

STATES AND CAPITALS IN COMBINATION

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In the November 2001 Word Ways I examined the transposability of the names of the capitals of the 50 US states. In the February and May 2002 issues, I extended the study to the longest transdeletion and the shortest transaddition of each capital name. For instance, for MONTGOMERY, the longest transdeletion was MOTORMEN, a deletion of two letters, and the shortest transaddition was MYRINGOTOME, an addition of one letter. To extend this research, I now combine the names of the capitals and the corresponding states, seeking the longest transdeletion. For example, the longest transdeletion for AUSTIN TEXAS appears to be SANITATES, requiring the deletion of two letters.

My initial research was carried out using the software package LeXpert, widely used by Scrabble players. LeXpert combines the vocabularies of the latest editions of the US and UK Scrabble bibles: Official Tournament and Club Word List (Merriam-Webster) and Official Scrabble Words (Chambers). LeXpert also contains many thousands of longer words, mostly culled from the 10th edition of Merriam-Webster's Collegiate Dictionary, though some have been sourced from a small number of other collegiate dictionaries.

The list has been ordered by the number of letters that need to be deleted to obtain the longest possible transdeletion, from two to ten letters.

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|-------------------------|------------------|---|
| Austin Texas | sanitates | 2 |
| Salem Oregon | sloganeer | 2 |
| Augusta Maine | umangites | 3 |
| Boise Idaho | hoodies | 3 |
| Dover Delaware | overlarded | 3 |
| Madison Wisconsin | nonadmissions | 3 |
| St Paul Minnesota | lamentations | 3 |
| Topeka Kansas | anapests | 3 |
| Albany New York | nonlawyer | 4 |
| Atlanta Georgia | alteration | 4 |
| Carson City Nevada | contrivances | 4 |
| Columbus Ohio | scholium | 4 |
| Denver Colorado | overlarded | 4 |
| Des Moines Iowa | admission | 4 |
| Helena Montana | nonmental | 4 |
| Lansing Michigan | misaligning | 4 |
| Lincoln Nebraska | cannonballs | 4 |
| Nashville Tennessee | heavenlinesses | 4 |
| Baton Rouge Louisiana | neurobiologist | 5 |
| Columbia South Carolina | collaborationism | 5 |
| Juneau Alaska | alkanes | 5 |
| Little Rock Arkansas | contralateral | 5 |
| Pierre South Dakota | autotrophies | 5 |

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|---------------------------------|----------------------|----|
| Sacramento California | reconfirmations | 5 |
| Charleston West Virginia | reinvestigations | 6 |
| Cheyenne Wyoming | hegemonic | 6 |
| Concord New Hampshire | comprehension | 6 |
| Hartford Connecticut | counteraction | 6 |
| Honolulu Hawaii | unhallow | 6 |
| Jefferson City Missouri | meritoriousness | 6 |
| Montgomery Alabama | amalgamator | 6 |
| Montpelier Vermont | improvement | 6 |
| Olympia Washington | inhalations | 6 |
| Phoenix Arizona | anorexia | 6 |
| Raleigh North Carolina | narratological | 6 |
| Richmond Virginia | inharmonic | 6 |
| Salt Lake City Utah | stealthily | 6 |
| Santa Fe New Mexico | emanations | 6 |
| Tallahassee Florida | stallholder | 6 |
| Annapolis Maryland | armadillos | 7 |
| Bismarck North Dakota | radiocarbons | 7 |
| Jackson Mississippi | pianissimos | 7 |
| Providence Rhode Island | cephaloridines | 7 |
| Springfield Illinois | disenrolling | 7 |
| Trenton New Jersey | sweetener | 7 |
| Boston Massachusetts | attachments | 8 |
| Frankfort Kentucky | fortunate | 8 |
| Harrisburg Pennsylvania | unavailingness | 8 |
| Washington District of Columbia | antifluoridationists | 8 |
| Oklahoma City Oklahoma | homothallic | 9 |
| Indianapolis Indiana | anaplasia | 10 |

The total number of letters deleted to achieve the 51 transdeletions is 275, an average of 5.4 letters per transdeletion. I am sure that many improvements are possible by venturing to larger vocabularies than that offered by LeXpert. Rigorous checking of the unabridged Merriam-Webster dictionaries and the Oxford English Dictionary would reveal many improvements. To give a flavour of what is possible, I located in both Webster's Second and the OED the word ALEMONGERS, which needs only a single O deleted from SALEM OREGON.

What makes good transdeletions difficult to find? In the above list, the greatest shortfalls are for OKLAHOMA CITY OKLAHOMA (9) and INDIANAPOLIS INDIANA (10). These are repeated names, suggesting that a shortage of single letters may be deleterious (these have only CITY and POLS, respectively). However, HONOLULU HAWAII has only one single-letter occurrence, W, yet it has a not-unreasonable shortfall of six with the transdeletion UNHALLOW.

I considered the possibility of searching for transadditions, too. What are the shortest transadditions of the 51 combinations of capital names combined with state names? Most of the combinations are rather long, and therefore unlikely to yield useful results. A search using LeXpert revealed only three transadditions:

| | | |
|--------------|-------------------|---|
| Austin Texas | transsexuality | 3 |
| Salem Oregon | conglomerates | 2 |
| Boise Idaho | bacteriorhodopsin | 7 |