

Appendix C. Billboard Revenues

In this appendix, billboard revenue rates in San Antonio are extrapolated from Anaheim. This approach is taken for two reasons: to compute these advertising rates based on publicly known data only; and to demonstrate the important factors in setting rates. An understanding of the economic factors that drive revenue rates are critical to understanding how simply moving a billboard from one part of a city to another can produce a huge change in revenue. In terms of scope, only simple linear (proportional) relationships between variables are assumed.

1. Per-Face Billboard Revenues in Anaheim

From Appendix B, the annual billboard revenues in Anaheim are:

- Old technology signs on secondary roads:
 - \$3,600 for a 8-sheet (approximately 72 square foot) billboard
 - \$32,400 for a 30-sheet (approximately 300 square foot) billboard
 - \$120,000 for a bulletin (approximately 700-1200 square foot) billboard
- Freeway-oriented billboard: \$350,000 – Passive style.

Source: “Responses to a Request for Information (RFI) for a Billboard Exchange Program”, Planning Department, City of Anaheim, November 6, 2007. [Ref B4 in Appendix B.]

2. Adjustment Factors

Now in order to extrapolate these numbers to San Antonio, consider each factor in turn: traffic density, demographics, competition, size, and business cycle.

Traffic Density. Traffic flow is important factor because it is the prime determinant of exposure rate.

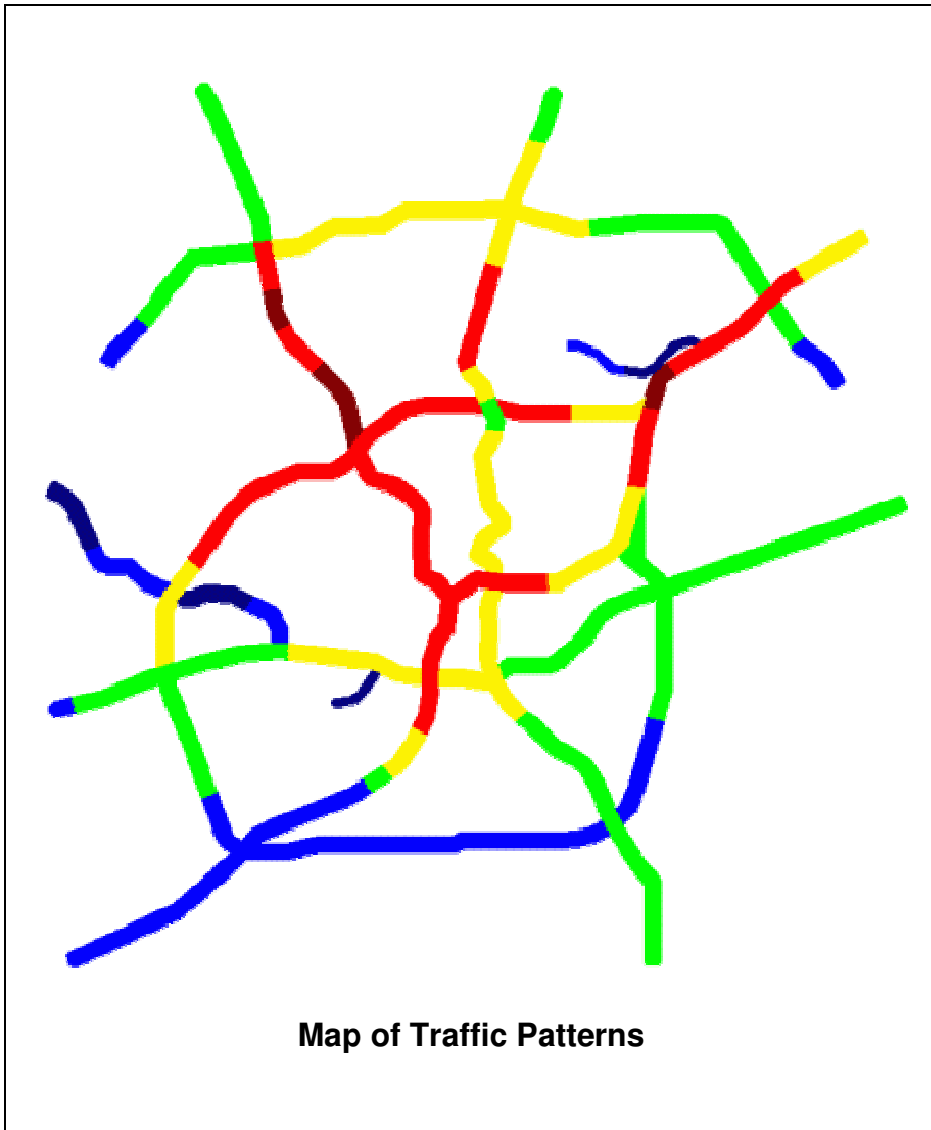
But traffic is also complex. It varies along the time dimension: time of the day, day of the week, business day vs. holiday, and so forth. It even varies between segments along the same highway, based on branching between pathways. This last effect is graphically demonstrated for San Antonio in the figure on the next page. [Ref C1.] In order to make calculation tractable, I need simple, common metrics.

From “2007 Annual Urban Mobility Report” [Ref C2], compute and compare the statistic:

$$[\text{Vehicle Density}] = [\text{Daily Vehicle-Miles of Travel (1000s)}] / [\text{Lane Miles}]$$

For Anaheim, use the data for Los Angeles-Long Beach-Santa Ana, CA. San Antonio use data from its separate report. For both cities, use data for the last reported year, 2005.

- Secondary (Arterial) Streets:
 - $[\text{Vehicle Density}]_{\text{Anaheim}} = [126,000] / [20,755] = 6.07$
 - $[\text{Vehicle Density}]_{\text{San Antonio}} = [11,245] / [2,235] = 5.03$
 - ➔ $\text{Traffic Factor}_{\text{Secondary}} = [\text{Vehicle Density}]_{\text{San Antonio}} / [\text{Vehicle Density}]_{\text{Anaheim}} = 5.03 / 6.07 = \underline{0.83}$



Map of Traffic Patterns

	200,000+		50,000 - 99,999
	150,000 - 199,999		25,000 - 49,999
	100,000 - 149,999		< 25,000

Legend

	FWY	LOCATION	2006 AADT	'05-'06 % CHG
1	10	Callaghan Rd.	216,000	+9.51%
2	35	Thousand Oaks	214,000	+12.85%
3	10	DeZavala Rd.	209,000	+6.88%
4	35	O'Connor Rd.	193,000	+14.81%
5	35	S of Rittiman Rd.	188,000	+3.01%
6	35	McCullough Ave.	187,000	-0.12%
7	35	N of Walzem Rd.	184,000	+7.18%
8	410	Evers Rd.	181,000	+2.06%
9	10	Huebner Rd.	179,000	+9.88%
10	35	S of Walzem Rd.	178,000	+4.68%
11	35	S. Laredo St.	176,000	+3.41%
12	410	Vance Jackson Rd.	172,000	+1.62%
13	410	Blanco Rd.	171,000	+6.19%
14	281	Brookhollow Dr.	169,000	+26.63%
15	410	Broadway	168,000	+2.13%
16	410	McCullough Ave.	165,000	+1.85%
17	10	Frio St.	164,000	-3.25%
	10	Crossroads Blvd.	164,000	-1.31%
18	35	Pat Booker Rd.	162,000	+21.87%
	281	Nakoma Rd.	162,000	+3.24%
19	35	N. New Braunfels Ave.	160,000	-0.32%
20	35	Theo Ave.	157,000	+4.74%
	410	Nacogdoches Rd.	157,000	+2.18%
21	10	S of Loop 1604	151,000	+5.40%
22	410	S of Bandera Rd.	150,000	-8.41%

Tabulation of Highest Traffic Segments

- Notes:**
1. While not the primary focus of this paper, new digital billboards can be expected on high travel segments.
 2. From "The Texas Highwayman Pages" (<http://www.texhwyman.com/traffic.htm>). Thanks to Brian Purcell for permission to use.

Figure C-1. San Antonio Average 2006 Daily Traffic by Location

- Freeways:

- $[\text{Vehicle Density}]_{\text{Anaheim}} = [140,000] / [5,870] = 23.85$

- $[\text{Vehicle Density}]_{\text{San Antonio}} = [17,065] / [1,090] = 15.66$

- $\text{Traffic Factor}_{\text{Freeways}} = [\text{Vehicle Density}]_{\text{Anaheim}} / [\text{Vehicle Density}]_{\text{San Antonio}} = 15.66 / 23.85 = \underline{0.66}$

Demographics. From “State Median Family Income by Family Size, US Census Bureau” [Ref C3], use median family income as the measure of citizen demographics:

- $[\text{Mean Family Income}]_{\text{California}} = \$64,563$

- $[\text{Mean Family Income}]_{\text{Texas}} = \$52,355$

- $\text{Demographics Factor} = [\text{Mean Family Income}]_{\text{Texas}} / [\text{Mean Family Income}]_{\text{California}} = \$52,355 / \$64,563 = \underline{0.81}$

Competition. Clear Channel owns 90% of the off-premise billboards in San Antonio, and hence can employ monopolistic pricing. As a rough figure, assume it can charge a 10% premium in San Antonio over what it could charge in Anaheim, which has a more competitive market. So its pricing is

- $\text{Competition Factor} = \underline{1.10}$

Size. Multiple billboard sizes and ranges are already accounted for in the Anaheim data but some adjustments for size are made in Tables C2 and C4, as noted in the tables.

Business Cycle. In an absolute sense, national and regional economies can vary over time, favoring one metropolitan area over another. To make this analysis more generic, neglect this factor.

Design.

Digital billboards allow companies to advertise and charge multiple customers from the same sign. Some references:

- “Seven standard billboards in Cleveland, Clear Channel Outdoor's first "digital" billboard market, returned \$380,000 in revenue from July 2004 to July 2005. In July 2005, the standard billboards were converted to digital. The new billboards generated \$3.5 million from January 2006 to December 2006, according to company projections.” [Ref C4.]
- “If ads could be updated quickly and cost-effectively by electronic means, billboard operators could rotate ads throughout the day with multiple advertisers per unit. Digital currently has appealing economics, with five to 10 times higher revenue per unit based on my calculations.” [Ref C5.]
- “New focus: one board for many advertisers. Aside from raising rates, an outdoor advertising (OA) company's best strategy for growing revenue had been to erect additional billboards. The more billboards, the higher the revenue. However, strict cap and replace ordinances often limit the number of billboards a company can own. This will lead outdoor advertising companies to look to technology--in the form of digital billboards--to grow revenue through more efficient boards. Digital billboards allow several advertisers to share the same billboard, multiplying revenue from an individual board by as much as six to eight times.” [Ref C6.]
- “But the digital billboards offer increased revenues opportunities for the outdoor advertising companies. A single digital billboard can bring in up to six times the revenue of a traditional one.” [Ref C7.]
- “Each digital sign produces \$14,000 a month in revenue, typically from multiple advertisers, compared with \$1,000 to \$2,000 for traditional billboards, which serve only one advertiser.” [Ref C8.]

A revenue factor of 8 appears reasonable for digital faces vs. passive ones. So mathematically,

$$[\text{Design Factor}]_{\text{Passive}} = 1.00$$

$$[\text{Design Factor}]_{\text{Digital}} = 8.00$$

3. Per-Face Billboard Revenues in San Antonio

To compute revenue rates for (passive) billboards in San Antonio that are comparable to those in Anaheim, multiply by the above adjustment factors:

Table C-1. Estimated Revenues for Passive Billboards in San Antonio based on Anaheim Revenues

Anaheim			Adjustment Factors				San Antonio
Street Type	Face Size	Revenue	Traffic Density	Demographics	Competition	Design	Revenue
Secondary	8-Sheet (72 Sq Ft)	\$3,600	0.83	0.81	1.1	1.0	\$2,662
	30-Sheet (300 Sq Ft)	\$32,400	0.83	0.81	1.1	1.0	\$23,961
	700-1200 Sq Ft	\$120,000	0.83	0.81	1.1	1.0	\$88,744
Freeway	700-1200 Sq Ft	\$350,000	0.66	0.81	1.1	1.0	\$205,821

The San Antonio ordinance addresses the plethora of current billboard sizes in San Antonio. (See Appendix A.) To account for all these variations, Table C-1 is expanded, as below¹.

Table C-2. Expanded Estimated Revenues for Passive Billboards in San Antonio

San Antonio			
Street Type	Face Size	Revenue	Comment
Secondary	8-Sheet (72 Sq Ft)	\$2,662	Exact match from Table C-1
	30-Sheet (288 Sq Ft)	\$23,961	Use 300 Sq Ft value from Table C-1
	10x30 Ft (300 Sq Ft)	\$23,961	Exact match from Table C-1
	10.6x36 Ft (378 Sq Ft)	\$40,000	Approx interpolations between 300 & 700 Sq Ft values
	10x40 Ft (400 Sq Ft)	\$40,000	
	10x48 Ft (672 Sq Ft)	\$88,744	Use 700-1200 Sq Ft value from Table C-1
	20x60 Ft (1200 Sq Ft)	\$88,744	Use 700-1200 Sq Ft value from Table C-1
Freeway	700-1200 Sq Ft	\$205,821	Exact match from Table C-1

¹ While the primary focus of this paper is economics, a political comment on the plethora of billboard sizes in the ordinance seems appropriate. If nothing else, the ordinance is written in such a way that it gives the unmistakable appearance that the billboard industry had a significant, if not predominant, role in its creation. How else can we explain the extraordinary effort the City made to give the industry credit for all the different billboard sizes? One can only hope that city government will give a more balanced attention to citizen inputs when the ordinance comes up for renewal in 2008; otherwise, I would suggest citizens consider legislative records when they go to vote in next election in May 2009.

To maximize revenues, I expect the companies to place new digital faces on high traffic highways.

Table C-3. Estimated Revenues for Digital Billboards in San Antonio based on Anaheim Revenues

Anaheim			Adjustment Factors				San Antonio
Street Type	Face Size	Revenue	Traffic Density	Demographics	Competition	Design	Revenue
Freeway	700-1200 Sq Ft	\$350,000	0.66	0.81	1.1	8.0	\$1,600,000

Again, to account for digital billboard size options in the San Antonio ordinance, I expand Table C-3, as below.

Table C-4. Expanded Estimated Revenues for Digital Billboards in San Antonio

San Antonio			
Street Type	Face Size	Revenue	Comment
Freeway	700-1200 Sq Ft	\$1,600,000	Exact match from Table C-3
	300 Sq Ft	\$800,000	From Table C2, revenue is not precisely proportional to face size. Assume 50%

Now that I have the per-face revenues estimated for San Antonio, I can compute the net revenue impacts for each exchange allowed by the San Antonio ordinance in the next appendix.

References

For safety, cut and paste addresses into your navigation bar.

- C1. "The Texas Highwayman Pages": <http://www.texhwyman.com/traffic.htm>
- C2. "2007 Annual Urban Mobility Report", Texas Transportation Institute, Texas A&M University System: <http://mobility.tamu.edu/ums/>
- C3. "State Median Family Income by Family Size", US Census Bureau: <http://www.census.gov/hhes/www/income/statemedfaminc.html>
- C4. Digital Billboard Blog: <http://digitalbillboards.blogspot.com/2007/06/clearchannel-tests-light-emitting-diode.html>
- C5. "Coming to Your Highway: Digital Billboards", Ryan Fuhrmann, CFA, May 15, 2007
- C6. All Business: <http://www.allbusiness.com/services/business-services/3997703-1.html>
- C7. NWITimes, February 17, 2008:
<http://www.nwitimes.com/articles/2008/02/17//business/business/docf7c241cac839ae94862573ef0058cd1a.txt>
- C8. "Bright Lights, Big Impact, Why digital billboards are growing in popularity". Sarah Goldstein:
<http://www.inc.com/magazine/20080301/bright-lights-big-impact.html>