

Trade Facilitation and CPMM Indicators

**Corridor Performance Measurement and
Monitoring (TA 6437 REG)**

2

March 2010

Almaty, Kazakhstan

Objectives

- 1 To select key indicators from CPMM
- 2 To discuss the results of data collection

Contents

1 CPMM Data Profile

2 Cost Efficiency

3 Time Efficiency

4 Unofficial Payments

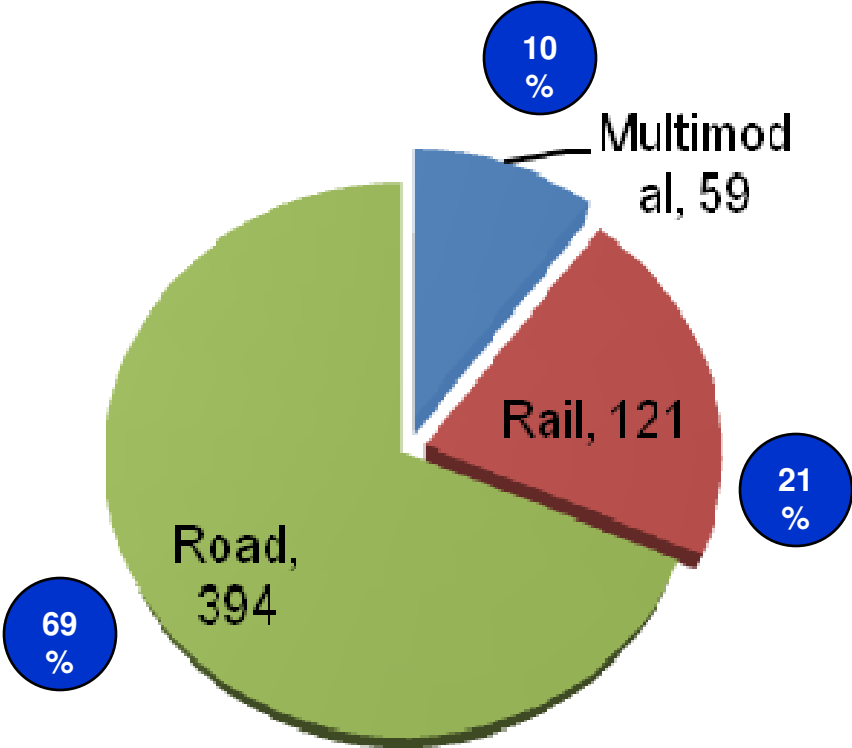
5 Summary

Data Submissions

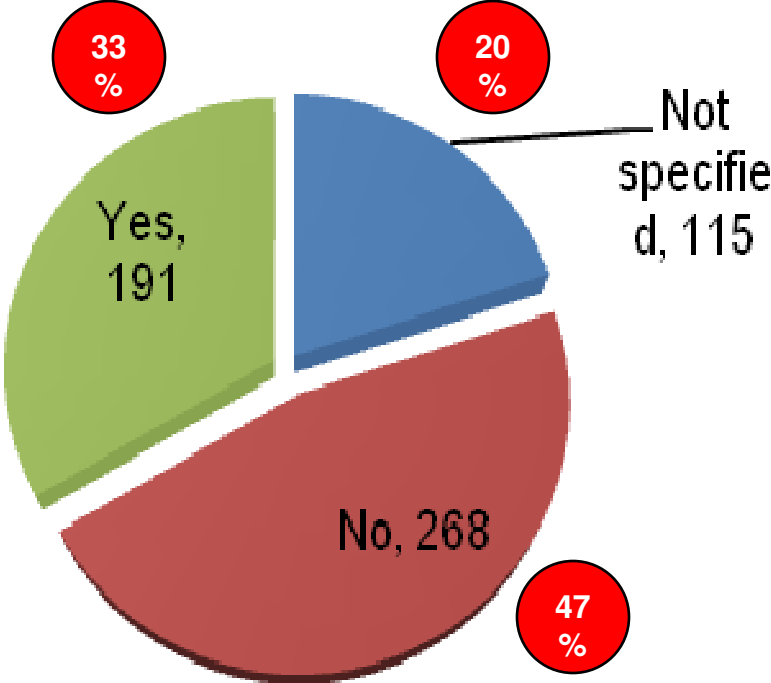
Country	Association	MONTH			Total
		August	July	September	
Afghanistan	AAFFCO	30	30	30	90
Azerbaijan	ABADA	0	9	0	9
Kazakhstan	KFFA	30	30	0	60
Kyrgyz Republic	FOA	8	18	2	28
Mongolia	NTTFC	30	30	30	90
PRC	CIFA	30	30	30	90
PRC	IMAR	5	6	5	16
Tajikistan	ABBAT	20	30	10	60
Uzbekistan	ADBL	11	30	0	41
Uzbekistan	AIRCUZ	30	30	30	90
Total		194	243	137	574

Note : Some data for July to Sep 2009 were submitted after the cut-off date.

General Profile



Types of Transport Mode

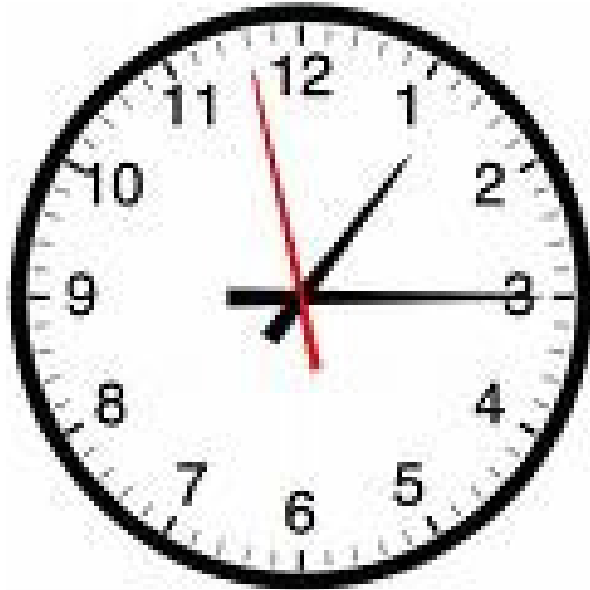


Use of TIR

Types of Cargoes



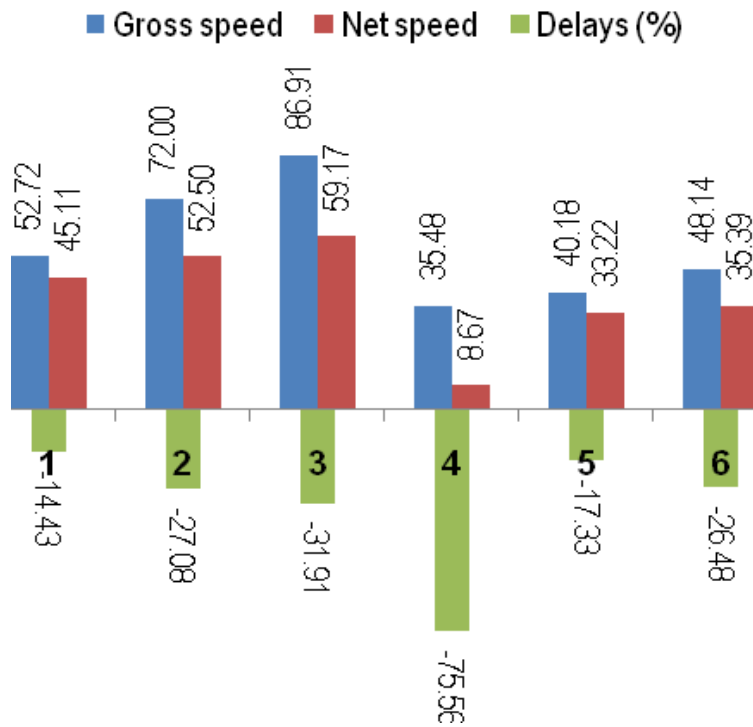
Please put in the cargo type. If it contains mixed cargo, then enter '**Mixed**' in Form A.



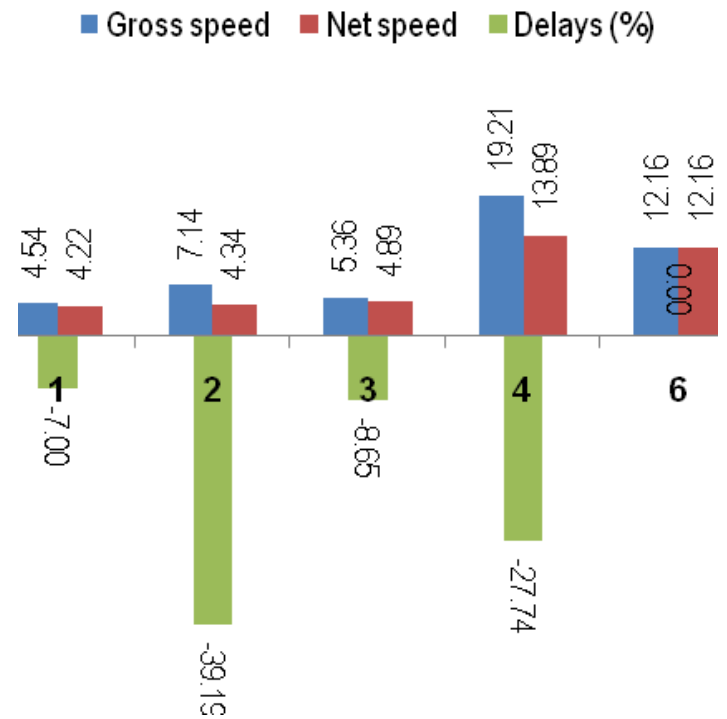
TIME EFFICIENCY (SPEED)

Average Speed

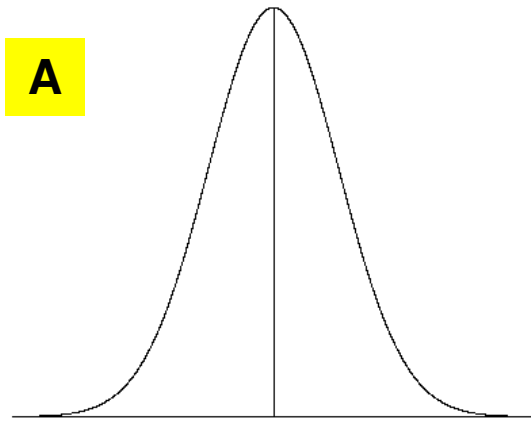
Road Speed along corridors



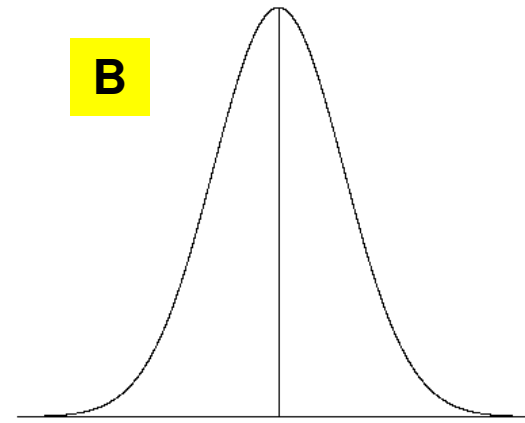
Rail Speed along corridors



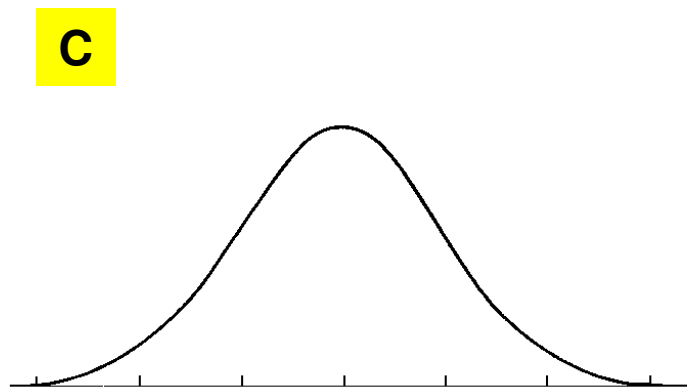
Measuring Variability in Transport



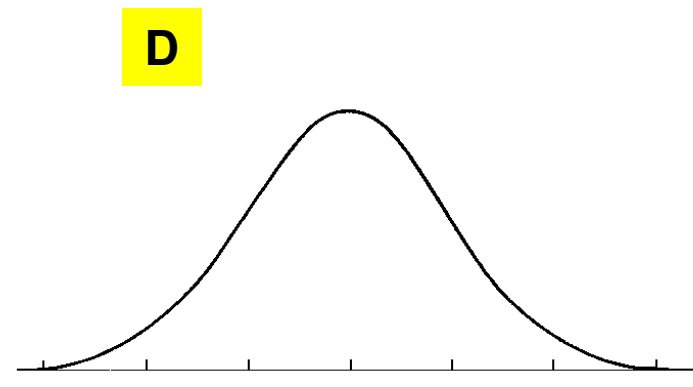
Mean = 40 hours
Standard Deviation = 12.5



Mean = 80 hours
Standard Deviation = 12.5



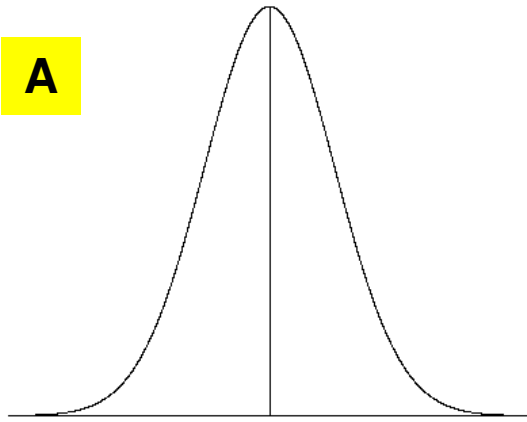
Mean = 40 hours
Standard Deviation = 25



Mean = 80 hours
Standard Deviation = 25

Coefficient of Variation (CoV)

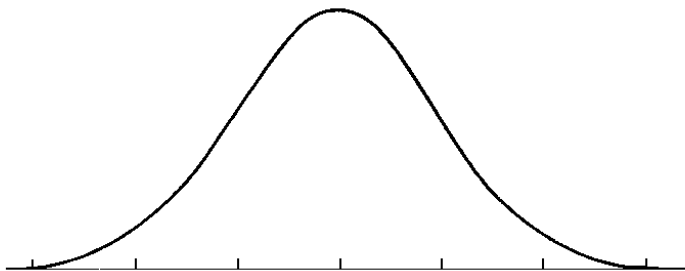
A



Mean = 40 hours
Standard Deviation = 12.5

$$\begin{aligned}\text{CoV} &= \text{Standard Deviation} / \text{Mean} \\ &= 12.5 / 40 \\ &= 0.3125\end{aligned}$$

C



Mean = 40 hours
Standard Deviation = 25

$$\begin{aligned}\text{CoV} &= \text{Standard Deviation} / \text{Mean} \\ &= 25 / 40 \\ &= 0.625\end{aligned}$$

Speed Reliability (Example)

S/N	Files	Route	Distance (km)	Total Cost (US\$)	Days	Hours
1	MON-SEP09-021	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$3,474.07	8.00	1.13
2	MON-SEP09-022	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$3,471.07	6.00	20.98
3	MON-SEP09-023	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$2,142.92	7.00	18.27
4	MON-SEP09-024	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$2,161.67	9.00	4.42
5	MON-SEP09-025	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$2,111.11	9.00	5.48
6	MON-SEP09-026	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$2,087.45	9.00	22.33
7	MON-SEP09-027	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$2,111.66	8.00	0.25
8	MON-SEP09-028	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$2,111.66	8.00	11.23
9	MON-SEP09-029	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$2,111.66	9.00	21.43
10	MON-SEP09-030	Ulaanbaatar-Choir-Sainshand-Zamiin-Uud-Erlian-Tianjin	1,277	\$2,061.66	6.00	5.82

Speed Reliability (Example)

S/N	Files	Total Hours (A)	Mean (B)	A-B	$(A-B)^2$
1	MON-SEP09-021	193.13	200.73	-7.60	57.82
2	MON-SEP09-022	164.98	200.73	-35.75	1,278.35
3	MON-SEP09-023	186.27	200.73	-14.46	209.21
4	MON-SEP09-024	220.42	200.73	19.69	387.54
5	MON-SEP09-025	221.48	200.73	20.75	430.40
6	MON-SEP09-026	238.33	200.73	37.60	1,413.46
7	MON-SEP09-027	192.25	200.73	-8.48	71.98
8	MON-SEP09-028	203.23	200.73	2.50	6.23
9	MON-SEP09-029	237.43	200.73	36.70	1,346.60
10	MON-SEP09-030	149.82	200.73	-50.91	2,592.24

Speed Reliability (Example)

S/N	Files	Total Hours (A)	Mean (B)	A-B	(A-B) ²
1	MON-SEP09-021	193.13	200.73	-7.60	57.82
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9	MON-SEP09-029	237.43	200.73	36.70	1,346.60
10	MON-SEP09-030	149.82	200.73	-50.91	2,592.24

Total	7,793.81
Total / (n-1)	865.98
Standard Deviation	29.43
Mean	200.73
Standard Deviation	29.43
Coefficient of Variation	0.15

What if the Data Becomes More Volatile?

S/N	Files	Total Hours (A)	Mean (B)	A-B	(A-B) ²
1	MON-SEP09-021	193.13	200.73	-7.60	57.82
2	MON-SEP09-022	164.98	200.73	-35.75	1,278.35
3	MON-SEP09-023	186.27	200.73	-14.46	209.21
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7	MON-SEP09-027	192.25	200.73	-8.48	71.98
8	MON-SEP09-028	203.23	200.73	2.50	6.23
9	MON-SEP09-029	237.43	200.73	36.70	1,346.60
10	MON-SEP09-030	149.82	200.73	-50.91	2,592.24

Min 149.82
 Max 238.33
 Range **88.51**

What if the Data Becomes More Volatile?

S/N	Files	Total Hours (A)	Mean (B)	A-B	$(A-B)^2$
1	MON-SEP09-021	135	202.70	-67.70	4,583.29
2	MON-SEP09-022	250	202.70	47.30	2,237.29
3	MON-SEP09-023	154	202.70	-48.70	2,371.69
4	MON-SEP09-024	230	202.70	27.30	745.29
5	MON-SEP09-025	220	202.70	17.30	299.29
6	MON-SEP09-026	150	202.70	-52.70	2,777.29
7	MON-SEP09-027	170	202.70	-32.70	1,069.29
8	MON-SEP09-028	270	202.70	67.30	4,529.29
9	MON-SEP09-029	170	202.70	-32.70	1,069.29
10	MON-SEP09-030	278	202.70	75.30	5,670.09

Min 135
 Max 278
 Range 143

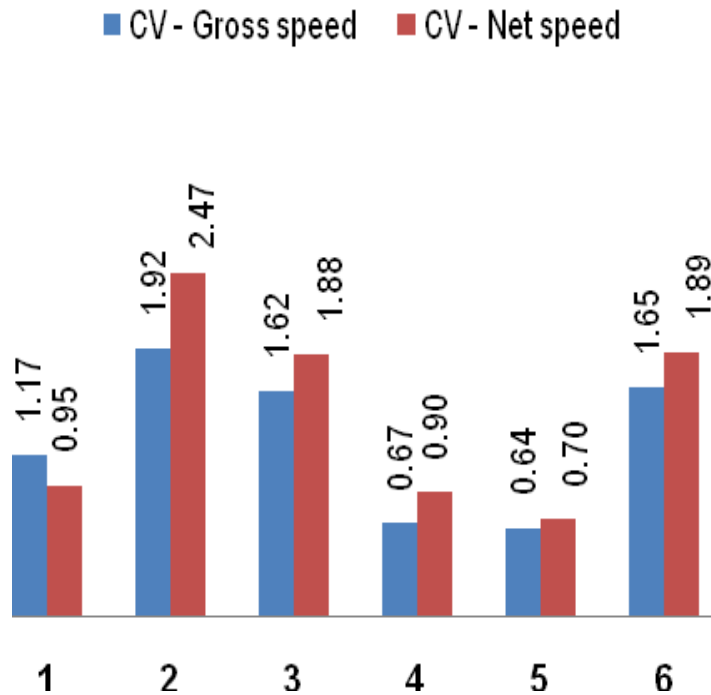
CoV increases by 73%!

S/N	Files	Total Hours (A)	Mean (B)	A-B	(A-B) ²
1	MON-SEP09-021	135	202.70	-67.70	4,583.29
2	MON-SEP09-022	250	202.70	47.30	2,237.29
3	MON-SEP09-023	154	202.70	-48.70	2,371.69
4	MON-SEP09-024	230	202.70	27.30	745.29
5	MON-SEP09-025	220	202.70	17.30	299.29
6	MON-SEP09-026	150	202.70	-52.70	2,777.29
7	MON-SEP09-027	170	202.70	-32.70	1,069.29
8	MON-SEP09-028	270	202.70	67.30	4,529.29
9	MON-SEP09-029	170	202.70	-32.70	1,069.29
10	MON-SEP09-030	278	202.70	75.30	5,670.09

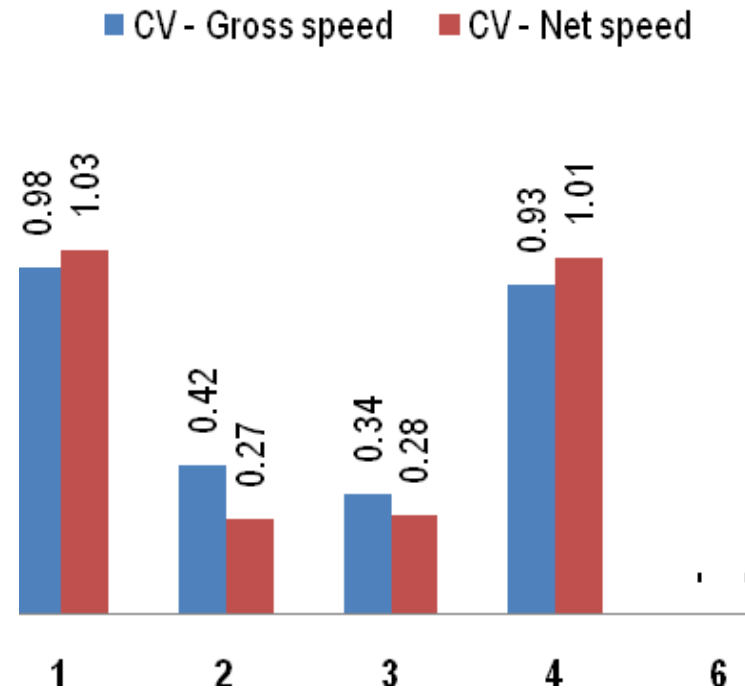
Total	25,352.10
Total / (n-1)	2,816.90
Standard Deviation	53.07
Mean	202.70
Standard Deviation	53.07
Coefficient of Variation	0.26

Speed Reliability (Rail)

Coefficient of variation of road speed (%)

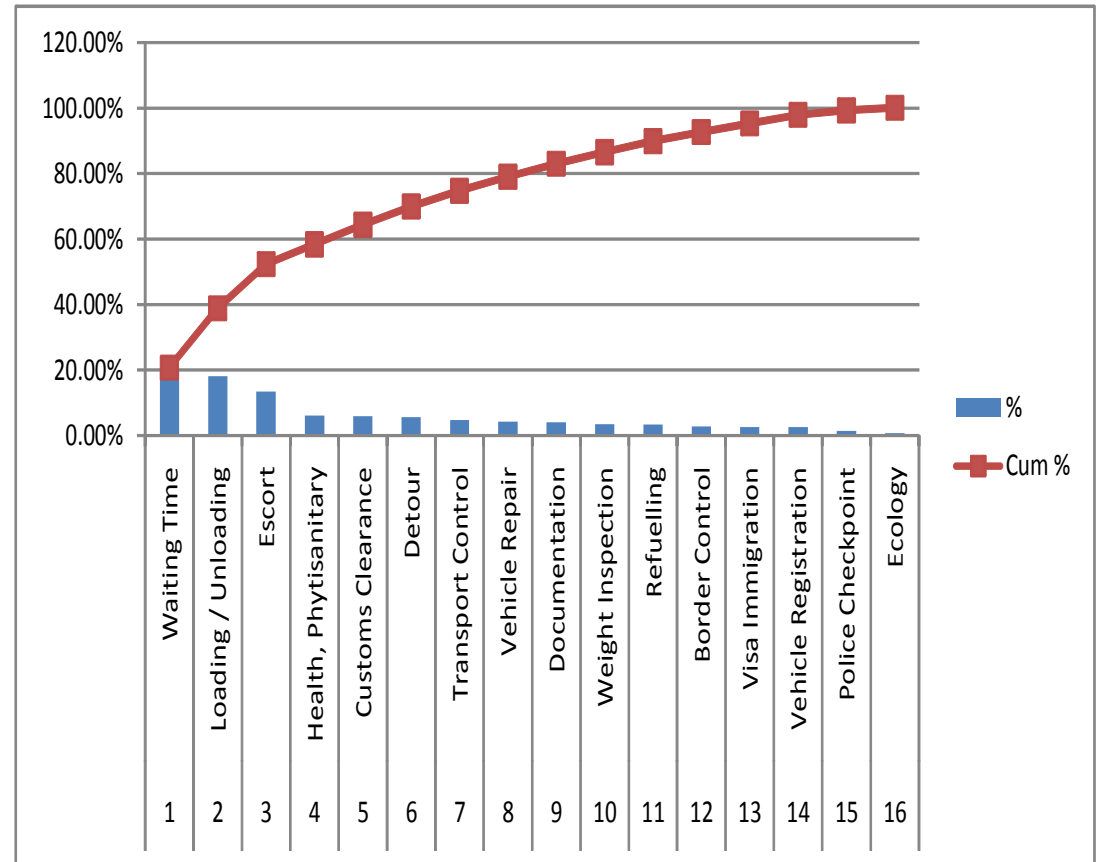


Coefficient of variation of rail speed (%)



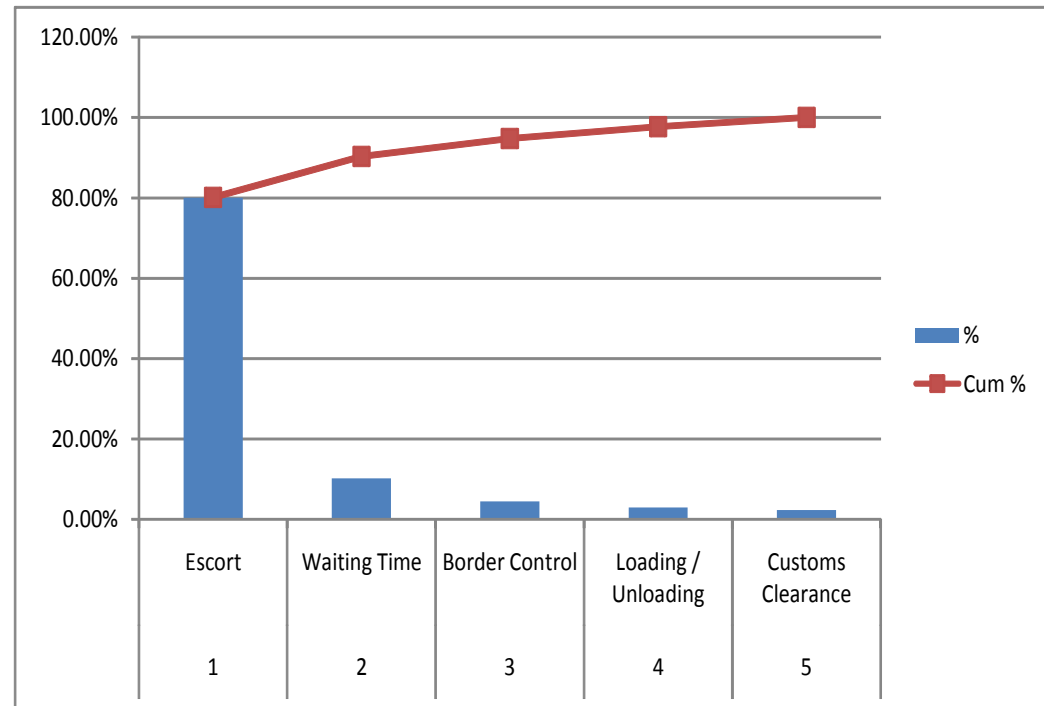
Stop Analysis for Road

S/N	Activities	%	Cum %	Hrs/500km
1	Waiting Time	20.76%	20.76%	14.22
2	Loading / Unloading	18.11%	38.87%	12.41
3	Escort	13.46%	52.33%	9.22
4	Health, Phytisanitary	6.04%	58.37%	4.14
5	Customs Clearance	5.94%	64.31%	4.07
6	Detour	5.62%	69.93%	3.85
7	Transport Control	4.76%	74.69%	3.26
8	Vehicle Repair	4.31%	79.00%	2.95
9	Documentation	4.01%	83.01%	2.75
10	Weight Inspection	3.47%	86.48%	2.38
11	Refuelling	3.33%	89.81%	2.28
12	Border Control	2.79%	92.60%	1.91
13	Visa Immigration	2.64%	95.24%	1.81
14	Vehicle Registration	2.61%	97.85%	1.79
15	Police Checkpoint	1.40%	99.26%	0.96
16	Ecology	0.74%	100.00%	0.51
	Total			68.51



Stop Analysis for Rail

S/N	Activities	%	Cum %	Hrs/500km
1	Escort	80.09%	80.09%	92.05
2	Waiting Time	10.21%	90.31%	11.74
3	Border Control	4.42%	94.73%	5.08
4	Loading / Unloading	2.95%	97.68%	3.39
5	Customs Clearance	2.32%	100.00%	2.67
	Total			114.93

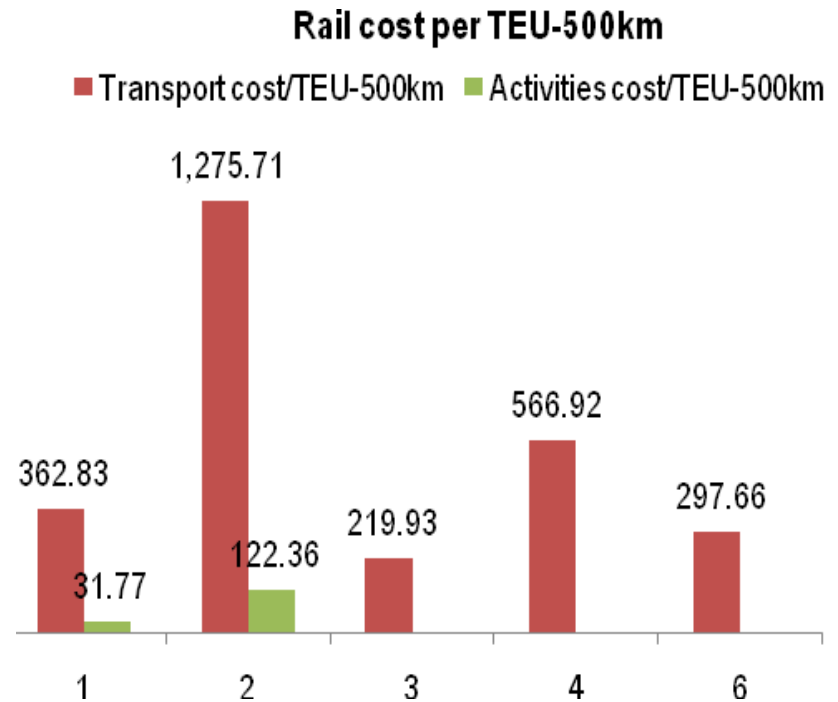
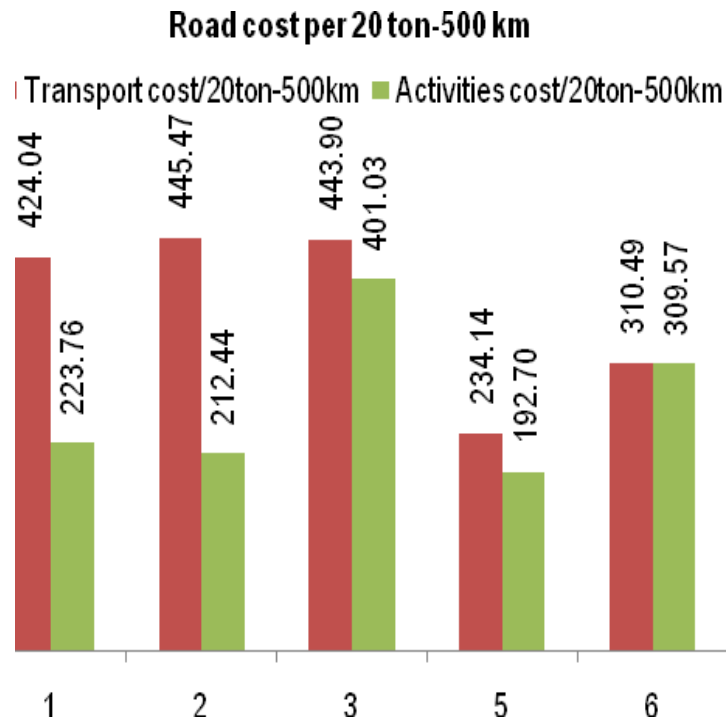


Pareto Analysis of Stops along Rail Transport



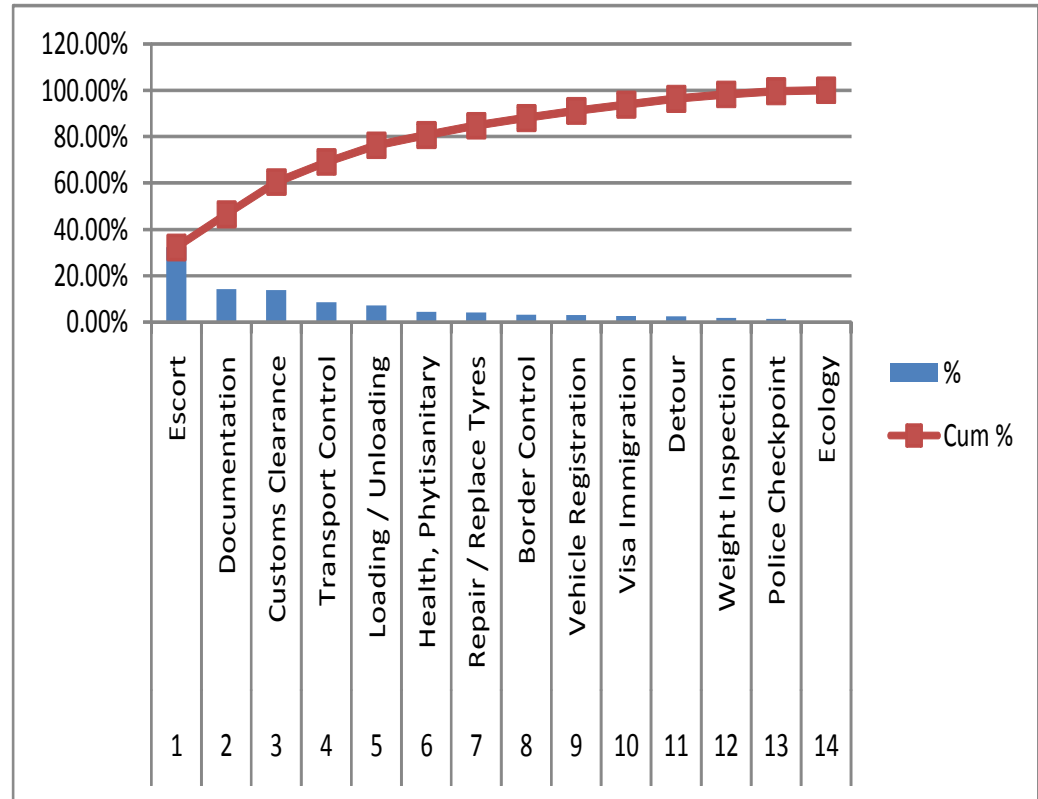
COST EFFICIENCY (\$\$\$)

Average Cost



Activities Cost (Road)

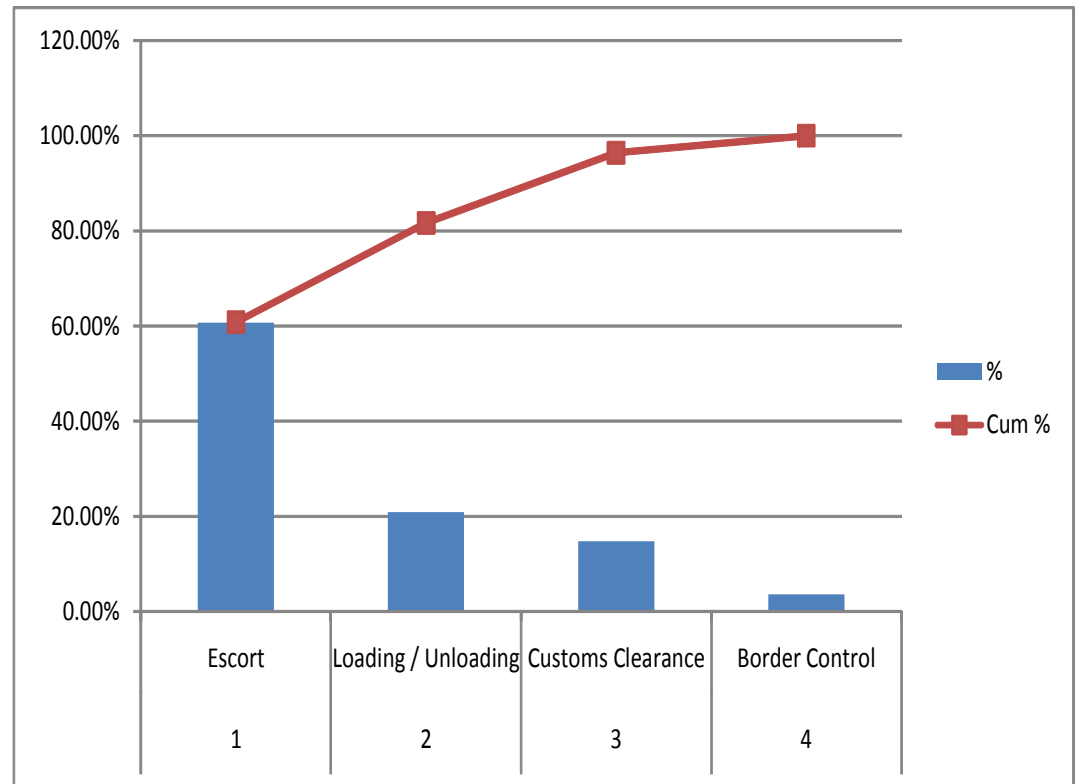
S/N	Activities	%	Cum %	US\$/500km
1	Escort	32.31%	32.31%	960.9
2	Documentation	14.29%	46.60%	424.87
3	Customs Clearance	13.89%	60.48%	412.94
4	Transport Control	8.62%	69.11%	256.47
5	Loading / Unloading	7.16%	76.26%	212.83
6	Health, Phytisanitary	4.41%	80.68%	131.24
7	Repair / Replace Tyres	4.13%	84.81%	122.83
8	Border Control	3.31%	88.12%	98.39
9	Vehicle Registration	3.02%	91.14%	89.94
10	Visa Immigration	2.67%	93.81%	79.33
11	Detour	2.56%	96.36%	76.02
12	Weight Inspection	1.86%	98.23%	55.39
13	Police Checkpoint	1.39%	99.62%	41.29
14	Ecology	0.38%	100.00%	11.43
	Total			2,973.87



Pareto Analysis of Activities Costs along Road Transport

Activities Cost (Rail)

S/N	Activities	%	Cum %	US\$/500km
1	Escort	60.78%	60.78%	223.94
2	Loading / Unloading	20.86%	81.63%	76.85
3	Customs Clearance	14.75%	96.39%	54.36
4	Border Control	3.61%	100.00%	13.31
5	Total			368.46



Pareto Analysis of Activities Costs along Rail Transport



UNOFFICIAL PAYMENTS

Unofficial Payments (Road)

Activities	Official		Unofficial	
	#	%	#	%
Police checkpoint	65	2.8	2271	97.2
Customs clearance	34	3.5	941	96.5
Border control	6	0.7	864	99.3
Phytosanitary	142	24.6	435	75.4
Health inspection	187	36.3	328	63.7
Weight inspection	41	13.2	270	86.8
Vehicle registration	107	33.6	211	66.4
Documentation	-		154	100
Veterinary	94	40.9	136	59.1
Transport control	-		60	100
Visa / immigration	18	60	12	40
Escort	34	73.9	12	26.1
Others	40	81.6	9	18.4
Detour	22	100	0	-
Waiting	104	100	0	-
Loading / unloading	394	100	0	-
Rest / overnight stay	698	100	0	-
Vehicle repair	221	100	0	-
Refuelling	204	100	0	-
Ecology checkpoint	10	100	0	-
Meals	1,956	100	0	-
Proportion	44%		56%	

Unofficial payments sorted by frequency of occurrences

Activities	Official		Unofficial	
	#	%	#	%
Documentation	-		154	100
Transport control	-		60	100
Border control	6	0.7	864	99.3
Police checkpoint	65	2.8	2271	97.2
Customs clearance	34	3.5	941	96.5
Weight inspection	41	13.2	270	86.8
Phytosanitary	142	24.6	435	75.4
Vehicle registration	107	33.6	211	66.4
Health inspection	187	36.3	328	63.7
Veterinary	94	40.9	136	59.1
Visa / immigration	18	60	12	40
Escort	34	73.9	12	26.1
Others	40	81.6	9	18.4
Detour	22	100	0	0
Waiting	104	100	0	0
Loading / unloading	394	100	0	0
Rest / overnight stay	698	100	0	0
Vehicle repair	221	100	0	0
Refuelling	204	100	0	0
Ecology checkpoint	10	100	0	0
Meals	1,956	100	0	0
Proportion	44%		56%	

Unofficial payments sorted by proportion

Thank you



Max Ee

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