



**Anne Cambon-Thomsen**, MD, Emeritus Research director CNRS,  
RDA ambassador and member of the European Group on Ethics of science and new technologies.  
UMR 1027, Inserm, Université Toulouse III Paul Sabatier, Epidémiologie et analyses en santé publique;  
équipe BIOETHICS (team leader : Emmanuelle Rial-Sebbag)

## RDA-COVID19 Working Group

<https://www.rd-alliance.org/groups/rda-covid19>

RDA France webinar, 9/7/2020

RDA = Research data alliance

An example regarding the organisation of  
international cooperation around COVID-19 data.



# Outline of presentation

- **Basic elements on RDA**
- Context and characteristics of the RDA COVID-19 working group
- Methods, organisation and steps
- Outputs and other productions
- Visualisation and help to use the document
- How to foster impact?
- Conclusion
- Discussion





# RDA in a Nutshell

## Vision

**Researchers and innovators** openly share and re-use data across technologies, disciplines, and countries to address the grand challenges of society.

## Mission

RDA builds the **social and technical bridges** that **enable open sharing and re-use** of data.

Some slides have been prepared by Hilary Hanahoe, Secretary general RDA

## THE RESEARCH DATA ALLIANCE

[www.rd-alliance.org](http://www.rd-alliance.org)

*building the social and technical bridges that enable open sharing of data*

### 45 FLAGSHIP OUTPUTS

including 12 ICT Technical Specifications

### 100+ ADOPTION CASES

across multiple disciplines, organisations & countries

### 98 GROUPS WORKING ON GLOBAL DATA INTEROPERABILITY CHALLENGES

40 Working Groups  
58 Interest Groups

### 10,890 INDIVIDUAL MEMBERS FROM 145 COUNTRIES

69% Academia & Research  
14% Public Administration  
11% Enterprise & Industry

### 51 ORGANISATIONAL MEMBERS 11 AFFILIATE MEMBERS





# The technical heart of RDA ... 98 groups

## Working Groups

- develop and implement tools, policy, practices & products for data management that are adopted and used by projects, organisations, communities
- TIMING: 12-18 MONTHS
- TOTAL: 40 Working Groups

**RECOMMENDATIONS:** Concrete deliverables - "Running code", tools, standards, etc.

## Interest Groups

- focus on solving a specific data sharing problem and identifying what kind of infrastructure needs to be built.
- TIMING: as long as group is active
- TOTAL: 58 Interest Groups

**OUTPUT:** Possibly case statements for new WGs, guidelines, best practice, etc.



# RDA Recommendations & Outputs

## RECOMMENDATIONS

Equivalent of the “specifications” or “standards” that other organisations create and endorse.

**25 Recommendations**  
*of which 12 ICT  
Technical Specifications*

## SUPPORTING OUTPUTS

Outputs of RDA WGs and IGs that are fruit of RDA work, but are not necessarily adoptable bridges.

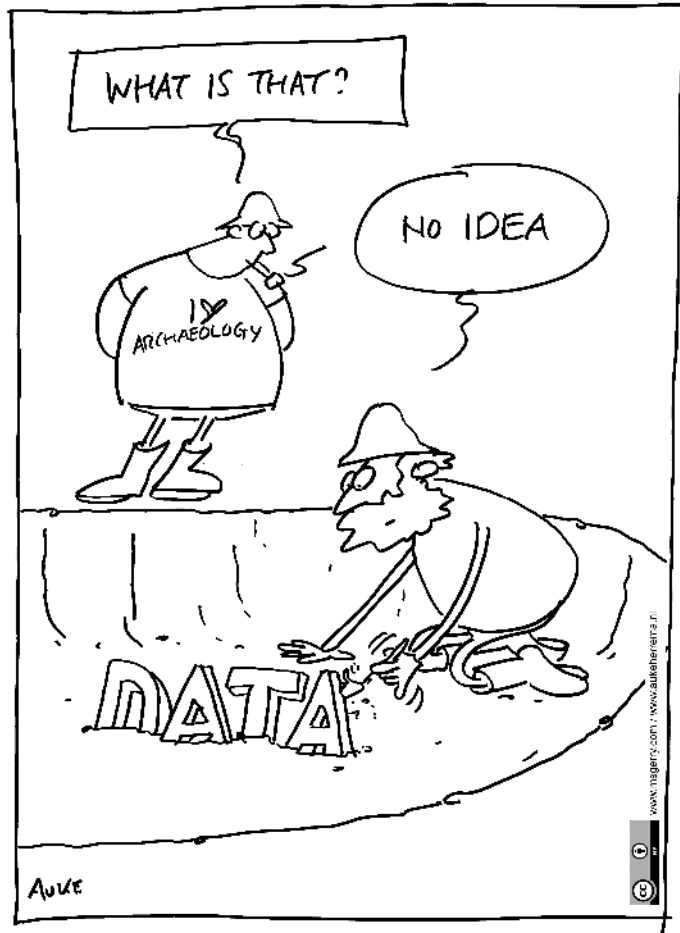
**22 Supporting Outputs**

## OTHER OUTPUTS

Anything a WG or IG wants to register and report, e.g. workshop reports, articles, survey results, etc.



# What is RDA's impact?



DATA FOR FUTURE GENERATIONS

Global data agreements

Standards

Institutional change

Discipline specific solutions

*Cross | multi | inter disciplinary solutions*

Education and Training

*Policy*

Professional career enhancement



# Outline of presentation

- Basic elements on RDA
- **Context and characteristics of the RDA COVID-19 working group**
- **Methods, organisation and steps**
- Outputs and other productions
- Visualisation and help to use the document
- How to foster impact?
- Conclusion
- Discussion





# RDA community response to COVID-19



# Setting up an exceptional working group

- Internal discussions in RDA on how to contribute in the context of COVID-19 crisis
- Discussion with partners and institutions, in particular the European Commission
- Identification of needs for guidelines and recommendations towards data sharing good practices in context of pandemic, for researchers and for policymakers : fall in RDA worldwide mission, spirit and know how
- A few TC between mid- and end of March to define the objectives, mandate and first steps of process





# The Research Data Alliance COVID-19 Data Sharing Recommendations and Guidelines

by the community for the community

*How is it both classical and exceptional?*

*9 July 2020*



# Objectives

## Recommendations and guidelines:

- Detailed **guidelines** to help **researchers** and **data stewards** follow best practices to maximise the efficiency of their work, and to act as a blueprint for future emergencies;
- **Recommendations** to help **policymakers** and **funders** to maximise timely, quality data sharing and appropriate responses in such health emergencies.
- **Address interests** of researchers, policymakers, funders, publishers, and providers of data sharing infrastructures.

**What are the objectives?**

**1.0** Clearly define detailed guidelines on data and software sharing for COVID-19 research.

**1.1** Help stakeholders follow best practices to maximise the efficiency.

**1.2** Act as a blueprint for future emergencies to maximise the efficiency of their work.

**2** Develop recommendations for funders and policymakers to maximise timely, quality data and software sharing and appropriate responses in health emergencies.

**3** Address interests of researchers, policymakers, funders, publishers, and providers of data sharing infrastructures.

**Global Effort to Raise the Bar for Data Sharing**

- 117 cross sectoral signatories to the [Wellcome Trust statement](#) in January 2020.
- Agreement by 30 leading publishers on [immediate open access](#) to COVID-19 publications and underlying data.



# RDA Community response



Call to action to create a **fast track Working Group** aimed at developing a system for **data sharing in public health emergencies, specifically COVID-19**

- 🌐 Around 600 RDA members and newcomers registered for the different groups
- 🌐 165 active contributors to the documents
- 🌐 Experts in different fields as group moderators
- 🌐 Regular calls and iterations
- 🌐 Weekly webinars, requests for comments
- 🌐 5 releases produced (April – June 2020)
- 🌐 Final release – 30 June 2020

## RDA's guiding principles:

- ✓ **Openness**
- ✓ **Consensus**
- ✓ **Balance**
- ✓ **Harmonization**
- ✓ **Community-driven**
- ✓ **Non-profit and technology-neutral**





# Working group co-chairs



**Juan Bicarregui**  
STFC



**Anne Cambon-Thomsen**  
CNRS



**Ingrid Dillo**  
DANS



**Natalie Harrower**  
DRI



**Sarah Jones**  
DCC



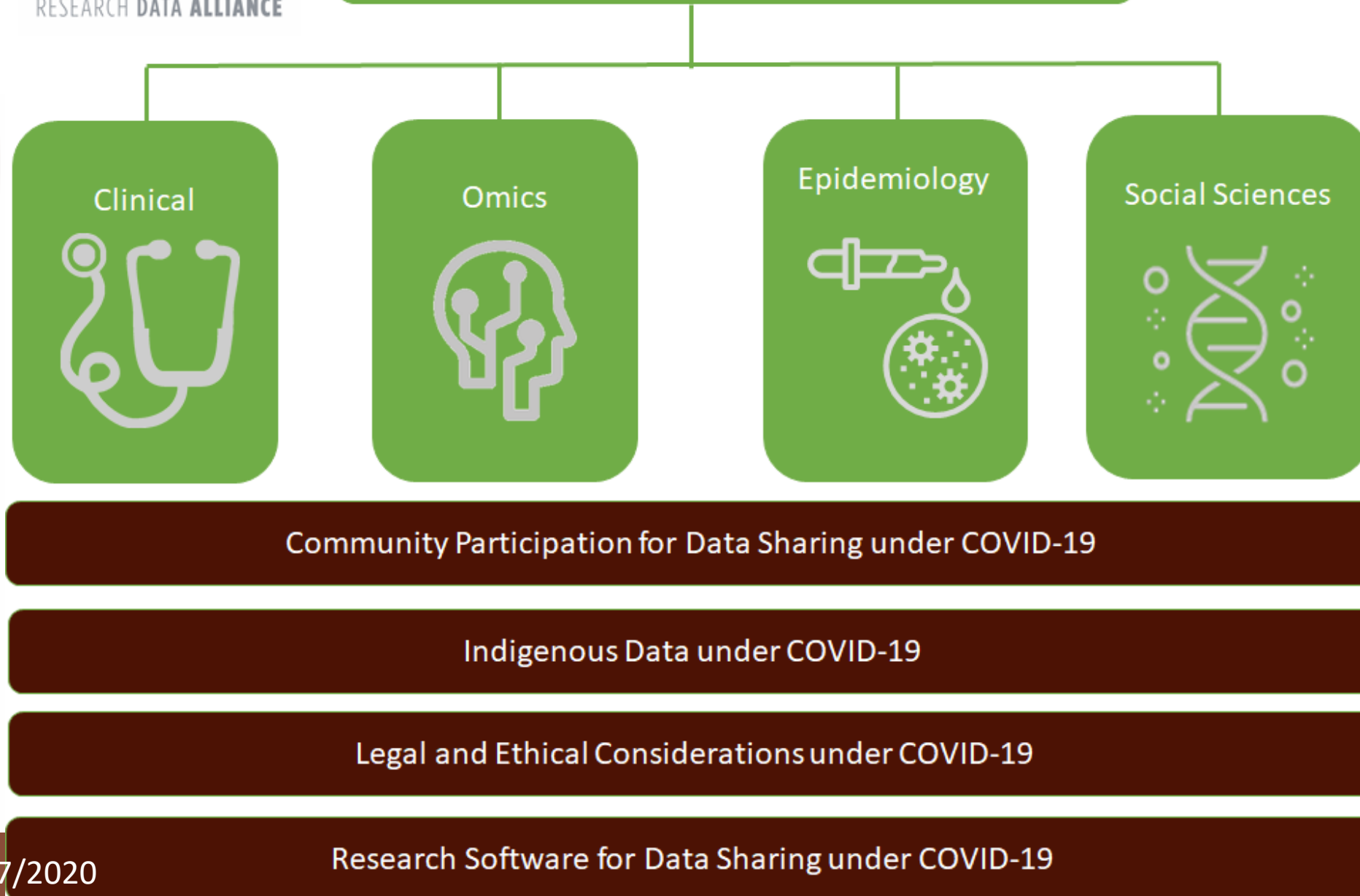
**Mark Leggott**  
Research Data  
Canada



**Priyanka Pillai**  
University of  
Melbourne

<https://www.rd-alliance.org/groups/rda-covid19>







# RDA-COVID19 Clinical sub-group

<b>RDA COVID19 UMBRELLA GROUP WEB PAGES</b>	<a href="https://www.rd-alliance.org/groups/rda-covid19">https://www.rd-alliance.org/groups/rda-covid19</a>
<b>RDA COVID19 CASE STATEMENT</b>	<a href="https://www.rd-alliance.org/node/68704/case-statement">https://www.rd-alliance.org/node/68704/case-statement</a>
<b>RDA COVID19 EVENTS (WEBINAR DETAILS)</b>	<a href="https://www.rd-alliance.org/node/68704/events">https://www.rd-alliance.org/node/68704/events</a>
<b>RDA COVID19 WORKING &amp; SUB-GROUP ORGANIZATION</b>	<a href="https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization">https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization</a>
<b>RDA COVID19 CLINICAL SUBGROUP WEB PAGES</b>	<a href="https://www.rd-alliance.org/groups/rda-covid19-clinical">https://www.rd-alliance.org/groups/rda-covid19-clinical</a>
<b>RDA COVID19 CLINICAL SUBGROUP GOOGLE FOLDER</b>	<a href="https://drive.google.com/open?id=1dLAL7aNU3TVYWk5UtryiHfLpyzf3mPF7">https://drive.google.com/open?id=1dLAL7aNU3TVYWk5UtryiHfLpyzf3mPF7</a>

## Clinical Sub-group Moderators



**Clinical Sub-group Co-chair**

Anne Cambon-Thomsen  
CNRS



**Clinical**  
Andrea Jackson-Dipina, NIH  
Sergio Bonini, CNR  
Dawei Lin, NIH  
Christian Ohmann, ECRIN





# RDA-COVID19 Clinical sub-group

## Members

Alejandra Gonzalez-Beltran  
Anne-Caroline Deletoille  
Bridget Walker  
Daniel Mietchen  
Diana Navarro-Llobet  
Galia Weidl  
Holly Murray  
Isabelle PERSEIL  
Jonathan Tedds  
Leslie McIntosh-Borrelli  
Marcia Levenstein  
Martin Golebiewski  
Natalie Meyers  
Patrick Dunn  
Ram Gouripeddi  
Sara Pittonet Gaiarin  
Simon Parker  
Stuart Chalk  
Thomas Exner  
Wei Gu

Andrea Jackson Dipina  
Anthony Juehne  
Catherine Chronaki  
David Carr  
Dominique Gibert  
Grace O'Malley  
Iain Hrynaszkiewicz  
James Hetherington  
Juan Bicarregui  
Lew Berman  
Marcos Roberto Tovani-Palone  
Mary O'Brien Uhlmansiek  
Natalie Pankova  
Paulette Lieby  
Robert Quick  
Sarah Jones  
Stefan Sauermann  
Sunil Kushor  
Thomas Duflot  
Wolmar Nyberg Åkerström

Angel Alberich-Bayarri  
Anupama Gururaj  
Christian Ohmann  
Dawei Lin  
Fanny Sébire  
Gustav Nilsonne  
Idris Sulaiman  
Jeremy Geelen  
Juliane Fluck  
Lorena García-Hevia  
Mark Leggott  
Melissa Haendel  
Oya Beyan  
Peter Van Reusel  
Robin Michelet  
Sergio Bonini  
Stéphanie Rennes  
Susanna-Assunta Sansone  
Toralf Kirsten  
Young-Joo Lee

Anne Cambon-Thomsen  
Brendan Palmer  
Claire Austin  
Diana Dimitrova  
Franziska Weng  
Hilary Hanahoe  
Ingrid Dillo  
Jitendra Jonnagaddala  
Laurent Dollé  
Luc DECKER  
Marta Marin  
Mogens Thomsen  
Paola Di Maio  
Priyanka Pillai  
Rowan Emam  
Simon Hodson  
Steve Tsang  
Susheel Varma  
Vivien Bonazzi





# RDA-COVID19 Omics sub-group

<b>RDA COVID19 UMBRELLA GROUP WEB PAGES</b>	<a href="https://www.rd-alliance.org/groups/rda-covid19">https://www.rd-alliance.org/groups/rda-covid19</a>
<b>RDA COVID19 CASE STATEMENT</b>	<a href="https://www.rd-alliance.org/node/68704/case-statement">https://www.rd-alliance.org/node/68704/case-statement</a>
<b>RDA COVID19 EVENTS (WEBINAR DETAILS)</b>	<a href="https://www.rd-alliance.org/node/68704/events">https://www.rd-alliance.org/node/68704/events</a>
<b>RDA COVID19 WORKING &amp; SUB-GROUP ORGANIZATION</b>	<a href="https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization">https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization</a>
<b>RDA COVID19 OMICS SUBGROUP WEB PAGES</b>	<a href="https://www.rd-alliance.org/groups/rda-covid19-omics">https://www.rd-alliance.org/groups/rda-covid19-omics</a>
<b>RDA COVID19 OMICS SUBGROUP GOOGLE FOLDER</b>	<a href="https://drive.google.com/open?id=1bHzfxQLIMdsJtrbl_ZeoSeNZUnY0r2o1">https://drive.google.com/open?id=1bHzfxQLIMdsJtrbl_ZeoSeNZUnY0r2o1</a>



**Omics Sub-group  
Co-chair**

Juan Bicarregui  
STFC



Rob Hooft: [rob.hooft@dtls.nl](mailto:rob.hooft@dtls.nl) | @rwwh

Natalie Meyers: [natalie.meyers@nd.edu](mailto:natalie.meyers@nd.edu) | @nkmeyers



**Omics Sub-group Moderators**

**Omics**  
Rob Hooft, DTL &  
Natalie Meyers, Uni of Notre Dame





# RDA-COVID19 Omics sub-group

## Members

Alecia Naidu  
Andrea Zaliani  
Bartha Maria Knoppers  
Calvin Chan  
Christopher Harrison  
Dara Hallinan  
Eric Piver  
Galia Weidl  
Hilary Hanahoe  
Isabelle PERSEIL  
Juliane Fluck  
Korbinian Bösl  
Lynn Schriml  
Marta Teperek  
Paolo Manghi  
Pieter Heyvaert  
Ram Gouripeddi  
Rodrigo Sara  
Stéphanie Rennes  
Thomas Duflot  
Vivien Bonazzi

Alejandra Gonzalez-Beltran  
Andrew Harrison  
Brian Corrie  
Caterina Tomulescu  
Claire Austin  
David Molik  
Fanny Sébire  
George Papastefanatos  
Hugh Shanahan  
Jeremy Geelen  
Justine Vandendorpe  
Laurence DELHAES  
Mark Leggott  
Mary O'Brien Uhlmansiek  
Patrick Dunn  
Piotr Dabrowski  
Richard Milne  
Rosanna Babagiannou  
Steve Tsang  
Tim Smith  
Wolmar Nyberg Åkerström

Alessandra Renieri  
Anupama Gururaj  
Brian Corrie  
Catherine Chronaki  
Clara Amid  
Deepti Mittal  
Felix Bach  
Heidi Laine  
Hussein Sherief  
Jonathan Tedds  
Kara Woo  
Lawrence Nderu  
Mark Taylor  
Miguel Rocha  
Paula Martinez Lavanchy  
Priyanka Pillai  
Rob Hooft  
Simon Hodson  
Susanna-Assunta Sansone  
Venkata Satagopam  
Yasemin Turkyilmaz-van der Velden

Alexander Bernier  
Artur Rocha  
Bridget Walker  
Christian Busse  
Daniel Mietchen  
Emmanuelle Rial-Sebbag  
Fotis Psomopoulos  
helene blasco  
Idris Sulaiman  
Juan Bicarregui  
Konrad Förstner  
Leyla Garcia  
Marta Marin  
Natalie Meyers  
Philippe Rocca-Serra  
Rajini Nagrani  
Robert Quick  
Sophie Limou  
Susheel Varma  
Victor Greiff  
Zoe Cournia





# RDA-COVID19 Epidemiology sub-group

RDA COVID19 UMBRELLA GROUP WEB PAGES	<a href="https://www.rd-alliance.org/groups/rda-covid19">https://www.rd-alliance.org/groups/rda-covid19</a>
RDA COVID19 CASE STATEMENT	<a href="https://www.rd-alliance.org/node/68704/case-statement">https://www.rd-alliance.org/node/68704/case-statement</a>
RDA COVID19 EVENTS (WEBINAR DETAILS)	<a href="https://www.rd-alliance.org/node/68704/events">https://www.rd-alliance.org/node/68704/events</a>
RDA COVID19 WORKING & SUB-GROUP ORGANIZATION	<a href="https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization">https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization</a>
RDA COVID19 EPIDEMIOLOGY SUBGROUP WEB PAGES	<a href="https://www.rd-alliance.org/groups/rda-covid19-epidemiology">https://www.rd-alliance.org/groups/rda-covid19-epidemiology</a>
RDA COVID19 EPIDEMIOLOGY SUPPORTING OUTPUT	<a href="https://www.rd-alliance.org/group/rda-covid19-epidemiology/outcomes/data-sharing-epidemiology">https://www.rd-alliance.org/group/rda-covid19-epidemiology/outcomes/data-sharing-epidemiology</a>

## Epidemiology Sub-group Moderators

### Epidemiology Sub-group Co-chair



Priyanka Pillai  
University of Melbourne



### Epidemiology

Claire Austin, Environment and Climate Change Canada  
Gabriel Turinici, University Paris Dauphine





# RDA-COVID19 Epidemiology sub-group

## Members

Alejandra Gonzalez-Beltran  
Anne-Caroline Deletoille  
Birte Lindstaedt  
Catherine Chronaki  
Cyrille Delpierre  
Eiko Yoneki  
Felix Ameka  
Henri TONNANG  
Iain Hrynaszkiewicz  
Jay Greenfield  
Jonathan Tedds  
Lactatia Motsuku  
Marlon Bayot  
Michelle Kelly-Irving  
Patrick Ntantu ikinsa  
Ramona Walls  
Sam Packard  
Stefano Dalmiani  
Susheel Varma  
Yong Li

Alvaro Lopez Garcia  
Anthony Juehne  
Bridget Walker  
Chifundo Kanjala  
Daniel Mietchen  
Emma Lazzeri  
Gabriel TURINICI  
Henriette Senst  
Idris Sulaiman  
Jeremy Geelen  
Jouni Jaakkola  
Luke A McGuinness  
Mary O'Brien Uhlmansiek  
Natalie Meyers  
Philippe Després  
Richard Welpton  
Shirley Mills  
Steve Tsang  
Toralf Kirsten

Andrew Sporle  
Ariel Benis  
Carlos Luis Parra-Calderon  
Christos Diou  
David Delmail  
Fanny Sébire  
Galia Weidl  
Hilary Hanahoe  
Isabelle PERSEIL  
Jitendra Jonnagaddala  
Juliane Fluck  
Marcos Roberto Tovani-Palone  
Matthew Cannon  
Natalie Harrower  
Rajini Nagrani  
Robert Quick  
Simon Hodson  
Sunil Kushor  
Turkka Näppilä

Anna Widyastuti  
Artur Rocha  
Carsten Oliver Schmidt  
Claire Austin  
Dimitris Kotzinos  
Felix Bach  
Gayo Diallo  
Hugh Shanahan  
Jason Nairnsey  
Joanne Stocks  
Keith Jeffrey  
Mark Leggott  
Meg Sears  
Patricia Kearney  
Ram Gouripeddi  
Robin Michelet  
Stefan Sauermann  
Susanna-Assunta Sansone  
Wolmar Nyberg Åkerström





# RDA-COVID19 Social Science sub-group

<b>RDA COVID19 UMBRELLA GROUP WEB PAGES</b>	<a href="https://www.rd-alliance.org/groups/rda-covid19">https://www.rd-alliance.org/groups/rda-covid19</a>
<b>RDA COVID19 CASE STATEMENT</b>	<a href="https://www.rd-alliance.org/node/68704/case-statement">https://www.rd-alliance.org/node/68704/case-statement</a>
<b>RDA COVID19 EVENTS (WEBINAR DETAILS)</b>	<a href="https://www.rd-alliance.org/node/68704/events">https://www.rd-alliance.org/node/68704/events</a>
<b>RDA COVID19 WORKING &amp; SUB-GROUP ORGANIZATION</b>	<a href="https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization">https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization</a>
<b>RDA COVID19 SOCIAL SUBGROUP WEB PAGES</b>	<a href="https://www.rd-alliance.org/groups/rda-covid19-social-sciences">https://www.rd-alliance.org/groups/rda-covid19-social-sciences</a>
<b>RDA COVID19 SOCIAL SUBGROUP GOOGLE FOLDER</b>	<a href="https://drive.google.com/drive/folders/100Aa-KnETZswHP9FiLZlIZZfHVNfd9Dh?usp=sharing">https://drive.google.com/drive/folders/100Aa-KnETZswHP9FiLZlIZZfHVNfd9Dh?usp=sharing</a>



**Social Sub-group  
Co-chair**

Ingrid Dillo  
DANS



**Social Sub-group Moderators**

**Social**  
Iryna Kuchma, EIFL  
Amy Pienta, University of Michigan





# RDA-COVID19 Social Science sub-group

## Members

Adrian Groza  
Andrew Sporle  
Ben Geiger  
Claire Austin  
Daniel Mietchen  
Eva Méndez  
Gena Palmieri  
Ingrid Dillo  
James McNally  
Jorge Clarke  
Katherine Mika  
Libby Hemphill  
Marcos Roberto Tovani-Palone  
Michaela Mayrhofer  
Natalie Dewson  
Panayiota Polydoratou  
Robert Quick  
Simon Hodson  
Stephanie Russo Carroll  
Timea Biro  
Wolmar Nyberg Åkerström  
Yung Shin Van Der Sype

Alexander Thistlewood  
Ann Myatt James  
Bridget Walker  
Claudia Bauzer Medeiros  
de Pedraza Pablo  
Felix Bach  
Helena Laaksonen  
Iryna Kuchma  
Jenny O'Neill  
Jose Carlos Urra Llanusa  
Katie Hannan  
Louise Bezuidenhout  
Mark Leggott  
Michelle Barker  
Neil Winkles  
Pascal Heus  
Robert Downs  
Simon Parker  
Sunil Kushor  
Valeria Quochi  
Yann Le Franc

Alexandre Hobeika  
Anthony Juehne  
Calvin Chan  
Claudia Engelhardt  
Devika Madalli  
Galia Weidl  
Hilary Hanahoe  
Isabelle PERSEIL  
Jeremy Geelen  
Katerina Zourou  
Kristan Kang  
Louise Bezuidenhout  
Marta Teperek  
Minglu Wang  
Nora Dörrenbächer  
Rainer Stotzka  
Rooney Figueiredo Pinto  
Stefanie Kethers  
Susanna-Assunta Sansone  
Wim HUGO  
Yong Liu

Amy Pienta  
Arnab Paul  
Catherine Chronaki  
Dana Rad  
Dimitris Kotzinos  
Gauthier Chassang  
Iain Hrynaszkiwicz  
Jagadeesh G  
John Brian Pickering  
Katherine McNeill  
Laura Morales  
Mar Valverde  
Mary O'Brien Uhlmansiek  
Mitrea Geta  
Pamela Andanda  
Richard Milne  
sabrina Boni  
Stéphanie Rennes  
Thordis Sveinsdottir  
Wissam El-Hage  
Yulia Karimova





# RDA-COVID19 Community Participation

<b>RDA COVID19 UMBRELLA GROUP WEB PAGES</b>	<a href="https://www.rd-alliance.org/groups/rda-covid19">https://www.rd-alliance.org/groups/rda-covid19</a>
<b>RDA COVID19 CASE STATEMENT</b>	<a href="https://www.rd-alliance.org/node/68704/case-statement">https://www.rd-alliance.org/node/68704/case-statement</a>
<b>RDA COVID19 EVENTS (WEBINAR DETAILS)</b>	<a href="https://www.rd-alliance.org/node/68704/events">https://www.rd-alliance.org/node/68704/events</a>
<b>RDA COVID19 WORKING &amp; SUB-GROUP ORGANIZATION</b>	<a href="https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization">https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization</a>
<b>RDA COVID19 COMMUNITY PARTICIPATION SUBGROUP WEB PAGES</b>	<a href="https://www.rd-alliance.org/groups/rda-covid19-community-participation">https://www.rd-alliance.org/groups/rda-covid19-community-participation</a>
<b>RDA COVID19 COMMUNITY PARTICIPATION <i>SUBGROUP</i> GOOGLE FOLDER</b>	<a href="https://drive.google.com/drive/folders/1mqWSuHxSFzoxueS_a1pUXVlk8xaHCx_Al?usp=sharing">https://drive.google.com/drive/folders/1mqWSuHxSFzoxueS_a1pUXVlk8xaHCx_Al?usp=sharing</a>

## Community participation Sub-group Moderators

**Community participation Sub-group Co-chair**



Sarah Jones  
DCC



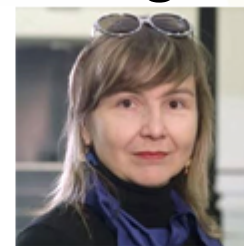
Joanne Stocks,  
University of  
Nottingham



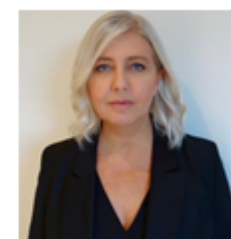
Kheeran  
Dharmawardena  
Cytrax Consulting



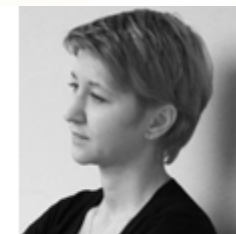
Daniel Mietchen,  
School of Data  
Science, UVA



Eva Mendez,  
Uni Carlos III  
Madrid



Susanna-Assunta  
Sansone, Oxford e-  
Research Centre



Timea Biro, DRI





# RDA-COVID19 Community sub-group

## Members

Alecia Naidu  
Alicia Fátima Gómez Sánchez  
Andrew Sporle  
Arriel Benis  
Bridget Walker  
Christine Kirkpatrick  
Cord Wiljes  
Daniella Lowenberg  
Eva Méndez  
Fernando Aguilar  
Galia Weidl  
Iain Hrynaszkiewicz  
James Hetherington  
Joao Miranda  
Karsten Kryger Hansen  
Kemas Osuji  
Louise Chisholm  
Mark Leggott  
Martine Gagnon  
Nikolaus Forgo  
Peter McQuilton  
Robert Quick  
Ryan Fraser  
Sarah Jones  
Sharif Islam  
Steve Tsang  
Tessa Oomen  
Vanessa Proudman  
Yan Wang

Alejandra Gonzalez-Beltran  
Alvaro Lopez Garcia  
Angeliki Adamaki  
Barbara Waha  
Calvin Chan  
Claire Austin  
Dan Valen  
Diego Calvanese  
Eva Hnatkova  
Francesco Mercuri  
Gena Palmieri  
Ilkay Altintas  
Jeanne Holm  
Johanna Havemann  
Katerina Zourou  
Kheeran Dharmawardena  
Lynn Schriml  
Marko Balabanovic  
Mary O'Brien Uhlmansiek  
Oya Beyan  
Philippe Boulben  
Rodrigo Sara  
Sa-kwang Song  
Sarah Champion  
Sindhu Prasad  
Suganya Sundaravadivelu  
Thierry Louge  
Ville Tenhunen  
Yung Shin Van Der Sype

Alejandro Rodríguez González  
Amy Nurnberger  
Anthony Juehne  
Bernadette Hyland-Wood  
Catherine Chronaki  
Claudia Bauzer Medeiros  
Daniel Mietchen  
Doina Cristina Duma  
Federica Rosetta  
Frankie Stevens  
Gilles Mathieu  
Iryna Kuchma  
Jeremy Geelen  
Jonathan Tedds  
Katherine Mika  
Laura Morales  
Marcos Roberto Tovani-Palone  
Marta Teperek  
Matthew Dovey  
Paola Di Maio  
Piyachat Ratana  
Romain DAVID  
Sandra Gesing  
Shanmugasundaram Venkataraman  
Stefanie Kethers  
Sunil Kushor  
Timea Biro  
Vivien Bonazzi

Alexander Thistlewood  
Andreas Czerniak  
Anthony Oko-Isu  
Beth Montague-Hellen  
Catriona MacCallum  
Colm Carroll  
Daniel Bangert  
Elena Sartini  
Felix Bach  
Franziska Boehm  
Hilary Hanahoe  
Isabelle PERSEIL  
Joanne Stocks  
Jonathan Dorey  
Katie Hannan  
Lina Elisabet Sitz  
Maria J. Cruz  
Martie van Deventer  
Michelle Barker  
Pascal Heus  
Rainer Stotzka  
Ron Dekker  
Sarah Callaghan  
Shannon Cobb  
Stephen Diggs  
Susanna-Assunta Sansone  
Tiziana Lombardo  
Wolmar Nyberg Åkerström





# Indigenous Populations and Data Sharing

**Contributors: Stephanie Carroll, Pyrou Chung, Donna Cormack, Maui Hudson, Tahu Kukutai, Robyn Rowe, Michele Suina, Waggie Walter**

**[International Indigenous Data Sovereignty Interest Group](#)**





# Cross-cutting Legal and Ethical Issues

<https://www.rd-alliance.org/groups/rda-covid19-legal-ethical>



Chair: **Anne Cambon-Thomsen**



Moderator:  
**Alexander Bernier**



Moderator:  
**Brian Pickering**





# RDA-COVID19 Legal/Ethical sub-group

## Members

Alexander Bernier  
Claire Austin  
Diana Navarro-Llobet  
Gustav Nilsson  
Katharina O Cathaoir  
Mary O'Brien Uhlmansiek  
Paula Andrea Martinez  
Sa-kwang Song  
Timea Biro

Anne Cambon-Thomsen  
Claudia Bauzer Medeiros  
Dimitris Kotzinos  
Hilary Hanahoe  
Kemas Osuji  
Michaela Mayrhofer  
Philippe Després  
Simon Parker  
Yan Wang

Bridget Walker  
Dara Hallinan  
Fanny Sébire  
Iryna Kuchma  
Marcos Roberto Tovani-Palone  
Pamela Andanda  
Regina Becker  
Stefanie Kethers

Carlos Luis Parra-Calderon  
Diana Dimitrova  
Gauthier Chassang  
John Brian Pickering  
Mark Taylor  
Paul Uhlir  
Rodrigo Sara  
Stéphanie Rennes





# RDA-COVID19 Software sub-group

RDA COVID19 UMBRELLA GROUP WEB PAGES	<a href="https://www.rd-alliance.org/groups/rda-covid19">https://www.rd-alliance.org/groups/rda-covid19</a>
RDA COVID19 EVENTS (WEBINAR DETAILS)	<a href="https://www.rd-alliance.org/node/68704/events">https://www.rd-alliance.org/node/68704/events</a>
RDA COVID19 WORKING & SUB-GROUP ORGANIZATION	<a href="https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization">https://www.rd-alliance.org/group/rda-covid19/wiki/working-sub-group-organization</a>
RDA COVID19 SLACK CHANNEL (SELECT #SOFTWARE)	<a href="https://app.slack.com/client/T0121RE9LAC/C012V7DT34L">https://app.slack.com/client/T0121RE9LAC/C012V7DT34L</a>
RDA COVID19 SOFTWARE SUBGROUP WEB PAGES	<a href="https://www.rd-alliance.org/groups/rda-covid19-software">https://www.rd-alliance.org/groups/rda-covid19-software</a>
RDA COVID19 SOFTWARE SUBGROUP GOOGLE FOLDER	<a href="https://drive.google.com/drive/folders/103hFPuNPwwEB8kTUopegaFyjNSkObPRI?usp=sharing">https://drive.google.com/drive/folders/103hFPuNPwwEB8kTUopegaFyjNSkObPRI?usp=sharing</a>

## Software Sub-group Moderators

## Software Sub-group

### Software Sub-group Co-chair



Ingrid Dillo  
DANS



Michelle Barker, Research Software Alliance, Fotis Psomopoulos, Institute of Applied Biosciences (INAB|CERTH), Hugh Shanahan, Royal Holloway, University of London

### Editors

Sandra Gesing, University of Notre Dame  
Leyla Jael Garcia Castro, ZB Med  
Piotr Wojciech Dabrowski, Robert Koch Institute





# RDA-COVID19 Software sub-group

## Members

Alejandra Gonzalez-Beltran  
Carole Goble  
Daniela Hensen  
Henrik Næss  
Iryna Kuchma  
Katherine McNeill  
Mary O'Brien Uhlmansiek  
Pieter Heyvaert  
Sandra Gesing

Ann Myatt James  
Christian Busse  
Fotis Psomopoulos  
Hilary Hanahoe  
James Hetherington  
Leyla Garcia  
Michelle Barker  
Piotr Dabrowski  
Shoab Sufi

Anna-Lena Lamprecht  
Claire Austin  
Galia Weidl  
Hugh Shanahan  
Joanna Leng  
Lina Elisabet Sitz  
Nick Jones  
Qian Zhang  
Stéphanie Rennes

Bridget Walker  
Daniel S. Katz  
Gavin Rozzi  
Ingrid Dillo  
Justine Vandendorpe  
Marcos Roberto Tovani-Palone  
Paula Andrea Martinez  
Rowland Mosbergen

Collaboration with Research Software  
Alliance (ReSA)





# Overarching Guidelines Editorial Team



Christophe Bahim  
PWC



Ingrid Dillo  
DANS



Natalie Harrower  
DRI



Mark Leggott  
Research Data  
Canada



Nicolas Loozen  
PWC



Priyanka Pillai  
University of  
Melbourne



Megan  
Underwood  
RDA-US/RNA



Mary O'Brien  
Uhlmansiek  
RDA-US/RNA



Bridget Walker  
RDA  
Foundation



# Working methods and coordination

- A general feature: intense!
- Meetings and co-ordination :
  - Co-Chairs weekly meetings
  - Weekly webinar for updating on the work
  - Weekly Co-Chairs plus Co-Moderators plus RDA secretariat team (coordination)
  - 1 to 3 weekly meetings in each sub-group, plus some moderators
  - A specific group to take care of the zotero file of resources
  - A specific group to design « visualisation tools » to help navigating the document produced
- Momentum in production and consultation: 1st release 24 April, 5th release 31 May (for community input), Final adoption 30 June





# Outline of presentation

- Basic elements on RDA
- Context and characteristics of the RDA COVID-19 working group
- Methods, organisation and steps
- **Outputs and other productions**
- Visualisation and help to use the document
- How to foster impact?
- Conclusion
- Discussion





## WG outputs

- Best practice guidelines per sub-group and overall
- Recommendations for researchers and policymakers to help maximise data sharing
- Catalogue of key resources to inform guidelines (e.g. key datasets, standards, tools, repositories etc)
- A visualisation tool to facilitate navigation to specific resources by different stakeholders





# Outputs, support outputs, other outputs

- A 145 page document with context, general guidelines and recommendations, specific (per sub-group)
- An executive summary
- Supporting output: RDA-COVID19-WG Zotero Library
  - <https://doi.org/10.15497/rda00051>
  - The RDA-COVID19-WG Zotero Library was created to support development of the RDA-COVID19 Data Sharing Recommendations and Guidelines. It is an extensive, but not a comprehensive bibliography. The Library is publicly available on the Web at:
    - [https://www.zotero.org/groups/2485086/rda-covid19\\_wg](https://www.zotero.org/groups/2485086/rda-covid19_wg)
- Other outputs: Epidemiology document (endorsed), articles in preparation





# Research Areas & Cross-cutting themes



**CLINICAL**



**OMICS**



**EPIDEMIOLOGY**



**SOCIAL SCIENCES**



**COMMUNITY**



**INDIGENOUS DATA GUIDELINES**



**RESEARCH SOFTWARE**

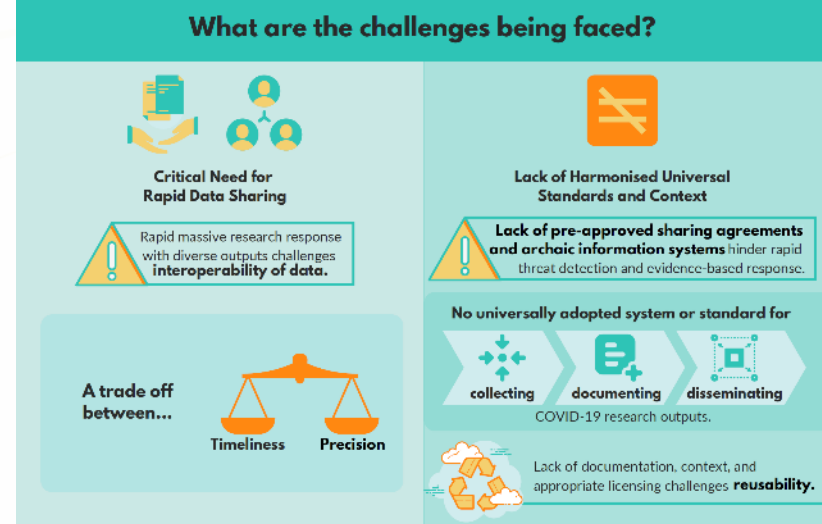


**LEGAL AND ETHICAL CONSIDERATIONS**



# Overarching Challenges

- ✓ Rapid sharing of research efforts, findings, and data
- ✓ Timeliness vs. precision
- ✓ Lack of “pre-approved” data sharing agreements
- ✓ No universal standard / system for COVID-19 research outputs
- ✓ Cross-disciplinary reusability
- ✓ Contextualisation, licensing, documentation
- ✓ Ad-hoc Research software





# What are the key recommendations?

The RDA COVID-19 Recommendations and Guidelines are aimed at developing a systematic approach for data sharing in public health emergencies that supports scientific research and policymaking, including an overarching framework, common tools and processes, and principles that can be embedded in research practice.

- 1 Coordinate cross-jurisdictional efforts to foster global **Open Science** through policy and investment.
- 2 Incentivise early publication and release of data and software outputs.
- 3 Invest in state-of-the-art IT, data management systems **infrastructure, economies of scale, and people.**
- 4 Data, software and models should be **timely and FAIR: Findable, Accessible, Interoperable, Reusable.**
- 5 Require the use of **Data Management Plans.**
- 6 Use common domain-specific **metadata standards, and persistent identifiers.**
- 7 Provide **documentation** of context, methodologies used to define, construct, and compile data, data cleaning and quality checks, data imputation, and data provenance.

- 8 Use **Trustworthy Data Repositories** committed to the long-term preservation and sustained access to their data holdings.
- 9 Use common generic as well as domain-specific **metadata standards, and persistent identifiers.**
- 10 **Balance ethics and privacy,** taking into account public interests and benefits while addressing the health crisis.
- 11 Access should be as **open as possible** and as **closed as necessary.**
- 12 Seek **technical solutions** that ensure anonymisation, encryption, privacy protection, and de-identification to **increase trust** in data sharing.
- 13 Provide **legal frameworks that promote sharing** of surveillance data across jurisdictions and sectors.



# Cross cutting theme highlights

Cross cutting themes	Challenges	Guidelines for researchers	Recommendations for funders/policy makers
Clinical	Promotion of clinical data sharing is important due to many studies and trials being performed under enormous time pressure	Standardised clinical terminologies should be used and a fair balance achieved between timely data sharing and protecting privacy and confidentiality	Measures should be taken in order to organise the sharing of data and trial documents in a suitable, trustworthy and secure data repository
Omics	An increased need of rapid openness for omics data to gain early insights into molecular biology of the processes at cellular level	Omics research should be a collaborative effort to learn the genetic determinants of COVID-19 susceptibility, severity and outcomes	Promote use of domain-specific repositories to enable standardisation of terms and enforce metadata standards
Epidemiology	Data and models are frequently incomplete, provisional, and subject to correction under changing conditions	Data models must include clinical data, disease milestones, indicators and reporting data, contact tracing and personal risk factors	Incentivise the publication of situational data, analytical models, scientific findings, and reports used in decision-making
Social Sciences	Require equal inclusion of social and economic context with health-related information to enable evidence-based decision-making	Enable interoperable cross-disciplinary and cross-cultural data collection, data use and collaboration for managing social sciences data during pandemics	Ensure robust funding streams for social sciences research for understanding and managing the human aspects of pandemics

# Cross cutting theme highlights

Cross cutting themes	Challenges	Guidelines for researchers	Recommendations for funders/policy makers
Community	Need specific guidelines for enabling citizen scientists undertaking research to contribute to a common body of knowledge	Encourage public and patient involvement (PPI) throughout the data management lifecycle from research question to final data sharing and usage	Balance between timely testing and contact tracing, emergency response, community safety and individual privacy concerns
Indigenous Data Guidelines	Indigenous data rights, priorities and interests must be recognised in all COVID-19 research and surveillance activities	Indigenous governance of data collection, ownership, sharing and use priorities is the central principle of Indigenous data sovereignty	<a href="#">CARE Principles</a> of Indigenous Data Governance set minimum standards for collectors, users and stewards of data
Legal and Ethical Considerations	Achieve a balance between rights of people and interests of researchers and policymakers	Ethical instruments should be interpreted with the law, and can guide the interpretation of the law if the law does not address a particular issue	During a pandemic, ethical review and approval for legally sharing data should be expedited
Research Software	Need systems in place for sharing of research software and accelerated and reproducible research during a pandemic	It is critical for software that is used in data analysis to produce results that can, if necessary, be reproduced	Funders must allocate financial resources to support the development and maintenance of new research software





## Table of content main document

### **Executive Summary 7**

- 1. Objectives and Use of This Document 11
- 2. **Foundational Elements 14**
  - 2.1 Challenges 14
  - 2.2 **Recommendations 15**
    - 2.2.1 Coordinated, Cross-jurisdictional Efforts to Foster Global Open Science 15
    - 2.2.2 Infrastructure Investment & Economies of Scale 16
    - 2.2.3 FAIR and Timely 17
    - 2.2.4 Data Management Planning 17
    - 2.2.5 Metadata 18
    - 2.2.6 Documentation 19
    - 2.2.7 Use of Trustworthy Data Repositories 19
    - 2.2.8 Publications / Data Publications 20

### **3. Data Sharing in Clinical Medicine 21**

- 3.1 Focus and Description 21
- 3.2 Scope 21
- 3.3 Policy Recommendations 21
  - 3.3.1 Trustworthy Sources of Clinical Data 21
- 3.4 Guidelines 23
  - 3.4.1 Data and Metadata Standards for Clinical Data 23
  - 3.4.2 Clinical Trials on COVID-19 24
  - 3.4.3 Immunological, Imaging and Healthcare Data 25

### **4. Data Sharing in Omics Practices 27**

- 4.1 Focus and Description 27
- 4.2 Scope 27
- 4.3 Policy Recommendations 27
  - 4.3.1 Researchers Producing Data 27
  - 4.3.2 Policymakers & Funders 27
- 4.4 Guidelines 28
  - 4.4.1 Guidelines for Virus Genomics Data 28
  - 4.4.2 Guidelines for Host Genomics Data 29
  - 4.4.3 Guidelines for Structural Data 31
  - 4.4.4 Guidelines for Proteomics 33
  - 4.4.5 Guidelines for Metabolomics 34
  - 4.4.6 Guidelines for Lipidomics 35



## 5. Data Sharing in Epidemiology 37



5.1 Focus and Description 37

5.2 Scope 37

5.2.1 Supporting Output 37

5.3 Policy Recommendations 37

5.3.1 Information Technology and Data Management 37

5.3.2 COVID-19 Epidemiological Data, Analysis and Modelling 38

5.4 Guidelines 38

5.4.1 COVID-19 Population Level Data Sources 39

5.4.2 Interoperable COVID-19 Epidemiological Surveillance: Clinical and Population-based Instruments 40

5.4.3 Preservation of Individuals' Privacy in Shared COVID-19 Related Data 41

5.4.4 Full Spectrum View of the COVID-19 Data Domain: An Epidemiological Data Model 41

5.4.5 Epi-TRACS: Rapid Detection and Whole System Response for Emerging Pathogens 42

5.4.6 COVID-19 Emergency Public Health and Economic Measures Causal Loops: A Computable Framework 42

5.4.7 Common Data Models and Full Spectrum Epidemiology: Epi-STACK Architecture for COVID-19 Epidemiology Datasets 42

## 6. Data Sharing in Social Sciences 44

6.1 Focus and Description 44

6.2 Scope 44

6.3 Policy Recommendations 45

6.4 Guidelines 46

6.4.1 Data Management Responsibilities and Resources 46

6.4.2 Documentation, Standards, and Data Quality 46

6.4.3 Storage and Backup 47

6.4.4 Legal and Ethical Requirements 47

6.4.5 Data Sharing and Long-term Preservation 48





## **7. Community Participation and Data Sharing 50**

7.1 Focus and Description 50

7.2 Scope 50

7.3 Policy Recommendations 52

7.3.1 Transparency, Community Participation and Data Governance 52

7.3.2 Inclusive, Incremental and Multidisciplinary Approach 52

7.3.3 Legal and Ethical Aspects 53

7.3.4 Software Development 53

7.4 Guidelines 54

7.4.1 Data Collection 54

7.4.2 Data Quality and Documentation 54

7.4.3 Data Storage and Long-term Preservation 55

## **8. Indigenous Populations and Data Sharing 56**

8.1 Focus and Description 56

8.2 Scope 57

8.3 Policy Recommendations and Guidelines 57

## **9. Research Software Sharing for Data Analysis 61**

9.1 Focus and Description 61

9.2 Scope 61

9.3 Policy Recommendations 61

9.4 Guidelines for Publishers 63

9.5 Guidelines for Researchers 65

## **10. Legal and Ethical Considerations 67**

10.1 Focus and Description 67

10.2 Scope 67

10.3 Policy Recommendations 68

10.3.1 Initial Recommendations 68

10.3.2 Relevant Policy and Non-Policy Statements 68

10.4 Guidelines 69

10.4.1 Cross-Cutting Principles 69

10.4.2 Hierarchy of Obligations 69

10.4.3 Seeking Guidance 71

10.4.4 Anonymisation 72

10.4.5 Consent 74

10.4.6 Licensing Data and Licensing Software 75

10.4.7 The 5 Safes Model 76

10.4.8 Vulnerable Groups 77





Table of Figures 6

Table of Tables 6

Executive Summary 7

1. Objectives and Use of This Document 11

**11. Glossary 78**

12. Acronyms 89

13. Additional Resources 95

14. References 100

**15. Contributors 141**

## Legend of Figures

Figure 1 - RDA COVID-19 WG sub-groups including research areas and cross-cutting themes 11

## Title of Tables

Table 1 - Summary of challenges, guidelines and recommendations 9

Table 2 - COVID-19 population level data sources 37

Table 3 - Questionnaire instruments: Reference studies 37

Table 4 - Questionnaire instruments: Resources 38





## Example of content

 Regarding software.





# Require that software citations be included in publication



- It is essential that the role of software in achieving research outcomes is supported. **Treating research software as a first class research object in a scholarly publication** is a very effective mechanism for implementing this, as it increases the visibility and credit to the research software developers (for example by enabling academic and commercial citation services and/or databases, such as Google Scholar, Scopus and Microsoft Academic) ([Smith et al., 2016](#)).
- **Examples:** The FORCE11 Software Citation Implementation Working Group ([Chue Hong et al., 2017](#)) has been leading work in this area for 3+ years, and currently has a journals task force that is developing sample language for journals to use. The American Astronomical Society (AAS) Journals encourage software citation in several ways (explicit software policy, added the LaTeX `\software{}` tag to emphasise code used, etc.) ([AAS Journals, 2020](#)).



# Require that software developed for a publication is deposited in a repository that supports Persistent Identifiers



- For publishers to ensure that the research they publish is reproducible, software developed as part of the work reported in a submission must also be findable. Publishers should require such software to be deposited in an archival repository that supports PIDs such as Zenodo ([CERN, 2020](#)) and Figshare ([FigShare, 2020](#)). These repositories provide PIDs that can be directly included in the citation and referenced in a publication, supporting research integrity ([Di Cosmo et al., 2018](#)). If the software is deposited along with data ([DataCite, 2020](#)), as recommended in certain communities of practice, the selected data repository should provide a PID for the collection. Several versions of the software can be tagged with PIDs and, thus, if multiple versions are used for research, having different PIDs ensures reproducibility.
- **Example:** The Journal of Open Source Software ([JOSS, 2020](#)) review process requires authors to make a tagged release of the software after acceptance, and deposit a copy of the repository with a data-archiving service such as Zenodo or Figshare. This is part of the guidance from the FORCE11 Software Citation Implementation Working Group ([Chue Hong et al., 2017](#)). The GigaScience journal is another example of publication requiring the availability of software ([GigaScience, 2020](#)).





# Outline of presentation

- 🌐 Basic elements on RDA
- 🌐 Context and characteristics of the RDA COVID-19 working group
- 🌐 Methods, organisation and steps
- 🌐 Outputs and other productions
- 🌐 **Visualisation and help to use the document**
- 🌐 **How to foster impact?**
- 🌐 Conclusion
- 🌐 Discussion





# How to use the document?

- 🌐 No one will generally need to explore the full document
- 🌐 The need will be for a rather specific question or domain
- 🌐 How to quickly find what you need?
- 🌐 A « visualisation group » is working on 3 tools
  - An infographics (most recent version [here](https://drive.google.com/file/d/1sUGJrdqmA2R2ZpSf_oPkdx2uy4ufwWP4/view))
  - A mindmap
  - A wizard





# How to foster impact?

- 🌐 Recommendations and guidelines that are not implemented are unuseful!
- 🌐 Dissemination to communities and institutions is essential
- 🌐 These recommendations are broad enough to be of interest for numerous stakeholders across the world



# Outline of presentation

- Basic elements on RDA
- Context and characteristics of the RDA COVID-19 working group
- Methods, organisation and steps
- Outputs and other productions
- Visualisation and help to use the document
- How to foster impact?
- **Conclusion**
- **Discussion**





# Highlights of general policies

1. Promote FAIR sharing of COVID-19 related Data
2. Encourage expedited review processes for pandemic related research
3. Encourage researchers to apply generic metadata for COVID-19 related data
4. Request authors to add available contextual documentation
5. Promote the use of trustworthy repositories
6. Respect the ground rules for Ethics, Privacy and sound Legal Frameworks in COVID-19 data sharing

<https://www.rd-alliance.org/rda-covid-19-recommendations-and-guidelines-data-sharing-how-stm-publishers-can-contribute>



# Take home messages

- Data availability in time of a pandemic is a priority
- A variety of well documented data is needed, not just numbers of cases and deaths, with good metadata (interdisciplinary oriented)
- The Research data alliance (RDA) has issued guidelines and recommendations to increase data sharing, especially regarding standards and trustworthy data sources, as well as policy oriented
- These recommendations are in principle applicable in a broad geographical coverage, (not specific to a given jurisdiction)
- As interdisciplinarity is needed, referring to community accepted standards was chosen, even if already well known within a specific community.



# 16<sup>th</sup> Research Data Alliance PLENARY MEETING

9-12 November 2020

Knowledge E

Organized by CONARE Costa Rica and RDA United States

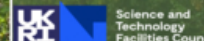


RDA's 17th  
Plenary Meeting

20 - 22 April 2021, Edinburgh



Organised by



Jisc



# INTERNATIONAL DATA WEEK 2021

Data to Improve our World

8-11  
NOVEMBER  
2021

SEOUL,  
REPUBLIC OF  
KOREA

09/07/2020



Convened by



SAVE THE DATE

International Data Week 2023  
A Festival of Data

23-26 October 2023  
Salzburg, Austria



The Research Data Alliance  
COVID-19 Data Sharing  
Recommendations and  
Guidelines  
*by the community for the  
community*

9 July 2020

Contact Anne Cambon-Thomsen :  
[anne.cambon-thomsen@univ-tlse3.fr](mailto:anne.cambon-thomsen@univ-tlse3.fr)

RDA

Email - [enquiries@rd-alliance.org](mailto:enquiries@rd-alliance.org)

Web - [www.rd-alliance.org](http://www.rd-alliance.org)

Twitter - @resdatall

LinkedIn - [www.linkedin.com/in/ResearchDataAlliance](http://www.linkedin.com/in/ResearchDataAlliance)

Slideshare -

<http://www.slideshare.net/ResearchDataAlliance>

Hilary Hanahoe - Contact

Secretary General, Research Data Alliance

Email - [hilary.hanahoe@rda-foundation.org](mailto:hilary.hanahoe@rda-foundation.org)

Twitter - @hilaryhanahoe

