

The implementation of AI diagnostic tools in oncology What is the impact of new

technologies on humans and society?

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Research Question:

How could the Western World implement AI diagnostic tools in oncology?

- Survey to medical professionals and students
- Legal document analysis on matters of liability

Survey Findings:

Q1: Is current AI training sufficient?

- Hypothesis: Current AI **training** for medical professionals is insufficient to ensure competence in effectively utilizing AI tools.
- Results: The perceived preparedness of medical professional demonstrates that a substantial majority does not feel equipped to employ tools in practice (around 60% of medical graduates consider training insufficient)

Q3: Who should be held liable in case of malfunction?

- 1st Hypothesis: Doctors feel more legal responsibility when using white box AI compared to non-transparent black box AI
- Results: The mean of legal responsibility for white box AI is slightly higher than for a black box AI, the difference is non-significant. The latter is however larger for employed medical professionals than for medical students.
- 2nd Hypothesis: A doctor will feel more legal responsibility in a scenario where a correct AI diagnosis is ignored (with best intentions) then when an incorrect AI diagnosis is adopted.
- Results: At an uncertainty level of 1%, we find that **our** hypothesis holds under the use of both a transparent white box and a non-transparent black box AI.

might substitute them?

Q2: Are medical professionals fearful that AI

- Hypothesis: Factors such as age, experience and skills play a role in opinions on current job security when it comes to use and possible replacement of AI tools
- Results: There is a **significant negative relationship** between age and AI tools (1% uncertainty level), but there is no evidence that experience and AI skills have an effect on concerns of replacement.

Q4: Does liability influence willingness to use AI tools?

- Hypothesis: Doctors likely prefer to minimize their liability.
- Results: Doctors show a significantly lower willingness to utilize AI tools when they carry **full liability**, rather than where liability is shared or entirely borne by the AI developer.

Survey Analysis:

Bootstrap analysis method:

Computations are based on a thousand new samples that are drawn with replacement from our original sample

Legal Analysis:

Legal **Personhood**

- Resolves agency problem
- Suits could be brought against AI devices

Advantages of the method:

- 1) Variables don't have to be normally distributed 2) Less susceptible to outliers
- 3) More accurate for a low sample size

Product liability

- Manufacturer's liabilitγ for damage caused by a defective product
- EU Law regime presents gaps to be addressed

AI liability under tort law

Hospitals and health care providers

- Vicariously liable for acts of another individual during the course of employment
- Directly liable for failure to ensure adequacy of AI equipment, facilities, etc.

Medical negligence

- Duty of care + Breach + Causation + Damage
- Physician shall attain the standards of care
- AI might alter this standard and bring about complications for the fulfillment of those requirements

Others:

- Informed consent
- Enterprise liability

