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Data Literacy & the Academic Library

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#ILA2021Regional



Data Literacy

& the academic library

Ellie Dworak

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graph TD; A[1. What?] --> B[2. Why?]; B --> C[3. How?];
```

1. What?

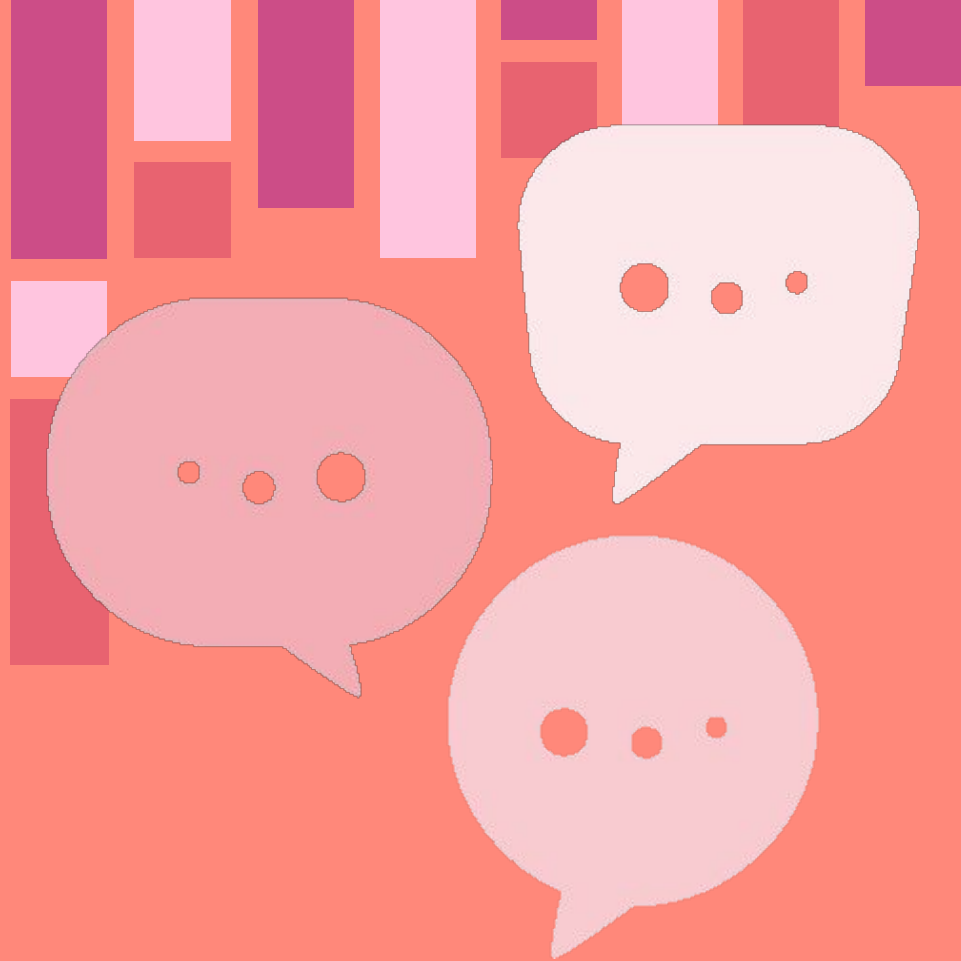
2. Why?

3. How?



01.

What is Data Literacy?



Depends on
who you **ask**

**A broad category of skills
required for students to “read”
and “write” with data.**

- [Creating Data Literate Students](#)

Understanding what data mean, including:

- how to read charts**
- draw correct conclusions from data**
- recognize when data are being used in misleading ways**

- [Carlson et al., 2011](#)

**The desire and ability to
constructively engage in
society through and about
data.**

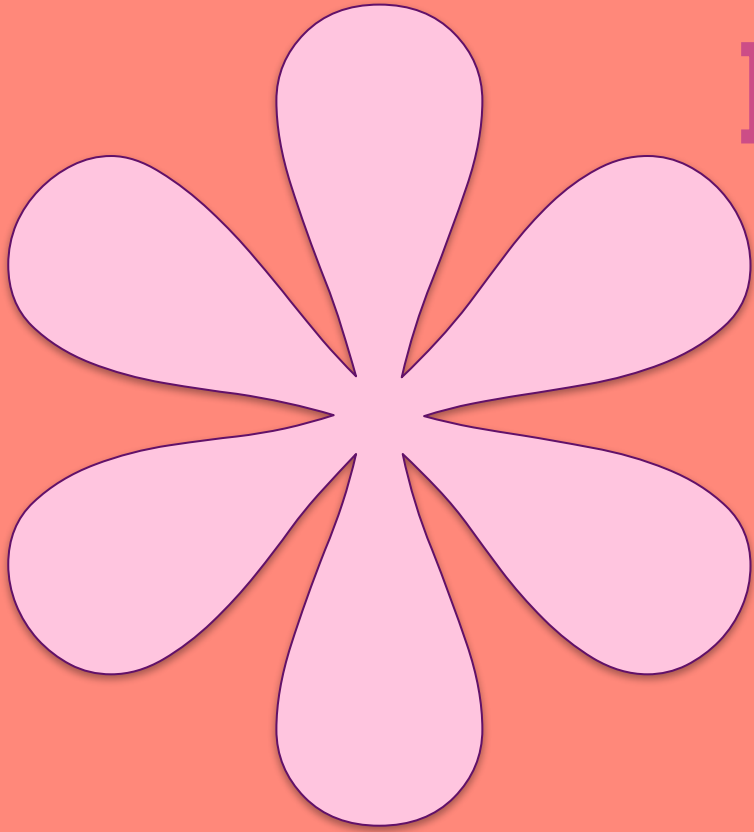
- [DataPop Alliance](#)

**The knowledge and skills
involved in collecting,
processing, managing,
evaluating, and using data for
scientific inquiry.**

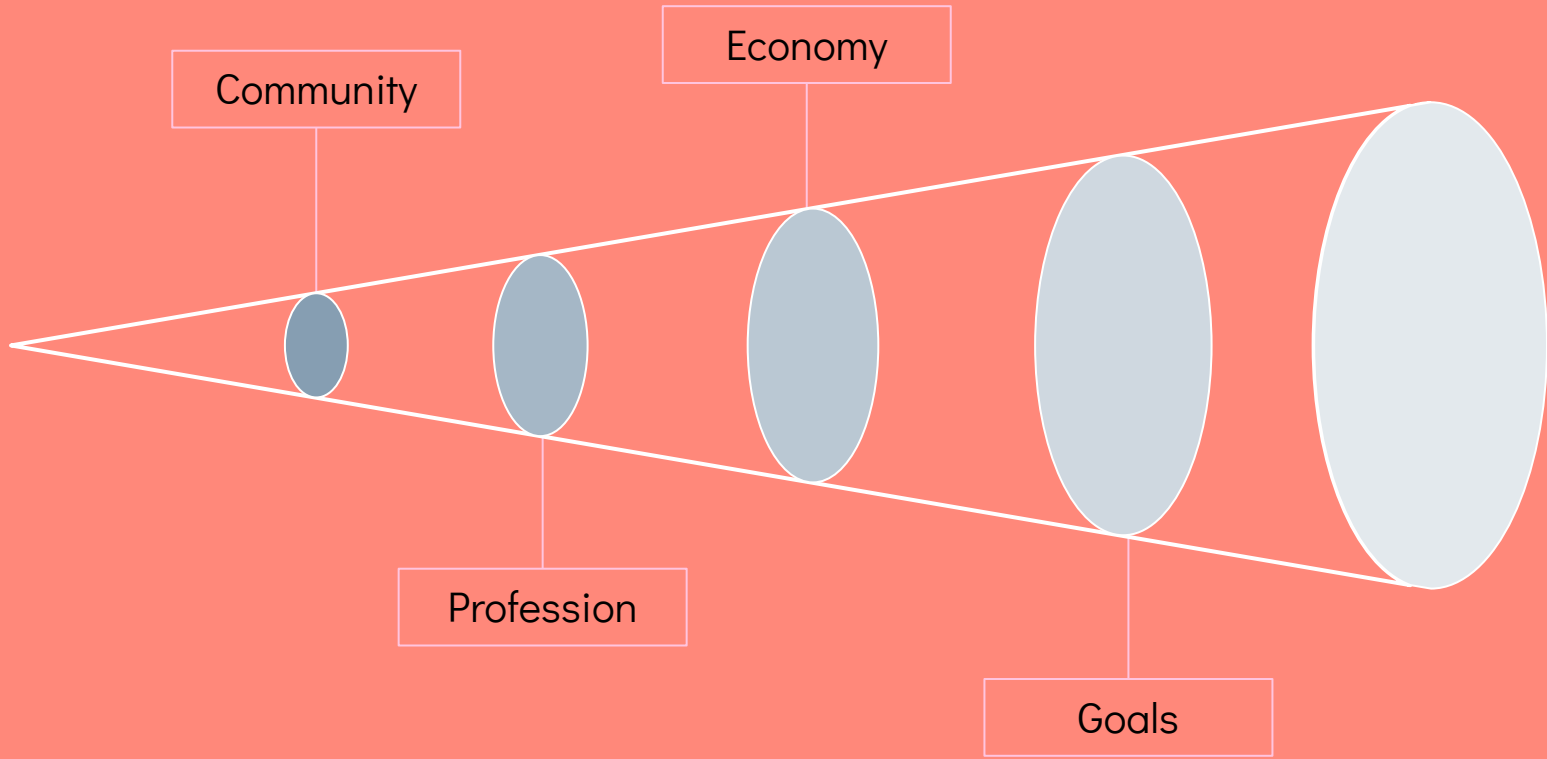
- [National Library of Medicine](#)



Why so many definitions?



Data Literacy is
contextual

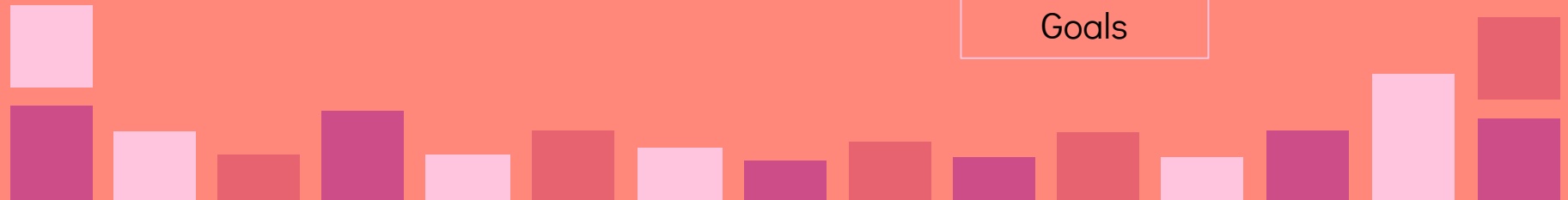


Community

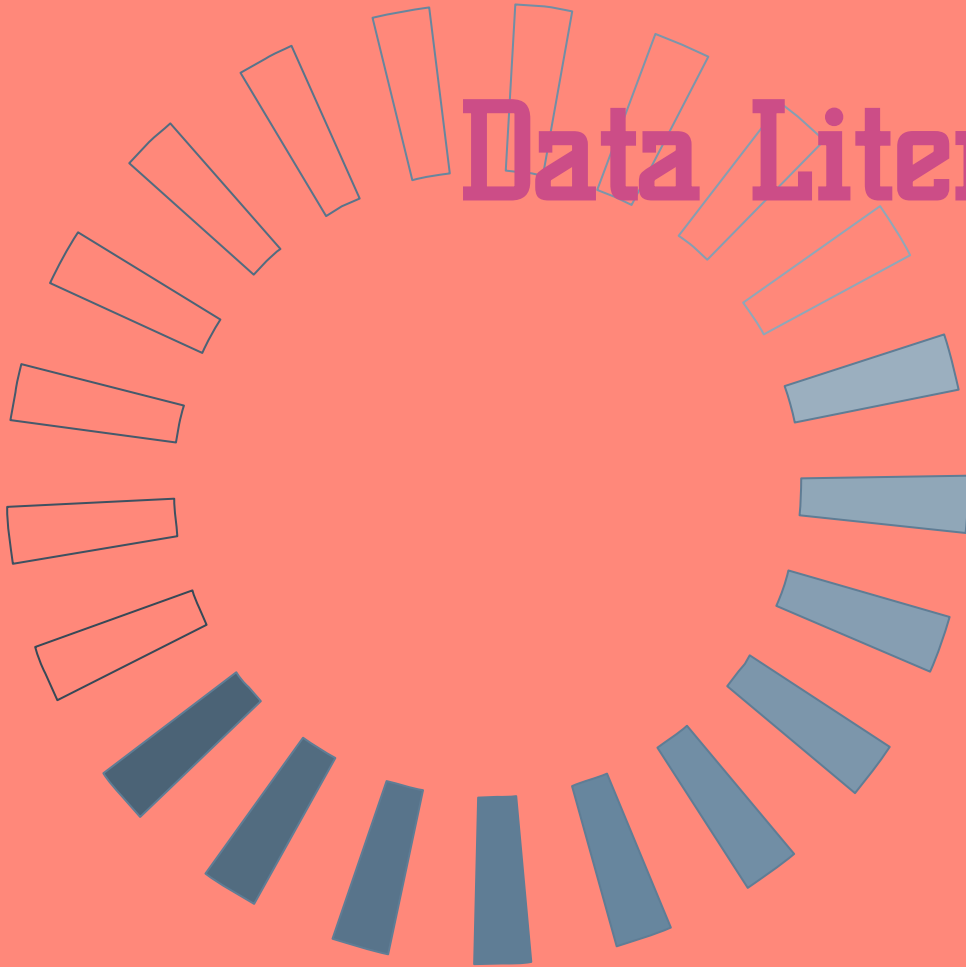
Economy

Profession

Goals



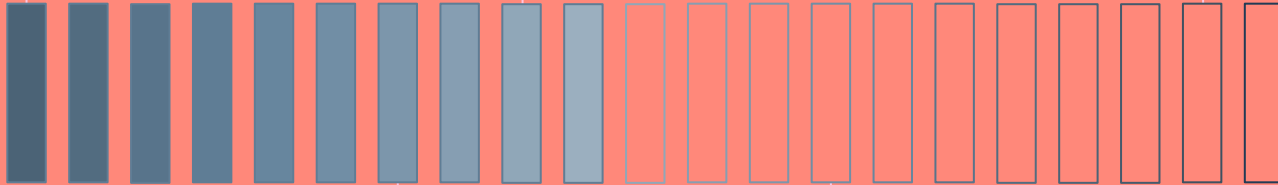
**Data Literacy is on a
spectrum**



Understand
impacts of data

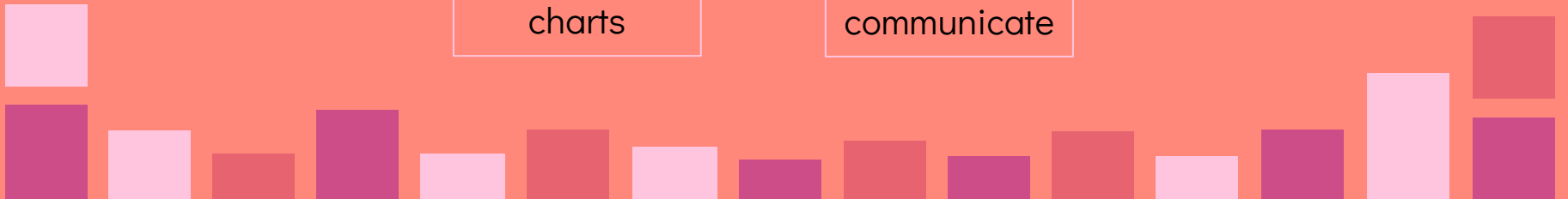
Select, analyze &
draw conclusions
from data

Produce &
manage datasets



Interpret
charts

Use data to
communicate



**Data Literacy is one
of many literacies**

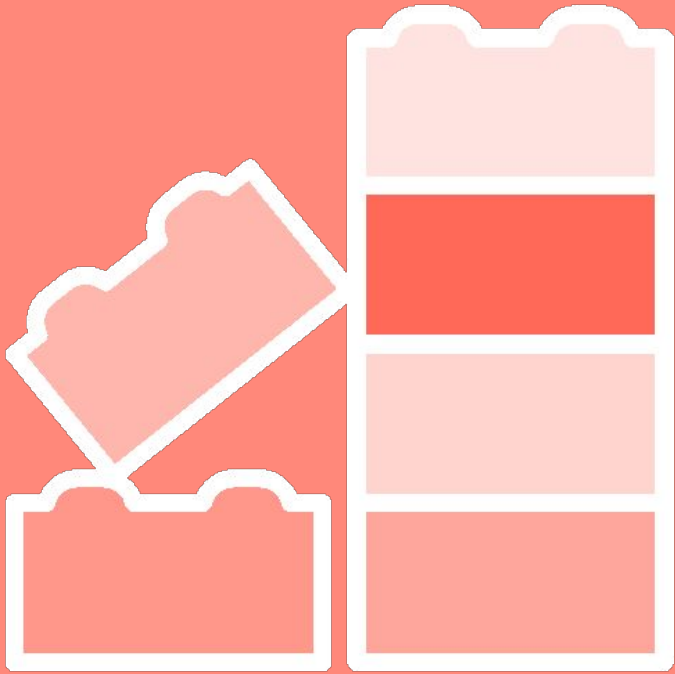
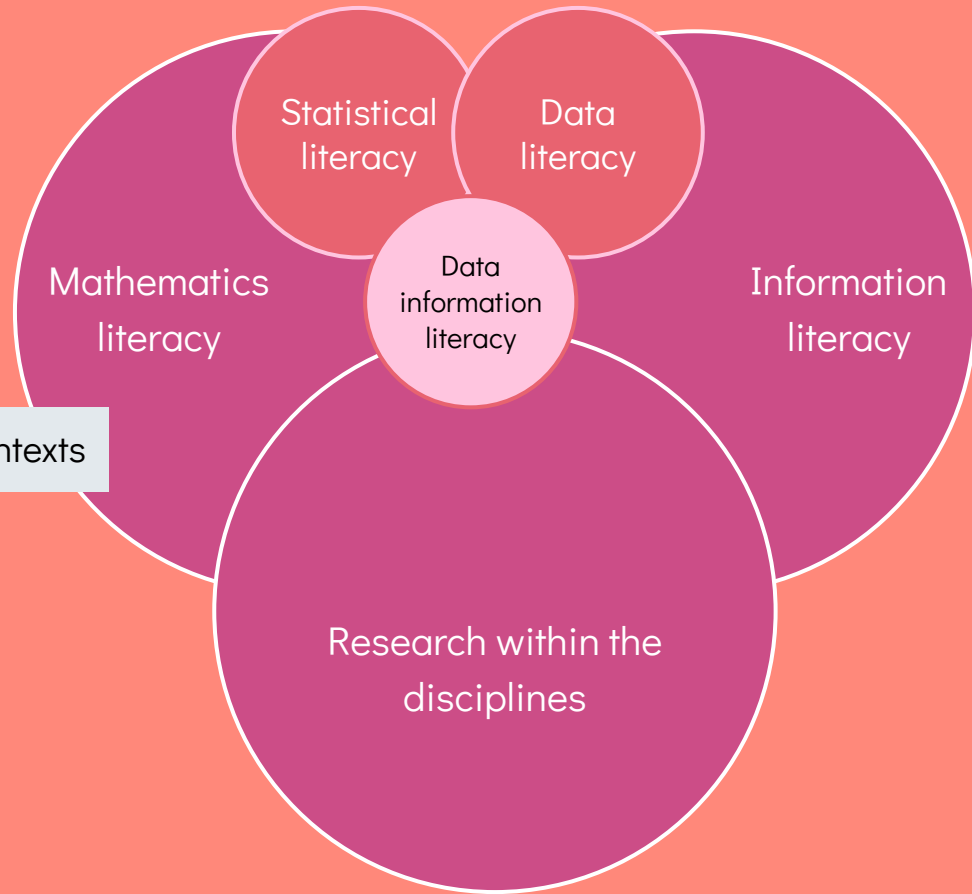
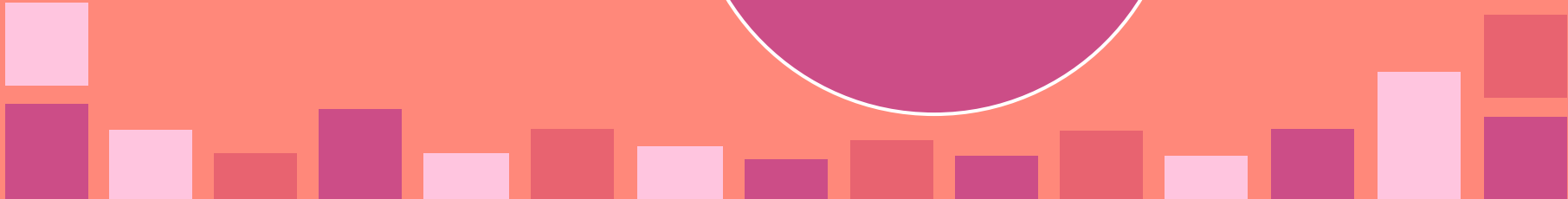


Image courtesy of thenounproject.com



Some of the literacy worlds & contexts





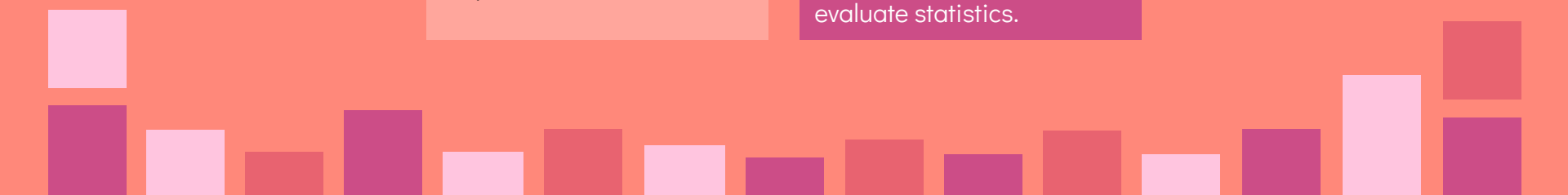
Roughly speaking

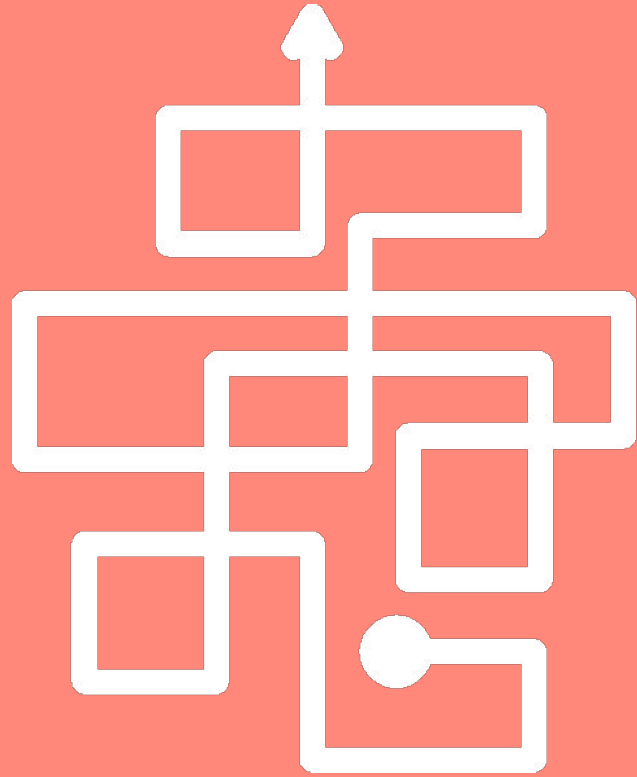
Data literacy is “understanding what data mean, including how to read charts appropriately, draw correct conclusions from data & recognize when data are being used in misleading or inappropriate ways” (Carlson et al., 2011).

Data Information literacy relates to the organization, access, re-use, and preservation of research data, originally in support of open science.

Information literacy is the ability to seek, evaluate, use, and create information to achieve a goal.

Statistical literacy is the ability to interpret and evaluate statistics.





**n.b. data
literacy
assessment
also has to be
contextual**

COMPETENCY	SCAFFOLDING	
<i>Recognize how data is integrated into daily life.</i>	Introductory Level All Disciplines	
<i>Interpret and critically evaluate data and their sources.</i>	All Levels, with increasing complexity All Disciplines	
<i>Analyze data.</i>		
<i>Communicate data with visualizations.</i>		
<i>Read/understand data types & formats.</i>	Introductory	Upper Level/ Undergrad Research
<i>Clean / process / convert data.</i>		
<i>Find, select, access, or create datasets in order to test a hypothesis or answer a research question.</i>		Natural Sciences Social Sciences
<i>Ethically collect / use / cite data.</i>	Upper Level/ Undergrad Research	All Levels, increasing complexity
<i>Integrate and synthesize data into different contexts with other sources and prior knowledge.</i>	Natural Sciences Social Sciences	

Frameworks
are in the
works

Data Literacy: A Working Definition

Use

Data to
communicate



Recognize

The types of data &
their utility



Consider

Factors such as
source & purpose



Locate

Reliable data



Within a specific context



02.

Why Data Literacy?

Work & Career

“Automation, robotics & AI are creating fundamental changes in how we live & work. **Data is the universal language of this fourth industrial revolution.**”

- [The Data Literacy Index](#)

Learning & Skill Acquisition

52% of American adults don't have the skills to use technology for personal learning.

- [Pew Research Center](#)

Privacy

91% of Americans feel that they have lost control of their data & don't know how to get it back.

- [Pew Research Center](#)

Life

“Data is a persistent part of our lives, no matter whether we fill in a form with our personal details to take part in a raffle, or whether we control the lights and the heating in our apartment with an app.”

- [Critical Edges](#)

Civic Engagement

“Data literate individuals are more likely to gain informed opinions on current topics, be able to express their opinions, & be able to **propose informed solutions.**”

- [Erica Deahl](#)

Global Development

In the Fourth Industrial Revolution, **big data** have become the **new gold**.

Social Justice

“Adoption of technology for adult learning in both personal and job-related activities varies by people’s **socio-economic status**, their **race & ethnicity**, & their **level of access to home broadband & smartphones.**”

- [Pew Research Center](#)

“Universities are failing to ensure students have the data literacy skills they need.”

- [Dataversity](#)





03.

How?

[Library Edit]

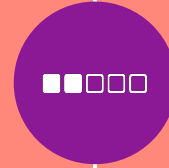
Libraries as
Organizations

Individual
Librarians

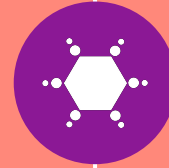
Students

Libraries as Organizations

support for **librarian** data literacy



Set clear expectations, measures, & incentives



Provide learning resources that work for learners



Learning takes time.
Act accordingly



Offer opportunities to use new skills

Libraries as Organizations

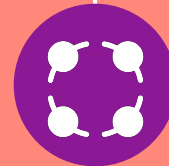
support for **student** data literacy



Support data literacy related learning objectives



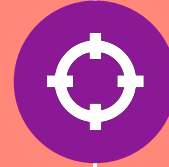
Encourage librarians to teach



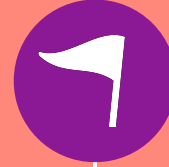
Promote library representation on curriculum committees

Librarians as Individuals

improving **one's own** data literacy



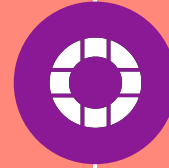
Create or locate a syllabus



Set learning goals



Work it into your schedule & your work



Ask for help

Librarians as Individuals

support for **student** data literacy



Increase your own data literacy



Build data lit skills into information literacy instruction



Watch for data literacy initiatives on campus & in the profession



Don't be afraid to learn from students

Resources

Learn

- [Data Literacy Guide](#)
A robust guide to the concepts of data literacy
- [Data Literacy Project](#)
Free brief learning modules

Teach

- [Data Literacy in Academic Libraries: Teaching Critical Thinking with Numbers](#)
This forthcoming book looks fantastic
- [Data Literacy Lab](#)
A teaching toolkit designed for college journalism curricula
- [Data Literacy Teaching Toolkit](#)
Includes competencies and activities

More

- [Creating Data Literate Students](#)
Focused on high school students
- [Data Information Literacy Project](#)
An IMLS-funded research project that generated a number of useful resources

Questions?

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