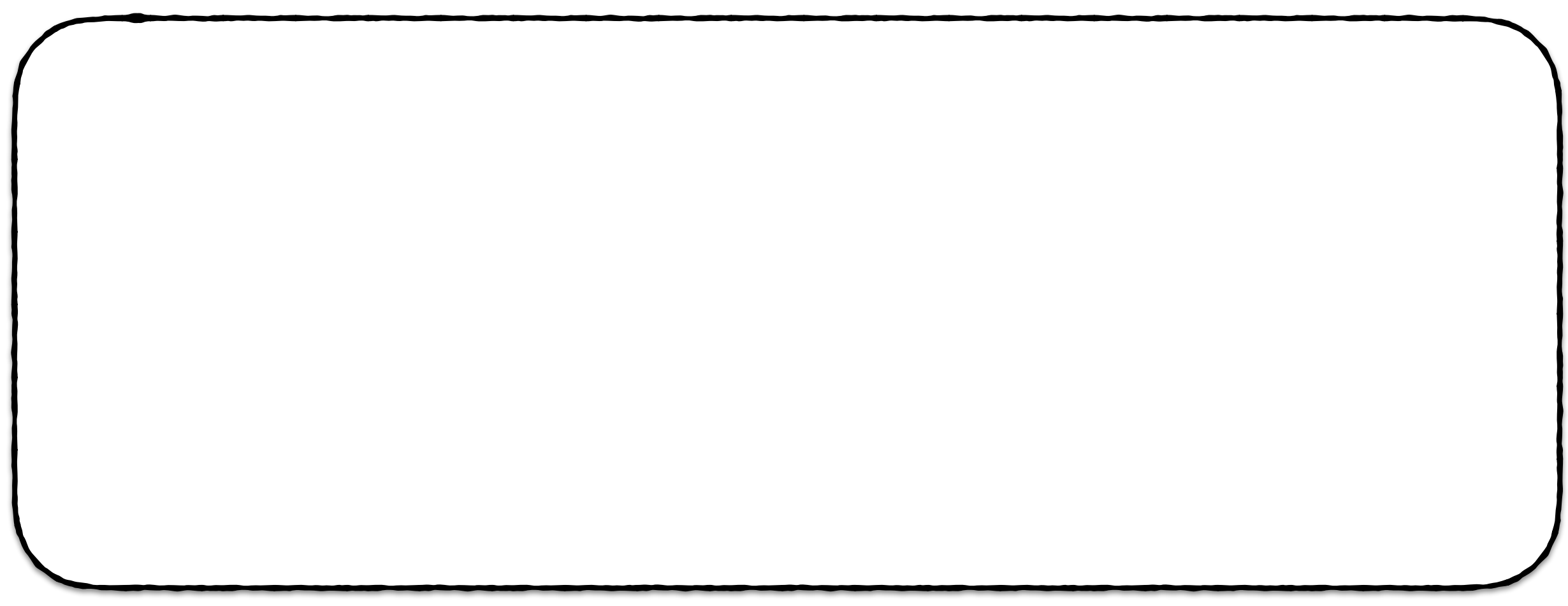




PINQ: Privacy Integrated Queries



Let  $M(\mathbf{A})$ : repeat until happy ...

1. Use the exp mech to pick a PINQ program  $\mathbf{p}$ ,
2. Evaluate  $\mathbf{p}$  on the the actual data  $\mathbf{A}$ . (call it  $\mathbf{m}$ ).
3. Update estimated distribution  $\mathbf{D}$ , using MCMC.

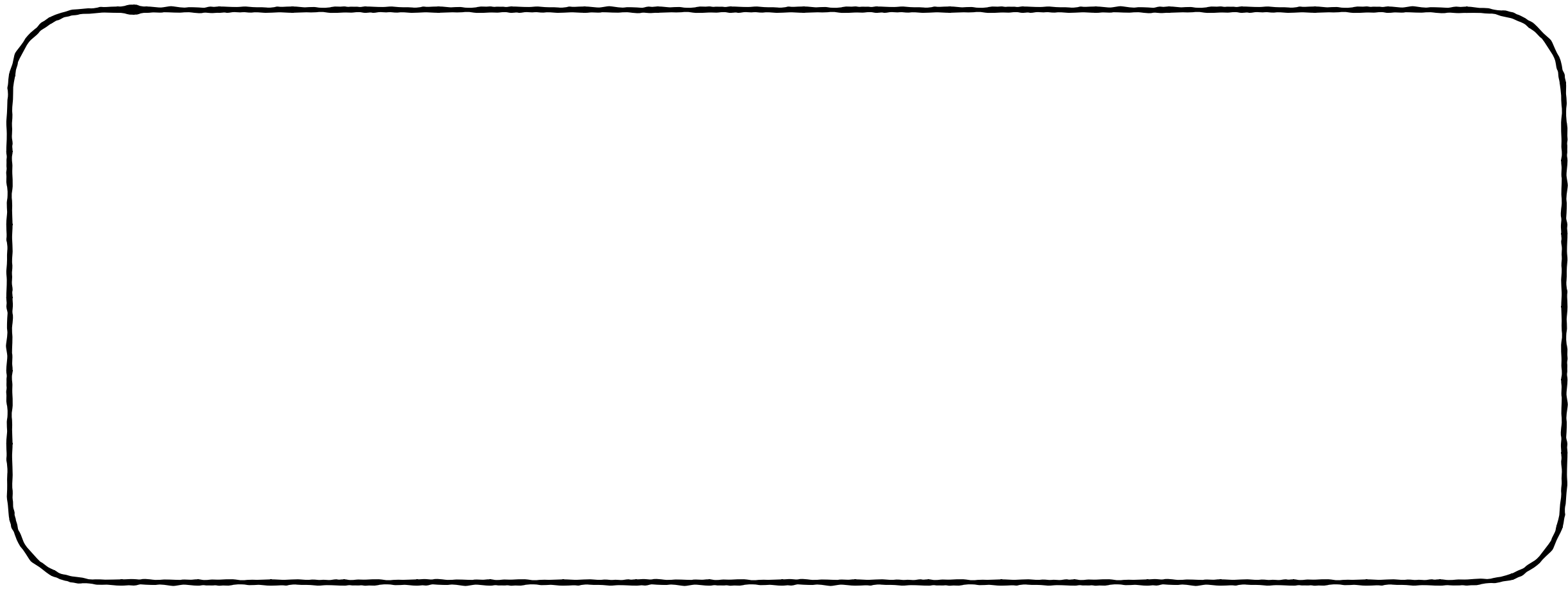
**MCMC: for a long time:**  
**choose a random  $D'$**   
**update  $D$  to  $D'$  with probability**  
 **$P(m \mid D') / P(m \mid D)$ .**

$$\text{score}(A, p) \equiv -\log \text{Pr}(p(A) \mid D).$$

**“Theorem”: works great, if you run for exponentially long.**







$$\text{score}(A, p) \equiv -\log \text{Pr}(p(A) | D).$$



**“Theorem”: works great, if you run for exponentially long.**

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