

Mental Health & US Coal Miners

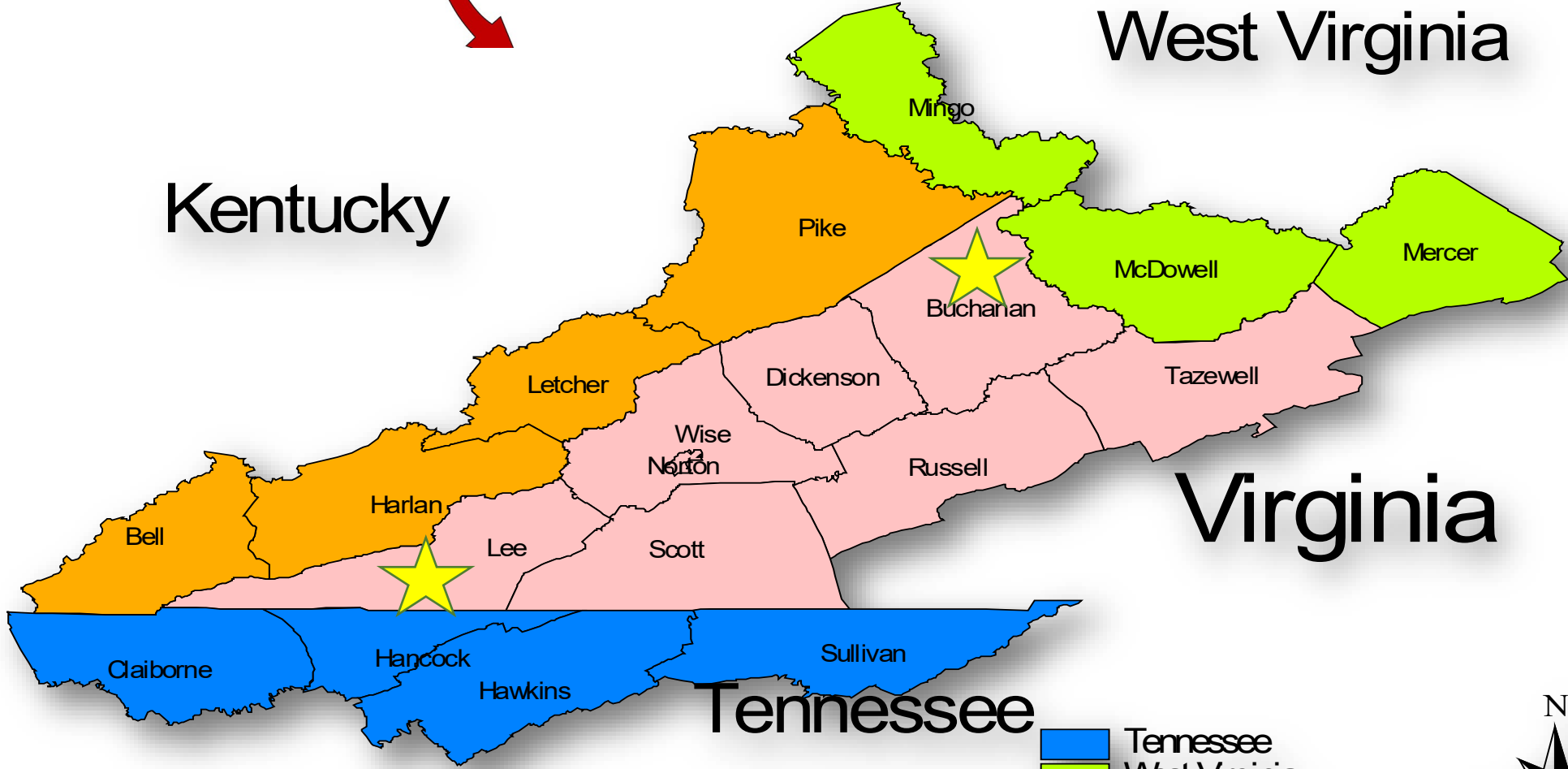
Drew Harris MD

University of Virginia & Stone Mountain Health

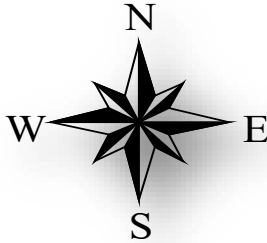


Conflicts of interest

- None



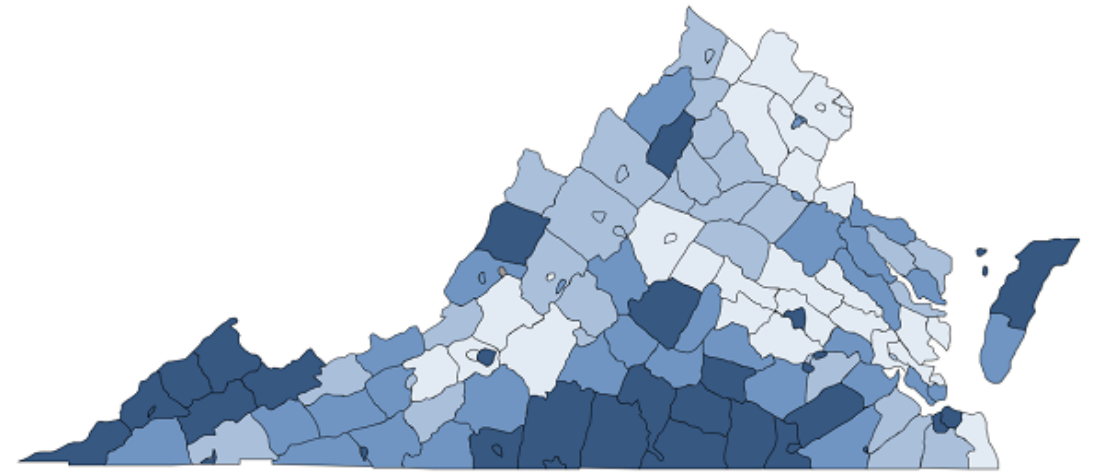
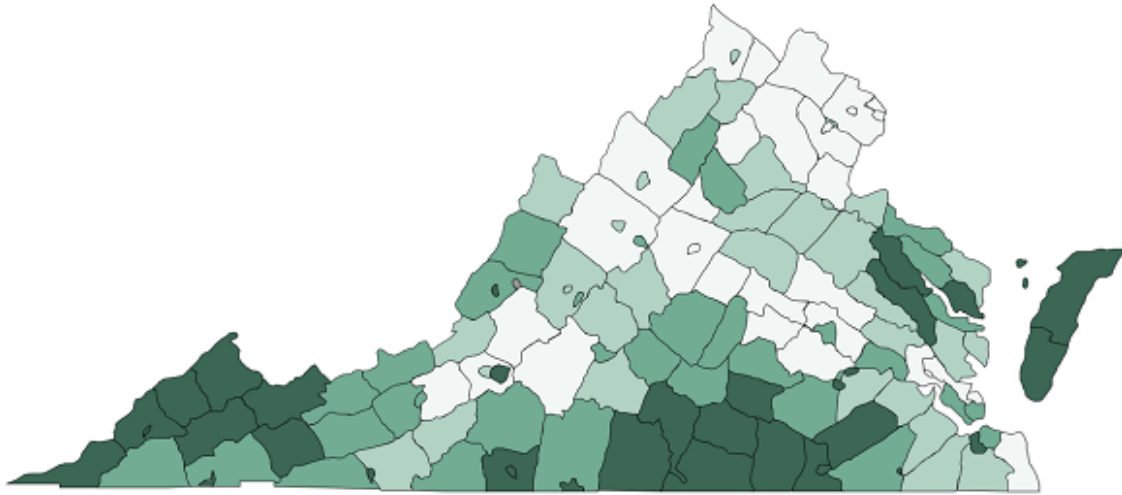
-  Tennessee
-  West Virginia
-  Kentucky
-  Pd1 and PD2



2022 County Health Rankings & Roadmaps

Health Determinants

Health Outcomes



Health Outcome Ranks  1 to 33  34 to 66  67 to 100  101 to 133

Health Factor Ranks  1 to 33  34 to 66  67 to 100  101 to 133

Stone Mountain Health Services
Black Lung Clinic Program
St. Charles & Vansant, Virginia

2020-2021: 1187 patients from 8 states

Mean Age: 66 [28-96]

New FBL Applications	Hearings	Awards (All Levels)
275	148	371

Coal Workers' Pneumoconiosis	1,023 (79.1%)
Progressive Massive Fibrosis	210 (16.2%)





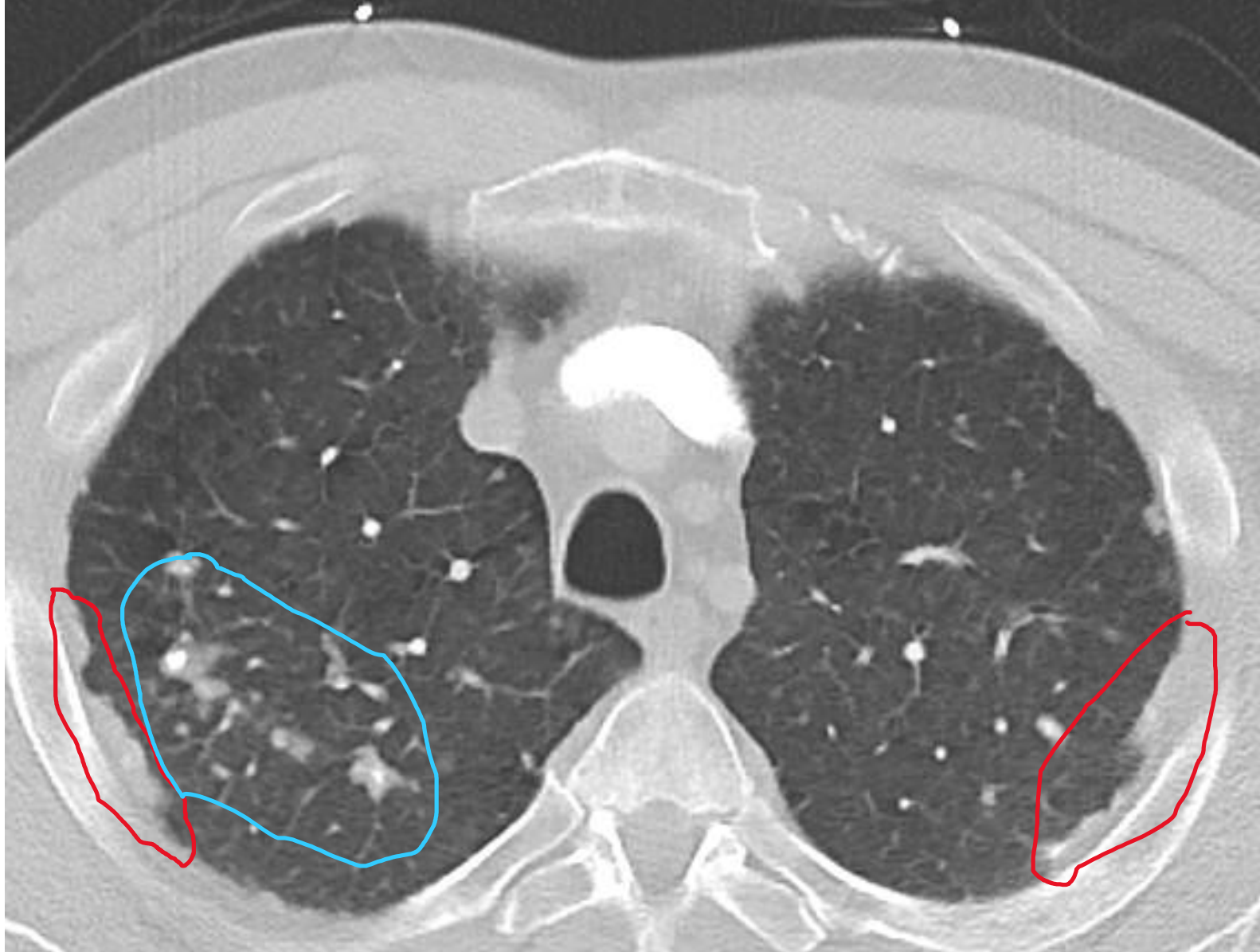






Occupational History

- 25 years underground until 2019
 - Continuous miner for 20+ years
 - Coal as low as 30 inches
- Witnessed **SEVEN** of his friends die in the mines
- Once worked **THIRTY-TWO straight hours** trying to free a friend who was covered up (deceased upon discovery)
- His hand was crushed in a rock fall



Benign parenchymal lung tissue with fibrosis and abundant carbon laden alveolar macrophages.
Negative for granuloma or acute inflammatory inflammation.
Negative for malignancy or premalignant changes.

June 2022





SMHS Behavioral Health Program

“Well-Being Questionnaire” for all miners seeking medical or legal/benefits services beginning July 1, 2018

- Generalized Anxiety Disorder questionnaire - 2 (GAD-2; anxiety)
- Patient Health Questionnaire – 9 (PHQ-9; depression and suicidality)
- Primary Care - PTSD screen (PC-PTSD4; trauma)

Results (N=2,826 between 2018-2020)

- Median Age 66
- 99%+ white males
- Median mining tenure 26 years
- 13% current & 47% former smokers (median 17 pack year)

- 18% on long term oxygen therapy
- 36.5% had FEV1/FVC < 0.7
- 79% with CWP

	SMHS Coal Miners (N,%)	National Comparison
Depression (PHQ9 ≥ 10)	883 (37%)	<p>5% (US males > 50 yr)</p> <p>19.2% (Central App Medicare Beneficiaries)</p>
Moderate (10 - 14)	383 (16.2%)	
Moderately Severe (15 – 19)	267 (11.3%)	
Severe (20+)	233 (9.9%)	

	SMHS Coal Miners	National Comparison
Suicidal Ideation	295 (11%)	<p>2.4% (US males > 50 yr, 2019)</p> <p>4.5% (US males, 2019)</p>

National Institute of Mental Health (NIMH.NIH.GOV/health/statistics)
SAMHSA

Harris JAMA Network Open 2021

	SMHS Coal Miners	National Comparison
Anxiety (GAD-2 \geq 3)	1005 (39%)	15.6% (US adults, 2019)
PTSD (PC-PTSD4 \geq 2)	639 (26.2%)	5% (Past year prevalence in US adults) 11-30% (US Veterans)

Strong correlation between chronic hypoxemia & suicidal ideation, anxiety, and depression



Improving mine safety and health through funding research and developmental projects by qualified academic institutions and other not-for-profit organizations

Dec 2021 RFP: Seeking to investigate mental illness among US coal miners

Aim 1: Estimate the prevalence of mental health at seven HRSA Black Lung clinics across the country.

Aim 2: Connect study participants with mental health needs to appropriate, ongoing care in their community.

Aim 3: Describe the risk (& protective) factors for mental illness (& health) through a mixed methods study.

Mental Illness in US Coal Miners

A collaborative approach to understand risk factors and prevalence, while ensuring those suffering get the care they need

Clinics we are hopeful to partner with for this project →

Green indicates already doing some form of behavioral health screening

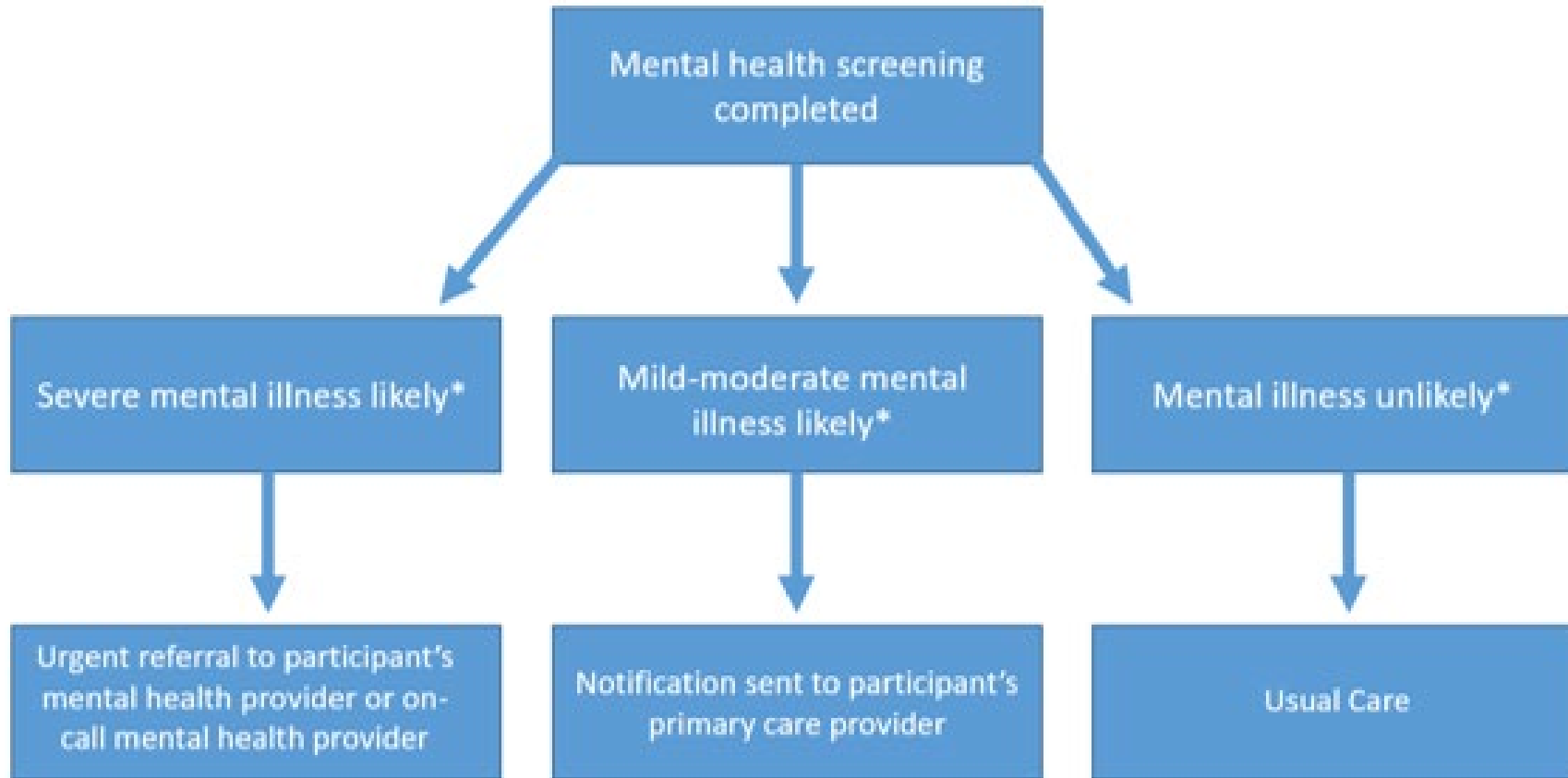


Kirsten Almberg (UIC)

Aim 1: Estimate prevalence at 7 different clinics

- Leverages established, trusted relationships between miners & our black lung clinics
- Survey active and former miners who seek care for any reason (24 months)
 - Compare to demographic-matched non-miners (2:1 ratio)
- Measures:
 - Depression & suicidality (PHQ-9) +/- Columbia-Suicide severity scale
 - Anxiety (GAD-7)
 - PTSD (PC-PTSD-5) +/- Modified life-events checklist DSM-5 to assess occupation-specific factors
 - Alcohol misuse (Alcohol Use Disorders Identification Test AUDIT)
 - Substance use (Drug Abuse Screening Test DAST-10)

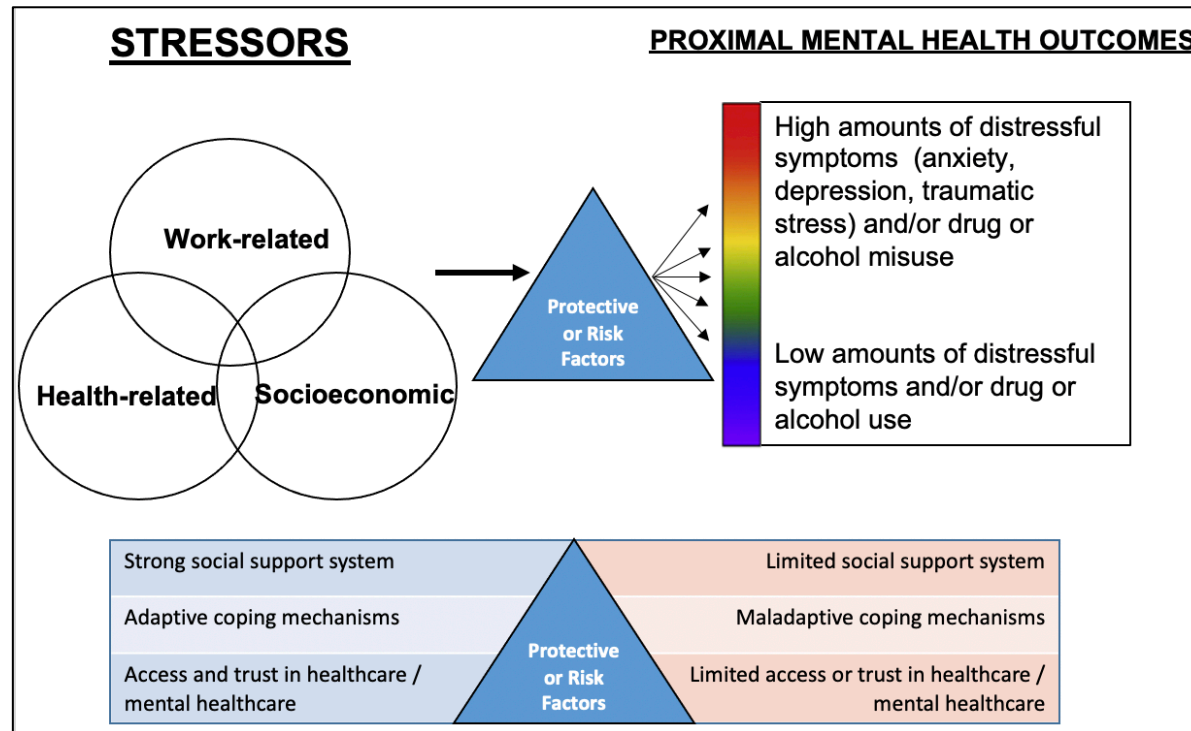
Aim 2: Connect participants with mental health needs to appropriate ongoing care in their community



Aim 3: Identify risk & protective factors

Sequential mixed methods:

- 1) Multivariable regression: Identify risk/protective factors (SES, occupational, clinical) for mental illness
- 2) Qualitative: better understand lived experience and perspective of miners who face challenges in achieving or maintaining positive mental health



Final Thoughts

- Most of the clinical care and research in US coal miners has historically been directed at *physical health*
- Based on our initial work in Virginia, mental illness is a newly recognized / long ignored problem in coal miners
- In partnership with 8 black lung clinics across the country, we plan to better characterize prevalence rates, risk and protective factors
- We hope to use this information to:
 - 1) Reduce the burden of mental illness in coal miners currently suffering
 - 2) Prevent the development of mental illness in coal miners in the future