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# UPSID:

U C L A PHONOLOGICAL SEGMENT INVENTORY DATABASE

**DATA**

**AND**

**INDEX**

**UCLA WPP 53**

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## UCLA Phonological Segment Inventory : Data and Index

### Introduction.

This volume of UCLA Working Papers in Phonetics contains charts showing the phoneme inventory of each of the carefully selected sample of 317 languages which comprise the UCLA Phonological Segment Inventory Database (UPSID). It also includes an index of each segment type which occurs in the database. This index is arranged according to the phonetic classification of the segments, and includes the frequency of occurrence of each given segment type and a list of the languages in which it occurs. A full description of the structure and contents of UPSID can be found in Working Papers in Phonetics 50. Papers discussing the analysis of the data in UPSID have appeared in WPP 46 and 50. (It should be noted that there have been a number of corrections made in the data since the papers were written, and some detailed changes in the frequencies reported need to be made in the texts. These papers are being revised for publication in a single volume together with the data in the present issue of WPP).

The phoneme charts and segment index make available to other users the basic data of UPSID. With these tools, much of the information in the database can be manipulated without the use of a computer. For example, suppose one wishes to answer the question: does /g/ only occur in languages with /k/? The answer can be found for the UPSID sample by using the index to find the list of languages with /g/ and then turning to each relevant chart to see if /k/ occurs, or cross-checking the list of languages with /k/ in the index. More complex co-occurrences of segments can be examined more easily by a study of the charts.

Making the data available in a public form also serves another purpose, that of making the interpretations of the phoneme inventories adopted in UPSID open to independent evaluation. Scholars may reach their own conclusions of the appropriateness of the inventory as it is represented in UPSID.

### The charts.

#### 1. Consonants.

The consonants of each language are represented on a chart which is fully labeled for each place of articulation, secondary articulation, and manner of articulation which occurs in that language. Places of articulation are arranged along the top of the chart in a sequence from the front to the back of the oral cavity. These places correspond to those recognised in the list of variables used in the UPSID database (WPP 50: 12-13). The last place of articulation in this sequence is glottal. Note that /h/ is not considered to have a glottal place of articulation, but to have a variable place. It is placed after glottal. In addition to dental and alveolar places, an unspecified dental or alveolar column is included for those segments which are not precisely identified as being one or the other in the source used for the

description of a given language. This column is labeled dental/alveolar.

Double articulations are listed after variable place in a front-to-back sequence determined by the more forward of the two articulations concerned. Secondary articulations are placed in the columns following the primary place. Nasalization, including pre- and post-nasalization, is considered a secondary articulation and is listed first. Other secondary articulations follow in a sequence from the front to the back of the oral cavity, i.e. labialization is first, pharyngealization is last.

Manners of articulation are arranged down the chart in a sequence in which the primary arrangement is by decreasing degrees of stricture, with stops first and approximants last. Stops are followed by affricates, fricatives, nasals, taps, trills, and flaps, then approximants. Within stops, plosives precede ejective stops and implosives. The Khoisan languages (Nama and !Xu) required special handling because of their large inventories of clicks. The clicks are placed on a separate chart. Sibilant affricates and fricatives follow nonsibilant ones, and lateral affricates and fricatives follow both. Lateral approximants precede central ones. A special category for segments which are simply identified as some kind of r-sound follows taps, trills and flaps.

Differences in phonation type are nested within this sequence in a way similar to the way that secondary articulations are nested within the sequence of primary places. However, the sequence of phonation types varies for different classes of consonants. For plosives, affricates and fricatives - which are more commonly voiceless - voiceless types are listed first. For nasals, trills, flaps and approximants - which are more commonly voiced - voiced types are listed first. More unusual phonation types follow the plain voiceless or voiced types, so that voiceless aspirated or laryngealized (glottalized) voiceless categories follow the plain voiceless, and breathy (murmured) or laryngealized voiced types follow the plain voiced. Ejective affricates or fricatives follow their pulmonic central or lateral counterparts.

Some of the phonetic labels have had to be abbreviated to save space on the charts. A key to the abbreviations used is given on page 9.

Each phonemic consonant segment in the language is represented by a symbol placed at the intersection of the row and column defining its place and manner. The symbols used are orthodox I.P.A. symbols as far as possible. However, I.P.A. conventions have been supplemented in some cases, drawing on conventions used in Preliminaries to Linguistic Phonetics (P. Ladefoged, University of Chicago Press, 1971) and elsewhere in phonetic literature, or newly invented for the purpose. The result is a transcription system in which each symbol, meaning any distinct letter or combination of letter(s) and diacritic(s), uniquely represents one segment type. That is to say, each symbol corresponds to

one and only one combination of values for the phonetic variables in the UPSID data file. In particular, it may be noted that unspecified dental/alveolar segments are distinguished from alveolar segments in transcription by the use of quote marks, e.g. /"t"/ vs. /t/. An unspecified r-sound is represented by a doubled letter r; thus /rr/ represents an unspecified type of r-sound in this case of alveolar place of articulation, and /"rr"/ represents a an unspecified r-sound of undetermined dental or alveolar place of articulation.

## 2. Vowels.

The vowels of each language are given below the consonant chart. The vowel charts are not fully labeled. Instead, the choice of symbols is left to provide more of the information on the nature of the vowels in question. However, labels are provided for those levels of the familiar dimension of vowel height that are represented in the given language, and the symbols are arranged in a left to right order which corresponds to a front-to-back dimension. The overall layout approximates a conventional vowel chart, albeit one of a rather more triangular shape than is customary. Lip position is indicated entirely by choice of symbol. Where rounded and unrounded vowels occur at the same position on the vowel chart, front unrounded vowels precede front rounded vowels and back rounded vowels precede back unrounded vowels. The pairs of symbols are separated by a comma.

In many languages there are several separate series of vowels (short, long, nasalized, laryngealized, etc.). These are given in separate arrangements, with the "plainest" series first. Overshort vowels are indicated with a superscript micron. Mid vowels which are not further distinguished as higher mid (half-close) or lower mid (half-open) are represented by letters enclosed in quote marks. The same letters without the quotes represent higher mid vowels. Thus /e/ is a higher mid front unrounded voiced vowel, /"e"/ is a similar vowel which is only described as mid (it might be in the middle of the mid range, or vary in quality within the mid range, or it might just be incompletely described). All other vowel symbols are those suggested by the I.P.A. apart from a few improvisations for unusual vowels. A chart of the vowel letters used and a key to the diacritics which may be applied to create vowel symbols is given on page 10.

If a language has any diphthongs which are accepted as unit phonemes by the criteria used by UPSID, they are given to the right of the simple vowels. No attempt is made to label the diphthongs; they are simply represented by digraphs indicating approximate starting and ending points.

## 3. Anomalous segments.

Those segments in the inventory of a given language that are regarded as somewhat anomalous (though still worthy of being included in the inventory) are indicated by superscript numbers on the charts. These correspond to non-zero values of the Anomaly variable in the UPSID data file (UCLA WPP 50: 18-19). The superscripts have the following values:

- 1--indicates a segment of extremely low frequency (e.g. one that occurs in a handful of words only).
- 2--indicates a segment that occurs only in foreign words or unassimilated loans though these are frequent enough to include the segment in the inventory.
- 3--indicates a segment which is posited in underlying forms but which is neutralized in underlying forms.
- 4--indicates a segment which is sometimes treated as phonemic but which may be regarded as derived from other underlying segments.
- 5--indicates a segment which, although apparently a genuine member of the inventory, is described in a particularly obscure or contradictory fashion (such segments may be ones which are represented by undefined ambiguous symbols or ones where the description provided is particularly confusing).

The index.

The index to segment types is divided into ten major sections:

- 1. plosives
- 2. glottalic stops
- 3. clicks (including affricated clicks)
- 4. affricates (including ejective affricates)
- 5. fricatives (including ejective fricatives)
- 6. nasals
- 7. trills, taps, and flaps
- 8. approximants
- 9. vowels
- 10. diphthongs.

These sections separate segments into major manner classes. Within these sections, the sequence of segments is ordered in a way that similar to the way the charts are arranged, except that, since the index is a single sequence rather than a two-dimensional array, the values for manner and place features are nested into a single sequence. Within each section, place is given priority over manner with the following exceptions:

- a) ejectives precede implosives in section 2.
- b) affricated clicks follow plain clicks in section 3.
- c) ejective affricates and fricatives follow all the pulmonic types in sections 4 and 5.
- d) in section 7, trills precede taps, which precede flaps. Unspecified r-sounds are included at the end of this section.
- e) lateral segments are grouped together in the relevant sections, following segments with central articulation in sections 3, 4, 5 and 7, but preceding central segments in section 8. This arrangement juxtaposes the common types of flapped and approximant laterals in sections 7 and 8. Note that the arrangements specified in b), c), and d) above take precedence over e).



Voiceless segments of a given place are listed before voiced ones in sections 1, 2, 3, 4, and 5. Voiced ones precede voiceless ones of the same place in sections 6, 7, 8, 9, and 10. Other modifications of the phonation type are next most highest ranked, while secondary articulations (of place) are the most superficial criterion for sequencing. I.e., a voiceless aspirated alveolar plosive will precede any voiced alveolar plosives, and a palatalized voiceless aspirated alveolar plosive follows one with no secondary articulation but precedes a velarized one.

Vowels are arranged in three main classes: all front vowels are listed before all central vowels, which, in turn precede all back vowels. Within each height/backness class (e.g. high front or lower mid back), unrounded vowels precede rounded vowels. This arrangement applies even for back vowels, where rounding is more common. Other modifications (such as nasalization, pharyngealization) form the most superficial level of vowel classification.

Diphthongs are arranged in the following way. First, the quality of the vowel recognized as their point of origin is used to arrange them in a similar way to that in which the simple vowels are arranged. Diphthongs starting with a high front unrounded vowel come first and so on. Those with the same starting point are then arranged on the basis of the vowel quality recognized for their ending point. The manner in which this is done can be understood by imagining an array of lines on the conventional vowel chart from the point of origin to the point of termination. The diphthongs are then sequenced in an "anticlockwise" manner with the closest to 12:00 o'clock as the starting point. Note that the transcriptional distinction between mid vowels (/ "e"/, / "o"/ etc.) and higher mid vowels (/e/, /o/ etc.) is not maintained for diphthongs. No quote marks are used here.

Following each phonetic definition, a list of those languages in UPSID in which the defined segment occurs is given. The listing of language names is in the order in which identification numbers were assigned. A full list of the 317 languages in identification number order is given on pages 7-8. If a segment is regarded as anomalous in a language, the language is listed at the end of the entry for the segment following a short keyword which describes the nature of the anomaly. The following are the keywords used in the index to correspond to the non-zero values of the Anomaly variable in the UPSID data file. (See section 3 under "Charts" above).

<u>Value of Anomaly</u>	<u>Index Keyword</u>	<u>Brief Definition</u>
1	RARE	Extremely low lexical frequency
2	LOAN	Occurs in unassimilated loans
3	?ABSTRACT	Posited underlying segment
4	?DERIVED	Segment possibly derivable from others
5	OBSCURE	Particularly vague or contradictory description.

Additional and \*Amended References

These items supplement or correct the list of sources consulted in the course of determining segment inventories for UPSID. The original listing is given on pp. 29-56 of WPP 50.

- \*EMENEAU, M.B. (1937) "Phonetic observations on the Brahūī language", Bulletin of the School of Oriental Studies 8, 981-983.
- GRUBB, D.M. (1977) A Practical Writing System and Short Dictionary of Kwakw'ala (Kwakiutl) (Canadian Ethnology Service Paper 34), National Museum of Man, Ottawa.
- HUIJER, H. (1946) "Tonkawa" Linguistic Structures of Native America (Viking Fund Publications in Anthropology 6), New York: 289-311.
- KOSTIC, D., A. Mitter and B. Krishnamurti (1977) A Short Outline of Telugu Phonetics Indian Statistical Institute, Calcutta.
- LADEFOGED, P. and A. Traill (1980) "The phonetic inadequacy of phonological specifications of clicks" UCLA Working Papers in Phonetics 49, 1-27.
- \*POWELL, J.V. (1975) Proto-Chimakuan: Materials for a Reconstruction Working Papers in Linguistics (University of Hawaii), 7, No. 2.
- SASTRY, J.V. (1972) Telugu Phonetic Reader Central Institute of Indian Languages, Mysore.
- SWANTON, J.R. (1911) "Tlingit" Handbook of American Indian Languages Part 1 (Bulletin of American Ethnology, Smithsonian Institution, 40) ed. Franz Boas: 425-559.

Alphabetic Index to new references.

- Brahui 917 Emeneau (1937)
- Kwakw'ala 731 Grubb (1977)
- Nama 913 Ladefoged and Traill (1980)
- Quileute 732 Powell (1975)
- Telugu 902 Kostić et al (1977)

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Norwegian 006	Tampulma 112	Beja 261
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Russian 008	Ewe 114	Dizi 263
Bulgarian 009	Akan 115	Kefa 264
French 010	Igbo 116	Hamer 265
Spanish 011	Ga 117	Hausa 266
Romanian 012	Lelemi 118	Angas 267
Farsi 013	Efik 119	Margi 268
Pashto 014	Birom 120	Ngizim 269
Kurdish 015	Tarok 121	Kanakuru 270
Hindi-Urdu 016	Amo 122	Mundari 300
Bengali 017	Beembe 123	Kharia 301
Kashmiri 018	Swahili 124	Khasi 302
Punjabi 019	Luvale 125	Vietnamese 303
Sinhalese 020	Zulu 126	Sedang 304
Albanian 021	Teke 127	Khmer 305
E. Armenian 022	Doayo 128	Maung 350
Ostyak 050	Gbeya 129	Tiwi 351
Cheremis 051	Zande 130	Burera 352
Komi 052	Songhai 200	Nunggubuyu 353
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Hungarian 054	Maba 202	Maranungku 355
Lappish 055	Fur 203	Malakmalak 356
Yurak 056	Maasai 204	Bardi 357
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Osmanli 058	Nubian 206	Kunjen 359
Azerbaijani 059	Nyangi 207	Western Desert 360
Chuvash 060	Ik 208	Nyangukata 361
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Kirghiz 062	Tama 210	Kariera-Ngarluma 363
Bashkir 063	Temein 211	Gugu-Yalanji 364
Khalaj 064	Nera 212	Mabuiag 365
Tuva 065	Tabi 213	Arabana-Wanganura 366
Mongolian 066	Mursi 214	Diyari 367
Evenki 067	Logbara 215	Bandjalang 368
Goldi 068	Yulu 216	Standard Thai 400
Manchu 069	Sara 217	Lakkia 401
Korean 070	Berta 218	Yay 402
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Tagalog 414	Hadia 700	Paez 804
Sa'ban 415	Tlingit 701	Ocaina 805
Chamorro 416	Navaho 702	Muinane 806
Rukai 417	Chipewyan 703	Carib 807
Tsou 418	Tolowa 704	Apinaye 809
Adzera 419	Hupa 705	Amahuaca 810
Roro 420	Nez Perce 706	Chacobo 811
Kaliai 421	Klamath 707	Tacana 812
Iai 422	Maidu 708	Cashinahua 813
Maori 423	Wintu 709	Ashuslay 814
Hawaiian 424	Chontal 710	Abipon 815
Mandarin 500	Zoque 711	S. Nambiquara 816
Taishan 501	Tzeltal 712	Arabela 817
Hakka 502	Totonac 713	Auca 818
Changchow 503	K'ekchi 714	Quechua 819
Amoy 504	Mixe 715	Jaqaru 820
Fuchow 505	Otomi 716	Gununa-Kena 821
Kan 506	Mazahua 717	Wapishana 822
Tamang 507	Mazatec 727	Island Carib 823
Dafla 508	Mixtec 728	Amuesha 824
Burmese 509	Chatino 729	Campa 825
Lahu 510	Nootka 730	Guajiro 826
Jingpho 511	Kwakw'ala 731	Moxo 827
Ao 512	Quileute 732	Guarani 828
Tiddim Chin 513	Squamish 733	Siriono 829
Garo 514	Puget Sound 734	Guahibo 830
Boro 515	Papago 736	Ticuna 831
Karen 516	Luiseno 737	Barasano 832
Yao 517	Hopi 738	Siona 833
Andamanese 600	Yaqui 739	Tucano 834
Asmat 601	Tiwa 740	Jivaro 835
Washkuk 602	Karok 741	Cofan 836
Sentani 603	Pomo 742	Araucanian 837
Nimboran 604	Diegueno 743	Greenlandic 900
Iwam 605	Achumawi 744	Aleut 901
Telefol 606	Yana 745	Telugu 902
Selepet 607	Shasta 746	Kota 903
Gadsup 608	Tarascan 747	Kurukh 904
Yagaria 609	Zuni 748	Malayalam 905
Kewa 610	Acoma 749	Ket 906
Chuave 611	Ojibwa 750	Yukaghir 907
Pawaian 612	Delaware 751	Chukchi 908
Dani 613	Tonkawa 752	Gilyak 909
Wantoat 615	Wiyot 753	Georgian 910
Daribi 616	Seneca 754	Kabardian 911
Fasu 617	Wichita 755	Lak 912
Suena 618	Dakota 756	Nama 913
Dera 619	Yuchi 757	Basque 914
Kunimaipa 620	Tunica 758	Burushaski 915
Yareba 621	Alabama 759	Ainu 916
Koiari 622	Wappo 760	Brahui 917
Taoripi 623	Itonama 800	!Xu 918
Nasioi 624	Bribri 801	

## Table of Abbreviations of Phonetic Terms used on UPSID Charts

This listing includes all abbreviations used on the charts in this volume. Many are self-evident, but in the event that an abbreviation is unclear, its expansion can be found in this listing.

<u>Abbreviation</u>	<u>Expansion</u>
affric, aff., af.	affricate
alv.	alveolar
approx., appr., app.	approximant
asp.	aspirated
cent., c.	central
cl., c.	click
eject.	ejective
fric.	fricative
labial-vel.	labial-velar
laryngd., laryng.	laryngealized
lat.	lateral
nas.	nasal
nonsib.	nonsibilant
palato-alv.	palato-alveolar
plos	plosive
presasp.	preaspirated
rel.	release
sib.	sibilant
var.	variable
vel.	velar
vl.	voiceless
vd.	voiced
w.	with

Vowel Symbols and Diacritics for UPSID

	FRONT	CENTRAL	BACK
HIGH	i, y	ɨ, ɥ	u, ɯ
LOWERED HIGH	ɪ, ʏ	ɨ̟, ɥ̟	ɯ̟, ɥ̟
HIGHER MID	e, ø	ɘ, ɵ	o, ɤ
MID	"e", "ø"	"ə", "ɜ"	"o", "ɤ"
LOWER MID	ɛ, œ	ɜ, ɞ	ɔ, ʌ
RAISED LOW	æ, ɶ	ɛ̟, ɞ̟	ɔ̟, ʌ̟
LOW	ɶ̟, ɶ̟	ɑ, ɶ	ɔ, ɑ

Diacritics (exemplified with the vowel /a/):

/a:/	long	/a <sup>ʏ</sup> /	with velar stricture
/a̟/	overshort	/a̟/	fronted
/a̰/	laryngealized	/a̰/	retracted
/a̤/	breathy voiced	/a̤/	lowered
/ḁ/	voiceless	/ḁ/	raised
/ã/	nasalized	/a̠/	pharyngealized
/ạ/	retroflexed		

Language	bilabial	labio-dental	dental	dental/alveolar	alveolar	palatal	velar	bilabial labialized	bilabial labialized and velarized	dental	dental velarized	dental/alveolar	dental/alv. palatalized	dental/alv. velarized	alveolar	alveolar palatalized	alveolar velarized	palato-alveolar	palatal	palatal palatalized	velar	velar palatalized	variable place	Labial-velar	
<u>Language</u>																									
Greek (000)																									
voiceless plosive	p			"t"				p <sup>h</sup>	p <sup>h</sup>	t <sup>h</sup>		"t <sup>h</sup> "									k <sup>h</sup>	k <sup>h</sup>			
voiced plosive	b			"d"				b <sup>h</sup>	b <sup>h</sup>			"d"									g	g			
vl. sibilant affric.																									
vd. sibilant affric.																									
vl. nonsibilant fric.		f	θ					f <sup>h</sup>	f <sup>h</sup>												x	x			
vd. nonsibilant fric.		v	ð					v <sup>h</sup>	v <sup>h</sup>												ɣ	ɣ		h	
vl. sibilant fric.										s															
vd. sibilant fric.										z															
voiced nasal	m			"n"				m <sup>h</sup>	m <sup>h</sup>	n		"n <sup>h</sup> "		"n <sup>h</sup> "											
voiced flap				"ɾ"																					
vd. lateral approx.				"l"																					
vd. central approx.																									
<u>Vowels</u>																									
high	i						u																		ü:
lower mid	e		ɔ																						ë: ö:
low			ɑ																						ä:





Language	Labiodental	Dental	Dental/alveolar	Alveolar	Palato-alveolar	Retroflex	Palatal	Velar	Variable place	Language	Labiodental	Dental	Dental/alveolar	Alveolar	Palato-alveolar	Labiodental	Bilabial	Plosive	Fricative	Labiodental	Bilabial	Dental/alveolar	Alveolar	Palato-alveolar	Palatal	Velar								
Norwegian (006)	ph	tʰ	d	tʰ	ʃ	tʰ	ç	kʰ		Lithuanian (007)	Labio-dental	Dental	Dental/alveolar	Alveolar	Palato-alveolar	Labio-dental	Bilabial	Plosive <td>Fricative <td>Labio-dental</td> <td>Bilabial</td> <td>Dental/alveolar</td> <td>Dental/alveolar</td> <td>Alveolar</td> <td>Palato-alveolar</td> <td>Palato-alveolar</td> <td>Palatal</td> <td>Velar</td> </td>	Fricative <td>Labio-dental</td> <td>Bilabial</td> <td>Dental/alveolar</td> <td>Dental/alveolar</td> <td>Alveolar</td> <td>Palato-alveolar</td> <td>Palato-alveolar</td> <td>Palatal</td> <td>Velar</td>	Labio-dental	Bilabial	Dental/alveolar	Dental/alveolar	Alveolar	Palato-alveolar	Palato-alveolar	Palatal	Velar						
vl. aspirated plos.										voiceless plosive							p																	
voiced plosive	b	d		q	ʃ	q	ç	g		voiced plosive						bʃ	b																	
vl. nonsibilant fric.	f								h	vl. sibilant affric.																								
vl. sibilant fric.										vd. sibilant affric.																								
voiced nasal	m	n						ŋ		vl. nonsib. fric.						v																		
voiced flap										vd. nonsib. fric.																								
vd. lateral approx.										vl. sibilant fric.																								
vd. central approx.	ɣ									vd. sibilant fric.																								
Vowels										voiced nasal						mʃ	m																	
high	i:, y:	e:	u:		ɨ, ʏ	ɛ	ɤ			voiced trill																								
higher mid	e:, ø:									vd. lat. approx.																								
mid										vd. cent. approx.																								
lower mid	æ:																																	
low																																		



Language	bilabial	labio-dental	dental	palato-alveolar	palatal	velar	uvular	labial-palatal	labial-velar
French (O10)									
voiceless plosive	p	f	t			k			
voiced plosive	b		d			g			
vl. nonsibilant fric.		f							
vd. nonsibilant fric.		v							
vl. sibilant fric.			s	ʃ					
vd. sibilant fric.			z	ʒ					
voiced nasal	m		n			ŋ			
voiced trill			r				r		
vd. lateral approx.			l						
vd. central approx.					j			y	w

  

Language	bilabial	labio-dental	dental	alveolar	palatal	velar	uvular
Spanish (O11)							
voiceless plosive	p		t			k	
vl. sibilant affric.				tʃ			
vl. nonsibilant fric.		f	θ				
vd. nonsibilant fric.	β		ð				
vl. sibilant fric.			s				
voiced nasal	m		n				
voiced trill			r				
voiced tap				D			
vd. lateral approx.			ʎ		ɲ		
vd. central approx.					j		w

Vowels	high	mid	low
i, y			
e, ø			
ε, œ			
a			
o:			
ø			
œ			
æ			
ɔ			
ɔ			
u			
ɪ			
"e"			
"o"			
a			

Language	Labiodental	Dental/alveolar	Alveolar	Palato-alveolar	Palatal	Velar	Variable place	Labial-velar
Romanian (012)								
voiceless plosive	p	"t"				k		
voiced plosive	b	"d"				g		
vl. sibilant affric.		"ts"		tʃ				
vd. sibilant affric.				dʒ				
vl. nonsibilant fric.		f						
vd. nonsibilant fric.		v						
vl. sibilant fric.		"s"		ʃ				
vd. sibilant fric.		"z"		ʒ				
voiced nasal	m	"n"						
voiced flap								
vd. lateral approx.								
vd. central approx.								
<u>Vowels</u>								
high	i							
higher mid		e						
mid		"ə"						
low		a						

  

Language	Bilabial	Labio-dental	Dental/alveolar	Alveolar	Palato-alveolar	Palatal	Velar	Variable place	Labial-velar
Farsi (013)									
voiceless plosive									
vl. aspirated plos.	p <sup>h</sup>	t <sup>h</sup>							
voiced plosive	b	d							
vl. sibilant affric.					tʃ				
vd. sibilant affric.					dʒ				
vl. nonsibilant fric.		f							
vd. nonsibilant fric.		v							
vl. sibilant fric.					"s"				
vd. sibilant fric.					"z"				
voiced nasal	m	n							
voiced trill									
vd. lateral approx.					"l"				
vd. central approx.					"r"				
<u>Vowels</u>									
high	i								
higher mid		e							
mid		"ə"							
low		a							

Language	Labial	Labio-dental	dental/alveolar	alveolar	pharyngealized	palato-alveolar	palatal	velar	uvular	pharyngeal	glottal
Kurdish (015)											
voiceless plosive	p		t					k	q		ʔ
voiced plosive	b		d					g			
vl. sibilant affric.					tʃ						
vd. sibilant affric.						dʒ					
vl. nonsibilant fric.		f						x		ħ	
vd. nonsibilant fric.			v					y		ʕ	
vl. sibilant fric.			s		sʃ						
vd. sibilant fric.			z			ʒ					
voiced nasal			m								ŋ
voiced trill											
voiced flap											
vd. lateral approx.											
vd. central approx.											

Language	Labial	Labio-dental	dental/alveolar	palato-alveolar	retroflex	palatal	velar	uvular	variable place	Labial-velar
Pashto (014)										
voiceless plosive	p		"t"		t		k			
voiced plosive	b		"d"		d		g			
vl. sibilant affric.			"ts"	tʃ						
vd. sibilant affric.			"dz"	dʒ						
vl. nonsibilant fric.		f						x	h	
vd. nonsibilant fric.		β						ɸ		
vl. sibilant fric.			"s"	ʃ	ʂ					
vd. sibilant fric.			"z"	ʒ	ʐ					
voiced nasal		m	"n"		ɳ					
voiced trill			"r"		r					
voiced lateral fric.				lʃ						
vd. central approx.						j				w

Vowels

high	i	ɨ	o	ɔ	ɯ	u
mid	"e"		"ə"		"eɨ"	"oɯ"
low						a

Diphthongs

el	eɨ	ai	oi	ul
eu	əu	əu	əu	əu
				a:

Language	bilabial	labio-dental	dental	dental/alveolar	palato-alveolar	retroflex	palatal	velar	uvular	glottal	variable place
Hindi-Urdu (016)	p		t			t		k	q <sup>2</sup>	ʔ <sup>2</sup>	
voiceless plosive	p <sup>h</sup>	t <sup>h</sup>	t <sup>h</sup>			t <sup>h</sup>		k <sup>h</sup>			
vl. aspirated plos.	b	d	d			d		g			
voiced plosive	b <sup>h</sup>	d <sup>h</sup>	d <sup>h</sup>			d <sup>h</sup>		g <sup>h</sup>			
breathy vd. plos.											
vl. sibilant affric.											
vl. asp. sib. affric.											
vd. sibilant affric.											
breathy vd. sib. affric.											
vl. nonsibilant fric.											
vd. nonsibilant fric.											
vl. sibilant fric.											
vd. sibilant fric.											
voiced nasal	m		n								
breathy vd. nasal	m <sup>h</sup>		n <sup>h</sup>								
voiced trill											
voiced flap											
vd. lateral approx.											
breathy vd. lat. approx.											
vd. central approx.											

Language	bilabial	dental/alveolar	palato-alveolar	retroflex	palatal	velar	variable place
Bengali (017)	p	"t"		t		k	
voiceless plosive	p <sup>h</sup>	"t <sup>h</sup> "		t <sup>h</sup>		k <sup>h</sup>	
vl. aspirated plos.	b	"d"		d		g	
voiced plosive	b <sup>h</sup>	"d <sup>h</sup> "		d <sup>h</sup>		g <sup>h</sup>	
breathy voiced plos.							
vl. sibilant affric.							
vl. asp. sib. affric.							
vd. sibilant affric.							
breathy vd. sib. affric.							
vl. nonsibilant fric.							
vl. sibilant fric.		"s" <sup>2</sup>					
voiced nasal	m	"n"					
voiced flap							
vd. lateral approx.							
vd. central approx.							
vd. mid central approx.							

Vowels	high	higher mid	mid	lower mid	low
	i	e	ə	ɔ	ɑ
	ɪ	ɛ	ɜ	ɔ̄	ɑ̄
	u	o	ɔ	ɔ̄	ɑ̄
	ɪ	ɛ	ɜ	ɔ̄	ɑ̄
	u	o	ɔ	ɔ̄	ɑ̄

Language  
Punjabi (019)

voiceless plosive	p	bilabial	Labial-dental	dental	dental/alveolar	palato-alveolar	retroflex	palatal	velar	variable place	Labial-velar
long voiceless plos.	p:			"t:"	"t:"		t		k		
vl. aspirated plos.	p <sup>h</sup>			"t <sup>h</sup> "	"t <sup>h</sup> "		t <sup>h</sup>		k <sup>h</sup>		
long vl. asp. plos.	p <sup>h</sup> :			"t <sup>h</sup> :"	"t <sup>h</sup> :"		t <sup>h</sup> :		k <sup>h</sup> :		
voiced plosive	b			"d"	"d"		d		g		
long voiced plos.	b:			"d:"	"d:"		d:		g:		
vl. sibilant affric.						tʃ					
long vl. sib. affric.						tʃ:					
vl. asp. sib. affric.						tʃ <sup>h</sup>					
long vl. asp. sib. aff.						tʃ <sup>h</sup> :					
vd. sibilant affric.						dʒ					
long vd. sib. affric.						dʒ:					
vl. nonsibilant fric.			f <sup>2</sup>								
vd. nonsibilant fric.											
vl. sibilant fric.						ʒ					
long vl. sib. fric.						ʒ:					
vd. sibilant fric.						ʒ <sup>2</sup>					
voiced nasal	m					ɳ					
long vd. nasal	m:					ɳ:					
voiced trill											
voiced flap											
vd. lateral approx.						l					
long vd. lat. approx.						l:					
vd. central approx.											

Language  
Kashmiri (018)

voiceless plosive	p	bilabial	dental	dental/alveolar	alveolar	palato-alveolar	retroflex	palatal	velar	variable place	Labial-velar
vl. aspirated plos.	p <sup>h</sup>		t <sup>h</sup>			t <sup>h</sup>	t <sup>h</sup>		k		
voiced plosive	b		d			d	d		g		
vl. sibilant affric.				ts	tʃj						
vl. asp. sib. affric.				ts <sup>h</sup>	tʃ <sup>h</sup>						
vd. sibilant affric.				dʒ	dʒ <sup>h</sup>						
vd. nonsibilant fric.											
vl. sibilant fric.			"s"		fʃ						
voiced nasal	m			n							
voiced trill				r							
vd. lateral approx.				l							
vd. central approx.								j			

Vowels

high	i	ɪ	u	ʊ	ɨ	ɨ					
higher mid	e	o		ø	ø						
mid	"e"			"g"							
low	a			ə							

Vowels

high	i	ɪ	u	ʊ	ɨ	ɨ					
higher mid	e	o		ø	ø						
mid	"e"			"g"							
low	a			ə							

<u>Language</u>		Sinhalese (020)	
voiceless plosive	p	bilabial	
voiced plosive	b	dental	
v1. nonsibilant affric.	t	dental/alveolar	
vd. nonsibilant affric.	ʈ	alveolar	
v1. nonsibilant fric.	ʃ	palato-alveolar	
vd. nonsibilant fric.	ʒ	retroflex	
v1. sibilant fric.	ʂ	palatal	
vd. sibilant fric.	ʐ	velar	
v1. sibilant fric.	ʑ	variable place	
voiced nasal	m		
voiced flap	n		
vd. lateral approx.	ɲ		
vd. central approx.	ɳ		

  

<u>Vowels</u>		Sinhalese (020)	
high	i	o	u
higher mid	e	o:	o:
mid	ɛ	ɛ:	ɔ:
low	a	æ:	a:

<u>Language</u>		Albanian (021)	
voiceless plosive	p	bilabial	
voiced plosive	b	labio-dental	
v1. sibilant affric.	tʃ	dental	
vd. sibilant affric.	ʈʂ	dental/alveolar	
v1. nonsibilant affric.	ʃ	alveolar	
vd. nonsibilant affric.	ʒ	alveolar velarized	
v1. nonsibilant fric.	ʂ	palato-alveolar	
vd. nonsibilant fric.	ʐ	palatal	
v1. sibilant fric.	ʑ	velar	
voiced nasal	m	variable place	
vd. lateral approx.	ɲ		
vd. central approx.	ɳ		

  

<u>Vowels</u>		Albanian (021)	
high	i, y	u	
mid	ɛ	ɛ	
low	a		



<u>Language</u>	Labio-dental	dental/alveolar	palato-alveolar	retroflex	palatal	velar	uvular	variable place	<u>Language</u>	bilabial	labio-dental	dental/alveolar	palato-alveolar	retroflex	palatal	velar	uvular	variable place
E. Armenian (022)	p	"t"	"ts"	"tʃ"		k			Ostyak (050)	p	"t"					k		
voiceless plosive	ph	"tʰ"	"tsʰ"			kʰ			voiceless plosive									
vl. aspirated plos.	p'	"tʰ"	"tʃʰ"			k'			vl. sibilant affric.									
vl. ejective stop									vd. nonsibilant fric.									
vl. sibilant affric.									vl. sibilant fric.									
vl. asp. sib. affric.									voiced nasal									
vl. eject. sib. affric.									voiced trill									
vl. nonsibilant fric.		fʰ	"tsʰ"						vd. lateral approx.									
vd. nonsibilant fric.	v		"tsʰ"						vd. central approx.									
vl. sibilant fric.									<u>Vowels</u>									
vd. sibilant fric.									high									
voiced nasal	m								mid									
voiced trill									low									
vd. lateral approx.																		
vd. central approx.																		
<u>Vowels</u>																		
high	i																	
mid	"e"																	
low	a																	

<u>Vowels</u>									
high	i	u							
mid	"e"	"o"							
low	a								

<u>Vowels</u>									
high	i	u, w							
mid	"e"	"o"							
low	a								

Language

Cheremis (051)

voiceless plosive p p<sup>2</sup>

vl. sibilant affric. β f<sup>2</sup>

vl. nonsibilant fric. ø

vd. nonsibilant fric. "s" j x<sup>2</sup>

vl. sibilant fric. "z" ʒ y

vd. sibilant fric. "n" p ɒ

voiced nasal m

voiced flap

vd. lateral approx. "l" λ

vd. central approx. "l" j

Vowels

high i, y u

higher mid ø

mid "e" "o"

lower mid ε λ

bilabial p p<sup>2</sup>

bilabial palatalized β

dental "t" "t<sup>n</sup>"

dental/alveolar "ts<sup>n</sup>" "tʃ<sup>n</sup>"

dental/alv. palatalized "tʃ"

palato-alveolar "tʃ"

palatal j ʒ

velar k

Language

Komi (052)

voiceless plosive p

voiced plosive b

vl. sibilant affric. "ts<sup>n</sup>" tʃ

vd. sibilant affric. dʒ

vl. nonsibilant affric. cɥ

vd. nonsibilant affric. fʃ

vl. nonsibilant fric. f<sup>2</sup> ɕ x<sup>2</sup>

vd. nonsibilant fric. v y

vl. sibilant fric. s ʃ

vd. sibilant fric. z ʒ

voiced nasal m n

voiced trill "r<sup>n</sup>"

vd. lateral approx. l

vd. central approx. j

Vowels

high i u

higher mid o

mid "e" "ə"

low a

Language	bilabial	labio-dental	dental	dental/alveolar	alveolar	palato-alveolar	palatal	velar	variable place
<u>Finnish (053)</u>									
voiceless plosive	p	f <sup>2</sup>	t					k	velar
long voiceless plos.	p:		t:					k:	
voiced plosive	b <sup>2</sup>		d <sup>4</sup>					g <sup>2</sup>	palatal
vl. nonsibilant fric.		f <sup>2</sup>							palato-alveolar
vd. nonsibilant fric.		v							alveolar
vl. sibilant fric.				s	f <sup>2</sup>				dental/alveolar
long vl. sib. fric.				s:					dental
voiced nasal	m:		ɱ						labio-dental
long voiced nasal	m:		ɱ:					ɱ: <sup>4</sup>	bilabial
voiced trill				"r:"					palato-alveolar
long voiced trill				"r:":					alveolar
vd. lateral approx.			l						palatal
long vd. lat. approx.			l:						palato-alveolar
vd. central approx.									alveolar

Language	bilabial	labio-dental	dental	dental/alveolar	alveolar	palato-alveolar	palatal	velar	variable place
<u>Hungarian (054)</u>									
voiceless plosive	p		t					k	velar
voiced plosive	b		ɸ					g	palatal
vl. sibilant affric.			tʃ						palato-alveolar
vd. sibilant fric.			dʒ <sup>2</sup>						dental/alveolar
vl. nonsibilant affric.									dental
vd. nonsibilant affric.									labio-dental
vl. nonsibilant fric.				f					bilabial
vd. nonsibilant fric.				v					palato-alveolar
vl. sibilant fric.									dental/alveolar
vd. sibilant fric.									dental
voiced nasal									labio-dental
voiced trill									bilabial
vd. lateral approx.									palato-alveolar
vd. central approx.									dental/alveolar

Vowels

high i:, y: u: i<sup>1</sup> y<sup>1</sup> u

higher mid e:, ø: o: ø

lower mid ε

low ə a a: a<sup>1</sup> p

Language	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	variable place
Lappish (055)							
voiceless plosive	p	"t"			k		
voiced plosive	b	"d"			g		
vl. sibilant affric.			"ts"	tʃ			
vl. nonsibilant fric.		f	"s"	ʃ		h	
voiced nasal	m	"n"	"ɲ"		ɲ		
voiced trill		"r"					
vd. lateral approx.		"l"					
vd. central approx.	β				j		
<u>Vowels</u>							
high	i		ɨ		u		
mid		e		o			
low		a					

  

Language	bilabial	bilabial palatalized	dental	dental palatalized	dental/alveolar	dental/alv. palatalized	palatal	velar	glottal
Yurak (056)									
voiceless plosive	p	pʲ			t	tʲ		k	ʔ
voiced plosive	b	bʲ							
vl. sibilant affric.					ts	tsʲ			
vl. nonsibilant fric.									
vd. nonsibilant fric.			ð	ðʲ					x
vl. sibilant fric.					s	sʲ			
voiced nasal	m	mʲ			n	nʲ			ŋ
voiced trill					r	rʲ			
vd. lateral approx.					l	lʲ			
vd. central approx.									j
<u>Vowels</u>									
high	i			u	ɤ	ɤʲ			
mid		e	o						
low		a							

Language	bilabial	dental	dental/alveolar	palatal	velar	glottal	bilabial	labio-dental	dental	dental/alveolar	alveolar	palato-alveolar	palatal	velar	glottal	variable place
<u>Language</u>																
Tavgy (057)																
voiceless plosive	p		"t"	c	k	ʔ										
voiced plosive	b		"d"	tʃ	g											
vl. nonsibilant affric.					kx											
vd. nonsibilant fric.		ð														
vl. sibilant fric.			"s"													
voiced nasal	m		"n"	ɲ	ŋ											
voiced trill			"r"													
vd. lateral approx.			"l"	ʎ												
vd. central approx.				j												
<u>Vowels</u>																
high	i, y	i	ɪ	u												
mid		"e"	"ə"	"o"												
low	a															

Language  
Osmani (058)

voiceless plosive  
vl. aspirated plos.  
voiced plosive  
vl. sibilant affric.  
vd. sibilant affric.  
vl. nonsibilant fric.  
vd. nonsibilant fric.  
vl. sibilant fric.  
vd. sibilant fric.  
voiced nasal  
voiced flap  
vd. lateral approx.  
vd. central approx.

Vowels  
high  
mid  
lower mid  
low

i, y  
u, w  
"o"  
ɛ, œ  
a

Language

Azerbaijani (059)

voiceless plosive  
 vl. aspirated plos.  
 vl. sibilant affric.  
 vd. sibilant affric.  
 vl. nonsibilant fric.  
 vd. nonsibilant fric.  
 vl. sibilant fric.  
 vd. sibilant fric.  
 voiced nasal  
 vd. lateral approx.  
 vd. central approx.

bilabial  
 labio-dental  
 dental  
 dental/alveolar  
 alveolar  
 palato-alveolar  
 palatal  
 velar  
 variable place

p p<sup>h</sup>  
 t t<sup>h</sup>  
 f v  
 tʃ dʒ  
 c ch  
 k k<sup>2</sup>  
 x h  
 y  
 s ʃ  
 z ʒ  
 "n"  
 "l"  
 j

Vowels

high  
 higher mid  
 lower mid  
 low

ɪ, ʏ  
 ø  
 ε  
 ɛ̃  
 ɔ  
 ɑ

Language

Chuvash (060)

voiceless plosive  
 voiced plosive  
 vl. sibilant affric.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 vd. sibilant fric.  
 voiced nasal  
 long voiced nasal  
 voiced trill  
 long voiced trill  
 vd. lateral approx.  
 long. vd. lat. approx.  
 vd. central approx.  
 long vd. cent. approx.

bilabial  
 labio-dental  
 dental/alveolar  
 dental/alv. palatalized  
 palato-alveolar  
 palatal  
 velar  
 labial-velar

p b  
 b<sup>2</sup>  
 t<sup>2</sup>  
 tʃ  
 f<sup>2</sup>  
 "t"  
 "tʃ"  
 "d"<sup>2</sup>  
 "tʃ"<sup>2</sup>  
 "s"  
 "z"<sup>2</sup>  
 "h"  
 "h"<sup>2</sup>  
 "r"  
 "r"<sup>2</sup>  
 "l"  
 "l"<sup>2</sup>  
 "l:"  
 m  
 m:  
 m  
 m:  
 "l"  
 "l:"  
 j  
 j:  
 w  
 w:

Vowels

high  
 higher mid  
 mid  
 lower mid  
 low

ɪ, ʏ  
 ø  
 "e"  
 "o"<sup>2</sup>  
 ɔ  
 ɑ  
 u, w

Language	bilabial	labio-dental	dental	dental/alveolar	dental/alv. velarized	palato-alveolar	palatal	palatal nasalized	Velar	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	Velar
Yakut (061)															
voiceless plosive	p <sup>2</sup>			"h"		tʃ		k		p					
long voiceless plosive	p:		"t:"		tʃ:			k:		ph					
voiced plosive	b		"p"					g			f				
vl. sibilant affric.										β					
long vl. sib. affric.															
vd. sibilant affric.						dʒ									
long vd. sib. affric.						dʒ:									
vl. nonsibilant fric.		f <sup>2</sup>								m					
vd. nonsibilant fric.		v <sup>2</sup>													
vl. sibilant fric.			s			f <sup>2</sup>									
long vl. sib. fric.			ʒ:												
vd. sibilant fric.			ʒ <sup>2</sup>			ʒ <sup>2</sup>									
voiced nasal	m		ɲ												
long voiced nasal	m:		ɲ:												
voiced trill				"r"											
vd. lateral approx.				"r:"											
long vd. lat. approx.															
vd. central approx.															
<u>Vowels</u>															
high	i, y														
lower mid	ɛ, œ														
low	a														

Language	Labial	Labio-dental	dental	alveolar	palato-alveolar	palatal	velar	glottal	variable place	labial-velar
Bashkir (063)										
voiceless plosive	p			t			k	ʔ <sup>2</sup>		
voiced plosive	b			d			g			
vl. sibilant affric.				t <sup>s</sup> <sup>2</sup>	tʃ <sup>2</sup>		x		h	
vl. nonsibilant fric.		f <sup>2</sup>	θ							
vd. nonsibilant fric.		v <sup>2</sup>								
vl. sibilant fric.				s	f					/
vd. sibilant fric.				z <sup>2</sup>	ʒ <sup>2</sup>		ŋ			
voiced nasal	m			n						
voiced trill				r						
vd. lateral approx.				l						
vd. central approx.						j				w

Language	bilabial	labio-dental	dental	alveolar	palato-alveolar	palatal	velar	palato-alveolar	palatal	velar	variable place
Khalaj (064)											
voiceless plosive											
voiced plosive											
vl. sibilant affric.								tʃ			
vd. sibilant affric.								dʒ <sup>2</sup>			
vl. nonsibilant fric.											
vd. nonsibilant fric.		f <sup>2</sup>									
vl. sibilant fric.		v <sup>2</sup>									
vd. sibilant fric.								"s"			
voiced nasal								"z"			
voiced tap								"d"			
vd. lateral approx.								"l"			

Vowels	bilabial	labio-dental	dental	alveolar	palato-alveolar	palatal	velar	palato-alveolar	palatal	velar	variable place
high	i, y										
higher mid		ɸ									
mid											
low											



Language	Labio-dental	Dental	Palato-alveolar	Palatal	Velar
Tuva (065)					
voiceless plosive	p	t			k
voiced plosive	b	d			g
vl. sibilant affric.		tʃ	tʃ		
vl. nonsibilant fric.	f				
vd. nonsibilant fric.	v				ɣʂ
vl. sibilant fric.		ʂ	ʃ		
vd. sibilant fric.		ʐ	ʒ		
voiced nasal	m	n			ŋ
voiced trill		r			
vd. lateral approx.		l			
vd. central approx.					

  

Language	Bilabial	Dental/alveolar	Palato-alveolar	Palatal	Velar
Mongolian (066)					
vl. aspirated plos.	pʰ	tʰ			kʰ
voiced plosive	b	d			g
vl. sibilant affric.		tʃ	tʃ		
vd. sibilant affric.		dʒ	dʒ		
vl. nonsibilant fric.	ɸ <sup>2</sup>				
vd. nonsibilant fric.	β <sup>2</sup>				x
vl. sibilant fric.		ʂ	ʃ		
voiced nasal	m	n			
voiced trill		r			
vd. lateral approx.		l			
vl. lateral approx.		l̥			
vd. central approx.					

Vowels	high	higher mid	mid	low
	i, y	e	ə	o
				ɔ
				o:

<u>Language</u>	bilabial	dental/alveolar	alveolar	palato-alveolar	palatal	velar
Evenki (067)	p <sup>2</sup>	"t"				k
voiceless plosive	p	"t"				k
voiced plosive	b	"p"				g
vl. sibilant affric.				tʃ		
vd. sibilant affric.				dʒ		
vd. nonsibilant fric.	β		s			x
vl. sibilant fric.						
vd. sibilant fric.		"z" <sup>h</sup>				
voiced nasal	m	"n"				ŋ
voiced trill		"r"				
vd. lateral approx.		"l"				
vd. central approx.						

  

<u>Language</u>	bilabial	dental/alveolar	palato-alveolar	palatal	velar
Goldi (068)	p	"t"			
voiceless plosive	p	"t"			
voiced plosive	b	"d"			
vl. sibilant affric.			tʃ		
vd. sibilant affric.			dʒ		
vl. nonsibilant fric.					
vd. nonsibilant fric.	β				
vl. sibilant fric.		"s"			
voiced nasal	m	"n"			
voiced trill		"r"			
vd. lateral approx.		"l"			

<u>Vowels</u>						
high	i	u	iː	uː	ɨ	ɤ
higher mid	e	o				
low	a					

  

<u>Vowels</u>						
high	ɨ	u	iː	uː	ɨ	ɤ
mid		"o"				
lower mid	ɛ	ɔ	ɛː	ɔː	ɛə, ɨə, ɨə	
low	a					

<u>Language</u>	labio-dental	dental	dental/alveolar	palato-alveolar	palatal	velar	bilabial	labial-velar
Manchu (069)								
voiceless plosive	p <sup>l</sup>	t				k	p	"t"
voiced plosive	b	d				g	ph	"tʰ"
vl. sibilant affric.			tʃ				p	"t̥"
vd. sibilant affric.			dʒ					tʃ
vl. nonsibilant fric.	f					x		tʃʰ
vl. sibilant fric.								tʃ
voiced nasal	m	n				n	m	
voiced trill			"r"					
vd. lateral approx.		l						
vd. central approx.					j			

Vowels

high	i	u
higher mid	ø	
mid	"e"	"o"
low	a	

Vowels

high	i, y	u, w	i:	u:, w:
higher mid	e, ø	o	e:	o:
mid		"y"		"x:"
low	a	æ	a:	a:

Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	velar nasalized	variable place	labial-velar
Japanese (071)								
voiceless plosive	p	"t"	tʃ		k			
long voiceless plosive	p	"tː"	"ts," <sup>4</sup> tʃ: <sup>4</sup>		k:			
voiced plosive	b	"d"	dʒ		g <sup>4</sup>			
vl. sibilant affric.								
long vl. sib. affric.								
vd. sibilant affric.								
vl. nonsibilant fric.								
long vl. nonsib. fric.								
vl. sibilant fric.		"s"	ʃ					
long vl. sib. fric.		"sː"	ʃ:					
vd. sibilant fric.		"z"						
voiced nasal	m	"n"						
voiced flap		"ɾ"						
vd. central approx.								
Vowels								
high	i							
lower mid		e						
low								

Language	bilabial	dental	labio-dental	dental	dental/alveolar	alveolar	palatal	velar	labial-velar
Katcha (100)									
voiceless plosive		t̪			t				
voiced plosive	b	d			d				
vd. implosive	ɓ	"ɗ"			"ɗ"				
vl. nonsibilant fric.			f						
vl. sibilant fric.					"s"				
vd. sibilant fric.					"z"				
voiced nasal	m				"n"				
voiced trill					"r"				
vd. lateral approx.					"l"				
vd. central approx.									
Vowels									
high	i								
higher mid		e							
lower mid		ɛ							
low									

Language	bilabial	labio-dental	dental	alveolar	palatal	velar	labial-velar
Kadugli (102)							
voiceless plosive	p		t	t	c	k	
voiced plosive	b		d	d		g	
vl. sibilant affric.				tʃ			
vd. sibilant affric.				dʒ			
vl. nonsibilant fric.		f					
vd. nonsibilant fric.			θ				
vl. sibilant fric.			s				
voiced nasal	m			n	ɲ	ŋ	
voiced trill				r			
voiced lateral flap							
vd. lateral approx.				l			
vd. central approx.							
<u>Vowels</u>							
	i	"e"					
high							"o"
mid							
low							a

Language	bilabial	labio-dental	dental	alveolar	palato-alveolar	retroflex	palatal	velar	labial-velar
Moro (101)									
voiceless plosive	p		t			t		k	
voiced plosive	b							g	
vl. sibilant affric.									
vd. sibilant affric.									
vl. nonsibilant fric.		f							
vd. nonsibilant fric.			θ						
vl. sibilant fric.			s						
voiced nasal	m			n			ɲ	ŋ	
voiced trill				r					
voiced lateral flap									
vd. lateral approx.				l					
vd. central approx.									
<u>Vowels</u>									
	i	"e"							
high									
mid									
low									a

<u>Language</u>	bilabial	labio-dental	alveolar	palatal	velar	velar labialized	labial-velar
<u>Kpelle (103)</u>							
voiceless plosive	p		t		k	k <sup>w</sup>	kp
voiced plosive	b		d		g	g <sup>w</sup>	gb
vd. implosive	β						
vl. nonsibilant fric.		f					
vd. nonsibilant fric.		v				y	
vl. sibilant fric.			s				
vd. sibilant fric.			z				
voiced flap			r				
vd. lateral approx.			l				
vd. central approx.				j			

  

<u>Language</u>	bilabial	labio-dental	alveolar	palatal	velar	velar labialized	labial-velar
<u>Bisa (104)</u>							
voiceless plosive	p		t				
voiced plosive	b		d				
vl. nonsibilant fric.		f					
vd. nonsibilant fric.		v					
vl. sibilant fric.			s				
vd. sibilant fric.			z				
voiced nasal			m				
voiced trill			r				
vd. lateral approx.			l				
vd. central approx.				j			

<u>Vowels</u>	bilabial	labio-dental	alveolar	palatal	velar	velar labialized	labial-velar
high	i						
lower mid	e	ɔ	o	u			
low	a						

  

<u>Vowels</u>	bilabial	labio-dental	alveolar	palatal	velar	velar labialized	labial-velar
high							
higher mid							
lower mid							
low							

Language

Bambara (105)

voiceless plosive

voiced plosive

v1. sibilant affric.

vd. sibilant affric.

v1. nonsibilant fric.

v1. sibilant fric.

vd. sibilant fric.

voiced nasal

voiced tap

vd. lateral approx.

vd. central approx.

bilabial

p

b

labio-dental

t

d

palato-alveolar

tʃ

dʒ

alveolar

s

z

variable place

h

palatal

ʃ

velar

k

g

labial-velar

kp

gb

Language

Dan (106)

voiceless plosive

voiced plosive

vd. implosive

v1. nonsibilant fric.

vd. nonsibilant fric.

v1. sibilant fric.

vd. sibilant fric.

voiced nasal

vd. lateral approx.

vd. central approx.

bilabial

p

b

ɓ

labio-dental

f

v

alveolar

t

d

ɗ

palatal

ʈ

velar

k

g

labial-velar

kɸ

gb

Vowels

high

higher mid

lower mid

low

i

e

ɛ

a

ɪ

u

o

ɔ

ʊ

ø

ɛ̃

ɔ̃

Vowels

high

higher mid

mid

lower mid

low

i

e

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Language	Labial-velar	glottal	uvular	velar	palatal	dental/alveolar	labio-dental	bilabial	Labial-velar	Labial-dental	alveolar	palatal	velar	Variable place	Labial-velar
Wolof (107)															
voiceless plosive	"t"	ʔ		k	c	"t"	p				t	c	k		
voiced plosive	"d"				f	"d"	b				d	f	g		
long voiced plosive					f:		b:				f				
vl. nonsibilant affric.			ʧ								s				
vl. nonsibilant fric.			χ			f					n	n	ŋ		
vl. sibilant fric.	"s"					"s"	m				r				
voiced nasal	"n"			ŋ	ɲ	"n"	m				l				
long voiced nasal	"n:"					"n:"	m:					j			w
voiced flap	"ɾ"					"ɾ"									
vd. lateral approx.	"l"					"l"									
long vd. lat. approx.	"l:"					"l:"									
vd. central approx.					j										
<u>Vowels</u>															
high	i:				u:										
higher mid	e:				o:										
lower mid	ɛ:				ɔ:							ɛ	"ə"	ɔ	
low	a:												a		



<u>Language</u>	Labiodental	Dental	Alveolar	Palatal	Velar	Labial-velar
Temne (109)						
voiceless plosive	p	t	t		k	ɕ <sup>1</sup>
voiced plosive	b		d		g	gb
vl. nonsibilant fric.						h
vl. sibilant fric.			s			
voiced nasal	m		n			
voiced trill			r			
vd. lateral approx.			l			
vd. central approx.				j		w
<u>Vowels</u>						
high	i			u		
higher mid		e				
mid		"e"				
lower mid		ɛ		ɔ		
low		a		a		

  

<u>Language</u>	Bilabial	Labio-dental	Dental/alveolar	Palato-alveolar	Palatal	Velar	Labial-velar
Dagbani (110)							
voiceless plosive	p		"t"			k	kp
voiced plosive	b		"d"			g	gb
vl. sibilant affric.				tʃ			
vd. sibilant affric.				dʒ			
vl. nonsibilant fric.							
vd. nonsibilant fric.		f					
vl. sibilant fric.		v					
vd. sibilant fric.			"s"				
voiced nasal			"z"				
vd. lateral approx.	m		"n"		ɲ	ŋ	mŋ
vd. central approx.			"l"		j		w
<u>Vowels</u>							
high		i:		u:	i	u	ɛi
higher mid		e:		o:			ɔu
low						a:	a

Language	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	labial-velar
Senadi (111)							
voiceless plosive	p	"t"			c	k	kʰ
voiced plosive	b	"d"			ʃ	g	gʱ
vl. nonsibilant fric.		f					
vd. nonsibilant fric.		v					
vl. sibilant fric.		"s"	ʃ				
vd. sibilant fric.		"z"	ʒ				
voiced nasal	m	"n"				ŋ	
vd. lateral approx.		"l"					
vd. central approx.					j		w

  

Language	bilabial	labio-dental	alveolar	palatal	velar	labial-velar
Tampulma (112)						
voiceless plosive	p		t	c	k	kʰ
voiced plosive	b		d	ʃ	g	gʱ
vl. nonsibilant fric.		f				
vd. nonsibilant fric.		v				
vl. sibilant fric.			s			
vd. sibilant fric.			z			
voiced nasal	m		n	ɲ	ŋ	mŋ
voiced trill			r			
vd. lateral approx.			l			
vd. central approx.				j		w

Vowels	i	ɪ	e	ɛ	ɐ	ə	ɜ	ɝ	ɞ	ɔ	o	u	ʊ
high													
higher mid													
lower mid													
low													



Language

Akan (115)

bilabial	labio-dental	dental/alveolar	palatal	palatal labialized	velar	variable place	labial-velar
p <sup>h</sup>		"t <sup>h</sup> "	ɔɔ	ɔɔ <sup>w</sup>	k <sup>h</sup>		
b		"d"		ɔɔ <sup>w</sup>	g		
vl. aspirated plos.				ɔɔ <sup>w</sup>			
voiced plosive				ɔɔ <sup>w</sup>			
vl. nonsibilant affric.				ɔɔ <sup>w</sup>			
vd. nonsibilant affric.				ɔɔ <sup>w</sup>			
vl. nonsibilant fric.	f			ɔɔ <sup>w</sup>			
vl. sibilant fric.		"s"		ɔɔ <sup>w</sup>			
voiced nasal	m	"n"		ɔɔ <sup>w</sup>			
voiced trill		"r"		ɔɔ <sup>w</sup>			
vd. central approx.			j	ɔɔ <sup>w</sup>		h	w

Vowels

high	i	u	ɔ	ɔ̃	ɔ̃		
higher mid	e	o	o	ɔ̃	ɔ̃	ɔ̃	
lower mid							œ: <sup>l</sup>
low	a						œ: <sup>l</sup>

Language

Igbo (116)

bilabial	labio-dental	dental/alveolar	palatal	palatal-velar	palatal	velar	velar labialized	variable place	variable place labialized	labial-velar
p	p <sup>h</sup>	"t"	p <sup>h</sup>	p <sup>h</sup>	k	k <sup>w</sup>	k <sup>w</sup>			
vl. asp. plos.		"t <sup>h</sup> "			k <sup>h</sup>	k <sup>h</sup>	k <sup>h</sup>			
voiced plosive	b	"d"	b <sup>h</sup>	b <sup>h</sup>	g	g <sup>w</sup>	g <sup>w</sup>			
breathy vd. plos.	b	"d <sup>h</sup> "	b <sup>h</sup>	b <sup>h</sup>	g	g <sup>w</sup>	g <sup>w</sup>			
vl. implosive	p <sup>s</sup>									
vd. implosive	b									
vl. sib. affric.										
vd. sib. affric.										
breathy vd. sib. af.										
vl. nonsib. fric.	f									
vd. nonsib. fric.	v									
vl. sib. fric.		"s"								
vd. sib. fric.		"z"								
voiced nasal	m	"n"								
voiced flap		"ɾ"								
vd. lateral approx.		"l"								
vd. central approx.										

Vowels

high	i	u	ɔ	ɔ̃	ɔ̃		
higher mid	e	o	o	ɔ̃	ɔ̃	ɔ̃	ɔ̃
lower mid							ɔ̃
low	a						ɔ̃

Language	Labiodental	Dental	Dental/alveolar	Alveolar	Palato-alveolar	Palato-alv., labialized	Palatal	Velar	Variable place	Labial-palatal	Labial-velar	Language	Labiodental	Alveolar	Retroflex	Palatal	Velar	Labial-velar
Gã (117)	b <sup>h</sup>	t <sup>h</sup>		d	tʃ <sup>h</sup>	tʃ <sup>w</sup>		k <sup>h</sup>			ʔ	Lelami (118)	b		ɟ		k	ʔ
voiceless plosive												voiceless plosive						
v1. aspirated plos.												voiced plosive						
voiced plosive												v1. ejective stop						
v1. sibilant affric.												v1. sibilant affric.						
v1. asp. sib. affric.												vd. sibilant affric.						
vd. sibilant affric.												vd. nonsibilant affric.						
v1. nonsibilant fric.												v1. sibilant fric.						
vd. nonsibilant fric.												voiced nasal						
v1. sibilant fric.												vd. lateral approx.						
vd. sibilant fric.												vd. central approx.						
voiced nasal																		
voiced trill																		
vd. lateral approx.																		
vd. central approx.																		
<u>Vowels</u>												<u>Vowels</u>						
high	i		u									high	i	u	ɿ			
higher mid	e		o									higher mid	e	o				
lower mid	ɛ		ɔ									lower mid	ɛ	ɔ				
low	a											low	a					

<u>Language</u>	bilabial	labio-dental	alveolar	palato-alveolar	palatal	velar	variable place	labial-velar
Birum (120)								
voiceless plosive	p		t		c	k		kp
voiced plosive	b		d		f	g		gb
vl. nonsibilant fric.		f						
vd. nonsibilant fric.		v						
vl. sibilant fric.			s					
vd. sibilant fric.			z					
voiced nasal	m		n			ŋ		
vd. central approx.					j			w

<u>Language</u>	bilabial	labio-dental	alveolar	palatal	velar	labial-velar
Efik (119)						
voiceless plosive			t		k	kp
voiced plosive	b		d			
vl. nonsibilant fric.		f				
vl. sibilant fric.			s			
voiced nasal	m		n	p	ŋ	
vd. central approx.				j		w

Vowels

high i u

higher mid e o

lower mid ε ɔ

low a

Language	bilabial	labio-dental	alveolar	palato-alveolar	palatal	velar	variable place	labial-velar
Amo (122)	p		t	tʃ		k		kʰ
voiceless plosive								
voiced plosive	b		d	tʃ		g		gʱ
vd. implosive	ɓ							
vl. sibilant affric.			f	tʃ				
vd. sibilant affric.				dʒ				
vl. nonsibilant fric.								
vd. nonsibilant fric.			v					
vl. sibilant fric.								
vd. sibilant fric.								
voiced nasal	m		n			ŋ		
voiced r-sound			r					
vd. lateral approx.			l					
vd. central approx.								

Vowels

high	i	u
higher mid	e	o
lower mid	ɛ	ɔ
low	a	ɐ

Language	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	variable place	labial-velar
Tarok (121)	p	"t"				k		kʰ
voiceless plosive								
voiced plosive	b	"d"				g		gʱ
vd. implosive	ɓ	"ɗ"						
vl. sibilant affric.				tʃ				
vd. sibilant affric.				dʒ				
vl. nonsibilant fric.		f						
vd. nonsibilant fric.		v						
vl. sibilant fric.			"s"					
vd. sibilant fric.			"z"					
voiced nasal	m		"n"			ŋ		
voiced r-sound			"r"					
vd. lateral approx.			"l"					
vd. central approx.								

Vowels

high	i	u
mid	"e"	"o"
low	a	

Language	Labial-velar	Labial-dental	Dental/alveolar	Alveolar	Palato-alveolar	Palatal	Velar	Labial-velar
Swahili (124)								
voiceless plosive	p		"t"					
v1. aspirated plos.	p <sup>h</sup>		"t <sup>h</sup> "					
v1. sibilant affric.	ɸ		"ɸ"					
v1. asp. sib. affric.					tʃ			
v1. nonsibilant affric.					tʃ <sup>h</sup>			
v1. asp. nonsib. affric.		f						
v1. nonsibilant fric.		v						
vd. nonsibilant fric.								
v1. sibilant fric.			"s"					
vd. sibilant fric.			"z"					
voiced nasal	m		"n"					
vd. lateral approx.			"l"					
vd. central approx.								

Language	Labial-velar	Labial-dental	Dental/alveolar	Alveolar	Palatal	Velar	Variable place	Labial-velar
Beembe (123)								
voiceless plosive	p		"t"					
v1. aspirated plos.	p <sup>h</sup>		"t <sup>h</sup> "					
v1. sibilant affric.				ts				
v1. asp. sib. affric.				tsh				
v1. nonsibilant affric.		pf						
v1. asp. nonsib. affric.		pf <sup>h</sup>						
v1. nonsibilant fric.		f						
vd. nonsibilant fric.		v						
v1. sibilant fric.				s				
voiced nasal	m		"n"					
vd. lateral approx.			"l"					
vd. central approx.								

Vowels	high	higher mid	low
	i	e	a
	ɪ	ɛ	ɶ
	u	ɔ	ɔ̃
	ʊ	ɔ̃	ɶ



Language	bilabial	bilabial prenasalized	labio-dental	dental/alveolar	dental/alv. prenasalized	palato-alveolar	palato-alv. prenasalized	palatal	velar	velar prenasalized	variable place	labial-velar
<u>Language</u>												
Luvale (125)	p	m <sup>b</sup>	"m"	"n"	"n <sup>d</sup> "	tf	n <sup>dʒ</sup>	ɲ	ŋ			
voiceless plosive												
voiced plosive												
vl. sibilant affric.												
vd. sibilant affric.												
vl. nonsibilant fric.			f									
vl. sibilant fric.			"s"			f						
vd. sibilant fric.			"n"			ʒ						
voiced nasal	m		"ŋ"									
voiced lateral flap			"l"									
vd. central approx.			ɣ					j				
<u>Vowels</u>												
high	i			u								
higher mid		e	o									
low		a										

Language	bilabial	labio-dental	alveolar	palato-alveolar	palatal	velar	variable place	labial-velar
Zulu (126)	p	t	t					
voiceless plosive								
vl. aspirated plos.	p <sup>h</sup>	t <sup>h</sup>						
vl. ejective stop	p'	t'						
voiceless click				ɽ				
vd. implosive	b							
vl. affricated click			t <sup>s</sup>					
vl. sib. eject. affric.				tf				
vd. sibilant affric.					ʃʃ			
vd. lateral eject. aff.								
vl. nonsibilant fric.		f						
vd. nonsibilant fric.		v						
vl. sibilant fric.			s	ʃ				
vd. sibilant fric.			z					
vl. lateral fric.			ɬ					
vd. lateral fric.			ɮ					
voiced nasal	m		n	ɲ				
voiced trill			r <sup>2</sup>					
vd. lateral approx.			l					
vl. lat. affric. click			ɬ <sup>4</sup>					
vd. central approx.					j			

Vowels	high	lower mid	low
	i	ɛ	a
		o	
			u

Language

Teke (127)

voiceless plosive  
 voiced plosive  
 vl. sibilant affric.  
 vd. sibilant affric.  
 vl. nonsibilant affric.  
 vd. nonsibilant affric.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 vd. lateral approx.  
 vd. central approx.

bilabial  
 labio-dental  
 alveolar  
 palato-alveolar  
 palatal  
 velar  
 variable place  
 labial-velar

p t  
 b d  
 tʃ dʒ  
 pʃ bʃ  
 f s  
 m n  
 l j

Vowels

high  
 mid  
 low

ɪ  
 "e"  
 a

u

"o"

a

Language

Doayo (128)

voiceless plosive  
 voiced plosive  
 vd. implosive  
 vl. nonsibilant fric.  
 vd. nonsibilant fric.  
 vl. sibilant fric.  
 vd. sibilant fric.  
 voiced nasal  
 voiced r-spund  
 vd. lateral approx.  
 vd. central approx.

bilabial  
 labio-dental  
 dental/alveolar  
 palatal  
 velar  
 variable place  
 labial-velar

p b ɓ  
 f v  
 "t" "d" "ɗ"  
 "s" "z" "h" "r" "j"  
 m  
 n  
 j w

Vowels

high  
 higher mid  
 lower mid  
 low

ɪ  
 e  
 ɛ  
 a

u

o

ɔ

a

Language	bilabial	bilabial prenasalized	labio-dental	dental	dental prenasalized	alveolar	palatal	velar	velar prenasalized	glottal	variable place	labial-velar	labial-vel. prenasalized
Gbeya (129)	p	m <sup>b</sup>	f	t	t			k	ŋ <sup>g</sup>	ʔ		kp	
voiceless plosive	p												
voiced plosive	b	m <sup>b</sup>		p				g	ŋ <sup>g</sup>			gb	
vd. implosive	β			ɖ								m <sup>ɓ</sup> gb	
v1. nonsibilant fric.			f								h		
vd. nonsibilant fric.			v										
v1. sibilant fric.						s							
vd. sibilant fric.						z							
voiced nasal	m			ɱ				ŋ					
laryngd. vd. nasal	m̃			ɱ̃									
voiced flap			v			ɾ							
vd. lateral approx.				l									
vd. central approx.							j						
<u>Vowels</u>													
high	i			ɨ									
higher mid	e			o									
lower mid	ɛ			ɔ									
low	a												

Language	bilabial	labio-dental	alveolar	palatal	velar	variable place	labial-velar
Zande (130)							
voiceless plosive	p		t		k		kp
voiced plosive	b		d		g		gb
v1. nonsibilant fric.		f				h	
vd. nonsibilant fric.		v					
v1. sibilant fric.			s				
vd. sibilant fric.			z				
voiced nasal	m		n				
vd. central approx.				j			w
<u>Vowels</u>							
high	i						
higher mid	ɨ						
mid	o	"o"					
lower mid	ɛ	"e"					
low	a						

Language	bilabial	labio-dental	dental/alveolar	palato-alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar
Kanuri (201)	p	"t"	"t"	tʃ			k	ʔ		
	voiceless plosive									
	voiced plosive	b	"d"				g			
	vl. sibilant affric.			tʃ						
	vd. sibilant affric.			dʒ						
	vl. nonsibilant fric.	ɸ <sup>l</sup>	f <sup>l</sup>							
	vl. sibilant fric.		"s"	ʃ		x <sup>2</sup>				h
	vd. sibilant fric.		"z"							
	voiced nasal	m	"n"			n	ŋ			
	voiced trill		"r"							
	vd. lateral approx.		"l"							
	vd. central approx.									

Language	bilabial	labio-dental	dental/alv. palatalized	palatal	velar	labial-velar
Songhai (200)	b	"t"	"tj" <sup>4</sup>		k	
	voiceless plosive					
	voiced plosive		"d"	"pj" <sup>4</sup>	g	
	vl. nonsibilant fric.	f	"s"			
	vl. sibilant fric.		"z"			
	vd. sibilant fric.		"n"	ɲ	ŋ	
	voiced nasal	m	"r"			
	voiced r-sound		"l"			
	vd. lateral approx.			j	w	
	vd. central approx.					

Vowels

high	i	u	ɨ <sup>l</sup>
higher mid		o	ɔ <sup>l</sup>
mid	"e"		ɛ <sup>l</sup>
low	a		ɐ <sup>l</sup>

Language

Maba (202)

voiceless plosive  
voiced plosive  
vl. nonsibilant fric.  
vl. sibilant fric.  
vd. sibilant fric.  
voiced nasal  
voiced trill  
vd. lateral approx.  
vd. central approx.

bilabial  
labio-dental  
dental/alveolar  
alveolar  
palato-alveolar  
retroflex  
palatal  
velar  
glottal  
labial-velar

b  
f  
m

"t"  
"p"  
s  
z  
n  
r  
l

t  
d  
ʃ  
ʒ  
ɲ  
j  
w

?

Language

Fur (203)

voiceless plosive  
voiced plosive  
vd. sibilant affric.  
vl. nonsibilant fric.  
vd. nonsibilant fric.  
vl. sibilant fric.  
vd. sibilant fric.  
voiced nasal  
voiced trill  
vd. lateral approx.  
vd. central approx.

bilabial

labio-dental

alveolar

palato-alveolar

palatal

velar

variable place

labial-velar

p  
b

t  
d

k  
g

ʃ  
ʒ

f  
h

m  
n  
r  
l

s  
z

ʃ  
ʒ

ɲ  
j

ɲ  
j

ɲ  
j

Vowels

high  
higher mid  
mid  
lower mid  
low

i  
e

ɪ  
ɛ

u  
ɔ

o  
a

u  
i

u  
i

u  
a

Language	bilabial	dental/alveolar	alveolar	palato-alveolar	palatal	velar	labial-velar
Maasai (204)							
voiceless plosive	p	"t"				k	
vd. implosive	ɓ	"ɗ"			f	ɠ	
vl. sibilant affric.		"s"		tʃ			
vl. sibilant fric.		"ʃ"		ʃ			
voiced nasal	m	"n"			ɲ	ŋ	
voiced trill		"r"					
voiced flap							
vd. lateral approx.		"l"					
vd. central approx.					j		w
<u>Vowels</u>							
high	i						
higher mid		e					
lower mid		ɛ					
low							

  

Language	bilabial	labio-dental	dental	alveolar	palato-alveolar	palatal	velar	glottal	variable place
Luc (205)									
voiceless plosive									
vl. aspirated plos.	pʰ			th			kʰ	ʔ	
voiced plosive	b			d			g		
vl. sibilant affric.					tʃ				
vd. sibilant affric.					dʒ				
vl. nonsibilant affric.			ɬ						
vd. nonsibilant affric.			ɖ						
vl. nonsibilant fric.	f								h
vl. sibilant fric.				s					
voiced nasal	m			n			ŋ		
voiced flap				r					
vd. lateral approx.				l					
vd. central approx.									w
<u>Vowels</u>									
high	i								
mid		"e"					"o"		
low							a		

Language	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	variable place
Nubian (206)							
voiceless plosive			"t"			k	
voiced plosive	b		"d"			g	
v1. sibilant affric.				tʃ			
vd. sibilant affric.				dʒ			
v1. nonsibilant fric.		f					h
v1. sibilant fric.			"s"	ʃ			
voiced nasal	m		"n"		n		
voiced trill			"r"				
vd. lateral approx.			"l"				

Language	bilabial	dental	alveolar	palatal	velar	labial-velar
Nyangi (207)						
voiceless plosive	p		t	c	k	
vd. implosive	ɓ		ɗ	f	ɠ	
v1. sibilant fric.		s				
v1. lateral fric.			ɬ			
voiced nasal	m		n	ɲ	ŋ	
voiced trill			r			
vd. lateral approx.			l			
vd. central approx.				j		w

Vowels

high  
mid  
low

i  
"e"  
a

u

"o"

high  
higher mid  
lower mid  
low

i  
e  
ɛ  
a

o  
ɔ

u

Language

Ik (208)

bilabial  
labio-dental  
dental  
dental/alveolar  
alveolar  
palato-alveolar  
palatal  
velar  
uvular  
variable place  
labial-velar

voiceless plosive  
voiced plosive  
vl. ejective stop  
vd. implosive  
vl. sibilant affric.  
vd. sibilant affric.  
vl. eject. sib. affric.  
vl. eject. lat. affric.  
vl. nonsibilant fric.  
vl. sibilant fric.  
vd. sibilant fric.  
vl. lateral fric.  
vd. lateral fric.  
voiced nasal  
voiced trill  
vd. lateral approx.  
vd. central approx.

p  
b  
β

t  
d  
ɖ

f  
ts  
dz  
ts'

k  
g  
k'

h  
s  
z  
r  
j

l  
u  
o  
ɛ  
ɔ  
a

bilabial  
labial-velar  
velar  
uvular  
variable place  
labial-velar

Language

Sebei (209)

voiceless plosive  
vl. sibilant fric.  
voiced nasal  
voiced trill  
voiced flap  
vd. lateral approx.  
vd. central approx.

p  
m  
n  
r  
ɾ  
l

h  
i  
e  
mid  
lower mid  
low

bilabial  
dental/alveolar  
palatal  
velar  
labial-velar



<u>Language</u>	bilabial	labio-dental	dental	alveolar	palatal	velar	pharyngeal	variable place	labial-velar
Tama (210)									
voiceless plosive			t		k				
voiced plosive	b		ɖ		g				
vd. implosive	ɓ			ɗ					
v1. nonsibilant fric.		f					ħ	h	
v1. sibilant fric.				s					
voiced nasal	m			n					
voiced trill				r					
voiced flap				ɾ					
vd. lateral approx.				l					
vd. central approx.					j				w

<u>Language</u>	bilabial	dental	alveolar	palatal	velar	labial-velar
Temain (211)						
voiceless plosive	p	t	t		k	
voiced plosive	b	ɖ	d	ʃ	g	
v1. sibilant fric.			s			
voiced nasal	m	ɱ				
voiced trill			r			
vd. lateral approx.			l			
vd. central approx.				j		w

Vowels

high	i					u
higher mid		e				o
lower mid			ɛ			ɔ
low					a	

<u>Language</u>	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	variable place	labial-velar
Nera (212)								
voiceless plosive			"t"			k		
voiced plosive	b		"d"			g		
vd. sibilant affric.				dʒ				
vl. nonsibilant fric.		f					h	
vl. sibilant fric.			"s"	ʃ				
voiced nasal	m		"n"			ŋ		
voiced trill			"r"					
vd. lateral approx.			"l"					
vd. central approx.					j			w
<u>Vowels</u>								
high	i				u			
mid		"e"		"o"				
low		a						

  

<u>Language</u>	bilabial	labio-dental	dental	alveolar	palato-alveolar	palatal	velar	glottal	variable place
Tabi (213)									
voiceless plosive	p	t					k	ʔ	
voiced plosive	b	d					g		
vl. nonsibilant fric.		f	θ						
vd. nonsibilant fric.			ð						h
vl. sibilant fric.				s	ʃ				
vd. sibilant fric.				z					
voiced nasal	m			n			ŋ		
voiced trill				r					
vd. lateral approx.				l					
vd. central approx.						j			w
<u>Vowels</u>									
high	i								
higher mid		e							
mid				"e"					
lower mid			ɛ		ɔ				
low				a					

Language	bilabial	dental	dental/alveolar	palatal	palatal prenasalized	velar	velar prenasalized	Labial-velar
Yulu (216)	p	t		c	tʃ	k	ŋg	kʰ
voiceless plosive								
voiced plosive	b	d						
vd. implosive	ɓ		"ɗ"					
vl. nonsibilant fric.		θ						
vl. sibilant fric.			"dz"					
voiced nasal	m		"ŋ"					
voiced trill			"ʒ"					
vd. lateral approx.			"r"					
vd. central approx.			"l"					

Language	bilabial	dental	dental/alveolar	palatal	palatal prenasalized	velar	velar prenasalized	Labial-velar
Mursi (214)	p			c	tʃ	k	ŋg	kʰ
voiceless plosive								
voiced plosive	b							
vd. implosive	ɓ							
vl. nonsibilant fric.		θ						
vl. sibilant fric.								
voiced nasal	m							
voiced trill								
vd. lateral approx.								
vd. central approx.								

Language	bilabial	dental	dental/alveolar	palatal	palatal prenasalized	velar	velar prenasalized	Labial-velar
Mursi (214)	p			c	tʃ	k	ŋg	kʰ
voiceless plosive								
voiced plosive	b							
vd. implosive	ɓ							
vl. nonsibilant fric.		θ						
vl. sibilant fric.								
voiced nasal	m							
voiced trill								
vd. lateral approx.								
vd. central approx.								

Vowels	i	e	a	ɪ	ɛ	ə	u	o	ɔ	ʊ	ɔ̃	ɔ̃
high												
mid		"e"						"o"				
low			a									

Language	Labial	Labio-dental	Dental	Dental/alveolar	Palato-alveolar	Palatal	Velar	Glottal	Variable place	Labial-velar	Language	Labial	Labial prenasalized	Alveolar	Alveolar prenasalized	Palato-alveolar	Palatal	Palatal prenasalized	Velar	Velar prenasalized	Variable place
Logbara (215)	p	t	t				k	ʔ		kʰ	Sara (217)	p		t					k		
	b	d	d				g			gʰ		b	m <sup>b</sup>	d				ŋ	g		
	b	b	b		tʃ							β		ɸ		dʒ					
	vi. sibilant affric.											vi. sibilant affric.									
	vd. sibilant affric.				dʒ							vi. nonsibilant fric.									
	vi. nonsibilant fric.	f							h			vi. sibilant fric.	s								
	vd. nonsibilant fric.	v										voiced nasal	m	n							
	vi. sibilant fric.			"s"								voiced flap		r							
	vd. sibilant fric.			"z"								vd. lateral approx.		l							
	voiced nasal			"n"								vd. central approx.		j							
	voiced flap			"r"																	
	vd. lateral flap			"l"																	
	vd. central approx.																				
	laryngealized vd. cent. approx.																				
		i	i			j				w											
	high	e <sup>l</sup>	e <sup>l</sup>							w											
	higher mid																				
	lower mid	ɛ	ɛ																		
	low	a	a																		

Language	bilabial	bilabial prenasalized	labio-dental	dental	dental/alveolar	dental/alv. prenasalized	palato-alveolar	palatal	velar	velar prenasalized	glottal	variable place	Labial-velar
Berta (218)													
voiceless plosive													
voiced plosive	b	m <sup>b</sup>			"p"	"p"			g	g <sup>h</sup>	ʔ		
vl. ejective stop	p <sup>ʔ</sup>								k <sup>ʔ</sup>				
vd. implosive					"p"	"p"							
vl. sibilant affric.													
vl. nonsib. fric.				f	θ								
vl. sibilant fric.					"s"	"s"							
vl. sib. eject. fric.					"s <sup>h</sup> "								
voiced nasal	m				"n"	"n"							
voiced trill					"r"	"r"							
vd. lateral approx.					"l"	"l"							
vd. central approx.													

Language	bilabial	labio-dental	dental	alveolar	palato-alveolar	palatal	velar	variable place	Labial-velar
Kunama (219)									
voiceless plosive									
voiced plosive	b		t						
vl. sibilant affric.			d						
vd. sibilant affric.					tʃ				
vl. nonsibilant fric.		f			dʒ				
vl. sibilant fric.				s	ʃ				
voiced nasal	m			n					
voiced trill				r					
vd. lateral approx.				l					
vd. central approx.						j			w

Vowels

high	i	ɪ	u
mid	"e"	"e"	"o"
low		a	a

Language	Arabic (250)	Koma (220)
	voiceless plosive	voiceless plosive
	long vl. plosive	voiced plosive
	voiced plosive	vl. ejective stop
	long vd. plosive	vd. implosive
	vd. sib. affric.	vl. nonsibilant fric.
	vl. nonsib. fric.	vl. sibilant fric.
	long "	vl. sib. eject. fric.
	vd. nonsib. fric.	voiced nasal
	long "	voiced trill
	vl. sib. fric.	vd. lateral approx.
	long "	vd. central approx.
	voiced nasal	
	long vd. nasal	
	long vd. trill	
	voiced flap	
	vd. lat. approx.	
	long "	
	vd. cent. approx.	
	long "	
	Vowels	
	high	high
	higher mid	higher mid
	mid	mid
	lower mid	lower mid
	low	low

Language	Arabic (250)	Koma (220)
	bilabial	bilabial
	labio-dental	labial
	dental	alveolar
	dental pharyngealized	alveolar
	palato-alveolar	palato-alveolar
	palatal	palatal
	velar	velar
	glottal	glottal
	variable place	variable place
	labial-velar	labial-velar

Language	Language	Labial-velar	variable place	Labial-velar	Labial-velar	variable place	Labial-velar	variable place	Labial-velar
Tigre (251)	Amharic (252)	bilabial	glottal	bilabial	labio-dental	alveolar	palato-alveolar	palatal	velar
voiceless plosive	voiceless plosive	t	ʔ	p <sup>2</sup>	f				k
voiced plosive	voiced plosive	d		b					k <sup>w</sup>
vl. ejective stop	vl. ejective stop	tʰ		p <sup>2</sup>					g <sup>w</sup>
vl. sibilant affric.	vl. sibilant affric.						tf		k <sup>w</sup>
vd. sibilant affric.	vd. sibilant affric.						dʒ		g
vl. sib. eject. affric.	vl. sib. eject. affric.	tsʰ					tfʰ		kʰ
vl. nonsibilant fric.	vl. nonsibilant fric.			f					
vd. nonsibilant fric.	vd. nonsibilant fric.								h
vl. sibilant fric.	vl. sibilant fric.	s							h <sup>w</sup>
vd. sibilant fric.	vd. sibilant fric.	z							
vl. sib. eject. fric.	vl. sib. eject. fric.	sʰ							
voiced nasal	voiced nasal	n		m					n
voiced trill	voiced flap	r							r
vd. lateral approx.	vd. lateral approx.	l							l
vd. central approx.	vd. central approx.								j
<u>Vowels</u>	<u>Vowels</u>	i:	u:	i					
high	high								u
mid	mid	"e:"	"o:"	"e"					"o"
lower mid	lower mid								a
low	low								

Language	Labiodental	Dental/alveolar	Palato-alveolar	Palatal	Velar	uvular	glottal	variable place
Hebrew (253)								
voiceless plosive	p	"t"			k		?	
voiced plosive	b	"d"		g				
vl. sibilant affric.		"ts"	tʃ <sup>2</sup>					
vd. sibilant affric.			dʒ <sup>2</sup>		x			
vl. nonsibilant fric.	f							h
vd. nonsibilant fric.	v	"s"	ʃ		ʒ			
vl. sibilant fric.		"z"	ʒ <sup>2</sup>					
vd. sibilant fric.	m	"n"						
voiced nasal		"l"						
vd. lateral approx.				j				
vd. central approx.								
<u>Vowels</u>								
high	i		e					
mid			o					
lower mid		ɛ						
low		a						

Language	Labiodental	Dental/alveolar	Palato-alveolar	Palatal	Velar	uvular	glottal	variable place
Socotri (254)								
voiceless plosive		"t"			k		?	
voiced plosive	b	"d"			g			
vl. ejective stop		"tʃ"			kʰ			
vl. nonsibilant fric.	f							h
vd. nonsibilant fric.		"s"	ʃ					
vl. sibilant fric.		"z"	ʒ					
vl. sib. eject. fric.		"sʒ"	ʃʒ <sup>1</sup>					
vl. lateral fric.		"ɸ"						
vd. lateral fric.		"lʒ"						
voiced nasal	m	"n"						
voiced r-sound		"r"						
vd. lateral approx.		"l"						
vd. central approx.				j				
<u>Vowels</u>								
high	i							
mid		"e"	"o"					
low		a						





Language

Tuareg (257)

- voiceless plosive
- voiced plosive
- vl. nonsibilant fric.
- vd. nonsibilant fric.
- vl. sibilant fric.
- vd. sibilant fric.
- voiced nasal
- voiced trill
- vd. lateral approx.
- vd. central approx.

bilabial      b

labio-dental      f

dental      t      tʰ      d      dʰ

dental pharyngealized      tʰ      dʰ

palato-alveolar      tʃ      dʒ

palatal      tʃ      dʒ

velar      k      g

uvular      x      ʁ

variable place

labial-velar

Vowels

- high      i      u
- mid      "e"      "ə"      "o"
- low      ə      e

Language

Somali (258)

- voiceless plosive
- vl. aspirated plos.
- voiced plosive
- long voiced plosive b;
- laryng. vd. plosive
- long laryng. vd. plos.
- vl. sibilant affric.
- vl. nonsibilant fric.
- vd. nonsibilant fric.
- vl. sibilant fric.
- voiced nasal
- long voiced nasal
- voiced trill
- voiced flap
- vd. lateral approx.
- long vd. lat. approx.
- vd. central approx.

bilabial

labio-dental      tʰ      dʰ

dental      d      dʰ

alveolar

palato-alveolar      tʃ      dʒ

retroflex      ɖ      ɗ

palatal      ɟ      ɟʰ

velar      g      gʰ

uvular      ʁ      ʁʰ

pharyngeal      ʕ      ʕʰ

glottal      ʔ

variable place

labial-velar

- Vowels
- high      i      u
  - mid      "e"      "ə"      "o"
  - lower mid      ɛ      ɔ
  - low      ə      a









Language	Labial	Labio-dental	Alveolar	Palato-alveolar	Palatal	Velar	Glottal	Labial-velar
Margi (268)	p		t		c	k	ʔ	
voiceless plosive								
voiced plosive	b		d		ʃ	g		
vd. implosive	ɓ		ɗ					
vl. sibilant affric.			ts	tʃ				
vd. sibilant affric.			dz	dʒ				
vl. nonsibilant fric.		f			ç	x		
vd. nonsibilant fric.		v			ʝ	y		
vl. sibilant fric.			s	ʃ				
vd. sibilant fric.			z	ʒ				
vl. lateral fric.			ɬ					
vd. lateral fric.			ɮ					
voiced nasal	m		n		ɲ	ŋ		
voiced trill			r					
vd. lateral approx.			l					
vd. central approx.			ʎ					
voiced flap			ɾ					
vd. lateral approx.			ɻ					
vd. central approx.			ɽ					

Vowels

high	i	u
mid	"e"	"o"
lower mid	ɛ	a
low		

Language	Labial	Labio-dental	Alveolar	Palato-alveolar	Palatal	Velar	Variable place	Labial-velar
Angas (267)	p		t		c	k		
voiceless plosive								
voiced plosive	b		d		ʃ	g		
vd. implosive	ɓ		ɗ	tʃ	ʃ			
vl. sibilant affric.				dʒ				
vd. sibilant affric.		f			x	h		
vl. nonsibilant fric.		v			y			
vd. nonsibilant fric.			s	ʃ				
vl. sibilant fric.			z	ʒ				
vd. sibilant fric.			n		ɲ	ŋ		
voiced nasal	m		r					
voiced trill			l					
vd. lateral approx.			ʎ					
vd. central approx.			ɽ					
high			u	i:	ɪ:	u:	ɛ:ɪ	
mid	"e"		"o"					
lower mid	ɛ							
low	a					a:		

Vowels

high	i	u
mid	"e"	"o"
lower mid	ɛ	a
low		

Language	bilabial	bilabial prenasalized	labio-dental	alveolar	alveolar prenasalized	palato-alveolar	palatal	palatal prenasalized	velar	velar labialized	velar prenasalized	vel. labialized & prenasalized	variable place	labial-velar
Ngizim (269)	p	m <sup>b</sup>	t	d	n <sup>d</sup>	c	t	ʃ	k	k <sup>w</sup>	ŋ	ŋ <sup>w</sup>		
voiceless plos.														
voiced plosive	b		d						g					
laryng. vd. plos.	b <sup>ʔ</sup>		d <sup>ʔ</sup>						g <sup>w</sup>					
vi. nonsib. fric.			f											
vd. nonsib. fric.			v											
vi. sib. fric.			s											
vd. sib. fric.			z											
vl. lat. fric.			ʃ											
vd. lat. fric.			ʒ											
voiced nasal	m		n											
voiced trill			r											
voiced flap			ɾ											
vd. lat. approx.			l											
vd. cent. approx.														

Language	bilabial	bilabial	alveolar	palato-alveolar	palatal	palatal	Labial-velar
Kanakuru (270)	p	b	ʃ	t	d	ʒ	
voiceless plosive							
voiced plosive							
vd. implosive							
vd. nonsibilant fric.							
vi. sibilant fric.							
vd. sibilant fric.							
vd. lateral fric.							
voiced nasal							
vd. lateral approx.							
vd. central approx.							

Vowels	high	mid	low
	i	"e:"	a
	u	"o:"	a:
		"e"	
		"o"	
		"ə"	
		"ɔ"	
		a	



Language		Language									
		Mundari (300)					Kharia (301)				
		bilabial	dental	alveolar	palato-alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar
voiceless plosive		p	t			t	k	ʔ <sup>4</sup>			
vl. aspirated plos.		p <sup>h</sup>	t <sup>h</sup>			t <sup>h</sup>	k <sup>h</sup>				
voiced plosive		b	d			d	g				
breathy voiced plosive		b:	d:			d:	g:				
vl. sibilant affric.											
vl. aspirated sib. affric.											
vd. sibilant affric.											
breathy voiced sib. affric.											
vl. nonsibilant fric.											
vl. sibilant fric.											
voiced nasal		m	n	s		ŋ	ŋ <sup>4</sup>				
voiced trill											
vd. lateral approx.			l	r		l					
vd. central approx.							j				w

Language		Language									
		Mundari (300)					Kharia (301)				
		bilabial	dental	alveolar	palato-alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar
voiceless plosive		p	t			t	k	ʔ <sup>4</sup>			
vl. aspirated plos.		p <sup>h</sup>	t <sup>h</sup>			t <sup>h</sup>	k <sup>h</sup>				
voiced plosive		b	d			d	g				
breathy voiced plosive		b:	d:			d:	g:				
vl. sibilant affric.											
vl. aspirated sib. affric.											
vd. sibilant affric.											
breathy voiced sib. affric.											
vl. nonsibilant fric.											
vl. sibilant fric.											
voiced nasal		m	n	s		ŋ	ŋ <sup>4</sup>				
voiced trill											
vd. lateral approx.			l	r		l					
vd. central approx.							j				w

Language		Language									
		Mundari (300)					Kharia (301)				
		bilabial	dental	alveolar	palato-alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar
voiceless plosive		p	t			t	k	ʔ <sup>4</sup>			
vl. aspirated plos.		p <sup>h</sup>	t <sup>h</sup>			t <sup>h</sup>	k <sup>h</sup>				
voiced plosive		b	d			d	g				
breathy voiced plosive		b:	d:			d:	g:				
vl. sibilant affric.											
vl. aspirated sib. affric.											
vd. sibilant affric.											
breathy voiced sib. affric.											
vl. nonsibilant fric.											
vl. sibilant fric.											
voiced nasal		m	n	s		ŋ	ŋ <sup>4</sup>				
voiced trill											
vd. lateral approx.			l	r		l					
vd. central approx.							j				w

Language		Language									
		Mundari (300)					Kharia (301)				
		bilabial	dental	alveolar	palato-alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar
voiceless plosive		p	t			t	k	ʔ <sup>4</sup>			
vl. aspirated plos.		p <sup>h</sup>	t <sup>h</sup>			t <sup>h</sup>	k <sup>h</sup>				
voiced plosive		b	d			d	g				
breathy voiced plosive		b:	d:			d:	g:				
vl. sibilant affric.											
vl. aspirated sib. affric.											
vd. sibilant affric.											
breathy voiced sib. affric.											
vl. nonsibilant fric.											
vl. sibilant fric.											
voiced nasal		m	n	s		ŋ	ŋ <sup>4</sup>				
voiced trill											
vd. lateral approx.			l	r		l					
vd. central approx.							j				w

Language		Language									
		Mundari (300)					Kharia (301)				
		bilabial	dental	alveolar	palato-alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar
voiceless plosive		p	t			t	k	ʔ <sup>4</sup>			
vl. aspirated plos.		p <sup>h</sup>	t <sup>h</sup>			t <sup>h</sup>	k <sup>h</sup>				
voiced plosive		b	d			d	g				
breathy voiced plosive		b:	d:			d:	g:				
vl. sibilant affric.											
vl. aspirated sib. affric.											
vd. sibilant affric.											
breathy voiced sib. affric.											
vl. nonsibilant fric.											
vl. sibilant fric.											
voiced nasal		m	n	s		ŋ	ŋ <sup>4</sup>				
voiced trill											
vd. lateral approx.			l	r		l					
vd. central approx.							j				w

Language	bilabial	dental/alveolar	palato-alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar	Language	bilabial	labio-dental	dental/alveolar	alveolar	palatal	velar	glottal	variable place	labial-velar
Khasi (302)										Vietnamese (303)									
voiceless plosive	p	"t"				k	ʔ			voiceless plosive			t	c	k				
v1. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "			k <sup>h</sup>					v1. aspirated plos.			t <sup>h</sup>						
voiced plosive	b	"d"								vd. implosive	β		ʃ						
vd. sibilant affric.			dʒ							v1. nonsibilant fric.		f			x				
v1. nonsibilant fric.								h		vd. nonsibilant fric.		v			y				
v1. sibilant fric.		"s"	ʃ							v1. sibilant fric.			s						
voiced nasal	m	"n"			ɲ	ŋ				voiced nasal	m				ɲ	ŋ			
voiced trill		"r"								vd. sibilant fric.			z						
vd. lateral approx.				l						voiced lateral approx.			"l"						
vd. lowered cent. approx.					ɻ			ʝ		vd. central approx.			"l"		j				w
										lower mid central approx.						ʌ			
<u>Vowels</u>										<u>Vowels</u>									
high	i		u							high	ɪ								
mid		"e"	"o"							higher mid	e		ɻ, o						
low		a				a:				lower mid	ɛ	ʌ, ɔ							
										low	ə								a:

Language	bilabial	bilabial prenasalized	dental/alveolar	dental/alv. prenasalized	palato-alveolar	palatal	velar	velar prenasalized	glottal	variable place	labial-velar	Language	bilabial	labio-dental	dental/alveolar	dental/alv. prenasalized	palato-alveolar	retroflex	palatal	velar	glottal	variable place		
Sedang (304)	p	m <sup>b</sup>	"t" "tʰ"	"n <sup>d</sup> "	tʃ		k kʰ		ʔ			Khmer (306)	p	"t"	"tʰ"		tʃ			k kʰ	ʔ			
voiceless plosive												voiceless plosive												
vl. aspirated plos.	p <sup>h</sup>		"tʰu"				kʰ					vl. aspirated plos.	p <sup>h</sup>	"tʰ"						kʰ				
voiced plosive	b	m <sup>b</sup>	"d"	"n <sup>d</sup> "				ŋ				vd. implosive	b	"d"										
laryng. vd. plosive												vl. sibilant affric.												
vl. sibilant affric.					tʃ							vl. asp. sib. affric.				tʃ								
vd. sibilant affric.					dʒ							vl. nonsibilant fric.				tʃʰ								
vl. nonsibilant fric.												vl. sibilant fric.		"s"										
vl. sibilant fric.				"s"	ʃ							voiced nasal	m	"n"						ŋ				
voiced nasal	m		"n"	"n"		ɲ	ɲ					voiced flap				ɟ								
laryngealized vd. nas.	m̥		"n̥"	"n̥"		ɲ̥	ɲ̥					vd. lateral approx.			"ɸ"									
voiceless nasal	m̥		"n̥"	"n̥"		ɲ̥	ɲ̥					vd. central approx.	ɣ											
voiced trill			"r"	"r"																				
laryngealized vd. trill			"r̥"	"r̥"																				
voiceless trill			"r̥"	"r̥"																				
vd. lateral approx.			"l"	"l"																				
laryngealized vd. lat. app.			"l̥"	"l̥"																				
vl. lateral approx.			"l̥"	"l̥"																				
vd. central approx.																								
laryngealized vd. cent. app.																								
voiceless central approx.																								

Vowels	high	higher mid	lower mid	low	u	o	ɔ	ə	ɛ	ɐ	ɨ	ɜ	ɛ	ə	ɨ	ɜ	ɛ	ə	ɨ	ɜ	ɛ	ə	
high					u																		
higher mid						o	ɔ																
lower mid								ɜ															
low									ɛ														

Language	bilabial	dental	alveolar	retroflex	palatal	velar	labial-velar
Tiwī (351)	p	t̪	t	ʈ		k	
voiceless plosive							
vd. nonsibilant fric.						ɣ <sup>l</sup>	
voiced nasal	m	n	n	ɳ		ŋ	
voiced tap			ɖ				
vd. lateral approx.			l	ɭ			
vd. central approx.				ɻ	j		w

Language	bilabial	alveolar	retroflex	palatal	velar	dental-palatal
Maung (350)	p	t	ʈ		k	tʃ
voiceless plosive						
vd. nonsibilant fric.						
voiced nasal	m	n	ɳ		ŋ	
voiced trill			r			
voiced flap			ɻ			
vd. lateral approx.		l	ɭ			
vd. central approx.				j		

Vowels

high	i	u <sup>l</sup>
mid		"o"
low		a

high	i	u
lower mid	e	ɔ
low		a

Language	bilabial	dental/alveolar	alveolar	palatal	velar	labial-velar
Burera (352)						
voiceless plosive	p	"n"	t	c	k	
voiced nasal	m			ɲ	ŋ	
voiced flap			ɾ			
vd. lateral approx.			l			
vd. central approx.			ʃ	j	ɟ	w

Vowels

high	i	u
lower mid	ɛ	ɔ
low		a

Language	bilabial	dental	alveolar	palato-alveolar	retroflex	palatal	velar	labial-velar
Nungubuyu (353)								
voiceless plosive	p	t	t	t	ʈ		k	
voiced nasal	m	ɲ	n	ɲ	ɳ		ŋ	
voiced trill			r					
vd. lateral approx.		l	l	ɭ	ɻ			
vd. central						j		w

Vowels

high	i	ɨ
low		a

Language	Maranungku (355)	Alawa (354)
bilabial	p	b
labial-velar	k	m
palatal	p:	
palato-alveolar	tʃ	
alveolar		
dentals/alveolar	"t"	
voiced plosive		voiced plosive
long vl. plosive		voiced nasal
vl. sibilant affric.		voiced trill
voiced nasal	m	vd. lateral approx.
long voiced nasal	m:	vd. central approx.
voiced trill	r	
vd. lateral approx.	"l"	
vd. central approx.	"j"	
<u>Vowels</u>		
high	i	i
mid	"e"	e
low	a	a

Language

Bardi (357)

voiceless plosive

voiced nasal

voiced trill

vd. lateral approx.

vd. central approx.

bilabial

alveolar

palato-alveolar

retroflex

palatal

velar

labial-velar

bilabial

alveolar

palato-alveolar

retroflex

palatal

velar

labial-velar

Language

Malakmalak (356)

voiceless plosive

voiced nasal

voiced trill

vd. lateral approx.

vd. central approx.

bilabial

alveolar

palato-alveolar

palatal

velar

labial-velar

bilabial

alveolar

palato-alveolar

palatal

velar

labial-velar

Language

Bardi (357)

voiceless plosive

voiced nasal

voiced trill

vd. lateral approx.

vd. central approx.

bilabial

alveolar

palato-alveolar

retroflex

palatal

velar

labial-velar

bilabial

alveolar

palato-alveolar

retroflex

palatal

velar

labial-velar

Vowels

high i u i: u:

lower mid ɔ

low a a:

Vowels

high i u

mid "e" "e" "ɔ"

low a

Language	bilabial	labio-dental	dental	alveolar	retroflex	palatal	velar	labial-velar
Kunjen (359)	p	f	t̪	t	c	k		
voiceless plosive								
vi. aspirated plos.	ph		t̪h	th	ch	kh		
vi. nonsibilant fric.								
vd. nonsibilant fric.			ɬ					
voiced nasal	m		ɽ	n	ɽ	ŋ		
voiced trill				r				
vd. lateral approx.								
vd. central approx.					ɻ			w

Vowels

high	i	u
mid		"o"
lower mid		ɛ
low		a

Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	glottal	labial-velar
Wik-Munkan (358)	p	"t"	t̪	j	k	ʔ	
voiceless plosive							
voiced nasal	m	"n"	n		ŋ		
voiced trill		"ɽ"					
vd. lateral approx.		"l"					
vd. central approx.							w

Vowels

high	i	ɔ
lower mid		ɛ
low		a



<u>Language</u>	bilabial	dental	alveolar	retroflex	palatal	velar	labial-velar
Western Desert (360)							
voiceless plosive	p	t	t	t		k	
voiced nasal	m	n	n	ɳ		ŋ	
voiced flap			ɾ				
vd. lateral approx.		l	l	ɭ			
vd. central approx.				ɻ	j		
<u>Vowels</u>							
high	i		u				
low		a					

<u>Language</u>	bilabial	alveolar	alveolar palatalized	retroflex	palatal	velar	labial-velar
Nyangumata (361)							
voiceless plosive	p	t	tʃ	ɟ		k	
voiced plosive			nʃ	ɳ		ŋ	
voiced nasal		n	n				
voiced trill		r					
vd. lateral approx.		l	lʃ				
vd. central approx.				ɻ	j		w
<u>Vowels</u>							
high	i		u				
low		a					

<u>Language</u>	Aranda	Kariera-Ngarluma (363)
voiceless plosive	p	p
voiced plosive	m	m
voiced nasal	b <sup>m</sup>	"h"
voiced flap	ɾ	"r"
vd. lateral approx.	l	"l"
vd. central approx.		
<u>Vowels</u>	high i u	high i u
low	a	low a

  

<u>Language</u>	Kariera-Ngarluma (363)
voiceless plosive	p
voiced nasal	m
voiced trill	"r"
vd. lateral approx.	l
vd. central approx.	
<u>Vowels</u>	high i u
low	a

<u>Language</u>	Aranda	Kariera-Ngarluma (363)
voiceless plosive	p	p
voiced plosive	m	m
voiced nasal	b <sup>m</sup>	"h"
voiced flap	ɾ	"r"
vd. lateral approx.	l	"l"
vd. central approx.		
<u>Vowels</u>	high i u	high i u
low	a	low a

  

<u>Language</u>	Aranda	Kariera-Ngarluma (363)
voiceless plosive	p	p
voiced plosive	m	m
voiced nasal	b <sup>m</sup>	"h"
voiced flap	ɾ	"r"
vd. lateral approx.	l	"l"
vd. central approx.		
<u>Vowels</u>	high i u	high i u
low	a	low a

Language	bilabial	dental/alveolar	retroflex	palatal	velar	labial-velar
Gugu-Yalanji (364)						
voiceless plosive	p	"t"		c	k	
voiced nasal	m	"n"		n	ŋ	
voiced r-sound		"r"				
vd. lateral approx.		"l"				
vd. central approx.			ɻ	j		w
<u>Vowels</u>						
high	i					
low		a				

  

Language	bilabial	dental/alveolar	palatal	velar	labial-velar
Mabuig (365)					
voiceless plosive	p	"t"		k	
voiced plosive	b	"d"		g	
vl. sibilant fric.		"s"			
vd. sibilant fric.		"z"			
voiced nasal	m	"n"		ŋ	
voiced r-sound		"r"			
vd. lateral approx.		"l"			
vd. central approx.			j		w
<u>Vowels</u>					
high	i				
mid	"e"	"o"			
low		a			

Language

Arabana-Wanganura (366)

voiceless plosive

voiced nasal

voiced trill

vd. lateral approx.

vd. central approx.

Vowels

high

low

bilabial	p	t	ʈ	ʈ	ʈ	ʈ	ʈ
dental	m	n	ɲ	ɲ	ɲ	ɲ	ɲ
alveolar		t	t	t	t	t	t
retroflex		ɖ	ɖ	ɖ	ɖ	ɖ	ɖ
palatal		c	c	c	c	c	c
velar		ɟ	ɟ	ɟ	ɟ	ɟ	ɟ
labial-velar							

Language

Diyari (367)

voiceless plosive

voiced plosive

voiced nasal

voiced trill

vd. lateral approx.

vd. central approx.

Vowels

high

low

Language	Standard Thai (400)	Labial	Labio-dental	dental	dental/alveolar	alveolar	palatal	velar	glottal	variable place	Labial-velar
		p	p <sup>h</sup>	t	t <sup>h</sup>	d	tʃ	k	ʔ		
	voiceless plosive	b						k <sup>h</sup>			
	vl. aspirated plos.			tʃ							
	voiced plosive										
	vl. sibilant affric.			tʃ							
	vl. asp. sib. affric.			tʃ <sup>h</sup>							
	vl. nonsibilant fric.		f								
	vl. sibilant fric.			s							
	voiced nasal	m		n				ŋ			
	voiced flap										
	vd. lateral approx.				"l"						
	vd. central approx.						j				w

Vowels

i	high
e	higher mid
a	lower mid
ə	low

Language	Bandjalang (368)	bilabial	alveolar	palato-alveolar	palatal	velar	labial-velar
		b	d	dʒ		g	
	voiced plosive	m	n	n		ŋ	
	vd. sibilant affric.		r				
	voiced nasal						
	voiced trill						
	vd. lateral approx.		l				
	vd. central approx.				j		w

Vowels

i	high
e <sup>h</sup>	mid
a	low

Language

Lakkia (401)

voiceless plosive

vl. aspirated plos.

laryngealized vd. plos.

vl. sibilant affric.

vl. asp. sib. affric.

vl. nonsibilant fric.

vl. lateral fric.

voiced nasal

voiceless nasal

vd. lateral approx.

vd. central approx.

vl. central approx.

Vowels

high

higher mid

lower mid

low

l

e

ɛ

a

u

i

ɛ:

a:

u:

ɛ:

ɛ:

a:

ø

ɛ

ɛ

a

ɤ

ɤ

ɛ:

ɛ:

ɥ:

ɥ:

ɛ:

ɛ:

Language

Yay (402)

voiceless plosive

vl. aspirated plos.

voiced plosive

vl. nonsibilant fric.

vd. nonsibilant fric.

vl. sibilant fric.

voiced nasal

voiced r-sound

vd. lateral approx.

vd. central approx.

Vowels

high

mid

lower mid

low

l

ɥ

e

a

ɥ

ɥ

ɛ

a

ɥ

ɥ

ɛ

a:

Language

Variable place

bilabial

labio-dental

dental

dental/alveolar

palatal

velar

glottal

p

ph

b

f

θ

v

p

ph

b

f

θ

v

"t"

"tʰ"

"d"

"s"

"h"

"r"

"l"

"t"

"tʰ"

"d"

"s"

"h"

"r"

"l"

c

ch

k

kh

?

?

?

?

?

?

?

Diphthongs

le

uo

le

uo

Language	bilabial	dental/alveolar	alveolar	palato-alveolar	palatal	velar	uvular	glottal	variable place	labial-velar
Sui (403)	p "t"	"tʰ"			k	q	qʰ	ʔ		
voiceless plosive										
vl. aspirated plos.	pʰ	"tʰ"			kʰ	qʰ				
voiced plosive	b	"p"								
laryngealized vd. plos.	b̚	"p̚"								
vl. sibilant affric.			ts	tʃ						
vl. asp. sib. affric.			tʃh	tʃh						
vl. nonsibilant fric.	ɸ				x					
vd. nonsibilant fric.					y	ɬ				
laryng. vd. nonsib. fric.					ɣ					
vl. sibilant fric.		"s"								
vd. sibilant fric.		"z"								
voiced nasal	m	"n"			ɲ					
voiceless nasal	ɱ	"ŋ"			ɳ					
laryngealized vd. nas.	m̚	"ŋ̚"			ɳ̚					
vd. lateral approx.		"l"								
vd. central approx.										
laryng. vd. cent. approx.										
Vowels	high	low	mid	low	high	mid	low	low	low	low
	i	"e"	"ə"	"o"	ɨ	ɛ	ɔ	ɔ	ɛ	ə
		ɜ								

Language	bilabial	labio-dental	alveolar	palatal	velar	glottal	variable place
Saek (404)	p	t	t	k	k	ʔ	
voiceless plosive							
vl. aspirated plos.	pʰ	tʰ	tʰ	kʰ			
voiced plosive	b	d	d				
vl. nonsibilant affric.				cç			
vl. nonsibilant fric.							
vd. nonsibilant fric.		v	s	y			
vl. sibilant fric.							
voiced nasal	m	n	n	ɲ			
vd. lateral approx.			l				
vd. central approx.			ɟ	j			
Vowels	high	mid	low	high	mid	low	low
	i	e	ɔ	ɨ	ɛ	ɔ	ɔ
		"ə"					

Diphthongs

fa  
fa  
ua

<u>Language</u>	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	glottal	variable place
Lungchow (406)								
voiceless plosive	p	"t"	"tʰ"			k	ʔ	
vl. aspirated plos.	pʰ	"tʰn²"	"tʰn²"			kʰ²		
vl. sibilant affric.			tf					
vl. asp. sib. affric.			tʃʰ²					
vl. nonsibilant fric.	f	f						
vd. nonsibilant fric.	v	v						
vl. sibilant fric.				ʃ				
vl. lateral fric.								
voiced nasal	m	"ɳ"	"ɳ"					
vd. lateral approx.		"l"	"l"					
vd. central approx.								

<u>Vowels</u>	high	mid	low	Diphthong
	i	u, w	ɤ, ʊ	
	ɪ	ʊ	ɤ	ɤɪ
		"e"	"o"	
		a	a	

<u>Language</u>	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	glottal	variable place
Po-Ai (405)								
voiceless plosive	p	"t"	"tʰ"			k	ʔ	
vl. aspirated plos.	pʰ²	"tʰn²"	"tʰn²"			kʰ²		
vl. sibilant affric.			tf					
vl. asp. sib. affric.			tʃʰ²					
vl. nonsibilant fric.	f	f						
vd. nonsibilant fric.	v	v						
vl. sibilant fric.				ʃ				
vl. lateral fric.								
voiced nasal	m	"ɳ"	"ɳ"					
vd. lateral approx.		"l"	"l"					
vd. central approx.								

<u>Vowels</u>	high	higher mid	mid	lower mid	low	Diphthong
	i	e	ɛ	ɔ	a	
	ɪ			ɛ	a	ɪɛ
				ɔ	a	ɔɔ
					a	aɪ



Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	uvular	pharyngeal	glottal	labial-velar
Sundanese (408)	p	t			k	q		ʔ	
voiceless plosive		"t"							
voiced plosive	b	"ts"			x		ħ		
vl. sibilant affric.					γ				
vd. nonsibilant fric.	β	"s"							
vl. sibilant fric.			<sup>1</sup> ʒ						
vd. sibilant fric.	m	"n"			ŋ				
voiced nasal		"r"							
voiced r-sound				j <sup>4</sup>					w <sup>4</sup>
vd. central approx.									
<u>Vowels</u>									
high	i	ɛ	o	u	ɪ	u:			
lower mid									
low		a							

bilabial      dental      dental/alveolar      alveolar      palato-alveolar      palatal      velar      uvular      pharyngeal      glottal      labial-velar

voiceless plosive      voiced plosive      vl. sibilant affric.      vd. sibilant affric.      vl. nonsibilant fric.      vl. sibilant fric.      voiced nasal      voiced trill      vd. lateral approx.      vd. central approx.

high      mid      lower mid      low

Language	bilabial	dental	dental/alveolar	retroflex	palatal	velar	variable place	labial-velar
Malagasy (410)								
voiceless plosive	p	t						
voiced plosive	b	d						
vl. sibilant affric.		ts						
vd. sibilant affric.		dz						
vl. nonsibilant fric.			f					
vd. nonsibilant fric.			v					
vl. sibilant fric.								"s"
vd. sibilant fric.								"z"
voiced nasal	m							"n"
voiced trill								"r"
vl. affricated trill								ʈʂ
vd. affricated trill								ʣʝ
vd. lateral approx.								"l"
vd. central approx.								

Yowels

high	i							
higher mid								o
mid								"e"
low								a

Language	bilabial	dental	dental/alveolar	alveolar	palatal	velar	glottal	variable place	labial-velar
Javanese (409)									
voiceless plosive	p	t		t		k	ʔ		
vl. plos. with breathy release	p <sup>h</sup>	t <sup>h</sup>		t <sup>h</sup>		k <sup>h</sup>			
vl. sibilant affric.			ts						
vl. sib. affric. with breathy release			ts <sup>h</sup>						
vl. nonsibilant fric.									
vl. sibilant fric.		s							
voiced nasal	m		"n"		ɲ	ŋ			
voiced trill			"l"	r					
vd. lateral approx.									
vd. central approx.					j				w

Yowels

high	i							
higher mid	e							o
mid								"e"
lower mid		ɛ						ɔ
low								a

Language	Labial	dental/alveolar	palato-alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar
Cham (411)									
voiceless plosive	p	"t"		t	c	k	ʔ		
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "		t <sup>h</sup>	c <sup>h</sup>	k <sup>h</sup>			
voiced plosive	b	"d"							
vl. nonsibilant fric.			f	s				h	
vl. sibilant fric.									
voiced nasal	m	"n"			n	ŋ			
voiced r-sound		"r"							
vd. lateral approx.		"l"							
vd. central approx.					j				w

Language	bilabial	dental/alveolar	palatal	velar
Malay (412)				
voiceless plosive	p	"t"	c	k
voiced plosive	b	"d"	ʃ	g
vl. nonsibilant fric.				
vl. sibilant fric.		"s"		
voiced nasal	m	"n"	ɲ	ŋ
voiced trill		"r"		
vd. lateral approx.		"l"		

Vowels	high	higher mid	mid	low
i				
e				
"e"				
ɛ				
a				
ɪ	high			
e		higher mid		
"e"		mid		
a		low		

Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	uvular	variable place	labial-velar
Batak (413)	p	"t"		k				
voiceless plosive		"d"	dʒ	g				
voiced plosive								
vd. sibilant affric.								
vl. nonsibilant fric.		"s"						
vl. sibilant fric.	m	"n"		ŋ				
voiced nasal								
voiced trill								
vd. lateral approx.		"l"						
vd. central approx.								

Language	bilabial	dental/alveolar	palatal	velar	glottal	variable place	labial-velar
Tagalog (414)	p	"t"			ʔ		
voiceless plosive		"d"		g			
voiced plosive		"ts"					
vl. sibilant affric.		"s"					
vl. nonsibilant fric.	m	"n"		ŋ			
voiced nasal		"j"					
vd. lateral approx.							
vd. central approx.							

Vowels	high	mid	lower mid	low
i				
u				
"o"				
ɛ				
a				

Language	bilabial	labio-dental	dental/alveolar	alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar
Chamorro (416)	p			t			k	ʔ		
voiceless plosive				d						
voiced plosive				ts						
vl. sibilant affric.				dz						
vd. sibilant affric.										
vl. nonsibilant fric.		f								
vl. sibilant fric.			"s"							
voiced nasal	m			n		ɲ				
vd. lateral approx.				l						
vd. central approx.					ʃ	j				w

Vowels

high	i	u
mid		"e" "o"
low	ə	ɔ

Language	bilabial	alveolar	palato-alveolar	palatal	velar	glottal	variable place	labial-velar
Sa'ban (415)	p	t			k	ʔ		
voiceless plosive	b	d			g			
voiced plosive			tʃ					
vl. sibilant affric.			dʒ					
vd. sibilant affric.								
vl. nonsibilant fric.		ɣ						
vd. nonsibilant fric.		s						
vl. sibilant fric.	m	n		ɲ				
voiced nasal								
vd. lateral approx.		l						
vd. central approx.				j				w

Vowels

high	i	ɨ	u
mid		"e"	
lower mid	ɛ	ɔ	
low		a	a:

<u>Language</u>	bilabial	labio-dental	dental	alveolar	retroflex	palatal	velar	glottal	variable place	labial-velar
<u>Rukai (417)</u>										
voiceless plosive	p		t				k	ʔ		
voiced plosive	b		d				g			
vl. sibilant affric.				ts						
vl. nonsibilant fric.			θ							
vd. nonsibilant fric.		v	ð							
vl. sibilant fric.				s						
voiced nasal	m			n			ŋ			
voiced trill				r						
vd. lateral approx.				l	l̥					
vd. central approx.						j				w

<u>Language</u>	bilabial	labio-dental	dental/alveolar	velar	glottal	variable place
<u>Tsou (418)</u>						
voiceless plosive	p		"t"			
voiced plosive	b		"ts"			
vl. sibilant affric.						
vl. nonsibilant fric.		f				
vd. nonsibilant fric.		v				
vl. sibilant fric.			"s"			
vd. sibilant fric.			"z"			
voiced nasal	m		"n"			
vd. lateral approx.			"l"			

<u>Vowels</u>	high	mid	low
	i	"e"	a
	ɨ		
	u	"o"	

<u>Diphthongs</u>
ɨə
eo
əa

Language	bilabial	labio-dental	dental/alveolar	palatal	velar	glottal	variable place
Adzera (419)						ʔ	
voiceless plosive	p <sup>h</sup>		"t <sup>h</sup> "		k <sup>h</sup>		
vl. aspirated plos.			"d"		g		
voiced plosive	b		"ts <sup>h</sup> "				
vl. asp. sib. affric.			"dʒ"				
vd. sibilant affric.							
vl. nonsibilant fric.		f	"s"				h
vl. sibilant fric.			"n"				
voiced nasal	m		"r"				
voiced trill				j	ɣ		
vd. central approx.							

Vowels

high	i	u	i:
mid	"o"		"o:"
low	a	a	a:

Language	bilabial	dental	velar	glottal	variable place
Roro (420)					
voiceless plosive	p	t	k	ʔ	
voiced plosive	b				
vl. nonsibilant fric.					
voiced nasal	m	n			
voiced flap		ɸ			

Vowels

high	i	u
mid	"e"	"o"
low	a	a

Language	bilabial	labio-dental	dental	dental/alveolar	alveolar	palato-alveolar	retroflex	palatal	velar	variable place	labial-velar
Iai (422)				"t" "d"			t ɖ		k g		
voiceless plosive	p			"t"			t		k		
voiced plosive	b			"d"			ɖ		g		gb
vl. sibilant affric.						tʃ					
vd. sibilant affric.						dʒ					
vl. nonsibilant affric.	ɸ	f	θ								
vd. nonsibilant affric.	β		ð						x		
vl. sibilant fric.				"s"		ʃ					
voiced nasal	m			"n"			ɳ	ɲ	ŋ		ŋm
voiceless nasal	ɱ						ɳ̥	ɲ̥	ŋ̥		ŋ̥m̥
vd. lateral approx.							ɻ				
vl. lateral approx.							ɻ̥				
vd. central approx.							ɻ̥				
vl. central approx.							ɻ̥				

Vowels

high	i, y	u	i:	e:	o:	u:
higher mid	e	o				
lower mid	ɛ, œ	ɔ				ɛ: ɔ:
low	a					a:

Language	bilabial	dental/alveolar	alveolar	retroflex	velar	variable place	labial-velar
Kaliai (421)							
voiceless plosive	p	"t"			k		
voiced plosive	b	"d"			g		
vl. nonsibilant fric.						h	
vd. nonsibilant fric.	β						
vl. sibilant fric.		"s"					
voiced nasal	m	"n"			ŋ		
voiced trill			r				
voiced flap				ɻ			
vd. lateral approx.		"j"					
vl. central approx.							

Vowels

high	i	u				
mid	"e"	"o"				
low	a					



Language  
 Maori (423)  
 voiceless plosive  
 vl. nonsibilant fric.  
 voiced nasal  
 voiced trill  
 vd. central approx.

bilabial      labio-dental      dental      alveolar      velar      variable place      labial-velar

p      f      t      k      h

m      n      ʔ      ŋ

w

Language  
 Hawaiian (424)  
 voiceless plosive  
 vl. nonsibilant fric.  
 voiced nasal  
 vd. lateral approx.  
 vd. central approx.

bilabial      dental/alveolar      velar      glottal      variable place      labial-velar

p      k      ʔ      h

m      "h"      "l"      w

Vowels  
 high  
 mid  
 lower mid  
 low

i      u      "o"  
 ε      a

Vowels  
 high  
 mid  
 lower mid  
 low

i      u      "o"  
 ε      a

Language

Mandarin (500)

voiceless plosive  
 vl. aspirated plos.  
 vl. sibilant affric.  
 vl. asp. sib. affric.  
 vl. nonsibilant affric.  
 vl. asp. nonsib. affric.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 vd. sibilant fric.  
 voiced nasal  
 vd. lateral approx.  
 vd. central approx.

bilabial

p ph

labio-dental

"t"  
 "th"  
 "ts"  
 "tsh"

dental/alveolar

alveolar

retroflex

tʂ tʂh

palatal

cç cçh

velar

k kʰ

uvular

χ

labial-palatal

labial-velar

Language

Taishan (501)

voiceless plosive  
 vl. aspirated plos.  
 vl. sibilant affric.  
 vl. asp. sib. affric.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 vd. lateral approx.  
 vl. lateral approx.  
 vd. central approx.

bilabial

p ph

labio-dental

"t"  
 "th"

dental/alveolar

palato-alveolar

tʃ tʃh

palatal

velar

k kʷ  
 -kʰ kʷh

velar labialized

variable place

h

labial-velar

Vowels

high  
 higher mid  
 mid  
 low

i, y

u

ɤ

ɯ

a, a<sup>r4</sup>

high

lower mid

low

i

u

ɔ

ə

a

Vowels

j u w

j

u

w

Language

Hakka (502)

voiceless plosive	p	bilabial	Labial-velar
vl. aspirated plos.	p <sup>h</sup>	bilabial prenasalized	variable place
voiced plosive	m <sup>b</sup>		Velar prenasalized
vl. sibilant affric.			Velar
vl. asp. sib. affric.			k
vl. nonsibilant fric.	f	Labio-dental	k <sup>h</sup>
vl. sibilant fric.		dental/alveolar	
vd. lateral approx.		dental/alv. prenasalized	n <sup>d</sup>
vd. central approx.			

Language

Changchow (503)

voiceless plosive	p	bilabial	Labio-dental	dental/alveolar	palatal	velar	glottal	variable place	Labial-velar
vl. aspirated plos.	p <sup>h</sup>						ʔ		
vl. plos. w. breathy rel.	p <sup>ɦ</sup>								
vl. sibilant affric.									
vl. asp. sib. affric.									
vl. sib. af./breathy rel.	f								
vl. nonsibilant fric.									
vd. nonsibilant fric.	v								
vl. sibilant fric.									
vd. sibilant fric.									
voiced nasal	m								
vd. lateral approx.									
vd. central approx.									

Vowels

high	i, y	u	ɿ	ʊ
mid			"e" "o"	"g"
low		a	a	w

Language	bilabial	dental/alveolar	palato-alveolar	velar	glottal	variable place
Amyo (504)	p	"t"		k	ʔ	
voiceless plosive		"tʰ"		kʰ		
vl. aspirated plos.	pʰ	"d"		g		
voiced plosive	b	"ts"				
vl. sibilant affric.		"tsʰ"				
vl. asp. sib. affric.		"dz"	dʒ			
vd. sibilant affric.		"s"				h
vl. nonsibilant fric.		"n"				
vl. sibilant fric.						
voiced nasal	m					

  

Language	bilabial	dental/alveolar	velar
Fuchow (505)	p	"t"	k
voiceless plosive	pʰ	"tʰ"	kʰ
vl. aspirated plos.		"ts"	
vl. sibilant affric.		"tsʰ"	
vl. asp. sib. affric.		"s"	
vl. nonsibilant fric.		"n"	
vl. sibilant fric.	m		
voiced nasal			
vd. lateral approx.			

Vowels	high	lower mid	low
i, y	ɛ, e	o	a
u			

Language	bilabial	dental/alveolar	retroflex	palatal	velar	variable place
Tamang (507)						
voiceless plosive	p	"t"			k	labial-velar
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "			k <sup>h</sup>	labial-velar
vl. sibilant affric.		"ts"				
vl. asp. sib. affric.		"ts <sup>h</sup> "				
vl. nonsibilant affric.				cç		
vl. asp. nonsib. affric.				cç <sup>h</sup>		
vl. nonsibilant fric. ç				ç		
vl. sibilant fric. "s"						
voiced nasal	m	"n"		ɲ		
vd. lateral approx.		"l"				
vd. central approx.			ɻ			

Language	bilabial	dental/alveolar	retroflex	palatal	velar	variable place
Kan (506)						
voiceless plosive	p	"t"			k	labial-velar
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "			k <sup>h</sup>	labial-velar
vl. sibilant affric.		"ts"				
vl. asp. sib. affric.		"ts <sup>h</sup> "				
vl. nonsibilant affric.				cç		
vl. asp. nonsib. affric.				cç <sup>h</sup>		
vl. nonsibilant fric. ç				ç		
vl. sibilant fric. "s"						
voiced nasal	m	"n"		ɲ		
vd. lateral approx.		"l"				
vd. central approx.			ɻ			

Language	bilabial	dental/alveolar	retroflex	palatal	velar	variable place
Tamang (507)						
voiceless plosive	p	"t"			k	labial-velar
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "			k <sup>h</sup>	labial-velar
vl. sibilant affric.		"ts"				
vl. asp. sib. affric.		"ts <sup>h</sup> "				
vl. nonsibilant affric.				cç		
vl. asp. nonsib. affric.				cç <sup>h</sup>		
vl. nonsibilant fric. ç				ç		
vl. sibilant fric. "s"						
voiced nasal	m	"n"		ɲ		
vd. lateral approx.		"l"				
vd. central approx.			ɻ			

Language	bilabial	dental	dental/alveolar	alveolar	palatal	velar	variable place
Dafila (508)							
voiceless plosive	p		"t"		k	k	glottal
voiced plosive	b		"d"		g	g	variable place
vl. nonsibilant fric.			"s"		x	h	
vl. sibilant fric.			"n"		ɔ		
voiced nasal	m						
voiced trill				r			
vd. lateral approx.		l					
vd. central approx.					j		

Language	bilabial	dental	dental/alveolar	palato-alveolar	palatal	velar	glottal
Burmese (509)							
voiceless plosive	p		"t"			k	ʔ
vl. aspirated plos.	p <sup>h</sup>		"t <sup>h</sup> "			k <sup>h</sup>	
voiced plosive	b		"d"			g	
vl. sibilant affric.				tʃ			
vl. asp. sib. affric.				tʃ <sup>h</sup>			
vd. sibilant affric.				dʒ			
vl. nonsibilant fric.		θ					
vd. nonsibilant fric.		ð					
vl. sibilant fric.			"s"				
vl. asp. sib. fric.			"s <sup>h</sup> "				
vd. sibilant fric.			"z"				
voiced nasal	m		"n"		ɲ	ŋ	
voiceless nasal	ɱ		"ŋ"		ɲ	ɳ	
vd. lateral approx.			"l"				
vl. lateral approx.			"l̥"				
vd. central approx.					j		
vl. central approx.							

Vowels	high	l	u	ɯ	ɤ	ɯ	ɯ
higher mid	e						ɛ
mid	"e"						
lower mid	ɛ	ɔ					
low	a						æ

Language	Labial-dental	dental/alveolar	palato-alveolar	palatal	velar	glottal	variable place	Labial-velar
Jingpho (511)								
voiceless plosive	p	"t"			k	ʔ		
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "			k <sup>h</sup>			
voiced plosive	b	"d"			g			
vl. sibilant affric.		"ts"	tʃ					
vl. asp. sib. affric.			tʃ <sup>h</sup>					
vd. sibilant affric.		"dz"	dʒ					
vl. nonsibilant fric.	f						h	
vd. nonsibilant fric.	v				ɣ			
vl. sibilant fric.			f					
voiced nasal	m	"n"			ɳ			
vd. lateral approx.		"l"						
vd. central approx.				j				w <sup>2</sup>

Language	Labial-dental	dental/alveolar	palato-alveolar	palatal	velar	glottal	variable place	Labial-velar
Jingpho (511)								
voiceless plosive	p	"t"			k	ʔ		
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "			k <sup>h</sup>			
voiced plosive	b	"d"			g			
vl. sibilant affric.		"ts"	tʃ					
vl. asp. sib. affric.			tʃ <sup>h</sup>					
vd. sibilant affric.		"dz"	dʒ					
vl. nonsibilant fric.	f						h	
vd. nonsibilant fric.	v				ɣ			
vl. sibilant fric.			f					
voiced nasal	m	"n"			ɳ			
vd. lateral approx.		"l"						
vd. central approx.				j				w <sup>2</sup>

Language	Labial-dental	dental/alveolar	palato-alveolar	palatal	velar	glottal	variable place	Labial-velar
Lahu (510)								
voiceless plosive	p	"t"			k	ʔ <sup>1</sup>		
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "			k <sup>h</sup>			
voiced plosive	b	"p"			g			
vl. sibilant affric.			tʃ					
vl. asp. sib. affric.			tʃ <sup>h</sup>					
vd. sibilant affric.			dʒ					
vl. nonsibilant fric.	f						h	
vd. nonsibilant fric.	v				ɣ			
vl. sibilant fric.			f					
voiced nasal	m	"n"			ɳ			
vd. lateral approx.		"l"						
vd. central approx.				j				w <sup>2</sup>

Vowels	high	higher mid	mid	lower mid	low
i					
e					
"e"					
a					
ɪ	high				
e	higher mid				
"e"	mid				
a	lower mid				
a	low				

<u>Language</u>	bilabial	alveolar	retroflex	palatal	velar	glottal	labial-velar
Ao (512)							
voiceless plosive	p	t			k	ʔ	
vl. nonsibilant affric.				cç			
vl. sibilant fric.		s					
vd. sibilant fric.		z					
vd. lateral fric.			ɻ				
voiced nasal	m	n			ŋ		
vd. lateral approx.		l					
vd. central approx.				j			w
<u>Vowels</u>							
high	i			u, w			
higher mid	e	ə	o				
low	a						

  

<u>Language</u>	bilabial	labio-dental	alveolar	velar	glottal	variable place	labial-velar
Tiddin Chin (513)							
voiceless plosive	p		t	k	ʔ		
vl. aspirated plos.	ph		th				
voiced plosive	b		d	g			
vl. sibilant affric.			ts				
vl. nonsibilant fric.				x		h	
vd. nonsibilant fric.		v					
vl. sibilant fric.			s				
vd. sibilant fric.			z				
voiced nasal	m		n	ŋ			
vd. lateral approx.			l				
laryng. vd. lat. approx.			l̥				
laryng. vd. cent. approx.			l̥				w

Vowels

high  
 lower mid  
 low

i            u  
 e            o  
 a



Language

Garó (514)

voiceless plosive p t  
 voiced plosive b d  
 vl. sibilant affric. ts  
 vd. sibilant affric. dz  
 vl. nonsibilant fric. s  
 vl. sibilant fric. z  
 voiced nasal m n  
 voiced flap r  
 vd. central approx. w

variable place  
 Labial-velar

bilabial  
 dental  
 alveolar  
 velar  
 glottal  
 ?

variable place

bilabial  
 alveolar  
 palatal  
 velar

Language

Boro (515)

voiceless plosive p  
 voiced plosive b  
 vl. nonsibilant fric. h  
 vl. sibilant fric. s  
 vd. sibilant fric. z  
 voiced nasal m  
 voiced flap r  
 vd. lateral approx. l  
 vd. central approx. j

Vowels

high i u  
 mid "e" "ɛ" "o"  
 low a

Vowels

high i u  
 higher mid e o  
 low a

Language	Labial	Dental	Dental/alveolar	Alveolar	Palato-alveolar	Palatal	Velar	Glottal	Variable place	Labial-velar
Karen (516)	p	t	tʰ			c <sup>l</sup>	k	ʔ		
voiceless plosive										
vl. aspirated plos.	p <sup>h</sup>	tʰ			c <sup>h</sup> <sup>l</sup>		k <sup>h</sup>			
voiced implosive	β									
vl. nonsibilant fric.		θ					x		h <sup>l</sup>	
vd. nonsibilant fric.							ɣ			
vl. sibilant fric.					f <sup>l</sup>					
vl. asp. sib. fric.										
vd. sibilant fric.										
voiced nasal	m					n <sup>l</sup>				
vd. lateral approx.				l						
vd. central approx.				ɹ		j				w
<u>Vowels</u>										
high	i		t							
higher mid	e									
lower mid		ɛ, ɛ								
low		a								

Language	Labial	Dental	Dental/alveolar	Alveolar	Palato-alveolar	Palatal	Velar	Glottal	Variable place	Labial-velar
Yao (517)	p	t	tʰ			c	k	ʔ		
voiceless plosive										
vl. aspirated plos.	p <sup>h</sup>	tʰ				c <sup>h</sup>	k <sup>h</sup>			
voiced plosive	b	d				f	g			
vl. sibilant affric.										
vl. asp. sib. affric.										
vd. sibilant affric.										
vl. nonsibilant fric.		f								
vl. sibilant fric.										
voiced nasal	m	n								
voiced nasal										
voiceless nasal	ɱ	n̥								
vd. lateral approx.										
vd. central approx.										
<u>Vowels</u>										
high	i									
higher mid	e									
lower mid		ə								
low		æ	a							

<u>Language</u>									
Asmat (601)									
voiceless plosive	p	t							k
vl. sibilant affric.									
vl. nonsibilant fric.		f							
vl. sibilant fric.									
voiced nasal	m	n							
voiced flap									
vd. central approx.									w

<u>Language</u>									
Andamanese (600)									
voiceless plosive	p	t							k
voiced plosive	b								g
vl. sibilant affric.									
vd. sibilant affric.									
voiced nasal	m	n							
vd. lateral approx.									
vd. central approx.									w

<u>Vowels</u>					
high	i				u
higher mid		e			
mid				"e"	
lower mid					o
low					a

<u>Vowels</u>					
high	i				u
mid		"e"			"o"
lower mid				ɛ	o
low				a	a

Language

Waahkuk (602)

voiceless plosive

voiced plosive

vl. sibilant affric.

vd. sibilant affric.

vl. nonsib. fric.  $\phi^w$

vd. nonsib. fric.  $\beta$

vl. sibilant fric.

voiced nasal

voiced flap

vd. central approx.

Vowels

high

higher mid

mid

lower mid

low

bilabial  
 bilabial prenasalized  
 bilab. labialized & prenas.  
 alveolar  
 alveolar prenasalized  
 palato-alveolar  
 palato-aly. prenasalized  
 palatal  
 velar  
 velar labialized  
 velar prenasalized  
 vel. labialized & prenasalized  
 glottal  
 variable place  
 labial-velar

voiceless plosive

voiced plosive

vl. sibilant affric.

vd. sibilant affric.

vl. nonsib. fric.  $\phi^w$

vd. nonsib. fric.  $\beta$

vl. sibilant fric.

voiced nasal

voiced flap

vd. central approx.

Vowels

high

higher mid

mid

lower mid

low

Language

Sentani (603)

voiceless plosive

voiced plosive

vl. nonsibilant fric.

voiced nasal

vd. central approx.

Vowels

high

higher mid

mid

lower mid

low

bilabial  
 Labio-dental  
 dental/alveolar  
 palatal  
 velar  
 variable place  
 labial-velar

high

higher mid

mid

lower mid

low

Language  
 Iwam (605)

voiceless plosive	p	bilabial	alveolar	palatal	velar	variable place	labial-velar
vl. nonsibilant fric.	t				k		
vl. sibilant fric.	s					h	
voiced nasal	m				ŋ		
voiced r-sound	rr						
vd. central approx.	j						w

Vowels

high	i	u
mid	"e"	"o"
low	a	

Language  
 Nimboran (604)

voiceless plosive	p	bilabial	dental	velar	variable place
voiced plosive	b		t	k	
vl. nonsibilant fric.			d	g	
vl. sibilant fric.	s				h
voiced nasal	m		ɲ	ŋ	
voiced r-sound	rr				

Vowels

high	i	ɨ	w
mid	"e"	"y"	
low	a		

Language	bilabial	labiod-dental	dental/alveolar	palatal	velar	velar labialized	labial-velar
Telefol (606)							
voiceless plosive	p <sup>2</sup>		"t"		k	k <sup>w</sup>	
voiced plosive	b		"d" <sup>2</sup>		g <sup>2</sup>		
vl. nonsibilant fric.		f	"s"				
vl. sibilant fric.			"n"		ɖ		
voiced nasal	m		"l"				
vd. lateral approx.							
vd. central approx.				j			w
<u>Vowels</u>							
high	i	u		i:			u:
lower mid					ɛ:		ɔ:
low	a					a:	

  

Language	bilabial	bilabial prenasalized	dental	dental prenasalized	alveolar	palatal	velar	velar prenasalized	variable place	labial-velar
Selepet (607)										
vl. aspirated plos.	p <sup>h</sup>	m <sup>b</sup>	t <sup>h</sup>	ɖ <sup>h</sup>			k <sup>h</sup>	ɖ <sup>g</sup>		
voiced plosive										
vl. nonsibilant fric.										
vl. sibilant fric.					s				h	
voiced nasal	m		n							
voiced flap					r					
vd. lateral approx.					l					
vd. central approx.						j				w
<u>Vowels</u>										
high	i				u					
higher mid										
lower mid		ɛ								
low			a		ɔ					

<u>Language</u>	bilabial	dental/alveolar	alveolar	palatal	velar	glottal	
Gadsup (608)							
voiceless plosive	p		t		k	ʔ	
voiced plosive	β		d				
vd. nonsibilant fric.	m	"n"					
voiced nasal				j			
vd. central approx.							
<u>Vowels</u>							
high	i	u					
higher mid				e:	o:		
lower mid		ɛ					
low				ɛ:			

  

<u>Language</u>	bilabial	labio-dental	alveolar	palatal	velar	glottal	variable place
Yagara (609)							
voiceless plosive	p		t		k	ʔ	
voiced plosive	b		d		g		
vl. nonsibilant fric.							
vd. nonsibilant fric.		v					h
vl. sibilant fric.			s				
voiced nasal	m		n				
m vd. lateral approx.							
vd. central approx.				j			
<u>Vowels</u>							
high			i		u		ɛi
mid				"o"			ae
lower mid		e					ao
low		a					ou

Diphthongs

<u>Language</u>	bilabial	bilabial prenasalized	alveolar	alveolar prenasalized	palatal	velar	labial-velar
Kewa (610)			t		c	g	
voiceless plosive							
voiced plosive	m <sup>b</sup>			n <sup>d</sup>		g	
vl. nonsibilant fric.	ɸ		s			x	
vl. sibilant fric.	m		n		ɲ		
voiced nasal							
voiced flap			ɾ				
voiced lateral flap			ɺ				
vd. central approx.					j		w

<u>Vowels</u>	bilabial	labio-dental	alveolar	palatal	velar	labial-velar
high			t		k	
mid			d		g	
low		f	s			
			n			
			ɾ			
				j		w

<u>Vowels</u>	bilabial	labio-dental	alveolar	palatal	velar	labial-velar
high			t			
mid						
low						
		"e"				
		"o"				
	a					



Language

Pawaian (612)

- voiceless plosive
- vl. nonsibilant fric.
- vl. sibilant fric.
- voiced nasal
- voiced flap
- vd. central approx.

bilabial      p  
 dental/alveolar      "t"  
 retroflex      "ʃ"  
 palatal      "s"  
 velar      "h"  
 variable place  
 labial-velar      k  
 w

Vowels

high      i      ɪ      u      ʊ  
 mid      "o"  
 lower mid      ɛ      ɔ  
 low      ɐ

Language

Dani (613)

- voiceless plosive
- vl. nonsibilant fric.
- vl. sibilant fric.
- voiced nasal
- vd. lateral approx.
- vd. central approx.

bilabial      p  
 dental/alveolar      "t"  
 palatal      "s"  
 velar      "h"  
 velar labialized      k<sup>w</sup>  
 glottal      ʔ  
 variable place  
 labial-velar      h  
 w

Vowels

high      i      ɪ      u  
 mid      "e"      "o"  
 low      a

Diphthongs

eɪ      ɔɪ  
 aɪ      ɔɪ  
 aʊ

Language  
 Wantoot (615)  
 voiceless plosive  
 voiced plosive  
 vl. sibilant fric.  
 vd. sibilant fric.  
 voiced nasal  
 Vowels  
 high  
 mid  
 low

bilabial  
 bilabial prenasalized  
 dental/alveolar  
 dental/alv. prenasalized  
 velar  
 velar labialized  
 velar prenasalized  
 vel. labialized & prenasalized

Language  
 Daribi (616)  
 voiceless plosive  
 vl. aspirated plos.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 voiced flap  
 vd. central approx.

bilabial  
 alveolar  
 palatal  
 velar  
 variable place  
 labial-velar

voiceless plosive  
 vl. aspirated plos.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 voiced flap  
 vd. central approx.

bilabial  
 bilabial prenasalized  
 dental/alveolar  
 dental/alv. prenasalized  
 velar  
 velar labialized  
 velar prenasalized  
 vel. labialized & prenasalized

Language  
 Daribi (616)  
 voiceless plosive  
 vl. aspirated plos.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 voiced flap  
 vd. central approx.

bilabial  
 alveolar  
 palatal  
 velar  
 variable place  
 labial-velar

voiceless plosive  
 vl. aspirated plos.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 voiced flap  
 vd. central approx.

bilabial  
 bilabial prenasalized  
 dental/alveolar  
 dental/alv. prenasalized  
 velar  
 velar labialized  
 velar prenasalized  
 vel. labialized & prenasalized

<u>Language</u>	bilabial	dental/alveolar	palatal	velar	labial-velar
Suena (618)					
voiceless plosive	p	"t"		k	
voiced plosive	b	"d"		g	
vd. sibilant affric.		"dz"			
vl. sibilant fric.		"s"			
voiced nasal	m	"n"			
voiced flap		"ɾ"			
vd. central approx.			j		w

Vowels

high	i	u
lower mid	e	ɔ
low	ə	a

<u>Language</u>	bilabial	alveolar	palatal	velar	variable place	labial-velar
Fasu (617)						
voiceless plosive	p	t		k		
vl. nonsibilant fric.	ɸ	s			h	
vl. sibilant fric.		n				
voiced nasal	m	ɾ				
voiced flap						
vd. central approx.			j			w

Vowels

high	i	u	ɿ	ʊ
mid	"e"	"o"	"ɛ"	"ɔ"
low	a	ɜ	ɜ	

<u>Language</u>	bilabial	dental/alveolar	palatal	velar	labial-velar
Dera (619)					
voiceless plosive	p	"t"		k	
voiced plosive	b	"d"		g	
voiced nasal	m	"n"		ŋ	
vd. central approx.			j		w
<u>Vowels</u>					
high	i				
mid		"e" "ə" "o"			
low		a			

<u>Language</u>	bilabial	dental	dental/alveolar	retroflex	velar	uvular
Kunimaipa (620)						
voiceless plosive	p		"t"		k	
voiced plosive	b	d			g	e
vl. sibilant fric.			"s"			
vd. sibilant fric.			"z"			
voiced nasal	m		"n"		ŋ	
voiced flap				ɕ		
vd. lateral approx.			"l"			
vd. central approx.	β					
<u>Vowels</u>						
high	i		o			u
higher mid		e				
low		a				

Language	bilabial	alveolar	palatal	velar	labial-velar
Yareba (621)					
voiceless plosive		t		k	
voiced plosive	b	d		g	
vd. sibilant affric.		dz			
vl. nonsibilant fric.	ɸ				
vl. sibilant fric.		s			
voiced nasal	m	n			
voiced flap		r			
vd. central approx.			j		w
<u>Vowels</u>					
	i		u		
high					
mid	"e"		"o"		
low		a			

  

Language	bilabial	labio-dental	dental	alveolar	velar	variable place
Kotiari (622)						
voiceless plosive				t	k	
voiced plosive	b			d	g	
vl. nonsibilant fric.		f				
vd. nonsibilant fric.			ð			
voiced nasal	m			n		
voiced flap				r		
<u>Vowels</u>						
	i					u
high						
mid	"e"					"o"
low		a				

<u>Language</u>									
Taoripi (623)	bilabial	labio-dental	dental/alveolar	velar	variable place				
voiceless plosive	p	f	"t"	k	h				
vl. nonsibilant fric.									
vl. sibilant fric.			"s"						
voiced nasal	m								
vd. lateral approx.			"l"						

<u>Vowels</u>									
high	i			u					
mid		"e"		"o"					
lower mid									
low									

<u>Language</u>					
Nasioi (624)	bilabial	dental/alveolar	velar	glottal	
voiceless plosive	p	"t"	k	ʔ	
voiced plosive	b				
voiced nasal	m	"n"			
voiced flap		"ɾ"			

<u>Vowels</u>					
high	i			u	
higher mid					o
lower mid					ɛ
low					a

Language

Rotokas (625)

voiceless plosive

voiced plosive

vd. nonsibilant fric.

voiced tap

bilabial

p

β

alveolar

t

D

velar

k

g

Vowels

high

mid

low

l

"e"

"o"

a

u

Language

Nambakaengo (626)

voiceless plosive

vl. asp. plos.

voiced plosive

vd. nonsib. fric.

vl. sib. fric.

voiced nasal

vd. lat. approx.

vd. cent. approx.

labial

p

ph

m

m<sup>w</sup>

p<sup>w</sup>

p<sup>j</sup>

labio-dental

"t"

"t<sup>w</sup>"

"t<sup>j</sup>"

dental/alveolar

"t<sup>h</sup>"

"t<sup>h</sup>"

dental/alv. palatalized

"t<sup>h</sup>"

"t<sup>h</sup>"

"t<sup>h</sup>"

dental/alv. palatalized

"t<sup>h</sup>"

"t<sup>h</sup>"

dental/alv. labialized & prenasalized

"t<sup>h</sup>"

"t<sup>h</sup>"

"t<sup>h</sup>"

palatal

k

k<sup>w</sup>

k<sup>j</sup>

velar palatalized

k

k<sup>w</sup>

k<sup>j</sup>

velar labialized & prenasalized

g

g<sup>w</sup>

g<sup>j</sup>

Vowels

high

mid

low

i

e

u

a

æ

ɔ

ɪ

ɛ

ɔ

ɛ

æ

ɔ

ɪ

ɛ

ɔ

ɪ

ɛ

ɔ

ɪ

ɛ

ɔ

Language

Haida (700)

voiceless plosive  
 vl. aspirated plos.  
 vl. ejective stop  
 vl. sibilant affric.  
 vl. asp. sib. affric.  
 vl. sib. eject. affric.  
 vl. lateral affric.  
 vd. lateral affric.  
 vl. lat. eject. affric.  
 vl. nonsibilant fric.  
 vl. lateral fric.  
 voiced nasal  
 laryngealized vd. nas.  
 vd. lateral approx.  
 laryng. vd. lat. approx.  
 vd. central approx.  
 laryng. vd. cent. approx.

bilabial  
 dental/alveolar  
 palato-alveolar  
 palatal  
 velar  
 velar labialized  
 uvular  
 uvular labialized  
 glottal  
 variable place  
 labial-velar

p "t"  
 p<sup>h</sup> "tʰ"  
 "tʰ"  
 tf  
 tf<sup>h</sup>  
 tf'  
 "tʰ"  
 "d|ʒ"  
 "tʰ"  
 "tʰ"  
 m "n"  
 m "n"  
 "l"  
 "l"  
 j  
 j

bilabial  
 dental/alveolar  
 palato-alveolar  
 palatal  
 velar  
 velar labialized  
 uvular  
 uvular labialized  
 glottal  
 variable place  
 labial-velar

p "t"  
 b "d"  
 p' "tʰ"  
 "tʰ"  
 "tʰ"  
 "dʒ"  
 "tʰ"  
 "tʰ"  
 "d|ʒ"  
 "tʰ"  
 "tʰ"  
 "s"  
 "s"  
 "ʎ"  
 "ʎ"  
 "n"  
 "n"

bilabial  
 dental/alveolar  
 palato-alveolar  
 palatal  
 velar  
 velar labialized  
 uvular  
 uvular labialized  
 glottal

bilabial  
 dental/alveolar  
 palato-alveolar  
 palatal  
 velar  
 velar labialized  
 uvular  
 uvular labialized  
 glottal

Language

Tlingit (701)

voiceless plosive  
 voiced plosive  
 vl. ejective stop  
 vl. sibilant affric.  
 vd. sibilant affric.  
 vl. sib. eject. affric.  
 vl. lateral affric.  
 vd. lateral affric.  
 vl. lat. eject. affric.  
 vl. nonsibilant fric.  
 vl. nonsib. eject. fric.  
 vl. sibilant fric.  
 vl. sib. eject. fric.  
 vl. lateral fric.  
 vl. lat. eject. fric.  
 voiced nasal  
 vd. central approx.

p "t"  
 b "d"  
 p' "tʰ"  
 "tʰ"  
 "dʒ"  
 "tʰ"  
 "tʰ"  
 "d|ʒ"  
 "tʰ"  
 "tʰ"  
 "s"  
 "s"  
 "ʎ"  
 "ʎ"  
 "n"  
 "n"

bilabial  
 dental/alveolar  
 palato-alveolar  
 palatal  
 velar  
 velar labialized  
 uvular  
 uvular labialized  
 glottal

bilabial  
 dental/alveolar  
 palato-alveolar  
 palatal  
 velar  
 velar labialized  
 uvular  
 uvular labialized  
 glottal

Vowels

high  
 low

i  
 a

o

u

"e"  
 "o"

mid  
 low

a

Vowels

high  
 mid  
 low

i  
 "e"  
 "o"  
 a

u

"e"  
 "o"

mid  
 low

a



Language	Navaho (702)	Chipewyan (703)
voiceless plosive	p	p
v1. aspirated plos.	tʰ	
v1. ejective stop	tʰ	
v1. sibilant affric.	tʰs	
v1. asp. sib. affric.	tsʰ	
v1. sib. eject. affric.	tsʰ	
v1. lateral affric.	tʰ	
vd. lateral affric.	d ʒ	
v1. lat. eject. affric.	tʰ	
v1. nonsibilant fric.		
vd. nonsibilant fric.		
v1. sibilant fric.	s	
vd. sibilant fric.	z	
v1. lateral fric.	ʃ	
voiced nasal	m <sup>l</sup>	
vd. lateral approx.	l	
vd. central approx.		
Vowels	ɪ, ʏ, ɛ, ɔ, a	ɪ, ʏ, ɛ, ɔ, u, i, ʊ, ɔ, a
high	ɪ	ɪ
higher mid		ʏ
lower mid	ɛ	ɛ
low	a	a

Language	Navaho (702)	Chipewyan (703)
voiceless plosive	p	p
v1. ejective stop	tʰ	
v1. sibilant affric.	tʰs	
v1. asp. sib. affric.	tsʰ	
v1. sib. eject. affric.	tsʰ	
v1. lateral affric.	tʰ	
vd. lateral affric.	d ʒ	
v1. lat. eject. affric.	tʰ	
v1. nonsibilant fric.		
vd. nonsibilant fric.		
v1. sibilant fric.	s	
vd. sibilant fric.	z	
v1. lateral fric.	ʃ	
voiced nasal	m <sup>l</sup>	
vd. lateral approx.	l	
vd. central approx.		
Vowels	ɪ, ʏ, ɛ, ɔ, a	ɪ, ʏ, ɛ, ɔ, u, i, ʊ, ɔ, a
high	ɪ	ɪ
higher mid		ʏ
lower mid	ɛ	ɛ
low	a	a

Language

Toiowa (704)

bilabial p "t"  
 dental/alveolar "tʰ"  
 alveolar "t̚"  
 palato-alveolar tf  
 retroflex ts' tʂ'  
 palatal k k'  
 velar kʷ kʷ'  
 velar labialized kʷ kʷ'  
 glottal ʔ  
 variable place  
 labial-velar

voiceless plosive  
 vl. aspirated plos.  
 vl. ejective stop  
 vl. sibilant affric.  
 vl. asp. sib. affric.  
 vl. sib. eject. affric.  
 vl. nonsibilant fric.  
 vd. nonsibilant fric.

voiced nasal  
 laryngealized vd. nas.  
 vd. lateral approx.  
 vd. central approx.

bilabial m  
 "ɱ"  
 bilabial "ɱ"  
 alveolar s f ʂ  
 palatal  
 velar x xʷ  
 velar labialized xʷ xʷ'  
 glottal h  
 variable place  
 labial-velar w

voiceless plosive  
 vl. aspirated plos.  
 vl. ejective stop  
 vl. sibilant affric.  
 vl. asp. sib. affric.  
 vl. sib. eject. affric.  
 vl. lat. eject. affric.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 vl. lateral fric.  
 voiced nasal  
 vd. lateral approx.  
 vd. central approx.

Vowels

high	i	u	ɨ	ɯ	ɨ:	ɯ:	ɨ:	ɯ:
mid	"e"	"e"			"e:			
low	a	ã	ä	a:				ã:

Language

Hupa (705)

voiceless plosive t  
 vl. aspirated plos. th  
 vl. ejective stop t'  
 vl. sibilant affric. ts tf  
 vl. asp. sib. affric. tsʰ tʂʰ  
 vl. sib. eject. affric. ts' tʂ'  
 vl. lat. eject. affric. tʂ'  
 vl. nonsibilant fric. x xʷ  
 vl. sibilant fric. s  
 vl. lateral fric. ʃ  
 voiced nasal m n  
 vd. lateral approx. l  
 vd. central approx. j

palato-alv. labialized  
 alveolar  
 bilabial  
 palatal  
 velar  
 velar labialized  
 uvular  
 glottal  
 variable place  
 var. place labialized

Language	Labial	Alveolar	Palatal	Velar	uvular	glottal	variable place	Labial-velar
Klamath (707)								
voiceless plosive	p <sup>h</sup>	t <sup>h</sup>	c <sup>h</sup>	k <sup>h</sup>	q <sup>h</sup>	ʔ		
vl. aspirated plos.	b	d	ʃ	g	g			
voiced plosive	pʰ	tʰ	cʰ	kʰ	qʰ			
vl. ejective stop	pʰ	tʰ	cʰ	kʰ	qʰ			
vl. nonsibilant fric.								
vl. sibilant fric.		s						
voiced nasal	m	n						
laryngealized vd. nas.	m̥	n̥						
vl. nasal	ṃ	ṅ						
vd. lateral approx.		l						
laryng. vd. lat. approx.		l̥						
vl. lateral approx.		l̥						
vd. central approx.								
laryng. vd. cent. approx.								
vl. central approx.								

Vowels

high	i	
mid	"e"	"o"
low	a	a

Language	Labial	Dental	Alveolar	Palatal	Velar	uvular	glottal	variable place	Labial-velar
Nez Perce (706)									
voiceless plosive	p	t	t		k	q	ʔ		
vl. ejective stop	pʰ	tʰ	tʰ		kʰ	qʰ			
vl. nonsibilant affric.						qʰ			
vl. nonsibilant fric.					x				
vl. sibilant fric.			s						
vl. lateral fric.			ʃ						
voiced nasal	m	n							
laryngealized vd. nas.	m̥	n̥							
vd. lateral approx.			l						
laryng. vd. lat. approx.			l̥						
vd. central approx.									
laryng. vd. cent. approx.									

Vowels

high	i	
lower mid	e	o
low	a	a

Language	Labial	Labio-dental	Dental	Alveolar	Palato-alveolar	Palatal	Velar	Uvular	Glottal	Variable place	Labial-velar
Wintu (709)											
voiceless plosive	p			t			k	q	ʔ		
vl. aspirated plos.	p <sup>h</sup>			t <sup>h</sup>							
voiced plosive	b			d							
vl. ejective stop	p'			t'			k'	q'			
vl. sibilant affric.					tʃ						
vd. sibilant affric.					dʒ						
vl. sib. eject. affric.					tʃ'						
vl. lateral affric.				tɬ							
vl. lat. eject. affric.				tɬ'							
vl. nonsibilant fric.		f	θ				x	χ			h
vl. sibilant fric.				s							
voiced nasal	m			n							
vd. lateral approx.				l							
vd. central approx.				j							w

Vowels

high	i	u
mid	"e"	"o"
low		a

Language	Labial	Alveolar	Palatal	Velar	Variable place	Labial-velar
Maidu (708)						
vl. aspirated plos.	p <sup>h</sup>	t <sup>h</sup>	c <sup>h</sup>	k <sup>h</sup>		
vl. ejective stop.	p'	t'	c'	k'		
vd. implosive	ɓ	d				
vl. nonsibilant fric.					h	
vl. sibilant fric.		s				
voiced nasal	m	n				
vd. lateral approx.		l				
vd. central approx.			j			w

Vowels

high	i	u
mid	"e"	"o"
low		a

Language	bilabial	dental	alveolar	palato-alveolar	palatal	velar	glottal	variable place	labial-velar
Chontal (710)									
voiceless plosive	p	t				k	ʔ		
voiced plosive	b	d							
vl. ejective stop	pʰ	tʰ				kʰ			
vl. sibilant affric.			ts	tʃ					
vl. sib. eject. affric.			tsʰ	tʃʰ					
vl. nonsibilant fric.			s	f				h	
vl. sibilant fric.									
voiced nasal	m		n						
voiced flap			r						
vd. lateral approx.			l						
vd. central approx.					j				w

Language	bilabial	alveolar	palatal	velar	glottal	variable place	labial-velar
Zoque (711)							
voiceless plosive	p	t		k	ʔ		
voiced plosive	b <sup>2</sup>	d <sup>2</sup>		g <sup>2</sup>			
vl. sibilant affric.		ts					
vl. nonsibilant fric.		s					
vl. sibilant fric.							
voiced nasal	m	n		ŋ			
vd. lateral approx.		l					
vd. central approx.			j				w

Vowels	high	mid	lower mid	low
	i		ɛ	a
	u	"o"		
		"ɔ"		

Language	bilabial	dental	alveolar	palatal	velar	glottal	variable place	labial-velar
Tzeltal (712)	p	t				ʔ		
voiceless plosive								
vl. aspirated plos.					k <sup>h</sup>			
voiced plosive	b	d <sup>2</sup>			g <sup>2</sup>			
vl. ejective stop	p'	t'			k'			
vl. sibilant affric.		tʃ	ts					
vl. sib. eject. affric.		tʃ'	ts'					
vl. nonsibilant fric.		s						
vl. sibilant fric.								
voiced nasal	m	n						
voiced flap								
vd. lateral approx.								
vd. central approx.								

  

Language	bilabial	alveolar	palatal	velar	glottal	variable place	labial-velar
Totonac (713)	p	t					
voiceless plosive							
vl. sibilant affric.		ts					
vl. nonsibilant fric.							
vl. sibilant fric.		s					
vl. lateral fric.		ʃ					
voiced nasal							
vd. lateral approx.							
vd. central approx.			j				

  

Language	bilabial	alveolar	palatal	velar	glottal	variable place	labial-velar
Tzeltal (712)	p	t					
voiceless plosive							
vl. aspirated plos.							
voiced plosive	b	d <sup>2</sup>					
vl. ejective stop	p'	t'					
vl. sibilant affric.		tʃ					
vl. sib. eject. affric.		tʃ'					
vl. nonsibilant fric.		s					
vl. sibilant fric.							
voiced nasal	m	n					
voiced flap							
vd. lateral approx.							
vd. central approx.			j				

Language	bilabial	alveolar	palatal	velar	glottal	variable place	labial-velar
Tzeltal (712)	p	t					
voiceless plosive							
vl. aspirated plos.							
voiced plosive	b	d <sup>2</sup>					
vl. ejective stop	p'	t'					
vl. sibilant affric.		tʃ					
vl. sib. eject. affric.		tʃ'					
vl. nonsibilant fric.		s					
vl. sibilant fric.							
voiced nasal	m	n					
voiced flap							
vd. lateral approx.							
vd. central approx.			j				

  

Language	bilabial	alveolar	palatal	velar	glottal	variable place	labial-velar
Tzeltal (712)	p	t					
voiceless plosive							
vl. aspirated plos.							
voiced plosive	b	d <sup>2</sup>					
vl. ejective stop	p'	t'					
vl. sibilant affric.		tʃ					
vl. sib. eject. affric.		tʃ'					
vl. nonsibilant fric.		s					
vl. sibilant fric.							
voiced nasal	m	n					
voiced flap							
vd. lateral approx.							
vd. central approx.			j				

<u>Language</u>										
K'ekchi (714)										
voiceless plosive	p	t								
laryngealized vd. plos.	b	t'								
vl. ejective stop		ts	tʃ							
vl. sibilant affric.		ts'	tʃ'							
vl. sib. eject. affric.		s	ʃ							
vl. nonsibilant fric.		m	n							
vl. sibilant fric.		l								
voiced nasal										
vd. lateral approx.										
vd. central approx.										

<u>Vowels</u>										
high	i	u								
mid	"e"	"o"								
low	a									

<u>Language</u>										
Mixe (715)										
voiceless plosive	p	t								
voiced plosive		d								
vl. sibilant affric.		ts								
vd. nonsibilant fric.		v								
vl. sibilant fric.		s	ʃ							
vd. sibilant fric.			ʒ							
voiced nasal	m	n								
vd. central approx.										

<u>Vowels</u>										
high	i	t								
higher mid										
mid	"e"	"ə"								
lower mid										
low	a									

Language	bilabial	alveolar	palato-alveolar	palatal	velar	labialized velar	glottal	variable place	labial-velar
Mazahua (717)	p	"t"	palato-alveolar	palatal	velar	labialized vel.	glottal	variable place	labial-velar
voiceless plosive	p	"t"			k	k <sup>w</sup>	ʔ		
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "			k <sup>h</sup>	k <sup>w<sup>h</sup></sup>			
voiced plosive	b	"d"			g	g <sup>w</sup>			
vl. ejective stop	b	"t <sup>s</sup> "			k'	k <sup>w'</sup>			
vd. implosive	b	"d"							
vl. sibilant affric.		"ts"	tʃ						
vl. asp. sib. affric.		"ts <sup>h</sup> "	tʃ <sup>h</sup>						
vl. sib. eject. affric.		"ts <sup>s</sup> "	tʃ <sup>s</sup>						
vl. nonsibilant fric.		"s"	ʃ						
vl. sibilant fric.		"s <sup>h</sup> "							
vl. asp. sib. fric.		"z"	ʒ						
vd. sibilant fric.		"s <sup>s</sup> "							
vl. sib. eject. fric.		"n"							
voiced nasal	m	"n"							
laryngealized vd. nas.	m <sup>4</sup>	"n <sup>4</sup> "							
voiceless nasal	m <sup>4</sup>	"n <sup>4</sup> "							
voiced flap	r	"r"							
vd. lateral approx.		"r <sup>l</sup> "							
vd. central approx.		"j"							
laryng. vd. cent. approx.		"j <sup>~</sup> "							
vl. central approx.		"j <sup>o</sup> "							
Vowels	high	i			u	ɥ			
higher mid	e				o				
mid		"e <sup>h</sup> "							
lower mid		ɛ	ɔ						
low		a	a						



Language

Mazatec (727)

voiceless plosive

voiced plosive

v1. sibilant affric.

vd. sibilant affric.

v1. nonsibilant fric.

vd. nonsibilant fric.

v1. sibilant fric.

voiced nasal

voiced trill

vd. lateral approx.

vd. central approx.

bilabial

p<sup>2</sup>

b<sup>2</sup>

dental

"t"

dental/alveolar

alveolar

ts

alveolar prenasalized

palato-alveolar

retroflex

retroflex prenasalized

palatal

vehr

vehr prenasalized

glottal

variable place

Language

Mixtec (728)

voiceless plosive

v1. sibilant affric.

v1. nonsibilant fric.

vd. nonsibilant fric.

v1. sibilant fric.

vd. sibilant fric.

voiced nasal

voiced trill

vd. lateral approx.

bilabial

p

dental

"t"

dental/alveolar

palato-alveolar

tf

velar labialized

k<sup>w</sup>

glottal

?

variable place

h

Vowels

high

higher mid

lower mid

low

i

o

ε

a

ɾ

θ

ʒ

ʒ

j

high

mid

low

i

"e"

a

u

"o"

ɔ

ɾ

"ɛ"

ɛ

u

"ɔ"

ɛ

Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	velar labialized	uvular	uvular labialized	pharyngeal	glottal	glottal pharyngealized	variable place	labial-velar
Nootka (730)													
voiceless plosive	p	t			k	k <sup>w</sup>	q	q <sup>w</sup>		ʔ	ʔ <sup>s</sup>		
voiced plosive	b	tʰ			kʰ	kʰ <sup>w</sup>	qʰ	qʰ <sup>w,2</sup>					
vl. nonsibilant fric.													
vl. sibilant fric.													
voiced nasal	m												
voiced r-sound													
vd. lateral approx.													
vd. central approx.													
<u>Vowels</u>													
high	i												
mid	"o"												
low	a												

Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	glottal	variable place	labial-velar
Chatino (729)								
voiceless plosive	p	"t"			k	ʔ		
voiced plosive	b	"d"			g			
vl. nonsibilant fric.							h	
vl. sibilant fric.		"s"	ʃ					
voiced nasal	m	"n"						
voiced r-sound		"r"						
vd. lateral approx.		"l"						
vd. central approx.								
<u>Vowels</u>								
high	i	u						
mid	"o"	"o"						
low	a							

Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	velar labialized	uvular	uvular labialized	pharyngeal	glottal	glottal pharyngealized	variable place	labial-velar
<u>Vowels</u>													
high													
higher mid													
lower mid													
low													

Language

Kwakw'ala (731)

voiceless plosive  
 vl. aspirated plosive  
 voiced plosive  
 vl. ejective stop  
 vl. asp. sibilant affric.  
 vd. sibilant affric.  
 vl. sib. ejective affric.  
 vl. nonsibilant fric.  
 vl. asp. lateral affric.  
 vd. lateral affricate  
 vl. lat. ejective affric.  
 vl. sibilant fric.  
 vl. lateral fric.  
 voiced nasal  
 laryngealized vd. nasal  
 voiced lateral approx.  
 laryngealized vd. lat. app.  
 voiced central approx.  
 laryngealized vd. c. appr.

bilabial

alveolar

palatal

velar labialized

uvular

uvular labialized

glottal

variable place

labial-velar

Language  
 Quileute (732)

voiceless plosive  
 voiced plosive  
 vl. ejective stop  
 vl. sibilant affric.  
 vl. sib. eject. affric.  
 vl. lateral affric.  
 vl. lat. eject. affric.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 vl. lateral fric.  
 vd. lateral approx.  
 vd. central approx.

bilabial

alveolar

palato-alveolar

palatal

velar

velar labialized

uvular

uvular labialized

glottal

variable place

labial-velar

Vowels

high  
 mid  
 lower mid  
 low

high  
 low

Vowels

i  
 a  
 a

u

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a

a



Language

Papago (736)

voiceless plosive  
 voiced plosive  
 vl. sibilant affric.  
 vd. sibilant affric.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 vd. lateral flap  
 vd. central approx.

bilabial p b  
 dental t d  
 palato-alveolar tʃ dʒ  
 retroflex d  
 palatal j  
 velar k g  
 glottal ʔ  
 variable place h  
 labial-velar

Vowels

high i f u  
 lower mid ə  
 low a

Language

Luiseno (737)

voiceless plosive  
 vl. sib. affric.  
 vl. nonsib. fric.  
 vd. nonsib. fric.  
 vl. sib. fric.  
 voiced nasal  
 voiced trill  
 vd. lat. approx.  
 vd. cent. approx.

bilabial p  
 labio-dental v  
 dental t  
 dental/alveolar ʃ  
 palato-alveolar tʃ  
 retroflex s  
 palatal  
 velar k x  
 velar labialized k<sup>w</sup> x<sup>w</sup>  
 uvular q  
 uvular labialized q<sup>w</sup>  
 glottal ʔ  
 variable place h  
 labial-velar

Vowels

high i . o  
 mid "e" "o"  
 low a

<u>Language</u>	bilabial	labio-dental	alveolar	palato-alveolar	palatal	velar	glottal	variable place	labial-velar
Yacqui (739)	p	b	t	tʃ		k	ʔ		
voiceless plosive									
voiced plosive			d <sup>2</sup>						
vl. sibilant affric.									
vl. nonsibilant fric.		f <sup>2</sup>							
vl. sibilant fric.			s						
voiced nasal	m		n						
voiced flap			r						
vd. lateral approx.			l						
vd. central approx.					j				w

Vowels

high	i	u
mid	"e"	"o"
low	a	

<u>Language</u>	bilabial	labio-dental	alveolar	retroflex	palatal	velar	velar labialized	uvular	glottal	variable place	labial-velar
Hopi (738)	p	v	t	ɽ	ɕ	k	k <sup>w</sup>	q	ʔ	h	
voiceless plosive											
vl. nonsibilant fric.											
vd. nonsibilant fric.			s								
vl. sibilant fric.			n		ɲ	ŋ	ŋ <sup>w</sup>				
voiced nasal	m		ɲ								
voiceless nasal	ɱ		ɳ								
vd. central approx.					j						w
vl. central approx.					j						ɰ

Vowels

high	i	ou
higher mid	ɕ	ɣ
low	a	a

Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	velar labialized	glottal	variable place	labial-velar
Karok (741)	p	"t"	tʃ		k	k <sup>w</sup>	ʔ		
voiceless plosive									
vl. sibilant affric.									
voiced plosive	b <sup>2</sup>	"d" <sup>2</sup>			g <sup>2</sup>				
vl. ejective stop	p'	"tʃ"			k'	k <sup>w,l</sup>			
vl. sibilant affric.			tʃ						
vl. nonsibilant fric.					x	x <sup>w</sup>		h	
voiced nasal	m	"s"							
voiced flap									
vd. central approx.									

Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	velar labialized	glottal	variable place
Tiwa (740)	p	"t"			k	k <sup>w</sup>	ʔ	
voiceless plosive								
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "						
voiced plosive	b <sup>2</sup>	"d" <sup>2</sup>						
vl. ejective stop	p'	"tʃ"						
vl. sibilant affric.			tʃ					
vl. nonsibilant fric.								
voiced nasal	m	"n"						
voiced r-sound								
vd. lateral approx.								
vd. central approx.								

Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	velar labialized	glottal	variable place
Karok (741)	p	"t"	tʃ		k	k <sup>w</sup>	ʔ	
voiceless plosive								
vl. sibilant affric.								
voiced plosive	b <sup>2</sup>	"d" <sup>2</sup>			g <sup>2</sup>			
vl. ejective stop	p'	"tʃ"			k'	k <sup>w,l</sup>		
vl. sibilant affric.			tʃ					
vl. nonsibilant fric.					x	x <sup>w</sup>		h
voiced nasal	m	"s"						
voiced flap								
vd. central approx.								

Language	bilabial	labio-dental	dental	dental/alveolar	alveolar	palato-alveolar	palatal	velar	uvular	glottal	variable place	labial-velar
Pomo (742)	p	t	t	t	t	t	k	q	ʔ			
voiceless plosive												
voiced plosive	b											
vl. ejective stop	p'	t'					k'	q'				
vl. sibilant affric.				ts								
vl. sib. eject. affric.				ts'								
vl. nonsibilant fric.	f						x	χ		h		
vl. sibilant fric.						ʃ						
voiced nasal	m		"s"									
voiced flap			"n"									
vd. lateral approx.			"r" <sup>2</sup>									
vd. central approx.			"l"									

Vowels

high	i	o
higher mid	e	o:
mid	"e"	
lower mid	ɔ <sup>l</sup>	ɔ:l
low	a	a:

Vowels

high	i	o
lower mid	ɛ	ɔ
low	a	



Language	bilabial	dental/alveolar	alveolar	palato-alveolar	palatal	velar	uvular	glottal	variable place	labial-velar
Achumawi (744)	p	t		dʒ		k	q	ʔ		
voiceless plosive										
vd. sibilant affric.										
vl. nonsibilant fric.						x	x			
vl. sibilant fric.										
voiced nasal	m		s	ʃ						
voiced r-sound		"n"								
vd. lateral approx.		"r"								
vd. central approx.					j					w

Language	bilabial	dental	dental/alveolar	palato-alveolar	palatal	velar	glottal	variable place	labial-velar
Yana (745)									
voiceless plosive									
vl. aspirated plos.	p <sup>h</sup>	t <sup>h</sup>							
voiced plosive	b	d							
vl. ejective stop	p'	t'							
vl. asp. sib. affric.				tʃ <sup>h</sup>					
vd. sibilant affric.				dʒ					
vl. sib. eject. affric.				tʃ'					
vl. nonsibilant fric.									
vl. sibilant fric.		s							
voiced nasal	m	n							
voiced r-sound			"r"						
vd. lateral approx.			"l"						
vd. central approx.					j				w

Vowels

high	i	u
mid	"e"	"o"
low	a	

Diphthongs

aɪ
au
ɔi

Language	Shasta (746)	Tarascan (747)
voiceless plosive	p	p
vi. ejective stop	p'	p <sup>h</sup>
vi. sibilant affric.	tʃ	b <sup>2</sup>
vi. sib. eject. affric.	tʃ'	ts
vi. nonsibilant fric.	"s"	ts <sup>h</sup>
vi. sibilant fric.	"h"	ts <sup>h</sup> tʃ <sup>h</sup>
voiced nasal	m	ɸ <sup>2</sup> f <sup>2</sup>
voiced r-sound	"rr"	"s"
vd. central approx.		"n"
		f
		ɸ
		r
		ɸ <sup>1</sup>
		j
		j <sup>1</sup>
		j

  

Language	Shasta (746)	Tarascan (747)
voiceless plosive	p	p
vi. ejective stop	p'	p <sup>h</sup>
vi. sibilant affric.	tʃ	b <sup>2</sup>
vi. sib. eject. affric.	tʃ'	ts
vi. nonsibilant fric.	"s"	ts <sup>h</sup>
vi. sibilant fric.	"h"	ts <sup>h</sup> tʃ <sup>h</sup>
voiced nasal	m	ɸ <sup>2</sup> f <sup>2</sup>
voiced r-sound	"rr"	"s"
vd. central approx.		"n"
		f
		ɸ
		r
		ɸ <sup>1</sup>
		j
		j <sup>1</sup>
		j

  

Language	Shasta (746)	Tarascan (747)
voiceless plosive	p	p
vi. ejective stop	p'	p <sup>h</sup>
vi. sibilant affric.	tʃ	b <sup>2</sup>
vi. sib. eject. affric.	tʃ'	ts
vi. nonsibilant fric.	"s"	ts <sup>h</sup>
vi. sibilant fric.	"h"	ts <sup>h</sup> tʃ <sup>h</sup>
voiced nasal	m	ɸ <sup>2</sup> f <sup>2</sup>
voiced r-sound	"rr"	"s"
vd. central approx.		"n"
		f
		ɸ
		r
		ɸ <sup>1</sup>
		j
		j <sup>1</sup>
		j

  

Language	Shasta (746)	Tarascan (747)
voiceless plosive	p	p
vi. ejective stop	p'	p <sup>h</sup>
vi. sibilant affric.	tʃ	b <sup>2</sup>
vi. sib. eject. affric.	tʃ'	ts
vi. nonsibilant fric.	"s"	ts <sup>h</sup>
vi. sibilant fric.	"h"	ts <sup>h</sup> tʃ <sup>h</sup>
voiced nasal	m	ɸ <sup>2</sup> f <sup>2</sup>
voiced r-sound	"rr"	"s"
vd. central approx.		"n"
		f
		ɸ
		r
		ɸ <sup>1</sup>
		j
		j <sup>1</sup>
		j



Language	bilabial	dental/alveolar	alveolar	palato-alveolar	velar	glottal
Delaware (751)						
voiceless plosive	p	"t"	t	tʃ	k	ʔ
long vl. plos.	p:	"tː"	ht <sup>5</sup>	htʃ <sup>5</sup>	hk <sup>5</sup>	
vl. sibilant affric.		tʃ		tʃ		
long, vl. sib. affric.		tʃ:		htʃ <sup>5</sup>		
vl. nonsibilant fric.			ʃ	ʃ		
long vl. nonsib. fric.			"s"	htʃ <sup>5</sup>		
vl. sibilant fric.		"s"	n			
voiced nasal	m	"n"				
long vd. nasal	m:	"nː"				
vd. lateral approx.		"l"				
long vd. lat. approx.		"lː"				
vd. central approx.						
long vd. cent. approx.						
<u>Vowels</u>						
high		u				
higher mid						ɔ:
lower mid						ɛ:
low						ä:

  

Language	bilabial	dental/alveolar	alveolar	palato-alveolar	velar	glottal
Ojibwa (750)						
voiceless plosive	p	"t"	t	tʃ	k	ʔ
vl. preaspirated plos.	hp <sup>5</sup>		ht <sup>5</sup>	htʃ <sup>5</sup>	hk <sup>5</sup>	
vl. sibilant affric.				tʃ		
vl. preasp. sib. affric.				htʃ <sup>5</sup>		
vl. sibilant fric.		"s"		ʃ		
vl. preasp. sib. fric.		"hs"		htʃ <sup>5</sup>		
voiced nasal	m	"n"	n			
vd. lateral approx.		"l"				
<u>Vowels</u>						
high		u				
higher mid						ɔ:
lower mid						ɛ:
low						ä:

Language

Tonkawa (752)

voiceless plosive  
 vl. sibilant affric.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 vd. lateral approx.  
 vd. central approx.

bilabial p  
 dental  
 dental/alveolar "t"  
 "ts"  
 "s"  
 palatal  
 velar k x  
 velar labialized kw xw  
 glottal  
 variable place h  
 Labial-velar w

Vowels

high t  
 higher mid  
 lower mid e o  
 low a

u  
 i:  
 e:  
 o:  
 a:  
 u:  
 o:

Language

Miyot (753)

voiceless plosive  
 vl. aspirated plos.  
 vl. sibilant affric.  
 vl. asp. sib. affric.  
 vl. sibilant fric.  
 vl. lateral fric.  
 voiced nasal  
 vd. lateral approx.  
 vd. central approx.

bilabial p  
 ph  
 "ts"  
 "tsh"  
 "s"  
 "ʃ"  
 m  
 "n"  
 "l"  
 dental/alveolar  
 alveolar  
 palato-alveolar  
 retroflex  
 palatal  
 velar k kh  
 velar labialized kw kh<sup>w</sup>  
 glottal  
 Labial-velar

Vowels

high i  
 mid "e" "o"  
 low a

j  
 t  
 j  
 y  
 w



Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	variable place	labial-velar
Dakota (756)							
voiceless plosive	p	"t"			k		
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "			k <sup>h</sup>		
voiced plosive	b						
vl. ejective stop	p'	"tʰ"			k'		
vl. sibilant affric.			tʃ				
vl. asp. sib. affric.			tʃ <sup>h</sup>				
vl. sib. eject. affric.			tʃ'				
vl. nonsibilant fric.					x	h	
vl. nonsib. eject. fric.					x'		
vd. nonsibilant fric.					ɣ		
vl. sibilant fric.		"s"	ʃ				
vd. sibilant fric.		"z"	ʒ				
vl. sib. eject. fric.			ʃ'				
voiced nasal	m <sup>4</sup>	"n" <sup>4</sup>					
vd. lateral approx.		"l"					
vd. central approx.				j		w	
<u>Vowels</u>							
high	i		u		ɿ	ü	
higher mid			o				
lower mid		ɛ					
low		a					æ

Language

Yuchi (757)

voiceless plosive  
 vl. aspirated plos.  
 voiced plosive  
 vl. ejective stop  
 vl. sibilant affric.  
 vl. asp. sib. affric.  
 vd. sibilant affric.  
 vl. sib. eject. affric.  
 vl. nonsibilant fric.  
 vl. nonsib. eject. fric.  
 vl. sibilant fric.  
 vl. sib. eject. fric.  
 vl. lateral fric.  
 vl. lat. eject. fric.  
 voiced nasal  
 laryngealized vd. nas.  
 vd. lateral approx.  
 laryng. vd. lat. approx.  
 vd. central approx.  
 laryng. vd. cent. approx.

bilabial

dental/alveolar

palato-alveolar

palatal

velar

glottal

variable place

labial-velar

p "t"  
 p<sup>h</sup> "t<sup>h</sup>"  
 b "d"  
 p' "tʰ"  
 "ts" tʃ  
 "ts<sup>h</sup>" tʃ<sup>h</sup>  
 "dz" dʒ  
 "ts'" tʃ'  
 ɸ  
 ɸ'  
 "s" ʃ  
 "z" ʒ  
 "q"  
 "q'"  
 "n"  
 "n'"  
 "l"  
 "l'"  
 "j"  
 "j'"  
 "w"  
 "w'"

higher mid  
 higher mid  
 mid  
 low

high  
 higher mid  
 mid  
 low

l  
 ɛ  
 a  
 a

u  
 o  
 j  
 j'  
 w  
 w'

Language	bilabial	dental	dental/alveolar	alveolar	palato-alveolar	palatal	velar	variable place	labial-velar
Alabama (759)	p	t					k		
voiceless plosive									
voiced plosive	b								
vl. sibilant affric.					tʃ				
vl. nonsibilant fric.	ɸ							h	
vl. sibilant fric.				s					
vl. lateral fric.			"ɸ"						
voiced nasal	m		"h"						
vd. lateral approx.			"l"						
vd. central approx.						j			w

Vowels

higher mid e o  
low a

Language	bilabial	alveolar	palato-alveolar	palatal	velar	glottal	variable place	labial-velar
Tunica (758)	p <sup>h</sup> b <sup>2</sup>	t <sup>h</sup> d <sup>2</sup>	tʃ <sup>h</sup>		k <sup>h</sup> g <sup>2</sup>	ʔ		
voiceless plosive								
vl. aspirated plos.								
voiced plosive								
vl. asp. sib. affric.								
vl. nonsibilant fric.							h	
vl. sibilant fric.		s	ʃ					
voiced nasal	m	n						
voiced trill		r						
vd. lateral approx.		l						
vd. central approx.				j				w

Vowels

high i u  
higher mid e o  
lower mid e c  
low a



Language	bilabial	labio-dental	dental	dental/alveolar	alveolar	palato-alveolar	palatal	velar	glottal	variable place
Wappo (760)	p b <sup>2</sup> p'		t d <sup>2</sup> t'	t t'	t t'	tʃ tʃ'		k g <sup>2</sup> k'	ʔ	
voiceless plosive			t	t	t	tʃ		k	ʔ	
voiced plosive	b <sup>2</sup>		d <sup>2</sup>	t'	t'	tʃ'		g <sup>2</sup>	ʔ	
vl. ejective stop	p'		t'	t'	t'	tʃ'		k'	ʔ	
vl. sibilant affric.			"ts"	"ts"	"ts"	tʃ				
vl. sib. eject. affric.		f <sup>2</sup>	"ts"	"ts"	"ts"	tʃ'				
vl. nonsibilant fric.						f				h
vl. sibilant fric.			"s"	"s"	"s"					
voiced nasal	m		"n"	"n"	"n"					
laryngealized vd. nas.	m̃		"ñ"	"ñ"	"ñ"					
voiced r-sound			"r" <sup>2</sup>	"r" <sup>2</sup>	"r" <sup>2</sup>					
laryng. vd. r-sound			"r̃" <sup>2</sup>	"r̃" <sup>2</sup>	"r̃" <sup>2</sup>					
vd. lateral approx.			"l"	"l"	"l"					
laryng. vd. lat. app.			"l̃"	"l̃"	"l̃"					
vd. central. approx.										
laryng. vd. cent. app.										

Vowels

high	i	ɨ	u
mid	"e"	"ø"	"o"
low		a	

Vowels

high	i	ɨ	u
mid	"e"	"ø"	"o"
low		a	

<u>Language</u>	bilabial	dental/alveolar	palato-alveolar	palatal	velar	labial-velar
Bribri (801)						
voiceless plosive	p	"t"			k	
voiced plosive	b	"d"			g	
vl. sibilant affric.		"ts"	tʃ			
vl. nonsibilant fric.		"s"	ʃ		x	
vl. sibilant fric.		"z"				
vd. sibilant fric.		"r"				
voiced nasal	m	"n"		ɲ		
voiced r-sound		"rr"				
vd. central approx.				j	w	

  

<u>Vowels</u>	high	mid	low
	i	"e"	a
	u	"o"	
	ɨ	"ɛ"	ɔ
	ʉ	"ɔ"	ɛ

<u>Language</u>	bilabial	dental/alveolar	velar	glottal	variable place
Mura (802)					
voiceless plosive	p	"t"	k	ʔ	
voiced plosive	b		g		
vl. nonsibilant fric.					
vl. sibilant fric.		"s"			h

  

<u>Vowels</u>	high	mid	low
	i	"o"	a

Language

Cayapa (803)

- voiceless plosive
- voiced plosive
- vl. sibilant affric.
- vl. nonsibilant fric.
- vl. sibilant fric.
- voiced nasal
- voiced r-sound
- vd. lateral approx.
- vd. central approx.

bilabial p  
 bilabial prenasalized m<sub>b</sub>  
 bilabial palatalized m<sub>b</sub>  
 alveolar t  
 alveolar palatalized t<sub>j</sub>  
 alveolar prenasalized t<sub>j</sub>  
 alveolar palatalized & palatalized t<sub>j</sub>  
 palato-alveolar  
 palatal  
 velar  
 glottal  
 variable place  
 labial-velar

Vowels

- high
- lower mid
- low

i  
 ε  
 a

Language

Paez (804)

- voiceless plosive
- voiced plosive
- vl. sibilant affric.
- vl. nonsib. fric.
- vd. nonsib. fric.
- vl. sibilant fric.
- vd. sibilant fric.
- voiced nasal
- voiced flap
- vd. lateral flap
- vd. central approx.

bilabial p  
 bilabial prenasalized m<sub>b</sub>  
 bilabial palatalized m<sub>b</sub>  
 alveolar t  
 alveolar palatalized t<sub>j</sub>  
 alveolar prenasalized t<sub>j</sub>  
 alveolar palatalized & palatalized t<sub>j</sub>  
 palato-alveolar  
 palato-alv. prenasalized  
 palato-alv. palatalized  
 palatal  
 velar  
 velar prenasalized  
 glottal  
 variable place  
 labial-velar

Vowels

- high
- lower mid
- low

i  
 ε  
 a

Language	bilabial	alveolar	alveolar palatalized	palato-alveolar	palatal	velar	glottal	variable place
Ocaina (805)								
voiceless plosive	p	t	tʃ			k	ʔ	
voiced plosive	b		dʃ			g		
vl. sibilant affric.		ts	tʃ					
vd. sibilant affric.		dz						
vl. nonsibilant fric.	ɸ					x	h	
vd. nonsibilant fric.	β							
vl. sibilant fric.		s		ʃ				
vd. sibilant fric.		n		ʒ				
voiced nasal	m	n				ɲ		
long voiced nasal	m:	n:				ɲ:		
voiced flap		ɾ						

Language	bilabial	alveolar	alveolar palatalized	palato-alveolar	palatal	velar	glottal
Muinane (806)							
voiceless plosive	p	t				k	ʔ
voiced plosive	b	d				g	
vl. sibilant affric.			tʃ				
vd. sibilant affric.			dʒ				
vl. nonsibilant fric.	ɸ					x	
vd. nonsibilant fric.	β						
vl. sibilant fric.		s		ʃ			
vd. sibilant fric.		n			z		
voiced nasal	m	n			ɲ		
voiced r-sound		rr	rrʃ				

Vowels	high	mid	lower mid	low
i				
u				
ɛ				a
o				
ø				
ɜ				
ɐ				

Vowels	high	higher mid	lower mid	low
i				
ɛ				
a				
ɜ				
ɐ				

Language

Carib (807)

voiceless plosive  
 voiced plosive  
 vl. nonsibilant fric.  
 vd. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 voiced flap  
 vd. central approx.

bilabial  
 dental/alveolar

p "t"  
 b "d"

β  
 m "n"

ɸ  
 j

alveolar  
 dental/alveolar

h

variable place  
 glottal

ʔ<sup>4</sup>

labial-velar

h

Language

Apinaye (809)

voiceless plosive  
 voiced plosive  
 vl. sibilant affric.  
 vd. nonsibilant fric.  
 vl. sibilant fric.  
 vd. sibilant fric.  
 voiced flap

bilabial  
 bilabial prenasalized  
 labio-dental  
 dental/alveolar  
 alveolar  
 alveolar prenasalized  
 palato-alveolar  
 retroflex  
 palatal prenasalized  
 velar  
 velar prenasalized  
 glottal

p  
 m<sup>b</sup>  
 v  
 "s"<sup>l</sup>  
 t  
 n<sup>d</sup>  
 tʃ  
 ʒ  
 ʃ

Vowels

high  
 lower mid  
 low

i  
 e  
 ɛ  
 ɔ  
 ɔ, ʌ  
 a

u, w  
 ɜ  
 ɔ, ʏ  
 ɛ  
 ɔ, ʌ  
 a

high  
 higher mid  
 lower mid  
 low

ɪ  
 e  
 ɛ  
 ɔ, ʌ  
 a

u, w  
 ɜ  
 ɔ, ʏ  
 ɛ  
 ɔ, ʌ  
 a

ɪ  
 e  
 ɛ  
 ɔ, ʌ  
 a

Language

Amahuaca (810)

voiceless plosive  
vl. sibilant affric.  
vl. nonsibilant fric.  
vl. sibilant fric.  
voiced nasal  
voiced flap  
vd. central approx.

bilabial p  
dental θ  
dental/alveolar "t"  
palato-alveolar tʃ  
palatal  
velar k x  
glottal ?  
variable place  
labial-velar

Vowels

high i  
mid "o"  
low a

ɿ  
ʊ  
"ø"  
ɶ

Vowels

high i t  
mid "o"  
low a

Language

Chacobo (811)

voiceless plosive  
vl. sibilant affric.  
vl. nonsibilant fric.  
vd. nonsibilant fric.  
vl. sibilant fric.  
voiced nasal  
voiced flap  
vd. central approx.

bilabial p  
alveolar t  
palato-alveolar ts tʃ  
retroflex  
velar k  
glottal ?  
variable place  
labial-velar



Language

Ashuslay (814)

- voiceless plosive
- laryngealized vl. plos.
- vl. sibilant affric.
- laryng. vl. sib. affric.
- vl. nonsibilant affric.
- vl. nonsibilant fric.
- vl. sibilant fric.
- voiced nasal
- vd. lateral approx.
- vd. central approx.

bilabial      labio-dental      dental/alveolar      palatal      velar      glottal      labial-velar      dental/alveolar-velar

p      p      "t̥"      "t̥s"      "t̥s̃"      "t̥s̃"      k      k̃      k̃      x      "s"      "n"      "l̥"

palato-alveolar      palato-alveolar

tʃ      tʃ̃

ʃ

j

w

Vowels

high      i      u  
mid      "e"      "o"  
low      a      o

Language

Abipon (815)

- voiceless plosive
- vl. sibilant affric.
- vl. nonsibilant fric.
- vd. nonsibilant fric.
- voiced nasal
- voiced r-sound
- vd. lateral approx.
- vd. central approx.

bilabial      dental/alveolar      palato-alveolar      palatal      velar      uvular      variable place      labial-velar

p      "t̥"      tʃ      "t̥"      "n"      "r̥"      "l̥"      m      "n"      "r̥"      "l̥"      j

Vowels

high      i      i  
mid      "e"      "o"  
low      a



Language

Southern Nambiquara (816)

voiceless plosive

vl. aspirated plos.

vl. ejective stop

vd. implosive

vl. nonsibilant fric.

laryng. vd. nonsib. fric.

vl. sibilant fric.

laryng. vl. sib. fric.

voiced nasal

laryng. vd.nasal

voiced lateral flap

laryng. vd. lat. flap.

vd. central approx.

bilabial      alveolar      retroflex      palatal      velar      velar labialized      palatal      variable place      labial-velar

p

p<sup>h</sup>

p<sup>ʔ</sup>

b

t

t<sup>h</sup>

t<sup>ʔ</sup>

d

s

ʂ

ɲ

ɳ

ʄ

ʄ̥

j

ɰ

ɰ̥

ɰ̥̥

ɰ̥̥̥

ɰ̥̥̥̥

ɰ̥̥̥̥̥

ɰ̥̥̥̥̥̥

ɰ̥̥̥̥̥̥̥

ɰ̥̥̥̥̥̥̥̥

ɰ̥̥̥̥̥̥̥̥̥

ɰ̥̥̥̥̥̥̥̥̥̥

ɰ̥̥̥̥̥̥̥̥̥̥̥

ɰ̥̥̥̥̥̥̥̥̥̥̥̥

Language

Arabela (817)

voiceless plosive

vl. nonsibilant fric.

vl. sibilant fric.

voiced nasal

voiced trill

vd. central approx.

bilabial      dental/alveolar      palato-alveolar      palatal      velar      variable place      labial-velar

p

"t"

"s"

m

"r"

j

w

Vowels

high

mid

low

i

"e"

a

u

"o"

ɔ̃

ɔ̃̃

ɔ̃̃̃

ɔ̃̃̃̃

ɔ̃̃̃̃̃

ɔ̃̃̃̃̃̃

ɔ̃̃̃̃̃̃̃

ɔ̃̃̃̃̃̃̃̃

ɔ̃̃̃̃̃̃̃̃̃

ɔ̃̃̃̃̃̃̃̃̃̃

ɔ̃̃̃̃̃̃̃̃̃̃̃

Vowels

high

mid

low

i

"e"

a

ɰ

"o"

ɔ̃

ɔ̃̃

ɔ̃̃̃

ɔ̃̃̃̃

ɔ̃̃̃̃̃

Language	Labial	Dental	Dental/alveolar	Palato-alveolar	Palatal	Velar	uvular	variable place	Labial-velar
Quechua (819)									
voiceless plosive	p	"t"				k	q		
vl. aspirated plos.	p <sup>h</sup>	"t <sup>h</sup> "				k <sup>h</sup>	q <sup>h</sup>		
vl. ejective stop	p'	"t'ʰ"				k'	q'		
vl. sibilant affric.				tʃ					
vl. asp. sib. affric.				tʃ <sup>h</sup>					
vl. sib. eject. affric.				tʃ'					
vl. nonsibilant fric.	ɸ <sup>2</sup>							h	
vd. nonsibilant fric.	β <sup>2</sup>	ɣ <sup>2</sup>							
vl. sibilant fric.					ʃ				
voiced nasal	m	"s"				n			
voiced trill		"r" <sup>2</sup>							
voiced flap		"ɾ"							
vd. lateral approx.		"l"			ʎ				
vd. central approx.					j				w

Vowels

high	i	e <sup>2</sup>	o
lower mid		e <sup>2</sup>	ɔ <sup>2</sup>
low			a

Language	Labial	Alveolar	Palatal	Velar	Labial-velar
Auca (818)					
voiceless plosive	p	t		k	
voiced plosive	b	d		g	
voiced nasal	m	n	ɲ	ŋ	w
vd. central approx.					

  

Vowels

high	i	ɿ			
mid	"e"	"o"		"e"	"o"
low	a	a		ɤ	ɤ

Language	bilabial	alveolar	palato-alveolar	retroflex	palatal	velar	uvular	labial-velar
Jaqaru (820)	p	t			c	k	q	labial-velar
voiceless plosive	p <sup>h</sup>	th			c <sup>h</sup>	k <sup>h</sup>	q <sup>h</sup>	
vl. aspirated plos.	p'	t'			c'	k'	q'	
vl. ejective stop	ts	tʃ	tʃ	tʃ				
vl. sibilant affric.	ts <sup>h</sup>	tʃ <sup>h</sup>	tʃ <sup>h</sup>	tʃ <sup>h</sup>				
vl. asp. sib. affric.	ts'	tʃ'	tʃ'	tʃ'				
vl. sib. eject. affric.								
vl. nonsibilant fric.						x		
vl. sibilant fric.		s	f					
voiced nasal	m	n			ɲ	ŋ		
voiced flap		r						
vd. lateral approx.		l			ʎ			
vd. central approx.					j			

  

Language	bilabial	dental	palato-alveolar	palatal	velar	uvular	glottal	variable place
Gumuna-Kena (821)	p	t			k	q	ʔ	
voiceless plosive	b	d						
voiced plosive	p'	t'			k'			
vl. ejective stop		tʃ	tʃ					
vl. sibilant affric.		tʃ'	tʃ'					
vl. sib. eject. affric.								
vl. nonsibilant fric.					x			
vl. sibilant fric.		ʒ	ʃ	ʃ				
voiced nasal	m	n						
voiced trill		r						
vd. lateral approx.		l						
vl. lateral approx.		l̥						
vd. central approx.		ɹ		j				

Vowels	high	mid	low
	i	"e" "ə" "o"	a

  

Vowels	high	mid	low
	i	"e" "ə" "o"	a

<u>Language</u>	bilabial	alveolar	palato-alveolar	retroflex	velar	glottal	variable place	labial-velar
Wapishana (822)						ʔ		
voiceless plosive	p <sup>h</sup>	t <sup>h</sup>			k <sup>h</sup>			
vl. aspirated plos.		d			g			
voiced plosive	b	d						
laryngealized vd. plos.		d						
vl. sibilant affric.			tʃ					
vl. nonsibilant fric.		s	f				h <sup>l</sup>	
vl. sibilant fric.				ʒ				
laryng. vd. sib. fric.								
voiced nasal	m		n					
voiced flap		r						
vd. central approx.								w

<u>Vowels</u>	i	ɪ	u	ʊ	a	ə	ɘ	ɚ	ɛ	ɜ	ɞ	ɔ	ɔ̃	ɔ̄
high														
mid														
low														

<u>Language</u>	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	variable place	labial-velar
Island Carib (823)								
voiceless plosive	p		"t"			k		
voiced plosive	b		"d"			g		
vl. sibilant affric.				tʃ				
vl. nonsibilant fric.		f						
vl. sibilant fric.			"s"					
voiced nasal	m		"n"					
voiced flap			"ɸ"					
vd. lateral approx.			"l"					
vd. central approx.					j			w

<u>Vowels</u>	i	ɪ	u	ʊ	a	ə	ɘ	ɚ	ɛ	ɜ	ɞ	ɔ	ɔ̃	ɔ̄
high														
mid														
low														



Language	bilabial	dental/alveolar	palato-alveolar	palatal	velar	glottal	variable place	labial-velar
Guajiro (826)	p	"t"	tʃ		k	ʔ		
voiceless plosive	hp	"ht"			hk			
vl. preasp. plos.			tʃ					
vl. sibilant affric.			htʃ					
vl. preasp. sib. affric.								
vl. nonsibilant fric.								
vl. sibilant fric.		"s"	f				h	
voiced nasal	m	"n"						
voiced trill		"r"						
vd. lateral flap		"l"						
vd. central approx.				j				w

Language	bilabial	labio-dental	alveolar	palato-alveolar	palatal	velar	glottal	variable place
Moxos (827)	p		t		k	ʔ		
voiceless plosive	b <sup>2</sup>		d <sup>2</sup>					
voiced plosive			ts	tʃ				
vl. sibilant affric.		f <sup>2</sup>						
vl. nonsibilant fric.	β		s	f <sup>1</sup>				
vd. nonsibilant fric.	m		n	ŋ	o <sup>2</sup>			
vl. sibilant fric.			ɾ					
voiced nasal			j <sup>2</sup>					
voiced flap								
vd. lateral approx.				j				w <sup>4</sup>
vd. central approx.								

Vowels	high	higher mid	lower mid	low
i				
ɪ				
u				
ʊ				
ɔ <sup>5</sup>				
ø <sup>5</sup>				
ɛ				
ɔ				
ə				
a				
ɶ				

Language

Guarani (828)

voiceless plosive  
 vl. sibilant affric.  
 vl. nonsibilant fric.  
 vd. nonsibilant fric.  
 vl. sibilant fric.  
 voiced nasal  
 voiced fricative trill  
 voiced flap  
 vd. lateral approx.

bilabial p f<sup>2</sup>  
 labio-dental v f<sup>2</sup>  
 dental t t<sup>2</sup>  
 dental/alveolar s s  
 alveolar r r<sup>2</sup>  
 palato-alveolar tʃ<sup>2</sup>  
 palatal k k<sup>w</sup>  
 velar x x<sup>w2</sup>  
 velar labialized y y<sup>w2</sup>  
 glottal ?

Language

Siriono (829)

voiceless plosive  
 voiced plosive  
 vl. sibilant affric.  
 vd. sibilant affric.  
 vl. nonsibilant fric.  
 vl. sibilant fric.  
 voiced flap  
 vd. central approx.

bilabial p m<sup>b</sup>  
 bilabial prenasalized m<sup>b</sup>  
 dental/alveolar "t"  
 dental/alveolar "n", "d"  
 palato-alveolar tʃ  
 palato-alveolar prenasalized n<sup>o3</sup>  
 palatal k k<sup>j</sup>  
 velar prenasalized ɲ<sup>o3</sup>  
 velar place

labial-velar

Vowels

high i f u  
 higher mid e o  
 low a

Vowels

high ɨ<sup>5</sup> u  
 higher mid o  
 low a

w

Language	Labial	Labio-dental	dental/alveolar	palato-alveolar	palatal	Velar	Velar labialized	glottal
Ticuna (831)								
voiceless plosive	p		"t"			k	k <sup>w</sup>	ʔ
voiced plosive	b		"d"			g		
vl. sibilant affric.				tʃ				
vd. sibilant affric.				dʒ				
vl. nonsibilant fric.				f <sup>2</sup>				
vd. nonsibilant fric.			"s" <sup>2</sup>					
voiced nasal	m		"n"		ɲ	ŋ		
voiced flap			"ɾ"					
vd. central approx.								w

Vowels	high	mid	low
i			
e			
o			
a			
ɨ			
ʉ			

Language	Labial	Labio-dental	dental	alveolar	palatal	Velar	variable place
Guahibo (830)							
voiceless plosive	p		t <sup>h</sup>	t		k	
vl. aspirated plos.							
voiced plosive	b			d			
vl. sibilant affric.				ts			
vl. nonsibilant fric.		f			x		h
vd. nonsibilant fric.		v					
voiced nasal	m			n			
voiced trill				r			
vd. lateral approx.				l			
vd. central approx.					j		

Vowels	high	mid	low
i			
e			
o			
a			
ɨ			
ʉ			



Language	bilabial	dental	alveolar	palato-alveolar	retroflex	palatal	velar	velar labialized	glottal	variable place	variable place labialized	labial-velar
Siona (833)	p	t		tʃ	tʃ		k	kʷ	ʔ			
	voiceless plosive											
	laryng. vl. plosive											
	vl. sibilant affric.											
	vl. nonsibilant fric.											
	vl. sibilant fric.											
	laryng. vl. sib. fric.											
	voiced nasal											
	vd. central approx.											

Language	bilabial	alveolar	palatal	velar	variable place	labial-velar
Barasano (832)	p	t		k		
	b	d		g		
	vl. nonsibilant fric.					
	vl. sibilant fric.	s <sup>2</sup>			h	
	voiced flap	ɾ				
	vd. central approx.		j			

Vowels

high	i	u	ɨ	ɯ
higher mid				ø
mid	"e"	o		
low	a		"ə"	a

Vowels

high	i	u	ɨ	ɯ
higher mid				ø
mid	"e"	o		
low	a		"ə"	a

<u>Language</u>	bilabial	dental/alveolar	palatal	velar	glottal	labial-velar
Jivaro (835)	p	"t" "ts"		k	ʔ <sup>1</sup>	
voiceless plosive						
vi. sibilant affric.		"tʃ"				
vi. nonsibilant fric.			x			
vi. sibilant fric.		"s"				
voiced nasal	m	"n"				
voiced flap		"ɺ"				
vd. central approx.			j			w

<u>Language</u>	bilabial	alveolar	palatal	velar	glottal	variable place	labial-velar
Tucano (834)	p	t		k	ʔ		
voiceless plosive							
voiced plosive	b	d		g			
vi. nonsibilant fric.						h	
vi. sibilant fric.		s					
voiced flap		ɺ					
vd. central approx.			j				w

Vowels  
 high i u, w  
 low e, a

Vowels  
 high i u  
 mid "e" "o"  
 low a

Language	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	glottal	variable place	labial-velar
Cofan (836)									
voiceless plosive	p	"t"	"tʰ"	cʰ	k	k	ʔ		
vl. aspirated plos.	pʰ	"tʰ"	chʰ	chʰ	kʰ	kʰ			
voiced plosive	b	"d"	"dʰ"	fʰ	g	g			
vl. sibilant affric.			tʃ	tʃ					
vl. asp. sib. affric.			tʃʰ	tʃʰ					
vd. sibilant affric.			dʒ	dʒ					
vl. nonsibilant fric.	f	f					h		
vd. nonsibilant fric.	β				ɣ				
vl. sibilant fric.			"s"	f					
vd. sibilant fric.			"r"						
voiced nasal	m	"n"	"r"	z	n				
voiced r-sound			"rr"						
vd. central approx.				j	ɣ	w			

Vowels

	high	mid	lower mid	low
	i	e	ɛ	a
	ɨ	ɜ	ɔ	ɔ
	u, w			

Vowels

	high	lower mid	low
	i	ɛ	a
	ɨ	ɜ	ɔ
	u, w		

Language

Araucanian (837)

	bilabial	dental	alveolar	palato-alveolar	retroflex	palatal	velar	labial-velar
voiceless plosive	p	t	t	tʃ	tʃ		k	
vl. sibilant affric.					tʃ			
vl. nonsibilant affric.					tʃ			
vl. nonsibilant fric.	ɸ	θ						
vd. nonsibilant fric.								
vl. sibilant fric.			s <sup>2</sup>					
voiced nasal	m	n	n					
vd. lateral approx.		l	l					
vd. central approx.								

<u>Language</u>	bilabial	dental	dental/alveolar	palato-alveolar	palatal	velar	uvular	variable place	labial-velar
Aleut (901)			"t"			k	q		
voiceless plosive			"ts"						
vl. sibilant affric.						x	X	h	
vl. nonsibilant fric.						y	ʁ		
vd. nonsibilant fric.		ð							
vl. sibilant fric.				ʃ					
vd. sibilant fric.				ʒ					
vl. lateral fric.			"q"						
voiced nasal	m		"n"				ŋ		
voiceless nasal			"ŋ"						
vd. lateral approx.			"l"						
vd. central approx.					j				w
vl. central approx.					j				w

Vowels

high i u  
low a

<u>Language</u>	bilabial	labio-dental	dental	dental/alveolar	palato-alveolar	palatal	velar	uvular
Greenlandic (900)			t	"ts"			k	q
voiceless plosive	p							
vl. sibilant affric.		f:				x:	X:	
long vl. nonsib. fric.						y	ʁ	
vd. nonsibilant fric.	β			"s"	ʃ			
vl. sibilant fric.								
long vl. lateral fric.			ʃ:					
voiced nasal	m		ɲ					
vd. lateral approx.			l					
high	i		u					
low	a							

Language

Telugu (902)

voiceless plosive

vl. aspirated plos.

voiced plosive

breathly vd. plos.

vl. sibilant affric.

vd. sibilant affric.

vl. nonsibilant fric.

vd. nonsibilant fric.

vl. sibilant fric.

voiced nasal

voiced flap

vd. lateral approx.

vd. central approx.

Vowels

high

higher mid

lower mid

low

bilabial      Labio-dental      dental      dental/alveolar      alveolar      retroflex      palatal      velar      variable place

p

p<sup>h2</sup>

b

b<sup>2</sup>

ɸ

ɸ<sup>2</sup>

ɸ<sup>2</sup>

m

β

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

ɸ

t

t<sup>h2</sup>

d

d<sup>2</sup>

d<sup>2</sup>

ɸ

ɸ<sup>2</sup>

ɸ<sup>2</sup>

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Language	bilabial	dental/alveolar	palato-alveolar	retroflex	palatal	velar	uvular	variable place	labial-velar
Kurukh (904)									
voiceless plosive	p "t"			t		k			
voiced plosive	b "d"			d		g			
vl. sibilant affric.			tʃ						
vd. sibilant affric.			dʒ						
vl. nonsibilant fric.									
vl. sibilant fric.		"s"					x		
voiced nasal	m	"n"							
voiced trill		"r"		ɽ					
vd. lateral approx.		"l"							
vd. central approx.					j			w	

  

Language	bilabial	dental	alveolar	palato-alveolar	retroflex	palatal	velar	variable place
Malayalam (905)								
voiceless plosive	p	t						
voiced plosive	b	d						
vl. sibilant affric.			tʃ					
vd. sibilant affric.			dʒ					
vl. nonsibilant fric.								
vl. sibilant fric.			s		ʂ			
voiced nasal	m	n						
voiced trill		r						
voiced flap		D						
vd. lateral approx.		l						
vd. central approx.		ʎ						

Vowels	high	mid	low
i			
"e"			
a			
u			
"ø"			
"ə"			
ɔ			
ɪ			
"e"			
"o"			
a			

Language	bilabial	dental/alveolar	dental/alv. palatalized	palatal	velar	uvular	glottal	variable place
Ket (906)		"t"	"tj"	k	q	?		
voiceless plosive	b	"p"	"pj"					
voiced plosive		"b"	"bj"					
vl. sibilant affric.		"s"	"sj"					
vl. nonsibilant fric.								h
vd. nonsibilant fric.								
voiced nasal	m	"n"						
vd. lateral approx.		"l"	"lj"					

Vowels

high	i	e	u
mid		"e"	
lower mid			o
low	a	a	

Language	bilabial	dental/alveolar	dental/alv. velarized	palato-alveolar	palatal	velar	uvular	Labial-velar
Yukaghir (907)								
voiceless plosive	p	"t"						
voiced plosive	b	"p"						
vl. sibilant affric.				tʃ				
vd. sibilant affric.				dʒ				
vd. nonsibilant fric.								
vl. sibilant fric.		"s"						
voiced nasal	m	"n"			n	ŋ		
voiced trill		"r"						
vd. lateral approx.		"l"	"t"					
vd. central approx.					j			w

Vowels

high	i	u
mid		"e" "o"
lower mid		ɛ
low		ɔ

Language	bilabial	dental/alveolar	retroflex	palatal	velar	uvular	glottal	labial-velar
Chukchi (908)								
voiceless plosive	p	"t"		k	q		ʔ	
vl. sibilant affric.		"ts" <sup>l</sup>						
vd. nonsibilant fric.		"s"	ʃ	ɣ				
vl. sibilant fric.		"ʃ"						
vl. lateral fric.		"h"		ŋ				
voiced nasal	m							w
vd. central approx.			j					
<u>Vowels</u>								
high	ɪ				u			
higher mid	e							
mid			"e"	"o"				
lower mid	ɛ							
low			a					

  

Language	bilabial	labio-dental	dental/alveolar	palato-alveolar	palatal	velar	uvular	variable place
Gilyak (909)								
voiceless plosive	p		"t"		c	k	q	
vl. aspirated plos.	p <sup>h</sup>		"t <sup>h</sup> "			k <sup>h</sup>	q <sup>h</sup>	
vl. asp. sib. affric.				tʃ <sup>h</sup>				
vl. nonsibilant fric.		f			x		χ	h
vd. nonsibilant fric.			"s"		ɣ		ʁ	
vl. sibilant fric.			"z"					
vd. sibilant fric.	m		"n"		ɲ			
voiced nasal			"r"					
voiced trill			"ɽ"					
voiceless trill			"ɽ"					
vd. lateral approx.			"l"					
vd. central approx.		ɤ		j				w
<u>Vowels</u>								
high	ɪ							
higher mid			ɤ					ɛ
mid			"o"					
low		ə						











Language

Ainu (916)

voiceless plosive  
vl. sibilant affric.  
vl. nonsibilant fric.  
vl. sibilant fric.  
voiced nasal  
voiced r-sound  
vd. central approx.

bilabial  
alveolar  
palato-alveolar  
palatal  
velar  
variable place  
labial-velar

p t  
s  
m n  
rr

tʃ

h

j

w

Vowels

high  
lower mid  
low

i  
ɛ  
a

Language

Brahui (917)

voiceless plosive  
voiced plosive  
vl. sibilant affric.  
vd. sibilant affric.  
vl. nonsibilant fric.  
vd. nonsibilant fric.  
vl. sibilant fric.  
vd. sibilant fric.  
vl. lateral fric.  
voiced nasal  
voiced trill  
voiced flap  
vd. lateral approx.

bilabial  
labio-dental  
dental  
alveolar  
palato-alveolar  
velar  
glottal  
variable place

p b

t d

tʃ dʒ

x ɣ

s

z

ʃ

ɳ

r

ɾ

l

Vowels

high  
higher mid  
low

i:  
e:  
o:  
a

u:

ɪ

e

a

u

Language

!Xü (918)

a) Non-click consonants and vowels.

voiceless plosive

vl. aspirated plosive

voiced plosive

breathy voiced plosive

vl. ejective stop

voiced ejective stop

vl. sibilant affricate

vl. aspirated sib. affric.

voiced sib. affric.

vl. sib. ejective affric.

breathy vd. sib. affric.

vd. sib. ejective affric.

vl. nonsibilant fric.

vd. nonsibilant fric.

vl. sibilant fric.

voiced sibilant fric.

voiced nasal

long voiced nasal

breathy voiced nasal

laryngealized vd. nasal

voiced flap

vd. central approx.

Vowels high i

mid "e" "o"

low a

mid "e" "o"

low a

ia

ei

eu

ae

ao

Labial-velar

variable place

pharyngealized

velar

palatal

palatal-velarized

palatal-alveolar

alveolar

alveolar-velarized

labial-velar

variable place

pharyngealized

velar

palatal

palatal-velarized

palatal-alveolar

alveolar

alveolar-velarized

labial-velar

variable place

pharyngealized

velar

palatal

palatal-velarized

palatal-alveolar

alveolar

alveolar-velarized

labial-velar

variable place

pharyngealized

velar

palatal

palatal-velarized

palatal-alveolar

alveolar

alveolar-velarized

labial-velar

variable place

pharyngealized

velar

palatal

palatal-velarized

palatal-alveolar

alveolar

alveolar-velarized

labial-velar

variable place

pharyngealized

Language

!Xü (918)

b) Click consonants

voiceless click

vl. aspirated click

glottalized vl. click

voiced click

breathy voiced click

glottalized vd. click

vl. affricated click

vl. asp. affr. click

glot. vl. aff. click

vd. affric. click

breathy vd. aff. cl.

glot. vd. aff. click

vl. lat. aff. click

vl. asp. lat. aff. c.

gl. vl. lat. aff. cl.

vd. lat. affr. click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

breathy vd. lateral affricated click

gl. vd. lat. aff. cl.

See notes on the description of click consonants on the chart for Nama (913).

SEGMENT INDEX TO UPSID

(Numbers in parentheses should be subtracted from the segment totals if 'anomalous' cases are to be omitted from consideration)

1. PLOSIVES.

Voiceless bilabial plosive.

/p/ 262 (-8)      Greek, German, Lithuanian, Russian, French, Spanish, Romanian, Pashto, Kurdish, Hindi-Urdu, Bengali, Kashmiri, Punjabi, Sinhalese, Albanian, E. Armenian, Ostyak, Cheremis, Komi, Finnish, Hungarian, Lappish, Yurak, Tavgy, Azerbaijani, Chuvash, Kirghiz, Bashkir, Khalaj, Tuva, Goldi, Korean, Japanese, Moro, Kadugli, Kpelle, Bisa, Bambara, Dan, Wolof, Diola, Temne, Dagbani, Senadi, Tampulma, Bariba, Igbo, Birom, Tarok, Amo, Beembe, Swahili, Luvale, Zulu, Teke, Doayo, Gbeya, Zande, Kanuri, Fur, Maasai, Luo, Nyangi, Ik, Sebei, Temein, Tabi, Mursi, Logbara, Yulu, Sara, Koma, Hebrew, Neo-Aramaic, Awiya, Iraqw, Kefa, Hamer, Angas, Margi, Ngizim, Kanakuru, Mundari, Kharia, Khasi, Sedang, Khmer, Maung, Tiwi, Burera, Nunggubuyu, Maranungku, Malakmalak, Bardi, Wik-Munkan, Kunjen, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Gugu-Yalanji, Mabuiag, Arabana-Wanganura, Diyari, Standard Thai, Lakkia, Yay, Sui, Saek, Po-ai, Lungchow, Atayal, Sundanese, Javanese, Malagasy, Cham, Malay, Batak, Tagalog, Sa'ban, Chamorro, Rukai, Tsou, Roro, Kaliai, Iai, Maori, Hawaiian, Mandarin, Taishan, Hakka, Changchow, Amoy, Fuchow, Kan, Tamang, Dafla, Burmese, Lahu, Jingpho, Ao, Tiddim Chin, Garo, Boro, Karen, Yao, Andamanese, Asmat, Sentani, Nimboran, Iwam, Gadsup, Yagaria, Pawaian, Dani, Wantoat, Daribi, Fasu, Suená, Dera, Kunimaipa, Taoripi, Nasioi, Rotokas, Nambakaengo, Haida, Tlingit, Navaho, Chipewyan, Tolowa, Nez Perce, Wintu, Chontal, Zoque, Tzeltal, Totonac, K'ekchi, Mixe, Otomi, Mazahua, Chatino, Nootka, Quileute, Squamish, Puget Sound, Papago, Luiseno, Hopi, Yacqui, Tiwa, Karok, Pomo, Diegueno, Achumawi, Shasta, Tarascan, Zuni, Ojibwa, Delaware, Tonkawa, Wiyot, Dakota, Yuchi, Alabama, Wappo, Itonama, Bribri, Mura, Cayapa, Paez, Ocaina, Muinane, Carib, Apinaye, Amahuaca, Chacobo, Tacana, Cashinahua, Ashuslay, Abipon, S. Nambiquara, Arabela, Auca, Quechua, Jaqaru, Gununa-Kena, Amuesha, Campa, Guajiro, Moxos, Guarani, Siriono, Guahibo, Ticuna, Barasano, Siona, Tucano, Jivaro, Cofan, Araucanian, Greenlandic, Telugu, Kurukh, Malayalam, Yukaghir, Chukchi, Gilyak, Georgian, Nama, Basque, Burushaski, Ainu, Brahui, !Xu; RARE Manchu, Island Carib; LOAN Yakut, Evenki, Amharic, Telefol, Mazatec, Mixtec.

Long voiceless bilabial plosive.

/p:/ 7 Punjabi, Finnish, Yakut, Japanese, Maranungku,  
Delaware, Lak.

Palatalized voiceless bilabial plosive.

/p<sup>j</sup>/ 7 (-1) Lithuanian, Russian, Yurak, Igbo, Nambakaengo,  
Amuesha; LOAN Cheremis.

Labialized voiceless bilabial plosive.

/p<sup>w</sup>/ 1 Nambakaengo.

Voiceless aspirated bilabial plosive.

/p<sup>h</sup>/ 82 (-4) Breton, Norwegian, Bulgarian, Farsi, Hindi-Urdu,  
Bengali, Kashmiri, Punjabi, E. Armenian, Osmanli,  
Azerbaijani, Kirghiz, Korean, Ewe, Akan, Igbo, Ga,  
Beembe, Swahili, Zulu, Mundari, Kharia, Khasi, Sedang,  
Khmer, Kunjen, Standard Thai, Lakkia, Yay, Sui, Saek,  
Lungchow, Cham, Adzera, Mandarin, Taishan, Hakka,  
Changchow, Amoy, Fuchow, Kan, Tamang, Dafla,  
Burmese, Lahu, Jingpho, Tiddim Chin, Karen, Yao,  
Selepet, Daribi, Nambakaengo, Klamath, Maidu, Wintu,  
Otomi, Mazahua, Kwakw'ala, Tiwa, Yana, Tarascan,  
Acoma, Wiyot, Dakota, Yuchi, Tunica, S. Nambiquara,  
Quechua, Jaqaru, Wapishana, Cofan, Kota, Gilyak,  
Georgian, Kabardian, Lak, Burushaski, !Xu; RARE Haida;  
LOAN Mongolian, Po-ai, Telugu.

Long voiceless aspirated bilabial plosive.

/p<sup>h</sup>:/ 1 Punjabi.

Labialized velarized voiceless aspirated bilabial plosive.

/p<sup>w</sup><sup>h</sup>/ 1 Irish.

Palatalized voiceless aspirated bilabial plosive.

/p<sup>j</sup><sup>h</sup>/ 3 Irish, Bulgarian, Igbo.

Voiceless preaspirated bilabial plosive.

/p<sup>h</sup>/ 2 (-1) Guajiro; OBSCURE Ojibwa.

Voiceless bilabial plosive with breathy release.

/p<sup>h</sup>/ 2 Javanese, Changchow.

Laryngealized voiceless bilabial plosive.

/p̥/ 3 Korean, Ashuslay, Siona.

Voiced bilabial plosive.

/b/ 199 (-11) Greek, Breton, German, Norwegian, Lithuanian,  
Russian, Bulgarian, French, Romanian, Farsi,  
Pashto, Kurdish, Hindi-Urdu, Bengali, Kashmiri,  
Punjabi, Sinhalese, Albanian, Komi, Hungarian,  
Lappish, Tavgy, Osmanli, Yakut, Bashkir, Khalaj,  
Tuva, Mongolian, Evenki, Goldi, Manchu, Japanese,  
Katcha, Moro, Kadugli, Kpelle, Bisa, Bambara, Dan,



Wolof, Diola, Temne, Dagbani, Tampulma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Efik, Birom, Tarok, Amo, Teke, Doayo, Gbeya, Zande, Songhai, Kanuri, Maba, Fur, Luo, Nubian, Ik, Tama, Temein, Nera, Tabi, Mursi, Logbara, Yulu, Sara, Berta, Kunama, Koma, Tigre, Amharic, Hebrew, Socotri, Neo-Aramaic, Shilha, Tuareg, Somali, Awiya, Iraqw, Beja, Dizi, Dizi, Kefa, Hamar, Hausa, Angas, Margi, Ngizim, Kanakuru, Mundari, Kharia, Khasi, Alawa, Mabuiag, Bandjalang, Standard Thai, Yay, Sui, Saek, Sundanese, Malagasy, Cham, Malay, Batak, Tagalog, Sa'ban, Chamorro, Rukai, Tsou, Adzera, Roro, Iai, Amoy, Dafla, Burmese, Lahu, Jingpho, Tiddim Chin, Garo, Boro, Yao, Andamanese, Nimboran, Telefol, Yagaria, Chuave, Suená, Dera, Kunimaipa, Yareba, Koiari, Nasioi, Tlingit, Klamath, Wintu, Tzeltal, Chontal, Otomi, Chatino, Kwakw'ala, Quileute, Puget Sound, Papago, Yacqui, Pomo, Yana, Acoma, Dakota, Yuchi, Alabama, Itonama, Bribri, Mura, Cayapa, Ocaina, Muinane, Carib, Tacana, Cashinahua, Auca, Gununa-Kena, Island Carib, Siriono, Guahibo, Ticuna, Barasano, Tucano, Cofan, Telugu, Kota, Kurukh, Malayalam, Ket, Yukaghir, Kabardian, Lak, Basque, Burushaski, Brahui, !Xu; RARE Seneca; LOAN Finnish, Chuvash, Zoque, Mazatec, Tiwa, Tarascan, Tunica, Wappo, Moxos; OBSCURE Yurak.

Long voiced bilabial plosive.

/b:/ 5 Punjabi, Wolof, Arabic, Shilha, Somali,

Prenasalized voiced bilabial plosive.

/<sup>m</sup>b/ 18 (-1) Luvale, Gbeya, Yulu, Sara, Berta, Ngizim, Sedang, Alawa, Hakka, Washkuk, Selepet, Kewa, Wantoat, Nambakaengo, Paez, Apinaye, Siriono; RARE Kaliai.

Prenasalized labialized voiced bilabial plosive.

/<sup>m,w</sup>b/ 2 Washkuk, Nambakaengo.

Nasally-released voiced bilabial plosive.

/b<sup>m</sup>/ 1 Aranda.

Labialized voiced bilabial plosive.

/b<sup>w</sup>/ 1 Irish.

Palatalized voiced bilabial plosive.

/b<sup>j</sup>/ 6 (-1) Irish, Lithuanian, Russian, Bulgarian, Igbo; OBSCURE Yurak.

Breathy voiced bilabial plosive.

/b/ 6 (-1) Hindi-Urdu, Bengali, Igbo, Mundari, Kharia; LOAN Telugu.

Palatalized breathy voiced bilabial plosive.

/b<sup>ɥ</sup>/ 1 Igbo.

Laryngealized voiced bilabial plosive.

/b/ 8 Logbara, Ngizim, Sedang, Lakkia, Sui, Lungchow,  
K'ekchi, Wapishana.

Voiceless dental plosive.

/t̪/ 72 Russian, French, Spanish, Kurdish, Hindi-Urdu,  
Sinhalese, Albanian, Finnish, Hungarian,  
Azerbaijani, Khalaj, Tuva, Manchu, Katcha, Moro,  
Kadugli, Temne, Gbeya, Ik, Tama, Temein, Tabi, Logbara,  
Yulu, Kunama, Arabic, Tigre, Neo-Aramaic, Tuareg,  
Beja, Mundari, Kharia, Tiwi, Nunggubuyu, Kunjen,  
Western Desert, Aranda, Kariera-Ngarluma,  
Arabana-Wanganura, Diyari, Standard Thai,  
Sundanese, Javanese, Malagasy, Rukai, Roro, Maori,  
Tamang, Garo, Yao, Nimboran, Nez Perce, Tzeltal,  
Mixe, Nootka, Squamish, Papago, Luiseno, Pomo,  
Diegueno, Alabama, Wappo, Gununa-Kena, Guarani, Siona,  
Araucanian, Greenlandic, Telugu, Malayalam, Georgian,  
Nama, Brahui.

Long voiceless dental plosive.

/t̪:/ 2 Finnish, Arabic.

Palatalized voiceless dental plosive.

/t̪<sup>ɥ</sup>/ 1 Russian.

Pharyngealized voiceless dental plosive.

/t̪<sup>ħ</sup>/ 2 Arabic, Tuareg.

Long pharyngealized voiceless dental plosive.

/t̪<sup>ħ</sup>:/ 1 Arabic.

Voiceless aspirated dental plosive.

/t̪<sup>h</sup>/ 22 Irish, Norwegian, Farsi, Hindi-Urdu, Osmanli,  
Azerbaijani, Ewe, Ga, Somali, Mundari, Kharia,  
Kunjen, Standard Thai, Tamang, Yao, Selepet, Yana,  
Acoma, Guahibo, Kota, Georgian, Kabardian.

Voiceless dental plosive with breathy release.

/t̪<sup>h̥</sup>/ 1 Javanese.

Voiced dental plosive.

/d/ 53 (-3) Irish, Norwegian, Russian, French, Farsi,  
Kurdish, Hindi-Urdu, Sinhalese, Albanian, Hungarian,  
Osmanli, Khalaj, Tuva, Manchu, Katcha, Kadugli, Ewe,  
Gbeya, Ik, Tama, Temein, Tabi, Logbara, Yulu, Kunama,  
Arabic, Tigre, Neo-Aramaic, Tuareg, Somali, Beja,  
Mundari, Kharia, Standard Thai, Malagasy, Rukai,  
Garo, Yao, Nimboran, Kunimaipa, Mixe, Papago, Yana,

Acoma, Gununa-Kena, Telugu, Kota, Malayalam, Kabardian, Brahui; LOAN Tzeltal, Wappo; ?DERIVED Finnish.

Long voiced dental plosive.

/d:/ 2 Arabic, Somali.

Prenasalized voiced dental plosive.

/n<sub>d</sub>/ 2 Gbeya, Selepet.

Nasally-released voiced dental plosive.

/d<sup>n</sup>/ 1 Aranda.

Palatalized voiced dental plosive.

/d<sup>j</sup>/ 1 Russian.

Pharyngealized voiced dental plosive.

/d<sup>ʕ</sup>/ 2 Arabic, Tuareg.

Long pharyngealized voiced dental plosive.

/d<sup>ʕ</sup>:/ 1 Arabic.

Breathy voiced dental plosive.

/d̤/ 3 Hindi-Urdu, Mundari, Kharia.

Laryngealized voiced dental plosive.

/d̥/ 1 Logbara.

Voiceless dental/alveolar plosive.

/"t"/ 84 Greek, German, Lithuanian, Romanian, Pashto, Bengali, Kashmiri, Punjabi, E. Armenian, Ostyak, Cheremis, Lappish, Yurak, Tavgy, Chuvash, Yakut, Kirghiz, Evenki, Goldi, Korean, Japanese, Wolof, Dagbani, Senadi, Igbo, Tarok, Beembe, Swahili, Luvale, Doayo, Songhai, Kanuri, Maba, Maasai, Nubian, Sebei, Nera, Mursi, Arabic, Amharic, Hebrew, Socotri, Shilha, Awiya, Kullo, Dizi, Kefa, Hausa, Khasi, Sedang, Khmer, Maranungku, Wik-Munkan, Gugu-Yalanji, Mabuig, Lakkia, Yay, Sui, Po-ai, Lungchow, Atayal, Cham, Malay, Batak, Tagalog, Tsou, Kaliai, Iai, Mandarin, Taishan, Hakka, Changchow, Amoy, Fuchow, Kan, Dafla, Burmese, Lahu, Jingpho, Karen, Andamanese, Sentani, Telefol, Pawaian, Dani, Wantoat, Suena, Dera, Kunimaipa, Taoripi, Nasioi, Nambakaengo, Haida, Tlingit, Chipewyan, Tolowa, Chontal, Mazahua, Mazatec, Mixtec, Chatino, Tiwa, Karok, Shasta, Zuni, Delaware, Tonkawa, Wiyot, Seneca, Wichita, Dakota, Yuchi, Itonama, Bribri, Mura, Carib, Amahuaca, Ashuslay, Abipon, Arabela, Quechua, Island Carib, Guajiro, Siriono, Ticuna, Jivaro, Cofan, Aleut, Kurukh, Ket, Yukaghir, Chukchi, Gilyak, Basque, Burushaski.

Long voiceless dental/alveolar plosive.

/'t:/ 7 Punjabi, Yakut, Japanese, Shilha, Maranungku,  
Delaware, Lak.

Labialized voiceless dental/alveolar plosive.

/'tʷ/ 1 Nambakaengo.

Palatalized voiceless dental/alveolar plosive.

/'tʲ/ 8 (-2) Lithuanian, Yurak, Chuvash, Nambakaengo, Itonama, Ket;  
LOAN Cheremis; ?DERIVED Songhai.

Pharyngealized voiceless dental/alveolar plosive.

/'tˤ/ 1 Shilha.

Voiceless aspirated dental/alveolar plosive.

/'tʰ/ 48 (-2) Breton, Bulgarian, Bengali, Kashmiri, Punjabi, E.  
Armenian, Kirghiz, Mongolian, Korean, Akan, Igbo,  
Beembe, Swahili, Khasi, Sedang, Khmer, Lakkia, Yay,  
Lungchow, Cham, Adzera, Mandarin, Taishan, Hakka,  
Amoy, Fuchow, Kan, Burmese, Lahu, Jingpho, Karen,  
Nambakaengo, Haida, Tolowa, Mazahua, Kwakw'ala,  
Tiwa, Wiyot, Wichita, Dakota, S. Nambiquara,  
Quechua, Cofan, Gilyak, Lak, Burushaski; LOAN  
Irish, Po-ai.

Long voiceless aspirated dental/alveolar plosive.

/'tʰː/ 1 Punjabi.

Palatalized voiceless aspirated dental/alveolar plosive.

/'tʲʰ/ 1 Bulgarian.

Velarized voiceless aspirated dental/alveolar plosive.

/'tʰˠ/ 1 Chipewyan.

Preaspirated voiceless dental/alveolar plosive.

/'hʰt/ 1 Guajiro.

Voiceless dental/alveolar plosive with breathy release.

/'tʰ̤/ 1 Changchow.

Laryngealized voiceless dental/alveolar plosive.

/'t̚/ 2 Korean, Ashuslay.

Voiced dental/alveolar plosive.

/'d/ 77 (-5) Greek, Breton, German, Lithuanian, Bulgarian,  
Romanian, Pashto, Bengali, Kashmiri, Punjabi,  
Lappish, Tavgy, Yakut, Mongolian, Evenki, Japanese,  
Wolof, Dagbani, Senadi, Akan, Igbo, Tarok, Doayo,  
Songhai, Kanuri, Maba, Nubian, Nera, Mursi, Berta,  
Amharic, Hebrew, Socotri, Shilha, Kullo, Kefa, Hausa,  
Khasi, Karijera-Ngarluma, Mabuiag, Yay, Sui, Cham,  
Malay, Batak, Tagalog, Adzera, Iai, Amoy, Dafla,

Burmese, Lahu, Jingpho, Andamanese, Sentani, Suena, Dera, Tlingit, Chatino, Yuchi, Itonama, Bribri, Carib, Island Carib, Ticuna, Cofan, Kurukh, Ket, Yukaghir, Lak, Basque, Burushaski; RARE Chontal; LOAN Irish, Chuvash, Telefol, Tiwa.

Long voiced dental/alveolar plosive.

/"d:"/ 3 Punjabi, Arabic, Shilha.

Prenasalized voiced dental/alveolar plosive.

/"<sup>n</sup>d"/ 9 Luvale, Yulu, Berta, Sedang, Hakka, Wantoat, Nambakaengo, Mazatec, Siriono.

Long prenasalized voiced dental/alveolar plosive.

/"<sup>n</sup>d:"/ 1 (-1) RARE Kaliai.

Prenasalized labialized voiced dental/alveolar plosive.

/"<sup>n</sup>d<sup>w</sup>"/ 1 Nambakaengo.

Palatalized voiced dental/alveolar plosive.

/"d<sup>j</sup>"/ 4 (-1) Lithuanian, Bulgarian, Ket, ?DERIVED Songhai.

Pharyngealized voiced dental/alveolar plosive.

/"d<sup>ɣ</sup>"/ 1 Shilha.

Breathy voiced dental/alveolar plosive.

/"d̤"/ 3 (-1) Bengali, Igbo; LOAN Telugu.

Laryngealized voiced dental/alveolar plosive.

/"d̥"/ 5 Mundari, Sedang, Sui, Lungchow, Wapishana.

Voiceless alveolar plosive.

/t/ 109 (-1) Komi, Bashkir, Katcha, Kadugli, Kpelle, Bisa, Bambara, Dan, Diola, Temne, Tampulma, Bariba, Lelemi, Efik, Birom, Amo, Zulu, Teke, Zande, Fur, Luo, Nyangi, Temein, Sara, Koma, Iraqw, Hamar, Angas, Margi, Ngizim, Kanakuru, Vietnamese, Maung, Tiwi, Burera, Nunggubuyu, Malakmalak, Bardi, Kunjen, Western Desert, Nyangumata, Aranda, Arabana-Wanganura, Diyari, Saek, Javanese, Sa'ban, Chamorro, Ao, Tiddim Chin, Boro, Asmat, Washkuk, Iwam, Gadsup, Yagaria, Kewa, Chuave, Daribi, Fasu, Yareba, Koiari, Rotokas, Navaho, Hupa, Nez Perce, Wintu, Zoque, Totonac, K'ekchi, Otomi, Quileute, Puget Sound, Hopi, Yacqui, Pomo, Diegueno, Achumawi, Tarascan, Ojibwa, Wappo, Cayapa, Paez, Muinane, Apinaye, Chacobo, Tacana, Cashinahua, S. Nambiquara, Auca, Jaqaru, Amuesha, Campa, Moxos, Guahibo, Barasano, Tucano, Araucanian, Ainu, Brahui, !Xu; OBSCURE Ojibwa.

Palatalized voiceless alveolar plosive.

/t<sup>j</sup>/ 3 Nyangumata, Paez, Ocaina.

Voiceless aspirated alveolar plosive.

/t<sup>h</sup>/ 19 Zulu, Vietnamese, Kunjen, Saek, Changchow, Tiddim  
Chin, Daribi, Navaho, Hupa, Klamath, Maidu, Wintu,  
Otomi, Tarascan, Tunica, Jaqaru, Wapishana, Kota, !Xu.

Voiceless alveolar plosive with breathy release.

/t<sup>h̥</sup>/ 1 Javanese.

Voiced alveolar plosive.

/d/ 65 (-5) Komi, Bashkir, Katcha, Kadugli, Kpelle, Bisa,  
Bambara, Dan, Diola, Temne, Tampulma, Bariba, Ga,  
Efik, Birom, Amo, Teke, Zande, Fur, Luo, Temein, Sara,  
Koma, Iraqw, Hamar, Angas, Margi, Kanakuru,  
Alawa, Diyari, Bandjalang, Saek, Sundanese, Sa'ban,  
Chamorro, Tiddim Chin, Boro, Gadsup, Chuave, Yareba,  
Koiari, Klamath, Wintu, Otomi, Kwakw'ala,  
Quileute, Puget Sound, Pomo, Cayapa, Muinane,  
Tacana, Cashinahua, Auca, Wapishana, Guahibo, Barasano,  
Tucano, Kota, Brahui, !Xu; LOAN Zoque, Yacqui,  
Tarascan, Tunica, Moxos.

Prenasalized voiced alveolar plosive.

/<sup>n</sup>d/ 8 Sara, Ngizim, Alawa, Washkuk, Kewa, Paez, Apinaye.

Prenasalized palatalized voiced alveolar plosive.

/<sup>n</sup>d<sup>j</sup>/ 1 Paez.

Nasally-released alveolar plosive.

/d<sup>n</sup>/ 1 Aranda.

Palatalized voiced alveolar plosive.

/d<sup>j</sup>/ 1 Ocaina.

Velarized voiced alveolar plosive.

/d̠/ 1 !Xu.

Laryngealized voiced alveolar plosive.

/d̥/ 3 Ngizim, Otomi, Wapishana.

Voiceless palato-alveolar plosive.

/t̥/ 7 Nunggubuyu, Malakmalak, Bardi, Wik-Munkan, Aranda,  
Cayapa, Campa.

Voiced palato-alveolar plosive.

/d̥/ 2 Alawa, Cayapa.

Prenasalized voiced palato-alveolar plosive.

/<sup>n</sup>d̥/ 1 Alawa.

Nasally-released voiced palato-alveolar plosive.

/d̪ⁿ/ 1 Aranda.

Voiceless retroflex plosive.

/ɖ/ 28 (-1) Pashto, Hindi-Urdu, Bengali, Kashmiri, Punjabi, Sinhalese, Moro, Maba, Beja, Mundari, Kharia, Maung, Nunggubuyu, Bardi, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Arabana-Wanganura, Diyari, Cham, Rukai, Iai, Telugu, Kurukh, Malayalam, Burushaski; ?DERIVED Tiwi.

Long voiceless retroflex plosive.

/ɖ:/ 1 Punjabi.

Laryngealized voiceless retroflex plosive.

/ɖ̥̚/ 1 Siona.

Voiceless aspirated retroflex plosive.

/ɖʰ/ 10 (-1) Norwegian, Hindi-Urdu, Bengali, Kashmiri, Punjabi, Kharia, Cham, Kota, Burushaski; LOAN Telugu.

Long voiceless aspirated retroflex plosive.

/ɖʰ:/ 1 Punjabi.

Voiced retroflex plosive.

/d/ 23 Norwegian, Pashto, Hindi-Urdu, Bengali, Kashmiri, Punjabi, Sinhalese, Lelemi, Maba, Awiya, Beja, Mundari, Kharia, Alawa, Diyari, Rukai, Iai, Papago, Telugu, Kota, Kurukh, Malayalam, Burushaski.

Long voiced retroflex plosive.

/d:/ 1 Punjabi.

Prenasalized voiced retroflex plosive.

/ᵑd/ 2 Alawa, Aranda.

Breathy voiced retroflex plosive.

/d̤/ 5 (-1) Hindi-Urdu, Bengali, Mundari, Kharia; LOAN Telugu.

Laryngealized voiced retroflex plosive.

/d̚/ 1 Somali.

Long laryngealized voiced retroflex plosive.

/d̚:/ 1 Somali.

Voiceless palatal plosive.

/c/ 41 (-2) Ostyak, Komi, Tavgy, Azerbaijani, Katcha, Kadugli, Wolof, Diola, Senadi, Tampulma, Birom, Nyangi, Sebei, Tabi, Mursi, Yulu, Hamer, Angas, Margi, Ngizim, Vietnamese, Burera, Kunjen, Kariera-Ngarluma, Gugu-Yalanji, Arabana-Wanganura, Diyari, Yay, Cham, Malay, Yao, Kewa, Haida, Hupa, Muinane, Jaqaru, Kurukh,

Gilyak, Basque; RARE Karen, OBSCURE Cofan.

Voiceless aspirated palatal plosive.

/c<sup>h</sup>/ 16 (-3) Breton, Azerbaijani, Kunjen, Yay, Cham, Yao, Haida, Hupa, Klamath, Maidu, Kwakw'ala, Acoma, Jaqaru; RARE Karen; LOAN Osmanli; OBSCURE Cofan.

Voiced palatal plosive.

/j/ 31 (-2) Breton, Komi, Tavgy, Katcha, Wolof, Diola, Senadi, Tampulma, Birom, Maba, Tama, Temein, Tabi, Mursi, Tuareg, Hamer, Angas, Margi, Ngizim, Sundanese, Malay, Yao, Klamath, Kwakw'ala, Acoma, Muinane, Kurukh, Yukaghir, Basque; LOAN Osmanli; OBSCURE Cofan.

Long voiced palatal plosive.

/j:/ 1 Ngizim.

Prenasalized voiced palatal plosive.

/<sup>n</sup>j/ 3 Yulu, Sara, Apinaye.

Voiceless velar plosive.

/k/ 283 (-3) Greek, German, Lithuanian, Russian, French, Spanish, Romanian, Pashto, Kurdish, Hindi-Urdu, Bengali, Kashmiri, Punjabi, Sinhalese, Albanian, E. Armenian, Ostyak, Cheremis, Komi, Finnish, Hungarian, Lappish, Yurak, Tavgy, Chuvash, Yakut, Bashkir, Khalaj, Tuva, Evenki, Goldi, Manchu, Korean, Japanese, Katcha, Moro, Kadugli, Kpelle, Bisa, Bambara, Dan, Wolof, Diola, Temne, Dagbani, Senadi, Tampulma, Bariba, Igbo, Lelemi, Efik, Birom, Tarok, Amo, Swahili, Luvale, Zulu, Teke, Doayo, Gbeya, Zande, Songhai, Kanuri, Maba, Fur, Maasai, Luo, Nubian, Nyangi, Ik, Sebei, Tama, Temein, Nera, Tabi, Mursi, Logbara, Yulu, Sara, Kunama, Koma, Arabic, Amharic, Tigre, Hebrew, Socotri, Neo-Aramaic, Shilha, Tuareg, Awiya, Iraqw, Beja, Kullo, Dizi, Kefa, Hausa, Angas, Margi, Ngizim, Kanakuru, Mundari, Kharia, Khasi, Vietnamese, Sedang, Khmer, Maung, Tiwi, Burera, Nunggubuyu, Maranungku, Malakmalak, Bardi, Wik-Munkan, Kunjen, Western Desert, Nyangumata, Aranda, Karijera-Ngarluma, Gugu-Yalanji, Mabuiag, Arabana-Wanganura, Diyari, Standard Thai, Lakkia, Yay, Sui, Saek, Po-ai, Lungchow, Atayal, Sundanese, Javanese, Malagasy, Cham, Malay, Batak, Tagalog, Chamorro, Rukai, Tsou, Roro, Kaliai, Iai, Maori, Hawaiian, Mandarin, Taishan, Hakka, Changchow, Amoy, Fuchow, Kan, Tamang, Dafla, Burmese, Lahu, Jingpho, Ao, Tiddim Chin, Garo, Boro, Karen, Yao, Andamanese, Asmat, Washkuk, Sentani, Nimboran, Iwam, Telefol, Gadsup, Yagaria, Chuave, Pawaian, Dani, Wantoat, Daribi, Fasu, Suena, Dera, Kunimaipa, Yareba, Koiari, Taoripi, Nasioi,



Rotokas, Nambakaengo, Haida, Tlingit, Navaho, Chipewyan, Tolowa, Nez Perce, Wintu, Chontal, Zoque, Totonac, K'ekchi, Mixe, Otomi, Mazahua, Mazatec, Mixtec, Chatino, Nootka, Quileute, Puget Sound, Papago, Luiseno, Hopi, Yacqui, Tiwa, Karok, Pomo, Diegueno, Achumawi, Shasta, Tarascan, Ojibwa, Delaware, Tonkawa, Wiyot, Seneca, Wichita, Dakota, Yuchi, Alabama, Wappo, Itonama, Bribri, Mura, Cayapa, Paez, Ocaina, Muinane, Carib, Apinaye, Amahuaca, Chacobo, Tacana, Cashinahua, Ashuslay, Abipon, S. Nambiquara, Arabela, Auca, Quechua, Jaqaru, Gununa-Kena, Amuesha, Campa, Guajiro, Moxos, Guarani, Siriono, Guahibo, Ticuna, Barasano, Siona, Tucano, Jivaro, Cofan, Araucanian, Greenlandic, Aleut, Telugu, Kurukh, Malayalam, Ket, Yukaghir, Chukchi, Gilyak, Georgian, Nama, Basque, Burushaski, Ainu, Brahui, !Xu; RARE Squamish, Island Carib; LOAN Azerbaijani.

Long voiceless velar plosive.

/k:/ 9 Punjabi, Finnish, Yakut, Japanese, Arabic, Shilha, Maranungku, Delaware, Lak.

Labialized voiceless velar plosive.

/k<sup>w</sup>/ 38 (-1) Kpelle, Igbo, Amharic, Awiya, Iraqw, Beja, Hausa, Ngizim, Lakkia, Taishan, Washkuk, Telefol, Dani, Wantoat, Nambakaengo, Haida, Tlingit, Chipewyan, Tolowa, Mazahua, Mixtec, Nootka, Quileute, Squamish, Puget Sound, Luiseno, Hopi, Tiwa, Diegueno, Tarascan, Tonkawa, Wiyot, ?DERIVED Wichita, S. Nambiquara, Guarani, Ticuna, Siona; ?DERIVED Otomi.

Long labialized voiceless velar plosive.

/k<sup>w</sup>:/ 1 Lak.

Palatalized voiceless velar plosive.

/k<sup>j</sup>/ 5 Lithuanian, Russian, Hausa, Nambakaengo, Siriono.

Pharyngealized voiceless velar plosive.

/k<sup>ʕ</sup>/ 1 Shilha.

Voiceless aspirated velar plosive.

/k<sup>h</sup>/ 79 (-3) Irish, Breton, Norwegian, Bulgarian, Farsi, Hindi-Urdu, Bengali, Kashmiri, Punjabi, E. Armenian, Osmanli, Azerbaijani, Korean, Ewe, Akan, Igbo, Ga, Beembe, Swahili, Zulu, Somali, Mundari, Kharia, Khasi, Sedang, Khmer, Kunjen, Standard Thai, Lakkia, Yay, Saek, Lungchow, Cham, Adzera, Mandarin, Taishan, Hakka, Changchow, Amoy, Fuchow, Kan, Tamang, Burmese, Lahu, Jingpho, Karen, Yao, Selepet, Daribi, Nambakaengo, Haida, Navaho, Klamath, Maidu, Tzeltal, Otomi, Mazahua, Yana, Tarascan, Acoma, Wiyot, Wichita, Dakota, Yuchi, Tunica, S. Nambiquara,

Quechua, Jaqaru, Wapishana, Cofan, Kota, Gilyak, Georgian, Lak, Burushaski, !Xu; LOAN Mongolian, Po-ai, Telugu.

Long voiceless aspirated velar plosive.

/k:/ 1 Punjabi.

Labialized voiceless aspirated velar plosive.

/k<sup>wh</sup>/ 14 (-1) Igbo, Lakkia, Taishan, Haida, Mazahua, Kwakw'ala, Tarascan, Zuni, Wiyot, Wichita, S. Nambiquara, Kabardian, Lak; RARE Navaho.

Palatalized voiceless aspirated velar plosive.

/k<sup>jh</sup>/ 4 Irish, Bulgarian, Lakkia, Kabardian.

Preaspirated voiceless velar plosive.

/h<sup>h</sup>k/ 2 (-1) Guajiro; OBSCURE Ojibwa.

Voiceless velar plosive with breathy release.

/k<sup>h</sup>/ 2 Javanese, Changchow.

Laryngealized voiceless velar plosive.

/k/ 3 Korean, Ashuslay, Siona.

Voiced velar plosive.

/g/ 175 (-14) Greek, Irish, Breton, German, Norwegian, Lithuanian, Russian, Bulgarian, French, Romanian, Farsi, Pashto, Kurdish, Hindi-Urdu, Bengali, Kashmiri, Punjabi, Sinhalese, Albanian, Komi, Hungarian, Lappish, Tavgy, Osmanli, Yakut, Bashkir, Khalaj, Tuva, Mongolian, Evenki, Goldi, Manchu, Katcha, Moro, Kadugli, Kpelle, Bisa, Bambara, Dan, Diola, Temne, Dagbani, Senadi, Tampulma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Birom, Tarok, Amo, Teke, Doayo, Gbeya, Zande, Songhai, Kanuri, Maba, Fur, Luo, Nubian, Ik, Tama, Temein, Nera, Tabi, Mursi, Logbara, Yulu, Sara, Berta, Kunama, Koma, Tigre, Amharic, Hebrew, Socotri, Neo-Aramaic, Shilha, Tuareg, Somali, Awiya, Iraqw, Beja, Kullo, Dizi, Kefa, Hamer, Hausa, Angas, Margi, Ngizim, Kanakuru, Mundari, Kharia, Alawa, Mabuiag, Bandjalang, Sundanese, Malagasy, Malay, Batak, Tagalog, Chamorro, Rukai, Adzera, Iai, Amoy, Dafla, Burmese, Lahu, Jingpho, Tiddim Chin, Garo, Boro, Yao, Andamanese, Nimboran, Yagaria, Kewa, Chuave, Suena, Dera, Kunimaipa, Yareba, Koiari, Rotokas, Tlingit, Klamath, Mixe, Otomi, Mazahua, Chatino, Papago, Yana, Acoma, Yuchi, Bribri, Mura, Cayapa, Ocaina, Muinane, Carib, Auca, Wapishana, Island Carib, Ticuna, Barasano, Tucano, Cofan, Telugu, Kota, Kurukh, Yukaghir, Lak, Basque, Burushaski, Brahui, !Xu; RARE Puget Sound; LOAN Finnish,

Chuvash, Sa'ban, Telefol, Zoque, Tzeltal, Quileute, Yacui, Tiwa, Tarascan, Tunica, Wappo; ?DERIVED Japanese.

Long voiced velar plosive.

/g:/ 4 Punjabi, Arabic, Shilha, Somali.

Prenasalized voiced velar plosive.

/<sup>ŋ</sup>g/ 18 (-1) Luvale, Gbeya, Yulu, Sara, Berta, Ngizim, Sedang, Alawa, Hakka, Washkuk, Selepet, Wantoat, Nambakaengo, Mazatec, Paez, Apinaye, Siriono; RARE Kaliai.

Labialized prenasalized voiced velar plosive.

/<sup>ŋ</sup>g<sup>w</sup>/ 4 Ngizim, Washkuk, Wantoat, Nambakaengo.

Nasally-released voiced velar plosive.

/g<sup>ŋ</sup>/ 1 Aranda.

Labialized voiced velar plosive.

/g<sup>w</sup>/ 14 (-1) Kpelle, Igbo, Amharic, Awiya, Iraqw, Beja, Hausa, Ngizim, Tlingit, Mazahua, Kwakw'ala, Puget Sound, Kabardian; ?DERIVED Otomi.

Palatalized voiced velar plosive.

/g<sup>j</sup>/ 5 Irish, Lithuanian, Bulgarian, Hausa, Kabardian.

Breathy voiced velar plosive.

/g̤/ 7 (-1) Hindi-Urdu, Bengali, Igbo, Mundari, Kharia, !Xu; LOAN Telugu.

Labialized breathy voiced velar plosive.

/g̤<sup>w</sup>/ 1 Igbo.

Voiceless uvular plosive.

/q/ 38 (-2) Kurdish, Kirghiz, Arabic, Neo-Aramaic, Tuareg, Awiya, Iraqw, Hamar, Sui, Atayal, Lahu, Haida, Tlingit, Hupa, Wintu, Totonac, K'ekchi, Nootka, Quileute, Squamish, Puget Sound, Luiseno, Hopi, Pomo, Achumawi, Abipon, Quechua, Jaqaru, Gununa-Kena, Greenlandic, Aleut, Ket, Yukaghir, Chukchi, Gilyak, Burushaski; RARE Diegueno; LOAN Hindi-Urdu.

Labialized voiceless uvular plosive.

/q<sup>w</sup>/ 9 (-1) Awiya, Iraqw, Haida, Tlingit, Quileute, Squamish, Puget Sound, Luiseno; LOAN Nootka.

Long labialized voiceless uvular plosive.

/q<sup>w</sup>:/ 1 Lak.

Voiceless aspirated uvular plosive.

/q<sup>h</sup>/ 11 Kirghiz, Sui, Lahu, Haida, Klamath, Kwakw'ala,

Quechua, Jaqaru, Gilyak, Lak, Burushaski.

Labialized voiceless aspirated uvular plosive.

/q<sup>wh</sup>/ 3 Haida, Kwakw'ala, Lak.

Voiced uvular plosive.

/g/ 8 Farsi, Somali, Awiya, Kunimaipa, Tlingit, Klamath, Kwakw'ala, Lak.

Long voiced uvular plosive.

/g:/ 1 Somali.

Labialized voiced uvular plosive.

/g<sup>w</sup>/ 4 Awiya, Tlingit, Kwakw'ala, Lak.

Voiced pharyngeal plosive.

/\*ʕ/ 1 Iraqw.

Glottal plosive.

/ʔ/ 96 (-11) Farsi, Kurdish, Yurak, Tavgy, Wolof, Kanuri, Maba, Luo, Tabi, Logbara, Berta, Koma, Arabic, Tigre, Hebrew, Socotri, Neo-Aramaic, Somali, Iraqw, Beja, Kullo, Kefa, Hausa, Margi, Khasi, Vietnamese, Sedang, Khmer, Wik-Munkan, Standard Thai, Lakkia, Yay, Sui, Saek, Po-ai, Lungchow, Atayal, Sundanese, Javanese, Cham, Tagalog, Sa'ban, Chamorro, Rukai, Tsou, Adzera, Roro, Hawaiian, Changchow, Amoy, Burmese, Jingpho, Ao, Tiddim Chin, Garo, Karen, Yao, Washkuk, Gadsup, Yagaria, Dani, Nasioi, Haida, Tlingit, Chipewyan, Tolowa, Hupa, Nez Perce, Klamath, Wintu, Chontal, Zoque, Tzeltal, Totonac, K'ekchi, Mixe, Otomi, Mazahua, Mazatec, Mixtec, Chatino, Nootka, Kwakw'ala, Quileute, Squamish, Puget Sound, Papago, Luiseno, Hopi, Yacqui, Tiwa, Karok, Pomo, Diegueno, Achumawi, Yana, Shasta, Zuni, Acoma, Ojibwa, Tonkawa, Wiyot, Seneca, Wichita, Yuchi, Tunica, Wappo, Itonama, Mura, Cayapa, Paez, Ocaina, Muinane, Apinaye, Chacobo, Tacana, Ashuslay, S. Nambiquara, Gununa-Kena, Wapishana, Amuesha, Guajiro, Moxos, Guarani, Ticuna, Siona, Tucano, Cofan, Kurukh, Ket, Chukchi, Kabardian, Lak, Nama, Brahui; RARE Temne, Gbeya, Lahu, Tarascan, Jivaro; LOAN Hindi-Urdu, Osmanli, Bashkir; ?DERIVED Mundari, Navaho, Carib.

Long glottal plosive.

/ʔ:/ 1 Arabic.

Labialized glottal plosive.

/ʔ<sup>w</sup>/ 1 Kabardian.

Pharyngealized glottal plosive.

/ʔ<sup>ʕ</sup>/ 1 Nootka.

Voiceless labial-velar plosive.

/k̠p̠/ 18 Kpelle, Dan, Dagbani, Senadi, Tampulma, Bariba, Ewe, Ga, Lelemi, Efik, Birom, Tarok, Amo, Doayo, Gbeya, Zande, Logbara, Yulu.

Voiced labial-velar plosive.

/g̠b̠/ 19 Kpelle, Dan, Temne, Dagbani, Senadi, Tampulma, Bariba, Ewe, Ga, Lelemi, Birom, Tarok, Amo, Doayo, Gbeya, Zande, Logbara, Yulu, Iai.

Prenasalized voiced labial-velar plosive.

/m̠g̠b̠/ 1 Gbeya.

Voiceless dental-palatal plosive.

/t̠c̠/ 1 Maung.

2. GLOTTALIC STOPS.

(Note that 'voiced ejectives' in !Xu are prevoiced, the release is voiceless.)

Voiceless bilabial ejective stop.

/p̠ʰ/ 34 (-1) E. Armenian, Lelemi, Zulu, Berta, Koma, Kefa, Tlingit, Nez Perce, Klamath, Maidu, Wintu, Chontal, Tzeltal, Otomi, Nootka, Kwakw'ala, Quileute, Squamish, Puget Sound, Tiwa, Pomo, Yana, Shasta, Acoma, Dakota, Wappo, S. Nambiquara, Quechua, Jaqaru, Gununa-Kena, Georgian, Kabardian, Lak; LOAN Amharic.

Voiced bilabial ejective stop.

/b̠ʰ/ 1 !Xu.

Voiceless dental ejective stop.

/t̠ʰ/ 11 Nez Perce, Tzeltal, Nootka, Squamish, Pomo, Yana, Acoma, Wappo, Gununa-Kena, Georgian, Kabardian.

Voiceless dental/alveolar ejective stop.

/'t̠ʰ''/ 21 E. Armenian, Tigre, Amharic, Socotri, Kullo, Dizi, Kefa, Haida, Tlingit, Chipewyan, Tolowa, Chontal, Mazahua, Kwakw'ala, Tiwa, Shasta, Dakota, Yuchi, Itonama, Quechua, Lak.

Voiceless alveolar ejective stop.

/t̠ʰ/ 17 Zulu, Koma, Navaho, Hupa, Nez Perce, Klamath, Maidu, Wintu, K'ekchi, Otomi, Quileute, Puget Sound, Pomo, Wappo, S. Nambiquara, Jaqaru, !Xu.

Voiced alveolar ejective stop.

/d̠ʰ/ 1 !Xu.

Voiceless palatal ejective stop.

/c̠ʰ/ 7 Haida, Hupa, Klamath, Maidu, Kwakw'ala, Acoma, Jaqaru.

Voiceless velar ejective stop.

/kʰ/ 47 (-1) E. Armenian, Zulu, Ik, Berta, Koma, Tigre, Amharic, Socotri, Kullo, Dizi, Hamer, Hausa, Haida, Tlingit, Navaho, Chipewyan, Tolowa, Nez Perce, Klamath, Maidu, Wintu, Chontal, Tzeltal, K'ekchi, Otomi, Mazahua, Nootka, Quileute, Puget Sound, Tiwa, Pomo, Yana, Shasta, Zuni, Wichita, Dakota, Yuchi, Wappo, Itonama, S. Nambiquara, Quechua, Jaqaru, Gununa-Kena, Georgian, Lak, !Xu; RARE Squamish.

Labialized voiceless velar ejective stop.

/kʰʷ/ 18 (-2) Amharic, Hausa, Haida, Tlingit, Chipewyan, Tolowa, Mazahua, Nootka, Kwakw'ala, Quileute, Squamish, Puget Sound, Zuni, S. Nambiquara, Kabardian, Lak; RARE Tiwa; ?DERIVED Otomi.

Palatalized voiceless velar ejective stop.

/kʰj/ 2 Hausa, Kabardian.

Voiced velar ejective stop.

/gʰ/ 1 !Xu.

Voiceless uvular ejective stop.

/qʰ/ 19 (-1) Kefa, Haida, Tlingit, Hupa, Nez Perce, Klamath, Wintu, K'ekchi, Kwakw'ala, Quileute, Squamish, Puget Sound, Pomo, Quechua, Jaqaru, Georgian, Kabardian, Lak; LOAN Nootka.

Labialized voiceless uvular ejective stop.

/qʰʷ/ 8 Haida, Tlingit, Nootka, Quileute, Squamish, Puget Sound, Kabardian, Lak.

Voiceless bilabial implosive.

/p̥/ 1 Igbo.

Voiced bilabial implosive.

/b/ 30 (-1) Katcha, Kadugli, Kpelle, Dan, Igbo, Tarok, Swahili, Zulu, Doayo, Gbeya, Maasai, Nyangi, Ik, Tama, Mursi, Yulu, Sara, Koma, Hamer, Hausa, Angas, Margi, Kanakuru, Vietnamese, Khmer, Karen, Maidu, Mazahua, S. Nambiquara; RARE Iraqw.

Voiced dental implosive.

/ɖ/ 3 Kadugli, Gbeya, Ik.

Voiced dental/alveolar implosive.

/"ɖ"/ 13 Katcha, Tarok, Swahili, Doayo, Maasai, Mursi, Yulu, Berta, Kullo, Hausa, Karen, Mazahua, S. Nambiquara.

Voiceless alveolar implosive.

/t̥/ 2 Igbo, Sara.

Voiced alveolar implosive.

/d/ 12 (-1) Dan, Nyangi, Tama, Koma, Hamer, Angas, Margi,  
Kanakuru, Vietnamese, Khmer, Maidu; RARE Iraqw.

Voiced palatal implosive.

/ɟ/ 7 Kadugli, Swahili, Maasai, Nyangi, Ik, Yulu, Angas.

Voiced velar implosive.

/g/ 5 Swahili, Maasai, Nyangi, Ik, Hamer.

3. CLICKS.

(Including affricated clicks. Note that clicks may be affricated in two ways. The front release may be affricated or the back (velar) release may be affricated. UPSID refers only to the former as affricated clicks. A fricated release of the back closure is referred to as velarization of the click.)

Voiceless alveolar click.

/ʈ/ 2 Nama, !Xu.

Velarized voiceless alveolar click.

/ʈ̠/ 1 !Xu.

Voiceless aspirated alveolar click.

/ʈʰ/ 1 !Xu.

Nasalized voiceless aspirated alveolar click.

/ʈʰ̃/ 1 Nama.

Velarized voiceless aspirated alveolar click.

/ʈʰ̠/ 1 Nama.

Nasalized voiceless aspirated alveolar click.

/ʈʰ̠̃/ 1 !Xu.

Glottalized nasalized voiceless alveolar click.

/ʈʰ̠̃ʔ/ 2 Nama, !Xu.

Glottalized velarized voiceless alveolar click.

/ʈʰ̠ʔ/ 1 !Xu.

Voiced alveolar click.

/gʈ/ 1 !Xu.

Nasalized voiced alveolar click.

/ŋʈ/ 2 Nama, !Xu.

Velarized voiced alveolar click.

/gʈ̠/ 1 !Xu.

Breathy voiced alveolar click.

/g̤ʔ/ 1 !Xu.

Nasalized breathy voiced alveolar click.

/ŋ̤ʔ/ 1 !Xu.

Glottalized velarized voiced alveolar click.

/g̤ʔ̥/ 1 !Xu.

Voiceless palato-alveolar click.

/t̥/ 2 Zulu, Nama.

Nasalized voiceless aspirated palato-alveolar click.

/t̥ʰ/ 1 Nama.

Velarized voiceless aspirated palato-alveolar click.

/t̥ʰ̠/ 1 Nama.

Glottalized nasalized voiceless palato-alveolar click.

/t̥ʔ̥/ 1 Nama.

Nasalized voiced palato-alveolar click.

/ŋ̤/ 1 Nama.

Voiceless palatal click.

/c/ 1 !Xu.

Velarized voiceless palatal click.

/c̠/ 1 !Xu.

Voiceless aspirated palatal click.

/cʰ/ 1 !Xu.

Nasalized voiceless aspirated palatal click.

/cʰ̥/ 1 !Xu.

Glottalized nasalized voiceless palatal click.

/cʔ̥/ 1 !Xu.

Glottalized nasalized velarized voiceless palatal click.

/cʔ̥̠/ 1 !Xu.

Voiced palatal click.

/g̠/ 1 !Xu.

Nasalized voiced palatal click.

/ŋ̠/ 1 !Xu.

Velarized voiced palatal click.

/g̠/ 1 !Xu.



Breathy voiced palatal click.

/g̊/ 1 !Xu.

Glottalized velarized voiced palatal click.

/g̊ʔ/ 1 !Xu.

Nasalized breathy voiced palatal click.

/ŋ̊/ 1 !Xu.

Voiceless dental affricated click.

/t̚<sup>s</sup>/ 2 Nama, !Xu.

Velarized voiceless dental affricated click.

/t̚<sup>s</sup>/ 1 !Xu.

Voiceless aspirated dental affricated click.

/t̚<sup>sh</sup>/ 1 !Xu.

Nasalized voiceless aspirated dental affricated click.

/ŋ̊<sup>sh</sup>/ 1 Nama.

Velarized voiceless aspirated dental affricated click.

/t̚<sup>h</sup>/ 1 Nama.

Glottalized nasalized voiceless dental affricated click.

/ŋ̊<sup>sʔ</sup>/ 2 Nama, !Xu.

Glottalized nasalized velarized voiceless dental affricated click.

/ŋ̊<sup>sʔ</sup>/ 1 !Xu.

Nasalized voiceless aspirated dental affricated click.

/ŋ̊<sup>sh</sup>/ 1 !Xu.

Voiced dental affricated click.

//g̊<sup>s</sup>/ 1 !Xu.

Velarized voiced dental affricated click.

/g̊<sup>s</sup>/ 1 !Xu.

Nasalized voiced dental affricated click.

/ŋ̊<sup>s</sup>/ 1 Nama, !Xu.

Glottalized velarized voiced dental affricated click.

/g̊<sup>sʔ</sup>/ 1 !Xu.

Nasalized breathy voiced dental affricated click.

/ŋ̊<sup>s</sup>/ 1 !Xu.

Breathy voiced dental affricated click.

/g̊<sup>s</sup>/ 1 !Xu.

Voicless alveolar affricated click.

/ʧ<sup>s</sup>/ 1 Zulu.

Voicless palatal lateral affricated click.

/ʧ<sup>ʎ</sup>/ 1 !Xu.

Velarized voicless palatal lateral affricated click.

/ʧ<sup>ʎʰ</sup>/ 1 !Xu.

Voicless aspirated palatal lateral affricated click.

/ʧ<sup>ʎh</sup>/ 1 !Xu.

Glottalized nasalized voicless palatal lateral affricated click.

/ŋ<sup>ʎ</sup>/ 1 !Xu.

Glottalized nasalized velarized voicless palatal lateral affricated

click.  
/ŋ<sup>ʎʎ</sup>/ 1 !Xu.

Nasalized voicless aspirated palatal lateral affricated click.

/ŋ<sup>ʎh</sup>/ 1 !Xu.

Voiced palatal lateral affricated click.

/gʧ<sup>ʎ</sup>/ 1 !Xu.

Velarized voiced palatal lateral affricated click.

/gʧ<sup>ʎʰ</sup>/ 1 !Xu.

Breathy voiced palatal lateral affricated click.

/gʧ<sup>ʎʰ</sup>/ 1 (-1) RARE !Xu.

Glottalized velarized voiced palatal lateral affricated click.

/gʧ<sup>ʎʰʎ</sup>/ 1 !Xu.

Voicless alveolar lateral affricated click.

/ʧ<sup>ʎ</sup>/ 2 Zulu, Nama.

Velarized voicless aspirated alveolar lateral affricated click.

/ʧ<sup>ʎh</sup>/ 1 Nama.

Nasalized voicless aspirated alveolar lateral affricated click.

/ŋ<sup>ʎh</sup>/ 1 Nama.

Glottalized nasalized voicless alveolar lateral affricated click.

/ŋ<sup>ʎhʎ</sup>/ 1 Nama.

Nasalized voiced alveolar lateral affricated click.

/ŋʧ<sup>ʎ</sup>/ 1 Nama.

Nasalized voiced palatal lateral affricated click.

/ŋʧ<sup>ʎʎ</sup>/ 1 !Xu.

Breathy voiced palatal lateral affricated click.

/g<sup>h</sup>ʎ/ 1 !Xu.

4. AFFRICATES.

(Pulmonic and glottalic affricates are included here. Affricated clicks are listed together with other clicks in section 3.)

Voiceless labio-dental affricate.

/pf/ 3 German, Beembe, Teke.

Voiceless aspirated labio-dental affricate.

/pf<sup>h</sup>/ 1 Beembe.

Voiced labio-dental affricate.

/bv/ 1 Teke.

Voiceless dental affricate.

/tθ/ 2 Luo, Chipewyan.

Voiceless aspirated dental affricate.

/tθ<sup>h</sup>/ 1 Chipewyan.

Voiced dental affricate.

/dð/ 1 Luo.

Voiceless dental sibilant affricate.

/t͡s/ 11 Hungarian, Tuva, Ewe, Standard Thai, Malagasy, Tamang, Tzeltal, Squamish, Gununa-Kena, Kabardian.

Voiceless aspirated dental sibilant affricate.

/t͡s<sup>h</sup>/ 4 Standard Thai, Tamang, Acoma, Nama.

Voiced dental sibilant affricate.

/d͡z/ 5 Hungarian, Ewe, Malagasy, Acoma, Kabardian.

Voiceless dental/alveolar sibilant affricate.

/"ts"/ 45 (-5) German, Russian, Bulgarian, Romanian, Pashto, Kashmiri, Albanian, E. Armenian, Lappish, Yurak, Kirghiz, Hebrew, Awiya, Kullo, Lakkia, Atayal, Tagalog, Tsou, Mandarin, Hakka, Changchow, Amoy, Fuchow, Kan, Jingpho, Yao, Tlingit, Chipewyan, Chontal, Mazahua, Tonkawa, Wichita, Yuchi, Wappo, Bribri, Ashuslay, Jivaro, Greenlandic, Aleut, Basque, Burushaski; RARE Chukchi; LOAN Lithuanian, Cheremis, Komi, Chuvash.

Long voiceless dental/alveolar affricate.

/"ts:"/ 3 (-1) Wichita, Lak; ?DERIVED Japanese.

Long labialized voiceless dental/alveolar sibilant affricate.

/"ts<sup>w</sup>:"/ 1 Lak.

Palatalized voiceless dental/alveolar sibilant affricate.

/"ts<sup>j</sup>"/ 3 (-1) Bulgarian, Yurak; LOAN Lithuanian.

Voiceless aspirated dental/alveolar sibilant affricate.

/"ts<sup>h</sup>"/ 19 Kashmiri, E. Armenian, Mongolian, Lakkia, Adzera, Mandarin, Hakka, Changchow, Amoy, Fuchow, Kan, Yao, Chipewyan, Mazahua, Zuni, Wiyot, Yuchi, Lak, Burushaski.

Labialized voiceless aspirated dental/alveolar sibilant affricate.

/"ts<sup>wh</sup>"/ 1 Lak.

Voiceless dental/alveolar sibilant affricate with breathy release.

/"ts<sup>h</sup>"/ 1 Changchow.

Laryngealized voiceless dental/alveolar sibilant affricate.

/"ts"/ 1 Ashuslay.

Voiced dental/alveolar sibilant affricate.

/"dz"/ 15 (-1) Lithuanian, Pashto, Kashmiri, Albanian, Mongolian, Yulu, Adzera, Amoy, Jingpho, Yao, Suena, Tlingit, Puget Sound, Seneca, Yuchi, Ocaina, Telugu; RARE Awiya.

Voiceless alveolar affricate.

/tʃ/ 1 Tamang.

Voiceless aspirated alveolar affricate.

/tʃ<sup>h</sup>/ 1 Tamang.

Voiceless alveolar sibilant affricate.

/ts/ 39 Greek, Bashkir, Lelemi, Amo, Beembe, Ik, Hamer, Margi, Sui, Javanese, Chamorro, Rukai, Tiddim Chin, Garo, Navaho, Hupa, Zoque, Tzeltal, Totonac, K'ekchi, Mixe, Mazatec, Nootka, Quileute, Puget Sound, Hopi, Pomo, Tarascan, Cayapa, Paez, Ocaina, Chacobo, Cashinahua, Jaqaru, Campa, Moxos, Guahibo, Georgian, !Xu.

Velarized voiceless alveolar sibilant affricate.

/t̤s/ 1 !Xu.

Voiceless aspirated alveolar sibilant affricate.

/ts<sup>h</sup>/ 10 Beembe, Sui, Navaho, Hupa, Kwakw'ala, Tarascan, Jaqaru, Amuesha, Georgian, !Xu.

Voiceless alveolar sibilant affricate with breathy release.

/ts<sup>h</sup>/ 1 Javanese.

Voiced alveolar sibilant affricate.

/dz/ 10 Greek, Lelemi, Ik, Margi, Chamorro, Garo, Yareba,  
Kwakw'ala, Puget Sound, Ocaina.

Prenasalized voiced alveolar sibilant affricate.

/<sup>n</sup>dz/ 1 Mazatec.

Velarized voiced alveolar sibilant affricate.

/d̥z/ 1 !Xu.

Breathy voiced alveolar sibilant affricate.

/dz/ 1 !Xu.  
....

Voiceless palato-alveolar sibilant affricate.

/tʃ/ 141 (-5) Irish, Lithuanian, Russian, Bulgarian, Spanish,  
Romanian, Farsi, Pashto, Kurdish, Hindi-Urdu, Bengali,  
Punjabi, Albanian, E. Armenian, Cheremis, Komi,  
Hungarian, Lappish, Azerbaijani, Chuvash, Yakut,  
Kirghiz, Khalaj, Tuva, Evenki, Goldi, Manchu, Korean,  
Japanese, Moro, Bambara, Dagbani, Tarok, Amo, Swahili,  
Luvale, Teke, Kanuri, Maasai, Luo, Nubian, Ik,  
Logbara, Kunama, Tigre, Amharic, Neo-Aramaic, Somali,  
Awiya, Kullo, Dizi, Hausa, Angas, Margi, Mundari,  
Kharia, Sedang, Khmer, Maranungku, Sui, Po-ai,  
Lungchow, Sundanese, Sa'ban, Iai, Taishan, Burmese,  
Lahu, Jingpho, Andamanese, Asmat, Washkuk, Haida,  
Tlingit, Navaho, Chipewyan, Tolowa, Hupa, Wintu,  
Chontal, Totonac, K'ekchi, Mazahua, Mazatec, Mixtec,  
Nootka, Quileute, Squamish, Puget Sound, Papago,  
Luiseno, Yacqui, Tiwa, Karok, Diegueno, Shasta,  
Tarascan, Ojibwa, Delaware, Wiyot, Dakota, Yuchi,  
Alabama, Wappo, Itonama, Bribri, Cayapa, Paez, Ocaina,  
Muinane, Apinaye, Amahuaca, Chacobo, Tacana,  
Cashinahua, Ashuslay, Abipon, Quechua, Jaqaru, Island  
Carib, Campa, Guajiro, Moxos, Siriono, Ticuna, Siona,  
Jivaro, Cofan, Araucanian, Malayalam, Yukaghir,  
Georgian, Basque, Burushaski, Brahui, !Xu; LOAN Goldi,  
Hebrew, Otomi, Guarani; OBSCURE Kefa.

Long voiceless palato-alveolar sibilant affricate.

/tʃ:/ 5 (-1) Punjabi, Yakut, Delaware, Lak; ?DERIVED Japanese.

Labialized voiceless palato-alveolar sibilant affricate.

/tʃ<sup>W</sup>/ 1 Ga.

Long labialized voiceless palato-alveolar sibilant affricate.

/tʃ<sup>W</sup>:/ 1 Lak.

Palatalized voiceless palato-alveolar sibilant affricate.

/tʃ<sup>J</sup>/ 1 Kashmiri.

Velarized voiceless palato-alveolar sibilant affricate.

/tʃ/ 1 !Xu.

Voiceless aspirated palato-alveolar sibilant affricate.

/tʃʰ/ 42 (-2) Hindi-Urdu, Bengali, Punjabi, E. Armenian, Osmanli, Mongolian, Korean, Igbo, Ga, Swahili, Kharia, Khmer, Sui, Lungchow, Taishan, Burmese, Lahu, Haida, Navaho, Chipewyan, Tolowa, Mazahua, Yana, Tarascan, Zuni, Acoma, Wiyot, Dakota, Yuchi, Tunica, Quechua, Jaqaru, Wapishana, Amuesha, Cofan, Kota, Gilyak, Georgian, Lak, Burushaski, !Xu; RARE Jingpho; LOAN Po-ai.

Long voiceless aspirated palato-alveolar sibilant affricate.

/tʃʰ:/ 1 Punjabi.

Labialized voiceless aspirated palato-alveolar sibilant affricate.

/tʃʷʰ/ 2 Hupa, Lak.

Palatalized voiceless aspirated palato-alveolar sibilant affricate.

/tʃʲʰ/ 2 (-1) Kashmiri; OBSCURE Amuesha.

Preaspirated voiceless palato-alveolar sibilant affricate.

/hʰtʃ/ 2 (-1) Guajiro; OBSCURE Ojibwa.

Laryngealized voiceless palato-alveolar sibilant affricate.

/tʃ̠/ 3 Korean, Mundari, Ashuslay.

Voiced palato-alveolar sibilant affricate.

/dʒ/ 80 (-5) Irish, Lithuanian, Bulgarian, Romanian, Farsi, Pashto, Kurdish, Hindi-Urdu, Bengali, Punjabi, Albanian, Komi, Osmanli, Azerbaijani, Yakut, Mongolian, Evenki, Goldi, Manchu, Japanese, Moro, Bambara, Dagbani, Igbo, Ga, Tarok, Zulu, Teke, Kanuri, Fur, Luo, Nubian, Ik, Nera, Logbara, Sara, Berta, Kunama, Arabic, Tigre, Amharic, Neo-Aramaic, Awiya, Beja, Kullo, Dizi, Hausa, Angas, Margi, Mundari, Kharia, Khasi, Bandjalang, Batak, Sa'ban, Iai, Amoy, Burmese, Lahu, Jingpho, Andamanese, Tlingit, Wintu, Papago, Achumawi, Yana, Acoma, Yuchi, Muinane, Ticuna, Cofan, Kota, Malayalam, Burushaski, Brahui; RARE Puget Sound; LOAN Hungarian, Khalaj, Hebrew; OBSCURE Kefa.

Long voiced palato-alveolar sibilant affricate.

/dʒ:/ 2 Punjabi, Yakut.

Prenasalized voiced palato-alveolar sibilant affricate.

/ⁿdʒ/ 5 Luvale, Sedang, Washkuk, Mazatec, Siriono.

Labialized voiced palato-alveolar sibilant affricate.

/dʒʷ/ 1 Ga.

Palatalized voiced palato-alveolar sibilant affricate.

/dʒʲ/ 1 Kashmiri.

Velarized voiced palato-alveolar sibilant affricate.

/dʒ/ 1 !Xu.

Breathy voiced palato-alveolar sibilant affricate.

/dʒ̤/ 6 Hindi-Urdu, Bengali, Igbo, Mundari, Kharia, !Xu.

Voiceless retroflex affricate.

/tʃ̠/ 1 Araucanian.

Voiceless retroflex sibilant affricate.

/tʃ̠/ 7 Ostyak, Mandarin, Mazatec, Tacana, Jaqaru, Basque, Burushaski.

Voiceless aspirated retroflex sibilant affricate.

/tʃ̠ʰ/ 6 Mandarin, Acoma, Wichita, Jaqaru, Amuesha, Burushaski.

Voiced retroflex sibilant affricate.

/dʒ̠/ 2 Acoma, Burushaski.

Prenasalized voiced retroflex sibilant affricate.

/ᶯdʒ̠/ 1 Mazatec.

Voiceless retroflex affricated trill.

/tʃ̠ʀ/ 1 Malagasy.

Voiced retroflex affricated trill.

/dʒ̠ʀ/ 1 Malagasy.

Voiceless palatal affricate.

/cç/ 9 Sinhalese, Albanian, Komi, Hungarian, Akan, Saek, Mandarin, Kan, Ao.

Labialized voiceless palatal affricate.

/cçʷ/ 1 Akan.

Voiceless aspirated palatal affricate.

/cçʰ/ 2 Mandarin, Kan.

Voiced palatal affricate.

/tʃ/ Sinhalese, Albanian, Komi, Hungarian, Akan.

Labialized voiced palatal affricate.

/tʃʷ/ 1 Akan.

Voiceless palatal sibilant affricate.

/cç̥/ 2 (-1) Gununa-Kena; LOAN Telugu.

Voiceless velar affricate.

/kx/ 1 Tavgy.

Voiceless aspirated velar affricate.

/kx<sup>h</sup>/ 2 Chipewyan, Nama.

Labialized voiceless aspirated velar affricate.

/kx<sup>w</sup><sub>h</sub>/ 1 Chipewyan.

Voiceless uvular affricate.

/qχ/ 1 Wolof, Nez Perce, Kabardian.

Labialized voiceless uvular affricate.

/qχ<sup>w</sup>/ 1 Kabardian.

Palatalized voiceless dental lateral affricate.

/t̥t̪<sup>j</sup>/ 1 Kabardian.

Voiceless dental/alveolar lateral affricate.

/"t̥t̪"/ 1 Haida, Tlingit, Chipewyan, Nootka, Squamish.

Voiceless aspirated dental/alveolar lateral affricate.

/"t̥t̪<sup>h</sup>"/ 1 Chipewyan.

Voiced dental/alveolar lateral affricate.

/"dl̪̚"/ 2 Haida, Tlingit.

Voiceless alveolar lateral affricate.

/t̥t̪/ 3 Navaho, Wintu, Quileute.

Voiceless aspirated alveolar lateral affricate.

/t̥t̪<sup>h</sup>/ 1 Kwakw'ala.

Voiced alveolar lateral affricate.

/dl̪̚/ 2 Navaho, Kwakw'ala.

Voiceless velar plosive with alveolar lateral fricative release.

/kɬ/ 1 (-1) OBSCURE Ashuslay.

Voiceless dental ejective affricate.

/t̥θ̚'/ 1 Chipewyan.

Voiceless dental sibilant ejective affricate.

/t̥s̪̚'/ 5 Tzeltal, Squamish, Acoma, Gununa-Kena, Kabardian.

Voiceless dental/alveolar sibilant ejective affricate.

/"ts̪̚"/ 11 E. Armenian, Kullo, Dizi, Tlingit, Chipewyan, Mazahua, Zuni, Wichita, Yuchi, Wappo, Lak.

Labialized voiceless dental/alveolar sibilant ejective affricate.

/"ts̪̚<sup>w</sup>"/ 1 Lak.

Voiceless alveolar sibilant ejective affricate.

/ts̪̚'/ 18 Ik, Tigre, Iraqw, Navaho, Tolowa, Hupa, Wintu, Tzeltal, K'ekchi, Otomi, Nootka, Kwakw'ala,



Quileute, Puget Sound, Pomo, Jaqaru, Georgian, !Xu.

Voiced alveolar sibilant ejective affricate.

/dzʰ/ 1 !Xu.

Voiceless palato-alveolar sibilant ejective affricate.

/tʃʰ/ 35 (-2) E. Armenian, Zulu, Tigre, Amharic, Dizi, Haida, Tlingit, Navaho, Chipewyan, Tolowa, Hupa, Wintu, Chontal, K'ekchi, Mazahua, Nootka, Quileute, Squamish, Puget Sound, Yana, Shasta, Zuni, Acoma, Dakota, Yuchi, Wappo, Itonama, Quechua, Jaqaru, Gununa-Kena, Georgian, Lak, !Xu; ?DERIVED Otomi; OBSCURE Kefa.

Labialized voiceless palato-alveolar sibilant ejective affricate.

/tʃʰ<sup>w</sup>/ 1 Lak.

Voiced palato-alveolar sibilant ejective affricate.

/dʒʰ/ 1 !Xu.

Voiceless retroflex sibilant ejective affricate.

/ʈʂʰ/ 3 Tolowa, Acoma, Jaqaru.

Voiceless palatal ejective affricate.

/cçʰ/ 1 Gununa-Kena.

Voiceless velar ejective affricate.

/kxʰ/ 1 Tlingit.

Labialized voiceless velar ejective affricate.

/kxʰ<sup>w</sup>/ 1 Tlingit.

Voiceless dental/alveolar lateral ejective affricate.

/'tɬʰ'/ 6 Ik, Haida, Tlingit, Chipewyan, Nootka, Squamish.

Voiceless alveolar lateral ejective affricate.

/tɬʰ/ 7 Iraqw, Navaho, Hupa, Wintu, Kwakw'ala, Quileute, Puget Sound.

Voiceless laterally-released velar ejective affricate.

/kɬʰ/ 1 Zulu.

5. FRICATIVES.

Voiceless bilabial fricative.

/ɸ/ 21 (-5) Ewe, Hausa, Sui, Iai, Kan, Washkuk, Kewa, Fasu, Yareba, Otomi, Yuchi, Alabama, Cayapa, Ocaina, Muinane, Araucanian; RARE Kanuri; LOAN Sinhalese, Mongolian, Tarascan, Quechua.

Labialized voiceless bilabial fricative.

/ɸ<sup>w</sup>/ 1 Washkuk.

Labialized velarized voiceless bilabial fricative.

/ɸ<sup>W</sup>/ 1 Irish.

Palatalized voiceless bilabial fricative.

/ɸ<sup>J</sup>/ 3 Irish, Hausa, Paez.

Voiced bilabial fricative.

/β/ 32 (-2) Spanish, Pashto, Cheremis, Kirghiz, Evenki, Goldi, Ewe, Neo-Aramaic, Dizi, Atayal, Kaliai, Iai, Washkuk, Gadsup, Rotokas, Mazatec, Mixtec, Diegueno, Paez, Ocaina, Muinane, Carib, Chacobo, Tacana, Amuesha, Campa, Moxos, Cofan, Greenlandic, Georgian; LOAN Mongolian, Quechua.

Palatalized voiced bilabial fricative.

/β<sup>J</sup>/ 1 Irish.

Voiceless labio-dental fricative.

/f/ 135 (-15) Greek, Breton, German, Norwegian, Russian, Bulgarian, French, Spanish, Romanian, Farsi, Pashto, Kurdish, Albanian, Hungarian, Lappish, Osmanli, Azerbaijani, Kirghiz, Tuva, Manchu, Katcha, Moro, Kadugli, Kpelle, Bisa, Bambara, Dan, Wolof, Diola, Temne, Dagbani, Senadi, Tampilma, Bariba, Ewe, Akan, Igbo, Ga, Efik, Birom, Tarok, Amo, Beembe, Swahili, Zulu, Teke, Doayo, Gbeya, Zande, Songhai, Maba, Fur, Luo, Nubian, Ik, Tama, Nera, Tabi, Logbara, Berta, Kunama, Arabic, Tigre, Amharic, Hebrew, Socotri, Neo-Aramaic, Shilha, Tuareg, Somali, Awiya, Iraqw, Beja, Kullo, Dizi, Kefa, Angas, Margi, Ngizim, Vietnamese, Kunjen, Standard Thai, Lakkia, Yay, Po-ai, Lungchow, Malagasy, Chamorro, Tsou, Adzera, Iai, Maori, Mandarin, Taishan, Hakka, Changchow, Lahu, Yao, Asmat, Sentani, Telefol, Chuave, Koiari, Taoripi, Wintu, Karok, Pomo, Ashuslay, Island Carib, Guahibo, Cofan, Ket, Kabardian, Basque, Brahui; RARE Luvale, Kanuri; LOAN Hindi-Urdu, Punjabi, E. Armenian, Cheremis, Komi, Finnish, Chuvash, Yakut, Bashkir, Khalaj, Yacqui, Tarascan, Wappo, Moxos, Guarani, Ticuna, Telugu, Burushaski.

Long voiceless labio-dental fricative.

/f:/ 3 Arabic, Shilha, Greenlandic.

Palatalized voiceless labio-dental fricative.

/f<sup>J</sup>/ 2 Russian, Bulgarian.

Voiced labio-dental fricative.

/v/ 67 (-3) Greek, Breton, German, Lithuanian, Russian, Bulgarian, French, Romanian, Farsi, Kurdish, Albanian, E. Armenian, Komi, Finnish, Hungarian, Osmanli, Azerbaijani, Tuva, Kpelle, Bisa, Dan,

Dagbani, Senadi, Tampulma, Ewe, Igbo, Ga, Lelemi, Birom, Tarok, Amo, Beembe, Swahili, Zulu, Doayo, Gbeya, Zande, Logbara, Hebrew, Angas, Margi, Ngizim, Vietnamese, Yay, Saek, Po-ai, Lungchow, Malagasy, Rukai, Tsou, Changchow, Lahu, Tiddim Chin, Yagaria, Nambakaengo, Mixe, Luiseno, Hopi, Apinaye, Guarani, Guahibo, Kota, Kabardian, Brahui; LOAN Yakut, Bashkir, Khalaj.

Palatalized voiced labio-dental fricative.

/v<sup>J</sup>/ 3 Lithuanian, Russian, Bulgarian.

Voiceless dental fricative.

/θ/ 18 (-1) Greek, Spanish, Albanian, Bashkir, Tabi, Mursi, Berta, Lakkia, Yay, Rukai, Iai, Burmese, Karen, Chipewyan, Wintu, Amahuaca, Araucanian; RARE Arabic.

Voiced dental fricative.

/ð/ 21 (-5) Greek, Spanish, Albanian, Cheremis, Yurak, Tavgy, Moro, Tabi, Rukai, Iai, Burmese, Koiari, Chipewyan, Mixtec, Tacana, Aleut; RARE Arabic, Kunjen; LOAN Mazatec, Quechua, Guarani.

Palatalized voiced dental fricative.

/ð<sup>J</sup>/ 1 Yurak.

Pharyngealized voiced dental fricative.

/ð<sup>ɣ</sup>/ 1 (-1) RARE Arabic.

Voiceless dental sibilant fricative.

/s/ 32 Irish, Russian, French, Spanish, Kurdish, Punjabi, Sinhalese, Albanian, Hungarian, Yakut, Tuva, Manchu, Moro, Nyangi, Arabic, Tuareg, Beja, Standard Thai, Javanese, Tamang, Nimboran, Tzeltal, Mixe, Squamish, Papago, Karok, Diegueno, Yana, Acoma, Gununa-Kena, Guarani, Kabardian.

Long voiceless dental sibilant fricative.

/s:/ 3 Punjabi, Yakut, Arabic.

Palatalized voiceless dental sibilant fricative.

/s<sup>J</sup>/ 1 Russian.

Pharyngealized voiceless dental sibilant fricative.

/s<sup>ɣ</sup>/ 1 Arabic.

Long pharyngealized voiceless dental sibilant fricative.

/s<sup>ɣ</sup>:/ 1 Arabic.

Voiced dental sibilant fricative.

/z/ 11 (-2) Russian, French, Kurdish, Albanian, Hungarian, Tuva, Arabic, Tuareg,

Kabardian; LOAN Punjabi, Yakut.

Long voiced dental sibilant fricative.

/z:/ 1 Arabic.

Palatalized voiced dental sibilant fricative.

/zʲ/ 1 Russian.

Pharyngealized voiced dental sibilant fricative.

/zˤ/ 2 Arabic, Tuareg.

Long pharyngealized voiced dental sibilant fricative.

/zˤ:/ 1 Arabic.

Voiceless dental/alveolar sibilant fricative.

/"s"/ 131 (-3) Breton, Norwegian, Lithuanian, Bulgarian, Romanian, Farsi, Pashto, Hindi-Urdu, Kashmiri, E. Armenian, Ostyak, Cheremis, Lappish, Yurak, Tavgy, Chuvash, Kirghiz, Khalaj, Mongolian, Goldi, Korean, Japanese, Katcha, Wolof, Dagbani, Senadi, Ewe, Akan, Igbo, Ga, Tarok, Swahili, Luvale, Doayo, Songhai, Kanuri, Maasai, Nubian, Sebei, Nera, Logbara, Berta, Amharic, Hebrew, Socotri, Shilha, Awiya, Kullo, Dizi, Hausa, Kharia, Khasi, Sedang, Khmer, Mabuig, Yay, Sui, Atayal, Malagasy, Malay, Batak, Tagalog, Chamorro, Tsou, Adzera, Kaliai, Iai, Mandarin, Hakka, Changchow, Amoy, Fuchow, Kan, Dafla, Burmese, Jingpho, Karen, Yao, Telefol, Pawaian, Dani, Wantoat, Suena, Kunimaipa, Taoripi, Nambakaengo, Tlingit, Chipewyan, Chontal, Mazahua, Mazatec, Mixtec, Chatino, Tiwa, Pomo, Shasta, Tarascan, Zuni, Ojibwa, Delaware, Tonkawa, Wiyot, Seneca, Wichita, Dakota, Yuchi, Wappo, Itonama, Bribri, Mura, Carib, Amahuaca, Ashuslay, Arabela, Quechua, Island Carib, Guajiro, Siriono, Jivaro, Cofan, Greenlandic, Kurukh, Ket, Yukaghir, Gilyak, Lak, Basque, Burushaski; RARE Apinaye; LOAN Bengali, Ticuna.

Long voiceless dental/alveolar sibilant fricative.

/"sː"/ 4 Japanese, Shilha, Wichita, Lak.

Labialized voiceless dental/alveolar sibilant fricative.

/"sʷ"/ 1 Amharic.

Palatalized voiceless dental/alveolar sibilant fricative.

/"sʲ"/ 6 (-1) Lithuanian, Bulgarian, Yurak, Ket, Chukchi; LOAN Cheremis.

Pharyngealized voiceless dental/alveolar sibilant fricative.

/"sˤ"/ 1 Shilha.

Voiceless aspirated dental/alveolar sibilant fricative.

/"s<sup>h</sup>"/ 3 Burmese, Karen, Mazahua.

Preaspirated voiceless dental/alveolar sibilant fricative.

/"h<sup>s</sup>"/ 1 (-1) OBSCURE Ojibwa.

Laryngealized voiceless dental/alveolar sibilant fricative.

/s̥/ 2 Korean, Hausa.

Voiced dental/alveolar sibilant fricative.

/"z"/ 49 (-4) Breton, Lithuanian, Bulgarian, Romanian, Farsi, Pashto, E. Armenian, Cheremis, Kirghiz, Khalaj, Japanese, Katcha, Dagbani, Senadi, Ewe, Igbo, Ga, Tarok, Swahili, Doayo, Songhai, Kanuri, Logbara, Yulu, Amharic, Hebrew, Socotri, Shilha, Tuareg, Awiya, Kullo, Dizi, Hausa, Mabuia, Sui, Malagasy, Changchow, Burmese, Kunimaipa, Chipewyan, Mazahua, Dakota, Bribri, Apinaye, Lak, Burushaski; RARE Karen; LOAN Hindi-Urdu, Chuvash, Evenki.

Long voiced dental/alveolar sibilant fricative.

/"zː"/ 1 Shilha.

Prenasalized voiced dental/alveolar sibilant fricative.

/"n<sup>h</sup>z"/ 1 Wantoat.

Palatalized voiced dental/alveolar sibilant fricative.

/"z<sup>j</sup>"/ 1 Bulgarian.

Pharyngealized voiced dental/alveolar sibilant fricative.

/"z<sup>ħ</sup>"/ 1 Shilha.

Voiced alveolar fricative.

/ʒ/ 3 Azerbaijani, Sa'ban, Karen.

Voiceless alveolar sibilant fricative.

/s/ 102 Greek, German, Komi, Finnish, Osmanli, Azerbaijani, Bashkir, Evenki, Kadugli, Kpelle, Bisa, Bambara, Dan, Diola, Temne, Tampulma, Bariba, Lelemi, Efik, Birom, Amo, Beembe, Zulu, Teke, Gbeya, Zande, Maba, Fur, Luo, Ik, Tama, Temein, Tabi, Sara, Kunama, Koma, Tigre, Neo-Aramaic, Somali, Iraqw, Hamer, Angas, Margi, Ngizim, Mundari, Vietnamese, Saek, Sundanese, Sa'ban, Rukai, Ao, Tiddim Chin, Garo, Boro, Asmat, Washkuk, Iwam, Selepet, Yagaria, Kewa, Chuave, Daribi, Fasu, Yareba, Navaho, Tolowa, Hupa, Nez Perce, Klamath, Maidu, Wintu, Zoque, Tzeltal, Totonac, K'ekchi, Otomi, Nootka, Kwakw'ala, Quileute, Puget Sound, Hopi, Yacqui, Karok, Diegueno, Achumawi, Tunica, Alabama, Cayapa, Paez, Muinane, Ocaina, Chacobo, Cashinahua, S. Nambiquara, Jaqaru, Wapishana, Amuesha, Campa, Moxos, Guarani, Guahibo,

Siona, Tucano, Malayalam, Georgian, Nama, Brahui, Ainu, !Xu; RARE Telugu; LOAN Barasano, Araucanian.

Long voiceless alveolar sibilant fricative.

/s:/ 2 Finnish, Iraqw.

Pharyngealized voiceless alveolar sibilant fricative.

/s<sup>̠</sup>/ 1 Kurdish.

Laryngealized voiceless alveolar sibilant fricative.

/s̥/ 2 S. Nambiquara, Siona.

Voiced alveolar sibilant fricative.

/z/ 36 (-1) Greek, German, Komi, Osmanli, Azerbaijani, Kpelle, Bisa, Bambara, Dan, Tampulma, Bariba, Birom, Amo, Zulu, Gbeya, Zande, Maba, Fur, Ik, Tabi, Tigre, Neo-Aramaic, Hamer, Angas, Margi, Ngizim, Vietnamese, Ao, Tiddim Chin, Boro, Navaho, Otomi, Georgian, Brahui, !Xu; LOAN Bashkir.

Prenasalized voiced alveolar sibilant fricative.

/<sup>n</sup>z/ 1 Paez.

Voiceless palato-alveolar fricative.

/ç/ 1 Kabardian.

Voiced palato-alveolar fricative.

/j/ 1 Kabardian.

Voiceless palato-alveolar sibilant fricative.

/ʃ/ 146 (-7) Irish, Breton, German, Norwegian, Lithuanian, Bulgarian, French, Romanian, Farsi, Pashto, Kurdish, Albanian, E. Armenian, Cheremis, Komi, Hungarian, Lappish, Osmanli, Azerbaijani, Chuvash, Kirghiz, Bashkir, Khalaj, Tuva, Mongolian, Manchu, Japanese, Bambara, Senadi, Ga, Birom, Tarok, Amo, Swahili, Luvale, Zulu, Kanuri, Maba, Fur, Maasai, Luo, Nubian, Nera, Tabi, Mursi, Berta, Kunama, Koma, Arabic, Tigre, Amharic, Hebrew, Socotri, Neo-Aramaic, Shilha, Tuareg, Somali, Awiya, Iraqw, Beja, Kullo, Dizi, Kefa, Hamer, Hausa, Angas, Margi, Ngizim, Kanakuru, Khasi, Sedang, Sui, Po-ai, Lungchow, Cham, Iai, Taishan, Burmese, Lahu, Jingpho, Washkuk, Navaho, Chipewyan, Tolowa, Chontal, Totonac, K'ekchi, Mixe, Otomi, Mazahua, Mixtec, Chatino, Nootka, Quileute, Squamish, Puget Sound, Karok, Pomo, Achumawi, Tarascan, Zuni, Acoma, Ojibwa, Delaware, Wiyot, Dakota, Yuchi, Tunica, Wappo, Bribri, Cayapa, Paez, Ocaina, Muinane, Chacobo, Tacana, Cashinahua, Ashuslay, Arabela, Quechua, Jaqaru, Gununa-Kena, Wapishana, Amuesha, Campa, Guajiro, Siriono, Jivaro, Cofan, Greenlandic, Aleut, Georgian, Kabardian, Lak,

Basque, Burushaski, !Xu; RARE Karen, Moxos; LOAN Hindi-Urdu, Sinhalese, Ostyak, Finnish, Yakut; ?DERIVED Luiseno; OBSCURE Ojibwa.

Long voiceless palato-alveolar sibilant fricative.

/ʃ:/ 4 Japanese, Arabic, Shilha, Lak.

Labialized voiceless palato-alveolar sibilant fricative.

/ʃ<sup>w</sup>/ 2 Ga, Lak.

Long labialized palato-alveolar sibilant fricative.

/ʃ<sup>w</sup>:/ 1 Lak.

Palatalized voiceless palato-alveolar sibilant fricative.

/ʃ<sup>j</sup>/ 3 Lithuanian, Kashmiri, Paez.

Velarized voiceless palato-alveolar sibilant fricative.

/ʃ̠/ 1 Russian.

Voiced palato-alveolar sibilant fricative.

/ʒ/ 51 (-7) Breton, Lithuanian, Bulgarian, French, Romanian, Farsi, Pashto, Kurdish, Albanian, E. Armenian, Cheremis, Komi, Hungarian, Osmanli, Azerbaijani, Khalaj, Tuva, Senadi, Tarok, Luvale, Maba, Tigre, Amharic, Socotri, Neo-Aramaic, Shilha, Tuareg, Dizi, Angas, Margi, Ngizim, Kanakuru, Navaho, Mixe, Mazahua, Mixtec, Dakota, Ocaina, Apinaye, Aleut, Georgian, Kabardian, Lak, !Xu; RARE Atayal; LOAN German, Hindi-Urdu, Chuvash, Yakut, Bashkir, Hebrew.

Long voiced palato-alveolar sibilant fricative.

/ʒ:/ 1 Shilha.

Prenasalized voiced palato-alveolar sibilant fricative.

/<sup>n</sup>ʒ/ 1 Paez.

Palatalized voiced palato-alveolar sibilant fricative.

/ʒ<sup>j</sup>/ 1 Lithuanian.

Velarized voiced palato-alveolar sibilant fricative.

/ʒ̠/ 1 Russian.

Voiceless retroflex fricative.

/ç/ 1 Hopi.

Voiced retroflex fricative.

/ʁ/ 4 E. Armenian, Araucanian, Chukchi, Burushaski.

Voiceless retroflex sibilant fricative.

/s̺/ 17 Pashto, Punjabi, Cham, Mandarin, Tolowa, Mazatec, Papago, Tarascan, Acoma, Chacobo, Tacana,

Cashinahua, Telugu, Kota, Malayalam, Basque,  
Burushaski.

Voiced retroflex sibilant fricative.

/z/ 3 Pashto, Mandarin, Amuesha.

Laryngealized voiced retroflex sibilant fricative.

/z̥/ 1 Wapishana.

Voiceless palatal fricative.

/ç/ 16 (-1) Irish, Norwegian, Bengali, Komi, Margi, Mandarin,  
Kan, Haida, Kwakw'ala, Paez; OBSCURE Chuvash.

Long voiceless palatal fricative.

/ç:/ 1 (-1) ?DERIVED Japanese.

Labialized voiceless palatal fricative.

/ç<sup>w</sup>/ 1 Akan.

Voiced palatal fricative.

/j/ 3 Komi, Khalaj, Goldi, Margi, Asmat, Greenlandic, Ket.

Voiceless palatal sibilant fricative.

/ç/ 2 Gununa-Kena, Telugu.

Voiced palatal sibilant fricative.

/ʒ/ 2 Muinane, Cofan.

Voiceless velar fricative.

/x/ 75 (-7) Greek, Irish, Breton, German, Russian, Bulgarian,  
Spanish, Kurdish, Yurak, Azerbaijani, Chuvash,  
Kirghiz, Bashkir, Mongolian, Goldi, Manchu, Hebrew,  
Shilha, Iraqw, Angas, Margi, Vietnamese, Sui, Atayal,  
Iai, Fuchow, Dafla, Tiddim Chin, Karen, Kewa, Haida,  
Tlingit, Navaho, Chipewyan, Tolowa, Hupa, Nez Perce,  
Wintu, K'ekchi, Nootka, Quileute, Luiseno, Tiwa,  
Karak, Pomo, Achumawi, Yana, Shasta, Tarascan,  
Delaware, Tonkawa, Dakota, Bribri, Ocaina,  
Muinane, Amahuaca, Ashuslay, Jaqaru, Gununa-Kena,  
Amuesha, Guarani, Guahibo, Jivaro, Aleut, Gilyak,  
Lak, Nama, Brahui, !Xu; LOAN Lithuanian, Cheremis,  
Komi, Khalaj, Kanuri, Somali; ?DERIVED K'ekchi.

Long voiceless velar fricative.

/x:/ 3 Shilha, Greenlandic, Lak.

Labialized voiceless velar fricative.

/x<sup>w</sup>/ 18 (-1) Iraqw, Haida, Tlingit, Chipewyan, Tolowa, Hupa,  
Nootka, Kwakw'ala, Quileute, Squamish, Puget Sound,  
Luiseno, Tiwa, Diegueno, Tonkawa, Kabardian, Lak; LOAN  
Guarani.



Long labialized voiceless velar fricative.

/x<sup>w</sup>:/ 1 Lak.

Palatalized voiceless velar fricative.

/x<sup>j</sup>/ 1 Kabardian.

Voiced velar fricative.

/ɣ/ 40 (-4) Greek, Irish, Spanish, Kurdish, Ostyak, Cheremis, Azerbaijani, Kpelle, Igbo, Fur, Shilha, Angas, Margi, Vietnamese, Maung, Kunjen, Sui, Saek, Atayal, Lahu, Karen, Navaho, Chipewyan, Tolowa, Dakota, Paez, Abipon, Amuesha, Guarani, Cofan, Greenlandic, Aleut, Chukchi, Gilyak, Brahui; RARE Tiwi; LOAN Mazatec, Quechua; ?ABSTRACT Osmanli; OBSCURE Tuva.

Long voiced velar fricative.

/ɣ:/ 1 Shilha.

Labialized voiced velar fricative.

/ɣ<sup>w</sup>/ 2 (-1) Chipewyan; LOAN Guarani.

Palatalized voiced velar fricative.

/ɣ<sup>j</sup>/ 1 Kabardian.

Laryngealized voiced velar fricative.

/ɣ̤/ 1 Sui.

Voiceless uvular fricative.

/χ/ 27 (-4) Farsi, Pashto, E. Armenian, Wolof, Arabic, Neo-Aramaic, Tuareg, Mandarin, Haida, Tlingit, Wintu, Kwakw'ala, Quileute, Squamish, Puget Sound, Pomo, Achumawi, Aleut, Kurukh, Gilyak, Georgian, Kabardian, Lak; LOAN Hindi-Urdu, Nootka, Basque, Burushaski.

Long voiceless uvular fricative.

/χ:/ 3 Arabic, Greenlandic, Lak.

Labialized voiceless uvular fricative.

/χ<sup>w</sup>/ 9 (-1) Haida, Tlingit, Kwakw'ala, Quileute, Squamish, Puget Sound, Kabardian, Lak; LOAN Nootka.

Long labialized voiceless uvular fricative.

/χ<sup>w</sup>:/ 1 Lak.

Voiced uvular fricative.

/β/ 14 (-1) Pashto, Arabic, Hebrew, Tuareg, Sui, Abipon, Greenlandic, Aleut, Yukaghir, Gilyak, Georgian, Kabardian, Burushaski; LOAN Hindi-Urdu.

Long voiced uvular fricative.

/β:/ 1 Arabic.

Labialized voiced uvular fricative.

/b<sup>w</sup>/ 1 Kabardian.

Voiceless pharyngeal fricative.

/ħ/ 13 Kurdish, Ewe, Tama, Arabic, Tigre, Socotri, Shilha, Somali, Iraqw, Atayal, Nootka, Kabardian, Lak.

Long voiceless pharyngeal fricative.

/ħ:/ 2 Arabic, Shilha.

Voiced pharyngeal fricative.

/ʕ/ 8 (-1) Kurdish, Ewe, Arabic, Tigre, Socotri, Shilha, Somali; LOAN Kabardian.

Long voiced pharyngeal fricative.

/ʕ:/ 1 Arabic.

Voiceless "h".

/h/ 202 (-2) Irish, German, Norwegian, Romanian, Farsi, Pashto, Bengali, Albanian, E. Armenian, Finnish, Hungarian, Lappish, Osmanli, Azerbaijani, Bashkir, Khalaj, Korean, Japanese, Bambara, Diola, Temne, Tampulma, Bariba, Akan, Igbo, Ga, Birom, Tarok, Amo, Beembe, Luvale, Zulu, Teke, Doayo, Gbeya, Zande, Kanuri, Fur, Luo, Nubian, Ik, Tama, Nera, Tabi, Mursi, Logbara, Sara, Berta, Kunama, Koma, Arabic, Tigre, Amharic, Hebrew, Socotri, Neo-Aramaic, Shilha, Tuareg, Somali, Iraqw, Beja, Kullo, Dizi, Kefa, Hamar, Hausa, Angas, Ngizim, Mundari, Khasi, Vietnamese, Sedang, Khmer, Standard Thai, Lakkia, Yay, Sui, Saek, Po-ai, Lungchow, Sundanese, Javanese, Malagasy, Cham, Malay, Batak, Tagalog, Sa'ban, Chamorro, Rukai, Tsou, Adzera, Roro, Kaliai, Iai, Maori, Hawaiian, Taishan, Hakka, Changchow, Amoy, Kan, Tamang, Burmese, Lahu, Jingpho, Tiddim Chin, Garo, Boro, Yao, Washkuk, Sentani, Nimboran, Iwam, Selepet, Yagaria, Pawaian, Dani, Daribi, Fasu, Koiari, Taoripi, Haida, Navaho, Chipewyan, Tolowa, Hupa, Nez Perce, Klamath, Maidu, Wintu, Chontal, Zoque, Tzeltal, Totonac, Otomi, Mazahua, Mazatec, Mixtec, Chatino, Nootka, Kwakw'ala, Quileute, Squamish, Puget Sound, Papago, Luiseno, Hopi, Yacqui, Tiwa, Karok, Pomo, Achumawi, Yana, Shasta, Tarascan, Zuni, Acoma, Delaware, Tonkawa, Seneca, Dakota, Yuchi, Tunica, Alabama, Wappo, Itonama, Mura, Cayapa, Paez, Ocaina, Carib, Amahuaca, Chacobo, Cashinahua, Abipon, S. Nambiquara, Arabela, Quechua, Gununa-Kena, Island Carib, Campa, Guajiro, Moxos, Siriono, Guahibo, Barasano, Siona, Tucano, Cofan, Aleut, Kurukh, Malayalam, Ket, Gilyak, Lak, Nama, Burushaski, Ainu, Brahui; RARE Wapishana; LOAN Georgian.

Long voiceless "h".

/h:/ 2 Arabic, Delaware.

Labialized voiceless "h".

/h<sup>w</sup>/ 4 Igbo, Amharic, Hupa, Siona.

Laryngealized voiceless "h".

/h/ 1 (-1) OBSCURE S. Nambiquara.

Voiced "h".

/h/ 13 (-1) Hindi-Urdu, Kashmiri, Punjabi, Sinhalese, Zulu, Kharia, Changchow, Dafla, Wichita, Telugu, Kabardian, !Xu; RARE Karen.

Long voiceless dental lateral fricative.

/ɬ:/ 1 Greenlandic.

Palatalized voiceless dental lateral fricative.

/ɬ<sup>j</sup>/ 1 Kabardian.

Voiced dental lateral fricative.

/ɮ/ 1 Diegueno.

Palatalized voiced dental lateral fricative.

/ɮ<sup>j</sup>/ 1 Kabardian.

Voiceless dental/alveolar lateral fricative.

/"ɬ"/ 17 Ik, Socotri, Lakkia, Po-ai, Lungchow, Haida, Tlingit, Tolowa, Nootka, Tiwa, Zuni, Wiyot, Yuchi, Alabama, Aleut, Chukchi, Brahui.

Voiced dental/alveolar lateral fricative.

/"ɮ"/ 2 Ik, Socotri.

Voiceless alveolar lateral fricative.

/ɬ/ 13 Zulu, Nyangi, Iraqw, Margi, Ngizim, Navaho, Hupa, Nez Perce, Totonac, Kwakw'ala, Quileute, Puget Sound, Diegueno.

Voiced alveolar lateral fricative.

/ɮ/ 5 Zulu, Margi, Ngizim, Kanakuru, Diegueno.

Voiced palato-alveolar lateral fricative.

/ɮ/ 1 Pashto.

Voiced retroflex lateral fricative.

/ɮ/ 1 Ao.

Voiceless velar-alveolar lateral fricative.

/xɬ/ 1 (-1) OBSCURE Ashuslay.

Voiceless bilabial ejective fricative.

/p̥ʰ/ 1 Yuchi.

Voiceless labio-dental ejective fricative.

/f̥ʰ/ 1 Kabardian.

Voiceless dental/alveolar sibilant ejective fricative.

/"sʰ"/ 7 Berta, Socotri, Tlingit, Mazahua, Wichita, Dakota, Yuchi.

Voiceless alveolar sibilant ejective fricative.

/sʰ/ 1 Koma.

Voiceless palato-alveolar sibilant ejective fricative.

/ʃʰ/ 4 (-1) Dakota, Yuchi, Kabardian; RARE Socotri.

Voiceless retroflex sibilant ejective fricative.

/ʂʰ/ 1 Acoma.

Voiceless palatal sibilant ejective fricative.

/çʰ/ 1 Acoma.

Voiceless velar ejective fricative.

/xʰ/ 1 Dakota.

Voiceless uvular ejective fricative.

/χʰ/ 1 Tlingit.

Labialized voiceless uvular ejective fricative.

/χʷʰ/ 1 Tlingit.

Voiceless dental/alveolar lateral ejective fricative.

/"ɬʰ"/ 2 Tlingit, Yuchi.

6. NASALS.

Voiced bilabial nasal.

/m/ 299 (-3) Greek, Breton, German, Norwegian, Lithuanian, Russian, Bulgarian, French, Spanish, Romanian, Farsi, Pashto, Kurdish, Hindi-Urdu, Bengali, Kashmiri, Punjabi, Sinhalese, Albanian, E. Armenian, Ostyak, Cheremis, Komi, Finnish, Hungarian, Lappish, Yurak, Tavgy, Osmanli, Azerbaijani, Chuvash, Yakut, Kirghiz, Bashkir, Khalaj, Tuva, Mongolian, Evenki, Goldi, Manchu, Korean, Japanese, Katcha, Moro, Kadugli, Bisa, Bambara, Dan, Wolof, Diola, Temne, Dagbani, Senadi, Tampulma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Efik, Birom, Tarok, Amo, Beembe, Swahili, Luvale, Zulu, Teke, Doayo, Gbeya, Zande, Songhai, Kanuri, Maba, Fur, Maasai, Luo, Nubian, Nyangi, Ik, Sebei, Tama, Temein, Nera,

Tabi, Mursi, Logbara, Yulu, Sara, Berta, Kunama, Koma, Arabic, Tigre, Amharic, Hebrew, Socotri, Neo-Aramaic, Shilha, Tuareg, Somali, Awiya, Iraqw, Beja, Kullo, Dizi, Kefa, Hamer, Hausa, Angas, Margi, Ngizim, Kanakuru, Mundari, Kharia, Khasi, Vietnamese, Sedang, Khmer, Maung, Tiwi, Burera, Nunggubuyu, Alawa, Maranungku, Malakmalak, Bardi, Wik-Muncan, Kunjen, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Gugu-Yalanji, Mabuiag, Arabana-Wanganura, Diyari, Bandjalang, Standard Thai, Lakkia, Yay, Sui, Saek, Po-ai, Lungchow, Atayal, Sundanese, Javanese, Malagasy, Cham, Malay, Batak, Tagalog, Sa'ban, Chamorro, Rukai, Tsou, Adzera, Roro, Kaliai, Iai, Maori, Hawaiian, Mandarin, Taishan, Changchow, Amoy, Fuchow, Kan, Tamang, Dafla, Burmese, Lahu, Jingpho, Ao, Tiddim Chin, Garo, Boro, Karen, Yao, Andamanese, Asmat, Washkuk, Sentani, Nimboran, Iwam, Telefol, Selepet, Gadsup, Yagaria, Kewa, Chuave, Pawaian, Dani, Wantoat, Daribi, Fasu, Suena, Dera, Kunimaipa, Yareba, Taoripi, Nasioi, Nambakaengo, Haida, Tolowa, Hupa, Nez Perce, Klamath, Maidu, Wintu, Chontal, Zoque, Tzeltal, Totonac, K'ekchi, Mixe, Otomi, Mazahua, Mazatec, Chatino, Nootka, Kwakw'ala, Squamish, Papago, Luiseno, Hopi, Yacqui, Tiwa, Karok, Pomo, Diegueno, Achumawi, Yana, Shasta, Tarascan, Zuni, Acoma, Ojibwa, Delaware, Tonkawa, Wiyot, Tunica, Alabama, Wappo, Itonama, Bribri, Cayapa, Paez, Ocaina, Muinane, Carib, Amahuaca, Chacobo, Tacana, Cashinahua, Ashuslay, Abipon, Arabela, Auca, Quechua, Jaqaru, Gununa-Kena, Wapishana, Island Carib, Amuesha, Campa, Guajiro, Moxos, Guarani, Guahibo, Ticuna, Siona, Jivaro, Cofan, Araucanian, Greenlandic, Aleut, Telugu, Kota, Kurukh, Malayalam, Ket, Yukaghir, Chukchi, Gilyak, Georgian, Kabardian, Lak, Nama, Basque, Burushaski, Ainu, Brahui, !Xu; RARE Navaho, Seneca; ?DERIVED Dakota.

Long voiced bilabial nasal.

/m:/ 11 Punjabi, Finnish, Chuvash, Yakut, Wolof, Arabic, Shilha, Maranungku, Delaware, Ocaina, !Xu.

Labialized voiced bilabial nasal.

/m<sup>w</sup>/ 2 Washkuk, Nambakaengo.

Labialized velarized voiced bilabial nasal.

/m<sup>w</sup>/ 1 Irish.

Palatalized voiced bilabial nasal.

/m<sup>j</sup>/ 6 Irish, Lithuanian, Russian, Bulgarian, Yurak, Amuesha.

Breathy voiced bilabial nasal.

/m/ 2 Hindi-Urdu, !Xu.

Laryngealized voiced bilabial nasal.

/m/ 14 Gbeya, Sedang, Sui, Haida, Tolowa, Nez Perce, Klamath,  
~ Otomi, Mazahua, Nootka, Kwakw'ala, Acoma, Wappo, !Xu.

Voiceless bilabial nasal.

/m̥/ 11 (-1) Sedang, Lakkia, Sui, Iai, Burmese, Yao, Klamath,  
Mazahua, Hopi, Aleut; ?DERIVED Otomi.

Voiced labiodental nasal.

/ɱ/ 1 Teke.

Voiced dental nasal.

/n/ 55 Irish, Norwegian, Russian, French, Spanish,  
Farsi, Kurdish, Hindi-Urdu, Punjabi, Finnish,  
Hungarian, Yakut, Khalaj, Tuva, Manchu, Gbeya, Ik,  
Temein, Arabic, Tigre, Tuareg, Beja, Mundari,  
Tiwi, Nunggubuyu, Kunjen, Western Desert,  
Aranda, Kariera-Ngarluma, Arabana-Wanganura, Diyari,  
Standard Thai, Roro, Garo, Tamang, Yao, Nimboran,  
Selepet, Nez Perce, Tzeltal, Squamish, Papago,  
Luiseno, Diegueno, Yana, Acoma, Tonkawa, Gununa-  
Kena, Guarani, Araucanian, Greenlandic, Malayalam,  
Kabardian, Nama, Brahui.

Long voiced dental nasal.

/n:/ 4 Punjabi, Finnish, Yakut, Arabic.

Palatalized voiced dental nasal.

/nʲ/ 1 Russian.

Breathy voiced dental nasal.

/n̥/ 1 Hindi-Urdu.

Laryngealized voiced dental nasal.

/n̥/ 3 Gbeya, Nez Perce, Acoma.

Voiceless dental nasal.

/n̥/ 1 Yao.

Voiced dental/alveolar nasal.

/"n"/ 155 (-1) Greek, Breton, German, Lithuanian, Bulgarian,  
Romanian, Pashto, Bengali, Kashmiri, Sinhalese, E.  
Armenian, Ostyak, Cheremis, Lappish, Yurak, Tavgy,  
Osmanli, Azerbaijani, Chuvash, Kirghiz, Mongolian,  
Evenki, Goldi, Korean, Japanese, Katcha, Wolof,  
Dagbani, Senadi, Ewe, Akan, Igbo, Ga, Beembe,  
Swahili, Luvale, Doayo, Songhai, Kanuri, Maasai,  
Nubian, Sebei, Nera, Mursi, Logbara, Yulu, Berta,  
Amharic, Hebrew, Socotri, Neo-Aramaic, Shilha, Awiya,

Kullo, Dizi, Kefa, Hausa, Kharia, Khasi, Vietnamese, Sedang, Khmer, Burera, Maranungku, Wik-Munkan, Kariera-Ngarluma, Gugu-Yalanji, Mabuiag, Lakkia, Yay, Sui, Po-ai, Lungchow, Atayal, Sundanese, Javanese, Malagasy, Cham, Malay, Batak, Tagalog, Tsou, Adzera, Kaliai, Iai, Hawaiian, Taishan, Changchow, Amoy, Fuchow, Kan, Dafla, Burmese, Lahu, Jingpho, Karen, Andamanese, Sentani, Telefol, Gadsup, Pawaiian, Dani, Wantoat, Suena, Dera, Kunimaipa, Nasioi, Nambakaengo, Haida, Tlingit, Chipewyan, Tolowa, Chontal, Mazahua, Chatino, Nootka, Tiwa, Karok, Pomo, Achumawi, Shasta, Tarascan, Zuni, Delaware, Wiyot, Seneca, Wichita, Yuchi, Alabama, Wappo, Itonama, Bribri, Carib, Amahuaca, Ashuslay, Abipon, Arabela, Quechua, Island Carib, Guajiro, Ticuna, Jivaro, Cofan, Aleut, Kurukh, Ket, Yukaghir, Chukchi, Gilyak, Georgian, Lak, Basque, Burushaski; ?DERIVED Dakota.

Long voiced dental/alveolar nasal.

/"n:"/ 6 Chuvash, Wolof, Shilha, Maranungku, Delaware, Wichita.

Labialized voiced dental/alveolar nasal.

/"n<sup>w</sup>"/ 1 Nambakaengo.

Palatalized voiced dental/alveolar nasal.

/"n<sup>j</sup>"/ 5 (-1) Irish, Bulgarian, Yurak, Chuvash; OBSCURE Nambakaengo.

Velarized voiced dental/alveolar nasal.

/"n̠"/ 1 Irish.

Laryngealized voiced dental/alveolar nasal.

/"n̥"/ 8 Sedang, Sui, Haida, Tolowa, Nootka, Yuchi, Wappo, S. Nambiquara.

Voiceless dental/alveolar nasal.

/"ŋ"/ 6 Sedang, Lakkia, Sui, Burmese, Mazahua, Aleut.

Palatalized voiceless dental/alveolar nasal.

/"ŋ<sup>j</sup>"/ 1 (-1) ?DERIVED Irish.

Velarized voiceless dental/alveolar nasal.

/"ŋ̠"/ 1 (-1) ?DERIVED Irish.

Voiced alveolar nasal.

/n/ 106 Albanian, Komi, Bashkir, Moro, Kadugli, Bisa, Bambara, Dan, Diola, Temne, Tampulma, Bariba, Lelemi, Efik, Birom, Tarok, Amo, Zulu, Teke, Zande, Maba, Fur, Luo, Nyangi, Tama, Tabi, Sara, Kunama, Koma, Somali, Iraqw, Hamar, Angas, Margi, Ngizim, Kanakuru, Maung, Tiwi, Nunggubuyu, Alawa, Malakmalak, Bardi, Kunjen, Western Desert, Nyangumata, Aranda, Arabana-

Wanganura, Diyari, Bandjalang, Saek, Sa'ban, Chamorro, Rukai, Maori, Mandarin, Ao, Tiddim Chin, Boro, Asmat, Washkuk, Iwam, Yagaria, Kewa, Chuave, Daribi, Fasu, Yareba, Koiari, Navaho, Hupa, Wintu, Klamath, Maidu, Zoque, Totonac, K'ekchi, Mixe, Otomi, Mazatec, Kwakw'ala, Hopi, Yacqui, Diegueno, Ojibwa, Tunica, Cayapa, Paez, Ocaina, Muinane, Chacobo, Tacana, Cashinahua, S. Nambiquara, Auca, Jaqaru, Amuesha, Campa, Moxos, Guahibo, Siona, Araucanian, Telugu, Kota, Malayalam, Ainu, !Xu.

Long voiced alveolar nasal.

/n:/ 2 Somali, Ocaina.

Palatalized voiced alveolar nasal.

/n<sup>j</sup>/ 1 Nyangumata.

Laryngealized voiced alveolar nasal.

/n̥/ 3 Klamath, Otomi, Kwakw'ala.

Voiceless alveolar nasal.

/ŋ̥/ 3 (-1) Klamath, Hopi; ?DERIVED Otomi.

Voiced palato-alveolar nasal.

/ŋ/ 17 Albanian, Zulu, Nunggubuyu, Alawa, Malakmalak, Bardi, Wik-Munkan, Aranda, Bandjalang, Mazatec, Papago, Diegueno, Cayapa, Wapishana, Campa, Moxos, Jivaro.

Voiced retroflex nasal.

/ŋ̠/ 20 (-1) Norwegian, Pashto, Punjabi, Ostyak, Mundari, Maung, Nunggubuyu, Alawa, Bardi, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Arabana-Wanganura, Diyari, Iai, Telugu, Kota, Malayalam; ?DERIVED Tiwi.

Voiceless retroflex nasal.

/ŋ̠̥/ 1 Iai.

Voiced palatal nasal.

/ɲ/ 107 (-3) Irish, Breton, Lithuanian, French, Spanish, Punjabi, Ostyak, Cheremis, Komi, Hungarian, Lappish, Tavgy, Yakut, Evenki, Goldi, Katcha, Moro, Kadugli, Bisa, Bambara, Wolof, Diola, Dagbani, Tampulma, Ewe, Igbo, Ga, Lelemi, Efik, Amo, Swahili, Luvale, Teke, Zande, Songhai, Kanuri, Maba, Fur, Maasai, Luo, Nubian, Nyangi, Ik, Sebei, Tama, Temein, Tabi, Mursi, Yulu, Sara, Amharic, Tuareg, Hamar, Angas, Margi, Ngizim, Kankuru, Kharia, Khasi, Vietnamese, Sedang, Khmer, Burera, Maranungku, Kunjen, Kariera-Ngarluma, Gugu-Yalanji, Arabana-Wanganura, Diyari, Yay, Sui, Saek, Sundanese, Javanese, Cham, Malay, Sa'ban,



Chamorro, Iai, Kan, Burmese, Yao, Andamanese, Washkuk, Mazahua, Hopi, Bribri, Paez, Ocaina, Muinane, Abipon, Auca, Quechua, Jaqaru, Amuesha, Guarani, Ticuna, Cofan, Araucanian, Malayalam, Ket, Yukaghir, Gilyak, Basque; RARE Karen; LOAN Sinhalese, Tarascan.

Long voiced palatal nasal.

/ɲ:/ 2 Yakut, Ocaina.

Laryngealized voiced palatal nasal.

/ɲ̥/ 3 Sedang, Sui, Mazahua.

Voiceless palatal nasal.

/ɲ̥/ 6 Sedang, Sui, Iai, Burmese, Yao, Mazahua.

Voiced velar nasal.

/ŋ/ 167 (-9) Irish, Breton, German, Norwegian, Kurdish, Bengali, Punjabi, Ostyak, Cheremis, Lappish, Yurak, Tavgy, Yakut, Kirghiz, Bashkir, Tuva, Evenki, Goldi, Manchu, Korean, Japanese, Katcha, Moro, Kadugli, Bisa, Bambara, Wolof, Diola, Dagbani, Senadi, Tampulma, Ewe, Igbo, Ga, Lelemi, Efik, Birom, Tarok, Amo, Luvale, Teke, Doayo, Gbeya, Songhai, Kanuri, Fur, Maasai, Luo, Nyangi, Ik, Sebei, Tama, Temein, Nera, Tabi, Mursi, Yulu, Berta, Kunama, Awiya, Iraqw, Hamar, Angas, Margi, Kanakuru, Kharia, Khasi, Vietnamese, Sedang, Khmer, Maung, Tiwi, Bureru, Nunggubuyu, Alawa, Maranungku, Malakmalak, Bardi, Wik-Munkan, Kunjen, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Gugu-Yalanji, Mabuiaq, Arabana-Wanganura, Diyari, Bandjalang, Standard Thai, Lakkia, Yay, Sui, Saek, Po-ai, Lungchow, Atayal, Sundanese, Javanese, Cham, Malay, Batak, Tagalog, Sa'ban, Chamorro, Rukai, Tsou, Adzera, Kaliai, Iai, Maori, Mandarin, Taishan, Changchow, Amoy, Fuchow, Kan, Tamang, Dafla, Burmese, Lahu, Jingpho, Ao, Tiddim Chin, Garo, Boro, Yao, Andamanese, Nimboran, Iwam, Telefol, Selepet, Wantoat, Dera, Kunimaipa, Nambakaengo, Hupa, Zoque, Luiseno, Hopi, Tarascan, Cayapa, Carib, Auca, Jaqaru, Guarani, Ticuna, Araucanian, Greenlandic, Aleut, Kota, Malayalam, Ket, Yukaghir, Chukchi, Gilyak, Burushaski, !Xu; RARE Swahili, Koma, Karen; LOAN French, Hebrew, Moxos; ?DERIVED Sinhalese, Mundari, Mixtec.

Long voiced velar nasal.

/ŋ:/ 2 (-1) Yakut; ?DERIVED Finnish.

Labialized voiced velar nasal.

/ŋ<sup>w</sup>/ 7 Awiya, Iraqw, Lakkia, Wantoat, Nambakaengo, Hopi, Guarani.

Palatalized voiced velar nasal.

/ŋ<sup>j</sup>/ 2 Irish, Lakkia.

Pharyngealized voiced velar nasal.

/ŋ<sup>ʕ</sup>/ 1 !Xu.

Laryngealized voiced velar nasal.

/ŋ̃/ 3 Sedang, Sui, Haida.

Voiceless velar nasal.

/ŋ̥/ 7 Sedang, Sui, Iai, Burmese, Yao, Hopi, Aleut.

Palatalized voiceless velar nasal.

/ŋ<sup>j</sup>/ 1 Lakkia.

Voiced labial-velar nasal.

/m̃ŋ/ 6 Dagbani, Tampuan, Igbo, Ga, Gbeya, Iai.

Voiceless labial-velar nasal.

/m̃ŋ̥/ 1 Iai.

Voiced dental-palatal nasal.

/ɲ̃/ 1 Maung.

7. TRILLS, TAPS AND FLAPS.

Voiced dental trill.

/r/ 5 Russian, Hungarian, Tuva, Tamang, Gununa-Kena.

Palatalized voiced dental trill.

/r<sup>j</sup>/ 1 Russian.

Voiced dental/alveolar trill.

/"r"/ 52 (-4) Bulgarian, Farsi, Pashto, Kurdish, Hindi-Urdu, Kashmiri, Punjabi, Albanian, E. Armenian, Ostyak, Komi, Finnish, Lappish, Yurak, Tavgy, Chuvash, Yakut, Kirghiz, Mongolian, Evenki, Goldi, Manchu, Katcha, Akan, Kanuri, Nubian, Nera, Sebei, Mursi, Yulu, Berta, Khasi, Sedang, Wik-Munkan, Kariera-Ngarluma, Sundanese, Malagasy, Malay, Adzera, Chipewyan, Luiseno, Arabela, Guajiro, Kurukh, Gilyak, Georgian, Lak, Basque; RARE Ga, Mixtec; LOAN Mazatec, Quechua.

Long voiced dental/alveolar trill.

/"r:"/ 2 Finnish, Chuvash.

Palatalized voiced dental/alveolar trill.

/"r<sup>j</sup>"/ 2 Bulgarian, Yurak.

Velarized voiced dental/alveolar trill.

/"r̥"/ 1 Yukaghir.

Laryngealized voiced dental/alveolar trill.

/"r̥"/ 1 Sedang.

Voiceless dental/alveolar trill.

/r̥/ 3 Maasai, Sedang, Gilyak.

Voiced dental/alveolar fricative trill.

/"r̥"/ 1 (-1) LOAN Guarani.

Voiced alveolar trill

/r/ 54 (-3) Breton, Lithuanian, Spanish, Bashkir, Moro, Kadugli, Bisa, Temne, Tampulma, Amo, Maba, Fur, Nyangi, Ik, Tama, Temein, Tabi, Kunama, Koma, Tigre, Shilha, Tuareg, Hausa, Angas, Margi, Ngizim, Mundari, Maung, Nunggubuyu, Alawa, Maranungku, Malakmalak, Bardi, Kunjen, Nyangumata, Arabana-Wanganura, Diyari, Bandjalang, Javanese, Rukai, Kaliai, Maori, Dafla, Tarascan, Tunica, Guahibo, Kota, Malayalam, Kabardian, Nama, Brahui; RARE Diegueno; LOAN Swahili, Zulu.

Long voiced alveolar trill.

/r:/ 3 Arabic, Shilha, Somali.

Palatalized voiced alveolar trill.

/rʲ/ 1 Lithuanian.

Pharyngealized voiced alveolar trill.

/rˤ/ 1 Shilha.

Voiced retroflex trill.

/ɽ/ 5 (-2) Pashto, Kariëra-Ngarluma, Arabana-Wanganura; ?DERIVED Kurukh; OBSCURE Batak.

Voiced uvular trill.

/R/ 2 German, French.

Voiced dental tap.

/ð/ 1 Acoma.

Laryngealized voiced dental tap.

/ð̥/ 1 Acoma.

Voiced dental/alveolar tap.

/"ð"/ 1 Khalaj.

Voiced alveolar tap.

/ð/ 5 Spanish, Bambara, Tiwi, Rotokas, Malayalam.

Voiced labio-dental flap.

/v̥/ 2 (-1) Gbeya; RARE Margi.

Voiced dental flap.

/ɾ/ 1 Roro.

Voiced dental/alveolar flap.

Greek, Norwegian, Kurdish, Cheremis, Japanese,  
/ʀ/ 30 (-11) Wolof, Ewe, Igbo, Sebei, Logbara, Sara, Awiya,  
Kharia, Suena, Nasioi, Chontal, Itonama, Amahuaca,  
Quechua, Island Carib, Amuesha, Siriono, Ticuna,  
Jivaro, Basque; LOAN Pomo.

Palatalized voiced dental/alveolar flap.

/'ɾʲ/ 1 Igbo.

Voiced alveolar flap.

Irish, Romanian, Bengali, Sinhalese, Osmanli, Kpelle,  
/ɾ/ 53 (-2) Diola, Bariba, Gbeya, Maasai, Luo, Tama, Arabic,  
Amharic, Neo-Aramaic, Somali, Hamer, Hausa, Ngizim,  
Burera, Western Desert, Aranda, Standard Thai, Garo,  
Boro, Washkuk, Selepet, Kewa, Chuave, Daribi, Fasu,  
Yareba, Koiari, Tzeltal, Otomi, Yacqui, Karok, Ocaina,  
Carib, Chacobo, Tacana, Jaqaru, Wapishana, Campa,  
Moxos, Guarani, Barasano, Tucano, Telugu, Lak,  
Brahui; RARE Asmat; LOAN Paez.

Palatalized voiced alveolar flap.

/ɾ/ 1 Irish.

Voiced alveolar fricative flap.

/ʁ/ 1 Tacana.

Palatalized voiceless alveolar flap.

/ɾ̥ʲ/ 1 Irish.

Velarized voiceless alveolar flap.

/ɾ̥/ 1 Irish.

Voiced retroflex flap.

Bengali, Punjabi, Kharia, Khmer, Maung, Kaliai,  
/ɽ/ 11 (-1) Pawaian, Kunimaipa, Apinaye, Kota; LOAN Hindi-Urdu.

Voiced dental/alveolar lateral flap.

/'ɽ/ 3 Luvale, Logbara, Guajiro.

Voiced alveolar lateral flap.

/ɽ/ 2 Kewa, Paez.

Palatalized voiced alveolar lateral flap.

/'ɽʲ/ 1 Paez.

Voiced retroflex lateral flap.

/ɽ/ 3 Moro, Papago, S. Nambiquara.

Laryngealized voiced retroflex lateral flap.

/ɺ̥/ 1 S. Nambiquara.

Voiced dental r-sound.

/r̥r/ 1 Nimboran.

Voiced dental/alveolar r-sound.

/"rr"/ 25 (-2) Tarok, Doayo, Zande, Songhai, Socotri, Beja, Kullo, Dizi, Kefa, Gugu-Yalanji, Mabuiag, Yay, Atayal, Cham, Jingpho, Boro, Chatino, Achumawi, Yana, Shasta, Bribri, Abipon, Cofan, Burushaski; LOAN Tiwa, Wappo.

Laryngealized voiced dental/alveolar r-sound.

/"r̥r"/ 2 (-1) Wichita; LOAN Wappo.

Voiced alveolar r-sound.

/rr/ 5 Iraqw, Iwam, Cayapa, Muinane, Ainu.

Palatalized voiced alveolar r-sound.

/r̥r̥ʲ/ 1 Muinane.

8. APPROXIMANTS.

Voiced dental lateral approximant.

/l̥/ 27 (-1) Lithuanian, French, Spanish, Punjabi, Finnish, Tuva, Manchu, Gbeya, Arabic, Tuareg, Mundari, Nunggubuyu, Western Desert, Aranda, Kariera-Ngarluma, Arabana-Wanganura, Diyari, Tamang, Dafla, Tzeltal, Luiseno, Diegueno, Tonkawa, Gununa-Kena, Araucanian, Greenlandic; LOAN Guarani.

Long voiced dental lateral approximant.

/l̥:/ 3 Punjabi, Finnish, Arabic.

Palatalized voiced dental lateral approximant.

/l̥ʲ/ 1 Russian.

Voiceless dental lateral approximant.

/l̥̥/ 1 Gununa-Kena.

Voiced dental/alveolar lateral approximant.

/"l"/ 121 (-4) Greek, Farsi, Kurdish, Hindi-Urdu, Bengali, Kashmiri, E. Armenian, Ostyak, Hungarian, Lappish, Yurak, Tavgy, Osmanli, Azerbaijani, Chuvash, Kirghiz, Khalaj, Mongolian, Evenki, Goldi, Korean, Katcha, Wolof, Dagbani, Senadi, Ewe, Igbo, Ga, Tarok, Beembe, Swahili, Doayo, Songhai, Kanuri, Maasai, Nubian, Ik, Sebei, Nera, Mursi, Yulu, Berta, Hebrew, Socotri, Shilha, Awiya, Beja, Kullo, Kefa, Hamer, Kharia, Vietnamese, Sedang, Maranungku, Wik-

Munkan, Kariera-Ngarluma, Gugu-Yalanji, Mabuiag, Standard Thai, Lakkia, Yay, Sui, Po-ai, Lungchow, Sundanese, Javanese, Malagasy, Cham, Malay, Batak, Tagalog, Tsou, Kaliai, Hawaiian, Mandarin, Taishan, Hakka, Changchow, Fuchow, Kan, Burmese, Lahu, Jingpho, Yao, Andamanese, Telefol, Dani, Kunimaipa, Taoripi, Nambakaengo, Haida, Chipewyan, Tolowa, Nez Perce, Chontal, Mazahua, Chatino, Squamish, Tiwa, Pomo, Yana, Zuni, Delaware, Wiyot, Dakota, Yuchi, Alabama, Wappo, Itonama, Abipon, Quechua, Island Carib, Aleut, Kurukh, Yukaghir, Gilyak, Lak, Basque, Burushaski; LOAN Tarascan, Ojibwa; ?DERIVED Mixtec.

Long voiced dental/alveolar lateral approximant.

/ˈlː/ 4 Chuvash, Wolof, Shilha, Delaware.

Palatalized voiced dental/alveolar lateral approximant.

/ˈlʲ/ 5 Bulgarian, Yurak, Chuvash, Amuesha, Ket.

Velarized voiced dental/alveolar lateral approximant.

/ˈlˠ/ 6 Bulgarian, Yakut, Khmer, Ket, Yukaghir, Georgian.

Long velarized voiced dental/alveolar lateral approximant.

/ˈlˠː/ 1 Yakut.

Pharyngealized voiced dental/alveolar lateral approximant.

/ˈlˤ/ 1 Shilha.

Breathy voiced dental/alveolar lateral approximant.

/ˈl̤/ 1 Hindi-Urdu.

Laryngealized voiced dental/alveolar lateral approximant.

/ˈl̥/ 4 Sedang, Haida, Yuchi, Wappo.

Voiceless dental/alveolar lateral approximant.

/ˈl̥/ 6 Mongolian, Sedang, Taishan, Burmese, Yao, Chipewyan.

Voiced alveolar lateral approximant.

/l/ 93 (-3) Breton, German, Norwegian, Romanian, Sinhalese, Albanian, Komi, Bashkir, Moro, Kadugli, Kpelle, Bisa, Bambara, Dan, Diola, Temne, Tampilma, Bariba, Lelemi, Amo, Zulu, Teke, Maba, Fur, Luo, Nyangi, Sebei, Tama, Temein, Tabi, Sara, Kunama, Koma, Tigre, Amharic, Neo-Aramaic, Somali, Iraqw, Hamer, Hausa, Angas, Margi, Ngizim, Kanakuru, Maung, Tiwi, Burera, Nunggubuyu, Alawa, Malakmalak, Bardi, Kunjen, Western Desert, Nyangumata, Aranda, Arabana-Wanganura, Diyari, Bandjalang, Saek, Sa'ban, Chamorro, Rukai, Ao, Tiddim Chin, Boro, Karen, Selepet, Navaho, Hupa, Nez Perce, Klamath, Maidu, Wintu, Zoque, Totonac, K'ekchi, Kwak'ala, Quileute, Yacqui, Diegueno, Achumawi, Tunica, Cayapa, Jaqaru, Guahibo,

Araucanian, Telugu, Kota, Malayalam, Brahui; RARE  
Ashuslay; LOAN Otomi, Moxos.

Long voiced alveolar lateral approximant.

/l:/ 1 Somali.

Palatalized voiced alveolar lateral approximant.

/l<sup>j</sup>/ 3 Irish, Lithuanian, Nyangumata.

Velarized voiced alveolar lateral approximant.

/ɫ/ 2 Irish, Albanian.

Pharyngealized voiced alveolar lateral approximant.

/l<sup>q</sup>/ 1 Kurdish.

Laryngealized voiced alveolar lateral approximant.

/l̥/ 4 Tiddim Chin, Nez Perce, Klamath, Kwakw'ala.

Voiceless alveolar lateral approximant.

/l̥/ 1 Klamath.

Palatalized voiceless alveolar lateral approximant.

/l<sup>j</sup>̥/ 1 (-1) ?DERIVED Irish.

Velarized voiceless alveolar lateral approximant.

/ɫ̥/ 1 (-1) ?DERIVED Irish.

Voiced palato-alveolar lateral approximant.

/l̥/ 5 Alawa, Malakmalak, Bardi, Aranda, Cayapa.

Voiced retroflex lateral approximant.

/l̥/ 22 (-1) Norwegian, Punjabi, Ostyak, Kanuri, Mundari, Khasi, Maung, Nunggubuyu, Alawa, Bardi, Western Desert, Nyangumata, Kariera-Ngarluma, Arabana-Wanganura, Diyari, Rukai, Iai, Tarascan, Telugu, Kota, Malayalam; ?DERIVED Tiwi.

Voiceless retroflex lateral approximant.

/l̥̥/ 1 Iai.

Voiced palatal lateral approximant.

// 15 (-2) Spanish, Ostyak, Cheremis, Komi, Tavgy, Kariera-Ngarluma, Arabana-Wanganura, Diyari, Quechua, Jaqaru, Araucanian, Malayalam, Basque; LOAN Osmanli, Guarani.

Velarized voiced palatal lateral approximant.

/k/ 1 Irish.

Voiced velar lateral approximant.

/g/ 1 Yagaria.

Voiced bilabial approximant.

/β/ 6 Hindi-Urdu, Lappish, Lakkia, Kunimaipa, Karok, Telugu.

Long voiced bilabial approximant.

/β:/ 1 Telugu.

Voiced labio-dental approximant.

/v/ 6 Norwegian, Sinhalese, Luvale, Khmer, Malayalam, Ket.

Voiced dental/alveolar approximant.

/"ɹ"/ 1 Andamanese.

Voiced alveolar approximant.

/ɹ/ 11 (-1) Kanakuru, Maung, Burera, Maranungku, Malakmalak, Saek, Iai, Wintu, Diegueno, Wiyot; RARE Tarascan.

Voiced retroflex approximant.

/ɻ/ 15 Tiwi, Nunggubuyu, Alawa, Bardi, Kunjen, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Gugu-Yalanji, Arabana-Wanganura, Diyari, Chamorro, Kan, Wiyot.

Voiced palatal approximant.

/j/ 271 (-1) Greek, Irish, Breton, German, Norwegian, Lithuanian, Russian, Bulgarian, French, Spanish, Romanian, Farsi, Pashto, Kurdish, Hindi-Urdu, Bengali, Kashmiri, Punjabi, Sinhalese, Albanian, E. Armenian, Ostyak, Cheremis, Komi, Finnish, Hungarian, Lappish, Yurak, Tavgy, Osmanli, Chuvash, Yakut, Kirghiz, Bashkir, Tuva, Mongolian, Evenki, Manchu, Korean, Japanese, Katcha, Moro, Kadugli, Kpelle, Bisa, Bambara, Dan, Wolof, Diola, Temne, Dagbani, Senadi, Tampulma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Efik, Birom, Tarok, Amo, Beembe, Swahili, Luvale, Zulu, Teke, Doayo, Gbeya, Zande, Songhai, Kanuri, Maba, Fur, Maasai, Luo, Nyangi, Ik, Sebei, Tama, Temein, Nera, Tabi, Mursi, Logbara, Yulu, Sara, Berta, Kunama, Koma, Arabic, Tigre, Amharic, Hebrew, Socotri, Neo-Aramaic, Shilha, Tuareg, Somali, Awiya, Iraqw, Beja, Kullo, Dizi, Kefa, Hamer, Hausa, Angas, Margi, Ngizim, Kanakuru, Mundari, Vietnamese, Sedang, Khmer, Maung, Tiwi, Burera, Nunggubuyu, Alawa, Maranungku, Malakmalak, Bardi, Wik-Munkan, Kunjen, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Gugu-Yalanji, Mabuiag, Arabana-Wanganura, Diyari, Bandjalang, Standard Thai, Lakkia, Yay, Sui, Saek, Po-ai, Lungchow, Sundanese, Javanese, Malagasy, Cham, Batak, Tagalog, Sa'ban, Chamorro, Rukai, Adzera, Mandarin, Taishan, Changchow, Tamang, Dafla, Burmese, Lahu, Jingpho, Ao, Boro, Karen, Yao, Andamanese, Washkuk, Sentani, Iwam, Telefol, Selepet, Gadsup,



Yagaria, Kewa, Chuave, Pawaiian, Dani, Daribi, Fasu, Suena, Dera, Yareba, Nambakaengo, Haida, Tlingit, Navaho, Chipewyan, Tolowa, Hupa, Nez Perce, Klamath, Maidu, Wintu, Chontal, Zoque, Totonac, K'ekchi, Mixe, Otomi, Mazahua, Mazatec, Chatino, Nootka, Kwakw'ala, Quileute, Squamish, Puget Sound, Papago, Luiseno, Hopi, Yacqui, Tiwa, Karok, Pomo, Diegueno, Achumawi, Yana, Shasta, Tarascan, Zuni, Acoma, Delaware, Tonkawa, Wiyot, Seneca, Dakota, Yuchi, Tunica, Alabama, Wappo, Itonama, Bribri, Cayapa, Paez, Yukaghir, Amahuaca, Tacana, Cashinahua, Ashuslay, Abipon, S. Nambiquara, Arabela, Quechua, Jaqaru, Gununa-Kena, Island Carib, Amuesha, Campa, Guajiro, Moxos, Siriono, Guahibo, Barasano, Siona, Tucano, Jivaro, Cofan, Araucanian, Aleut, Telugu, Kota, Kurukh, Malayalam, Yukaghir, Chukchi, Gilyak, Kabardian, Lak, Burushaski, Ainu, !Xu; ?DERIVED Atayal.

Long voiced palatal approximant.

/j:/ 2 Chuvash, Arabic.

Nasalized voiced palatal approximant.

/j̃/ 2 Yakut, Kharia.

Laryngealized voiced palatal approximant.

/j̥/ 13 Logbara, Hausa, Sui, Haida, Nez Perce, Klamath, Otomi, Mazahua, Nootka, Kwakw'ala, Acoma, Yuchi, Wappo.

Voiceless palatal approximant.

/j̥/ 7 Malagasy, Yao, Klamath, Otomi, Mazahua, Hopi, Aleut.

Lowered voiced palatal approximant.

/ɹ̥/ 1 Khasi.

Mid palatal approximant.

/"e"/ 1 Bengali.

Lower mid back approximant.

/ʌ/ 1 Vietnamese.

Voiced velar approximant.

/ɣ/ 5 Kanakuru, Aranda, Adzera, Wiyot, Cofan.

Nasalized voiced velar approximant.

/ɣ̃/ 1 Japanese.

Voiced uvular approximant.

/ʁ/ 1 E. Armenian.

Voiced labial-palatal approximant.

/ɸ/ 4 Breton, French, Ga, Mandarin.

Voiced labial-velar approximant.

/w/	238 (-5)	Irish, Breton, French, Spanish, Romanian, Farsi, Pashto, Kurdish, Bengali, Kashmiri, Punjabi, Ostyak, Hungarian, Yurak, Chuvash, Bashkir, Korean, Katcha, Moro, Kadugli, Bisa, Bambara, Dan, Wolof, Diola, Temne, Dagbani, Senadi, Tampulma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Efik, Birom, Tarok, Amo, Beembe, Swahili, Luvale, Zulu, Teke, Doayo, Gbeya, Zande, Songhai, Kanuri, Maba, Fur, Maasai, Luo, Nyangi, Ik, Sebei, Tama, Temein, Nera, Tabi, Mursi, Logbara, Yulu, Sara, Berta, Kunama, Koma, Arabic, Tigre, Amharic, Socotri, Shilha, Tuareg, Somali, Awiya, Iraqw, Beja, Kullo, Dizi, Kefa, Hamer, Hausa, Angas, Margi, Ngizim, Kankuru, Mundari, Kharia, Vietnamese, Sedang, Tiwi, Burera, Nunggubuyu, Alawa, Maranungku, Malakmalak, Bardi, Wik-Munkan, Kunjen, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Gugu-Yalanji, Mabuig, Arabana-Wanganura, Diyari, Bandjalang, Standard Thai, Lakkia, Sui, Sundanese, Javanese, Malagasy, Cham, Batak, Tagalog, Sa'ban, Chamorro, Rukai, Iai, Maori, Hawaiian, Mandarin, Taishan, Hakka, Changchow, Tamang, Burmese, Jingpho, Ao, Garo, Karen, Yao, Andamanese, Asmat, Washkuk, Sentani, Iwam, Telefol, Selepet, Kewa, Chuave, Pawaiian, Dani, Daribi, Fasu, Suen, Dera, Yareba, Nambakaengo, Haida, Tlingit, Tolowa, Hupa, Nez Perce, Klamath, Maidu, Wintu, Chontal, Zoque, Tzeltal, Totonac, K'ekchi, Otomi, Mazahua, Chatino, Nootka, Kwakw'ala, Quileute, Squamish, Puget Sound, Papago, Luiseno, Hopi, Yacqui, Tiwa, Pomo, Diegueno, Achumawi, Yana, Shasta, Tarascan, Zuni, Acoma, Delaware, Tonkawa, Wiyot, Seneca, Wichita, Dakota, Yuchi, Tunica, Alabama, Itonama, Bribri, Cayapa, Paez, Carib, Amahuaca, Chacobo, Tacana, Cashinahua, Ashuslay, Abipon, S. Nambiquara, Arabela, Auca, Quechua, Jaqaru, Gununa-Kena, Wapishana, Island Carib, Amuesha, Guajiro, Siriono, Ticuna, Barasano, Siona, Tucano, Jivaro, Cofan, Araucanian, Aleut, Kurukh, Yukaghir, Chukchi, Gilyak, Kabardian, Lak, Burushaski, Ainu, !Xu; RARE Japanese, Navaho; LOAN Lahu; ?DERIVED Atayal, Moxos.
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Long voiced labial-velar approximant.

/w:/	3	Chuvash, Arabic, Delaware.
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Nasalized voiced labial-velar approximant.

/w̃/	1	Breton.
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Laryngealized voiced labial-velar approximant.

/w̥/	14 (-1)	Logbara, Sedang, Sui, Tiddim Chin, Haida, Nez Perce, Klamath, Otomi, Mazahua, Nootka, Kwakw'ala, Acoma, Yuchi; RARE Wichita.
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Voiceless labial-velar approximant.

/m/ 11 (-1) Sedang, Lakkia, Kaliai, Iai, Yao, Klamath, Otomi,  
Mazahua, Hopi, Aleut; RARE Burmese.

Lowered voiced labial-velar approximant.

/ᵐ/ 1 Khasi.

Higher mid voiced labial-velar approximant.

/ᵑ/ 1 Bengali.

9. VOWELS.

High front unrounded vowel.

/i/ 271 (-1) Greek, Breton, Russian, Bulgarian, French, Spanish,  
Romanian, Farsi, Pashto, Kashmiri, Punjabi,  
Albanian, E. Armenian, Ostyak, Cheremis, Komi, Finnish,  
Hungarian, Lappish, Yurak, Tavgy, Osmanli, Chuvash,  
Yakut, Bashkir, Khalaj, Tuva, Mongolian, Goldi,  
Manchu, Korean, Japanese, Katcha, Moro, Kadugli,  
Kpelle, Bisa, Bambara, Dan, Wolof, Diola, Temne,  
Dagbani, Senadi, Tampulma, Bariba, Ewe, Akan, Igbo,  
Ga, Lelemi, Efik, Birom, Tarok, Amo, Beembe, Swahili,  
Luvale, Zulu, Teke, Doayo, Gbeya, Zande, Songhai,  
Kanuri, Maba, Fur, Maasai, Luo, Nubian, Nyangi, Ik,  
Sebei, Tama, Temein, Nera, Tabi, Mursi, Logbara,  
Yulu, Sara, Berta, Kunama, Koma, Amharic, Socotri,  
Neo-Aramaic, Shilha, Tuareg, Somali, Awiya, Beja,  
Kullo, Dizi, Kefa, Hamer, Ngizim, Kanakuru,  
Kharia, Khasi, Sedang, Maung, Tiwi, Burera,  
Maranungku, Malakmalak, Bardi, Wik-Muncan, Kunjen,  
Western Desert, Nyangumata, Aranda, Kariera-  
Ngarluma, Gugu-Yalanji, Mabuig, Arabana-Wanganura,  
Diyari, Bandjalang, Standard Thai, Lakkia, Yay, Sui,  
Saek, Po-ai, Lungchow, Atayal, Sundanese, Javanese,  
Malagasy, Cham, Malay, Batak, Sa'ban, Chamorro, Rukai,  
Tsou, Adzera, Roro, Kaliai, Iai, Maori, Hawaiian,  
Mandarin, Taishan, Hakka, Changchow, Fuchow, Kan,  
Tamang, Dafla, Burmese, Lahu, Jingpho, Ao, Tiddim  
Chin, Garo, Boro, Karen, Yao, Andamanese, Asmat,  
Washkuk, Sentani, Nimboran, Iwam, Telefol, Selepet,  
Gadup, Yagaria, Kewa, Chuave, Pawaian, Dani,  
Wantoat, Daribi, Fasu, Suena, Dera, Kunimaipa, Yareba,  
Koiari, Taoripi, Nasioi, Rotokas, Nambakaengo, Haida,  
Tlingit, Chipewyan, Tolowa, Klamath, Maidu, Wintu,  
Chontal, Zoque, Totonac, K'ekchi, Mixe, Otomi, Mazahua,  
Mazatec, Mixtec, Chatino, Nootka, Kwak'ala, Quileute,  
Papago, Hopi, Yacqui, Tiwa, Karok, Yana, Shasta,  
Tarascan, Zuni, Acoma, Delaware, Tonkawa, Wiyot,  
Seneca, Wichita, Dakota, Yuchi, Tunica, Wappo,  
Itonama, Bribri, Mura, Cayapa, Paez, Ocaina, Muinane,  
Carib, Apinaye, Chacobo, Tacana, Cashinahua, Ashuslay,

Abipon, S. Nambiquara, Arabela, Auca, Jaqaru, Wapishana, Island Carib, Campa, Guajiro, Moxos, Guarani, Siriono, Guahibo, Ticuna, Barasano, Siona, Tucano, Jivaro, Cofan, Araucanian, Greenlandic, Aleut, Telugu, Kota, Kurukh, Malayalam, Ket, Lak, Nama, Burushaski, Ainu, Brahui, !Xu; ?DERIVED Margi.

Long high front unrounded vowel.

/i:/ 42 (-1) Irish, Breton, German, Norwegian, Lithuanian, Kurdish, Hindi-Urdu, Sinhalese, Finnish, Evenki, Korean, Wolof, Dagbani, Fur, Arabic, Tigre, Neo-Aramaic, Tuareg, Iraqw, Hausa, Angas, Khmer, Bardi, Lakkia, Atayal, Adzera, Iai, Yagaria, Navaho, Chipewyan, Tolowa, Totonac, Karok, Ojibwa, Delaware, Tonkawa, Telugu, Kabardian, Lak, Brahui, !Xu; RARE Hungarian.

Overshort high front unrounded vowel.

/ĩ/ 3 Yurak, Po-ai, Lungchow.

Nasalized high front unrounded vowel.

/ĩ̃/ 53 (-1) Bulgarian, Kashmiri, Punjabi, Kpelle, Bambara, Senadi, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Beembe, Doayo, Gbeya, Zande, Sara, Kharia, Changchow, Pawaiian, Dariibi, Fasu, Nambakaengo, Chipewyan, Tolowa, Otomi, Mazahua, Mazatec, Mixtec, Chatino, Tiwa, Dakota, Paez, Ocaina, Apinaye, Cashinahua, S. Nambiquara, Auca, Wapishana, Island Carib, Guajiro, Guarani, Siriono, Guahibo, Ticuna, Barasano, Siona, Tucano, Jivaro, Kurukh, Nama, !Xu; RARE Karok.

Long nasalized high front unrounded vowel.

/ĩ̃:/ 8 Irish, Hindi-Urdu, Lakkia, Navaho, Chipewyan, Tolowa, Ojibwa, Delaware.

High front unrounded vowel with velar stricture.

/i̠/ 1 (-1) OBSCURE Siriono.

Nasalised high front unrounded vowel with velar stricture.

/ĩ̠̃/ 1 (-1) OBSCURE Siriono.

Pharyngealized high front unrounded vowel.

/i̠̤/ 1 Neo-Aramaic.

Long pharyngealized high front unrounded vowel.

/i̠̤:/ 1 Evenki, Neo-Aramaic.

Breathy voiced high front unrounded vowel.

/i̠̥/ 1 Tamang.

Laryngealized high front unrounded vowel.

/i̠̥̥/ 1 Sedang, S. Nambiquara.

Laryngealized nasalized high front unrounded vowel.

/ɲ̥/ 1 S. Nambiquara.

Voiceless high front unrounded vowel.

/j̥/ 1 Ik, Dafla.

High front rounded vowel.

/y/ 21 Breton, French, Albanian, Cheremis, Finnish, Hungarian, Tavgy, Osmanli, Chuvash, Yakut, Kirghiz, Bashkir, Khalaj, Tuva, Korean, Iai, Mandarin, Changchow, Fuchow, Kan, Tzeltal.

Long high front rounded vowel.

/y:/ 5 Breton, German, Norwegian, Finnish; RARE Hungarian.

Lowered high front unrounded vowel.

/ɨ/ 54 (-1) Irish, German, Norwegian, Lithuanian, Kurdish, Hindi-Urdu, Bengali, Punjabi, Sinhalese, Azerbaijani, Kirghiz, Evenki, Kpelle, Diola, Tampulma, Akan, Amo, Zande, Maasai, Luo, Ik, Tama, Tabi, Logbara, Kunama, Arabic, Hebrew, Somali, Iraqw, Hausa, Angas, Mundari, Vietnamese, Khmer, Nunggubuyu, Alawa, Tagalog, Dani, Navaho, Nez Perce, Tzeltal, Puget Sound, Luiseno, Pomo, Diegueno, Ojibwa, Amahuaca, Quechua, Yukaghir, Chukchi, Gilyak, Georgian, Basque; ?DERIVED Hupa.

Long lowered high front unrounded vowel.

/ɨ:/ 1 Mongolian.

Nasalized lowered high front rounded vowel.

/ɨ̃/ 9 Irish, Hindi-Urdu, Bengali, Punjabi, Kpelle, Akan, Burmese, Navaho, Amahuaca.

Pharyngealized lowered high front unrounded vowel.

/ɨ̠/ 2 Evenki, Hamer.

Lowered high front rounded vowel.

/Y/ 3 German, Norwegian, Azerbaijani.

Higher mid front unrounded vowel.

/e/ 82 (-1) French, Romanian, Farsi, Kashmiri, Mongolian, Goldi, Korean, Katcha, Bisa, Bambara, Dan, Wolof, Diola, Temne, Senadi, Tampulma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Efik, Birom, Amo, Swahili, Luvale, Doayo, Gbeya, Maba, Fur, Maasai, Nyangi, Ik, Sebei, Tama, Temein, Tabi, Sara, Koma, Hamer, Kharia, Vietnamese, Sedang, Standard Thai, Lakkia, Saek, Po-ai, Javanese, Cham, Malay, Iai, Amoy, Tamang, Burmese, Lahu, Ao, Garo, Boro, Karen, Yao, Asmat, Washkuk, Sentani, Kunimaipa, Chipewyan, Otomi, Mazahua, Squamish, Tiwa, Seneca, Yuchi, Tunica, Alabama, Apinaye,

Campa, Guarani, Siriono, Telugu, Chukchi, Nama, Brahui;  
RARE Logbara.

Long higher mid front unrounded vowel.

/e:/ 23 (-1) Irish, German, Norwegian, Lithuanian, Hindi-  
Urdu, Sinhalese, Hungarian, Mongolian, Korean, Wolof,  
Dagbani, Arabic, Iraqw, Khmer, Iai, Gadsup, Karok,  
Diegueno, Tonkawa, Wichita, Telugu, Brahui;  
?DERIVED Finnish.

Nasalized higher mid front unrounded vowel.

/ẽ/ 9 Kashmiri, Bambara, Ewe, Igbo, Zande, Mazahua, Tiwa,  
Guarani, Siriono.

Long nasalized higher mid front unrounded vowel.

/ẽ:/ 2 Irish, Hindi-Urdu.

Higher mid retracted front unrounded vowel.

/e̠/ 1 Karen.

Breathy voiced higher mid front unrounded vowel.

/ḛ/ 1 Tamang.

Laryngealized higher mid front unrounded vowel.

/ḛ̰/ 1 Sedang.

Higher mid front rounded vowel.

/ø/ 15 (-1) Breton, Cheremis, Finnish, Hungarian, Azerbaijani,  
Kirghiz, Bashkir, Khalaj, Tuva, Manchu, Korean, Wolof,  
Hopi, Gilyak; OBSCURE Guajiro.

Long higher mid front rounded vowel.

/ø:/ 6 (-2) Breton, German, Norwegian, Hungarian; RARE Akan;  
?DERIVED Finnish.

Overshort higher mid front rounded vowel.

/ø̥/ 1 Chuvash.

Nasalized higher mid front rounded vowel.

/ø̃/ 1 OBSCURE Guajiro.

Mid front unrounded vowel.

/"e"/ 113 (-2) Irish, Breton, Norwegian, Spanish, Bengali,  
Sinhalese, Albanian, Ostyak, Komi, Lappish, Yurak,  
Tavgy, Chuvash, Tuva, Manchu, Moro, Kadugli,  
Tarok, Teke, Zande, Songhai, Kanuri, Luo, Nubian,  
Nera, Mursi, Yulu, Berta, Kunama, Amharic, Socotri,  
Neo-Aramaic, Tuareg, Somali, Awiya, Beja, Kullo,  
Dizi, Kefa, Hausa, Angas, Kanakuru, Mundari, Khasi,  
Malakmalak, Mabuiag, Sui, Lungchow, Malagasy,  
Chamorro, Tsou, Roro, Kaliai, Lahu, Jingpho,  
Andamanese, Nimboran, Iwam, Kewa, Chuave, Dani,

Wantoat, Daribi, Fasu, Dera, Yareba, Koiari, Taoripi, Rotokas, Nambakaengo, Tlingit, Tolowa, Hupa, Klamath, Maidu, Wintu, Chontal, Tzeltal, K'ekchi, Mixe, Mixtec, Chatino, Luiseno, Yacqui, Achumawi, Yana, Shasta, Wiyot, Wappo, Itonama, Bribri, Tacana, Ashuslay, Abipon, S. Nambiquara, Arabela, Auca, Gununa-Kena, Island Carib, Guahibo, Ticuna, Barasano, Siona, Tucano, Kota, Kurukh, Malayalam, Georgian, Basque, Burushaski, !Xu; RARE Alawa, Bandjalang.

Long mid front unrounded vowel.

/"e:"/ 10 Pashto, Kurdish, Tigre, Tuareg, Hausa, Ngizim, Tolowa, Hupa, Kabardian, !Xu.

Overshort mid front unrounded vowel.

/"e̞"/ 1 Ostyak.

Nasalized front mid unrounded vowel.

/"ẽ"/ 22 (-2) Irish, Bengali, Punjabi, Dan, Zande, Sara, Daribi, Fasu, Zoque, Chatino, Yuchi, Bribri, S. Nambiquara, Auca, Island Carib, Guahibo, Barasano, Siona, Tucano, Kurukh; RARE Songhai, Mixtec.

Pharyngealized mid front unrounded vowel.

/"e̠"/ 3 (-1) Neo-Aramaic, Hamer; ?DERIVED Lak.

Laryngealized mid front unrounded vowel.

/"e̜"/ 1 S. Nambiquara.

Laryngealized nasalized front mid unrounded vowel.

/"ẽ̜"/ 1 S. Nambiquara.

Voiceless mid front unrounded vowel.

/"e̥"/ 1 Ik.

Lower mid front unrounded vowel.

/ɛ/ 116 (-5) Greek, German, Russian, Bulgarian, Cheremis, Finnish, Hungarian, Osmanli, Azerbaijani, Yakut, Kirghiz, Evenki, Japanese, Katcha, Kpelle, Bambara, Dan, Wolof, Diola, Temne, Senadi, Tampilma, Bariba, Ewe, Igbo, Ga, Lelemi, Efik, Birom, Amo, Beembe, Zulu, Doayo, Gbeya, Maba, Fur, Maasai, Nyangi, Ik, Tama, Temein, Tabi, Logbara, Sara, Koma, Hebrew, Somali, Iraqw, Angas, Vietnamese, Sedang, Khmer, Maung, Burera, Wik-Munkan, Kunjen, Lakkia, Yay, Saek, Po-ai, Atayal, Sundanese, Javanese, Cham, Batak, Sa'ban, Maori, Hawaiian, Hakka, Fuchow, Kan, Dafla, Burmese, Tiddim Chin, Karen, Andamanese, Washkuk, Sentani, Selepet, Yagaria, Pawaian, Suena, Nasioi, Navaho, Zoque, Mazahua, Mazatec, Nootka, Kwakw'ala, Pomo, Tarascan, Zuni, Acoma, Delaware,

Tonkawa, Wichita, Dakota, Tunica, Cayapa, Paez, Ocaina, Muinane, Carib, Apinaye, Guajiro, Moxos, Cofan, Araucanian, Yukaghir, Chukchi, Ainu; RARE French, Karok; LOAN Margi, Quechua; ?DERIVED Iai.

Long lower mid front unrounded vowel.

/ɛ:/ 12 (-2) Breton, German, Evenki, Wolof, Khmer, Lakkia, Telefol, Navaho, Ojibwa, Wichita; RARE French; ?DERIVED Iai.

Overshort lower mid front unrounded vowel.

/ɛ̞/ 1 Po-ai.

Nasalized lower mid front unrounded vowel.

/ɛ̃/ 20 Bulgarian, Kpelle, Bambara, Senadi, Bariba, Ewe, Igbo, Ga, Lelemi, Beembe, Doayo, Kharia, Lakkia, Pawaian, Navaho, Mazatec, Seneca, Paez, Apinaye, Guajiro.

Long nasalized lower mid front unrounded vowel.

/ɛ̃:/ 4 (-1) Lakkia, Navaho, Ojibwa; LOAN Breton.

Laryngealized lower mid front unrounded vowel.

/ɛ̰/ 1 Sedang.

Lower mid front rounded vowel.

/œ/ 7 German, Norwegian, French, Osmanli, Yakut, Iai, Fuchow.

Long lower mid front rounded vowel.

/œ:/ 1 (-1) RARE Akan.

Nasalized lower mid front rounded vowel.

/œ̃/ 1 French.

Raised low front unrounded vowel.

/æ/ 39 (-5) Norwegian, Bengali, Punjabi, Ostyak, Finnish, Tavgy, Bashkir, Korean, Dan, Luo, Shilha, Tuareg, Somali, Vietnamese, Maranungku, Standard Thai, Chamorro, Iai, Taishan, Burmese, Yao, Andamanese, Wantoat, Nambakaengo, Nez Perce, Totonac, Mixe, Otomi, Hopi, Seneca, Yuchi, Auca, Ket, Gilyak; RARE Hungarian, Quileute; ?DERIVED Lithuanian, Awiya, Hakka.

Long raised low front unrounded vowel.

/æ:/ 10 Norwegian, Lithuanian, Sinhalese, Finnish, Korean, Arabic, Tuareg, Iai, Delaware, Telugu.

Nasalized raised low front unrounded vowel.

/æ̃/ 8 French, Bengali, Punjabi, Gbeya, Changchow, Nambakaengo, Otomi, Auca.



Long nasalized raised low front unrounded vowel.

/ä:~ / 1 Delaware.

Pharyngealized raised low front unrounded vowel.

/æ̠ / 1 Lak.

Low front unrounded vowel.

/a / 14 Breton, Russian, French, Farsi, Sinhalese, Azerbaijani, Kpelle, Khmer, Sentani, Pawaian, Acoma, Cashinahua, Yukaghir, Georgian.

Long low front unrounded vowel.

/a: / 5 Tigre, Vietnamese, Khmer, Gadsup, Kabardian.

Nasalized low front unrounded vowel.

/ã / 3 Dan, Pawaian, Cashinahua.

High central unrounded vowel.

/ɨ / 40 Romanian, Kurdish, Kashmiri, Komi, Lappish, Tavgy, Tuva, Dan, Kanuri, Amharic, Awiya, Standard Thai, Saek, Po-ai, Sundanese, Cham, Sa'ban, Rukai, Lahu, Washkuk, Nimboran, Maidu, Mixe, Otomi, Papago, Acoma, Itonama, Muinane, Chacobo, Abipon, Gununa-Kena, Wapishana, Guarani, Ticuna, Barasano, Siona, Tucano, Cofan, Ket, Kabardian.

Long high central unrounded vowel.

/ɨ: / 2 Angas, Khmer.

Overshort high central unrounded vowel.

/ɨ̥ / 3 Kashmiri, Sebei, Po-ai.

Nasalized high central unrounded vowel.

/ɨ̃ / 7 Kashmiri, Wapishana, Guarani, Ticuna, Barasano, Siona, Tucano.

Overshort nasalized high central unrounded vowel.

/ɨ̥̃ / 1 Kashmiri.

Retroflexed high central unrounded vowel.

/ɨ̠ / 1 Tarascan.

High central rounded vowel.

/ɥ / 6 Norwegian, Ostyak, Mongolian, Yay, Tsou, Nambakaengo.

Long high central rounded vowel.

/ɥ: / 2 Norwegian, Mongolian.

Overshort high central rounded vowel.

/ɥ̥ / 1 Sebei.

Lowered high central unrounded vowel.

/ɨ/ 3 (-1) Kirghiz, Karen; LOAN Hindi-Urdu.

Lowered high central rounded vowel.

/ɥ/ 1 Somali.

Higher mid central unrounded vowel.

/ə/ 6 (-1) Goldi, Dan, Khmer, Standard Thai, Lahu; RARE Iraqw.

Retroflexed higher mid central unrounded vowel.

/ɘ/ 1 Mandarin.

Mid central unrounded vowel.

/"ə"/ 67 (-1) Breton, German, Norwegian, Romanian, Pashto, Kurdish, Kashmiri, Punjabi, Albanian, E. Armenian, Cheremis, Komi, Tavgy, Bashkir, Diola, Temne, Tarok, Fur, Tabi, Sara, Koma, Tigre, Amharic, Socotri, Tuareg, Hausa, Margi, Kanakuru, Khmer, Maranungku, Malakmalak, Yay, Sui, Saek, Po-ai, Sundanese, Javanese, Cham, Malay, Tagalog, Sa'ban, Changchow, Kan, Burmese, Boro, Asmat, Sentani, Iwam, Wantoat, Dera, Nambakaengo, Tolowa, Chontal, Mixe, Otomi, Mazahua, Kwakw'ala, Squamish, Puget Sound, Tiwa, Diegueno, Achumawi, Delaware, Gununa-Kena, Kurukh, Nama; ?DERIVED Sinhalese.

Long mid central unrounded vowel.

/"ə:"/ 2 (-1) Khmer; LOAN Sinhalese.

Overshort mid central unrounded vowel.

/"ə̞"/ 3 Sebei, Chukchi, Georgian.

Nasalized mid central unrounded vowel.

/"ə̃"/ 8 Kashmiri, Punjabi, Dan, Sara, Nambakaengo, Mazahua, Tiwa, Guahibo.

Long nasalized mid central unrounded vowel.

/"ə̃:"/ 1 Delaware.

Mid central rounded vowel.

/"e"/ 5 Ostyak, Mongolian, Somali, Ket, Yukaghir.

Long mid central rounded vowel.

/"e:"/ 1 Mongolian.

Overshort mid central rounded vowel.

/"e̞"/ 2 Ostyak, Sebei.

Lower mid central unrounded vowel. Hindi-Urdu, Dan, Zande, Logbara, Tigre,

/ɜ/ 10 Iraqw, Sui, Gadsup, Telugu, Kabardian.

Nasalized lower mid central unrounded vowel.

/ẽ/            2            Hindi-Urdu, Zande.

Raised low central unrounded vowel.

/e/            6            German, Amo, Tuareg, Dizi, Mazahua, Carib.

Overshort raised low central unrounded vowel.

/ẽ̆/            1 (-1)        RARE Sebei

Pharyngealized raised low central unrounded vowel.

/ĕ̠/            1            Hamer.

Low central unrounded vowel.

/a/            272            Irish, Lithuanian, Spanish, Romanian, Bengali, Kashmiri, Punjabi, Sinhalese, Albanian, E. Armenian, Ostyak, Komi, Finnish, Lappish, Yurak, Tavgy, Osmanli, Yakut, Kirghiz, Khalaj, Evenki, Goldi, Manchu, Korean, Japanese, Moro, Kadugli, Kpelle, Bisa, Bambara, Dan, Wolof, Diola, Temne, Dagbani, Senadi, Tampulma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Efik, Birom, Tarok, Amo, Beembe, Swahili, Luvale, Zulu, Teke, Doayo, Gbeya, Zande, Songhai, Kanuri, Maba, Fur, Maasai, Luo, Nubian, Nyangi, Ik, Sebei, Tama, Temein, Nera, Tabi, Mursi, Logbara, Yulu, Sara, Berta, Kunama, Koma, Arabic, Amharic, Hebrew, Socotri, Neo-Aramaic, Somali, Awiya, Iraqw, Beja, Kullo, Dizi, Kefa, Hausa, Angas, Margi, Ngizim, Kanakuru, Mundari, Kharia, Khasi, Sedang, Maung, Tiwi, Burera, Nunggubuyu, Alawa, Maranungku, Malakmalak, Bardi, Wik-Munkan, Kunjen, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Gugu-Yalanji, Mabuig, Arabana-Wanganura, Diyari, Bandjalang, Standard Thai, Lakkia, Yay, Sui, Saek, Po-ai, Lungchow, Atayal, Sundanese, Javanese, Malagasy, Cham, Malay, Batak, Sa'ban, Rukai, Tsou, Adzera, Roro, Kaliai, Hawaiian, Mandarin, Taishan, Hakka, Changchow, Amoy, Fuchow, Kan, Tamang, Burmese, Lahu, Jingpho, Ao, Tiddim Chin, Garo, Boro, Karen, Yao, Andamanese, Asmat, Washkuk, Nimboran, Iwam, Telefol, Selepet, Yagaria, Kewa, Chuave, Dani, Wantoat, Daribi, Fasu, Suená, Dera, Kunimaipa, Yareba, Koiari, Taoripi, Nasioi, Rotokas, Nambakaengo, Haida, Tlingit, Navaho, Chipewyan, Tolowa, Hupa, Nez Perce, Klamath, Maidu, Wintu, Chontal, Zoque, Tzeltal, K'ekchi, Mixe, Otomi, Mazahua, Mazatec, Mixtec, Chatino, Nootka, Kwakw'ala, Quileute, Squamish, Puget Sound, Papago, Luiseno, Hopi, Yacqui, Karok, Pomo, Diegueno, Achumawi, Yana, Shasta, Tarascan, Zuni, Ojibwa, Delaware, Tonkawa, Wiyot, Seneca, Wichita, Dakota, Yuchi, Tunica, Alabama, Wappo, Itonama, Bribri, Mura, Paez, Ocaina, Muinane, Apinaye, Amahuaca, Chacobo, Tacana, Ashuslay, Abipon, S. Nambiquara,

Arabela, Auca, Quechua, Jaqaru, Gununa-Kena, Wapishana, Island Carib, Amuesha, Campa, Guajiro, Moxos, Guarani, Siriono, Guahibo, Ticuna, Barasano, Siona, Tucano, Jivaro, Cofan, Araucanian, Greenlandic, Aleut, Kota, Kurukh, Malayalam, Ket, Chukchi, Lak, Nama, Basque, Burushaski, Ainu, Brahui, !Xu.

Long low central unrounded vowel.

/a:/ 36 (-1) German, Lithuanian, Kurdish, Hindi-Urdu, Sinhalese, Finnish, Hungarian, Evenki, Korean, Wolof, Dagbani, Fur, Neo-Aramaic, Angas, Ngizim, Khasi, Bardi, Lakkia, Yay, Adzera, Yao, Telefol, Navaho, Chipewyan, Tolowa, Hupa, Totonac, Karok, Diegueno, Ojibwa, Delaware, Tonkawa, Telugu, Lak, !Xu; ?DERIVED Sa'ban.

Overshort low central unrounded vowel.

/ǎ/ 3 Yurak, Po-ai, Lungchow.

Nasalized low central unrounded vowel.

/ã/ 55 (-3) Irish, Bengali, Kashmiri, Punjabi, Kpelle, Bambara, Dan, Senadi, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Beembe, Doayo, Gbeya, Zande, Sara, Kharia, Lakkia, Daribi, Fasu, Nambakaengo, Navaho, Chipewyan, Tolowa, Otomi, Mazahua, Mazatec, Mixtec, Dakota, Bribri, Paez, Ocaina, Apinaye, Amahuaca, S. Nambiquara, Auca, Wapishana, Island Carib, Guajiro, Guarani, Siriono, Guahibo, Ticuna, Siona, Tucano, Jivaro, Kurukh, Nama, !Xu; RARE Songhai, Logbara, Karok.

Long nasalized low central unrounded vowel.

/ã:/ 8 Hindi-Urdu, Lakkia, Navaho, Chipewyan, Tolowa, Ojibwa, Delaware, !Xu.

Retroflexed low central unrounded vowel.

/ạ/ 1 (-1) ?DERIVED Mandarin.

Pharyngealized low central unrounded vowel.

/a<sup>̠</sup>/ 2 Neo-Aramaic, !Xu.

Long pharyngealized low central unrounded vowel.

/a<sup>̠</sup>:/ 2 Neo-Aramaic, !Xu.

Nasalized pharyngealized low central unrounded vowel.

/ã<sup>̠</sup>/ 1 !Xu.

Long nasalized pharyngealized low central unrounded vowel.

/ã<sup>̠</sup>:/ 1 !Xu.

Breathy voiced low central unrounded vowel.

/a̰/ 1 Tamang.

Laryngealized low central unrounded vowel.

/a/ 2 Sedang, S. Nambiquara.

Laryngealized nasalized low central unrounded vowel.

/ã/ 1 S. Nambiquara.

Voiceless low central unrounded vowel.

/ḁ/ 1 Ik.

Overshort low central rounded vowel.

/ɔ̥/ 1 (-1) RARE Sebei.

High back unrounded vowel.

/u/ 20 Ostyak, Osmanli, Chuvash, Yakut, Korean, Japanese, Lungchow, Adzera, Dafla, Ao, Nimboran, Nez Perce, Ocaina, Carib, Apinaye, Amahuaca, Cashinahua, Jaqaru, Jivaro, Araucanian.

Long high back unrounded vowel.

/u:/ 1 Korean.

Overshort high back unrounded vowel.

/u̥/ 1 Lungchow.

Nasalized high back unrounded vowel.

/ũ/ 5 Apinaye, Amahuaca, Cashinahua, Abipon, Jivaro.

High back rounded vowel.

/u/ 253 (-1) Greek, Breton, Norwegian, Russian, Bulgarian, French, Spanish, Romanian, Farsi, Pashto, Kashmiri, Punjabi, Albanian, E. Armenian, Ostyak, Cheremis, Komi, Finnish, Hungarian, Lappish, Yurak, Tavgy, Osmanli, Chuvash, Yakut, Bashkir, Khalaj, Tuva, Evenki, Goldi, Manchu, Korean, Katcha, Moro, Kadugli, Kpelle, Bisa, Bambara, Dan, Wolof, Temne, Dagbani, Senadi, Tampulma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Efik, Birom, Tarok, Amo, Beembe, Swahili, Luvale, Zulu, Teke, Doayo, Gbeya, Zande, Songhai, Kanuri, Maba, Fur, Maasai, Luo, Nubian, Nyangi, Ik, Tama, Temein, Nera, Tabi, Mursi, Logbara, Yulu, Sara, Berta, Kunama, Koma, Amharic, Socotri, Neo-Aramaic, Tuareg, Awiya, Beja, Kullo, Dizi, Kefa, Hamar, Angas, Margi, Ngizim, Kanakuru, Kharia, Khasi, Sedang, Maung, Tiwi, Burera, Malakmalak, Bardi, Kunjen, Western Desert, Nyangumata, Aranda, Kariera-Ngarluma, Gugu-Yalanji, Mabuiag, Arabana-Wanganura, Diyari, Bandjalang, Standard Thai, Lakkia, Yay, Sui, Saek, Po-ai, Lungchow, Atayal, Sundanese, Javanese, Cham, Malay, Batak, Sa'ban, Chamorro, Rukai, Tsou, Roro, Kaliai, Iai, Maori, Hawaiian, Mandarin, Taishan, Hakka, Changchow, Amoy, Fuchow, Kan, Tamang, Dafla, Burmese, Lahu, Jingpho, Ao, Tiddim Chin, Garo,

Boro, Karen, Yao, Andamanese, Asmat, Washkuk, Sentani, Iwam, Telefol, Selepet, Gadsup, Yagaria, Kewa, Chuave, Pawaian, Dani, Wantoat, Daribi, Fasu, Suena, Dera, Kunimaipa, Yareba, Koiari, Taoripi, Nasioi, Rotokas, Nambakaengo, Tlingit, Chipewyan, Tolowa, Maidu, Wintu, Chontal, Zoque, Totonac, K'ekchi, Mixe, Otomi, Mazahua, Mixtec, Chatino, Kwakw'ala, Quileute, Papago, Yacqui, Tiwa, Achumawi, Yana, Shasta, Tarascan, Zuni, Acoma, Delaware, Tonkawa, Wiyot, Wichita, Dakota, Yuchi, Tunica, Wappo, Itonama, Bribri, Paez, Muinane, Carib, Apinaye, Cashinahua, Ashuslay, S. Nambiquara, Arabela, Gununa-Kena, Wapishana, Island Carib, Guajiro, Moxos, Guarani, Siriono, Guahibo, Ticuna, Barasano, Siona, Tucano, Jivaro, Araucanian, Greenlandic, Aleut, Telugu, Kota, Kurukh, Malayalam, Ket, Yukaghir, Chukchi, Gilyak, Lak, Nama, Basque, Burushaski, Ainu, Brahui, !Xu; RARE Seneca.

Long high back rounded vowel.

/u:/ 38 (-1) Irish, Breton, German, Norwegian, Lithuanian, Kurdish, Hindi-Urdu, Sinhalese, Finnish, Hungarian, Evenki, Korean, Wolof, Dagbani, Fur, Arabic, Tigre, Neo-Aramaic, Tuareg, Iraqw, Hausa, Khmer, Bardi, Lakkia, Atayal, Iai, Telefol, Chipewyan, Tolowa, Totonac, Delaware, Tonkawa, Telugu, Kabardian, Lak, Brahui, !Xu; RARE Angas.

Overshort high back rounded vowel.

/u/ 4 Yurak, Sebei, Po-ai, Lungchow.

Nasalized high back rounded vowel.

/ũ/ 51 (-2) Bulgarian, Kashmiri, Punjabi, Kpelle, Bambara, Dan, Senadi, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Beembe, Doayo, Gbeya, Zande, Sara, Kharia, Lakkia, Pawaian, Daribi, Fasu, Nambakaengo, Chipewyan, Tolowa, Otomi, Mazahua, Mixtec, Chatino, Dakota, Bribri, Paez, Apinaye, Cashinahua, Wapishana, Island Carib, Guajiro, Guarani, Siriono, Guahibo, Ticuna, Barasano, Siona, Tucano, Jivaro, Kurukh, Nama, !Xu; RARE Songhai, Tiwa.

Long nasalized high back rounded vowel.

/ũ:/ 7 Irish, Hindi-Urdu, Lakkia, Chipewyan, Hupa, Delaware, !Xu.

Pharyngealized high back rounded vowel.

/u<sup>̠</sup>/ 1 Neo-Aramaic.

Long pharyngealized high back rounded vowel.

/u<sup>̠</sup>:/ 1 Neo-Aramaic.

Breathy voiced high back rounded vowel.

/u̥/ 1 Tamang.

Laryngealized high back rounded vowel.

/ṵ/ 2 Sedang, S. Nambiguara.

Voiceless high back rounded vowel.

/u̥/ 2 Ik, Dafla.

Lowered high back unrounded vowel.

/u̯/ 4 Vietnamese, Nunggubuyu, Alawa, Mandarin.

Lowered high back rounded vowel.

/o/ 47 Irish, German, Lithuanian, Kurdish, Hindi-Urdu, Bengali, Punjabi, Sinhalese, Azerbaijani, Kirghiz, Mongolian, Kpelle, Diola, Tampilma, Akan, Igbo, Amo, Zande, Maasai, Luo, Tama, Logbara, Kunama, Arabic, Hebrew, Somali, Iraqw, Hausa, Mundari, Vietnamese, Khmer, Maranungku, Wik-Munkan, Tagalog, Dani, Kunimaipa, Haida, Tzeltal, Puget Sound, Luiseno, Karok, Pomo, Diegueno, Ojibwa, Cayapa, Quechua, Georgian, Brahui.

Long lowered high back rounded vowel.

/o:/ 1 Karok.

Nasalized lowered high back rounded vowel.

/õ/ 7 Irish, Hindi-Urdu, Bengali, Punjabi, Akan, Igbo, Burmese.

Pharyngealized lowered high back rounded vowel.

/o̠/ 2 Evenki, Hamar.

Long pharyngealized lowered high back rounded vowel.

/o̠:/ 1 Evenki.

Higher mid back unrounded vowel.

/ɤ/ 4 Vietnamese, Hopi, Apinaye, Gilyak.

Higher mid fronted back unrounded vowel.

/ɤ̟/ 1 Azerbaijani.

Higher mid back rounded vowel.

/o/ 88 (-1) Romanian, Farsi, Bengali, Kashmiri, Komi, Finnish, Hungarian, Azerbaijani, Kirghiz, Khalaj, Goldi, Korean, Katcha, Bisa, Bambara, Dan, Diola, Temne, Senadi, Tampilma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Efik, Birom, Amo, Swahili, Luvale, Doayo, Gbeya, Songhai, Maba, Fur, Maasai, Nyangi, Ik, Sebei, Tama, Temein, Tabi, Sara, Koma, Hamar, Sedang, Standard Thai, Saek, Javanese, Malagasy, Cham, Malay, Iai, Amoy, Tamang, Burmese, Lahu, Ao, Garo, Boro,

Karen, Yao, Selepet, Nasioi, Chipewyan, Mixe, Otomi, Mazahua, Mazatec, Nootka, Squamish, Tiwa, Tarascan, Dakota, Yuchi, Tunica, Alabama, Ocaina, Apinaye, Amuesha, Campa, Guarani, Siriono, Barasano, Telugu, Nama; RARE Logbara.

Long higher mid back rounded vowel.

/o:/ 25 (-2) Irish, Breton, German, Lithuanian, Hindi-Urdu, Sinhalese, Hungarian, Korean, Wolof, Dagbani, Arabic, Iraqw, Khmer, Iai, Gadsup, Navaho, Karok, Diegueno, Ojibwa, Tonkawa, Wichita, Telugu, Brahui; RARE French; ?DERIVED Finnish.

Overshort higher mid back rounded vowel.

/o/ 1 Po-ai.

Nasalized higher mid back rounded vowel.

/õ/ 17 (-1) French, Bengali, Kashmiri, Bambara, Ewe, Igbo, Zande, Lakkia, Mazahua, Mazatec, Tiwa, Ocaina, Apinaye, Guarani, Siriono, Barasano; RARE Songhai.

Long nasalized higher mid back rounded vowel.

/õ:/ 4 Irish, Hindi-Urdu, Navaho, Ojibwa.

Pharyngealized higher mid back rounded vowel.

/o̠/ 1 Lak.

Breathy voiced higher mid back rounded vowel.

/o̤/ 1 Tamang.

Laryngealized higher mid back rounded vowel.

/o̜/ 1 Sedang.

Mid back unrounded vowel.

/"ɣ"/ 6 Bulgarian, Bashkir, Korean, Moro, Nimboran, Island Carib.

Long mid back unrounded vowel.

/"ɣ:"/ 1 Korean.

Nasalized mid back unrounded vowel.

/"ɣ̃"/ 2 Bulgarian, Island Carib.

Nasalized mid fronted back unrounded vowel.

/"ɣ̃̄"/ 1 Zoque.

Mid back rounded vowel.

/"o"/ 133 (-3) Irish, Breton, Russian, Spanish, Punjabi, Sinhalese, Albanian, E. Armenian, Ostyak, Cheremis, Lappish, Yurak, Tavgy, Osmanli, Bashkir, Tuva, Mongolian, Evenki, Manchu, Moro, Kadugli, Tarok, Teke, Zande, Kanuri, Luo, Nubian, Nera, Mursi,



Yulu, Berta, Kunama, Amharic, Hebrew, Socotri, Neo-Aramaic, Tuareg, Awiya, Beja, Kullo, Dizi, Kefa, Hausa, Angas, Margi, Kanakuru, Mundari, Kharia, Khasi, Vietnamese, Malakmalak, Kunjen, Mabuiag, Sui, Lungchow, Sundanese, Batak, Chamorro, Tsou, Adzera, Roro, Kaliai, Maori, Hawaiian, Changchow, Kan, Jingpho, Andamanese, Washkuk, Iwam, Yagara, Kewa, Chuave, Pawaian, Dani, Wantoat, Daribi, Fasu, Dera, Yareba, Koiari, Taoripi, Rotokas, Nambakaengo, Tlingit, Hupa, Klamath, Maidu, Wintu, Chontal, Zoque, Tzeltal, K'ekchi, Mixtec, Chatino, Luiseno, Yacqui, Achumawi, Yana, Wiyot, Seneca, Wappo, Itonama, Bribri, Mura, Muinane, Amahuaca, Chacobo, Tacana, Ashuslay, Abipon, S. Nambiquara, Arabela, Auca, Gununa-Kena, Guahibo, Ticuna, Siona, Tucano, Cofan, Kota, Kurukh, Malayalam, Yukaghir, Chukchi, Gilyak, Georgian, Basque, Burushaski, !Xu; RARE Tigre; LOAN Chuvash; ?DERIVED Telugu.

Long mid back rounded vowel.

/"o:"/ 13 Norwegian, Pashto, Kurdish, Mongolian, Manchu, Tigre, Tuareg, Hausa, Ngizim, Adzera, Hupa, Kabardian, !Xu.

Overshort mid back rounded vowel.

/"ø"/ 1 Ostyak.

Nasalized mid back rounded vowel.

/"ø̃"/ 24 Irish, Punjabi, Dan, Zande, Sara, Kharia, Changchow, Pawaian, Daribi, Fasu, Nambakaengo, Mixtec, Chatino, Yuchi, Bribri, Amahuaca, S. Nambiquara, Auca, Guahibo, Ticuna, Siona, Tucano, Kurukh, !Xu.

Pharyngealized mid back rounded vowel.

/"o̠"/ 2 Neo-Aramaic, !Xu.

Long pharyngealized mid back rounded vowel.

/"o̠:"/ 1 !Xu.

Laryngealized mid back rounded vowel.

/"o̜"/ 1 S. Nambiquara.

Laryngealized nasalized mid back rounded vowel.

/"ø̜̃"/ 1 S. Nambiquara.

Voiceless mid back rounded vowel.

/"o̥"/ 1 Ik.

Lower mid back unrounded vowel.

/ɨ/ 4 Cheremis, Vietnamese, Dafla, Apinaye.

Nasalized lower mid back unrounded vowel.

/ɨ̃/ 1 Apinaye.

Lower mid back rounded vowel.

/ɔ/ 100 (-3) Greek, German, Lithuanian, Bulgarian, French, Bengali, Yakut, Mongolian, Evenki, Japanese, Katcha, Kpelle, Bisa, Bambara, Dan, Wolof, Diola, Temne, Senadi, Tampilma, Bariba, Ewe, Akan, Igbo, Ga, Lelemi, Efik, Birom, Amo, Beembe, Zulu, Doayo, Gbeya, Maba, Fur, Maasai, Nyangi, Ik, Sebei, Tama, Temein, Tabi, Logbara, Sara, Koma, Somali, Iraqw, Vietnamese, Sedang, Khmer, Maung, Burera, Bardi, Wik-Munkan, Standard Thai, Yay, Saek, Po-ai, Atayal, Javanese, Cham, Sa'ban, Iai, Taishan, Hakka, Amoy, Fuchow, Dafla, Burmese, Lahu, Tiddim Chin, Karen, Yao, Andamanese, Asmat, Sentani, Pawaian, Suena, Taoripi, Navaho, Nez Perce, Mixe, Otomi, Mazahua, Kwakw'ala, Papago, Pomo, Zuni, Delaware, Tonkawa, Tunica, Carib, Apinaye, Guajiro, Araucanian, Ket, Ainu; RARE Diegueno; LOAN Nootka, Quechua.

Long lower mid back rounded vowel.

/ɔ:/ 9 Mongolian, Evenki, Wolof, Khmer, Lakkia, Iai, Telefol, Delaware; RARE Diegueno.

Overshort lower mid back rounded vowel.

/ɔ/ 2 Chuvash, Po-ai.

Nasalized lower mid back rounded vowel.

/ɔ̃/ 17 Bulgarian, Bengali, Kpelle, Bambara, Senadi, Bariba, Ewe, Igbo, Ga, Beembe, Doayo, Gbeya, Sara, Pawaian, Navaho, Seneca, Guajiro.

Long nasalized lower mid back rounded vowel.

/ɔ̃:/ 2 Lakkia, Delaware.

Pharyngealized lower mid back rounded vowel.

/ɔ̣/ 1 Hamer.

Long nasalized pharyngealized lower mid back rounded vowel.

/ɔ̣̃:/ 1 !Xu.

Laryngealized lower mid back rounded vowel.

/ɔ̰/ 1 Sedang.

Centralized low back unrounded vowel.

/ə/ 1 Selepet.

Centralized low back rounded vowel.

/ɒ/ 2 Norwegian, Kirghiz.

Low back unrounded vowel.

/ɑ/ 22 (-1) Greek, Norwegian, Bulgarian, Farsi, Azerbaijani, Chuvash, Bashkir, Khalaj, Tuva, Mongolian, Dan, Temne, Hamer, Khmer, Chamorro, Maori, Dafla,

Nambakaengo, Tiwa, Cayapa, Ashuslay; LOAN Hindi-Urdu.

Long low back unrounded vowel.

/ɑ:/ 7 Irish, Norwegian, Pashto, Mongolian, Iraqw, Khmer, Brahui.

Nasalized low back unrounded vowel.

/ã/ 4 (-1) Bulgarian, Nambakaengo, Tiwa; LOAN Hindi-Urdu.

Long nasalized low back unrounded vowel.

/ã:/ 2 Irish, Breton.

Low back rounded vowel.

/ɔ/ French, Punjabi, Hungarian, Luo, Wichita.

Long low back rounded vowel.

/ɔ:/ Breton, Wichita.

Overshort low back rounded vowel.

/ɔ̹/ Ostyak.

Nasalized low back rounded vowel.

/ɔ̃/ French, Punjabi, Dan.

10. DIPHTHONGS.

High front unrounded to mid front unrounded diphthong.

/ie/ 3 E. Armenian, Evenki, Lakkia.

Nasalized high front unrounded to mid front unrounded diphthong.

/iẽ/ 1 Lakkia.

High front unrounded to low front unrounded diphthong.

/iã/ 1 Evenki.

High front unrounded to low central unrounded diphthong.

/ia/ 2 Saek, !Xu.

High front unrounded to mid back rounded diphthong.

/io/ 3 Kurdish, Acoma, !Xu.

Long high front unrounded to mid back rounded diphthong.

/io:/ 1 Evenki.

High front unrounded to high back rounded diphthong

/iu/ 1 Acoma.

Lowered high front unrounded to mid front unrounded diphthong.

/t e/ 1 Gilyak.

Mid front unrounded to high front unrounded diphthong.

/ei/ 6 Kurdish, Khmer, Dani, Nambakaengo, Acoma, !Xu.

Nasalized mid front unrounded to high front unrounded diphthong.

/ẽĩ/ 2 Burmese, !Xu.

Mid front unrounded to low central unrounded diphthong.

/ea/ 1 Tsou.

Mid front unrounded to mid back rounded diphthong.

/eo/ Tsou, Acoma.

Nasalized mid front unrounded to high back rounded diphthong.

/ẽũ/ 1 !Xu.

Mid front unrounded to high central rounded diphthong.

/eə/ 1 Tsou.

Lower mid front unrounded to high front unrounded diphthong.

/ɛi/ 2 Dagbani, Yagaria.

Low front unrounded to mid front unrounded diphthong.

/æ/ 1 Hindi-Urdu.

Nasalized low front unrounded to lower mid front unrounded diphthong.

/ãẽ/ 1 Hindi-Urdu.

High central unrounded to high front unrounded diphthong.

/iɨ/ 1 Acoma.

High central unrounded to low central unrounded diphthong.

/ɨa/ 1 Saek.

Mid central unrounded to high central unrounded diphthong.

/əɨ/ 1 Khmer.

Mid central unrounded to high front unrounded diphthong.

/əi/ 1 Kurdish.

Mid central unrounded to high back rounded diphthong.

/əu/ 1 Kurdish.

Lower mid central unrounded to high front unrounded diphthong.

/ɜi/ 1 Angas.

Low central unrounded to high central unrounded diphthong.

/aɨ/ 1 Po-ai.

Low central unrounded to high front unrounded diphthong.

/ai/ 5 Kurdish, Dani, Yana, Acoma, Arabela.

Low central unrounded to mid front unrounded diphthong.

/ae/ 2 Yagaria, !Xu.

Pharyngealized low central unrounded to mid front unrounded diphthong.

/ae<sup>ɰ</sup>/ 1 !Xu.

Nasalized pharyngealized low central unrounded to mid front unrounded diphthong.

/ãe<sup>ɰ</sup>/ 1 !Xu.

Low central unrounded to mid back rounded diphthong.

/ao/ 2 Yagaria, !Xu.

Pharyngealized low central unrounded to mid back rounded diphthong.

/ao<sup>ɰ</sup>/ 1 !Xu.

Nasalized pharyngealized low central unrounded to mid back rounded diphthong.

/ão<sup>ɰ</sup>/ 1 !Xu.

Low central unrounded to high back rounded diphthong.

/au/ 1 Kurdish, Dani, Yana, Acoma, Arabela.

Low central unrounded to high back unrounded diphthong.

/aw/ 2 Lungchow, Island Carib.

High back rounded to higher mid back rounded diphthong.

/uo/ 1 Lakkia.

High back rounded to low central unrounded diphthong.

/ua/ 1 Saek.

High back rounded to high front unrounded diphthong.

/ui/ 4 Kurdish, Yana, Acoma, !Xu.

Nasalized high back rounded to high front unrounded diphthong.

/ũi/ 1 !Xu.

Mid back rounded to high back rounded diphthong.

/ou/ 4 Khmer, Yagaria, Dani, Hopi.

Nasalized mid back rounded to high back rounded diphthong.

/õu/ 1 Burmese.

Mid back rounded to low central unrounded diphthong.

/oa/ 1 !Xu.

Nasalized mid back rounded to low central unrounded diphthong.

/õã/ 1 !Xu.

Pharyngealized mid back rounded to low central unrounded diphthong.

/oa<sup>ɰ</sup>/ 1 !Xu.

Nasalized pharyngealized mid back rounded to low central unrounded diphthong.

/õã<sup>ɰ</sup>/ 1 !Xu.

Mid back rounded to mid front unrounded diphthong.

/oe/ 1 !Xu.

Mid back rounded to high front unrounded diphthong.

/oi/ 3 Kurdish, Dani, !Xu.

Nasalized mid back rounded to high front unrounded diphthong.

/ø̃i/ 1 !Xu.

Pharyngealized mid back rounded to high front unrounded diphthong.

/oi<sup>̠</sup>/ 1 !Xu.

Nasalized pharyngealized mid back rounded to high front unrounded diphthong.

/ø̃i<sup>̠</sup>/ 1 !Xu.

Lower mid back rounded to higher mid back rounded diphthong.

/ɔo/ 1 Hindi-Urdu.

Nasalized lower mid back rounded to higher mid back rounded diphthong.

/ɔ̃o/ 1 Hindi-Urdu.

Lower mid back rounded to high back rounded diphthong.

/ou/ 1 Dagbani.