General Linear Model

Between-Subjects Factors

		Value Label	N
Router Type | Protocol	1	ecmp-mptcp	140
	2	ps-mptcp	140
Juggler Enabled	1	false	140
	2	true	140

Descriptive Statistics

	Router Type | Protocol	Juggler Enabled	Mean	Std. Deviation
Goodput	ecmp-mptcp	false	130081.9866	72772.81013
		true	135277.6520	53008.79715
		Total	132679.8193	63486.58847
	ps-mptcp	false	134492.8100	77517.40034
		true	180710.4508	138465.7810
		Total	157601.6304	114184.6646
	Total	false	132287.3983	74944.30334
		true	157994.0514	106920.6498
		Total	145140.7248	93056.88552
Throughput	ecmp-mptcp	false	190642.9474	97421.23151
		true	195316.3890	73956.04233
		Total	192979.6682	86208.36072
	ps-mptcp	false	211919.8098	99482.68592
		true	249231.5953	176311.9252
		Total	230575.7026	143855.7483
	Total	false	201281.3786	98681.81736
		true	222273.9922	137397.7506
		Total	211777.6854	119864.1115
Flow Completion Time	ecmp-mptcp	false	.088426	.0252672
		true	.110597	.1640139
		Total	.099511	.1174488
	ps-mptcp	false	.091969	.0434341
		true	.074584	.0446935
		Total	.083276	.0447676

Descriptive Statistics

	Router Type | Protocol	Juggler Enabled	N
Goodput	ecmp-mptcp	false	70
		true	70
		Total	140
	ps-mptcp	false	70
		true	70
		Total	140
	Total	false	140
		true	140
		Total	280
Throughput	ecmp-mptcp	false	70
		true	70
		Total	140
	ps-mptcp	false	70
		true	70
		Total	140
	Total	false	140
		true	140
		Total	280
Flow Completion Time	ecmp-mptcp	false	70
		true	70
		Total	140
	ps-mptcp	false	70
		true	70
		Total	140

Descriptive Statistics

	Router Type | Protocol	Juggler Enabled	Mean	Std. Deviation
	Total	false	.090197	.0354479
		true	.092591	.1211266
		Total	.091394	.0890898
Mean Network Utilization	ecmp-mptcp	false	.5125159361	.1793982176
		true	.5134373011	.1698706114
		Total	.5129766186	.1740704423
	ps-mptcp	false	.6890510718	.1423448504
		true	.6976022760	.1480750064
		Total	.6933266739	.1447784097
	Total	false	.6007835039	.1840691437
		true	.6055197885	.1837080074
		Total	.6031516462	.1835741489

Descriptive Statistics

	Router Type | Protocol	Juggler Enabled	N
	Total	false	140
		true	140
		Total	280
Mean Network Utilization	ecmp-mptcp	false	70
		true	70
		Total	140
	ps-mptcp	false	70
		true	70
		Total	140
	Total	false	140
		true	140
		Total	280

Box's Test of Equality of Covariance Matrices[a]

Box's M	511.318
F	16.599
df1	30
df2	209438.549
Sig.	.000

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + router_proto + juggler_enabled + router_proto * juggler_enabled

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df
Intercept	Pillai's Trace	.945	1178.895[b]	4.000	273.000
	Wilks' Lambda	.055	1178.895[b]	4.000	273.000
	Hotelling's Trace	17.273	1178.895[b]	4.000	273.000
	Roy's Largest Root	17.273	1178.895[b]	4.000	273.000
router_proto	Pillai's Trace	.250	22.760[b]	4.000	273.000
	Wilks' Lambda	.750	22.760[b]	4.000	273.000
	Hotelling's Trace	.333	22.760[b]	4.000	273.000
	Roy's Largest Root	.333	22.760[b]	4.000	273.000
juggler_enabled	Pillai's Trace	.045	3.251[b]	4.000	273.000
	Wilks' Lambda	.955	3.251[b]	4.000	273.000
	Hotelling's Trace	.048	3.251[b]	4.000	273.000
	Roy's Largest Root	.048	3.251[b]	4.000	273.000
router_proto * juggler_enabled	Pillai's Trace	.035	2.466[b]	4.000	273.000
	Wilks' Lambda	.965	2.466[b]	4.000	273.000
	Hotelling's Trace	.036	2.466[b]	4.000	273.000
	Roy's Largest Root	.036	2.466[b]	4.000	273.000

Multivariate Tests[a]

Effect		Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.000	.945
	Wilks' Lambda	.000	.945
	Hotelling's Trace	.000	.945
	Roy's Largest Root	.000	.945
router_proto	Pillai's Trace	.000	.250
	Wilks' Lambda	.000	.250
	Hotelling's Trace	.000	.250
	Roy's Largest Root	.000	.250
juggler_enabled	Pillai's Trace	.013	.045
	Wilks' Lambda	.013	.045
	Hotelling's Trace	.013	.045
	Roy's Largest Root	.013	.045
router_proto * juggler_enabled	Pillai's Trace	.045	.035
	Wilks' Lambda	.045	.035
	Hotelling's Trace	.045	.035
	Roy's Largest Root	.045	.035

a. Design: Intercept + router_proto + juggler_enabled + router_proto * juggler_enabled

b. Exact statistic

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	df1	df2	Sig.
Goodput	Based on Mean	3.070	3	276	.028
	Based on Median	2.366	3	276	.071
	Based on Median and with adjusted df	2.366	3	167.873	.073
	Based on trimmed mean	2.410	3	276	.067
Throughput	Based on Mean	2.428	3	276	.066
	Based on Median	2.010	3	276	.113
	Based on Median and with adjusted df	2.010	3	170.040	.114
	Based on trimmed mean	1.931	3	276	.125
Flow Completion Time	Based on Mean	4.726	3	276	.003
	Based on Median	1.654	3	276	.177
	Based on Median and with adjusted df	1.654	3	86.973	.183
	Based on trimmed mean	1.656	3	276	.177
Mean Network Utilization	Based on Mean	.749	3	276	.524
	Based on Median	.747	3	276	.525
	Based on Median and with adjusted df	.747	3	265.266	.525
	Based on trimmed mean	.685	3	276	.562

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + router_proto + juggler_enabled + router_proto * juggler_enabled

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square
Corrected Model	Goodput	1.192E+11[a]	3	3.973E+10
	Throughput	1.484E+11[b]	3	4.948E+10
	Flow Completion Time	.046[c]	3	.015
	Mean Network Utilization	2.279[d]	3	.760
Intercept	Goodput	5.898E+12	1	5.898E+12
	Throughput	1.256E+13	1	1.256E+13
	Flow Completion Time	2.339	1	2.339
	Mean Network Utilization	101.862	1	101.862
router_proto	Goodput	4.348E+10	1	4.348E+10
	Throughput	9.894E+10	1	9.894E+10
	Flow Completion Time	.018	1	.018
	Mean Network Utilization	2.277	1	2.277
juggler_enabled	Goodput	4.626E+10	1	4.626E+10
	Throughput	3.085E+10	1	3.085E+10
	Flow Completion Time	.000	1	.000
	Mean Network Utilization	.002	1	.002
router_proto * juggler_enabled	Goodput	2.945E+10	1	2.945E+10
	Throughput	1.864E+10	1	1.864E+10
	Flow Completion Time	.027	1	.027
	Mean Network Utilization	.001	1	.001
Error	Goodput	2.297E+12	276	8321883584
	Throughput	3.860E+12	276	1.399E+10
	Flow Completion Time	2.168	276	.008
	Mean Network Utilization	7.123	276	.026
Total	Goodput	8.314E+12	280	
	Throughput	1.657E+13	280	
	Flow Completion Time	4.553	280	
	Mean Network Utilization	111.264	280	
Corrected Total	Goodput	2.416E+12	279	
	Throughput	4.009E+12	279	
	Flow Completion Time	2.214	279	
	Mean Network Utilization	9.402	279	

Tests of Between-Subjects Effects

Source	Dependent Variable	F	Sig.	Partial Eta Squared
Corrected Model	Goodput	4.774	.003	.049
	Throughput	3.538	.015	.037
	Flow Completion Time	1.962	.120	.021
	Mean Network Utilization	29.442	.000	.242
Intercept	Goodput	708.786	.000	.720
	Throughput	897.908	.000	.765
	Flow Completion Time	297.718	.000	.519
	Mean Network Utilization	3947.058	.000	.935
router_proto	Goodput	5.224	.023	.019
	Throughput	7.074	.008	.025
	Flow Completion Time	2.349	.127	.008
	Mean Network Utilization	88.225	.000	.242
juggler_enabled	Goodput	5.559	.019	.020
	Throughput	2.206	.139	.008
	Flow Completion Time	.051	.821	.000
	Mean Network Utilization	.061	.805	.000
router_proto * juggler_enabled	Goodput	3.539	.061	.013
	Throughput	1.333	.249	.005
	Flow Completion Time	3.486	.063	.012
	Mean Network Utilization	.039	.843	.000
Error	Goodput			
	Throughput			
	Flow Completion Time			
	Mean Network Utilization			
Total	Goodput			
	Throughput			
	Flow Completion Time			
	Mean Network Utilization			
Corrected Total	Goodput			
	Throughput			
	Flow Completion Time			
	Mean Network Utilization			

a. R Squared = .049 (Adjusted R Squared = .039)

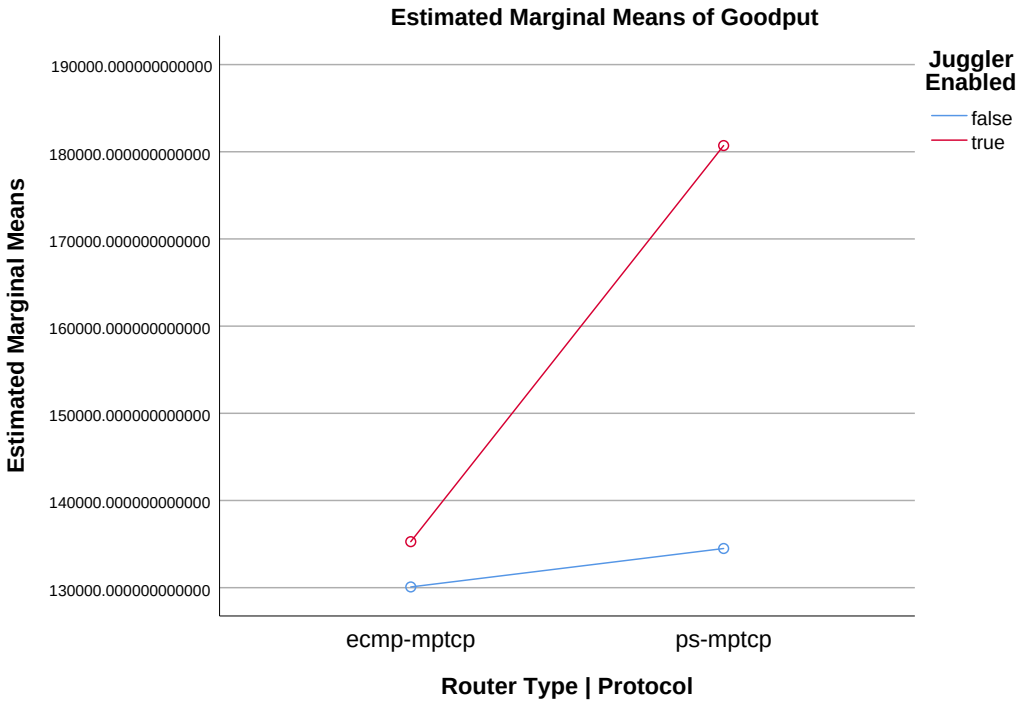
b. R Squared = .037 (Adjusted R Squared = .027)

c. R Squared = .021 (Adjusted R Squared = .010)

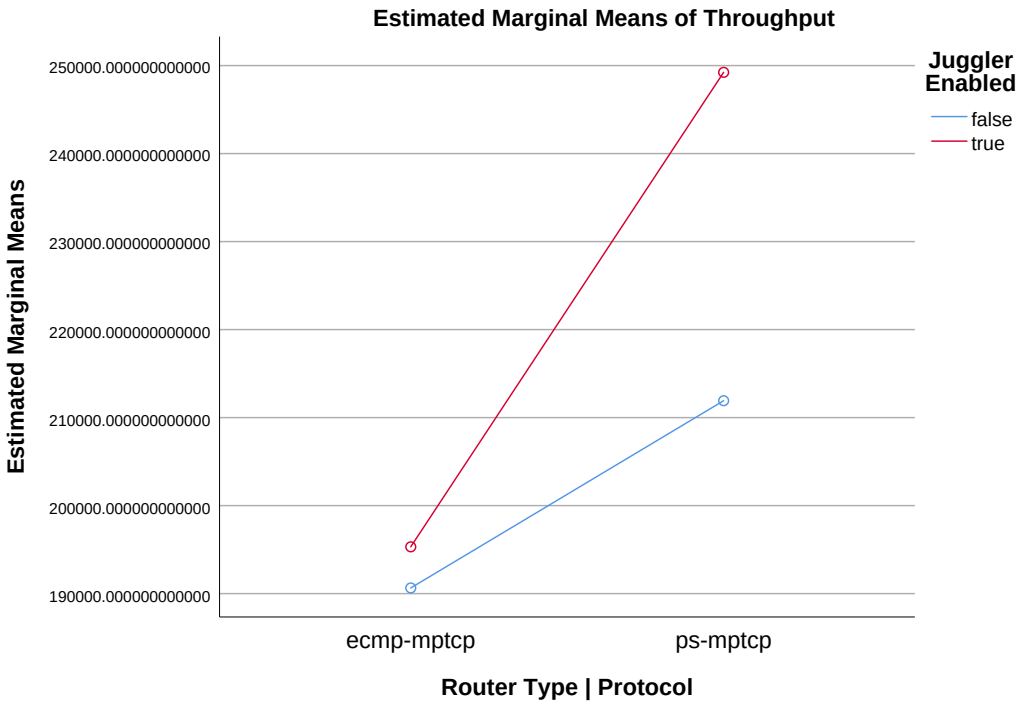
d. R Squared = .242 (Adjusted R Squared = .234)

Profile Plots

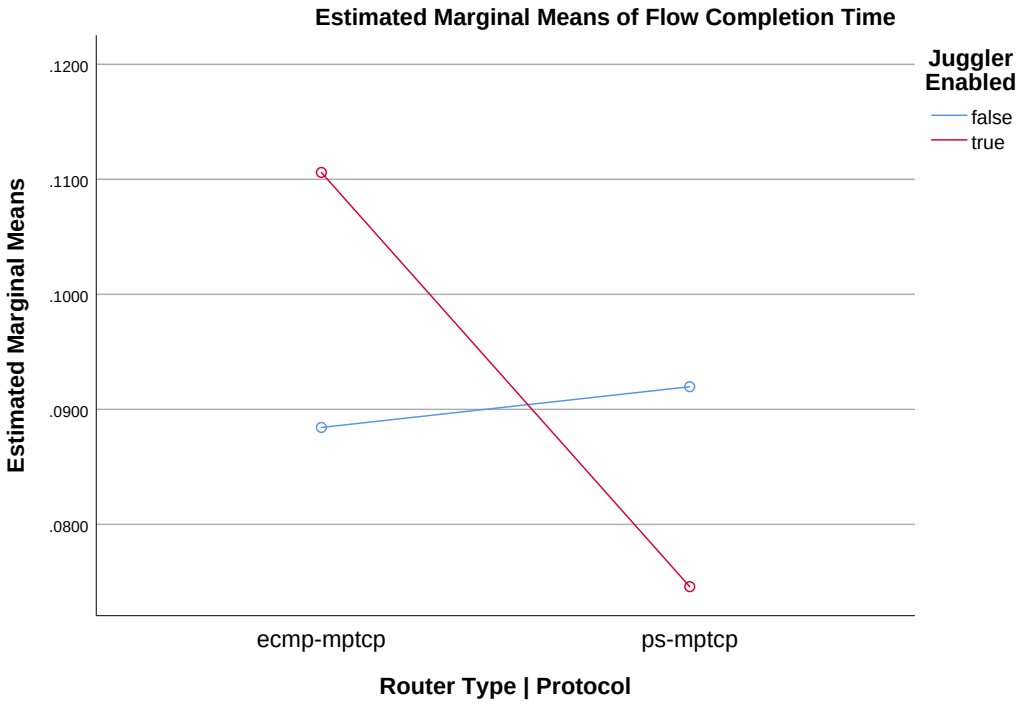
Goodput



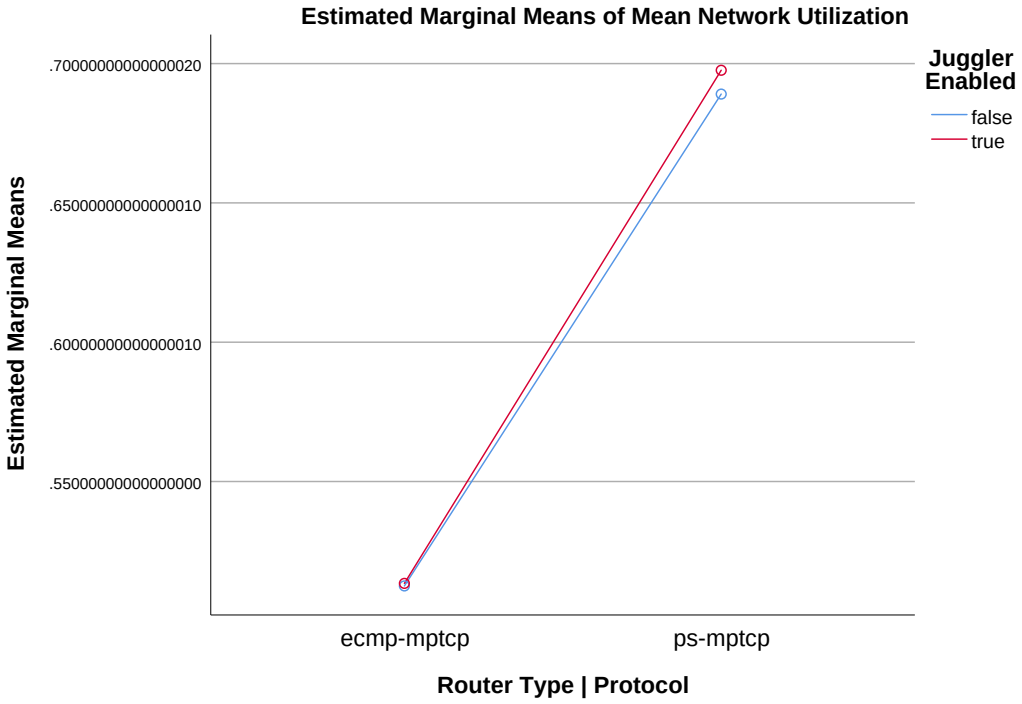
Throughput



Flow Completion Time



Mean Network Utilization


Estimated Marginal Means of Mean Network Utilization
Estimated Marginal Means
.70000000000000020
.65000000000000010
.60000000000000010
.55000000000000000
ecmp-mptcp
ps-mptcp
Router Type | Protocol
Juggler Enabled
false
true