University of Washington Tacoma
UW Tacoma Digital Commons

GIS Certificate Projects | Urban Studies

6-1-2011

Changing Vacant Parcels to Pocket Parks in Tacoma, WA

Gabriel Rhee

Follow this and additional works at: https://digitalcommons.tacoma.uw.edu/gis_projects

 Part of the Urban, Community and Regional Planning Commons, and the Urban Studies and Planning Commons

Recommended Citation
Rhee, Gabriel, "Changing Vacant Parcels to Pocket Parks in Tacoma, WA" (2011). *GIS Certificate Projects*. 46.
https://digitalcommons.tacoma.uw.edu/gis_projects/46

This GIS Certificate Project is brought to you for free and open access by the Urban Studies at UW Tacoma Digital Commons. It has been accepted for inclusion in GIS Certificate Projects by an authorized administrator of UW Tacoma Digital Commons.

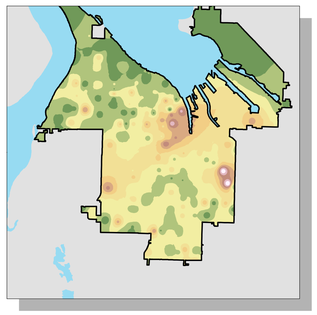
Changing Vacant Parcels To Pocket Parks In Tacoma, Wa

Gabriel Rhee
University of Washington, Tacoma
GIS_Certificate Program

Purpose:
The purpose for this project is to show that unused vacant commercial and industrial land parcels can be turned into pocket parks based on their location. Unused vacant land parcels can become places of blight, sources of vandalism, and unless properly secured and monitored by the surrounding community create a place for homeless people to occupy. However, with a proactive and concerned community meeting with an attentive and helpful city council or Metro Parks exutives, these parcels could give a much needed lift to quality of life in the City of Destiny.

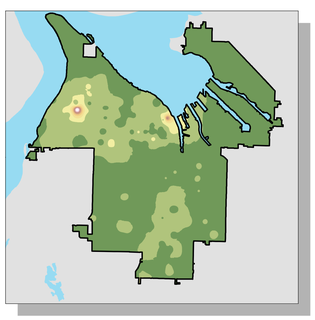
Objectives:
Objectives of this project is to show the Tacoma Parks and Recreation officials that are in charge of parks (Metro Parks) and local neighborhood and city councils that using GIS you can create more Pocket Parks in the areas of high need or areas that are underserved in terms of walking distance to existing parks. I hope that this project will achieve the goals of Jane Jacobs vison. That is, the perfect park plan should include a local community into the planning and development stages of a park so that it best meets the needs of the community and most importantly the people that live in that community. So that the park achieves the goal of bringing a community closer together.

Poverty Rate

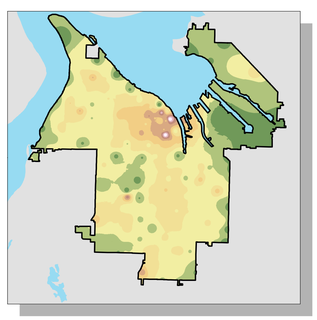


Methods: My first step in deciding what vacant land parcels could be potential pocket parks was selecting all the parcels labeled as vacant or not in-use industrial parcels and vacant commercial parcels. I chose to use Industrial and Commercial based on the fact that vacant residential was incredibly massive and didn't accurately display the entire parcel as being vacant. To create a network analysis points are required so all of the vacant land parcels were turned into points using polygon to point. After selecting all the parcels by attributes, Census demographics were chosen and added to the map. I chose to use 6 different demographic data: population density, density of population 65 and over, density of single male headed households with children under 18, density of single female headed households with children under 18, density of families with children under 18, and poverty rate. After adding a field to each of the demographics attribute table the equations I used for Density [Population] / ({Shape Area} *.000000358700643) = Population Density was used. For Poverty sense it was a rate I had to use total population of that block group and then divide by total people that took the poverty survey in the 2000 census.
To create my raster layers in the six smaller maps I selected Spatial Analyst IDW interpolation method. To do this I used the field that was created using my rates and desity. Once the rasters for both industrial and commercial were created Network Analyst was used to give my 10-minute walking distances to each of the vacant parcels. In giving 10-minute walking distance I would then be able to see what parcels were in high need of a park based on whether or not they were ranked high on the scale of my census data that had been interpolated. Raster calculator was used to determine the highest score for both commercial and industrial vacant land parcels. In the end 19 parcels were selected to be potential pocket parks based to demographics within a 10 minute walk.

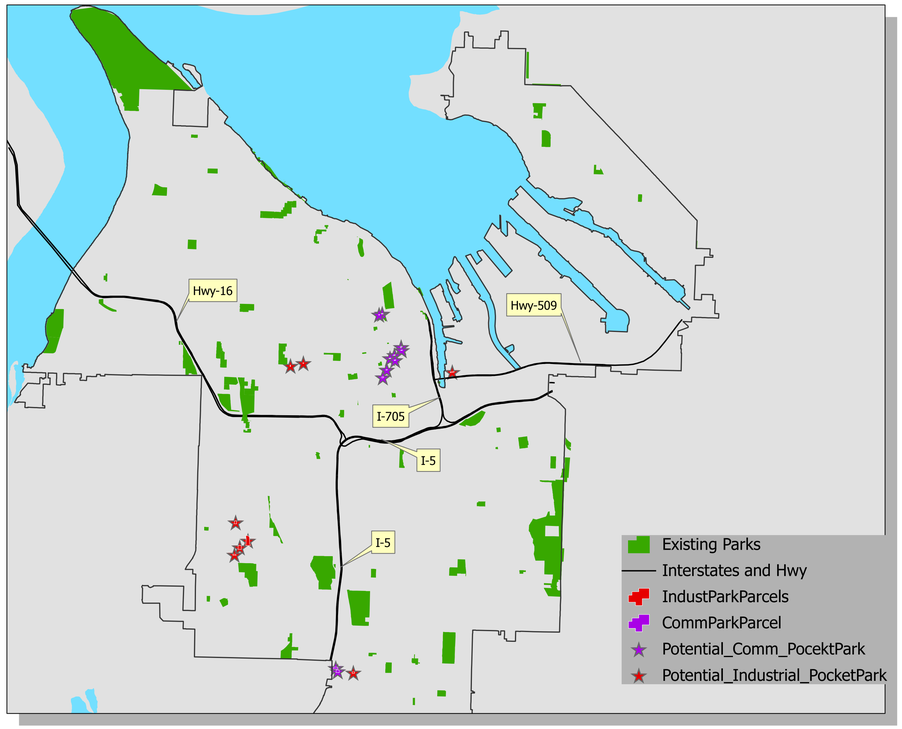
Population Density 65+



Population Density



Potential Pocket Park Parcels



Potential Commercial Pocket Park Demographics

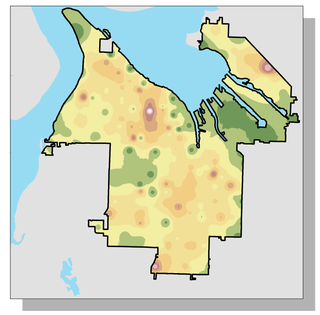
Commercial Parcels	Avg Population Density	Avg Poverty Rate	Avg Population Density 65+	Avg Density of Family with Kids<18	Avg Density of Single Female Households with Kids<18	Avg Density of Single Male Households with Kids<18
5	10345	0.32	948.212	516.202	338.748	95.486
3	10037	0.35	918.152	468.254	355.631	121.980
7	10036	0.30	814.554	442.710	333.389	88.447
6	10018	0.32	793.593	399.298	326.104	89.615
4	9920	0.34	775.322	389.752	347.497	116.150
2	9857	0.37	767.045	377.794	418.456	146.647
1	9607	0.37	732.684	320.284	372.351	107.604
8	9305	0.28	684.425	309.251	414.089	118.480
9	9263	0.21	625.323	290.582	367.819	106.090
10	7099	0.20	592.416	263.318	346.237	108.844
11	6387	0.15	582.347	262.063	235.448	162.785
MEAN	9261	0.29	748.55	367.23	350.52	114.74

Potential Industrial Pocket Park Demographics

Industrial Parcels	Avg Population Density	Avg Poverty Rate	Population Density 65+	Avg Density of Family with Kids<18	Avg Density of Single Female Households with Kids<18	Avg Density of Single Male Households with Kids <18
1	7289	0.19	727.49	597.95	293.86	64.56
2	6025	0.17	768.91	492.72	220.03	69.70
3	5892	0.31	587.35	310.10	204.89	71.42
4	4911	0.25	360.43	312.15	364.53	73.82
5	5548	0.28	349.44	371.17	416.33	81.96
6	6065	0.19	560.59	478.68	254.13	87.69
7	6139	0.24	430.14	468.88	366.12	90.32
8	6119	0.15	666.37	529.32	220.38	105.42
MEAN	5999	0.25	556	445	293	81

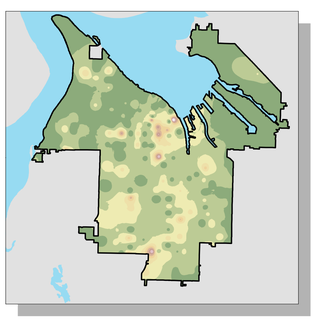
Results:
To get accurate results I classified my raster layers from 1,2,3 so therefore instead of using the random irregular numbers from the interpolation. To visualize this data I used a white to green color spectrograph, white being high yellow being moderate, green being low. This way could run zonal statistic using each of my 6 demographic data on each of the vacant land parcels, this meant running zonal statistics 12 times. Then reclassifying the Zonal stats data so that raster calculator could be used to calculate the scores showing which points scored highest or lowest based on my demographics data. For industrial Vacant land parcels the 8 highest scoring parcels were chosen for potential pocket parks. The table below shows the demographics in a 10 minute walking distance around these parcels.
For commercial vacant land parcels the same process was selected with very similar results however some of the highest scoring parcels were un-selected due to the fact that their locations were either right next a high scoring parcel or they were with in the same parcel selected. There were 11 points total for potential commercial pocket parks and the table below shows the demographics for those 11 points chosen within a 10 minute walking distance.

Families with Kids<18



Citations: All census data was downloaded from: http://factfinder.census.gov/home/saff/aff_transition.html.
Bedimo-Rung, A. L., Mowen, A. J., & Cohen, D. A. (2005). The significance of parks to physical activity and public health: A conceptual model. American Journal of Preventive Medicine, 28159-168. doi:10.1016/j.amepre.2004.10.024.
Greco, J. (2007). Learning from Jane Jacobs. Parks & Recreation, 42(6), 54-57. Retrieved from EBSCOhost.
Pearce, J., Witten, K., & Bartie, P. (2006). Neighbourhoods and health: a GIS approach to measuring community resource accessibility. Journal of Epidemiology & Community Health, 60(5), 389-395. doi:10.1136/jech.2005.043281
Prochnik, G. (2009, December 13). City of Earthy Delights. New York Times. p. 10. Retrieved from EBSCOhost
Randall, T. A., Churchill, C. J., & Baetz, B. W. (2003). A GIS-based decision support system for neighbourhood greening. Environment & Planning B: Planning & Design, 30(4), 541-563. Retrieved from EBSCOhost
Rodenburg, C., Baycan-Levent, T., van Leeuwen, E., & Nijkamp, P. (2001). Urban Economic Indicators for Green Development in Cities. Greener Management International, (36), 105. Retrieved from EBSCOhost.
Sackett, C. R. (2010). Ecotherapy: A Counter to Society's Unhealthy Trend?. Journal of Creativity in Mental Health, 5(2), 134-141. doi:10.1080/15401383.2010.485082
Tajima, K. (2003). New Estimates of the Demand for Urban Green Space: Implications for Valuing the Environmental Benefits of Boston's Big Dig Project. Journal of Urban Affairs, 25(5), 641-655. doi:10.1111/j.1467-9906.2003.00006.x
I also would like to give a big mahalo (thank you) to Matthew Kelley and the countless hours he spent with me, (and us as a class), critiquing and helping us all achieve our goals in our projects and challenging us to be more analytic and critical.

Single Male Household with Kids<18



Single Female Household with Kids<18