Hospital Simulation

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```
library(parallel)
library(simmer)
library(simmer.plot)
```

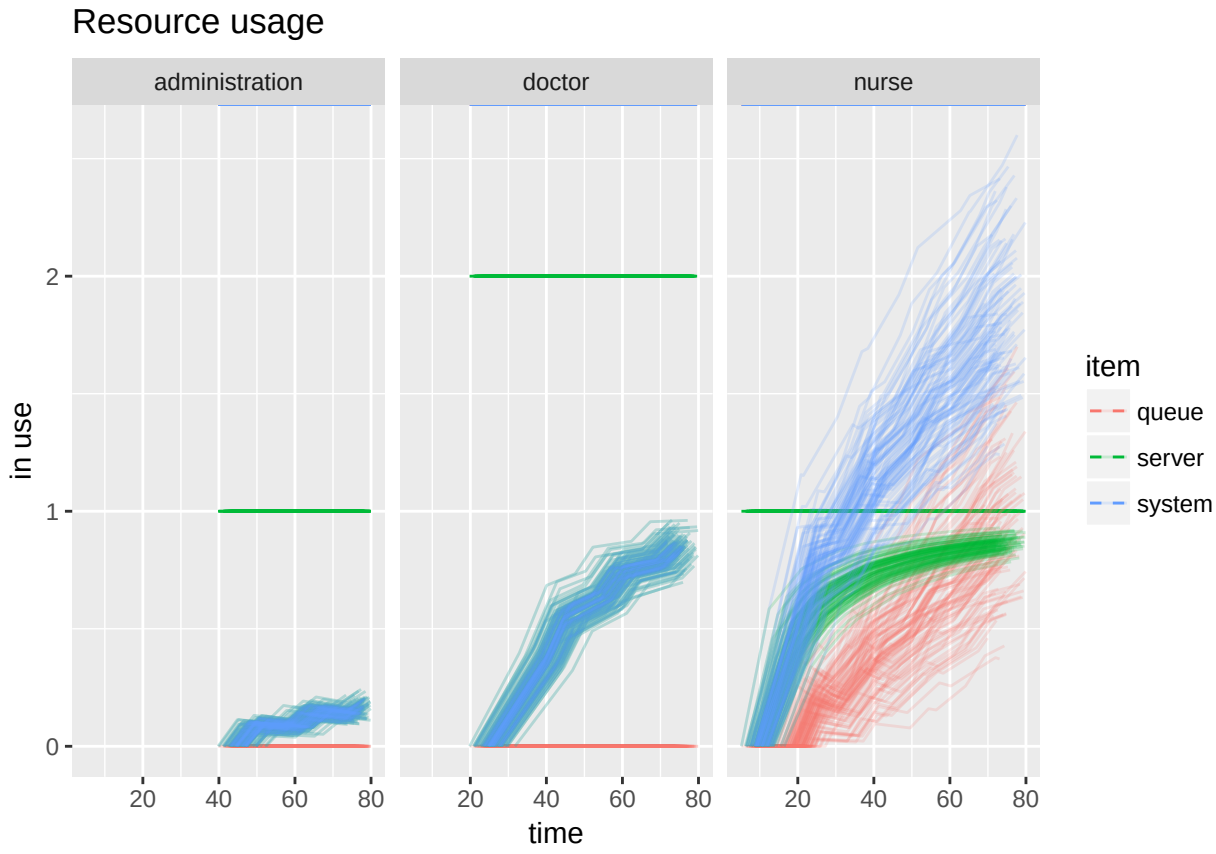
```
## Loading required package: ggplot2
```

```
SIM_TIME <- 80
```

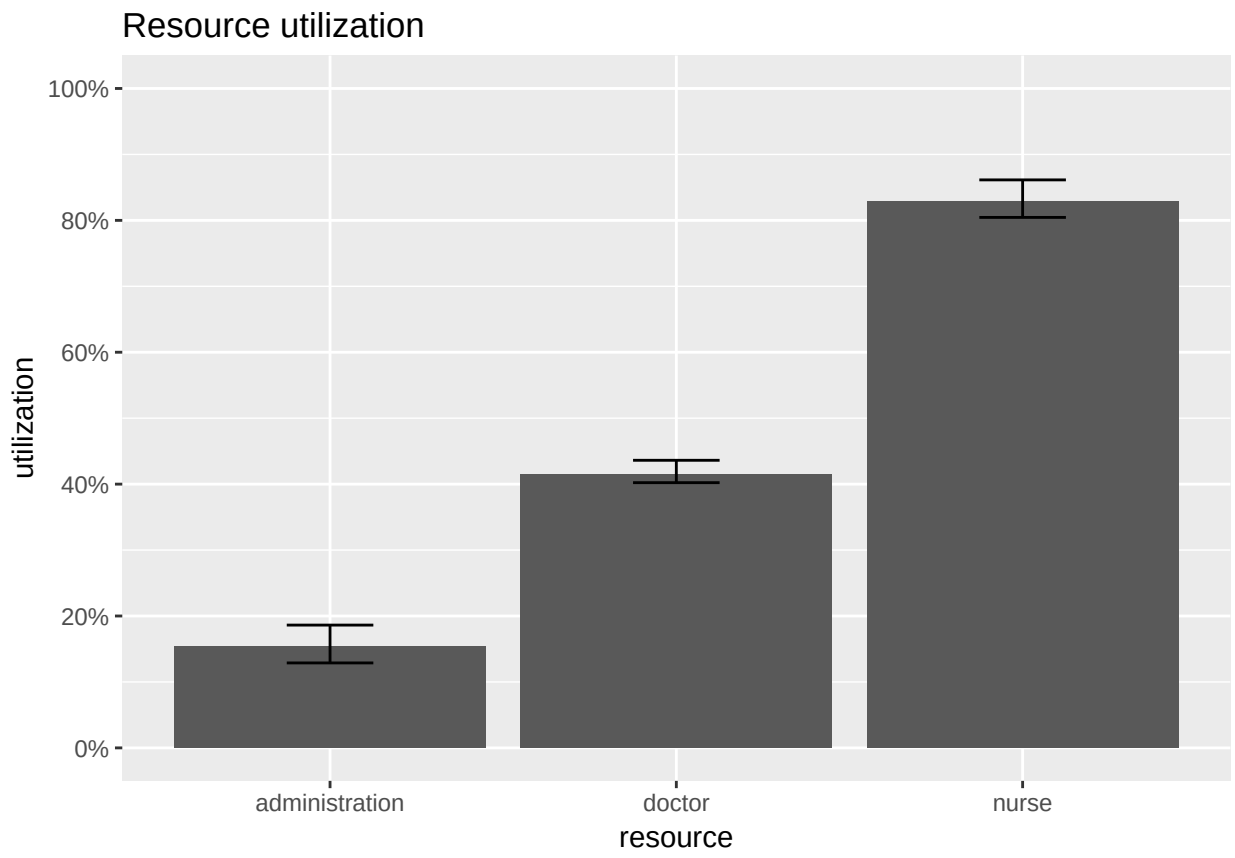
```
patient <- trajectory("patients' path") %>%
  ## add an intake activity
  seize("nurse", 1) %>%
  timeout(function() rnorm(1, 15)) %>%
  release("nurse", 1) %>%
  ## add a consultation activity
  seize("doctor", 1) %>%
  timeout(function() rnorm(1, 20)) %>%
  release("doctor", 1) %>%
  ## add a planning activity
  seize("administration", 1) %>%
  timeout(function() rnorm(1, 5)) %>%
  release("administration", 1)

envs <- mclapply(1:100, function(i) {
  simmer("SuperDuperSim") %>%
    add_resource("nurse", 1) %>%
    add_resource("doctor", 2) %>%
    add_resource("administration", 1) %>%
    add_generator("patient", patient, function() rnorm(1, 10, 2)) %>%
    run(SIM_TIME) %>%
    wrap()
})
```

Plot Things

```
plot(envs, what = "resources", metric = "usage", c("nurse", "doctor","administration"))
```

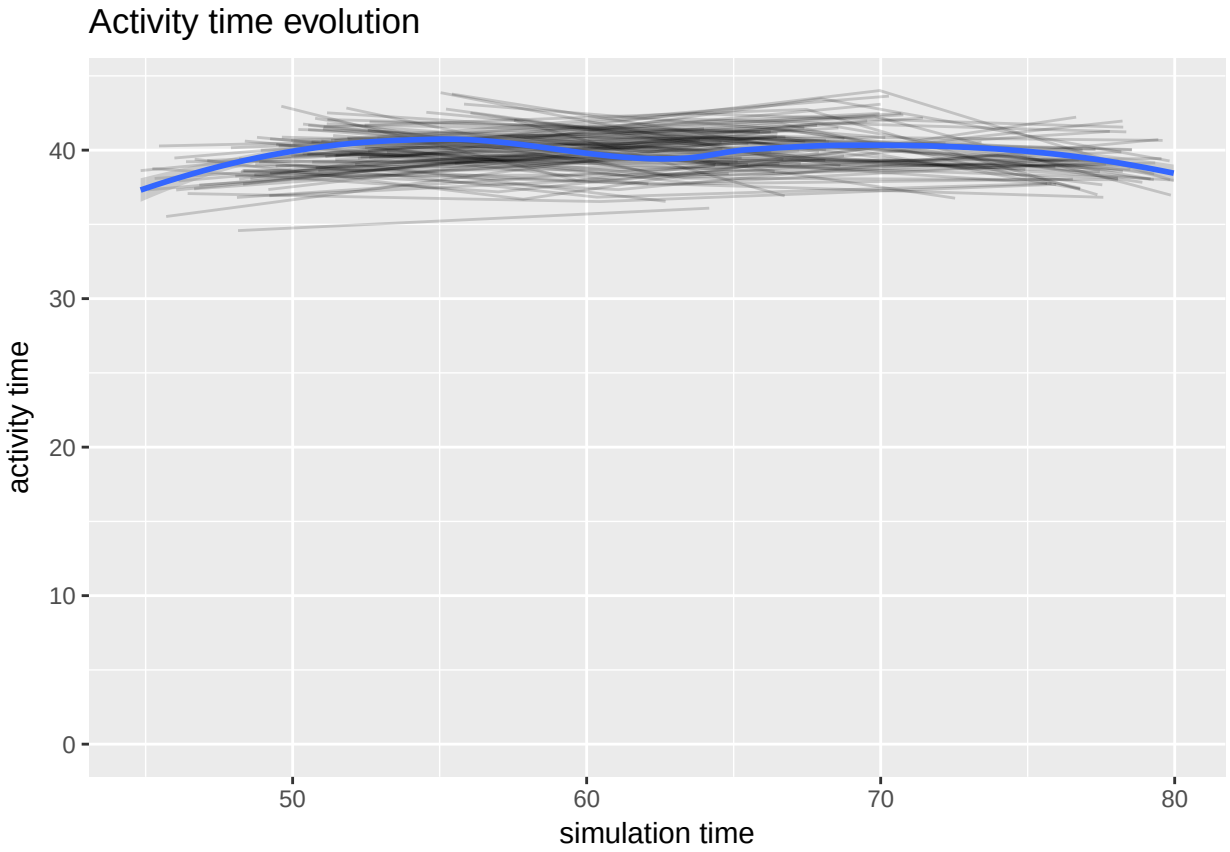



```
plot(envs, what = "resources", metric = "utilization", c("nurse", "doctor","administration"))
```



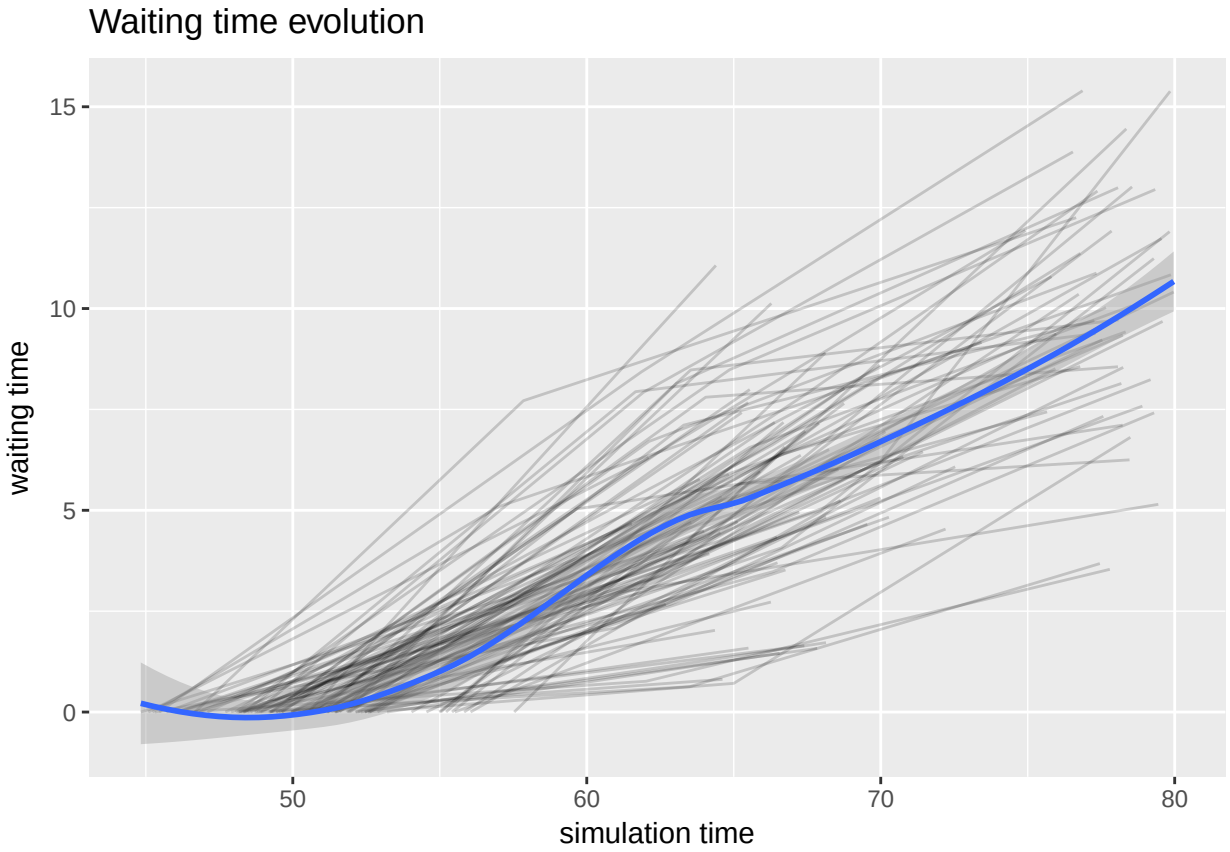

```
plot(envs, what = "arrivals", metric = "activity_time")
```

```
## `geom_smooth()` using method = 'loess'
```



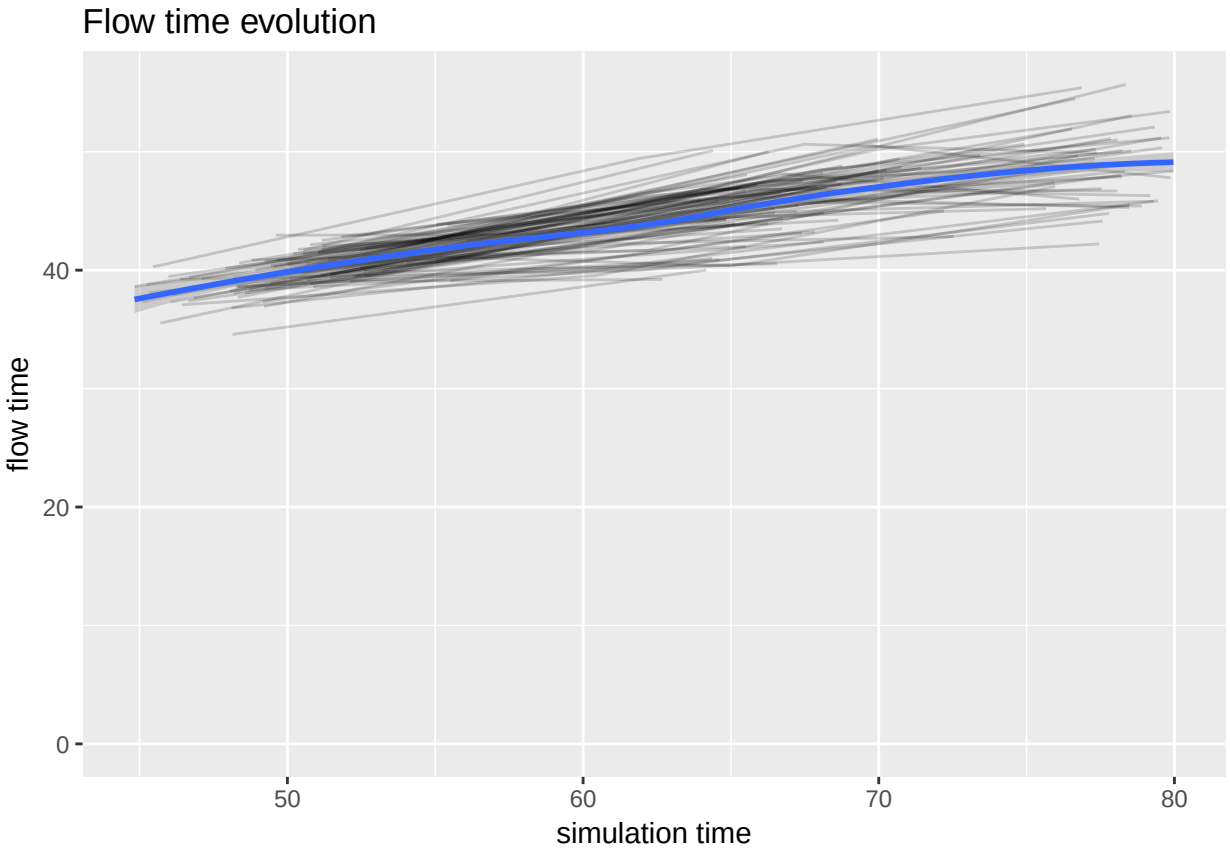

```
plot(envs, what = "arrivals", metric = "waiting_time")
```

```
## `geom_smooth()` using method = 'loess'
```




```
plot(envs, what = "arrivals", metric = "flow_time")
```

```
## `geom_smooth()` using method = 'loess'
```


Flow time evolution
flow time
40
20
0
50
60
70
80
simulation time