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Assessing Intrastate Equity of Transportation Funding

The Case of Southwest Florida

Xuehao Chu

Center for Urban Transportation Research

Transportation Research Forum

Outline

- Equity Concepts
 - Motivation
- Equity Measures
 - Applications
 - Results
 - Conclusions

Equity Concepts

- Vertical equity
- Horizontal equity
- **Geographic equity**
 - Interstate equity in distributing funds from the highway account of the federal Highway Trust Fund

Motivation

- Confusion on perspectives
 - Fund recipients
 - Funding agencies
- Confusion on equity measures
 - Collection-based
 - Norm-based
- Sources of Confusion
 - Literature
 - Practice in Florida

Equity Measures

- Collection-Based
 - Compares actual distributions to collections
 - Use these
 - When need objectivity in defining equity
 - When comparing distributions with collections
- Norm-Based
 - Compares actual distributions to what should be distributed
 - Use these
 - When need flexibility in defining equity
 - When assessing if distribution is done according to existing laws and policies

Equity Measures

Norm-Based

$$\text{Norm - Based} = \frac{D_i}{N_i}$$

$$\text{Typically, } N_i = D \sum_k (w_i^k F_i^k), \quad \sum_k w_i^k = 1, \quad \sum_i F_i^k = 1$$

- It is subjective to select:
 - What values for the weights
 - How many factors
 - What factors

Equity Measures

Collection-Based

Based on Gross Collections = $\frac{D_i}{C_i}$

Always

Based on Net Collections = $\frac{D_i}{C_i \left(\frac{C_n}{C} \right)}$

In a long period

Similar in a Long Period

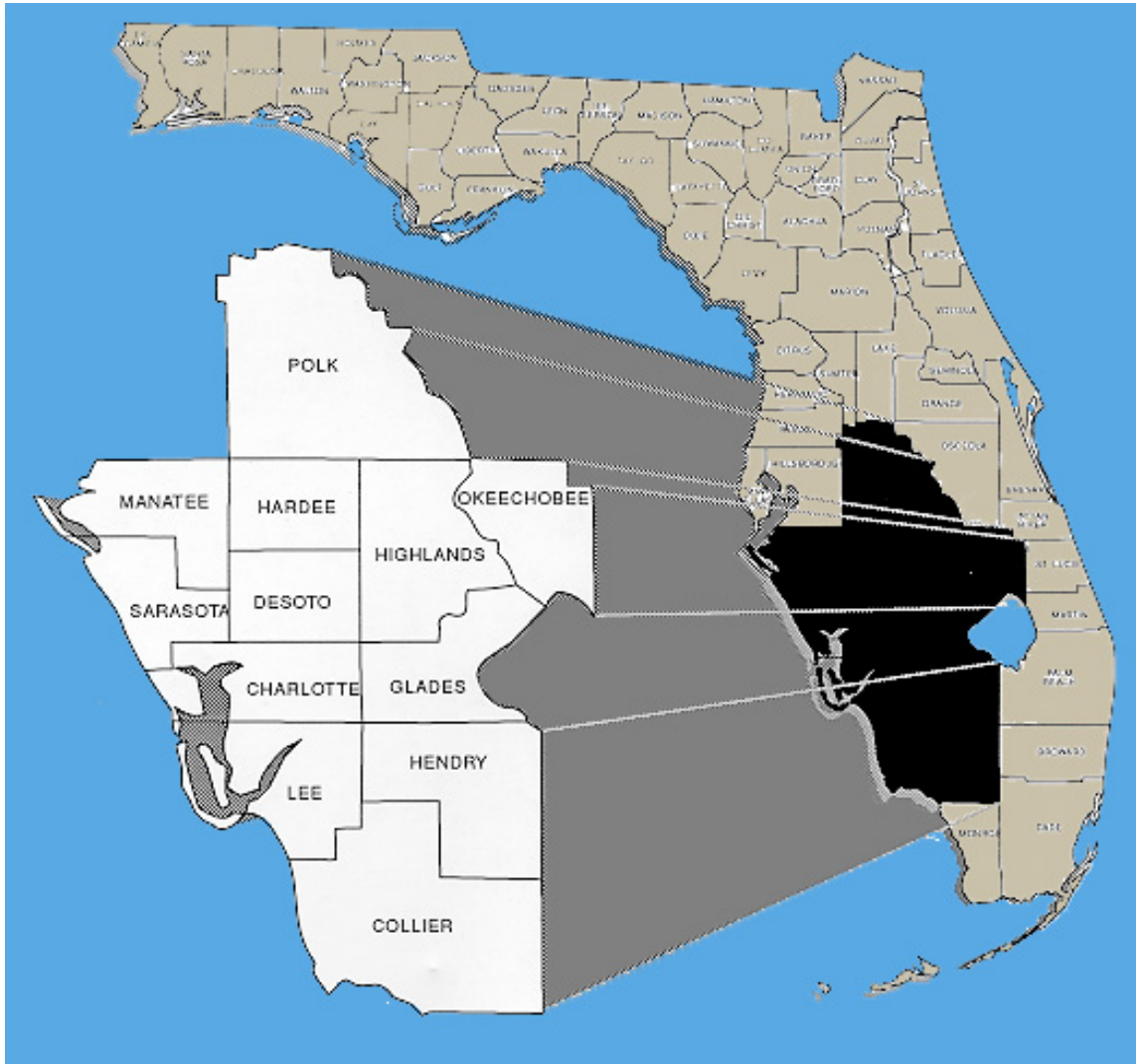
Based on Gross Shares = $\frac{\frac{D_i}{C_i}}{\frac{D}{C}} = \frac{\frac{D_i}{D}}{\frac{C_i}{C}} = \frac{D_i}{D \left(\frac{C_i}{C} \right)} = \frac{D_i}{C_i \left(\frac{D}{C} \right)}$

Equal

Based on Net Shares = $\frac{\frac{D_i}{C_i}}{\frac{D}{C_n}} = \frac{\frac{D_i}{C_i \left(\frac{C_n}{C} \right)}}{\frac{D}{C_n}} = \frac{D_i}{C \left(\frac{D}{C} \right)}$

Application

The Region: Southwest Florida



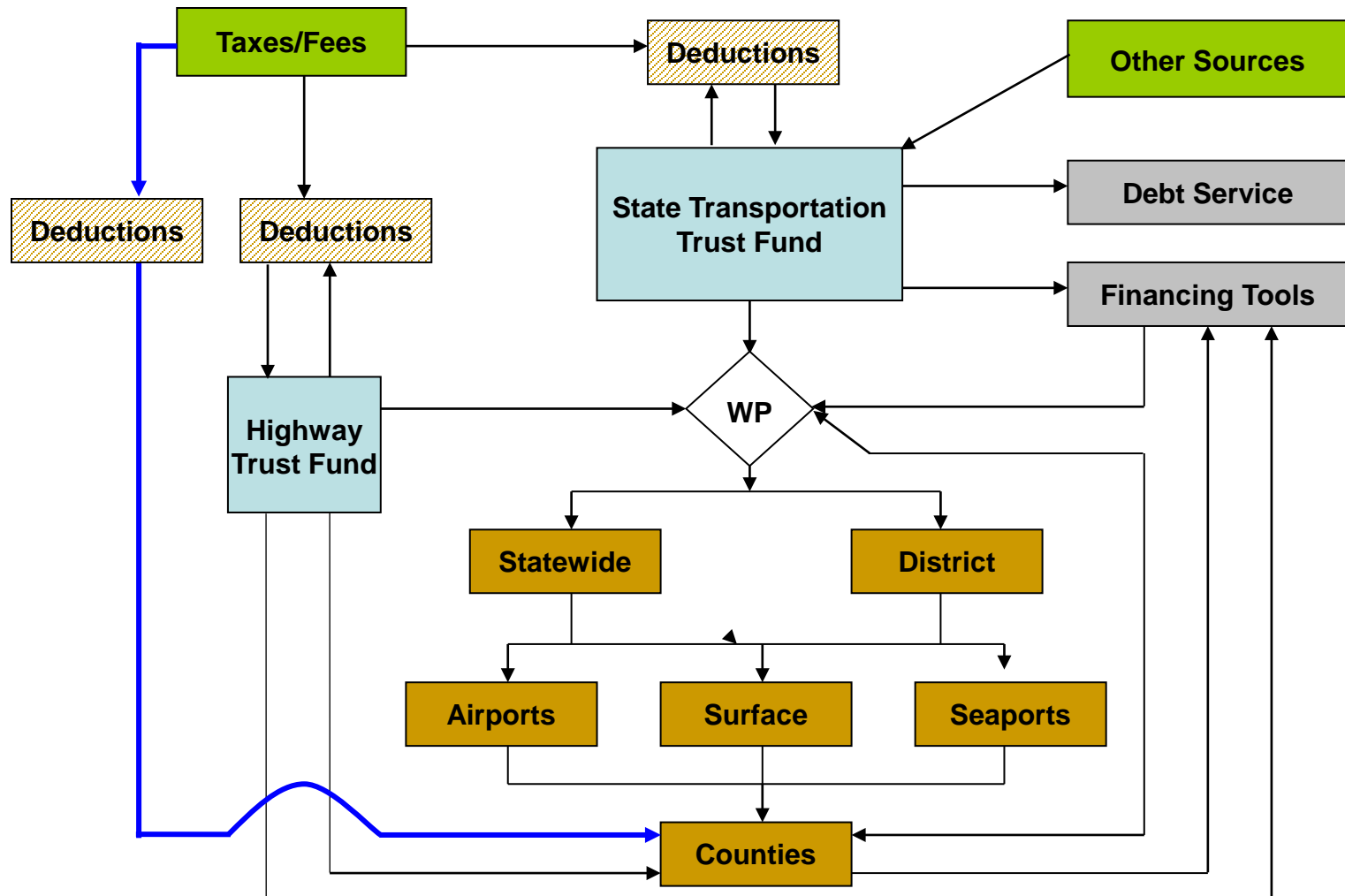
- Individual counties want to know their relative distributions and collections
- Assess intrastate equity for individual counties as fund recipients

Application

- Modes: All
- Time frame: FY1995 – FY2004
- Base analysis: Equity measure based on gross shares
- Sensitivity analysis:
 - Equity measure based on gross collections
 - Equity measure based on net collections

Application

Flow of Funds



Application

Revenue Sources

Taxes/Fees	Grouping	Control
Federal Highway Excise Taxes	Federal Highway Excise Taxes (36.14%)	State Controlled (79.28%)
Fuel Sales Taxes SCETS Tax Alternative Fuel Fee Fuel Use Tax and Fee Aviation Fuel Tax Motor Vehicle License Fee Initial Registration Fee Motor Vehicle Title Fee Rental Car Surcharge	State Other Taxes/Fees (46.95%)	
Fuel Excise Taxes	State Fuel Excise Taxes (6.91%)	Local Controlled (20.72%)
Ninth-cent Fuel Tax Local Option Fuel Taxes	Local Fuel Taxes (13.81%)	

Application

Determining Gross Collections

Approaches	Taxes	Percent
Exclusion	Alternative Fuel Fee	0.01%
Actual Data	Motor Vehicle Fees	13.97%
Direct Estimation	Federal Highway Fuel Excise Tax State Highway Fuel Sales Tax SCETS Tax State Fuel Excise Taxes Local Fuel Taxes	78.37%
Apportionment	Federal Highway Non-Fuel Excise Taxes State Off-Highway Fuel Sales Tax State Fuel Use Tax and Fee State Aviation Fuel Tax State Rental Car Surcharge	7.85%

Application

Net Collections

Adjustments	Federal Highway Excise Taxes	State Other Taxes/Fees	State Fuel Excise Taxes	Local Fuel Taxes
Diversions of Gross Collections	-24%	-14%	-6%	-7%
Non-Transportation Sources		+5%		
Diversions of STTF Proceeds		-3%		
Total	-24%	-12%	-6%	-7%

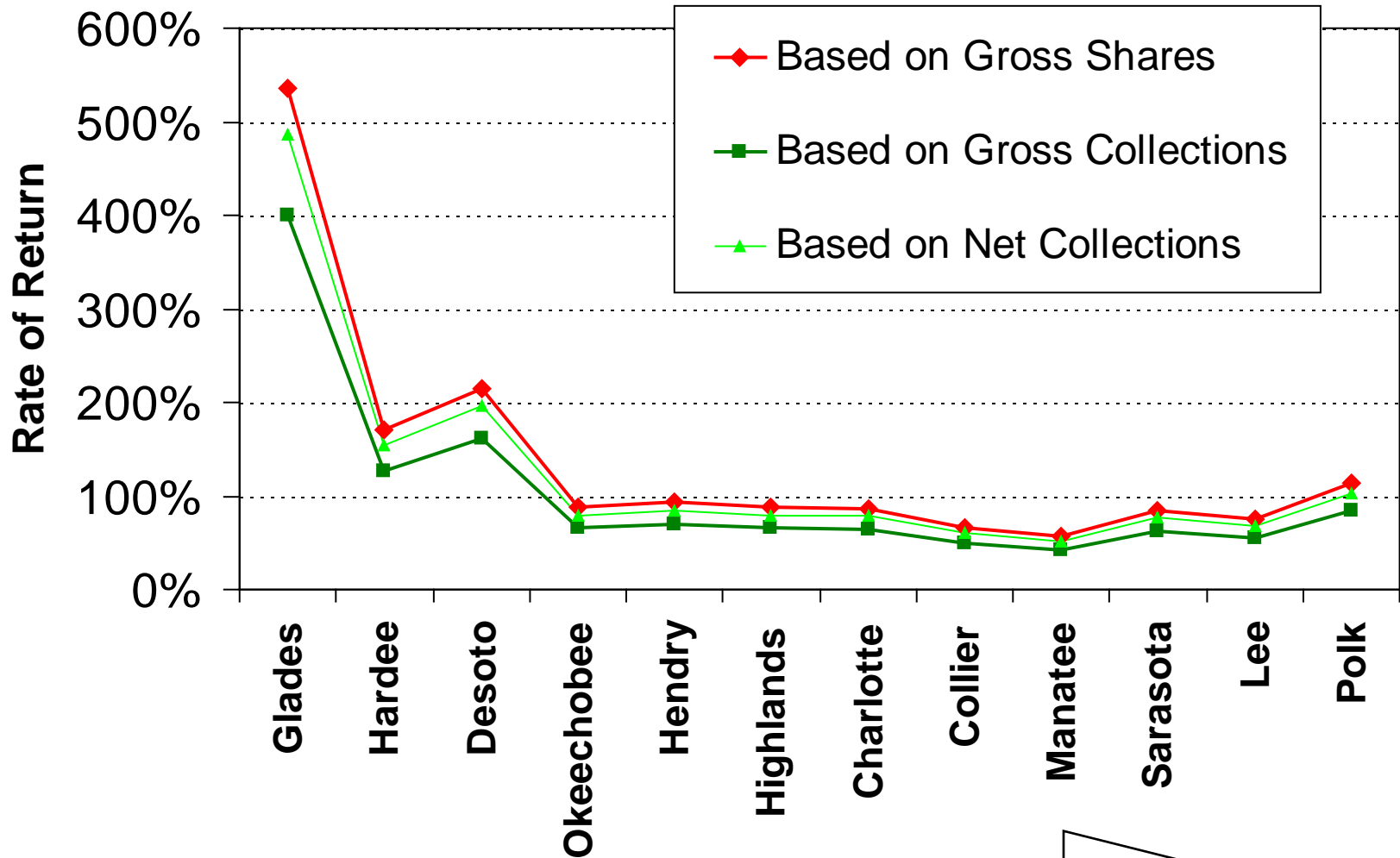
Application

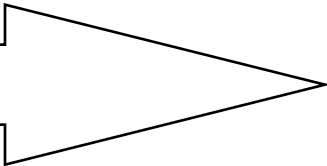
Determining Distributions

- FDOT's Work Program Administration database
- Excluding projects not funded by transportation taxes/fees
 - Non-reimbursable local participation
 - Toll funded projects
 - FRA, FAA, FEMA
 - Toll Facilities Revolving Trust Fund
 - Reimbursable emergency repair funds
 - Etc.

Results

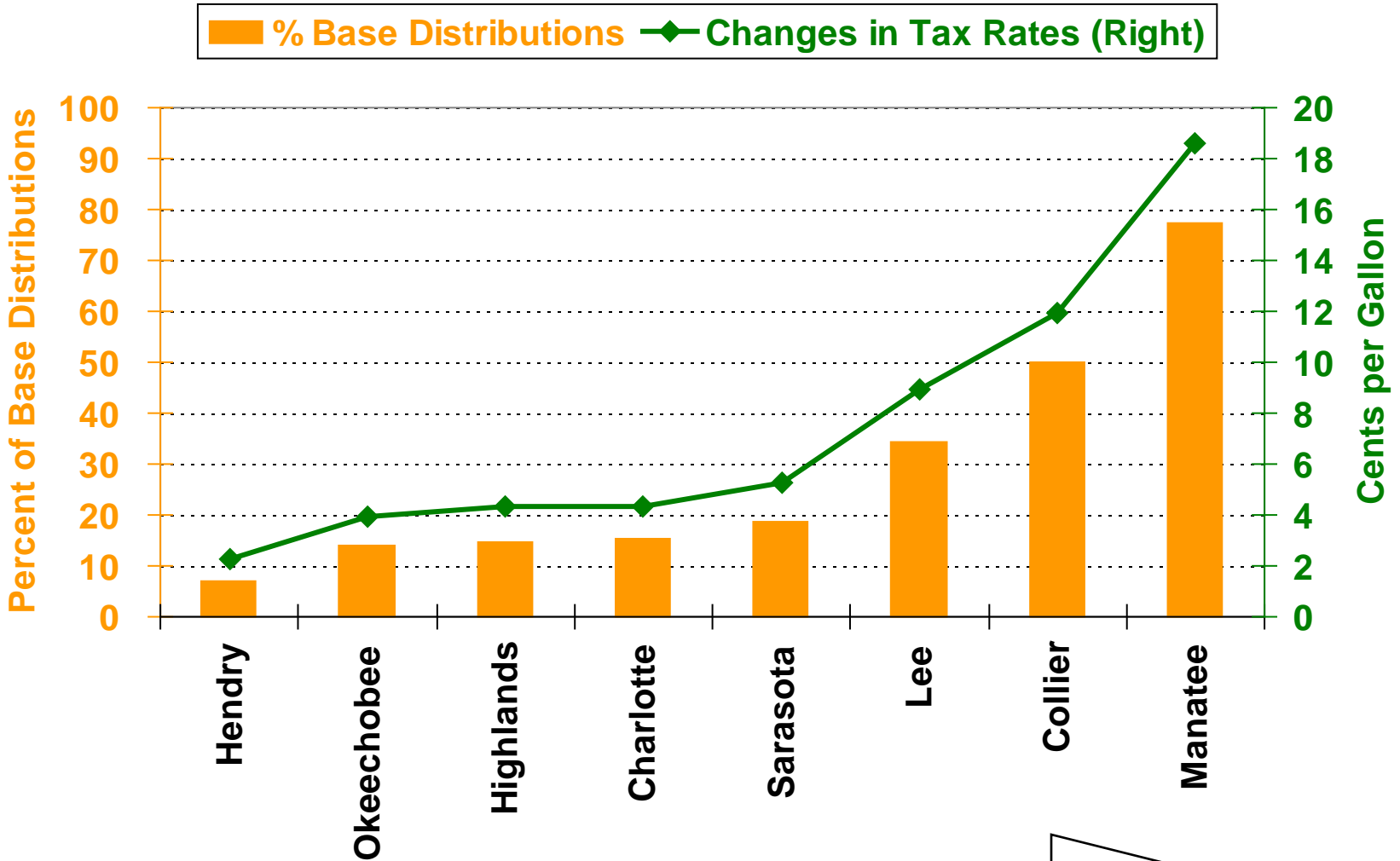
Rate of Return



Greater Population 

Results

Required Changes to Achieve 100% Rate of Return



Lower Rate of Return

Conclusions

- Collection-based equity measures are objective
- Collection-based measures should be used if fund recipients want to know their distributions relative to their collections
- Norm-based equity measures are subjective in many ways
- Norm-based measures are often used by funding agencies to justify funding practices

Conclusions

- Rates of return based on gross shares vary dramatically across counties, ranging from 56% to 535%.
- The highest rates of return are with the least populous inland counties.
- To achieve a 100% rate of return:
 - Requires an increase in distributions ranging from 7% to 77%, **or**
 - Requires an increase in local fuel tax rates ranging from 2.3 cents to 18.6 cents per gallon