What's the probability of observing a word w?

Topic: θ_d

text 0.04
mining 0.035

$p(\theta_d)+(\theta_B)=1$

d

$P(\text{"the"})=p(\theta_d)p(\text{"the"}|\theta_d) + p(\theta_B)p(\text{"the"}|\theta_B)$
$= 0.5*0.000001+0.5*0.03$

=0.5

"the"?

the 0.000001

Topic
hoice

"text"?

$P(\text{"text"})=p(\theta_d)p(\text{"text"}|\theta_d) + p(\theta_B)\,p(\text{"text"}|\theta_B)$
$= 0.5*0.04+0.5*0.000006$

.5

we 0.01
food 0.003
…
text 0.000006
…

Background (topic) θ_B