1106-R5-2717 **Susannah Shoemaker*** (susannahcshoemaker@gmail.com), 1301 Ben Hur Drive, Houston, TX 77055, and **Deanna Needell**, **Wesley Kerr**, **Arpineh Asadoorian**, **Jessica Nadalin**, **Christian Ayala** and **Ryan McCarthy**. *Compressed Sensing Impacts the Statistical Inferences Made from fMRI.*

Compressed sensing is a new technology which demonstrates that high dimensional signals may be robustly recovered from few linear measurements. To make such a significantly underdetermined problem feasible, one assumes that the signal of interest is sparse. The key to its use in an imaging setting like MRI is that wavelet bases provide such a sparsifying transformation. The ability of CS to preserve the statistical properties of reconstructed signals is not yet well-understood. We provide evidence for the feasibility of statistical analysis on reconstructed signals through a case study of fMRI signals. A GLM was applied to each voxel time series of an original fMRI and a subsampled fMRI reconstructed via TV and wavelet minimization. We found evidence of non-normality in the residuals and some bias in the estimated regression coefficients. However, through comparison of the regions of activation for each task yielded from the original and the reconstruction from 50% of the data, we show that these biases do not preclude the use of CS for statistical analysis of different signals. This study provides some preliminary understanding of the problem of statistical analysis and parameter estimation in data compression, as well as advances our knowledge of the use of CS for fMRI. (Received September 16, 2014)