Supplementary Information

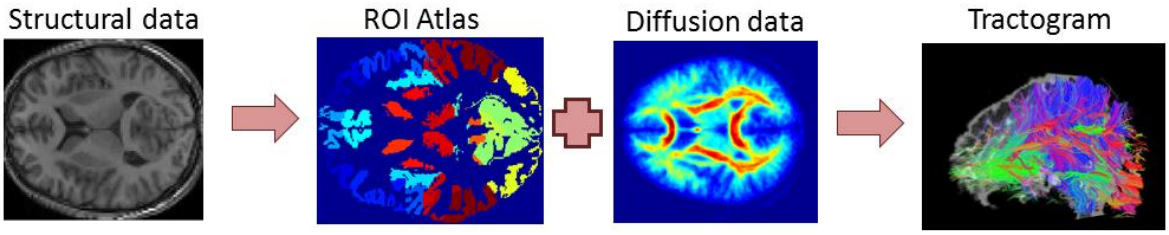

Figure S1: Generation of the tractograms from the young healthy "atlas" data set.

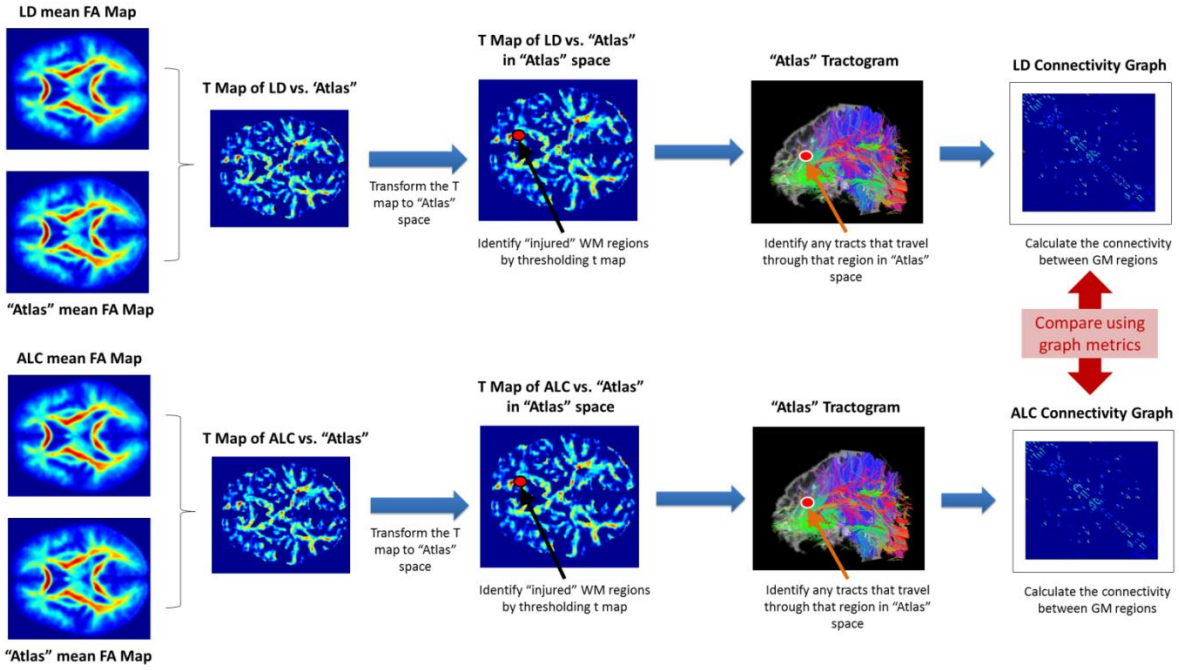

Figure S2: The process to determine changes to brain network metrics in alcoholic patients using high-resolution tractography data.

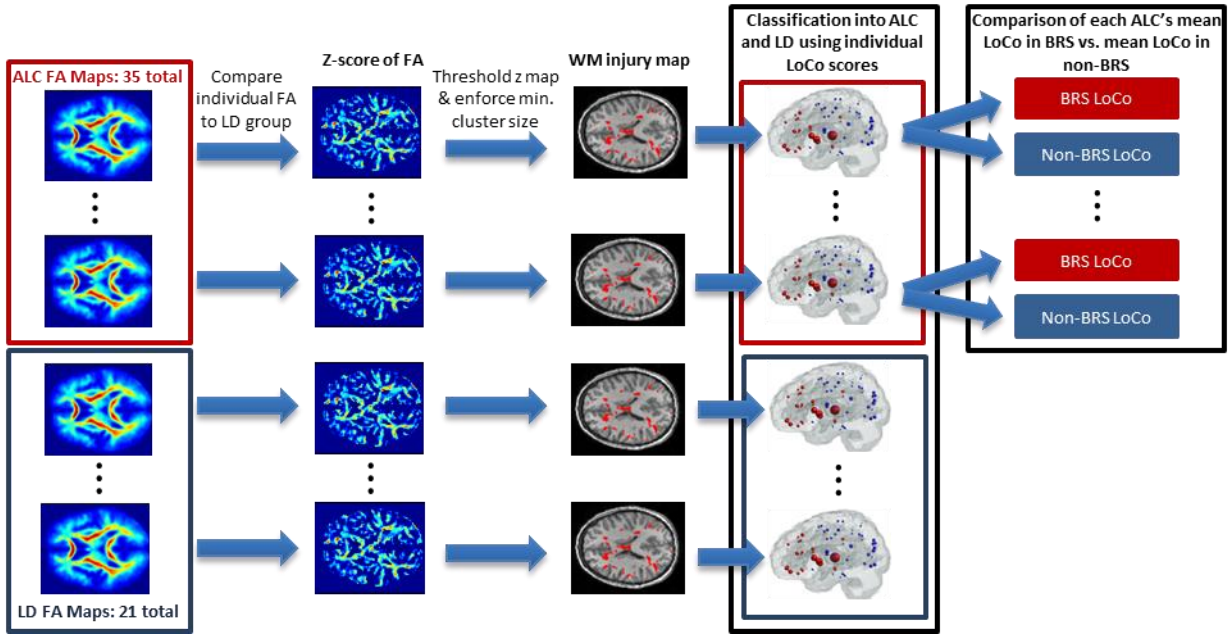

Figure S3: The processing pipeline for the two individual LoCo analyses: 1) classification into groups and 2) comparison of the ALC individuals' mean LoCo scores in the BRS and non-BRS regions.

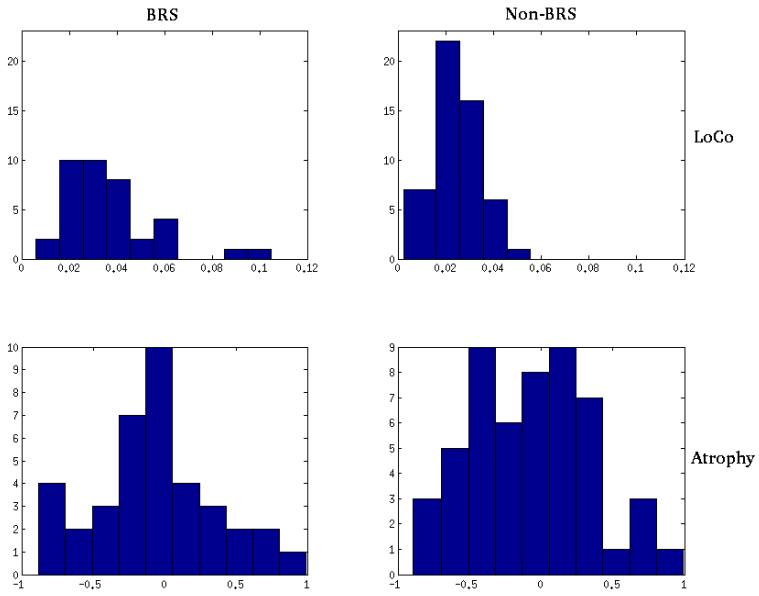

Figure S4: Histograms of each ALC individual's mean LoCo (top row) and each ALC individual's mean GM atrophy (bottom row) in the BRS (left column) and non-BRS regions (right column). This is the comparison of the BRS vs. non-BRS at the level of the individual LoCo scores, as described in Figure S3.

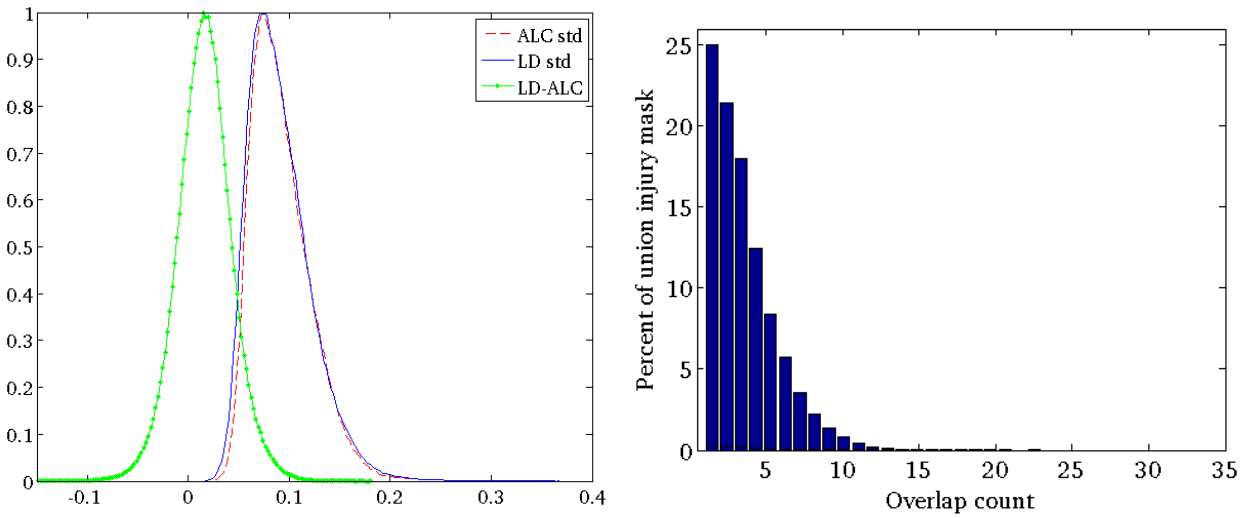

Figure S5: Panel A compares the normalized histograms of the differences in the group means versus the groups' standard deviations (in voxels with FA greater than 0.1). Panel B was created by first taking the union of all the ALC individuals' WM injury masks. For each voxel in this union mask, we counted the number of times it was included in each of the 35 ALC individuals' WM injury masks. The histogram can be interpreted thus: the first bar indicates that 25% of all of the voxels in the union WM injury mask were only present in 1 individual's WM injury mask.

Tables: Regions with yellow highlight in tables S1-S3 are identified as members of the BRS.

Table S1: LoCo score for each of 90 parcellated GM regions. The LoCo is the percent of total fibers connecting to that region that intersect regions of significantly low FA in the ALC group.

Region	LoCo
Caudate_R	0.098882
Thalamus_R	0.082242
Cingulum_Ant_R	0.069836
Occipital_Inf_R	0.067463
Cingulum_Post_R	0.061913
Occipital_Mid_R	0.061224
Thalamus_L	0.060388
Frontal_Sup_Orb_R	0.054151
Rectus_R	0.052246
Frontal_Mid_Orb_R	0.049964
Hippocampus_R	0.045582
Lingual_R	0.04493
Temporal_Mid_R	0.040719
Frontal_Sup_R	0.040365
Hippocampus_L	0.038044
Olfactory_R	0.03558
Occipital_Mid_L	0.035349
Caudate_L	0.034854
Putamen_R	0.03411
ParaHippocampal_R	0.033709
Fusiform_R	0.033387
Frontal_Mid_Orb_R	0.033163
Frontal_Sup_Medial_R	0.032484
Calcarine_R	0.032469
Occipital_Inf_L	0.029655
Precuneus_R	0.027518
Putamen_L	0.027453
Temporal_Inf_R	0.025708
Pallidum_L	0.025378
Frontal_Mid_R	0.023403
Fusiform_L	0.02325
Cingulum_Mid_R	0.022715
Frontal_Mid_Orb_L	0.021779
Temporal_Inf_L	0.021032
Frontal_Inf_Orb_R	0.020934
Frontal_Inf_Orb_L	0.020409
Heschl_L	0.020172
Pallidum_R	0.019707
Rectus_L	0.019115
Cingulum_Ant_L	0.018399
Temporal_Mid_L	0.017872
Occipital_Sup_R	0.017738
Cingulum_Post_L	0.017428
Insula_R	0.016922
Calcarine_L	0.016632
Lingual_L	0.01592
Olfactory_L	0.015586
Occipital_Sup_L	0.015012
Angular_R	0.014896
Frontal_Sup_Orb_L	0.014875
ParaHippocampal_L	0.0146
Cuneus_R	0.0134
Temporal_Sup_R	0.013374
Angular_L	0.012552
Precuneus_L	0.011623
Frontal_Mid_Orb_L	0.01081
Insula_L	0.010026
Temporal_Pole_Sup_R	0.009389
Temporal_Pole_Mid_R	0.008826
Temporal_Sup_L	0.008511
Cuneus_L	0.008148
Heschl_R	0.007918
Frontal_Inf_Tri_R	0.007773
Precentral_R	0.006494
Rolandic_Oper_L	0.005975
Amygdala_L	0.005929
Frontal_Inf_Oper_R	0.005286
Postcentral_R	0.004526
Supp_Motor_Area_R	0.004509
Cingulum_Mid_L	0.004281
SupraMarginal_R	0.003668
Paracentral_Lobule_R	0.002812
Parietal_Inf_R	0.002675
Rolandic_Oper_R	0.002383

Frontal_Inf_Oper_L	0.002213
Temporal_Pole_Sup_L	0.002089
Frontal_Inf_Tri_L	0.002086
SupraMarginal_L	0.001971
Parietal_Inf_L	0.00187
Frontal_Sup_Medial_L	0.001447
Amygdala_R	0.001438
Frontal_Mid_L	0.001243
Frontal_Sup_L	0.001004
Postcentral_L	0.000827
Parietal_Sup_R	0.000717
Precentral_L	0.000609
Parietal_Sup_L	0.000541
Supp_Motor_Area_L	0.000537
Paracentral_Lobule_L	0.000324
Temporal_Pole_Mid_L	0.000105

Table S2: List of t-scores of volume per region. ALC minus LD (negative values indicate smaller than normal volume)

Region	t-score
Frontal_Mid_R	-2.76948
Olfactory_R	-2.43487
Frontal_Sup_Medial_R	-2.19364
Frontal_Sup_L	-2.1613
Frontal_Sup_Medial_L	-1.90642
Frontal_Sup_R	-1.83191
Parietal_Sup_L	-1.78447
Parietal_Sup_R	-1.50736
Precentral_R	-1.49989
Parietal_Inf_R	-1.35578
Supp_Motor_Area_R	-1.30265
Supp_Motor_Area_L	-1.24467
Insula_R	-1.03027
Cuneus_L	-1.00522
Frontal_Inf_Tri_R	-0.92225
Postcentral_R	-0.92098
Frontal_Mid_L	-0.91873
Paracentral_Lobule_L	-0.88058
Rolandic_Oper_R	-0.81429
Olfactory_L	-0.73929
Paracentral_Lobule_R	-0.73378
Rolandic_Oper_L	-0.708
Rectus_R	-0.6828
Precentral_L	-0.64013
Caudate_L	-0.63013
Occipital_Mid_R	-0.56478
Postcentral_L	-0.54999
Temporal_Sup_R	-0.51399
Temporal_Pole_Sup_L	-0.49688
Insula_L	-0.48618
Frontal_Sup_Orb_L	-0.46573
Heschl_R	-0.42895
Precuneus_L	-0.31466
Occipital_Sup_R	-0.21815
Occipital_Sup_L	-0.16214
Frontal_Inf_Tri_L	-0.10478
Putamen_R	-0.06635
Hippocampus_R	-0.01261
Frontal_Inf_Oper_R	0.058064
Caudate_R	0.073584
Amygdala_L	0.07414
Amygdala_R	0.117666
Frontal_Mid_Orb_L	0.139358
Angular_L	0.210261
Fusiform_L	0.223249
Angular_R	0.246987
Temporal_Pole_Mid_L	0.266217
Cingulum_Ant_L	0.291276
Calcarine_L	0.296748
Temporal_Pole_Mid_R	0.360943
Frontal_Mid_Orb_R	0.381481
Hippocampus_L	0.42214
Heschl_L	0.442933
Temporal_Inf_R	0.46046
Frontal_Inf_Orb_R	0.513689
Putamen_L	0.569784
Occipital_Inf_L	0.63179
ParaHippocampal_R	0.63394
Temporal_Pole_Sup_R	0.635745
Rectus_L	0.679429
Frontal_Inf_Orb_L	0.744906
Cingulum_Ant_R	0.818469
Fusiform_R	0.825277
ParaHippocampal_L	1.050584
Cuneus_R	1.097399
Temporal_Sup_L	1.097811
Lingual_R	1.169725
Frontal_Sup_Orb_R	1.176148
Parietal_Inf_L	1.214913
Occipital_Inf_R	1.254058
Occipital_Mid_L	1.265978
Pallidum_R	1.355105
Frontal_Mid_Orb_L	1.364577
Precuneus_R	1.410894
Temporal_Mid_R	1.537444
Lingual_L	1.553106
Pallidum_L	1.655974
Calcarine_R	1.665253
Cingulum_Mid_L	1.674942
Cingulum_Mid_R	1.692427
Frontal_Inf_Oper_L	1.692924

SupraMarginal_R	1.693516
Temporal_Mid_L	1.707403
Frontal_Mid_Orb_R	1.717287
Thalamus_L	1.812668
Thalamus_R	1.847411
Cingulum_Post_L	2.028942
Cingulum_Post_R	2.115099
Temporal_Inf_L	2.119281
SupraMarginal_L	2.201346

Table S3: List of weights per region from the first eigenvector of the SVD

Region	Eigenvector
Thalamus_L	0.334945
Thalamus_R	0.287741
Caudate_R	0.210054
Caudate_L	0.203707
Pallidum_L	0.195768
Putamen_L	0.188913
Putamen_R	0.184249
Insula_R	0.164341
Frontal_Sup_Orb_R	0.136737
Cingulum_Post_R	0.133262
Rolandic_Oper_R	0.13208
Cingulum_Ant_R	0.126262
Insula_L	0.125994
Occipital_Mid_L	0.123896
Frontal_Sup_R	0.120896
Frontal_Mid_Orb_R	0.118357
Hippocampus_R	0.117527
Occipital_Inf_R	0.116983
Frontal_Inf_Oper_R	0.1168
Rolandic_Oper_L	0.115226
Occipital_Inf_L	0.112832
Calcarine_R	0.10894
Pallidum_R	0.108594
Occipital_Mid_R	0.107405
Cingulum_Ant_L	0.107044
Occipital_Sup_R	0.106417
SupraMarginal_R	0.104343
Postcentral_R	0.101342
Rectus_R	0.097777
Occipital_Sup_L	0.097244
Frontal_Mid_Orb_R	0.096096
Frontal_Inf_Tri_R	0.093983
Cuneus_R	0.093448
Frontal_Mid_R	0.091353
Precentral_R	0.090502
Precentral_L	0.08991
Frontal_Mid_Orb_L	0.089823
Frontal_Inf_Orb_R	0.088427
Frontal_Inf_Oper_L	0.087115
Precuneus_R	0.086015
Frontal_Sup_Medial_R	0.085325
Cingulum_Post_L	0.084136
Cingulum_Mid_R	0.084103
Frontal_Sup_Orb_L	0.08355
Temporal_Mid_R	0.083197
Postcentral_L	0.083095
Heschl_L	0.082673
Frontal_Mid_Orb_L	0.081049
Lingual_R	0.080423
Hippocampus_L	0.079325
Frontal_Sup_L	0.07919
Angular_R	0.078934
Cingulum_Mid_L	0.077519
Paracentral_Lobule_L	0.077501
Supp_Motor_Area_R	0.074461
Frontal_Inf_Orb_L	0.073621
Paracentral_Lobule_R	0.073548
Frontal_Inf_Tri_L	0.07215
Temporal_Inf_R	0.070973
Heschl_R	0.070665
Frontal_Mid_L	0.069471
Parietal_Inf_L	0.067029
Frontal_Sup_Medial_L	0.066156
Rectus_L	0.065807
Precuneus_L	0.064065
Supp_Motor_Area_L	0.064059
Angular_L	0.063347
Fusiform_R	0.062906
SupraMarginal_L	0.062344
Temporal_Sup_R	0.06185
Olfactory_R	0.061386
Fusiform_L	0.058954
Calcarine_L	0.0589
Parietal_Sup_L	0.058762
Temporal_Mid_L	0.057539
Lingual_L	0.057452
Cuneus_L	0.057113
Temporal_Sup_L	0.056274
Parietal_Inf_R	0.054762
ParaHippocampal_R	0.051032
Temporal_Inf_L	0.051016
Parietal_Sup_R	0.038306

Olfactory_L	0.037668
ParaHippocampal_L	0.027819
Temporal_Pole_Mid_R	0.021808
Amygdala_L	0.019786
Amygdala_R	0.019197
Temporal_Pole_Sup_R	0.013085
Temporal_Pole_Sup_L	0.012732
Temporal_Pole_Mid_L	0.007138