A Dataset of Sustainable Diet Arguments on Twitter

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Sustainable diets

"Transformation to healthy diets by 2050 will require substantial dietary shifts. Global consumption of fruits, vegetables, nuts and legumes will have to double, and consumption of foods such as red meat and sugar will have to be reduced by more than 50%. A diet rich in **plant-based** foods and with fewer animal source foods confers both improved health and **environmental** benefits."
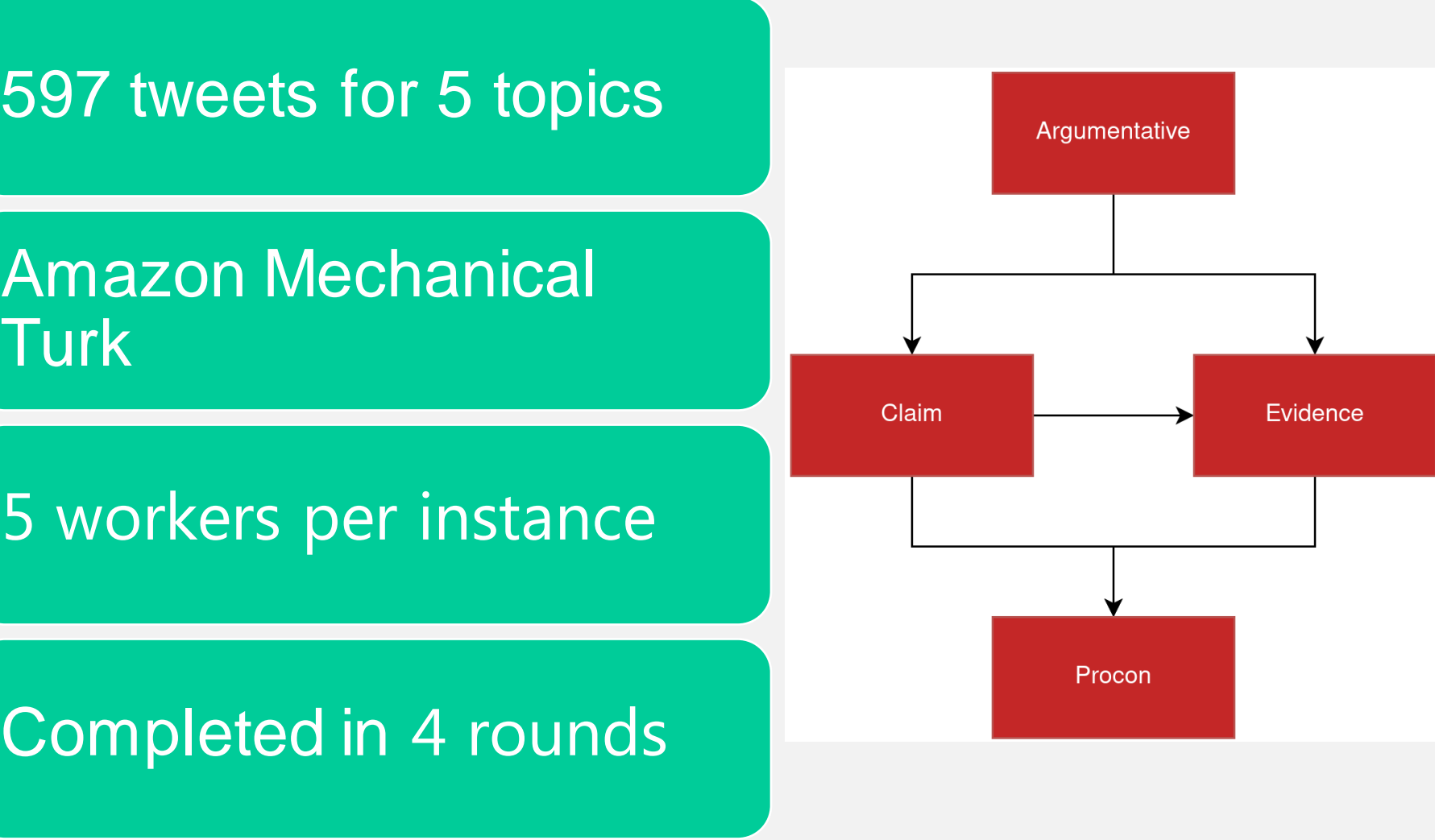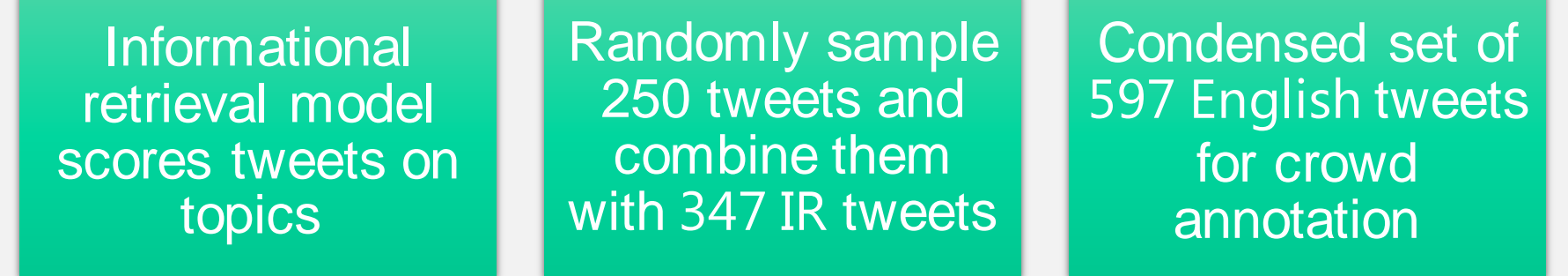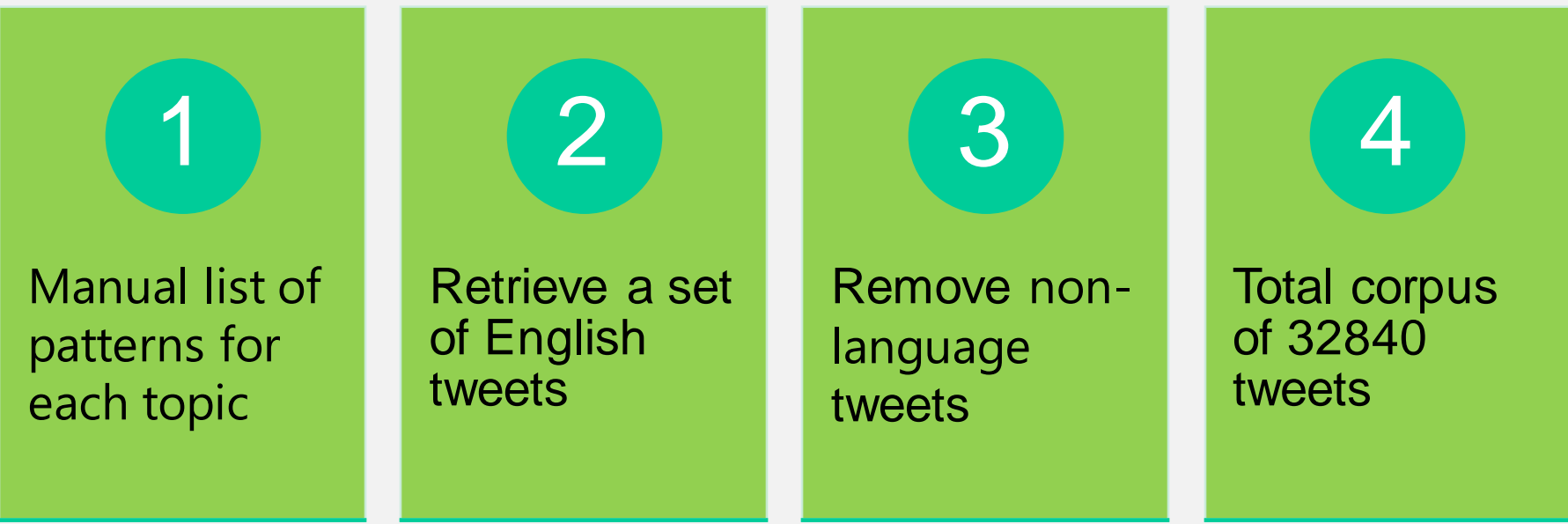
https://eatforum.org/

Hard to change
- Perceptions of taste
- Knowledge and skills
- Cultural and social norms

Existing interventions
- Communication campaigns
- Nudging and convenience
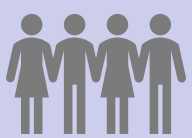- Supporting producers and retail

Data Collection and Annotation

1 Manual list of patterns for each topic

2 Retrieve a set of English tweets

3 Remove non-language tweets

4 Total corpus of 32840 tweets

Informational retrieval model scores tweets on topics

Randomly sample 250 tweets and combine them with 347 IR tweets

Condensed set of 597 English tweets for crowd annotation

597 tweets for 5 topics

Amazon Mechanical Turk

5 workers per instance

Completed in 4 rounds

Argumentative → Claim → Evidence → Procon

	Tweets	Arg
	597	387

Topic – a short, usually controversial statement that defines the subject of interest; it is **clear** and **dividing** where claim and evidence have a **clear stance** towards it.

Can AI convince consumers of diverse backgrounds to change their habitual behavior?

What characterizes successful arguments for behavior change in public discourse?

Argumentative - text contains argumentative structures such as claims or evidence while having a clear stance towards a topic

Claim – a standpoint towards the discussed topic implicitly or explicitly

Evidence - statement used to support or attack a topic or claim

Pro/con - the stance of a claim or the evidence towards the discussed topic
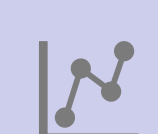
Types of evidence

Anecdotal: A description of an episode(s), centered on individual(s) or clearly located in place and/or in time.

Expert: Testimony by a person, group, committee, an organization with some known expertise/authority on the topic

Study: Results of a quantitative analysis of data, given as numbers, or as conclusions.

Fact: A known piece of information without a clear source, regardless of whether it is a *true* fact or not.

Normative: Description of a belief or value the author holds.

Results summary

XGBoost is a strong starting point for argument mining

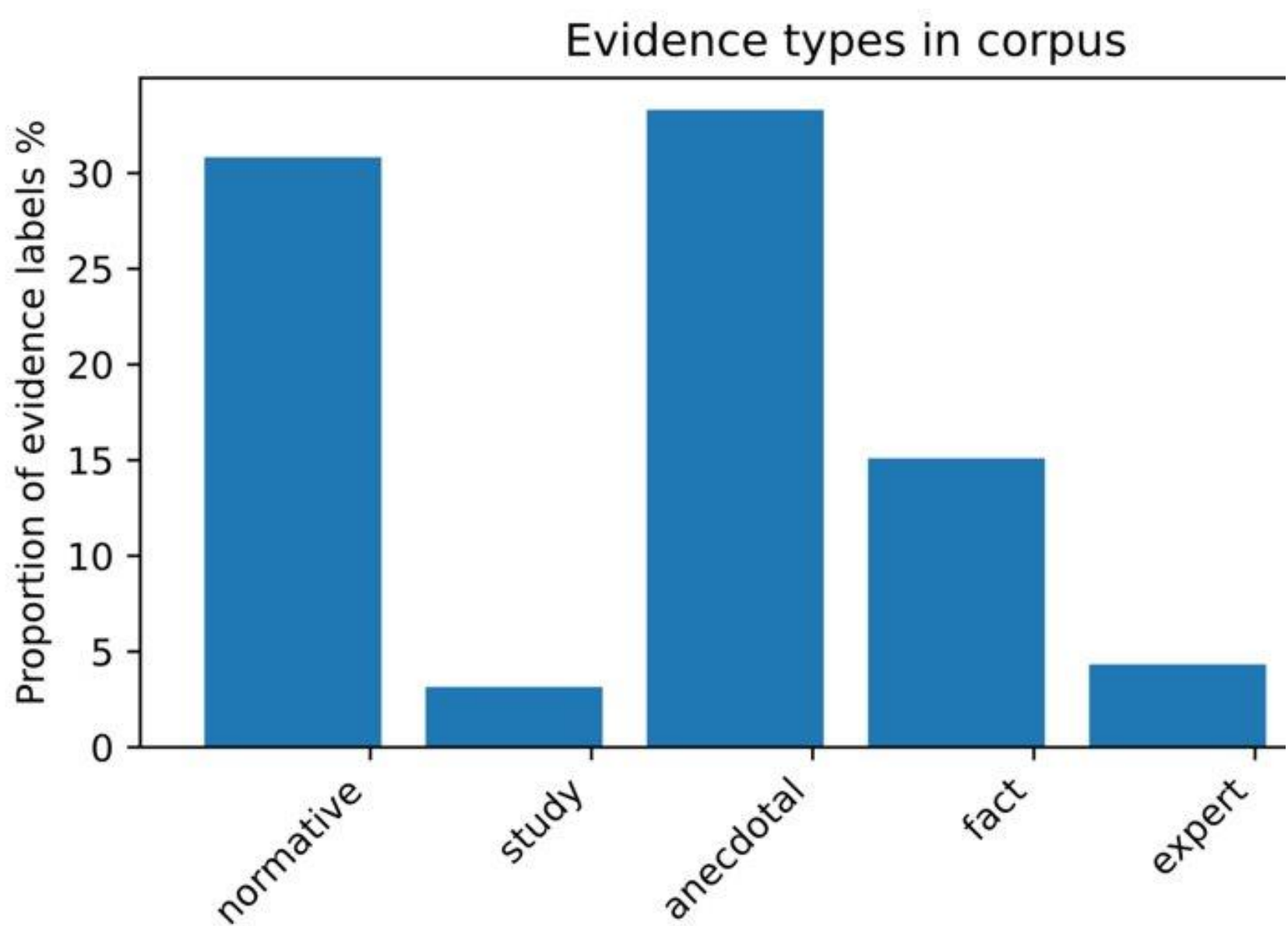IBM Debater API a robust zero-shot model for argumentation tasks

Potential applications

Surveying public attitudes and exposing misinformation

Generation of convincing arguments for communication campaigns

Understanding public knowledge of sustainable diets

Examples

Lol - and the wash post is the PR firm and Whole Foods is the official food supplier

Not argumentative

Topic: T5 (*We should pursue policies that promote sustainable foods*). Tweet: *It would also be nice if our government could begin subsidizing more sustainable options (like plant based meat) vs things like beef but... i digress*

Pro claim + normative evidence

Topic: T2 (*Plant based food should be encouraged*). Tweet: *Green taxes go into subsidizing development and production of green energy solutions. If we were on 100% renewables, our electricity prices would not have needed to go up. We need to move into self-sufficient green energy as soon as possible*

Argumentative but unrelated

Topic: T1 (*We should reduce the consumption of meat*). Tweet: *Yes but to be fair: we can expect a massive increase in meat and dairy consumption in emerging countries that will severely limit the impact of whatever we do.*

Con claim + normative evidence

We are on the green bean diet here, too! I love them. Mom hasn't tried broccoli 😱

Many fruit & veg (which contain natural acid) don't trigger flare ups- The list is long and varied (obs this may not apply to you) but after a little digging I found some doctors do reccomend a plant based diet to ease the inflammation. Going meatless is even recommended by ICA

According to a 2022 study, eating an optimal #diet of whole grains, legumes, fish, fruits, vegetables and nuts can improve life expectancy by how many years?

Hey eco-friendlies! The well known high-carbon company McDonalds produces 1.5 MILLION tonnes of food packaging alone 🙁! Fun fact carbon footprints are important! Tune in for more behind closed door stats!

The dangerous of this thing is that our vegan extremists will start interfering in this..

Unrelated/no evidence *Give your children healthy food to avoid the dad bod haha*

Evidence types in corpus

Bar chart: Proportion of evidence labels % by evidence type — normative ~31, study ~3, anecdotal ~33, fact ~15, expert ~4.

Statistics

ADUs		Claims	Evidence	Claims with evidence	Pro	Con
We should reduce the consumption of meat	118	63	89	34	77	37
Plant based food should be encouraged	130	92	85	47	89	38
Meat alternatives should be encouraged	85	42	63	20	58	27
Vegan and vegetarian diets should be encouraged	156	106	112	62	99	54
We should pursue policies that promote sustainable foods	140	60	113	33	96	37

Code and data:
https://github.com/danielhers/sustainable-diet-arguments-twitter

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