The Sustainability of Affordable Housing

Pierre Lucas, Victor Okoro, Calvin Chen

TABLE OF CONTENTS

01

ABOUT US

Who are we?

02

AFFORDABLE HOUSING BACKGROUND

What is affordable housing like today?

03

NATIONAL CONTEXT

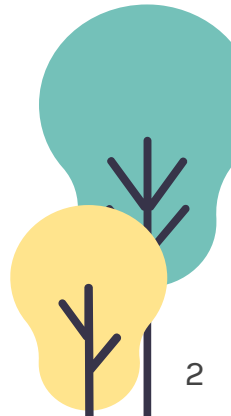What does housing affordability look like at the national level?

04

LOCAL CONTEXT (SF)

How sustainable is affordable housing in San Francisco today?

05

CONCLUSIONS AND RECOMMENDATIONS

What should be done moving forward?

01

About Us

Calvin Chen

Development Engineer with an interest in developing data-driven policy for local issues.

Victor Okoro

Development Engineer with an interest in socio-dynamics and the economics of mobility in poverty-constrained areas.

Pierre Lucas

Development Engineer with an interest in ancestral irrigation systems.

02

Affordable Housing Background

Never so unaffordable.

Today, the US housing market has hit a critical point.

More than 37.1 million of American households are **rent burdened**, more than 500 thousand human beings are **homeless** in the US, and Americans cannot afford to rent homes that were purchasable only 30 years ago.

We need more affordable housing, but where? How can ensure they are sustainable to their community, and vice versa?

Uncovering the socioeconomic facets of human mobility

Wider availability of **public transportation and amenities** in more populous US cities may be the feature that mitigates the correlation between income and movement.

Uncovering locational patterns in the distribution of Housing Choice Vouchers

Spatial analysis show that between 2000 and 2010, t**he density of HCV households grew significantly and disproportionately** along the San Francisco Bay Area's urban cores and its rural periphery.

Social exclusion of elderly and social vulnerability

The sustainability of a neighborhood is determined by the **social vulnerability** of its communities. **Frameworks and metrics** have been designed and used to demonstrate the social exclusion of **elderly** affordable housing in the city of chicago, **lacking access to health services** and facilities.

scientific reports

Check for updates

OPEN Uncovering the socioeconomic facets of human mobility

Hugo Barbosa[1], Surendra Hazarie[2], Brian Dickinson[3], Aleix Bassolas[4], Adam Frank[2],

Cores and Peripheries: Spatial Analysis of Housing Choice Voucher Distribution in the San Francisco Bay Area Region, 2000–2010

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Social exclusion of older persons: a scoping review and conceptual framework

Kieran Walsh[1] · Thomas Scharf[2] · Norah Keating[3,4]

Abstract As a concept, social exclusion has considerable potential to explain and respond to disadvantage in later life. However, in the context of ageing populations, the construct remains ambiguous. A disjointed evidence-base, spread across disparate disciplines, compounds the challenge of developing a coherent understanding of exclusion in older age. This article addresses this research deficit by presenting the findings of a two-stage scoping review encompassing seven separate reviews of the international literature pertaining to old-age social exclusion. Stage one involved a review of conceptual frameworks on old-age exclusion, identifying conceptual understandings and key domains of later-life exclusion. Stage two involved scoping reviews on each domain (six in all). Stage one identified six conceptual frameworks on old-age exclusion and six common domains across these frameworks: neighbourhood and community; services, amenities and mobility; social relations; material and financial resources; socio-cultural aspects; and civic participation. International literature concentrated on the first four domains, but indicated a general lack of research knowledge and of theoretical development. Drawing on all seven scoping reviews and a knowledge synthesis, the article presents a new definition and conceptual framework relating to old-age exclusion.

Keywords Multidimensional disadvantage · Later life · Knowledge synthesis · Old-age exclusion

Introduction

Are affordable housing units today sustainable?

From economic, racial, and mobility standpoints.

If not, what needs to change?
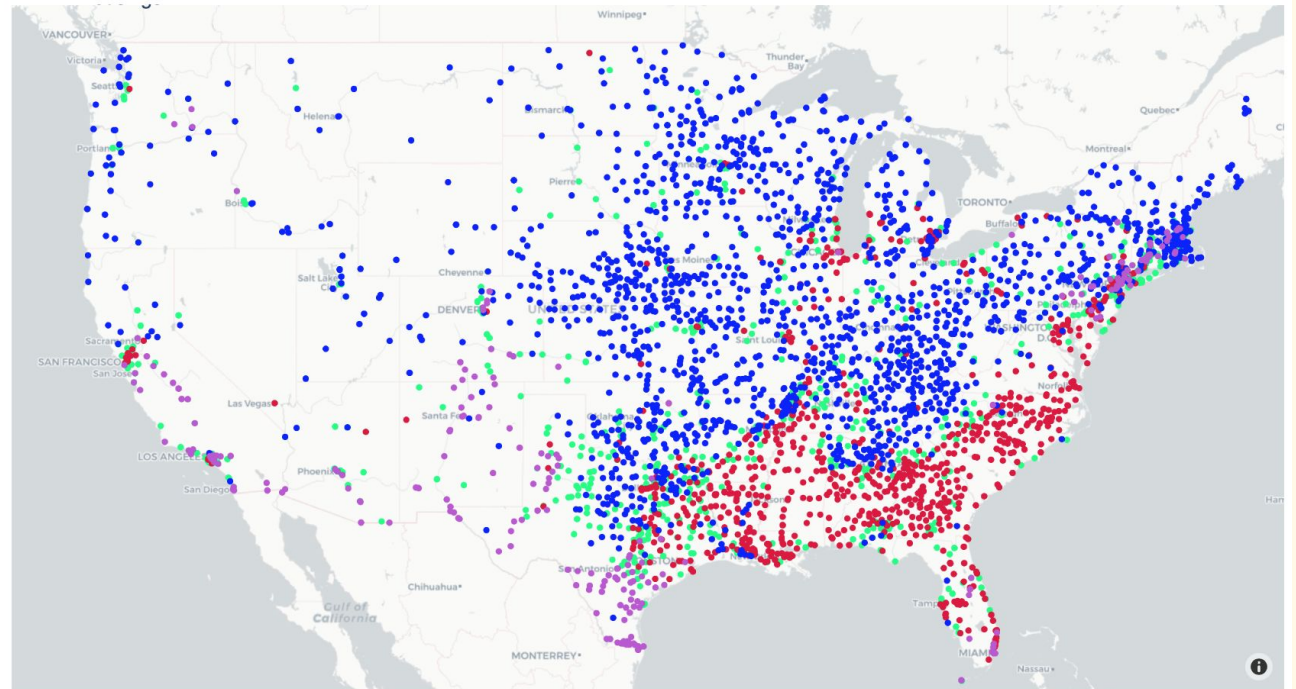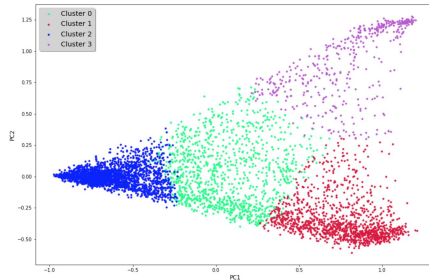
03

National Context

PCA & Clustering

• **2 levels**: units and neighborhoods
• **2 categories:** economic and ethnic attributes

Cluster blue (North US): low minority households living in low minority and low poverty neighborhoods
Cluster red (South East) US: high minorities households living in ethnically diverse but poor neighborhoods
Cluster purple (South West US): high minorities households living in high minorities and high poverty neighborhoods
Cluster green (Spread over the US): ethnically diverse households living in low minority and low poverty neighborhoods

Cluster characteristics

People per unit

Rent per month

Household Income

% Minorities

% Census tract minorities

% Census tract poverty

% Welfare as major income

% Wage as major income

Main discrepancies

• Ethnicity and source of income of the households

• Ethnicity and poverty of the neighborhoods
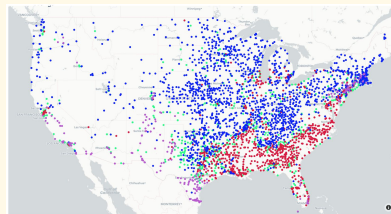
Diversity of clusters in the Bay Area

San Francisco characteristics

• Affordable housings have more minorities

• Neighborhoods have higher minorities and poverty proportions
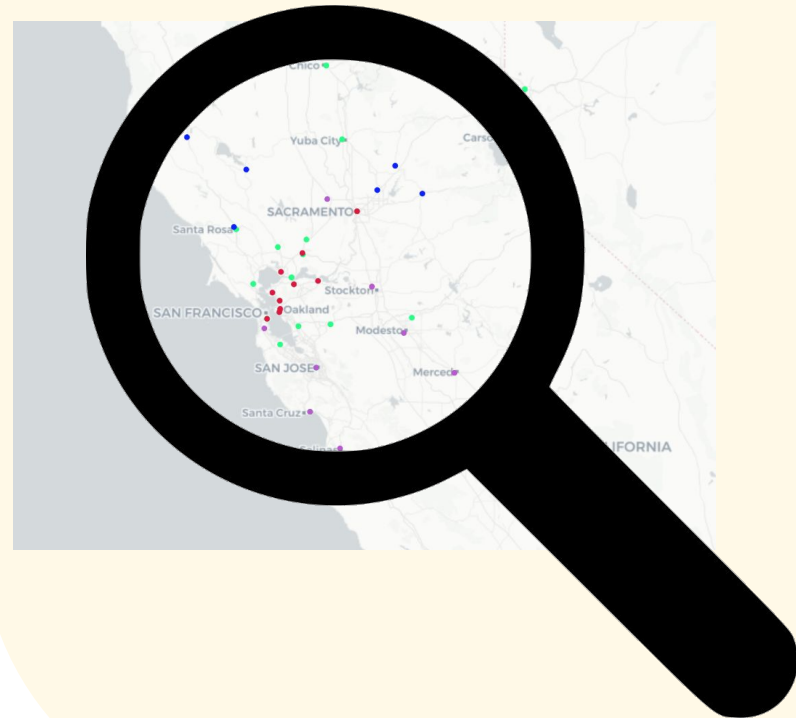
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Local Context (San Francisco)

History of Housing in SF

	Nature of Housing Policy	Description
1870 to post-1970	Implicit and Explicit Racial Zoning	Land use regulations that implicitly and explicitly exclude certain racial groups.
late 1800s–post 1970	Racial Steering & Blockbusting	A realtor practice of steering homebuyers away or toward certain neighborhoods depending on the race of the buyer
1937–post-1970	Racialized Public Housing Policies	Local housing authority segregation policies & racial quotas, barriers (e.g. voter referenda) to building new public housing, demolition of public housing without replacement.
1950–post-1970	Urban Renewal	**1966:** Reinstatement of California Fair Housing Act **1968**: Passage of Federal Fair Housing Act State acquisition of private land through eminent domain & forced displacement of residents to allow for redevelopment.
1945 to post-1970	White Flight and Municipal Fragmentation	Movement of white households away from urban centers to suburbs, incorporation of new suburban municipalities.

14

Definition

Combination of socio-economic and mobility characteristics

- Ethnic diversity
- Poverty proportion
- Density of the built environment
- Education level
- Income

Computational methods

Dimensionality Reduction

Apply principal component analysis on our key attributes

Weighted sum

Compute the weighted sum of key attributes

Neighborhood's sustainability characteristics
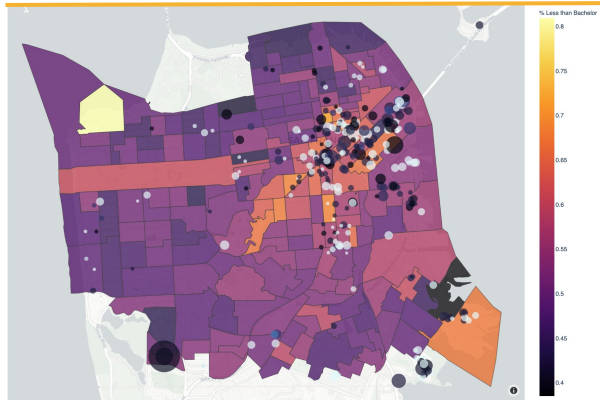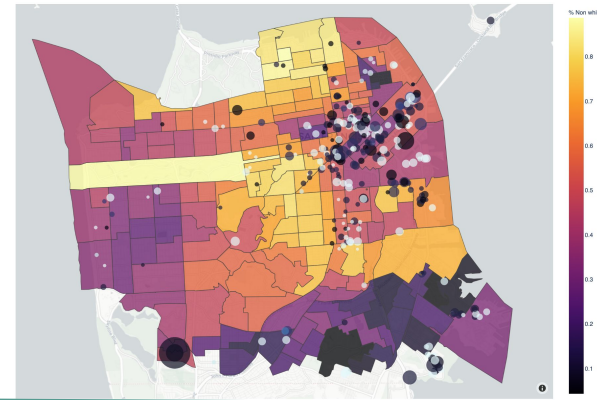

Education
% less than bachelor

% Non white
Ethnicity

Poverty
% below poverty level
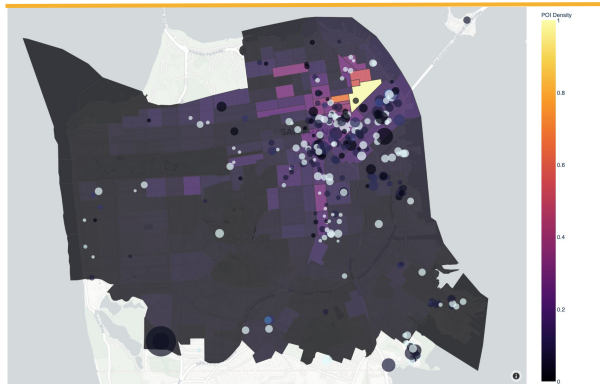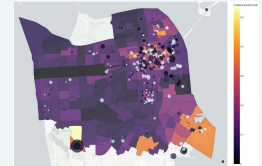
POI Density
POI per square meter

Household income $
Income

16

Neighborhood's sustainability - Results
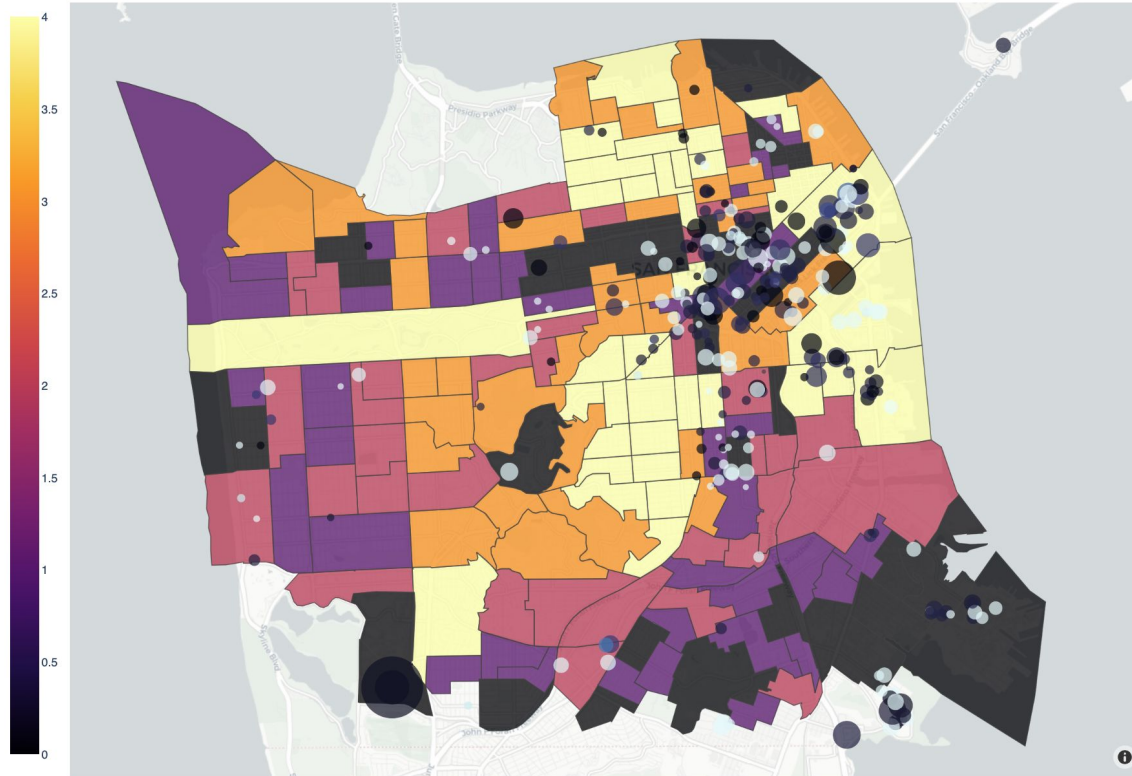
80% of all affordable housings are located in the **40%** less sustainable neighborhoods

17

Waldo Tobler's

First Law of Geography:

"Everything depends on everything else, but closer things more so."

Using Local Moran's I:

$$I_i = z_i \sum_j w_{ij} z_j$$

Spatial auto-correlation on Non-White Population in SF - Local Moran I Statistics

- Q1: Red indicates high non-white areas surrounded by other high non-white areas.
- Q2: Teal indicates low scores surrounded by high scores.
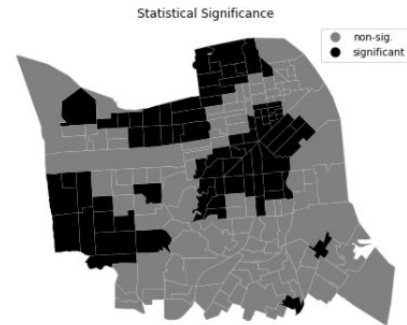- Q3: Low scores surrounded by low scores
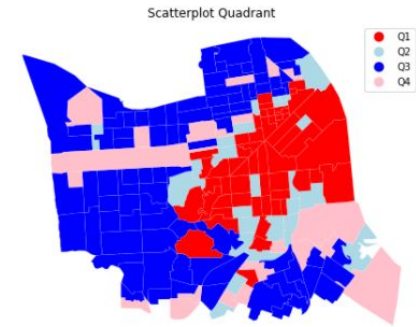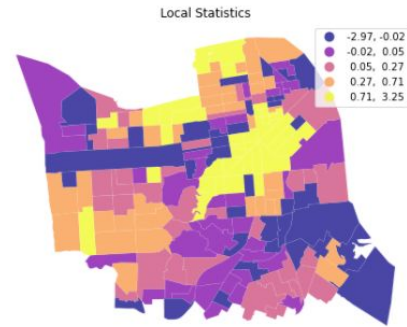- Q4: High scores surrounded by low scores.

19
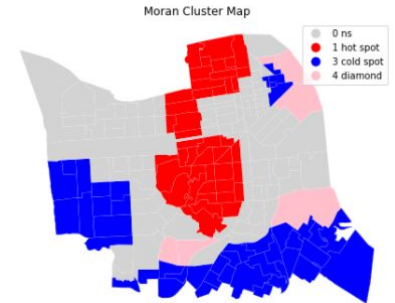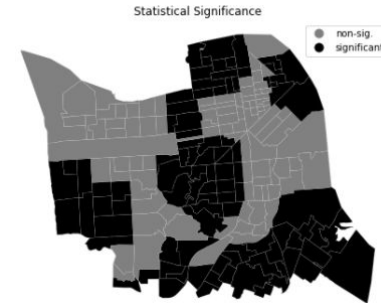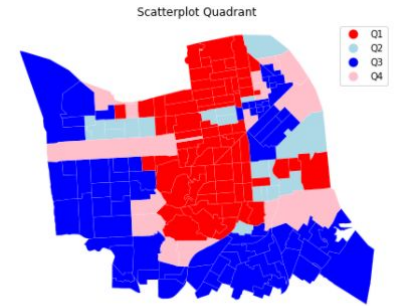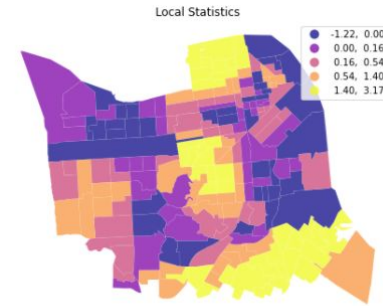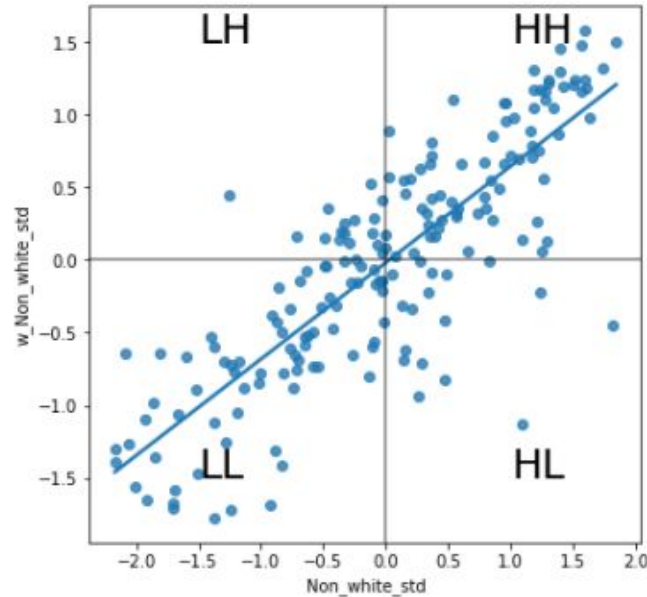
Spatial auto-correlation of Poverty Level in SF - Local Moran I Statistics
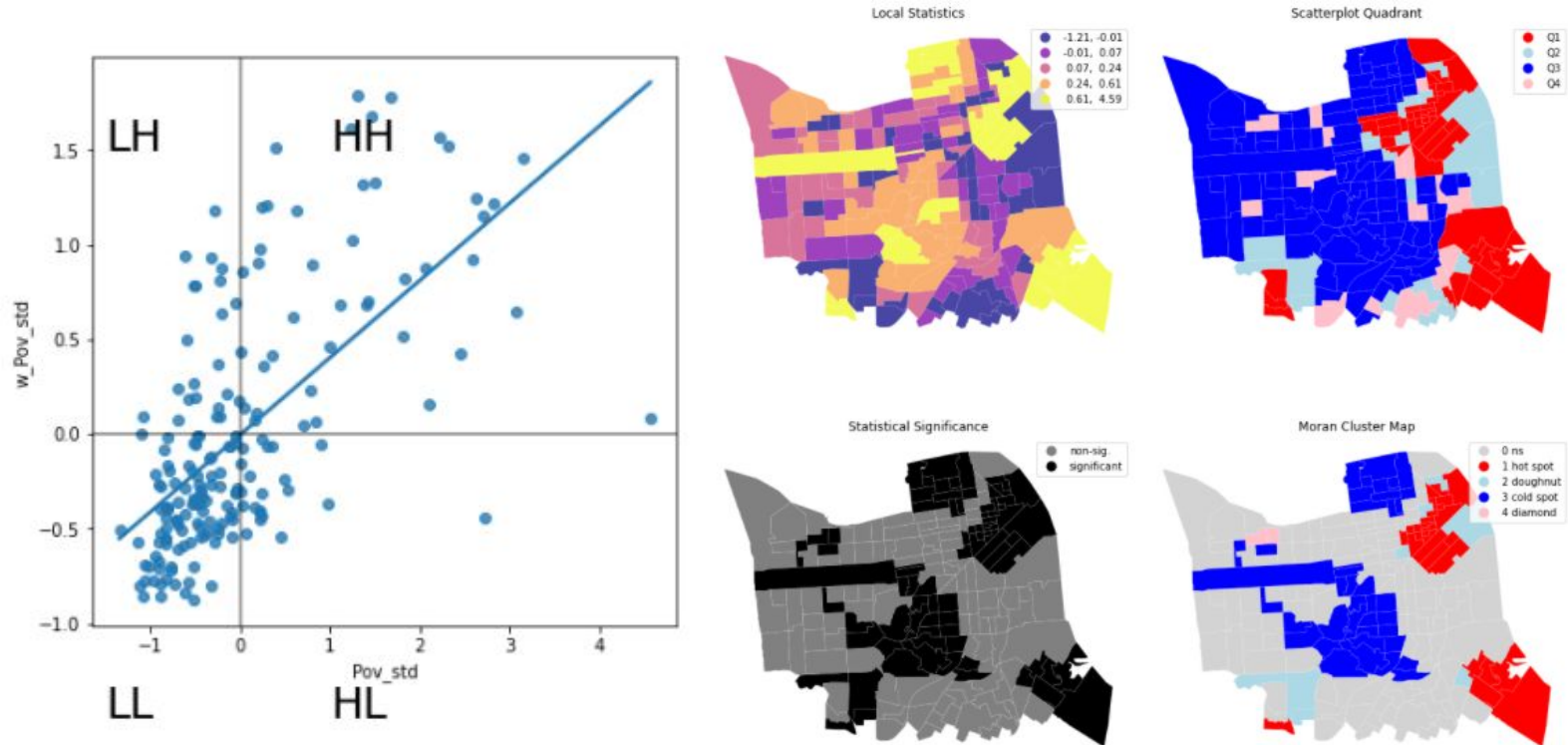
Spatial auto-correlation of Bachelor Education Level in SF - Local Moran I Statistics

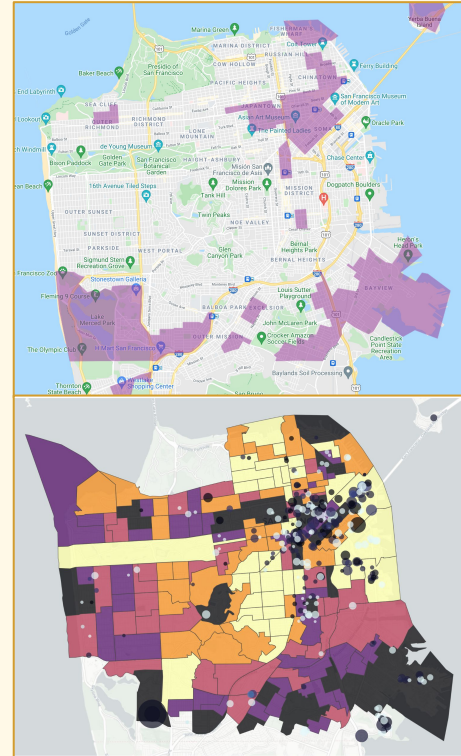# 05
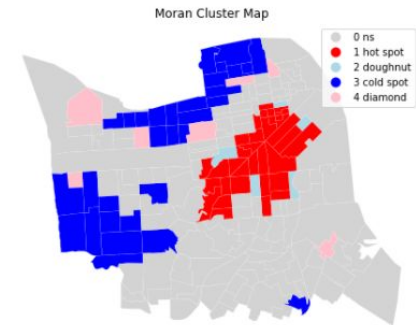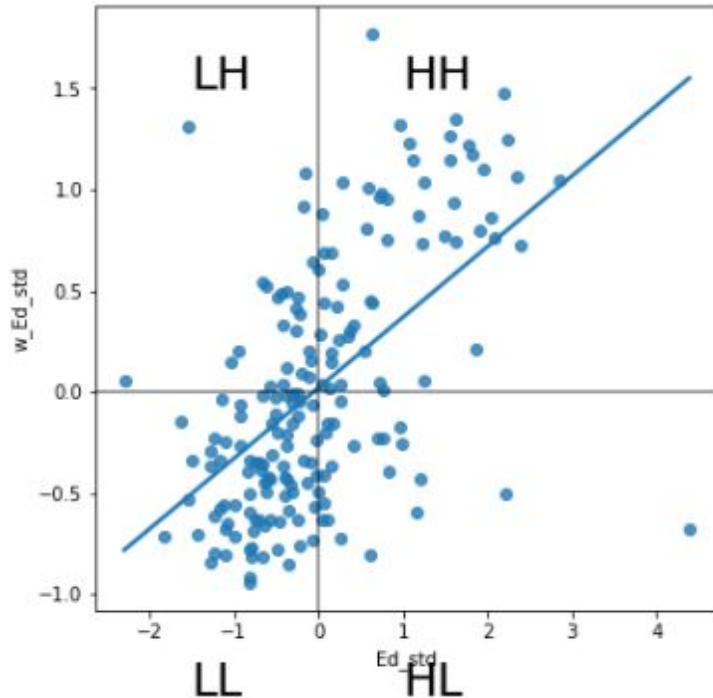
Conclusions and Recommendations

QCT (qualified census tract)

- Provides financial benefits for residents and owners (tax exemption/reduction)
- Eligibility criteria

Government policies support less sustainable neighborhoods, where most affordable housings are located

Qualified Census Tract

+ Focused on the development of less sustainable neighborhoods

- Can persist impoverishment of these same neighborhoods

Continues to congregate poorer people into the same poorer areas

Proposition

New Housing Policy

+ Expand low-income housing into richer neighborhoods

+ Provide tax benefits or back more projects in a larger variety of neighborhoods

Decrease segregation and increase integration

24

THANK YOU!

Any questions?