

Example hypotheses

1. There is a two-way interaction between land-use and transportation*
2. Increasing commuting costs results in reverse suburbanization as households relocate closer to workplaces to mitigate transportation costs.*
3. Higher income households are less likely to relocate closer to work and more likely to move farther away from work in the event of increasing transportation costs.*
4. Urban areas that include a high number of two-worker households with workers generally travelling in the same direction may be an indication that there is a lack of job centers in close proximity to these households.*
5. There is an inverse relationship between home size and commuting distance.*
6. Optimized AED locations improve coverage of out-of-hospital cardiac arrests (OHCAs) compared to real AED locations.
7. Temporal accessibility is equally as important as spatial proximity in bystander AED use.
8. The successes in public OHCA response can be achieved in private settings using the same types of OHCA interventions.
9. The objective function value (spatiotemporal OHCA coverage) from spatiotemporal optimization models, which account for temporal information, is strictly equal to or greater than the coverage provided from spatial-only optimization models.
10. Optimization models perform equally as well in study settings with different physical infrastructures, populations, and existing AED networks to build upon.
11. The distribution of coffee shops across the city matches more closely to the historical OHCA distribution than fast food chain locations.
12. The capture of cells by dielectrophoresis is more dependent on cell polarization than cell size. (This difference forms the basis of a separation strategy to isolate specific cells from a mixed population of equally sized cells.)
13. Using more highly correlated encoding approaches for amino acids will improve the accuracy of trained convolutional neural networks on protein sequence data.
14. Adding gold nanostructure to micro-sized needle electrodes conjugated with antibodies will increase the limit of detection to bound analytes.

*Derived from: Akbari, S. (2018). Land-use and Transportation Interactions through the Lenses of Two-Worker Households, Rising Commuting Costs and Transit-Oriented Development (Doctoral dissertation).