## Zoning, Land-use Fragmentation And Environmental Justice In Early Phoenix, AZ

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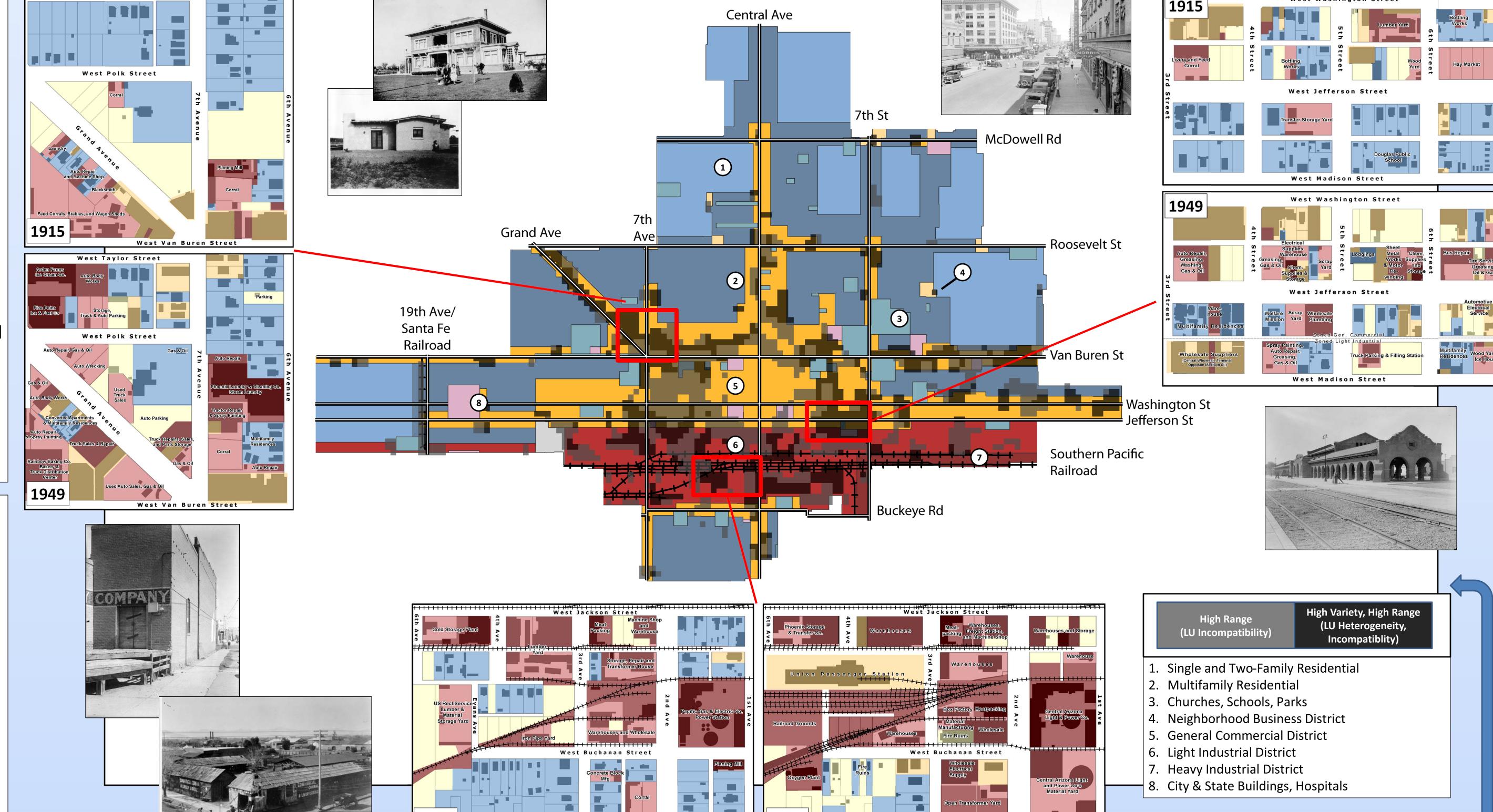
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#### Background

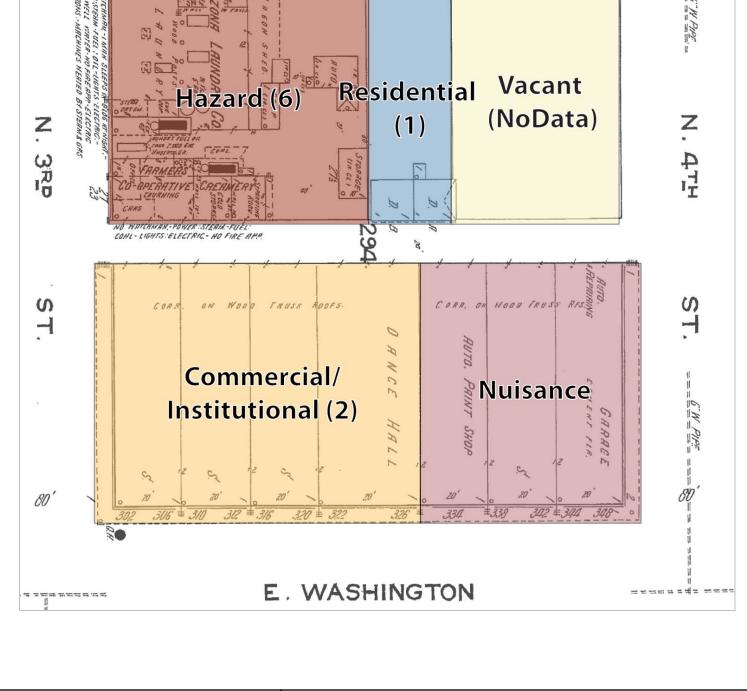
- •Euclidean Zoning adopted by Phoenix in 1930 to promote urban health/efficiency through rigid separation of land-uses
- •Effects of zoning have often run counter to this. Posited that zoning decisions in Phoenix have over time created "random" (fragmented) land-use designations (Talen 2011)
- •Building from this: does the early onset of zoning in Phoenix promote fragmented land-uses within zones themselves?
- •Comparison of land-use in Phoenix pre (1915) and post- (1949) zoning using parcel-level land-use coverages generated from Sanborn Fire Insurance Mans
- •Environmental Justice emphasis: identifying community exposure to nuisances and hazards

#### Analysis

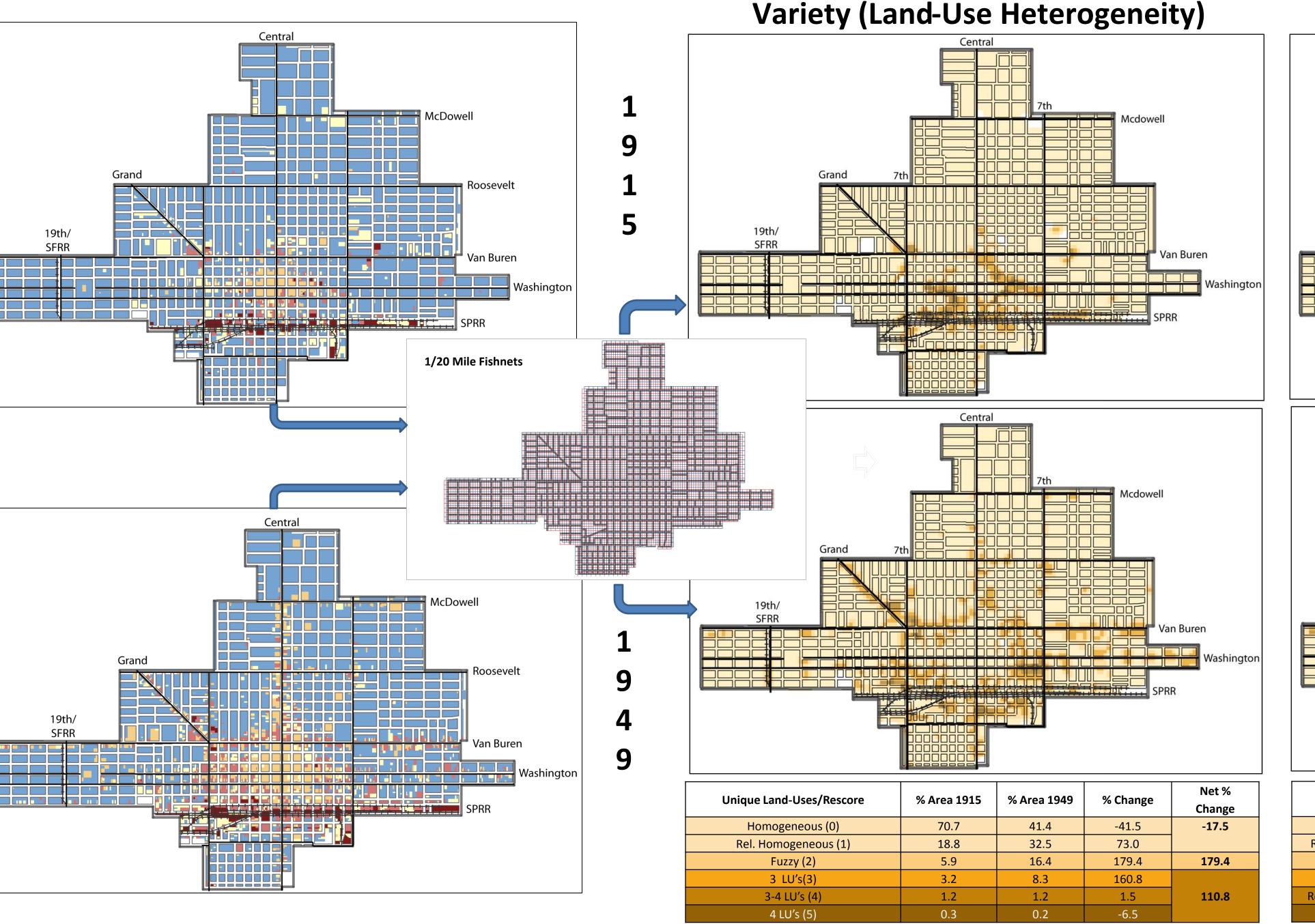
- •Case study area: 1915 Sanborn Map Coverage of Phoenix
- •Digitization/editing/analysis performed using ESRI ArcGIS
- •Metrics: Variety (LU Heterogeneity): unique LU's/cell; Range (LU Incompatiblity): Distance between LU classification scores. Higher Range = greater land-use conflict
- Aggregated to two 1/20 mile fishnets to capture block and corridor-level interaction effects



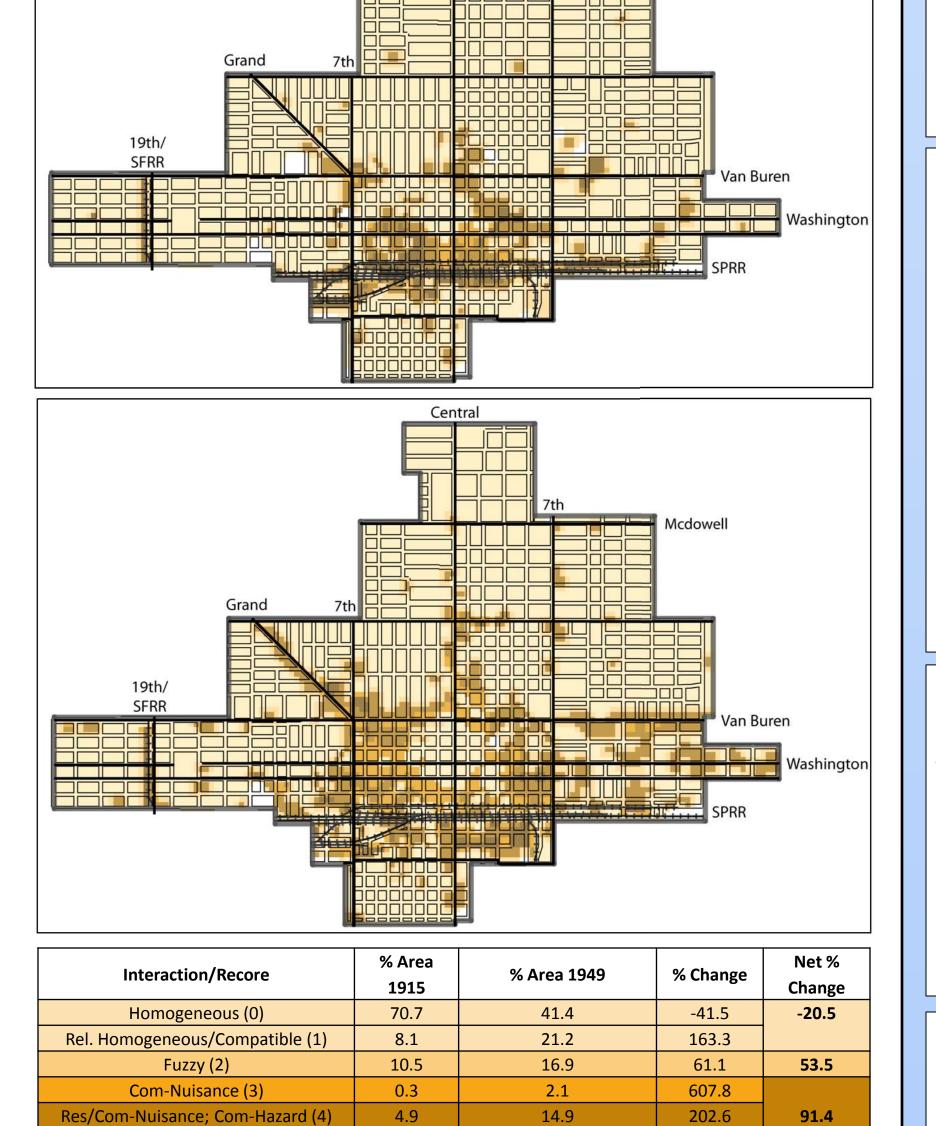
# Sanborn Map Classification



Class (Score)	Description
Undeveloped (NoData)	Vacant parcels, parking lots, parcels containing vacant or damaged structures
Residential (1)	Single- and two-family homes, apartments, boarding houses, lodgings, tenements, cabins, shanties; Churches, schools, parks, clubs; Parcels subdivided for residential use
Commercial/Institutional (2)	Retail, restaurants, hotels, offices, neighborhood groceries, health services; Government offices, public services, armories, hospitals
Nuisance (5)	Warehouses, wholesale suppliers, lumberyards, scrap yards, transport distribution facilities, light manufacturing, repair, and maintainence facilities; Automotive services
Hazard (6)	Planing and flour mills, industrial steam laundries, ice manufacturing and cold storage, chemical storage and manufacturing, steel manufacturing, electric power stations and transformer yards, iron works; Rail yards and railroad tracks



### Range (Land-Use Incompatibility)



-36.6

#### Results

•LU Heterogeneity and Incompatibility each spread with the onset of zoning in Phoenix

•Spread of nuisance LU's along major thoroughfares (Van Buren, Grand, Central) and clustering around CBD

•Increase 1915-1949 in residential exposure to nuisance land-uses: dispersion of nuisances

•Slight decrease 1915-1949 in residential exposure to environmental hazards: concentration of hazards

•Net decrease in LU homogeneity/compatibility: Decrease in perfect homogeneity; increase of relative LU compatibility (i.e. along N. Central Ave corridor, RR-oriented land-uses

#### Discussion

•Permissiveness of nuisance LU's (esp. automotive services, warehouses & wholesale) under Phoenix's original zoning ordinance

•Persistence of older minority neighborhoods within areas rezoned Gen. Commercial and Light Industrial

•Multifamily Residential zones as buffers between homogeneous, racially-restrictive single-family neighborhoods and disamenty zones

•Homebuilding boom, automobile dependency 1920s+: distancing of Phoenecian suburbs from expanding industry and problems of CBD; Boosterism thrives

•Onset of postwar Phoenix sprawl amid decaying CBD

#### **Future Directions**

•Incorporation of a larger time series of Sanborn Maps for future research (1890s-1960s)

•Spatial modeling of parcel-level land-use change in central Phoenix

 Assessment of zoning change (rezoning and variances) in Phoenix from the postwar era to present

#### Sources

Talen E, 2011, "Zoning for and against sprawl: A local analysis", Working paper, School of Geographical Sciences & Urban Planning, Arizona State University, Tempe, AZ.

Map Sources:
ProQuest Digital Sanborn Maps Database
Phoenix City Zoning Commission 1930 and 1941 Zoning Maps
Hale A and Talen E, 2011, "Analysis of Zoning Changes in Phoenix, AZ", CAP-LTER 13<sup>th</sup> Annual Poster

•Image Source: Arizona State University Libraries Arizona and Southwestern index

#### Acknowledgements

Funding provided by the President's Strategic Initiative School of Human Evolution and Social Change's Late Lessons from Early History Project