



Mount Hood view and single family residential land values in Portland, OR

J Garrett Armstrong
Masoud Momeni
Henry Underwood

http://www.pdc.us/images/photo-library_hi-res/portland-downtown-01.jpg

Outline

- Introduction
- Methods
- Results
- Conclusions
- Future research

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Introduction

- Mount Hood is an ever present feature in the lives of Portlanders
- Taller buildings have eliminated that view for many areas
- Are homeowners willing to pay more for a view of Mount Hood?



<http://vintageportland.files.wordpress.com/2011/02/a2004-002-2266-view-of-mt-hood-and-portland-from-kings-heights-with-st-francis-catholic-church-1912.jpg>

Introduction

- We would expect that a view of Mount Hood would mean an increase in land value
- A digital surface model can be used with observation points to determine what areas of Portland have a view of Mount Hood
- The RLIS data set contains assessed land value that can be combined with a viewshed result

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Methods

Data sources:

- 3ft LiDAR DSM of Portland area (City of Portland)
- 10m DEM of Oregon State (USGS)
- RLIS taxlots Nov 2011 (Metro Data Resource Center)
- Neighborhood association boundaries (City of Portland)

Methods

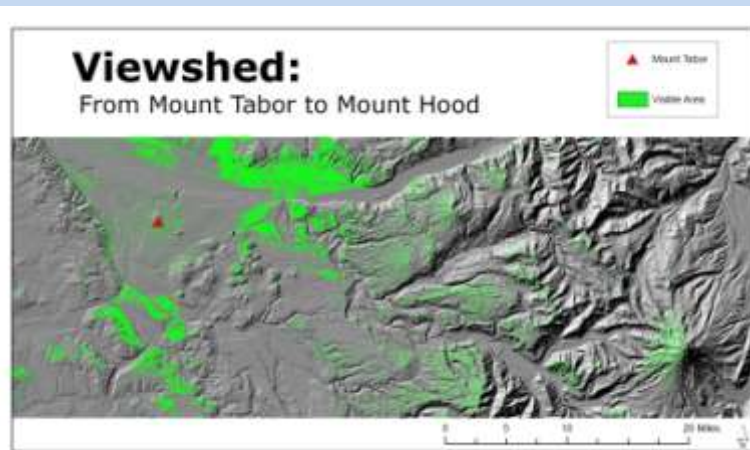
- Resample DSM and DEM to 10 X10 ft and mosaic together with the DSM “on top”
- Clip to the study area

Methods



Methods

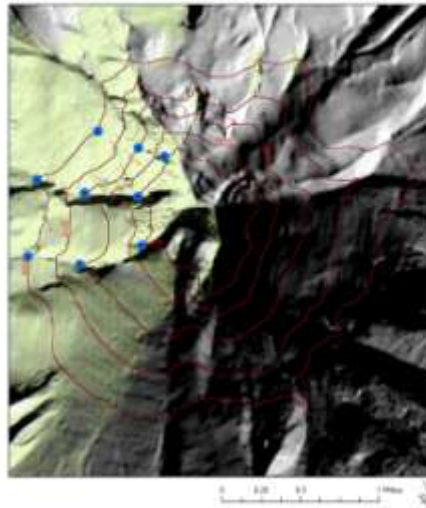
- Generated a viewshed from Mount Tabor to determine our viewpoint placement on Mount Hood



Methods

- Create contour lines at 500 ft interval
- Place the points on the contour lines within the viewshed of Mount Tabor at 8000, 9000, 10000 ft

Mount Hood Viewpoints
Within Mount Tabor Viewshed



Methods

- Run viewshed from all three elevations
- It was determined there was not much difference between three elevations within the DSM therefore 9000ft was selected

Methods

Portland Metro
8,000 ft Viewshed of Mt. Hood



Methods

Portland Metro
9,000 ft Viewshed of Mt. Hood



Methods

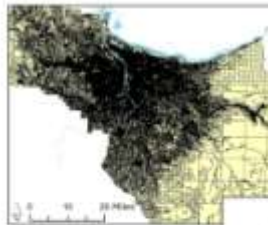
Portland Metro
10,000 ft Viewshed of Mt. Hood



Methods

- Clip taxlots to the neighborhood boundaries
- Select single family residential taxlots

Portland Taxlots



Portland
Neighborhoods



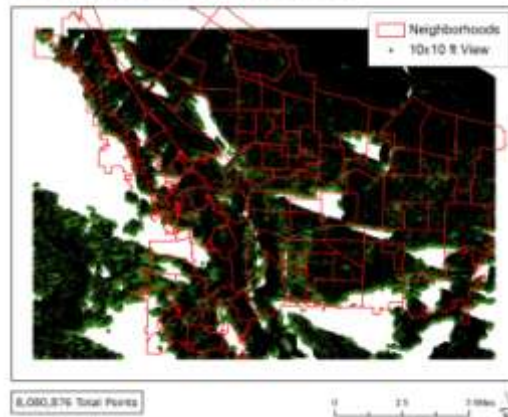
SFR Taxlots
Clipped to
Neighborhoods



Methods

- Clip the viewshed raster to the taxlot extent
- Convert raster to point, removing points with no view

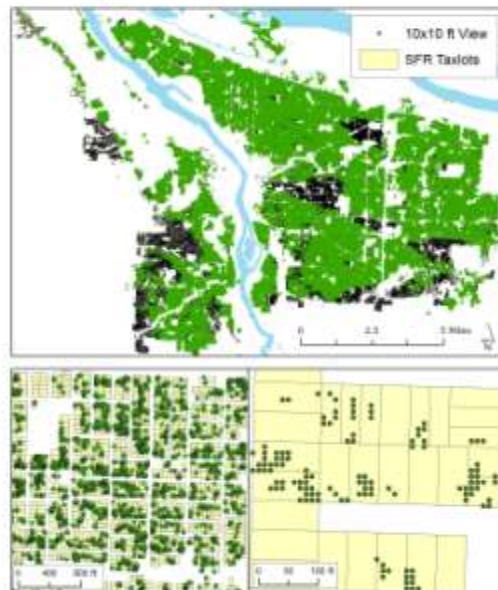
Visible Points of Mount Hood in Portland Neighborhoods



Methods

- Clip points to the SFR taxlots
- Join the viewshed point and taxlots
- Count the number of points in each parcel

Study Area Viewshed Points in Portland Single Family Residential Taxlots



Methods

- Calculate percent of taxlot with a view of Mount Hood
- Calculate price per square foot of each taxlot

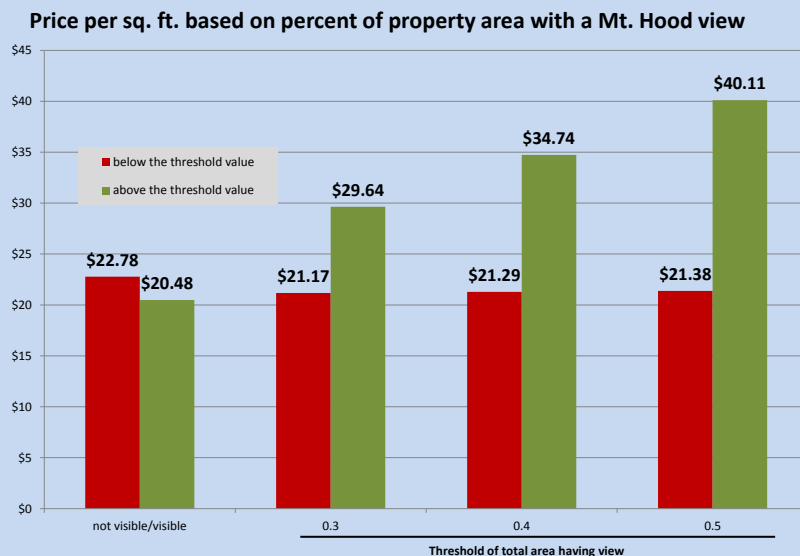
Outline

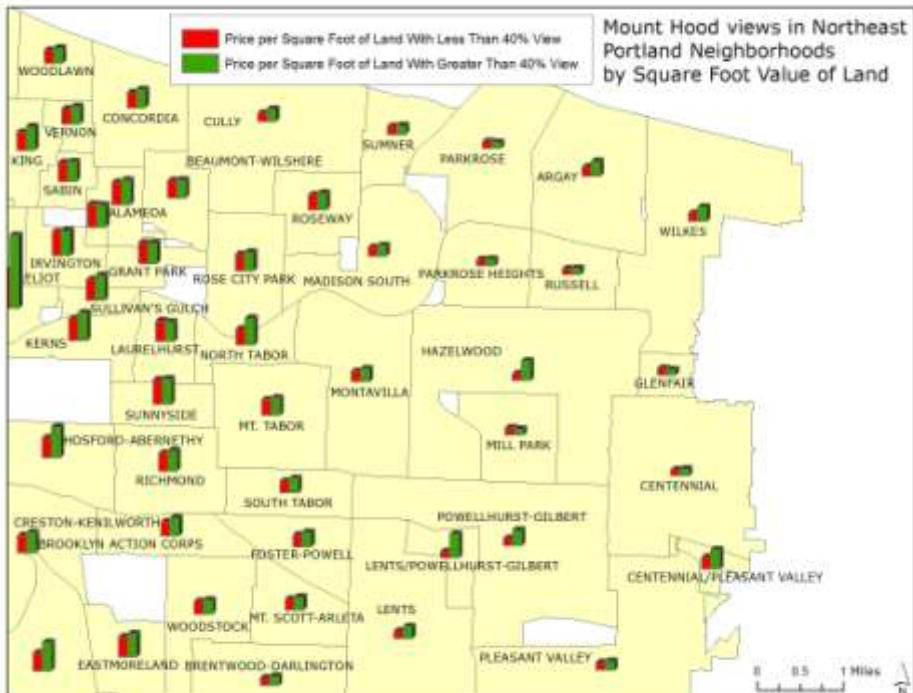
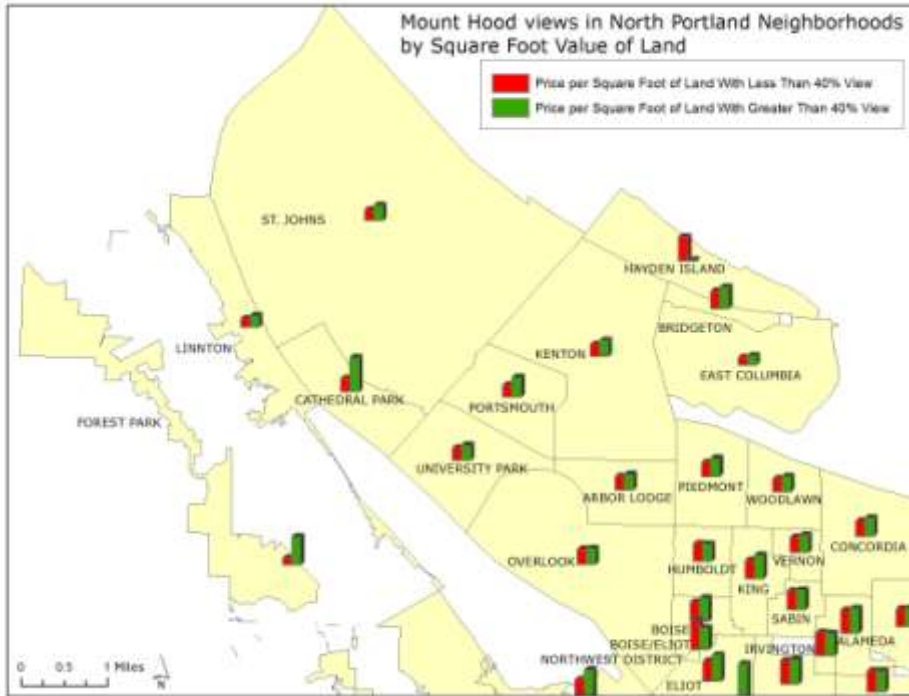
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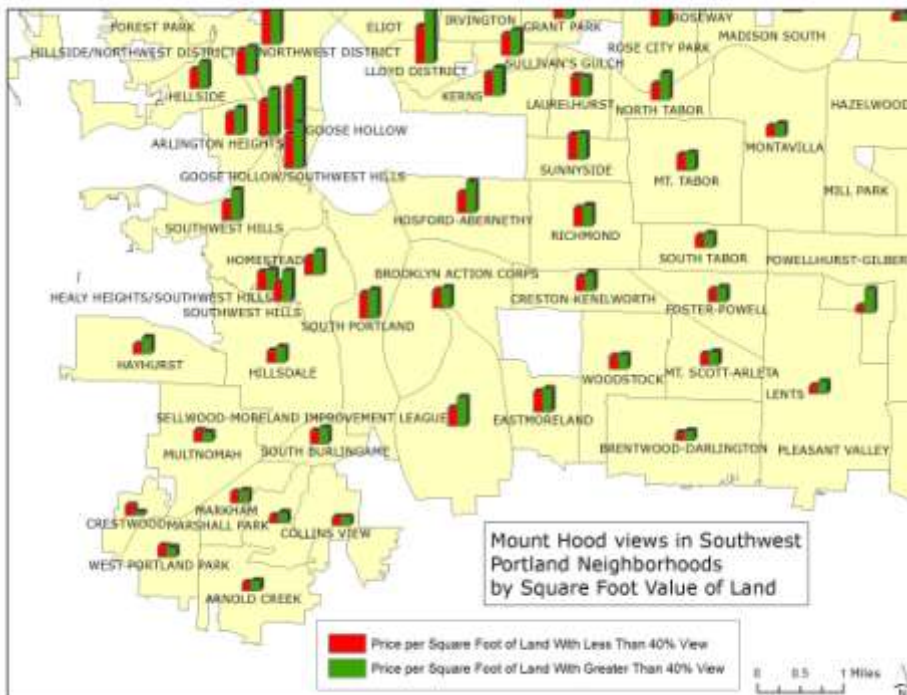
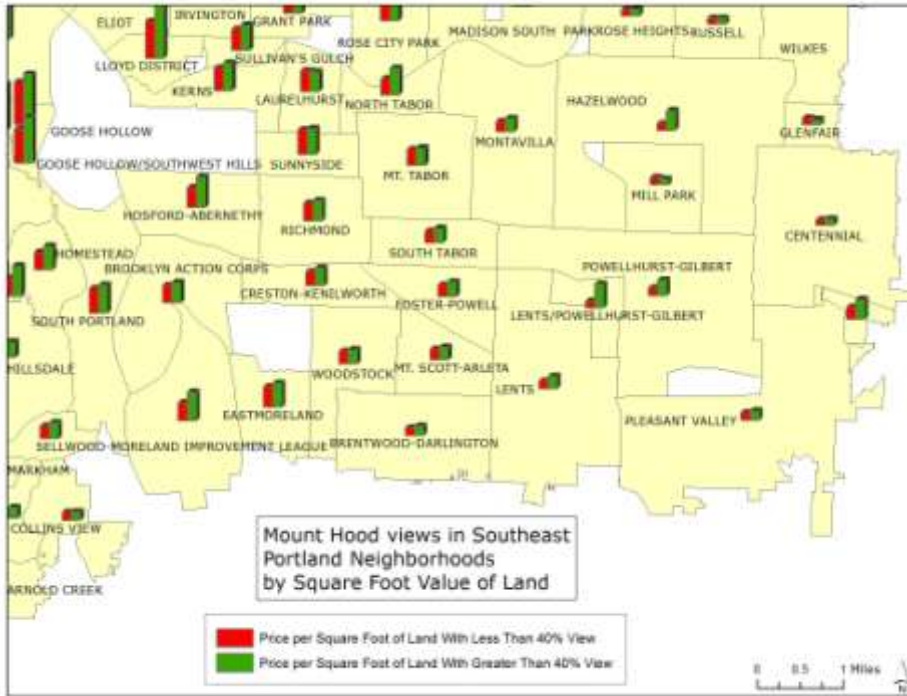
Results

- Since we are using first return LiDAR data there may be some false positives within the viewshed caused by tall features such as trees that are not actually views of Mount Hood
- We decided on three threshold values to organize our results:
 - 30% ft² of taxlot with a view
 - 40% ft² of taxlot with a view
 - 50% ft² of taxlot with a view

Results







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Conclusions

- The vast majority of single family residential taxlots in Portland do not have a view of Mount Hood
- There appears to be a positive relationship among taxlots with a higher percentage view of Mount Hood
- The sample size of taxlots with the highest percent view becomes very small
- By neighborhood, the positive relationship seems less pronounced or invalid due to small sample size

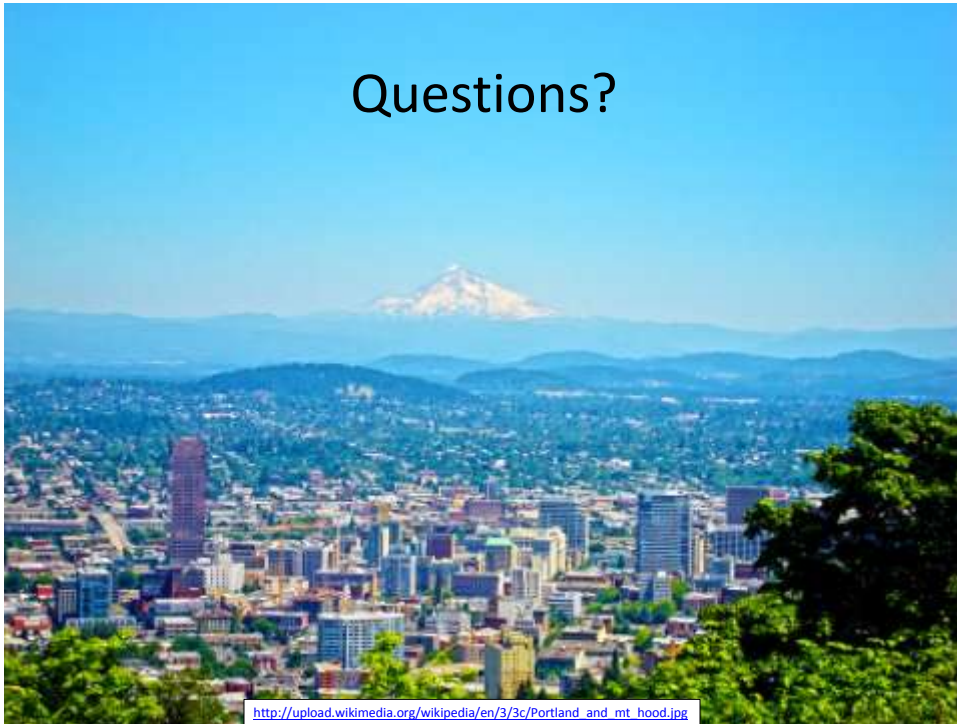
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Future Research

- A hedonic pricing model may have generated more accurate land values
- A true 3D model (representing floors and aspect) would define viewable areas more accurately than a surface model
- Compare these results with mixed-use and multi-family residential tax lots

Questions?



http://upload.wikimedia.org/wikipedia/en/3/3c/Portland_and_mt_hood.jpg