From land and buildings to human- and function-centered GIS

ArcGIS, the GIS platform driving regional DX

About Kenjiro Nakahira

- **Work**
  - Hino City
    - Director of the Environmental Policy Division
    - Responsible for urban planning (housing estate regeneration project)
    - municipal comprehensive strategy
    - innovation policy, and SDGs promotion plan, among others.
- **Hobby**
  - old-school rock music
  - drawing in an old-fashioned style

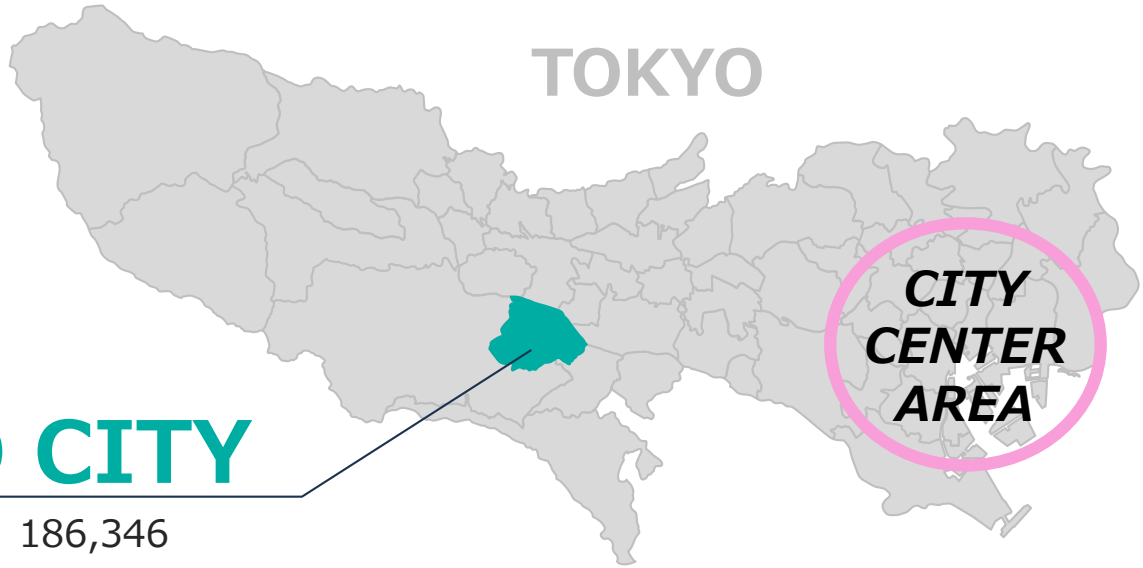
About Kentaro Ujiie

- **Work**
  - Hino City(10years)
    - Architect(4years)★Now
    - City Planning(6years)
      GIS,Master Cityplanning,
      Housing(Vacant Houses)
  - System Development(3years)
    - Industry: Web Advertising
- **Family**:an daughter(5) and a wife
- **Hobby**
  - Drawing(PC)
    - Photoshop,illustrator
  - Vegetable growing
    - Community Garden

CONTENTS

ABOUT HINO CITY

Hino City is a suburban residential town known for its versatile land use, featuring accessible natural landscapes such as greenery and water, corporate clusters, and convenient transportation infrastructure



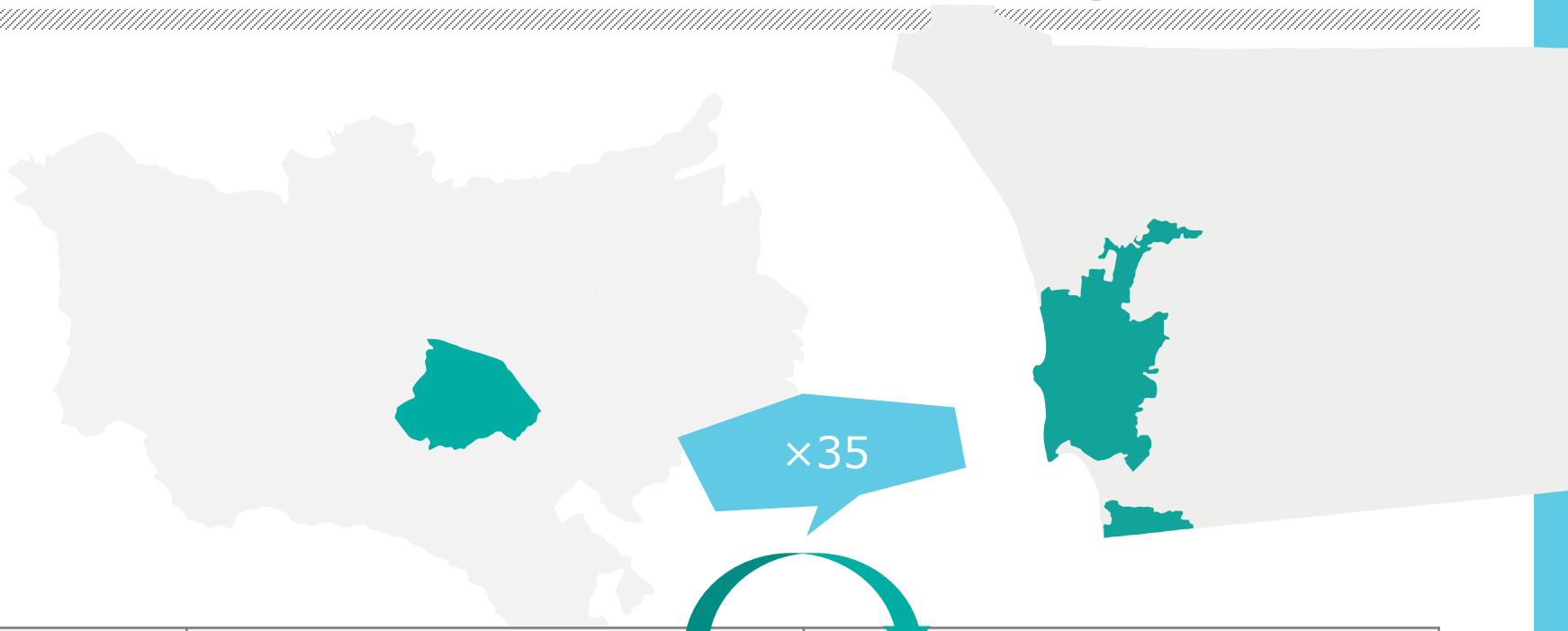
HINO CITY

Population : 186,346

Hino city is a sister city of Redlands, California, in the United States.
The common policy principle aligns with SDG Goal 17: "Partnerships for the Goals," emphasizing collaboration to achieve objectives.

17 PARTNERSHIPS FOR THE GOALS

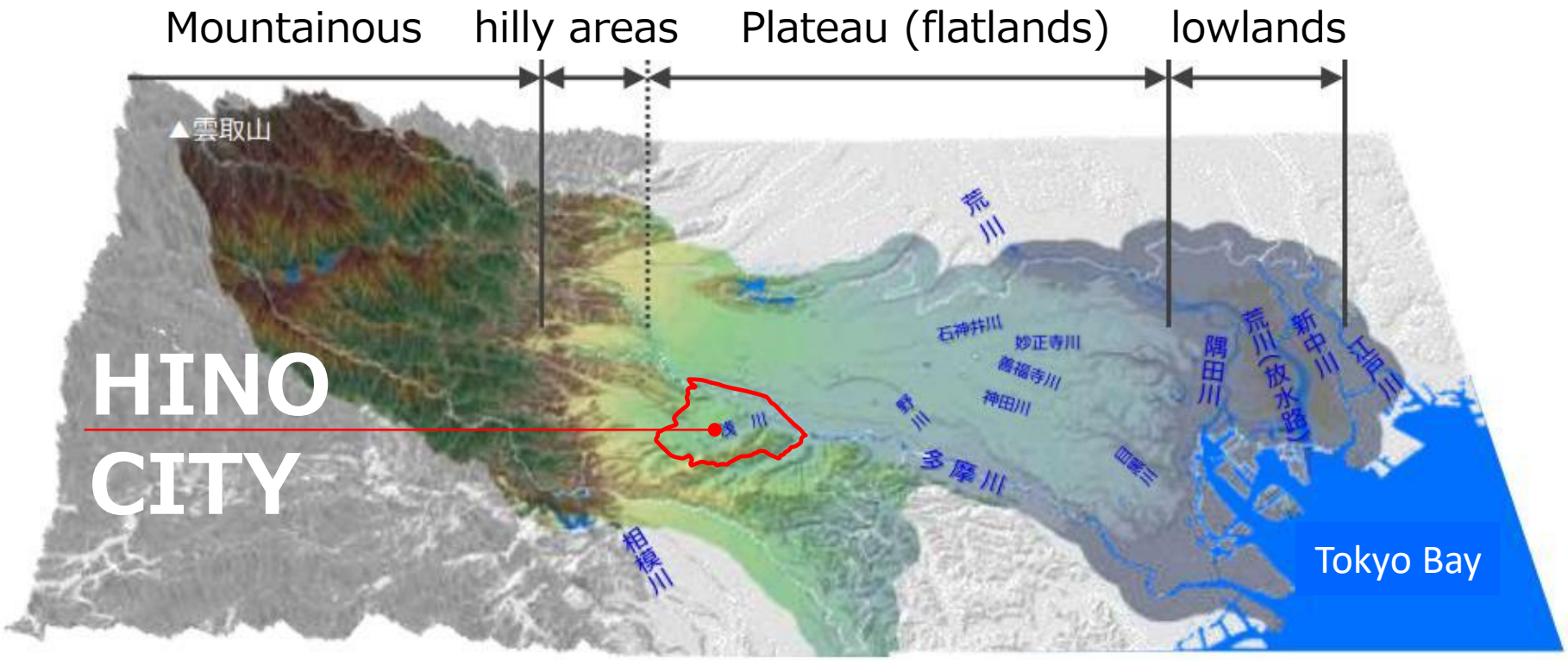
Compare with San Diego



Name	Hino	San Diego
㎢	27.55	964.51
acre	6,807.74	238,557.64

Topographic model

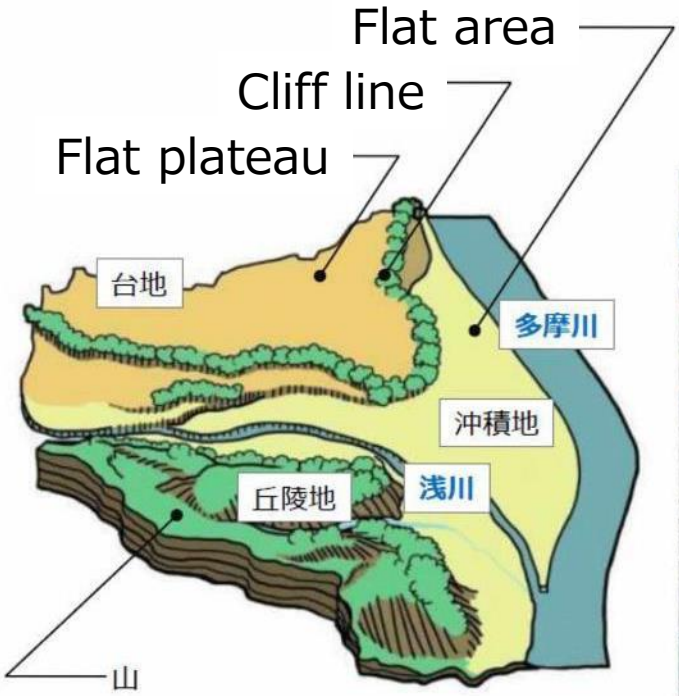
Hino City is a suburban residential town known for its versatile land use, featuring accessible natural landscapes such as greenery and water, corporate clusters, and convenient transportation infrastructure.

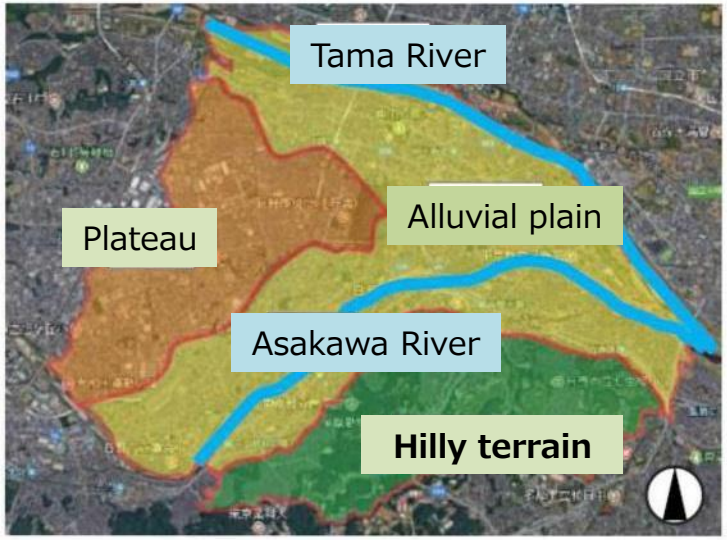


Topographic bird's-eye view map of Tokyo

Topographic model (three terrain elements)

The terrain of Hino City consists of three terrain elements.





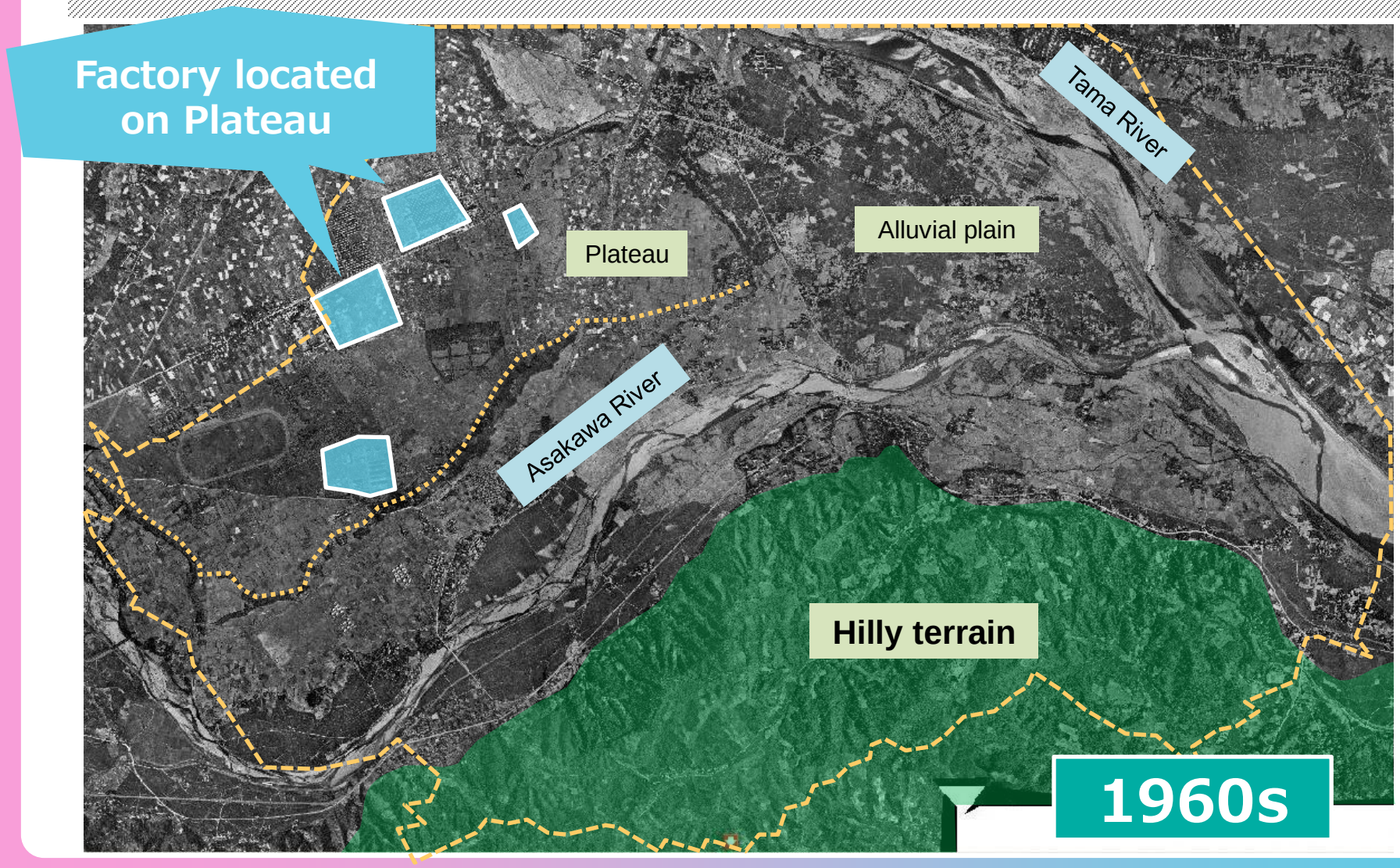
Two rivers carved through the plateau, creating a diverse and undulating terrain.

The river and canal network of Hino City

Agricultural water

112km irrigation canal network that has remained for 450 years.

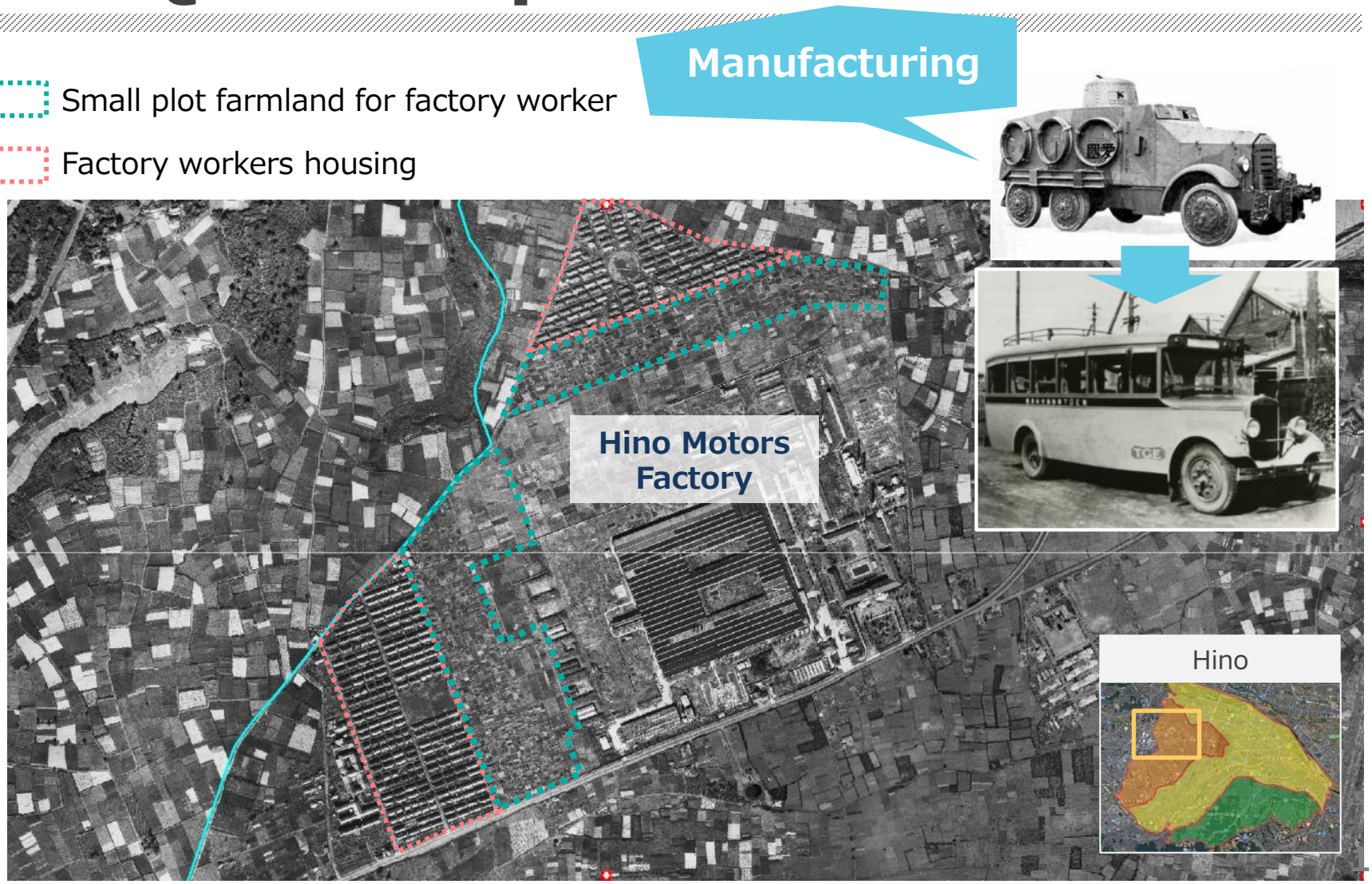
GHQ aerial photo Factories



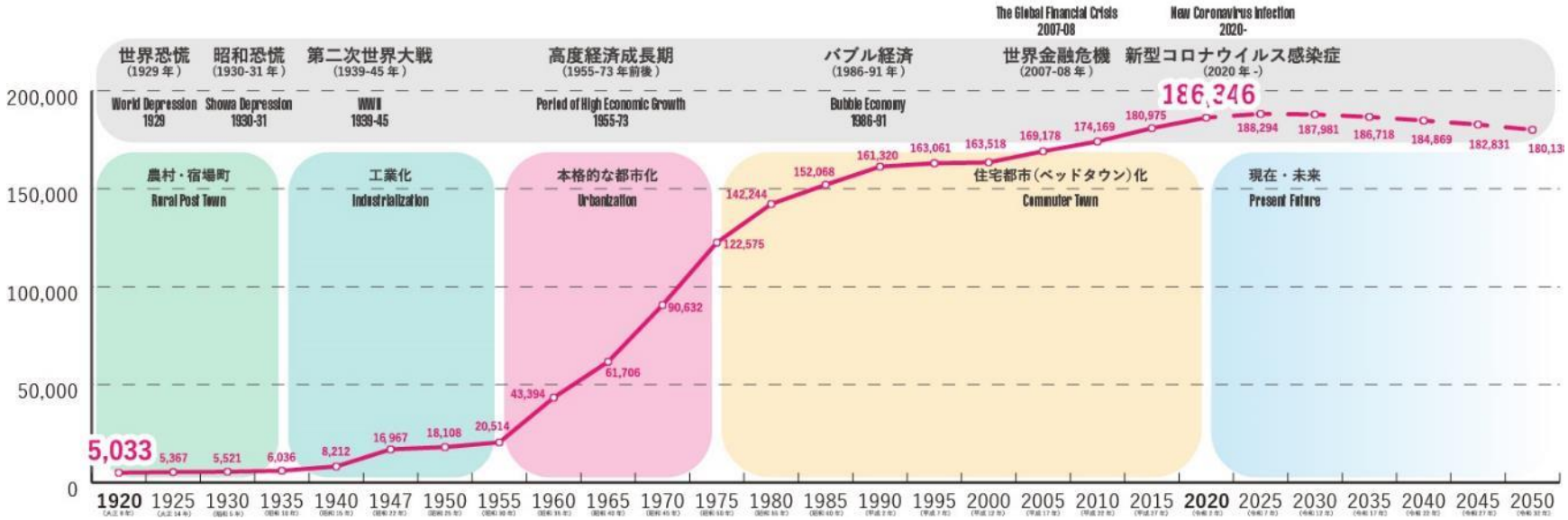
GHQ aerial photo Factories

Small plot farmland for factory worker

Factory workers housing



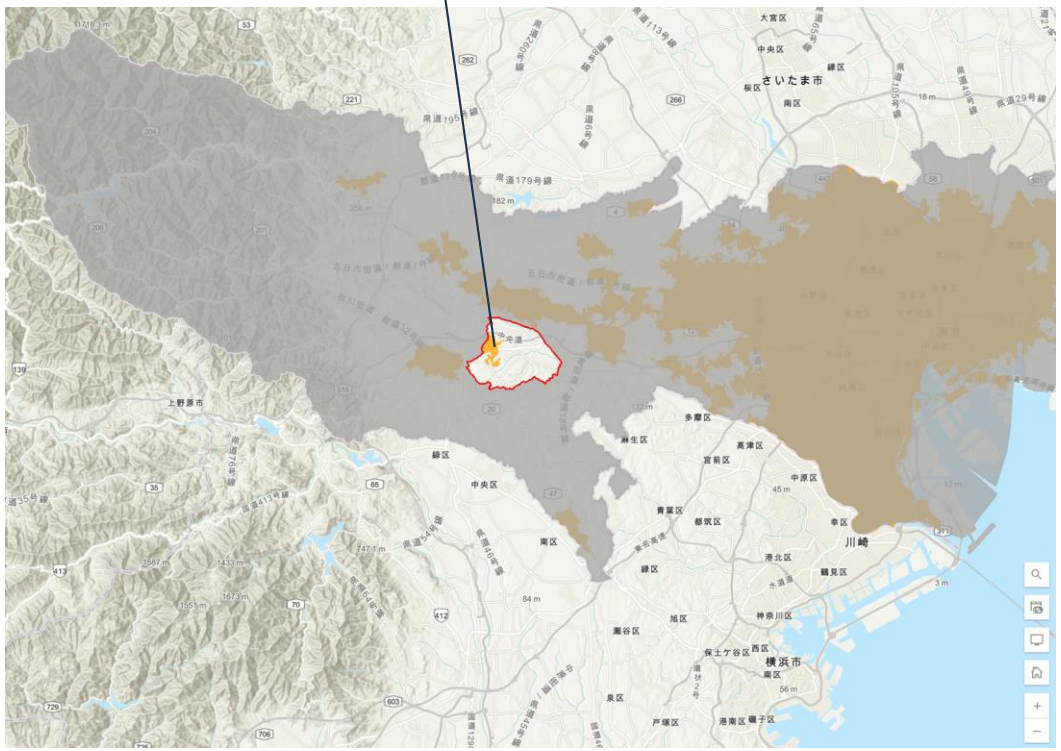
The History and Populaition Growth the Last 100 Years



Change in the DID Areas (Progress of Urban Expansion)

- **DID**:4000 people/㎢
  Densely **I**nhabited **D**istrict

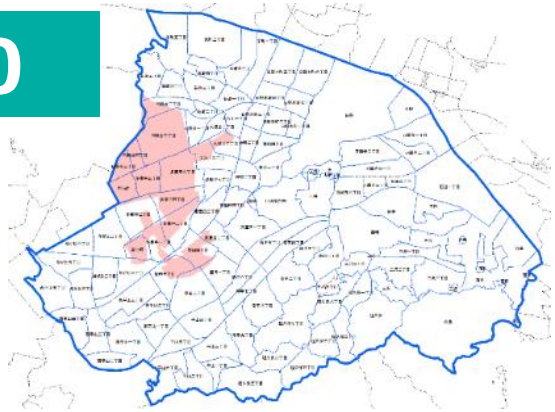
2000s-



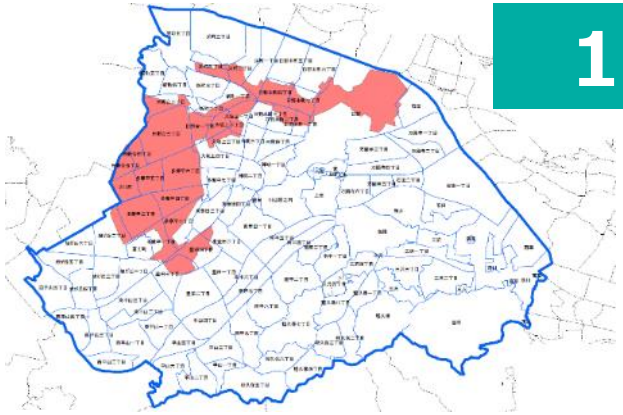
Change in the DID Areas (Progress of Urban Expansion)

DID:4000people/㎢

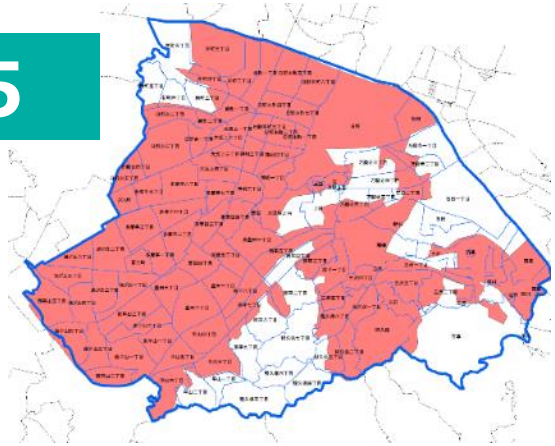
1960



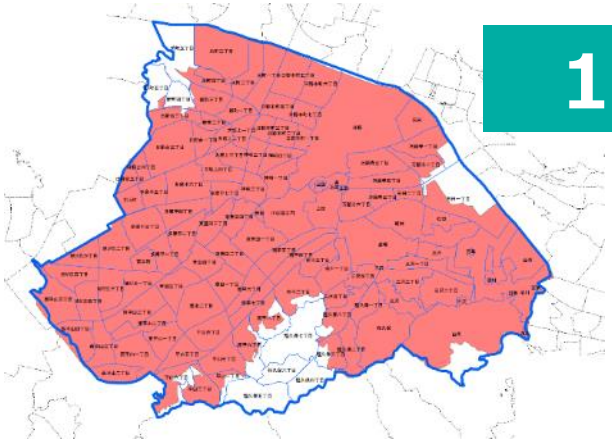
1965



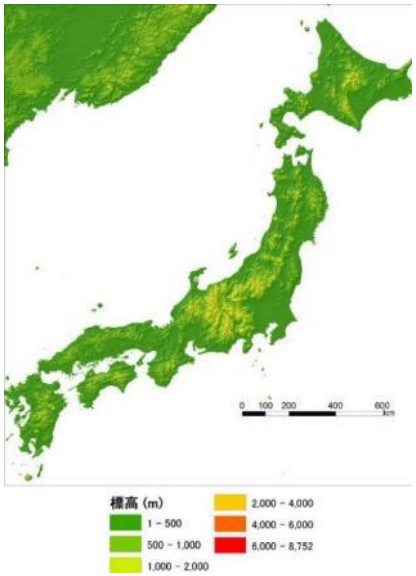
1975

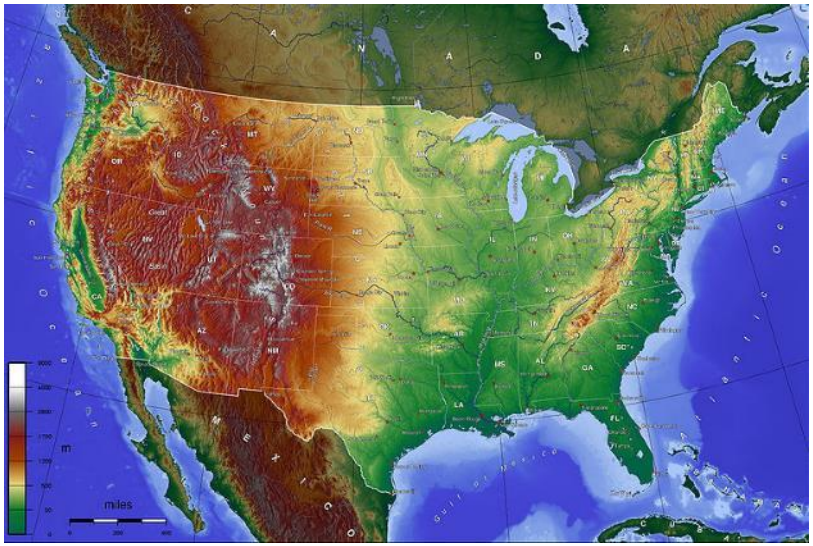


1995



Housing Situation in Japan
(for Japanese people)





Japan
Residential land area: Approximately 370,000
square kilometers (about 27.7% of the total land area)
Total land area: Approximately 1.3 million square kilometers

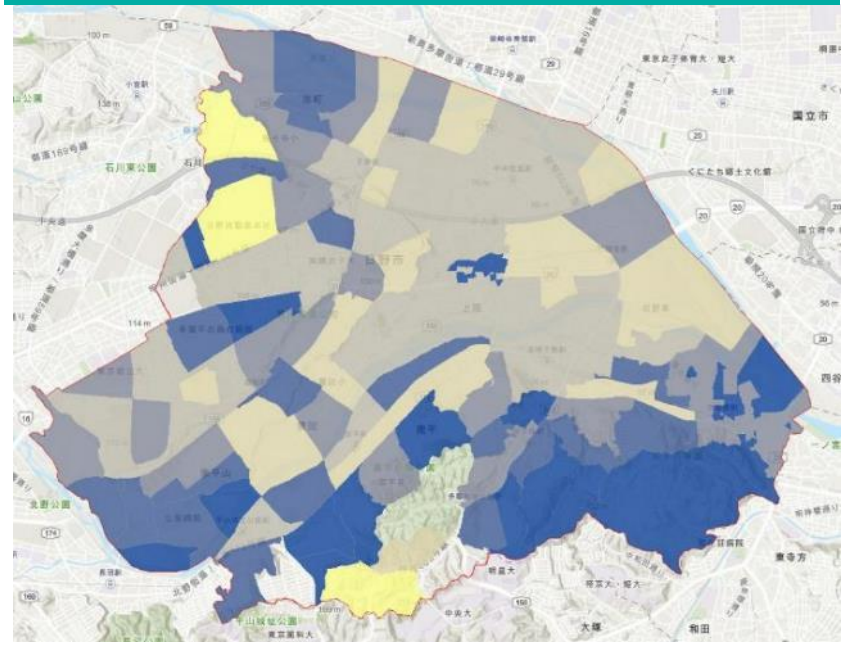
United States
Residential land area: Approximately 9.857 million square kilometers (about 47.8% of the total land area)
Total land area: Approximately 20.654 million square kilometers

Hino City Background

Current Areas with Significant Aging Populations and Public Transportation Service Networks

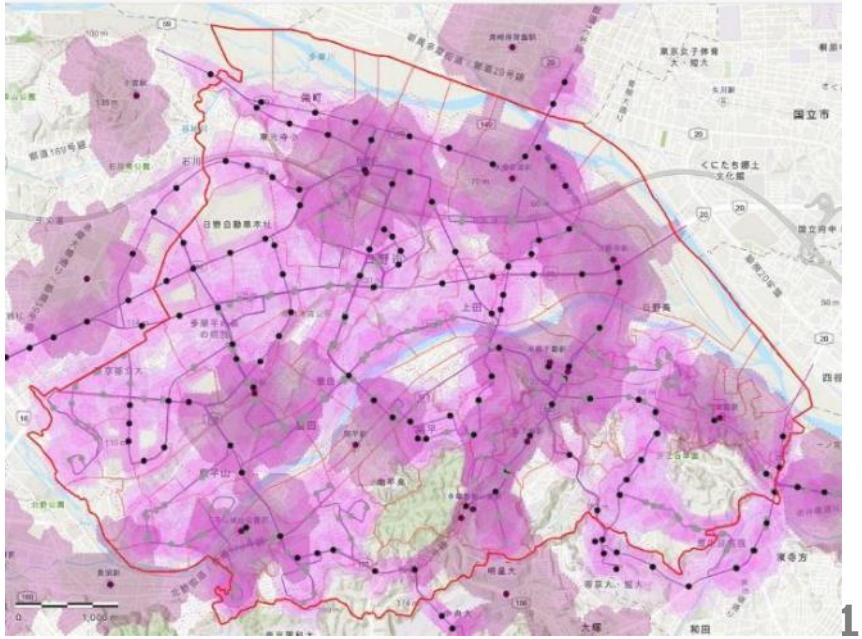
Aging Areas

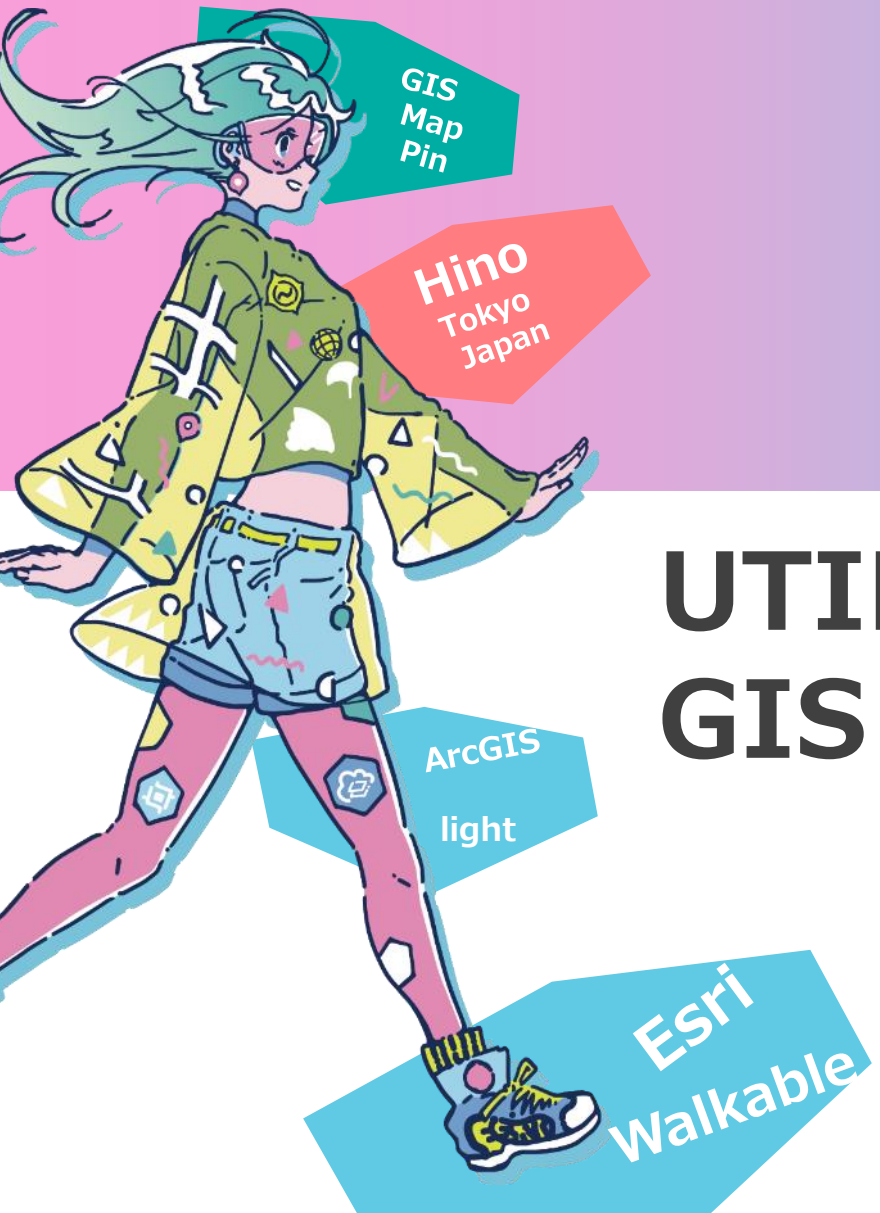
(Dark Blue Areas indicate Regions with Significant Aging Populations)



Public transportation Network Map

(Achromatic areas are transportation void regions, and Light pink areas indicate regions with insufficient transportation systems.)



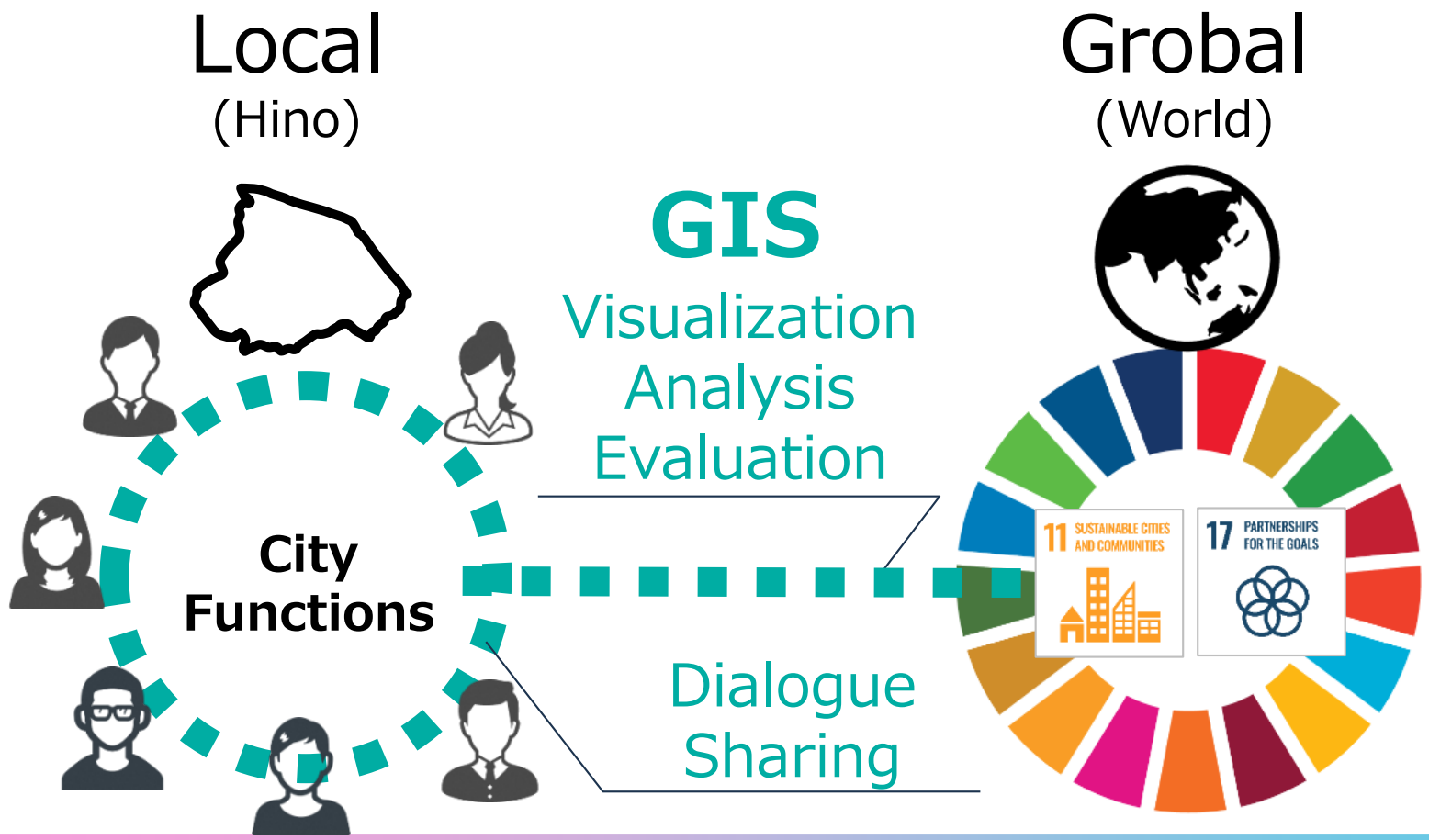


UTILIZATION OF GIS IN HINO

CONTENTS

What will be necessary for aging cities to be sustainable?

The relationship between the World, Hino, SDGs and GIS



City functions for sustainable

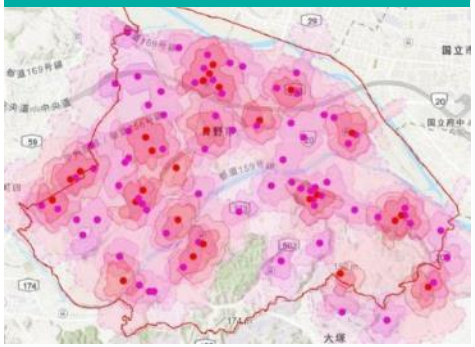
Shopping

City functions for sustainable

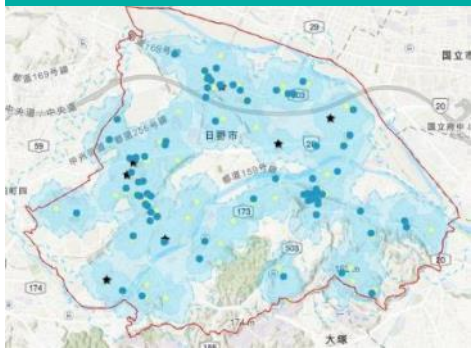
Medical

Walking distance from functions

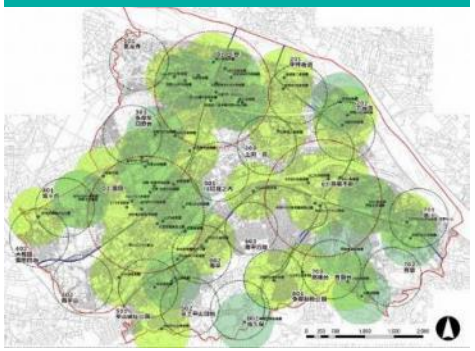
Supermarkets, convenience stores, shopping malls



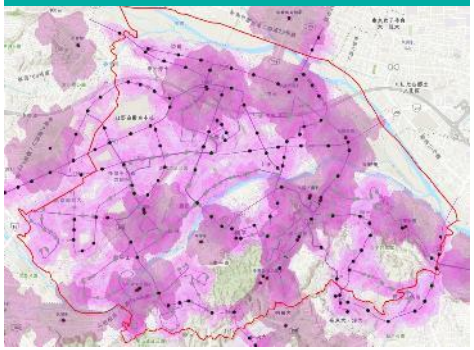
Hospitals, clinics, pharmacies



Kindergarten, nursery school

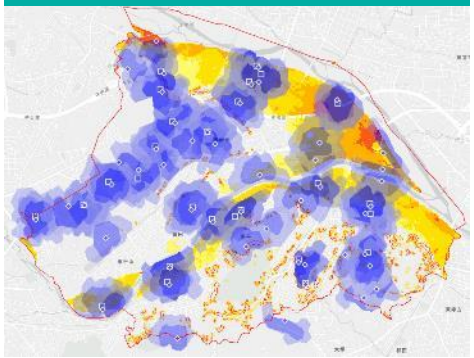


Transportation hubs Stations, bus stops



Social interaction site

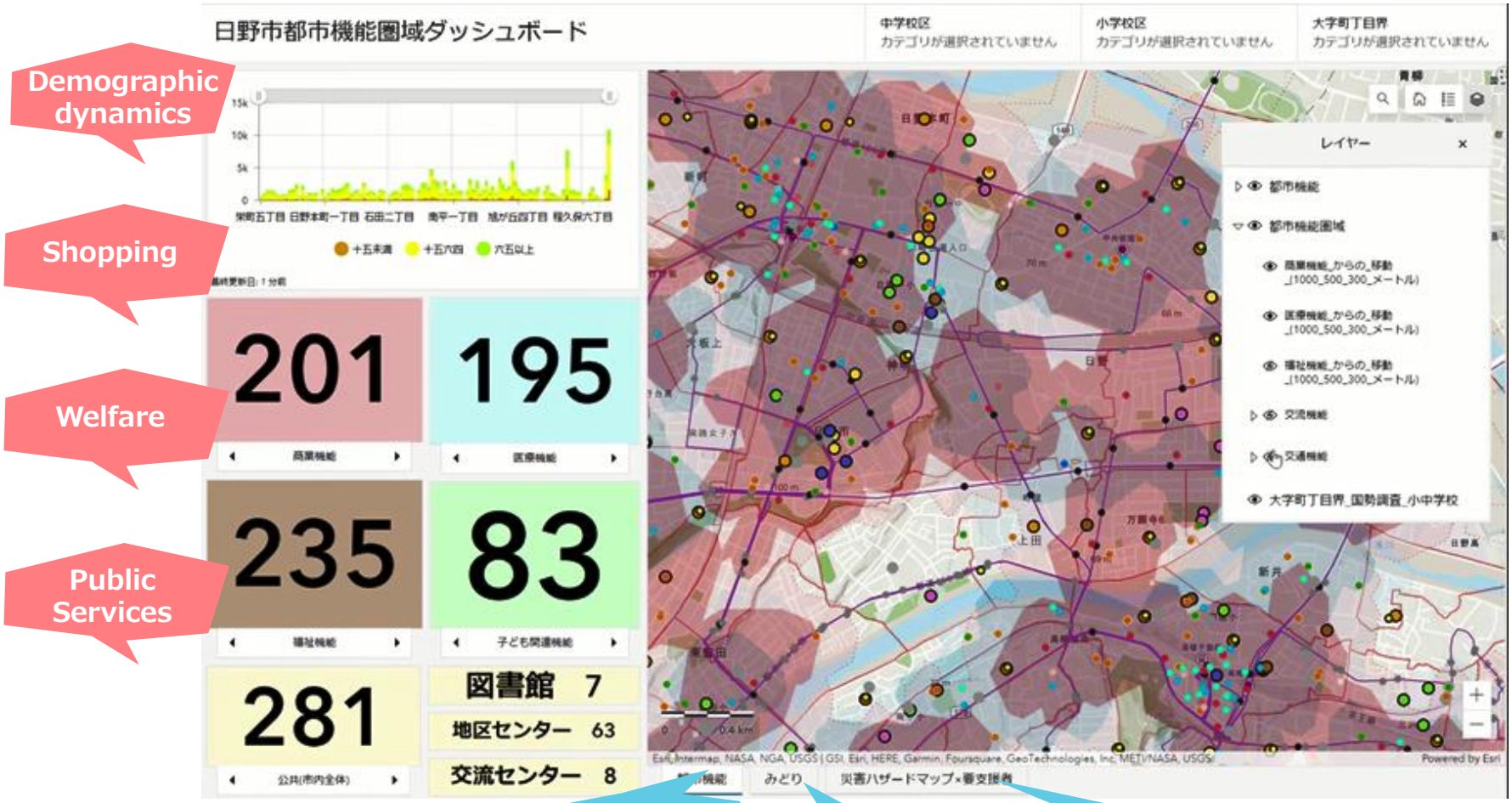
Disaster Information, Evacuation Sites



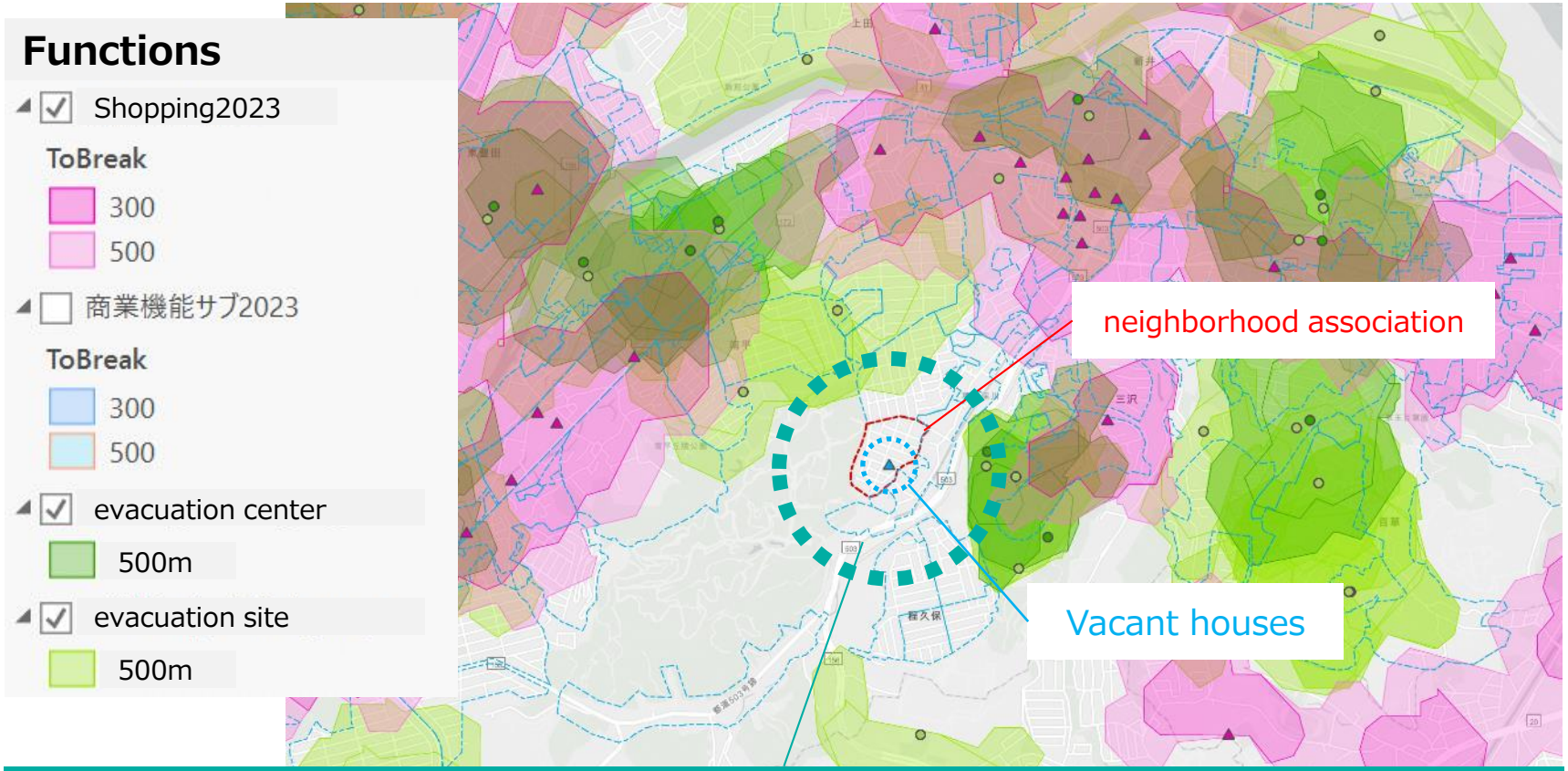
Visualization of convenient/low walkable areas

Dashboard of City Functional Area

by ArcGISOnline



Utilization of vacant houses



hilly region
Lack of City Functions = Inconvenient

Utilization of vacant houses

Many slopes, narrow streets, dense houses

Before: apartments

After: community square

Utilization of vacant houses

Local residents make their own

Win-win for all

land and property owner

Tax reductions on their land as a contribution to the community, while also eliminating the need for management

Local residents

Vacant house serves a **significant public functions** for local residents

Local government

Local governments could **avoid over-investment** in areas with lack of city functions.

Regional agreements

Contribution to the community

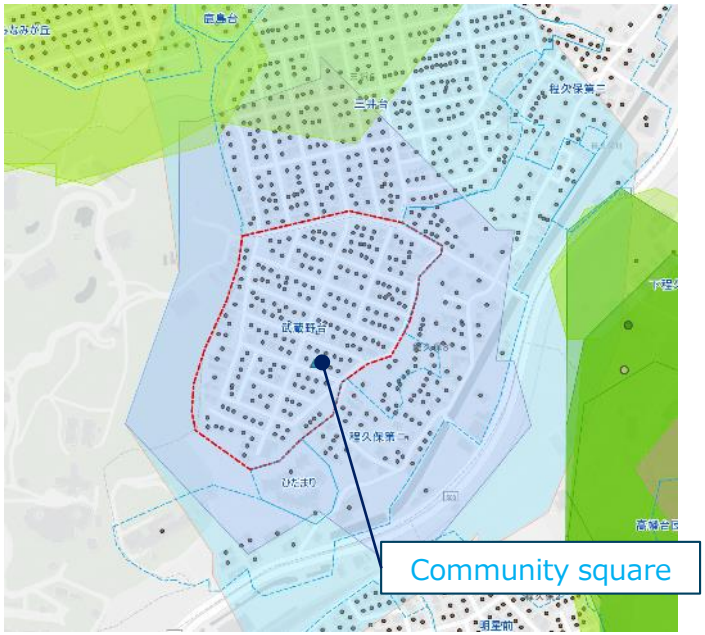
Evacuation drills

Food and drinks

local community

Valuation of vacant houses

Indicator	Value
City function area coverage	0→100%
Population in neighborhood association	563
Number of households in neighborhood association	292
Population in 300m walking distance	1455
Number of households in 300m walking distance	710
Area covered within 300m walking distance	0.18㎢

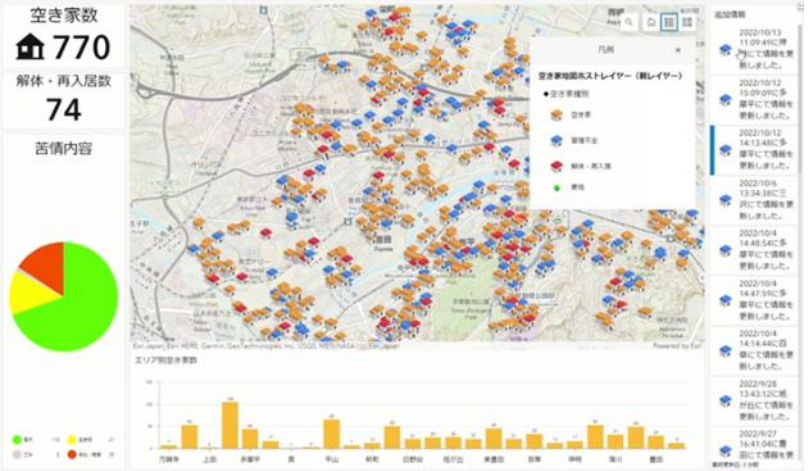


- Complements missing functions in the community
- Visualize the number of potential users who can access nearby

GIS use by local government

SmartDevice&Form
Actual Spot

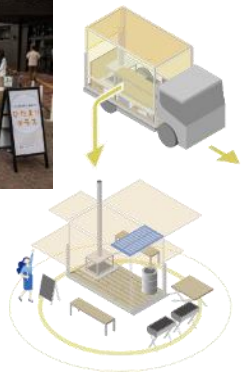
Dashboard
Policy Making



A tool to smoothly connect the Actual Spot and policy making

Flexible town and community Development




small,
shareable,
movable,
Functions,
easily changeable

Flexible town Community Development

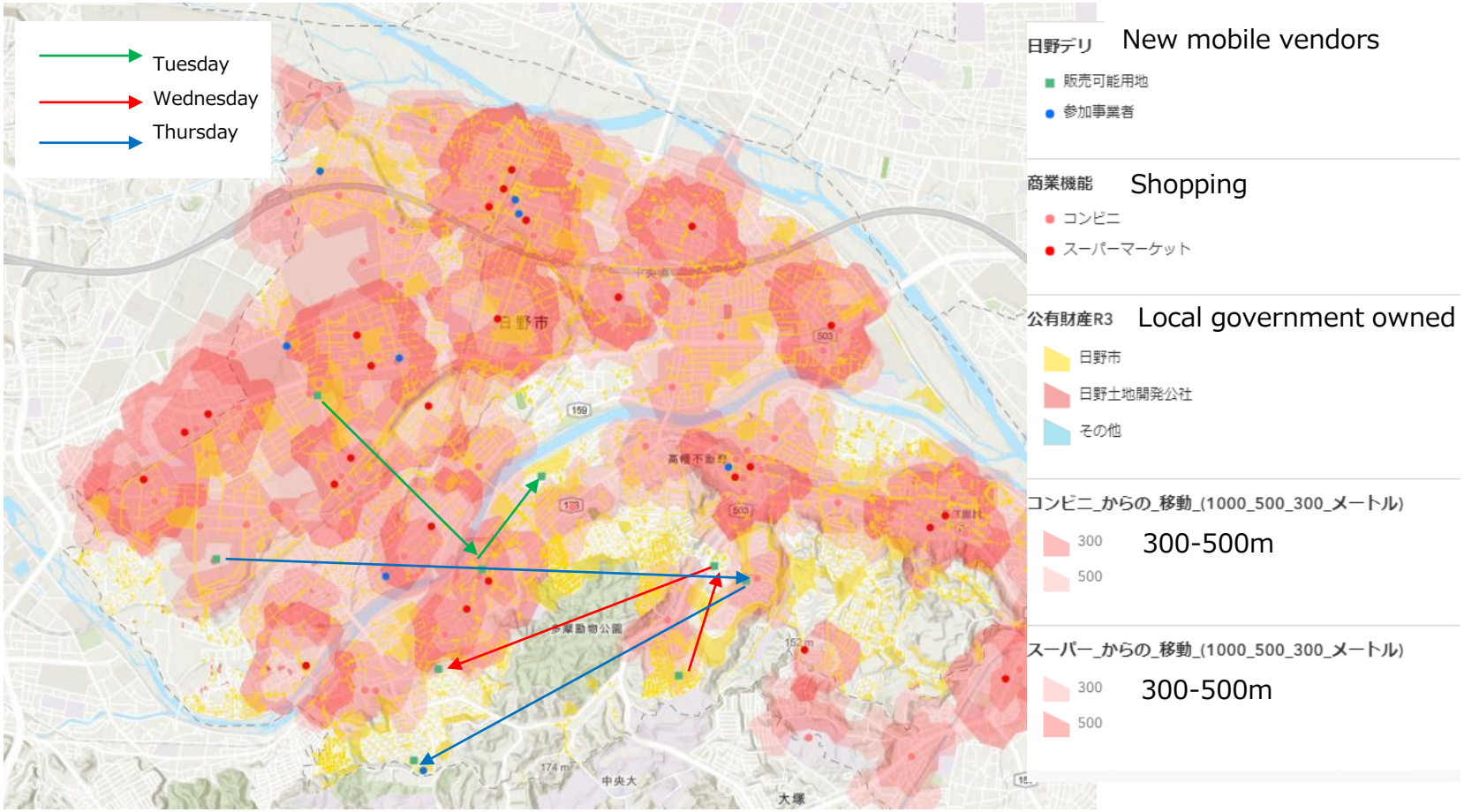
Traditional Urban Development

large,
owned,
costly,
flashy,
Facility,
rigid structures

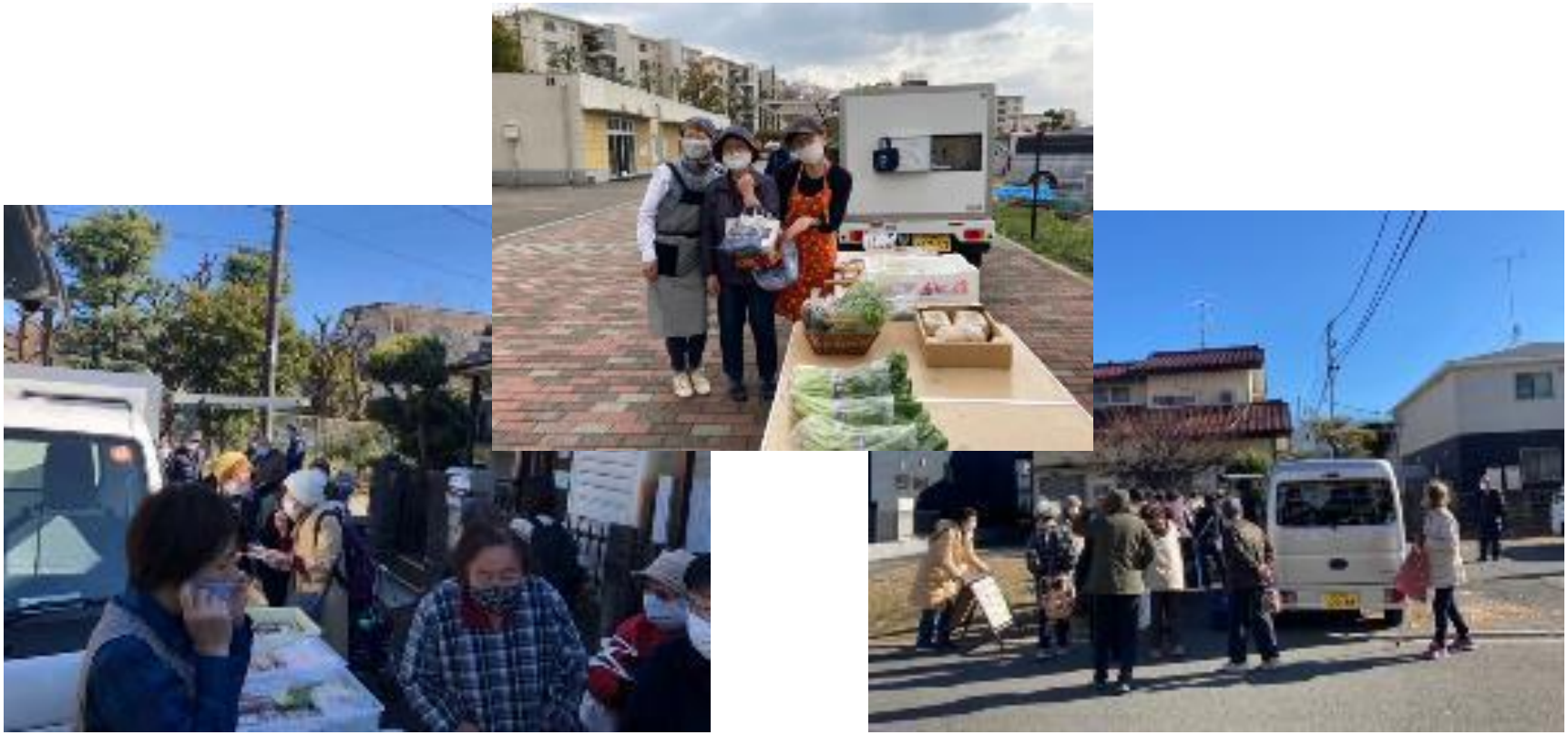
Utilization of GIS in Hino Case

Visualization of city functions during

the Corona Disaster



Visualization of city functions during the Corona Disaster

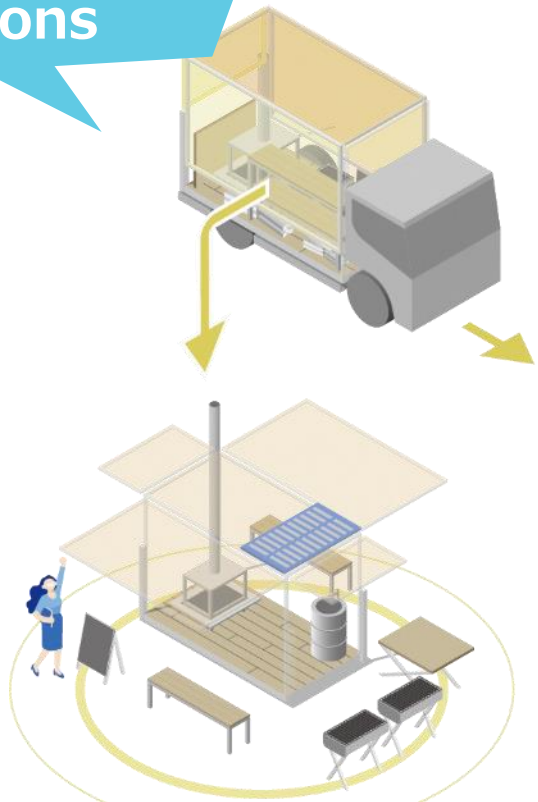


Adapting to new life after Corona

CONTENTS

Sustainable Mobility Solutions (Hino Motors)

Portable functions



Hino Motors. PLOP(Place & Oppotunity)

Roofed spaces

Supply electricity

Visualize human data

GIS has been integrated into
the Basic Resident Register System(2023-)

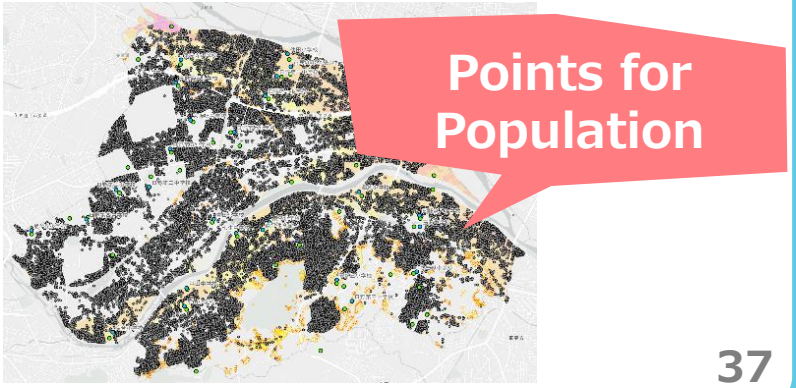
Until now

Tabulated by town block area

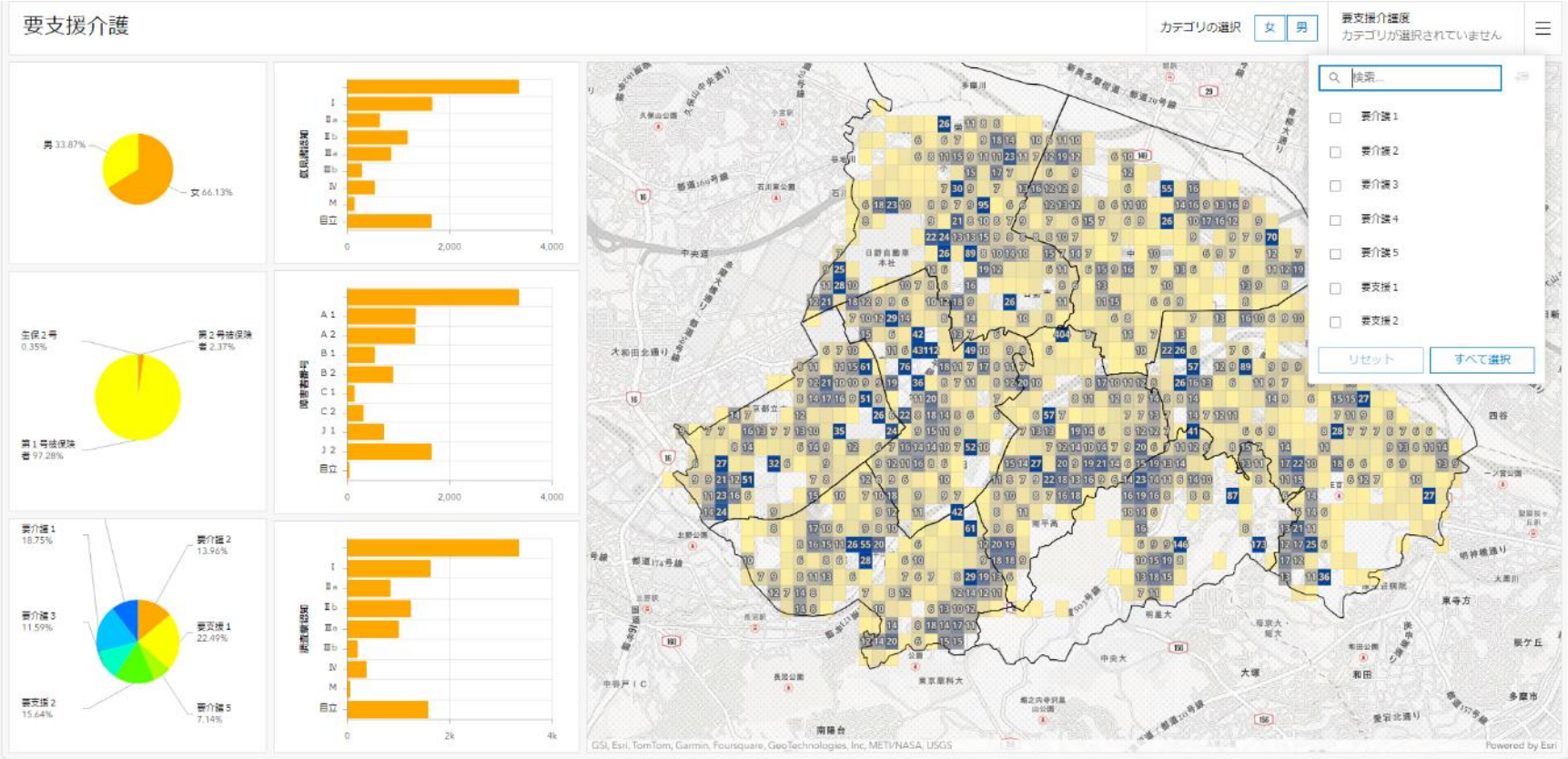
After now

Aggregation and statistics of any scope

(community planning, disaster prevention, welfare, education, environment...)



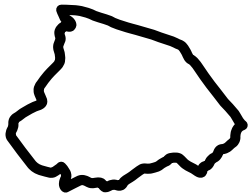
Visualize human data case



Mesh analysis by Care and Support Need

CONTENTS

Local
(Hino)



Grobal
(World)

GIS

Visualization
Analysis
Evaluation

Dialogue
Sharing