

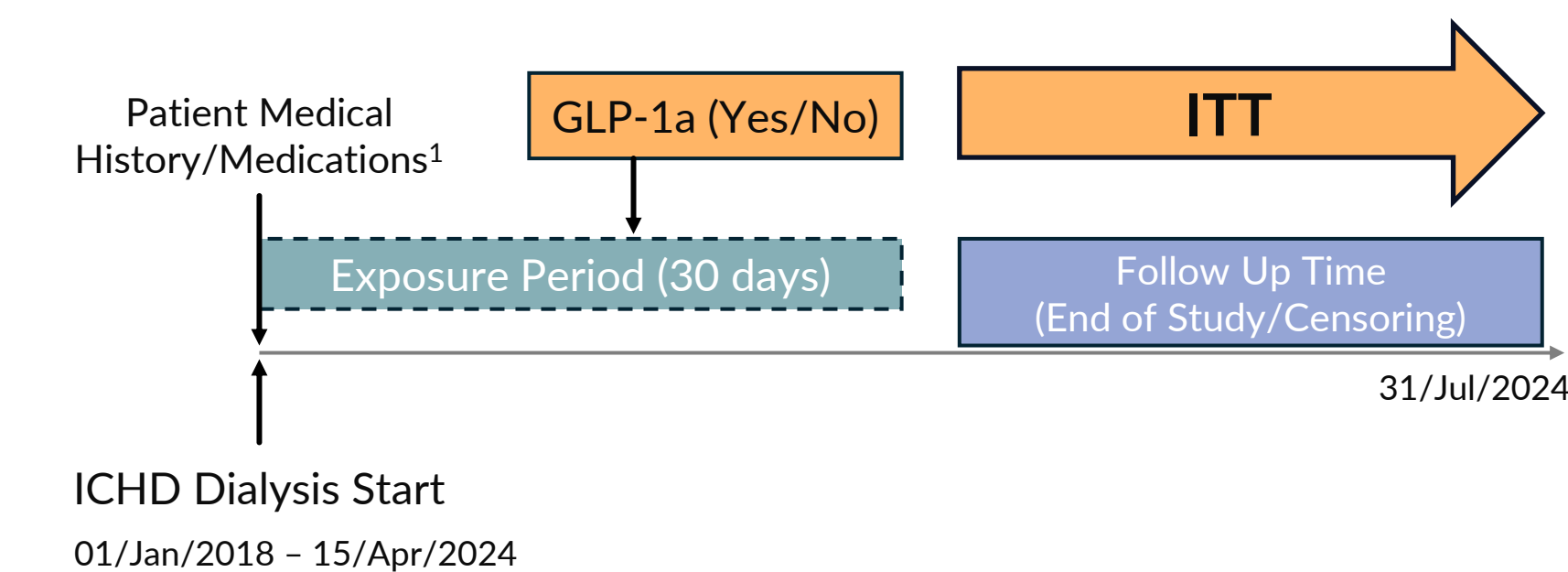
Introduction and Objective

- Glucagon-like peptide 1 (GLP-1) agonists help manage metabolism by lowering serum glucose levels and are utilized to treat type 2 diabetes and to help with weight loss.
- In a recent clinical trial (FLOW), the GLP-1a Semaglutide reduced the risk of clinically important outcomes and death from cardiovascular causes in patients with type 2 diabetes and chronic kidney disease (CKD).¹
- Given the clinical trial benefit in patients with CKD, the clinical question remains whether, and to what degree, these drugs are beneficial to patients with end-stage kidney disease (ESKD).
 - Recently, the substantial increase in GLP-1a use has enabled observational research studies.

Methods

- Eligible patients included in this analysis were adult ESKD patients who initiated 3x weekly in-center hemodialysis (ICHD) at a kidney care organization between 1/1/18 and 4/15/24 (n=116,692).
- Using internal EHR data, all eligible patients with an active GLP-1a prescription in the first 30 days after dialysis initiation were matched 1:1 to those without a prescription (2,492 matched pairs). Matching factors included: a diabetes diagnosis, 2728 indicator of predialysis nephrology care, and use of diabetes medications during the first 30 days of dialysis (Figure 1).
- Patients were followed from index date until death, censoring (loss to follow up, transfer, transplant, and end of study) or the end of study (7/31/24). Patients were not censored for discontinuation of GLP-1a's.
- Incident rate ratios were estimated using a negative binomial distribution with a random intercept to account for the matched nature of the data.

Figure 1. Study Schematic



Results

Table 1. Patient Characteristics

Characteristics	Eligible Cohort	
	No GLP-1a N = 113,735	GLP-1a N = 2,957
Female, %	42%	41%
Age, mean (SD)	63.7 (14.5)	63.3 (11.6)
Race, %		
White	39%	45%
Black	26%	22%
Hispanic	16%	13%
Other	19%	20%
Etiology, %		
Diabetes	36%	55%
Hypertension/Large Vessel Disease	25%	14%
Other/ Unknown	40%	31%
Body mass index (BMI), mean (SD)	29.4 (7.7)	34.2 (8.4)
Predialysis weight, mean (SD)	85.7 (24.6)	100.8 (27.8)
Dual eligibility indicator, %	16%	20%
Initial albumin value, mean (SD)	3.6 (0.5)	3.6 (0.5)
Initial hemoglobin value, mean (SD)	9.3 (1.3)	9.5 (1.3)
Initial access type, %		
AV Fistula/Graft/Shunt	18%	26%
CVC Catheter	78%	73%
PD Catheter	<0.1%	0%
Maturing access indicator, %	14%	15%
Days between chronic/ facility dialysis start, mean (SD)	2.0 (3.0)	1.6 (2.7)
Predialysis nephrology indicator, %	67%	76%
Diagnosis: diabetes, %	72%	98%
Indicator Rx: insulin, %	28%	61%

Matched on insulin, sulfonurea, DPP4i, SGLT-2i, use of other diabetes medications, recorded diabetes diagnosis, weight with a caliper of 5 kg, the 2728 indicator for predialysis nephrology care, and index date with a caliper of 7 days.

Figure 2. Concomitant Use of Diabetes Medications

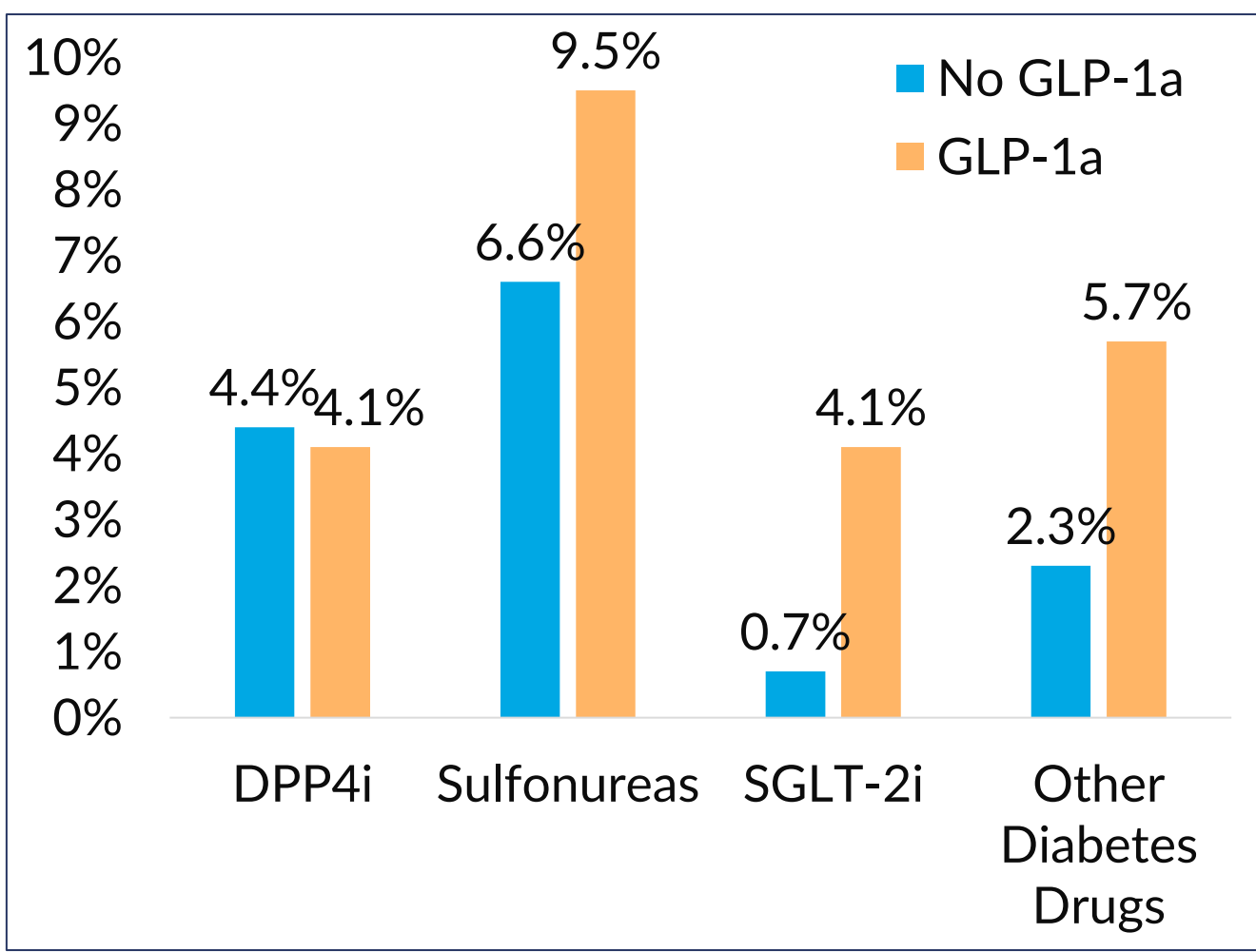
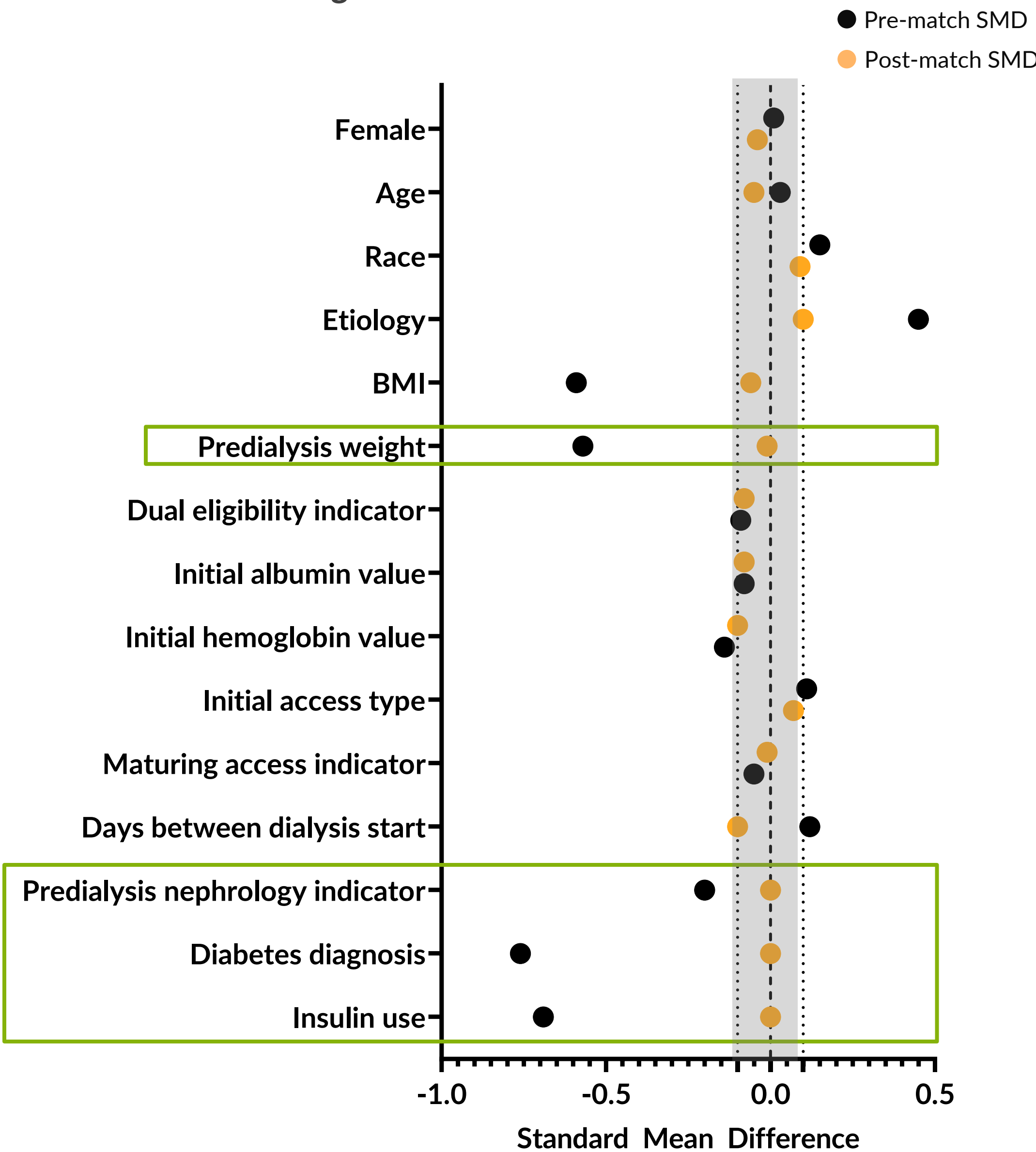


Table 2. Proportion of Patients on each GLP-1a

Type of GLP-1a	Proportion of Patients
Dulaglutide	46.0%
Semaglutide	27.0%
Liraglutide	24.0%
Exenatide	2.1%
Tirzepatide	1.2%
Albiglutide	1.0%
Lixisenatide	0.1%

Figure 3: Standard Mean Differences between Eligible and Matched Cohorts



Black dots are SMDs between entire No GLP-1a group (n=113,735) and GLP-1a group (n=2,957). Yellow dots are SMDs between matched cohort of No GLP-1a and GLP-1a. Green bars show matching factors.

Study Limitations

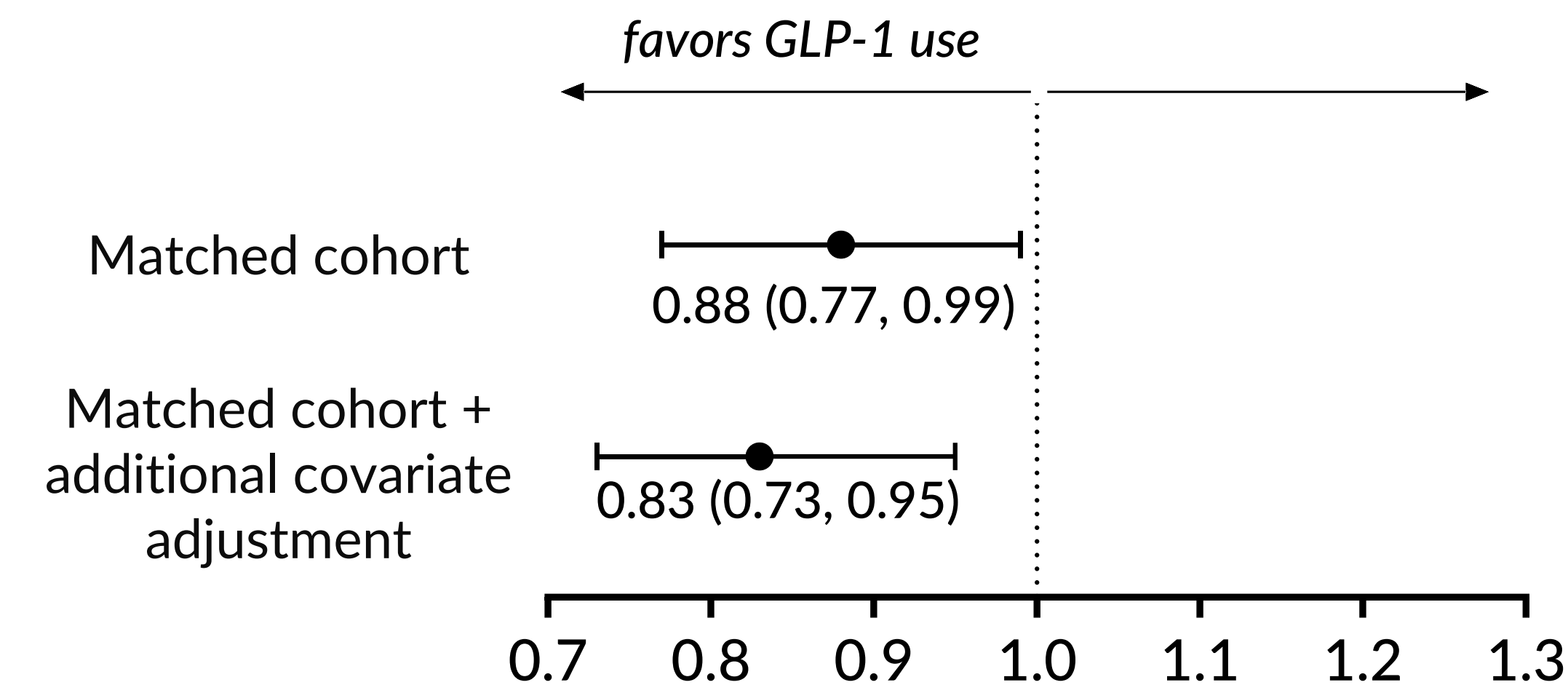
- This is an observational study, and despite efforts at extensive matching residual confounding may exist.
- No reliable predialysis data (other than the 2728 form and careful attention to diabetic medication classes) could be obtained from provider EHR. For administrative purposes, only patients on ICHD were included in this study.
- This association represents a composite drug class effect, as individual agents are too low in number to generate reliable estimates to date.

Table 3. Mortality Outcome

	No GLP-1a	GLP-1a
At-risk time, patient years ^a	3,845.3	4,047.9
Mortality Events	532	502
Mortality Rate, per pt year	0.14	0.12
Matched cohort IRR (95% CI)	Ref	0.88 (0.77, 0.99)
Matched cohort + additional covariate adjustment IRR (95% CI) ^b	Ref	0.83 (0.73, 0.95)

^a Mortality events were included within 14 days beyond censoring or lost to follow up during dialysis.
^b Further multivariable adjustment for age, race, and dual eligibility.

Figure 4. Mortality Outcome IRRs



Conclusions

- Descriptively, patients filling GLP-1a in the first month of dialysis are on average 63 years old, most frequently self-described as white (46%), with a mean BMI of 33.
- Nearly all patients (98%) have a known diagnosis of, or a medication inferred evidence of diabetes, and a majority have 2728 form evidence of predialysis nephrology care.
- After controlling for demographics, comorbidity, and concomitant medications, GLP-1a's are independently associated with a reduction in mortality [0.83 (0.73, 0.95)] in patients with ESKD.

References and Acknowledgements

1. Perkovic V, et al.: Effects of semaglutide on chronic kidney disease in patients with type 2 diabetes. N Engl J Med. 2024, 391:109-21.

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