Supporting Information

Towards a 'City in Nature': Evaluating the cultural ecosystem services approach to support urban green space management

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Fig. S1. Photographs of prominent park features in BAMKP. A. Lotus Garden. B. Adventure Playground. C. Allotment Garden. D. Landscape Pond. E. Water Playground. F. Therapeutic Garden. G. Inclusive Playground. H. Dog Run. J. Butterfly Habitat. K. Recycle Hill. L. Shelter and fitness corner. M. McDonald's F&B outlet. N. Renaturalised river in Pond Gardens. P. Renaturalised river in River Plains. Q. River-crossing stone steps. R. River-crossing bridge. S. Popular shelter for school field trips and camps. T. Wild chicken crossing a pathway.
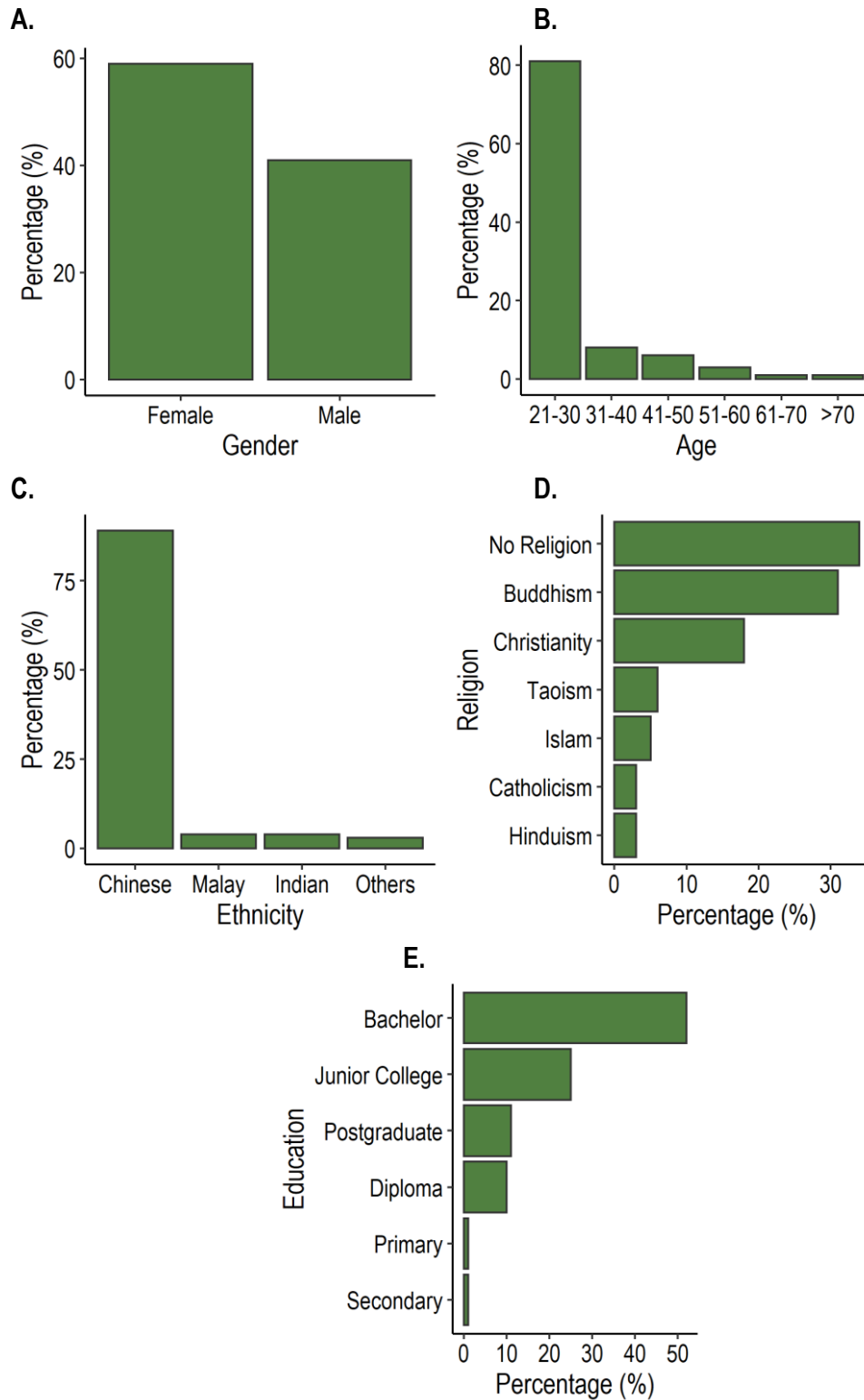
Fig. S2. Sociodemographic information of PPGIS participants. A. Graph of participants' gender. B. Graph of participants' age. B. Graph of participants' ethnicity. D. Graph of participants' religion. E. Graph of participants' highest attained education level.
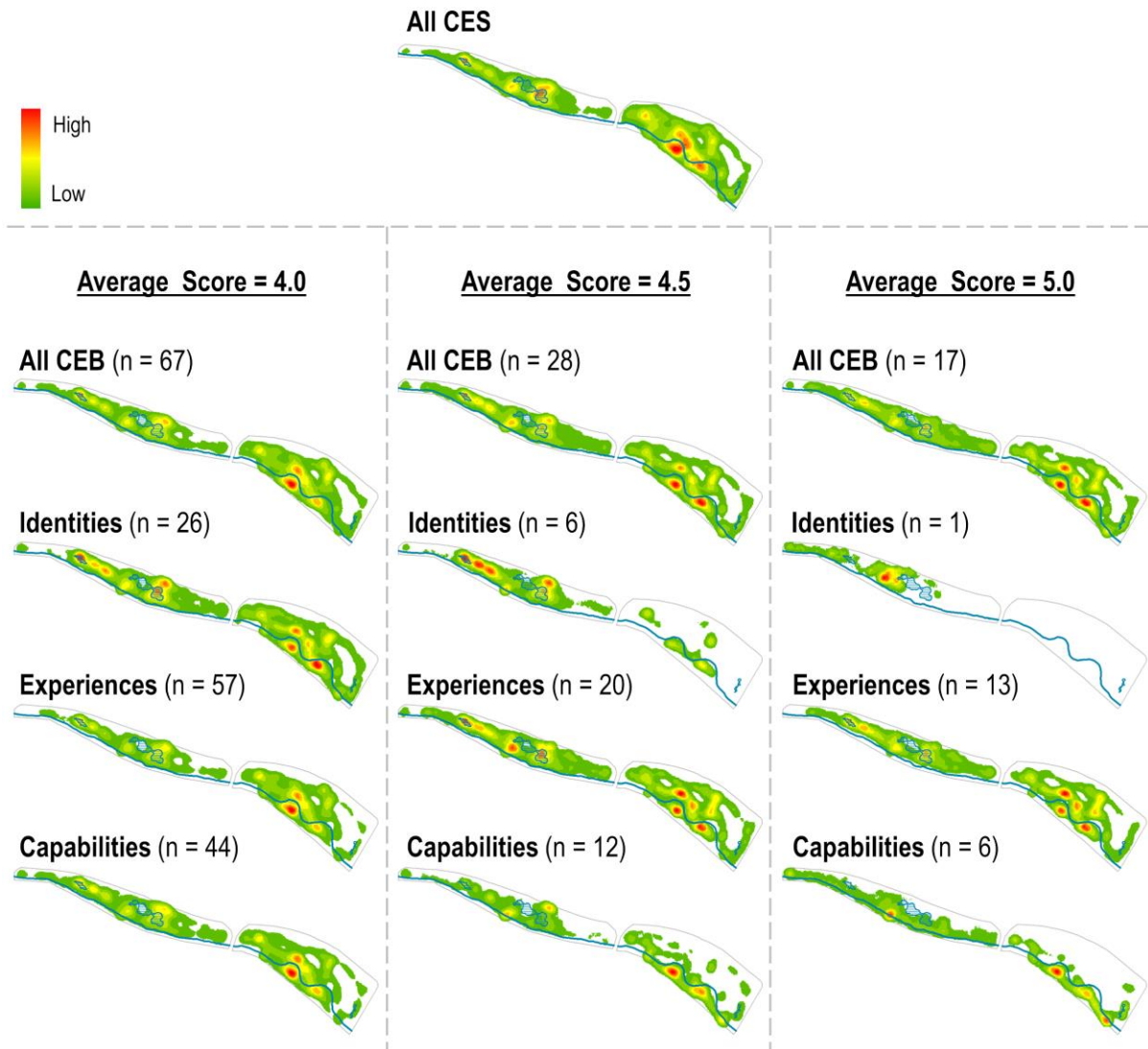
Fig. S3. Sensitivity analysis of CES relating to high CEB enjoyment in BAMKP. Using the heat maps where the average score of CEB = 4.5 was found to be most ideal for two reasons. Firstly, the spatial distribution of CES is distinctive from each other and from the all CES heat map which allows for meaningful analysis to be performed. This is unlike the heat maps where the average score of CEB = 4.0 where the spatial distributions were all too similar. Secondly, there is a lower chance of spatial data skewness to ensure reliable analysis to be performed. This is unlike the heat maps where the average score of CEB = 5.0 where for example, the heat map for identities CEB only relied on one participant's response.

Fig. S4. Screenshot of PPGIS Map-Me user interface. Participants may move around, zoom in and out and change between current map or satellite view while plotting their mapped blobs. A single left button click of the mouse will place one blob on the map near the pointer while holding down the left button of the mouse will continuously place blobs onto the map near the pointer. Participants may also hold down the left button of the mouse while moving the mouse around to place a stretch of blobs onto the map tracing the pointer, as shown in the figure.

Supporting Table

Table S1
PPGIS one-way ANOVA test information.

Park Usage Factors	One-way ANOVA p-value Coefficient														
	CES						CEB			Cultural Values					
	REC	AES	EDU	SOC	REL	BIO	IDE	EXP	CAP	REC	AES	EDU	SOC	REL	BIO
Last Visit	0.006	0.131	0.781	0.746	0.003	0.088	0.134	0.349	0.895	0.307	0.094	0.994	0.369	0.302	0.014
Visit Frequency	0.069	0.815	0.987	0.827	0.003	0.782	0.012	0.805	0.146	0.286	0.484	0.545	0.542	0.248	0.109
Visit Duration	0.610	0.290	0.541	0.027	0.914	0.367	0.188	0.271	0.100	0.001	0.800	0.663	0.909	0.096	0.082
Alone/Company	0.192	0.360	0.586	0.887	0.014	0.996	0.491	0.122	0.606	0.011	0.585	0.220	0.055	0.043	0.120
Residential Proximity	0.147	0.276	0.179	0.267	0.125	0.752	0.014	0.312	0.150	0.160	0.278	0.039	0.340	0.501	0.421

The p-value coefficients in colour were statistically significant at 1% (green), 5% (yellow) and 10% (orange). The p-value coefficient for CES was calculated using the number of mapped blobs from the PPGIS mapping as proxy while that for CEB and CES valuations were calculated using direct data from the PPGIS survey.

Supporting Method

Method S1. PPGIS online survey questionnaire.

Link to PPGIS online survey questionnaire: https://forms.gle/MkW3gVgZFEpCxLdH8

Park Usage

1. When was your last visit to Bishan-Ang Mo Kio Park?
   - ❏ Within the past 1 week
   - ❏ Between 1 to 4 weeks ago
   - ❏ Between 1 to 12 months ago
   - ❏ More than 12 months ago
   - ❏ I have never visited Bishan-Ang Mo Kio Park

2. In the past 12 months, how frequently have you visited Bishan-Ang Mo Kio Park on average?
   - ❏ Almost daily
   - ❏ Two to four times a week
   - ❏ Once a week
   - ❏ One to three times a month
   - ❏ Less than once a month
   - ❏ Never

3. What is the average duration of your visit to Bishan-Ang Mo Kio Park?
   - ❏ <10 minutes
   - ❏ 10-30 minutes
   - ❏ 30-60 minutes
   - ❏ 60-90 minutes
   - ❏ >90 minutes

4. Are you usually alone or do you have company during your visits to Bishan-Ang Mo Kio Park?
   - ❏ Alone
   - ❏ With children (<13 years old)
   - ❏ With family (13-64 years old)
   - ❏ With elderly (>64 years old)
   - ❏ With friend(s)
   - ❏ With pet(s)
   - ❏ Others: _____

Activities engaged in Bishan-Ang Mo Kio Park

5. Where have you enjoyed recreational activities (e.g. physical exercise, jogging, sports, walking dog)?

6. Where have you enjoyed admiring the beauty of nature and/or man-made structures?

7. Where have you enjoyed learning more about nature and the environment?

8. Where have you enjoyed socialising and spending time with family and friends?

9. Where have you enjoyed relaxing and unwinding from work and everyday life?

10. Where have you enjoyed getting near and/or watching wild animals and plants?

Perception of Bishan-Ang Mo Kio Park

11. On a scale from 1-5, how important to you are the following functions of Bishan-Ang Mo Kio Park? (1 being not important and 5 being very important)

|	1 (Not important)	2	3	4	5 (Very important)
Recreation - Park allows people to enjoy recreational activities (e.g. physical exercise, jogging, sports, walking dog)					
Aesthetic - Park allows people to enjoy admiring the beauty of nature and/or man-made structures					
Education - Park allows people to enjoy learning more about nature and the environment					
Social - Park allows people to enjoy socialising and spending time with family and friends					
Relaxation - Park allows people to enjoy relaxing and unwinding from work and everyday life					
Biodiversity - Park allows people to enjoy getting near and/or watching wild animals and plants					

Benefits provided by Bishan-Ang Mo Kio Park

12. On a scale from 1-5, how often have you enjoyed the following benefits when visiting Bishan-Ang Mo Kio Park? (1 being never enjoyed and 5 being frequently enjoyed)

	1 (Never enjoyed)	2	3	4	5 (Frequently enjoyed)
Improving physical health					
Improving mental health					
Developing sense of spirituality					
Developing connection to nature					
Learning more about nature					
Developing sense of belonging to the park					
Strengthening social bonds with others					
Creating memorable experiences					
Providing sense of freedom					

Land Use Preference

Map of Bishan-Ang Mo Kio Park
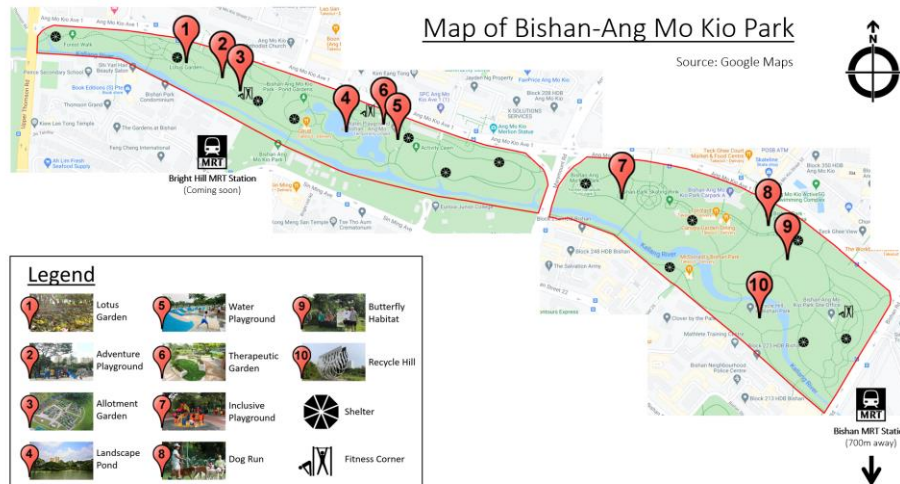
13. With reference to the map above, what do you think should happen to the following park features if the Bishan-Ang Mo Kio Park is undergoing refurbishment and upgrading?

	No Opinion	Remove - feature is unnecessary	Keep - feature is good enough	Upgrade - feature needs improvement
(1) Lotus Garden				
(2) Adventure Playground				
(3) Allotment Garden				
(4) Landscape Pond				
(5) Water Playground				
(6) Therapeutic Garden				
(7) Inclusive Playground				
(8) Dog Run				
(9) Butterfly Habitat				
(10) Recycle Hill				
Naturalised River				
Fitness Corners				
Shelters & Benches				
Paths & Bridges				
F&B Outlets				

14. What improvement(s) and/or other feature(s) do you wish to be included in Bishan-Ang Mo Kio Park?

_____

_____

Sociodemographic Information

15. Postal code

_____

16. Gender
   ❏ Female
   ❏ Male

17. Age
   ❏ 21-30 years old
   ❏ 31-40 years old
   ❏ 41-50 years old
   ❏ 51-60 years old
   ❏ 61-70 years old
   ❏ >70 years old

18. Ethnicity
   ❏ Chinese
   ❏ Malay
   ❏ Indian
   ❏ Other: _____

19. Religion
   ❏ No Religion
   ❏ Buddhism
   ❏ Catholicism
   ❏ Christianity
   ❏ Islam
   ❏ Hinduism
   ❏ Sikhism
   ❏ Taoism
   ❏ Other: _____

20. Highest level of education
   ❏ Primary School
   ❏ Secondary School ('O' / 'N' Levels)
   ❏ Junior College ('A' Levels)
   ❏ Polytechnic or Professional Diploma
   ❏ Bachelor's Degree
   ❏ Postgraduate Degree
   ❏ Other: _____