About Me



NAME

Jingjing Tong, Ph.D. in Industrial Engineering

TITLE

Clinical Assistant Professor

Data Analytics and Statistics

YEARS AT UNT

3 years

RESEARCH FOCUS AREAS

- Predictors of cancer severity and screening adherence
- Service supply chains and resource allocation
- Inland waterway disruption response
- Course design and evaluation in engineering technology

Environmental Exposures and Thyroid Cancer Severity

Environmental context

OBJECTIVE

Determine whether environmental indicators improve prediction of advanced-stage diagnosis beyond demographic, socioeconomic, and tumor characteristics.

DATASET

368,726 SEER cases (2004-2021) linked to 13 environmental indicators.

MAIN FINDINGS

Environmental indicators added small predictive gains. Nitrogen dioxide ranked highest in logistic regression, but indicator rankings varied across models.

PBDE flame retardants

OBJECTIVE

Examine how total PBDE exposure and individual PBDE congener relate to thyroid cancer severity.

DATASET

493 population-group observations, linking NHANES biomarkers (2001-2016) to SEER severity outcomes (2006-2021), with a five-year lag.

MAIN FINDINGS

PBDE mixtures showed a modest association with severity, with no consistently dominant individual PBDE congener.

Outputs: 1 journal article (2026), 1 manuscript under review, 2 conference talks + 2 poster presentations (2025).

Adherence to Colorectal Cancer Screening Using Nationwide Unbalanced Data

OBJECTIVE

Assess potential factors associated with colorectal cancer screening adherence.

DATASET

BRFSS survey: 208,616 respondents aged 50-75.
Target: overall and test-specific screening adherence.



MAIN FINDINGS

- 76.5% adherence to screening guidelines
- Subgroups with inadequate screening rates: younger, Asian and Hispanic, male, never married, lower income, lower education attainment, employed/student, fair health condition, IHS, last checkup more than 1 year, everyday/someday smoker, heavy drinker and underweight.
- Undersampling offers a better PAC than oversampling method.

Outputs: 1 conference paper + 2 conference talks (2024). Funding: $1,000 UNT conference support (2024)

Supply Chain Analytics for Mobile Clinic Deployment

OBJECTIVE

Evaluate how community priorities and demand hidden by capacity limits affect the allocation of mobile-clinic appointments.

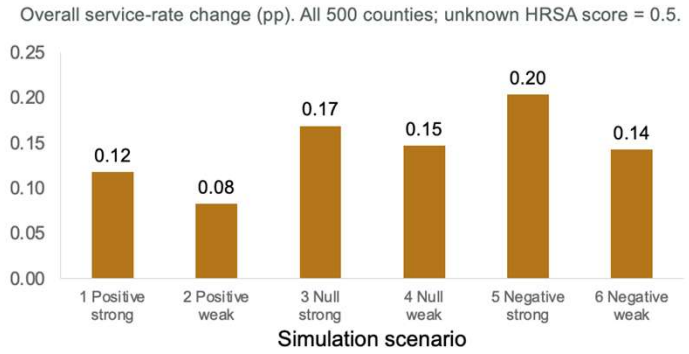
DATASET

Public data of 500 U.S. counties + 36 simulated months. Six scenarios, five random seeds each, with equal deployment capacity.

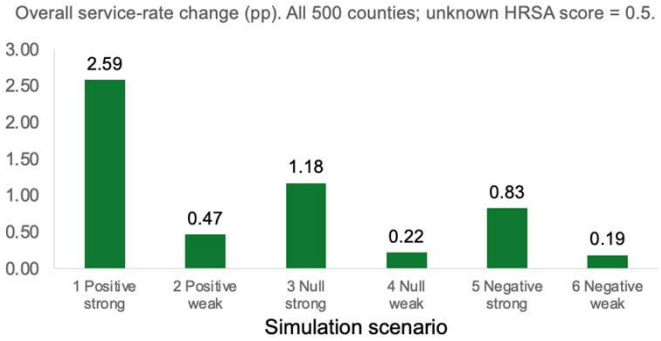
MAIN FINDINGS

- Prioritizing community needs during model training slightly improved overall service but reduced service in high-poverty counties.
- Accounting for hidden demand raised service by 0.19-2.59 percentage points versus the matched model that ignored capacity limits.

Considering Community Priorities During Model Training



Accounting for Hidden Demand in Demand Forecasting



Outputs: 1 conference talk + 1 poster presentation (2026). This research is in the starting phase.

Inland waterways & engineering technology course design

Inland waterway disruption response

OBJECTIVE

Use operations research models to prioritize disrupted cargo on inland waterways and select alternative terminals to limit value loss

MAIN FINDINGS

The genetic algorithm and tabu search approaches reduced cargo value losses and response time compared with assigning barges to the nearest terminals. Tabu search performed best among the approaches tested.

RESEARCH OUTPUTS

3 journal articles, 6 conference papers,
15 conference talks, 8 posters. Total funding: $36,564

Engineering technology course design

OBJECTIVE

Improve engineering and engineering technology learning through applied laboratory experiences.

MAIN FINDINGS

Energy Management: With 10 labs and partially flipped teaching, higher learning outcomes and satisfaction were achieved.
Computational Analysis in Engineering and Technology: For the 12 Scilab labs, numerical integration and differential-equation exercises were associated with higher student satisfaction.

RESEARCH OUTPUTS

2 journal articles, 1 conference talk