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Creating new data with parkrun

Paul Schneider and Robert Smith are PhD students in the Wellcome Trust DTC for Public Health, Economics & Decision Science. They found their first-year research attachment with 'parkrun UK' so interesting, they continued to work on it even after they moved on to their PhD research. They tell us more about their work with the organisation that has encouraged thousands of people across the UK to take up the weekly challenge of a 5km run or walk.

An interesting opportunity for a research attachment arose when, in December 2018, parkrun received funding from Sport England to set up 200 additional events. The aim of this was to further increase participation, particularly from deprived communities. We established a collaboration with *parkrun UK* and helped them to better understand the current disparities in access to and participation in parkrun events in England. This involved the development of a geospatial optimisation algorithm which provided recommendations for the best parks and green spaces in which to establish new parkrun events.

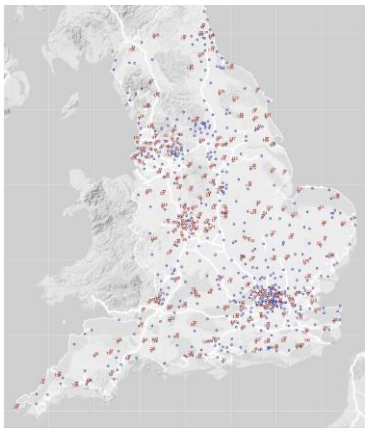
Open research and public health

Throughout the project, we tried to make our research as transparent and accessible as possible. As this was initially planned as a short-term project adjacent to our PhDs, we wanted to ensure that other researchers could use the wealth of data provided by parkrun UK. We also wanted to enable researchers in the 22 countries where parkrun is currently active to reproduce and refine our methods.

Our research resulted in multiple research outputs, including an interactive map that shows existing parkrun events and recommended locations for future events. Since recommended locations were not always suitable to host running events, the map proved useful for parkrun UK in allowing them to identify alternative locations in close proximity. Our work also informed parkrun UK's broader strategy for making their running events more inclusive, as illustrated by a 2020 press release:

> Decisions about where to locate events have been informed by Rob's expertise and insight, as have efforts to grow participation at those events once they have been established [...] One example of how the statistical tool was used is the creation of Bowling Park parkrun, located in a deprived area of Bradford. Our local Ambassador, working with community groups, identified the location as an option for a parkrun event – which was corroborated by Rob's work – and the event became a reality for the local people. [1]

Several open access publications resulted from the project [2], one of which is available in the Wellcome Open Research platform, which has an open peer-review process and staged version history. Preliminary results were also made available on preprint server medRxiv and promoted on social media to invite feedback. This led to an eagle-eyed reader spotting that their parkrun was missing from the map and informing us via the parkrun Facebook group. The bug was subsequently fixed, the interactive map updated and the paper corrected before submission to the journal. Rob also promoted our research to the wider public when he took part in Nicola Forwood and Danny Norman's popular *With Me Now* parkrun podcast.



Paul and Robert created an interactive map showing existing parkrun events and recommended locations for future events.

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Looking to the future

To ensure our research follows the FAIR principles and is reusable by others in the future, we have made our research as accessible as possible. All of our data have been made openly available in Zenodo [3,4] and GitHub, alongside an annotated version of the source code used to generate the results, meaning that others can replicate our findings. The source code was also submitted to two Repo-Hacks - day-long hackathons where researchers from different fields meet and try to reproduce the published research of others. Our study was successfully replicated and we received some useful feedback, enabling us to make further improvements. Rob has also given talks alongside representatives from the Wellcome Trust as part of their effort to encourage other researchers to make their research more open.

Our open research

- Preliminary results shared on preprint server, leading to a reader correction of data
- Publication of research output on the Wellcome Open Research platform
- Data and code openly available in GitHub and Zenodo

References

[1] Using research to improve inclusivity. *Parkrun UK* [online]. 8 December 2020. https://blog.parkrun.com/uk/2020/12/08/using-research-to-improve-inclusivity

[2] Schneider, P. et al. (2020). Multiple deprivation and geographic distance to community physical activity events — achieving equitable access to parkrun in England. *Public Health* 189: 48-53. https://doi.org/10.1016/j.puhe.2020.09.002

[3] Smith, R. (2020). RobertASmith/DoPE_Public: Determinants of parkrun Engagement v1.0. [Dataset] Zenodo. https://doi.org/10.5281/zenodo.3596841

[4] Schneider, P. (2020). Code and Data Repository for: Multiple deprivation and geographic distance to community sport events — achieving equitable access to parkrun in England. [Dataset] Zenodo. https://doi.org/10.5281/zenodo.3866143