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NIPPON FOUNDATION OCEAN NEXUS CENTER
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EarthLab

# ADAPTING RESEARCH METHODOLOGIES IN THE COVID-19 PANDEMIC

## Resources for researchers

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# Contents

# Executive Summary

This document is the first edition of a compilation of resources addressed to junior researchers whose social research projects have been affected by the COVID-19 pandemic.

The resources contained in the document are intended for doctoral and postdoctoral researchers in social research at the stage of research design or data collection, and particularly for those involved in the research on ocean equity issues. Researchers at this stage may have originally relied on face-to-face forms of human interaction to collect their data and they can no longer do so due to the mobility restrictions in place worldwide. This document offers guidance on potentially useful methods to help redesign their projects.

The document has two parts. The first one offers an overview of qualitative, semi-qualitative and quantitative methodologies and methods that may provide feasible alternatives for research design and data collection. The resources listed are methodological texts and studies applying these methodologies in the social sciences in general, and in ocean issues in particular. The second part contains a list of online discussions and resources on how this adaptation is taking or may be taking place in the near future.

Over the next few months we will be updating this compilation with insights from academics and junior researchers on the opportunities and challenges involved in conducting social research during the COVID-19. We will also be following the discussions on how methodologies and data collection methods may be evolving and we will include links to the recordings of these discussions where available.

## Acknowledgements

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# Background and contents

## Background

The purpose of this document is to provide resources for doctoral and postdoctoral researchers employing qualitative or mixed methods whose work is being affected by the current measures in place worldwide restricting mobility, gatherings of people, and face-to-face meetings for interviews.

Methods of data collection that are prone to be impacted by the situation in COVID-19 include those that involve human interaction (conferences and meetings, interviews, ethnographic research) and travel for data collection. Qualitative researchers who would normally travel to field sites and interview people to collect their data face the need to modify their data collection instruments and may have to consider alternatives, such as document or media/social media analysis or using online platforms or telephone for data collection. These tools offer new opportunities; however, their methodological fit to research questions, technical requirements, resource implications and ethical implications need to be adequately gauged.

We address situations in which the researcher cannot travel and has to research from home (not tools for fieldwork research with social distancing protocols). These resources will be useful for researchers who need to adjust their data collection methods, and we also offer examples where methods can be used to provide complementary data sources to fieldwork. In a later edition of this document we will include insights from interviews with researchers to provide an overview of current practices and experiences that may be useful for people adjusting their research methods. We will also address the potential of archival data as an alternative source, such as administrative or historical data, or data sharing practices.

This document includes examples of methodologies that can be considered (including introductory texts to the methodologies); examples of their application in different domains of the social sciences, especially in those areas of interest to researchers in ocean equity; and current discussions on how to adapt data collection methods. It could be that universities will be offering resources on changing data sources and analysis for projects on social topics and that some of these may be publicly accessible; we are conducting searches on these and we are including relevant resources and discussion fora. We welcome those of you who can and wish to contribute resources, papers or best practices to email us at Sonia's address.

## Access to documents

We have collated the pdfs of the materials listed in this document as a private group in the referencing software Mendeley (www.mendeley.com), so that Nexus researchers can access the documents directly, without having to search for them through their libraries. Please email Sonia Garcia at sonia.garciagarcia@uts.edu.au if you wish to be included in the group. In a few cases where the entire text is not available, a table of contents has been uploaded.

## Contents of this document

This document is a compilation of methodological resources and current discussions on how to adapt research methodologies and data collection methods to the conditions imposed by the COVID-19 pandemic. We have collated the information obtained through the following:

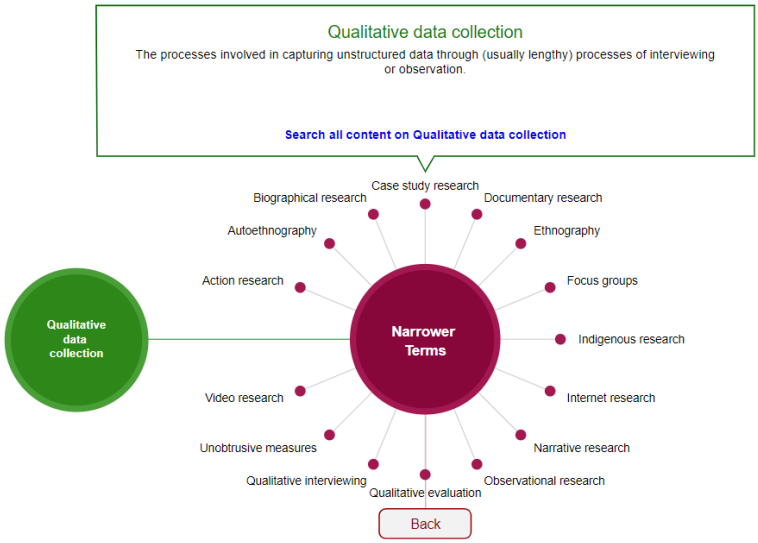
- a desktop search on qualitative, semi-quantitative and quantitative research methods in Social Sciences research;
- the adaptation of a collaborative document initiated by Deborah Lupton, SHARP Professor in the Centre for Social Research in Health and the Social Policy Research Centre at the University of New South Wales (Australia). Prof Lupton's collaborative document offers guidance and examples of papers in qualitative research methods and it is the backbone of the qualitative section of this Nexus document. Professor's Lupton full document is available at:

  Lupton, D. (editor) (2020) Doing fieldwork in a pandemic (crowd-sourced document). Available at: https://docs.google.com/document/d/1clGjGABB2h2qbduTgfqribHmog9B6P0NvMgVuiHZCl8/edit?ts=5e88ae0a#;
- a desktop search of papers in the topic area of 'ocean equity' (from ocean and coastal management to fisheries or climate change) that illustrate the methodologies listed;

- a desktop search of academic resources, websites and online discussions on the topic, listed uin the ‘Online discussion and resources’ section.

To structure our searches, we have generally followed the research methods maps in the SAGE research methods database (https://methods-sagepub-com.ezproxy.lib.uts.edu.au/). First, we have looked at the main methods for qualitative (and mixed methods) data collection detailed in Figure 1:

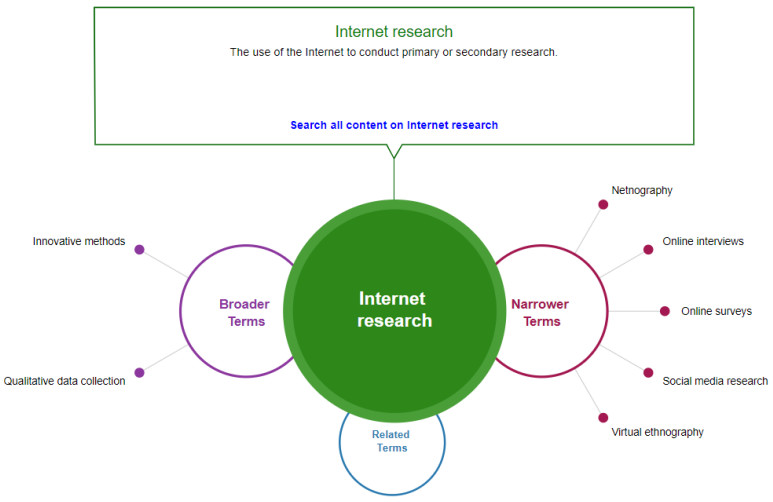
**Figure 1. Qualitative data collection methods**




(Source: SAGE Methods Map, available at https://methods-sagepub-com.ezproxy.lib.uts.edu.au/methods-map)

The search includes methods that have been adapted to the technological possibilities offered by the Internet (methods ‘with’ the Internet) and methods developed to research online interactions (methods ‘in’ the Internet). The first possibility may suit researchers that wish to adapt fieldwork research to conditions where conducting research on the ground is no longer possible (for example, fishing communities that are observed or interviewed on site). The second possibility offers guidance on how to conduct research in the virtual world (for example, social media angler groups). A number of papers in this list deal with the fact that both worlds are not separate compartments, and that internet research methods may serve both ends. Figure 2 contains a list of consolidated online methods and methodologies for qualitative and mixed methods researchers.

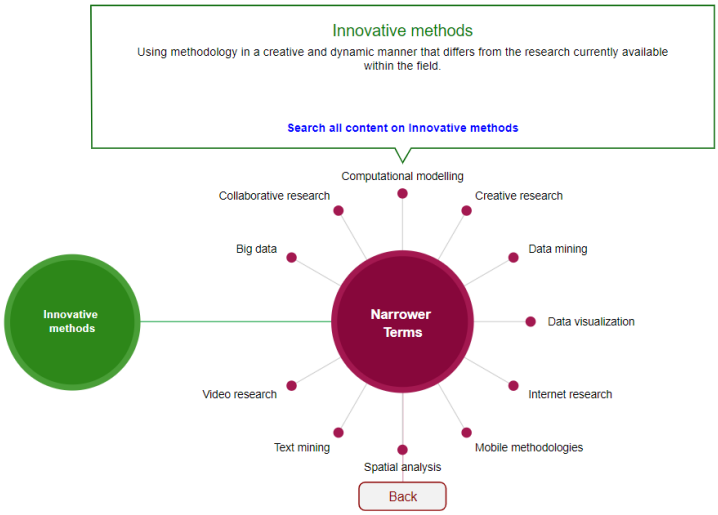
**Figure 2. Internet research methods**




(Source: SAGE Methods Map, available at https://methods-sagepub-com.ezproxy.lib.uts.edu.au/methods-map)

In addition to these, a number of other methods offer online research possibilities for qualitative and mixed methods. These are listed in Figure 3 (where Internet research is still listed as 'innovative'):

**Figure 3. Innovative research methods**




(Source: SAGE Methods Map, available at https://methods-sagepub-com.ezproxy.lib.uts.edu.au/methods-map)

# Research method(ologie)s

## Online research methods – general

A number of resources offer guidance on internet research methods, whether for research 'with' the Internet (adapting face-to-face methods), 'in' the Internet (researching online interactions) or 'on' the Internet (adopting online research as a topic for research).

Ackland, R. (2013). *Web Social Science: Concepts, data and tools for social scientists in the digital age*. https://doi.org/10.4135/9781446270011

Dawson, C. (2020). *A to Z of digital research methods*. Routledge.

Evans, A., Elford, J., & Wiggins, D. (2010). Using the internet for qualitative research. In C. Willig & W. Stainton-Rogers (Eds.), *The SAGE handbook of qualitative research in Psychology* (pp. 315–333). SAGE Publications. https://doi.org/10.4135/9781848607927

Fielding, N. G., Lee, R. M., & Blank, G. (Eds.). (2017). *The SAGE handbook of online research methods*. SAGE Publications. https://doi.org/10.4135/9781473957992

Germain, J., Harris, J., Mackay, S., & Maxwell, C. (2017). Why should we use online research methods? Four doctoral health student perspectives. *Qualitative Health Research*, *28*(10), 1650–1657. https://doi.org/10.1177/1049732317721698

Hughes, J. (Ed.). (2012). *SAGE internet research methods*. SAGE Publications. https://doi.org/10.4135/9781446268513

Sappleton, N. (Ed.). (2013). *Advancing research methods with new technologies*. IGI Global. https://doi.org/doi:10.4018/978-1-4666-3918-8

## Ethics

Deborah Lupton summarises several issues to consider when moving from face-to-face to distant fieldwork:

> For a start, if your human research ethics committee has already approved your face-to-face methods and you wish to modify these along the lines of some of the suggestions above, most ethics committees will require a modification request and approval process.
>
> You will also need to consider the 'affective atmospheres' of conducting any kind of social research in a pandemic, when normal routines are disrupted and many people are feeling uncertain and worried, or are ill or caring for ill family members. People may be living in environments where they are subjected to harassment, violence or surveillance by other family members. Privacy issues are very important to consider in these contexts.
>
> On the other hand, with people more confined, feeling bored or restless but in good health, they may welcome the opportunity to be part of a research project. Consider your target participant group very carefully when making decisions about the best way forward.
>
> If you decide to use online data collection methods that engage with pre-existing material people have uploaded (as opposed to material you have specifically asked them to generate following a consent process, which includes many of the methods listed here), you will need to carefully consider the ethical issues. Check the Association of Internet Researchers' document discussing these issues, available here: IRE 3.0 - final-includes missing reference
>
> Some guidelines on anthropological fieldwork generally (mostly related to in-person methods) can be found at ASA Ethics Guidelines. (Lupton 2020, p. 19)

Some references on general and particular issues can be found here:

Lehner-Mear, R. (2020). Negotiating the ethics of Netnography: developing an ethical approach to an online study of mother perspectives. *International Journal of Social Research Methodology*, *23*(2), 123–137. http://10.0.4.56/13645579.2019.1634879

Monkman, G. G., Kaiser, M., & Hyder, K. (2018). The ethics of using social media in fisheries research. *Reviews in Fisheries Science & Aquaculture*, *26*(2), 235–242. http://10.0.4.56/23308249.2017.1389854

Roberts, L. D. (2015). Ethical Issues in Conducting Qualitative Research in Online Communities. *Qualitative Research in Psychology*, *12*(3), 314–325. https://doi.org/10.1080/14780887.2015.1008909

Tiidenberg, K. (2018). Research ethics, vulnerability, and trust on the internet. In J. Hunsinger, M. M. Allen, & L. Klastrup (Eds.), *Second International Handbook of Internet Research*. Springer. https://doi.org/10.1007/978-94-024-1202-4_55-1

Zimmer, M., & Kinder-Kurlanda, K. (2017). *Internet research ethics for the social age*. Peter Lang. https://doi.org/10.3726/b11077

# Working with enumerators/local organisations

One of the effects of the pandemic has been the disruption of fieldwork conducted with local contacts, whether enumerators for surveys or local organisations. While research will soon be able to provide best practices, agencies are reacting on the field and producing guidelines, posts, and other sorts of reflection.

Agrilinks, an online community of food security and development practitioners, has two posts on how NGOs are approaching these challenges, one on the transition of enumerators to collect phone data https://www.agrilinks.org/post/preparing-collect-phone-data-during-pandemic and another on the redesign of monitoring and evaluation https://www.agrilinks.org/post/continuing-monitoring-and-evaluation-efforts-during-covid-19-pandemic-qa-i-aps.

The Devpolicy blog from the Development Policy Centre housed in the Crawford School of Public Policy at The Australian National University offers an overview of the implications for locally-led development and research in this post by Chris Roche and Fiona Tarpey.

A common consideration in adapting methodologies to work with local contacts is the existence of solid networks and trusted relationships between the partnerships. For example, researchers in the Pacific Community's Food Systems Integrated Program were able to switch successfully and in a short timeframe to a web-based space due to COVID-19 travel restrictions to reflect on the future of food systems and health outcomes in the region.

# Qualitative research

### Netnography / virtual / digital / online ethnography, anthropology

Conducting ethnography online has been approached from different angles. Christine Hine coined the term 'virtual ethnography', Robert Kozinets introduced 'netnography' and 'digital ethnography' is also usually employed as a generic term. For differences between the approaches, see an explanation offered by Kozinets here. For those interested in digital ethnography and anthropology, the London School of Economics Digital Ethnography collective has prepared a reading list in the form of a collaborative document, available at Zoë Glatt's website.

Hine, C. (2000). *Virtual ethnography*. SAGE Publications.

Hine, C. (2015). *Ethnography for the internet: embedded, embodied and everyday*. Bloomsbury Academic.

Kavanaugh, P. R., & Maratea, R. J. (2019). Digital ethnography in an age of information warfare: Notes from the field. *Journal of Contemporary Ethnography*, *49*(1), 3–26. https://doi.org/10.1177/0891241619854123

Kozinets, R. V. (2010). *Netnography: doing ethnographic research online*. SAGE.

Lehner-Mear, R. (2020). Negotiating the ethics of Netnography: developing an ethical approach to an online study of mother perspectives. *International Journal of Social Research Methodology*, *23*(2), 123–137. http://10.0.4.56/13645579.2019.1634879

Lenihan, A., & Kelly-Holmes, H. (2016). Virtual ethnography. In Z. Hua (Ed.), *Research Methods in Intercultural Communication: A Practical Guide*. John Wiley & Sons, Incorporated.

Mawer, M. (2016). Observational practice in virtual worlds: revisiting and expanding the methodological discussion. *International Journal of Social Research Methodology*, 19(2), 161–176. http://10.0.4.56/13645579.2014.936738

Murthy, D. (2012). Digital ethnography: An examination of the use of new technologies for social research. In J. Hughes (Ed.), *SAGE Internet Research Methods*. SAGE Publications. https://doi.org/https://dx-doi-org.ezproxy.lib.uts.edu.au/10.1177/0038038508094565

Salmond, A. (2012). Digital subjects, cultural objects: Special Issue introduction. *Journal of Material Culture*, *17*(3), 211–228. https://doi.org/10.1177/1359183512453531

Were, G. (2013). Imaging digital lives. *Journal of Material Culture*, *18*(3), 213–222. https://doi.org/10.1177/1359183513489927

## Literary anthropology

Fiction—from folktales to literary essays, short stories or online narratives— is rooted in historical and socio-cultural contexts and it often offers 'a rich source of information about societies that can or cannot be investigated through traditional ethnographic methods' (Cohen 2013, p. 9). Literary anthropology can be used for a variety of purposes, such as historical ethnography, contemporary studies using online resources and/or to study digitally born narratives.

Betjemann P. (2018). The Ecology of Desire: Coastal Poetics, Passion, and Environmental Consciousness. In L. Price & N. Narchi (Eds.), *Coastal Heritage and Cultural Resilience*. Springer.

Cohen, M. (Ed.). (2013). *Novel approaches to anthropology: contributions to literary anthropology*. Lexington Books.

Jones, S. (2015). The absent pirate: exceeding justice in the Indian Ocean. *Journal of Eastern African Studies*, *9*(3), 522–535. https://doi.org/10.1080/17531055.2015.1087682

Ronell, A. (2014). Writing your life on LiveJournal: Immigrant fiction by Victoria Reicher. *Prooftexts*, *34*(1), 99–124. http://ezproxy.lib.uts.edu.au/login?url=https://search.proquest.com/docview/1683723806?accountid=17095

Underberg, N. M., & Zorn, E. (2013). *Digital ethnography: Anthropology, narrative, and new media*. University of Texas Press. http://ebookcentral.proquest.com/lib/uts/detail.action?docID=3443656

## Interviews

Online interviews can be structured, semi-structured or unstructured, synchronous or asynchronous, with or without visual support. The following resources offer guidance on different interview types and Alexia Maddox offers some useful tips in Lupton (2020, p.6). As a starting point, Dowling et al. (2015) offer an overview of how different methods (social media, mobile methods, etc.) can 'enrich' the interview.

Bampton, R., & Cowton, C. J. (2002). The e-interview. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 3*(2), Art. 9. https://doi.org/10.17169/fqs-3.2.848

Bampton, R., Cowton, C. J., & Downs, Y. (2013). The e-interview in qualitative research. In N. Sappleton (Ed.), *Advancing research methods with new technologies* (pp. 329–343). IGI Global.

Burns, E. (2010). Developing email interview practices in qualitative research. *Sociological Research Online*, *15*(4), 1–12. https://doi.org/10.5153/sro.2232

Dowling, R., Lloyd, K., & Suchet-Pearson, S. (2015). Qualitative methods 1: Enriching the interview. *Progress in Human Geography*, *40*(5), 679–686. https://doi.org/10.1177/0309132515596880

Gray, T., Haggett, C., & Bell, D. (2005). Offshore wind farms and commercial fisheries in the UK: A study in Stakeholder Consultation. *Ethics, Place & Environment*, *8*(2), 127–140. https://doi.org/10.1080/13668790500237013

Hinchcliffe, V., & Gavin, H. (2009). Social and virtual networks: Evaluating synchronous online Interviewing using instant messenger. *Qualitative Report*, *14*(2), 318–340. http://ezproxy.lib.uts.edu.au/login?url=https://search.proquest.com/docview/60007462?accountid=17095

Irvine, A. (2011). Duration, dominance and depth in telephone and face-to-face interviews: A comparative exploration. *International Journal of Qualitative Methods*, *10*(3), 202–220. https://doi.org/10.1177/160940691101000302

Janghorban, R., Roudsari, R. L., & Taghipour, A. (2014). Skype interviewing: The new generation of online synchronous interview in qualitative research. *International Journal of Qualitative Studies on Health and Well-Being*, *9*(1), 24152. https://doi.org/10.3402/qhw.v9.24152

Kucera, K. L., Loomis, D., Lipscomb, H., & Marshall, S. W. (2010). Prospective study of incident injuries among southeastern United States commercial fishermen. *Occupational and Environmental Medicine*, *67*(12), 829. https://doi.org/http://dx.doi.org/10.1136/oem.2009.053140

Linabary, J. R., & Hamel, S. A. (2017). Feminist online interviewing: engaging issues of power, resistance and reflexivity in practice. *Feminist Review*, *115*(1), 97–113. https://doi.org/http://dx.doi.org/10.1057/s41305-017-0041-3

Marino, S. (2019). Cook it, eat it, Skype it: Mobile media use in re-staging intimate culinary practices among transnational families. *International Journal of Cultural Studies*, *22*(6), 788–803. https://doi.org/10.1177/1367877919850829

Shapka, J. D., Domene, J. F., Khan, S., & Yang, L. M. (2016). Online versus in-person interviews with adolescents: An exploration of data equivalence. *Computers in Human Behavior*, *58*, 361–367. https://doi.org/https://doi.org/10.1016/j.chb.2016.01.016

Wiber, M., Charles, A., Kearney, J., & Berkes, F. (2009). Enhancing community empowerment through participatory fisheries research. *Marine Policy*, *33*(1), 172–179. https://doi.org/https://doi.org/10.1016/j.marpol.2008.05.009

## Focus groups

Focus groups have been successfully transferred online and widely used in market research. These references offer guidance on methodological issues and examples of application in public health and environmental research. Nathan Browning offers useful tips to set up online focus groups in Lupton (2020, pp. 12-13).

Barbour, R. S., & Morgan, D. L. (2017). *A new era in focus group research: Challenges, innovation and practice*. Springer.

Chen, J., & Neo, P. (2019). Texting the waters: An assessment of focus groups conducted via the WhatsApp smartphone messaging application. *Methodological Innovations*, *12*(3), 1-10. https://doi.org/10.1177/2059799119884276

Daniels, N., Gillen, P., Casson, K., & Wilson, I. (2019). STEER: Factors to consider when designing online focus groups using audiovisual technology in health research. *International Journal of Qualitative Methods*, *18*, 1-11. https://doi.org/10.1177/1609406919885786

Flynn, R., Albrecht, L., & Scott, S. D. (2018). Two approaches to focus group data collection for qualitative health research: Maximizing resources and data quality. *International Journal of Qualitative Methods*, *17*, 1-9. https://doi.org/10.1177/1609406917750781

Forrestal, S. G., D'Angelo, A. V., & Vogel, L. K. (2015). Considerations for and lessons learned from online, synchronous focus groups. *Survey Practice*, *8*(2), 1–8.

Lupton, D., & Turner, B. (2018). "I can't get past the fact that it is printed": consumer attitudes to 3D printed food. *Food, Culture & Society*, *21*(3), 402–418. https://doi.org/10.1080/15528014.2018.1451044

Riesch, H., Oltra, C., Lis, A., Upham, P., & Pol, M. (2013). Internet-based public debate of CCS: Lessons from online focus groups in Poland and Spain. *Energy Policy*, *56*, 693–702. https://doi.org/https://doi.org/10.1016/j.enpol.2013.01.029

Woodyatt, C. R., Finneran, C. A., & Stephenson, R. (2016). In-person versus online focus group discussions: a comparative analysis of data quality. *Qualitative Health Research*, 26(6), 741–749. https://doi.org/10.1177/1049732316631510

## Mobile methods

Mobile methodologies capture social life 'as it happens' (Dowling et al. 2015, p. 679, see reference above in p. 9) and app-based methods may assist scholars attempting to gather data that is simultaneous with the social interactions researched. In the oceanic space, mobile technologies and the tracking of fish (and fishers) have offered enormous possibilities.

Boase, J., & Humphreys, L. (2018). Mobile methods: Explorations, innovations, and reflections. *Mobile Media & Communication*, *6*(2), 153–162. https://doi.org/10.1177/2050157918764215

Griffiths, S. P., Zischke, M. T., Tonks, M. L., Pepperell, J. G., & Tickell, S. (2013). Efficacy of novel sampling approaches for surveying specialised recreational fisheries. *Reviews in Fish Biology and Fisheries*, *23*(3), 395–413. https://doi.org/10.1007/s11160-012-9299-x

Kaufmann, K., & Peil, C. (2019). The mobile instant messaging interview (MIMI): Using WhatsApp to enhance self-reporting and explore media usage in situ. *Mobile Media & Communication*, *8*(2), 229–246. https://doi.org/10.1177/2050157919852392

Lowerre-Barbieri, S. K., Kays, R., Thorson, J. T., & Wikelski, M. (2019). The ocean's movescape: fisheries management in the bio-logging decade (2018–2028). *ICES Journal of Marine Science*, *76*(2), 477–488. https://doi.org/10.1093/icesjms/fsy211

## Diaries

Deborah Lupton's comments on the use of digital diaries are quoted below, as well as some key references on the method and examples, including their use in the assessment of recreational fishing activity.

> Diaries can be structured (like questionnaire) and aiming for quantitative analysis, or semi- or unstructured - asking for more free-flowing reflection. Keeping in touch with participants is very important, especially for longer-term studies, as this maintains participation (attrition can be an issue). Also receiving some entries early on in the process and giving feedback may help as sometimes relevance can be an issue too. Diaries can be used over months or hours, depending on the focus of the study. They can use interval-based sampling (i.e. record something every hour or every day) or event-based (i.e. record something when it occurs, which may be more irregular). Diaries can take many different forms including visual, collage, photo-based as well as written or spoken - it is important to consider the participants and what they would find easy to use (ask them - piloting is essential) and also what you will be able to analyse within the analytical approach you have chosen. (Lupton 2020, p. 4)


Adamson, G. C. D. (2015). Private diaries as information sources in climate research. *WIREs Climate Change*, *6*(6), 599–611. https://doi.org/10.1002/wcc.365

Ahlin, T., & Li, F. (2019). From field sites to field events: Creating the field with information and communication technologies (ICTs). *Medicine, Anthropology and Theory*, *6*(2), 1–24. https://doi.org/doi.org/10.17157/mat.6.2.655

Alaszewski, A. (2006). *Using diaries for social research*. SAGE Publications.

Bartlett, R. (2015). *What is diary method?* (C. Milligan (Ed.)). Bloomsbury Academic. https://www.bloomsburycollections.com/book/what-is-diary-method/

Crozier, S. E., & Cassell, C. M. (2016). Methodological considerations in the use of audio diaries in work psychology: Adding to the qualitative toolkit. *Journal of Occupational and Organizational Psychology*, *89*(2), 396–419. https://doi.org/10.1111/joop.12132

Dawson, C. (2019). *Mobile diaries* (1st ed.). Routledge. https://doi.org/10.4324/9781351044677-31

Eidse, N., & Turner, S. (2014). Doing resistance their own way: Counter-narratives of street vending in Hanoi, Vietnam through solicited journaling. *Area*, *46*(3), 242–248. https://doi.org/10.1111/area.12107

Griffiths, S. P., Zischke, M. T., Tonks, M. L., Pepperell, J. G., & Tickell, S. (2013). Efficacy of novel sampling approaches for surveying specialised recreational fisheries. *Reviews in Fish Biology and Fisheries*, *23*(3), 395–413. https://doi.org/10.1007/s11160-012-9299-x

Harvey, L. (2011). Intimate reflections: private diaries in qualitative research. *Qualitative Research*, *11*(6), 664–682. https://doi.org/10.1177/1468794111415959

Lyle, J. M., Morton, A. J., & Forward, J. (2005). Characterisation of the recreational fishery for southern rock lobster, Jasus edwardsii, in Tasmania, Australia: Implications for management. *New Zealand Journal of Marine and Freshwater Research*, *39*(3), 703–713. https://doi.org/10.1080/00288330.2005.9517346

Zimmerman, D. H., & Wieder, D. L. (1977). The Diary: Diary-Interview method. *Urban Life*, *5*(4), 479–498. https://doi.org/10.1177/089124167700500406


## Photo/Video/Voice elicitation

Smartphones can be used to assist with the collection of data for several methods, such as asynchronous interviews, mobile methodologies or diaries. Getting participants to talk about images or to generate images as data are some of the possibilities employed in the papers below. The combination of all these different resources results in a co-created 'field event' (Ahlin & Li 2019) by researchers and the researched.


Ahlin, T., & Li, F. (2019). From field sites to field events: Creating the field with information and communication technologies (ICTs). *Medicine, Anthropology and Theory*, *6*(2), 1–24. https://doi.org/doi.org/10.17157/mat.6.2.655

Copes, H., Tchoula, W., Brookman, F., & Ragland, J. (2018). Photo-elicitation interviews with vulnerable populations: Practical and ethical considerations. *Deviant Behavior*, *39*(4), 475–494. https://doi.org/10.1080/01639625.2017.1407109

Harper, D. (2002). Talking about pictures: A case for photo elicitation. *Visual Studies*, *17*(1), 13–26. http://10.0.4.56/14725860220137345

Steenfeldt, V. O., Therkildsen, M., & Lind, J. (2019). Nursing students' experiences of a challenging course: A photo-elicitation study. *Nurse Education Today*, *76*, 31–37. https://doi.org/https://doi.org/10.1016/j.nedt.2019.01.019

## Videos for ethnographic, auto-ethnographic or bio-logging (of the self and others)

Asking participants to record videos of their everyday practices has been usually done by researchers that follow them around, but participants can also be asked to record the videos themselves and share them with the researcher. Videos on everyday practices may also be used to document the researcher's auto-ethnographic work.

Lowerre-Barbieri, S. K., Kays, R., Thorson, J. T., & Wikelski, M. (2019). The ocean's movescape: fisheries management in the bio-logging decade (2018–2028). *ICES Journal of Marine Science*, *76*(2), 477–488. https://doi.org/10.1093/icesjms/fsy211

Pink, S. (2014). Digital–visual–sensory-design anthropology: Ethnography, imagination and intervention. *Arts and Humanities in Higher Education*, *13*(4), 412–427. https://doi.org/10.1177/1474022214542353

Pink, S. (2015). Going forward through the world: thinking theoretically about first person perspective digital ethnography. *Integrative Psychological & Behavioral Science*, *49*(2), 239–252. https://doi.org/10.1007/s12124-014-9292-0

Pink, S., & Leder Mackley, K. (2014). Re-enactment methodologies for everyday life research: art therapy insights for video ethnography. *Visual Studies: Visualising Ethnography: Ethnography's Role in Art and Visual Cultures*, *29*(2), 146–154. https://doi.org/10.1080/1472586X.2014.887266

Pink, S., & Leder Mackley, K. (2016). Moving, making and atmosphere: Routines of home as sites for mundane improvisation. *Mobilities*, *11*(2), 171–187. https://doi.org/10.1080/17450101.2014.957066

Pink, S., Fors, V., & Glöss, M. (2017). Automated futures and the mobile present: In-car video ethnographies. *Ethnography*, *20*(1), 88–107. https://doi.org/10.1177/1466138117735621

Pink, S., Gomes, A., Zilse, R., Lucena, R., Pinto, J., Porto, A., Caminha, C., De Siqueira, G. M., & Duarte De Oliveira, M. (2018). Automated and connected? Smartphones and automobility through the global south. *Applied Mobilities*, 1–17. https://doi.org/10.1080/23800127.2018.1505263

Ristić, D., & Marinković, D. (2019). Lifelogging: Digital technologies of the self as the practices of contemporary biopolitics - Upisivanje života: Digitalne tehnologije sopstva kao prakse savremene biopolitike. *Sociologija*, *61*(4), 535–549. https://doi.org/http://dx.doi.org/10.2298/SOC1904535R

Struthers, D. P., Danylchuk, A. J., Wilson, A. D. M., & Cooke, S. J. (2015). Action cameras: Bringing aquatic and fisheries research into view. *Fisheries*, *40*(10), 502–512. https://doi.org/10.1080/03632415.2015.1082472

Vivienne, S., & Burgess, J. (2013). The remediation of the personal photograph and the politics of self-representation in digital storytelling. *Journal of Material Culture*, *18*(3), 279–298. https://doi.org/10.1177/1359183513492080

## Story completion

Story completion is a qualitative technique that has been mostly used in developmental psychology but has a potential in other research areas (Clarke et al., 2019).

> The method involves the use of story 'stems', in which a fictional character is introduced and commonly, they face a dilemma they need to resolve. Participants are asked to complete the story. The completed narratives are then analysed for what they reveal about understandings, discourses or imaginaries concerning the topic of the story stems. (Lupton 2020, p. 15)

This method can be used in combination with elicitation or cultural probes, and digital tools can be used to record, transmit and analyse the data.

Braun, V., Clarke, V., Hayfield, N., Frith, H., Malson, H., Moller, N., & Shah-Beckley, I. (2019). Qualitative story completion: Possibilities and potential pitfalls. *Qualitative Research in Psychology*, *16*(1), 136–155. https://doi.org/10.1080/14780887.2018.1536395

Clarke, V., Braun, V., Frith, H., & Moller, N. (2019). Editorial introduction to the special issue: Using story completion methods in qualitative research. *Qualitative Research in Psychology*, *16*(1), 1–20. https://doi.org/10.1080/14780887.2018.1536378

Gravett, K. (2019). Story Completion: Storying as a method of meaning-making and discursive discovery. *International Journal of Qualitative Methods*, *18*. https://doi.org/10.1177/1609406919893155

Lupton, D. (2019). 'The Internet both reassures and terrifies': Exploring the more-than-human worlds of health information using the story completion method. *Medical Humanities*, medhum-2019-011700. https://doi.org/10.1136/medhum-2019-011700

### Auto- and duo-ethnography

Auto- and duo-ethnography turn the researcher into a subject of research. Working through memory and experience can be assisted by a variety of the data collection methods above, from re-enactment videos (with or without wearable cameras) to app-based tools.

Bille, T., & Steenfeldt, V. O. (2013). Challenging fieldwork situations: A study of researcher's subjectivity. *Journal of Research Practice*, *9*(1), Article M2. http://jrp.icaap.org/index.php/jrp/article/view/299/327

Cleland, D. (2018). *Just a game? Playing in pursuit of sustainability, inclusion and justice in small-scale fisheries in the Philippines*), PhD thesis [Australian National University]. https://trove.nla.gov.au/version/254083712

Neilson, A., São Marcos, R., Sempere, K., Sousa, L., & Canha, C. (2019). A vision at sea: Women in fisheries in the Azores Islands, Portugal. *Maritime Studies*, *18*(3), 385–397. https://doi.org/10.1007/s40152-019-00155-0

Sawyer, R. D., & Norris, J. (2012). *Duoethnography: Understanding qualitative research*. Oxford University Press, Incorporated. http://ebookcentral.proquest.com/lib/uts/detail.action?docID=1480987

### Arts-based research

Apart from literary ethnographic methods above, other art forms can be valuable tools for qualitative researchers looking to gather data from social interactions.

Barone, T., & Eisner, E. W. (2012). *Arts Based Research*. SAGE. https://doi.org/10.4135/9781452230627

Burke, M., Ockwell, D., & Whitmarsh, L. (2018). Participatory arts and affective engagement with climate change: The missing link in achieving climate compatible behaviour change? *Global Environmental Change*, *49*(October 2017), 95–105. https://doi.org/10.1016/j.gloenvcha.2018.02.007

Galafassi, D., Tabara, J. D., & Heras, M. (2018). Restoring our senses, restoring the Earth. Fostering imaginative capacities through the arts for envisioning climate transformations. *Elementa: Science of the Anthropocene*, *6*(1). https://doi.org/10.1525/elementa.330

Kara, H. (2015). *Creative research methods in the social sciences: a practical guide*. Policy Press.

Leavy, P. (2009). *Method meets art: arts-based research practice*. Guilford Press.

Osei-Kofi, N. (2013). The emancipatory potential of arts-based research for social justice. *Equity & Excellence in Education*, *46*(1), 135–149. https://doi.org/10.1080/10665684.2013.750202

## Semiquantitative and quantitative research

### Online and phone surveys

While software for conducting surveys online is well established with both free and paid tools, many surveys are still mostly conducted with a mix of online, phone and face-to-face (F2F) modes of collection. The latter is especially relevant in countries where unequal access to IT infrastructure may result in high non-response, attrition or under-coverage problems unless there is also F2F data collection. Participants in the conference 'Data collection at the time of multiple crises' (ANU, 21 May 2020, see below pp. 20-21) discussed the alternatives that agencies have experimented with when conducting surveys during the pandemic. The conference addressed the challenges ahead: will there be a new 'normal' after the pandemic? How will it affect responses? What will be the new protocols for F2F surveys? The CGIAR webinar on phone surveys also offered insights into how a transition to phone interviews may look like.

While those transitioning from F2F to online or phone surveys are presenting their experiences, a number of references offer guidance on the development of surveys, from design to dissemination of results and ethical considerations, as well as case studies combining online surveys with other methods and/or illustrating the possibilities of online sampling services.

Allcott, H., Boxell, L., Conway, J. C., Gentzkow, M., Thaler, M., & Yang, D. Y. (2020). Polarization and public health: Partisan differences in social distancing during the coronavirus pandemic. Working Paper 26946, National Bureau of Economic Research. http://www.nber.org/papers/w26946

Cochrane, K. L., Eggers, J., & Sauer, W. H. H. (2020). A diagnosis of the status and effectiveness of marine fisheries management in South Africa based on two representative case studies. *Marine Policy*, *112*, 103774. https://doi.org/https://doi.org/10.1016/j.marpol.2019.103774

Fabinyi, M., Liu, N., Song, Q., & Li, R. (2016). Aquatic product consumption patterns and perceptions among the Chinese middle class. *Regional Studies in Marine Science*, *7*, 1–9. https://doi.org/https://doi.org/10.1016/j.rsma.2016.01.013

Hai-Jew, S. (2019). *Online survey design and data analytics: Emerging research and opportunities*. IGI Global - Engineering Science Reference.

Marshall, N., Barnes, M. L., Birtles, A., Brown, K., Cinner, J., Curnock, M., Eakin, H., Goldberg, J., Gooch, M., Kittinger, J., Marshall, P., Manuel-Navarrete, D., Pelling, M., Pert, P. L., Smit, B., Tobin, R., Manuel-Navarrete, D., Pelling, M., Pert, P. L., … Tobin, R. (2018). Measuring what matters in the Great Barrier Reef. *Frontiers in Ecology & the Environment*, *16*(5), 271–277. https://doi.org/10.1002/fee.1808

Toepoel, V. (2016). *Doing surveys online*. SAGE. https://doi.org/10.4135/9781473967243

Triantoro, T., Gopal, R., Benbunan-Fich, R., & Lang, G. (2019). Would you like to play? A comparison of a gamified survey with a traditional online survey method. *International Journal of Information Management*, *49*(June), 242–252. https://doi.org/https://doi.org/10.1016/j.ijinfomgt.2019.06.001

Voyer, D. M., & van Leeuwen, D. J. (2019). 'Social license to operate' in the Blue Economy. *Resources Policy*, *62*, 102–113. https://doi.org/https://doi.org/10.1016/j.resourpol.2019.02.020

## Digital methods

Digital methods is a 'native' digital mixed method that draws attention to the infrastructure that stores and organises digital data:

> The notion of digital methods was introduced in 2007 as a counterpoint to virtual methods, which sought to introduce the social scientific instrumentarium to digital research (Rogers, 2009). Virtual methods, it was claimed, consisted in the digitisation of such traditional research methods (e.g. in online surveys or online ethnography). Rooted in media studies and the so-called computational turn in the humanities and social sciences, digital methods sought instead to learn from the methods of the medium and repurpose them for social and cultural research. (Venturini & Bounegro 2018, p. 4200)

Here is a quotation from Anders Kristian Munk (https://vbn.aau.dk/en/persons/126983) on the issues tackled by digital methods practitioners:

> I encourage my students to consider ways in which computational analysis of born digital material can complement fieldwork (e.g. as a way to map relational fields) and/or be thought of as a form of fieldwork in its own right (e.g. by locating digital traces in specific media cultures/socio-technical infrastructures or by using computation exploratively and descriptively to discover questions and concerns from actors online). (Lupton 2020, p. 23)

Some resources on digital methods:

Caliandro, A. (2017) Digital methods for ethnography: analytical concepts for ethnographers exploring social media environments, *Journal of Contemporary Ethnography*. SAGE Publications, 47(5), pp. 551–578. doi: 10.1177/0891241617702960.

Perriam, J., Birkbak, A. and Freeman, A. (2020) Digital methods in a post-API environment, *International Journal of Social Research Methodology*, 23(3), pp. 277–290.doi: http://10.0.4.56/13645579.2019.1682840.

Roberts, S., Snee, H., Hine, C., Morey, Y., & Watson, H. (2015). *Digital methods for social science: An interdisciplinary guide to research innovation*. Palgrave Macmillan Limited. http://ebookcentral.proquest.com/lib/uts/detail.action?docID=4082283

Rogers, R. (2019) *Doing digital methods*. London: Sage.

Venturini, T., Bounegru, L., Gray, J., Rogers, R. (2018) A reality check(list) for digital methods, *New Media & Society*. SAGE Publications, 20(11), pp. 4195–4217. doi: 10.1177/1461444818769236.

Munk has a series of tutorials introducing different digital methods centered on Wikipedia as a field (Lupton 2020, p. 23):

- https://medium.com/@EthnographicMachines/introduction-to-controversy-mapping-6961f03f9a8a

- https://medium.com/@EthnographicMachines/mapping-controversies-with-digital-methods-scrapers-crawlers-apis-17e0c96c340a
- https://medium.com/@EthnographicMachines/visual-network-analysis-with-gephi-d6241127a336
- https://medium.com/@EthnographicMachines/mapping-controversies-hand-in-1-d3ec9f1d0dc0
- https://medium.com/@EthnographicMachines/introduction-to-semantic-analysis-with-cortext-19f355b7289a

## Big data

> Big data methods are attractive to the social sciences — and all the sciences — because they can address data sets where the number of variables can far exceed the number of cases being analyzed. Generally speaking, big data methods seek to detect stable and potentially complex clusters and/or predictions in the data, while also taking aggressive steps not to capitalize on chance in doing so (Oswald and Putka 2017, p. 103).

The use of 'Big data' methods refers to a variety of methodologies such as data (or text) mining, social media analysis, content analysis or spatial analysis when these involve large datasets of geographic, text, or social media data. Chen (2018) offers an overview of the different methods and applications, and the references belonging to a special edition in *Sociology* in 2017 illustrate their application to health, education, psychology or communication, as well as ethical implications and potential pitfalls.


Bleidorn, W., Hopwood, C. J., & Wright, A. G. C. (2017). Using big data to advance personality theory. *Current Opinion in Behavioral Sciences*, *18*, 79–82. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.08.004

Boyd, R. L., & Pennebaker, J. W. (2017). Language-based personality: a new approach to personality in a digital world. *Current Opinion in Behavioral Sciences*, *18*, 63–68. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.07.017

Cappella, J. N. (2017). Vectors into the Future of Mass and Interpersonal Communication Research: Big Data, Social Media, and Computational Social Science. *Human Communication Research*, *43*(4), 545–558. https://doi.org/10.1111/hcre.12114

Chamorro-Premuzic, T., Akhtar, R., Winsborough, D., & Sherman, R. A. (2017). The datafication of talent: how technology is advancing the science of human potential at work. *Current Opinion in Behavioral Sciences*, *18*, 13–16. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.04.007

Chen, S.-H. (Ed.). (2018). *Big data in computational social sciences and humanities*. Springer. https://doi.org/10.1007/978-3-319-95465-3_1

Connelly, R., Playford, C. J., Gayle, V., & Dibben, C. (2016). The role of administrative data in the big data revolution in social science research. *Social Science Research*, *59*, 1–12. https://doi.org/10.1016/j.ssresearch.2016.04.015

Gillan, C. M., & Whelan, R. (2017). What big data can do for treatment in psychiatry. *Current Opinion in Behavioral Sciences*, *18*, 34–42. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.07.003

Greenberg, D. M., & Rentfrow, P. J. (2017). Music and big data: a new frontier. *Current Opinion in Behavioral Sciences*, *18*, 50–56. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.07.007

Guntuku, S. C., Yaden, D. B., Kern, M. L., Ungar, L. H., & Eichstaedt, J. C. (2017). Detecting depression and mental illness on social media: an integrative review. *Current Opinion in Behavioral Sciences*, *18*, 43–49. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.07.005

Halford, S., & Savage, M. (2017). Speaking sociologically with big data: Symphonic social science and the future for big data research. *Sociology*, *51*(6), 1132–1148. https://doi.org/10.1177/0038038517698639

Harari, G. M., Müller, S. R., Aung, M. S. H., & Rentfrow, P. J. (2017). Smartphone sensing methods for studying behavior in everyday life. *Current Opinion in Behavioral Sciences*, *18*, 83–90. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.07.018

Jang, S. M., & Hart, P. S. (2015). Polarized frames on "climate change" and "global warming" across countries and states: Evidence from Twitter big data. *Global Environmental Change*, *32*, 11–17. https://doi.org/https://doi.org/10.1016/j.gloenvcha.2015.02.010

Luhmann, M. (2017). Using Big Data to study subjective well-being. *Current Opinion in Behavioral Sciences*, *18*, 28–33. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.07.006

Mahmoodi, J., Leckelt, M., van Zalk, M. W. H., Geukes, K., & Back, M. D. (2017). Big data approaches in social and behavioral science: four key trade-offs and a call for integration. *Current Opinion in Behavioral Sciences*, *18*, 57–62. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.07.001

Matz, S. C., & Netzer, O. (2017). Using Big Data as a window into consumers' psychology. *Current Opinion in Behavioral Sciences*, *18*, 7–12. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.05.009

Oswald, F. L., & Putka, D. J. (2017). Big data methods in the social sciences. *Current Opinion in Behavioral Sciences*, *18*, 103–106. https://doi.org/10.1016/j.cobeha.2017.10.006

Pal, J., & Gonawela, A. (2017). Studying political communication on Twitter: the case for small data. *Current Opinion in Behavioral Sciences*, *18*, 97–102. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.09.009

Pardos, Z. A. (2017). Big data in education and the models that love them. *Current Opinion in Behavioral Sciences*, *18*, 107–113. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.11.006

Ruggeri, K., Yoon, H., Kácha, O., van der Linden, S., & Muennig, P. (2017). Policy and population behavior in the age of big data. *Current Opinion in Behavioral Sciences*, *18*, 1–6. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.05.010

Tay, L., Jebb, A. T., & Woo, S. E. (2017). Video capture of human behaviors: toward a big data approach. *Current Opinion in Behavioral Sciences*, *18*, 17–22. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.05.026

Watson, R. J., & Christensen, J. L. (2017). Big data and student engagement among vulnerable youth: A review. *Current Opinion in Behavioral Sciences*, *18*, 23–27. https://doi.org/https://doi.org/10.1016/j.cobeha.2017.07.004

## Content analysis

The semi-quantitative or quantitative analysis of texts and multimodal documents to find patterns and common themes has greatly expanded its possibilities in recent years. The availability of large datasets online and enhanced software tools have contributed to refine this method, often used in communication studies.

Bazeley, P. (2018). From codes and counts to content analysis and "big data." In *Integrating Analyses in Mixed Methods Research* (pp. 158–178). SAGE Publications. https://doi.org/10.4135/9781526417190.n7

Boussalis, C., & Coan, T. G. (2016). Text-mining the signals of climate change doubt. *Global Environmental Change*, *36*, 89–100. https://doi.org/10.1016/j.gloenvcha.2015.12.001

Conway, S. L., O'Keefe, P. A., & Hrasky, S. L. (2015). Legitimacy, accountability and impression management in NGOs: the Indian Ocean tsunami. *Accounting, Auditing & Accountability Journal*, *28*(7), 1075–1098. https://doi.org/http://dx.doi.org/10.1108/AAAJ-04-2012-01007

Lewis, S. C., Zamith, R., & Hermida, A. (2013). Content analysis in an era of big data: A hybrid approach to computational and manual methods. *Journal of Broadcasting & Electronic Media: Emerging Methods for Digital Media Research*, *57*(1), 34–52. https://doi.org/10.1080/08838151.2012.761702

Lobo, R., & Jacques, P. J. (2017). SOFIA'S choices: Discourses, values, and norms of the World Ocean Regime. *Marine Policy*, *78*, 26–33. https://doi.org/https://doi.org/10.1016/j.marpol.2016.12.023

Wozniak, A., Lück, J., & Wessler, H. (2015). Frames, stories, and images: The advantages of a multimodal approach in comparative media content research on climate change. *Environmental Communication*, *9*(4), 469–490. https://doi.org/10.1080/17524032.2014.981559

## Social media analysis

Social interactions registered in platforms such as Facebook, Twitter, Instagram, Weibo, Foursquare and others have been widely used to gather data on the interactions within or between given groups, as well as topics of academic research. These data can be analysed through qualitative, semi-quantitative or quantitative methods. For an overview of the different methods, see Sloan & Quan-Haase (2016). Both qualitative and quantitative methods have been used in ocean and coastal studies, as in the papers referenced below.

Airoldi, M. (2018). Ethnography and the digital fields of social media. *International Journal of Social Research Methodology*, *21*(6), 661–673. http://10.0.4.56/13645579.2018.1465622

Gibbs, M., Meese, J., Arnold, M., Nansen, B., & Carter, M. (2015). #Funeral and Instagram: death, social media, and platform vernacular. *Information, Communication & Society*, *18*(3), 255–268. https://doi.org/10.1080/1369118X.2014.987152

Golder, S. P., Ahmed, S., Norman, G., & Booth, A. (2017). Attitudes toward the ethics of research using social media: A systematic review. *Journal of Medical Internet Research*, *19*(6). https://doi.org/10.2196/jmir.7082

King, T. J. & O'Meara, D. 2019. 'The people have spoken': how cultural narratives politically trumped the best available science (BAS) in managing the Port Phillip Bay fishery in Australia. *Maritime Studies,* 18**,** 1-13. 10. doi: 1007/s40152-018-0097-5

Marino, S. (2018). Digital food and foodways: How online food practices and narratives shape the Italian diaspora in London. *Journal of Material Culture*, *23*(3), 263–279. https://doi.org/10.1177/1359183517725091

Martin, D. R., Pracheil, B. M., DeBoer, J. A., Wilde, G. R., Pope, K. L., Chizinski, C. J., Eskridge, K. M., & Pope, K. L. (2014). Using the internet to understand angler behavior in the information age. *Fisheries Research*, *157*(10), 24–27. https://doi.org/10.1016/J.FISHRES.2014.03.013

Monkman, G. G., Kaiser, M. J., & Hyder, K. (2018). Text and data mining of social media to map wildlife recreation activity. *Biological Conservation*, *228*, 89–99. https://doi.org/10.1016/j.biocon.2018.10.010

Monkman, G. G., Kaiser, M., & Hyder, K. (2018). The ethics of using social media in fisheries research. *Reviews in Fisheries Science & Aquaculture*, *26*(2), 235–242. http://10.0.4.56/23308249.2017.1389854

Shiffman, D. S., Macdonald, C., Ganz, H. Y., & Hammerschlag, N. (2017). Fishing practices and representations of shark conservation issues among users of a land-based shark angling online forum. *Fisheries Research*, *196*(C), 13–26. https://doi.org/10.1016/j.fishres.2017.07.031

Sloan, L., & Quan-Haase, A. (2016). *The SAGE Handbook of Social Media Research Methods*. https://doi.org/10.4135/9781473983847

Utekhin, I. (2017). Small data first: pictures from Instagram as an ethnographic source. *Russian Journal of Communication*, *9*(2), 185–200. https://doi.org/10.1080/19409419.2017.1327328

## Spatial analysis

The use of geographic data collection methods, such as GIS (Geographic Information Systems) or geospatial data to study social-ecological systems such as the AIS (Automated Information Systems) for vessels has been widely applied to domains such as ocean and coastal planning, climate change adaptation or ecosystem services (see Dailianis et al., [2018] for an example of the types of mapped activity in marine habitats in Europe). The papers below offer examples of its potential and limitations to study complex socio-ecological systems, such as in inferring behavioural patterns from geospatial data (see McDermott et al. [2019] and its responses in McDermott et al., [2018] and Hanich et al., [2018]).

Cornu, E. Le, Kittinger, J. N., Koehn, J. Z., Finkbeiner, E. M., & Crowder, L. B. (2014). Current Practice and Future Prospects for Social Data in Coastal and Ocean Planning. *Conservation Biology*, *28*(4), 902–911. https://doi.org/10.1111/cobi.12310

Dailianis, T., Smith, C. J., Papadopoulou, N., Gerovasileiou, V., Sevastou, K., Bekkby, T., Bilan, M., Billett, D., Boström, C., Carreiro-Silva, M., Danovaro, R., Fraschetti, S., Gagnon, K., Gambi, C., Grehan, A., Kipson, S., Kotta, J., McOwen, C. J., Morato, T., … Scrimgeour, R. (2018). Human activities and resultant pressures on key European marine habitats: An analysis of mapped resources. *Marine Policy*, *98*, 1–10. https://doi.org/https://doi.org/10.1016/j.marpol.2018.08.038

Damasio, L. M. A., Peninno, M. G., & Lopes, P. F. M. M. (2020). Small changes, big impacts: Geographic expansion in small-scale fisheries. *Fisheries Research*, *226*(February), 105533. https://doi.org/10.1016/j.fishres.2020.105533

Ekstrom, J. A., Suatoni, L., Cooley, S. R., Pendleton, L. H., Waldbusser, G. G., Cinner, J. E., Ritter, J., Langdon, C., Van Hooidonk, R., Gledhill, D., Wellman, K., Beck, M. W., Brander, L. M., Rittschof, D., Doherty, C., Edwards, P. E. T., & Portela, R. (2015). Vulnerability and adaptation of US shellfisheries to ocean acidification. *Nature Climate Change*, *5*(3), 207–214. https://doi.org/10.1038/nclimate2508

Fortin, M.-J., & Dale, M. R. T. (2014). *Spatial analysis: a guide for ecologists* (Second edition). Cambridge University Press.

Griffiths, E. (2012). Geographic information systems (GIS) and spatial analysis. In M. Williams & W. P. Vogt (Eds.), *The SAGE Handbook of Innovation in Social Research Methods* (pp. 442–464). SAGE Publications. https://doi.org/10.4135/9781446268261

Hanich, Q., Rotjan, R., Aqorau, T., Bailey, M., Campbell, B., Gray, N., Gruby, R., Hampton, J., Ota, Y., Parris, H., Reid, C., Sumaila, U. R., & Swartz, W. (2018). Unraveling the blue paradox: Incomplete analysis

yields incorrect conclusions about Phoenix Islands Protected Area closure. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(52), E12122–E12123. https://doi.org/10.1073/pnas.1815600115

Koehn, J. Z., Reineman, D. R., & Kittinger, J. N. (2013). Progress and promise in spatial human dimensions research for ecosystem-based ocean planning. *Marine Policy*, *42*(C), 31–38. https://doi.org/10.1016/j.marpol.2013.01.015

McDermott, G. R., Meng, K. C., McDonald, G. G., & Costello, C. J. (2019). The blue paradox: Preemptive overfishing in marine reserves. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(12), 5319–5325. https://doi.org/10.1073/pnas.1802862115

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Ruskule, A., Klepers, A., & Veidemane, K. (2018). Mapping and assessment of cultural ecosystem services of Latvian coastal areas. *One Ecosystem*, *3*, 1–20. https://doi.org/10.3897/oneeco.3.e25499

Wedding, L. M., Lecky, J., Gove, J. M., Walecka, H. R., Donovan, M. K., Williams, G. J., Jouffray, J.-B., Crowder, L. B., Erickson, A., Falinski, K., Friedlander, A. M., Kappel, C. V, Kittinger, J. N., McCoy, K., Norström, A., Nyström, M., Oleson, K. L. L., Stamoulis, K. A., White, C., & Selkoe, K. A. (2018). Advancing the integration of spatial data to map human and natural drivers on coral reefs. *PloS One*, *13*(3), 1. https://doi.org/http://dx.doi.org/10.1371/journal.pone.0189792

## Social network analysis

Social network analyses measure and represent the connections between social actors and activities using graph analytical tools to explain the characteristics of these interactions, find patterns and offer explanations for social behaviour in areas as diverse as marine planning, seafood trade or climate change adaptation. Data for social analysis can be gathered, as in Smythe (2017), via email surveys as opposed to methods that involve fieldwork (Dacks et al., 2018, Clarke et al., 2016), but also from archival or administrative data (Dell'Appa et al., 2013).

Alexander, S. M., Bodin, Ö., & Barnes, M. L. (2018). Untangling the drivers of community cohesion in small-scale fisheries. *International Journal of the Commons*, *12*(1), 519–547. https://doi.org/10.18352/ijc.843

Cioffi-Revilla, C. (2017). *Introduction to computational social science. Principles and applications* (2nd ed.). Springer. https://doi.org/10.1007/978-3-319-50131-4

Clarke, B., Tually, S., & Scott, M. (2016). Social networks and decision-making for coastal land-use planning, development and adaptation response. *Australian Journal of Maritime and Ocean Affairs*, *8*(2), 101–116. https://doi.org/http://dx.doi.org/10.1080/18366503.2016.1217378

Dacks, R., Ticktin, T., Jupiter, S. D., & Friedlander, A. (2018). Drivers of fishing at the household scale in Fiji. *Ecology and Society*, *23*(1), 37. https://doi.org/10.5751/ES-09989-230137

Dell'Apa, A., Johnson, J. C., Kimmel, D. G., & Rulifson, R. A. (2013). The international trade and fishery management of spiny dogfish: A social network approach. *Ocean and Coastal Management*, *80*, 65–72. https://doi.org/10.1016/j.ocecoaman.2013.04.007

Gençer, M. (2020). *Applied social network analysis with R: emerging research and opportunities*. IGI Global, Engineering Science Reference.

Jaja, J., Dawson, J., & Gaudet, J. (2017). Using social network analysis to examine the role that institutional integration plays in community-based adaptive capacity to climate change in Caribbean small island communities. *Local Environment*, *22*(4), 424–442. https://doi.org/10.1080/13549839.2016.1213711

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Scott, J. (2017). *Social Network Analysis* (Fourth). SAGE. https://doi.org/10.4135/9781529716597

Smythe, T. C. (2017). Marine spatial planning as a tool for regional ocean governance? An analysis of the New England ocean planning network. *Ocean & Coastal Management*, *135*, 11–24. https://doi.org/https://doi.org/10.1016/j.ocecoaman.2016.10.015

## Social simulation

In the computational social sciences, social simulation modelling has been applied to policy analysis and among the different methodologies grouped under this label, agent-based modelling (ABM) is often used for the study of:

> Complex crises and emergencies, given their ability to represent human communities in environments prone to natural, technological, or anthropogenic hazards. In another important application, as we shall see, agent-based models provide the first viable methodology for modeling entire societies, polities, and economies, as well as national, regional, and global scales of these social systems. (Cioffi-Revilla 2017, p. 17)

The use of ABM for policy decisions in socio-ecological systems and in particular, for the management of marine resources, including small-scale fisheries, is a field for emerging cooperation between social, natural and computer scientists. The papers referenced below indicate the increasing interest in the applications of ABM for the human dimensions of ocean and coastal management.


Abar, S., Theodoropoulos, G. K., Lemarinier, P., & O'Hare, G. M. P. (2017). Agent Based Modelling and Simulation tools: A review of the state-of-art software. *Computer Science Review*, *24*, 13–33. https://doi.org/https://doi.org/10.1016/j.cosrev.2017.03.001

Burgess, M. G., Carrella, E., Drexler, M., Axtell, R. L., Bailey, R. M., Watson, J. R., Cabral, R. B., Clemence, M., Costello, C., Dorsett, C., Gaines, S. D., Klein, E. S., Koralus, P., Leonard, G., Levin, S. A., Little, L. R., Lynham, J., Madsen, J. K., Merkl, A., … Wilcox, S. (2020). Opportunities for agent-based modelling in human dimensions of fisheries. *Fish and Fisheries*, *21*(3), 570–587. https://doi.org/10.1111/faf.12447

Cioffi-Revilla, C. (2017). *Introduction to Computational Social Science. Principles and Applications* (2nd ed.). Springer. https://doi.org/10.1007/978-3-319-50131-4

Elsenbroich, C. (2017). Social Simulation and Online Research Methods. In N. G. Fielding, R. M. Lee, & G. Blank (Eds.), *The SAGE Handbook of Online Research Methods*. SAGE Publications. https://doi.org/10.4135/9781473957992

Jager, W., Verbrugge, R., Flache, A., de Roo, G., Hoogduin, L., & Hemelrijk, C. (Eds.). (2017). *Advances in Social Simulation 2015* (1st ed. 20). Springer. https://doi.org/10.1007/978-3-319-47253-9

Libre, S. V. D., van Voorn, G. A. K., ten Broeke, G. A., Bailey, M., Berentsen, P., & Bush, S. R. (2015). Effects of social factors on fishing effort: The case of the Philippine tuna purse seine fishery. *Fisheries Research*, *172*, 250–260. https://doi.org/https://doi.org/10.1016/j.fishres.2015.07.033

Lindkvist, E., Wijermans, N., Daw, T. M., Gonzalez-Mon, B., Giron-Nava, A., Johnson, A. F., van Putten, I., Basurto, X., & Schlüter, M. (2020). Navigating complexities: Agent-based modeling to support research, governance, and management in small-scale fisheries. *Frontiers in Marine Science*, *6*(January), 733. https://doi.org/10.3389/fmars.2019.00733

Santos J., Borit M., Vanhée L. (2020) Modelling the "Captain's Nose": Exploring the Shift Towards Autonomous Fishing with Social Simulation. In: Verhagen H., Borit M., Bravo G., Wijermans N. (eds) *Advances in Social Simulation*. Springer Proceedings in Complexity. Springer.

ten Broeke, G. A., van Voorn, G. A. K. K., Ligtenberg, A., & Molenaar, J. (2019). Cooperation can improve the resilience of common-pool resource systems against over-harvesting. *Ecological Complexity*, *40*(June 2017), 100742. https://doi.org/https://doi.org/10.1016/j.ecocom.2018.08.009

Wijermans N., O'Neill E.D. (2020) Towards Modelling Interventions in Small-Scale Fisheries. In: Verhagen H., Borit M., Bravo G., Wijermans N. (eds) *Advances in Social Simulation*. Springer Proceedings in Complexity. Springer.


## Expert elicitation

Expert elicitation 'may be defined as the facilitation of the quantitative expression of subjective judgement, whether about matters of fact or matters of value' (Dias et al. 2018, p. 1) and it is usually employed 'when existing data and models cannot provide needed information' (Colson & Cooke 2018, p. 113), often to inform policy decisions in conditions of uncertainty (Morgan, 2014). The data collection modes for this methodology can be in person (as in Singh et al, 2017) or through email (Singh et al., 2019), and it may be combined with other methods such as (social) network analysis.


Colson, A. R., & Cooke, R. M. (2018). Expert Elicitation: Using the Classical Model to Validate Experts' Judgments. *Review of Environmental Economics and Policy*, *12*(1), 113–132. https://doi.org/10.1093/reep/rex022

Dias, L. C., Morton, A., & Quigley, J. (Eds.). (2018). *Elicitation The Science and Art of Structuring Judgement* (1st ed. 20). Springer International Publishing. https://doi.org/10.1007/978-3-319-65052-4

Morgan, M. G. (2014). Use (and abuse) of expert elicitation in support of decision making for public policy. *Proceedings of the National Academy of Sciences*, *111*(20), 7176 LP – 7184. https://doi.org/10.1073/pnas.1319946111

Singh, G. G., Cisneros-Montemayor, A. M., Swartz, W., Cheung, W., Guy, J. A., Kenny, T.-A. A., McOwen, C. J., Asch, R., Geffert, J. L., Wabnitz, C. C. C. , Sumaila, R., Hanich, Q., & Ota, Y. (2018). A rapid assessment of co-benefits and trade-offs among Sustainable Development Goals. *Marine Policy*, *93*(March 2017), 223–231. https://doi.org/https://doi.org/10.1016/j.marpol.2017.05.030

Singh, G. G., Hilmi, N., Bernhardt, J. R., Cisneros Montemayor, A. M., Cashion, M., Ota, Y., Acar, S., Brown, J. M., Cottrell, R., Djoundourian, S., González-Espinosa, P. C., Lam, V., Marshall, N., Neumann, B., Pascal, N., Reygondeau, G., Rocklöv, J., Safa, A., Virto, L. R., & Cheung, W. (2019). Climate impacts on the ocean are making the Sustainable Development Goals a moving target travelling away from us. *People and Nature*, *1*(3), 317–330. https://doi.org/10.1002/pan3.26

Singh, G. G., Sinner, J., Ellis, J., Kandlikar, M., Halpern, B. S., Satterfield, T., & Chan, K. M. A. (2017). Mechanisms and risk of cumulative impacts to coastal ecosystem services: An expert elicitation approach. *Journal of Environmental Management*, *199*, 229–241. https://doi.org/https://doi.org/10.1016/j.jenvman.2017.05.032

# Online discussions and resources

As the academic community reflects on how to address this challenge, discussions and papers are being produced, such as the one below by Wigginton et al. (2020) on how to ramp up (or down) academic research during the pandemic.

Wigginton, N. S., Cunningham, R. M., Katz, R. H., Lidstrom, M. E., Moler, K. A., Wirtz, D., & Zuber, M. T. (2020). Moving academic research forward during COVID-19. *Science*, pp 1-5 (numbering not final). https://doi.org/10.1126/science.abc5599

The following list contains a number of discussions and resources from different disciplines. Please alert us if you would like to add an event or online resource.

## American Anthropological Association

The Association features a series of webinars on the impacts and responses to COVID-19 and the role of anthropologists in these.

## CGIAR – Platform for Big Data in Agriculture

The Socio-Economic Data Community of Practice of this CGIAR (Consortium of International Agricultural Research Centers) hosted a webinar on 14 May 2020 to discuss the harmonisation of COVID-19 phone surveys in CGIAR, anticipating that the restrictions in travel and mobility will result in an uptake of phone surveys for agricultural research.

## Data collection in a time of multiple crises: The social research response to COVID-19, bushfires, and drought, ANU, 21 May 2020

This online Conference, organised by the Centre for Social Research & Methods at the Australian National University on 21 May 2020 presented several challenges related to the collection of survey data.

https://csrm.cass.anu.edu.au/events/data-collection-time-multiple-crises-social-research-response-covid-19-bushfires-and-drought

Sessions 1 and 4 of this Conference presented a discussion on the actions and challenges that the pandemic is posing to data collection for surveys.

In **Session 1**, insights from agencies working around the world, such as the World Bank, the Pew Research Centre or Harvard offered some advice, recommendations and discussed challenges. Some of the common points for discussion were the following:

- Face-to-face data collection has been generally suspended but phone data collection modes continue, especially in those places where there is high quality access.
- Responses are coming in more quickly, partially because people are at home and more accessible, maybe also because they are more eager to share their experiences. However, working at home may not ensure correct privacy standards for those interviewed (objects showing personal information or other persons in the background, etc.).
- The return to the new 'normal' poses new challenges: when face-to-face resumes, will the responses of household to enumerators change? Will datasets pre-and post-pandemic be comparable? How will the new conditions impact costs? Quality concerns, economic pressures and public health considerations may well be important factors to assess in future surveys.
- COVID-19 presents challenges unlike Ebola or armed conflicts and has led to the retooling and repurposing of large scale surveys conducted by large organisations like National Statistical Offices. For example, the World Bank has resorted to high-frequency phone surveys (HFPS) and partnered with other organisations to use and share Big Data. Phone data collection, now a substitute for F2F data collection, will probably become a complement in the 'new normal'.
- In the 'new normal', areas for improvement were noted:

    - Need to increase capacity in physical and human capital, and institutionalise change, if phone surveys are going to replace F2F data collection modes.
    - Need to minimise biases due to non-response, attrition, or undercoverage stemming from the change in methods.
    - Need to build baseline data to be able to compare datasets pre- and post-pandemic.
    - New protocols for F2F surveys (travelling, social distancing, etc.).
    - Researcher adaptation to the changes in people's responses: How to ask sensitive questions, how to best collect data? Do we have the time for time-consuming questions? Need to improve the use of time, technology, and data collection choices.
    - Better use of existing resources, better data integration, rely more on alternate modes for data collection. Probably in the near future there will be more data based on modelling.
- And a final realisation, for those working with local contacts, that there is very little substitute for quality local knowledge and this is even truer now.

**Session 2** and a **lunchtime workshop on online survey design** offered further insights from the experience of conducting surveys in emergency settings, panellists reflected on problems and alternatives:

Problems

- Quick turnaround is needed
- Lack of access to population
- Benchmarks are non-existent or outdated
- The impact of biases is not known

Resources

- Online data collection
- Piggyback on existing data (official statistics, existing surveys)

Resorting to administrative data or data archives will be an important tool, hence the importance to share research data. Data archives offer not only data, but also the data collection instruments.

Collecting and sharing data in these contexts offer several challenges:

- Open-ended questions and quick turnaround are incompatible.
- Confidentiality presents the biggest challenge: how do you share qualitative data safely, with ethical implications and consent from vulnerable populations, such as indigenous populations and data sovereignty?
- With regards to open-ended responses and supervised coding, the contextual information in which the qualitative data has been collected that helps positioning the data offers problems, some technical like the difficulty in transporting coding from qualitative analysis software.

**Session 4** offered further insights into the experience of social researchers conducting surveys and qualitative research during the pandemic. From examples of the differences between conducting focus groups online and face-to-face in assessing the social impacts of COVID-19 (Social Research Centre) to how face-to-face data collection modes may transition to online collection in longitudinal household surveys (Institute for Social and Economic Research), or partnering with technological companies to develop large-scale surveys (University of Maryland). The session's Q&A offered some considerations for the future:

- A greater use of technology in social research, whether quantitative or qualitative.
- Uncertainty (and excitement) as to what the 'new normal' will be for social researchers in terms of adapting methodologies.
- The awareness that the transition to alternative methodologies for social research has been accelerated.

## Innovative Social Research Methods Public Group

Deborah Lupton curates this community Facebook page (https://www.facebook.com/groups/333716010504710/) in which researchers post questions, examples, practices, and discussions on innovative methods.

## LSE School of Economics and Political Science

https://blogs.lse.ac.uk/impactofsocialsciences/2020/03/23/editorial-social-science-in-a-time-of-social-distancing/

Reflects on different impacts of the pandemic for researchers in the social sciences, including adapting methodologies (link to Lupton 2020) and travel.

## Resuming field research – academic guidance

Many universities have started to provide advice on when to resume field activities, revised ethics procedures and instructions on how to conduct fieldwork. Advice varies according to specific conditions, university policies, ethics requirements, and foreseeable deadlines. The examples below show the variety of aspects involved and the evolving nature of these measures. Although these are not methodological in nature, they do present implications for data collection methods that need to be gauged when planning data collection in the near future.

The **University of Washington** offers guidance in this resource. https://www.washington.edu/research/or/guidance-for-returning-to-in-person-research/. It includes a decision tree: https://www.washington.edu/research/wp/wp-content/uploads/Returning-to-In-Person-Research-Decision-Tree.pdf

**McMaster University** provides guidance for fieldwork conducted during the pandemic: https://hr.mcmaster.ca/app/uploads/2020/05/Fieldwork-Research-Guidelines-COVID-19-FINAL.pdf

**University of Maine**: https://umaine.edu/research-compliance/wp-content/uploads/sites/445/2020/06/FieldWorkGuidance_02June2020.pdf and

**University of California, Berkeley**: https://ehs.berkeley.edu/news-alerts/covid-19-precautions-and-considerations-travel-or-fieldwork

## SAGE Ocean

SAGE Ocean (https://ocean.sagepub.com/) collates several resources for social scientists aiming to work with Big Data and Technology. The site offers two useful tools for a first overview of diverse computational methods: a compendium of resources for social scientists entering this field (https://ocean.sagepub.com/start-working-with-big-data) including books, videos, webinars and learner stories; and an overview of the software tools most used in the different CSS methodologies (https://ocean.sagepub.com/research-tools-directory).

## Social Science Research Council

The series Covid-19 and the Social Sciences in the Insights section of the Social Science Research Council offers a plethora of reactions to how social research can contribute to the pandemic. Some of the pieces reflect on the future of societies and social research methods, or on when, and how, will field research resume.

## Social Science Space

https://www.socialsciencespace.com/coronavirus/

Offers resources for educators and researchers including methods, targeted specifically at behavioural social scientists.

## Using Mobile Phones for Survey Research in the Time of Covid-19 Lockdowns and Beyond, PRCI, 29 May 2020

The Innovation Lab for Food Security Policy, Research, Capacity and Influence at the Michigan State University hosts the video of this webinar held on 29 May 2020 to discuss the opportunities offered by the

increasing availability of mobile phones in developing countries to conduct research during the pandemic (https://www.canr.msu.edu/news/prci-webinar-on-using-mobile-phones-for-survey-research-now-available).

## World Council of Anthropological Associations

The 1ª WCAA Webinar: Culture and public health in the era of Coronavirus on 16 April 2020 was followed by a second Fieldwork in an era of pandemia: digital (and other) alternatives on 19 May.The recordings can be found in the Videos section of the WCAA website (www.wcaanet.org).