

## Supplemental Methods

### Description of Coordinated Care Management System (CCMS)

CCMS is an integrated data system hosted by the San Francisco Department of Public Health (DPH) that links information about service use across mental health, physical health, substance use, and social health domains in a vulnerable, complex, and high-risk population.

The construction and maintenance of this dataset has been described comprehensively elsewhere (Kanzaria et al). In brief, San Francisco DPH matches and integrates data at the patient level within the CCMS based on last name, first name, date of birth, and social security number using computer probability algorithms followed by manual confirmation.

The following services are included in the dataset:

- Medical Urgent/Emergent Services
  - Medical hospital stays
  - Emergency department visits
  - Medical urgent care visits
- Psychiatric/Mental Health
  - Mental health hospital stays
  - Psychiatric emergency service visits
  - Mental health urgent care visits
- Substance use urgent/emergent services
  - Sobering center visits
  - Substance use disorder medical detoxification stays
  - Substance use disorder social detoxification stays
- Social services
  - Jail health days
  - Medical respite days

### Description of CCMS Record Creation

A CCMS record is created for any patient observed or reported to be homeless in a DPH or county housing system; engaged with county behavioral health, housing, or jail services; or engaged with urgent/emergent services across physical health, mental health, substance use, or social health domains.

### Description of the Cancer Registry

ZSFG is an American College of Surgeons Commission on Cancer (CoC) accredited cancer program. The CoC requires that accredited programs abstract tumors diagnosed and/or initially treated at the abstracting facility. More information about the fields included in a cancer registry is detailed here: <https://www.facs.org/quality-programs/cancer-programs/national-cancer-database/ncdb-call-for-data/registry-manuals/>.

### Dataset Linkage

We linked patients in the ZSFG Cancer Registry and CCMS using social security numbers as a unique patient identifier in accordance with UCSF minimum security standards. Once matched, we limited the data to include records only where the cancer diagnosis overlapped with the fiscal year the CCMS data was pulled from.

We conducted all data linkages on UCSF's Research Analysis Environment (RAE), which is a secure data hosting and compute service for UCSF researchers and collaborators. RAE provides compute, storage, and analysis tools in a secure, HIPAA-compliant platform for sensitive data. Researchers trained and approved to work with Protected Health Information analyzed the data.

### Additional References

- Kanzaria HK, Niedzwiecki M, Cawley CL, et al. Frequent Emergency Department Users: Focusing Solely On Medical Utilization Misses The Whole Person. *Health Aff (Millwood)*. 2019;38(11):1866-1875. doi:10.1377/HLTHAFF.2019.00082
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- Cawley C, Henderson J, Kanzaria HK, Lacoe J, Paolillo S, Perez K, Raven M, Skog A. Signals of High Utilization of Criminal Legal and Urgent and Emergent Health Services in San Francisco. California Policy Lab (2022). <https://www.capolicylab.org/signals-of-distress-high-utilization-of-criminal-legal-and-urgent-and-emergent-health-services-in-san-francisco/>. Accessed December 27, 2023.
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