MEASURING COMMUNITY EMBEDDEDNESS NEAR ARMY INSTALLATIONS: A FEASIBILITY STUDY

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PROJECT DESCRIPTION

Goal: Define and create composite indicators for measuring community embeddedness

The ARI-SDAD collaboration seeks to understand the relationship between the Soldier's community and Soldier performance and behavior.

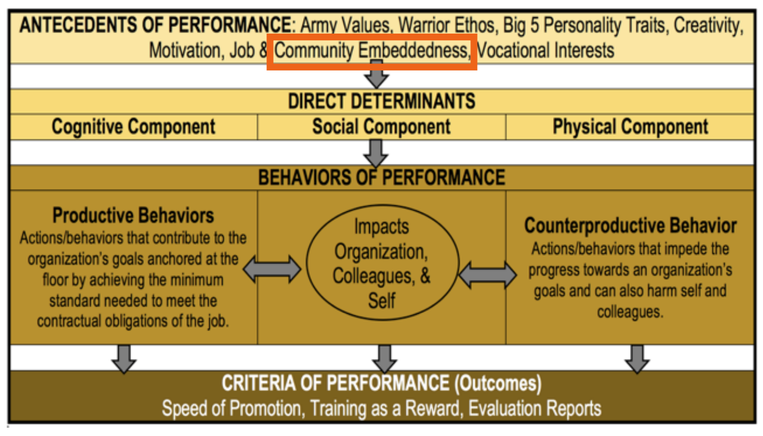
Research Questions:

- What is community embeddedness, and what characteristics of a community promote embeddedness?
- How does community embeddedness differ in counties with an Army post to surrounding counties?

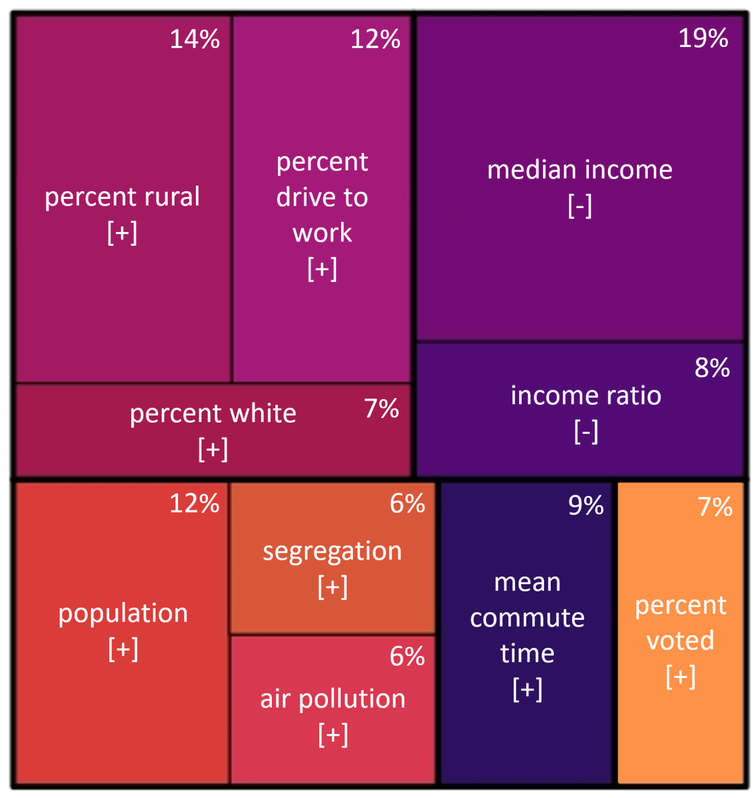
COMMUNITY EMBEDDEDNESS LITERATURE

- Community embeddedness is often studied in terms of job embeddedness, measured using surveys of employees [2-6]
- Community embeddedness refers to social links made within an individual's community, quality of community fit, sacrifices made by those who live in community

This project conceptualizes embeddedness as "the degree to which certain county factors interact with presence of Army installation to contribute to an individual's interest in staying or moving out of that county."



Weights of Indicators for Community Embeddedness Index



Note: + and – denote whether indicator positively or negatively contributes to community embeddedness; percent indicates normalized weight of indicator

DATA SELECTION

Using the Social Determinants of Health literature, we used data from the American Community Survey, County Health Rankings, Annie E. Casey Foundation Kids Count, Virginia Department of Elections, and Oklahoma State Election Board on:

- Neighborhood and built environment
- Health and home case
- Economic stability
- Education
- Social and community context

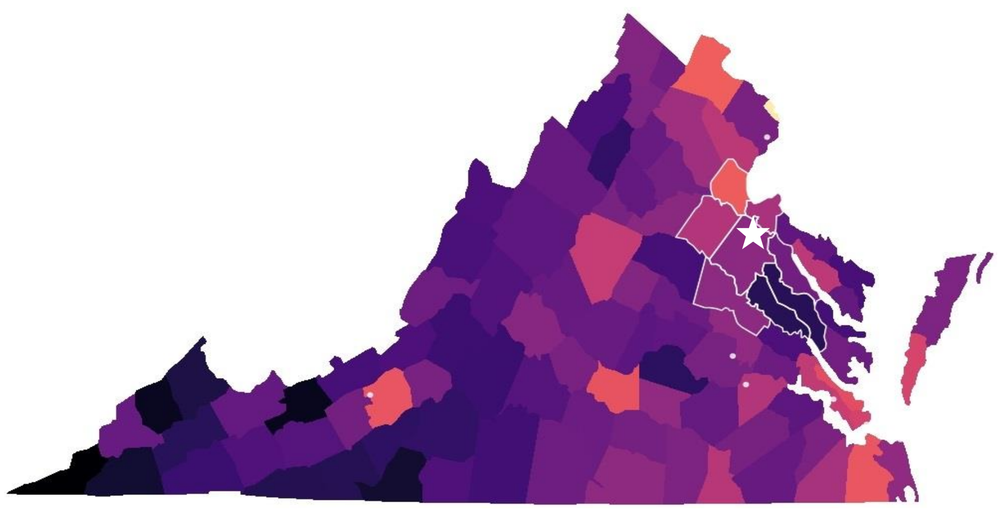
CREATING THE INDEX

- Analyzed our data using linear regression with the percentage of people who stayed within a county over the past 5 years as a proxy for community embeddedness
- Ran best subsets and lasso regressions to identify the best predictors for our proxy and found that best subsets is a better fit
- Scaled values & ran multiple linear regression
- Pulled the coefficients from this model to use as preliminary weights for each of our indicators
- Explored Principle Components Analysis and Factor Analysis to validate decision
- Scaled embeddedness construct to create index

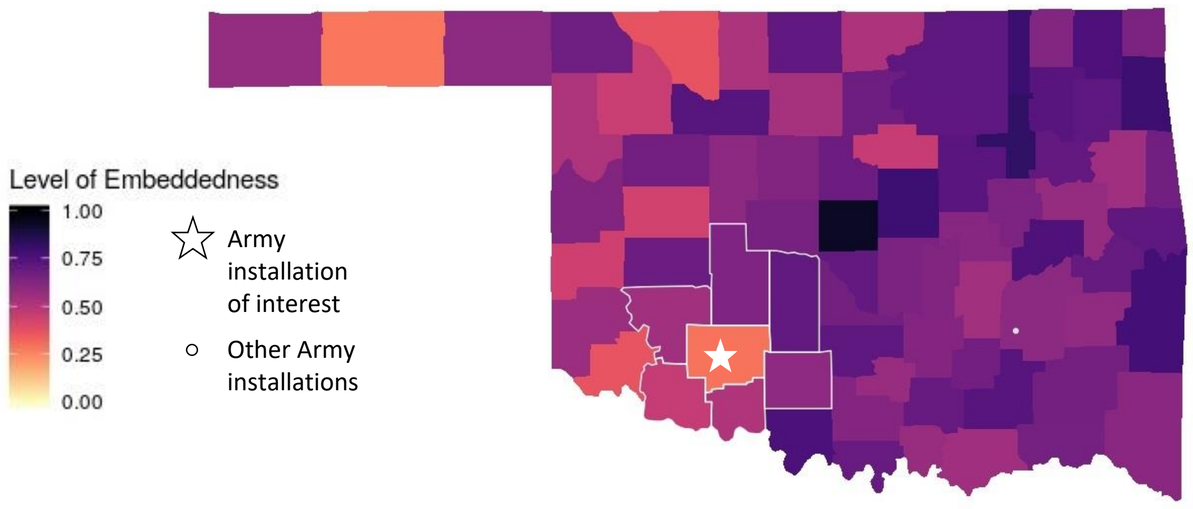
Definitions: **Income ratio:** ratio of household income at 80th percentile to income at 20th; **Segregation:** evenness with which two groups (white/non-white) are distributed across a geographic area; **Voted**: Gubernatorial elections in 2017 and 2018

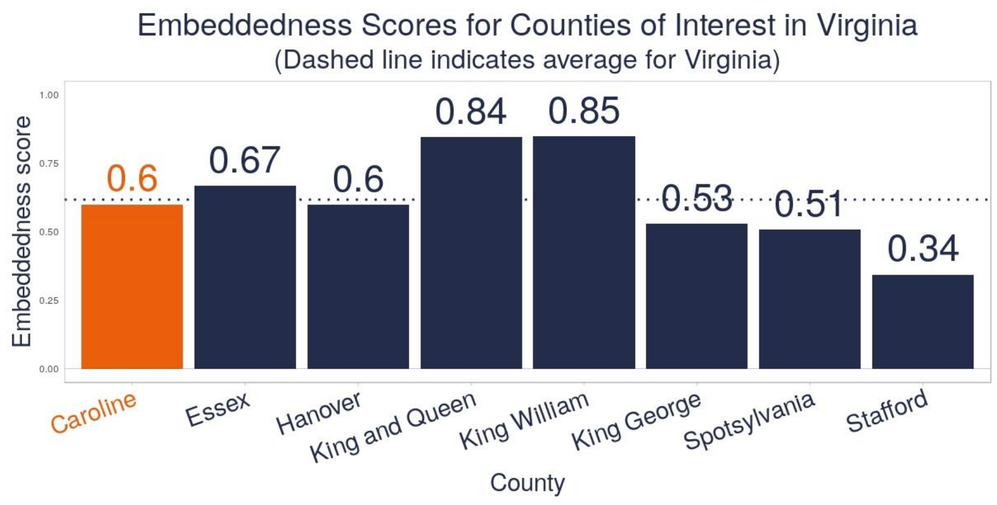
COMMUNITY EMBEDDEDNESS INDEX FOR VIRGINIA AND OKLAHOMA COUNTIES

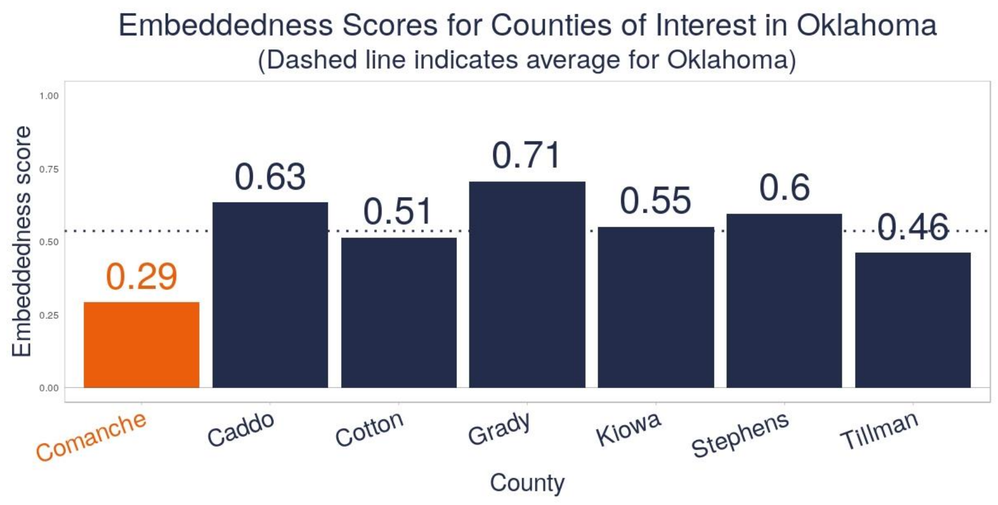
Fort A.P. Hill, Virginia (Caroline County)
Used for training active and reserve troops for the Army, Navy, Marine Corps, and Air Force



Fort Sill, Oklahoma (Comanche County)
Home to the Field Artillery Training Command; One of four Army Basic Combat Training locations







DISCUSSION AND NEXT STEPS

Findings: Using the Social Determinants of Health literature to guide variable selection, we found that counties with higher levels of income tend to have lower rates of community embeddedness. Some of the factors in our model illustrate aspects of the place that lead to embeddedness (rural indicators: rurality, driving to work; urban indicators: air pollution, segregation). Other factors indicate aspects of individuals within a community that point to their ability and willingness to leave (income, population, percent white, commute time, voting patterns).

Next steps: Future models should control for race and income and include data from all counties within the U.S., as there may be particular factors that are more prevalent in Virginia and Oklahoma than in the rest of the country. Other frameworks and methods, such as network analysis, should also be considered. We could also explore other potential proxy outcomes other than migration patterns, which might not be the best way to capture embeddedness.

References
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