

University of Tulsa

Transit Ridership Forecast

Project

In the spring of 2008, the University of Tulsa College of Business Administration quantitative methods classes of Professor Wen-Chyuan Chiang formed teams to study and forecast the passenger ridership of Tulsa Transit's Fixed Route service. The teams were asked to deliver a five-year ridership forecast, using the statistical methods and variable samples they felt relevant to the project.

The forecasts were evaluated by staff members from the University of Tulsa and Tulsa Transit, and two teams were recognized as delivering the most thorough and reasonable forecasts. Their findings are summarized below.

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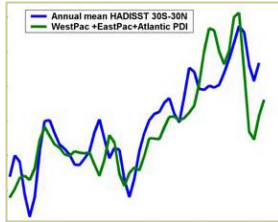
Transit Ridership Forecast

Facts

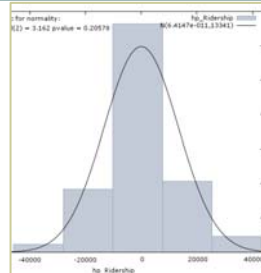
- Fixed Route ridership has increased 8% per year for the last several years.
- Most transit riders use the bus system 5 or more times per week.
- 57% of local transit trips are for work commutes.
- 51% of Tulsa Transit passengers are aged 35 to 55.
- 82% of Tulsa Transit passengers do not have a car available to them.
- 29% of passengers are new customers

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Several statistical methods were used and the results were compared.



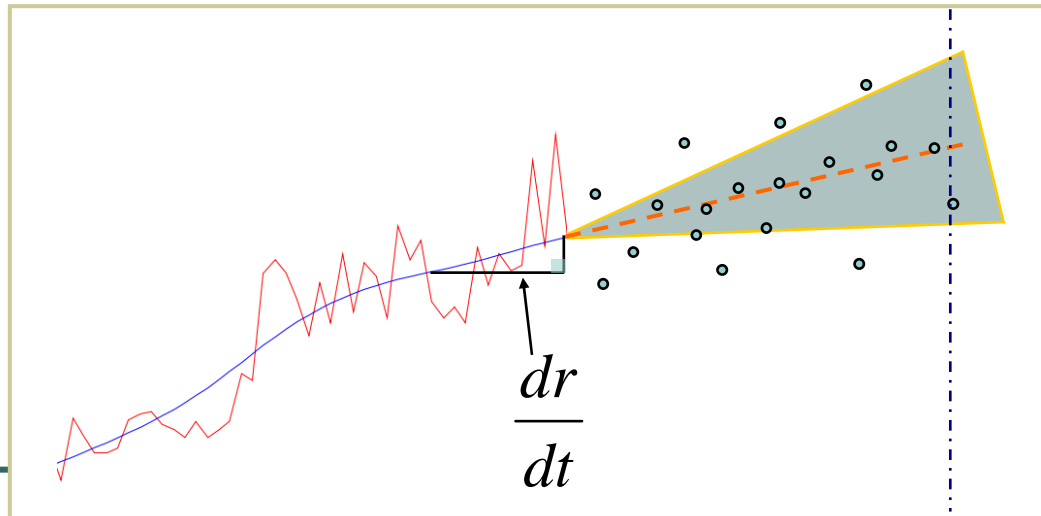
Factors



Error Distribution → **Seeded Data**

$$t_1 = \frac{r}{c_1}, t_2 = \frac{r}{c_2}, t_2 - t_1 = \Delta t = r \left(\frac{1}{c_2} - \frac{1}{c_1} \right)$$
$$r = \Delta t \left(\frac{c_1 c_2}{c_1 - c_2} \right)$$

Smoothing



Fixed Route

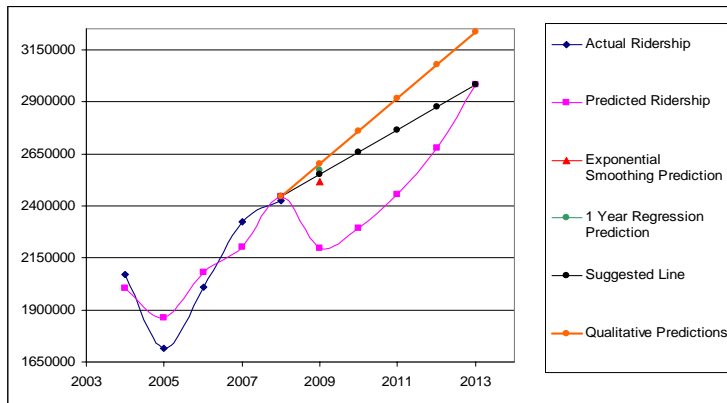
Conclusion

Using the various selected quantitative models, Tulsa Transit may expect to see a 32% fixed route ridership increase over the next 5 years (FY09 – FY13).

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Team A

5-Year Prediction (FY09-FY13)



Quantitative Forecasting

Year	Ridership
2009	2,550,216
2010	2,657,757
2011	2,765,299
2012	2,872,840
2013	2,980,381

Qualitative Forecasting

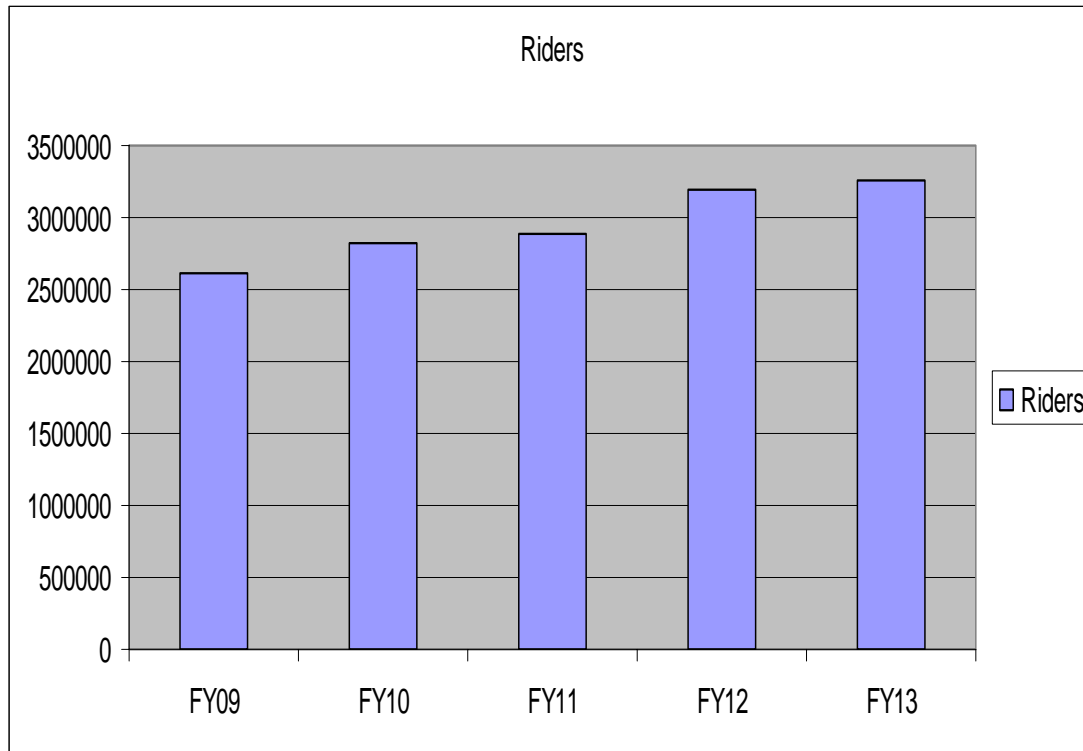
Year	Ridership
2009	2,601,221
2010	2,759,767
2011	2,918,313
2012	3,076,859
2013	3,235,405

- Our qualitative predictions show a greater increase in ridership due to the possible future rise in oil prices.

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Team B

5-Year Prediction (FY09-FY13)



Year	Riders
FY09	2,608,689
FY10	2,822,967
FY11	2,894,268
FY12	3,193,477
FY13	3,256,986

Fixed Route

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Team Members

Tulsa Transit wishes to thank Professor Wen-Chyuan Chiang and all of the University of Tulsa students who worked on this project. The team members whose work is summarized in this presentation are:

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Team B

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