

## Exploring the Assumptions of the Friends of Trees Model

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March 9, 2010

### What is the 'Grey to Green' Initiative?

- City of Portland - Bureau of Environmental Services (BES) initiative to expand the city's green infrastructure
- 5 years – \$50 million
- Goals
  - 43 acres of ecoroofs
  - 920 Green Street Facilities – 'bioswales'
  - Replace 8 culverts that block fish passage
  - Purchase and protect 419 acres of high priority natural areas
  - **Plant 83,000 trees throughout the city**

### BES/Friends of Trees Partnership

- Friends of Trees (FOT) is a not-for-profit organization ([friendsoftrees.org](http://friendsoftrees.org))
- Since 1989 planted more than 380,00 trees and native plants
- Offer discounted trees to interested homeowners
  - (\$200 tree for \$30-50)
- Organize weekend community-building plantings

### Challenge / Objective of Project

- Limited time and resources are available for efforts that raise awareness and/or promote action.
- This project is intended to help with decision making associated with the allocation of resources.
  - Explore some of the assumptions about where FOT is successful.
  - Neighborhood and street-level analysis

## Assumptions About Where FOT Should Be Successful

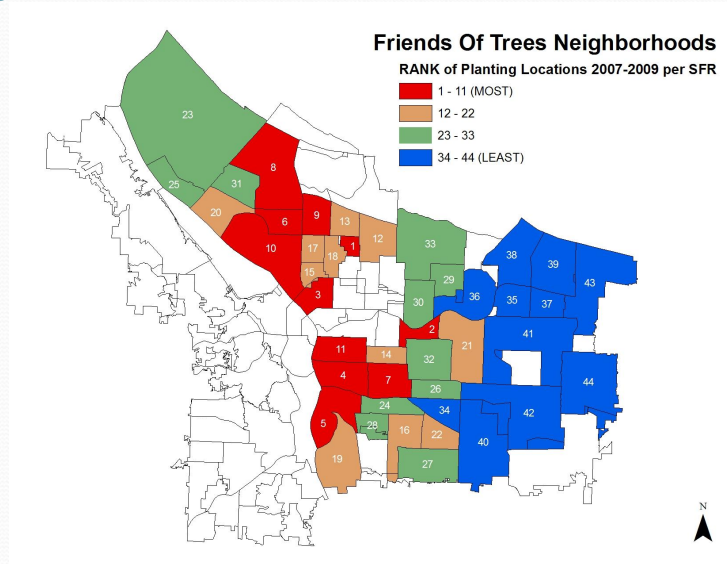
- In areas where . . .
  - There have been more recent sales of single family residences. (i.e. “Motivated New Owners”)
  - There are more people who own the homes they live in. (i.e. Owner Occupied Single Family Residences)
  - FOT has had success in the past (i.e. Brand recognition/Word of Mouth)

## Data Sources

- RLIS “Taxlot Information”
- City of Portland: Office of Neighborhood Involvement “Neighborhood Demographics”
- Friends of Trees “Past Planting Data”



## Neighborhood Overview



## Methods: Neighborhood-Level Analysis

### Simple Linear Regression

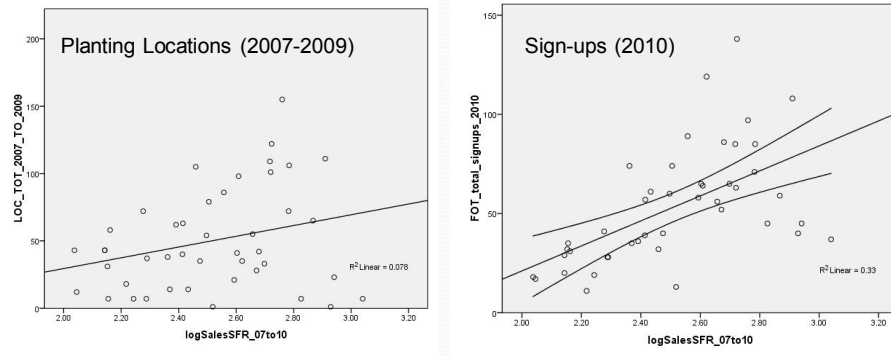
#### Dependent (Response) Variables

- Number of Locations where Trees Were Planted (FOT DATA)
- Number of FOT Signups in 2010 (FOT DATA)

#### Independent (Explanatory) Variables

- Sales of Single Family Residences (SFR) from 2000-2007 (RLIS)
- Numbers of Owner Occupied SFR, 2007 and 2010(RLIS)

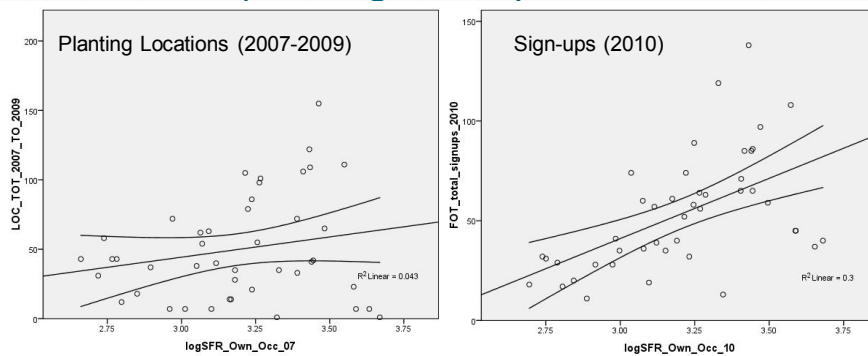
## Sales of Single Family Residences (SFR) 2007-2009



Analysis suggests there is a weak association between the number of planting locations and the number of recent sales of SFRs. (Slope coefficient p-value = 0.066)

Analysis suggests there is an association between the number of signups and the number of recent sales of SFRs. (Slope coefficient p-value < 0.05)

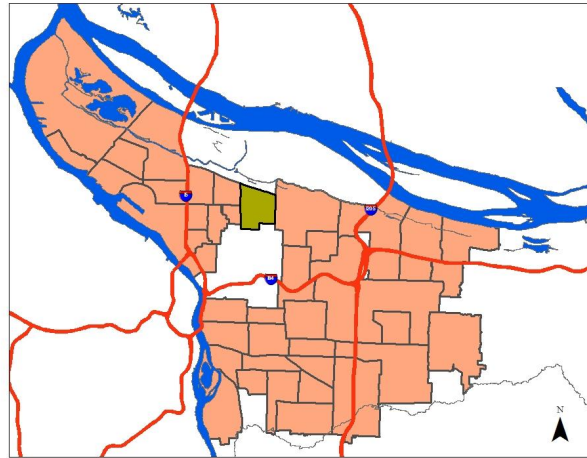
## Owner Occupied Single Family Residences



Analysis suggests there is no association between the number of planting locations and the number of owner-occupied SFR in a neighborhood. (slope coefficient p-value = 0.178)

Analysis suggests there is an association between the signups and the number of owner-occupied SFR in a neighborhood. (slope coefficient p-value < 0.05)

## Street Level Case Study: Concordia



## Concordia: Planting History Overview 1997-2009



Trees Planted: 701

Years With Plantings: 12

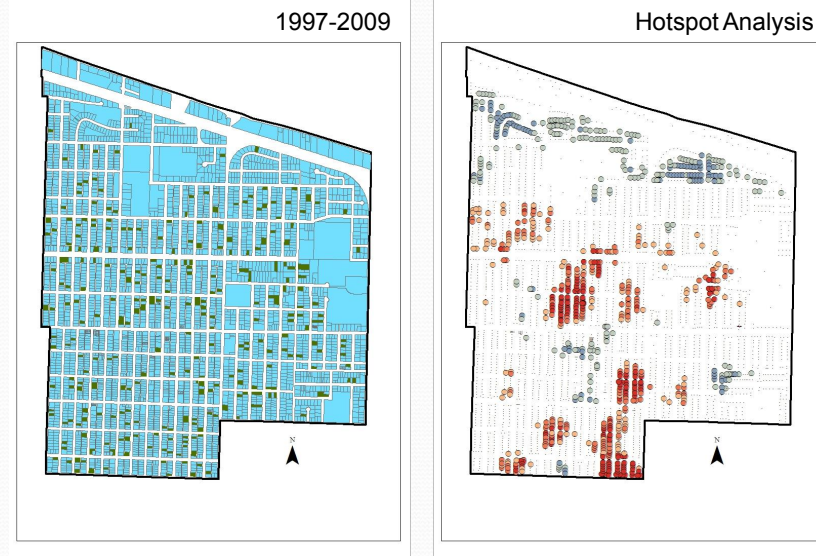
2010 Signups: 143 (\*highest)

2010 Owner Occupancy Rate: 76.1%  
(FOT Neighborhoods Ave / SD: 72.5% / 7.2%)

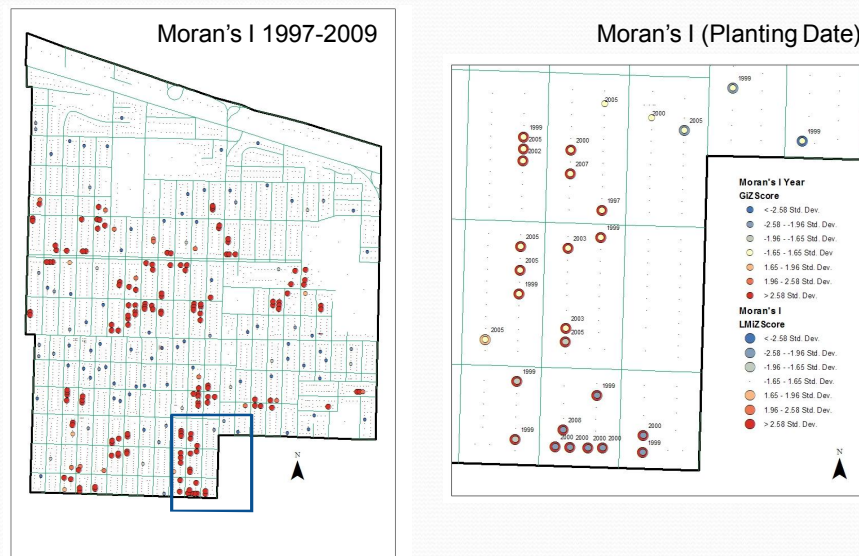
% SFR Sold 2007-2009: 14.9%  
(FOT Neighborhoods Ave / SD: 14.8% / 2.0%)



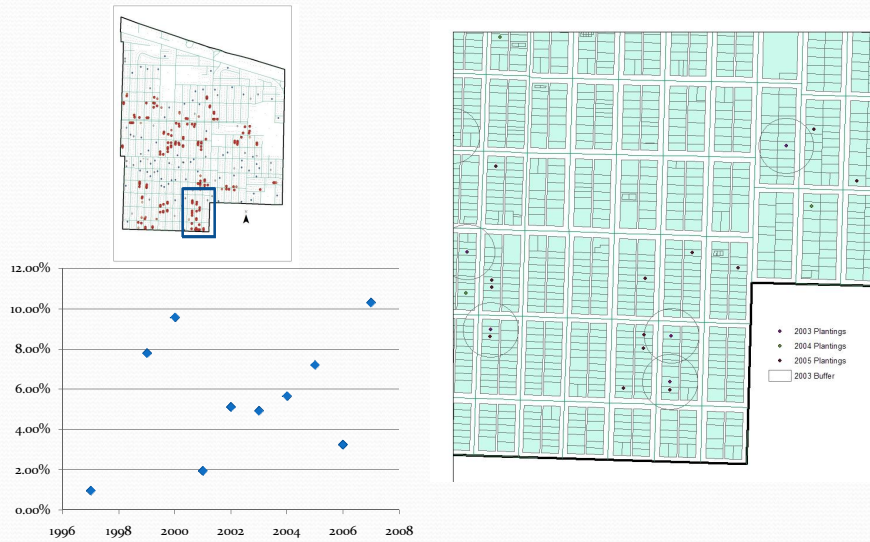
## Concordia: Planting Location Investigation



## Spatial autocorrelation across time: Moran's I Analysis



## Spatial autocorrelation across time: Buffer analysis

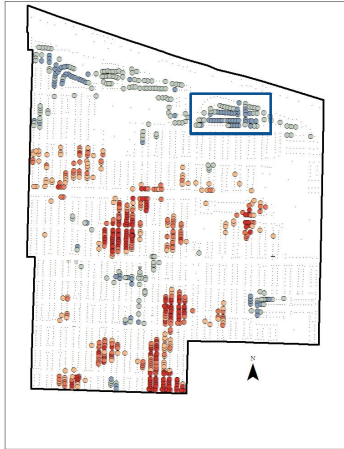


## Historical Hot Spot Investigation





## Historical Cool Spot Investigation



Google Maps

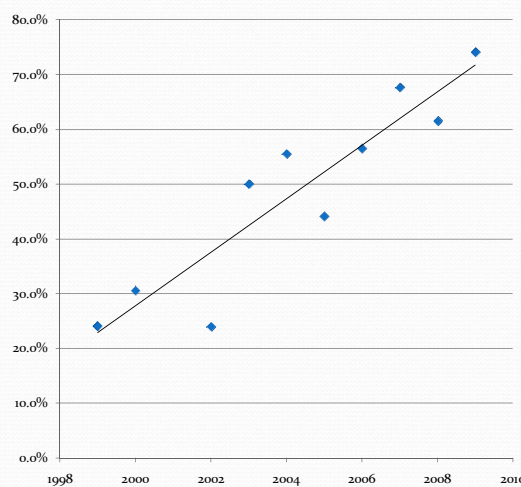
Stats for area:

**% of owner occupied SFR: 81%**  
(Concordia SFR owner occupancy Rate: 76.1%)

**% of new home owners (<3 yrs): 10%**  
(Concordia % new home owners: 14.9%)

Past FOT Plantings: 2

## Concordia: New Owner Plantings By Year



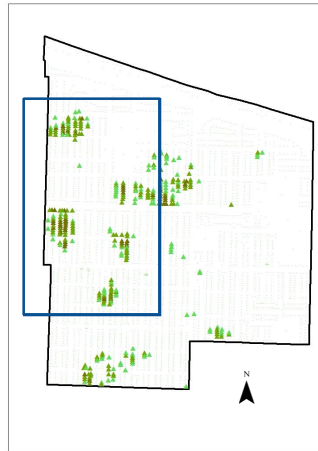
Year	Plantings	<3 Yrs Purchase
1999	83	20
2000	36	11
2001	2	2
2002	25	6
2003	16	8
2004	27	15
2005	34	15
2006	23	13
2007	34	23
2008	26	16
2009	27	20

◆ <3 YEARS FROM PURCHASE OF HOME  
— Linear (<3 YEARS FROM PURCHASE OF HOME)

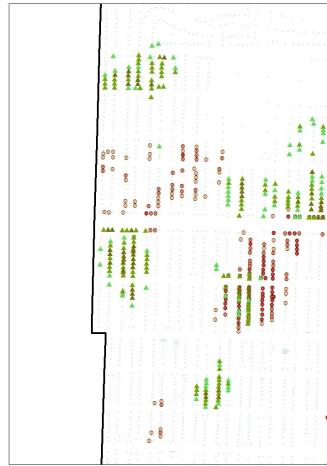
2001 HAS BEEN REMOVED BECAUSE IT ONLY HAD 2 TREES PLANTED IN ORDER TO MORE CLEARLY DEPICT THE TREND. BOTH TREES MET THE <3 YEARS FROM PURCHASE DATE CRITERIA.

## Concordia: Where should we go next?

2007-2010 Home Sales Hotspots



Compared to Historical Hotspots



## Limitations/Ongoing Challenges

- Data Quality
  - FOT Database
  - RLIS
- Temporal Aspect

### Opportunities For Future Research

- BES Canvassing
  - Collected data for 20,000 canvassed properties