# AEGIS Version 1.0: An open-source, spatial analytic solution

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**Is this the first time you have submitted your work to be displayed at any OHDSI Symposium?**

Yes _____  No___O___

## Introduction

We have been developing an open-source, spatial analytic solution called the Application for Epidemiological Geographic Information System (AEGIS)[1]. Based on the cohorts generated by ATLAS, this tool provides analysis and visualization in a variety of spatial statistical methods to monitor hot-spot areas where a disease is abnormally concentrated. One limitation of AEGIS has been a requirement for manual generation of a mapping table to link different location information and a geographic information system (GIS) database for each Common Data Model (CDM) database. We solved this limitation using the updated table structure of CDM version 6.0 and further enhanced the visualization and stability of AEGIS.

## Method

The updated location table structure in CDM version 6.0 contains latitude and longitude information. We used the point-in-polygon method[2] (mainly used in computational geometry) GIS database to determine whether it included the polygons of the administrative districts and to link the location information between the CDM and GIS databases. We applied the leaflet, the most widely used open source interactive map based on JavaScript, to the AEGIS background to provide an interactive disease map.

## Result

The 452 locations included in the CDM database of Ajou University School of Medicine were linked with 229 administrative districts included in the Database of Global Administrative Areas (GADM), without manually creating a mapping table, through the point-in-polygon method. As a result of applying the leaflet to the background map used in AEGIS, the output of the disease map provides interactive panning and zooming and clicking on the administrative polygon to supply information such as area name, target/outcome count, and risk of disease (Figure 1).

## Conclusion

In this software demonstration, we will highlight that AEGIS version 1.0 can be harmonized with the existing Observational Health Data Sciences and Informatics (OHDSI) ecosystem to perform disease mapping. We believe that findings from AEGIS can be used as a tool to study the health effects of patients and potential risk factors, or to establish new hypotheses. To generate better evidence of the effects of spatial or spatio-temporal factors on patients, we welcome collaborations with working groups or OHDSI collaborators.

**References**

1.  Jaehyeong C. Application for Epidemiological Geographic Information System (AEGIS): An open source spatial analysis tool based on CDM. https://github.com/ohdsi/aegis.
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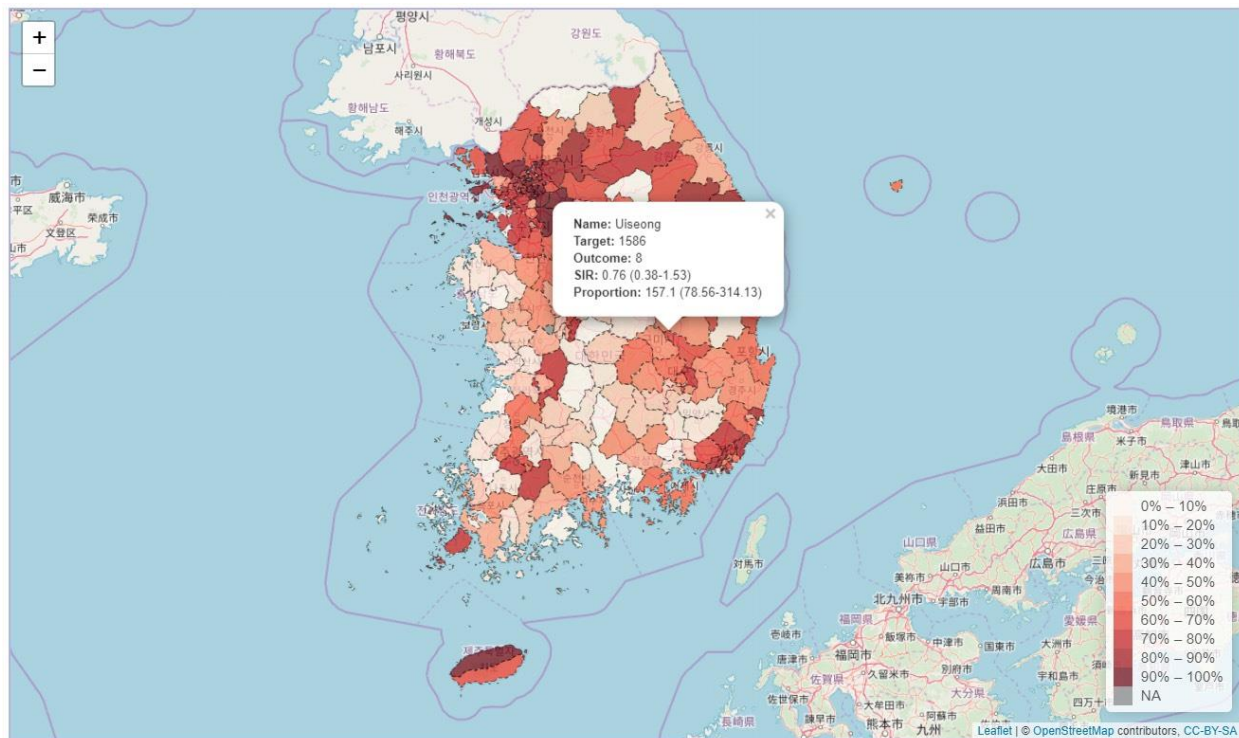
**Figure 1** Interactive disease map: supports panning and zooming, popup information (administrative name, target/outcome count, SIR, proportion) in the study area
SIR: Standardized Incidence Ratio