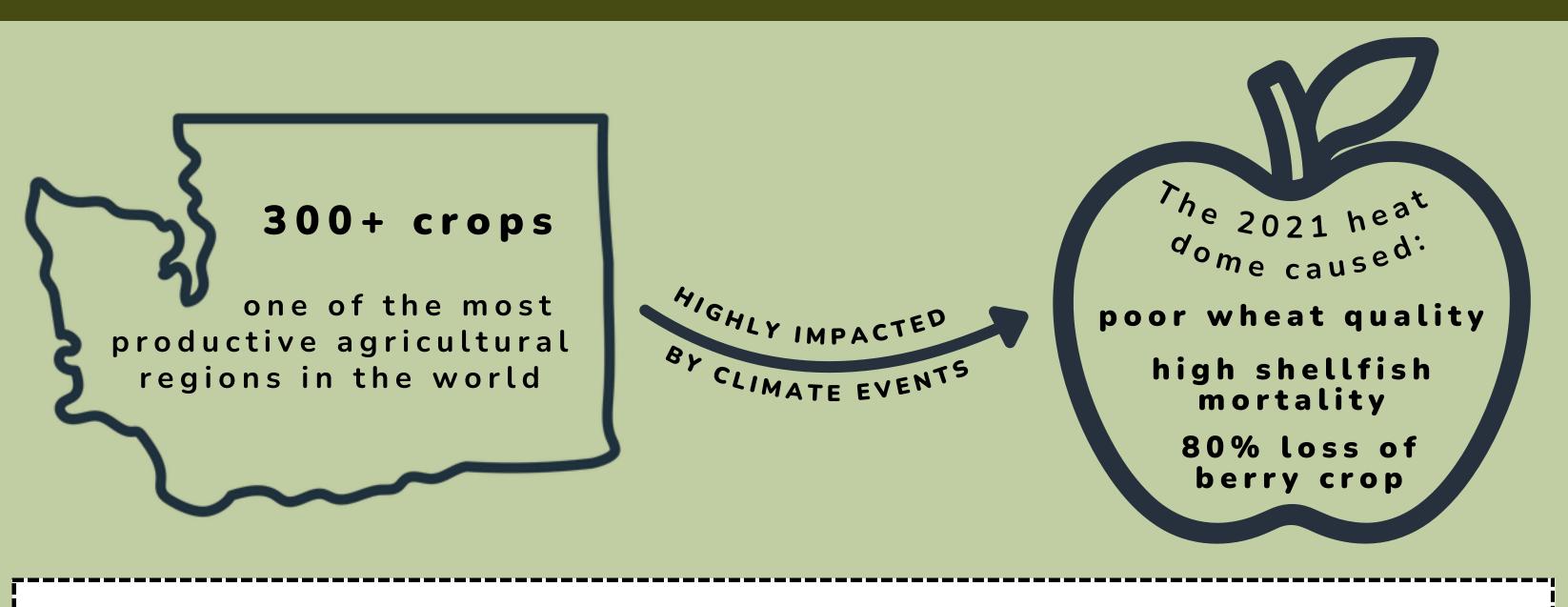
PROOF-OF-CONCEPT SOCIAL SENSOR TO DETECT CLIMATE CHANGE IMPACTS ON THE WASHINGTON STATE FOOD SYSTEM

GUIDING QUESTION

Can social sensors be used to detect the effects of climate change on a food system?

PROBLEM & GOAL



A "social sensor" analyzes impacts on using social activity.

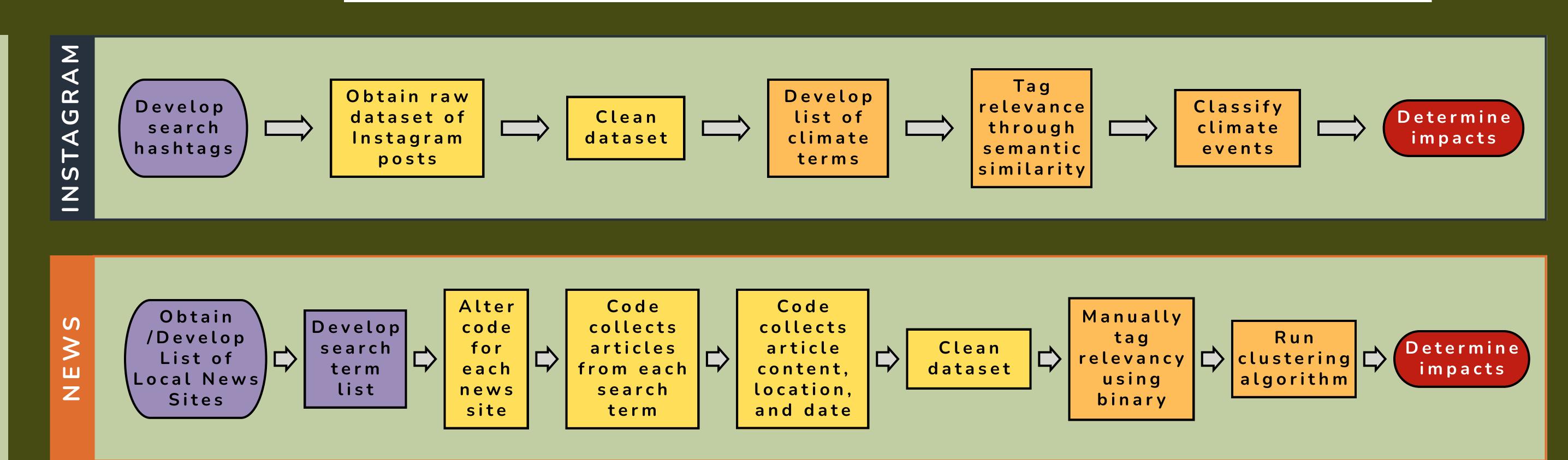
Currently, there is **little to no established framework** for systematically collecting or analyzing such data.

100 data

points

collected

GENERAL PROCESS FLOW



WHERE CAN DATA BE FOUND?

Chose three climate events, collected general search:

- Snoqualmie Valley Flood
- Pearl Hill Fire
- 2021 Heat Dome

Categorized information sources for ranking

	Accessibility	Representation	from stance Source	*s O	Sample Size	4ccuracy	Sum
Weight	35	20	10	3	15	17	100
Instagram	3	2	5	5	5	2	319
Local News Outlets	3	3	4	3	5	4	357
Major News Outlets	3	2	3	4	2	5	302
Social Media (all)	3	3	5	3	5	1	316

DATA SOURCE WEIGHT-AND-RANK MATRIX

Special thanks to Patricia
Buchanan, Sarah Collier,
Christina Mastrangelo, Jennifer
Otten, and Marie Spiker!

SCHOOL OF PUBLIC HEALTH UNIVERSITY of WASHINGTON

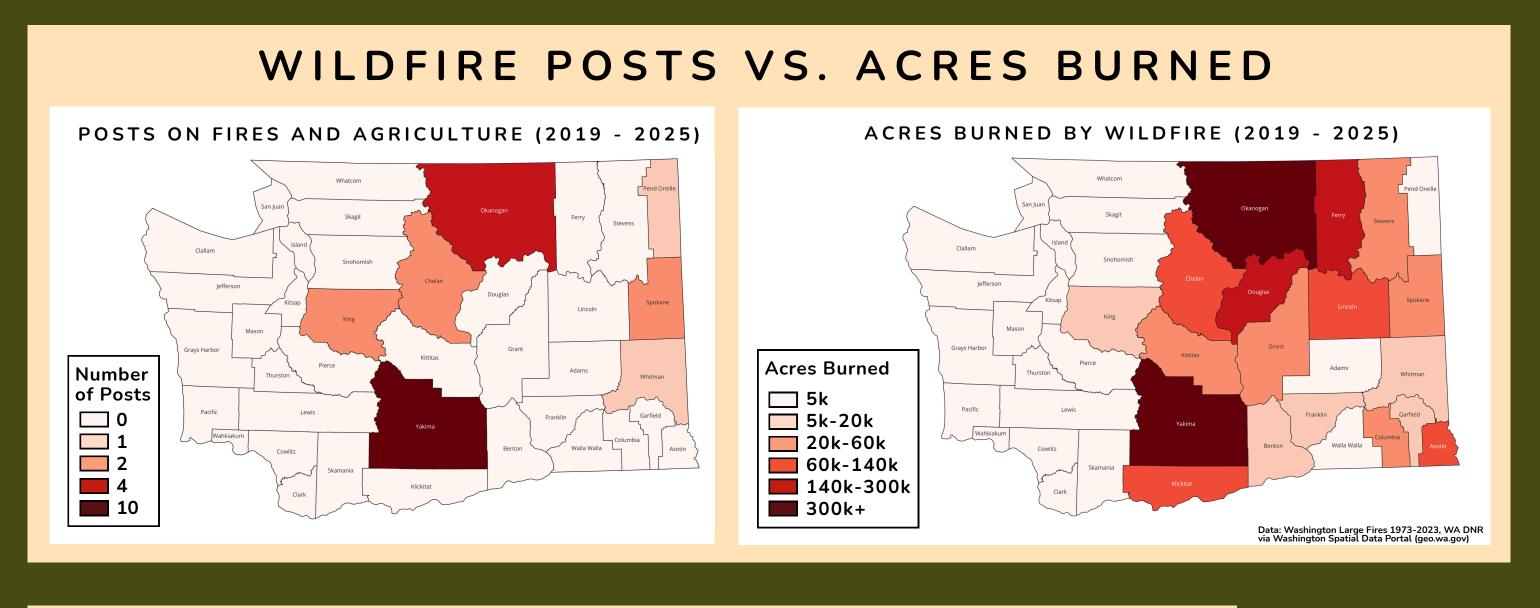
INDUSTRIAL & SYSTEMS ENGINEERING
UNIVERSITY of WASHINGTON

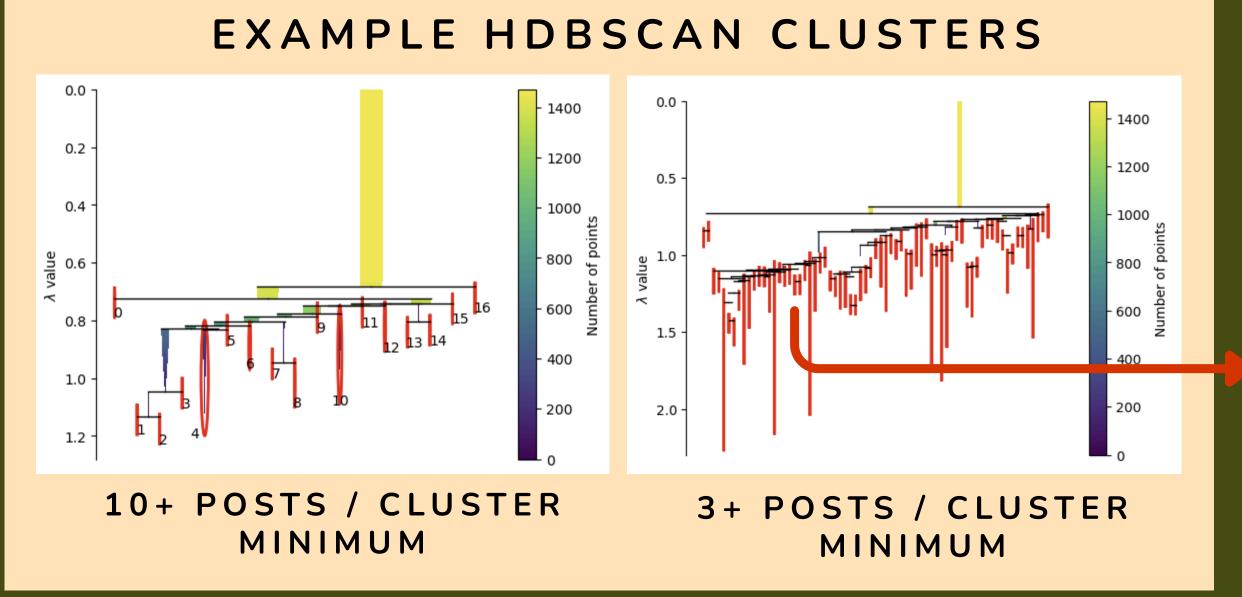
HOW IS THE DATA COLLECTED?

COLLECTION METHOD WEIGHT-AND-RANK MATRIX										
	Cost	Ease of Use	Amount of Data Collected	Data Sources Accessed	Speed of Retrieval	Robustness of Output	Sum			
Weight	20	20	25	5	10	20	100			
Apify	4	5	5	5	5	4	460			
ProQuest TDM	5	3	5	2	2	4	395			
Python Scraper	5	2	3	3	3	5	360			

DATA COLLECTED DISTRIBUTION OF DATA OVER TIME String 1500 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000

HOW IS THE DATA ANALYZED?





TF IDF KMeans

SBERT KMeans

'Shocking and sobering': Washington's heat wave scorched shellfish, but total losses are still unclear

Labor shortages, heat bring tough tides for WA shellfish farm

Shellfish Growers are Feeling Climate Change's Effects Now

Small fish, big barriers: A county confronts climate change

Shellfish farmers line up for disaster aid after
heat wave decimates oysters and clams

WHAT IS THE FUTURE OF SOCIAL SENSORS?

- As a proof-of-concept, future research could expand this work
- Replication on greater scale
- Inclusion of images
- Larger number of sources

A future social sensor could detect climate events and understand the ongoing impact on the food systems.