AirRater: collaborative approaches to protecting health

COLLABORATION

AirRater is a smartphone app co-designed by researchers and government agencies, supporting users to make decisions to protect their health from environmental hazards.

EVALUATION

After the widespread Australian bushfires in 2019-20, we did both quantitative and qualitative evaluations to see how AirRater was used.

LEARNINGS

AirRater provides information that many people use to make behaviour changes. While most people find it easy to use, opportunities exist to make it more helpful.

Background

AirRater is a smartphone app that provides users with near real-time information about air quality, pollen and temperature at a selected location. Users log symptoms to build a personal profile of their environmental triggers over time. This can help users to make decisions based on their health needs. Symptom data are aggregated to inform public health decisions and build knowledge of air quality, pollen and temperature impacts on health. AirRater was launched in Tasmania in 2015 and has become increasingly available across Australia. By late 2020, there were over 55,000 users Australia-wide.

What have we done?

Given the app's rapid growth over the Australian bushfire season of 2019-20, we developed quantitative and qualitative evaluations to examine how AirRater was used across this time. A survey was sent to app users Australia-wide, capturing information on health impacts, air filter use and app use. To build on this information and provide more detailed data on how people use AirRater and how it can change behaviour, in-depth interviews were conducted.

What did we learn from our quantitative research?

In February 2020, we sent an online survey to over 13 000 app users from jurisdictions highly affected by smoke from the Black Summer fires (QLD, NSW, Vic, ACT, SA and WA). We received responses from 1732 users (13.3%). Respondents reported the app was highly useful, supporting informed decision-making regarding daily activities during the smoke-affected period. Commonly reported activities supported by information provided through the app were staying inside (76%), rescheduling or planning outdoor activities (64%), changing locations to less affected areas (29%) and informing decisions on medication use (15%) (see Figure 1). We found that innovative and easy-to-use smartphone apps such as AirRater, that provide individual-level and location-specific data, can enable users to reduce their exposure to environmental hazards and therefore protect health. This research was published in the journal *Fire* in August 2020 as doi:10.3390/fire3030040.

What did you do differently as a result of AirRater?

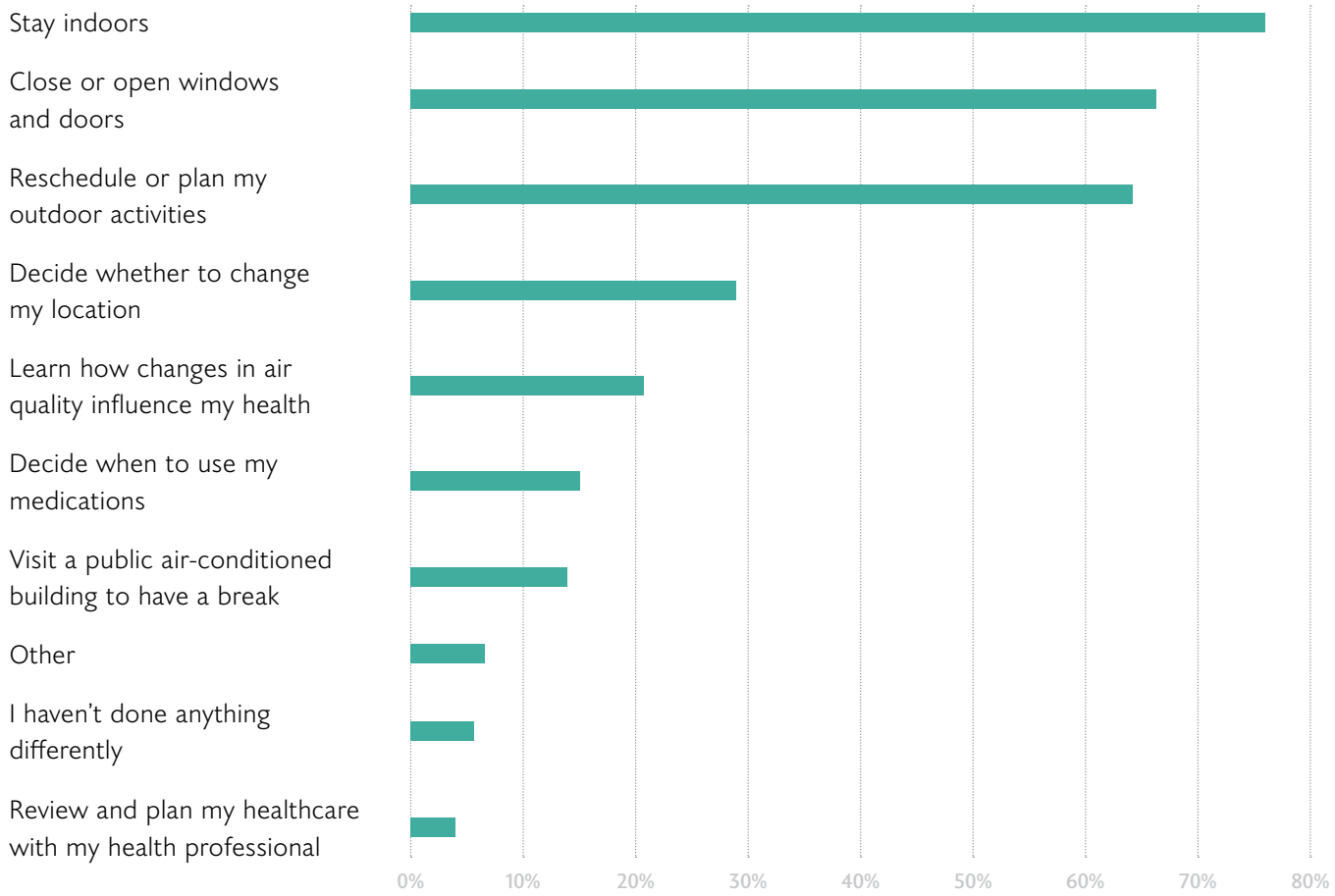

***Figure 1**: Behaviour changes as a result of information provided by AirRater*

What did we learn from our qualitative research?

In May 2020, forty-two users were interviewed from across Tasmania, the ACT and NSW. The study was informed by the World Health Organization's guide Monitoring and evaluating digital health interventions: a practical guide to conducting research and assessment. This research was published in March 2021 in the International Journal of Environmental Research and Public Health as doi:10.3390/ijerph18073591

Use of AirRater

Most AirRater users indicated the app was useful, straightforward and/or easy to use. About half the users use the app to confirm that how they feel is a result of their environment.

> ***"…using the app has given me the opportunity to know that I was right…it confirms what my body's telling me."***

Features of AirRater

Users indicated what they liked and disliked about the app's features. The most popular feature was the location function, which allows users to monitor important locations, including those of family members. Not everyone liked the symptom reporting function.

> ***"What I would like to see is the capacity to be able to print it out…and find out what the changes were."***

Understanding and trust of AirRater

Many users indicated that the information the app provides was easy to understand. Some felt that the traffic light and one-word rating systems used in the app made it easy to understand. Most users did not question the accuracy of the data provided by AirRater.

> ***"I think the interface is fairly user-friendly for people…the colour change…made it really quick and simple to understand."***

Self-management and behaviour change

Most users indicated they use the app to help them make decisions to protect their health. Some people use the app to help with medication use.

> ***"…it became a ritual for me… it helped me form a schedule…of using my medication."***

Sharing information from the app

While most users had discussed or recommended the app to family, friends or colleagues, only some users had discussed the app with a doctor. Users suggested a number of changes to make it easier to share their personal symptoms or have a discussion with a doctor.

> ***"…I've mentioned AirRater to my doctor and that I use it, and that's part of my asthma plan."***

What's next?

Users suggested improvements to the app including the addition of a time-stamp on data readings, providing additional information (such as wind direction and UV ratings), supporting customisation and the creation of downloadable reports. We are considering these suggested changes.

In-depth interviews with healthcare professionals, government agencies and peak body representatives are being undertaken to gain perspectives on the role that health apps like AirRater can play in supporting individuals to protect their health, and what steps can be taken to further embed the app into the healthcare setting.

Acknowledgements

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