

# The realisation of *g'ha* with an affricate in Swiss German dialects

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# 1 Introduction

A very characteristic trait of most Swiss German dialects is the presence of the stereotypical, velar~uvular affricate  $/\widehat{kx}/$  and the absence of an aspirated velar plosive as opposed to e.g. Standard German.  $[k^h]$  in loan words is commonly adapted as  $/\widehat{kx}/$ . In native words,  $[k^h]$  does appear, but only in morphologically complex words, i.e. it is the combination of the prefix  $/k/$  or  $/g/$  with a following  $/h/$ . However, some words show variation between  $[\widehat{kx}]$  and  $[k^h]$ , both between and within dialects. In most of these words the prefix is lexicalised, but there is also a productively formed particle which shows this alternation. That particle is *g'ha*, from the verb *hā* 'have' which some speakers pronounce with an affricate, e.g.  $[\widehat{kx}a]$ . Personal impressions suggest that this pronunciation is an innovation in dialects like Bernese and that it is mainly young people who use it. This is the hypothesis to be tested.

The theoretical first part of this paper tries to shed some light on  $[\widehat{kx}]$ ,  $[k^h]$ , and the alternation between them. The focus lies on *g'ha* where the pronunciation with an affricate seems to be a distinctive feature of certain dialects as shown in Bleiker (1969). The empirical second part of this paper focuses on data obtained from the iPhone application *Dialäkt Äpp* which allows users to upload recordings of their dialect, gathering linguistic data using crowdsourcing. This data is visualised in maps, illustrating the distribution of  $[\widehat{kx}]$  in *g'ha* in Swiss German dialects today. The data is then compared to that presented by Bleiker (1969) which represents the situation at the beginning of the twentieth century, exploring the differences and similarities between the two data sets. In the last part, the data is analysed for sociolinguistic variation using variable rules analysis in order to test the hypothesis.

## 2 Background

Most varieties of Swiss German have a velar~uvular affricate  $/\widehat{kx}/$  and the cluster  $/kh/$ . The latter is sometimes realised identically to the former. To illustrate the affricate and the cluster and the differences between them, their respective history and phonological distribution is outlined below.

### 2.1 The affricate $[\widehat{kx}]$

The presence of the affricate in High Alemannic results in a symmetric fricative/affricate inventory, with each fricative having an affricate counterpart. Its diachronic development also left the language without aspirated plosives.

### 2.1.1 Historic origin

In the High German Consonant Shift, among other sound changes, Germanic voiceless plosives /p/, /t/, /k/ became fricatives and affricates, depending on the phonological environment. Affricates developed in three environments (exemplified here with /k/→/kx/):

- word-initially: cf. NHG /katsə/ with South Bavarian /kxatsə/
- when geminated: cf. NHG /ʃtɛkən/ with High Alemannic /ʃtækxən/
- after sonorants: cf. NHG /dan̩k/ with High Alemannic /d̩an̩kx̩/.

These changes are generally thought to have happened in several waves, spreading from the south. /ts/ is found in the whole High German area, /pf/ is generally found less frequently in the north and /kx/ is geographically very limited, occurring only in the very South (Schmidt 2013: 236ff). In High Alemannic, the affricate was later shifted to /ç/ in most positions, compare e.g. /ç̩n̩/ with South Bavarian /kx̩nd̩/. The historic isogloss of /kx/ runs from southern Alsace close up to Freiburg im Breisgau and then again southward through the Black Forest to Lake Constance. The shift also affected the neighbouring Southern Bavarian spoken in Austria and Italy, mainly in Tyrol, c.f. figure (1) which is adapted from Noble (1983: 142) and Bohnenberger (1953: 303ff).



Figure 1: Historical isogloss of /kx/.

Within Switzerland, /kx/ (and the lenited /ç/) correspond to /k<sup>h</sup>/ in the traditional varieties of the cities Basel and Chur.

### 2.1.2 Occurrence in onset position

In native words, [k̂x] mostly occurs word-internally or word-finally. Because of the shift to [k̂] in onset position, its occurrence there is limited to three groups of words: Loanwords, mainly from Standard German, where aspirated /k/ (more generally, written ⟨k⟩) is adapted as /k̂x/. This includes words that most speakers would consider native words, e.g. /k̂xamp̂f/ ‘fight’ or /k̂xʏftə/ ‘coast’ as well as more recent loans like /k̂xəm̂ik̂x/ ‘comic strip’ or /k̂xəm̂p̂ju:t̂ər/ ‘computer’. Another possibility for [k̂x] to occur in onset position are words with word-initial clusters consisting of /k/ and /k̂/. This includes words that result from productive processes, e.g. /k-ŷəuf-t/ ‘bought’ from /ŷəufə/ ‘to buy’ or /k-ŷæ:r/ ‘whingeing’ from /ŷæ:rə/ ‘to whinge’, but there are also lexicalised instances of that cluster, which are not recognisable as such anymore, e.g. /k̂xɛ:nə/ ‘to know’, where word-initial /k̂/ (a result of the sound shift) was prefixed with /k-/~ŷ-/ , resulting in an affricate (Staub et al. 1885-: 3,311). Another example is /k̂xɛ-/ ‘no (determiner)’ which is a reflex of MHG *dehein* which underwent syncope and assimilation of the plosive to the following fricative (Staub et al. 1885-: 3,319). And then there are words which have [k̂x] as a result of a shift from /kh/, compare e.g. Sensler German /k̂xi:rə/ (Schmutz et al. 2004: 213) with Bernese German /khɛĵjə/. Considering the limited occurrence of [k̂x] in onset position, this shift is interesting.

## 2.2 The morphologically complex /kh/

The cluster /kh/, which only occurs in onset position, consists of the prefix /ŷ-/~/k-/ and morpheme-initial /h/. The prefix covers a wide variety of functions, some of the more prominent ones are:

- Past participle of verbs, e.g. /k-lɑ:/ from /lɑ:/ ‘let’
- Continual nominalised verbs, e.g. /k-ŷræn:/ from /ŷrænə/ ‘cry’
- Collective nouns, e.g. /k-æft/ from /ɑft/ ‘branch’

There are also many instances where the prefix can be considered lexicalised, i.e. is not recognisable as a prefix anymore and usually had a meaning or function that is lost today, e.g. /ŷlɔ̂bɔ̂/ ‘believe’ or the aforementioned /k̂xɛ:nə/.

When this prefix is attached to a word with initial /h/, the cluster /kh/ is created. Its realisation is essentially an aspirated velar plosive [k<sup>h</sup>]. In most Swiss German dialects, any surfacing [k<sup>h</sup>] is always the realisation of such a cluster (except when preserving phonology in

foreign words or names). It is also always morphologically complex since it always contains the prefix.

### 2.3 /kh/ → [k̥x]

As mentioned before, this /kh/ is sometimes shifted to an affricate. The question is, where? It seems that the change is not uncommon in Swiss German. The grammatical register of the *Idiotikon* (Staub et al. 1885-) contains a non-exhaustive list of phonetic, morphological and semantic alternations that the authors happened to notice in the course of compiling the dictionary. In *Laute:Lautgruppen:Einzelnes* (“Grammatikalisches Register” 2014) one can find a list *geh* > *kx* containing several lemmata with *geh-* where an alternative pronunciation [k̥x-]<sup>1</sup> is mentioned although without any further explanation. Some examples from that list as well as others not contained in it are shown in table (1), all from Staub et al. (1885-).

Page	Lemma	Form	Meaning
2,869	g(e)hab	GR: <i>kχäb</i> GRV: <i>kχäben</i>	watertight
2,911	g(e)haben	GR, ObS: <i>Das Gschirr ket</i>	be watertight
2,911	g(e)haben	GA: <i>Er kebet si<sup>ch</sup> über Ruggewē</i>	complain
2,1396	g(e)hand	BO: <i>kχand</i> BSi: <i>kχant</i> GRh: <i>kχann</i>	nearby
2,1512	g(e)härig	W: <i>kārig</i>	hairy
2,851	g(e)hei	GL: <i>Kχei</i>	type of mist
2,1103	g(e)hî(j)e <sup>n</sup>	B oSi: <i>kīje</i> AP: <i>keiḡ</i> GrD: <i>kīa</i>	fall

Table 1: Variation between [k<sup>h</sup>] and [k̥x] in the *Idiotikon*

There are remarks concerning this specific sound change such as “*kχ* oder *k̥* aus *g’h* ein nicht seltener Übergang” (Staub et al. 1885-: 869) or “Aus *g’h* (*k̥*) entwickelt sich in einigen MAA. (FM: Mundarten) durchweg, in anderen sporadisch *kχ*” (Staub et al. 1885-: 1,163). At first sight, it seems like the majority of shifted /kh/ come from alpine regions, e.g. the Bernese Oberland, Uri or Graubünden. However, a systematic examination of instances of affricated /kh/ in the *Idiotikon* is not within the scope of this paper. It is noteworthy that the change from an aspirated plosive [k<sup>h</sup>] to an affricate [k̥x] is the same as the one discussed in section 2.1.1.

<sup>1</sup>Note that ⟨k⟩ traditionally represents an affricate in written Swiss German

## 2.4 Occurrence in participles

As mentioned above, the prefix *g-* has many different functions. However, in all the instances of /kh/ → [kx̥] found in the *Idiotikon*, it has a derivational or unclear meaning, i.e. is lexicalised). The perhaps most frequent and productive use of the prefix today is for building past participles; the shift to an affricate is not mentioned for participles in the *Idiotikon*, for which there are two possible explanations; one would be that participles are/were not affected and the other that participles are not listed in the dictionary. Either way, there is one participle for which the shift is documented. That is *g'ha* from *hā* ‘have’: “Ptc. (an manchen Orten mit anl. *kχ* aus *g'h*)” (Staub et al. 1885-: 871). A similar situation was found in a previous study (Matter 2014) which was only intended to be a small empiric study, so it was not exhaustive and somewhat tentative. 26 speakers of Bernese German and two speakers of Highest Alemannic varieties were presented with English sentences (to avoid influence on pronunciation by written ⟨geh-⟩) and asked to translate them to their native dialect. The translations were intended to contain words with /kh/. The words containing /kh/ were both what could be considered productive and non-productive ones (i.e. participles of verbs with a /h-/ onset and forms with lexicalised prefixes like the ones shown above):

Participle (Infinitive)	Translation	[kx̥]?	Non-productive /kh/	Translation	[kx̥]?
uy-k-hoert (uyhœrə)	stopped	×	khʏdər	trash	✓
ɑb-k-holt (ɑbhɔlə)	picked up	×	khœ:rə	hear	✓
k-hɑ(:) (hɑ:)	had	✓	ʊmkhɛjt (khɛjə)	fell over	✓
k-huəftət (huəftə)	coughed	×	khɛimnis	secret	×

Table 2: Occurrence of [kx̥] in Bernese speakers

A ✓ indicates that at least one proband used [kx̥] in that particular form. As can be seen, the three words with a lexicalised prefix, /khɛjə/, /khœ:rə/ and /khʏdər/ were pronounced with an affricate by some speakers as well as the participle /k-hɑ/. None of the other participles showed this behaviour. There was no apparent correlation with age, gender or origin. The study included only a small sample of both speakers and target words, but the results appear to be in line with what can be found in the *Idiotikon* - i.e. the participle of /hɑ:/ behaving differently from other participles in terms of an affricated onset, at least in Bernese German. A Valais German speaker and a speaker of Sensler German were also included in the proband group because these varieties consistently show the shift in e.g. /kxi:ə/. Both used an affricate in all three lexicalised words mentioned above while the Valais German speaker also used an affricate in *g'ha*, whereas the Sensler German speaker had /k-hæ:bə/. Using data from the

*Dialäkt Äpp* (see below), it was also found that the participle of /hɑ:/ commonly contains [kx̥] in Valais. This combined with the fact that some speakers of Bernese have this pronunciation as well leads to two questions: In what dialects is the pronunciation of *g'ha* with an affricate prevalent and in those dialects where it is not, what speakers use it?

## 2.5 g'ha

The *Sprachatlas der deutschen Schweiz* (SDS) is another standard work for Swiss German containing maps describing phonetic, morphological and lexical differences of different dialects. It has a map solely dedicated to this participle (Handschuh et al. 1975: 46). The map itself unfortunately only encodes vowel quality, the presence of *-bə-* and final *-t* or *-n*. Although differences in the onset are not encoded, the pronunciation with an affricate is mentioned with the remark that it was mostly reported in the alps and north eastern Switzerland. There are several quotes from informants illustrating different types of variation, which also contain the following instances of *g'ha* with an affricate:

- Bern: “wir sagen kχ̥ebə, aber kχ̥ā ist vornehmer”
- Bern: “die Jungen sagen etwa kχ̥ā”
- St. Gallen: “kχ̥ē alt, kχ̥ā jung”
- Valais: “früher kχ̥ē, jetzt kxa”
- Glarus: “meistens sagen wir kχ̥ē, kχ̥ā sagt man in Schwanden”
- Valais: “hier sagt man kχ̥ā (im Gegensatz zu WS21 ‘ghä[n]’)”

It should be noted that the differences being pointed out have nothing to do with the onset except for the last quote. The SDS refers to a book by Bleiker (1969) for a more detailed description of the pronunciation with an affricate. The book treats the morphology of the verbs for ‘have’, ‘be’ and ‘do’ in Swiss German dialects based on data collected for the SDS (Bleiker 1969: 20). Bleiker also discusses the participle of *hā* showing an affricate about which he writes:

Im Anlaut gilt meistens aspirierte *Fortis* [...]. Daneben treten auch aspirierte Lenis [...] und Affrikate [...] auf. [...] Ihre Hauptgebiete sind der Osten und der voralpine bzw. alpine Westen, verbunden besonders durch gelegentliche Bezeugungen in der Innerschweiz; daneben noch einzelne Streubelege. (Bleiker 1969: 79; italics in the original)



Figure (2) shows the corresponding map on which can be seen that varieties with  $[\widehat{kx}]$  are found in Valais, the Bernese Oberland, parts of Lucerne, Glarus, Graubünden, the North Eastern corner of Switzerland and in some parts of Schwyz and Uri. There are also some single flecks in the Central Plateau. Concerning the diachronic development, Bleiker thinks that generally,  $[k^h]$  is replacing  $[\widehat{kx}]$  because of the latter's strong concentration in areas that are rather static linguistically and because of remarks from data collectors stating that  $[k^h]$  is newer. However, he also says that the question is not easy to answer (Bleiker 1969: 81). It also seems there is a connection between *g'ha* showing an affricate and *g'heie* doing so (Bleiker 1969: 197).

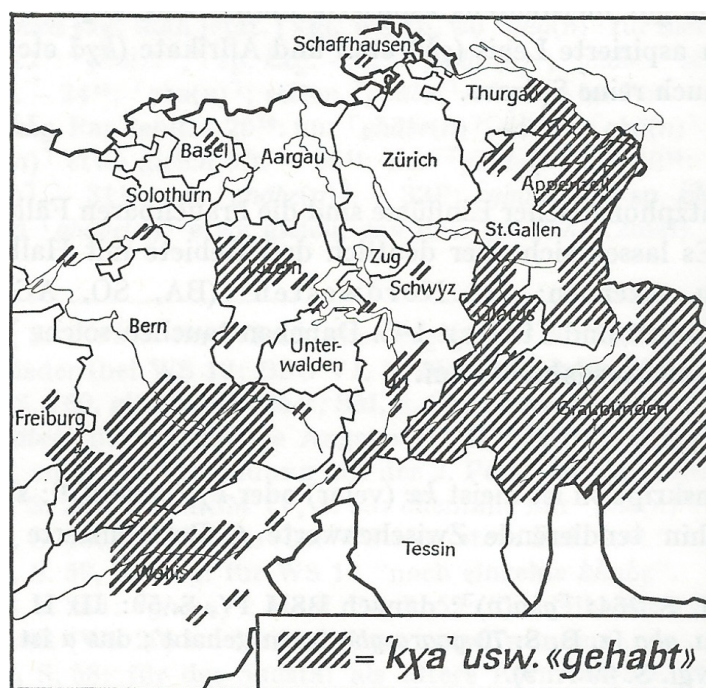


Figure 2: Varieties with  $[\widehat{kx}]$  in the participle of *hā* (Bleiker 1969: 79).

## 2.6 Comparison with today

The data used by Bleiker were collected from 1940 onwards by the creators of the SDS (Hotzenköcherle 1962: 8). However, since the informants, questions and recording sites were chosen in such a way as to give a “slightly archaic” picture of Swiss German dialects, the situation represented in the data is roughly from “the first decades” of the twentieth century (Hotzenköcherle 1962: 5). Since the pronunciation with  $[\widehat{kx}]$  is found in today's dialects and since its use is not confined to the areas sketched out by Bleiker, it will be interesting to see

what its geographical and/or sociolinguistic distribution looks like today, thereby also testing the hypothesis that younger speakers use it more often. Data from the iPhone app *Dialäkt Äpp* will serve as a basis for this endeavour in the practical part.

### 3 Method

The *Dialäkt Äpp* (Leemann et al. 2013) is an iPhone application offering a variety of functions. Users can provide information about their native dialect and record their pronunciation of keywords that contain distinctive features, e.g. ‘free’ which is /fri:/ in areas where the hiatus diphthongisation did not take place and /frɛi/ or /fræi/ elsewhere. Crowdsourcing the recording process is an efficient and relatively cheap way of gathering linguistic data. All recorded word lists are accessible through a map view of Switzerland where users can select a location and listen to the recordings of speakers of the local dialect. The application also includes some historical recordings as well as a little quiz where the user provides information about their pronunciation or lexical value of the keywords and in the end receives a guess about where their dialect is from. Apart from the single-word recordings, there are also two longer texts that can be recorded and listened to, one of which contains a token of the participle. This will serve as the data source. The relevant text from the app is the first paragraph of a longer text called “Gespräch am Neujahrstag”. It seems the text is designed to contain as many keywords for phonetic and lexical differences as possible. It is not clear if *g’ha* is one of them, although one might suspect that, considering that there is an SDS map dedicated to it. The text was first published in (Dieth 1952). The selected passage as presented in the app:

Ich lasse ihr vielmals danken. Du bist ein braves Kind, hattest du aber schwer zu tragen gehabt! Rutsch doch ein bisschen an den Ofen hin, auf das Ofenbänkli. Du hast sicher kalte Füße, du hast ja ganz kalte Hände. Warum zieht ihr auch keine Handschuhe an, bei dieser Kälte? Ihr seid immer die gleichen! Gell, es hat geschneit, alle Bäume sind voll.

There are several disadvantages to this text (for the purpose of this study):

1. It is a text instead of a single-word recording which means that there are far less recordings of it than of the single-word recordings since users are less motivated to record a full length text. It is also one of the last items in the recording list.
2. The written form of the relevant word is ⟨gehabt⟩, meaning that the user sees the sequence ⟨geh⟩, possibly prompting them to produce [k<sup>h</sup>] when they would usually use [k̂x].

3. The sentence is somewhat clumsily written, containing an apparently unnecessary pluperfect construction: “...hattest du aber schwer zu tragen gehabt!”. Without ⟨gehabt⟩, the text would be translated exactly the same way in Swiss German. It is possible that this formulation was chosen to specifically elicit the participle.

One of the creators of the application, Adrian Leemann, was kind enough to provide the recordings of this sentence in digital form which enabled much easier processing than would have been possible by only using the iPhone app. A total of 1802 recordings from individual users were obtained, with metadata containing canton, municipality, gender and age. These were each listened to individually. The perceived pronunciation (analysis by ear) was entered into an Excel sheet, along with age, gender and municipality. The entries were primarily coded depending on whether there was a velar~uvular fricative (‘kx’) or aspiration (‘kh’) following the velar plosive. If necessary, the recording was played several times until a definite decision could be made. As mentioned before, the frame sentence is not written in a very natural way. This caused many speakers to either use a construction with a modal verb - *du hesch schwär müesse traage*, to skip the part in question or to stop recording altogether. These recordings which contained no token of *g’ha* were marked with an ‘N’, dismissing them from the sample. Some users also stuttered, repeated words, talked very slowly or produced various speech errors in this particular sentence. If speech production was deemed overly unnatural, the entry was also marked with ‘N’. Texts recorded in Standard German, duplicated entries or multiple recordings by the same person were also marked. An additional complication was that the metadata was provided by the users. This resulted in several entries having an audible discrepancy between the metadata and the recording, i.e. entries with wrong age, wrong gender or wrong dialect. If it was apparent that the person had selected the wrong gender or age by accident, this was corrected (in the case of age to an approximate value; this was not done for more than five entries). Entries with a clear mismatch between dialect and location (e.g. l-vocalisation in Graubünden) were marked with ‘N’. After removing all invalid entries a total of 1531 was left. A list of these entries can be found in the appendix and on the accompanying CD-ROM.

## 4 Results

Out of these 1531 tokens of *g’ha*, 208 (15.6%) contained [kx̂]. In section 4.1, the distribution of these tokens will be analysed in terms of geographical distribution. In section 4.2, that distribution is compared to the older data gathered for the SDS. In section 4.3, places with

innovated  $[\widehat{kx}]$  will be examined for any potential correlations with age or gender.

## 4.1 Geographical distribution

In terms of distribution per canton, very high percentages ( $>80\%$ ) of  $[\widehat{kx}]$  were found in Valais, Glarus and Appenzell Ausserrhoden, clearly above average were St. Gallen and Graubünden ( $>30\%$ ). The distribution in the single cantons can be seen in table 3.

Appenzell Innerrhoden	100%	Zürich	6.6%
Valais	87.1%	Lucerne	4.5%
Glarus	84.2%	Basel-Landschaft	3.7%
St. Gallen	33.9%	Zug	3.1%
Graubünden	26.9%	Aargau	2.6%
Appenzell Ausserrhoden	20%	Basel-Stadt	0%
Bern	17.2%	Nidwalden	0%
Fribourg	15.4%	Obwalden	0%
Solothurn	10.5%	Schaffhausen	0%
Thurgau	10.1%	Schwyz	0%
Zürich	6.6%	Total	13.2%

Table 3: % of  $[\widehat{kx}]$  in *g'ha* per canton

This only shows how frequently  $[\widehat{kx}]$  is found in a specific canton which gives a general idea about its geographical distribution. But linguistic differences do of course not necessarily correspond to canton borders. In order to receive a visual representation and have a better overview of the geographic distribution, the percentage of  $[\widehat{kx}]$  was calculated for every municipality, which was included in the metadata from the *Dialäkt Äpp*. Then, using Google's Geocoding API (<http://developers.google.com/maps/documentation/geocoding/>), the coordinates for every municipality were retrieved and combined with the information present in the metadata. With the help of the Google Maps Javascript API (<http://developers.google.com/maps/documentation/javascript/>), a heat map was created where red indicates a high percentage of  $[\widehat{kx}]$  in a location, green a low percentage and uncoloured areas do not show  $[\widehat{kx}]$  in the data. The map can be seen in figure (3). An interactive version of this map, allowing to switch between SDS data and *Dialäkt Äpp* data and providing more detailed information about single sampling locations can be found on the CD-ROM belonging to this paper.

Areas where  $[\widehat{kx}]$  is clearly predominant can be found in Valais (1), the Bernese Oberland (2), Glarus (3), Graubünden (4), Appenzell and eastern St. Gallen (5). There are two minor

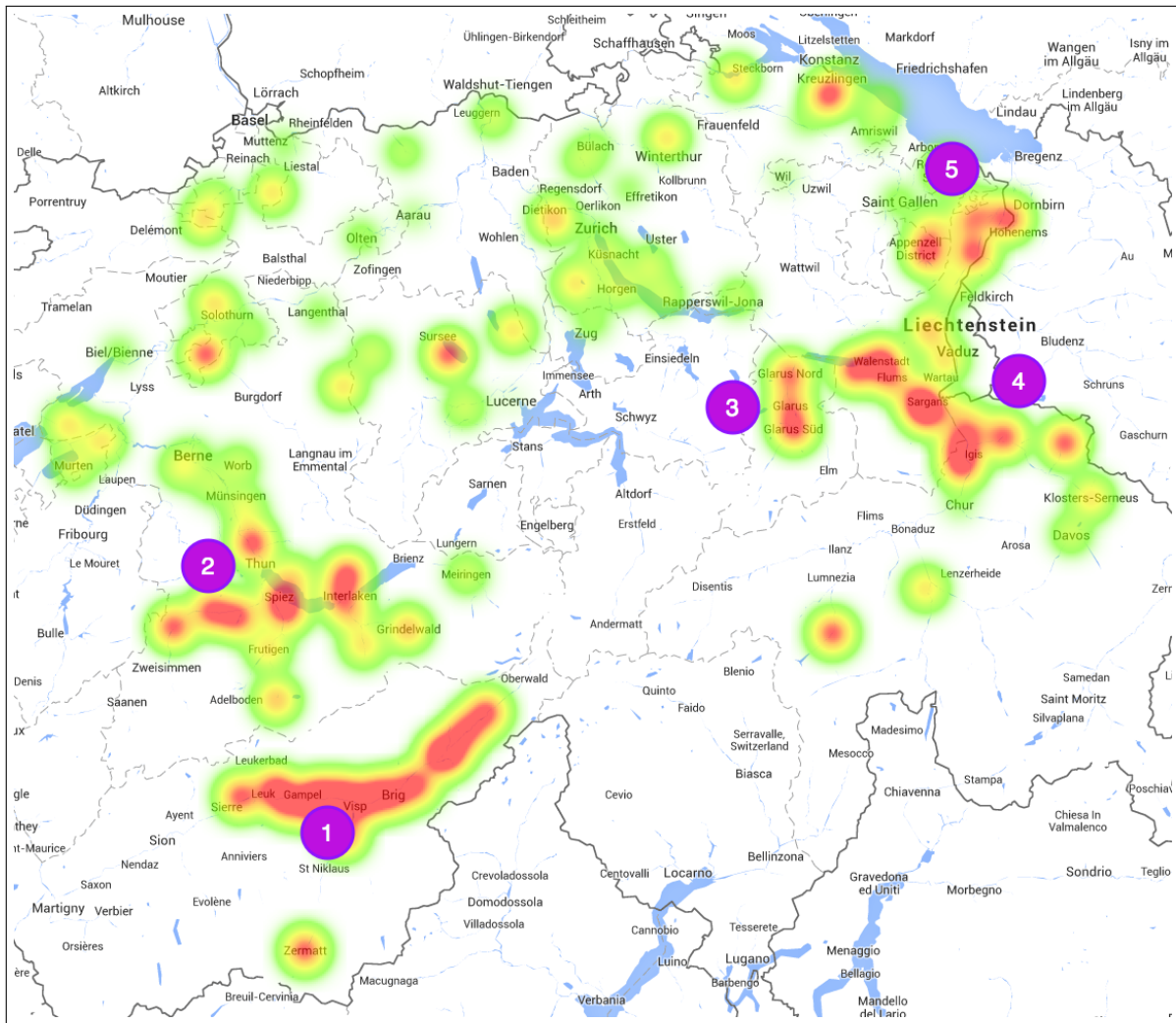


Figure 3: Distribution of the participle with  $[\widehat{kx}]$  based on *Dialäkt Äpp* data.

”red spots” in the Central Plateau: Mühledorf and Nottwil. On closer investigation however, these locations have one single token which happens to contain  $[\widehat{kx}]$  which is hardly representative. The same is true for many locations in the larger red areas, but the bigger picture shows that these are not coincidental. There is also a comparably big green area around Zürich; 10% of tokens in it contain  $[\widehat{kx}]$ . Other locations with small percentages are found throughout the Central Plateau; there is no geographical pattern visible.

## 4.2 Comparison

As mentioned before, there is a difference of a little less than a century between the *Dialäkt Äpp* and the SDS data. In this section these two points in time will be compared in terms

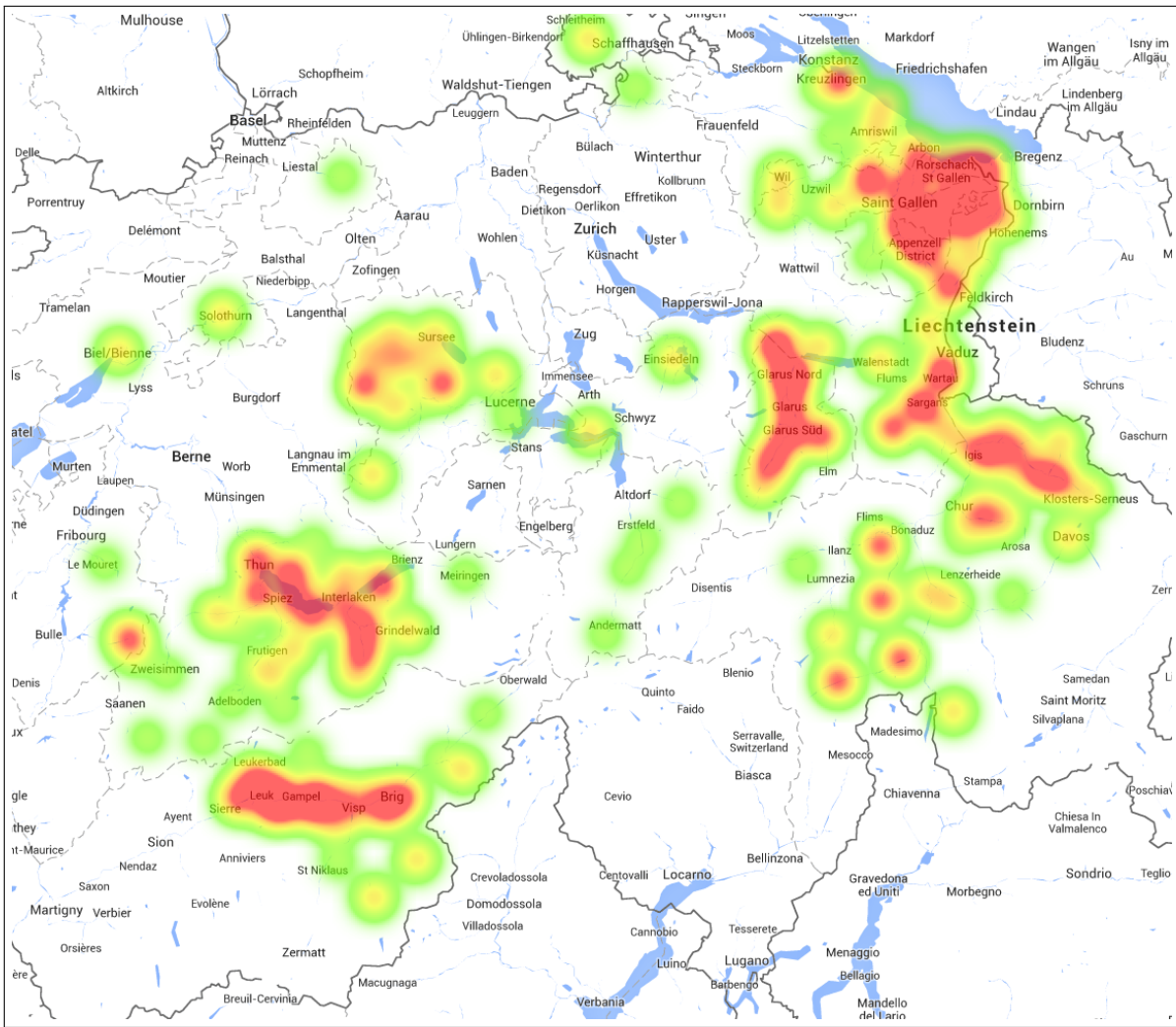


Figure 4: Remade map based on the SDS data provided by Bleiker

of the geographical distribution of speakers who use  $[\widehat{kx}]$ . In an attempt to create a more easily comparable map than the one shown in figure (2), figure (4) shows a map based on the proportion of  $[\widehat{kx}]$  in the SDS data which are encoded in (Bleiker 1969: 80) as follows: Tokens of  $g'ha$  showing exclusively  $[\widehat{kx}]$  in a location (corresponds to a “heat” value of 100 on the map), more than two thirds showing it (corresponds to 50) and less than one third showing it (corresponds to 16.6). The two maps differ in that the *Dialekt Äpp* map shows the percentage of speakers per location that used  $[\widehat{kx}]$  in the recording and the SDS map shows the percentage of  $[\widehat{kx}]$  in the data gathered from one or more informants. In comparing the two maps it is assumed that these two values are representative of the usage of  $[\widehat{kx}]$  in a community.



Many areas do not show any big changes. One of them is Valais where, if anything,  $[\widehat{kx}]$  seems to be more concentrated in the Rhône valley today compared with the SDS data. The data is somewhat fragmentary, since many locations are missing in the sample and many others only have one token, but figure 5 shows that in the SDS, no or only a small proportion of  $[\widehat{kx}]$  is reported for the upper Rhône valley (1) and that Grächen (2) and Ferden (3) have no  $[\widehat{kx}]$  compared to the SDS<sup>2</sup>.

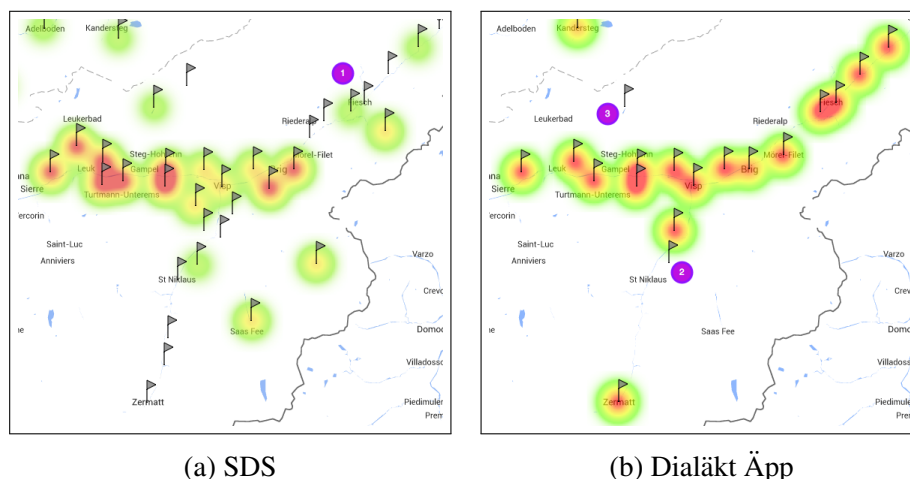


Figure 5: Comparison of Valais

In the adjacent Bernese Oberland,  $[\widehat{kx}]$  is still predominant. Almost all sampled locations show 50% or more  $[\widehat{kx}]$  with only very few showing no  $[\widehat{kx}]$  at all. The apparent difference in area size can mostly be explained by missing locations. The situation is similar in Graubünden where the majority still shows  $[\widehat{kx}]$ , but a lot of locations are missing in comparison with the SDS. In Glarus, the area with  $[\widehat{kx}]$  looks a lot smaller than in the SDS map, but again this is due to missing locations. Over 80% of tokens from Glarus show  $[\widehat{kx}]$ . In the neighbouring Sarganserland (St. Gallen), all sampled locations now show  $[\widehat{kx}]$  to some degree in comparison to the SDS (which is really only a difference of two towns: Quarten and Flums).

Things get more interesting around the city of St. Gallen. The general tendency here seems to be that  $[\widehat{kx}]$  is retreating. In the SDS sample, visualised in figure (7a), there is a big area uniformly showing  $[\widehat{kx}]$ . In the *Dialäkt Äpp* sample, visualised in figure (7b), the usage of  $[\widehat{kx}]$  has gone back in the same area which is only partially due to missing locations in the sample. Only 11 of 17 locations there show  $[\widehat{kx}]$  at all, with an overall percentage of under 35%. There are also places around this area which show significantly decreased usage

<sup>2</sup>Flags mark sampling locations

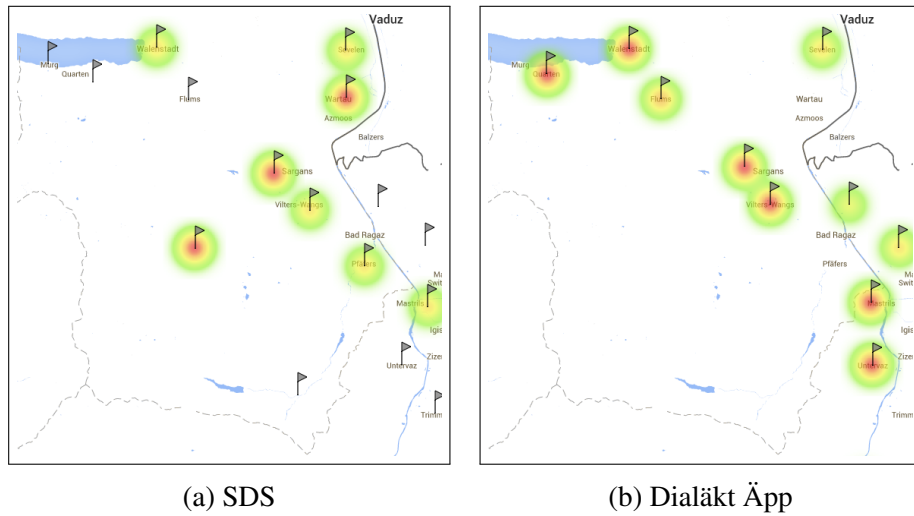


Figure 6: Sarganserland

of  $[\widehat{kx}]$  (Wil with ~11%) or have no more  $[\widehat{kx}]$  at all (e.g. Kirchberg and Flawil). What is also interesting is that right at the border to Austria, unlenited word-initial  $/\widehat{kx}/$  is found. In the recorded text, all speakers from Diepoldsau and Oberriet used an affricate in e.g.  $/\widehat{kx}alti/$  ‘cold (pl.)’, other dialects  $/\overset{\circ}{y}alti/$ . These speakers also all used  $[\widehat{kx}]$  in the participle. However, there is too little data to suggest a connection.

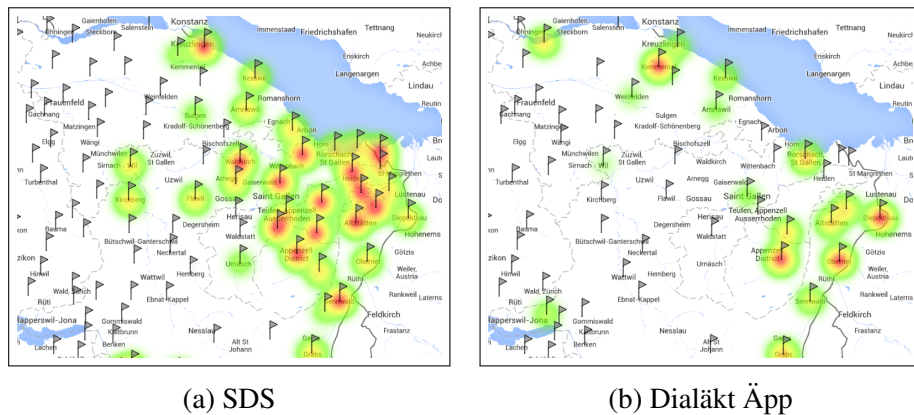


Figure 7: St. Gallen and Appenzell

Another area showing a conspicuous difference in terms of geographical distribution is approximately 15 km around Willisau LU northwest of Lucerne, where the usage of  $[\widehat{kx}]$  seems to have gone back almost completely: In the SDS data, 2 places show only the affricate, 6 have more than 2/3 and 2 more than 1/3. In the *Dialäkt Äpp* data, only two tokens with  $[\widehat{kx}]$  are found in the same area.



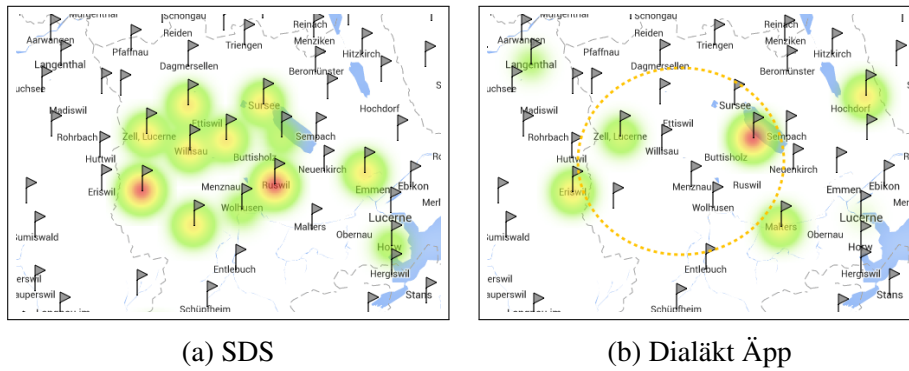


Figure 8: Comparison of the situation around Willisau

A possible, very speculative explanation for the relatively strong retreat of  $[\widehat{kx}]$  in these last two areas compared with the others could be that they are not as isolated as the dialects in the Alps and therefore more strongly affected by the influence of surrounding dialects.

#### 4.2.1 Age distribution in St. Gallen

Considering the apparent changes in these last two areas, it would be interesting to see how the use of  $[\widehat{kx}]$  is distributed age-wisely, possibly indicating a diachronic development. If so, one could expect a pattern which is representative of a linguistic change in apparent-time (Chambers et al. 2004: 76). For this purpose, the entries were sorted into age groups (under 20, 20-29, 30-39, 40-49, over 50). There is only one age group for speakers older than 50 because there are far fewer recordings from these speakers, which would result in very disproportionate group sizes. Unfortunately, there is only a total of 22 tokens in the area around Willisau, which is too little. For St. Gallen however, there is more data. In the circled area seen in figure (9a), there are a total of 123 tokens. The percentage for each age group was evaluated as seen in figure (9b) which shows that older speakers tend to use  $[\widehat{kx}]$  more frequently than younger speakers which suggests a gradual replacement of  $[\widehat{kx}]$  by  $[k^h]$  in this area.

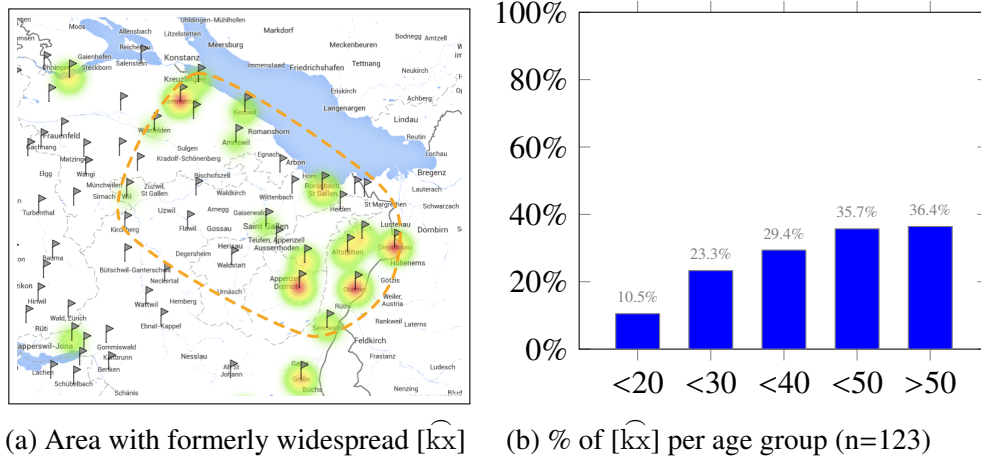


Figure 9: Correlation with age around St. Gallen

### 4.3 Innovation in the Central Plateau

Based on a visual comparison of the SDS map and the *Dialekt Äpp* maps, the pronunciation with  $[\widehat{kx}]$  is - as suspected - an innovation in the Central Plateau, with the hypothesis being that the innovating group are young people. The coloured areas in figure (10a) show the SDS data. The flags represent the sampled locations from the *Dialekt Äpp*, blue flags indicate locations with  $[\widehat{kx}]$  which are not in one of the areas showing  $[\widehat{kx}]$  in the SDS data. The idea behind selecting these locations is that these are the places where  $[\widehat{kx}]$  is an innovation. Figure (10b) shows the corresponding age chart where a tendency for younger people to use it more often is visible.

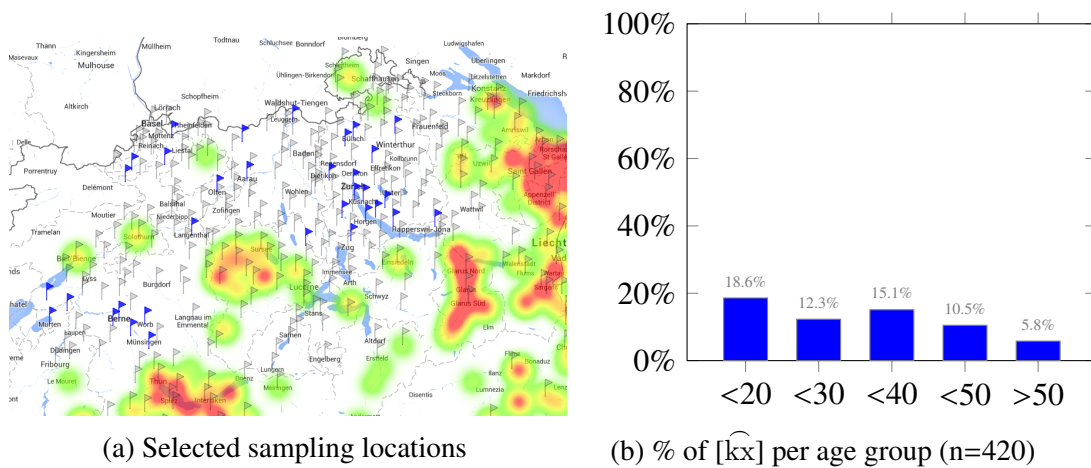


Figure 10: Locations with innovated  $[\widehat{kx}]$

The tendency is not as clear as one might wish, but there is one, with e.g. people under 20 being more than three times as probable to use  $[\widehat{kx}]$  than people over 50. This would support the hypothesis of there being an age correlation. However, what has not been taken into account so far at all is gender. In figure (11), the same sample as in (10) is additionally split up by gender. Here, a different pattern emerges: People below 20 use  $[\widehat{kx}]$  approximately equally frequent, but ages 20-50 show a significant discrepancy between male and female speakers, with more than 18% of men in this range using  $[\widehat{kx}]$ , but only about 5% of women, indicating that the potential carriers of the innovation are male and/or young speakers.

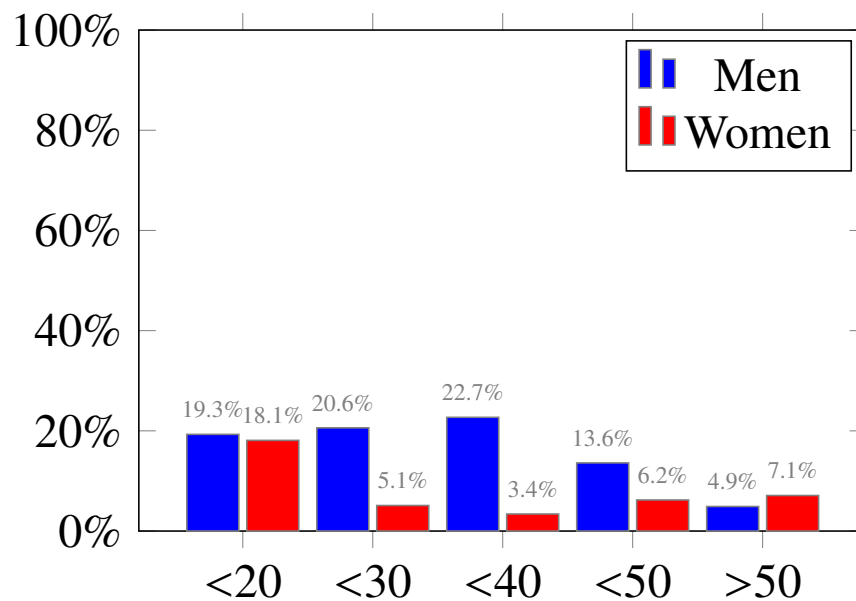


Figure 11: Locations with innovated  $[\widehat{kx}]$  (n=420)

## 5 Conclusion

It was shown that  $/kh/ \rightarrow [\widehat{kx}]$  was a common sound change in different Swiss German varieties, shifting the morphologically complex  $/kh/ - [k^h]$  to an affricate  $[\widehat{kx}]$ , similar to the High German consonant shift. The shift can mostly be found in word with a lexicalised prefix, but also in the productively formed participle of  $/ha:/, /kha:/$ , on which the rest of the paper focused. It was shown which dialects traditionally (at the beginning of the twentieth century) had an affricate in that participle, based on data gathered for the *Sprachatlas der deutschen Schweiz*. This was then compared to the situation today, using data gathered by the iPhone application *Dialäkt App*. It appeared that  $[\widehat{kx}]$  in *g'ha* has remained stable in the alpine dia-

lects, but not so much in Lucerne and St. Gallen where its use has gone back. The distribution in locations that traditionally had no [kx̥] in *g'ha*, but do show it in the *Dialäkt Äpp* data was examined, showing that there is both a tendency for young people and male speakers to use [kx̥].

One major issue of this study is the data used. It is unclear how representative the data gathered by the *Dialäkt Äpp* is for the Swiss German speech community, considering that it is only available for iPhone users. iPhones are the most expensive smartphones commonly available on the Swiss market, possibly skewing the sample. The mode of data collection also resulted in an age bias with people below 20 making up over 30% of the sample and people over 50 less than 15%. Another problem is the rather small sample size, with only one or two tokens for many sampling locations. It would probably be worthwhile to focus on a smaller area, e.g. a single city and conduct a detailed sociolinguistic study on [kx̥], using a representative speaker sample. A question that should also be addressed is if and how this pronunciation of *g'ha* is connected with [kx̥] in words with a lexicalised prefix like e.g. *g'hööre*. Also, a personal observation which might have further implications is that there are speakers who realise every /kh/ as [kx̥], e.g. [kx̥æbt], /k-hæbt/. This means that the shift is not necessarily limited to words with lexicalised prefixes and *g'ha*, but is also affecting other productively formed instances of /kh/. In conclusion, it can be said that the pronunciation of *g'ha* with an affricate is still a prominent feature in many dialects. Also, there is a possible change in this direction going on in other dialects where the innovation appears to be carried by male and/or young speakers.

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## 6 Appendix

The recordings were obtained as single WAV files encoded at CD quality (44.1 kHz at a bit depth of 16 bits). The metadata is encoded in the filenames in the format Canton\_Municipality\_Gender\_Age\_ID, e.g. Zürich\_Meilen\_m\_32\_5154bfe022b8d.wav. Below is a list of all valid entries with a token of *g’ha*:

Canton	Municipality	Gender	Age	Value	Canton	Municipality	Gender	Age	Value
Aargau	Aarau	m	12	kh	Schwyz	Einsiedeln	w	22	kh
Aargau	Aarau	m	16	kh	Schwyz	Einsiedeln	w	40	kh
Aargau	Aarau	m	23	kh	Schwyz	Freienbach	w	65	kh
Aargau	Aarau	m	24	kh	Schwyz	Galgenen	w	15	kh
Aargau	Aarau	m	26	kh	Schwyz	Galgenen	w	19	kh
Aargau	Aarau	m	27	kh	Schwyz	Galgenen	w	28	kh
Aargau	Aarau	m	30	kh	Schwyz	Galgenen	w	48	kh
Aargau	Aarau	m	31	kh	Schwyz	Innerthal	m	13	kh
Aargau	Aarau	m	36	kh	Schwyz	Innerthal	w	29	kh
Aargau	Aarau	m	38	kh	Schwyz	Küssnacht	w	12	kh
Aargau	Aarau	m	41	kh	Schwyz	Küssnacht	w	13	kh
Aargau	Aarau	m	44	kh	Schwyz	Küssnacht	w	23	kh
Aargau	Aarau	m	50	kh	Schwyz	Küssnacht	w	30	kh
Aargau	Aarau	m	59	kh	Schwyz	Muotathal	m	22	kh
Aargau	Aarau	w	12	kh	Schwyz	Muotathal	w	14	kh
Aargau	Aarau	w	12	kh	Schwyz	Muotathal	w	14	kh
Aargau	Aarau	w	13	kx	Schwyz	Muotathal	w	14	kh
Aargau	Aarau	w	15	kh	Schwyz	Muotathal	w	24	kh
Aargau	Aarau	w	15	kh	Schwyz	Oberiberg	m	13	kh
Aargau	Aarau	w	18	kh	Schwyz	Oberiberg	m	24	kh
Aargau	Aarau	w	22	kh	Schwyz	Rothenthurm	m	19	kh
Aargau	Aarau	w	25	kx	Schwyz	Rothenthurm	m	20	kh
Aargau	Aarau	w	32	kh	Schwyz	Rothenthurm	m	29	kh
Aargau	Aarau	w	36	kh	Schwyz	Schibbelbach	w	20	kh
Aargau	Aarau	w	39	kh	Schwyz	Schibbelbach	w	20	kh
Aargau	Aarau	w	43	kh	Schwyz	Schwyz	m	16	kh
Aargau	Aarau	w	50	kh	Schwyz	Schwyz	m	16	kh
Aargau	Aarau	w	50	kh	Schwyz	Schwyz	m	20	kh
Aargau	Aarau	w	52	kh	Schwyz	Schwyz	m	20	kh
Aargau	Aarau	w	56	kh	Schwyz	Schwyz	m	22	kh
Aargau	Aarau	w	64	kh	Schwyz	Schwyz	m	31	kh
Aargau	Aarburg	m	69	kh	Schwyz	Schwyz	m	49	kh
Aargau	Aarburg	w	28	kh	Schwyz	Schwyz	w	11	kh
Aargau	Aarburg	w	31	kh	Schwyz	Schwyz	w	13	kh
Aargau	Auw	m	26	kh	Schwyz	Schwyz	w	15	kh
Aargau	Auw	w	20	kh	Schwyz	Schwyz	w	50	kh

Aargau	Auw	w	48	kh	Schwyz	Tuggen	m	49	kh
Aargau	Birmenstorf	m	65	kh	Schwyz	Tuggen	w	27	kh
Aargau	Birmenstorf	w	16	kh	Solothurn	Balsthal	m	13	kh
Aargau	Birmenstorf	w	20	kh	Solothurn	Balsthal	m	37	kh
Aargau	Birmenstorf	w	53	kh	Solothurn	Balsthal	w	49	kh
Aargau	Boswil	m	11	kh	Solothurn	Balsthal	w	55	kh
Aargau	Boswil	w	14	kh	Solothurn	Bärschwil	m	16	kh
Aargau	Boswil	w	25	kh	Solothurn	Bärschwil	m	47	kh
Aargau	Böttstein	m	55	kh	Solothurn	Bettlach	m	37	kh
Aargau	Bremgarten	m	15	kh	Solothurn	Bettlach	m	57	kh
Aargau	Bremgarten	m	44	kh	Solothurn	Bettlach	w	18	kh
Aargau	Bremgarten	w	13	kh	Solothurn	Bettlach	w	19	kh
Aargau	Bremgarten	w	23	kh	Solothurn	Bettlach	w	47	kh
Aargau	Bremgarten	w	23	kh	Solothurn	Breitenbach	w	15	kh
Aargau	Bremgarten	w	28	kh	Solothurn	Däniken	m	13	kh
Aargau	Brittnau	m	34	kh	Solothurn	Däniken	w	45	kh
Aargau	Brittnau	w	18	kh	Solothurn	Däniken	w	49	kh
Aargau	Brugg	m	16	kh	Solothurn	Deitingen	m	38	kh
Aargau	Brugg	m	19	kh	Solothurn	Deitingen	w	68	kh
Aargau	Brugg	m	27	kh	Solothurn	Gänsbrunnen	w	12	kh
Aargau	Brugg	m	54	kh	Solothurn	Günsberg	m	15	kh
Aargau	Brugg	m	58	kh	Solothurn	Günsberg	w	22	kh
Aargau	Brugg	m	67	kh	Solothurn	Gunzgen	w	12	kh
Aargau	Brugg	m	71	kh	Solothurn	Hofstetten-Flüh	m	38	kh
Aargau	Brugg	w	13	kh	Solothurn	Hofstetten-Flüh	m	38	kh
Aargau	Brugg	w	13	kh	Solothurn	Hofstetten-Flüh	w	19	kh
Aargau	Brugg	w	13	kh	Solothurn	Kleinlützel	w	14	kh
Aargau	Brugg	w	15	kh	Solothurn	Kriegstetten	m	14	kh
Aargau	Brugg	w	19	kh	Solothurn	Kriegstetten	m	21	kh
Aargau	Brugg	w	22	kh	Solothurn	Kriegstetten	m	32	kh
Aargau	Brugg	w	22	kh	Solothurn	Kriegstetten	m	42	kh
Aargau	Brugg	w	22	kh	Solothurn	Kriegstetten	m	63	kh
Aargau	Brugg	w	24	kh	Solothurn	Kriegstetten	w	12	kh
Aargau	Brugg	w	25	kh	Solothurn	Kriegstetten	w	22	kh
Aargau	Brugg	w	27	kh	Solothurn	Messen	m	13	kh
Aargau	Brugg	w	32	kh	Solothurn	Messen	m	13	kh
Aargau	Brugg	w	36	kh	Solothurn	Mühledorf	m	34	kh
Aargau	Brugg	w	43	kh	Solothurn	Mümliswil-Ramiswil	m	13	kh
Aargau	Brugg	w	62	kh	Solothurn	Mümliswil-Ramiswil	m	50	kh
Aargau	Brugg	w	68	kh	Solothurn	Mümliswil-Ramiswil	w	28	kh
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Aargau	Döttingen	m	17	kh	Solothurn	Nunningen	m	41	kh
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Aargau	Ehrendingen	w	38	kh	Solothurn	Olten	m	14	kh
Aargau	Fahrwangen	m	13	kh	Solothurn	Olten	m	16	kh
Aargau	Fisibach	w	13	kh	Solothurn	Olten	m	25	kh
Aargau	Frick	m	13	kh	Solothurn	Olten	m	26	kh
Aargau	Frick	m	25	kh	Solothurn	Olten	m	27	kh
Aargau	Frick	w	14	kh	Solothurn	Olten	m	27	kh
Aargau	Frick	w	15	kh	Solothurn	Olten	m	38	kh
Aargau	Frick	w	15	kh	Solothurn	Olten	m	45	kh
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Aargau	Gansingen	w	18	kh	Solothurn	Olten	w	19	kh
Aargau	Künten	w	13	kh	Solothurn	Olten	w	25	kh
Aargau	Künten	w	42	kh	Solothurn	Olten	w	29	kh
Aargau	Küttigen	w	12	kh	Solothurn	Olten	w	37	kh
Aargau	Küttigen	w	17	kh	Solothurn	Olten	w	46	kh
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Aargau	Möhlin	w	13	kh	Solothurn	Solothurn	w	27	kh
Aargau	Möhlin	w	16	kh	Solothurn	Solothurn	w	27	kh
Aargau	Möhlin	w	18	kh	Solothurn	Solothurn	w	44	kh
Aargau	Muhlen	m	15	kh	Solothurn	Stüsslingen	m	57	kh
Aargau	Muhlen	w	22	kh	St. Gallen	Altstätten	m	15	kh
Aargau	Murgenthal	w	27	kh	St. Gallen	Altstätten	m	44	kh
Aargau	Niederrohrdorf	w	15	kh	St. Gallen	Altstätten	w	22	kh
Aargau	Niederrohrdorf	w	16	kh	St. Gallen	Altstätten	w	23	kh
Aargau	Niederrohrdorf	w	35	kh	St. Gallen	Benken	m	48	kh
Aargau	Niederrohrdorf	w	42	kh	St. Gallen	Benken	w	17	kh
Aargau	Niederrohrdorf	w	46	kh	St. Gallen	Diepoldsau	m	13	kh
Aargau	Safenwil	m	41	kh	St. Gallen	Diepoldsau	m	42	kh
Aargau	Safenwil	m	52	kh	St. Gallen	Diepoldsau	m	55	kh
Aargau	Schmiedrued	m	11	kh	St. Gallen	Ebnat-Kappel	m	45	kh
Aargau	Schöffland	m	49	kh	St. Gallen	Ebnat-Kappel	w	29	kh
Aargau	Seengen	m	34	kh	St. Gallen	Ernetschwil	m	15	kh
Aargau	Seengen	w	13	kh	St. Gallen	Eschenbach SG	m	45	kh
Aargau	Seengen	w	28	kh	St. Gallen	Eschenbach SG	w	14	kh
Aargau	Spreitenbach	w	13	kh	St. Gallen	Eschenbach SG	w	15	kh
Aargau	Spreitenbach	w	15	kh	St. Gallen	Eschenbach SG	w	45	kh
Aargau	Villigen	w	27	kh	St. Gallen	Eschenbach SG	w	49	kh
Aargau	Widen	w	52	kh	St. Gallen	Flawil	m	22	kh
Aargau	Wittnau	w	13	kh	St. Gallen	Flawil	w	15	kh
Aargau	Wittnau	w	13	kh	St. Gallen	Flawil	w	22	kh
Aargau	Würenlingen	m	48	kh	St. Gallen	Flawil	w	24	kh
Aargau	Würenlingen	w	18	kh	St. Gallen	Flums	m	14	kh
Aargau	Würenlingen	w	21	kh	St. Gallen	Flums	m	50	kh
Aargau	Würenlos	m	39	kh	St. Gallen	Flums	w	14	kh
Aargau	Würenlos	w	13	kh	St. Gallen	Grabs	m	16	kh
Aargau	Würenlos	w	16	kh	St. Gallen	Grabs	m	16	kh
Aargau	Würenlos	w	40	kh	St. Gallen	Grabs	m	51	kh
Aargau	Zofingen	m	16	kh	St. Gallen	Grabs	m	35	kh
Aargau	Zofingen	m	20	kh	St. Gallen	Grabs	m	60	kh
Aargau	Zofingen	m	21	kh	St. Gallen	Grabs	w	25	kh
Aargau	Zofingen	m	48	kh	St. Gallen	Grabs	w	29	kh
Aargau	Zofingen	w	16	kh	St. Gallen	Grabs	w	29	kh
Aargau	Zofingen	w	16	kh	St. Gallen	Grabs	w	36	kh
Aargau	Zofingen	w	17	kh	St. Gallen	Grabs	w	43	kh
Aargau	Zofingen	w	18	kh	St. Gallen	Grabs	w	47	kh
Aargau	Zofingen	w	35	kh	St. Gallen	Kirchberg	m	57	kh

Aargau	Zofingen	w	44	kh	St. Gallen	Mels	m	20	kx
Aargau	Zufikon	m	40	kh	St. Gallen	Mels	w	11	kx
AP Ausserrhoden	Gais	m	22	kh	St. Gallen	Mels	w	11	kx
AP Ausserrhoden	Gais	w	22	kx	St. Gallen	Mörschwil	m	14	kh
AP Ausserrhoden	Heiden	w	16	kh	St. Gallen	Mörschwil	w	51	kh
AP Ausserrhoden	Teufen	w	15	kh	St. Gallen	Mosnang	w	12	kh
AP Ausserrhoden	Waldstatt	w	10	kh	St. Gallen	Mosnang	w	12	kh
AP Innerrhoden	Rüti	m	30	kx	St. Gallen	Neckertal	m	36	kh
Basel-Land	Aesch BL	m	19	kh	St. Gallen	Neckertal	w	18	kh
Basel-Land	Aesch BL	m	24	kh	St. Gallen	Niederbüren	m	22	kh
Basel-Land	Aesch BL	m	26	kh	St. Gallen	Niederbüren	m	40	kh
Basel-Land	Aesch BL	m	38	kh	St. Gallen	Niederbüren	w	40	kh
Basel-Land	Aesch BL	m	44	kh	St. Gallen	Oberriet	m	21	kx
Basel-Land	Aesch BL	m	44	kh	St. Gallen	Oberriet	m	22	kx
Basel-Land	Aesch BL	m	47	kh	St. Gallen	Oberriet	m	23	kx
Basel-Land	Aesch BL	w	20	kh	St. Gallen	Oberriet	m	48	kx
Basel-Land	Aesch BL	w	26	kh	St. Gallen	Oberriet	w	24	kx
Basel-Land	Aesch BL	w	45	kh	St. Gallen	Quarten	w	13	kx
Basel-Land	Arisdorf	w	33	kh	St. Gallen	Rebstein	w	14	kh
Basel-Land	Arlesheim	w	43	kh	St. Gallen	Rebstein	w	18	kx
Basel-Land	Arlesheim	w	45	kh	St. Gallen	Rheineck	m	12	kh
Basel-Land	Arlesheim	w	57	kh	St. Gallen	Rorschach	m	28	kx
Basel-Land	Biel-Benken	w	14	kh	St. Gallen	Rorschach	m	46	kx
Basel-Land	Biel-Benken	w	33	kh	St. Gallen	Rorschach	m	69	kh
Basel-Land	Bubendorf	m	20	kh	St. Gallen	Rorschach	w	19	kx
Basel-Land	Ettingen	w	17	kh	St. Gallen	Rorschach	w	28	kh
Basel-Land	Gelterkinden	m	13	kh	St. Gallen	Rorschach	w	32	kh
Basel-Land	Gelterkinden	m	23	kh	St. Gallen	Rorschach	w	48	kx
Basel-Land	Gelterkinden	m	23	kh	St. Gallen	Rorschach	w	62	kx
Basel-Land	Gelterkinden	w	15	kh	St. Gallen	Schmerikon	w	43	kh
Basel-Land	Gelterkinden	w	19	kh	St. Gallen	Sennwald	w	17	kh
Basel-Land	Hölstein	w	14	kh	St. Gallen	Sennwald	w	18	kh
Basel-Land	Laufen	m	40	kh	St. Gallen	Sennwald	w	37	kx
Basel-Land	Laufen	m	47	kx	St. Gallen	Sevelen	w	23	kh
Basel-Land	Laufen	w	14	kh	St. Gallen	Sevelen	w	62	kx
Basel-Land	Laufen	w	16	kh	St. Gallen	St. Gallen	m	13	kh
Basel-Land	Liestal	m	23	kh	St. Gallen	St. Gallen	m	16	kh
Basel-Land	Liestal	m	33	kh	St. Gallen	St. Gallen	m	17	kh
Basel-Land	Liestal	w	16	kh	St. Gallen	St. Gallen	m	20	kh
Basel-Land	Liestal	w	20	kh	St. Gallen	St. Gallen	m	23	kh
Basel-Land	Liestal	w	21	kh	St. Gallen	St. Gallen	m	23	kh
Basel-Land	Liestal	w	25	kh	St. Gallen	St. Gallen	m	28	kh
Basel-Land	Liestal	w	29	kh	St. Gallen	St. Gallen	m	29	kh
Basel-Land	Maisprach	w	17	kh	St. Gallen	St. Gallen	m	54	kh
Basel-Land	Pratteln	m	20	kx	St. Gallen	St. Gallen	m	56	kx
Basel-Land	Pratteln	m	35	kh	St. Gallen	St. Gallen	m	62	kh
Basel-Land	Pratteln	m	37	kh	St. Gallen	St. Gallen	w	15	kh
Basel-Land	Pratteln	m	56	kh	St. Gallen	St. Gallen	w	19	kh
Basel-Land	Pratteln	w	14	kh	St. Gallen	St. Gallen	w	21	kh
Basel-Land	Pratteln	w	15	kh	St. Gallen	St. Gallen	w	21	kx
Basel-Land	Pratteln	w	18	kh	St. Gallen	St. Gallen	w	22	kh
Basel-Land	Pratteln	w	18	kh	St. Gallen	St. Gallen	w	23	kh
Basel-Land	Pratteln	w	27	kh	St. Gallen	St. Gallen	w	23	kh
Basel-Land	Pratteln	w	29	kh	St. Gallen	St. Gallen	w	26	kh
Basel-Land	Pratteln	w	53	kh	St. Gallen	St. Gallen	w	30	kh
Basel-Land	Reigoldswil	w	16	kh	St. Gallen	St. Gallen	w	41	kh
Basel-Land	Reigoldswil	w	18	kh	St. Gallen	St. Gallen	w	44	kh
Basel-Land	Therwil	m	36	kh	St. Gallen	St. Gallen	w	47	kx
Basel-Land	Therwil	w	55	kh	St. Gallen	St. Gallen	w	61	kh
Basel-Land	Zeglingen	m	44	kh	St. Gallen	Thal	m	14	kh
Basel-Land	Zeglingen	w	15	kh	St. Gallen	Vilters-Wangs	m	15	kx
Basel-Land	Zunzgen	w	17	kh	St. Gallen	Vilters-Wangs	m	16	kx
Basel-Stadt	Basel	m	11	kh	St. Gallen	Walenstadt	m	13	kx
Basel-Stadt	Basel	m	12	kh	St. Gallen	Walenstadt	w	13	kx
Basel-Stadt	Basel	m	15	kh	St. Gallen	Walenstadt	w	14	kx
Basel-Stadt	Basel	m	19	kh	St. Gallen	Walenstadt	w	36	kx
Basel-Stadt	Basel	m	21	kh	St. Gallen	Wattwil	m	11	kh
Basel-Stadt	Basel	m	24	kh	St. Gallen	Wattwil	m	22	kh
Basel-Stadt	Basel	m	27	kh	St. Gallen	Wattwil	m	33	kh
Basel-Stadt	Basel	m	30	kh	St. Gallen	Wattwil	w	68	kh
Basel-Stadt	Basel	m	31	kh	St. Gallen	Wil SG	m	12	kh
Basel-Stadt	Basel	m	36	kh	St. Gallen	Wil SG	m	20	kh
Basel-Stadt	Basel	m	36	kh	St. Gallen	Wil SG	m	28	kh
Basel-Stadt	Basel	m	42	kh	St. Gallen	Wil SG	m	28	kx
Basel-Stadt	Basel	m	43	kh	St. Gallen	Wil SG	m	33	kh
Basel-Stadt	Basel	m	44	kh	St. Gallen	Wil SG	m	33	kh
Basel-Stadt	Basel	m	46	kh	St. Gallen	Wil SG	m	38	kh
Basel-Stadt	Basel	m	51	kh	St. Gallen	Wil SG	m	41	kh
Basel-Stadt	Basel	m	56	kh	St. Gallen	Wil SG	w	16	kh
Basel-Stadt	Basel	w	14	kh	St. Gallen	Wil SG	w	16	kh
Basel-Stadt	Basel	w	14	kh	St. Gallen	Wil SG	w	17	kh
Basel-Stadt	Basel	w	15	kh	St. Gallen	Wil SG	w	19	kh
Basel-Stadt	Basel	w	16	kh	St. Gallen	Wil SG	w	19	kh
Basel-Stadt	Basel	w	19	kh	St. Gallen	Wil SG	w	24	kh
Basel-Stadt	Basel	w	19	kh	St. Gallen	Wil SG	w	24	kh
Basel-Stadt	Basel	w	21	kh	St. Gallen	Wil SG	w	24	kh
Basel-Stadt	Basel	w	22	kh	St. Gallen	Wil SG	w	25	kh
Basel-Stadt	Basel	w	23	kh	St. Gallen	Wildhaus-Alt St. Johann	m	23	kh
Basel-Stadt	Basel	w	25	kh	Thurgau	Affeltrangen	w	13	kh
Basel-Stadt	Basel	w	25	kh	Thurgau	Affeltrangen	w	17	kh
Basel-Stadt	Basel	w	25	kh	Thurgau	Amriswil	m	19	kx
Basel-Stadt	Basel	w	26	kh	Thurgau	Amriswil	m	21	kh
Basel-Stadt	Basel	w	28	kh	Thurgau	Amriswil	m	23	kh
Basel-Stadt	Basel	w	29	kh	Thurgau	Amriswil	m	27	kh
Basel-Stadt	Basel	w	30	kh	Thurgau	Amriswil	w	15	kh
Basel-Stadt	Basel	w	31	kh	Thurgau	Amriswil	w	18	kh
Basel-Stadt	Basel	w	41	kh	Thurgau	Amriswil	w	23	kh
Basel-Stadt	Basel	w	42	kh	Thurgau	Amriswil	w	25	kh
Basel-Stadt	Basel	w	47	kh	Thurgau	Amriswil	w	32	kh
Basel-Stadt	Basel	w	48	kh	Thurgau	Basadingen-Schlattingen	w	16	kh
Basel-Stadt	Basel	w	49	kh	Thurgau	Basadingen-Schlattingen	w	32	kh
Basel-Stadt	Basel	w	53	kh	Thurgau	Bichelsee-Balterswil	m	48	kh
Basel-Stadt	Basel	w	58	kh	Thurgau	Birwinken	w	16	kh
Basel-Stadt	Basel	w	59	kh	Thurgau	Birwinken	w	48	kh
Basel-Stadt	Basel	w	59	kh	Thurgau	Birwinken	w	53	kh
Basel-Stadt	Bettingen	m	41	kh	Thurgau	Bottighofen	m	13	kh
Basel-Stadt	Bettingen	m	69	kh	Thurgau	Bottighofen	m	14	kh
Bern	Aarberg	m	18	kh	Thurgau	Bottighofen	m	29	kh
Bern	Aarberg	w	18	kh	Thurgau	Bottighofen	m	54	kx
Bern	Aarberg	w	21	kh	Thurgau	Bottighofen	w	13	kh
Bern	Aarberg	w	37	kh	Thurgau	Bottighofen	w	14	kh
Bern	Aarwangen	m	24	kh	Thurgau	Bottighofen	w	18	kh
Bern	Aarwangen	m	45	kh	Thurgau	Bottighofen	w	22	kx
Bern	Aarwangen	m	45	kh	Thurgau	Bottighofen	w	25	kx

Bern	Aarwangen	m	80	kh	Thurgau	Bottighofen	w	30	kh
Bern	Aeschi bei Spiez	m	63	xx	Thurgau	Bottighofen	w	34	kh
Bern	Aeschi bei Spiez	w	15	xx	Thurgau	Bottighofen	w	37	kh
Bern	Affoltern im Emmental	w	24	kh	Thurgau	Bottighofen	w	40	kh
Bern	Affoltern im Emmental	w	35	kh	Thurgau	Braunau	m	33	kh
Bern	Affoltern im Emmental	w	44	kh	Thurgau	Ermatingen	w	32	kh
Bern	Belp	m	39	kh	Thurgau	Frauenfeld	m	10	kh
Bern	Belp	w	11	kh	Thurgau	Frauenfeld	m	25	kh
Bern	Belp	w	12	xx	Thurgau	Frauenfeld	m	25	kh
Bern	Belp	w	22	kh	Thurgau	Frauenfeld	m	29	kh
Bern	Belp	w	25	kh	Thurgau	Frauenfeld	m	32	kh
Bern	Bern	m	13	kh	Thurgau	Frauenfeld	m	39	kh
Bern	Bern	m	13	kh	Thurgau	Frauenfeld	m	42	kh
Bern	Bern	m	13	kh	Thurgau	Frauenfeld	m	56	kh
Bern	Bern	m	13	kh	Thurgau	Frauenfeld	m	65	kh
Bern	Bern	m	14	kh	Thurgau	Frauenfeld	m	67	kh
Bern	Bern	m	14	kh	Thurgau	Frauenfeld	w	16	kh
Bern	Bern	m	14	kh	Thurgau	Frauenfeld	w	17	kh
Bern	Bern	m	18	xx	Thurgau	Frauenfeld	w	20	kh
Bern	Bern	m	19	kh	Thurgau	Frauenfeld	w	25	kh
Bern	Bern	m	19	kh	Thurgau	Frauenfeld	w	25	kh
Bern	Bern	m	20	kh	Thurgau	Frauenfeld	w	42	kh
Bern	Bern	m	21	xx	Thurgau	Frauenfeld	w	48	kh
Bern	Bern	m	22	kh	Thurgau	Frauenfeld	w	50	kh
Bern	Bern	m	22	kh	Thurgau	Frauenfeld	w	57	kh
Bern	Bern	m	25	kh	Thurgau	Gachnang	w	15	kh
Bern	Bern	m	30	kh	Thurgau	Gachnang	w	17	kh
Bern	Bern	m	33	kh	Thurgau	Hüttwilen	m	18	kh
Bern	Bern	m	34	kh	Thurgau	Kemmental	w	35	xx
Bern	Bern	m	34	xx	Thurgau	Kesswil	m	34	xx
Bern	Bern	m	35	kh	Thurgau	Kesswil	w	20	kh
Bern	Bern	m	35	kh	Thurgau	Kesswil	w	24	kh
Bern	Bern	m	35	kh	Thurgau	Kesswil	w	24	kh
Bern	Bern	m	35	xx	Thurgau	Mammern	m	72	kh
Bern	Bern	m	35	xx	Thurgau	Mammern	w	65	xx
Bern	Bern	m	36	kh	Thurgau	Neunforn	w	24	kh
Bern	Bern	m	36	xx	Thurgau	Roggwil	w	19	kh
Bern	Bern	m	37	kh	Thurgau	Steffurt	m	50	kh
Bern	Bern	m	37	xx	Thurgau	Wängi	m	21	kh
Bern	Bern	m	42	kh	Thurgau	Wängi	m	57	kh
Bern	Bern	m	44	kh	Thurgau	Weinfelden	m	18	kh
Bern	Bern	m	47	kh	Thurgau	Weinfelden	m	23	kh
Bern	Bern	m	47	kh	Thurgau	Weinfelden	m	26	kh
Bern	Bern	m	47	kh	Thurgau	Weinfelden	m	32	xx
Bern	Bern	m	47	xx	Thurgau	Weinfelden	m	33	kh
Bern	Bern	m	48	kh	Thurgau	Weinfelden	m	44	kh
Bern	Bern	m	49	kh	Thurgau	Weinfelden	w	13	kh
Bern	Bern	m	53	kh	Thurgau	Weinfelden	w	18	kh
Bern	Bern	m	53	kh	Thurgau	Weinfelden	w	18	kh
Bern	Bern	m	55	kh	Thurgau	Weinfelden	w	35	kh
Bern	Bern	m	57	kh	Thurgau	Weinfelden	w	49	kh
Bern	Bern	m	58	kh	Thurgau	Wigoltingen	m	47	kh
Bern	Bern	m	58	kh	Thurgau	Wigoltingen	w	30	kh
Bern	Bern	m	60	xx	Uri	Aldorf	m	16	kh
Bern	Bern	m	66	kh	Uri	Aldorf	m	18	kh
Bern	Bern	w	11	kh	Uri	Aldorf	m	19	kh
Bern	Bern	w	12	kh	Uri	Aldorf	m	27	kh
Bern	Bern	w	13	kh	Uri	Aldorf	w	18	kh
Bern	Bern	w	13	kh	Uri	Erstfeld	m	35	kh
Bern	Bern	w	13	kh	Uri	Unterschächen	m	25	kh
Bern	Bern	w	14	kh	Wallis	Ausserberg	m	36	xx
Bern	Bern	w	15	kh	Wallis	Ausserberg	w	16	xx
Bern	Bern	w	15	kh	Wallis	Brig-Glis	m	12	xx
Bern	Bern	w	16	kh	Wallis	Brig-Glis	m	14	kh
Bern	Bern	w	16	kh	Wallis	Brig-Glis	m	47	xx
Bern	Bern	w	20	kh	Wallis	Brig-Glis	w	13	xx
Bern	Bern	w	20	kh	Wallis	Brig-Glis	w	13	xx
Bern	Bern	w	22	kh	Wallis	Brig-Glis	w	18	xx
Bern	Bern	w	22	kh	Wallis	Eischoll	m	18	xx
Bern	Bern	w	26	kh	Wallis	Ernen	m	13	xx
Bern	Bern	w	28	kh	Wallis	Ferden	m	13	kh
Bern	Bern	w	31	kh	Wallis	Grächen	m	17	kh
Bern	Bern	w	36	kh	Wallis	Grächen	m	34	kh
Bern	Bern	w	36	kh	Wallis	Guttet-Feschel	m	25	xx
Bern	Bern	w	37	kh	Wallis	Guttet-Feschel	w	19	xx
Bern	Bern	w	39	kh	Wallis	Lax	m	59	xx
Bern	Bern	w	43	kh	Wallis	Lax	w	30	xx
Bern	Bern	w	46	kh	Wallis	Mörel-Filet	w	17	xx
Bern	Bern	w	52	kh	Wallis	Mund	m	35	xx
Bern	Bern	w	54	kh	Wallis	Niedergesteln	m	29	xx
Bern	Bern	w	68	kh	Wallis	Niedergesteln	m	52	xx
Bern	Biel	m	16	kh	Wallis	Reckingen-Gluringen	m	42	xx
Bern	Biel	m	23	kh	Wallis	Salgesch	w	22	xx
Bern	Biel	m	28	xx	Wallis	Törbel	m	15	xx
Bern	Biel	m	35	kh	Wallis	Turtmann	m	18	xx
Bern	Biel	m	35	kh	Wallis	Turtmann	w	12	xx
Bern	Biel	m	46	kh	Wallis	Visp	m	19	xx
Bern	Biel	w	12	kh	Wallis	Visp	m	67	xx
Bern	Biel	w	15	kh	Wallis	Visp	w	25	xx
Bern	Biel	w	18	xx	Wallis	Visp	w	49	xx
Bern	Biel	w	19	kh	Wallis	Zermatt	m	15	xx
Bern	Biel	w	23	kh	Zug	Baar	m	13	xx
Bern	Biel	w	29	kh	Zug	Baar	m	15	kh
Bern	Biel	w	29	kh	Zug	Baar	m	25	kh
Bern	Biel	w	32	kh	Zug	Baar	w	16	kh
Bern	Biel	w	34	kh	Zug	Baar	w	28	kh
Bern	Biel	w	45	kh	Zug	Baar	w	28	kh
Bern	Biel	w	51	kh	Zug	Baar	w	46	kh
Bern	Biel	w	52	kh	Zug	Baar	w	50	kh
Bern	Biel	w	59	kh	Zug	Hünenberg	m	12	kh
Bern	Bleienbach	w	29	kh	Zug	Hünenberg	m	46	kh
Bern	Blumenstein	w	31	kh	Zug	Hünenberg	m	53	kh
Bern	Blumenstein	w	41	kh	Zug	Hünenberg	w	16	kh
Bern	Bolligen	m	32	kh	Zug	Menzingen	m	13	kh
Bern	Bolligen	m	51	kh	Zug	Oberägeri	m	21	kh
Bern	Boltingen	w	18	xx	Zug	Oberägeri	w	14	kh
Bern	Brienz	m	15	kh	Zug	Oberägeri	w	16	kh
Bern	Brienz	m	63	kh	Zug	Oberägeri	w	38	kh
Bern	Büren an der Aare	w	43	kh	Zug	Oberägeri	w	42	kh
Bern	Burgdorf	m	14	kh	Zug	Risch	m	22	kh
Bern	Burgdorf	m	14	kh	Zug	Walchwil	w	16	kh
Bern	Burgdorf	m	16	kh	Zug	Zug	m	12	kh
Bern	Burgdorf	m	25	kh	Zug	Zug	m	14	kh
Bern	Burgdorf	m	26	kh	Zug	Zug	m	14	kh



Bern	Burgdorf	m	35	kh	Zug	Zug	m	30	kh
Bern	Burgdorf	m	38	kh	Zug	Zug	m	37	kh
Bern	Burgdorf	w	17	kh	Zug	Zug	w	13	kh
Bern	Burgdorf	w	31	kh	Zug	Zug	w	14	kh
Bern	Burgdorf	w	53	kh	Zug	Zug	w	17	kh
Bern	Därstetten	m	25	kx	Zug	Zug	w	17	kh
Bern	Diemtigen	m	65	kx	Zug	Zug	w	18	kh
Bern	Diemtigen	w	22	kx	Zug	Zug	w	21	kh
Bern	Eriswil	w	15	kx	Zug	Zug	w	37	kh
Bern	Eriswil	w	18	kh	Zürich	Aeugst am Albis	m	13	kh
Bern	Frutigen	m	12	kx	Zürich	Aeugst am Albis	m	26	kx
Bern	Frutigen	m	27	kh	Zürich	Bäretswil	w	43	kh
Bern	Frutigen	m	33	kh	Zürich	Bassersdorf	m	16	kh
Bern	Frutigen	m	39	kx	Zürich	Bassersdorf	m	20	kh
Bern	Frutigen	w	24	kx	Zürich	Bassersdorf	m	31	kh
Bern	Frutigen	w	28	kh	Zürich	Bassersdorf	m	55	kh
Bern	Grafenried	m	43	kh	Zürich	Bassersdorf	w	13	kh
Bern	Grindelwald	m	12	kh	Zürich	Bassersdorf	w	17	kh
Bern	Grindelwald	m	16	kx	Zürich	Bassersdorf	w	21	kx
Bern	Grindelwald	m	46	kx	Zürich	Bassersdorf	w	30	kh
Bern	Gsteigwiler	m	14	kx	Zürich	Bassersdorf	w	31	kh
Bern	Gsteigwiler	w	15	kh	Zürich	Bassersdorf	w	34	kh
Bern	Habkern	w	35	kx	Zürich	Bassersdorf	w	49	kh
Bern	Heimberg	m	45	kx	Zürich	Bauma	m	53	kh
Bern	Heimenhausen	m	61	kh	Zürich	Bauma	w	20	kh
Bern	Huttwil	m	39	kh	Zürich	Bauma	w	29	kh
Bern	Huttwil	m	47	kh	Zürich	Bertschikon	m	22	kh
Bern	Huttwil	m	66	kh	Zürich	Birmensdorf	m	28	kh
Bern	Huttwil	w	52	kh	Zürich	Birmensdorf	m	54	kh
Bern	Ins	m	48	kh	Zürich	Bubikon	m	14	kh
Bern	Ins	w	19	kx	Zürich	Bülach	m	16	kh
Bern	Kandersteg	m	34	kx	Zürich	Bülach	m	17	kh
Bern	Kandersteg	m	45	kh	Zürich	Bülach	m	20	kh
Bern	Kandersteg	w	59	kx	Zürich	Bülach	m	54	kh
Bern	Köniz	m	43	kh	Zürich	Bülach	m	74	kh
Bern	Köniz	w	17	kx	Zürich	Bülach	w	12	kh
Bern	Köniz	w	51	kh	Zürich	Bülach	w	40	kh
Bern	Konolfingen	m	26	kh	Zürich	Bülach	w	51	kh
Bern	Konolfingen	m	41	kh	Zürich	Bülach	w	57	kh
Bern	Konolfingen	w	21	kh	Zürich	Egg	m	12	kx
Bern	Langenthal	m	12	kh	Zürich	Egg	m	14	kh
Bern	Langenthal	m	12	kh	Zürich	Egg	m	48	kh
Bern	Langenthal	m	30	kh	Zürich	Egg	w	14	kh
Bern	Langenthal	m	37	kh	Zürich	Embrach	m	60	kh
Bern	Langenthal	m	38	kh	Zürich	Embrach	w	18	kh
Bern	Langenthal	m	41	kh	Zürich	Fällanden	m	50	kh
Bern	Langenthal	m	46	kh	Zürich	Flaach	m	12	kh
Bern	Langenthal	m	47	kh	Zürich	Flaach	m	20	kh
Bern	Langenthal	m	48	kh	Zürich	Gossau	m	56	kh
Bern	Langenthal	m	49	kh	Zürich	Gossau	w	14	kh
Bern	Langenthal	m	68	kh	Zürich	Hedingen	m	22	kh
Bern	Langenthal	w	15	kx	Zürich	Henggart	m	13	kh
Bern	Langenthal	w	16	kx	Zürich	Henggart	w	43	kh
Bern	Langenthal	w	26	kh	Zürich	Hinwil	m	50	kh
Bern	Langenthal	w	40	kh	Zürich	Hinwil	w	11	kh
Bern	Langenthal	w	40	kh	Zürich	Hinwil	w	22	kh
Bern	Langenthal	w	41	kh	Zürich	Hinwil	w	34	kh
Bern	Langenthal	w	44	kh	Zürich	Horgen	m	11	kx
Bern	Langenthal	w	46	kh	Zürich	Horgen	m	11	kx
Bern	Langenthal	w	51	kh	Zürich	Horgen	m	13	kh
Bern	Langnau im Emmental	m	14	kh	Zürich	Horgen	m	15	kx
Bern	Langnau im Emmental	w	15	kh	Zürich	Horgen	m	16	kh
Bern	Langnau im Emmental	w	18	kh	Zürich	Horgen	m	18	kh
Bern	Langnau im Emmental	w	26	kh	Zürich	Horgen	m	51	kh
Bern	Langnau im Emmental	w	26	kh	Zürich	Horgen	m	55	kh
Bern	Laupen	w	19	kh	Zürich	Horgen	w	13	kh
Bern	Lauterbrunnen	m	23	kx	Zürich	Horgen	w	17	kh
Bern	Lauterbrunnen	m	57	kh	Zürich	Horgen	w	32	kh
Bern	Lyss	m	12	kh	Zürich	Hütten	w	22	kh
Bern	Lyss	m	17	kh	Zürich	Hütten	w	26	kh
Bern	Lyss	m	18	kh	Zürich	Illnau-Effretikon	m	15	kh
Bern	Lyss	m	19	kh	Zürich	Illnau-Effretikon	m	18	kh
Bern	Lyss	m	64	kh	Zürich	Illnau-Effretikon	m	21	kh
Bern	Meikirch	m	17	kh	Zürich	Illnau-Effretikon	m	49	kh
Bern	Meikirch	m	21	kh	Zürich	Illnau-Effretikon	m	71	kh
Bern	Meikirch	m	31	kh	Zürich	Illnau-Effretikon	w	12	kh
Bern	Meikirch	w	65	kh	Zürich	Illnau-Effretikon	w	16	kh
Bern	Meiringen	w	13	kh	Zürich	Illnau-Effretikon	w	51	kh
Bern	Meiringen	w	15	kx	Zürich	Illnau-Effretikon	w	60	kh
Bern	Meiringen	w	27	kh	Zürich	Illnau-Effretikon	w	68	kh
Bern	Meiringen	w	28	kh	Zürich	Kappel am Albis	w	17	kh
Bern	Melchnau	m	29	kh	Zürich	Kappel am Albis	w	26	kh
Bern	Münchenbuchsee	m	15	kh	Zürich	Kilchberg	m	22	kx
Bern	Münchenbuchsee	m	30	kh	Zürich	Kilchberg	m	70	kh
Bern	Münchenbuchsee	m	45	kh	Zürich	Kilchberg	w	16	kh
Bern	Münchenbuchsee	w	14	kh	Zürich	Kilchberg	w	28	kh
Bern	Münchenbuchsee	w	14	kh	Zürich	Kilchberg	w	33	kh
Bern	Münchenbuchsee	w	27	kh	Zürich	Kilchberg	w	42	kh
Bern	Münchenbuchsee	w	40	kh	Zürich	Kleinandelfingen	w	18	kh
Bern	Niederbipp	w	23	kh	Zürich	Küsnacht	m	36	kh
Bern	Niederbipp	w	52	kh	Zürich	Küsnacht	m	42	kh
Bern	Oberbalm	m	13	kh	Zürich	Küsnacht	m	49	kh
Bern	Pieterlen	m	17	kh	Zürich	Küsnacht	w	16	kh
Bern	Pieterlen	m	46	kh	Zürich	Küsnacht	w	18	kh
Bern	Radelingen	m	20	kh	Zürich	Küsnacht	w	49	kh
Bern	Radelingen	w	20	kh	Zürich	Küsnacht	w	71	kx
Bern	Saanen	m	25	kh	Zürich	Langnau am Albis	w	35	kh
Bern	Schangnau	m	22	kh	Zürich	Laufen-Uhwiesen	m	47	kh
Bern	Schwarzenburg	m	19	kh	Zürich	Marthalen	m	20	kh
Bern	Schwarzenburg	m	23	kh	Zürich	Marthalen	m	23	kh
Bern	Schwarzenburg	m	46	kh	Zürich	Marthalen	w	20	kh
Bern	Seftigen	m	36	kh	Zürich	Marthalen	w	36	kh
Bern	Seftigen	w	15	kh	Zürich	Maur	m	14	kh
Bern	Seftigen	w	30	kh	Zürich	Maur	m	45	kh
Bern	Sigriswil	w	20	kx	Zürich	Maur	m	51	kh
Bern	Sigriswil	w	38	kh	Zürich	Meilen	m	15	kh
Bern	Spiez	m	15	kx	Zürich	Meilen	m	29	kh
Bern	Spiez	m	25	kx	Zürich	Meilen	m	32	kh
Bern	Spiez	m	61	kx	Zürich	Meilen	m	56	kh
Bern	Spiez	w	16	kh	Zürich	Meilen	m	63	kh
Bern	Spiez	w	22	kh	Zürich	Meilen	m	68	kh
Bern	Sumiswald	w	46	kh	Zürich	Meilen	m	74	kh
Bern	Täuffelen	m	13	kh	Zürich	Meilen	w	12	kh
Bern	Täuffelen	w	45	kh	Zürich	Meilen	w	16	kx

Bern	Thun	m	14	kh	Zürich	Meilen	w	19	kh
Bern	Thun	m	14	kh	Zürich	Meilen	w	19	kh
Bern	Thun	m	19	kh	Zürich	Meilen	w	20	kh
Bern	Thun	m	20	kh	Zürich	Meilen	w	22	kh
Bern	Thun	m	31	kh	Zürich	Meilen	w	22	kh
Bern	Thun	m	37	kk	Zürich	Meilen	w	25	kh
Bern	Thun	m	41	kh	Zürich	Meilen	w	29	kh
Bern	Thun	m	43	kh	Zürich	Meilen	w	60	kh
Bern	Thun	m	46	kh	Zürich	Metmenstetten	m	31	kh
Bern	Thun	m	49	kk	Zürich	Metmenstetten	w	20	kh
Bern	Thun	m	52	kh	Zürich	Neftenbach	m	39	kh
Bern	Thun	m	71	kh	Zürich	Neftenbach	m	41	kh
Bern	Thun	w	13	kh	Zürich	Neftenbach	w	36	kh
Bern	Thun	w	15	kh	Zürich	Niederglatt	m	14	kh
Bern	Thun	w	16	kh	Zürich	Niederglatt	m	16	kk
Bern	Thun	w	20	kh	Zürich	Niederglatt	m	32	kh
Bern	Thun	w	20	kh	Zürich	Niederglatt	w	15	kh
Bern	Thun	w	40	kk	Zürich	Niederglatt	w	28	kh
Bern	Twann-Tüscherz	w	18	kh	Zürich	Niederweningen	m	60	kh
Bern	Unterlangenegg	w	67	kh	Zürich	Niederweningen	w	17	kh
Bern	Unterseen	m	12	kk	Zürich	Oetwil am See	m	46	kh
Bern	Unterseen	m	17	kh	Zürich	Oetwil am See	w	45	kh
Bern	Unterseen	w	42	kk	Zürich	Oetwil am See	w	58	kh
Bern	Ursenbach	w	11	kh	Zürich	Otelfingen	m	13	kh
Bern	Wichtrach	m	13	kh	Zürich	Otelfingen	m	20	kh
Bern	Wichtrach	m	44	kk	Zürich	Otelfingen	m	32	kh
Bern	Wichtrach	w	23	kh	Zürich	Otelfingen	w	22	kh
Bern	Worb	m	22	kh	Zürich	Pfäffikon	m	20	kh
Bern	Worb	w	11	kh	Zürich	Pfäffikon	m	30	kh
Bern	Worb	w	18	kk	Zürich	Pfäffikon	m	39	kh
Bern	Worb	w	22	kh	Zürich	Pfäffikon	m	49	kh
Bern	Zuzwil	w	50	kh	Zürich	Pfäffikon	w	12	kh
Freiburg	Düdingen	m	44	kh	Zürich	Pfäffikon	w	14	kh
Freiburg	Düdingen	w	16	kh	Zürich	Pfäffikon	w	19	kh
Freiburg	Freiburg	m	40	kh	Zürich	Pfäffikon	w	20	kh
Freiburg	Freiburg	w	56	kh	Zürich	Pfäffikon	w	25	kh
Freiburg	Kerzers	m	51	kk	Zürich	Pfäffikon	w	38	kh
Freiburg	Kerzers	w	15	kh	Zürich	Pfäffikon	w	56	kh
Freiburg	Murten	m	13	kh	Zürich	Rafz	w	17	kh
Freiburg	Murten	m	38	kh	Zürich	Regensberg	m	44	kh
Freiburg	Murten	m	49	kk	Zürich	Regensberg	w	27	kh
Freiburg	Tafers	w	12	kh	Zürich	Rümlang	w	35	kh
Freiburg	Tafers	w	19	kh	Zürich	Russikon	m	39	kh
Freiburg	Winnewil-Flamatt	w	15	kh	Zürich	Schlatt	m	40	kh
Freiburg	Winnewil-Flamatt	w	43	kh	Zürich	Seuzach	w	11	kk
Glarus	Glarus	m	11	kh	Zürich	Seuzach	w	39	kh
Glarus	Glarus	m	12	kh	Zürich	Stadel	w	29	kh
Glarus	Glarus	m	27	kk	Zürich	Stäfa	m	69	kh
Glarus	Glarus	m	44	kh	Zürich	Stäfa	w	11	kh
Glarus	Glarus	m	53	kk	Zürich	Stäfa	w	13	kk
Glarus	Glarus	w	28	kk	Zürich	Stäfa	w	16	kh
Glarus	Glarus Nord	m	15	kk	Zürich	Stäfa	w	32	kh
Glarus	Glarus Nord	m	23	kk	Zürich	Stäfa	w	39	kh
Glarus	Glarus Nord	m	23	kk	Zürich	Stäfa	w	42	kh
Glarus	Glarus Nord	m	51	kk	Zürich	Stäfa	w	54	kk
Glarus	Glarus Nord	m	58	kh	Zürich	Stäfa	w	78	kh
Glarus	Glarus Nord	m	66	kk	Zürich	Stallikon	m	22	kh
Glarus	Glarus Nord	w	18	kk	Zürich	Stallikon	m	42	kh
Glarus	Glarus Nord	w	25	kk	Zürich	Trüllikon	m	17	kh
Glarus	Glarus Süd	m	26	kk	Zürich	Turbenthal	m	57	kh
Glarus	Glarus Süd	w	14	kk	Zürich	Unterstammheim	m	17	kh
Glarus	Glarus Süd	w	15	kk	Zürich	Unterstammheim	m	30	kh
Glarus	Glarus Süd	w	39	kk	Zürich	Unterstammheim	w	19	kh
Glarus	Glarus Süd	w	39	kk	Zürich	Unterstammheim	w	30	kh
Graubünden	Chur	m	13	kh	Zürich	Urdorf	m	16	kh
Graubünden	Chur	m	15	kh	Zürich	Urdorf	m	34	kk
Graubünden	Chur	m	18	kh	Zürich	Urdorf	w	35	kk
Graubünden	Chur	m	19	kh	Zürich	Uster	m	20	kh
Graubünden	Chur	m	34	kh	Zürich	Uster	m	20	kh
Graubünden	Chur	m	35	kh	Zürich	Uster	m	26	kh
Graubünden	Chur	m	40	kh	Zürich	Uster	m	29	kh
Graubünden	Chur	m	47	kh	Zürich	Uster	m	30	kh
Graubünden	Chur	m	47	kh	Zürich	Uster	m	45	kh
Graubünden	Chur	m	48	kh	Zürich	Uster	m	46	kh
Graubünden	Chur	m	54	kh	Zürich	Uster	m	55	kh
Graubünden	Chur	w	66	kh	Zürich	Uster	w	19	kh
Graubünden	Chur	w	14	kh	Zürich	Uster	w	21	kh
Graubünden	Chur	w	14	kh	Zürich	Uster	w	27	kh
Graubünden	Chur	w	17	kh	Zürich	Uster	w	32	kh
Graubünden	Chur	w	18	kk	Zürich	Uster	w	39	kh
Graubünden	Chur	w	23	kh	Zürich	Volketswil	m	14	kh
Graubünden	Chur	w	31	kh	Zürich	Volketswil	m	14	kh
Graubünden	Chur	w	33	kh	Zürich	Volketswil	m	21	kh
Graubünden	Chur	w	33	kh	Zürich	Volketswil	w	20	kh
Graubünden	Chur	w	41	kk	Zürich	Volketswil	w	22	kh
Graubünden	Chur	w	44	kh	Zürich	Volketswil	w	31	kh
Graubünden	Chur	w	46	kh	Zürich	Volketswil	w	65	kh
Graubünden	Chur	w	47	kh	Zürich	Wädenswil	m	28	kh
Graubünden	Chur	w	49	kh	Zürich	Wädenswil	m	35	kh
Graubünden	Davos	m	21	kh	Zürich	Wädenswil	m	42	kh
Graubünden	Davos	m	27	kh	Zürich	Wädenswil	m	51	kh
Graubünden	Davos	w	16	kk	Zürich	Wädenswil	w	11	kh
Graubünden	Davos	w	27	kh	Zürich	Wädenswil	w	12	kh
Graubünden	Fläsch	m	22	kh	Zürich	Wädenswil	w	13	kh
Graubünden	Fläsch	m	30	kk	Zürich	Wädenswil	w	17	kh
Graubünden	Fläsch	m	36	kh	Zürich	Wädenswil	w	20	kh
Graubünden	Grüsch	w	17	kk	Zürich	Wädenswil	w	25	kh
Graubünden	Jenins	w	22	kh	Zürich	Wädenswil	w	69	kh
Graubünden	Jenins	w	63	kk	Zürich	Wald	m	16	kh
Graubünden	Klosters-Serneus	w	24	kh	Zürich	Wald	m	32	kh
Graubünden	Klosters-Serneus	w	47	kk	Zürich	Wald	m	62	kh
Graubünden	Landquart	w	62	kk	Zürich	Wald	w	14	kh
Graubünden	Maladers	m	15	kh	Zürich	Weiningen	m	18	kh
Graubünden	Malans	w	65	kh	Zürich	Weiningen	m	54	kh
Graubünden	Malans	w	25	kh	Zürich	Weiningen	w	57	kh
Graubünden	Schmittlen	w	23	kh	Zürich	Winterthur	m	12	kh
Graubünden	St. Antonien	m	11	kk	Zürich	Winterthur	m	13	kh
Graubünden	Thuisis	m	39	kk	Zürich	Winterthur	m	15	kh
Graubünden	Thuisis	w	13	kh	Zürich	Winterthur	m	17	kh
Graubünden	Thuisis	w	13	kh	Zürich	Winterthur	m	18	kh
Graubünden	Thuisis	w	17	kk	Zürich	Winterthur	m	18	kh
Graubünden	Thuisis	w	32	kk	Zürich	Winterthur	m	22	kh
Graubünden	Thuisis	w	35	kh	Zürich	Winterthur	m	35	kh
Graubünden	Untervaz	w	32	kk	Zürich	Winterthur	m	37	kh

Graubünden	Valendas	m	20	kh	Zürich	Winterthur	m	42	kh
Graubünden	Vals	w	25	kx	Zürich	Winterthur	m	43	kh
Luzern	Altbüron	m	12	kh	Zürich	Winterthur	m	44	kh
Luzern	Altbüron	m	38	kh	Zürich	Winterthur	m	47	kh
Luzern	Beromünster	m	14	kh	Zürich	Winterthur	m	49	kh
Luzern	Beromünster	m	14	kh	Zürich	Winterthur	m	49	kh
Luzern	Beromünster	m	27	kh	Zürich	Winterthur	m	50	kh
Luzern	Beromünster	m	38	kh	Zürich	Winterthur	m	54	kh
Luzern	Beromünster	m	44	kh	Zürich	Winterthur	m	59	kh
Luzern	Beromünster	m	48	kh	Zürich	Winterthur	m	63	kh
Luzern	Beromünster	w	11	kh	Zürich	Winterthur	m	64	kh
Luzern	Beromünster	w	11	kh	Zürich	Winterthur	w	12	kh
Luzern	Beromünster	w	33	kh	Zürich	Winterthur	w	13	kh
Luzern	Dagmersellen	w	18	kh	Zürich	Winterthur	w	15	kh
Luzern	Dagmersellen	w	25	kh	Zürich	Winterthur	w	17	kh
Luzern	Ebikon	m	24	kh	Zürich	Winterthur	w	18	kh
Luzern	Ebikon	m	41	kh	Zürich	Winterthur	w	18	kh
Luzern	Ebikon	m	18	kh	Zürich	Winterthur	w	21	kh
Luzern	Entlebuch	m	18	kh	Zürich	Winterthur	w	22	kh
Luzern	Entlebuch	m	33	kh	Zürich	Winterthur	w	24	kh
Luzern	Entlebuch	w	14	kh	Zürich	Winterthur	w	36	kh
Luzern	Entlebuch	w	29	kh	Zürich	Winterthur	w	38	kh
Luzern	Entlebuch	w	46	kh	Zürich	Winterthur	w	39	kh
Luzern	Eschenbach LU	m	17	kh	Zürich	Winterthur	w	44	kh
Luzern	Eschenbach LU	m	17	kh	Zürich	Winterthur	w	46	kh
Luzern	Eschenbach LU	w	55	kh	Zürich	Winterthur	w	52	kh
Luzern	Hitzkirch	m	50	kh	Zürich	Winterthur	w	62	kh
Luzern	Hitzkirch	w	22	kh	Zürich	Zürich	m	11	kh
Luzern	Hohenrain	m	14	kx	Zürich	Zürich	m	12	kh
Luzern	Hohenrain	m	32	kh	Zürich	Zürich	m	12	kh
Luzern	Horw	w	14	kh	Zürich	Zürich	m	13	kh
Luzern	Horw	w	17	kh	Zürich	Zürich	m	13	kh
Luzern	Luthern	w	18	kh	Zürich	Zürich	m	13	kh
Luzern	Luzern	m	14	kh	Zürich	Zürich	m	13	kh
Luzern	Luzern	m	14	kh	Zürich	Zürich	m	14	kh
Luzern	Luzern	m	15	kh	Zürich	Zürich	m	15	kx
Luzern	Luzern	m	16	kh	Zürich	Zürich	m	16	kh
Luzern	Luzern	m	20	kh	Zürich	Zürich	m	16	kh
Luzern	Luzern	m	25	kh	Zürich	Zürich	m	16	kh
Luzern	Luzern	m	27	kh	Zürich	Zürich	m	16	kh
Luzern	Luzern	m	28	kh	Zürich	Zürich	m	17	kh
Luzern	Luzern	m	29	kh	Zürich	Zürich	m	18	kh
Luzern	Luzern	m	34	kh	Zürich	Zürich	m	18	kh
Luzern	Luzern	m	38	kh	Zürich	Zürich	m	19	kh
Luzern	Luzern	m	42	kh	Zürich	Zürich	m	20	kh
Luzern	Luzern	m	48	kh	Zürich	Zürich	m	20	kh
Luzern	Luzern	m	49	kh	Zürich	Zürich	m	21	kh
Luzern	Luzern	m	49	kh	Zürich	Zürich	m	21	kh
Luzern	Luzern	m	50	kh	Zürich	Zürich	m	23	kh
Luzern	Luzern	w	10	kh	Zürich	Zürich	m	23	kh
Luzern	Luzern	w	10	kh	Zürich	Zürich	m	23	kh
Luzern	Luzern	w	12	kh	Zürich	Zürich	m	24	kh
Luzern	Luzern	w	15	kh	Zürich	Zürich	m	25	kh
Luzern	Luzern	w	16	kx	Zürich	Zürich	m	25	kx
Luzern	Luzern	w	18	kh	Zürich	Zürich	m	26	kh
Luzern	Luzern	w	22	kh	Zürich	Zürich	m	29	kx
Luzern	Luzern	w	24	kh	Zürich	Zürich	m	30	kx
Luzern	Luzern	w	24	kh	Zürich	Zürich	m	34	kh
Luzern	Luzern	w	28	kh	Zürich	Zürich	m	34	kx
Luzern	Luzern	w	30	kh	Zürich	Zürich	m	36	kh
Luzern	Luzern	w	30	kh	Zürich	Zürich	m	36	kh
Luzern	Luzern	w	33	kh	Zürich	Zürich	m	36	kh
Luzern	Luzern	w	37	kh	Zürich	Zürich	m	36	kx
Luzern	Luzern	w	37	kh	Zürich	Zürich	m	38	kh
Luzern	Luzern	w	39	kh	Zürich	Zürich	m	38	kh
Luzern	Luzern	w	46	kh	Zürich	Zürich	m	38	kh
Luzern	Luzern	w	49	kh	Zürich	Zürich	m	39	kh
Luzern	Luzern	w	56	kh	Zürich	Zürich	m	40	kh
Luzern	Luzern	w	56	kh	Zürich	Zürich	m	41	kh
Luzern	Luzern	w	64	kh	Zürich	Zürich	m	42	kh
Luzern	Malters	m	23	kh	Zürich	Zürich	m	42	kh
Luzern	Malters	m	41	kx	Zürich	Zürich	m	42	kh
Luzern	Malters	w	50	kh	Zürich	Zürich	m	43	kh
Luzern	Malters	w	50	kh	Zürich	Zürich	m	43	kh
Luzern	Marbach	w	25	kh	Zürich	Zürich	m	45	kh
Luzern	Menzna	m	22	kh	Zürich	Zürich	m	45	kh
Luzern	Neuenkirch	m	43	kh	Zürich	Zürich	m	46	kh
Luzern	Neuenkirch	w	40	kh	Zürich	Zürich	m	47	kh
Luzern	Nottwil	w	21	kx	Zürich	Zürich	m	47	kh
Luzern	Rothenburg	m	17	kh	Zürich	Zürich	m	47	kh
Luzern	Rothenburg	m	25	kh	Zürich	Zürich	m	48	kh
Luzern	Rothenburg	m	27	kh	Zürich	Zürich	m	48	kh
Luzern	Rothenburg	m	29	kh	Zürich	Zürich	m	49	kh
Luzern	Rothenburg	m	48	kh	Zürich	Zürich	m	49	kx
Luzern	Rothenburg	m	67	kh	Zürich	Zürich	m	50	kh
Luzern	Schötz	m	34	kh	Zürich	Zürich	m	51	kh
Luzern	Schötz	m	77	kh	Zürich	Zürich	m	52	kh
Luzern	Schötz	w	26	kh	Zürich	Zürich	m	53	kh
Luzern	Schötz	w	27	kh	Zürich	Zürich	m	57	kh
Luzern	Schüpfheim	w	22	kh	Zürich	Zürich	m	59	kh
Luzern	Sempach	m	15	kh	Zürich	Zürich	m	61	kh
Luzern	Sempach	m	16	kh	Zürich	Zürich	m	62	kh
Luzern	Sempach	m	46	kh	Zürich	Zürich	m	62	kh
Luzern	Sursee	m	16	kh	Zürich	Zürich	m	62	kh
Luzern	Sursee	m	18	kh	Zürich	Zürich	m	62	kh
Luzern	Sursee	m	20	kh	Zürich	Zürich	m	63	kh
Luzern	Sursee	m	22	kh	Zürich	Zürich	m	68	kh
Luzern	Sursee	w	13	kh	Zürich	Zürich	m	68	kh
Luzern	Sursee	w	25	kh	Zürich	Zürich	m	69	kh
Luzern	Sursee	w	43	kh	Zürich	Zürich	m	72	kh
Luzern	Triengen	m	11	kh	Zürich	Zürich	m	75	kh
Luzern	Triengen	m	22	kh	Zürich	Zürich	w	12	kh
Luzern	Triengen	w	32	kh	Zürich	Zürich	w	12	kh
Luzern	Weggis	m	31	kh	Zürich	Zürich	w	13	kh
Luzern	Weggis	w	70	kh	Zürich	Zürich	w	14	kh
Luzern	Willisau	m	11	kh	Zürich	Zürich	w	15	kh
Luzern	Willisau	m	23	kh	Zürich	Zürich	w	15	kh
Luzern	Willisau	m	52	kh	Zürich	Zürich	w	16	kh
Luzern	Wolhusen	m	57	kh	Zürich	Zürich	w	16	kh
Luzern	Zell	m	22	kh	Zürich	Zürich	w	16	kh
Luzern	Zell	m	45	kx	Zürich	Zürich	w	16	kx
Luzern	Zell	w	15	kh	Zürich	Zürich	w	17	kh
Luzern	Zell	w	18	kh	Zürich	Zürich	w	18	kh
Nidwalden	Emmetten	m	18	kh	Zürich	Zürich	w	19	kx

Nidwalden	Hergiswil	m	33	kh	Zürich	Zürich	w	21	kh
Nidwalden	Oberdorf NW	m	32	kh	Zürich	Zürich	w	22	kh
Nidwalden	Oberdorf NW	w	20	kh	Zürich	Zürich	w	23	kh
Nidwalden	Stans	m	34	kh	Zürich	Zürich	w	24	kh
Nidwalden	Stans	w	22	kh	Zürich	Zürich	w	25	kh
Nidwalden	Stans	w	48	kh	Zürich	Zürich	w	26	kh
Nidwalden	Wolfenschiessen	m	37	kh	Zürich	Zürich	w	26	kh
Nidwalden	Wolfenschiessen	w	52	kh	Zürich	Zürich	w	26	kh
Obwalden	Alpnach	m	22	kh	Zürich	Zürich	w	28	kh
Obwalden	Alpnach	m	24	kh	Zürich	Zürich	w	29	kh
Obwalden	Engelberg	m	11	kh	Zürich	Zürich	w	29	kh
Obwalden	Engelberg	m	13	kh	Zürich	Zürich	w	31	kh
Obwalden	Giswil	m	22	kh	Zürich	Zürich	w	31	kh
Obwalden	Giswil	w	28	kh	Zürich	Zürich	w	31	kh
Obwalden	Kerns	m	23	kh	Zürich	Zürich	w	32	kh
Obwalden	Lungern	w	19	kh	Zürich	Zürich	w	32	kh
Obwalden	Lungern	w	20	kh	Zürich	Zürich	w	33	kh
Obwalden	Sachslen	m	32	kh	Zürich	Zürich	w	33	kh
Obwalden	Sachslen	w	69	kh	Zürich	Zürich	w	35	kh
Obwalden	Sarnen	m	35	kh	Zürich	Zürich	w	36	kh
Obwalden	Sarnen	w	18	kh	Zürich	Zürich	w	38	kh
Obwalden	Sarnen	w	21	kh	Zürich	Zürich	w	38	kh
Schaffhausen	Hallau	m	46	kh	Zürich	Zürich	w	40	kh
Schaffhausen	Lohn	m	15	kh	Zürich	Zürich	w	41	kh
Schaffhausen	Rüdlingen	w	12	kh	Zürich	Zürich	w	41	kh
Schaffhausen	Schaffhausen	m	21	kh	Zürich	Zürich	w	42	kh
Schaffhausen	Schaffhausen	m	21	kh	Zürich	Zürich	w	43	kh
Schaffhausen	Schaffhausen	m	25	kh	Zürich	Zürich	w	43	kh
Schaffhausen	Schaffhausen	m	37	kh	Zürich	Zürich	w	45	kh
Schaffhausen	Schaffhausen	m	46	kh	Zürich	Zürich	w	45	kh
Schaffhausen	Schaffhausen	m	49	kh	Zürich	Zürich	w	46	kh
Schaffhausen	Schaffhausen	w	18	kh	Zürich	Zürich	w	46	kh
Schaffhausen	Schaffhausen	w	20	kh	Zürich	Zürich	w	46	kh
Schaffhausen	Schaffhausen	w	22	kh	Zürich	Zürich	w	48	kh
Schaffhausen	Schaffhausen	w	29	kh	Zürich	Zürich	w	48	kh
Schaffhausen	Schaffhausen	w	37	kh	Zürich	Zürich	w	49	kh
Schaffhausen	Schaffhausen	w	58	kh	Zürich	Zürich	w	49	kh
Schaffhausen	Schleitheim	m	22	kh	Zürich	Zürich	w	50	kh
Schaffhausen	Stein am Rhein	m	35	kh	Zürich	Zürich	w	51	kh
Schaffhausen	Wilchingen	w	27	kh	Zürich	Zürich	w	56	kh
Schwyz	Arth	m	62	kh	Zürich	Zürich	w	56	kh
Schwyz	Arth	w	49	kh	Zürich	Zürich	w	59	kh
Schwyz	Einsiedeln	m	22	kh	Zürich	Zürich	w	62	kh
Schwyz	Einsiedeln	m	35	kh	Zürich	Zürich	w	63	kh
Schwyz	Einsiedeln	w	15	kh	Zürich	Zürich	w	68	kh
Schwyz	Einsiedeln	w	20	kh	Zürich	Zürich	w	68	kh