



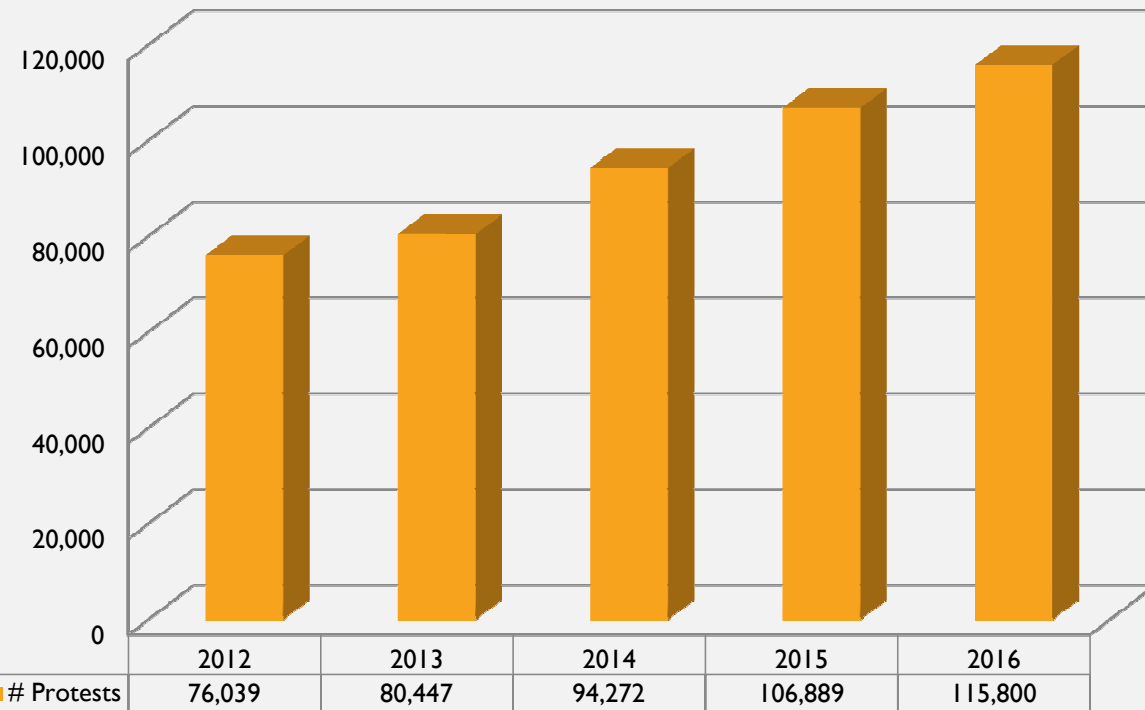
TRAVIS CAD PROCESS INITIATIVES

PROCESS INITIATIVES

- **Additional staff to handle increased protest volume**
- **Increased funding for litigation**
- **Additional funding for market data and research position**
- **Fee appraisals to test and calibrate mass appraisal model**

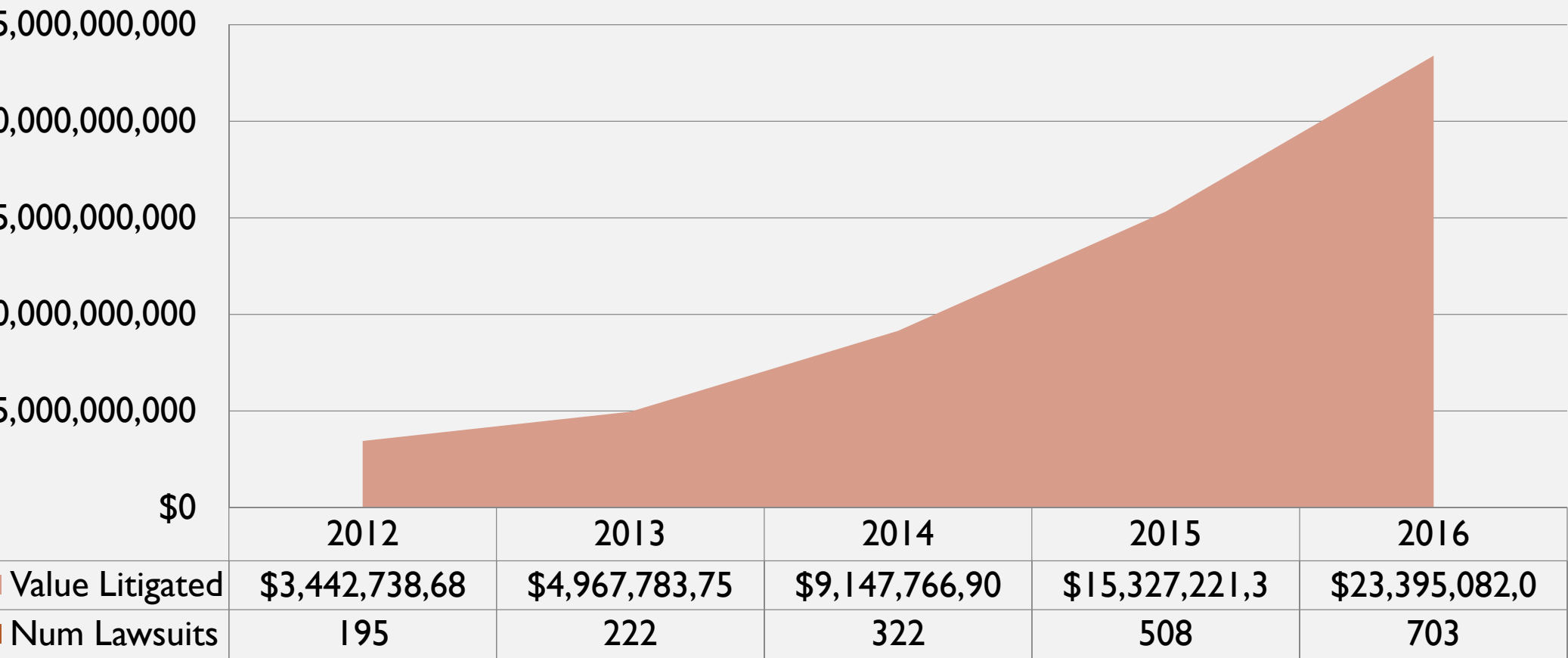
PROTEST

Protest Volume



- Record number of protest in 2016
- Completed all improved commercial July 1st
- Certified appraisal roll July 18 at 95%
- Completed all protests by August 31
- Average wait time - 9 minutes

LITIGATION



MARKET DATA AND MODEL CALIBRATION

- Commercial - Lonnie Hendry
- Residential – Michael Kasper

COMMERCIAL

- **Data Mining**
- **Austin Market Data**
- **Modernization of Litigation Processes**

DATA MINING

Utilized for 2015 and 2016 valuation cycles

Increased confirmed sales data, specifically for Office, Hospitality and Multifamily

Increased refinance appraisal data, across all commercial portfolios

Increased staff knowledge and expertise, macro and micro

Greatly reduced TCAD's exposure to "home-run" equity appeals

AUSTIN MARKET DATA

- Representative market values that are more supportable throughout the protest and litigation process
- Creation of a comprehensive evidence packet for all portfolios



Industrial

Market Overview

Investment sales continued to dominate the Austin Industrial Market based on data from Real Capital Analytics and are contributing to a rise in rents and absorption rates. Real Capital Analytics shows sales volume increased 50% year over year in Austin. 2015 sales volume in Austin's industrial property portfolio reached over a billion dollars for the first time.

Vacancy Tightening

Vacancy rates continue to decline and the overall cap rates continue to compress. All of these signs point to a very healthy and vibrant industrial marketplace that is experiencing decades low vacancy coupled with decades high rent increases.

The industry analysts and market participants agree that vacancy rates have continued their historic decline in the Austin Industrial Market through 2015 and into 2016. Vacancy rates are being reported for the Austin region by the various market publications from 5.7% to 8%. This is an average drop of two or more percentage points from the previous year. While new space continues to come on line, especially in the Southeast and Northeast regions, positive absorption is trending in all areas of Austin. Integra Realty Resources 2016 Viewpoint has Austin's Industrial market in their expansion stage 2 defined as: High absorption, Moderate/High Employment growth, Moderate/High new construction, decreasing vacancy rates, and Medium/High rental rate growth.

Citywide Absorption

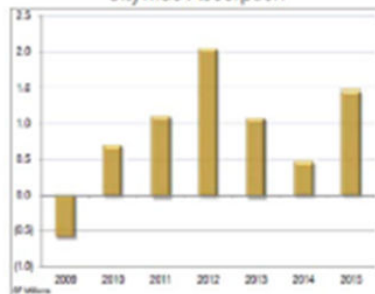
REOC Austin, in their fourth quarter 2015 publication states Austin's Industrial market, "Featured a trifecta of positive indicators... healthy leasing/sales activity, positive net absorption, and improved occupancy. Strong market fundamentals continue to support stable rental rates and new construction". See the infographics and charts that show the fourth quarter and annual absorption for Austin.

As the Austin population continues to grow, the need for warehouse/distribution and flex space will continue to grow with it. Office service "flex space" is increasing in popularity as a "go-to" choice for its cost effectiveness and flexibility. Expect rates to continue to increase and vacancy rates to continue their decline as many traditional office users move to the flex-based office concept for the foreseeable future. As Austin continues to be a national choice for data center services and data disaster recovery, this segment continues to grow as well. New Industrial Centers continued to bring new space online in 2015. Notable deliveries included the FedEx Ground Distribution and the latest expansion to the Met Center complex, Met Center Building 3. The prospects for continued growth in the industrial sector look promising. There is plenty of capital available for this type of investment and the Austin market has shown the ability to absorb any new supply that's being brought to market.

Current Quarter Absorption

12/31/15	Flex/ R&D	Office/ Warehouse	Total
Flound Rock	15,191	0	15,191
North	(54,001)	12,275	(41,726)
Northeast	24,279	55,927	80,206
East	N/A	0	0
Southeast	(17,041)	337,370	320,329
South	0	26,200	26,200
Total	(31,572)	431,772	400,200

Citywide Absorption



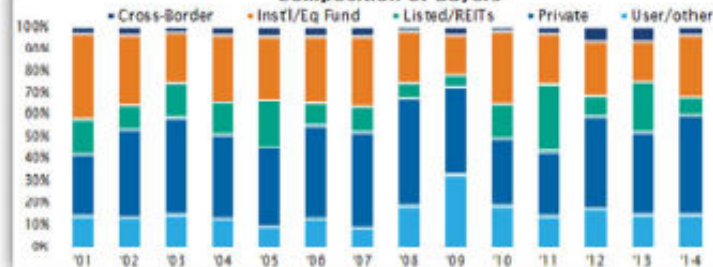
Market Graphics

Austin

Year	Month	Volume	YoY %	#	Total Units
Year	'01	\$ 21,423,284		4	227,507
	'02				
	'03	\$ 25,603,202		3	378,572
	'04	\$ 334,915,095	1208%	50	4,692,911
	'05	\$ 157,785,000	-53%	15	3,068,215
	'06	\$ 425,409,606	170%	27	4,313,698
	'07	\$ 354,322,845	-17%	35	5,058,598
	'08	\$ 108,803,900	-69%	9	1,326,248
	'09	\$ 43,750,000	-60%	2	250,013
	'10	\$ 161,749,917	270%	13	2,547,132
	'11	\$ 209,524,238	30%	24	3,416,025
	'12	\$ 317,778,353	52%	34	5,471,825
	'13	\$ 290,143,660	-9%	29	4,017,353
	'14	\$ 666,138,649	130%	66	10,533,836
	'15	\$ 1,001,949,915	50%	137	15,374,459

This volume was comprised of primarily cross-border and private investors.

Composition of Buyers





TRAVIS CENTRAL APPRAISAL DISTRICT 2016 LAWSUIT EQUITY WORKSHEET - OFFICE ONLY

FROST BANK TOWER

TCAD PID 192833

EFFECTIVE JANUARY 1, 2016



PROPERTY DESCRIPTIONS							VALUATION							ASSESSED DATA											EGIM			
Number	PID #	ORA	Model Code	NRA	CR Yr	Income Class	Land Subject	Gross Rent	Sec Income	VAC Loss	Exp's Less Tax	Cap% Less Tax	Cap Rate (GAR)	Gross Rent	Reim Inc	Gross Rent	Sec Income	Effective Income	Cap's Less Taxes	Cap% Less Taxes	NOI Less Taxes	Stabilized Cap Rate Unloaded	2015 Stabilized Assessed Value	Stabilized Final 2015	Overall Loaded Cap Rate Calculated	Overall Cap Rate Adjusted	Adjusted Overall Cap Rate	Effective Gross Income Multiplier
Subject	192833	FROST BANK TOWER	00000	026,070	2002	AA	10000	\$62.00	\$6.00	0.0%	\$12.00	20.00%	5.00%	\$61.25	\$22.75	\$64.00	\$6.00	\$67.25	\$12.00	20.00%	\$65.25	5.00%	\$227,264,406	\$614.02	7.60%	0.00%	7.60%	10.00
1	192833	CHRIST CHURCH	00000	120,000	2010	A	10000	\$67.00	\$6.00	0.0%	\$11.50	20.00%	5.00%	\$65.00	\$0.00	\$65.00	\$6.00	\$65.00	\$10.00	20.00%	\$65.00	5.00%	\$1,163,200	\$625.36	7.60%	-0.00%	7.60%	10.00
2	192833	SOUTH LAMAR WHOLE FOODS	00000	201,316	2004	A	10000	\$67.00	\$6.00	0.0%	\$11.50	20.00%	5.00%	\$62.52	\$15.00	\$63.52	\$6.00	\$65.52	\$10.00	22.21%	\$65.82	5.00%	\$71,261,608	\$633.86	7.60%	-0.00%	7.60%	10.01
3	192833	100 CONGRESS	00000	411,636	1985	AAA	10000	\$61.00	\$6.00	0.0%	\$11.75	21.00%	5.25%	\$67.40	\$20.25	\$67.65	\$6.25	\$61.54	\$10.50	20.00%	\$65.54	5.25%	\$118,060,000	\$629.96	7.60%	-0.25%	7.60%	10.73
4	192836	COLORADO TOWER	00000	373,334	2014	AAA	10000	\$61.00	\$6.00	0.0%	\$11.75	21.00%	5.25%	\$67.75	\$20.25	\$68.00	\$6.15	\$69.27	\$10.25	20.00%	\$65.82	5.25%	\$100,426,473	\$618.87	7.60%	-0.25%	7.60%	10.70
5	192833	ONE CONGRESS PLAZA	00000	518,386	1985	A	10000	\$67.00	\$6.00	0.0%	\$11.50	20.00%	5.00%	\$64.82	\$18.00	\$64.65	\$5.02	\$64.65	\$10.00	20.00%	\$62.96	5.00%	\$223,776,437	\$621.00	7.60%	-0.44%	7.60%	10.20
6	192830	301 CONGRESS	00000	426,658	1985	A (+V-0)	10000	\$69.00	\$6.25	0.0%	\$11.50	20.00%	5.00%	\$69.00	\$0.00	\$69.00	\$6.00	\$67.50	\$11.50	22.19%	\$65.93	5.00%	\$227,458,312	\$623.21	7.60%	-0.25%	7.60%	10.52
7	192844	SAN JACINTO CENTER SHORELINE	00000	410,268	1985	A	10000	\$67.00	\$6.00	0.0%	\$11.50	20.00%	5.00%	\$67.25	\$18.50	\$66.75	\$5.96	\$67.90	\$10.50	22.19%	\$67.30	5.00%	\$100,673,678	\$622.89	7.60%	-0.00%	7.60%	10.52
8	192838	800 BANK PLAZA	00000	194,794	2013	A	10000	\$67.00	\$6.00	0.0%	\$11.50	20.00%	5.00%	\$66.75	\$17.25	\$66.00	\$6.00	\$66.06	\$11.50	24.54%	\$65.36	5.00%	\$88,364,600	\$603.63	7.60%	-0.60%	7.60%	10.20
9	192836	300 WEST 50TH	00000	454,225	2000	AA (+V-0)	10000	\$63.00	\$6.75	0.0%	\$11.88	21.00%	5.10%	\$63.25	\$22.00	\$62.75	\$6.00	\$65.50	\$11.88	21.32%	\$63.6	5.10%	\$263,018,620	\$608.91	7.60%	-0.13%	7.60%	10.03
10	192827	CHASE TOWER	00000	300,000	1972	A (+V-0)	10000	\$66.75	\$6.75	0.0%	\$11.38	20.00%	5.00%	\$65.50	\$20.00	\$63.50	\$6.75	\$65.54	\$11.25	24.60%	\$64.39	5.00%	\$167,731,677	\$609.02	7.60%	-0.00%	7.60%	10.00
11	192832	310 CONGRESS BQA CENTER	00000	255,714	1974	A (+V-0)	10000	\$66.75	\$6.75	0.0%	\$11.38	20.00%	5.00%	\$66.75	\$0.00	\$66.75	\$6.75	\$65.82	\$11.38	24.31%	\$65.48	5.00%	\$113,862,868	\$613.71	7.60%	-0.00%	7.60%	10.23
12	192828	PERRY BROOKS TOWER	00000	134,638	1985	A (+V-0)	10000	\$66.75	\$6.75	0.0%	\$11.38	20.00%	5.00%	\$65.00	\$21.00	\$67.00	\$1.25	\$65.43	\$11.75	21.20%	\$63.69	5.00%	\$73,038,908	\$605.96	7.60%	-0.00%	7.60%	10.66
13	192879	LAVACA PLAZA	00000	116,540	1980	A (+V-0)	10000	\$66.75	\$6.75	0.0%	\$11.38	20.00%	5.00%	\$64.50	\$20.00	\$64.50	\$10.00	\$61.83	\$11.75	22.67%	\$60.80	5.00%	\$68,710,301	\$605.40	0.00%	-0.00%	7.60%	10.46
14	192888	SLUCON LAIS WEST	00000	217,228	2000	A (+V-0)	10000	\$66.75	\$6.75	0.0%	\$11.38	20.00%	5.00%	\$67.00	\$10.40	\$65.40	\$3.00	\$65.62	\$11.60	24.67%	\$65.12	5.00%	\$95,510,490	\$609.72	7.60%	-0.00%	7.60%	10.00
15	192870	SLUCON LAIS EAST	00000	217,228	2000	A (+V-0)	0	\$66.75	\$6.75	0.0%	\$11.38	20.00%	5.00%	\$67.00	\$10.40	\$65.40	\$3.00	\$65.62	\$11.60	24.67%	\$65.12	5.00%	\$95,510,490	\$609.72	7.60%	-0.00%	7.60%	10.18
16	192894	CAPSTAR AT COMMERCE PLAZA	00000	116,515	2000	A (+V-0)	0	\$62.00	\$6.25	0.0%	\$11.00	20.00%	5.00%	\$60.10	\$10.00	\$67.10	\$2.25	\$65.47	\$10.00	21.52%	\$65.47	5.00%	\$62,977,280	\$605.90	7.60%	-0.00%	7.60%	10.61
Median				237,771	1980			\$67.00	\$6.00	0.0%	\$11.50	20.00%	5.00%	\$67.13	\$18.40	\$65.40	\$6.45	\$65.34	\$11.32	22.44%	\$65.36	5.00%	\$105,062,044	\$605.17		7.60%		10.61

EQUITY SUMMARY				
Based on Adjusted Median Cap Rate				
Value	Adjusted Median Cap Rate	2015 Value	2015 Assessed Value	Over/Under
\$327,264,406	7.60%	\$327,264,406	\$327,264,406	\$0
Per Square Foot		\$614.02	\$614.02	\$0.00
Based on Median EGIM				
Value	Median EGIM	2015 Value	2015 Assessed Value	Over/Under
\$324,125,153	10.60	\$324,125,153	\$327,264,406	\$3,139,253
Per Square Foot		\$605.88	\$614.02	\$11.47
Based on Median Effective Adjusted Rate				
Value	Median Effective Adjusted Rate	2015 Value	2015 Assessed Value	Over/Under
\$318,692,177	8.00%	\$318,692,177	\$327,264,406	\$8,572,229
Per Square Foot		\$605.88	\$614.02	\$13.76

Equity Summary		Median	
EGIM 10	10.60	\$605.88	\$324,125,153
EGIM 15	15.90		
EGIM 20	20.00		

Direct Capitalization			
Cap Rate	Value	Cap Rate	Value
7.60%	\$327,264,406	7.60%	\$327,264,406
10.60%	\$324,125,153	10.60%	\$324,125,153
8.00%	\$318,692,177	8.00%	\$318,692,177
Comp Median	\$605.88	Comp Median	\$605.88

Indirect Capitalization			
Cap Rate	Value	Cap Rate	Value
7.60%	\$327,264,406	7.60%	\$327,264,406
10.60%	\$324,125,153	10.60%	\$324,125,153
8.00%	\$318,692,177	8.00%	\$318,692,177
Comp Median	\$605.88	Comp Median	\$605.88

LITIGATION

- Gained consensus among plaintiff attorneys to work on a schedule that is more efficient and effective
- Completion date goal for all current and prior year litigation is January 31, 2017 (with the exception of those set for trial)
- Moving forward – one year turnaround.

	August 1 - December 1, 2016						August 1 - December 1, 2015				
Year	Count	Certified	Adjudged	Pct		Count	Certified	Adjudged			
2005											
2006											
2007											
2008	4	\$ 16,934,562	\$ 15,148,000	-11%		1	\$ 15,908,516	\$ 12,141,873	-2		
2009											
2010						3	\$ 5,020,949	\$ 4,149,360	-1		
2011						3	\$ 4,023,399	\$ 3,220,835	-2		
2012	10	\$ 115,322,051	\$ 106,731,869	-7%		48	\$ 145,066,539	\$ 135,768,577	-		
2013	41	\$ 446,527,594	\$ 424,691,409	-5%		50	\$ 513,592,897	\$ 486,807,914	-		
2014	116	\$ 1,525,135,041	\$ 1,416,199,935	-7%		103	\$ 1,972,277,691	\$ 1,842,907,576	-		
2015	244	\$ 4,759,347,865	\$ 4,503,923,055	-5%		15	\$ 4,495,562	\$ 4,092,310	-		
2016	154	\$ 4,089,106,086	\$ 3,882,185,434	-5%							
	569	\$ 10,952,373,199	\$ 10,348,879,702	-6%		223	\$ 2,660,385,553	\$ 2,489,088,445	-		

RESIDENTIAL

- Key Terms/Concepts
- Neighborhood (NBHD) Life Cycle
- Austin Urban Core (AUC) Transitional NBHDs
- NBHD Life Cycle Market Effect
- Market Segmentation 2.0

KEY TERMS/CONCEPTS

Because I always lead with the exciting stuff!!

KEY TERMS/CONCEPTS

Appraisal Ratio –

(1) The ratio of the appraised value to an independent indicator of market value (usually a sale price). (2) The ratio of the appraised value to the sale price of a property; a simple indication of appraisal accuracy.

Calculated as: $\text{Appraised Value} / \text{Sale Price}$ (1.00 or 100% would be a “completely accurate” appraisal). The Appraisal District REFLECTS the market.

An appraiser is not required to determine the presence of a characteristic

An appraiser's task is to determine if a given characteristic is a:

Market Premium?

Market Neutral?

Market Deterrent?

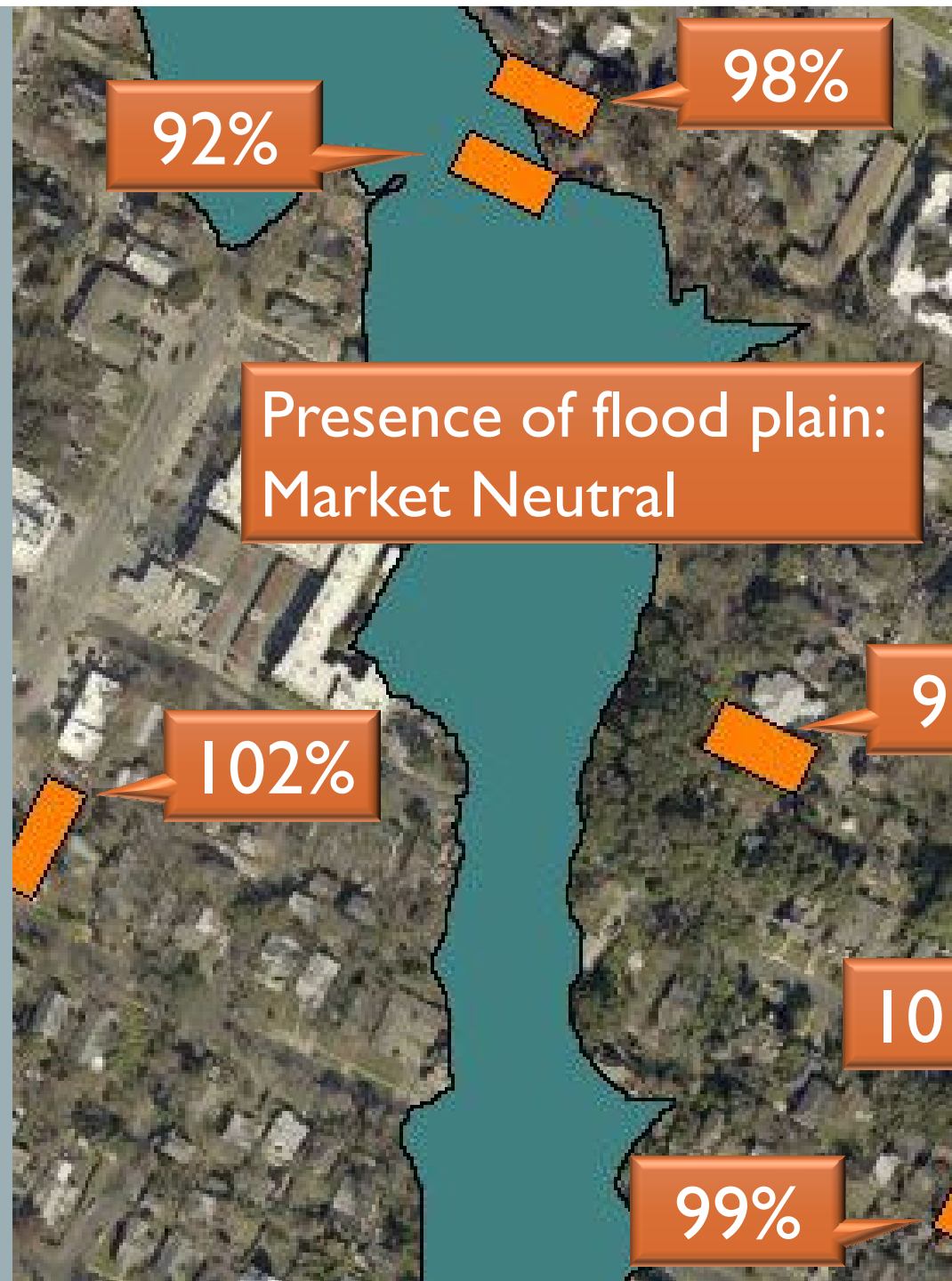
THE MARKET SETS THE VALUE

Assume: 6 home sales in which all factors, other than the presence of flood plain, are equal.

Was the presence of the flood plain in 2 of the sales a market premium, market neutral, or a market deterrent?

The market tells us through the appraisal ratios of the sales whether a value adjustment is warranted.

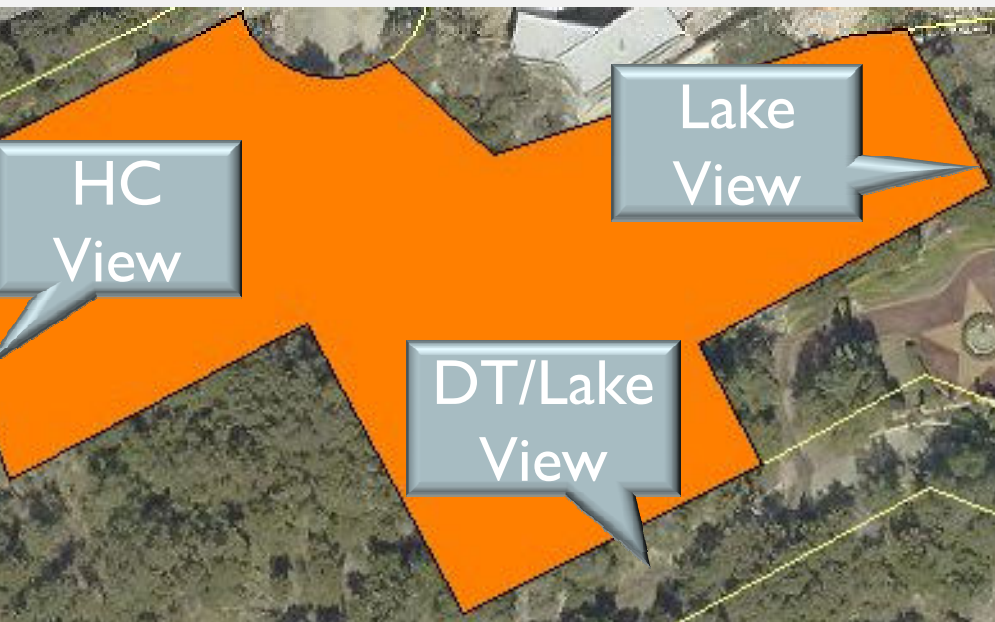
Statistically relevant data and generally accepted appraisal methods are required for adjustments.



THE MARKET SETS THE VALUE

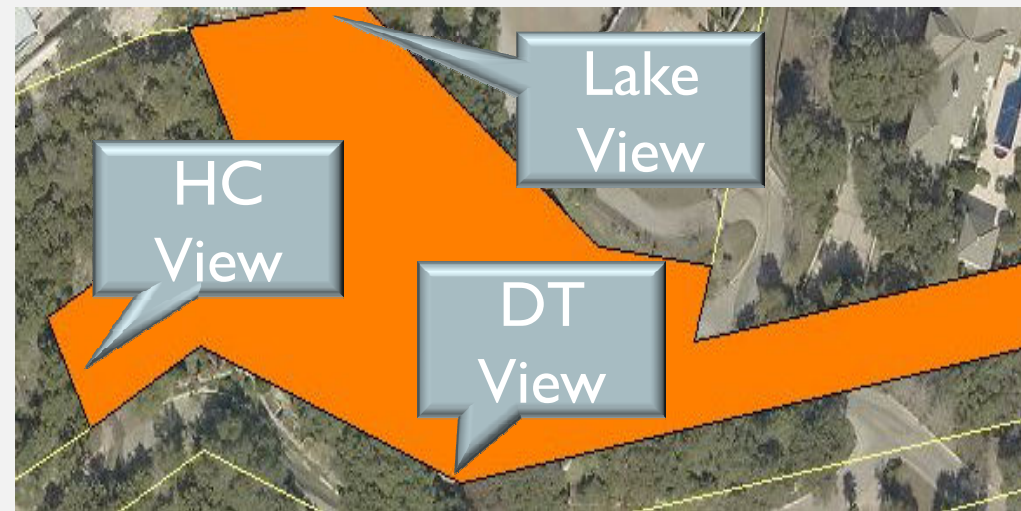
ODD-SHAPED LOT #1

ELEVATION CHANGE: 120 FT.



ODD-SHAPED LOT #2

ELEVATION CHANGE: 130 F



KEY TERMS

Market Segmentation

The act of distinguishing or delineating the universe of properties that the appraiser should consider and distinguish between, in their data analysis. When appraising a typical, single-family residence, the market segmentation process may relate only to identifying the specific neighborhood in which the subject property is located, along with comparable land and improved property sales.

Market Segmentation 2.0 (TCAD Exclusive)

Applying conventional market segmentation analysis, through ratio studies, to discover the presence or effect of an unconventional “market within a market” or “submarket” as a result of the neighborhood life cycle and neighborhoods in transition.

Each year a NBHD must be re-evaluated for the presence of a “submarket”.

NBHD LIFE CYCLE

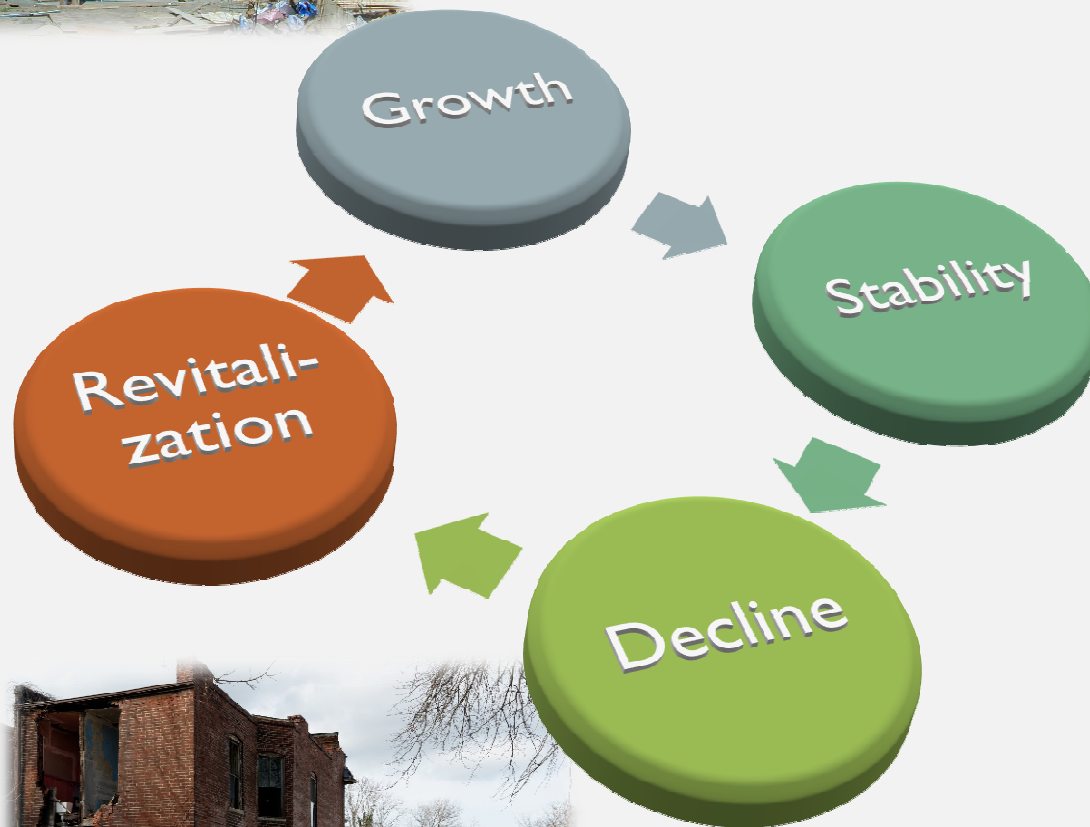
Having homes, side by side, that are at different points along the NHBD life cycle indicates a neighborhood in transition.



Revitalization =
new construction,
made new",
demand exceeds



Growth =
new construction,
demand exceeds supply



Decline = population migrates to suburbs,
supply exceeds demand

Stability =
price point uniform
supply and demand
are in equilibrium



AUSTIN URBAN CORE (AUC)

NBHDs in Transition

AUC MARKET DEFINED

Travis CAD Alpha Areas:

L, K, F, X, Z, E, Y, D

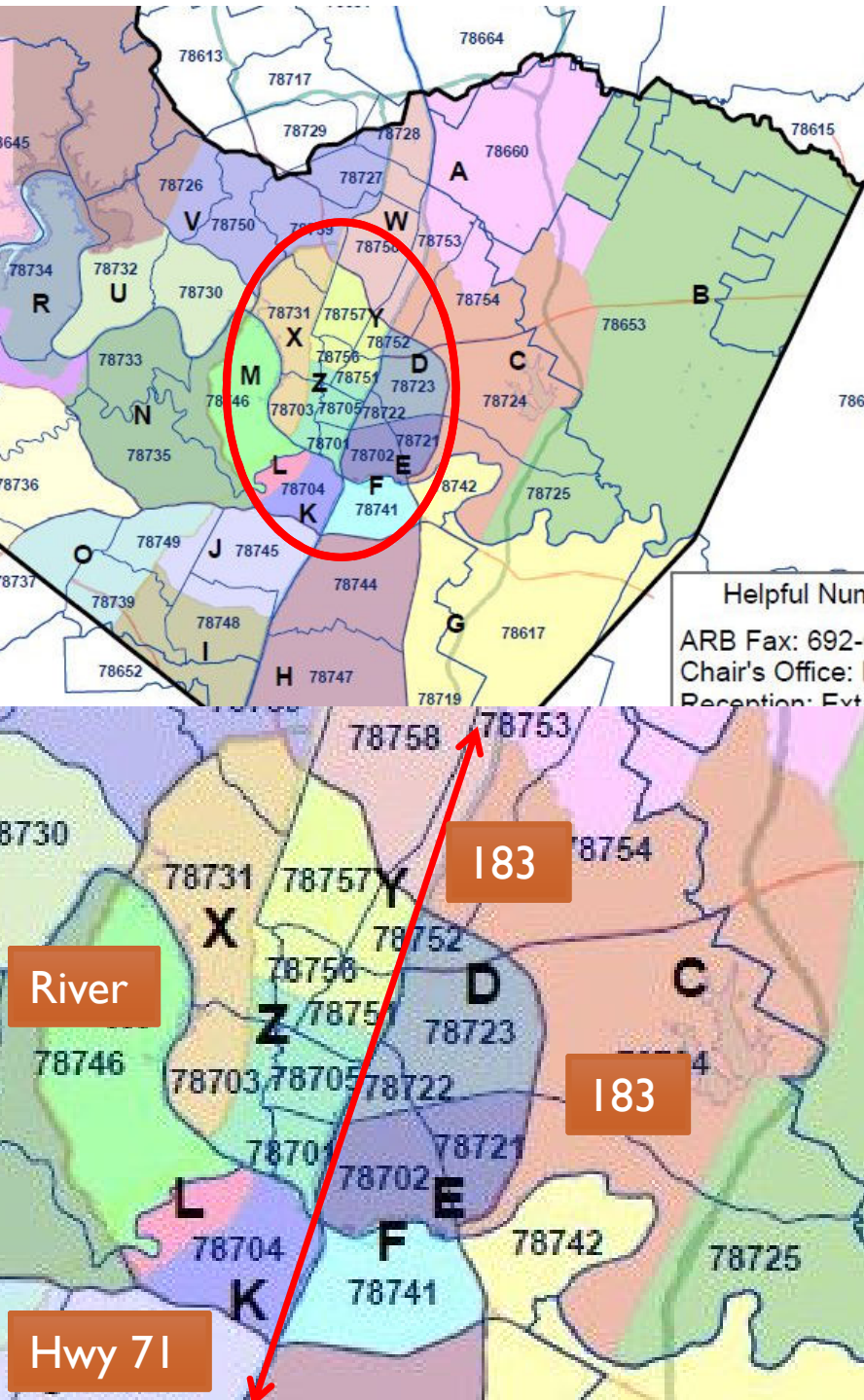
Zip Codes:

78704, 78741, 78703, 78701, 78702

78705, 78722, 78721, 78756, 78751

78723, 78731, 78757, 78752

Each year stands on its own and must be
re-evaluated...



MARKET EFFECT OF TRANSITIONAL NBHDS

Evidence of market segmentation in appraisal ratio studies

STATISTICAL EVIDENCE OF MARKET SEGMENTATION

NBHD Profile: Sorted by Appraisal Ratio (appraised value/sale price)

Segmentation		No Segmentation	
REM	82%	REM	96%
REM	82%	Ori	97%
REM	83%	Ori	98%
REM	84%	REM	98%
REM	84%	Ori	100%
REM	84%	REM	100%
Ori	122%	REM	101%
Ori	124%	Ori	101%
Ori	124%	REM	102%
Ori	126%	REM	103%

REM = remodeled
Ori = original

% < 100% = under
% > 100% = overvalued

h Level
raisal

STATISTICAL EVIDENCE OF MARKET SEGMENTATION

2016 Case Study: Y4000 Allandale

Appraisal Year 2015
Neighborhood ALLANDALE
NBHD ASSOC

NBHD Code Y4000
Sample Size 124
Sample Percent 4.24%
Population 2924
Old NBHD Adj 1.33
Avg Land/Sale 52.76%

Property ID	Re...
	82.75%
	82.92%
	82.93%
	83.32%
	83.34%
	83.49%
	83.50%
	83.60%
	83.61%

Remodeled =
Undervalued

Original =
Overvalued

Appraisal Year 2015
Neighborhood ALLANDALE
NBHD ASSOC

NBHD Code Y4000
Sample Size 124
Sample Percent 4.24%
Population 2924
Old NBHD Adj 1.33
Avg Land/Sale 52.76%

Property ID	Re...
	118.02%
	118.74%
	119.19%
	119.72%
	120.34%
	120.35%
	121.39%
	121.94%
	123.67%

STATISTICAL EVIDENCE OF MARKET SEGMENTATION



Appraisal Ratio: 0.83
Updated/Remodeled

STATISTICAL EVIDENCE OF MARKET SEGMENTATION



Sales Ratio: 0.83
Updated/Remodeled
Footprint NOT changed

STATISTICAL EVIDENCE OF MARKET SEGMENTATION



Sales Ratio: 1.20
NOT Updated

STATISTICAL EVIDENCE OF MARKET SEGMENTATION



Sales Ratio: 1.24
NOT Updated

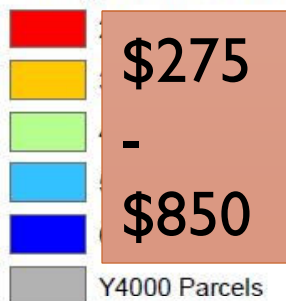
TRAVIS CAD: PIONEERS IN MARKET SEGMENTATION

- For 2016 this sample NBHD was bifurcated into two NBHDs to reflect market segmentation:
 - “Original”: Older than 2010, and Class \leq 4+, and Condition \leq A+
 - Statistically derived location adjustment: 1.55 or 155%
 - “Remodeled”: 2010 or newer, or Class \geq 5-, or Condition G
 - Statistically derived market adjustment: 1.93 or 193%
- Fairness in appraisal:
 - New/remodeled homes appraised at their full market value
 - Homeowners of older/original homes not burdened with undue market value

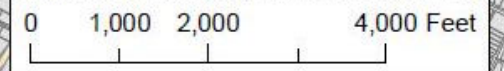
Y4000

Improved Parcel Sales

Sale (\$ In Thousands)



10/19/2016



Y4009

Improved Parcel Sales

Sale (\$ In Thousands)



\$520



-



\$1200



Y4009 Parcels

N



10/20/2016

0 1,000 2,000 4,000 Feet



TCAD MARKET SEGMENTATION 2.0

2017 and beyond...

Helpful Numbers
 ARB Fax: 692-
 Chair's Office:
 Reception: Ext

L, K, F, X, Z, E, Y, D

78704, 78741, 78703, 78701, 78702
78705, 78722, 78721, 78756, 78751
78723, 78731, 78757, 78752

Extending into East Austin for 2017!