

Quick Guide to Peer-Grouping Methodology in Rural iNTD

Peer comparison can help transit agencies more objectively evaluate their performance and allow them to better identify and prioritize problem areas for management actions. The first step in this comparative analysis is to identify transit agencies to serve as peers, i.e., agencies that share similar characteristics and are deemed comparable. As part of the Transit Cooperative Research Program Project G-11 (Ryus et al. 2011), a peer-grouping methodology was developed for urban transit agencies and implemented in the Urban Integrated National Transit Database (Urban iNTD) component of the Florida Transit Information System (FTIS). A counterpart to this urban peer-grouping methodology was subsequently developed for rural transit agencies and implemented in the Rural iNTD component of the FTIS. This document serves as a quick guide for the Rural iNTD users on the peer-grouping methodology. For more details on the methodology and its development, users are referred to the [full report](#) prepared by the research team from Kittelson and Associates, Inc. (KAI, 2019).

The methodology used to group peers in Rural iNTD is summarized below (KAI, 2019):

1. The peer-grouping methodology considers a total of nine factors to identify similar agencies (i.e., “subrecipients” in the context of rural NTD) to serve as potential peers. They include four *screening* factors, four *similarity* factors, and one *proximity* factor.
2. The four *screening factors* below are used to group subrecipients on the basis of the types of transit modes operated, the type of agency operating the service, and whether the agencies are headquartered within or outside an urbanized area (i.e., a region with a population > 50,000):
 - a) *Subrecipient Agency Type*: Transit operators falling within the same agency-type category are expected to be more similar in terms of service area and available funding options than operators that have different agency types. The Rural NTD identifies eight agency-type categories (*Form RU-20, “Agency Type”*):
 - Tribes
 - Cities, counties, and other local government agencies (e.g., public universities)
 - State government units
 - Public agency, or subsidiary unit of transit agency
 - Private provider reporting on behalf of a public entity
 - Private-for-profit corporation or other publicly-owned or privately-owned chartered corporation
 - Metropolitan planning organizations (MPOs), councils of government (COGs), or other planning agency
 - Private non-profit corporation or area agency on aging

The methodology further classifies certain agencies based on their NTD subrecipient name (*Form RU-20, “Subrecipient Name”*):

- Agencies with “City of”, “Town of”, “Village of”, or “University” in their name are assigned an additional characteristic of being city/university systems (i.e., likely to have a

- smaller service area, but may have more intense service levels relative to county systems).
 - The NTD “Private non-profit corporation or area agency on aging” category is split into two categories: “Private non-profit corporation” and “Area agency on aging”.
 - Agencies with “Senior”, “Human”, “Special”, “Social”, or “Aging” in their name are assigned the “Area agency on aging” agency type, regardless of their NTD subrecipient agency type. All other agencies with the NTD “Private non-profit corporation or area agency on aging” category are assigned the “Private non-profit corporation” agency type.
 - b) *Operates Commuter Bus*: An agency is considered to operate commuter bus if data for the CB mode appear in the rural NTD for the most recent reporting year (*Form RU-20, Modes: “Commuter bus” is checked*).
 - c) *Percent Motorbus Revenue Hours*: The sum of motorbus (MB) and commuter bus (CB) annual vehicle revenue hours divided by total annual vehicle revenue hours, for the most recent reporting year (*Form RU-20, Service Data, Annual Vehicle Revenue Hours for Bus, Commuter Bus, and Total*).
 - d) *Headquarters City in an Urbanized Area*: The headquarters city and state listed in the Rural NTD (*Form RU-20, Subrecipient City, Subrecipient State*) is used to determine whether the agency is located within an urbanized area.
3. The four *similarity* factors below are used to identify the degree of similarity between a target subrecipient and a potential peer subrecipient:
- a) *Annual Vehicle Revenue Miles Operated*: This factor measures the amount of service provided, which is a function of service frequency, hours and days of service, number of vehicles operated, and service area size (*Form RU-20, Service Data, Annual Vehicle Revenue Miles, Total*).
 - b) *Percent Funding §5310*: This factor is calculated as annual §5310 (Enhanced Mobility of Seniors & Individuals with Disabilities) operating funds divided by total annual operating revenue, for the most recent reporting year (*Form RU-20, Federal Assistance, §5310 Operating Funds; and Form RU-20, Total Annual Operating Revenues Expended*).
 - c) *Percent Local Funding*: This factor is calculated as annual local funds divided by total annual operating revenue, for the most recent reporting year (*Form RU-20, Local Operating Funds; and Form RU-20, Total Annual Operating Revenues Expended*).
 - d) *Headquarters City Population*: This factor is used to compare the population of an agency’s headquarters city to that of a potential peer. It serves as a proxy for other factors (e.g., service area population, service area population density) not available in an automated way from the NTD or other sources.
4. The *proximity* factor is based on the great-circle distance in miles between the centroids of the target and potential peer agencies’ five-digit zip codes (*Form RU-20, Subrecipient Zip code*).

5. An average likeness score is calculated for each pair of target subrecipient and potential peer subrecipient, as follows:

$$ALS = \frac{\sum_{i=1}^n (RV_i \times FW_i)}{n}$$

where:

ALS = average likeness score,

RV_i = raw value for factor *i*,

FW_i = factor weight for factor *i*, and

n = number of target agency factors for which data are available in the NTD.

The lower the average likeness score of a potential peer subrecipient, the more similar it is to the target subrecipient. In general, an average likeness score under 0.50 indicates a high likelihood of being a good peer, between 0.50 and 1.00 represents a reasonable potential to be a good peer, and above 1.00 indicates that it is unlikely to be a good peer, except for agencies located outside the 48 contiguous United States that have few nearby potential peers.

Because some factors that may be important in selecting a peer (e.g., service area population density) are not considered by the method due to a lack of data, a low average likeness score is not a guarantee of a transit provider being a suitable peer. It is recommended that users review the factor likeness scores and possibly consider other factors not considered by the method when forming a peer group out of the potential peers suggested by the method. In general, however, the set of potential peers identified by the method should be a good starting point for narrowing down to a final peer group.

In calculating the average likeness score for a potential peer subrecipient, the raw value for each of the nine peer-grouping factors is first calculated. A raw value measures the difference in a factor between the target subrecipient and a potential peer subrecipient. The raw value is then adjusted by a corresponding factor weight to obtain the likeness score for the factor. It is noted that the factor weights are not used to indicate the relative importance of the different factors, but simply to account for the difference in the value scales of the different factors. A high factor weight simply indicates that the raw values for that factor tend to be very small numbers. Similarly, a factor weight of 1 indicates that the raw values for that factor already fall into the desired range for likeness scores.

It is also noted that because individual factor likeness scores are averaged when developing the average likeness score, a potential peer subrecipient can (and often will) have a not-so-good likeness score for one or more factors, but still end up with an average likeness score that indicates a good or reasonable match. This is not a problem in itself; it cannot be expected that peers will be close in all respects covered by the method.

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References

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Kittelson and Associates, Inc. 2019. *Rural and Small City Transit Agency Peer-Grouping Methodology*, Final Report prepared for the Florida International University and the National Rural Transit Assistance Program.