

	0.5x	1x	2x
	Medium	Large	XLarge
Query	Execution Time (s)	Execution Time (s)	Execution Time (s)
1	8.01	4.62	8.33
2	28.58	14.39	11.40
3	25.68	15.90	10.63
4	91.02	45.68	28.01
5	42.92	18.71	19.07
6	10.95	4.87	5.11
7	24.21	11.22	10.83
8	20.00	11.76	5.93
9	58.28	26.81	17.22
10	10.64	4.72	6.06
11	61.13	35.54	24.93
12	4.77	2.12	1.73
13	41.05	17.50	8.17
14	54.60	25.42	19.40
15	2.66	2.08	2.69
16	4.00	2.50	4.32
17	15.34	9.20	9.36
18	6.77	3.43	3.99
19	16.54	7.36	4.02
20	0.85	0.57	0.69
21	1.44	1.20	2.48
22	6.26	3.91	4.82
23	179.87	89.19	46.24
24	411.59	231.99	94.71
25	22.13	10.37	8.47
26	7.70	5.77	2.52
27	31.24	8.95	2.50
28	72.23	20.32	12.71
29	21.60	9.94	7.53
30	4.49	3.83	3.54
31	22.84	11.72	5.74
32	1.12	0.86	1.01
33	22.69	6.34	4.03
34	12.76	5.08	4.68
35	10.09	6.48	5.48
36	22.81	7.88	2.40
37	3.23	2.26	1.83
38	18.30	11.91	9.42
39	3.27	2.91	4.11
40	2.53	1.96	17.45

41	0.21	0.10	0.38
42	11.66	2.69	1.54
43	7.84	3.83	2.44
44	24.56	6.11	3.45
45	6.31	4.06	3.06
46	28.47	8.92	6.16
47	22.07	10.73	6.56
48	19.67	5.53	3.80
49	61.66	29.86	14.13
50	13.21	4.87	4.07
51	33.24	16.56	9.81
52	12.58	7.41	1.22
53	6.74	3.07	1.81
54	7.92	8.97	2.48
55	3.98	2.08	1.32
56	12.92	5.27	4.70
57	8.79	4.62	3.40
58	9.38	2.94	2.65
59	16.77	8.79	5.81
60	13.61	4.44	3.94
61	26.67	6.02	4.61
62	6.10	2.99	2.22
63	8.46	2.95	2.04
64	63.86	32.71	23.80
65	30.81	14.65	10.41
66	18.99	8.57	5.68
67	139.60	57.96	32.12
68	44.95	21.98	11.39
69	1.93	0.64	1.34
70	25.38	11.44	5.01
71	25.38	11.35	5.56
72	8.16	5.11	4.84
73	13.31	5.76	3.29
74	40.73	23.60	18.17
75	45.46	24.30	17.06
76	32.88	8.18	3.94
77	41.72	11.90	6.41
78	54.13	28.62	16.69
79	33.79	13.34	4.92
80	63.25	29.33	14.75
81	8.14	6.85	6.28
82	5.49	2.06	1.67
83	2.05	1.80	1.47

84	1.55	0.96	1.93
85	9.68	5.01	6.25
86	3.45	1.89	1.33
87	19.92	12.43	9.29
88	40.74	18.48	10.16
89	11.48	3.53	2.57
90	4.17	1.93	2.19
91	1.06	1.20	1.51
92	2.54	1.68	1.37
93	16.52	4.65	3.54
94	10.90	4.50	3.05
95	14.52	8.07	4.93
96	27.34	9.30	2.61
97	34.06	19.77	8.20
98	17.27	7.60	2.57
99	5.64	3.11	2.01
Geomean Time (s)	13.59	6.61	4.90
Geomean Cost (cents)	3.02	2.94	4.36

	0.5x	1x	2x	
4 i3.2xlarge workers; i3.4xlarge driver workers; i3.8xlarge driver workers; i3.8xlarge driver; Photon				
Query	Execution Time (s)	Execution Time (s)	Execution Time (s)	
1	30.15	26.39	24.33	
2	21.53	13.63	9.73	
3	27.30	14.12	9.14	
4	133.20	68.40	37.41	
5	48.98	24.62	14.83	
6	12.28	6.28	5.22	
7	36.36	19.40	11.14	
8	16.12	8.36	4.63	
9	20.64	10.78	6.07	
10	12.19	7.03	5.19	
11	69.00	32.98	18.57	
12	6.60	4.17	3.20	
13	33.16	16.15	9.73	
14	56.20	29.66	19.88	
15	3.70	1.99	2.36	
16	28.95	13.84	8.86	
17	32.12	13.15	8.17	
18	54.42	5.35	4.39	
19	14.80	7.26	4.33	
20	1.74	1.91	1.90	
21	7.78	4.59	4.37	
22	24.19	18.04	13.58	
23	190.80	102.60	46.48	
24	145.80	84.60	35.50	
25	18.54	9.89	5.78	
26	4.59	4.15	2.53	
27	21.35	10.70	6.18	
28	57.19	27.78	15.27	
29	31.11	15.70	9.39	
30	4.54	3.10	2.44	
31	36.37	18.30	10.33	
32	1.40	1.27	0.91	
33	15.35	15.39	6.44	
34	11.88	6.06	3.62	
35	15.30	15.62	5.92	
36	14.83	7.99	4.71	
37	14.07	7.90	4.25	
38	28.64	14.21	7.82	
39	7.05	6.05	5.26	
40	5.68	3.71	3.04	

41	0.51	0.51	0.52
42	7.96	4.26	2.54
43	9.71	5.17	3.26
44	14.96	8.35	4.95
45	5.01	3.08	2.38
46	20.95	10.74	6.25
47	39.44	21.16	11.46
48	23.21	12.46	6.61
49	34.60	33.54	10.42
50	72.00	41.04	18.66
51	56.66	28.03	16.05
52	9.48	4.37	2.47
53	12.67	6.89	4.21
54	12.97	7.63	4.45
55	7.81	4.40	2.84
56	15.87	9.23	6.78
57	11.89	7.15	5.42
58	17.20	9.34	5.28
59	20.32	10.73	6.16
60	16.35	9.84	6.68
61	26.14	13.88	7.37
62	8.38	4.70	3.35
63	12.43	6.66	3.93
64	97.80	51.64	27.26
65	46.64	23.13	11.87
66	13.00	8.38	6.13
67	302.40	145.20	76.20
68	27.92	13.91	7.72
69	0.78	0.79	0.78
70	21.82	11.03	5.96
71	14.97	7.68	4.50
72	20.65	11.12	6.55
73	10.59	5.63	3.27
74	47.93	24.55	13.03
75	60.60	30.49	15.75
76	15.73	8.23	4.84
77	16.13	9.10	5.36
78	104.40	52.01	25.38
79	21.85	11.20	5.91
80	43.75	21.85	12.29
81	7.36	4.50	3.60
82	24.80	13.84	7.16
83	3.54	2.25	1.64

84	4.64	2.61	1.87
85	8.31	5.23	4.65
86	4.21	2.76	1.59
87	30.86	14.95	8.40
88	55.16	28.12	14.91
89	15.61	8.34	5.11
90	3.25	1.97	1.34
91	1.31	1.04	0.95
92	3.88	2.34	1.49
93	67.80	36.77	18.52
94	16.20	8.84	5.26
95	21.81	12.31	7.20
96	7.34	3.93	2.24
97	31.62	16.39	8.30
98	18.91	9.44	5.80
99	8.04	4.97	3.33
Geomean Time (s)	16.96	9.61	5.95
Geomean Cost (c)	3.40	3.86	3.98

	0.5x	1x	2x							
	DW500c	DW1000c	DW2000c							
Query	Execution Time (s)	Execution Time (s)	Execution Time (s)							
1	22.31	7.398	7.121							
2	82.59	35.63	30.458							
3	12.32	1.557	2.031							
4	255.70	61.746	65.495							
5	53.05	14.436	13.786							
6	12.30	6.314	7.811							
7	13.88	3.454	4.435							
8	9.26	4.429	5.897							
9	14.00	4.768	5.962							
10	28.49	10.885	11.082							
11	61.82	26.563	36.086							
12	4.69	2.653	3.299							
13	14.94	3.996	5.143							
14	63.42	26.041	22.655							
15	33.41	12.275	13.543							
16	48.84	14.939	17.265							
17	60.82	15.733	15.342							
18	24.25	9.322	11.977							
19	11.46	5.059	6.365							
20	11.40	4.918	5.149							
21	5.17	1.777	2.597							
22	12.40	4.033	4.687							
23	400.53	115.087	88.809							
24	77.00	30.35	27.178							
25	32.52	13.422	13.116							
26	8.66	3.183	4.087							
27	7.67	2.967	3.828							
28	7.93	2.675	3.574							
29	40.36	14.64	19.167							
30	25.31	10.875	13.583							
31	43.46	16.816	20.467							
32	18.67	6.85	6.249							
33	20.06	10.077	10.849							
34	41.89	36.929	40.387							
35	51.20	24.141	23.435							
36	4.62	1.841	2.37							
37	2.89	1.122	1.525							
38	65.08	28.325	26.123							
39	49.18	42.484	25.99							
40	10.96	7.385	6.271							
41	2.40	1.663	2.172							
42	2.17	1.276	1.824							
43	13.44	5.34	4.859							
44	18.80	2.929	3.386							
45	21.94	8.023	10.086							
46	14.63	6.263	7.999							
47	22.16	7.048	8.699							
48	10.06	6.223	4.411							
49	72.61	51.425	41.027							
50	22.31	6.851	4.693							
51	40.49	18.027	14.495							
52	3.02	2.22	1.847							
53	3.08	1.89	2.331							
54	11.33	9.817	8.383							
55	2.45	1.544	1.795							
56	22.68	13.099	11.867							
57	29.30	14.234	12.7							
58	16.22	8.421	8.643							
59	104.41	38.452	30.909							
60	24.70	13.059	14.167							
61	12.52	8.699	6.31							
62	4.32	4.767	2.693							
63	3.07	4.787	2.639							
64	115.58	80.849	70.804							
65	52.36	25.01	16.238							
66	22.99	13.253	3.479							
67	205.46	91.74	49.47	Since this is not run for Synapse, the values are the geomean of the values for this query for Snowflake and Databricks.						
68	16.718	21.719	7.026							
69	11.56	6.637	6.327							
70	7.23	12.838	3.764							
71	1163.79	1165.77	1093.32							
72	50.86	32.326	17.955							
73	8.03	13.132	3.374							
74	78.59	37.26	29.591							
75	82.56	47.704	32.39							
76	12.81	9.591	8.182							

77	21.90	18.603	8.02							
78	179.28	154.847	91.383							
79	16.30	17.412	5.1							
80	53.78	37.175	20.352							
81	45.82	18.689	23.562							
82	4.84	1.941	2.134							
83	7.54	5.73	6.673							
84	12.60	6.296	6.181							
85	15.06	8.376	10.019							
86	3.05	1.719	2.167							
87	80.95	32.654	30.204							
88	13.25	11.137	7.232							
89	4.72	3.417	3.093							
90	4.77	2.625	2.198							
91	6.65	4.599	5.725							
92	5.40	4.943	2.165							
93	23.77	6.787	4.296							
94	26.18	21.222	10.301							
95	31.41	10.867	12.513							
96	1.98	1.379	1.584							
97	54.74	22.236	17.807							
98	148.20	162.405	164.182							
99	12.42	7.086	4.896							
Geomean Time (s)	20.14	10.18	9.15							
Geomean Cost (cents)	3.36	3.39	6.10							

	0.5x	1x	2x
	3x ra3.4xlarge	5x ra3.4xlarge	10x ra3.4xlarge
Query	Execution Time (s)	Execution Time (s)	Execution Time (s)
1	9.755	5.87	1.947092637
2	14.003	10.06	3.673180263
3	9.057	7.59	1.744383643
4	70.526	48.61	33.83475663
5	25.099	17.80	5.232566921
6	9.035	3.08	5.843556114
7	20.629	12.33	9.145225491
8	14.452	11.60	3.52525874
9	24.699	7.65	4.847623198
10	9.359	18.89	2.012961195
11	93.839	43.45	17.23263196
12	1.694	1.03	0.593698374
13	24.252	16.13	10.55555216
14	41.374	30.28	11.62864531
15	15.882	0.94	0.6652712356
16	142.399	87.72	37.03503159
17	26.829	11.81	8.757264283
18	11.966	6.29	10.14202593
19	12.974	20.37	6.78341724
20	0.740	0.43	0.4139316967
21	4.955	4.78	0.6188522559
22	9.290	6.21	3.5202428
23	181.324	112.51	56.80533901
24	835.281	26.20	10.92977563
25	22.498	10.06	7.769476064
26	2.051	1.31	6.434864388
27	16.668	10.15	3.022435703
28	33.012	15.20	6.911718193
29	28.342	10.58	7.312257914
30	28.750	4.89	1.571242232
31	27.886	21.51	12.89591112
32	0.869	8.46	0.58245447
33	13.495	12.42	7.555438927
34	12.225	8.95	6.693678489
35	16.602	20.64	12.04695802
36	8.005	10.21	1.563315047
37	1.412	5.10	0.6949180271
38	33.360	30.74	15.06594373
39	6.945	2.27	1.481460733
40	1.544	1.06	0.750266877

41	19.361	5.98	0.2850140445
42	9.214	7.04	1.026204578
43	11.566	11.51	2.46856499
44	10.159	8.83	2.86577479
45	26.620	13.04	0.9183565155
46	16.558	11.24	7.713507372
47	78.350	60.76	24.13537314
48	17.533	12.22	8.537894371
49	13.561	14.30	4.080773355
50	86.830	58.75	43.80918893
51	40.702	24.02	8.779997891
52	4.196	6.50	1.182861719
53	9.776	9.78	1.705430425
54	10.003	4.17	7.094331365
55	3.479	6.21	0.9782271925
56	12.280	9.30	7.072984544
57	33.327	15.38	8.372195461
58	14.621	18.10	1.859804965
59	21.073	12.99	6.711864495
60	19.588	15.24	6.801529066
61	28.431	16.04	8.37825872
62	8.155	7.15	6.081518135
63	5.614	3.37	1.483354834
64	75.954	44.35	21.70874302
65	23.388	11.90	6.220397889
66	13.208	10.84	8.948840015
67	150.635	91.76	39.12689248
68	19.573	12.46	8.106180257
69	6.880	7.13	1.733152312
70	14.194	12.90	4.516413971
71	9.255	10.17	4.195987224
72	20.261	16.08	7.364756498
73	7.150	8.64	6.50709921
74	53.332	56.35	14.45175097
75	34.064	33.01	10.78998435
76	13.367	7.36	2.551784087
77	10.740	10.14	2.986154216
78	89.915	64.53	22.13330695
79	18.119	12.29	8.557574032
80	21.635	12.78	6.345461961
81	6.574	28.96	1.795250899
82	2.271	1.50	0.7651958847
83	1.132	6.24	0.8148856927

84	0.612	0.51	0.4809909035
85	17.956	16.66	8.030157862
86	6.063	1.32	0.7580639329
87	40.202	39.89	11.82962051
88	43.159	27.60	16.32749077
89	7.222	9.66	2.242632047
90	2.396	5.34	0.8949710056
91	8.500	0.41	4.682342964
92	1.835	1.24	0.7868532557
93	7.669	3.84	2.16146044
94	57.048	32.03	17.03042148
95	5.103	1.50	0.891799503
96	4.756	2.67	1.480251853
97	30.634	25.16	13.44962656
98	5.913	3.66	2.523505222
99	4.637	7.90	6.900538411
Geomean Time (s)	13.79	9.70	4.20
Geomean Cost (cents)	3.75	4.39	3.80

	0.5x	1x	2x
	300 slots	600 slots	1200 slots
Query	Execution Time (s)	Execution Time (s)	Execution Time (s)
1	13.8	12.93	13.5
2	16.0	9.54	6.1
3	3.1	2.02	1.5
4	128.7	65.58	39.2
5	15.3	9.40	6.8
6	26.04	14.39	10.6
7	8.13	4.63	3.2
8	5.35	3.86	3.0
9	6.88	4.25	3.0
10	4.59	3.85	4.6
11	69.74	37.66	24.3
12	2.88	2.53	2.5
13	13.78	8.39	6.7
14	102.18	58.93	33.7
15	19.64	14.80	11.2
16	16.98	12.51	12.5
17	44.58	24.76	16.4
18	27.98	17.28	14.5
19	6.10	4.88	4.3
20	4.55	3.29	3.9
21	2.46	2.96	2.8
22	14.25	14.01	17.1
23	186.38	99.88	61.4
24	70.83	39.23	31.3
25	55.27	26.93	18.6
26	3.91	2.38	1.9
27	8.87	4.65	3.3
28	6.52	3.33	2.5
29	50.10	24.24	17.4
30	9.15	8.57	9.1
31	14.01	7.07	5.5
32	3.49	1.89	1.7
33	22.21	11.49	7.6
34	5.78	3.30	2.8
35	13.08	10.23	11.3
36	9.94	5.02	3.8
37	3.10	2.45	2.3
38	13.72	7.34	7.9
39	22.49	18.13	23.4
40	16.54	8.26	6.1

41	0.48	0.38	0.5
42	3.75	2.03	2.2
43	4.25	2.99	2.3
44	7.06	3.90	3.2
45	19.39	13.45	13.3
46	9.25	5.35	4.5
47	62.84	32.42	19.8
48	16.68	8.25	6.0
49	26.67	13.40	10.0
50	29.31	14.74	13.5
51	20.73	15.29	13.6
52	3.47	1.88	2.0
53	4.30	3.07	2.6
54	17.20	8.53	5.8
55	3.45	2.06	1.4
56	24.93	12.58	8.2
57	23.54	13.06	9.3
58	25.01	13.71	9.8
59	63.33	23.18	15.8
60	24.81	12.94	9.2
61	10.45	5.49	4.8
62	3.32	2.02	1.8
63	4.36	2.55	2.3
64	235.61	115.65	67.9
65	24.49	16.83	15.6
66	6.40	3.91	2.9
67	43.97	26.39	18.2
68	9.96	6.37	5.1
69	5.90	5.22	4.9
70	8.69	5.28	4.2
71	8.18	5.29	3.9
72	27.93	15.54	16.5
73	3.96	2.77	2.3
74	59.88	31.36	20.4
75	33.43	18.31	13.0
76	6.98	3.89	2.9
77	7.92	4.84	3.4
78	90.29	49.13	35.5
79	8.08	5.03	3.8
80	67.43	33.41	22.1
81	10.17	10.13	9.4
82	3.86	3.43	2.9
83	4.41	2.77	2.9

84	1.67	1.56	1.7
85	4.99	4.93	5.3
86	2.70	2.03	2.3
87	12.49	9.20	8.2
88	21.17	11.28	7.1
89	5.89	3.19	2.5
90	1.60	1.55	1.7
91	1.52	1.47	1.7
92	2.09	1.35	1.8
93	27.10	14.52	11.6
94	6.06	4.67	4.4
95	21.81	15.88	12.9
96	2.93	1.71	2.0
97	27.80	19.17	18.3
98	9.62	6.20	5.0
99	4.34	2.80	2.3
Geomean Time (s)	11.66	7.35	6.11
Geomean Cost (cents)	2.66	3.36	5.58

Warehouse	Scale	Time	Cost
Snowflake	0.5x	13.59	3.02
Snowflake	1x	6.61	2.94
Snowflake	2x	4.90	4.36
Databricks	0.5x	16.96	3.40
Databricks	1x	9.61	3.86
Databricks	2x	5.95	3.98
Synapse	0.5x	20.14	3.36
Synapse	1x	10.18	3.39
Synapse	2x	9.15	6.10
Redshift	0.5x	13.79	3.75
Redshift	1x	9.70	4.39
Redshift	2x	4.20	3.80
BigQuery	0.5x	11.66	2.66
BigQuery	1x	7.35	3.36
BigQuery	2x	6.11	5.58