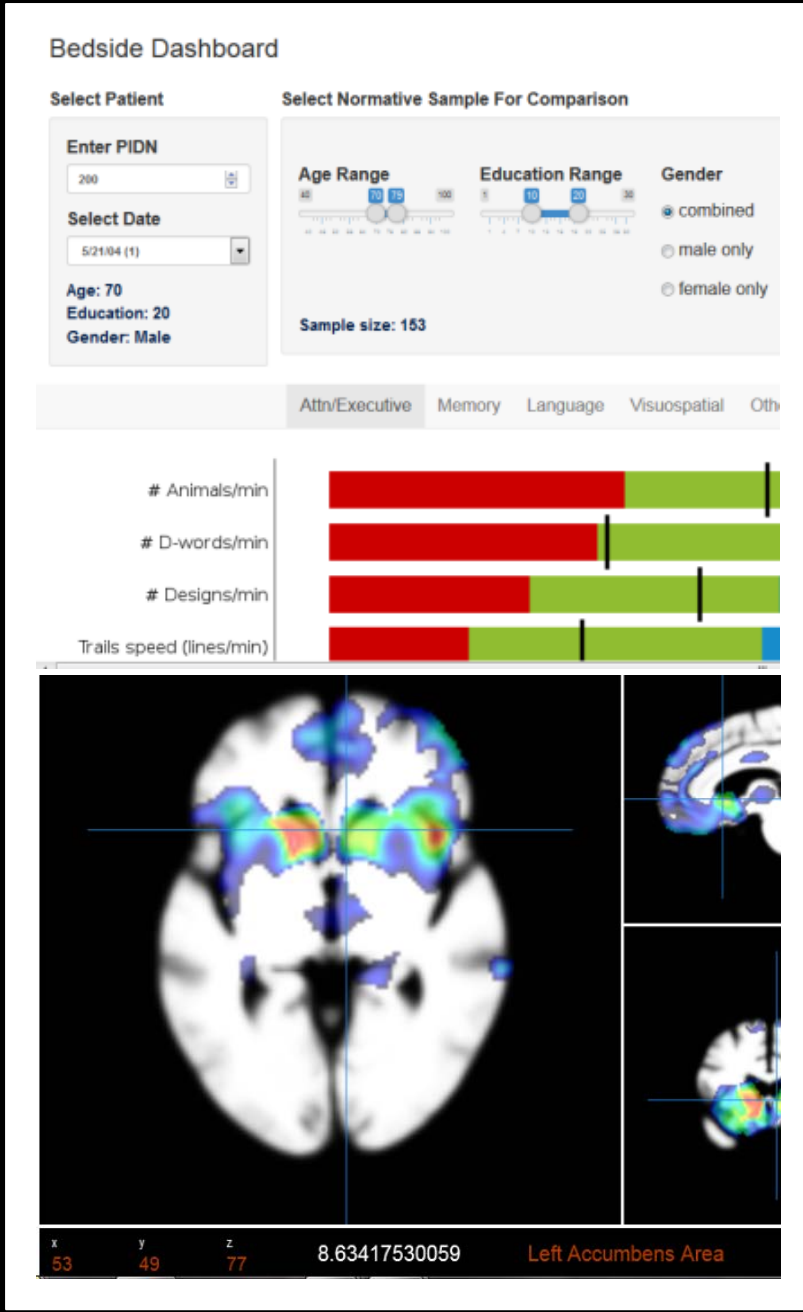
NACC Data Visualization and Analytic Tools

Kate Rankin, Ph.D.

Professor, Department of Neurology

Memory and Aging Center

University of California San Francisco

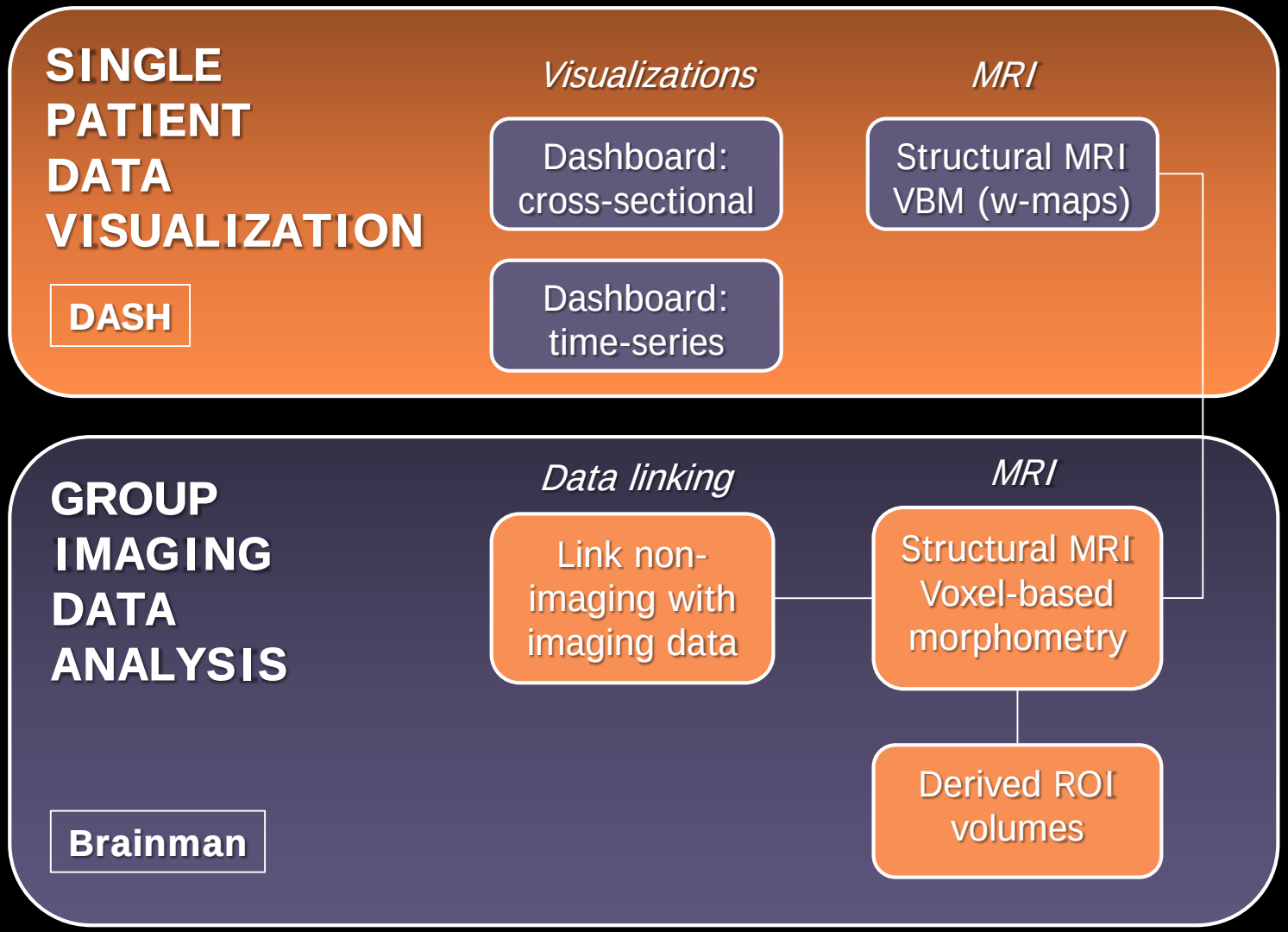


ADC Panel Draft Recommendations

"Modernize and expand the computer and data analytics systems required to facilitate interactions among the ADCs and broader research community."

- "Leverage existing data and computer systems to streamline discovery and access rich ADC and related resources for samples and data"
- "Incentivize both data producers and consumers to align with the federated system"

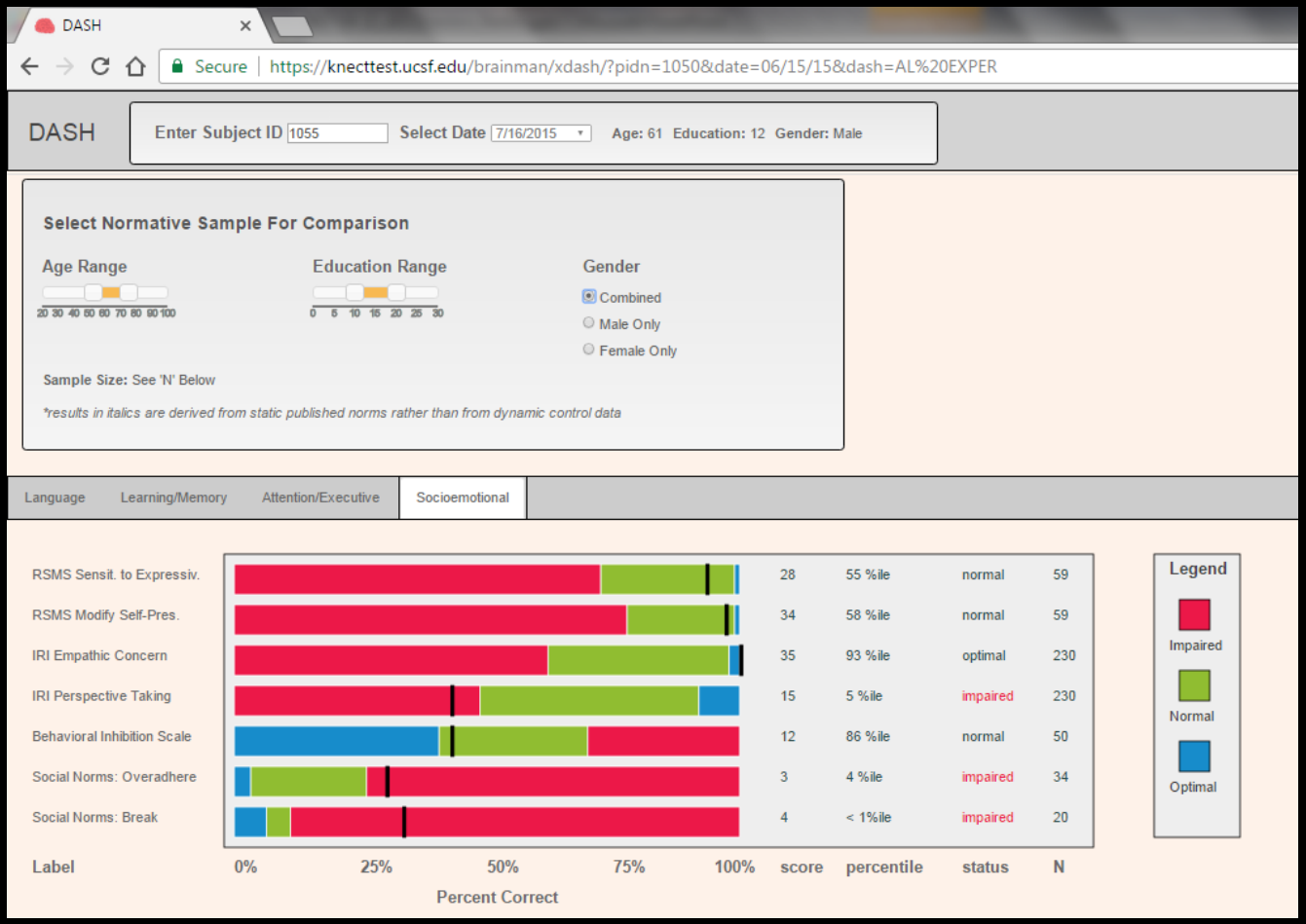
Patient Dashboards and Structural MRI Analytics @ UCSF



DASH: Single subject cross-sectional data

Investigators can see individual patients' NACC data (cognitive, functional, neuropsychiatry, etc.) against a normative reference set

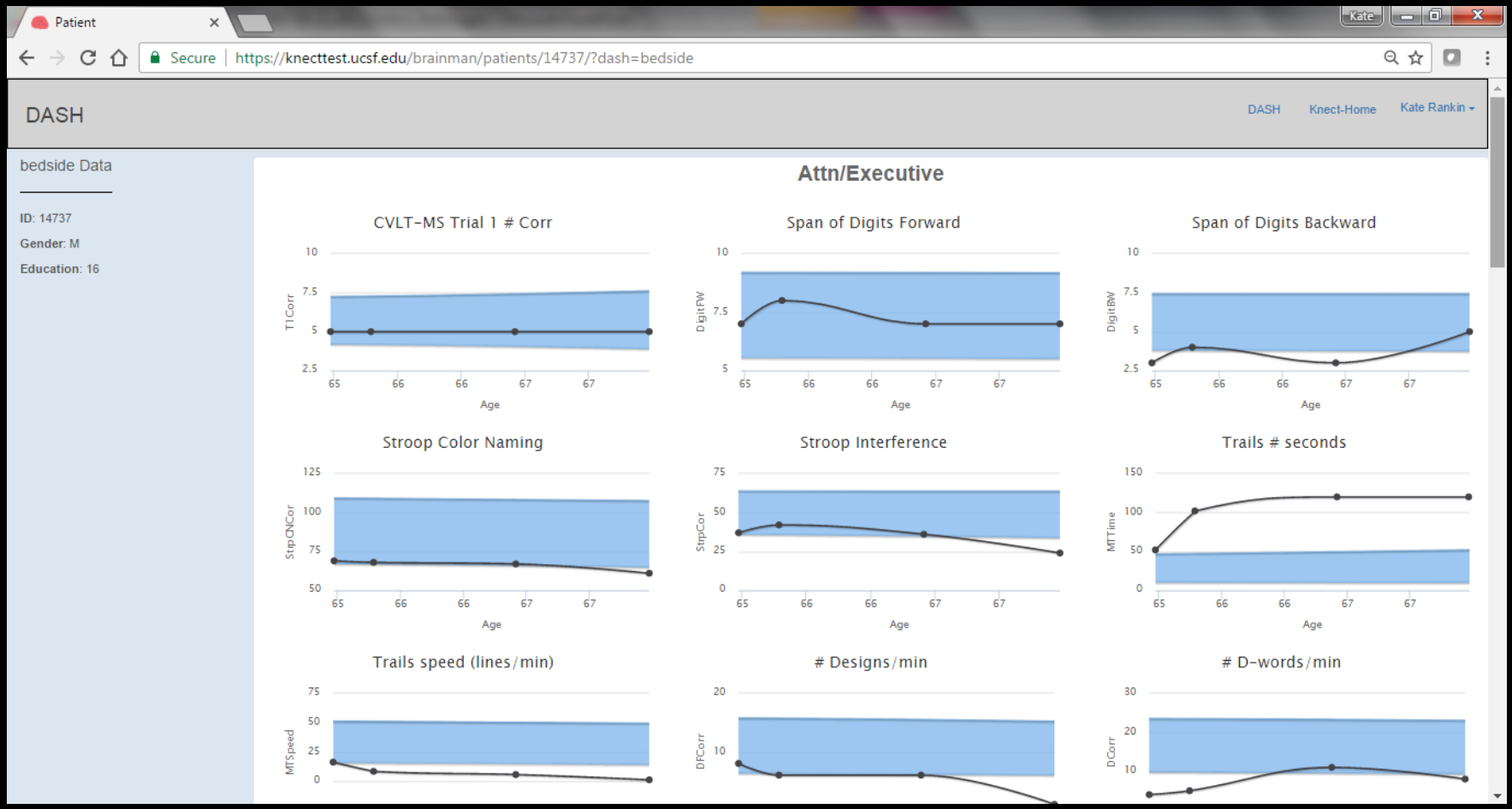
- system accommodates "live" and static (published) norms sets



Data from UDS FTLD Module (Forms C1-6F)

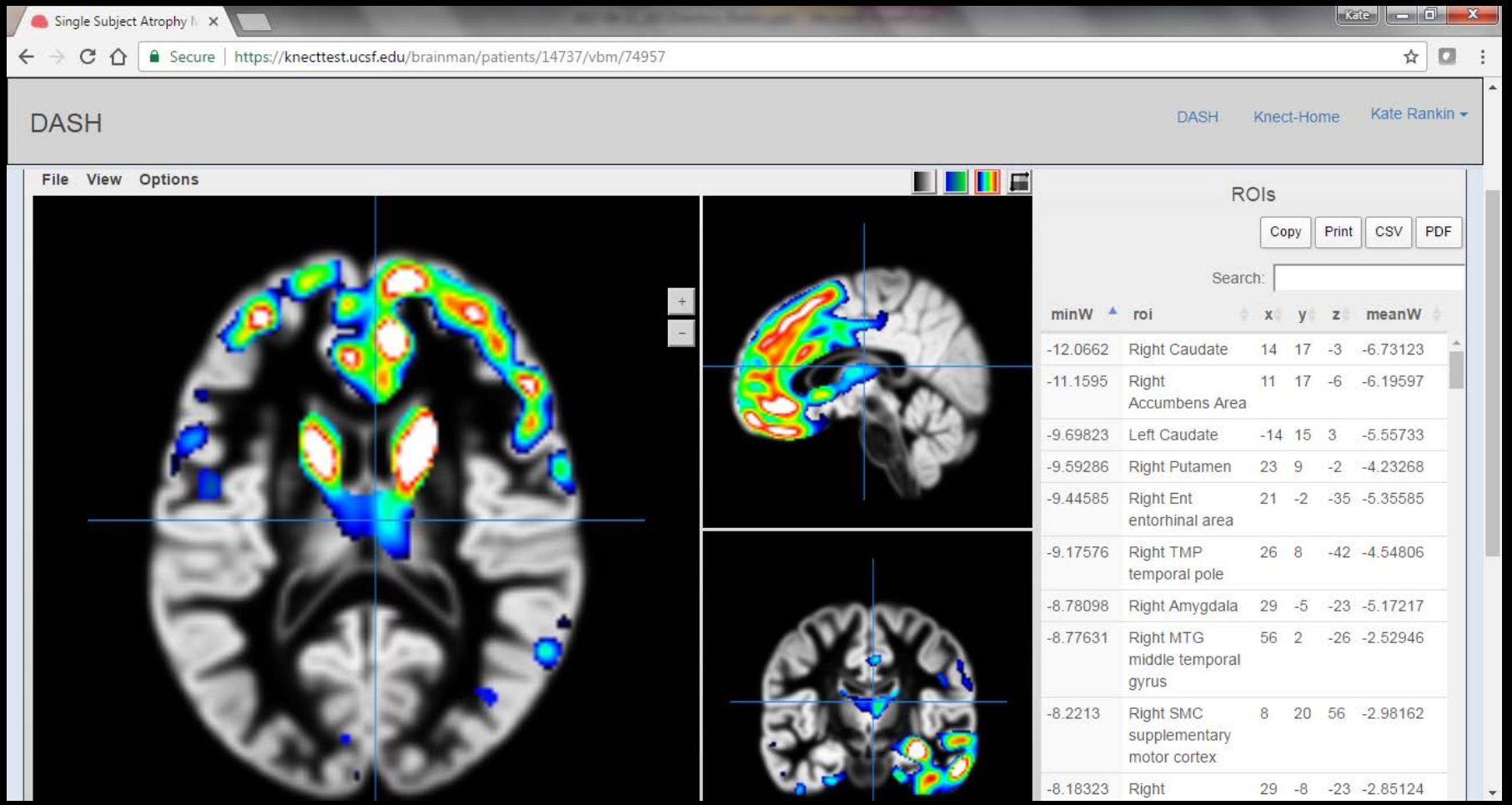
DASH: Single subject time-series data

Provides longitudinal patient data against backdrop of calculated “normative reference range” from control data over age span



DASH: Single subject structural MRI calculation

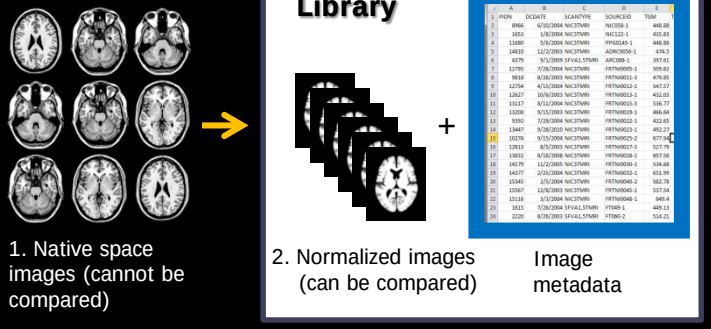
W-maps of atrophy compared to healthy controls matched for age/sex



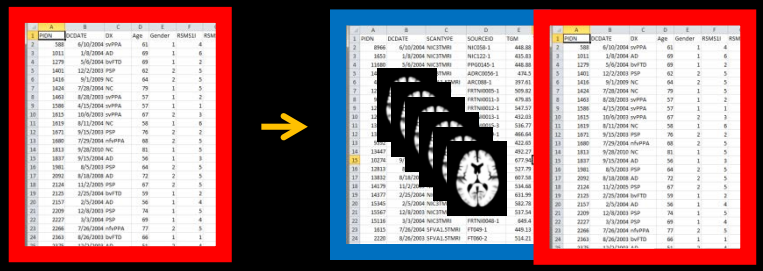
DASH: Single subject diagnostic dashboards based on key ROIs from structural MRI

Brainman: Structural MRI analysis

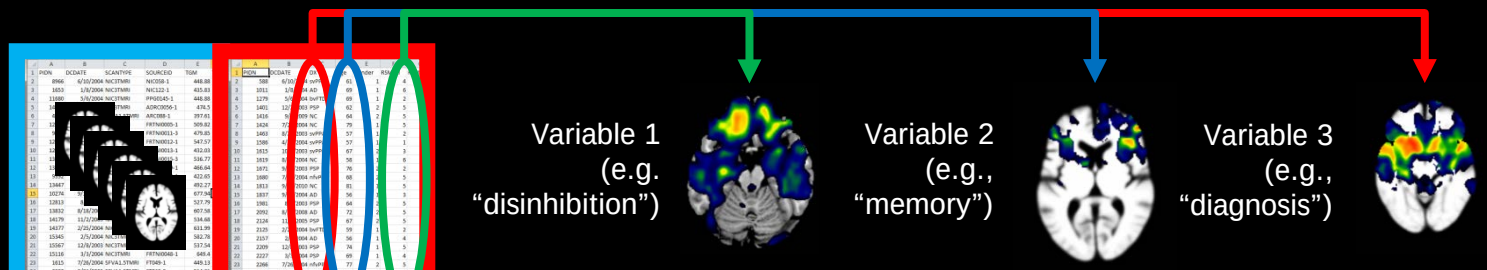
A. Established library of preprocessed brain images



B. Scripted analytic utilities create new data set linking images with investigator's data

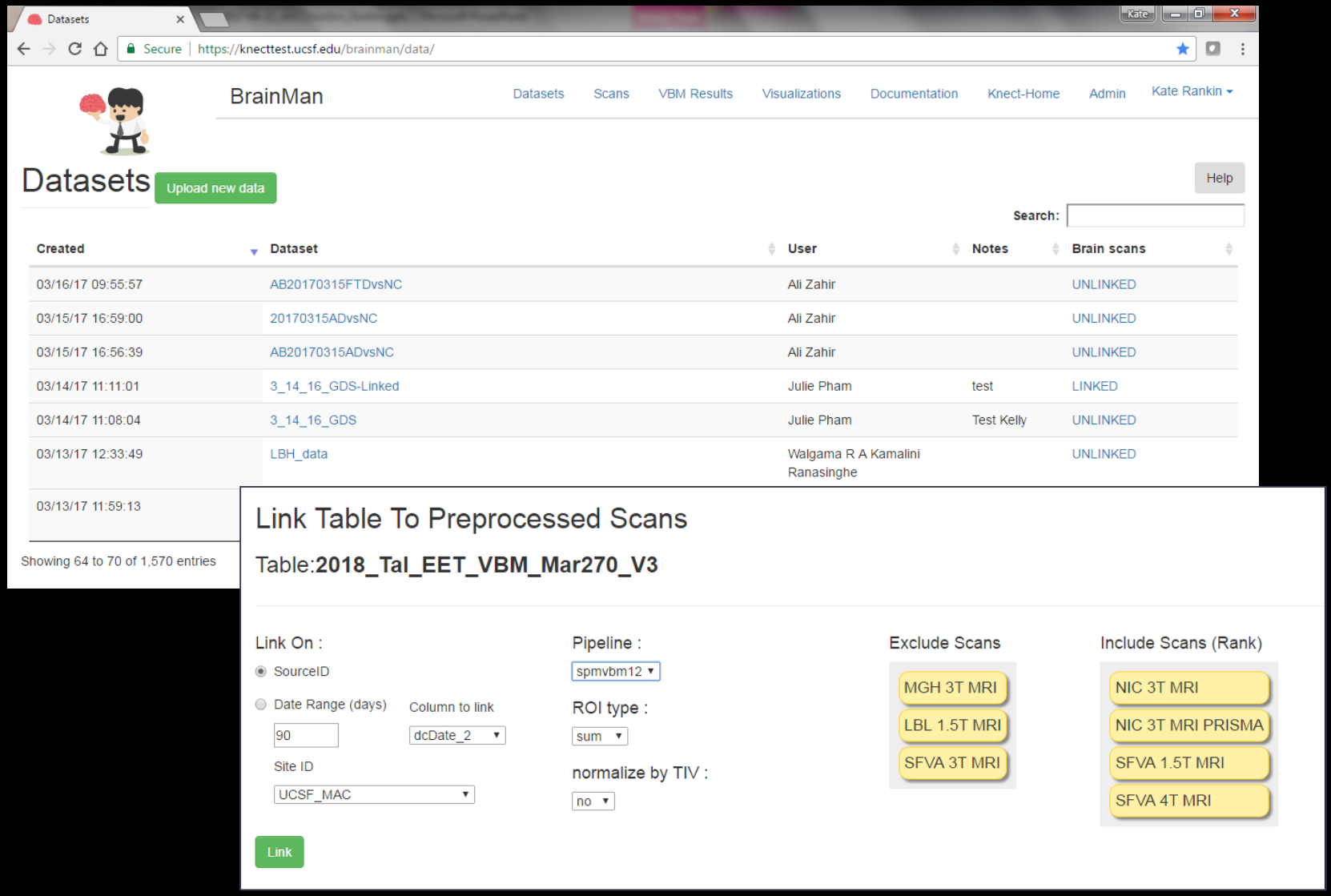


C. Investigator identifies variables in their dataset they want to analyze, script automatically generates voxel-based morphometry results



3D statistical maps of volume correlating with any variable selected by investigator

Brainman: Data upload/linking to MRI data



Brainman: Group-based quantitative MRI analysis

Test Variable : RSMS_Tot2

Controls : tiv, ageAtScan, MagnetStrength, MMSETot, SEX

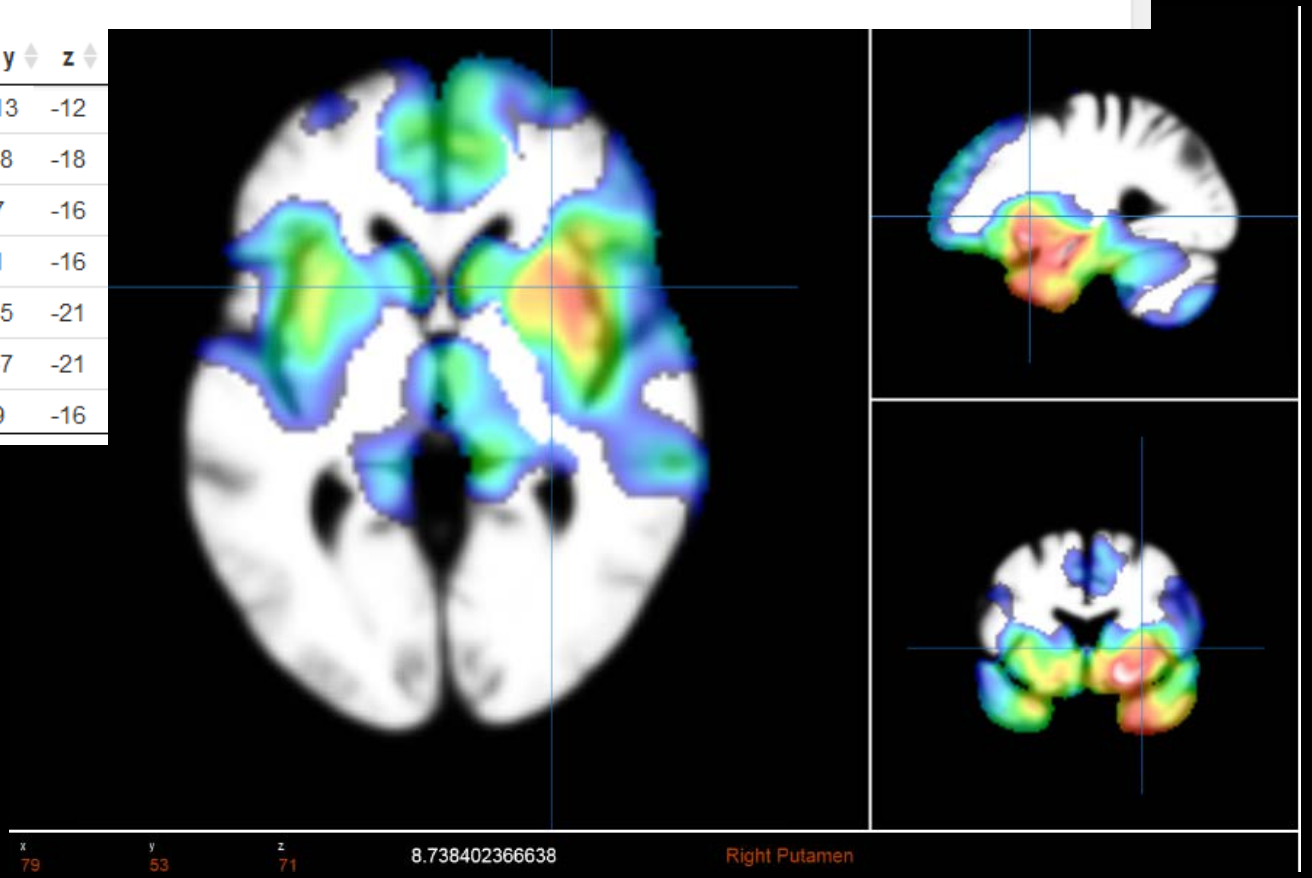
Original VLSM2 Output

Linux :**/mnt/macdata/projects/knect/images/jobs/vlsm/Kate_Rankin/July2_RSMStot/RSMS_Tot2_1047**

Windows :**R:\projects\knect\images\jobs\vlsm\Kate_Rankin\July2_RSMStot\RSMS_Tot2_1047**

Template Location:Template Download

maxT	roi	x	y	z
10.1354	Right Putamen	18	13	-12
9.74951	Right Inf Lat Vent	28	-8	-18
9.72692	Right Basal Forebrain	21	7	-16
9.69325	Right Ent entorhinal area	21	1	-16
9.68184	Right Amygdala	28	-5	-21
9.58119	Right Hippocampus	28	-7	-21
9.55557	Right POrG posterior orbital	24	9	-16



Questions

- Should the NACC provide services like this?
  - to ADCs to view their own UDS data?
  - to investigators who make data requests of the NACC to view and analyze UDS data?
- How would the costs of setting up/maintaining such tools be covered?
- Are there other existing visualization or analytic tools like this that should be considered and could be adapted to use NACC data?

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