2019

Philadelphia Department of Public Health (PDPH) 500 Cities Project

LINKING LOCAL DATA FOR TARGETED ACTION AMONG PHILADELPHIA'S MOST VULNERABLE NEIGHBORHOODS

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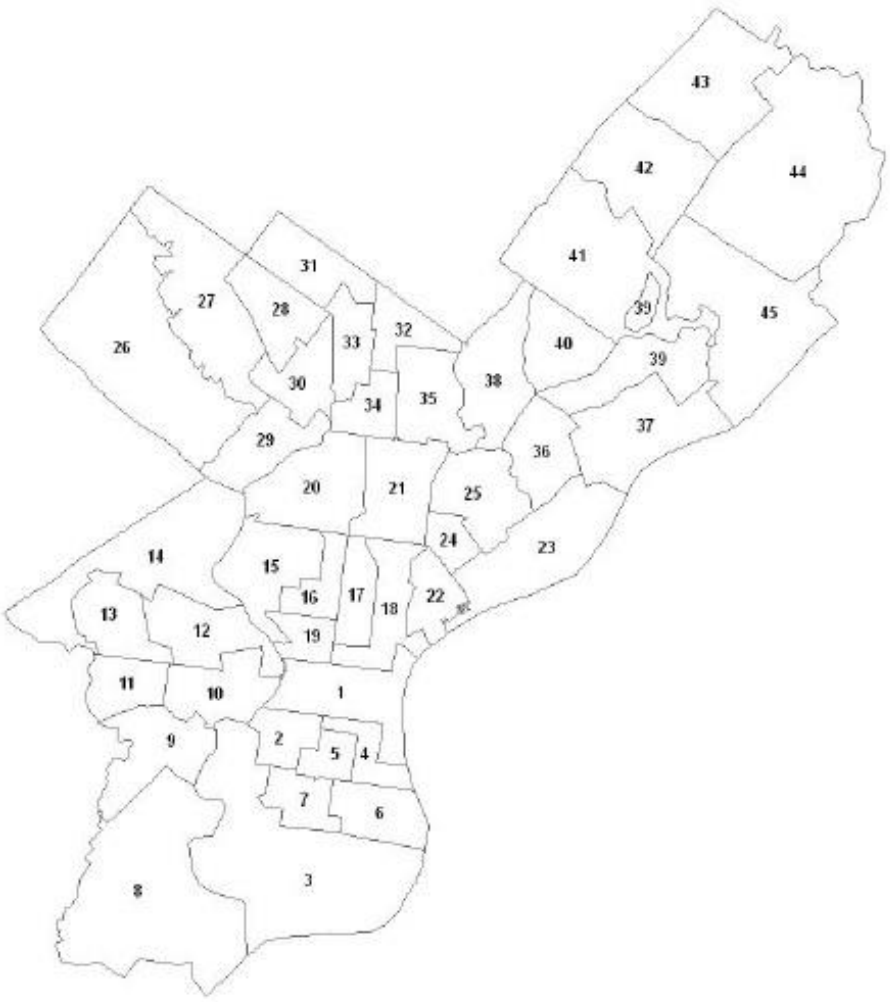
Contents

Neighborhood Definitions

Initially 45 neighborhoods were proposed, using boundaries created for the Southeast Pennsylvania Household Health Survey which were based on 2000 Census Tract boundaries (**Error! Reference source not found.**). Dornsife School of Public Health (DSPH) aligned these neighborhoods with 2010 Census Tract boundaries (



Source:PHMC 2012 HHS Binder Appendix A

Figure 2). For the 2010 Census boundaries, the US Census designated special land-use tracts with little or no residential population and special characteristics such as large parks or employment areas (

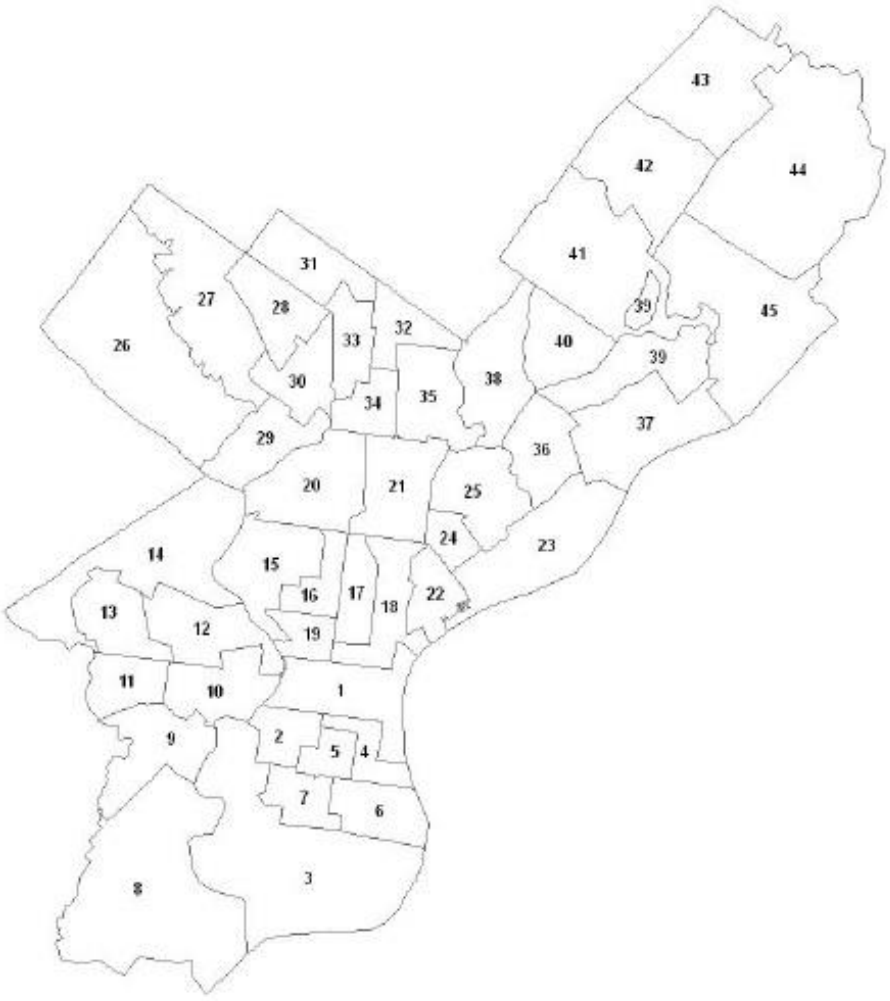
Table 1). These are shown with cross hatching in

Figure 3.

Excluding the special land use tracts and the Navy Yard, the population estimated for the 45 neighborhoods using 2012-2016 American Community Survey (ACS) ranges from 19,008 to 60,518 with an average of 34,559. DSPH proposed splitting Center City with population 60,518 along Broad Street into Center City East (population29,382) and Center City West (population 31,136) (

Figure 3). Center City East includes the OpenDataPhilly/Azavea neighborhoods Society Hill, Washington Square, Old City, Chinatown, Riverfront and Center City. Center City West includes Rittenhouse, Fitler Square and part of Logan Square. The populations of the proposed 46 neighborhoods are listed in Table 2.

Figure 1 Neighborhoods from Southeast Pennsylvania Household Health Survey



Source:PHMC 2012 HHS Binder Appendix A

Figure 2 Neighborhoods from Southeast Pennsylvania Household Health Survey based on 2010 Tracts

Figure 3 Proposed Neighborhoods

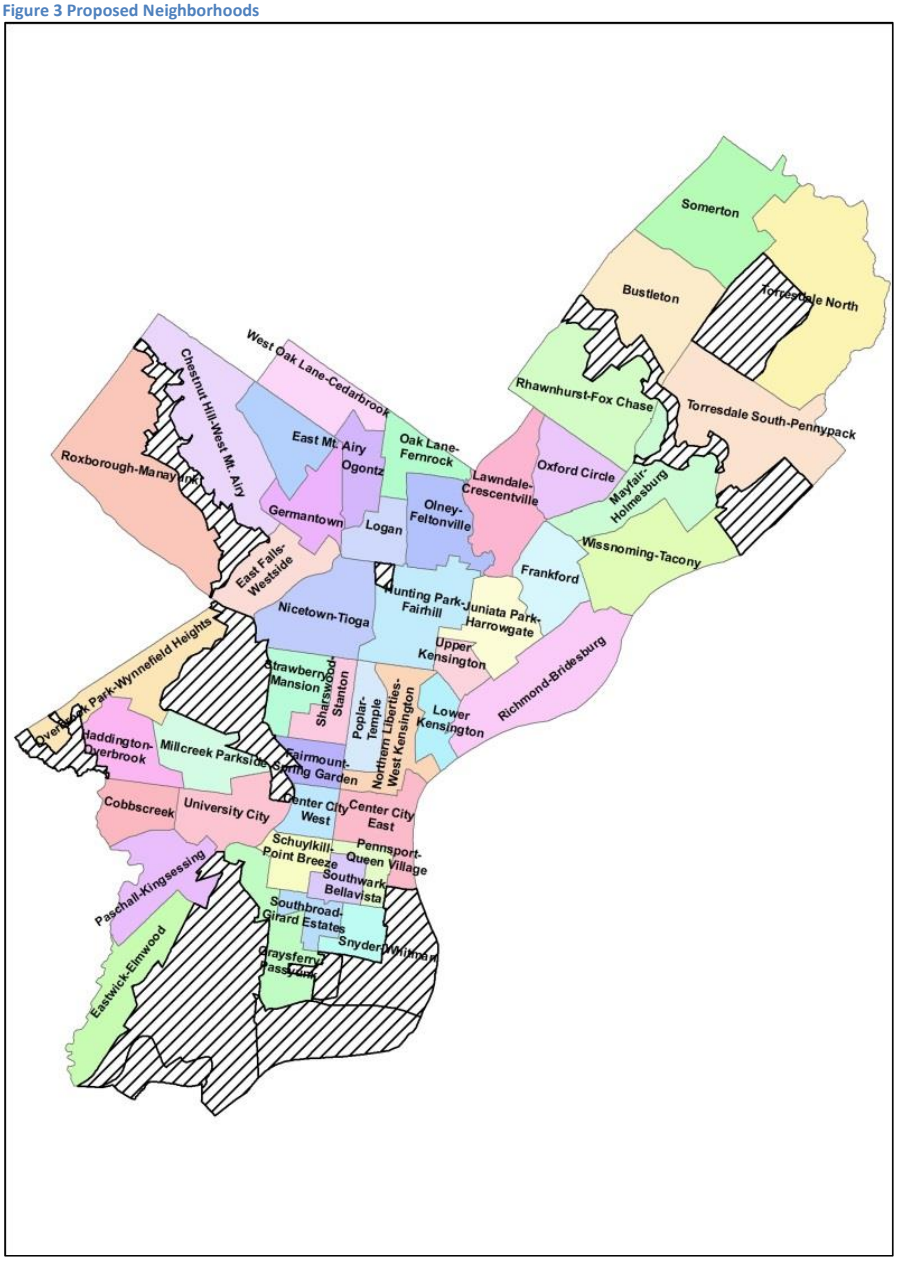


Table 1 Special Land Use Tracts and Navy Yard

2010 Tract ID	Description	Population	Under18	Over 64	Households
42101980000	Fairmount Park	1026	119	12	80
42101980100	Wissahickon Park	107	4	34	56
42101980200	Pennypack Park	715	102	324	121
42101980300	Northeast Airport	0	0	0	0
42101980400	International Airport	0	0	0	0
42101980500	Hunting Park	0	0	0	0
42101980600	Stadium District	0	0	0	0
42101980700	Industrial-Port	0	0	0	0
42101980800	Cobbs Creek Park	0	0	0	0
42101980900	Industrial - Refinery	4	0	4	4
42101989100	Prison Jail Detention Center	2926	82	33	0
42101005000	Navy Yard	0	0	0	0

Population estimates from 2012-2016 American Community Survey

Table 2 Proposed Neighborhood Population Estimates (ACS 2012-2016)

Neighborhood	Population	Under 18	Over 64	Households	Fraction ge65	Fraction lt18
Bustleton	31990	5815	7623	13280	0.24	0.18
Center City E	29382	2176	3857	15044	0.13	0.07
Center City W	31136	1909	5306	18972	0.17	0.06
Chestnut Hill - W. Mt. Airy	25197	4433	4964	10854	0.20	0.18
Cobbs Creek	39503	9152	5769	14119	0.15	0.23
East Falls - Westside	19008	3142	2254	8127	0.12	0.17
East Mt. Airy	24405	4963	4073	9579	0.17	0.20
Eastwick - Elmwood	30125	8084	3219	11213	0.11	0.27
Fairmount - Spring Garden	24379	2826	3063	11837	0.13	0.12
Frankford	33351	10123	2522	11265	0.08	0.30
Germantown	24938	6120	3763	9812	0.15	0.25
Grays Ferry - Passyunk	23087	4807	3895	9107	0.17	0.21
Haddington - Overbrook	49972	12476	6260	19055	0.13	0.25
Hunting Park - Fairhill	53206	16672	4360	16620	0.08	0.31
Juniata Park - Harrowgate	37989	13762	2317	11209	0.06	0.36
Lawndale - Crescentville	43303	13816	3575	13720	0.08	0.32
Logan	25264	7315	2710	8502	0.11	0.29
Lower Kensington	20577	3420	1725	8002	0.08	0.17
Mayfair - Holmesburg	52369	12719	7006	19626	0.13	0.24
Mill Creek - Parkside	33549	9870	4085	11703	0.12	0.29
Nicetown - Tioga	36992	8474	5148	15053	0.14	0.23
Northern Liberties - West Kensington	28983	5547	2046	10903	0.07	0.19
Oak Lane - Fernrock	21497	4608	2881	7661	0.13	0.21
Ogontz	28843	6437	4503	10097	0.16	0.22
Olney - Feltonville	54106	16607	3388	16134	0.06	0.31
Overbrook Park - Wynnefield Heights	37688	7104	6196	15191	0.16	0.19
Oxford Circle	51974	14780	4251	15806	0.08	0.28
Paschall - Kingsessing	40701	10436	5274	15582	0.13	0.26
Pennsport - Queen Village	23616	3843	2242	10237	0.09	0.16

Neighborhood	Population	Under 18	Over 64	Households	Fraction ge65	Fraction lt18
Poplar - Temple	22638	4599	2770	6903	0.12	0.20
Rhawnhurst - Fox Chase	49944	11020	8205	18582	0.16	0.22
Richmond - Bridesburg	22901	4249	2896	8898	0.13	0.19
Roxborough - Manayunk	43123	6294	5573	17665	0.13	0.15
Schuylkill - Point Breeze	28540	4658	3013	12175	0.11	0.16
Sharswood - Stanton	21816	3843	1991	7724	0.09	0.18
Snyder - Whitman	31685	7201	3954	10348	0.12	0.23
Somerton	33019	6608	6439	12727	0.20	0.20
South Broad - Girard Estates	31408	5898	4384	12252	0.14	0.19
Southwark - Bellavista	30461	4709	3663	11648	0.12	0.15
Strawberry Mansion	32617	9344	3620	12415	0.11	0.29
Torresdale North	43452	9127	7377	16235	0.17	0.21
Torresdale S. - Pennypack Park	40676	7739	7710	16448	0.19	0.19
University City	46664	3936	2503	14663	0.05	0.08
Upper Kensington	22960	7815	1205	7062	0.05	0.34
West Oak Lane - Cedarbrook	39272	7907	7536	14702	0.19	0.20
Wissinoming - Tacony	36854	9119	3809	13576	0.10	0.25

Table 3 Proposed Neighborhood Population Estimates (2010)

Neighborhood	Population 2010	Under 18	Over 64	Fraction ge65	Fraction lt18
Bustleton	32655	5750	7421	0.23	0.18
Center City E	29677	1784	3582	0.12	0.06
Center City W	29205	1532	4669	0.16	0.05
Chestnut Hill - W. Mt. Airy	24122	4178	4290	0.18	0.17
Cobbs Creek	37723	9566	5850	0.16	0.25
East Falls - Westside	20495	3718	2051	0.10	0.18
East Mt. Airy	23433	5365	3593	0.15	0.23
Eastwick - Elmwood	29629	8683	2748	0.09	0.29
Fairmount - Spring Garden	22676	2341	2763	0.12	0.10
Frankford	33799	10791	2322	0.07	0.32
Germantown	26674	6581	3581	0.13	0.25
Grays Ferry - Passyunk	21920	5330	3263	0.15	0.24
Haddington - Overbrook	47430	12665	5918	0.12	0.27
Hunting Park - Fairhill	53142	17039	3850	0.07	0.32
Juniata Park - Harrowgate	34405	11765	2234	0.06	0.34
Lawndale - Crescentville	38339	11362	3305	0.09	0.30
Logan	23018	6281	2503	0.11	0.27
Lower Kensington	19715	3841	1909	0.10	0.19
Mayfair - Holmesburg	54167	13532	7238	0.13	0.25
Mill Creek - Parkside	30555	8112	3709	0.12	0.27
Nicetown - Tioga	39407	9520	5308	0.13	0.24
Northern Liberties - West Kensington	26622	5732	2049	0.08	0.22
Oak Lane - Fernrock	19503	4352	2371	0.12	0.22
Ogontz	27874	6448	4200	0.15	0.23
Olney - Feltonville	49541	14973	3102	0.06	0.30
Overbrook Park - Wynnefield Heights	36266	6496	5778	0.16	0.18

Neighborhood	Population 2010	Under 18	Over 64	Fraction ge65	Fraction lt18
Oxford Circle	48860	14165	3931	0.08	0.29
Paschall - Kingsessing	43153	12413	4829	0.11	0.29
Pennsport - Queen Village	21629	3428	2144	0.10	0.16
Poplar - Temple	23471	4912	2463	0.10	0.21
Rhawnhurst - Fox Chase	46395	9360	8635	0.19	0.20
Richmond - Bridesburg	22429	4768	2915	0.13	0.21
Roxborough - Manayunk	41094	5372	5180	0.13	0.13
Schuylkill - Point Breeze	27334	5275	2915	0.11	0.19
Sharswood - Stanton	24479	4809	2116	0.09	0.20
Snyder - Whitman	28365	6204	3775	0.13	0.22
Somerton	33247	6253	6044	0.18	0.19
South Broad - Girard Estates	31142	6577	4476	0.14	0.21
Southwark - Bellavista	29679	4972	3649	0.12	0.17
Strawberry Mansion	34145	9378	3831	0.11	0.27
Torresdale North	44523	9840	6933	0.16	0.22
Torresdale S. - Pennypack Park	40629	7839	7653	0.19	0.19
University City	47566	3900	2490	0.05	0.08
Upper Kensington	21798	7718	1160	0.05	0.35
West Oak Lane - Cedarbrook	37512	8091	6432	0.17	0.22
Wissinoming - Tacony	37564	10540	3653	0.10	0.28

Summary of Neighborhood Indictors Selection

The following table lists the indicators included in the health atlas along with data sources and whether UHC or PDPH provided the indicators.

Table 4 Neighborhood Indicators selected in original workplan

Data Source	Year(s)	Indicators	UHC/PDPH	File location at UHC data was pulled from	Status
500 Cities Data CDC	2014 or 2015	- Asthma among adults ≥18 years (%) - Hypertension among adults ≥18 years (%) - High cholesterol among adults ≥18 years (%) - Cancer among adults ≥18 years (%) - Chronic kidney disease among adults ≥18 years (%) - COPD among adults ≥18 years (%) - Coronary heart disease among adults ≥18 years (%) - Diabetes among adults ≥18 years (%) - Stroke among adults ≥18 years (%) - Poor Mental Health among adults ≥18 years (%) - Poor Physical Health among adults ≥18 years (%) - Hypertension medication adherence among adults ≥18 years who have been diagnosed with hypertension (%) - Colon cancer screening among adults 50-75 years (%) - Mammography screening among female adults 50-74 years (%)	UHC	\UHC_Data\CDC_500_Cities\ SAS\ ct10cdc500citiesphl_13_14.sas7bdat	Complete with standard errors calculated

Data Source	Year(s)	Indicators	UHC/PDPH	File location at UHC data was pulled from	Status
		- Older adults ≥65 years up to date on core set of preventive services (%); by sex - Have a routine medical checkup (proxy for access to care) among adults ≥18 years (%) - Obesity among adults ≥18 years (%) - Tobacco use among adults ≥18 years (%) (current smoking) - Alcohol use among adults ≥18 years (%) (binge drinking) - No leisure time physical activity among adults ≥18 years (%)			
Vital Statistics Philadelphia Department of Public Health	2016	- Infant mortality (per 1,000 live birth) - Premature mortality (years of potential life lost per 100,000 population) - Life expectancy; by sex - Teen births (per 1,000 females 15-19) - Prenatal care access (% with inadequate care) - Homicides mortality rate (per 100,000 population) - Suicides (per 100,000 population) - Drug overdoses mortality (per 100,000 population) - Unintentional injury mortality rate (per 100,000 population) - Low birth weight (<2,500 Grams)	PDPH	\Projects\PDPH_500Cities\SAS\CT_Neighborhood crosswalks_Drexel (DSPH)_040219.xlsx \Projects\PDPH_500Cities\SAS\ Corrected Vitals Data.xlsx	Complete; Dropped the following: - All-cause mortality/leading causes of death - Cause-specific mortality rates for select causes

Data Source	Year(s)	Indicators	UHC/PDPH	File location at UHC data was pulled from	Status
Education School District of Philadelphia	2015-2016	- Reading proficiency % of K-2 students reading at grade level	UHC	\UHC_Data\Schools\RawData \SPR_SY1617_School_metric_ Scores_20180118.xlsx	Complete; Dropped Graduation rates
Education American Community Survey	2012-2016	- Educational attainment % ≥high school % ≥some college %≥bachelors degree	UHC	\UHC_Data\CensusACS12_16 \data\ census2012_2016_tract.sas7 bdat	Complete
Housing Housing Authority of Philadelphia	2016	- Low-income housing availability	PDPH		Dropped, unable to obtain
Housing American Community Survey	2012-2016	- Rent burden (>30% of income) - Housing cost burden (>30% of income) NOTE: changed from 35% to 30% per conversations with PDPH	UHC	\UHC_Data\CensusACS12_16 \data\ census2012_2016_tract.sas7 bdat	Complete
Housing Department of Licenses and Inspections	2015-2017 (Violations) 11/2/2018 (Unsafe & Imminently Dangerous)	- Housing code violations All violations from L&I per 1,000 housing units (all housing units) BCOCP* violations from L&I per 1,000 housing units (all housing units) - Imminently dangerous and unsafe buildings All housing and occupancy violations divided by occupied housing from ACS Unsafe and Imminently Dangerous buildings divided by occupied housing from ACS	UHC	\UHC_Data\Licensing_Inspect ions_PHL\SAS\ violations_11_2_18_ll_ct10.s as7bdat \Licensing_Inspections_PHL\c sv\Li_unsafe_19_ct10.csv LI_imm_dang_18_ct10.csv	Complete
Housing	2016	- Vacant properties	UHC	UHC_Data\Parcels_Property\ vacant_property_indicators\S	Complete

Data Source	Year(s)	Indicators	UHC/PDPH	File location at UHC data was pulled from	Status
Office of Innovation and Technology		Residential vacant parcels likely to be vacant divided by total residential parcels Residential parcels likely to have vacant buildings divided by total residential parcels		AS\CT10vact_phl_18.sas7bdat	
Violent Crime FBI Crime Reports	2017	- Violent crime rates FBI Violent crime (does not include other assaults) per 10,000 population - Homicides per 10,000 population	UHC	\UHC_Data\Crime\Crime_PHL_9_7_18\SAS\ct10crimerate_phl_06_17.sas7bdat	Complete
Demographics American Community Survey	2012-2016	- Race/ethnicity % Black Non-Hispanic % White Non-Hispanic % Asian Non-Hispanic % Other races Non-Hispanic % Hispanic - Poverty % Children <18 living below the poverty level % Persons living below the poverty level (all ages) - Income inequality Index of Concentration at the Extremes (ICE) - Health insurance coverage (All ages) % with Private insurance % with Public insurance % with No insurance - Single parent households % of households which are single parent (male or female)	UHC	\UHC_Data\CensusACS12_16\data\census2012_2016_tract.sas7bdat	Complete; Dropped median household income.

Data Source	Year(s)	Indicators	UHC/PDPH	File location at UHC data was pulled from	Status
Workforce American Community Survey	2012-2016	- Unemployment % unemployed among persons ages ≥16 in the labor force	UHC	\UHC_Data\CensusACS12_16 \data\ census2012_2016_tract.sas7 bdat	Complete
USDA USDA food access atlas	2015	- Share (%) of population that are beyond ½ mile from a supermarket - Share (%) of population that are beyond 1 mile from a supermarket	UHC	\UHC\ResearchAndData\UHC _Data\Food_Access\USDA_Fo od_Access\USDA_Food_Acce ss_2015\RawData	Complete
PDPH		Sexually transmitted disease	PDPH		Dropped, unable to obtain
PDPH	2016	- PCP ratio Population per primary care provider (ie: number of persons per provider)	PDPH	\Projects\PDPH_500Cities\SA S\2016 Pop to Provider Ratios.xlsx	Complete
City Health Dashboard	2012-2016	- Lead Risk Percent of housing with potential lead risk	UHC	\UHC_Data\City_Health_Das hboard\SAS\chdashboard_tra ct.sas7bdat	Complete
Transit American Community Survey	2012-2016	- Long commute time % of workers age ≥16 who commute ≥ 60 minutes - Driving alone to work % of workers age ≥16 who drive alone to work	UHC	\UHC_Data\CensusACS12_16 \data\ census2012_2016_tract.sas7 bdat	Complete
City Health Dashboard Walk Score	2018	- Percent of population with Walk Score of 70 or more (very walkable) - Percent of population with Walk Score of 90 or more (walker's paradise) - Walk Score weighted by land area	PDPH	\Projects\PDPH_500Cities\SA S\Walkability score by census tract.xlsx	Complete

*__BCOCP = B__uilding __C__onstruction and __O__ccupancy & __C__ommunity Life Improvement __P__rogram violations

Neighborhood Rankings Based on County Health Rankings

County Health Rankings (CHR) Methodology

Overview

"The County Health Rankings are compiled from many different types of data. To calculate the ranks, we first standardize each of the measures. The ranks are then calculated based on weighted sums of the standardized measures within each state. The county with the lowest score (best health) gets a rank of #1 for that state and the county with the highest score (worst health) is assigned a rank corresponding to the number of places we rank in that state." (http://www.countyhealthrankings.org/explore-health-rankings/our-methods)[1]

Detailed Methods

Source: http://www.countyhealthrankings.org/explore-health-rankings/our-methods/calculating-scores-and-ranks

Standardizing Measures

"We standardize each measure within each state to the average of counties in that state. Recall that our measures are in a number of different scales—some are percentages, some are rates, some are averages of survey responses, or other metrics. Standardizing each of these measures transforms them to the same metric—a mean (average) value of 0 and a standard deviation (measure of spread) of 1. We refer to these as Z-scores where:

$$Z = \frac{\text{(County Value) - (Average of Counties in State)}}{\text{(Standard Deviation of Counties in State)}}$$

Each Z-score is relative to the other counties in that state—not compared to an absolute standard—and shown in the metric of standard deviations. A positive Z-score indicates a value higher than the average of counties in that state; a negative Z-score indicates a value for that county lower than the average of counties in that state. For example, if a county has a Z-score on a measure of 1.2 that means the county is 1.2 standard deviations above the state average of counties for that measure. For counties with a population of 20,000 or less, any z-score that is < -3.0 or > 3.0 is truncated to -3.0 or 3.0, respectively."

Reverse Coding

For most of the measures, a higher Z-score score indicates poorer health (e.g., years of potential life lost before age 75). However, for some of our measures (e.g., high school graduation) a higher score indicates better health or a more desirable value. We have to take this into account before computing summary scores. For these measures we compute the Z-score as usual but multiply it by -1, so that higher scores indicate poorer health. The measures that we reverse code in this manner are:

- Food environment index

- Access to exercise opportunities
- Diabetes monitoring
- Mammography screening
- High school graduation
- Some college (post-secondary education)
- Social associations

Composite Scores

The scores we compute are weighted composites of the Z-scores for individual measures where the weights represent relative importance of the different measures. A weighted composite is computed by multiplying each Z-score by its weight and adding them up. Below is the formula we use for our weighted composite scores:

$$\text{Composite}=\sum w_i Z_i$$

In this formula the Z_i values are the Z-scores of the measures used to compute the summary score. The wi values are the weights applied to each Z-score. The ∑ sign simply means to add up all the Z-scores multiplied by their weights.

All of the summary scores we compute use the formula above, standardized Z-scores for each measure (reverse coded when necessary), and the weights described in previous sections. Remember that we always compute composite scores separately by state.

Ranking

After we compute composite scores we sort them from lowest to highest within each state. The lowest score (best health) gets a rank of #1 for that state and the highest score (worst health) gets whatever rank corresponds to the number of units we rank in that state.

It is important to note that we do not suggest that the rankings themselves represent statistically significant differences from county to county. That is, the top ranked county in a state (#1) is not necessarily significantly healthier than the second ranked county (#2). See the next section about quartiles for more information.

Quartiles

To de-emphasize the differences between individual county ranks, we also group counties into quartiles according to their Health Outcomes and Health Factors ranks separately. For each set of ranks there are four quartiles that divide up all the units within the state into the top 25%, the second from top 25%, the second from bottom 25%, and the bottom 25%. The top 25% are the healthiest counties with the best ranks, the bottom 25% are the least healthy counties with the worst ranks, and the other two quartiles are in between. We provide color-coded maps of the Health Outcomes and Health Factors summary scores by quartile to see the distribution of ranks within each state.

Weight of each indicator

- Health Outcomes (each county gets a rank in this):
    - Length of Life (50%)

        - Premature Death (50%)
    - Quality of Life (50%)
        - Poor or fair health (10%)
        - Poor physical health days (10%)
        - Poor mental health days (10%)
        - Low birthweight (20%)
- Health Factors (each county gets a rank in this):
    - Health Behaviors (30%)
        - Adult smoking (10%)
        - Adult obesity (5%)
        - Food Environment index (2%)
        - Physical inactivity (2%)
        - Access to exercise opportunities (1%)
        - Excessive drinking (2.5%)
        - Alcohol-impaired driving deaths (2.5%)
        - Sexually transmitted infections (2.5%)
        - Teen births (2.5%)
    - Clinical Care (20%)
        - Uninsured (5%)
        - Primary care physicians (3%)
        - Dentists (1%)
        - Mental health providers (1%)
        - Preventable hospital stays (5%)
        - Diabetes monitoring (2.5%)
        - Mammography screening (2.5%)
    - Social & Economic Factors (40%)
        - HS graduation (5%)
        - Some College (5%)
        - Unemployment (10%)
        - Children in poverty (7.5%)
        - Income inequality (2.5%)
        - Children in single-parent households (2.5%)
        - Social associations (2.5%)
        - Violent crime (2.5%)
        - Injury deaths (2.5%)
    - Physical Environment (10%)
        - Air pollution particulate (2.5%)
        - Drinking water violations (2.5%)
        - Severe housing problems (2%)
        - Driving alone to work (2%)
        - Long commute driving alone (1%)

Ranking System

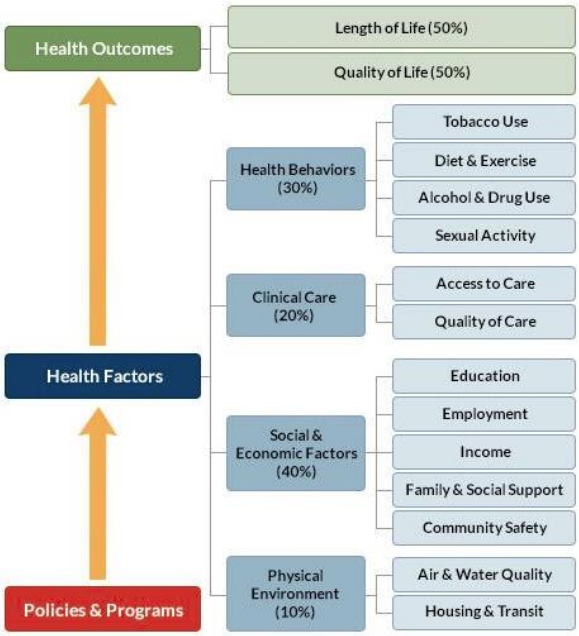


Image from: http://www.countyhealthrankings.org/explore-health-rankings/our-methods

Weights were determined using five primary methods: 1) historic perspective 2) literature review 3) weighting schemes by other health rankings 4) analytic approach and 5) pragmatic approach (stakeholder engagement). These were summarized below[2].

Summary of Different Perspectives on Assigning Weights to Determinants of Health

	Historical Perspective	Literature Review	Other Rankings*			Analytic Approach	Pragmatic Approach	*County Health Rankings*
			AHR	WI, KS, TN	NM			
Social and economic factors	Increasing importance ↑	21% (up to 8x clinical care)	27%	40%	40%	55%	25%	40%
Health behaviors		57%	37%	40%	40%	37%	25%	30%
Clinical care		14% (up to 50%)	27%	10%	15%	21%	25%	20%
Environmental factors		7%	9%	10%	5%	-3%	25%	10%

*AHR = America's Health Rankings; the four other rankings were done within the states of Wisconsin, Kansas, Tennessee, and New Mexico

Philadelphia Neighborhood Health Ranking (NHR):

Overview

We followed CHR process to create neighborhood health rankings (NHR) for Philadelphia. Broadly, we identified data that matched CHR ranking metrics, then compiled them according to the categories/domains used in CHR. From there we followed the same process to create the composite indictors and display quartiles:

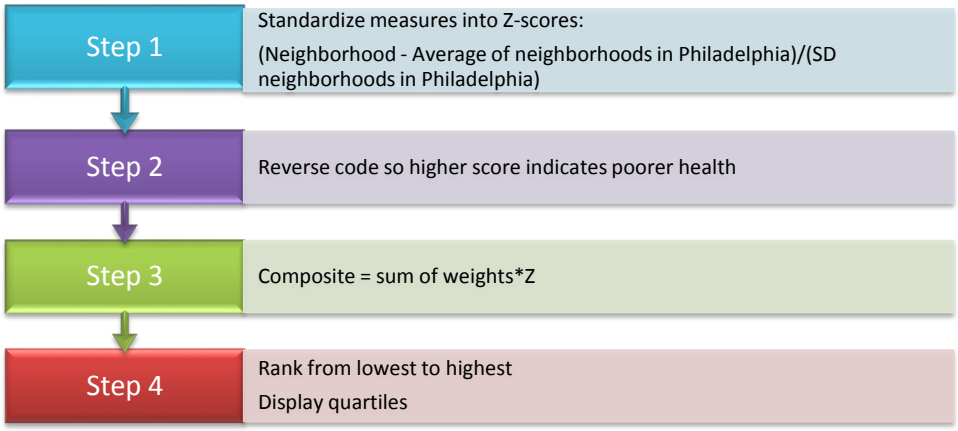


Table 5 Included indicators (matched to CHR)

Category	Sub-Category	County Health Ranking	Philadelphia NHR
Length of Life/Mortality (50%)		Premature Death	Life expectancy; by sex (male and female)
Quality of Life/Morbidity (50%)		Poor physical health days	Poor Physical Health among adults ≥18 years (%)
		Poor mental health days	Poor Mental Health among adults ≥18 years (%)
		Low birthweight	% of births that are low birth weight (<2,500 Grams)
		Poor or fair health	Asthma among adults ≥18 years (%)
			Hypertension among adults ≥18 years (%)
			High cholesterol among adults ≥18 years (%)
			Cancer among adults ≥18 years (%)
			Chronic kidney disease among adults ≥18 years (%)
			COPD among adults ≥18 years (%)
			Coronary heart disease among adults ≥18 years (%)
			Diabetes among adults ≥18 years (%)
			Stroke among adults ≥18 years (%)

Category	Sub-Category	County Health Ranking	Philadelphia NHR
Health Behaviors (30%)	Tobacco Use (10%)	Adult smoking	Tobacco use among adults ≥18 years (%) (current smoking)
	Diet and Exercise (10%)	Adult obesity	Obesity among adults ≥18 years (%)
		Food environment index	Share (%) of population that are beyond ½ mile from a supermarket
		Physical inactivity	No leisure time physical activity among adults ≥18 years (%)
		Access to exercise opportunities	None available
	Alcohol and Drug Use (5%)	Excessive drinking	Alcohol use among adults ≥18 years (%) (binge drinking)
		Alcohol-impaired driving deaths	None available
			Drug overdoses mortality (per 100,000 population)
	Sexual Activity (5%)	Sexually transmitted infections	None available

Category	Sub-Category	County Health Ranking	Philadelphia NHR
		Teen births	Teen births (per 1,000 females 15-19)
Clinical Care (20%)	Access to Care (10%)	Uninsured	% with No health insurance
		Primary care physicians	Population per primary care provider
		Dentists	None available
		Mental health providers	None available
			Prenatal care access (% with inadequate care)
			Have a routine medical checkup (proxy for access to care) among adults ≥18 years (%)
	Quality of Care (10%)	Preventable hospital stays	Older adults ≥65 years up to date on core set of preventive services (%); by sex (male and female)
		Diabetic monitoring	None available
		Mammography screening	Mammography screening among female adults 50-74 years (%)
			Hypertension medication adherence among adults ≥18 years who have been diagnosed with hypertension (%)
Social and Economic Factors (40%)	Education (10%)	High School graduation	Reading proficiency: % of K-2 students reading at grade level
		Some College	Educational attainment (% ≥some college)
	Employment (10%)	Unemployment	Unemployment: % unemployed among persons ages ≥16 in the labor force
	Income (10%)	Children in poverty	Poverty: % Children <18 living below the poverty level – change to child poverty
		Income inequality	Income inequality: Index of Concentration at the Extremes (income)
	Family and Social Support (5%)	Children in single-parent households	% of households which are single parent (male or female)
		Social associations	None available
	Community Safety (5%)	Violent Crime	FBI Violent crime per 10,000 population
		Injury Deaths	Unintentional injury mortality rate (per 100,000 population)

Category	Sub-Category	County Health Ranking	Philadelphia NHR
			Homicides per 10,000 population
Physical Environment (10%)	Air and Water Quality (5%)	Air pollution-particulate matter	None available
		Drinking water violations	None available
	Housing and Transit (5%)	Severe housing problems	Housing code violations: All violations from L&I per 1,000 housing units
		Driving alone to work	% of workers age ≥16 who drive alone to work
		Long commute - driving alone	% of workers age ≥16 who commute ≥ 60 minutes
			Walkability (Walk Score® weighted by land area)
			Residential parcels likely to have vacant buildings divided by total residential parcels

Instructions

Standardizing Indicators

Similar to CHR, we standardize each indicator to the average of neighborhoods in the city. We recommend that if your city boundaries cover multiple counties, these z-scores may want to be done for each neighborhood within each county (standardized to the county average). Just as CHR needs standardization to equalize rates/survey responses/metrics, our neighborhood rankings have similar breadth of indicators. Standardizing each of these indicators transforms them to the same metric—a mean (average) value of 0 and a standard deviation (measure of spread) of 1. We refer to these as Z-scores where:

$$Z = \frac{\text{(Neighborhood Value) - (Average of Neighborhoods in City)}}{\text{(Standard Deviation of Neighborhood in City)}}$$

Each Z-score is relative to the other neighborhoods in Philadelphia—not compared to an absolute standard—and shown in the metric of standard deviations. A positive Z-score indicates a value higher than the average of neighborhoods in Philadelphia; a negative Z-score indicates a value for that neighborhood lower than the average of neighborhoods in Philadelphia. Using the same example as CHR, if a neighborhood has a Z-score on a indicator of 1.2 that means the neighborhood is 1.2 standard deviations above the city average of neighborhoods for that indicator. For indicators where the denominator for the neighborhood is 2000 or less, any z-score that is < -3.0 or > 3.0 is truncated to -3.0 or 3.0, respectively.

Reverse Coding

We followed CHR and reverse coded indicators so that **higher Z-score scores indicate poorer health**. The following indicators were multiplied by -1 (reverse coded):

- Life expectancy; by sex (male and female)
- Have a routine medical checkup (proxy for access to care) among adults ≥18 years (%)
- Older adults ≥65 years up to date on core set of preventive services (%); by sex (male and female)
- Mammography screening among female adults 50-74 years (%)
- Hypertension medication adherence among adults ≥18 years who have been diagnosed with hypertension (%)
- Reading proficiency: % of K-2 students reading at grade level
- Educational attainment (% ≥some college)
- Income inequality: Index of Concentration at the Extremes (income)
- Walkability (Walk Score® weighted by land area)

Composite Scores

The final scores are weighted composites of the Z-scores for individual indicators where the weights represent relative importance of the different indicators. The weighted composite is computed by

multiplying each Z-score by its weight and summing them. Below is the formula we used for our weighted composite scores (same as CHR):

$$Composite=\sum w_i Z_i$$

In this formula the Z_i values are the Z-scores of the indicators used to compute the summary score. The w_i values are the weights applied to each Z-score. The $\sum$ sign simply means to add up all the Z-scores multiplied by their weights.

All of the summary scores we compute use the formula above, standardized Z-scores for each indicator (reverse coded when necessary), and the weights described in previous sections.

Weight of each indicator

We assigned weights to each indicator using the CHR as guidance. As shown in the chart below, often this was assignment of the same weight to functionally the same indicator. Sometimes, we had more than the number of indicators previously used to represent a domain, in which case weights were assigned proportionally.

Table 6 Health Outcomes Indicators

Weight in CHR	Indicator in CHR	Indicator in NHR	Weight in NHR
50	Premature Death	Life expectancy; male	25
		Life expectancy; female	25
10	Poor physical health days	Poor Physical Health among adults ≥18 years (%)	10
10	Poor mental health days	Poor Mental Health among adults ≥18 years (%)	10
20	Low birthweight	% of births that are low birth weight (<2,500 Grams)	20
10	Poor or fair health	Asthma among adults ≥18 years (%)	1
		Hypertension among adults ≥18 years (%)	1
		High cholesterol among adults ≥18 years (%)	1
		Cancer among adults ≥18 years (%)	1.5[a]
		Chronic kidney disease among adults ≥18 years (%)	1
		COPD among adults ≥18 years (%)	1
		Coronary heart disease among adults ≥18 years (%)	1.5[a]
		Diabetes among adults ≥18 years (%)	1
		Stroke among adults ≥18 years (%)	1

[a]Cancer and Heart Disease were given more weight because they are the top 2 causes of death in the U.S.

Table 7 Health Factors Indicators

Broad Category	Sub-Category	Weight in CHR	Indicator in CHR	Indicator in NHR	Weight in NHR
Health Behaviors (30%)	Tobacco Use (10%)	10	Adult smoking	Tobacco use among adults ≥18 years (%) (current smoking)	10
	Diet and Exercise (10%)	5	Adult obesity	Obesity among adults ≥18 years (%)	5
		2	Food environment index	Share (%) of population that are beyond ½ mile from a supermarket	2
		2	Physical inactivity	No leisure time physical activity among adults ≥18 years (%)	3[b]
		1	Access to exercise opportunities	None available	0[b]

Broad Category	Sub-Category	Weight in CHR	Indicator in CHR	Indicator in NHR	Weight in NHR
	Alcohol and Drug Use (5%)	2.5	Excessive drinking	Alcohol use among adults ≥18 years (%) (binge drinking)	2.5
		2.5	Alcohol-impaired driving deaths	None available	0[c]
		0		Drug overdoses mortality (per 100,000 population)	2.5[c]
	Sexual Activity (5%)	2.5	Sexually transmitted infections	None available	0[d]
		2.5	Teen births	Teen births (per 1,000 females 15-19)	5[d]
Clinical Care (20%)	Access to Care (10%)	5	Uninsured	% with No health insurance	5
		3	Primary care physicians	PCP ratio: Population per primary care provider (ie: number of persons per provider)	3
		1	Dentists	None available	0[e]
		1	Mental health providers	None available	0[e]
		0		Prenatal care access (% with inadequate care)	1[e]
		0		Have a routine medical checkup (proxy for access to care) among adults ≥18 years (%)	1[e]
	Quality of Care (10%)	5	Preventable hospital stays	Older adults ≥65 years up to date on core set of preventive services (%); male	2.5
				Older adults ≥65 years up to date on core set of preventive services (%); female	2.5
		2.5	Diabetic monitoring	None available	0[f]
		2.5	Mammography screening	Mammography screening among female adults 50-74 years (%)	2.5

Broad Category	Sub-Category	Weight in CHR	Indicator in CHR	Indicator in NHR	Weight in NHR
		0		Hypertension medication adherence among adults ≥18 years who have been diagnosed with hypertension (%)	2.5[f]
Social and Economic Factors (40%)	Education (10%)	5	High School graduation	None available	0[g]
		5	Some College	Educational attainment (% ≥some college)	5
		0		Reading proficiency: % of K-2 students reading at grade level *(represents school quality)*	5[g]
	Employment (10%)	10	Unemployment	Unemployment: % unemployed among persons ages ≥16 in the labor force	10
	Income (10%)	7.5	Children in poverty	Poverty: % Children <18 living below the poverty level	7.5
		2.5	Income inequality	Income inequality: Index of Concentration at the Extremes (ICE)	2.5
	Family and Social Support (5%)[h]	2.5	Children in single-parent households	% of households which are single parent (male or female)	5[h]
		2.5	Social associations	None available	0[h]
	Community Safety (5%)	2.5	Violent Crime	FBI Violent crime per 10,000 population	1.5[i]
		2.5	Injury Deaths	Unintentional injury mortality rate (per 100,000 population)	2.5
		0		Homicides per 10,000 population	1[i]
Physical Environment (10%)[j]	Air and Water Quality (5%)[j]	2.5	Air pollution-particulate matter	None available	0[j]
		2.5	Drinking water violations	None available	0[j]
	Housing and Transit (5%)[j]	2	Severe housing problems	Housing code violations: All violations from L&I per 1,000 housing units	2

Broad Category	Sub-Category	Weight in CHR	Indicator in CHR	Indicator in NHR	Weight in NHR
		2	Driving alone to work	Driving alone to work: % of workers age ≥16 who drive alone to work	2
		1	Long commute - driving alone	Long commute time: % of workers age ≥16 who commute ≥ 60 minutes	2
		0		Walkability (Walk Score® weighted by land area)	2[j]
		0		Residential parcels likely to have vacant buildings divided by total residential parcels	2[j]

[b]Since our indicator does not have access to physical activity facilities, we gave additional weight to physical activity itself (i.e. the 1% from access is added to the 2% for physical activity to equal 3%)

[c]Since we do not have alcohol induced driving deaths, and we wanted to capture alcohol & drug use, we have substituted drug overdose deaths.

[d]Since we did not have STI rates, teen pregnancy captures all of the weight for the sexual activity category

[e]Dentists and mental health providers were not available so we substituted prenatal care access and access to care among adults.

[f]Since we did not have diabetes monitoring, we substituted hypertension control (as an indicator of chronic disease management)

[g]We used reading performance to represent school quality, since HS graduation rates are not as salient in Philadelphia where a majority of students do not go to neighborhood HS. See other documentation (Pew Report: https://www.pewtrusts.org/en/research-and-analysis/reports/2017/09/getting-into-high-school-in-philadelphia)

[h]We were unable to get social associations so single parent households represent all of family structure. The broad category should be renamed to just "Family Support" or collapsed into a different SES category

[i]To include homicides we took some weight away from violent crimes (since homicides are closer to violent crimes than to injury deaths).

[j]Air and water metrics were unavailable at this scale. As such, we have removed sub-headers within the physical environment section. The 5% for air and water have been reallocated so that each of our five indicators within physical environment are equally weighting.

Figure 4 shows the scatterplot of the health outcomes vs. health factors ranking scores. The correlation between the scores is 0.898.

Figure 4 Scatterplot of health outcomes vs health factors ranking scores

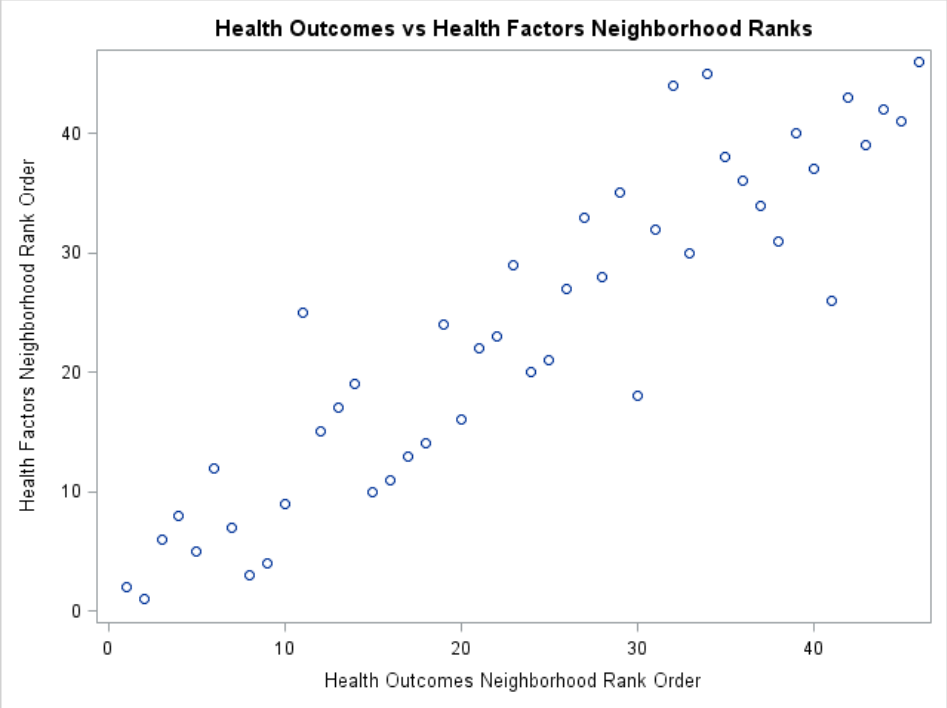
Ranking

After we compute composite scores we sort them from lowest to highest within Philadelphia. The lowest score (best health) gets a rank of #1 for that state and the highest score (worst health) gets 46 corresponding to the number of neighborhoods ranked within Philadelphia.

Same as CHR, the rankings themselves do not represent statistically significant differences from neighborhood to neighborhood.

Figure 5 shows the scatterplot of the health outcomes vs. health factors ranking order. The correlation between the scores is 0.914.

Figure 5 Scatterplot of health outcomes vs health factors ranking order



Quartiles

To de-emphasize the differences between individual neighborhood ranks, we grouped neighborhoods into quartiles according to their Health Outcomes and Health Factors ranks separately. For each set of ranks there are four quartiles that divide up neighborhoods into the top 25%, the second from top 25%, the second from bottom 25%, and the bottom 25%. The top 25% are the healthiest neighborhoods with the best ranks, the bottom 25% are the least healthy neighborhoods with the worst ranks, and the other two quartiles are in between. We provide color-coded maps of the Health Outcomes and Health Factors summary scores by quartile to see the distribution of ranks (**Error! Reference source not found.**). Table 8 shows the crosstabs of the quartiles of health outcomes vs health factors ranks.

Figure 6 Neighborhood Health Rankings by Quartiles

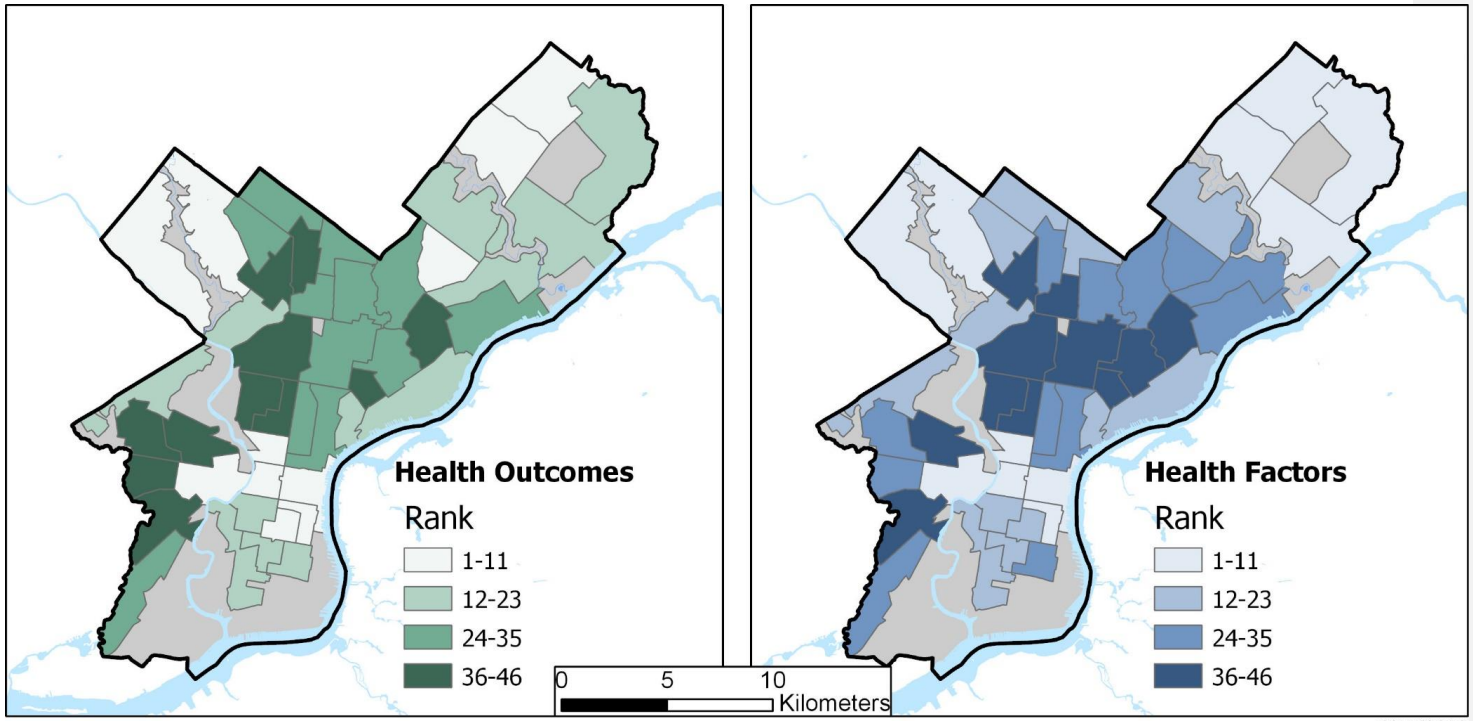


Table 8 Health Outcomes vs Health Factors Quartiles

		Health Factors Ranking Quartiles				
Frequency Percent Row Pct Col Pct		**1 (Better)**	**2**	**3**	**4 (Worse)**	**Total**
Health Outcomes Ranking Quartiles	**1 (Better)**	9 19.57 81.82 81.82	1 2.17 9.09 8.33	1 2.17 9.09 8.33	0 0.00 0.00 0.00	11 23.91
	2	2 4.35 16.67 18.18	8 17.39 66.67 66.67	2 4.35 16.67 16.67	0 0.00 0.00 0.00	12 26.09
	3	0 0.00 0.00 0.00	3 6.52 25.00 25.00	6 13.04 50.00 50.00	3 6.52 25.00 27.27	12 26.09
	4 (Worse)	0 0.00 0.00 0.00	0 0.00 0.00 0.00	3 6.52 27.27 25.00	8 17.39 72.73 72.73	11 23.91
	Total	11 23.91	12 26.09	12 26.09	11 23.91	46 100.00

SAS Code:

STEP_m_create Z scores_2019_05_08.sas
STEP_n_create rankings_2019_05_13.sas

Definitions and Creation of Neighborhood Indicators

Most of the data sources used for this project provide data at the census tract level. The methods for aggregation and definitions of variables are provided in the sections below. Indicators were created and saved as SAS datasets. Three datasets were created:

1. Rankings dataset. This dataset has one row per neighborhood (N=46) and contains:
    a. Neighborhood score calculated from weighted z-scores
    b. Neighborhood ranking (1-46): low is "better" neighborhood
    c. Neighborhood ranking quartile (1-4): low is "better" neighborhood
2. Neighborhood-level dataset. This dataset has one row per neighborhood (N=46) and contains:
    a. All created indicators (Estimates)
    b. The standard deviation of the census tracts within that neighborhood (SD_). NOTE: this should not be used as a measure for statistical tests comparing neighborhoods. This is only included as a check of variability within the neighborhood.
    c. Minimum and Maximum values of census tracts within that neighborhood (MIN_; MAX_)
    d. For indicators were a standard error was provided in the source data, a standard error was calculated (SE_)
3. Census tract-level dataset. This dataset has one row per census tract with the ID/Name of the neighborhood it belongs to. This contains:
    a. Estimates of created indicators for census tracts.
    b. Standard errors as provided by the source data if applicable.

Population Estimates

Estimates of population and number of housing units were used as the denominator for rates per person (such as crime indicators) or to calculate population weights for indicators that were provided as percentages (such as CDC 500 Cities indicators, USDA Food Access Atlas). Population and housing unit data was obtained from the American Community Survey (ACS) 5-year aggregated data for years 2012-2016 or U.S. 2010 Census[3].

500 Cities Data

Information on health outcomes, prevention, and unhealthy behaviors from calendar year 2014 were obtained from the 500 Cities: Local Data for Better Health Project (maintained by the Center for Disease Control and Prevention)[4]. For the 500 Cities project, small area estimates for census tracts were derived from multi-level statistical models with a poststratification approach[5, 6]. Definitions for the indicators are in Table 9.

Table 9 Indicators definitions for indicators derived from 500 Cities: Local Data for Better Health

More details on the definitions can be found on the 500 Cities website: https://www.cdc.gov/500cities/measure-definitions.htm

Indicators	Numerator	Denominator	Population for Weighted Estimates
Asthma among adults ≥18 years (%)	Weighted number of respondents who answer "yes" both to both of the following questions: "Have you ever been told by a doctor, nurse, or other health professional that you have asthma?" and the question "Do you still have asthma?"	Weighted number of respondents to BRFSS excluding "don't know" and "refused" responses to the question "Have you ever been told you have asthma?".	U.S. 2010 Census: All adults age 18 and over
Hypertension among adults ≥18 years (%)	Respondents aged ≥18 years who report ever having been told by a doctor, nurse, or other health professional that they have high blood pressure. Women who were told high blood pressure only during pregnancy and those who were told they had borderline hypertension were not included.	Respondents age ≥18 years (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
High cholesterol among adults ≥18 years (%)	Respondents aged ≥18 years who report having been told by a doctor, nurse, or other health professional that they had high cholesterol.	Respondents age ≥18 years who report having their cholesterol checked within the past 5 years (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
Cancer among adults ≥18 years (%)	Respondents aged ≥18 years who report ever having been told by a doctor, nurse, or other health professional that they have any other types (besides skin) of cancer.	Respondents age ≥18 years (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
Chronic kidney disease among adults ≥18 years (%)	Respondents aged ≥18 years who report ever having been told by a doctor, nurse, or other health professional that they have kidney disease.	Respondents age ≥18 years who report or do not report ever having been told by a doctor, nurse, or other health professional that they have kidney disease (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
COPD among adults ≥18 years (%)	Respondents aged ≥18 years who report ever having been told by a doctor, nurse, or other health professional that they had chronic obstructive pulmonary disease (COPD), emphysema, or chronic bronchitis.	Respondents age ≥18 years who report or do not report ever having been told by a doctor, nurse, or other health professional that they had COPD, emphysema, or chronic bronchitis (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over

Indicators	Numerator	Denominator	Population for Weighted Estimates
Coronary heart disease among adults ≥18 years (%)	Respondents aged ≥18 years who report ever having been told by a doctor, nurse, or other health professional that they had angina or coronary heart disease.	Respondents age ≥18 years who report or do not report ever having been told by a doctor, nurse, or other health professional that they had angina or coronary heart disease (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
Diabetes among adults ≥18 years (%)	Respondents aged ≥18 years who report ever been told by a doctor, nurse, or other health professional that they have diabetes other than diabetes during pregnancy.	Respondents age ≥18 years who report or do not report ever having been told by a doctor, nurse, or other health professional that they had diabetes (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
Stroke among adults ≥18 years (%)	Respondents aged ≥18 years who report ever having been told by a doctor, nurse, or other health professional that they have had a stroke.	Respondents age ≥18 years who report or do not report ever having been told by a doctor, nurse, or other health professional that they had stroke (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
Poor Mental Health among adults ≥18 years (%)	Respondents aged ≥18 years who report 14 or more days during the past 30 days during which their mental health was not good.	Respondents age ≥18 years who report or do not report the number of days during the past 30 days during which their mental health was not good (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
Poor Physical Health among adults ≥18 years (%)	Respondents aged ≥18 years who report 14 or more days during the past 30 days during which their physical health was not good.	Respondents age ≥18 years who report or do not report the number of days during the past 30 days during which their physical health was not good (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
Hypertension medication adherence among adults ≥18 years who have been diagnosed with hypertension (%)	Respondents aged ≥18 years who report taking medicine for high blood pressure.	Respondents age ≥18 years who report having been told by a doctor, nurse, or other health professional of having high blood pressure other than during pregnancy (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: Respondents aged ≥18 years who report ever having been told by a doctor, nurse, or other health professional that they have high blood pressure. Women who were told high blood pressure only during pregnancy and those who were told they had

Indicators	Numerator	Denominator	Population for Weighted Estimates
			borderline hypertension were not included.
Colon cancer screening among adults 50-75 years (%)	Respondents aged 50–75 years who report having had 1) a fecal occult blood test (FOBT) within the past year, 2) a sigmoidoscopy within the past 5 years and a FOBT within the past 3 years, or 3) a colonoscopy within the past 10 years.	Respondents age 50-75 years who report ever having or never having an FOBT, siqmoidoscopy, or colonoscopy (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 50-74 Due to age groups provided in U.S. Census data, the age range was restricted in 50-74 rather than 50-75
Mammography screening among female adults 50-74 years (%)	Female respondents aged 50-74 years who report having had a mammogram within the previous 2 years.	Female respondents age 50-74 years who report ever having or never having had a mammogram (excluding unknowns and refusals)	U.S. 2010 Census: All female adults age 50-74
Older adults ≥65 years up to date on core set of preventive services (%); female	Number of women aged ≥65 years reporting having received all of the following: an influenza vaccination in the past year; a pneumococcal vaccination (PPV) ever; either a fecal occult blood test (FOBT) within the past year, a sigmoidoscopy within the past 5 years and a FOBT within the past 3 years, or a colonoscopy within the previous 10 years; and a mammogram in the past 2 years.	Number of women age ≥65	U.S. 2010 Census: All female adults age 65 and over
Older adults ≥65 years up to date on core set of preventive services (%); male	Number of men aged ≥65 years reporting having received all of the following: an influenza vaccination in the past year; a PPV ever; and either a fecal occult blood test (FOBT) within the past year, a sigmoidoscopy within the past 5 years and a FOBT within the past 3 years, or a colonoscopy within the past 10 years.	Number of men age ≥65	U.S. 2010 Census: All male adults age 65 and over
Have a routine medical checkup (proxy for access to care) among adults ≥18 years (%)	Respondents aged ≥18 years who report having been to a doctor for a routine checkup (e.g., a general physical exam, not an exam for a specific injury, illness, condition) in the previous year.	Respondents age ≥18 years who report or do not report the having been to a doctor for a routine checkup (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
Obesity among adults ≥18 years (%)	Respondents aged ≥18 years who have a body mass index (BMI) ≥30.0 kg/m² calculated from self-reported weight and height. Exclude the following: • Height: data from respondents measuring <3 ft or ≥8 ft	Respondents aged ≥18 years for whom BMI can be calculated from their self-reported weight and height (excluding unknowns, refusals tor provide weight or height and exclusions listed below): • Height: data from respondents measuring <3 ft or ≥8	U.S. 2010 Census: All adults age 18 and over

Indicators	Numerator	Denominator	Population for Weighted Estimates
	• Weight: data from respondents weighing <50 lbs or ≥650 lbs • BMI: data from respondents with BMI <12 kg/m2 ≥100 kg/m2 • Pregnant women	ft • Weight: data from respondents weighing <50 lbs or ≥650 lbs • BMI: data from respondents with BMI <12 kg/m2 ≥100 kg/m2 • Pregnant women	
Tobacco use among adults ≥18 years (%) (current smoking)	Respondents aged ≥18 years who report having smoked ≥100 cigarettes in their lifetime and currently smoke every day or some days.	Adults aged ≥18 years who reported information about cigarette smoking (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
Alcohol use among adults ≥18 years (%) (binge drinking)	Adults aged ≥18 years who report having five or more drinks (men) or four or more drinks (women) on an occasion in the past 30 days.	Adults aged ≥18 years who report having a specific number, including zero, of drinks on an occasion in the past 30 days (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over
No leisure time physical activity among adults ≥18 years (%)	Respondents who answered "no" to the following question: "During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?"	Number of adults aged ≥18 years who reported any or no physical activity in the past month (excluding those who refused to answer, had a missing answer, or answered "don't know/not sure").	U.S. 2010 Census: All adults age 18 and over

The CDC 500 Cities data is available at the census tract level. To combine census tracts to neighborhoods, the following assumptions are made:

Assumptions:

1. Census tracts are independent from one another.
2. The estimates follow a normal distribution (on either the rate scale or logit scale).
3. Estimates created in the 500 Cities project are unbiased estimates of the true tract-level rates for each indicator.
4. Rates reflect the actual race/age distribution within a given census tract. We do not have a way to test this since we do not have race/age specific estimates at the census tract level provided in the CDC 500 Cities dataset. Population distributions represent the population from the 2010 U.S. Census.
5. We are assuming that the precision of tract-level estimates are correlated with population size (ie: those with higher population in the tract will have smaller confidence intervals).

To aggregate the census tract level indicators to neighborhoods, we created a weighted estimate as the estimate provided by CDC 500 Cities multiplied by the proportion of the population within that census tract, then sum the weighted estimates within neighborhood. The population used for the population weights reflect the population from the 2010 U.S. Census for the appropriate age group. For most indicators, this is all adults age 18 years and older. For indicators that are calculated within a subgroup, the respective subgroup was used. The population used for each indicator is indicated in Table 6.

The following formulas were used:

$$W_i = \frac{CTPopulation_i}{\sum_1^n (CT\ population_i)}$$

$$Weighted\ Estimate = \sum_1^n W_i * Est(X_i)$$

Where:

- W_i = Census tract population proportion (the proportion of the neighborhood population within census tract i)
- $CTPopulation_i$ = Population in census tract i
- Weighted Estimate = The percent of persons living in the neighborhood who meet the definition for the indictor (Table 6)
- $Est(X_i)$ = The small area estimate provided in the 500 Cities dataset for census tract i
- n = Total number of census tracts within the neighborhood

To calculated standard errors, we used the census tract level confidence intervals provided in the dataset and aggregated to neighborhood level by creating weighted standard errors. To combine census tracts to neighborhoods, the following assumptions are made:

Assumptions:

1. Census tracts are independent from one another.
2. Normality: The 95% confidence intervals are symmetric around the estimate and the estimates are normally distributed.

The following formulas were used:

Standard error (SE) of census tract level indicator:

$$SE(X_i) = (\widehat{\theta_i} - \theta_i^{(L)})/1.96$$

Where:

- $SE(X_i)$ = Census tract SE for variable X
- $\widehat{\theta_i}$ = Estimate for census tract i
- $\theta_i^{(L)}$ = Lower bound for census tract i

Using the SE(X_i), the weighted standard error is constructed using the formula:

$$SE(X) = \sqrt{\sum_1^n (W_i * SE(X_i))^2}$$

Where:

- W_i = Census tract population proportion (the proportion of the neighborhood population within census tract i)
- $SE(X_i)$ = Census tract SE for variable X

SAS Code:

STEP_a1_select variable from CDC500_2019_03_18.sas
STEP_a2_create estimates for CDC500_2019_05_08.sas

Vital Statistics

Vital statistics indicators were calculated by the Get Healthy Philly – Division of Chronic Disease Prevention, Philadelphia Department of Public Health.

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Commented [M1]: RAYNARD

The definitions for the indicators are in Table 10.

Table 10 Indicators definitions for indicators derived from vital statistics (2016)

Indicators	Numerator	Denominator	Formula
Infant mortality (per 1,000 live birth)	Number of infant deaths	Number of live births	(Numerator/Denominator)*1000
Premature mortality (year of potential life lost to age 75 per 100,000 population)			
Life expectancy; by sex (male and female)			
Teen births (per 1,000 females 15-19)	Number of births to teems (15-19 years old)	Number of females age 15-19 in 2010 US Census	(Numerator/Denominator)*1000
Prenatal care access (% with inadequate care)	Number of births with inadequate prenatal care. Inadequate utilization is defined as either starting prenatal care (PNC) after the 4th month of pregnancy or receiving less than 50% of expected visits PNC visits recommended by ACOG.	Number of live births	(Numerator/Denominator)*100
Homicides mortality rate (per 100,000 population)	Number of death due to homicide	What population estimate was used?	(Numerator/Denominator)*100000
Suicides (per 100,000 population)	Number of death due to suicide	What population estimate was used?	(Numerator/Denominator)*100000
Drug overdoses mortality (per 100,000 population)	Number of death due to drug overdose	What population estimate was used?	(Numerator/Denominator)*100000
Unintentional injury mortality rate (per 100,000 population)	Number of death due to unintentional injury	What population estimate was used?	(Numerator/Denominator)*100000
% of births that are low birth weight (<2,500 Grams)	Number of live births with weight <2,500 grams	Number of live births	(Numerator/Denominator)*100

Commented [M2]: RAYNARD – how is this defined?

Commented [M3]: RAYNARD – how is this defined?

Commented [M4]: RAYNARD - How is this defined?

Commented [M5]: RAYNARD - How is this defined?

SAS Code:

STEP_g1_data from pdph_2019_06_07.sas

School District of Philadelphia

Reading proficiency was obtained from the School District of Philadelphia (https://www.philasd.org/performance/programsservices/open-data/school-performance/#school_progress_report access date 6/9/2016). School locations were obtained from

Pennsylvania Spatial Data Access (PASDA (https://www.pasda.psu.edu/). A few 2016-2017 schools in the School District of Philadelphia data were not included in the data downloaded from PASDA and were geocoded by UHC. ArcGISPro 2.3.2 was used to link school locations to 2010 census tract IDs which were then linked to the neighborhoods.

Reading proficiency is represented by the percent of students in kindergarten through 2nd grade who are reading at grade level. Data was provided for individual K-8 schools, which were aggregated to neighborhood level. Every neighborhood had at least one K-8 school. To calculate K-2 reading proficiency, we used the formula:

$$Neighborhood\ K-2\ reading = \sum_{1}^{n}\left(School\ K2\ Reading \times \left[\frac{Number\ K2\ students\ in\ School}{\sum_{1}^{n}(Number\ K2\ students\ in\ School)}\right]\right)$$

Where:

- $School\ K2\ Reading$ = K-2 reading proficiency at an elementary or K-8 school
- $Number\ K2\ students\ in\ School$ = total K-2 students with a reading score at the an elementary or K-8 school
- n = Total number of Elementary of K-8 schools with K-2 reading scores within the neighborhood

SAS Code:

STEP_e1_create estimates for education k2 reading_2019_05_02.sas

American Community Survey

Information on educational attainment, housing cost burden, race/ethnicity, poverty, income inequality, health insurance status, single parent households, unemployment, and commuting were obtained from the American Community Survey (ACS) 5-year aggregated data for years 2012-2016[3]. Definitions for the indicators are in Table 11.

Table 11 Indicators definitions for indicators derived from American Community Survey 2012-2016

Indicators	Numerator	Denominator
Education: % of persons aged 25 and above with high school education or higher	Number of persons meeting the criteria: • High school graduate (includes equivalency) • Some college, less than 1 year • Some college, 1 or more years • Associate's degree • Bachelor's degree • Master's degree • Professional school degree	Total population 25 years and older

Indicators	Numerator	Denominator
Education: % of persons aged 25 and above with some college education or higher	Number of persons meeting the criteria: • Some college, less than 1 year • Some college, 1 or more years • Associate's degree • Bachelor's degree • Master's degree • Professional school degree	Total population 25 years and older
Education: % of persons aged 25 and above with Bachelor's degree education or higher	Number of persons meeting the criteria: • Bachelor's degree • Master's degree • Professional school degree	Total population 25 years and older
Rent burden: % of households with gross rent >30% of household income	Number of households that are renter occupied where percent of gross rent >30%	Total number of renter occupied housing units
Housing cost burden: % of households with mortgage >30% of household income	Number of households that are owner occupied where percent of mortgage >30%	Total number of owner occupied housing units
Race/ethnicity: % of persons non-Hispanic Black	Number of persons Not Hispanic or Latino: Black or African American alone	Total population
Race/ethnicity: % of persons non-Hispanic White	Number of persons Not Hispanic or Latino: White alone	Total population
Race/ethnicity: % of persons non-Hispanic Asian	Number of persons Not Hispanic or Latino: Asian alone	Total population
Race/ethnicity: % of persons non-Hispanic Other races	Number of persons Not Hispanic or Latino: American Indian and Alaska Native alone, Native Hawaiian and Other Pacific Islander alone, Some other race alone	Total population
Race/ethnicity: % of persons Hispanic	Number of persons Hispanic or Latino	Total population
Poverty: % of persons less than 18 years of age at or above the federal poverty level (past 12 months)	Number of persons less than 18 years of age at or above the federal poverty level (past 12 months)	Total population less than 18 years of age where poverty status is determined
Poverty: % of persons at or above the federal poverty level (past 12 months) All ages	Number of persons at or above the federal poverty level (past 12 months)	Total population where poverty status is determined
Health insurance coverage: % of persons (civilian noninstitutionalized population) with Private health insurance	Number of persons (civilian noninstitutionalized population) with: • Employer-based Health Insurance Only • Direct-purchase Health Insurance Only • Employer-Based and Direct-Purchase Coverage • Other Private Insurance Combinations	Total civilian noninstitutionalized population
Health insurance coverage: % of persons (civilian noninstitutionalized population) with Public health insurance	Number of persons (civilian noninstitutionalized population) with: • Medicare Coverage Only • Tricare/Military Health Coverage Only • VA Health Care Coverage Only • Medicare and Medicaid/Means-Tested Public Coverage • Other Public Only Combinations	Total civilian noninstitutionalized population

Indicators	Numerator	Denominator
Health insurance coverage: % of persons (civilian noninstitutionalized population) with No health insurance	Number of persons (civilian noninstitutionalized population) with: • No Health Insurance Coverage	Total civilian noninstitutionalized population
Single Parent Household: % of households that are Single parent households (male or female)	Number of households with one or more persons under 18 years with: • Family households: Female Householder, no husband present • Family households: Male Householder, no wife present • Non-Family households: Female Householder, no husband present • Non-Family households: Male Householder, no wife present	Total households
Unemployment: % of persons 16 years and older (civilian) who are unemployed	Number of persons 16 years and older (civilian) who are unemployed	Total civilian population 16 years and older in the labor force
Commuting: % of workers 16 years and older with >= 60 minutes travel time to work	Number of workers age 16 years and older with >=60 minutes travel time to work	Total workers 16 years and older
Commuting: % of workers 16 years and older Driving alone to work	Number of workers age 16 years and older who drove alone to work	Total workers 16 years and older

Income inequality is represented with the Index of Concentration at the Extremes (ICE), which is the relationship between affluent and poor persons[7]. Affluent persons are considered those above the 80th percentile of income, and poor individuals are those below the 20th percentile of income.

$$ICE = \frac{(Number\ of\ affluent\ persons - Number\ of\ poor\ persons)}{Total\ Population}$$

ACS data provides sixteen income categories. We selected affluent and poor income categories based on the distribution of income throughout all of Philadelphia. We chose income less than $15,000, which covers 21.32% of the Philadelphia population, and income greater than or equal to $100,000, which covers 15.69% of the Philadelphia population, to represent the 20th and 80th percentiles, respectively.

To calculate neighborhood income ICE, we used the formula:

$$ICE = \frac{\sum_1^n(CT\ pop.with\ income \geq \$100{,}000) - \sum_1^n(CT\ pop.with\ income < \$15{,}000)}{\sum_1^n(CT\ population\ )}$$

Where:

- $CT\ pop.with\ income \geq \$100{,}000$ = The population in the neighborhood in income categories $100,000 to $125,000, $125,000 to $150,000, $150,000 to $200,000, or at least $200,000
- $CT\ pop.with\ income < \$15{,}000$ = The population in the neighborhood in income categories less than $10,000 or $10,000 to $15,000

- CT population = Total population in the census tract in 2010 US Census (see population section above)
- n = Total number of census tracts within the neighborhood

SAS Code:

STEP_k1_create estimates for income ICE_2019_05_01.sas

The ACS data is available for census tracts. To aggregate the census tract level indicators to neighborhoods, the following general formula was used:

$$ACS\ Indicator\ Percent\ = \frac{\sum_1^n (CT\ Indictor\ numerator)}{\sum_1^n (CT\ Indicator\ denominator)}$$

Where:

- ACS Indicator Percent = The percent of persons living in the neighborhood who meet the definition for the indictor (Table 8)
- CT Indicator numerator = Number of persons in the census tract meeting the numerator definition (Table 8)
- CT Indicator denominator = Number of persons in the census tract meeting the denominator definition (Table 8)
- n = Total number of census tracts within the neighborhood

SAS Code:

STEP_b1_create estimates for ACS1216_2019_04_26.sas
STEP_b2_variability from ACS1216_2019_04_26.sas
STEP_k1_create estimates for income ICE_2019_05_01.sas

Philadelphia Licensing and Inspection

Philadelphia Department of Licenses and Inspections provides records of violations on OpenData Philly.org[8].

For violations representing housing conditions we considered using all violations or focusing on a subset of violations associated with building, construction and occupancy codes (BCOCP violations). We also included Community Life Improvement Program (CLIP) violations in this subset since these are likely associated with neighborhood quality of life. We calculated the number of violations over a three-year period (2015-2017) per 1,000 housing units. Housing unit estimates from the American Community

Survey (ACS) 2012-2016 aggregated to the neighborhoods were used (see population section above for details). All types of housing code violations were included. The housing code violation rates were calculated as:

$$Housing\ Code\ Violation\ Rate = \left[\frac{Number\ of\ Total\ Housing\ code\ violations}{Total\ Housing\ Units}\right] * 1{,}000$$

Building Construction and Occupancy & Community Life Improvement Program (BCOCP) violations include violation types PM (Property Maintenance) E (Electrical) FC (Fire Code) and CP (Community Life Improvement Program).

BCOCP housing code violations are defined as the number of BCOCP violations over a three-year period (2015-2017) per 1,000 housing units. Housing unit estimates from the American Community Survey (ACS) 2012-2016 aggregated to the neighborhoods was used (see population section above for details). The BCOCP housing code violation rates were calculated as:

$$BCOCP\ Housing\ Code\ Violation\ Rate = \left[\frac{Number\ of\ BCOCP\ Housing\ code\ violations}{Total\ Housing\ Units}\right] * 1{,}000$$

All open imminently dangerous and unsafe buildings as of 11/1/2018 were downloaded from OpenDataPhilly[8]. Imminently dangerous and unsafe buildings (IDUB) are defined as the number of buildings identified as imminently dangerous and unsafe as of 11/1/2018 per 1,000 housing units. Housing unit estimates from the American Community Survey (ACS) 2012-2016 aggregated to the neighborhoods was used (see population section above for details). The IDUB rates were calculated as:

$$\text{IDUB}\ Rate = \left[\frac{Number\ of\ IDUB}{Total\ Housing\ Units}\right] * 1{,}000$$

SAS Code:

STEP_d1_create estimates for unsafe_dang_2019_04_03.sas

Philadelphia Office of Innovation and Technology

Vacant properties and buildings were obtained from the Philadelphia Office of Innovation and Technology (POIT). There is no single accurate source of data identifying locations of vacant properties and buildings. In 2016, the POIT released indicators that identifies properties likely to be vacant or to have a vacant building based on several administrative datasets derived using an analytical modelling approach. This model was developed in cooperation with Department of Licenses and Inspections,

Office of Property Assessment, Philadelphia Land Bank, and Philadelphia Water Department. The model aggregates multiple city administrative and geographic data sources selecting for indicators of potential building or land vacancy for each tax parcel boundary (building lot) in the city[9].

Input characteristics of the model are determined to be either positive or negative indicators of vacancy. A positive indicator has a tendency to signify vacancy (e.g., code violation issued by L+I). A negative indicator has a tendency to signify occupancy (e.g., OPA occupied property code). Individual indicators are weighted based on age of record or other factors as determined by city department subject matter experts for a contributing dataset. Subject matter experts are familiar with department procedures regarding frequency and completeness of updates to datasets and field procedures for collecting data. Vacant land and vacant building indicators identify building lots likely to be vacant or likely to contain a vacant building. Building lots likely to be vacant could include lots maintained by Pennsylvania Horticultural Society or being used as community gardens. They might also be sites where illegal dumping occurs. Building lots that are likely to contain a vacant building may contain a properly secured empty building, or a building that is occupied illegally or used intermittently for illegal activities[9]. In order to investigate the impact of vacant land or buildings on health, we focused on developing indicators of vacant land or buildings in residential areas. The impact of vacant industrial buildings and land in industrial areas separated from residential neighborhoods is likely to be different from the impact of living next to a vacant row house. Residential parcels were identified by land use of tax parcel data from the Philadelphia City Planning Commission[10].

The percent of vacant properties was calculated as:

$$Percent\ Vacant\ Properties = \left[\frac{Number\ of\ Parcels\ likely\ to\ be\ vacant}{Total\ residential\ parcels}\right] * 100$$

The percent of vacant buildings was calculated as:

$$Percent\ Vacant\ Buildings = \left[\frac{Number\ of\ buildings\ likely\ to\ be\ vacant}{Total\ residential\ parcels}\right] * 100$$

SAS Code:

vacantbuildings_from_indicators.sas
STEP_d1_create estimates for unsafe_dang_2019_04_03.sas

Philadelphia Police Department

Violent crime and homicide rates were obtained from the Philadelphia Police Department's INCT system[11]. Crime incidents reported to police in the city of Philadelphia are available from OpenDataPhilly[12] with data starting in 1/1/2006 and are current through the date of download

(9/6/2018). Crime incidents from the calendar year 2017 were extracted and assigned to the neighborhood where the crime occurred by the latitude/longitude coordinates of where the crime occured as provided by the Philadelphia Police Department. Violent crime was defined by the Federal Bureau of Investigation (FBI) Uniform Crime Reporting (UCR) system as murder/homicide, aggravated assault, robbery, and rape[13].

The violent crime rate is reported as the number of violent crime incidents per 10,000 population. Population estimates from the American Community Survey (ACS) 2012-2016 aggregated to the neighborhoods was used (see population section above for details). The crime rates were calculated as:

$$Violent\ Crime\ Rate = \left[\frac{Number\ of\ Violent\ Crimes}{Total\ population}\right] * 10{,}000$$

The homicide rate is reported as the number of homicide incidents per 10,000 population. Population estimates from the American Community Survey (ACS) 2012-2016 aggregated to the neighborhoods was used (see population section above for details). The crime rates were calculated as:

$$Homicide\ Rate = \left[\frac{Number\ of\ Homicides}{Total\ population}\right] * 10{,}000$$

SAS Code:

step0_import_crime data_18.sas
step1_create_year_and_crime_category_18.sas
step2_clean_and_check_18.sas
step3_merge_CT00CT10_to_crime_18.sas
step4_count_by category_18.sas
step5_import_pop_18.sas
step6_rate_and_density_18.sas
STEP_c1_create estimates for Crime_2019_05_13.sas

USDA Food Access Atlas

Low food access obtained from the United States Department of Agriculture (USDA) Food Access Atlas which provides food access data for populations within census tracts[14]. We used the share (percent) of the population that is greater than ½ mile from the nearest supermarket, supercenter, or large grocery store for an urban area. A parallel indicator is available using 1 mile distance to nearest supermarket, supercenter, or large grocery store.

To aggregate the census tract level indicator of food access to neighborhoods, the following formula was used:

$$Neighborhood\ Percent\ = \frac{\sum_1^n[(USDA\ percent) * (CT\ population)]}{\sum_1^n(CT\ population)}$$

Where:

- Neighborhood Percent = The share of the population in the neighborhood greater than ½ mile from a supermarket, supercenter, or large grocery store
- USDA percent = The share of the population in the census tract greater than ½ mile from a supercenter, or large grocery store (provided by USDA Food Access Atlas)
- CT population = Total population in the census tract in 2010 US Census (see population section above)
- n = Total number of census tracts within the neighborhood

A higher number indicates more persons within the neighborhood have low access to a supercenter, or large grocery store.

SAS Code:

STEP_f1_create estimates for foodaccess_2019_03_20.sas

Primary Care Provider Ratio

Primary care provider ratio is the ratio of the total population divided by number of physician.

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We first calculated the estimated number of primary care physicians in each census tract with the formula, and then used the estimated number of physicians to calculate the neighborhood population to Primary Care Provider (PCP) ratio:

$$CT\ Number\ of\ physicians = \frac{CT\ population}{CT\ pop{:}\ PCP}$$

$$Neighborhood\ pop{:}\ PCP = \frac{\sum_1^n CT\ population}{\sum_1^n CT\ Number\ of\ physicians}$$

Where:

- $CT\ population$ = Total population in the census tract in 2010 US Census (see population section above)
- $CT\ pop{:}\ PCP$ = Census tract population to PCP ratio
- $CT\ Number\ of\ physicians$ = Estimated number of Physicians in the neighborhood
- n = Total number of census tracts within the neighborhood

SAS Code:

STEP_j1_create estimates for provider PCP_2019_04_26.sas

City Health Dashboard

Lead Risk

Lead risk was obtained from the City Health Dashboard (CHD) as the percent of housing with potential lead risk. This was calculated by counting the number of housing units in each of five time periods: pre-1939, 1940–59, 1960–79, 1980–99, and 2000 or newer. These counts were weighted by the likelihood of lead exposure in the housing in that era[15].

To aggregate the census tract level indicator of lead risk to neighborhoods, the following formula was used:

$$W_i = \frac{CT\ Total\ Number\ Housing\ Units_i}{\sum_1^n (CT\ Total\ Number\ Housing\ Units_i)}$$

$$Neighborhood\ Percent = \sum_1^n (W_i \times CT\ percent\ of\ housing\ units\ with\ lead\ risk_i)$$

Where:

- W_i = Census tract housing proportion (the proportion of the neighborhood housing units within census tract i)
- Neighborhood Percent = The percent of housing with potential lead risk
- CT percent of housing units with lead risk = The estimated percent of housing units with potential lead risk in the census tract (provided by City Health Dashboard)
- CT Total Number of housing units = The total number of housing units in the census tract (provided by City Health Dashboard)
- n = Total number of census tracts within the neighborhood

To calculated standard errors, we used the census tract level confidence intervals provided in the dataset and aggregated to neighborhood level by creating weighted standard errors. To combine census tracts to neighborhoods, the following assumptions are made:

Assumptions:

1. Census tracts are independent from one another.
2. Normality: The 95% confidence intervals are symmetric around the estimate and the estimates are normally distributed.

The following formulas were used:

Standard error (SE) of census tract level indicator:

$$SE(X_i) = (\widehat{\theta_i} - \theta_i^{(L)})/1.96$$

Where:

- $SE(X_i)$ = Census tract SE for variable X
- $\widehat{\theta_i}$ = Estimate for census tract i
- $\theta_i^{(L)}$ = Lower bound for census tract i

Using the SE(X_i), the weighted standard error is constructed using the formula:

$$SE(X) = \sqrt{\sum_1^n \left(W_i * SE(X_i)\right)^2}$$

Where:

- W_i = Census tract population proportion (the proportion of the neighborhood population within census tract i)
- $SE(X_i)$ = Census tract SE for variable X

SAS Code:

STEP_h1_create estimates for city health dashboard_2019_05_08.sas

Walkability

Walkability was obtained from the City Health Dashboard (CHD) as Walk Score® which is an index indicator based on intersection density, residential density, and accessibility of amenities such as grocery stores, parks, and restaurants and is available on CHD for each census tract[15]. The following categories are recommended using Walk Score®[16]:

- 90-100 = Walker's Paradise (Daily errands do not require a car)
- 70-89 = Very Walkable (Most errands can be accomplished on foot)
- 50-69 = Somewhat Walkable (Some errands can be accomplished on foot)
- 25-49 = Car-Dependent (Most errands require a car)
- 0-24 = Car-Dependent (Almost all errands require a car)

Three neighborhood indicators of Walk Score® were created:

- Percent of population with Very Walkable or better (70-100)
- Percent of population with Walker's Paradise (90-100)

To create the indicators for percent of population with Very Walkable or better and Walker's Paradise, the following formula was used:

$$Neighborhood\ Percent\ = \frac{\sum_1^n[(CT\ population\ where\ Walk\ Score® \geq X)]}{\sum_1^n(CT\ population)}$$

Where:

- Neighborhood Percent = The percent of population in the neighborhood who live in a census tract with Very Walkable or better (or Walker's Paradise)
- CT population where Walk Score® ≥ X = The total population within the census tract in ACS2012-2016 where the Walk Score® is greater than or equal X.
    - X = 70 for Very Walkable or better
    - X = 90 for Walker's Paradise
- CT population = The total population in the census tract for all census tracts in ACS2012-2016 (see population section above)
- n = Total number of census tracts within the neighborhood

The average neighborhood walkability was calculated as the average of census tract Walk Score® weighted by land area. This was calculated with the formula:

$$Walkability = \sum_1^n\left(CT\ Walk\ Score® \times \frac{CT\ Land\ Area}{\sum_1^n(CT\ Land\ Area\ )}\right)$$

Where:

- $CT\ Walk\ Score®$ = Walk Score® assigned to a census tract
- $CT\ Land\ Area$ = Total land area in a census tract
- n = Total number of census tracts within the neighborhood

SAS Code:

STEP_h1_create estimates for city health dashboard_2019_05_08.sas

Appendix A: Variable Codebooks

Rankings Dataset

Neighborhood Level Rankings dataset

This dataset includes the final health outcomes and health factors weighted score, rank order, and quartile.

…\PDPH_500Cities\SAS\Final results\final_nbhd_ranks_raw_scores_20190612.csv

Indicators	Variable
Neighborhood Name	Name_DSPH
Health Outcome Neighborhood weighted score	nbhd_ho_score
Health Outcomes Neighborhood Rank Order	rank_ho_order
Health Outcomes Ranking Quartile	nbhd_ho_quart
Health Factors Neighborhood weighted score	nbhd_hf_score
Health Factors Neighborhood Rank Order	rank_hf_order
Health Factors Ranking Quartile	nbhd_hf_quart

Neighborhood Level Z-scores Dataset

Neighborhood Level dataset …\PDPH_500Cities\SAS\Final results\z_scores.csv

This dataset contains the z-scores used for the indicators in the health outcomes and health factors rankings.

Data Source	Year(s)	Indicators	Variable
		Neighborhood name	Name_DSPH
500 Cities Data CDC	2015	Asthma among adults ≥18 years (%)	CASTHMA
		Hypertension among adults ≥18 years (%)	BPHIGH
		High cholesterol among adults ≥18 years (%)	HIGHCHOL
		Cancer among adults ≥18 years (%)	CANCER
		Chronic kidney disease among adults ≥18 years (%)	KIDNEY
		COPD among adults ≥18 years (%)	COPD
		Coronary heart disease among adults ≥18 years (%)	CHD
		Diabetes among adults ≥18 years (%)	DIABETES
		Stroke among adults ≥18 years (%)	STROKE
		Poor Mental Health among adults ≥18 years (%)	MHLTH
		Poor Physical Health among adults ≥18 years (%)	PHLTH
		Hypertension medication adherence among adults ≥18 years who have been diagnosed with hypertension (%)	BPMED
		Mammography screening among female adults 50-74 years (%)	MAMMOUSE
		Older adults aged ≥65 years who are up to date on a core set of clinical preventive services (Men: Flu shot past year, Pneumococcal polysaccharides vaccine (PPV) shot ever, Colorectal cancer screening)	COREM
		Older adults aged ≥65 years who are up to date on a core set of clinical preventive services (Women: Flu shot past year, Pneumococcal polysaccharides vaccine (PPV) shot ever, Colorectal cancer screening, and Mammogram past 2 years)	COREW
		Have a routine medical checkup (proxy for access to care) among adults ≥18 years (%)	CHECKUP
		Obesity among adults ≥18 years (%)	OBESITY
		Tobacco use among adults ≥18 years (%) (current smoking)	CSMOKING
		Alcohol use among adults ≥18 years (%) (binge drinking)	BINGE
		No leisure time physical activity among adults ≥18 years (%)	LPA
Vital Statistics Philadelphia Department of Public Health	2016	Life expectancy – Male	LifeExpectancyMale
		Life expectancy – Female	LifeExpectancyFemale
		Drug overdoses mortality (per 100,000 population)	DrugAARates
		Unintentional injury mortality rate (per 100,000 population)	AccidentAARates
		Teen births (per 1,000 females 15-19)	TeenBirthRate
		Prenatal care access (% with inadequate care)	PctInadPrenatCare
		% of births that are low birth weight (<2,500 Grams)	PctLowWeightBirths
Education School District of Philadelphia	2015-2016	Reading proficiency: % of K-2 students reading at grade level	K2rdg_wt_est
Education American Community Survey	2012-2016	Educational attainment: % some college or higher	Educ_minsomecoll

Data Source	Year(s)	Indicators	Variable
Housing Department of Licenses and Inspections	2015-2017	Housing code violations: All violations (2015-2017 aggregate) per 1,000 housing units	Allviolation
	2016	Residential parcels likely to have vacant buildings divided by total residential parcels	vacant_bldg
Violent Crime FBI Crime Reports	2017	FBI Violent crime (does not include other assaults) per 10,000 population	VIOLENT_CRIME_RATE
		Homicides per 10,000 population	HOMICIDES_RATE
Demographics American Community Survey	2012-2016	Poverty: % Children <18 living below the poverty level	pov_lt18
		Health insurance coverage: All ages No insurance	insur_no_allage
		Single parent households: % of households which are single parent (male or female)	PCT_MF_HH
		Income inequality: Index of Concentration at the Extremes (ICE)	Ice_est
Workforce American Community Survey	2012-2016	Unemployment: % unemployed among persons ages ≥16 in the labor force	unemployed
USDA Food access atlas	2015	USDA food access atlas: Share (%) of population that are beyond ½ mile from a supermarket	lapophalfshare
PDPH	2016	PCP ratio: Population per primary care provider (ie: number of persons per provider)	poppcp_est
Transit American Community Survey	2012-2016	Long commute time: % of workers age ≥16 who commute ≥ 60 minutes	travtime_ge60
		Driving alone to work: % of workers age ≥16 who drive alone to work	trans_autoalone
Transit City Health Dashboard	2018	Average Walk Score® weighted by land area	WalkScore

Neighborhood Level Indicators Dataset

Neighborhood Level dataset …\PDPH_500Cities\SAS\Final results\merged_results.csv

SAS Code: STEP_l_merge results_2019_06_07.sas

This dataset includes indicators compiled at the neighborhood level.

Each indicator includes the:

- Estimate – Calculated estimate for that neighborhood
- Min – Minimum value of all census tracts in that neighborhood
- Max – Maximum value of all census tracts in that neighborhood
- SD – Standard deviation of all census tract in that neighborhood

Some indicators will include the estimated standard error if confidence intervals or standard error indicators are provided with the source data.

- SE – Estimated standard error

Data Source	Year(s)	Indicators	Statistic	Variable
		Neighborhood name		Name_DSPH
		Neighborhood ID		ID_DSPH
		Number of census tracts in neighborhood	Count	_FREQ_
U.S. Census Bureau	2010	Total population in 2010	Count	pop10
		Population under 18 in 2010	Count	popunder18
		Population 50-74 in 2010	Count	pop50to74
		Female population 50-74 in 2010	Count	Female50to74
		Population over 64 in 2010	Count	popover64
		Male population over 64 in 2010	Count	maleover64
		Female population over 64 in 2010	Count	femaleover64
		% population over 64 in 2010	Proportion	age_ge65
		% population under 18 in 2010	Proportion	age_lt18
Housing American Community Survey	2012-2016	Number of housing units (ACS2012-2016)	Count	HU_lf
U.S. Census Bureau	2010	Total land area (sq meters)	Count	AREALAND1
500 Cities Data CDC	2015	Asthma among adults ≥18 years (%)	Estimate	CASTHMA
			Minimum	MIN_CASTHMA
			Maximum	MAX_CASTHMA
			Standard Deviation	SD_CASTHMA
			Standard Error	SE_CASTHMA
		Hypertension among adults ≥18 years (%)	Estimate	BPHIGH
			Minimum	MIN_BPHIGH
			Maximum	MAX_BPHIGH
			Standard Deviation	SD_BPHIGH
			Standard Error	SE_BPHIGH
			Estimate	HIGHCHOL

Data Source	Year(s)	Indicators	Statistic	Variable
		High cholesterol among adults ≥18 years (%)	Minimum	MIN_HIGHCHOL
			Maximum	MAX_HIGHCHOL
			Standard Deviation	SD_HIGHCHOL
			Standard Error	SE_HIGHCHOL
		Cancer among adults ≥18 years (%)	Estimate	CANCER
			Minimum	MIN_CANCER
			Maximum	MAX_CANCER
			Standard Deviation	SD_CANCER
			Standard Error	SE_CANCER
		Chronic kidney disease among adults ≥18 years (%)	Estimate	KIDNEY
			Minimum	MIN_KIDNEY
			Maximum	MAX_KIDNEY
			Standard Deviation	SD_KIDNEY
			Standard Error	SE_KIDNEY
		COPD among adults ≥18 years (%)	Estimate	COPD
			Minimum	MIN_COPD
			Maximum	MAX_COPD
			Standard Deviation	SD_COPD
			Standard Error	SE_COPD
		Coronary heart disease among adults ≥18 years (%)	Estimate	CHD
			Minimum	MIN_CHD
			Maximum	MAX_CHD
			Standard Deviation	SD_CHD
			Standard Error	SE_CHD
		Diabetes among adults ≥18 years (%)	Estimate	DIABETES
			Minimum	MIN_DIABETES
			Maximum	MAX_DIABETES
			Standard Deviation	SD_DIABETES
			Standard Error	SE_DIABETES
		Stroke among adults ≥18 years (%)	Estimate	STROKE
			Minimum	MIN_STROKE
			Maximum	MAX_STROKE
			Standard Deviation	SD_STROKE
			Standard Error	SE_STROKE
		Poor Mental Health among adults ≥18 years (%)	Estimate	MHLTH
			Minimum	MIN_MHLTH
			Maximum	MAX_MHLTH
			Standard Deviation	SD_MHLTH
			Standard Error	SE_MHLTH
		Poor Physical Health among adults ≥18 years (%)	Estimate	PHLTH
			Minimum	MIN_PHLTH
			Maximum	MAX_PHLTH
			Standard Deviation	SD_PHLTH
			Standard Error	SE_PHLTH
		Hypertension medication adherence among adults ≥18 years who have been diagnosed with hypertension (%)	Estimate	BPMED
			Minimum	MIN_BPMED
			Maximum	MAX_BPMED
			Standard Deviation	SD_BPMED
			Standard Error	SE_BPMED

Data Source	Year(s)	Indicators	Statistic	Variable
		Colon cancer screening among adults 50-75 years (%)	Estimate	COLON_SC
			Minimum	MIN_COLON_SC
			Maximum	MAX_COLON_SC
			Standard Deviation	SD_COLON_SC
			Standard Error	SE_COLON_SC
		Mammography screening among female adults 50-74 years (%)	Estimate	MAMMOUSE
			Minimum	MIN_MAMMOUSE
			Maximum	MAX_MAMMOUSE
			Standard Deviation	SD_MAMMOUSE
			Standard Error	SE_MAMMOUSE
		Older adults aged ≥65 years who are up to date on a core set of clinical preventive services (Men: Flu shot past year, Pneumococcal polysaccharides vaccine (PPV) shot ever, Colorectal cancer screening)	Estimate	COREM
			Minimum	MIN_COREM
			Maximum	MAX_COREM
			Standard Deviation	SD_COREM
			Standard Error	SE_COREM
		Older adults aged ≥65 years who are up to date on a core set of clinical preventive services (Women: Flu shot past year, Pneumococcal polysaccharides vaccine (PPV) shot ever, Colorectal cancer screening, and Mammogram past 2 years)	Estimate	COREW
			Minimum	MIN_COREW
			Maximum	MAX_COREW
			Standard Deviation	SD_COREW
			Standard Error	SE_COREW
		Have a routine medical checkup (proxy for access to care) among adults ≥18 years (%)	Estimate	CHECKUP
			Minimum	MIN_CHECKUP
			Maximum	MAX_CHECKUP
			Standard Deviation	SD_CHECKUP
			Standard Error	SE_CHECKUP
		Obesity among adults ≥18 years (%)	Estimate	OBESITY
			Minimum	MIN_OBESITY
			Maximum	MAX_OBESITY
			Standard Deviation	SD_OBESITY
			Standard Error	SE_OBESITY
		Tobacco use among adults ≥18 years (%) (current smoking)	Estimate	CSMOKING
			Minimum	MIN_CSMOKING
			Maximum	MAX_CSMOKING
			Standard Deviation	SD_CSMOKING
			Standard Error	SE_CSMOKING
		Alcohol use among adults ≥18 years (%) (binge drinking)	Estimate	BINGE
			Minimum	MIN_BINGE
			Maximum	MAX_BINGE
			Standard Deviation	SD_BINGE
			Standard Error	SE_BINGE
		No leisure time physical activity among adults ≥18 years (%)	Estimate	LPA
			Minimum	MIN_LPA
			Maximum	MAX_LPA
			Standard Deviation	SD_LPA
			Standard Error	SE_LPA
Vital Statistics	2016	Infant mortality (per 1,000 live birth)	Estimate	InfMortalityRate
		Premature mortality (year of potential life lost to age 75 per 100,000 population)	Estimate	YPLLRate

Data Source	Year(s)	Indicators	Statistic	Variable
Philadelphia Department of Public Health		Life expectancy – Male	Estimate	LifeExpectancyMale
		Life expectancy – Female	Estimate	LifeExpectancyFemale
		Homicides mortality rate (per 100,000 population)	Estimate	HomicideAARates
		Suicides (per 100,000 population)	Estimate	SuicideAARates
		Drug overdoses mortality (per 100,000 population)	Estimate	DrugAARates
		Unintentional injury mortality rate (per 100,000 population)	Estimate	AccidentAARates
		Teen births (per 1,000 females 15-19)	Estimate	TeenBirthRate
		Prenatal care access (% with inadequate care)	Estimate	PctInadPrenatCare
		% of births that are low birth weight (<2,500 Grams)	Estimate	PctLowWeightBirths
Education School District of Philadelphia	2015-2016	Reading proficiency: % of K-2 students reading at grade level	Estimate	K2rdg_wt_est
		Total number of K-2 schools with data about reading level in neighborhood	Count	n_k2school
		Total number of K-8 schools in neighborhood	Count	elk8_tot_sch
Education American Community Survey	2012-2016	Educational attainment: % >=high school	Estimate	Educ_minHS
			Minimum	MIN_Educ_minHS
			Maximum	MAX_Educ_minHS
			Standard Deviation	SD_Educ_minHS
		Educational attainment: % some college	Estimate	Educ_somecoll
			Minimum	MIN_Educ_somecoll
			Maximum	MAX_Educ_somecoll
			Standard Deviation	SD_Educ_somecoll
		Educational attainment: % some college or higher	Estimate	Educ_minsomecoll
			Minimum	MIN_Educ_minsomecoll
			Maximum	MAX_Educ_minsomecoll
			Standard Deviation	SD_Educ_minsomecoll
		Educational attainment: %>=bachelors degree or higher	Estimate	Educ_minBA
			Minimum	MIN_Educ_minBA
			Maximum	MAX_Educ_minBA
			Standard Deviation	SD_Educ_minBA
Housing American Community Survey	2012-2016	Rent burden: % of households with gross rent >30% of household income	Estimate	HUcost_rentge30HHinc
			Minimum	MIN_HUcost_rentge30HHinc
			Maximum	MAX_HUcost_rentge30HHinc
			Standard Deviation	SD_HUcost_rentge30HHinc
		Housing cost burden: % of households with mortgage >30% of household income	Estimate	HUcost_ownge30HHinc
			Minimum	MIN_HUcost_ownge30HHinc
			Maximum	MAX_HUcost_ownge30HHinc
			Standard Deviation	SD_HUcost_ownge30HHinc
Housing	2015-2017		Estimate	Allviolation
			Minimum	MIN_Allviolation

Data Source	Year(s)	Indicators	Statistic	Variable
Department of Licenses and Inspections		Housing code violations: All violations (2015-2017 aggregate) per 1,000 housing units	Maximum	MAX_Allviolation
			Standard Deviation	SD_Allviolation
		Housing code violations: Building Construction and Occupancy & Community Life Improvement Program violations (2015-2017 aggregate) per 1,000 housing units	Estimate	BCOCPviolation
			Minimum	MIN_BCOCPviolation
			Maximum	MAX_BCOCPviolation
			Standard Deviation	SD_BCOCPviolation
	11/2/2018	Imminently dangerous and unsafe buildings per 1,000 households	Estimate	ID_safe
			Minimum	MIN_ID_safe
			Maximum	MAX_ID_safe
			Standard Deviation	SD_ID_safe
Housing Office of Innovation and Technology	2016	Residential vacant parcels likely to be vacant divided by total residential parcels	Estimate	vacant_land
			Minimum	MIN_vacant_land
			Maximum	MAX_vacant_land
			Standard Deviation	SD_vacant_land
		Residential parcels likely to have vacant buildings divided by total residential parcels	Estimate	vacant_bldg
			Minimum	MIN_vacant_bldg
			Maximum	MAX_vacant_bldg
			Standard Deviation	SD_vacant_bldg
Violent Crime FBI Crime Reports	2017	FBI Violent crime (does not include other assaults) per 10,000 population	Estimate	VIOLENT_CRIME_RATE
			Minimum	MIN_VIOLENT_CRIME_RATE
			Maximum	MAX_VIOLENT_CRIME_RATE
			Standard Deviation	SD_VIOLENT_CRIME_RATE
		Homicides per 10,000 population	Estimate	HOMICIDES_RATE
			Minimum	MIN_HOMICIDES_RATE
			Maximum	MAX_HOMICIDES_RATE
			Standard Deviation	SD_HOMICIDES_RATE
Demographics American Community Survey	2012-2016	Race/ethnicity: % non-Hispanic black	Estimate	BlackNH
			Minimum	MIN_BlackNH
			Maximum	MAX_BlackNH
			Standard Deviation	SD_BlackNH
		Race/ethnicity: % non-Hispanic White	Estimate	WhiteNH
			Minimum	MIN_WhiteNH
			Maximum	MAX_WhiteNH
			Standard Deviation	SD_WhiteNH
		Race/ethnicity: % non-Hispanic Asian	Estimate	AsianNH
			Minimum	MIN_AsianNH
			Maximum	MAX_AsianNH
			Standard Deviation	SD_AsianNH
		Race/ethnicity: % non-Hispanic Other races	Estimate	OtherNH
			Minimum	MIN_OtherNH
			Maximum	MAX_OtherNH
			Standard Deviation	SD_OtherNH
		Race/ethnicity: % Hispanic	Estimate	Hisp
			Minimum	MIN_Hisp
			Maximum	MAX_Hisp
			Standard Deviation	SD_Hisp

Data Source	Year(s)	Indicators	Statistic	Variable
		Poverty: % Children <18 living below the poverty level	Estimate	pov_lt18
			Minimum	MIN_pov_lt18
			Maximum	MAX_pov_lt18
			Standard Deviation	SD_pov_lt18
		Poverty: % Persons living below the poverty level (all ages)	Estimate	pov_allage
			Minimum	MIN_pov_allage
			Maximum	MAX_pov_allage
			Standard Deviation	SD_pov_allage
		Health insurance coverage: All ages Private	Estimate	insur_pri_allage
			Minimum	MIN_insur_pri_allage
			Maximum	MAX_insur_pri_allage
			Standard Deviation	SD_insur_pri_allage
		Health insurance coverage: All ages Public	Estimate	insur_pub_allage
			Minimum	MIN_insur_pub_allage
			Maximum	MAX_insur_pub_allage
			Standard Deviation	SD_insur_pub_allage
		Health insurance coverage: All ages No insurance	Estimate	insur_no_allage
			Minimum	MIN_insur_no_allage
			Maximum	MAX_insur_no_allage
			Standard Deviation	SD_insur_no_allage
		Single parent households: % of households which are single parent (male or female)	Estimate	PCT_MF_HH
			Minimum	MIN_PCT_MF_HH
			Maximum	MAX_PCT_MF_HH
			Standard Deviation	SD_PCT_MF_HH
		Income inequality: Index of Concentration at the Extremes (ICE)	Estimate	Ice_est
			Minimum	Min_ice
			Maximum	Max_ice
			Standard Deviation	std_ice
Workforce American Community Survey	2012-2016	Unemployment: % unemployed among persons ages ≥16 in the labor force	Estimate	unemployed
			Minimum	MIN_unemployed
			Maximum	MAX_unemployed
			Standard Deviation	SD_unemployed
USDA Food access atlas	2015	USDA food access atlas: Share (%) of population that are beyond ½ mile from a supermarket	Estimate	lapophalfshare
			Minimum	MIN_lapophalfshare
			Maximum	MAX_lapophalfshare
			Standard Deviation	SD_lapophalfshare
		USDA food access atlas: Share (%) of population that are beyond 1 mile from a supermarket	Estimate	lapop1share
			Minimum	MIN_lapop1share
			Maximum	MAX_lapop1share
			Standard Deviation	SD_lapop1share
PDPH	2016	PCP ratio: Population per primary care provider (ie: number of persons per provider)	Estimate	poppcp_est
			Minimum	min_poppcp
			Maximum	max_poppcp
			Standard Deviation	std_poppcp
Housing City Health Dashboard	2012-2016	Lead Risk: Percent of housing with potential lead risk	Estimate	HHLeadRisk
			Minimum	MIN_HHLeadRisk
			Maximum	MAX_HHLeadRisk
			Standard Deviation	SD_HHLeadRisk
			Standard Error	SE_HHLeadRisk

Data Source	Year(s)	Indicators	Statistic	Variable
Transit American Community Survey	2012-2016	Long commute time: % of workers age ≥16 who commute ≥ 60 minutes	Estimate	travtime_ge60
			Minimum	MIN_travtime_ge60
			Maximum	MAX_travtime_ge60
			Standard Deviation	SD_travtime_ge60
		Driving alone to work: % of workers age ≥16 who drive alone to work	Estimate	trans_autoalone
			Minimum	MIN_trans_autoalone
			Maximum	MAX_trans_autoalone
			Standard Deviation	SD_trans_autoalone
Transit City Health Dashboard	2018	Percent of population with Walk Score® >=70 (Very Walkable or better)	Estimate	PctWalkScore70
		Percent of population with Walk Score® >=90 (Walker's Paradise)	Estimate	PctWalkScore90
		Average Walk Score® weighted by land area	Estimate	WalkScore
			Minimum	MIN_WalkScore
			Maximum	MAX_WalkScore
			Standard Deviation	SD_WalkScore

Census Tract Level Indicators Dataset

This dataset contains indicators at the census tract level that were used to aggregate to neighborhoods.

Census Tract Level dataset …\PDPH_500Cities\SAS\Final results\ct_merged_results.csv

SAS Code: STEP_I_merge results_2019_06_07.sas

Data Source	Year(s)	Indicators	Statistic	Variable
		Census Tract ID		GEOID10
		Neighborhood name		Name_DSPH
		Neighborhood ID		ID_DSPH
U.S. Census Bureau	2010	Total population in 2010	Count	pop10
		Population under 18 in 2010	Count	popunder18
		Population 50-74 in 2010	Count	pop50to74
		Female population 50-74 in 2010	Count	female50to74
		Population over 64 in 2010	Count	popover64
		Male population over 64 in 2010	Count	maleover64
		Female population over 64 in 2010	Count	femaleover64
		% population over 64 in 2010	Proportion	age_ge65
		% population under 18 in 2010	Proportion	age_lt18
		Neighborhood adult (18+) population	Count	nbhdpop
		Census Tract/Neighborhood proportion for adults	Proportion	ct_nbhdprop
		Census Tract/Neighborhood proportion for ages 50-75	Proportion	ct_nbhdprop5075
		Census Tract/Neighborhood proportion for females 50-75	Proportion	ct_nbhdpropf5075
		Census Tract/Neighborhood proportion for males >65	Proportion	ct_nbhdpropm65
		Census Tract/Neighborhood proportion for females >65	Proportion	ct_nbhdpropf65
Housing American Community Survey	2012-2016	Number of housing units (ACS2012-2016)	Count	HU_lf
U.S. Census Bureau	2010	Total land area (sq meters)	Count	AREALAND1
500 Cities Data CDC	2015	Asthma among adults ≥18 years (%)	Estimate	CASTHMA
			Lower Bound	L_CASTHMA
			Upper Bound	U_CASTHMA
		Hypertension among adults ≥18 years (%)	Estimate	BPHIGH
			Lower Bound	L_BPHIGH
			Upper Bound	U_BPHIGH
		High cholesterol among adults ≥18 years (%)	Estimate	HIGHCHOL
			Lower Bound	L_HIGHCHOL
			Upper Bound	U_HIGHCHOL
		Cancer among adults ≥18 years (%)	Estimate	CANCER
			Lower Bound	L_CANCER
			Upper Bound	U_CANCER
		Chronic kidney disease among adults ≥18 years (%)	Estimate	KIDNEY
			Lower Bound	L_KIDNEY
			Upper Bound	U_KIDNEY
		COPD among adults ≥18 years (%)	Estimate	COPD

Data Source	Year(s)	Indicators	Statistic	Variable
			Lower Bound	L_COPD
			Upper Bound	U_COPD
		Coronary heart disease among adults ≥18 years (%)	Estimate	CHD
			Lower Bound	L_CHD
			Upper Bound	U_CHD
		Diabetes among adults ≥18 years (%)	Estimate	DIABETES
			Lower Bound	L_DIABETES
			Upper Bound	U_DIABETES
		Stroke among adults ≥18 years (%)	Estimate	STROKE
			Lower Bound	L_STROKE
			Upper Bound	U_STROKE
		Poor Mental Health among adults ≥18 years (%)	Estimate	MHLTH
			Lower Bound	L_MHLTH
			Upper Bound	U_MHLTH
		Poor Physical Health among adults ≥18 years (%)	Estimate	PHLTH
			Lower Bound	L_PHLTH
			Upper Bound	U_PHLTH
		Hypertension medication adherence among adults ≥18 years who have been diagnosed with hypertension (%)	Estimate	BPMED
			Lower Bound	L_BPMED
			Upper Bound	U_BPMED
		Colon cancer screening among adults 50-75 years (%)	Estimate	COLON_SC
			Lower Bound	L_COLON_SC
			Upper Bound	U_COLON_SC
		Mammography screening among female adults 50-74 years (%)	Estimate	MAMMOUSE
			Lower Bound	L_MAMMOUSE
			Upper Bound	U_MAMMOUSE
		Older adults aged ≥65 years who are up to date on a core set of clinical preventive services (Men: Flu shot past year, Pneumococcal polysaccharides vaccine (PPV) shot ever, Colorectal cancer screening)	Estimate	COREM
			Lower Bound	L_COREM
			Upper Bound	U_COREM
		Older adults aged ≥65 years who are up to date on a core set of clinical preventive services (Women: Flu shot past year, Pneumococcal polysaccharides vaccine (PPV) shot ever, Colorectal cancer screening, and Mammogram past 2 years)	Estimate	COREW
			Lower Bound	L_COREW
			Upper Bound	U_COREW
		Have a routine medical checkup (proxy for access to care) among adults ≥18 years (%)	Estimate	CHECKUP
			Lower Bound	L_CHECKUP
			Upper Bound	U_CHECKUP
		Obesity among adults ≥18 years (%)	Estimate	OBESITY
			Lower Bound	L_OBESITY
			Upper Bound	U_OBESITY
		Tobacco use among adults ≥18 years (%) (current smoking)	Estimate	CSMOKING
			Lower Bound	L_CSMOKING
			Upper Bound	U_CSMOKING
		Alcohol use among adults ≥18 years (%) (binge drinking)	Estimate	BINGE
			Lower Bound	L_BINGE
			Upper Bound	U_BINGE
		No leisure time physical activity among adults ≥18 years (%)	Estimate	LPA
			Lower Bound	L_LPA

Data Source	Year(s)	Indicators	Statistic	Variable
			Upper Bound	U_LPA
Education American Community Survey	2012-2016	Educational attainment: % high school or higher	Estimate	Educ_minHS
		Educational attainment: % some college	Estimate	Educ_somecoll
		Educational attainment: % bachelors degree or higher	Estimate	Educ_minBA
Housing American Community Survey	2012-2016	Rent burden: % of households with gross rent >30% of household income	Estimate	HUcost_rentge30HHinc
		Housing cost burden: % of households with mortgage >30% of household income	Estimate	HUcost_ownge30HHinc
Housing Department of Licenses and Inspections	2017	Housing code violations: All violations (2015-2017 aggregate) per 1,000 housing units	Estimate	Allviolation
		Housing code violations: Building Construction and Occupancy & Community Life Improvement Program violations (2015-2017 aggregate) per 1,000 housing units	Estimate	BCOCPviolation
	11/2/2018	Imminently dangerous and unsafe buildings per 1,000 housing units	Estimate	ID_safe
Housing Office of Innovation and Technology	2016	Residential vacant parcels likely to be vacant divided by total residential parcels	Estimate	vacant_land
		Residential parcels likely to have vacant buildings divided by total residential parcels	Estimate	vacant_bldg
Violent Crime FBI Crime Reports	2017	FBI Violent crime (does not include other assaults) per 10,000 population	Estimate	VIOLENT_CRIME_RATE
		Homicides per 10,000 population	Estimate	HOMICIDES_RATE
Demographics American Community Survey	2012-2016	Race/ethnicity: % non-Hispanic black	Estimate	BlackNH
		Race/ethnicity: % non-Hispanic White	Estimate	WhiteNH
		Race/ethnicity: % non-Hispanic Asian	Estimate	AsianNH
		Race/ethnicity: % non-Hispanic Other races	Estimate	OtherNH
		Race/ethnicity: % Hispanic	Estimate	Hisp
		Poverty: % Children <18 living below the poverty level	Estimate	pov_lt18
		Poverty: % Persons living below the poverty level (all ages)	Estimate	pov_allage
		Health insurance coverage: All ages Private	Estimate	insur_pri_allage
		Health insurance coverage: All ages Public	Estimate	insur_pub_allage
		Health insurance coverage: All ages No insurance	Estimate	insur_no_allage
		Single parent households: % of households which are single parent (male or female)	Estimate	PCT_MF_HH
		Income inequality: Index of Concentration at the Extremes (ICE)	Estimate	ice_ct
Workforce American Community Survey	2012-2016	Unemployment: % unemployed among persons ages ≥16 in the labor force	Estimate	unemployed
USDA Food access atlas	2015	USDA food access atlas: Share (%) of population that are beyond ½ mile from a supermarket	Estimate	lapophalfshare
		USDA food access atlas: Share (%) of population that are beyond 1 mile from a supermarket	Estimate	lapop1share
PDPH	2016	PCP ratio: Population per primary care provider (ie: number of persons per provider)	Estimate	POP_PCP
Housing			Estimate	HHLeadRisk

Data Source	Year(s)	Indicators	Statistic	Variable
City Health Dashboard	2012-2016	Lead Risk: Percent of housing with potential lead risk	Lower Bound	HHLeadRiskLCI
			Upper Bound	HHLeadRiskUCI
Transit American Community Survey	2012-2016	Long commute time: % of workers age ≥16 who commute ≥ 60 minutes	Estimate	travtime_ge60
		Driving alone to work: % of workers age ≥16 who drive alone to work	Estimate	trans_autoalone
Transit City Health Dashboard	2018	Walk Score®	Estimate	WalkScore

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