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## Youth Safety Zone Methodology

This document outlines the technical process for developing the Office of Youth Safety Zones including the data sources and analytical process for constructing Zones.

### 1. Data

Youth Safety Zone maps draw on several Metro data sources and the U.S. Census Bureau. The basemap is the Metro Nashville ITS Basemap, which renders the county outline and street network at varying levels of detail depending on zoom.

Fatal and non-fatal shooting data come from [MNPd's Gunshot Injuries Map](#). The dashboard's downloadable data include ZIP codes for all shootings and latitude/longitude for shootings in which the victim is an adult. To address missing location information in the open data portal, these records are supplemented with MNPd calls-for-service data (shootings and shots fired) and MNPd incident data from Data.Nashville.gov.

Zones are enriched with Metro GIS layers for schools, parks facilities, libraries, and higher-education locations. NAZA-funded program sites come from data provided by NAZA. Only Metro facilities and services are shown on the map.

Population figures for ZIP codes, tracts, and block groups come from the American Community Survey 2020–2024 5-year estimates.

### 2. Analysis

Because OYS is charged primarily with addressing gun violence affecting youth, Youth Safety Zones are drawn around areas where gun violence is concentrated. As a form of community violence, proximity to gun violence is itself a traumatic exposure and a recognized adverse childhood experience.

Gunshot injury records were grouped by ZIP code and totaled for 2025 and 2026 year-to-date (through 6/25/2026, the date of analysis). This window was chosen to reflect recent trends while retaining a long enough horizon to reveal persistent areas of gun violence. ZIP codes were ranked by total gunshot injuries, and the top ten were carried forward.

Each of the top five ZIP codes anchors a Zone. Four of the five anchors were paired with an adjacent ZIP code from the top ten to form the Zone; Zone 5 consists of a single ZIP code,

37211. Two ZIP codes were not incorporated in their entirety. Based on kernel-density mapping of gunshot-injury points, Zone 2 adds six block groups from 37206 and five from 37203 that combine a high density of gun injuries with high-density housing and large youth populations. Zone 4 adds one block group from 37203 near Watkins Park to capture a concentration of gun violence. Zone 4 also excluded several blocks from 37218 and 37209 because they extend away from areas with higher gun violence toward the perimeter of the county. Excluding these areas—based on the locations of gun violence—focuses efforts on areas most impacted.

Reanalysis using gunshot-injury rates relative to population did not change which ZIP codes were included. The rate-based analysis changed rankings of which areas had the most concentrated impact but no areas would have been excluded based on per-capital rates of fatal and non-fatal shootings.

Once Zone boundaries were set, the ZIP code and block-group boundaries were dissolved together in ArcGIS and overlaid with Metro GIS layers to display Metro facilities and services within each Zone.

### **3. Limitations**

Areas of gun violence are often persistent, but violence can also emerge in new locations. Zones are therefore not intended as firm boundaries but as planning tools for organizing Metro resources that serve similar areas and residents. Zone boundaries may shift as the dynamics of community violence change and as Nashville grows.

Gun violence is also concentrated within Zones, with some areas carrying a higher burden than others. Interventions will need to be tailored to the specific locations where they are implemented.

Finally, youth move across Zone boundaries as they travel around the county. This cross-Zone mobility is an important area for further research.

### **Technical Note: Population Estimation for Modified Zones**

ZIP codes are the foundational unit for Zones, but Zones 2 and 4 include modifications — removing unnecessary areas from Zone 4 (for example, the Cockrill Bend area, which contains John C. Tune Airport and three Tennessee Department of Correction facilities) and adding important areas to Zone 2 (for example, extending from 37210 West toward Edgehill and into 37206 along Shelby Ave. and Main St.).

Because of Census methodology, many block groups and tracts are split by ZIP code boundaries. Split geography can be handled in several ways, including apportioning population by area or by number of addresses. Here, block groups were added whole

wherever possible. Individual 2020 Census blocks were used only where a block group was large enough that adding it whole would have pulled in unintended areas or overlapped an adjacent Zone and double-counted population; in those cases, population was assigned at the 2020 block level. Only Zone 4 had area removed, and all removals used 2020 blocks.

$$\textit{Zone Pop} = \textit{Zip Code Pop} + \textit{Added Blockgroups} + \textit{Added 2020 Blocks} \\ - \textit{Removed 2020 Blocks}$$