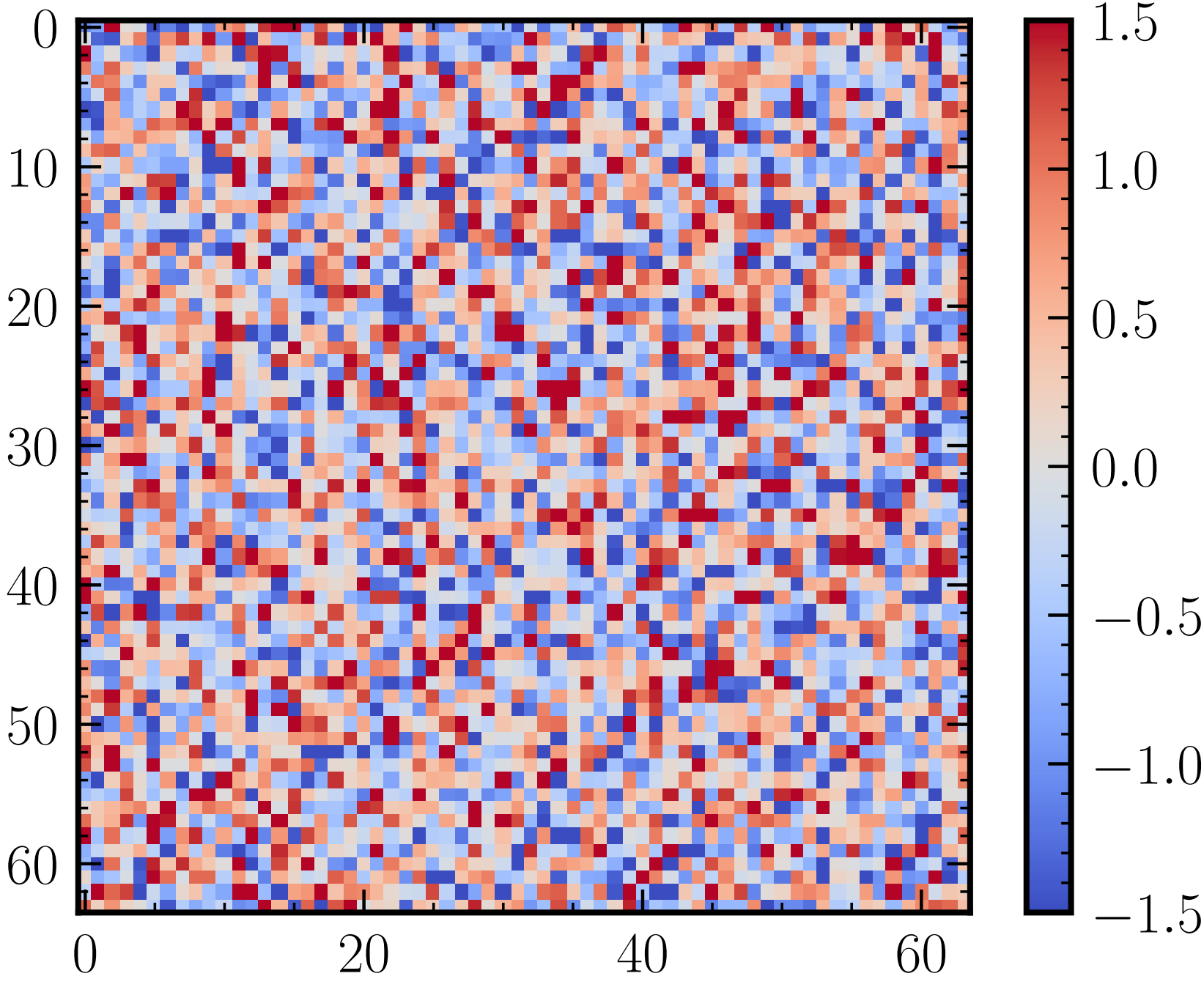
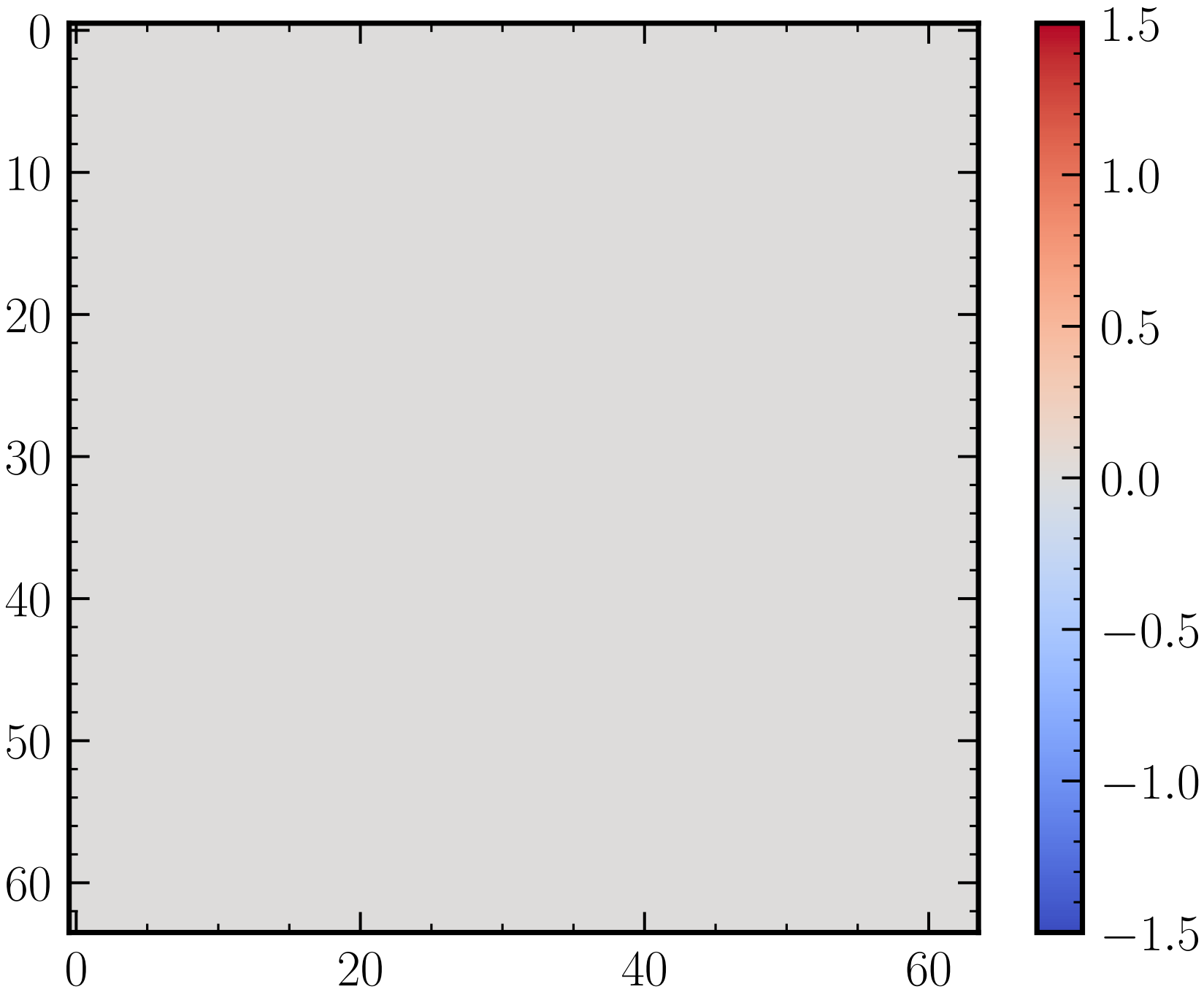
/66

10

# *Typicality* and *likelihood* of samples

Which of these samples have a higher likelihood under $\mathscr{L} = \mathcal{N}(0, \mathbb{I}_d)$?


0
10
20
30
40
50
60
0
20
40
60
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5


0
10
20
30
40
50
60
0
20
40
60
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5

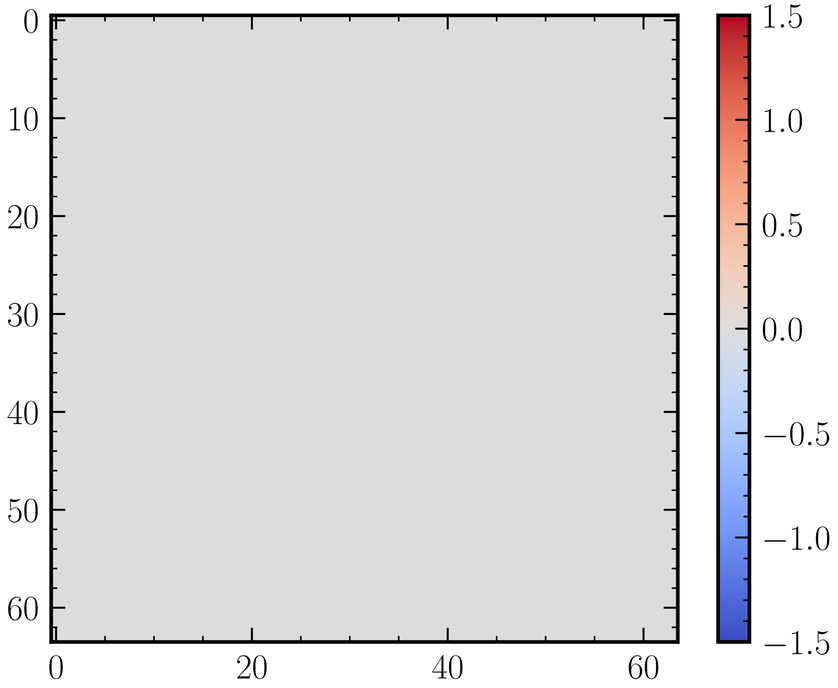
$\log \mathscr{L} \approx -0.92$ nats/dim

$\log \mathscr{L} \approx -1.43$ nats/dim

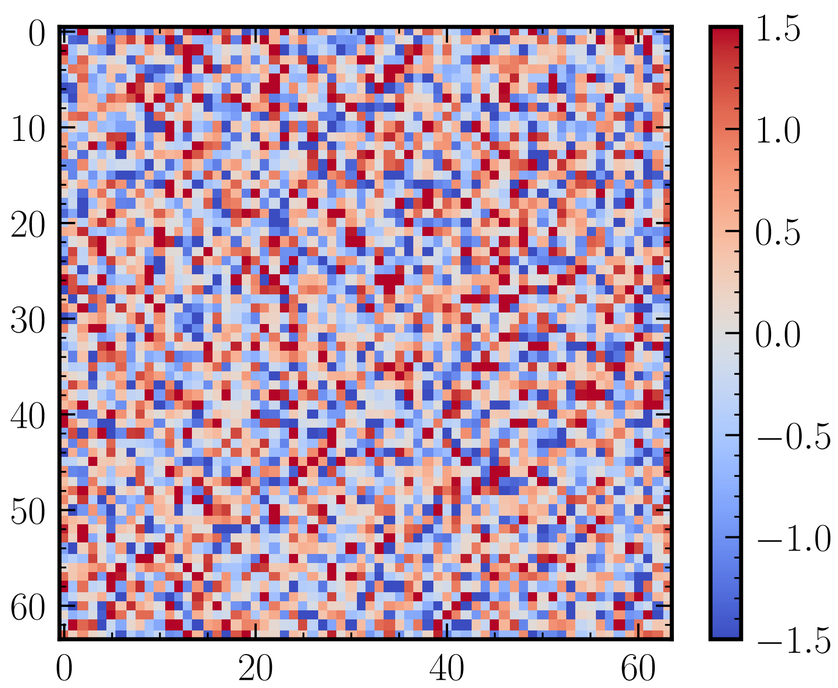
*Evaluation of high-dimensional distributions is challenging!*

# *Typicality* and *likelihood* of samples

Which of these samples have a higher likelihood under $\mathscr{L} = \mathcal{N}(0, \mathbb{I}_d)$?




$\log \mathscr{L} \approx -0.92$ nats/dim

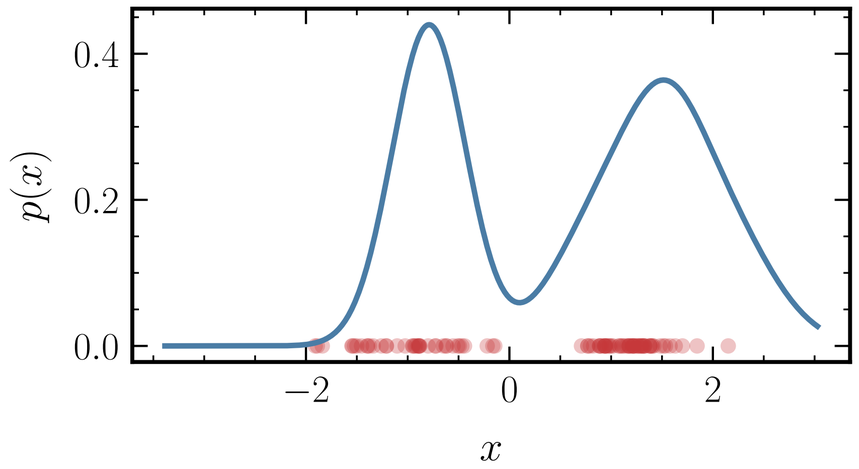



$\log \mathscr{L} \approx -1.43$ nats/dim

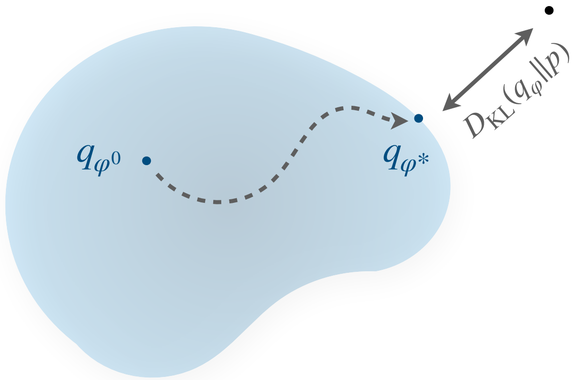
*Evaluation of high-dimensional distributions is challenging!*

# (Some) Ways of training deep generative models

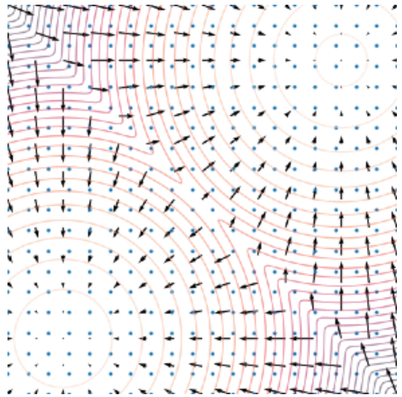
## Maximum-likelihood



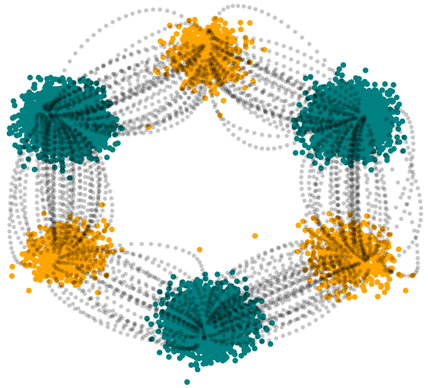

## Optimizing a bound on the likelihood




## Score-matching



## Optimal transport



## Adversarial training