



# PREDICT

## December 2025

### Project Updates

We're officially 12 months into the project and we've found some interesting findings from both our data simulation studies and the application of the PREDICT methodologies to real-world data.

- See page 2 for a visual infographic of the findings from our fake data simulation studies.
- We have applied 3 out of 4 PREDICT methods to real-world data on two models 1) the prediction of a heart attack or stroke in 10 years (similar to QRisk) and 2) the prediction of a fall in 12 months time. Preliminary results show both the overprediction of future heart attack and stroke (page 3).
- We are carrying out a basic health economic analysis to estimate the economical impact of overprescribing statins (page 3).
- We are working with patients and the public by gathering experiences and options to help develop strategies to improve regulation of healthcare prediction models.

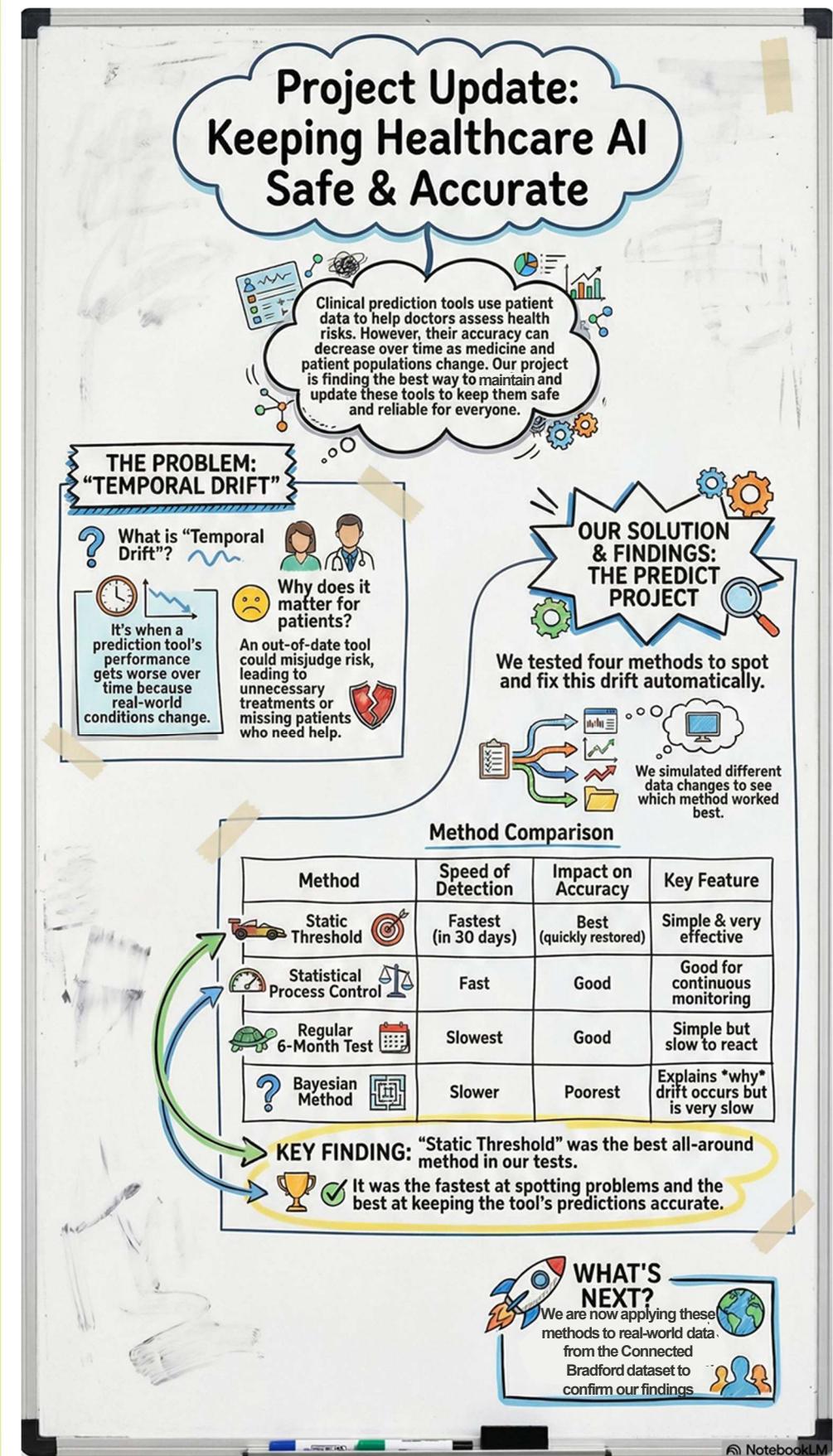
### PPIE Expression of Interest

Due to the doctor's strikes we had to rearrange our PPIE event to January. In this event we will be exploring how it feels to be told by a doctor "you are at risk of developing a disease e.g. heart attack or falls", because the doctor or the computer has calculated your risk.

*If you have recent experience of this happening to you, whether it went well or badly, we would be really keen to hear from you, please contact Sam or Oliver if you're interested (email addresses on the next page).*

We look forward to sharing the findings from these discussions with you in our next newsletter updates.

Check out our AI-generated project update summary:



The infographic is titled "Project Update: Keeping Healthcare AI Safe & Accurate" in a large, bold, black font inside a blue cloud-like shape at the top. Below the title is a detailed illustration of medical icons like a heart rate monitor, a brain scan, a bar chart, and a gear. A speech bubble contains text about clinical prediction tools and their decreasing accuracy over time due to changing medicine and patient populations. The main content is organized into three main sections: "THE PROBLEM: 'TEMPORAL DRIFT'", "OUR SOLUTION & FINDINGS: THE PREDICT PROJECT", and "Method Comparison".

**THE PROBLEM: "TEMPORAL DRIFT"**

- What is "Temporal Drift"?** It's when a prediction tool's performance gets worse over time because real-world conditions change.
- Why does it matter for patients?** An out-of-date tool could misjudge risk, leading to unnecessary treatments or missing patients who need help.

**OUR SOLUTION & FINDINGS: THE PREDICT PROJECT**

- We tested four methods to spot and fix this drift automatically.
- We simulated different data changes to see which method worked best.

**Method Comparison**

Method	Speed of Detection	Impact on Accuracy	Key Feature
Static Threshold	Fastest (in 30 days)	Best (quickly restored)	Simple & very effective
Statistical Process Control	Fast	Good	Good for continuous monitoring
Regular 6-Month Test	Slowest	Good	Simple but slow to react
Bayesian Method	Slower	Poorest	Explains *why* drift occurs but is very slow

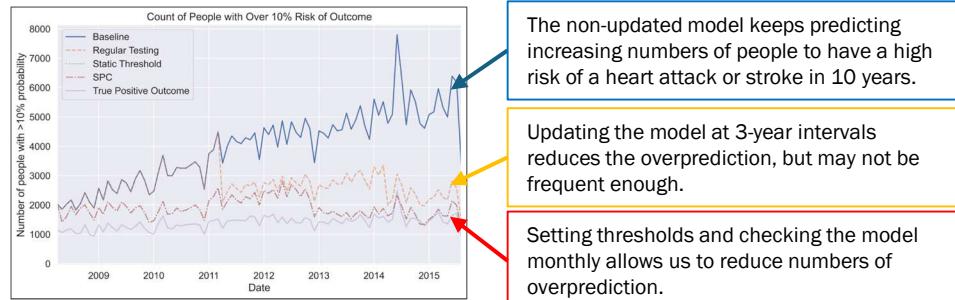
**KEY FINDING:** "Static Threshold" was the best all-around method in our tests. It was the fastest at spotting problems and the best at keeping the tool's predictions accurate.

**WHAT'S NEXT?** We are now applying these methods to real-world data from the Connected Bradford dataset to confirm our findings.

This summary infographic was generated using Gemini Pro, providing the model with our code and publication draft to extract key features.

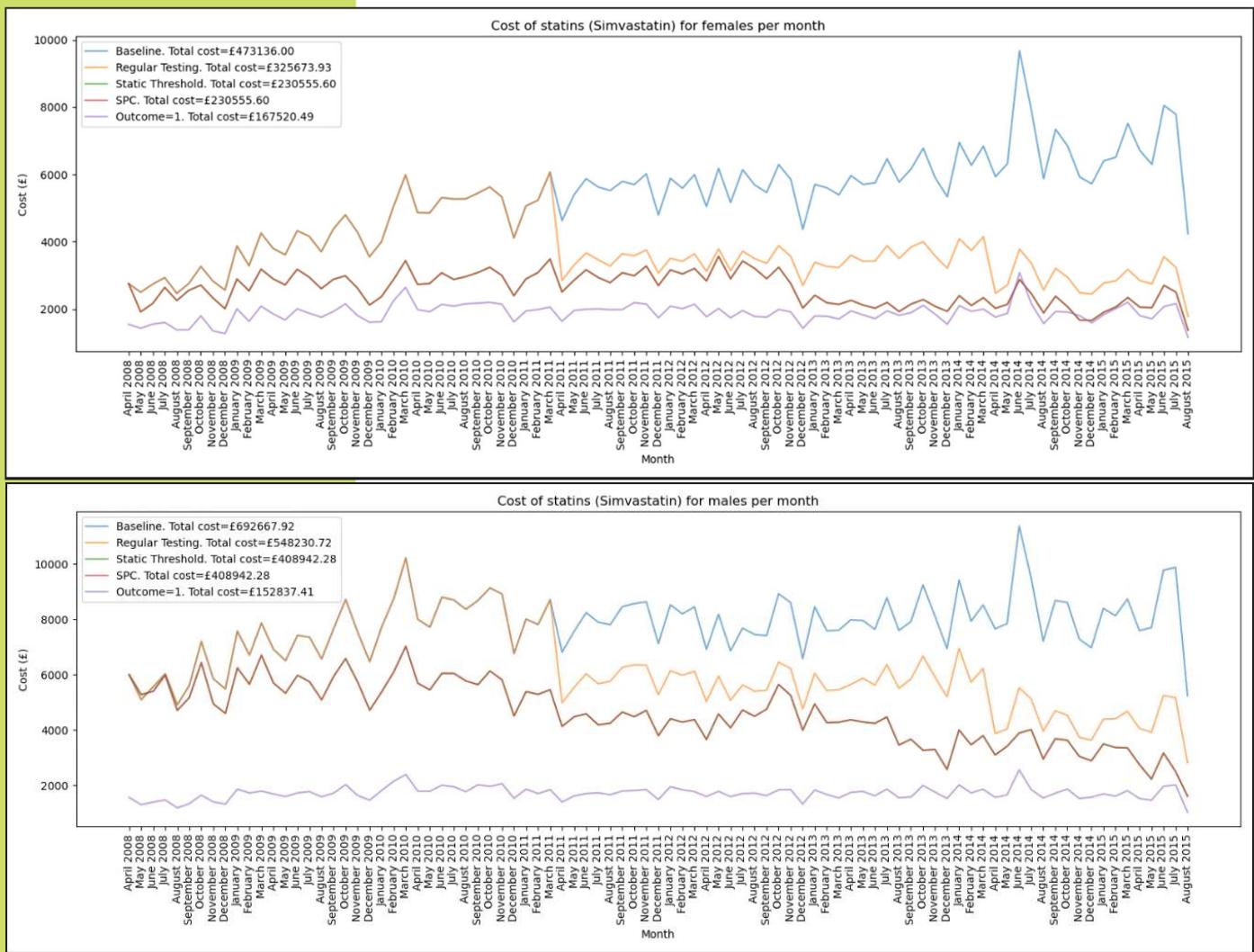
# Preliminary Results

Below is an example of the number of people predicted to have over a 10% chance of a heart attack or stroke in the following 10 years using 3 methods, versus the true number who had a heart attack or stroke.



The two Figures below show that if we don't update or check our heart attack prediction models for 7 years, we could be charging the NHS for misclassification! In the female population, not updating the model could've cost the NHS around £242,581 in overpredicting heart attack risk, and another £283,725 in the male population. That's over half a million pounds!

The data used was based on patient records from Bradford, so this is just a small portion of the money that is potentially costing the NHS across the UK.



Cost of statins per month in females and males in the Bradford region depending on whether we don't update the model (Baseline) or update it with various methods (Regular Testing, Static Threshold, and SPC). Outcome=1 is the number of people who had a heart attack or stroke and the cost to prescribe these individuals statins.