INTERIM
COUNT METHODOLOGY GUIDANCE FOR ACTIVE TRANSPORTATION PROGRAM (ATP)

This Interim Count Methodology Guidance (Interim Guide) is intended to guide ATP applicants and project awardees in meeting the minimum expectations for conducting user counts, surveys, and evaluation requirements for active transportation projects funded through the Active Transportation Program (ATP).

These instructions are labeled ***INTERIM*** to acknowledge that more research, feedback, collaboration, and documentation is needed prior to finalizing guidance on: 1) determining the number and location of the counts that should be required for varying project types and 2) only estimating the total number of active transportation users generated by ATP funds within specified project limits based on limited count locations. To this goal, the Active Transportation Resource Center (ATRC) is tasked with developing a statewide database for the evaluation of ATP funded projects. This database may ask for more in-depth user data.

This Interim Guide covers the following topics that represent central steps to ensure that ATP awardees can provide consistent and uniform project user-data for project progress and final delivery reports:

1. Determining the Type of Count Data Collection Needed — Page 2
2. Determining the Number of Count Locations Needed — Page 4
3. Selecting Count Locations — Page 7
4. Conducting Pedestrian and Bicycle Counts — Page 8
5. Estimating the Total Volume within the Project Limits — Page 12
6. User Count Reporting Process — Page 18
7. Approval Process for Other Count Methodologies — Page 18

The guidance provided here shall be used for any ATP project applications which require user data and for all ATP-funded projects that receive a construction phase California Transportation Commission (CTC) allocation at or after the October 2019 meeting. Any project that has already completed the pre-construction phase counts shall use the same methodology for the post-construction counts. Since there is a vast range of evaluation and techniques that exist for collecting data on bicycle and pedestrian volumes, agencies wishing to utilize methodologies that do not conform to the methodologies shown in Tables 1 through 3, must secure approval of their methodology from the Caltrans ATP Office prior to initiating data collection efforts. See

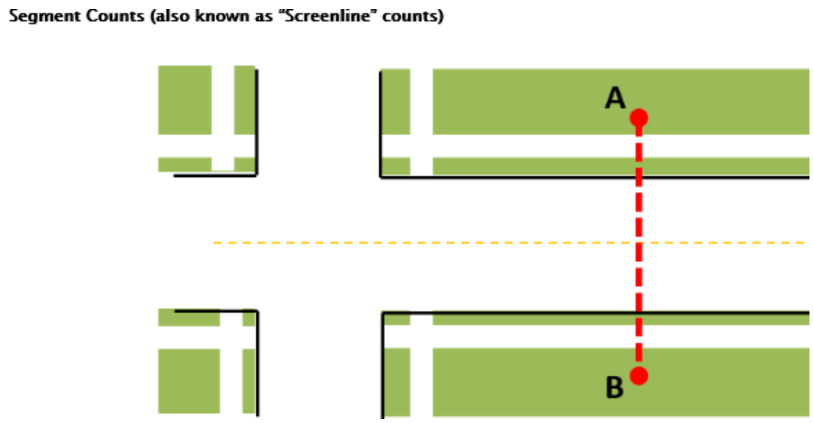
"Approval Process for Other Count Methodologies."

1. Determining the Type of Count Data Collection Needed

The types of projects that ATP currently funds include infrastructure, non-infrastructure (NI), quick build and plan project types, as well as projects that combine infrastructure and NI strategies. While these project types necessitate different ways to collect the data, all project types (except for quick build and plan projects) are required to collect the necessary user data so that Caltrans can report on the impact of ATP investments in relation to the ATP's legislated goals and the CTC's SB 1 Accountability Requirements. Table 1 summarizes the preferred type of user data that is needed for each project type. For projects that include infrastructure and NI components, a combination of data collection strategies from Tables 1, 2 and 3 shall be used.
As shown in Table 3, for Safe Routes to School (SRTS) and community/jurisdiction- wide NI projects, obtaining field counts is not considered an ideal methodology for project evaluation purposes. Instead, project-specific surveys and/or modeling may be more appropriate. Any agency who plans to use a survey or modeling should reach out to ATP-NI@dot.ca.gov for assistance and approval. These types of projects will require the submittal of all survey data as well as the complied report. SRTS NI awardees must complete student travel tallies or parent surveys (go to ATP Project Reporting | Caltrans then see NI Resources). Additional details are provided in Appendix A of this document. If an agency believes an alternative method of data collection would be more suitable, it must have its methodology approved by the Caltrans ATP Office prior to beginning their data collection, see Section 6. Agencies will be asked to fully document their proposed methodology to a level that ensures consistency in how before and after user counts are conducted.

For Plan and Quick Build projects, obtaining "Before/After" user counts will not show any meaningfuldifference in volumes until a permanent improvement identified is implemented. Therefore, agencies awarded a plan project are not required to conduct or report usercounts, but they may do so if they wish to obtain current user levels.

A variety of methodologies exist for collecting user counts (Please see a list of references at the end of this guide). Common methods include screenline counts (see the diagram below), intersection counts, student travel tallies, and parent and/or community-wide surveys. In addition, within a particular methodology there are often many varieties of counting. For example, screenline counts can be completed manually, by video, using automated technologies, etc. Surveys can be administered online or in-person. This Interim Guide provides standard expectations for estimating user counts for each type of ATP project; and seeks to follow national best practices and accommodate existing regional pedestrian and bicycle count methodologies across California.

Screenline counts are user counts taken across an imaginary line which is perpendicular to the direction of travel.	

Count Data Collection Methods (Table 1)

ATP Project Types	Recommended Count Type & Method	Duration	Alternative Count Type & Method	Duration
Infrastructure (Including SRTS Infrastructure projects)	Automated 24 Hour Manual Count from Video 24 Hour	One Week	Manual In-fieldCounts Peak Period	4-total Hours on 3 Weekdays (T, W, TH) at 7 – 9 AM and 4 – 6 PM and 1 Weekend day 11 AM - 1 PM*

*For manual counts, it is preferable that counts be taken on three consecutive days during the AM and PM 2-hour PEAK plus one weekend day's 2-hour peak. This interim guidance will allow an agency to opt to conduct one weekday am/pm 2-hour peak + one weekend day 2-hour peak count. If the location's 2- hour peak is different from these, that 2-hour period should be used.

Note: Counts should be taken during typical conditions i.e. for SRTS projects, during the school year. Not during holidays or a special event.

Count Data Collection Methods (Table 1 continued)

ATP Project Types	Recommended Count Type & Method	Duration	Alternative Count Type & Method	Duration
Safe Routes to School Non-Infrastructure	Classroom Student Travel Tallies or Parent Surveys (at each school in project) **	Two Days forTallies-averaged	Automated or Manual VolumeCounts (Per Infrastructure Recommendations)	
Community Wide/ Jurisdiction Wide Non-Infrastructure	Surveys***/ Modeling	Variable	Automated or Manual VolumeCounts (Per Infrastructure Recommendations)	

** See Appendix A for details on the Student Travel Tallies.

***FHWA's Non-Motorized Transportation Pilot Program – Community Wide Evaluation Study and the Mineta Institute's Pedestrian and Bicycle Survey are two available examples. Additional ideas for collecting data to inform community-wide non-infrastructure evaluation can also be found in Alta Planning +Design's Measure for Success: New Tools for Shaping Transportation Behavior. Your MPO may also have suggested tools and methods. See References for related links.

Note: New facilities, such as a new Class 1 trail, do not require pre-construction user counts. The initial user count will be assumed to be zero. An agency may elect to do field counts at location(s) that have an existing facility, such as a dirt trail, for reporting purposes.

2. Determining the Number of Count Locations Needed

Active Transportation Program projects vary greatly in size, shape, and type, and each of these variables directly impacts the number, location, and types of data collection efforts that are necessary to measure project success. There are well-established common practices for conducting the physical active transportation field counts (as discussed in the following sections) but little state or national guidance exists on how to determine the number and location of the counts necessary to establish reliable estimations of the total number of active transportation users within a specified project limit.

The goal of this Interim Guidance is to establish a minimum number of count locations for the widely varying ATP project types that accounts for both the limited resources available to conduct counts and the need for developing reliable user estimates for ATP reporting. This document establishes interim guidance on this topic with the understanding that it can be adjusted as more research, feedback, and data becomes available.

While this Interim Guidance acknowledges that the minimum "number" of counts is being intentionally constrained to reduce the burden on agencies implementing ATP projects, there is also an expectation that projects seeking larger amounts of ATP funding will provide higher levels of 'before vs. after' user count data. Therefore, this guidance requires larger ATP projects to provide more count locations.

For projects that include both infrastructure and NI components, a combination of data collection strategies should be used; however, the combined count requirements could produce an unintended burden on the agency. If an agency believes this applies to their project, they must have their methodology for the total number of count locations/types approved by Caltrans ATP Office prior to beginning their data collection.

The following tables provide simple, high-level guidance to ATP applicants and project implementers when determining the required/recommended evaluation to determine project success for either Infrastructure (Table 2) or Non-Infrastructure (Table 3) projects.

Data Collection Requirements for Infrastructure Projects (Table 2)

ATP Infrastructure Project Types*	Minimum Required # of count locations (# maximum)	Alternative Minimum Required # of count locations
Small Infrastructure Projects	1	N/A
Medium Infrastructure Projects Multiple Corridors/Intersections and Networks	1 per two Corridors or Intersections (3 maximum)	0.05 * Total Centerline or Center lane Miles of Project[4]
Large Infrastructure Projects Multiple Corridors/Intersections and Networks	1 per Corridor or Intersection (7 maximum)	0.10 * Total Centerline or Center lane Miles of Project[5]

*Includes SRTS Infrastructure Projects

[4,5]Washington State DOT, A Guidebook for When and Where to Count

Data Collection Methodology for Non-Infrastructure (NI) Projects (Table 3)

ATP Non-infrastructure Project Types	Minimum Required #	Alternative Minimum Required #
Safe Routes to School Projects	1 Set of Tallies/Survey*/ School	N/A
Community/Jurisdiction Wide	Survey***	Modeling

*See Appendix A for details on the Student Travel Tallies.

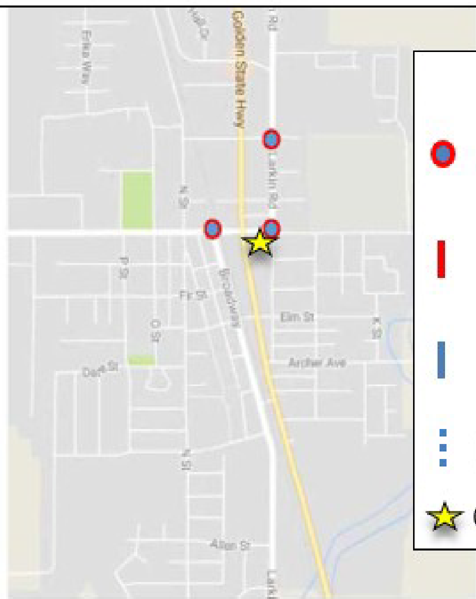
***FHWA's Non-Motorized Transportation Pilot Program – Community Wide Evaluation Study and the Mineta Institute's Pedestrian and Bicycle Survey are two available examples. Additional ideas for collecting data to inform community-wide non-infrastructure evaluation can also be found in Alta Planning +Design's Measure for Success: New Tools for Shaping Transportation Behavior. Your MPO may also have suggested tools and methods. See References for related links.

The following four examples demonstrate the wide variety of ATP Infrastructure projects. With each of these example projects, the number and location of the user counts necessary to establish reliable estimations of the total number of active transportation users within the project limits would vary.

Count Location Examples 1 through 4

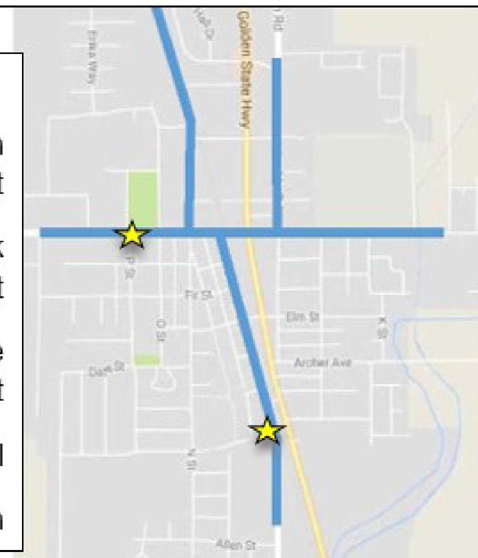
Example 1: $1M total project cost (Small)
Intersection Improvement only project-

- Only 1 count is required
- Conduct count at intersection with highest number of expected users.



Example 2: $2M total project cost (Medium)
Bike lane only project-

- 4 corridors = 2 counts are required
- Conduct counts at locations with highest number of expected users.

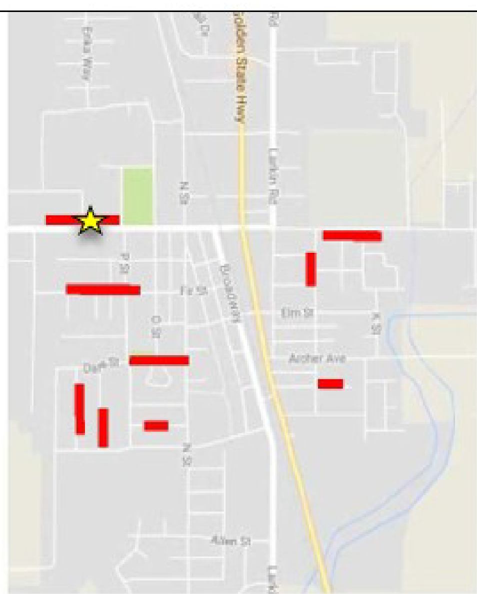


Legend

- Intersection Improvement
- Sidewalk Improvement
- Bike Lane Improvement
- Multi-Use Trail
- Count Location

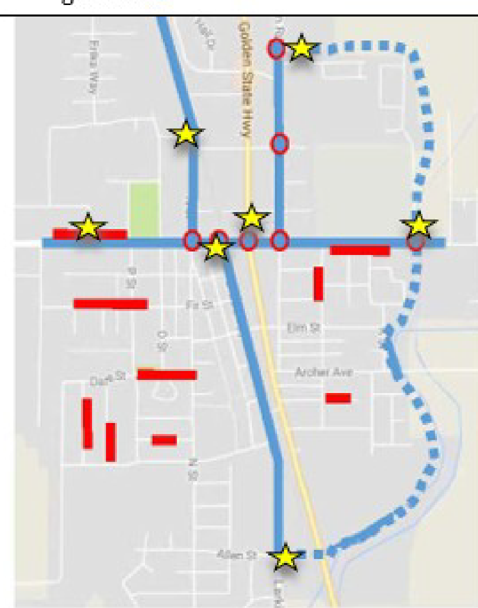
Example 3: $1.4M total project cost (Small)
Sidewalk gap closure only project-

- Only 1 count is required
- Conduct count at a location with highest number of expected users.



Example 4: $10M total project cost (Large)
With all improvement types

- 5 bike corridors, 7 intersections, 9 sidewalks = 7 counts are required
- Ideally counts would be taken at locations where both bike and pedestrian data can be gathered.



3. Selecting Count Locations

Knowing that the number of active transportation field-counts for ATP project applications is constrained, it is critical that applicants carefully select the most effective locations for their limited counts. There is no set formula for determining the best count locations, but instead there are some generally accepted best practices that need to be combined with the project implementer's knowledge and judgement of the project limits.

The following National Bicycle and Pedestrian Documentation (NBPD) Project criteria are recommended for short-duration (week-long or peak period) counts:

- Locations where pedestrian and bicycle activity is high (downtowns, near schools, parks, etc.) to increase accuracy;
- Representative locations in urban, suburban, and rural locations;
- Key corridors that can be used to gauge the impacts of future improvements;
- Locations where counts have been conducted historically;
- Locations where ongoing counts are being conducted by other agencies through a variety of means, including videotaping;
- Gaps, pinch points, and locations that are operationally difficult for bicyclists and pedestrians (potential improvement areas);
- Locations where either bicycle and/or pedestrian collision numbers are high; and
- Select locations that meet as many of these criteria as possible.

In the case of ATP projects, the following should also be considered:

- For corridors where a single count is being conducted, it should be centrally located along the corridor or at a location where volumes are expected to be high;
- For networks, counts should be spread throughout the network in varying land uses, on varying roadway types, and in locations where future improvements are expected;
- For long corridors, multiple count locations will improve the accuracy of user volume estimations.

Additional guidance on siting count locations can be found in the following resources:

- 2016 FHWA Traffic Monitoring Guide (TMG) (Chapter 4): https://www.fhwa.dot.gov/policyinformation/tmguide/tmg_fhwa_pl_17_003.pdf
- Nation Cooperative Highway Research Program (NCHRP) 797 – Guidebook on Pedestrian and Bicycle Volume Data Collection (Chapter 3): https://www.nap.edu/catalog/22223/guidebook-on-pedestrian-and-bicycle-volume-data-collection
- Washington State Department of Transportation – Collecting Network-wide Bicycle and Pedestrian Data: A Guidebook for When and Where to Count (Chapter 4): https://www.wsdot.wa.gov/research/reports/800/collecting-network-wide-bicycle-and-pedestrian-data-guidebook-when-and-where

- SCAG Active Transportation Database (Creating a Count Program): https://atdb.scag.ca.gov/Pages/Tutorials.aspx

For SRTS Infrastructure projects, there should be at least one count at each school served by the project. Count location(s) should be conducted along the improved route where volume is expected to change. As previously noted, for SRTS NI projects, agencies can work with local school administrators to administer in-classroom Student Travel Tallies or Parent Surveys to determine the number of students walking to and from school, insteadof field-counts. (See Appendix A).

4. Conducting Pedestrian and Bicycle Counts:

In an effort to create consistency for ATP applications/projects in how user counts are conducted and the resulting data, this Interim Guide establishes baseline requirements for user counts and recommends that all fields-counts be consistent with Southern California Association of Governments (SCAG) Active Transportation Database.

Agencies not wishing to use SCAG's methodology and database should follow the guidance in the Federal Highway Administration 2016 TMG and/or the NCHRP Report 797 (listed on page 7 as well as in the Reference section).

All of these best practices will impact the resulting count data and are required to be followed for ATP projects:

- General consistency for all methods
    a. All pre-construction counts should be conducted no more than six months before the construction phase begins and post-construction counts should be conducted at least six months after construction is completed. If this timeframe would make item *b* below impossible, the agency should receive approval for an alternative date. Agencies are encouraged but not required to conduct additional counts two years after the project has been completed, to allow projects to come to "maturity."
    b. Before and after user counts are to be conducted at the same location on the same days of the week, the same time(s) of day, and the same week of the year. This will reduce the chances of variability due to seasonal or daily changes in travel behavior.
        i. If inclement weather or another constraint is present, counts should be rescheduled to the next possible day that is the same day of the week. For example, if the count was expected to take place on a Tuesday-Thursday-Saturday during the second week of the month, and itrained, the count should be rescheduled for the Tuesday-Thursday-Saturday in the third week of the month.
    c. Consistency related to location, time of year and weather conditions is extremely important and should be accounted for prior to initiating user data collection.
- Consistency in tracking and recording data in before and after counts:
    a. Counts data should contain:

i. directionality (flows) and the mode of travel should be captured for each facility being measured. For example, a typical screenline count on a two-way street with sidewalks would have four facilities (two sidewalks and either two bikeways or two general travel lanes) and a minimum of eight mode/direction combinations. This assumes only bikes and pedestrians are counted. If wheelchairs and other wheeled devices are captured there would be sixteen combinations. *SCAG's Active Transportation Database is consistent with this methodology. Agencies interested in using SCAG's methodology and storing their data in the database should contact atdb@scag.ca.gov to discuss coordination.*

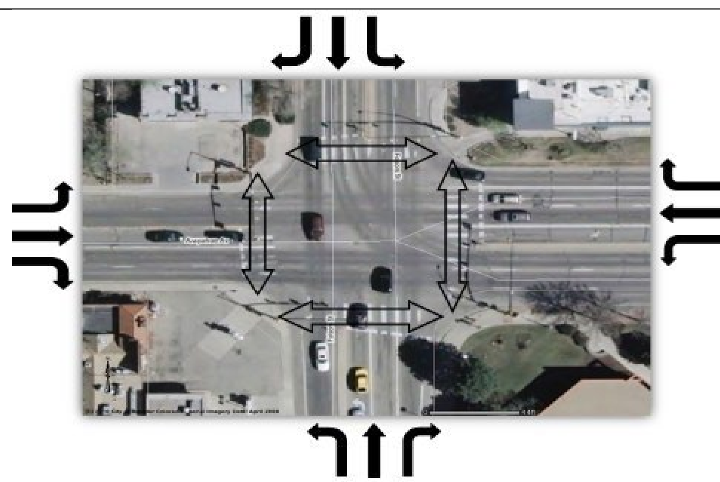
ii. Alternatively, aggregate information can be gathered for a location for all facilities in each direction for each mode/direction combination. This method is usually used for trails or with manual counts using paper tally sheets to reduce the complexity for the counter.

b. Counts should be conducted at the lowest level of aggregation possible. Typically for automated counters, this can be done with timestamps for each bicyclist or pedestrian. SCAG's mobile Bike Ped Counter application also allows for timestamped data for each record. For manual counts, data should be aggregated into 15-minute increments or bins. 15-minute bins are also acceptable for automated counters.

c. Manual Counts:

i. For manual screenline counts, SCAG has developed a paper count form and a mobile application that can be used to count locations: https://atdb.scag.ca.gov/Pages/Tutorials.aspx. As noted above, agencies can use other formats if they conform to Federal Highway Administration 2016 TMG and/or the NCHRP Report 797.

ii. For manual intersection counts, NCHRP 797 (pg. 119-120) should be consulted, and a 12-movement method should be used to capture the entry and exit of each bicyclist and pedestrian. Agencies can use other formats if they conform to the TMG (FHWA Traffic Monitoring Guide) standards.

Typical intersection 12 movements, 4 through, 4 right tuns, and 4 left turns	

iii. User data such as helmet use, gender, and age should be captured when possible.

iv. Ideally, counts would be taken on three consecutive weekdays or for a continuous 24-hour period to provide more accurate measurements. This Interim Guide allows data to be collected for a minimum of six hours at each location including one weekday AM and PM peak, and one weekend day peak. See table 1.

d. Automated Counts:

i. Automated Counts should be completed for a minimum of 24 hours per day for one week.

ii. A variety of technologies and methods currently exist for collecting both bicycle and pedestrian counts. Please see the Reference section at the end of this document that include recommendations on technology types.

- Safe Routes to School Non-Infrastructure
  a. Appendix A has additional guidance for conducting student travel tallies and parent surveys.
  b. If the project only spans one school year, tallies should be taken on the same days of the week on days with similar temperature and weather conditions.
- Community wide/Jurisdiction wide Non-Infrastructure
  a. Surveys can utilize in-person or electronic methods, but implementers should consider how the target community will access the platform and resource the effort accordingly. This may require paid staff to conduct surveys in person.
  b. Modeling efforts should be conducted in partnership with county and regional planning organizations whenever possible.
  c. The use of big data will be considered by Caltrans on a case-by-case basis until final guidance on this topic can be developed. Agencies wishing to use big data sources should secure prior approval.

5. Estimating the Total Volume (Number of Users) within the Project Limits:

Once the actual field-count data has been collected (manual or automated or surveys), the final step in the ATP reporting process is to estimate the total number of active transportation users within the proposed project limits.

For the Active Transportation Program, the units for a project's total number of users are to be in <u>Daily Pedestrian Volume</u> and <u>Daily Bicycle Volume</u>

For this Interim Guide, the priority has been to establish a consistent and repeatable approach for estimating the total number of users for the individual ATP projects. For ATP reporting purposes, establishing a methodology that will result in consistent before and after counts for individual project analysis is a higher priority than the numeric accuracy of the total number of users.

In order to make a highly reliable estimate of the total number of users within a project's boundaries based on a relatively small number of spot-location counts, extensive details of the active transportation travel patterns and complex calculation-factors are required. It is understood that at the time this guidance is being developed, these details and corresponding calculation-factors are not available for most California cities and counties. Therefore, in this interim guidance, the number of factors and the complexity of the adjustment calculations are intentionally constrained, with the goal of meeting the needs of ATP reporting while minimizing the time and resources to complete the calculations.

This ATP guidance breaks the "total volume" for bicyclists and pedestrians calculation process into two steps:

Step 1- Converting the count data into Average Daily Volume for each of the individual count locations:

For this Interim Guide, the Average Daily Volume will be an average for the whole week. For most projects with will be an average of the 5 weekdays and 2 weekend days. The process for calculating this single value for each count location will vary significantly based on "Type of Count Data Collection Needed". With this in mind, two calculation methodologies are provided (24-hour counts and Manual Partial-day counts):

24-hour Counts:

- For locations with a full week of 24-hour count data, the calculation is much easier. The implementing agency can simply take the total users for a 7-day period and divide by 7. The result = "Total Daily Volume" for the individual count location ($tdt_{c\text{-}location}$).
- Use this number in Step 2.

Manual Partial-Day Counts:

- For locations with partial-day field counts, each weekday and weekend field-count will be converted into an estimation of the "Total Daily Volume" for the full 24-hour period.
- In order to do this, there needs to be a method of estimating the number of users in each hour of the weekday and weekend for the specific count location.
    a. Ideally, this distribution of "Daily Pedestrian Volume" and "Daily Bicycle Volume" would be known for each count location. But at the time this guidance is being developed, this is not a practical expectation.
    b. In locations where this active transportation data is not known, daily vehicle average daily traffic counts ($\#_{td}$) can be used. (If traffic

count data for the exact count location is not available, the agency should use data from a nearby location)

- Once the 24-hour vehicle count is made for each location ($\#_{td}$), then the pedestrian and bicycle count data collected for the peak hours on the weekdays and weekends can be extrapolated into 24-hour totals.

- The following is a brief example of how to convert the count data into total Average Daily Volume for each of the individual count locations. (Note: This process needs to be completed for both "Pedestrian" and "Bicycle" counts.) ***For examples, see Appendix B.***

Converting Weekday Counts Example: 7 – 9 AM and 4 – 6 PM counts:

1. If counts were taken on multiple weekdays, the first step is to calculate a single average total count value for each of the blocks of times counted.
2. Using the 24-hour vehicle count total for an average weekday ($\#_{td\text{-}weekday}$), calculate the general ratio of the pedestrian and bicycle counts between 7-9 AM ($\#_{7\text{-}9}$) plus 4-6 PM ($\#_{4\text{-}6}$) as compared to the full 24-hour counts. Here is a sample calc:
   $(\#_{7\text{-}9} + \#_{4\text{-}6}) / \#_{td\text{-}weekday}$ = ratio of count volumes vs. total volumes ($rv_{weekday}$)
3. Then divide the sum of the actual count data collected from 7-9 AM and 4-6 PM by this general ratio.
   $(Count\#_{7\text{-}9} + Count\#_{4\text{-}6}) / rv_{weekday}$ = an estimation of the total daily volume for the full 24-hour period of an average weekday ($tdt_{weekday}$).

Converting Weekend Counts Example: Saturday 11 AM - 1 PM count:

1. Using the 24-hour vehicle count for an average weekend ($\#_{td\text{-}weekend}$), calculate the general ratio of the counts between 11AM - 1 PM ($\#_{11\text{-}1}$) as compared to the full 24-hour counts. Here is a sample calc:
   $(\#_{11\text{-}1}) / \#_{td\text{-}weekend}$ = ratio of count volumes vs. total volumes ($rv_{weekend}$)
2. Then divide the actual count data collected from 11AM - 1 PM by this general ratio.
   $Count\#_{11\text{-}1} / rv_{weekend}$ = an estimation of the total daily volume for the full 24-hour period of an average weekend ($tdt_{weekend}$).

Converting Weekday and Weekend volumes into an Average Daily Volume:

1. Once the total daily volumes are estimated for the weekdays ($tdt_{weekday}$) and weekend-days ($tdt_{weekend}$), then these values can be used to calculate a single average "Total Daily Volume".
2. Take 5 times the weekday value plus 2 times the weekend-day value and divide by 7

(5 x $tdt_{weekend}$ + 2 x $tdt_{weekend}$) / 7 = total daily volume for the count location ($tdt_{c\text{-}location}$)

3. *Use this number in Step 2.*

For SRTS and/or other project/count types:

- ATP includes a wide range of projects that are expected to utilize very different count types that result in many different types of count data.
- For this interim guidance, local agencies are expected to establish **consistent and repeatable approaches** for estimating the total daily volume for each of their count locations. Agencies are encouraged to consult with Caltrans staff as they establish their approaches.

Step 2- Converting the Average Daily Volume(s) into a single Total Project Volume:

With each of the project's count-location volumes converted into a single "Total Daily Volume" value (separate values for "Pedestrians" and "Bicycles"), the final step is to convert these Total Daily Volume values for each count-location into an estimation of the project's total number of users presented in total "Daily Pedestrian Volume" and total "Daily Bicycle Volume".

Note: For this step (more than for any of the previous steps), the emphasis is placed on establishing a methodology that will result in consistent and repeatable before and after counts for individual projects. For this Interim Guidance, the numeric accuracy of the following calculations will vary widely depending on the size and complexity of each individual project.

Projects with a single improvement location using a vehicular count data conversion:

- When the total daily volume calculated for the count location is considered a reasonable approximation of the total daily volume of users within the overall the project limits, then the 'total daily volume' value from Step 1 (above) can be used as the final total volume of users in the project limits.
  1. The 'daily volume' value from step 1 should be multiplied by an adjustment factor(s). This factor is expected to vary based on the number and length of improvement locations within the overall project limits.
  2. **This factor must be the same for the before and after counts**.
  3. This factor must be established by the implementing agency.
  4. The following two brief example calculations are intended to provide the implementing agency some insight on how to establish this factor. This example is based on Count Location Example1 shown above on Page 6 in Section 2 of this guidance.

For an example of how to develop and utilize this process see Appendix B.

Count Location Example 1- This example shows a project improving 3 intersections with only one count location:

- When the project includes multiple corridors/intersections and/or long corridors, the single count location is probably not a reasonable approximation of the total volume of users in the project limits. For these projects, a second calculation is needed to convert the single location volume to an approximate total daily volume of the overall the project limits:

  - If the agency has reason to believe that each intersection will have similar numbers of users and most users-trips only cross through one of the intersections, then the agency can simply multiply the 'total daily volume' value calculated in Step 1 by a factor of 3:

    $tdt_{c\text{-}location}$ x 3 = total daily volume for the entire project limits

For an example of how to develop and utilize these factors, see Appendix B, Example 1.

OR

  - If the agency has reason to believe that each intersection will have widely varying numbers of users, then the agency could multiply the 'total daily volume' value calculated in Step 1 by 2 different factors for the intersections not counted:

    $tdt_{c\text{-}location}$ + $tdt_{c\text{-}location}$ x Factor 1 + $tdt_{c\text{-}location}$ x Factor 2 = total daily volume for the entire project limits

For an example of how to develop and utilize these factors, see Appendix B, Example 1A.

OR

  - If the agency has reason to believe that a large percentage of the users at the count location are also traveling through the other intersections, then a reduction-factors should be applied to the other two intersections, so multi-location user-trips are not double counted:

    $tdt_{c\text{-}location}$ + $tdt_{c\text{-}location}$ x Reduction-factor 1 + $tdt_{c\text{-}location}$ x Reduction-factor 2 = total daily volume for the entire project limits

For an example of how to develop and utilize these factors, see Appendix B, Example 1B.

Count Location Example 3: This example project shows a project improving numerous (9) small segments of sidewalk with only one count location:

- If the agency has reason to believe that each segment of sidewalk will have widely varying numbers of users, then the agency could multiply the 'total daily volume' value calculated in Step 1 by different factors for each of the segments not counted:

$tdt_{c\text{-}location}$ + $tdt_{c\text{-}location}$ x Factor 1 + $tdt_{c\text{-}location}$ x Factor 2 + $tdt_{c\text{-}location}$ x Factor 3 + $tdt_{c\text{-}location}$ x Factor 4 + $tdt_{c\text{-}location}$ x Factor 5 + $tdt_{c\text{-}location}$ x Factor 6 + $tdt_{c\text{-}location}$ x Factor 7 + $tdt_{c\text{-}location}$ x Factor 8 = total daily volume for the entire project limits

For an example of how to develop and utilize these factors, see Appendix B, Example 3.

AND

- If the agency has reason to believe that a large percentage of the user-trips at the count location (or on a corridor) are also traveling through one or more of the other segments/corridors, then reduction-factors should be applied so the expected multi-location user-trips are not double counted.

Projects with multiple count locations:

- When the sum of the total daily volumes calculated for the count locations is considered a reasonable approximation of the total daily volume of users within the overall the project limits, then the sum of the 'daily volume' values from each location in Step 1 (above) can be used as the final total volume of users in the project limits.
- When the project includes multiple corridors and/or intersections where counts were not taken, then the sum of the total daily volumes calculated for the count locations is probably not a reasonable approximation of the total volume of users in the project limits. For these projects, a second calculation is needed to convert the count location volumes to an approximate total daily volume of the overall the project limits:
    1. The 'daily volume' values calculated from Step 1 need to be multiplied by an adjustment factor. These adjustments are expected to vary based on the number and length of improvement locations within the overall project limits. These factors will need to account for each of the corridors and/or intersections that did not have counts collected at them.
    2. **This factor must be the same for the before and after counts**.
    3. This factor must be established by the implementing agency.
    4. The following two brief example calculations are intended to provide the implementing agency some insight on how to establish this factor. These examples are based on the count location

examples shown above on Page 6 in Section 2 of this guidance. ***For an example of how to develop and utilize these factors, see Appendix B.***

Count Location Example 2: This example shows a project adding Class 2 bike lanes to 4 corridors with only two required count locations:

- For projects with multiple count locations and with additional improvement corridors locations that don't require counts, the implementing agency needs to consider adjustment factors for the segments/corridors with and without count locations.
- Where the agency believes that the field count volume(s) is a good representation of the total volume for one or more of the corridors, then they can simply use that value for the total daily volume for the corridor.

$tdt_{c\text{-}location\text{-}1} + tdt_{c\text{-}location\text{-}2} + tdt_{c\text{-}location\text{-}(1\ or\ 2)} \times \text{Factor 1} + tdt_{c\text{-}location\text{-}(1\ or\ 2)} \times \text{Factor 2}$ = total daily volume for the entire project limits

For an example of how to develop and utilize these factors, see Appendix B, Example 2.

Count Location Example 4: This example project shows a large project improving 5 bike corridors, 7 intersections, and 9 sidewalk segments with only 7 count locations:

- Although this project has far more improvement locations than any of the other examples discussed above, the process for estimating the volume at each of the project's improvement locations and then summing them together is similar. Therefore, this guidance will refer to the other examples instead of restating the same process for this example project.

SRTS NI Projects:

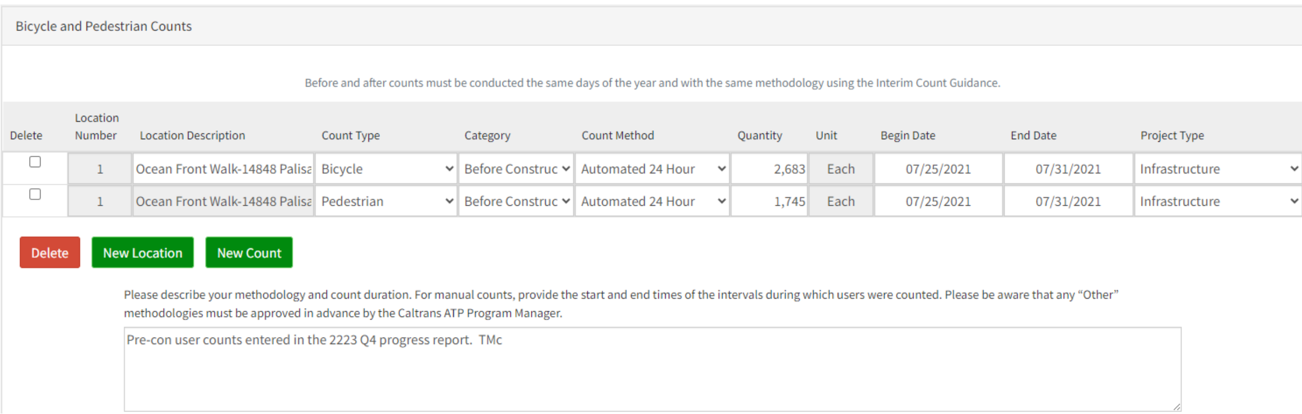
•For SRTS NI projects that have Student Travel Tally Project data the method to calculate the Average Daily Bicycle and Pedestrian Volumes is as follows:

- Pedestrian Volume = Enrollment multiplied by the AM plus PM Walk percentages (as a decimal) divided by two.
- Bicycle Volume = Enrollment multiplied by the AM plus PM Bike percentages (as a decimal), divided by two.

For an example of how to develop and utilize this process **see *Appendix A.***

6. User Count Reporting Process

All ATP funded projects are required to submit quarterly CalSmart Progress Reports as soon as the project selection is announced. The CalSmart address is https://calsmart.dot.ca.gov/. One of the CalSmart tabs is ATP User Counts. As stated in Section 4 all pre-construction counts should be conducted no more than six months before the construction phase begins. Once a project's Construction phase allocation has been voted by the CTC, the next Quarterly Report should either have the Before Construction count data entered (see below); or a comment should be entered stating when the data is planned to be entered. If the data or comment is not entered the progress report reviewer will return the report for correction.



Bicycle and Pedestrian Counts

Before and after counts must be conducted the same days of the year and with the same methodology using the Interim Count Guidance.

Delete	Location Number	Location Description	Count Type	Category	Count Method	Quantity	Unit	Begin Date	End Date	Project Type
☐	1	Ocean Front Walk-14848 Palisa	Bicycle	Before Construc	Automated 24 Hour	2,683	Each	07/25/2021	07/31/2021	Infrastructure
☐	1	Ocean Front Walk-14848 Palisa	Pedestrian	Before Construc	Automated 24 Hour	1,745	Each	07/25/2021	07/31/2021	Infrastructure

Delete New Location New Count

Please describe your methodology and count duration. For manual counts, provide the start and end times of the intervals during which users were counted. Please be aware that any "Other" methodologies must be approved in advance by the Caltrans ATP Program Manager.

Pre-con user counts entered in the 2223 Q4 progress report. TMc

Also per Section 4 post-construction counts should be conducted at least six months after construction is completed. Post-construction counts shall be reported as part of the CalSmart Final Delivery Report.

7. Approval Process for Other Count Methodologies:

If an agency determines that none of the previously mentioned methodologies are appropriate for their project; they can request that Caltrans Office of State Funded Programs approve a substitute methodology. The process is as follows:

- Contact your ATP Manager and notify them that you are planning to request approval of a count method that is not mentioned in this guidance.
- E-mail the manager your proposed count methodology and equations along with a map that indicates your proposed count locations.
    - Include any reference literature that supports your proposed method.
- Count methodology approval will be made via an e-mail and may take up to one month.

Glossary:

- Allocation

  When a project is ready to proceed, the CTC must vote to allocate the funds. Any work that is started prior to the funds being allocated is not eligible for reimbursement.
- Centerline or Centerlane mile

  The length of a roadway from its starting point to its endpoint.
- Non-Infrastructure (NI)

  A project that does not result in construction; but does education and encouragement activities.
- Infrastructure

  A project that constructs facilities, such as bike lanes or sidewalk.
- Plan project

  A community-wide active transportation plan, including bike, pedestrian, safe routes to schools, or comprehensive active transportation plans.
- Screenline Counts or Segment Counts

  User counts taken across an imaginary line which is perpendicular to the direction of travel.
- Parent Surveys

  A survey designed to help understand the various forms of travel used by students use to get from home to school and back.
- Student Travel Tallies

  Data on how students get from home to school and back.

Appendix A – Interim SRTS NI Count Guidance

This guidance addresses minimum standards for evaluation data collection for ATP Safe Routes to School Non-Infrastructure awardees. All ATP applicants and awardees must do the necessary advanced preparation to ensure pre- and post-project data collection protocols meet the following requirements for each school targeted by the project or covered under the umbrella of the project for a school district/region-wide project:

- *Utilization of an existing regional or local Student Travel Tally or Parent Survey form that captures student travel mode data similar to the NCSRTS tool*. Please check with your MPO to see if an alternate form may be available.

- *Administration of the Student Travel Tally on two (2) separate days within the same week.*

- *Consistent timing of pre-project implementation ('Before') data collection*:
    - Within six (6) months prior to the implementation of the first ATP public education, encouragement or enforcement activity, and
    - Within the regular school year.

- *Consistent timing of post-project implementation ('After') data collection:*
    - At least six (6) months after the completion of the last ATP public education,encouragement, or enforcement activity;
    - Within the regular school year; and, if possible,
    - Within the same month and roughly the same days during which the 'Before' data collection occurred.

ATP applicants and awardees must submit tally summary reports for each school and/or aggregate reports that combine data from multiple schools as part of their applications and/or project reporting requirements. Additional assistance on meeting the data collection requirements are available from the Active Transportation Resource Center by emailing atsp@cdph.ca.gov.

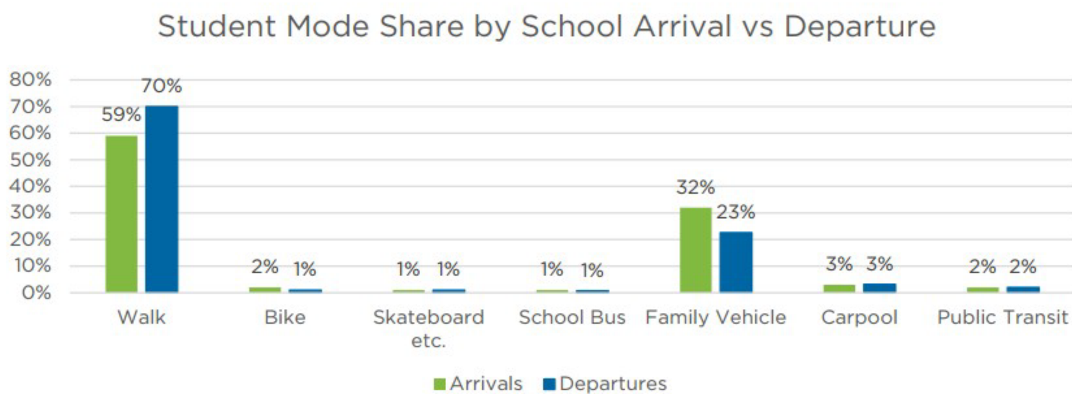
(Appendix A continued)

Student Tally report conversion to Average Daily Bicycle and Pedestrian Volumes

The Travel Tally Project is a TWO (2) DAY in-classroom data collection exercise to capture how students travel to and from school. Analysis of students' travel behavior assists Safe Routes to School (SRTS) in developing plans to reduce speed and promote responsible travel by adults and children on our city streets.

Dates of Data Collection: Sept 13th and 14th, 2017
Weather: Sunny

Students:
- Enrollment 715
- Survey Participation 71%



The calculations for the Safe Routes to Schools Average Daily Bicycle and Pedestrian Volumes will be as follows (the data from this report shows that the data for kindergarten was collected, but was not utilized in calculating the percentages shown above):

Average Daily Pedestrian Volume= 715 * (.59 + .70) = 922.4 / 2 = **461**

Average Daily Bicycle Volume= 715 * (.02 + .01) = 21.4 / 2 = **11**

Parent Survey About Walking and Biking to School

Dear Parent or Caregiver,

Your child's school wants to learn your thoughts about children walking and biking to school. This survey will take about 5 - 10 minutes to complete. We ask that each family complete only one survey per school your children attend. If more than one child from a school brings a survey home, please fill out the survey for the child with the next birthday from today's date.

After you have completed this survey, send it back to the school with your child or give it to the teacher. Your responses will be kept confidential and neither your name nor your child's name will be associated with any results.

Thank you for participating in this survey!

+ **CAPITAL LETTERS ONLY – BLUE OR BLACK INK ONLY** +

School Name:

☐☐

1. **What is the grade of the child who brought home this survey?** ☐☐ Grade (PK,K,1,2,3...)

2. **How many children do you have in Kindergarten through 8th grade?** ☐☐

3. **What is the street intersection nearest your home?** (Provide the names of two intersecting streets)

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ **and** ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box.

4. **How far does your child live from school?**

- ☐ Less than ¼ mile
- ☐ ¼ mile up to ½ mile
- ☐ ½ mile up to 1 mile
- ☐ 1 mile up to 2 miles
- ☐ More than 2 miles
- ☐ Don't know

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box. +

5. **On most days, how does your child arrive and leave for school?** (Select one choice per column, mark box with X)

Arrive at school

- ☐ Walk
- ☐ Bike
- ☐ School Bus
- ☐ Family vehicle (only children in your family)
- ☐ Carpool (Children from other families)
- ☐ Transit (city bus, subway, etc.)
- ☐ Other (skateboard, scooter, inline skates, etc.)

Leave from school

- ☐ Walk
- ☐ Bike
- ☐ School Bus
- ☐ Family vehicle (only children in your family)
- ☐ Carpool (Children from other families)
- ☐ Transit (city bus, subway, etc.)
- ☐ Other (skateboard, scooter, inline skates, etc.)

+ **Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box** +

6. **How long does it normally take your child to get to/from school?** (Select one choice per column, mark box with X)

Travel time to school

- ☐ Less than 5 minutes
- ☐ 5 – 10 minutes
- ☐ 11 – 20 minutes
- ☐ More than 20 minutes
- ☐ Don't know / Not sure

Travel time from school

- ☐ Less than 5 minutes
- ☐ 5 – 10 minutes
- ☐ 11 – 20 minutes
- ☐ More than 20 minutes
- ☐ Don't know / Not sure

+ +

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box

7. **Has your child asked you for permission to walk or bike to/from school in the last year?** ☐ Yes ☐ No

8. **At what grade would you allow your child to walk or bike to/from school without an adult?**
(Select a grade between PK,K,1,2,3...) ☐☐ grade **(or)** ☐ I would not feel comfortable at any grade

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box

9. **What of the following issues affected your decision to allow, or not allow, your child to walk or bike to/from school?** (Select ALL that apply)

10. **Would you probably let your child walk or bike to/from school if this problem were changed or improved?** (Select one choice per line, mark box with X)

☐ My child already walks or bikes to/from school

9.	10.		
☐ Distance	☐ Yes	☐ No	☐ Not Sure
☐ Convenience of driving	☐ Yes	☐ No	☐ Not Sure
☐ Time	☐ Yes	☐ No	☐ Not Sure
☐ Child's before or after-school activities	☐ Yes	☐ No	☐ Not Sure
☐ Speed of traffic along route	☐ Yes	☐ No	☐ Not Sure
☐ Amount of traffic along route	☐ Yes	☐ No	☐ Not Sure
☐ Adults to walk or bike with	☐ Yes	☐ No	☐ Not Sure
☐ Sidewalks or pathways	☐ Yes	☐ No	☐ Not Sure
☐ Safety of intersections and crossings	☐ Yes	☐ No	☐ Not Sure
☐ Crossing guards	☐ Yes	☐ No	☐ Not Sure
☐ Violence or crime	☐ Yes	☐ No	☐ Not Sure
☐ Weather or climate	☐ Yes	☐ No	☐ Not Sure

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box

11. **In your opinion, how much does your child's school encourage or discourage walking and biking to/from school?**
☐ Strongly Encourages ☐ Encourages ☐ Neither ☐ Discourages ☐ Strongly Discourages

12. **How much fun is walking or biking to/from school for your child?**
☐ Very Fun ☐ Fun ☐ Neutral ☐ Boring ☐ Very Boring

13. **How healthy is walking or biking to/from school for your child?**
☐ Very Healthy ☐ Healthy ☐ Neutral ☐ Unhealthy ☐ Very Unhealthy

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box

14. **What is the highest grade or year of school you completed?**
☐ Grades 1 through 8 (Elementary)
☐ Grades 9 through 11 (Some high school)
☐ Grade 12 or GED (High school graduate)
☐ College 1 to 3 years (Some college or technical school)
☐ College 4 years or more (College graduate)
☐ Prefer not to answer

15. **Please provide any additional comments below.**

Encuesta sobre ir caminando o andando en bicicleta a la escuela
- PARA PADRES -

Estimado Padre o Encargado,
La escuela donde su hijo/hija asiste desea saber sus opiniones sobre niños caminando y andando en bicicleta a la escuela. Esta encuesta tomará entre 5 y 10 minutos para completar. Le pedimos a las familias que completen sólo una encuesta por escuela a la que asisten sus niños. Si recibe más de un formulario de la misma escuela, por favor complete solo una encuesta, la del niño que cumpla años en la fecha más próxima al día de hoy.

Después de completar esta encuesta, devuélvala a la escuela a través de su hijo o entréguesela a la maestra. Sus respuestas se mantendrán confidencial y no se asociará su nombre ni el de su hijo a ningún resultado.
¡Gracias por participar en esta encuesta!

+ **LETRA MAYUSCULA SOLAMENTE USE TINTA AZUL O NEGRA** +

Nombre de la Escuela:

1. ¿En qué grado esta el niño que trajo esta encuesta al hogar? ☐☐ Grado (PK,K,1,2,3...)

2. ¿Cuántos niños tiene usted entre Kindergarten y el 8vo grado? ☐☐

3. ¿Cuál es la intersección más cerca de su casa? (el cruce de las dos calles)

Y

+ **¿Cómo llenar este formulario?: Escriba en letras MAYUSCULAS. Marque las cajas con "X"** +

4. ¿A qué distancia vive su niño de la escuela?

☐ Menos de 1/4 milla ☐ media milla hasta 1 milla ☐ Más de 2 millas

☐ Entre 1/4 y ½ milla ☐ Entre 1 y 2 millas ☐ No lo sé

5. La mayoría de los días, ¿cómo va su niño a la escuela y cómo regresa a la casa después de la escuela?

Llega a la escuela
- ☐ Caminando
- ☐ Bicicleta
- ☐ Autobús escolar
- ☐ Vehículo de la familia (solo con niños de la familia)
- ☐ Compartiendo el viaje en auto con niños de otras familias
- ☐ Tránsito (autobús de la ciudad, subterráneo, etc.)
- ☐ Otro (patineta, monopatín, patines, etc.)

Regresa a casa
- ☐ Caminando
- ☐ Bicicleta
- ☐ Autobús escolar
- ☐ Vehículo de la familia (solo con niños de la familia)
- ☐ Compartiendo el viaje en auto con niños de otras familias
- ☐ Tránsito (autobús de la ciudad, subterráneo, etc.)
- ☐ Otro (patineta, monopatín, patines, etc.)

+ **¿Cómo llenar este formulario?: Escriba en letras MAYUSCULAS. Marque las cajas con "X"** +

6. ¿Cuánto tiempo le toma a su niño para ir y regresar de la escuela? (una respuesta por columna con una "X" en la caja)

Tiempo del recorrido a la escuela
- ☐ Menos de 5 minutos
- ☐ 5 a 10 minutos
- ☐ 11 a 20 minutos
- ☐ Más de 20 minutos
- ☐ No lo sé / No estoy seguro/a

Tiempo del recorrido para llegar a casa
- ☐ Menos de 5 minutos
- ☐ 5 a 10 minutos
- ☐ 11 a 20 minutos
- ☐ Más de 20 minutos
- ☐ No lo sé / No estoy seguro/a

+ +

7. **Has your child asked you for permission to walk or bike to/from school in the last year?** ☐ Yes ☐ No

8. **At what grade would you allow your child to walk or bike to/from school without an adult?**
(Select a grade between PK,K,1,2,3...) ☐☐ grade **(or)** ☐ I would not feel comfortable at any grade

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box

9. **What of the following issues affected your decision to allow, or not allow, your child to walk or bike to/from school?** (Select ALL that apply)

10. **Would you probably let your child walk or bike to/from school if this problem were changed or improved?** (Select one choice per line, mark box with X)

☐ My child already walks or bikes to/from school

9. Issue	10.		
☐ Distance	☐ Yes	☐ No	☐ Not Sure
☐ Convenience of driving	☐ Yes	☐ No	☐ Not Sure
☐ Time	☐ Yes	☐ No	☐ Not Sure
☐ Child's before or after-school activities	☐ Yes	☐ No	☐ Not Sure
☐ Speed of traffic along route	☐ Yes	☐ No	☐ Not Sure
☐ Amount of traffic along route	☐ Yes	☐ No	☐ Not Sure
☐ Adults to walk or bike with	☐ Yes	☐ No	☐ Not Sure
☐ Sidewalks or pathways	☐ Yes	☐ No	☐ Not Sure
☐ Safety of intersections and crossings	☐ Yes	☐ No	☐ Not Sure
☐ Crossing guards	☐ Yes	☐ No	☐ Not Sure
☐ Violence or crime	☐ Yes	☐ No	☐ Not Sure
☐ Weather or climate	☐ Yes	☐ No	☐ Not Sure

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box

11. **In your opinion, how much does your child's school encourage or discourage walking and biking to/from school?**
☐ Strongly Encourages ☐ Encourages ☐ Neither ☐ Discourages ☐ Strongly Discourages

12. **How much fun is walking or biking to/from school for your child?**
☐ Very Fun ☐ Fun ☐ Neutral ☐ Boring ☐ Very Boring

13. **How healthy is walking or biking to/from school for your child?**
☐ Very Healthy ☐ Healthy ☐ Neutral ☐ Unhealthy ☐ Very Unhealthy

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box

14. **What is the highest grade or year of school you completed?**
☐ Grades 1 through 8 (Elementary)
☐ Grades 9 through 11 (Some high school)
☐ Grade 12 or GED (High school graduate)
☐ College 1 to 3 years (Some college or technical school)
☐ College 4 years or more (College graduate)
☐ Prefer not to answer

15. **Please provide any additional comments below.**

Safe Routes to School Students Arrival and Departure Tally Sheet

CAPITAL LETTERS ONLY – BLUE OR BLACK INK ONLY

School Name: **Teacher's First Name:** **Teacher's Last Name:**

Grade: (PK,K,1,2,3...) 0 2 **Monday's Date** (Week count was conducted) M M D D Y Y Y Y **Number of Students Enrolled in Class:** 1 5

- Please conduct these counts **on two of the following three days Tuesday, Wednesday, or Thursday. (Three days would provide better data if counted)**
- **Please do not conduct these counts on Mondays or Fridays.**
- Before asking your students to raise their hands, please read through all possible answer choices so they will know their choices. Each Student may only answer once.
- Ask your students as a group the question "**How did you arrive at school today?**"
- Then, reread each answer choice and record the number of students that raised their hands for each. **Place just one character or number in each box.**
- Follow the same procedure for the question **"How do you plan to leave for home after school?"**
- You can conduct the counts once per day but during the count please ask students both the school arrival and departure questions.
- Please conduct this count regardless of weather conditions (i.e., ask these questions on rainy days, too).

Step 1.
Fill in the weather conditions and number of students in each class

Step 2.
AM – "**How did you arrive at school today?**" Record the number of hands for each answer.
PM – "**How do you plan to leave for home after school?**" Record the number of hands for each answer.

Key	Weather	Student Tally	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
	S= sunny R= rainy O=overcast SN=snow	Number in class when count made	-	-	-	Only with Children from your family	Riding with children from other families	City bus, subway, etc.	Skate-board, scooter, etc.
Sample AM	S N	2 0	2	3	8	3		3	1
Sample PM	R	1 9	3	3	8	1	2	2	
Tues. AM									
Tues. PM									
Wed. AM									
Wed. PM									
Thurs. AM									
Thurs. PM									

Please list any disruptions to these counts or any unusual travel conditions to/from the school on the days of the tally.

References

2016 FHWA Traffic Monitoring Guide (TMG) (Chapter 4):
https://www.fhwa.dot.gov/policyinformation/tmguide/tmg_fhwa_pl_17_003.pdf

Nation Cooperative Highway Research Program (NCHRP) 797 – Guidebook on Pedestrian and Bicycle Volume Data Collection (Chapter 3)
https://www.nap.edu/catalog/22223/guidebook-on-pedestrian-and-bicycle-volume-data-collection

Washington State Department of Transportation – Collecting Network-wide Bicycle and Pedestrian Data: A Guidebook for When and Where to Count (Chapter 4):
https://www.wsdot.wa.gov/research/reports/800/collecting-network-wide-bicycle-and-pedestrian-data-guidebook-when-and-where

SCAG Active Transportation Database (Creating a Count Program):
https://atdb.scag.ca.gov/Pages/Tutorials.aspx

Appendix B – Sample Calculations

Converting Vehicular Count data to Average Daily Bicycle and Pedestrian Volumes

	Weekday	Weekend	Weekday Peak 2-hour		Weekend 2- hour peak	
Time Period	Vehicle Counts	Vehicle Counts	Bike Counts	Ped. Counts	Bike Counts	Ped. Counts
Midnight	2	3				
1:00 AM	0	2				
2:00 AM	1	0				
3:00 AM	3	3				
4:00 AM	4	3				
5:00 AM	12	6				
6:00 AM	15	8				
7:00 AM	**26**	11	3	8		
8:00 AM	**33**	10	6	12		
9:00 AM	20	13				
10:00 AM	21	14				
11:00 AM	22	**15**			3	6
Noon	35	**18**			4	8
1:00 PM	22	17				
2:00 PM	23	17				
3:00 PM	26	18				
4:00 PM	**36**	21	4	9		
5:00 PM	**44**	24	8	10		
6:00 PM	30	23				
7:00 PM	29	14				
8:00 PM	25	10				
9:00 PM	15	12				
10:00 PM	8	5				
11:00 PM	6	6				
Total	458	273				

Step 1-weekday= (26+33+36+44)/458=

$rv_{weekday}$ 0.303

Step 1-weekend= (15+18)/273=

$rv_{weekend}$ 0.121

Pedestrian

$tdt_{weekday}$ (8+12+9+10)/0.303= 128.7

$tdt_{weekend}$ (6+8)/0.121= 115.7

Average daily pedestrian volume

(5 * 128.7 + 2 * 115.7)/7= **124.9**

Bicycle

$tdt_{weekday}$ (3+6+4+8)/0.303= 69.3

$tdt_{weekend}$ (3+4)/0.121= 57.8

Average daily bicycle volume

(5 * 69.3 + 2 * 57.8)/7= **66**

(Appendix B – Continued)

Example 1- Improving 3 Intersections and using 1 Count Location (assuming all 3 intersections have similar numbers of users)

The agency can choose to use one of the following methods to count the users at the intersection with the highest volume (in order of preference)-

1. A week of automated 24-hour non-motorized counts
2. An automated 24-hour non-motorized count
3. Use the previous example to convert vehicular count data

Once the total daily volume has been counted or calculated at the intersection with the highest number of users; if the agency believes that that the other two intersections will have similar numbers of users. Then multiply the 'total daily volume' value by a factor of 3, to get the volume for the entire project.

The Average Daily Pedestrian Volume calculation for this example would be as follows:

1. Divide the total of the week of automated bicycle and pedestrian counts by 7 to get the daily average at that location, then multiply by 3 to get the Average Daily Volume for the project
2. Multiply the total of the 24-hour counts for Bicycles and Pedestrians by 3 to get the Average Daily Volume for the project
3. Multiply the calculated Average daily volume for Bicycles and Pedestrians by 3 to get the Average Daily Volume for the project

The Average Daily Bicycle Volume calculation for this example would be as follows:

$tdt_{c\text{-}location}$ x 3 = total daily volume for the entire project limits

- Using the Average Daily Bicycle Volume calculated above, the Average Daily Bicycle Volume for the project will be (66 * 3) = **198**

(Appendix B – Continued)

Example 1A- Improving 3 Intersections and using 1 Count Location (assuming all 3 intersections have different users)

Once the volume has been calculated at the intersection with the highest number of users, a factor can be applied to that number based on an estimate or assumption of how much lower the user volume will be at the other two locations.

If the agency assumes that one intersection will have 70% of both bicycles and pedestrians as the count intersection and the third intersection will have 50% of both types of users as the count intersection.

The Average Daily Bicycle Volume calculation for this example would be as follows:

$tdt_{c\text{-}location}$ + $tdt_{c\text{-}location}$ x Factor 1 + $tdt_{c\text{-}location}$ x Factor 2 = total daily volume for the entire project limits

- Using the Average Daily Bicycle Volume calculated above, the Average Daily Bicycle Volume for the project will be (66 + 66*.70 + 66*.50) = **145.2**

Example 1B- Improving 3 Intersections and using 1 Count Location (assuming 1 intersection is close enough to the count intersection that some of the user are the same. The 3rd intersection has different users)

If the agency assumes that one intersection will have 70% of both bicycles and pedestrians as the count intersection; but because the intersections are adjacent that 15% of the users have been counted by the automated count and the third intersection will have 50% of both types of users as the count intersection.

The Average Daily Bicycle Volume calculation for this example would be as follows:

$tdt_{c\text{-}location}$ + $tdt_{c\text{-}location}$ x Reduction-factor 1 + $tdt_{c\text{-}location}$ x Reduction-factor 2 = total daily volume for the entire project limits

- Using the Average Daily Bicycle Volume calculated above, the Average Daily Bicycle Volume for the project will be (66 + (66*(.70-(.70*.15))) + 66*.50) = **138.3**

(Appendix B – Continued)

Example 2- This example shows a project adding class 2 bike lanes to 4 corridors with only 2 required count locations

Where the agency believes that the field count volume(s) is a good representation of the total volume for one or more of the corridors, then they can simply use that value for the total daily volume for the corridor.

The Average Daily Bicycle Volume calculation for this example would be as follows:

$tdt_{c\text{-}location\text{-}1}$ + $tdt_{c\text{-}location\text{-}2}$ + $tdt_{c\text{-}location\text{-}(1\ or\ 2)}$ x Factor 1 + $tdt_{c\text{-}location\text{-}(1\ or\ 2)}$ x Factor 2 = total daily volume for the entire project limits

- Using the Average Daily Bicycle Volumes derived from the 2 count locations, the Average Daily Bicycle Volume for the project will be 66 + 82 + 66 * .80 + 82 * .90 = **274.6**

Example 3- This example shows a project improving numerous (9) small segments of sidewalk with only one required count location

If the agency believes that each segment of the sidewalk will have widely varying numbers of users, then the agency can multiply the 'total daily volume' value that was calculated in Step 1 by different factors for each of the segments that aren't getting a count.

The Average Daily Pedestrian Volume calculation for this example would be as follows:

$tdt_{c\text{-}location}$ + $tdt_{c\text{-}location}$ x Factor 1 + $tdt_{c\text{-}location}$ x Factor 2 + $tdt_{c\text{-}location}$ x Factor 3 + $tdt_{c\text{-}location}$ x Factor 4 + $tdt_{c\text{-}location}$ x Factor 5 + $tdt_{c\text{-}location}$ x Factor 6 + $tdt_{c\text{-}location}$ x Factor 7 + $tdt_{c\text{-}location}$ x Factor 8 = total daily volume for the entire project limits

- Using the Average Daily Pedestrian Volume calculated above, the Average Daily Bicycle Volume for the project will be 125 + 125 * 0.53 + 125 * 0.75 + 125 * 0.99 + 125 * .90 + 125 * .95 + 125 * 0.8 +125 * 0.85 + 125 * 0.83 = **950**