

Supplement Materials

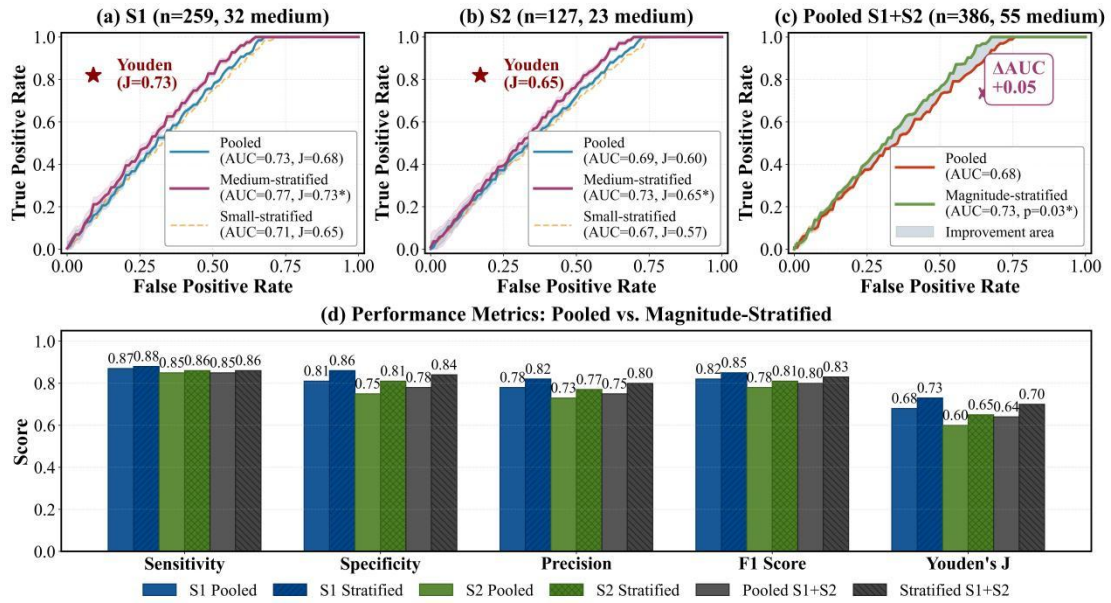


Figure S1 ROC curve comparison of magnitude-stratified versus pooled Accr6h thresholds for subsets.

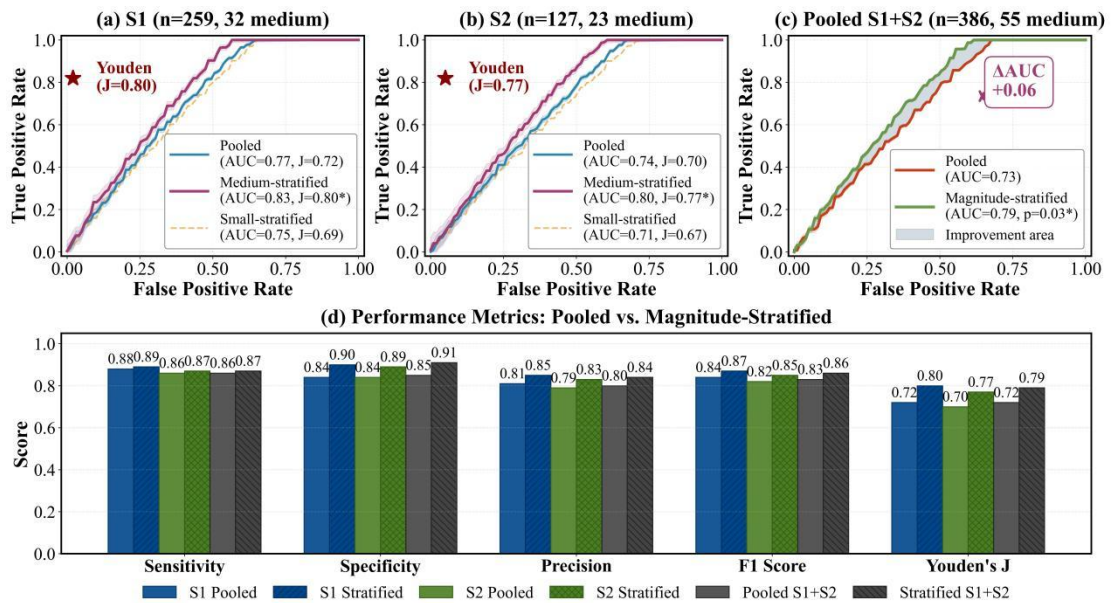


Figure S2 ROC curve comparison of magnitude-stratified versus pooled Accr24h thresholds for subsets.

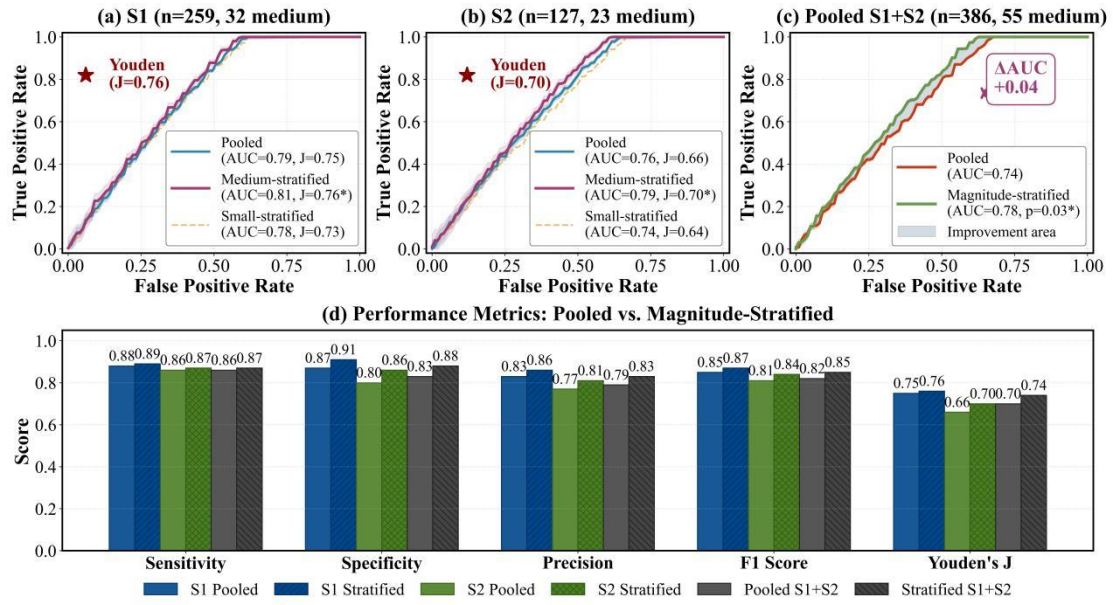


Figure S3 ROC curve comparison of magnitude-stratified versus pooled AccR6h+Imax thresholds for subsets.

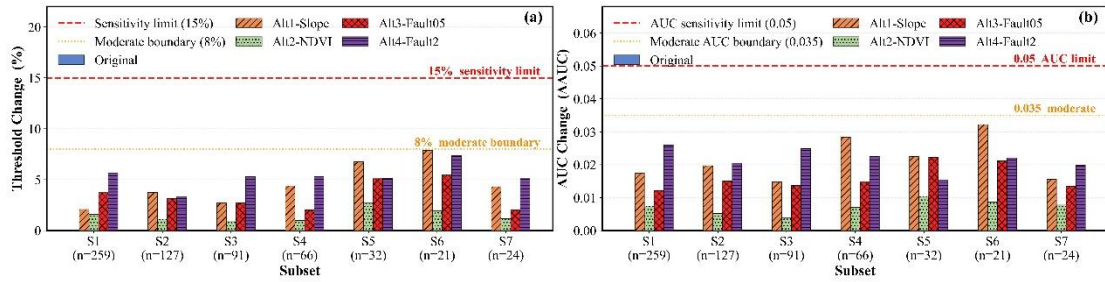


Figure S4 Alternative scheme sensitivity of AccR6h across seven subsets: (a) threshold Change (%) and (b) AUC change.

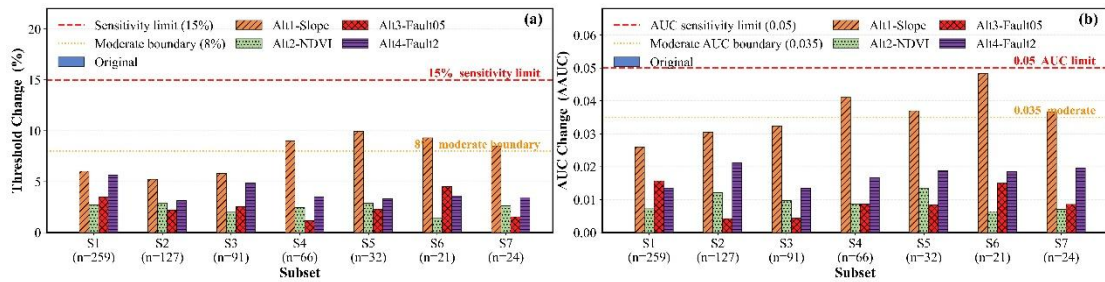


Figure S5 Alternative scheme sensitivity of AccR24h across seven subsets: (a) threshold Change (%) and (b) AUC change.

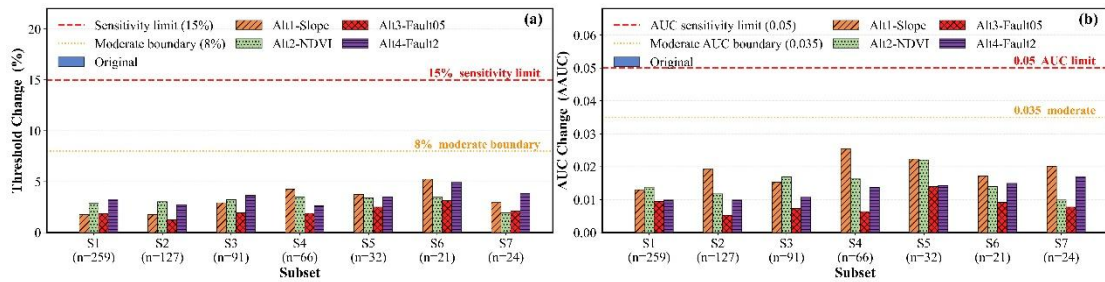


Figure S6 Alternative scheme sensitivity of Imax across seven subsets: (a) threshold Change (%) and (b) AUC change.

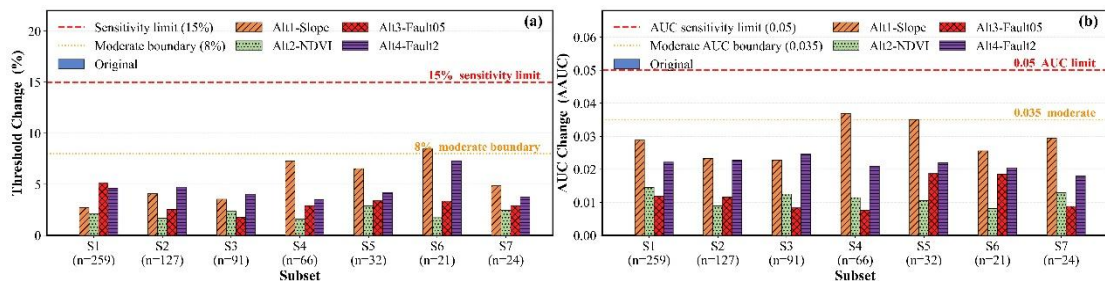


Figure S7 Alternative scheme sensitivity of AccR6h+Imax across seven subsets: (a) threshold Change (%) and (b) AUC change.

Table S1 Robustness metrics for AccR6h thresholds under alternative classification schemes.

Subset	95% CI	CI Tier	Max Δ Threshold (%)	Max Δ AUC (%)	Robustness
S1	0.0189	Low	5.7	2.6	Pass
S2	0.0278	Low	3.7	2.1	Pass
S3	0.0333	Low	5.3	2.5	Pass
S4	0.0396	Low	5.3	2.8	Pass
S5	0.0585	Low	6.8	2.2	Pass
S6	0.0734	Moderate	7.9	3.2	Pass
S7	0.0683	Moderate	5.1	2.0	Pass

Note: Pass criteria: threshold change $\leq 15\%$, $|\Delta\text{AUC}| \leq 0.05$. Values represent maxima across Alt1–Slope, Alt2–NDVI, Alt3–Fault ≤ 0.5 km, and Alt4–Fault ≤ 2 km.

Table S2 Robustness metrics for AccR24h thresholds under alternative classification schemes.

Subset	95% CI	CI Tier	Max Δ Threshold (%)	Max Δ AUC (%)	Robustness
S1	0.0155	Low	6.0	2.6	Pass
S2	0.0240	Low	5.2	3.0	Pass
S3	0.0294	Low	5.8	3.2	Pass
S4	0.0357	Low	9.0	4.1	Pass (marginal)
S5	0.0555	Low	9.9	3.7	Pass (marginal)
S6	0.0718	Moderate	9.3	4.8	Pass (marginal)
S7	0.0662	Moderate	8.5	3.7	Pass (marginal)

Note: Pass criteria: threshold change $\leq 15\%$, $|\Delta\text{AUC}| \leq 0.05$. Values represent maxima across Alt1–Slope, Alt2–NDVI, Alt3–Fault ≤ 0.5 km, and Alt4–Fault ≤ 2 km.

Table S3 Robustness metrics for I_{max} thresholds under alternative classification schemes.

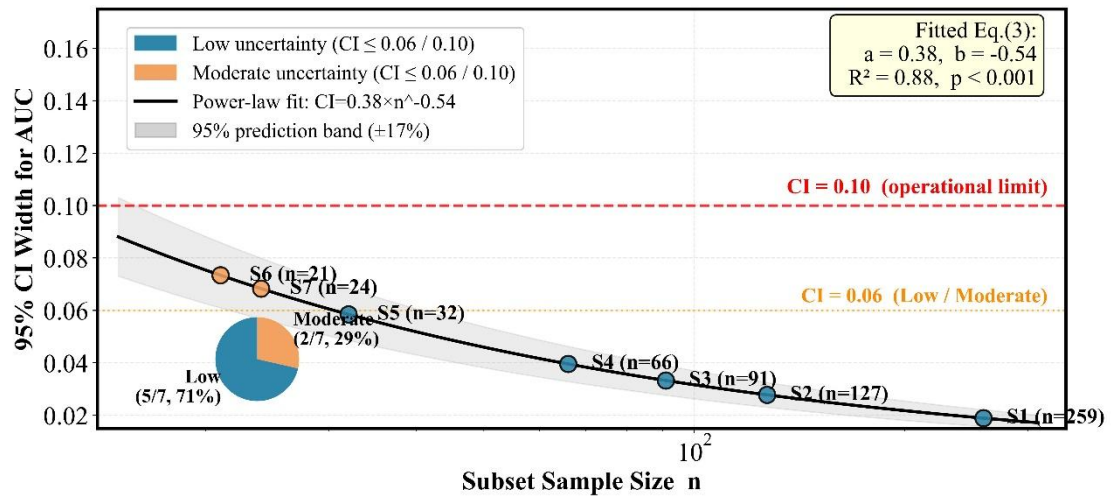
Subset	95% CI	CI Tier	Max Δ Threshold (%)	Max Δ AUC (%)	Robustness
S1	0.0195	Low	3.3	1.4	Pass
S2	0.0282	Low	3.0	1.9	Pass
S3	0.0335	Low	3.7	1.7	Pass
S4	0.0396	Low	4.3	2.5	Pass
S5	0.0577	Low	3.8	2.2	Pass
S6	0.0719	Moderate	5.2	1.7	Pass
S7	0.0670	Moderate	3.9	2.0	Pass

Note: Pass criteria: threshold change $\leq 15\%$, $|\Delta\text{AUC}| \leq 0.05$. Values represent maxima across Alt1–Slope, Alt2–NDVI, Alt3–Fault ≤ 0.5 km, and Alt4–Fault ≤ 2 km.

Table S4 Robustness metrics for AccR6h+Imax thresholds under alternative classification schemes.

Subset	95% CI	CI Tier	Max Δ Threshold (%)	Max Δ AUC (%)	Robustness
S1	0.0178	Low	5.2	2.9	Pass
S2	0.0265	Low	4.7	2.3	Pass
S3	0.0320	Low	4.0	2.5	Pass
S4	0.0383	Low	7.3	3.7	Pass (marginal)
S5	0.0574	Low	6.5	3.5	Pass (marginal)
S6	0.0727	Moderate	8.5	2.6	Pass (marginal)
S7	0.0675	Moderate	4.8	2.9	Pass

Note: Pass criteria: threshold change $\leq 15\%$, $|\Delta \text{AUC}| \leq 0.05$. Values represent maxima across Alt1 - Slope, Alt2 - NDVI, Alt3 - Fault ≤ 0.5 km, and Alt4 - Fault ≤ 2 km.



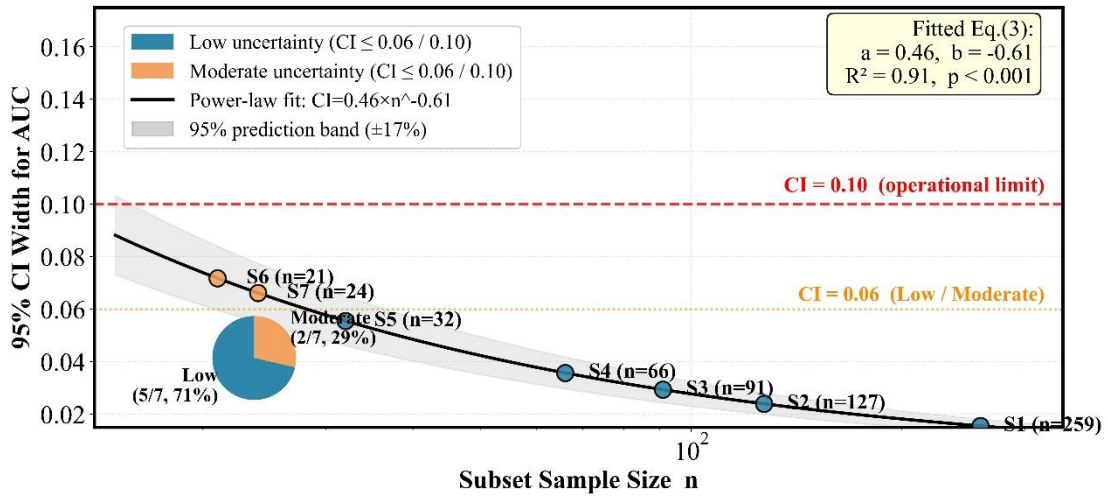


Figure S9 Sample size constraints for Accr24h thresholds.

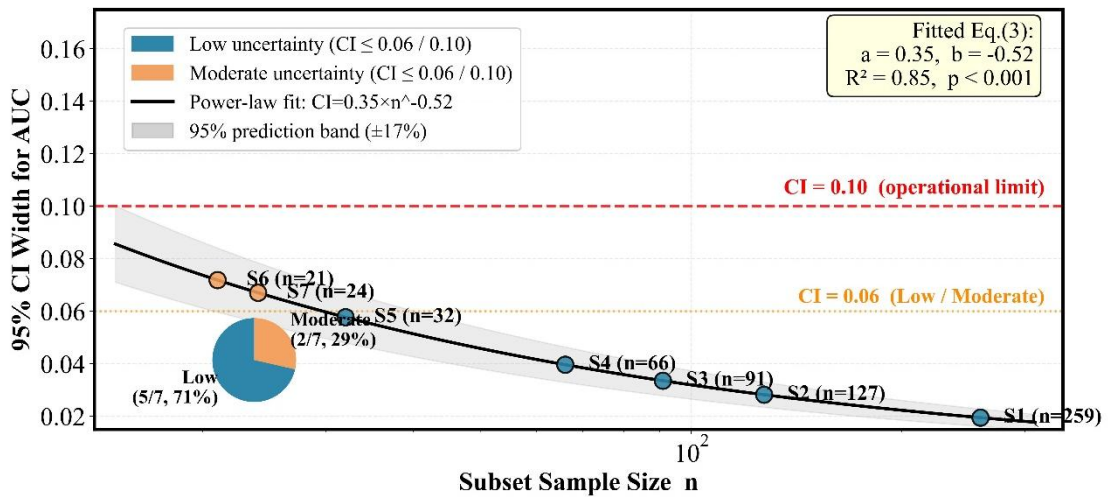


Figure S10 Sample size constraints for Imax thresholds.

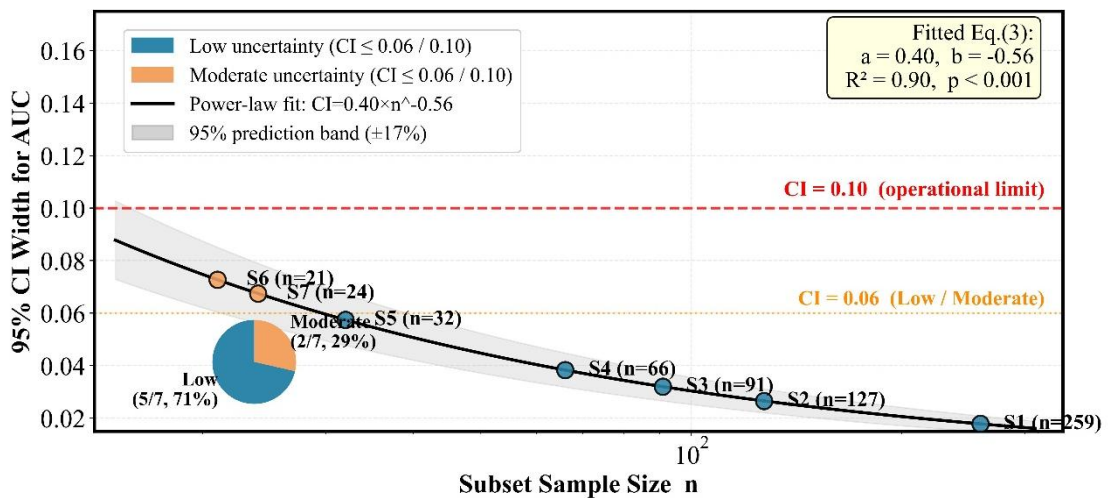


Figure S11 Sample size constraints for Accr6h+Imax thresholds.