

Supplementary Material

Geometrically-aggregated training samples: Leveraging summary statistics to enable healthcare data democratization

Jenny Yang, Anshul Thakur, Andrew A. S. Soltan & David A. Clifton, 2023

A Software Packages and Implementation

Models were implemented using Python (v3.6.9) and PyTorch (v1.10.1+cu102). All models were run using an Intel Xeon E-2146G Processor (CPU: 6 cores, 4.50 GHz max frequency).

QUAIL, MWEM, and PATE-CTGAN models were trained using Diffprivlab and Smartnoise packages.

Implementation times:

1. CURIAL (22,737 samples, 26 features): 1.74 s
2. eICU (65,741 samples, 402 features): 47.6 s
3. Adult (24,420 samples, 12 features): 4.17 s

B Datasets

B.1 CURIAL Datasets

The CURIAL database is an anonymized database with United Kingdom National Health Service (NHS) approval via the national oversight/regulatory body, the Health Research Authority (HRA)(CURIAL; NHS HRA IRAS ID: 281832).

Data from OUH studied here are available from the Infections in Oxfordshire Research Database (<https://oxfordbrc.nihr.ac.uk/research-themes/modernising-medical-microbiology-and-big-infection-diagnostics/infections-in-oxfordshire-research-database-iord/>), subject to an application meeting the ethical and governance requirements of the Database. Data from UHB, PUH and BH are available on reasonable request to the respective trusts, subject to HRA requirements.

Supplementary Table 1: Clinical predictors considered for COVID-19 status prediction.

Category	Features
Vital Signs	Heart rate, respiratory rate, oxygen saturation, systolic blood pressure, diastolic blood pressure, temperature
Blood Tests	Haemoglobin, haematocrit, mean cell volume, white cell count, neutrophil count, lymphocyte count, monocyte count, eosinophil count, basophil count, platelets
Liver Function Tests & C-reactive protein	Albumin, alkaline phosphatase, alanine aminotransferase, bilirubin, C-reactive protein
Urea & Electrolytes	Sodium, potassium, creatinine, urea, estimated glomerular filtration rate

Supplementary Table 2: Summary of number of patients, COVID-19 positive cases

	Training	Validation	Test
Total patients	22,737 (1,182 positive)	7,579 (439 positive)	134,578 (3,680 positive)
PUH	22,737 (1,182 positive)	7,579 (439 positive)	7,580 (384 positive)
UHB	NA	NA	10,293 (439 positive)
BH	NA	NA	1,177 (144 positive)
OUH "wave 2"	NA	NA	22,857 (2,012 positive)
OUH "wave 1"	NA	NA	92,671 (701 positive)

B.2 ICU Dataset

The eICU Collaborative Research Database (eICU-CRD) is a publicly-available, anonymized database with pre-existing institutional review board (IRB) approval. The database is released under the Health Insurance Portability and Accountability Act (HIPAA) safe harbor provision. The re-identification risk was certified as meeting safe harbor standards by Privacert (Cambridge, MA) (HIPAA Certification no. 1031219-2).

The eICU Collaborative Research Database is available online at <https://www.physionet.org/content/eicu-crd/2.0/>

Using similar inclusion and exclusion criteria to those used in previous studies, we selected adult patients (age > 18) with a minimum of 15 ICU records, and grouped these records into 1 hour windows. We removed any samples that did not have a clear discharge status (i.e., anything that was not "alive" or "expired").

Further preprocessing was performed to remove samples with any missing values, one-hot encode categorical features, and standardize all continuous features to have a mean of 0 and a standard deviation of 1.

We used a 80:20 training and test ratio, resulting in 65,741 training (5,987 deaths) and 16,436 (1,486 deaths) test samples, respectively.

Supplementary Table 3: Clinical predictors considered for predicting patient discharge status and patient diagnosis.

Category	Features
Demographic features	Gender, age, height, weight
Measurements at hospital admission	Non-invasive systolic blood pressure, non-invasive diastolic blood pressure, non-invasive mean arterial pressure, heart rate, supporting oxygen used at admission, blood oxygen saturation, Glasgow coma score, diagnosis at admission
Measurements at ICU admission	Glucose

B.3 Adult (Census Income) Dataset

The UCI Adult (Census Income) Dataset is available online at <https://archive.ics.uci.edu/ml/datasets/Adult/>

C Model Architectures

Neural Network Models: The rectified linear unit (ReLU) activation function was used for the hidden layers and the Sigmoid activation function was used in the output layer. For updating model weights, binary cross entropy loss and the Adaptive Moment Estimation (Adam) optimizer was used during training. Models were trained using 100 epochs and a batch size of 2048.

Supplementary Table 4: Neural Network hyperparameter settings for COVID-19, income, and discharge status prediction.

Task	Hyperparameters
COVID-19 Diagnosis	n hidden layers = 4
	n hidden nodes (per layer) = 10
	learning rate = 0.005
Income Prediction	n hidden layers = 3
	n hidden nodes (per layer) = 5
	learning rate = 0.005
Discharge Status Prediction	n hidden layers = 1
	n hidden nodes (per layer) = 200
	learning rate = 0.001

D Results

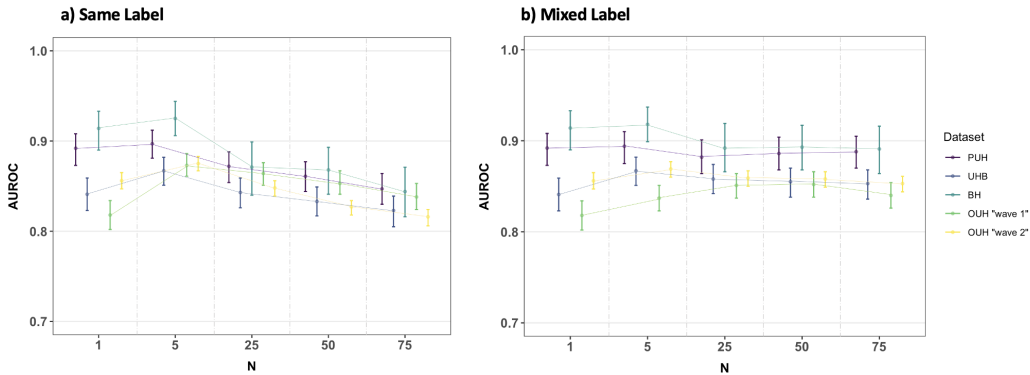
D.1 CURIAL datasets

Supplementary Table 5: Comparison of AUROC and AUPRC performances using a neural network-based model (alongside 95% CIs), between same label and mixed label patient sample combinations, for the CURIAL datasets.

N	Test Set	AUROC		AUPRC	
		Same Labels	Mixed Labels	Same Labels	Mixed Labels
Baseline (N=1)	PUH	0.892(0.875-0.908)		0.578(0.536-0.623)	
	UHB	0.859(0.84-0.876)		0.359(0.322-0.404)	
	BH	0.924(0.901-0.943)		0.723(0.661-0.781)	
	OUH "wave 2"	0.874(0.865-0.882)		0.613(0.593-0.633)	
	OUH "wave 1"	0.85(0.835-0.865)		0.13(0.112-0.153)	
5	PUH	0.890(0.873-0.907)	0.897(0.881-0.912)	0.534(0.489-0.579)	0.580(0.537-0.623)
	UHB	0.869(0.851-0.887)	0.871(0.853-0.886)	0.405(0.364-0.455)	0.365(0.326-0.405)
	BH	0.927(0.904-0.948)	0.939(0.919-0.955)	0.716(0.648-0.780)	0.724(0.654-0.790)
	OUH "wave 2"	0.874(0.865-0.882)	0.881(0.873-0.889)	0.606(0.586-0.627)	0.633(0.613-0.652)
	OUH "wave 1"	0.858(0.844-0.873)	0.860(0.847-0.873)	0.139(0.122-0.161)	0.129(0.112-0.148)
25	PUH	0.876(0.859-0.894)	0.891(0.874-0.908)	0.387(0.347-0.427)	0.542(0.500-0.591)
	UHB	0.867(0.850-0.883)	0.863(0.847-0.880)	0.290(0.262-0.322)	0.317(0.281-0.358)
	BH	0.920(0.901-0.937)	0.933(0.914-0.950)	0.607(0.536-0.676)	0.709(0.644-0.777)
	OUH "wave 2"	0.863(0.854-0.871)	0.877(0.869-0.885)	0.478(0.459-0.496)	0.588(0.567-0.607)
	OUH "wave 1"	0.861(0.848-0.875)	0.848(0.834-0.862)	0.082(0.073-0.091)	0.072(0.063-0.084)
50	PUH	0.838(0.816-0.859)	0.888(0.869-0.905)	0.325(0.290-0.363)	0.568(0.525-0.615)
	UHB	0.837(0.817-0.857)	0.865(0.847-0.882)	0.262(0.235-0.290)	0.343(0.305-0.386)
	BH	0.881(0.850-0.908)	0.910(0.882-0.933)	0.553(0.487-0.621)	0.715(0.653-0.769)
	OUH "wave 2"	0.838(0.828-0.847)	0.876(0.868-0.884)	0.436(0.417-0.453)	0.630(0.611-0.649)
	OUH "wave 1"	0.831(0.815-0.846)	0.851(0.837-0.866)	0.065(0.058-0.072)	0.117(0.101-0.135)
75	PUH	0.814(0.791-0.836)	0.879(0.861-0.897)	0.317(0.281-0.355)	0.513(0.470-0.562)
	UHB	0.822(0.801-0.845)	0.850(0.832-0.867)	0.271(0.243-0.302)	0.324(0.290-0.367)
	BH	0.869(0.834-0.898)	0.936(0.915-0.954)	0.552(0.483-0.623)	0.710(0.643-0.785)
	OUH "wave 2"	0.822(0.811-0.832)	0.867(0.858-0.875)	0.440(0.422-0.458)	0.603(0.584-0.622)
	OUH "wave 1"	0.802(0.784-0.819)	0.837(0.822-0.853)	0.063(0.056-0.070)	0.095(0.082-0.112)

Supplementary Table 6: Comparison of AUROC and AUPRC performances using a XGBoost model (alongside 95% CIs), between same label and mixed label patient sample combinations, for the CURIAL datasets.

N	Test Set	AUROC		AUPRC	
		Same Labels	Mixed Labels	Same Labels	Mixed Labels
Baseline (N=1)	PUH	0.892(0.873-0.908)		0.606(0.565-0.647)	
	UHB	0.841(0.823-0.859)		0.33(0.294-0.373)	
	BH	0.914(0.89-0.933)		0.699(0.638-0.763)	
	OUH "wave 2"	0.856(0.847-0.865)		0.597(0.578-0.616)	
	OUH "wave 1"	0.818(0.802-0.834)		0.152(0.13-0.179)	
5	PUH	0.897(0.881-0.912)	0.894(0.875-0.91)	0.543(0.501-0.588)	0.583(0.54-0.631)
	UHB	0.867(0.851-0.882)	0.867(0.851-0.882)	0.39(0.353-0.432)	0.374(0.335-0.418)
	BH	0.925(0.906-0.944)	0.918(0.899-0.937)	0.71(0.646-0.777)	0.673(0.606-0.737)
	OUH "wave 2"	0.875(0.867-0.883)	0.869(0.86-0.877)	0.611(0.592-0.629)	0.608(0.589-0.626)
	OUH "wave 1"	0.873(0.861-0.886)	0.837(0.823-0.851)	0.172(0.148-0.199)	0.148(0.126-0.176)
25	PUH	0.872(0.854-0.888)	0.882(0.864-0.901)	0.404(0.362-0.45)	0.574(0.527-0.619)
	UHB	0.843(0.826-0.859)	0.858(0.842-0.874)	0.289(0.254-0.33)	0.312(0.275-0.353)
	BH	0.871(0.84-0.899)	0.892(0.866-0.919)	0.606(0.537-0.677)	0.647(0.575-0.713)
	OUH "wave 2"	0.848(0.839-0.856)	0.859(0.85-0.867)	0.495(0.475-0.515)	0.551(0.532-0.571)
	OUH "wave 1"	0.864(0.851-0.876)	0.851(0.837-0.864)	0.099(0.086-0.114)	0.122(0.104-0.145)
50	PUH	0.861(0.844-0.877)	0.886(0.868-0.904)	0.352(0.311-0.398)	0.59(0.548-0.633)
	UHB	0.833(0.817-0.849)	0.855(0.838-0.87)	0.258(0.226-0.297)	0.324(0.286-0.364)
	BH	0.868(0.841-0.893)	0.893(0.868-0.917)	0.54(0.47-0.615)	0.651(0.582-0.719)
	OUH "wave 2"	0.827(0.818-0.834)	0.858(0.849-0.866)	0.429(0.409-0.448)	0.57(0.552-0.589)
	OUH "wave 1"	0.853(0.841-0.867)	0.852(0.838-0.866)	0.08(0.07-0.094)	0.134(0.115-0.158)
75	PUH	0.847(0.83-0.864)	0.888(0.87-0.905)	0.331(0.292-0.375)	0.581(0.539-0.623)
	UHB	0.823(0.805-0.839)	0.853(0.836-0.868)	0.254(0.221-0.292)	0.306(0.268-0.346)
	BH	0.844(0.816-0.871)	0.891(0.864-0.916)	0.491(0.423-0.563)	0.637(0.565-0.704)
	OUH "wave 2"	0.816(0.806-0.824)	0.853(0.844-0.861)	0.418(0.399-0.437)	0.547(0.528-0.566)
	OUH "wave 1"	0.838(0.824-0.853)	0.84(0.826-0.854)	0.076(0.065-0.089)	0.119(0.102-0.142)



Supplementary Figure 1: AUROC performances using an XGBoost model, alongside 95% confidence intervals, for different values of N for (a) class-wise *GATS* and (b) mixed-class *GATS*. N=1 represents baseline performance on the original dataset. Results presented use a 3:1 ratio of same-label and mixed label *GATS*, respectively. Full numerical results for both AUROC and AUPRC can be found in the Supplementary Material.

Supplementary Table 7: Ablation of the mixed label ratio (i.e. the proportion of COVID-19 positive vs negative patients used to create mixed label *GATS* samples.

pos:neg labels	Dataset	N=5	N=50	N=100
6:4	PUH	0.89(0.872-0.907)	0.894(0.878-0.91)	0.887(0.869-0.905)
	UHB	0.863(0.844-0.881)	0.865(0.848-0.883)	0.863(0.846-0.881)
	BH	0.932(0.909-0.951)	0.928(0.906-0.947)	0.931(0.91-0.95)
	OUH "wave 2"	0.873(0.864-0.881)	0.87(0.861-0.878)	0.877(0.869-0.885)
	OUH "wave 1"	0.851(0.837-0.865)	0.847(0.833-0.862)	0.845(0.83-0.86)
7:3	PUH	0.897(0.881-0.912)	0.888(0.869-0.905)	0.886(0.869-0.903)
	UHB	0.871(0.853-0.886)	0.865(0.847-0.882)	0.851(0.833-0.869)
	BH	0.939(0.919-0.955)	0.91(0.882-0.933)	0.931(0.91-0.95)
	OUH "wave 2"	0.881(0.873-0.889)	0.876(0.868-0.884)	0.871(0.862-0.88)
	OUH "wave 1"	0.86(0.847-0.873)	0.851(0.837-0.866)	0.85(0.836-0.864)
8:2	PUH	0.896(0.878-0.912)	0.887(0.869-0.904)	0.882(0.864-0.899)
	UHB	0.865(0.847-0.882)	0.868(0.851-0.884)	0.849(0.83-0.867)
	BH	0.929(0.909-0.947)	0.926(0.904-0.946)	0.921(0.897-0.943)
	OUH "wave 2"	0.872(0.863-0.881)	0.875(0.867-0.884)	0.866(0.857-0.875)
	OUH "wave 1"	0.846(0.832-0.861)	0.847(0.833-0.861)	0.829(0.813-0.846)
9:1	PUH	0.89(0.872-0.907)	0.874(0.855-0.893)	0.87(0.85-0.889)
	UHB	0.859(0.84-0.876)	0.842(0.822-0.862)	0.856(0.839-0.873)
	BH	0.931(0.91-0.951)	0.926(0.902-0.947)	0.922(0.9-0.943)
	OUH "wave 2"	0.872(0.863-0.88)	0.865(0.856-0.874)	0.866(0.857-0.875)
	OUH "wave 1"	0.846(0.831-0.861)	0.823(0.806-0.84)	0.843(0.829-0.857)

Supplementary Table 8: Ablation of the batch size used to generate *GATS* samples.

batch size	Dataset	N=5	N=50	N=100
128	PUH	0.897(0.881-0.913)	0.881(0.861-0.899)	0.879(0.86-0.897)
	UHB	0.87(0.854-0.886)	0.854(0.836-0.872)	0.854(0.835-0.873)
	BH	0.928(0.908-0.945)	0.918(0.889-0.942)	0.928(0.907-0.947)
	OUH "wave 2"	0.872(0.863-0.88)	0.878(0.87-0.886)	0.873(0.865-0.881)
	OUH "wave 1"	0.845(0.83-0.859)	0.846(0.831-0.862)	0.851(0.837-0.866)
256	PUH	0.896(0.88-0.912)	0.887(0.869-0.904)	0.888(0.871-0.906)
	UHB	0.865(0.848-0.881)	0.857(0.839-0.875)	0.864(0.847-0.88)
	BH	0.932(0.912-0.949)	0.912(0.885-0.935)	0.912(0.886-0.936)
	OUH "wave 2"	0.875(0.866-0.883)	0.872(0.863-0.881)	0.875(0.866-0.883)
	OUH "wave 1"	0.863(0.85-0.876)	0.846(0.832-0.86)	0.853(0.84-0.867)
512	PUH	0.888(0.869-0.905)	0.882(0.863-0.9)	0.886(0.869-0.904)
	UHB	0.865(0.847-0.882)	0.848(0.829-0.866)	0.861(0.842-0.879)
	BH	0.931(0.911-0.95)	0.922(0.897-0.943)	0.929(0.906-0.947)
	OUH "wave 2"	0.879(0.871-0.887)	0.868(0.859-0.876)	0.871(0.862-0.879)
	OUH "wave 1"	0.852(0.838-0.867)	0.851(0.837-0.866)	0.854(0.84-0.868)
1024	PUH	0.89(0.872-0.908)	0.891(0.875-0.907)	0.894(0.876-0.91)
	UHB	0.862(0.844-0.88)	0.858(0.84-0.875)	0.874(0.857-0.891)
	BH	0.931(0.91-0.95)	0.928(0.905-0.947)	0.936(0.917-0.954)
	OUH "wave 2"	0.878(0.869-0.886)	0.868(0.86-0.877)	0.887(0.878-0.894)
	OUH "wave 1"	0.853(0.839-0.867)	0.848(0.832-0.862)	0.861(0.847-0.876)
2048	PUH	0.897(0.881-0.912)	0.888(0.869-0.905)	0.886(0.869-0.903)
	UHB	0.871(0.853-0.886)	0.865(0.847-0.882)	0.851(0.833-0.869)
	BH	0.939(0.919-0.955)	0.91(0.882-0.933)	0.931(0.91-0.95)
	OUH "wave 2"	0.881(0.873-0.889)	0.876(0.868-0.884)	0.871(0.862-0.88)
	OUH "wave 1"	0.86(0.847-0.873)	0.851(0.837-0.866)	0.85(0.836-0.864)

Supplementary Table 9: Ablation of the proportion of mixed label *GATS* samples added to training.

p	Dataset	N=5	N=50	N=100
0.9	PUH	0.891(0.874-0.908)	0.897(0.882-0.912)	0.887(0.87-0.904)
	UHB	0.854(0.835-0.874)	0.859(0.841-0.876)	0.856(0.837-0.873)
	BH	0.934(0.913-0.952)	0.929(0.908-0.948)	0.929(0.91-0.946)
	OUH "wave 2"	0.875(0.866-0.883)	0.874(0.865-0.882)	0.876(0.868-0.884)
	OUH "wave 1"	0.843(0.829-0.859)	0.855(0.842-0.868)	0.848(0.834-0.863)
0.7	PUH	0.901(0.885-0.916)	0.892(0.874-0.909)	0.887(0.868-0.904)
	UHB	0.864(0.846-0.881)	0.865(0.848-0.881)	0.855(0.838-0.874)
	BH	0.93(0.91-0.95)	0.928(0.907-0.949)	0.915(0.888-0.938)
	OUH "wave 2"	0.878(0.869-0.886)	0.876(0.868-0.884)	0.87(0.862-0.878)
	OUH "wave 1"	0.853(0.84-0.867)	0.856(0.843-0.871)	0.847(0.832-0.861)
0.5	PUH	0.892(0.875-0.909)	0.886(0.869-0.904)	0.889(0.872-0.906)
	UHB	0.861(0.842-0.879)	0.862(0.846-0.879)	0.863(0.845-0.881)
	BH	0.935(0.915-0.953)	0.933(0.913-0.95)	0.923(0.901-0.942)
	OUH "wave 2"	0.878(0.87-0.886)	0.874(0.866-0.882)	0.875(0.867-0.883)
	OUH "wave 1"	0.849(0.834-0.862)	0.852(0.837-0.866)	0.85(0.837-0.865)
0.3	PUH	0.89(0.873-0.907)	0.89(0.873-0.907)	0.888(0.871-0.905)
	UHB	0.861(0.843-0.878)	0.859(0.841-0.876)	0.861(0.844-0.879)
	BH	0.937(0.918-0.953)	0.93(0.909-0.95)	0.919(0.895-0.939)
	OUH "wave 2"	0.877(0.868-0.885)	0.879(0.871-0.887)	0.868(0.86-0.876)
	OUH "wave 1"	0.853(0.84-0.867)	0.861(0.848-0.874)	0.845(0.831-0.86)
0.1	PUH	0.892(0.875-0.908)	0.878(0.86-0.896)	0.885(0.867-0.903)
	UHB	0.867(0.849-0.884)	0.862(0.845-0.878)	0.856(0.839-0.872)
	BH	0.931(0.91-0.95)	0.924(0.901-0.943)	0.918(0.893-0.94)
	OUH "wave 2"	0.868(0.859-0.876)	0.875(0.866-0.883)	0.872(0.864-0.88)
	OUH "wave 1"	0.845(0.83-0.86)	0.843(0.83-0.857)	0.84(0.825-0.855)

D.2 eICU dataset

Supplementary Table 10: Comparison of AUROC and AUPRC performances using a neural network (alongside 95% CIs), for the eICU dataset.

N	AUROC		AUPRC	
	Same Labels	Mixed Labels	Same Labels	Mixed Labels
Baseline (N=1)	0.851(0.843-0.86)		0.473(0.453-0.495)	
5	0.857(0.849-0.865)	0.856(0.848-0.864)	0.468(0.448-0.491)	0.463(0.442-0.486)
25	0.837(0.829-0.845)	0.848(0.84-0.856)	0.344(0.328-0.361)	0.455(0.435-0.478)
50	0.822(0.814-0.831)	0.847(0.839-0.855)	0.319(0.303-0.335)	0.448(0.428-0.47)
75	0.802(0.792-0.811)	0.846(0.838-0.855)	0.291(0.276-0.306)	0.449(0.429-0.471)
100	0.781(0.771-0.791)	0.849(0.841-0.857)	0.27(0.256-0.284)	0.454(0.434-0.476)

Supplementary Table 11: Comparison of AUROC and AUPRC performances using XGBoost (alongside 95% CIs), for the eICU dataset.

N	AUROC		AUPRC	
	Same Labels	Mixed Labels	Same Labels	Mixed Labels
Baseline (N=1)	0.879(0.872-0.886)		0.527(0.507-0.549)	
5	0.809(0.8-0.819)	0.864(0.857-0.872)	0.367(0.347-0.387)	0.495(0.475-0.517)
25	0.762(0.751-0.772)	0.864(0.857-0.872)	0.272(0.256-0.291)	0.494(0.474-0.516)
50	0.751(0.74-0.761)	0.864(0.856-0.872)	0.248(0.231-0.265)	0.499(0.478-0.52)
75	0.740(0.73-0.751)	0.864(0.857-0.872)	0.237(0.222-0.253)	0.496(0.475-0.519)
100	0.741(0.731-0.752)	0.867(0.86-0.875)	0.235(0.22-0.251)	0.501(0.482-0.522)

D.3 Adult (Census Income) dataset

Supplementary Table 12: Comparison of AUROC and AUPRC performances using a neural network model (alongside 95% CIs), for the Adult dataset.

N	AUROC		AUPRC	
	Same Labels	Mixed Labels	Same Labels	Mixed Labels
Baseline (N=1)	0.888(0.882-0.895)		0.736(0.722-0.753)	
5	0.858(0.851-0.866)	0.877(0.870-0.884)	0.664(0.647-0.682)	0.685(0.666-0.704)
25	0.838(0.831-0.846)	0.869(0.862-0.876)	0.607(0.589-0.627)	0.704(0.687-0.721)
50	0.827(0.82-0.835)	0.873(0.866-0.880)	0.538(0.522-0.558)	0.692(0.674-0.710)
75	0.823(0.816-0.831)	0.878(0.871-0.886)	0.506(0.49-0.524)	0.709(0.692-0.727)
100	0.819(0.812-0.827)	0.871(0.864-0.878)	0.497(0.482-0.514)	0.688(0.669-0.707)

Supplementary Table 13: Comparison of AUROC and AUPRC performances using a XGBoost model (alongside 95% CIs), for the Adult dataset.

N	AUROC		AUPRC	
	Same Labels	Mixed Labels	Same Labels	Mixed Labels
Baseline (N=1)	0.928(0.922-0.933)		0.826(0.814-0.839)	
5	0.883(0.877-0.889)	0.909(0.904-0.915)	0.689(0.671-0.709)	0.789(0.774-0.802)
25	0.83(0.822-0.839)	0.911(0.905-0.917)	0.629(0.610-0.649)	0.790(0.776-0.804)
50	0.783(0.774-0.793)	0.913(0.907-0.919)	0.534(0.516-0.556)	0.797(0.784-0.811)
75	0.739(0.728-0.749)	0.913(0.907-0.919)	0.448(0.431-0.468)	0.796(0.783-0.81)
100	0.736(0.725-0.746)	0.913(0.908-0.919)	0.455(0.436-0.475)	0.798(0.785-0.811)