Oscar Utilization

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1 Introduction

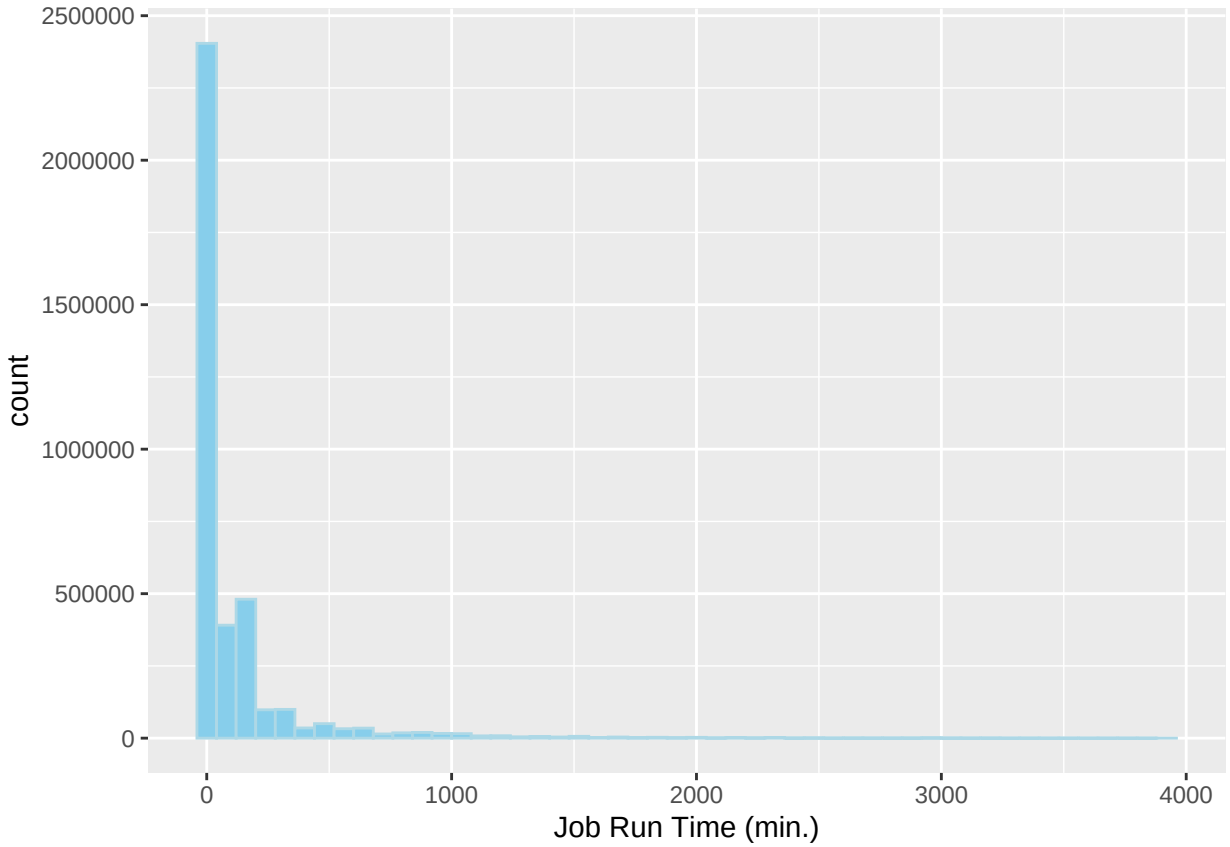
This document contains summary information of the jobs submitted to Oscar via the SLURM scheduler. The jobs summarized in the present report were submitted to Oscar from 2020-05-12 20:12:56 to 2022-10-31 07:41:37. The table below gives an overview of the jobs submitted over this period of time.

2 Job Run Times

As the histogram below illustrates, the overwhelming majority of jobs had rather brief total run times (i.e., minutes, or a small number of hours). Although the mean run time for jobs was 12340 minutes, this is highly skewed by a small number of very long-running jobs—the median run time is 14 minutes. For example, of the 4054871 total jobs, there were 53233 with run times longer than 2 weeks. And of these, there were 16742 ran for two months or more, and 12772 that ran for three months or more.

It is also worth mentioning that some of the plot and models discussed below are likely to be influenced by the more out-lying values on the run times and the in-queue wait times.

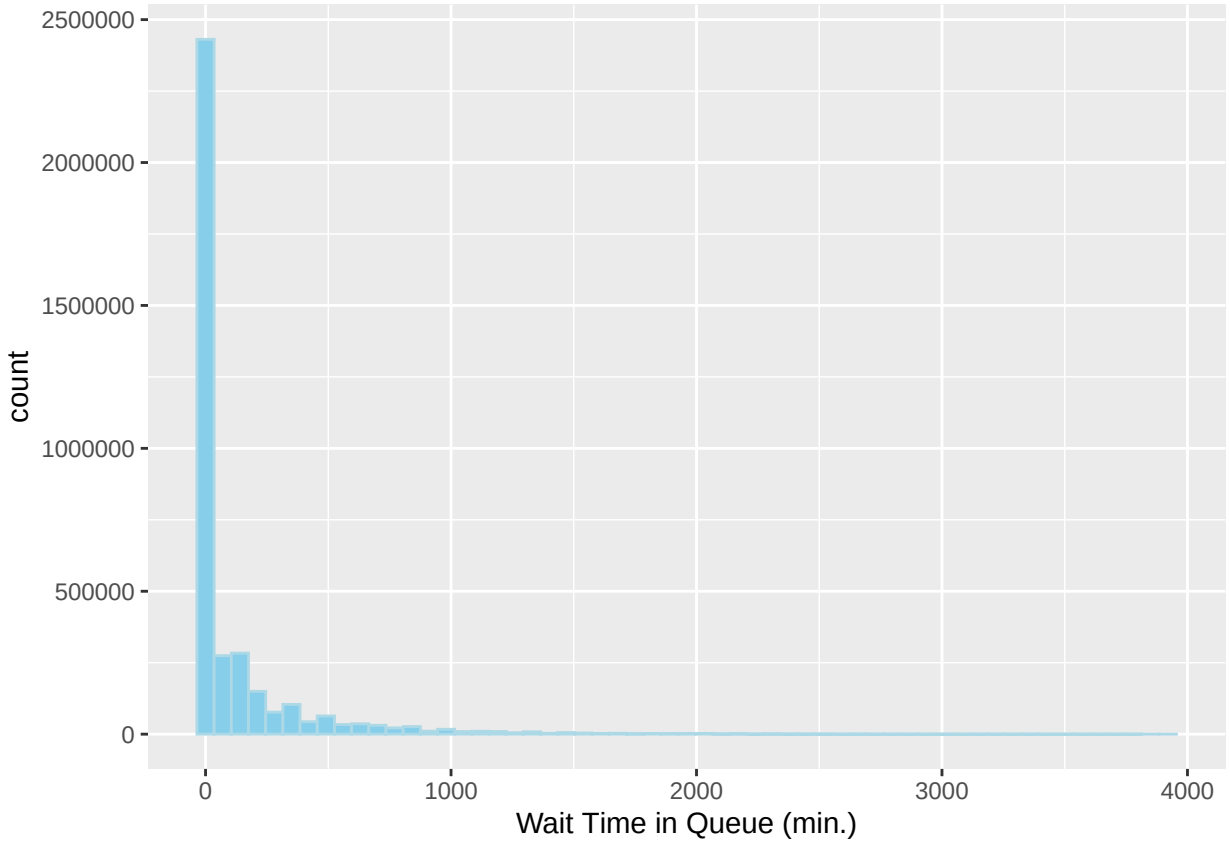
Description	Statistic
Total Jobs	4054871
GPU Jobs	498543
Unique Users	1640
Median Run Time (min.)	15
Median Wait in Queue (min.)	7
Median CPUs Requested	1
Maximum CPUs Requested	720
Mean Nodes Allocated	1
Median Nodes Allocated	1
Maximum Nodes Allocated	32
Median GPUs Requested	1
Maximum GPUs Requested	10



3 Job Wait Times in Queue

The histogram below illustrates the distribution of wait times in the queue (i.e., the time between when a job is submitted, and when it begins running). As this distribution suggests, the majority of the jobs are waiting only briefly in the queue. The bulk of the distribution is centered near 0, but note also the log tail indicating that a small number of jobs waited a long time in the queue before they began to run.[1] The median wait time in the queue across all jobs is 6.65 minutes.

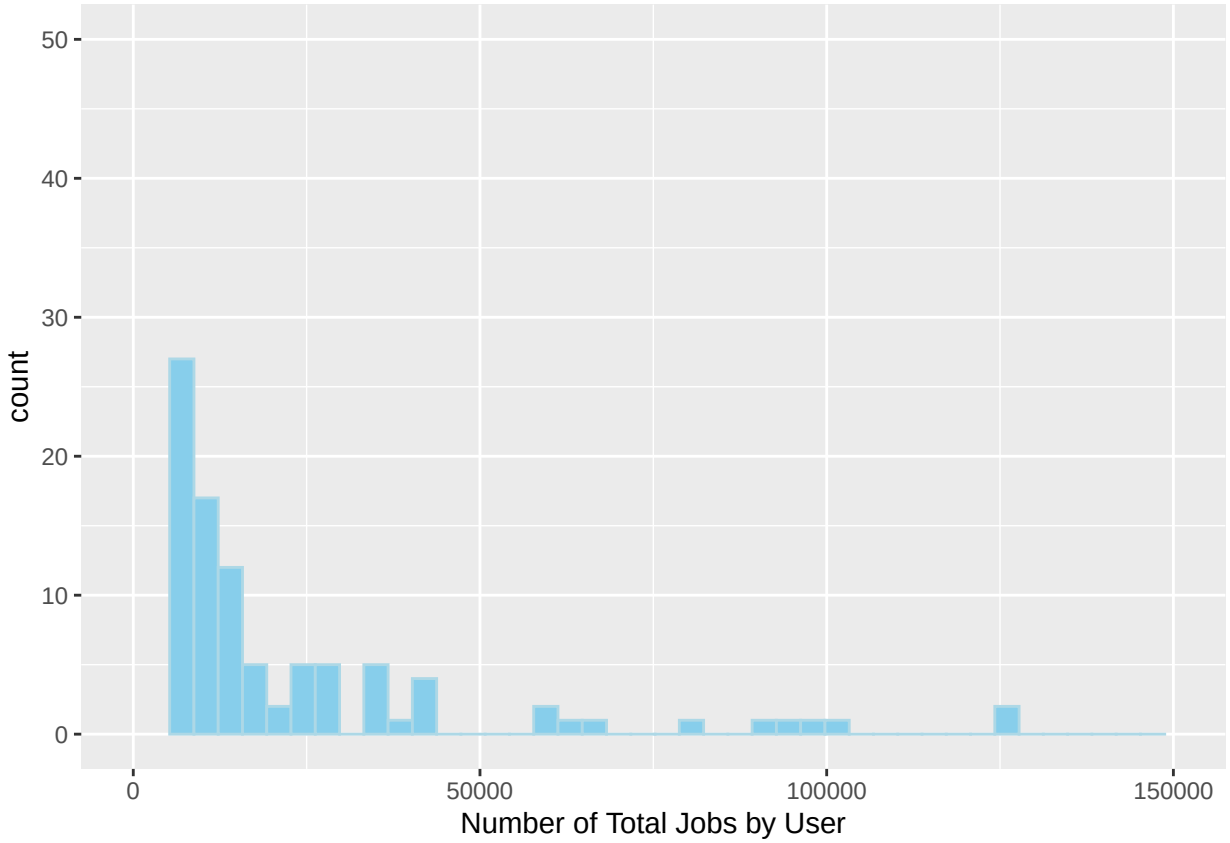
[1]The x-axis is truncated at 4000 minutes; a very small number of jobs waited longer than this before running



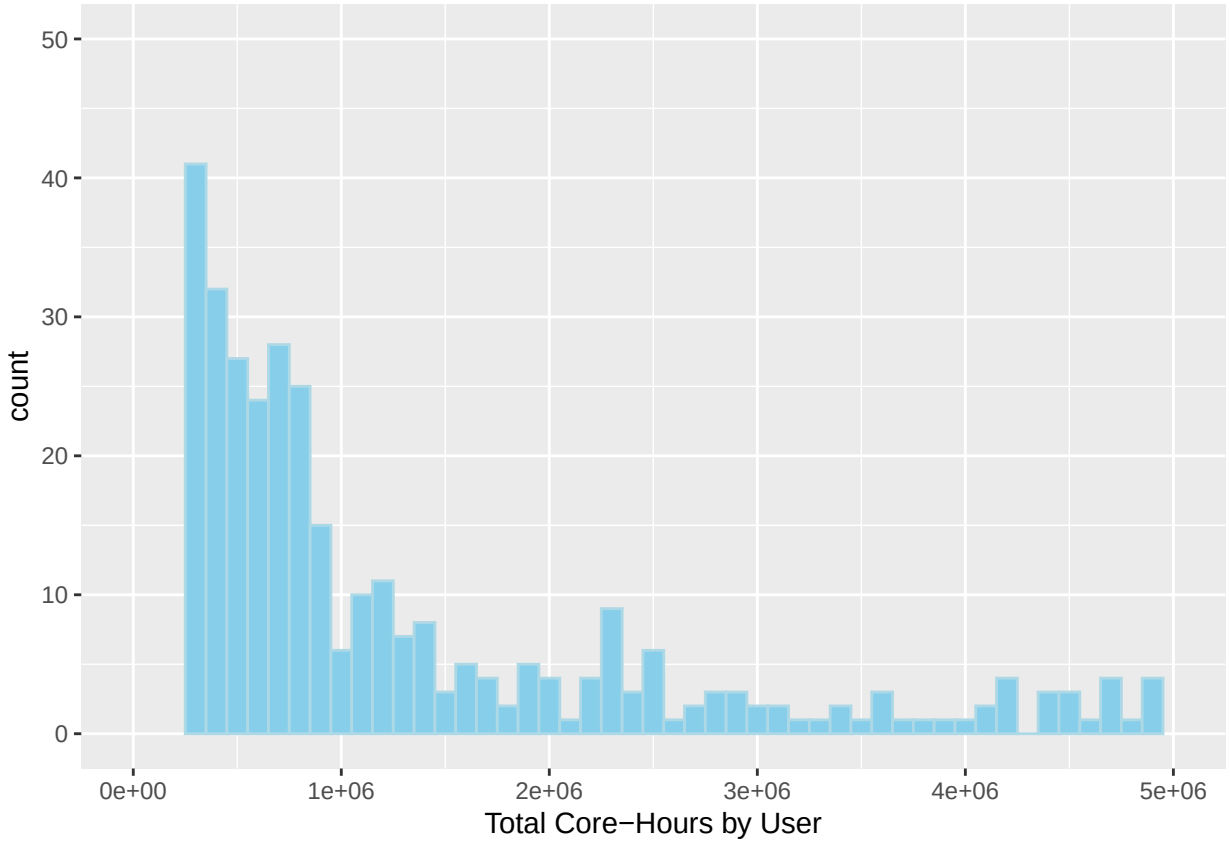
4 Jobs by User

While the above sections describe job-level statistics, the current section briefly discusses some user-level usage statistics.

The histogram below indicates the distribution of number-of-jobs by user. As this plot illustrates, the overwhelming majority of users (i.e., 99.1%) ran fewer than 50000 jobs in the time interval from 2020-05-12 20:12:56 to 2022-10-31 07:41:37.

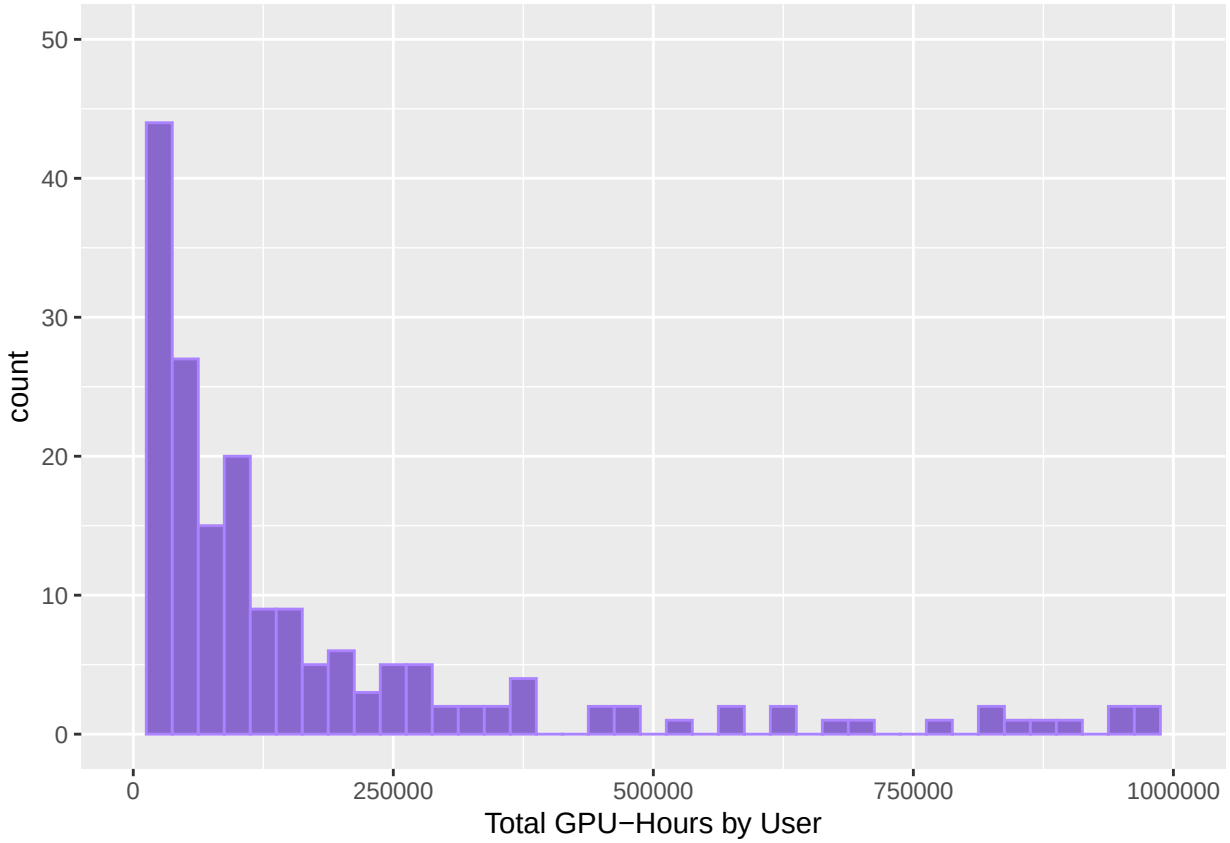

50
40
30
20
10
0
count
0
50000
100000
150000
Number of Total Jobs by User

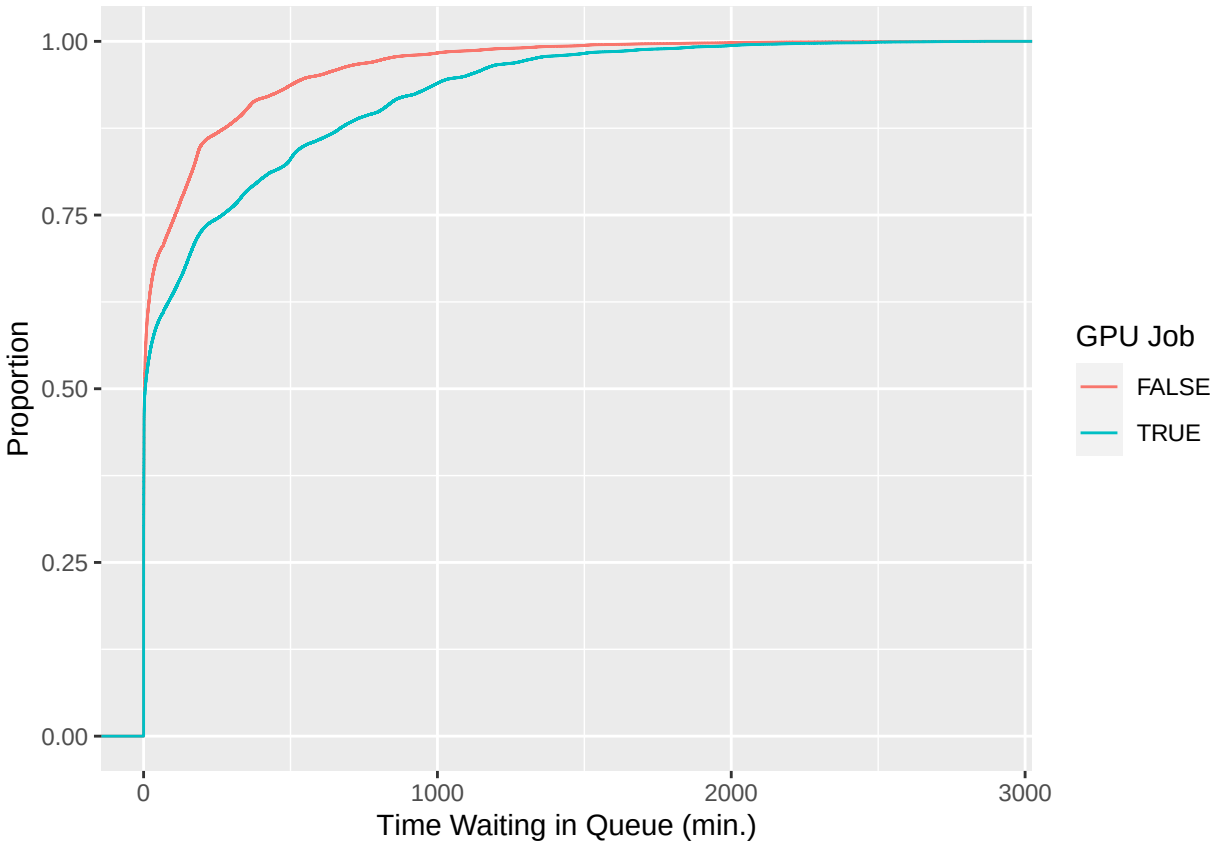
4.1 CPU Core-Hours by User



4.2 GPU Hours

We can also explore the usage of GPUs by user. In particular, the historgram below illustrates the distribution of total GPU-hours by user. Similar to CPU core-hours discussed above, a GPU-hour represents the number of GPUs used multiplied by the duration of the job in hours. So, for example, a job that uses 2 GPUs for a duration of 6 hours counts as 12 GPU-hours.


50
40
30
20
10
0
count
0
250000
500000
750000
1000000
Total GPU−Hours by User


1.00
0.75
0.50
0.25
0.00
Proportion
0
1000
2000
3000
Time Waiting in Queue (min.)
GPU Job
FALSE
TRUE