ParkServe

Documentation and How-To Guide

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This guide documents the ParkServe® database and the methods used to create it. Additionally, it is a how-to guide for implementing custom analyses with the underlying data, including an associated data schema, available for public download at tpl.org/park-data-downloads.

Table of Contents

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Part 1: ParkServe Concepts

The ParkServe Database is built around a few key components:

- **Parks:** ParkServe aims to provide a comprehensive database of parks within every urban area in the U.S. The parks dataset contains park boundary polygons and attributes.
- **Places and Urban Areas:** These are the geographic units within which the analysis is conducted and follow U.S. Census Bureau guidance.
- **10-minute walk service areas:** Polygons representing the population living within a walkable half-mile (i.e. estimated as a ten-minute walk) of any given park.
- **Demographic estimates:** Most of the spatial analyses center around quantifying relationships between populations and parks. Esri's annual demographic estimates (part of the Esri Advanced Demographics product[1]) are the core data source and are provided down to the block group level; we use the Esri's Census Block Point dataset (from the same product) to translate these estimates to different geographic scales.
- **Park prioritization:** In addition to identifying 10-minute walk park access gaps, we calculate a prioritization index using six demographic and environmental variables to further prioritize park acquisitions.

The spatially derived statistics used in ParkServe (and the ParkScore Index) can all be calculated using these concepts, each of which is detailed below. The feature classes/shapefiles containing the data associated with each concept are listed at the start of each section.

Parks

GIS Data Feature Class: Parks, AdditionalData

ParkServe aims to maintain a comprehensive database of all publicly accessible parks for every urban area in the U.S. To be included, a park or 'park-like' place must meet the following criteria:

- Located outdoors

[1] Available with Business Analyst license, more info here.

- A named destination (e.g. not an unnamed median or drainageway)
- Encourages informal public use (e.g., the public is encouraged to walk through and stay awhile)
- Encourages at least one 'park-like' activity such as socializing, enjoying nature, or play/exercise

Schoolyards with formalized open-access policies via joint-use agreement or school district policy are included. Privately managed parks, such as those managed by homeowners' associations, may also be included if they are open to public use. Examples of sites that do not meet the above criteria include non-public parks in gated communities, private golf courses, publicly managed stadiums or zoos, and private cemeteries. For further examples, see Appendix: Park Inclusion Examples.

Some sites that do not meet the criteria remain in the database and are identified by "Park Access" field values other than 3 (Open Access). These only remain in the database to maintain a record of database reviews; we don't aim to maintain a comprehensive database of potential parks or non-publicly accessible parks. Therefore, any analysis should exclude those that don't meet our criteria.

Today, there are about 148,000 publicly accessible parks in the ParkServe database. Most of these parks were added in the creation of the ParkServe database from 2016 to 2018. In this initial database set-up, we contacted each city or town to request parks data and searched for GIS parks data resources on municipal and regional open data websites. If no GIS data were available, we delineated park boundaries based on satellite imagery and confirmed public access via city park websites or signage viewable through Google Street View. Cities and towns were given the opportunity to confirm the boundaries we determined.

The parks database has three tiers of 'completeness':

- For the 100 most populous U.S. cities (~20% of the U.S. population), the data is updated annually in partnership with park and recreation agency staff for the ParkScore Index. This dataset can be assumed to be 'complete.'
- For the remaining urban areas across the U.S., the database is mostly complete as of the initial 2018 development of the dataset. Suggested edits to these urban areas are reviewed and updated on a monthly basis, averaging about 450 new parks per year. While this dataset is the most comprehensive national dataset of

local parks, we recommend reviewing other local or national datasets to assess 'completeness.'

- We do not maintain parks data outside of urban areas (see Places and Urban Areas below). We recommend using PAD-US[2] for research requiring parks data beyond urban area boundaries.

Places and Urban Areas

GIS Data Feature Class: Places_Statistics

ParkServe' s geographic extent (a set of geographies referred to herein as ParkServe places) includes every "place" (Census-designated place, incorporated place, or minor civil division) that intersects an urban area. We include each place's full boundary even if it extends beyond the urban area boundary. We follow the Census' definitions for both urban areas and places. Effectively, this means that ParkServe does not maintain parks data for the unincorporated portions of counties or outside of minor civil divisions in states where they are used – see "Places" below.

Urban Areas

ParkServe includes the 2,644 Census-defined urban areas, which cover about 75% of the U.S. population and 5% of the total U.S. land area.

We follow the Census guidance on classifying urban areas, which was updated in 2020 to be defined as a densely developed area with a minimum of 5,000 people or 2,000 housing units, encompassing residential and non-residential urban land uses. Urban areas are contiguous areas meeting this definition with density derived from counts at the census block level. Urban area delineation is provided directly from the U.S. Census Bureau.

Places

The ParkServe Places dataset includes the 12,754 incorporated places, census-designated places (CDP), and minor civil divisions that intersect one of the Census defined urban areas (Table 1). The largest non-urban place in the country is Rio Rico, AZ at 21,469 population.

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[2] Pad-US Overview

An incorporated place is a legally bounded entity that has been "established to provide governmental functions for a concentration of people[3]." These typically include cities, towns, and villages. In the six New England States, as well as PA, NJ, and areas of NY outside of the New York City urban area, Minor Civil Divisions[4] are used instead of incorporated place boundaries in ParkServe because they better reflect the perception of 'place' in those states and are in fact units of governance.

In contrast, Census Designated Places are statistical entities designated by the Census Bureau that are unincorporated but are identifiable by name. Census Designated Places have no minimum population number, but they must include some residential population or housing. Unlike Incorporated places, the boundaries of Census Designated Places have no legal meaning. The inclusion of these places helps account for local variation across the country. For example, Hawaii has no formally incorporated places (e.g. Honolulu is a Census Designated Place and is governed as a county).Arlington County, VA is not incorporated as a city but otherwise functions similarly.

Table 1. Percentage of all U.S. places that overlap urban areas and are included in ParkServe database

	Incorporated Places			Census-Designated Places			Minor Civil Divisions		
		Overlap			*Overlap*			*Overlap*	
Population Size	*Total*	*Urban Area*	*% of Total*	*Total*	*Urban Area*	*% of Total*	*Total*	*Urban Area*	*% of Total*
200,000+	121	121	100%	4	4	100%	16	16	100%
50,000 - 199,999	614	614	100%	62	62	100%	125	125	100%
10,000 - 49,999	2,094	2,090	99%	708	694	98%	949	943	99%
<10,000	14,874	3,664	25%	8,872	2,518	28%	4,658	1,903	41%
Total	**17,703**	**6,489**	**37%**	**9,675**	**3,278**	**34%**	**5,748**	**2,987**	**52%**

Notes
1. Incorporated places and CDP counts exclude those in areas where we use minor civil divisions instead
2. In two instances, we replace places with Counties - Mecklenburg and Honolulu. They are each treated as 1 place

[3] Census Glossary
[4] See US Census Terms and Definitions for details on Minor Civil Divisions.

10-Minute Walk Service Areas

GIS Data Feature Class: 10MW_ServiceAreas

Every park in ParkServe is associated with a single "service area." Each service area represents the population that is within a 'walkable' half mile of one of the park's access points. A half mile is selected to estimate a 10-minute walk. The service areas from multiple parks can overlap, implying that several parks are within a walkable half mile of the given location. The service areas not calculated as the crow files, but are dependent upon a) a street network dataset and b) each park's specific access points.

For the street network dataset, we use Esri's nationwide database of streets and paths (StreetMap Premium and Network Analyst tools)[5]; only routes accessible to pedestrians are considered. Routes are considered inaccessible if the dataset describes them as private roads, roads unsuitable for pedestrians, or roads that prohibit pedestrians. Esri updates their database annually to reflect changes in the street network; we are not able to modify the underlying street network data. Suggested edits to Esri's street network can be submitted to HERE (the vendor Esri uses to provide the data) through the MapCreator tool.

For almost all parks, the access points are auto-generated by intersecting a 200-foot buffer around the park with the street network data set (Figure 1). Due to data limitations, these auto-generated access points are not limited to formal entrances and do not account for physical barriers along the park's perimeter. To improve this accuracy, users can provide a custom set of access points using our Park Reviewer tool. However, once a single custom access point has been created for a park, we no longer auto-generate the access points for that park (i.e. users need to add all of a park's access points). Due to data limitations, we do not maintain an access point data layer – these millions of access points are stored temporarily for the purposes of creating service areas.

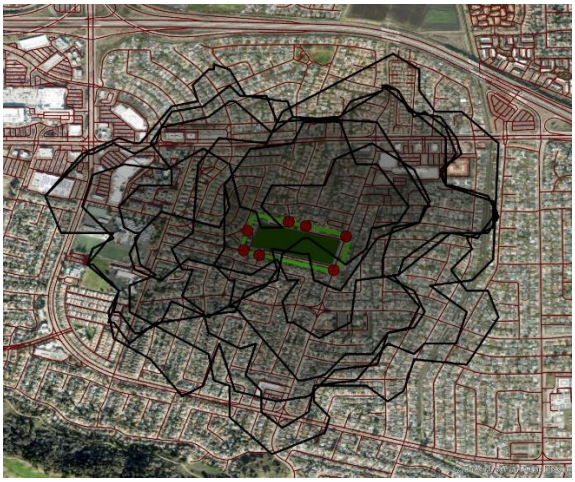
A separate service area is generated for each access point. These separate service areas are then dissolved together to create an overall service area for that park (see Figure 1). Service areas always include the area of the park itself as well.

[5] Esri's Network Analysis tools and StreetMap Premium data.

A.

B.

C.



D.

Figure 1 – Generating a park service area. (A) The required inputs are park geometry and the street network. (B) The park is buffered by 200 ft (green line) and the buffer is intersected with the road network (red lines) to produce access points (red points). (C) A 10-minute walk service area is generated for each access point. (D) All service areas are dissolved into a single service area for the park.

Open-Source Alternative: Service Area Analysis

Advanced users can create a network dataset using open-source Open Steet Maps data and use network analysis tools in Esri products or QGIS to generate service areas. The process of creating an accurate and high-quality network dataset is fairly involved; tutorials can be found online[6].

Population and Demographic Estimates

GIS Data Feature Class: Parks_Statistics, Places_Statistics

Demographic estimates allow us to quantify who is served by parks, identify areas that are underserved, and calculate place-wide statistics about the impact of a community's park system.

Due to computational limitations, our 10-minute walk population and demographic estimates use Census Block Groups and Census Blocks as the analysis unit (rather than individual households). The Census Block Group, which represents about 1,500 people, is the smallest geographic unit in which the U.S. Census and Esri provide demographic breakdowns. We use Esri's annual demographic estimates for our Census Block Group dataset (as opposed to American Community Survey 5-year Census Block Group datasets) and this dataset is the foundation for all population and demographic estimates. Esri develops these estimates from a combination of the decennial U.S. Census, the U.S. Census Bureau's 5-year estimates, and other public and private data sources.

We calculate the following fields for every Census Block Group based on the Esri dataset (see field schema below for more):

- Population: The overall population of the block group, as well as population counts for a list of demographics. Data provided directly by Esri and based on Census counts (except for Puerto Rico data which is provided via the 5-year ACS).
- Households: The overall number of households in the block group. Data provided directly by Esri and based on Census counts (except for Puerto Rico data which is provided via the 5-year ACS).

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[6] For more information on making your own network dataset, see the following:
Network - OpenStreetMap for ArcGIS
How to Make a Network Dataset in ArcGIS Pro (Tutorial on YouTube)

- Age: Children (0 – 17), Adults (18 – 64), and seniors (65+)
- Race/Ethnicity: We combine Race and Ethnicity fields by classifying anybody who is Hispanic ethnicity as 'Hispanic' and then classifying all other racial groups based on their respective non-Hispanic estimates.
- Income: We calculate based off household income (in contrast to population estimates for age and race/ethnicity). Households are classified as high, medium, or low- income based on annual household income relative to the median annual household income of their urban area (provided by the 5-Year American Community Survey). Households making >125% of urban area median income are considered high income, while those making <75% of the urban area median income are considered low income[7].

Most analyses require summarizing population data at a scale other than a Census Block Group (e.g., park service area, ParkServe place, urban area, neighborhood boundary). To do this, we use Esri's Census Block Point dataset[8]. Each block group contains many block points (about 20 on average in urban areas) and each block point is associated with a census block polygon, which are designed to represent the size of a city block. Each block point represents the population centroid of a single Census block and contains the estimated fraction of the Census Block Group's population in that Census Block. The specific demographic estimates (e.g., age, race/ethnicity, income) are assumed constant for all census blocks within a Census Block Group.

For example, take a Census Block Group with 1,500 residents of which 100 are children, 1,000 are adults, and 400 are seniors. A block point within that block group may represent 10% of the block group's population, which would translate to 150 residents – 15 children, 100 adults and 40 seniors. To summarize the population demographics within a given polygon, we then simply add the calculated populations of the demographics of interest for all block points located within the polygon (Figure 2).

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[7] Esri and the US Census provide household income estimates categorically for each Census Block Group (e.g. # households with income between $90,000 - $120,000). When an income bracket contains the cut-off value for high- or low- income households (e.g. if the high-income break is $100,000), we assume a linear distribution of household income for the bracket and assign the relative number of households accordingly. For example, if 6,000 households are within the $90,000 - $120,000 bracket and the cut-off is $100,000, then 4,000 of those households will be classified as high-income (66% * 6,000) and 2,000 middle-income.

[8] The decadal US Census produces a block point dataset but does not provide annual estimates via the American Community Survey. Esri has developed its own in-house model to estimate block point population counts annually.

Note that this method assumes that people live at one point; however, since block points are designed to be used at the city block level, the error introduced by this tends to be small and self-balancing. Use of block points rather than the area of block group within the service area allows us to account for variations in population density within a block group.

Figure 2 - Visualization of the block point method using the same park shown in Figure 1. Each block group (dark blue lines) contains multiple block points (red and blue points). Each block point represents a fraction of the population of the block group it resides in. The population of each block point for each demographic can be calculated using this fraction. To calculate the population served in a given region (in this case, the service area shown in black), the demographic populations for all points within the region (blue points) are summed. Although nine block groups intersect the service area, only six contain block points within the service area. The block point method takes variations of population density within a block group into account.

Open-Source Alternatives: Block Point and Areal Apportionment

Prerequisites: both of the open-source alternative methods described below require as an input a set of block group boundaries with attributes containing the total populations of the demographics you wish to summarize for each block group.

Block Point

The block point data set provided by Esri is derived from the US Census Block Dataset, which is in the public domain. The public domain data includes the geometry and population of each census block for decadal census years only. Esri makes two additional changes to this dataset: 1) population of each block is estimated annually (as opposed to every 10 years by the US Census) and 2) block geometries are converted to points representing the center of each block's population distribution, resulting in the creation of 'block points'.

For those without access to this Esri Block Point dataset, the Census provides a simplified block point dataset derived from the geometric centroid of each block, which can be joined with the census block populations. While this simplified method will not account for population and housing growth between each Census year, for most of the country, it provides a reasonable estimate. Additionally, the Federal Communications Commission (FCC) produced annual block level population and household estimates using open-source datasets until 2023. For more, see: https://www.fcc.gov/staff-block-estimates.

Areal Apportionment

If block point data is not available, it is also possible to use the areal apportionment method to calculate demographics within areas the intersect with partial block groups (Figure 3). In this method the percentage of the area of each block group that is within the area for which you want to summarize demographics is multiplied by the total block group demographic populations to obtain the population of the area of interest within that block group. The process can be repeated for all intersecting block groups and the populations summed up to obtain the total demographic population of the area of interest. This method has the upside of simplicity, but the downside is that it does not account for block groups with unevenly distributed populations. Results produced by this method

should be expected to be significantly different from the more accurate block point-based results in some areas.

Figure 3 – To calculate populations using aerial apportionment, the population of each demographic for each block group is adjusted by the percentage of the block group's areas (blue numbers) inside the summary area (the black service area in this case) and then the adjusted percentages are added to produce a population number. As the leftmost block group shows, this method does not consider the population distribution and can lead to less accurate results.

Park Prioritization

GIS Data Feature Class: ParkPriorityAreas

In addition to prioritizing park acquisitions for populations without any nearby parks, decision-makers may want to prioritize acquisitions based on community needs. The park priority layer provides an indexed approach to classifying census block groups based on

these characteristics. The index is created using six equally weighted factors selected based on a 2021 TPL review of both the most used measures by park and recreation agencies as well as academic studies identifying the community characteristics most strongly correlated with increased parks and green space. In general, areas with more people, more people of color, more low-income households, more air pollution, hotter surface temperatures, and worse health rates are prioritized.

Many of these metrics rely on the area to normalize data for comparisons between block groups, which we calculate after erasing areas in which people do not live. Erased areas include census blocks with 0 population, block groups with population density < 0.02 people per acre, block groups with population less than 25[9], water bodies[10], roads with a 10-meter buffer (Esri, 2022), airports (Esri, 2022) and cemeteries (Esri, 2022). After erasing these areas, we re-calculate each block group's acreage to be used for area-based calculations below.

1. Population Density

This factor measures the concentration of people in an area (census block group population divided by census block group area). Areas with higher population density are prioritized because improving park access there would benefit more residents per square mile. Data source: Esri 2025

2. Density of Low-Income Households

This factor measures the concentrations of low-income households in an area (census block group low-income households divided by census block group area). Households with lower incomes are less likely to have access to private green space or have the time or resources necessary to afford fee-based parks or recreation facilities. Areas with higher density of low-income households are prioritized. Data source: Esri 2025 (see Population and Demographic Estimates for more details on how these income groups are defined).

3. Density of People of Color

This factor measures the concentrations of people of color in an area (census block group people of color divided by census block group area). Nationally, neighborhoods with the

[9] These first four are based on the Advanced Demographics data from Esri.
[10] National Hydrography Dataset; NHD Area (Canal/Ditch, Stream/River, Sea/Ocean), 2023.
National Hydrography Dataset; NHD Waterbody (Ice Mass, Lake/Pond, Reservoir, Estuary), 2023

highest concentrations of people of color have significantly less park space than predominantly white neighborhoods due to decades of unfair urban planning and investment decisions; these historically underserved neighborhoods are prioritized. Data source: Esri 2025

4. Air Pollution Respiratory Hazard

This factor considers levels of air pollutants that can cause respiratory issues. Areas with higher air pollution levels are prioritized. The data comes from the 2024 EPA EJScreen respiratory hazard index metric, which is based on the 2019 Air Toxics Data Update. The data is collected at the census tract level; all block groups are assigned the same value as the tract containing them. The index can range from 0 – 5 and is a relative measure of the amount of non-cancer-causing toxins that affect various organs in the ambient outdoor air. The index has been deprecated and has not been updated since 2023.

5. Urban Heat Islands

This factor provides a measure of how much each census block group's average surface temperature in degrees Fahrenheit differs from the place's overall average[11]. Areas with higher heat island values are prioritized. The anomaly data is summarized at the block group level by finding the simple mean raster anomaly values for cells that are within each block group, using the block group version with no/low population areas erased.

6. Health (Mental Health and Physical Activity)

This factor combines two health measures: poor mental health and physical inactivity. These data are reported at the Census Tract level. Block groups are neatly nested within Census Tracts, so the values for each block group are derived from the corresponding Census Tract value from the raw data. CDC PLACES data are not available for Puerto Rico (Puerto Rico's Park Priority Index is calculated without the health category). Poor mental health is defined as the percent of respondents aged ≥18 years who report 14 or more days during the past 30 days during which their mental health was not good. Physical inactivity is defined as the percent of respondents aged ≥18 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

[11] Trust for Public Land's urban heat islands dataset; derived from Landsat 8 satellite imagery from June/July/August 2025.

for exercise?" For more information, see CDC PLACES 2025. Areas with high rates of poor mental health and physical inactivity are given higher priority.

Calculating the Index

Each measure above is measured on a separate scale and with different units. To create the composite index, each measure is quintilized into 5 groups each containing an equal number of block groups on a place-by-place basis. For example, for a given measure, quintile 5 (highest priority) contains the 20% of block groups with the highest value for the measure within the local place. Both the original values and quintiles are stored in the prioritization feature class in the data downloads. The health measure is comprised of two sub-measures (physical inactivity and poor mental health); each of these sub-measures are first quintilized separately before being averaged for the health measure's overall quintile.

The Park Priority Index is available for download equally weights each of the six measures to produce each census block group's overall priority score (in the ParkPriority field). This will differ slightly from the default web view, which further combines the overall Index into three equal sized quintiles, which are available in the download as the ParkRank field. In both ParkRank and ParkPriority, higher scores are related to higher priority within a given ParkServe place (since ranks are relative to a single place, you cannot compare them between regions with different PlaceID values).

Note that these metrics do not consider the presence or absence of parks as a prioritization factor. We put an emphasis on high priority areas located outside of a 10-minute walk service area.

The ParkServe tool by The Trust for Public Land uses these factors to create equity-focused prioritization maps that help city planners and community advocates make data-driven decisions about where to focus park development efforts. These layers are available on both the Place scale and the Urban Area scale. It is also possible to use the data downloads to perform a custom prioritization (see the "How To" section below).

Part 2: Custom Analysis

Calculate 10-minute walk statistics

The ParkServe database is the most comprehensive national source for 10-minute statistics for every urban area in the country. The database includes the geometry (service area layer) and demographics (park statistics layer) of the area within a walkable half-mile for every park in the database. Parks are only assigned a service area and service area demographics if Park_Access is set to "3 – Open Access" and the park has at least one access point (any park within 200 feet of a pedestrian friendly road will have at least one auto-generated access point or custom access point). These service areas are based on the street network provided by StreetMap Premium (see service area section above).

The Parks_Statistics feature class summarizes the total population and their demographics within a 10-minute walk for each park. For place-level statistics (e.g. percentage of a city's population within a 10-minute walk of a park), the Places_Statistics feature class summarizes the population and demographics of people within a 10-minute walk of a park and those who are not for ParkServe places.

The guidance below is written for calculating 10-minute walk statistics but can be applied to any distance of interest (a 10-minute walk is approximately half a mile).

Calculating 10-minute walk statistics for an individual park

The following method is used for calculating the demographics of the population living within a 10-minute walk of a given park. It is the same method used within ParkServe to populate the Parks_Statistics data file and produce the park statistics shown on the website.

1. Generate a set of access points for the park using one of two methods:
    a. Assign an access point at each instance where the street network intersects a 200-foot buffer of the park's perimeter (default method used for the Parkserve dataset).
    b. Define custom access points for the park based on goal of analysis – e.g., focus on formal access points, ADA-accessible access points, informal or social trails.
2. Use a network analysis tool and a street network dataset to create a 10-minute walk service area for each access point (equivalent to a half mile). Dissolve all service areas associated with each of the park's access points and the park's geometry into one service area associated with the park. Including the park's geometry ensures

that any population associated with block points inside the park boundary is included in the 10-minute walk calculation.
    a. The ParkServe data uses the Esri StreetMap Premium street network dataset for service area creation.
3. Calculate the population characteristics of the park's service area using one of two methods:
    a. Create a block point dataset with population counts and associated demographic characteristics and sum values within the service area (default method used for ParkServe dataset as of 2025).
    b. Use a block group dataset and estimate the population characteristics based on the area overlap between the service area and associated block groups (this method was used for ParkServe prior to the 2025 update).
4. (Optional): Calculating the population that is only within a 10-minute walk of the specified park requires calculating steps 1-4 for all parks that are within a mile of the specified park. All service area geometries associated with other parks must be erased out of the service area of the specific park. The remaining service area represents the area that is only within a walkable half-mile of the specific park and no others. Demographics can then be calculated within the remaining service area using the methods described above.

Calculating 10-minute walk statistics for a given community

10-minute walk statistics have been calculated for every city, town, or village in the ParkServe places dataset using the methods described below and can be found in the Places_Statistics feature class in the data downloads.

The ParkServe database only contains park inventory data for urban areas and thus 10-minute walk statistics cannot be calculated using the ParkServe database outside of these areas[12]. It is possible to summarize at a county, state, or national scale – but must be qualified as only representing the urban areas within any of these geographies.

[12] It is possible to follow this methodology using custom park inventory data outside of urban areas. However, a) the 10-minute walk is a less useful metric outside of urban areas and b) the methodology described here becomes less precise in lower density areas with fewer census block groups (block groups can be miles wide in rural areas).

To calculate the percentage of the total population or a specific demographic population residing within a 10-minute walk of a park in a defined region, two statistics are required: (1) the number of people living in the region, and (2) the number of people living within park service areas in the region. These numbers can be calculated using the following steps:

1. Calculate the number of people or households within a 10-minute walk of a park in the defined region (e.g., place or urban area) using the following steps:
    a. Create service areas for all parks inside and within ½ mile of the region boundaries (parks outside the boundary can still be used by that region's residents) using the method described above.
    b. Dissolve all the resulting service areas into one feature, eliminating regions of overlap. The result represents all areas in the region with 10-minute walk park access.
    c. Clip the dissolved service area to the place boundary.
    d. Calculate the populations of interest for the clipped, dissolved service area using one of two methods (see Population and Demographic Estimates above for details):
        i. Create a block point dataset with overall and demographic-specific population counts and sum populations of block points within the service area (method used for ParkServe dataset as of 2025).
        ii. Use a block group dataset and estimate the population characteristics based on the area overlap between the service area and associated block groups (this method was used for ParkServe prior to the 2025 update).

2. Calculate the total population or number of households in the specified region. One of the following methods should be used to ensure that the included populations of block groups that cross the region boundary are properly estimated (see Population and Demographic Estimates above for details):
    a. Create a block point dataset with overall and demographic-specific population counts and sum populations of block points within the region (method used for the ParkServe dataset as of 2025; populations for the ParkServe Places defined in Places_Statistics were calculated using this method and the results are in the feature class).

b. Use a block group dataset and estimate the population characteristics based on the area overlap between the region and associated block groups (this method was used for ParkServe prior to the 2025 update).

The population within a 10-minute walk of a park ('population served') can then be divided by the region's total population to obtain the percentage of each demographic of interest with 10-minute walk access.

Measure park equity

In addition to comparing the percentage of each demographic within a 10-minute walk of at least one park, we can calculate measures of distributional equity by comparing the differences in nearby park space or other measures of park resource. This allows us to consider not only disparities in access to parks, but also the distribution of attributes such as park size or other measures of park qualities. This process consists of two steps: (1) summarizing the nearby park attributes to a block point dataset and (2) summarizing for groups of individuals or geographically defined regions (e.g. neighborhoods).

Summarize nearby park attributes

In this step we summarize the park attributes within a half-mile buffer (as a proxy for 10-minute walk) of each block point in the geography of interest.

1. Create a block point dataset as described above.
2. For each block point, summarize the amount of park space (or other attribute, such as amenity count) within a ½ mile buffer[13].
    a. For acreage, it is important to dissolve parks prior to calculating to ensure overlapping polygons are not double counted. Additionally, for the ParkScore equity calculation, we remove water area[14] from the parks prior to calculating to ensure more of an apples-to-apples comparison between cities.
    b. For other attributes of parks that may not be easily clipped to the buffer (e.g. summarizing number of amenities of nearby parks), you can use the percentage park area overlap to estimate the portion of the given attribute within the ½ mile buffer. In ArcGIS the summarize within tool provides this

[13] The analysis can also be completed by calculating service areas around each block point, but this quickly becomes computationally prohibitive when scaled up given the large number of block points in the dataset and is unlikely to have a large impact on the results.
[14] NHD note with specifics (copied from elsewhere)

functionality. This method should only be applied to quantity attributes, not percentage or rating attributes.

3. In some cases, such as the TPL ParkScore equity metric, you may want to normalize for population density and can divide the summarized park acreage by the block points population.

Summarizing for population groups or neighborhoods

Once the amount of park resources each block point has access to is determined, we can use this dataset to compare the average amount of nearby park resources (e.g. park acreage, park amenities, park investment) between population groups or neighborhoods to measure distributional equity. The first facilitates the comparison of the average amount of park 'stuff' close to the average *person* of a specific population group (e.g. low-income households). The second facilitates the same comparison, but between neighborhoods (or other geographic areas such as council districts) with a mix of different types of people.

Comparing between Individuals

This metric measures the amount park resources (e.g. park space) close to the average person in each population group. It is effectively a population-weighted average of the block point data, which can be calculated as follows for each demographic of interest (such as Black population, high-income population, or overall population):

1. Define your area of interest (e.g. a specific city or place), attribute of interest (e.g. park acreage), and demographic of interest (e.g. low-income households).
2. Calculate the population-weighted estimate for the specified attribute for every block point.
    a. Calculate the total number of people or households of the demographic of interest from the block point dataset (e.g. total number of low-income households)
    b. For each block point, calculate the fraction it represents of the place of interest's total population. For example, if there are 13,000 low-income households in a given place and a single block point contains 100 low-income households, it would have a fraction of .00769 (all fractions should total to 1)
3. For each block point, calculate the weighted amount of the park resource attribute of interest (e.g. park acreage). Multiply the block point's population fraction by the block point's nearby park supply measure (e.g. .00769 * 43 park acres)

4. Sum the weighted contributions to obtain the population-weighted average. This will result in a value such as the average low-income household in a given city has 34 acres of nearby park space.
5. Repeat steps 1-4 for all demographics you want to compare for the equity analysis.
6. (Optional) To compare between population groups, you can calculate ratios between population groups of interest. For example, you can divide the low-income household value by the high-income household value.

Compare between neighborhoods

This second approach is similar, except that instead of calculating the amount of a park resource (e.g. park acreage that the average *person* has access to, it calculates the amount of a resource for the average resident of a specific *neighborhood*. For example, we can compare the amount of park space that a resident of a low-income neighborhood has compared to the amount of access that a resident of a high-income neighborhood. Once the neighborhoods are defined, all neighborhood residents are included regardless of their individual demographic (a typical low-income neighborhood contains some higher income residents). By comparing the amount of park resources, such as park space, between a community's most segregated neighborhoods, this metric has the ability to reflect the historical patterns of investment associated with specific areas within a city. This is the approach that is used within the ParkScore Index equity measure; its associated data are available upon request.

The steps below replicate TPL's ParkScore equity quantification method (note that the analysis is designed for ParkServe places with at least 20-30 block groups and may produce inaccurate results for places with fewer):

1. Classify neighborhoods of interest based on concentrations of specific demographics.
    a. For each Census Block in the area of interest (e.g. a city), calculate the percentage its population made up of each demographic you wish to compare (e.g. 75% of the households are low-income households). This can be calculated using the demographics of the Census Block Group containing the Census Block demographic data, or the block point populations derived from that data.
    b. Calculate the total population for the area of interest (e.g. a city) using the block point methodology described earlier.

    c. Identify the Census Blocks with the highest concentrations of each demographic of interest. For the ParkScore Equity measure, we group into quintiles of equal population (as opposed to equal number of census blocks).
        i. Sort all census blocks within the area of interest from highest to lowest percentage of the demographic.
        ii. Starting at the top of the sorted list, select census blocks until the total population of the selected census blocks is greater than or equal to 20% of the total area of interest population calculated above.
        iii. Assign all block groups containing at least one of the selected block points to the neighborhood. For example, if you are sorting on percent Hispanic residents, the selected block groups represent the neighborhood with the highest percentage of Hispanic residents.
2. Calculate the average amount of nearby park supply (e.g. park acreage) for all residents of the group of census block groups identified above.
    a. Calculate the summarized park attributes for all block points using the steps in the "Summarize nearby park attributes" section.
    b. Calculate the population weighted average for all block points contained in the 20% of block groups with the highest concentration of a given demographic. One way to do this is to follow the approach described in the 'Comparing between individuals' section above with two differences: (1) Instead of calculating each block point's fraction relative to the city's population, calculate relative to the total population (not the population of the demographic of interest) of the identified census block groups (the 'neighborhood') and (2) use the total population of each block point in the neighborhoods when assigning weights instead of the population of the demographic of interest.
3. Repeat steps one and two for all demographics you want to compare for the equity analysis.
4. (Optional) To compare between neighborhoods, you can calculate ratios between the averages for neighborhoods of interest. For example, you can divide the averages between low-income and high-income neighborhoods (e.g. ParkScore Index).

Prioritize locations for new parks

The following steps are used to create a custom prioritization layer using the ParkPriorityAreas feature class:

1. Determine which of the six factors you wish to use in your prioritization and the relative importance of each one (relative importance, or weight, should be a value between 0 and 1; all weights should add up to 1).
2. Calculate the weighted priority index for each block group.
    a. Multiply the quintilized field for each factor (fields ending in “rank”; see accompanying data schema) by the chosen weight for each block group, producing weighted values.
    b. Sum the weighted values for each block group. This sum is the weighted index.
    c. (optional) Quantilize the results to obtain rating categories with the same number of features in each category.
3. (optional) Erase all areas covered by service areas from the priority areas to shift the focus to areas that are not currently served by any park.

To make the prioritization sensitive to the presence of existing parks, one method is to calculate the percentage of each block group made up of park space and quintilize that result into 5 equal sized categories as is done for the other factors. The new factor can then be included in the weighted average with the other quintilized factors.

Appendix: Park Inclusion Examples

This appendix provides a set of visual examples of the decision-making process for park inclusion. Parks must meet all three criteria (named place, informal public use, park-like activities) and be accessible to the public to be included in the database as an open park.

COMMUNITY SCHOOLYARDS

Locked Schoolyard
Anywhere, USA

PS 156 Waverly and LS 392
New York, NY

Named place *Formal joint-use agreement or school district policy documented* *City & school district willing to advertise as public on website*	✗ No formal public access policy	✓
Informal public use *Can anybody walk through and stay awhile outside of school hours?*	✗ No, explicitly closed to public	✓ Yes, explicit signage with hours
Park-like activities *e.g. socializing, play/exercise, enjoy nature*	✓	✓

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PRIVATELY MANAGED SPACES (e.g. HOAs)

Featherstone HOA

Central Park HOA

Named place *City & private manager is willing to advertise park as public on website* *City attests meets same maintenance and quality standards*	✓	✗ Named, but not able to advertise as public
Informal public use *Can anybody legally walk through and stay awhile?* *No restrictive signage or within gated communities*	✓	✗ No, explicitly private signage
Park-like activities *e.g. socializing, play/exercise, enjoy nature*	✓	✓

TRUST FOR PUBLIC LAND

GOLF COURSES

Randolph Dell Urich Golf Course
Tucson, AZ

Rock Creek Golf Course
Washington, DC

Named place *Advertised on website*	✓	✓
Informal public use *Can anybody walk through and stay awhile?*	✓ Yes – around perimeter	✘ No – golfers only
Park-like activities *e.g. socializing, play/exercise, enjoy nature*	✓	✓

TRUST FOR PUBLIC LAND

STREETSCAPES

Murals
San Antonio, TX

Boulevard Median
Chicago, IL

Named place *Advertised on website*	✓	✘ No – unnamed
Informal public use *Can anybody walk through and stay awhile?*	✓	✓
Park-like activities *e.g. socializing, play/exercise, enjoy nature*	✘ No – no seating	✓

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TRAILWAYS

Bike lanes
Anywhere, US

Paseo Del Bosque
Albuquerque, NM

Named place *Advertised on website*	✗ No – unnamed	✓
Informal public use *Can anybody walk through and stay awhile?*	✓	✓
Park-like activities *e.g. socializing, play/exercise, enjoy nature*	✓	✓

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OPEN SPACE

Auten Nature Preserve
Mecklenburg, NC

Drainageway 68
Greensboro, NC

Named place *Advertised on website*	✓	✗ No – unnamed & unadvertised
Informal public use *Can anybody walk through and stay awhile?*	✗ No – not yet open to public	✓
Park-like activities *e.g. socializing, play/exercise, enjoy nature*	✓	✓

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CEMETERIES

Arlington National Cemetery
Arlington, VA

Spring Grove Cemetery
Cincinnati, OH

	Arlington National Cemetery	Spring Grove Cemetery
Named place *Advertised on website*	✓	✓
Informal public use *Can anybody walk through and stay awhile?*	✓	✓ Yes, includes mapped walking trails
Park-like activities *e.g. socializing, play/exercise, enjoy nature*	✗ No, explicitly restricts running, eating	✓

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