

Federal Highway Administration

Highway Performance
Monitoring System
Travel Time Based Metric
Data Validation

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Highway Performance Monitoring System (HPMS) Travel Time Based Metric Data Validation

This document provides FHWA data validation method in the HPMS Software for the travel time based metric data, described in the document “Travel Time Metric Data Reporting Requirements & Specifications (February 2018).”¹

The Dataset “**Travel_Time_Metrics**” Table (noted as [**Travel_Time_Metrics**]) in this document refers to the state submitted travel time metric dataset, described in Table 1 of the document “Travel Time Metric Data Reporting Requirements & Specifications (February 2018).”²

“**Item_71**” Dataset (noted as [**Item_71**]) in this document refers to the sections data for the HPMS Data Item 71 - “Travel_Time_Code (Travel Time Reporting Segment)”, described in the document “Travel Time Metric Data Reporting Requirements & Specifications (February 2018).”³

The Dataset “**Travel_Message_Channel_Identification**” Table (noted as [**Travel_Message_Channel_Identification**]) in this document refers to the Travel Messaging Code (TMC) Identification Table, provided in the National Performance Management Research Dataset (NPMRDS)⁴.

Field names in this document is denoted as *[Table Name]:Field Name* format.

For example, [**Travel_Time_Metrics**]:**METRIC_SOURCE** indicates **METRIC_SOURCE** Field in “**Travel_Time_Metrics**” Table. Similarly, [**Travel_Message_Channel_Identification**]:**tmc** indicates **tmc** Field in Travel Messaging Code Identification Table in NPMRDS. Also for HPMS data value is noted such as [**Item_71**]:**Value_Text** which indicates **Value_Text** Field for **Item_71**.

¹ https://www.fhwa.dot.gov/tpm/guidance/pm3_hpms.pdf

² Ibid.

³ Ibid.

⁴ 2017 NPMRDS TMC Identification Table:

https://explore.dot.gov/views/2017_NPMRDS_TMC_Identification/FCandNHSAttributes?iframeSizedToWindow=true&embed=y&showAppBanner=false&:display_count=no&:showVizHome=no

Table A - Data Coverage

Submittal Type	If	Then	Warning Message	Coverage Validation Criteria No.
<p>Reporting segments from NPMRDS <u>without</u> Item 71</p>	<p>All records in Travel_Time_Metrics Table are from NPMRDS (i.e., [Travel_Time_Metrics]:METRIC_SOURCE = 1 for all records)</p> <p>AND</p> <p>Item 71 has not been submitted (i.e., there is no Data_ITEM = "Travel_Time_Code") in HPMS Sections data</p>	<p>All TMC values with valid "nhs" Field values⁵ in "TMC Identification Table" from the NPMRDS ([Travel_Message_Channel_Identification]:tmc) for a State should be included in [Travel_Time_Metrics]:Travel_Time_Code submitted by that state. Only the TMC values in "TMC Identification Table" from the NPMRDS should be included in Travel_Time_Metrics Table. Note, there may be cases where combined segments (with concatenated names) may be reported (please see the document "Travel Time Metric Data Reporting Requirements & Specifications (February 2018)).</p>	<p>If a segment in Travel_Time_Metrics Table is from NPMRDS, submitted Travel_Time_Code must match TMC in NPMRDS.</p>	<p>1</p>

⁵ Valid values for **[Travel_Message_Channel_Identification]:nhs** are 1, 2, 3, 4, 5, 6, 7, 8, and 9.

Submittal Type	If	Then	Warning Message	Coverage Validation Criteria No.
Reporting segments from NPMRDS with Item 71	<p>All records in Travel_Time_Metrics Table are from NPMRDS (i.e., [Travel_Time_Metrics]:METRIC_SOURCE = 1 for all records)</p> <p>AND</p> <p>Item 71 has been submitted (i.e., there are sections records with Data_ITEM = "Travel_Time_Code").</p> <p>(Please note Item 71 is all or nothing for NPMRDS based reporting segments)</p>	<p>All TMC values in with valid "nhs" Field values⁶ "TMC Identification Table" from the NPMRDS ([Travel_Message_Channel_Identification]:tmc) for a state should be included in [Travel_Time_Metrics]:Travel_Time_Code submitted by that state. Only the TMC values in "TMC Identification Table" from the NPMRDS should be included in Travel_Time_Metrics Table. Note, there may be cases where combined segments (with concatenated names) may be reported (the document "Travel Time Metric Data Reporting Requirements & Specifications (February 2018)).</p>	<p>If all reporting segments in Travel_Time_Metrics Table are from NPMRDS, all TMC in NPMRDS must be included in Travel_Time_Metrics Table as TTC.</p>	2
		<p>Item 71 must be submitted (i.e., there are sections records with Data_Item = "Travel_Time_Code") for <u>all records</u> in Travel_Time_Metrics Table. The Value_Text of Item 71 ([Item_71]:Value_Text) should have 1:1 match with reporting segment ID in Travel_Time_Metrics Table ([Travel_Time_Metrics]:Travel_Time_Code).</p>	<p>If all reporting segments in Travel_Time_Metrics Table are from NPMRDS, all TMC must be submitted as Data Item 71 or not submitted at all.</p>	3

⁶ Ibid.

Submittal Type	If	Then	Warning Message	Coverage Validation Criteria No.
Reporting segments from Equivalent Dataset or a combination of Equivalent/NPMRDS	All records in Travel_Time_Metrics Table are from equivalent dataset (i.e., [Travel_Time_Metrics]:METRIC_SOURCE = 2) OR Some records in Table 1 are from NPMRDS (i.e., [Travel_Time_Metrics]:METRIC_SOURCE = 1 OR [Travel_Time_Metrics]:METRIC_SOURCE = 2)	Item 71 must be submitted (i.e., there are sections records with Data_Item = "Travel_Time_Code") for <u>all records</u> in Travel_Time_Metrics Table. The [Item_71]:Value_Text values should have 1:1 match with reporting segment ID in Travel_Time_Metrics Table ([Travel_Time_Metrics]:Travel_Time_Code).	If any reporting segment in Travel_Time_Metrics Table is from an equivalent data set, all TMC in Travel_Time_Metrics Table must be reported as Data Item 71.	4
		Item 71 must fully cover the entire NHS.	If the Travel_Time_Code (Data Item 71) is reported, Data Item 71 must fully cover the NHS.	5
		For the records with [Travel_Time_Metrics]:METRIC_SOURCE = 1 in Travel_Time_Metrics Table, TMC values with valid "nhs" Field values ⁷ in "TMC Identification Table" from the NPMRDS ([Travel_Message_Channel_Identification]:tmc) for a state should be included in [Travel_Time_Metrics]:Travel_Time_Code . Note, there may be cases where combined segments (with concatenated names) may be reported (please see the document "Travel Time Metric Data Reporting Requirements & Specifications (February 2018)").	If a segment in Travel_Time_Metrics Table is from NPMRDS, submitted Travel_Time_Code must match TMC in NPMRDS	1

⁷ Ibid.

Table B - Field Validation Check for Each Record in “Travel_Time_Metrics” Table and Item 71

Data Field	Validation	Warning Message	Field Validation Criteria No.
[Travel_Time_Metrics]:Year_Record	Must not be NULL. Data year		
[Travel_Time_Metrics]:State_Code	Must not be NULL. Appendix C of HPMS Field Manual		
[Travel_Time_Metrics]:Travel_Time_Code	Must not be NULL AND Must be alpha-numeric and unique (reject any record, if invalid)	Travel_Time_Code Must Not Be NULL and Must Be Alpha-numeric and Unique	1
[Travel_Time_Metrics]: F_System	Must not be NULL AND Must be IN (1,2,3,4,5,6,7) (reject any record, if invalid)	F_System Must Be in (1,2,3,4,5,6,7)	2
[Travel_Time_Metrics]:Urban_Code	Must not be NULL. Appendix I of HPMS Field Manual (reject any record, if invalid)	Urban_Code Must Be a Valid Urban Code of the state	3
[Travel_Time_Metrics]:Facility_Type	Must not be NULL AND Must be mainline NHS (IN (1,2,6)) (reject any record, if invalid)	Facility_Type Must Be in (1,2,6)	4
[Travel_Time_Metrics]:NHS	Must not be NULL AND Must be IN (1,2,3,4,5,6,7,8,9) (reject any record, if invalid)	NHS Must Be (1,2,3,4,5,6,7,8,9)	5
[Travel_Time_Metrics]:Segment_Length	Must not be NULL.	Segment_Length Must Not Be NULL	6
[Travel_Time_Metrics]:Directionality	Must be IN (1,2,3,4,5) (reject any record, if invalid)	Directionality Must Be (1,2,3,4,5)	7
[Travel_Time_Metrics]:DIR_AADT	Must not be NULL AND Must be > 0	DIR_AADT Must Be >0	8
[Travel_Time_Metrics]:LOTTR_AMP	Must not be NULL AND Must be >= 1.00	LOTTR_AMP Must Be >= 1.00	9
[Travel_Time_Metrics]:TT_AMP50PCT	Must not be NULL AND Must be >= 0	TT_AMP50PCT Must be >= 0	10
[Travel_Time_Metrics]:TT_AMP80PCT	Must not be NULL AND Must be >= 0	TT_AMP80PCT Must be >= 0	11
[Travel_Time_Metrics]:LOTTR_MIDD	Must not be NULL AND Must be >= 1.00	LOTTR_MIDD Must be >= 1	12
[Travel_Time_Metrics]:TT_MIDD50PCT	Must not be NULL AND Must be >= 0	TT_MIDD50PCT Must be >= 0	13
[Travel_Time_Metrics]:TT_MIDD80PCT	Must not be NULL AND Must be >= 0	TT_MIDD80PCT Must be >= 0	14
[Travel_Time_Metrics]:LOTTR_PMP	Must not be NULL AND Must be >= 1.00	LOTTR_PMP Must be >= 1	15
[Travel_Time_Metrics]:TT_PMP50PCT	Must not be NULL AND Must be >= 0	TT_PMP50PCT Must be >= 0	16
[Travel_Time_Metrics]:TT_PMP80PCT	Must not be NULL AND Must be >= 0	TT_PMP80PCT Must be >= 0	17
[Travel_Time_Metrics]:LOTTR_WE	Must not be NULL AND Must be >= 1.00	LOTTR_WE Must be >= 1	18
[Travel_Time_Metrics]:TT_WE50PCT	Must not be NULL AND Must be >= 0	TT_WE50PCT Must be >= 0	19

Data Field	Validation	Warning Message	Field Validation Criteria No.
[Travel_Time_Metrics]:TT_WE80PCT	Must not be NULL AND Must be >= 0	TT_WE80PCT Must be >= 0	20
[Travel_Time_Metrics]:TTTR_AMP	Must be >= 1.00. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	21
[Travel_Time_Metrics]:TTT_AMP50PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22
[Travel_Time_Metrics]:TTT_AMP95PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22
[Travel_Time_Metrics]:TTTR_MIDD	Must be >= 1.00. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	21
[Travel_Time_Metrics]:TTT_MIDD50PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22
[Travel_Time_Metrics]:TTT_MIDD95PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22

Data Field	Validation	Warning Message	Field Validation Criteria No.
[Travel_Time_Metrics]:TTTR_PMP	Must be >= 1.00. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	21
[Travel_Time_Metrics]:TTT_PMP50PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22
[Travel_Time_Metrics]:TTT_PMP95PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22
[Travel_Time_Metrics]:TTTR_OVN	Must be >= 1.00. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	21
[Travel_Time_Metrics]:TTT_OVN50PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22
[Travel_Time_Metrics]:TTT_OVN95PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22

Data Field	Validation	Warning Message	Field Validation Criteria No.
[Travel_Time_Metrics]:TTTR_WE	Must be >= 1.00. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	21
[Travel_Time_Metrics]:TTT_WE50PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22
[Travel_Time_Metrics]:TTT_WE95PCT	Must be >= 0. May be NULL for non-Interstate NHS (please see Cross-data Item Check Table)	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	22
[Travel_Time_Metrics]:PHED	Must be >= 0. May be NULL (please see Cross-data Item Check Table for applicable states and urbanized areas)	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	23
[Travel_Time_Metrics]:OCC_FAC	Must be >= 1. May be NULL	OCC_FAC Must Be >= 1 If Not NULL.	24
[Travel_Time_Metrics]:METRIC_SOURCE	Must not be NULL AND Must be IN (1,2) (reject any record, if invalid)	METRIC_SOURCE Must be IN (1,2)	25
[Item_71]:Value_Text	Must be unique and not NULL	Value_Text of Travel_Time_Code Section Must Be Unique	33

Table C - Cross-Data Item Check for Each Record within “Travel_Time_Metrics” Table

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:LOTTR_AMP	TT_AMP50PCT > 1 AND TT_AMP50PCT IS NOT NULL	Must be between $\text{round} \left(\frac{\text{TT_AMP80PCT} - 1}{\text{TT_AMP50PCT} + 1}, 2 \text{ decimals} \right)$ and $\text{round} \left(\frac{\text{TT_AMP80PCT} + 1}{\text{TT_AMP50PCT} - 1}, 2 \text{ decimals} \right)$	Submitted LOTTR_AMP value is not compatible with submitted TT_AMP50PCT and TT_AMP80PCT values.	1
[Travel_Time_Metrics]:TT_AMP50PCT		Must be <= TT_AMP80PCT	TT_AMP50PCT Must Be <= TT_AMP80PCT	2
[Travel_Time_Metrics]:TT_AMP80PCT		Must be >= TT_AMP50PCT	TT_AMP80PCT Must Be >= TT_AMP50PCT	3
[Travel_Time_Metrics]:LOTTR_MIDD	TT_MIDD50PCT >1 AND TT_MIDD50PCT IS NOT NULL	Must be between $\text{round} \left(\frac{\text{TT_MIDD80PCT} - 1}{\text{TT_MIDD50PCT} + 1}, 2 \text{ decimals} \right)$ and $\text{round} \left(\frac{\text{TT_MIDD80PCT} + 1}{\text{TT_MIDD50PCT} - 1}, 2 \text{ decimals} \right)$	Submitted LOTTR_MIDD value is not compatible with submitted TT_MIDD50PCT and TT_MIDD80PCT values.	4
[Travel_Time_Metrics]:TT_MIDD50PCT		Must be <= TT_MIDD80PCT	TT_MIDD50PCT Must Be <= TT_MIDD80PCT	5
[Travel_Time_Metrics]:TT_MIDD80PCT		Must be >= TT_MIDD50PCT	TT_MIDD80PCT Must Be >= TT_MIDD50PCT	6
[Travel_Time_Metrics]:LOTTR_PMP	TT_PMP50PCT >1 AND TT_PMP50PCT IS NOT NULL	Must be between $\text{round} \left(\frac{\text{TT_PMP80PCT} - 1}{\text{TT_PMP50PCT} + 1}, 2 \text{ decimals} \right)$ and $\text{round} \left(\frac{\text{TT_PMP80PCT} + 1}{\text{TT_PMP50PCT} - 1}, 2 \text{ decimals} \right)$	Submitted LOTTR_PMP value is not compatible with submitted TT_PMP50PCT and TT_PMP80PCT values.	7
[Travel_Time_Metrics]:TT_PMP50PCT		Must be <= TT_PMP80PCT	TT_PMP50PCT Must Be <= TT_PMP80PCT	8
[Travel_Time_Metrics]:TT_PMP80PCT		Must be >= TT_PMP50PCT	TT_PMP80PCT Must Be >= TT_PMP50PCT	9

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:LOTTR_WE	TT_WE50PCT >1 AND TT_WE50PCT IS NOT NULL	Must be between $\text{round} \left(\frac{\text{TT_WE80PCT} - 1}{\text{TT_WE50PCT} + 1}, 2 \text{ decimals} \right)$ and $\text{round} \left(\frac{\text{TT_WE80PCT} + 1}{\text{TT_WE50PCT} - 1}, 2 \text{ decimals} \right)$	Submitted LOTTR_WE value is not compatible with submitted TT_WE50PCT and TT_WE80PCT values.	10
[Travel_Time_Metrics]:TT_WE50PCT		Must be <= TT_WE80PCT	TT_WE50PCT Must Be <= TT_WE80PCT	11
[Travel_Time_Metrics]:TT_WE80PCT		Must be >= TT_WE50PCT	TT_WE80PCT Must Be >= TT_WE50PCT	12
[Travel_Time_Metrics]:TTTR_AMP	TTT_AMP50PCT >1 AND TTT_AMP50PCT IS NOT NULL	Must be between $\text{round} \left(\frac{\text{TTT_AMP95PCT} - 1}{\text{TTT_AMP50PCT} + 1}, 2 \text{ decimals} \right)$ and $\text{round} \left(\frac{\text{TTT_AMP95PCT} + 1}{\text{TTT_AMP50PCT} - 1}, 2 \text{ decimals} \right)$	Submitted TTTR_AMP value is not compatible with submitted TTT_AMP50PCT and TTT_AMP95PCT values.	13
[Travel_Time_Metrics]:TTT_AMP50PCT		Must be <= TTT_AMP95PCT	TTT_AMP50PCT Must Be <= TTT_AMP95PCT	14
[Travel_Time_Metrics]:TTT_AMP95PCT		Must be >= TTT_AMP50PCT	TTT_AMP95PCT Must Be >= TTT_AMP50PCT	15
[Travel_Time_Metrics]:TTTR_MIDD	TTT_MIDD50PCT >1 AND TTT_MIDD50PCT IS NOT NULL	Must be between $\text{round} \left(\frac{\text{TTT_MIDD95PCT} - 1}{\text{TTT_MIDD50PCT} + 1}, 2 \text{ decimals} \right)$ and $\text{round} \left(\frac{\text{TTT_MIDD95PCT} + 1}{\text{TTT_MIDD50PCT} - 1}, 2 \text{ decimals} \right)$	Submitted TTTR_MIDD value is not compatible with submitted TTT_MIDD50PCT and TTT_MIDD95PCT values.	16
[Travel_Time_Metrics]:TTT_MIDD50PCT		Must be <= TTT_MIDD95PCT	TTT_MIDD50PCT Must Be <= TTT_MIDD95PCT	17
[Travel_Time_Metrics]:TTT_MIDD95PCT		Must be >= TTT_MIDD50PCT	TTT_MIDD95PCT Must Be >= TTT_MIDD50PCT	18

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:TTTR_PMP	TTT_PMP50PCT >1 AND TTT_PMP50PCT IS NOT NULL	Must be between $\text{round} \left(\frac{\text{TTT_PMP95PCT} - 1}{\text{TTT_PMP50PCT} + 1}, 2 \text{ decimals} \right)$ and $\text{round} \left(\frac{\text{TTT_PMP95PCT} + 1}{\text{TTT_PMP50PCT} - 1}, 2 \text{ decimals} \right)$	Submitted TTTR_PMP value is not compatible with submitted TTT_PMP50PCT and TTT_PMP95PCT values.	19
[Travel_Time_Metrics]:TTT_PMP50PCT		Must be <= TTT_PMP95PCT	TTT_PMP50PCT Must Be <= TTT_PMP95PCT	20
[Travel_Time_Metrics]:TTT_PMP95PCT		Must be >= TTT_PMP50PCT	TTT_PMP95PCT Must Be >= TTT_PMP50PCT	21
[Travel_Time_Metrics]:TTTR_OVN	TTT_OVN50PCT >1 AND TTT_OVN50PCT IS NOT NULL	Must be between $\text{round} \left(\frac{\text{TTT_OVN95PCT} - 1}{\text{TTT_OVN50PCT} + 1}, 2 \text{ decimals} \right)$ and $\text{round} \left(\frac{\text{TTT_OVN95PCT} + 1}{\text{TTT_OVN50PCT} - 1}, 2 \text{ decimals} \right)$	Submitted TTTR_OVN value is not compatible with submitted TTT_OVN50PCT and TTT_OVN95PCT values.	22
[Travel_Time_Metrics]:TTT_OVN50PCT		Must be <= TTT_OVN95PCT	TTT_OVN50PCT Must Be <= TTT_OVN95PCT	23
[Travel_Time_Metrics]:TTT_OVN95PCT		Must be >= TTT_OVN50PCT	TTT_OVN95PCT Must Be >= TTT_OVN50PCT	24
[Travel_Time_Metrics]:TTTR_WE	TTT_WE50PCT >1 AND TTT_WE50PCT IS NOT NULL	Must be between $\text{round} \left(\frac{\text{TTT_WE95PCT} - 1}{\text{TTT_WE50PCT} + 1}, 2 \text{ decimals} \right)$ and $\text{round} \left(\frac{\text{TTT_WE95PCT} + 1}{\text{TTT_WE50PCT} - 1}, 2 \text{ decimals} \right)$	Submitted TTTR_WE value is not compatible with submitted TTT_WE50PCT and TTT_WE95PCT values.	25
[Travel_Time_Metrics]:TTT_WE50PCT		Must be <= TTT_WE95PCT	TTT_WE50PCT Must Be <= TTT_WE95PCT	26
[Travel_Time_Metrics]:TTT_WE95PCT		Must be >= TTT_WE50PCT	TTT_WE95PCT Must Be >= TTT_WE50PCT	27

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:TTTR_AMP	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTTR_AMP must not be NULL	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	Field Validation Criteria Number 21 (see Table B)
[Travel_Time_Metrics]:TTT_AMP50PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_AMP50PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)
[Travel_Time_Metrics]:TTT_AMP95PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_AMP95PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)
[Travel_Time_Metrics]:TTTR_MIDD	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTTR_MIDD must not be NULL	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	Field Validation Criteria Number 21 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:TTT_MIDD50PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_MIDD50PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)
[Travel_Time_Metrics]:TTT_MIDD95PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_MIDD95PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)
[Travel_Time_Metrics]:TTTR_PMP	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTTR_PMP must not be NULL	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	Field Validation Criteria Number 21 (see Table B)
[Travel_Time_Metrics]:TTT_PMP50PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_PMP50PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:TTT_PMP95PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_PMP95PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)
[Travel_Time_Metrics]:TTTR_OVN	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTTR_OVN must not be NULL	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	Field Validation Criteria Number 21 (see Table B)
[Travel_Time_Metrics]:TTT_OVN50PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_OVN50PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)
[Travel_Time_Metrics]:TTT_OVN95PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_OVN95PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:TTTR_WE	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTTR_WE must not be NULL	TTTR_AMP, TTTR_MIDD, TTTR_PMP, TTTR_OVN, TTTR_WE Must be >= 1 OR NULL for Non-Interstate NHS, Must Be >=1 for all other sections	Field Validation Criteria Number 21 (see Table B)
[Travel_Time_Metrics]:TTT_WE50PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_WE50PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)
[Travel_Time_Metrics]:TTT_WE95PCT	[Travel_Time_Metrics]: F_System = 1	[Travel_Time_Metrics]:TTT_WE95PCT must not be NULL	TTT_AMP50PCT, TTT_AMP95PCT, TTT_MIDD50PCT, TTT_MIDD95PCT, TTT_PMP50PCT, TTT_PMP95PCT, TTT_OVN50PCT, TTT_OVN95PCT, TTT_WE50PCT, TTT_WE95PCT Must be >= 0 OR NULL for Non-Interstate NHS, Must Be >= 0 for all other sections	Field Validation Criteria Number 22 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 4 AND [Travel_Time_Metrics]:Urban_Code = 69184	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 5 AND [Travel_Time_Metrics]:Urban_Code = 56116	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 6 AND [Travel_Time_Metrics]:Urban_Code IN (79039, 78904, 77068, 78661, 51445, 75340)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 8 AND [Travel_Time_Metrics]:Urban_Code = 23527	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 10 AND [Travel_Time_Metrics]:Urban_Code = 69076	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 72 AND [Travel_Time_Metrics]:Urban_Code = 79093	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 11 AND [Travel_Time_Metrics]:Urban_Code = 92242	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 13 AND [Travel_Time_Metrics]:Urban_Code = 03817	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 17 AND [Travel_Time_Metrics]:Urban_Code IN (16264, 77770)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 18 AND [Travel_Time_Metrics]:Urban_Code IN (16264, 41212)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 21 AND [Travel_Time_Metrics]:Urban_Code = 16885	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 24 AND [Travel_Time_Metrics]:Urban_Code IN (04843, 69076, 92242)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 25 AND [Travel_Time_Metrics]:Urban_Code = 09271	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 26 AND [Travel_Time_Metrics]:Urban_Code = 23824	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 27 AND [Travel_Time_Metrics]:Urban_Code = 57628	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code 28 = AND [Travel_Time_Metrics]:Urban_Code = 56116	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 29 AND [Travel_Time_Metrics]:Urban_Code = 77770	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 32 AND [Travel_Time_Metrics]:Urban_Code = 47995	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 33 AND [Travel_Time_Metrics]:Urban_Code = 09271	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 34 AND [Travel_Time_Metrics]:Urban_Code IN (69076, 63217)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 36 AND [Travel_Time_Metrics]:Urban_Code = 63217	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 37 AND [Travel_Time_Metrics]:Urban_Code = 15670	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 39AND [Travel_Time_Metrics]:Urban_Code IN (16885, 17668, 19234)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 41 AND [Travel_Time_Metrics]:Urban_Code = 71317	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 42 AND [Travel_Time_Metrics]:Urban_Code IN (69076, 69697)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 45 AND [Travel_Time_Metrics]:Urban_Code = 15670	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 47 AND [Travel_Time_Metrics]:Urban_Code = 56116	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 48 AND [Travel_Time_Metrics]:Urban_Code IN (40429, 22042)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 49 AND [Travel_Time_Metrics]:Urban_Code = 78499	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 51 AND [Travel_Time_Metrics]:Urban_Code = 92242	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 53 AND [Travel_Time_Metrics]:Urban_Code IN (71317, 80389)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Data Field	If	Then	Warning Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:PHED	[Travel_Time_Metrics]:State_Code = 55 AND [Travel_Time_Metrics]:Urban_Code IN (57466, 57628)	[Travel_Time_Metrics]:PHED must not be NULL	PHED Must be >= 0 for Urban_Code IN (3817, 4843, 9271, 15670, 16264, 16885, 17668, 19234, 22042, 23527, 23824, 40429, 41212, 47995, 51445, 56116, 57466, 57628, 63217, 69076, 69184, 69697, 71317, 75340, 77068, 77770, 78499, 78661, 78904, 79039, 79093, 80389, 92242) or May be NULL otherwise	Field Validation Criteria Number 23 (see Table B)

Table D – Cross-Tabular Data Item Checks

Data Field	If	Then	Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:F_System	[Travel_Time_Metrics]:METRIC_SOURCE = 1 AND Item 71 Unreported AND ([Travel_Time_Metrics]:F_System IN (1,2,3,4,5,6,7)) WHERE([Travel_Time_Metrics]:Travel_Time_C ode = [Travel_Message_Channel_Identification]:tmc)	[Travel_Time_Metrics]:F_System = [Travel_Message_Channel_Identification]:f_system	F_System, Urban_Code, Facility_Type and NHS of Travel_Time_Metrics Must Match f_system, urban_code, faciltytype and nhs of Travel_Message_Channel_ Identification, respectively, Where METRIC_SOURCE = 1 AND Travel_Time_Code of Travel_Time_Metrics = Travel_Message_Channel of Travel_Message_Channel_ Identification AND Travel_Time_Code Is Not Reported as a Data Item Section	30

Data Field	If	Then	Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:Urban_Code	<p>[Travel_Time_Metrics]:METRIC_SOURCE = 1 AND Item 71 Unreported AND ([Travel_Time_Metrics]:Urban_Code IS NOT NULL AND [Travel_Time_Metrics]:Urban_Code ≠0)</p> <p>WHERE([Travel_Time_Metrics]:Travel_Time_C ode = [Travel_Message_Channel_Identification]:tmc)</p>	[Travel_Time_Metrics]:Urban_Code = [Travel_Message_Channel_Identification]:urban_code	<p>F_System, Urban_Code, Facility_Type and NHS of Travel_Time_Metrics Must Match f_system, urban_code, faciltytype and nhs of Travel_Message_Channel_ Identification, respectively, Where METRIC_SOURCE = 1 AND Travel_Time_Code of Travel_Time_Metrics = Travel_Message_Channel of Travel_Message_Channel_ Identification AND Travel_Time_Code Is Not Reported as a Data Item Section</p>	30

Data Field	If	Then	Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:Facility_Type	[Travel_Time_Metrics]:METRIC_SOURCE = 1 AND Item 71 Unreported AND ([Travel_Time_Metrics]:Facility_Type IS NOT NULL AND [Travel_Time_Metrics]:Facility_Type ≠ 0) WHERE([Travel_Time_Metrics]:Travel_Time_C ode = [Travel_Message_Channel_Identification]:tmc)	[Travel_Time_Metrics]:Facility_Type = [Travel_Message_Channel_Identification]:faciltype	F_System, Urban_Code, Facility_Type and NHS of Travel_Time_Metrics Must Match f_system, urban_code, faciltype and nhs of Travel_Message_Channel_ Identification, respectively, Where METRIC_SOURCE = 1 AND Travel_Time_Code of Travel_Time_Metrics = Travel_Message_Channel of Travel_Message_Channel_ Identification AND Travel_Time_Code Is Not Reported as a Data Item Section	30

Data Field	If	Then	Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:NHS	<p>[Travel_Time_Metrics]:METRIC_SOURCE = 1 AND Item 71 Unreported AND ([Travel_Time_Metrics]:NHS IS NOT NULL AND [Travel_Time_Metrics]:NHS ≠0)</p> <p>WHERE([Travel_Time_Metrics]:Travel_Time_C ode = [Travel_Message_Channel_Identification]:tmc)</p>	[Travel_Time_Metrics]:NHS = [Travel_Message_Channel_Identification]:nhs	<p>F_System, Urban_Code, Facility_Type and NHS of Travel_Time_Metrics Must Match f_system, urban_code, faciltytype and nhs of Travel_Message_Channel_ Identification, respectively, Where METRIC_SOURCE = 1 AND Travel_Time_Code of Travel_Time_Metrics = Travel_Message_Channel of Travel_Message_Channel_ Identification AND Travel_Time_Code Is Not Reported as a Data Item Section</p>	30
[Travel_Time_Metrics]:Segment_Length	<p>[Travel_Time_Metrics]:METRIC_SOURCE = 1</p> <p>WHERE([Travel_Time_Metrics]:Travel_Time_C ode = [Travel_Message_Channel_Identification]:tmc)</p>	<p>round([Travel_Time_Metrics]:Segment_Length, 1 decimal place) = round([Travel_Message_Channel_Identification]:miles , 1 decimal place)</p>	<p>Segment_Length of Travel_Time_Metrics Must = miles of Travel_Message_Channel_ Identification in an accuracy of one decimal Where METRIC_SOURCE = 1 AND Travel_Time_Code of Travel_Time_Metrics = Travel_Message_Channel of Travel_Message_Channel_ Identification</p>	31

Data Field	If	Then	Message	Cross Validation Criteria No.
[Travel_Time_Metrics]:DIR_AADT	[Travel_Time_Metrics]:METRIC_SOURCE = 1 AND Item 71 Unreported WHERE([Travel_Time_Metrics]:Travel_Time_Code = [Travel_Message_Channel_Identification]:tmc)	[Travel_Time_Metrics]: DIR_AADT <= [Travel_Message_Channel_Identification]:aadt	DIR_AADT of Travel_Time_Metrics Must <= aadt of Travel_Message_Channel_ Identification Where METRIC_SOURCE = 1 AND Travel_Time_Code of Travel_Time_Metrics = Travel_Message_Channel of Travel_Message_Channel_ Identification AND Travel_Time_Code as a Travel_Time_Code Section Is Not Reported.	32