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Impacts of Green Landscapes of Urban Freeway on Driver's Visual Perception: An Equilibrium Effect of Greenness and Complexity

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Supplementary Table 1: Pairwise comparison of the three fundamental landscape settings in proportion of fixation count on greenery

	Barren	Turf	Woody
Barren	—		
Turf	ns	—	
Woody	-0.059**	ns	—

NOTE

The number value represents the mean difference, which is marked as *** $p < 0.001$, ** $p < 0.01$, and * $p < 0.05$; ns means non-significance when $p \geq 0.05$.

Supplementary Table 2: Pairwise comparison of the three fundamental landscape settings in proportion of fixation count on buildings

	Barren	Turf	Woody
Barren	—		
Turf	ns	—	
Woody	0.151***	0.108**	—

NOTE

The number value represents mean difference, which is marked as *** $p < 0.001$, ** $p < 0.01$, and * $p < 0.05$; ns means non-significance when $p \geq 0.05$.

Supplementary Table 3: Pairwise comparison of the three fundamental landscape settings in proportion of fixation duration on buildings

	Barren	Turf	Woody
Barren	—		
Turf	ns	—	
Woody	0.156**	0.109*	—

NOTE

The number value represents mean difference, which is marked as *** $p < 0.001$, ** $p < 0.01$, and * $p < 0.05$; ns means non-significance when $p \geq 0.05$.

Supplementary Table 4: Pairwise comparison of six conditions in proportion of fixation count on greenery

	Barren	Turf	Shrub-regular	Shrub-random	Tree-regular	Tree-random
Barren	—					
Turf	ns	—				
Shrub-regular	ns	ns	—			
Shrub-random	ns	ns	ns	—		
Tree-regular	-0.083**	-0.060**	-0.066*	-0.094**	—	
Tree-random	-0.147***	-0.123**	-0.129***	-0.157***	ns	—

NOTE

The number value represents mean difference, which is marked as *** $p < 0.001$, ** $p < 0.01$, and * $p < 0.05$; ns means non-significance when $p \geq 0.05$.

Supplementary Table 5: Pairwise comparison of six conditions in proportion of fixation count on buildings

	Barren	Turf	Shrub-regular	Shrub-random	Tree-regular	Tree-random
Barren	—					
Turf	ns	—				
Shrub-regular	ns	ns	—			
Shrub-random	0.112*	ns	ns	—		
Tree-regular	0.239***	0.196***	0.180***	0.127*	—	
Tree-random	0.193***	0.149**	0.133**	ns	ns	—

NOTE

The number value represents mean difference, which is marked as *** $p < 0.001$, ** $p < 0.01$, and * $p < 0.05$; ns means non-significance when $p \geq 0.05$.

Supplementary Table 6: Pairwise comparison of six conditions in proportion of fixation duration on greenery

	Barren	Turf	Shrub-regular	Shrub-random	Tree-regular	Tree-random
Barren	—					
Turf	ns	—				
Shrub-regular	ns	ns	—			
Shrub-random	ns	ns	ns	—		
Tree-regular	-0.082**	-0.051*	-0.065*	-0.096**	—	
Tree-random	-0.143**	-0.112*	-0.126***	-0.157***	ns	—

NOTE

The number value represents mean difference, which is marked as *** $p < 0.001$, ** $p < 0.01$, and * $p < 0.05$; ns means non-significance when $p \geq 0.05$.

Supplementary Table 7: Pairwise comparison of six conditions in proportion of fixation duration on buildings

	Barren	Turf	Shrub-regular	Shrub-random	Tree-regular	Tree-random
Barren	—					
Turf	ns	—				
Shrub-regular	ns	ns	—			
Shrub-random	0.127*	ns	ns	—		
Tree-regular	0.238***	0.191***	0.175***	ns	—	
Tree-random	0.195***	0.148**	0.132**	ns	ns	—

NOTE

The number value represents mean difference, which is marked as *** $p < 0.001$, ** $p < 0.01$, and * $p < 0.05$; ns means non-significance when $p \geq 0.05$.



Supplementary Table 8: Pairwise comparison of six conditions in horizontal gaze dispersions

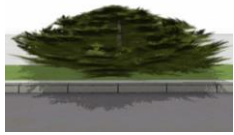






	Barren	Turf	Shrub-regular	Shrub-random	Tree-regular	Tree-random
Barren	—					
Turf	ns	—				
Shrub-regular	ns	16.722*	—			
Shrub-random	ns	ns	ns	—		
Tree-regular	ns	15.831*	ns	ns	—	
Tree-random	12.971***	20.978**	ns	ns	ns	—

NOTE

The number value represents mean difference, which is marked as *** $p < 0.001$, ** $p < 0.01$, and * $p < 0.05$; ns means non-significance when $p \geq 0.05$.

Supplementary Table 9: Shrubs chosen for simulation and their visualization in CityEngine® with corresponding dimensions

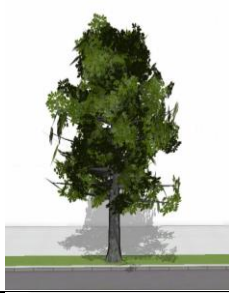




Botanical name	Size reference	Appearance in CE	Size in CE (m)	Number in CE
<i>Buxus sempervirens</i>	Medium shrub: 1.5 ~ 2.5 m Small shrub: 1 ~ 1.5 m Low-growing shrub: < 1 m		(1) H0.5, R0.4 (2) H1, R0.75 (3) H1.5, R1	(1) 532 (2) 534 (3) 534
<i>Forsythia intermedia</i>	Large shrub: > 2.5 m Medium shrub: 1.5 ~ 2.5 m Small shrub: 1 ~ 1.5 m		(1) H1, R0.5 (2) H1.5, R0.8 (3) H2, R1	(1) 532 (2) 534 (3) 534

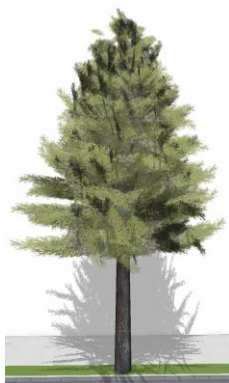
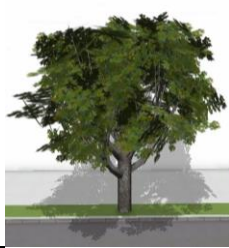
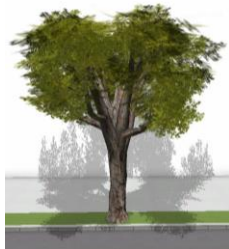
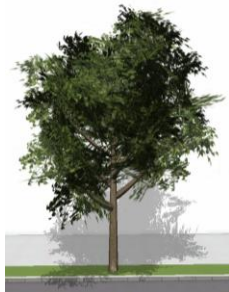

<i>Juniperus chinensis</i>	Large shrub: > 2.5 m Medium shrub: 1.5 ~ 2.5 m Small shrub: 1 ~ 1.5 m Low-growing shrub: < 1 m		(1) H0.5, R0.75 (2) H0.8, R1.5 (3) H1.7, R2	(1) 532 (2) 534 (3) 534
<i>Cornus pumila</i>	Low-growing shrub: < 1 m		(1) H0.3, R0.3 (2) H0.5, R0.5 (3) H0.9, R1	(1) 532 (2) 534 (3) 534
<i>Buxus microphylla</i> var. <i>koreana</i>	Small shrub: 1 ~ 1.5 m Low-growing shrub: < 1 m		(1) H0.9, R0.3 (2) H1.4, R0.5 (3) H1.8, R0.6	(1) 532 (2) 534 (3) 534
<i>Metasequoia glyptostroboides</i> 'Miss Grace'	Large shrub: > 2.5 m Medium shrub: 1.5 ~ 2.5 m Small shrub: 1 ~ 1.5 m		(1) H0.4, R0.3 (2) H0.7, R0.5 (3) H1.2, R1	(1) 532 (2) 534 (3) 534
<i>Diervilla rivularis</i>	Medium shrub: 1.5 ~ 2.5 m Small shrub: 1 ~ 1.5 m		(1) H1, R0.6 (2) H1.5, R0.85 (3) H1.8, R1.5	(1) 532 (2) 534 (3) 534
<i>Berberis thunbergii</i>	Medium shrub: 1.5 ~ 2.5 m Small shrub: 1 ~ 1.5 m		(1) H1.5, R0.75 (2) H1.8, R0.9 (3) H2, R2	(1) 532 (2) 534 (3) 534
<i>Hypericum kalmianum</i>	Small shrub: 1 ~ 1.5 m Low-growing shrub: < 1 m		(1) H0.7, R0.5 (2) H1.2, R0.8 (3) H1.6, R1	(1) 532 (2) 534 (3) 534
<i>Fothergilla major</i>	Large shrub: > 2.5 m Medium shrub: 1.5 ~ 2.5 m Small shrub: 1 ~ 1.5 m		(1) H1, R0.5 (2) H1.5, R0.75 (3) H2, R1.5	(1) 532 (2) 534 (3) 534

NOTES

1. Species information is retrieved from *The Morton Arboretum*.
2. CE stands for CityEngine; H stands for Height; and R stands for radius.
3. Each type of shrub in shrub-random scene has 3 different size settings, the total number of shrubs of each size setting is noted separately (adapted from Ref. [18]).

Supplementary Table 10: Trees chosen for simulation and their visualization in CityEngine® with corresponding dimensions

Botanical name	Size reference	Appearance in CE	Size in CE	Number in CE
<i>Aesculus hippocastanum</i>	Mature Height: 15 ~ 23 m Mature width: 12 ~ 20 m		(1) H5, R1 (2) H10, R2 (3) H15, R2.5	(1) 135 (2) 135 (3) 135
<i>Aesculus flava</i>	Mature Height: 18 ~ 24 m Mature width: 8 ~ 10 m		(1) H15, R3 (2) H18, R4 (3) H23, R5	(1) 135 (2) 135 (3) 135
<i>Quercus shumardii</i>	Mature Height: 12 ~ 18 m Mature width: 12 ~ 18 m		(1) H5, R2 (2) H11, R4 (3) H14, R5	(1) 135 (2) 135 (3) 135
<i>Taxodium distichum</i>	Mature Height: 15 ~ 21 m Mature width: 6 ~ 9 m		(1) H7, R2 (2) H12, R3.5 (3) H15, R4.5	(1) 135 (2) 135 (3) 136
<i>Nyssa sylvatica</i>	Mature Height: 9 ~ 15 m Mature width: 6 ~ 9 m		(1) H7, R2.5 (2) H9, R3 (3) H15, R4.5	(1) 135 (2) 135 (3) 135

<i>Metasequoia glyptostroboides</i>	Mature Height: 21 ~ 30 m Mature width: 5 ~ 8 m		(1) H15, R3.5 (2) H20, R4 (3) H23, R4	(1) 135 (2) 135 (3) 135
<i>Betula nigra</i>	Mature Height: 9 ~ 12 m Mature width: 6 ~ 9 m		(1) H7, R3 (2) H10, R4.5 (3) H12, R5	(1) 135 (2) 136 (3) 135
<i>Quercus alba</i>	Mature Height: 15 ~ 24 m Mature width: 15 ~ 24 m		(1) H5, R2.5 (2) H7, R3.5 (3) H9, R4.5	(1) 135 (2) 135 (3) 135
<i>Tilia cordata</i>	Mature Height: 12 ~ 21 m Mature width: 9 ~ 12 m		(1) H10, R3 (2) H15, R4.5 (3) H17, R5	(1) 135 (2) 135 (3) 135
<i>Quercus robur</i>	Mature Height: 22.5 ~ 30 m Mature width: 22.5 ~ 30 m		(1) H6, R3 (2) H8, R4 (3) H12, R5	(1) 135 (2) 135 (3) 136

NOTES

1. Species information is retrieved from *The Morton Arboretum*.
2. CE stands for CityEngine; H stands for Height; and R stands for radius.
3. Each type of tree in tree-random scene has 3 different size settings, the total number of trees of each size setting is noted separately (adapted from Ref. [18]).

ETHICAL APPROVAL

This study was approved by the Human Research Ethics Committee (HREC) at the University of Hong Kong and the Institutional Review Board (IRB) of the Department of Psychology at Tsinghua University.