A Whole New Road:
Third Columbia River Crossing Site Suitability

Geog 492

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Introduction:

• As the Portland metropolitan area continues to grow in both spatial dimension and population, the constraints of the region's built environment have become increasingly apparent. The day to day commute is fraught with long waits in nearly all directions as the capacity of the transportation infrastructure is reached.

• The Columbia River Crossing project was brought up for voting in the 2012 election cycle, with the Clark County senate having reservations and ultimately blocking the attempt to build a new 1-5 bridge. Now, years later, a separate proposal has popped up in the form of a 3rd Columbia River Crossing, i.e. a whole new bridge project independent of either I-5 or I-205.

Is their proposed location the most auspicious to consider?

Method:

In order to create a site suitability analysis I built a new model in Arcmap (pictured below). In order to model the criteria that i found to be the most impactful.
Elevation from DEM, the type of zoning of the area, and Euclidean distance from Freeway system indicating need are the criteria that rose to the top. Also to be considered was population density. Density was left out of the model after discovering the best locations for bridge sites were sparsely populated. A weighted overlay was used on the zoning layer in order to rank the most suitable zoning areas so as to minimize disturbance to the general public. Each input was reclassed and then combined in another weighted overlay tool. Output was further discerned by using the Con tool and Majority filter.

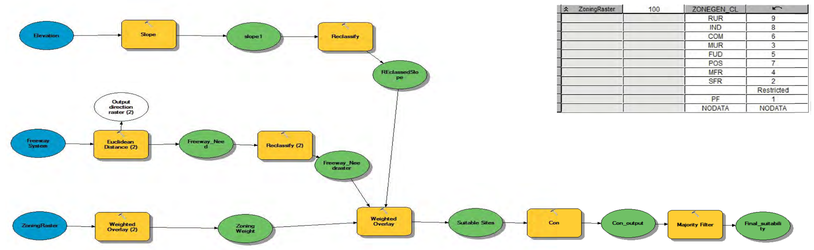
Raster	% Influence	Field	Scale Value
Zoning Weight	60	VALUE	

VALUE	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
NODATA	NODATA

Freeway_Needras	30	VALUE	
		1	1
		2	2
		3	3
		4	4
		5	5
		6	6
		7	7
		8	8
		9	9
		NODATA	NODATA

RIclassedSlope	10	VALUE	
		1	9
		2	8
		3	7
		4	6
		5	5
		6	4
		7	3
		8	2
		9	1
		NODATA	NODATA

ZoningRaster	100	ZONEGEN_CL	
		RUR	9
		IND	8
		COM	6
		MUR	3
		FUD	5
		POS	7
		MFR	4
		SFR	2
			Restricted
		PF	1
		NODATA	NODATA



Study Area: North / Northeast Portland

Date: March 13th, 2018 Author: Teryl Neal

Conclusion:

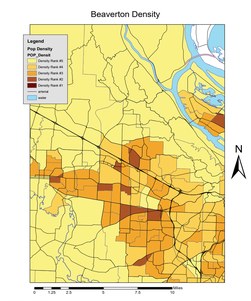
The Clark County Proposed location for the third Columbia River Crossing is adequetly placed, more so when considering the voume of traffic and density of the eastern portion of Portland.

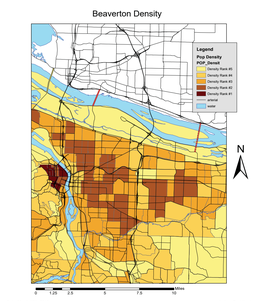
In terms of site suitablity, according to my model, both Washington and Oregon state should strongly consider constructing a Western Bypass from Beaverton into Vancouver.

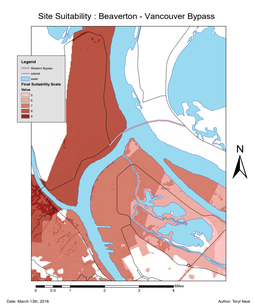
A Western Bypass would save time by reducing the distance traveled from Beaverton to Vancouver.

The East County Bridge would lower the total miles needed to traverse from Gresham to Camas, serving the density located on the East side of the Metro Area.

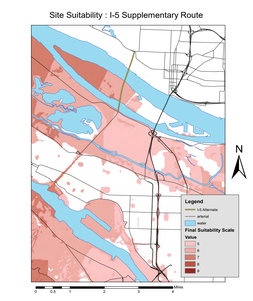
Other routes across the Columbia that are included in my analysis are not as neccessary, due to proximity to existing freeway features, and density already being served by aforementioned freeways.



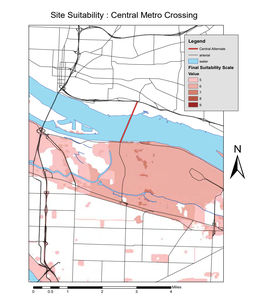




Suitability Rank: #1



Suitability Rank # 3



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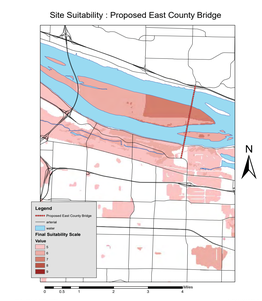
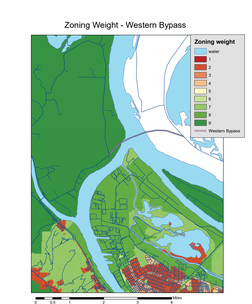
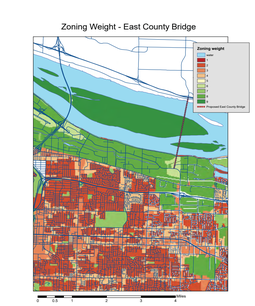
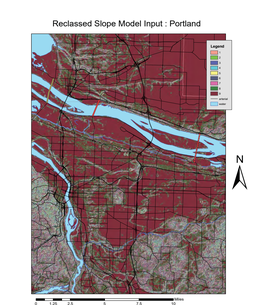
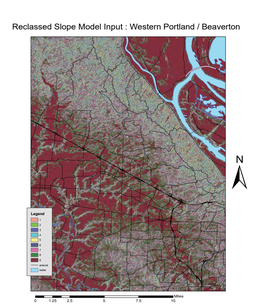


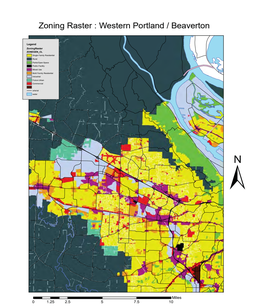
Suitability Rank # 2

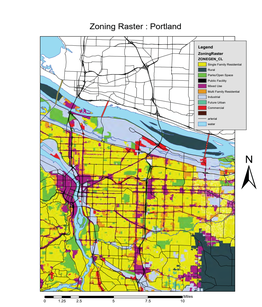












Datasets Utilized:

- Arterials
- Census Tracts (2010)
- Zoning layer
- Water Features
- Freeways
- NLCD
- Elevation

Arcmap Tools Utilized:

- Slope
- Weighted Overlay
- Reclassify
- Euclidean Distance
- Con
- Majority Filter
- Network Analyst - New route

References:

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Dake, Lauren. "Washington Legislature Passes Columbia River Bridge Bill, but Oregon Lawmakers Busy." Spokesman.com, The Spokesman-Review, 23 Apr. 2017,

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