

Gordon Andrews (designer)  
*Gazelle chair* (c. 1950) designed, 1957 manufactured  
plywood, aluminium, wool  
74.0 x 48.0 x 55.0 cm  
Museum of Applied Arts and Sciences, Sydney  
Purchased, 1989 (89/499)

# engage my brain — not my eye

## explain well

Martin Krzywinski

[mkweb.bcgsc.ca](http://mkweb.bcgsc.ca)







our goals, always

respect and elevate the data  
communicate conceptual hierarchies  
make purposeful choices



our methods, always

treat everything as data

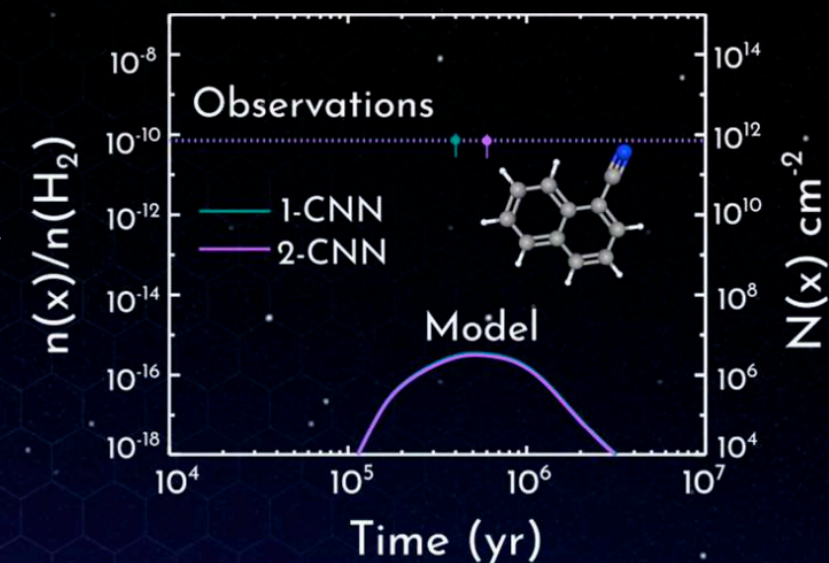
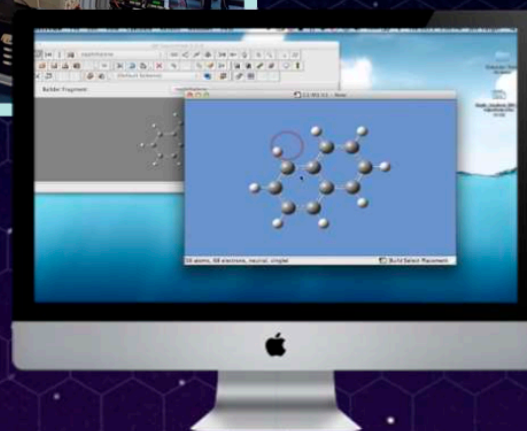
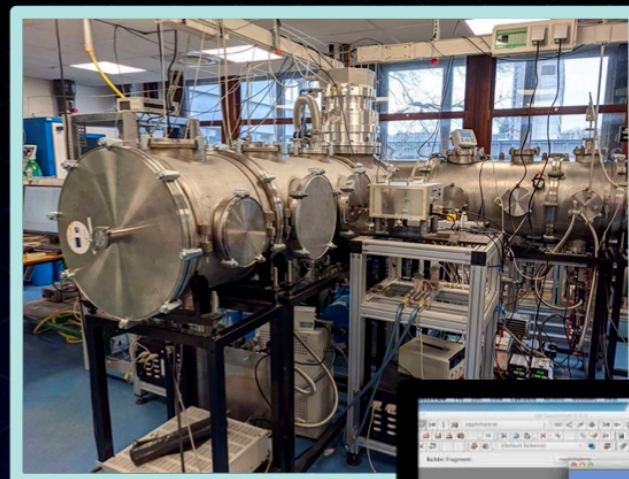
tabulate, align, thematize

anticipate questions and answer them

get out of the way

# Astrochemistry goals: Detect new molecules in interstellar space and explain how they form

**Radio Observations:**  
Detect new molecules  
(>200 detected so far!)

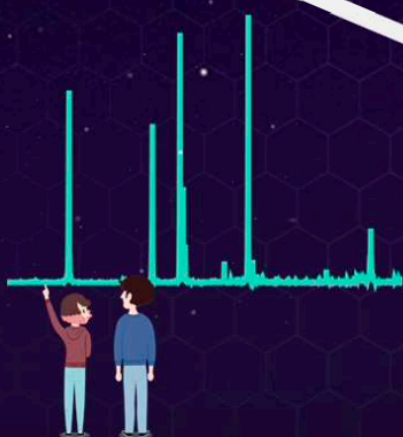


**Chemical kinetics  
modelling:**

How, When and Where  
are these molecules formed?

**Experiments:**

- Spectroscopy
- Kinetic parameters
- Reaction dynamics/mechanisms







**The 64-meter radio telescope at Parkes Observatory as seen in 1969, when it was used to receive live televised video from Apollo 11.**

This photo, taken in 1969, shows the telescope as it was around the time of the first manned Moon landing. CSIRO's Parkes radio telescope was officially opened on the 31 October 1961 by the Governor-General, Viscount De L'Isle forty years on, it is still one of the most advanced telescopes of its kind. A gigantic structure of steel and concrete, the telescope soars nearly 55 metres into the sky near Parkes NSW. It played a crucial role in receiving signals during the Apollo 11 Moon landing in 1969, relaying them for broadcast to an audience of 600 million around the world.

*[https://en.wikipedia.org/wiki/Radio\\_telescope](https://en.wikipedia.org/wiki/Radio_telescope)*





## **ASTROCHEMISTRY**

DETECT NEW MOLECULES  
IN INTERSTELLAR SPACE

**&**

EXPLAIN HOW THEY FORM





thank you for your submissions

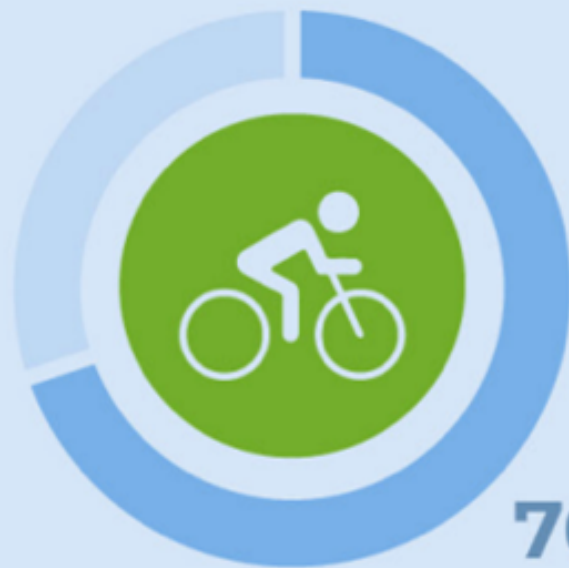
all redesign files will be made available



# information graphics

a training ground for more complex scenarios

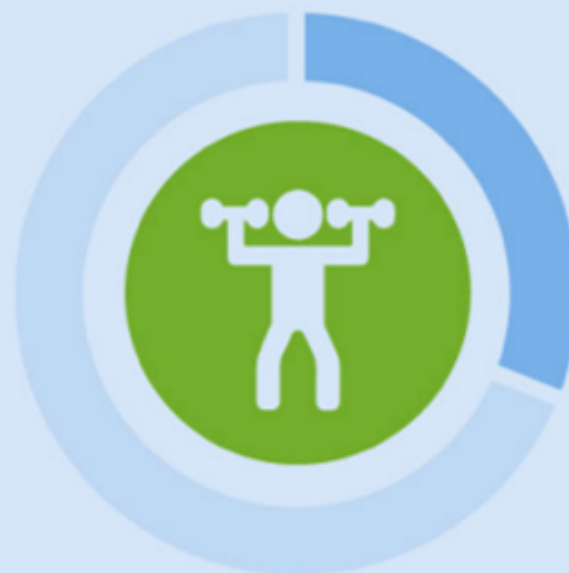
## Top 3 types of exercises people did\*



**70%**  
recreational  
activities



**45%**  
exercise  
programs  
or classes



**31%**  
individual  
exercises

\*Respondents selected all the answers that applied

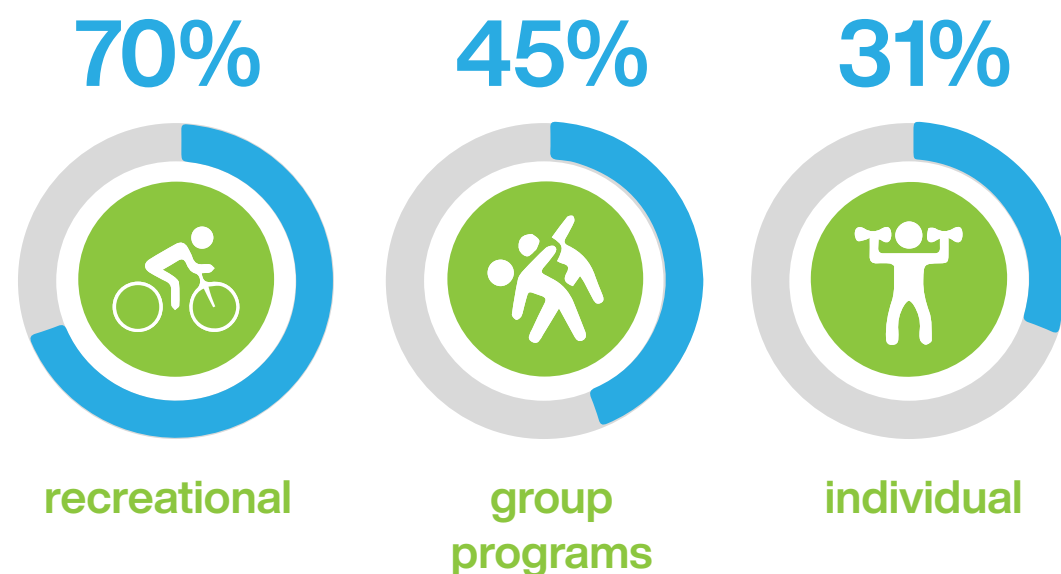


# How are you moving?



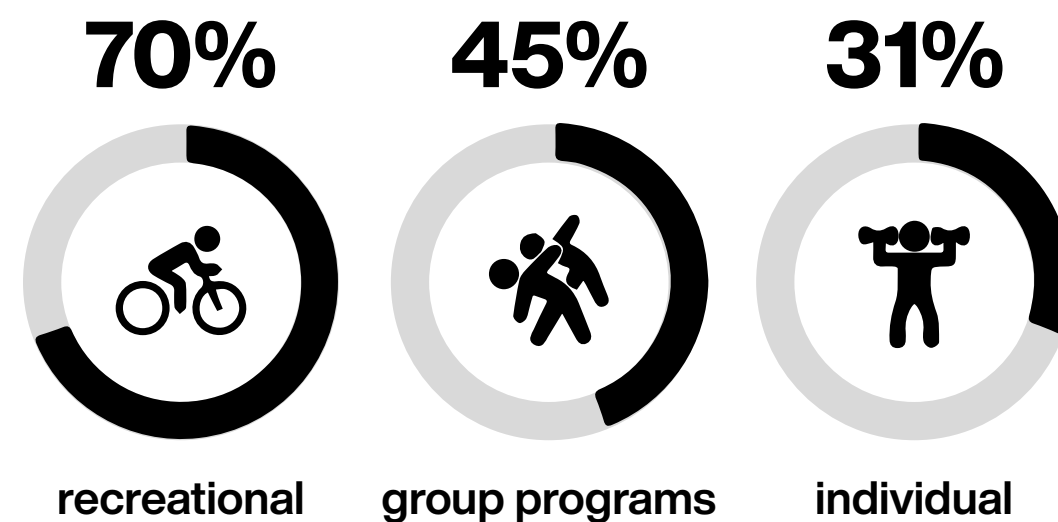
Respondents selected all types of exercise that applied.

## How are you moving?

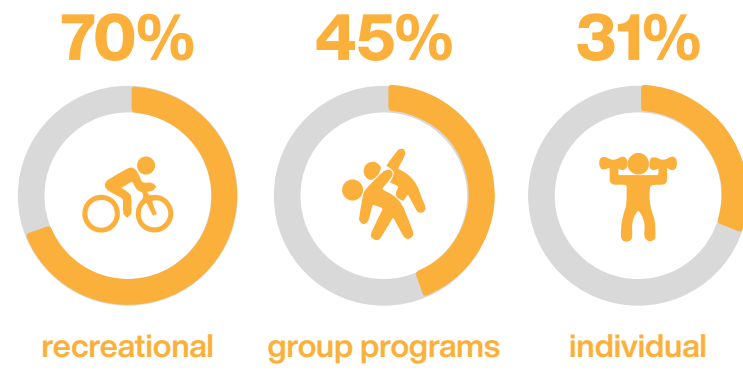


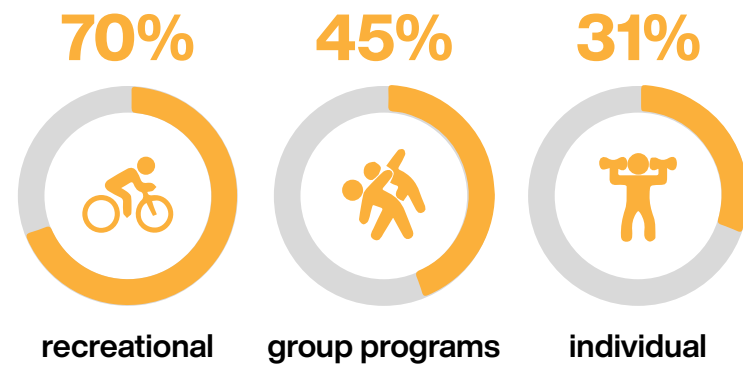
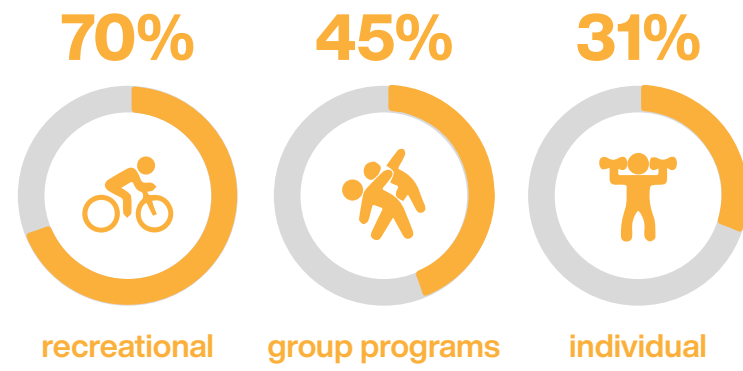
Respondents selected all types of exercise that applied.

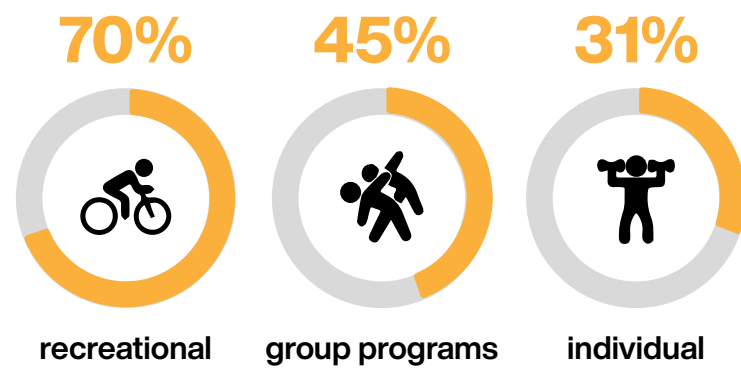
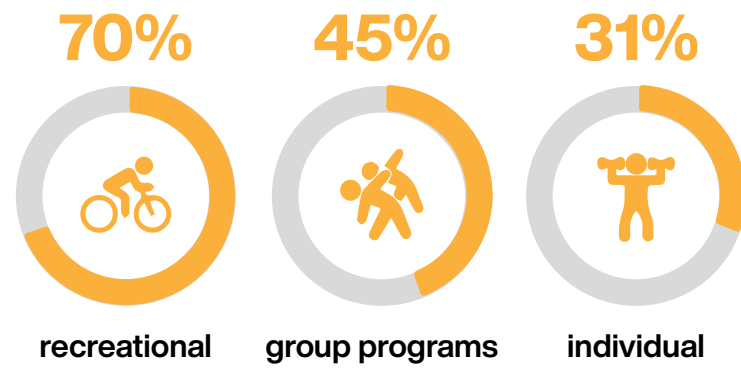
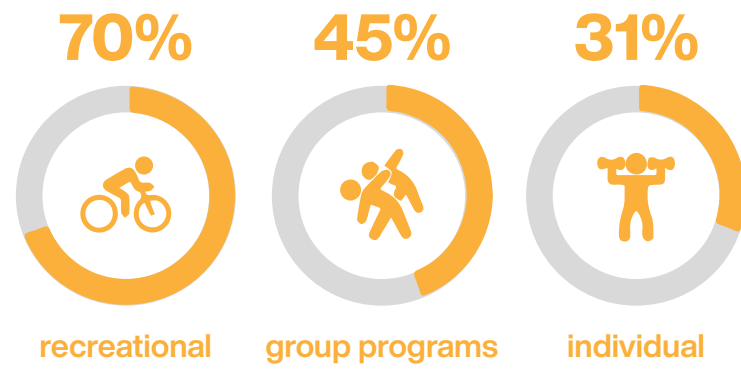
## How did you move this week?

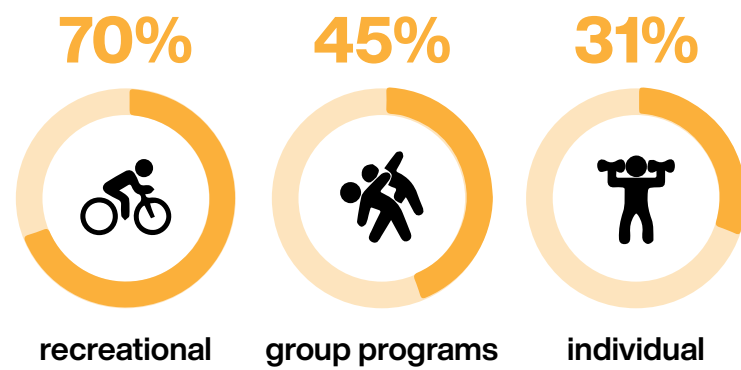
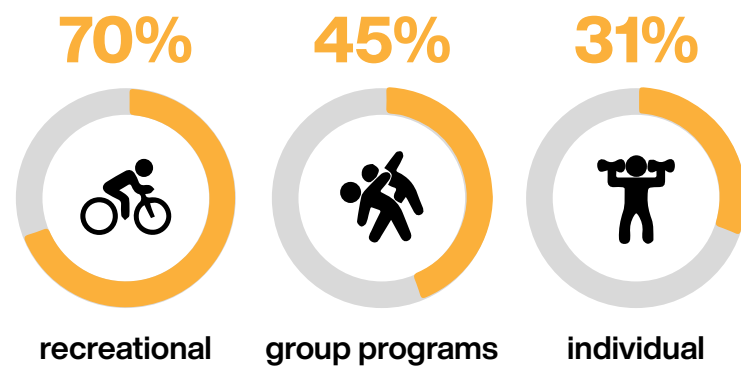
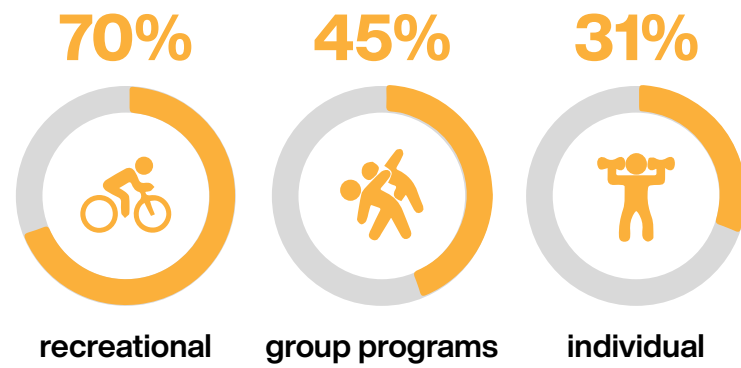
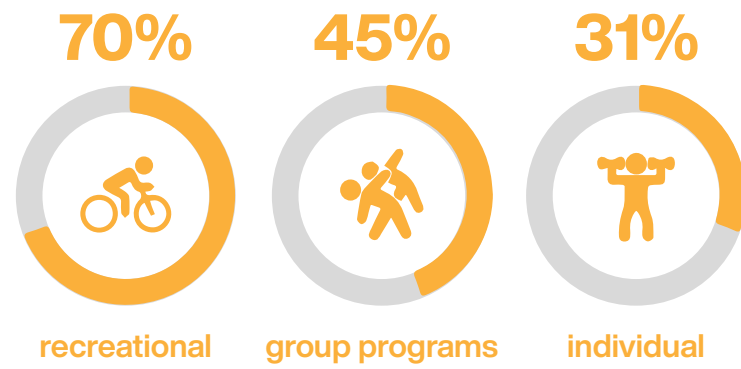


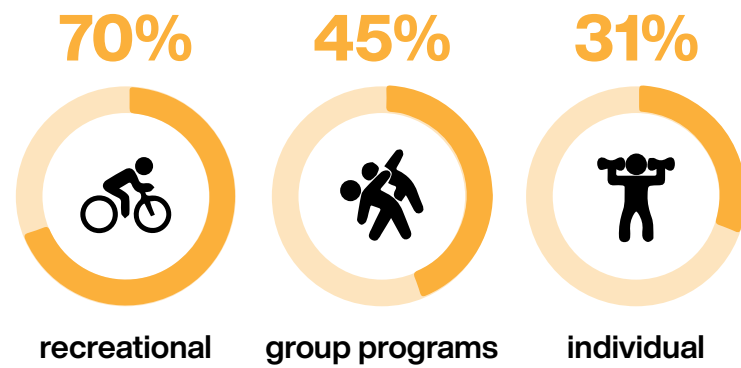
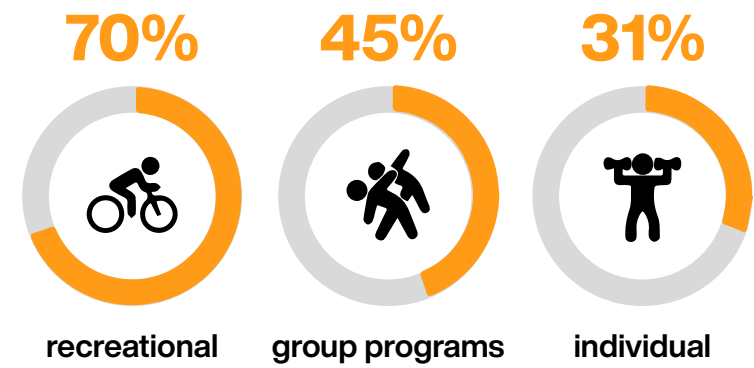
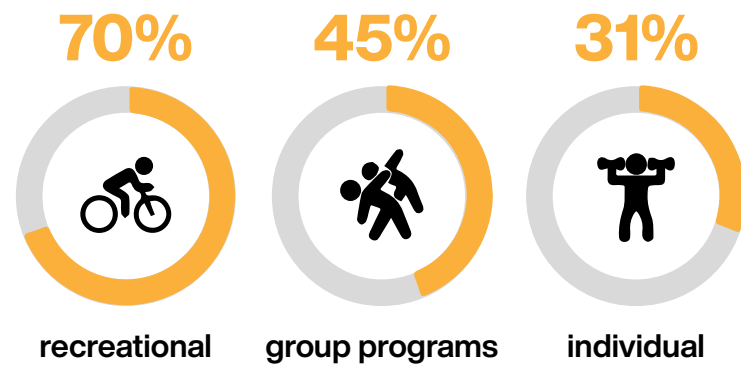
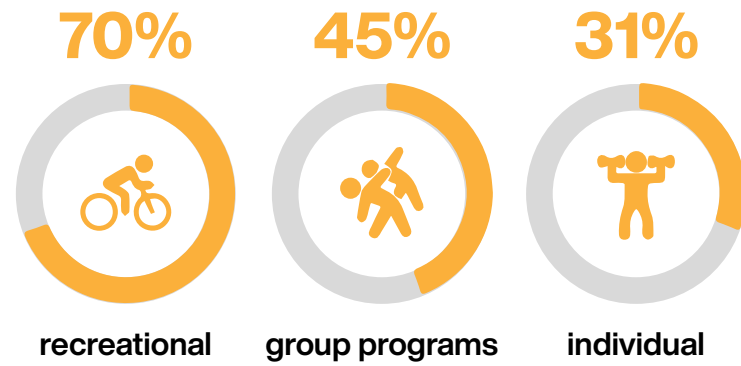
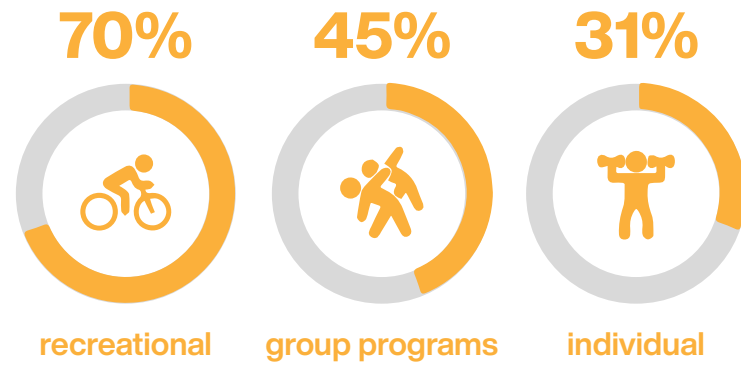
*Respondents selected all types of exercise that applied.*











# How did you move this week? engage

70%



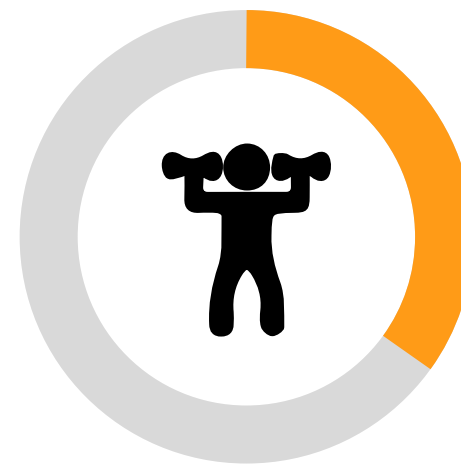
recreationally

45%



in a group

31%



individually

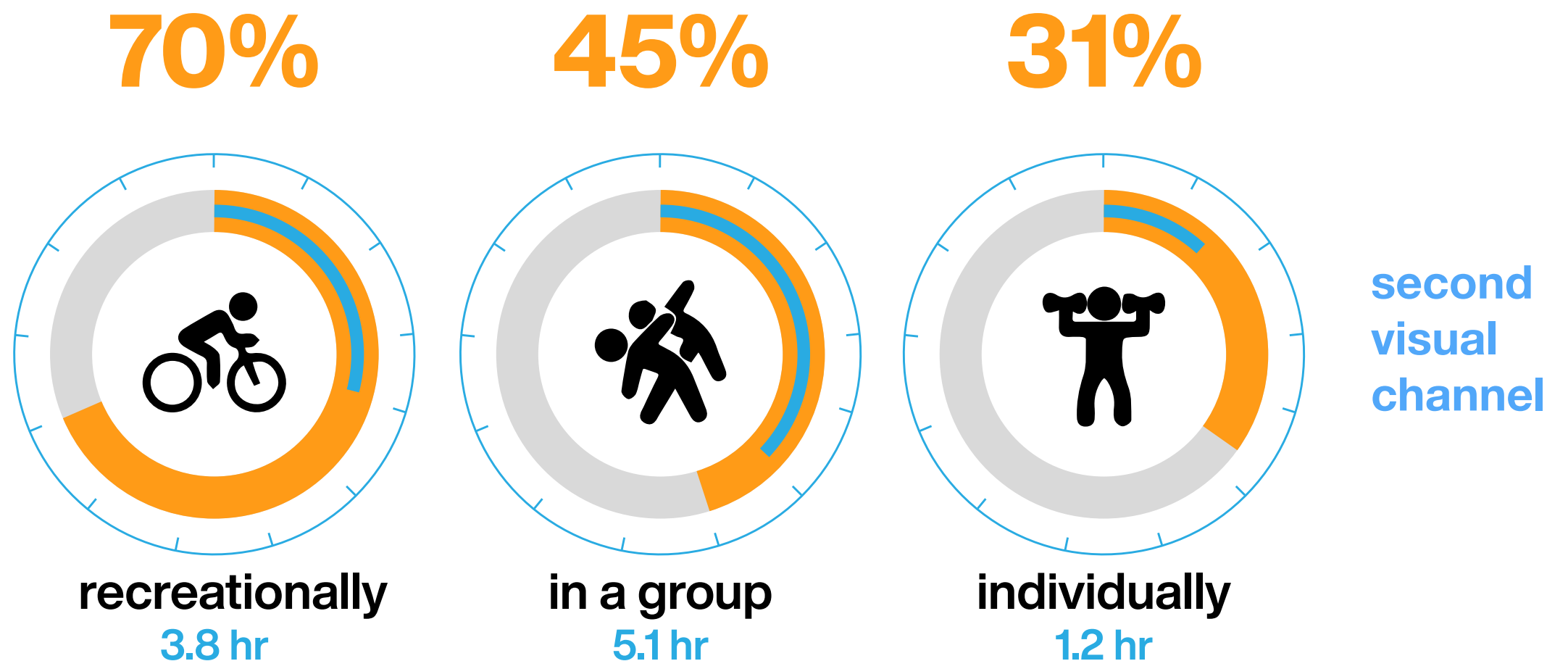
theme

*Respondents selected all types of exercise that applied.*

terse but  
clear copy

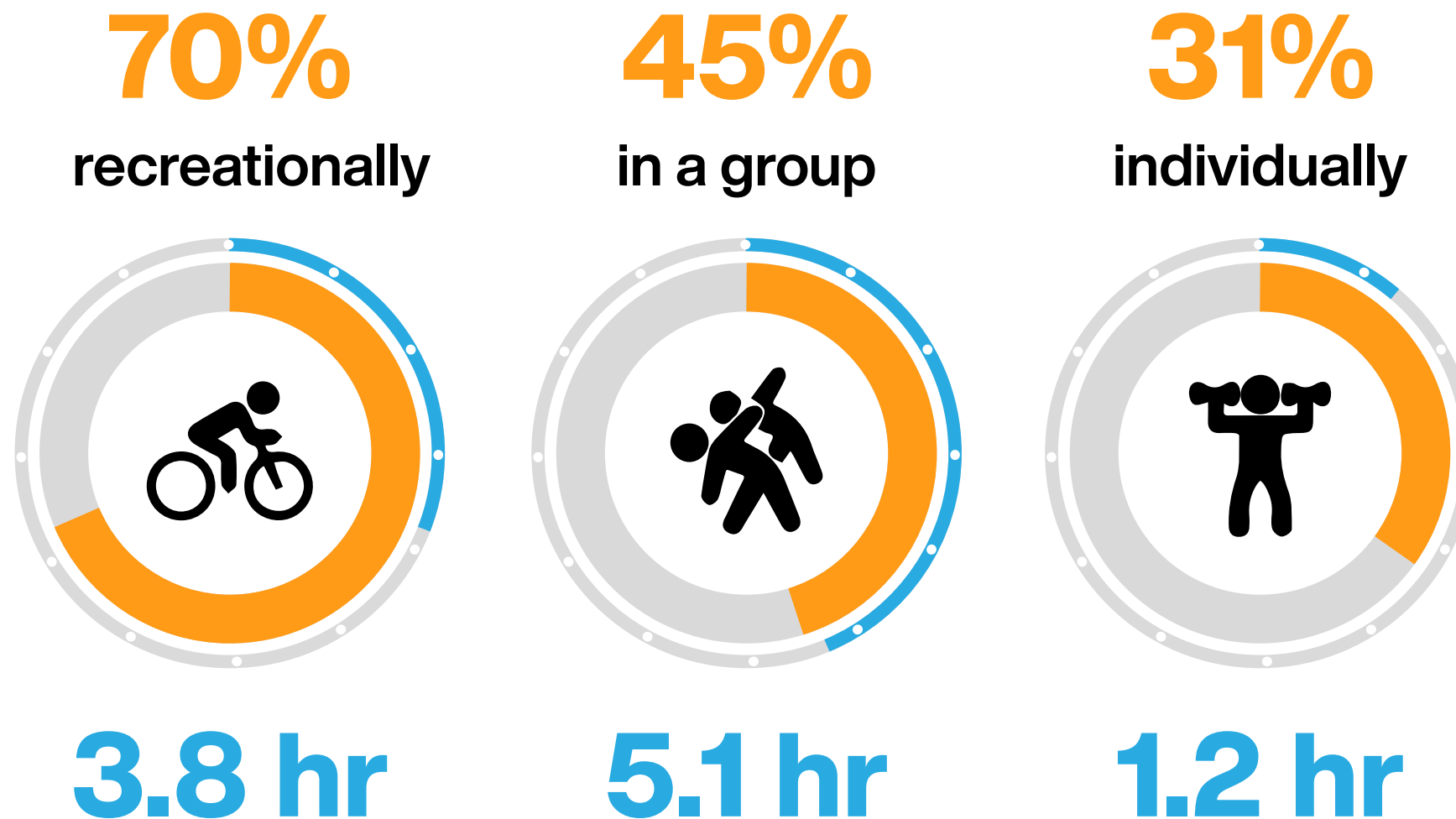


# How did you move this week?



*Respondents selected all types of exercise that applied.*

# How did you move this week?



# How long did you move for?

*Respondents selected all types of exercise that applied.  
Duration corresponds to time spent in a given category of movement.*



organize to emphasize differences

establish categories and hierarchies

# Deliberative Dialogue



## 1. Lay summary of evidence

*To summarize and interpret PEIRS-22 data*

- In-depth analysis of the PEIRS-22 data
- Enabled informed discussions during the workshop



## 2. Virtual evaluation workshop

*To dialogue among partners*

- 3-hours of small and large group discussions
- Created initial recommendations called solution statements

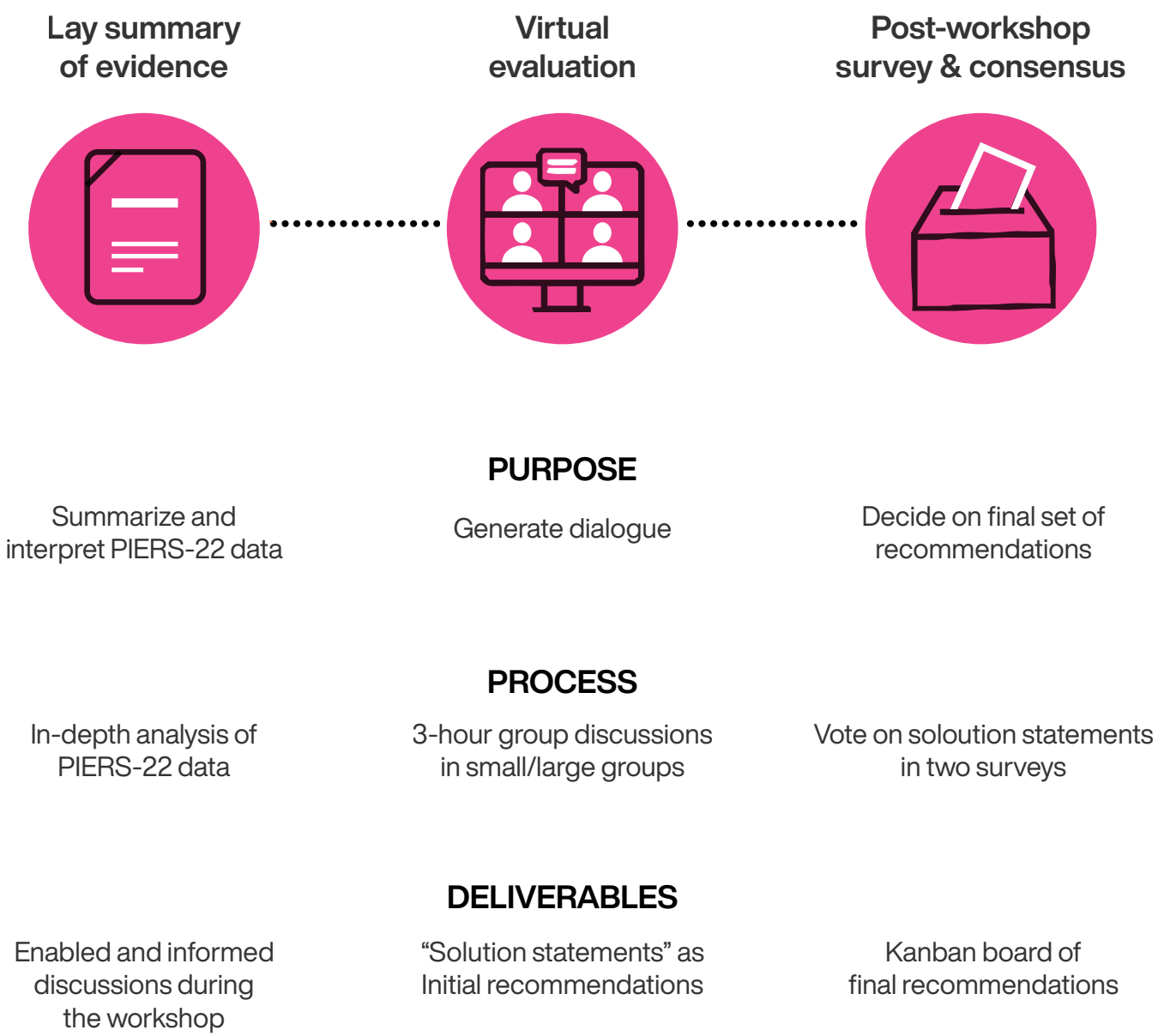


## 3. Post-workshop survey & consensus

*To decide on the final set of recommendations*

- 2 successive surveys to vote on solution statements
- Created final recommendations organized into a Kanban board

# DELIBERATIVE DIALOGUE



theme  
within  
a theme

# DELIBERATIVE DIALOGUE

Lay summary  
of evidence



Virtual  
evaluation



Post-workshop  
survey & consensus



## PURPOSE

Summarize and  
interpret PIERS-22 data

Generate dialogue

Decide on final set of  
recommendations

## PROCESS

In-depth analysis of  
PIERS-22 data

3-hour group discussions  
in small/large groups

Vote on solution statements  
in two surveys

## DELIVERABLES

Enabled and informed  
discussions during  
the workshop

“Solution statements” as  
Initial recommendations

Kanban board of  
final recommendations

# DELIBERATIVE DIALOGUE

Lay summary  
of evidence



Virtual  
evaluation



Post-workshop  
survey & consensus



## PURPOSE

Summarize and  
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Initial recommendations

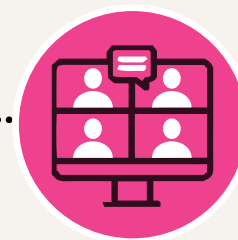
Kanban board of  
final recommendations

# DELIBERATIVE DIALOGUE

Lay summary  
of evidence



Virtual  
evaluation



Post-workshop  
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Decide on final set of  
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## DELIVERABLES

Enabled and informed  
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“Solution statements” as  
Initial recommendations

Kanban board of  
final recommendations



# branding and identity

go all in, or not at all

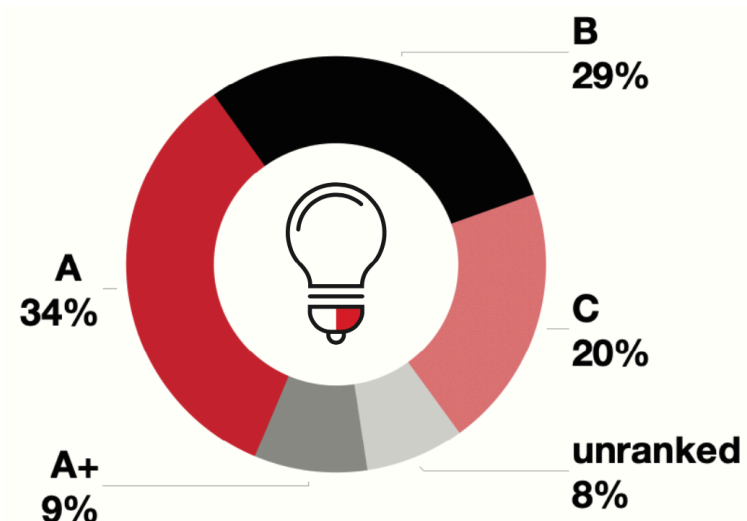


# 5-YEAR Research Portfolio



**Carleton**  
University

**Sprett**  
School of Business



**399**  
peer-reviewed  
articles



**233**  
conference  
proceedings

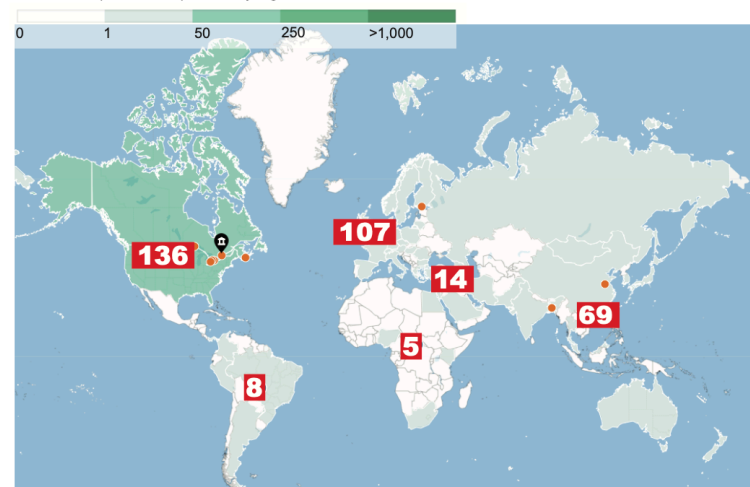


**276**  
presentations



## INTERNATIONAL ENGAGEMENT

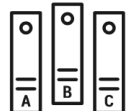
Co-authored publications per country/region:



**47**  
chapters



**5**  
books



**246**  
editorships



■ Collaborating Institutions  
● Top Institutions worldwide by co-authored publications

CMYK

0 / 100 / 100 / 0

PANTONE

185

RGB

233 / 28 / 36

HEX

E91C24

CMYK

0 / 0 / 0 / 100

RGB

0 / 0 / 0

HEX

000000

TINTS

90%

80%

70%

60%

50%

40%

30%

20%

10%

5%

CMYK

0 / 0 / 0 / 0

RGB

255 / 255 / 255

HEX

FFFFFF

# BRAND GUIDELINES

Introduction / Brand / Visual identity / Typography / Colours / [Photography](#) / Graphic elements / Sprott brand / Ravens brand

## [Photography](#) → [Guiding principles](#)

Engaging original photography should be used where possible. To accurately tell our story and reflect the Carleton brand, there are four guiding principles to consider.

### SELECTED IMAGES SHOULD BE:

## Bold

Carleton is an exciting place doing exciting things. Photography should be confident and distinctive, not quiet and generic.

## Active

There's a lot going on in every part of the university. Our subjects should be captured either taking action or taking a brief break from what they're doing to interact with our audience.

## Authentic

Photography must reflect the actual story of Carleton. We should capture real students, faculty, and staff in environments that reflect Carleton. We have a unique story to tell, so must emphasize this through the imagery we use.

## Inclusive

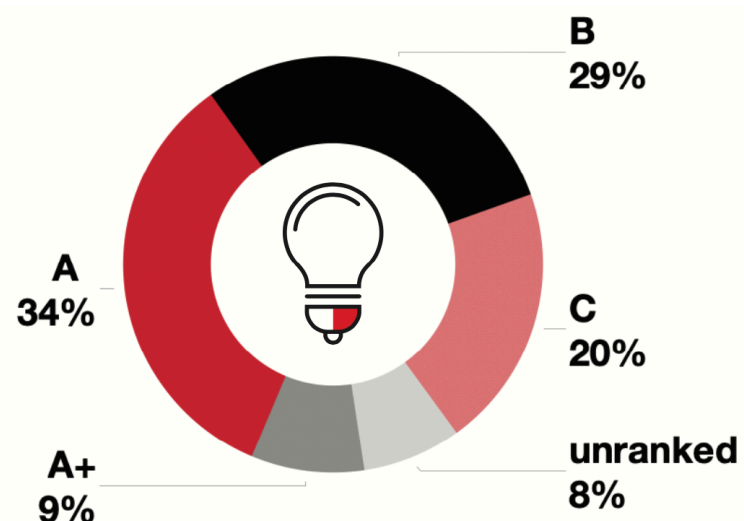
The Carleton community is diverse in every way. Photography should proportionately represent diversity in all forms.

# 5-YEAR Research Portfolio



**Carleton**  
University

**Sprett**  
School of Business



**399**

peer-reviewed  
articles



**233**

conference  
proceedings



**276**

presentations



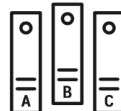
**47**

chapters



**5**

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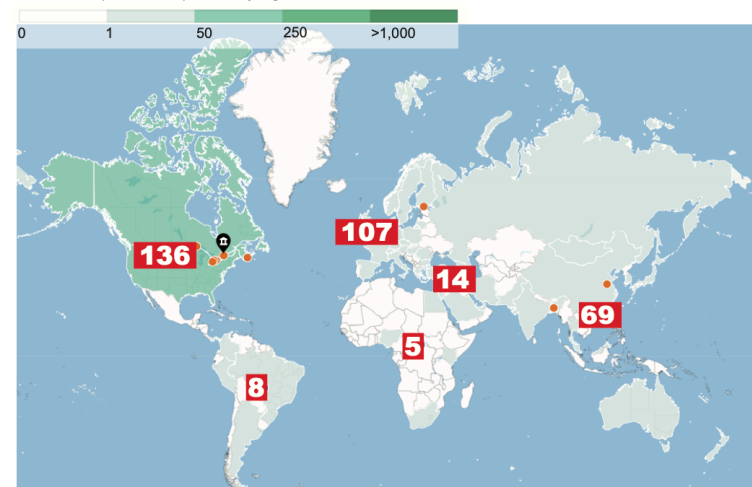
**246**

editorships



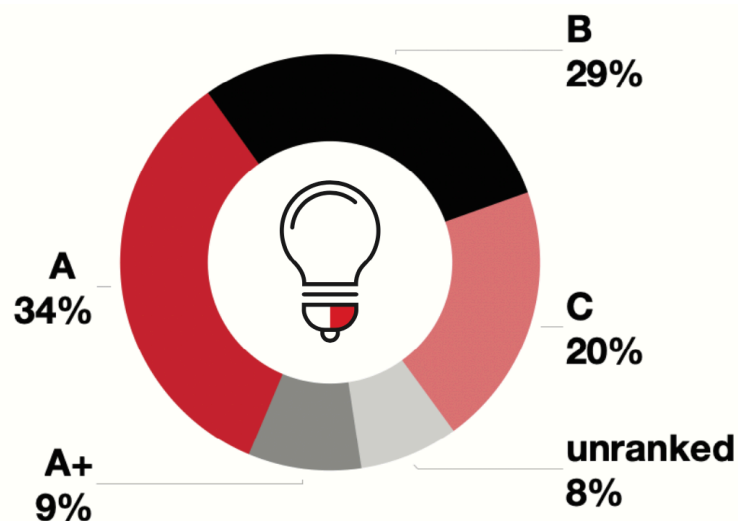
## INTERNATIONAL ENGAGEMENT

Co-authored publications per country/region:



■ Collaborating Institutions  
● Top Institutions worldwide by co-authored publications

# 5-YEAR Research Portfolio



**399**  
peer-reviewed  
articles

**233**  
conference  
proceedings

**276**  
presentations

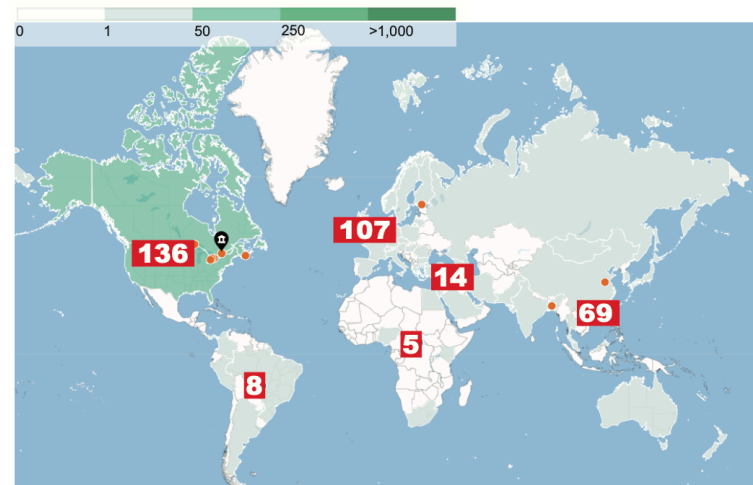
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chapters

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books

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## INTERNATIONAL ENGAGEMENT

Co-authored publications per country/region:



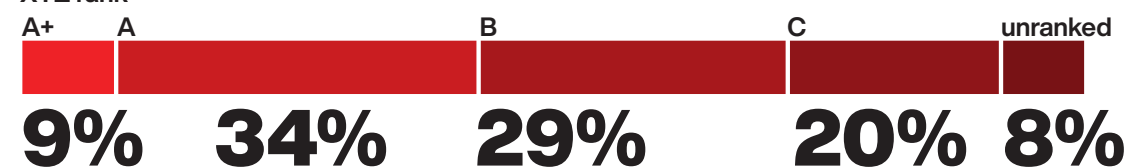
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# 5-YEAR Research Portfolio

**399** peer-reviewed articles  
**276** presentations  
**233** conference proceedings  
**246** editorships  
**47** chapters  
**5** books

## Research programs

XYZ rank



## International engagement

co-authored publications, by region

● top 10, by publications

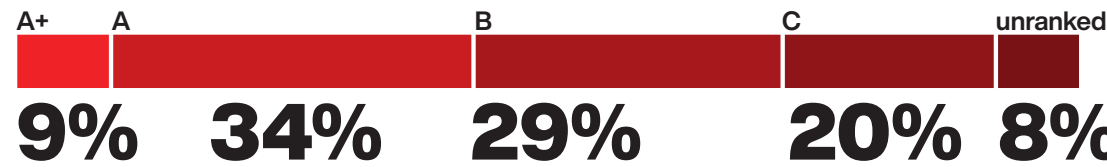


## 5-YEAR Research Portfolio

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### Research programs

XYZ rank



### International engagement

co-authored publications, by region

● top 10, by publications



## 2018-2023 5-YEAR Research Portfolio

**399** peer-reviewed articles  
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**233** conference proceedings  
**246** editorships  
**47** chapters  
**5** books

### Research programs XYZ rank

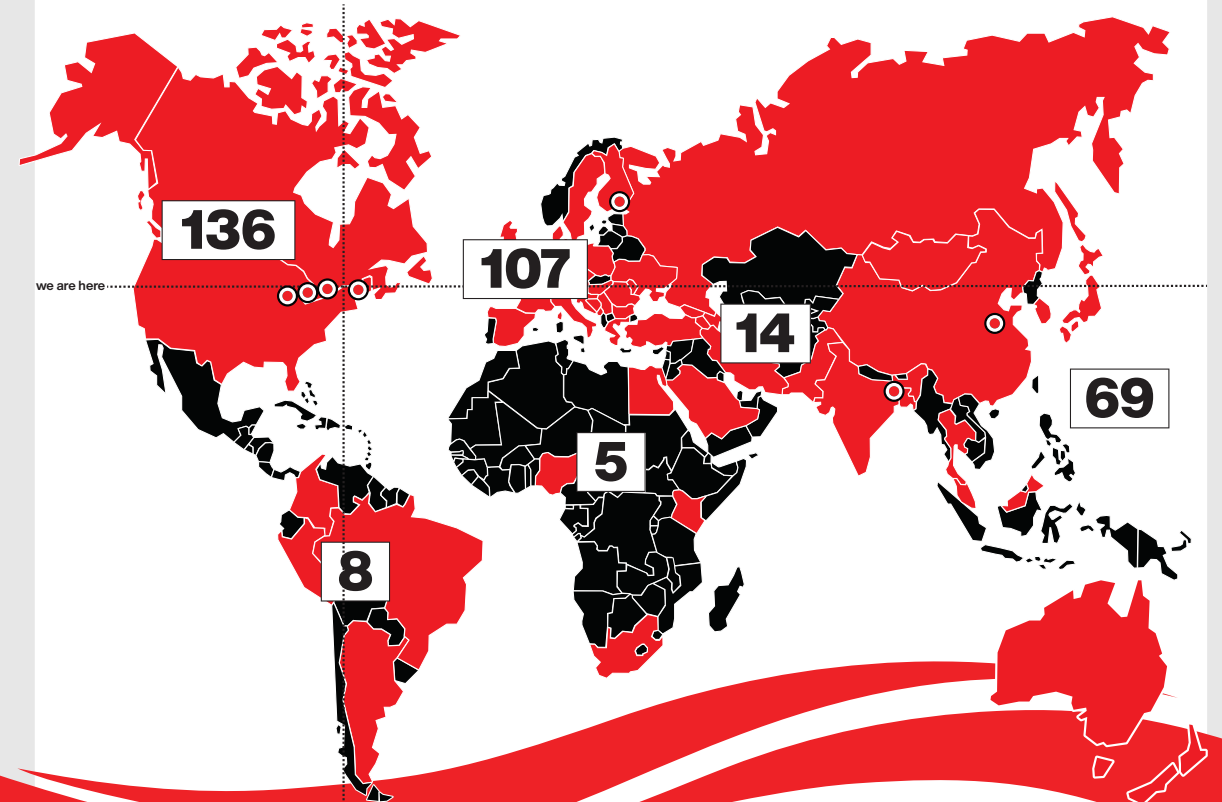


### International engagement

co-authored publications, by region

● top 10, by publications

Organization 1, Organization 2, Organization 3, Organization 4, Organization 5  
 Organization 6, Organization 7, Organization 8, Organization 9, Organization 10





2018-2023

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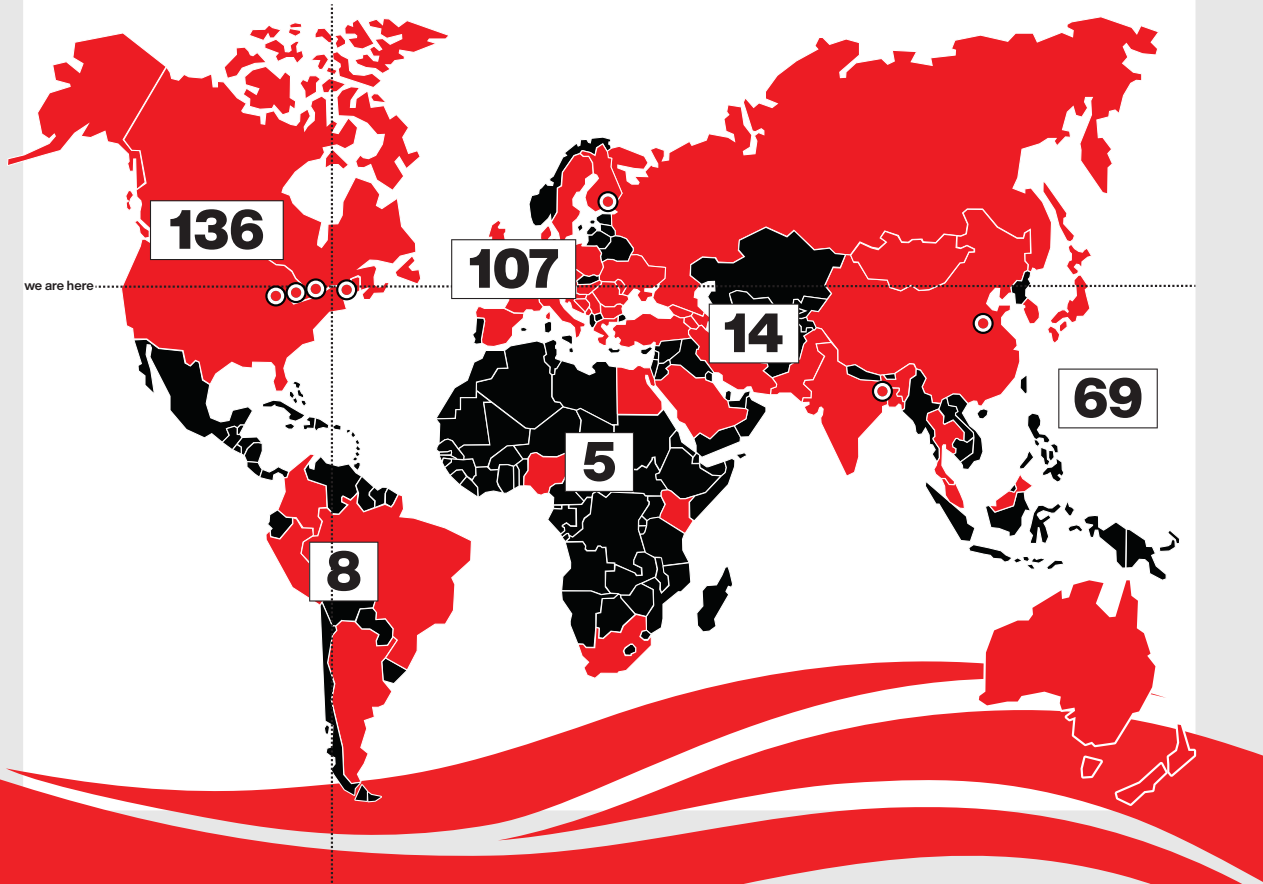
### Research programs XYZ rank



### International engagement co-authored publications, by region

top 10, by publications

Organization 1, Organization 2, Organization 3, Organization 4, Organization 5  
Organization 6, Organization 7, Organization 8, Organization 9, Organization 10



2018-2023

## 5-YEAR Research Portfolio

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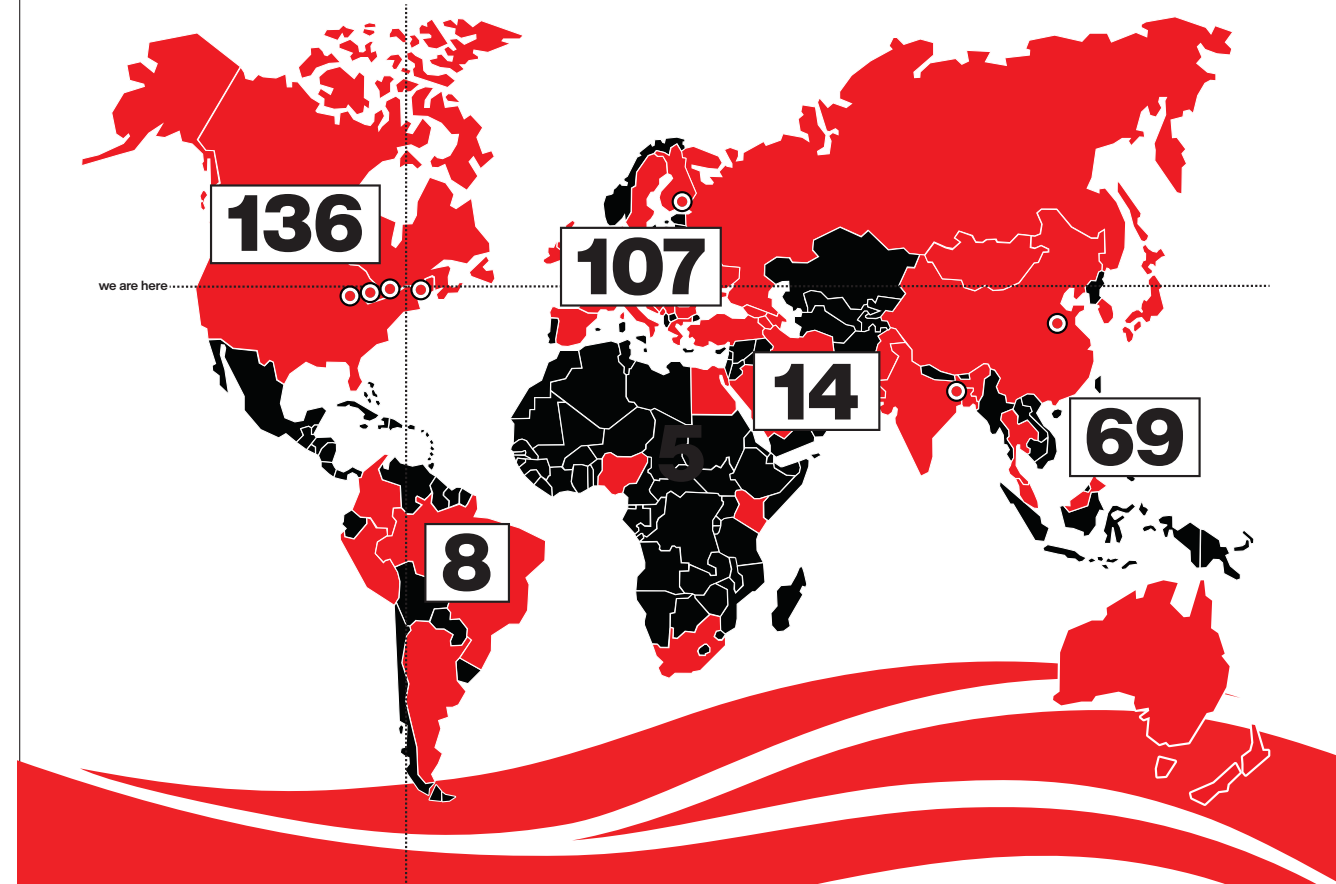
### Research programs XYZ rank



### International engagement co-authored publications, by region

top 10, by publications

Organization 1, Organization 2, Organization 3, Organization 4, Organization 5  
Organization 6, Organization 7, Organization 8, Organization 9, Organization 10





typography

intermission



## Typography → Brand fonts

The brand fonts should be used for marketing collateral and branded communications where possible and practical to do so, as they are the purest visual expression of the Carleton brand voice, and help ensure communications coming from us are recognized as ours.

Helvetica Now is available in a number of weights and any may be used.

## Typography → Alternate fonts

When our brand fonts are not available, you can choose these alternative fonts. They are widely available and come in a variety of weights and styles.

Arial is available in a number of weights and any may be used.

### HELVETICA NOW

**abcdefghijklmnopqrstuvwxyz  
ABCDEFGHIJKLMNOPQRSTUVWXYZ  
1234567890 !@#\$%^&\*()**

Helvetica Now is our primary brand font. It's a modernized version of a very classic sans serif font that has endured time and has evolved to perform better in the digital world. Bold and confident, it can be used for headlines, titles and lead-in copy — anywhere you want to draw attention. It is also versatile and can be used for body copy.

### ARIAL

**abcdefghijklmnopqrstuvwxyz  
ABCDEFGHIJKLMNOPQRSTUVWXYZ  
1234567890 !@#\$%^&\*()**

Arial is our primary alternate font. It can be used in place of Helvetica Now for headlines, titles and lead-in copy. It can also be used for body copy.

**5-YEAR** **Research Portfolio**  
**rtf**

**5-YEAR** **Research Portfolio**  
**rtf**

*Robert Bringhurst*

version 3.0





*the penalty of the law in force against witchcraft ... and ... the marriage, upon conviction, shall stand null and void.*

The function of typography, as I understand it, is neither to further the power of witches nor to bolster the defences of those, like this unfortunate parliamentarian, who live in terror of being tempted and deceived. The satisfactions of the craft come from elucidating, and perhaps even ennobling, the text, not from deluding the unwary reader by applying scents, paints and iron stays to empty prose. But humble texts, such as classified ads or the telephone directory, may profit as much as anything else from a good typographical bath and a change of clothes. And many a book, like many a warrior or dancer or priest of either sex, may look well with some paint on its face, or indeed with a bone in its nose.

#### 1.1.2 *Letters have a life and dignity of their own.*

Letterforms that honor and elucidate what humans see and say deserve to be honored in their turn. Well-chosen words deserve well-chosen letters; these in their turn deserve to be set with affection, intelligence, knowledge and skill. Typography is a link, and it ought, as a matter of honor, courtesy and pure delight, to be as strong as the others in the chain.

Writing begins with the making of footprints, the leaving of signs. Like speaking, it is a perfectly natural act which humans have carried to complex extremes. The typographer's task has always been to add a somewhat unnatural edge, a protective shell of artificial order, to the power of the writing hand. The tools have altered over the centuries, and the exact degree of unnaturalness desired has varied from place to place and time to time, but the character of the essential transformation between manuscript and type has scarcely changed.

The original purpose of type was simply copying. The job of the typographer was to imitate the scribal hand in a form that permitted exact and fast replication. Dozens, then hundreds, then thousands of copies were printed in less time than a scribe would need to finish one. This excuse for setting texts in type has disappeared. In the age of photolithography, digital scanning and offset printing, it is as easy to print directly from handwritten copy as from text that is typographically composed. Yet the typographer's task is little changed. It is still to

give the illusion of superhuman speed and stamina – and of superhuman patience and precision – to the writing hand.

Typography is just that: idealized writing. Writers themselves now rarely have the calligraphic skill of earlier scribes, but they evoke countless versions of ideal script by their varying voices and literary styles. To these blind and often invisible visions, the typographer must respond in visible terms.

In a badly designed book, the letters mill and stand like starving horses in a field. In a book designed by rote, they sit like stale bread and mutton on the page. In a well-made book, where designer, compositor and printer have all done their jobs, no matter how many thousands of lines and pages, the letters are alive. They dance in their seats. Sometimes they rise and dance in the margins and aisles.


Simple as it may sound, the task of creative non-interference with letters is a rewarding and difficult calling. In ideal conditions, it is all that typographers are really asked to do – and it is enough.

#### 1.1.3 *There is a style beyond style.*


Literary style, says Walter Benjamin, “is the power to move freely in the length and breadth of linguistic thinking without slipping into banality.” Typographic style, in this large and intelligent sense of the word, does not mean any particular style – my style or your style, or Neoclassical or Baroque style – but the power to move freely through the whole domain of typography, and to function at every step in a way that is graceful and vital instead of banal. It means typography that can walk familiar ground without sliding into platitudes, typography that responds to new conditions with innovative solutions, and typography that does not vex the reader with its own originality in a self-conscious search for praise.

Typography is to literature as musical performance is to composition: an essential act of interpretation, full of endless opportunities for insight or obtuseness. Much typography is far removed from literature, for language has many uses, including packaging and propaganda. Like music, it can be used to manipulate behavior and emotions. But this is not where typographers, musicians or other human beings show us their finest side. Typography at its best is a slow performing art, worthy of the same informed appreciation that we sometimes give to mu-

From part 2 of Benjamin's essay on Karl Kraus, in *Illuminationen* (Frankfurt, 1955). There is an English translation in Walter Benjamin, *Reflections*, ed. Peter Demetz (New York, 1978).



# Lower Kuskokwim School District Student Survey Results



**PC CARES**  
PROMOTING COMMUNITY  
CONVERSATIONS  
ABOUT  
RESEARCH TO  
END  
SUICIDE

1

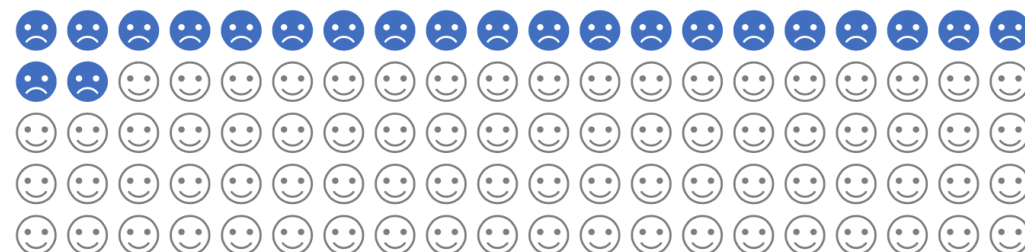
**60 OUT OF 100 STUDENTS** in the Rural LKSD Schools agreed or strongly agreed that they feel like **ADULTS AT SCHOOL CARE ABOUT THEM.**



- School Climate and Connectedness Survey (2019)

2

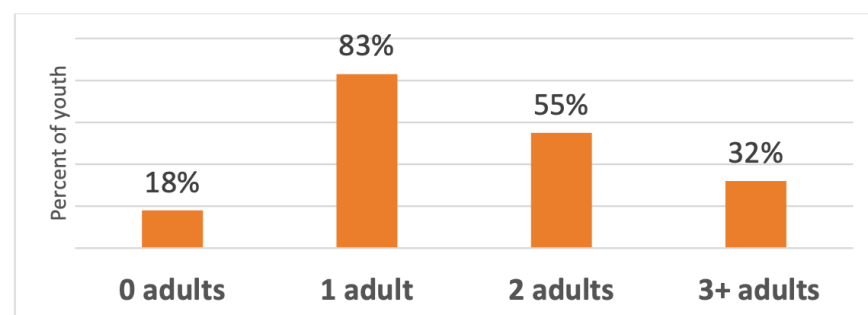
**22 OUT OF 100 STUDENTS** agreed or strongly agreed that they **FEEL ALONE IN THEIR LIFE.**



- Youth Risk Behavior Survey (2017)


3

Youth reported **the number of adults they said they would feel comfortable going to** if they had an important question affecting their life...




- Youth Risk Behavior Survey (2017)





## Lower Kuskokwim School District Student Survey Results



**PC CARES**  
PROMOTING COMMUNITY  
CONVERSATIONS  
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SUICIDE

1

**60 OUT OF 100 STUDENTS** in the Rural LKSD Schools agreed or strongly agreed that they feel like **ADULTS AT SCHOOL CARE ABOUT THEM.**



- School Climate and Connectedness Survey (2019)

2

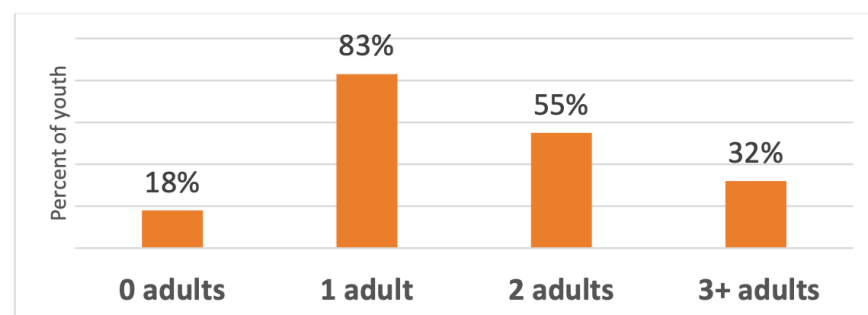
**22 OUT OF 100 STUDENTS** agreed or strongly agreed that they **FEEL ALONE IN THEIR LIFE.**



- Youth Risk Behavior Survey (2017)

3

Youth reported **the number of adults they said they would feel comfortable going to** if they had an important question affecting their life...



- Youth Risk Behavior Survey (2017)


LC 2: Support for Youth and Everyday Caring

ACTIVITY 1: Survey Results Handout

SIDE B

## Lower Kuskokwim School District Student Survey Results


DO ADULTS AT SCHOOL CARE ABOUT ME?



60% of students in Rural LKSD Schools agreed or strongly agreed that they feel that adults at school care about them.

—School Climate and Connectedness Survey (2019)

AM I ALONE?



22% of students agreed or strongly agreed that they feel alone in life.

—Youth Risk Behavior Survey (2017)

DO I HAVE ADULTS THAT I CAN TRUST?

XX% of students had at least 2 adults with whom they feel comfortable speaking to about important life questions.

—Youth Risk Behavior Survey (2017)

| adults | students, % |
|--------|-------------|
| 0      | 10          |
| 1      | 50          |
| 2      | 25          |
| 3+     | 15          |

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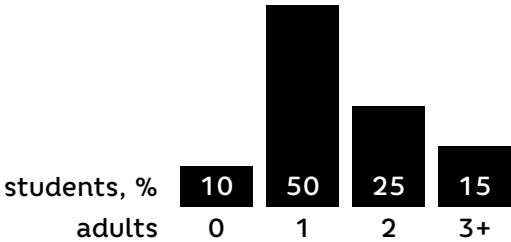
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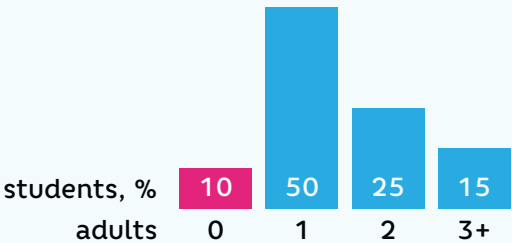
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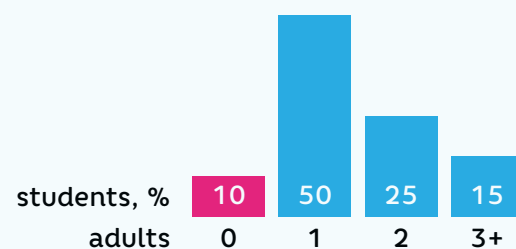
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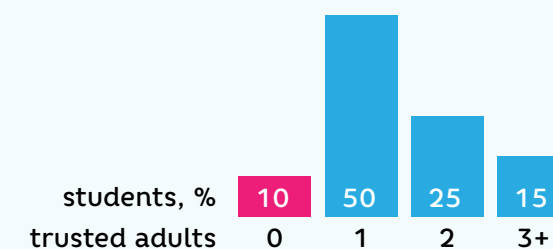
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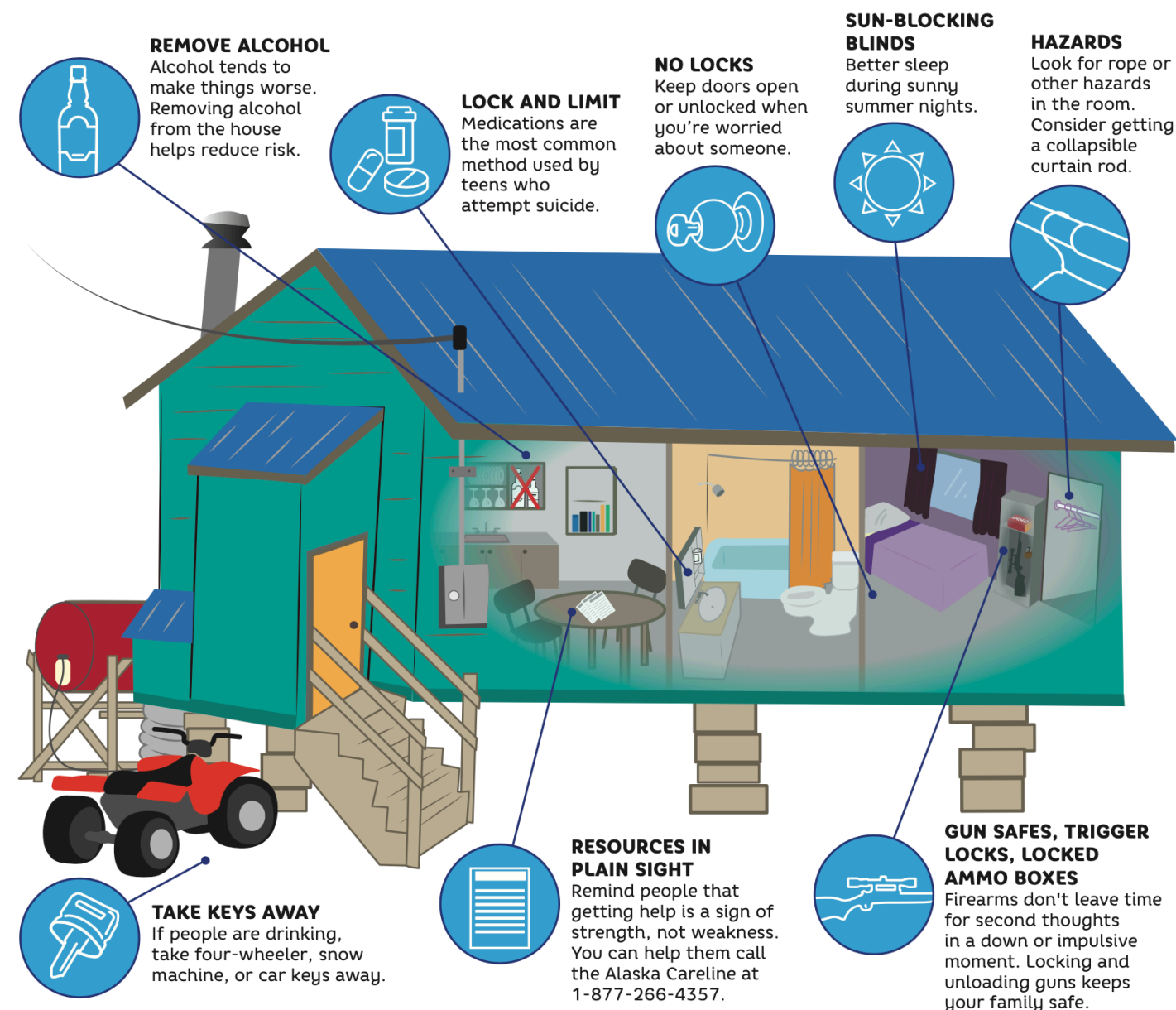
# context & focus

map pertinence to salience

# What we know about effective prevention...

**#1 10 MINUTES CAN SAVE A LIFE.** Research shows that making it harder for someone to find a loaded gun, a private place, pills, a bridge, alcohol, or snow machine keys... **CAN SAVE A LIFE!**  
*Even a few-minute delay can prevent suicide.*

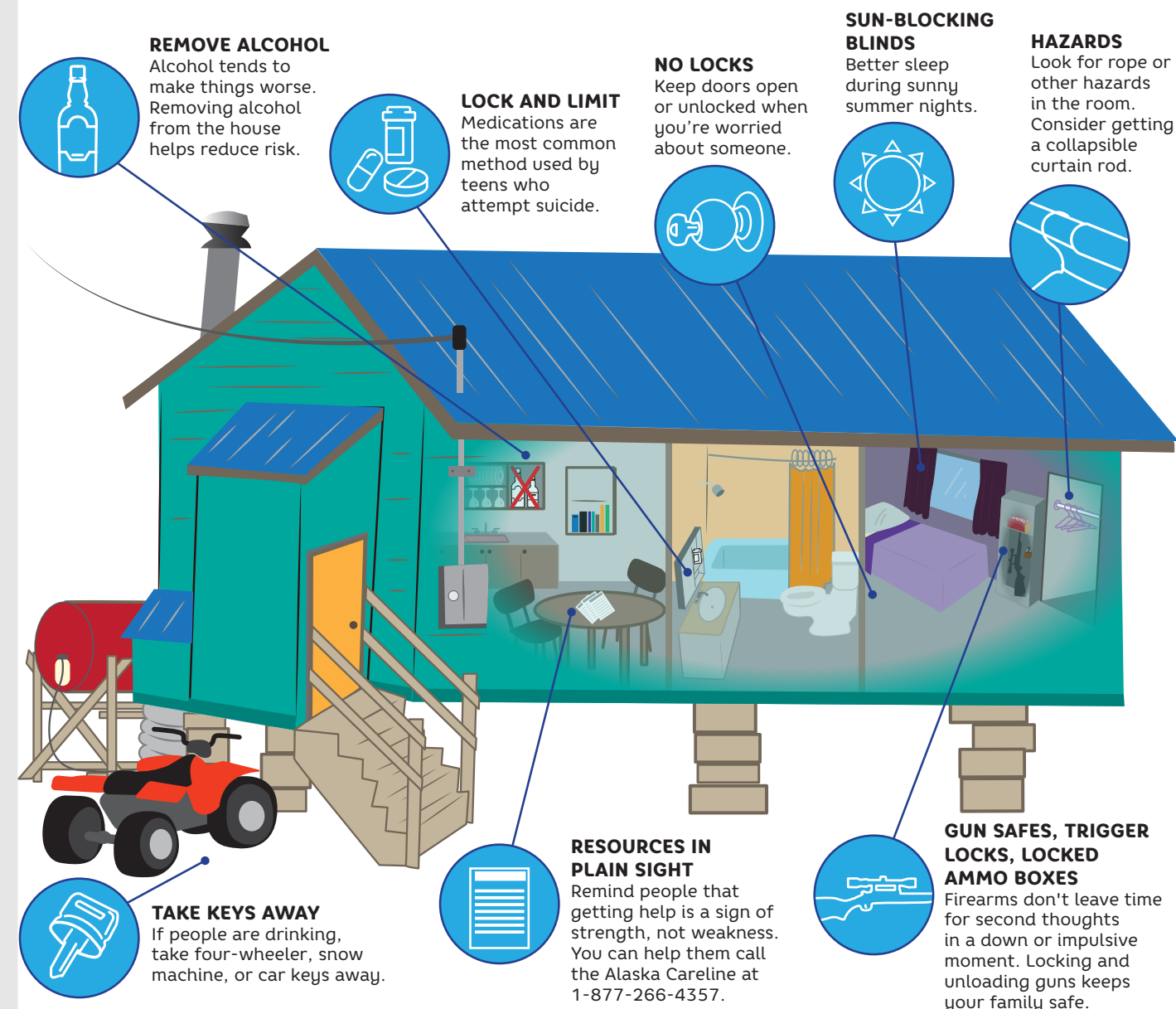
**#2 SIMPLE CHANGES TO A HOME** can make it safer, especially for someone who is struggling. Interrupting a dangerous impulse, even for a few minutes, gives time for a better outcome.



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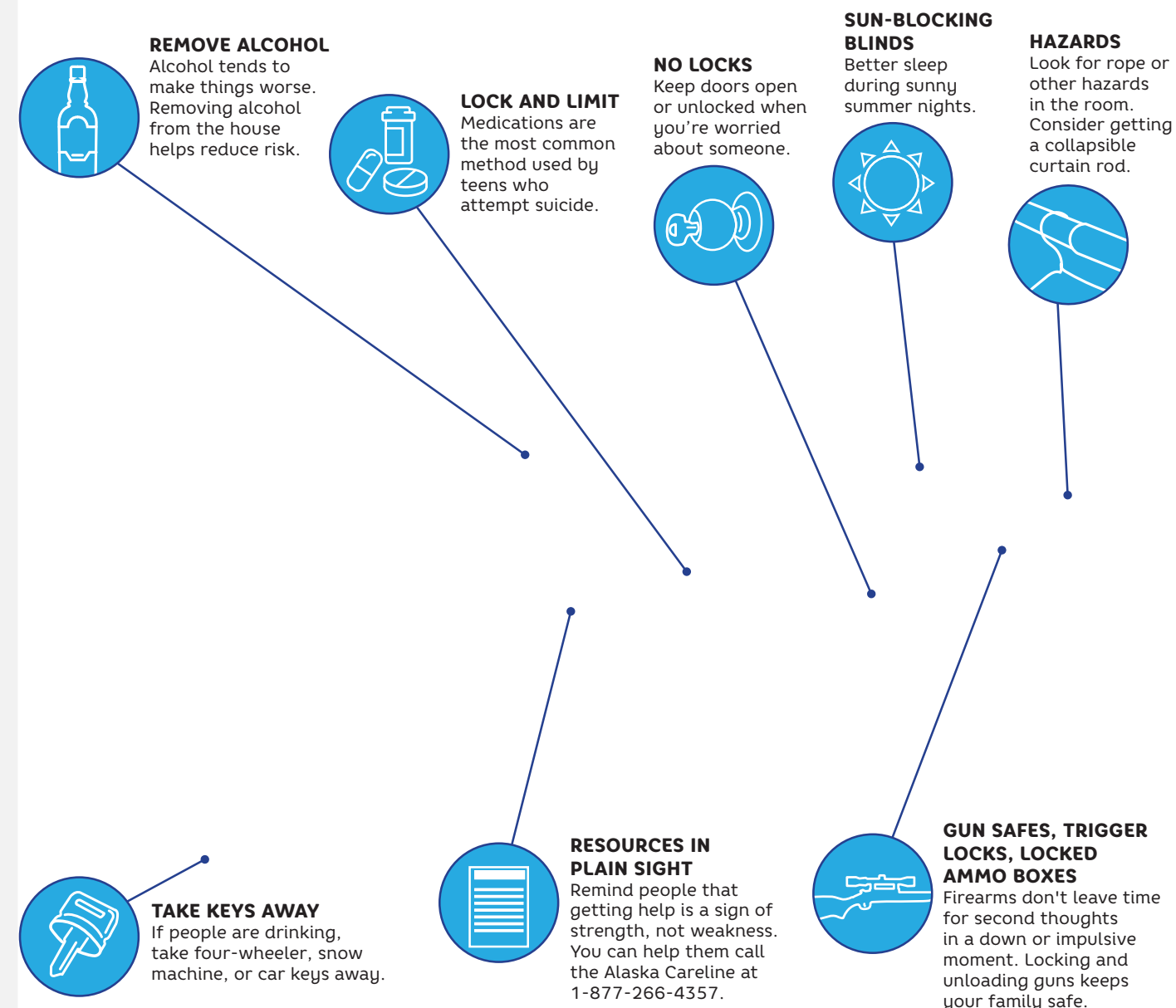
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# 10 minutes can save a life!

Give someone who is dealing with suicidal thoughts  
a few more minutes to get the help they need.

## 1 — INTERRUPT THE IMPULSE

Prevent suicide by making it harder  
for someone to find a loaded gun,  
pills, alcohol, or car keys.

## 2 — MAKE SIMPLE CHANGES AT HOME

It's easy to make a home safer. Put  
harmful items out of reach and out of  
sight.

If you or someone around you needs support,  
call the Alaska Careline at **1-877-266-4357**.



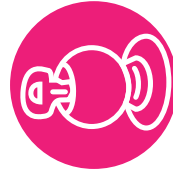
### REMOVE ALCOHOL

Alcohol tends to make  
things worse. Removing  
alcohol from the house  
helps reduce risk.



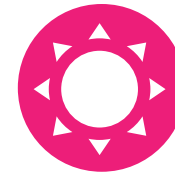
### SAFELY STORE PILLS

Medications are the most  
common method used by  
teens who attempt  
suicide.



### OPEN DOORS

Keep doors open or  
unlocked when you're  
worried about someone.



### SUN-BLOCKING BLINDS

Lift mood by getting  
better sleep during sunny  
summer nights.



### HAZARDS

Look for rope or other  
hazards in the room.  
Consider getting a  
collapsible curtain rod.



### TAKE KEYS AWAY

If people are drinking,  
take away their keys and  
do not let them drive...  
anything.



### LOCK GUNS

Firearms don't leave  
time for second  
thoughts. Locking and  
unloading guns keeps  
your family safe.



### RESOURCES IN PLAIN SIGHT

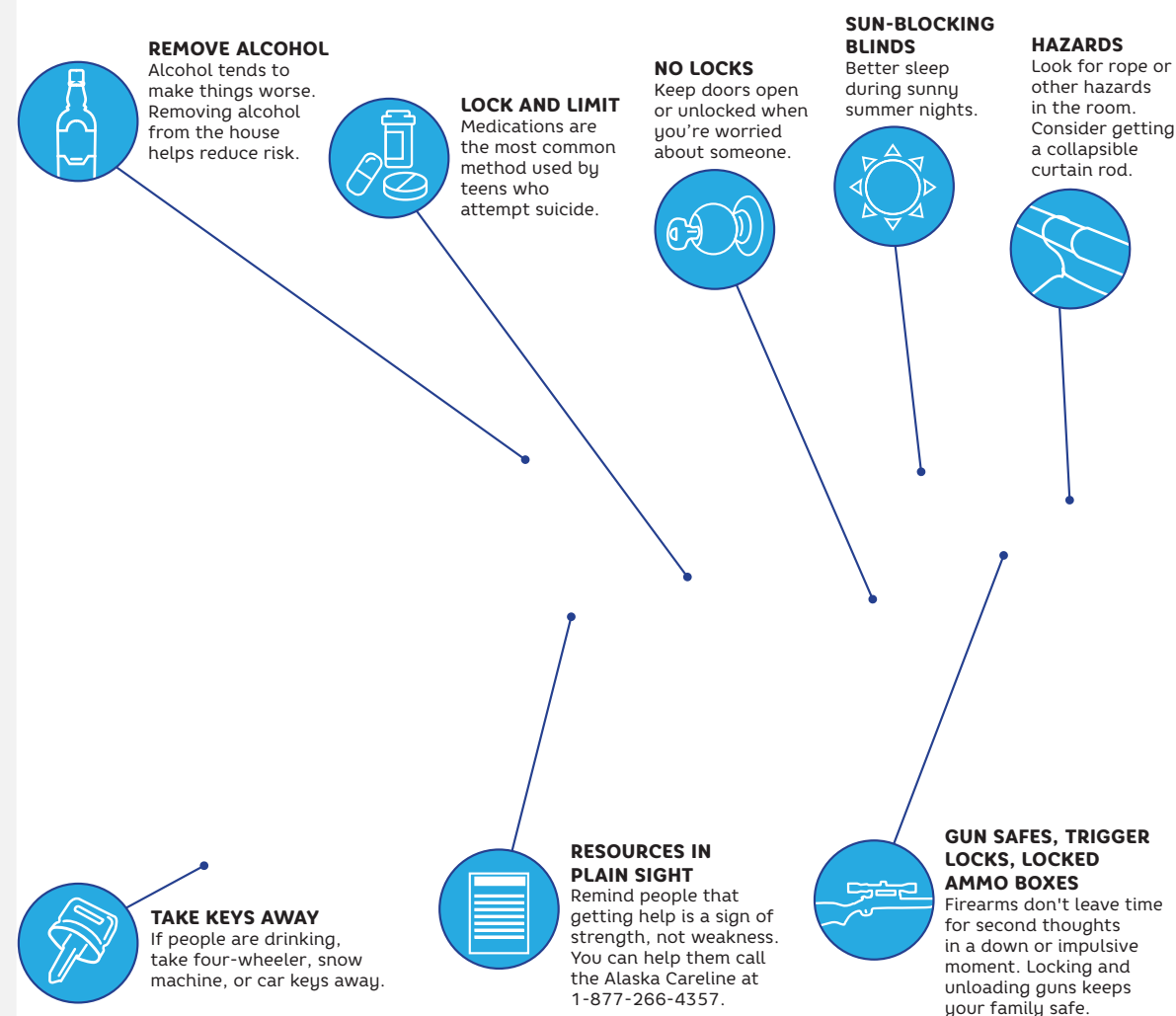
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**REMOVE ALCOHOL**  
Alcohol is never a solution.

#### SAFELY STORE PILLS

Medications are the most common method used by teens who attempt suicide.



#### TAKE KEYS AWAY

Take away keys from anyone who has been drinking. Don't let them drive ... anything.

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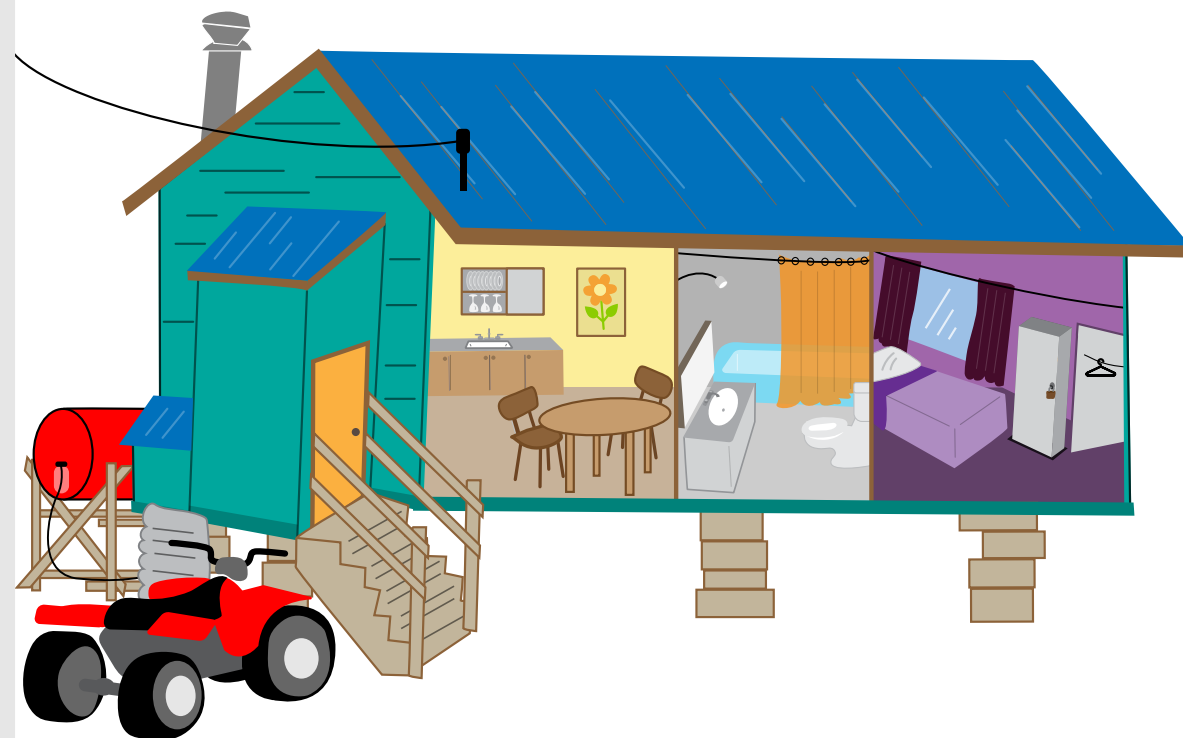
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Firearms don't leave time for second thoughts. Lock and unload guns to keep your family safe.

#### OTHER HAZARDS

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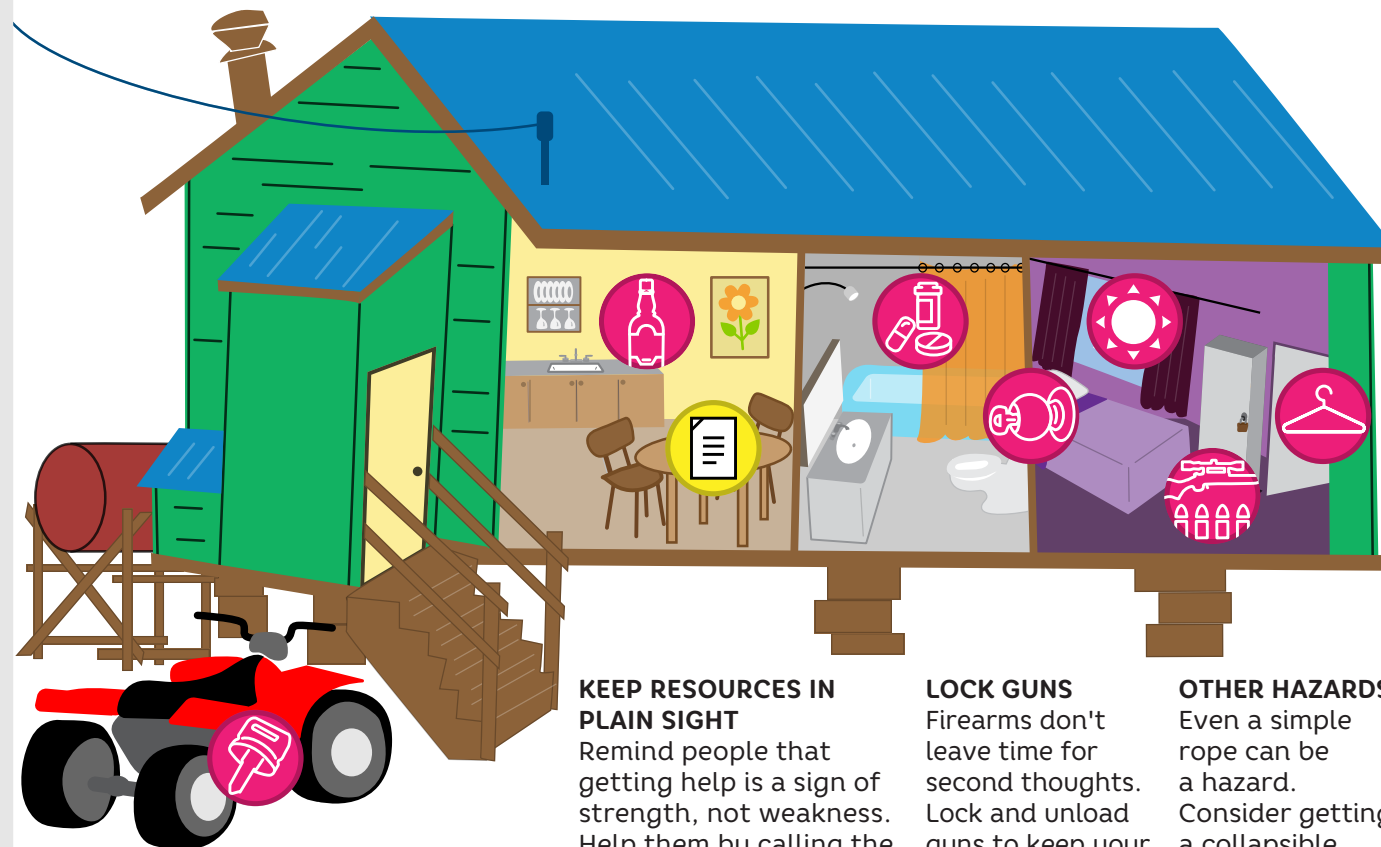
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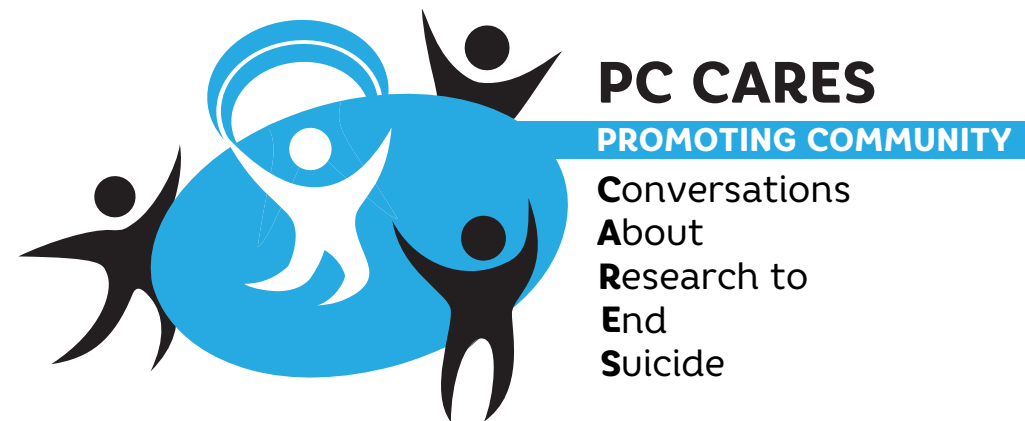
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**C**onversations  
**A**bout  
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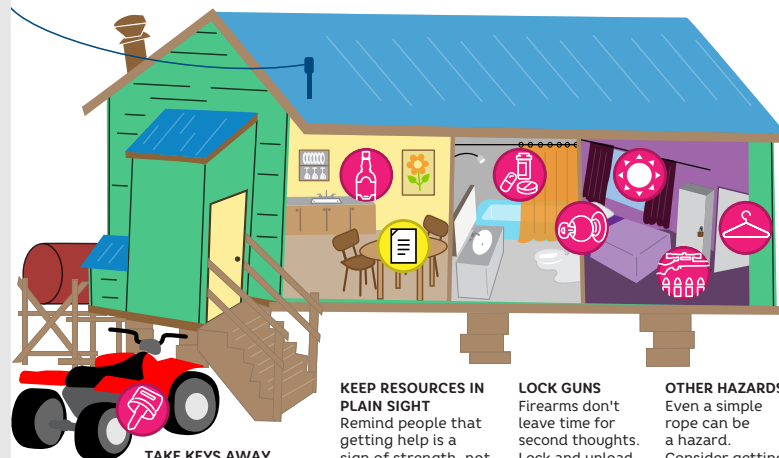
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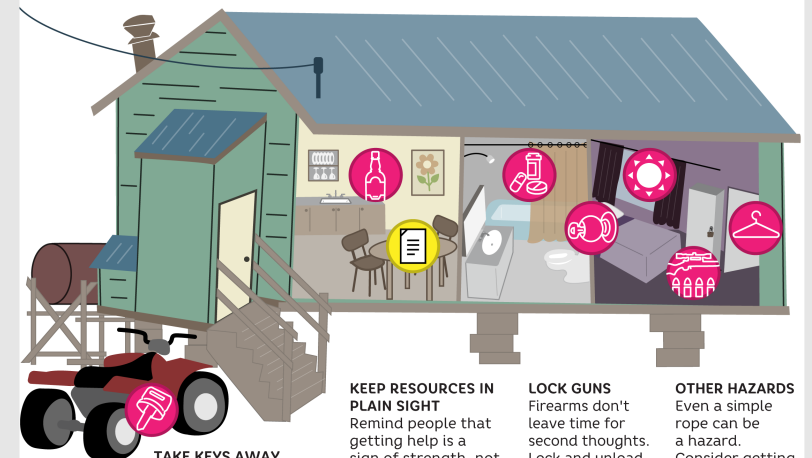
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# Gestalt

intermission











[illegible]

look here

**Spa    cemak    esgro    ups**

Spa cemak esgro ups



reserve color for themes

understand the eye's response









|                       | Random sequence generation (selection bias) | Allocation concealment (selection bias) | Blinding of participants and personnel (performance bias) | Blinding of outcome assessment (detection bias) | Incomplete outcome data (attrition bias) | Selective reporting (reporting bias) | Other bias |
|-----------------------|---|---|---|---|--|--------------------------------------|------------|
| Aimer 2017            | +   | ?                                       | -   | +   | -  | +                                    | -          |
| Allen 2017            | +   | +                                       | -   | +   | +  | -                                    | -          |
| Asenlof 2005          | +   | -                                       | -   | ?   | +  | +                                    | -          |
| Chesterton 2021       | +   | +                                       | -   | +   | +  | +                                    | -          |
| Crotty 2009           | +   | +                                       | -   | +   | +  | +                                    | +          |
| El Miedany 2013       | ?   | ?                                       | ?   | +   | +  | ?                                    | -          |
| Evers 2002            | +   | ?                                       | -   | ?   | +  | +                                    | -          |
| Hinman 2020           | +   | +                                       | +   | ?   | +  | +                                    | ?          |
| Li 2020               | +   | +                                       | -   | +   | +  | +                                    | +          |
| Manning 2014          | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Murphy 2016           | +   | +                                       | -   | +   | -  | ?                                    | -          |
| Nilssen 2020          | +   | +                                       | -   | -   | +  | ?                                    | -          |
| O'Keeffe 2020         | +   | ?                                       | -   | -   | +  | +                                    | ?          |
| O'Dwyer 2017          | +   | +                                       | -   | +   | +  | +                                    | +          |
| Pariser 2005          | ?   | ?                                       | -   | ?   | +  | ?                                    | -          |
| Roddy 2020            | +   | +                                       | -   | +   | +  | +                                    | ?          |
| Shao 2021             | +   | +                                       | -   | +   | +  | +                                    | +          |
| Skou 2015             | +   | -                                       | -   | +   | +  | ?                                    | +          |
| Thomsen 2016 and 2020 | +   | +                                       | -   | +   | +  | ?                                    | -          |
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| Skou 2015             | +   | -                                       | -   | +   | +  | ?                                    | +          |
| Thomsen 2016 and 2020 | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Van den berg 2006     | +   | +                                       | -   | +   | +  | ?                                    | ?          |
| Williams 2015         | +   | +                                       | -   | +   | +  | +                                    | +          |

|                       | Random sequence generation (selection bias) | Allocation concealment (selection bias) | Blinding of participants and personnel (performance bias) | Blinding of outcome assessment (detection bias) | Incomplete outcome data (attrition bias) | Selective reporting (reporting bias) | Other bias |
|-----------------------|---|---|---|---|--|--------------------------------------|------------|
| Aimer 2017            | +   | ?                                       | -   | +   | -  | +                                    | -          |
| Allen 2017            | +   | +                                       | -   | +   | +  | -                                    | -          |
| Asenlof 2005          | +   | -                                       | -   | ?   | +  | +                                    | -          |
| Chesterton 2021       | +   | +                                       | -   | +   | +  | +                                    | -          |
| Crotty 2009           | +   | +                                       | -   | +   | +  | +                                    | +          |
| El Miedany 2013       | ?   | ?                                       | ?   | +   | +  | ?                                    | -          |
| Evers 2002            | +   | ?                                       | -   | ?   | +  | +                                    | -          |
| Hinman 2020           | +   | +                                       | +   | ?   | +  | +                                    | ?          |
| Li 2020               | +   | +                                       | -   | +   | +  | +                                    | +          |
| Manning 2014          | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Murphy 2016           | +   | +                                       | -   | +   | -  | ?                                    | -          |
| Nilssen 2020          | +   | +                                       | -   | -   | +  | ?                                    | -          |
| O'Keeffe 2020         | +   | ?                                       | -   | -   | +  | +                                    | ?          |
| O'Dwyer 2017          | +   | +                                       | -   | +   | +  | +                                    | +          |
| Pariser 2005          | ?   | ?                                       | -   | ?   | +  | ?                                    | -          |
| Roddy 2020            | +   | +                                       | -   | +   | +  | +                                    | ?          |
| Shao 2021             | +   | +                                       | -   | +   | +  | +                                    | +          |
| Skou 2015             | +   | -                                       | -   | +   | +  | ?                                    | +          |
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| Asenlof 2005          | +   | -                                       | -   | ?   | +  | +                                    | -          |
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| El Miedany 2013       | ?   | ?                                       | ?   | +   | +  | ?                                    | -          |
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| Hinman 2020           | +   | +                                       | +   | ?   | +  | +                                    | ?          |
| Li 2020               | +   | +                                       | -   | +   | +  | +                                    | +          |
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| Nilssen 2020          | +   | +                                       | -   | -   | +  | ?                                    | -          |
| O'Keeffe 2020         | +   | ?                                       | -   | -   | +  | +                                    | ?          |
| O'Dwyer 2017          | +   | +                                       | -   | +   | +  | +                                    | +          |
| Pariser 2005          | ?   | ?                                       | -   | ?   | +  | ?                                    | -          |
| Roddy 2020            | +   | +                                       | -   | +   | +  | +                                    | ?          |
| Shao 2021             | +   | +                                       | -   | +   | +  | +                                    | +          |
| Skou 2015             | +   | -                                       | -   | +   | +  | ?                                    | +          |
| Thomsen 2016 and 2020 | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Van den berg 2006     | +   | +                                       | -   | +   | +  | ?                                    | ?          |
| Williams 2015         | +   | +                                       | -   | +   | +  | +                                    | +          |

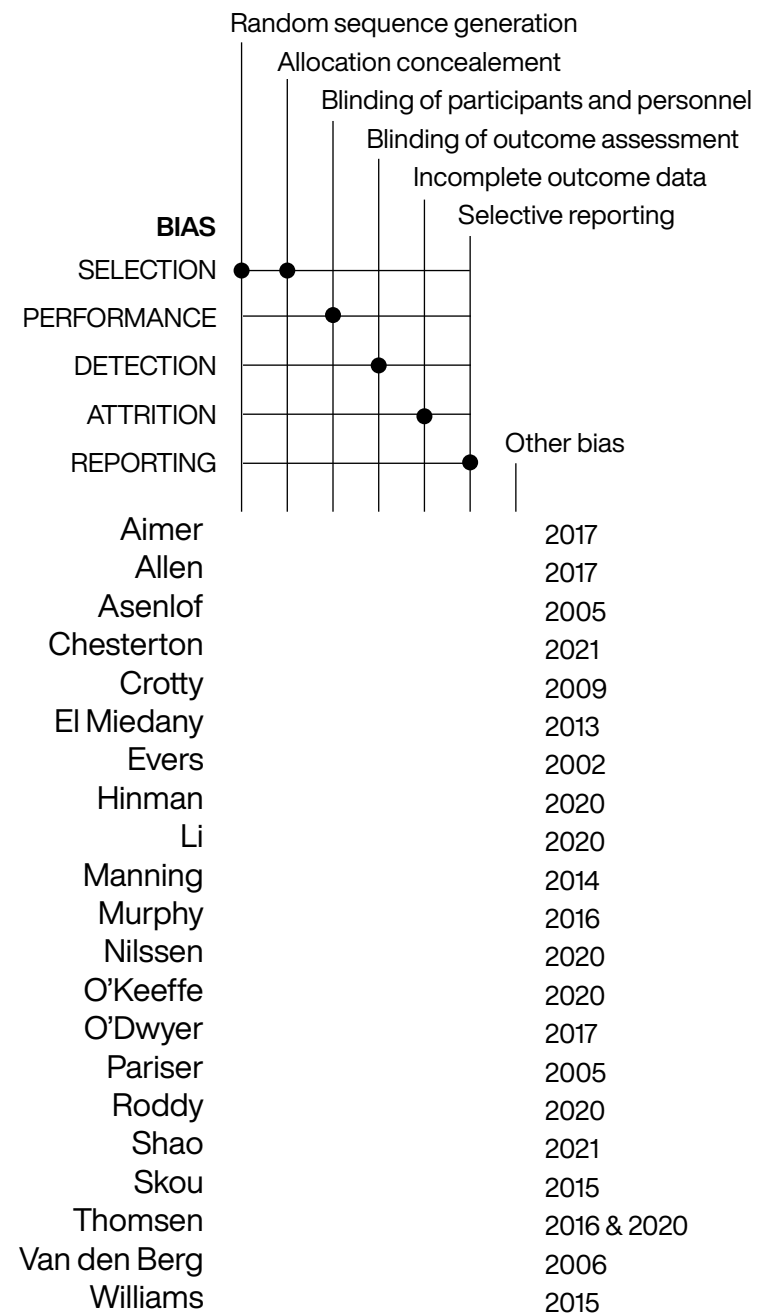


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| Allen 2017            | +   | +                                       | -   | +   | +  | -                                    | -          |
| Asenlof 2005          | +   | -                                       | -   | ?   | +  | +                                    | -          |
| Chesterton 2021       | +   | +                                       | -   | +   | +  | +                                    | -          |
| Crotty 2009           | +   | +                                       | -   | +   | +  | +                                    | +          |
| El Miedany 2013       | ?   | ?                                       | ?   | +   | +  | ?                                    | -          |
| Evers 2002            | +   | ?                                       | -   | ?   | +  | +                                    | -          |
| Hinman 2020           | +   | +                                       | +   | ?   | +  | +                                    | ?          |
| Li 2020               | +   | +                                       | -   | +   | +  | +                                    | +          |
| Manning 2014          | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Murphy 2016           | +   | +                                       | -   | +   | -  | ?                                    | -          |
| Nilssen 2020          | +   | +                                       | -   | -   | +  | ?                                    | -          |
| O'Keeffe 2020         | +   | ?                                       | -   | -   | +  | +                                    | ?          |
| O'Dwyer 2017          | +   | +                                       | -   | +   | +  | +                                    | +          |
| Pariser 2005          | ?   | ?                                       | -   | ?   | +  | ?                                    | -          |
| Roddy 2020            | +   | +                                       | -   | +   | +  | +                                    | ?          |
| Shao 2021             | +   | +                                       | -   | +   | +  | +                                    | +          |
| Skou 2015             | +   | -                                       | -   | +   | +  | ?                                    | +          |
| Thomsen 2016 and 2020 | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Van den berg 2006     | +   | +                                       | -   | +   | +  | ?                                    | ?          |
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| El Miedany 2013       | ?   | ?                                       | ?   | +   | +  | ?                                    | -          |
| Evers 2002            | +   | ?                                       | -   | ?   | +  | +                                    | -          |
| Hinman 2020           | +   | +                                       | +   | ?   | +  | +                                    | ?          |
| Li 2020               | +   | +                                       | -   | +   | +  | +                                    | +          |
| Manning 2014          | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Murphy 2016           | +   | +                                       | -   | +   | -  | ?                                    | -          |
| Nilssen 2020          | +   | +                                       | -   | -   | +  | ?                                    | -          |
| O'Keeffe 2020         | +   | ?                                       | -   | -   | +  | +                                    | ?          |
| O'Dwyer 2017          | +   | +                                       | -   | +   | +  | +                                    | +          |
| Pariser 2005          | ?   | ?                                       | -   | ?   | +  | ?                                    | -          |
| Roddy 2020            | +   | +                                       | -   | +   | +  | +                                    | ?          |
| Shao 2021             | +   | +                                       | -   | +   | +  | +                                    | +          |
| Skou 2015             | +   | -                                       | -   | +   | +  | ?                                    | +          |
| Thomsen 2016 and 2020 | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Van den berg 2006     | +   | +                                       | -   | +   | +  | ?                                    | ?          |
| Williams 2015         | +   | +                                       | -   | +   | +  | +                                    | +          |

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| Aimer 2017            | +   | ?                                       | -   | +   | -  | +                                    | -          |
| Allen 2017            | +   | +                                       | -   | +   | +  | -                                    | -          |
| Asenlof 2005          | +   | -                                       | -   | ?   | +  | +                                    | -          |
| Chesterton 2021       | +   | +                                       | -   | +   | +  | +                                    | -          |
| Crotty 2009           | +   | +                                       | -   | +   | +  | +                                    | +          |
| El Miedany 2013       | ?   | ?                                       | ?   | +   | +  | ?                                    | -          |
| Evers 2002            | +   | ?                                       | -   | ?   | +  | +                                    | -          |
| Hinman 2020           | +   | +                                       | +   | ?   | +  | +                                    | ?          |
| Li 2020               | +   | +                                       | -   | +   | +  | +                                    | +          |
| Manning 2014          | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Murphy 2016           | +   | +                                       | -   | +   | -  | ?                                    | -          |
| Nilssen 2020          | +   | +                                       | -   | -   | +  | ?                                    | -          |
| O'Keeffe 2020         | +   | ?                                       | -   | -   | +  | +                                    | ?          |
| O'Dwyer 2017          | +   | +                                       | -   | +   | +  | +                                    | +          |
| Pariser 2005          | ?   | ?                                       | -   | ?   | +  | ?                                    | -          |
| Roddy 2020            | +   | +                                       | -   | +   | +  | +                                    | ?          |
| Shao 2021             | +   | +                                       | -   | +   | +  | +                                    | +          |
| Skou 2015             | +   | -                                       | -   | +   | +  | ?                                    | +          |
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| Van den berg 2006     | +   | +                                       | -   | +   | +  | ?                                    | ?          |
| Williams 2015         | +   | +                                       | -   | +   | +  | +                                    | +          |





Number of data classes: 11



[how to use](#) | [updates](#) | [downloads](#) | [credits](#)

# COLORBREW 2.0

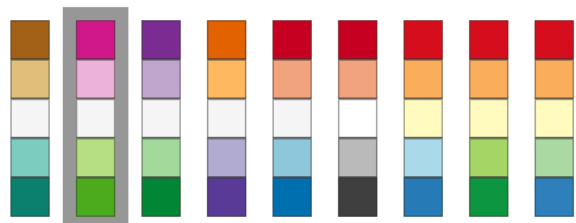
color advice for cartography

Nature of your data:



☐ sequential ☒ diverging ☐ qualitative

Pick a color scheme:



Only show:



- ☐ colorblind safe
- ☐ print friendly
- ☐ photocopy safe

Context:



- ☐ roads
- ☐ cities
- ☒ borders

Background:



- ☒ solid color
- ☐ terrain



color transparency

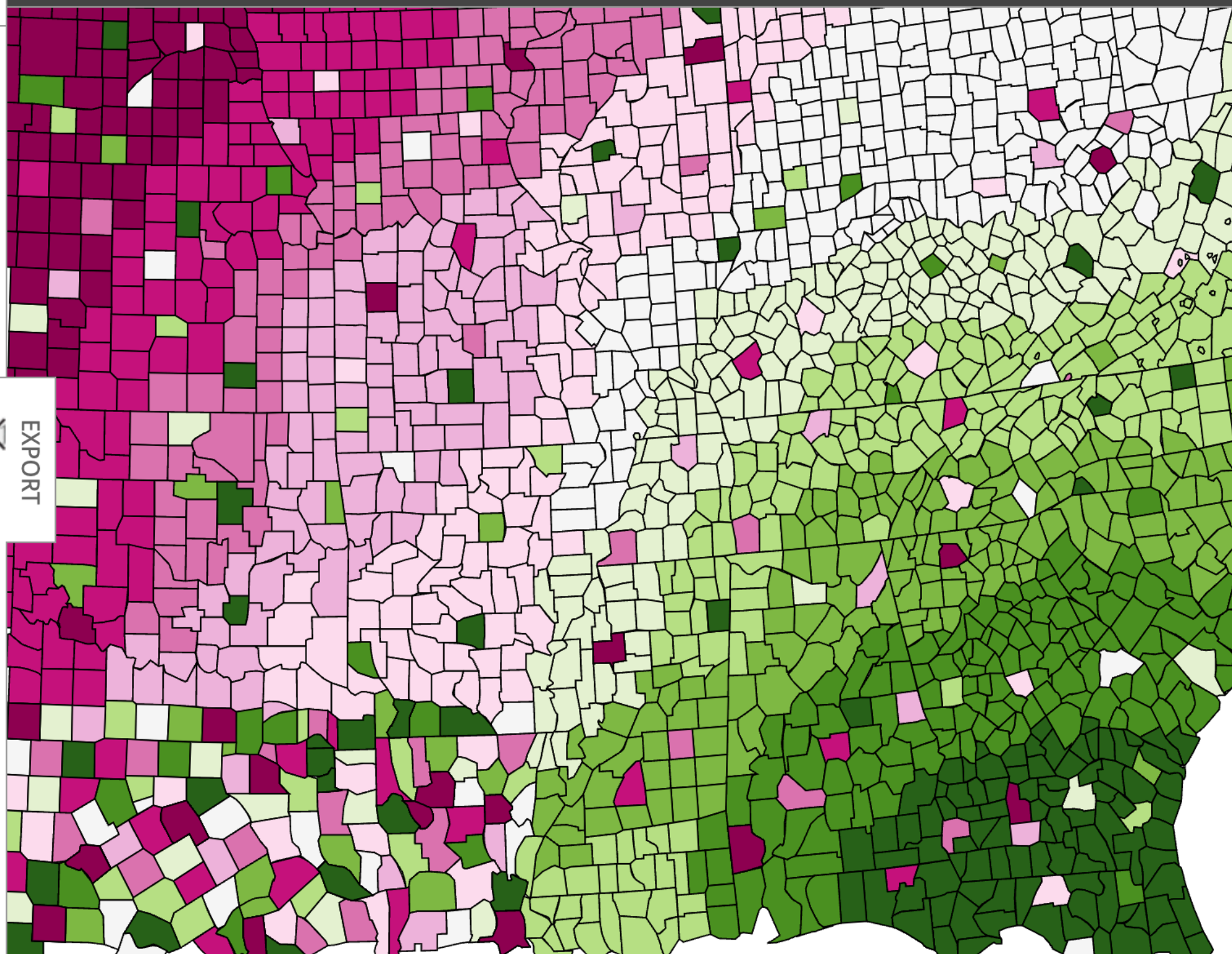
11-class PiYG

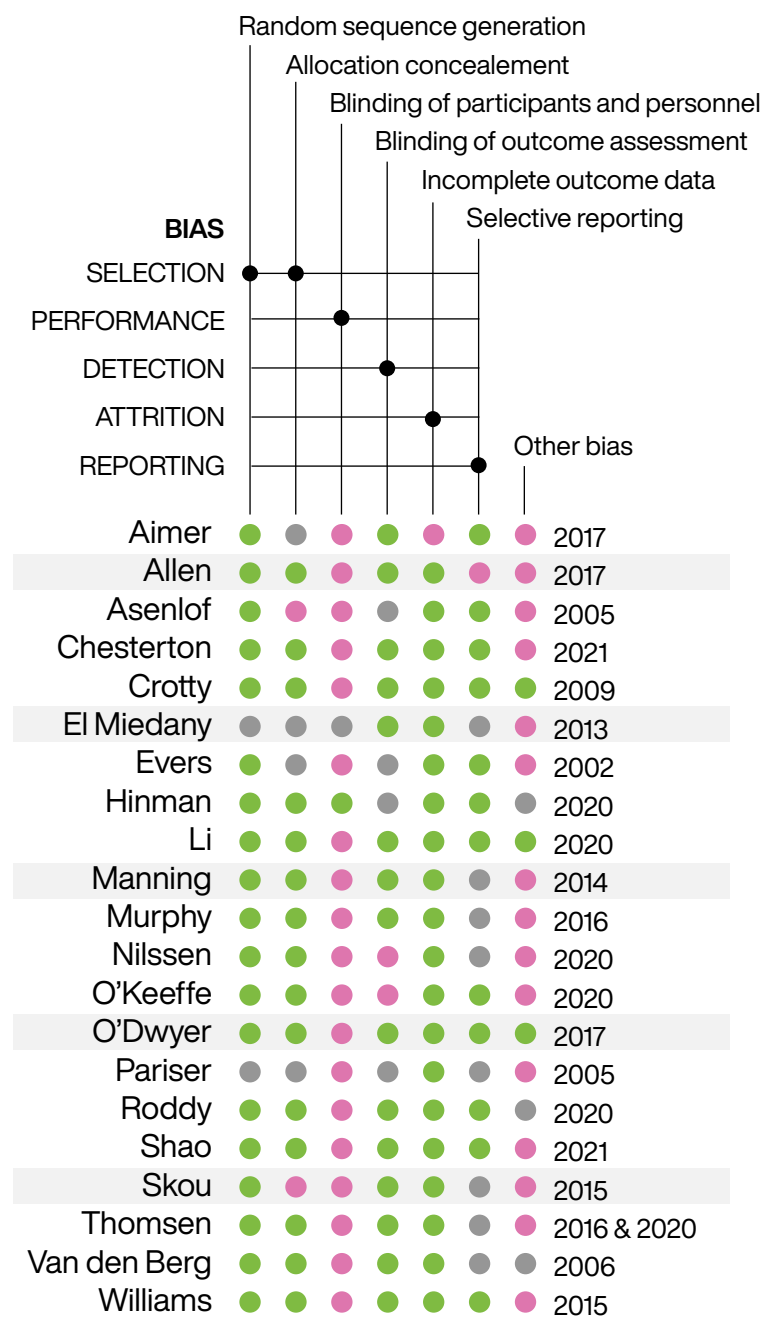
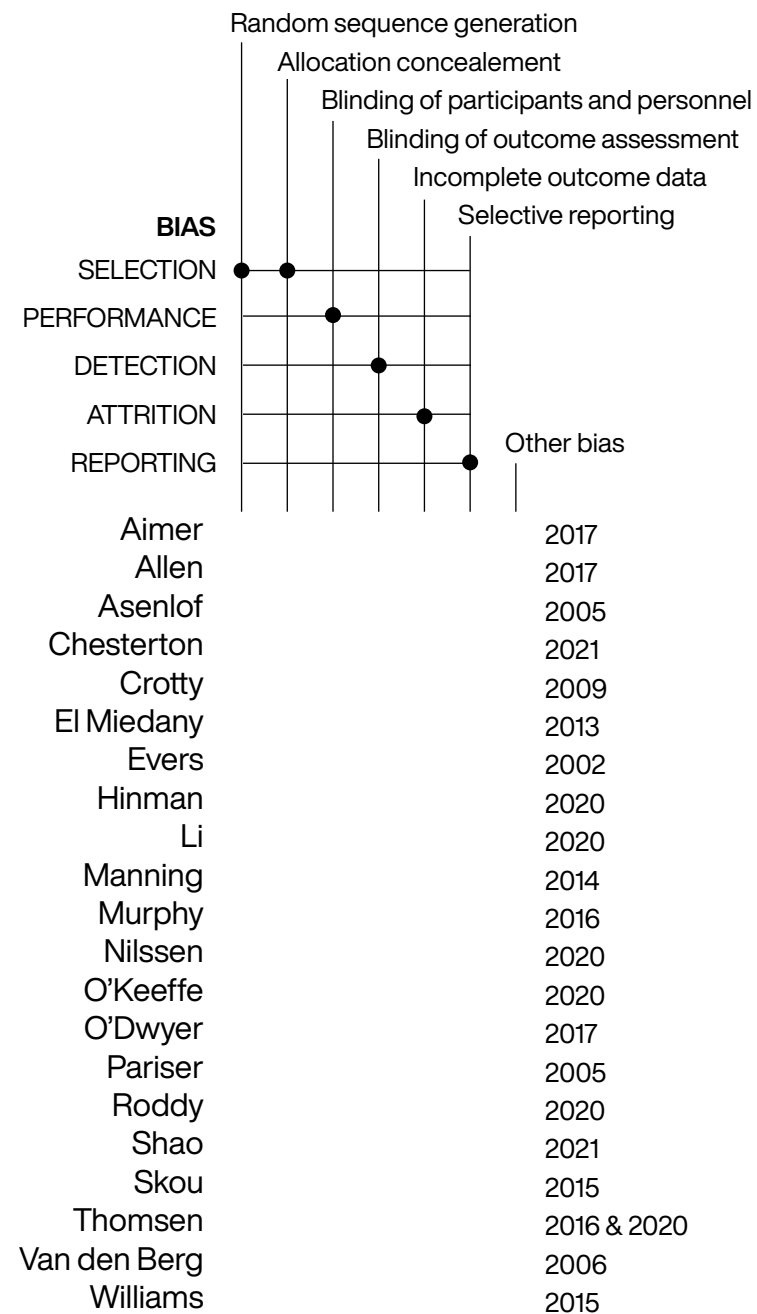


EXPORT

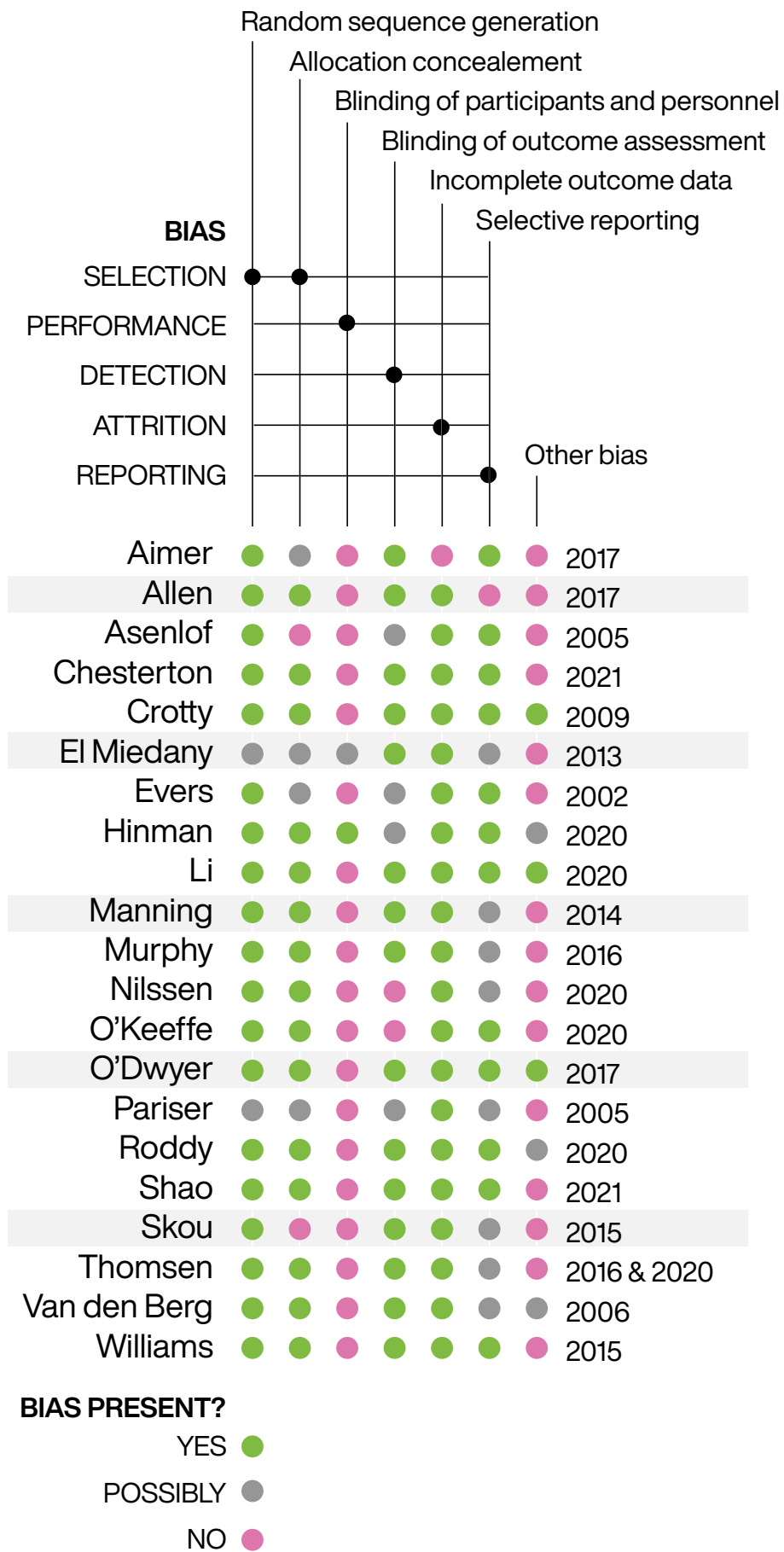
HEX

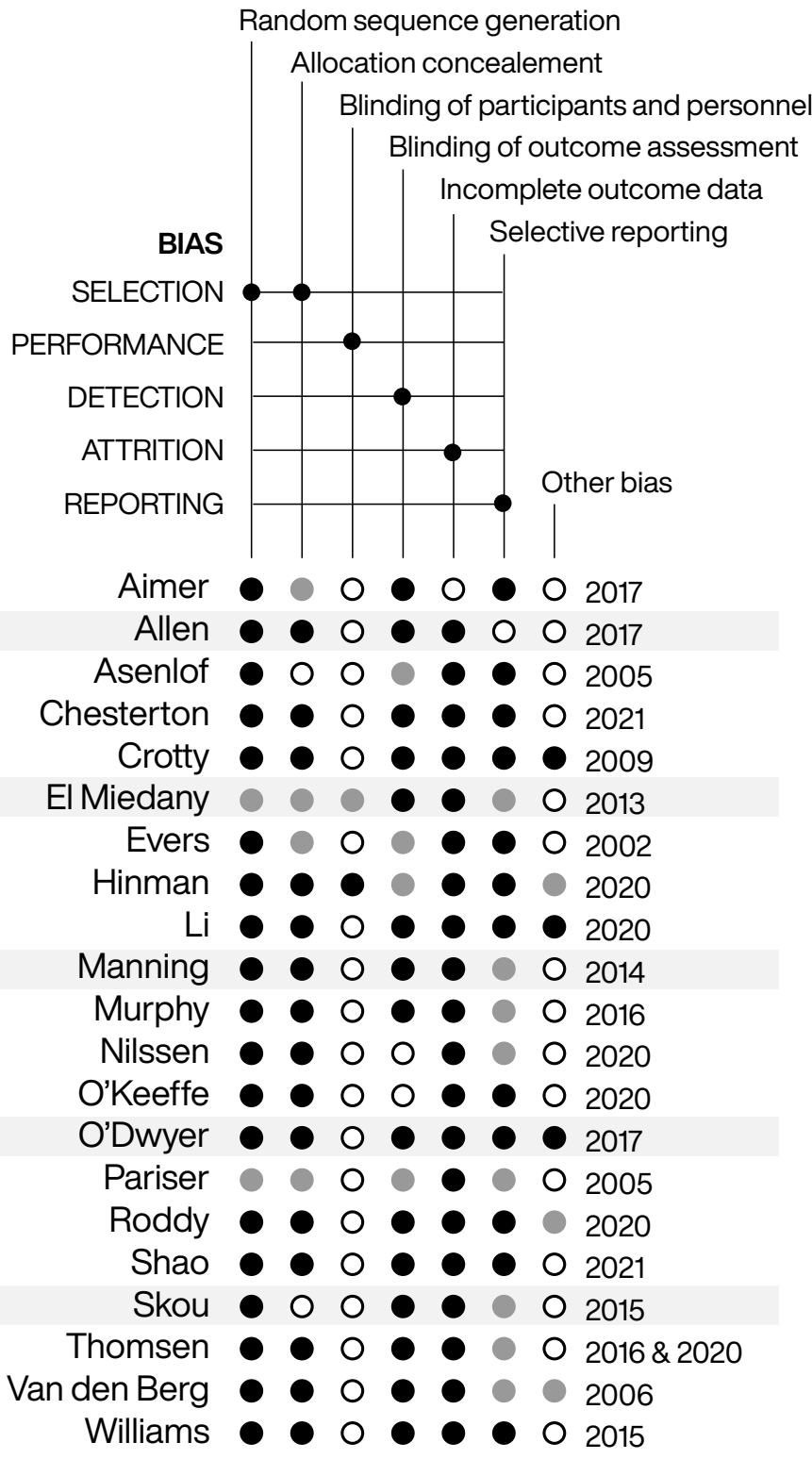
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|--|---------|
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|  | #c51b7d |
|  | #de77ae |
|  | #f1b6da |
|  | #fde0ef |
|  | #f7f7f7 |
|  | #e6f5d0 |
|  | #b8e186 |
|  | #7fbc41 |
|  | #4d9221 |
|  | #276419 |





|                       | Random sequence generation (selection bias) | Allocation concealment (selection bias) | Blinding of participants and personnel (performance bias) | Blinding of outcome assessment (detection bias) | Incomplete outcome data (attrition bias) | Selective reporting (reporting bias) | Other bias |
|-----------------------|---|---|---|---|--|--------------------------------------|------------|
| Aimer 2017            | +   | ?                                       | -   | +   | -  | +                                    | -          |
| Allen 2017            | +   | +                                       | -   | +   | +  | -                                    | -          |
| Asenlof 2005          | +   | -                                       | -   | ?   | +  | +                                    | -          |
| Chesterton 2021       | +   | +                                       | -   | +   | +  | +                                    | -          |
| Crotty 2009           | +   | +                                       | -   | +   | +  | +                                    | +          |
| El Miedany 2013       | ?   | ?                                       | ?   | +   | +  | ?                                    | -          |
| Evers 2002            | +   | ?                                       | -   | ?   | +  | +                                    | -          |
| Hinman 2020           | +   | +                                       | +   | ?   | +  | +                                    | ?          |
| Li 2020               | +   | +                                       | -   | +   | +  | +                                    | +          |
| Manning 2014          | +   | +                                       | -   | +   | +  | ?                                    | -          |
| Murphy 2016           | +   | +                                       | -   | +   | -  | ?                                    | -          |
| Nilssen 2020          | +   | +                                       | -   | -   | +  | ?                                    | -          |
| O'Keeffe 2020         | +   | ?                                       | -   | -   | +  | +                                    | ?          |
| O'Dwyer 2017          | +   | +                                       | -   | +   | +  | +                                    | +          |
| Pariser 2005          | ?   | ?                                       | -   | ?   | +  | ?                                    | -          |
| Roddy 2020            | +   | +                                       | -   | +   | +  | +                                    | ?          |
| Shao 2021             | +   | +                                       | -   | +   | +  | +                                    | +          |
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| Van den berg 2006     | +   | +                                       | -   | +   | +  | ?                                    | ?          |
| Williams 2015         | +   | +                                       | -   | +   | +  | +                                    | +          |



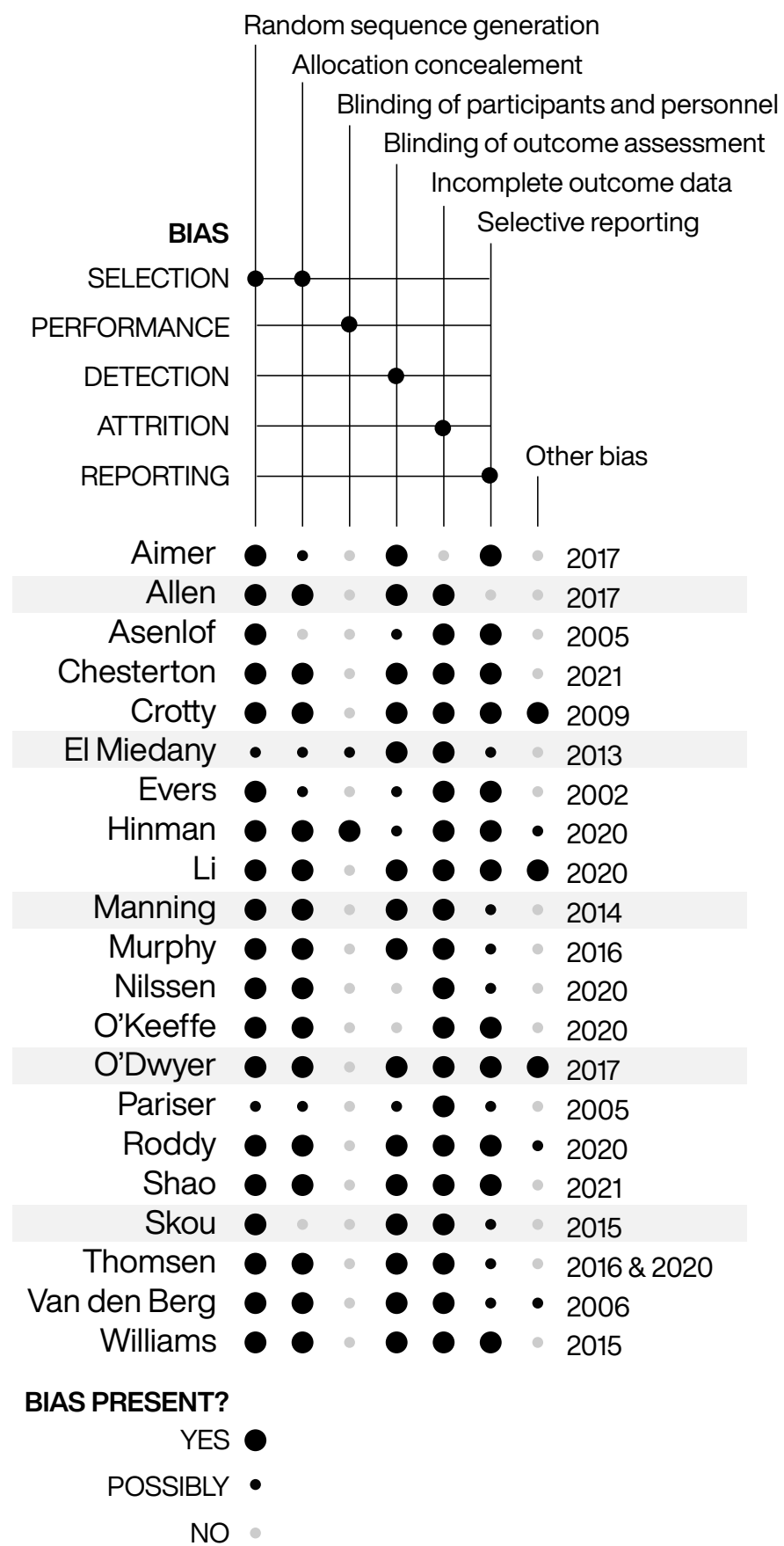
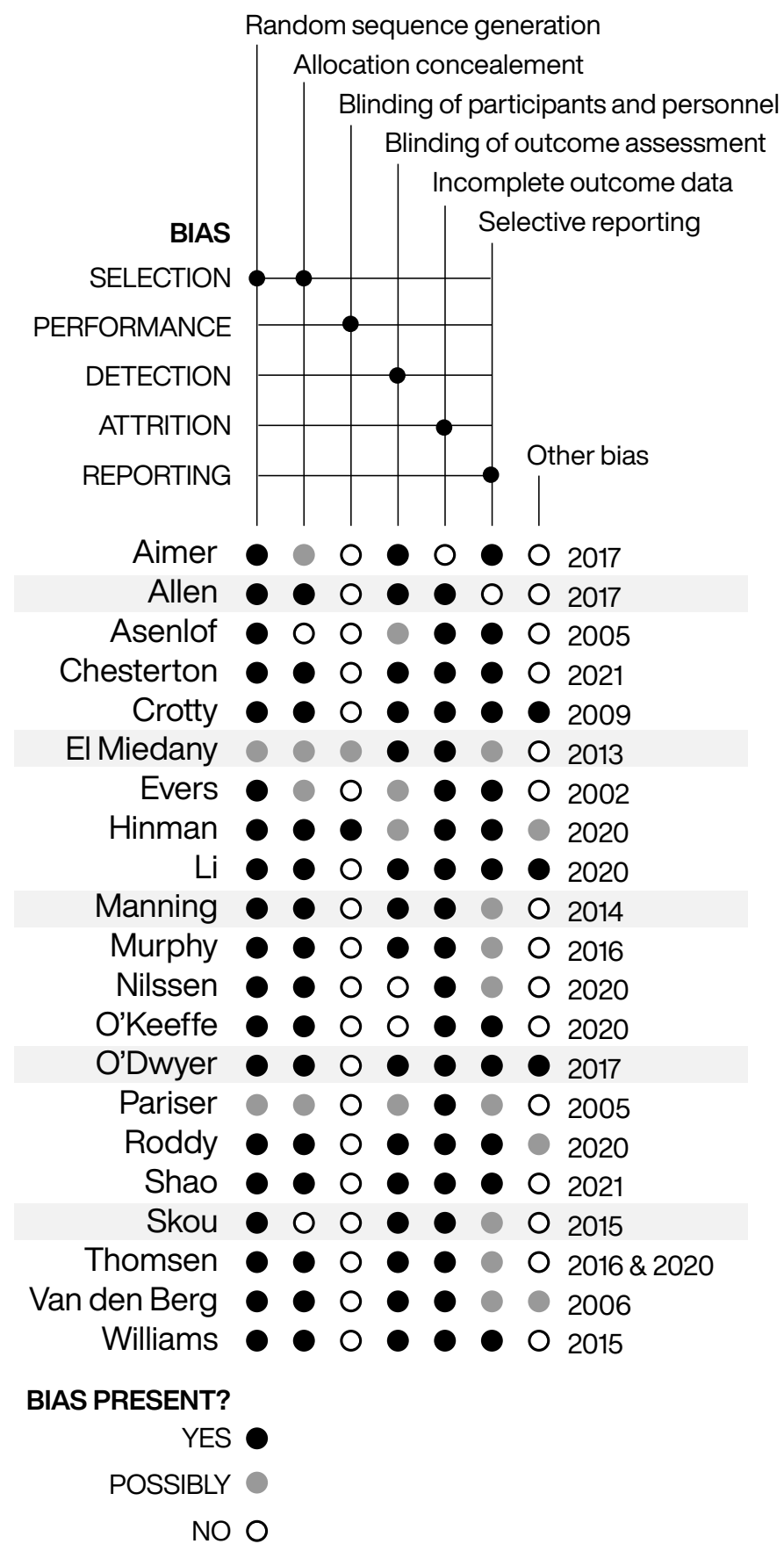


**BIAS PRESENT?**

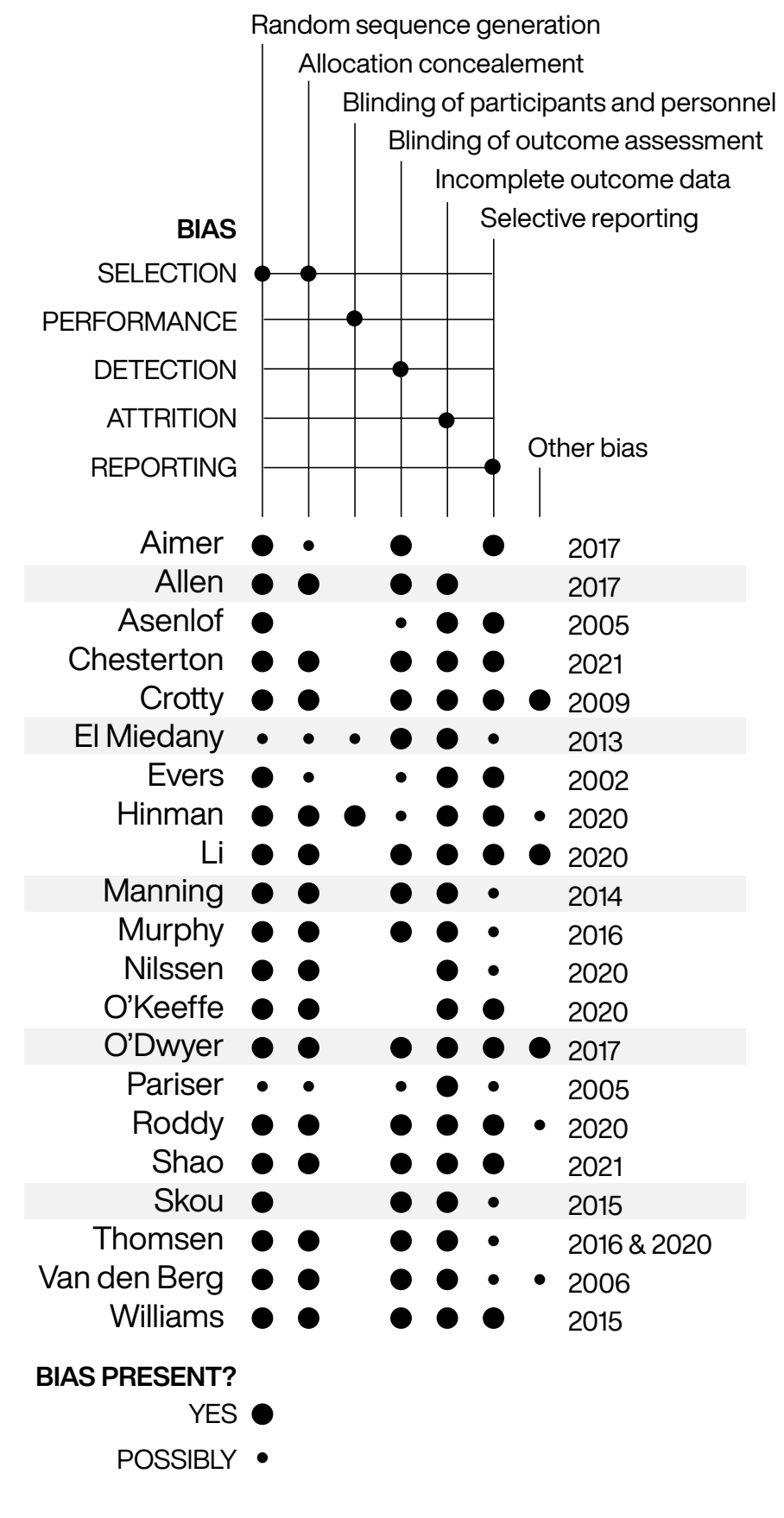
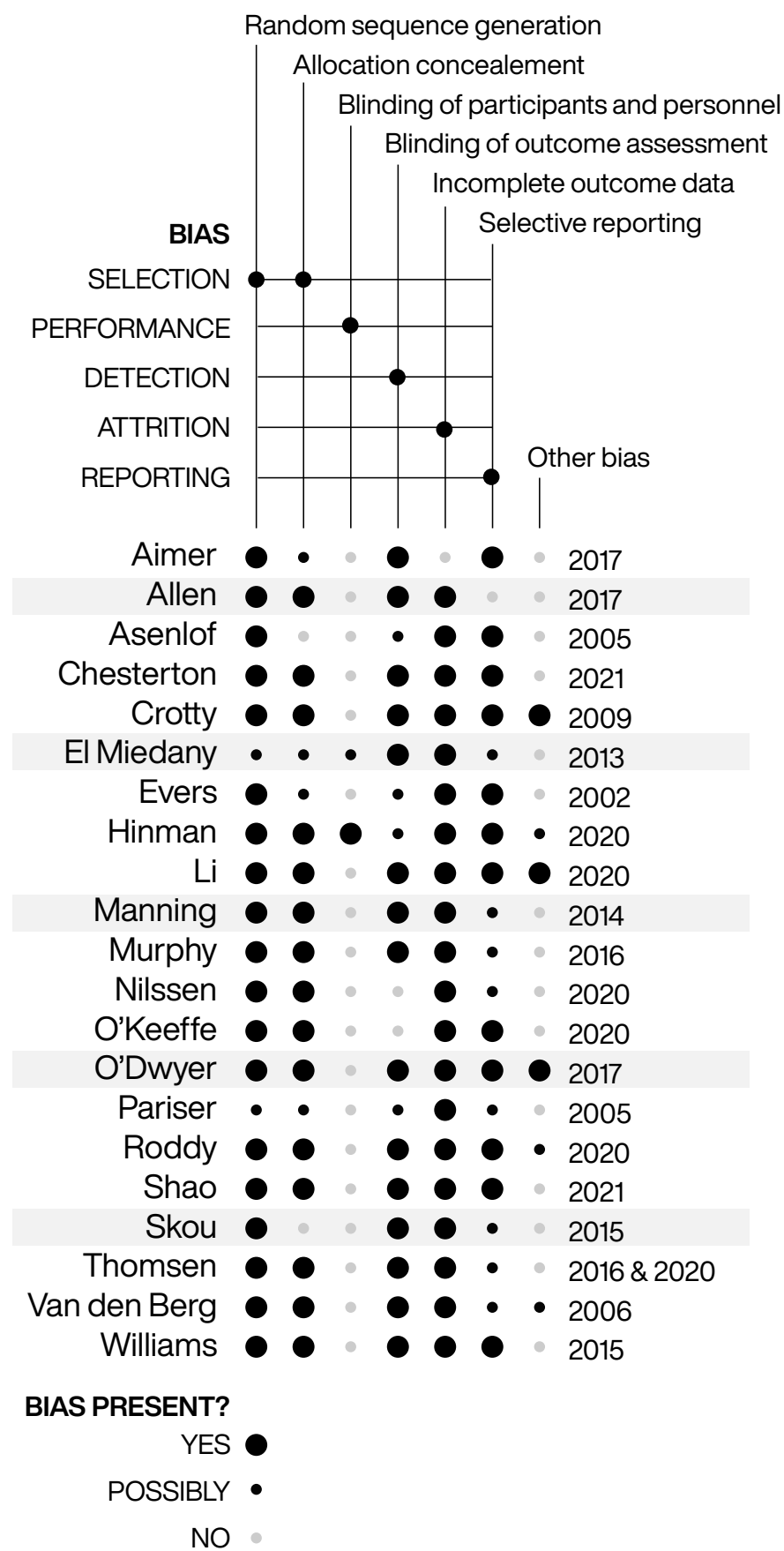
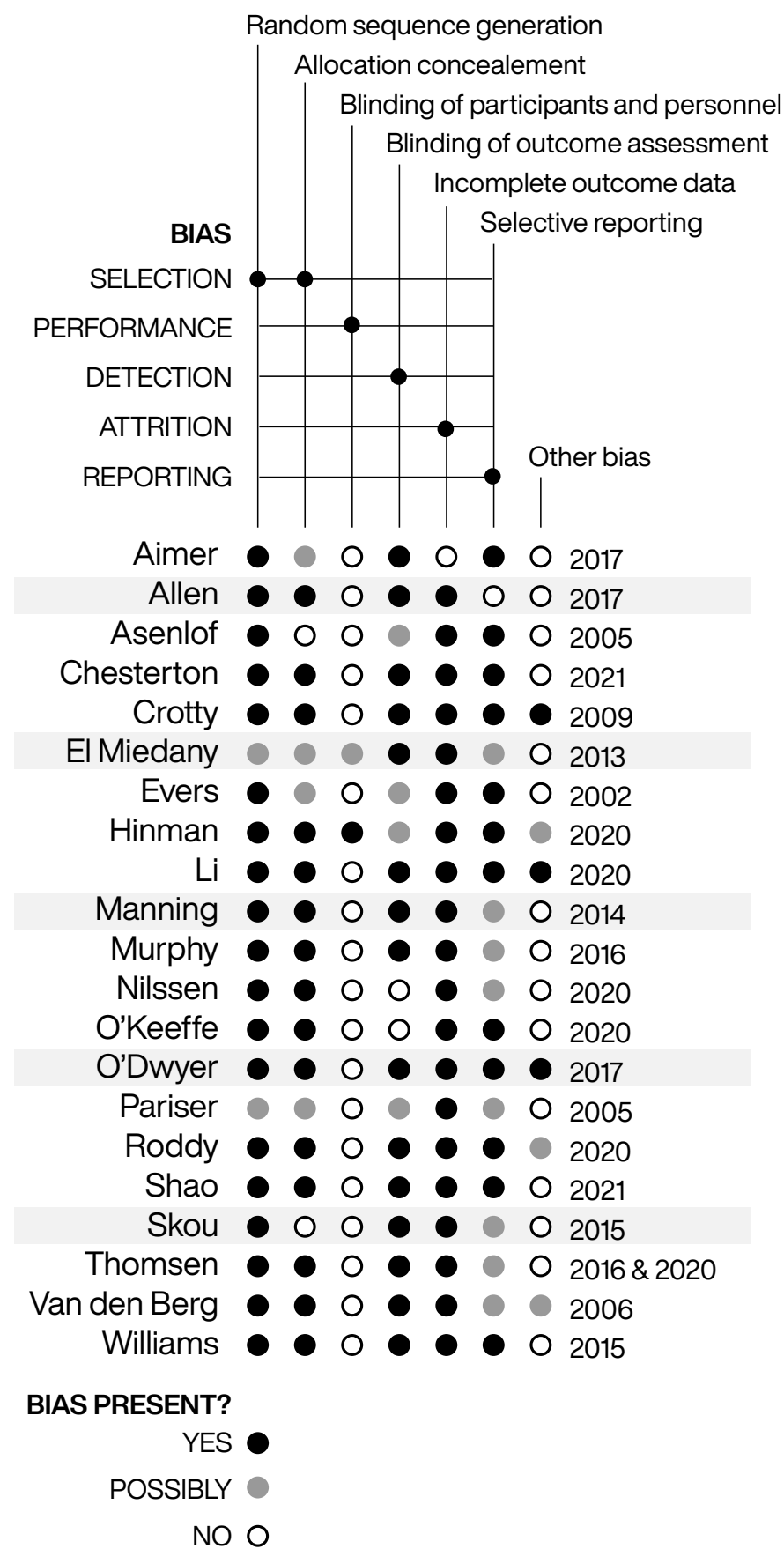
YES ●

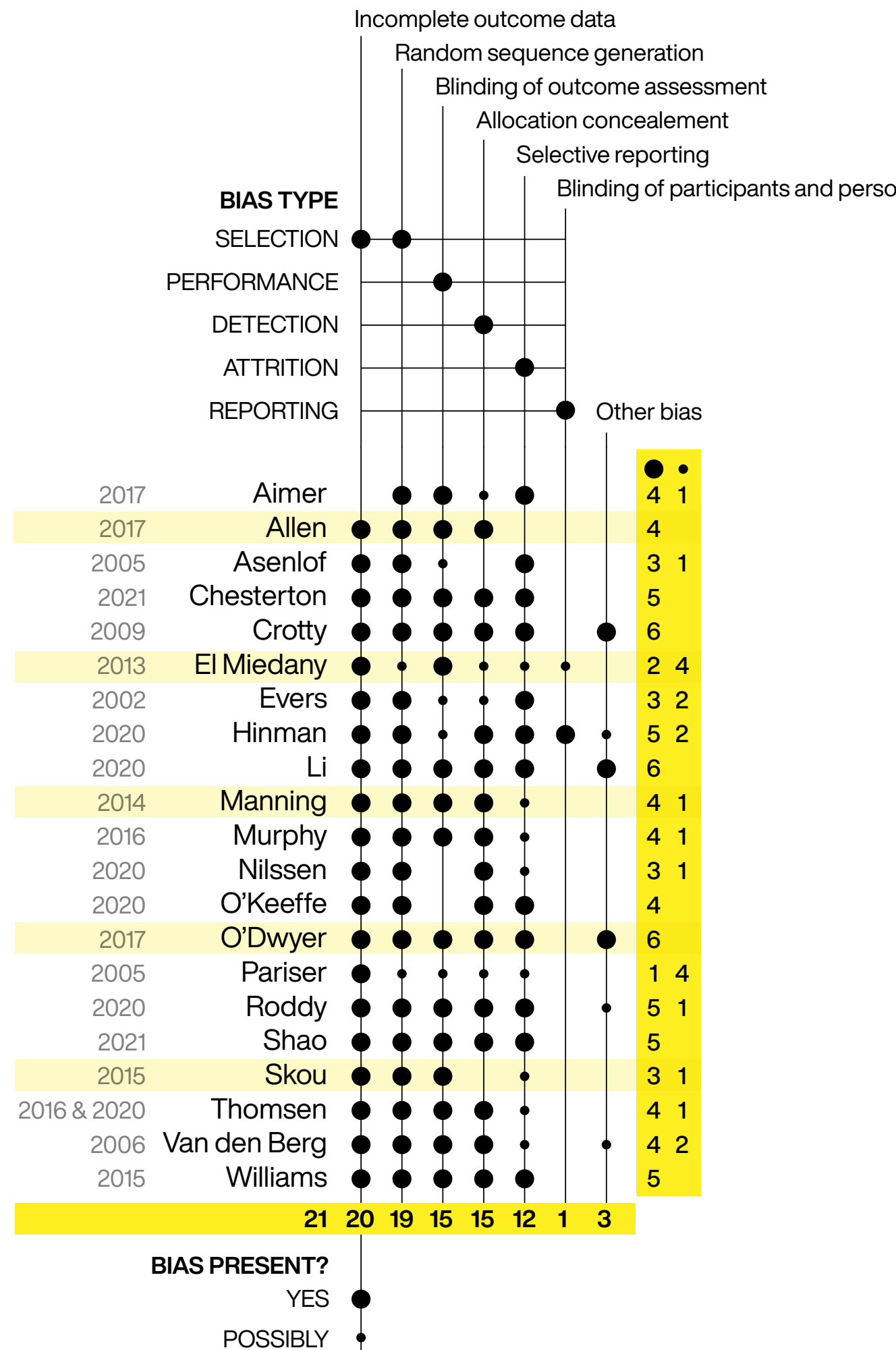
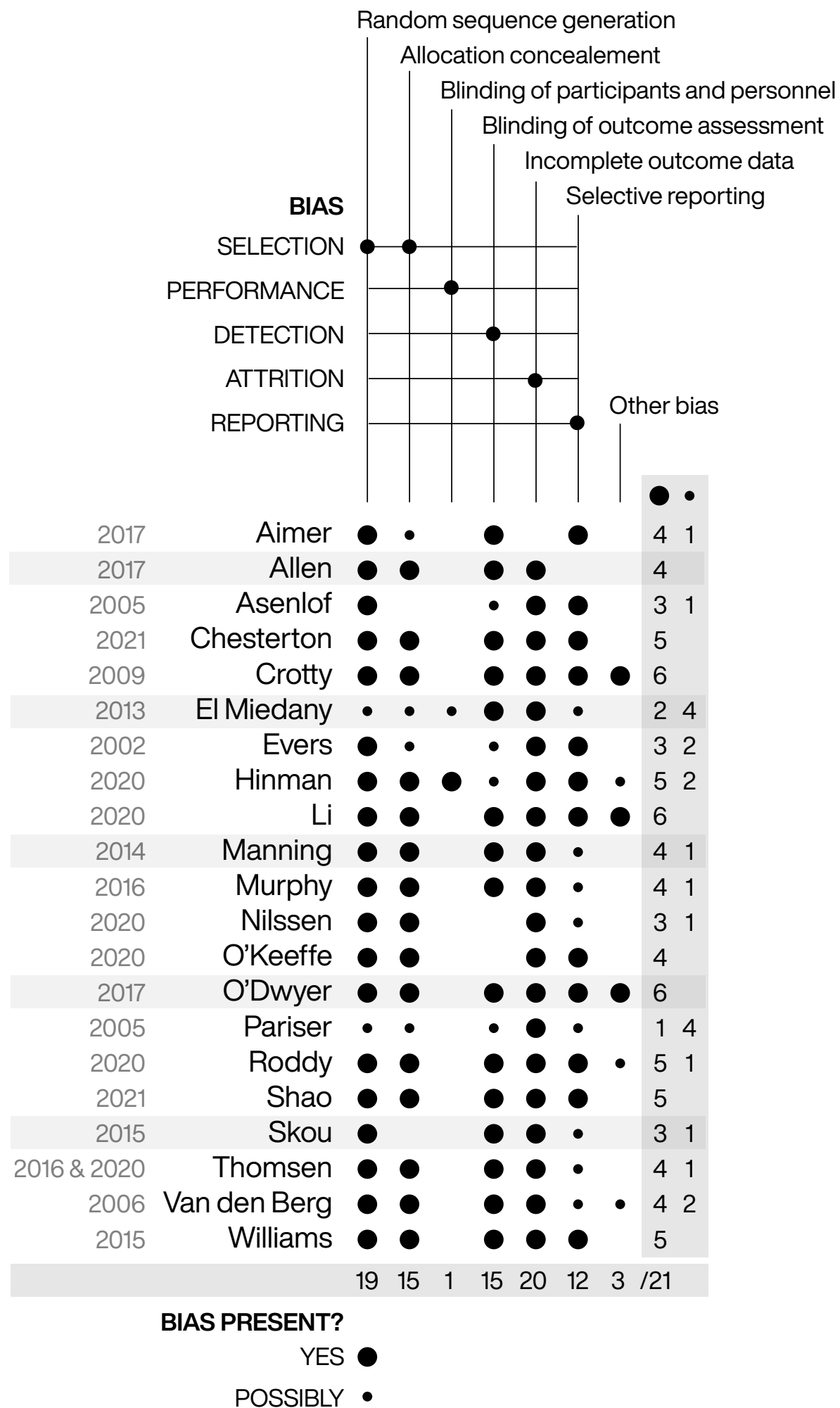
POSSIBLY ●

NO ○









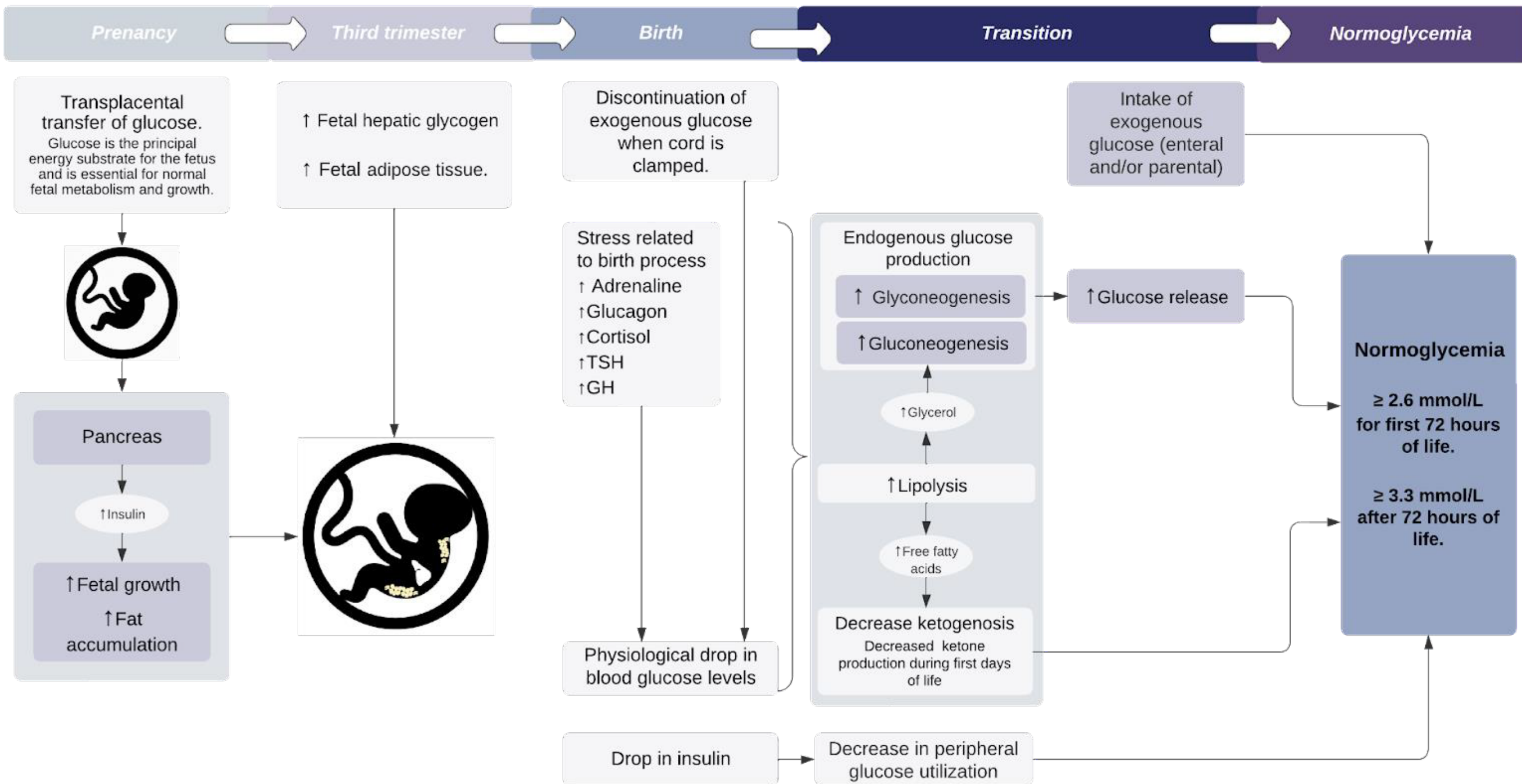




find your inner obsessive nature

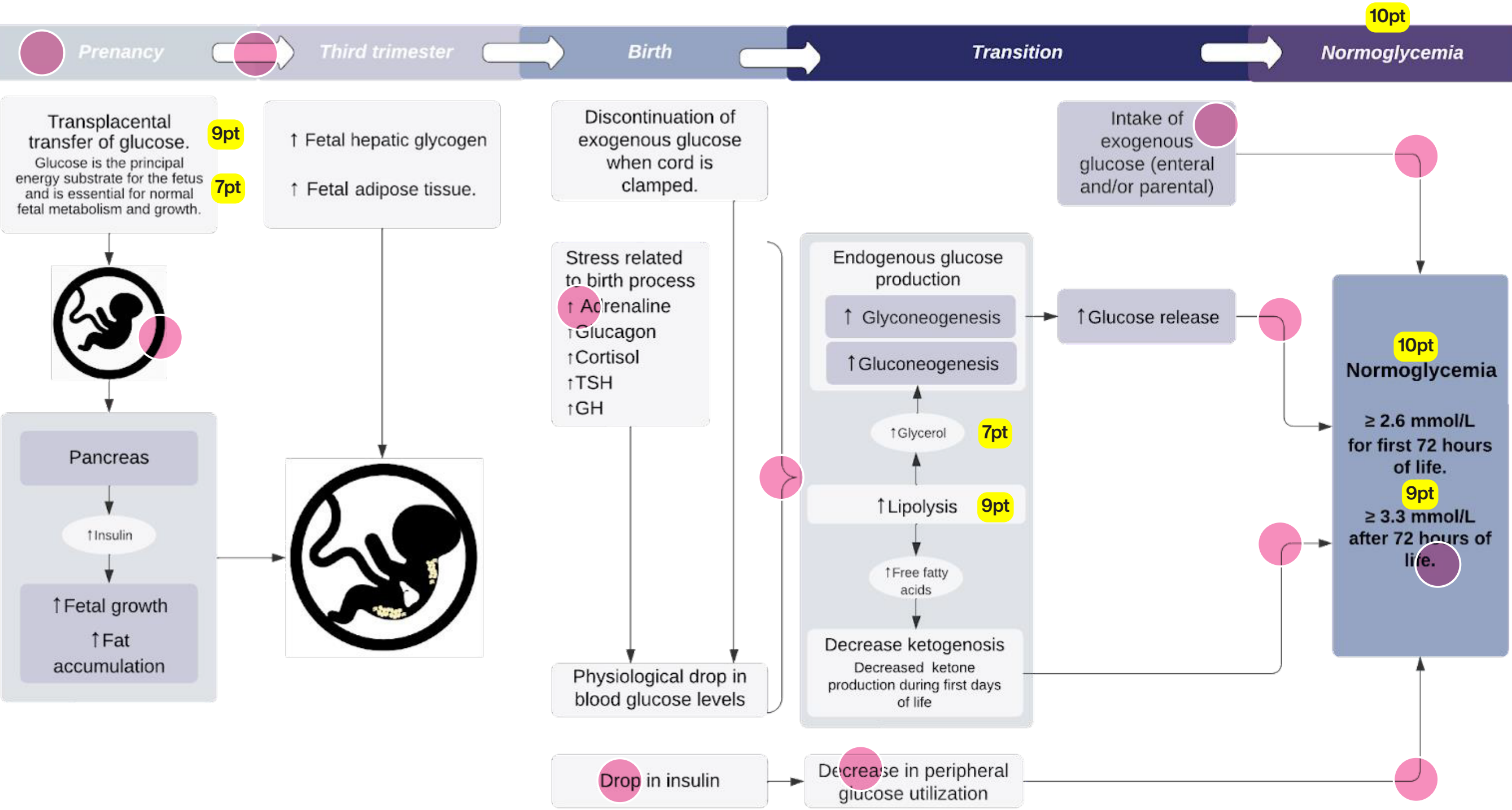
the data and ideas deserve your complete attention

# GLYCEMIC TRANSITION OF THE NEWBORN





GLYCEMIC TRANSITION OF THE NEWBORN 11pt





# GLYCEMIC TRANSITION OF THE NEWBORN

Glucose is the principal energy source for the fetus.  
It is essential for normal metabolism and growth.

pregnancy

birth

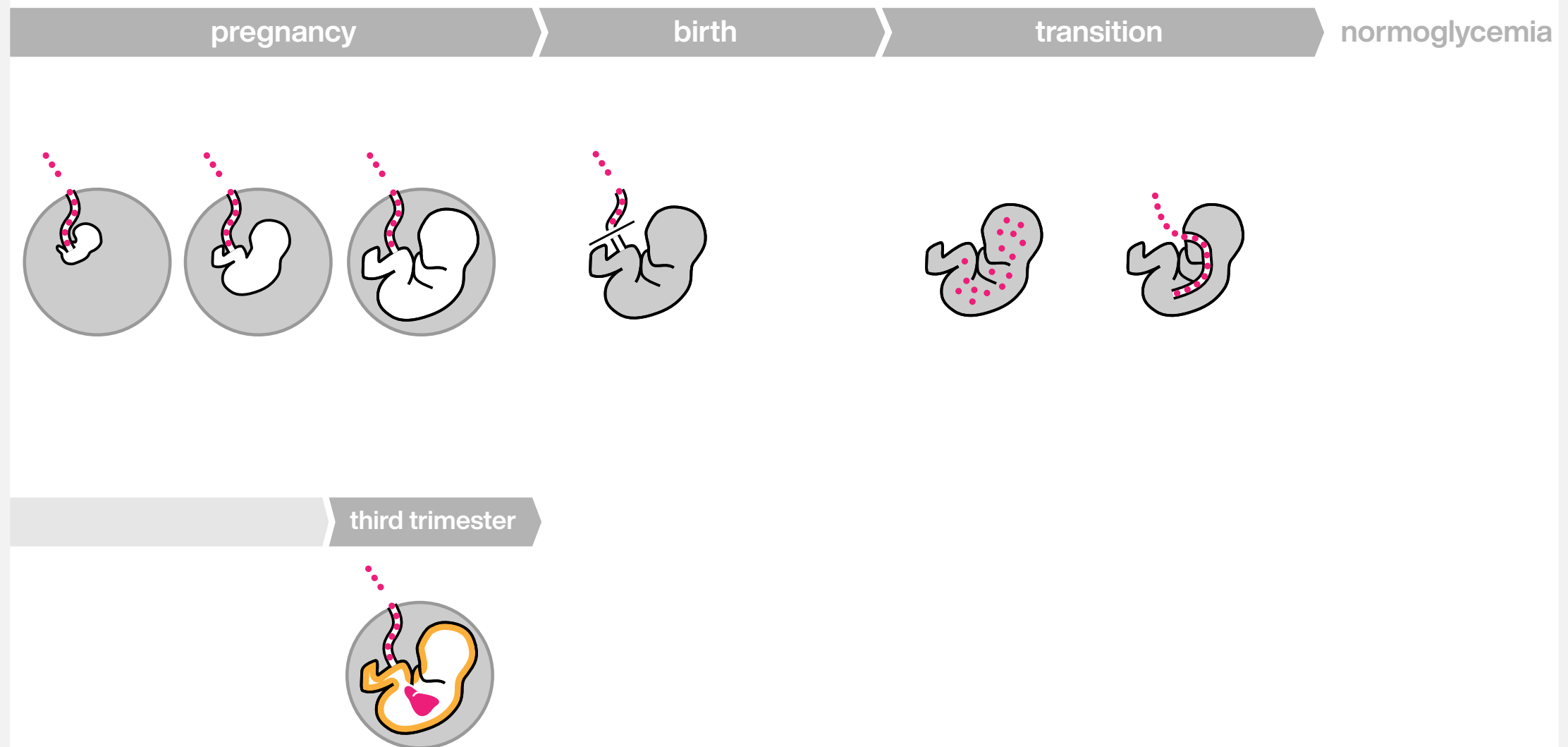
transition

normoglycemia

third trimester

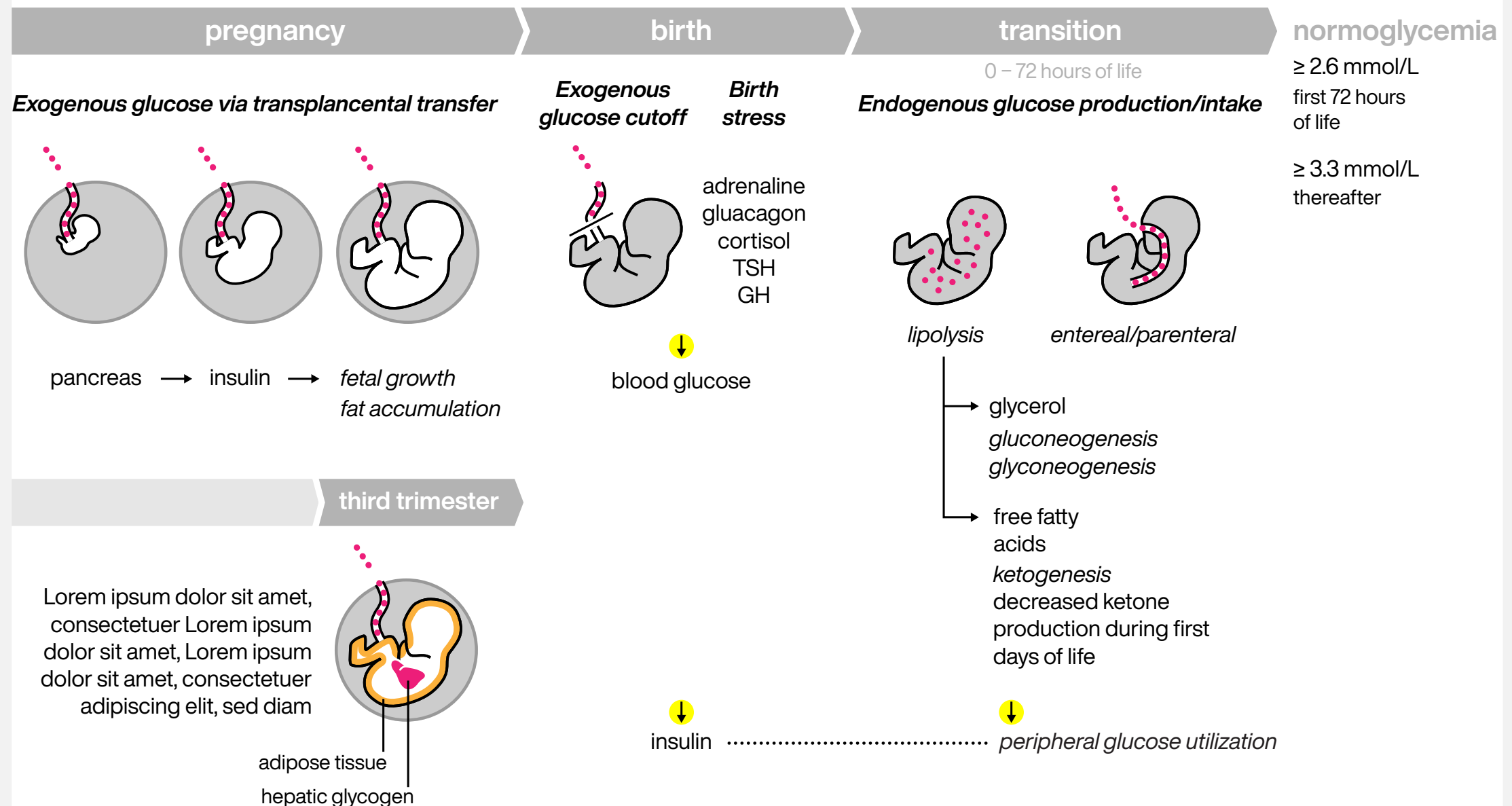
## GLYCEMIC TRANSITION OF THE NEWBORN

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It is essential for normal metabolism and growth.



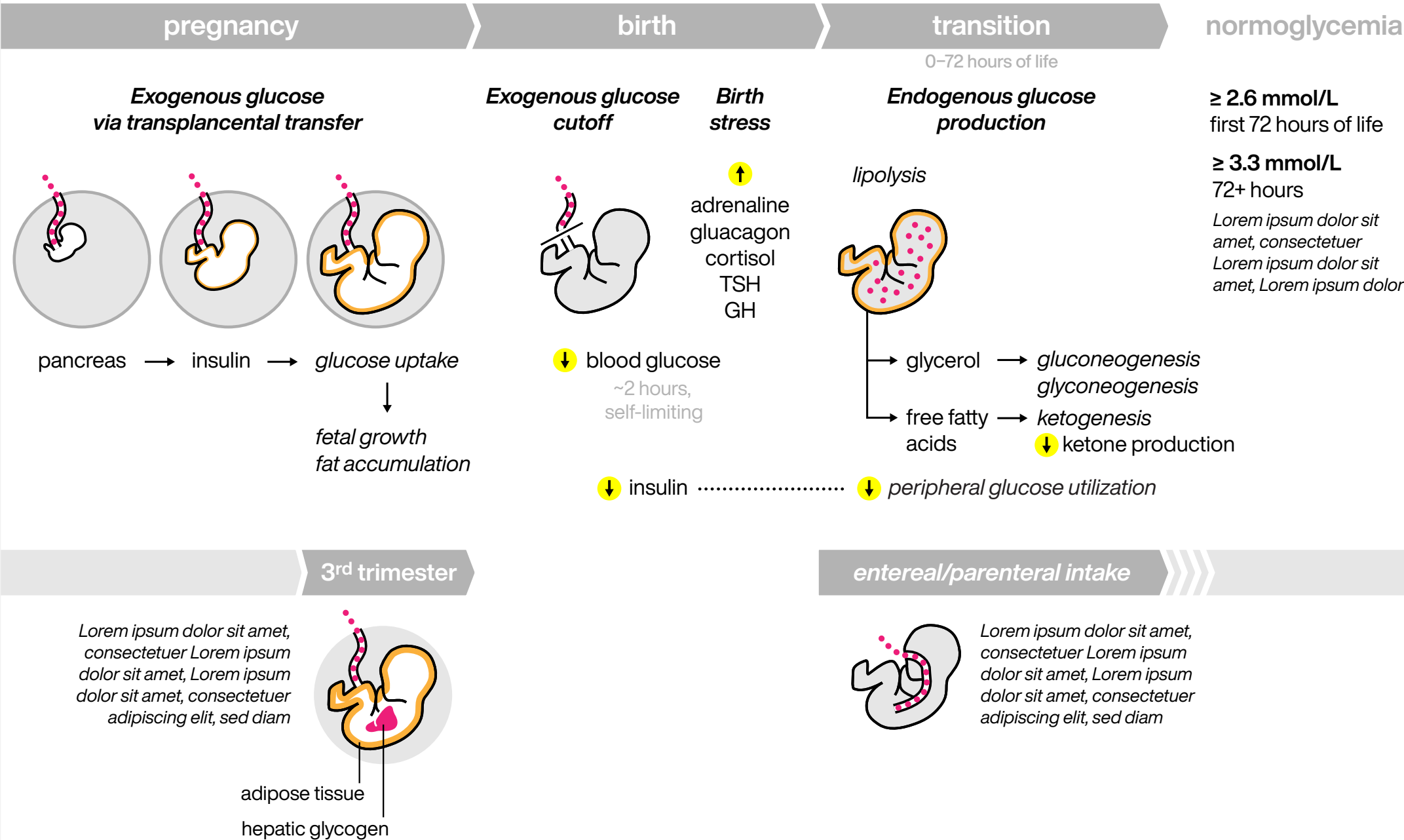
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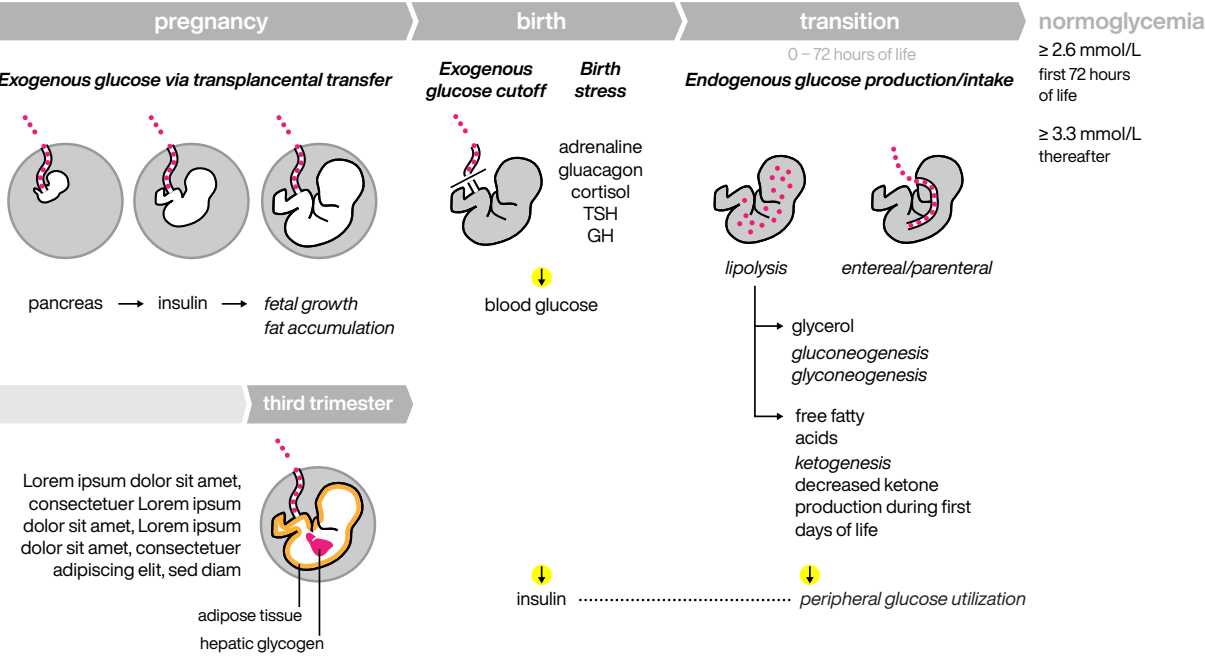
# GLYCEMIC TRANSITION OF THE NEWBORN — THE FIRST 72 HOURS

Glucose is the principal energy source for the fetus, received transplacentally from the mother.  
 At birth, the newborn must switch to entereal glucose delivery and endogenous production.  
 This complex transition is triggered by key hormones released at birth.



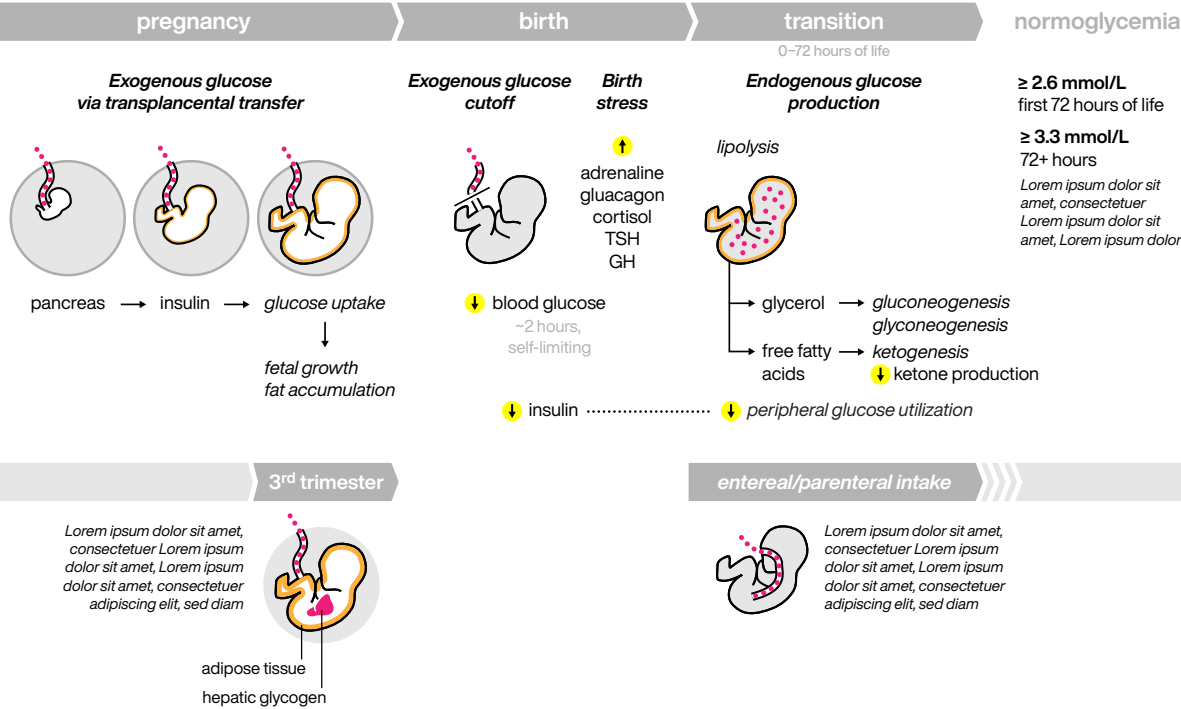
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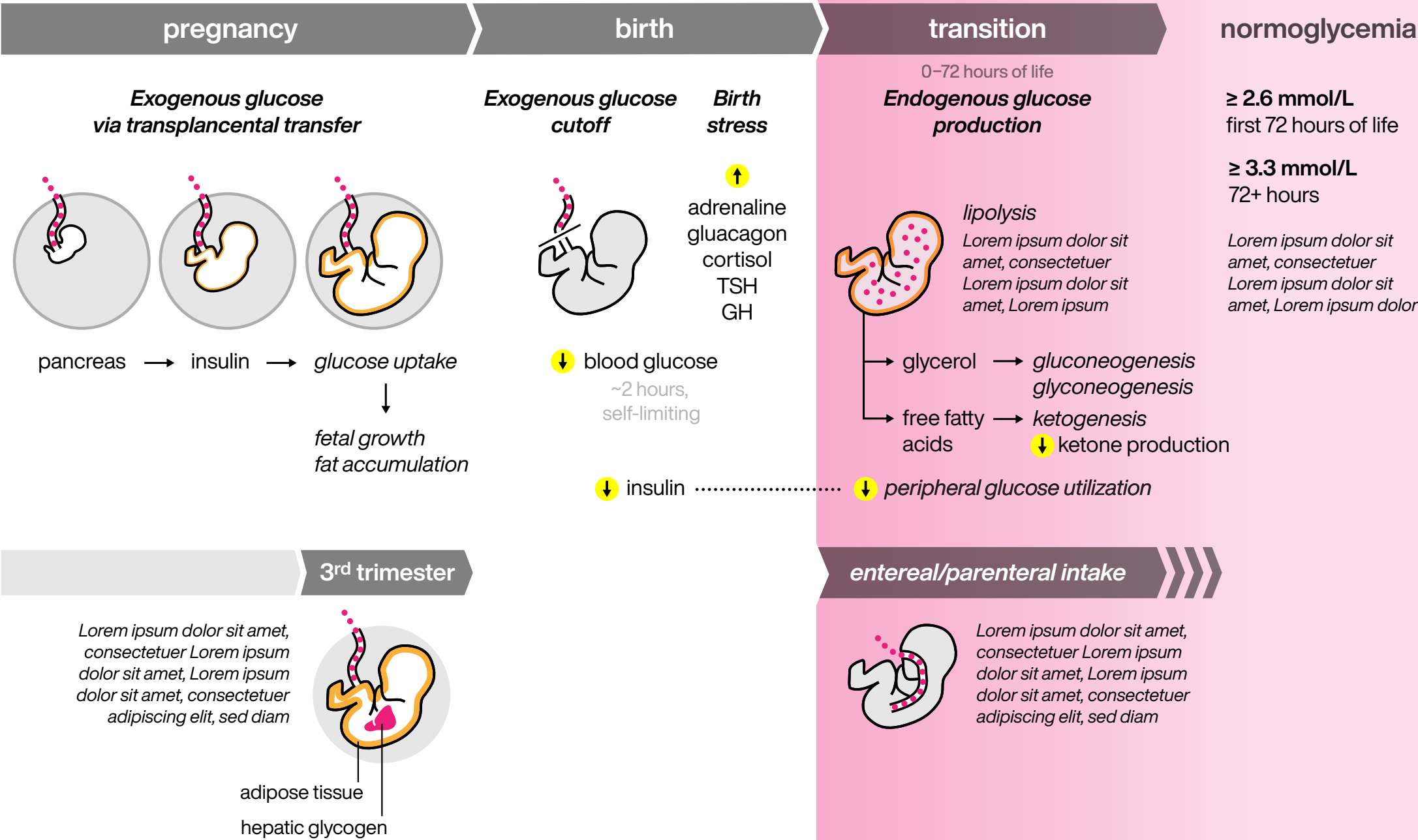
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Glucose is the principal energy source for the fetus, received transplacentally from the mother.

A complex metabolic transition is triggered by key hormones released at birth...

# THE FIRST 72 HOURS

...as the newborn must switch to endogenous glucose production and entereal





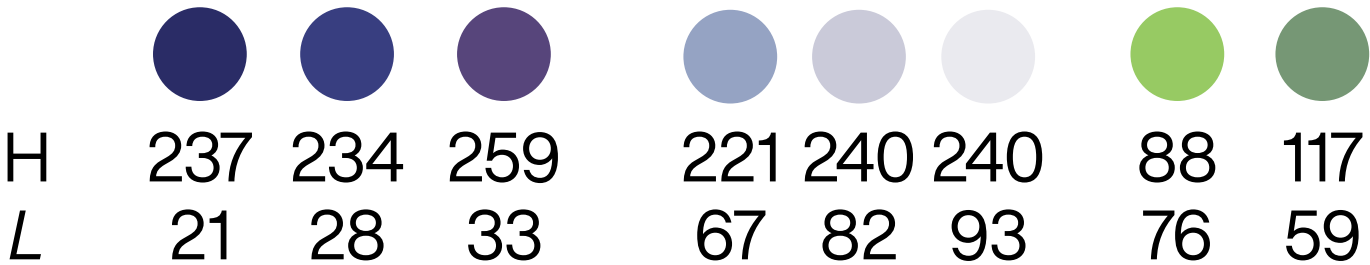
# Healthy women having healthy pregnancies and infants

Perinatal Services BC (PSBC) provides leadership, support, and coordination for the strategic planning of perinatal services in British Columbia and is the central source in the province for evidence-based perinatal information.

[Learn more >](#)

## Popular Topics

- [COVID-19 in pregnancy & lactation for patients](#) >
- [COVID-19 in pregnancy & lactation for health professionals](#) >
- [Prenatal genetic screening](#) >
- [Trisomy 21 Risk Calculator](#) >
- [Edinburgh Postnatal Depression Scale \(EPDS\)](#) >
- [Estimated Date of Delivery \(EDD\) Calculator](#) >



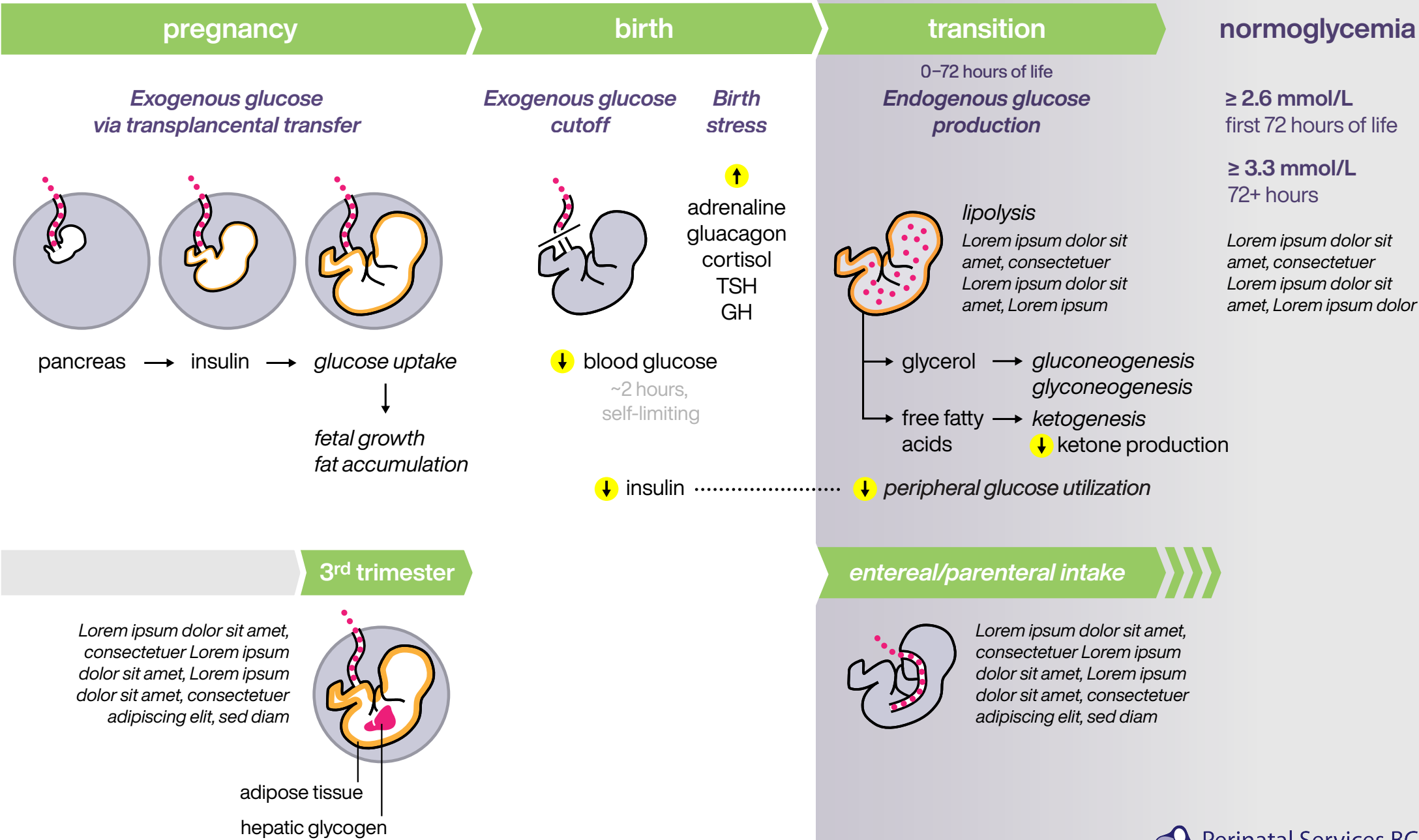
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A complex metabolic transition is triggered by key hormones released at birth...

# THE FIRST 72 HOURS

...as the newborn must switch to endogenous glucose production and entereal





don't litter, visually

or otherwise

# Firefighter Illness, Injury & Death in Canada, 2007–2017

## Background

Canadian firefighters can experience many hazards on the job. Injuries can lead to prolonged periods of time off of work, long-term health effects, or even death.

A firefighter's duties include:

Emergency Medical Aid  
Safety Education  
Rescue  
Fire Suppression  
Responding to Motor Vehicle Crashes

## Risk Factors

Contagious & infectious diseases  
Extreme temperature  
Unstable structures or falling objects  
Strenuous physical labour  
Repetitive or prolonged activity  
Shift work & long hours  
Traumatic events  
Excessive noise  
Falling from extreme heights

Risks for illness, injury, and mental health challenges include:



Each year,  
**1 IN EVERY 4,032**  
firefighters take time  
off work due to **CANCER**

Each year,  
**1 IN EVERY 79**  
firefighters take time  
off work due to **INJURY**

In Canada, there are more than  
**25,000** professional firefighters  
**80,000** volunteer firefighters

## Injury

Due to the nature of the occupation, firefighters are at a high risk for injury while on the job. Work-related injury affects younger firefighters: 2/3 absent due to injury were 30-49 years old.

**Causes:** Hazardous conditions, heat, intense physical activity, motor vehicle crash, unstable structures, falling objects

**Types:** Muscle strains and sprains, back injury, arm and leg injuries, burns

## Cancer

While firefighters have the same genetic and environmental predispositions for cancer as the general population, they are at increased risk for cancer. Work-related cancer affects older firefighters: 79% absent due to cancer were 40-64 years old.

**Causes:** Exposure to carcinogens and disease, shift work

**Types:** Testicular and prostate cancer and non-Hodgkin's lymphoma

## Mental Health

Mental health issues span all ages. Although it is under-reported, of all the firefighters on leave from work due to work-related mental health issues, approximately:

- 6% were under 30 years old
- 27% were 30-39 years old
- 65% were 40-59 years old

**Causes:** Traumatic events, death or rescue of a child, pre-existing health conditions

**Types:** Anxiety, depression, post-traumatic stress disorder (PTSD), substance use

## Injuries & Illnesses

### Respiratory Disease

100% of work-related deaths due to respiratory disease were among firefighters 65 years of age and older.

**Causes:** Exposure to chemicals, gases, and othersubstances

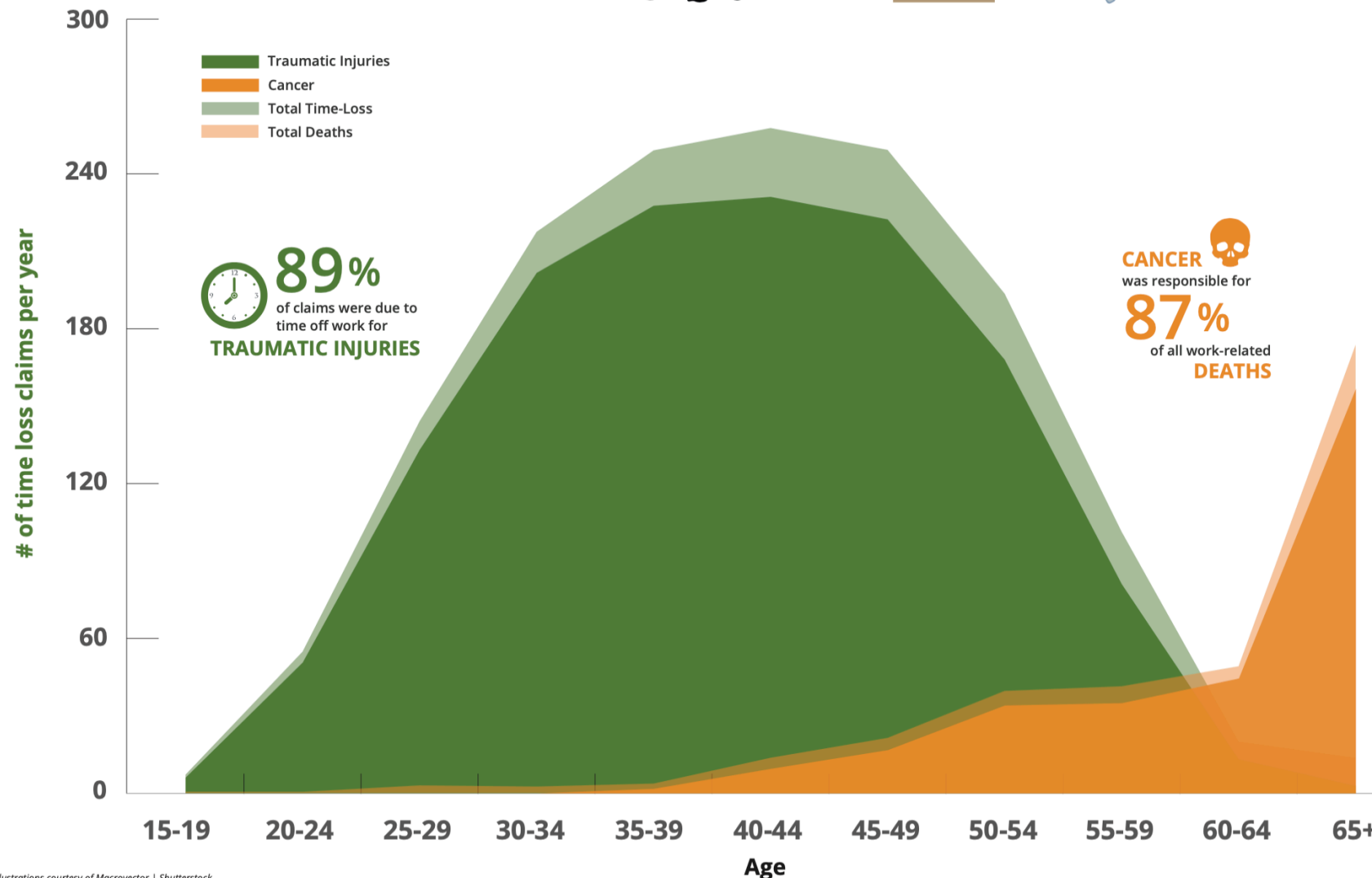
**Types:** Bronchitis, pneumonia, tuberculosis, asthma, chronic obstructive pulmonary disease (COPD)

### Cardiovascular Disease

50% of work-related deaths due to cardiovascular disease were among firefighters between 50 and 64 years of age.

**Causes:** Physical demands, emotional stress, environmental hazards

**Types:** Heart disease, heart attack, congestive heart failure, cerebrovascular disease



# of death claims per year



## Policy Implications

- Surveillance:** A national firefighter injury surveillance system should be established in order to accurately determine the causes of work-related firefighter injury and death, and inform prevention efforts.
- Early Detection:** Encouragement of screening for illnesses and awareness of the warning signs for mental health disorders.
- Health Promotion:** Opportunities for personal mental and physical health should be implemented by fire departments. This can include installation of gym equipment and healthy food options.

# Firefighter Illness, Injury & Death in Canada, 2007–2017

Each year, 1 in 79 firefighters took time off work due to injury

## Firefighters in Canada

**PROFESSIONAL FIREFIGHTERS**  
**25,000**

**VOLUNTEER FIREFIGHTERS**  
**80,000**

Canadian firefighters can experience many hazards on the job. Injuries can lead to prolonged periods of time off of work, long-term health effects, or even death.

**Fire suppression**  
**Emergency medical aid**  
**Responding to motor vehicle crashes**  
**Rescue**  
**Safety education**

## Risk Factors

**INJURY RATE**  
each year

**1/79**

firefighters took time off work due to injury

**CANCER**  
each year

**1/4,032**

firefighters took time off work due to cancer

**Strenuous physical labour**  
**Repetitive or prolonged activity**  
**Shift work & long hours**  
**Contagious & infectious diseases**  
**Traumatic events**  
**Extreme temperature**  
**Excessive noise**  
**Unstable structures or falling objects**  
**Falling from extreme heights**

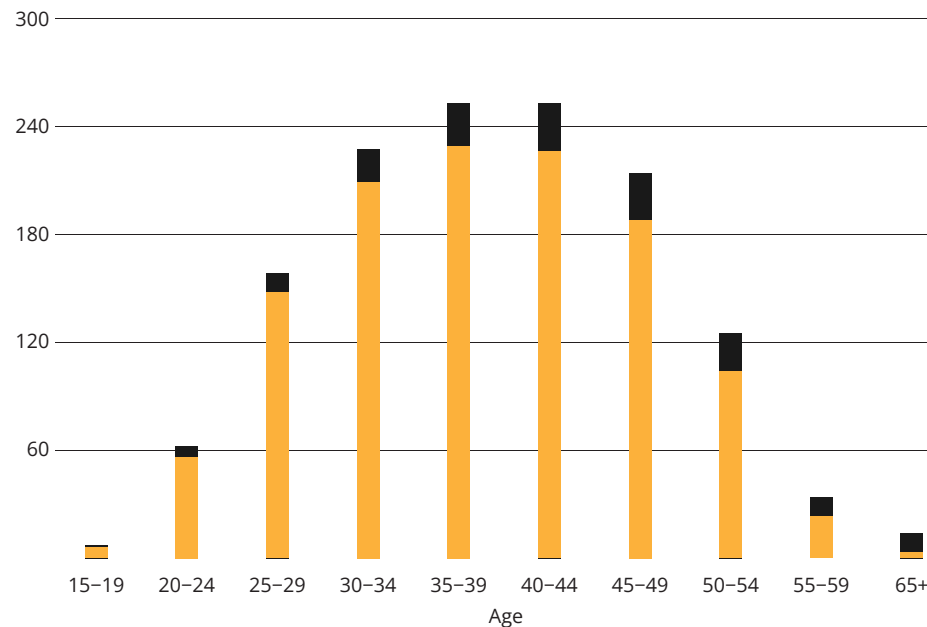
### TRAUMATIC INJURIES

**89%**

of claims were due to time of work due to traumatic injury.

#### TIME-LOSS CLAIMS PER YEAR

■ all ■ due to traumatic injuries



## Injuries & Illnesses

### PHYSICAL INJURY

Due to the nature of the occupation, firefighters are at a high risk for injury while on the job. Work-related injury affects younger firefighters: 2/3 absent due to injury were 30-49 years old.

#### Causes

Hazardous conditions, heat, intense physical activity, motor vehicle crash, unstable structures, falling objects

#### Types

Muscle strains and sprains, back injury, arm and leg injuries, burns

### CARDIOVASCULAR DISEASE

50% of work-related deaths due to cardiovascular disease were among firefighters between 50 and 64 years of age.

#### Causes

Physical demands, emotional stress, environmental hazards

#### Types

Heart disease, heart attack, congestive heart failure, cerebrovascular disease

### CANCER

While firefighters have the same genetic and environmental predispositions for cancer as the general population, they are at increased risk for cancer.

Work-related cancer affects older firefighters: 79% absent due to cancer were 40-64 years old.

#### Causes

Exposure to carcinogens and disease, shift work

#### Types

Testicular and prostate cancer and non-Hodgkin's lymphoma

### RESPIRATORY DISEASE

100% of work-related deaths due to respiratory disease were among firefighters 65 years of age and older.

#### Causes

Exposure to chemicals, gases, and othersubstances

#### Types

Bronchitis, pneumonia, Cardiovascular Disease tuberculosis, asthma, chronic obstructive pulmonary disease 50% of work-related deaths due to (COPD)

### MENTAL HEALTH

Mental health issues span all ages. Although it is under-reported, of all the firefighters on leave from work due to work-related mental health issues, approximately:

- 6% were under 30 years old
- 27% were 30-39 years old
- 65% were 40-59 years old

#### Causes

Traumatic events, death or rescue of a child, pre-existing health conditions

#### Types

Anxiety, depression, post-traumatic stress disorder (PTSD), substance use

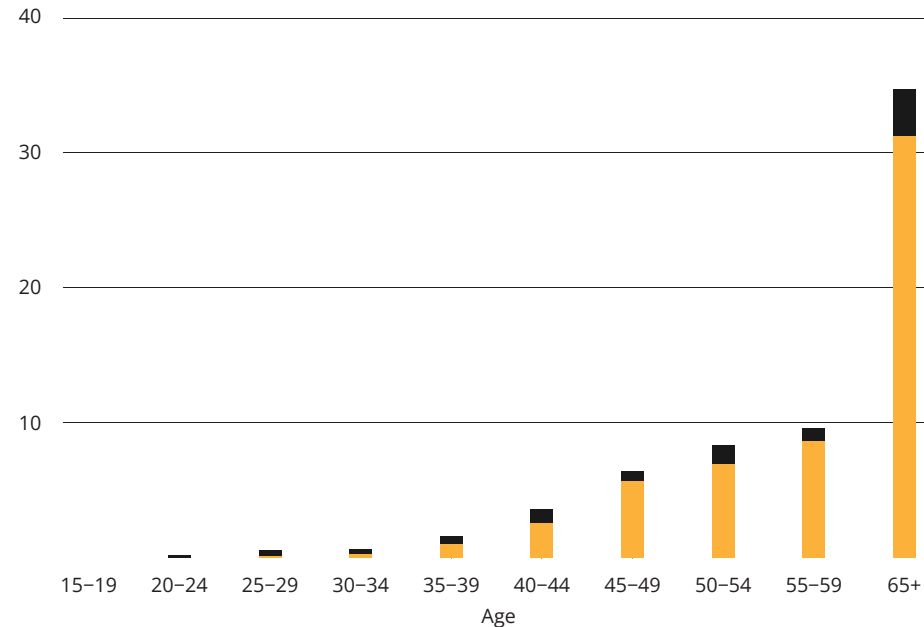
### CANCER

**87%**

of all work-related deaths were due to cancer.

#### DEATH CLAIMS PER YEAR

■ all ■ due to cancer



## Policy Implications

### SURVEILLANCE

A national firefighter injury surveillance system should be established in order to accurately determine the causes of work-related firefighter injury and death, and inform prevention efforts.

### EARLY DETECTION

Encouragement of screening for illnesses and awareness of the warning signs for mental health disorders.

### HEALTH PROMOTION

Opportunities for personal mental and physical health should be implemented by fire departments. This can include installation of gym equipment and healthy food options.

# Firefighter Illness, Injury & Death in Canada, 2007–2017

Each year, 1 in 79 firefighters took time off work due to injury

|        | PHYSICAL INJURY   | RESPIRATORY DISEASE  | CANCER  | CARDIOVASCULAR DISEASE  | MENTAL HEALTH   |
|--------|---|--|---|---|---|
|        | <p>Due to the nature of the occupation, firefighters are at a high risk for injury while on the job. Work-related injury affects younger firefighters: 2/3 absent due to injury were 30-49 years old.</p> | <p>100% of work-related deaths due to respiratory disease were among firefighters 65 years of age and older.</p> | <p>While firefighters have the same genetic and environmental predispositions for cancer as the general population, they are at increased risk for cancer.</p> <p><b>21%</b> <b>79%</b> <b>Absent due to cancer</b><br/><i>Work-related cancers disproportionately affect older firefighters.</i></p> | <p>50% of work-related deaths due to cardiovascular disease were among firefighters between 50 and 64 years of age.</p> | <p>Mental health issues span all ages. Although it is under-reported, of all the firefighters on leave from work due to work-related mental health issues.</p> <p><b>6%</b> <b>27%</b> <b>65%</b> <b>Affected</b><br/><i>Mental health disproportionately affects older firefighters.</i></p> |
| CAUSES | <p>hazardous conditions<br/>heat<br/>intense physical activity<br/>motor vehicle crash<br/>unstable structures<br/>falling objects.</p>   | <p>exposure to chemicals, gases, and other substances</p>  | <p>exposure to carcinogens and disease, shift work</p>  | <p>physical demands<br/>emotional stress<br/>environmental hazards</p>  | <p>traumatic events<br/>death or rescue of a child<br/>pre-existing health conditions</p>   |
| TYPES  | <p>muscle strains and sprains<br/>back injury<br/>arm and leg injuries<br/>burns</p>  | <p>bronchitis<br/>pneumonia<br/>tuberculosis<br/>asthma<br/>chronic obstructive pulmonary disease (COPD)</p>     | <p>testicularcancer<br/>prostate cancer<br/>non-Hodgkin's lymphoma</p>  | <p>heart disease<br/>heart attack<br/>congestive heart failure<br/>cerebrovascular disease</p>                          | <p>anxiety<br/>depression<br/>post-traumatic stress disorder (PTSD)<br/>substance use</p>   |



# Firefighter Illness, Injury & Death in Canada, 2007–2017

Each year, 1 in 79 firefighters took time off work due to injury

## Firefighters in Canada

PROFESSIONAL FIREFIGHTERS  
25,000

VOLUNTEER FIREFIGHTERS  
80,000

## Duties

Firefighters are exposed to hazzardous conditions during many of their daily duties, which include

- fire suppression
- emergency medical aid
- rescue
- responding to motor vehicle crashes
- safety education

## Injuries & Illnesses

Canadian firefighters can experience many hazards on the job. These can lead to periods of time off of work, long-term health effects, or even death.

- |                                  |  |
|----------------------------------|--|
| strenuous physical labour        | extreme temperature                    |
| repetitive or prolonged activity | excessive noise                        |
| shift work & long hours          | unstable structures or falling objects |
| contagious & infectious diseases | falling from extreme heights           |
| traumatic events                 |  |

## Policy Implications

### SURVEILLANCE

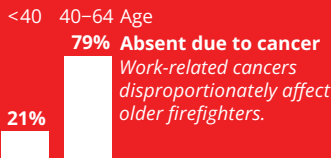

A national firefighter injury surveillance system should be established in order to accurately determine the causes of work-related firefighter injury and death, and inform prevention efforts.

### HEALTH PROMOTION

Opportunities for personal mental and physical health should be implemented by fire departments. This can include installation of gym equipment and healthy food options.

### EARLY DETECTION

Encouragement of screening for illnesses and awareness of the warning signs for mental health disorders.

|        | PHYSICAL INJURY  | RESPIRATORY DISEASE   | CANCER  | CARDIOVASCULAR DISEASE   | MENTAL HEALTH   |
|--------|--|---|---|--|---|
|        | Due to the nature of the occupation, firefighters are at a high risk for injury while on the job. Work-related injury affects younger firefighters: 2/3 absent due to injury were 30-49 years old. | 100% of work-related deaths due to respiratory disease were among firefighters 65 years of age and older. | While firefighters have the same genetic and environmental predispositions for cancer as the general population, they are at increased risk for cancer.<br><br> | 50% of work-related deaths due to cardiovascular disease were among firefighters between 50 and 64 years of age. | Mental health issues span all ages. Although it is under-reported, of all the firefighters on leave from work due to work-related mental health issues.<br><br> |
| CAUSES | hazardous conditions<br>heat<br>intense physical activity<br>motor vehicle crash<br>unstable structures<br>falling objects.  | exposure to chemicals, gases, and other substances  | exposure to carcinogens and disease, shift work   | physical demands<br>emotional stress<br>environmental hazards  | traumatic events<br>death or rescue of a child<br>pre-existing health conditions  |
| TYPES  | muscle strains and sprains<br>back injury<br>arm and leg injuries<br>burns   | bronchitis<br>pneumonia<br>tuberculosis<br>asthma<br>chronic obstructive pulmonary disease (COPD)         | testicularcancer<br>prostate cancer<br>non-Hodgkin's lymphoma   | heart disease<br>heart attack<br>congestive heart failure<br>cerebrovascular disease                             | anxiety<br>depression<br>post-traumatic stress disorder (PTSD)<br>substance use   |

# Firefighter Illness, Injury & Death in Canada, 2007–2017

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**VOLUNTEER FIREFIGHTERS**  
**80,000**

each year

**1/79**

firefighters took time off work due to injury

## Duties

Firefighters are exposed to hazardous conditions during many of their daily duties, which include

fire suppression  
emergency medical aid  
rescue  
responding to motor vehicle crashes  
safety education

## Injuries & Illnesses

Canadian firefighters can experience many hazards on the job. These can lead to periods of time off of work, long-term health effects, or even death.

strenuous physical labour  
repetitive or prolonged activity  
shift work & long hours  
contagious & infectious diseases  
traumatic events

extreme temperature  
excessive noise  
unstable structures or falling objects  
falling from extreme heights

each year

**1/4,032**

firefighters took time off work due to cancer

## Policy Implications

### SURVEILLANCE

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### HEALTH PROMOTION

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## PHYSICAL INJURY

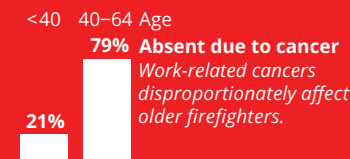
Due to the nature of the occupation, firefighters are at a high risk for injury while on the job. Work-related injury affects younger firefighters: 2/3 absent due to injury were 30-49 years old.

## RESPIRATORY DISEASE

100% of work-related deaths due to respiratory disease were among firefighters 65 years of age and older.

## CANCER

While firefighters have the same genetic and environmental predispositions for cancer as the general population, they are at increased risk for cancer.



## CARDIOVASCULAR DISEASE

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## MENTAL HEALTH

Mental health issues span all ages. Although it is under-reported, of all the firefighters on leave from work due to work-related mental health issues.



## CAUSES

hazardous conditions  
heat  
intense physical activity  
motor vehicle crash  
unstable structures  
falling objects.

exposure to chemicals, gases, and other substances

exposure to carcinogens and disease, shift work

physical demands  
emotional stress  
environmental hazards

traumatic events  
death or rescue of a child  
pre-existing health conditions

## TYPES

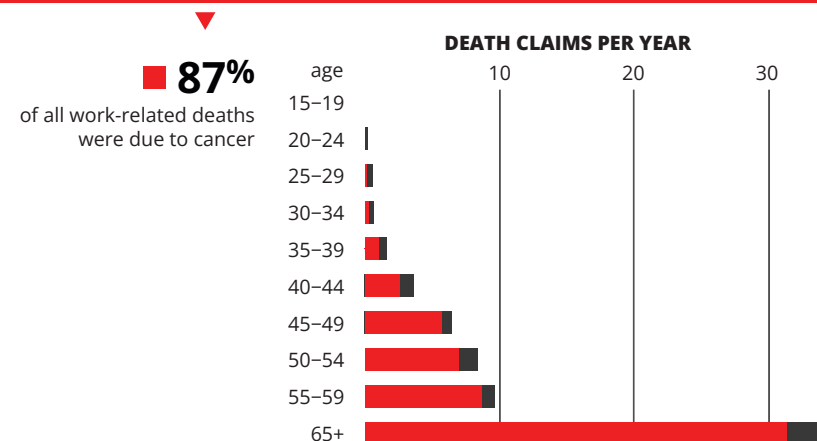
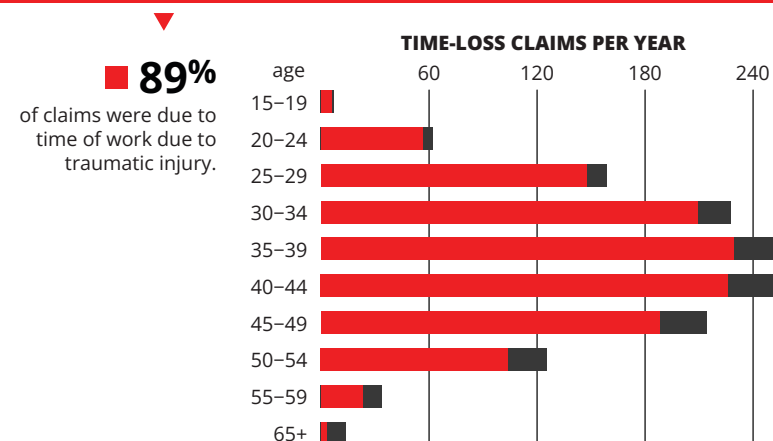
muscle strains and sprains  
back injury  
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burns

bronchitis  
pneumonia  
tuberculosis  
asthma  
chronic obstructive pulmonary disease (COPD)

testicular cancer  
prostate cancer  
non-Hodgkin's lymphoma

heart disease  
heart attack  
congestive heart failure  
cerebrovascular disease

anxiety  
depression  
post-traumatic stress disorder (PTSD)  
substance use



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Ramsden R, Smith J, Turcotte K, Garis L, Kunz K, Maxim P, Thomas L, Pike I. Determinants of Injury and Death in Canadian Firefighters: A Case for a National Firefighter Wellness Surveillance System. A report by the BC Injury Research and Prevention Unit, for the University of the Fraser Valley: Abbotsford, BC. February 2018.

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- repetitive or prolonged activity
- shift work & long hours
- contagious & infectious diseases
- traumatic events
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- excessive noise
- unstable structures or falling objects
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## Policy Implications

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**1/4,032**  
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### PHYSICAL INJURY

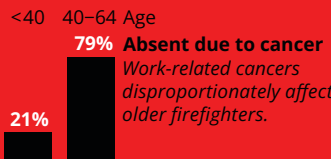
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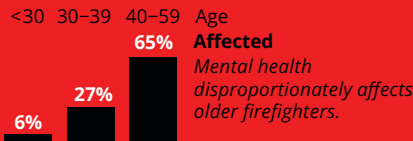


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### CAUSES

hazardous conditions  
heat  
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environmental hazards

traumatic events  
death or rescue of a child  
pre-existing health conditions

### TYPES

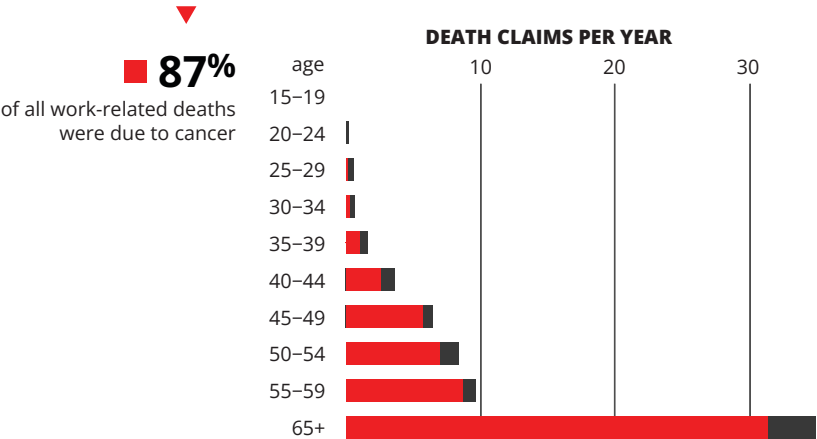
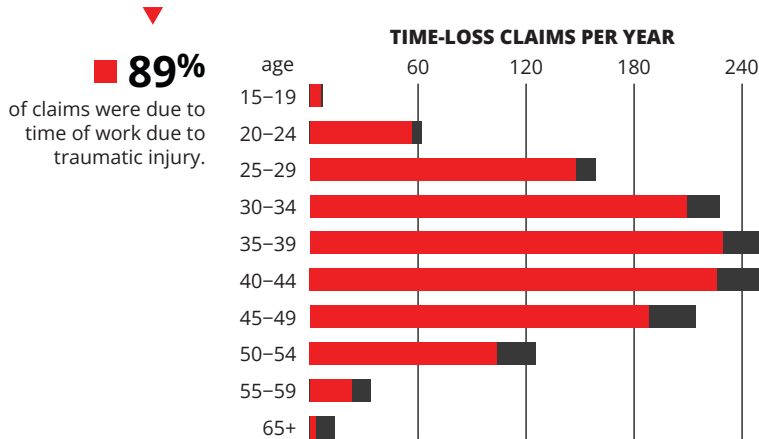
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## Duties

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- fire suppression
- emergency medical aid
- rescue
- responding to motor vehicle crashes
- safety education

## Injuries & Illnesses

Canadian firefighters can experience many hazards on the job. These can lead to periods of time off of work, long-term health effects, or even death.

- strenuous physical labour
- repetitive or prolonged activity
- shift work & long hours
- contagious & infectious diseases
- traumatic events
- extreme temperature
- excessive noise
- unstable structures or falling objects
- falling from extreme heights

## Policy Implications

### SURVEILLANCE

A national firefighter injury surveillance system should be established in order to accurately determine the causes of work-related firefighter injury and death, and inform prevention efforts.

### EARLY DETECTION

Encouragement of screening for illnesses and awareness of the warning signs for mental health disorders.

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Opportunities for personal mental and physical health should be implemented by fire departments. This can include installation of gym equipment and healthy food options.

each year  
**1/79**  
firefighters took time off work due to injury

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### PHYSICAL INJURY

Due to the nature of the occupation, firefighters are at a high risk for injury while on the job. Work-related injury affects younger firefighters: 2/3 absent due to injury were 30-49 years old.

### RESPIRATORY DISEASE

100% of work-related deaths due to respiratory disease were among firefighters 65 years of age and older.

### CANCER

While firefighters have the same genetic and environmental predispositions for cancer as the general population, they are at an increased risk for cancer.



### CARDIOVASCULAR DISEASE

5% of work-related deaths due to cardiovascular disease were among firefighters between 50 and 64 years of age.

### MENTAL HEALTH

Mental health issues span all ages. Although it is under-reported, of all the firefighters on leave from work due to work-related mental health issues.



### CAUSES

hazardous conditions  
heat  
intense physical activity  
motor vehicle crash  
unstable structures  
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exposure to carcinogens and disease, shift work

physical demands  
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death or rescue of a child  
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### TYPES

muscle strains and sprains  
back injury  
arm and leg injuries  
burns

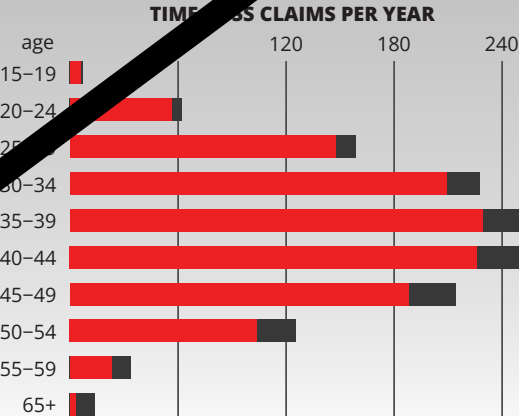
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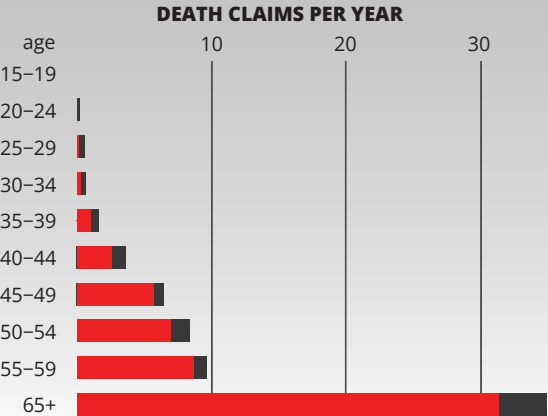
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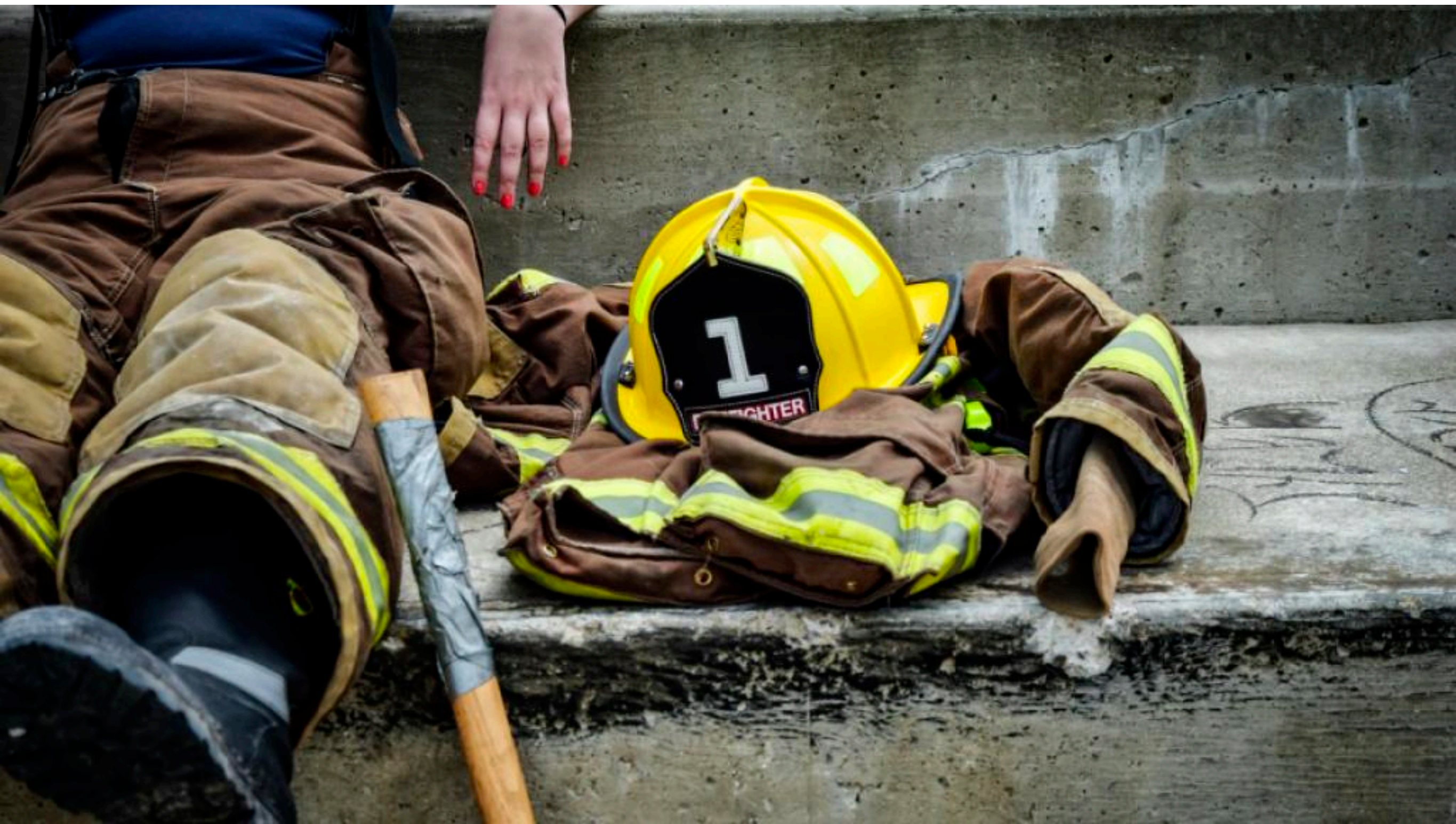
## **Policy Implications**















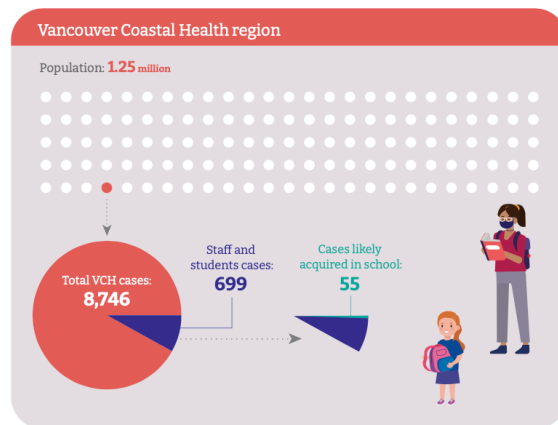
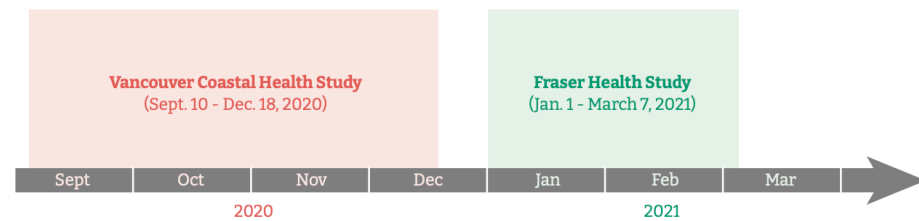
# science, in time of crisis

do not pander to short attention spans or low expectations

science is already full of meaningful rewards

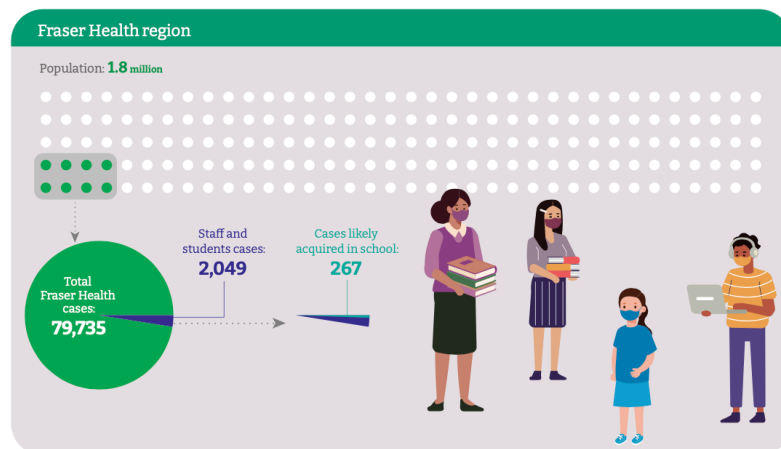
# COVID-19 Safety & BC Schools

## School transmission studies in Vancouver Coastal Health and Fraser Health



### Sept. 10 - Dec. 18, 2020

Staff and student cases made up approximately 8% of all cases in VCH. Of those cases, 8% of student and staff cases (0.6% of all cases) were likely acquired in school.



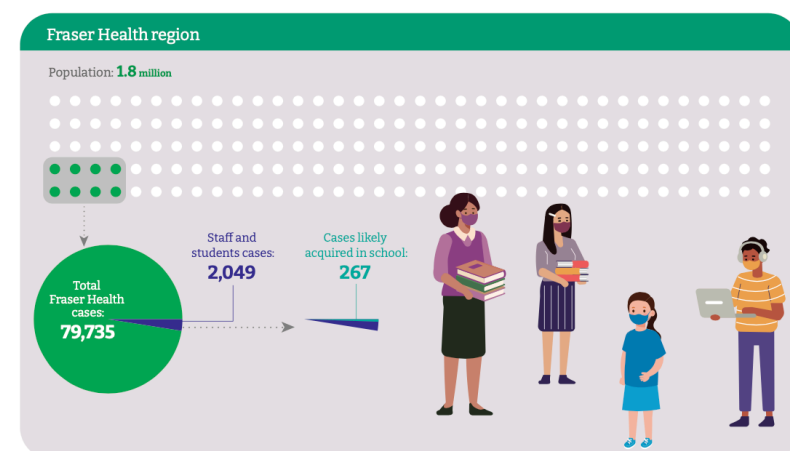
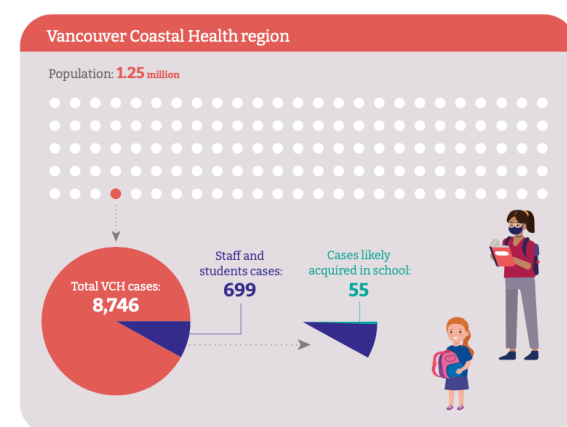
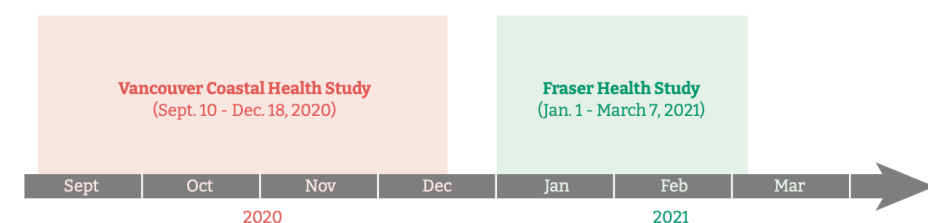
### Jan. 1 - March 7, 2021

Staff and student cases made up approximately 2.5% of all cases in Fraser Health. Of those cases, 13% of student and staff cases (0.3% of all cases) were likely acquired in school.

When transmission did occur within a school setting, a case would typically lead to 1 or 2 other cases within the school.

# COVID-19 Safety & BC Schools

## School transmission studies in Vancouver Coastal Health and Fraser Health



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For more information, visit [www.bccdc.ca/schools](http://www.bccdc.ca/schools)

# COVID-19 Safety & BC Schools

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## School transmission studies in Vancouver Coastal Health and Fraser Health regions



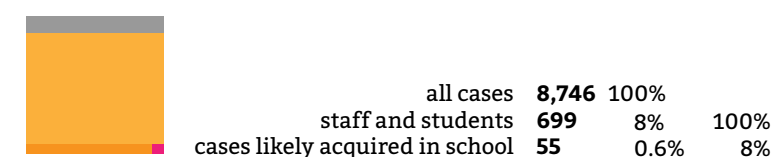
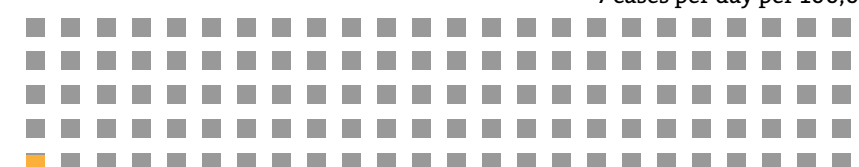
### Vancouver Coastal Health region

population 1.25 million

10,000 people

cases for Sep 10 - Dec 18, 2020 (100 days)

7 cases per day per 100,000

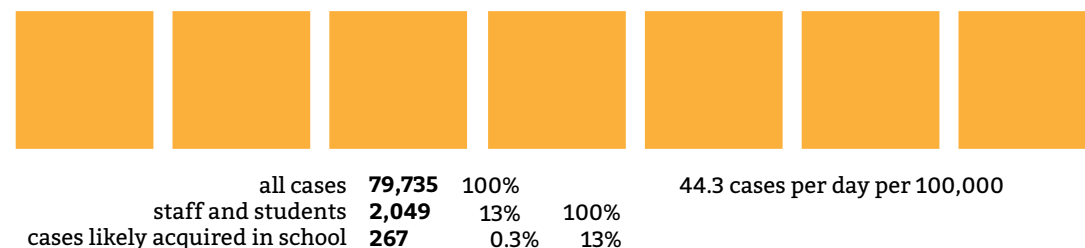
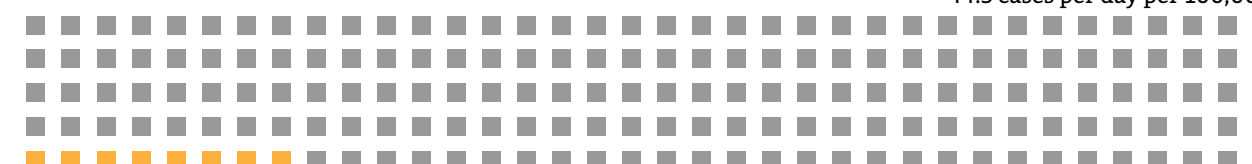


### Fraser Health region

population 1.8 million

cases for Jan 1 - Mar 7, 2021 (68 days)

44.3 cases per day per 100,000



When transmission did occur within a school setting, a case would typically lead to 1 or 2 other cases within the school.

# COVID-19 Safety & BC Schools

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## School transmission studies in Vancouver Coastal Health and Fraser Health regions

### Vancouver Coastal Health Study

cases for Sep 10 – Dec 18, 2020 (100 days), 7 cases per day per 100,000

|                                 |           |   |        |      |      |
|---------------------------------|-----------|---|--------|------|------|
| Vancouver Coastal Health region | 1,250,000 | ■ | 100%   |      |      |
| all cases                       | 8,746     | ■ | 0.7%   | 100% |      |
| staff and students              | 699       | ■ | 0.06%  | 8%   | 100% |
| cases likely acquired in school | 55        | ■ | 0.004% | 0.6% | 8%   |

### Fraser Health Study

cases for Jan 1 – Mar 7, 2021 (68 days), 44 cases per day per 100,000

|                                 |           |   |        |      |      |
|---------------------------------|-----------|---|--------|------|------|
| Fraser Health region            | 1,800,000 | ■ | 100%   |      |      |
| all cases                       | 79,735    | ■ | 4.4%   | 100% |      |
| staff and students              | 2,049     | ■ | 0.11%  | 13%  | 100% |
| cases likely acquired in school | 267       | ■ | 0.015% | 0.3% | 13%  |

When transmission did occur within a school setting, a case would typically lead to 1 or 2 other cases within the school.



# COVID-19 Safety & BC Schools

For more information, visit [bccdc.ca/schools](https://bccdc.ca/schools)

## School transmission studies in Vancouver Coastal Health and Fraser Health regions

### Vancouver Coastal Health Study

cases for Sep 10 – Dec 18, 2020 (100 days), 7 cases per day per 100,000

|                                 |           |   |        |      |      |
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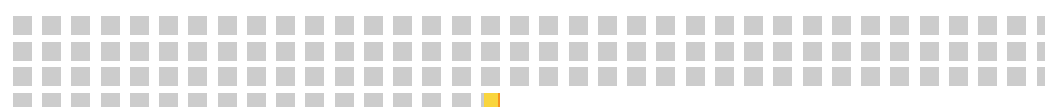
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## School transmission studies in Vancouver Coastal Health and Fraser Health regions

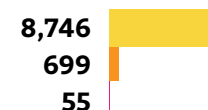
10,000 people ■

### Vancouver Coastal Health Study

cases for Sep 10 – Dec 18, 2020 (100 days), 7 cases per day per 100,000

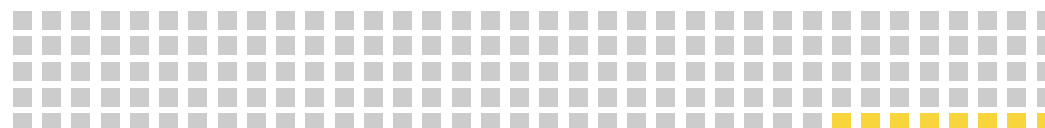


|                                 |           |   |        |      |      |
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# COVID-19 Safety & BC Schools

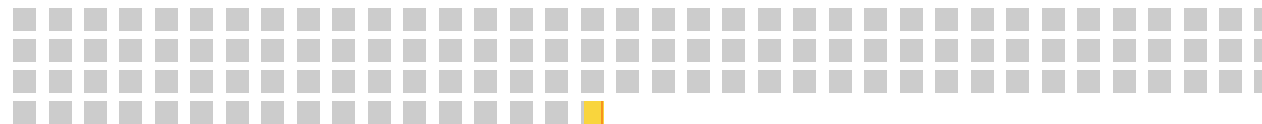
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## School transmission studies in Vancouver Coastal Health and Fraser Health regions

10,000 people ■

### Vancouver Coastal Health Study

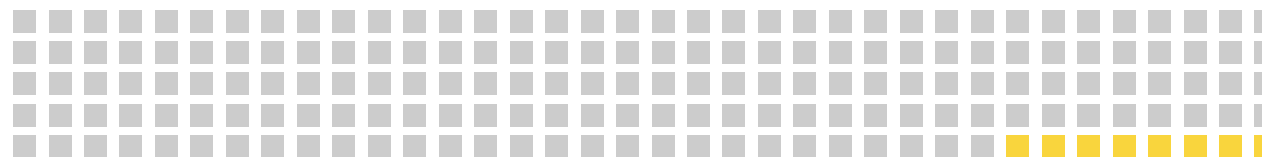
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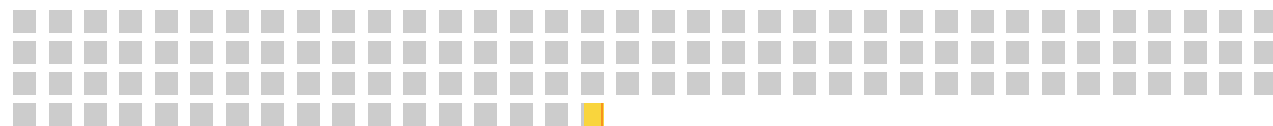
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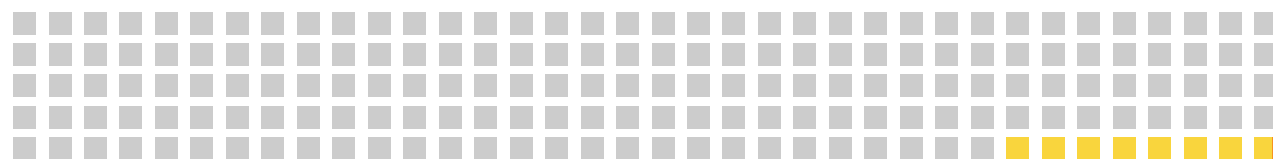


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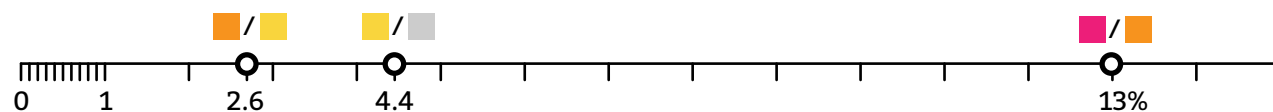


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| cases likely acquired in school | 267       | ■ | 0.015% | 0.3% | 13%  |



**A / B** expresses quantity A (e.g. cases among staff and students) as a fraction of quantity B (all cases in the region)  
When transmission did occur within a school setting, a case would typically lead to 1 or 2 other cases within the school.



# science, in time of crisis

bring text and annotation into the graphic

# Vaccine Effectiveness (VE): 2 Doses | British Columbia (BC), Canada

**Vaccines:** mRNA (Pfizer Comirnaty & Moderna Spikevax), AstraZeneca Vaxzevria

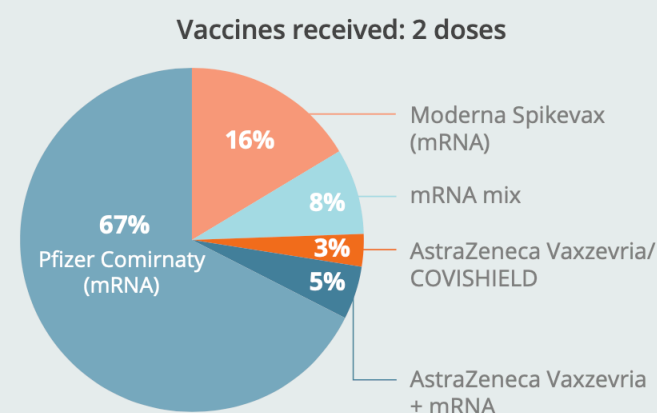
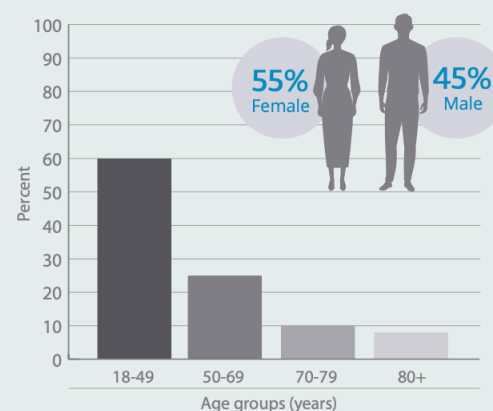
**Population:** 18+ year olds, excluding long term care residents

**Research method:** Test-negative design

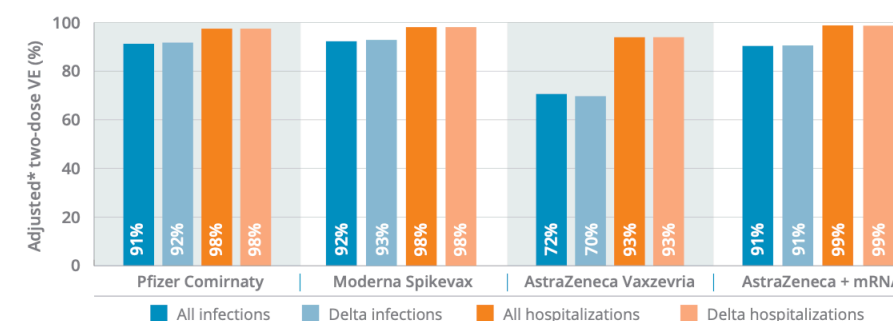
**Study period:** May 30 - Sept. 11, 2021, during rise of Delta variant in BC

**Sample size:** 246,656  
**Cases:** 17,077 **Controls:** 229,579

## Participant characteristics

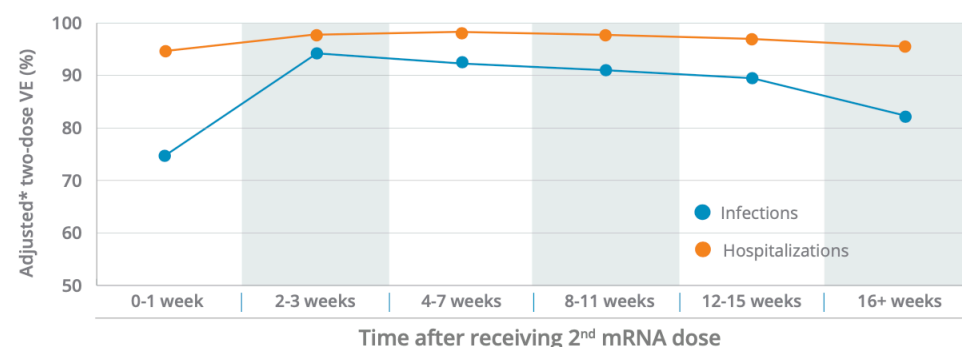


## 2 doses of any vaccine are highly protective, including against the Delta variant

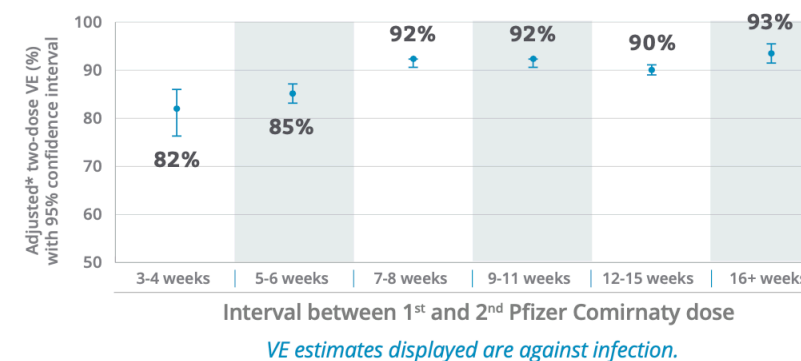


- Hospitalization risk in vaccinated people reduced by more than 90%
- Infection risk reduced by more than 90% for mRNA recipients and 70% for Vaxzevria
- Mixed doses (mRNA and Vaxzevria) offers protection similar to 2 mRNA doses

## Strong protection > 80-90% against infection maintained at least 4 months after the 2<sup>nd</sup> mRNA dose (monitoring continues, including for AstraZeneca Vaxzevria)



## Protection is even stronger when the interval between 1<sup>st</sup> and 2<sup>nd</sup> dose is more than 6 weeks



\*Adjusted for: age group, gender, epidemiological week (22 - 36) and health regions

Skowronski DM, Setayeshgar S, Zou M et al. Two-dose vaccine effectiveness against SARS-CoV-2 infection and hospitalization, including Delta variant: a test-negative design in British Columbia, Canada.

September 28, 2021



# 2 Doses of vaccine are highly protective, including against Delta variant

**Vaccines**  
mRNA  
mRNA  
viral

**Population**

**Research method**

**Study period**

**Sample size**  
Cases  
Controls

**Participant characteristics**

**Vaccines received: 2 doses**

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# 2 Doses of vaccine are highly protective, including against Delta variant



BC Centre for Disease Control  
Provincial Health Services Authority

September 28, 2021

## Vaccines

mRNA Pfizer Comirnaty  
mRNA Moderna Spikevax  
viral AstraZeneca Vaxzevria

## Population

18+-year-olds,  
excluding long term care residents

## Research method

Test-negative design

## Study period

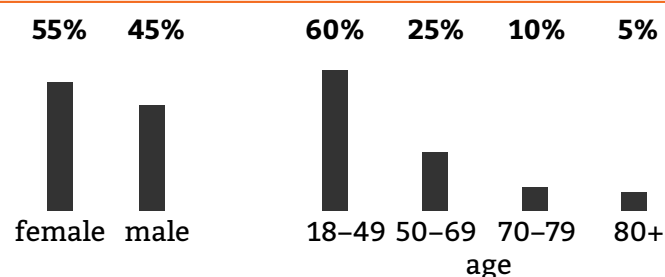
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Sample size 246,656

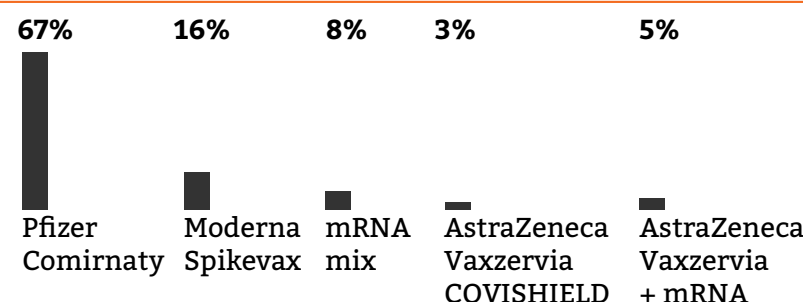
Cases 17,077

Controls 229,579

## Participant characteristics



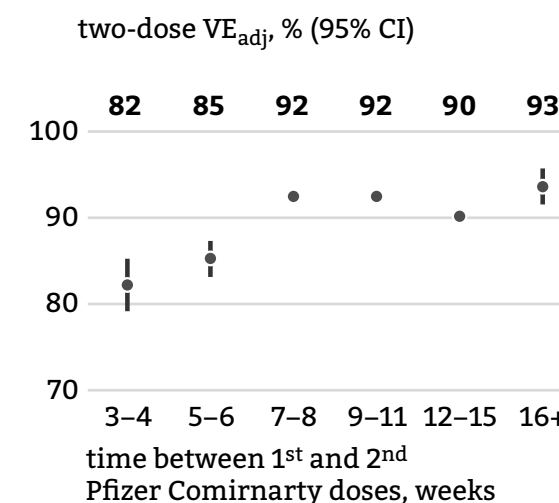
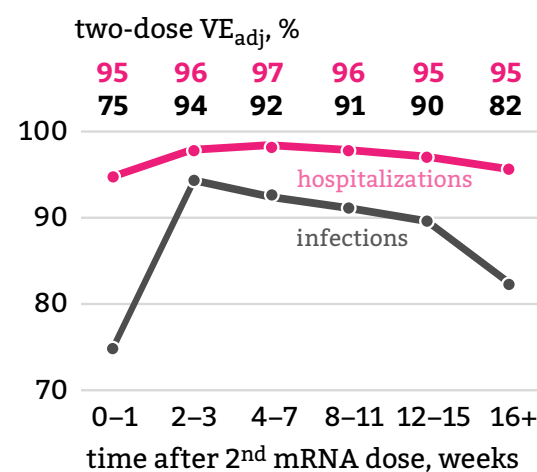
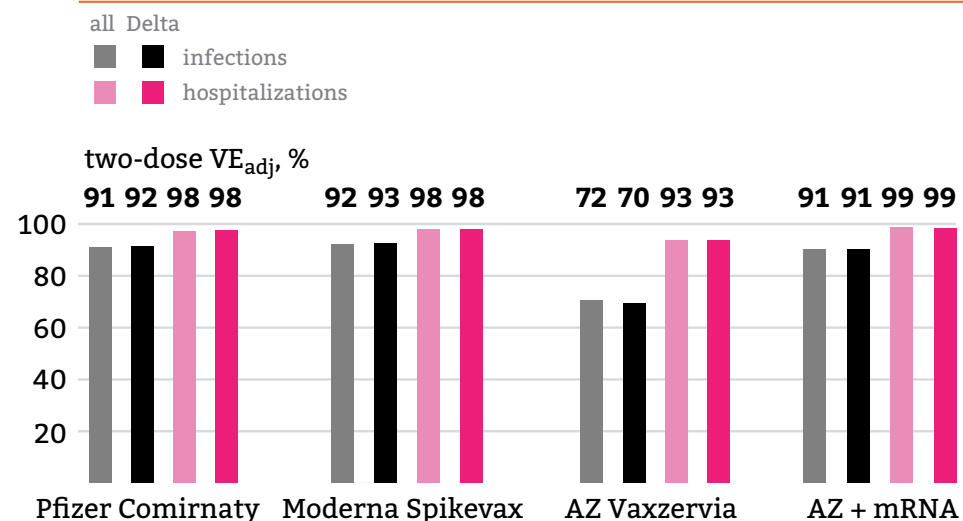
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Test-negative design

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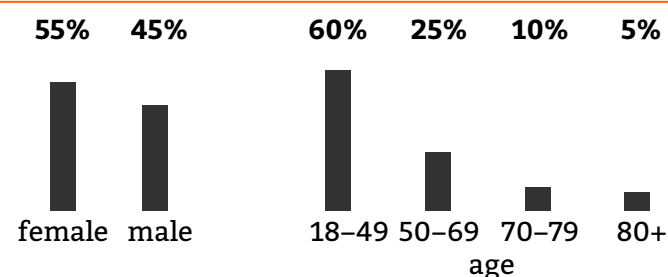
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Sample size 246,656

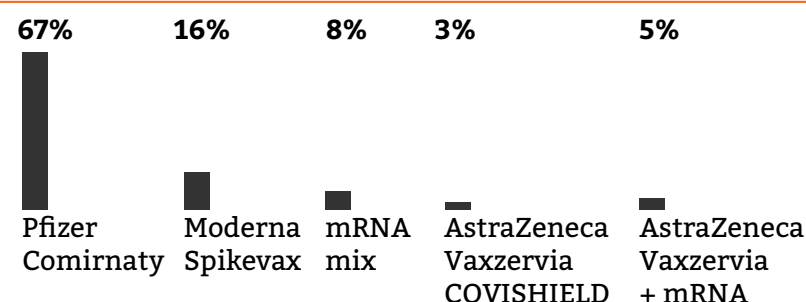
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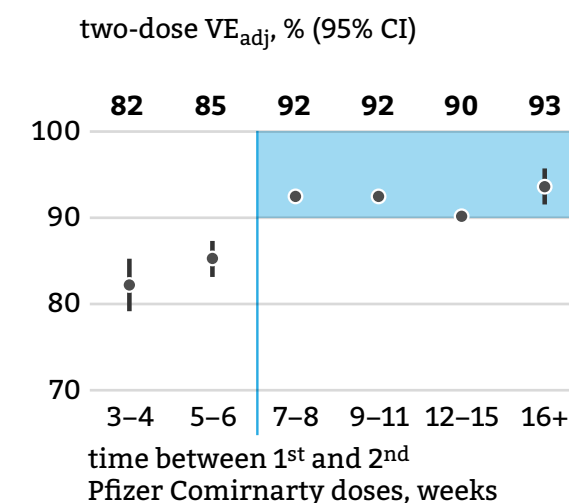
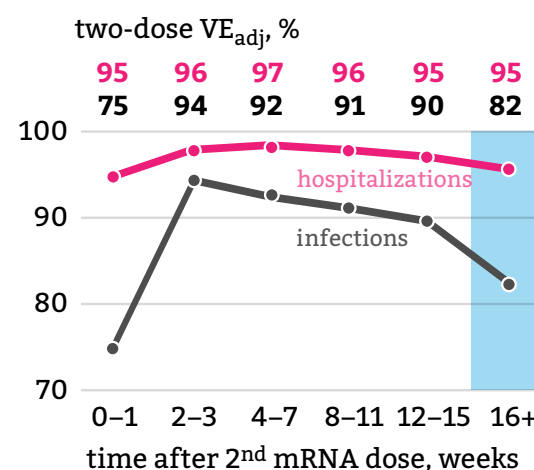
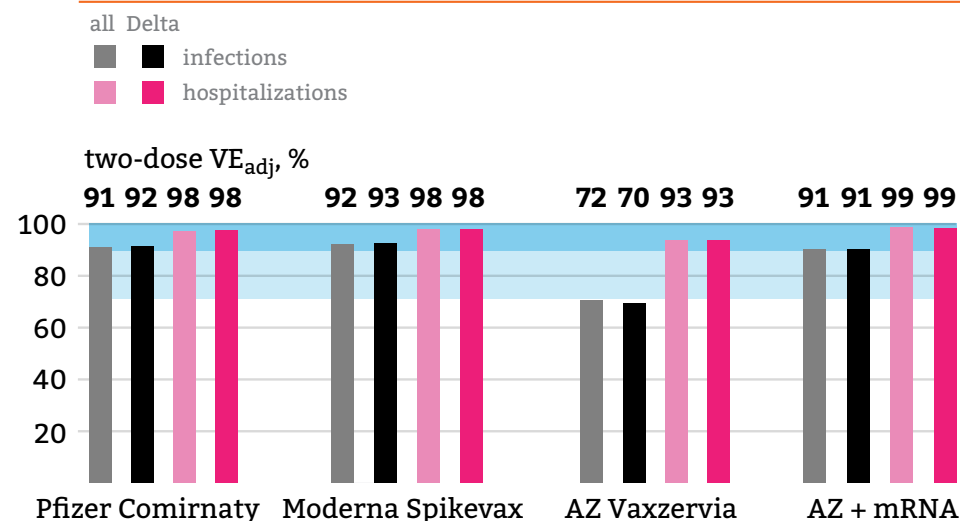
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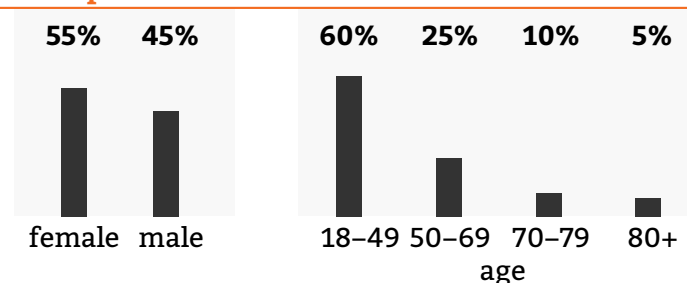
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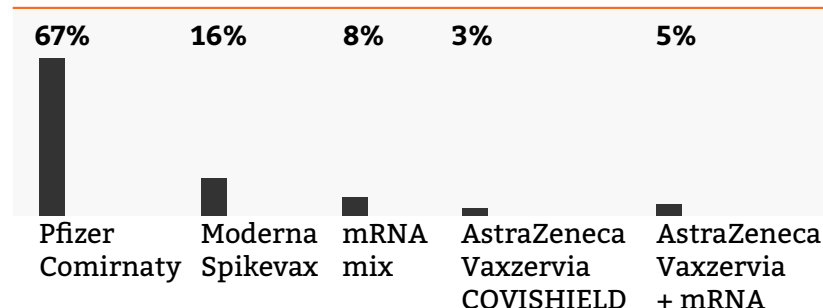
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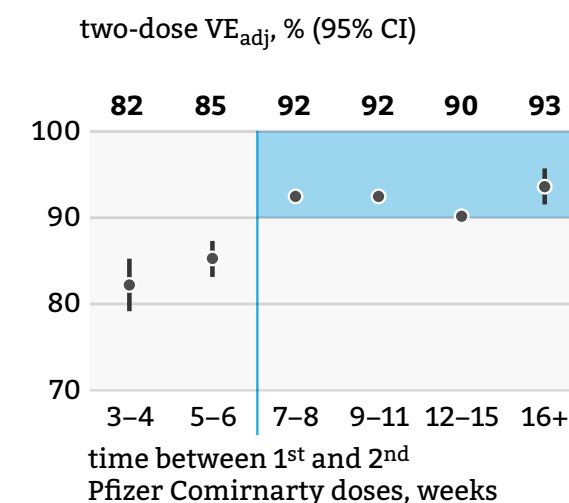
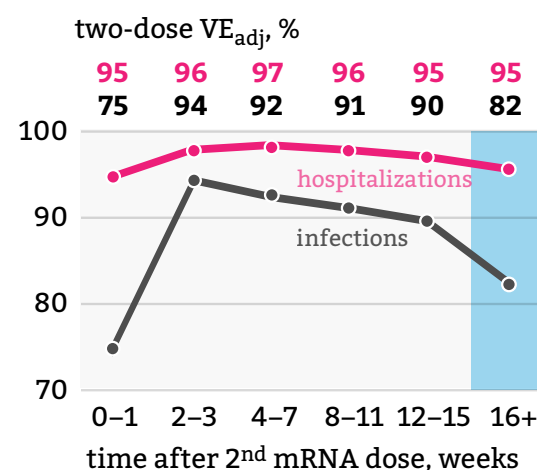
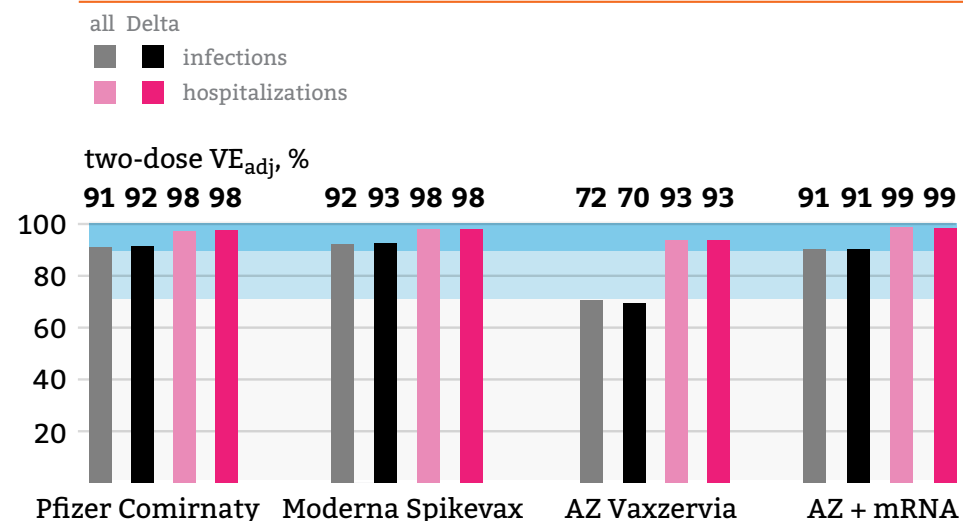
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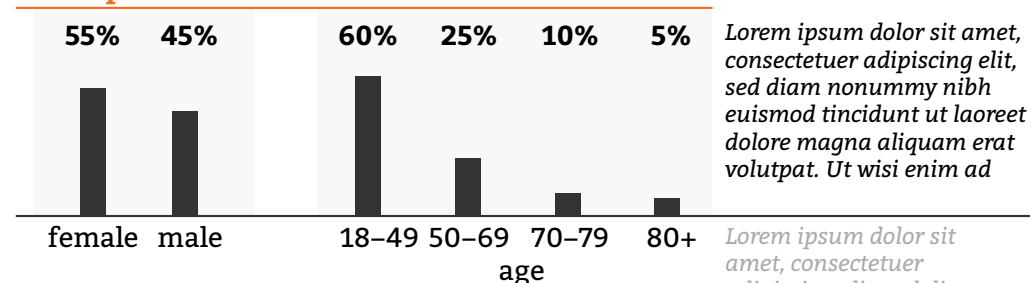
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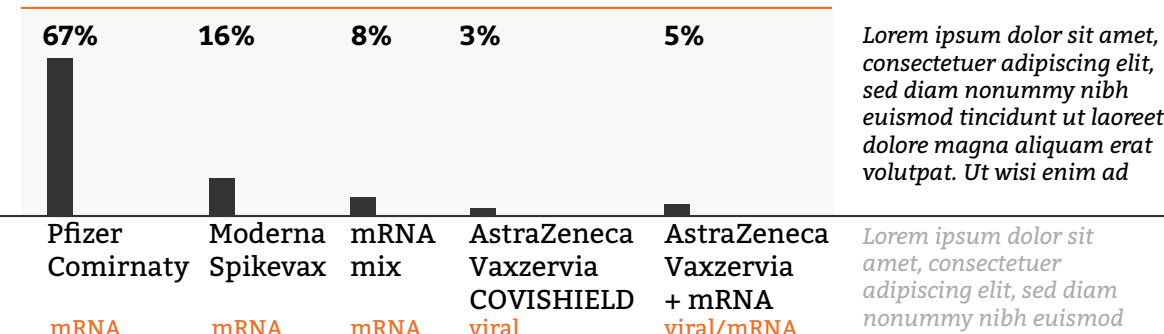
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Controls 229,579

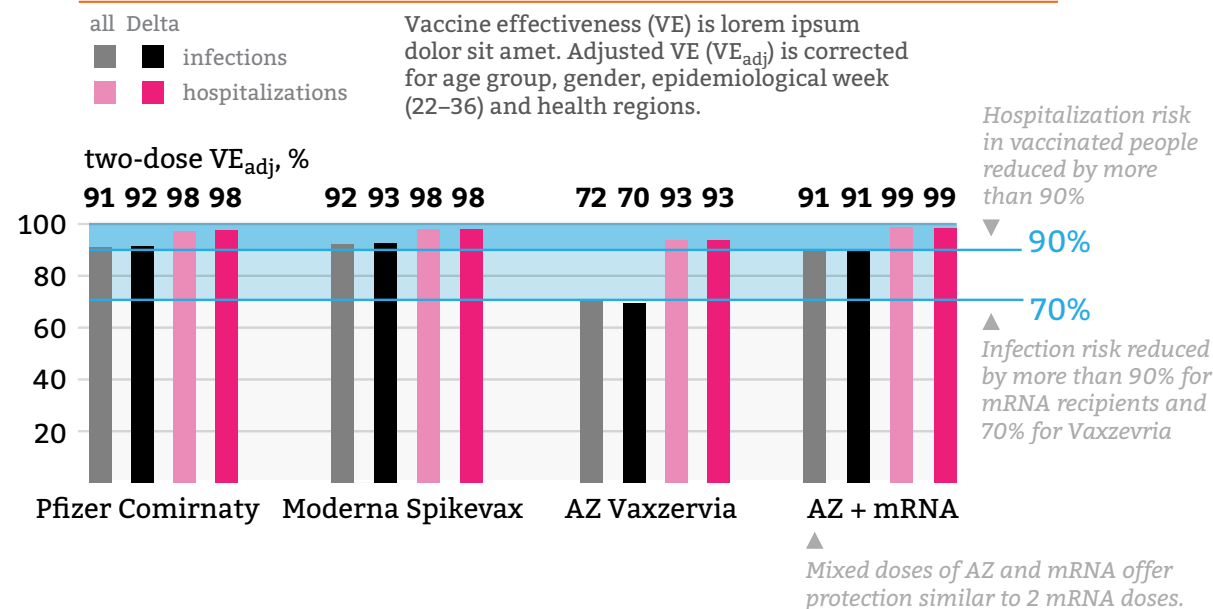
## Participant characteristics



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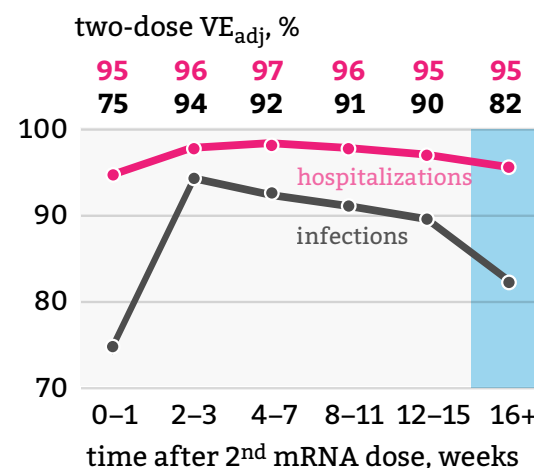


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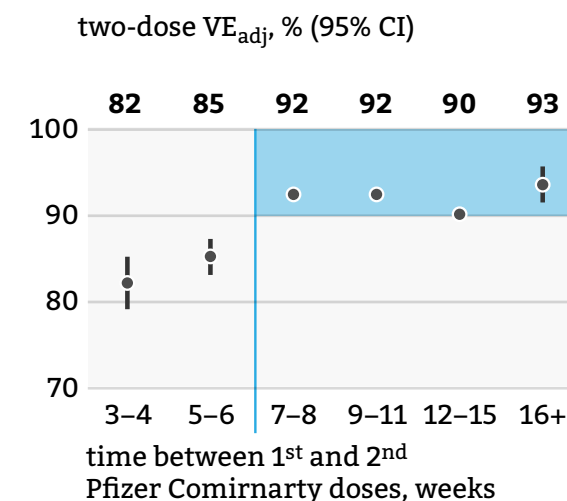
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monitoring continues, including for AstraZeneca Vaxzevria



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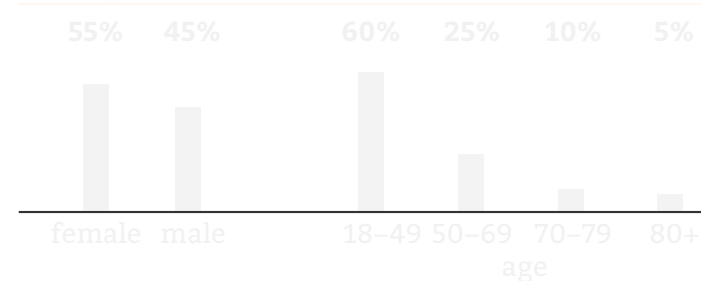
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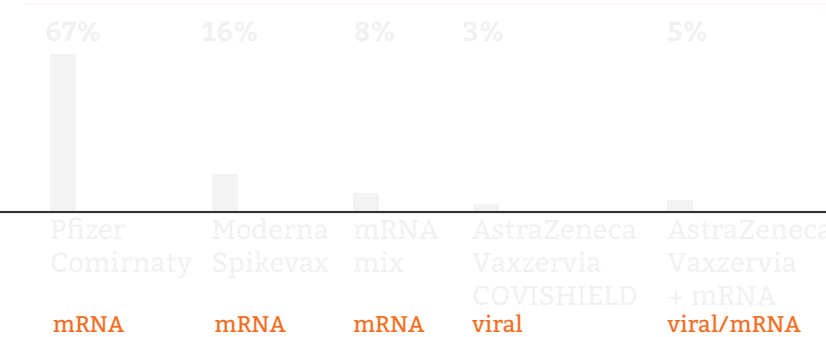
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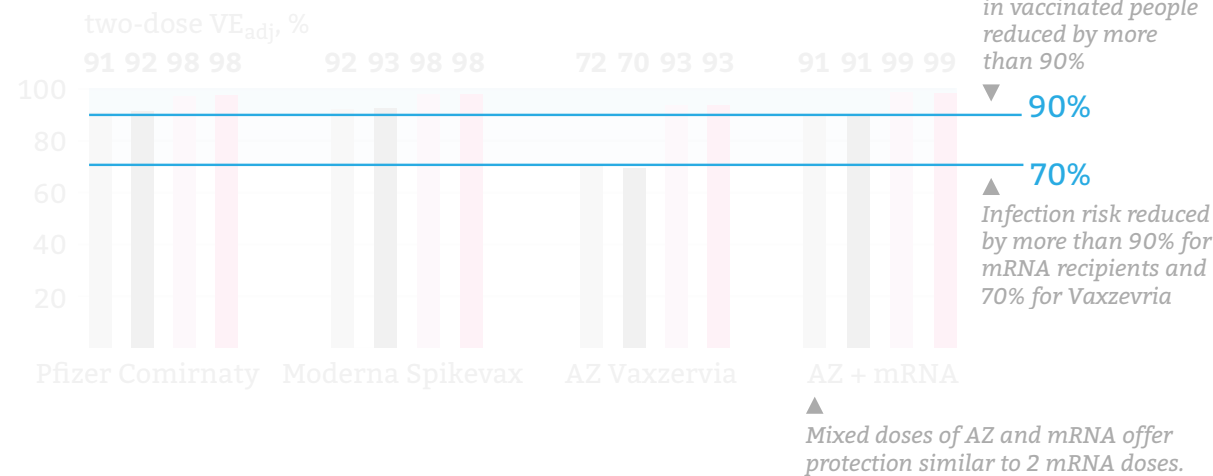
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Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod

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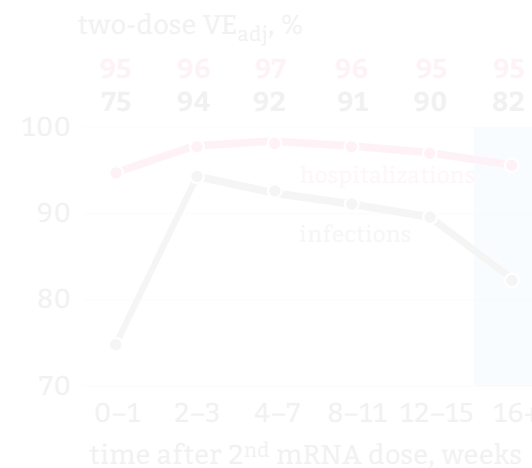
all Delta  
infections  
hospitalizations

Vaccine effectiveness (VE) is lorem ipsum dolor sit amet. Adjusted VE (VE<sub>adj</sub>) is corrected for age group, gender, epidemiological week (22-36) and health regions.



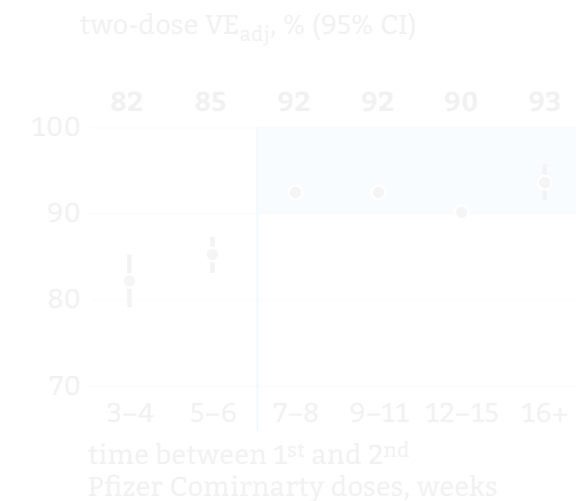
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be a communicator

don't market, inspire



cute today

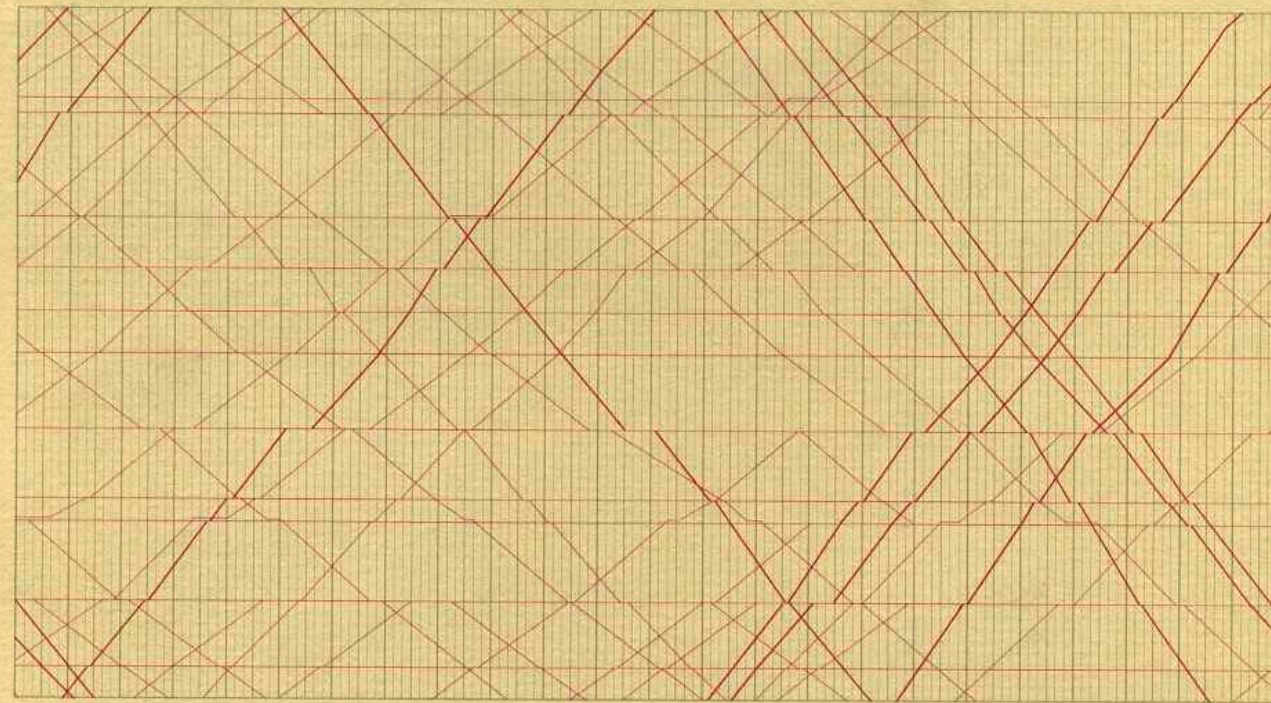
tedious tomorrow



~~pretty~~

let form follow function





# The Visual Display of Quantitative Information

EDWARD R. TUFTE



Z E N



A R T

of MOTORCYCLE  
MAINTENANCE

— an inquiry into values —

ROBERT M. PIRSIG



## thinking classically

*“The classic style is straightforward, unadorned, unemotional, economical and carefully proportioned. Its purpose is not to inspire emotionally, but to bring order out of chaos and make the unknown known. It is not an esthetically free and natural style. It is esthetically restrained. Everything is under control. Its value is measured in terms of the skill with which this control is maintained.”*



Gordon Andrews (designer)  
*Gazelle chair* (c. 1950) designed, 1957 manufactured  
plywood, aluminium, wool  
74.0 x 48.0 x 55.0 cm  
Museum of Applied Arts and Sciences, Sydney  
Purchased, 1989 (89/499)