



# Security Implications:

## Readying for and Responding to a Megacity Disaster



### Damage in aftermath of 1923 Tokyo earthquake



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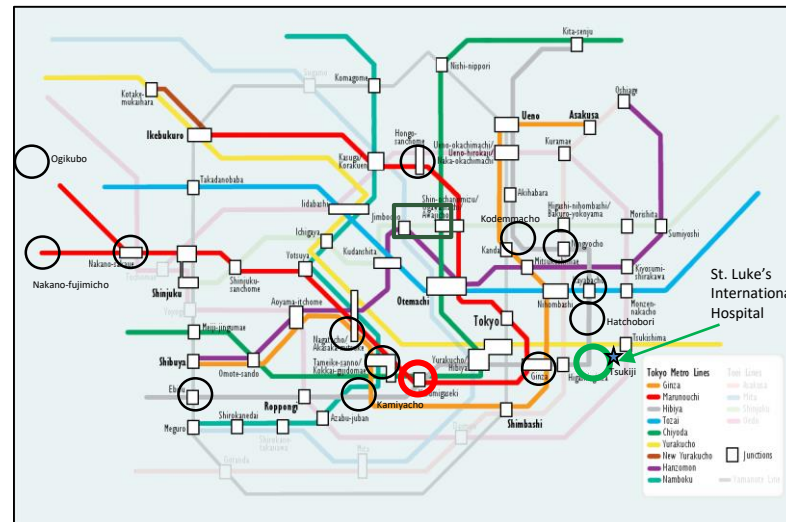


# The 1995 Sarin Attack on Tokyo's Subway



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- March 20, 1995 (two months after 6.9 Kobe earthquake)
- Aum Shinrikyo cult seeks to disrupt Japanese legal process
- Cult members puncture weak sarin mixture held in balloon membranes on Marunouchi, Chiyoda, and Hibiya subway lines
- Fifteen stations eventually contaminated
- 5,510 patients seen by doctors around Tokyo, 12 die





# *Observations and Initial Implications*



- Hospital receiving most patients (St. Luke's International) finds out agent is sarin from television
- Medical and responder communications and other capabilities overwhelmed
- 10% of firefighters and medical personnel (St. Luke's) suffer effects
- Nonetheless, Ground Self-Defense Force, police, fire, private company (Sumitomo Kagaku Corporation), and citizens on the street assist
- Estimated 70-80% of patients are “worried well,” not actually affected by sarin.

# Disaster response system overwhelmed



% using transport  
type to get to hospital



- Medical and responder communications and other capabilities overwhelmed
- No system for determining who needs what information (Hospital with most victims finds out agent is sarin from TV)
- No system for distribution of patients among hospitals
- No centralized oversight
- Ground Self-Defense Force, police, fire, private company (Sumitomo Kagaku Corporation), and citizens on the street are crucial to limiting consequences
- “First first responders” key...but uninformed



1.4%



7.0%



12.9%



34.9%



24.1%



13.5%



# *Virtual Terrain Walk Scenario*



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- **Notional event for this session's analysis: 7.3 Richter Scale earthquake strikes Tokyo during 2020 Summer Olympics (70% probability of such a quake occurring by 2050)**
- **Many major sports competitions in progress as earthquake occurs**
- **Expectations (from 2013 Cabinet Office, Government of Japan analysis considering a magnitude 7 earthquake):**
  - **850,000 buildings destroyed by tremors or fire**
  - **11,000 killed; 210,000 injured (37,000 seriously)**
  - **50% of central district without water or electricity for > week**
  - **3M first-day evacuees increasing to 7.2M within 2 weeks**
  - **Damage estimate: 112T yen (~ \$1.03T)**





# Tokyo Olympics Venue Analysis



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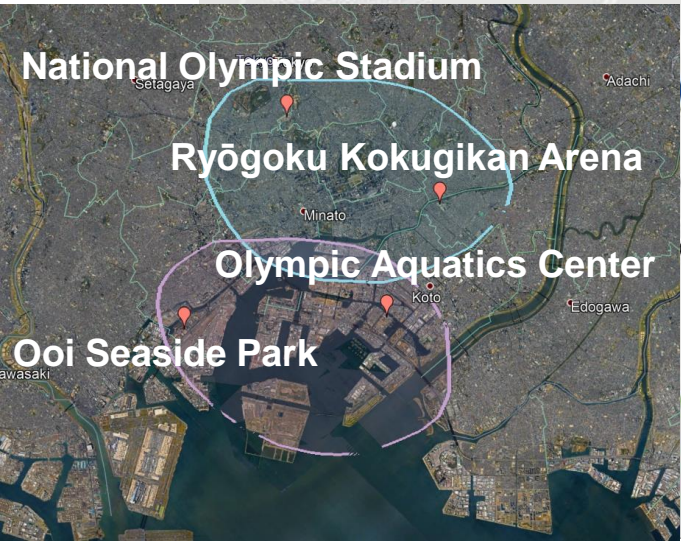




# Tokyo 2020 Olympic Venue Map



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# 1. National Olympic Stadium

## 国立霞ヶ丘陸上競技場



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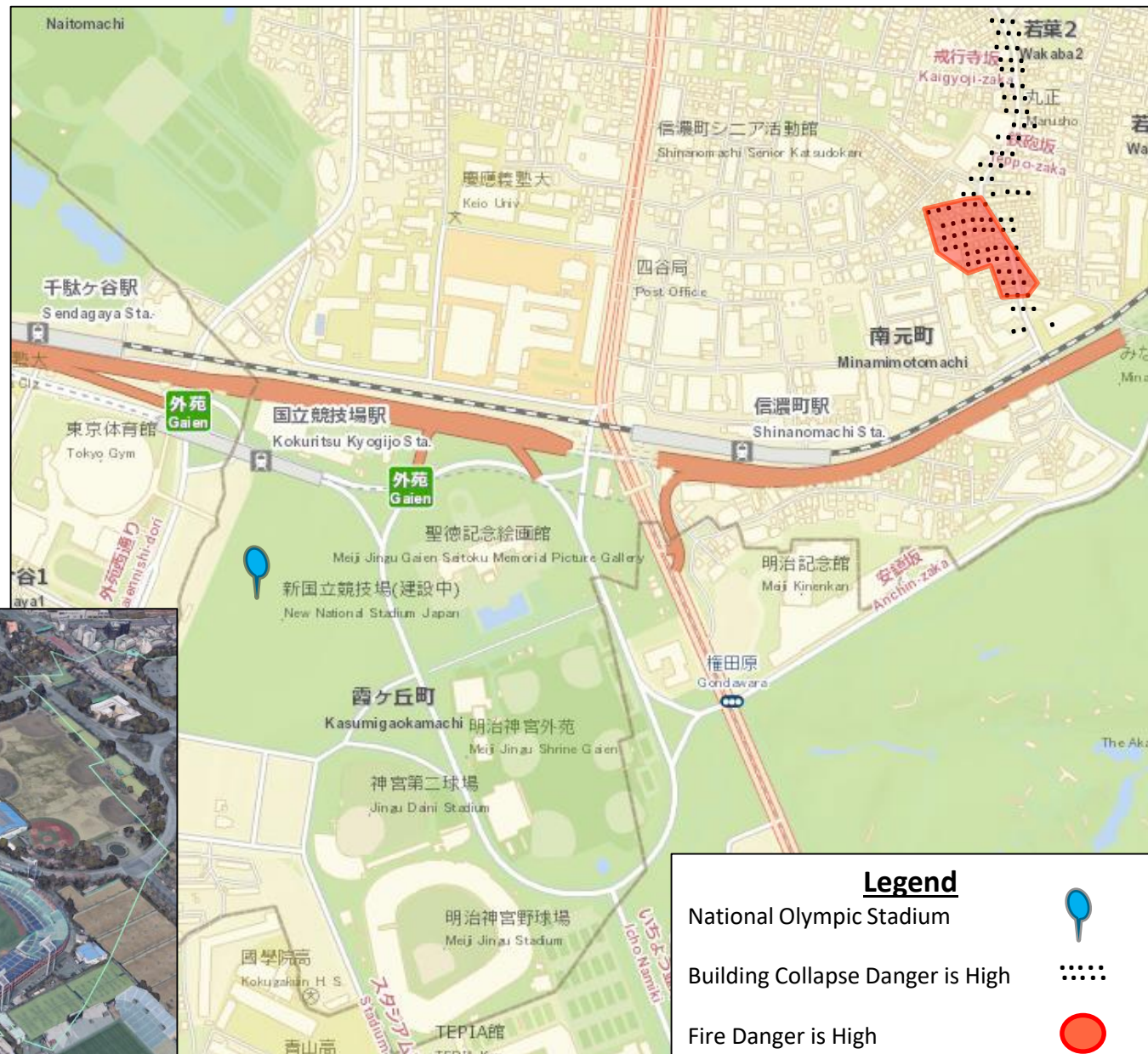
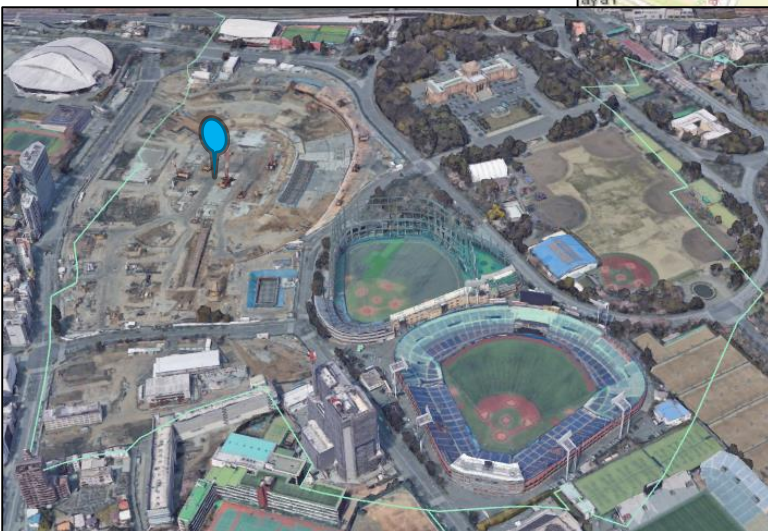
The stadium is in the Shinjuku ward. It is a major commercial and administrative center, housing the northern half of the busiest railway station in the world (Shinjuku Station) and the Tokyo Metropolitan Government Building, the administration center for the government of Tokyo. As of 2018, the ward had an estimated population of 346,958 and a total area of 18.23 km<sup>2</sup>. Since the end of the Second World War, Shinjuku has been a major secondary center of Tokyo.

### Capacity:

- 68,000-80,016

### Events:

- Opening and closing ceremonies, athletics, soccer final, rugby



### Legend

National Olympic Stadium

Building Collapse Danger is High

Fire Danger is High







## 2. Ryōgoku Kokugikan Arena

### 両国国技館



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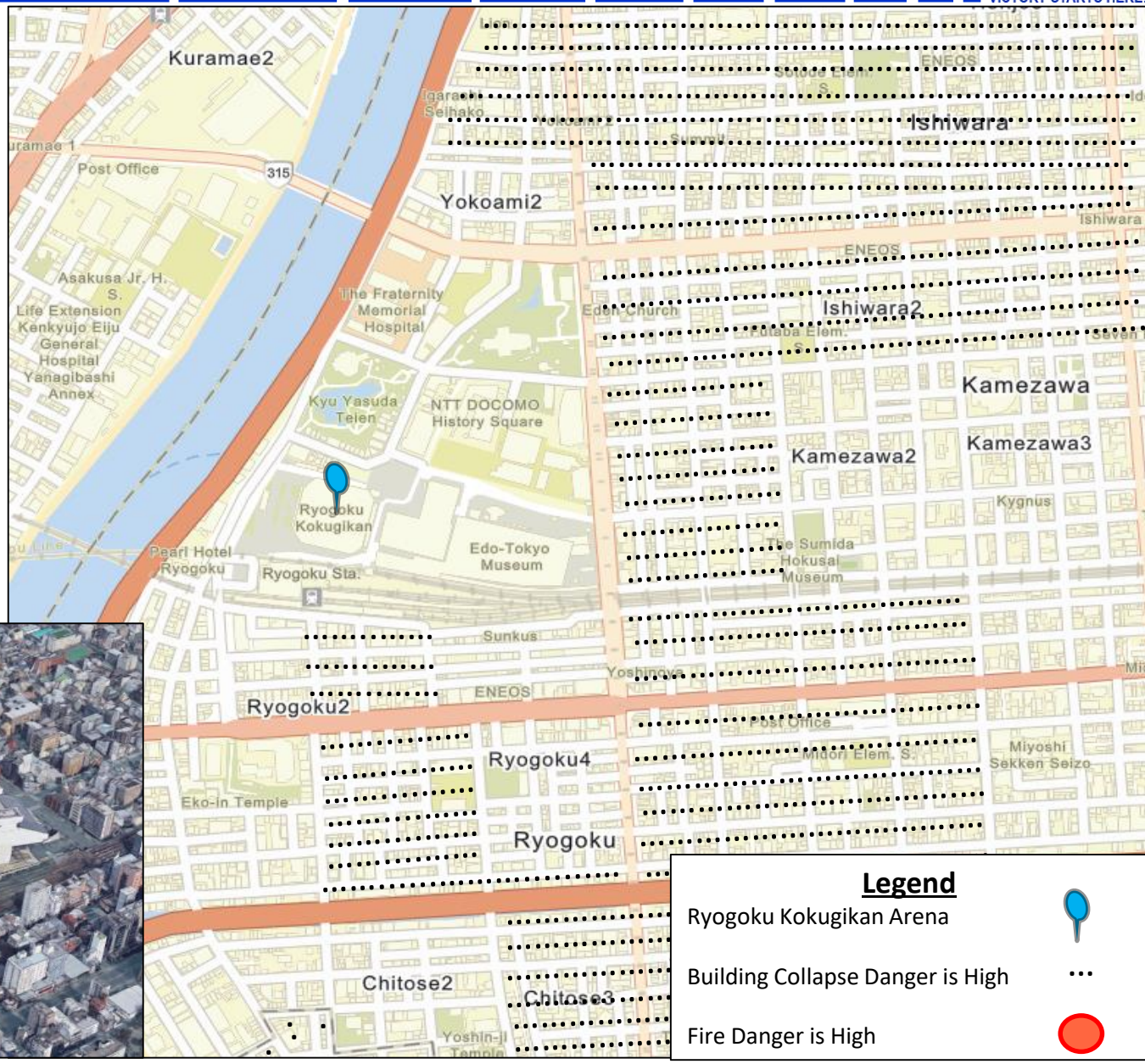
The arena is within Ryogoku, a district in the east end of Tokyo across the Sumida River from Asakusabashi and located in the Sumida Ward. Ryogoku is best known as the spiritual heartland of sumo in Japan. As of 2018, the ward had an estimated population of 266,605 and a total area of 13.77 km<sup>2</sup>.

#### Capacity:

- 11,098

#### Events:

- Boxing



#### Legend

Ryogoku Kokugikan Arena




Building Collapse Danger is High



Fire Danger is High







# 3. Ooi Seaside Park 大井埠頭海浜公園



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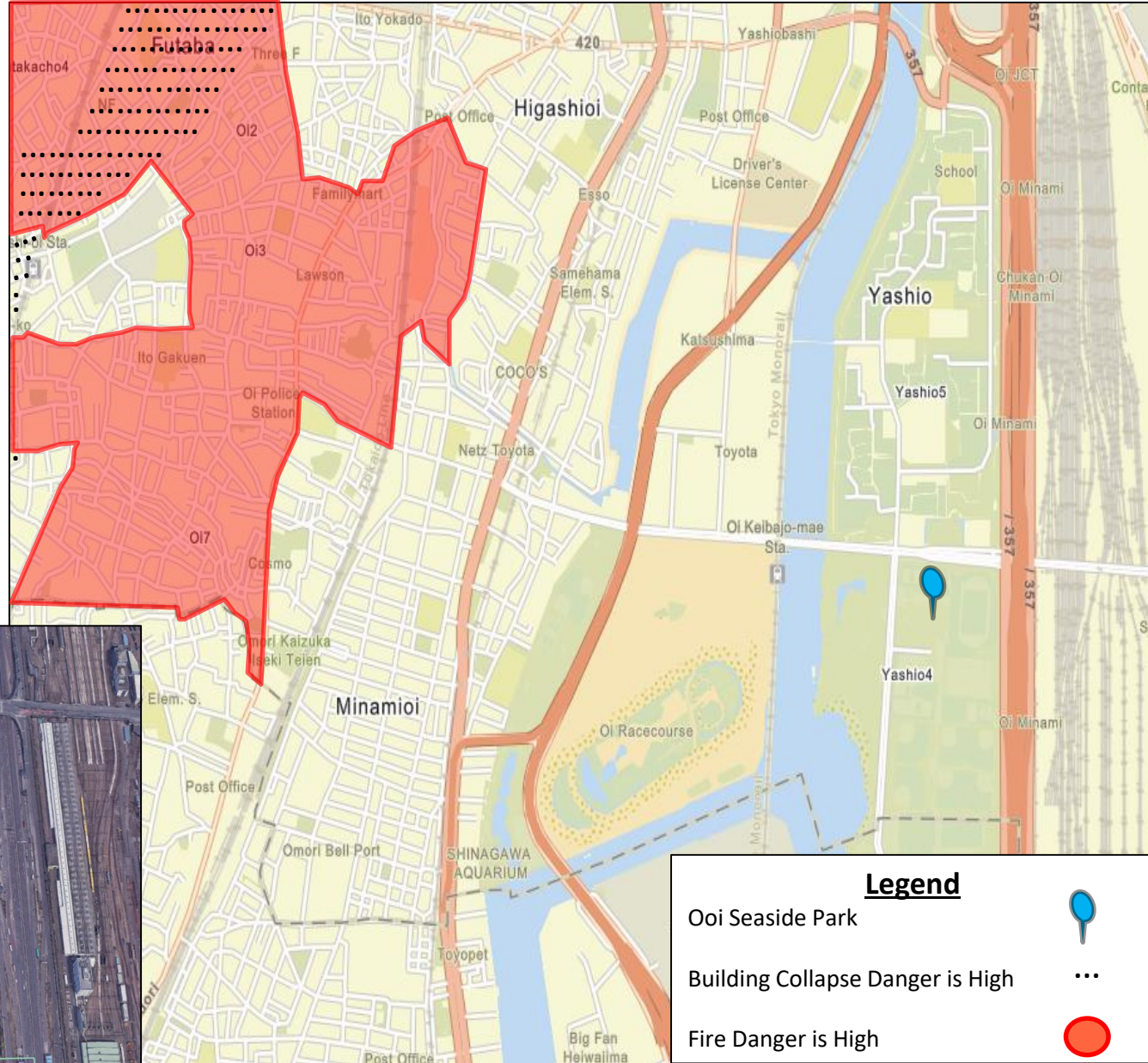
The park is within Shinagawa; a ward south of the central city and adjacent to Tokyo Bay. Shinagawa was the first post station on the Edo Period Tokaido highway connecting Nihonbashi in Edo to Kyoto, 500km to the west, and retains status as an important transit point today. As of 2018, the ward had an estimated population of 403,338 and a total area of 22.84 km<sup>2</sup>.

## Capacity:

- 10,000

## Events:

- Field Hockey



## Legend

Ooi Seaside Park



Building Collapse Danger is High



Fire Danger is High







# 4. Olympic Aquatics Center オリンピック アクアティック センター



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The center is part of the Koto ward located in Tokyo Metropolis and refers to itself as Kōtō City in English. As 2018, the ward had an estimated population of 515,029 and a total area of 40.16 km<sup>2</sup>.

## Capacity:

- 20,000

## Events:

- Swimming, Diving, and Synchronized Swimming

