illness (saw a doctor, visited the ER, or were hospitalized for a respiratory symptom). We examined the interaction of PM2.5 with spending time outdoors during the wildfires. Poisson regression models with robust standard errors were adjusted for age, sex, race, smoking, allergies, and education. RESULTS/ANTICIPATED RESULTS: Among 337 adults with asthma in the WHAT-NOW cohort, one standard deviation higher smoke-driven PM2.5 was associated with higher risk of any persistent respiratory symptom (risk ratio (RR) 1.38, 95% CI 1.07 – 1.78) and having at least one medically attended respiratory illness (RR 1.33, 95% CI 1.07 – 1.65), but not significantly associated with repeated asthma exacerbations (RR 1.30, 95% CI 0.92 – 1.81). However, there was a significant interaction between PM2.5 and outdoor activities during the wildfire on the outcomes of any persistent respiratory symptoms ($p = 0.041$) and repeated asthma exacerbations ($p = 0.028$). The association between PM2.5 and repeated asthma exacerbations was greater among people who spent time outdoors (RR 3.36, 95% CI 1.47 – 10.23) than those who did not (RR 1.00, $p = 0.99$). DISCUSSION/SIGNIFICANCE OF IMPACT: This study provides evidence that exposure to wildfire smoke increases respiratory morbidity among adults with asthma beyond the acute wildfire period. Additionally, it suggests that avoiding outdoor activities on smoky days can significantly decrease the risk of future repeated asthma exacerbations associated with smoke exposure.

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How do you share documents with collaborators external to your institution?

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OBJECTIVES/GOALS: Using secure systems for sharing documents with external collaborators is essential for all researchers. These documents may include protected health information (PHI) or sensitive materials like protocols, study reports, DSMB reports, publications, presentations, abstracts, and statistical analysis plans (SAPs). METHODS/STUDY POPULATION: We surveyed the ACTS Biostatistics, Epidemiology, and Research Design Special Interest Group (BERD-SIG) to gather information about the systems they are currently using or have used in the past for document sharing with external collaborators. The survey focused on the security of these systems, particularly in relation to sharing documents containing PHI. In addition, the survey included questions about various system features of interest. These features included version control, simultaneous editing by multiple users, and access rights management, such as the ability to assign different permissions (e.g., read-only, write, and download) to different individuals. We also invited participants to provide feedback on any additional positive or negative aspects of the systems they use. RESULTS/ANTICIPATED RESULTS: We received 28 completed survey responses. Respondents had an option for choosing more than one system. The top current systems reported were Microsoft Teams (OneDrive, SharePoint) (n = 16), Box (n = 11), Google Docs/Drive (n = 10), and Dropbox (n = 6). Among other systems listed individually were Filelocker, REDCap, Slack, Website, Significant Media Shuttle, and Zulip. Notably, 15 responses indicated the respondents were unsure if their system is secure for sharing documents containing PHI. Respondents also offered feedback on both the positive and negative aspects of these systems. For example, a key advantage of Box was its password-controlled access. However, its incompatibility with office tools and the challenges for external collaborators attempting to access the system were noted as drawbacks. DISCUSSION/SIGNIFICANCE OF IMPACT: Utilizing secure institutional document-sharing systems and understanding their features significantly affects the effectiveness and security of collaborations among researchers, particularly with external partners. This knowledge is especially crucial when sharing documents containing sensitive patient and study data.

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Genome-wide association study of visual memory and spatial organization in a community setting: The Cohorts for Heart and Aging Research in Genomic Epidemiology Consortium*

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OBJECTIVES/GOALS: Poor visual memory and perceptual organization task performance predicts cognitive decline and is sensitive to dementia severity. No genome-wide association study (GWAS) has assessed the genomic basis of cognitive visual-spatial phenotypes. We aimed to identify common genetic variants associated with visual memory and spatial organization. METHODS/STUDY POPULATION: We included dementia- and stroke-free participants aged 45 years or older from up to seven cohorts in the Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) consortium, who performed cognitive tasks assessing delayed visual memory (e.g., Benton Visual Retention Test (BVRT, n = 10,934) and visual reproductions (VR, n = 5,527)) or spatial organization (i.e., Hooper Visual Organization Test (HVOT, n = 5,024)). Each cohort used linear regression models to relate common genetic variants imputed to the 1000 Genomes panel to each cognitive phenotype, adjusting for age, sex, population stratification, and education. Summary statistics for the BVRT were meta-analyzed using METAL. Combined GWAS was used for a joint analysis of all traits. RESULTS/ANTICIPATED RESULTS: We identified a genome-wide significant variant related to BVRT performance located near the TSHZ3 gene (rs10425277, $p = 6.76\times10–9$). TSHZ3 is important for the development and function of cortical projecting neurons and may be implicated in Alzheimer's disease progression by repressing CASP4 transcription. Multitrait analyses, including BVRT, VR, and HVOT, identified two additional variants of interest in SMYD3 gene (rs10802275, $p = 5.58\times10–7$) and near ZFPM2 (rs2957459, $p = 2.03\times10–7$), both of which are overexpressed in the brain and have important implications for neurodevelopment. SMYD3 may be directly involved in synaptic dysfunction and has been shown to be upregulated in the prefrontal cortex of Alzheimer's disease patients. DISCUSSION/SIGNIFICANCE OF

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