

# A quantitative study on the 'Phags-pa script\*

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In this paper, we investigate the usage and distribution of letters in the 'Phags-pa script quantitatively. Originally invented by a Tibetan monk to write Middle Mongolian, the script shows several peculiarities as a writing system. An important point of this script is that it shows variation in usage since writers of the script might not have had a standard for usage, and it was used not only for Middle Mongolian, but also for Tibetan, Chinese and Sanskrit. Thus, the aim of the study is to clarify the tendencies regarding the writing of the script. After creating a corpus from over 70 materials written in the 'Phags-pa script, we examine the (i) frequency of each letter, (ii) syllabic structures expressed in the script, (iii) patterns of vowel harmony, and (iv) some idiosyncratic functions of certain letters. By doing so, the study allowed us to examine some rules and exceptions of the script. This not only highlights the phonological structure of Middle Mongolian reflected in the script, and but also offers a comprehensive view of the 'Phags-pa script.

**Keywords:** 'Phags-pa script, quantitative analysis, Middle Mongolian, vowel harmony, token frequency

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## 1. Introduction

In this paper, we investigate the distribution and the usage of the 'Phags-pa script quantitatively. Despite its importance in the history of the Mongolian language and the history of writing systems, there have been few studies that examined the 'Phags-pa script using a large data set and provided a quantitative analysis of it. It is necessary to look into the 'Phags-pa script quantitatively since the script shows variation in usage. Although the 'Phags-pa script was invented primarily to write Middle Mongolian, languages that the script was used for were not limited to Middle Mongolian; Chinese, Tibetan and Sanskrit were also written using the script. These different domains of usage allowed the script to express various phonetic values with a single letter or led to different distributions or combinations of letters that would not emerge in Middle Mongolian. Moreover, variation exists within Mongolian since the writers of the script did not have standard rules for writing the script. Hence, the linguistic knowledge of Mongolian speakers may have been reflected in different variations of writing systems. By looking at quantitative data, we were able to figure out the phonological structure of Middle Mongolian, as well as the various usages and functions of the letters, distinguishing regular (frequently attested) usage of letters from exceptional (rarely attested) usage. The data we investigated is based on the transcription and transliteration of the Middle Mongolian monuments collected by Hujiltu (2004) and Tumurtogoo (2010), which include over seventy written materials such as empirical edicts as well as religious monuments written in the 'Phags-pa script. We first cross-examined the written materials collected by Hujiltu (2004) and Tumurtogoo (2010), for any difference in transliteration or transcription from the source material. Since there were several discrepancies or typographical errors in transliteration and transcription between the two sources, we checked and modified them, comparing with the actual images of such materials. After digitizing the written source with some modifications, more than 37,000 letters were analyzed. These constitute 6,426 words and 16,846 syllables in total.<sup>1</sup>

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<sup>1</sup> In this study, repeating words in the corpus are included in the dataset and counted as a separate item. Thus, the statistics given in this paper are focused on the token frequencies of the letters in order to examine orthographic variation in the corpus. However, as pointed out by an anonymous reviewer, this method has limitations in that



## (1) Transliteration and transcription of the 'Phags-pa script

Letter	Translit.	Transcr.	Letter	Translit.	Transcr.
ᠮ	k	k	ᠮ	ts	ts
ᠮ	k'	k'	ᠮ	ts'	ts'
ᠮ	g	g	ᠮ	dz	dz
ᠮ	ŋ	ŋ	ᠮ	w	w
ᠮ	č	č	ᠮ	ž	ž
ᠮ	č'	č'	ᠮ	z	z
ᠮ	ǰ	ǰ	ᠮ	•	a / ̄ / • <sup>3</sup>
ᠮ	ň	ň	ᠮ	y	y
ᠮ	t	t	ᠮ	r	r
ᠮ	t'	t'	ᠮ	l	l
ᠮ	d	d	ᠮ	š	š
ᠮ	n	n	ᠮ	s	s
ᠮ	p	p	ᠮ	h	h
ᠮ	b	b	ᠮ	q	q
ᠮ	b'	b'	ᠮ	ɣ	ɣ
ᠮ	m	m	ᠮ	hv	f
ᠮ	'	a / ' <sup>4</sup>	ᠮ	v	v
ᠮ	i	i	ᠮ	j	j
ᠮ	u	u	ᠮ	yi	y (Mongolian)
ᠮ	è	è / y (after a vowel)			
ᠮ	o	o			
ᠮ	e	e			
ᠮ	eu	ü / eu (foreign)			
ᠮ	eo	ö / eo (foreign)			

<sup>3</sup> ᠮ is transcribed as /a/ when there is no vowel in a syllable, as a macron (̄) over the succeeding vowel (e.g., /ā/, /ē/, /ū/) when the letter is placed after a consonant, and /•/ elsewhere. This distribution will further be discussed in Section 5.

<sup>4</sup> ᠮ is transcribed as /a/ when there is no apparent vowel in a syllable and as /' / elsewhere.

Within this dataset, we surveyed the (i) frequency and distribution of each letter, (ii) syllabic structure of the script, (iii) distribution of dark vowels ⟨e, è⟩, and the “light-dark” vowel harmony, (iv) usage of the so-called “null initial” ⟨'⟩ and the “glottal letter” ⟨•⟩.

## 2. Frequency and distribution of single segments

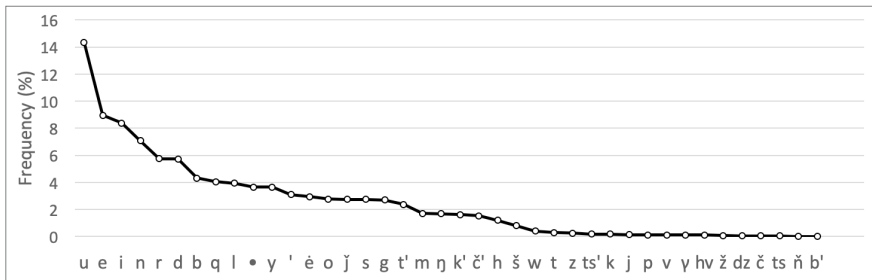
### 2.1. Consonant

Below is the table and the line graph of the number of occurrences and the frequency in which each 'Phags-pa letter is used in the corpus. In the table, the rows are sorted in descending order. Among consonants, letters that were used only in Middle Mongolian are as follows: ⟨b, m, d, t', s, n, r, l, j, č', š, y, g, k', q, ŋ, h, •⟩ (Svantesson *et al.* 2005).

#### (2) Frequency of each letter

Rank	Letter	#	%	Rank	Letter	#	%
(1)	u	5,339	14.350	(21)	k'	600	1.613
(2)	e	3,328	8.945	(22)	č'	573	1.540
(3)	i	3,115	8.372	(23)	h	445	1.196
(4)	n	2,635	7.082	(24)	š	298	0.801
(5)	r	2,136	5.741	(25)	w	153	0.411
(6)	d	2,132	5.730	(26)	t	113	0.304
(7)	b	1,604	4.311	(27)	z	92	0.247
(8)	q	1,510	4.058	(28)	ts'	69	0.185
(9)	l	1,468	3.946	(29)	k	68	0.182
(10)	•	1,360	3.655	(30)	j	49	0.132
(11)	y	1,357	3.647	(31)	p	47	0.126
(12)	'	1,155	3.104	(32)	v	47	0.126
(13)	è	1,100	2.956	(33)	γ	47	0.126
(14)	o	1,032	2.774	(34)	hv	43	0.115
(15)	j	1,024	2.752	(35)	ž	24	0.065

Rank	Letter	#	%	Rank	Letter	#	%
(16)	s	1,022	2.746	(36)	dz	21	0.056
(17)	g	1,007	2.706	(37)	č	20	0.054
(18)	t'	884	2.375	(38)	ts	16	0.043
(19)	m	637	1.712	(39)	ň	4	0.010
(20)	ŋ	630	1.693	(40)	b'	2	0.005
					Total	37,206	100



Next, we re-tabulated the frequency of letters by the place of articulation and the manner of articulation. We followed the consonantal classification of Poppe (1957). Since the manner of articulation for <γ> and <•> is unclear, we excluded them in (4).

(3) Frequency of consonants classified by the place of articulation

Class	Letter	#	%	Ratio among the class (%)	Sum	
Labial	b	1,604	7.246	63.324	2,533	6.808%
	b'	2	0.009	0.079		
	p	47	0.212	1.856		
	m	637	2.877	25.148		
	w	153	0.691	6.040		
	v	47	0.212	1.856		
	hv	43	0.194	1.698		

Class	Letter	#	%	Ratio among the class (%)	Sum	
Alveolar	d	2,132	9.631	20.136	10,588	28.458%
	t'	884	3.993	8.349		
	t	113	0.510	1.067		
	dz	21	0.095	0.198		
	ts'	69	0.312	0.652		
	ts	16	0.072	0.151		
	s	1,022	4.617	9.652		
	z	92	0.415	0.869		
	n	2,635	11.903	24.858		
	r	2,136	9.649	20.174		
	l	1,468	6.631	13.865		
Palatal	ǰ	1,024	4.626	30.576	3,349	9.001%
	č'	573	2.588	17.110		
	č	20	0.090	0.597		
	š	298	1.346	8.898		
	ž	24	0.108	0.717		
	ň	4	0.018	0.119		
	y	1,357	6.130	40.520		
	j	49	0.221	1.463		
Velar	g	1,007	4.549	26.075	3,862	10.380%
	k'	600	2.710	15.536		
	k	68	0.307	1.761		
	q	1,510	6.821	39.099		
	ɣ	47	0.212	1.217		
	ŋ	630	2.846	16.309		
Glottal	h	445	2.010	24.654	1,805	4.851%
	•	1,360	6.144	75.346		
Total					22,137	100%

## (4) Frequency of consonants classified by the manner of articulation

Class	Letter	#	%	Ratio among the class (%)	Sum	
Stop	b	1,604	7.738	20.133	7,967	39.482%
	b'	2	0.010	0.025		
	p	47	0.227	0.590		
	d	2,132	10.285	26.760		
	t'	884	4.264	11.096		
	t	113	0.545	0.142		
	g	1,007	4.858	12.640		
	k'	600	2.894	7.531		
	k	68	0.328	0.085		
q	1,510	7.284	18.953			
Fricative	hv	43	0.207	0.873	1,924	9.535%
	s	1,022	4.930	53.119		
	z	92	0.444	4.782		
	š	298	1.438	15.489		
	ž	24	0.116	1.247		
	h	445	2.147	23.129		
Affricate	dz	21	0.101	1.161	1,723	8.539%
	ts'	69	0.332	4.005		
	ts	16	0.077	0.927		
	ǰ	1,024	4.940	59.431		
	č'	573	2.764	33.256		
	č	20	0.096	1.237		
Nasal	m	637	3.073	16.308	3,906	19.357%
	n	2,635	12.711	67.460		
	ň	4	0.019	0.102		
	ŋ	630	3.039	16.129		
Liquid	r	2,136	10.303	59.267	3,604	17.860%
	l	1,468	7.081	40.733		



Class	Letter	#	%	Ratio among the class (%)	Sum	
Approximant	y	1,357	6.546	84.496	1,606	7.959%
	w	153	0.738	9.526		
	j	49	0.236	3.051		
	v	47	0.227	2.927		
Total					20,179	100

Let us discuss several tendencies found in (2), (3) and (4). For the consonants, the alveolar class makes up the greatest portion of them, and the glottal class the smallest. The labial class makes up relatively a small portion among the major place classes and it lacks the aspiration contrast<sup>5</sup> which is present in the other place classes (alveolar, palatoalveolar, and velar).<sup>6</sup> Concerning the manner of articulation, stops make up the largest group, followed by nasals, liquids, fricatives, affricates, and approximants. The following consonants are ones in which the frequency is less than 1% of all occurrences: p, w, v, hv, t, dz, ts', ts, z, č, ž, š, ŋ, j, k, γ. According to Tumurtogoo (2010), all of these letters, except for ⟨š⟩, are used to express foreign sounds, which explains their low frequency.

Previous studies (Svantesson *et al.* 2005, among others) suggest that the contrast of aspiration in obstruents was present in Middle Mongolian. This is well reflected in the script. Letters ⟨d⟩-⟨t'⟩, ⟨j⟩-⟨č'⟩, ⟨g⟩-⟨k'⟩ contrast with each other, the former being unaspirated and the latter being aspirated. Furthermore, given that the frequency of the aspirated obstruents is lower than the unaspirated one, we can suggest that the aspirated obstruents in Middle Mongolian are more marked than the unaspirated ones. In other words, the laryngeal specification of aspiration is marked in Middle Mongolian. In order to better show this contrast, the frequency among stop consonants is presented below. The stop letters are classified by their position; word-initial, syllable-initial (non-word-initial), and syllable-final.

<sup>5</sup> ⟨t', č', k', ts'⟩ represent aspirated consonants (Poppe 1965, Hujjiltu 2004).

<sup>6</sup> Letter 𐩪 ⟨b'⟩ appears to be an allograph of 𐩪 ⟨b⟩; Hujjiltu (2004) classifies them as different graphemes, but studies such as Tumurtogoo (2010) consider them a variant form of a single grapheme.

(5) Frequency among stop consonants

(i) Alveolar

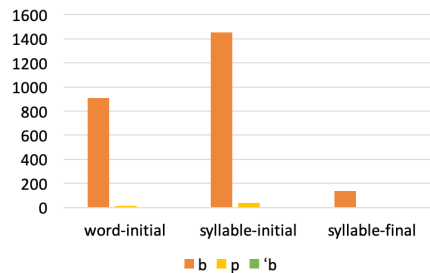
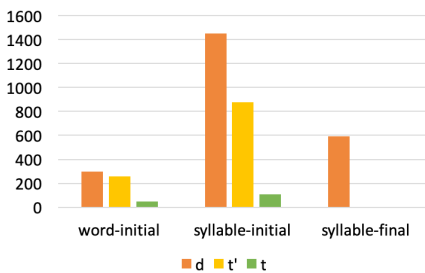
	d		t'		t		Sum
word-initial	296	(49.2%)	257	(42.7%)	49	(8.1%)	602 (100%)
syllable-initial	1,451	(59.6%)	877	(36.0%)	107	(4.4%)	2,435 (100%)
syllable-final	593	(49.2%)	4	(0.67%)	0	(0.0%)	597 (100%)

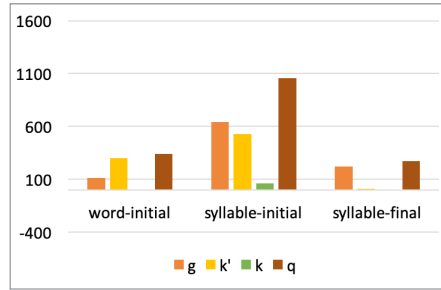
(ii) Labial

	b		p		b'		Sum
word-initial	907	(98.8%)	11	(1.2%)	0	(0.0%)	918 (100%)
syllable-initial	1,451	(97.3%)	39	(2.6%)	2	(0.1%)	1,492 (100%)
syllable-final	139	(99.3%)	1	(0.7%)	0	(0.0%)	140 (100%)

(iii) Velar

	g		k'		k		q		Sum
word-initial	116	(15.2%)	299	(39.2%)	6	(0.8%)	342	(44.8%)	763 (100%)
syllable-initial	641	(28.0%)	526	(23.0%)	62	(2.7%)	1,058	(46.3%)	2,287 (100%)
syllable-final	224	(44.2%)	13	(2.5%)	0	(0.0%)	270	(53.3%)	507 (100%)





In (5), the frequency of ⟨p⟩, ⟨t⟩, ⟨č⟩, ⟨k⟩ is much lower than their homorganic counterparts. This is due to the fact that these letters were not in contrast with other obstruents in Middle Mongolian, but were used to write foreign sounds, such as Tibetan, Sanskrit, or Chinese. Based on the description of *Menggu Ziyun*, these letters are assumed to express voiced obstruents, such as the onsets of 定 or 燈 in Middle Chinese, which do not exist in Middle Mongolian. Moreover, the position of aspirated consonants is more limited than their lenis counterparts. In the syllable-final position, aspirated consonants hardly occur. This might suggest a neutralization process of aspiration in this position.

Moreover, the labial set seems to lack its aspirated consonant. Neither ⟨p⟩ nor ⟨b′⟩ make up more than 10% of occurrences and this makes it difficult for us to postulate a labial aspirated consonant that contrasts with ⟨b⟩. This observation supports previous studies (Svantesson *et al.* 2005, Poppe 1965) that suggest Mongolian lost the aspirated labial through history. Therefore, usage of ⟨p⟩ and ⟨b′⟩ are restricted to foreign words.

One more thing to note from (5) is the characteristics of ⟨g⟩, ⟨k′⟩ and ⟨q⟩. The relatively high frequency of these letters might make us assume that the velar class has a three-way contrast, namely, ⟨g⟩-⟨k′⟩-⟨q⟩. However, note that in the syllable-final position ⟨g⟩ and ⟨q⟩ frequently occur. As mentioned earlier, aspirated consonants rarely occur in syllable-final position. This makes us assume that ⟨q⟩ might not be specified for aspiration. In fact, they differ in concord with the “light/dark” contrast of the vowels. Studies such as Svantesson *et al.* (2005) have suggested Middle Mongolian had seven vowels /a, o, u, e, ö, ü, i/. In 'Phags-pa script, /ö/ and /ü/ are expressed by combining ⟨e⟩ before ⟨o⟩ and ⟨u⟩, thus ⟨eo⟩ and ⟨eu⟩ respectively. /a, o, u/ are traditionally known as “light” (or masculine) while /e, ö, ü/ are “dark” (or feminine) vowels, with the exact

phonological features of these vowels remaining controversial.<sup>7</sup> However, arguing the phonological features of Middle Mongolian is beyond the scope of this study. We adopt the theory-neutral term, “dark-light” contrast, in this paper. Velar consonant letters show a different distribution according to this vowel system. Namely, ⟨q⟩ is placed only before or after light vowels /a, o, u/, and ⟨g⟩, ⟨kʰ⟩ are only used before or after dark vowels /e, ö, ü/ in Mongolian. A detailed description will be given in Section 3.4.

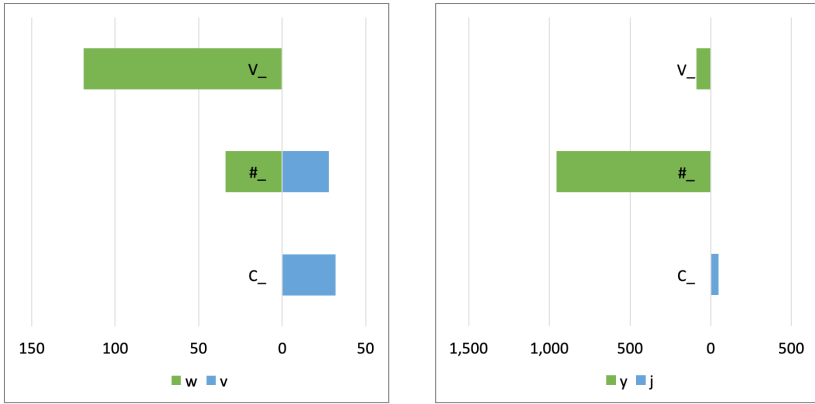
Finally, there are some pairs of letters that have a similar phonetic value but differ in their usage between Mongolian and foreign words. ⟨w⟩-⟨v⟩ and ⟨y⟩-⟨j⟩ are all semivowels, but ⟨w⟩ and ⟨y⟩ are used for both Mongolian and foreign languages whereas ⟨v⟩ and ⟨j⟩ are used only for foreign languages. Plus, ⟨v⟩ and ⟨j⟩ are only used in the syllable-initial position (before a vowel) of a consonant cluster, while ⟨w⟩ and ⟨y⟩ can be used in both the syllable-initial and in the syllable-final position. This is shown in (6). We can see that ⟨w, y⟩ are more frequently used than ⟨v, j⟩. This leads us to suggest that this asymmetry of frequency between these letters is due to their domains of usage.

#### (6) Distribution of semivowels

(C\_: after a consonant, #\_: word-initial, V\_: after a vowel)

	w	v	y	j
C_	0	32	0	49
#_	34	28	957	0
V_	119	0	89	0
total	153	60	1,046	49

<sup>7</sup> It has been suggested that /a, o, u/ are [-front] whereas /e, ö, ü/ are [+front], as many modern dialects of Mongolian have this feature (Svantesson *et al.* 2005, Poppe 1965). On the other hand, some recent studies (Ko 2018, Vaux 2009) suggest these phonemes contrast in terms of [RTR] feature, so /a, o, u/ are [+RTR] and /e, ö, ü/ are [-RTR].



## 2.2. Vowel

As for vowels, (2) shows that ⟨e⟩, ⟨o⟩, ⟨u⟩ are frequently used in the 'Phags-pa script. We should not, however, conclude that these vowels are actually the most frequent vowels in Middle Mongolian. Note that the vowel /a/ is not represented with any explicit vowel grapheme in a syllable and vowels /ö/ and /ü/ are expressed by combining two letters, ⟨eo⟩ and ⟨eu⟩ respectively.

In order to investigate a comprehensive distribution of vowels, we re-tabulate the vowels including the number of syllables without an apparent vowel (which denotes the inherent vowel /a/) and the number of occurrences of ⟨eo⟩ and ⟨eu⟩.<sup>8</sup> Plus, diphthongs are also included in the table. In Mongolian written in the 'Phags-pa script, falling diphthongs are expressed by vowel + ⟨é⟩ or vowel + ⟨yi⟩ (Poppe 1957).

### (7) Frequency of vowel letters

Transliteration	Transcription	#	%
u	u	4,549	27.003
∅	a	4,400	26.119
i	i	2,797	16.603

<sup>8</sup> There are a few cases where ⟨eo⟩ and ⟨eu⟩ are transcribed as /eo/ and /eu/, respectively. These cases relate to foreign words, in which /eo/ or /eu/ express diphthongs that do not exist in Middle Mongolian.

Transliteration	Transcription	#	%
e	e	2,143	12.721
o	o	697	4.137
è	è	608	3.609
eu	ü	417	2.475
eo	ö	330	1.959
yi	ay	289	1.716
eè	ey	212	1.258
uè	uy	175	1.039
eué	üy	105	0.623
eu	eu	93	0.552
ei	ei	19	0.113
eyi	ey	7	0.042
oyi	oy	3	0.018
eo	eo	2	0.012
Total		16,846	100

Let us discuss some notable facts observed in (7). First, /u/ still has the highest frequency among vowel letters. Second, the inherent vowel /a/ has the second highest frequency, which is not apparent in (2). Third, although it is debatable whether ⟨e⟩ and ⟨è⟩ are allographs of a single phoneme, the lower frequency of ⟨è⟩ compared to ⟨e⟩ implies that the usage of ⟨è⟩ is more restricted than ⟨e⟩. As will be shown in Section 4, these two letters show a nearly complementary distribution, which may suggest that these are two different letters of a phonologically single phoneme /e/. Third, as for the “light-dark” contrast, the dark vowels /e, ö, ü/ appear more marked than the light ones /a, o, u/. The sum of frequencies of the light vowels is 57.259%, whereas that of the dark vowels is 20.764% (among the monophthong letters). Fourth, the lower frequency of diphthongs ⟨ayi, eè, uè, üè, ei, eu, ei, eyi, oyi, eo⟩ shows that their occurrences are lower than those of the monophthongs. Among them, ⟨yi, eyi, oyi, uè, eè, üè⟩ were used for both Mongolian and Chinese, whereas ⟨ei⟩ is used only for Chinese and Tibetan. Also, ⟨eu⟩ and ⟨eo⟩, transcribed as /eu/ and /eo/ respectively, are assumed to be different vocalic nuclei

used for Chinese. Finally, in Mongolian, only /yi/ was used to express ⟨ay⟩. On the other hand, in order to express /ey/, ⟨eè⟩ is preferred to ⟨eyi⟩. /oy/ is only expressed by ⟨oyi⟩, and /uy/ and /üy/ are only expressed by ⟨uè⟩ and ⟨euè⟩, respectively.

### 3. Syllabic structure of the 'Phags-pa script

The syllabic structure of Middle Mongolian is (C)V(C) (Svantesson *et al.* 2005). That is, there can be maximally one consonant in the onset or the coda position. Below is the frequency of each syllabic structure in the 'Phags-pa script. In classifying consonants and vowels, only ⟨o, u, i, e, è⟩ are encoded as vowels while the rest of the letters are encoded as consonants.

#### (8) Syllabic structures of the 'Phags-pa script

Rank	Structure	#	%	Rank	Structure	#	%
(1)	CV	6,060	35.973	(11)	VC	134	0.795
(2)	CVC	3,738	22.189	(12)	CVVV	105	0.623
(3)	C	2,627	15.594	(13)	CVCV	10	0.059
(4)	CC	1,574	9.343	(14)	CCCC	9	0.053
(5)	CVV	1,046	6.209	(15)	CVCC	2	0.012
(6)	CCV	539	3.200	(16)	CCCVC	2	0.012
(7)	V	377	2.238	(17)	CCCV	1	0.006
(8)	CCVC	229	1.359	(18)	CVVCC	1	0.006
(9)	CVVC	201	1.193	(19)	VCC	1	0.006
(10)	CCC	145	0.861				
					Total	16,846	100

Contrary to our expectation of the maximal syllabic structure of CVC, there were many more patterns in our corpus. Let us discuss this distribution. First, a syllable with only one consonant ⟨C⟩ denotes an inherent vowel /a/. In a ⟨CC⟩ structure, usually the first consonant is parsed as an onset, and the last is parsed as a coda. However, in foreign

words, both consonants are parsed into an onset position, as in ⟨lh-rjè⟩ /lharjé/ “the prince’s name for Tibet.”

In a ⟨CVV⟩ structure, there are two attested syllabic structures. First, the two vowels are ⟨eo⟩ or ⟨eu⟩, so that phonologically they are one vowel /ö/ or /ü/, respectively. Second, the second vowel is a semivowel, so that phonologically, two vowels denote a diphthong.

In a ⟨CCV⟩ structure, there are four attested syllabic structures. First, in foreign words, both consonants belong to onset position, as in ⟨lém-hvŋ-shi⟩ /lémfanŋshi/ “a title for public officers in the Yuan dynasty.” Second, the second consonant is the glottal letter ⟨•⟩ so the vowel is transcribed as a long vowel, as in ⟨q•n⟩ /qān/ “Emperor.” This structure is possible in Mongolian. Third, the second consonant is ⟨y⟩ and the following vowel is ⟨i⟩, so that ⟨Cyi⟩ denotes a diphthong /Cay/, as in ⟨bos-q-byi⟩ /bosqabay/ “(he) built.” This structure is also possible in Mongolian. Finally, the first consonant letter can be ⟨’⟩ or ⟨•⟩, used both in Mongolian and foreign languages, as in ⟨’yi-mq⟩ /ayimaq/ “provinces,” ⟨bom•bore⟩ /bom•bore/ “name of a region in Tibet.”

In a ⟨CVVV⟩ structure, only ⟨’euè⟩ is attested and it is transcribed as /üy/, which is a single diphthong.

In a ⟨CCVC⟩ structure, the first two consonants can be parsed in the same way that a ⟨CCV⟩ structure can be parsed.

In a ⟨CVCV⟩ structure, the last ⟨CV⟩ is ⟨yi⟩, as in ⟨mo-qoyi⟩ /moqoy/ “serpent,” so that phonologically ⟨yi⟩ is a single semivowel /y/. It is noteworthy that ⟨yi⟩ is usually written separately from the syllable to which it belongs when it is word-medial, but written joined to the syllable to which it belongs when it is word-final (Poppe 1957). Hence, in ⟨qo-yi-n⟩ /qoyna/ “rear,” there is a space between ⟨qo⟩ and ⟨yi⟩ but in ⟨mo-qoyi⟩, ⟨qo⟩ and ⟨yi⟩ is written without a space. When ⟨yi⟩ is the accusative suffix, it is written separately even if it is word-final, so as in ⟨t’u-s-yi⟩ /t’usayi/ “benefit-acc.,” word-final ⟨yi⟩ is written with a space before it.

⟨CCC⟩ or ⟨CCCC⟩ structures are rather complex, in that they are only used for foreign words and the syllabification of this structure requires knowledge of foreign languages. A vowel can be inserted either between the second and the third consonant or between the first and the second consonant. ⟨CCCV⟩, ⟨CCVCV⟩, ⟨CVVCC⟩, ⟨VCC⟩ structures are only used for foreign words.

To sum up, there are various syllabic structures expressed in the ’Phags-



pa script, but phonologically, only the maximal CVC structure is allowed in Mongolian.

### 3.1. Syllable-initial consonant

In this section, we will first look into the frequency of syllable-initial consonants. We call this position “syllable-initial,” not “onset,” in order to look into every possible consonant letter that occurs before a vowel (including the inherent vowel /a/<sup>9</sup>) in a syllable. Hence, sequences like ⟨q•⟩, ⟨k'•⟩ were included in this position. Below is the table and the line graph of frequency in the syllable-initial position. “∅” denotes syllables with no consonant in this position. Also, consonants occurring less than 10 times in the corpus are not included in the table and listed separately.

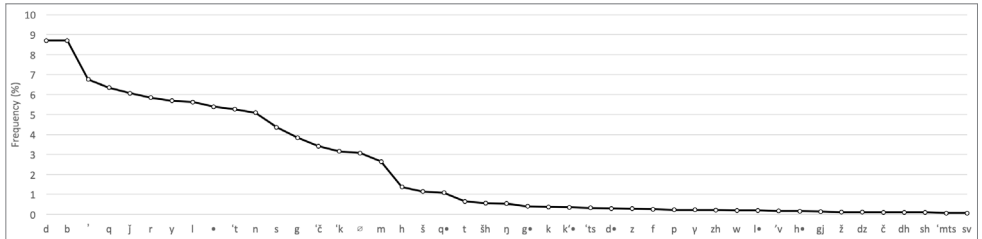
#### (9) Frequency of syllable-initial consonants

Rank	Letter	#	%	Rank	Letter	#	%
(1)	d	1,451	8.613	(24)	g•	68	0.404
(2)	b	1,451	8.613	(25)	k	62	0.368
(3)	'	1,126	6.684	(26)	k'•	60	0.356
(4)	q	1,058	6.280	(27)	ts'	55	0.326
(5)	ǰ	1,012	6.007	(28)	d•	49	0.291
(6)	r	975	5.788	(29)	z	48	0.285
(7)	y	948	5.627	(30)	f	43	0.255
(8)	l	937	5.562	(31)	p	39	0.232
(9)	•	899	5.337	(32)	γ	38	0.226
(10)	t'	877	5.206	(33)	zh	36	0.214
(11)	n	849	5.040	(34)	w	34	0.202
(12)	s	728	4.322	(35)	l•	33	0.196
(13)	g	641	3.805	(36)	'v	28	0.166
(14)	č'	570	3.384	(37)	h•	27	0.160
(15)	k'	526	3.122	(38)	gj	23	0.137

<sup>9</sup> The position of the inherent vowel /a/ could be detected based on transcription.

Rank	Letter	#	%	Rank	Letter	#	%
(16)	∅	512	3.039	(39)	ž	19	0.113
(17)	m	440	2.612	(40)	dz	19	0.113
(18)	h	229	1.359	(41)	č	18	0.107
(19)	š	190	1.128	(42)	dh	18	0.107
(20)	q•	181	1.074	(43)	sh	17	0.101
(21)	t	107	0.635	(44)	mts‘	11	0.065
(22)	šh	93	0.552	(45)	sv	11	0.065
(23)	ŋ	90	0.534	...*	...	...	...
					Total	16,846	100

\*items occurring less than 10 times: ts, γv, sg, r•, rg, zj, rgj, md, y•, gv, lh, dp, tsv, gr, jh, hj, th, gž, ŋ, •b, kj, rts‘, dr, dzh, gh, t‘h, sk, b‘, mŋ, mč‘, gy, sm, st, j•, db, bč‘, k‘rh, t•, kž, yv, tsh, lj, čh, gts, dw, gs, rb, bj, md•, bs, dg•, bz, br, qr, •br, yŋ, sn, brg, sr, pj, jj, ‘ŋ, s•, b•, s•.



From (9), we can see that aspirated stops have a lower frequency than their non-aspirated counterparts, as the frequency of single segments has. In addition, the least frequent syllable-initial consonant is ⟨ŋ⟩, which appears 90 times and makes up 0.671% of occurrences. According to Svantesson *et al.* (2005), /ŋ/ is not a separate phoneme in Middle Mongolian. It is used only as an allophone of a nasal consonant before a velar, or for foreign words (See Section 3.3.). In addition, most of the consonant clusters, except for ⟨consonant⟩ + ⟨•⟩, were used for foreign languages.<sup>10</sup>

Now, syllable-initial consonants are classified by the place and manner of articulation. Items containing only a single letter are calculated. This is

<sup>10</sup> Coblin (2007) suggests that ⟨h⟩ in the second part of a consonant cluster, as in ⟨zh⟩ or ⟨sh⟩, denotes the apical vowel with the following vowel ⟨i⟩.

shown in (10) and (11).

(10) Frequency of syllable-initial consonants classified by the place of articulation

	#	%
Labial	2,007	14.000
Alveolar	6,076	42.383
Palatal	2,722	18.987
Velar	2,377	16.581
Glottal	1,154	8.050
Total	14,336	100

(11) Frequency of syllable-initial consonants classified by the manner of articulation

	#	%
Stop	6,212	46.528
Fricative	1,266	9.482
Affricate	1,600	11.984
Nasal	1,379	10.329
Liquid	1,912	14.321
Approximant	982	7.355
Total	13,351	100

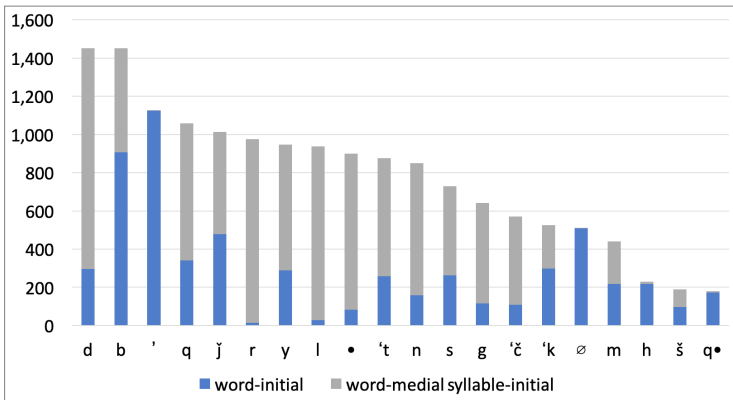
We can see that the alveolar class makes up the largest percentage in this position. The glottal class takes up the least. Concerning the manner of articulation, stops make up the largest number, fricatives the smallest.

When we look into word-initial consonants, a slightly different distribution emerges. This is shown in (12). A comparison between word-initial and syllable-initial position is made in the line graph. “∅” denotes syllables with no consonant in this position. Consonants occurring less than 10 times in the corpus are not included in the table and listed separately.

(12) Frequency of word-initial consonants

Rank	Letter	#	%	Rank	Letter	#	%
(1)	'	1,124	17.491	(17)	š	98	1.525
(2)	b	907	14.115	(18)	•	83	1.292
(3)	∅	508	7.905	(19)	k•	60	0.934
(4)	ǰ	479	7.454	(20)	g•	59	0.918
(5)	q	342	5.322	(21)	t	49	0.763
(6)	k'	299	4.653	(22)	ts'	44	0.685
(7)	d	296	4.606	(23)	z	43	0.669
(8)	y	288	4.482	(24)	d•	40	0.622
(9)	s	262	4.077	(25)	l	28	0.436
(10)	t'	257	3.999	(26)	r	14	0.218
(11)	m	218	3.392	(27)	hv	13	0.202
(12)	h	217	3.377	(28)	p	11	0.171
(13)	q•	173	2.692	(29)	gj	10	0.156
(14)	n	159	2.474	(30)	'v	10	0.156
(15)	g	116	1.805	(30)	sv	10	0.156
(16)	č'	108	1.681	...*	...	...	...
					Total	6,426	100

\*items occurring less than 10 times: γ, w, lh, č, k, md, gv, ts, dh, gr, dz, jh, gž, ň, t'h, γv, rts', sg, dr, sk, k'rh, kž, zj, hj, th, šh, kj, gts, rb, bj, mts', gy, bs, br, sh, rg, yj, sn, brg, pj, ŋ, j•.



In (12), it is shown that ⟨'⟩ makes up the largest percentage in this position and is never used in the (non-word-initial) syllable initial position. As will be discussed more in Section 5, ⟨'⟩ was mainly used for the word-initial /a/ or before the dark vowel /ö, ü/. Also, we can see that ⟨d, b, q⟩ are still favored in the word-initial position, although the frequency of ⟨d⟩ decreased to a relative degree in the word-initial position. As one of many characteristics of so-called “Altaic” languages (Poppe 1965, among others), liquids such as ⟨r⟩, ⟨l⟩, are avoided in the word-initial position. It is shown that ⟨r⟩ is the sixth most frequent consonant (5.788%) in the syllable-initial position, whereas it is the twenty-sixth most frequent (0.218%) in the word-initial position. Similarly, ⟨l⟩ is the eighth most frequent (5.562%) in the syllable-initial position, but it is twenty-fifth most frequent (0.436%) in the word-initial position. There are no words starting with ⟨ŋ⟩, compared to the syllable-initial position in which ⟨ŋ⟩ is used in 90 items. This would indicate no language including Middle Mongolian written in the 'Phags-pa script allows /ŋ/ in the word-initial position. Syllables with no apparent consonant account for 512 items in the syllable-initial count but 508 items in the word-initial count. The 4 items in which there is no consonant syllable-initially but not word-initially are of foreign words. Examples include ⟨ty-šhi-u-ji-tsven⟩ /tay-šhi-u-ji-tsven/ “name of a monk,” and ⟨ts'ons-ge-bun⟩ /ts'aonsgebun/ “name of a region in Tibet.”

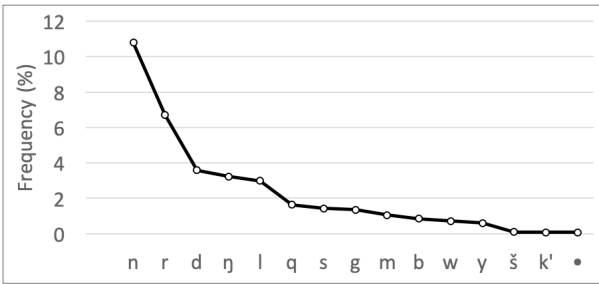
### 3.2. Syllable-final consonant

Let us examine consonants in the syllable-final position in 'Phags-pa script. As explained in Section 3.1, we hesitate to call this position “coda,” in order to look into every possible consonant letter that occurs after a vowel in a syllable. For instance, it is beyond the scope of this study to argue whether ⟨ew⟩ expresses a diphthong (nucleus) or a vowel and a semivowel (nucleus and coda). All letters following a vowel (including the inherent /a/) were counted. “Ø” denotes syllables with no consonant in this position. Consonants occurring less than 10 times in the corpus are not included in the table and are listed separately.

(13) Frequency of syllable-final consonants

Rank	Letter	#	%	Rank	Letter	#	%
(1)	∅	11022	65.428	(9)	g	224	1.330
(2)	n	1785	10.596	(10)	m	172	1.021
(3)	r	1107	6.571	(11)	b	139	0.825
(4)	d	593	3.520	(12)	w	118	0.700
(5)	ŋ	532	3.158	(13)	y	99	0.588
(6)	l	491	2.915	(14)	š	15	0.089
(7)	q	270	1.603	(15)	k'	13	0.077
(8)	s	235	1.395	(16)	•	13	0.077
				...*	...	...	...
					Total	16,846	100

\* items occurring less than 10 times: rs, t', ŋs, gs, p, sr, rg, č, rd.



(14) Frequency of syllable-final consonants classified by the place of articulation

	#	%
Labial	429	7.386
Alveolar	4,212	72.521
Palatal	114	1.963
Velar	1,040	17.906
Glottal	13	0.224
Total	5,808	100

## (15) Frequency of syllable-final consonants classified by the manner of articulation

	#	%
Stop	1,239	21.381
Fricative	250	4.314
Affricate	0	0.000
Nasal	2,490	42.968
Liquid	1,599	27.593
Approximant	217	3.745
Total	5,795	100

In the syllable-final position, it is shown that the alveolar class makes up the largest percentage. Concerning the manner of articulation, the nasal class makes up the largest percentage, followed by the liquid class. Moreover, the syllable-final position is more restricted than the syllable-initial position in two points: (i) affricates ⟨č', j'⟩ are never allowed. (ii) aspirated consonants ⟨k', t', č', h'⟩ are never or hardly allowed. Finally, examples of syllable-final ⟨•⟩ include ⟨y-bu•su⟩ /yabu•asu/ “if they go” and /h-rn-lu•/ /haranlu•a/ “with people.” Interestingly, in all items containing ⟨•⟩ in the syllable-final position, the vowel preceding ⟨•⟩ is ⟨u⟩.

### 3.3. Consonantal sequence

Now, we will investigate patterns of intervocalic consonantal sequences in the script. As presented in the account for patterns in (8), Middle Mongolian does not allow a consonantal sequence in onset or coda position. That is, consonantal sequences in this language can only be attested in the intervocalic position, i.e. a syllable-final consonant of a preceding syllable plus a syllable-initial consonant of a following syllable. We listed these consonantal sequences in (16).

## (16) Frequency of word-medial consonantal sequences

	CC sq.	#		CC sq.	#		CC sq.	#
(1)	r-l	214	(21)	r-č'	39	(41)	w-d	14
(2)	l-b	160	(22)	m-q	39	(42)	q-s	14
(3)	d-d	145	(23)	q-t'	39	(43)	n-t'	14
(4)	n-d	111	(24)	g-b	37	(44)	ŋ-y	13
(5)	ŋ-r	109	(25)	q-d	34	(45)	m-d	13
(6)	s-d	83	(26)	r-m	30	(46)	l-g	13
(7)	b-č'	82	(27)	l-d	30	(47)	n-č'	13
(8)	ŋ-g	75	(28)	l-t'	27	(48)	n-ž	12
(9)	n-šh	70	(29)	g-d	27	(49)	n-š	12
(10)	l-č'	64	(30)	ŋ-ǰ	26	(50)	y-šh	12
(11)	r-g	58	(31)	d-t'	25	(51)	k'-d	11
(12)	l-ǰ	56	(32)	n-ǰ	22	(52)	r-d	11
(13)	l-q	55	(33)	r-t'	21	(53)	š-m	10
(14)	r-b	44	(34)	ŋ-q	20	(54)	d-k'	10
(15)	ŋ-k'	43	(35)	r-q	19	(55)	ŋ-t	10
(16)	b-t'	43	(36)	ŋ-l	19	(56)	l-mts'	10
(17)	r-k'	42	(37)	ŋ-d	19	(57)	ŋ-zh	10
(18)	g-s	41	(38)	n-k'	19	(58)	w-g	10
(19)	g-t'	41	(39)	r-γ	19			
(20)	y-d	40	(40)	n-g	15			

Here, we can see that the ⟨r-l⟩ sequence is the most frequently attested consonant sequence in our corpus. This is because of the frequent occurrences of the word ⟨ǰr-liq⟩ /ǰarliq/ “edict” in our data. One more thing to notice is that alveolar nasal ⟨n⟩ is hardly used before a velar consonant ⟨q, g, k'⟩, while ⟨ŋ-k'⟩ (43 times), ⟨ŋ-g⟩ (75 times), ⟨ŋ-q⟩ (20 times) are more attested than ⟨n-k'⟩ (19 times) and ⟨n-g⟩ (15 times). Moreover, words containing ⟨n-k'⟩ or ⟨n-g⟩ are all foreign, as in ⟨gey-dèn-ku⟩ /geydènku/ “name of the treasury in Buddhist monasteries (Chinese word)” or ⟨'ven-gew-zhi⟩ /'vengewzhi/ “name of a temple.” Therefore, we



might suggest that /n/ is assimilated to /ŋ/ before a velar consonant, at least in Mongolian, so that the usage of ⟨n⟩ before a velar consonant is not attested.

### 3.4. Combination of a consonant and a vowel

In this section, we investigate frequency of ⟨CV⟩ structures, so that we can see which consonant can be combined with which vowel. We excluded foreign consonant clusters, but included the clusters of a consonant plus a glottal letter ⟨•⟩ before a vowel. Note that between a preceding consonant and a following consonant, ⟨•⟩ is transcribed as a long vowel in Hugjiltu (2004).

#### (17) Distribution of a consonant and a following vowel

	a	o	u	e	é	eo	eu	i	Sum
b	579	91	441	173	1	40	17	109	1,451
b'	0	0	2	0	0	0	0	0	2
p	3	3	17	1	3	0	0	12	39
d	354	85	573	213	157	209	364	62	2017
t'	244	19	437	135	4	18	15	5	877
t	27	0	4	0	4	0	0	27	62
g	28	33	146	315	2	3	40	74	641
k'	47	1	201	165	1	37	38	36	526
k	5	0	2	45	0	0	0	10	62
q	609	52	390	0	0	0	0	7	1,058
γ	21	8	5	0	0	0	0	4	38
f	15	0	17	11	0	0	0	0	43
s	112	2	353	169	7	1	61	23	728
z	41	0	17	1	3	0	1	2	65
š	40	0	7	2	14	0	4	123	190
ž	2	0	2	0	0	0	0	15	19
h	95	20	4	31	1	0	11	67	229
ǰ	403	8	309	105	6	0	16	165	1,012

	a	o	u	e	è	eo	eu	i	Sum
č'	40	8	99	112	7	6	5	293	570
č	1	0	4	0	3	0	3	7	18
dz	5	0	6	1	1	0	1	5	19
ts'	47	0	1	0	0	0	0	7	55
ts	1	0	2	0	0	0	0	6	9
m	122	66	83	120	10	4	1	34	440
n	144	94	428	110	1	8	0	64	849
ň	2	0	0	0	1	0	0	1	4
ŋ	4	1	74	0	7	0	0	4	90
r	160	8	171	41	3	4	0	588	975
l	141	16	222	164	2	0	8	384	937
w	21	0	1	0	0	0	0	12	34
y	318	110	43	29	50	0	7	391	948
q•	181	0	0	0	0	0	0	0	181
g•	0	0	0	68	0	0	0	0	68
k•	0	0	0	60	0	0	0	0	60
l•	33	0	0	0	0	0	0	0	33
h•	0	0	0	27	0	0	0	0	27
d•	7	0	35	7	0	0	0	0	49
r•	1	0	0	8	0	0	0	0	9
y•	7	0	0	0	0	0	0	0	7
ŷ•	2	0	0	0	0	0	0	0	2
b•	0	0	0	1	0	0	0	0	1
Sum	3,862	625	4,096	2,114	288	330	592	2,537	14,444

Let us discuss some notable facts observed in (17). First, as discussed in Section 2.1, velar consonant ⟨q⟩ appears only before light vowels ⟨a, o, u⟩. On the other hand, it seems that ⟨g, k•⟩ are used freely regardless of the darkness of following/preceding vowels. Combinations of a velar consonant and a vowel, in the syllable-initial (before a vowel letter) and in the syllable-final (after a vowel letter) position, are re-tabulated in (18).

## (18) Combination of a velar consonant and a vowel

Syllable-initial	Light			Dark				Neutral
	a	o	u	e	eo	eu	è	
g	28	33	146	315	3	40	1	36
k'	47	1	201	165	37	38	1	36
q	609	52	390	0	0	0	0	7
Syllable-final	Light			Dark				Neutral
	a	o	u	e	eo	eu	è	
g	2	2	19	71	71	1	0	58
k'	0	0	0	13	0	0	0	0
q	49	11	27	0	0	0	0	183

A close examination of our corpus shows that the usage of ⟨g, k'⟩ before light vowels is limited to (i) foreign words, (ii) words where the darkness of a following vowel is expected due to vowel harmony, or (iii) conventional spelling of certain words. Such foreign examples include ⟨gl-b-w-rš⟩ /galbawaraš/ “Kalpavriksha, name of a divine tree in Hindu mythology (Sanskrit),” ⟨sŋ-g-ši-ri⟩ /sangaširi/ “Segge Siri, name of a Tibetan prince (Tibetan),” ⟨geuŋ-gon⟩ /geuŋgon/ “Taoist temple (Chinese).” On the other hand, in cases like ⟨'eo-teo-gu-le⟩ /ötögüle/ “to be senior” or ⟨neo-ko-e⟩ /nökö-e/ “other,” ⟨o⟩ or ⟨u⟩ is expected to be pronounced as /ö/ or /ü/ respectively, without noting ⟨e⟩ due to vowel harmony. A detailed description of vowel harmony patterns in the 'Phags-pa script will be discussed in Section 4.2. Finally, words like ⟨moŋ-k'⟩ /moŋk'a/ “eternal” or /k'u-č'un-dur/ “strength,” are conventionally written with ⟨k'⟩ or ⟨g⟩. There is some indirect evidence that these words are actually pronounced with [dark] vocalism. In our corpus, there is a case where /moŋ-k'/ is written as /moŋ-k'e/, with an /e/. Also, /k'u-č'un-dur/ is sometimes spelled /k'eu-č'eun-dur/ or /k'u-č'eu-dur/. This variety in spelling suggests that these words might not be [light] words, but [dark]. Poppe (1957) claims that these words are assumed to be specified for [dark] based on other written and spoken Mongolian data.

Furthermore, there are certain suffixes that change their form to match the vowel harmony of the preceding morpheme. Past tense suffix ⟨q-sn⟩ /qsan/ ~ ⟨g-sen⟩ /gsen/ is one example. For instance, in ⟨bos-qq-sn⟩

/bosqaqsan/ “(he) erected,” /-qsan/ is used since the preceding verb is /bosqa-/ which is specified for [light]. On the other hand, in <i-deg-sen> /idegsen/ “(he) ate,” the verb is specified for [dark], because of /e/ in the second syllable, and the suffix changes to /-gsen/. If /-qsan/ and /-gsen/ are allomorphs of the same morpheme, we may assume that <q> and <g> contrast with vowel harmony, thus <q> is used for [light] vowels while <g> is used for [dark] vowels. Based on this evidence, we argue that velar consonant <k’> and <g> are written before or after [dark] vowels.

Besides this, other observations that can be made from (17) are as follows: (Alveo-) palatal <š> and <č’> is more frequently used before <i> than before other vowels. This suggests that palatalization might have played a role in this distribution of letters. In addition to this fact, distribution of alveolar consonants <d, t’> before <i> is rather restricted. Furthermore, when consonants are followed by <•>, which makes a following vowel long, it is only used when a following vowel is <a, o, u, e>. Alveolar and palatal fricatives and affricates <s, z, š, ž, ʃ, č’, č, dz, ts’, ts> are never or hardly ever used before <o>. <ɣ> is only combined with the light vowels <a, o, u>. <w> is almost only used before <a> or <i>.

#### 4. Distribution of the “dark” vowels

In this section, we will deal with the distribution of dark vowels <e, è>. It will be presented that these two letters show a complementary distribution. Moreover, vowel harmony patterns in Mongolian words will be presented. It will be shown that patterns presented in our corpus are more complicated than expected, and we suggest a tendency towards marking vowel harmony in the script.

##### 4.1. Complementary distribution of two dark vowel letters

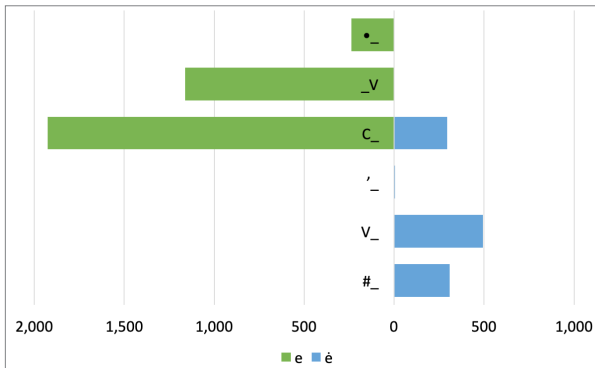
In this section, we will deal with the distribution of dark vowels <e, è>. As previous studies argue (Yang Naisi 1986, Poppe 1957, among others), there are several opinions on the difference of function or distribution between these two letters. The problem becomes more complex when the script is used to write foreign languages. However, when we divide the occurrences of these letters by their surrounding environment, it is shown that it is

more likely that these letters represent a single phoneme /e/, at least in Middle Mongolian.

(19) Distribution of ⟨e⟩ and ⟨è⟩

(“\_” denotes the position where the letter occurs, and “C” and “V” means a consonant and a vowel, respectively.)

Environment	e	è
#_	0	309
C_	1,927	295
V_	0	492
_V	1,162	0
'_	2	4
•_	237	0
Total	3,328	1,100



As seen in (19), ⟨e⟩ and ⟨è⟩ are in a nearly complementary distribution except for the post-consonantal position and before ⟨'⟩. That is, ⟨e⟩ is used after a consonant, as a vowel, and before a vowel, as a “darkness” ([–front] or [+RTR]) marker which changes following /o/ or /u/ into /ö/ or /ü/, respectively. ⟨e⟩ is not used word-initially without a preceding consonant, nor is it used after a vowel. On the other hand, ⟨è⟩ is used word-initially, post-consonantly, and post-vocalically. It is not used before a vowel. When ⟨è⟩ is used after a vowel, it expresses a semivowel, as in ⟨eè, uè, üè⟩.

In order to prove a complementary distribution of ⟨e⟩ and ⟨è⟩, the usage of these letters in a post-consonantal position should be explained, aside from the rare usage of ⟨e⟩ and ⟨è⟩ before ⟨ʻ⟩ or ⟨•⟩. In fact, almost all of the words with a post-consonantal ⟨è⟩ are foreign, e.g. ⟨gey-dèn-ku⟩ /geydénku/ “name of the treasury in Buddhist monasteries (Chinese; 解典庫),” ⟨duṅ-yw-mèw⟩ /duṅyawmèw/ “Dongyue temple (Chinese; 东岳庙).”<sup>11</sup> Thus, at least in Middle Mongolian, it can be said that these two letters belong to a single phoneme and show a complementary distribution.

Cases where ⟨e⟩ and ⟨è⟩ are used after ⟨ʻ⟩ are all from the word ⟨er-di-ni⟩ (spelled otherwise ⟨èr-di-ni⟩ or ⟨èr-ti-ni⟩). This word is rooted from a Sanskrit word *ratna*, “jewel” (Poppe 1957).

220 out of 237 cases where ⟨e⟩ is used after ⟨•⟩ are in the intervocalic position, in which ⟨•⟩ is used as a hiatus marker. 17 cases are those where ⟨•⟩ is placed word-initially before ⟨e⟩. Cases with ⟨•⟩ are to be discussed in Section 5.

#### 4.2. Vowel harmony in 'Phags-pa script

In this section, we present vowel harmony patterns expressed in the 'Phags-pa script. Middle Mongolian, like many Modern Mongolian languages, had vowel harmony. This harmony is concerned with the “light-dark” contrast, where /a, o, u/ are light, /e, ö, ü/ are dark, and /i/ is neutral and can be realized regardless of harmony. Thus, all words are specified as either light or dark. For example, words like ⟨qo-to-l⟩ /qotola/ “entire” or ⟨eoṅ-ge-le⟩ /öṅgele/ “to paint” are possible, but \*/qotele/ or \*/öṅgela/ is impossible.

An interesting aspect about 'Phags-pa script is that the “darkness” marker ⟨e⟩ does not have to be written in all syllables in a word specified as [dark]. Once the first syllable of a word is marked with ⟨e⟩, following syllables will be automatically in harmony. Thus, to write a word like /nökö•e/ “other,” it is both possible to write it as ⟨neo-keo•e⟩ or ⟨neo-ko•e⟩. In order to take a comprehensive look at the vowel harmony patterns in the 'Phags-pa script, we marked light-dark information to vowels as “+ (light; /a, o, u/),” “– (dark; /e, ö, ü, è/),” and “0 (neutral; /i/),” and ignored other vowel qualities. The table of vowel harmony patterns in

<sup>11</sup> There is one word in this position that is assumed to be a Mongolian word, ⟨dèṅ-ri⟩ /dèṅri/ “heaven, god.” However, it is doubtful that this word is a true native Mongolian word, since its reflexes are well attested in other languages such as Turkic.

bisyllabic and trisyllabic words is presented below.

(20) Vowel harmony patterns in bisyllabic words

Rank	Pattern	#	%
(1)	(+)-(+)	1,108	47.189
(2)	(-)-(-)	394	16.780
(3)	(+)-(0)	279	11.882
(4)	(-)-(+)	270	11.499
(5)	(-)-(0)	149	6.346
(6)	(0)-(0)	64	2.726
(7)	(0)-(-)	37	1.576
(8)	(0)-(+)	35	1.491
(9)	(+)-(-)	12	0.511
	Total	2,348	100

(21) Vowel harmony patterns in trisyllabic words

Rank	Pattern	#	%	Rank	Pattern	#	%
(1)	(+)-(+)-(+)	693	27.251	(15)	(0)-(-)-(+)	40	1.573
(2)	(+)-(0)-(+)	315	12.387	(16)	(-)-(-)-(0)	27	1.062
(3)	(-)-(-)-(+)	267	10.499	(17)	(0)-(-)-(-)	23	0.904
(4)	(+)-(+)-(0)	251	9.870	(18)	(+)-(-)-(+)	18	0.708
(5)	(+)-(0)-(0)	129	5.073	(19)	(+)-(0)-(-)	11	0.433
(6)	(-)-(0)-(+)	118	4.464	(20)	(-)-(+)-(0)	10	0.393
(7)	(-)-(0)-(0)	116	4.562	(21)	(0)-(0)-(+)	9	0.354
(8)	(-)-(-)-(-)	92	3.618	(22)	(0)-(0)-(0)	7	0.275
(9)	(-)-(+)-(-)	77	3.028	(23)	(+)-(+)-(-)	6	0.236
(10)	(0)-(+)-(+)	77	3.028	(24)	(+)-(-)-(-)	4	0.157
(11)	(-)-(+)-(+)	67	2.635	(25)	(0)-(+)-(0)	4	0.157
(12)	(-)-(0)-(-)	67	2.635	(26)	(+)-(-)-(0)	3	0.118
(13)	(0)-(+)-(-)	67	2.635	(27)	(0)-(-)-(0)	2	0.079
(14)	(0)-(0)-(-)	43	1.691				
					Total	2,543	100

Both in bisyllabic and trisyllabic words, more instances of words with light vowels are attested than the dark ones. In bisyllabic words, the (+)-(-) pattern is much less common than the (-)-(+) or (-)-(-) pattern. In fact, all words with (+)-(-) pattern are foreign, and therefore not as heavily influenced by vowel harmony as Mongolian words. This suggests progressive harmony marking, i.e. the pattern by which marking of ⟨e⟩ in a *preceding* syllable predicts harmony pattern in the word, is used rather than regressive harmony pattern, i.e. the pattern by which marking of ⟨e⟩ in a *following* syllable predicts harmony pattern in the word. Below is the comparison of progressive and regressive marking (neutral vowels excluded).

(22) Directionality of the darkness marker in bisyllabic words

Directionality	#	%
progressive	270	39.941
regressive	12	1.775
redundant	394	58.284
Total	676	100

One might ask why redundant harmony marking (58.284%), that is, marking of ⟨e⟩ in every syllable in a word, is more attested than progressive harmony marking (39.941%) in bisyllabic words. This is because ⟨e⟩ as a nucleus of a syllable should always be written in the script. For instance, ⟨beye⟩ /beye/ “body” is never written as \*⟨be-y⟩. Nevertheless, there are a few words that are truly redundant in harmony marking, such as ⟨neo-k’eor⟩ /nökör/ “friend,” ⟨t’eo-beod⟩ /töböd/ “Tibet,” ⟨t’eo-reon⟩ /törön/ “to come to be,” ⟨’eor-geon⟩ /örgön/ “wide,” of which there are 8 tokens.

In trisyllabic words, too, progressive marking is more prevalent than regressive marking, such that marking patterns of ⟨e⟩ only in the first syllable or in the first and the last syllables show the highest frequency, as shown in (23).



## (23) Directionality of the darkness marker in trisyllabic words

Marking	#	%
1st syll.	195	21.739
2nd syll.	61	6.800
3rd syll.	84	9.365
first two	294	32.776
last two	27	3.010
first + last	144	16.053
all three	92	10.256
Total	897	100

Although it seems that redundant darkness-marking patterns are numerous, words with truly redundant marking consist only of 39 items (4.348%). Also, in cases where ⟨e⟩ is written in the first two syllables (32.776%), the last syllable is usually a suffix, like /-un/, /-dur/, /-ud/.

In sum, the vowel harmony pattern is well reflected in the 'Phags-pa script. Interestingly, there is variation in spelling. ⟨e⟩, the letter used to mark [dark] vocalism, is usually written once in the first syllable of a word. ⟨o⟩ and ⟨u⟩ in following syllables are expected to be [dark] without ⟨e⟩, due to vowel harmony. Rarely, ⟨e⟩ is marked more than once in a word. As said earlier, there are cases where the same word is written with a variety of spellings, such as ⟨neo-keo•e⟩ or ⟨neo-ko•e⟩ “other.”

## 5. Usage of the null initial and the glottal letter

In this section, we investigate the distribution of the null initial ʁ (⟨'⟩) and the glottal letter ʁ (⟨•⟩). These letters are assumed to have their own phonetic value in Tibetan, as corresponding Tibetan letters show (ʁ and ʁ, respectively). However, when we look into their distribution, these letters are better described in terms of functional graphemes in Mongolian texts, rather than phonological entities that have their own sound value.

## (24) Distribution of ⟨'⟩

“#” denotes a word boundary, and “\$” denotes a syllable boundary (a

space in the script). “C” is a consonant letter and “V” is a vowel letter ⟨o, u, e, è, i⟩.

Environment	#
#_{eo, eu}	574
#_\$_	384
#_C\$_	153
#_v{V, C}	28
#_yi	8
#_{è, e, o, u}	8
Total	1,155

(24) shows the distribution of ⟨'⟩. In all cases, ⟨'⟩ is used word-initially. And except when it is placed before ⟨v⟩, ⟨'⟩ marks an onsetless syllable. It is most frequently used word-initially before ⟨eo⟩ or ⟨eu⟩. In fact, most of the words in which ⟨eo⟩ or ⟨eu⟩ is written word-initially are always accompanied by a ⟨'⟩ (573 items out of 589 items). Next, it expresses /a/ in a word-initial position (#\_\$\_, #\_C\$\_), as in ⟨'-b-l⟩ /abala/ “to hunt” or ⟨'l-b⟩ /alba/ “duty.” Since there is no apparent letter for /a/, when ⟨'⟩ is used without any preceding letter in a syllable, it expresses /a/. There is no case where a consonant is parsed into the onset in transcription. Thus, ⟨'l⟩ is always read as /al/, not /la/.

When ⟨'⟩ is placed before ⟨v⟩, it is used to write foreign words, like ⟨'vŋ-ts'ŋ-guè⟩ /vaŋts'ŋguy/ “a person’s name (王清貴)” As discussed in Section 2.1, ⟨v⟩ is only used for foreign languages and it is always preceded by ⟨'⟩.

In ⟨#\_yi⟩ environment, ⟨yi⟩ is a single semivowel in a coda position, so that it is transcribed as /ay/, as in ⟨'yi-mq⟩ /aymaq/ “provinces.”

Cases where ⟨'⟩ is placed before a vowel ⟨e, è, o, u⟩ are rare. In 6 cases where ⟨'⟩ is used before ⟨e⟩ or ⟨è⟩, it is used for the word ⟨er-di-ni⟩ (or spelled as ⟨èr-di-ni⟩, ⟨èr-ti-ni⟩) /erdini/ “jewel.” It is said (Poppe 1957) that this word is derived from the Sanskrit word *ratna*.

One case where ⟨'⟩ is placed before ⟨o⟩ is ⟨'om⟩, which denotes the Sanskrit sound *om* (ॐ), and the case where ⟨'⟩ is placed before ⟨u⟩ is ⟨'u-rts'aj⟩ /'urts'aj/ “Ü-Tsang, a traditional province of Tibet.” In these cases, ⟨'⟩ is assumed to have a phonetic value that corresponded to the

sound of Sanskrit or Tibetan.

In sum, except for usage in foreign words, ⟨'⟩ is used word-initially in order to express an onsetless /a/ or a dark vowel (/ö/ and /ü/). Next, we will look into distribution of ⟨•⟩. We list its environments based on transliteration below.

(25) Distribution of ⟨•⟩

“#” denotes a word boundary, and “\$” denotes a syllable boundary (a space in the script). “C” is a consonant letter and “V” is a vowel letter ⟨o, u, e, é, i⟩.

Environment	#	Characteristics
V\$_V	571	intervocalic position
\$C\$_V	132	
\$C\$_C\$	5	
V\$_C\$	57	
V\$_yi\$	35	
\$C_V\$	61	between a consonant and a vowel in a syllable
\$C_C\$	50	
\$C_\$	183	
\$C_VC\$	145	
\$CC_\$	4	
C\$_C	5	elsewhere
V\$_CV	1	
C\$_V	10	
#_C\$	6	
#_V(C)\$	73	
\$CV_\$	13	
\$_\$	9	
Total	1,360	

The most frequent environment where ⟨•⟩ is used is the intervocalic position (V\$\_V), as in ⟨neo-ko•e⟩ /nökö•e/ “other.” Also, in environments like ⟨\$C\$\_V⟩, ⟨\$C\$\_C\$⟩ and ⟨V\$\_C\$⟩, it can be said that ⟨•⟩ is placed

intervocally since the preceding syllable ends with a vowel letter or with an inherent vowel /a/<sup>12</sup> and ⟨◌⟩ is placed in the syllable-initial position which is followed by a vowel or an inherent vowel, as in ⟨yo-su-ᠷ⟩ /yosu·ar/ “in accordance with,” ⟨y-ud⟩ /ya·ud/ “what (plural),” or ⟨č·b-č·-l⟩ /č·abč·a·al/ “ravine.” Finally, in ⟨V\$\_yi\$⟩ environment, ⟨◌⟩ is placed in the intervocalic position since ⟨yi⟩ in the second syllable is expected to have /a/ so that its transcription would be /ayi/, as in ⟨y-bu·yi⟩ /yabu·ay/ “(he) walked” (See Section 3). In sum, in these environments ⟨◌⟩ is used between two (apparent or inherent) vowels, thus in the intervocalic position. Note that ⟨◌⟩ is placed before the second vowel of two hiatal vowels.<sup>13</sup> As Poppe (1957) and Svantesson *et al.* (2005) suggest, it can be said that this usage of ⟨◌⟩ shows its function as a hiatus marker.

Next, ⟨◌⟩ is also frequently used after a consonant and before a vowel in a syllable (\$C\_V\$, \$C\_VC\$). It expresses long vowels, as in ⟨d·e-du⟩ /dēdü/ “sublime,” or ⟨k·g-de⟩ /kēgde/ “to be said.” Also, in cases where ⟨◌⟩ is used after a consonant and before another consonant or a syllable boundary (\$C\_C\$, \$C\_-\$), it expresses a long vowel /ā/, since no apparent vowel exists in the syllable. Such examples include ⟨q·n⟩ /qān/ “Emperor” or ⟨j·y-t'n⟩ /jāyāt'an/ “those having a predestination.” However, it is unclear whether Middle Mongolian had a vowel quantity contrast (Svantesson *et al.* 2005). Rather, considering the limited usage of vowel length, it is suggested that two syllables are contracted into one syllable (Hugjiltu 1999). This is compatible with the view that ⟨◌⟩ represents a glottal letter that had been lenited or deleted intervocally in Middle Mongolian (Hill 2009). That is, two syllables with the same vowel might have been represented by Middle Mongolian people as a single syllable with a long vowel, marked by ⟨◌⟩ that shows a trace of contraction.

Usage of ⟨◌⟩ in other environments is rather rare. It is used before a consonant (C\$\_C\$, V\$\_CV\$, #\_C\$), or before a vowel when the preceding syllable ends with a consonant (C\$\_V\$). In these environments, it can be said that ⟨◌⟩ is placed in the syllable-initial position. Also, ⟨◌⟩ can be used in the word-initial position, which is followed by an inherent/apparent vowel (#\_C\$, #\_V(C)\$). Interestingly, most of the vowel letters

<sup>12</sup> In ⟨C\$\_C\$⟩, the syllable is expected to have /a/ since there is no apparent vowel in it.

<sup>13</sup> There are two cases of the same word where ⟨◌⟩ is written twice in the intervocalic position. This word is ⟨bos-q·-d⟩ /bosqā·d/ “(he) erected.” However, it is also written as ⟨bos-qa·d⟩. The reason for this variation in writing is not clear.

which followed ⟨·⟩ were ⟨i⟩ or ⟨eu⟩. Finally, ⟨·⟩ is used in the syllable-final position (\$CV\_ \$), or used solely in a syllable (\$\_ \$). Examples of the syllable-final ⟨·⟩ include ⟨bo-lu·-su⟩ “to be-cond.”, ⟨ur-qu·-su⟩ “to grow-cond.”, ⟨y-bu·-su⟩ “to go-cond.”, ⟨č'-du·-su⟩ “to satiate oneself-cond.”, where ⟨su⟩ denotes a conditional suffix (expressed as -γasu/-gesü in Poppe (1957)), and examples of solely used ⟨·⟩ in a syllable include ⟨qr-q·-su⟩ “to show-cond.”, ⟨t'o·-sun⟩ “earth”, ⟨jir-qo·-n⟩ “six”, ⟨do-lo·-n⟩ “seven”.<sup>14</sup> It is interesting to see that the conditional suffix ⟨·(e)su⟩ has a variety of spelling positions as shown in ⟨bu-ši-r·e-su⟩ “to respect-cond.”, ⟨de-le-du·e-su⟩ “to strike-cond.”, ⟨qu-ri-y·-su⟩ “to collect-cond.” and ⟨b-y-ji·u-lu·-su⟩ “to enrich-cond.” In all these rarely attested environments, ⟨·⟩ might have a phonetically consonantal value such as glottal stop or glottal fricative (Hill 2009). Otherwise, it might show a trace of a phonetic value that had been pronounced in earlier Mongolian or in other languages. However, due to the scarcity of data, it is unclear whether this letter has a phonemic status in Middle Mongolian.

## 6. Conclusion

In this paper, we investigated the general tendencies regarding the usage and distribution of the 'Phags-pa letters with a large size of data. Specifically, we looked into frequency of letters, syllabic structures reflected in the script, vowel harmony patterns, and some idiosyncratic usage and distributions of several letters. Studying the 'Phags-pa script is complicated in that it was used not only for Mongolian, but also for foreign languages such as Sanskrit, Tibetan and Chinese. Regarding this fact, our observations verified the phonological structures of the Middle Mongolian language reported in previous studies, and gave a comprehensive view on the rules and the exceptions of the script itself. Given that variation in spelling shows some aspects of the linguistic knowledge possessed by its users, our study could be an important step toward a quantitative study of the 'Phags-pa script and the Middle Mongolian language. Nevertheless, given that our study did not exclude repeating words in the corpus, future

<sup>14</sup> There are some variations in spelling of some of these words: ⟨jir-qo·-n⟩ - ⟨jir-qo·n⟩, ⟨do-lo·-n⟩ - ⟨do-lo·n⟩. It might be the case that the space between syllables is hard to recognize.

study is necessary in order to verify if results with type-frequency based statistics square with the general tendencies of this study, especially for a more accurate view on the phonological structure of Middle Mongolian. Moreover, classifying the corpus by languages would be another task in the future study. Different word structures and usage of letters between Mongolian words and foreign words are quite apparent, and an analysis on the usage of letters based on the language would be interesting in order to investigate linguistic borrowings and adaptations between Mongolian, Sanskrit, Chinese and Tibetan.

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### Appendix: Distribution of 'Phags-pa letters in syllabic units

Below are the tables representing the distribution of each 'Phags-pa letter within a syllabic unit. The letters are ordered alphabetically based on their transcriptions. The letters are denoted above their tables respectively, with the transcription in brackets. The first column denotes the number of occurrences per syllable; the second column denotes the relative ratio of the number to the total occurrences of the letter of interest; the third (transcription) and the fourth ('Phags-pa) columns represent the syllabic units in which the letter of interest is included, with the position of letter denoted with an underscore. In each table, the sum of all occurrences is shown at the top, the ratio being 100%.

ཁ <•>

1389	100.00%	total	
249	17.93%	_u	ཁ_ཏ
146	10.51%	q_	ཁ_
123	8.86%	_e	ཁ_ཏ
77	5.54%	_ud	ཁ_ཏཏ
74	5.33%	_uè	ཁ_ཏཏ
67	4.82%	_er	ཁ_ཏ
66	4.75%	_un	ཁ_ཏཏ
49	3.53%	_r	ཁ_ཏ
45	3.24%	q_n	ཁ_ཏ
38	2.74%	_i	ཁ_ཏ
36	2.59%	d_ul	ཁ_ཏཏ
35	2.52%	_yi	ཁ_ཏཏ
32	2.30%	l_	ཁ_ཏ
30	2.16%	g_en	ཁ_ཏཏ
27	1.94%	h_en	ཁ_ཏཏ
24	1.73%	k'_e	ཁ_ཏ
23	1.66%	g_e	ཁ_ཏ
21	1.51%	_ul	ཁ_ཏཏ
20	1.44%	_ed	ཁ_ཏ

19	1.37%	k'_en	ཁ_ཏཏ
17	1.22%	k'_eg	ཁ_ཏཏ
17	1.22%	_eu	ཁ_ཏ
14	1.01%	g_ek'	ཁ_ཏཏ
13	0.94%	_ir	ཁ_ཏ
10	0.72%	_n	ཁ_ཏ
9	0.65%	_	_
8	0.58%	bu_	ཁ_ཏ
7	0.50%	_en	ཁ_ཏ
6	0.43%	_d	ཁ_ཏ
6	0.43%	d_e	ཁ_ཏ
6	0.43%	lu_	ཁ_ཏ
4	0.29%	y_	ཁ_ཏ
4	0.29%	r_e	ཁ_ཏ
4	0.29%	_od	ཁ_ཏ
4	0.29%	_ur	ཁ_ཏ
3	0.22%	y_n	ཁ_ཏ
3	0.22%	d_	ཁ_ཏ
3	0.22%	_m	ཁ_ཏ
3	0.22%	_o	ཁ_ཏ
3	0.22%	r_	ཁ_ཏ



3	0.22%	_ inj	_ རྒྱ
2	0.14%	ŷ_	ཡ_
2	0.14%	_ on	_ ཀཾ
2	0.14%	g_ eg	ཁ_ ལཱ
2	0.14%	_ eg	_ ལཱ
2	0.14%	_ ut'	_ ཉཱ
2	0.14%	mŋ_	ཚྱ_
2	0.14%	_ bo	_ རྒྱ
1	0.07%	b_ su	བ_ རྒྱ
1	0.07%	q_ e	ལ_ ལ
1	0.07%	s_ r	ཅ_ ཀ
1	0.07%	d_ n	ཁ_ རྒྱ
1	0.07%	_ su	_ རྒྱ
1	0.07%	'_	ཅ_
1	0.07%	b_ en	བ_ ལཱ
1	0.07%	d_ eg	ཁ_ ལཱ
1	0.07%	d_ g	ཁ_ ལ
1	0.07%	md_	ཚཱ_
1	0.07%	'_ u	ཅ_ ཉ
1	0.07%	dg_	ཁཱ_
1	0.07%	q_ l	ལ_ ལ
1	0.07%	d_ en	ཁ_ ལཱ
1	0.07%	_ bor	_ རྒྱ
1	0.07%	se_ d	ཅཱ_ ལ
1	0.07%	du_	ཁཱ_
1	0.07%	_ brog	_ རྒྱཀྱ
1	0.07%	b_	བ_
1	0.07%	_ r_ er	_ ཀ_ ལཱ
1	0.07%	qu_	ལཱ_
1	0.07%	d_ d	ཁ_ ལ
1	0.07%	šhi_	ཀཱཱ_
1	0.07%	t'_	ཀ_
1	0.07%	_ l	_ ལ

1	0.07%	_ oq	_ ཀཱ
1	0.07%	_ bu	_ རྒྱ
ཅ <'>			
1147	100.00%	total	
381	33.22%	_	_
250	21.80%	_ eu	_ ལཱ
114	9.94%	_ eo	_ ལཱ
105	9.15%	_ euè	_ ལཱཱ
99	8.63%	_ l	_ ལ
71	6.19%	_ eog	_ ལཱཱ
45	3.92%	_ b	_ རྒྱ
20	1.74%	_ eol	_ ལཱཱ
20	1.74%	_ ven	_ ལཱཱ
8	0.70%	_ yi	_ རྒྱ
8	0.70%	_ vŋ	_ ལཱ
4	0.35%	_ èr	_ ལཱ
3	0.26%	_ eonj	_ ལཱཱ
2	0.17%	_ eor	_ ལཱཱ
2	0.17%	_ eun	_ ལཱཱ
2	0.17%	_ q	_ ལ
2	0.17%	_ er	_ ལཱ
1	0.09%	_ u	_ ལཱ
1	0.09%	_ eunj	_ ལཱཱ
1	0.09%	_	_ ལ
1	0.09%	_ ŋonj	_ ལཱཱ
1	0.09%	_ eus	_ ལཱཱ
1	0.09%	_ us	_ ལཱ
1	0.09%	_ om	_ ལཱ
1	0.09%	_ r	_ ལ
1	0.09%	_ ve	_ ལཱ
1	0.09%	_ ŋ	_ ལ
1	0.09%	_ š	_ ལ

ቤ <b>

1662	100.00%	total	2	0.12%	_en	_ሆሪ
492	29.60%	_	2	0.12%	_uq	_ኮይ
454	27.32%	_u	2	0.12%	_s	_ገ
86	5.17%	_i	2	0.12%	_r	_ዘ
78	4.69%	qu_	2	0.12%	•_o	ሁ_K
76	4.57%	_er	2	0.12%	_ጎ	_ሀ
74	4.45%	_eè	2	0.12%	è_	ሆ_
51	3.07%	_ol	1	0.06%	_rge	_ዘገላ
45	2.71%	'_	1	0.06%	_m	_ሪ
40	2.41%	_eo	1	0.06%	•_rog	ሁ_HKገ
32	1.93%	_n	1	0.06%	rgj_	ዘገላ_
31	1.87%	_q	1	0.06%	_•	_ሁ
21	1.26%	_id	1	0.06%	n_	ሪ_
19	1.14%	_o	1	0.06%	l_	ሁ_
18	1.08%	_eu	1	0.06%	_•en	_ሁሆሪ
15	0.90%	_e	1	0.06%	_è	_ሆ
12	0.72%	_os	1	0.06%	_č'ug	_ዘገላገ
9	0.54%	_uè	1	0.06%	_el	_ሆገ
8	0.48%	_u•	1	0.06%	č'_	ዘ_
7	0.42%	_w	1	0.06%	de_	ሆ_
7	0.42%	_un	1	0.06%	sg_	ገገ_
6	0.36%	_eyi	1	0.06%	r_on	H_Kሪ
6	0.36%	_ur	1	0.06%	_sod	_ገገላ
5	0.30%	_yi	1	0.06%	•_u	ሁ_ኮ
5	0.30%	_rs	1	0.06%	_zጎ	_ሀሀ
4	0.24%	_oq	1	0.06%	•_or	ሁ_KH
4	0.24%	_ud	1	0.06%	r_	H_
3	0.18%	_on	1	0.06%	sn_	ገገ_
3	0.18%	_or	1	0.06%	_rin	_ዘሪሪ
3	0.18%	_l	1	0.06%	se_	ገሆ_
2	0.12%	g_	1	0.06%	_om	_Kሪ
2	0.12%	_eod	1	0.06%	_j	_ህ
			1	0.06%	_us	_ኮገ

1	0.06%	_ *su	_ །ཅུ
1	0.06%	gru _	ཀྲུཨ _
1	0.06%	t' _	ཐ' _
1	0.06%	d_ l	ལ' །

ཁ <b'>

3	100.00%	total	
2	66.67%	_ u	_ །
1	33.33%	_ ur	_ །ཨ

ཀ <č'>

20	100.00%	total	
4	20.00%	_ i	_ །
4	20.00%	_ uŋ	_ །ཀུ
3	15.00%	_ èw	_ །ཇ
3	15.00%	_ in	_ །ཀོ
3	15.00%	_ eu	_ །ཀུ
1	5.00%	r_	ཨ_
1	5.00%	_	_
1	5.00%	_ hi	_ །ཅུ

ཨ <č'>

568	100.00%	total	
219	38.56%	_ i	_ །
84	14.79%	_ e	_ །
44	7.75%	_ in	_ །ཀོ
43	7.57%	_ un	_ །ཀུ
33	5.81%	_ u	_ །
31	5.46%	_	_
26	4.58%	_ en	_ །ཀོ
16	2.82%	_ ig	_ །ཀོ
13	2.29%	_ us	_ །ཅུ
11	1.94%	_ id	_ །ལ

7	1.23%	_ s	_ །
5	0.88%	_ èn	_ །ཀོ
5	0.88%	_ eol	_ །ཀོ
4	0.70%	_ uŋ	_ །ཀུ
3	0.53%	_ od	_ །ཀོ
3	0.53%	_ eu	_ །ཀུ
2	0.35%	_ im	_ །ཀོ
2	0.35%	_ eun	_ །ཀུ
2	0.35%	_ è	_ །
2	0.35%	m_ od	ཀོ_ །ཀོ
2	0.35%	_ o	_ །
2	0.35%	_ oq	_ །ཀོ
1	0.18%	_ ul	_ །ཀུ
1	0.18%	_ el	_ །ཀོ
1	0.18%	_ q	_ །
1	0.18%	b_ ug	ཀོ_ །ཀོ
1	0.18%	_ os	_ །ཀོ
1	0.18%	_ y	_ །
1	0.18%	_ ir	_ །ཀོ
1	0.18%	_ eon	_ །ཀོ
1	0.18%	_ b	_ །

ལ <d>

2150	100.00%	total	
337	15.67%	_	_
289	13.44%	_ ur	_ །ཨ
145	6.74%	_ u	_ །
141	6.56%	_ e	_ །
113	5.26%	_ un	_ །ཀུ
101	4.70%	_ èŋ	_ །ཀོ
90	4.19%	y_	ཅ_
90	4.19%	yi_	ཅུ_
77	3.58%	_ o	_ །

77	3.58%	•u _	ԼԻԳ _	5	0.23%	_el	_ ԼԸ
55	2.56%	ŋu _	ՈՒԳ _	5	0.23%	su _	ՏԻԳ _
48	2.23%	_i	_ Թ	5	0.23%	_uq	_ ԵԸ
45	2.09%	k'e _	ԵԼԼ _	4	0.19%	bu _	ԲՈԳ _
36	1.67%	_•ul	_ ԼԻԳԸ	4	0.19%	ri _	ԻՐԸ
35	1.63%	_eg	_ ԼԸ	4	0.19%	•o _	ԵԿ _
35	1.63%	_ém	_ ԼԸ	4	0.19%	q _	Ը _
33	1.54%	se _	ՏԼԼ _	4	0.19%	_uŋ	_ ԵՈՍ
29	1.35%	me _	ՄԵԼ _	4	0.19%	_eu	_ ԼԻԳ
27	1.26%	le _	ԼԵԼ _	3	0.14%	č'o _	ՇԻԿ _
23	1.07%	_eè	_ ԼԼԸ	3	0.14%	r _	Ի _
22	1.02%	mu _	ՄԻԳ _	3	0.14%	_iš	_ ԹԸԸ
21	0.98%	bi _	ԲԻԸ _	3	0.14%	ho _	ԽԿԸ _
20	0.93%	•e _	ԵԼԼ _	3	0.14%	_on	_ ԿԹ
15	0.70%	_èn	_ ԼԼԸ	3	0.14%	_hr	_ ԼՏԻ
11	0.51%	m _	Մ _	3	0.14%	_•	_ Ե
11	0.51%	č'i _	ՇԻԸ _	3	0.14%	s _	Տ _
9	0.42%	_hiy	_ ԼՏԹՅ	2	0.09%	_eor	_ ԼԿԻ
8	0.37%	_um	_ ԵՐԸ	2	0.09%	_ué	_ ԵՈԸ
8	0.37%	_š	_ Ը	2	0.09%	_i _	_ Թ _
7	0.33%	_l	_ Ը	2	0.09%	_oq	_ ԿԸ
7	0.33%	m_o	Մ_Կ	2	0.09%	t'o _	ԹԿ _
6	0.28%	_•	_ Ե	2	0.09%	_r	_ Ի
6	0.28%	_•e	_ ԵԼԼ	2	0.09%	_ŋ	_ Ս
6	0.28%	ge _	ԳԵԼ _	2	0.09%	sm _	ՏՄ _
6	0.28%	_pl	_ ՍԸ	2	0.09%	beo _	ԲԵՍԿ _
6	0.28%	è _	Ը _	2	0.09%	mč'o _	ՄՇԻԿ _
6	0.28%	_hi	_ ԼՏԹ	2	0.09%	_or	_ ԿԻ
5	0.23%	_n	_ Թ	1	0.05%	_ris	_ ԻՐՏ
5	0.23%	_en	_ ԼԻԸ	1	0.05%	yo _	ՅՈ _
5	0.23%	wi _	ՎԻԸ _	1	0.05%	_•eg	_ ԵԼԸ
5	0.23%	_em	_ ԼԻԸ	1	0.05%	_•g	_ ԵԸ
5	0.23%	lu _	ԼՎԳ _	1	0.05%	_p	_ Ս

1	0.05%	p_	ཤ_
1	0.05%	_eb	_ལའ
1	0.05%	_u_	_ཉ_
1	0.05%	_g•	_ཐལ
1	0.05%	qu_	ཐཉ_
1	0.05%	_wus	_ཐཉའའ
1	0.05%	gu_	ཐཉ_
1	0.05%	_ri	_ཐའ
1	0.05%	u_	ཉ_
1	0.05%	_•	_ལ_
1	0.05%	_•en	_ལལའ
1	0.05%	_è	_འ
1	0.05%	se•_	འལལ_
1	0.05%	_rs	_ཐའ
1	0.05%	_eur	_ཐཉཉམ
1	0.05%	seo_	འལའའ_
1	0.05%	_us	_ཉའ
1	0.05%	k' _	ཐ_
1	0.05%	_il	_ཐའ
1	0.05%	nu_	ཐཉ_
1	0.05%	_en	_ལའ
1	0.05%	mo_	ཐའའ_
1	0.05%	_u•	_ཉལ
1	0.05%	ju_	ཐཉ_
1	0.05%	wr_	ཐམ_
1	0.05%	ye_	ཐལ_
1	0.05%	bsö_	ཐའའའ_
1	0.05%	li_	ཐའ_
1	0.05%	_•n	_ལའ
1	0.05%	_iŋs	_ཐའའའ
1	0.05%	_is	_ཐའ
1	0.05%	_s	_འ
1	0.05%	m_•	ཐ_ལ

1	0.05%	_bl	_ཐའ
ཤ < dz >			
22	100.00%	total	
4	18.18%	_i	_ཐ
4	18.18%	_u	_ཉ
3	13.64%	_ŋ	_ལ
2	9.09%	_uŋ	_ཉལ
2	9.09%	_hi	_ཐའ
1	4.55%	_ew	_ལམ
1	4.55%	_w	_མ
1	4.55%	_euŋ	_ཐཉལ
1	4.55%	_r	_མ
1	4.55%	_èn	_ཐའ
1	4.55%	_m	_ཐ
1	4.55%	_in	_ཐའ

ལ < e >			
2400	100.00%	total	
168	7.00%	g_	ཐ_
141	5.88%	d_	ལ_
123	5.13%	•_	ལ_
110	4.58%	k' _	ཐ_
109	4.54%	n_	ཐ_
101	4.21%	t' _	ཐ_
93	3.88%	l_	ལ_
92	3.83%	g_è	ཐ_འ
84	3.50%	č' _	ཐ_
79	3.29%	s_n	འ_ཐ
76	3.17%	b_r	ཐ_མ
74	3.08%	b_è	ཐ_འ
67	2.79%	•_r	ལ_མ
65	2.71%	j_n	ཐ_ཐ

57	2.38%	m_	ᄃ_	8	0.33%	f_n	ᄃ_ᄃ
45	1.88%	k_	ᄃ_	7	0.29%	g_w	ᄃ_ᄃ
45	1.88%	k'_d	ᄃ_ᄃ	7	0.29%	•_n	ᄃ_ᄃ
44	1.83%	s_	ᄃ_	7	0.29%	y_	ᄃ_
36	1.50%	r_	H_	6	0.25%	g_d	ᄃ_ᄃ
36	1.50%	l_s	ᄃ_ᄃ	6	0.25%	d_	ᄃ_ᄃ
35	1.46%	d_g	ᄃ_ᄃ	6	0.25%	rg_l	ᄃ_ᄃ
33	1.38%	s_d	ᄃ_ᄃ	6	0.25%	y_n	ᄃ_ᄃ
31	1.29%	t'_n	ᄃ_ᄃ	6	0.25%	g_n	ᄃ_ᄃ
30	1.25%	g*_n	ᄃ_ᄃ	6	0.25%	b_yi	ᄃ_ᄃ
29	1.21%	m_d	ᄃ_ᄃ	5	0.21%	h_inj	ᄃ_ᄃ
28	1.17%	m_s	ᄃ_ᄃ	5	0.21%	d_l	ᄃ_ᄃ
27	1.13%	h*_n	ᄃ_ᄃ	5	0.21%	d_m	ᄃ_ᄃ
27	1.13%	l_d	ᄃ_ᄃ	5	0.21%	d_n	ᄃ_ᄃ
26	1.08%	č'_n	ᄃ_ᄃ	5	0.21%	tsv_n	ᄃ_ᄃ
24	1.00%	k*_	ᄃ_ᄃ	4	0.17%	g_r	ᄃ_ᄃ
23	0.96%	g*_	ᄃ_ᄃ	4	0.17%	r_g	ᄃ_ᄃ
23	0.96%	d_è	ᄃ_ᄃ	4	0.17%	r*_	ᄃ_ᄃ
20	0.83%	ǰ_è	ᄃ_ᄃ	4	0.17%	m_r	ᄃ_ᄃ
20	0.83%	•_d	ᄃ_ᄃ	3	0.13%	g_m	ᄃ_ᄃ
20	0.83%	'v_n	ᄃ_ᄃ	3	0.13%	l_n	ᄃ_ᄃ
19	0.79%	k*_n	ᄃ_ᄃ	3	0.13%	l_g	ᄃ_ᄃ
17	0.71%	k*_g	ᄃ_ᄃ	3	0.13%	h_n	ᄃ_ᄃ
16	0.67%	y_r	ᄃ_ᄃ	3	0.13%	t'_r	ᄃ_ᄃ
16	0.67%	h_	ᄃ_ᄃ	3	0.13%	g_s	ᄃ_ᄃ
16	0.67%	g_y	ᄃ_ᄃ	2	0.08%	•_g	ᄃ_ᄃ
15	0.63%	b_	ᄃ_ᄃ	2	0.08%	ǰ_m	ᄃ_ᄃ
14	0.58%	g*_k'	ᄃ_ᄃ	2	0.08%	s_t'	ᄃ_ᄃ
13	0.54%	ǰ_	ᄃ_ᄃ	2	0.08%	n_n	ᄃ_ᄃ
9	0.38%	g_i	ᄃ_ᄃ	2	0.08%	g_l	ᄃ_ᄃ
9	0.38%	k'_n	ᄃ_ᄃ	2	0.08%	m_g	ᄃ_ᄃ
9	0.38%	k'_r	ᄃ_ᄃ	2	0.08%	_	_
9	0.38%	sv_n	ᄃ_ᄃ	2	0.08%	f_	ᄃ_ᄃ

2	0.08%	s_ŋ	𑐳_𑐮
2	0.08%	r_n	H_𑐮
2	0.08%	š_	𑐮_
2	0.08%	l_l	𑐮_𑐮
2	0.08%	t'_g	𑐮_𑐮
2	0.08%	'_r	𑐳_H
2	0.08%	g•_g	𑐮𑐮_𑐮
2	0.08%	l_ŋ	𑐮_𑐮
2	0.08%	b_n	𑐮_𑐮
1	0.04%	š_n	𑐮_𑐮
1	0.04%	brg_	𑐮𑐮𑐮_
1	0.04%	s_r	𑐳_H
1	0.04%	j_s	𑐮_𑐳
1	0.04%	y_d	𑐳_𑐮
1	0.04%	d_b	𑐮_𑐮
1	0.04%	k'_m	𑐮_𑐮
1	0.04%	z_ŋ	𑐮_𑐮
1	0.04%	d•_n	𑐮𑐮_𑐮
1	0.04%	j_w	𑐮_𑐮
1	0.04%	s_•d	𑐳_𑐮𑐮
1	0.04%	b•_n	𑐮𑐮_𑐮
1	0.04%	d_ŋ	𑐮_𑐮
1	0.04%	k_s	𑐮_𑐳
1	0.04%	r_s	H_𑐳
1	0.04%	rg_	H𑐮_
1	0.04%	p_in	𑐮_𑐮𑐮
1	0.04%	k'_è	𑐮_𑐮
1	0.04%	d•_g	𑐮𑐮_𑐮
1	0.04%	dz_w	𑐮_𑐮
1	0.04%	g_g	𑐮_𑐮
1	0.04%	g_ij	𑐮_𑐮𑐮
1	0.04%	s_g	𑐳_𑐮
1	0.04%	h_g	𑐮_𑐮

1	0.04%	g_ŋ	𑐮_𑐮
1	0.04%	gv_n	𑐮𑐮_𑐮
1	0.04%	č'_l	𑐮_𑐮
1	0.04%	q•_	𑐮𑐮_
1	0.04%	ž_	𑐮_
1	0.04%	k_w	𑐮_𑐮
1	0.04%	yv_n	𑐮𑐮_𑐮
1	0.04%	•r	𑐮𑐮_𑐮
1	0.04%	b_l	𑐮_𑐮
1	0.04%	s_b	𑐳_𑐮
1	0.04%	'v_	𑐳_𑐮
1	0.04%	h_èn	𑐮_𑐮𑐮
1	0.04%	j_g	𑐮_𑐮
1	0.04%	k'_i	𑐮_𑐮
1	0.04%	t'_yi	𑐮_𑐮𑐮

𑐮K <eo>

345	100.00%	total	
114	33.04%	'_	𑐳_
71	20.58%	'_g	𑐳_𑐮
40	11.59%	b_	𑐮_
31	8.99%	k'_	𑐮_
20	5.80%	'_l	𑐳_𑐮
19	5.51%	t'_	𑐮_
5	1.45%	č'_l	𑐮_𑐮
5	1.45%	n_	𑐮_
5	1.45%	k'_r	𑐮_𑐮
5	1.45%	n_r	𑐮_𑐮
4	1.16%	r_	H_
3	0.87%	'_ŋ	𑐳_𑐮
3	0.87%	m_r	𑐮_𑐮
2	0.58%	b_d	𑐮_𑐮
2	0.58%	g_n	𑐮_𑐮

2	0.58%	d_r	𑍩_H
2	0.58%	k'_l	𑍡_𑍡
2	0.58%	g_	𑍢_
2	0.58%	'_r	𑍤_H
1	0.29%	l_	𑍣_
1	0.29%	r_n	H_𑍢
1	0.29%	č'_n	𑍡_𑍢
1	0.29%	k'_rg	𑍡_𑍢𑍢
1	0.29%	r_l	H_𑍡
1	0.29%	m_	𑍢_
1	0.29%	s_d	𑍤_𑍩
1	0.29%	k'_n	𑍡_𑍢

𑍩𑍩 <eu>

610	100.00%	total	
250	40.98%	'_	𑍤_
105	17.21%	'_è	𑍤_𑍢
56	9.18%	s_	𑍤_
32	5.25%	g_𑍩	𑍢_𑍢
27	4.43%	k'_	𑍡_
18	2.95%	b_	𑍢_
17	2.79%	•_	𑍣_
15	2.46%	ĵ_	𑍡_
15	2.46%	t'_	𑍢_
12	1.97%	h_	𑍤_
8	1.31%	k'_r	𑍡_H
7	1.15%	g_	𑍢_
4	0.66%	l_	𑍣_
4	0.66%	d_	𑍩_
4	0.66%	y_	𑍤_
4	0.66%	š_	𑍢_
3	0.49%	č'_	𑍡_
3	0.49%	č_	𑍢_

2	0.33%	'_n	𑍤_𑍢
2	0.33%	s_𑍩	𑍤_𑍢
2	0.33%	g_n	𑍢_𑍢
2	0.33%	l_𑍩	𑍣_𑍢
2	0.33%	y_𑍩	𑍤_𑍢
2	0.33%	č'_n	𑍡_𑍢
2	0.33%	k'_𑍩	𑍡_𑍢
1	0.16%	l_g	𑍣_𑍢
1	0.16%	z_𑍩	𑍢_𑍢
1	0.16%	d_r	𑍩_H
1	0.16%	dz_𑍩	𑍢_𑍢
1	0.16%	'_s	𑍤_𑍤
1	0.16%	ž_n	𑍢_𑍢
1	0.16%	s_n	𑍤_𑍢
1	0.16%	'_𑍩	𑍤_𑍢
1	0.16%	m_r	𑍢_H
1	0.16%	ž_	𑍢_
1	0.16%	k'_n	𑍡_𑍢
1	0.16%	ĵ_𑍩	𑍡_𑍢

𑍢𑍢 <è>

1100	100.00%	total	
192	17.46%	_	-
105	9.55%	'eu_	𑍤𑍩𑍩_
101	9.18%	d_𑍩	𑍩_𑍢
92	8.36%	ge_	𑍢𑍩_
74	6.73%	be_	𑍢𑍩_
74	6.73%	•u_	𑍣𑍩_
66	6.00%	_l	_𑍣
44	4.00%	y_	𑍤_
42	3.82%	qu_	𑍢𑍩_
36	3.27%	_r	_H
35	3.18%	d_m	𑍩_𑍢



26	2.36%	gu_	𑄂𑄣_	2	0.18%	du_	𑄂𑄣_
23	2.09%	de_	𑄂𑄣_	2	0.18%	_b	_𑄂
20	1.82%	je_	𑄂𑄣_	2	0.18%	gh_	𑄂𑄣_
15	1.36%	d_n	𑄂_𑄂	1	0.09%	su_	𑄂𑄣_
14	1.27%	k'u_	𑄂𑄣_	1	0.09%	dz_n	𑄂_𑄂
10	0.91%	š_n	𑄂_𑄂	1	0.09%	g_m	𑄂_𑄂
9	0.82%	m_w	𑄂_𑄣	1	0.09%	d_	𑄂_
9	0.82%	bu_	𑄂𑄣_	1	0.09%	š_r	𑄂_𑄂
7	0.64%	mu_	𑄂𑄣_	1	0.09%	l_ŋ	𑄂_𑄂
6	0.55%	_d	_𑄂	1	0.09%	he_n	𑄂𑄣_𑄂
5	0.46%	ŋ_m	𑄂_𑄂	1	0.09%	u_	𑄂_
5	0.46%	č'_n	𑄂_𑄂	1	0.09%	g_	𑄂_
5	0.46%	s_n	𑄂_𑄂	1	0.09%	m_n	𑄂_𑄂
5	0.46%	j_w	𑄂_𑄣	1	0.09%	_m	_𑄂
4	0.36%	y_r	𑄂_𑄂	1	0.09%	k'e_	𑄂𑄣_
4	0.36%	'_r	𑄂_𑄂	1	0.09%	ñ_n	𑄂_𑄂
3	0.27%	y_n	𑄂_𑄂	1	0.09%	n_n	𑄂_𑄂
3	0.27%	t'_n	𑄂_𑄂	1	0.09%	y_u	𑄂_𑄂
3	0.27%	r_n	𑄂_𑄂	1	0.09%	gy_r	𑄂𑄣_𑄂
3	0.27%	z_r	𑄂_𑄂	1	0.09%	gy_l	𑄂𑄣_𑄂
3	0.27%	č'_w	𑄂_𑄣	1	0.09%	t_	𑄂_
3	0.27%	t_n	𑄂_𑄂	1	0.09%	b_	𑄂_
2	0.18%	š_s	𑄂_𑄂	1	0.09%	j_n	𑄂_𑄂
2	0.18%	p_n	𑄂_𑄂	1	0.09%	l_m	𑄂_𑄂
2	0.18%	_n	_𑄂	1	0.09%	y_w	𑄂_𑄣
2	0.18%	č'_	𑄂_	1	0.09%	k'_	𑄂_
2	0.18%	_ŋ	_𑄂	1	0.09%	t'_	𑄂_
2	0.18%	s_ŋ	𑄂_𑄂	1	0.09%	p_sr	𑄂_𑄂𑄣
2	0.18%	h_n	𑄂_𑄂	1	0.09%	lu_	𑄂𑄣_
2	0.18%	š_w	𑄂_𑄣				
2	0.18%	šu_	𑄂𑄣_				
2	0.18%	m_	𑄂_				
2	0.18%	rj_	𑄂𑄣_				
				41	100.00%	total	
				12	29.27%	_u	_𑄂

𑄂 &lt;f&gt;

11	26.83%	_	_
8	19.51%	_en	_ሆሪ
5	12.20%	_uj	_ዳቢ
3	7.32%	_ገ	_ቢ
2	4.88%	_e	_ሆ

ቤ <g>

1010	100.00%	total	
168	16.63%	_e	_ሆ
92	9.11%	_eè	_ሆሆ
77	7.62%	_un	_ዳሪ
71	7.03%	'eo	ጌሆሀ _
35	3.47%	de	ሆሆ _
34	3.37%	ri	ሆሪ _
32	3.17%	_euj	_ሆዳቢ
30	2.97%	_en	_ሆሆሪ
30	2.97%	_is	_ሪሪ
29	2.87%	_ir	_ሪዘ
26	2.57%	_uè	_ዳሆ
25	2.48%	_on	_ሀሪ
24	2.38%	_u	_ዳ
23	2.28%	_e	_ሆሆ
17	1.68%	k'e	ሆሆሆ _
17	1.68%	lu	ሆዳ _
16	1.58%	_ey	_ሆሪ
16	1.58%	č'i	ሆሪ _
14	1.39%	_ek'	_ሆሆሆ
10	0.99%	_us	_ዳሪ
9	0.89%	_ei	_ሆሪ
8	0.79%	_jy	_ሆሪ
8	0.79%	_o	_ሀ
8	0.79%	_	_
8	0.79%	_i	_ሪ

8	0.79%	_m	_ሪ
7	0.69%	_jገ	_ሆቢ
7	0.69%	_ew	_ሆሆ
7	0.69%	_eu	_ሆዳ
6	0.59%	_en	_ሆሪ
6	0.59%	r_el	ሆ _ሆሪ
6	0.59%	_ed	_ሆሆ
5	0.50%	r_jl	ሆ _ሆሪ
5	0.50%	ši	ሆሪ _
5	0.50%	_vገ	_ሆቢ
4	0.40%	re	ሆሆ _
4	0.40%	_er	_ሆዘ
4	0.40%	_r	_ሀ
4	0.40%	_žis	_ሆሪሪ
3	0.30%	_em	_ሆሪ
3	0.30%	_es	_ሆሪ
3	0.30%	s_ገ	ሪ _ቢ
3	0.30%	_il	_ሪሪ
3	0.30%	_uj	_ዳቢ
3	0.30%	li	ሆሪ _
3	0.30%	le	ሆሆ _
2	0.20%	_e	ሆሆ _
2	0.20%	t'e	ሆሆ _
2	0.20%	_r_s	_ሀ _ሪ
2	0.20%	_js	_ሆሪ
2	0.20%	_b	_ሀ
2	0.20%	me	ሆሆ _
2	0.20%	_el	_ሆሪ
2	0.20%	_eon	_ሆሀሪ
2	0.20%	_l	_ሀ
2	0.20%	_im	_ሆሪ
2	0.20%	_eun	_ሆዳሪ
2	0.20%	_jw	_ሆሆ

2	0.20%	s_or	ཨ
2	0.20%	_e_	ལ
2	0.20%	_iŋ	ཏ
2	0.20%	_hè	འ
2	0.20%	_ur	ཤ
2	0.20%	_ŋ	ཏ
2	0.20%	_w	ལ
2	0.20%	_eo	འ
2	0.20%	_s	ཨ
1	0.10%	_tsŋ	ཏ
1	0.10%	k'eor	འའའ
1	0.10%	se	ཨ
1	0.10%	_ŋs	ཏ
1	0.10%	bč'u	འའའ
1	0.10%	_bro	འའའ
1	0.10%	_sum	འའའ
1	0.10%	d•e	འའའ
1	0.10%	_è	འ
1	0.10%	_e	འ
1	0.10%	d•	འའའ
1	0.10%	_os	འ
1	0.10%	he	འ
1	0.10%	s_l	ཨ
1	0.10%	qro	འའའ
1	0.10%	r_m	འ
1	0.10%	_r	འ
1	0.10%	r_jb	འའའ
1	0.10%	br_e	འའའ
1	0.10%	_jl	འ
1	0.10%	je	འའའ
1	0.10%	_yèl	འའའ
1	0.10%	_erŋ	འའའ
1	0.10%	k'i	འའའ

1	0.10%	s_o	ཨ
1	0.10%	_yèr	འའའ
1	0.10%	_eiŋ	འའའ
1	0.10%	t'u	འའའ
1	0.10%	_èm	འའའ
1	0.10%	s_u	ཨ
1	0.10%	_ji	འ
1	0.10%	_ud	འའའ
1	0.10%	_iw	འའའ
1	0.10%	leu	འའའ
1	0.10%	s_b	ཨ
1	0.10%	d•	འ
1	0.10%	r_jis	འའའ
1	0.10%	r_e	འ
1	0.10%	_rub	འའའ
1	0.10%	_ronŋ	འའའ
1	0.10%	_j	འ
1	0.10%	_ven	འའའ

འ <γ>

48	100.00%	total	
13	27.08%		
7	14.58%	_n	འ
5	10.42%	_v	འ
5	10.42%	_o	ཨ
3	6.25%	_uŋ	འའའ
3	6.25%	_oŋ	འའའ
3	6.25%	_iw	འའའ
2	4.17%	_vo	འ
2	4.17%	_u	འ
1	2.08%	_vy	འ
1	2.08%	_w	འ
1	2.08%	_ŋ	འ

1	2.08%	_inj	_ 𑌗𑌢
1	2.08%	_vn	_ 𑌗𑌣

𑌗 <h>

442	100.00%	total	
95	21.49%	š_i	𑌗_ 𑌗
75	16.97%	_	_
65	14.71%	_i	_ 𑌗
31	7.01%	z_i	𑌗_ 𑌗
27	6.11%	_en	_ 𑌗𑌢𑌣
16	3.62%	_e	_ 𑌗
15	3.39%	s_i	𑌗_ 𑌗
15	3.39%	_r	_ 𑌗
14	3.17%	_on	_ 𑌗𑌢
12	2.72%	_eu	_ 𑌗𑌢
9	2.04%	d_iy	𑌗_ 𑌗𑌢
6	1.36%	d_i	𑌗_ 𑌗
5	1.13%	_eij	_ 𑌗𑌢𑌣
4	0.91%	ĵ_ŋ	𑌗_ 𑌗
3	0.68%	l_	𑌗_
3	0.68%	d_r	𑌗_ 𑌗
3	0.68%	_en	_ 𑌗𑌢
3	0.68%	_od	_ 𑌗𑌢
3	0.68%	_y	_ 𑌗
3	0.68%	_j	_ 𑌗
3	0.68%	t'	𑌗_
3	0.68%	_u	_ 𑌗
2	0.45%	g_è	𑌗_ 𑌗
2	0.45%	_èn	_ 𑌗𑌢
2	0.45%	dz_i	𑌗_ 𑌗
2	0.45%	_o	_ 𑌗
2	0.45%	s_inj	𑌗_ 𑌗𑌢
2	0.45%	l_s	𑌗_ 𑌗

1	0.23%	š_i•	𑌗_ 𑌗𑌢
1	0.23%	t_iy	𑌗_ 𑌗𑌢
1	0.23%	k'r_s	𑌗_ 𑌗𑌢
1	0.23%	_jiŋ	_ 𑌗𑌢𑌣
1	0.23%	č_i	𑌗_ 𑌗
1	0.23%	l_os	𑌗_ 𑌗𑌢
1	0.23%	_jŋ	_ 𑌗𑌢
1	0.23%	_eèn	_ 𑌗𑌢𑌣
1	0.23%	_uŋ	_ 𑌗𑌢
1	0.23%	t_i	𑌗_ 𑌗
1	0.23%	_eg	_ 𑌗𑌢
1	0.23%	t_inj	𑌗_ 𑌗𑌢
1	0.23%	ĵ_iw	𑌗_ 𑌗𑌢
1	0.23%	ts_i	𑌗_ 𑌗
1	0.23%	t_iw	𑌗_ 𑌗𑌢
1	0.23%	_or	_ 𑌗𑌢
1	0.23%	_oq	_ 𑌗𑌢

𑌗 <i>

3085	100.00%	total	
501	16.24%	r_	𑌗_
219	7.10%	qy_	𑌗_ 𑌗
219	7.10%	č'_	𑌗_
186	6.03%	l_	𑌗_
176	5.71%	y_n	𑌗_ 𑌗
170	5.51%	l_q	𑌗_ 𑌗
111	3.60%	y_	𑌗_
95	3.08%	šh_	𑌗_ 𑌗
90	2.92%	y_d	𑌗_ 𑌗
89	2.89%	š_	𑌗_
86	2.79%	b_	𑌗_
65	2.11%	h_	𑌗_
56	1.82%	ĵ_	𑌗_

56	1.82%	n_	ཏ_	8	0.26%	j_r	ཡ_ཨ
48	1.56%	d_	ལ_	8	0.26%	z_n	ཅ_ཏ
44	1.43%	č'_n	མ_ཏ	7	0.23%	w_	ཨ_
38	1.23%	•_	ལ_	7	0.23%	l_m	ལ_ཏ
37	1.20%	j_ŋ	ཡ_ཏ	6	0.19%	t'y_	མ_ཏ
35	1.14%	•y_	ལ_ཏ	6	0.19%	š_w	ཏ_ཨ
35	1.14%	j_l	ཡ_ཏ	6	0.19%	dh_	ལ_ཏ
34	1.10%	r_g	མ_ཏ	6	0.19%	q_	ལ_
32	1.04%	k'_	ཨ_	6	0.19%	ž_	ཅ_
31	1.01%	zh_	ལ_ཏ	6	0.19%	bey_	ཏ_ཏ
30	0.97%	g_s	ཏ_ཏ	5	0.16%	š_g	ཏ_ཏ
29	0.94%	g_r	ཏ_ཨ	5	0.16%	ny_	ཏ_ཏ
29	0.94%	r_n	མ_ཏ	5	0.16%	š_r	ཏ_ཨ
25	0.81%	t_	ལ_	5	0.16%	n_ŋ	ཏ_ཏ
22	0.71%	j_n	ཡ_ཏ	5	0.16%	by_	ཏ_ཏ
21	0.68%	b_d	ཏ_ལ	5	0.16%	he_ŋ	ལ_ཏ
20	0.65%	s_	ཏ_	5	0.16%	w_d	ཨ_ལ
19	0.62%	_	_	4	0.13%	š_n	ཏ_ཏ
18	0.58%	m_	ཏ_	4	0.13%	r_q	མ_ལ
16	0.52%	č'_g	མ_ཏ	4	0.13%	t_ŋ	ལ_ཏ
15	0.49%	sh_	ཏ_ཏ	4	0.13%	n_s	ཏ_ཏ
14	0.45%	ly_	ཏ_ཏ	4	0.13%	ts'_n	ཏ_ཏ
13	0.42%	m_ŋ	ཏ_ཏ	4	0.13%	č_	ཏ_
13	0.42%	•_r	ལ_ཨ	4	0.13%	gž'_s	ཏ_ཏ
12	0.39%	j_w	ཡ_ཨ	4	0.13%	š_l	ཏ_ཏ
11	0.36%	č'_d	མ_ལ	4	0.13%	r_d	མ_ལ
10	0.32%	k_	ལ_	4	0.13%	dz_	ཏ_
9	0.29%	ge_	ཏ_ཏ	4	0.13%	ŋ_	ཏ_
9	0.29%	dh_y	ལ_ཏ	3	0.10%	t'_n	ཏ_ཏ
8	0.26%	p_ŋ	ཏ_ཏ	3	0.10%	γ_w	ཏ_ཏ
8	0.26%	š_ŋ	ཏ_ཏ	3	0.10%	l_g	ཏ_ཏ
8	0.26%	g_	ཏ_	3	0.10%	ts'_ŋ	ཏ_ཏ
8	0.26%	'y_	ཏ_ཏ	3	0.10%	g_l	ཏ_ཏ

3	0.10%	č_n	ᠮ_ᠪ
3	0.10%	r_s	ᠬ_ᠵ
3	0.10%	•_ᠨ	ᠪ_ᠮ
3	0.10%	l_ᠨ	ᠪ_ᠮ
3	0.10%	d_š	ᠮ_ᠪ
3	0.10%	ts_ᠨ	ᠪ_ᠮ
3	0.10%	qoy_	ᠪᠻ_ᠵ
2	0.07%	st_	ᠵᠡᠰ_
2	0.07%	g_m	ᠪ_ᠮ
2	0.07%	m_n	ᠮ_ᠮ
2	0.07%	d_d	ᠮ_ᠮ
2	0.07%	y_l	ᠵ_ᠪ
2	0.07%	t'_	ᠮ_
2	0.07%	rj_	ᠬᠠᠰ_
2	0.07%	n_n	ᠮ_ᠮ
2	0.07%	sh_ᠨ	ᠵᠻ_ᠮ
2	0.07%	g_ᠨ	ᠪ_ᠮ
2	0.07%	dzh_	ᠮᠻ_
2	0.07%	n_r	ᠮ_ᠬ
2	0.07%	l_w	ᠪ_ᠮ
2	0.07%	k'_l	ᠪ_ᠪ
2	0.07%	č'_m	ᠬ_ᠮ
1	0.03%	r_r	ᠬ_ᠬ
1	0.03%	p_	ᠮ_
1	0.03%	kž_s	ᠪᠻ_ᠵ
1	0.03%	ts_r	ᠪ_ᠮ
1	0.03%	rgj_s	ᠬᠪᠵ_ᠵ
1	0.03%	gj_	ᠪᠵ_
1	0.03%	_t'	_ᠮ
1	0.03%	g_w	ᠪ_ᠮ
1	0.03%	dr_	ᠮᠬ_
1	0.03%	hj_ᠨ	ᠵᠵ_ᠮ
1	0.03%	s_m	ᠵ_ᠮ

1	0.03%	ts_	ᠪ_
1	0.03%	th_w	ᠵᠻ_ᠮ
1	0.03%	k'_w	ᠪ_ᠮ
1	0.03%	d_l	ᠮ_ᠪ
1	0.03%	th_y	ᠵᠻ_ᠵ
1	0.03%	d_ᠨs	ᠮ_ᠮᠻ
1	0.03%	z_m	ᠮ_ᠮ
1	0.03%	dz_n	ᠮ_ᠮ
1	0.03%	l_d	ᠪ_ᠮ
1	0.03%	š_s	ᠮ_ᠵ
1	0.03%	y_q	ᠵ_ᠪ
1	0.03%	t'ey_	ᠮᠠᠵ_
1	0.03%	th_ᠨ	ᠵᠻ_ᠮ
1	0.03%	k'_ᠨ	ᠪ_ᠮ
1	0.03%	y_m	ᠵ_ᠮ
1	0.03%	q_q	ᠪ_ᠪ
1	0.03%	d_s	ᠮ_ᠵ
1	0.03%	s_ᠨ	ᠵ_ᠮ
1	0.03%	k'_g	ᠪ_ᠮ
1	0.03%	q_s	ᠪ_ᠵ
1	0.03%	čh_	ᠮᠻ_
1	0.03%	br_n	ᠮᠪ_ᠮ
1	0.03%	dr_s	ᠮᠬ_ᠵ
1	0.03%	k'e_	ᠪᠠᠵ_
1	0.03%	th_	ᠵᠻ_
1	0.03%	ts_n	ᠪ_ᠮ
1	0.03%	l_l	ᠪ_ᠪ
1	0.03%	ge_ᠨ	ᠮᠪ_ᠮ
1	0.03%	m_s	ᠮ_ᠵ
1	0.03%	jh_w	ᠮᠻ_ᠮ
1	0.03%	ǰ_u	ᠮ_ᠮ
1	0.03%	r_l	ᠮ_ᠪ
1	0.03%	č'_r	ᠮ_ᠮ

1	0.03%	ž_ŋ	ཅ_ཏ
1	0.03%	s_w	ཅ_ཨ
1	0.03%	ň_	ཅ_
1	0.03%	γ_ŋ	ཅ_ཏ
1	0.03%	z_r	ཏ_ཏ
1	0.03%	pe_n	ཏ_ཏ_ཏ
1	0.03%	tsh_	ཏ_ཏ_
1	0.03%	p_z	ཏ_ཏ
1	0.03%	ry_	ཏ_ཏ_
1	0.03%	šh_•	ཏ_ཏ_ཏ
ུ <j>			
48	100.00%	total	
8	16.67%	g_y	ཏ_ཏ_ཏ
7	14.58%	g_ŋ	ཏ_ཏ_ཏ
6	12.50%	z_ŋ	ཏ_ཏ_ཏ
5	10.42%	rg_l	ཏ_ཏ_ཏ_ཏ
3	6.25%	h_	ཏ_ཏ_
2	4.17%	k_	ཏ_ཏ_
2	4.17%	g_s	ཏ_ཏ_ཏ
2	4.17%	g_w	ཏ_ཏ_ཏ
1	2.08%	z_	ཏ_ཏ_
1	2.08%	h_inj	ཏ_ཏ_ཏ_ཏ
1	2.08%	g_l	ཏ_ཏ_ཏ
1	2.08%	k_uj	ཏ_ཏ_ཏ_ཏ
1	2.08%	rg_b	ཏ_ཏ_ཏ_ཏ
1	2.08%	ǰ_	ཏ_ཏ_
1	2.08%	g_i	ཏ_ཏ_ཏ
1	2.08%	g_	ཏ_ཏ_
1	2.08%	p_ŋ	ཏ_ཏ_ཏ
1	2.08%	rg_is	ཏ_ཏ_ཏ_ཏ_ཏ
1	2.08%	h_ŋ	ཏ_ཏ_ཏ_ཏ
1	2.08%	b_	ཏ_ཏ_

1	2.08%	l_m	ཏ_ཏ_ཏ
ཡ <j>			
1017	100.00%	total	
295	29.01%	_u	_ཏ
251	24.68%	_r	_ཏ
65	6.39%	_en	_ཏ_ཏ
64	6.29%	_l	_ཏ
61	6.00%	_	_
56	5.51%	_i	_ཏ
37	3.64%	_inj	_ཏ_ཏ
35	3.44%	_il	_ཏ_ཏ
22	2.16%	_in	_ཏ_ཏ
20	1.97%	_èè	_ཏ_ཏ
15	1.48%	_eu	_ཏ_ཏ
14	1.38%	_ŋ	_ཏ
13	1.28%	_e	_ཏ
12	1.18%	_iw	_ཏ_ཏ
8	0.79%	_uj	_ཏ_ཏ
8	0.79%	_o	_ཏ
8	0.79%	_ir	_ཏ_ཏ
5	0.49%	_èw	_ཏ_ཏ
4	0.39%	_hj	_ཏ_ཏ
4	0.39%	_m	_ཏ
2	0.20%	r_è	ཏ_ཏ
2	0.20%	_em	_ཏ_ཏ
2	0.20%	_•	_ཏ
2	0.20%	r_i	ཏ_ཏ
1	0.10%	_èn	_ཏ_ཏ
1	0.10%	_ul	_ཏ_ཏ
1	0.10%	_n	_ཏ
1	0.10%	_euj	_ཏ_ཏ_ཏ
1	0.10%	_hiw	_ཏ_ཏ_ཏ

1	0.10%	_ eg	_ ሪፍ
1	0.10%	_ es	_ ሪሯ
1	0.10%	_ ew	_ ሪዜ
1	0.10%	_ y	_ ኃ
1	0.10%	_ j	_ ህ
1	0.10%	_ iu	_ ሪጻጻ
1	0.10%	_ ud	_ ጻሳ

፫ <k>

70	100.00%	total	
45	64.29%	_ e	_ ሪ
10	14.29%	_ i	_ ሪ
3	4.29%	_	_
2	2.86%	_ j	_ ህ
1	1.43%	_ es	_ ሪሯ
1	1.43%	_ ew	_ ሪዜ
1	1.43%	_ un	_ ጻጻ
1	1.43%	_ r	_ ዘ
1	1.43%	_ žis	_ ጻጻሯ
1	1.43%	_ juግ	_ ህጻጻ
1	1.43%	s_ or	ሯ_ ዘ
1	1.43%	_ l	_ ጸ
1	1.43%	_ u	_ ጻ
1	1.43%	s_ u	ሯ_ ጻ

፬ <k'>

612	100.00%	total	
123	20.10%	_ u	_ ጻ
110	17.97%	_ e	_ ሪ
45	7.35%	_ ed	_ ሪሳ
37	6.05%	_	_
36	5.88%	_ un	_ ጻጻ
32	5.23%	_ i	_ ሪ

31	5.07%	_ eo	_ ሪዘ
27	4.41%	_ eu	_ ሪጻጻ
24	3.92%	_ *e	_ ሪሳ
23	3.76%	_ ur	_ ጻዘ
19	3.11%	_ *en	_ ሪሳጻ
17	2.78%	_ *eg	_ ሪሳፍ
14	2.29%	g*e	ፍሪሳ_
14	2.29%	_ uè	_ ጻጻ
9	1.47%	_ en	_ ሪጻ
9	1.47%	_ er	_ ሪዘ
8	1.31%	_ eur	_ ሪጻጻዘ
5	0.82%	_ eor	_ ሪዘዘ
3	0.49%	_ uግ	_ ጻጻ
3	0.49%	_ y	_ ኃ
2	0.33%	_ il	_ ሪጸጸ
2	0.33%	_ n	_ ሪ
2	0.33%	_ euግ	_ ሪጻጻ
2	0.33%	_ eol	_ ሪዘጸ
1	0.16%	_ d	_ ሳ
1	0.16%	_ iw	_ ሪዜ
1	0.16%	_ em	_ ሪጻ
1	0.16%	_ è	_ ጻ
1	0.16%	_ ig	_ ሪጻፍ
1	0.16%	_ ei	_ ሪጻ
1	0.16%	_ iግ	_ ሪጻ
1	0.16%	_ o	_ ዘ
1	0.16%	_ eorg	_ ሪዘዘፍ
1	0.16%	_ eè	_ ሪጻ
1	0.16%	_ eun	_ ሪጻጻጻ
1	0.16%	_ rhs	_ ዘሳሯ
1	0.16%	_ r	_ ዘ
1	0.16%	_ eon	_ ሪዘጻ
1	0.16%	_ ግ	_ ጻ



𑀧 <1>

1451	100.00%	total	5	0.35%	q_	𑀧_
186	12.82%	_ i	5	0.35%	č'eo_	𑀧𑀢𑀢_
170	11.72%	_ iq	5	0.35%	_ ud	_ 𑀢𑀢
162	11.17%	_ u	5	0.35%	de_	𑀢𑀢_
104	7.17%	_	4	0.28%	ši_	𑀧𑀢_
99	6.82%	'_	4	0.28%	qo_	𑀢𑀢_
93	6.41%	_ e	4	0.28%	_ eu	_ 𑀢𑀢
66	4.55%	è_	3	0.21%	gi_	𑀧𑀢_
64	4.41%	ĵ_	3	0.21%	_ eg	_ 𑀢𑀢
51	3.52%	bo_	3	0.21%	_ en	_ 𑀢𑀢
36	2.48%	d•u_	3	0.21%	b_	𑀢_
36	2.48%	_ es	3	0.21%	t'_	𑀢_
35	2.41%	ĵi_	3	0.21%	_ h	_ 𑀢
32	2.21%	_ •	3	0.21%	_ in	_ 𑀢𑀢
27	1.86%	_ ed	3	0.21%	_ ig	_ 𑀢𑀢
21	1.45%	•u_	2	0.14%	_ iw	_ 𑀢𑀢
20	1.38%	'eo_	2	0.14%	_ e_	_ 𑀢_
20	1.38%	_ un	2	0.14%	yi_	𑀢𑀢_
17	1.17%	_ ug	2	0.14%	_ us	_ 𑀢𑀢
14	0.97%	_ yi	2	0.14%	n_	𑀢_
12	0.83%	_ w	2	0.14%	_ en	_ 𑀢𑀢
9	0.62%	_ on	2	0.14%	_ eun	_ 𑀢𑀢𑀢
7	0.48%	_ im	2	0.14%	g_	𑀢_
7	0.48%	_ o	2	0.14%	k'i_	𑀢𑀢_
7	0.48%	d_	2	0.14%	ge_	𑀢𑀢_
6	0.41%	_ n	2	0.14%	k'eo_	𑀢𑀢𑀢_
6	0.41%	dp_	2	0.14%	_ hs	_ 𑀢𑀢
6	0.41%	_ u•	1	0.07%	šu_	𑀢𑀢_
6	0.41%	_ ŋ	1	0.07%	•_	𑀢_
6	0.41%	rge_	1	0.07%	ts'_	𑀢_
6	0.41%	_ uq	1	0.07%	di_	𑀢𑀢_
5	0.35%	rgj_	1	0.07%	db_	𑀢𑀢_
			1	0.07%	y_	𑀢_

1	0.07%	_ uè	_ ʁɛ	57	9.03%	_ e	_ ɛ
1	0.07%	r_	H_	42	6.66%	_ onj	_ Kɒ
1	0.07%	k_	Ɛ_	38	6.02%	t' _	ʁ _
1	0.07%	_ i_	_ ʁ_	35	5.55%	dè_	ʁɛ _
1	0.07%	_ b	_ ɒ	31	4.91%	_ u	_ ʁ
1	0.07%	u_	ʁ_	29	4.60%	_ ed	_ ʁɛ
1	0.07%	be_	ʁɛ _	28	4.44%	_ es	_ ʁɛ
1	0.07%	o_	K_	22	3.49%	_ ud	_ ʁɛ
1	0.07%	reo_	HʁK_	21	3.33%	_ un	_ ʁɛ
1	0.07%	_ q	_ ɛ	18	2.85%	_ i	_ ʁ
1	0.07%	č'u_	Hʁʁ_	15	2.38%	_ o	_ K
1	0.07%	ri_	Hʁ _	13	2.06%	_ iŋ	_ ʁɒ
1	0.07%	_ _	_ _	11	1.74%	_ d	_ ɛ
1	0.07%	_ eug	_ ʁɛʁ	9	1.43%	_ èw	_ ʁɛ
1	0.07%	_ jm	_ ʁ	8	1.27%	g_	ʁ_
1	0.07%	_ èŋ	_ ʁɒ	8	1.27%	du_	ʁɛ _
1	0.07%	_ id	_ ʁɛ	7	1.11%	_ uè	_ ʁɛ
1	0.07%	ju_	ʁɛ _	7	1.11%	li_	ʁɛ _
1	0.07%	_ èm	_ ʁɛ	7	1.11%	_ do	_ ʁK
1	0.07%	gj_	ʁɛ _	6	0.95%	n_	ʁ_
1	0.07%	q*_	ʁɛ _	6	0.95%	_ ts'n	_ ʁɛ
1	0.07%	_ hos	_ ʁKɛ	5	0.79%	no_	ʁK_
1	0.07%	_ uŋ	_ ʁɒ	5	0.79%	ŋè_	ʁɛ _
1	0.07%	_ eo	_ ʁK	5	0.79%	de_	ʁɛ _
1	0.07%	ŋŋ_	ʁɒ _	5	0.79%	q_	ʁ_
1	0.07%	gyè_	ʁɛʁ _	4	0.63%	ʃ_	ʁ_
1	0.07%	č'e_	Hʁ _	4	0.63%	_ ts'	_ ʁ
1	0.07%	sg_	ʁɛ _	4	0.63%	_ er	_ ʁH
1	0.07%	so_	ʁK_	4	0.63%	_ q	_ ɛ
				3	0.48%	_ eor	_ ʁKH
				3	0.48%	•_	ʁ_
				3	0.48%	ge_	ʁɛ _
				3	0.48%	u_	ʁ_
ṛ <m>							
631	100.00%	total					
101	16.01%	_	_				

2	0.32%	_ w	_ བ
2	0.32%	je_	ཡཡ_
2	0.32%	_ in	_ རེེ
2	0.32%	ru_	མཉ_
2	0.32%	o_	K_
2	0.32%	ts'_	ཅ_
2	0.32%	gi_	ཅེེ_
2	0.32%	_ on	_ ཀེེ
2	0.32%	y_	ཟ_
2	0.32%	_ eg	_ ཡེེ
2	0.32%	_ ག•	_ རེུ
2	0.32%	_ è	_ ར
2	0.32%	t'u_	མཉ_
2	0.32%	_ č'od	_ མཀུ
2	0.32%	_ ur	_ རམ
2	0.32%	_ r	_ མ
2	0.32%	s_d	ཟ_ ཡ
2	0.32%	č'i_	མེེ_
1	0.16%	su_	ཟཉ_
1	0.16%	bo_	ཏཀ_
1	0.16%	_ uq	_ རེེ
1	0.16%	gsu_	ཅེེཉ_
1	0.16%	ro_	མཀ_
1	0.16%	si_	ཟེེ_
1	0.16%	_ uŋ	_ རམ
1	0.16%	_ n	_ ར
1	0.16%	è_	ར
1	0.16%	_ is	_ རཟ
1	0.16%	lj_	ཅུ_
1	0.16%	k'e_	ཅུུ_
1	0.16%	lè_	ཅུུ_
1	0.16%	dz_	ཏ_
1	0.16%	_ eur	_ རམམ

1	0.16%	_ èn	_ རེེ
1	0.16%	gè_	ཅེེ_
1	0.16%	zi_	མེེ_
1	0.16%	_ od	_ ཀུ
1	0.16%	b_	ཏ_
1	0.16%	_ d•	_ རེུ
1	0.16%	sro_	ཟམཀ_
1	0.16%	'o_	ཟཀ_
1	0.16%	_ ts'o	_ རཀ
1	0.16%	rg_	མེེ_
1	0.16%	_ eo	_ རཀ
1	0.16%	yi_	ཟེེ_
1	0.16%	s_	ཟ_

ར <n>

2666	100.00%	total	
434	16.28%	_ u	_ ར
176	6.60%	yi_	ཟེེ_
156	5.85%	qu_	ཅཉ_
122	4.58%	_	_
113	4.24%	du_	ཡཉ_
109	4.09%	_ e	_ ཡ
101	3.79%	_ o	_ ཀ
91	3.41%	su_	ཟཉ_
79	2.96%	se_	ཟུུ_
77	2.89%	gu_	ཅཉ_
70	2.63%	t'_	ཏ_
66	2.48%	•u_	ཡཉ_
65	2.44%	je_	ཡཡ_
56	2.10%	_ i	_ ར
51	1.91%	ru_	མཉ_
45	1.69%	q•_	ཏུུ_
44	1.65%	č'i_	མེེ_

43	1.61%	č'u _	ዘባ _	6	0.23%	mts' _	ጸገ _
36	1.35%	k'u _	ቲባ _	6	0.23%	ge _	ገገ _
35	1.31%	r _	ዘ _	6	0.23%	_ m	_ ጸ
32	1.20%	b _	ቢ _	6	0.23%	ye _	ጌህ _
31	1.16%	t'e _	ጠህ _	5	0.19%	_ eor	_ ሆKH
30	1.13%	g•e _	ገገህ _	5	0.19%	_ eo	_ ሆK
29	1.09%	ri _	ዘገ _	5	0.19%	tsve _	ጸገህ _
27	1.01%	h•e _	ከህ _	5	0.19%	d _	ሆ _
27	1.01%	y _	ሂ _	5	0.19%	_ inj	_ ገገ
26	0.98%	č'e _	ዘህ _	5	0.19%	č'è _	ዘገ _
25	0.94%	go _	ገገ _	5	0.19%	_ yi	_ ጌገ
22	0.83%	ji _	ዘገ _	5	0.19%	de _	ሆህ _
21	0.79%	mu _	ጸባ _	5	0.19%	sè _	ጸገ _
20	0.75%	've _	ጸገህ _	5	0.19%	_ om	_ Kገ
20	0.75%	lu _	ቲባ _	5	0.19%	_ s	_ ጸ
19	0.71%	k'e _	ቲህ _	4	0.15%	ŋu _	ሆባ _
15	0.56%	dè _	ሆገ _	4	0.15%	ši _	ገገ _
14	0.53%	ho _	ከK _	4	0.15%	ts'i _	ገገ _
14	0.53%	s _	ጸ _	4	0.15%	_ is	_ ገገ
12	0.45%	q _	ቢ _	3	0.11%	yo _	ጌK _
10	0.38%	• _	ሆ _	3	0.11%	t'è _	ጠገ _
10	0.38%	šè _	ገገ _	3	0.11%	rè _	ዘገ _
9	0.34%	sve _	ጸገህ _	3	0.11%	do _	ሆK _
9	0.34%	lo _	ገገ _	3	0.11%	he _	ከህ _
9	0.34%	k'e _	ቲህ _	3	0.11%	t'i _	ጠገ _
8	0.30%	fe _	ከህ _	3	0.11%	či _	ጠገ _
8	0.30%	ži _	ገገ _	3	0.11%	_ _	_ _
7	0.26%	•e _	ሆህ _	3	0.11%	yè _	ጌገ _
7	0.26%	bu _	ቢባ _	3	0.11%	tè _	ገገ _
7	0.26%	š _	ገ _	3	0.11%	y• _	ጌህ _
7	0.26%	w _	ዘ _	3	0.11%	le _	ሆህ _
7	0.26%	γ _	ጠ _	3	0.11%	bo _	ገገ _
6	0.23%	l _	ገ _	2	0.08%	č'eu _	ዘሆባ _

2	0.08%	'eu _	ཅུཤ _	1	0.04%	heè _	ཁེཏ _
2	0.08%	_ir	_འམ	1	0.04%	bri _	བཤའ _
2	0.08%	_i _	_འ _	1	0.04%	ĵ _	ཡ _
2	0.08%	be _	བུ _	1	0.04%	mè _	མེཏ _
2	0.08%	_e _	_ལ _	1	0.04%	še _	ཤེ _
2	0.08%	re _	རུ _	1	0.04%	γv _	ཇུ _
2	0.08%	hè _	ཁེཏ _	1	0.04%	t'ò _	ཐུ _
2	0.08%	k' _	ཁ _	1	0.04%	ñè _	ལེཏ _
2	0.08%	_l	_ལ _	1	0.04%	t'u _	ཐུ _
2	0.08%	mi _	མེཏ _	1	0.04%	_ur	_འམ
2	0.08%	mo _	མུ _	1	0.04%	gve _	ཀེཏ _
2	0.08%	geo _	ཁེཏ _	1	0.04%	m _	མ _
2	0.08%	•o _	ལ _	1	0.04%	_ud	_འམ
2	0.08%	pè _	ཤེཏ _	1	0.04%	yve _	ཇུ _
2	0.08%	_r	_འ _	1	0.04%	seu _	ཤེཏ _
2	0.08%	_ŋ	_ལ _	1	0.04%	rbo _	རུ _
2	0.08%	è _	ཁ _	1	0.04%	k'eo _	ཁེཏ _
2	0.08%	geu _	ཁེཏ _	1	0.04%	s_b	ཤ _འ
1	0.04%	tsi _	ཐུ _	1	0.04%	pei _	ཤེཏ _
1	0.04%	ts' _	ཐ _	1	0.04%	k'eu _	ཁེཏ _
1	0.04%	wu _	ཡུ _	1	0.04%	dzè _	ཐེཏ _
1	0.04%	_b	_བ _	1	0.04%	ku _	ཀུ _
1	0.04%	u _	ུ _				
1	0.04%	d•e _	འེཏ _				
1	0.04%	č'eo _	ཁེཏ _	602	100.00%	total	
1	0.04%	dzi _	ཐུ _	101	16.78%	dè _	ཐེཏ _
1	0.04%	_è _	_འ _	55	9.14%	_ud	_འམ
1	0.04%	ro _	རུ _	42	6.98%	mo _	མུ _
1	0.04%	žeu _	ཐེཏ _	37	6.15%	ĵi _	ཡུ _
1	0.04%	reo _	རུ _	36	5.98%	ts' _	ཐ _
1	0.04%	d• _	འེཏ _	32	5.32%	geu _	ཁེཏ _
1	0.04%	b•e _	བུཏ _	14	2.33%	ĵ _	ཡ _
1	0.04%	jë _	ཡེཏ _	13	2.16%	mi _	མེཏ _

འེ <ŋ>

10	1.66%	š_	ḡ_	3	0.50%	γu_	ጸጋ_
10	1.66%	_u	_ጋ	3	0.50%	f_	፲_
9	1.50%	t'u_	ጠጋ_	3	0.50%	dz_	ጠ_
8	1.33%	y_	ኃ_	3	0.50%	rts'_	ዘገ_
8	1.33%	ši_	ጠገ_	3	0.50%	li_	ጠገ_
8	1.33%	pi_	ጠገ_	3	0.50%	sg_	ገገ_
8	1.33%	'v_	ጸጋ_	2	0.33%	gi_	ጠገ_
8	1.33%	ju_	ጠጋ_	2	0.33%	yeu_	ጠጋጋ_
7	1.16%	gj_	ጠጋ_	2	0.33%	se_	ገገ_
7	1.16%	o_	K_	2	0.33%	b_	ጠ_
6	1.00%	l_	ጠ_	2	0.33%	ru_	ዘጋ_
6	1.00%	zj_	ጠጋ_	2	0.33%	sè_	ገገ_
5	0.83%	gv_	ጠጋ_	2	0.33%	shi_	ገገገ_
5	0.83%	hei_	ጠጋገ_	2	0.33%	n_	ጠ_
5	0.83%	ni_	ጠገ_	2	0.33%	d_	ጠ_
5	0.83%	_èm	_ጠገ	2	0.33%	g_	ጠ_
5	0.83%	fu_	ጠጋጋ_	2	0.33%	ž_	ጠ_
4	0.66%	jh_	ጠጋ_	2	0.33%	seu_	ጠጋጋጋ_
4	0.66%	č'u_	ጠጋጋ_	2	0.33%	leu_	ጠጋጋጋ_
4	0.66%	_	_	2	0.33%	è_	ጠ_
4	0.66%	tu_	ጠጋጋ_	2	0.33%	le_	ጠጋ_
4	0.66%	ti_	ጠጋገ_	2	0.33%	k'eu_	ጠጋጋጋጋ_
4	0.66%	_i	_ጠ	2	0.33%	m_•	ጠ_ጠ
4	0.66%	_un	_ጋጠገ	2	0.33%	dzu_	ጠጋጋ_
4	0.66%	ču_	ጠጋጋ_	1	0.17%	kju_	ጠጋጋጋጋ_
4	0.66%	du_	ጠጋጋ_	1	0.17%	pj_	ጠጋ_
3	0.50%	k'u_	ጠጋጋ_	1	0.17%	'eu_	ጠጋጋጋጋ_
3	0.50%	tsi_	ጠጋገ_	1	0.17%	tsu_	ጠጋጋ_
3	0.50%	•i_	ጠጋገ_	1	0.17%	gro_	ጠጠጠጠ_
3	0.50%	'eo_	ጠጋጠጠ_	1	0.17%	hj_	ጠጋጋ_
3	0.50%	gu_	ጠጋጋ_	1	0.17%	γi_	ጠጋገ_
3	0.50%	ts'i_	ጠጋገ_	1	0.17%	dzeu_	ጠጋጋጋጋ_
3	0.50%	γo_	ጠጠጠ_	1	0.17%	y_l	ኃ_ጠ

1	0.17%	t' _	𑖅 _	𑖅 <ñ>			
1	0.17%	jeu _	𑖅𑖅𑖅 _	4	100.00%	total	
1	0.17%	gts _	𑖅𑖅 _	1	25.00%	_ q	_ 𑖅
1	0.17%	' _	𑖅 _	1	25.00%	_ 𑖅	_ 𑖅
1	0.17%	ro _	HK _	1	25.00%	_ i	_ 𑖅
1	0.17%	ze _	𑖅𑖅 _	1	25.00%	_ èn	_ 𑖅𑖅
1	0.17%	_ o	_ K				
1	0.17%	k' _	𑖅 _	K <o>			
1	0.17%	bz _	𑖅𑖅𑖅 _	712	100.00%	total	
1	0.17%	hu _	𑖅𑖅𑖅 _	101	14.19%	n _	𑖅 _
1	0.17%	' _ o _	𑖅 _ K _	77	10.82%	d _	𑖅 _
1	0.17%	t'o _	𑖅K _	74	10.39%	y _	𑖅 _
1	0.17%	k'i _	𑖅𑖅 _	51	7.16%	b_l	𑖅_𑖅
1	0.17%	ži _	𑖅𑖅 _	42	5.90%	m_ 𑖅	𑖅_ 𑖅
1	0.17%	mu _	𑖅𑖅𑖅 _	42	5.90%	q _	𑖅 _
1	0.17%	ge _	𑖅𑖅 _	33	4.64%	y_r	𑖅_ H
1	0.17%	su _	𑖅𑖅𑖅 _	27	3.79%	_	_
1	0.17%	hji _	𑖅𑖅𑖅𑖅 _	25	3.51%	g_n	𑖅_ 𑖅
1	0.17%	o_s	K_ 𑖅	19	2.67%	b _	𑖅 _
1	0.17%	di_s	𑖅𑖅_ 𑖅	15	2.11%	m _	𑖅 _
1	0.17%	si _	𑖅𑖅 _	14	1.97%	t' _	𑖅 _
1	0.17%	ñ _	𑖅 _	14	1.97%	h_n	𑖅_ 𑖅
1	0.17%	lè _	𑖅𑖅 _	12	1.69%	b_s	𑖅_ 𑖅
1	0.17%	gei _	𑖅𑖅𑖅𑖅 _	9	1.26%	l_n	𑖅_ 𑖅
1	0.17%	_ u _	_ 𑖅 _	8	1.12%	j _	𑖅 _
1	0.17%	de _	𑖅𑖅 _	8	1.12%	g _	𑖅 _
1	0.17%	thi _	𑖅𑖅𑖅𑖅 _	7	0.98%	l _	𑖅 _
1	0.17%	g_s	𑖅_ 𑖅	7	0.98%	_ 𑖅	_ 𑖅
1	0.17%	γ _	𑖅 _	7	0.98%	md _	𑖅𑖅 _
1	0.17%	s _	𑖅 _	6	0.84%	r _	H _
1	0.17%	lu _	𑖅𑖅𑖅 _	5	0.70%	n_m	𑖅_ 𑖅
1	0.17%	zeu _	𑖅𑖅𑖅𑖅 _	5	0.70%	γ _	𑖅 _
				4	0.56%	•_ d	𑖅_ 𑖅

4	0.56%	q_l	ᄃ_ᄃ
4	0.56%	b_q	ᄃ_ᄃ
3	0.42%	y_n	ᄃ_ᄃ
3	0.42%	h_d	ᄃ_ᄃ
3	0.42%	•_	ᄃ_ᄃ
3	0.42%	γ_η	ᄃ_ᄃ
3	0.42%	p_	ᄃ_ᄃ
3	0.42%	b_r	ᄃ_ᄃ
3	0.42%	d_n	ᄃ_ᄃ
3	0.42%	č_d	ᄃ_ᄃ
3	0.42%	b_n	ᄃ_ᄃ
3	0.42%	q_yi	ᄃ_ᄃ
2	0.28%	mč_d	ᄃ_ᄃ
2	0.28%	č_q	ᄃ_ᄃ
2	0.28%	t_d	ᄃ_ᄃ
2	0.28%	d_r	ᄃ_ᄃ
2	0.28%	d_q	ᄃ_ᄃ
2	0.28%	h_	ᄃ_ᄃ
2	0.28%	_m	ᄃ_ᄃ
2	0.28%	•b_	ᄃ_ᄃ
2	0.28%	sg_r	ᄃ_ᄃ
2	0.28%	m_n	ᄃ_ᄃ
2	0.28%	γv_	ᄃ_ᄃ
2	0.28%	č_	ᄃ_ᄃ
2	0.28%	•_n	ᄃ_ᄃ
2	0.28%	q_r	ᄃ_ᄃ
1	0.14%	•br_g	ᄃ_ᄃ
1	0.14%	m_d	ᄃ_ᄃ
1	0.14%	t_n	ᄃ_ᄃ
1	0.14%	h_r	ᄃ_ᄃ
1	0.14%	r_q	ᄃ_ᄃ
1	0.14%	sg_	ᄃ_ᄃ
1	0.14%	č_s	ᄃ_ᄃ

1	0.14%	η_	ᄃ_ᄃ
1	0.14%	r_n	ᄃ_ᄃ
1	0.14%	t_r	ᄃ_ᄃ
1	0.14%	qr_g	ᄃ_ᄃ
1	0.14%	b_m	ᄃ_ᄃ
1	0.14%	sk_r	ᄃ_ᄃ
1	0.14%	rb_n	ᄃ_ᄃ
1	0.14%	t_η	ᄃ_ᄃ
1	0.14%	mts_	ᄃ_ᄃ
1	0.14%	sr_m	ᄃ_ᄃ
1	0.14%	bs_d	ᄃ_ᄃ
1	0.14%	_ηs	ᄃ_ᄃ
1	0.14%	gr_η	ᄃ_ᄃ
1	0.14%	r_m	ᄃ_ᄃ
1	0.14%	•b_r	ᄃ_ᄃ
1	0.14%	s_	ᄃ_ᄃ
1	0.14%	s_l	ᄃ_ᄃ
1	0.14%	g_s	ᄃ_ᄃ
1	0.14%	y_d	ᄃ_ᄃ
1	0.14%	k'_	ᄃ_ᄃ
1	0.14%	r_η	ᄃ_ᄃ
1	0.14%	h_q	ᄃ_ᄃ
1	0.14%	•_q	ᄃ_ᄃ
1	0.14%	lh_s	ᄃ_ᄃ
1	0.14%	'η_η	ᄃ_ᄃ
1	0.14%	_l	ᄃ_ᄃ
1	0.14%	'_m	ᄃ_ᄃ
ᄃ <p>			
48	100.00%	total	
16	33.33%	_ur	ᄃ_ᄃ
8	16.67%	_iη	ᄃ_ᄃ
6	12.50%	d_l	ᄃ_ᄃ



3	6.25%	_	_
3	6.25%	_o	_K
2	4.17%	_én	_ཁེ
2	4.17%	_u	_ཉ
1	2.08%	_ein	_ལེེེ
1	2.08%	_uq	_ཉེ
1	2.08%	_i	_ེ
1	2.08%	_iz	_ེཎ
1	2.08%	_d	_ལ
1	2.08%	_jŋ	_ཡཎ
1	2.08%	_èsr	_ེམམ
1	2.08%	d_	ལ_

ེ <q>

1521	100.00%	total	
323	21.24%	_	_
219	14.40%	_yi	_ཟེ
170	11.18%	li_	ེེེ_
156	10.26%	_un	_ཉེ
146	9.60%	_•	_ེ
101	6.64%	_u	_ཉ
78	5.13%	_ub	_ཉཎ
45	2.96%	_•n	_ེེ
42	2.76%	_o	_K
42	2.76%	_uè	_ཉེེ
37	2.43%	_s	_ེ
31	2.04%	b_	ཎ_
17	1.12%	_ur	_ཉམ
12	0.79%	_n	_ེ
10	0.66%	t'u_	ེལ_
8	0.53%	_ _	_ _
6	0.39%	_i	_ེ
6	0.39%	lu_	ེལ_

5	0.33%	_m	_ེ
5	0.33%	du_	ལཉ_
5	0.33%	_l	_ེ
4	0.26%	m_	ེ_
4	0.26%	_d	_ལ
4	0.26%	ri_	མེ_
4	0.26%	_ol	_Kེ
4	0.26%	_r	_H
4	0.26%	bo_	ཎK_
3	0.20%	_oyi	_Kཟེ
2	0.13%	do_	ལK_
2	0.13%	č'o_	མམ_
2	0.13%	bu_	ཎཉ_
2	0.13%	'_	ཟ_
2	0.13%	_or	_KH
1	0.07%	su_	ཟཉ_
1	0.07%	ho_	ལ'K_
1	0.07%	l_	ེ_
1	0.07%	ro_	HK_
1	0.07%	ru_	མཉ_
1	0.07%	_•e	_ེལ
1	0.07%	č'_	མ_
1	0.07%	ñ_	ེ_
1	0.07%	_rog	_HKེ
1	0.07%	_u•	_ཉེ
1	0.07%	mu_	ེལ_
1	0.07%	•o_	ལK_
1	0.07%	pu_	ཎཉ_
1	0.07%	yi_	ཟེ_
1	0.07%	r_	H_
1	0.07%	_is	_ེེ
1	0.07%	_•l	_ེེ
1	0.07%	_i_	_ེ_

1	0.07%	_ud	_ ᎠᎳ
1	0.07%	u_	ᎠᎳ
H <r>			
2121	100.00%	total	
501	23.62%	_i	_ Ꭰ
289	13.63%	du_	ᎠᎳ
251	11.83%	ḷ_	ᎠᎳ
119	5.61%	_	_
114	5.38%	_u	_ Ꭰ
76	3.58%	be_	ᎠᎳ
67	3.16%	•e_	ᎠᎳ
51	2.41%	_un	_ ᎠᎳ
49	2.31%	•_	ᎠᎳ
36	1.70%	_e	_ Ꭰ
36	1.70%	è_	ᎠᎳ
35	1.65%	_n	_ Ꭰ
34	1.60%	_ig	_ ᎠᎳ
33	1.56%	yo_	ᎠᎳ
29	1.37%	_in	_ ᎠᎳ
29	1.37%	gi_	ᎠᎳ
23	1.08%	k'u_	ᎠᎳ
17	0.80%	qu_	ᎠᎳ
16	0.75%	ye_	ᎠᎳ
16	0.75%	pu_	ᎠᎳ
15	0.71%	h_	ᎠᎳ
13	0.61%	•i_	ᎠᎳ
11	0.52%	y_	ᎠᎳ
9	0.42%	k'e_	ᎠᎳ
8	0.38%	ḷi_	ᎠᎳ
8	0.38%	k'eu_	ᎠᎳ
6	0.28%	_o	_ Ꭰ
6	0.28%	bu_	ᎠᎳ

6	0.28%	t'u_	ᎠᎳ
6	0.28%	_gel	_ ᎠᎳ
5	0.24%	_gɪl	_ ᎠᎳ
5	0.24%	k'eo_	ᎠᎳ
5	0.24%	ši_	ᎠᎳ
5	0.24%	neo_	ᎠᎳ
5	0.24%	b_s	ᎠᎳ
5	0.24%	s_	ᎠᎳ
4	0.19%	_eg	_ ᎠᎳ
4	0.19%	q_	ᎠᎳ
4	0.19%	u_	ᎠᎳ
4	0.19%	me_	ᎠᎳ
4	0.19%	_iq	_ ᎠᎳ
4	0.19%	'è_	ᎠᎳ
4	0.19%	_•e	_ ᎠᎳ
4	0.19%	_id	_ ᎠᎳ
4	0.19%	g_	ᎠᎳ
4	0.19%	yè_	ᎠᎳ
4	0.19%	•u_	ᎠᎳ
4	0.19%	ge_	ᎠᎳ
4	0.19%	_eo	_ ᎠᎳ
3	0.14%	t'e_	ᎠᎳ
3	0.14%	meo_	ᎠᎳ
3	0.14%	zè_	ᎠᎳ
3	0.14%	_ts'ŋ	_ ᎠᎳ
3	0.14%	_èn	_ ᎠᎳ
3	0.14%	_d	_ ᎠᎳ
3	0.14%	_•	_ ᎠᎳ
3	0.14%	dh_	ᎠᎳ
3	0.14%	_is	_ ᎠᎳ
3	0.14%	bo_	ᎠᎳ
2	0.09%	deo_	ᎠᎳ
2	0.09%	_ji	_ ᎠᎳ

2	0.09%	_ um	_ །འོ	1	0.05%	_ b	_ །
2	0.09%	g_ gs	ཐ_ ཐའོ	1	0.05%	ho_	ལྷཀ_
2	0.09%	do_	ལྷཀ_	1	0.05%	b'u_	བུའོ_
2	0.09%	_ en	_ །འོ	1	0.05%	meu_	མེུའོ_
2	0.09%	b_	བ_	1	0.05%	'_	ཇ_
2	0.09%	gu_	ཐའོ_	1	0.05%	_ bon	_ །ཀའོ
2	0.09%	n_	འོ_	1	0.05%	nu_	འོའོ_
2	0.09%	d_	ལ_	1	0.05%	_ q	_ །
2	0.09%	_ jè	_ །འོ	1	0.05%	s*_	ཇུའོ_
2	0.09%	qo_	ལྷཀ_	1	0.05%	_ ge	_ །འོ
2	0.09%	ni_	འོའོ_	1	0.05%	_ es	_ །འོ
2	0.09%	mu_	མུའོ_	1	0.05%	d_ i	ལ_ །འོ
2	0.09%	m_	མ_	1	0.05%	_ us	_ །འོ
2	0.09%	'eo_	ཇུཀ_	1	0.05%	k'_	ཐ_
2	0.09%	'e_	ཇུ_	1	0.05%	_ š	_ །
2	0.09%	_ uŋ	_ །འོ	1	0.05%	_ eon	_ །ཀའོ
2	0.09%	sgo_	ཇའོཀ_	1	0.05%	s_ om	ཇ_ །ཀའོ
1	0.05%	q_ og	ལ_ །ཀའོ	1	0.05%	_ l	_ །
1	0.05%	pès_	ཐའོའོ_	1	0.05%	_ gjis	_ །འོའོ
1	0.05%	tsi_	ཐའོ_	1	0.05%	_ il	_ །འོ
1	0.05%	_ on	_ །ཀའོ	1	0.05%	_ gjb	_ །འོའོ
1	0.05%	sko_	ཇའོཀ_	1	0.05%	d_ s	ལ_ །འོ
1	0.05%	*bo_	ཐའོཀ_	1	0.05%	g_ g	ཐ_ །ཐ
1	0.05%	_ yi	_ །འོ	1	0.05%	t'o_	ཐའོ_
1	0.05%	k_	ཐ_	1	0.05%	*_ *e_	ཐ_ །ཐ_
1	0.05%	se_	ཇུ_	1	0.05%	dz_	ཐ_
1	0.05%	zi_	ཐའོ_	1	0.05%	k'eo_ g	ཐའོཀ_ །ཐ
1	0.05%	g_ oŋ	ཐ_ །ཀའོ	1	0.05%	_ oq	_ །ཀའོ
1	0.05%	d_ is	ལ_ །འོ	1	0.05%	g_ ub	ཐ_ །འོ
1	0.05%	_ u_	_ །འོ_	1	0.05%	b_ ge	བ_ །ཐའོ
1	0.05%	k'_ hs	ཐ_ །འོ	1	0.05%	b_ in	བ_ །འོ
1	0.05%	_ i_	_ །འོ_	1	0.05%	su_	ཇུ_
1	0.05%	t'_	ཐ_	1	0.05%	šè_	ཐའོ_

1	0.05%	_ s	_ ṣ
1	0.05%	ts'u	ṭṭṭ
1	0.05%	deu	ṭṭṭṭ
1	0.05%	w_d	ṭṭ
1	0.05%	_ oŋ	_ KṆ
1	0.05%	_ č	_ Ṇ
1	0.05%	_ uq	_ ṭṭṭ
1	0.05%	_ om	_ Kṛ
1	0.05%	•b_og	ṭṭṭ_Kṛ
1	0.05%	_ eol	_ ṭṭṭṭ
1	0.05%	gyè	ṭṭṭṭ
1	0.05%	_ gm	_ ṭṭṭ
1	0.05%	č'i	ṭṭṭ

ṣ <s>

1030	100.00%	total	
261	25.34%	_ u	_ ṭṭ
94	9.13%	_	_
91	8.84%	_ un	_ ṭṭṭ
79	7.67%	_ en	_ ṭṭṭ
56	5.44%	_ eu	_ ṭṭṭ
44	4.27%	_ e	_ ṭṭ
37	3.59%	q	ṭṭ
36	3.50%	le	ṭṭṭ
33	3.20%	_ ed	_ ṭṭṭ
30	2.91%	gi	ṭṭṭ
28	2.72%	me	ṭṭṭ
20	1.94%	_ i	_ ṭṭ
15	1.46%	_ hi	_ ṭṭṭṭ
14	1.36%	_ n	_ ṭṭ
13	1.26%	č'u	ṭṭṭ
12	1.17%	bo	ṭṭṭ
10	0.97%	gu	ṭṭṭ

9	0.87%	_ ven	_ ṭṭṭṭ
7	0.68%	č'	ṭṭ
5	0.49%	br	ṭṭṭ
5	0.49%	_ èn	_ ṭṭṭ
5	0.49%	n	ṭṭ
5	0.49%	_ r	_ Ṇ
5	0.49%	_ ud	_ ṭṭṭ
4	0.39%	ni	ṭṭṭ
4	0.39%	gži	ṭṭṭṭ
3	0.29%	ri	ṭṭṭ
3	0.29%	_ d	_ ṭṭ
3	0.29%	ge	ṭṭṭ
3	0.29%	_ gŋ	_ ṭṭṭṭ
2	0.19%	b	ṭṭ
2	0.19%	_ et'	_ ṭṭṭ
2	0.19%	_ hiŋ	_ ṭṭṭṭṭ
2	0.19%	_ ti	_ ṭṭṭ
2	0.19%	_ gor	_ ṭṭṭṭ
2	0.19%	lu	ṭṭṭ
2	0.19%	_ v	_ Ṇ
2	0.19%	_ èŋ	_ ṭṭṭṭ
2	0.19%	_ eŋ	_ ṭṭṭṭ
2	0.19%	_ euŋ	_ ṭṭṭṭṭ
2	0.19%	g	ṭṭ
2	0.19%	grg	ṭṭṭṭṭ
2	0.19%	lh	ṭṭṭ
2	0.19%	gj	ṭṭṭ
2	0.19%	šé	ṭṭṭ
2	0.19%	_ u	_ ṭṭ
2	0.19%	_ md	_ ṭṭṭ
1	0.10%	go	ṭṭṭ
1	0.10%	g_um	ṭṭ_ ṭṭṭ
1	0.10%	'eu	ṭṭṭṭṭ

1	0.10%	di _	འིེ _
1	0.10%	_ eg	_ འེ
1	0.10%	č'o _	མཀ _
1	0.10%	_ uè	_ ཉེ
1	0.10%	r _	མ _
1	0.10%	ši _	ཚེ _
1	0.10%	_ eun	_ འེེེ
1	0.10%	_ eb	_ འེ
1	0.10%	_ um	_ ཉེེ
1	0.10%	_ ol	_ ཀེ
1	0.10%	gŋ _	ཚེེ _
1	0.10%	_ o	_ ཀ
1	0.10%	b_od	བ _ ཀེ
1	0.10%	_ gl	_ ཚེ
1	0.10%	rgji _	མཚེེེ _
1	0.10%	_ im	_ རེེ
1	0.10%	din _	འིེེེ _
1	0.10%	_ nb	_ རེེ
1	0.10%	_ iw	_ རེེ
1	0.10%	ru _	མེ _
1	0.10%	dri _	འམེེ _
1	0.10%	t' _	མ _
1	0.10%	bu _	བམེ _
1	0.10%	_ go	_ ཚེཀ
1	0.10%	re _	མེ _
1	0.10%	lho _	ཚེཀཀ _
1	0.10%	_ _	_ _
1	0.10%	pè_r	ཚེེ _ མ
1	0.10%	_ r	_ རེམ
1	0.10%	je _	ཡེ _
1	0.10%	k'rh _	ཚེམཀ _
1	0.10%	d _	འ _
1	0.10%	mi _	ཚེེ _

1	0.10%	kži _	ཚེེེ _
1	0.10%	_ gu	_ ཚེེ
1	0.10%	_ iŋ	_ རེེེ
1	0.10%	_ er	_ འེམ
1	0.10%	t'u _	མམེ _
1	0.10%	š _	ཚ _
1	0.10%	_ ur	_ ཉེམ
1	0.10%	oŋ _	ཀེེ _
1	0.10%	'u _	ཚེེེ _
1	0.10%	dr _	འམེ _
1	0.10%	_ ŋ	_ རེ
1	0.10%	_ gb	_ ཚེེེ
1	0.10%	qi _	ཚེེ _
1	0.10%	_ rom	_ མཀེེ
1	0.10%	_ m	_ རེ
1	0.10%	_ uŋ	_ ཉེེེ
1	0.10%	_ kor	_ ཚེཀམ
1	0.10%	_ uq	_ ཉེེ
1	0.10%	dwu _	འམེེེ _
1	0.10%	_ eod	_ འེཀེ
1	0.10%	•_ u	ཚ _ ཉེ
1	0.10%	b•_ u	བཚ _ ཉེ
1	0.10%	_ e•d	_ འེཚེ
1	0.10%	_ ku	_ ཚེེ
1	0.10%	ke _	ཚེེ _
1	0.10%	du _	འམེ _
ཚེ <š>			
299	100.00%	total	
95	31.77%	_ hi	_ ཚེེེ
89	29.77%	_ i	_ རེ
20	6.69%	_	_
10	3.34%	_ èn	_ རེེ

10	3.34%	_ ገ	_ ጠ
8	2.68%	d _	ሆ _
8	2.68%	_ ገ	_ ጠ
7	2.34%	_ n	_ ጠ
6	2.01%	_ iw	_ ጠ
5	1.67%	_ ig	_ ጠ
5	1.67%	_ ir	_ ጠ
4	1.34%	_ il	_ ጠ
4	1.34%	_ in	_ ጠ
4	1.34%	_ eu	_ ጠ
3	1.00%	di _	ሆ _
3	1.00%	_ u	_ ጠ
2	0.67%	_ e	_ ጠ
2	0.67%	_ èw	_ ጠ
2	0.67%	_ ès	_ ጠ
2	0.67%	_ uè	_ ጠ
2	0.67%	t' _	ሆ _
1	0.33%	' _	ኔ _
1	0.33%	_ ul	_ ጠ
1	0.33%	_ en	_ ጠ
1	0.33%	r _	H _
1	0.33%	_ èr	_ ጠ
1	0.33%	_ hi	_ ጠ
1	0.33%	_ is	_ ጠ
1	0.33%	_ s	_ ጠ

፫ <t>

117	100.00%	total	
42	35.90%	_ y	_ ኃ
25	21.37%	_ i	_ ጠ
19	16.24%	_ w	_ ጠ
13	11.11%	_	_
4	3.42%	_ unj	_ ጠ

4	3.42%	_ ገ	_ ጠ
3	2.56%	_ èn	_ ጠ
2	1.71%	s _ i	ኔ _ ጠ
1	0.86%	_ hiገ	_ ጠ
1	0.86%	_ hiw	_ ጠ
1	0.86%	_ hiy	_ ጠ
1	0.86%	_ è	_ ጠ
1	0.86%	_ hi	_ ጠ

፬ <t'>

888	100.00%	total	
405	45.61%	_ u	_ ጠ
102	11.49%	_	_
101	11.37%	_ e	_ ጠ
70	7.88%	_ n	_ ጠ
38	4.28%	_ m	_ ጠ
31	3.49%	_ en	_ ጠ
19	2.14%	_ eo	_ ጠ
15	1.69%	_ eu	_ ጠ
14	1.58%	_ o	_ ጠ
14	1.58%	_ y	_ ኃ
10	1.13%	_ uq	_ ጠ
9	1.01%	_ unj	_ ጠ
6	0.68%	_ ur	_ ጠ
6	0.68%	_ yi	_ ኃ
5	0.56%	_ w	_ ጠ
3	0.34%	_ èn	_ ጠ
3	0.34%	_ in	_ ጠ
3	0.34%	_ er	_ ጠ
3	0.34%	_ h	_ ጠ
3	0.34%	_ l	_ ጠ
2	0.23%	_ um	_ ጠ
2	0.23%	_ eg	_ ጠ

2	0.23%	se _	𑄎𑄣 _
2	0.23%	_od	_K𑄣
2	0.23%	_š	_𑄣
2	0.23%	_i	_𑄎
2	0.23%	•u _	𑄣𑄣 _
1	0.11%	i _	𑄎 _
1	0.11%	_on	_K𑄎
1	0.11%	_è	_𑄣
1	0.11%	_un	_𑄣𑄎
1	0.11%	_us	_𑄣𑄎
1	0.11%	_eyi	_𑄣𑄎𑄎
1	0.11%	_oŋ	_K𑄎
1	0.11%	_•	_𑄣
1	0.11%	_ug	_𑄣𑄎
1	0.11%	_s	_𑄎
1	0.11%	_r	_H
1	0.11%	_ŋ	_𑄎
1	0.11%	_or	_KH
1	0.11%	_b	_𑄎

𑄎 <ts'>

16	100.00%	total	
5	31.25%	_ven	_𑄎𑄎𑄎
3	18.75%	_iŋ	_𑄎𑄎
1	6.25%	_ir	_𑄎H
1	6.25%	g_ŋ	𑄎_𑄎
1	6.25%	_i	_𑄎
1	6.25%	_uŋ	_𑄣𑄎
1	6.25%	_u	_𑄣
1	6.25%	_in	_𑄎𑄎
1	6.25%	_hi	_𑄣𑄎
1	6.25%	_w	_𑄎

𑄎 <ts'>

68	100.00%	total	
36	52.94%	_ŋ	_𑄎
6	8.82%	m_n	𑄎_𑄎
6	8.82%	_	_
4	5.88%	m_	𑄎_
4	5.88%	_in	_𑄎𑄎
3	4.41%	r_ŋ	H_𑄎
3	4.41%	_iŋ	_𑄎𑄎
2	2.94%	_m	_𑄎
1	1.47%	_n	_𑄎
1	1.47%	m_o	𑄎_K
1	1.47%	_l	_𑄎
1	1.47%	_ur	_𑄣H

𑄣 <u>

4807	100.00%	total	
454	9.45%	b_	𑄎_
434	9.03%	n_	𑄎_
405	8.43%	t'_	𑄎_
295	6.14%	ŋ_	𑄎_
289	6.01%	d_r	𑄣_H
261	5.43%	s_	𑄎_
249	5.18%	•_	𑄣_
162	3.37%	l_	𑄎_
156	3.25%	_	_
156	3.25%	q_n	𑄣_𑄎
145	3.02%	d_	𑄣_
123	2.56%	k'_	𑄣_
114	2.37%	r_	H_
113	2.35%	d_n	𑄣_𑄎
101	2.10%	q_	𑄣_
91	1.89%	s_n	𑄎_𑄎

78	1.62%	q_b	ᄃ_ᄆ
77	1.60%	•_d	ᄃ_ᄆ
77	1.60%	g_n	ᄆ_ᄆ
74	1.54%	•_è	ᄃ_ᄆ
66	1.37%	•_n	ᄃ_ᄆ
55	1.14%	ŋ_d	ᄆ_ᄆ
51	1.06%	r_n	H_ᄆ
43	0.90%	č_n	H_ᄆ
43	0.90%	y_	ᄃ_
42	0.87%	q_è	ᄃ_ᄆ
36	0.75%	k'_n	ᄃ_ᄆ
36	0.75%	d•_l	ᄆᄃ_ᄆ
33	0.69%	č_	H_
31	0.65%	m_	ᄆ_
26	0.54%	g_è	ᄆ_ᄆ
24	0.50%	g_	ᄆ_
23	0.48%	k'_r	ᄃ_H
22	0.46%	m_d	ᄆ_ᄆ
21	0.44%	m_n	ᄆ_ᄆ
21	0.44%	•_l	ᄃ_ᄆ
20	0.42%	l_n	ᄃ_ᄆ
17	0.35%	l_g	ᄃ_ᄆ
17	0.35%	q_r	ᄃ_H
16	0.33%	p_r	ᄆ_H
14	0.29%	k'_è	ᄃ_ᄆ
13	0.27%	č'_s	H_ᄆ
12	0.25%	f_	ᄆ_
10	0.21%	t'_q	ᄆ_ᄆ
10	0.21%	ŋ_	ᄆ_
10	0.21%	g_s	ᄆ_ᄆ
9	0.19%	t'_ŋ	ᄆ_ᄆ
9	0.19%	b_è	ᄆ_ᄆ
8	0.17%	b_•	ᄆ_ᄆ

8	0.17%	d_m	ᄆ_ᄆ
8	0.17%	ŋ_ŋ	ᄆ_ᄆ
7	0.15%	m_è	ᄆ_ᄆ
7	0.15%	b_n	ᄆ_ᄆ
6	0.13%	l_•	ᄃ_ᄆ
6	0.13%	l_q	ᄃ_ᄆ
6	0.13%	t'_r	ᄆ_H
6	0.13%	b_r	ᄆ_H
5	0.10%	d_q	ᄆ_ᄆ
5	0.10%	f_ŋ	ᄆ_ᄆ
5	0.10%	s_d	ᄆ_ᄆ
5	0.10%	l_d	ᄃ_ᄆ
4	0.08%	t_ŋ	ᄆ_ᄆ
4	0.08%	ŋ_n	ᄆ_ᄆ
4	0.08%	_r	_H
4	0.08%	č'_ŋ	H_ᄆ
4	0.08%	dz_	ᄆ_
4	0.08%	•_r	ᄃ_H
4	0.08%	č_ŋ	ᄆ_ᄆ
4	0.08%	b_d	ᄆ_ᄆ
4	0.08%	d_ŋ	ᄆ_ᄆ
3	0.06%	š_	ᄆ_
3	0.06%	k'_ŋ	ᄃ_ᄆ
3	0.06%	g_ŋ	ᄆ_ᄆ
3	0.06%	h_	ᄆ_
3	0.06%	γ_ŋ	ᄆ_ᄆ
3	0.06%	_m	_ᄆ
2	0.04%	p_	ᄆ_
2	0.04%	t'_m	ᄆ_ᄆ
2	0.04%	š_è	ᄆ_ᄆ
2	0.04%	r_m	H_ᄆ
2	0.04%	l_s	ᄃ_ᄆ
2	0.04%	g_r	ᄆ_H



2	0.04%	•_t'	ཁ_མ	1	0.02%	r_s	མ_ཚ
2	0.04%	r_η	མ_ཏ	1	0.02%	b*s_	ཁའཚ_
2	0.04%	dz_η	མ_ཏ	1	0.02%	l_è	འ_ཏ
2	0.04%	b_q	ཁ_འ	1	0.02%	_l	_འ
2	0.04%	s_s	ཚ_ཚ	1	0.02%	d_s	ལ_ཚ
2	0.04%	γ_	མ_	1	0.02%	s_η	ཚ_ཏ
2	0.04%	b'_	ཁ_	1	0.02%	_d	_ལ
2	0.04%	m_r	ཁ_མ	1	0.02%	š_l	ཏ_འ
2	0.04%	d_è	ལ_ཏ	1	0.02%	t'_s	མ_ཚ
1	0.02%	t'_n	མ_ཁ	1	0.02%	k_n	ཏ_ཁ
1	0.02%	kj_η	ཏ_ཏ	1	0.02%	ji_	མཁ_
1	0.02%	r_q	མ_འ	1	0.02%	yè_	ཟཏ_
1	0.02%	gr_b	ཏམ_ཏ	1	0.02%	p_q	ཏ_འ
1	0.02%	s_r	ཚ_མ	1	0.02%	ts'_r	ཏ_མ
1	0.02%	_n	_ཁ	1	0.02%	gs_m	ཏཚ_ཁ
1	0.02%	q_d	འ_ལ	1	0.02%	q_•	འ_འ
1	0.02%	h_η	ལ_ཏ	1	0.02%	č'_l	མ_འ
1	0.02%	g_d	ཏ_ལ	1	0.02%	n_r	ཏ_མ
1	0.02%	'_	མའ_	1	0.02%	j'_l	མ_འ
1	0.02%	s_m	ཚ_ཁ	1	0.02%	bč'_g	ཏམ_ཏ
1	0.02%	m_q	ཁ_འ	1	0.02%	l_η	འ_ཏ
1	0.02%	r_r	མ_མ	1	0.02%	d_•	ལ_འ
1	0.02%	ts_	ཏ_	1	0.02%	b'_r	ཏ_མ
1	0.02%	k_	ཏ_	1	0.02%	dw_s	ལམ_ཚ
1	0.02%	d_d	ལ_ལ	1	0.02%	η_η	ཏ_ཏ
1	0.02%	j'_d	མ_ལ	1	0.02%	b_s	ཏ_ཚ
1	0.02%	m_η	ཁ_ཏ	1	0.02%	ts_η	ཏ_ཏ
1	0.02%	w_n	མ_ཁ	1	0.02%	sk_	ཚཏ_
1	0.02%	*s_	འཚ_	1	0.02%	s_è	ཚ_ཏ
1	0.02%	s_q	ཚ_འ	1	0.02%	t'_g	མ_ཏ
1	0.02%	_è	_ཏ	1	0.02%	n_d	ཏ_ལ
1	0.02%	_q	_འ	1	0.02%	sg_	ཚཏ_
1	0.02%	*b_	འཏ_	1	0.02%	'_s	མ_ཚ

᠈ <v>

61	100.00%	total	
20	32.79%	'_en	ᠬ_ᠯᠢᠷ
9	14.75%	s_en	ᠰ_ᠯᠢᠷ
8	13.12%	'_ᠨ	ᠬ_ᠨ
5	8.20%	g_ᠨ	ᠭ_ᠨ
5	8.20%	ts_en	ᠲᠰ_ᠯᠢᠷ
5	8.20%	ᠮ_	ᠮ_
2	3.28%	s_	ᠰ_
2	3.28%	ᠮ_o	ᠮ_᠎ᠠ
1	1.64%	g_en	ᠭ_ᠯᠢᠷ
1	1.64%	ᠮ_n	ᠮ_ᠨ
1	1.64%	y_en	ᠶ_ᠯᠢᠷ
1	1.64%	'_e	ᠬ_ᠡ
1	1.64%	ᠮ_y	ᠮ_ᠶ

ᠬ <w>

147	100.00%	total	
19	12.93%	t_	ᠲ_
14	9.52%	_	-
12	8.16%	l_	ᠯ_
12	8.16%	ᠵi_	ᠵᠢᠷ
9	6.12%	mè_	ᠮᠡᠷ
7	4.76%	_n	_ᠨ
7	4.76%	b_	ᠪ_
7	4.76%	ge_	ᠭᠡᠮ_
7	4.76%	_i	_ᠢ
6	4.08%	ši_	ᠰᠢᠷ
5	3.40%	_id	_ᠢᠳ
5	3.40%	ᠵè_	ᠵᠡᠷ
5	3.40%	t'_	ᠲ'_
3	2.04%	ᠶi_	ᠶᠢᠷ
3	2.04%	čè_	ᠴᠡᠷ

2	1.36%	m_	ᠮ_
2	1.36%	šè_	ᠰᠡᠷ
2	1.36%	g_	ᠭ_
2	1.36%	gj_	ᠭᠢᠯ_
2	1.36%	li_	ᠯᠢᠷ
1	0.68%	_rd	_ᠷᠳ
1	0.68%	jhi_	ᠵᠢᠰᠢᠷ
1	0.68%	si_	ᠰᠢᠷ
1	0.68%	_un	_ᠤᠨ
1	0.68%	gi_	ᠭᠢᠷ
1	0.68%	d_us	ᠳ_ᠤᠰ
1	0.68%	yè_	ᠶᠡᠷ
1	0.68%	y_	ᠶ_
1	0.68%	dz_	ᠳᠵ_
1	0.68%	k'i_	ᠬᠢᠷ
1	0.68%	ᠮ_	ᠮ_
1	0.68%	dze_	ᠳᠵᠡᠷ
1	0.68%	ts_	ᠲᠰ_
1	0.68%	je_	ᠵᠡᠷ
1	0.68%	ke_	ᠬᠡᠷ
1	0.68%	thi_	ᠲᠢᠰᠢᠷ

ᠵ <y>

1369	100.00%	total	
219	16.00%	q_i	ᠵ_ᠢ
192	14.03%	_	-
176	12.86%	_in	_ᠢᠨ
111	8.11%	_i	_ᠢ
90	6.57%	_d	_ᠳ
90	6.57%	_id	_ᠢᠳ
74	5.41%	_o	_᠎ᠠ
44	3.21%	_è	_ᠡᠷ
43	3.14%	_u	_ᠤ

42	3.07%	t_	ཅ_
35	2.56%	•_i	ཇ_འོ
33	2.41%	_or	_ཀམ
27	1.97%	_n	_འོ
16	1.17%	_er	_ལམ
16	1.17%	ge_	ཅལ_
14	1.02%	l_i	ཇ_འོ
14	1.02%	t'_	ཇ_
11	0.80%	_r	_མ
9	0.66%	dhi_	ལའོའོ_
8	0.58%	gj_	ཅལ_
8	0.58%	'_i	ཇ_འོ
8	0.58%	_ŋ	_ལ
7	0.51%	_e	_ལ
6	0.44%	_en	_ལའོ
6	0.44%	t'_i	ཇ_འོ
6	0.44%	be_i	ཅལ_འོ
5	0.37%	n_i	འོ_འོ
5	0.37%	b_i	ཅ_འོ
4	0.29%	_•	_ཇ
4	0.29%	_èr	_འམ
4	0.29%	_eu	_ལའོ
3	0.22%	_èn	_འམ
3	0.22%	_on	_ཀའོ
3	0.22%	_•n	_ཇའོ
3	0.22%	k'_	ཅ_
3	0.22%	h_	ཀ_
3	0.22%	qo_i	ཇཀ_འོ
2	0.15%	_il	_འོའོ
2	0.15%	_euŋ	_ལའོལ
2	0.15%	_m	_འོ
1	0.07%	_im	_འོའོ
1	0.07%	_w	_ཇ

1	0.07%	ǰ_	ཡ_
1	0.07%	g_èl	ཅ_འོའོ
1	0.07%	_ed	_ལལ
1	0.07%	g_èr	ཅ_འམ
1	0.07%	r_i	མ_འོ
1	0.07%	_èw	_འཇ
1	0.07%	t'e_i	ཇལ_འོ
1	0.07%	ɣv_	ཇལ_
1	0.07%	č'_	མ_
1	0.07%	thi_	ཅའོའོ_
1	0.07%	_iq	_འོའོ
1	0.07%	_od	_ཀལ
1	0.07%	_ven	_ལལའོ
1	0.07%	_ŋl	_ལའོ
1	0.07%	_l	_ཇ
1	0.07%	_èu	_འཇ

ཀ <z>

85	100.00%	total	
38	44.71%	_	_
31	36.47%	_hi	_ཀའོ
6	7.06%	_jŋ	_ལལ
3	3.53%	_èr	_འམ
1	1.18%	_j	_ལ
1	1.18%	_eŋ	_ལལ
1	1.18%	_im	_འོའོ
1	1.18%	_ir	_འོམ
1	1.18%	_euŋ	_ལའོལ
1	1.18%	b_ŋ	ཅ_ལ
1	1.18%	pi_	ཅའོ_

ཇ <ž>

25	100.00%	total	
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8	32.00%	_ in	_ ႃႃ	1	4.00%	_ iṅ	_ ႃႃ
6	24.00%	_ i	_ ႃ	1	4.00%	_ eun	_ ႃႃႃ
4	16.00%	g_ is	ႃ_ ႃႃ	1	4.00%	k_ is	ႃ_ ႃႃ
2	8.00%	_ ṅ	_ ႃ	1	4.00%	_ eu	_ ႃႃ
1	4.00%	_ e	_ ႃ				