

## 1) Introduction

- NEWSCLAIMS extends the claim detection task to extract additional attributes relating to the claim, such as the claimer, claim object, etc.
- We introduce the notion of *claim object*, which is an entity that identifies what is being claimed with respect to the topic of the claim.
- Mainly contains claims about COVID-19 from 143 news articles.

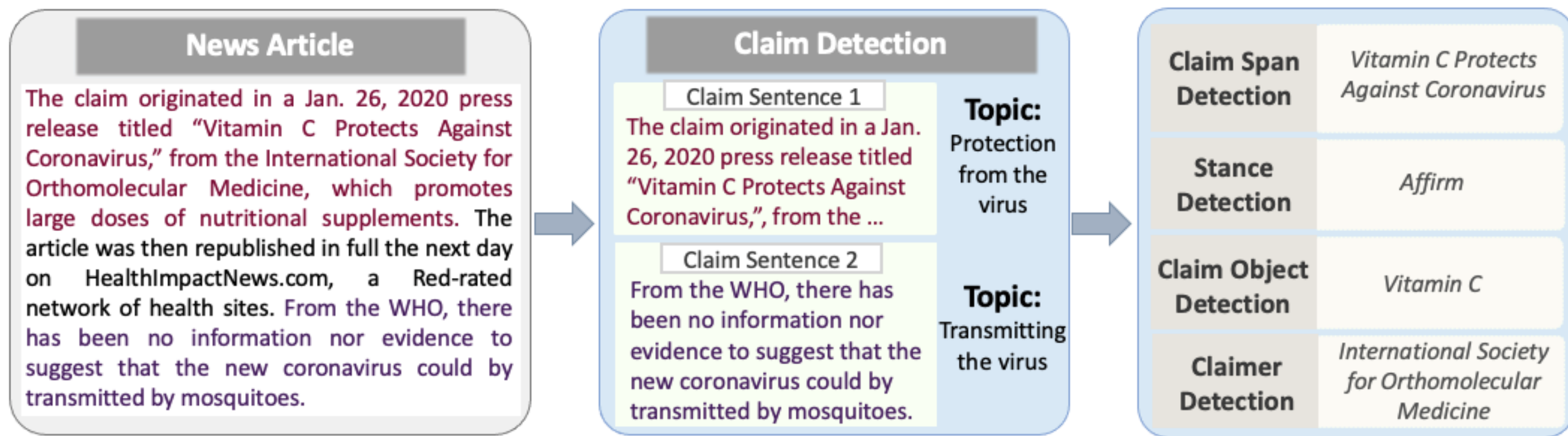


Figure 1: An example from NewsClaims.

Topic	Claim Sentence
Origin	The genetic data is pointing to this virus coming from a <b>bat reservoir</b>
Transmission	The virus lingers in the <b>air indoors</b> , infecting those nearby
Cure	<b>Vitamin C</b> is an effective treatment for COVID-19
Protection	Taking a <b>hot bath</b> prevents you from getting COVID-19

Table 1: Examples showing the claim object in **bold** for some claims in NEWSCLAIMS

- Claim detection approaches need to be able to be ported to new scenarios, without access to much training data.
- Further, the claimer detection subtask within NewsClaims requires considerable document-level reasoning, making it harder for existing attribution models which mainly involve sentence-level reasoning.

## 3) Claim Topic Filtering and Claim Object Detection

### Claim Topic Filtering

- Topic relevance is measured using answer confidence from QA model
- Input to the QA model comprises of the claim sentence along with the question corresponding to the individual topic
- For NLI baseline, topic relevance is via the entailment score

Model	P	R	F1
ClaimBuster	13.0	<b>86.5</b>	22.6
ClaimBuster + NLI	21.8	53.3	30.9
ClaimBuster + ClaimQA	<b>30.7</b>	43.4	<b>36.0</b>
Human (single)	52.7	70.0	60.1
Human (3-way)	60.2	83.5	70.0

Table 2: Performance for identifying claim sentences.

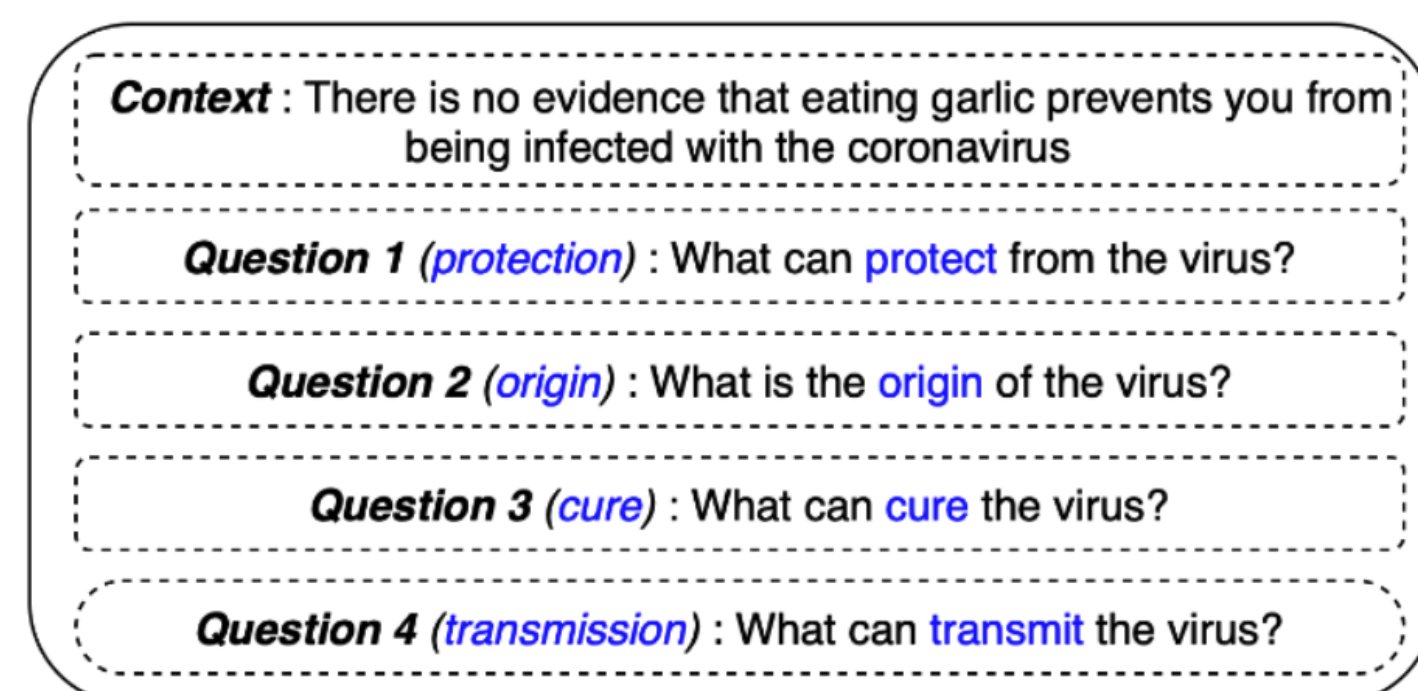


Figure 2: Questions corresponding to individual topics.

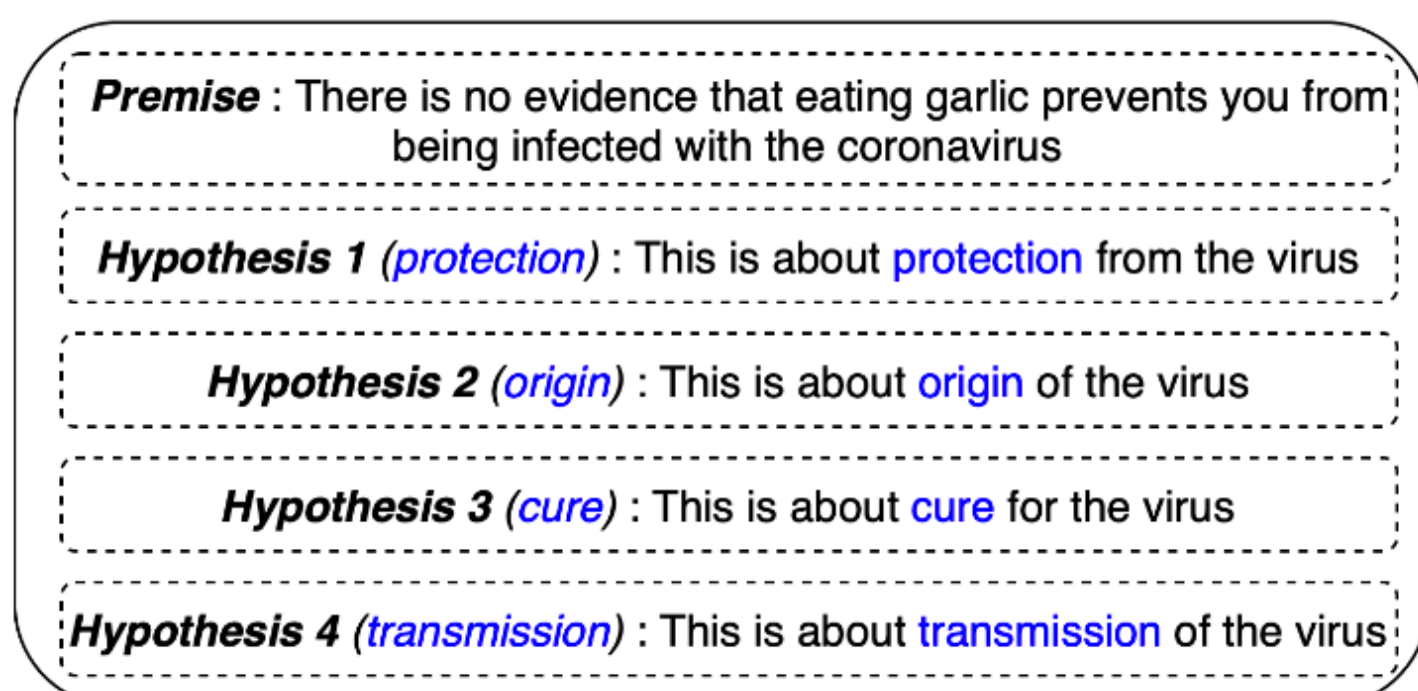


Figure 3: Hypotheses corresponding to individual topics.

### Claim Object Detection

- Claim object detection involves identifying what is being claimed in the claim sentence with respect to the topic.
- The answer span from the QA model for the question corresponding to the claim topic is used as the claim object.

Approach	Model	Type	F1
Prompting	GPT-3	Zero-shot	15.2
Prompting	T5	Zero-shot	11.4
In-context learning	GPT-3	Few-Shot	51.9
Prompt-based fine-tuning	T5	Few-Shot	51.6
ClaimQA	BERT	Zero-shot	<b>57.0</b>
Human	-	-	67.7

Table 3: F1 score for claim object detection.

## 2) QA-based Claim Detection Framework (COLING 2022)

- The same extractive QA model solves multiple sub-tasks within claim detection, without the need of any task-specific training data.
- This involves:
  - Filtering claims relating to specific topics
  - Identifying claim objects associated with such topics
  - Attribution for identifying the claimers making these claims
- Realized by using directed questions to help solve connected sub-tasks.

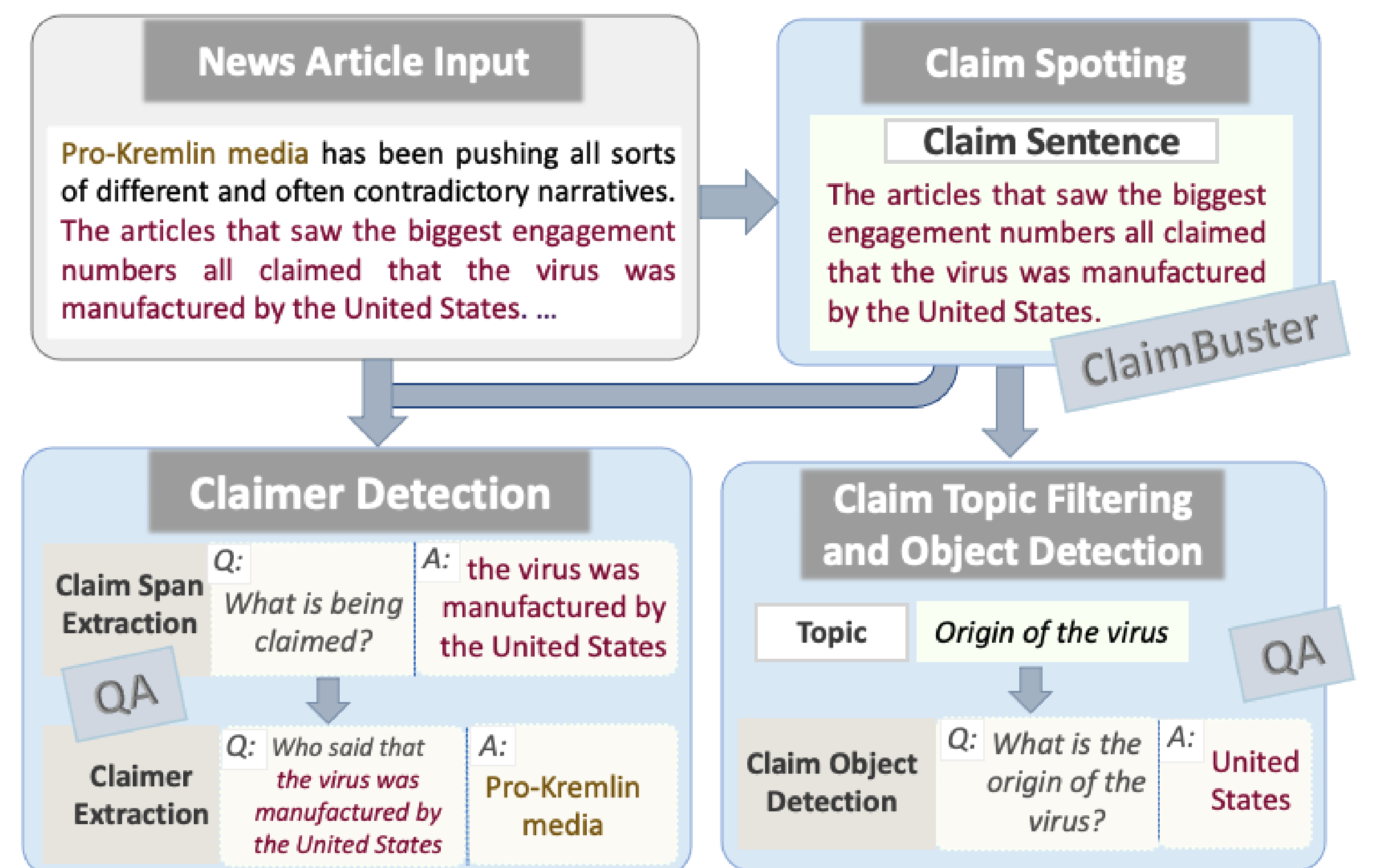
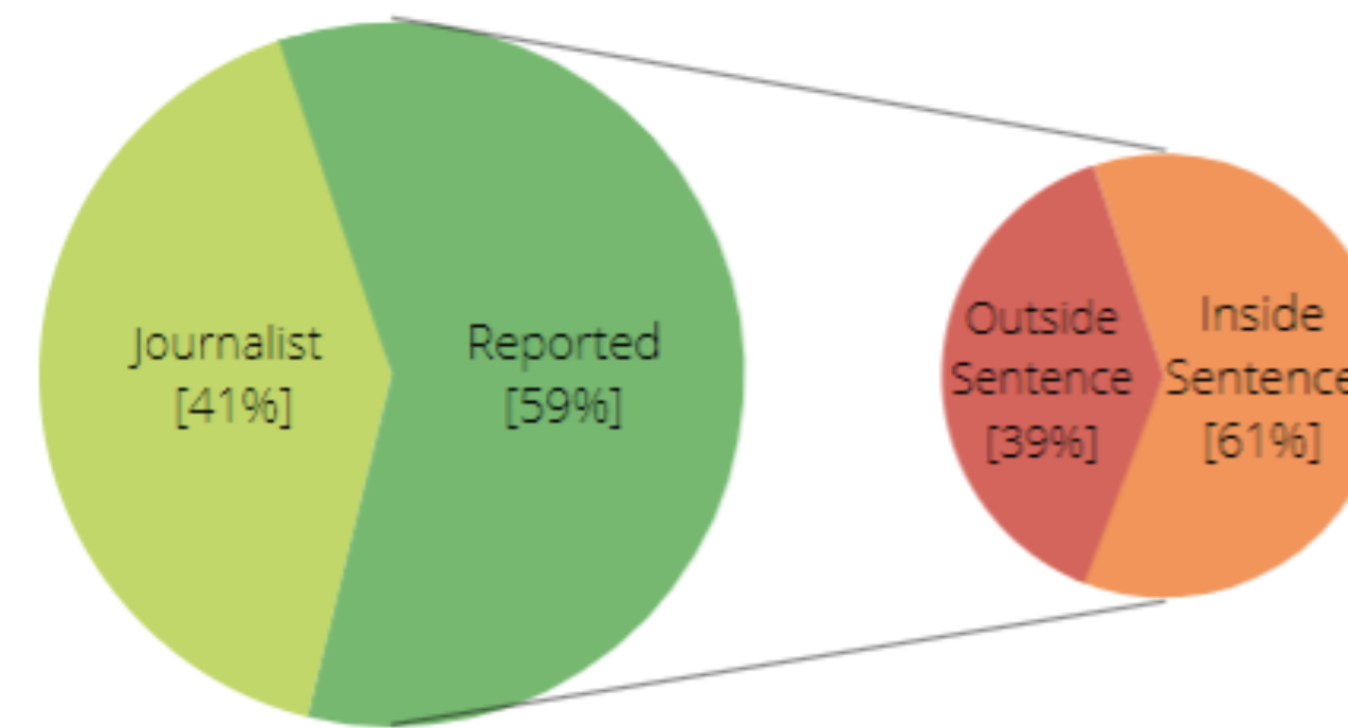


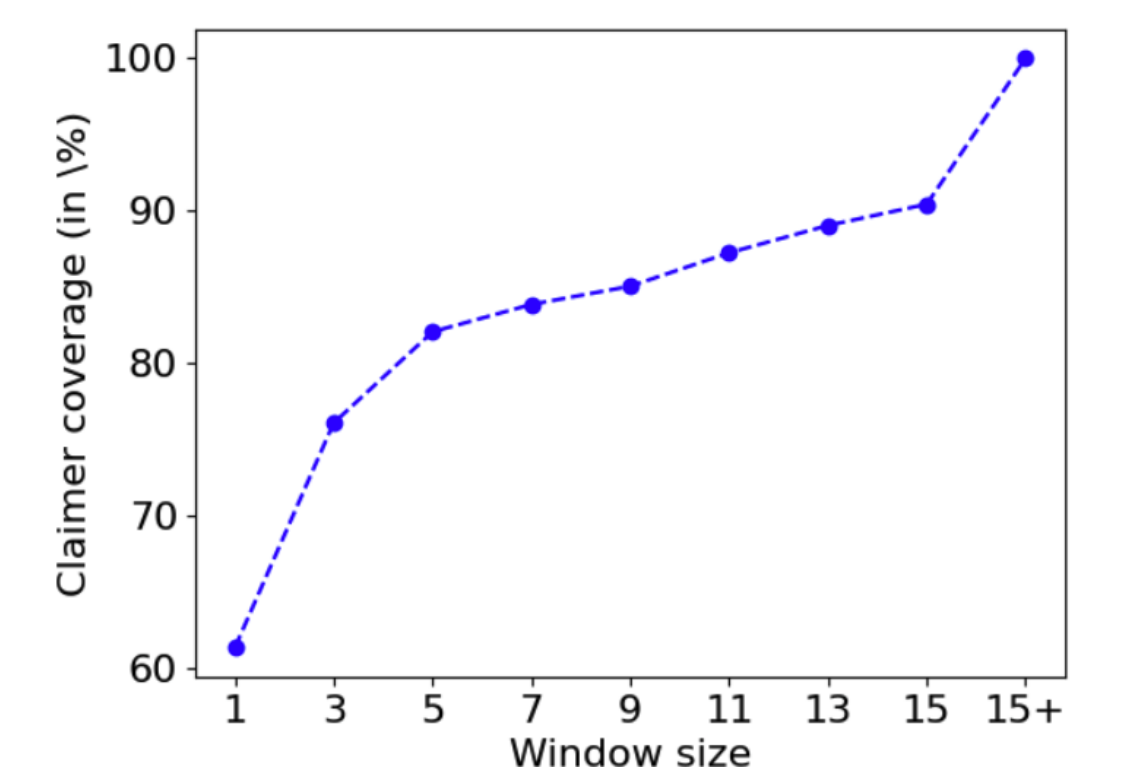
Figure 4: Proposed QA-based claim detection framework.

## 4) Document-level Claimer Detection

- Claims within news articles come from various types of sources.
- Claimer detection involves identifying whether the claim is made by a journalist or who the source is, in case it is reported in the news article.



(a) Claims by journalists vs. reported ones, along with claimer coverage for reported claims



(b) Coverage of claimer within a window size based on number of sentences around the claim sentence

Claim Sentence	Type
It is not yet known if remdesivir is safe for the treatment of COVID-19.	Journalist
Inhaling bleach fumes is dangerous and will not kill viruses that are already inside.	Journalist

Claims from journalists are direct assertions which do not require attribution and can be identified from sentence-level information.

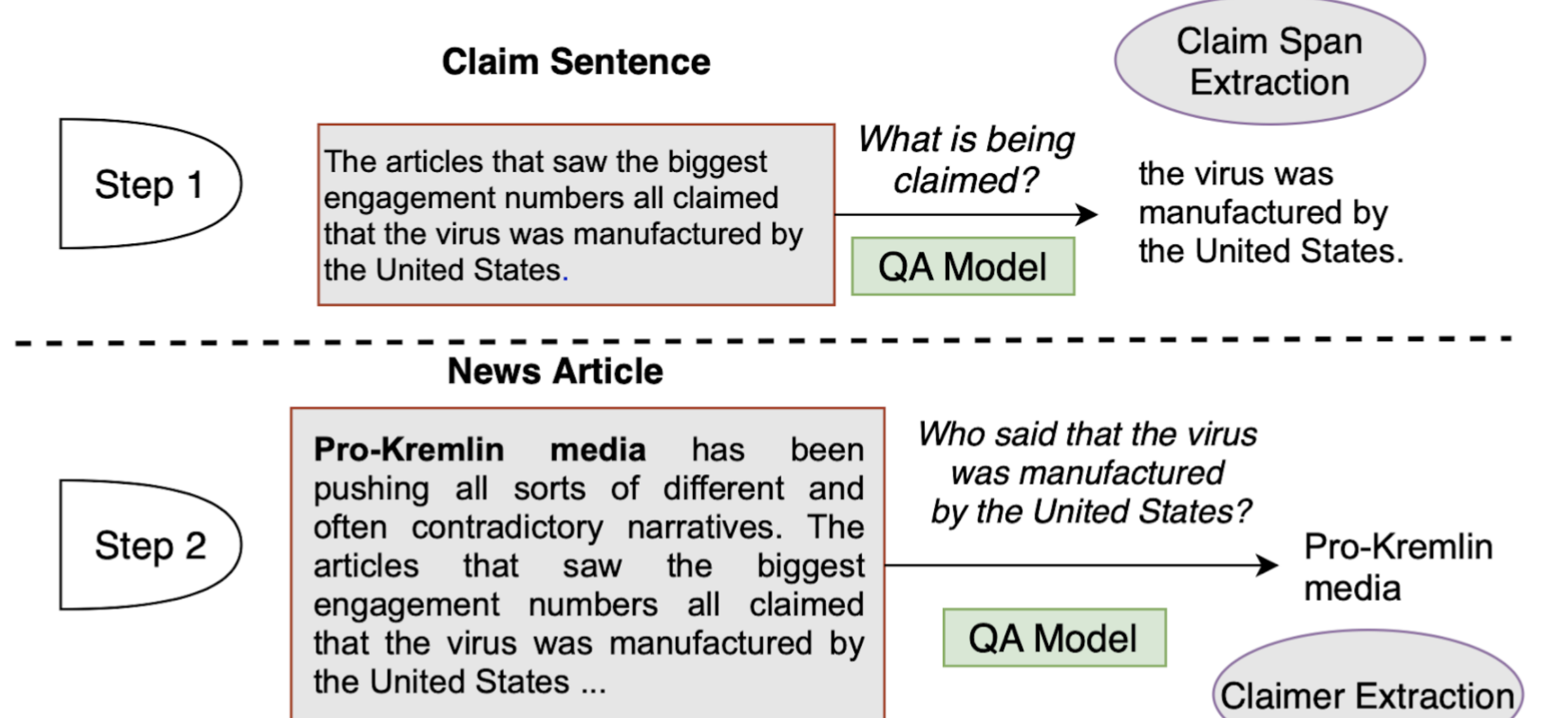


Figure 6: Two-step ClaimQA pipeline for identifying the claimer.

Model	Overall F1	Reported	Journalist	Model	In-sentence	Out-of-sentence
SRL	41.7	23.5	<b>67.2</b>	SRL	35.8	2.4
PoINeAR	42.3	25.5	65.9	PoINeAR	38.9	2.7
ClaimQA	<b>50.1</b>	<b>39.8</b>	64.4	ClaimQA	<b>46.2</b>	<b>29.0</b>
Human	85.8	81.3	88.9			

Table 4: F1 for identifying the claimer.

Table 5: F1 for claimer detection for when it is present within or outside the claim sentence.