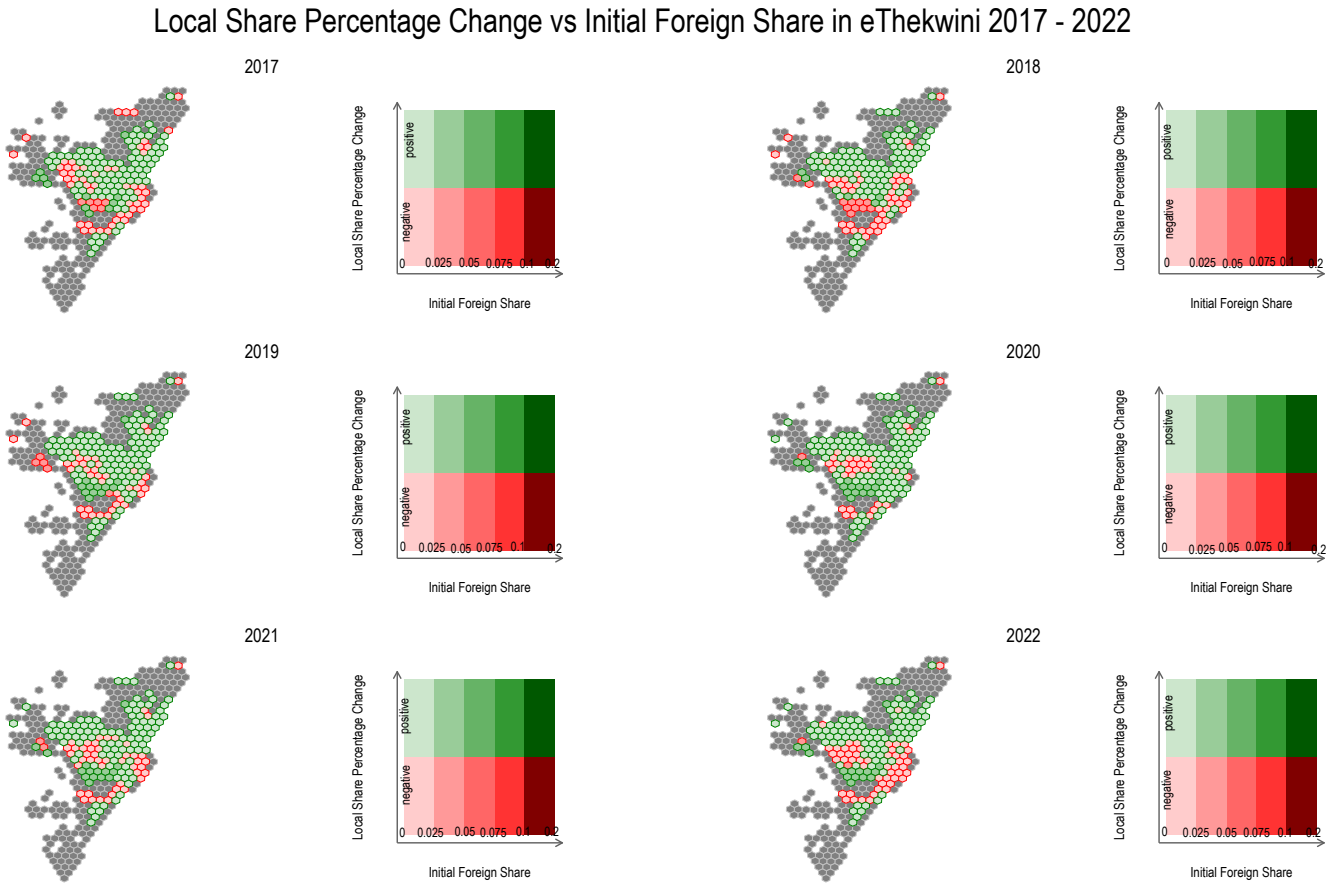


Note: Figure 3 shows local share percentage change versus initial foreign employment share in Cape Town between 2017 and 2022. The light red colour shows locations where local employment share fell where initial foreign share was low whereas the dark red shade illustrates locations where locals lost jobs where foreign employment concentration was initially high. The light green colour illustrates areas where locals gained jobs where initial foreign employment was low whereas the dark green colour shows locals gaining jobs in locations where initial foreign employment concentration was high.

Source: Author's own calculations from the CSP data

Figure 3 shows that in Cape Town, most of the local employment changes are happening where the initial foreign share was low to moderate. This suggests that in Cape Town, local and foreign employment are complementary.

Figure 4: Local Share Percentage Change vs Initial Foreigner Employment Share in eThekwini 2017 – 2022



Note: Figure 4 shows local employment growth versus initial foreign employment concentration in eThekwini between 2017 and 2022. The light red colour illustrates locations where local employment share fell where initial foreign share was low whereas the dark red shade illustrates locations where locals lost jobs where foreign employment concentration was initially high. The light green colour highlights areas where locals gained jobs where initial foreign employment was low whereas the dark green colour shows locals gaining jobs in locations where initial foreign employment concentration was high.

Source: Author's own calculations from the CSP data

Figure 4 shows that in eThekwini, local employment grew in locations on the periphery of the CBD that initially had relatively low foreign employment shares. Local employment declined in areas around the CBD that had moderately low initial foreign employment shares.

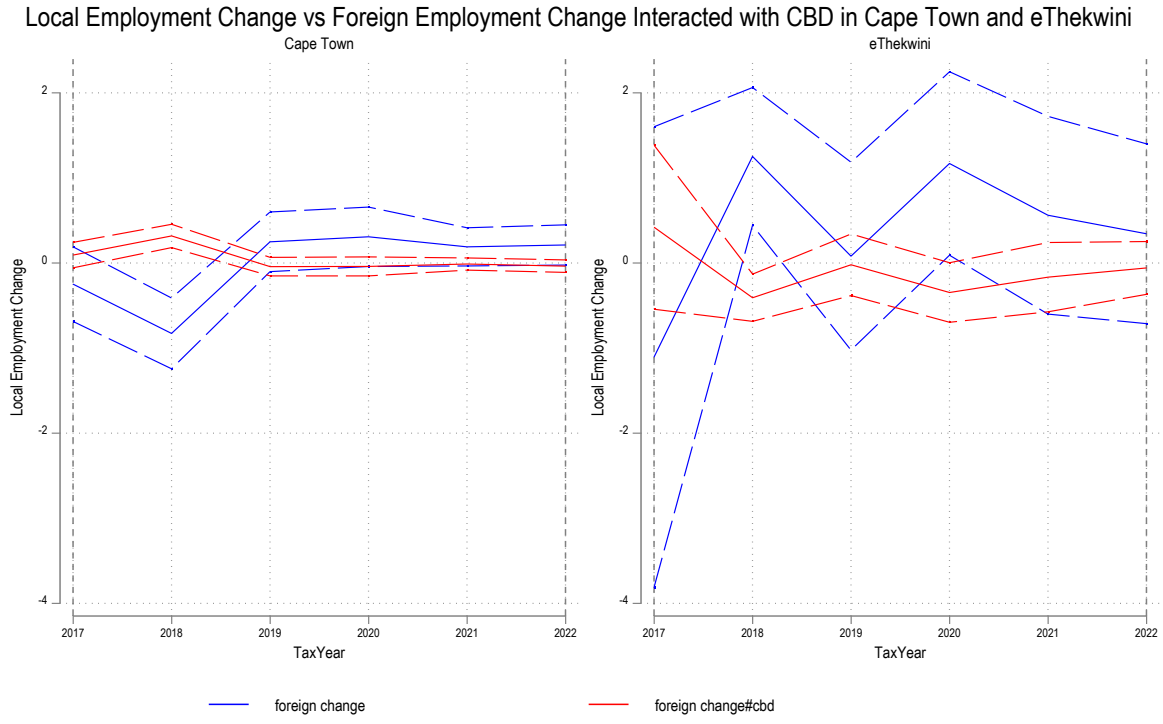
We then further investigated the descriptive findings in the regression section.

6.2 Regression results

6.2.1 Ordinary Least Squares (OLS) interaction model

We first assessed the descriptive findings in Figures 1 and 2 by investigating the association between foreign employment and local employment in the CBD and along main transport corridors as well as the CBD and transport corridor effect changes to the local person living at the average distance from the CBD and the main transport corridors. We show regressions of local employment growth relative to local employment in the base year on foreign employment growth relative to foreign employment in the base year, interacted with CBD and main transport routes in Tables A1, A2, A3 and A4 in the appendix section. We illustrate the associations across years for Cape Town and eThekwini in figures 5 and 6.

Figure 5: Local Employment Change vs Foreign Employment Change Interacted with CBD in Cape Town and eThekwini

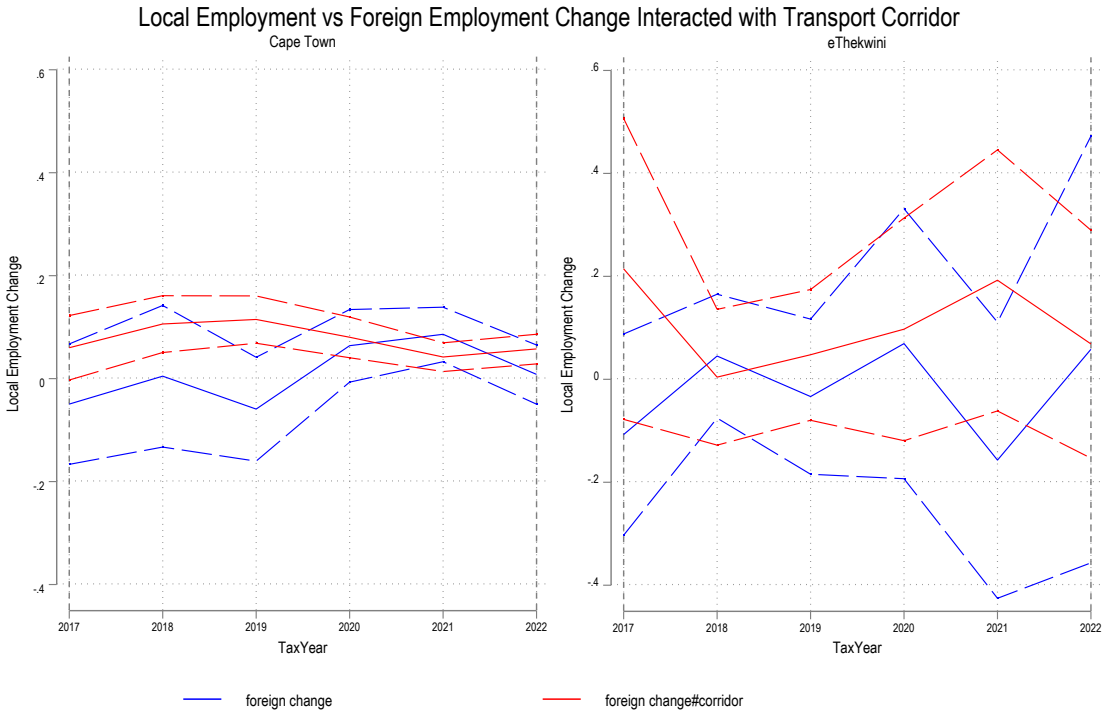


Note: Figure 5 shows local employment change regressed on foreign employment change interacted with continuous distance to the CBD in Cape Town and eThekwini between 2017 and 2022. The blue line is the coefficient in the CBD whereas the red line shows how the CBD effect changes for the person living at the average distance from the CBD.

Source: Author's own calculations from CSP and Geospatial data

The blue line in Figure 5 represents coefficients for the main effect (in other words for locations in the CBD). In Cape Town's CBD, immigrants replaced locals only in 2018. In all other years the association was insignificant. This shows that the loss of local jobs as shown in bivariate maps (red spots) in Figure 1 was only temporarily significant in 2018. The interaction coefficient – evaluated at the mean distance from the CBD in the red line in Figure 5 - shows that the substitution effect became weaker the further the location was from Cape Town's CBD in 2018. This suggests that in 2018, the loss of local jobs was mainly limited to the CBD. On the other hand, in eThekwini, the main effect shows significant complementarity between locals and immigrants in the CBD in 2018 and 2020 only. The interaction coefficient for the same years shows that the complementarity became weaker further from eThekwini's CBD. Therefore, the positive effects were mainly limited to the CBD.

Figure 6: Local Employment Change vs Foreign Employment Change Interacted with Transport Corridor in Cape Town and eThekwini



Note: Figure 6 shows local employment change regressed on foreign employment change interacted with continuous distance to the nearest transport corridors in Cape Town and eThekwini between 2017 and 2022.
Source: Author's own calculations from CSP and Geospatial data

The blue line in Figure 6 represents the main effect (locations along major roads). In Cape Town, along the major roads, there was an insignificant relationship between immigrant and local employment growth in 2020 and 2021. The interaction coefficient – evaluated at the mean

distance from the nearest major road in the red line in Figure 6 was positive and insignificant for all the years, indicating that the relationship did not change further from the corridors.

We then proceeded to perform the event study regression of local and foreign employment growth on the initial foreign employment share to investigate whether the patterns in Figures 3 and 4 showed new patterns or reinforced the initial spatial patterns.

6.2.2 Event study regression

To support the validity of our approach, we first present the joint parallel trends test for changes in local and foreign employment in Table 3, followed by the regression results in Figure 7.

Joint F-Test for Parallel Trends in Changes in Local and Foreign Employment in Cape Town and eThekwini

H_o: The coefficients on the 2014 and 2015 interaction terms with foreign employment in the base year are jointly equal to zero:

$\beta_{2014} = \beta_{2015} = 0$

H_1: At least one of the pre-treatment interaction coefficients is not equal to zero:

$\beta_{2014} \neq \beta_{2015} \neq 0$

$\alpha = 0.05$

Decision Rule: Reject H_o if p-value < 0.05

Table 1: Joint F-Test for Parallel Trends in Local and Foreign Employment Change in Cape Town and eThekwini

	Cape Town (p-value)	eThekwini (p-value)
Local Employment	0.0654	0.3876
Foreign Employment	0.4920	0.1290

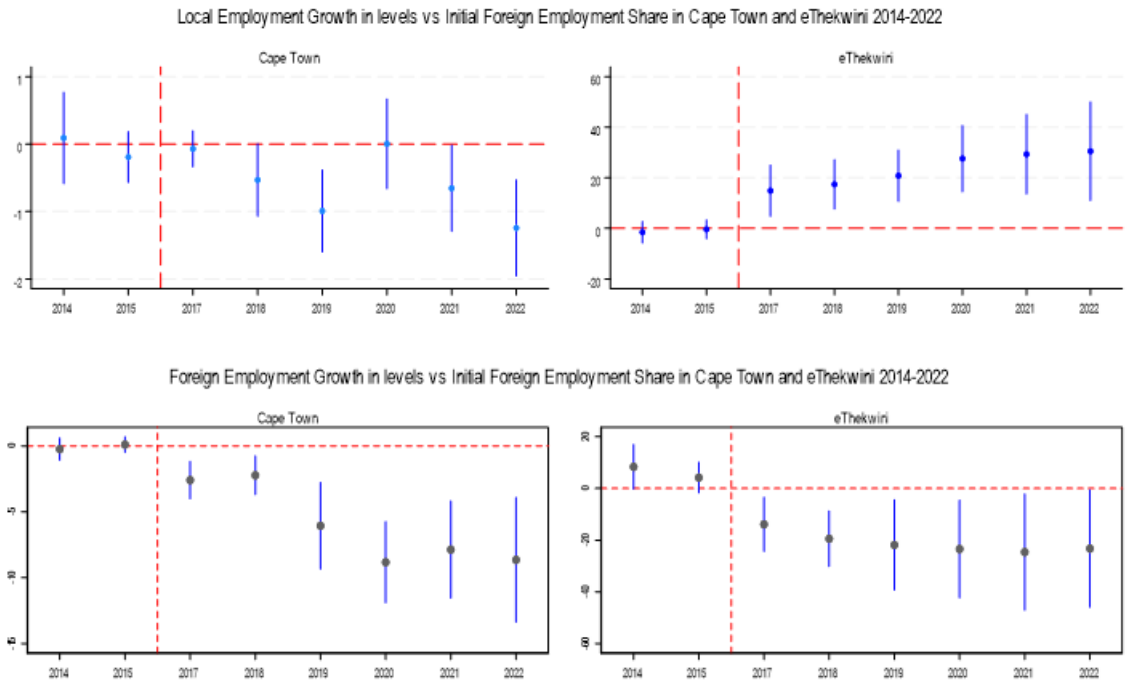
Source: Author's own calculations from the CSP data

Interpretation

Since all p-values are greater than 0.05, we fail to reject the null hypothesis in all cases. This suggests that the parallel trends assumption holds for both local and foreign employment in Cape Town and eThekwini during the pre-treatment period. However, for local employment in Cape Town, the p-value (0.0654) is close to the 0.05 threshold, which may indicate a weak deviation from parallel trends. This warrants caution in interpretation but does not constitute statistical evidence against the assumption.

Figure 7 summarizes the results, and more regression results are found in Appendices A4 and A5.

Figure 1: Local and Foreign Employment Growth in levels vs Initial Foreign Employment Share in Cape Town and eThekwini 2014-2022



Note: Figure 7 shows the regression of local and foreign employment growth in levels on the initial foreign employment share in Cape Town and eThekwini. Interaction coefficients are at the 95% confidence intervals.
Source: Author's own calculations from the CSP data

Figure 7 shows that foreign employment declined in parts of both cities where foreign employment shares were initially high. The dominant pattern is therefore that foreign employment grew in new places. In Cape Town, local employment declined where foreign employment shares were initially high, but the pattern was weak. However, in eThekwini, local employment grew where foreign employment was initially high, and the pattern was robust. These new patterns suggest that ZEP was associated with the formalization of work for ZEP holders who were initially in the informal labour market, and not counted in the initial foreign share, switching into the formal labour market.

The overall conclusion we draw is that the ZEP was associated with positive changes in aggregate employment and was therefore not at the expense of local employment. The negative effects occurred where foreign shares were initially high in Cape Town, whereas the positive effects happened where the foreign shares were initially high in eThekwini. While the maps show some substitution effects in the CBD, the dominant pattern was the complementarity of local and foreign employment growth. In eThekwini, although the policy was also associated with the co-occurrence of local and foreign employment, there was a robust pattern of the

substitution of local employment for foreign employment in locations where foreign employment was initially high.

However, several of our key estimates lack strong statistical significance, indicating that any observed associations between ZEP uptake and employment shares are weak. To establish more robust causal claims and inform reliable policy guidance, future research should leverage richer identification strategies, such as instrumental variables for permit take-up or firm-level panel data linking employee nationality with industry.

6.2.3 Spatial Econometric Regression Results

To validate our findings from event study regression, we present spatial econometric regression results. The best model was selected by comparing goodness-of-fit via Akaike's Information Criterion (AIC).

Table 2: Model Selection and Key Findings

City	Dependent Variable	Preferred Model	AIC	Spatial Term
Cape Town	Local Employment Growth	SAC	8317.5	ρ = 0.83***, λ = 0.85***
	Foreign Employment Growth	SEM	–1488.3	λ = 0.82***
eThekwini	Local Employment Growth	SAC	7085.5	ρ = 0.90***, λ = -0.68*
	Foreign Employment Growth	SAC	–715.05	ρ = 0.93***, λ = -0.60**

Source: Own calculations from the CSP data

Note: Statistically significant at *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.
Table 4 shows spatial econometric regression results for local and foreign employment growth in Cape Town and eThekwini. The spatial term indicates whether a spillover effect is present. All models include year fixed effects and controls for the logarithm of establishments in year 2016 and the logarithm of nightlights in year 2016. Spatial lag (ρ) captures direct spillover of neighbouring outcomes; spatial error (λ) corrects residual autocorrelation.

6.2.3.1 Interpretation and Comparison with the Non-Spatial Event Study.

Across all four preferred spatial models, the interaction coefficients between year and baseline foreign employment share remain qualitatively consistent with those from the original event study analysis. Specifically, in Cape Town, high foreign-share areas exhibited no sustained local employment growth following the implementation of the ZEP, alongside notable declines in foreign employment growth in adjacent hexagons. By contrast, in eThekwini, areas with greater initial foreign shares experienced positive local employment growth and mixed foreign employment responses, patterns suggestive of labour market complementarities.

The large and highly significant spatial parameters (ρ and λ), ranging from 0.8 to 0.9, confirm the presence of strong spatial interdependencies. This implies that omitting spatial structure would not only understate spillover effects but also bias standard error estimates.

Overall, the spatial econometric models confirm the original findings and enhance their precision by accounting for spatial dependence. The alignment between the continuous event study and the spatial models further reinforces the robustness of the core conclusion: that the ZEP was associated with localized displacement effects in Cape Town's urban core, while fostering complementary dynamics in eThekwini's more industrial periphery.

7 Conclusion and Policy Implications

This chapter examined the association between the Zimbabwe Exemption Permit (ZEP) and local employment outcomes in Cape Town and eThekwini—two metropolitan areas with distinct industrial profiles. The findings reveal that ZEP-driven formalisation had spatially heterogeneous effects. In both cities, the ZEP was associated with the absorption of formerly undocumented migrants into the formal labour market, indicating complementarities between local and migrant workers. However, in Cape Town's central business district (CBD), there was a notable decline in local employment in 2018, suggesting potential displacement effects. The overarching insight is that special permits, such as the ZEP, can enhance migrants' integration into formal employment systems—particularly when migrant and local workers are imperfect substitutes, as noted by Signorelli (2024). In such contexts, expanded formalisation can raise overall productivity and employment, benefiting both groups (World Bank, 2018).

Nonetheless, these benefits are not uniformly distributed. Labour market segmentation and the spatial concentration of low-skilled services in urban cores mean that permit-driven formalisation may have unintended negative consequences for certain groups of local workers. In emerging economies like South Africa, sectors such as hospitality, retail, and catering—typically located in CBDs—employ a high proportion of low-skilled migrants and locals. Where migrants are more educated or accept lower wages, the risk of displacement increases (Crush & Tawodzera, 2013; Sparreboom *et al.,* 2019). For example, Vettori (2017) documented how post-regularisation policies led to increased migrant recruitment in Cape Town's hospitality sector at the expense of similarly low-skilled locals.

These findings highlight the need for spatially differentiated policy interventions. In high-density urban cores, where job competition is intense and informal employment is prevalent, policies should prioritise wage enforcement, local skills upgrading, and active labour market programmes. In contrast, in peripheral zones such as industrial and logistics areas—where complementarity between local and migrant labour is more pronounced—regularisation

measures such as the ZEP can enhance productivity and improve labour matching (Elias *et al.,* 2024). Moreover, Signorelli (2024) points out that even within the same occupation, locals and migrants often perform different tasks. Locals tend to be concentrated in communication-intensive roles, while migrants frequently undertake more manual or routine tasks. This task-based division of labour may explain the positive local employment outcomes observed in eThekwini, whose diversified industrial structure is better equipped to absorb migrant inflows without displacing local workers.

In light of this, a more effective approach would be to design location- and sector-specific interventions that support inclusive labour markets. These could include targeted upskilling programmes for vulnerable local groups, support for entrepreneurship, and better coordination between immigration and labour departments. Future research should explore whether the relative preference for migrants in the CBD reflects productivity advantages, wage differentials, or informal labour arrangements that may border on exploitation.

It is important to interpret these findings cautiously. The analysis does not account for time-varying unobserved variables, and it excludes informal employment—a major source of livelihoods for both migrants and locals in South Africa. For example, the exclusion of human capital variables such as education may bias estimates of the wage gap or obscure differential sectoral selection. Despite these limitations, the results underscore the importance of recognising how industrial structure, spatial clustering, and labour market segmentation interact with migration policy.

In sum, while the ZEP appears to have facilitated formal labour market integration for migrants, its impact has been uneven across space and sectors. A more pragmatic and inclusive policy response requires improved institutional coordination, support for skills development among locals, and differentiated interventions that reflect the realities of urban labour market segmentation in South Africa.

8 Limitations and Future Research

While this chapter leverages rich spatial tax panel data and quasi-experimental designs to examine the impact of the Zimbabwe Exemption Permit (ZEP) on formal employment shares, several limitations moderate our conclusions. First, the informal sector, where migrants are heavily represented, lies outside the scope of the CSP data, limiting our view of the ZEP's full labour-market effects. As such, the estimated effects pertain only to the formal labour market and may understate the broader impact of the ZEP. Second, the lack of a sector–nationality cross-tabulation prevents an opportunity to test the association between ZEP holders and local employment within specific industries, an important mechanism given sectoral differences in

skills and wages. Third, potential endogeneity was inadequately addressed, as workers and firms may self-select into locations due to unobserved time-varying factors that also influence employment trends. Although our event-study framework addresses time-invariant heterogeneity, it cannot fully eliminate bias such as local economic shocks. Finally, several coefficient estimates show weak statistical significance, suggesting that observed associations are suggestive rather than definitive. Future work should seek firm-level panel data linking employee nationality and sector, as well as complementary data sources such as household or survey data that capture informal employment dynamics. Addressing these gaps will strengthen causal inference and support more targeted policy guidance.

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Appendix

Table A1: Local Employment Growth vs Foreign Employment Growth interacted with CBD in Cape Town

	(1)	(2)	(3)	(4)	(5)	(6)
	2017	2018	2019	2020	2021	2022
Variables	Local Employment Growth	Local Employment Growth	Local Employment Growth	Local Employment Growth	Local Employment Growth	Local Employment Growth
Foreign Employment Growth	-0.248	-0.827***	0.250	0.308*	0.190*	0.212*
	(0.224)	(0.212)	(0.179)	(0.178)	(0.114)	(0.120)
CBD	-1.728***	-4.336***	3.002***	3.919**	3.376***	6.085***
	(0.640)	(1.077)	(1.011)	(1.682)	(0.959)	(1.198)
Foreign Employment Growth#CBD	0.094	0.318***	-0.042	-0.040	-0.012	-0.037
	(0.076)	(0.070)	(0.0555)	(0.057)	(0.037)	(0.037)
Transport Corridor	1.910***	2.124***	1.502**	2.361***	0.259	0.130
	(0.356)	(0.547)	(0.595)	(0.647)	(0.549)	(0.639)
Constant	4.373***	12.54***	-7.144**	-8.572*	-6.586**	-11.88***
	(1.533)	(3.164)	(3.546)	(5.050)	(2.692)	(3.330)
Observations	248	248	248	248	248	248
R-squared	0.131	0.262	0.136	0.320	0.362	0.234

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Author's own calculations from the CSP and Geospatial data

Table A2: Local Employment Growth vs Foreign Employment Growth interacted with CBD in eThekwini

	(1)	(2)	(3)	(4)	(5)	(6)
	2017	2018	2019	2020	2021	2022
Variables	Local Employment Growth	Local Employment Growth	Local Employment Growth	Local Employment Growth	Local Employment Growth	Local Employment Growth
Foreign Employment Growth	-1.106	1.253***	0.081	1.170**	0.562	0.344
	(1.381)	(0.413)	(0.563)	(0.550)	(0.593)	(0.539)
CBD	1.306	3.033	0.968	2.040	4.668	3.757
	(1.873)	(3.071)	(1.749)	(2.238)	(3.306)	(2.522)
Foreign Employment Growth#CBD	0.421	-0.408***	-0.020	-0.346*	-0.166	-0.058
	(0.492)	(0.142)	(0.185)	(0.179)	(0.208)	(0.158)
Transport Corridor	-1.181	-1.537	-1.250	-2.330	-2.514	-4.452*
	(1.060)	(1.508)	(1.698)	(1.600)	(2.157)	(2.332)
Constant	-1.421	-2.916	4.869	2.479	-2.560	0.688
	(6.181)	(8.415)	(5.307)	(7.079)	(8.414)	(8.014)
Observations	160	159	159	159	159	157
R-squared	0.117	0.057	0.003	0.160	0.042	0.089

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Author's own calculations from the CSP and Geospatial data

Table A3: Local Employment Growth vs Foreign Employment Growth interacted with Transport Corridor in Cape Town

	(1)	(2)	(3)	(4)	(5)	(6)
	2017	2018	2019	2020	2021	2022
Variables	Local Employment Growth	Local Employment Growth	Local Employment Growth	Local Employment Growth	Local Employment Growth	Local Employment Growth
Foreign Employment Growth	-0.051	0.004	-0.060	0.063*	0.085***	0.007
	(0.060)	(0.070)	(0.052)	(0.036)	(0.027)	(0.029)
Transport Corridor	1.248***	0.306	-1.659**	-0.544	-1.239*	-1.805**
	(0.437)	(0.731)	(0.725)	(0.798)	(0.703)	(0.853)
Foreign Employment Growth#Transport Corridor	0.060*	0.106***	0.114***	0.080***	0.042***	0.057***
	(0.032)	(0.028)	(0.024)	(0.020)	(0.014)	(0.015)
CBD	-1.084**	0.188	3.149***	3.602***	3.807***	6.700***
	(0.426)	(0.783)	(0.649)	(0.795)	(0.741)	(1.070)
Constant	3.413***	1.284	-1.804	-2.533	-5.156**	-10.17***
	(0.913)	(1.525)	(1.938)	(2.233)	(1.996)	(2.673)
Observations	248	248	248	248	248	248
R-squared	0.142	0.239	0.226	0.355	0.377	0.259

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Author's own calculations from the CSP and Geospatial data

Table A4: Local Employment Growth vs Foreign Employment Growth interacted with Transport Corridor in eThekwini

	(1)	(2)	(3)	(4)	(5)	(6)
	2017	2018	2019	2020	2021	2022
Variables	Local Employment Change	Local Employment Change	Local Employment Change	Local Employment Change	Local Employment Change	Local Employment Change
Foreign Employment Growth	-0.108	0.044	-0.035	0.068	-0.158	0.057
	(0.100)	(0.061)	(0.077)	(0.134)	(0.137)	(0.212)
Transport Corridor	-1.850**	-1.179	-2.119	-4.093	-6.631*	-5.913**
	(0.892)	(2.050)	(1.703)	(2.620)	(3.564)	(2.877)
Foreign Employment Growth#Transport Corridor	0.214	0.004	0.047	0.097	0.192	0.068
	(0.149)	(0.067)	(0.065)	(0.110)	(0.129)	(0.113)
CBD	0.372	-0.202	0.640	-3.204*	1.713	2.809
	(1.161)	(2.773)	(2.325)	(1.631)	(2.757)	(2.836)
Constant	2.211	6.036	6.581	18.79***	9.551	5.526
	(3.636)	(8.147)	(6.889)	(5.632)	(8.921)	(8.572)
Observations	160	159	159	159	159	157
R-squared	0.109	0.006	0.006	0.127	0.062	0.091

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Author's own calculations from the CSP and Geospatial data

Table A5: Local Employment Growth vs Initial Foreign Employment Share in Cape Town and eThekwini

Variables	(1) Cape Town Local Employment Growth	(2) eThekwini Local Employment Growth
Foreign Share	-0.165**	-0.356
	(0.083)	(1.041)
2014	-0.089***	0.003
	(0.014)	(0.031)
2015	-0.031***	0.012
	(0.008)	(0.027)
2017	0.031***	-0.214***
	(0.006)	(0.080)
2018	0.061***	-0.126
	(0.013)	(0.086)
2019	0.091***	-0.197***
	(0.015)	(0.063)
2020	0.095***	-0.277***
	(0.016)	(0.083)
2021	0.078***	-0.325***
	(0.014)	(0.098)
2022	0.093***	-0.336***
	(0.016)	(0.125)
2014#foreign share	0.092	-1.505
	(0.343)	(2.144)
2015#foreign share	-0.192	-0.366
	(0.191)	(1.887)
2017#foreign share	-0.070	14.910***
	(0.135)	(5.102)
2018#foreign share	-0.531*	17.430***
	(0.273)	(4.924)
2019#foreign share	-0.991***	20.840***
	(0.308)	(5.116)
2020#foreign share	0.0038	27.600***
	(0.337)	(6.606)
2021#foreign share	-0.654**	29.340***
	(0.324)	(7.933)
2022#foreign share	-1.243***	30.520***
	(0.361)	(9.826)
Establishments	-0.015***	0.038*
	(0.005)	(0.021)
Nightlights	-0.010	-0.048**
	(0.006)	(0.020)
Constant	0.134***	-0.073
	(0.034)	(0.085)
Observations	1,287	873
R-squared	0.477	0.294

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Note: Table A5 illustrates the regression of local employment growth on the initial foreign employment share (in 2016). The interaction coefficients are at 95% confidence level.

Source: Author's own calculations from the CSP and Geospatial data

Table A5 shows that in Cape Town, initial foreign employment was associated with a 0.165 percentage point decrease in local employment. In eThekwini, although there was also a decline in local employment, it was insignificant.

Table A6: Foreign Employment Growth vs Initial Foreign Employment Share in Cape Town and eThekwini

Variables	(1) Cape Town Foreign Employment Growth	(2) eThekwini Foreign Employment Growth
Foreign Share	-0.107	-2.011*
	(0.147)	(1.134)
2014	-0.094***	-0.214***
	(0.020)	(0.061)
2015	-0.037***	-0.098**
	(0.014)	(0.042)
2017	0.129***	0.217***
	(0.032)	(0.078)
2018	0.170***	0.314***
	(0.033)	(0.077)
2019	0.396***	0.395***
	(0.072)	(0.119)
2020	0.533***	0.355***
	(0.066)	(0.125)
2021	0.465***	0.363**
	(0.082)	(0.153)
2022	0.482***	0.312**
	(0.107)	(0.147)
2014#foreign share	-0.236	8.365*
	(0.430)	(4.352)
2015#foreign share	0.109	4.205
	(0.302)	(2.996)
2017#foreign share	-2.588***	-13.870**
	(0.720)	(5.278)
2018#foreign share	-2.220***	-19.460***
	(0.743)	(5.418)
2019#foreign share	-6.054***	-21.840**
	(1.666)	(8.797)
2020#foreign share	-8.822***	-23.420**
	(1.561)	(9.522)
2021#foreign share	-7.863***	-24.610**
	(1.869)	(11.330)
2022#foreign share	-8.643***	-23.250**
	(2.395)	(11.450)
Establishments	-0.053***	-0.047
	(0.014)	(0.032)
Nightlights	0.018	0.000
	(0.017)	(0.031)
Constant	0.274***	0.316**
	(0.063)	(0.124)
Observations	1,271	845
R-squared	0.488	0.260

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Note: Table A6 shows the impact of foreign employment share in the base year, 2016 on changes in foreign employment.

Source: Author's own calculations from the CSP and Geospatial data

Table A6 highlights that initial foreign employment share was associated with a decrease in foreign employment in both Cape Town and eThekwini although it was significant only in eThekwini.

Table A7: Spatial Economic Regression Results

City	Dependent Variable	Preferred Model	AIC	Spatial Term
Cape Town	Local Employment Growth	SAC	8317.5	ρ = 0.83***, λ = 0.85***
	Foreign Employment Growth	SEM	–1488.3	λ = 0.82***
eThekwini	Local Employment Growth	SAC	7085.5	ρ = 0.90***, λ = -0.68*
	Foreign Employment Growth	SAC	–715.05	ρ = 0.93***, λ = -0.60**

Source: Own calculations from the CSP data

Note: Statistically significant at *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table A7 shows spatial econometric regression results for local and foreign employment growth in Cape Town and eThekwini. The spatial term indicates whether a spillover effect is present. All models include year fixed effects and controls for the logarithm of establishments in year 2016 and the logarithm of nightlights in year 2016. Spatial lag (ρ) captures direct spillover of neighbouring outcomes; spatial error (λ) corrects residual autocorrelation.