

# Does AI Speed Up Chest X-ray Reporting by Radiographers?

## Real-World Impact of AI Decision Support on Reporting Efficiency

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### KEY FINDINGS

32,152

CXRs

10%

Reduction in reporting time

$\rho = -0.66$

Slower reporters benefit most

#### PURPOSE & AIM

##### Background

AI decision-support tools are increasingly being deployed in clinical radiology, yet evidence for their impact on reporting efficiency in real-world NHS practice remains limited.

##### Aim

To evaluate the effect of a commercial AI decision-support system on chest X-ray (CXR) reporting time for reporting radiographers across a large acute NHS hospital trust.

#### METHODS & MATERIALS

##### Study Design

Retrospective pre / post service evaluation conducted at United Lincolnshire Teaching Hospitals NHS Trust.

##### Study Population

Adult ( $\geq 16$  years) CXR reports authored by reporting radiographers across two 12-week periods: immediately pre-implementation and beginning two weeks post-implementation of a commercial AI decision-support system (Harrison.ai, Australia).

##### Outcome Measure

Reporting time, defined as the time interval between dictation start and report verification.

##### Statistical Analysis

Descriptive statistics and non-parametric comparisons were performed, with outliers above the 95th percentile excluded. A multivariable linear mixed-effects regression model evaluated the association between AI use and reporting time while adjusting for admission source and AI triage rank (used as proxy for case complexity), with reporting radiographer included as a random effect. Spearman's rank correlation was used to assess the relationship between reporter's baseline median reporting time and their change in reporting time following AI implementation.

#### CONCLUSION

AI decision support was associated with a statistically significant reduction in CXR reporting time in real-world NHS practice. The benefit was most pronounced among reporters with slower baseline speeds, suggesting AI may help narrow performance variation across reporting teams.

While the per-study time saving is modest, scaled across high-volume NHS reporting workloads, even small per-case efficiencies could translate into meaningful reductions in reporting backlogs, with potential to support radiographer workforce sustainability.

#### RESULTS

##### Study Population

32,152 CXRs were analysed (14,473 pre-implementation; 17,679 post-implementation) across 13 radiographers.

##### Reporting Times

After excluding values above the 95th percentile ( $>488$  seconds), median reporting time was **69 seconds pre-AI** and **71 seconds post-AI**.

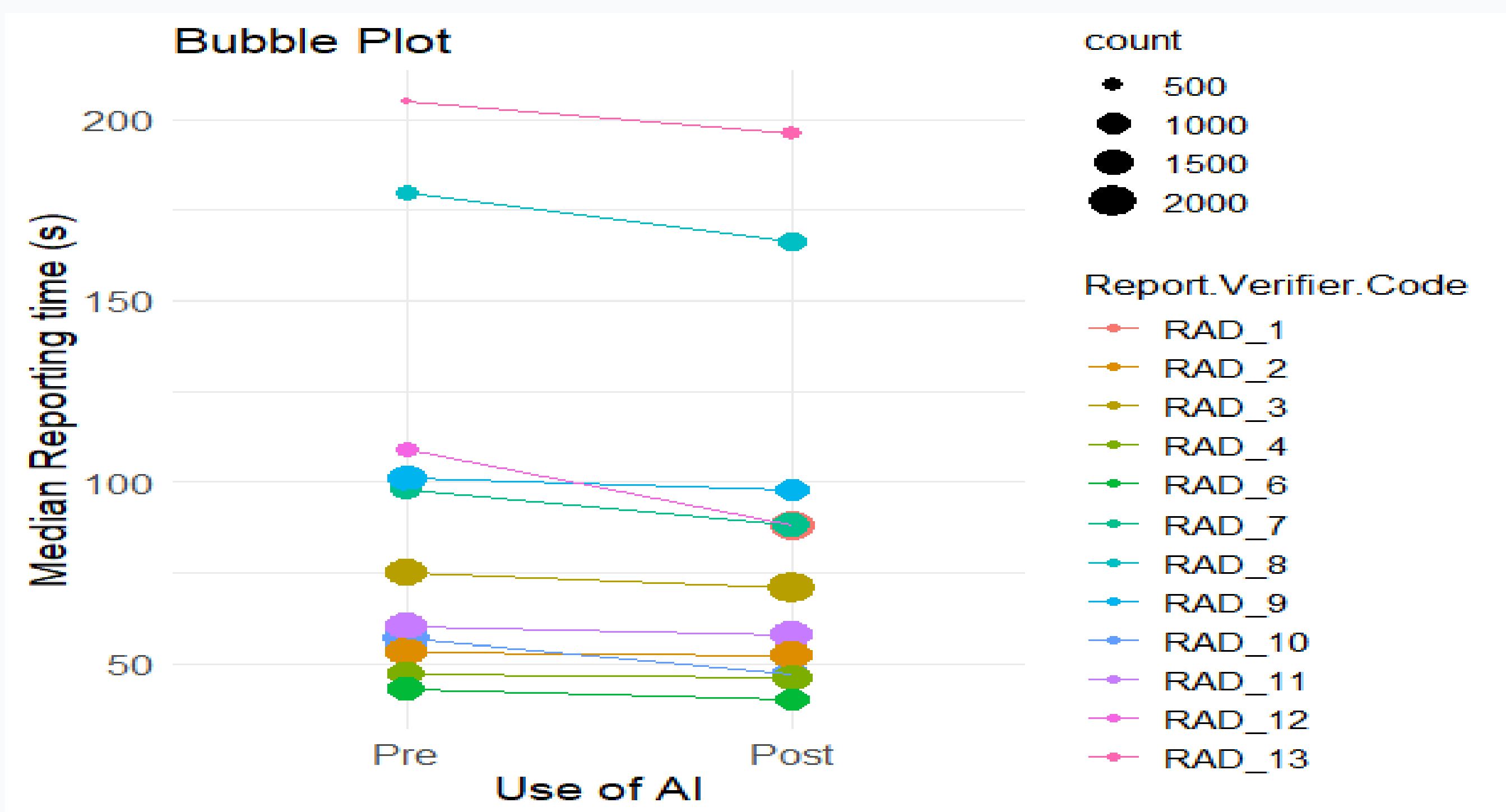
##### Mixed-Effects Regression

After adjusting for case complexity and reporter, AI-supported reporting was associated with a statistically significant reduction in reporting time of **6.9 seconds (10% of baseline median,  $p < 0.001$ )**.

##### Reporter-Level Analysis

A moderate-strong negative correlation was observed between baseline reporting speed and  $\Delta$ reporting time post-implementation (Spearman's  $\rho = -0.66$ ,  $p = 0.026$ ). A "floor effect" was observed, whereby AI had a lower impact on reporters with faster baseline speeds or higher reporting volumes. This suggests AI may be most beneficial as a decision-support aid for less experienced or lower-volume reporters (see Figure 1).

#### FIGURE 1



**Figure 1.** Bubble plot comparing median reporting time per reporter pre- and post-implementation of AI. Bubble size represents reporting volume. Reporters with slower baseline times showed the largest reductions in reporting time post-implementation.