Supplemental Table 1. IDs of ADNI subjects used throughout BETTH analysis.

002_S_0413_m132	129_S_6082_bl	130_S_6037_bl	016_S_6789_bl
002_S_6030_bl	129_S_6304_bl	130_S_6319_bl	016_S_6800_bl
002_S_6103_bl	129_S_6459_bl	141_S_6240_bl	021_S_4744_m60
003_S_5154_m60	130_S_5175_m48	177_S_6335_bl	024_S_2239_m102
003_S_6067_bl	130_S_6027_bl	941_S_4187_m72	027_S_6034_bl
003_S_6256_bl	130_S_6105_bl	941_S_6570_bl	036_S_4538_m66
006_S_6234_bl	130_S_6111_bl	003_S_6833_bl	067_S_6529_bl
006_S_6277_bl	131_S_6519_bl	011_S_4893_m60	109_S_6364_bl
006_S_6375_bl	141_S_6008_bl	016_S_4902_m72	116_S_6775_bl
007_S_4387_m72	141_S_6116_bl	016_S_6839_bl	127_S_6241_bl
007_S_6310_bl	177_S_6408_bl	018_S_2133_m84	130_S_6612_bl
007_S_6521_bl	941_S_6054_bl	023_S_6661_bl	141_S_6061_m24
011_S_6714_bl	941_S_6058_bl	036_S_4715_m66	941_S_6803_bl
014_S_6076_bl	941_S_6080_bl	036_S_6231_bl	002_S_6695_bl
014_S_6148_bl	941_S_6422_bl	037_S_6377_bl	003_S_6258_bl
016_S_4951_m48	941_S_6454_bl	114_S_0416_m132	003_S_6268_bl
016_S_6773_bl	941_S_6499_bl	116_S_6100_bl	007_S_6341_bl
016_S_6802_bl	002_S_5178_m48	127_S_1427_m108	011_S_4278_m96
018_S_4399_m48	002_S_6009_bl	129_S_6763_bl	011_S_6618_bl
020_S_6227_bl	002_S_6053_bl	130_S_2373_m72	018_S_4809_m48
022_S_6822_bl	003_S_6259_bl	130_S_2403_m66	018_S_4868_m48
023_S_4448_m48	006_S_0498_m132	130_S_6072_bl	023_S_2068_m84
023_S_6400_bl	006_S_6209_bl	002_S_4521_m48	023_S_6356_bl

023_S_6547_bl	006_S_6500_bl	011_S_4547_m66	023_S_6535_bl
024_S_4084_m72	007_S_6323_bl	011_S_4827_m60	024_S_6846_bl
024_S_6202_bl	009_S_6163_bl	011_S_6303_bl	027_S_2219_m72
024_S_6472_bl	016_S_6381_bl	016_S_6708_bl	033_S_6497_bl
036_S_6189_bl	019_S_5242_m24	021_S_4659_m60	036_S_2380_m84
037_S_5222_m24	020_S_6185_bl	022_S_6796_bl	037_S_0377_m132
037_S_6271_bl	020_S_6282_bl	027_S_6648_bl	037_S_4071_m48
067_S_6045_bl	020_S_6358_bl	027_S_6733_bl	052_S_6832_bl
067_S_6138_bl	020_S_6470_bl	036_S_6179_bl	067_S_4782_m60
067_S_6443_bl	020_S_6504_bl	037_S_6216_bl	098_S_0896_m138
067_S_6528_bl	020_S_6566_bl	114_S_6347_bl	126_S_6724_bl
070_S_6394_bl	023_S_6346_bl	114_S_6595_bl	127_S_4197_m48
070_S_6542_bl	035_S_4464_m48	126_S_6683_bl	127_S_4301_m72
082_S_6283_bl	037_S_4214_m48	127_S_4765_m48	127_S_6512_bl
082_S_6287_bl	037_S_6204_bl	127_S_6433_bl	128_S_2130_m90
094_S_6275_bl	067_S_6117_bl	127_S_6549_bl	129_S_6852_bl
098_S_6362_bl	099_S_6097_bl	129_S_6784_bl	141_S_2333_m78
099_S_6016_bl	100_S_4469_m66	301_S_6592_bl	301_S_6777_bl
123_S_6118_bl	114_S_6813_bl	002_S_1261_m120	941_S_6068_bl
127_S_2234_m108	116_S_6624_bl	002_S_4262_m48	941_S_6345_bl
127_S_6203_bl	127_S_4604_m48	002_S_4654_m48	
127_S_6348_bl	127_S_5266_m24	003_S_6606_bl	
127_S_6436_bl	128_S_4607_m72	014_S_6765_bl	

Supplemental Table 2. Characteristics of CU and CI participants for [18]F-flortaucipir (FTP) and [18]F-MK-6240 (MK) dichotomized, unmatched samples.

	FTP		MK	
	A-(N)- CU	A+(N)+ CI	A-(N)- CU	A+(N)+ CI
N	98 (54.1%)**	83 (45.9%)**	32 (33.3%)**	64 (66.7%)**
Sex	64.3% F 35.7% M	41.0% F 59.0% M	53.1% F 46.9% M	53.1% F 46.9% M
AD/MCI	--	57.8% AD* 42.2% MCI	--	62.5% AD* 37.5% MCI
Age (years)	69.82±5.95**	76.77±7.67**	73.13±4.90**	71.28±7.76**
MMSE	29.26±1.03	24.77±3.93*	28.97±1.19	23.99±2.89*
CT Composite (mm)	2.78±0.06	2.54±0.11	2.78±0.07	2.50±0.14
Centiloids (CL)	1.11±8.63	80.54±32.72	N/A	N/A

* p<0.05, **p<0.001

Dichotomized Results

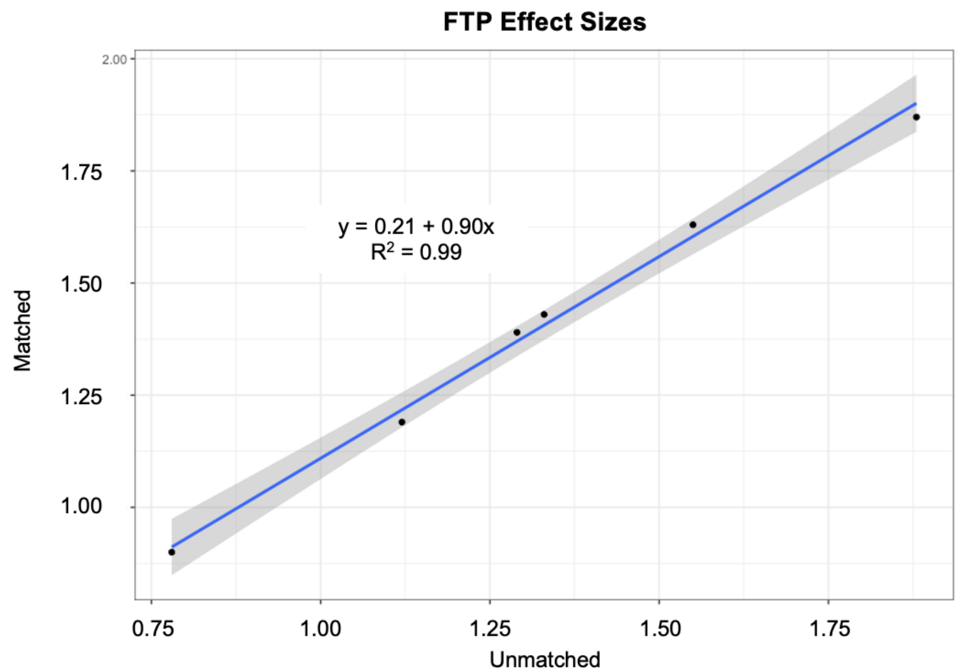
Dichotomized, unmatched regional SUVRs and effect sizes are displayed in Supplemental Table 3. The relationships between the dichotomized, unmatched effect sizes and matched (FTP_I, MK_I) effect sizes are shown in Supplemental Figure 1. The trends for effect sizes held, with the largest composite region effect sizes found for the Amygdala and Mesial Temporal composite regions and the lowest effect sizes for the Lateral Occipital region. As evidenced by the linear regression slopes (0.90 for FTP; 0.77 for MK), the matched effect sizes were typically lower than the raw, although more so for MK than FTP.

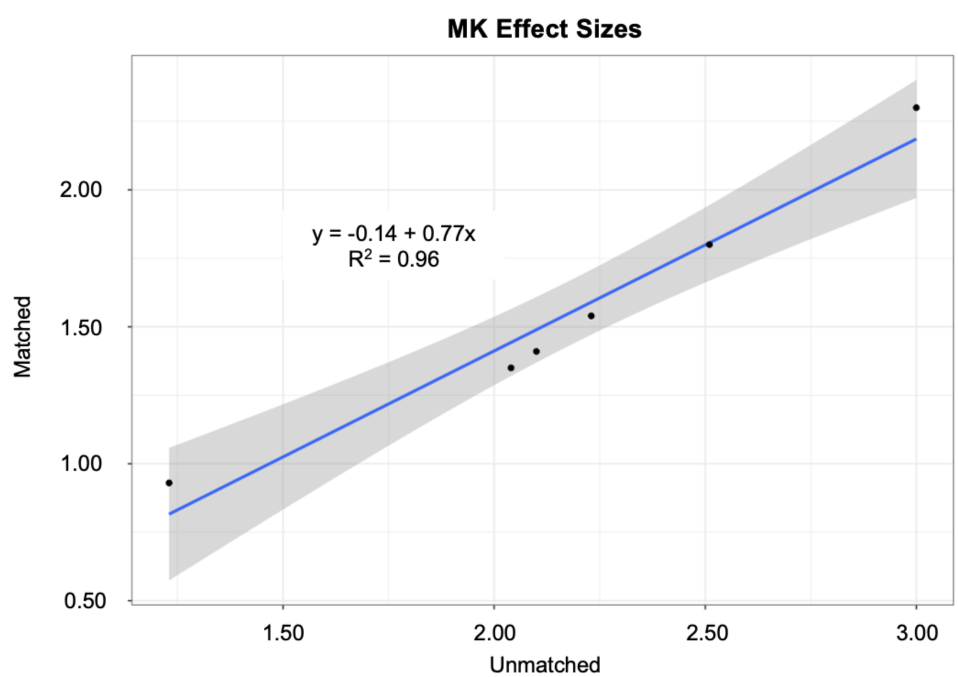
Supplemental Figure 2 shows the sensitivities and specificities of the threshold-determining methods examined for the dichotomized, unmatched data. These results largely agree with those from the matched data. Once again, the double ROC(p) yielded the greatest joint sensitivities across regions and GMM, HC, and k-means yielded joint specificities across regions. Resultant thresholds differed from the matched by +/- 5.1%.

Supplemental Table 3. Dichotomized, un-matched composite region summary.

	FTP				
	CU (SUVR)		CI (SUVR)		*d*
	Mean	σ^2	Mean	σ^2	
Amygdala	1.17	0.11	1.61	0.32	1.88
Inferior Temporal	1.18	0.08	1.62	0.46	1.33
Lateral Occipital	1.11	0.08	1.31	0.36	0.78
Lateral Temporal	1.17	0.08	1.58	0.45	1.29
Mesial Temporal	1.14	0.08	1.49	0.30	1.55
Meta Temporal	1.13	0.08	1.38	0.31	1.12
	MK				
	CU (SUVR)		CI (SUVR)		*d*
	Mean	σ^2	Mean	σ^2	
Amygdala	0.67	0.08	2.14	0.69	3.00
Inferior Temporal	1.03	0.10	2.74	1.15	2.10
Lateral Occipital	1.08	0.12	2.13	1.19	1.23
Lateral Temporal	1.01	0.10	2.64	1.13	2.04
Mesial Temporal	0.93	0.10	2.31	0.77	2.51
Meta Temporal	0.98	0.09	2.50	0.96	2.23

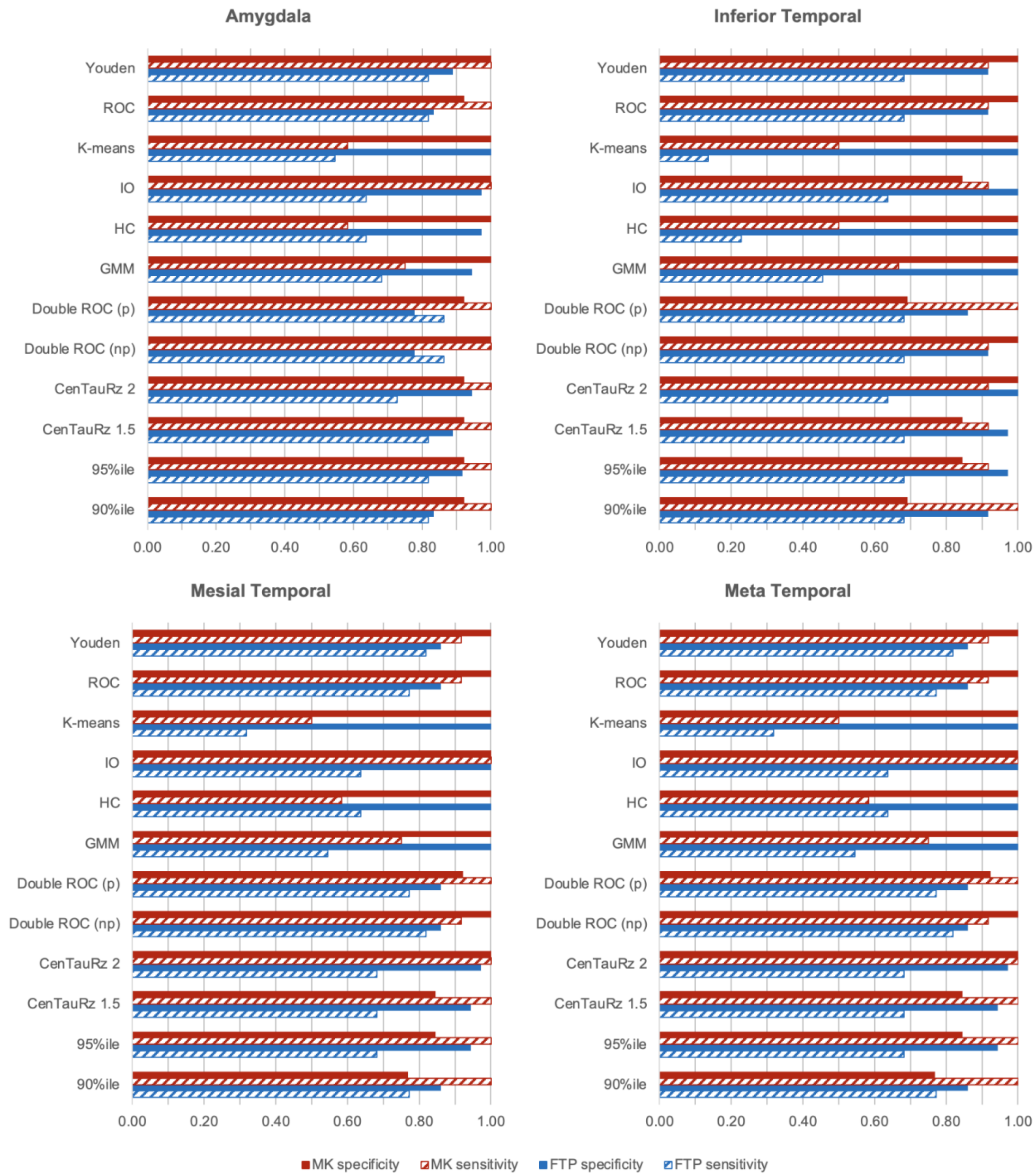
Supplemental Figure 1





Supplemental Figure 1. FTP and MK plots of unmatched vs. matched (FTP_I, MK_I) effect sizes.

Supplemental Figure 2



Supplemental Figure 2. Dichotomized, un-matched threshold sensitivities and specificities for the Amygdala, Inferior Temporal, Mesial Temporal, and Meta Temporal composite regions.

Harmonization Results

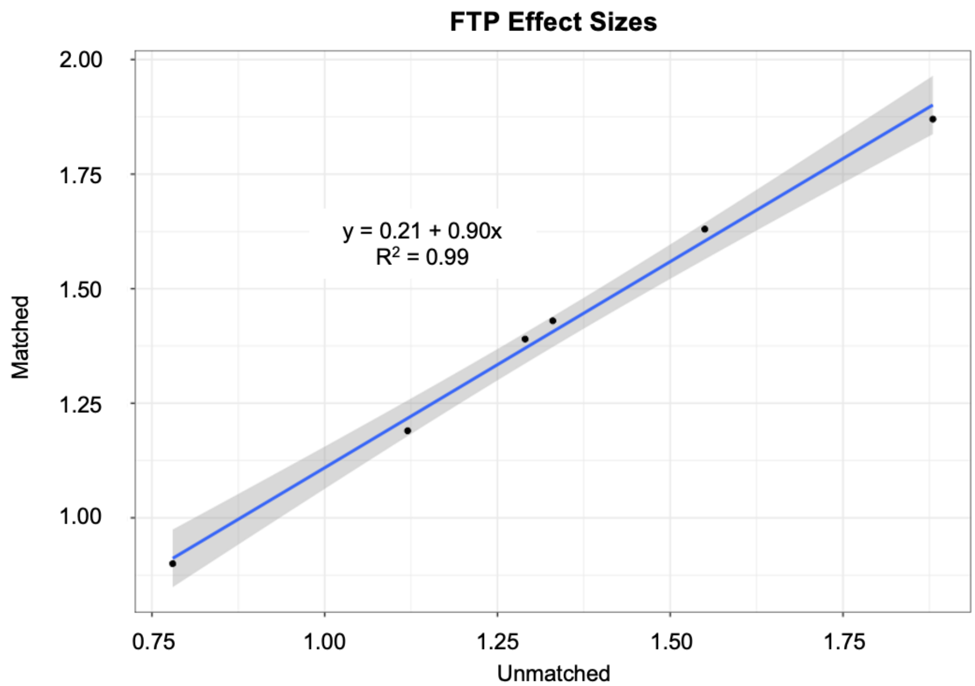
Harmonized regional SUVRs, as calculated with ComBat, and effect sizes are displayed in Supplemental Table 4. The relationships between the unmatched effect sizes and harmonized effect sizes are shown in Supplemental Figure 3. The trends for effect sizes held, with the largest composite region effect sizes found for the Amygdala and Mesial Temporal composite regions and the lowest effect sizes for the Lateral Occipital region. As evidenced by the linear regression slopes (0.87 for FTP; 0.89 for MK), the harmonized effect sizes were typically lower than the raw.

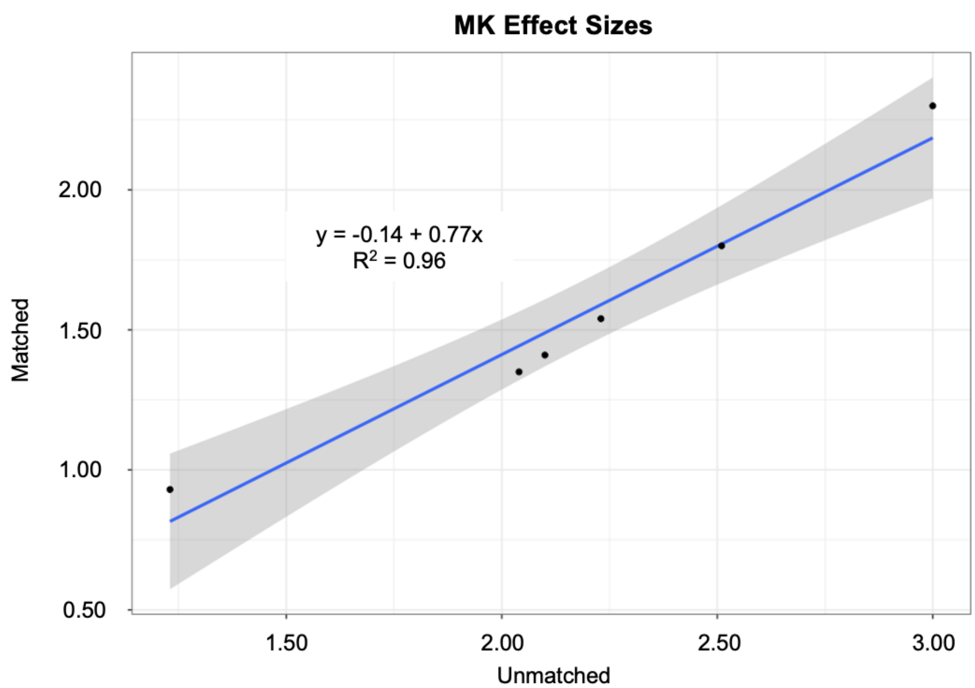
Supplemental Figure 4 shows the sensitivities and specificities of the threshold-determining methods examined for the harmonized data. These results largely agree with those from the dichotomized, unmatched data. Once again, the double ROC(p) yielded the greatest joint sensitivities across regions and GMM, HC, and k-means yielded joint specificities across regions. Resultant thresholds differed from the dichotomized, unmatched data by +/- 7.5%.

Supplemental Table 4. Harmonized composite region summary.

	ComBat FTP				
	CU (SUVR)		CI (SUVR)		*d*
	Mean	σ^2	Mean	σ^2	
Amygdala	1.14	0.11	1.63	0.30	2.15
Inferior Temporal	1.15	0.11	1.67	0.44	1.61
Lateral Occipital	1.08	0.10	1.34	0.33	1.05
Lateral Temporal	1.14	0.11	1.63	0.42	1.56
Mesial Temporal	1.12	0.10	1.50	0.27	1.86
Meta Temporal	1.11	0.09	1.40	0.28	1.38
	ComBat MK				
	CU (SUVR)		CI (SUVR)		*d*
	Mean	σ^2	Mean	σ^2	
Amygdala	0.72	0.12	2.14	0.69	2.85
Inferior Temporal	1.20	0.23	2.70	1.12	1.85
Lateral Occipital	1.32	0.30	2.06	1.01	1.00
Lateral Temporal	1.13	0.22	2.60	1.10	1.84
Mesial Temporal	1.04	0.17	2.28	0.75	2.31
Meta Temporal	1.11	0.19	2.63	0.93	2.27

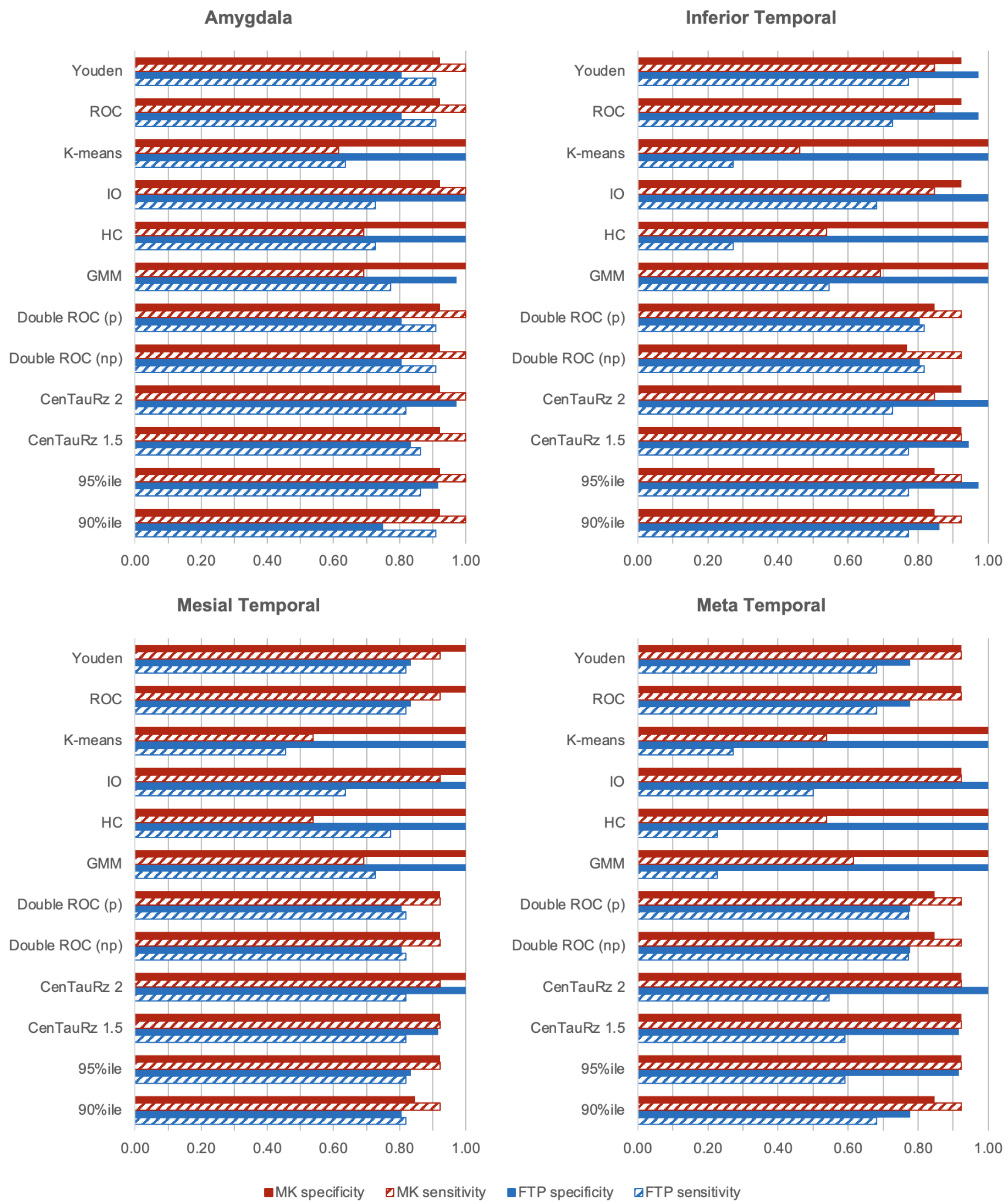
Supplemental Figure 3





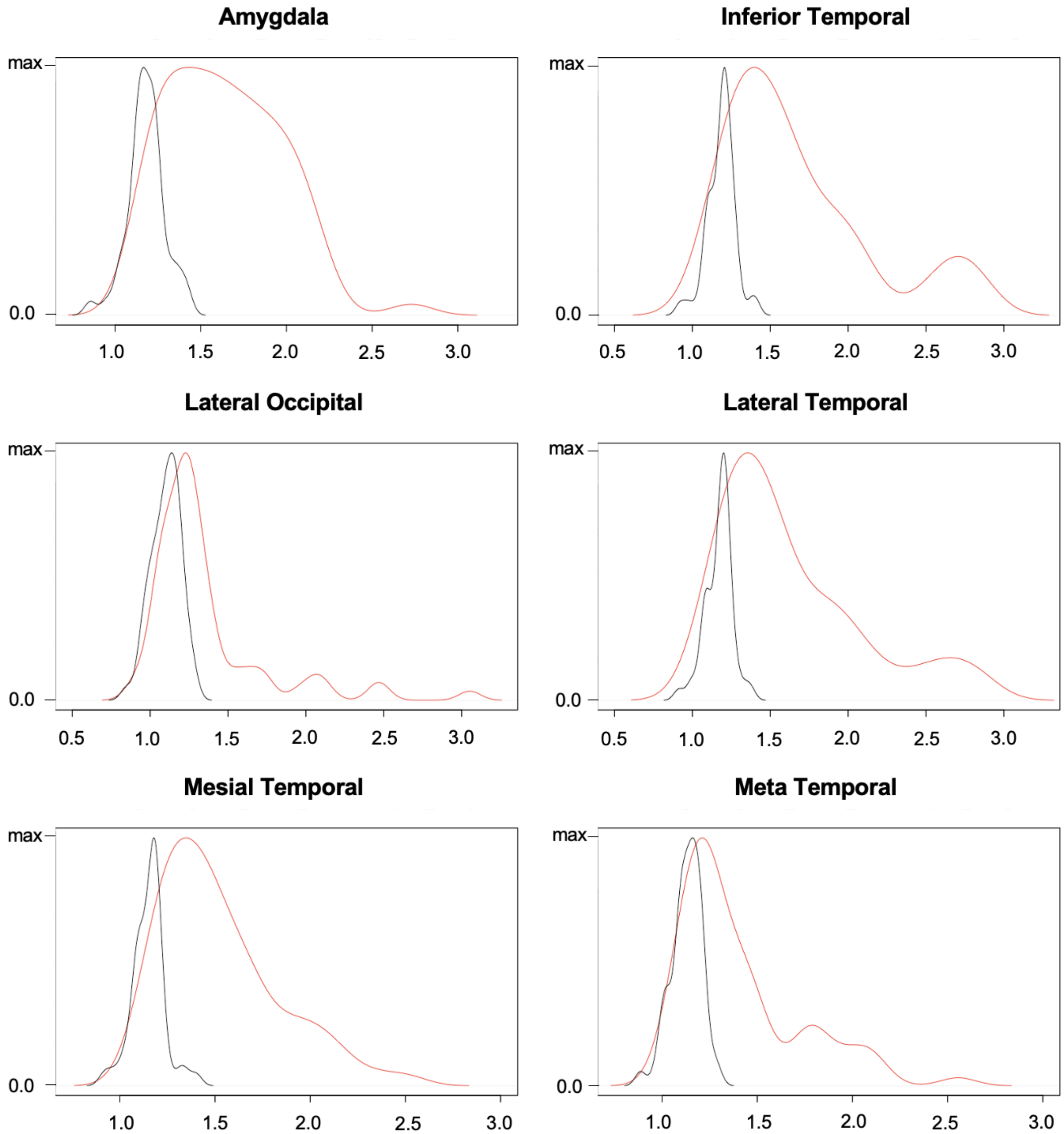
Supplemental Figure 3. FTP and MK plots of unmatched vs. harmonized effect sizes.

Supplemental Figure 4



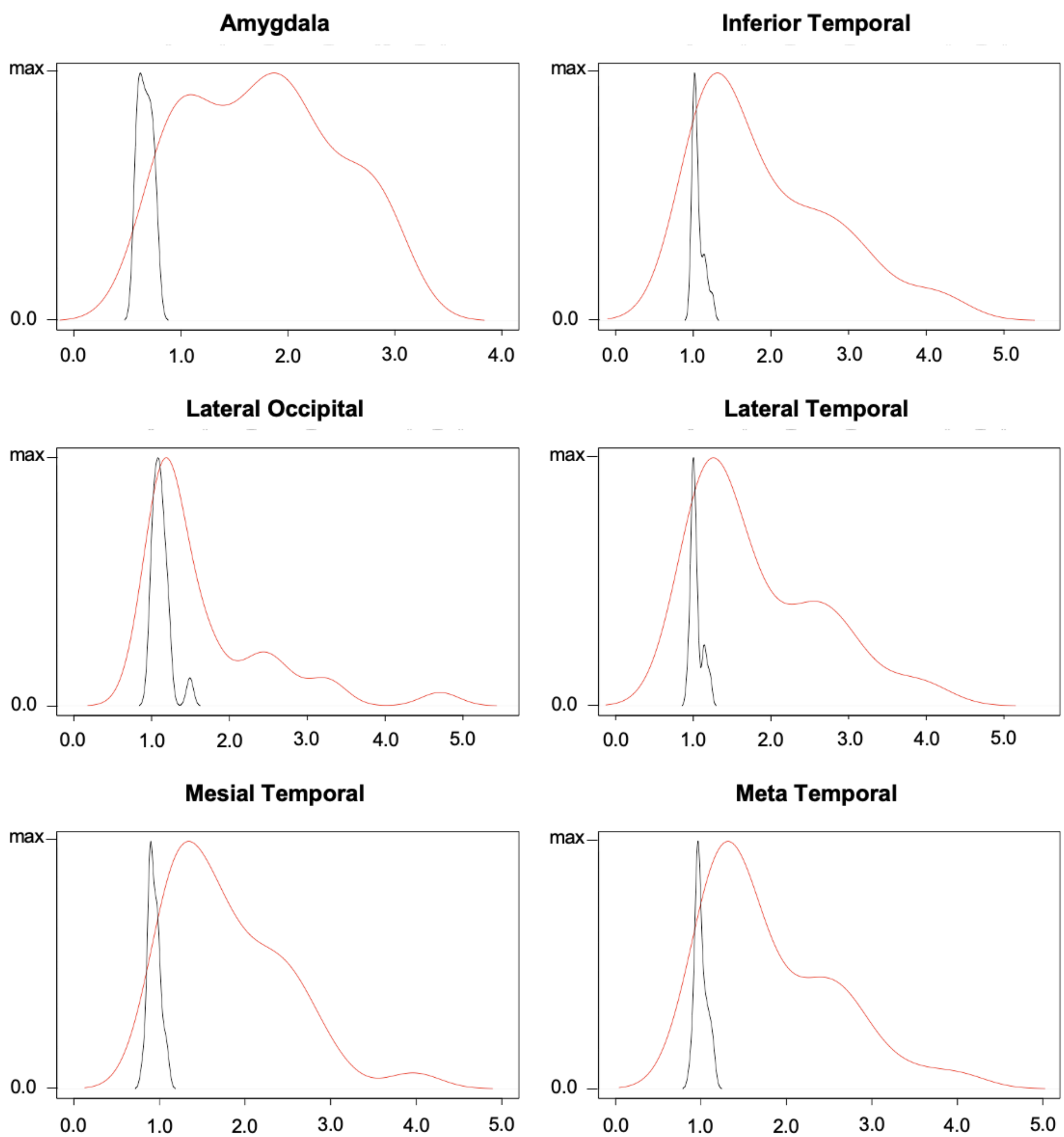
Supplemental Figure 4. Harmonized threshold sensitivities and specificities for the Amygdala, Inferior Temporal, Mesial Temporal, and Meta Temporal composite regions.

Supplemental Figure 5



Supplemental Figure 5. FTP$_I$ regional SUVR distributions of CU (black) and CI (red) participants, each plotted with respect to their own maximum density.

Supplemental Figure 6



Supplemental Figure 6. MK_I regional SUVR distributions of CU (black) and CI (red) participants, each plotted with respect to their own maximum density.