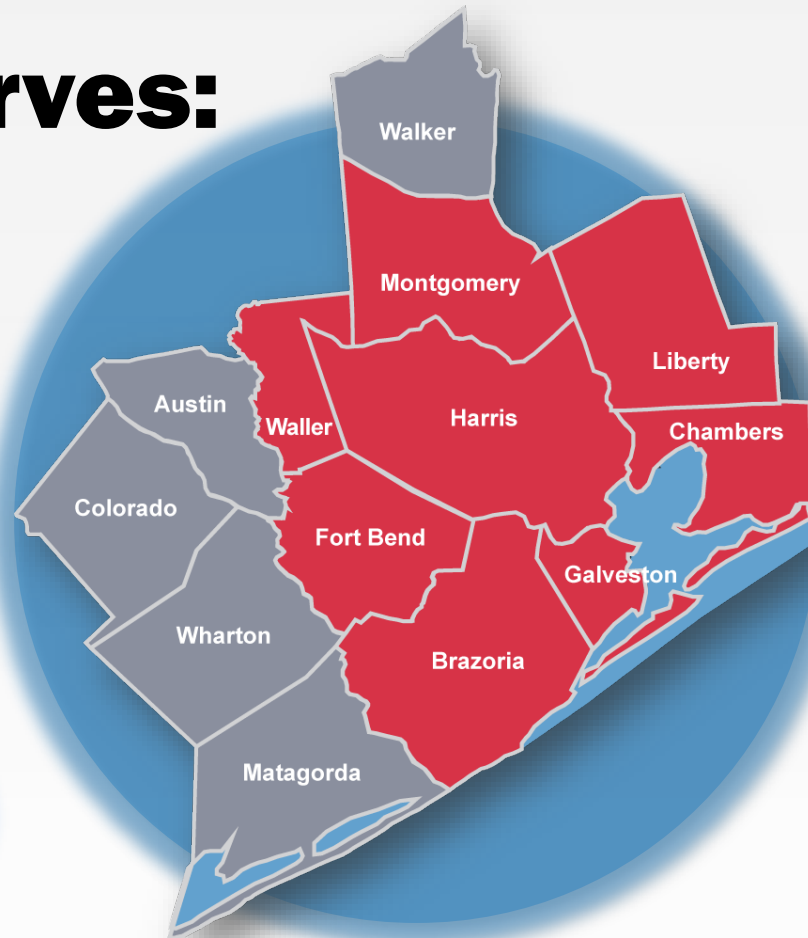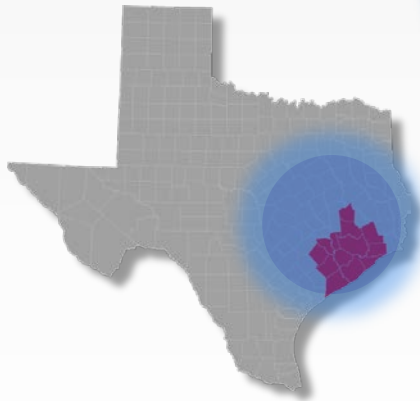# Interactive Web Mapping Applications for Planning

Pramod Sambidi PhD

Houston-Galveston Area Council

2017 Local Employment Dynamics (LED) Partnership Annual Workshop
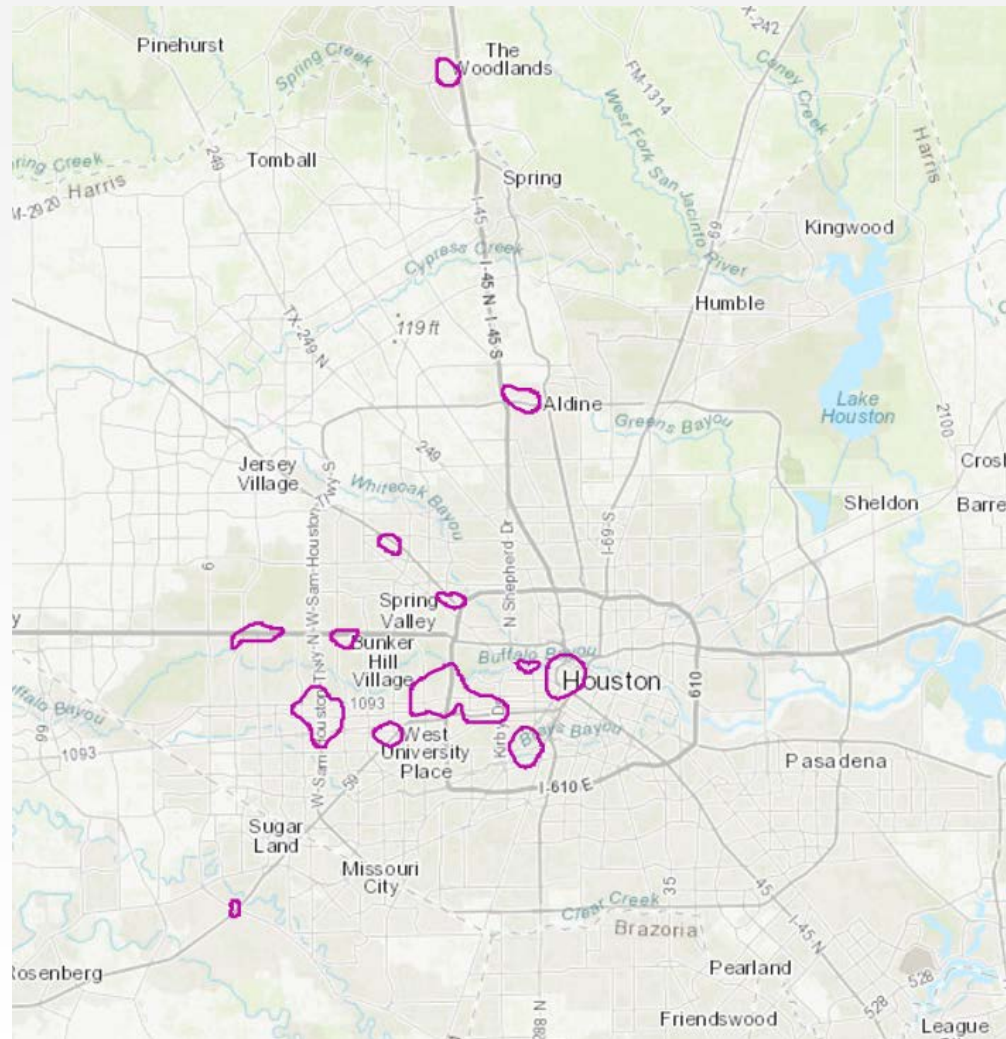
HGAC

Houston-Galveston
Area Council

H-GAC serves:

- **13 counties**
- **134 cities**
- **6.9 million people**
- **3 million jobs**
- **MPO for 8-county metro area**

Application 1

Commuting Patterns Tool
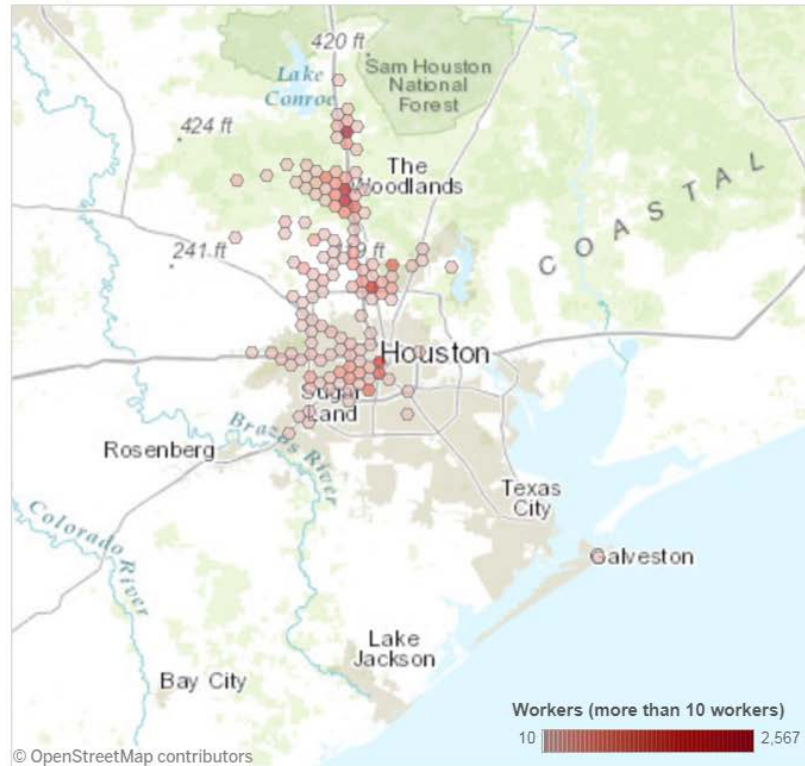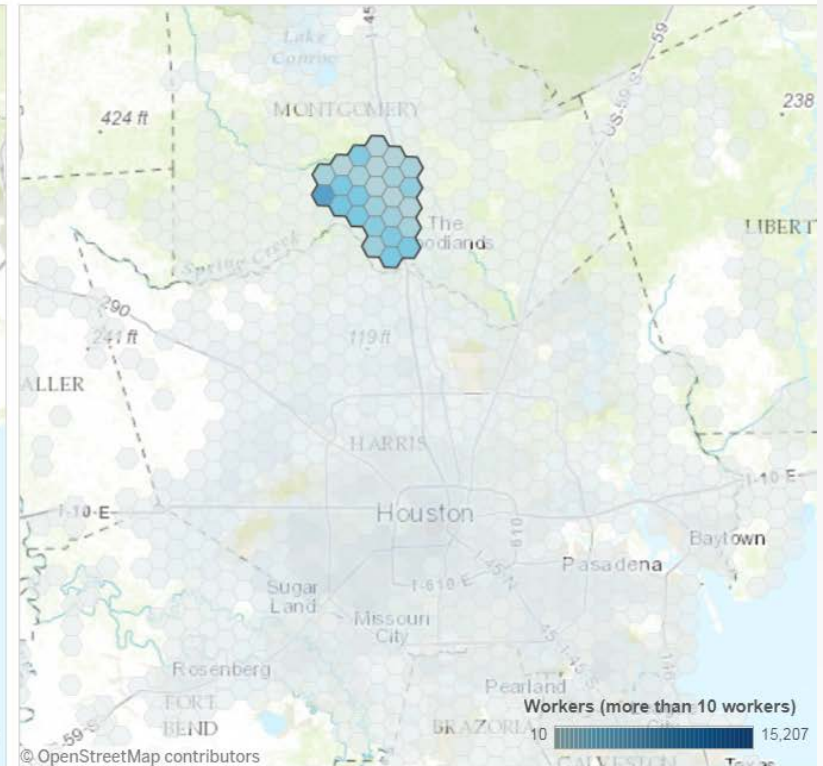
Houston- Employment Centers

Overview

- Analyzes workers commuting patterns between home and workplace

- Data: US Census Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES)

- Geographic-level: Hexagon Grids, Census Tracts, Zip Codes, Regional Sections, and County

- Update: Annual

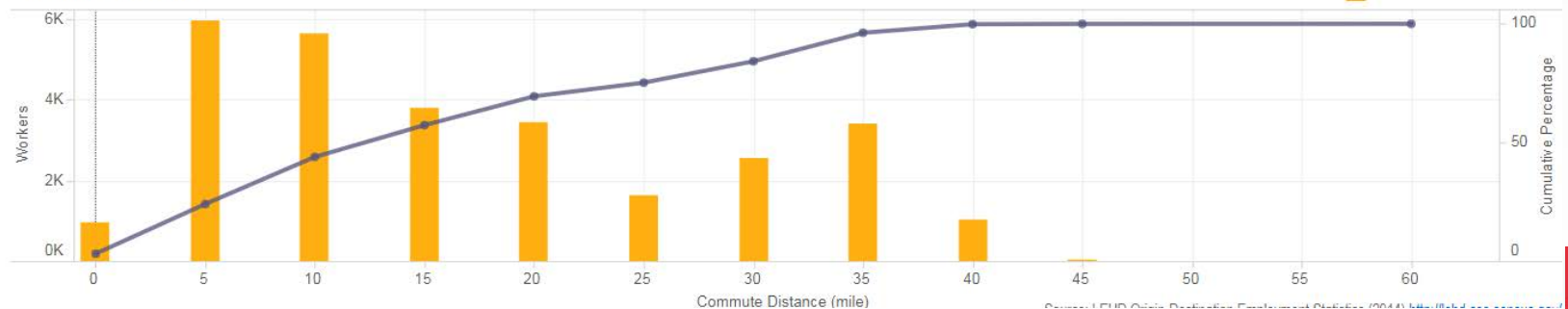- Software/Tools : SAS, GIS, and Tableau
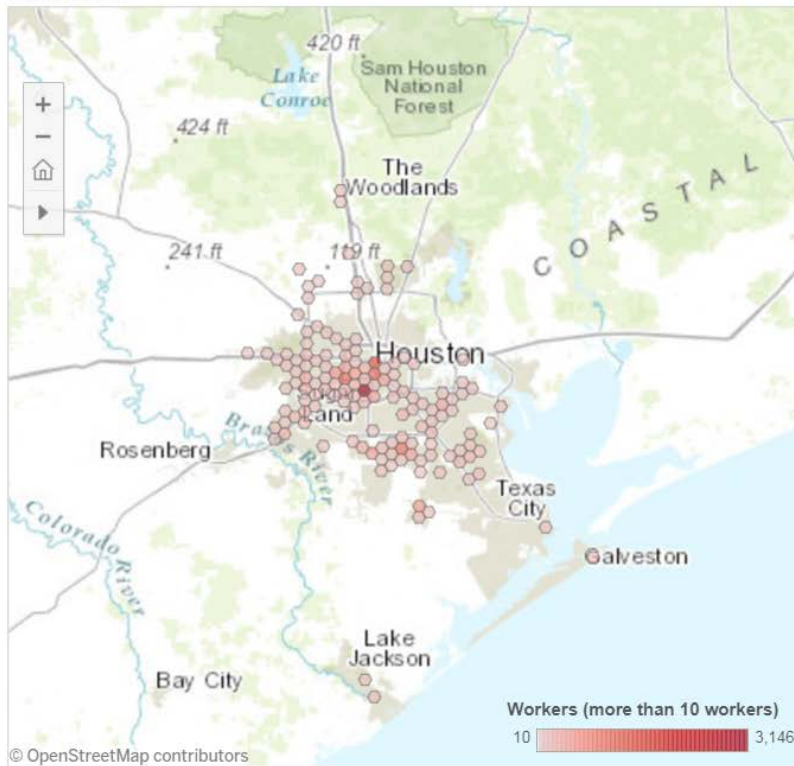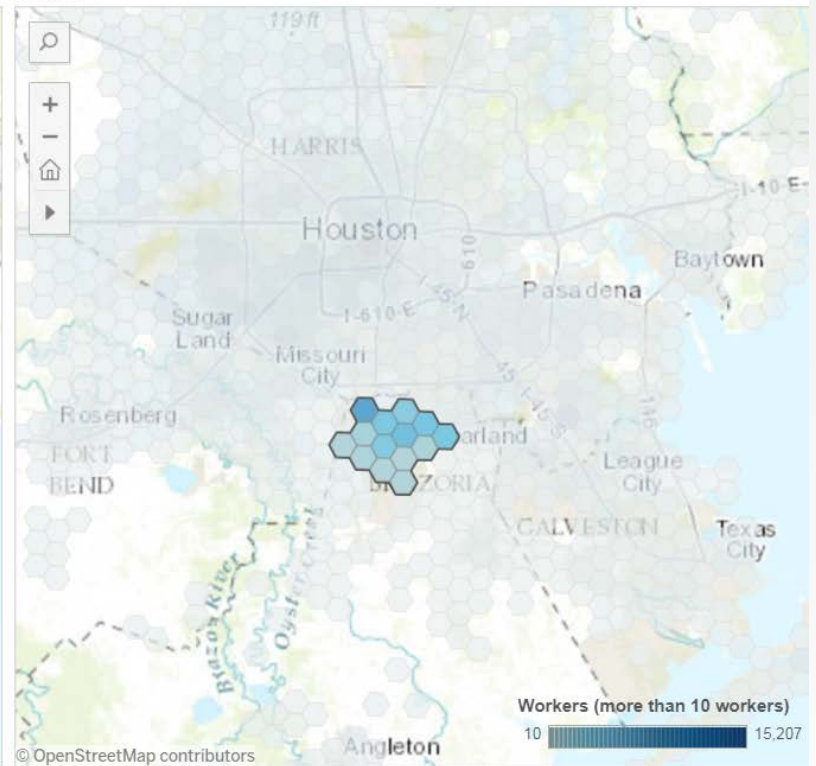
Example 1: The Woodlands

Workplace

Home

Workers (more than 10 workers)
10 — 2,567

Workers (more than 10 workers)
10 — 15,207

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Commute Distance

Cumulative Percentage
Workers

Commute Distance (mile)

Source: LEHD Origin-Destination Employment Statistics (2014) http://lehd.ces.census.gov/

Example 2: Pearland
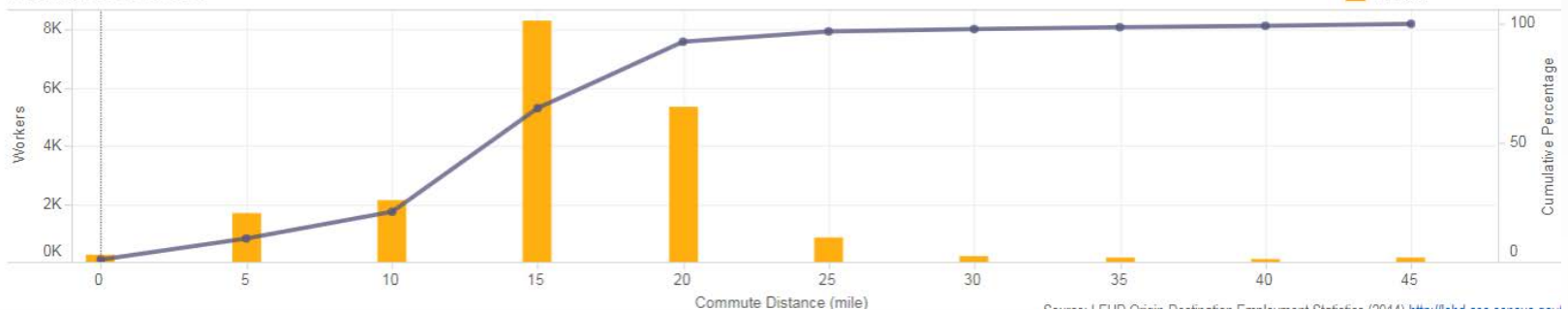
Example 3: Katy

Workplace

Home

Workers (more than 10 workers)
10 — 2,914

Workers (more than 10 workers)
10 — 15,207

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Commute Distance

Cumulative Percentage
Workers
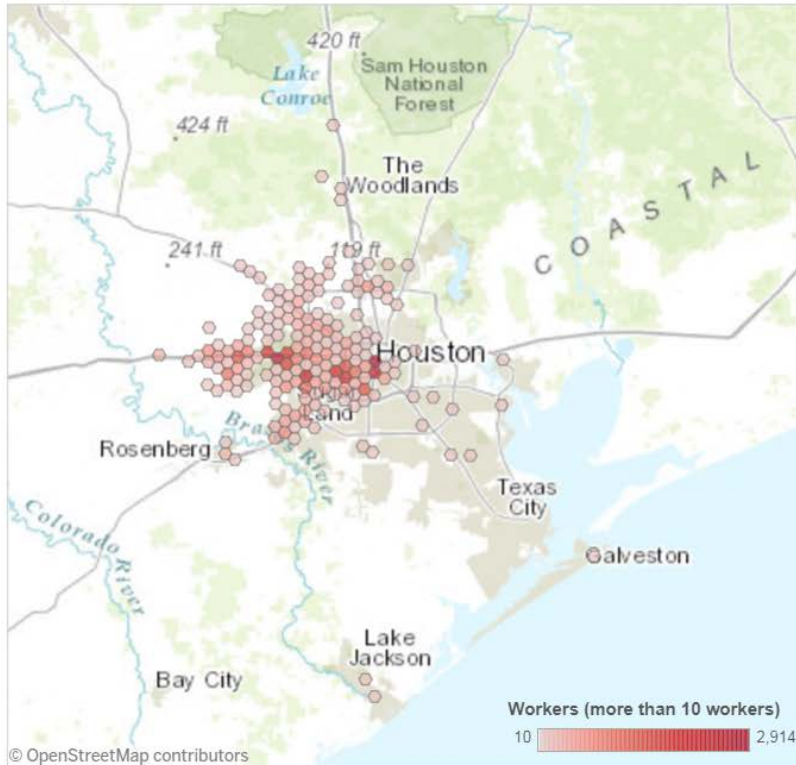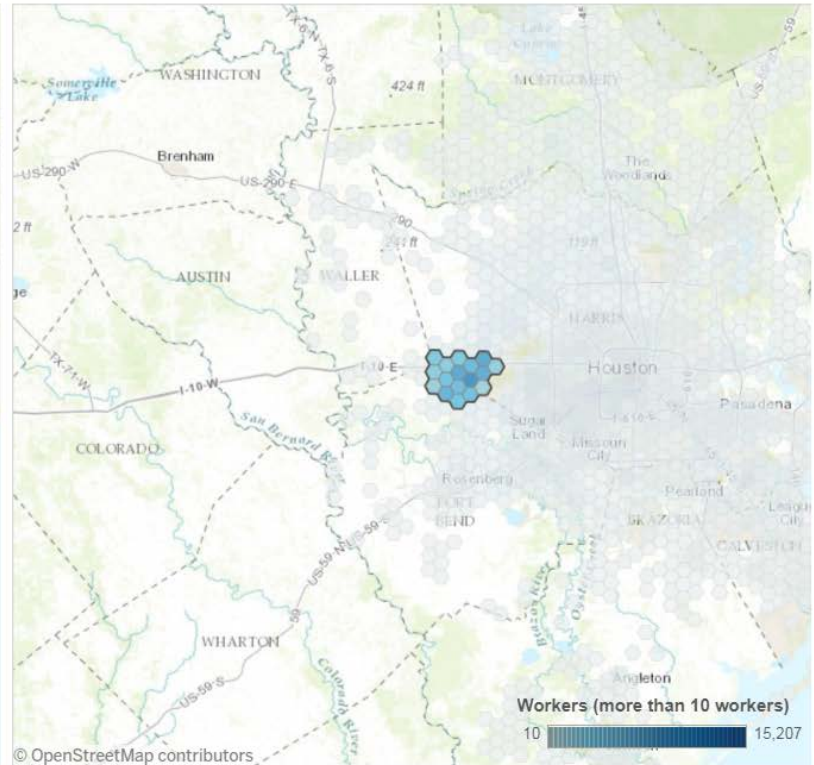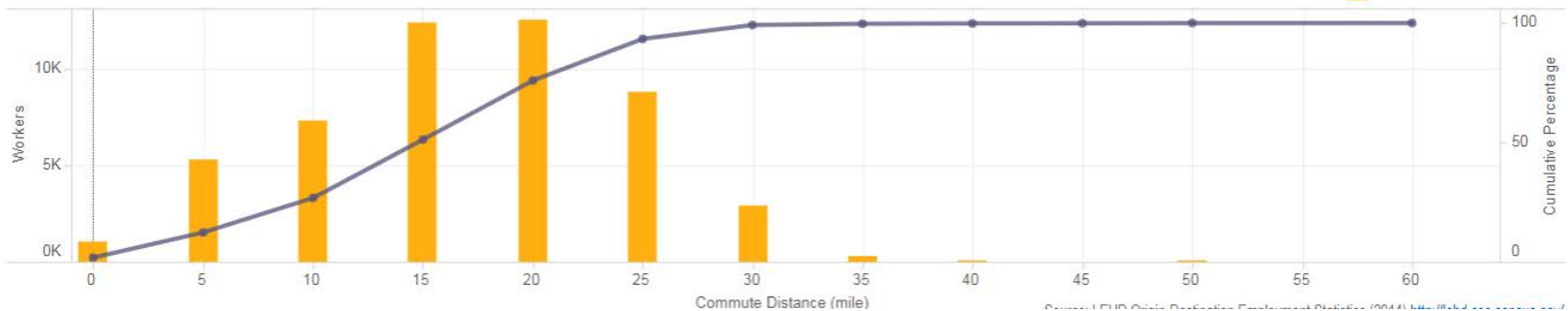
Example 4: Sector 12

Workplace

Select Workplace Sector
(All) ▼

Workers
13,116 — 555,446

© OpenStreetMap contributors

Home

Select Home Sector
(All) ▼

Workers
232 — 49,640

© OpenStreetMap contributors

Sector Details (Where Most Workers Work)

	Workers
Sector 12	155,288 (100.0%)

0K   50K   100K   150K   200K
Workers

Sector Details (Where Most Workers Live)

Sector	Workers
Sector 12	49,640 (32.0%)
Sector 3	19,506 (12.6%)
Sector 14	11,892 (7.7%)
Sector 8	11,395 (7.3%)
Sector 22	11,002 (7.1%)
Sector 1	7,181 (4.6%)
Sector 11	5,446 (3.5%)
Sector 23	4,372 (2.8%)
Sector 5	4,158 (2.7%)
Sector 17	3,997 (2.6%)
Sector 9	3,452 (2.2%)
Sector 19	3,445 (2.2%)
Sector 4	2,772 (1.8%)
Sector 25	2,356 (1.5%)
Sector 6	2,218 (1.4%)
Sector 18	1,962 (1.3%)
Sector 21	1,729 (1.1%)

Example 5: Workforce Characteristics

Workplace

Home

Workers
5 ▭ 91,790

Workers
5 ▭ 2,702

© OpenStreetMap contributors

© OpenStreetMap contributors
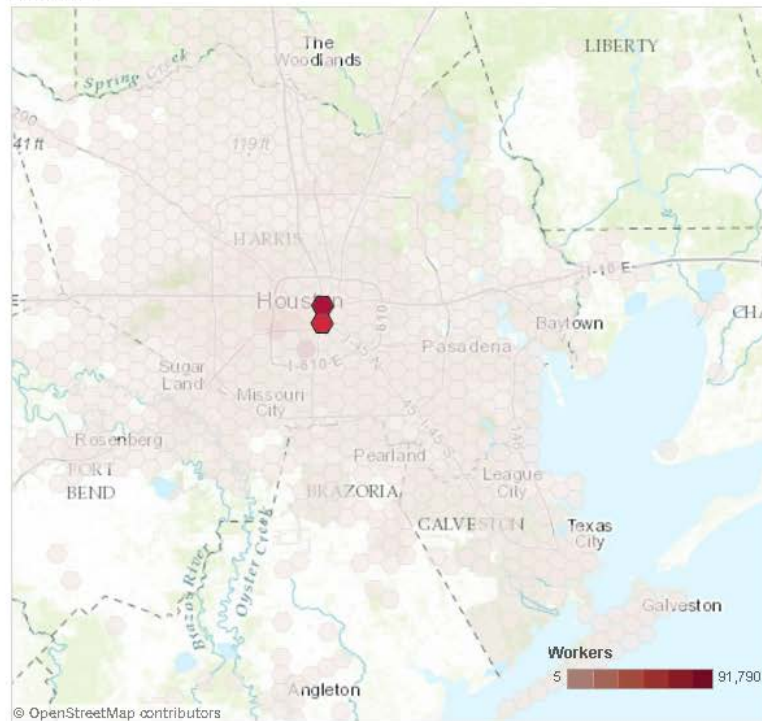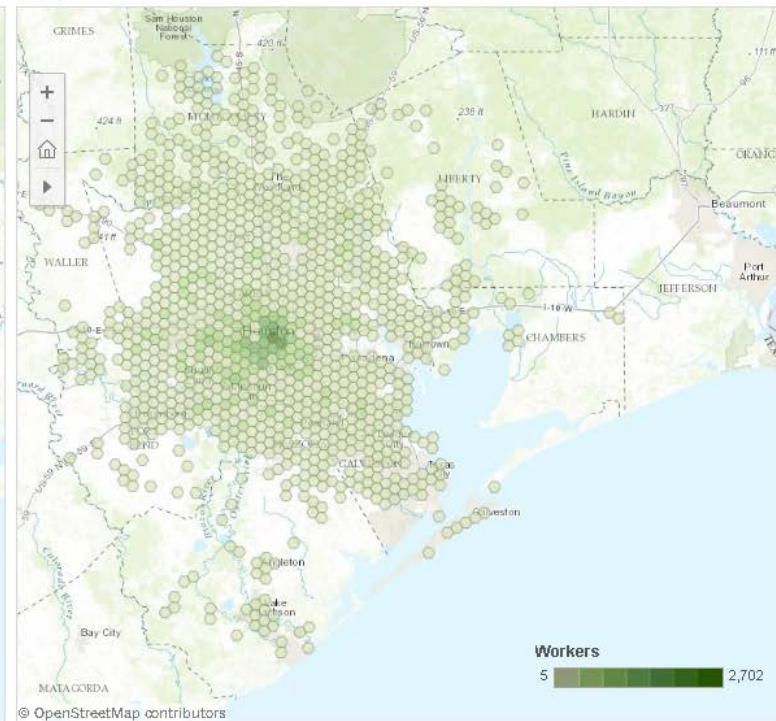
Summary (2014)

Total Workers	160,432
Age 29 or younger	26,313
Age 30 to 54	97,454
Age 55 or older	36,665
$1,250 or less	19,970
$1,251 to $3,333	34,125
More than $3,333	106,337
Goods Producing	22,098
TTU	20,522
Other Services	117,812

Age (2014)
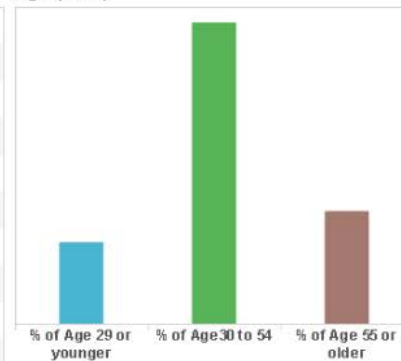
Earning (2014)
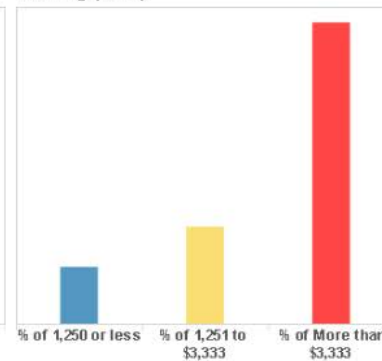
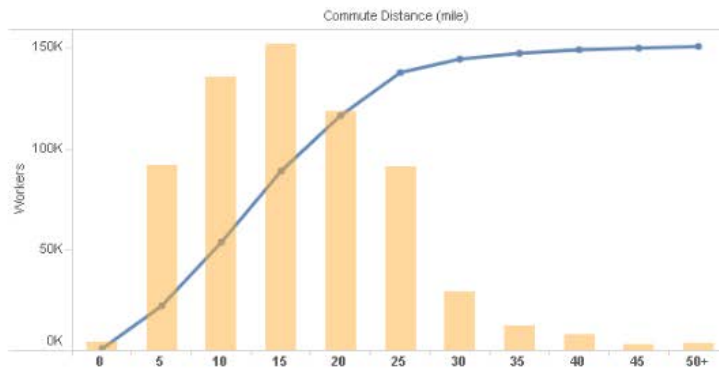Industry (2014)
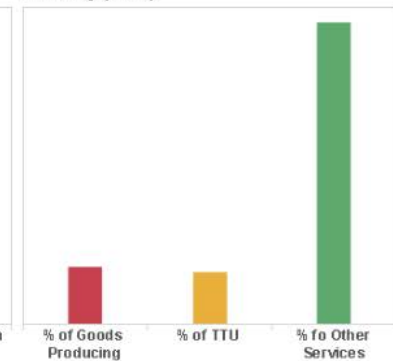
Example 6: Commute Patterns Trend

DEMO
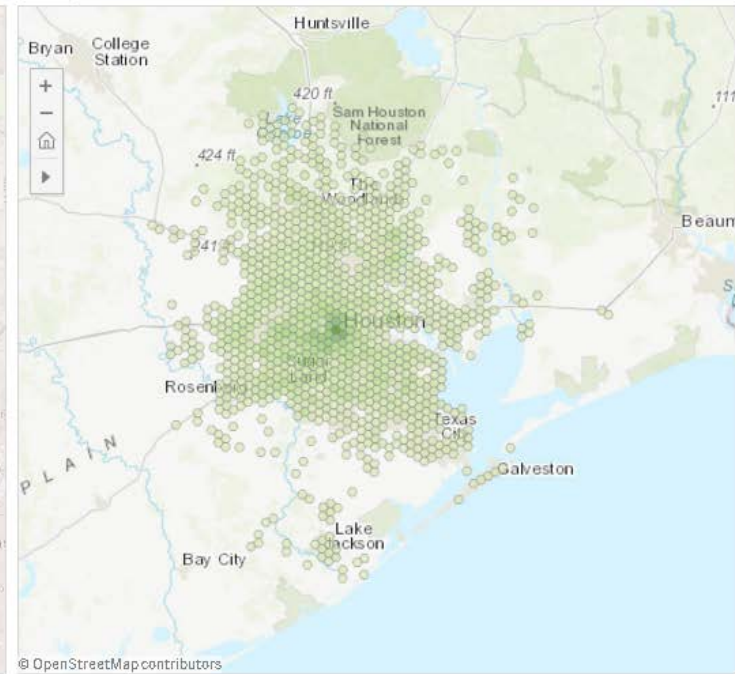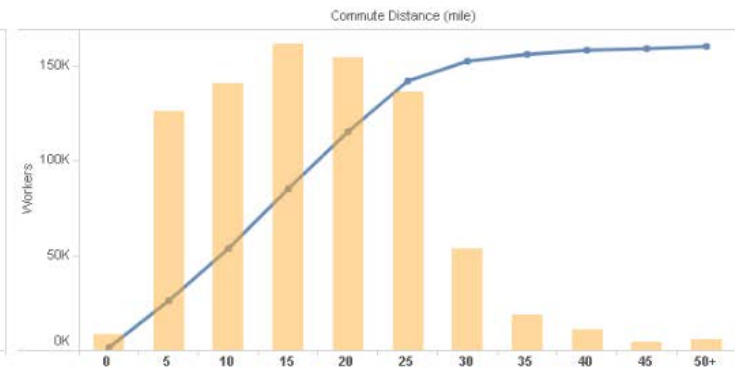
www.h-gac.com/go/apps

Application 2

ACE Tool:
Activity-Connectivity Explorer

Overview

- Identify existing activity center(s) based on density and connectivity index using hexagonal grid system.
- Measure neighborhood accessibility to population, jobs, and amenities
- **Density Indicators :** Household Population, Household, Employment, Activity Population (Population + Employment), Jobs/Housing balance
- **Connectivity Indicators:** Intersections
- **Accessibility Indicators:** Amenities (Ped-bike destinations), Activity Population, Intersections
- **Accessibility Score =** Activity Index (40%) + Connectivity Index (20%) + Amenity Index (40%)
- **Source**: US Census 2000 and 2010, US Census LEHD, Metropolitan Transit Authority of Harris County, County Appraisal Districts, and H-GAC.
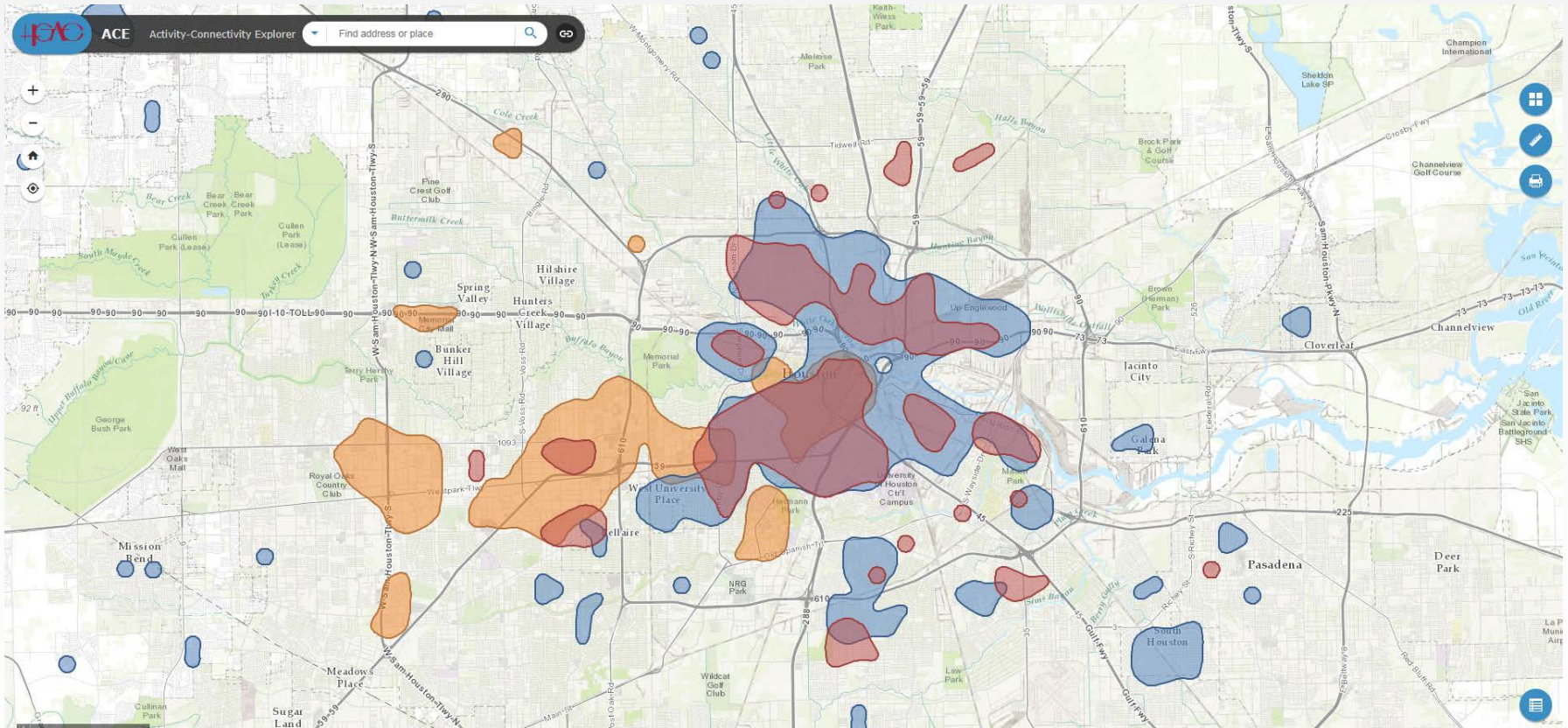
"Activity & Connectivity"

Top 10% Intersection Density
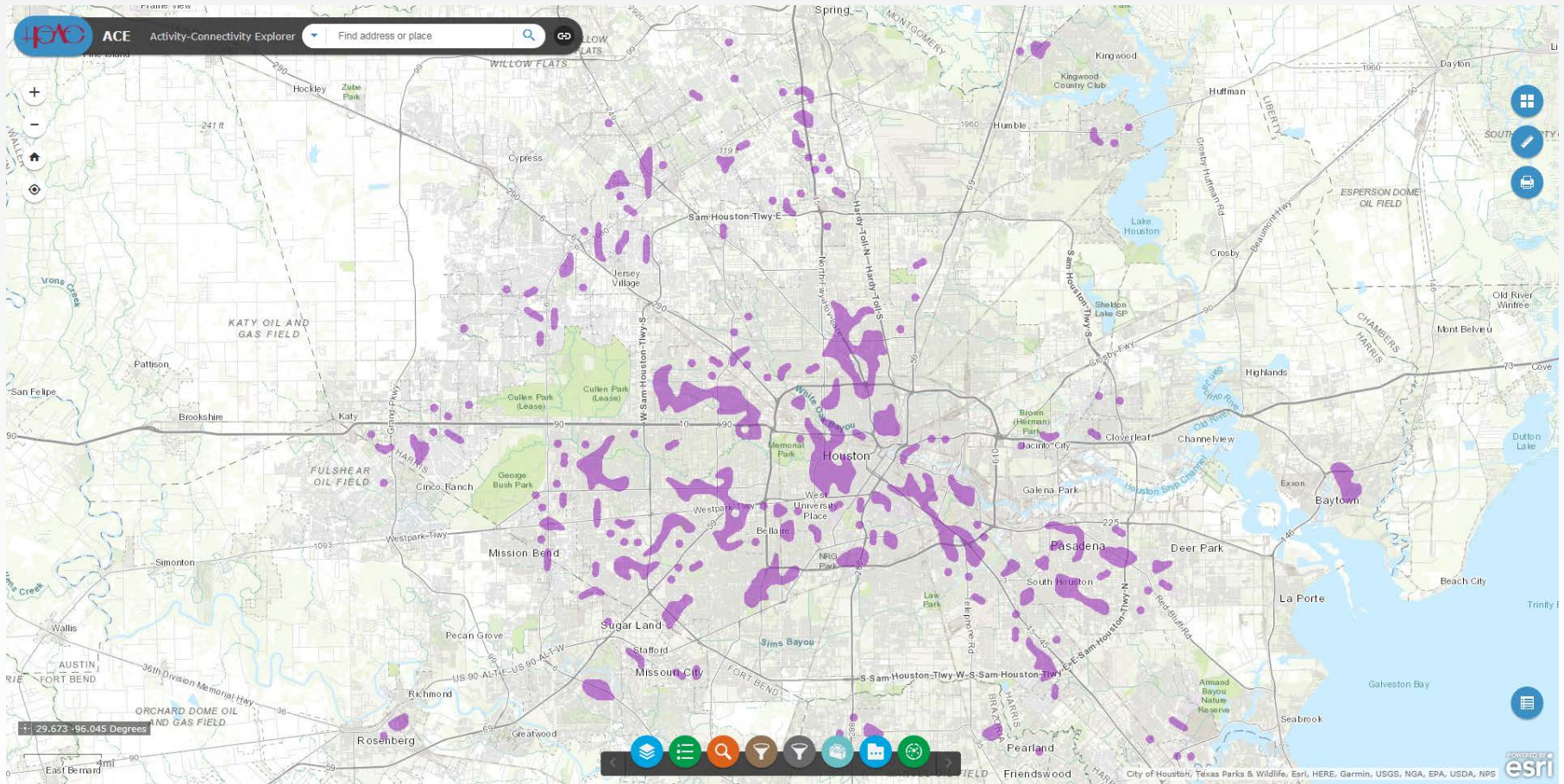Top 10% Activity Population
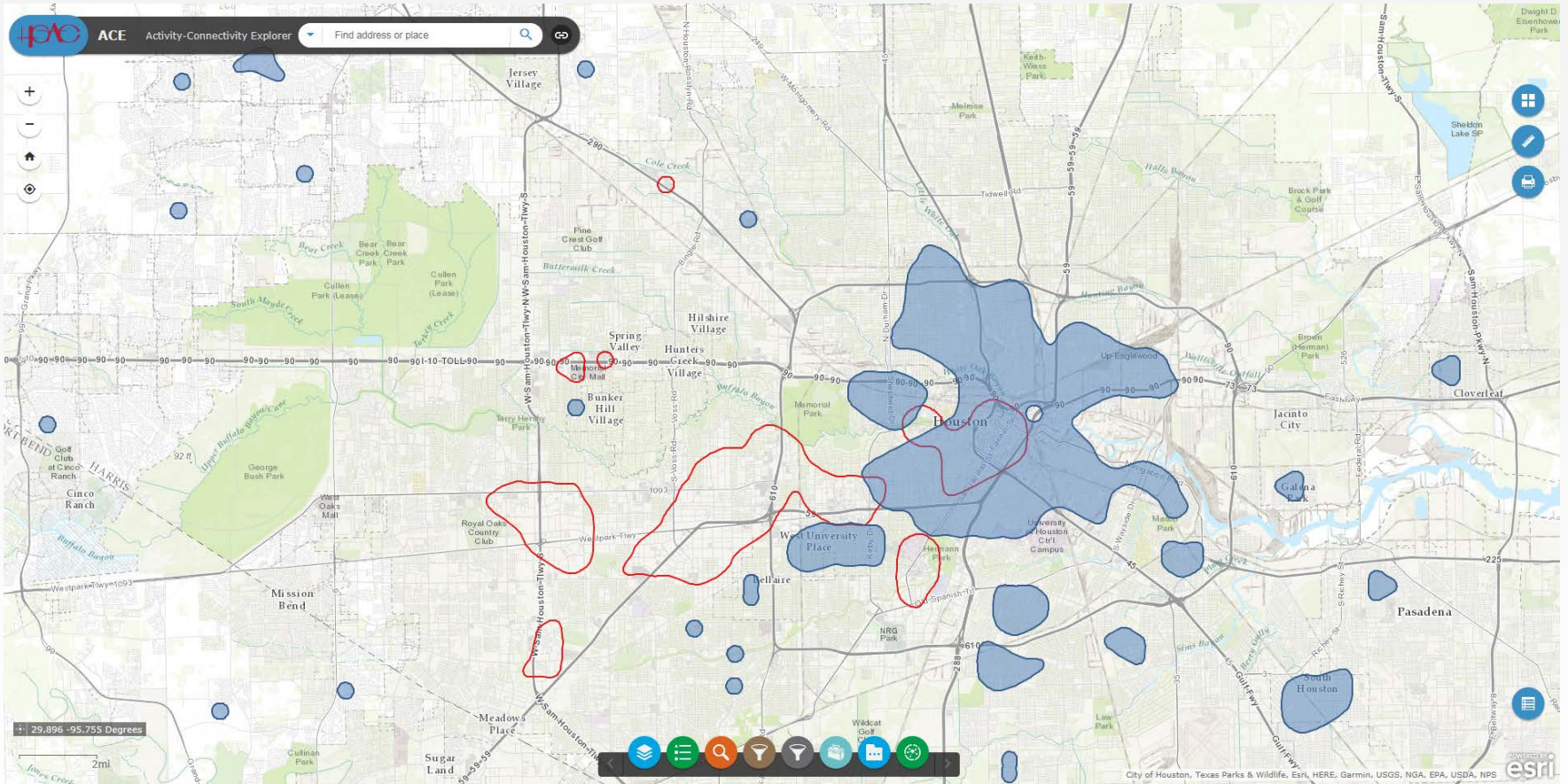
"Activity, Connectivity, & Amenities"

- Top 10% Connectivity
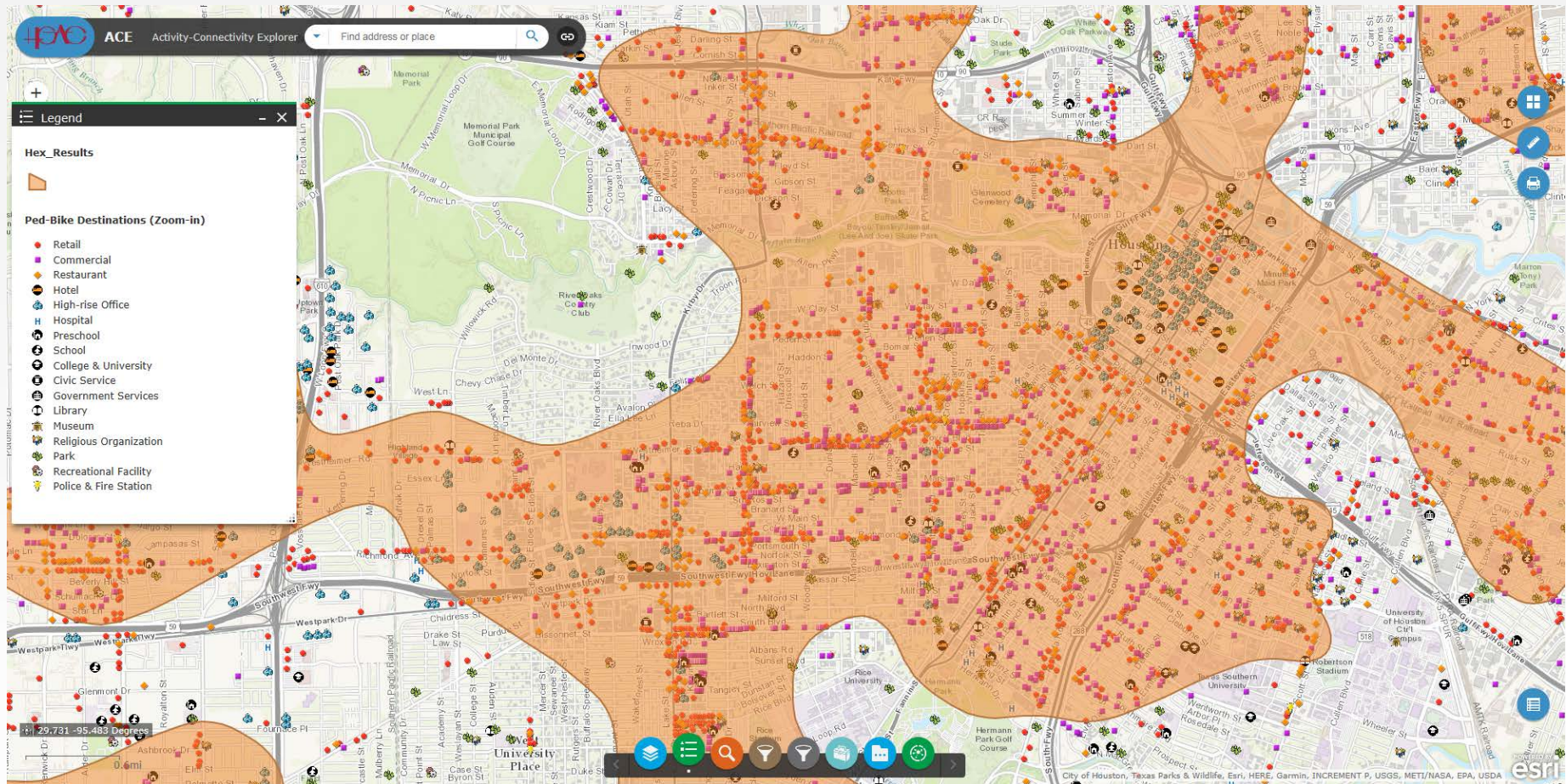- Top 10% Amenity Concentration
- Top 10% Activity

"Mixed Use Neighborhoods"

Jobs to Households ratio between 0.76 and 1.5

"In Top 10% of Accessibility Score"

Employment Density Comparison (2002-2016)
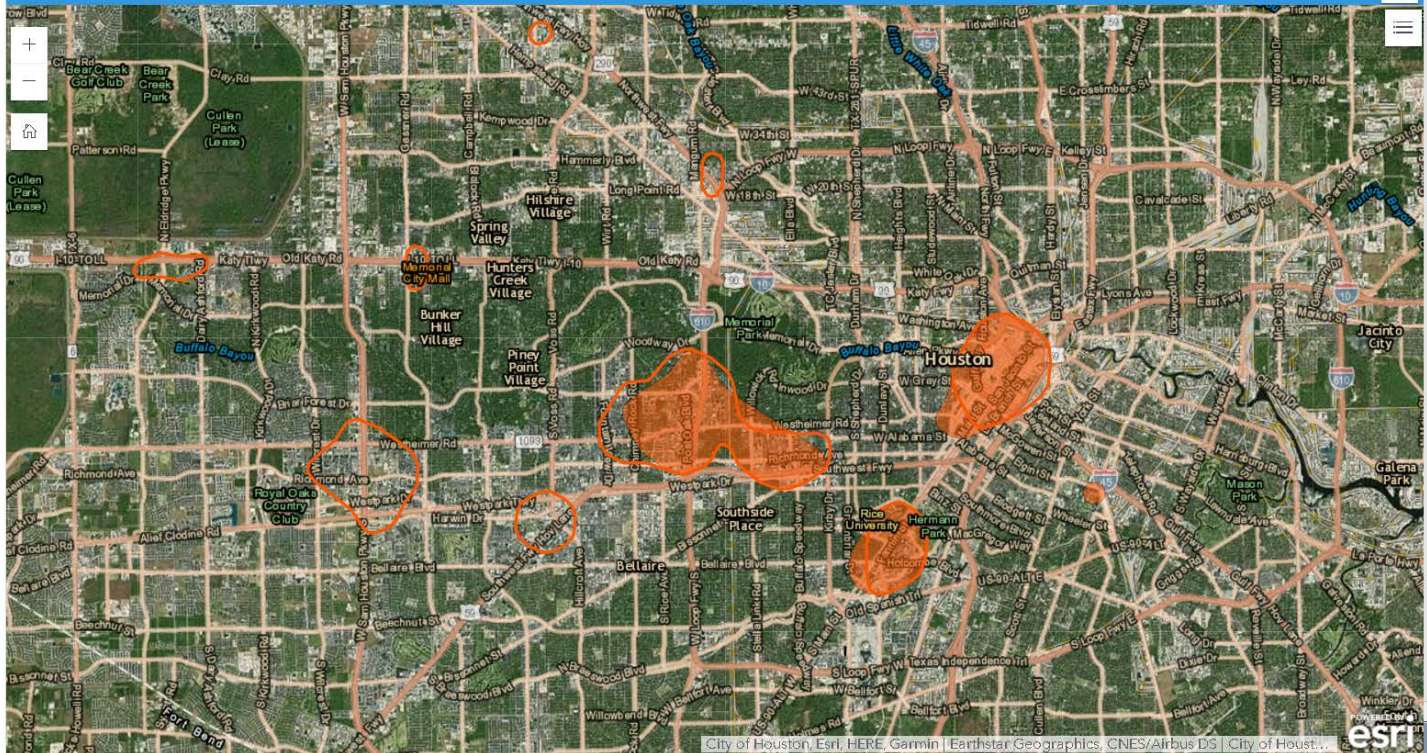
DEMO
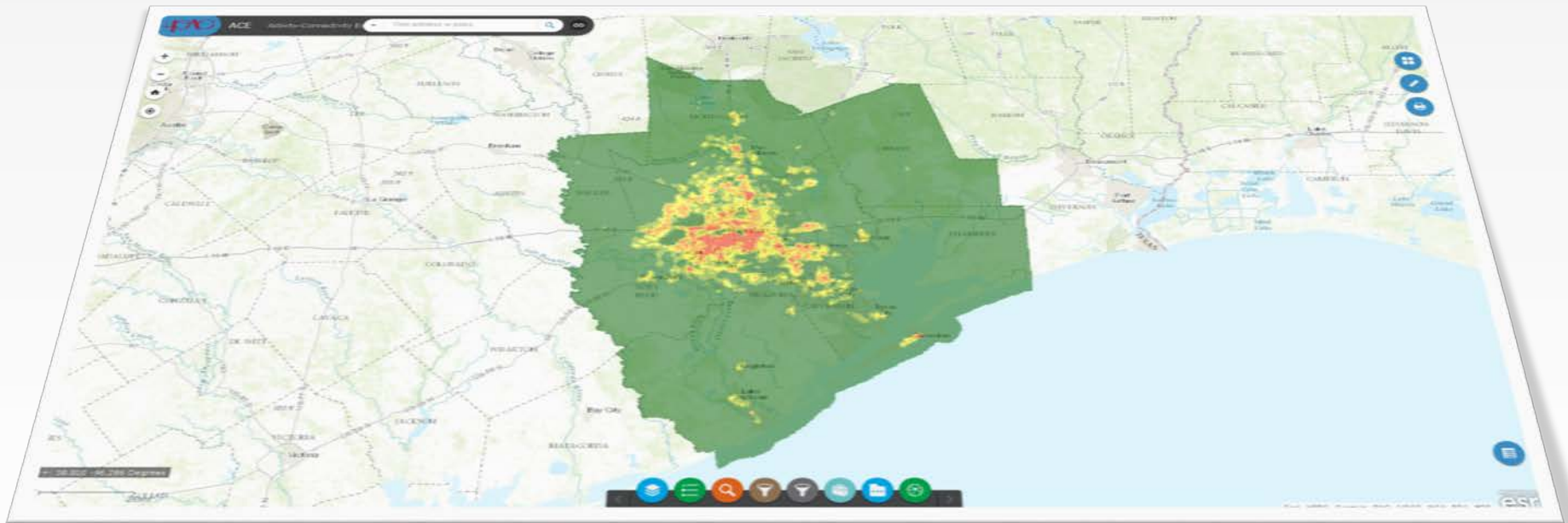
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Pramod Sambidi, PhD
Manager, Socioeconomic Modeling
Houston-Galveston Area Council
psambidi@h-gac.com

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