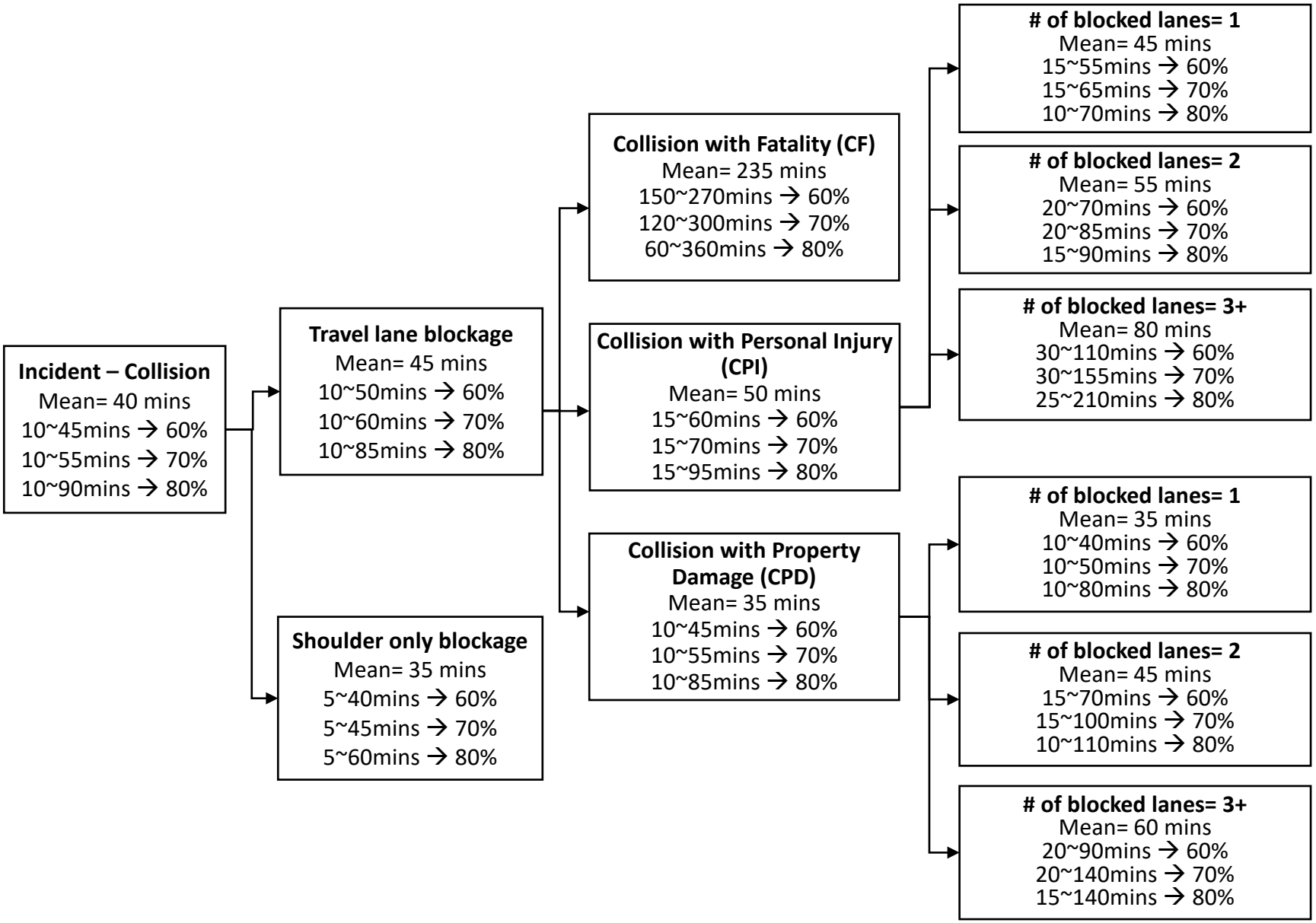
Incident Duration Prediction Model (I-95)

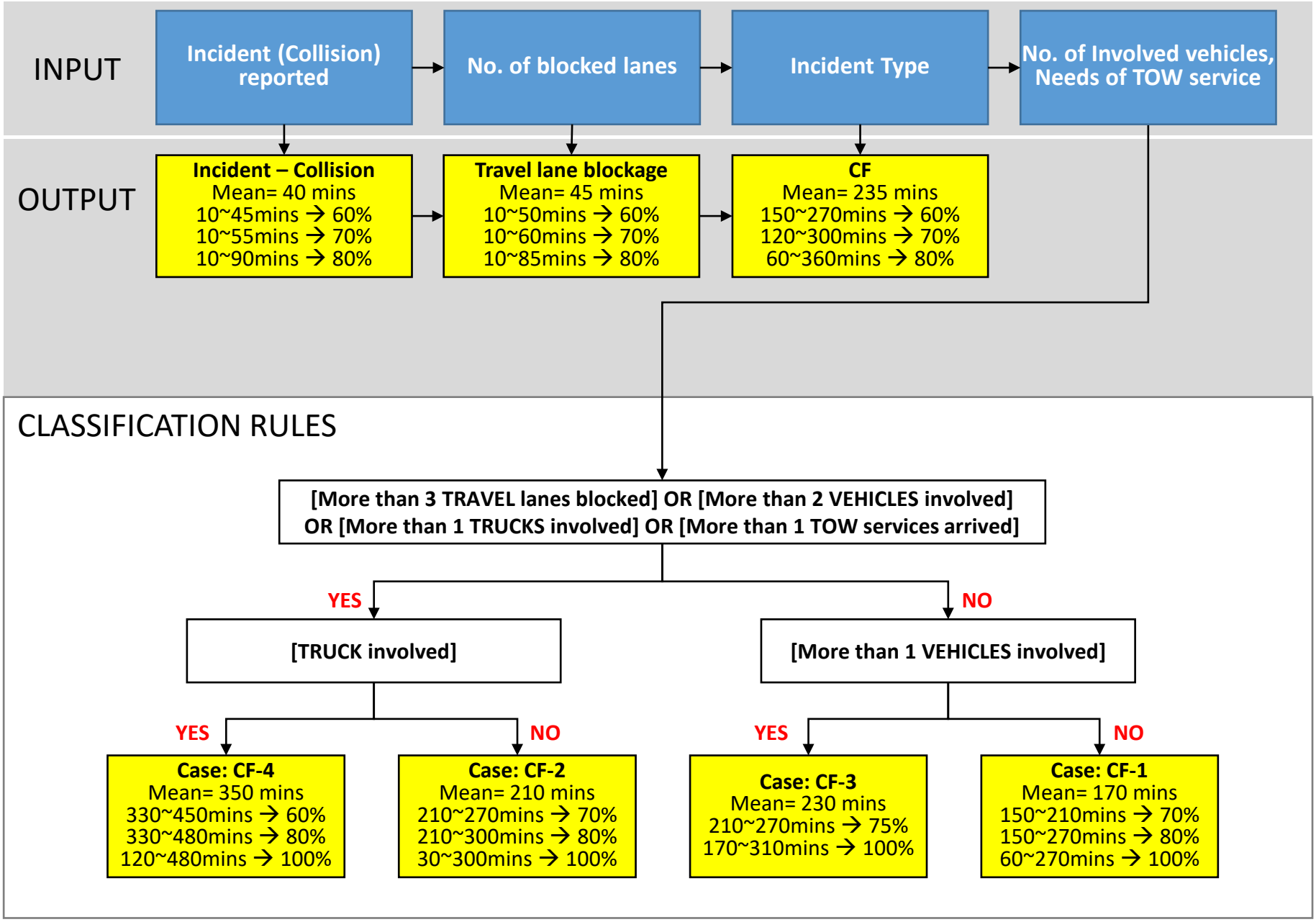
- *Rules and results –*

Up to December 2018

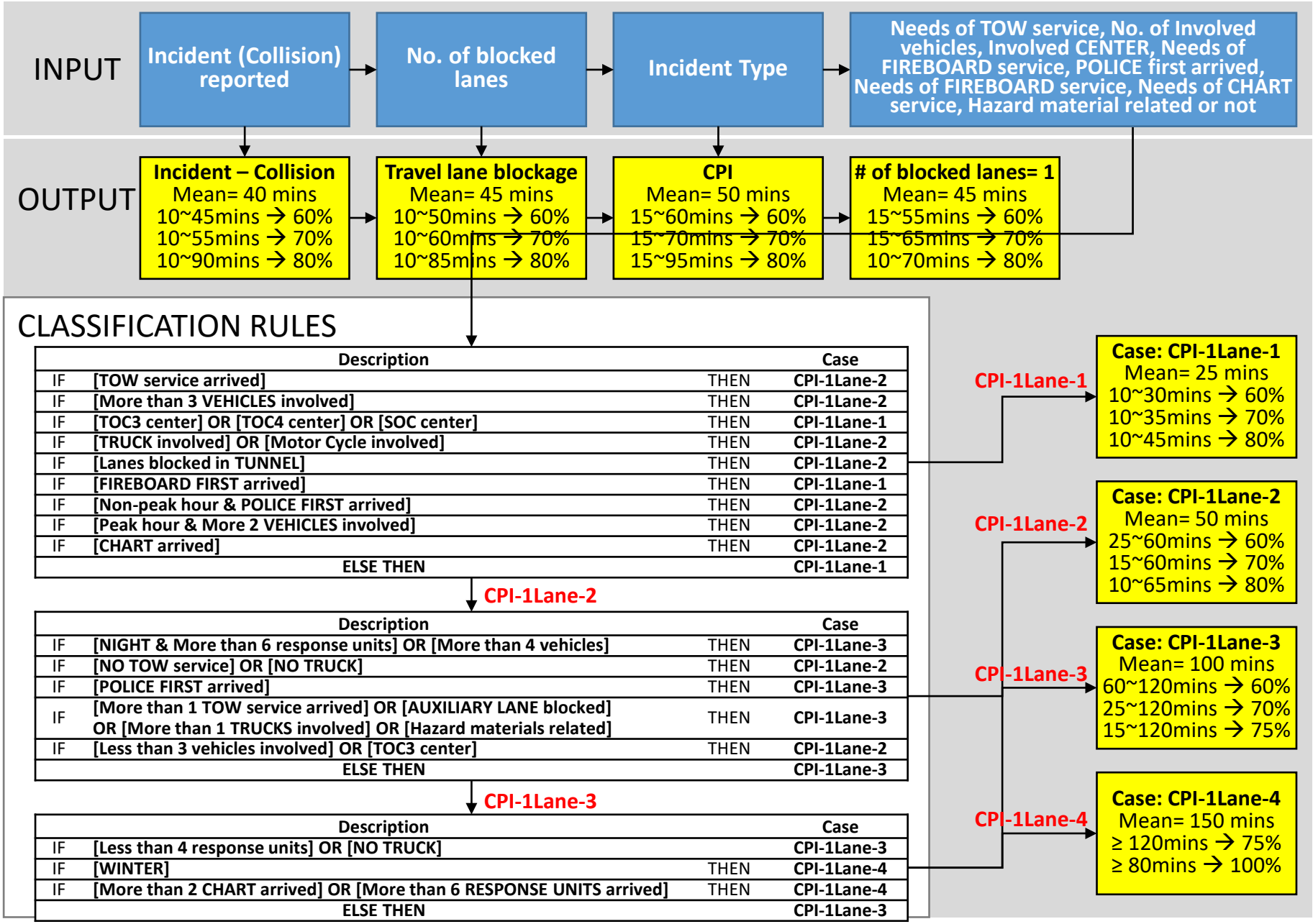
Incident Categorization



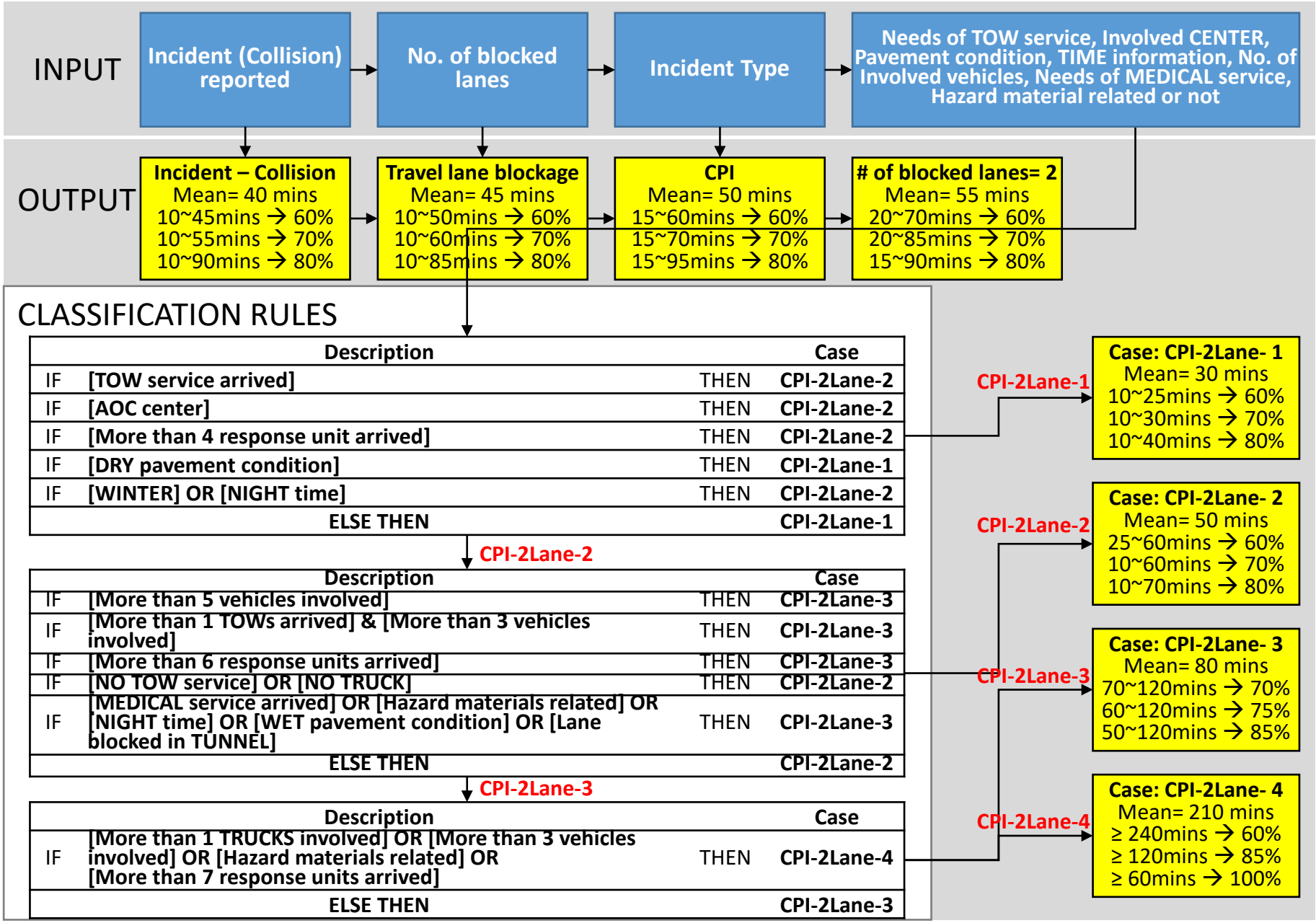
Travel lane blockage – CF



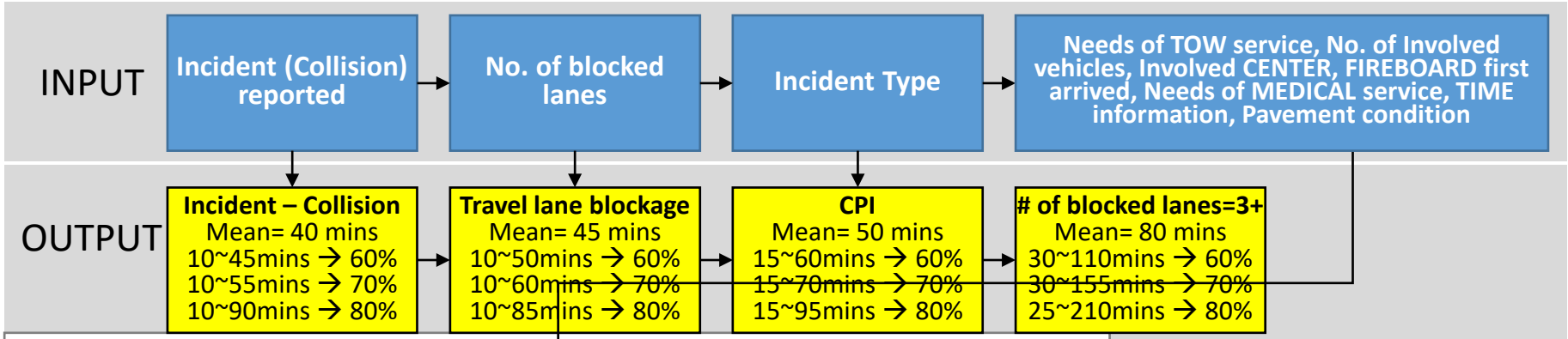
Travel lane blockage – CPI - 1 Travel lane blockage



Travel lane blockage – CPI - 2 Travel lanes blockage



Travel lane blockage – CPI - 3+ Travel lanes blockage



CLASSIFICATION RULES

	Description		Case
IF	[TOW service arrived] OR [Vehicle Jack-knifed OR Overturned OR Lost Load]	THEN	CPI-3Lane-2
IF	[TOC4 center]	THEN	CPI-3Lane-1
IF	[SOC center] OR [TRUCK involved] OR [More than 2 VEHICLES involved]	THEN	CPI-3Lane-2
IF	[TOC3 center]	THEN	CPI-3Lane-1
IF	[FIREBOARD FIRST arrived]	THEN	CPI-3Lane-2
	ELSE THEN		CPI-3Lane-1

CPI-3Lane-2

	Description		Case
IF	[MEDICAL service arrived]	THEN	CPI-3Lane-3
IF	[More than 8 response units arrived]	THEN	CPI-3Lane-3
IF	[NO TOW service]	THEN	CPI-3Lane-2
IF	[More than 3 TRAVEL LANES blocked]	THEN	CPI-3Lane-3
IF	[WEEKEND] OR [NIGHT time]	THEN	CPI-3Lane-3
IF	[DRY pavement condition]	THEN	CPI-3Lane-2
	ELSE THEN		CPI-3Lane-3

CPI-3Lane-3

	Description		Case
IF	[More than 9 response units arrived]	THEN	CPI-3Lane-4
IF	[NO TRUCK]	THEN	CPI-3Lane-3
IF	[More than 1 TRUCKS involved]	THEN	CPI-3Lane-4
IF	[MEDICAL service arrived] OR [Lane blocked in TUNNEL]	THEN	CPI-3Lane-4
	ELSE THEN		CPI-3Lane-3

CPI-3Lane-1

Case: CPI-3Lane-1
Mean= 25 mins
10~40mins → 65%
5~30mins → 70%
5~40mins → 85%

CPI-3Lane-2

Case: CPI-3Lane-2
Mean= 60 mins
30~60mins → 60%
15~60mins → 70%
10~75mins → 90%

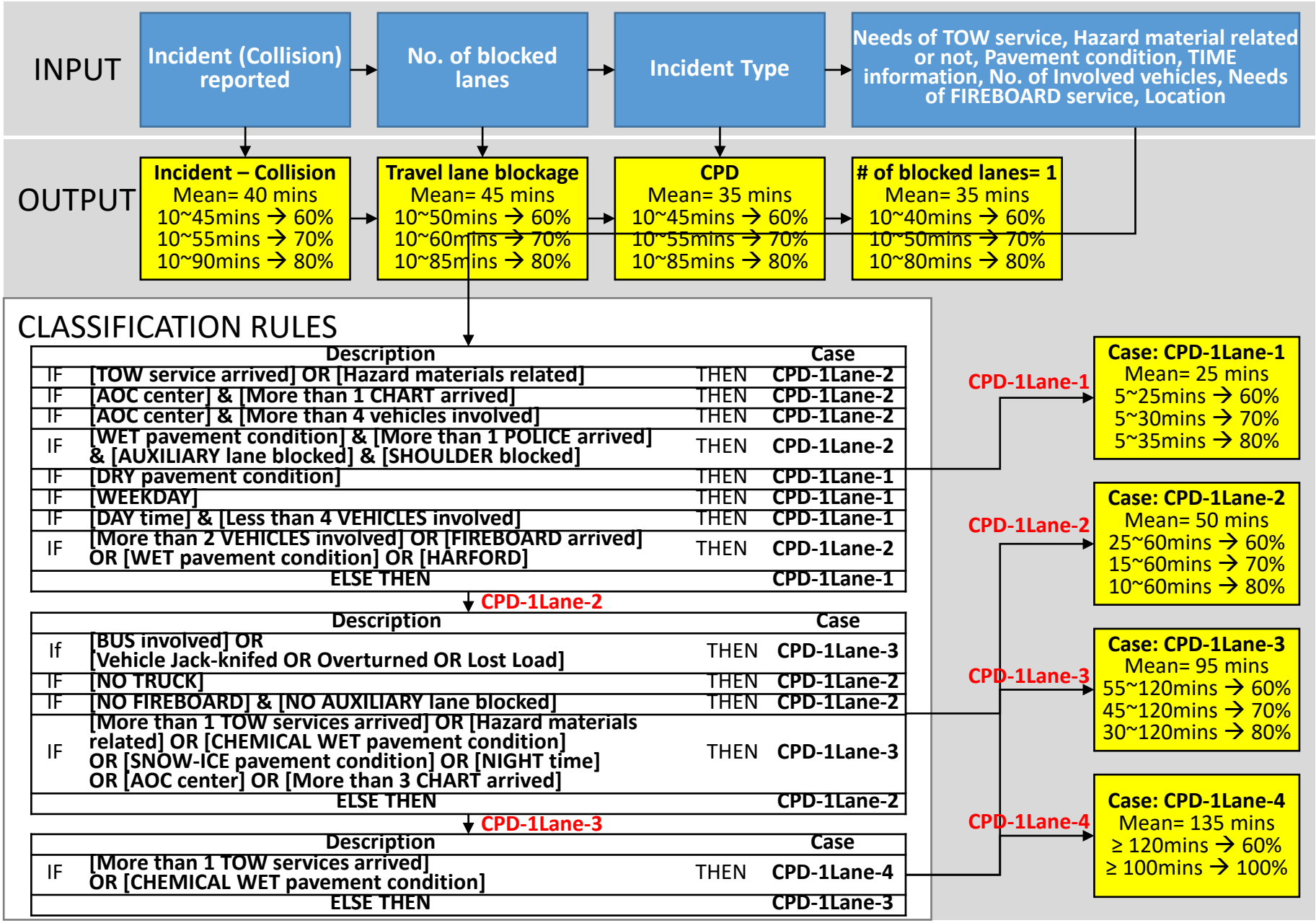
CPI-3Lane-3

Case: CPI-3Lane-3
Mean= 95 mins
60~120mins → 60%
45~120mins → 70%
25~120mins → 80%

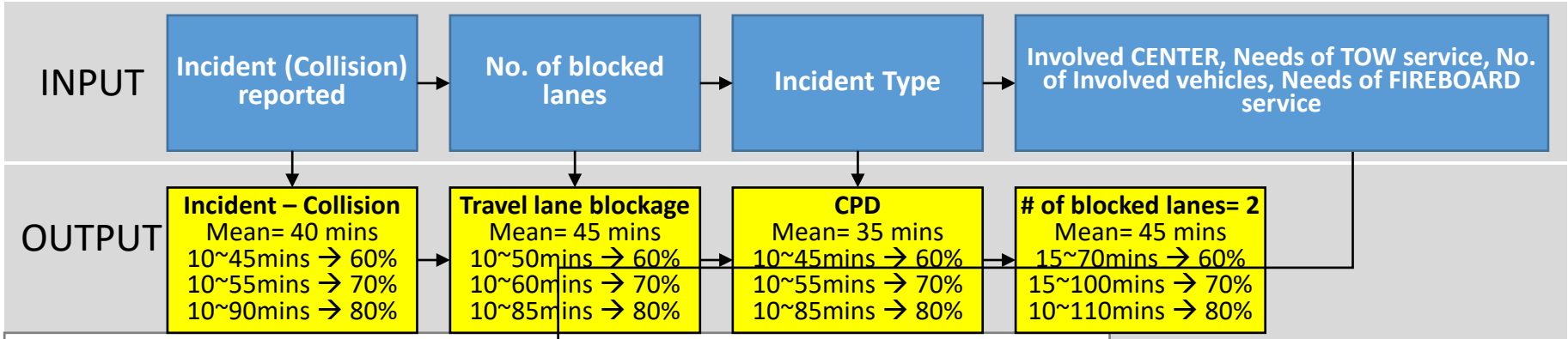
CPI-3Lane-4

Case: CPI-3Lane-4
Mean= 225 mins
≥ 170mins → 60%
≥ 140mins → 85%
≥ 120mins → 100%

Travel lane blockage – CPD - 1 Travel lane blockage



Travel lane blockage – CPD - 2 Travel lanes blockage



CLASSIFICATION RULES

	Description		Case
IF	[AOC center]	THEN	CPD-2Lane-2
IF	[TOW service arrived] & [FIREBOARD arrived]	THEN	CPD-2Lane-2
IF	[WEEKEND] & [NIGHT] & [TOW service arrived OR More than 3 responders arrived]	THEN	CPD-2Lane-2
IF	[TRUCK involved] & [More than 4 responders arrived]	THEN	CPD-2Lane-2
IF	[More than 5 vehicles involved]	THEN	CPD-2Lane-2
	ELSE THEN		CPD-2Lane-1

CPD-2Lane-2

	Description		Case
IF	[More than 1 TOW services arrived]	THEN	CPD-2Lane-3
IF	[WET pavement condition] & [FIREBOARD arrived] & [Spring OR Summer]	THEN	CPD-2Lane-3
IF	[More than 3 vehicles involved] & [More than 4 response units arrived]	THEN	CPD-2Lane-3
	ELSE THEN		CPD-2Lane-2

CPD-2Lane-3

	Description		Case
IF	[NO TRUCK]	THEN	CPD-2Lane-3
IF	[More than 7 response units arrived]	THEN	CPD-2Lane-4
	ELSE THEN		CPD-2Lane-3

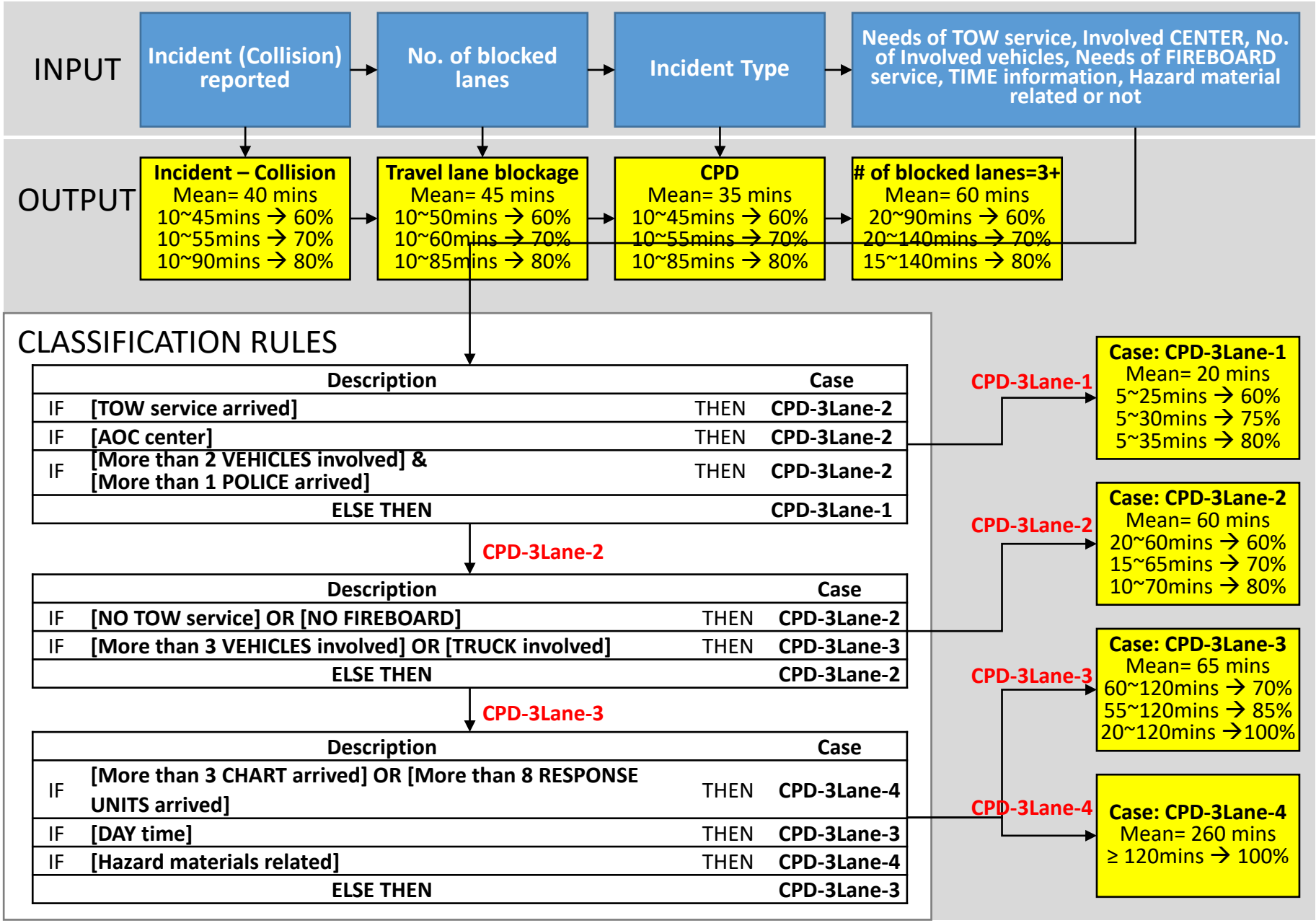
CPD-2Lane-1 → **Case: CPD-2Lane-1**
Mean= 30 mins
5~20mins → 65%
5~30mins → 75%
5~35mins → 80%

CPD-2Lane-2 → **Case: CPD-2Lane-2**
Mean= 50 mins
20~60mins → 65%
10~60mins → 70%
10~70mins → 75%

CPD-2Lane-3 → **Case: CPD-2Lane-3**
Mean= 85 mins
75~120mins → 60%
70~120mins → 80%
65~120mins → 100%

CPD-2Lane-4 → **Case: CPD-2Lane-4**
Mean= 200 mins
≥ 120mins → 100%

Travel lane blockage – CPD - 3+ Travel lanes blockage



Travel lane blockage – supplemental rules

Collision – Travel lane blockage cases

Description		CT range (minutes)	Mean CT (minutes)
IF [Hazard material] & [Truck Overturned OR 10+ response units arrived OR 3+ CHARTs arrived]	THEN	≥ 120 (90%)	160
IF [Winter] & [Weekend] & [Nighttime] & [CPI] & [TRUCK involved] & [TOW arrived] & [5+ response units]	THEN	150~180 (90%) 140~190 (100%)	165
IF [CPI OR CPD] & [Hazard material]	THEN	55~120 (90%)	80
IF [CPI] & [2~3 TRAVEL lanes blocked] & [1 TRUCK overturned] & [Less than 5 responders]	THEN	100~140 (90%) 90~150 (100%)	120
IF [Truck Overturned] & [4+ lanes blocked OR Harford region OR [CPI & 7+ responders]]	THEN	≥ 120 (90%)	200
IF [Truck Jack-knifed] & [2+ TOWs arrived] & [NOT Daytime]	THEN	≥ 120 (90%)	150
IF [Vehicle Overturned] & [[Weekend & 8+ resp.] OR [Medical & 2+ TOWs] OR [CECIL & 6+ resp.]]	THEN	≥ 120 (90%)	165
IF [CPD] & [2 TRAVEL lanes blocked] & [3 vehicles involved] & [TRUCK] & [TOW] & [NO jackknifed, lost-load, over-turned]	THEN	40~80 (90%) 30~90 (100%)	60
IF [Weekend] & [Night] & [CPD] & [3+ TRAVEL lanes blocked] & [TRUCK] & [NO jackknifed, lost-load, over-turned] & [TOW]	THEN	130~150 (90%) 120~160 (100%)	140
IF [Harford] & [Night] & [CPD] & [1 TRAVEL lane blocked] & [NO TRUCK] & [TOW] & [FIREBOARD]	THEN	35~85 (90%) 30~90 (100%)	60
IF [Holiday] & [4+ vehicles involved] & [SHOULDER blocked] & [NO TOW]	THEN	40~70 (90%) 30~80 (100%)	55
IF [Wet condition] & [AM peak] & [CPD] & [1 TRAVEL lane blocked] & [SOC] & [TOW arrived]	THEN	90~100 (90%) 80~110 (100%)	95
IF [CPD] & [1 TRAVEL lane blocked] & [NO TRUCK] & [Nighttime] & [AOC] & [7+ response units]	THEN	45~95 (90%) 40~100 (100%)	70
IF [Weekend] & [Night] & [4+ TRAVEL lanes blocked] & [3+ vehicles involved] & [NO jackknifed, lost-load, over-turned] & [6+ response units] & [TOW arrived]	THEN	150~170 (90%) 140~180 (100%)	160
IF [Baltimore] & [Night] & [Wet condition] & [CPD] & [2 TRAVEL lanes blocked] & [2+ vehicles involved] & [NO TRUCK] & [AOC] & [TOW arrived]	THEN	100~120 (90%) 90~130 (100%)	110
IF [Baltimore] & [Nighttime] & [CPI] & [4+ vehicles involved] & [NO TRUCK] & [TOW arrived] & [4+ response units]	THEN	100~120 (90%) 90~130 (100%)	110
IF [Cecil OR Harford] & [Truck Jack-knife] & [TOW arrived] & [4+ response units]	THEN	150~170 (90%) 140~180 (100%)	160
IF [CPD] & [3+ vehicles involved] & [Auxiliary lane blocked] & [TOW] &[FIREBOARD arrived] & [Weekend] & [Night]	THEN	130~150 (90%) 120~160 (100%)	140
IF [Nighttime] & [Weekend] & [TRUCK involved] & [AUXILIARY lane blocked] & [10+ response units]	THEN	180~210 (90%) 170~220 (100%)	195
IF [Truck Jack-knifed] & [Cecil] & [Exit100 (Bridge)] & [Nighttime]	THEN	200~230 (90%) 190~240 (100%)	215
IF [CPI] & [4+ TRAVEL lanes blocked] & [TRUCK involved] & [NO TOW] & [0-3AM]	THEN	170~190 (90%) 160~200 (100%)	180
IF [TOLL lane blocked] & [TRUCK involved] & [4+ response units arrived] & [0-7AM]	THEN	170~200 (90%) 160~210 (100%)	185
IF [Cecil] & [South] & [Exit100 (Bridge)] & [Weekend] & [More than 3 responders] & [Night OR 3+ vehicles involved]	THEN	90 ~ 110 (90%) 80 ~ 120 (100%)	100
IF [Holiday] & [Toll lane blocked] & [ONLY 1 TRUCK involved] & [NO TOW service]	THEN	100~120 (90%) 90~130 (100%)	110