

DENSER YET, AND YET LESS DENSE

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This article concerns words of high and low density, ie a large or small letter sum with respect to the number of letters. A recent effort by Susan Thorpe (*Lighter and Heavier*, *Word Ways*, August 2003), also details previous work. She (deliberately, one supposes) omitted words, variously sanctioned by the OED and the *Palindromicon*, of length 5 or more, consisting solely of a repeated letter: I follow her in not using about 24 examples of repeated letters A, X, and Z. She also seemed to impose a restriction to single words, hyphenated or not: the result is that the majority of her examples are medical words or place names. I have before commented on multiple-word place names. Great Yarmouth, near which I lived, is a very long way from Yarmouth. It should not be disqualified. Similarly, Newcastle (Shropshire), Newcastle upon Tyne (Tyne & Wear), or Newcastle-under-Lyme (Staffs) should all have equal rights, regardless of spaces or hyphens.

The examples below are the extreme cases I found for each length of word, plus some other examples of more familiar types (English, single-word, solid, etc). The examples are drawn from over 3500 equalling or improving upon her examples: thus, for length 25, I found about 130 examples heavier than hers. A few examples both improve upon hers and meet her inferred restrictions. Finally, I go beyond the previous 31-letter limit to 51, selecting from over 3700 examples, then giving just a few to 63.

These examples therefore act as an update to, and extension of, Susan's summary list (with a correction to her weight of length 5, from 152 to 127). The entries give number of letters, Susan's weight (if length less than 31), then my examples.

The word LIGHT, at 56, is appropriately lighter than HEAVY, at 61; but LIGHTER, at 79, weighs more than HEAVIER, at 68, (and similarly for LIGHTEST/HEAVIEST).

Most Dense words

3	75	77	zyz (Palindromicon)
		76	yzy (O)
11	220	228	Rodnik Ul'tszuytyyn -bulak, Mongolia, 47°16, 110°15
12	242	250	[Mr] Zzyzbyzynsky, <i>New Yorker</i> , 15 Mar. 1968
13	243	272	Yurty Kyzurovy, Russia, 58°27, 84°05
		249	topsy-turvyist (O topsy-turvy D)
		246	instytutyonys (O wipe 6d, 1538q)
16	284	299	Yusun Tszuyl Somon, Mongolia, 46°25, 103°50
17	297	323	Vysokovtsy Vtoryye, Russia, 59°29, 51°36
		305	bizz—bizz—whizz—zizz (O zizz 1a, 1824q)
18	317	330	Poluostrov Vypuklyy, Russia, 71°26, 53°02
19	315	350	Ostrov Yuzhnyy Zayzar, Russia, 74°21, 85°02
20	341	369	Mys Yuzhnyy Gusinyy Nos, Russia, 71°28, 51°54
21	349	378	Sovkhoz Yuzhnoy Kul'tury, Russia, 43°24, 39°57
22	367	398	Poluostrov Yuryung-Tumus, Russia, 74°05, 111°15
23	374	408	Zaliv Zyuydostovyy Kultuk, Azerbaijan, 39°19, 49°18
		374	Westslope cutthroat trout (ITIS animal)
24	368	412	Poluostrov Russkiy Zavorot, Russia, 68°56, 53°50

- 384 Kozlov's pterygoneurum moss (ITIS plant)
- 384 2-(2-Butoxyethoxy)ethoxymethyl (O, under piperonyl)
- 25 369 422 Ostanovochnyy Punkt Yuzhnyy, Russia, 55°57, 94°50
- 392 3-hydroxy-4-methoxytoluquinone, (O fumigatin, 1967q)
- 384 Workers Revolutionary Party (Bloomsbury)
- 26 400 425 Ostanovochnyy Punkt Suvorovo, Moldova, 46°45, 29°28
- 414 5-hydroxy-2-hydroxymethyl-c-pyrone [c omitted, not chem. group, O kojic (acid)]
- 404 does your mother know you're out? (O mother 1g)
- 27 402 445 Troitskiy Pervyy Pervotroitsk, Russia, 55°05, 80°22
- 406 to put words into another's mouth (O mouth 3l)
- 28 408 463 Ostanovochnyy Punkt Dvortsovy, Russia, 44°36, 42°05
- 430 you're so sharp you'll cut yourself, (O sharp 3f)
- 415 colpocystoureterocystotomize (inferred, Dorland)
- 29 409 491 Pervyye Vybory v Verkhovnyy Sovet, Russia, 56°53, 121°04
- 434 colpocystoureterocystotomizes (inferred, Dorland)
- 427 3-(3-oxo-1-phenylbutyl)-4-hydroxycoumarin (O warfarin)
- 30 420 479 Stantsiya Voroshilov Ussuriyskiy, Russia, 43°47, 131°54
- 440 colpocystoureterocystotomizing (inferred, Dorland)
- 438 recurved bryoerythrophyllum moss (ITIS plant)
- 31 481 498 Ostanovochnyy Punkt Vzmor'ye-Novoye, Russia, 54°56, 20°01
- 32 506 Vozvyshennost' Ondomozerskiye Keyvy, Russia, 66°20, 38°13
- 459 tetrakis-hydroxymethyl~phosphonium (O tetrakis, 1963q)
- 451 pull oneself up by one's (own) bootstraps, (Chambers boot)
- 450 conjunctivodacryocystorhinostomy (books.md)
- 33 510 Stantsiya Pavelets Vtoroy Syzranskiy, 53°50, 39°13
- 472 1-isopropylamino-3-(1-naphthyloxy)-2-propanol (O propranolol)
- 469 [Stantsiya] Leningrad-Sortirovochnyy-Moskovskiy, Russia, 59°52, 30°26
- 458 one picture is worth ten thousand words (O picture 2k)
- 34 541 Svetyashchiy Znak Morzhovskiy Yuzhnyy, Russia, 66°40, 42°40
- 497 Isopropoxy-methyl-phosphoryl-flouride (as made in Newport, Indiana, O sarin)
- 495 Kung-shan-tu-lung-tsu-nu-tsu-tzu-chih-hsien, China, 27°41, 98°37
- 492 tryin' to scratch your ear with your elbow (Anne Bertram: *In a Pig's Eye, The Dictionary of Country Jawing*)
- 465 conjunctivodacryocystorhinostomize, from conjunctivo...stomy (books.md)
- 35 555 Ostanovochnyy Punkt Izvestkovyy Kar'yer, Russia, 53°06, 103°19
- 484 conjunctivodacryocystorhinostomized (from conjunctivo...ostomy, books.md)
- 482 1:8-dihydroxy-3-methoxy-6-methylanthraquinone (O parietin)
- 469 to be born with a silver spoon in one's mouth (O spoon 3c)
- 36 559 Ostanovochnyy Punkt)) ((Kompessornyy Zavod, Russia, 56°47, 60°47
- 517 3-hydroxy-4,5-di(hydroxymethyl)-2-methylpyridine (O pyridoxine, a Vitamin B6)
- 501 Wei-ning-i-tsu-hui-ysu-miao-tsu-tzu-chih-hsien, China, 26°51, 104°14
- 490 conjunctivodacryocystorhinostomizing, (from conjunctivo...ostomy, books.md)
- 37 587 Ust'-Ordynskiy Buryatskiy Avtonomnyy Okrug, Russia, 53°20, 104°00
- 502 to pluck the grass to know where the wind sits (O grass 1c)
- 495 honest-to-goodness-twelve-months-in-the-year (O honest 4d, 1916q)
- 474 laparohysterosalpingo-oophorectomizing (from l...o-oophorectomy, books.md)
- 38 557 Otdeleniye Nomer Tri Sovkhoza Survorovskiy, Kazakhstan, 53°13, 74°38
- 508 Saint-Remy-en-Bouzemont-Saint-Genest-et-Isson, France, 48°38, 4°39

- 501 tell the whole truth and nothing but the truth (Bloomsbury)
 486 everyway-multiform-exquisitely-mechanical (O everyway 2, 1768q)
 39 595 Ostanovochnyy Punkt)) ((Podsobnoye Khozyaystvo, Russia, 56°17, 90°24
 528 Wei-ning-hsien-i-tsu-hui-tsu-miao-tsu-tzu-chih-ch'u, China, 26°51, 104°14
 528 4-(2-Hydroxy-3-isopropylaminopropoxy)-acetanilide (O practolol 1969q)
 511 Tetramethyldiaminobenzhydrylphosphinous (O Michler, 1910q)
 40 614 Podsobnoye Khozyaystvo Spirovskiy Zagotskot, Russia, 57°30, 34°57
 537 Minnesota Multiphasic Personality Inventory (O Minnesota)
 533 1,2-diphenyl-4-(2-phenylsulphinylethyl)pyrazolidine [The Cosmetic Products (Safety) Regulations 1996, Schedule 1 (banned)]
 41 598 Kontrol'nyy Punkt Svyasi Verkhnyaya Oblukovina, Russia, 55°15, 156°01
 592 2-methyl-3-hydroxy-4-carboxy-5-hydroxymethylpyridine (O pyridoxic, 1944q)
 547 Organization of Petroleum Exporting Countries, = OPEC (Bloomsbury)
 507 comiconomenclaturist disproportionableness, Book of Interesting Words
 42 632 Ostanovochnyy Punkt Zheleznodorozhnyy Poselok, Russia, 56°17, 91°02
 532 Appomattox Court House National Historical Park (Appomattox co., S central Va, NA)
 525 he should have a long spoon that sups with the Devil (O spoon 3)
 43 581 Southeast Kweichow Miao-T'ung Autonomous District, China, 26°35, 107°55
 574 2-aminomethyl-4-(2-carboxyethyl)-3-carboxymethylpyrrole (sic, O Porphobilinogen, 1972q)
 528 cytomegalovirus inclusion disease of the newborn (Longmans)
 44 628 1-(4-hydroxy-3-hydroxymethylphenyl)-2-t-butylaminoethanol (O salbutamol)
 614 Poselok Severnykh Promyslov Oзера Nomera Shestogo, Turkmenistan, 41°40, 52°46
 45 668 Ust'-Ordynskiy Buryat-Mongol'skiy Natsional'nyy Okrug, Russia, 53°20, 104°00
 605 1-(2-Acetyl-4-butyramidophenoxy)-3-isopropylaminopropan-2-ol (O acebutolol, 1972q)
 568 pneumoultramicroscopic silicovolcanokoniosis (O pneumono-, 1973q)
 46 657 Ostrov Glavnoye Upravleniye Severnogo Morskogo Puti, Russia, 69°33, 161°33
 631 1,2,3,4-tetrahydro-8-hydroxy-6,7-dimethoxy-1,2-dimethylisoquinoline, (O pellotine)
 47 672 Sel'skokhozyaystvennoye Predpriyatiye Buruktal'skiy, Russia, 50°48, 60°29
 48 623 4-(2-isopropylamino-1-hydroxyethyl)-methanesulphonamide hydrochloride (O sotalol)
 600 Brigada Nomer Chetyre Kolkhoza Sorokovoy Let Oktyabrya, Kazakhstan, 50°16, 71°45
 49 621 Hito Numero Veinticuatro Kilometro Quince del Rio Morona, Ecuador, -2°54, -77°35
 50 629 Gruzinskaya Sovetskaya Sotsialisticheskaya Respublika, Georgia, 42°00, 43°30
 629 Molochno Tovarnaya Ferma Brigady Nomer Dva Kolkhoza Kyzyltu, Kazakhstan, 43°25, 77°05
 51 742 Kaz. TsIK (Tsentral'nyy Iсполnitel'nyy Komitet Kazakhskoy SSR), Kazakhstan, 43°22, 76°51
 53 845 Uchastkovoye Khozyaystvo Sel'skokhozyaystvennyy Institut, Kazakhstan, 43°16, 77°11
 63 859 Dvadsatiletiye Turkmenskoy Sovetskoy Sotsialisticheskoy Respubliki, Turkmenistan, 37°38, 61°47

Least Dense words

- 6 10 8 ABAABA (Lau, Palindromicon)
 9 ABABAB (a rhythm, O quain, 1889q)
 7 11 9 Brachinus **aabaaba** grunniens (ITIS animal)
 8 14 12 abbaabba (first part of rhymes in Petrarchan or Miltonic sonnets, Chambers Miltonic; or ABBA ABBA, title by Anthony Burgess)
 11 35 32 Cha da Cabeça, Portugal, 40°10, -7°59
 12 40 33 Chaab ed Dabaa, Syria, 35°45, 39°47
 13 48 39 Jabada Beafada, Guinea-Biss, 11°48, -15°18
 15 74 55 Ahmadabad-e Baba'i, Iran, 36°44, 49°29
 17 88 59 Ciidda Bacaad Cadde, Somalia, 4°29, 47°51
 18 107 77 Baghcheh Bedaghabad, Iran, 30°19, 57°04

- 19 121 83 Canada de la Caballada, Uruguay, -32°11, -56°49
116 Canada beachhead iris (ITIS plant)
- 20 135 85 Magaalada Jaamacadaha, Somalia, 2°06, 45°10
112 Cascada de Basaseachic (national park, W Chihuahua, Mexico, NA)
123 blackbanded amberjack (ITIS animal)
- 21 149 116 Ja'farabad-e Bazbachcheh, Iran, 30°54, 52°27
146 blackback barrel-bubble (ITIS animal)
- 22 177 125 Hacienda Bancada de Cedro, Venezuela, 8°38, -72°14
147 concealed chalice-bubble (ITIS animal)
156 Hamamelidae-Dilleniidae (O ranalian, 1972q)
177 Pedro Calderon de la Barca (outstanding Spanish playwright, Bloomsbury)
- 23 171 116 Riacho Cabeceira da Bacaba, Brazil, -5°07, -43°16
149 Big Bend black-headed snake (ITIS animal)
- 24 184 125 Hacienda Machacamarca Baja, Bolivia, -16°31, -68°28
164 ARCHANGELICA ARCHANGELICA (B.E.C. Report for 1924 by G. Claridge Druce: Additions to the Flora Zetlandica)
- 25 189 157 Cami de la Collada de la Maiana, Andorra, 42°29, 1°37
183 naked-headed large-eyed bream (ITIS animal)
- 26 226 150 Ech Cheikh Aabaane abou Dahdah, Syria, 35°37, 36°44
194 California black-headed snake (ITIS animal)
211 as changeable as a weathercock (Bloomsbury)
220 Mohammed ibn Tarkhan al-Farabi ("greatest philosopher of reason to appear in Islam and in his time", around AD 900. Bloomsbury)
- 27 247 160 Canada La Cabeza de la Demajagua, Dominican Republic, 18°43, -71°07
193 Albemarle and Chesapeake Canal (SE Va., NA)
224 to have one's face made of a fiddle (O fiddle 1b)
235 double-banded coral snake mimic (ITIS animal)
- 28 243 184 Koumba Sidi Abd el Kader el Abbada, Algeria, 35°40, 0°20
233 alabama canebrake pitcher plant (ITIS plant)
235 bondage and discipline language (Hacker's Dictionary)
- 29 274 192 Badila Bedda Bedda Bonarua Island, Papua New Guinea, -10°45, 150°23
225 long-beaked saddle-backed dolphin (ITIS animal)
247 have one hand tied behind one's back (Bloomsbury)
- 30 313 203 Hacienda Cunchibamba de Chiriboga, Ecuador, -1°05, -78°37
257 short-beaked saddle-backed dolphin (ITIS animal)
271 Lake Mead National Recreation Area (sign I saw near the Hoover Dam, first RA in US)
294 Charles Marie Rene Leconte de Lisle (poet, Bloomsbury)
- 31 300 232 Jabbanat Sidi Muhammad Bin `Abd Allah, Libya, 31°56, 12°07
264 Gloria Dei National Affiliated Area (Philadelphia city, NA)
275 engaging and disengaging machinery, (O engaging 3)
289 nicotinamide-adenine dinucleotide (Longmans)
- 32 249 Quebrada Ojo de Agua de Hacienda Vieja, Guatemala, 13°59, -89°57
289 he may bear a bull that hath borne a calf (O bull 1c)
297 Tianjingshanlinchangjiedongdadui, China, 24°45, 113°06
329 Supercalafajalisticespialadojus (unpubl. song, O Supercalifragilisticexpialidocious, 1949q)
- 33 251 Kafr Ahmad Muhammad `Abd al Karim `Akilah, Egypt, 30°48, 32°00
291 like kicking dead whales down the beach (Hacker's Dictionary)

- 320 Pierre Carlet de Chamblain de Marivaux (Bloomsbury)
- 330 supercalafajalistickeespealadojus (1951 song title, not Mary Poppins' Supercalifragilisticexpialidocious, see latter in OED)
- 337 Jinxianchangshanzonghekenzhichang, China, 28°12, 116°14
- 34 271 Pampa de la Desembocadura de la Quebrada, Peru, -16°11, -73°19
- 295 Shanghaihongchangchuandongfenchang, China, 33°00, 120°42
- 328 Trail of Tears National Affiliated Area (of the Cherokee, NC, Tenn, Ga, Ala, Okla, Ark, NA)
- 363 cholangiocholecystocholechoectomy (Dorland)
- 35 278 Parque Nacional Cascadas de Basaseachic, Mexico, 28°05, -108°15
- 330 National Baseball Hall of Fame and Museum (Bloomsbury)
- 358 Nanchangshixinfengzonghekenzhichang, China, 28°34, 115°39
- 36 325 Historic Camden National Affiliated Area (Kershaw co., N central S.C., NA)
- 325 like banging one's head against a brick wall (Chambers brick)
- 377 Mingan Archipelago National Park Reserve (mouth of St. Lawrence R., E Que., Canada, NA)
- 396 Jacob Ludwig Felix Mendelssohn-Bartholdy, (visitor to Fingal's Cave, Bloomsbury)
- 37 299 Mohammadabad Mazra'eh-ye Vabasteh Beh Dehaj, Iran, 30°36, 54°56
- 355 like knocking one's head against a brick wall (Chambers brick)
- 376 ta-pocketa-pocketa-pocketa-pocketa-pocketa (O pocketa-pocketa, 1939q)
- 38 336 Polder de Gecombineerde Hoevensche Beemden, Netherlands, 51°36, 4°35
- 378 General Certificate Of Secondary Education (GCSE, grade 11 public exam in Britain)
- 390 Shakespeare-designed-to-be-read-as-word-music (O word IV 29, 1962q)
- 408 diketohydrindylidenediketohydrindamine (Ruhemann's Purple, www.sogang.ac.kr/~zeolite/images/publication/pub016.pdf)
- 39 322 Arroyo de la Calera y de la Canada del Carrascal, Spain, 39°23, -1°46
- 400 to believe that the moon is made of green cheese (O green cheese)
- 448 hepaticocholangiocholecystenterostomies (web.ics.purdue.edu/~cirillo/rpffans.htm)
- 40 364 Daryacheh-ye Sadd-e Mohammad Reza Shah-e Pahlavi, Iran, 36°37, 48°27
- 397 nicotinamide-adenine dinucleotide phosphate (Longmans)
- 403 Chattahoochee River National Recreation Area (Ga., NA)
- 41 370 YeDebub Biheroch Bihereseboch na Hizboch Kilil, Ethiopia, 6°15, 37°00
- 443 TETRADECAHYDROTETRAZOLOAZACYCLOHEXADECINE (RSH)
- 453 cold enough to freeze the balls off a brass monkey (O monkey 13b)
- 460 Bewester-Eede-bezuiden-Sint-Pietersdijkpolder, Netherlands, 51°16, 3°25
- 460 Wrangell-Saint Elias National Park and Preserve (SW Alaska, 62°00, -143°00, NA)
- 42 346 Chirinche de Paezd see Hacienda Chirinche de Paez, Ecuador, -1°05, -78°39
- 438 he that toucheth pitch shall be defiled therewith (Ecclesiasticus xiii 1)
- 461 Big South Fork National River and Recreation Area (on Tenn.-Ky. state line, NA)
- 466 Bewester-Eede-benoorden-Sint-Pietersdijkpolder, Netherlands, 51°18, 3°24
- 43 351 Ladang Getah Senawang Bahagian Shanghai Seremban, Malaysia, 2°39, 101°54
- 451 to correct Magnificat before one has learnt Te Deum (O Magnificat 3)
- 44 365 Fazenda Chimboa da Sociedade Agricola do Cassequel, Angola, -12°58, 14°28
- 453 like a long-tailed cat in a room full of rocking-chairs (Bloomsbury)
- 457 Abraham Lincoln Birthplace National Historic Site (Larue co., central Ky, NA)
- 45 385 [Lake] Chargoggagoggmanchauggagoggchaubunagungamaugg (Webster, Mass., www.bestofnewengland.com/)
- 441 Chickamauga and Chattanooga National Military Park (Ga. & Tenn., NA)
- 445 great-great-great-great-great-great-grand-niece-in-law (O great 21c, 1823q)
- 46 413 Karkhaneh-ye Kuchak-e Risandegi va Bafandegi-ye Mahyaran, Iran, 33°02, 51°28
- 47 439 Escola de Regentes Agricolas Francisco Vieira Machado, Angola, -15°10, 13°18

- 48 472 Illinois and Michigan Canal National Heritage Corridor (NE Ill., NA)
 478 Fédération Internationale de Bob-sleigh et Tobogganing (Bloomsbury)
 528 a-not-of-the-Roman-Catholic-Papicolar-polemics-unmerited (Opapicolist, 1910q, Coleridge)
 49 436 Ciudad Dolores Hidalgo Cuna de la Independencia National, Mexico, 21°10, -100°56 (NA)
 50 535 George Rogers Clark National Memorial and Historical Park (SW Ind., NA)
 51 516 Ostan-e Saheli-ye Banader va Jazayer-e Darya-ye `Oman va Khalij-e Fars, Iran, 27°45, 56°00
 54 464 Delaware and Lehigh Navigation Canal National Affiliated Area (E Pa, NA)

Graph

The graph below (of word lengths 1 to 51) shows that the densities of both least dense and most dense words converge, presumably to a value of 13.5, the average of the values of the letters from A to Z. The small 'kick' at the end of the most dense graph is due to a Kazak place (51 in Most Dense Words above) with quite a few Ys and Zs. The small deviation downwards towards the end of the least dense line is due to a Mexican place name (49 above). These two small excursions exemplify the general tendency for Russian names to be dense because they contain relatively many Ys, and Western names to be light. The smoothness of the graphs indicates that there are sufficient examples of each length to give a good chance that the extreme point plotted will be in line with the other extreme points plotted.

Place names, except where stated, are from the NIMA database, and their positions are given in degrees and minutes, latitude and longitude. For this article, I have used a Medical Dictionary at <http://books.md/>. BIW = Book of Interesting Words. NA means the Columbia Gazetteer of North America. O means OED. RSH = Ring Systems Handbook.

Densities of Most and Least Dense words for each word length

