

**Tonic and Topic:  
 A Study of Key Selection in American Hymnody**

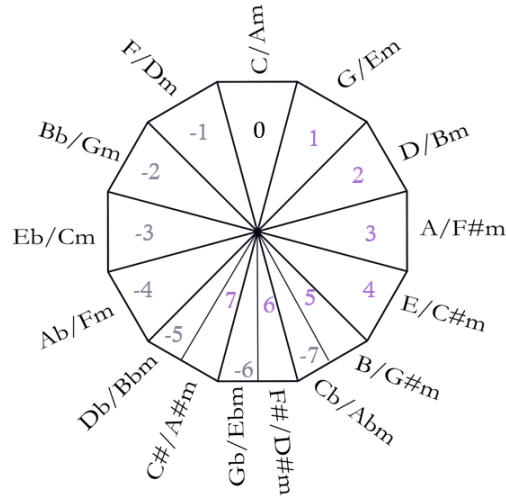


Fig. 1. “Sharpness” or “flatness” of keys

Dataset	Flat keys	Sharp keys	Neutral keys	Average “key”	Percentage of flat keys	Two-tailed test
Sampled	4606	4052	957	-0.3471	53.20%	$p < 0.0001, t = 5.954$
Baptist	3323	1806	582	-0.9426	64.79%	$p < 0.0001, t = 21.182$
Episcopal	3284	2928	724	-0.2958	52.87%	$p < 0.0001, t = 4.517$
Lutheran	7432	5867	1607	-0.4006	55.88%	$p < 0.0001, t = 13.571$
Methodist	5851	4118	1178	-0.5824	58.69%	$p < 0.0001, t = 17.537$

Table 1. Results for Hypothesis 1 (More hymns use a flat key signature than use a sharp key signature)

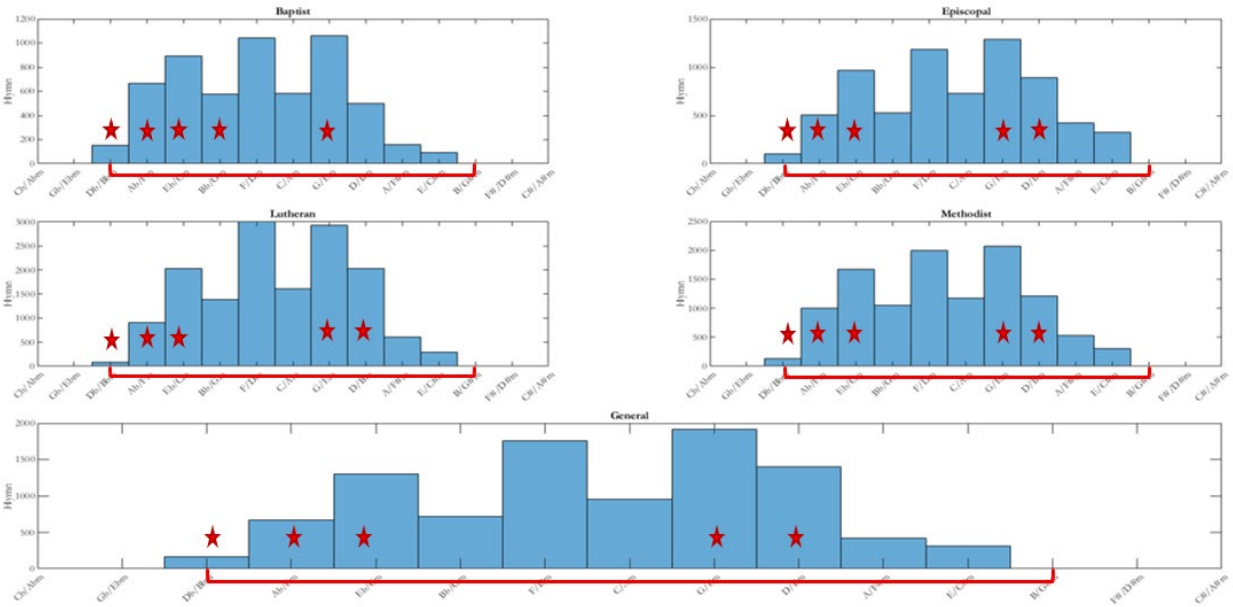
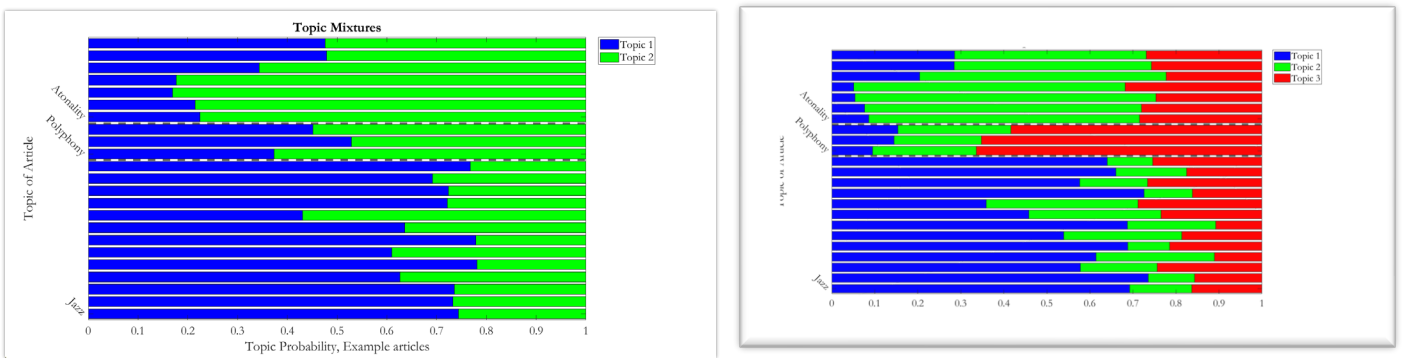


Fig. 2. Results for Hypothesis 2 (As accidentals increase, the likelihood of being in a flat key also increases)



Figs. 3, 4, 5. Topic clusters for 2, 3, and 6 topics on documents corresponding to jazz, counterpoint, and atonality



Figs. 6, 7. Topic mixtures for original documents using 2-3 topic clusters

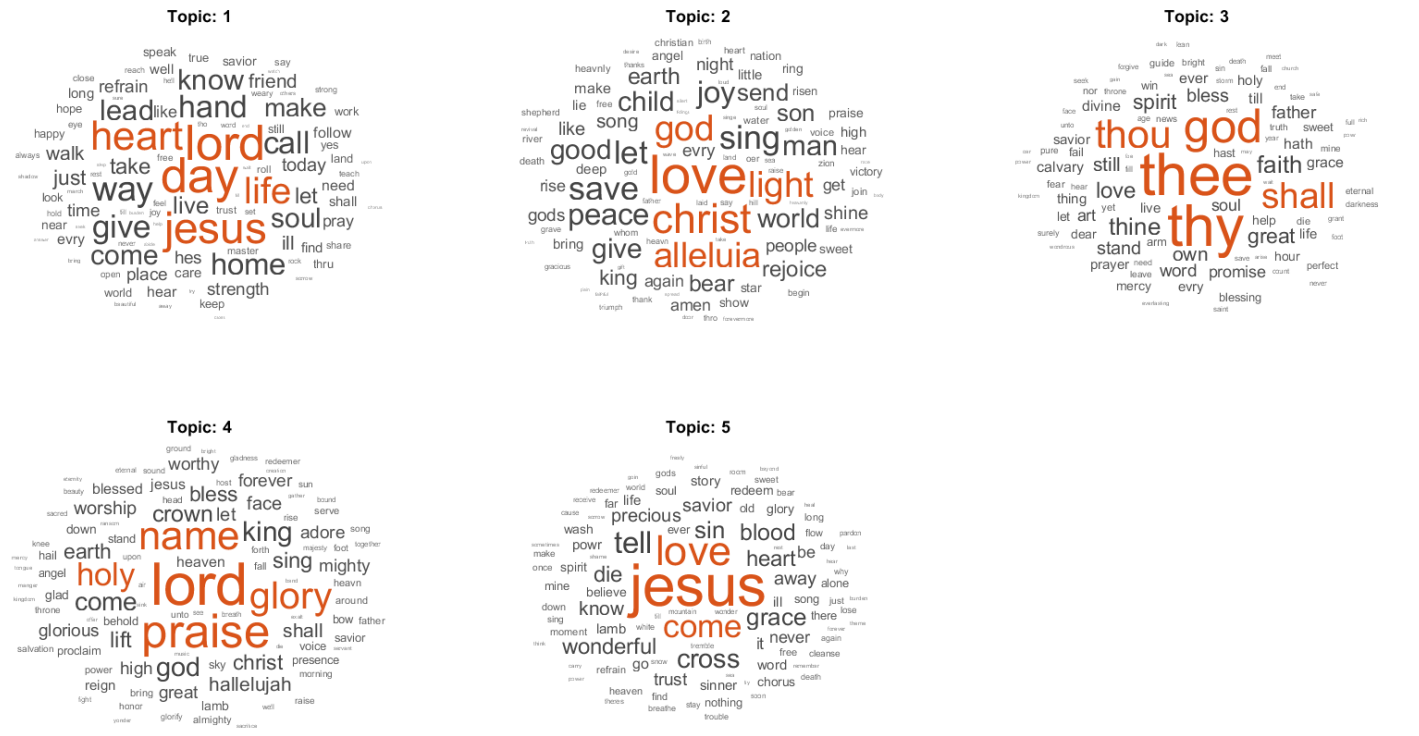


Fig 8. Topic clusters for Baptist hymns

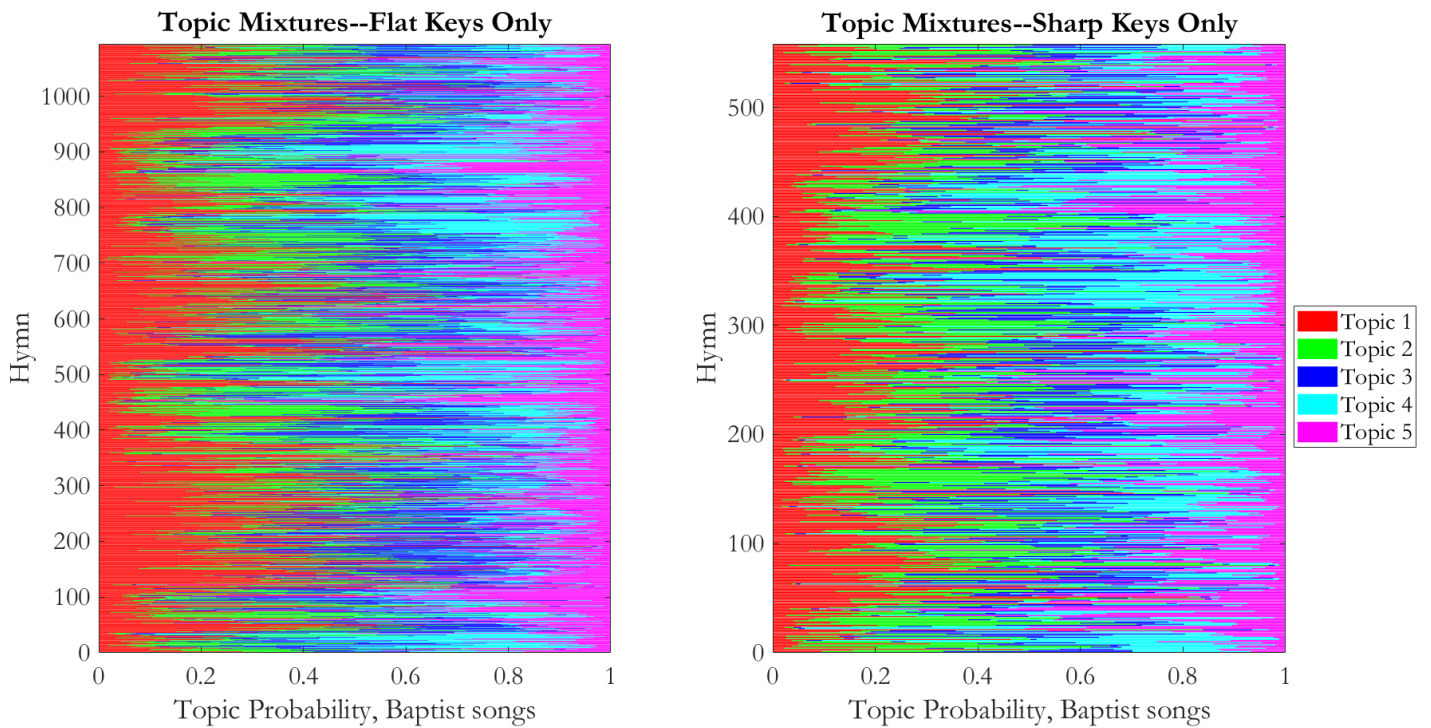


Fig. 9. Topic mixtures for sharp vs. flat keys for topics in Fig. 8.

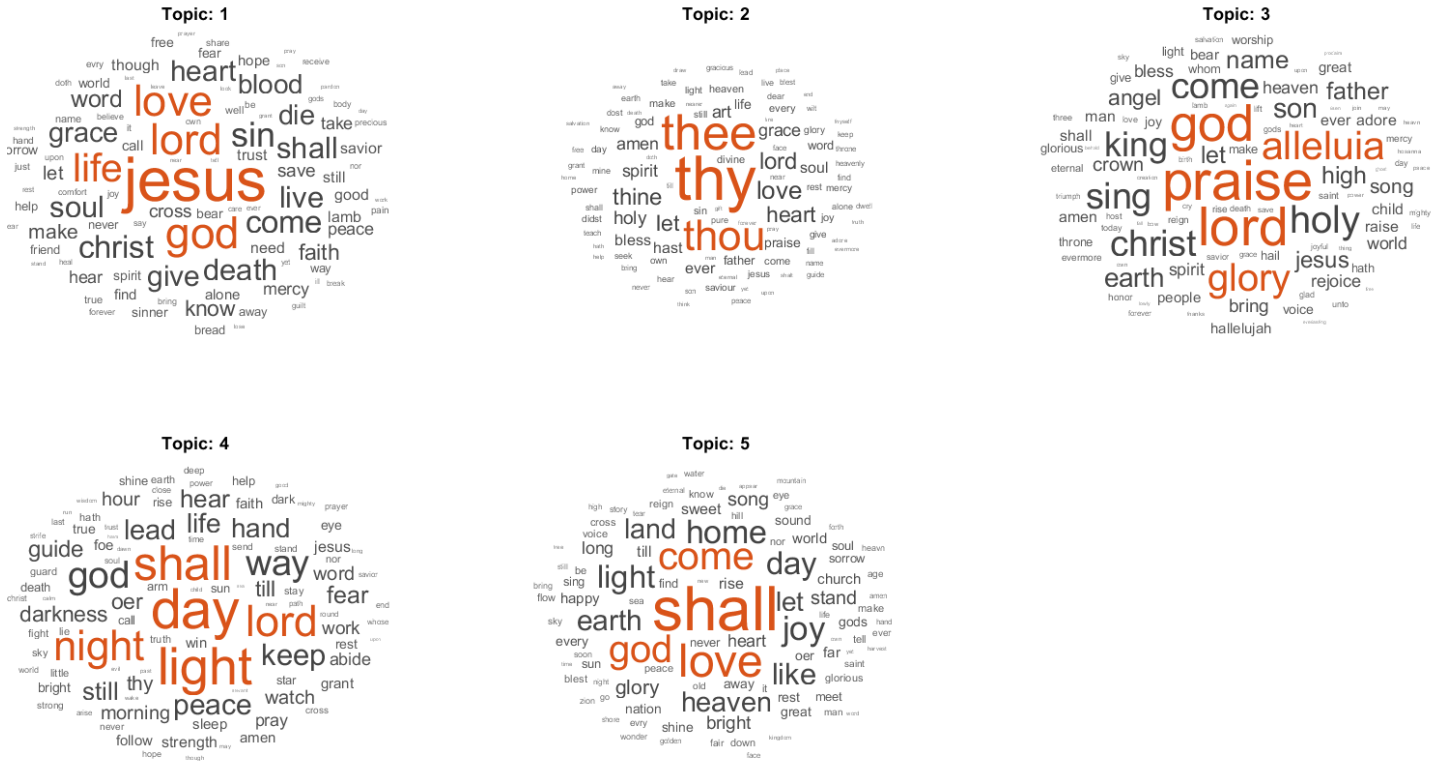


Fig 10. Topic clusters for combined hymns (Baptist, Episcopal, Lutheran, Methodist)

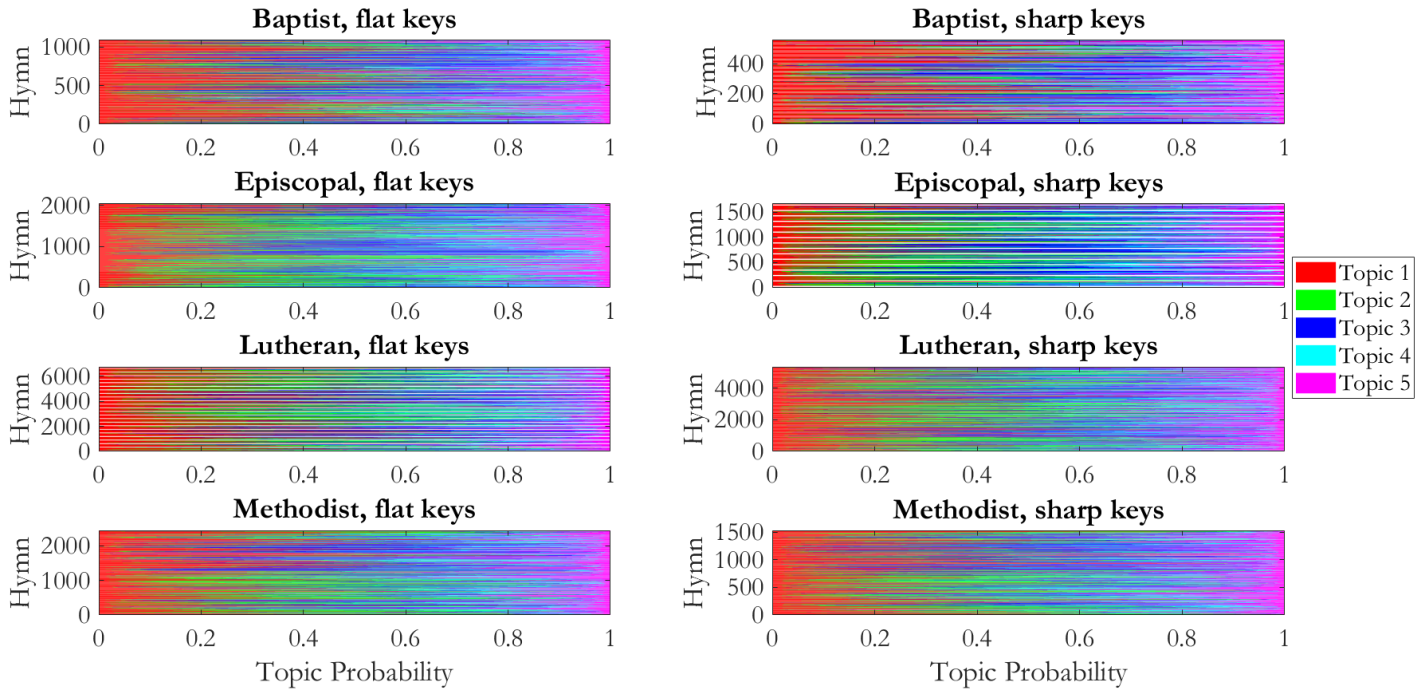


Fig. 11. Topic mixtures for sharp vs. flat keys for topics in Fig. 10.