Data Tips, Part 2

Gina Nichols

2020 Fall DataFEWsion Sharing Series

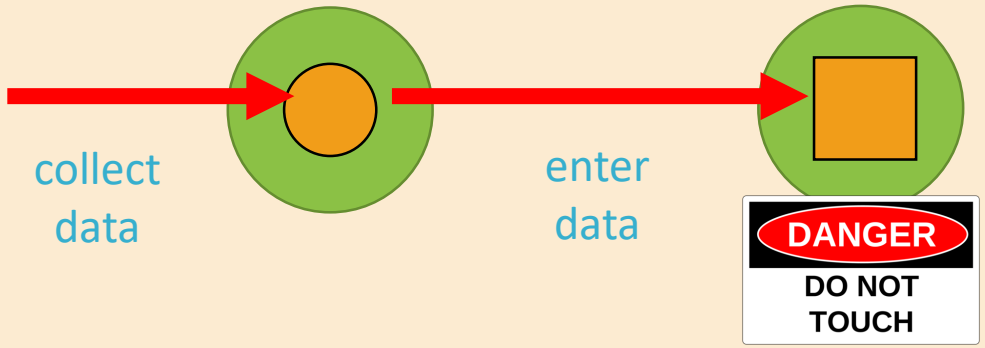
get some data
manuscript, glory, graduation

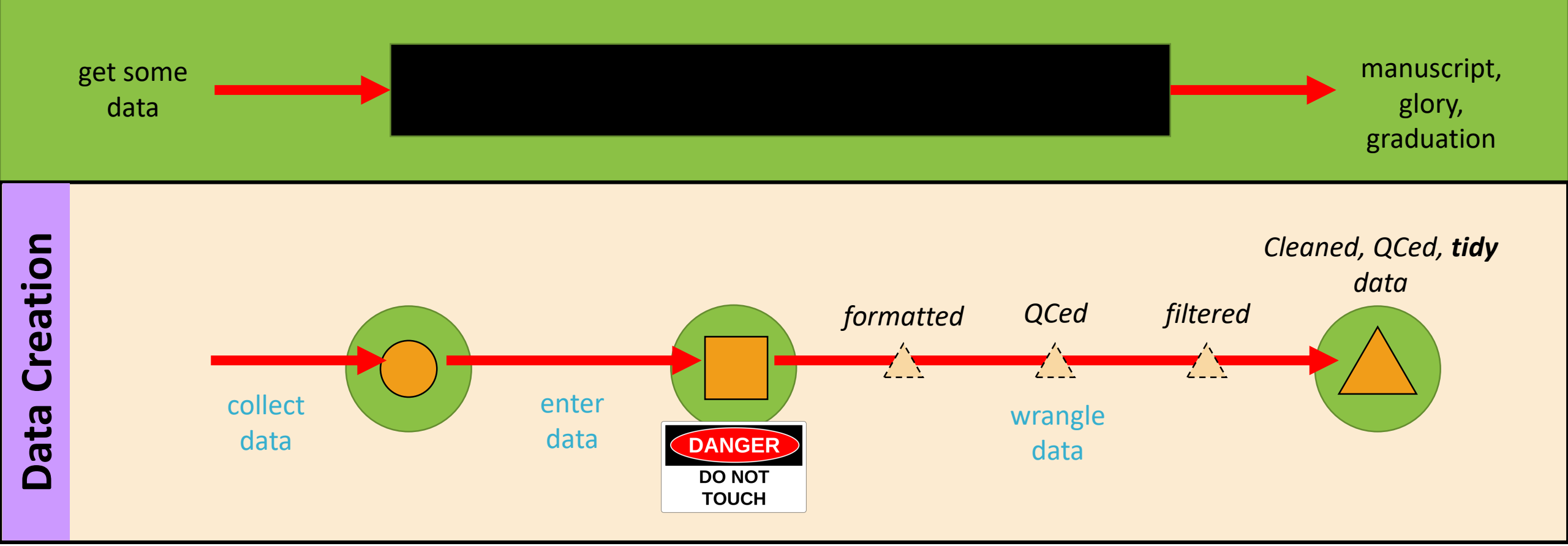
get some data
manuscript, glory, graduation
Data Creation
collect data

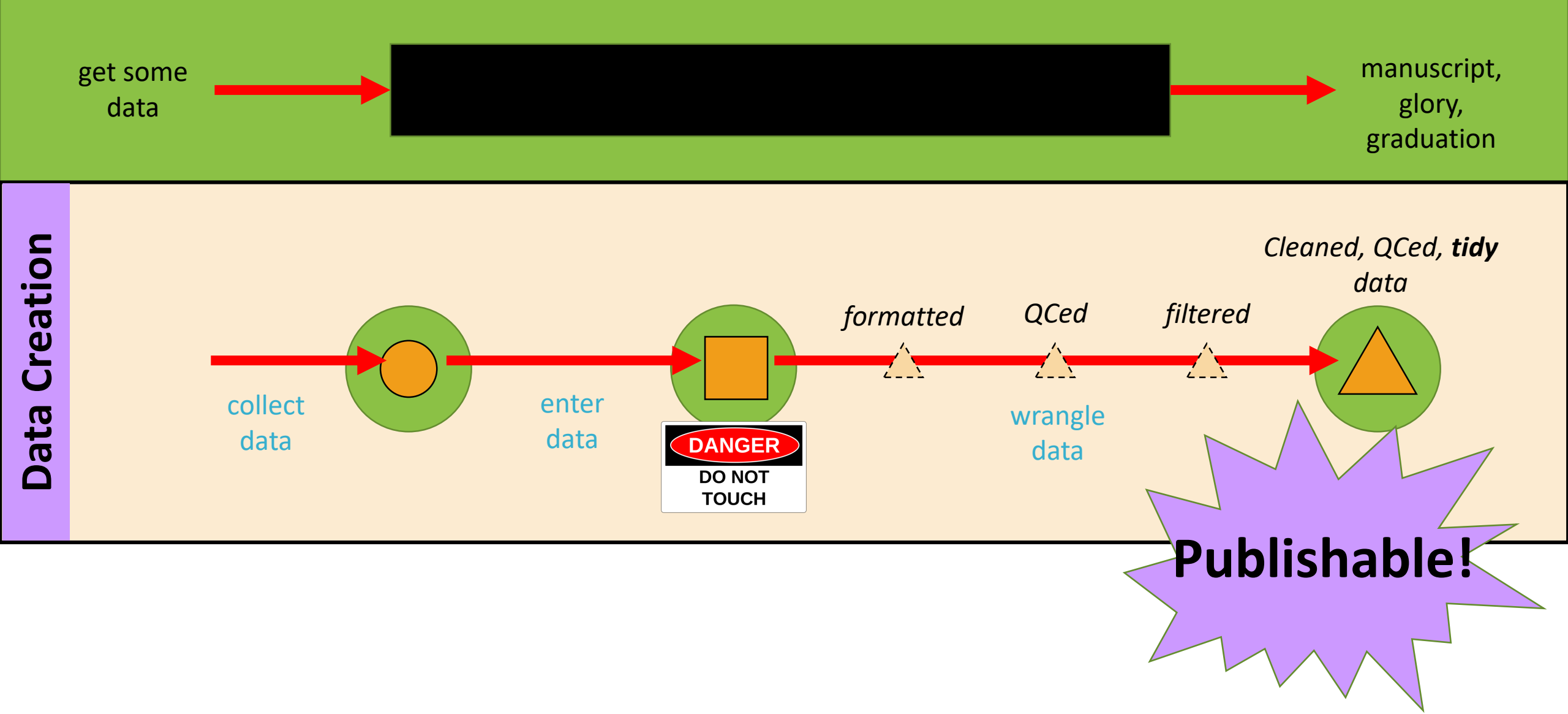
get some data

manuscript, glory, graduation

Data Creation




get some data
manuscript, glory, graduation
Data Creation
collect data
enter data
DANGER
DO NOT TOUCH
formatted
QCed
filtered
wrangle data
Cleaned, QCed, tidy data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Publishable!

Publishable!
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Open startup pages
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Share your research data with confidence
Iowa State University's DataShare is an open access repository for sharing, publishing, and archiving research data created by Iowa State University scholars and researchers.

Publishable!

Effect of cover crops on weed biomass and density in the US…

Dataset posted on 02.04.2020

Virginia Nichols

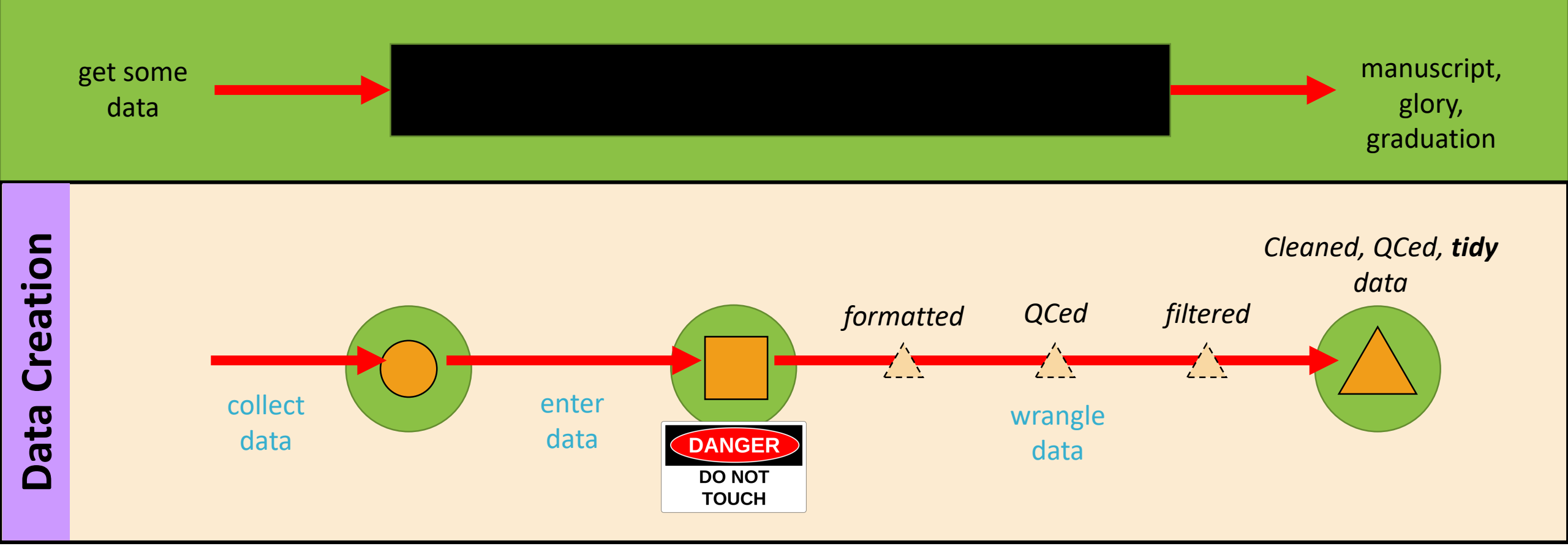
Effect of crop rotation on weed biomass and density literature…

Dataset posted on 09.07.2019

Virginia Nichols

Nichols, Virginia; Weisberger, David; Liebman, Matt (2019): Effect of crop rotation on weed biomass and density literature summary. Iowa State University. Dataset. https://doi.org/10.25380/iastate.7771010.v2

Nichols, Virginia; Basche, Andrea D.; Weisberger, David (2020): Effect of cover crops on weed biomass and density in the US Midwest Corn Belt meta-analysis dataset. Iowa State University. Dataset. https://doi.org/10.25380/iastate.11933214.v1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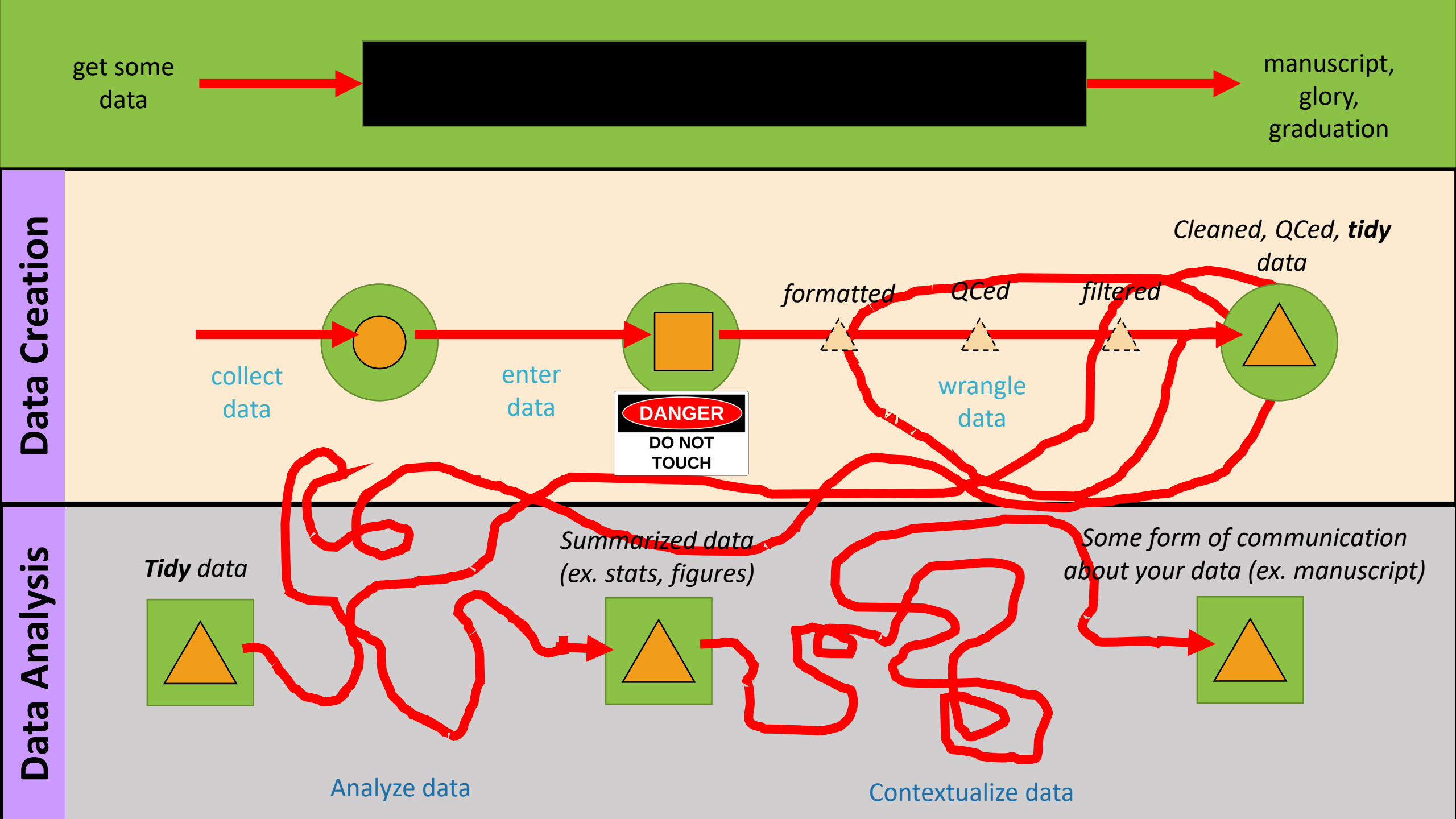
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Data Creation
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filtered
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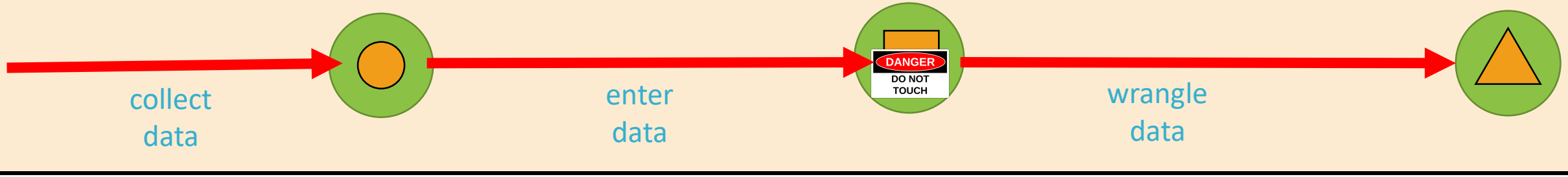
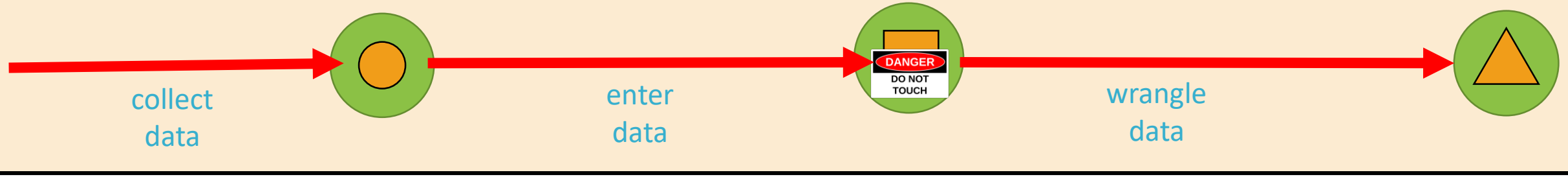
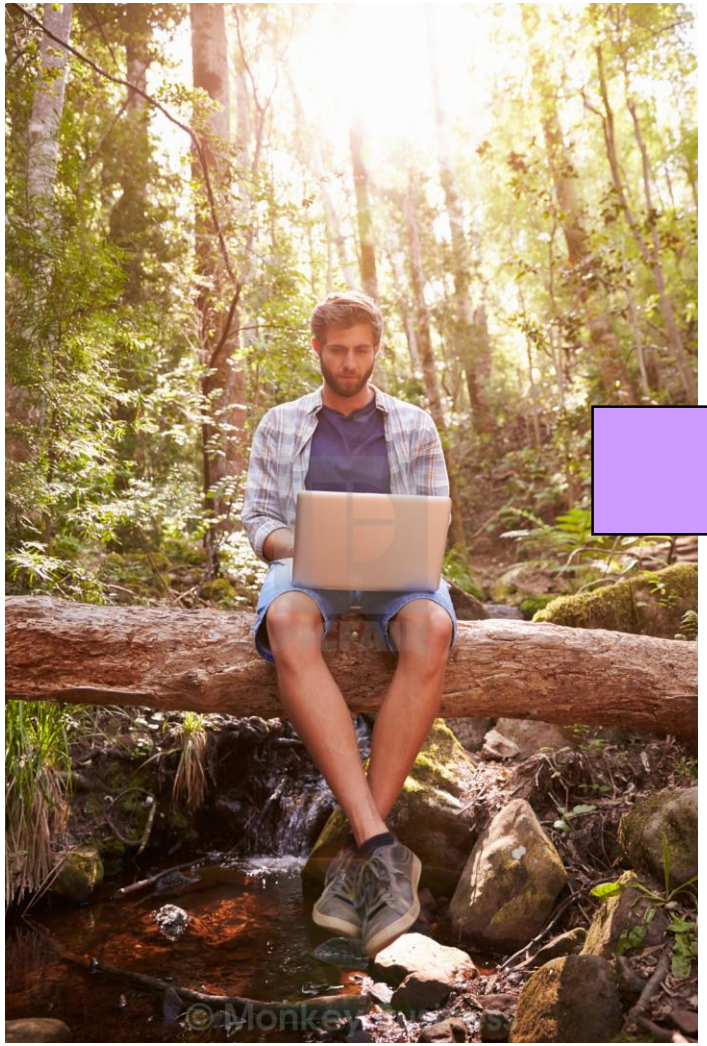
DANGER
DO NOT TOUCH
wrangle data
Data Analysis
Tidy data
Summarized data (ex. stats, figures)
Some form of communication about your data (ex. manuscript)
Analyze data
Contextualize data



sighting_id	observer_id	location_id	species_id	date	visual_recognition	audio_recognition
1	492	1	AMRO	2016-05-11 19:01:00	yes	no
2	492	1	EABL	2016-05-11 19:53:00	yes	no
3	213	2	DOWO	2016-05-16 16:27:00	yes	yes
4	492	3	AMGO	2016-05-17 06:55:00	yes	no
5	213	2	CLSW	2016-06-03 21:43:00	yes	no
6	213	2	GHOW	2016-06-03 22:24:00	no	yes
7	492	1	EABL	2016-06-06 18:28:00	yes	no
8	213	1	AMRO	2016-06-17 14:43:00	yes	yes
9	213	1	GBHE	2016-06-17 15:07:00	yes	no
10	213	1	PUFI	2016-06-17 15:45:00	yes	no
11	213	1	EABL	2016-06-17 16:00:00	yes	no
12	492	3	AMGO	2016-06-18 07:42:00	yes	no





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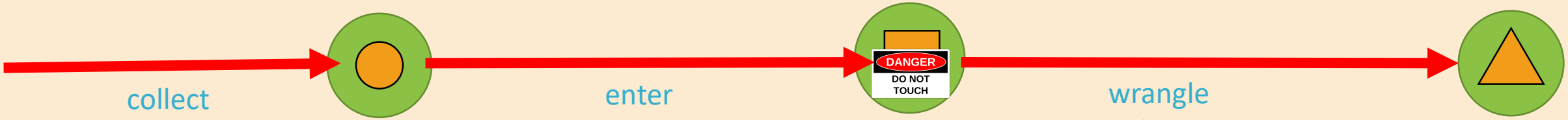
8	213	1	AMRO	2016-06-17 14:43:00	yes	yes
9	213	1	GBHE	2016-06-17 15:07:00	yes	no
10	213	1	PUFI	2016-06-17 15:45:00	yes	no
11	213	1	EABL	2016-06-17 16:00:00	yes	no
12	492	3	AMGO	2016-06-18 07:42:00	yes	no



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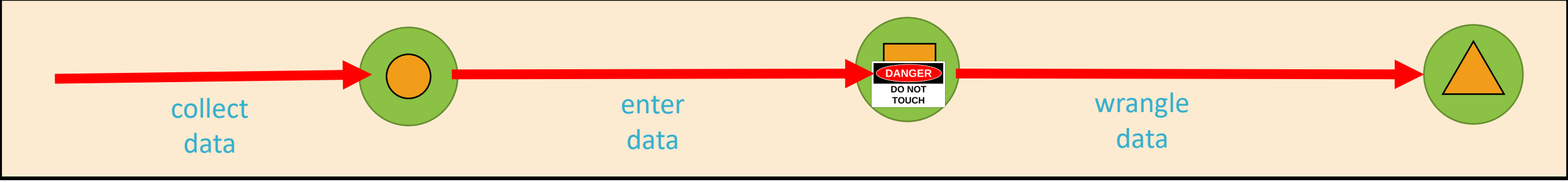
name	date	time	species	visual recognition	audio recognition

name	date	time	species	visual recognition	audio recognition



Page ___ of ___

Observer name:
Location of observations:
Date of observations:
Obs. notes:

Electronically entered by:
Date electronically entered:
Notes:

obs_nu	time	species	visual recognition	audio recognition	notes
1					
2					
3					
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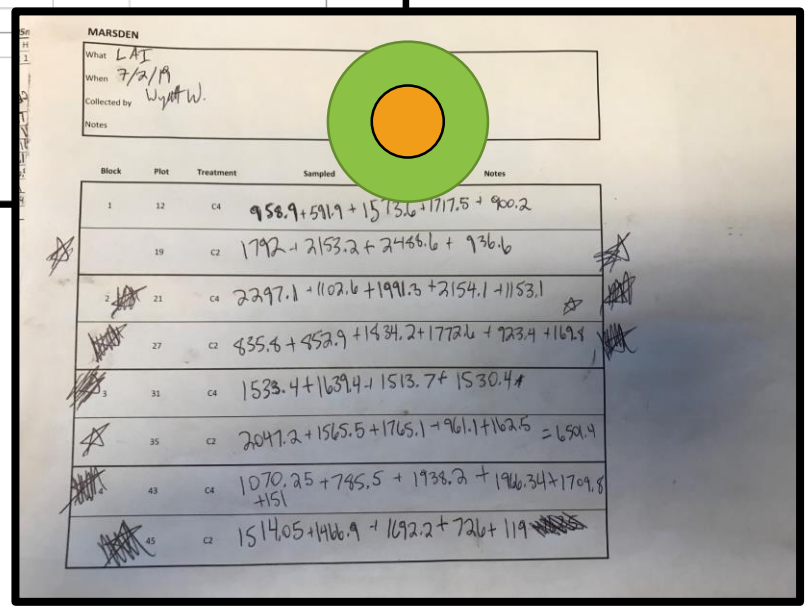
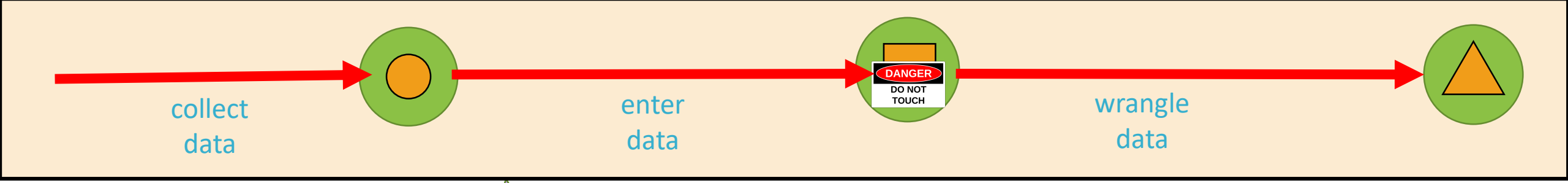
10					

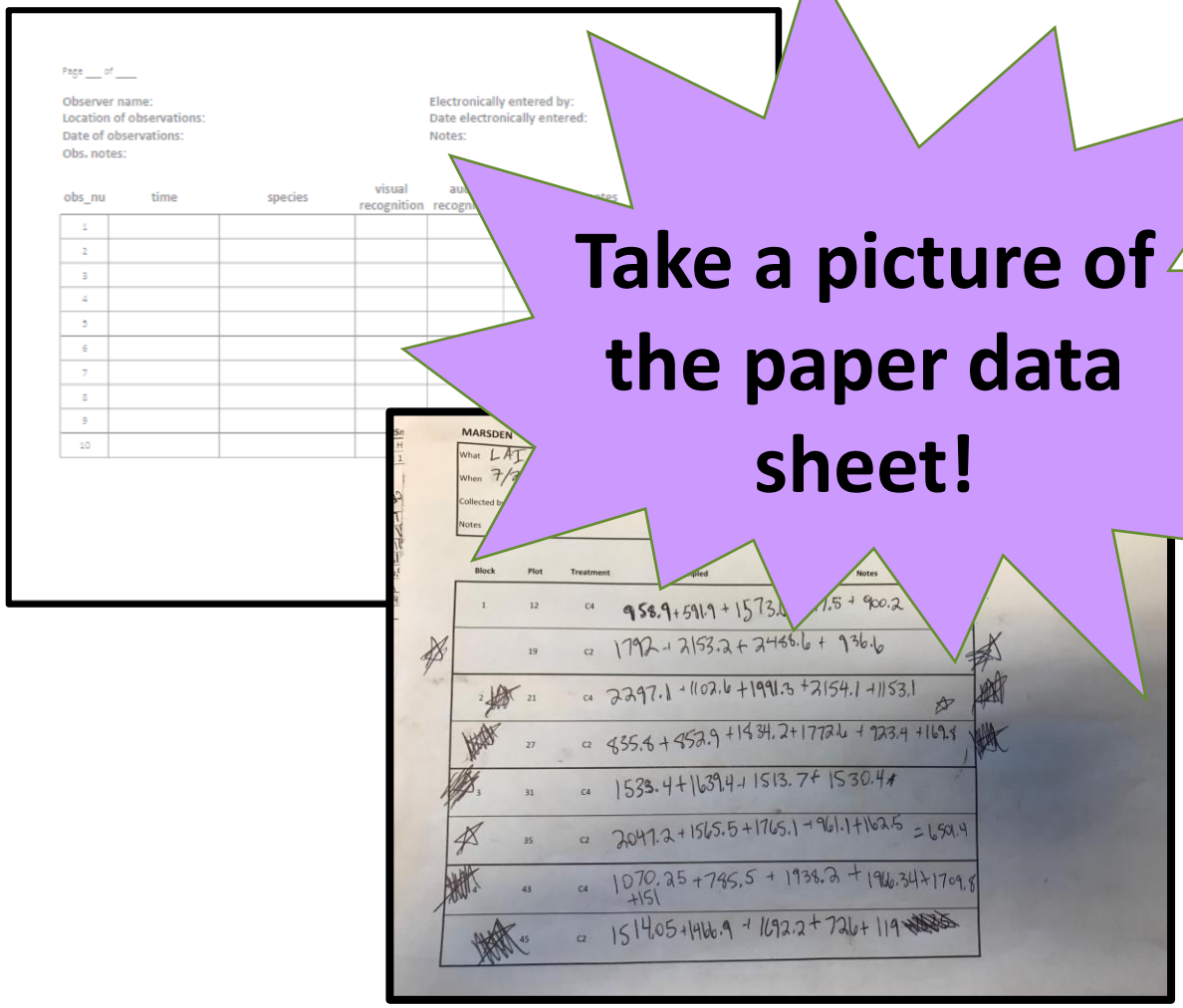


MARSDEN

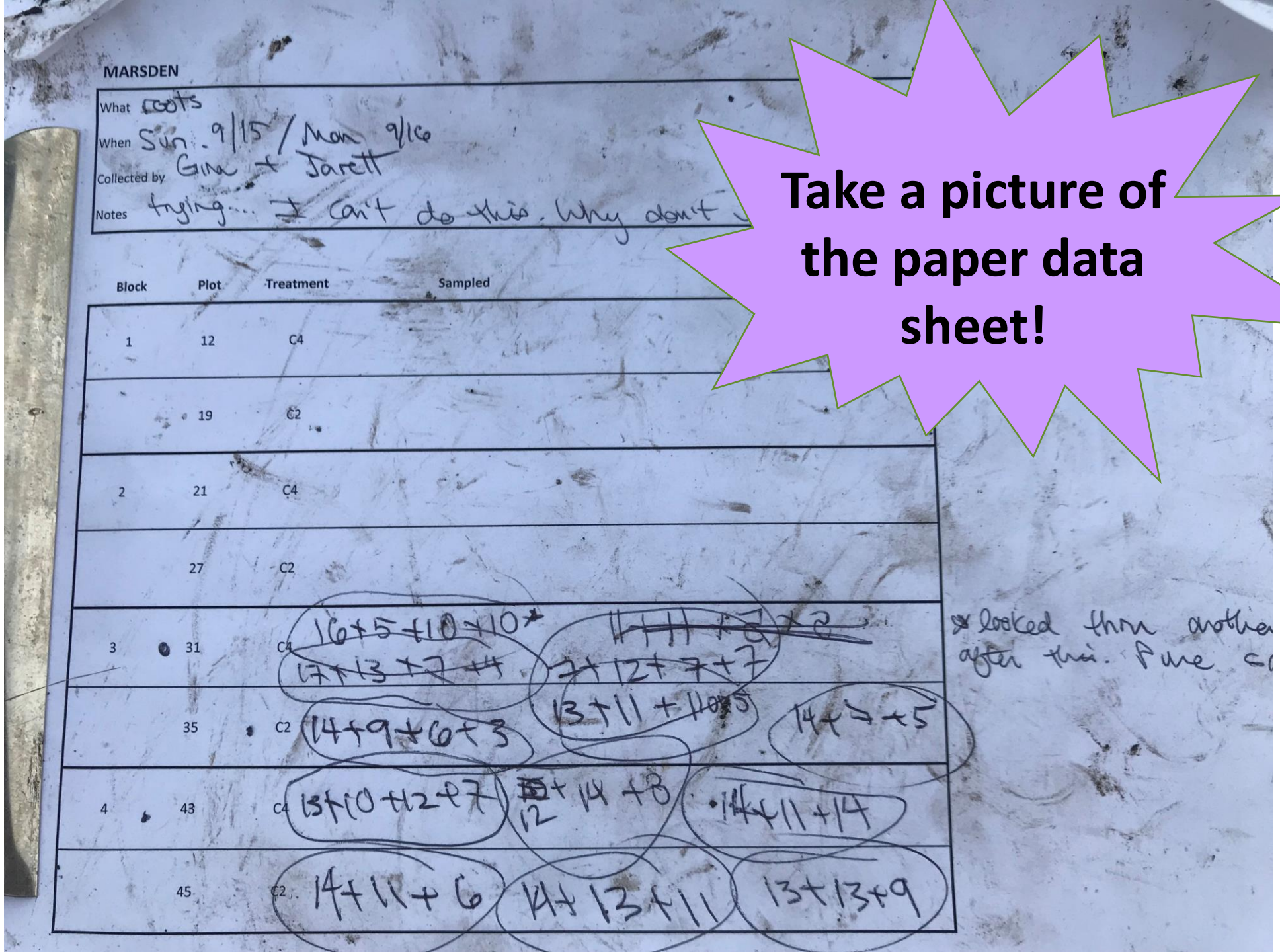
What LAI
When 7/2/19
Collected by Wyatt W.
Notes

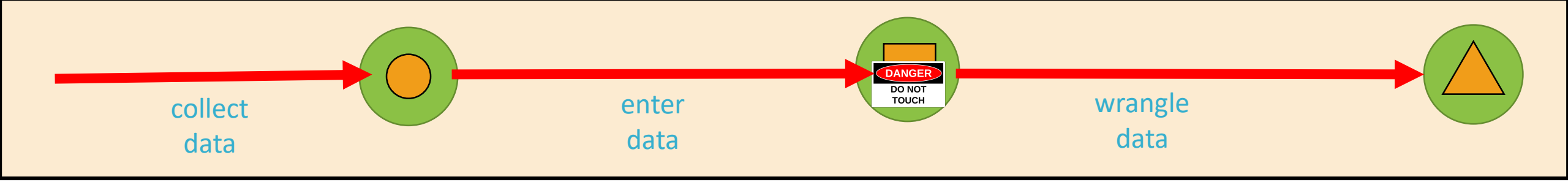
Block	Plot	Treatment	Sampled	Notes
1	12	C4	958.9+591.9+1573.6+1717.5+900.2	
	19	C2	1792+2153.2+2466.6+936.6	
2	21	C4	2797.1+1102.6+1991.3+2154.1+1153.1	
	27	C2	835.8+852.9+1434.2+1772.6+923.4+169.8	
3	31	C4	1533.4+1639.4+1513.7+1530.4	
	35	C2	2047.2+1565.5+1765.1+961.1+162.5=6501.4	
	43	C4	1070.25+785.5+1938.2+1966.34+1709.8+151	
	45	C2	1514.05+1466.9+1692.2+726+119	

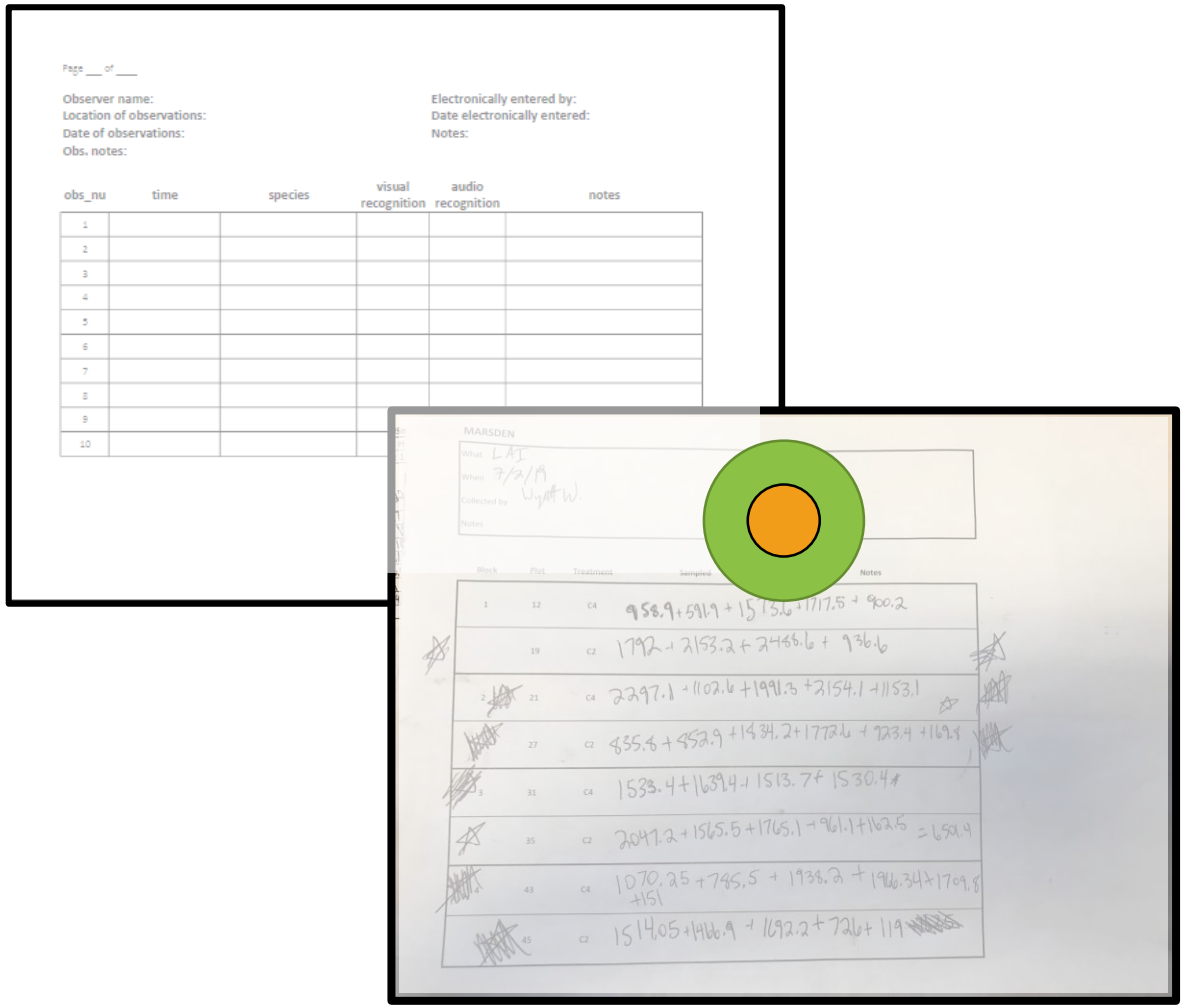




Take a picture of the paper data sheet!


MARSDEN
What roots
When Sun. 9/15 / Mon 9/16
Collected by Gina + Jarett
Notes trying... I can't do this. Why don't
Block Plot Treatment Sampled
1 12 C4
19 C2
2 21 C4
27 C2
3 31 C4
35 C2
4 43 C4
45 C2
Take a picture of the paper data sheet!





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Date of observations:
Obs. notes:

Electronically entered by:
Date electronically entered:
Notes:

obs_nu	time	species	visual recognition	audio recognition	notes
1					
2					
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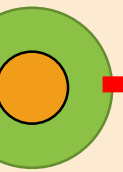
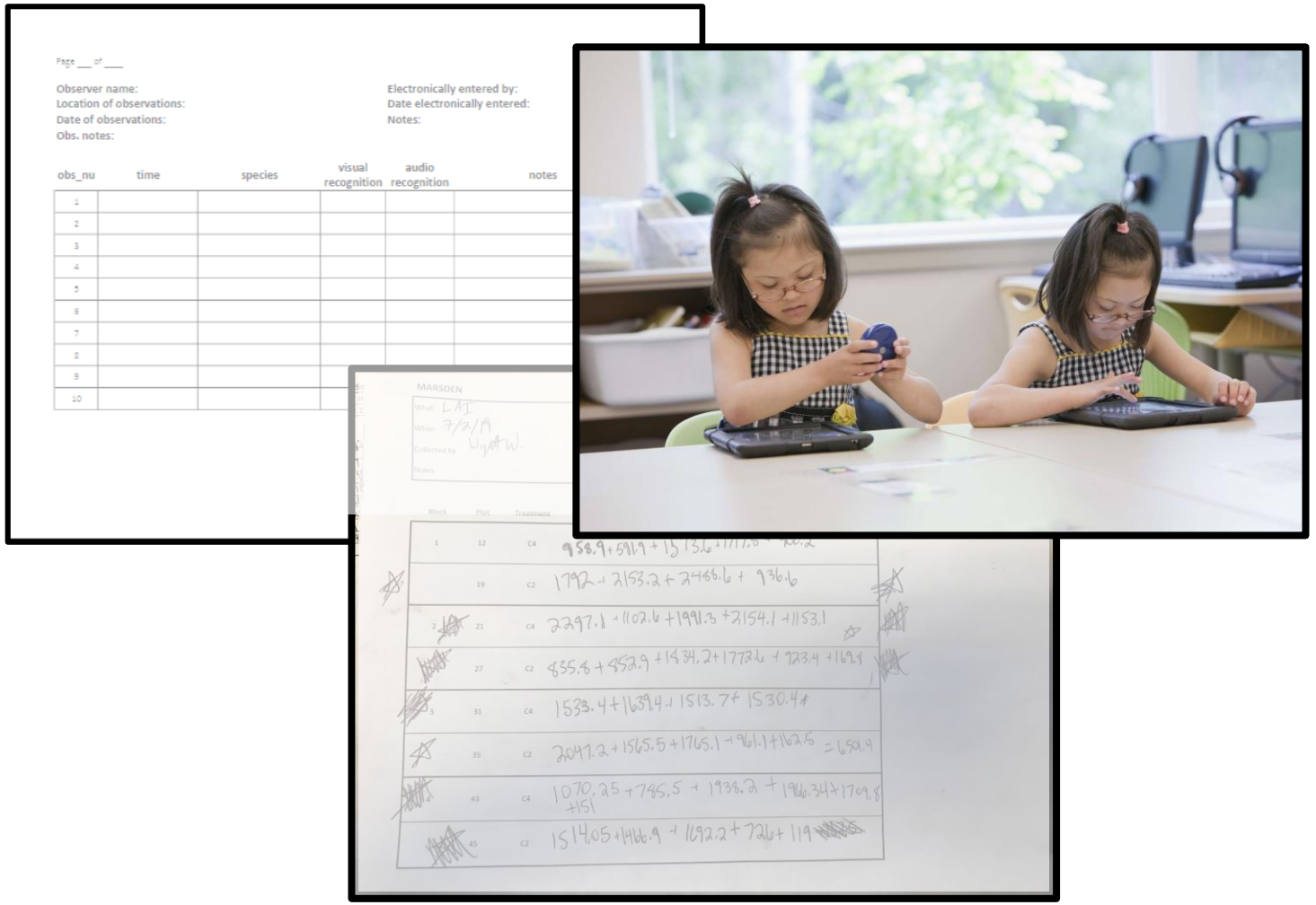
10					

collect data

enter data



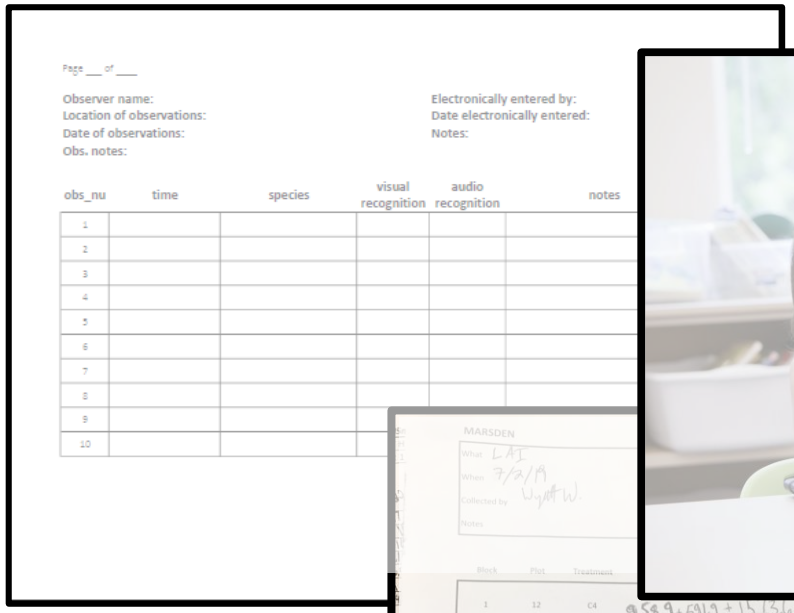
wrangle data



collect data

enter data

wrangle data



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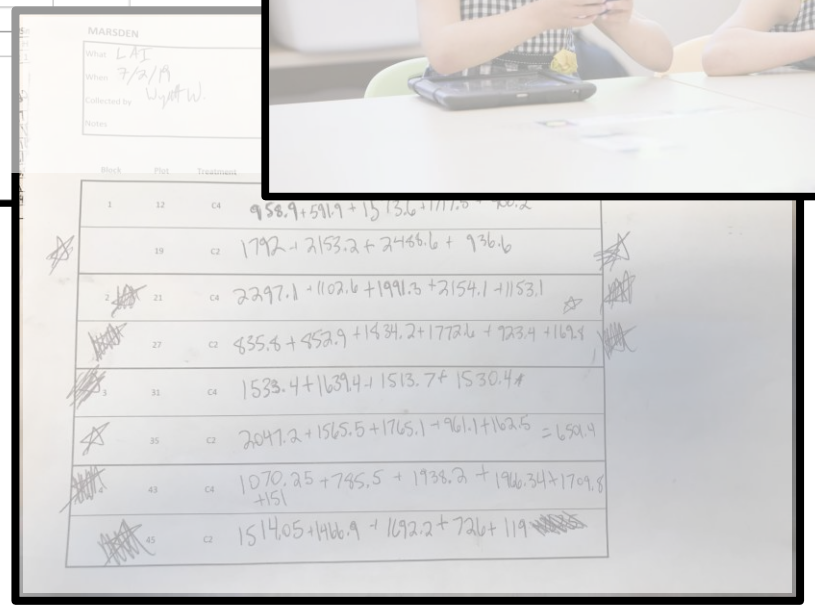

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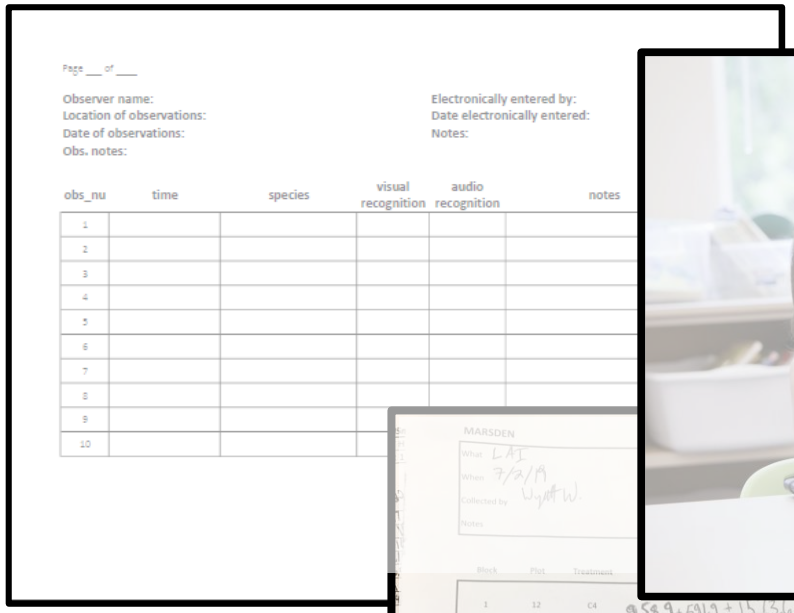
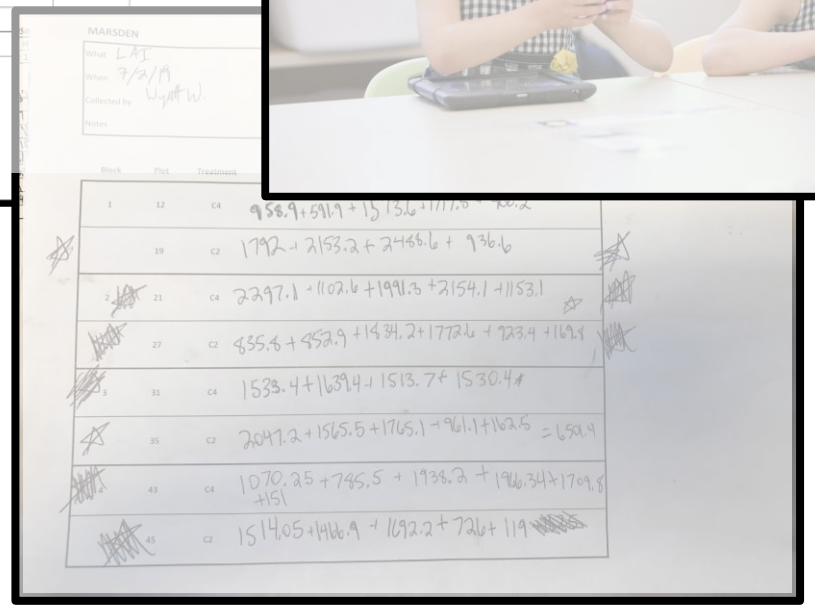
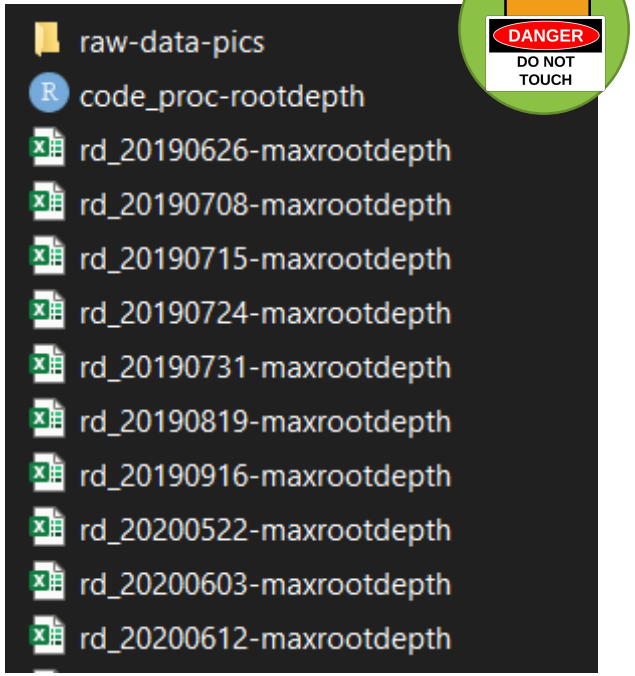




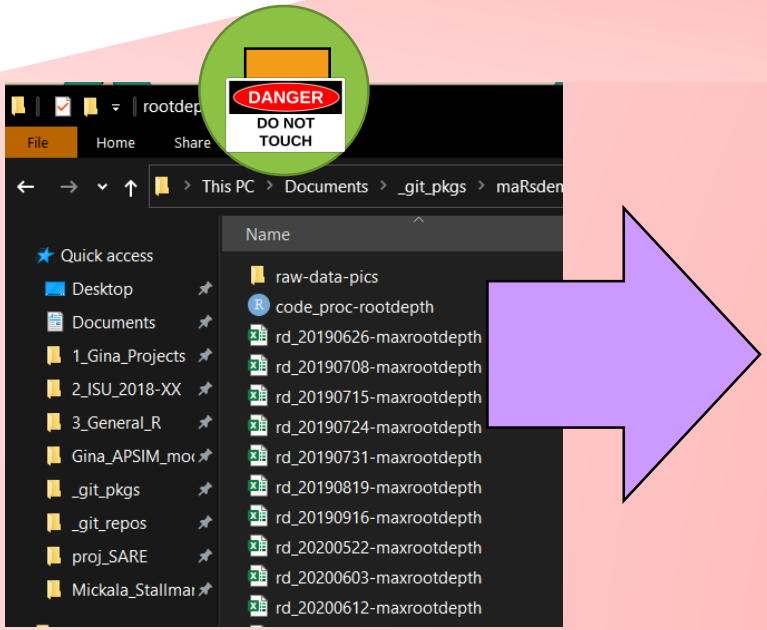


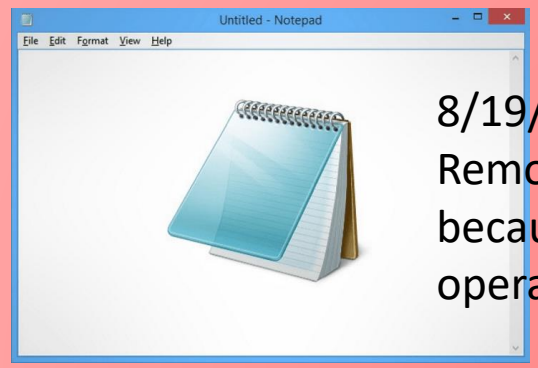
collect data

enter data

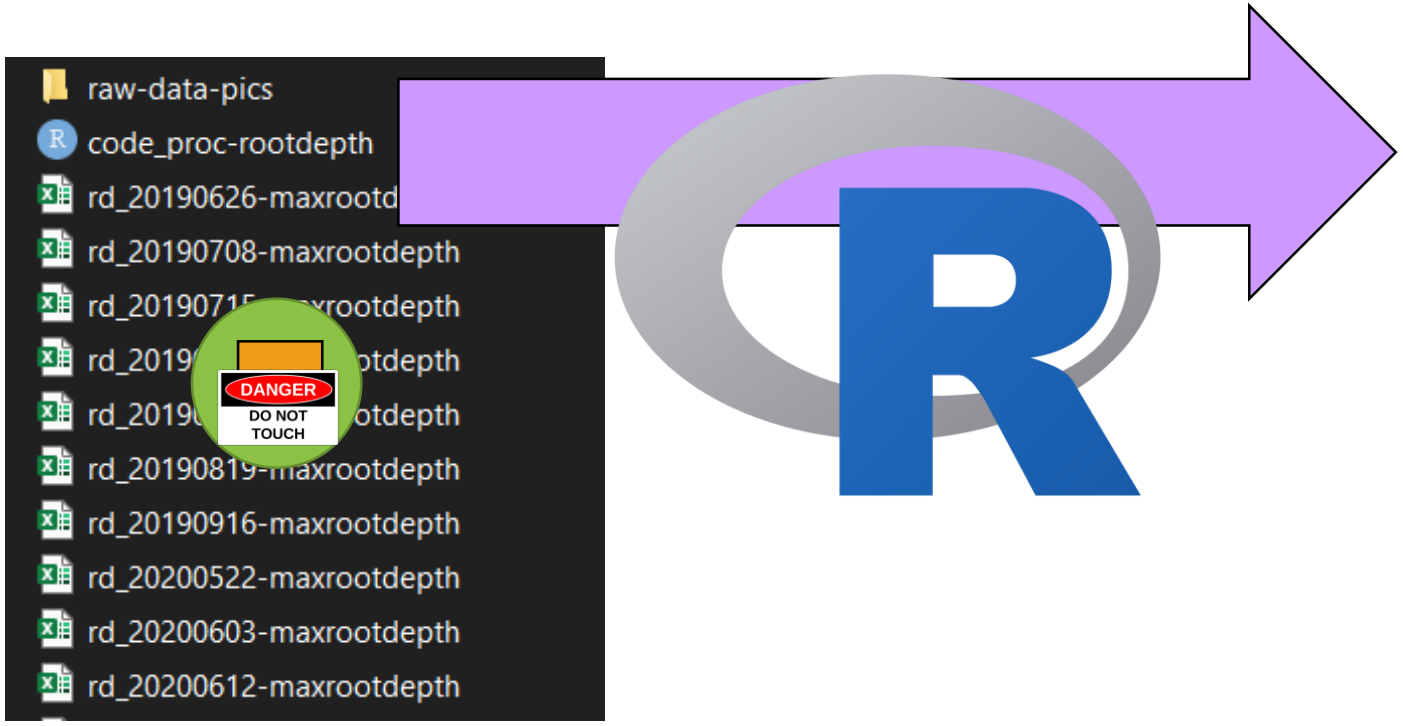
DANGER DO NOT TOUCH

wrangle data





8/19/1945
Removed obs 59 because machine operator sneezed


raw-data-pics
code_proc-rootdepth
rd_20190626-maxrootd
rd_20190708-maxrootdepth
rd_20190715-maxrootdepth
rd_20190819-maxrootdepth
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rd_20200603-maxrootdepth
rd_20200612-maxrootdepth
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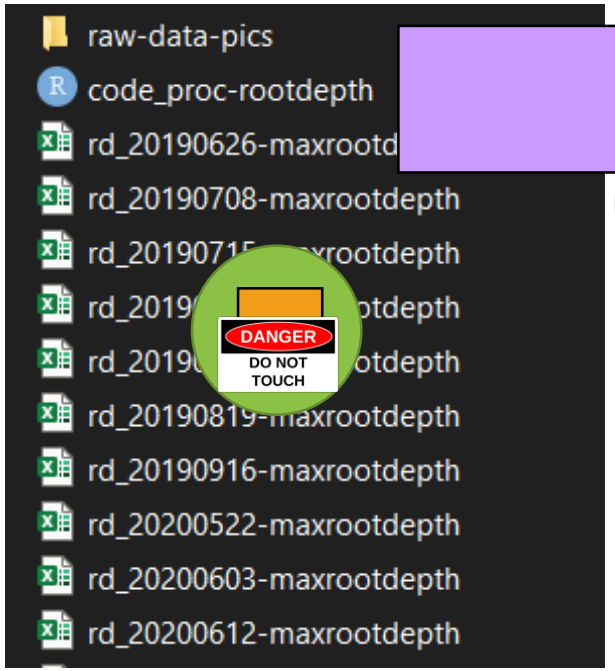

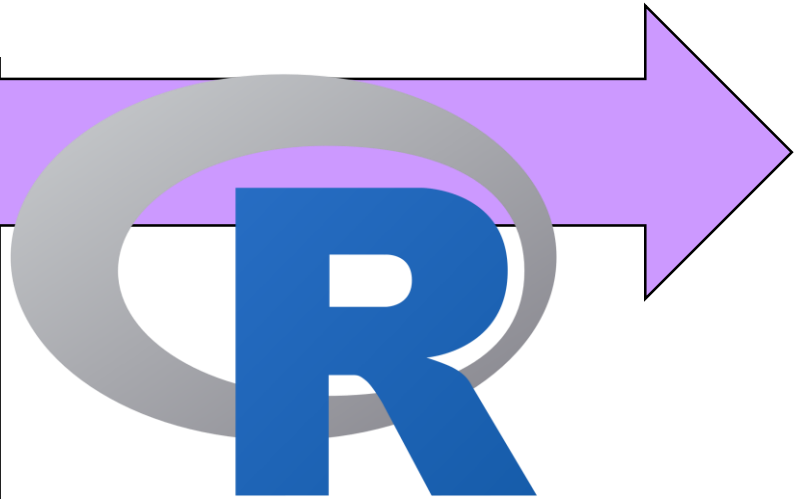

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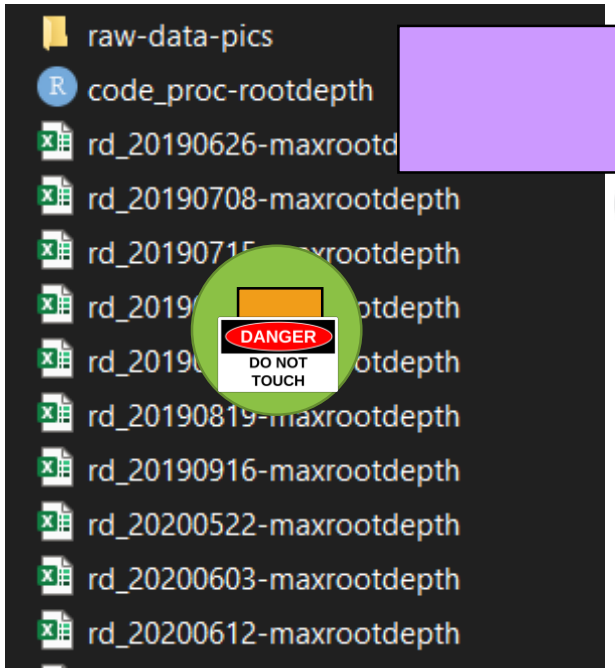
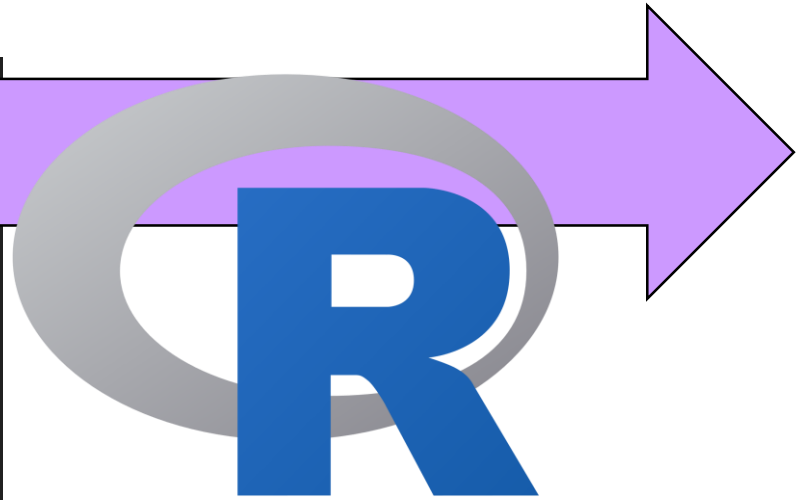
A1 year

	A	B	C	D	E	F	G
1	year	date	doy	plot_id	lai_cm2pl		
2	2018	6/1/2018	152	2018_13	382.2788		
3	2018	6/1/2018	152	2018_18	491.8917		
4	2018	6/1/2018	152	2018_24	648.4343		
5	2018	6/1/2018	152	2018_28	462.7012		
6	2018	6/1/2018	152	2018_34	291.1287		
7	2018	6/1/2018	152	2018_37	515.1943		
8	2018	6/1/2018	152	2018_44	487.1675		
9	2018	6/1/2018	152	2018_46	513.0775		
10	2018	6/18/2018	169	2018_13	3256.685		
11	2018	6/18/2018	169	2018_18	3542.381		
12	2018	6/18/2018	169	2018_24	3623.366		
13	2018	6/18/2018	169	2018_28	3533.6		
14	2018	6/18/2018	169	2018_34	2861.985		
15	2018	6/18/2018	169	2018_37	3814.048		
16	2018	6/18/2018	169	2018_44	2992.357		
17	2018	6/18/2018	169	2018_46	3467.939		
18	2018	7/3/2018	184	2018_13	NA		
19	2018	7/3/2018	184	2018_18	NA		
20	2018	7/3/2018	184	2018_24	NA		
21	2018	7/3/2018	184	2018_28	NA		
22	2018	7/3/2018	184	2018_34	NA		
23	2018	7/3/2018	184	2018_37	NA		
24	2018	7/3/2018	184	2018_44	NA		
25	2018	7/3/2018	184	2018_46	NA		
26	2018	7/17/2018	198	2018_13	4922.826		
27	2018	7/17/2018	198	2018_18	5395.206		
28	2018	7/17/2018	198	2018_24	6000.032		
29	2018	7/17/2018	198	2018_28	5214.014		

cornlai





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A1 year

	A	B	C	D	E	F	G
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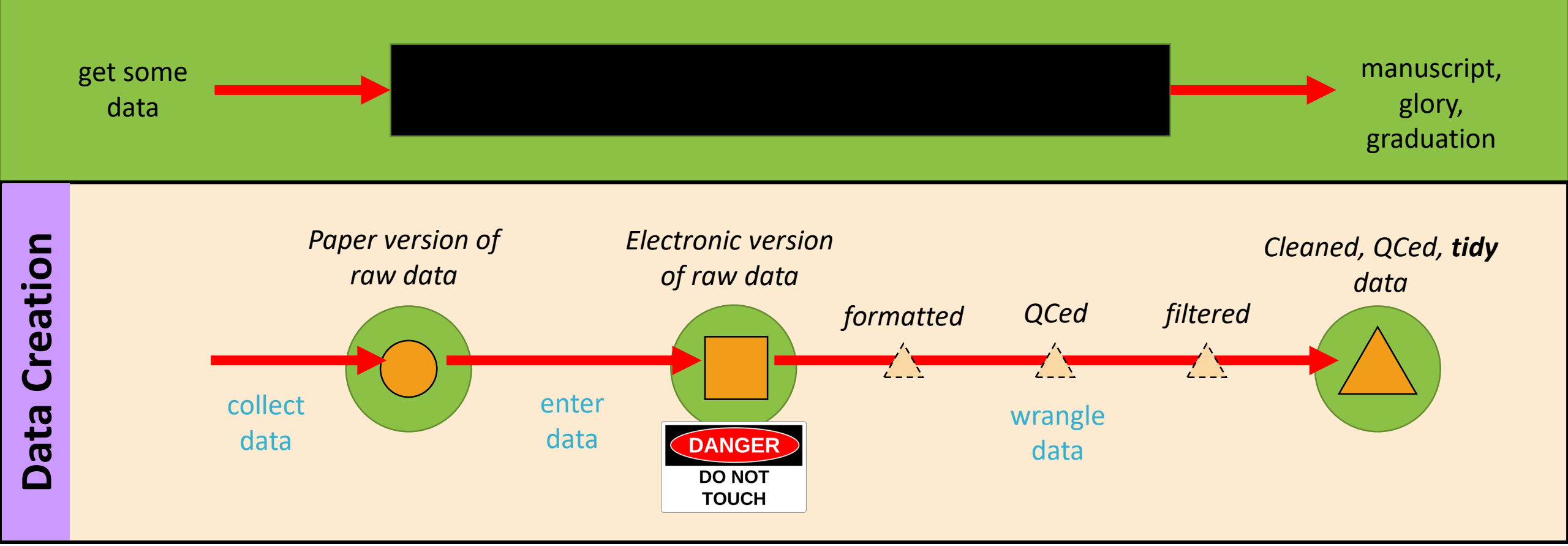
13	2018	6/18/2018	169	2018_28	3533.6		
14	2018	6/18/2018	169	2018_34	2861.985		
15		6/18/2018	169	2018_37			
	2018	6/18/2018	169	2018_44	2992.357		
17	2018	6/18/2018	169	2018_46	3467.939		
18	2018	7/3/2018	184	2018_13	NA		
19	2018	7/3/2018	184	2018_18	NA		
20	2018	7/3/2018	184	2018_24	NA		
21	2018	7/3/2018	184	2018_28	NA		
22	2018	7/3/2018	184	2018_34	NA		
23	2018	7/3/2018	184	2018_37	NA		
24	2018	7/3/2018	184	2018_44	NA		
25	2018	7/3/2018	184	2018_46	NA		
	2018	7/17/2018	198	2018_13	4922.826		
27		7/17/2018	198	2018_18			
28	2018	7/17/2018	198	2018_24	6000.032		
29	2018	7/17/2018	198	2018_28	5214.014		

cornlai


get some data
manuscript, glory, graduation
Data Creation
Paper version of raw data
Electronic version of raw data
Cleaned, QCed, tidy data
formatted
QCed
filtered
collect data
enter data
wrangle data
DANGER
DO NOT TOUCH

get some data

manuscript, glory, graduation

Data Creation

Paper version of raw data

Electronic version of raw data

formatted

QCed

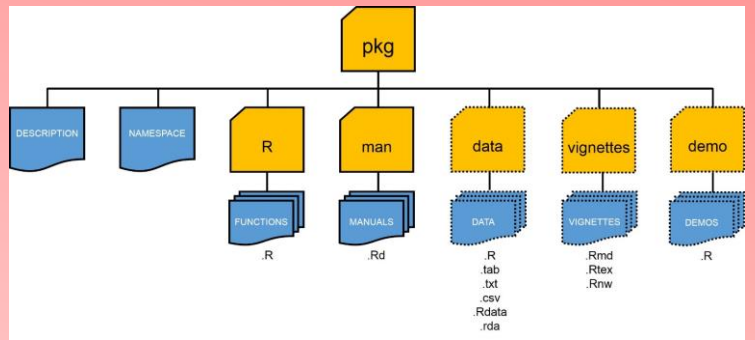
filtered

*Cleaned, QCed, **tidy** data*

collect data

enter data

wrangle data



get some data

[redacted]

manuscript, glory, graduation

Data Creation

Paper version of raw data

collect data

Electronic version of raw data

enter data

formatted

QCed

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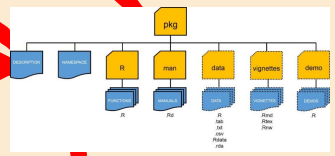
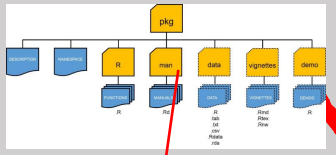
wrangle data

Cleaned, QCed, tidy format data



Data Analysis



Give to poor grad student taking up your project

Analyze data

Summarized data (ex. stats, figures)

Contextualize data

Some form of communication about your data (ex. manuscript)

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function | Addins | Project: (None)

Untitled1*

Source on Save | Run | Source

```
1 library(maRsden)
2 mrs
```

mrs_cornbio
mrs_cornbio_wo
mrs_cornlai
mrs_earrows
mrs_elevation
mrs_penetrom
mrs_phen
mrs_plotkey
mrs_residue

2:4 (Top Level) R Script

Console Terminal Jobs

~/

```
> 
> 
> 
> library(maRsden)
> 
```

Environment History Connections

Import Dataset | List

Global Environment

Environment is empty

Files Plots Packages Help Viewer

Zoom | Export

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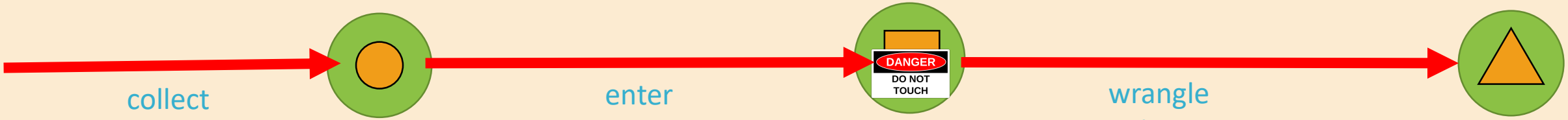
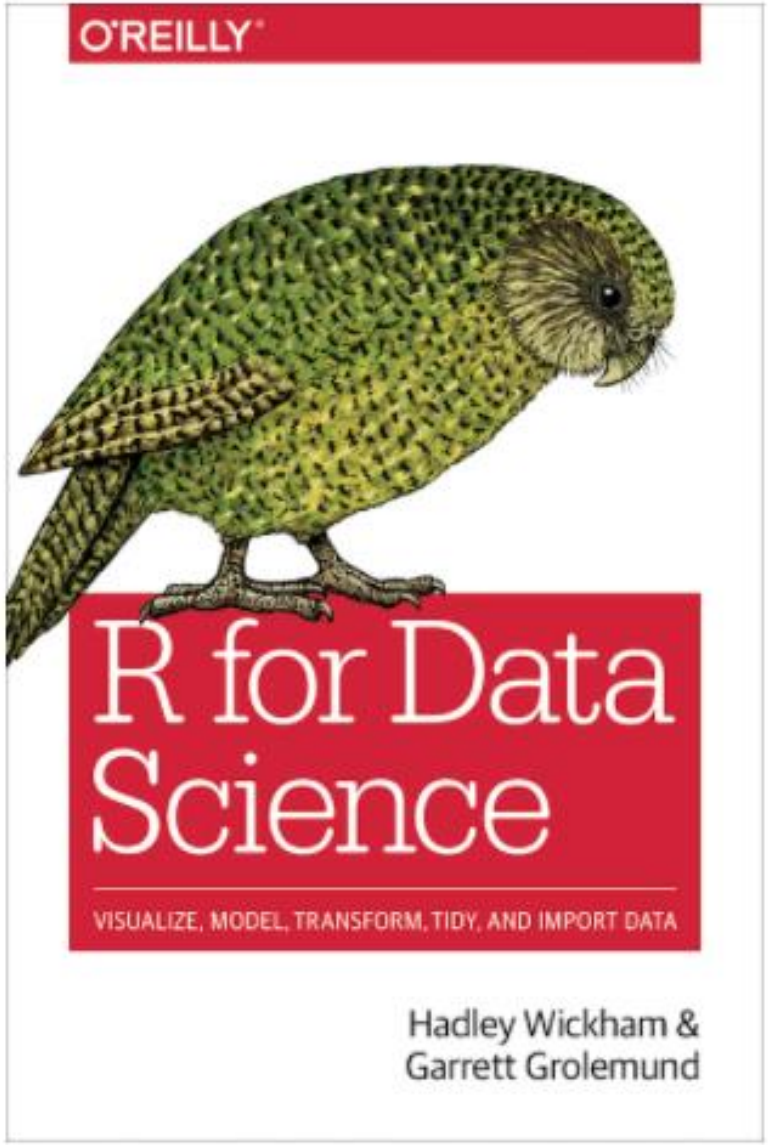


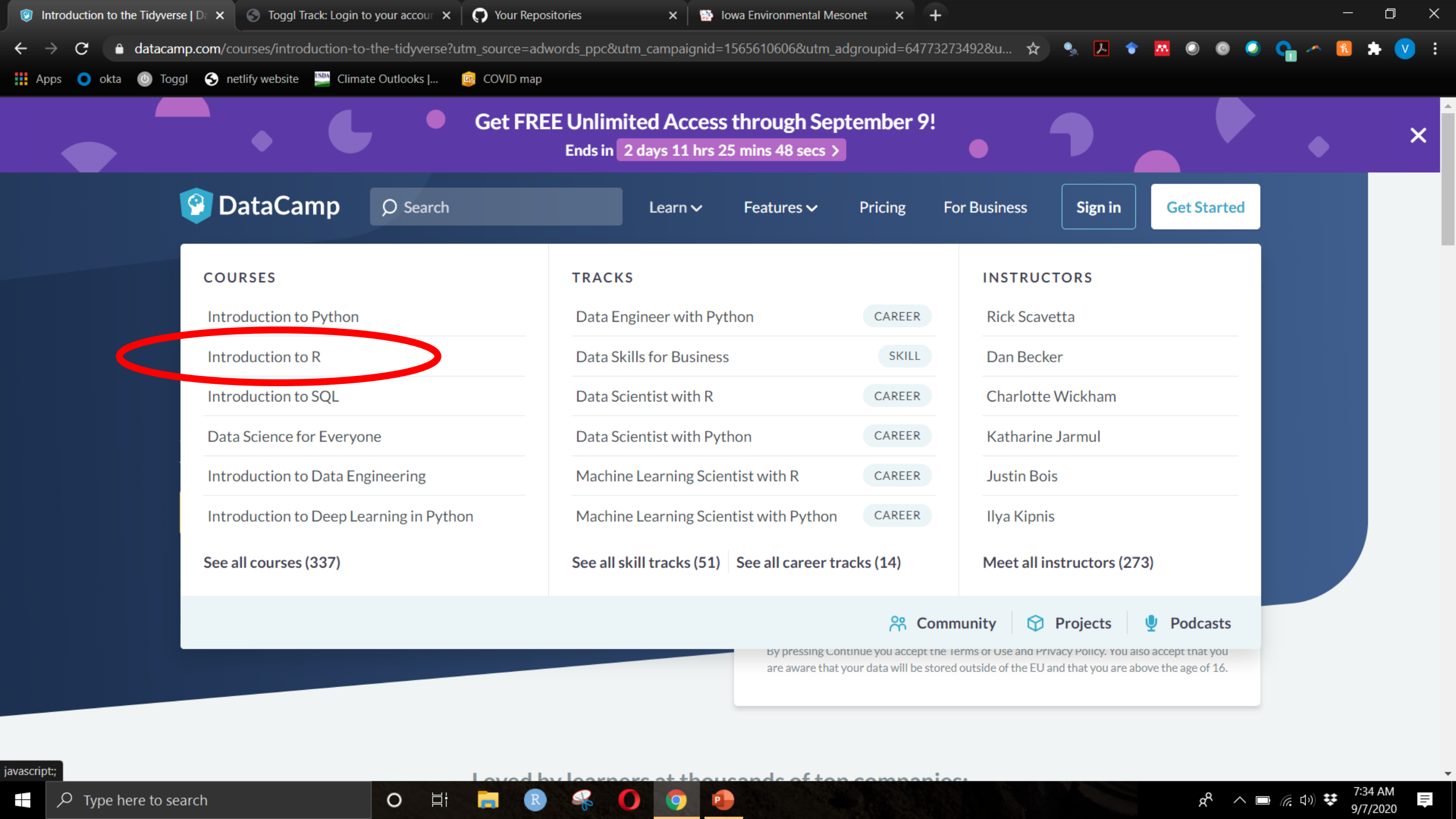
- Separate data collection and data analysis
- Consider publishing your data!
- Take pictures of paper copy of data
- Never touch the raw data
- Never touch the raw data
- If using Excel, consider learning R, but in the meantime keep a log of differences between raw data and tidy data

40 hours

- https://r4ds.had.co.nz/
- Stat579 (Intro to R and the tidyverse)
  - Every fall
- Stat585 (More advanced R, R packages)
  - Odd springs (spring 2021!)

- DataFEWSion program…?
- DataCamp

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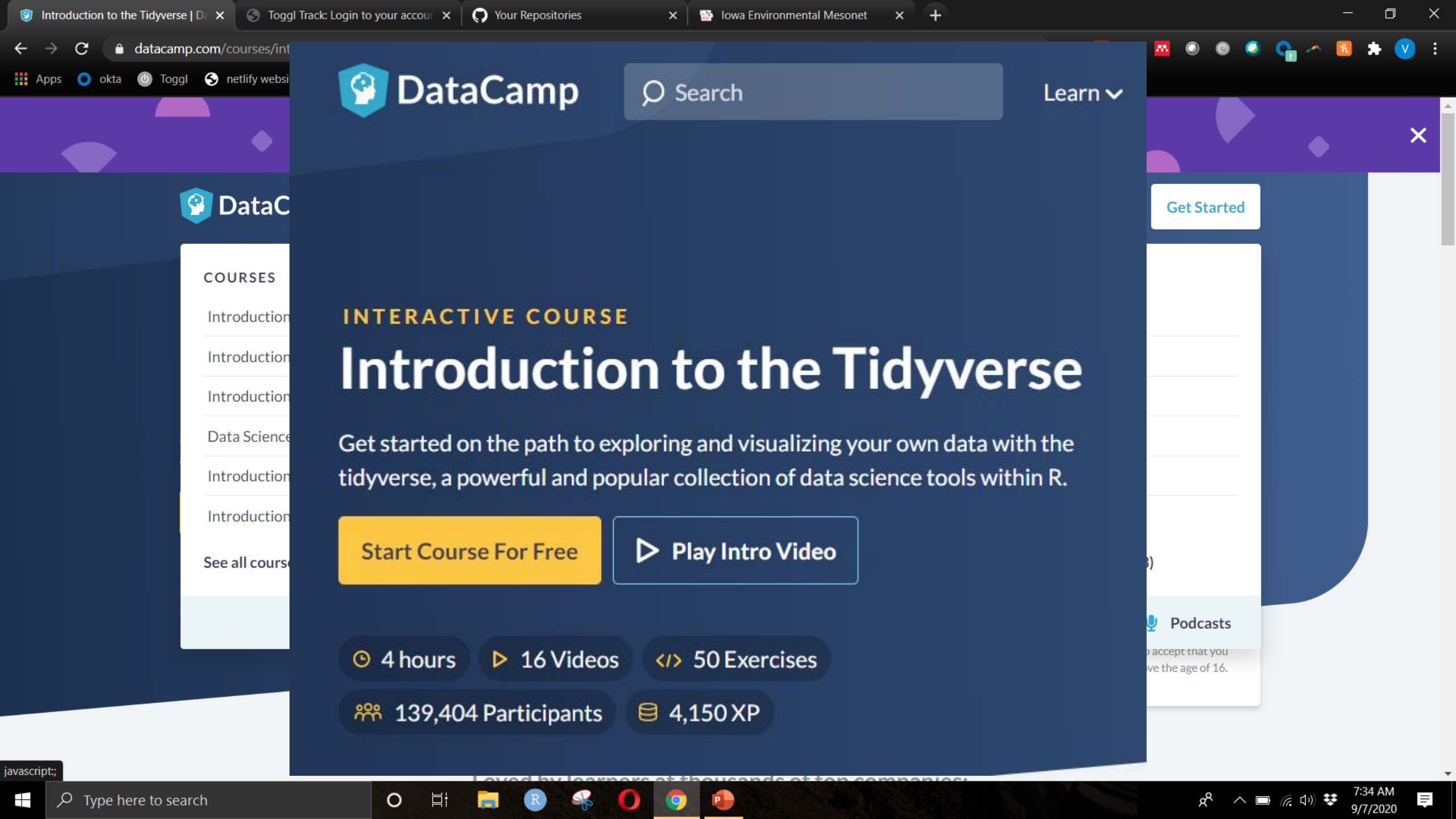
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