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Math in the City

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Math in the City

Petronela Radu

Department of Mathematics



Course Description

- ❖ Interdisciplinary mathematics course run in collaboration with local businesses and research centers in Lincoln to provides a real world experience.
- ❖ Course design:
 - teams of 3-5 students work on a semester long project
 - in class they learn necessary background material
 - students construct a model based on real data provided by the business collaborator; they analyze the model and draw conclusions
 - at the end of the semester students write a report and give a presentation of their results for the business collaborators and the Mathematics Department (faculty and students)



Benefits for the students

- ✓ Students understand how to translate a complex real-life situation into a mathematical model.
- ✓ Develop their skills for writing and for oral presentations.
- ✓ Exposure to workplaces outside academia.
- ✓ Learn how to work in teams.
- ✓ Exposure to mathematical & statistics software
- ✓ Sense of achievement and self-confidence.

Assessment of the program

- BOSR pre and post surveys for course participants and control
- Regular journal submissions
- Final report and class meeting
- End of semester focus group (BOSR)

Findings

- Students take ownership: ``I liked the fact that we didn't know what we were capable of doing until we did it.”
- Value of working with real data: ``How to value different raw data is one of the most important skills I learned. I also gained some skills to pick and choose goals that are reachable from goals that cannot be finished. “

Improving Learning :

- More goal-oriented assignments
- Choose projects with readily available data
- Formal sessions on writing and presentation skills
- Discuss/improve student assessment

Projects

- Based on real data concerning current research interests in Lincoln.
- Accessible to undergraduates with basic mathematical backgrounds.

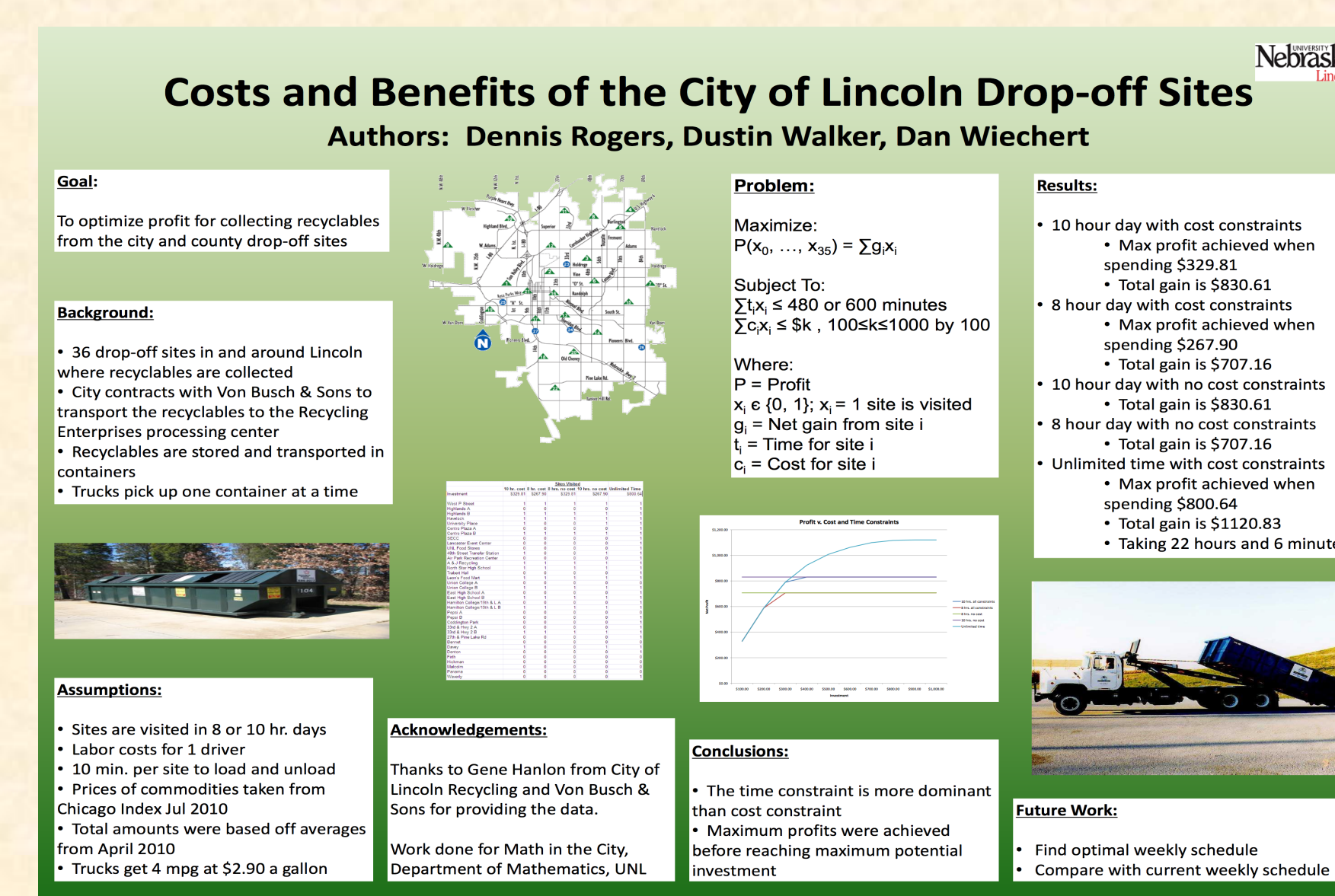
Projects 2006 -- 2014:

- Tell-Tale of Heart Attacks (UN Medical Center)
- Water Levels in Lake McConaughy (Dept of Natural Resources)
- Traffic Flow Analysis (Schemmer Associates)
- Statistical Analysis of Lincoln Real Estate (Lincoln County Assessor)
- Optimizing Costs and Savings in Sustainable Design at LEED Buildings (The Architectural Partnership)
- Analyzing Recycling Operations in Lincoln (City of Lincoln Recycling)



Impact of the MitC program

- Capstone course for the Math Department
- Strengthens the students' CVs and increases their marketability; students obtained positions after completing the course.
- Creates strong academia - industry connections



www.math.unl.edu/~math-mitc