

01- Understanding Urban Transformation

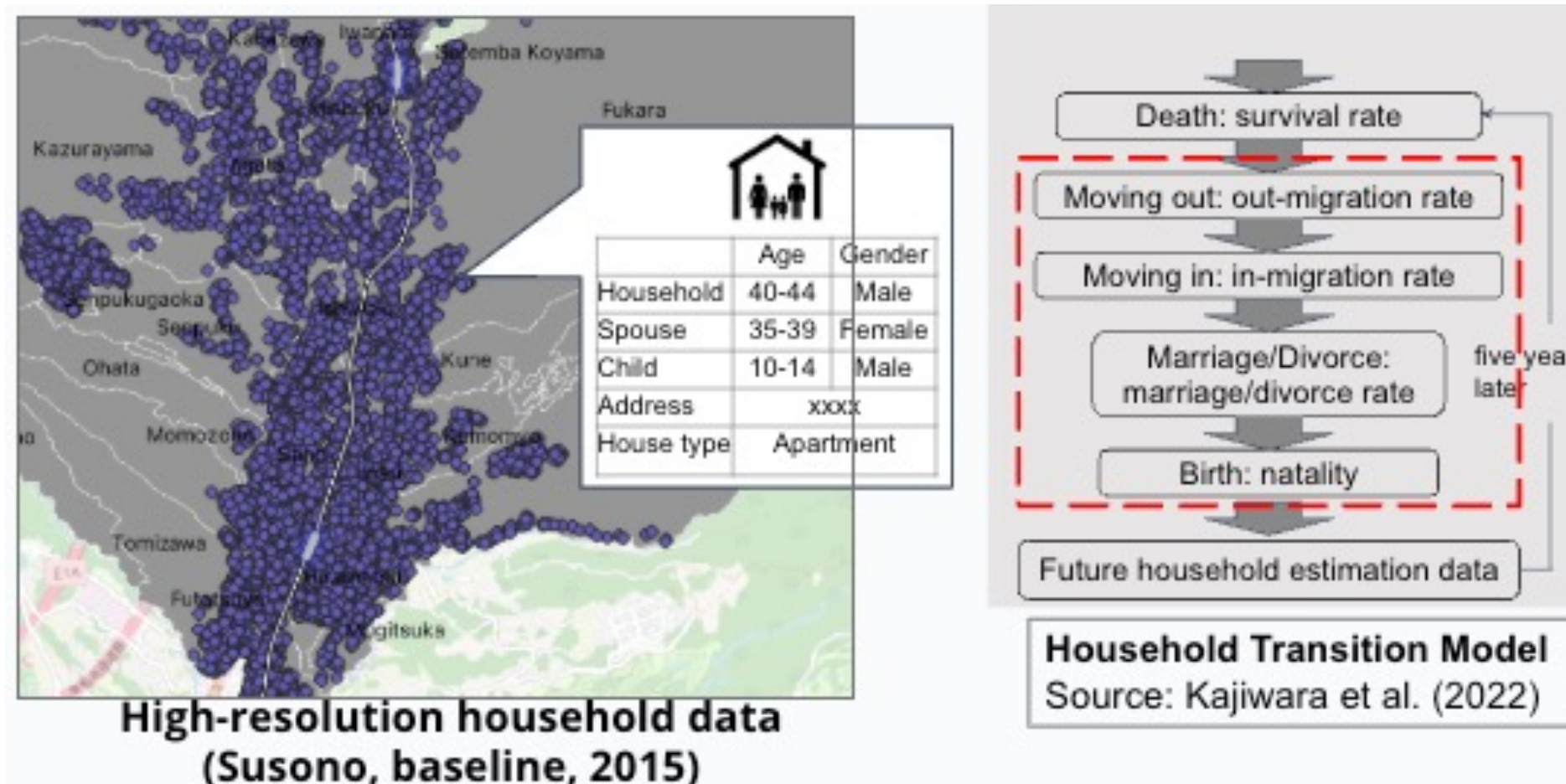
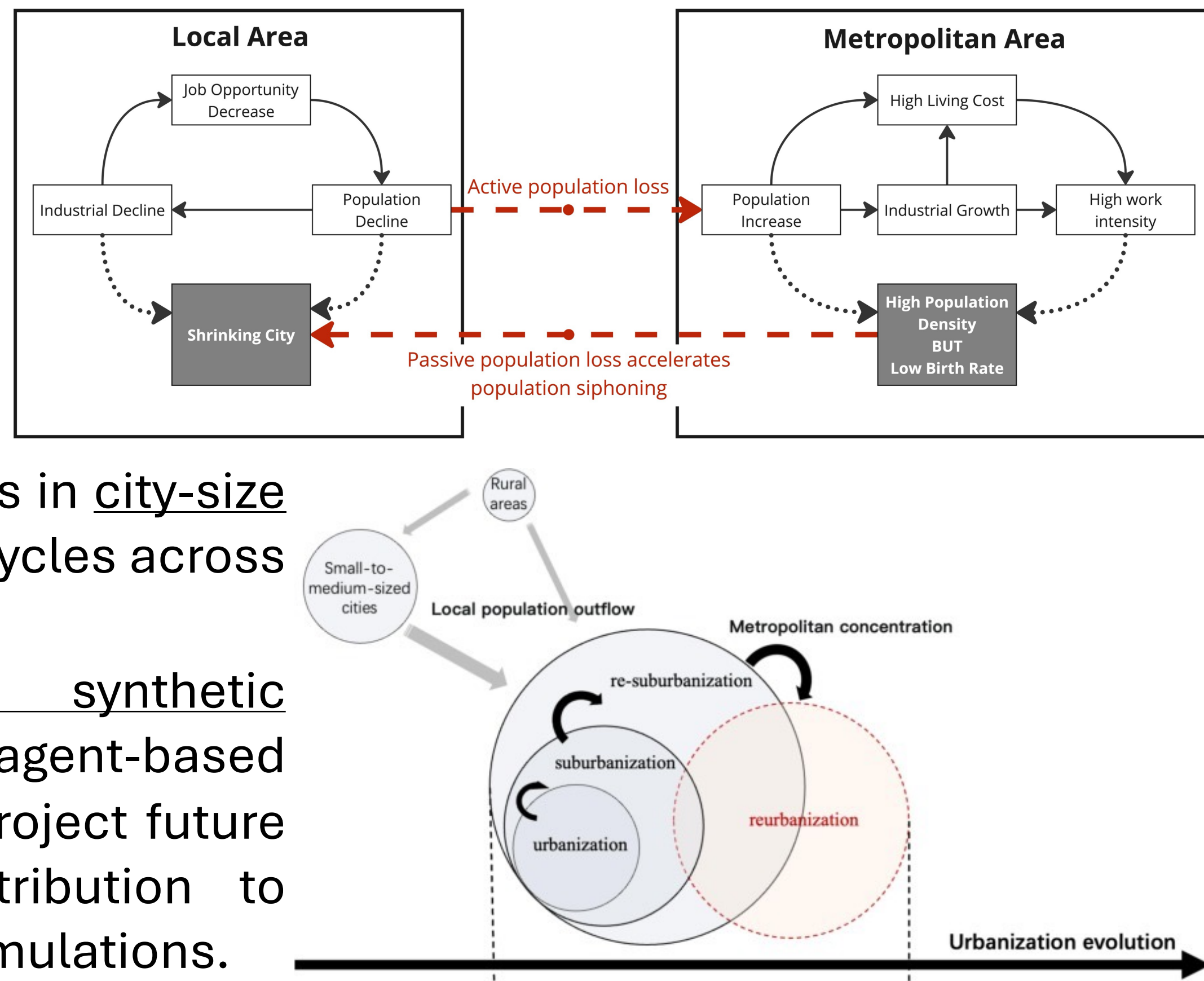
Research Question How do population decline and metropolitan concentration reshape Japan's urban system?

Approach

- Examine how population decline interacts with metropolitan concentration to widen the divide between growing metropolitan centers and shrinking smaller cities.
- Quantify long-term changes in city-size distributions and urban life cycles across Japan.
- Develop nationwide synthetic household datasets and an agent-based microsimulation model to project future household population distribution to enable fine-grained urban simulations.

Key Insight

Urban shrinkage is not simply a local consequence of industrial decline. It is part of a structural urbanization process in which demographic decline and metropolitan concentration reinforce the divide between growing and shrinking cities.

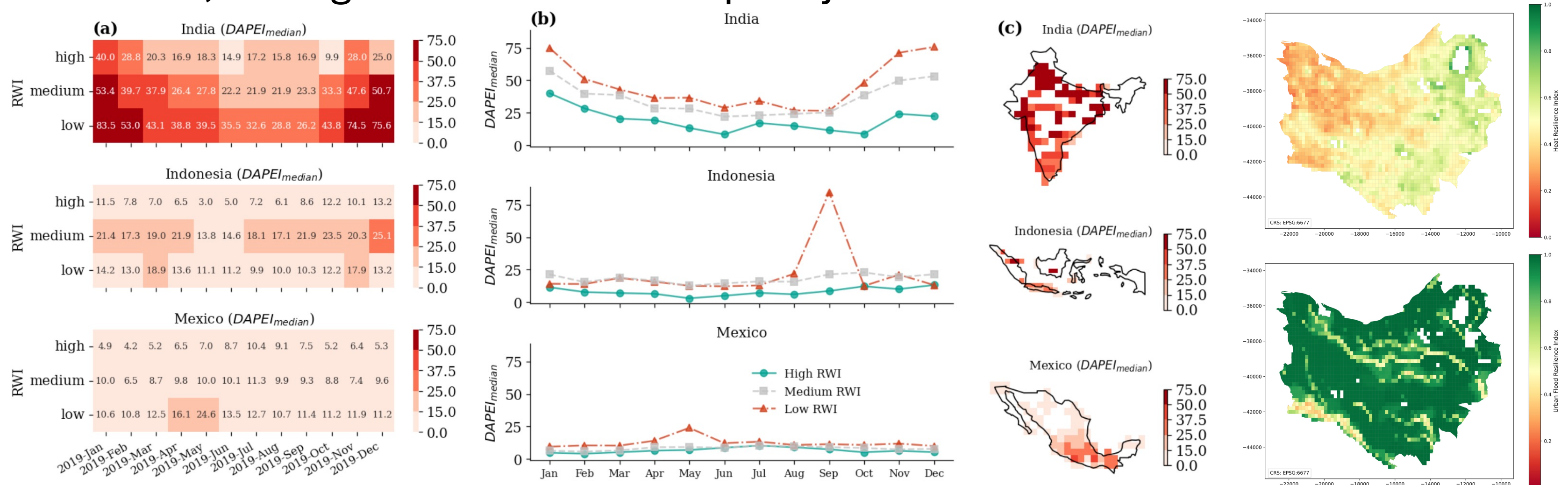
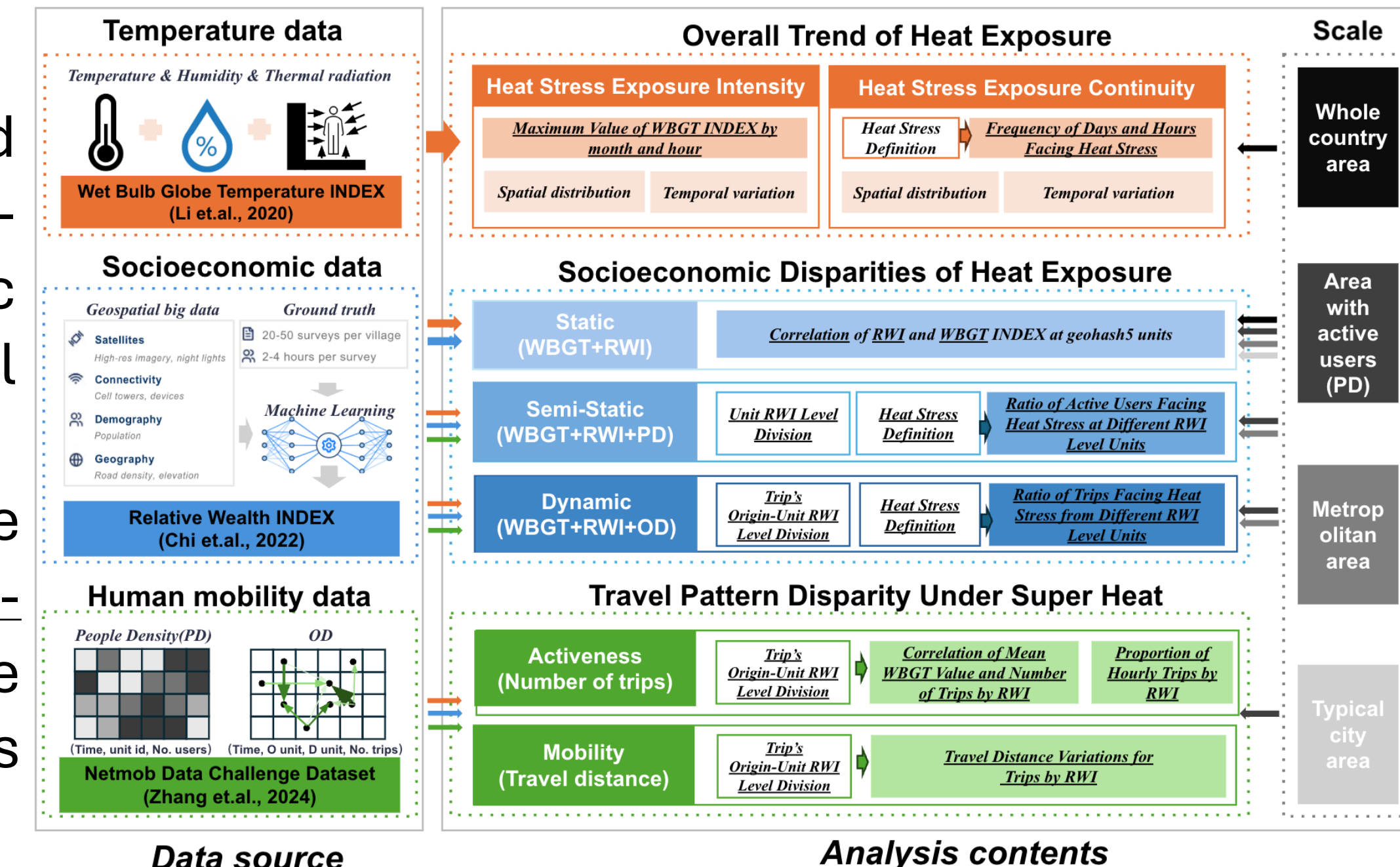


02 - Equity and Inclusive Urban Futures

Research Question How does daily mobility reshape socioeconomic inequalities in exposure to heat and other environmental hazards?

Approach

- Integrate time-resolved environmental, human-mobility, and socioeconomic data at multiple spatial scales.
- Compare static exposure with activity-based and trip-based exposure to capture the environmental conditions people actually experience.
- Examine whether socioeconomic groups differ in both experienced exposure and their capacity to adapt daily mobility under extreme conditions.
- Extend mobility-informed exposure analysis to air pollution and heat-flood resilience, linking environmental inequality to future urban-form scenarios.



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03 - Simulating Smart Mobility Futures

Research Question How can open, scenario-based simulation help communities test public transport interventions before implementation?

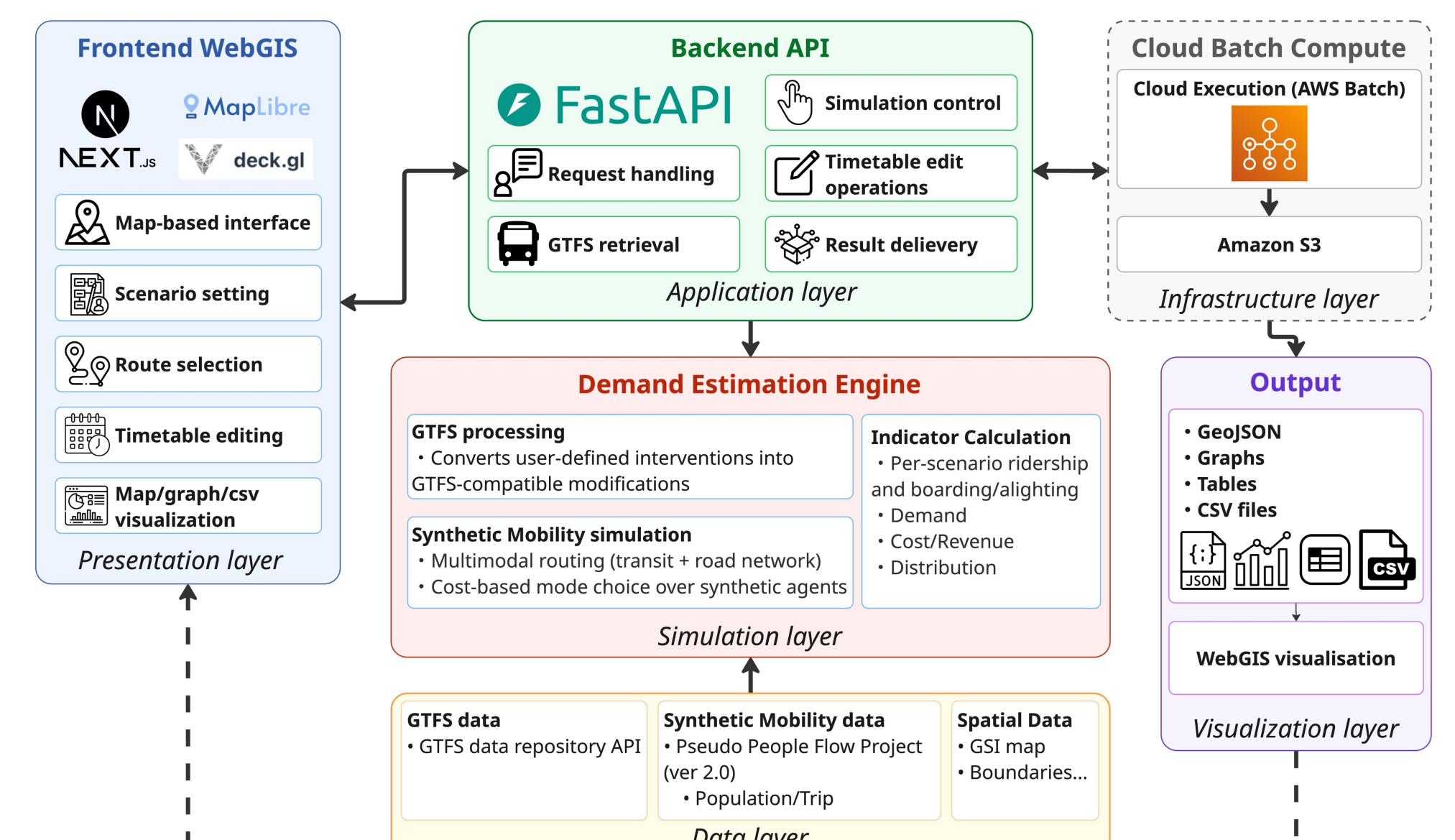
Concept

Open Data & API Open Access Web Platform Scenario Public Engagement

Approach

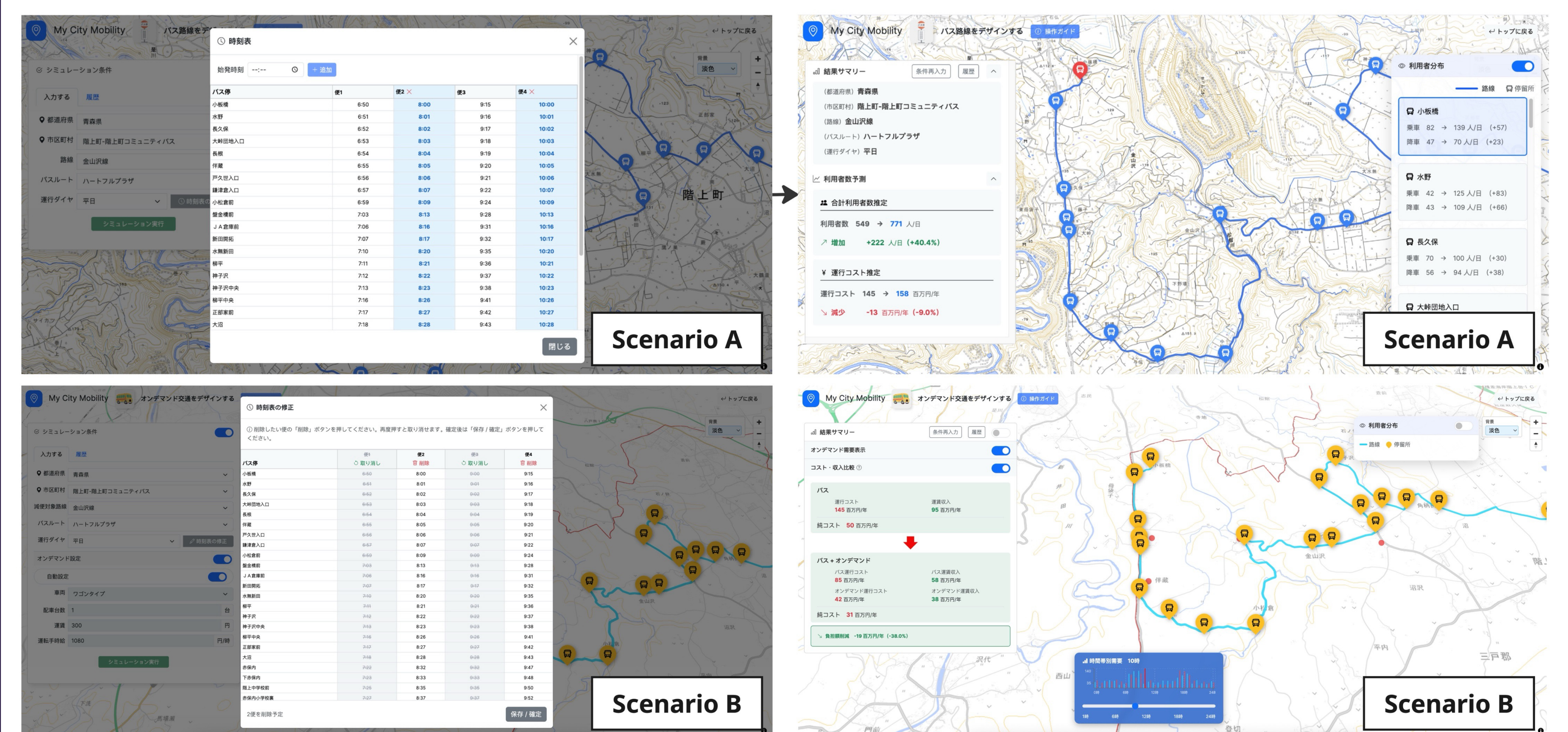
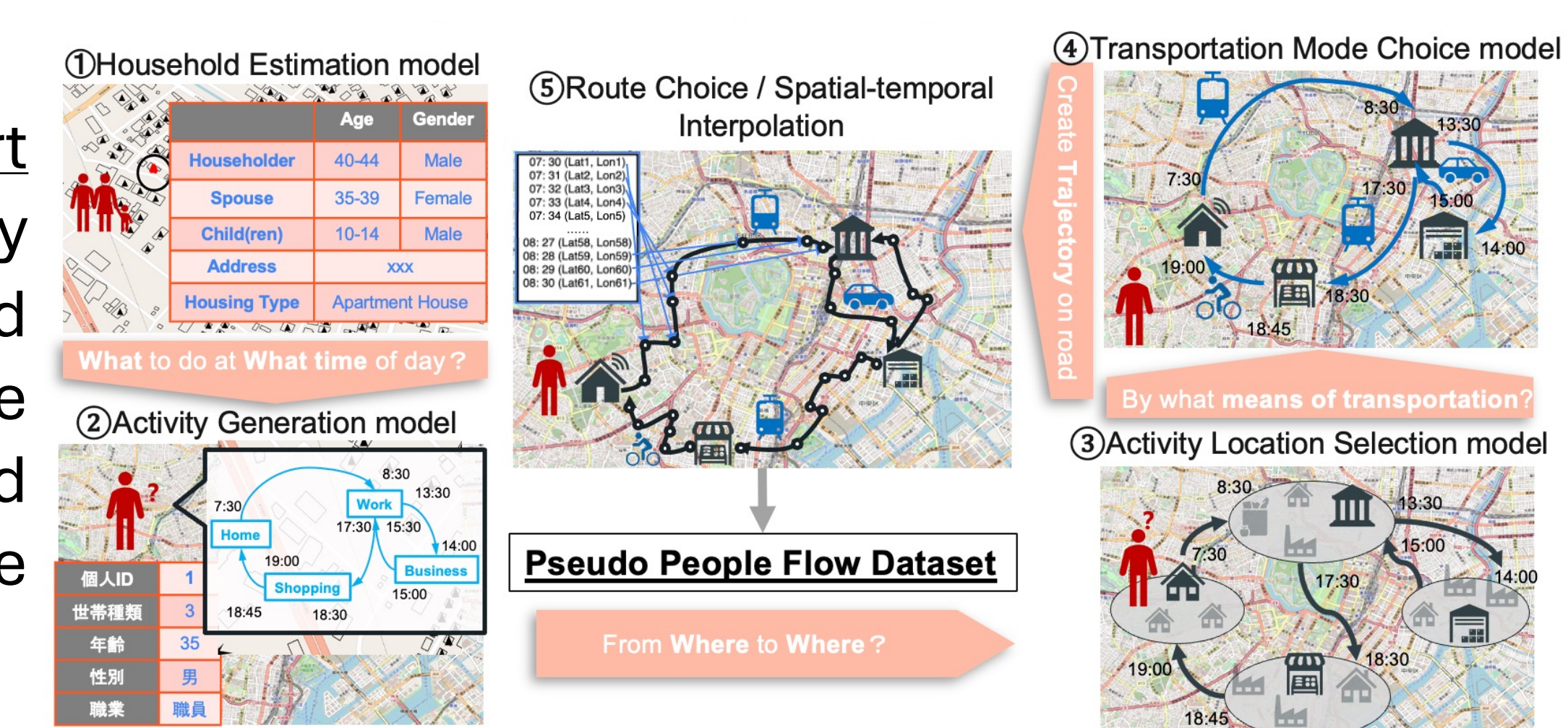
MyCityMobility: A Scenario-Based Public Transport Evaluation Platform

- Develop MyCityMobility, an open-access platform integrating open-data APIs, GTFS, synthetic people-flow data, and agent-based mobility simulation.
- Enable users to edit routes and timetables and test interventions such as increased bus frequency, and transformation to on-demand transport.



Key Insight

MCM transforms transport simulation from an expert-only analytical model into a shared planning environment where local governments, and service operators can explore policy trade-offs.

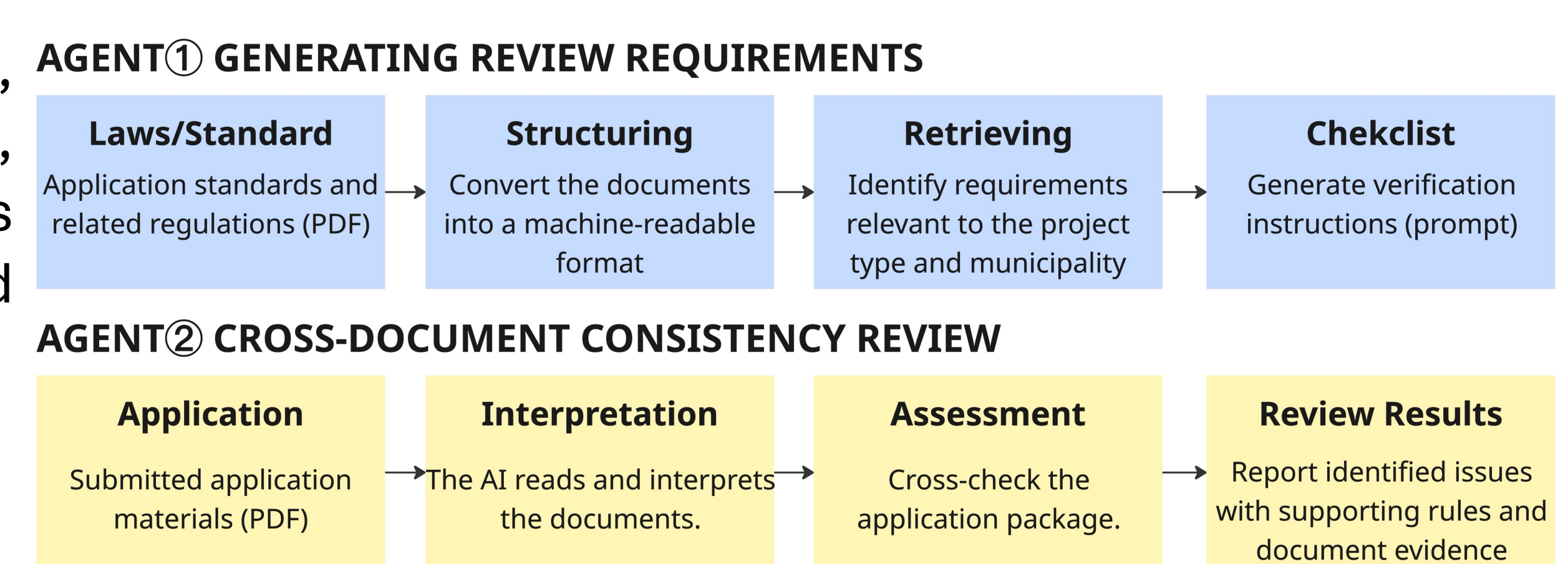


04 - Enabling Digital Governance

Research Question How can AI support reviewers in assessing multi-document development permit applications for regulatory compliance?

Approach

- Translate laws, planning regulations, and review manuals into municipality and project-specific machine-readable checklists.
- Use vision-language models to cross-check application forms, supporting documents, and drawings for missing information, inconsistencies, and potential regulatory violations.



Organizers

