Online-Only Supplemental Material

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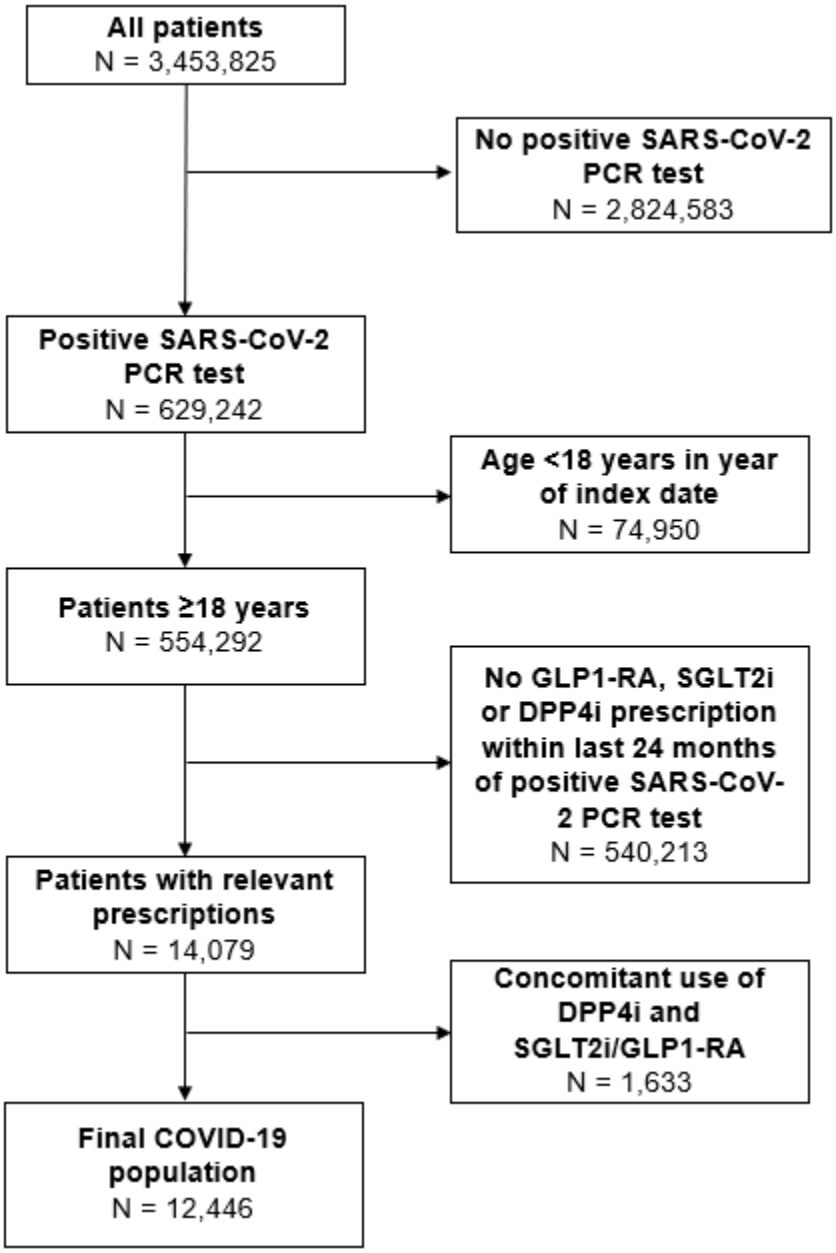
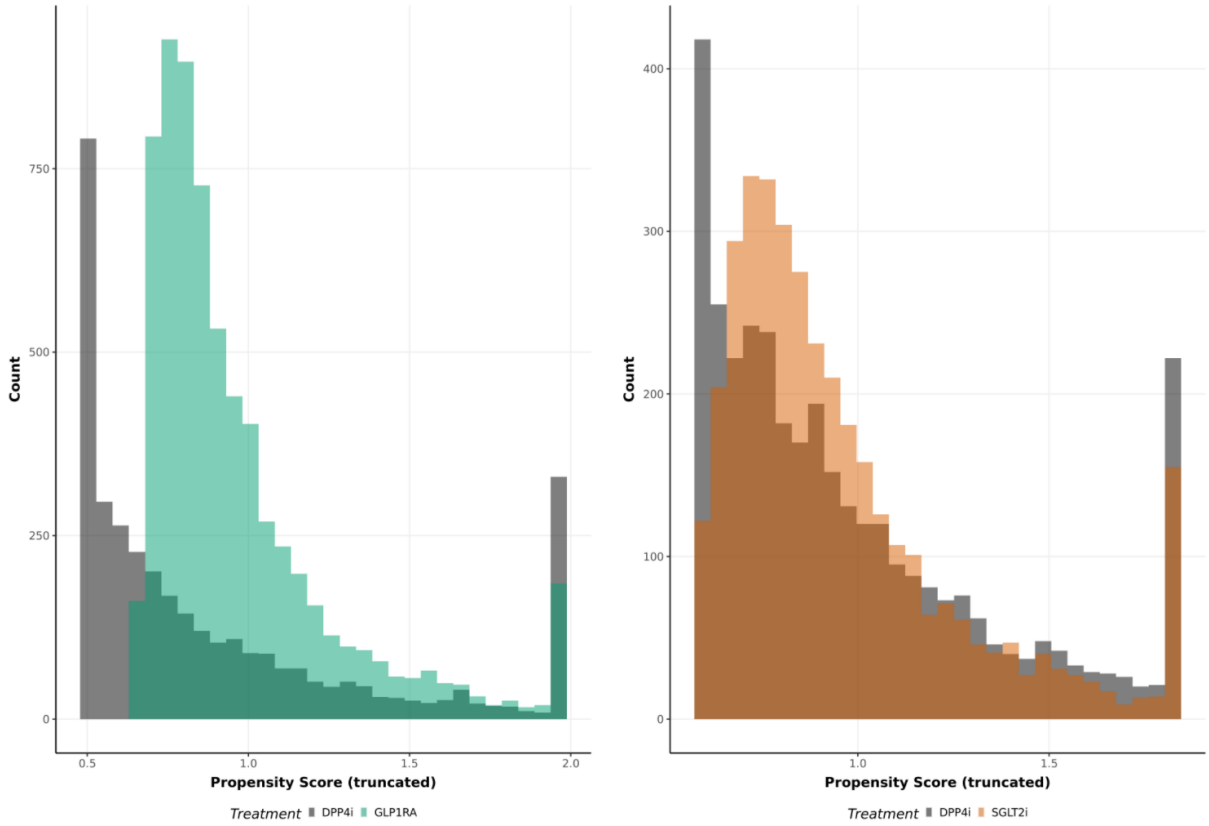
Supplemental Table S4. Odds ratios in eGFR-restricted cohort for 60-day mortality and secondary outcomes for glucagon-like peptide 1 receptor agonist (GLP1-RA) use vs. dipeptidyl peptidase-4 inhibitor (DPP4i) use and sodium glucose co-transporter 2 inhibitor (SGLT2i) use vs. DPP4i use.

Supplemental Figure S1. Overview of study population. Abbreviations: GLP1-RA—Glucagon-like Peptide 1 Receptor Agonist; SGLT2i— Sodium Glucose Co-transporter 2 Inhibitor; DPP4i—Dipeptidyl Peptidase-4 Inhibitor.



Supplemental Figure S2. Distribution of truncated propensity scores used in the full inverse probability treatment weighted model.



Supplemental Table S1. ATC codes used to define premorbid medication use.

Drug	ATC codes included
Glucagon-like peptide 1 receptor agonist	A10AE54, A10AE56, A10BJ01, A10BJ02, A10BJ03, A10BJ04, A10BJ05, A10BJ06
Sodium glucose co-transporter 2 inhibitor	A10BD15, A10BD16, A10BD19, A10BD20, A10BD21, A10BD23, A10BD24, A10BD25, A10BK01, A10BK02, A10BK03, A10BK04, A10BK05
Dipeptidyl peptidase-4 inhibitor	A10BD07, A10BD08, A10BD09, A10BD10, A10BD11, A10BD12, A10BD13, A10BD18, A10BD19, A10BD21, A10BD22, A10BD24, A10BD25, A10BH01, A10BH02, A10BH03, A10BH04, A10BH05, A10BH06, A10BH07, A10BH51, A10BH52
Insulin	A10AB01, A10AB02, A10AB03, A10AB04, A10AB05, A10AB06, A10AC01, A10AC02, A10AC03, A10AC04, A10AD01, A10AD02, A10AD03, A10AD04, A10AD05, A10AD06, A10AE01, A10AE02, A10AE03, A10AE04, A10AE05, A10AE06, A10AE54, A10AE56, A10AF01
Angiotensin converting enzyme inhibitor/Angiotensin II receptor blockers	C03AX01, C09AA01, C09AA02, C09AA03, C09AA04, C09AA05, C09AA06, C09AA07, C09AA08, C09AA09, C09AA10, C09AA11, C09AA12, C09AA13, C09AA14, C09AA15, C09AA16, C09BA01, C09BA02, C09BA03, C09BA04, C09BA05, C09BA06, C09BA07, C09BA08, C09BA09, C09BA12, C09BA13, C09BA15, C09BB02, C09BB03, C09BB04, C09BB05, C09BB06, C09BB07, C09BB10, C09BB12, C09BX01, C09BX02, C09BX03, C09BX04, C09CA01, C09CA02, C09CA03, C09CA04, C09CA06, C09CA07, C09CA08, C09CA09, C09CA10, C09DA01, C09DA02, C09DA03, C09DA04, C09DA06, C09DA07, C09DA08, C09DA09, C09DA10, C09DB01, C09DB02, C09DB04, C09DB05, C09DB06, C09DB07, C09DB08, C09DB09, C09DX01, C09DX02, C09DX03, C09DX04, C09DX05, C09DX06, C09DX07, C09XA02, C09XA52, C09XA53, C09XA54, C10BX04, C10BX06, C10BX07, C10BX10, C10BX11, C10BX12, C10BX13, C10BX14, C10BX15
Statin	A10BH51, A10BH52, C10AA01, C10AA02, C10AA03, C10AA04, C10AA05, C10AA06, C10AA07, C10AA08, C10BA01, C10BA02, C10BA03, C10BA04, C10BA05, C10BA06, C10BA07, C10BA08, C10BA09, C10BX02, C10BX03, C10BX05, C10BX06, C10BX07, C10BX08, C10BX09, C10BX10, C10BX11, C10BX12, C10BX13, C10BX14, C10BX15, C10BX16, C10BX17
Metformin	A10BA02, A10BD02, A10BD03, A10BD05, A10BD07, A10BD08, A10BD10, A10BD11, A10BD13, A10BD14, A10BD15, A10BD16, A10BD17, A10BD18, A10BD20, A10BD22, A10BD23, A10BD25
Sulfonylurea	A10BB01, A10BB02, A10BB03, A10BB04, A10BB05, A10BB06, A10BB07, A10BB08, A10BB09, A10BB11, A10BB12, A10BB31, A10BD01, A10BD02, A10BD04, A10BD06

Supplemental Table S2. Primary and secondary outcome after propensity score weighting, according to premorbid medication use.

	Glucagon-like Peptide 1 Receptor Agonist Users (N = 6,475)	Dipeptidyl Peptidase-4 Inhibitor Users (N = 3,175)	Sodium Glucose Co-transporter 2 Inhibitor Users (n=3,504)	Dipeptidyl Peptidase-4 Inhibitor Users (N = 3,445)
60-day mortality – E (%)	149 (2.31)	154 (4.86)	95 (2.70)	163 (4.74)
Total mortality* – E (%)	167 (2.58)	169 (5.33)	100 (2.87)	178 (5.18)
Emergency room visit† – E (%)	1951 (30.14)	1105 (34.80)	1078 (30.76)	1188 (34.48)
Hospitalization† – E (%)	1544 (23.84)	956 (30.10)	874 (24.95)	1041 (30.21)
Mechanical ventilation (Intubation or ventilation)† – E (%)	399 (6.17)	261 (8.24)	234 (6.68)	276 (8.00)

*During the observation period

†Within 14 days after a positive SARS-CoV-2 test.

N: Total number of individuals; E: number of outcome events (first event only); %: proportion of individuals with the outcome

Supplemental Table S3. Crude odds ratios and odds ratios adjusted for age and sex (simple model) for 60-day mortality and secondary outcomes for Glucagon-like Peptide 1 Receptor Agonist (GLP1-RA) use and Sodium Glucose Co-transporter 2 Inhibitor (SGLT2i) use vs. dipeptidyl peptidase-4 inhibitor (DDP4i)

Outcome	Model	GLP1-RA versus DDP4i Odds ratio (95% CI)	SGLT2i versus DDP4i Odds ratio (95% CI)
60-day mortality	Crude	0.35 (0.28-0.44)	0.40 (0.30-0.51)
	TMLE[a]	0.58 (0.46-0.73)	0.56 (0.44-0.73)
	IPTW[b]	0.58 (0.46-0.74)	0.52 (0.40-0.68)
Total mortality	Crude	0.36 (0.29-0.44)	0.39 (0.30-0.49)
	TMLE	0.58 (0.47-0.73)	0.55 (0.43-0.70)
	IPTW	0.59 (0.47-0.74)	0.51 (0.39-0.66)
Emergency room visit‡	Crude	0.70 (0.64-0.77)	0.72 (0.65-0.79)
	TMLE	0.79 (0.72-0.87)	0.80 (0.72-0.88)
	IPTW	0.82 (0.74-0.90)	0.79 (0.71-0.87)
Hospitalization‡	Crude	0.56 (0.51-0.61)	0.60 (0.54-0.67)
	TMLE	0.75 (0.68-0.83)	0.73 (0.66-0.81)
	IPTW	0.76 (0.69-0.84)	0.71 (0.64-0.79)
Intubation or ventilation‡	Crude	0.66 (0.56-0.77)	0.70 (0.59-0.84)
	TMLE	0.87 (0.73-1.03)	0.81 (0.67-0.97)
	IPTW	0.89 (0.75-1.06)	0.79 (0.66-0.95)

[a]TMLE: targeted maximum likelihood estimation (primary analysis)
[b]IPTW: inverse probability treatment weighted (sensitivity analysis)
[d]During the observation period
[d]Within 14 days after a positive SARS-CoV-2 test

Supplemental Table S4. **Odds ratios in eGFR-restricted cohort for 60-day mortality and secondary outcomes for glucagon-like peptide 1 receptor agonist (GLP1-RA) use vs. dipeptidyl peptidase-4 inhibitor (DPP4i) use and sodium glucose co-transporter 2 inhibitor (SGLT2i) use vs. DPP4i use**. The eGFR-restricted cohort included only individuals with eGFR ≥45 mL/min (6,032 GLP1-RA users, 3,413 SGLT2i users, and 2,762 DPP4i users).

	Model	GLP1-RA versus DPP4i Odds ratio (95% CI)	SGLT2i versus DPP4i Odds ratio (95% CI)
60-day mortality	Crude	0.43 (0.32-0.57)	0.54 (0.39-0.74)
	TMLE*	0.61 (0.31, 1.17)	0.66 (0.47, 0.92)
	IPTW†	0.60 (0.44, 0.84)	0.63 (0.45, 0.88)
Total mortality‡	Crude	0.43 (0.33-0.57)	0.54 (0.39-0.73)
	TMLE	0.58 (0.32, 1.04)	0.67 (0.49, 0.93)
	IPTW	0.60 (0.44, 0.82)	0.62 (0.45, 0.85)
Emergency room visit[d]	Crude	0.77 (0.69-0.85)	0.81 (0.72-0.90)
	TMLE	0.83 (0.74, 0.93)	0.89 (0.80, 1.01)
	IPTW	0.84 (0.75, 0.94)	0.87 (0.78, 0.97)
Hospitalization[d]	Crude	0.60 (0.54-0.67)	0.68 (0.61-0.77)
	TMLE	0.66 (0.53 0.82)	0.80 (0.71, 0.90)
	IPTW	0.75 (0.66, 0.85)	0.77 (0.68, 0.87)
Mechanical ventilation (Intubation or ventilation)§	Crude	0.68 (0.56-0.83)	0.81 (0.66-1.00)
	TMLE	0.69 (0.47, 1.00)	0.88 (0.70, 1.11)
	IPTW	0.73 (0.59, 0.91)	0.84 (0.67, 1.04)

*TMLE: targeted maximum likelihood estimation (primary analysis)
†IPTW: inverse probability treatment weighted (sensitivity analysis)
‡During the observation period
§Within 14 days after a positive SARS-CoV-2 test