Introduction:
In the fast-paced pre-hospital settings, it’s difficult to estimate accurate bed availability of intensive care unit (ICU) of the receiving hospitals while approaching out-of-hospital cardiac arrest (OHCA) patients. It might be troublesome if a OHCA patient regaining signs of life is sent to a hospital without ICU bed. Previous work has not elucidate the problem. We aim to evaluate the influence of ICU bed capacity on outcome of OHCA patients.

Methods:
We conduct a retrospective cohort study focusing on the association between OHCA outcome and ICU bed availability. The OHCA data was acquired from a regional emergency operation center, and the ICU bed information was obtained from a regional surveillance system among 22 hospitals. Demographic data of OHCA patients, timestamp of OHCA event, and features of the receiving hospitals were collected. Primary outcome was survival to discharge. Secondary outcome was favorable neurological outcome defined as cerebral performance category (CPC) 1 or 2.

Results:
In a 6-year period, 5141 OHCA (12.2%, traumatic) patients were sent to the hospitals with available records of ICU bed availability. Overall survival (discharged alive) was 7.8%, and 1% achieved favorable neurological outcome. On hospital arrival, the survival rate of OHCA patient treated in the hospitals with available ICU capacity was 8.6%. 17 % of OHCA patients were sent to the hospital without ICU bed, and demonstrated a survival rate of 3.5% with a favorable neurological outcome of 1.2%. In the multivariate analysis, the first recorded cardiac rhythm, location of OHCA, and availability of ICU bed appeared to be significant risk factors of survival to discharge, but not observed in neurological outcome.

Conclusion:
In addition to cardiac rhythm and location of OHCA, we disclosed the major indicator of ICU capacity for an increased chance of survival. With regard to achieving better precision public health, we recommend ICU bed availability as an adjuvant dispatch tool for OHCA management.