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## Abstract & Background

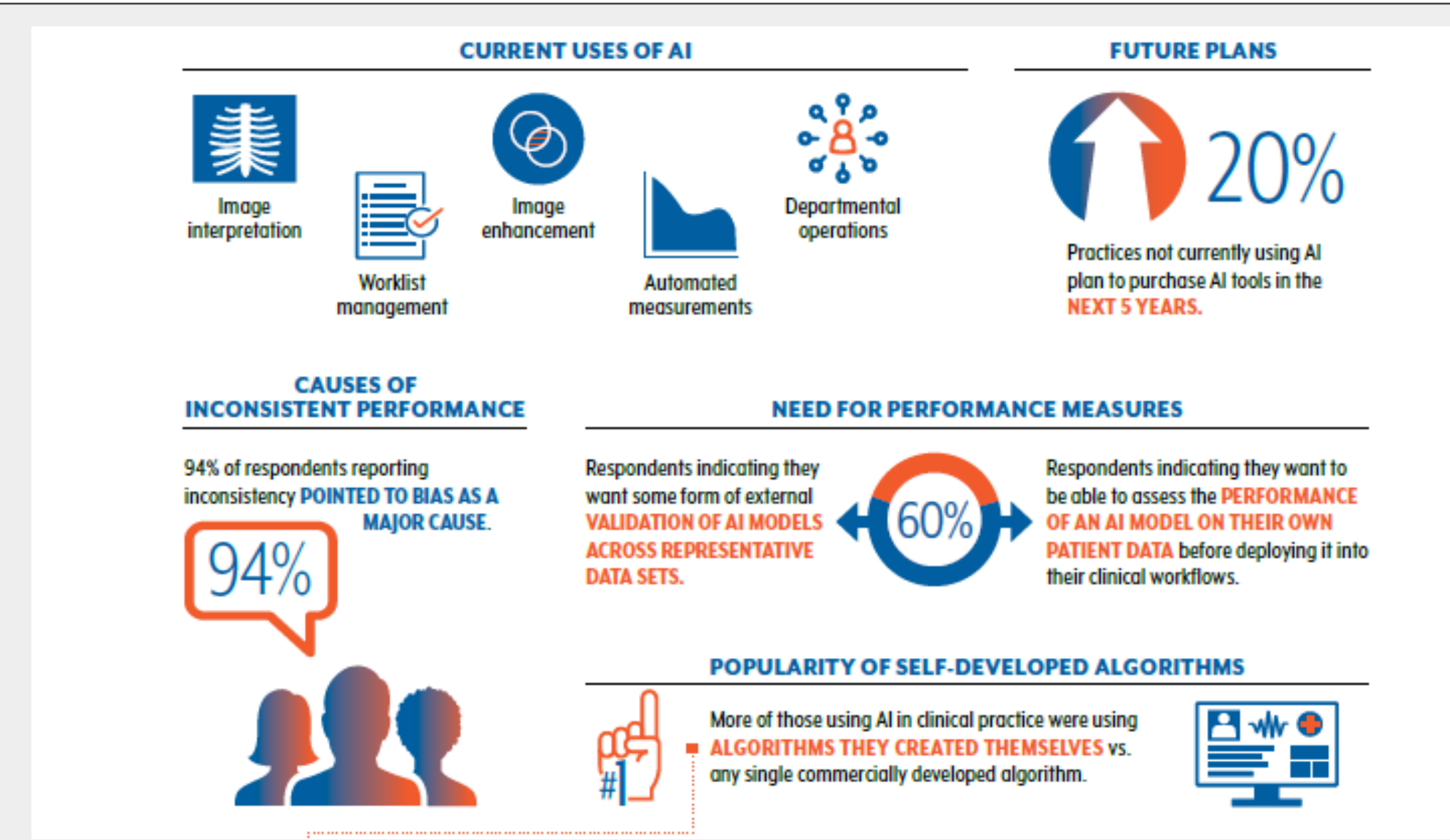


Figure: JACR Infographic on AI usage in radiology

Artificial Intelligence (AI) solutions are increasingly being adopted by medical specialties, especially radiology. From 2014-2021, the overall number of venture capital-backed healthcare AI startups increased more than fivefold. Learning how patients perceive these changes is an important aspect of upholding patient-centered care. The aim of our survey study is to improve understanding of patient perspectives on AI usage in interpreting radiologic images and generating reports, with regards to specific aspects such as comfort level, costs, favorability, and legal liability. Moreover, the study seeks to probe for similarities and differences of these perspectives between and within generational cohorts.

## Results to date

Demographic	#
Post War (1928-1945)	5
Boomer 1 (1946-1954)	36
Boomer 2 (1955-1964)	42
Gen X (1965-1980)	53
Millennial (1981-1996)	26
Gen Z (1997-2012)	7
*did not volunteer information*	15
<b>Total</b>	<b>184</b>

Figure: Survey Participants to date

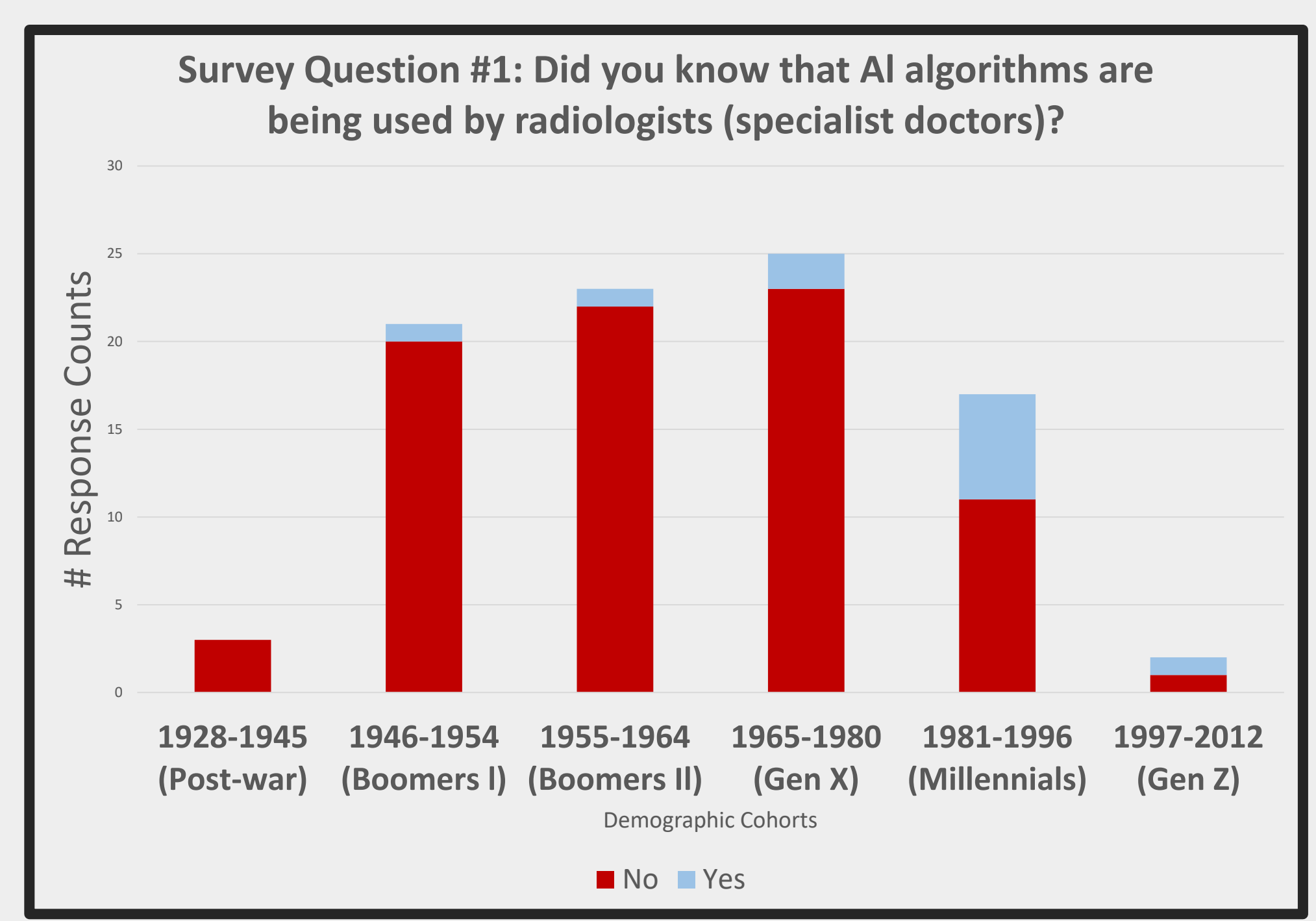


Figure: Cohort Analysis of Question #1

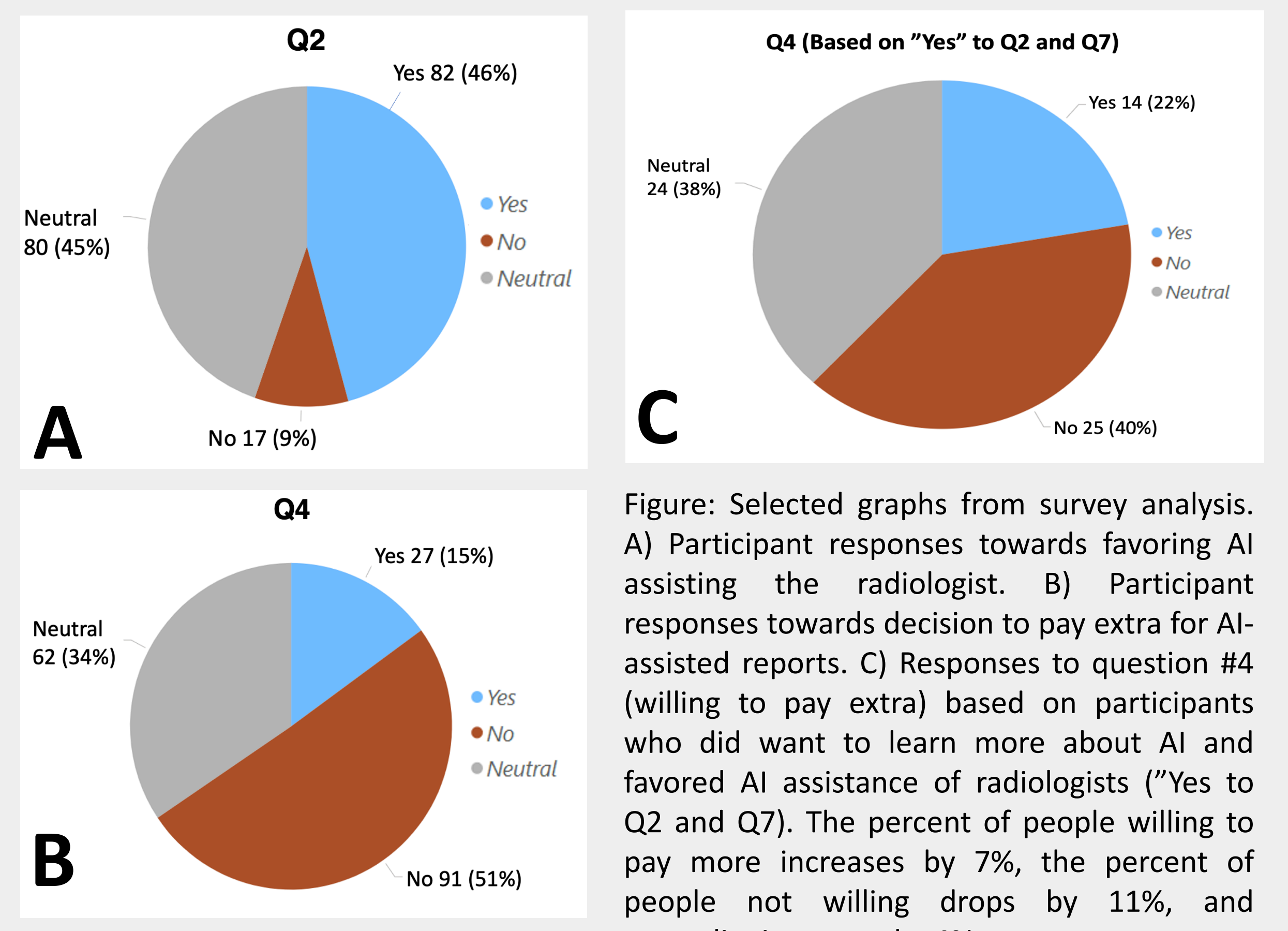


Figure: Selected graphs from survey analysis. A) Participant responses towards favoring AI assisting the radiologist. B) Participant responses towards decision to pay extra for AI-assisted reports. C) Responses to question #4 (willing to pay extra) based on participants who did want to learn more about AI and favored AI assistance of radiologists ("Yes to Q2 and Q7). The percent of people willing to pay more increases by 7%, the percent of people not willing drops by 11%, and neutrality increases by 4%.

## Survey Design

- 1) Did you know that AI algorithms are being used by UofL radiologists (specialist doctors)?
- 2) Are you in favor of these AI algorithms assisting the radiologist (specialist doctor)?
- 3) Would you be ever comfortable with a completely AI generated report (no radiologist (specialist doctor) involved in the interpretation) for your imaging study?
- 4) Would you be willing to pay extra if both the radiologist (specialist doctor) and the AI algorithm interpreted your study rather than just the radiologist (specialist doctor)?
- 5) If it was proven by using AI less things were missed, (a more correct reading, with less errors) of radiology studies occurred, would you be willing to pay more for using both AI and a radiologist?
- 6) Would you be more likely to follow recommendations from an AI assisted or generated report than you would be to follow directions in a report generated by a radiologist (specialist doctor) alone?
- 7) Would you want to know how the AI algorithm generated the results?
- 8) Would you be more likely to accept more AI tools in medicine?
- 9) Who would you hold accountable if the AI tool makes an error? (AI developer, hospital, radiologist, or all)
- 10) Are you in favor of AI implementation in other clinical fields?
- 11) Everything else remaining the same, would you choose a facility that uses AI plus a radiologist (specialist doctor) over a facility that does not have AI and the radiologist (specialist doctor) interprets your study alone?

Figure: Sample of Survey Questions

A brief survey to gauge patient perceptions was designed to be taken by volunteers from any generational cohort. Survey questions gave the survey participant a choice of saying "Yes", "No" or "Neutral" to realistic and plausible scenarios dealing with AI in radiology, such as relying on AI generated imaging recommendations, AI-assisted vs AI-generated reports, or who to find at fault in the setting of a medical error. This was appended with an optional comment section. The questions were sent to the IRB for evaluation and revision, to ensure the questions were unambiguous and self-explanatory. The surveys were then distributed in paper format to an outpatient center associated with UofL, where patients in waiting volunteered to fill out the survey.

Descriptive statistics of the survey answers were calculated from total number of participants and with respect to cohorts. A Chi-square test of independence was done with each survey question to determine if a survey response had a significant association with a cohort.

While this single-center study is also limited by a small sample size (especially with Post-War and Gen Z participants) and a potential selection bias (i.e., patients at an outpatient center waiting to get a diagnostic test done or to see a provider), our study provides an adaptable model for other hospital systems to gauge views on AI in radiology of their local populace.

## And the survey says...

**Gen Z:** "Depends on price if I'd be willing to pay more for AI. If I were rich, then yeah." ~ Gen Z

**Baby Boomer:** "Shouldn't have to pay more money for better care! Already pay an arm + a leg! If it helps, we are in favor but should NOT cost more for the patient!!" ~ Baby Boomer

**Gen X:** "I would like to see AI used as an aid or second look, not the only determining factor. It could help with human errors." ~ Gen X

**Millennial:** "I do not have enough info about any of this to choose anything more than 'neutral' for most options. I would need a lot of data to be informed." ~ Millennial

**Gen X:** "My answers reflect if AI does not increase greatly the financial burden that already exists, and it shows a much greater benefit to the patient." ~ Gen X

Please note: Pictures do not depict survey participants

## Discussion

Currently, the only statistically significant association of a demographic cohort with a specific response was Q1, signifying that Millennials were most aware that AI was already being used. Perhaps the underlying explanation is that Millennials are thought to be more connected digitally than the older cohorts. This reinforces that a multi-modal educational approach needs to be adopted for patient populations to ensure any misconception or hesitation towards AI application in radiology is addressed.

There was no association between cohorts with Q7 and Q9 responses, indicating that a desire to know more about AI in radiology and the notion of finding all parties (hospital, AI developer, radiologist) accountable for diagnostic errors associated with AI usage, spans across all generations. 66% of participants responding "yes" to Q7 and 73% of participants responding "yes" to Q9. In fact, many written comments as seen in the previous section stated that the participant did not know enough about the subject to formulate a stance.

After this is achieved, the benefits of financial savings, reduced burden of imaging volume on the radiology department, and providing higher levels of care can be realized. It is expected within the next five years that using today's technologies could result in savings of \$200 billion to \$360 billion annually with AI implementation in healthcare.

These insights will aid discussions between the radiologist and patient regarding AI-incorporated imaging reports (and possibly AI generated follow-up recommendations), in outlining legal responsibilities of all parties involved, and in the design of educational material that will keep patients informed of the changing healthcare landscape.

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# Patient Perspectives on the Integration of Artificial Intelligence (AI) in Radiology

## Introduction:

The adoption of Artificial Intelligence (AI) solutions, particularly in radiology, is becoming increasingly prevalent. Understanding how patients perceive these technological advancements is crucial for maintaining patient-centered care and enhancing patient education.

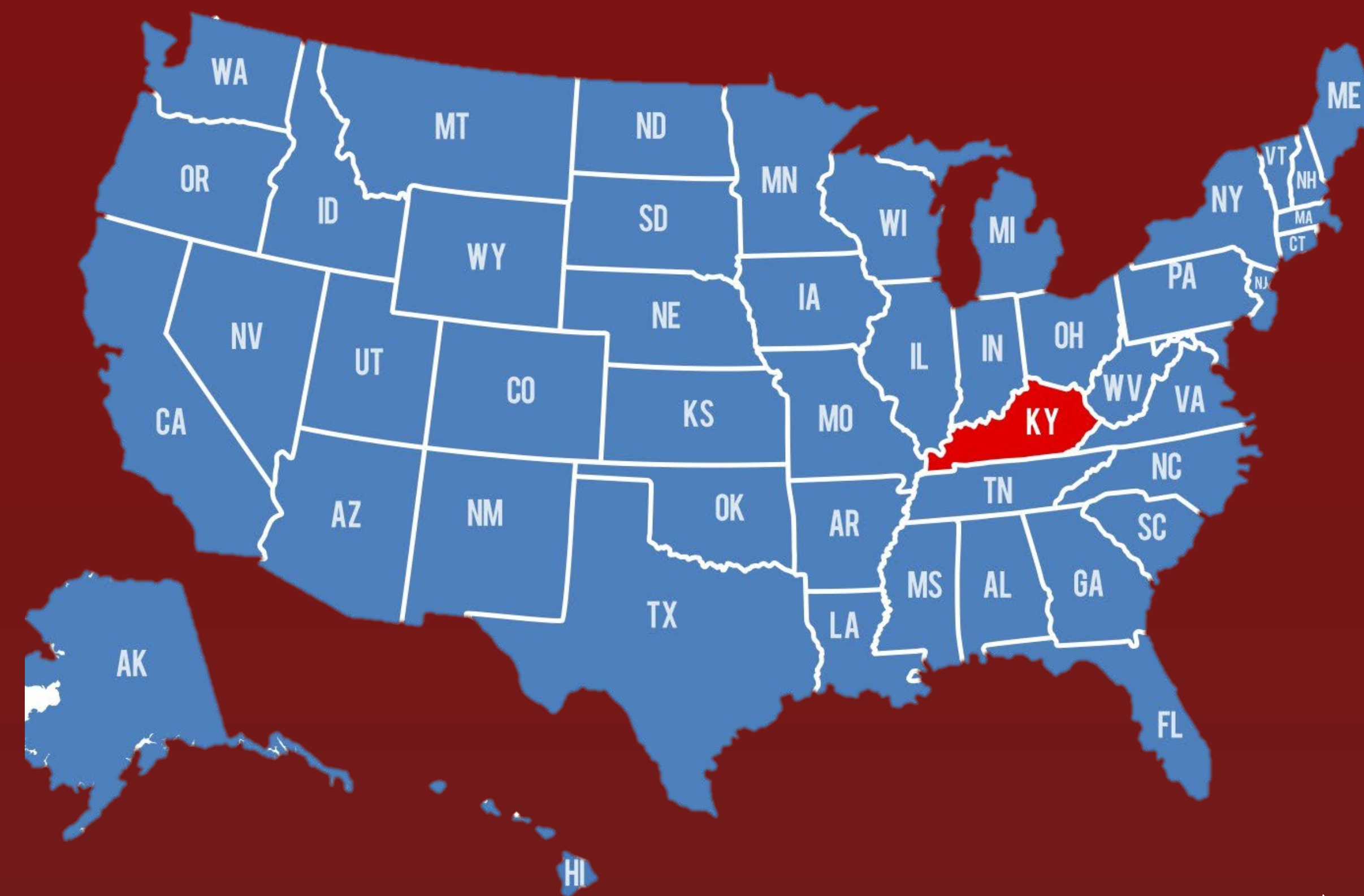
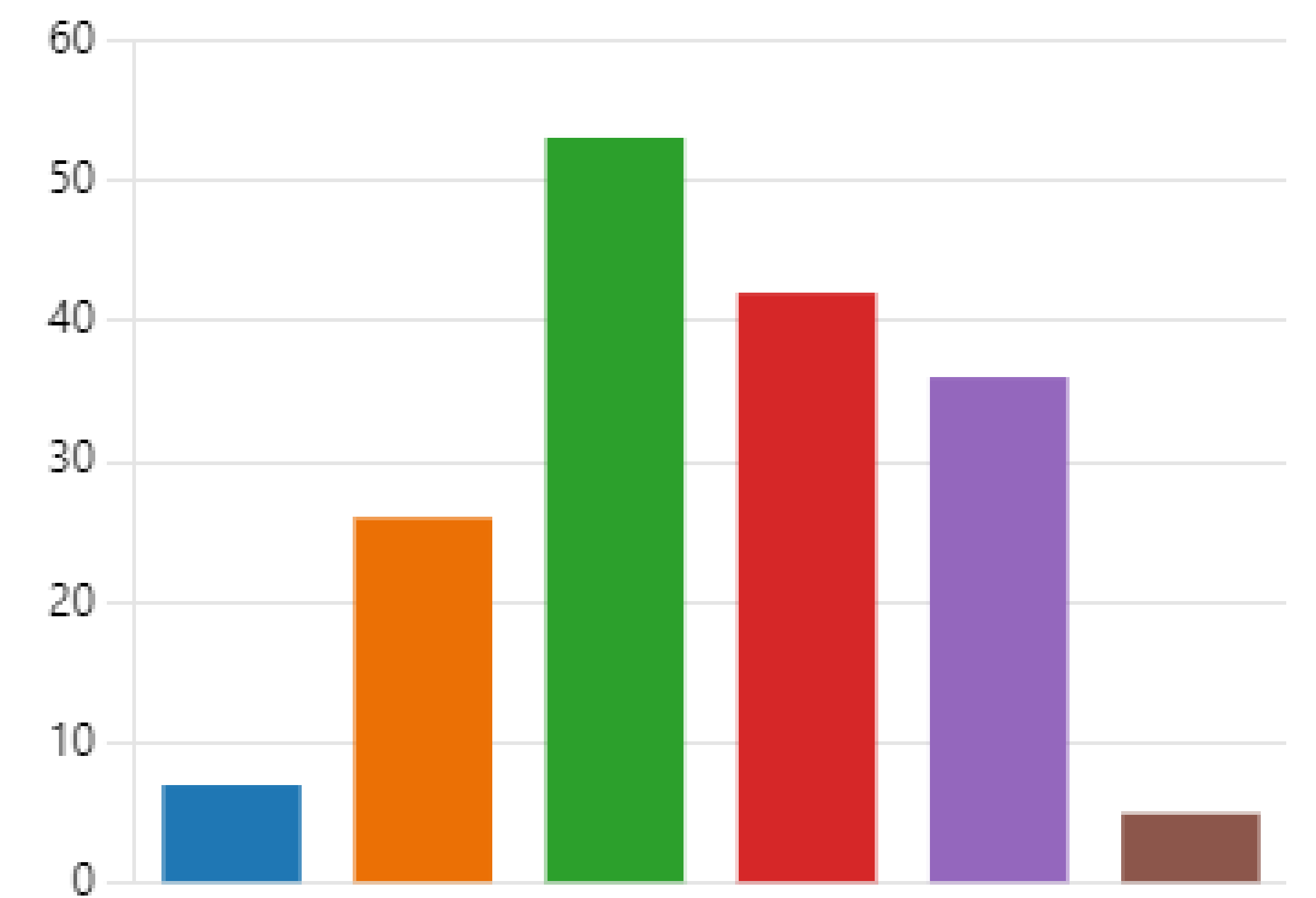
## Methodology:

To gather data, we distributed surveys to patients at an outpatient imaging center. The surveys included statements related to AI in radiology, to which participants could respond with 'Yes,' 'No,' or 'Neutral.'

12. What is your age group? (For statistical analysis purpose)

[More Details](#)

● 1997-2012 (Gen Z)	7
● 1981-1996 (Millennials)	26
● 1965-1980 (Gen X)	53
● 1955-1964 (Boomers II)	42
● 1946-1954 (Boomers I)	36
● 1928-1945 (Post-war)	5



# Patient Perspectives on the Integration of Artificial Intelligence (AI) in Radiology

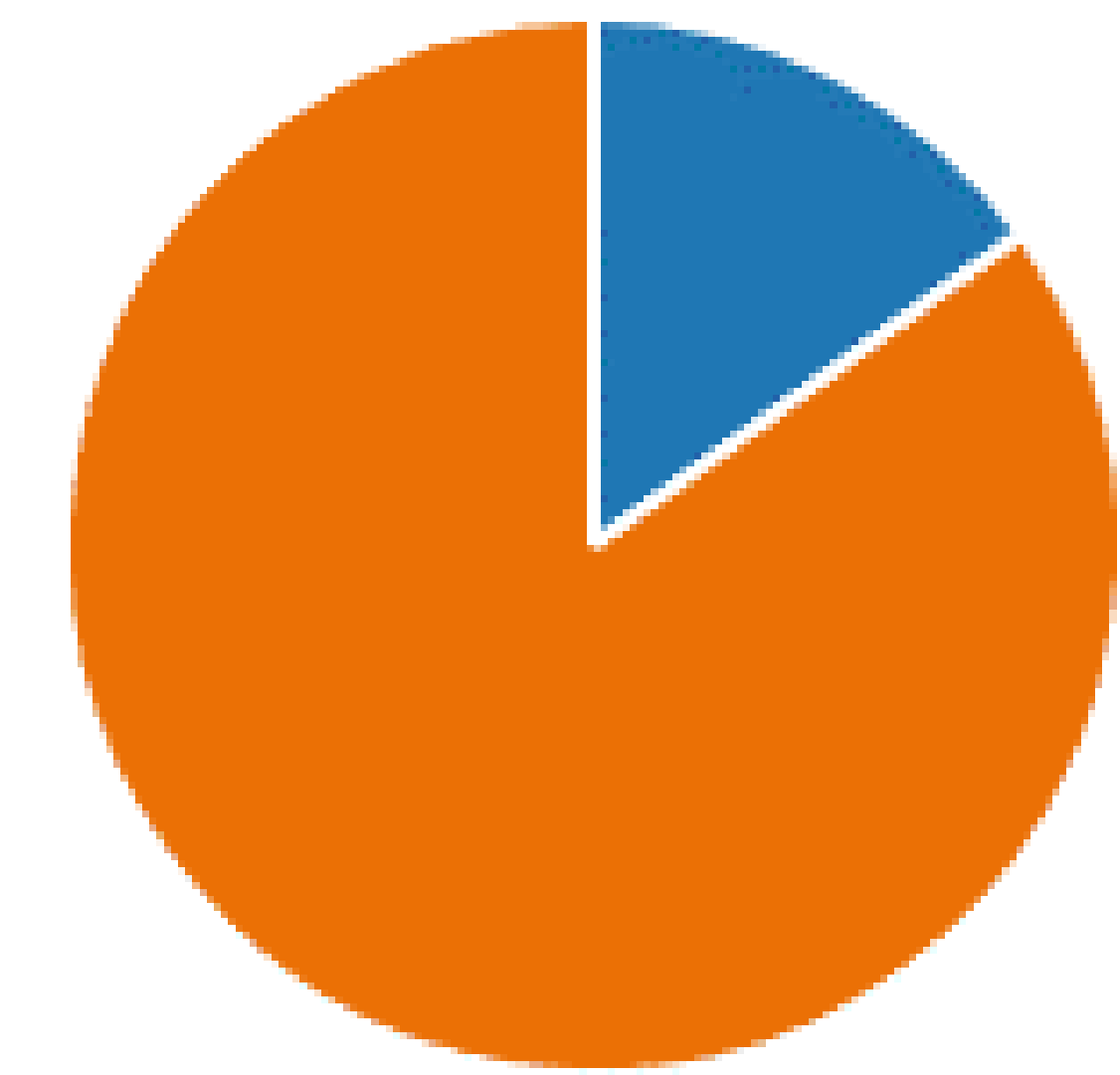
## Results:

- 85% of participants were not aware of AI implementation in UofL workflow.
- Only 9% of participants expressed opposition to AI algorithms assisting radiologists, with 46% in favor and 45% neutral.

1. Did you know that AI algorithms are being used by UofL radiologists (specialist doctors)?

[More Details](#)

Yes	27
No	153



2. Are you in favor of these AI algorithms assisting the radiologist (specialist doctor)?

[More Details](#)

Yes	82
No	16
Neutral	80



# Patient Perspectives on the Integration of Artificial Intelligence (AI) in Radiology

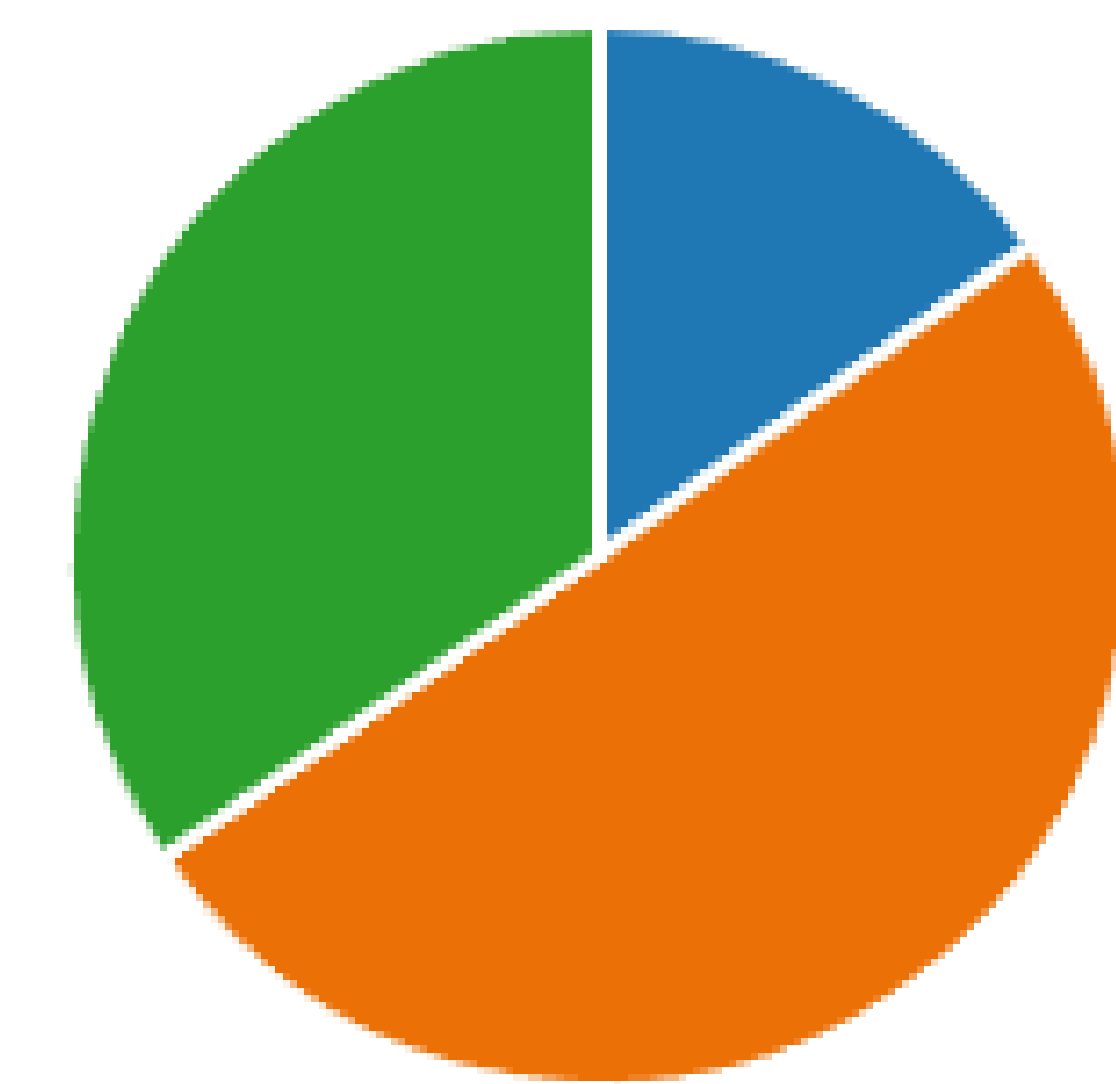
## Results (ROI):

- 15% of participants were willing to pay extra for reports interpreted collaboratively by both a radiologist and AI.
- A percentage that increased to 29% IF it was demonstrated that AI assistance led to fewer missed findings

4. Would you be willing to pay extra if both the radiologist (specialist doctor) and the AI algorithm interpreted your study rather than just the radiologist (specialist doctor)?

[More Details](#)

● Yes	27
● No	90
● Neutral	62

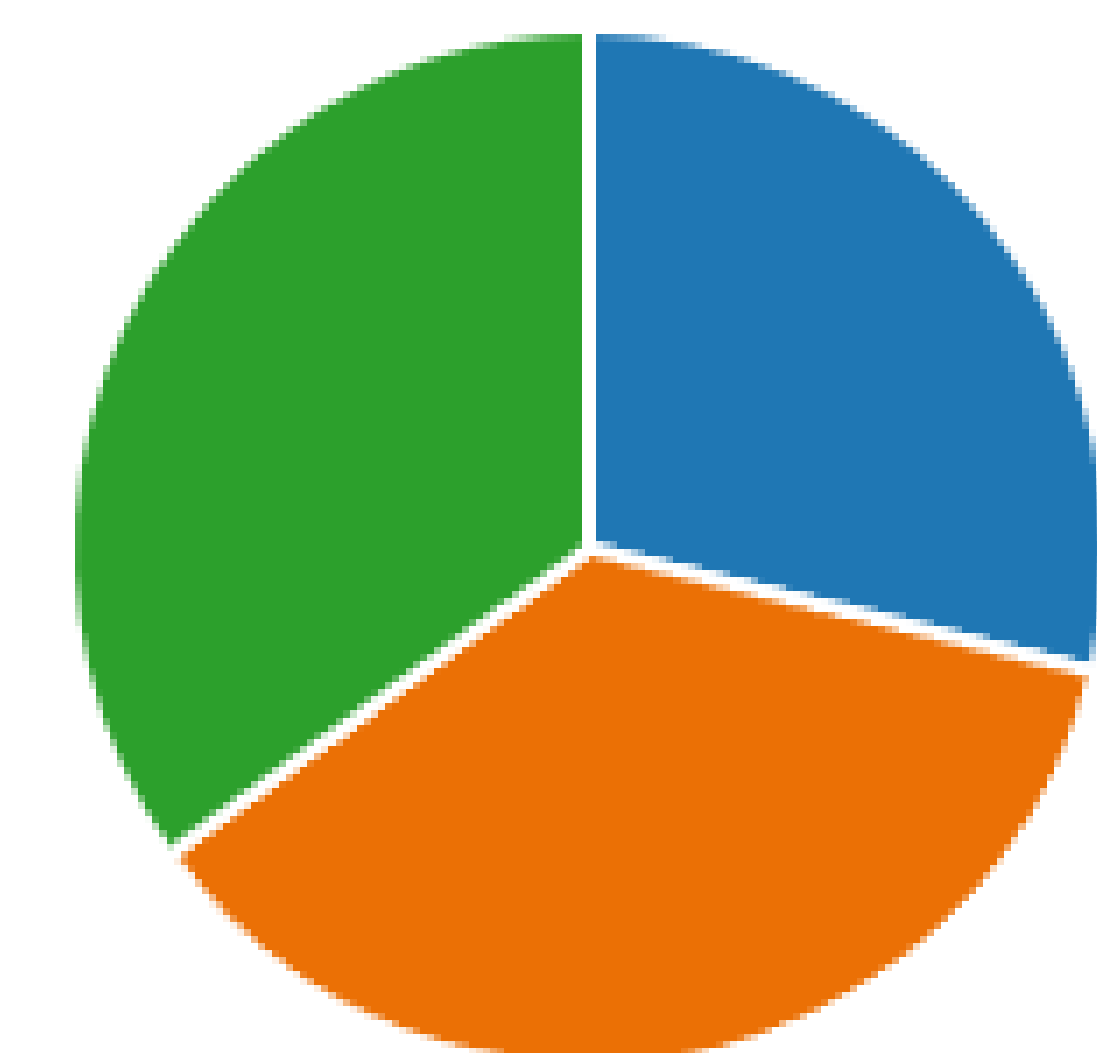


5. If it was proven by using AI less things were missed, (a more correct reading, with less errors) of radiology studies occurred, would you be willing to pay more for using both AI and a radiologist?

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● Yes	51
● No	64
● Neutral	62



# Patient Perspectives on the Integration of Artificial Intelligence (AI) in Radiology

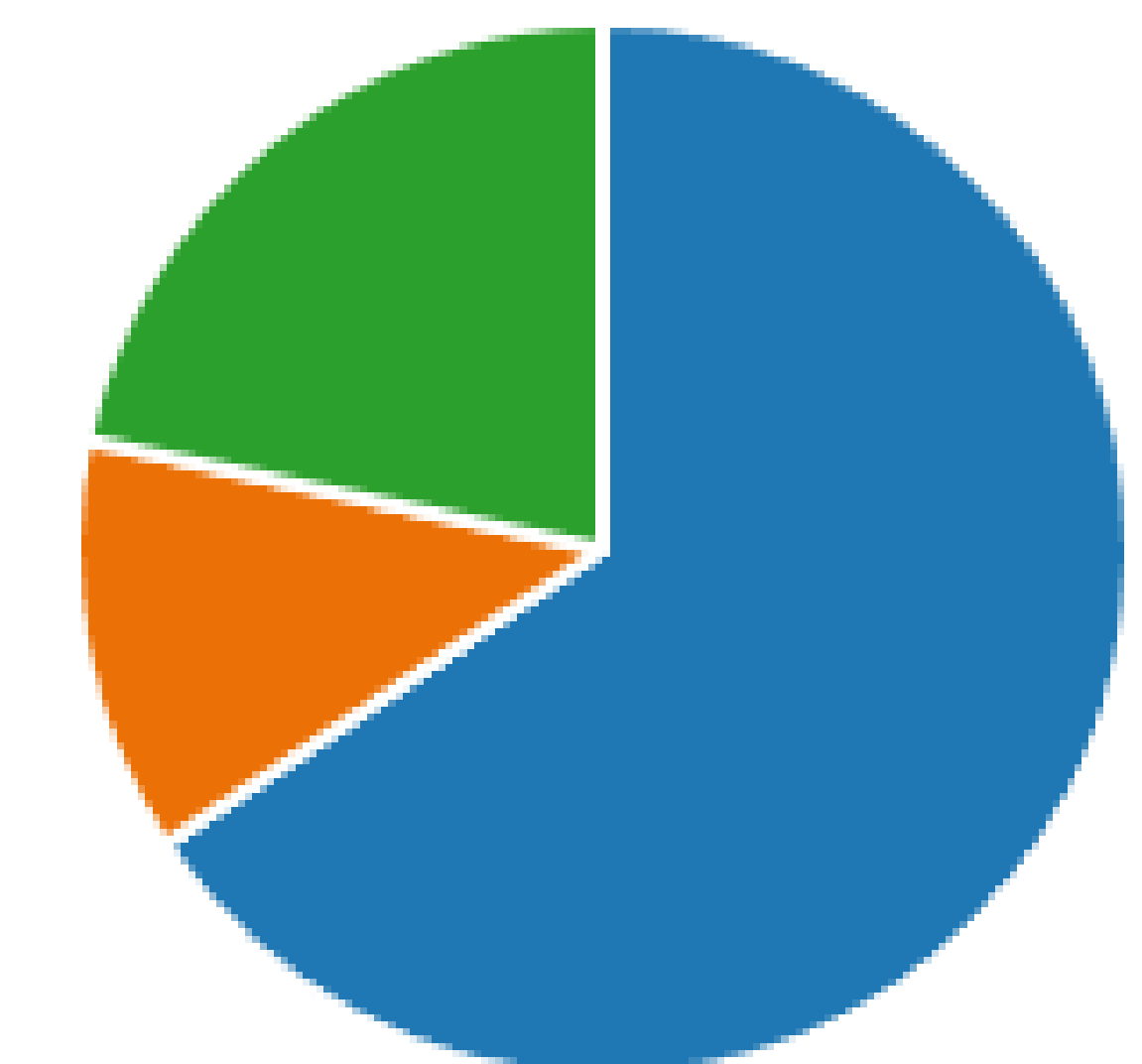
## Results:

- 66% of participants expressed a desire to learn more about how AI algorithms function in radiology.
- 29% of participants were supportive of AI implementation in other clinical fields.

7. Would you want to know how the AI algorithm generated the results?

[More Details](#)

Yes	118
No	23
Neutral	39



10. Are you in favor of AI implementation in other clinical fields?

[More Details](#)

[Insights](#)

Yes	50
No	24
Neutral	100



# Patient Perspectives on the Integration of Artificial Intelligence (AI) in Radiology

## Results:

For 34% of participants, using AI plus radiologists is a deciding factor in choosing a healthcare provider facility. 90% of these participants would like to know more about how AI works

11. Everything else remaining the same, would you choose a facility that uses AI plus a radiologist (specialist doctor) over a facility that does not have AI and the radiologist (specialist doctor) interprets your study alone?

[More Details](#)

[Insights](#)

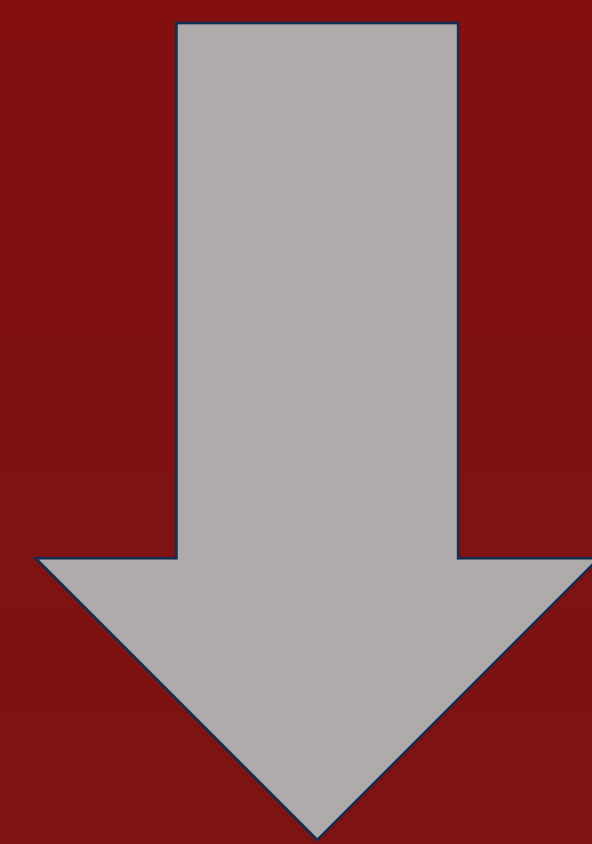
● Yes	59
● No	31
● Neutral	85



# Patient Perspectives on the Integration of Artificial Intelligence (AI) in Radiology

## Conclusion:

- 1) Patients would like to know.
- 2) Patients willing to choose a center who implemented AI assisted tools.
- 3) Patients willing to pay extra for higher level of care.
- 4) Many written comments stated that the participant did not know enough about the subject to formulate a stance.



Invest in patient education

The CAIRS center has been funded by a generous endowment from the J.T. Ling family.

