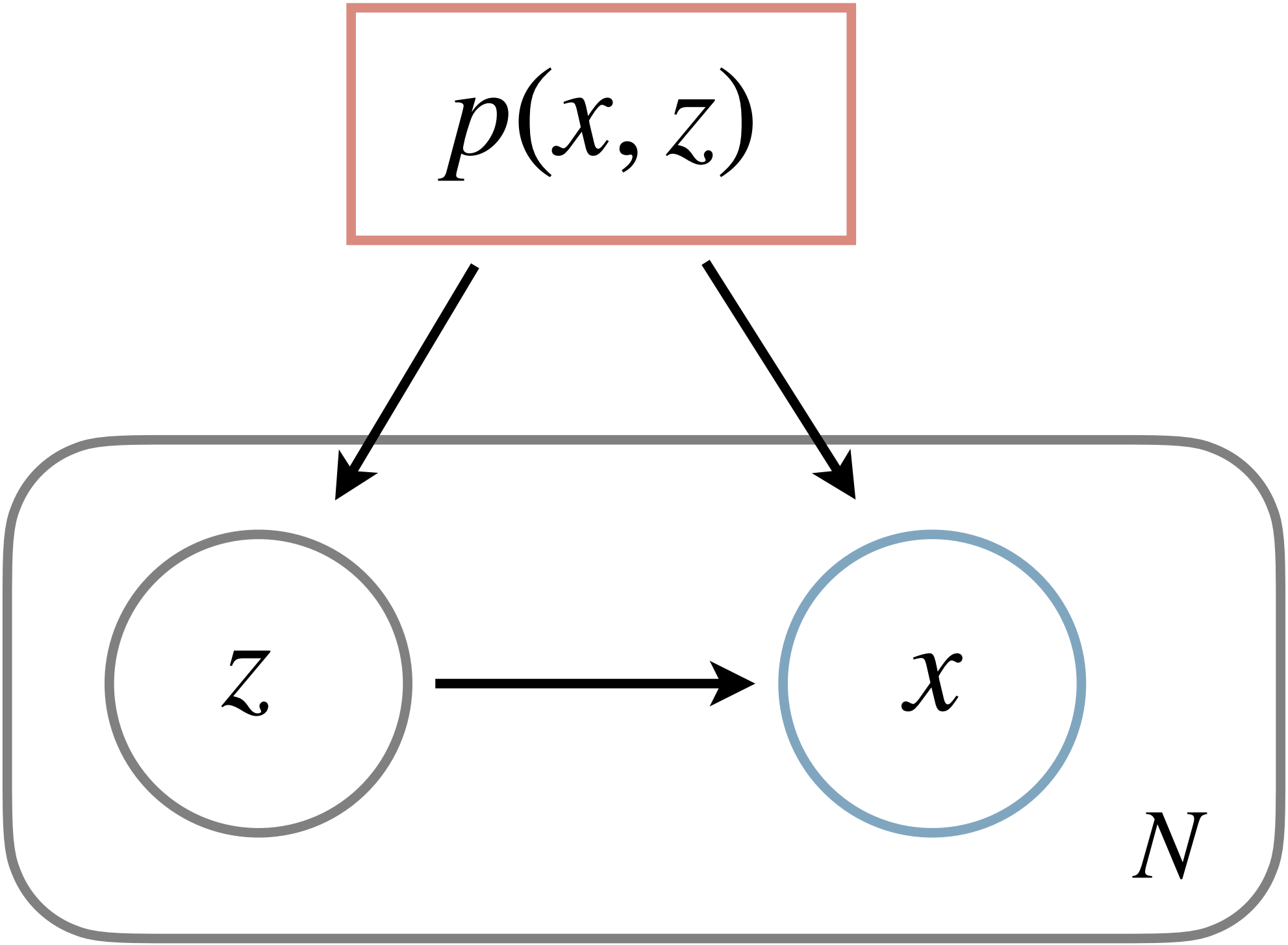
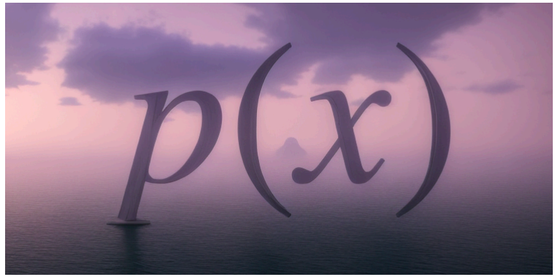
# Outline


$p(x, z)$
$z$
$x$
$N$

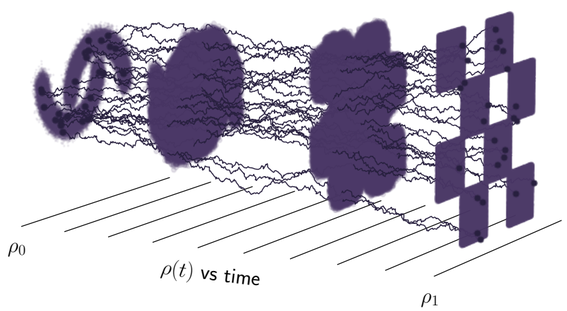
# Variational auto encoders

*Latent-variable modeling, and compression is all you need*



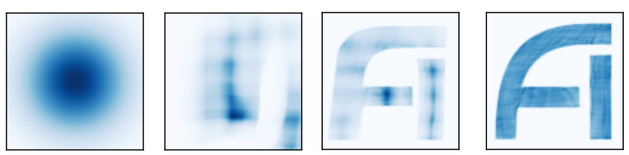

# Why (deep) generative modeling?

*What is it, and what can it do for you?*




## Diffusion models

*Models based on iterative refinement*



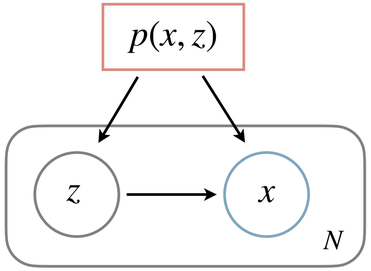
## Normalizing flows (and some other models)

*Invertible transformations*

# Outline

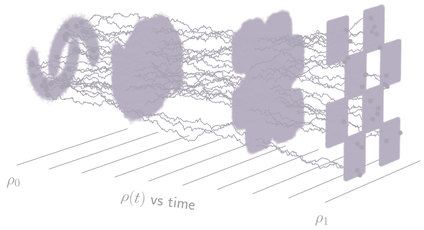

## Why (deep) generative modeling?

*What is it, and what can it do for you?*



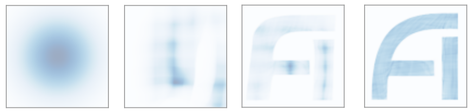

## Variational auto encoders

*Latent-variable modeling, and compression is all you need*




## Diffusion models

*Models based on iterative refinement*



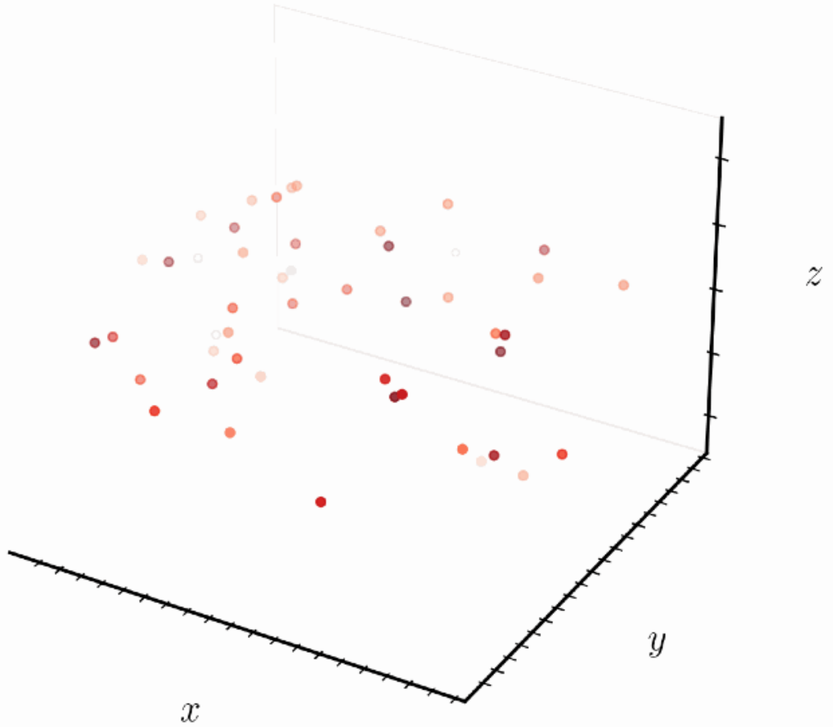
## Normalizing flows (and some other models)

*Invertible transformations*

# The pursuit of low-dimensional structure

## Real-world datasets often live in structured low-dimensional manifolds

"Difficult to model" $x$




"Easy to model" $z$