



Illegal Dumping as an Indicator for Social Disorganization

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Agenda



Background

Objectives

Data Collection

Results

What We Know

▶ Causes of Illegal Dumping

- ▶ High disposal costs (Crofts, Morris, Wells, & Powell, 2010)
- ▶ Low income & unemployment (Tasaki, et al., 2007)
- ▶ No or low fines (Ichinose & Yamamoto, 2011)
- ▶ Disposal restrictions (Sigman, 1998)
- ▶ Ease of accessibility (Jorda-Borrell, Ruiz-Rodriguez, & Lucendo-Monedero, 2014)
- ▶ Little surveillance (Matsumoto & Takeuchi, 2011)

Image: News Net 5



Image: Security Signs

Social Disorganization Theory

- ▶ Socially disorganized neighborhoods: (Shaw & McKay (1942), Bursik & Grasmick, 1993; Kubrin & Weitzer, 2003; Sampson & Raudenbush, 1999)
 - ▶ High population turnover
 - ▶ Populations speaking different languages
 - ▶ Poverty
- ▶ Refers to the neighborhood, not the individual



Social Disorganization Theory

- Strong social networks and communication allow communities to self-correct and prevent crime (Bursik, 1988)

Research Objectives

Is the amount of
Illegal dumping
associated with the
characteristics of a
socially disorganized
neighborhood?

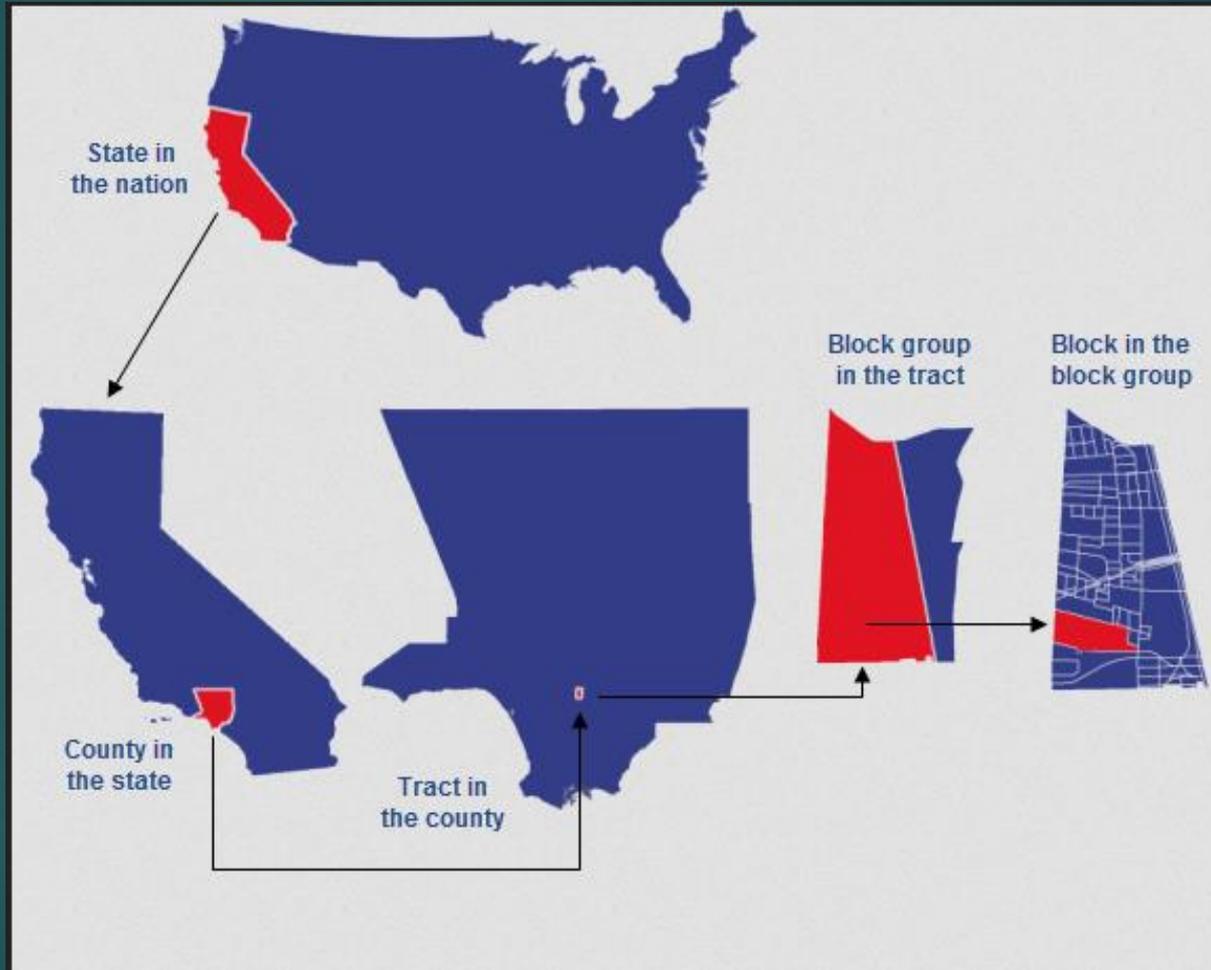
Social
Disorganization
Theory



And basic descriptors of items dumped

Data Collection

ESRI ArcGIS

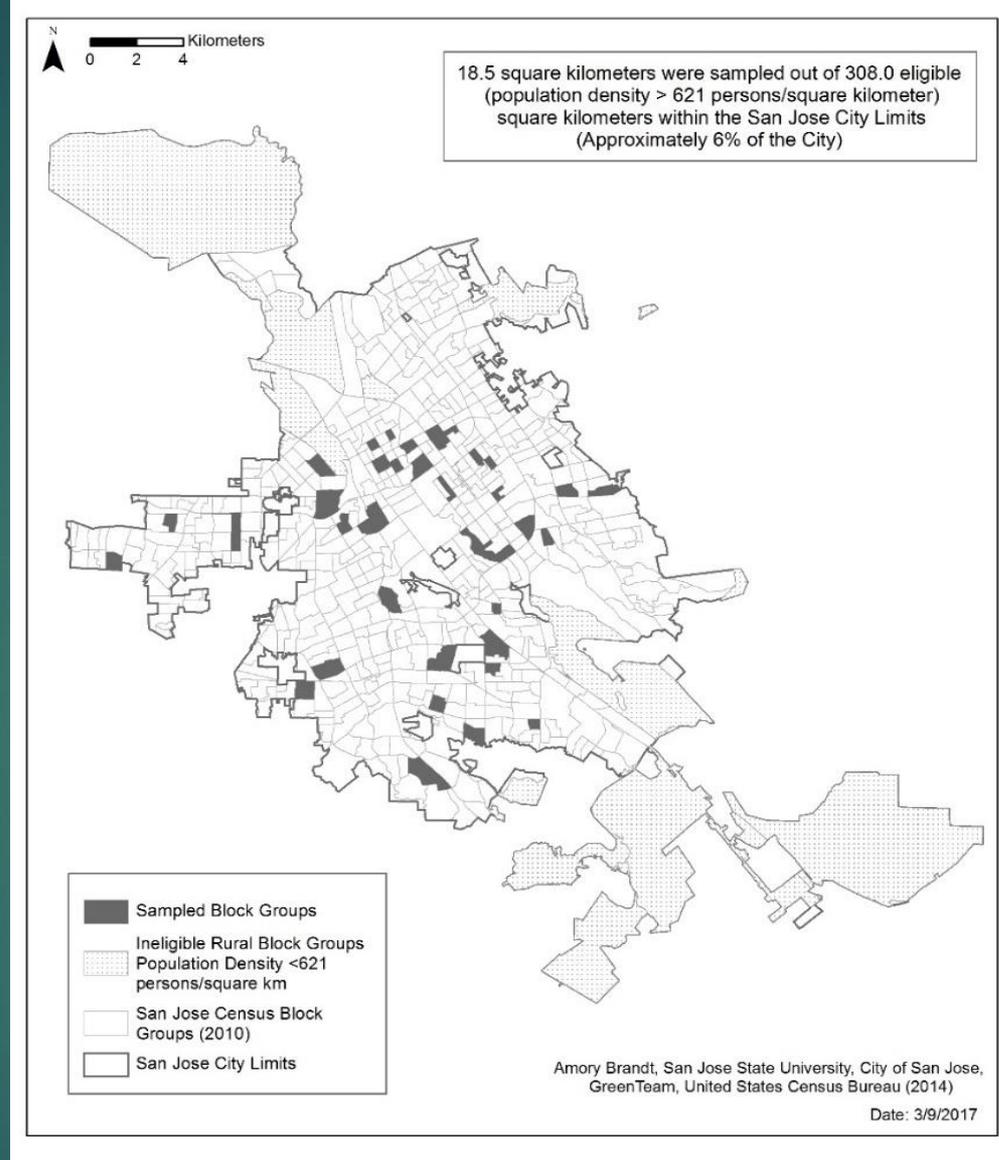


In this study, neighborhood= census block group

Data Collection

Census Block Groups

40 total, 10 per income



Low	Mid-Low	Mid-High	High
(\$17,458-\$64,934),	(\$70,742-97,500)	(\$99,762-\$120,694)	(\$122,969-\$180,714)

Median Family Income

Data Collection

- ▶ Sampled all city streets within the census block
- ▶ Geo-tagged photographs- smartphone



Data Analysis – photo preparation

Volume to weight conversion factors

Category	Recyclable Materials	Volume	Estimated Weight (lbs)
Appliances	Major Appliances		
	<i>Dishwasher</i>	1 unit	125
	<i>Clothes Dryer</i>	1 unit	125
	<i>Stove</i>	1 unit	150
	<i>Refrigerator</i>	1 unit	250
	<i>Clothes Washer</i>	1 unit	150
Automotive	Lead-Acid Battery		
	<i>Auto</i>	one	36
	<i>Truck</i>	one	47
	Scrap Tire		
	<i>Light Duty Tires (passenger, light truck)</i>	one	22.5
	<i>Commercial Tires</i>	one	120



Block group	Income Category	Total Kg Illegal dumping/Km Street
1	Low	1182.70
2	Mid-Low	759.43

Linear Regression



kg dumped/
street/
block group

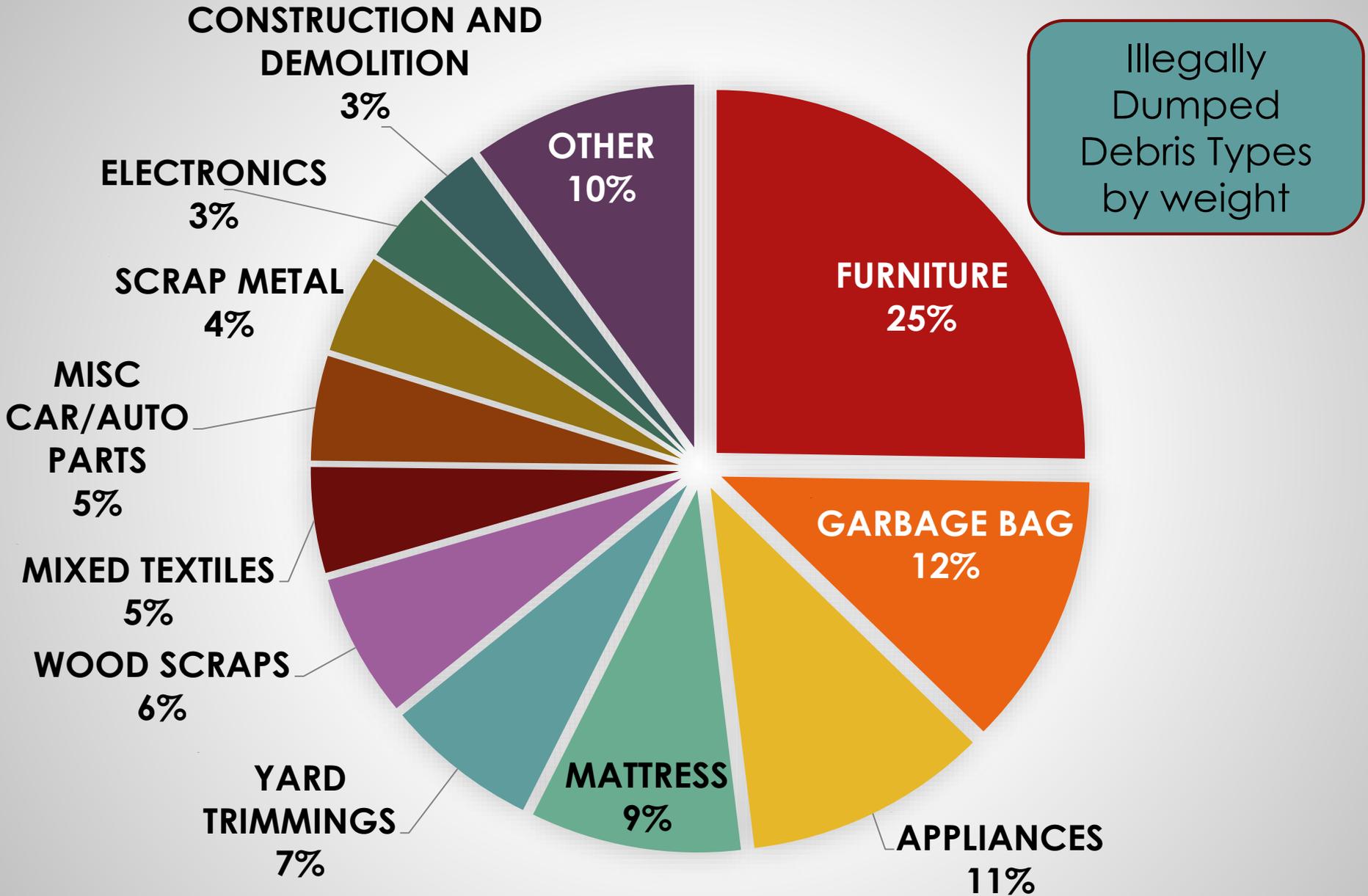
vs

Social Disorganization Theory



And basic pie charts of items dumped

Results



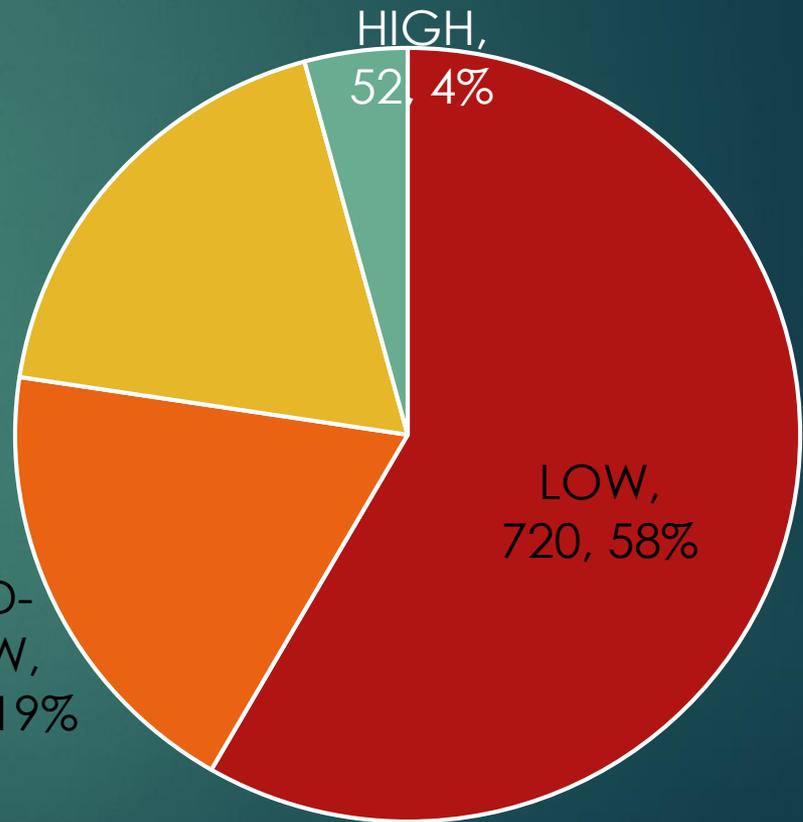
Results

Illegally Dumped Debris Type
by Income level

GARBAGE



MID-
LOW,
235, 19%



Linear Regression Results

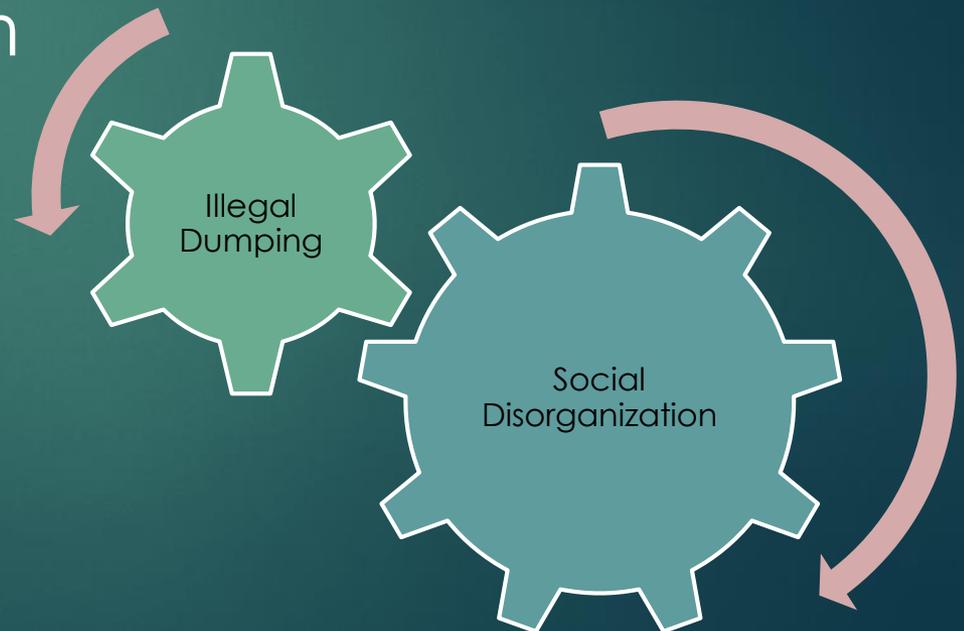


kg dumped/
street/
block group



Findings

- ▶ Theory of social disorganization supported
- ▶ Illegal dumping can serve as a visual indicator for the level of social disorganization within a neighborhood
- ▶ Problem vs Symptom



Education and Outreach

- Provide outreach in multiple languages
- Outreach often
- Build communication and social networks
 - Neighborhood groups and leaders
- Needs differ by community
 - No solution or program is one size fits all



Thank you!

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