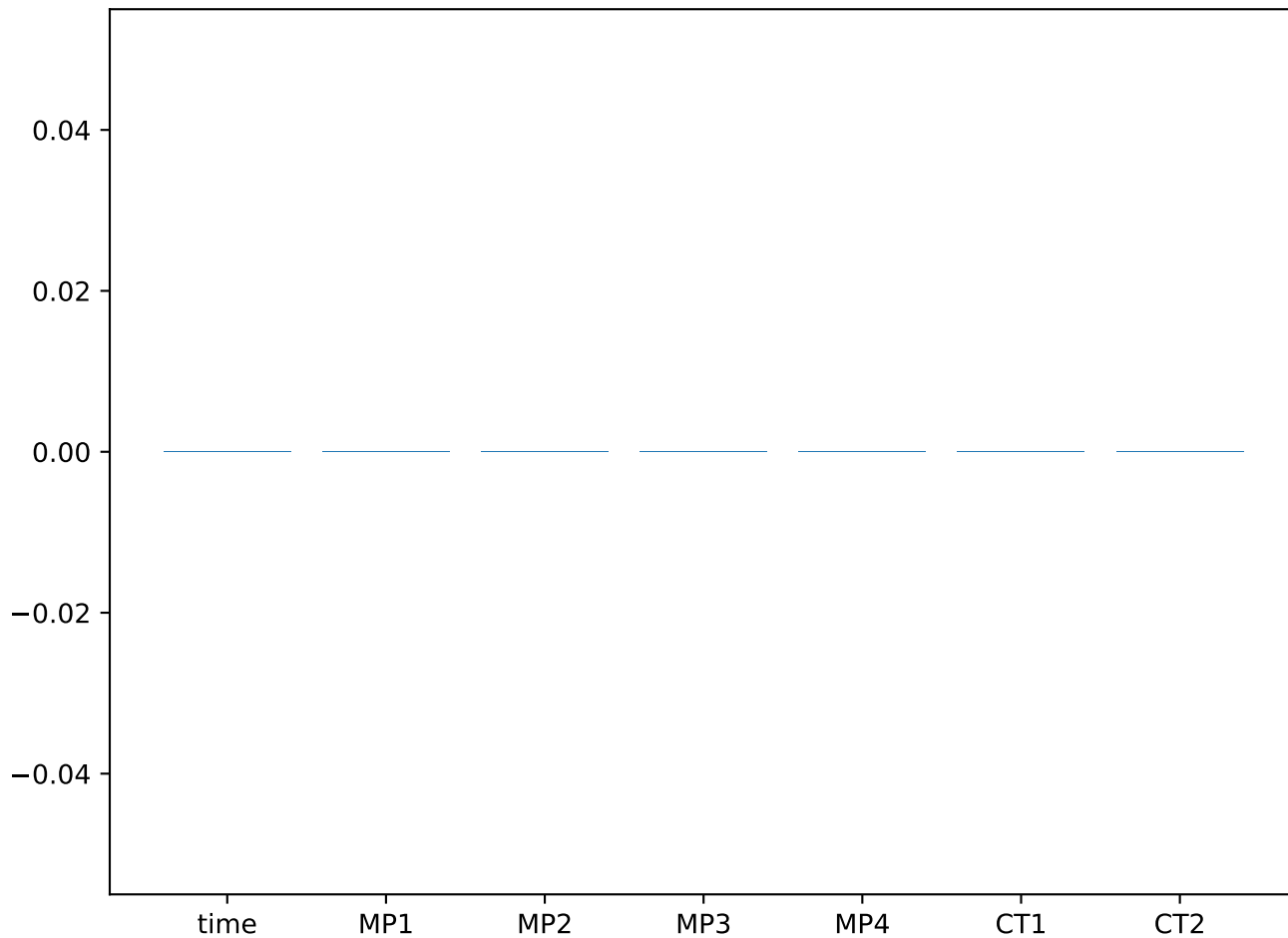


S2: Berth Occupancy Simulation

Percent Missing Zeros in Each Column

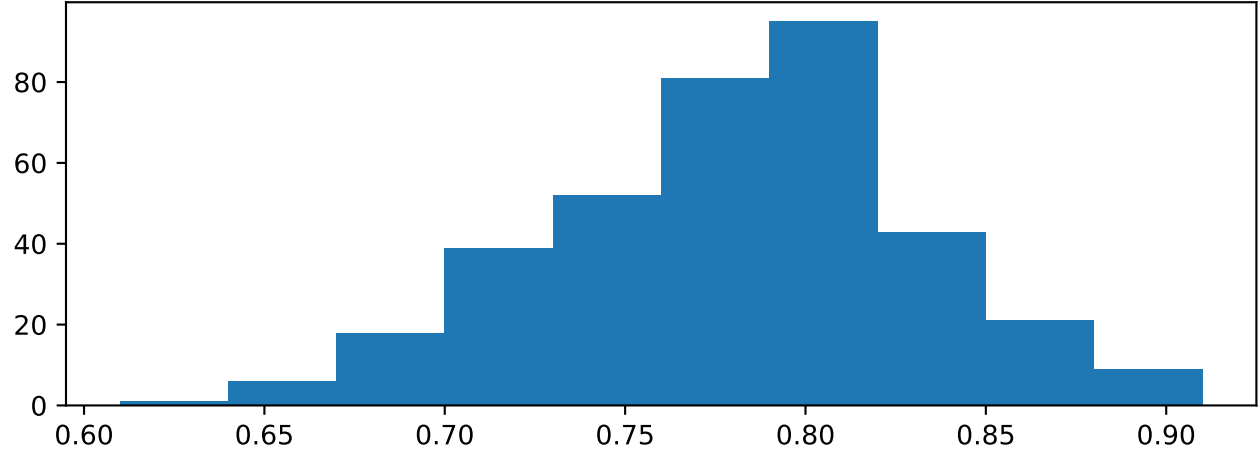


S2: Berth Occupancy Simulation

time	MP1	MP2	MP3	MP4	CT1	CT2
2025-01-01 00:00:00	0.76	0.84	0.68	0.82	0.73	0.77
2025-01-02 00:00:00	0.76	0.73	0.7	0.73	0.78	0.72
2025-01-03 00:00:00	0.84	0.83	0.68	0.78	0.77	0.82
2025-01-04 00:00:00	0.79	0.75	0.74	0.78	0.87	0.8
time	MP1	MP2	MP3	MP4	CT1	CT2
2025-01-01 00:00:00	0.76	0.84	0.68	0.82	0.73	0.77
2025-01-02 00:00:00	0.76	0.73	0.7	0.73	0.78	0.72
2025-01-03 00:00:00	0.84	0.83	0.68	0.78	0.77	0.82
2025-01-04 00:00:00	0.79	0.75	0.74	0.78	0.87	0.8
time	MP1	MP2	MP3	MP4	CT1	CT2
2025-01-01 00:00:00	0.76	0.84	0.68	0.82	0.73	0.77
2025-01-02 00:00:00	0.76	0.73	0.7	0.73	0.78	0.72
2025-01-03 00:00:00	0.84	0.83	0.68	0.78	0.77	0.82
2025-01-04 00:00:00	0.79	0.75	0.74	0.78	0.87	0.8
time	MP1	MP2	MP3	MP4	CT1	CT2
2025-01-01 00:00:00	0.76	0.84	0.68	0.82	0.73	0.77
2025-01-02 00:00:00	0.76	0.73	0.7	0.73	0.78	0.72
2025-01-03 00:00:00	0.84	0.83	0.68	0.78	0.77	0.82
2025-01-04 00:00:00	0.79	0.75	0.74	0.78	0.87	0.8
time	MP1	MP2	MP3	MP4	CT1	CT2
2025-01-01 00:00:00	0.76	0.84	0.68	0.82	0.73	0.77
2025-01-02 00:00:00	0.76	0.73	0.7	0.73	0.78	0.72
2025-01-03 00:00:00	0.84	0.83	0.68	0.78	0.77	0.82
2025-01-04 00:00:00	0.79	0.75	0.74	0.78	0.87	0.8
time	MP1	MP2	MP3	MP4	CT1	CT2
2025-01-01 00:00:00	0.76	0.84	0.68	0.82	0.73	0.77
2025-01-02 00:00:00	0.76	0.73	0.7	0.73	0.78	0.72
2025-01-03 00:00:00	0.84	0.83	0.68	0.78	0.77	0.82
2025-01-04 00:00:00	0.79	0.75	0.74	0.78	0.87	0.8
time	MP1	MP2	MP3	MP4	CT1	CT2
2025-01-01 00:00:00	0.76	0.84	0.68	0.82	0.73	0.77
2025-01-02 00:00:00	0.76	0.73	0.7	0.73	0.78	0.72
2025-01-03 00:00:00	0.84	0.83	0.68	0.78	0.77	0.82
2025-01-04 00:00:00	0.79	0.75	0.74	0.78	0.87	0.8
2025-01-05 00:00:00	0.8	0.77	0.78	0.77	0.88	0.7

S2: Berth Occupancy Simulation

MP1 in S2: Berth Occupancy Simulation

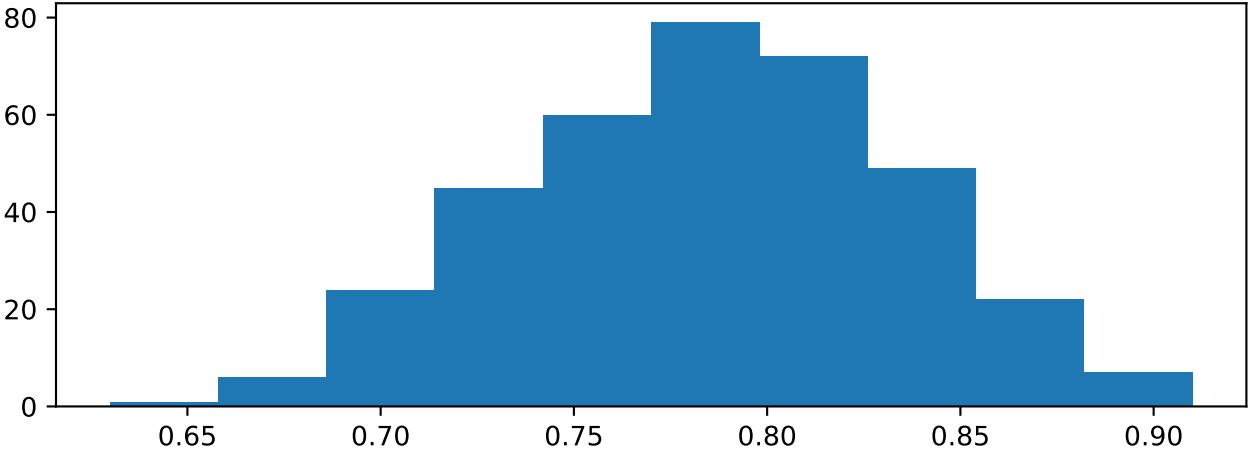


1 outlier(s) detected

time	MP1	MP2	MP3	MP4	CT1	CT2
2025-09-25 00:00:00	0.61	0.67	0.74	0.78	0.76	0.72

S2: Berth Occupancy Simulation

MP2 in S2: Berth Occupancy Simulation

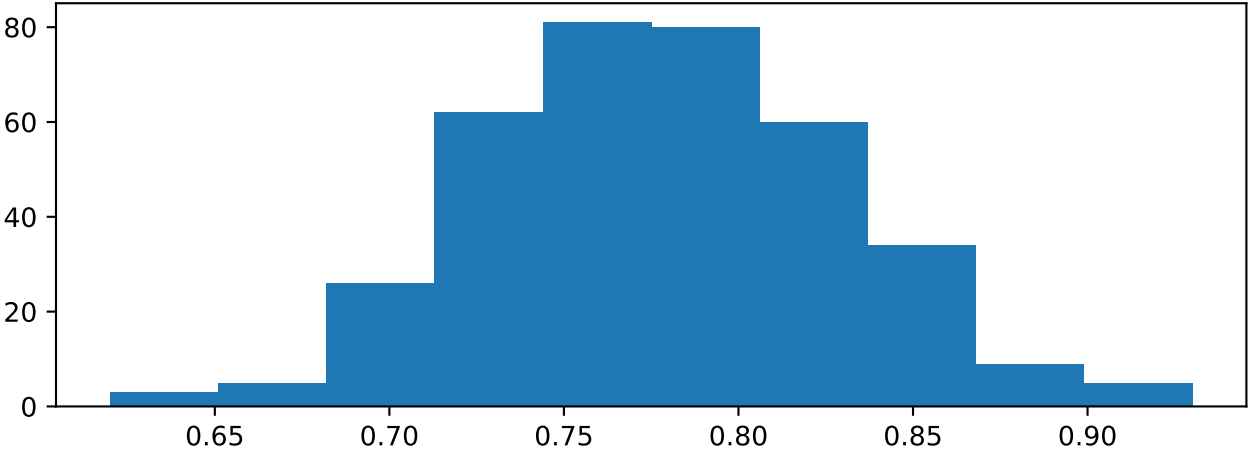


1 outlier(s) detected

time	MP1	MP2	MP3	MP4	CT1	CT2
2025-10-11 00:00:00	0.72	0.63	0.83	0.77	0.78	0.88

S2: Berth Occupancy Simulation

MP3 in S2: Berth Occupancy Simulation

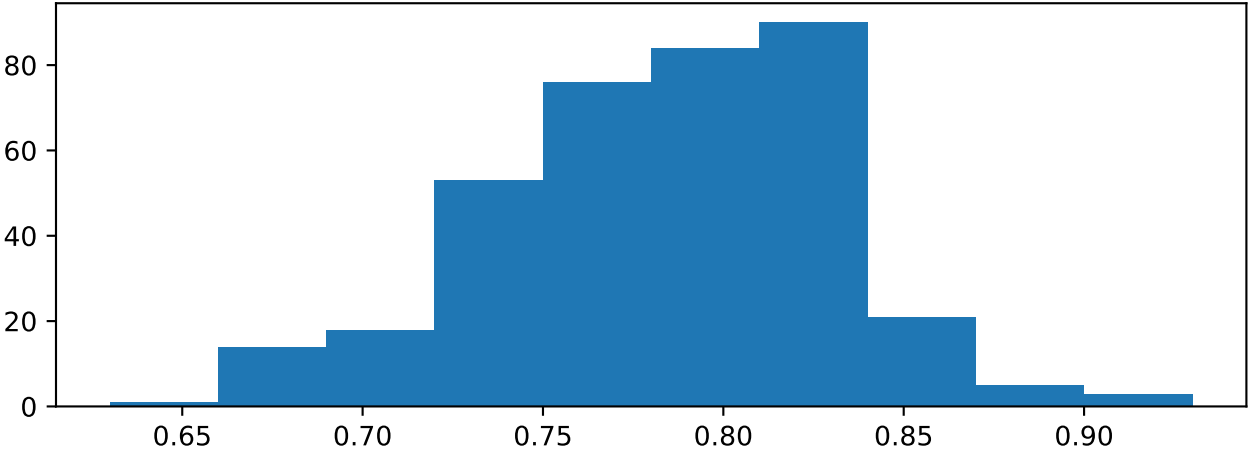


2 outlier(s) detected

time	MP1	MP2	MP3	MP4	CT1	CT2
2025-03-31 00:00:00	0.81	0.86	0.93	0.78	0.81	0.75
2025-08-18 00:00:00	0.8	0.76	0.62	0.83	0.81	0.77

S2: Berth Occupancy Simulation

MP4 in S2: Berth Occupancy Simulation

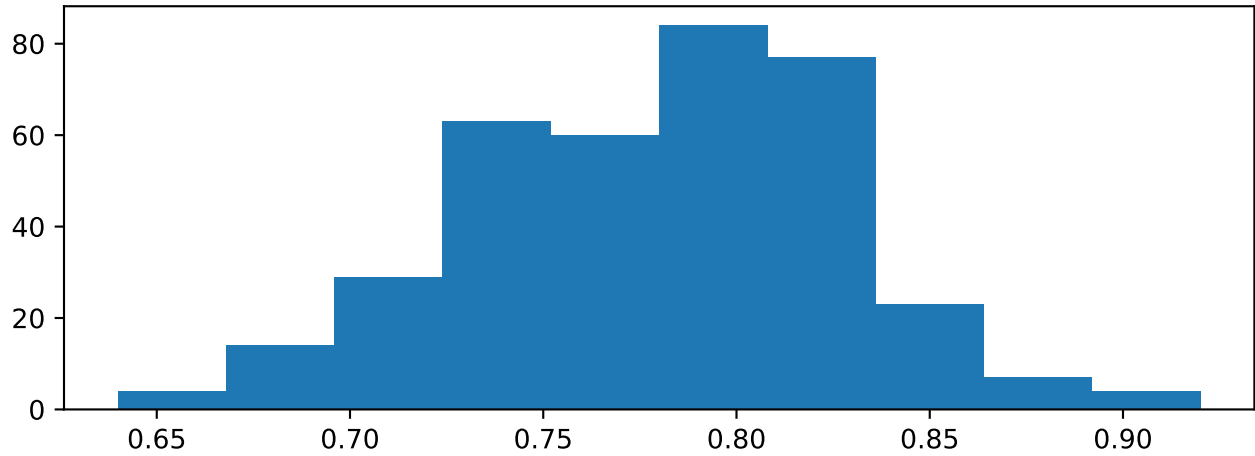


2 outlier(s) detected

time	MP1	MP2	MP3	MP4	CT1	CT2
2025-09-05 00:00:00	0.79	0.81	0.83	0.63	0.85	0.75
2025-12-15 00:00:00	0.69	0.83	0.74	0.93	0.81	0.8

S2: Berth Occupancy Simulation

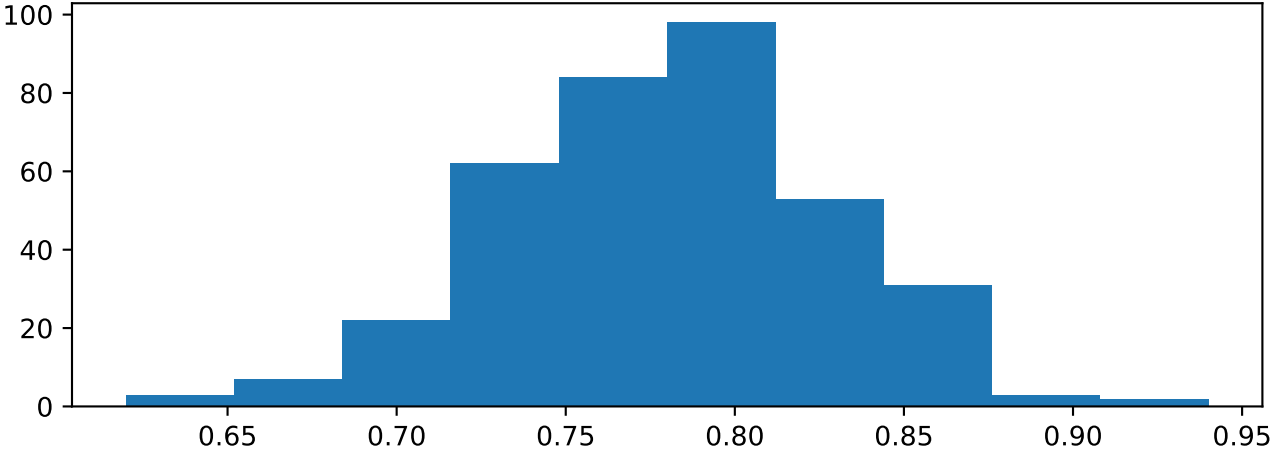
CT1 in S2: Berth Occupancy Simulation



No outliers detected

S2: Berth Occupancy Simulation

CT2 in S2: Berth Occupancy Simulation

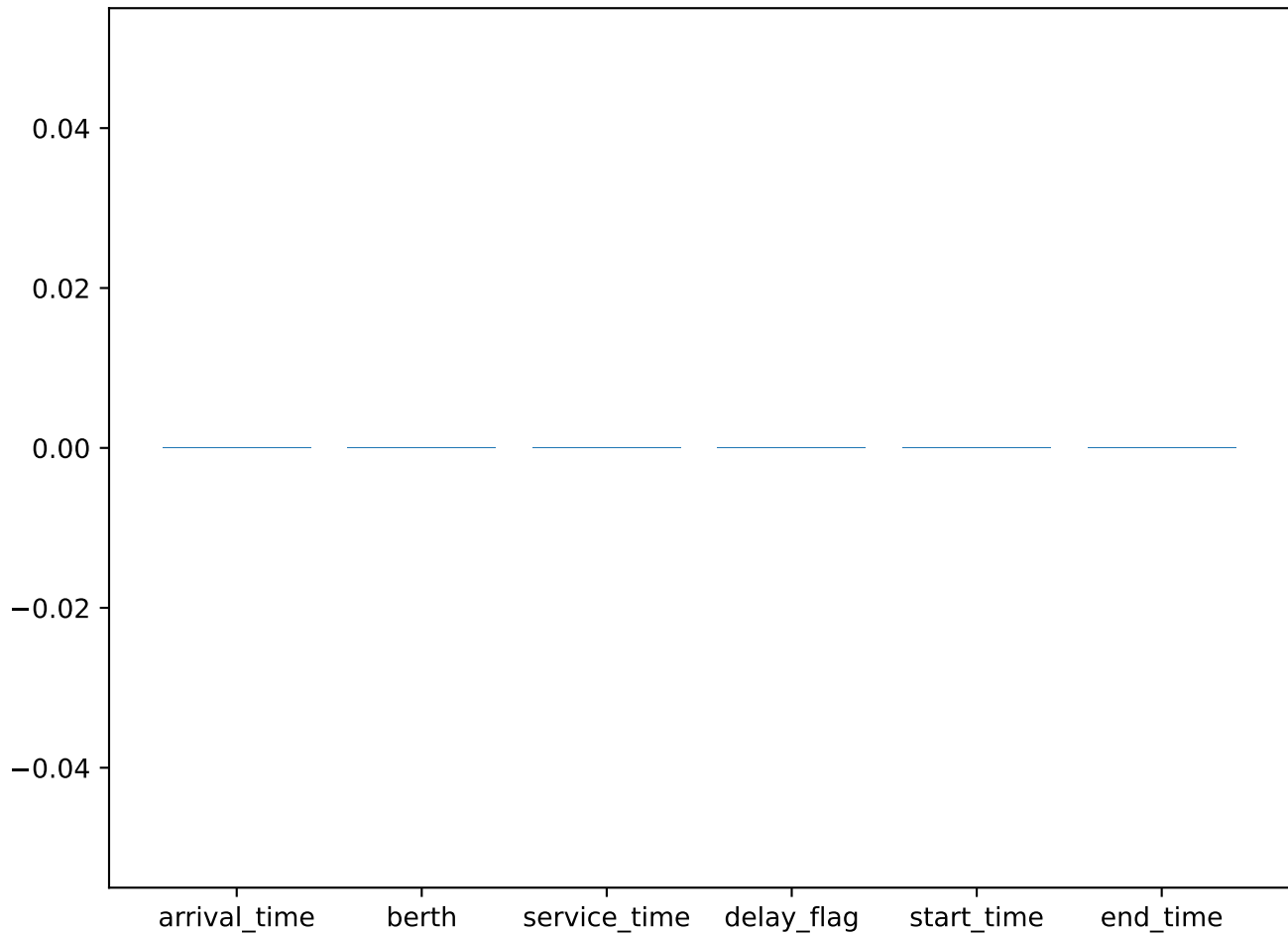


2 outlier(s) detected

time	MP1	MP2	MP3	MP4	CT1	CT2
2025-10-06 00:00:00	0.82	0.77	0.74	0.8	0.76	0.62
2025-10-07 00:00:00	0.78	0.74	0.77	0.84	0.72	0.94

S3: Vessel Arrival & Turnaround

Percent Missing Zeros in Each Column



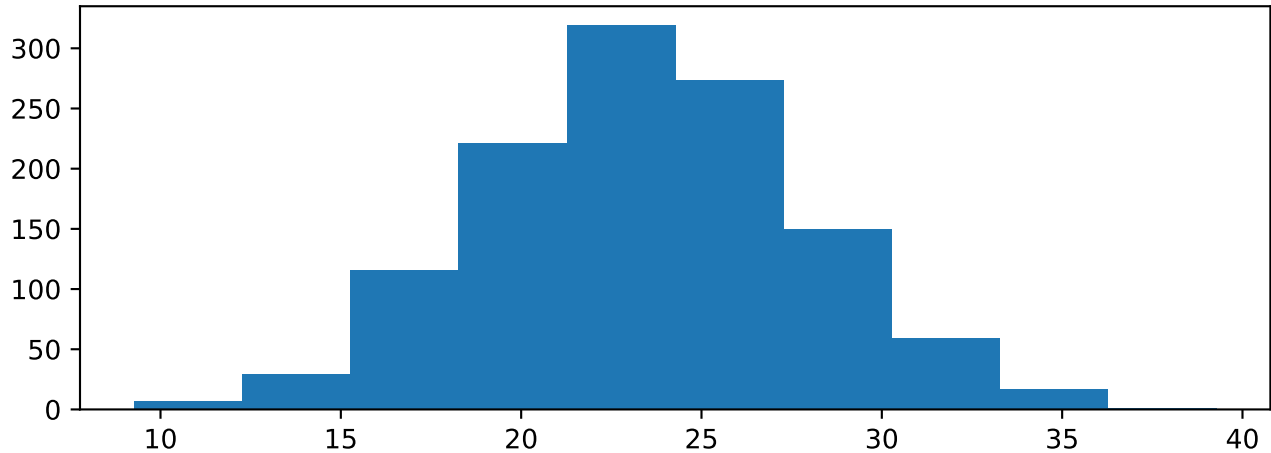
S3: Vessel Arrival & Turnaround

1193 outlier(s) detected

arrival_time	berth	service_time	delay_flag	start_time	end_time
2025-01-01 01:08:30	MP1	35.138888888888886	1	2025-01-01 01:08:30	2025-01-02 12:16:50
2025-01-01 09:44:35	MP2	20.234722222222222	0	2025-01-01 09:44:35	2025-01-02 05:58:40
2025-01-01 16:28:57	MP3	22.536666666666665	0	2025-01-01 16:28:57	2025-01-02 15:01:09
2025-01-01 17:34:45	MP4	26.027222222222222	0	2025-01-01 17:34:45	2025-01-02 19:36:23
2025-01-01 22:04:47	CT1	21.589166666666667	0	2025-01-01 22:04:47	2025-01-02 19:40:08

S3: Vessel Arrival & Turnaround

service_time in S3: Vessel Arrival & Turnaround

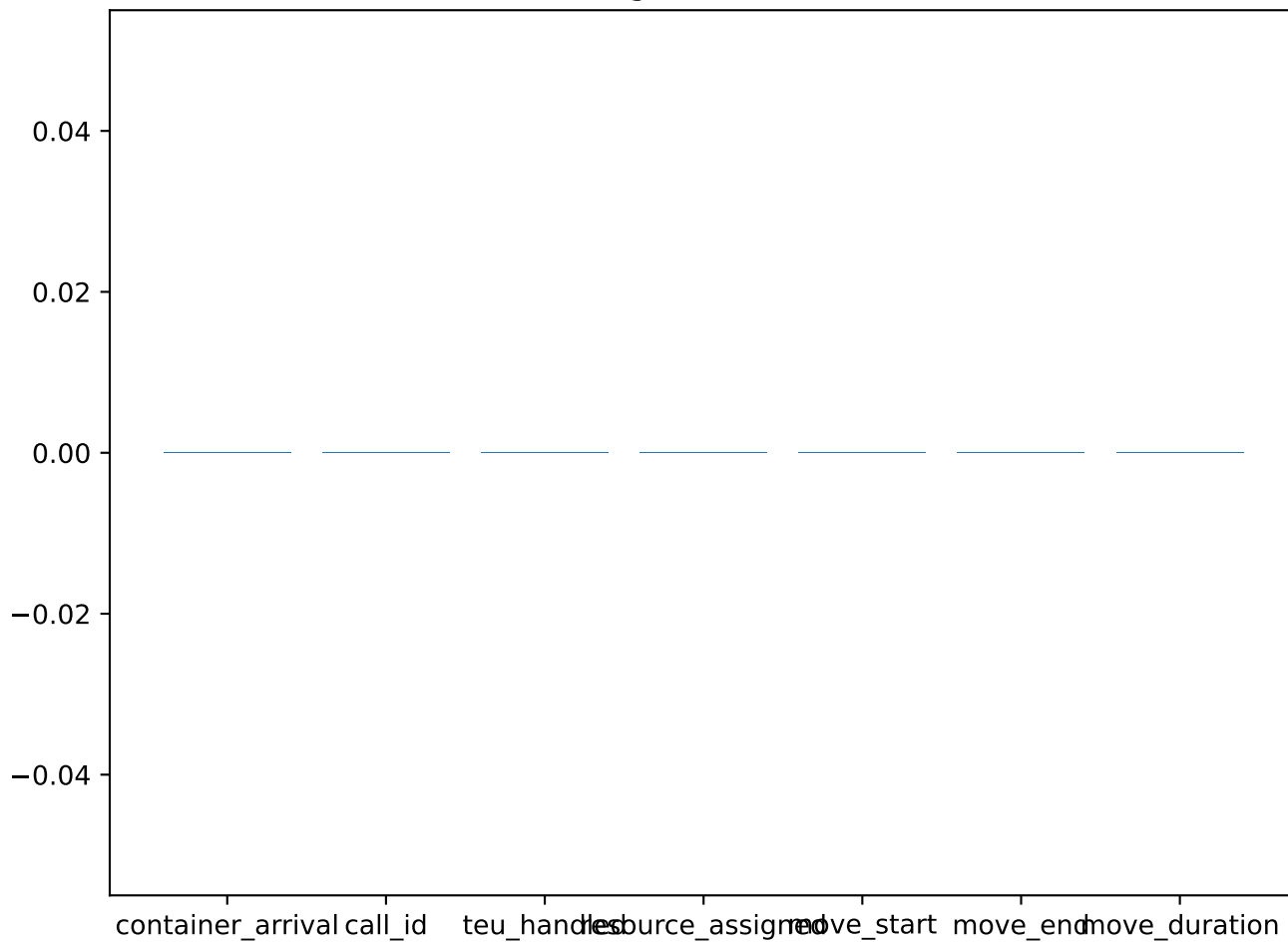


4 outlier(s) detected

arrival_time	berth	service_time	delay_flag	start_time	end_time
2025-03-30 15:30:03	MP3	9.268055555555556	0	2025-03-30 15:30:03	2025-03-31 00:46:08
2025-07-21 00:56:31	MP1	10.043333333333333	0	2025-07-21 00:56:31	2025-07-21 10:59:07
2025-08-04 05:20:02	MP3	9.848055555555556	0	2025-08-04 05:20:02	2025-08-04 15:10:55
2025-08-12 05:19:58	MP3	39.27361111111111	1	2025-08-12 05:19:58	2025-08-13 20:36:23

S4: Container Move Simulation

Percent Missing Zeros in Each Column



S4: Container Move Simulation

3159 outlier(s) detected

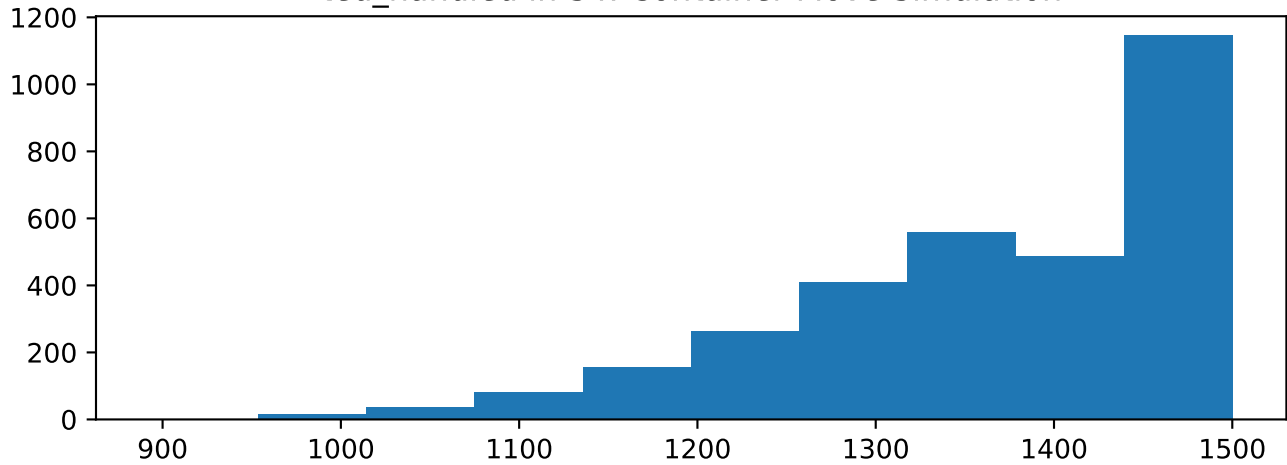
container_arrival	call_id	teu_handled	resource_assigned	move_start	move_end	move_duration
2025-01-02 06:49:03	1	1309	Quay0	2025-01-02 06:49:03	2025-01-02 06:50:24	0 days 00:01:21
2025-01-02 06:49:03	1	1309	Quay1	2025-01-02 06:49:03	2025-01-02 06:50:31	0 days 00:01:28
2025-01-02 06:49:03	1	1309	Quay2	2025-01-02 06:49:03	2025-01-02 06:50:27	0 days 00:01:24
2025-01-02 06:49:03	1	1309	Quay3	2025-01-02 06:49:03	2025-01-02 06:50:45	0 days 00:01:42
2025-01-02 06:49:03	1	1309	Quay4	2025-01-02 06:49:03	2025-01-02 06:50:46	0 days 00:01:43

3159 outlier(s) detected

container_arrival	call_id	teu_handled	resource_assigned	move_start	move_end	move_duration
2025-01-02 06:49:03	1	1309	Quay0	2025-01-02 06:49:03	2025-01-02 06:50:24	0.0225
2025-01-02 06:49:03	1	1309	Quay1	2025-01-02 06:49:03	2025-01-02 06:50:31	0.02444444444444446
2025-01-02 06:49:03	1	1309	Quay2	2025-01-02 06:49:03	2025-01-02 06:50:27	0.02333333333333334
2025-01-02 06:49:03	1	1309	Quay3	2025-01-02 06:49:03	2025-01-02 06:50:45	0.02833333333333332
2025-01-02 06:49:03	1	1309	Quay4	2025-01-02 06:49:03	2025-01-02 06:50:46	0.02861111111111111

S4: Container Move Simulation

teu_handled in S4: Container Move Simulation

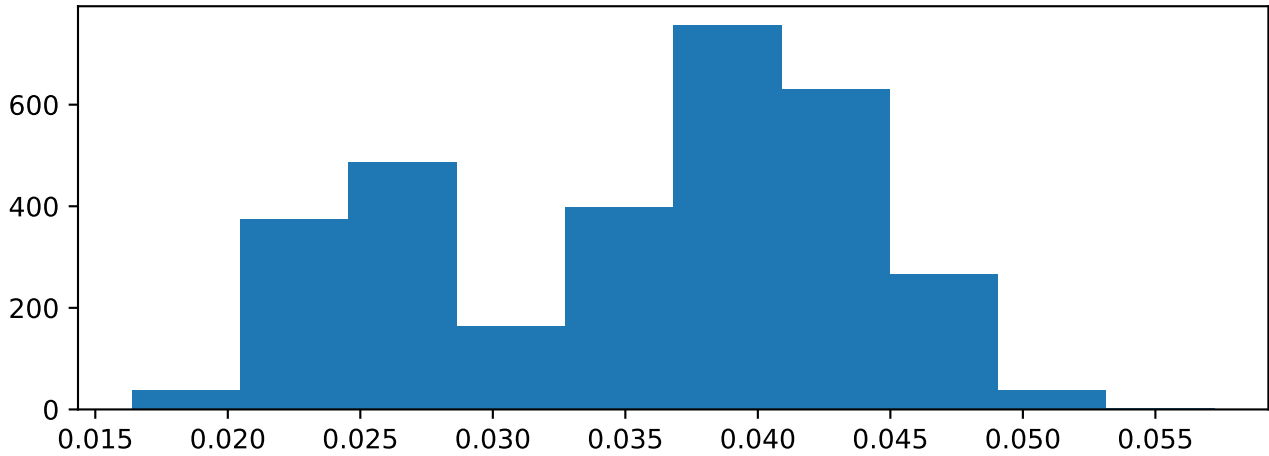


17 outlier(s) detected

container_arrival	call_id	teu_handled	resource_assigned	move_start	move_end	move_duration
2025-05-11 23:49:15	414	968	Yard6	2025-05-11 23:49:15	2025-05-11 23:51:40	0.0402777777777778
2025-05-11 23:49:15	414	968	Yard3	2025-05-11 23:49:15	2025-05-11 23:51:42	0.04083333333333333
2025-05-19 07:59:30	451	962	Yard1	2025-05-19 07:59:30	2025-05-19 08:01:32	0.03388888888888889
2025-05-19 07:59:30	451	962	Yard2	2025-05-19 07:59:30	2025-05-19 08:01:54	0.04
2025-05-19 07:59:30	451	962	Yard4	2025-05-19 07:59:30	2025-05-19 08:02:10	0.044444444444444446

S4: Container Move Simulation

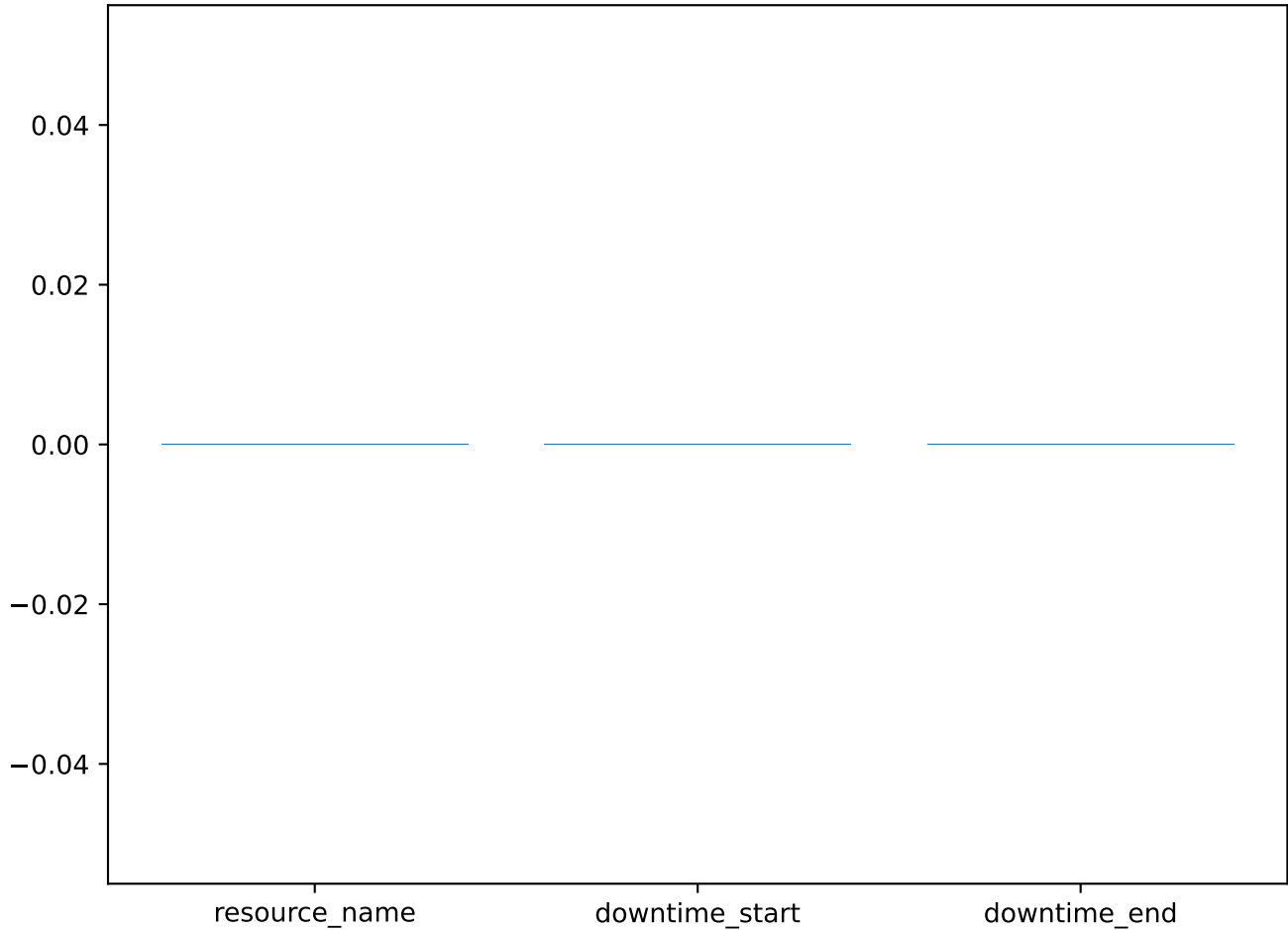
move_duration in S4: Container Move Simulation



No outliers detected

S5: Crane & RTG Uptime & Downtime

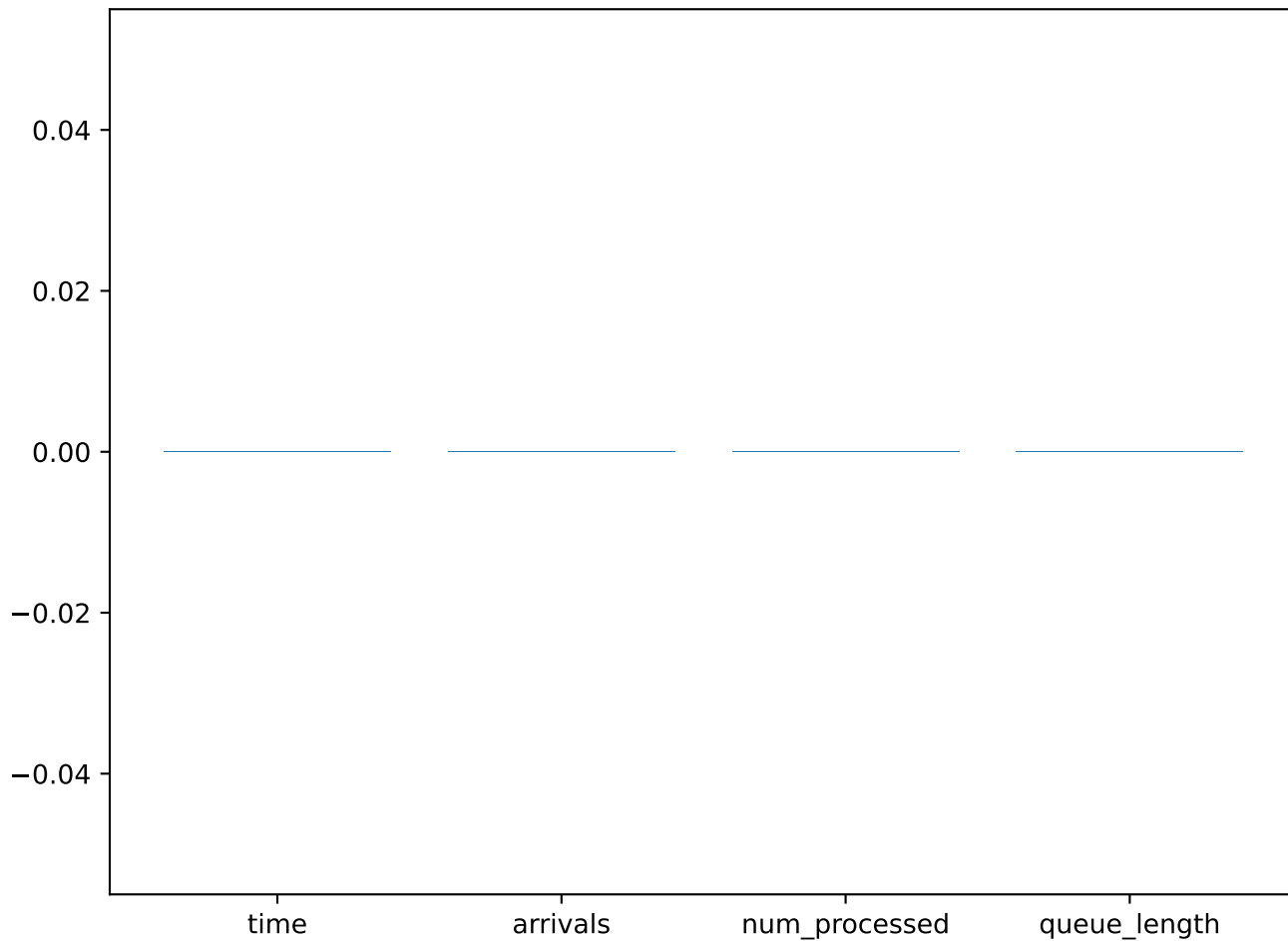
Percent Missing Zeros in Each Column



S5: Crane & RTG Uptime & Downtime

S6: Gate-Entry Traffic

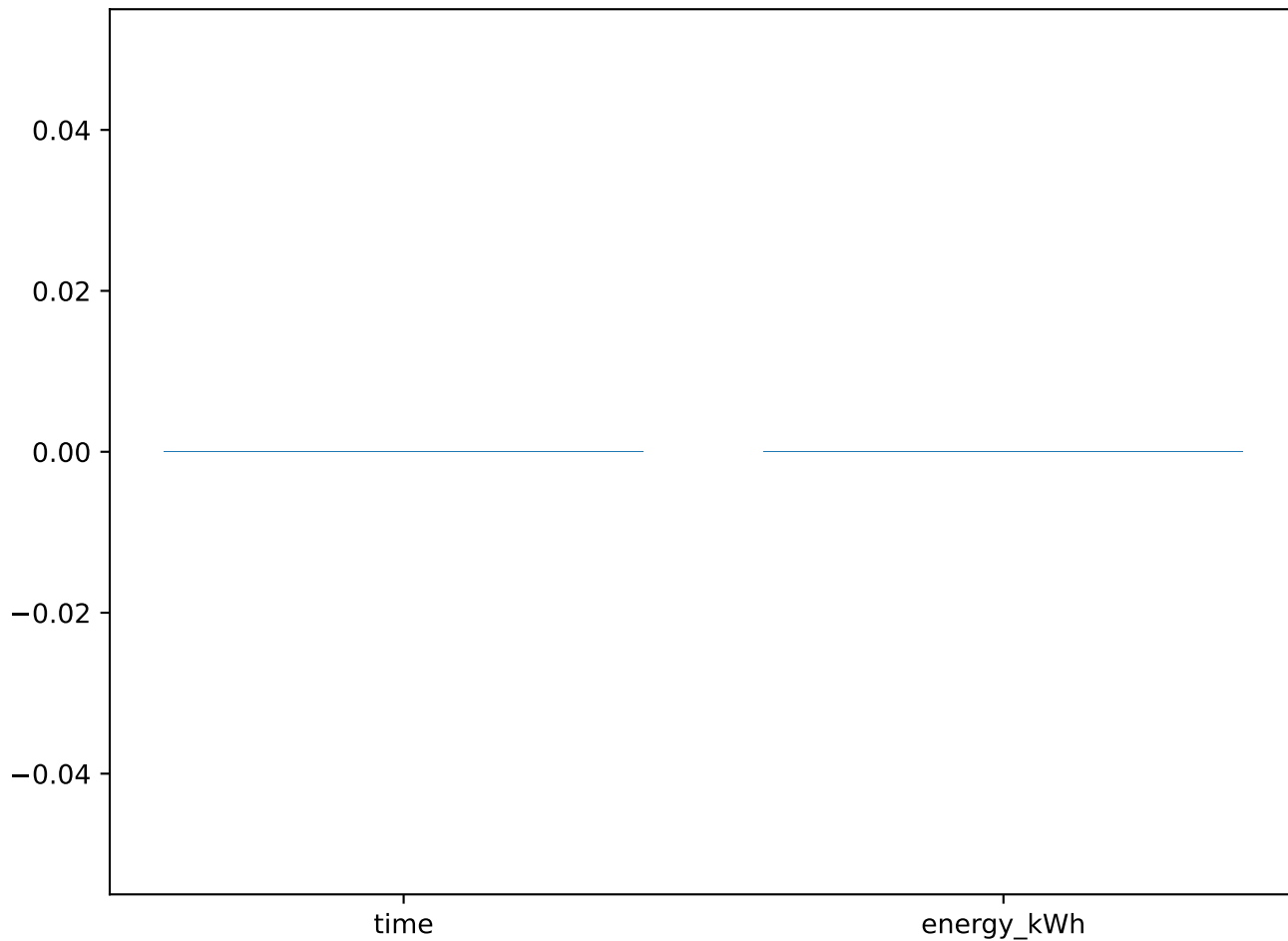
Percent Missing Zeros in Each Column



S6: Gate-Entry Traffic

S7: Energy Consumption Profile

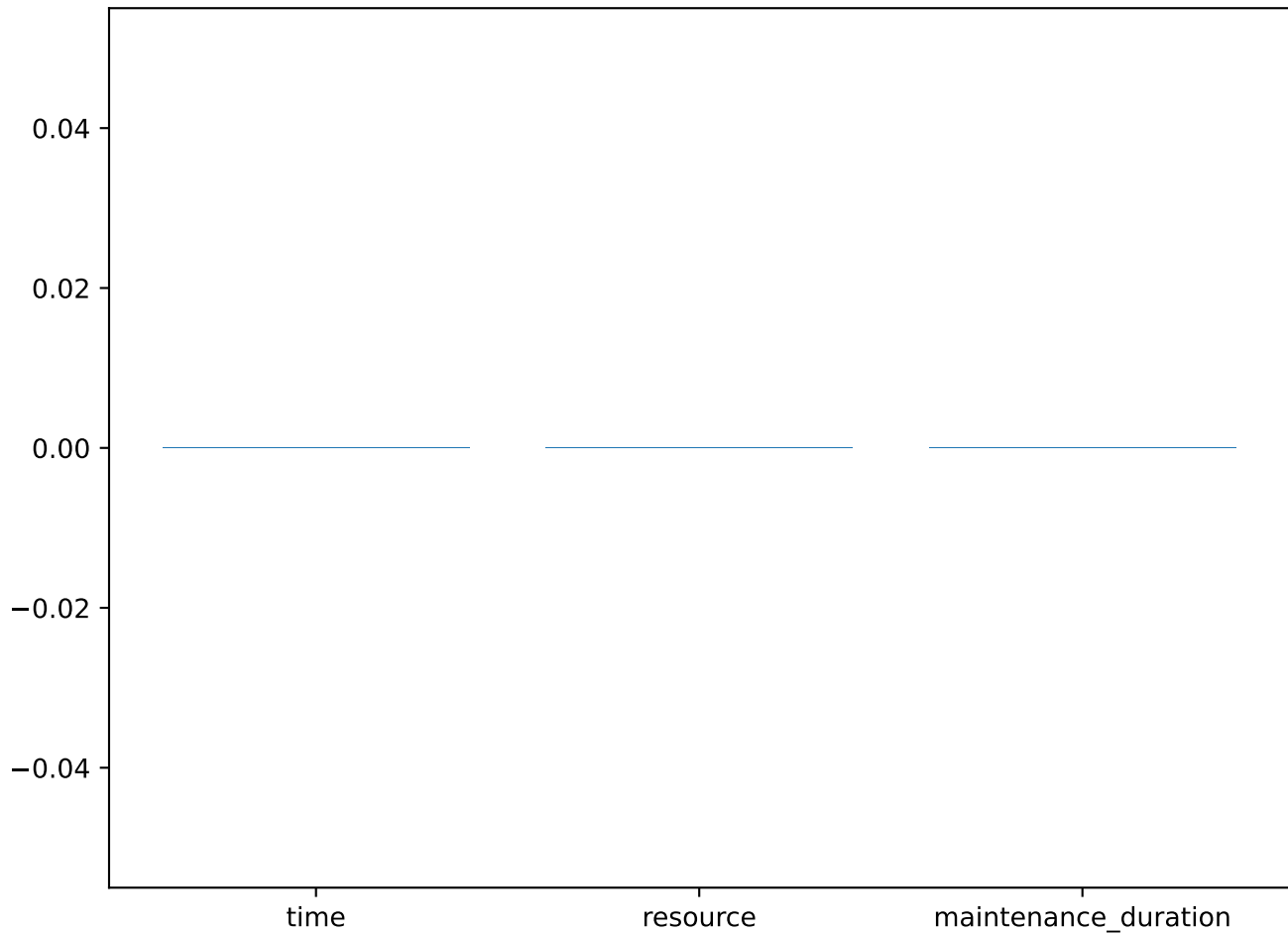
Percent Missing Zeros in Each Column



S7: Energy Consumption Profile

S8: Maintenance Event Simulation

Percent Missing Zeros in Each Column



S8: Maintenance Event Simulation