



Michael A. Miller

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EDUCATION

MS Mathematics, University of Arizona,
Tucson, AZ, 1992

BS Applied Mathematics (Cum Laude), University of Texas at Dallas,
Richardson, TX, 1989

PROFESSIONAL SKILLS SUMMARY

Data/Trend Analysis; Discrete and Continuous Optimization Algorithms;
Statistical Analysis and Interpretation; GIS Analysis; Modeling;
Programming; Mathematical/Statistical Computer Software.

PROFESSIONAL EXPERIENCE

5/03 – present. Program Director, Geovisual Analytics and Decision Management (GADA), Institute for Transportation Research and Education (ITRE), North Carolina State University, Raleigh, North Carolina. GADA is the union of two groups within ITRE: the Operations Research and Education Laboratory (OREd) and the Commercial Vehicle Enforcement Resource Lab (COVERLAB). Both groups specialize in GIS-centered analysis and providing clear and relevant information to decision-makers.

Working with the North Carolina State Highway Patrol, COVERLAB has developed a unique set of tools that allow troopers to more efficiently target size and weight enforcement efforts for commercial vehicles. Built on extensive GIS analyses, these tools can provide valuable up-to-date information to troopers in the field as well as provide input for strategic planning within the SHP.

OREd assists school districts in solving technically challenging and politically sensitive school siting and districting problems by providing tools for data-driven long-term facilities planning. OREd has developed a long-standing relationships with many school districts in North Carolina and beyond by providing Integrated Planning for School and Community (IPSAC), a suite of customized planning tools that utilize GIS data analysis, statistical trend analysis, network analysis, cohort analysis, and analysis of population demographics and dynamics. IPSAC received the 1998 Edelman award from the Institute for Operations Research and Management Sciences (INFORMS) and relies on the use of discrete optimization algorithms to solve a variety of problems confronted by growing school districts, including determining optimal sites and attendance boundaries for new schools

that satisfy Board policy and providing a scientific foundation for difficult school planning decisions.

Recent projects include development of the Student Potential Distribution Model (SPDM), a comprehensive student population forecast model based a unique high-resolution Land Use database created by OREd. The SPDM allows precision population forecasting for use in determining future school sites and attendance boundaries and has been used by the Wake County Public School System since 2005 in planning for the 150,000+ students currently enrolled in the district.

Other recent work involves the examination of political processes surrounding school board decisions and the refinement of IPSAC tasks to better meet the political challenges facing today's school districts. In addition, an on-going study of population dynamics using cohort data is showing promise in forecasting membership of rural school districts where growth patterns may vary widely within the district.

PUBLICATIONS

A Study of the Fiscal Constraints Facing the North Carolina Ferry System, Transportation Research Board 90th Annual Meeting, Paper 11-1507

Economic Effects of Access Management Techniques in North Carolina, Transportation Research Board 90th Annual Meeting, Paper 11-4189

Business Perceptions of Access Management Techniques, Public Works Management & Policy (pending)

Planning for Enrollment Growth: Using Land Use Data to Determine Future School Sites, Journal of the Transportation Research Board, No. 2074

Integrated Planning for School and Community, Transportation Research Record, Journal of the Transportation Research Board, No. 1922