ParkPlay - findings report

State of Life Ltd
London

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Executive summary: key findings

The composition of our survey
- 741 responses to the survey (6 of which were blank and 24 were under 16) between May and October 2023. Of the rest, 481 attended ParkPlay and 228 never attended (the latter being predominantly, but not entirely, people who registered for ParkPlay).
- Survey respondents who attended ParkPlay live in MORE deprived areas (IMD decile average 3.84 vs 4.33, where 1 is the most deprived) than those who haven't attended.
- Probably the most striking demographic difference is in the number of children - attendees have one child more on average, and more than double the average for non-attendees (1.73 vs. 0.73).
- Ethnic minorities are underrepresented among non-attendees in our survey sample (8%), while their representation among attendees (18.3%) is close to the population statistics from the registration data.
- Essex is somewhat overrepresented in our survey sample, whereas other regions such as Cumbria and London are underrepresented.
- People with a disability seem to be overrepresented in our survey, but this question in the ParkPlay registration data is asked in a different way and also has a lot of missing answers, so we are not entirely sure about this claim.

Cautiously positive first findings
Compared to people who don't attend ParkPlay, those who do attend report the following (which seem almost too positive):

- 1.2 points higher life satisfaction on the 0-10 scale, similar results for happiness and positive but lower association (around 0.4) with feeling worthwhile
- Higher resilience, reduced loneliness, higher likelihood of volunteering (11%) and increased trust in people in your neighbourhood
- Spending time with one's children more often
- More trust in people from one's neighbourhood
- Higher general health and motivation to do physical activity, but surprisingly lower perceived ability to be physically active
- **Finally, and importantly, when we look at deprivation levels of the area where the respondents live, the highest effect size estimate (1.5) is shown for those in the 20% most deprived areas.**

Frequency, duration of involvement and the need for caution in these findings

- In the Table 4 on page 14 we can see that ==the estimated relationship between attending ParkPlay and life satisfaction becomes stronger with increasing frequencies of attendance== (going up from an uplift of 0.7 points with respect to non-attendees for those who attend less than monthly up to 1.4 points for those who attend every week). So at a first glance, more ParkPlay = better outcomes.
- This pattern of higher effect size estimates for higher frequencies of participation, people living in high deprivation, and people with many children - are replicated if we consider happiness or resilience (being able to achieve one's goals) as an outcome.
- ==However, in terms of duration of attendance there is no clear pattern. Those who just recently started going to ParkPlay seem to have similar (or even higher) levels of life satisfaction compared to those who have been going for a long time.== This finding is somewhat peculiar and we discuss it in more detail.
- To dig deeper into this issue, we looked at demographics split by how long the respondents have been attending. We find that people who came to ParkPlay for the first time were from considerably more affluent areas (average IMD decile 5.40 vs. 3.84 for all respondents who attended). They were also the least likely to have a limiting disability (10.9%). Furthermore, they were the most likely to complete the survey at or immediately after attending ParkPlay, which we find is associated with higher wellbeing due to the focusing effect.
- ==Given the above, we think it is wise to account for these 'first timers' who generate early selection bias and focusing effects. In fact, we do so in our analysis where we consider different frequencies of participation at ParkPlay.==

On page 19 we use the WELLBY measure to provide a very cautious estimate of ParkPlay's potential wellbeing impact and return on investment. We do not publish this here because it is essential to read the full report, caveats and limitations.

While this report is good evidence of the positive role of ParkPlay - we would suggest more work to interrogate the effects before committing to a more certain economic valuation.

Introduction

ParkPlay is a programme of unstructured, community-led activities in local parks, where participants meet, move around, and play. Essex County Council commissioned State of Life to perform an evaluation of the impact of this programme on individuals' personal wellbeing and other related outcomes, in Essex and also elsewhere in England, and to estimate the corresponding social value in monetary terms.

Essex County Council (ECC) uses Impact Reporting's Progressive Web Application (PWA) to collect online survey data from participants of programmes that it supports. State of Life have previously helped ECC on numerous occasions with designing surveys to incorporate pre-validated national measures of wellbeing and other socially desirable outcomes. This study adapts one of the existing surveys to collect the necessary data for the wellbeing impact measurement of ParkPlay and analyses the resulting data to reach the above objective.

Methodology

The data

We received 741 responses to the survey (6 of which were blank) between May and October 2023. Because only 24 responses came from people under 16 years old, and because the wellbeing levels of children and young people tend to be quite different from those of adults, we restricted our analysis to people aged 16 and over only.

The data was collected through an online survey, with respondents being recruited via several means: an email sent out to the mailing list comprising all people registered for ParkPlay (who may or may not have actually attended); announcements to participants by ParkPlay volunteers at ParkPlay events encouraging people to complete the survey; and from the Essex Community Responder Panel (who might not have been registered for ParkPlay altogether).

The model

We perform Ordinary Least Squares (OLS) linear regression to estimate the relationship between outcomes and participation in ParkPlay, while accounting for (holding constant) a

range of observable demographic factors that are known to correlate with wellbeing. The data is not longitudinal. Therefore the regression models follow this pattern:

$$O_i = \alpha + \beta * PP_i + X_i * \gamma + \epsilon_i \ (1)$$

Where O_i is the value for individual i of the dependent (outcome) variable of the model, PP_i is the variable indicating ParkPlay attendance, and therefore the coefficient β is the difference in the outcome associated with attending ParkPlay. X_i is a vector of (mainly) demographic control variables and γ is a vector of the respective regression coefficients of these variables. α is the constant term and ϵ_i is the error term.

The variables

The main outcome variable fitted through the regression model is **life satisfaction**, measured on a scale of 0 to 10 via the ONS standard question: "Overall, how satisfied are you with your life nowadays?". This is also the only outcome used later on for wellbeing valuation.

Other outcome variables that have been considered are:

- Overall, how happy did you feel yesterday? (0 - not at all to 10 - completely)
- Overall, how anxious did you feel yesterday? (0 to 10)
- Overall, to what extent do you feel the things in your life are worthwhile? (0 to 10)
- In general, would you say your health is…? (1 - poor to 5 - excellent)
- I feel that I have the ability to be physically active. (1 - str. disagree to 5 - str. agree)
- I feel that I have the opportunity to be physically active. (as above)
- I find exercise enjoyable and satisfying. (as above)
- In the past week, on how many days have you done a total of 30 minutes or more of physical activity, which was enough to raise your breathing rate? (0 to 7)
- I can achieve most of the goals I set myself. (1 - str. disagree to 5 - str. agree)
- I am able to deal efficiently with unexpected events. (1 - not at all true, 5 - exactly true)
- How often do you feel lonely? (1 - hardly ever or never; 2 - some of the time; 3 - often)
- Number of close friends, capped at 10 (if answer >=10, it is reset to 10)
- Most people in your local area can be trusted (1 - str. disagree to 5 - str. agree)
- I feel like I belong to this neighbourhood (as above)
- How safe do you feel walking alone in your local area after dark? (1 - very unsafe to 4 - very safe)

Each of the outcomes above is used as the left-hand side variable O_i in a separate regression model following equation (1).

In terms of ParkPlay participation (the variable PP_i from equation 1), the base model uses a binary variable equal to 1 if individual i has attended ParkPlay and 0 otherwise. However, in several additional models we replace this with a categorical variable that accounts for different frequencies or durations of participation[1]. Below is a list of the participation variables and their categories (there is a separate model for every ONE variable and it includes ALL its categories in the same model):

1. How long have you been going to ParkPlay?
    a. 12 months or more
    b. At least 6 months but less than 12 months
    c. At least 3 months but less than 6 months
    d. At least 1 month but less than 3 months
    e. Less than a month
    f. It's my first time
2. How often do you go to ParkPlay?
    a. Every week
    b. At least monthly but less than weekly
    c. Less than once a month
    d. Only attended once (intentionally separated during data processing to avoid misleading frequency data)
3. I usually go to ParkPlay:
    a. With my friend(s)
    b. With my family
    c. On my own
4. Where do you attend ParkPlay?
    a. Essex
    b. Elsewhere in England

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[1] Categorical (factor) variables enter the model in the form of several binary variables that indicate belonging to each category except the base category (which is 'haven't attended ParkPlay' in all instances).

Furthermore, we run regression models that can estimate different effects for different subgroups of ParkPlay participants. This is achieved by generating interaction variables - additional variables that indicate different subgroups of the data based on two criteria (participation in ParkPlay and IMD decile, for example) - and including these additional variables in the regression model in a manner similar to the above (as categorical variables). This is done for the following subgroups:

1. Local area deprivation:
   a. IMD deciles 1-2 (most deprived)
   b. IMD deciles 3-4
   c. IMD deciles 5-7
   d. IMD deciles 8-10 (least deprived)
2. Number of children
   a. 0
   b. 1
   c. 2
   d. 3 or more

Every regression model that we run also includes the following control variables (they are all categorical variables and enter the regression model in the same way as described earlier. The base category for each variable is *italicised* below):

- Gender (*female*, male)
- Age (*16-24*, 25-34, 35-44, 45-54, 55-64, 65+)
- Ethnic minority status (*white*, other ethnic backgrounds)
- Marital status (*single*, married or civil partner, living as a couple, sep./wid./div.)
- Number of children (*0*, 1, 2, 3 or more)
- *No disability*, non-limiting disability, limiting disability
- Education (*University degree or above*, other HE, A-levels, GCSE, other qual., no qual.)
- Employment (*Full-time*, part-time, unemployed, retired and 4 other categories)
- Local area deprivation (*IMD deciles 1-2*, 3-4, 5-7, 8-10)
- Living in an *urban* vs. rural area
- General health (*poor*, fair, good, very good, excellent) - only when it is not an outcome

Wellbeing valuation

Valuation is based on the coefficients of different kinds of ParkPlay attendance from the regression models with life satisfaction as the outcome variable. In line with the recent [wellbeing supplementary guidance to the Green Book](#) published by HM Treasury, the **wellbeing value per person per year** of an intervention can be obtained by multiplying the regression coefficient of that intervention on life satisfaction by £13,000. Note that there is an underlying assumption on the duration of impact - we assume that this is a lasting intervention with continuous effects (that is, one can participate in ParkPlay for as long as one likes, and will only experience the effect as long as one is participating). In this case, this value will be generated for every year that every person participates in ParkPlay.

Key findings (full results in appendix)

The demographics of our respondents

In the table below we look at the demographic composition of those who completed our survey and whether there are any key differences between the respondents who have not attended ParkPlay and those who have. Note that the table excludes the respondents who were aged under 16 and also those who did not answer whether they attended ParkPlay or not.

For comparison we attach the statistics obtained from processing ParkPlay's registration data (also excluding ages under 16), which covers everyone who registered for ParkPlay from March 2021 up to mid-2023. We were fortunate to be granted access to this data, which can provide us some insight into the representativeness of our sample.

Table 1. Demographics - ParkPlay survey vs. registration data

Source	State of Life ParkPlay survey		Parkplay registration data	
ParkPlay attendance	**Never attended ParkPlay**	**Attended ParkPlay**	**Never attended ParkPlay**	**Attended ParkPlay**
Sample Size	228	481	2001	1847
Age	44.61 (223)	38.39 (457)	38.93 (2000)	39.60 (1845)
Index of Multiple Deprivation 2019 decile, 1 - most deprived	4.33 (187)	3.84 (394)	4.61 (1973)	4.46 (1762)
In the past week, on how many days have you done a total of 30 mins or more of physical activity?	3.18 (227)	3.91 (477)	2.73 (2000)	2.86 (1845)
Duration of participation in ParkPlay				
Once only / It's my first time		11.5% (55/478)		36.5% (675/1847)
Less than a month		8.4% (40/478)		10.6% (195/1847)
At least 1 month but less than 3 months		10.9% (52/478)		12.8% (236/1847)
At least 3 months but less than 6 months		15.3% (73/478)		9.8% (181/1847)
At least 6 months but less than 12 months		21.8% (104/478)		15.3% (282/1847)
12 months or more		32.2% (154/478)		15.1% (278/1847)
Frequency of attending ParkPlay				
Less than once a month		11.9% (57/478)		16.2% (300/1847)
At least monthly but less than weekly		30.8% (147/478)		40.5% (748/1847)

Every week		45.8% (219/478)		6.7% (124/1847)
Only attended once		11.5% (55/478)		36.5% (675/1847)
Gender				
Female	74.8% (169/226)	62.6% (298/476)	70.2% (1405/2001)	65.5% (1210/1847)
Male	25.2% (57/226)	37.4% (178/476)	29.2% (584/2001)	33.9% (627/1847)
Not provided			0.1% (2/2001)	0.3% (6/1847)
Other			0.1% (2/2001)	0.1% (1/1847)
Prefer not to say			0.4% (8/2001)	0.2% (3/1847)
Age in 10-year bins				
16-24	8.1% (18/223)	3.9% (18/457)	4.5% (90/2000)	6.3% (116/1845)
25-34	14.3% (32/223)	29.8% (136/457)	24.4% (488/2000)	19.0% (351/1845)
35-44	28.3% (63/223)	45.3% (207/457)	52.0% (1040/2000)	50.5% (931/1845)
45-54	22.9% (51/223)	15.3% (70/457)	13.5% (270/2000)	17.7% (327/1845)
55-64	22.9% (51/223)	3.7% (17/457)	3.5% (70/2000)	4.2% (77/1845)
65+	3.6% (8/223)	2.0% (9/457)	2.1% (42/2000)	2.3% (43/1845)
Local deprivation (IMD) 2019 in 3 categories				
IMD deciles 1-2	25.7% (48/187)	36.8% (145/394)	27.4% (540/1973)	26.4% (465/1762)
IMD deciles 3-4	41.2% (77/187)	31.0% (122/394)	25.6% (505/1973)	29.1% (513/1762)
IMD deciles 5-7	19.8% (37/187)	17.0% (67/394)	28.2% (557/1973)	28.4% (500/1762)
IMD deciles 8-10	13.4% (25/187)	15.2% (60/394)	18.8% (371/1973)	16.1% (284/1762)
Broad ethnic group, 5 categories				
Asian	3.1% (7/226)	10.5% (50/475)	10.5% (174/1650)	10.7% (161/1500)
Black	0.9% (2/226)	2.7% (13/475)	3.3% (55/1650)	1.6% (24/1500)
Mixed	1.3% (3/226)	3.8% (18/475)	2.5% (41/1650)	3.1% (46/1500)
Other	2.7% (6/226)	1.3% (6/475)	1.4% (23/1650)	0.7% (11/1500)
White	92.0% (208/226)	81.7% (388/475)	82.2% (1357/1650)	83.9% (1258/1500)
Region				
Cornwall		7.8% (37/475)	5.3% (104/1975)	5.8% (102/1761)
County Durham		12.2% (58/475)	8.3% (164/1975)	8.3% (147/1761)
Cumbria		9.1% (43/475)	17.2% (339/1975)	22.3% (392/1761)
Essex (incl. Southend and Thurrock)		46.9% (223/475)	36.4% (718/1975)	35.3% (621/1761)
Leeds		1.7% (8/475)	2.6% (52/1975)	2.2% (38/1761)
Leicestershire & Rutland		3.6% (17/475)	0.9% (18/1975)	1.8% (31/1761)
London		13.7% (65/475)	23.4% (462/1975)	21.4% (376/1761)
Other		5.0% (24/475)	6.0% (118/1975)	3.1% (54/1761)
Disability vs no disability				
No disability	62.1% (139/224)	69.4% (327/471)	85.9% (1308/1522)	89.1% (1211/1359)

Non-limiting disability	13.8% (31/224)	8.9% (42/471)	14.1% (214/1522)	10.9% (148/1359)
Limiting disability	24.1% (54/224)	21.7% (102/471)		

Note: number of observations behind each statistic is provided in parentheses.

Here are some key insights we can extract from the table above:

- Survey respondents who attended ParkPlay live in MORE deprived areas (IMD decile average 3.84 vs 4.33) than those who haven't attended. They are also below the average local area deprivation among the entire pool of people who attended ParkPlay, whereas our survey respondents who haven't attended are rather close to the total population that registered for ParkPlay but never attended.
- Survey respondents who attended ParkPlay have a similar average age to the entire population of ParkPlay registrants, but survey respondents who haven't attended are about 5-6 years older on average.
- There is a higher proportion of males among attendees, both in the survey sample (37.4% vs 25.2%) and in the registration data (33.9% vs. 29.2%), although the discrepancy in the survey sample is considerably higher.
- Ethnic minorities are underrepresented among non-attendees in our survey sample (8%), while their share among attendees (18.3%) is close to the population statistics from the registration data.
- Essex is somewhat overrepresented in our survey sample, whereas other regions such as Cumbria and London are underrepresented.
- People with a disability seem to be overrepresented in our survey, but this question in the ParkPlay registration data is being asked in a different way and also has a lot of missing answers, so we are not entirely sure about this claim.

Outcome levels and other key statistics

Here are the additional statistics collected in the ParkPlay survey (beyond those collected at registration, so comparison to registration data is not possible anymore). In the table below we can see how these statistics vary between respondents (aged 16 or above) who have attended ParkPlay and those who haven't.

Table 2. Outcomes and other descriptive statistics - ParkPlay survey

Source	State of Life ParkPlay survey	
ParkPlay attendance	Never attended ParkPlay	Attended ParkPlay

Sample Size	228	481
Overall, how satisfied are you with your life nowadays?	6.56 (226)	7.89 (478)
Overall, how happy did you feel yesterday?	6.62 (227)	7.81 (475)
Overall, how anxious did you feel yesterday?	4.30 (227)	4.03 (476)
Overall, to what extent do you feel the things in your life are worthwhile?	7.41 (227)	8.11 (477)
In general, would you say your health is…?	3.00 (227)	3.41 (478)
I feel that I have the ability to be physically active.	3.99 (227)	4.17 (478)
I feel that I have the opportunity to be physically active.	3.70 (226)	4.06 (475)
I find exercise enjoyable and satisfying.	3.65 (227)	4.12 (477)
In the past week, on how many days have you done a total of 30 minutes or more of physical activity?	3.18 (227)	3.91 (477)
I can achieve most of the goals I set myself.	3.43 (226)	3.85 (473)
I am able to deal efficiently with unexpected events.	3.00 (227)	3.18 (476)
How often do you feel lonely?	1.66 (227)	1.55 (477)
Number of close friends, capped at 10	3.97 (201)	4.04 (417)
Most people in your local area can be trusted	3.20 (226)	3.47 (477)
I feel like I belong to this neighbourhood	3.54 (226)	3.63 (474)
How safe do you feel walking alone in your local area after dark?	2.46 (227)	2.67 (478)
How many children (under 16) are in your household?	0.73 (220)	1.73 (454)
Are you completing this survey:		
At ParkPlay or immediately after attending		26.4% (127/481)
During the week after attending ParkPlay		41.4% (199/481)
Some time after attending ParkPlay (a few weeks or more)		32.2% (155/481)
I usually go to ParkPlay:		
On my own		5.0% (24/476)
With my family		80.5% (383/476)
With my friend(s)		14.5% (69/476)
What is your legal marital or civil partnership status?		
Single and never married and never in a civil partnership	21.4% (48/224)	14.6% (69/473)
Married	56.3% (126/224)	56.7% (268/473)
In a registered same-sex civil partnership	0.9% (2/224)	1.7% (8/473)
Living as a couple	11.6% (26/224)	19.7% (93/473)
Divorced / previously in a civil partnership	6.3% (14/224)	4.2% (20/473)
Separated, but still legally married / in a civil partnership	2.7% (6/224)	2.7% (13/473)
Widowed / Surviving partner	0.9% (2/224)	0.4% (2/473)
Number of children in household		
0	59.1% (130/220)	14.1% (64/454)

1	15.0% (33/220)	28.2% (128/454)
2	20.9% (46/220)	39.4% (179/454)
3 or more	5.0% (11/220)	18.3% (83/454)
What is your highest educational qualification?		
University degree or above	38.8% (87/224)	37.4% (178/476)
Other higher education below degree level (HNC, HND etc.)	14.7% (33/224)	12.2% (58/476)
A-levels or equivalent	18.3% (41/224)	17.0% (81/476)
GCSE or equivalent	20.1% (45/224)	23.3% (111/476)
Other qualifications	3.6% (8/224)	6.9% (33/476)
No qualifications	4.5% (10/224)	3.2% (15/476)
What is your current working status?		
Working full-time	49.1% (110/224)	54.8% (261/476)
Working part-time	21.4% (48/224)	19.7% (94/476)
Unemployed - less that 12 months	1.3% (3/224)	1.5% (7/476)
Unemployed (long-term) - more than 12 months	1.8% (4/224)	2.1% (10/476)
Not working - retired	8.0% (18/224)	2.7% (13/476)
Not working – looking after house/children	6.3% (14/224)	10.1% (48/476)
Not working – long-term sick or disabled	4.5% (10/224)	2.5% (12/476)
Student – in full-time education	3.6% (8/224)	1.9% (9/476)
Student – in part-time education	0.4% (1/224)	0.8% (4/476)
Other	3.6% (8/224)	3.8% (18/476)

Note: please refer to the methodology section ("The variables" subheading) for the answer scales of the outcome variables.

Probably the most striking demographic difference is in the number of children - attendees have one child more on average, and more than double the average for non-attendees (1.73 vs. 0.73). 59% of non-attendees are childless vs. only 14% of attendees. Also we can see that **ParkPlay is mainly attended with family** (80%). Only 5% of attending respondents attended on their own.

Other demographics not covered above - marital status, education and employment - seem to be relatively similar across the two subgroups.

Outcomes - and particularly personal wellbeing, but also health and attitudes to physical activity - seem to be a lot more positive for attendees at a first glance. However, we examine this in more detail in our regression analysis, so that we can adjust (control) for the

demographic differences across the two subgroups, which have been identified in this and the previous subsection.

Regression results

Below we can see that attending ParkPlay is associated with the following differences in outcomes on average:
- 1.2 points higher life satisfaction on the 0-10 scale, similar results for happiness and positive but lower association with feeling worthwhile
- Higher resilience (feeling able to achieve one's goals and solve one's problems)
- Less loneliness
- Higher likelihood of volunteering (by ca. 11 percentage points)
- Spending time with one's children more often
- More trust in people from one's neighbourhood
- Higher general health and motivation to do physical activity, but surprisingly lower perceived ability to be physically active
- The results are positive but not statistically significant for anxiety, days of physical activity, number of close friends, perceived belonging to neighbourhood and safety of local area

Table 3. Regression results - base model specification, different outcomes

Effect of ParkPlay on:	
Life Satisfaction (0 to 10)	1.199***
Happiness (0 to 10)	1.043***
Anxiety (0 - not al all anxious to 10 - completely anxious)	-0.358
Worthwhile (0 to 10)	0.440**
Days in the past week done physical activity (0 to 7)	0.223
Activity level (1 to 3 - a recode of the above into 3 categories)	0.063
I feel that I have the ability to be physically active (1 to 5)	-0.141**
I feel that I have the opportunity to be physically active (1 to 5)	0.321***
I find exercise enjoyable and satisfying (1 to 5)	0.278***
I can achieve most of the goals I set myself (1 to 5)	0.294***
I am able to deal efficiently with unexpected events (1 to 4)	0.166**
How often do you feel lonely? (1 - hardly/never to 3 - often/always)	-0.168***
Volunteered in the last 12 months (0 - no, 1 - yes)	0.109**
How many close friends would you say you have? (top-coded at 10)	0.029
How often do you and your children spend time together? (1 to 6)	0.490***

Most people in your local area can be trusted (1 to 5)	0.262***
I feel like I belong to this neighbourhood (1 to 5)	0.145
How safe do you feel walking alone in your local area after dark? (1 to 4)	0.017
In general, would you say your health is…? (1 to 5)	0.247**

We've also considered an alternative model specification where we controlled for motivation to exercise ('I find exercise enjoyable and satisfying'), and another one where we controlled for physical activity (days in the past week). Both are theoretically important potential omitted variables that may be responsible for part of the relationship between physical activity and outcomes such as wellbeing or health.

However, neither controlling for motivation nor for physical activity significantly alters the regression coefficients of attending ParkPlay on different outcomes presented above. The exception is the coefficient on general health, which goes down by half and ceases to be statistically significant if we control for motivation. We therefore do not focus on these results, but they are available in the appendix.

Furthermore, we have conducted disaggregated analysis by replacing the simple binary variable for having attended ParkPlay with more detailed categorical variables as specified in the methodology section. Here is what we found:

Table 4. Regression analysis - disaggregated treatment variables

Group ↓ / Effect of ParkPlay on →	Life sat.	Happiness	Resilience	Trust	Loneliness
I haven't attended ParkPlay (always the ref. group)	0.000	0.000	0.000	0.000	0.000
Attended ParkPlay (base model)	1.199***	1.043***	0.294***	0.262***	-0.168***
It's my first time	1.132***	1.096***	0.232	0.413**	-0.035
Less than a month	1.374***	1.075***	0.354**	0.115	-0.095
At least 1 month but less than 3 months	1.494***	1.106***	0.502***	0.312**	-0.206**
At least 3 months but less than 6 months	1.019***	1.308***	0.228*	0.190	-0.188*
At least 6 months but less than 12 months	1.110***	0.890***	0.189	0.166	-0.193**
12 months or more	1.217***	1.004***	0.324***	0.300***	-0.193***
Less than once a month	0.726**	0.778**	0.185	0.208	-0.097
At least monthly but less than weekly	1.138***	1.001***	0.227**	0.309***	-0.228***
Every week	1.399***	1.138***	0.380***	0.213**	-0.193***
Only attended once	1.151***	1.105***	0.240	0.418**	-0.039
On my own	1.086***	0.903**	0.021	0.316	-0.023
With my family	1.188***	1.030***	0.331***	0.205**	-0.195***
With my friend(s)	1.431***	1.333***	0.318**	0.703***	-0.115
Attended ParkPlay # IMD deciles 1-2	1.510***	1.444***	0.368***	0.317**	-0.196

Attended ParkPlay # IMD deciles 3-4	1.198***	1.182***	0.339**	0.286*	-0.141
Attended ParkPlay # IMD deciles 5-7	1.238***	0.446	0.276*	0.256	-0.217*
Attended ParkPlay # IMD deciles 8-10	0.659	0.873*	0.114	0.140	-0.116
Attended ParkPlay # 0 (children)	1.164***	0.845***	0.101	0.403**	-0.208**
Attended ParkPlay # 1	1.331***	1.110**	0.371**	0.109	-0.237**
Attended ParkPlay # 2	0.919***	1.038***	0.211	0.296*	-0.139
Attended ParkPlay # 3 or more	1.980***	1.434**	0.915***	0.084	-0.037
Essex	1.192***	1.051***	0.260**	0.208**	-0.115
Elsewhere in England	1.206***	1.032***	0.318***	0.295***	-0.239***

In the table above we can see that the estimated relationship between attending ParkPlay and life satisfaction becomes stronger with increasing frequencies of attendance (going up from an uplift of 0.7 points with respect to non-attendees for those who attend less than monthly up to 1.4 points for those who attend every week[2]).

However, in terms of duration of attendance there is no clear pattern, and those who just recently started going to ParkPlay seem to have similar (or even higher) levels of life satisfaction to those who have been going for a long time. This finding is somewhat peculiar and we discuss it in more detail later on. But there is a more natural pattern for the estimated effects on loneliness reduction, where the respondents need to have participated for at least a month to experience a stronger and statistically significant reduction.

In terms of who one attends ParkPlay with, the highest wellbeing levels are displayed by those who attend with friends (a difference of 1.4 w.r.t. non-attendees), while those who attend with family or on their own show a slightly lower life satisfaction uplift of around 1.1-1.2.

When we look at deprivation levels of the area where the respondents live, the highest effect size estimate (1.5) is shown for those in the 20% most deprived areas, while the 30% least deprived areas have a considerably lower estimated association; the remaining local area deprivation categories have an effect size close to the base model (that is the average effect estimate for everyone in the survey).

Families with many children (at least 3) also show the strongest relationship between ParkPlay and wellbeing - for them life satisfaction is higher by nearly 2 points on the 0-10 scale. However, this estimate may be less reliable as there are only 11 non-attendees with 3 or

[2] Both categories exclude those who said it's their first time at ParkPlay, who were moved into a separate category as their reported frequency is less meaningful in this case.

more children in our survey. This is also no clear pattern when we look at the effect size estimate for respondents with 0, 1 and 2 children.

Finally, there is practically no difference in the estimated effect size of attending ParkPlay on wellbeing for participants in Essex compared to elsewhere in England.

The patterns above - higher effect size estimates for higher frequencies of participation, people living in high deprivation, and people with many children - are replicated if we consider happiness or resilience (being able to achieve one's goals) as an outcome.

But most of these patterns break down if we take trust or loneliness as the outcome variable in the regression. For these two outcomes, the strongest effect is shown for those who have no children, and for loneliness there is also no clear relationship with local area deprivation. Loneliness is also the only one of the 5 outcomes above where attending with family has the biggest coefficient.

There is another disaggregation we looked at that is worth mentioning - namely that the estimated effect size is higher when the survey was completed immediately after or at the event rather than some time afterwards. This is indicative of what is known as the *focusing effect* - where the experience of ParkPlay plays a much more important role in the respondent's mind when the survey is taken at or immediately after the event, thus leading to an amplification of the feeling of happiness associated with participation.

Table 5. Effect of ParkPlay attendance on life satisfaction by survey completion time

I haven't attended ParkPlay	0.000
At ParkPlay or immediately after attending	1.442***
During the week after attending ParkPlay	1.276***
Some time after attending ParkPlay (a few weeks or more)	0.943***

Discussion and limitations

From the theoretical foundations of econometrics, the above findings do not establish causality, and other explanations than a direct effect of participating in ParkPlay may exist for the relationship between having attended ParkPlay and higher levels of life satisfaction. For example, people with higher outcome levels could be more likely to choose to attend ParkPlay rather than the other way around (reverse causality). Intuitively this is most likely to happen with outcomes such as health and motivation to do physical activity, but also with wellbeing and outcomes related to community/socialising.

Furthermore, there are other characteristics that we do not observe in our survey (because it is difficult to do so), such as personality traits, that may be a reason for making someone happier and also more likely to go to ParkPlay (omitted variable bias). In the demographics subsection we saw that the composition of the attendee and non-attendee subgroups is different (selection bias). This means that the two subgroups are also likely to be different in terms of the unobserved variables, and are therefore not an ideal counterfactual for each other when trying to isolate the effect of ParkPlay attendance.

Moving from the theoretical issues above to practical considerations, our first concern relates to the fact that the main effect size estimate of ParkPlay on life satisfaction - 1.2 in the base model - is much too big to be plausible for a short weekly leisure intervention that is not a central element of a person's life. Generally State of Life's wellbeing research to date has shown that periodic free time activities (volunteering, attending church, membership of certain community groups and activities, and even physical activity in general for 150+ minutes/week) do not correlate with more than a 0.1-0.2 point increase in life satisfaction, and effects of 1 point or more are only achieved by major life changes such as getting out of unemployment or improving one's health.

Secondly, we observe strange results for the effect size of participation over time - the 'how long have you been attending ParkPlay' question. We would expect to see a rise in the effect on wellbeing (and other outcomes) the longer you participate, that is, a person who has been coming for a year should be happier and healthier than someone who has just started. In the case of Parkplay we do not see such a pattern - but rather the effect size does not have a trend, fluctuating between 1 and 1.5 points of life satisfaction across all duration categories.

The two considerations above make it likely that selection bias is driving these findings more than the actual impact of ParkPlay. This means that, for whatever reason (such as the method of disseminating the survey, the peculiarities of the people that were easiest to reach or more likely to respond etc.), the non-attendee subgroup of our sample was drawn from a less happy segment of society than the attendee subgroup.

To look deeper into this issue, we have looked at the demographic variables in the data and how they differ across subgroups defined by different durations of participation. There are likely to also be unobserved differences (which we cannot control for in the regression), but the most we can do is look at the variables actually observed in the data (which we do control for) that could indicate the possibility of other, unobserved differences.

For example, people who came to ParkPlay for the first time were from considerably more affluent areas (average IMD decile 5.40 vs. 3.84 for all respondents who attended). They were also the least likely to have a limiting disability (10.9%). Furthermore, they were the most likely to complete the survey at or immediately after attending ParkPlay, which as we have seen earlier, is associated with higher wellbeing due to the focusing effect.

However, the demographic differences are not as big for the frequency of participation at ParkPlay, especially after setting aside the respondents who only participated once. One notable exception is still the time of completion, with those who participate more frequently being considerably more likely to have filled in the survey sooner after their last ParkPlay experience, thus being subject to the focusing effect as well.

Tentative wellbeing valuation and cost-benefit analysis

Wellbeing values per person
Below we provide some tentative wellbeing values based on the key regression coefficients in Table 4. We have rounded these coefficients to the nearest 0.1 to avoid a false impression of accuracy. These are per person per year values based on the assumption of a constant effect of continuous participation in ParkPlay - namely, the monetary value in the table is generated for every person that attends ParkPlay and for every year that that person continues to attend.

Table 6. Key wellbeing values per person per year

Category	Regression coefficient (WELLBYs), rounded	Monetary equivalent value (per person per year)
Attended ParkPlay (base model - average for everyone)	1.2	£15,600
Attended ParkPlay less than once a month	0.7	£9,100
Attended ParkPlay every week	1.4	£18,200
Attended ParkPlay from deprived areas (IMD deciles 1-2)	1.5	£19,500
Attended ParkPlay with 3 or more children	2	£26,000

The finding we have more confidence in is the difference between attending ParkPlay less than once a month and attending every week. This is because the demographic differences between these two groups are less pronounced (than the differences between attendees and non-attendees), as mentioned earlier in the limitations section and the tabulation by frequency that is accessible in the appendix.

This difference between one person attending ParkPlay less than once a month and attending every week, over the course of one year, would be around 0.7 (1.4 minus 0.7) WELLBYs. This is equivalent to a monetary value of £9,100 per person, per year.

Costs and participation numbers

The management of ParkPlay has provided us with information regarding the estimated number of unique participants at all ParkPlay events held in the calendar year 2022, as well as ParkPlay's operating costs for the respective year - £497,314, of which £300,000 is attributed by ParkPlay management to organising events for adults, and the remainder - for children.

Regarding participation, in 2022 there were 4,892 distinct attendees at ParkPlays across the country, of which 1,989 adults and 2,903 children. If we are conservative and apply the wellbeing value above to the circa 2000 adults only (since our analysis was ultimately only based on respondents over 16), the wellbeing value generated by ParkPlay in 2022 would be estimated at £9,100 * 2,000 = £18.2 million.

Relative to the operating costs of £300,000 incurred by ParkPlay in 2022 that can be attributed to adult participation, this would result in an estimated Social Benefit-Cost ratio (which is the average wellbeing value generated for every pound spent on organising ParkPlay) of 60.7.

Such high benefit-cost ratios are not unusual for grassroots, community-based interventions that are strongly reliant on volunteers, as the costs are correspondingly low. Nonetheless, we are uncertain of the validity of these wellbeing value and benefit-cost ratio estimates - hence the additional adjustments we propose next and disclaimer further below.

Further discounting for additionality (a.k.a. deadweight)
We would recommend discounting the estimated wellbeing benefits further due to:

1. The uncertainty of the duration of the wellbeing impacts i.e. we have no evidence that the benefits last 12 months if participation stops;
2. The ultimately unresolved selection bias issues discussed extensively up to this point;
3. The additionality of ParkPlay, which is likely to be considerably less than 100%. Put in plain words, if ParkPlay were not taking place, it's likely that those already motivated to be active would have found something else to do.

The three considerations above would all lead to the true benefit of ParkPlay being smaller than the £18.2 million figure presented earlier. Applying a range of different flat-rate discounts to the estimated wellbeing benefit to take these into account is an approach we took with our work with parkrun in 2021[3], and we also suggest doing this now.

Table 7. Additional discounting and cost-benefit metrics

Life Satisfaction increase	Value	Attendees	Discount applied	Potential value of ParkPlay	Costs	Return on investment
0.7	£9,100	2000	0	£18.2m	£0.3m	61 to 1
0.7	£9,100	2000	25%	£13.6m	£0.3m	45 to 1
0.7	£9,100	2000	50%	£9.1m	£0.3m	30 to 1
0.7	£9,100	2000	75%	£4.5m	£0.3m	15 to 1

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[3] Page 12: https://docs.google.com/document/d/1eMyIwXDAlWSqKOP9sjkH4R8XtgNseoCyRbjyoVmbW1s

Final disclaimer

In light of our caveats highlighted in the limitations section, we do not know how much of the estimated association between wellbeing and ParkPlay attendance is an actual causal effect of ParkPlay and how much is due to the fact that our survey respondents who have not attended ParkPlay are simply a different kind of people compared to those who did participate.

However, this study does constitute evidence that ParkPlay is more likely than not to have a positive effect on personal wellbeing, trust, resilience, loneliness and other socially important outcomes, and that regular participation is likely more beneficial than sporadic participation.

While the general picture regarding the positive effect of ParkPlay is relatively clear, we are not fully confident of the validity of the headline figures presented in this report (i.e. the magnitude of the wellbeing effect and corresponding monetary value). To address these concerns, we have presented the bottom-line metrics as a range, but nonetheless we urge caution when communicating about these findings to a wider audience.

Conclusion

In this study we analysed the data from a survey conducted by ParkPlay and the Essex County Council to measure the effect of participating in ParkPlay on the wellbeing (and trust, resilience, health, physical activity) levels of the local population using OLS regression analysis, and estimate the corresponding wellbeing value in monetary terms according to the latest Wellbeing Supplementary Guidance to the HMT Green Book.

The results show that attending ParkPlay is correlated with 1.2 points higher life satisfaction levels on average than not attending. The fact that this effect is implausibly large for an activity of ParkPlay's nature, together with the fact that it does not follow any meaningful pattern when we consider different durations of attendance, in addition to the demographic differences between attendees and non-attendees observed in our data, lead us to believe that selection bias is likely to be responsible for a part of this result (and in the current setup it is impossible to pin down how much) alongside a true impact of ParkPlay.

We therefore advise caution when interpreting these findings and recommend using them as indicative evidence that there is a social benefit of ParkPlay in general, as opposed to using the exact numeric values produced within this report to make bold public claims or statements.

As suggestions for further research, we recommend:
- Tracking individual participants and non-participants over time to observe how their outcomes level vary before and after attending ParkPlay for different periods of time, which will enable the use of more robust panel data estimation methods with higher validity;
- Considering practical ways to increase the sample size of the survey and also balance out the demographic composition of ParkPlay attendees and non-attendees (for example, by conducting a non-specific population survey as opposed to a survey centred around and delivered through ParkPlay).

Appendix. Full results

Results from the ParkPlay statistics - descriptive statistics (means and frequency tables by participation, frequency, duration) and regression analysis: ⓧ ParkPlay analysis output.xlsx

Descriptive statistics from the ParkPlay registration data, covering everyone registered from March 2021 to June 2023 but only the few demographic variables that are asked in the registration form: ⓧ ParkPlay admin data output.xlsx