reading notes

## Mapping and Measuring Social Disparities in Premature Mortality: The Impact of Census Tract Poverty within and across Boston Neighborhoods, 1999–2001 Jarvis T Chen 1,✉, David H Rehkopf 1, Pamela D Waterman 1, S V Subramanian 1, Brent A Coull 2, Bruce Cohen 3, Mary Ostrem 4, Nancy Krieger 1

<https://pubmed.ncbi.nlm.nih.gov/17001522/>

FROM HENI CENSUS TRACT DISPARITY LITERATURE

multilevel modeling framework ; premature mort rates are sig higher in more impoverished areas

lots of within neighborhood variation in premature mort; decreased after adjusting for CT poverty

“populatoin attributable fraction analysis” shows that in some of Boston’s poorest neighborhoods, 25-30% of premature deaths were assoc w CT poverty

mort data from mass dept of public health ; then deaths were geocoded w 97% successful matches at the CT level

premature mort : death before age 75

neighborhoods were defined by the boston public health commission - a total of 16 neighborhoods were included in the study

categorized CT poverty into 4 levels

multilevel analysis: age groups nested within CTs within neighborhoods

used ~ten year age groups - total of 9 groups

models: poisson mixed effects models

m1: age and spatial random effects

m2: age, spatial random effects, CT poverty

incidence rate ration (IRR) was estimated for each CT relative to the lowest poverty category (SO THE BOTTOM IS REFERENCE IN THIS CASE???)

contribution of CT and neighborhood var was estimated using random effects variance components

bayesian

I DONT UNDERSTAND THIS PART

models were fit w bayesian inference w markov chain monte carlo (MCMC) estimation

winbugs package w 70k iterations, 10k burnin and thinning by 30

model fit assessed using deviance informatoin criterion (DIC)

standardized mortality ratios (SMR) were mapped at CT and neighborhood levels showing premature mort rates relative to boston average (IN THIS CASE THE TOTAL AVERAGE WAS THE REFERENCE???)

model based direct std rates were calcd to adjust for age dist allowing comparisons w external mort rates

population attributable fraction (PAF) was estimated to determine the prop of premature deaths linked to living in high poverty CTs

bayesian modeling:

used to stabilize small area estimates

allows for spatial smoothing - can incorporate random effects at both the CT and neighborhood levels

bayesian credible intervals provide direct probabilistic statements about parameter estimates ; esp useful for estimating incidence rate ratios (IRRs) and mortality risk differences across CTs

## Sociodemographic disparities in e-cigarette retail environment: Vape stores and census tract characteristics in Orange County, CA

<https://doi.org/10.1016/j.healthplace.2017.12.004>

Georgiana Bostean, Luis Sanchez, Adam M. Lippert

FROM HENI CENSUS TRACT DISPARITY LITERATURE

vape stores within a single county

23.4% of CTs had at least 1 vape store; more prevalent in areas w higher percentage of hisp residents, lower pop density, and more tobacco retailer density

when controlling for tobacco retailer density, poverty was no longer a significant factor

clustering of nicotine related buisness

vape stores may be targeting or disprop appearing in communities w ses vulnerabilities

vape store location - compiled thru systematic internet search

total of 173 vape stores identified and geocoded

ground truthing for a subset of 36 stores to verify accuracy

tobacco retailer locations - obtained from CA state board of equalization

SES and land use data from the ACS 5 year est : race/eth, nativity, edu, poverty, age dist

land use: orange county public works; used to estimate the percent of commercial land use in each CT

“zero-inflated poisson regression” models to analyze the relationship between vape store counts and neighborhood chars (must be bc most cts don’t actually have vape stores) - also called a ZIP model :)

predicted outcome: count of vape stores in CTs where at least one store exists

relationship between vape store count and SES

higher vape store incidence rates in CTs w higher hisp pop, greater tobacco retailer density, lower pop density ; commercial land use sig decreased prob of a tract having no vape stores

## Association of Census Tract-Level Socioeconomic Status with Disparities in Prostate Cancer–Specific Survival Vincent L. Freeman1,2,5, Ana C. Ricardo3 , Richard T. Campbell1 , Richard E. Barrett2,4, and Richard B. Warnecke2 <https://doi.org/10.1158/1055-9965.epi-11-0344>

FROM HENI CENSUS TRACT DISPARITY LITERATURE

is CT SES associated w survival of prostate cancer??

retrospective cohort of Black and White men in 4 chicago area medical centers

concentrated disadvantage (CD) As a multidim SES indicator ; calcd from 1990 census data

survival analysis using cox proportional hazards models, adj for demographics, tumor chars, treatment, health care system

higher disadvantage -> lower prob of survival

racial disparities disappeared after adjusting for SES (THIS IS USEFUL!!!)

the effect of SES on survival was sig in private sector patients but not in the VA system - equal access health care system (VA) might mitigate the impact of SES on survival

Concentrated disadvantage CD = percent in poverty + percent unemployeed + percent female headed households + 100 - percent college grads

excluded racial composition from original formula to avoid collinearity

CD is useful because it is not analogous to individual SES (such as income or edu) but instead reflects broader neighborhood level economic and social conditions (kinda like our cluster value….)

CD is predictive of health outcomes, including self rated heatlh and asthma

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## Census Tract Poverty and Racial Disparities in HIV Rates in Milwaukee County, Wisconsin, 2009–2014

FROM HENI CENSUS TRACT DISPARITY LITERATURE

Crystal Gibson, Katarina Grande, Casey Schumann, Mari Gasiorowicz

<https://link.springer.com/article/10.1007/s10461-018-2064-y>  
  
census tract poverty levels and HIV rates

unadj HIV rates are assoc w poverty

after adjusting for percent black, percent male, percent unmarried, percent unemployment, percent vacant housing, the relationship between HIV and poverty was less clear

initially examined crude (unadj) HIV rates, then adjusted them for sociodemographic factors

examined all 298 CTs in milwaukee county ; focused on CT level analyses

poisson regression: dependent var was HIV cases; used log of populatoin as an offset in all models

separate models for black, white, all pop

black individuals have higher HIV rates across all poverty levels

low number of HIV diagnoses

focused on Milwaukee county

## Characterizing Within-County Health Disparity Using Multidimensional Disparity Indices from the PLACES Dataset: An Exploratory Analysis in New York

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NOT YET PUBLISHED ; FROM EMAIL FROM KEITH

two methods:

weighted model - captures disparity between tracts ONLY ; cannot account for within tract differences; effectively a point estimate of health weighted by population size ; no margins of error

simulated model: incorporates point estimate and margin of error for each measure; within CTs estimates are roughly drawn from normal dist until a “simulated” population the same size of the original CT is met ; therefore we can

comparisons between models and between disparity metric are mostly descriptive

## Individual and Neighborhood Differences in Diet Among Low-Income Foreign and U.S.-Born Women

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<https://doi.org/10.1016/j.whi.2007.11.001>

individual data nested within census tract level data

2-level linear regression to determine associations between individual level fruit/veg intake and ct level demographics - then conclusions are made like “an increase of XX fruit servings is associated with each 10 percent increase in tract demographics”

could we use similar logic where we have county-level race/income disparities and tract level raw values? then we could form conclusions like “every 10percent increase in countylevel income disparity is associated with a xxx change in tract level housing” is that meaningful?? we can then determine that county-level income or race disparities are associated with XXX census tract characteristics

## Associations between disparities in tobacco retailer density and disparities in tobacco use

Allison M. Glasser,\* Nathaniel Onnen, Peter F. Craigmile, Elli Schwartz, Megan E. Roberts

<https://doi.org/10.1016/j.ypmed.2021.106910>

FROM HENI CENSUS TRACT DISPARITY LITERATURE

focused on ohio

data come from ohio brfss and acs

tobacco retailer density is at CT level

ses and demographic chars at ct level (comes from ACS)

individual level tobacco use survey data

calculated disparities in TRD which were defined as high v low poverty and high v low racial/ethnic minority CT

calculated disparities in tobacco use which were defined as ratio of cig smoking among adults below vs above poverty and among minority vs non minority adults

then calcd correlations between disparities in tobacco retailer density and disparities in cig smoking / tobacco use

## Measuring Geographic and Racial Disparities within Counties, An Exploratory Analysis in New York

this is saved as 01\_Manuscript\_0906\_kg\_EB ; it’s a working paper from Jun/Keith/EB

keith’s summary: “he creates household level data for median household income within tracts by race so household sum totals the ct total AND the race group totals”

* “we evaluated percent changes and rank order corr of counties between a ct, alone, and ct plus subpop model. on avg, the ct model tended to underestimate the level of disparity in a county compared to that from the model with incorporated subpop data”
  + percent change is calcd by subtracting the disparity index at the ct level from the disparity index of the subpop divided by the disparity index at the ct level
  + basically this paper compares county level disparities calcd across cts to county level disparities calcd across race/eth subgroups using simulated data - v similar to what we’re trying to do but instead focused on the question of how / whether to account for within tract heterogeneity