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Neighbourhood parks & physical activity: A natural experiment

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Background

- Local parks are an important setting for physical activity (Floyd et al 2008)

- Specific attributes of parks may have implications for park-based physical activity (Kaczynski et al 2008, Reis et al 2009, Timperio et al 2008)

- Understanding how to attract residents to parks & encourage park users to be active is an important public health initiative

Background

- Natural experiments have been identified as a top research priority in investigating causal associations between the built environment & physical activity (Sallis et al 2009)

- Studies involving natural experiments are scarce

- Limited studies have focused on environmental modifications to parks (Cohen et al 2009, Fitzhugh et al 2010, Tester et al 2009)

- Opportunity arose to conduct a natural experiment through collaboration with a local council

Aims

To examine whether improvement in park facilities led to (maintained) changes in:

1) park use

2) physical activity (or sedentary) levels of users in the park

- It was hypothesized that improvement in park infrastructure would result in increased park use & park-based physical activity levels relative to a control park that was not refurbished

Methods

- Direct observations of park users
- Intervention & control park

(T1) • Pre-intervention August 2009

(T2) • Post-intervention March 2010

(T3) • Post-intervention August 2010
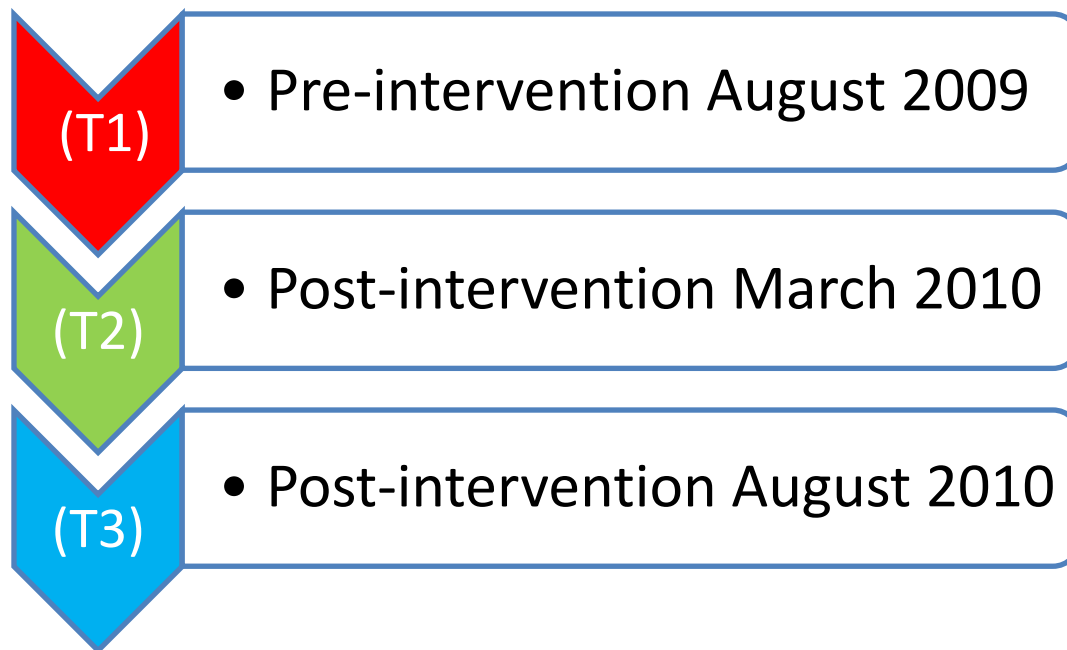
Intervention Park

- Park located in Rosebud West (size 25,200m^2)

  – area of low SES, 44% residents>65yrs

- Refurbishment focussed on providing a safe place for residents of all ages to participate in recreational activities & dog walking
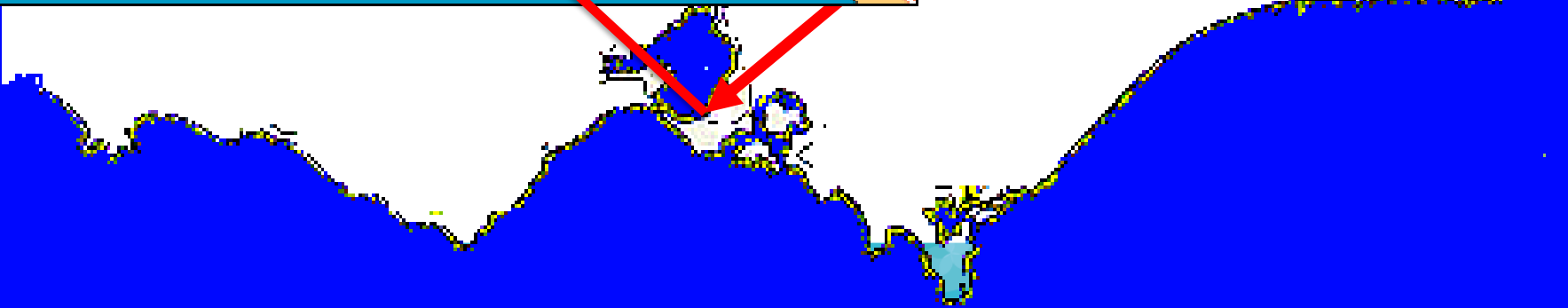
Intervention park
Pre-refurbishment

Control Park

Post-refurbishment: All-abilities playground

Leash free-area for dogs

BBQ area/
picnic facilities

Walking Paths

Observations

- SOPARC used to characterise park users (McKenzie et al 2006)

- Sex, age groups (2-4, 5-18, adult), activity (lying down, sitting, standing, walking, very active)

At each of 3 time-points observations were conducted:

→ every 15 minutes

→ 7.30-9.00am, 11.30-1.00pm, 3.30-5.00pm

→ 9 separate days: 5 weekdays & 4 weekend days

Statistical analyses

- Park counts were collected for 25 observations at the intervention park at T1 & 27 observations at T2 and T3 and all time points at control park

- Two-way between-subjects ANOVAs examined effects of park (intervention vs control) & time-point (T1, vs T2 vs T3) on the number of people in the park & the number walking & very active

- Data were transformed to render distribution normal

Results: Characteristics of park users

	Intervention Park			Control Park		
	T1[a]	T2	T3	T1	T2	T3
Total counts of park users (n)	*235*	*582*	*985*	*83*	*114*	*51*
Male	130	330	517	43	47	30
Female	105	252	468	40	67	21
Age (n)						
2-4 years	14	89	65	1	4	1
5-18 years	57	122	359	14	13	2
Adult	164	371	561	68	97	48

[a] 25 observations were completed at T1 at the intervention park, 27 observations were completed at all other times
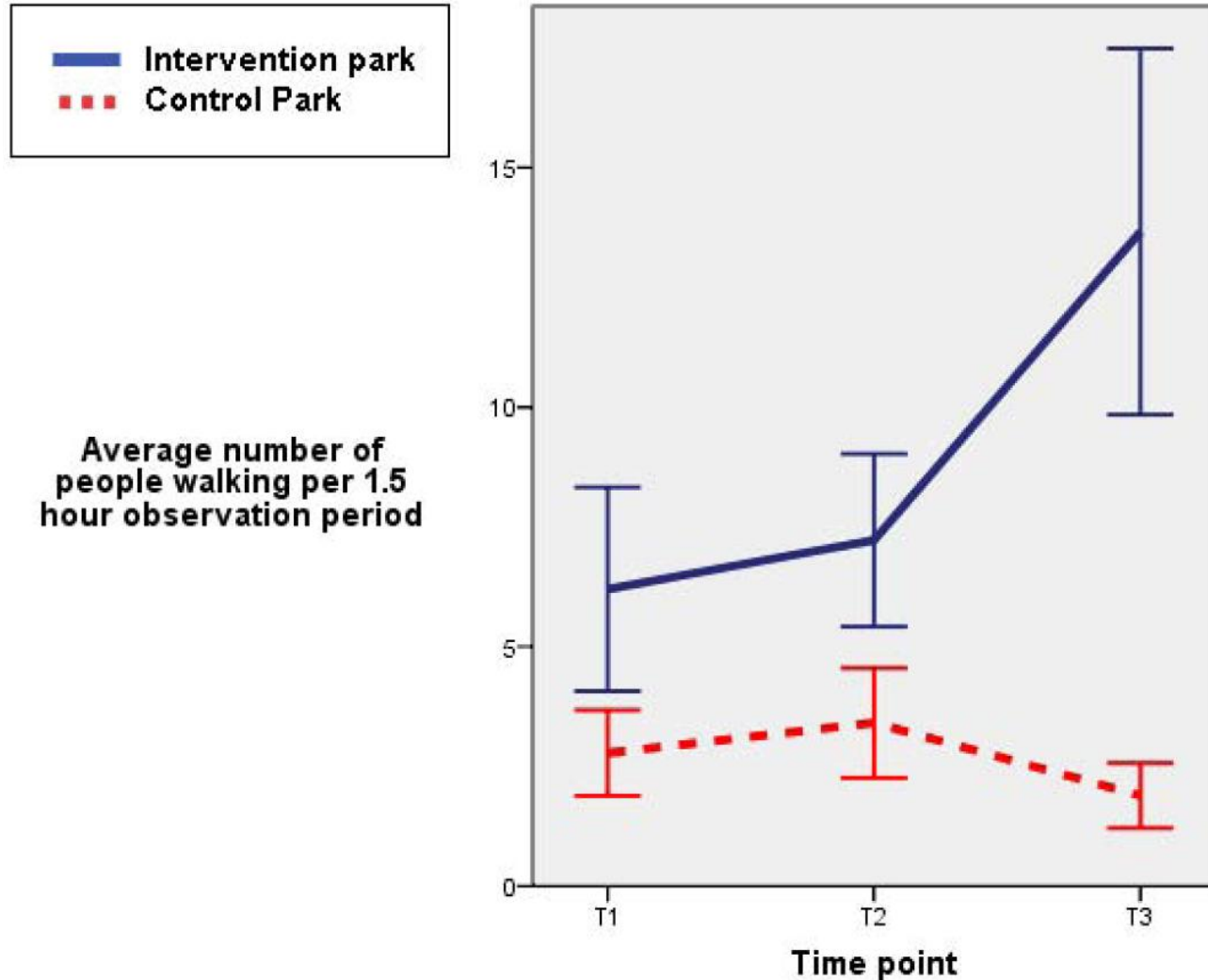
Park Use

	Intervention Park			Control Park		
	T1[a] (%)	T2 (%)	T3 (%)	T1 (%)	T2 (%)	T3 (%)
Time of day (n)						
7.30-9.00am	34	193	167	23	42	19
11.30-1.00pm	68	122	377	21	28	15
3.30-5.00pm	133	267	441	39	44	17
Activity levels (n)						
Walking	155	195	369	75	92	51
Vigorously active	38	137	257	5	1	0

Counts of people in parks
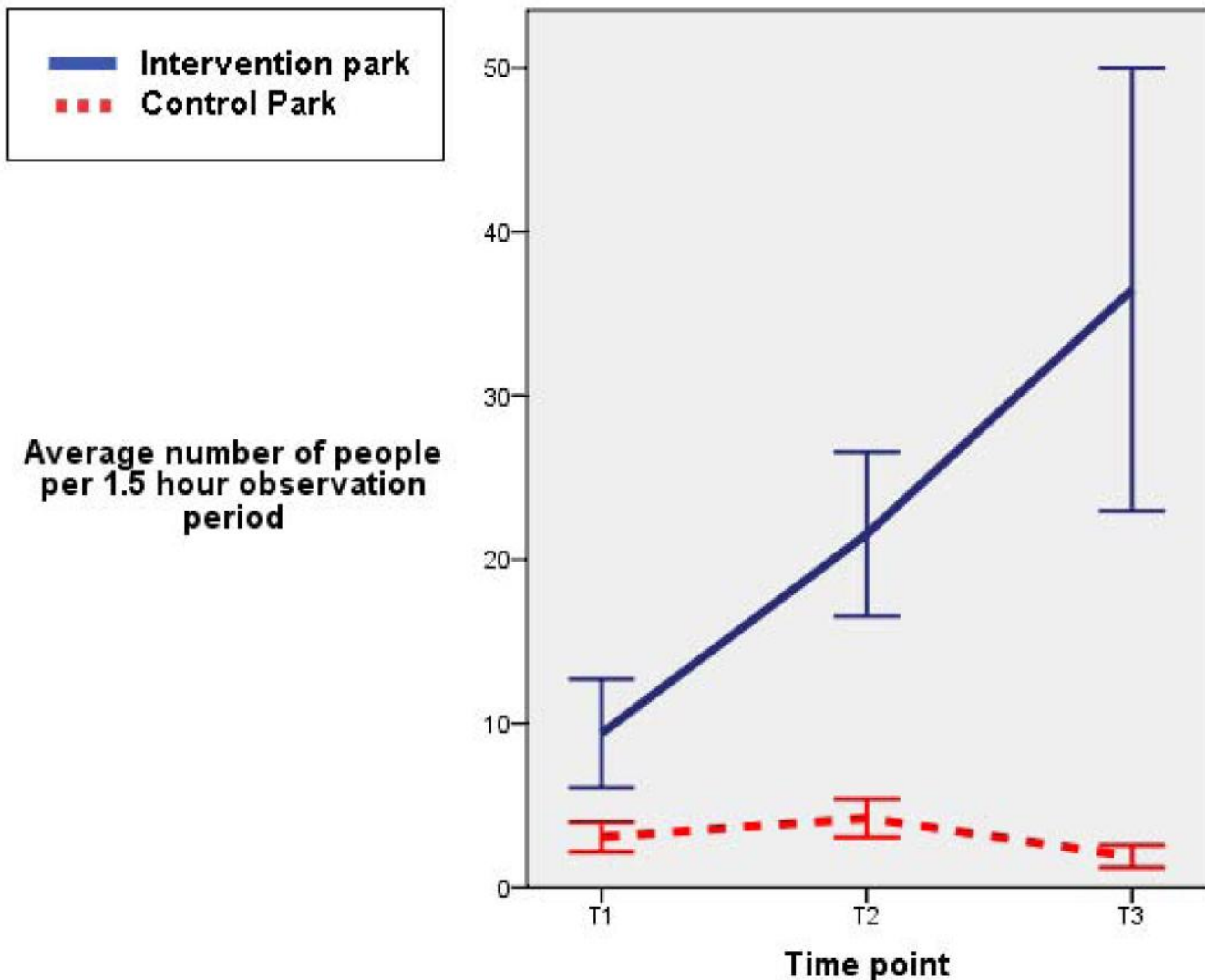
Counts of people <u>walking</u> in park

Counts of people <u>very active</u> in park
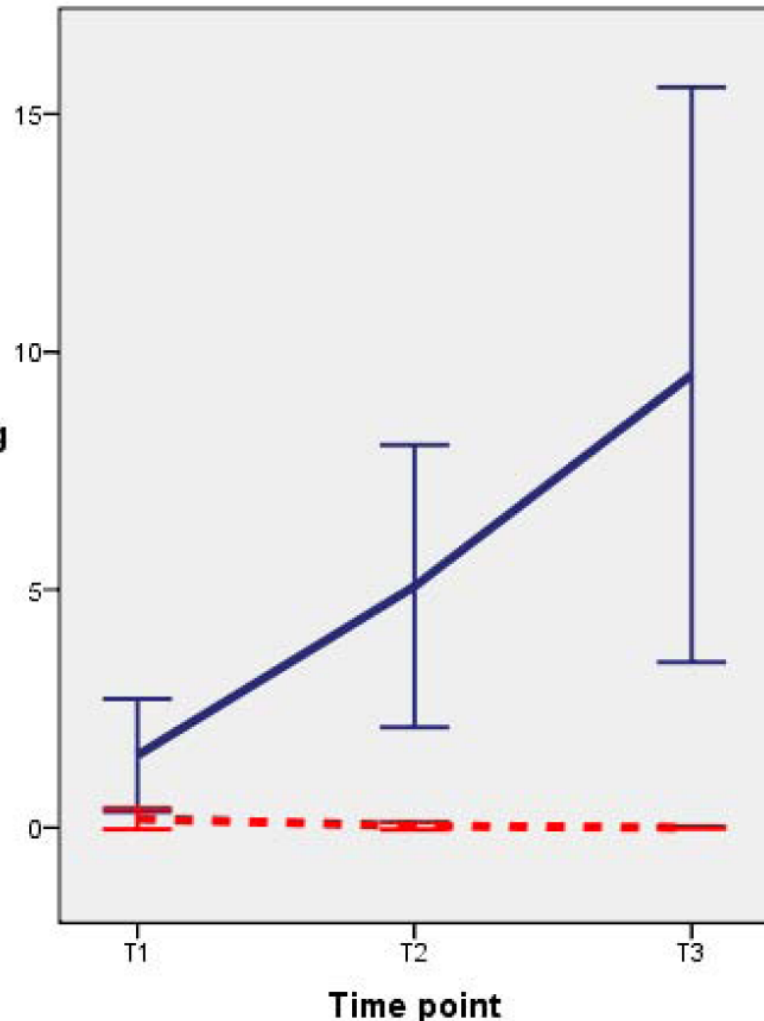
Summary

- This study provides evidence that renewal of parks has potential to positively influence park use & park-based physical activity

- Findings further confirm importance of parks as behaviour settings for physical activity

- Inform future park developments & assist urban planners & designers to develop parks that attract users & facilitate greater levels of physical activity

Conclusions

Limitations:

- One park in area of socio-economic disadvantage

- Control park smaller than intervention park

Strengths:

- Control park

- Objective measures (SOPARC) & 3 time-points

Future Studies

- Multiple parks of different sizes, in neighbourhoods of varying demographics & SES

- What attributes of refurbishment make the difference & are most important for different population groups

- Fenced off-leash dog areas

J Veitch, K Ball, D Crawford, G R Abbott, Jo Salmon Park improvements and park activity: A natural experiment. Am J Prev Med (accepted Feb 2012)

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Survey of residents

All residents living within a 1km buffer of parks were sent a survey at T1 (n=123) and T2 (n=76).

Demographics	Intervention park (n=44)
Age, years (mean)	56
Female (%)	73
Born in Australia (%)	91
Retired (%)	42
No children living with them (%)	77
Dog ownership (%)	72

Satisfaction with intervention park

	T1 %	T2 %	p
Satisfied with the quality of this park	24	70	<0.005
I am satisfied with the facilities	20	64	<0.005
The park is a good place for families to visit	41	79	<0.005
I feel safe there	56	84	<0.01

[a] Significance of differences between time points, assessed using chi-square test of independence

Results
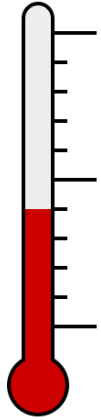
Daily Temperature

T1 = 23°C
T2 = 15°C
T3 = 15°C

Monthly Rainfall

T1 = 62 mm
T2 = 66 mm
T3 =102 mm