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Examining the Local Business Landscape

A Spatiotemporal Analysis of King County Businesses & Community Impacts

2024 Population Health Initiative Applied Research Fellows

Carmen Choong

Anoushka Manik

Sydney Pope

Priyanka Shrestha

Jenny Speelmon

Advised by:

Jessica Godwin, PhD

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Executive Summary

King County's population grew substantially over the last two decades, causing a noticeable change in area demographics. The influx of highly paid residents and the housing shortage caused a considerable increase in housing costs and area median income that displaced residents and businesses from their communities. This process of residential displacement of one social class and culture by another more affluent class is usually referred to as residential gentrification. These residential changes often coincide with changes to the local business landscape, such as a decrease in small, local, minority-owned businesses and an increase in high-priced specialty stores or chains; this process is called commercial gentrification (Liu et al., 2023). Commercial gentrification impacts not only residents of the surrounding neighborhood but also people across King County who rely on local businesses for socialization and community building. Despite its impacts, business displacement is understudied compared to the residential effects of gentrification.

The 2024 Population Health Applied Research Fellowship project sought to close this knowledge gap and examine the scope of commercial gentrification in King County with an analysis of business-level data from Data Axle, a data analytics firm, to quantify business openings and closures from 1997 to 2023 by employee size and industry. This report aims to offer insight into which communities and industries appear to be most impacted by commercial gentrification and over which time periods.

Methods

To validate the accuracy of Data Axle's data, we use the U.S. Census Bureau's County Business Patterns (CBP) data and the King County Department of Assessments list of top 10 employers in Puget Sound in 2018. To better understand spatial trends in businesses, we use King County's Health Reporting Areas (HRA) and unincorporated King County. For our industry-level analysis, we identify three essential services: grocery stores, pharmacies, child care providers, and four categories of third places: retail, entertainment, eating and drinking, and services establishments.

Findings

Our research shows that:

- Data Axle evidence indicates a larger number of businesses in King County than is found in CBP, particularly for businesses with zero to 19 employees.
- Microsoft, Boeing, and the University of Washington appear in Data Axle as the top 10 employers in King County and the King County Department of Assessments list of top 10 employers in Puget Sound. However, there are discrepancies in the number of employees across the two data sources.
- Amazon isnot among the top 10 employers in King County based on Data Axle information, and it has about 20,000 fewer employees than listed in the King County Department of Assessments report.
- Despite significant population growth in King County, the number of grocery stores and child care providers remained relatively stable since 1997.
- The number of pharmacies in King County increased since 1997, but eight of 61 Health Reporting Areas have two or fewer pharmacies.
- Third place services, eating and drinking, and entertainment establishments increased since 1997, while third place retail establishments decreased.
- The Central District, Chinatown-International District, Judkins, and North Beacon Hill HRA experienced a substantial loss of eating and drinking establishments, entertainment, and grocery stores from 2022 to 2023. The Downtown, Belltown, and First Hill HRA experienced the most retail and pharmacy losses. However, these HRAs gained over 100 new service establishments in that period.

Introduction

King County's beloved and quintessential businesses are dwindling. Over the last two decades, population growth has drastically increased the cost of living and transformed the county's demographics, resulting in the displacement of residents and businesses. Many studies have examined the causes and impacts of residential displacement, but few have explored commercial gentrification.

Small, local businesses are a central part of neighborhood identity and culture. A neighborhood is a geographical unit where residents share proximity and the circumstances that come with it. On the other hand, community is formed based on shared beliefs, concerns, or relationships (Chaskin, 1997). Neighborhood and community do not always coincide, but a sense of community in a neighborhood is created by the social and environmental factors that strengthen bonds and create social capital (Wang et al., 2023). Communities can be location-based, such as neighborhoods, but there are thousands of communities across King County whose members bond over their identities and passions rather than where they live. Businesses provide vital services that cater to the residents of an area, and they can provide a location for socialization and connection that enables communities to form and maintain bonds. Local establishments often serve as third places, or locations other than work, school, or home where people gather for social interaction, community building, and support (Finlay et al., 2019). Third places are crucial for maintaining healthy communities where people feel a sense of connection and pride that encourages civic participation. Residents experience emotional bonds with places that meet their material and social needs, a phenomenon known as place attachment (Altman & Low, 1992, as cited in Tuttle, 2021). Place attachment can be especially prevalent in ethnic enclaves where local establishments reproduce and preserve a community's culture. When long-time residents experience the closure of culturally important establishments due to rising costs and changing demographics, they can experience cultural displacement and a feeling of alienation from a place where they previously felt belonging (Tuttle, 2021). The loss of these establishments and the resulting loss of social cohesion can exacerbate crime, addiction, sociopolitical polarization, and inequality (Finlay et al., 2019).

The purpose of our project is to look at commercial gentrification in King County using business-level data from Data Axle, a data analytics firm, to analyze business

changes in the area. Our research offers insight into which communities and industries might be most impacted by commercial gentrification and how those changes have occurred over time.

The Population Health Applied Research Fellowship 2024 Project

Our primary goals for this project are to understand how Data Axle can be used to explore longitudinal business-level data and to quantify trends in business openings and closures across King County from 1997 to 2023 by employee size and specific business type.

Research Questions

1. How does the Data Axle data compare to the Census Bureau's County Business Patterns?
2. According to Data Axle, what are the top 10 employers in each of King County's jurisdictions by year?
3. How has the geographic spread of essential businesses like pharmacies, daycare centers, and grocery stores, as well as third places important to neighborhood and community life, changed in King County from 1997 to 2023?
4. How are trends in King County's business openings and closures changing over time?

Background

Discriminatory Housing Policies

Gentrification is a form of neighborhood change that leads to the displacement of incumbent residents of one social class and culture by another more affluent class, linked with an increase in property values (Richardson et al., 2019). When property values increase and neighborhood demographics change, local businesses are also impacted. Commercial gentrification occurs when businesses are replaced by higher-value establishments or residential developments. Commercially gentrifying

neighborhoods are usually identified by a decrease in small, local, minority-owned businesses that cater to the community and an increase in high-priced specialty stores or chain businesses (Liu et al., 2023).

In their book *How to Kill a City*, P.E. Moskowitz says, “Gentrification is not about individual acts; it’s about systemic violence based on decades of racist housing policy in the United States that has denied people of color, especially Black people, access to the same kinds of housing, and therefore the same levels of wealth, as white Americans. Gentrification cannot happen without this deeply rooted inequality; if we were all equal, there could be no gentrifier or gentrified, no perpetrator or victim.” Communities of color experience the negative effects of gentrification and displacement most acutely. The country’s history of racist policies and discrimination laid the foundation for the cultural erasure we are seeing in cities today.

Racial Restrictive Covenants

Racial restrictive covenants are “agreements entered into by a group of property owners, sub-division developers, or real estate operators in a given neighborhood, binding them not to sell, lease, rent or otherwise convoy their property to specified groups because of race, creed or color for a definite period unless all agree to the transaction.” Covenants that barred property owners from selling or renting properties to racial minorities became popular after the 1917 Supreme Court case *Buchanan v. Warley*. The court ruled that segregation zoning policies forbidding certain racial groups from buying property in designated areas were illegal on the basis that they violated property owners’ Fourteenth Amendment right to sell property to whomever they choose (Rothstein, 2017). As private contracts, restrictive covenants did not violate the Fourteenth Amendment, so they became the preferred method of neighborhood segregation. Many developers created mandatory neighborhood associations with whites-only clauses in the by-laws to ensure that every home was bound by a restrictive covenant. W.E. Boeing, the founder of Boeing Aircraft Company, utilized this strategy when he financed the development of multiple suburbs north of Seattle. In 1948, the Supreme Court ruled that racially restrictive covenants were not legally enforceable by state courts (Silva, 2009). Despite the ruling, neighborhood associations and residents continued

to enforce covenants through intimidation and threats. Non-white families were rarely comfortable buying a home with openly hostile neighbors regardless of the legal enforceability of covenants. Racial restrictive covenants remained prominent until the 1968 Fair Housing Act, which prohibited private discrimination in housing sales and rentals (Silva, 2009).

Redlining

In 1933, President Roosevelt created the Home Owners' Loan Corporation (HOLC) to assist families in danger of losing their homes to foreclosure during the Great Depression. The HOLC purchased mortgages that were subject to imminent foreclosure and issued new mortgages with longer repayment schedules (Rothstein, 2017). Because of the inherent risk of investing billions of dollars in mortgages, the agency devised a system to assess people's ability to pay back their loans. The HOLC created color-coded maps with green representing the "best" neighborhoods, blue representing "still desirable," yellow representing areas that were "definitely declining," and red representing "hazardous" neighborhoods. Neighborhoods were rated best if they were homogeneously white and had newer housing, and they were rated hazardous if they had non-white residents and older, dilapidated housing. An area could be assessed as a red zone if even one Black household lived there, regardless of the housing quality. This process is commonly referred to as redlining. Almost every majority-Black neighborhood in the United States was deemed hazardous by the HOLC (Moskowitz, 2017). This blatantly racist system barred many Black families from receiving federal funding for mortgages as it paved the way for white families to build generational wealth.

Mortgage Discrimination

A year after the HOLC was founded, the National Housing Act created the Federal Housing Administration (FHA), which insured bank mortgages to encourage banks to lend to more homebuyers. Any home that met FHA construction standards would be backed by government funding if the homeowners defaulted on their private mortgage. For the first time, homebuyers could purchase property with down payments of 10% to 20% and pay off loans over 15 to 30 years, reducing

monthly payments and making home ownership accessible to working-class people. The FHA created a manual that established its guidelines for assessing which neighborhoods were eligible for mortgage insurance. The manual stated, “If a neighborhood is to retain stability, it is necessary that properties shall continue to be occupied by the same social and racial classes” (Rothstein, 2017). The FHA recommended that neighborhoods enact racial restrictive covenants to be considered eligible. The agency did not recommend loans for properties outside of newly built suburbs, stating, “Older properties have a tendency to accelerate the transition to lower class occupancy.” The manual discouraged mixed-use planning, favoring the separation of residential zoning and commercial zoning. Builders were essentially prohibited from building in cities and encouraged to build race-restricted suburbs if they wanted to secure insured mortgage funding. These policies trapped racial minorities in disinvested city centers and spurred white flight to the suburbs.

Great Migration

During World War II, the Puget Sound area was a hub for ship and aircraft construction. Expanded wartime operations required a larger workforce, and Pacific Northwest companies recruited employees from the South. By the end of WWII, 45,000 Black workers and their families had migrated to the area to work at Boeing, in shipyards, and as soldiers at Fort Lawton (Taylor, 1995). Housing discrimination in Seattle forced Black residents into crowded buildings on Madison Street, Cherry Street, and the state’s first racially integrated public housing development, Yesler Terrace. Although the area had been home to a growing Black community since the early 1800s, large-scale migration during and after the war transformed the Central District into a majority Black neighborhood (Veith, 2009).

Population Growth and the Rise of Residential and Commercial Rent Prices

Discriminatory housing policies determined where communities could put down roots and therefore heavily influenced the layout of King County today. Some of Seattle’s most culturally significant neighborhoods include the Central District, a pillar of Seattle’s Black community; Chinatown–International District (CID), a cultural

hub for several Asian and Asian-American communities; Rainier Valley, which houses many immigrant and refugee communities and business enclaves; and South Park, Seattle's largest Latinx community. Each of these neighborhoods was rated as declining or hazardous on redlining maps, and each is now at high risk of displacement due to King County's significant population growth over the last two decades.

The Role of the Tech Industry

Between 2000 and 2020, King County's population grew 31% from 1.74 million to 2.27 million, with most of that growth occurring between 2010 and 2020. Migration to King County accounted for 63% of the population growth between 2010 and 2020, a marked increase from 39% the previous decade. This unprecedented increase in migration can be attributed in part to tech industry growth in the Seattle area. King County has been a landing spot for prominent tech companies since the dawn of the information age. Microsoft established its headquarters in Redmond in 1979, and Amazon was founded in a Bellevue garage in 1994. The area's most recent tech boom was kicked off by Amazon opening an office in Seattle's South Lake Union neighborhood in 2010. The office was expected to employ about 5,000 people, but the company rapidly expanded, opening numerous offices in Downtown Seattle in just a few years. By 2017, Amazon employed 40,000 people in Seattle alone and occupied significantly more office space than any other company in the city. Amazon accounted for 29% of the workers added to Seattle between 2010 and 2017. Other tech companies, like Google, Facebook, and Apple chose to follow in the company's footsteps and expand in the Seattle area to take advantage of the growing talent pool in the city, fueling further migration to King County.

Zoning Laws and Urban Villages

King County's zoning laws limit which areas can grow to accommodate large-scale population growth. In 1990, the State of Washington enacted the Growth Management Act, requiring fast-growing cities and counties to develop plans to manage population growth. Seattle's Comprehensive Plan introduced the urban village strategy, which limited the development of multi-family housing to areas designated by elected officials as urban villages while restricting the rest of the city

to single family zoning. Urban villages largely upheld existing development patterns, allowing multi-family housing in denser areas and restricting it in more suburban areas. Three-quarters of residential land in Seattle is zoned for single family homes, but only 5% of new net units were built in single-family zones from 2010 to 2017. The population of single-family neighborhoods grew just 9% between 1990 and 2020 in contrast to urban villages and centers where the population more than doubled in that time.

Housing Shortage

As King County's population grew, demand for housing skyrocketed. The supply of homes near the growing hub of tech companies in Seattle was not sufficient to meet the rising demand, and restrictive residential zoning laws made it difficult to remedy those conditions. Seattle would have had to build 9,000 additional housing units to keep up with the number of new jobs between 2005 and 2019. The housing shortage created intense competition that drove up costs. Between 2010 and 2019, median home values in Seattle increased by 80%. The median sales price of Seattle-area homes was $1,060,000 in 2022. Rents across the city increased 69% between 2010 and 2018, with prices almost doubling in areas like Capitol Hill, South Seattle, and Bothell. The zip codes that previously had the lowest average rents in the city have experienced the fastest growth in housing costs over the last decade. Racial minorities are more likely to be displaced by drastic price increases due to the racist housing policies that have historically confined them to disinvested city centers. The Seattle neighborhoods with the highest displacement risk include CID, Central District, Rainier Valley, Rainier Beach, South Park, High Point, and the University District, almost all of which have long been home to communities of color and immigrant populations. There has been a marked decline in the Hispanic population in South Park and the Black population in the Central District, which experienced a stark transformation from being more than 70% Black in the '70s to just 18% Black in 2020. Migration trends in King County between 2010 and 2019 show that low-income households are increasingly moving outside Seattle city limits, most likely due to rising housing costs.

Income Inequality

The growth of the tech industry brought an influx of wealth to King County that exacerbated income inequality in the region. In 2021, the top 20% of income earners in King County held 19 times the wealth of the bottom 20% of earners. Almost half of new jobs added to the Seattle area between 2005 and 2020 are in industries that pay a median annual wage of $75,000 or higher, with about a quarter paying $100,000 or more. Low- and middle-income families are competing for a limited number of units with residents who have much more disposable income, which exacerbates increasing costs. The inadequate housing supply compels higher income renters to occupy units that would otherwise be affordable to lower income households. This reduces the supply of housing available to lower income households, resulting in many being displaced from their neighborhoods.

The median household income in King County increased from $63,100 in 2010 to $116,360 in 2022, but this rise in affluence has not been equitable. The median household income for Black residents of King County in 2022 was $63,220. This stark disparity has roots in racist policies that robbed Black people of an equal opportunity to accumulate assets. Homeownership is the primary mechanism by which families build generational wealth. Discriminatory housing policies in the early 20th century largely precluded Black families from homeownership in areas where property values have since skyrocketed. Access to higher education is also an important predictor of income. The G.I. Bill of 1944 was supposed to cover college tuition for Black WWII veterans, but the benefits were administered locally, and many Black veterans in the segregated South were barred from universities or denied funding altogether. While white veterans reaped the financial benefits of college education, Black veterans were often left behind. One study found that the families of white veterans held an average of 32 times the wealth of Black veterans (Horvath, 2023). Wealth begets wealth, and many multiplied their net worth by investing their surplus income in the stock market. That wealth is then passed on to the next generation, who use their inheritances to buy their own homes and obtain college degrees, thus continuing the cycle of prosperity.

Commercial Rent

The increase in housing costs and median income in the county has significantly impacted local businesses. Many have been displaced by rising rents, redevelopment of buildings, or changing neighborhood demographics. Commercial

rents have continued to rise each year, excluding a brief dip during the COVID-19 pandemic. A 2018 report by the King County Department of Assessments cites years of tech industry growth as the driving force of high demand and price increases. The report states that competition for commercial space and high barriers to entry in Seattle and Bellevue disincentivized building owners from offering concessions like reduced rent, waived fees, and custom lease periods to potential tenants. Property values have soared throughout King County in the last decade. A 2017 zoning change that increased the height limit for buildings in CID led to "noticeably higher prices" for developable land. Downtown Seattle and CID experienced property value increases of more than 20% between 2018 and 2019.

Light Rail Development and Gentrification

Transit-oriented development (TOD) is a popular planning concept characterized by pedestrian-oriented commercial and residential development, high population density, and multi-family homes, office, and retail space centered around a transit station (Tehrani et al., 2019). TODs attract developers looking to build housing and businesses looking to capitalize on the increase in foot traffic. Upscale development, along with increased demand for homes and commercial real estate close to the light rail, is likely to increase property values and rent prices.

While transit development and equitable transportation access is essential, adequate funding can be difficult to obtain. In the 1980s, President Ronald Reagan cut federal spending on social welfare programs, housing, and transportation, forcing U.S. cities to seek alternative sources of funding for transportation, infrastructure, and public housing (Moskowitz, 2017). Cities were suddenly incentivized to attract a wealthier tax base that could cover the cost of necessary services and disincentivized to invest in the needs of lower income residents. TOD is commonly used by cities to revitalize less profitable areas and draw in more affluent residents.

Link Light Rail was approved by King County voters in 1996, began construction in 2002, and began operation in 2009 (Hess, 2020). On top of the transportation-related benefits, King County leaders promoted the light rail as an opportunity to revitalize neighborhoods, attract development, and add to the tax base of the region (Regional Transit Authority, 1996). Some of the proposed performance measures of the light rail included new businesses attracted to the

region and increased property values in areas near investment. These goals do contribute to the economic health of the region, but they also create conditions for gentrification and displacement pressure for pre-existing residents and businesses. A case study exploring demographic changes in Seattle neighborhoods with Link Light Rail stops between 1980 and 2014 found that the white population increased in Link neighborhoods just outside of Downtown Seattle while the Black, Hispanic, Asian, and Pacific Islander populations increased in the suburban Link neighborhoods farther from the city (Hess, 2020). These results are corroborated by King County household income and racial composition data from 2010 to 2019. The number of households earning less than 50% of area median income (AMI) remained about the same in Seattle but increased dramatically in the rest of King County. During that decade, Seattle's AMI increased by more than $30,000. In that same period, the Black population grew 6.6% in Seattle but 41% in the remainder of King County. The Native American population decreased almost 16% in Seattle and grew by almost 50% in the rest of King County. This may indicate that low-income and minority residents are migrating to the suburbs as housing costs increase. However, Black and Native American residents make up a small share of the population, so these percentages may represent a relatively low number of people migrating out of Seattle.

The share of young adults in Seattle has increased more than any age group in the recent population boom, and 19- to 34-year-olds now comprise more than a third of the city's residents. More than 75% of households in the city have only one or two members. Residents in these demographic groups tend to seek out multi-family housing, which is largely restricted to Seattle's urban villages and centers. When choosing locations for Link stations, the Sound Transit Board prioritized dense, walkable neighborhoods, so most Link stations were built in urban villages and centers. The construction of affordable housing is also almost exclusively restricted to these neighborhoods by Seattle's zoning laws. Increased property values in transit neighborhoods make it more expensive for the city to build affordable housing and therefore more difficult to meet demand. Seattle's Mandatory Housing Affordability (MHA) program requires developers to include affordable units in their projects or contribute to a fund that the city uses to build affordable housing (Seattle Office of Housing, 2023). More often than not, developers choose to pay the fee rather than provide affordable units. Since the adoption of MHA in 2017, property owners have committed to provide 404 units affordable to households earning less than 60% AMI. The construction of light rail

stations does increase demand and prices for surrounding properties. However, even in neighborhoods without TOD, Seattle's urban village growth strategy causes displacement that disproportionately impacts BIPOC communities by limiting housing supply and choice and driving up property values.

Data Sources

Data Axle

Data Axle, previously known as InfoGroup, is a private data, analytics, and marketing firm that provides marketing information on consumers and businesses. Data Axle's Historic Business Data used for this study contains annualized snapshots from 1997 to 2023 of establishment-level information on businesses across the United States and its territories. Each of the annualized datasets contain business names, addresses, geocodes, industry classifications, annual revenue, and company size, among other variables.

Like many other private panel research companies, Data Axle's data generating processes are rather opaque. Scholars who inquired into the data collection methods used in Data Axle's Historic Business Data suggest that it is drawn from multiple sources including the Department of Commerce, periodic phone calls and surveys to businesses, public property records data, and Data Axle's own estimation models (Makridis & Ohlrogge, 2017; Yang, 2019).

County Business Patterns

County Business Patterns (CBP) is an annual series by the U.S. Census Bureau that provides data of employment counts by industry and county. CBP data are extracted from the Business Register, a U.S. Census Bureau database of all known employer companies. Multi-establishment company data is provided by the Report of Organization survey. Single-establishment company data is obtained through the Economic Census, Annual Survey of Manufactures and Current Business Surveys, and administrative records. Noise is infused in the data to protect the privacy of individual businesses. CBP statistics are available at the U.S. level and by state, county, Metropolitan Statistical Area, Combined Statistical Area, ZIP code, and congressional district levels. We used CBP data as a comparison tool to test the

validity of the Data Axle business data. We used the *censusapi* package in **R** to extract county-level data for King County from 2007 to 2022.

Shapefiles

To better visualize spatial trends in businesses, we assigned the Data Axle GPS location data to several county and sub-county level maps. Shapefiles of King County's jurisdictions and unincorporated areas were obtained from the King County GIS Open Data. Area maps on large-scale regional growth areas and the urban growth area were obtained from the Puget Sound Regional Council Data Portal. Public Health-Seattle & King County provided us with shapefiles of the countywide centers. Information on each of these area maps are as follows:

- King County political boundaries show all the political boundaries of King County independent of Shoreline.
- Cities & unincorporated King County are polygons of both incorporated and unincorporated areas in King County. This shapefile is particularly useful for understanding business patterns in unincorporated King County. The county does not issue business licenses, so business data in unincorporated areas is limited.
- Health Reporting Areas (HRAs) are aggregates of King County's 2020 Census blocks that were created to report sub-county level health statistics. HRAs consist of various types of geographies ranging from neighborhoods in large cities, small cities, and unincorporated areas. They serve a significant role in monitoring the county's progress of developmental policies.
- Regional Growth Centers are regional locations up to 1.5 square miles designated for a mix of commercial, residential, industrial, and cultural activities. Growth Centers do not completely divide up King County.
- Urban Growth Area encompasses all urban lands in King County where urban growth is encouraged. Urban lands are intended to be the focus of future growth that is compact, includes a mix of uses, and is well-served by public infrastructure.
- Countywide Centers serve important roles as places for concentrating jobs, housing, shopping, and recreational opportunities. These are often smaller

> downtowns, high-capacity transit station areas, or neighborhood centers that are linked by transit, provide a mix of housing and services, and serve as focal points for local and county investment. (King County Office of Performance, Strategy, and Budget, 2021)

SIC and NAICS Codes

Standard Industrial Classification (SIC) Codes are four-digit numerical codes that categorize businesses into industries based on their activities. The U.S. government last revised SIC codes in 1987. SIC codes were largely replaced by six-digit North American Industry Classification System (NAICS) Codes in 1997. NAICS codes were jointly developed by the U.S., Canada, and Mexico to allow for a high level of comparability in business statistics among North American countries, and they are updated every five years. NAICS codes were most recently updated in 2022. Many government agencies, including the Securities and Exchange Commission, continue to use SIC codes, so the majority of companies utilize both classification systems.

Washington State Office of Financial Management

The Washington State Office of Financial Management produces annual population estimates for all cities and towns in the state of Washington. We used intercensal estimates from 1997 to 2020 and postcensal estimates from 2021 to 2024 to calculate annual population change for King County and its jurisdictions.

Methods

Data Cleaning

Data Axle

We utilized the complete Data Axle Historic Business Data from 1997 to 2023 for this study. To clean the data, we first extracted all businesses in King County for each year. Each business was geolocated within King County's jurisdictions, Health Reporting Areas, Urban Growth Area, Regional Growth Centers, and Countywide Centers using the provided longitude and latitude coordinates.

Counting Large Companies

We discovered that large companies are often represented by multiple smaller companies in the dataset, leading to overcounting the total number of businesses. This results in an undercount of the total number of employees, as employee numbers are provided at the level of each smaller company rather than the parent company. All companies with the same parent number belong to one parent company, so we used the parent number to identify which small businesses were part of a larger company. However, we found that companies with the same name sometimes have different parent numbers or lack a parent number altogether.

To address these issues and improve accuracy of the data, we created a Uniform Parent Number for all rows in the dataset. First, we cleaned for the following companies: Amazon, Microsoft, Boeing, Google, Salesforce, Tableau, Starbucks, Safeway, Fred Meyer, QFC, Virginia Mason, Swedish Hospital, and the University of Washington. For these companies, we assigned a consistent Uniform Parent Number for all rows that had any variation of the name of the parent business and standardized their names. For example, Xbox, a Microsoft subsidiary, was renamed as “Microsoft” so all companies under Microsoft’s Uniform Parent Number were named consistently. Similarly, Amazon’s acquisition of Whole Foods caused the two companies to share the same parent number, and they were grouped under the name “Amazon.” For all other companies, we assigned the current parent number as the Uniform Parent Number. If a company did not have a parent number, we used its name and address. This approach ensured there were no missing values for Uniform Parent Numbers and allowed us to accurately group large companies. A limitation of this approach is that we could not clean every major company in the dataset. Only the companies listed above were cleaned and assigned a consistent Uniform Parent Number.

Employee Size and County Business Patterns

CBP data represent the number of employees in an establishment with employee size categories zero to 19, 20 to 99, 100 to 249, 250 to 499, 500 to 999, and 1,000 or more. Data Axle uses a wider range of employee size categories that needed to be collapsed to match the CBP data for comparison. Data Axle data contain information on employee size categories zero to four, five to nine, 10 to 19, 20 to

49, 50 to 99, 100 to 249, 250 to 499, 500 to 999, 1,000 to 4,999, 5,000 to 9,999, and 10,000 or more. The data also contain the reported number of employees for each establishment. Unfortunately, both columns have missingness ranging from 0% in 2023 to 14% for size category in 2022 and 24% for reported number in 2002. Where the employee size category is missing but the reported total employee size is not, we filled in the missing values in the employee size category appropriately. To compare Data Axle to CBP, we then collapsed the Data Axle employee size category values into the CBP employee size categories. The Data Axle categories all perfectly nest within CBP categories.

Longitudinal Data

When we arranged our complete Data Axle dataset by year and business, we found that some businesses have missing observations in the longitudinal data structure between two years with non-missing data. We leveraged the information on the trajectory of each business over time and filled in the missing information. Whenever we encountered missingness in a specific year for a company we observed both before and after, we filled in the missing year's information using the data observed in the previous year. For example, as illustrated in Table 1, if Company 1 had missing information for 2003, we would fill in information from 2002. However, if the years preceding and following the missing year are both absent, we would leave it as missing, such as for Company 2. There were 23,996 (0.3%) company-year combinations imputed in this manner.

Year	Company 1	Company 2	Company 3
2002	A	X	X
2003	A	X	X
2004	B	X	A
2005	C	A	A
2006	X	X	B

Table 1: Imputing Missingness in Data Axle. We illustrate two common types of missingness for a given company across the years in Data Axle and steps taken to address missingness. Cells with missing values are highlighted in red for each hypothetical company. In cases like

Company 1, there is missingness in 2003 and information is available for the preceding and following years. We assume that Company 1's data for 2003 would be the same as the preceding year. Similarly for Company 3, data from 2005 is missing, and we assume its data is the same as in 2004. Other cases of missingness are denoted here with a red X and are assumed to represent years a business was, in fact, closed or not yet open.

Measures

Counting Totals

We explored various counting methods to find the most accurate way of counting businesses in Data Axle, including counting unique company names, company name and address pairings, ABI numbers (unique Data Axle business identifier), parent numbers (unique Data Axle parent company identifier), and Uniform Parent Numbers (a version of Data Axle's parent company identifiers we have modified).

- Company Names: This method counts each business once per unique name, regardless of location.
- Name and Address Pairings: This counts businesses by their locations by combining the company name with its address (e.g., "COMPANY NAME - 12345 Main St").
- ABI Numbers: Data Axle's ABI number is a unique identifier assigned to each row.
- Parent Numbers: This method groups subsidiaries under their parent companies and counts them together. However, this creates challenges with parent companies having multiple parent numbers or subsidiaries lacking a parent number.
- Uniform Parent Numbers: We created Uniform Parent Numbers by combining parent numbers for large companies under a single number (see data cleaning for details). This counts all ABIs related to large companies, such as Amazon or Virginia Mason, together.

In the end we chose to use name and address pairings to count locations separately and Uniform Parent Numbers to count businesses together for calculations such as the top 10 employers.

Estimating Employee Size

For each company with the same Uniform Parent Number, we calculated both lower and upper estimates for employee size. To do this, we first added the exact employee numbers for each company. If the exact number was not available, we used the limits of the employee size category range. For example, for a company with a size range of 10 to 19, the upper estimate would assume the company had 19 employees and the lower would assume it had 10. When upper and lower estimates for total employees are the same, this means the exact number was available and used rather than the range.

To calculate the top 10 employers, we added the upper and lower estimations for every company with the same assigned Uniform Parent Number, creating a total upper estimate and a total lower estimate. We created two top 10 lists by sorting the companies in descending order based on their total upper and total lower estimates. Many large companies in the top 10 have their exact employee numbers reported, so the upper and lower estimates are the same value.

Net Annual Differences

We counted the net annual difference in the total number of businesses by jurisdiction and HRA in King County. This allows us to identify which neighborhoods may be losing or gaining businesses and important services over the years. However, a positive net annual difference only suggests that a neighborhood might be experiencing more business openings than closures. In the next section, we describe how we measure business openings and closures using longitudinal data.

Business Openings and Closures

After filling in the missing longitudinal data using the previously described imputation method, we identified the timing of opening and closure for each business. To measure business closures, we looked for the last year in which a business was observed in our Data Axle sample. If we observed a business in Data Axle in a specific year, we treated that business as open for the entirety of that year. We treat the year following the last year that a business appears in Data Axle as the year the business closed. For example, if a business is observed from 2000 to

2011 but does not appear afterward, we treat 2012 as the year of closure. Using this method, we can only produce business closure estimates from 1998 to 2023.

To identify a business opening, we look for businesses that appear for the first time after 1997. The earliest year in which a business appears in our dataset is treated as the opening year. While Data Axle provides a year established column, it is missing for 97.4% of observations. We treat 1997 as the beginning of our observation window and do not report on openings for that year.

Industries

Retrieving Industry Through SIC Codes

We use primary SIC codes in Data Axle to identify specific industries and compare industry change over time. These industries include pharmacies, child care services, and grocery stores. Although NAICS codes replaced SIC codes as the U.S. government's preferred classification in 1997, we chose to use the primary SIC codes for two reasons. First, NAICS classifications and codes are revised every five years. This inconsistency makes identifying specific industries over time with NAICS codes challenging. However, primary SIC codes have not been changed since 1987, providing a basis for longitudinal industry analysis. Second, the primary SIC codes contain less missingness (0.00005%) than the primary NAICS codes (0.00056%) in our data.

Creating a Flag for Grocery Stores

The primary SIC code for grocery stores is 5411. However, we observed that major grocers such as Costco, Walmart, and Target were classified under the SIC code 5311, which represents department stores. Since 5311 also includes retail-only department stores like Macy's, we further filtered down to businesses with SIC codes 5311-02, 5311-04, and 5311-10. We then retained a list of all unique company names in Data Axle with these SIC codes. We researched each business individually and manually added a grocery flag to those we identified as grocery stores. Due to a limited timeline, we may not have identified all smaller grocery stores. Subsequent analyses of grocery stores include businesses if they were identified either through the manual flagging process or if they have the SIC code 5411.

Matching SIC Codes to NAICS Codes for Third Places

To create an index of third places, we reviewed the 2017 NAICS Manual and identified businesses that qualified as third places. We used a list of third place NAICS codes from the paper "Closure of 'Third Places'? Exploring Potential Consequences for Collective Health and Wellbeing" as our initial guide. After we created a comprehensive list, we divided it into four categories: retail, entertainment, eating and drinking, and services, such as barber shops and child care. NAICS codes are updated every five years and are therefore more difficult to track longitudinally than SIC codes, so we used the 2017 NAICS to SIC Crosswalk to identify the SIC codes for each business type in our third place index. A potential limitation of this method is that some of the chosen SIC codes might apply to a broader category of businesses than intended. This may have resulted in an overcount in some of the third place categories. With more time, a more comprehensive approach could be taken to filter out irrelevant businesses from third place SIC codes, as we did with grocery stores. A complete list of the SIC codes used in each third place category is included in the Appendix.

Findings

Data Representativeness

County Business Patterns Data

To assess how accurately the Data Axle data represent businesses in King County, we compared the total number of businesses (Figure 1) and the number of businesses in each employee size category (Figure 2) using CBP and Data Axle.

This comparison reveals that:

1. Data Axle has a higher total business count than CBP.

2. Data Axle has a much higher total of businesses with zero to 19 employees, but the data are similar to CBP totals in every other size category.

As we mentioned in the *Data Cleaning* section, one potential cause of this counting discrepancy is that large companies are sometimes broken into multiple smaller

companies in Data Axle. We were able to clean the data for many of the most prominent businesses in King County, but time constraints prevented us from cleaning every large company in the dataset. Further, as the next section reveals, we may be missing certain subsidiaries of large companies included in our cleaning process. Another possible explanation for the discrepancy is sole proprietorships. CBP does not include sole proprietorships in its data, but Data Axle contains many companies with one employee, and it is unclear whether those represent sole proprietorships.

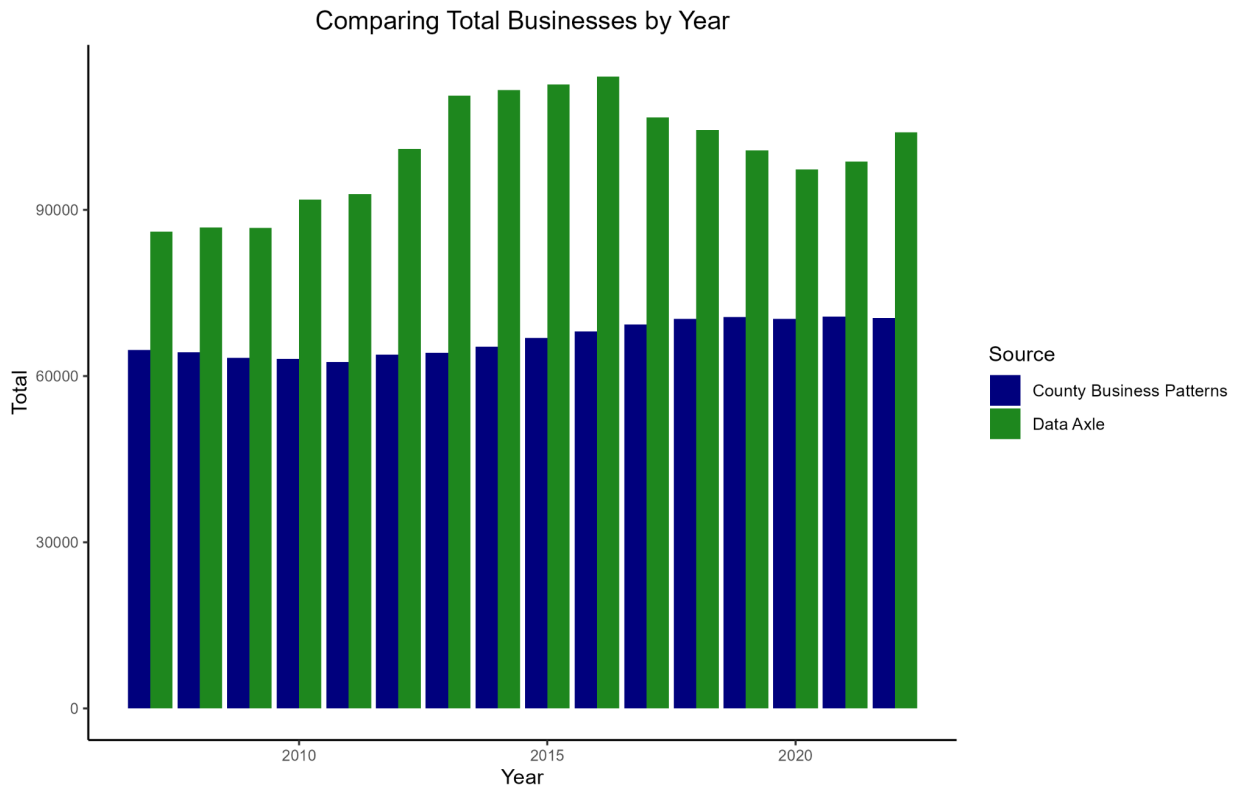


Figure 1: Total Businesses in King County by Year (Data Axle & CBP, 2007-2022)
This figure compares the total number of businesses in King County according to CBP data (depicted in blue) and Data Axle data (depicted in green).

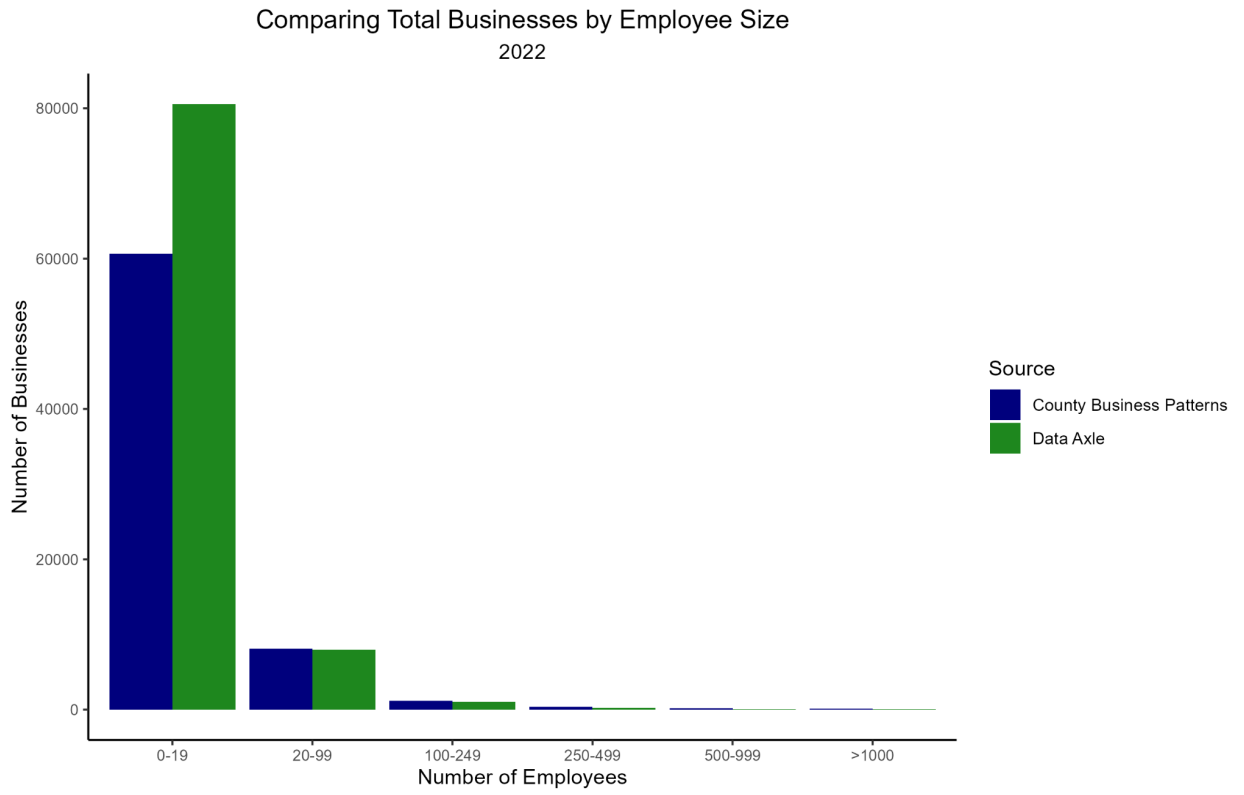


Figure 2: Total Businesses in King County by Size (Data Axle & CBP, 2022)
This figure compares the number of businesses in King County for each employee size category according to CBP data (depicted in blue) and Data Axle data (depicted in green). On the x-axis we have employee size categories as zero to 19, 20 to 90, 100 to 249, 250 to 499, 500 to 999, and 1,000 or more, as determined by CBP data.

King County Department of Assessments Data

To understand the accuracy of our top 10 employers analysis from Data Axle, we compared our results to the King County Department of Assessments list of top 10 employers for 2018. It is important to note that the King County Department of Assessments list covers the entire Puget Sound area while Data Axle only covers King County. Consequently, there are businesses from the King County Department of Assessments shown in Table 2 that are not within scope of our analysis, such as Joint Base Lewis-McChord, located in Pierce County.

TOP 10 PUGET SOUND EMPLOYERS[6]					
Rank	Company	Empl.	Rank	Company	Emply.
1	Boeing	+/- 80,000	6	Providence Health & Services	+/- 20,000
2	Joint Base Lewis-McChord	+/- 56,000	7	Wal-Mart	+/- 20,000
3	Microsoft	+/- 42,000	8	Fred Meyer	+/- 15,000
4	University of Washington	+/- 25,000	9	King County	+/- 13,000
5	Amazon	+/- 25,000	10	Wayerhaueser	+/- 10,000

Table 2: Top 10 Employers in Puget Sound, 2018 (King County Department of Assessments, 2018)
This table shows the top ten employers in Puget Sound in 2018, and was taken from the 2018 King County Department of Assessments Commercial Revalue Report.

This comparison reveals some discrepancies in employee counts between the two sources. Comparing Tables 2 and 3, we found that only three companies appear in the top 10 for both sources: Microsoft, Boeing, and the University of Washington. Microsoft's Data Axle employee count is similar, with a difference of approximately 2,000. However, Boeing's employee size in Data Axle is significantly smaller, with about 60,000 fewer employees than the King County Department of Assessments. On the other hand, our estimate from Data Axle shows almost 15,000 more employees for the University of Washington.

Finally, Amazon is reported to have 20,000 fewer employees in Data Axle and does not appear in the top 10 with 2,790 employees. This could be due to limitations of our cleaning method or the exclusion of subsidiaries in the data. For more details on these potential issues, refer to the next section.

Top 10 Employers in King County, 2018	
Company	**Estimate**
MICROSOFT CORP	40,286
UNIVERSITY OF WASHINGTON	39,745
BOEING CO	22,801
SWEDISH HOSPITAL	10,779
STARBUCKS	7,597
COSTCO WHOLESALE	6,998
VIRGINIA MASON MED CTR	6,944

SAFEWAY	6,358
MARRIOTT	5,924
LIBERTY MUTUAL	5,765

Table 3: Top 10 Employers in King County (Data Axle, 2018)
This table shows the top 10 employers in King County in 2018. Upper and lower estimates described in the *Estimating Employee Size* section are reduced to a single column because they contain the same values for these companies, i.e. these companies have reported an exact number for their employee size.

County-Level Results

Business Trends

Before examining the data longitudinally, we used the annual cross-sectional Data Axle data files to explore general business patterns over the years. Our descriptive results show that the total number of businesses in King County had an overall increasing trend with its highest peak in 2016 (Figure 3). Business growth slowed after 2016, followed by a steep decline in 2020, most likely caused by the COVID-19 pandemic. However, we see a rise in the number of businesses after 2020.

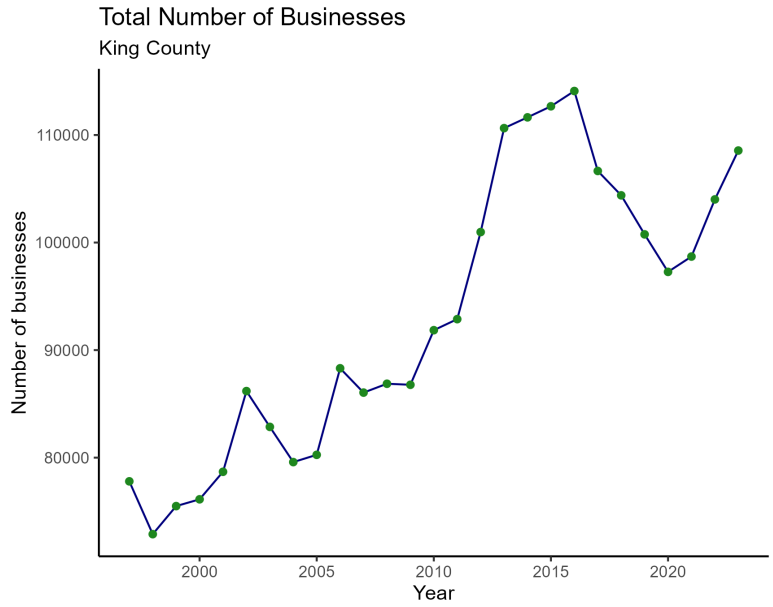


Figure 3: Total Number of Businesses in King County (Data Axle, 1997-2023)
This figure shows the total number of businesses in King County from 1997 to 2023.

We explored the trend over time of total number of businesses with different employee size categories ranging from zero to four, five to nine, 10 to 19, 20 to 49, 50 to 99, 100 to 249, 250 to 499, 500 to 999, 1,000 to 4,999, 5,000 to 9,999, and 10,00 or more (Figure 4). Each size category shows variations in the trend of total businesses over the years. For example, there were sharp declines in the zero to four, 50 to 99, 100 to 249, and 250 to 499 categories. The number of businesses with five to nine employees has steadily increased since 2008. The employee size scale for each business category is different, adding to the fluctuations in these categories over time. However, it is important to note that some of the fluctuations in employee numbers could be due to underreporting in the data.

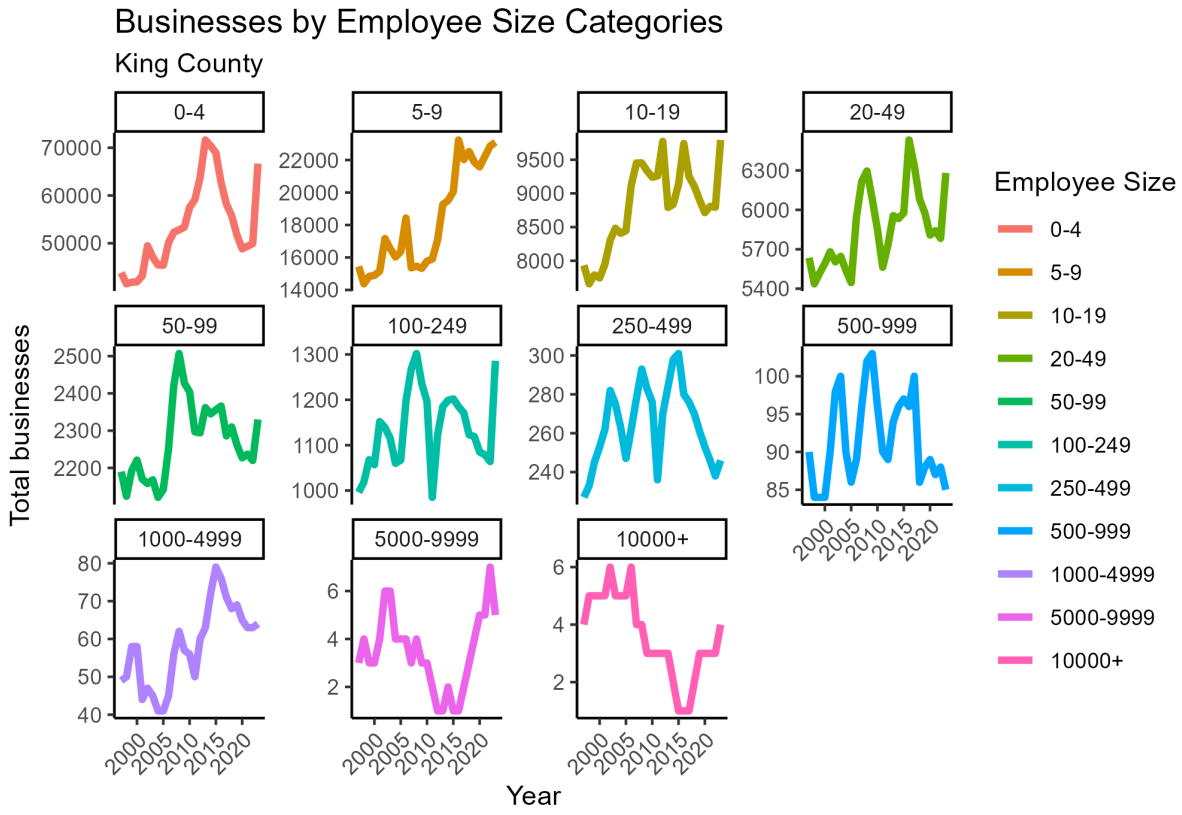


Figure 4: Total Number of Businesses by Employee Size Categories in King County (Data Axle, 1997-2023)
This figure shows the total number of businesses by employee size over time in King County.

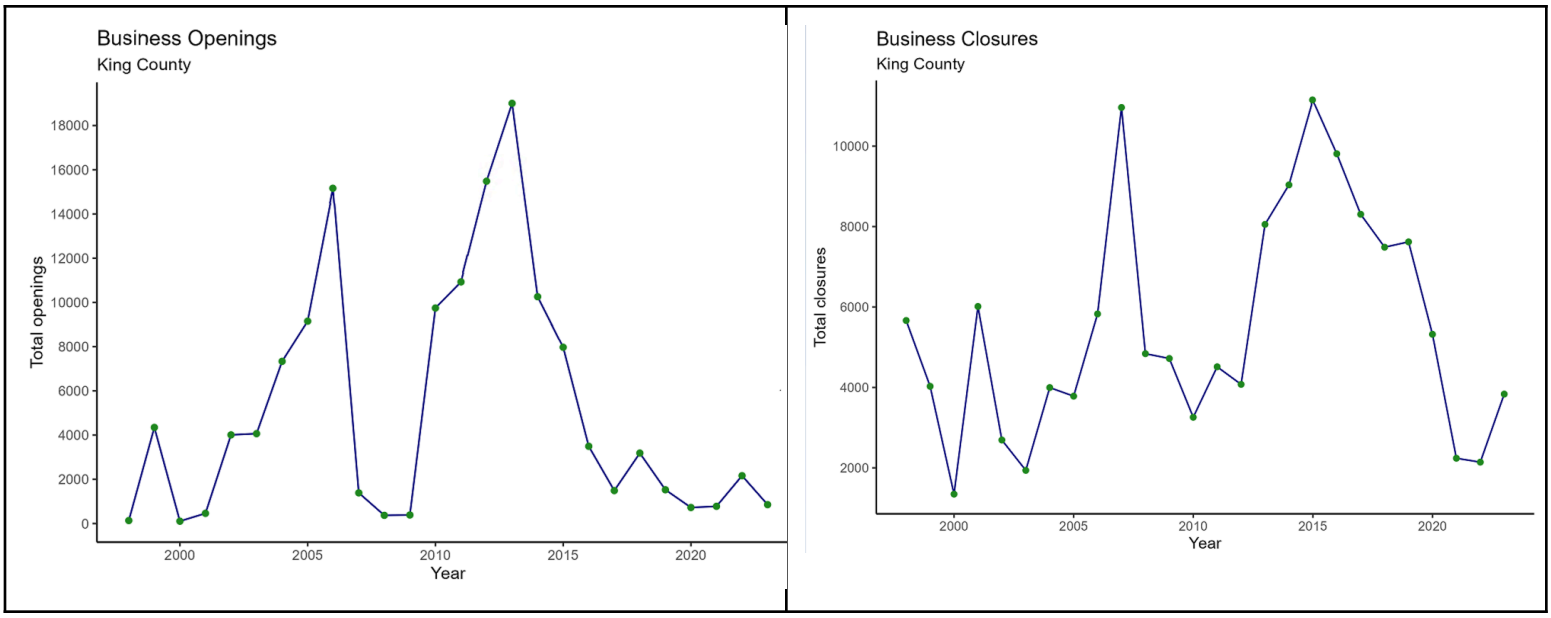


Figure 5: Trend of Businesses Openings and Closures in King County (Data Axle, 1997-2023) This figure shows the total number of businesses opened in King County from 1998 to 2023. (Note: We cannot observe business openings in the first year of data, 1997.)

After converting the cross-sectional data to longitudinal data for each business, we were able to measure business openings and closures. Figure 5 shows the temporal trend of total number of business openings (left) and closures (right) in King County. Business openings spiked around 15,000 to 18,000 between 2006 and 2013. Business openings declined from 2013 to 2017 and have remained fairly steady since. Business closures spiked in 2001, 2007, and 2015. Closures gradually declined from 2015 to 2021 before spiking in 2022. A potential explanation for this spike is the expiration of Seattle's small business eviction moratorium in January 2022.

Top 10 Employers in King County

Table 4 provides the top 10 employers in King County for 2023, with the University of Washington (n = 45,969) leading with almost 20,000 more employees than the next top employer. Amazon does not appear among the top 10 employers in King County we report in Table 4, despite reportedly employing 75,000 people in the area. When we investigated further, we learned that Amazon is divided into

hundreds of small companies in Data Axle. To identify which companies were Amazon, we compiled a list of all companies with “Amazon” and “AWS” in their name before excluding any companies that were unrelated to Amazon. In 2023, there are approximately 30 companies related to Amazon, with a total of 324 companies for all years combined. Each of these smaller companies has between zero and 285 employees, except one location with 1,200 to 2,000 employees as of 2017. These low numbers result in a low employee total for Amazon. Another factor contributing to the low employee total is that 29 out of 324 Amazon companies are not included in calculating the total due to missingness in both employee size numbers and size categories. The total for 2023 is only 3,326, even after adding the employees from all locations.

Top 10 Employers in King County, 2023

Company	Estimate
UNIVERSITY OF WASHINGTON	45,969
SWEDISH PRIMARY CARE	26,268
BOEING CO	22,371
MICROSOFT	20,698
VIRGINIA MASON MED CTR	19,186
EVERGREEN HEALTH	10,302
COSTCO	7,554
STARBUCKS	7,203
SAFEWAY	6,410
LIBERTY MUTUAL	5,768

Table 4: Top 10 Employers in King County (Data Axle, 2023)
This table shows the top 10 employers in King County as calculated in Data Axle for 2023. Upper and lower estimates described in the *Estimating Employee Size* section are reduced to a single column because they contain the same values for these companies, i.e. these companies have reported an exact number for their employee size.

There are a few possible explanations for Amazon’s low employee number. We manually identified which companies in Data Axle were subsidiaries of Amazon, so it is possible that some were missed. As mentioned above, Data Axle’s information gathering processes are not transparent, and it is possible that the reported

number of employees for Amazon in this data is incorrect. It is also possible that Amazon itself incorrectly reported employment numbers. In 2023, thousands of King County tech workers were laid off. Amazon and Microsoft made the biggest changes to their Puget Sound workforces, laying off around 2,300 and 2,900 employees, respectively. These workforce changes could impact the top 10 employers in the Data Axle data. On January 1, 2021, the payroll expense tax went into effect in Seattle. The tax applied to businesses that spent $7 million or more on payroll in 2020. Those companies would pay a tax on the wages of each employee making $150,000 or more. In 2023, the Seattle City Council approved legislation that increased the tax rates to a sliding scale of 0.746% to 2.557%, depending on payroll expenses and employee salaries. The tax applies to the salaries of any employees working in Seattle, even if a company is not headquartered in the city. After the Seattle City Council approved the payroll expense tax, Amazon reportedly offered Seattle-based employees the option to relocate to smaller offices outside the city. It is unclear how many employees relocated outside of King County. Figure 6 shows the number of Amazon employees in King County and Seattle from 2010 to 2023 according to Data Axle.

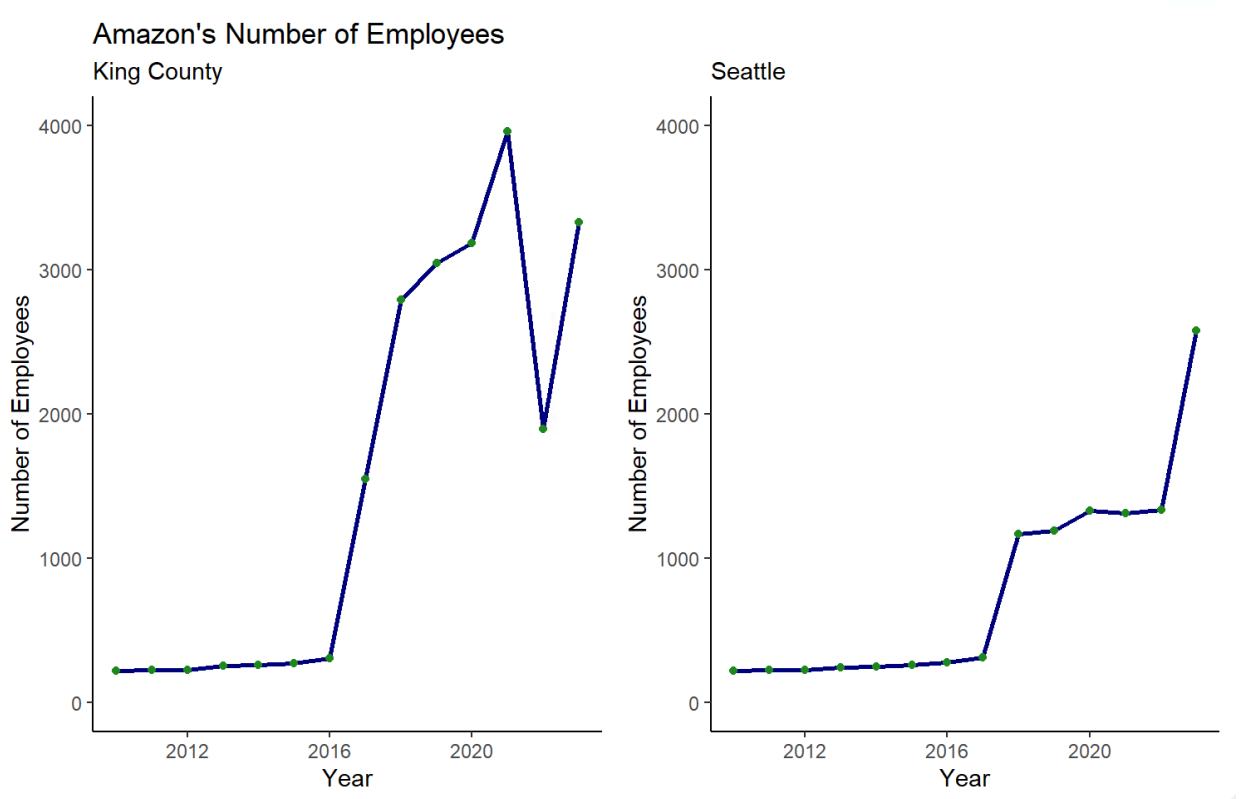


Figure 6: Amazon's Total Number of Employees in King County and Seattle (Data Axle, 2010-2023)
Left: Amazon's total number of employees between 2010 and 2023 in King County as reported in Data Axle and identified by our cleaning method described in *Counting Large Companies*.
Right: Amazon's total number of employees between 2010 and 2023 in the Seattle jurisdiction as reported in Data Axle and identified by our cleaning method described in *Counting Large Companies*.

Area-Level Results

Business by Size and Area

We analyzed changes in business size over time in King County's HRAs. Figure 7 shows the distribution of businesses by size category across King County's HRAs in 2023. Small businesses are predominantly observed in large cities and growing metropolitans such as Seattle, Bellevue, Kirkland, Shoreline, Kent, Renton, and Auburn. As the employee size categories increase from zero to four towards 20 to 49, the total number of businesses decreases, particularly in Federal Way, Auburn, and Southeast County.

Figure 8 shows the temporal changes in the number of businesses with 10 to 19 employees in King County HRAs between 2010 and 2023. The concentration of businesses remains relatively stable over time, with the majority concentrated in larger cities. However, we observe some signs of closures in 2020, potentially caused by COVID-19, with signs of recovery in 2023. Similar examples can be found for other employee size categories in the Appendix.

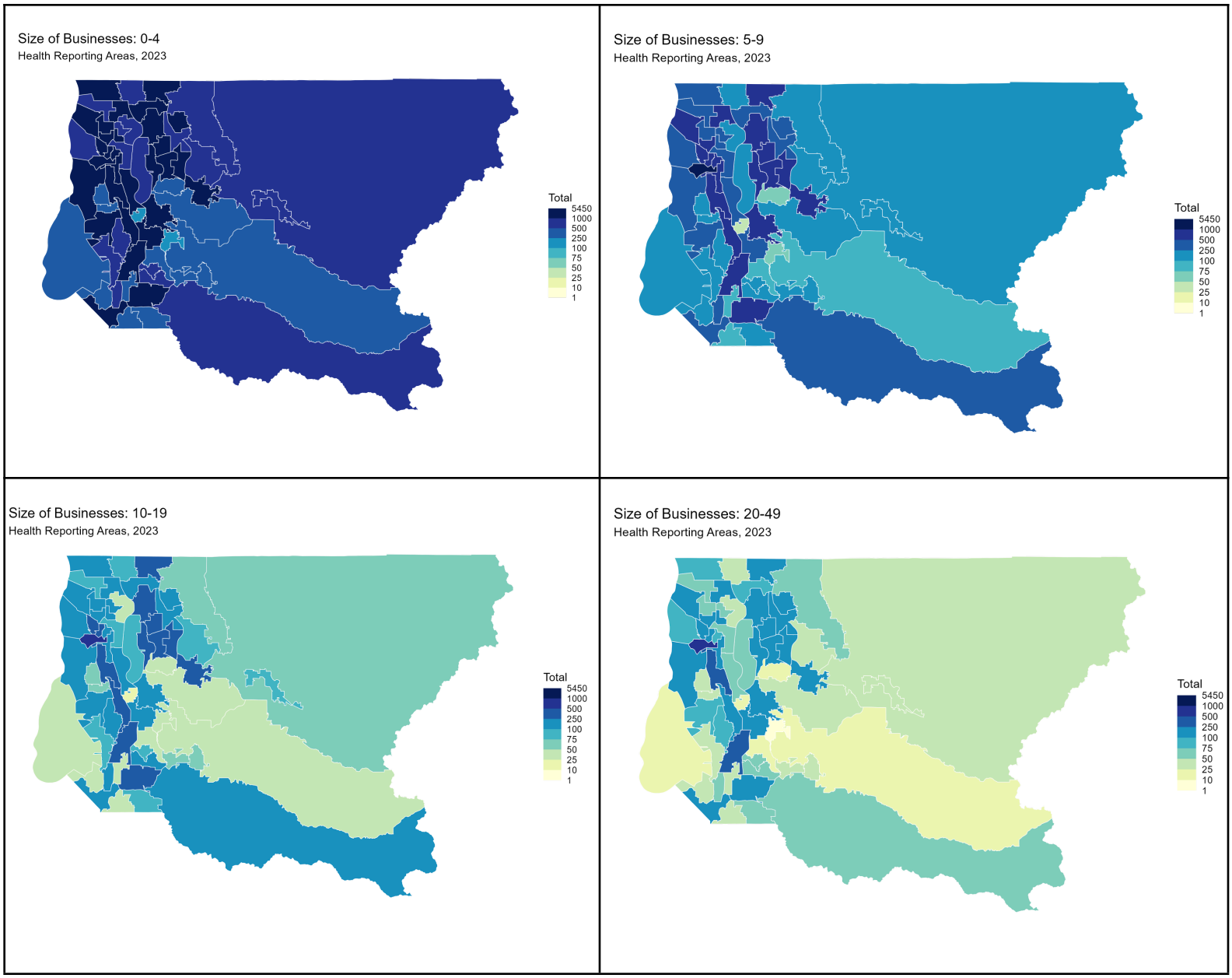


Figure 7: Total Number of Businesses by Employee Size Categories in King County HRAs. (Data Axle, 2023) This figure shows the total number of businesses for employee size categories 0-4 (top left), 5-9 (top right), 10-19 (bottom left), and 20-49 (bottom right) in King County HRAs for the year 2023.

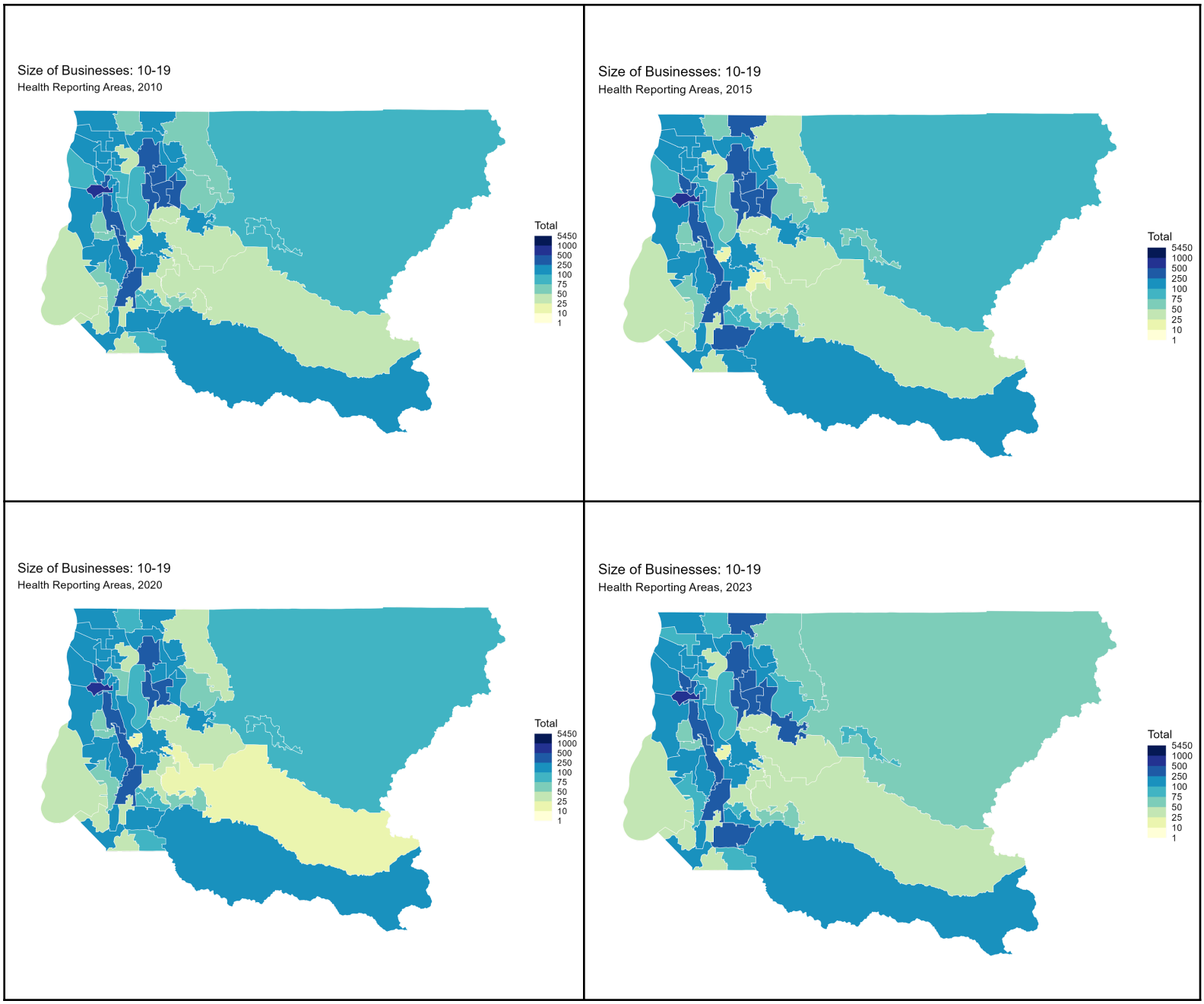


Figure 8: Total Number of Businesses by Employee Size Category 10-19 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)
This figure shows the total number of businesses for the 10-19 employee size category in King County HRAs for 2010 (top left), 2015 (top right), 2020 (bottom left), and 2023 (bottom right).

Industries of Interest

Accessible and affordable pharmacies, grocery stores, and child care providers are essential components of a healthy community. Analyzing changes in these establishments across King County offers insight that can help inform policy decisions to address pharmacy, food, and child care deserts. Third places facilitate socialization and connection that are foundational to community building and are therefore equally important to wellbeing. Limited access to these supportive environments is associated with poorer mental and physical health outcomes related to loneliness, alienation, and inactivity (Finlay et al., 2019). We used Data Axle to examine trends in each of these industries on the county and sub-county level.

Pharmacies

In recent years, a wave of pharmacy closures in King County has left communities underserved and struggling to fill prescriptions. Pharmacies are struggling to stay afloat amid competition from online retailers and reduced profit margins from the sale of prescription drugs. Many blame the latter on pharmacy benefit managers (PBMs), who are responsible for brokering deals between pharmacies and drug manufacturers. PBMs determine the list of drugs covered under insurance plans and influence which pharmacies patients can use. They offer contracts to pharmacies that barely reimburse the wholesale cost of prescriptions. If pharmacies reject these contracts, they risk losing a large portion of their customer base. In late 2020, Rite Aid acquired beloved local pharmacy chain Bartell Drugs for $95 million. Within two years of the acquisition, Bartell locations were closing across King County, starting with a location in Chinatown. Since the acquisition, more than 20 Bartells in the Seattle area have shut their doors. In 2023, two of every three Washington pharmacies that closed were in King County. The Seattle area now has no 24-hour pharmacies. A pharmacy desert is a community that is both low-income and has low geographical access to pharmacies (Wittenauer et al., 2022). Before the recent string of closures, King County had 153,711 adults living in pharmacy deserts, and that number has almost certainly increased.

Using Data Axle, we found that the total number of pharmacies in King County increased 83.2% from 220 in 1997 to 403 in 2023 (Figure 9). Most HRAs had at least

one pharmacy in 2023, with the Downtown, Belltown, and First Hill HRA having the most pharmacies (n = 18). There is no data available for: 1) Skyway, 2) Lakeland, Algona, Pacific, and Milton, and 3) East Highlands, Hobart, and Greater Maple Valley HRAs. Although the Downtown, Belltown, and First Hill HRA had the most pharmacies in 2023, it also saw the greatest net loss in pharmacies from 2022 to 2023 (Figure 10). Eight out of 61 HRAs have two or fewer pharmacies.

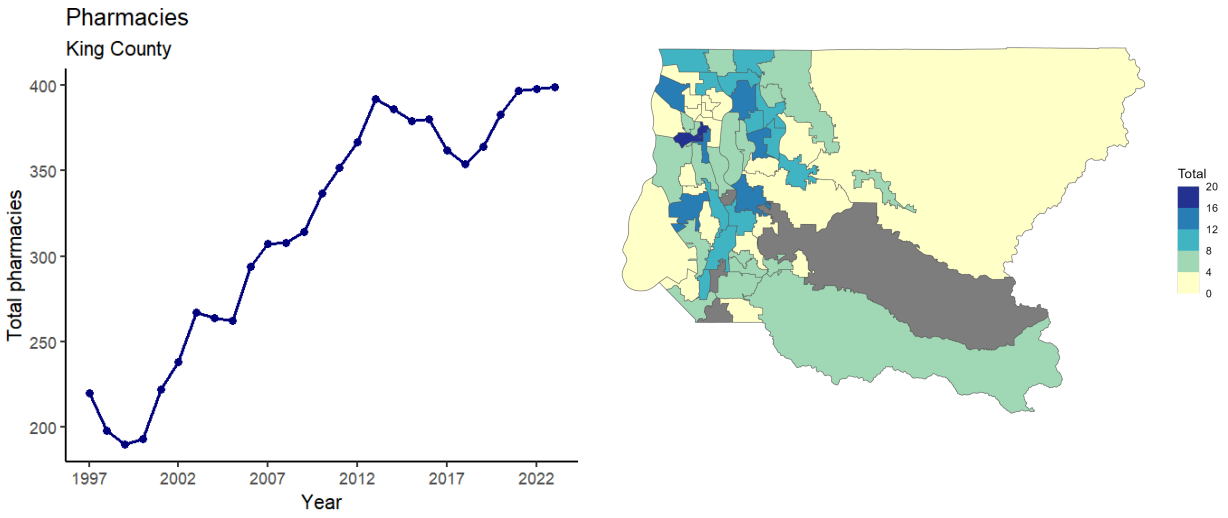


Figure 9: Pharmacies in King County (Data Axle, 1997-2023).
Left: Total pharmacies between 1997 and 2023 in King County.
Right: Total pharmacies in King County by HRA in 2023. Interactive map available here.

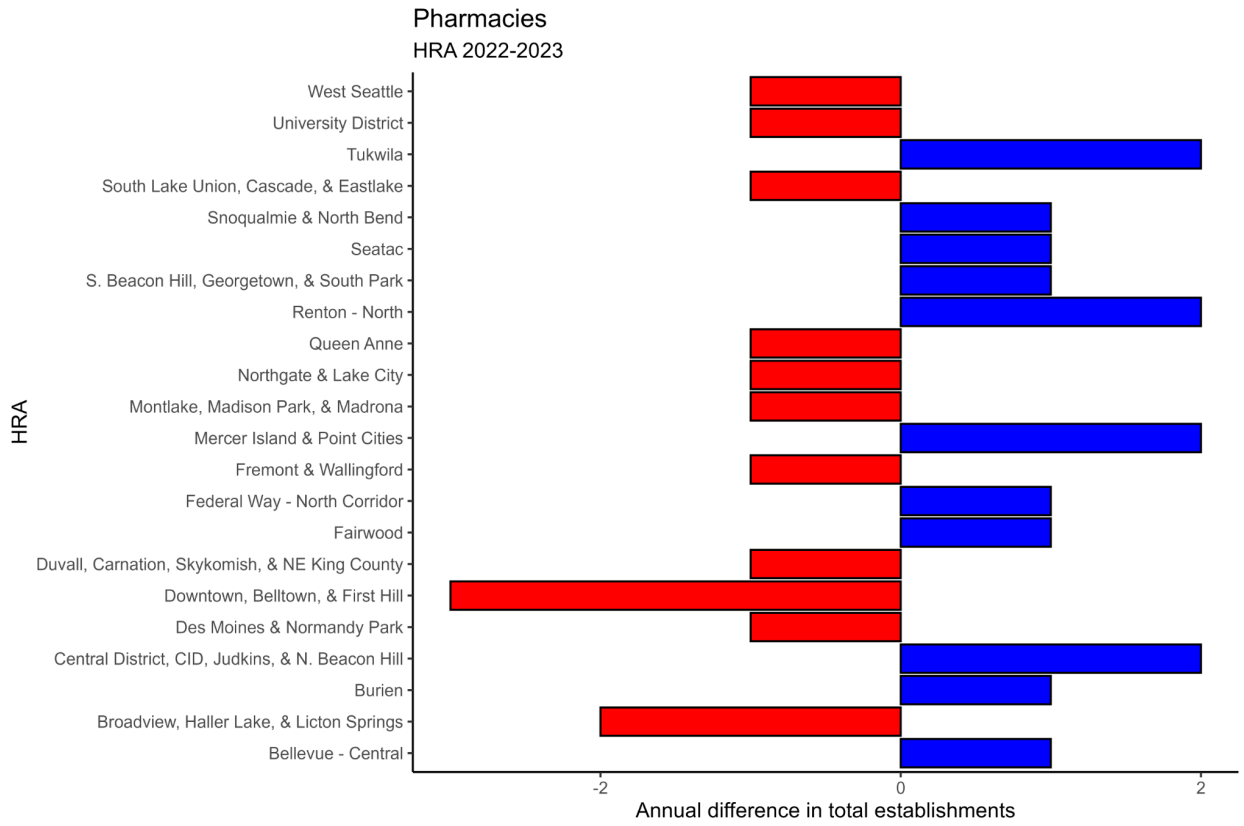


Figure 10: Changes in Pharmacies in King County (Data Axle, 2022-2023).
Annual difference in total pharmacies in King County by HRA from 2022 to 2023.

Grocery Stores

The closure of even one community supermarket can be a significant setback, especially for residents who walk or rely on public transportation to buy groceries. In 2020, the only full-service grocery store in Downtown Seattle closed. In 2021, QFC closed two locations that it could no longer afford to operate, one in Capitol Hill and one in Wedgwood. PCC Community Market opened and closed a Downtown location within two years. The company says its operating costs, which include leases, have increased twice as fast as labor costs since 2018. In October 2022, Viet-Wah Supermarket in CID's Little Saigon neighborhood closed after 40 years in business. The store was founded by a refugee with a mission to help other immigrants access food from their home countries. The owner of the building sold it to developers, citing high crime rates and rising land value and rents. He stated that many business owners from the area are relocating south toward Beacon Hill.

The closure of businesses like Viet-Wah leaves a hole in communities that cannot be easily filled. These establishments serve as cultural institutions that preserve the language, food, and traditions of people from various backgrounds. The supermarket's former location was sold to a developer who planned to replace the space with two seven-story mixed-use buildings. Đức Trần, the founder of Viet-Wah, said of the displacement in CID, "I have very little hope in this community because property is so expensive. Investors invest where the money is. They want to make money. Those things make it difficult to maintain in Little Saigon."

The future of most of King County's grocery stores is currently uncertain. In October 2022, a proposed merger was announced between the country's biggest supermarket chains, Kroger and Albertsons. Kroger, which owns Fred Meyer and QFC, and Albertsons, which owns Safeway, have more than 300 locations in Washington, and approximately two-thirds are in the Seattle area. The chains plan to sell hundreds of stores, 124 of which are in Washington, to C&S Wholesale Grocers to obtain federal approval for the merger. The company claims it is committed to keeping all locations open, but consumers and regulators are skeptical. C&S currently only operates 23 supermarkets, and many worry that it lacks the experience necessary for such a large expansion. The State of Washington and the Federal Trade Commission sued to block the merger in early 2024, stating that the deal would limit shopping options for consumers and eliminate competition that keeps grocery prices low. As many in King County are struggling to contend with rising food prices, the consequences of such a merger could be dire.

Data Axle shows that the number of grocery stores in King County has fluctuated over time. Specifically, there was an increase in grocery stores from 827 in 2001 to 963 in 2003 (Figure 11). The county lost 186, or 20%, of its grocery stores gradually between 2013 and 2021. Overall, the total number of grocery stores only increased by 0.025% from 1997 to 2023. In 2023, most grocery stores were located in the following HRAs: 1) Downtown, Belltown, and First Hill (n = 38), 2) North Renton (n = 36), and 3) the Central District or West Kent HRAs (n = 32). Notably, Central District also saw the largest net loss (n = -6) in grocery stores in 2023 (Figure 12). The HRAs with less than five grocery stores include Vashon; Fairwood; South Bellevue; Bear

Creek and Greater Sammamish; Newcastle and Four Creeks; and East Highlands, Hobart, and Greater Maple Valley.

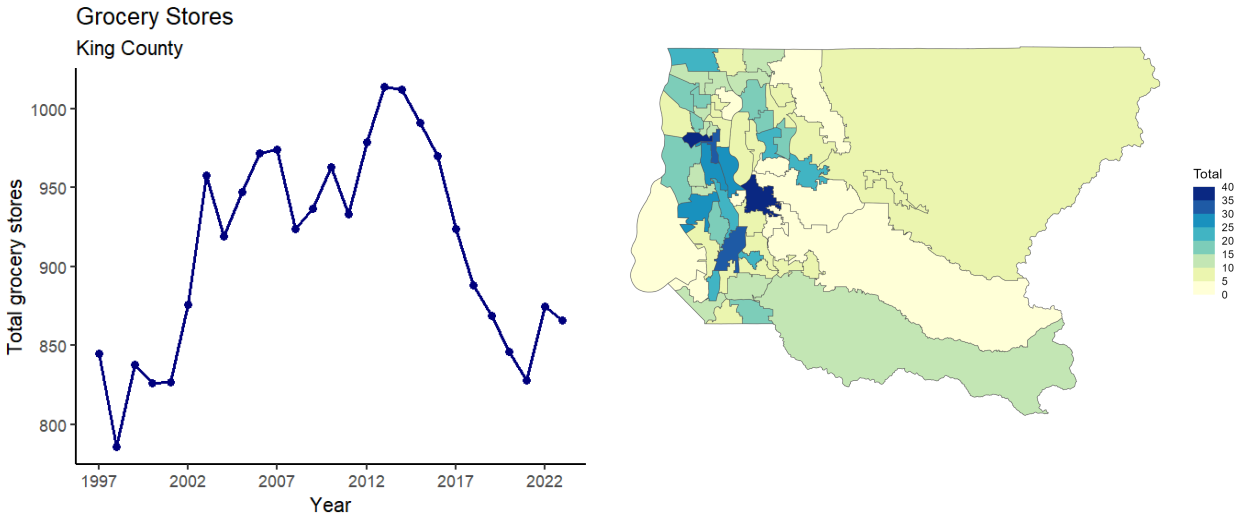


Figure 11: Grocery Stores in King County (Data Axle, 1997-2023).
Left: Total grocery stores between 1997 and 2023 in King County.
Right: Total grocery stores in King County by HRA in 2023. Interactive map available here.

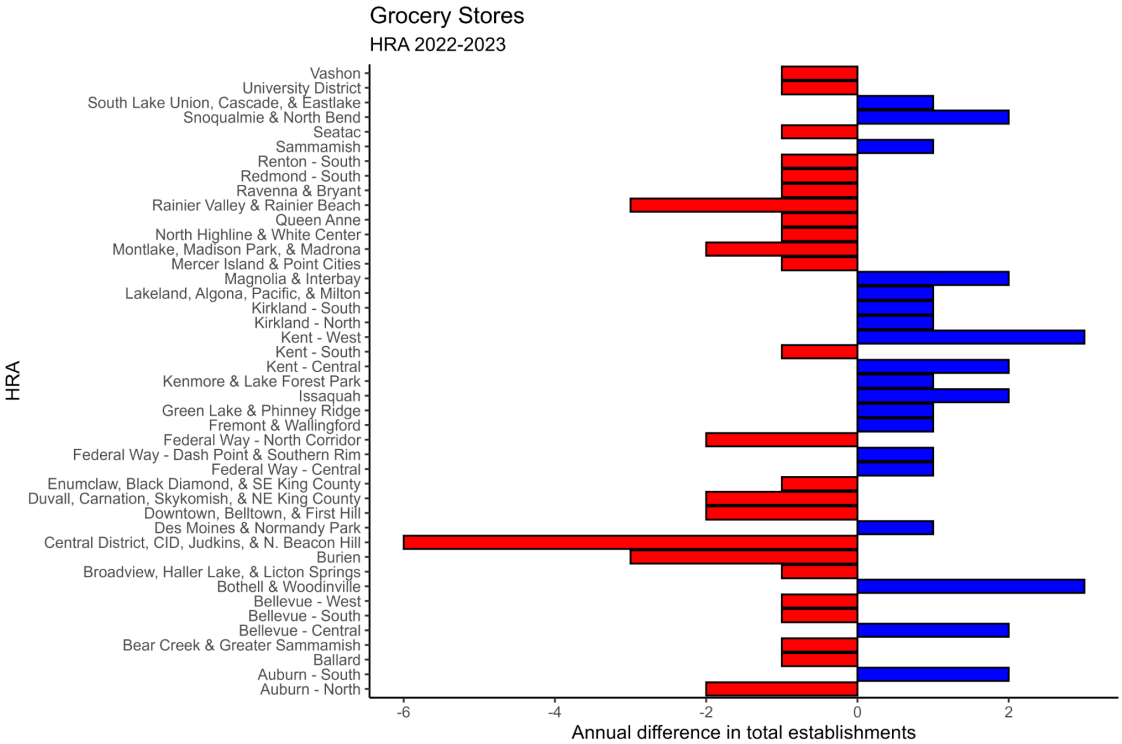


Figure 12: Changes in Grocery Stores in King County (Data Axle, 2022-2023).
Annual difference in total grocery stores in King County by HRA from 2022 to 2023.

Child Care

Rising costs have significantly impacted the child care industry in King County in recent years. Parents searching for licensed child care often encounter year-long wait lists and increasingly expensive tuition. In 2023, the median monthly cost for child care centers in King County was $2,058 for infants, $1,800 for toddlers, $1,556 for preschoolers, and $433 for school-age children (Child Care Aware, 2023). Child care providers must price their services at a rate that is affordable to the community to stay in business, but that price often does not reflect the actual cost of care. State-sponsored child care subsidies are calculated based on tuition prices, so providers that cater to lower-income communities receive less financial reimbursement. As commercial rent prices continue to increase, child care employees suffer the financial consequences. The average hourly rate for child care workers in King County is $20.41. Child care is a high-stress environment, and providers struggle to retain employees with hourly rates that do not cover the cost of living in the county. The Prenatal to Five Fiscal Strategies report determined that to provide a living wage to employees, child care facilities would have to charge $40,000 a year for infants, $30,000 for toddlers, $25,000 for preschoolers, and $13,000 for school-age children. Licensed facilities are required to maintain specific employee-to-child ratios based on the age of the children, and high employee turnover has put many out of business.

In 2023, King County had 641 child care services, which is only a 0.047% increase since 1997 (Figure 13). The total number of child care services in King County peaked in 2013 at 916 and, despite sustained population growth in the region, has consistently declined since. In 2023, child care services were mostly concentrated in Northeast Bellevue, Central Bellevue, Rainier Valley and Rainier Beach, and South Kirkland HRAs. Other HRAs like Vashon; North Highline and White Center; Skyway; Tukwila; Lakeland, Algona, Pacific, and Milton; and East Highlands, Hobart, and Greater Maple Valley only had one to three child care services in 2023. There were net losses in child care services in 33 of 61 HRAs between 2022 and 2023 (Figure 14).

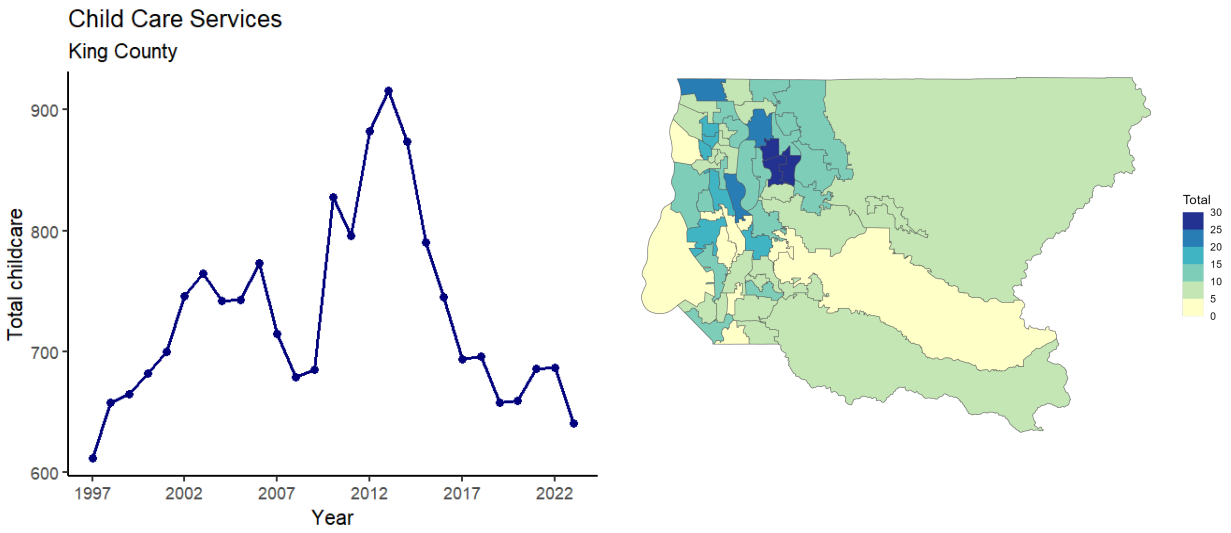


Figure 13: Child Care Services in King County (Data Axle, 1997-2023).
Left: Total child care services between 1997 and 2023 in King County.
Right: Total child care services in King County by HRA in 2023. [Interactive map available here](#).

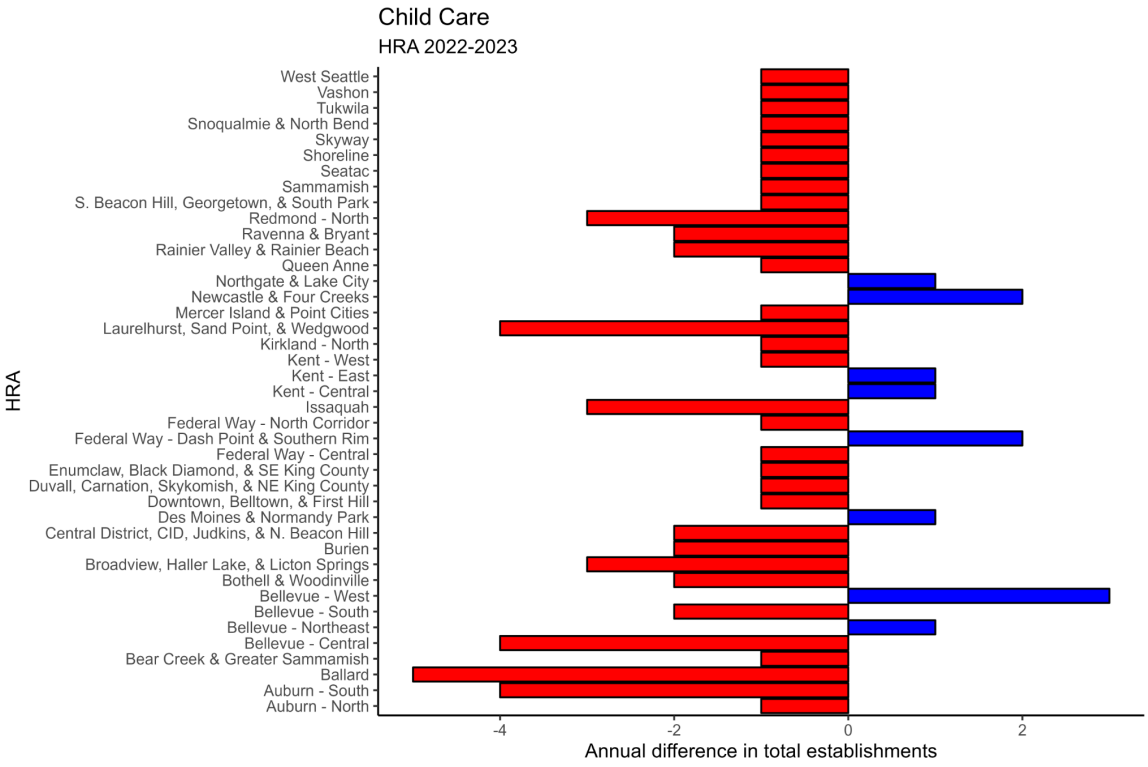


Figure 14: Changes in Child Care Services in King County (Data Axle, 2022-2023).
Annual difference in total child care services in King County by HRA from 2022 to 2023.

Third Places

Third places are sites that enable social interaction, sense of community, and belonging outside of home and the workplace (Finlay et al., 2019). Examples of third places include coffee shops, libraries, bars, bowling alleys, parks, and places of worship. The presence of third places in a community is associated with better quality of life and more positive health outcomes. These establishments can be especially crucial for historically marginalized groups, like LGBTQ+ or immigrant communities, as sources of support, protection, and care. By providing a venue for organizing and movement building, third places facilitate political and civic engagement and create thriving communities.

Communities have experienced the loss of many irreplaceable cultural institutions in King County due to gentrification. Re-bar was a revered nightclub and a safe space for the LGBTQ+ community in the Denny Triangle neighborhood since its opening in the early '90s. In the mid-2010s, the blocks surrounding the club were rezoned to allow buildings up to 40 stories. Shortly after, Amazon built its second office building just around the corner from Re-bar. The neighborhood's new residents were less tolerant of the club's noise and clientele, and the area saw a rise in hate crimes. The bar's rent reflected the changing landscape of Denny Triangle, increasing from $3,500 to $10,000 per month. Re-bar closed permanently in 2020, and Seattle lost what many called the last bastion of queer community in the city.

Bush Garden has been a fixture in CID since the 1950s. The restaurant was a vital resource for Japanese-Americans in Seattle who were returning to the city and re-establishing their community after Japanese incarceration during WWII. Bush Garden was the first establishment to introduce karaoke in the United States after it gained popularity in Japan in the 1970s (Vanishing Seattle, 2021). In 2016, Bush Garden's building was sold to developer Vibrant Cities, and the company planned to demolish the building to construct a 17-story apartment tower with market-rate rents. The restaurant's lease ended in 2021. Bush Garden plans to reopen in Uncle Bob's Place, an affordable housing development named after CID advocate and Bush Garden regular Robert Santos.

Third Places: Services

Service establishments include barber shops, beauty salons, nail salons, coin-operated laundries and drycleaners, individual and family services, child day care services, and other personal care services. The total number of services in King County has increased 60.18% overall from 4,540 in 1997 to 7,272 in 2023 (Figure 15). There were fluctuations in this period, with a 15.49% drop in service establishments between 2016 and 2020. Services increased significantly across most HRAs between 2022 and 2023, with over 100 new establishments in Central District, CID, Judkins, and North Beacon Hill, and Downtown, Belltown, and First Hill (Figure 16).

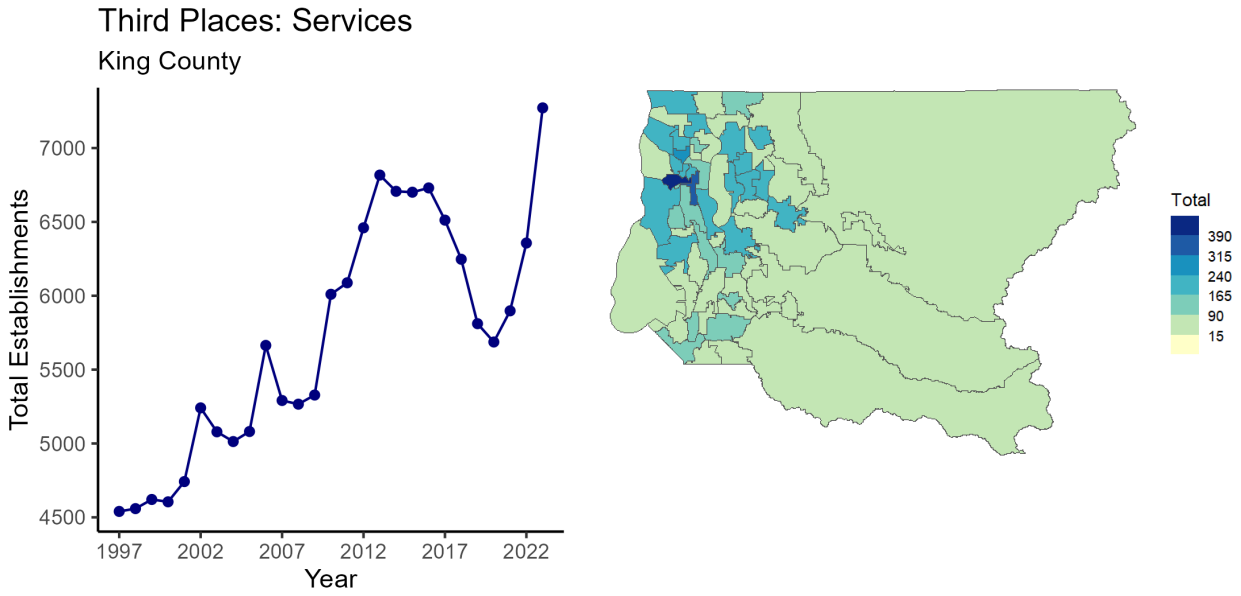


Figure 15: Spatial and Temporal Trends in Service-Related Third Places in King County. (Data Axle, 1997-2023)
Left: Total services between 1997 and 2023 in King County.
Right: Total services in King County by HRA in 2023. Interactive map available here.

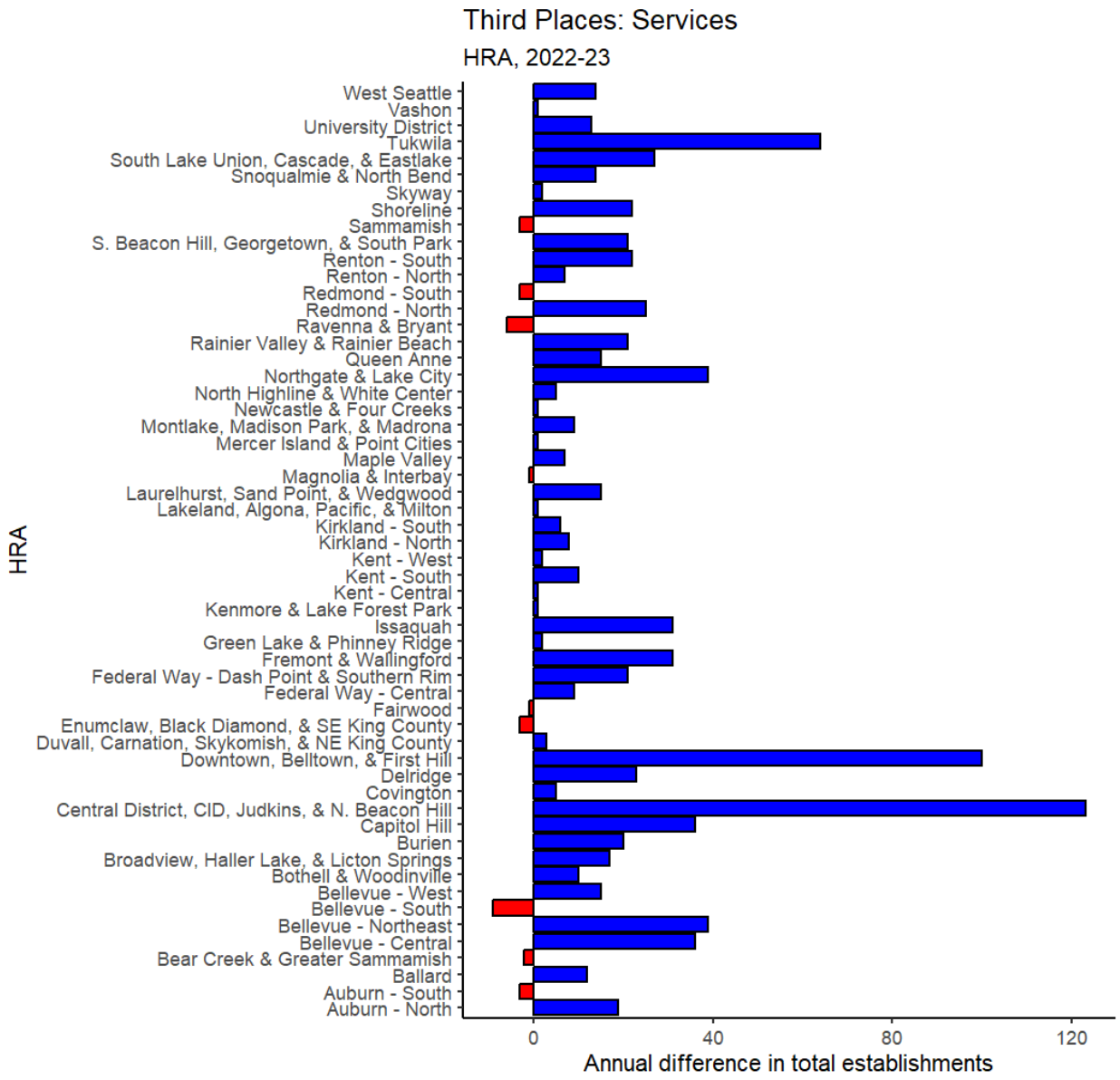


Figure 16: Changes in Service-Related Third Places in King County (Data Axle, 2022-2023).
Annual difference in total services in King County by HRA from 2022 to 2023.

Third Places: Retail

The list of establishments included in the retail category are convenience stores; gasoline stations with convenience stores; record and prerecorded tape stores; hobby, toy, and game stores; sewing, needlework, and piece goods stores; musical instrument and supplies stores; book stores; used merchandise stores; art dealers; tobacco stores; and video tape and disc rental. Retail establishments have dropped significantly from 5,020 in 1997 to 4,160 in 2020, a 17.13% decrease (Figure 17). However, retail establishments saw an increase beginning in 2010 and peaking in 2014, followed by a notable decrease, with the lowest total retail establishments observed in 2021. Between 2022 and 2023, Bellevue – West; Downtown, Belltown, and First Hill; and SLU, Cascade and Eastlake HRAs saw the most retail loss (Figure 18).

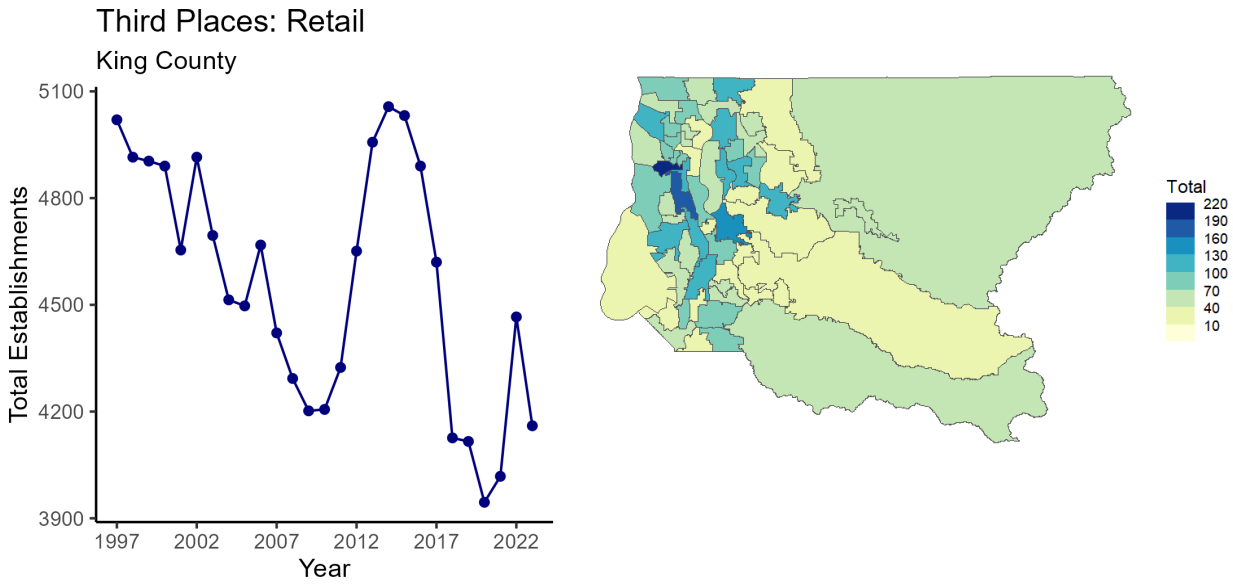


Figure 17: Spatial and Temporal Trends in Retail-Related Third Places in King County. (Data Axle, 1997-2023)
Left: Total retail between 1997 and 2023 in King County.
Right: Total retail in King County by HRA in 2023. Interactive map available here.

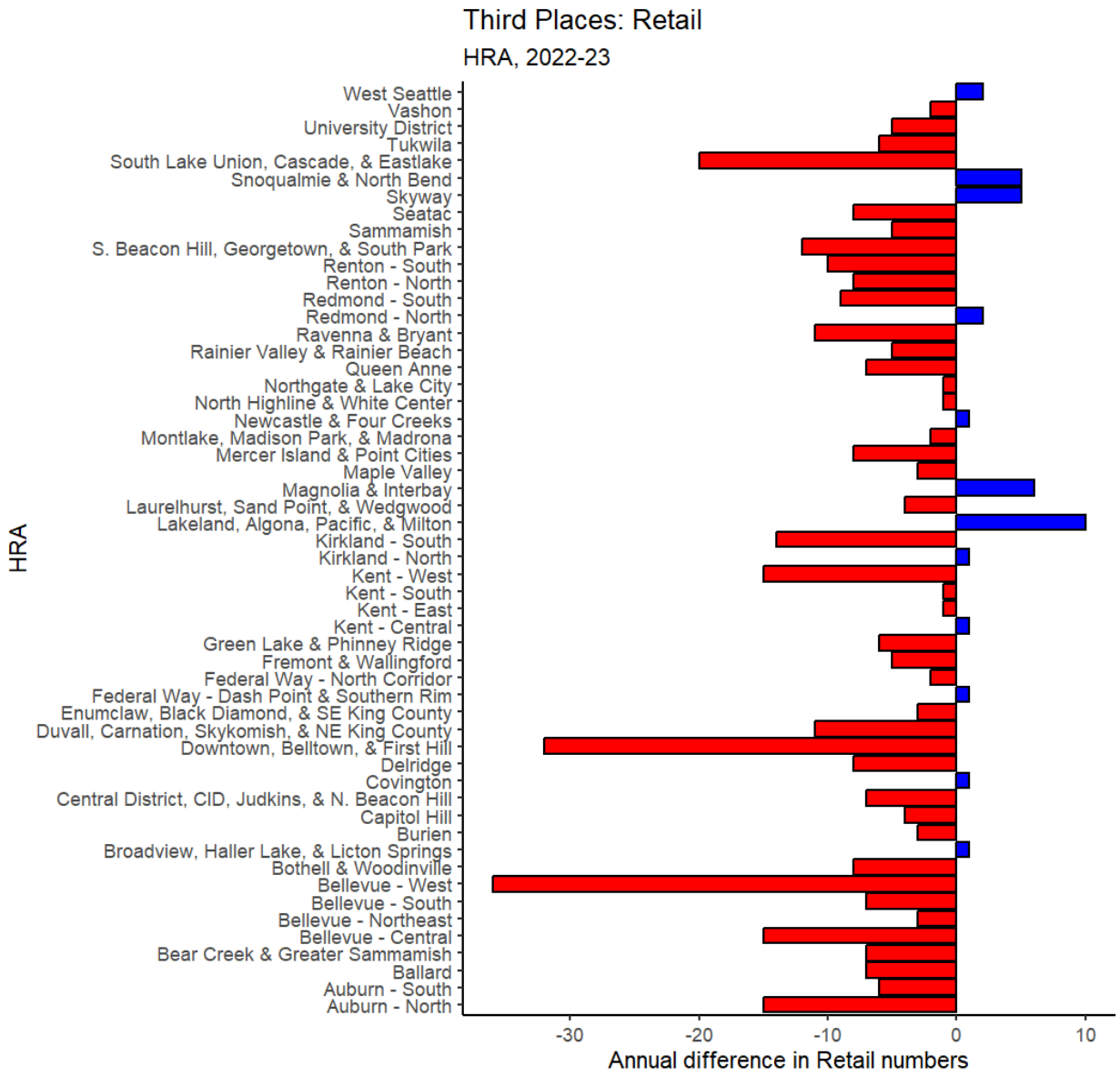


Figure 18: Changes in Retail-Related Third Places in King County (Data Axle, 2022-2023). Annual difference in total retail establishments in King County by HRA from 2022 to 2023.

Third Places: Eating and Drinking

Establishments included in the eating and drinking category are breweries, wineries, distilleries, drinking places, restaurants and other eating places, mobile food services, and snack and nonalcoholic beverage bars. From 1997 to 2023, the total number of eating and drinking establishments increased by 58.67% (Figure 19). While there is an overall positive trend, there was a dip between 2019 and 2021, which could be attributed to the COVID-19 pandemic. Across HRAs, there was a decrease in eating and drinking establishments between 2022 and 2023, especially in Central District, CID, Judkins, and North Beacon Hill (Figure 20).

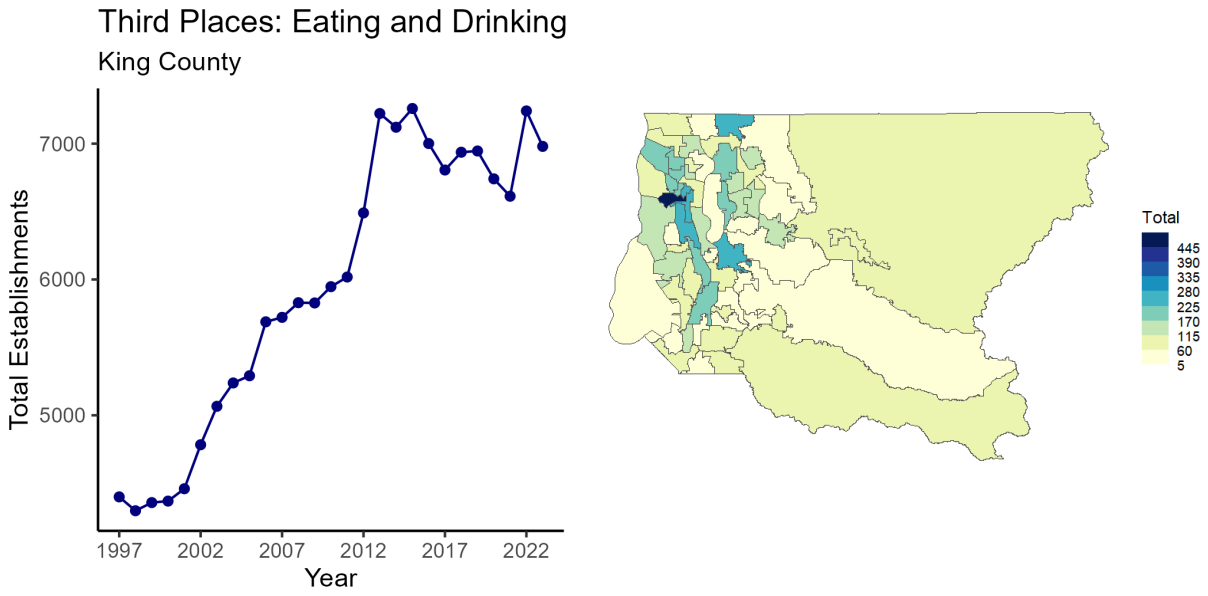


Figure 19: Spatial and Temporal Trends in Eating and Drinking-Related Third Places in King County. (Data Axle, 1997-2023)
Left: Total eating and drinking between 1997 and 2023 in King County.
Right: Total eating and drinking in King County by HRA in 2023. Interactive map available here.

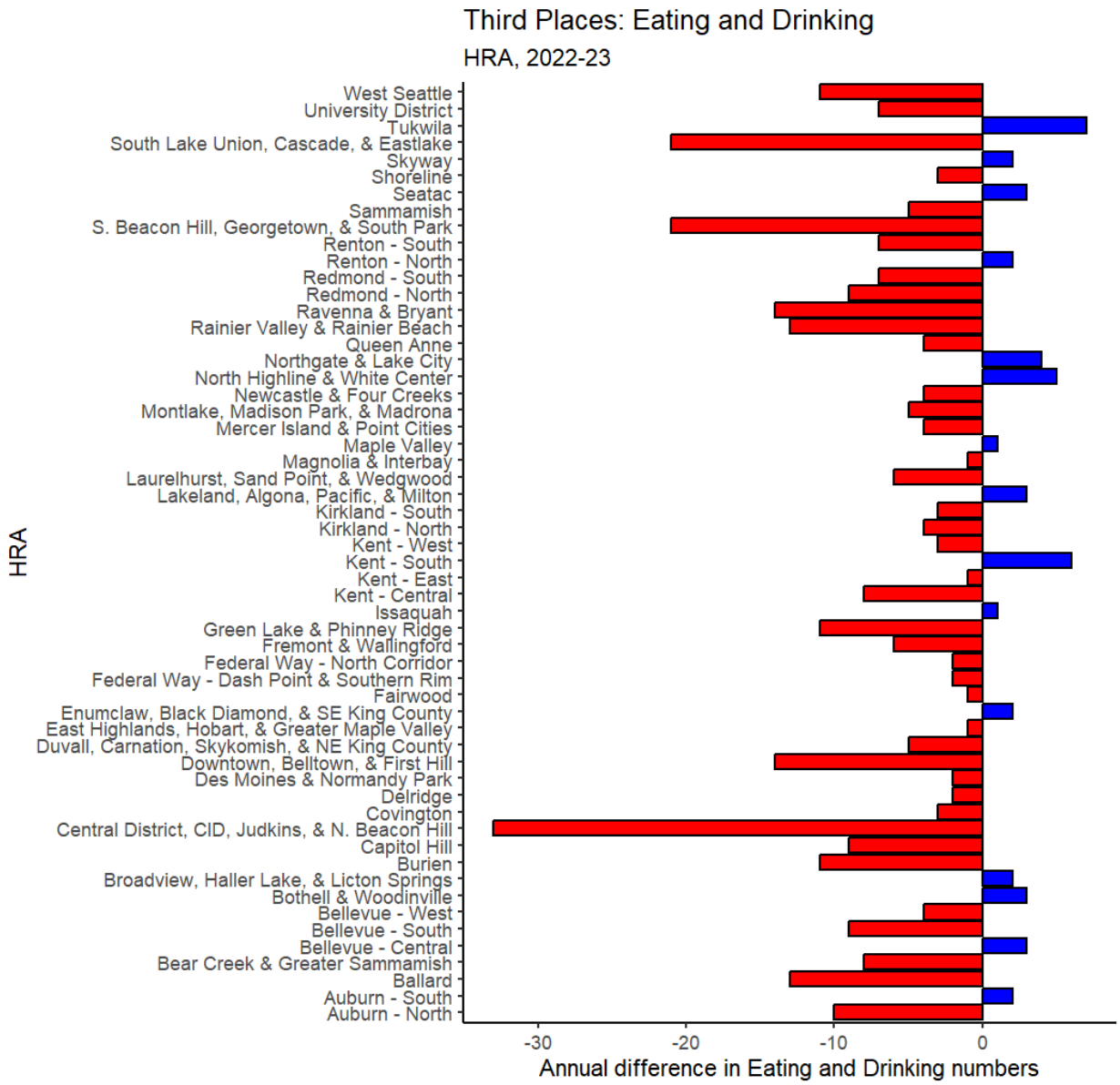


Figure 20: Changes in Eating and Drinking-Related Third Places in King County (Data Axle, 2022-2023).
Annual difference in total eating and drinking establishments in King County by HRA from 2022 to 2023.

Third Places: Entertainment

Entertainment establishments include motion picture theaters, fine art schools, sports and recreation instruction, language schools, all other schools and instruction, exam preparation and tutoring, theater companies and dinner theaters,

dance companies, musical groups and artists, other performing arts companies, spectator sports, museums, zoos and botanical gardens, amusement and theme parks, amusement arcades, fitness and recreational sports centers, bowling centers, and civic and social organizations. Entertainment is another third place category displaying a positive trend, with a 63.81% increase in total establishments from 1997 to 2023 (Figure 21). However, there was a 4.12% decline between 2019 and 2021, with another dip in 2023. Between 2022 and 2023, we saw the most loss in entertainment establishments in the Central District, CID, Judkins, and North Beacon Hill, South Lake Union, Cascade and Eastlake, and Capitol Hill HRAs. Entertainment establishments are most concentrated in the Downtown, Belltown, and First Hill HRA (Figure 22).

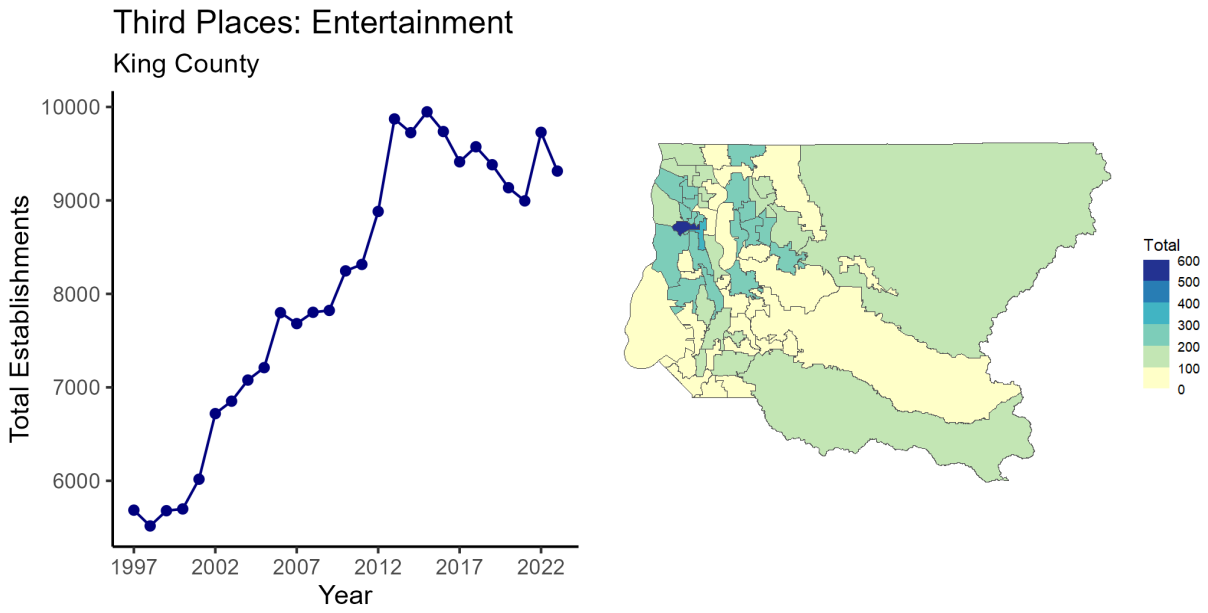


Figure 21: Spatial and Temporal Trends in Entertainment-Related Third Places in King County. (Data Axle, 1997-2023)
Left: Total entertainment establishments between 1997 and 2023 in King County.
Right: Total entertainment establishments in King County by HRA in 2023. Interactive map available here.

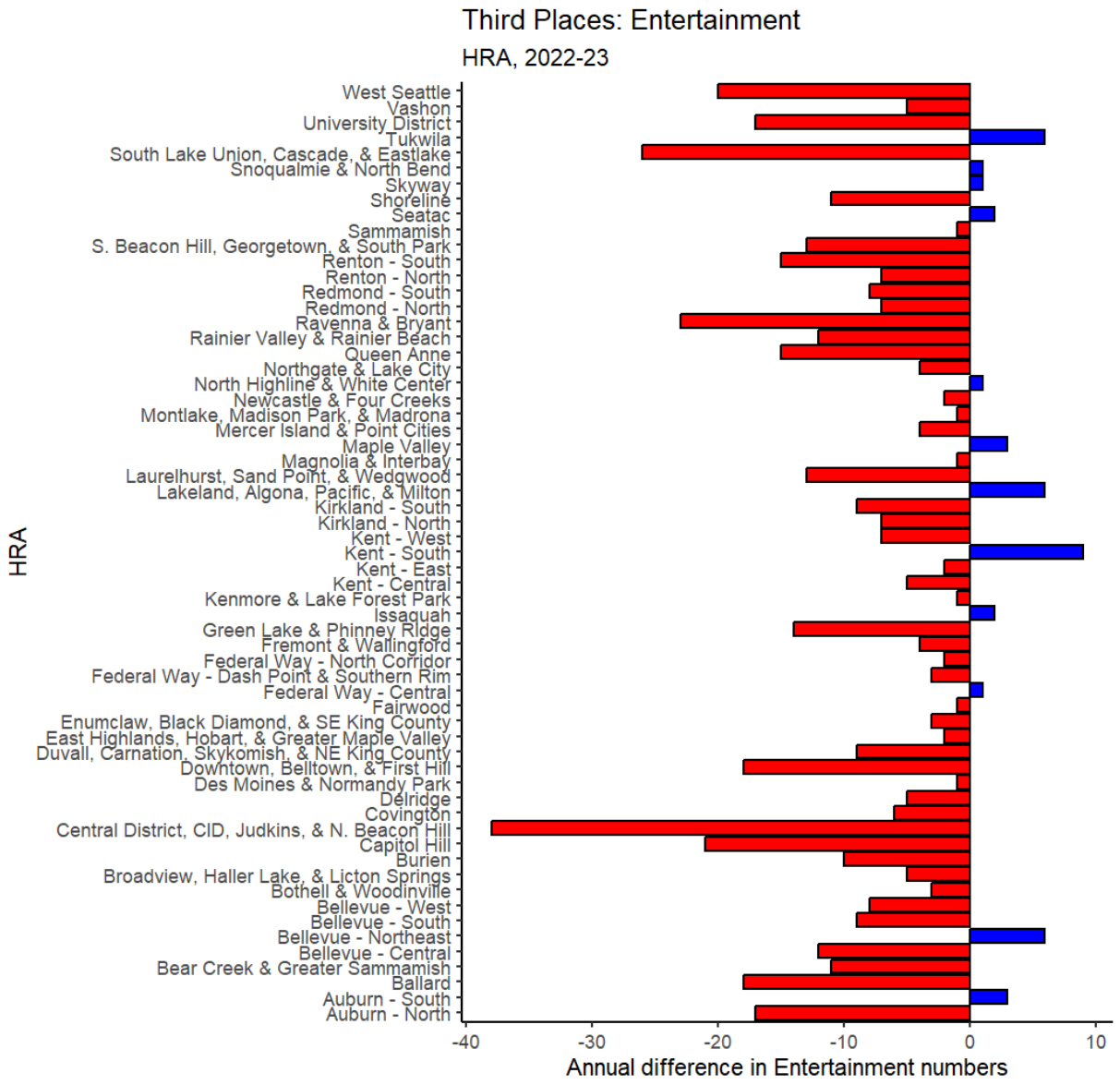


Figure 22: Entertainment in King County.
Annual difference in total entertainment establishments in King County by HRA from 2022 to 2023.

Unincorporated King County

Unincorporated King County consists of areas that are outside the jurisdiction of incorporated cities,where King County is the local government providing services such as road maintenance, law enforcement, and permitting. White Center and

Skyway are communities in unincorporated King County that are of interest to our stakeholders due to significant population growth in recent years.

The biggest employer in unincorporated King County is Snoqualmie Gaming Commission (n = 2,000) with four times as many employees as the next largest employer (Table 5). Seven of the biggest employers have an employee size between 200 and 265, with the remaining three employers between 360 and 2,000. Three of the top employers are involved in industrial and engineering services while two companies are in the retail industry.

Top 10 Employers in Unincorporated King County, 2023

Company	Estimate
SNOQUALMIE GAMING COMMISSION	2,000
WORLD LANGUAGE SVC LLC	500
NORTHSTAR CG LP	364
MECHATRONICS INC	262
SAFEWAY	240
WASTE MANAGEMENT-RECYCLE	230
DELTA MARINE INDUSTRIES INC	220
SAN MAR CORP	200
ALTUS MENSWEAR INC	200
US OIL & REFINING CO	200

Table 5: Top 10 Employers in Unincorporated King County (Data Axle, 2023)
This table shows the top 10 employers in unincorporated King County in 2023. Upper and lower estimates described in the *Estimating Employee Size* section are reduced to a single column because they contain the same values for these companies, i.e. these companies have reported an exact number for their employee size.

White Center

White Center is a census-designated place in King County located at the southwest edge of Seattle. During WWII, people flocked to White Center to work for Boeing and other war-time industries. The federal government funded the construction of 569 temporary housing units for war workers in 1943. In the ‘70s and ‘80s, White Center became home to immigrants from Vietnam, Cambodia, and Central America. In the ‘90s, King County Housing Authority secured a $25 million grant to

renovate the WWII era housing for low-income residents and immigrants. Other large investments by the Annie E. Casey Foundation, the Bill and Melinda Gates Foundation, Starbucks, and the White Center Community Development Association have contributed to the revitalization of the community. White Center has a population of 15,479. It is a diverse community, with people of color making up 65% of the population. The poverty rate is 16.4% compared to about 10% in Seattle. Home prices in the area are affordable compared to incorporated King County, but the median sales price has almost tripled since 2012. The neighborhood was identified as being at high risk for displacement by the Puget Sound Regional Council. In our dataset, the HRA that encapsulated our area of interest was the North Highline and White Center HRA.

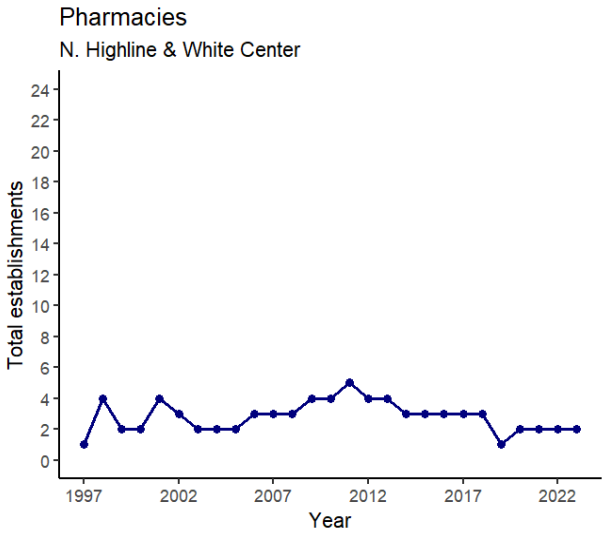
The biggest employer in North Highline and White Center is US Oil & Refining (n = 200) with more than double the employees as the next top employer (Table 6). Five of the biggest employers are in the retail, grocery, or eating and drinking industries. With the exception of Thompson Ferguson PLLC, all the remaining top employers are categorized as construction, transportation, hardware store, or automotive repair.

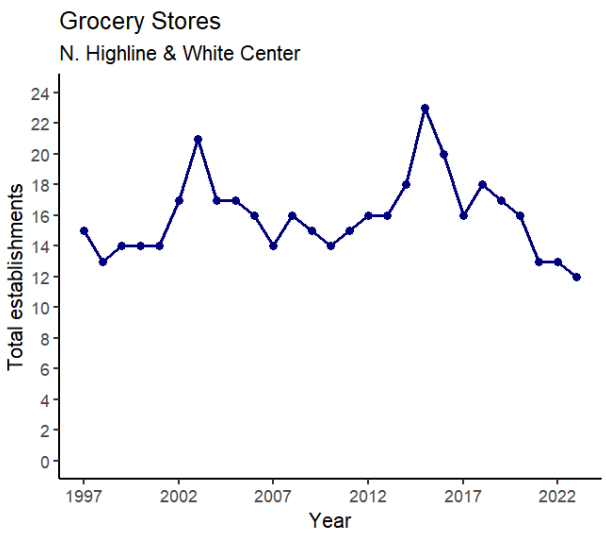
In terms of essential services, North Highline and White Center had some of the fewest pharmacies (n = 2) and child care services (n = 1) in King County in 2023 (Figure 23). The total number of pharmacies has remained relatively stable since 1997. Child care services spiked in 2011 (n = 9) but quickly fell, and the area has had only one childcare service provider since 2018. Conversely, the number of grocery stores in North Highline and White Center has fluctuated over time. Grocery store numbers generally decline from 2015. The area had 12 grocery stores in 2023, which is slightly less than the average number of grocery stores per HRA ($\bar{x}$ = 14.2).

Third place businesses have generally increased in North Highline and White Center (Figure 24). Specifically, the number of retail businesses peaked in 2015 at 56, but generally remained stable between 1997 (n = 41) and 2023 (n = 43). Eating and drinking businesses increased 60% in the same time period, although there were dips from 2013 to 2017 and during the COVID-19 pandemic. The number of entertainment venues increased 45.1%, with significant dips in 2001 and 2008 that coincided with recessions in the U.S. Lastly, services increased 84.6% between 1997 and 2023. Particularly, all four third place business categories saw a drop in numbers from around 2013 to 2017 in North Highline and White Center.

Top 10 Employers in North Highline and White Center, 2023	
Company	**Estimate**
US OIL & REFINING CO	200
WING STREET	63
SAAR'S SUPER SAVER FOODS	61
POPEYES	60
CONSTRUCTION UNLIMITED	38
ALLOVER AIRPORT SHUTTLE	35
THOMPSON FERGUSON PLLC	25
STARBUCKS	25
MCLENDON HARDWARE	24
GERBER COLLISION & GLASS	20

Table 6: Top 10 Employers in North Highline and White Center (Data Axle, 2023)
This table shows the top 10 employers in North Highline and White Center as calculated in Data Axle for 2023. Upper and lower estimates described in the *Estimating Employee Size* section are reduced to a single column because they contain the same values for these companies, i.e. these companies have reported an exact number for their employee size.





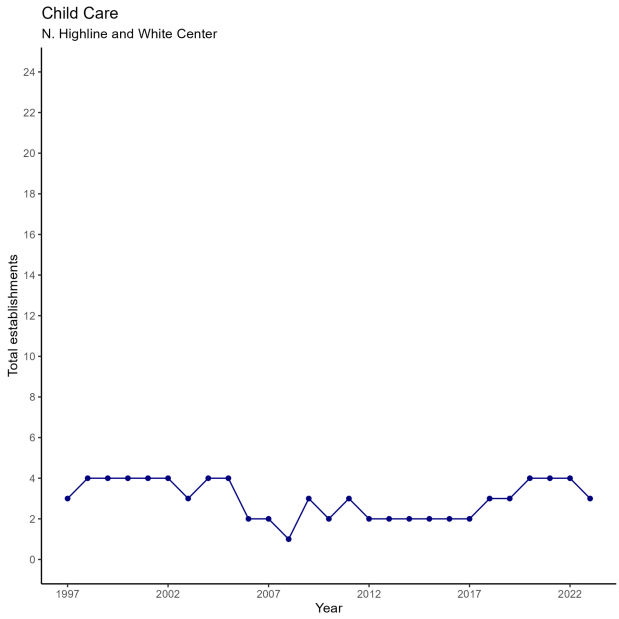
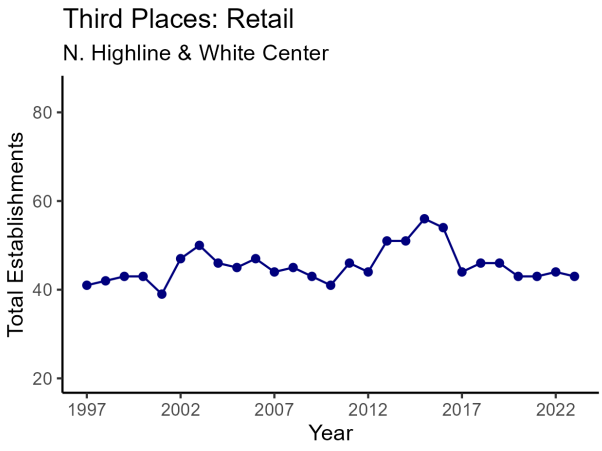
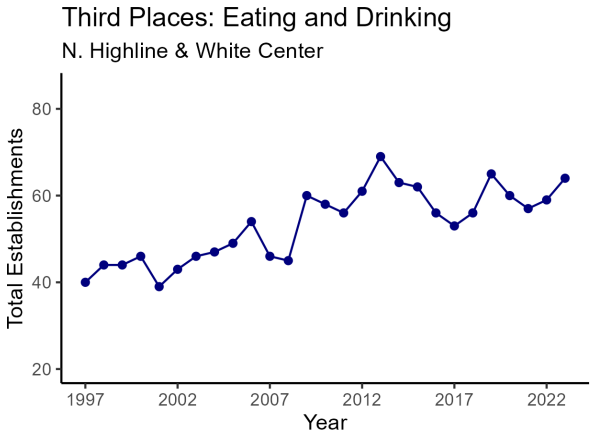


Figure 23: Essential Industries in North Highline and White Center (Data Axle, 1997-2023)
This figure shows the total number of businesses within the industries of pharmacies, grocery stores, and child care over time in North Highline and White Center for years in Data Axle data.





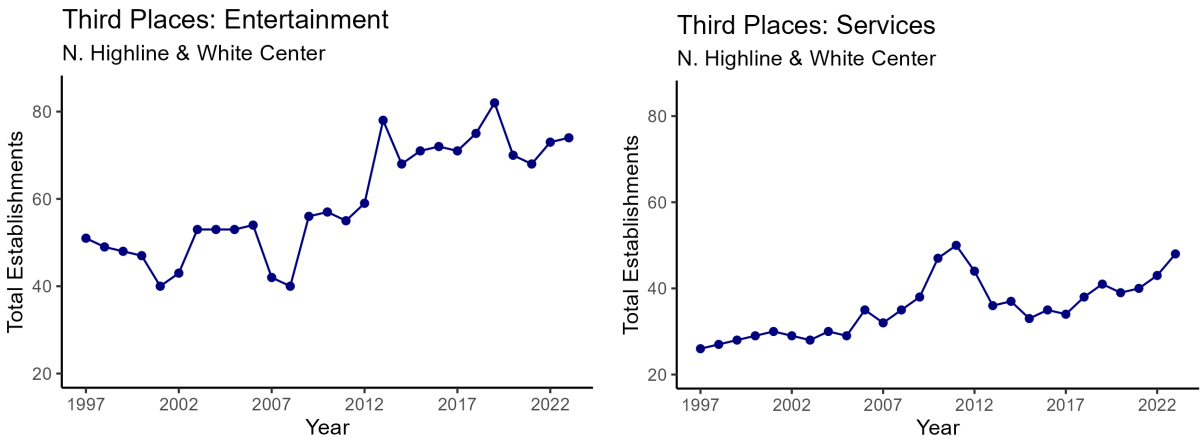


Figure 24: Third Places in North Highline and White Center (Data Axle, 1997-2023) This figure shows the total number of businesses in the industries of retail, services, eating and drinking, and entertainment over time in North Highline and White Center for years in Data Axle data.

Bryn-Mawr Skyway

Bryn-Mawr Skyway, commonly called Skyway or Skyway-West Hill, is a census-designated place in unincorporated King County south of Seattle and north of Renton. It has a population of 18,032. The community has the largest proportion of Black residents and the smallest proportion of white residents of any community in Washington at 25% and 29% of the population, respectively. Skyway has been historically underfunded by the county and has lacked public transit and infrastructure updates. In 2021, the County Council approved a budget with significant investments for Skyway, including $10 million for a new community center, $5 million for affordable housing, several million dollars for park upgrades and transit, and almost $5 million allocated to participatory budgeting. The area's rapidly changing demographics and cost of living exhibit signs of gentrification. The poverty rate was 10.6% in 2022, a 20% decrease from 2021. Property values also changed significantly, increasing 23% from 2021 to 2022.

Roman Casino, the biggest employer in Skyway (n = 148), has at least three times as many employees as the next biggest employer in the area (Table 7). Our list of top 10 employers in Skyway shows that most businesses have small employee sizes. Three of the biggest employers are related to government services: King County Fire District 20 (n =46), USPS Blue Collection Box (n=26), and Skyway Library (n=21). One of the three childcare services in Skyway, Little Steamers Academy, is also a top 10 employer. Five of the biggest employers in Skyway are in our industries of interest, including entertainment, grocery stores, and eating and drinking.

Between 1997 and 2023, the total count of essential services in Skyway has remained between zero and 10 (Figure 25). Our data observed one pharmacy, with missingness in the remaining years during which the pharmacy was either not captured in our dataset or was closed. Grocery stores and child care fluctuated throughout the years but remained relatively stable. There were three childcare establishments in both 1997 and 2023, and the number of grocery stores decreased slightly from seven in 1997 to five in 2023.

Looking at third places, there has been an overall increase in total establishments in Skyway, with an exception of retail establishments, which fluctuated but ultimately remained the same with 17 establishments in 1997 and 16 in 2023 (Figure 26). Entertainment establishments increased by 88.89%, peaking in 2016 (n = 32), service establishments increased by 87.5%, and eating and drinking locations increased by 50%.

Top 10 Employers in Skyway, 2023	
Company	**Estimate**
ROMAN CASINO	148
AMERICAN CORPORATE SECURITY	46
KING COUNTY FIRE DISTRICT 20	46
USPS BLUE COLLECTION BOX	26
GROCERY OUTLET	23
SKYWAY LIBRARY	21
LUCKY DRAGONZ RSTRNT & EVENT	21
BETTER PROPERTIES RENTON	15
EZELL'S CHICKEN	13
LITTLE STEAMERS ACADEMY	11

Table 7: Top 10 Employers in Skyway (Data Axle, 2023)
This table shows the top 10 employers in Skyway as calculated in Data Axle for 2023. Upper and lower estimates described in the *Estimating Employee Size* section are reduced to a single column because they contain the same values for these companies, i.e. these companies have reported an exact number for their employee size.

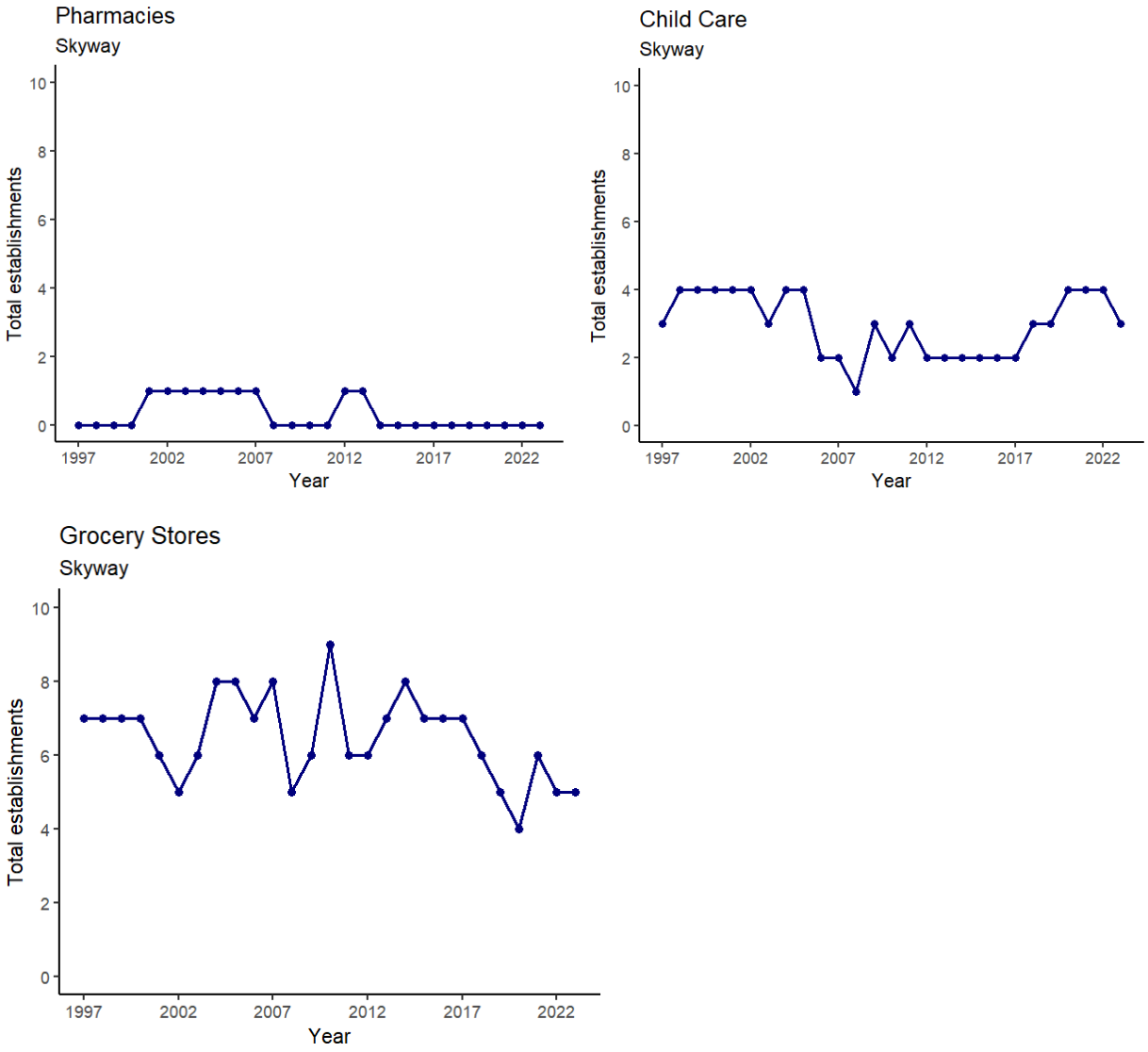


Figure 25: Essential Industries in Skyway (Data Axle, 1997-2023)
This figure shows the total number of businesses within the industries of pharmacies, grocery stores, and child care in Skyway from 1997 to 2023.

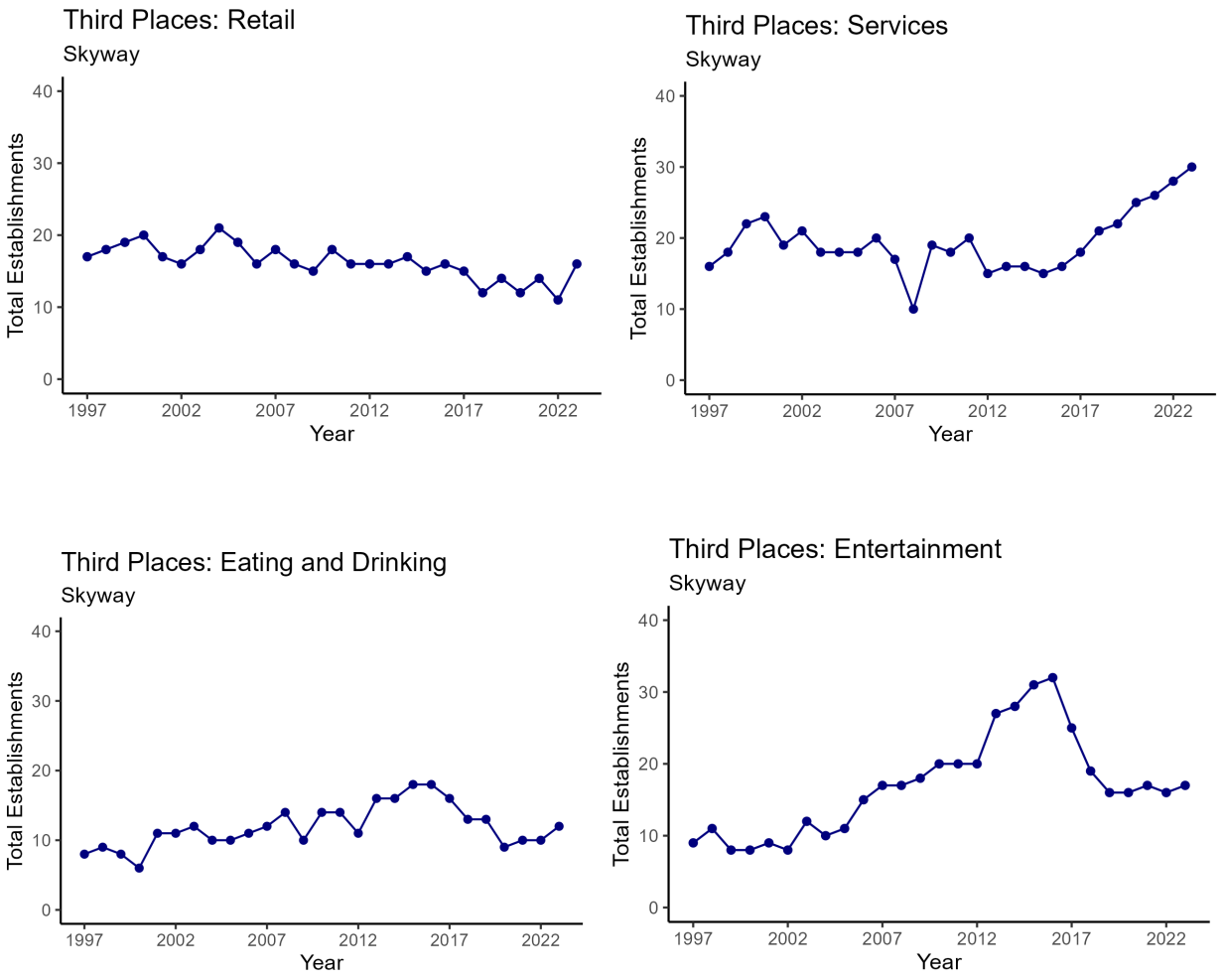


Figure 26: Third Places in Skyway (Data Axle, 1997-2023)
This figure shows the total number of businesses in the industries of retail, services, eating and drinking, and entertainment in Skyway from 1997 to 2023.

Discussion

Between 1997 and 2023, King County saw a 41.51% population increase. In this time period, there was a general increase in the total number of establishments in the county, but that increase did not keep up with population growth in some essential industries. Comparing 2023 to 1997, pharmacies had a substantial increase at 83.2%. However, most of that increase occurred between 1997 and 2014, with the number of pharmacies remaining relatively stable in the last decade despite a countywide population increase of more than 16% in that time. Child care

services and grocery stores have experienced almost no growth since 1997, with miniscule increases of 0.047% and 0.025%, respectively. There were fluctuations in third places throughout these years, especially during the COVID-19 pandemic. Services increased by 60.18%, retail decreased by 17.13%, eating and drinking increased by 58.67%, and entertainment increased by 63.81%.

However, there is geographic variation to this pattern across King County's HRAs. The majority of HRAs saw declines in retail, eating and drinking, and entertainment establishments. In 2023, child care services were most concentrated in Central Bellevue while most pharmacies and grocery stores were concentrated in the Downtown, Belltown, and First Hill HRA. The concentration of pharmacies in this HRA is potentially due to the significant number of hospitals in the area. Notably, the Broadview, Haller Lake, and Licton Springs HRA saw a loss in all essential services between 2022 and 2023. Most third place establishments were similarly concentrated in the Downtown, Belltown, and First Hill HRA. Between 2022 and 2023, this HRA gained more than 100 new service establishments but faced significant retail loss. Between 2022 and 2023, Central District, CID, Judkins, and North Beacon Hill saw over 100 new service establishments, but a decrease in eating and drinking and entertainment establishments. Despite these industry-level discrepancies between HRAs, it is apparent that gentrification and displacement has fundamentally changed each of these communities.

In the unincorporated areas of North Highline and White Center and Skyway, the biggest employers in both neighborhoods are in our industries of interest. Based on the two neighborhood case studies, it is clear that the third places and essential services that we highlighted are also some of the biggest employers in those communities. Both areas have had a decrease in grocery stores as well as consistently low numbers of pharmacies and child care services. However, both areas are seeing growth in third place establishments.

While we recognize the limitations in Data Axle's employee size information, the lists of top 10 employers in each area of King County are still informative. When compared to top 10 employer lists from alternate sources, we can see that our data are at least partially representative, and the companies listed have at least as many employees as listed in Data Axle. The one exception is the University of Washington's employee count, which is larger in Data Axle than in the King County Department of Assessments list of top 10 employers in Puget Sound. It is possible that we are including certain UW Medicine subsidiaries in our definition of the

University of Washington that the King County Department of Assessments report does not.

A report from Child Care Aware of Washington states that the number of child care providers in King County has increased from 1,991 with capacity for 65,356 children in 2018, to 2,348 providers with capacity for 77,787 children in June of 2023. The report only includes data from licensed providers, which includes centers and family child care, and exempt school-age programs. Our results show fewer than 700 child care facilities in 2018, with that number decreasing in 2023. This undercount is likely due to Child Care Aware using more comprehensive data gathering methods to report child care provider statistics. It is unclear whether Data Axle would capture family child care providers in the data. Additionally, Data Axle does not provide information about capacity. Child Care Aware states that there is a trend in the state of Washington of fewer providers but increased capacity as larger child care centers open. Our data do not indicate the size of child care facilities. We would have to research each child care provider in Data Axle individually to determine capacity.

Any analysis of Data Axle is subjected to the noise of missingness. As previously discussed, it is unclear whether the absence of a business in a specific year indicates the business was not open in that year *or* that the business was open and was not included in Data Axle that year. For companies observed in a specific year and two years later, but missing in the middle, we assumed they were open with the same employee sizes and industry information as the first year. A sensitivity analysis is warranted to compare this assumption with other methods of imputation for missing years. This imputation was only used in this report for calculations of business openings and closures. With more time, we would re-estimate other metrics on total businesses by area and/or industry using the imputed data. Finally, it would be ideal to understand how many companies have two, three, and four years of missing data in between two years of observed data. Linear interpolation or other imputation could be used to fill in more missingness.

While we can observe a business closing or relocating, Data Axle does not provide insight into why that business closed or relocated. The current but limited literature on business relocation decisions suggests that internal firm factors are more important determinants of relocation than location-related factors. Specifically, firm growth is often the primary driver for relocation, with younger and smaller businesses most commonly relocating to grow their business (van Dijk &

Pellenberg, 2000; Sleutjes & Beckers, 2013; Maoh & Kanaroglou, 2007). On the other hand, businesses that choose to stay in their current locations do so because of sunk costs, a lack of financial means, their familiarity with a local customer base, or satisfactory business performance (Sleutjes & Beckers, 2013). When businesses do relocate locally, they typically utilize their knowledge of the area and locate in neighborhoods that are less expensive, more diverse, and have younger residents and lower per-capita income (Mack & Wei, 2018). Other studies find that the extent to which location-related factors influence relocation decisions depends on the industry of the business (Gottlieb, 1995; Weterings, 2014). Businesses in consumer services are inclined to relocate when neighborhood conditions are poor (i.e., high violent crime incidents per capita, empty storefronts, and a lack of other consumer-facing businesses drive consumer-facing businesses away from an area). Businesses engaged in business-to-business services, manufacturing, and wholesale are also negatively affected by neighborhood neglect, but they have a stronger tendency to relocate when an area's population density increases, hampering business growth through congestion and a lack of space for expansion.

The factors that motivate business relocation decisions differ in gentrifying areas. There are three common mechanisms of commercial gentrification: 1) direct displacement, 2) indirect displacement, and 3) cultural displacement. Direct displacement occurs when businesses are forced to close by the city or a landlord. When property values increase, landlords stand to make significant profits by selling buildings or leasing to new tenants with access to more capital. Landlords will often buy out existing tenants, refuse to renew their lease, or raise the rent beyond what they can afford in favor of higher-paying occupants. When buildings are sold to developers, businesses are usually forced to vacate as the building is remodeled or demolished. Indirect displacement occurs when rising costs or other outside factors related to gentrification cause a business to relocate or close. This most commonly occurs when rising property values elicit an increase in rent or property taxes that the business owner cannot afford. Indirect displacement can also occur when construction or other disruptions limit customers' access to a location. Cultural displacement takes place when changing neighborhood demographics decreases a business's customer base. Existing businesses can struggle to compete as new businesses move into a neighborhood to capitalize on the younger, more affluent residents.

Data Axle only shows the absence of a business from the dataset. When a business no longer appears in King County, there is no way to determine from Data Axle

whether it closed, relocated out of the county, or simply did not report data for that year. Gentrification theory offers an explanation for changing business activity in certain areas. The rent gap theory of gentrification posits that the more disinvested a region becomes, the more profitable it is to gentrify (Moskowitz, 2017). The rent gap is the difference between how much a property is currently worth and how much it would be worth if it were renovated and marketed to higher-income tenants. In a capitalist system, developers and landlords have little incentive to maintain minimally profitable properties for low-income tenants or small businesses. Further research in this area should look at the size and types of businesses that are replacing establishments after closures. It could be that businesses with access to more capital, such as chains, are capable of paying the higher rents associated with redevelopment and renovation, thus decreasing business diversity and changing the landscape of an area. Use value and exchange value offer another theory on the gentrification of disinvested neighborhoods. Use value is the value a place holds for people by housing them, giving them a sense of community, or meeting their needs, and exchange value is a place's potential monetary worth (Moskowitz, 2017). Low-income neighborhoods are likely to have an exchange value that vastly outweighs the use value, making properties in those areas prime candidates for new, more profitable development. This calculation is commonly used by local governments in decisions regarding zoning or large-scale infrastructure projects. Locations that generate less money in property taxes are more likely to be chosen for projects that would displace current residents or attract more lucrative businesses. South King County's Somali community has experienced this type of displacement multiple times in recent years. In 2019, 16 majority East African owned businesses were forced to vacate their properties on Tukwila International Boulevard to make way for a new police station and courthouse. Of the 16 displaced businesses, 10 reopened in new locations and six were unable to find affordable space. The displaced business owners reached a settlement with the City of Tukwila and were compensated according to the size of their businesses. Just down the street that same year, SeaTac City Council sold three parcels of land containing Bakaro Mall and SeaTac Market. The spot was a commercial hub for East African, Latinx, and Southeast Asian immigrants with over 50 businesses. The property was sold to a developer who planned to build commercial space and 665 housing units, more than half of which would be aimed at households making 60% of AMI. While the development creates affordable housing the area desperately needs, it also takes away an important site of culture and community for residents of both cities. In 2021, three community members

opened SeaTac International Mall. The property has 21 stalls occupied by mostly immigrant-owned small businesses, many of which were displaced from Bakaro Mall. This community-led relocation project was accomplished in collaboration with the city and local nonprofit organizations to mitigate the effects of cultural displacement. It would take further qualitative study and other sources of data, such as these case studies, to understand the factors behind a business's decision to relocate or close.

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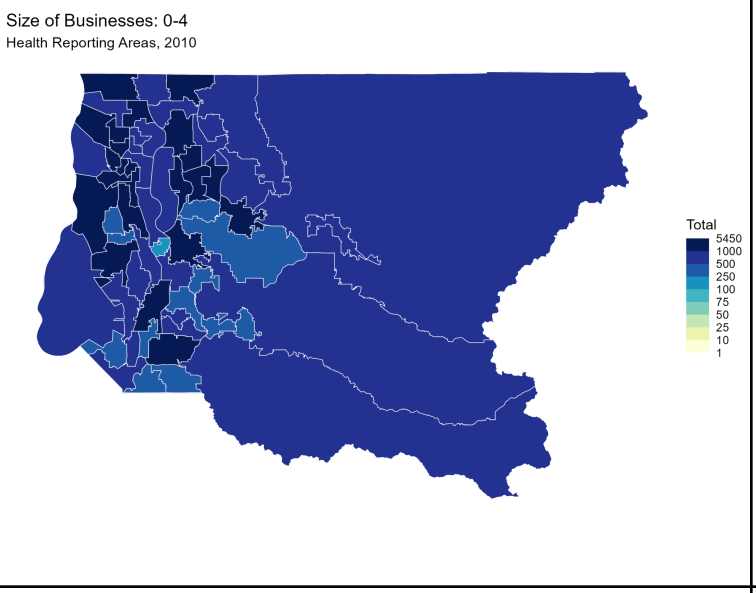
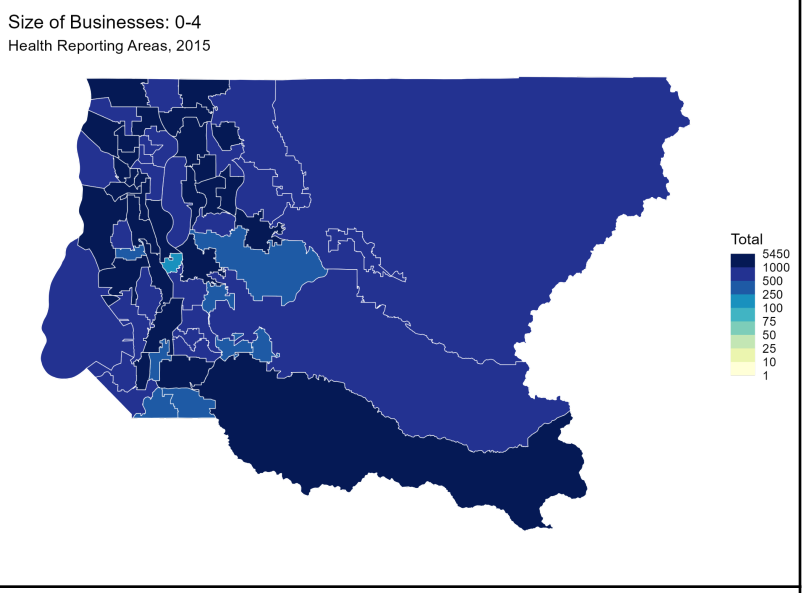
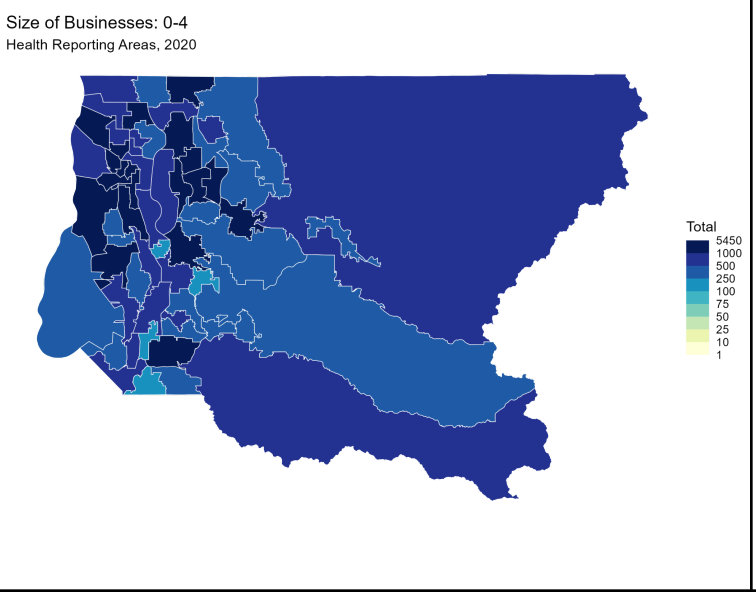
Appendix I: Businesses by Employee Size, King County HRAs







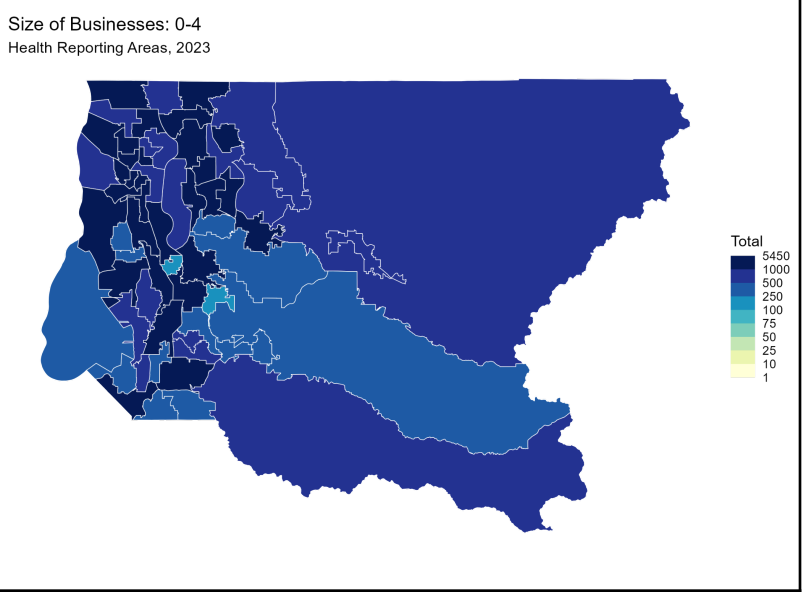


Figure A1: Total Number of Businesses by Employee Size Category 0-4 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)
This figure shows the total number of businesses for the 0-4 employee size category in King County HRAs for 2010, 2015, 2020 and 2023.

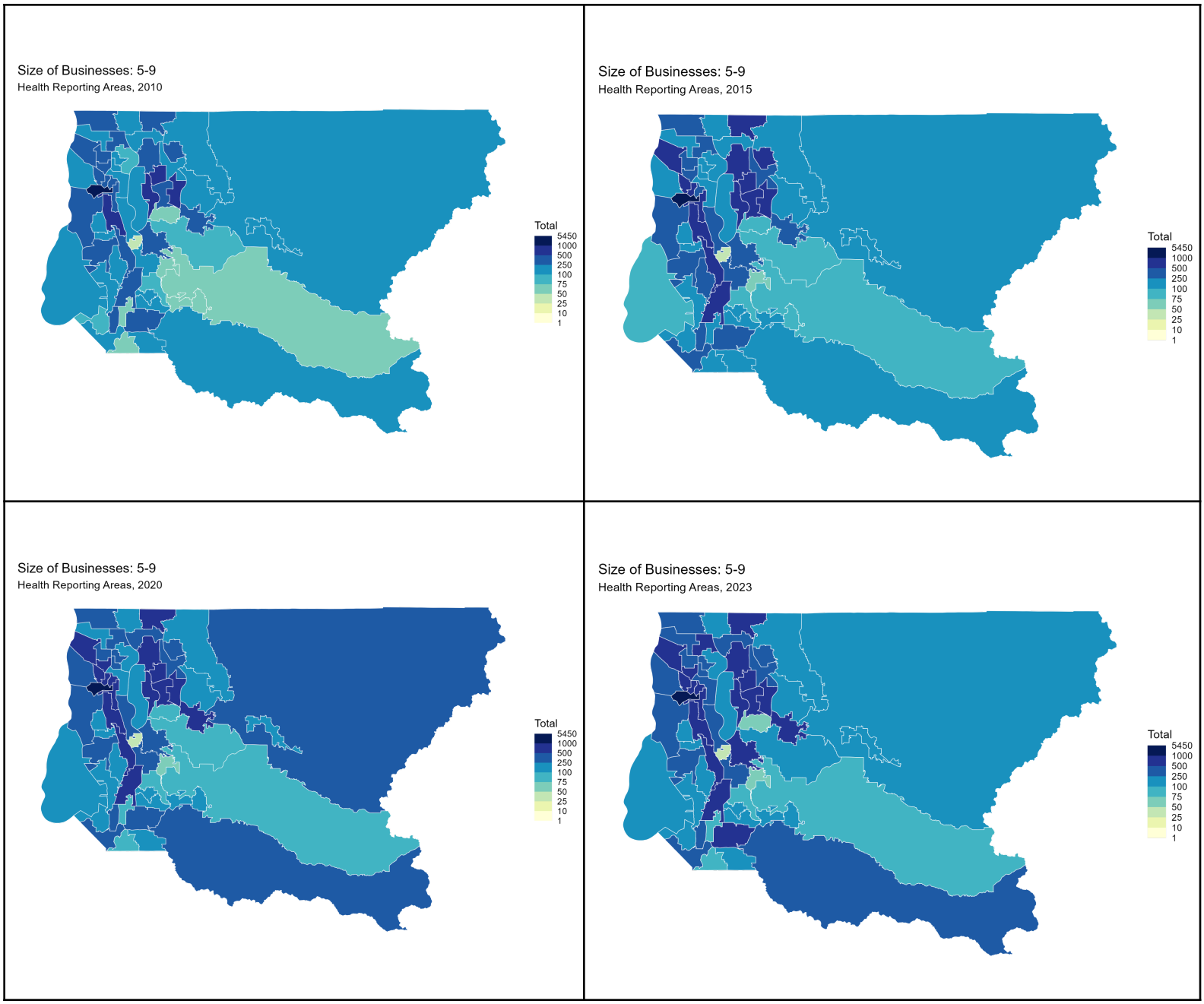


Figure A2: Total Number of Businesses by Employee Size Category 5-9 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)
This figure shows the total number of businesses for the 5-9 employee size category in King County HRAs for 2010, 2015, 2020 and 2023.

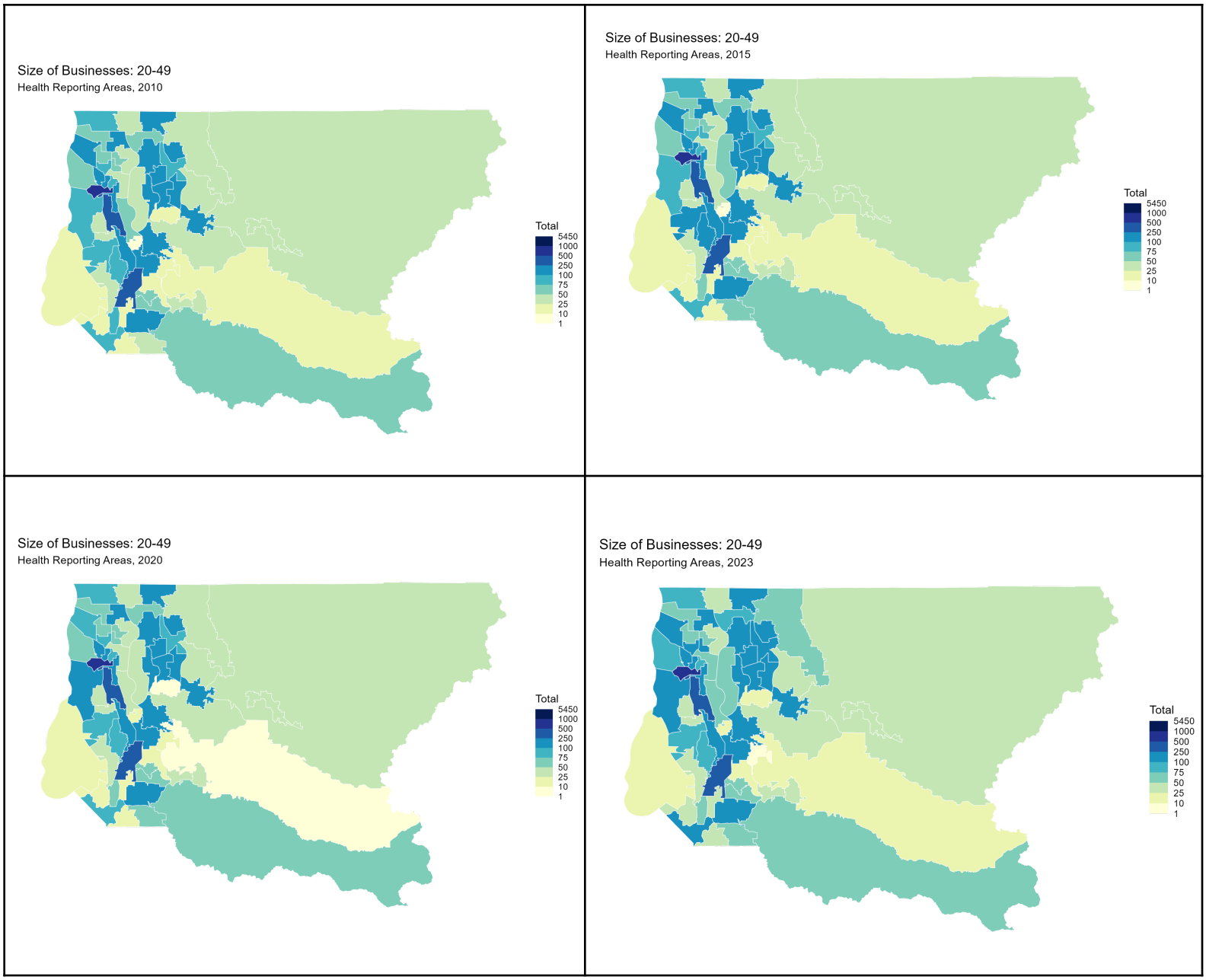


Figure A3: Total Number of Businesses by Employee Size Category 20-49 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)
This figure shows the total number of businesses for the 20-49 employee size category in King County HRAs for 2010, 2015, 2020 and 2023.

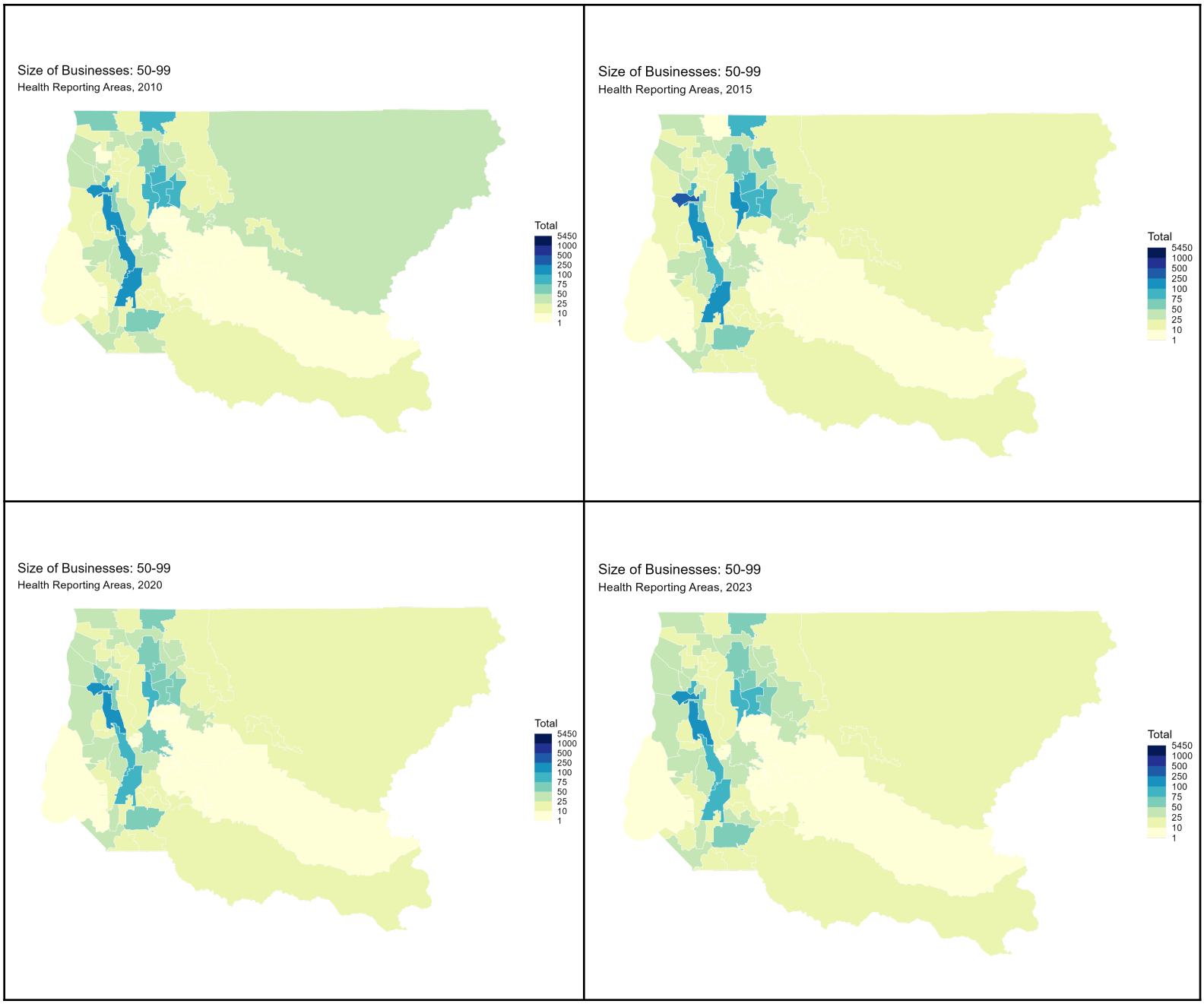


Figure A4: Total Number of Businesses by Employee Size Category 50-99 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)
This figure shows the total number of businesses for the 50-99 employee size category in King County HRAs for 2010, 2015, 2020 and 2023.

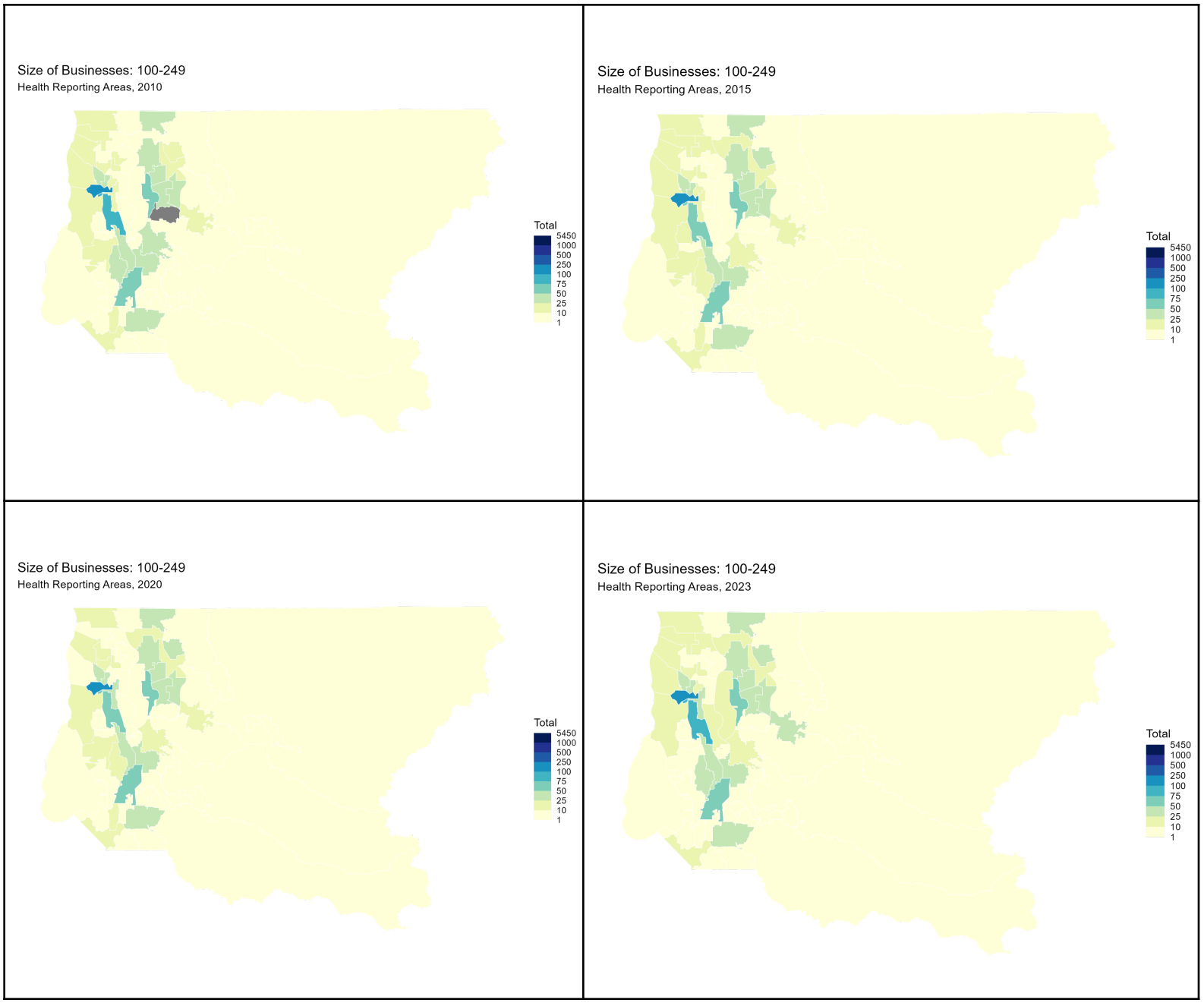


Figure A5: Total Number of Businesses by Employee Size Category 100-249 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)

This figure shows the total number of businesses for the 100-249 employee size category in King County HRAs for 2010, 2015, 2020 and 2023.

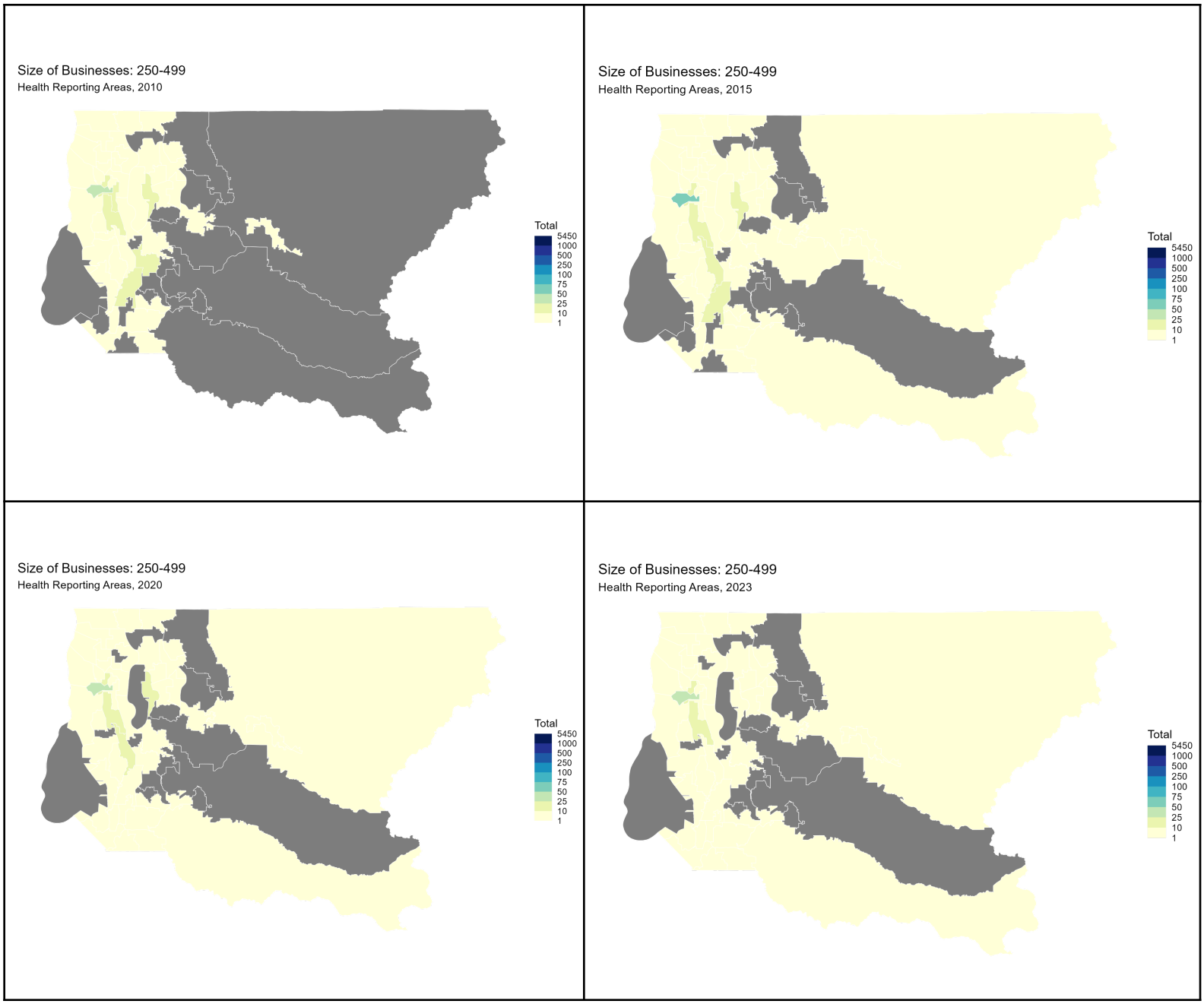


Figure A6: Total Number of Businesses by Employee Size Category 250-499 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)

This figure shows the total number of businesses for the 250-499 employee size category in King County HRAs for 2010, 2015, 2020 and 2023. [Note: gray areas indicate missingness]

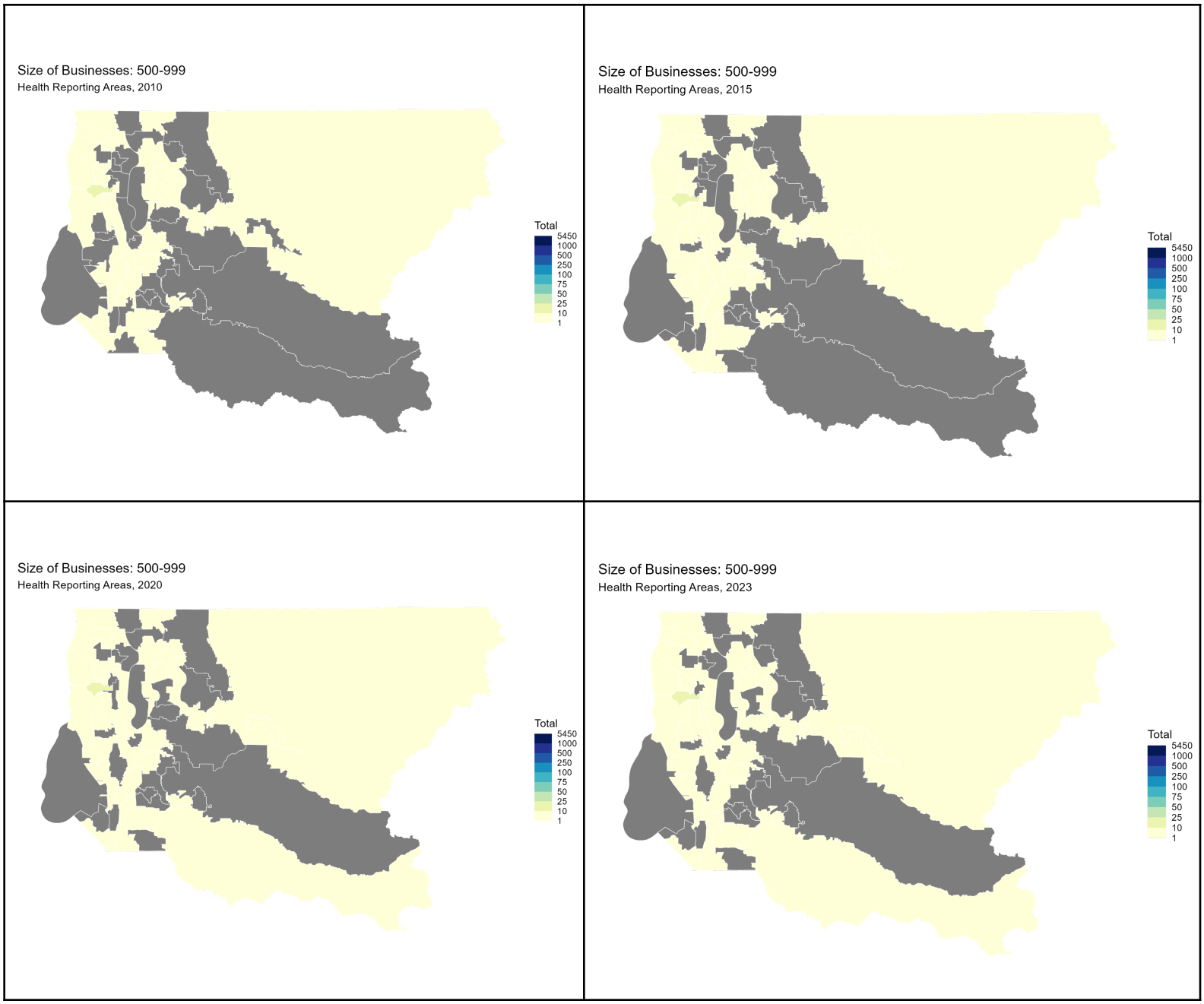


Figure A7: Total Number of Businesses by Employee Size Category 500-999 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)

This figure shows the total number of businesses for the 500-999 employee size category in King County HRAs for 2010, 2015, 2020 and 2023. [Note: gray areas indicate missingness]

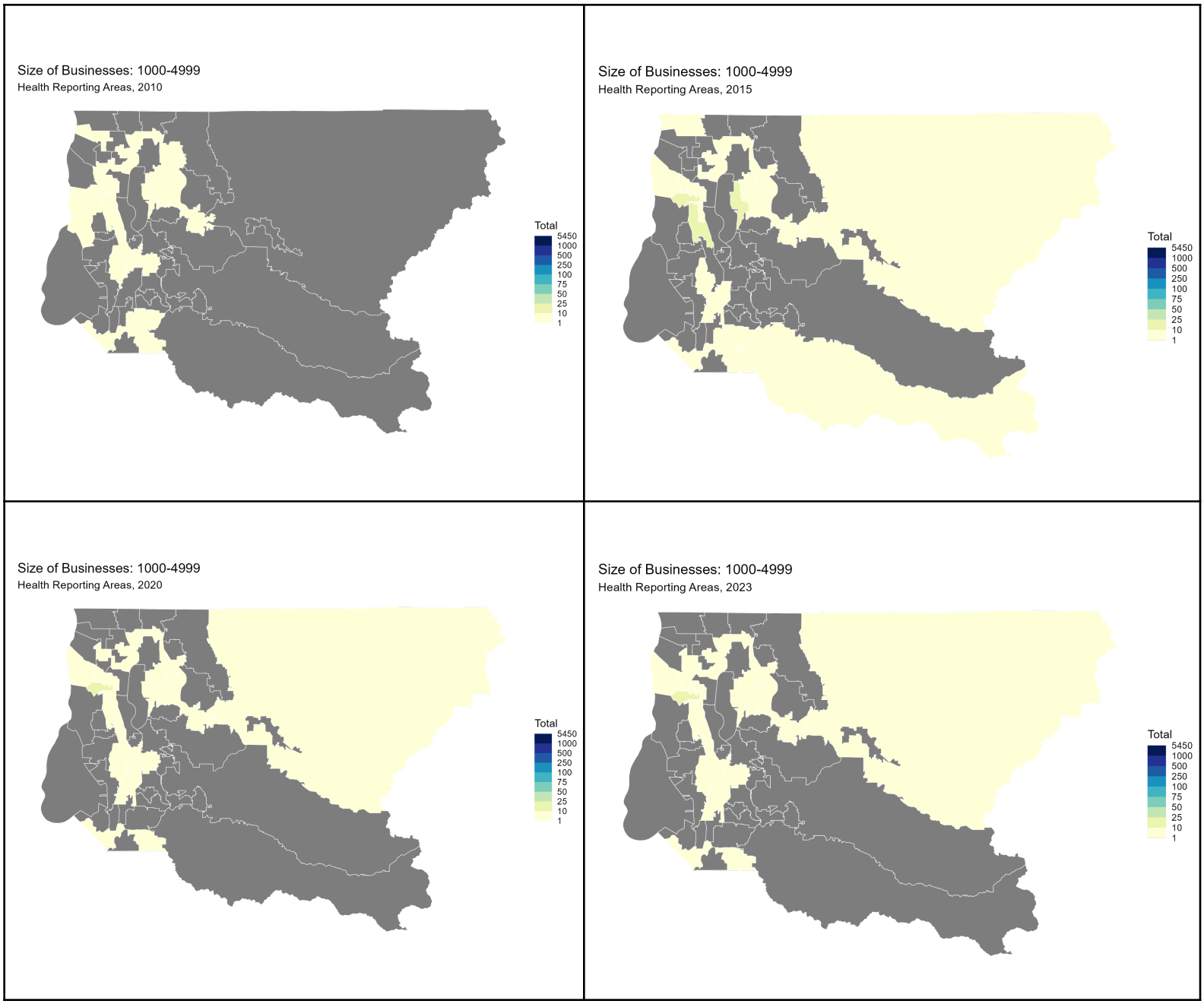


Figure A8: Total Number of Businesses by Employee Size Category 1,000-4,999 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)

This figure shows the total number of businesses for the 1,000-4,999 employee size category in King County HRAs for 2010, 2015, 2020 and 2023. [Note: gray areas indicate missingness]

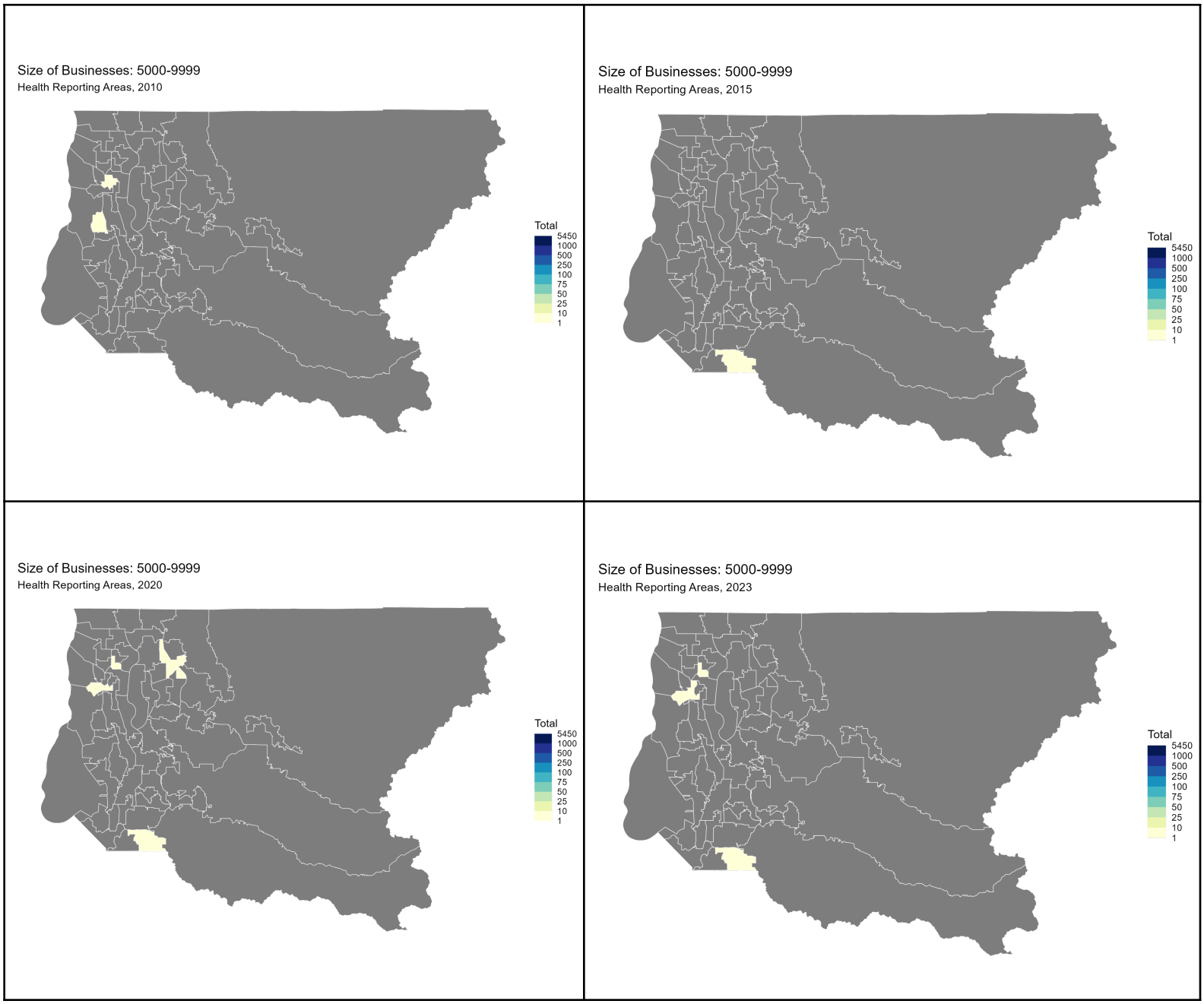


Figure A9: Total Number of Businesses by Employee Size Category 5,000-9,999 in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)
This figure shows the total number of businesses for the 5,000-9,999 employee size category in King County HRAs for 2010, 2015, 2020 and 2023.[Note: gray areas indicate missingness]

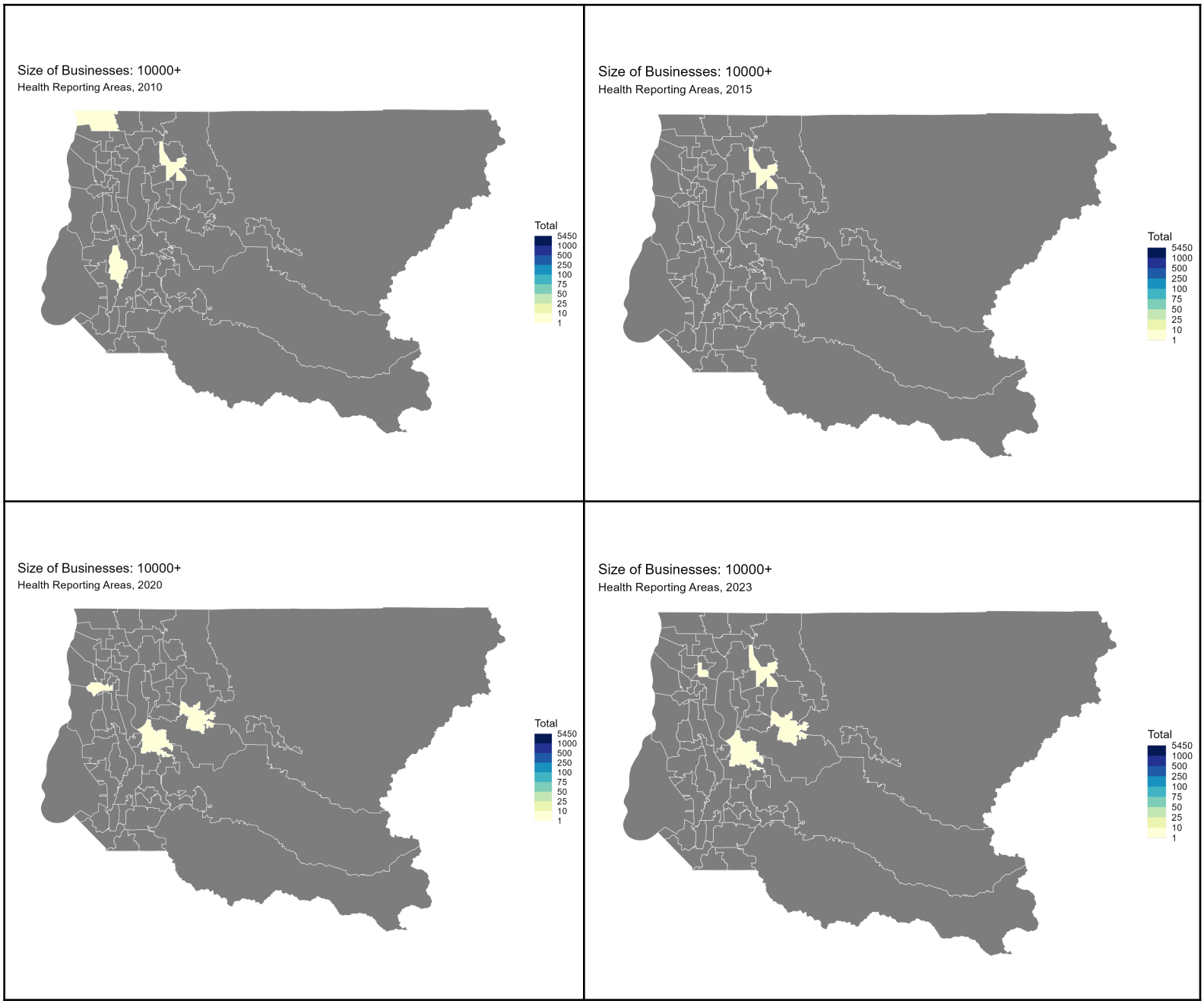


Figure A10: Total Number of Businesses by Employee Size Category 10000+ in King County HRAs. (Data Axle, 2010, 2015, 2020, 2023)
This figure shows the total number of businesses for the 10000+ employee size category in King County HRAs for 2010, 2015, 2020 and 2023. [Note: gray areas indicate missingness]

Appendix II: SIC Codes for Essential Services and Third Places

SIC Code	Description
5311	Department Stores
5411	Grocery Stores
5912	Pharmacies
8351	Child Day Care Services

Table B1: SIC Codes for Essential Services: Pharmacies, Grocery Stores & Child Care

SIC Code	Description
5735	Record and Prerecorded Tape Stores
5411	Convenience Stores
5411	Gasoline Stations with Convenience Stores
5541	Gasoline Stations with Convenience Stores
5092	Hobby, Toy, and Game Stores
5099	Hobby, Toy, and Game Stores
5945	Hobby, Toy, and Game Stores
5131	Sewing, Needlework, and Piece Goods Stores
5714	Sewing, Needlework, and Piece Goods Stores
5949	Sewing, Needlework, and Piece Goods Stores
5736	Musical Instrument and Supplies Stores
5192	Book Stores and News Dealers
5942	Book Stores
5932	Used Merchandise Stores

5999	Art Dealers
5194	Tobacco Stores
5993	Tobacco Stores
7841	Video Tape and Disc Rental

Table B2: SIC Codes for Third Places: Retail

SIC Code	Description
7832	Motion Picture Theaters Except Drive-Ins
7833	Drive-In Motion Picture Theaters
7911	Fine Art Schools
8299	Fine Art Schools
7999	Sports and Recreation Instruction
8299	Sports and Recreation Instruction
8299	Language Schools
7999	All Other Schools and Instruction
8299	All Other Schools and Instruction
8299	Exam Preparation and Tutoring
5812	Theater Companies and Dinner Theaters
7922	Theater Companies and Dinner Theaters
7922	Dance Companies
7929	Musical Groups and Artists
7929	Other Performing Arts Companies
7999	Other Performing Arts Companies
7941	Spectator Sports
7948	Spectator Sports

7999	Spectator Sports
8412	Museums
8422	Zoos and Botanical Gardens
7996	Amusement and Theme Parks
7993	Amusement Arcades
7991	Fitness and Recreational Sports Centers
7997	Fitness and Recreational Sports Centers
7999	Fitness and Recreational Sports Centers
7933	Bowling Centers
7911	All Other Amusement and Recreation Industries
7993	All Other Amusement and Recreation Industries
7997	All Other Amusement and Recreation Industries
7999	All Other Amusement and Recreation Industries
8641	Civic and Social Organizations
8699	Civic and Social Organizations

Table B3: SIC Codes for Third Places: Entertainment

SIC Code	**Description**
2082	Breweries
2084	Wineries
2085	Wineries
2085	Distilleries
5813	Drinking Places
5461	Restaurants and Other Eating Places
5812	Restaurants and Other Eating Places

5963	Mobile Food Services
5461	Snack and Nonalcoholic Beverage Bars
5812	Snack and Nonalcoholic Beverage Bars

Table B4: SIC Codes for Third Places: Eating and Drinking

SIC Code	Description
7241	Barber Shops
7231	Beauty Salons
7231	Nail Salons
7299	Other Personal Care Services
7215	Coin-Operated Laundries and Drycleaners
8322	Individual and Family Services
8351	Child Day Care Services

Table B5: SIC Codes for Third Places: Services

Appendix III: Comparisons of Data Axle to County Business Patterns

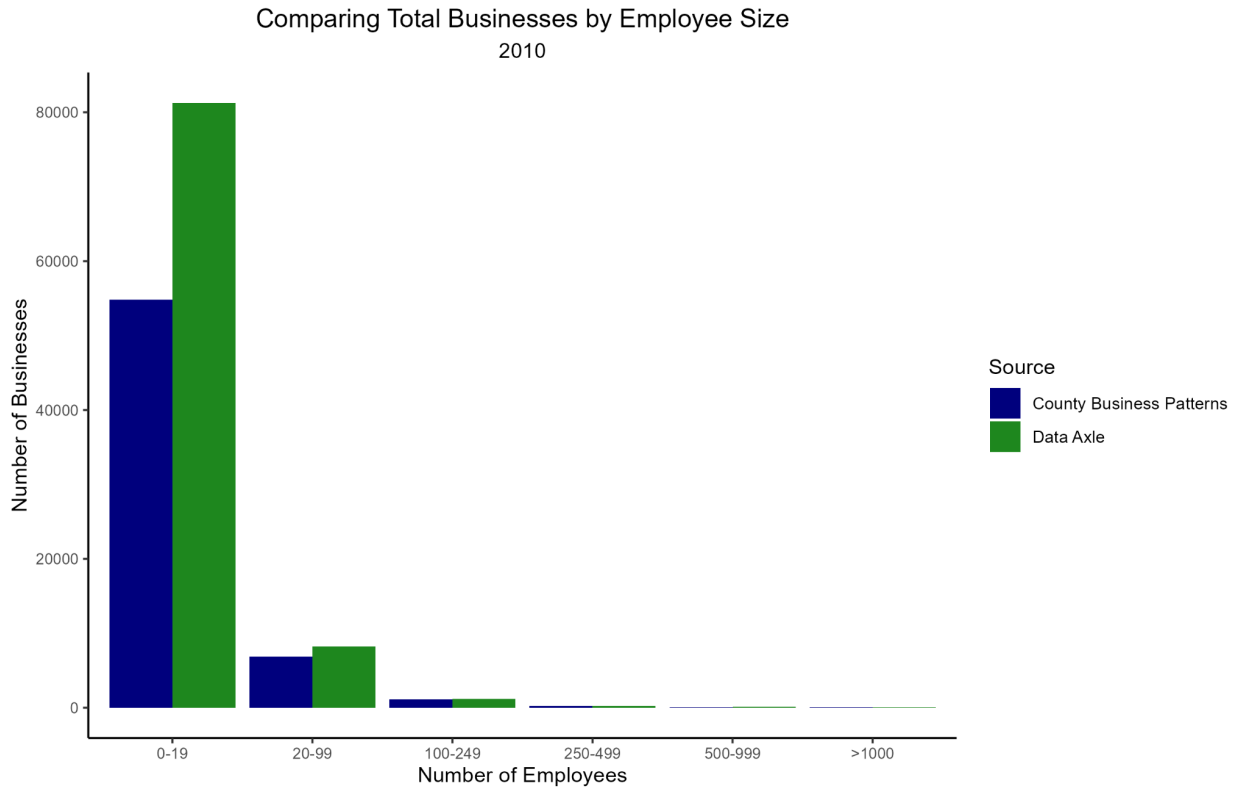


Figure C1: Total Businesses in King County by Size (Data Axle & CBP, 2010)
This figure compares the number of businesses in King County for each employee size category according to CBP data (depicted in blue) and Data Axle data (depicted in green). On the x-axis we have employee size categories as 0-19, 20-90, 100-249, 250-499, 500-999, and >1000, as determined by CBP data.

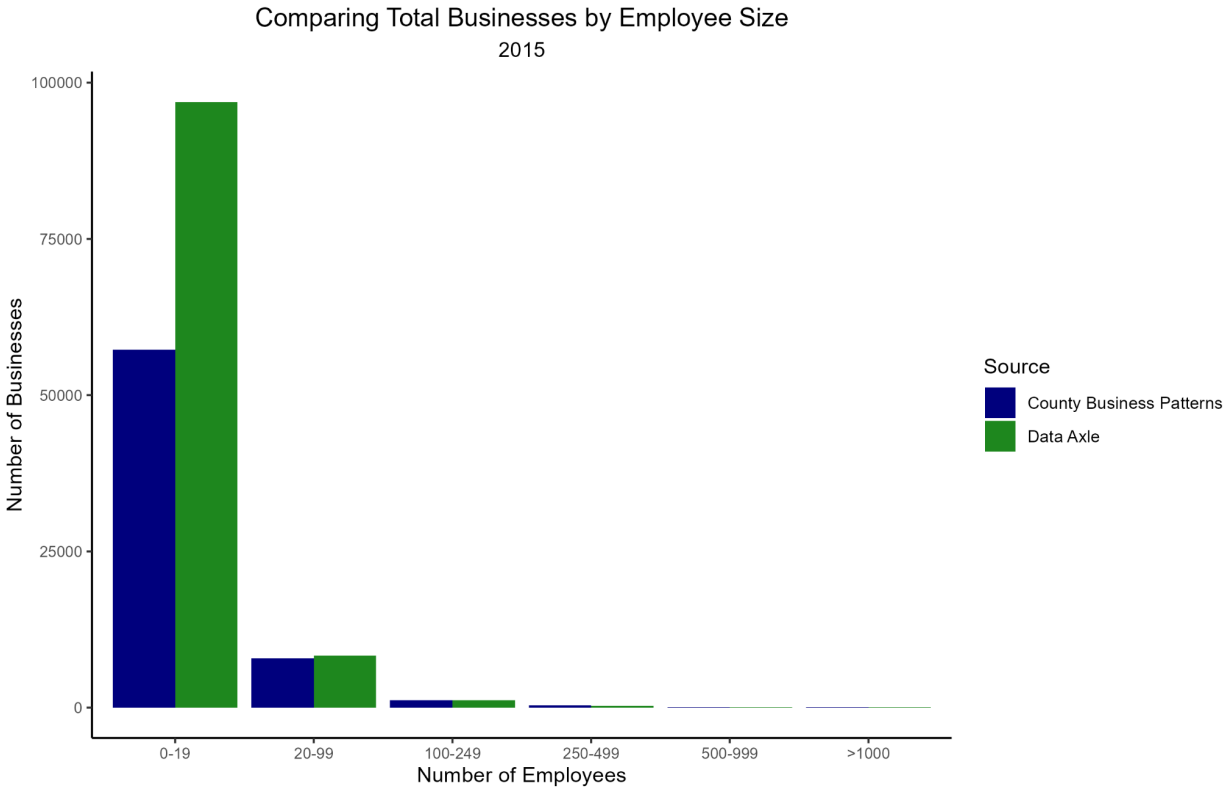


Figure C2: Total Businesses in King County by Size (Data Axle & CBP, 2015)
This figure compares the number of businesses in King County for each employee size category according to CBP data (depicted in blue) and Data Axle data (depicted in green). On the x-axis we have employee size categories as 0-19, 20-90, 100-249, 250-499, 500-999, and >1000, as determined by CBP data.

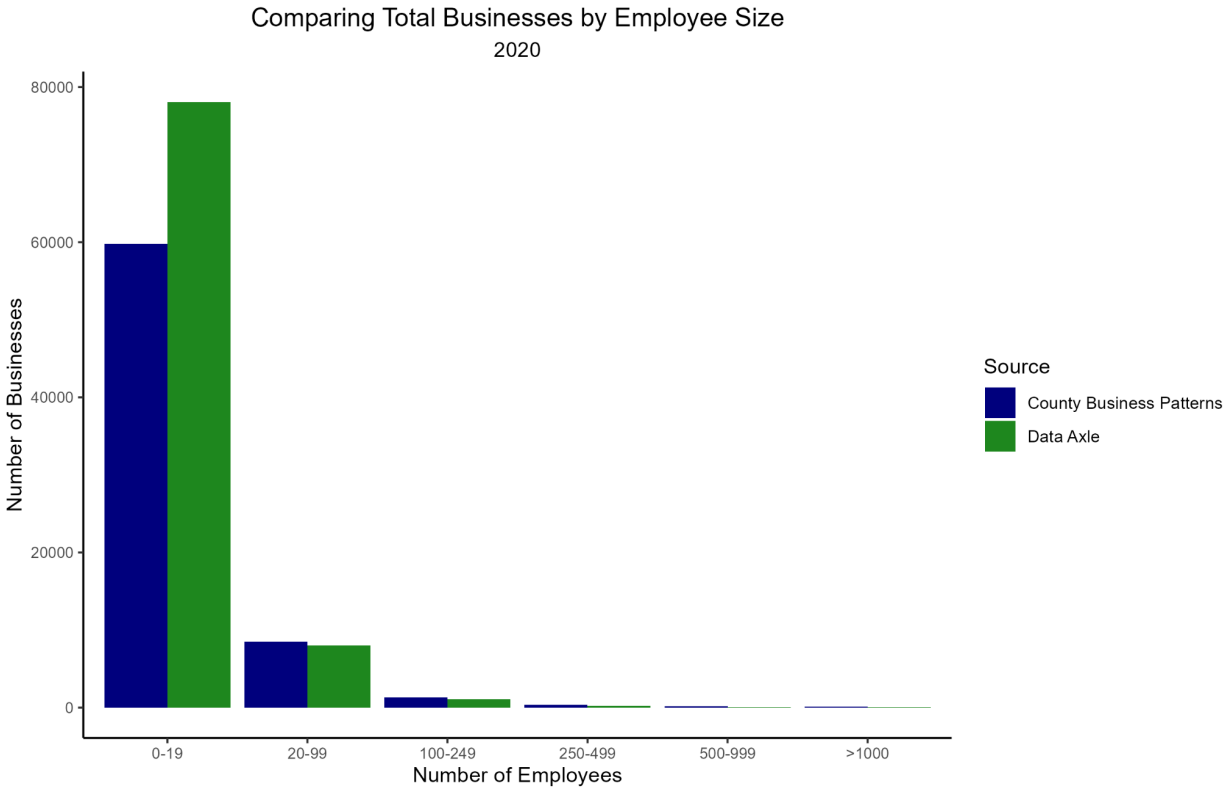


Figure C3: Total Businesses in King County by Size (Data Axle & CBP, 2020)
This figure compares the number of businesses in King County for each employee size category according to CBP data (depicted in blue) and Data Axle data (depicted in green). On the x-axis we have employee size categories as 0-19, 20-90, 100-249, 250-499, 500-999, and >1000, as determined by CBP data.

Appendix IV: Percentage Change in Population and Number of Businesses by Industry

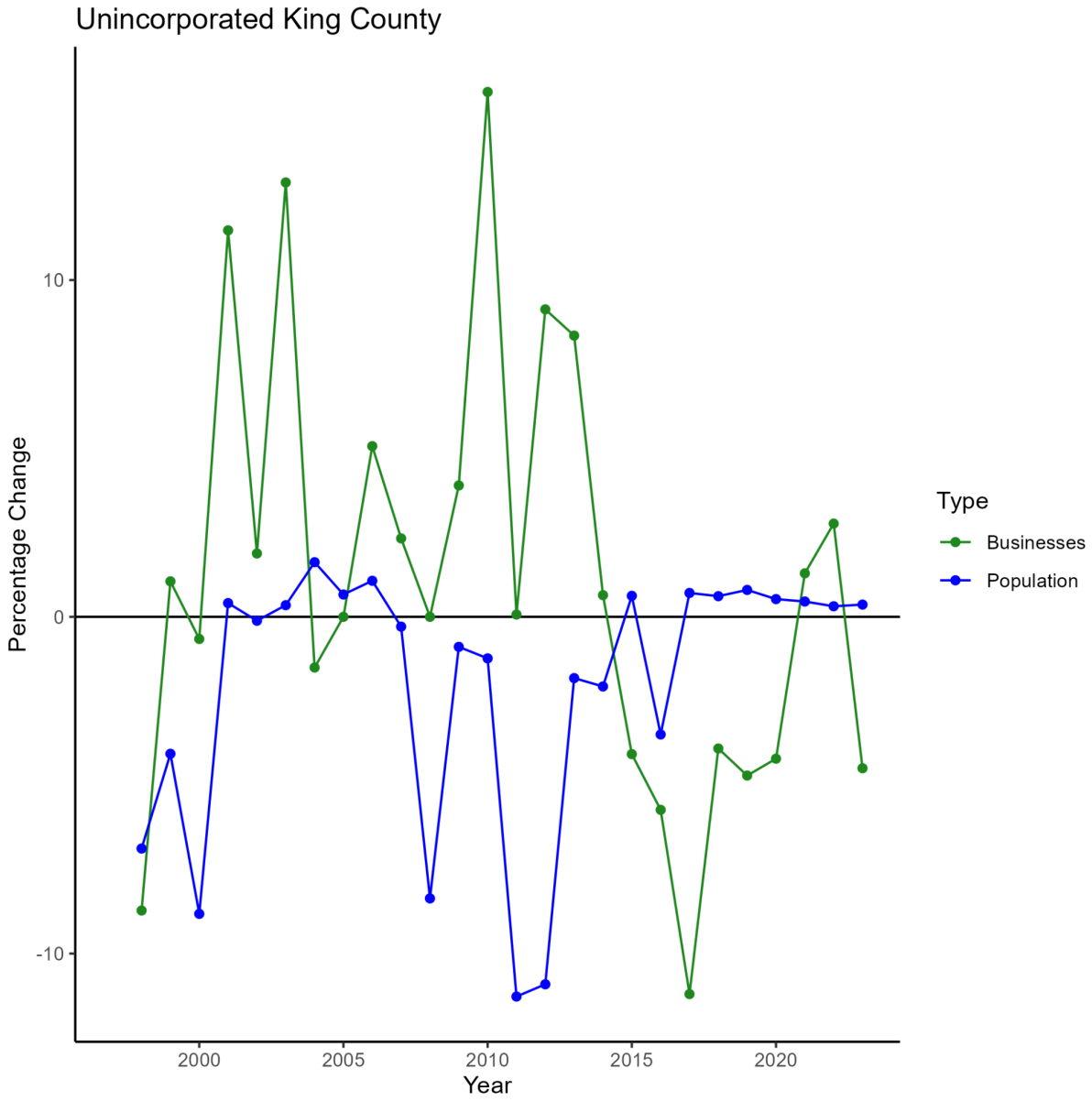


Figure D1: Percentage Population Change for Businesses and Population for Unincorporated King County (1997-2023).
This figure compares the percentage change in businesses in unincorporated King County utilizing Data Axle data (depicted in green) and the percentage change in population in Unincorporated King County (depicted in blue) for the same time frame using WA OFM data.

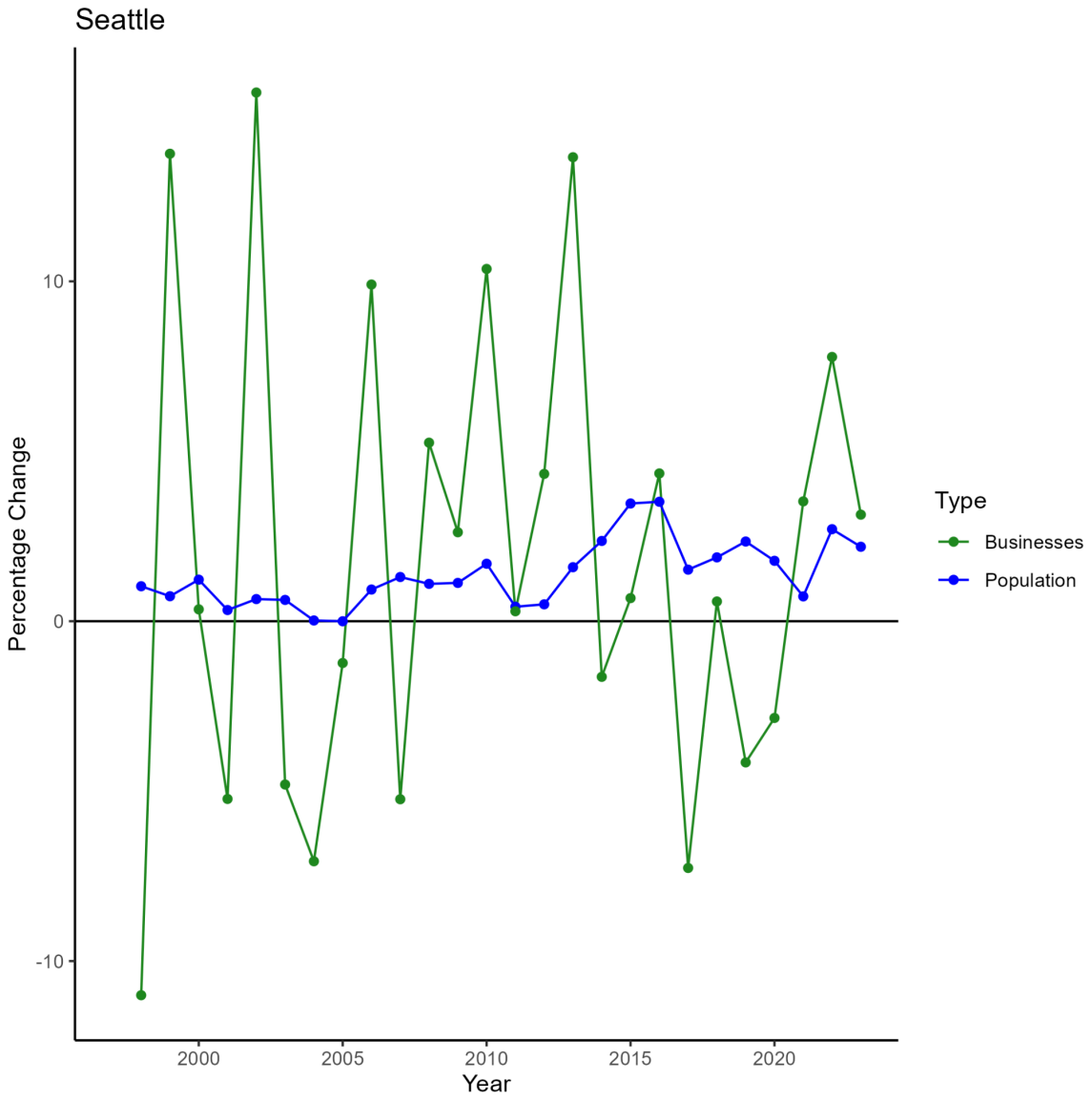


Figure D2: Percentage Population Change for Businesses and Population for Seattle (1997-2023).
This figure compares the percentage change in businesses in Seattle utilizing Data Axle data (depicted in green) and the percentage change in population in Seattle (depicted in blue) for the same time frame using WA OFM data.

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