General Linear Model

Between-Subjects Factors

		Value Label	N
Router Type | Protocol	1	ecmp-mptcp	160
	2	ps-mptcp	160
Juggler Enabled	1	false	160
	2	true	160

Descriptive Statistics

	Router Type | Protocol	Juggler Enabled	Mean	Std. Deviation
Goodput	ecmp-mptcp	false	1833533.179	99210.65194
		true	1751989.144	115824.6920
		Total	1792761.162	115016.2168
	ps-mptcp	false	1863812.664	89767.98534
		true	1708404.239	182712.6659
		Total	1786108.451	163299.4259
	Total	false	1848672.921	95524.25407
		true	1730196.691	154046.6459
		Total	1789434.806	141054.1868
Throughput	ecmp-mptcp	false	2079808.270	103632.0127
		true	2039500.381	270268.5682
		Total	2059654.325	205030.7507
	ps-mptcp	false	2113147.860	95442.96974
		true	2011535.361	155473.9054
		Total	2062341.610	138324.2513
	Total	false	2096478.065	100705.9527
		true	2025517.871	220226.3444
		Total	2060997.968	174618.2551
Flow Completion Time	ecmp-mptcp	false	.071708	.0041731
		true	.075141	.0050568
		Total	.073424	.0049319
	ps-mptcp	false	.070491	.0035242
		true	.077876	.0110814
		Total	.074184	.0089947

Descriptive Statistics

	Router Type | Protocol	Juggler Enabled	N
Goodput	ecmp-mptcp	false	80
		true	80
		Total	160
	ps-mptcp	false	80
		true	80
		Total	160
	Total	false	160
		true	160
		Total	320
Throughput	ecmp-mptcp	false	80
		true	80
		Total	160
	ps-mptcp	false	80
		true	80
		Total	160
	Total	false	160
		true	160
		Total	320
Flow Completion Time	ecmp-mptcp	false	80
		true	80
		Total	160
	ps-mptcp	false	80
		true	80
		Total	160

Descriptive Statistics

	Router Type | Protocol	Juggler Enabled	Mean	Std. Deviation
	Total	false	.071099	.0038982
		true	.076509	.0086948
		Total	.073804	.0072522
Mean Network Utilization	ecmp-mptcp	false	.6382726030	.1706914209
		true	.6262924461	.1824041499
		Total	.6322825246	.1761910223
	ps-mptcp	false	.8431981733	.0898778198
		true	.8679701861	.0637913731
		Total	.8555841797	.0786756611
	Total	false	.7407353882	.1704535696
		true	.7471313161	.1823369202
		Total	.7439333521	.1762475368

Descriptive Statistics

	Router Type | Protocol	Juggler Enabled	N
	Total	false	160
		true	160
		Total	320
Mean Network Utilization	ecmp-mptcp	false	80
		true	80
		Total	160
	ps-mptcp	false	80
		true	80
		Total	160
	Total	false	160
		true	160
		Total	320

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

Box's M	1527.674
F	49.762
df1	30
df2	274544.420
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	1.000	1040211.36[b]	4.000	313.000
	Wilks' Lambda	.000	1040211.36[b]	4.000	313.000
	Hotelling's Trace	13293.436	1040211.36[b]	4.000	313.000
	Roy's Largest Root	13293.436	1040211.36[b]	4.000	313.000
router_proto	Pillai's Trace	.441	61.778[b]	4.000	313.000
	Wilks' Lambda	.559	61.778[b]	4.000	313.000
	Hotelling's Trace	.790	61.778[b]	4.000	313.000
	Roy's Largest Root	.790	61.778[b]	4.000	313.000
juggler_enabled	Pillai's Trace	.253	26.451[b]	4.000	313.000
	Wilks' Lambda	.747	26.451[b]	4.000	313.000
	Hotelling's Trace	.338	26.451[b]	4.000	313.000
	Roy's Largest Root	.338	26.451[b]	4.000	313.000
router_proto * juggler_enabled	Pillai's Trace	.034	2.789[b]	4.000	313.000
	Wilks' Lambda	.966	2.789[b]	4.000	313.000
	Hotelling's Trace	.036	2.789[b]	4.000	313.000
	Roy's Largest Root	.036	2.789[b]	4.000	313.000

Multivariate Tests[a]

Effect		Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.000	1.000
	Wilks' Lambda	.000	1.000
	Hotelling's Trace	.000	1.000
	Roy's Largest Root	.000	1.000
router_proto	Pillai's Trace	.000	.441
	Wilks' Lambda	.000	.441
	Hotelling's Trace	.000	.441
	Roy's Largest Root	.000	.441
juggler_enabled	Pillai's Trace	.000	.253
	Wilks' Lambda	.000	.253
	Hotelling's Trace	.000	.253
	Roy's Largest Root	.000	.253
router_proto * juggler_enabled	Pillai's Trace	.027	.034
	Wilks' Lambda	.027	.034
	Hotelling's Trace	.027	.034
	Roy's Largest Root	.027	.034

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	9.239	3	316	.000
	Based on Median	2.750	3	316	.043
	Based on Median and with adjusted df	2.750	3	191.913	.044
	Based on trimmed mean	5.680	3	316	.001
Throughput	Based on Mean	3.547	3	316	.015
	Based on Median	2.810	3	316	.040
	Based on Median and with adjusted df	2.810	3	158.824	.041
	Based on trimmed mean	2.741	3	316	.043
Flow Completion Time	Based on Mean	16.940	3	316	.000
	Based on Median	4.782	3	316	.003
	Based on Median and with adjusted df	4.782	3	130.635	.003
	Based on trimmed mean	9.623	3	316	.000
Mean Network Utilization	Based on Mean	22.752	3	316	.000
	Based on Median	21.281	3	316	.000
	Based on Median and with adjusted df	21.281	3	206.893	.000
	Based on trimmed mean	22.263	3	316	.000

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	1.236E+12[a]	3	4.119E+11
	Throughput	4.786E+11[b]	3	1.595E+11
	Flow Completion Time	.003[c]	3	.001
	Mean Network Utilization	4.019[d]	3	1.340
Intercept	Goodput	1.025E+15	1	1.025E+15
	Throughput	1.359E+15	1	1.359E+15
	Flow Completion Time	1.743	1	1.743
	Mean Network Utilization	177.100	1	177.100
router_proto	Goodput	3540684671	1	3540684671
	Throughput	577719921.7	1	577719921.7
	Flow Completion Time	4.613E-5	1	4.613E-5
	Mean Network Utilization	3.989	1	3.989
juggler_enabled	Goodput	1.123E+12	1	1.123E+12
	Throughput	4.028E+11	1	4.028E+11
	Flow Completion Time	.002	1	.002
	Mean Network Utilization	.003	1	.003
router_proto * juggler_enabled	Goodput	1.091E+11	1	1.091E+11
	Throughput	7.517E+10	1	7.517E+10
	Flow Completion Time	.000	1	.000
	Mean Network Utilization	.027	1	.027
Error	Goodput	5.111E+12	316	1.618E+10
	Throughput	9.248E+12	316	2.927E+10
	Flow Completion Time	.014	316	4.455E-5
	Mean Network Utilization	5.890	316	.019
Total	Goodput	1.031E+15	320	
	Throughput	1.369E+15	320	
	Flow Completion Time	1.760	320	
	Mean Network Utilization	187.009	320	
Corrected Total	Goodput	6.347E+12	319	
	Throughput	9.727E+12	319	
	Flow Completion Time	.017	319	
	Mean Network Utilization	9.909	319	

Tests of Between-Subjects Effects

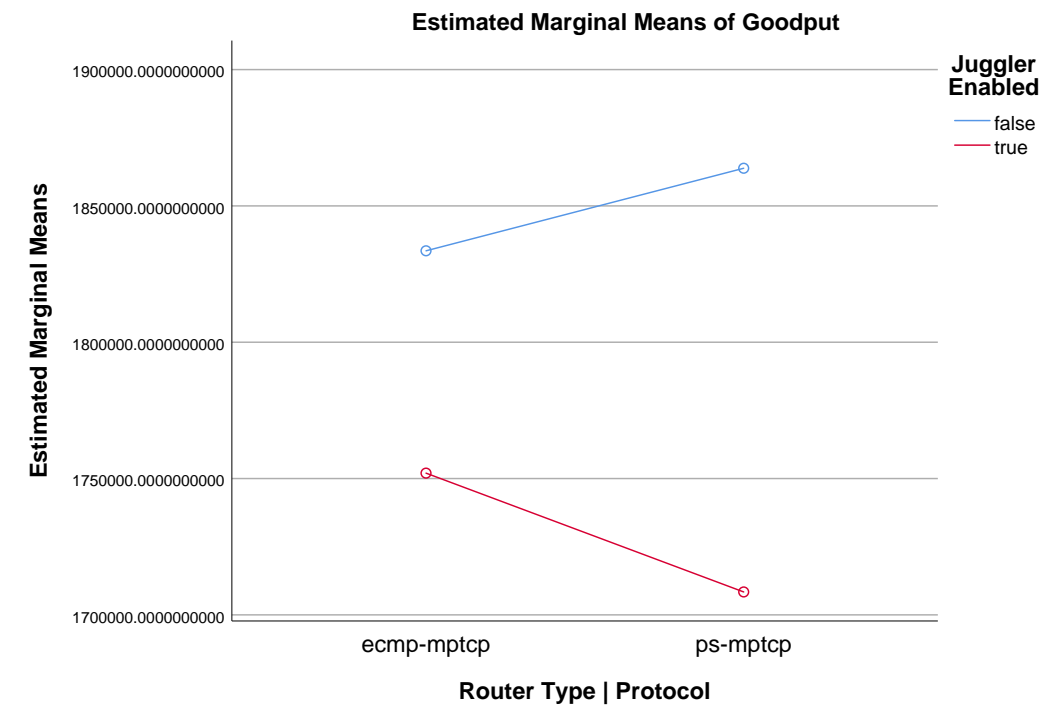| Source	Dependent Variable	F	Sig.	Partial Eta Squared
Corrected Model	Goodput	25.463	.000	.195
	Throughput	5.451	.001	.049
	Flow Completion Time	20.196	.000	.161
	Mean Network Utilization	71.883	.000	.406
Intercept	Goodput	63348.347	.000	.995
	Throughput	46444.428	.000	.993
	Flow Completion Time	39124.878	.000	.992
	Mean Network Utilization	9501.801	.000	.968
router_proto	Goodput	.219	.640	.001
	Throughput	.020	.888	.000
	Flow Completion Time	1.035	.310	.003
	Mean Network Utilization	214.024	.000	.404
juggler_enabled	Goodput	69.423	.000	.180
	Throughput	13.764	.000	.042
	Flow Completion Time	52.544	.000	.143
	Mean Network Utilization	.176	.675	.001
router_proto * juggler_enabled	Goodput	6.746	.010	.021
	Throughput	2.568	.110	.008
	Flow Completion Time	7.009	.009	.022
	Mean Network Utilization	1.449	.230	.005
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 = .195 (Adjusted R Squared = .187)

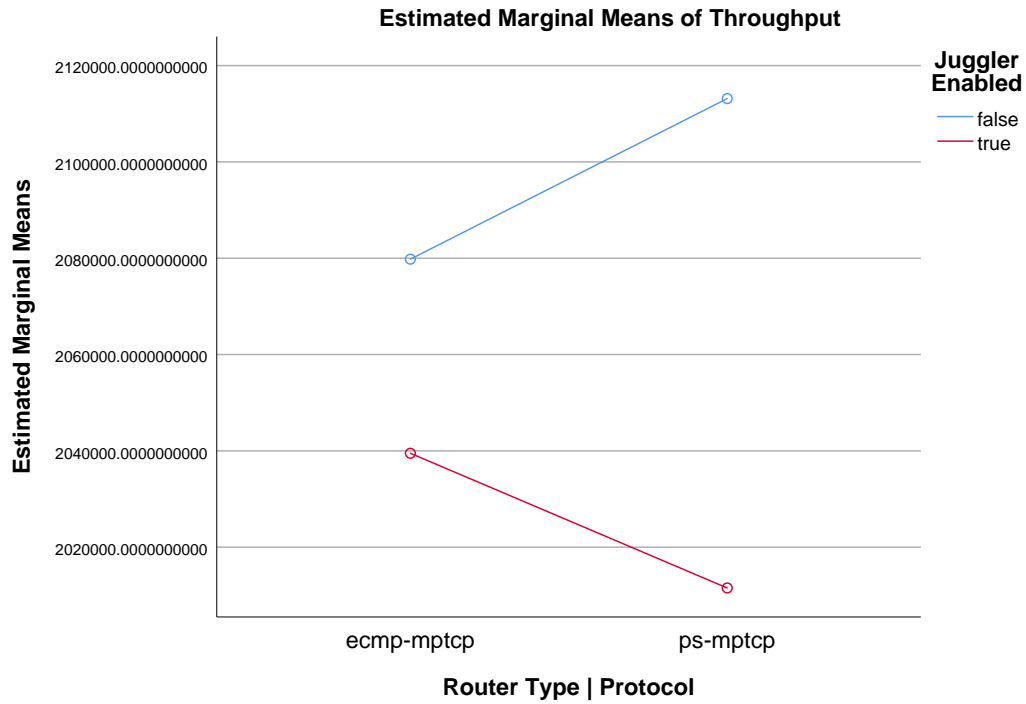b. R Squared = .049 (Adjusted R Squared = .040)

c. R Squared = .161 (Adjusted R Squared = .153)

d. R Squared = .406 (Adjusted R Squared = .400)

Profile Plots
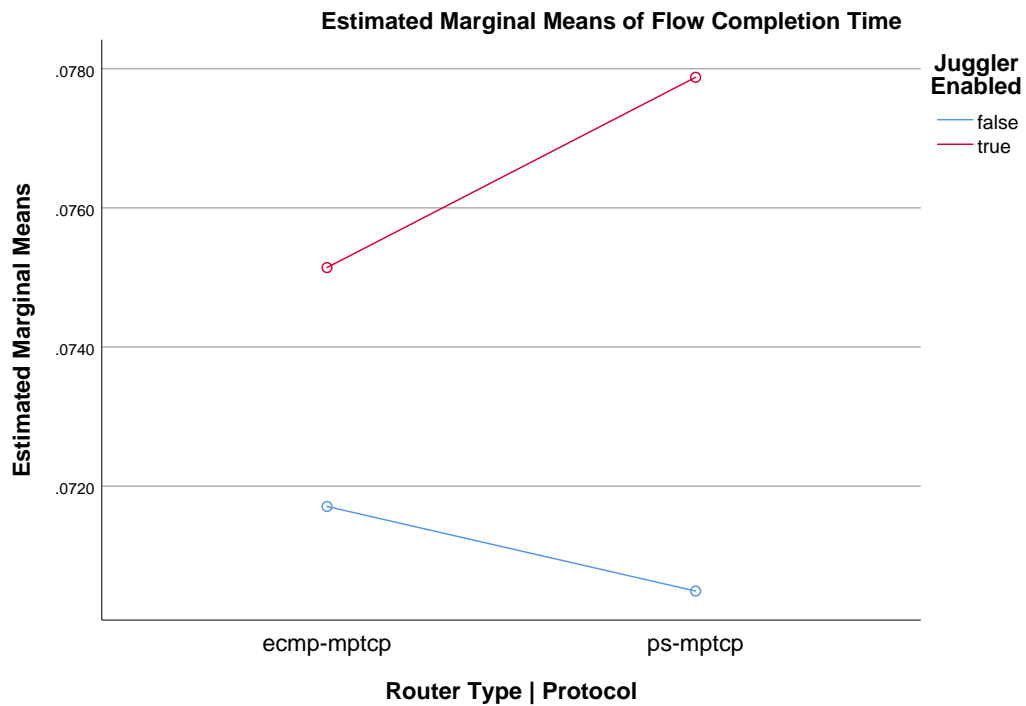
Goodput

Estimated Marginal Means of Goodput

Throughput

Estimated Marginal Means of Throughput

Flow Completion Time

Estimated Marginal Means of Flow Completion Time

Mean Network Utilization

Estimated Marginal Means of Mean Network Utilization

Figure axes:
- Y-axis: **Estimated Marginal Means** with values .650000000000000010, .700000000000000020, .750000000000000010, .800000000000000030, .850000000000000030, .900000000000000040
- X-axis: **Router Type | Protocol** with categories ecmp-mptcp, ps-mptcp

Legend: **Juggler Enabled**
- false (blue)
- true (red)