Smoothing: Accommodating Zero Counts

	W1	W2
¼ PseudoSeg_1	0	0
¼ PseudoSeg_2	1	0
¼ PseudoSeg_3	0	1
¼ PseudoSeg_4	1	1

$$p(X_{w1} = 1) = \frac{\text{count(w1)} + 0.5}{N + 1}$$

$$p(X_{w2} = 1) = \frac{\text{count(w2)} + 0.5}{N + 1}$$

$$p(X_{w1} = 1, X_{w2} = 1) = \frac{\text{count(w1, w2)} + 0.25}{N + 1}$$

Segment_1	1	0
•••		
Segment_N	0	1

Smoothing: Add pseudo data so that no event has zero counts (pretend we observed extra data)

Actually observed data

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