SUPPLEMENTAL MATERIAL

Supplemental Table S1. Search strings used in literature review

PubMed	Embase	Cochrane Library	Clinicaltrials.gov
Dialyses, Renal OR Renal Dialyses OR Dialysis, Renal OR Hemodialysis OR Hemodialyses OR Dialysis, Extracorporeal OR Dialyses, Extracorporeal OR Extracorporeal Dialyses OR Extracorporeal Dialysis	renal dialysis or hemodialysis or extracorporeal dialysis	renal dialysis or "hemodialysis" or extracorporeal dialysis	renal dialysis or end stage renal disease or end stage renal disease on dialysis
Prostheses, Blood Vessel OR Prosthesis, Blood Vessel OR Vessel Prostheses, Blood OR Vessel Prosthesis, Blood OR Blood Vessel Prostheses OR Vascular Prosthesis OR Prostheses, Vascular OR Prosthesis, Vascular OR Vascular Prostheses OR Blood vessel prosthesis implantation OR arteriovenous graft OR vascular graft OR AVG	“blood vessel prosthesis” or “blood vessel graft”	“blood vessel prosthesis" or "blood vessel prostheses" or vascular prosthesis or vascular prostheses	N/A
Polytetrafluoroethylene [expand] OR PTFE, GORE-TEX, Goretex, Teflon, Polytef, Politef, Tarflen, Fluoroplast, Propaten, Flixene, Acuseal	polytetrafluoroethylene	polytetrafluoroethylene	polytetrafluoroethylene
Clinical trial OR Meta-analysis OR Systematic review OR Comparative study OR Multicenter study OR Observational study (with/without case reports, reviews)	N/A	N/A	N/A
Humans	N/A	N/A	N/A

Supplemental Table S2. Characteristics of included studies

	Study	Country	Funding	Start Year	End Year	Mean Follow-Up	Patient n	Graft Type / Brand	Patency Parameters Reported in Text**	Patency Parameters Digitized**
1	Allemang 2014	US	Public	2008	2011	NR	265	NR	0	4
2	Anaya-Ayala 2015	US	None	2010	2011	21 mos	35	NR	6	12
3	Arhuidese 2017	US	NR	2011	2014	7 mos	68	Multiple	9	12
4	Berard 2015	France	NR	2011	2013	223.5 days	44	Flixene (Atrium)	6	12
5	Chiang 2014	New Zealand	None	2008	2011	280 days	45	Flixene (Atrium)	9	12
6	Davies 2016	US	None	2004	2014	23 mos (median)	482 *	Heparin-bonded vs. standard PTFE	3	12
7	Dixon 2009	US	Public/Private	2003	2007	NR	649 *	NR	1	2
8	Donati 2015	Italy	Public	2008	2011	NR	31	Gore-Tex (Gore)	2	5
9	Drouven 2019	Netherlands	None	2006	2017	29.6 mos	75	Gore-Tex (Gore)	3	12
10	Elwakeel 2013	Egypt	MR	2007	2010	19.6 mos	41	JOTEC; Atrium	4	8
11	Feldman 2013	Israel	None	2007	2010	25.1 mos	58	NR	2	2
12	Glickman 2015	US	Private	2010	2012	NR	138	Accuseal (Gore)	2	4
13	Głowiński 2014	Poland	NR	NR	NR	NR	34	Gore-Tex (Gore)	0	4
14	Jadlowiec 2015	US	None	2002	2013	NR	70	NR	4	4
15	Kakisis 2017	Greece	None	2007	2015	27 mos	61	Maxiflo (Vascutek)	2	8
16	Kakkos 2011	US	None	2004	2006	NR	125	Carboflo (Impra)	0	12
17	Keuter 2008	Netherlands	Public	2003	2006	325 days	53	Gore-Tex (Gore)	2	2
18	Khoshnevis 2013	Iran	None	2004	2010	NR	77	Gore-Tex (Gore)	4	0
19	Ko 2004	Taiwan	NR	2000	2001	NR	94 *	Exxcel (Boston Scientific); Stretch Gore-Tex (Gore)	4	4
20	Ko 2009	Taiwan	NR	2004	2005	NR	89 *	Venaflo cuffed (Bard); Gore-Tex (Gore)	8	8
21	Lee 2007	US	Public	2000	2004	13.4 mo	51	NR	0	8
22	Lioupis 2011	UK	None	2008	2009	NR	48	Flixene (Atrium)	6	9
23	Marcus 2019	US	None	2010	2017	38 mos	128	Gore-Tex (Gore); Propaten (Gore); Impra (Bard)	6	12
24	Milburn 2008	Scotland	NR	2001	2007	NR	39	Vascutek	6	8
25	Pham 2017	US	None	2009	2014	21 mos	32	NR	3	4
26	Ravari 2010	Iran	NR	2004	2006	24 mos	50?	Gore	2	2

27	Sala-Almonacil 2011	Spain	NR	2003	2007	11.9 mos	40	Gore	4	8
28	Scarritt 2014	US	Private	2008	2009	NR	143 *	Flixene (Atrium); traditional PTFE (Gore)	0	4
29	Schild 2011	US	Private	NR	NR	6 mos	33	Flixene (Atrium)	1	1
30	Shemesh 2015	Israel	NR	2007	2011	23.5 mos	160 *	Propaten (Gore); ePTFE (Gore)	9	9
31	Tozzi 2014	Italy	None	2011	2013	12 mos	30	Acuseal (Gore)	4	4
32	Weale 2007	UK	NR	2000	2005	18.1 mos	114	NR	3	8

* Studies had 2 arms included in the review. NR = not reported.

** There are 12 possible patency parameters: primary at 6, 12, 18, 24 mo., primary assisted at 6, 12, 18, 24 mo., secondary at 6, 12, 18, 24 mo. Here we list the number of patency parameters out of 12 reported in manuscript, and the number of patency parameters out of 12 that were digitized.

Supplemental Table S3. Characteristics of included patients

	Study	Patient n	Age (mean, yrs)	Male (%)	BMI (mean)	Race (nonwhite)	Tobacco use (%)	Diabetes (%)	Hypertension (%)	Anticoagulant therapy
1	Allemang 2014	265	60.8	33	28.1	Black: 81%	31	54	97	
2	Anaya-Ayala 2015	35	67	56	NR	NR	NR	59	98	
3	Arhuidese 2017	68	59.6	54.4	30.4	Black: 73.5%	50	63.2	98.5	
4	Berard 2015	44	63.2	61	24	NR	NR	39	75	Single antiplatelet use: 41% Dual antiplatelet use: 11% Anticoagulant use: 30%
5	Chiang 2014	45	52	51	NR	Maori: 58%	42	60	78	
6	Davies 2016 (heparin-bonded)	234	59	44	NR	Black: 56%	16	64	96	
6	Davies 2016 (standard)	248	61	48	NR	Black: 58%	14	68	100	
7	Dixon 2009 (dipyridamole + Aspirin)	321	59.1	41	30.8	Black: 72%	14	66	NR	
7	Dixon 2009 (placebo)	328	57.7	38	30.5	Black: 70%	17	60	NR	
8	Donati 2015	31	63.8	61.3	NR	NR	32.3	48.5	NR	
9	Drouven 2019	75	62.6	52	28.4	NR	NR	46.7	88	
10	Elwakeel 2013	41	54.7	37	NR	NR	NR	41	NR	
11	Feldman 2013	58	67.5	50	NR	NR	42.1	62.5	NR	Aspirin: 79.7% Dipyridamole: 48.4% Coumadin: 17.2%
12	Glickman 2015	138	63	49	30	Black: 55%	23	60	97	
13	Głowiński 2014	34	68.3	61.8	Obese: 32.4%	NR	NR	23.5	NR	
14	Jadlowiec 2015	70	58.9	52.9	NR	Black: 25.7%	23.9	NR	NR	Antiplatelet use: 44.3% Warfarin use: 18.6%
15	Kakisis 2017	61	68	56	NR	NR	NR	41	43	
16	Kakkos 2011	125	66 (median)	40	NR	NR	NR	NR	NR	
17	Keuter 2008	53	66	57	NR	NR	NR	47	51	
18	Khoshnevis 2013	77	56.3	30.4	NR	NR	NR	29.8	51.9	
19	Ko 2004 (Exxcel)	49	59.8	20	NR	NR	NR	24	31	
19	Ko 2004 (Gore-Tex)	45	63.8	16	NR	NR	NR	19	24	
20	Ko 2009 (cuffed)	47	61.2	35.7	NR	NR	NR	31	54.8	
20	Ko 2009 (non-cuffed)	42	64.9	42.6	NR	NR	NR	46.8	59.6	

21	Lee 2007	51	55	41	Obese: 41%	Black: 90%	NR	59	NR	
22	Lioupis 2011	48	59	65	Obese: 15%	Black: 52%	NR	40	79	
23	Marcus 2019	128	61	51	NR	Black: 16%	17	42	73	
24	Milburn 2008	39	62.1	17	NR	NR	NR	15	NR	
25	Pham 2017	32	56	34	NR	NR	NR	63	88	
26	Ravari 2010	50	57.6	48	Obese: 34%	NR	56	70	56	
27	Sala-Almonacil 2011	40	61	50	NR	NR	15	25	65	
28	Scarritt 2014	143	NR		NR	NR	NR	NR	NR	
29	Schild 2011	33	NR	48	NR	Black: 33%	26	60	96	
30	Shemesh 2015 (heparin-bonded)	80	69.9	48	NR	NR	NR	66.3	16.3	Aspirin: 66.3% Aspirin + clopidogrel: 7.5%
30	Shemesh 2015 (standard)	80	67.8	49	NR	NR	NR	61.3	15	Aspirin: 66.3% Aspirin + clopidogrel: 2.5%
31	Tozzi 2014	30	60	60	NR	NR	60	40	56.7	
32	Weale 2007	114	66.3	43.9	NR	Black: 1.7%	NR	43.9	NR	

NR = not reported.

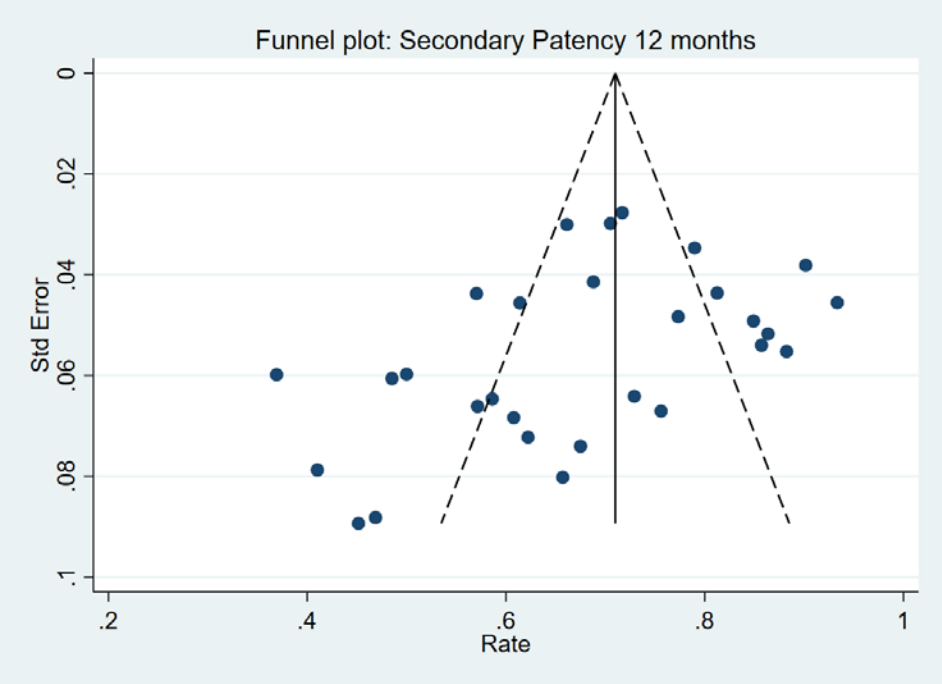
Supplemental Table S4. Inclusion and Exclusion Criteria of Included Studies

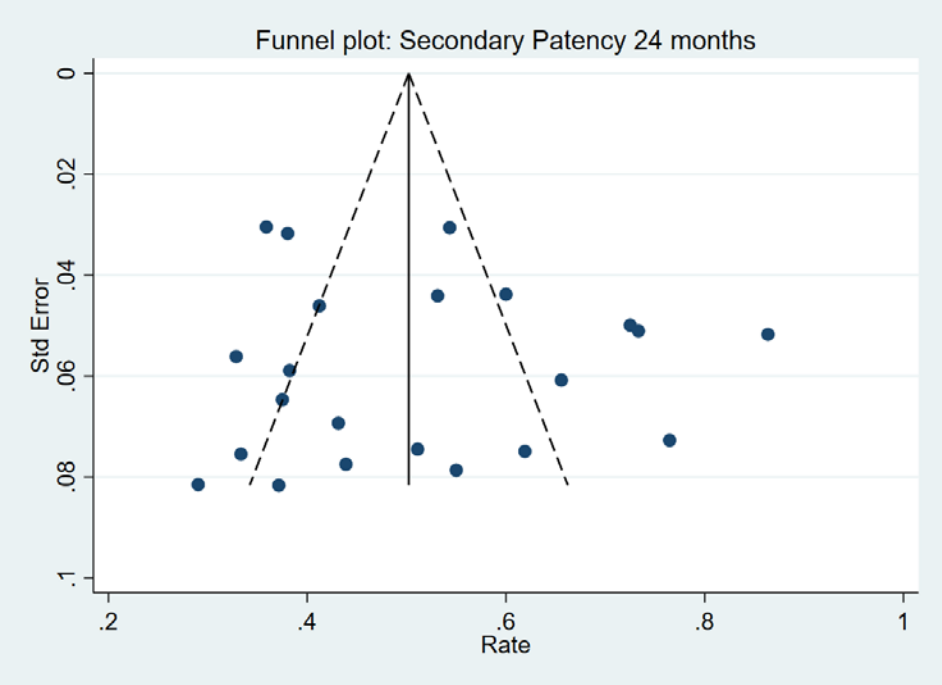
	Study	Inclusion Criteria	Exclusion Criteria	Risk of Bias*
1	Allemang 2014	Not reported	Not reported	Low
2	Anaya-Ayala 2015	Patients with compromised outflow venous anatomy	Not reported	Low
3	Arhuidese 2017	Patients who were not candidates for native AVF	Not reported	Low
4	Berard 2015	Patients who were not candidates for native AVF	Not reported	Low
5	Chiang 2014	Patients who were not candidates for native AVF or who previously failed AVF or AVG	Not reported	Low
6	Davies 2016	Patients with primary surgical creation of PTFE AVG for hemodialysis	AVF access; revision of AVF with PTFE or PTFE interposition grafts; second PTFE graft placed in same extremity; 4-7 mm tapered grafts; lower extermity or chest placement	Low
7	Dixon 2009	Patients aged 18+ with new AVG for hemodialysis	Pregnant or breastfeeding; increased bleeding risk or known bleeding disorder; esophagitis, gastritis, or peptic ulcer disease; platelet count <75000/mm^3; advanced liver disease; anticoagulant or antiplatelet use other than aspirin; allergy or adverse reaction to extended-release dipyridamole plus aspirin; uncontrolled hypertension	Low
8	Donati 2015	Patients with no native vessels available for AVF and who had not previously received a tunneled cuffed permanent catheter	Not reported	High
9	Drouven 2019	Patients for whom radial-cephalic or brachio-cephalic AVF failed or was not possible with a suitable elbow vein of 4 millimeters minimum	Not reported	Low
10	Elwakeel 2013	Patients who did not have suitable vein for AVF in both upper limbs and who had unsuitable brachial artery for brachial-axillary access	Not reported	Unclear
11	Feldman 2013	Patients aged 18-85 with uneventful AVG construction; successful first cannulation and extracorporeal blood flow 300mL/min	AVF access; known thrombophilia; AVG with major compications of graft surgery; AVG that underwent any intervention before successful first cannulation; "exotic" grafts	High
12	Glickman 2015	Patients currently undergoing or expected to start hemodialysis within 30 days who were not candidates for AVF and were able to have upper extremity placement	More than 2 prior vascular accesses in arm where AVG was to be implanted; known or suspected systemic infection; prior revision; bleeding disorder or coagulopathy; sensitivity to heparin; immune suppression; extended-release dipyridamole + aspirin	Low
13	Głowiński 2014	Patients with long distance between artery and vein; fibrotic elbow vein; thrombosis of previous fistula; inappropriate for simple thrombectomy; wide patent proximal cephalic vein	Not reported	Unclear

14	Jadlowiec 2015	Patients receiving upper-extremity access using the bracial artery as inflow to either cephalic or bailic vein for outflow	Not reported	High
15	Kakisis 2017	Not reported	Not reported	Low
16	Kakkos 2011	Not reported	Not reported	High
17	Keuter 2008	Patients with a previous RCAVF/BCAVF had failed or in which creation of forearm fistula was not possible	Not reported	Low
18	Khoshnevis 2013	Patients aged 18+ in whom AVF access not possible	Incomplete clinical records	High
19	Ko 2004	Patients with no suitable forearm superficial vein for AVF	Not reported	Unclear
20	Ko 2009	Patients without suitable superficial veins for AVF; who had clear consciousness and stable hemodynamically	Small vein (<3 mm); impalpable artery; low systolic pressure (<90 mmHg)	Low
21	Lee 2007	Patients who previously failed initial forearm AVF and who had minimum artery diameter of 2 mm and minimum vein diameter of 4.0 mm	Not reported	Low
22	Lioupis 2011	Patients with adequate arterial inflow and the absence of suitable forearm/upper arm veins (>2.5 mm)	Not reported	Low
23	Marcus 2019	Patients who were not suitable for AVF due to lack of available venous conduit and who had minimum inflow arterial and outflow venous diameter of 3 mm	Chest wall loop AVG; femoral AVG; AVG replacement for bleeding, aneurysm, infection; Dacron grafts	Low
24	Milburn 2008	Patients receiving transposed brachiobasilic fistula or upper arm AVG if radiocephalic or brachiocephalic fistula options exhausted	Not reported	Low
25	Pham 2017	Patients who were not candidates for AVF with poor venous anatomy (basilic vein diameter < 2.5mm)	Patients lost to follow-up	Low
26	Ravari 2010	Patients with first-time vascular access who had inappropriate vein for AVF	Not reported	High
27	Sala-Almonacil 2011	Patients undergoing first tertiary access	Not reported	Moderate
28	Scarritt 2014	Patients not appropriate for primary AVG	Not reported	High
29	Schild 2011	Patients aged 18-70 years old with history of previous AVF/AVG failure and no veins available for AVF	Not reported	High
30	Shemesh 2015	Patients with exhausted superficial veins who are unsuitable for native fistula	Thigh grafts; patients who couldn't consent or declined; warfarin use	Low
31	Tozzi 2014	Patients who were poor candidates for autogenous access including previous access failure, inadequate native vessels and urgent HD	Not reported	Low
32	Weale 2007	All patients who required access in upper arm	Patients who underwent procedure prior to 2000	Low

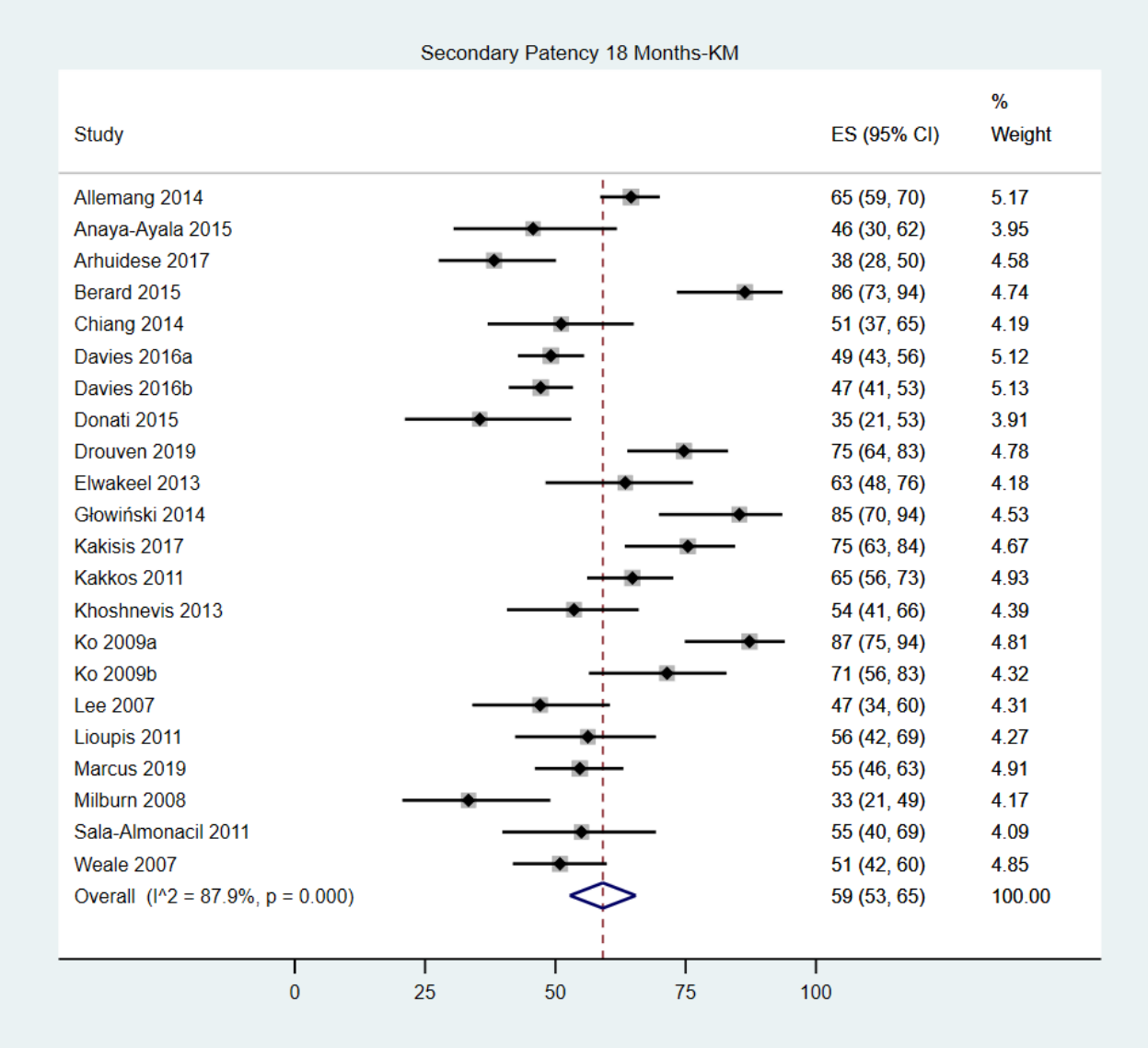
* Risk of bias assessment adapted from Al-Jaishi et al.[2]

Supplemental Figure S5. Funnel plots for secondary patency at 12 and 24 months

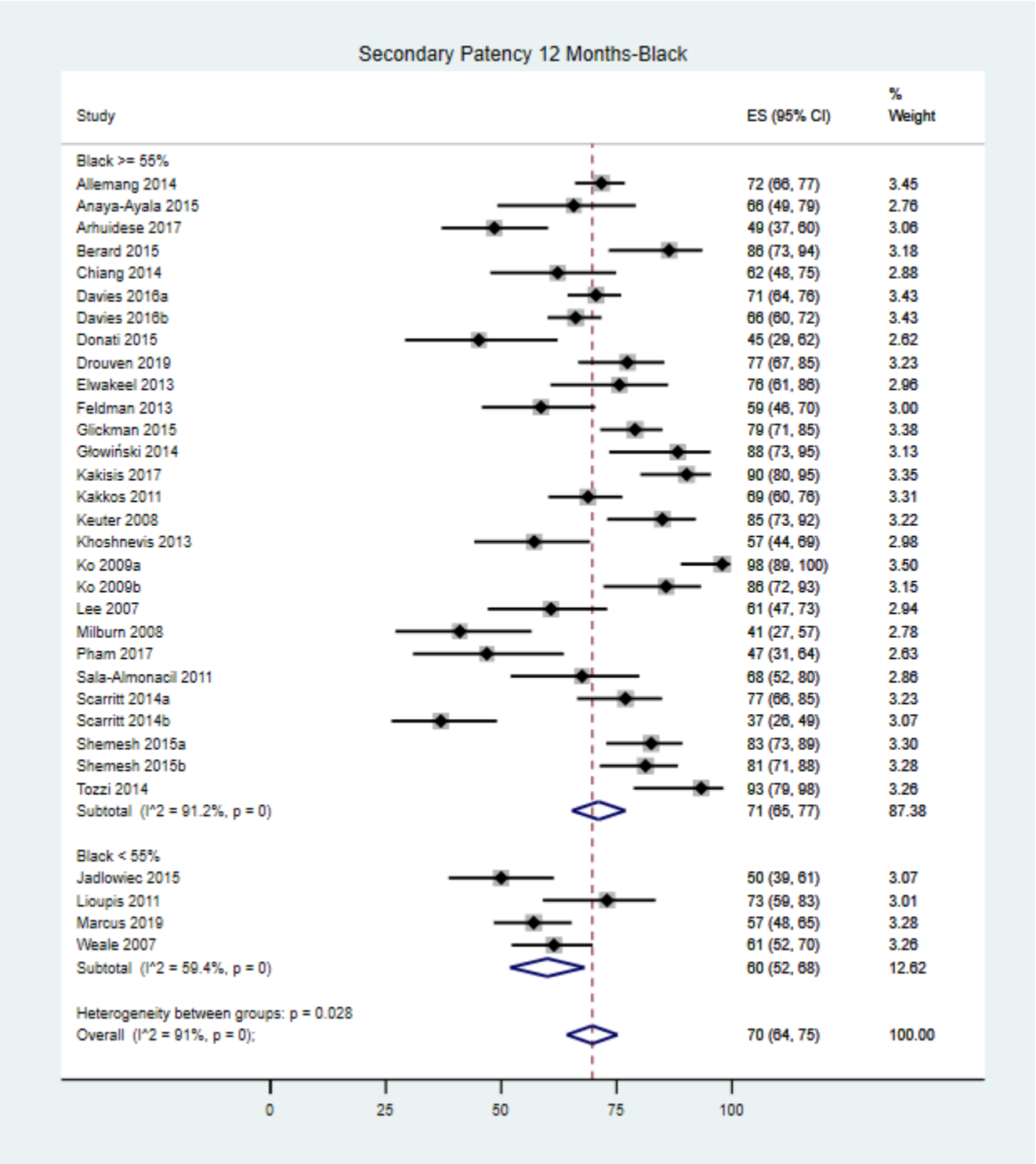




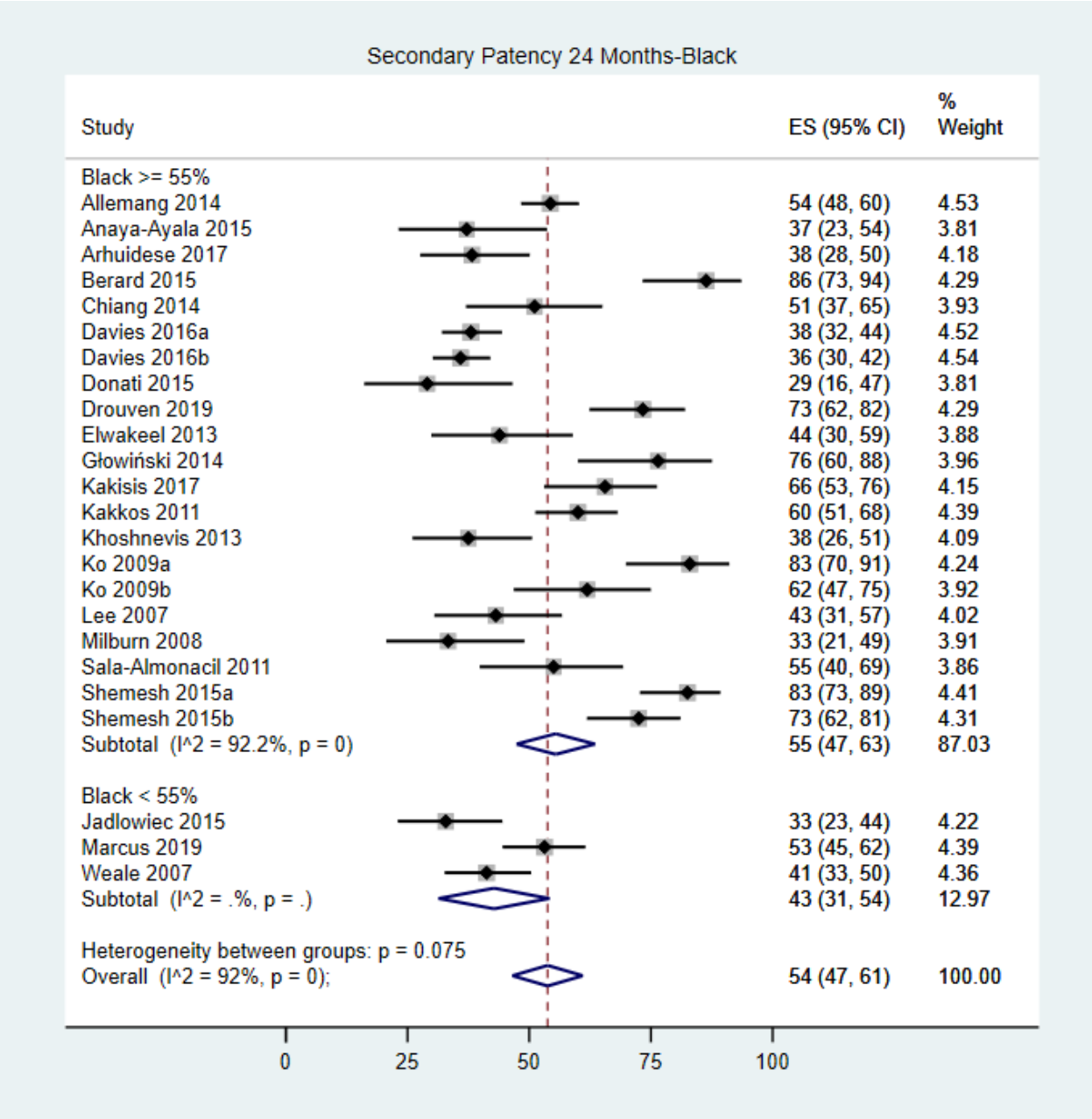
Supplemental Figure S6. Forest plot of secondary patency at 18 months



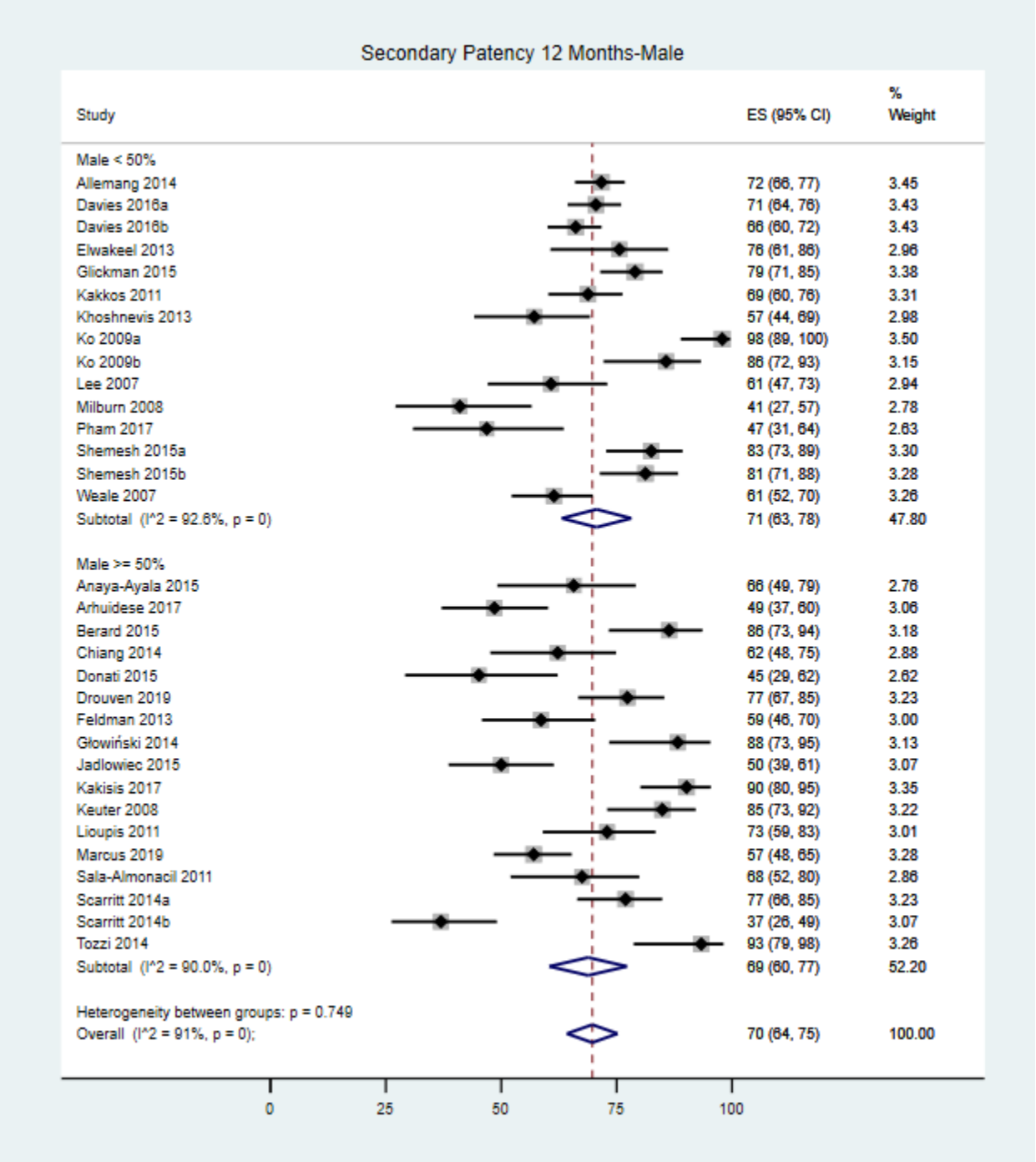
Supplemental Figure S7. Forest Plots of Secondary Patency by Subgroup - 12 Months by Black Race



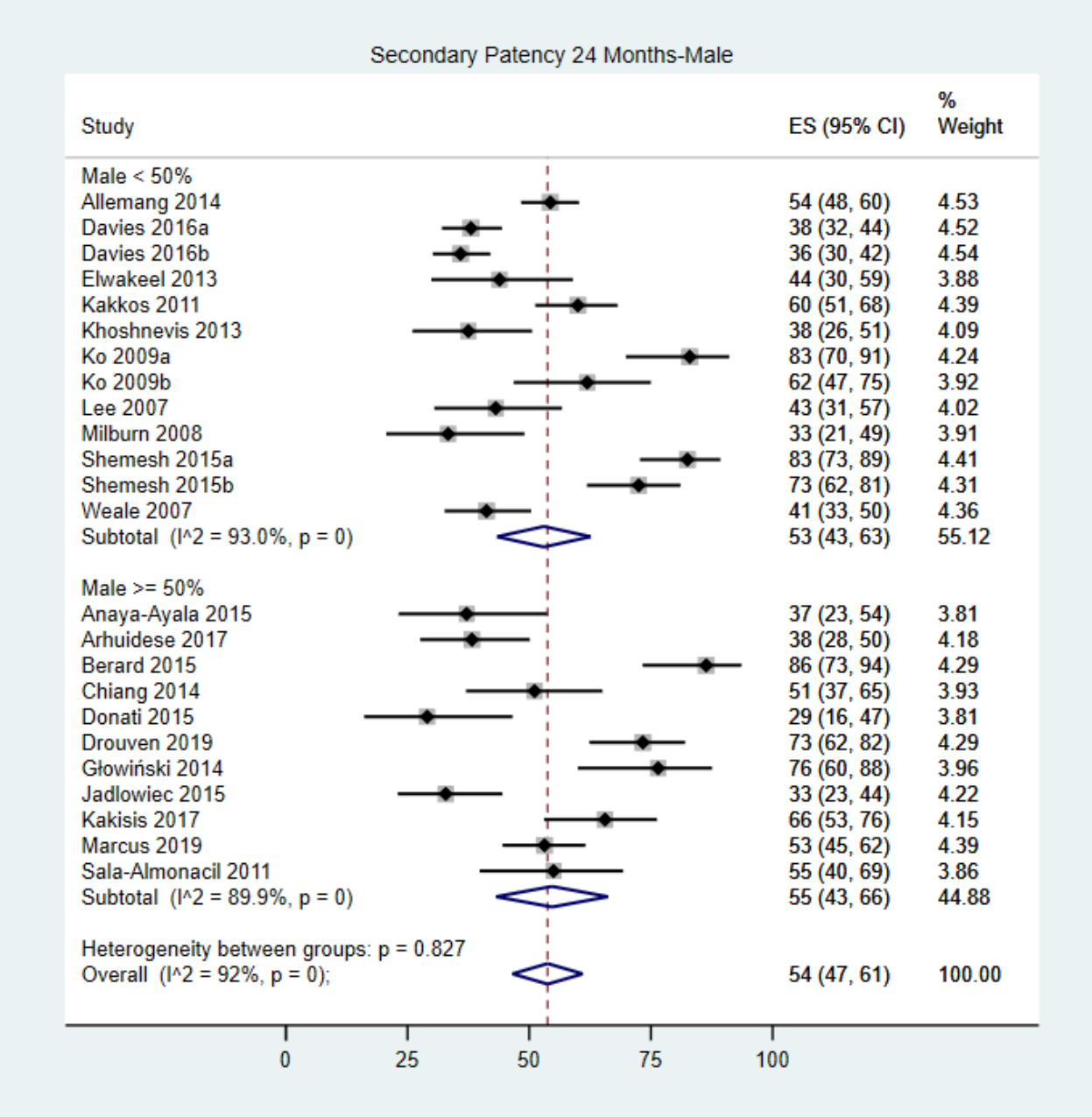
Supplemental Figure S8. Forest Plots of Secondary Patency by Subgroup - 24 Months by Black Race



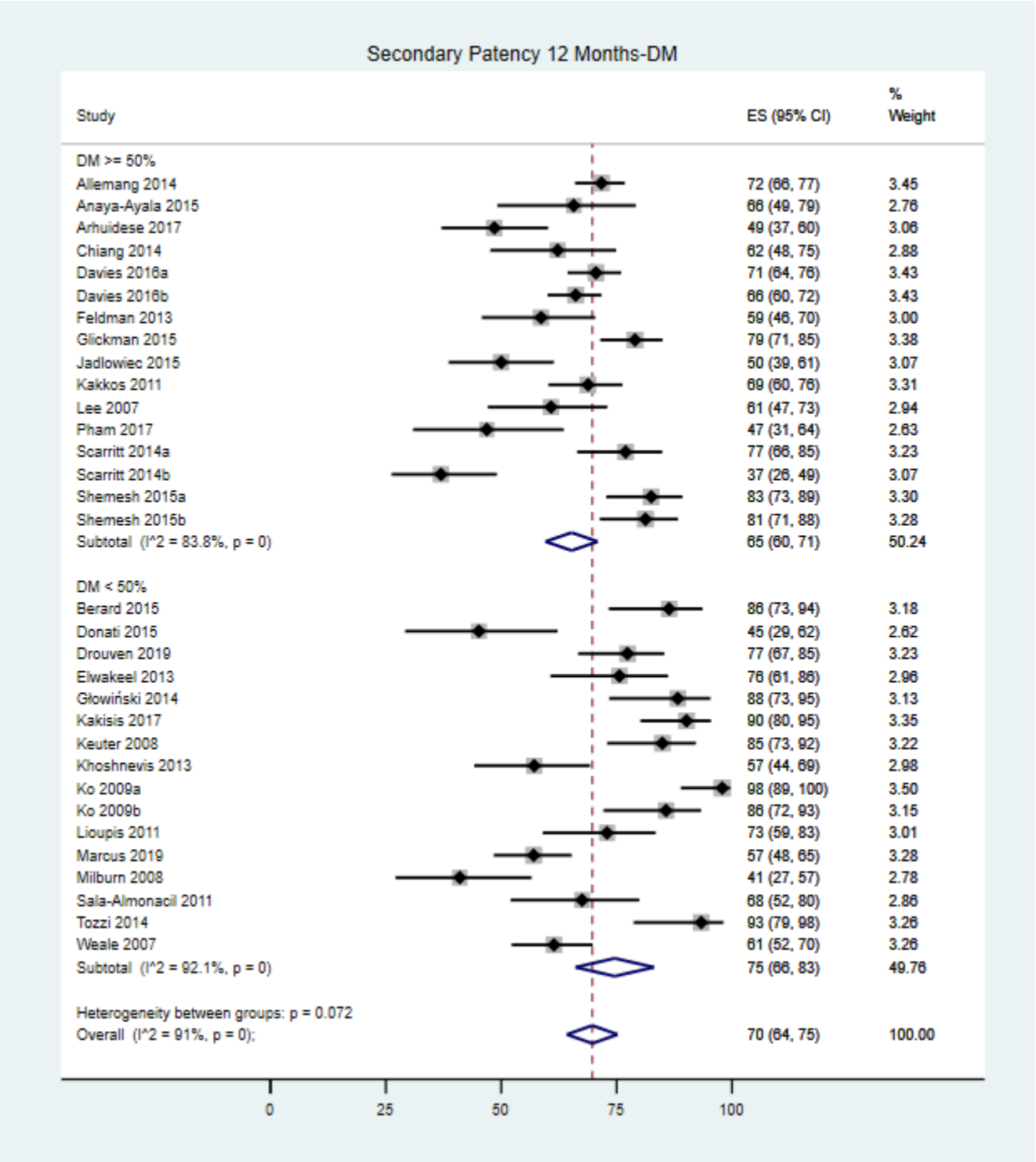
Supplemental Figure S9. Forest Plots of Secondary Patency by Subgroup - 12 Months by Sex



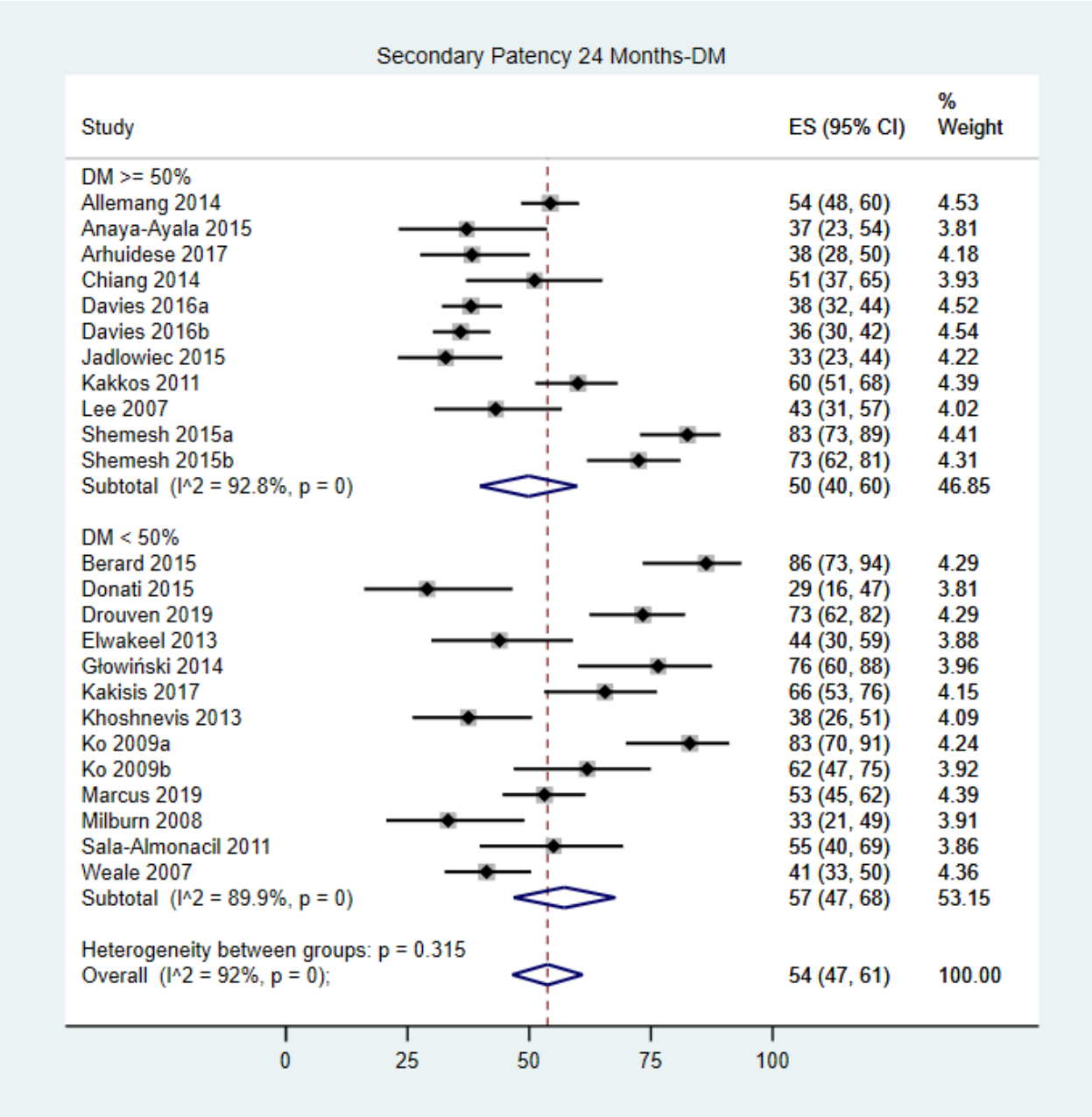
Supplemental Figure S10. Forest Plots of Secondary Patency by Subgroup - 24 Months by Sex



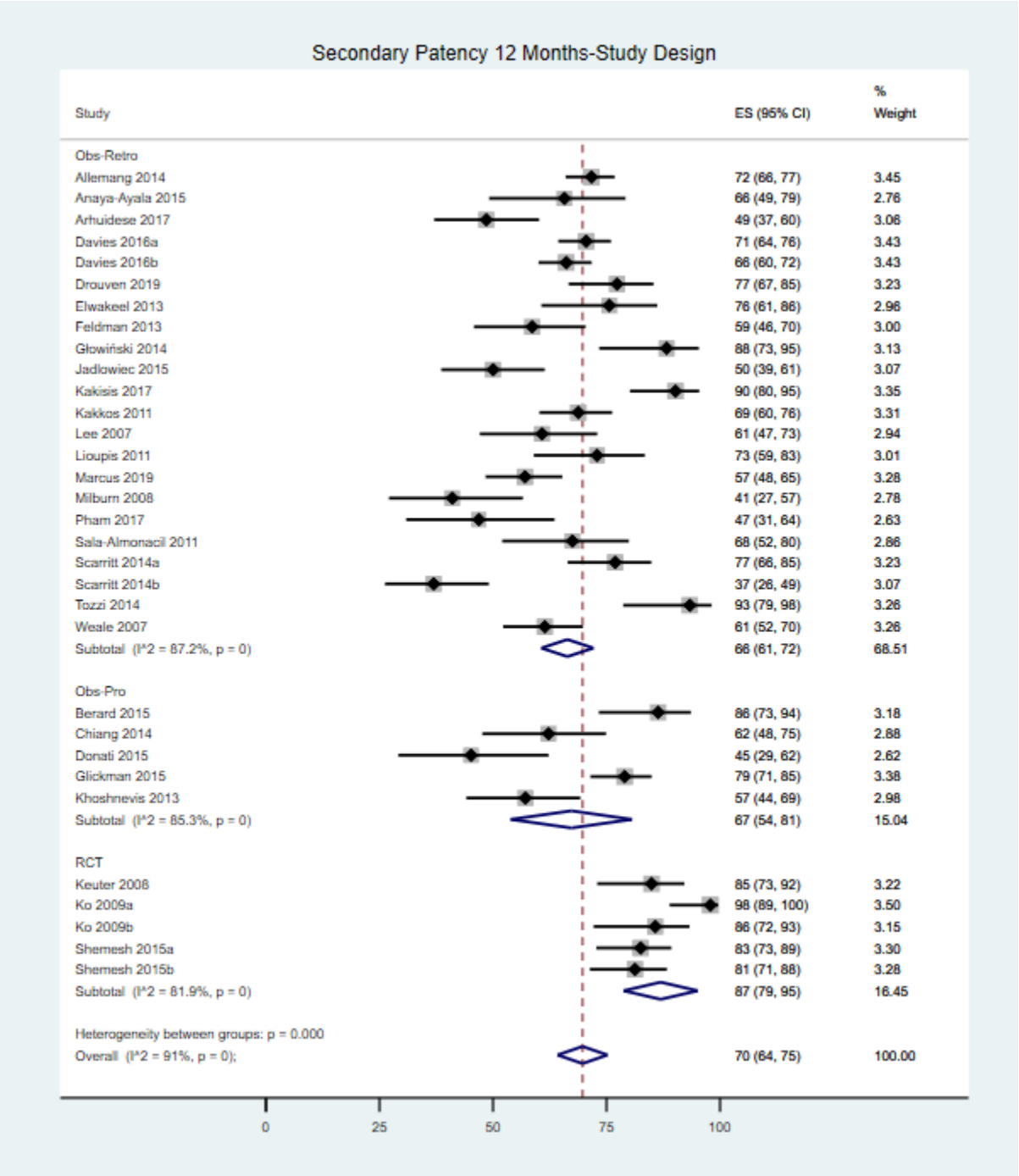
Supplemental Figure S11. Forest Plots of Secondary Patency by Subgroup - 12 Months by Diabetes Diagnosis



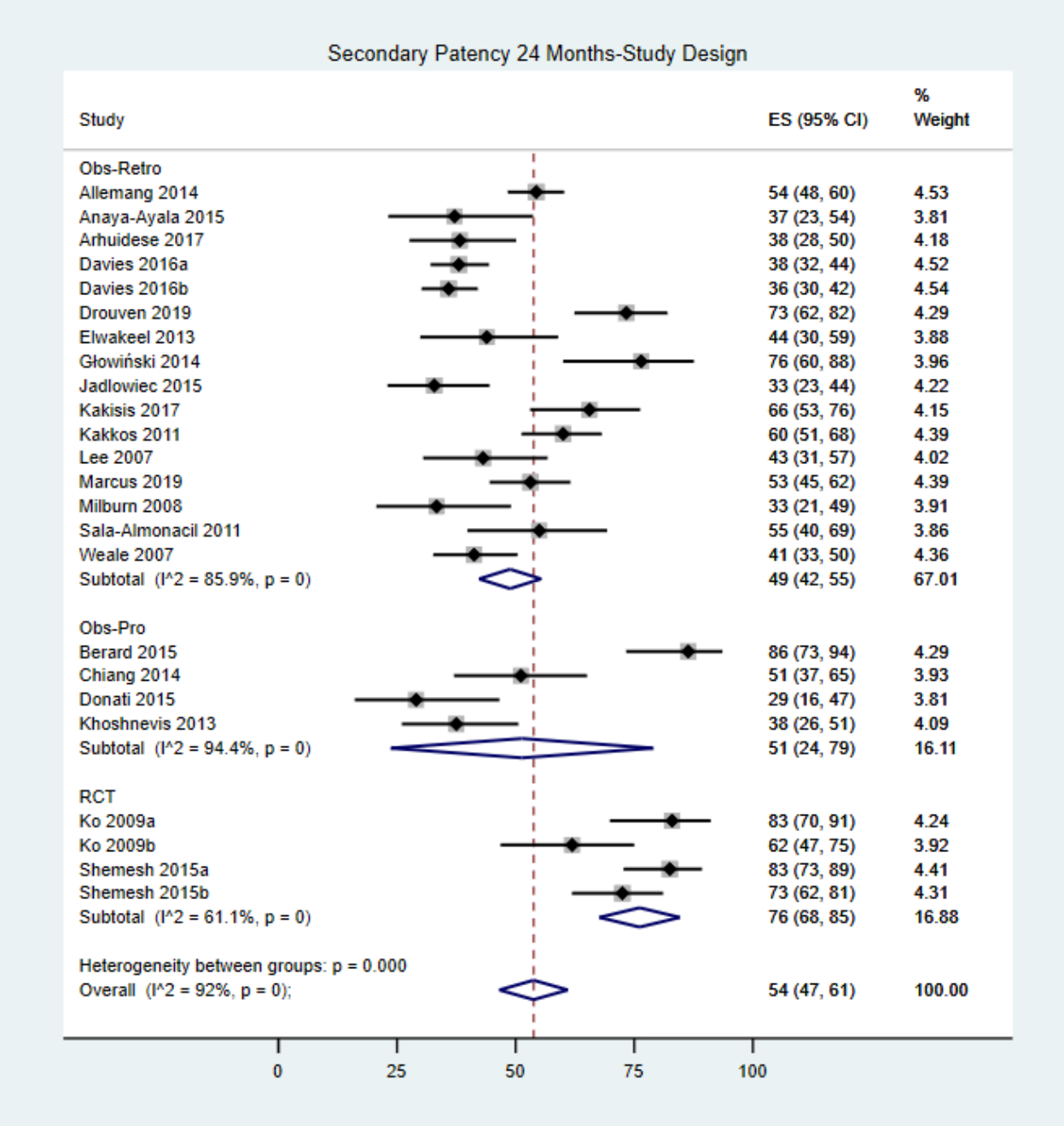
Supplemental Figure S12. Forest Plots of Secondary Patency by Subgroup - 24Months by Diabetes Diagnosis



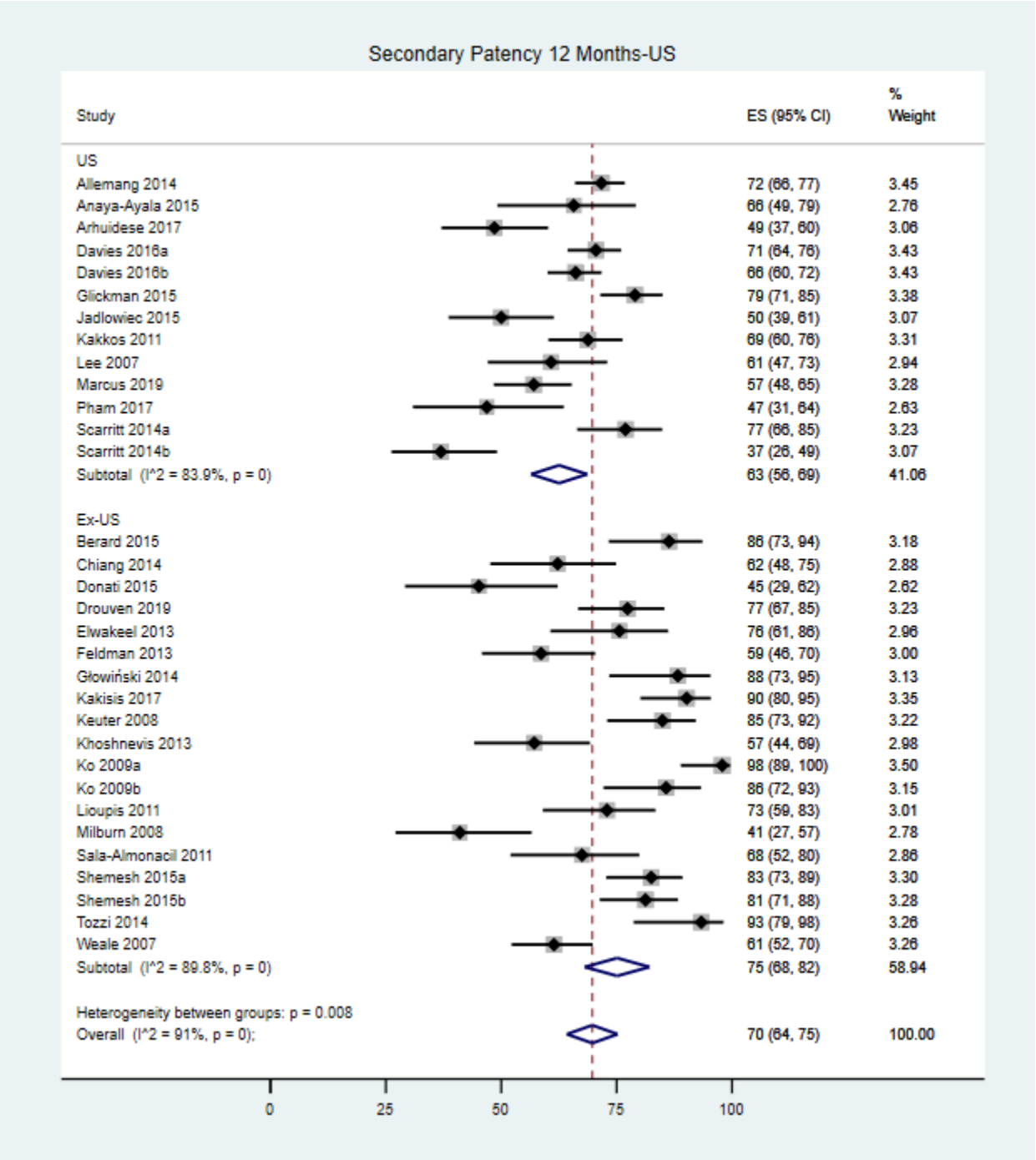
Supplemental Figure S13. Forest Plots of Secondary Patency by Subgroup - 12 Months by Study Design



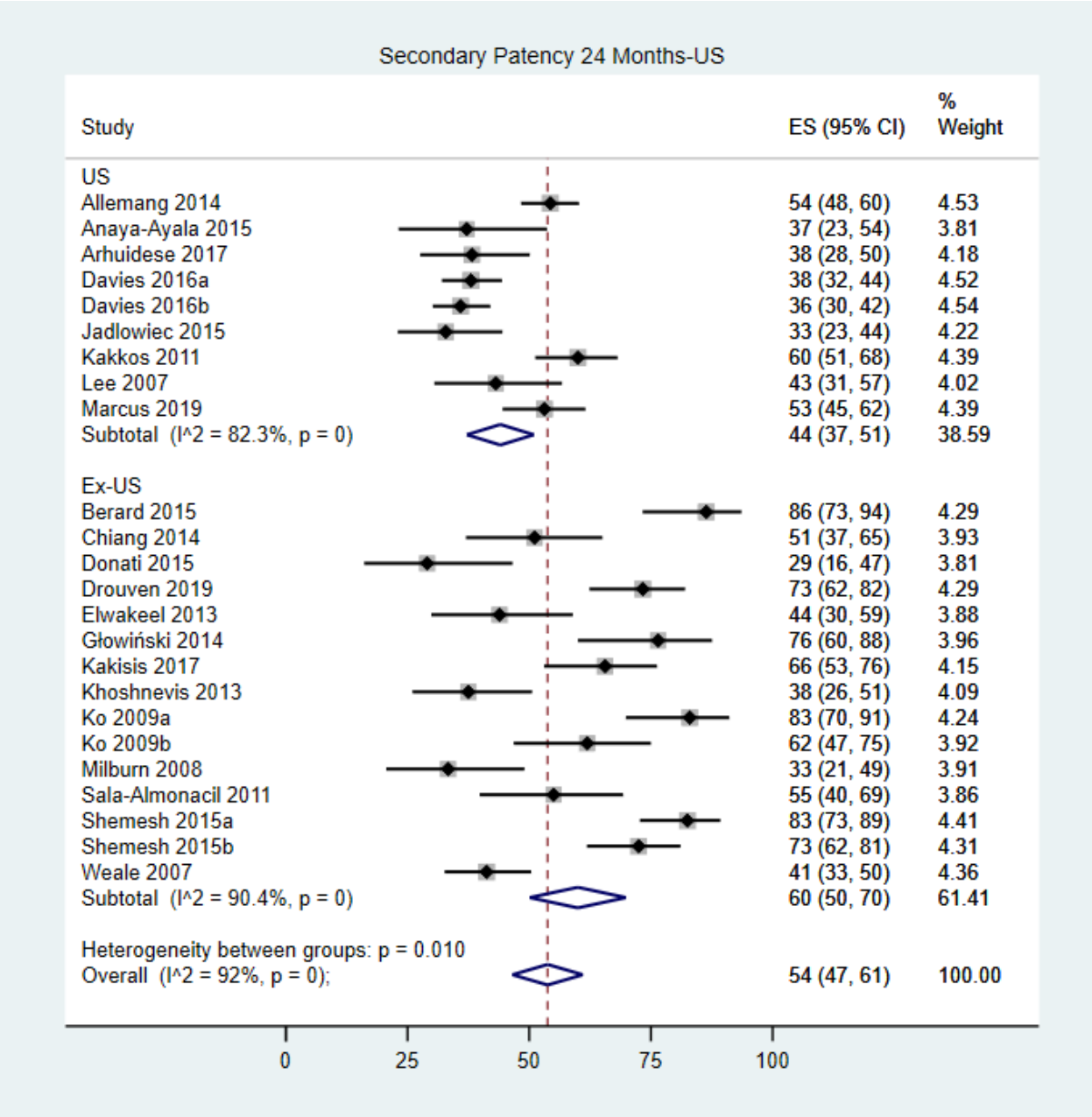
Supplemental Figure S14. Forest Plots of Secondary Patency by Subgroup - 24 Months by Study Design



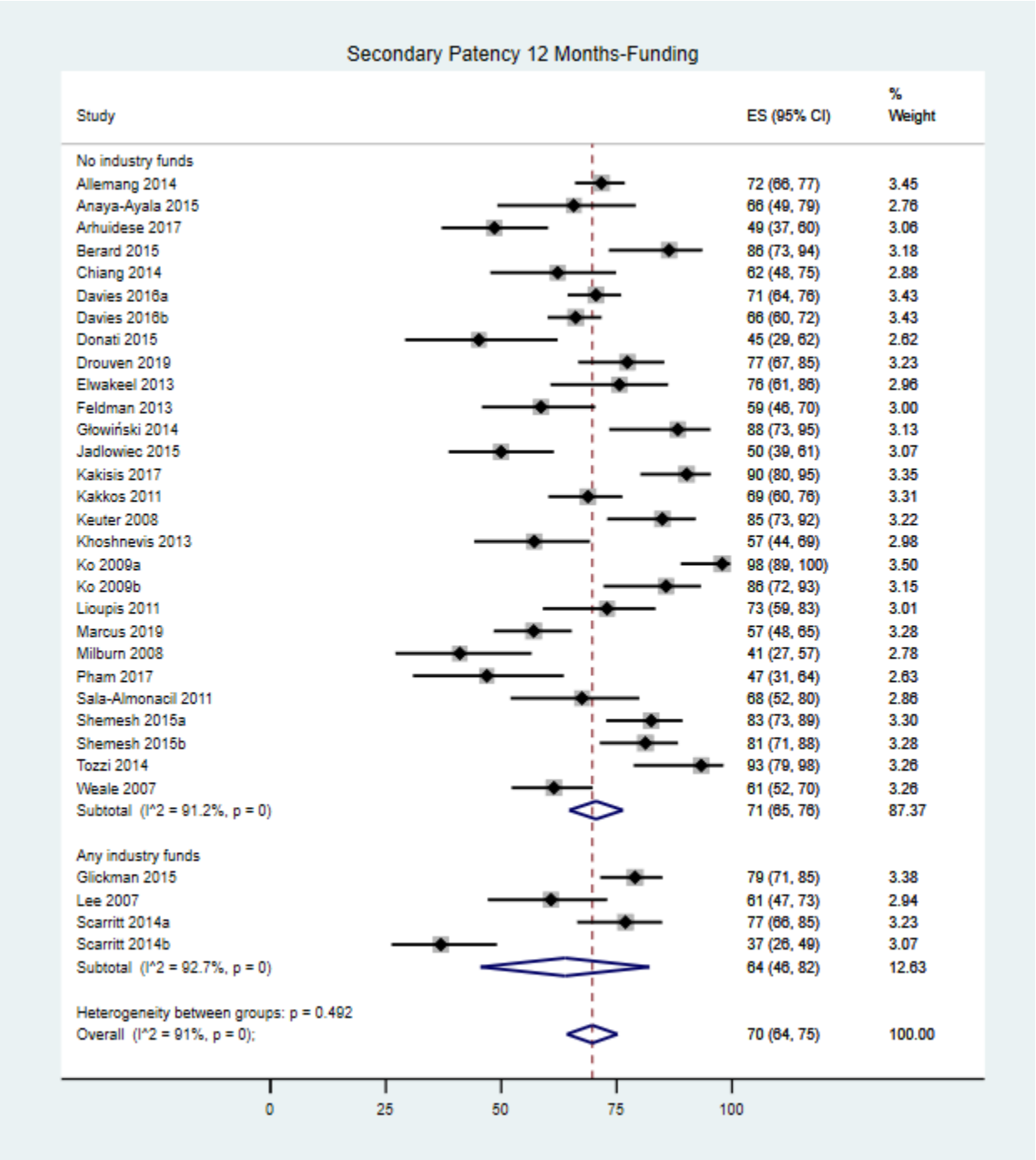
Supplemental Figure S15. Forest Plots of Secondary Patency by Subgroup - 12 Months by Study Country



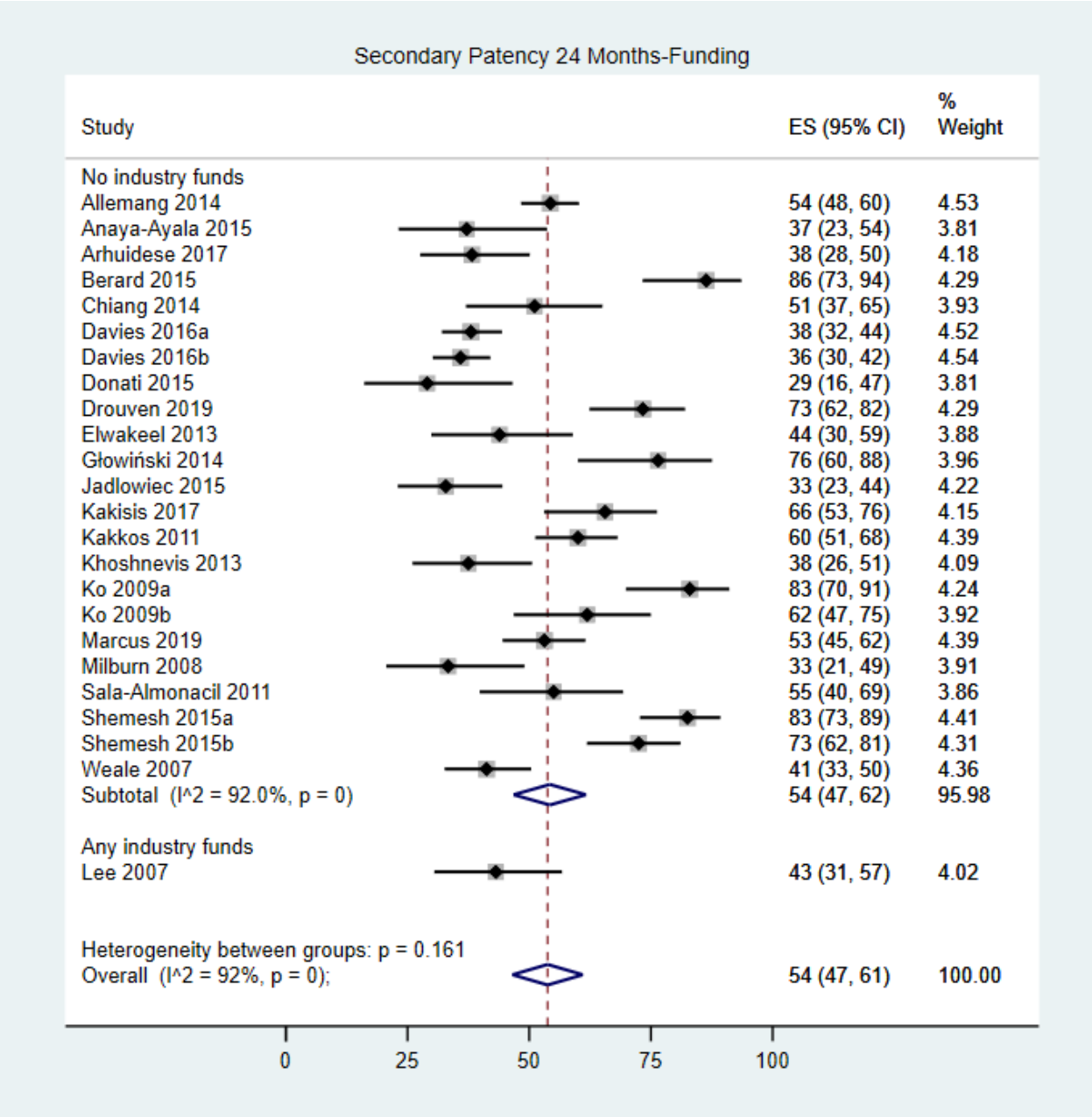
Supplemental Figure S16. Forest Plots of Secondary Patency by Subgroup - 24 Months by Study Country



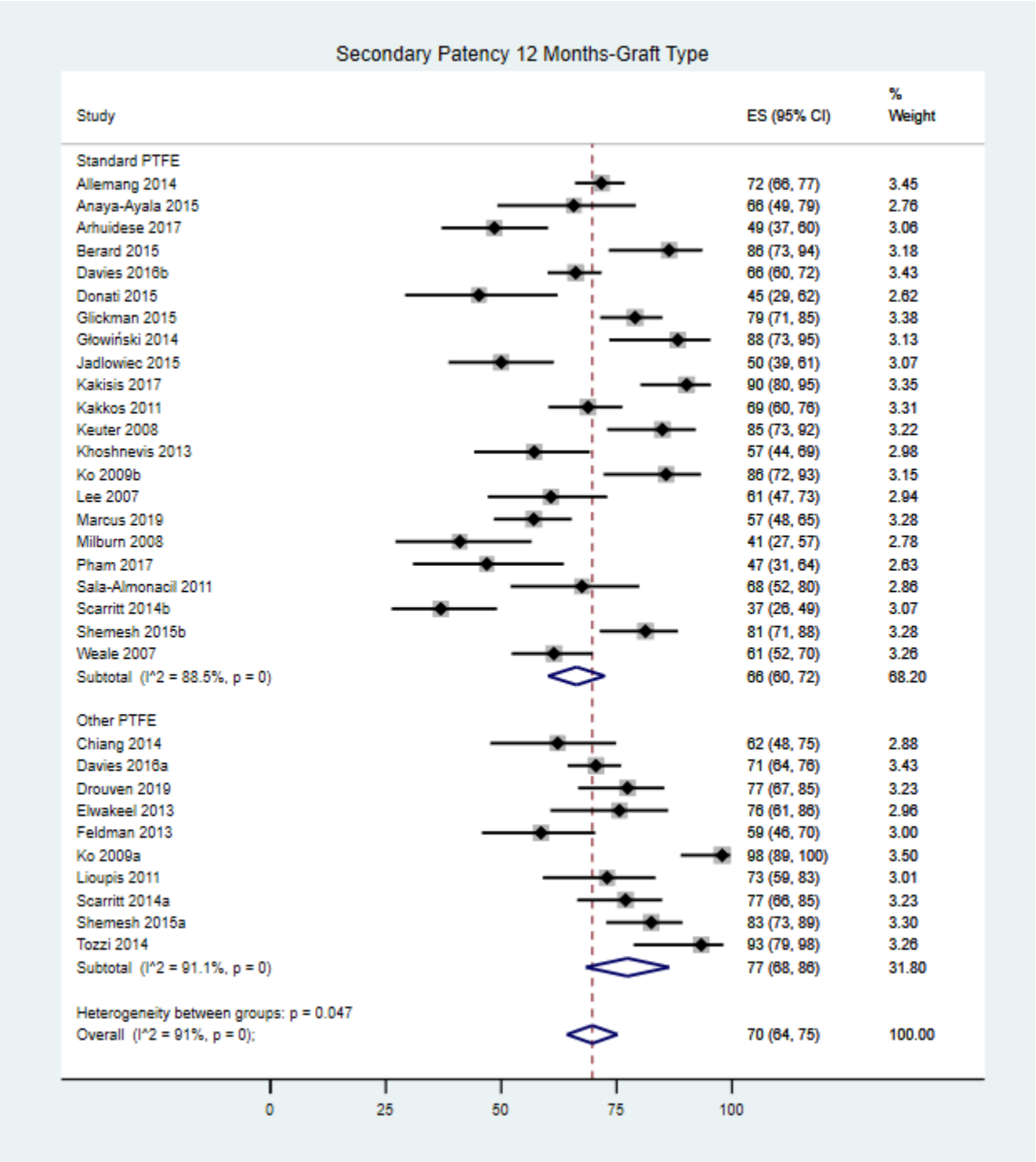
Supplemental Figure S17. Forest Plots of Secondary Patency by Subgroup - 12 Months by Study Funder



Supplemental Figure S18. Forest Plots of Secondary Patency by Subgroup - 24 Months by Study Funder



Supplemental Figure S19. Forest Plots of Secondary Patency by Subgroup - 12 Months by Graft Type



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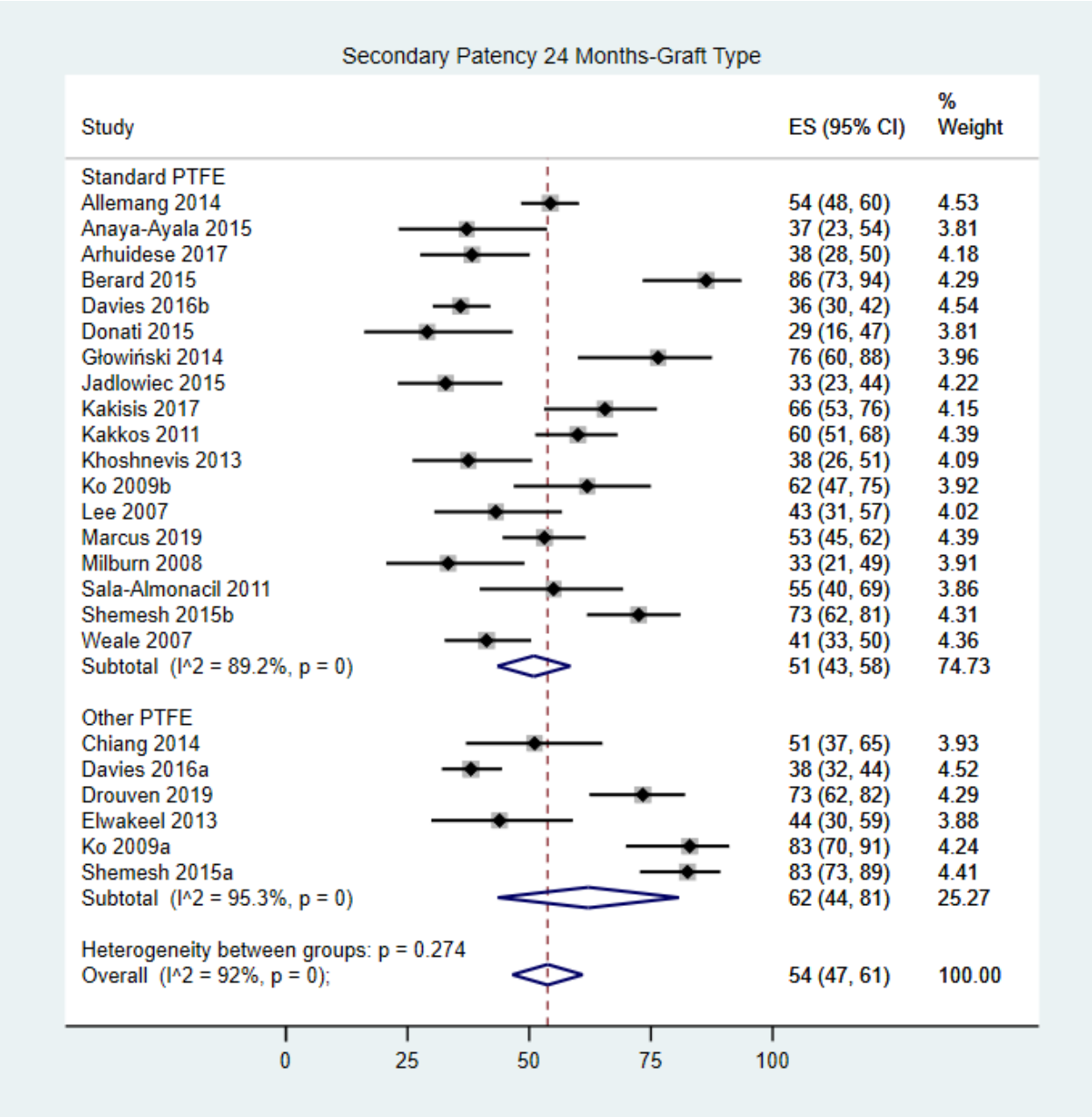
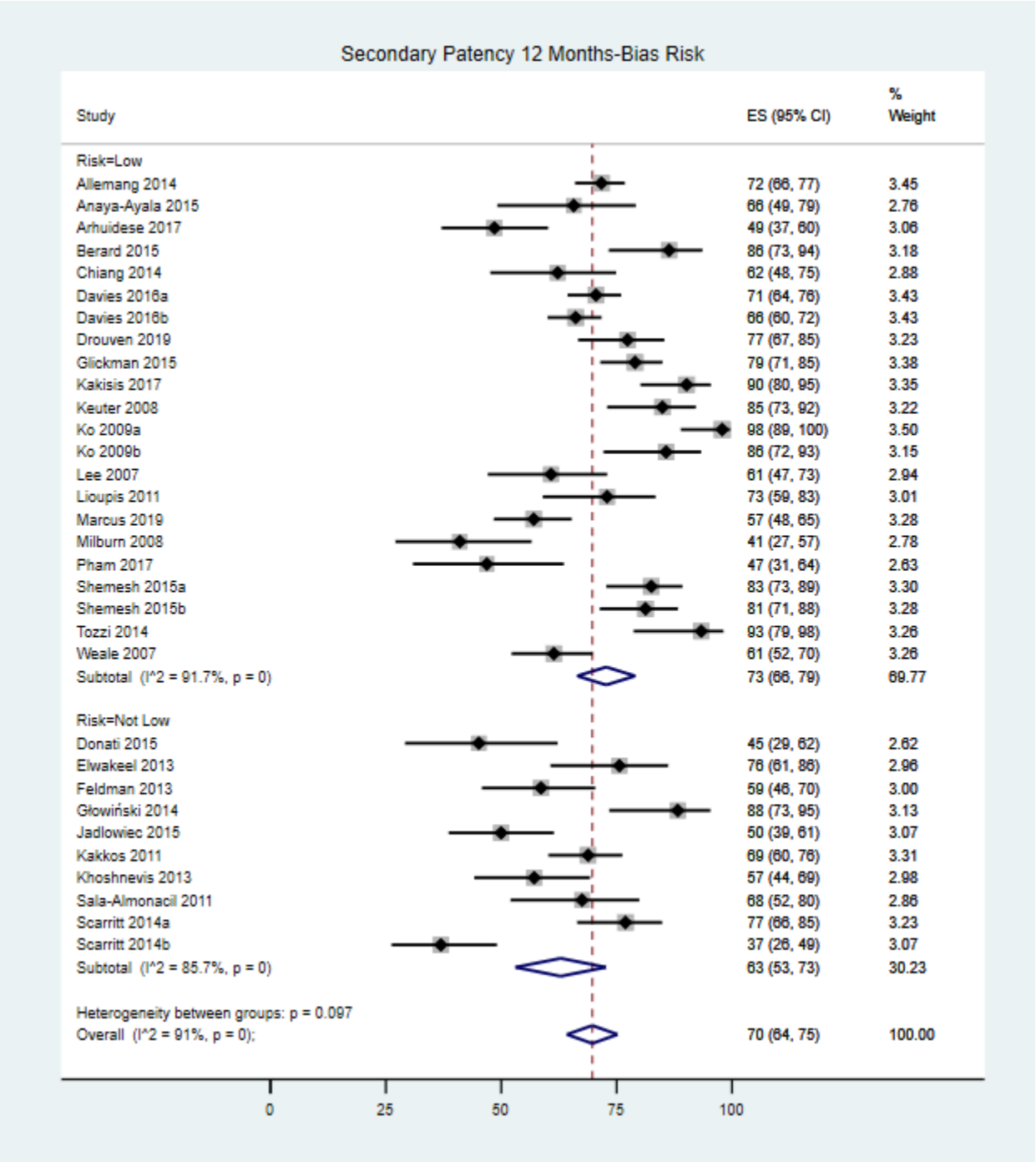
Supplemental Figure S20. Forest Plots of Secondary Patency by Subgroup - 24 Months by Graft Type



Supplemental Figure S21. Forest Plots of Secondary Patency by Subgroup - 12 Months by Risk of Bias



Supplemental Figure S22. Forest Plots of Secondary Patency by Subgroup - 24 Months by Risk of Bias