

Commercial Land Value Impacts of Access Management

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Could there be a connection?

Could managed access alone increase, decrease, or have no effect on average commercial land values per square foot?

“You want to take away MY driveway???”

- In addition to the proven safety and traffic flow benefits to society of managing access...
- A positive or non-relationship between land value and access could be a useful piece of data for commercial land owners protesting managed access for business reasons.

Research detailing the economic impacts of access management needs to be developed so that commercial land owners can be better informed about effects of access management

Agenda

- Need for Research
- Project Objectives and Hypothesis
- Methodology
- Data Collection
- Results
- Conclusions and Further Research

Need for Research

Controlling commercial land access could potentially impact economic factors

- Qualitative research: TX, IA, FL, KS
 - Impacts of raised medians on business sales through surveys
 - *No negative impacts found – owner perception was generally more negative than business change*
- Gaps in quantitative research due to sales data availability

Project Definition

This research will quantitatively study land value impacts of access management applications in Des Moines, Iowa

- Two multiple regression models based on the hedonic property value model
- Commercial land values per square foot on selected parcels on selected urban arterial roads in Des Moines are studied*

** Land value is more stable than property/structural value due to building modifications*

Objectives

- Create a replicable quantitative analysis
- Exist as a comparison dataset for further similar research in other cities
- Illustrate the commercial land value impacts of access control for business owners...
- As well for transportation officials implementing access control in urban commercial areas

Land Valuation: Methods and Theories

- Polk County land valuation method:
 - Replacement cost
 - Sales comparison (terms of sale, *physical characteristics*, location)
 - Income capitalization (property income + resale value)
- Alonso's bid rent curve:
 - Value determined through a formula, which includes *cost of transportation* as a variable

Land Value and Transportation Improvements

- Most recent research using multivariate regression models finds strong relationships between land value and general transportation improvements*
- Regression models can factor multiple variables' influences on the dependent variable
 - *Because land value is likely influenced by many factors, regression modeling is appropriate*

* Ryan (1999); Knapp et al (1996)

What are we measuring?

- Dependent variables
 - Model 1: Historic land values per square foot by parcel (before access improvements)
 - Model 2: Current land values per square foot by parcel
- Independent variables
 - Parcel square footage
 - Annual average daily traffic counts
 - Scaled access control (current and historic)

Hedonic Property Value Model

A regression model that measures the relationship between property value and its determinants

- Must use non-market values as variables (i.e. sales are not viable)
- HPVM used in various other fields, not yet in access management research
- This research modifies this model by using land value per square foot rather than property values

Regression modeling

- Before and after models were created to measure land value change per square foot on corridors having:
 - Varying access types
 - Varying average land value
 - Predominantly commercial land uses
 - Urban major arterial roadways

Data Collection

Data Collection

- Windshield surveys
 - Corridors with and without raised medians
 - Varied commercial uses
- Corridor and commercial parcel selection reduced by land value data availability

Study corridors

Southeast 14th Street*

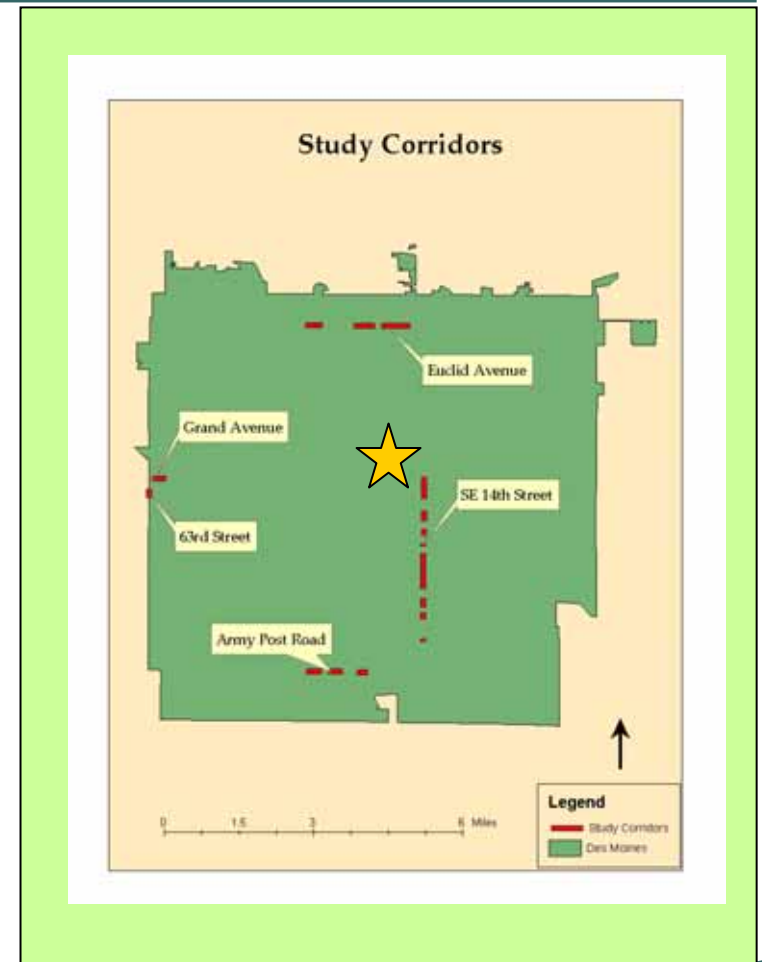
63rd Street*

Army Post Road

Euclid Avenue

Grand Avenue

* Denotes raised median



Location effects

Like any city, Des Moines has prosperous neighborhoods and deteriorating areas. To determine if location was skewing datasets, two additional model sets were created:



- Set 1: All five corridors included
- Set 2: Two western corridors excluded

Model variables

Land Value Data: Polk County Assessor's Office

- Historic land value data – years before raised medians were installed
 - Digitally scanned copies of land value cards
- Current land value data
 - A database!
- *Gross Domestic Product* (GDP) used to deflate land values

Land Value Trends vs. Access Control

Corridor	Historic Average Value per Square Foot	Current Average Value Per Square Foot	Access Control
SE 14th Street	\$2.15	\$1.93	Raised medians, poor driveway spacing
63rd Street	\$2.18	\$2.25	Raised medians, shared driveways
Army Post Road	\$3.64	\$2.82	4L undivided, ok driveway spacing
Euclid Avenue	\$3.83	\$3.37	4L undivided, poor driveway spacing
Grand Avenue	\$4.02	\$4.21	TWLTL

- Corridors with raised medians had lower average values per sq ft.
- Corridor with poor driveway spacing had high value per sq ft.
- Not enough data to truly compare access control to land value - many measures of access control must be investigated

Access Control

A 15- point access control scale was developed to quantify access control:

- Driveway spacing (5 points)
- Median type (5 points)
- Other factors (5 points)
 - Right turning lanes
 - Good parcel internal circulation
 - Shared driveways
 - Frontage roads
 - Formality of driveways

Driveway spacing

Points awarded based on 300-500 ft. acceptable spacing in NCHRP 348:

- **5 POINTS:** Both sides of driveway satisfy spacing standards
- **3 POINTS:** One side of driveway satisfies spacing standards
- **0 POINTS:** Neither side of driveways satisfies spacing standards

Corridor	0	3	5
SE 14th Street	41	3	2
63rd Street	5	0	0
Army Post Road	0	6	10
Euclid Avenue	27	0	3
Grand Avenue	3	2	2
All Corridors	76	11	17



Poor spacing: Southeast 14th Street

Median Type

Points based on median type on road fronting land parcel:

- **5 POINTS:** Raised median, breaks $\frac{1}{4}$ mile+
- **4 POINTS:** Raised median, breaks $< \frac{1}{4}$ mile
- **3 POINTS:** Painted median
- **2 POINTS:** Two-way left turn lanes
- **1 POINT:** Undivided roadway

Median Type	Number of Parcels
None/Undivided Roadway	46
Two-Way Left Turn Lanes	7
Painted Median	0
Raised Median, left turn breaks $\frac{1}{4}$ mi apart or less	47
Raised Median, left turn breaks more than $\frac{1}{4}$ mi apart	4

Other Factors – Good Internal Circulation

Scoring:

- **1 POINT:** Good internal circulation
- **0 POINTS:** Poor internal circulation (no channels for travel)

Corridor	Good Internal Circulation	Not Good Internal Circulation
SE 14th Street	8	38
63rd Street	5	0
Army Post Road	3	13
Euclid Avenue	13	17
Grand Avenue	5	2
All Corridors	34	70



Good internal circulation: Euclid Avenue

Other Factors – Shared Driveways

Scoring:

- **1 POINT:** Shared driveway
- **0 POINTS:** Not a shared driveway



Shared driveway: 63rd Street

Corridor	Shared Driveways	Non-Shared Driveways
SE 14th Street	10	36
63rd Street	4	1
Army Post Road	5	11
Euclid Avenue	12	18
Grand Avenue	2	5
All Corridors	33	71

Other Factors – Driveway Formality

Scoring:

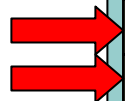
- **1 POINT:** Channelized driveways
- **0 POINTS:** Wide, unspecific driveways

Corridor	Not Formal	Formal
SE 14th Street	28	18
63rd Street	0	5
Army Post Road	13	3
Euclid Avenue	8	22
Grand Avenue	2	5
All Corridors	51	53



Wide driveway: Euclid Avenue

Access Control Overview



Corridor	Historic Access Scale Scores	Current Access Scale Scores
SE 14th Street	0 to 1	4 to 5
63rd Street	2 to 3	6 to 7
Army Post Road	5 to 6	5 to 6
Euclid Avenue	1 to 2	1 to 2
Grand Avenue	Variable: 3-9	Variable: 3-9

Most frequently occurring historic and current access control scores (by corridor)

SE 14th Street has a raised median, but not a high access control score due to poor driveway spacing

AADT

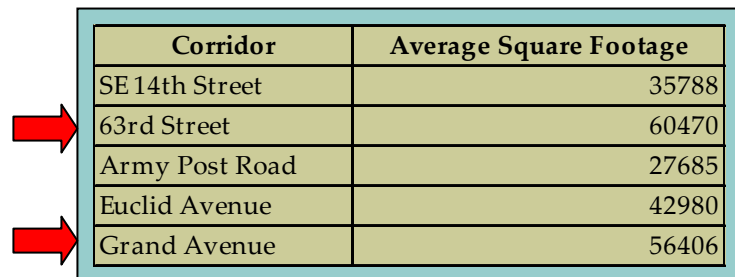
- Corridors with highest AADT: SE 14th Street and Army Post Road



Corridor	Average AADT
SE 14th Street	31400
63rd Street	19100
Army Post Road	23450
Euclid Avenue	21550
Grand Avenue	15050

Parcel square footage

- Corridors with highest average parcel square footage: 63rd Street and Grand Avenue
- Western study corridors, newer land development



Corridor	Average Square Footage
SE 14th Street	35788
63rd Street	60470
Army Post Road	27685
Euclid Avenue	42980
Grand Avenue	56406

Results

Location effects on land value

The three corridor model set fit the dataset slightly better than the model set with all corridors (R difference was slight)

The western side of Des Moines is inherently different from other areas of the city:

- West side considered more attractive
- West side has a “sprawl factor” – newer land development, larger square footage and higher overall land value trends

Results

The results of the various regression analyses found the following relationships to commercial land value per square foot FOR BOTH HISTORIC AND CURRENT DATA MODELS:

- Parcel square footage – significant, inverse relationship*
- AADT – significant, inverse relationship*
- Access control – no significant relationship*

Correlations:

- *Access control and historic value: weak inverse correlation*
- *Access control and current value: weak positive correlation*

Conclusions

This study provides evidence that commercial land values should not change due to access type, but other factors should be further studied:

- Create similar studies
 - Des Moines vs. other cities
 - More varied access control on corridors
 - Is no significant relationship found with other data?
- Study links between commercial land value and AADT – point of congestion where value decreases

Thank you!

