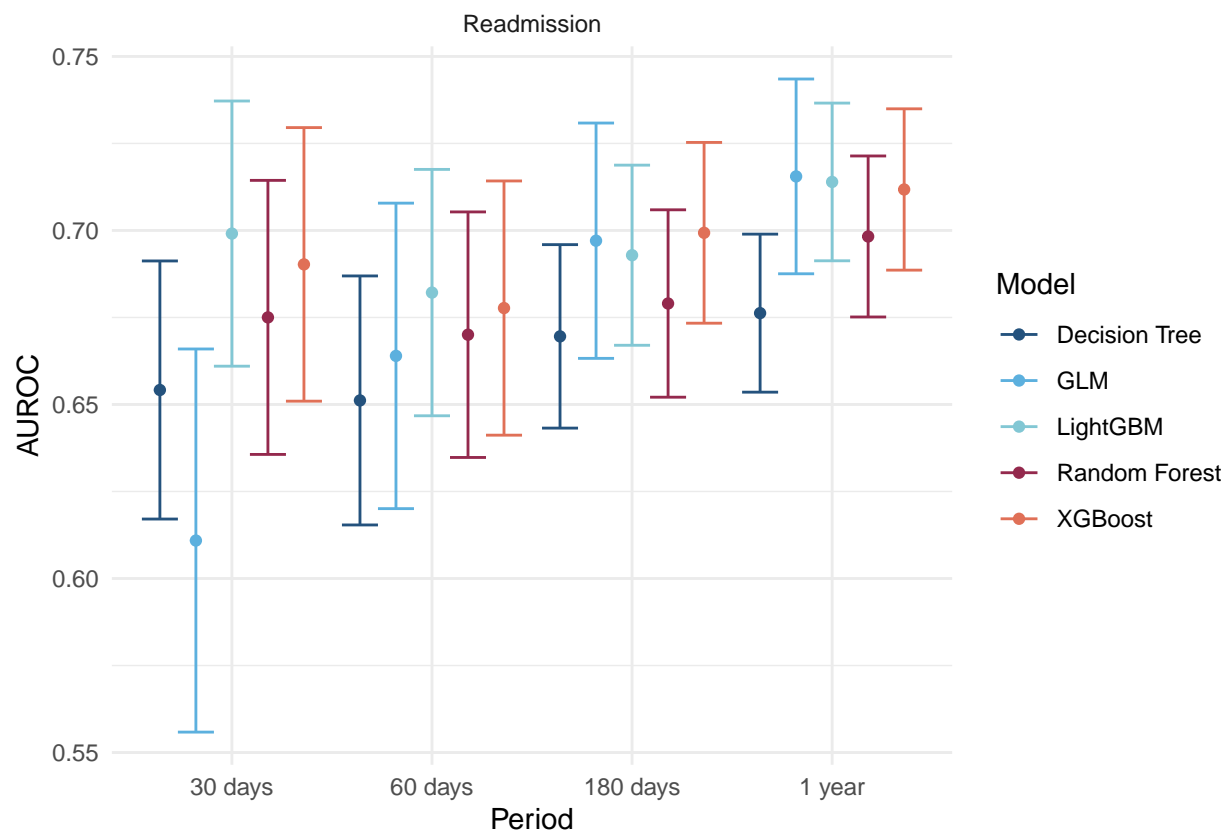


Model Selection Results

Eduardo Yuki Yada

Model Selection



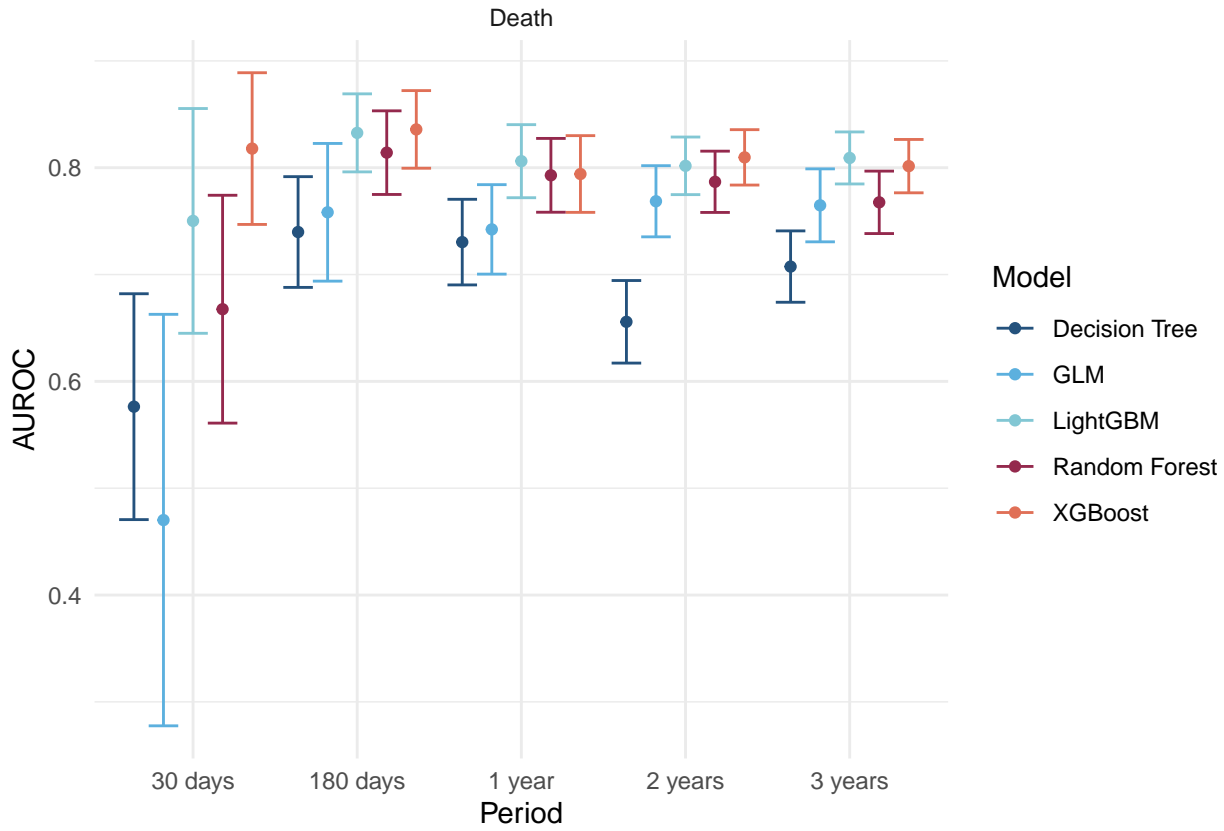


Table 1: Readmission models comparison

Period	Model	AUROC	Lower Limit	Upper Limit
30 days	LightGBM	0.699	0.661	0.737
30 days	XGBoost	0.690	0.651	0.730
30 days	Random Forest	0.675	0.636	0.714
30 days	Decision Tree	0.654	0.617	0.691
30 days	GLM	0.611	0.556	0.666
60 days	LightGBM	0.682	0.647	0.718
60 days	XGBoost	0.678	0.641	0.714
60 days	Random Forest	0.670	0.635	0.705
60 days	GLM	0.664	0.620	0.708
60 days	Decision Tree	0.651	0.615	0.687
180 days	XGBoost	0.699	0.673	0.725
180 days	GLM	0.697	0.663	0.731
180 days	LightGBM	0.693	0.667	0.719
180 days	Random Forest	0.679	0.652	0.706
180 days	Decision Tree	0.670	0.643	0.696
1 year	GLM	0.716	0.688	0.744
1 year	LightGBM	0.714	0.691	0.737
1 year	XGBoost	0.712	0.689	0.735
1 year	Random Forest	0.698	0.675	0.721
1 year	Decision Tree	0.676	0.654	0.699

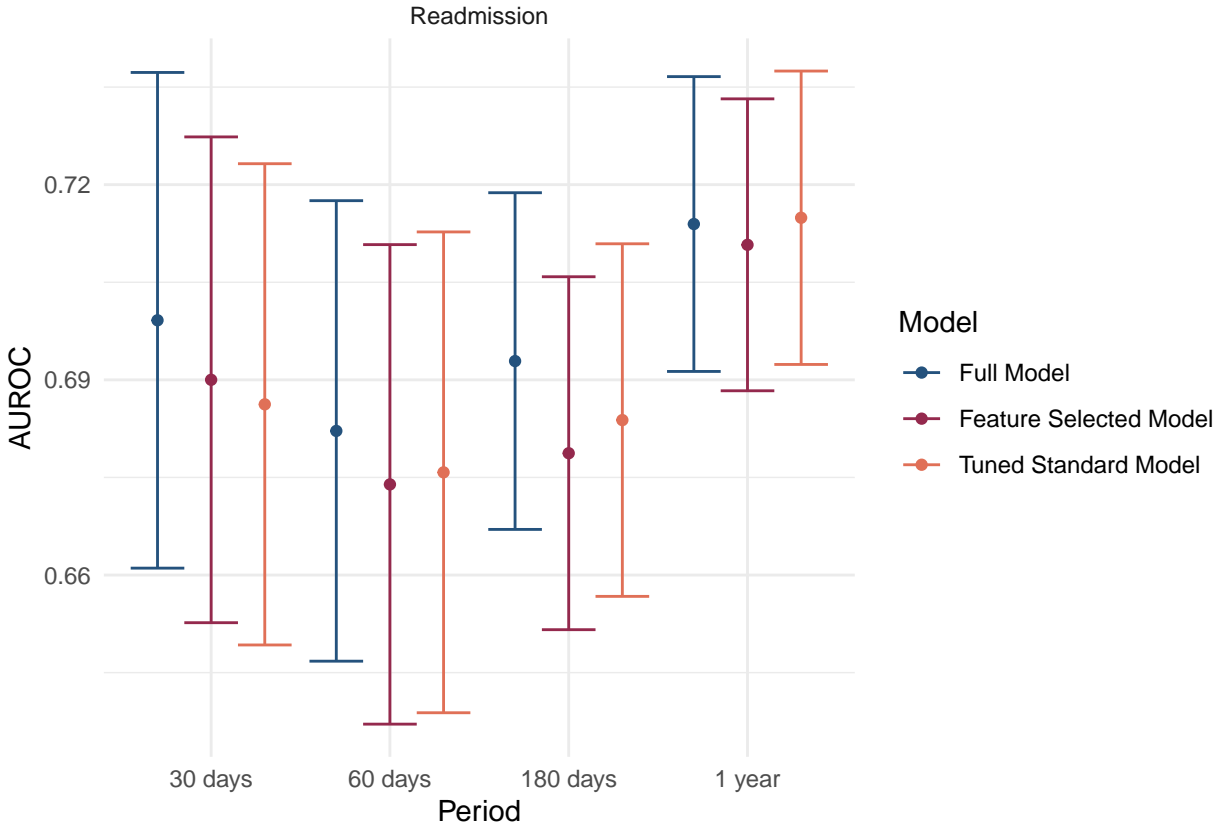
Table 2: Death models comparison

Period	Model	AUROC	Lower Limit	Upper Limit
30 days	XGBoost	0.818	0.747	0.889
30 days	LightGBM	0.750	0.645	0.855

Table 2: Death models comparison (*continued*)

Period	Model	AUROC	Lower Limit	Upper Limit
30 days	Random Forest	0.668	0.561	0.774
30 days	Decision Tree	0.576	0.471	0.682
30 days	GLM	0.470	0.278	0.663
180 days	XGBoost	0.836	0.800	0.872
180 days	LightGBM	0.833	0.796	0.869
180 days	Random Forest	0.814	0.775	0.853
180 days	GLM	0.758	0.694	0.823
180 days	Decision Tree	0.740	0.688	0.792
1 year	LightGBM	0.806	0.772	0.840
1 year	XGBoost	0.794	0.758	0.830
1 year	Random Forest	0.793	0.758	0.827
1 year	GLM	0.742	0.700	0.784
1 year	Decision Tree	0.730	0.690	0.770
2 years	XGBoost	0.810	0.784	0.836
2 years	LightGBM	0.802	0.775	0.829
2 years	Random Forest	0.787	0.758	0.815
2 years	GLM	0.769	0.735	0.802
2 years	Decision Tree	0.656	0.617	0.694
3 years	LightGBM	0.809	0.785	0.833
3 years	XGBoost	0.801	0.777	0.826
3 years	Random Forest	0.768	0.738	0.797
3 years	GLM	0.765	0.731	0.799
3 years	Decision Tree	0.707	0.674	0.741

Final Model



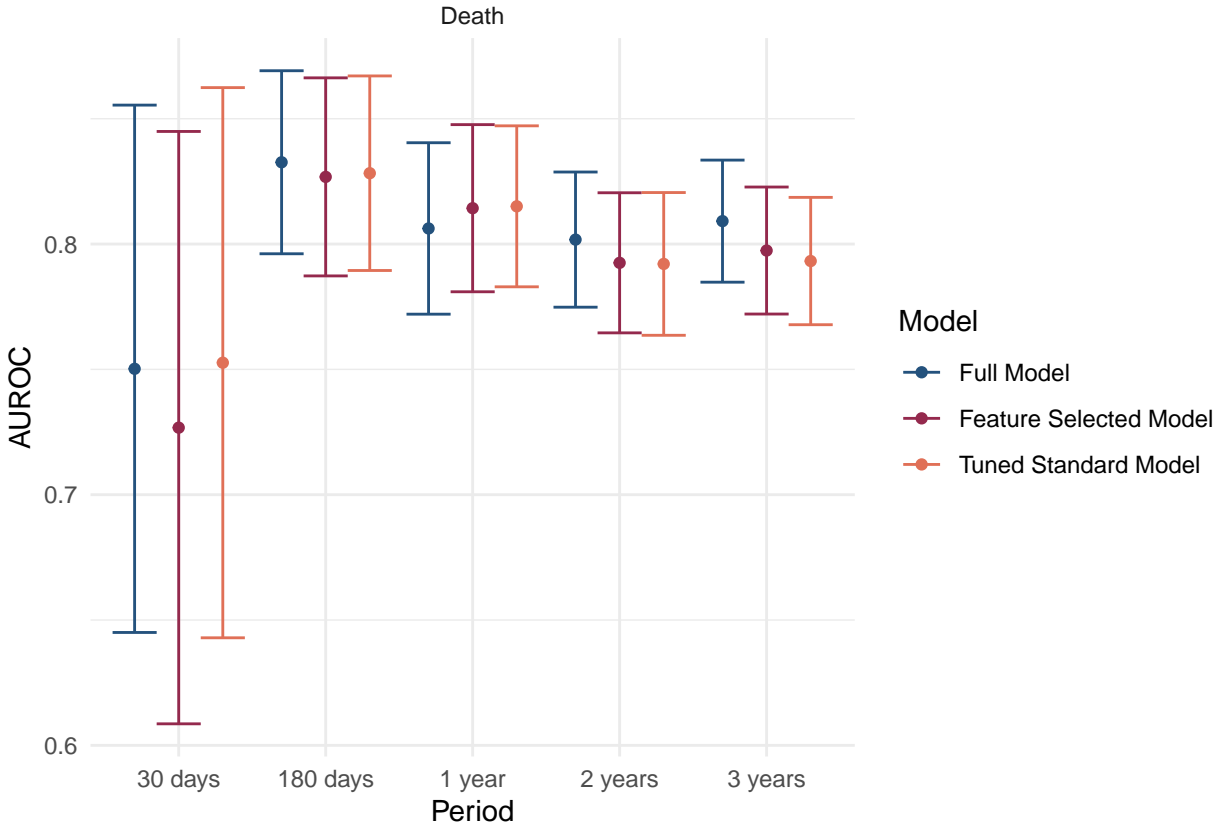


Table 3: Readmission models comparison

Period	Model	Features	AUROC	Lower Limit	Upper Limit
30 days	Full Model	76	0.699	0.661	0.737
30 days	Feature Selected Model	11	0.690	0.653	0.727
30 days	Tuned Standard Model	11	0.686	0.649	0.723
60 days	Full Model	84	0.682	0.647	0.718
60 days	Tuned Standard Model	4	0.676	0.639	0.713
60 days	Feature Selected Model	4	0.674	0.637	0.711
180 days	Full Model	95	0.693	0.667	0.719
180 days	Tuned Standard Model	7	0.684	0.657	0.711
180 days	Feature Selected Model	7	0.679	0.652	0.706
1 year	Tuned Standard Model	10	0.715	0.692	0.737
1 year	Full Model	97	0.714	0.691	0.737
1 year	Feature Selected Model	10	0.711	0.688	0.733

Table 4: Death models comparison

Period	Model	Features	AUROC	Lower Limit	Upper Limit
30 days	Tuned Standard Model	31	0.753	0.643	0.862
30 days	Full Model	64	0.750	0.645	0.855
30 days	Feature Selected Model	31	0.727	0.609	0.845
180 days	Full Model	78	0.833	0.796	0.869
180 days	Tuned Standard Model	9	0.828	0.789	0.867
180 days	Feature Selected Model	9	0.827	0.787	0.866
1 year	Tuned Standard Model	16	0.815	0.783	0.847
1 year	Feature Selected Model	16	0.814	0.781	0.848
1 year	Full Model	83	0.806	0.772	0.840
2 years	Full Model	80	0.802	0.775	0.829

Table 4: Death models comparison (*continued*)

Period	Model	Features	AUROC	Lower Limit	Upper Limit
2 years	Feature Selected Model	11	0.793	0.765	0.820
2 years	Tuned Standard Model	11	0.792	0.764	0.821
3 years	Full Model	81	0.809	0.785	0.833
3 years	Feature Selected Model	13	0.797	0.772	0.823
3 years	Tuned Standard Model	13	0.793	0.768	0.819

Selected Features

death_180days

1. hospital_stay
2. age
3. year_adm_t0
4. espironolactona
5. education_level
6. laboratorio
7. comorbidities_count
8. admission_pre_t0_count
9. vasodilatador

death_1year

1. hospital_stay
2. age
3. year_adm_t0
4. comorbidities_count
5. admission_pre_t0_count
6. espironolactona
7. education_level
8. antiarritmico
9. ieca_bra
10. cied_final_group_1
11. proced_invasivos_qtde
12. hypertension
13. ultrassom
14. admission_pre_t0_180d
15. antiplaquetario_ev
16. valvopathy

death_2year

1. hospital_stay
2. age
3. year_adm_t0
4. admission_pre_t0_count
5. espironolactona
6. education_level
7. comorbidities_count
8. diuretico
9. metodos_graficos_qtde
10. cied_final_group_1
11. antiarritmico

death_30days

1. hospital_stay
2. admission_pre_t0_count

3. year_adm_t0
4. metodos_graficos_qtde
5. education_level
6. vasodilatador
7. analises_clinicas_qtde
8. equipe_multiprof
9. meds_cardiovasc_qtde
10. bic
11. nyha_basal
12. holter
13. hypertension
14. citologia
15. cied_final_1
16. dva
17. classe_meds_qtde
18. ressonancia
19. renal_failure
20. diuretico
21. interconsulta
22. cultura
23. betabloqueador
24. af
25. proced_invasivos_qtde
26. tomografia
27. sex
28. procedure_type_1
29. ecocardiograma
30. admission_pre_t0_180d
31. cied_final_group_1

death_3year

1. hospital_stay
2. age
3. year_adm_t0
4. admission_pre_t0_count
5. espironolactona
6. education_level
7. comorbidities_count
8. ieca_bra
9. meds_cardiovasc_qtde
10. nyha_basal
11. antiarritmico
12. cied_final_group_1
13. ventilacao_mecanica

readmission_180d

1. hospital_stay
2. admission_pre_t0_count
3. vasodilatador
4. classe_meds_qtde
5. cied_final_1
6. equipe_multiprof
7. procedure_type_1

readmission_1year

1. hospital_stay
2. admission_pre_t0_count
3. year_adm_t0
4. meds_antimicrobianos

5. vasodilatador
6. icu_t0
7. procedure_type_new
8. nyha_basal
9. admission_pre_t0_180d
10. cied_final_1

readmission__30d

1. hospital_stay
2. admission_pre_t0_count
3. digoxina
4. meds_antimicrobianos
5. bic
6. icu_t0
7. antiarritmico
8. anticonvulsivante
9. comorbidities_count
10. procedure_type_new
11. prior_mi

readmission__60d

1. hospital_stay
2. admission_pre_t0_count
3. classe_meds_qtde
4. equipe_multiprof

Union

1. hospital_stay
2. age
3. year_adm_t0
4. espirolactona
5. education_level
6. laboratorio
7. comorbidities_count
8. admission_pre_t0_count
9. vasodilatador
10. antiarritmico
11. ieca_bra
12. cied_final_group_1
13. proced_invasivos_qtde
14. hypertension
15. ultrassom
16. admission_pre_t0_180d
17. antiplaquetario_ev
18. valvopathy
19. diuretico
20. metodos_graficos_qtde
21. analises_clinicas_qtde
22. equipe_multiprof
23. meds_cardiovasc_qtde
24. bic
25. nyha_basal
26. holter
27. citologia
28. cied_final_1
29. dva
30. classe_meds_qtde
31. ressonancia

- 32. renal_failure
- 33. interconsulta
- 34. cultura
- 35. betabloqueador
- 36. af
- 37. tomografia
- 38. sex
- 39. procedure_type_1
- 40. ecocardiograma
- 41. ventilacao_mecanica
- 42. meds_antimicrobianos
- 43. icu_t0
- 44. procedure_type_new
- 45. digoxina
- 46. anticonvulsivante
- 47. prior_mi