

1 Experimental Results

1.1 Ordered Linear Probing Hash Tables

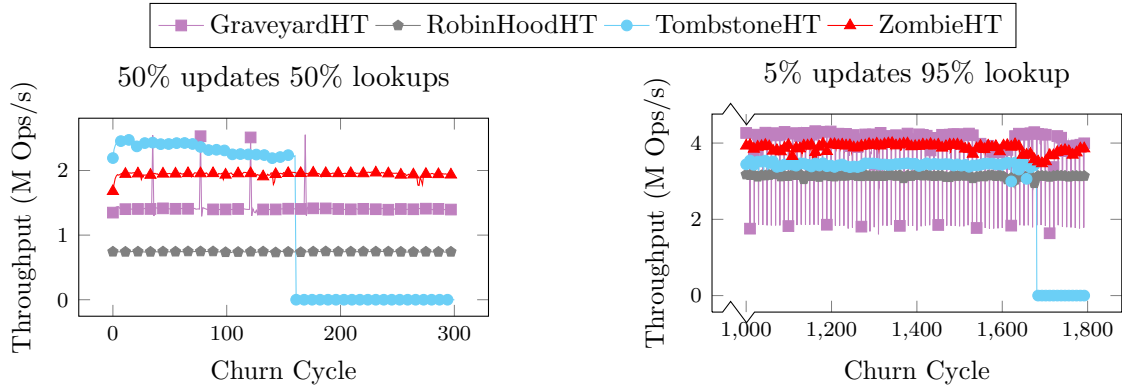


Figure 1: 95% Load factor throughput (Corresponds to Figure 6 in paper.)

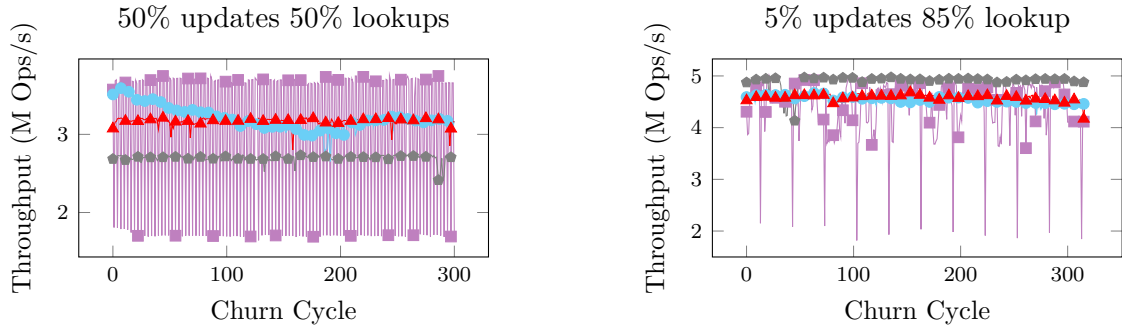


Figure 2: 85% load factor (corresponds to figure 7c, 7d in paper.)

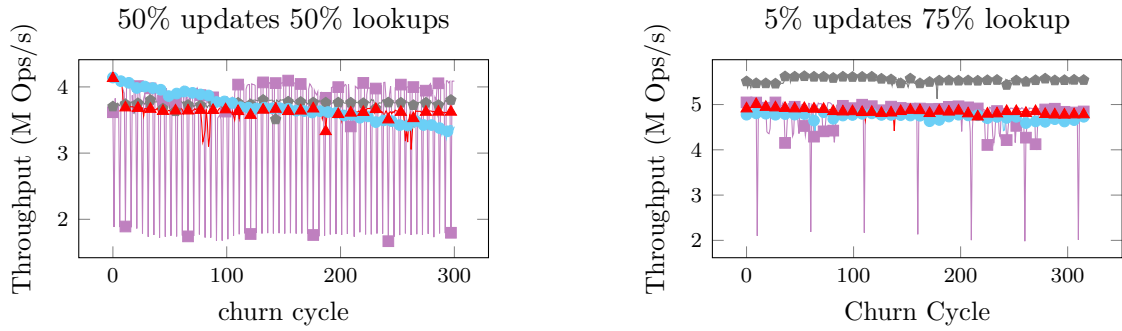


Figure 3: 75% load factor throughput (corresponds to figure 7a, 7b in paper.)

Table	MOps/sec	Table	MOps/sec	Table	MOps/sec
ZombieHT(C)	4.41	ZombieHT(C)	3.88	ZombieHT(C)	1.94
GraveyardHT	4.09	GraveyardHT	3.63	GraveyardHT	1.41
TombstoneHT	5.37	TombstoneHT	3.53	TombstoneHT	2.33
RobinHoodHT	5.55	RobinHoodHT	3.12	RobinHoodHT	0.74

(a) Load Factor (b) 5% updates (c) 50% updates

Figure 4: 95% load factor

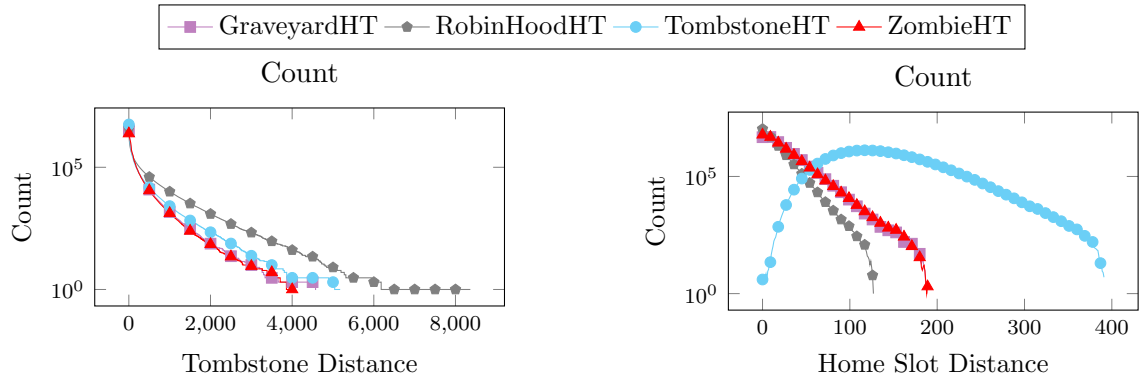


Figure 5: Microbenchmarks (Corresponds to Figure 10 in paper.)

	Hashmap	Size	Space Efficiency
0	ZombieHT(C)	1.63 GB	0.9212
1	NaN	1.63 GB	0.9212
2	GraveyardHT	1.63 GB	0.9212
3	CLHT	3.86 GB	0.3887
4	ABSL	2.13 GB	0.7055
5	RobinHoodHT	1.61 GB	0.9301
6	ZombieHT(V)	2.13 GB	0.7055
7	TombstoneHT	1.63 GB	0.9212
8	NaN	1.63 GB	0.9212
9	Cuckoo	2.00 GB	0.7496
10	IcebergHT	2.39 GB	0.6271

(a) Load Factor

Figure 6: Space Usage

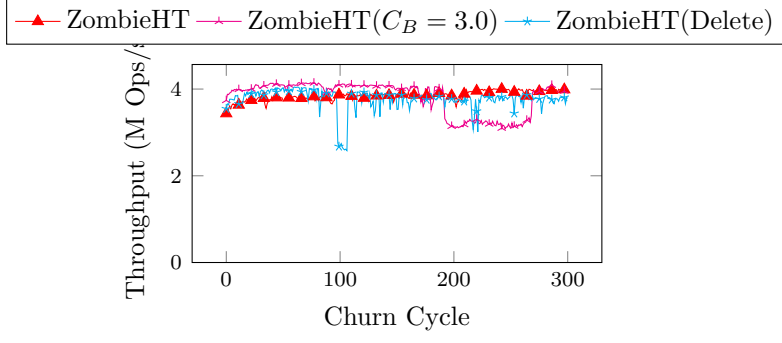


Figure 7: Zombie Internal Parameters (Figure 11)

2 Unordered Hash Tables

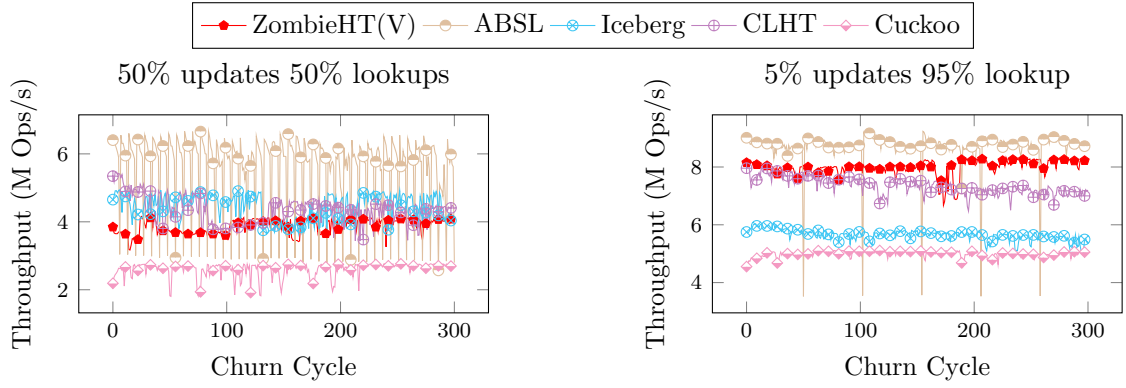


Figure 8: 95% Load factor throughput (Corresponds to Figure 8 in paper.)

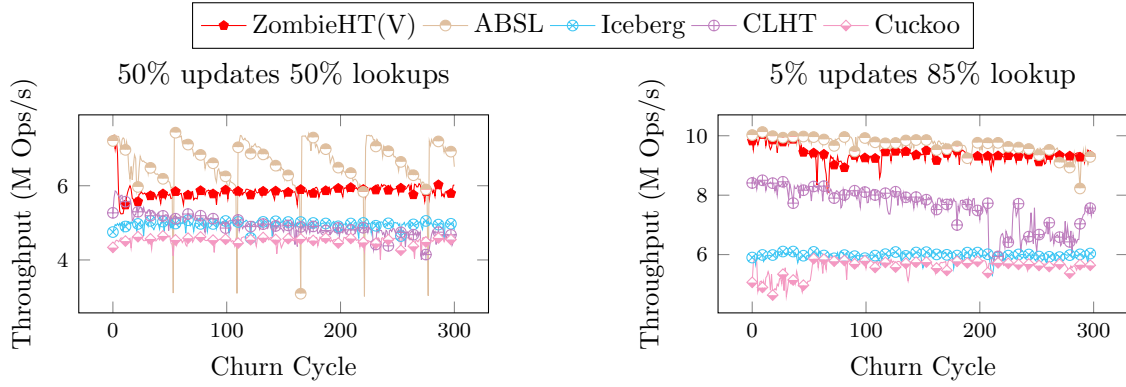


Figure 9: 85% Load factor throughput (Corresponds to Figure 9a, 9b in paper.)

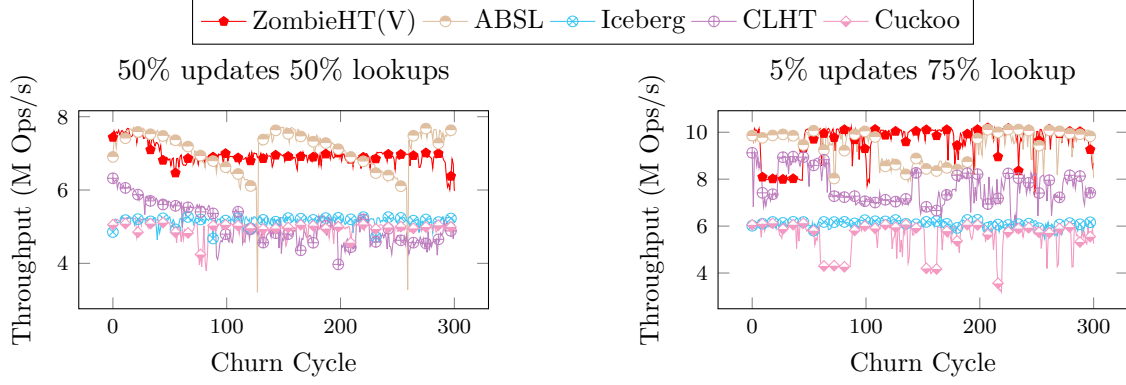


Figure 10: 75% Load factor throughput (Corresponds to Figure 9c, 9d in paper.)

3 Latency

	ZombieHT(C)	GraveyardHT	TombstoneHT	RobinHoodHT	ZombieHT(V)	ABSL	Cuckoo	IcebergHT	CLHT
count	1644.15	1644.15	1644.15	1644.15	1644.15	1644.15	1644.15	1644.15	1644.15
mean	64.05	97.77	47.63	105.29	28.17	17.30	50.74	20.36	21.09
std	19.27	10493.62	11.46	23.33	7.70	2489.59	12.93	3.21	173.77
min	37.91	22.35	23.51	37.02	10.34	7.66	19.91	15.10	9.75
50p	60.15	41.74	45.28	102.79	27.69	11.92	48.56	19.53	14.48
90p	78.69	56.51	63.13	136.10	36.96	13.78	67.17	23.80	17.37
99.99p	432.67	105.25	118.19	248.25	92.78	33.02	155.78	43.89	7324.15
max	854.55	2404881.19	584.12	622.16	561.90	1213312.98	654.87	534.38	13329.03
relVar	30.08	10733.23	24.06	22.16	27.34	14394.27	25.48	15.79	824.03

Table 1: Insert Latency (microseconds)

	ZombieHT(C)	GraveyardHT	TombstoneHT	RobinHoodHT	ZombieHT(V)	ABSL	Cuckoo	IcebergHT	CLHT
count	1644.15	1644.15	1644.15	1644.15	1644.15	1644.15	1644.15	1644.15	1644.15
mean	13.41	14.51	16.75	133.66	10.43	10.58	10.96	15.29	11.70
std	1.72	1.83	2.08	32.70	1.83	1.81	2.27	2.27	2.10
min	10.72	11.59	12.87	42.31	6.61	6.54	8.07	11.83	6.47
50p	13.17	14.27	16.47	130.02	10.22	10.38	10.32	14.73	11.44
90p	14.28	15.46	17.86	176.95	11.61	11.83	13.39	17.66	13.84
99.99p	33.07	41.65	46.87	339.49	29.76	31.30	35.34	39.96	31.66
max	322.66	342.95	336.46	728.03	399.01	321.63	330.51	352.58	313.00
relVar	12.84	12.64	12.44	24.46	17.55	17.15	20.75	14.88	17.98

Table 2: Delete Latency (microseconds)

	ZombieHT(C)	GraveyardHT	TombstoneHT	RobinHoodHT	ZombieHT(V)	ABSL	Cuckoo	IcebergHT	CLHT
count	3288.29	3288.29	3288.29	3288.29	3288.29	3288.29	3288.29	3288.29	3288.29
mean	12.57	13.79	15.99	12.20	7.32	7.32	10.24	15.25	8.62
std	1.83	1.79	2.20	1.66	1.59	1.48	2.39	2.53	1.67
min	10.07	10.81	12.33	9.50	5.50	5.52	7.72	11.53	5.16
50p	12.40	13.57	15.75	11.96	7.16	7.17	9.55	14.66	8.39
90p	13.26	14.67	17.00	13.04	7.98	7.93	12.86	17.67	10.09
99.99p	28.69	32.75	37.27	28.36	23.11	25.19	33.03	35.75	26.40
max	538.15	523.87	552.40	348.13	521.30	508.74	559.42	1126.84	253.32
relVar	14.56	12.95	13.78	13.59	21.76	20.16	23.33	16.56	19.43

Table 3: Lookup Latency (microseconds)