

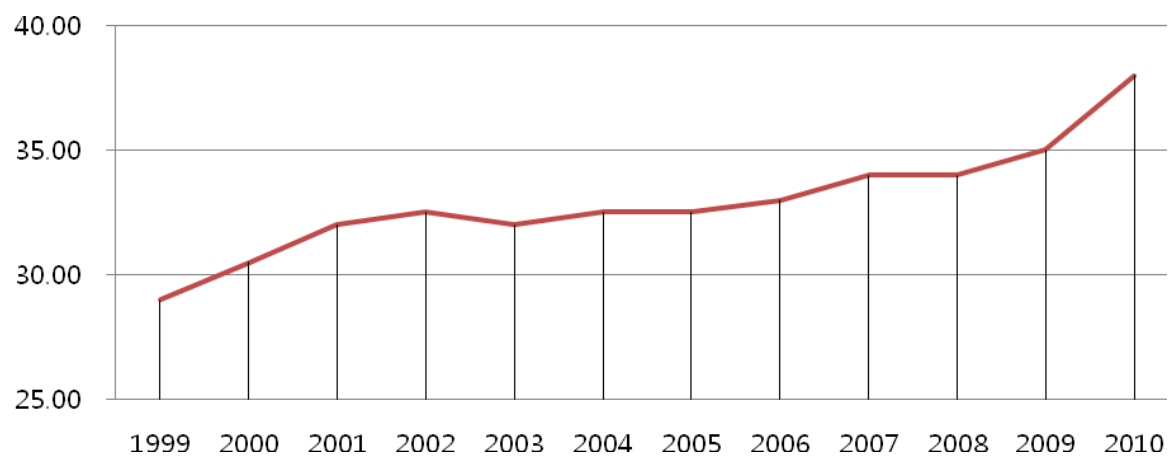
Supplementary figure 1. ALAN distribution pattern of South Korea over 12 years

(A) Average annual ALAN in South Korea increased every year between 1999 (ALAN: 37.8) and 2010 (ALAN: 37.8) showing a total increase of 1.26 fold.

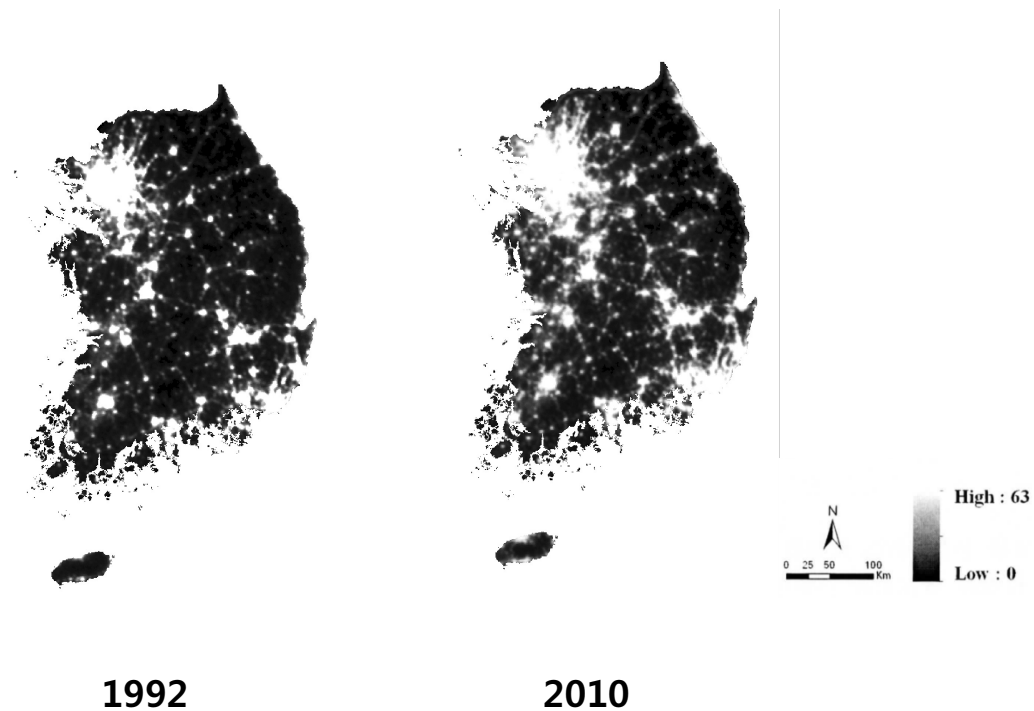
(B) Satellite pictures of ALAN in 1992 and 2010 in Korea (DMSP, 2010).

ALAN pictures were produced using visible light intensity data provided by the National Oceanic and Atmospheric Administration (NOAA) Satellite. The intensity of visible light ranges from 0 to 63 nanowatts/cm²/sr.

(A)



(B)

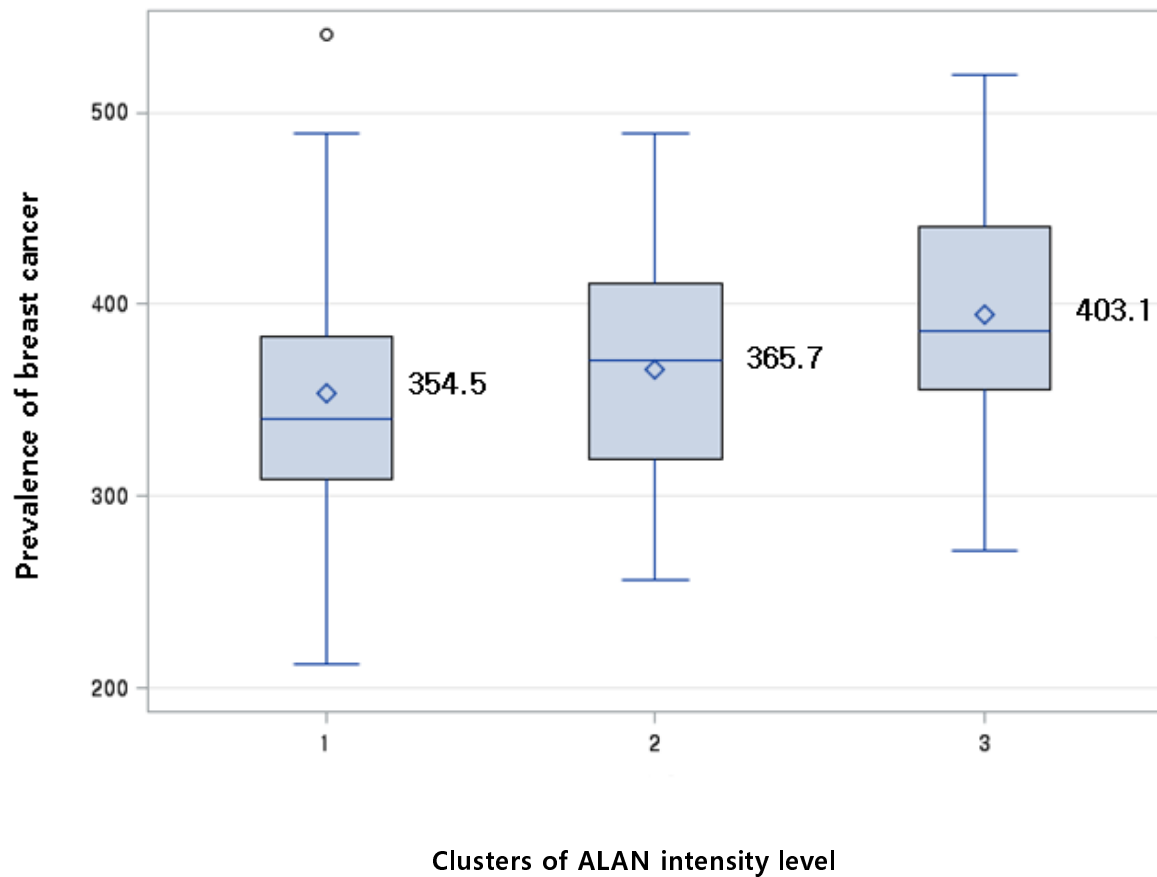


Supplementary figure 2. Analysis of ALAN intensity level clusters

We analyzed group of regions in 3 clusters of ALAN intensity levels in rural areas.

Result showed an 11.4% increased compared to the 1st cluster group and 3rd cluster group ($P>0.05$) and the average of prevalence of breast cancer is for each cluster groups:

1st is 354.5, 2nd is 365.7 and 3rd is 403.1 .



Supplementary table 1. Significant variables affecting the prevalence of breast cancer in each district by Poisson regression analysis in urban areas

	Prevalence of breast Cancer		
	Estimate	Relative Risk	C.I.
(Constant)	5.852	—	(5.774,5.931)
ALAN	0.0031	1.007	(0.0025,0.0037)
smoking	-0.0071	—	(-0.0131,0.0020)
Alcohol consumption	-0.0016	—	(-0.0058,0.0035)
obesity	0.0044	1.01	(0.0018,0.007)
CO	0.0979	—	(-0.0383,0.1774)
PM10	0.0007	—	(-0.0003,0.0017)
Urbanized parts	0.0019	1.004	(0.0015,0.0024)

ALAN: Light intensity at night from DMSP 2010 data (unit: nanowatts/cm2/sr).

Urbanized parts: The ratio of urbanized parts- the commerce, residence, industries or other urban businesses areas in each district.

C.I.: Credible interval. Bold font represent a p-value <0.05.