Parameter Estimation and Inferences in LDA

- Parameters can be estimated using ML estimator

$$(\hat{\vec{\alpha}}, \hat{\vec{\beta}}) = \arg\max_{\vec{\alpha}, \vec{\beta}} \log p(C \mid \vec{\alpha}, \vec{\beta})$$

How many parameters in LDA vs. PLSA?

- However, $\{\theta_j\}$ **and** $\{\pi_{d,j}\}$ must now be computed using posterior inference

$$p(\{\theta_j\}, \{\pi_{d,j}\} \mid C, \hat{\vec{\alpha}}, \hat{\vec{\beta}}) = ?$$

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  – Computationally intractable
  – Must resort to approximate inference
  – Many different inference methods are available