

Geographic Access to PrEP Clinics among US MSM: Documenting PrEP Deserts

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Background

- US men who have sex with men (MSM) have a disproportionate HIV burden
- Pre-exposure prophylaxis (PrEP) is effective for MSM ¹
- PrEP access requires quarterly (every 3 month) provider visits ²
- Geographic access to providers affects who can adhere to or benefit from PrEP
- Driving time to a provider is an understandable measure of access
- Spatial analyses can highlight geographic inequities in PrEP access

Objectives

- Describe census-tract level access to PrEP providers using driving time
- Identify areas with reduced geographic access to PrEP providers (“PrEP Deserts”)
- Quantify estimated MSM population living in PrEP Deserts
- Identify sociodemographic correlates of PrEP deserts

Methods

PrEP Providers and PrEP Eligibility

- Geocoded and mapped a national database (PrEP Locator) of publicly-listed clinics ^{3,4}
- MSM PrEP eligibility estimates sourced from a recent national analysis ⁵

Population Estimates

- County-level MSM population estimates⁶ were allocated to census tracts based on the ratio of:
Males in a tract / Males in all tracts in a given county
- Census tracts: Optimum size of 4,000 persons (2,500 – 8,000 persons) ⁷

Demographic Variables and Census Tracts

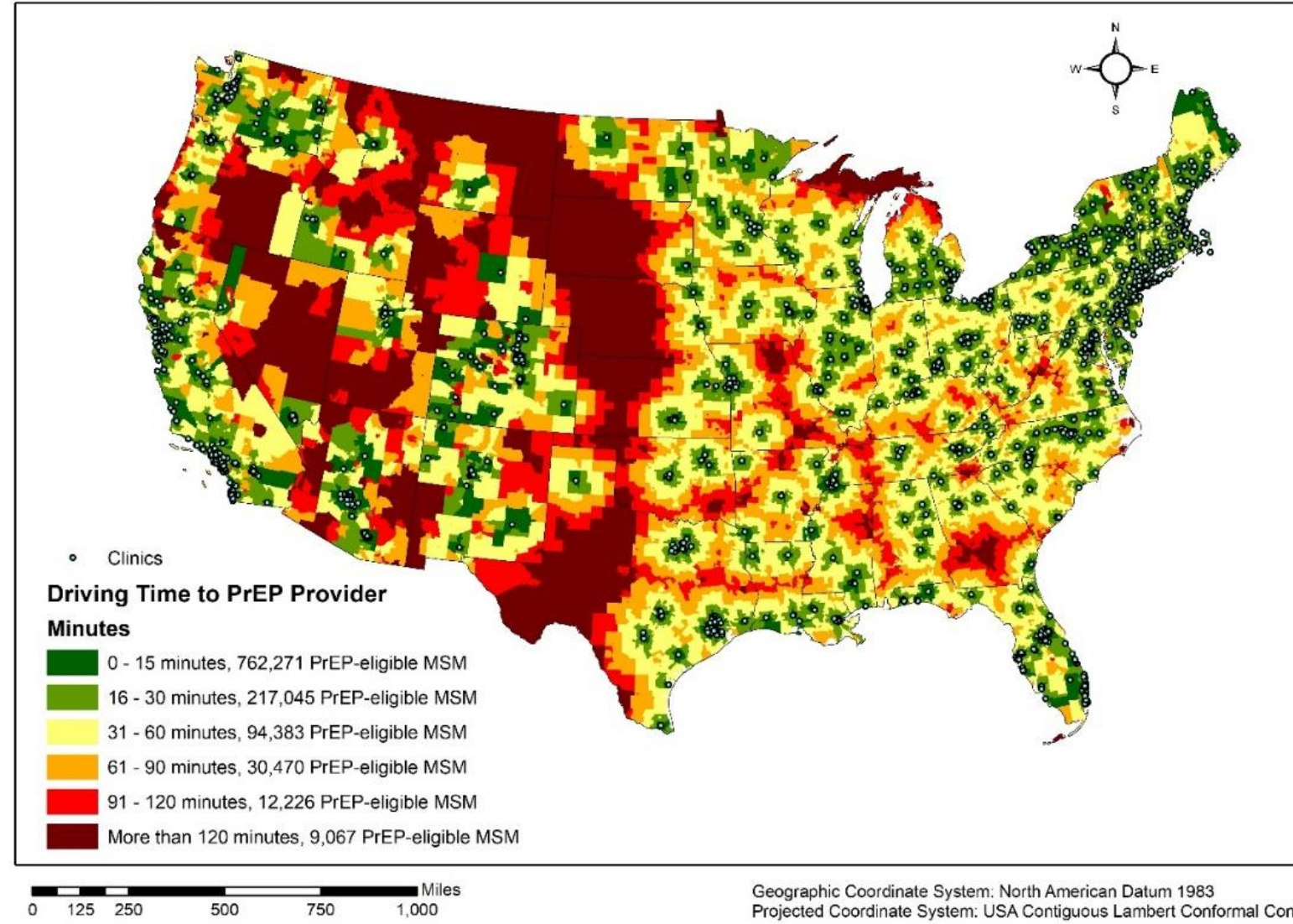
- Demographic variables, including race, median household income, and others sourced from the American Community Survey (ACS) 2011-2015 ⁸
- County urbanicity sourced from the National Center on Health Statistics ⁹
- Centers of population (population-weighted centroids) for census tracts were sourced from the US Census Bureau ¹⁰

Driving Time to PrEP Providers

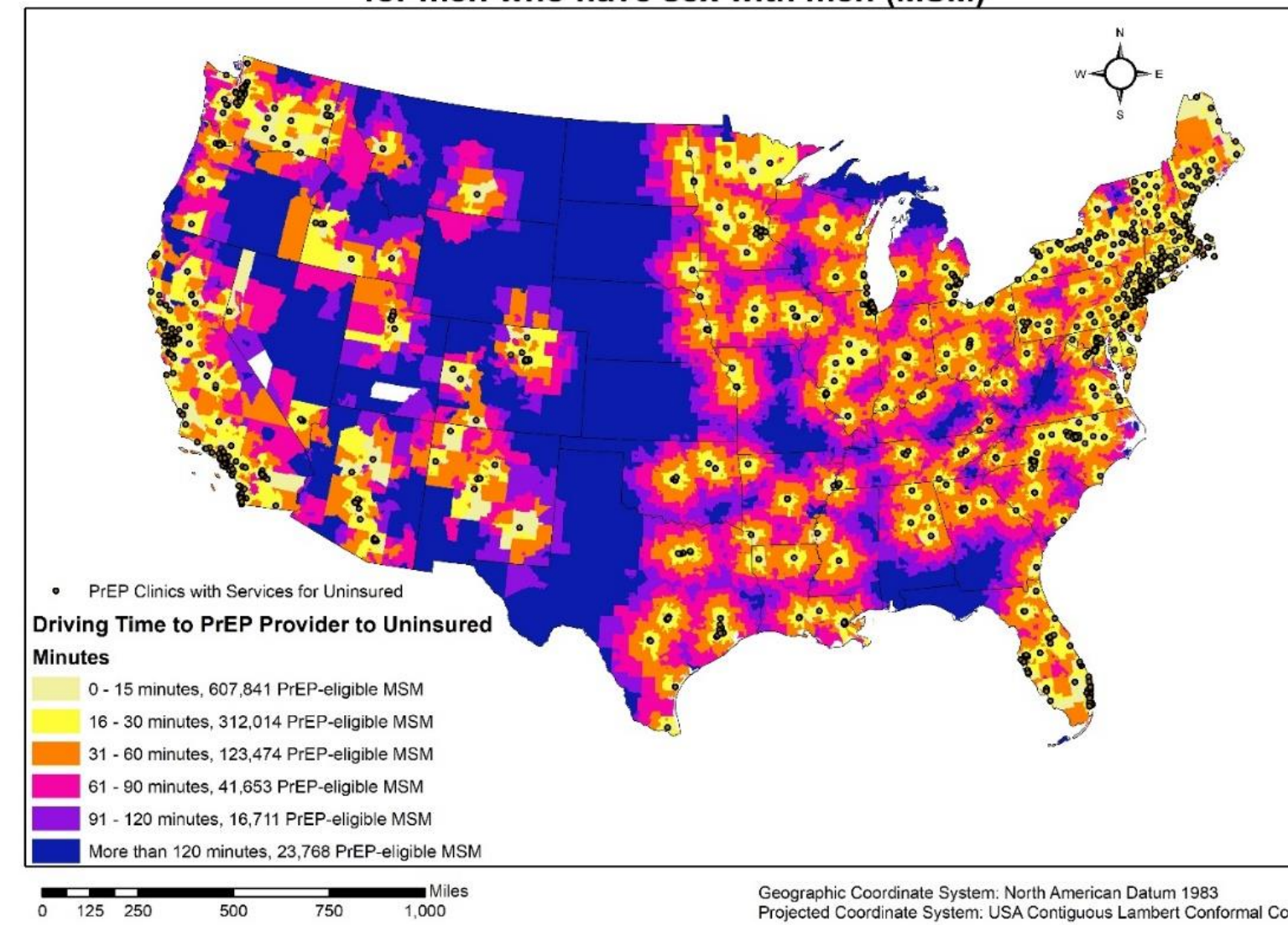
- Calculate nearest PrEP provider to each tract using ArcGIS
- Calculated driving time from population-weighted centroids to the nearest PrEP provider using Google Maps, using ideal traffic conditions
- Tracts classified as being part of a 30-minute or 60-minute ‘PrEP desert’ based on driving time to the nearest PrEP-providing clinic

Results

Driving Time to Nearest PrEP Provider for men who have sex with men (MSM)



Driving Time to Nearest PrEP Provider with Services for the Uninsured for men who have sex with men (MSM)



MSM Population Estimates and PrEP-eligible MSM Population Estimates, in All Census Tracts and PrEP Deserts, by County Urbanicity and Census Division

	All Tracts		30-Minute Deserts		60-Minute Deserts	
	MSM Population Estimate	PrEP-eligible Population Estimate	MSM Population Estimate	PrEP-eligible Population Estimate	MSM Population Estimate	PrEP-eligible Population Estimate
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
All census tracts	4556525 (100.0)	1125462 (100.0)	591684 (100.0)	146146 (100.0)	209566 (100.0)	51763 (100.0)
County Urbanicity						
Large central metro	2412935 (53.0)	595995 (53.0)	35925 (6.1)	8873 (6.1)	2339 (1.1)	578 (1.1)
Large fringe metro	1107246 (24.3)	273490 (24.3)	136409 (23.1)	33693 (23.1)	6989 (3.3)	1726 (3.3)
Medium/Small metro	743309 (16.3)	183597 (16.3)	199671 (33.7)	49319 (33.7)	77871 (37.2)	19234 (37.2)
Non-metro	293035 (6.4)	72380 (6.4)	219680 (37.1)	54261 (37.1)	122367 (58.4)	30225 (58.4)
County Census Division						
West						
Pacific	942300 (20.7)	232748 (20.7)	83216 (14.1)	20554 (14.1)	24838 (11.9)	6135 (11.9)
Mountain	354429 (7.8)	87544 (7.8)	56458 (9.5)	13945 (9.5)	37147 (17.7)	9175 (17.7)
Midwest						
West North Central	213778 (4.7)	52803 (4.7)	37911 (6.4)	9364 (6.4)	19143 (9.1)	4728 (9.1)
East North Central	622934 (13.7)	153865 (13.7)	69516 (11.7)	17170 (11.7)	12094 (5.8)	2987 (5.8)
South						
West South Central	588952 (12.9)	145471 (12.9)	85339 (14.4)	21079 (14.4)	39355 (18.8)	9721 (18.8)
East South Central	204206 (4.5)	50439 (4.5)	63426 (10.7)	15666 (10.7)	26025 (12.4)	6428 (12.4)
South Atlantic	1005235 (22.1)	248293 (22.1)	161673 (27.3)	39933 (27.3)	46733 (22.3)	11543 (22.3)
Northeast						
Middle Atlantic	475579 (10.4)	117468 (10.4)	26647 (4.5)	6582 (4.5)	3089 (1.5)	763 (1.5)
New England	149112 (3.3)	36831 (3.3)	7498 (1.3)	1852 (1.3)	1142 (0.5)	282 (0.5)

Results

- Most deserts (>70% - 30 mins, 95% - 60 mins) are in less urban areas
- Most MSM in deserts live in the South (53.5% - 60 mins)
- Deserts for clinics offering services to uninsured are larger
- Northeast has the most PrEP providers and fewest desert MSM
- PrEP deserts are: less educated, have greater poverty, have lower MHI, and lesser proportions of African-American and Hispanic individuals

Limitations

- Only evaluated vetted PrEP providers in the PrEP Locator database
- Centroid-based distance analyses might miss smaller trends and might not extend to individuals (ecological fallacy)
- Driving time can overestimate accessibility for those using public transit
- Non-distance measures of service access would enhance these findings
- Ecological analyses are better for hypothesis generation, not explanations of individual-level characteristics and risks

Conclusions

- One in eight PrEP-eligible MSM may have to drive ≥30 minutes for PrEP
- MSM in all US geographic regions have limited PrEP provider access
- Large numbers of MSM live in ‘deserts’ requiring long driving time to care
- PrEP availability is greatest in the Northeast and urban areas, least in less urban areas and the South
- Substantial travel time to care (with 4 visits per year) could limit scale-up
- HIV prevention programs must consider travel and transportation burden to more effectively reach PrEP-eligible MSM in deserts

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