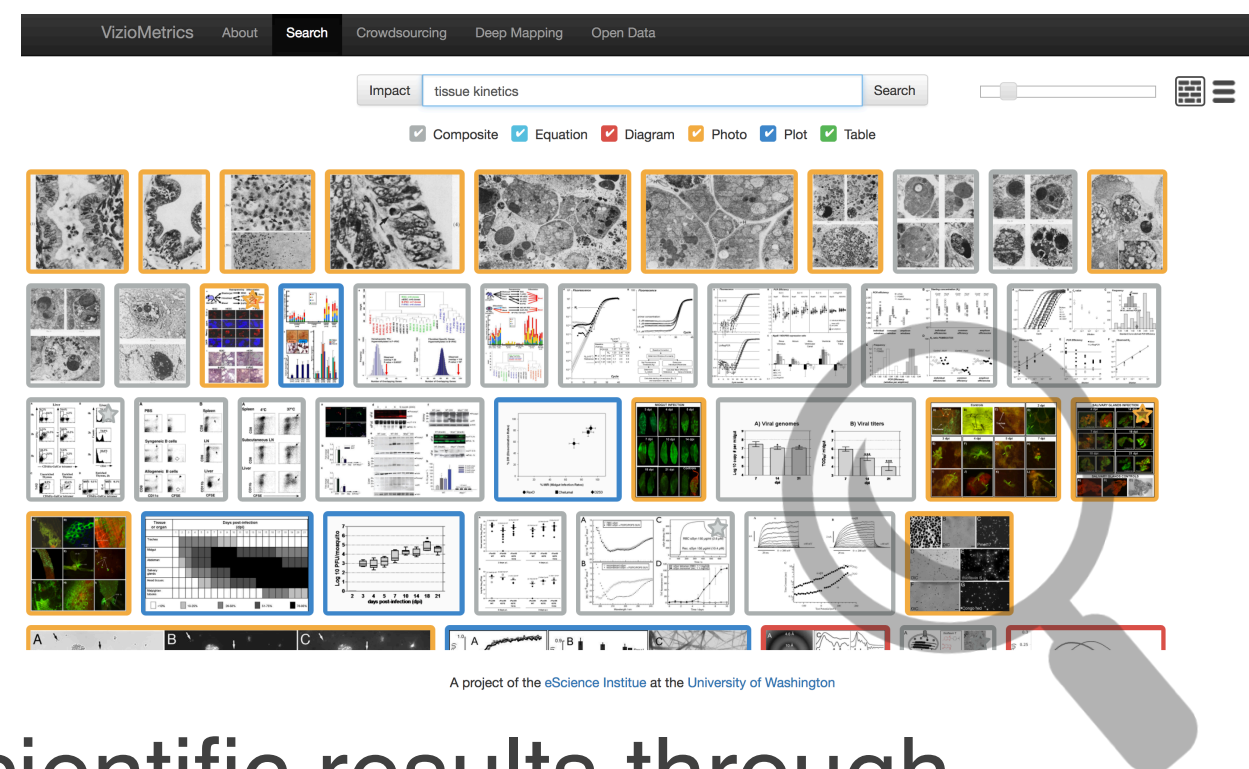


VizioMetrics: Evaluating the Importance of Visual Content in Scientific Literature

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About VizioMetrics

VizioMetrics is an image search engine and classifier, which was developed at the UW's eScience Institute. Apart from providing search capabilities, its' goals are to:



- Further the communication of scientific results through increased access to visual information.
- Study the relationship between the use of visual information and scientific impact.

The search and classification are performed on **8 million** images from PubMed Central.

Research Questions

At this time VizioMetrics researchers are working on a feature that automatically identifies a **'central figure'** in a scientific publication. Currently the algorithm is based on an NLP technique that evaluates the similarity between the abstract of a paper and the title of its figures.

"Central figure" is a visualization that encapsulates key aspects of a scientific publication, a graphical summary that captures the content of the article for readers at a single glance.

- How often is it possible to decide on a "central figure" in a scientific article?
- What does the "central figure" communicate to the reader?
- What class does the central figure belong to?
- How accurate is our current algorithm?

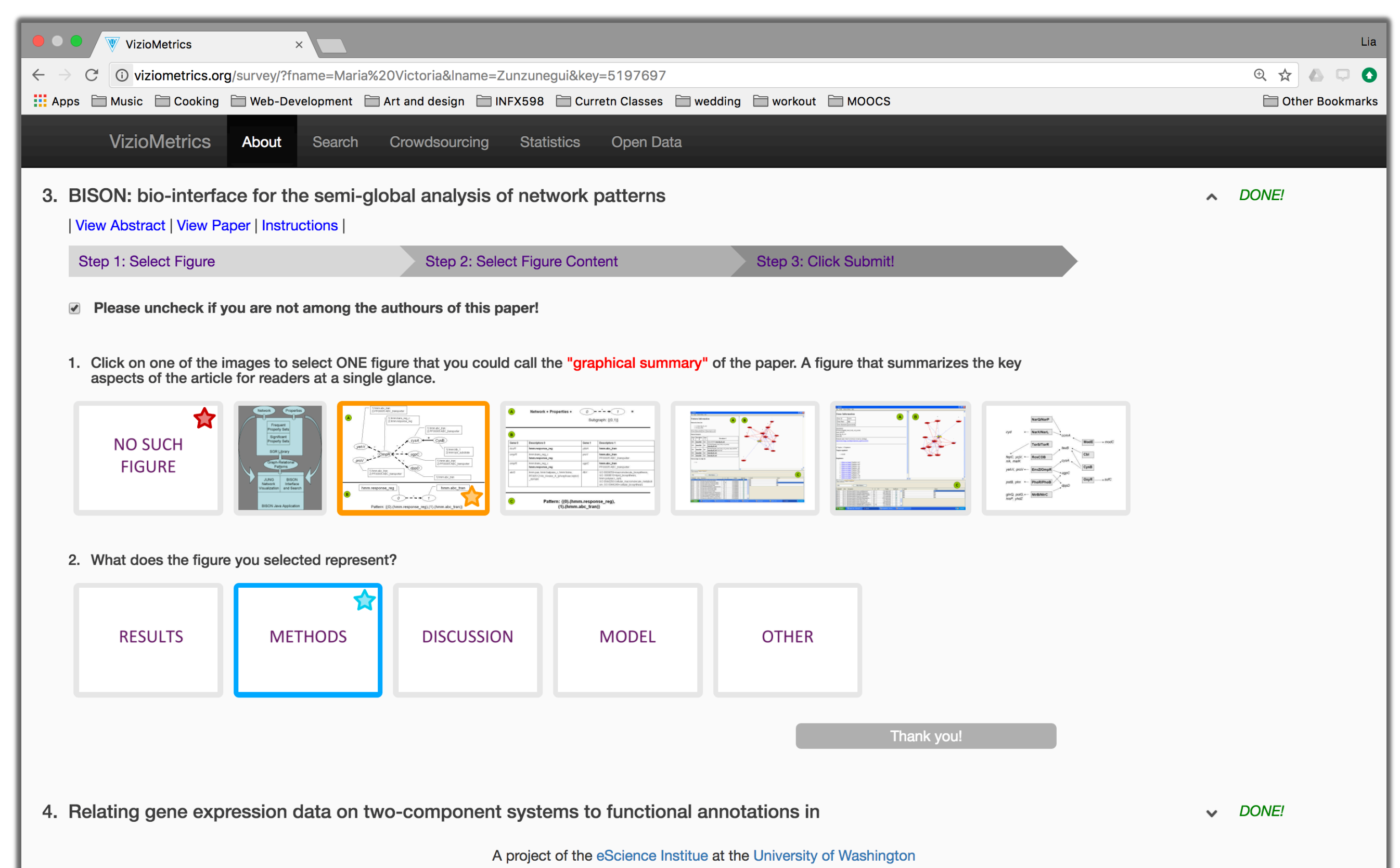
Survey Design and Data Collection

Labeled data was obtained through surveying authors whose contact information is available in PubMed. We sent survey invitations to **488,590 distinct email addresses***.

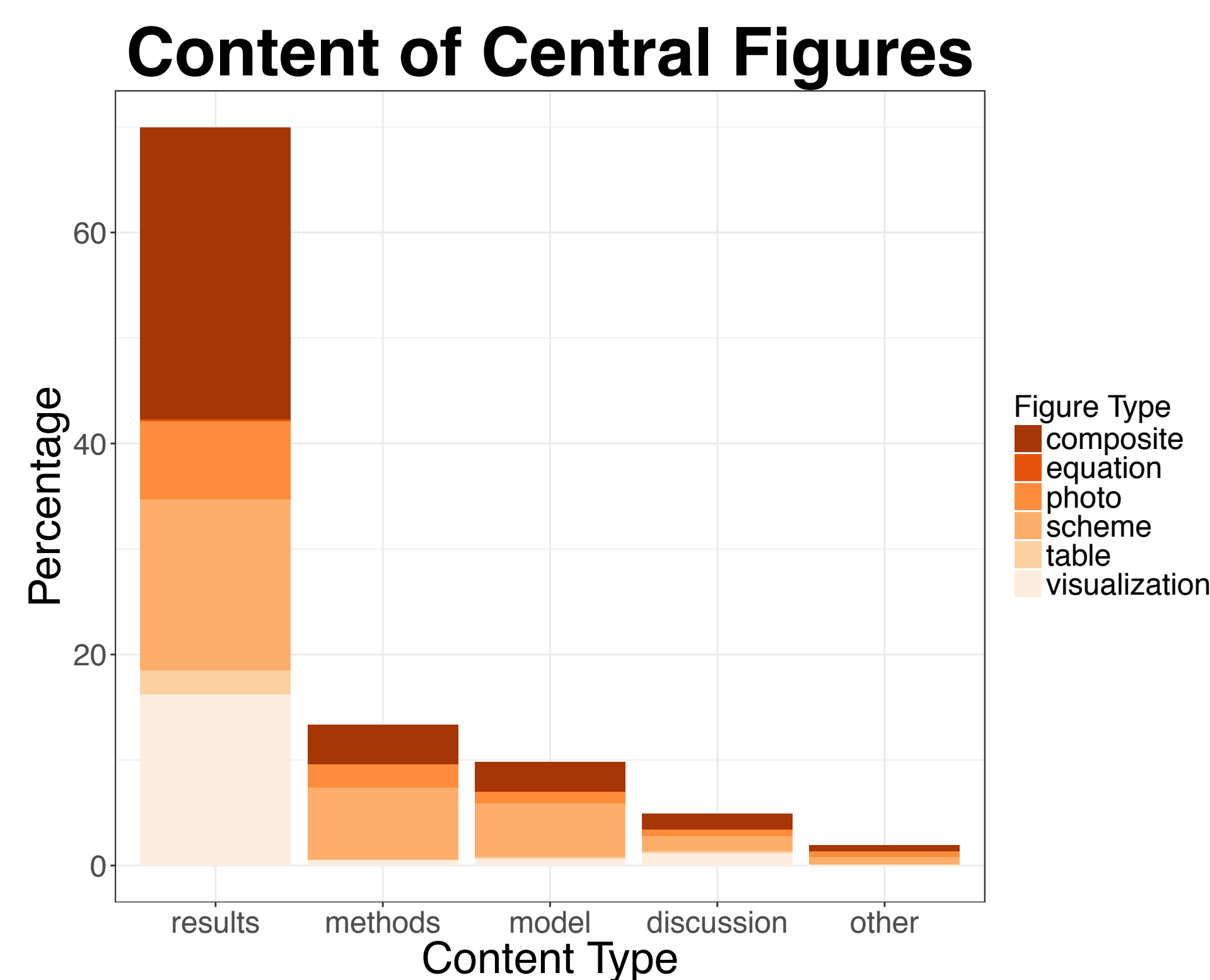
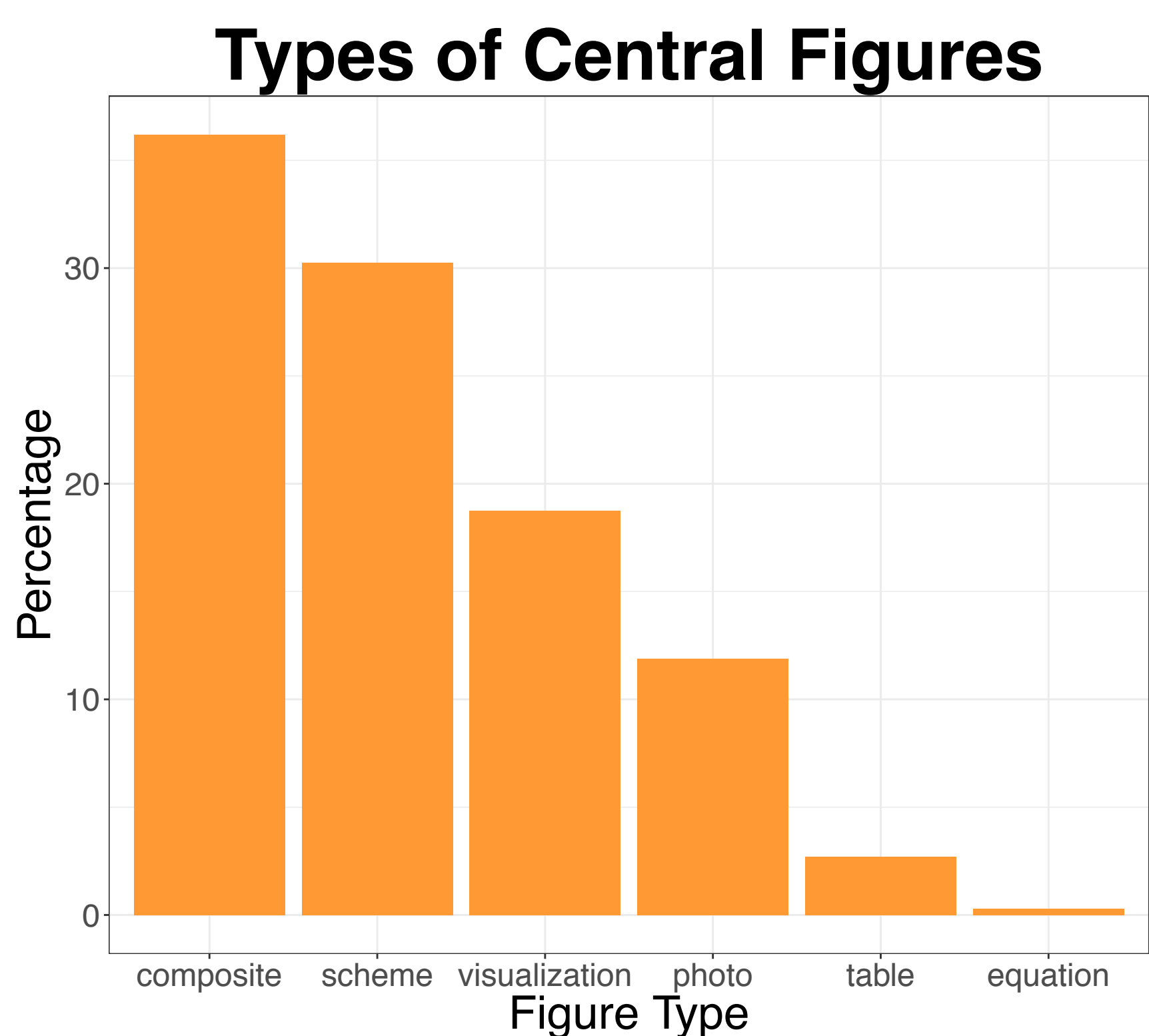
Researchers were presented with a list of their own papers and asked to:

- identify a "central figure", given our definition
- indicate what the selected represents [results, methods, discussion, model, other]

For the first question we presented the survey participants with the "No Such Figure" option, in case they struggled to identify a single figure that fit the description.



Results and Key Insights



For **89.7%** of papers the authors were able to select a single central figure.

The accuracy of the current algorithm is around 40%. More research needs to be conducted to investigate the reasons behind the discrepancy. It also means that the the question needs to be tackled through computer vision, not just NLP.

*at the time this poster was prepared we were still in the process of sending out emails. Information presented in the poster is based on 1732 papers that were evaluated by their authors at that time.

