

Using ACS Data to Estimate the Impact of State Employees on Austin Congestion



TRANSPORTATION Policy Research center

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Report link: http://tti.tamu.edu/policy/congestion tti.tamu.edu/documents/PRC-14-32-F.pdf



Background

 Austin has experienced steady population and economic growth.

Accompanied by increased congestion.

• As the state capital:

- Austin's largest employer is the State of Texas



- To determine the extent to which state employment contributes to Austin area congestion.
- To inventory state-employee focused programs for travel demand management (TDM) in other states.



Research Activities

- Review of best practices among state-level TDM programs.
- Census Analysis Examine Austin's high congestion and concentrated state employment.
- Congestion Analysis Evaluate congestion data to measure the effect of state employment on Austin-area congestion.

Census Analysis

- Objective
 - Understand state employee travel for those working in downtown Austin.
 - Compare state employee travel in downtown Austin to others working in downtown Austin.
- Methods
 - An analysis of ACS data that summarize employment and commuting patterns.
 - A GIS analysis of commuter home and work locations in Austin.

ACS and CTPP Data Used

- ACS 2008–2012 five-year estimates tables
 - DP03: Selected Economic Characteristics.
 - B23025: Employment Status for the Population 16 Years and Over.
 - B08301: Means of Transportation to Work.
 - B08128: Means of Transportation to Work by Class of Worker.
- CTPP Tables: ACS 2006–2010 five-year
 - Residence: A102103 Class of Worker (Workers 16 years and over)
 - Workplace: A202102– Class of Worker (Workers 16 years and over)

[What is the CTPP?]

- Census Transportation Planning Package (<u>CTPP</u>)
 Special tabulations designed for transportation planners
 - Workplace tables at census tract level
 - Flow data for journey to work
 - Additional transportation tables
 - Considerations
 - Most recent: ACS 2006–2010 five-year
 - Actual and modeled data
 - Margins of Error

Employment and Commuting in Austin MSA

111	111	Austin-	Dallas-Fort	Houston-	San Antonio-
		Round Rock	Worth-Arlington	The Woodlands-	New Braunfels
		MSA	MSA	Sugar Land MSA	MSA
Civilian Employed Population 16 Years and Over		880,341	3,098,480	2,808,873	963,525
State Government Employees		71,004	82,468	100,449	39,287
Percent State Employees		8.1%	2.7%	3.6%	4.1%
Commute Mode Distribution of All Workers	Drive Alone	75.0%	80.9%	79.2%	79.1%
	Carpool	11.3%	10.5%	11.7%	11.5%
	Public Transportation	2.6%	1.5%	2.4%	2.2%
	Other	2.7%	1.5%	1.9%	1.4%
	Walked	1.8%	1.2%	1.4%	1.9%
	Worked at Home	6.6%	4.5%	3.4%	3.9%
Travel Time to Work	Less than 15 minutes	24.3%	<mark>22.</mark> 4%	<mark>20</mark> .1%	23.4%
	15-29 minutes	39.1%	35.9%	35.0%	40.7%
	30-59 minutes	30.3%	34.4%	35.6%	30.2%
	60 minutes or more	6.3%	7.4%	9.3%	5.7%
Mean Travel to Work (Minutes)		25.3	26.7	28.1	25.1

Data Source: ACS 2008–2012 five-year estimates, U.S. Census Bureau

Austin MSA Transit & Telework

Commute Mode in Austin: All Workers and State Employees





Austin's State employees use transit more, telework less

Austin MSA Employment Density

- Employment is concentrated in central downtown
- Workplace-based CTPP data (from ACS 2006-2010)



Austin MSA Employee Density

0 2.5 5

10

15

- High concentration of all workers in Central Austin.
- About 26% of all workers commute into the downtown study area.
- About 8% of all workers are state employees.

Data Source: ACS 2006-2010 five-year estimates, U.S. Census Bureau from CTPP



Projection Coordinate System: NAD_1983_StatePlane_Texas_Central_FIPS_4203_Feet Data Source: Census Transportation Planning Products, 2006-2010 Estimation

Analysis



Analysis

Central Austin Employment

0 2.5 5

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The Central Austin study area includes

- 26% of all workers.
- 60% of state employees.

1 in 5 workers in **Central Austin area are** state employees



Analysis

Projection Coordinate System: NAD 1983 StatePlane Texas Central FIPS 4203 Feet Data Source: Census Transportation Planning Products, 2006-2010 Estimation

Congestion Analysis

- Objective To determine the extent to which state employees contribute to Austin congestion
- Methodology Using the INRIX data analysis tools, researchers compared travel times on specific state holidays to monthly and yearly average travel times



Congestion Analysis: Baseline Heat Maps

- Austin congestion levels
 - Increasing congestion over 2011-2013
- Red streaks spread wider (increased duration) and longer (increased queue lengths)





Average Yearly Travel Time Index on I-35 (US-183 to TX-71/Ben White Blvd) Averaged by 1 hour for every weekday for 2011, 2012 and 2013





Congestion Analysis: State Holiday Travel LBJs Birthday

- Southbound on I-35 in PM peak ("rush hour")
 - 18 minute decrease
 - Typical 46-min trip reduced to 28-min*

*Estimates for what would be a 20-minute trip at Free Flow speeds

Travel time represented as a percentage of the idea travel time (Travel Time/Free-flow Travel Time).

 FREE-FLOW
 11.11.1.3
 11.6
 2
 2.5
 CONGESTION



LBJ's Birthday Travel Time Index on I-35 (US-183 to TX-71/Ben White Blvd.) Averaged by 1 hour for August 27, 2012, August 2012 and every weekday for 2012.



Analysis

Conclusions



- State workers are heavily concentrated in highly congestion central Austin (1 in 5).
- State workers are already more likely to commute by alternative modes compared to their peers in Austin.
- State holidays showed decreases in travel time and congestion

Conclusions

- TDM efforts could be strengthened by following specific options:
 - Ridematching (intra- and inter-agency coordination)
 - Telework (e.g. change statutory requirements and switch to laptops)
 - Transit Subsidies
- Demonstrates how this type of data/analysis could be used to evaluate other TDM programs



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