

# How to generate a population density map?

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- Given: population density  $d(\theta, \varphi)$  in people per km<sup>2</sup>  
 where  $\theta$  – longitude [0 ... 360 degree]  
 $\varphi$  – latitude [-90 ... 90 degree]
- **Devise an algorithm that generates random number pairs  $(\theta, \varphi)$  in accordance with the population density  $d(\theta, \varphi)$**
- You can generate random numbers by using . . .
  - . . . a function  $u(a, b)$  that generates random numbers uniformly distributed between  $a$  and  $b$
  - . . . a function  $n(\mu, \sigma)$  that generates Gaussian random numbers with mean  $\mu$  and variance  $\sigma^2$

