access and data governance, ii) lower cost to build and maintain, and iii) long-term organizational strategic alignment with the academic medical center. We conducted a two-phase evaluation with the pilot self-service tool: functionality-based assessment, prioritizing tools for data science users, and usability-based assessment, evaluating selected tools through customized maturity models and surveys. The evaluation study targeted a focus group study with five diverse faculties and researchers in an academic medical center seeking improved access to research resources. RESULTS/ ANTICIPATED RESULTS: In evaluation phase 1, we explored seven self-service tool frameworks suitable for our research data warehouse (RDW). In phase 2, we implemented the top two tools selected from phase 1, QlikView and Palantir Foundry. Although the tool built on Palantir has higher mean and individual scores for user feedback than Qlik's, there is no statistically significant difference. Both tools had steep initial learning curve. Palantir has better feedback from qualitative responses. Our study findings highlight prioritized functionalities (efficiency, flexibility, sustainability, security, and cost reduction) for data science tool users; however features and the tool itself requires long term organizational planning and investment. DISCUSSION/SIGNIFICANCE: Academic and research medical centers strongly focus on efficient pilot data access for researchers to aid hypothesis generation. Establishing a clinical research-focused self-service data tool addresses the well-established demand for research resources and offers a model for similar organizations.

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In vivo electrophysiology sex differences in the locus coeruleus of wild type F344 rats

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OBJECTIVES/GOALS: Women are twice as susceptible to ailments like anxiety, PTSD, and Alzheimer's disease compared to men. The locus coeruleus (LC), the primary source of noradrenaline for the brain is implicated in these disorders, however physiological sex differences have never been assessed in the LC. METHODS/ STUDY POPULATION: To address this gap, In vivo electrophysiology under anesthesia was used to measure single unit activity of noradrenergic LC firing patterns in 4-month-old wild-type Fischer male and female rats. Recordings measured neuronal activity under basal conditions and in response to a footshock stimulation which elicits burst firing in LC neurons. Single unit activity is sorted via automatic valley seeking scan PCA, additional manual sorting is done via line and template method. Analysis is done extracting inter-spike interval (ISI) and firing rate of single units, additional analysis is done to quantify properties of bursting patterns (burst duration, spikes per burst, interburst interval, etc . . .). RESULTS/ ANTICIPATED RESULTS: This data shows that during LC burst firing, females have longer interspike intervals compared to males, supporting the inhibitory effect of E2 on LC firing. Additionally, females have significantly different waveform patterns than males, indicating possible differences in intrinsic properties, but further supporting sexually distinct physiology of the LC . Because female rats have been estrous cycle tracked via vaginal lavage, stratification into estrus groups and further analysis may uncover differences within females. These data suggest that estrogen acts as a potent neuromodulator of noradrenergic LC neurons, providing valuable insights into the physiology of this brain region. DISCUSSION/ SIGNIFICANCE: This study is the first exploration of LC physiological sex differences. This work offers insights into a critical brain region implicated in many diseases, and may pave the way for future therapeutic approaches, particularly for women, who are at a higher risk of neurological disease developing.

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Data-Driven Evaluation of Community Health Worker Program[†]

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OBJECTIVES/GOALS: This work is an evidential study that demonstrates the positive impact of integrating Community Health Workers (CHWs) and Social Determinants of Health on an important health outcome, notably in decreasing the 30-day unplanned hospital ED readmissions at Sinai Health Systems. METHODS/ STUDY POPULATION: Using data from the Sinai Urban Health Institute (SUHI), we compare predicting the read missions of patients with and without data pertaining to Social Determinants of Health (SDoH). We thoroughly describe the data cleaning and data pre-processing, done in collaboration with experts in community health. We use a fundamental and ubiquitous classifier in Random Forest for its feature characterization capability in order to translate models results into insights and recommendations for the CHW program. RESULTS/ANTICIPATED RESULTS: We show that when patients are simply engaged by CHWs, regardless of the content of those conversations, we canincrease the predictive accuracy of our classifier by 5%. We use this result to make recommendations for improving patient care and discuss limitations and future work. Importantly our work points directly to the human connection between patients and CHWs as an important feature in the read mission rate. DISCUSSION/SIGNIFICANCE: Our work shows that the predictive capabilities of the classifier increases with CHW logs and SDoH survey data, highlighting the benefit of collecting this information. This is the first step in early identification of such patients so that CHWs are focusing on and providing resources to patients who will most benefit from the program.

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Large Language Model Approaches to Understand Differences Between Guidelines and Clinician Perception of Best Practices

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OBJECTIVES/GOALS: The Clinical Implementation stage in the translational pipeline is hampered by the tension between formal evidence and clinician perceptions. For instance, when guidelines are translated into electronic clinical decision support alerts, they are often ignored. Using advances in LLMs we present a framework to quantify these discrepancies. METHODS/STUDY