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URBDP 450 Final Paper

The What and Why of Seattle Green Factor

Introduction

Greenspaces can be broadly defined as "any vegetated areas found in the urban environment, including parks, forests, open spaces, lawns, residential gardens, or street trees" (Cvejic et al, 2015). Greenspace provides obvious ecological benefits but also gives people natural space in which to feel more comfortable and benefit from nature's beauty. The addition and utilization of green space makes people happier and healthier in the urban environment. This paper will outline what the Seattle Green Factor (SGF) is, consider biophilic design, explore two studies done regarding the emotional and health benefits to people associated with greenspace, and examine the implications to the planning profession that these studies hold.

What is Seattle Green Factor?

The Seattle Green Factor is a scoring system that applies to green infrastructure. According to Seattle's Department of Construction and Inspections, "Seattle Green Factor is a score-based code requirement that increases the amount of and improves the quality of landscaping in new development" (Seattle Green Factor). It was integrated into Seattle's building code in 2007 and is a modified version of Berlin's Biotope Area Factor (Kazmierczak, 8). However, it does not apply to all buildings. According to the Seattle Municipal Code 23.86.019 the SGF only applies to new development and only in certain zones within the Seattle area. It is a scoring system that

gives points for green landscape elements such as grass, large trees, green roofs, vegetative walls, permeable paving, deep soil, and more. There are three main columns in the Green Factor Score Sheet as shown below. The first two columns are square feet and factor. The user goes down the rows which include a list of green landscape elements and, if applicable, multiplies the amount of square feet covered by the landscape elements times the factor, which range between 0.1 and 0.7. Row three is the total. At the end all the totals are added up to get a total score which will be a rate score. Seattle requires various minimum scores for new development depending on the zone it is in.

These minimum scores and zones include (Seattle Green Factor):

- 0.30 for Commercial and Neighborhood Commercial

- 0.30 for Industrial Commercial with urban village or urban center

- 0.30 for South Downtown for development with at least 20,000 gross square feet

- 0.50 for Midrise and Highrise Multifamily Residential

- 0.60 for Lowrise Multifamily Residential

- 0.30 for Yesler Terrace

- 0.30 for Seattle Mixed

Green Factor Score Sheet

SEATTLE × *green factor*

Project title:

		enter sq ft of parcel		
Parcel size *(enter this value first)* *		**5,000**	**SCORE**	**-**

	Landscape Elements**	Totals from GF worksheet	Factor	Total
A	**Landscaped areas (select one of the following for each area)**			
1	Landscaped areas with a soil depth of less than 24"	*enter sq ft* 0	0.1	-
2	Landscaped areas with a soil depth of 24" or greater	*enter sq ft* 0	0.6	-
3	Bioretention facilities	*enter sq ft* 0	1.0	-
B	**Plantings (credit for plants in landscaped areas from Section A)**			
1	Mulch, ground covers, or other plants less than 2' tall at maturity	*enter sq ft* 0	0.1	-
2	Shrubs or perennials 2'+ at maturity - calculated at 12 sq ft per plant (typically planted no closer than 18" on center)	*enter number of plants* 0 0	0.3	-
3	Tree canopy for "small trees" or equivalent (canopy spread 8' to 15') - calculated at 75 sq ft per tree	*enter number of plants* 0 0	0.3	-
4	Tree canopy for "small/medium trees" or equivalent (canopy spread 16' to 20') - calculated at 150 sq ft per tree	*enter number of plants* 0 0	0.3	-
5	Tree canopy for "medium/large trees" or equivalent (canopy spread of 21' to 25') - calculated at 250 sq ft per tree	*enter number of plants* 0 0	0.4	-
6	Tree canopy for "large trees" or equivalent (canopy spread of 26' to 30') - calculated at 350 sq ft per tree	*enter number of plants* 0 0	0.4	-
7	Tree canopy for preservation of large existing trees with trunks 6"+ in diameter - calculated at 20 sq ft per inch diameter	*enter inches DBH* 0 0	0.8	-
C	**Green roofs**			
1	Over at least 2" and less than 4" of growth medium	*enter sq ft* 0	0.4	-
2	Over at least 4" of growth medium	*enter sq ft* 0	0.7	-
D	**Vegetated walls**	*enter sq ft* 0	0.7	-
E	**Approved water features**	*enter sq ft* 0	0.7	-
F	**Permeable paving**			
1	Permeable paving over at least 6" and less than 24" of soil or gravel	*enter sq ft* 0	0.2	-
2	Permeable paving over at least 24" of soil or gravel	*enter sq ft* 0	0.5	-
G	**Structural soil systems**	*enter sq ft* 0	0.2	-
		sub-total of sq ft = 0		
H	**Bonuses**			
1	Drought-tolerant or native plant species	*enter sq ft* 0	0.1	-
2	Landscaped areas where at least 50% of annual irrigation needs are met through the use of harvested rainwater	*enter sq ft* 0	0.2	-
3	Landscaping visible to passersby from adjacent public right of way or public open spaces	*enter sq ft* 0	0.1	-
4	Landscaping in food cultivation	*enter sq ft* 0	0.1	-

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(Seattle Green Factor)

A score of 0.30 for example essentially means that thirty percent of the new development has

sufficient green space. Although the SGF applies to multiple zones the actually land designation
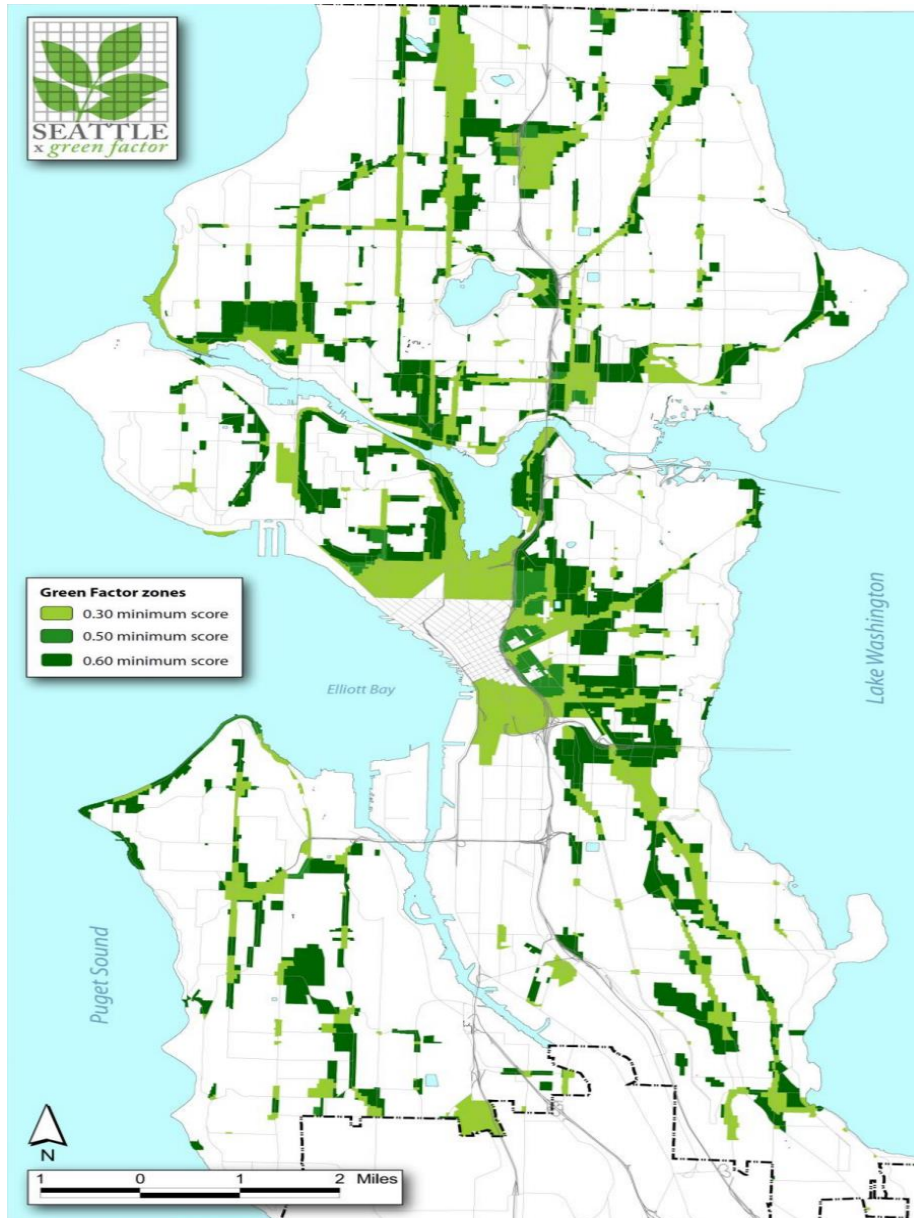
(LaClergue, 2)

covered is not as much as one might think. This map shows the areas and scores that apply to

SGF. Much of Seattle is not covered.

Biophilia

Biophilia is a hypothesis made famous by Edward Wilson in 1984 with the book *Biophilia*. Wilson states that it is "the innate tendency to focus on life and lifelike processes" (Wilson, 1984). He goes on to explain that it is a product of biological evolution in that the natural love of life helps to sustain life. This natural love of life can be incorporated in the urban environment. Another book called *Biophilic Design* by Stephen R. Kellert, goes over some specific designs and the benefits of incorporating nature into the human built environment. We need to know nature, experience it, and connect with it more than we are in modern times in the western world. Our disconnect from nature largely comes from society's shift toward urbanization, technology, and capitalistic culture. One way to slow, stop, or reverse this trend may be to encourage and feed our biological attraction to the natural environment. When we do not connect with nature "our biophilic tendencies are insufficiently stimulated and nurtured, they will remain latent, atrophied, and dysfunctional" (Kellert, 2008). Biophilic design can tap into our natural urge to connect with nature and living things. Planners should consider greenspace as a higher priority in the evolving form of the urban environment moving into the future.

Greenspace effects on happiness

Multiple studies have been done in the name of finding out how greenspace effects peoples' physical and mental health. This section of the paper will focus on peoples' mental health.

Urban planners, such as Charles Montgomery, have been studying factors that affect happiness in the city. During an experiment he did in New York partnered with the Guggenheim Museum, Montgomery had volunteers measure and track their levels of happiness while walking through Lower Manhattan. He found that everyone had significant spikes in happiness while walking through areas with some form of greenery. Montgomery stated that "green space in cities shouldn't be considered an optional luxury. It is a crucial part of a healthy human habitat." This is especially significant because "he doesn't mean enormous expanses like Central Park. He means pocket parks and other green strips that pedestrians can use as mental refreshers on their daily trips around the city" (Ehrenhalt, 2014).

Another study was done and published in Britain that showed the positive effects of greenspace on mental health called "The Longitudinal Effects on Mental Health of Moving to Greener and Less Green Urban Areas" (Alcock et al, 2014). General health questionnaires were passed out for five consecutive years to participants in the British Household Panel Survey. Mental health questions were included. The study looked at those who moved to different residential areas within those years. There were two general categories:

1. Those who moved to greener areas
2. Those who moved to less green areas

They looked at the mental health of the 1,064 qualifying participants before and after their moves and found that significant mental health improvement was found in those who moved to greener areas. When comparing scores to pre-move years, they found the boost in mental health was sustained for at least three years until the end of the study. It has been widely

advocated that surges in happiness will always end and a person's baseline of happiness will return. This study showed a "shifting baseline" (Alcock et al, 2014) where people maintained that higher level of happiness over an extended period. Results also showed that those who moved to less green areas did not experience a significant decrease in happiness except in their pre-move year. They seemed to adjust to the less green urban environment fine.

Other studies have found that "after looking at nature scenes, people are kinder and more charitable. They've suggested that children with ADHD have an easier time concentrating when they spend time outdoors. A 2008 study even found that, for office workers, a mere glimpse of green through a window or a live plant on their desk were, on the whole, associated with lower stress levels and higher job satisfaction" (Stromberg, 2014). These various studies all point to one thing, that greenspace can help to improve the mental health of people and with the projected state of urban environments becoming more densely populated into the future these results become even more significant.

Greenspace effects on physical health

Greenspace has not only been shown to improve a person's mental health but it has been shown to positively affect their mental health, as well. A study done in the Netherlands called "Green space, urbanity, and health: how strong is the relation?" (Maas et al, 2006) had people from 104 general practices respond to a one page questionnaire on their perceived mental health and sociodemographic information. They also calculated the percentage of green space within a 1 km and 3 km radius that the respondents lived in based on their postal code. They matched up the results to find that "residents of neighbourhoods with abundant green

space tend, on average, to enjoy better general health. This positive link was found to be most apparent among the elderly, housewives, and people from lower socioeconomic groups" (Mass et al, 2006).
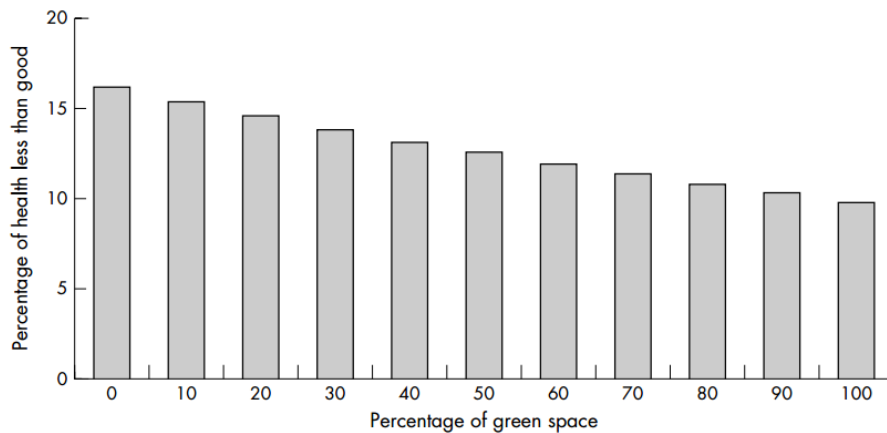
Figure 1 Relation between amount of green space (in a 3 km radius) and self perceived health (percentage stating their health is less than good) based on the logistic multilevel model of table 1, step 3b (controlling for urbanity, sociodemographic, and socioeconomic characteristics).

*graphic (Mass et al, 2006).

This study did not solely look at urban greenspace, however. "The total percentage of green space includes all urban green, agricultural green, forests, and nature conservation areas" (Maas et al, 2006). The results do show a correlation between self-reported levels of physical health and proximity to greenspace. A finding from the study that emphasizes this point is that "in areas where 90% of the environment around the home is green, only 10.2% of the residents feel unhealthy, as compared with areas in which 10% of the environment is green, where 15.5% of the residents feel unhealthy. The relation is equally strong for the 1 km and the 3 km radius" (Maas et al, 2006). This goes to show that fifty percent more people reported to feel physically unhealthy when living in less green environments.

Conclusion

SGF should be expanded to apply to more zones in Seattle as an integral design element for its ecological benefits and to make people happier and more comfortable. Biophilia is hypothesized to be an innate human-to-nature connection and biophilic design is a way to welcome nature into our urban world. Some recent studies have shown greenspace to improve the physical and mental health of the people who get to experience them in their daily lives.

In the conclusion of his study involving the people moving into or out of green urban areas, Alcock states that "our results may nevertheless aid policy makers and urban planners interested in exploring whether "green infrastructure", such as parks and green corridors, produces mental health benefits to local populations. Unlike many other changes in life circumstances, where effects on mental health can be short-lived, moving to a greener urban area was associated with sustained mental health gains" (Alcock et al, 2014). Additionally, the study in the Netherlands involving peoples perceived physical health and proximity to greenspace, concluded with "this research has shown that green space is more than just a luxury, and the development of green space should therefore be allocated a more central position in spatial planning policy. Healthy planning should include a place for green space and policy makers should take the amount of green space in the living environment into account when endeavouring to improve the health situation of the elderly, the youth, and lower SES groups, especially in urban environments" (Maas et al, 2006). These results have serious implications for the urban planning profession in Seattle. Other cities around the world are embracing more far-reaching green policy. "The city of Berlin, Germany, aims at providing at least 6 m² urban green per person, while Leipzig, Germany, aims at 10 m² per capita. In the UK,

it is recommended that – as a national target – city residents should have access to a natural

green space of minimum 2 ha within a distance of 300 m from home (Cvejic et al, 2015). A

number of countries are recognizing the value of greenspace and incorporating it into their

planning policy. SGF is a step in the right direction and the City of Seattle should be proud of

their progress but more can be done. Urban planners and policy makers are in unique positions

to push it even farther.

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