PUKAR BHANDARI

TRANSPORTATION DATA SCIENTIST

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PROFESSIONAL OVERVIEW

Transportation planner and data scientist with 3+ years of experience in travel demand modeling, geospatial analysis, and economic impact assessment. Proven expertise in developing and calibrating transportation models, conducting advanced statistical analysis, and creating automated workflows for regional planning initiatives. Strong background in stakeholder engagement and translating complex technical analyses into actionable insights for decision-makers.

WORK EXPERIENCE

Associate Transportation Planner/Analyst | Metro Analytics

Atlanta, GA | *June 2023 - Present*

Travel Demand & Economic Modeling:

- Developed and calibrated travel demand models for multiple Metropolitan Transportation Plans (MTPs), including Bowling Green-Warren County MPO (KY) and Lower Savannah COG (SC), serving populations exceeding 200,000.
- Led scenario-based economic impact assessments for Utah's Unified Transportation Plan 2023-2050, Utah Transit Authority, and Des Moines Area MPO, integrating inputs from regional travel demand, land use, and real-estate models to quantify multi-billion dollar economic effects.
- Conducted comprehensive benefit-cost analyses for major infrastructure projects, including Ohio DOT Cleveland intersection improvements and Missouri DOT STIP programs valued at $12+ billion, applying USDOT guidance and economic evaluation methodologies

Advanced Transportation Data Analysis:

- Performed accessibility and equity analysis using R, Python, and specialized transportation software (*Cube*, *TransCAD*).
- Developed automated spatial analysis workflows processing Census, ACS, LEHD/LODES, and CTPP datasets to generate socio-economic inputs for regional travel demand models across Georgia, South Carolina, and Kentucky.
- Integrated diverse transportation datasets, including HPMS, NBI, *AASHTOWare* crash data, and local traffic counts, to develop data-driven project prioritization frameworks for regional freight plans and long-range plans.

Database Development & Management:

- Built and maintained spatial and relational databases (*ESRI AGOL, SQLite*) supporting multi-state and national research programs, including NCHRP 08-146 Transportation Resiliency and BTS Cybersecurity Research.
- Created interactive dashboards and visualizations using tools like R Shiny and ArcGIS Experience Builder to communicate complex transportation patterns to non-technical stakeholders.

Graduate Teaching and Research Assistant | University of Utah

Salt Lake City, UT | *August 2021 – May 2023*

- Conducted statistical analysis using R and SPSS on resident survey data (n=1,200+) for Salt Lake City "*Thriving in Place*" anti-displacement initiative.
- Developed integrated geospatial databases for mining operations research, combining historical georeferenced datasets with current global mining data collected through web scraping and web mining operations.

EDUCATION

Master of City and Metropolitan Planning

University of Utah (2021 – 2023)

Specialization: Transportation Planning, Transportation Analysis Methods, Data Science, and Geospatial Data Analytics

Bachelor's Degree in Architecture

Tribhuvan University, Institute of Engineering (2013 – 2018)

TECHNICAL SKILLS

Programming and Data Analysis:

R/RStudio: *dplyr, ggplot2, sf, quarto, shiny*
Python/Jupyter: *numpy, pandas/ geopandas, plotnine, seaborn, scikit-learn*
Statistical Methods: *Regression analysis, spatial statistics, machine learning (Random Forest, K-Means, Naive Bayes)*
Databases: *MS Access, SQLite, DuckDB*
Version Control: *Git/GitHub*
Documentation: *R Markdown, Jupyter, Quarto, LaTeX*

Transportation Planning & Analysis:

Travel Demand Modeling: *Cube, TransCAD*
Traffic Analysis: *Synchro/SimTraffic*
Economic Modeling: *IMPLAN, TREDIS, REMI*
Infrastructure Assessment: *NBIAS*
Transportation Datasets: *Census/ACS, CTPP, LEHD/LODES, NHTS, HPMS, NBI, FAF5*

Geospatial Analysis and GIS:

GIS Platforms: *ArcGIS/AGOL, QGIS, GeoDA*
Spatial Programming: *sf package (R), geopandas (Python)*
Spatial Analysis: *network analysis, accessibility modeling, spatial statistics, proximity analysis*

Other:

MS Excel and VBA
CAD: *AutoCAD, SketchUp*
Frontend: *HTML/CSS, WordPress*
Web mining/Web scraping: *httr2/rvest (R)*