Description of a Corpus of European Portuguese Fricatives

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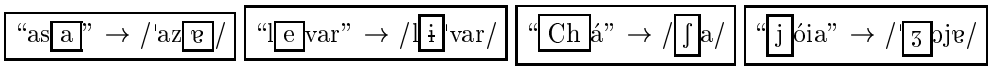
1 Listings of Corpora as Presented to the Speakers

The listings of corpora in the following sections, include the instructions given to subjects in italics.

1.1 Corpus 1a



Sustain fricative for 5 s.

1. /uvvvv ... u/
2. /ɐʒʒʒʒ ... ɐ/
3. /ɐvvvv ... ɐ/
4. /uʃʃʃʃ ... u/
5. /ɨvvvv ... ɨ/
6. /ɐʃʃʃʃ... ɐ/
7. /uffff ... u/
8. /ussss ... u/
9. /ɐzzzz ... ɐ/
10. /ɨʒʒʒʒ ... ɨ/
11. /ɨssss ... ɨ/
12. /uzzzz ... u/
13. /ɐffff ... ɐ/
14. /ɨʃʃʃʃ ... ɨ/
15. /ɐssss ... ɐ/
16. /ɨzzzz ... ɨ/
17. /uʒʒʒʒ ... u/
18. /ɨffff ... ɨ/

1.2 Corpus 1b

“Chá” → /ʃa/	“jóia” → /ʒɔjɐ/

Sustain for 5s.

Medium, soft and loud for each fricative.

Repeat corpus twice.

1. /ʃ/
   baixo
   alto
2. /s/
   baixo
   alto
3. /v/
   baixo
   alto
4. /ʒ/
   baixo
   alto
5. /f/
   baixo
   alto
6. /z/
   baixo
   alto
7. /s/
   baixo
   alto
8. /v/
   baixo
   alto
9. /f/
   baixo
   alto
10. /ʒ/
    baixo
    alto
11. /z/
    baixo
    alto
12. /ʃ/
    baixo
    alto

1.3 Corpus 2

“asa” → /ˈazɐ/	“le var” → /lɨˈvar/	“Chá” → /ʃa/	“jóia” → /ʒɔjɐ/

Do about 12 repetitions in one breath.

The stress was placed where Speaker LMTJ found it is most natural (respecting language specific phonological rules), and kept throughout all the repetitions and for Speakers CFGA, ACC and ISSS. There are also some words with equal stress in both syllables. There are some reduced vowels.

1. /pɨˈʃu/
2. /ˈpɐfɨ/
3. /puˈʒu/
4. /pɨfɨ/
5. /pɐˈvu/
6. /pɨˈzɐ/
7. /pɨʒɐ/
8. /pɨʃɨ/
9. /pɨˈzu/
10. /ˈpɐvɨ/
11. /ˈpɐʒɨ/

12. /puvu/
13. /pɐzɐ/
14. /pɨˈsɐ/
15. /ˈpuvɨ/
16. /pɨsɨ/
17. /pɐˈʃɐ/
18. /pɐˈʒu/
19. /pɨˈvu/
20. /pɐˈʃu/
21. /pɐfɐ/
22. /ˈpuʒɨ/
23. /pɐˈzu/
24. /ˈpɐʃɨ/
25. /pɨˈfu/
26. /pɐvɐ/
27. /ˈpusɨ/
28. /puˈfɐ/
29. /ˈpɐsɨ/
30. /pɐʒɐ/
31. /pɨˈʃɐ/
32. /pusu/
33. /pɐˈfu/
34. /pɨvɨ/
35. /puzu/
36. /pɨzɨ/
37. /puˈvɐ/
38. /pɨˈfɐ/
39. /puʃu/
40. /ˈpufɨ/
41. /pɨˈʒu/
42. /ˈpuzɨ/
43. /pɨʒɨ/
44. /pufu/
45. /pɨˈvɐ/
46. /puˈʒɐ/
47. /pɨˈsu/
48. /ˈpuʃɐ/
49. /pɐsɐ/
50. /ˈpuʃɨ/
51. /ˈpɐzɨ/
52. /puˈsɐ/
53. /pɐsu/
54. /puˈzɐ/

1.4 Corpus 3

The carrier sentence is repeated in the following listings, because they were based on the material that the speaker read in the recording session.

1. “Diga originar, por favor.”
2. “Diga fala, por favor.”
3. “Diga jogo, por favor.”
4. “Diga ferro, por favor.”
5. “Diga só, por favor.”
6. “Diga leve, por favor.”
7. “Diga vogar, por favor.”
8. “Diga amoroso, por favor.”
9. “Diga tojo, por favor.”
10. “Diga Zópiro, por favor.”
11. “Diga chefe, por favor.”
12. “Diga haja, por favor.”
13. “Diga sala, por favor.”
14. “Diga rosa, por favor.”
15. “Diga bolacha, por favor.”
16. “Diga zurrar, por favor.”
17. “Diga voo, por favor.”
18. “Diga ferir, por favor.”
19. “Diga asa, por favor.”
20. “Diga jaqueta, por favor.”
21. “Diga posse, por favor.”
22. “Diga dever, por favor.”
23. “Diga fofa, por favor.”
24. “Diga cava, por favor.”
25. “Diga pejo, por favor.”
26. “Diga bafo, por favor.”

27. “Diga mezinha, por favor.”
28. “Diga chamar, por favor.”
29. “Diga perdas, por favor.”
30. “Diga cheta, por favor.”
31. “Diga café, por favor.”
32. “Diga judeu, por favor.”
33. “Diga azul, por favor.”
34. “Diga seta, por favor.”
35. “Diga caça, por favor.”
36. “Diga cheque, por favor.”
37. “Diga mazinha, por favor.”
38. “Diga hoje, por favor.”
39. “Diga saber, por favor.”
40. “Diga uva, por favor.”
41. “Diga figo, por favor.”
42. “Diga teve, por favor.”
43. “Diga exacto, por favor.”
44. “Diga furar, por favor.”
45. “Diga ave, por favor.”
46. “Diga arejar, por favor.”
47. “Diga falir, por favor.”
48. “Diga girar, por favor.”
49. “Diga benefício, por favor.”
50. “Diga mesinha, por favor.”
51. “Diga chá, por favor.”
52. “Diga Beja, por favor.”
53. “Diga afiar, por favor.”
54. “Diga este, por favor.”
55. “Diga mofo, por favor.”
56. “Diga doce, por favor.”
57. “Diga mover, por favor.”
58. “Diga Brasil, por favor.”
59. “Diga vila, por favor.”
60. “Diga peso, por favor.”
61. “Diga febra, por favor.”
62. “Diga pés, por favor.”
63. “Diga cajado, por favor.”
64. “Diga cessa, por favor.”
65. “Diga chegar, por favor.”
66. “Diga ajudar, por favor.”
67. “Diga move, por favor.”
68. “Diga Zita, por favor.”
69. “Diga batesse, por favor.”
70. “Diga pós, por favor.”
71. “Diga garrafa, por favor.”
72. “Diga germe, por favor.”
73. “Diga bufa, por favor.”
74. “Diga capucho, por favor.”
75. “Diga sede, por favor.”
76. “Diga choco, por favor.”
77. “Diga sítio, por favor.”
78. “Diga chorar, por favor.”
79. “Diga age, por favor.”
80. “Diga chocha, por favor.”
81. “Diga volta, por favor.”
82. “Diga ressaca, por favor.”
83. “Diga sopa, por favor.”
84. “Diga zona, por favor.”
85. “Diga Zé, por favor.”
86. “Diga vermelho, por favor.”
87. “Diga pêssego, por favor.”
88. “Diga avó, por favor.”
89. “Diga benéfico, por favor.”
90. “Diga foco, por favor.”
91. “Diga capaz, por favor.”
92. “Diga vaca, por favor.”
93. “Diga secar, por favor.”

94. “Diga relevo, por favor.”
95. “Diga possível, por favor.”
96. “Diga diz, por favor.”
97. “Diga azar, por favor.”
98. “Diga efectuar, por favor.”
99. “Diga Zaire, por favor.”
100. “Diga bravo, por favor.”
101. “Diga fogo, por favor.”
102. “Diga ver, por favor.”
103. “Diga passear, por favor.”
104. “Diga véu, por favor.”
105. “Diga levar, por favor.”
106. “Diga bexiga, por favor.”
107. “Diga trefo, por favor.”
108. “Diga agir, por favor.”
109. “Diga mocho, por favor.”
110. “Diga tijolo, por favor.”
111. “Diga veia, por favor.”
112. “Diga mês, por favor.”
113. “Diga zarpar, por favor.”
114. “Diga achar, por favor.”
115. “Diga zelo, por favor.”
116. “Diga choca, por favor.”
117. “Diga partisse, por favor.”
118. “Diga asse, por favor.”
119. “Diga gelo, por favor.”
120. “Diga tugir, por favor.”
121. “Diga tocha, por favor.”
122. “Diga viver, por favor.”
123. “Diga jacto, por favor.”
124. “Diga altivo, por favor.”
125. “Diga Fafe, por favor.”
126. “Diga zelar, por favor.”
127. “Diga gelado, por favor.”
128. “Diga galhofa, por favor.”
129. “Diga Zézé, por favor.”
130. “Diga mares, por favor.”
131. “Diga aquecer, por favor.”
132. “Diga doze, por favor.”
133. “Diga tacho, por favor.”
134. “Diga chicote, por favor.”
135. “Diga beleza, por favor.”
136. “Diga ovelha, por favor.”
137. “Diga assar, por favor.”
138. “Diga dos, por favor.”
139. “Diga subir, por favor.”
140. “Diga viva, por favor.”
141. “Diga meche, por favor.”
142. “Diga bicha, por favor.”
143. “Diga jóia, por favor.”
144. “Diga pôs, por favor.”
145. “Diga Gigi, por favor.”
146. “Diga acusar, por favor.”
147. “Diga nova, por favor.”
148. “Diga iça, por favor.”
149. “Diga leva, por favor.”
150. “Diga possa, por favor.”
151. “Diga aloja, por favor.”
152. “Diga moça, por favor.”
153. “Diga condessa, por favor.”
154. “Diga bochecha, por favor.”

1.5 Corpus 4

Read twice.

1. “A Gigi é uma chocha e age em benefício da avó doce.”
2. “A vaca foge do gelo na zona.”
3. “A ave, no voo a subir, move a asa para zarpar da seta.”
4. “O chefe altivo fala à rosa de sede de beleza.”
5. “Quero chorar hoje, arejar o sítio e vogar.”
6. “O bravo do Zé quer ajudar o judeu só.”
7. “O café cura a ressaca ao chegar da caça.”
8. “Ver a mesinha nova de volta à sala, é benéfico para o modo de viver dos doze.”
9. “Furar uma jóia choca a condessa Zita.”
10. “O vermelho do fogo e o azul dos mares do Brasil.”
11. “A chá no sítio é possível achar.”
12. “Cava sala meche ver o dever de assar.”

2 Listings of Recorded Material (Corpus 1a, 1b and 2)

This section lists the recorded material of Corpus 1a, 1b and 2 for all four speakers (LMTJ, CFGA, ACC and ISSS). There are some differences between the listings of Corpora presented in Section 1 and the tokens which the speakers produced. This is due to the fact that none of them were phonetically trained and Corpus 1a, 1b and 2 are unnatural corpora.

Table 2.1: Corpus 1a (Speaker LMTJ).

	File N.	IPA
1	_18	[ɨffff ... ɨ]
2	_13	[ɐffff ... ɐ]
3	_7	[uffff ... u]
4	_5	[ɨvvvv ... ɨ]
5	_3	[ɐvvvv ... ɐ]
6	_1	[uvvvv ... u]
7	_12	[uvvvv ... u]
8	11_1r †	[ɨssss ... ɨ]
9	11_2r †	[ɨssss ... ɨ]
10	_15	[ɐssss ... ɐ]
11	_11	[ɐssss ... ɐ]
12	_8	[ussss ... u]

	File N.	IPA
13	16_1r †	[ɨzzzz ... ɨ]
14	16_2r †	[ɨzzzz ... ɨ]
15	_9	[ɐzzzz ... ɐ]
16	_16	[ɐzzzz ... ɨ]
17	12_r1 †	[uzzzz ... u]
18	12_r2 †	[uzzzz ... u]
19	14_1r †	[ɨʃʃʃʃ ... ɨ]
20	14_2r †	[ɨʃʃʃʃ ... ɨ]
21	_6	[ɐʃʃʃʃ... ɐ]
22	_14	[ɐʃʃʃʃ... ɐ]
23	_4	[uʃʃʃʃ ... u]
24	10_1r †	[ɨʒʒʒʒ ... ɨ]
25	10_2r †	[ɨʒʒʒʒ ... ɨ]
26	_2	[ɐʒʒʒʒ ... ɐ]
27	_10	[ɐʒʒʒʒ ... ɐ]
28	17_1r †	[uʒʒʒʒ ... u]
29	17_2r †	[uʒʒʒʒ ... u]

Table 2.2: Corpus 1a (Speaker CFGA).

	File N.	IPA
1	_18	[ɨffff ... ɨ]
2	_13	[ɐffff ... ɐ]
3	_7	[uffff ... u]
4	_5	[ɨvvvv ... ɨ]
5	_3	[ɐvvvv ... ɐ]
6	_1	[uvvvv ... u]
7	_11	[ɨssss ... ɨ]
8	_15	[ɐssss ... ɐ]
9	_8	[ussss ... u]

	File N.	IPA
10	_16	[ɨzzzz ... ɨ]
11	_9	[ɐzzzz ... ɐ]
12	_12	[uzzzz ... u]
13	_14	[ɨʃʃʃʃ ... ɨ]
14	_6	[ɐʃʃʃʃ... ɐ]
15	_4	[uʃʃʃʃ ... u]
16	_10	[ɨʒʒʒʒ ... ɨ]
17	_2	[ɐʒʒʒʒ ... ɐ]
18	_17	[uʒʒʒʒ ... u]

†Re-Recording Session (25/1/1999).

Table 2.3: Corpus 1a (Speaker ACC).

	File N.	IPA
1	18	[ɨffff ... ɨ]
2	18r1	[ɨffff ... ɨ]
3	13	[ɐffff ... ɐ]
4	13r1	[ɐffff ... ɐ]
5	7	[uffff ... u]
6	7r1	[uffff ... u]
7	5	[ɨvvvv ... ɨ]
8	5r1	[ɨvvvv ... ɨ]
9	3	[ɐvvvv ... ɐ]
10	3r1	[ɐvvvv ... ɐ]
11	1	[uvvvv ... u]
12	1r1	[uvvvv ... u]
13	11	[ɨssss ... ɨ]
14	11r1	[ɨssss ... ɨ]
15	11r2	[ɨssss ... ɨ]
16	15	[ɐssss ... ɐ]
17	15r1	[ɐssss ... ɐ]
18	8	[ussss ... u]
19	8r1	[ussss ... u]
20	16	[ɨzzzz ... ɨ]
21	16r1	[ɨzzzz ... ɨ]
22	9	[ɐzzzz ... ɐ]
23	9r1	[ɐzzzz ... ɐ]
24	9r2	[ɐzzzz ... ɐ]
25	12	[uzzzz ... u]
26	12r1	[uzzzz ... u]
27	14	[ɨʃʃʃʃ ... ɨ]
28	14r1	[ɨʃʃʃʃ ... ɨ]
29	6	[ɐʃʃʃʃ... ɐ]
30	6r1	[ɐʃʃʃʃ... ɐ]
31	4	[uʃʃʃʃ ... u]
32	4r1	[uʃʃʃʃ ... u]
33	10	[ɨʒʒʒʒ ... ɨ]
34	10r1	[ɨʒʒʒʒ ... ɨ]
35	2	[ɐʒʒʒʒ ... ɐ]
36	2r1	[ɐʒʒʒʒ ... ɐ]
37	17	[uʒʒʒʒ ... u]
38	17r1	[uʒʒʒʒ ... u]

Table 2.4: Corpus 1a (Speaker ISSS).

	File N.	IPA
1	_18	[ɨffff ... ɨ]
2	_13	[ɐffff ... ɐ]
3	_7	[uffff ... u]
4	_5	[ɨvvvv ... ɨ]
5	_3	[ɐvvvv ... ɐ]
6	_1	[uvvvv ... u]
7	_11	[ɨssss ... ɨ]
8	_15	[ɐssss ... ɐ]
9	_8	[ussss ... u]
10	_16	[ɨzzzz ... ɨ]
11	_9	[ɐzzzz ... ɐ]
12	_12	[uzzzz ... u]
13	_14	[ɨʃʃʃʃ ... ɨ]
14	_6	[ɐʃʃʃʃ... ɐ]
15	_4	[uʃʃʃʃ ... u]
16	_10	[ɨʒʒʒʒ ... ɨ]
17	_2	[ɐʒʒʒʒ ... ɐ]
18	_17	[uʒʒʒʒ ... u]

Table 2.5: Corpus 1b, Fricatives /f,v,s,z/ (Speaker LMTJ).

	File N.	IPA	Effort Level
1	5ar1	[f]	loud
2	5br1		soft
3	5nr1		medium
4	5ar2		loud
5	5br2		soft
6	5nr2		medium
7	9ar1		loud
8	9br1		soft
9	9nr1		medium
10	9ar2		loud
11	9br2		soft
12	9nr2		medium
13	3ar1	[v]	loud
14	3br1		soft
15	3nr1		medium
16	3ar2		loud
17	3br2		soft
18	3nr2		medium
19	3a1r †		loud
20	3b1r †		soft
21	3n1r †		medium
22	3a2r †		loud
23	3b2r †		soft
24	3n2r †		medium
25	8ar1		loud
26	8br1		soft
27	8nr1		medium
28	8ar2		loud
29	8br2		soft
30	8nr2		medium
31	2ar1	[s]	loud
32	2br1		soft
33	2nr1		medium
34	2ar2		loud
35	2br2		soft
36	2nr2		medium
37	7ar1		loud
38	7br1		soft
39	7nr1		medium
40	7ar2		loud
41	7br2		soft
42	7nr2		medium
43	7a1r †		loud
44	7b1r †		soft
45	7n1r †		medium
46	7a2r †		loud
47	7b2r †		soft
48	7n2r †		medium
49	6ar1	[z]	loud
50	6br1		soft
51	6nr1		medium
52	6ar2		loud
53	6br2		soft
54	6nr2		medium
55	11ar1		loud
56	11br1		soft
57	11nr1		medium
58	11ar2		loud
59	11br2		soft
60	11nr2		medium
61	13ar2		loud
62	13br2		soft
63	13nr2		medium

†Re-Recording Session (25/1/1999).

Table 2.6: Corpus 1b, Fricatives /ʃ,ʒ/ (Speaker LMTJ).

	File N.	IPA	Effort Level
64	1ar1	[ʃʃ]	loud
65	1br1		soft
66	1nr1		medium
67	1ar2		loud
68	1br2		soft
69	1nr2		medium
70	12ar1		loud
71	12br1		soft
72	12nr1		medium
73	12ar2		loud
74	12br2		soft
75	12nr2		medium

	File N.	IPA	Effort Level
76	4ar1	[ʒ]	loud
77	4br1		soft
78	4nr1		medium
79	4ar2		loud
80	4br2		soft
81	4nr2		medium
82	4a1r †		loud
83	4b1r †		soft
84	4n1r †		medium
85	4a2r †		loud
86	4b2r †		soft
87	4n2r †		medium
88	10ar1		loud
89	10br1		soft
90	10nr1		medium
91	10ar2		loud
92	10br2		soft
93	10nr2		medium
94	10a1r		loud
95	10b1r		soft
96	10n1r		medium
97	10a2r		loud
98	10b2r		soft
99	10n2r		medium

† Re-Recording Session (25/1/1999).

Table 2.7: Corpus 1b (Speaker CFGA).

	File N.	IPA	Effort Level
1	5a	[f]	loud
2	5b		soft
3	5n		medium
4	9a		loud
5	9b		soft
6	9n		medium
7	3a	[v]	loud
8	3b		soft
9	3n		medium
10	8a		loud
11	8b		soft
12	8n		medium
13	2a	[s]	loud
14	2b		soft
15	2n		medium
16	7a		loud
17	7b		soft
18	7n		medium
19	6a	[z]	loud
20	6b		soft
21	6n		medium
22	6a_r		loud
23	6b_r		soft
24	6n_r		medium
25	11a		loud
26	11b		soft
27	11n		medium
28	1a	[ʃ]	loud
29	1b		soft
30	1n		medium
31	12a		loud
32	12b		soft
33	12n		medium
34	4a	[ʒ]	loud
35	4b		soft
36	4n		medium
37	4a_r		loud
38	4b_r		soft
39	4n_r		medium
40	10a		loud
41	10b		soft
42	10n		medium

Table 2.8: Corpus 1b (Speaker ACC).

	File N.	IPA	Effort Level
1	5a	[f]	loud
2	5b		soft
3	5n		medium
4	5ar		loud
5	5br		soft
6	5nr		medium
7	9a		loud
8	9b		soft
9	9n		medium
10	3a	[v]	loud
11	3b		soft
12	3n		medium
13	3ar		loud
14	3br		soft
15	3nr		medium
16	8a		loud
17	8b		soft
18	8n		medium
19	2a	[s]	loud
20	2b		soft
21	2n		medium
22	2ar		loud
23	2br		soft
24	2nr		medium
25	7a		loud
26	7b		soft
27	7n		medium

	File N.	IPA	Effort Level
28	6a	[z]	loud
29	6b		soft
30	6n		medium
31	6ar		loud
32	6br		soft
33	6nr		medium
34	11a		loud
35	11b		soft
36	11n		medium
37	1a	[ʃ]	loud
38	1b		soft
39	1n		medium
40	1ar		loud
41	1br		soft
42	1nr		medium
43	12a		loud
44	12b		soft
45	12n		medium
46	4a	[ʒ]	loud
47	4b		soft
48	4n		medium
49	4ar		loud
50	4br		soft
51	4nr		medium
52	10a		loud
53	10b		soft
54	10n		medium

Table 2.9: Corpus 1b (Speaker ISSS).

	File N.	IPA	Effort Level
1	5a	[f]	loud
2	5b		soft
3	5n		medium
4	9a		loud
5	9b		soft
6	9n		medium
7	3a	[v]	loud
8	3b		soft
9	3n		medium
10	8a		loud
11	8b		soft
12	8n		medium
13	2a	[s]	loud
14	2b		soft
15	2n		medium
16	7a		loud
17	7b		soft
18	7n		medium

	File N.	IPA	Effort Level
19	6a	[z]	loud
20	6b		soft
21	6n		medium
22	11a		loud
23	11b		soft
24	11n		medium
25	1a	[ʃ]	loud
26	1b		soft
27	1n		medium
28	12a		loud
29	12b		soft
30	12n		medium
31	4a	[ʒ]	loud
32	4b		soft
33	4n		medium
34	10a		loud
35	10b		soft
36	10n		medium

Table 2.10: Corpus 2 (Speaker LMTJ).

	File N.	IPA
1	4	[ˈpɨfɨ]
2	4r †	[pɨfɨ]
3	38	[pɨˈfɐ]
4	25	[pɨˈfu]
5	2	[ˈpɐfɨ]
6	21	[pɐfɐ]
7	33	[pɐˈfu]
8	40	[ˈpuf]
9	28	[puˈfɐ]
10	44	[pufu]
11	34r †	[pɨvɨ]
12	45	[pɨvɐ]
13	19r †	[pɨˈvu]
14	10	[ˈpɐv]
15	34	[ˈpɐv]
16	26	[pɐvɐ]
17	5	[pɐˈvu]
18	19	[pɐˈvu]
19	15	[ˈpuv]
20	37	[puˈvɐ]
21	12	[puvu]
22	16	[ˈpɨs]
23	16r †	[pɨsɨ]
24	16rr †	[pɨsɨ]
25	14	[pɨˈsɐ]
26	47	[pɨˈsu]
27	29	[ˈpɐs]
28	49	[pɐsɐ]
29	7	[pɐˈsɐ]
30	53	[pɐsu]
31	27	[ˈpus]
32	52	[puˈsɐ]
33	32	[pusu]

	File N.	IPA
34	36r †	[pɨzɨ]
35	6	[pɨˈzɐ]
36	13	[pɨˈzɐ]
37	6r †	[pɨˈzɐ]
38	9	[pɨˈzu]
39	51	[ˈpɐz]
40	36	[ˈpɐz]
41	23	[pɐˈzu]
42	42	[ˈpuz]
43	54	[puˈzɐ]
44	54r †	[puˈzɐ]
45	35	[puzu]
46	8	[ˈpɨʃɨ]
47	8r †	[pɨʃɨ]
48	31	[pɨˈʃɐ]
49	1	[pɨˈʃu]
50	24	[ˈpɐʃɨ]
51	17	[pɐˈʃɐ]
52	20	[pɐˈʃu]
53	50	[ˈpuʃ]
54	48	[ˈpuʃɐ]
55	39	[puʃu]
56	43	[pɨʒɨ]
57	43r †	[pɨʒɨ]
58	43rr †	[pɨʒɨ]
59	7r †	[pɨˈʒɐ]
60	41	[pɨˈʒu]
61	41r †	[pɨˈʒu]
62	11	[ˈpɐʒ]
63	30	[pɐʒɐ]
64	18	[pɐˈʒu]
65	22	[ˈpuʒ]
66	46	[puˈʒɐ]
67	3	[puˈʒu]

† Re-Recording Session (25/1/1999).

Table 2.11: Corpus 2 (Speaker CFGA).

	File N.	IPA
1	4	[pɨfɨ]
2	38	[pɨˈfɐ]
3	25	[pɨˈfu]
4	2	[ˈpɐf]
5	21	[pɐfɐ]
6	33	[pɐˈfu]
7	40	[ˈpuf]
8	28	[puˈfɐ]
9	44	[pufu]
10	34	[pɨvɨ]
11	45	[pɨˈvɐ]
12	19	[pɨˈvu]
13	10	[ˈpɐv]
14	26	[pɐvɐ]
15	5	[pɐˈvu]
16	15	[ˈpuv]
17	37	[puˈvɐ]
18	12	[puvu]
19	16	[pɨsɨ]
20	14	[pɨˈsɐ]
21	47	[pɨˈsu]
22	29	[ˈpɐs]
23	49	[pɐsɐ]
24	49r	[pɐsɐ]
25	53	[pɐsu]
26	27	[ˈpus]
27	52	[puˈsɐ]
28	32	[pusu]

	File N.	IPA
29	36	[pɨzɨ]
30	36r	[pɨzɨ]
31	6	[pɨˈzɐ]
32	9	[pɨˈzu]
33	51	[ˈpɐz]
34	13	[pɐzɐ]
35	13r	[pɐzɐ]
36	23	[pɐˈzu]
37	42	[ˈpuz]
38	54	[puˈzɐ]
39	35	[puzu]
40	8	[pɨʃɨ]
41	31	[pɨˈʃɐ]
42	1	[pɨˈʃu]
43	1r	[pɨˈʃu]
44	24	[ˈpɐʃ]
45	17	[pɐˈʃɐ]
46	20	[pɐˈʃu]
47	20r	[pɐˈʃu]
48	50	[ˈpuʃ]
49	48	[puʃɐ]
50	39	[puʃu]
51	43	[pɨʒɨ]
52	7	[pɨˈʒɐ]
53	41	[pɨˈʒu]
54	11	[ˈpɐʒ]
55	30	[pɐʒɐ]
56	18	[pɐˈʒu]
57	22	[ˈpuʒ]
58	46	[ˈpuʒɐ]
59	46r1	[puˈʒɐ]
60	46r2	[puˈʒɐ]
61	3	[puˈʒu]

Table 2.12: Corpus 2 (Speaker ACC).

	File N.	IPA
1	4	[ˈpɨf]
2	4r1	[ˈpɨfɨ]
3	38	[pɨˈfɐ]
4	25	[pɨˈfu]
5	2	[ˈpɐf]
6	21	[ˈpɐfɐ]
7	33	[pɐˈfu]
8	40	[ˈpuf]
9	28	[puˈfɐ]
10	44	[pufu]
11	34	[ˈpɨvɨ]
12	45	[pɨˈvɐ]
13	19	[pɨˈvu]
14	10	[ˈpɐv]
15	26	[ˈpɐvɐ]
16	5	[pɐˈvu]
17	5r1	[pɐˈvu]
18	15	[ˈpuvɨ]
19	15r1	[ˈpuvɨ]
20	37	[puˈvɐ]
21	12	[ˈpuvu]
22	16	[ˈpɨsɨ]
23	14	[pɨˈsɐ]
24	47	[pɨˈsu]
25	29	[ˈpɐsɨ]
26	49	[ˈpɐsɐ]
27	53	[pɐˈsu]
28	27	[ˈpusɨ]
29	52	[puˈsɐ]
30	32	[pusu]

	File N.	IPA
31	36	[ˈpɨzɨ]
32	6	[ˈpɨzɐ]
33	9	[pɨˈzu]
34	51	[ˈpɐz]
35	13	[ˈpɐzɐ]
36	13r1	[ˈpɐzɐ]
37	13r2	[ˈpɐzɐ]
38	23	[pɐˈzu]
39	42	[ˈpuzɨ]
40	54	[puˈzɐ]
41	35	[puzu]
42	8	[ˈpɨʃ]
43	31	[pɨˈʃɐ]
44	1	[pɨˈʃu]
45	24	[ˈpɐʃ]
46	24r1	[ˈpɐʃɨ]
47	17	[pɐˈʃɐ]
48	20	[pɐˈʃu]
49	50	[ˈpuʃ]
50	48	[ˈpuʃɐ]
51	39	[ˈpuʃu]
52	43	[pɨʒɨ]
53	7	[ˈpɨʒɐ]
54	7r1	[ˈpɨʒɐ]
55	41	[pɨˈʒu]
56	11	[ˈpɐʒɨ]
57	30	[ˈpɐʒɐ]
58	18	[pɐˈʒu]
59	22	[ˈpuʒɨ]
60	46	[puʒɐ]
61	3	[puˈʒu]

Table 2.13: Corpus 2 (Speaker ISSS).

	File N.	IPA
1	4	[pɨfɨ]
2	38	[pɨˈfɐ]
3	25	[pɨˈfu]
4	2	[ˈpɐf]
5	21	[pɐfɐ]
6	33	[pɐˈfu]
7	40	[ˈpuf]
8	28	[puˈfɐ]
9	44	[pufu]
10	34	[pɨvɨ]
11	45	[pɨˈvɐ]
12	19	[pɨˈvu]
13	10	[ˈpɐv]
14	26	[pɐvɐ]
15	5	[pɐˈvu]
16	15	[ˈpuv]
17	37	[puˈvɐ]
18	12	[puvu]
19	16	[pɨsɨ]
20	14	[pɨˈsɐ]
21	47	[pɨˈsu]
22	29	[ˈpɐs]
23	49	[pɐsɐ]
24	53	[pɐˈsu]
25	27	[ˈpus]
26	52	[puˈsɐ]
27	32	[pusu]

	File N.	IPA
28	36	[pɨzɨ]
29	6	[pɨˈzɐ]
30	9	[pɨˈzu]
31	9r	[pɨˈzu]
32	51	[ˈpɐz]
33	13	[pɐzɐ]
34	23	[pɐˈzu]
35	42	[ˈpuz]
36	54	[puˈzɐ]
37	35	[puzu]
38	8	[pɨʃɨ]
39	31	[pɨˈʃɐ]
40	1	[pɨˈʃu]
41	24	[ˈpɐʃ]
42	17	[pɐˈʃɐ]
43	20	[pɐˈʃu]
44	50	[ˈpuʃ]
45	48	[ˈpuʃɐ]
46	48r	[ˈpuʃɐ]
47	39	[puʃu]
48	43	[pɨʒɨ]
49	7	[pɨˈʒɐ]
50	41	[pɨˈʒu]
51	11	[ˈpɐʒ]
52	30	[pɐʒɐ]
53	18	[pɐˈʒu]
54	22	[ˈpuʒ]
55	46	[puˈʒɐ]
56	3	[puʒu]

3 Listings of Recorded Material for All Speakers and Time Analysis for Speaker LMTJ (Corpus 3 and 4)

This section lists the results of the time analysis of Corpus 3 and 4 fricatives, and their VF and FV transitions for Speaker LMTJ. We also include a broad phonetic transcription of all recorded material and list re-recorded examples for Speaker LMTJ. The data presented includes: the VF transition duration, the fricative duration, the FV transition duration, the ratio of variances r_{σ^2}, and a manual classification of devoicing (listed in the column "Devoicing").

The file numbering of words from Corpus 4 has two parts: a number that refers to the sentence where the words occur and a word number which is the same as the one used in Corpus 3 (see Section 1).

When the phonetic transcription, of words with fricatives at the beginning or end, has an additional initial ([ɐ ˈvilɐ] in Table 21) or final ([ˈmɔv ɐ] in Table 39) phoneme, separated from the transcription of the word we are analysing by a white space, this means that there is co-articulation between the fricative and the final or initial phoneme of the previous or following word in the sentence.

Table 3.14: Fricative /f/ in Corpus 3 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
1	figo	[ɐ ˈfigu]	41	58.8	145.8	38.5	59.2
2	ferir	[ɐ f ɨˈr̥iɾ]	18	78.8	150.0		128.2
3	febra	[ɐ ˈfebɾɐ]	61	37.5	135.4	51.0	20.1
4	ferro	[ɐ ˈfɛʀu]	4	64.6	182.3	80.2	128.1
5	falir	[ɐ f ɐˈliɾ]	47	62.1	106.3	33.3	36.2
6	fala	[ɐ ˈfalɐ]	2	37.7	167.7	26.7	24.9
7	Fafe	[ɐ ˈf af]	125				
8	foco	[ɐ ˈfɔku]	90	71.3	122.9	36.0	146.9
9	fogo	[ɐ ˈfogu]	101	54.8	149.6	29.6	17.1
10	fofa	[ɐ ˈf ofɐ]	23	96.7	129.2	29.2	55.4
11	furar	[ɐ fuˈraɾ]	44	36.7	124.6	41.7	20.4
12	efectuar	[iˈf ɛtwaɾ]	98	55.2	116.5	12.7	3.5
13	benefício	[bɨnɨˈf isju]	49_1r †	61.7	158.1	25.4	197.6
14		[bɨnɨˈf isju]	49_2r †	55.6	122.9	41.0	93.3
15	benéfico	[bɨˈnɛfiku]	89	44.4	107.7	30.0	64.2
16		[bɨˈnɛfiku]	49	51.7	106.7	23.3	24.9
17	afiar	[ɐfiˈaɾ]	53	108.3	104.2	66.7	97.4
18	café	[kɐˈfɛ]	31	52.9	137.3	32.3	92.4
19	garrafa	[gɐˈr̥a f ɐ]	71	71.5	88.5	33.1	15.9
10	fofa	[ˈfo f ɐ]	23	54.2	91.7	69.8	45.9
20	galhofa	[gɐˈʎofɐ]	128	72.5	136.3	37.7	47.8
21	bufa	[ˈbufɐ]	73	45.0	131.0	24.0	54.4
22	trefo	[ˈtɾɐ f]	107	46.3	177.7	-	87.2
23	chefe	[ˈʃɛ f]	11	96.6	162.5	-	58.8
7	Fafe	[ˈfa f]	125	59.8	123.1	-	92.2
24	bafo	[ˈbaf]	26	62.5	95.8	-	97.2
25	mofo	[ˈmof]	55	50.4	86.3	-	52.2

† Re-Recording Session (25/1/1999).

Table 3.15: Fricative /v/ in Corpus 3 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
26	vila	[ɐ ˈvilɐ]	59	66.3	50.2	73.3	4.5	Voiced
27	viver	[ɐ v ɨˈveɾ]	122	58.1	46.7	65.6	32.6	Partially Devoiced
28	viva	[ɐ ˈ v ɨvɐ]	140	84.2	63.3	54.0	66.7	Voiced
29	vermelho	[ɐ v ɨɾˈmɐʎ]	86_1r †					Voiced
30		[ɐ v ɨɾˈmɐʎ]	86_2r †					Voiced
31	ver	[ɐ v eɾɨ]	102	44.0	89.6	36.9	118.9	Devoiced
32	véu	[ɐ ˈvɛ̃w]	104	65.0	72.9	53.1	122.5	Devoiced
33	veia	[ɐ ˈvɐjɐ]	111	39.2	98.8	35.2	57.1	Devoiced
34	vaca	[ɐ ˈvakɐ]	92	36.9	71.7	58.5	6.9	Voiced
35		[ɐ ˈvakɐ]	92_1r †	47.5	55.8	62.1	3.5	Voiced
36		[ɐ ˈvakɐ]	92_2r †	50.4	80.8	41.7	11.2	Voiced
37	volta	[ɐ ˈvɔltɐ]	81	70.0	59.6	47.1	2.0	Voiced
38	voo	[ɐ vow]	17	61.5	70.8	65.6	118.9	Devoiced
39	vogar	[ɐ ˈ v ugaɾ]	7	81.5	37.5	47.9	30.6	Partially Devoiced
27	viver	[viˈ v eɾ]	122	46.3	78.1	46.0	4.1	Voiced
40	possível	[pˈsi v ɛl]	95					Voiced
28	viva	[ˈvɪ v ɐ]	140	57.7	68.8	38.5	114.9	Voiced
41	dever	[dɨˈ v eɾɨ]	22	43.8	83.3	57.3	1.5	Voiced
42	levar	[lɨˈvaɾ]	105	59.8	77.3	34.4	58.9	Devoiced
43	leva	[ˈlɛvɐ]	149	64.4	55.8	40.6	25.1	Voiced
44	avó	[ɐˈvɔ]	88	40.2	64.4	32.5	9.3	Voiced
45	cava	[ˈkavɐ]	24_1r †	61.3	67.5	43.1	88.3	Partially Devoiced
46		[ˈkavɐ]	24_2r †	62.3	99.8	28.8	49.8	Devoiced
47	cavo	[ˈkavu]	24	72.9	43.8	43.8	139.4	Devoiced
48	nova	[ˈnɔvɐ]	147	79.0	40.4	85.4	1.6	Voiced
49	ovelha	[oˈvɐʎɐ]	136	65.2	54.0	47.5	107.5	Voiced
50	mover	[muˈ v eɾɨ]	57	38.1	77.1	38.5	11.6	Partially Devoiced
51	uva	[ˈuvɐ]	40	68.3	66.7	45.8	416.9	Devoiced
52	altivo	[alˈtiv]	124	46.0	110.2	-	44.2	Devoiced
53	teve	[ˈtev]	42	69.0	88.3	-	75.1	Devoiced
54	relevo	[ʁɨˈlev]	94	58.3	117.7	-	34.4	Devoiced
55	leve	[ˈlɛv]	6	81.3	122.9	-	51.5	Devoiced
56	ave	[ˈav]	45	84.4	97.9	-	55.7	Devoiced
57	bravo	[ˈbɾav]	100	56.5	72.1	-	58.7	Devoiced
58	move	[ˈmɔv]	67	24.2	135.4	-	32.9	Devoiced
59		[ˈmɔv] *	67_1r †	99.6	37.3	-	1.2	Voiced
60		[ˈmɔv] *	67_2r †	63.5	83.3	-	458.1	Devoiced

* "Diga ..., bem dito."

† Re-Recording Session (25/1/1999).

Table 3.16: Fricative /s/ in Corpus 3 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
61	sítio	[ɐ ˈsitju]	77	62.9	181.3	36.3	27.6
62	secar	[ɐ sˈkaɾ]	93	43.5	154.4	-	12.3
63	sede	[ɐ ˈsedɨ]	75	44.6	167.7	42.1	53.6
64	seta	[ɐ ˈsɛtɐ]	34	31.5	171.0	32.5	26.3
65	cessa	[ɐ ˈ s ɛsɐ]	64	65.4	175.8	25.2	34.9
66	saber	[ɐ s ɐˈbeɾ̥]	39	45.2	133.8	31.3	10.3
67	sala	[ɐ ˈsalɐ]	13	64.8	135.4	38.5	47.4
68	só	[ɐ sɔ]	5	79.6	149.8	55.4	104.8
69	sopa	[ɐ ˈsopɐ]	83	54.6	154.2	17.3	47.5
70	subir	[ɐ s uˈbiɾ̥]	139	43.1	144.2	43.1	43.7
71	içça	[ˈisɐ]	148	90.0	124.6	64.8	45.9
72	benefício	[bɨnɨˈfi s ju]	49_1r †				
73		[bɨnɨˈfi s ju]	49_2r †				
74	ressaca	[ʁɨˈsakɐ]	82	73.3	142.9	35.8	28.9
75	condessa	[kõˈdesɐ]	153	65.4	123.3	34.8	124.3
76	pêssego	[ˈpesgu]	87	39.2	164.6	-	24.1
77	aquecer	[ɐkɛˈseɾ]	131	44.6	157.1	48.1	18.5
65	cessa	[ˈsɐ s ɐ]	64	60.8	109.4	34.8	34.4
78	passear	[pɐˈsjaɾ]	103	61.0	184.0	49.0	39.1
79	assar	[ɐˈ s aɾɨ]	137	74.6	130.4	53.5	28.8
80	caça	[ˈkasɐ]	35	61.7	127.7	30.6	22.6
81	possa	[ˈpɔsɐ]	150	48.1	111.0	60.0	150.9
82	moça	[ˈmosɐ]	152	38.1	111.0	41.3	20.9
83	possível	[pˈ s ivɛl]	95	-	219.8	25.0	2.6
84	partisse	[paɾˈtis]	117	71.0	208.8	-	37.5
85	batesse	[bɐˈtes]	69	37.3	139.6	-	22.1
86	asse	[ˈas]	118	67.3	197.5	-	60.6
87	posse	[ˈpɔs]	21	29.2	139.6	-	13.2
88	doce	[ˈdos]	56	36.7	112.5	-	113.7

† Re-Recording Session (25/1/1999).

Table 3.17: Fricative /z/ in Corpus 3 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
89	Zita	[ɐ ˈzitɐ]	68	87.3	79.2	37.5	243.5	Devoiced
90	zelar	[ɐ ˈzɨlaɾ]	126	43.5	82.5	31.9	4.6	Partially Devoiced
91	zelo	[ɐ ˈzelu]	115	93.1	116.9	64.0	6.6	Voiced
92	Zé	[ɐ zɛ]	85	58.3	94.6	24.6	29.9	Devoiced
93	Zézé	[ɐ ˈz ɛzɛ]	129	36.0	74.8	39.6	1.3	Voiced
94	zarpar	[ɐ z ɐɾˈpaɾɨ]	113	46.5	67.3	31.7	47.9	Devoiced
95	Zaire	[ɐ ˈz ajɾɨ]	99	37.9	74.2	25.0	69.2	Devoiced
96	Zópiro	[ɐ ˈzɔpiɾu]	10	47.9	72.9	75.0	93.0	Devoiced
97	zona	[ɐ ˈzonɐ]	84	58.1	93.1	39.8	16.9	Partially Devoiced
98	zurrar	[ɐ z uˈʁaɾ]	16	40.6	55.2	55.2	2.2	Voiced
99	exacto	[iˈzatu]	43	46.9	76.5	36.5	67.3	Devoiced
100	mesinha	[mɨˈzi̯ɲɐ]	50	53.8	60.8	78.8	250.5	Devoiced
101		[mɨˈzi̯ɲɐ]	27	54.2	97.7	48.1	25.0	Partially Devoiced
102	beleza	[bɨˈlezɐ]	135	63.5	87.7	22.3	27.5	Devoiced
103	peso	[ˈpezu]	60	45.8	80.0	21.5	55.8	Devoiced
104	mezinha	[mɛˈzi̯ɲɐ]	27_1r †	31.0	61.5	37.3	3.8	Voiced
105		[mɛˈzi̯ɲɐ]	27_2r †	32.0	95.4	65.0	133.7	Devoiced
93	Zézé	[ˈzɛ z ɛ]	129	45.2	78.1	24.0	32.5	Devoiced
106	Brasil	[bɾɐˈzil]	58	55.8	110.6	26.7	117.1	Devoiced
107	azar	[ɐˈz aɾɨ]	97	101.3	95.0	33.3	8.2	Voiced
108	azul	[ɐˈzul]	33	99.8	101.0	28.1	85.8	Devoiced
109	mazinha	[maˈzi̯ɲɐ]	37	64.6	86.0	36.9	62.8	Devoiced
110	asa	[ˈazɐ]	19_1r †	59.6	77.3	39.6	33.3	Devoiced
111		[ˈazɐ]	19_2r †	59.6	66.7	35.4	17.4	Partially Devoiced
112	rosa	[ɾˈɾɔ z ɐ]	14	47.9	45.8	50.0	257.2	Devoiced
113	doze	[ˈdozɨ] *	132_2r †	32.3	100.4	45.6	105.3	Devoiced
114	acusar	[ɐkuˈz aɾ]	146	41.9	68.3	68.1	15.0	Voiced
115	doze	[ˈdoz]	132	56.7	90.4	-	199.4	Devoiced
116		[ˈdoz] *	132_1r †	24.0	86.0	-	27.1	Devoiced
117	amoroso	[ɐmuˈɾo z]	8	93.8	54.2	-	30.4	Devoiced

* "Diga ..., bem dito."

† Re-Recording Session (25/1/1999).

Table 3.18: Fricative /ʃ/ in Corpus 3 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
118	chicote	[ɐ ʃiˈkɔtɨ]	134	47.5	119.2	38.5	124.2
119	chegar	[ɐ ʃɨˈgaɾ]	65	52.9	136.7	29.8	18.7
120	cheta	[ɐ ˈʃetɐ]	30	59.6	155.8	42.8	191.0
121	cheque	[ɐ ˈʃɛkɨ]	36	65.6	165.6	26.7	137.6
122	chefe	[ɐ ˈʃɛf]	11				
123	chamar	[ɐ ʃɐˈmaɾɨ]	28	36.0	129.2	32.3	35.4
124	chá	[ɐ ʃa]	51	71.0	150.2	52.5	127.6
125	choca	[ɐ ˈʃɔkɐ]	116	79.4	176.9	39.6	10.8
126	choco	[ɐ ˈʃoku]	76	59.2	189.0	21.3	47.7
127	chocha	[ɐ ˈʃoʃɐ]	80	74.4	192.9	25.8	27.0
128	chorar	[ɐ ʃuˈɾaɾ]	78	45.4	150.4	37.1	74.6
129	bicha	[ˈbiʃɐ]	142	62.9	144.2	48.8	38.8
130	bexiga	[bˈʃigɐ]	106	-	193.5	36.5	1.2
131	bochecha	[buˈʃeʃɐ]	154	52.1	122.7	36.3	103.7
132	este	[ˈeʃt]	54	44.4	98.1	-	141.3
133	achar	[ɐˈʃaɾ]	114	77.1	154.2	32.5	61.9
134	bolacha	[buˈlaʃɐ]	15	105.4	94.6	50.4	35.9
135	tocha	[ˈtɔʃɐ]	121	52.3	121.5	46.0	48.0
127	chocha	[ˈʃoʃɐ]	80	37.3	133.3	32.5	34.0
131	bochecha	[buˈʃeʃɐ]	154	38.3	151.9	24.0	28.9
136	diz	[diʃ]	96	44.6	114.0	-	16.5
137	mares	[ˈmaɾʃ]	130	-	101	-	192.3
138	mês	[ˈmeʃ]	112	29.0	124.6	-	23.7
139	pés	[pɛʃ]	62	122.5	77.1	-	334.5
140	meche	[ˈmɛʃ]	141	41.9	156.3	-	117.4
141	perdas	[ˈpɛɾdɐʃ]	29	48.1	75.6	-	164.5
142	capaz	[kɐˈpaʃ]	91	44.2	102.7	-	20.6
143	tacho	[ˈtaʃ]	133	62.3	147.7	-	48.0
144	pós	[pɔʃ]	70	71.0	85.4	-	93.9
145	pôs	[poʃ]	144	81.5	94.2	-	235.5
146	mocho	[ˈmoʃ]	109	33.5	159.2	-	30.0
147	dos	[ˈduʃ]	138	40.8	77.5	-	28.8
148	capucho	[kɐˈpuʃ]	74	49.6	133.8	-	68.0

Table 3.19: Fricative /ʒ/ in Corpus 3 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
149	girar	[ɐ ʒ i'ɾaɾ]	48	59.4	71.0	36.9	142.3	Devoiced
150	Gigi	[ɐ ʒ i'ʒi]	145	31.9	82.5	32.3	2.0	Voiced
151	gelado	[ɐ ʒɨ'ladu]	127	39.8	103.5	32.3	11.2	Devoiced
152	gelo	[ɐ 'ʒelu]	119	37.9	105.0	38.5	5.4	Devoiced
153	germe	[ɐ 'ʒɛɾm]	72	76.9	76.0	27.9	17.0	Partially Devoiced
154	jaqueta	[ɐ ʒɐ'ketɐ]	20	48.3	61.3	30.0	53.5	Devoiced
155	jacto	[ɐ 'ʒatu]	123	32.5	85.8	28.5	5.9	Voiced
156	jóia	[ɐ 'ʒɔjɐ]	143	59.8	79.4	32.9	103.0	Devoiced
157	jogo	[ɐ 'ʒogu]	3	82.3	69.8	114.6	8.2	Devoiced
158	judeu	[ɐ ʒu'dew]	32	31.0	100.2	37.3	56.9	Devoiced
159	originar	[oɾiʒi'naɾ]	1	49.7	60.4	22.5	120.0	Devoiced
150	Gigi	[ʒi' ʒ i]	145	73.8	85.2	61.9	52.6	Voiced
160	tijolo	[ti'ʒolu]	110	31.0	100.2	26.9	27.1	Devoiced
161	arejar	[ɐɾɨ' ʒ a]	46	36.0	112.5	28.1	59.9	Devoiced
162	pejo	['peʒu]	25	77.1	77.1	66.7	57.1	Devoiced
163	Beja	['bɛʒɐ]	52	36.3	79.2	42.5	119.9	Devoiced
164	agir	[ɐ'ʒiɾ]	108	89.2	124.6	35.2	81.9	Devoiced
165	cajado	[kɐ'ʒadu]	63	55.2	61.0	77.5	58.1	Devoiced
166	ajudar	[ɐ'ʒudaɾ]	66	24.0	78.5	14.8	2.3	Devoiced
167	haja	['aʒɐ]	12_1r †	43.5	112.1	27.3	59.0	Devoiced
168		['aʒɐ]	12_2r †	55.6	94.2	40.0	123.0	Devoiced
169		['aʒɐ]	19	89.0	109.8	22.1	207.4	Devoiced
170	aloja	[ɐ'lɔʒɐ]	151	49.2	59.8	31.7	10.0	Voiced
171	hoje	['oʒɨ] *	38_2r †	24.6	128.8	53.8	106.8	Devoiced
172	tugir	[tu'ʒiɾ]	120	45.8	139.2	38.5	73.2	Devoiced
173	age	['aʒ]	79	108.8	135.8	-	89.4	Devoiced
174		['aʒ]	12	75.0	100.0	-	42.2	Devoiced
175	hoje	['oʒ]	38	56.0	111.0	-	224.9	Devoiced
176		['oʒ] *	38_1r †	51.9	111.9	-	9.7	Voiced
177	tojo	['toʒ]	9	129.2	75.0	-	228.6	Devoiced

* "Diga ..., bem dito."

† Re-Recording Session (25/1/1999).

Table 3.20: Fricative /f/ in Corpus 3 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
1	figo	[ɐ ˈfigu]	41				
2	ferir	[ɐ fɨˈɾiɾ]	18				
3	febra	[ɐ ˈfebɾɐ]	61				
4	ferro	[ɐ ˈfɛʁu]	4				
5	falir	[ɐ fɐˈliɾ]	47				
6	fala	[ɐ ˈfalɐ]	2				
7	Fafe	[ɐ ˈfaf]	125				
8	foco	[ɐ ˈfɔk]	90				
9	fogo	[ɐ ˈfogu]	101				
10	fofa	[ɐ ˈfofɐ]	23				
11	furar	[ɐ fuˈɾaɾ]	44				
12	efectuar	[iˈfɛtwaɾ]	98				
13	benefício	[bɨnɨˈfisju]	49				
14	benéfico	[bɨˈnɛfik]	89				
15	afiar	[ɐfiˈaɾ]	53				
16	café	[kɐˈfɛ]	31				
17	garrafa	[gɐˈχafɐ]	71				
10	fofa	[ˈfofɐ]	23				
18	galhofa	[gɐˈʎɔfɐ]	128				
19	bufa	[ˈbufɐ]	73				
20	trefo	[ˈtɾef]	107			-	
21	chefe	[ˈʃɛf]	11			-	
7	Fafe	[ˈfaf]	125			-	
22	bafo	[ˈbaf]	26			-	
23	mofo	[ˈmof]	55			-	

Table 3.21: Fricative /v/ in Corpus 3 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
24	vila	[ɐ ˈvilɐ]	59					Voiced
25	viver	[ɐ v iˈveɾ]	122					Voiced
26	viva	[ɐ ˈv ivɐ]	140					Devoiced
27	vermelho	[ɐ vɨɾˈmeʎu]	86					Devoiced
28	ver	[ɐ veɾ]	102					Devoiced
29	véu	[ɐ ˈvɛw]	104					Devoiced
30	veia	[ɐ ˈvɐjɐ]	111					Voiced
31	vaca	[ɐ ˈvakɐ]	92					Devoiced
32	volta	[ɐ ˈvɔltɐ]	81					Devoiced
33	voo	[ɐ vow]	17					Devoiced
34	vogar	[ɐ ˈvugaɾ]	7					Voiced
25	viver	[viˈv eɾ]	122					Devoiced
35	possível	[pˈsi v l]	95			-		Voiced
26	viva	[ˈvi v ɐ]	140					Voiced
36	dever	[dɨˈveɾ]	22					Devoiced
37	levar	[lɨˈvaɾ]	105					Devoiced
38	leva	[ˈlɛvɐ]	149					Devoiced
39	avó	[ɐˈvɔ]	88					Devoiced
40	cava	[ˈkavɐ]	24					Partially Devoiced
41	nova	[ˈnɔvɐ]	147					Devoiced
42	ovelha	[oˈvɐʎɐ]	136					Devoiced
43	mover	[muˈveɾ]	57					Partially Devoiced
44	uva	[ˈuvɐ]	40					Devoiced
45	altivo	[alˈtiv]	124			-		Devoiced
46	teve	[ˈtev]	42			-		Devoiced
47	relevo	[χɨˈle v]	94			-		Devoiced
48	leve	[ˈlɛv]	6			-		Devoiced
49	ave	[ˈav]	45			-		Devoiced
50	bravo	[ˈbɾav]	100			-		Devoiced
51	move	[ˈmɔv]	67			-		Devoiced

Table 3.22: Fricative /s/ in Corpus 3 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
52	sítio	[ɐ 'sitju]	77				
53	secar	[ɐ s'kaɾ]	93			-	
54	sede	[ɐ 'sed]	75				
55	seta	[ɐ 'sɛtɐ]	34				
56	cessa	[ɐ 's ɛsɐ]	64				
57	saber	[g sɐ'beɾ]	39	-			
58	sala	[ɐ 'salɐ]	13				
59	só	[ɐ sɔ]	5				
60	sopa	[ɐ 'sopɐ]	83				
61	subir	[ɐ su'biɾ]	139				
62	içа	['isɐ]	148				
63	benefício	[bɨnɨ'fi s ju]	49				
64	ressaca	[χ' s akɐ]	82	-			
65	condessa	[kõ'desɐ]	153				
66	pêssego	['pesg]	87			-	
67	aquecer	[ɐkɛ'seɾ]	131				
56	cessa	['sɛ s ɐ]	64				
68	passear	[pɐ'sjaɾ]	103				
69	assar	[ɐ'saɾ]	137				
70	caça	['kasɐ]	35				
71	possa	['pɔsɐ]	150				
72	moça	['mosɐ]	152				
73	possível	[p s ivl]	95	-			
74	partisse	[paɾ'tis]	117			-	
75	batesse	[bɐ'tes]	69			-	
76	asse	['as]	118			-	
77	posse	['pɔs]	21			-	
78	doce	['dos]	56			-	

Table 3.23: Fricative /z/ in Corpus 3 (Speaker CFGA)

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
79	Zita	[ɐ ˈzitɐ]	68					Partially Devoiced
80	zelar	[ɐ ˈzlaɾ]	126			-		Devoiced
81	zelo	[ɐ ˈzelu]	115					Devoiced
82	Zé	[ɐ zɛ]	85					Devoiced
83	Zézé	[ɐ ˈ z ɛzɛ]	129					Voiced
84	zarpar	[ɐ zɐɾˈpaɾ]	113					Devoiced
85	Zaire	[ɐ ˈzajɾɨ]	99					Devoiced
86	Zópiro	[ɐ ˈzɔpiɾu]	10					Devoiced
87	zona	[ɐ ˈzonɐ]	84					Devoiced
88	zurrar	[ɐ z uˈχaɾ]	16					Devoiced
89	exacto	[iˈzat]	43					Devoiced
90	mesinha	[mɨˈziɲɐ]	50					Devoiced
91		[mɨˈziɲɐ]	50r1					Devoiced
92		[mɨˈziɲɐ]	50r2					Devoiced
93	beleza	[bɨˈlezɐ]	135					Partially Devoiced
94	mezinha	[mɛˈziɲɐ]	27					Devoiced
83	Zézé	[ˈzɛ z ɛ]	129					Devoiced
95	Brasil	[bɾɐˈzil]	58					Partially Devoiced
96	azar	[ɐˈzaɾ]	97					Devoiced
97	azul	[ɐˈzul]	33					Devoiced
98	mazinha	[maˈziɲɐ]	37					Devoiced
99	asa	[ˈazɐ]	19					Devoiced
100	rosa	[ˈʁɔ z ɐ]	14					Devoiced
101	acusar	[ɐkuˈzaɾ]	146					Devoiced
102	peso	[ˈpez]	60			-		Voiced
103	doze	[ˈdoz]	132			-		Devoiced
104	amoroso	[ɐmuˈɾoz]	8			-		Devoiced

Table 3.24: Fricative /ʃ/ in Corpus 3 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
105	chicote	[ɐ ʃiˈkɔt]	134				
106	chegar	[ɐ ʃɨˈgaɾ]	65				
107	cheta	[ɐ ˈʃetɐ]	30				
108	cheque	[ɐ ˈʃɛk]	36				
109	chefe	[ɐ ˈʃɛf]	11				
110	chamar	[ɐ ʃɐˈmaɾ]	28				
111	chá	[ɐ ʃa]	51				
112	choca	[ɐ ˈʃɔkɐ]	116				
113	choco	[ɐ ˈʃok]	76				
114	chocha	[ɐ ˈʃoʃɐ]	80				
115	chorar	[ɐ ʃuˈɾaɾ]	78				
116	bicha	[ˈbiʃɐ]	142				
117	bexiga	[bˈʃigɐ]	106	-			
118	bochecha	[bˈʃeʃɐ]	154				
119	este	[ˈeʃt]	54			-	
120	achar	[ɐˈʃaɾ]	114				
121	bolacha	[buˈlaʃɐ]	15				
122	tocha	[ˈtɔʃɐ]	121				
114	chocha	[ˈʃoʃɐ]	80				
118	bochecha	[bˈʃeʃɐ]	154	-			
123	diz	[diʃ]	96			-	
124	mares	[ˈmʁʃ]	130	-		-	
125	mês	[ˈmeʃ]	112			-	
126	pés	[pɛʃ]	62			-	
127	meche	[ˈmɛʃ]	141			-	
128	perdas	[ˈpɐrdɐʃ]	29			-	
129	capaz	[kɐˈpaʃ]	91			-	
130	tacho	[ˈtaʃ]	133			-	
131	pós	[pɔʃ]	70			-	
132	pôs	[poʃ]	144			-	
133	mocho	[ˈmoʃ]	109			-	
134	dos	[ˈduʃ]	138			-	
135	capucho	[kɐˈpuʃ]	74			-	

Table 3.25: Fricative /ʒ/ in Corpus 3 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
136	girar	[ɐ ʒiˈɾaɾ]	48					Devoiced
137	Gigi	[ɐ ʒ̊iˈʒi]	145					Partially Devoiced
138	gelado	[ɐ ʒ̊ˈɬlad]	127			-		Devoiced
139	gelo	[ɐ ˈʒelu]	119					Devoiced
140	germe	[ɐ ˈʒɛɾm]	72					Devoiced
141	jaqueta	[ɐ ʒɐˈketɐ]	20					Devoiced
142	jacto	[ɐ ˈʒat]	123					Devoiced
143	jóia	[ɐ ˈʒɔjɐ]	143					Voiced
144	jogo	[ɐ ˈʒogu]	3					Devoiced
145	judeu	[ɐ ʒuˈdew]	32					Devoiced
146	originar	[oɾiʒiˈnaɾ]	1					Devoiced
137	Gigi	[ʒiˈʒ̊i]	145					Devoiced
147	tijolo	[tˈʒol]	110	-				Devoiced
148	arejar	[ɐɾɨˈʒaɾ]	46					Devoiced
149	Beja	[ˈbɛʒɐ]	52					Devoiced
150	agir	[ɐˈʒiɾ]	108					Devoiced
151	cajado	[kɐˈʒadu]	63					Devoiced
152	ajudar	[ɐˈʒudaɾ]	66					Devoiced
153	haja	[ˈaʒɐ]	12					Devoiced
154	aloja	[ɐˈlɔʒɐ]	151					Devoiced
155		[ɐˈlɔʒɐ]	151r1					Devoiced
156		[ɐˈlɔʒɐ]	151r2					Devoiced
157	tugir	[tuˈʒiɾ]	120					Voiced
158	pejo	[ˈpeʒ]	25			-		Devoiced
159	age	[ˈaʒ]	79			-		Devoiced
160	hoje	[ˈoʒ]	38			-		Devoiced
161	tojo	[ˈtoʒ]	9			-		Devoiced

Table 3.26: Fricative /f/ in Corpus 3 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
1	figo	[ɐ ˈfig]	41				
2	ferir	[ɐ f ɨˈɾiɾ]	18				
3	febra	[ɐ ˈfebɾɐ]	61				
4	ferro	[ɐ ˈf ɛχ]	4				
5	falir	[ɐ f ɐˈliɾ]	47				
6	fala	[ɐ ˈfalɐ]	2				
7	Fafe	[ɐ ˈf af]	125				
8	foco	[ɐ ˈfɔk]	90				
9	fogo	[ɐ ˈfog]	101				
10	fofa	[ɐ ˈf ofɐ]	23				
11	furar	[ɐ fuˈɾaɾ]	44				
12	efectuar	[iˈf ɛtwaɾ]	98				
13	benefício	[bɨnɨˈf isju]	49				
14	benéfico	[bɨˈnɛfik]	89				
15	afiar	[ɐfiˈaɾ]	53				
16	café	[kɐˈfɛ]	31				
17	garrafa	[gɐˈʁa f ɐ]	71				
10	fofa	[ˈfo f ɐ]	23				
18	galhofa	[gɐˈʎɔfɐ]	128				
19	bufa	[ˈbufɐ]	73				
20	trefo	[ˈtɾef]	107			-	
21	chefe	[ˈʃɛ f]	11			-	
7	Fafe	[ˈfa f]	125			-	
22	bafo	[ˈbaf]	26			-	
23	mofo	[ˈmof]	55			-	

Table 3.27: Fricative /v/ in Corpus 3 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
24	vila	[ɐ ˈvilɐ]	59					Voiced
25	viver	[ɐ v iˈveɾ]	122					Devoiced
26	viva	[ɐ ˈv ɨvɐ]	140					Partially Devoiced
27	vermelho	[ɐ vɨɾˈmeʎ]	86					Voiced
28	ver	[ɐ v eɾ]	102					Voiced
29	véu	[ɐ ˈvɛw]	104					Devoiced
30	veia	[ɐ ˈvɐjɐ]	111					Voiced
31	vaca	[ɐ ˈvakɐ]	92					Devoiced
32	volta	[ɐ ˈvɔltɐ]	81					Devoiced
33	voo	[ɐ vow]	17					Partially Devoiced
34	vogar	[ɐ ˈvugaɾ]	7					Voiced
25	viver	[viˈv eɾ]	122					Voiced
35	possível	[puˈsi v ɛl]	95					Voiced
26	viva	[ˈvi v ɐ]	140					Devoiced
36	dever	[dɨˈv eɾ]	22					Devoiced
37	levar	[lɨˈv aɾɨ]	105					Voiced
38	leva	[ˈlɛvɐ]	149					Partially Devoiced
39	avó	[ɐˈvɔ]	88					Devoiced
40	cava	[ˈkavɐ]	24					Partially Devoiced
41	nova	[ˈnɔvɐ]	147					Devoiced
42	ovelha	[oˈvɐʎɐ]	136					Voiced
43	mover	[muˈveɾ]	57					Devoiced
44	uva	[ˈuvɐ]	40					Devoiced
45	altivo	[alˈtiv]	124			-		Devoiced
46	teve	[ˈtɛv]	42			-		Devoiced
47	relevo	[ʁɨˈlev]	94			-		Devoiced
48	leve	[ˈlɛv]	6			-		Devoiced
49	ave	[ˈav]	45			-		Devoiced
50	bravo	[ˈbɾav]	100			-		Devoiced
51	move	[ˈmɔv]	67			-		Devoiced

Table 3.28: Fricative /s/ in Corpus 3 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
52	sítio	[ɐ 'sitju]	77				
53	secar	[ɐ s'kaɾ]	93			-	
54	sede	[ɐ 'sed]	75				
55	seta	[ɐ 'sɛtɐ]	34				
56	cessa	[ɐ 'sɛsɐ]	64				
57	saber	[ɐ sɐ'beɾ]	39				
58	sala	[ɐ 'salɐ]	13				
59	só	[ɐ sɔ]	5				
60	sopa	[ɐ 'sopɐ]	83				
61	subir	[ɐ su'biɾ̥]	139				
62	içа	['isɐ]	148				
63	benefício	[bɨnɨ'fisju]	49				
64	ressaca	[ɾ̥'sakɐ]	82	-			
65	condessa	[kõ'desɐ]	153				
66	pêssego	['pesgu]	87			-	
67	aquecer	[ɐkɛ'seɾ̥]	131				
56	cessa	['sɛsɐ]	64				
68	passear	[pɐ'sjaɾ]	103				
69	assar	[ɐ'saɾ̥]	137				
70	caça	['kasɐ]	35				
71	possa	['pɔsɐ]	150				
72	moça	['mosɐ]	152				
73	possível	[pu'sivɛl]	95				
74	partisse	[paɾ'tis]	117			-	
75	batesse	[bɐ'tes]	69			-	
76	asse	['as]	118			-	
77	posse	['pɔs]	21			-	
78	doce	['dos]	56			-	

Table 3.29: Fricative /z/ in Corpus 3 (Speaker ACC)

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
79	Zita	[ɐ ˈzitɐ]	68					Devoiced
80	zelar	[ɐ ˈzɬlaɾ̥]	126					Voiced
81	zelo	[ɐ ˈzel]	115					Partially Devoiced
82	Zé	[ɐ zɛ]	85					Voiced
83	Zézé	[ɐ ˈzɛzɛ]	129					Partially Devoiced
84	zarpar	[ɐ zɐɾˈpaɾ]	113					Partially Devoiced
85	Zaire	[ɐ ˈzajɾ̥ɨ]	99					Partially Devoiced
86	Zópiro	[ɐ ˈzɔpiɾ̥u]	10					Devoiced
87	zona	[ɐ ˈzonɐ]	84					Devoiced
88	zurrar	[ɐ zuˈɾ̥aɾ̥ɨ]	16					Devoiced
89	exacto	[iˈzat]	43					Voiced
90	mesinha	[mɨˈziɲɐ]	50					Devoiced
91	beleza	[bɨˈlezɐ]	135					Partially Devoiced
92	mezinha	[mɛˈziɲɐ]	27					Devoiced
83	Zézé	[ˈzɛzɛ]	129					Partially Devoiced
93	Brasil	[bɾɐˈzil]	58					Devoiced
94	azar	[ɐˈzaɾ̥]	97					Devoiced
95	azul	[ɐˈzul]	33					Devoiced
96	mazinha	[maˈziɲɐ]	37					Devoiced
97	asa	[ˈazɐ]	19					Devoiced
98	rosa	[ˈɾ̥ɔzɐ]	14					Partially Devoiced
99	acusar	[ɐkuˈzaɾ]	146					Devoiced
100	peso	[ˈpez]	60			-		Devoiced
101	doze	[ˈdoz]	132			-		Devoiced
102	amoroso	[ɐmuˈɾoz]	8			-		Devoiced

Table 3.30: Fricative /ʃ/ in Corpus 3 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
103	chicote	[ɐ ʃiˈkɔt]	134				
104	chegar	[ɐ ʃɨˈgaɾ]	65				
105	cheta	[ɐ ˈʃetɐ]	30				
106	cheque	[ɐ ˈʃɛk]	36				
107	chefe	[ɐ ˈʃɛf]	11				
108	chamar	[ɐ ʃɐˈmaɾ]	28				
109	chá	[ɐ ʃa]	51				
110	choca	[ɐ ˈʃɔkɐ]	116				
111	choco	[ɐ ˈʃok]	76				
112	chocha	[ɐ ˈʃoʃɐ]	80				
113	chorar	[ɐ ʃuˈɾaɾ]	78				
114	bicha	[ˈbiʃɐ]	142				
115	bexiga	[bˈʃigɐ]	106	-			
116	bochecha	[buˈʃeʃɐ]	154				
117	este	[ˈeʃt]	54			-	
118	achar	[ɐˈʃaɾ]	114				
119	bolacha	[buˈlaʃɐ]	15				
120	tocha	[ˈtɔʃɐ]	121				
112	chocha	[ˈʃoʃɐ]	80				
116	bochecha	[buˈʃeʃɐ]	154				
121	diz	[diʃ]	96			-	
122	mares	[ˈmaɾʃ]	130	-		-	
123	mês	[ˈmeʃ]	112			-	
124	pés	[pɛʃ]	62			-	
125	meche	[ˈmɛʃ]	141			-	
126	perdas	[ˈpɐɾdɐʃ]	29			-	
127	capaz	[kɐˈpaʃ]	91			-	
128	tacho	[ˈtaʃ]	133			-	
129	pós	[pɔʃ]	70			-	
130	pôs	[poʃ]	144			-	
131	mocho	[ˈmoʃ]	109			-	
132	dos	[ˈduʃ]	138			-	
133	capucho	[kɐˈpuʃ]	74			-	

Table 3.31: Fricative /ʒ/ in Corpus 3 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
134	girar	[ɐ ʒ i'raɾɨ]	48					Devoiced
135	Gigi	[ɐ ʒ i'ʒi]	145					Devoiced
136	gelado	[ɐ ʒɨ'lad]	127					Partially Devoiced
137	gelo	[ɐ 'ʒelu]	119					Devoiced
138	germe	[ɐ 'ʒ ɛɾm]	72					Devoiced
139	jaqueta	[ɐ ʒɐ'ketɐ]	20					Devoiced
140	jacto	[ɐ 'ʒat]	123					Devoiced
141	jóia	[ɐ 'ʒɔjɐ]	143					Devoiced
142	jogo	[ɐ 'ʒog]	3					Devoiced
143	judeu	[ɐ ʒu'dew]	32					Devoiced
144	originar	[oɾi ʒ i'naɾɨ]	1					Devoiced
135	Gigi	[ʒi ʒ i]	145					Devoiced
145	tijolo	[ti'ʒol]	110					Devoiced
146	arejar	[ɐɾ'ʒaɾɨ]	46	-				Devoiced
147	Beja	['bɛʒɐ]	52					Devoiced
148	agir	[ɐ' ʒ iɾ]	108					Devoiced
149	cajado	[kɐ'ʒa]	63					Devoiced
150	ajudar	[ɐ'ʒudaɾ]	66					Devoiced
151	haja	['aʒɐ]	12					Devoiced
152	aloja	[ɐ'lɔʒɐ]	151					Devoiced
153	tugir	[tu' ʒ iɾ]	120					Devoiced
154	pejo	['peʒ]	25			-		Devoiced
155	age	['aʒ]	79			-		Devoiced
156	hoje	['oʒ]	38			-		Devoiced
157	tojo	['toʒ]	9			-		Partially Devoiced

Table 3.32: Fricative /f/ in Corpus 3 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
1	figo	[ɐ ˈfig]	41				
2	ferir	[ɐ f ɨˈɾiɾ]	18				
3	febra	[ɐ ˈfebɾɐ]	61				
4	ferro	[ɐ ˈf ɛχ]	4				
5	falir	[ɐ fɐˈliɾ]	47				
6	fala	[ɐ ˈfalɐ]	2				
7	Fafe	[ɐ ˈf af]	125				
8	foco	[ɐ ˈfɔk]	90				
9	fogo	[ɐ ˈfogu]	101				
10	fofa	[ɐ ˈf ofɐ]	23				
11	furar	[ɐ fuˈɾaɾ]	44				
12	efectuar	[iˈfɛtwaɾ]	98				
13	benefício	[bɨnɨˈf isju]	49				
14	benéfico	[bɨˈnɛfi]	89				
15	afiar	[ɐfiˈaɾ]	53				
16	café	[kɐˈfɛ]	31				
17	garrafa	[gɐˈχa f ɐ]	71				
10	fofa	[ˈfo f ɐ]	23				
18	galhofa	[gɐˈʎɔfɐ]	128				
19	bufa	[ˈbufɐ]	73				
20	trefo	[ˈtɾef]	107			-	
21	chefe	[ˈʃɛ f]	11			-	
7	Fafe	[ˈfa f]	125			-	
22	bafo	[ˈbaf]	26			-	
23	mofo	[ˈmof]	55			-	

Table 3.33: Fricative /v/ in Corpus 3 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
24	vila	[ɐ ˈvilɐ]	59					Devoiced
25	viver	[ɐ v iˈveɾ]	122					Voiced
26	viva	[ɐ ˈv ivɐ]	140					Voiced
27	vermelho	[ɐ v ɨɾˈmeʎu]	86					Partially Devoiced
28	ver	[ɐ veɾ]	102					Partially Devoiced
29	véu	[ɐ ˈvɛw]	104					Partially Devoiced
30	veia	[ɐ ˈvɐjɐ]	111					Voiced
31	vaca	[ɐ ˈvakɐ]	92					Partially Devoiced
32	volta	[ɐ ˈvɔltɐ]	81					Voiced
33	voo	[ɐ vow]	17					Voiced
34	vogar	[ɐ ˈvugaɾ]	7					Voiced
25	viver	[viˈ v eɾ]	122					Voiced
35	possível	[pˈsi v ɛl]	95					Voiced
26	viva	[ˈvi v ɐ]	140					Voiced
36	dever	[dɨˈveɾ]	22					Voiced
37	levar	[lɨˈvaɾ]	105					Devoiced
38	leva	[ˈlɛvɐ]	149					Devoiced
39	avó	[ɐˈvɔ]	88					Voiced
40	cava	[ˈkavɐ]	24					Devoiced
41	nova	[ˈnɔvɐ]	147					Devoiced
42	ovelha	[oˈvɐʎɐ]	136					Voiced
43	mover	[muˈveɾ]	57					Voiced
44	uva	[ˈuvɐ]	40					Devoiced
45	altivo	[alˈtiv]	124			-		Devoiced
46	teve	[ˈtev]	42			-		Devoiced
47	relevo	[χɨˈle v]	94			-		Devoiced
48	leve	[ˈlɛv]	6			-		Devoiced
49	ave	[ˈav]	45			-		Devoiced
50	bravo	[ˈbɾav]	100			-		Devoiced
51	move	[ˈmɔv]	67			-		Devoiced

Table 3.34: Fricative /s/ in Corpus 3 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
52	sítio	[ɐ ˈsitju]	77				
53	secar	[ɐ sˈkaɾ]	93			-	
54	sede	[ɐ ˈsed]	75				
55	seta	[ɐ ˈsɛtɐ]	34				
56	cessa	[ɐ ˈs ɛsɐ]	64				
57	saber	[ɐ sɐˈbeɾ]	39				
58	sala	[ɐ ˈsalɐ]	13				
59	só	[ɐ sɔ]	5				
60	sopa	[ɐ ˈsopɐ]	83				
61	subir	[ɐ s uˈbiɾ̥]	139				
62	iça	[ˈisɐ]	148				
63	benefício	[bɨnɨˈfi s ju]	49				
64	ressaca	[χˈ s akɐ]	82	-			
65	condessa	[kõˈdesɐ]	153				
66	pêssego	[ˈpesg]	87			-	
67	aquecer	[ɐkɛˈseɾ]	131				
56	cessa	[ˈsɛ s ɐ]	64				
68	passear	[pɐˈsjaɾ]	103				
69	assar	[ɐˈsaɾ]	137				
70	caça	[ˈkasɐ]	35				
71	possa	[ˈpɔsɐ]	150				
72	moça	[ˈmosɐ]	152				
73	possível	[p s ivl]	95	-			
74	partisse	[paɾˈtis]	117			-	
75	batesse	[bɐˈtes]	69			-	
76	asse	[ˈas]	118			-	
77	posse	[ˈpɔs]	21			-	
78	doce	[ˈdos]	56			-	

Table 3.35: Fricative /z/ in Corpus 3 (Speaker ISSS)

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
79	Zita	[ɐ ˈzitɐ]	68					Devoiced
80	zelar	[ɐ ˈzlaɾ]	126			-		Devoiced
81	zelo	[ɐ ˈzelu]	115					Devoiced
82	Zé	[ɐ zɛ]	85					Devoiced
83	Zézé	[ɐ ˈzɛzɛ]	129					Devoiced
84	zarpar	[ɐ zɐɾˈpaɾ]	113					Voiced
85	Zaire	[ɐ ˈzajɾ̥]	99					Devoiced
86	Zópiro	[ɐ ˈzɔpiɾ̥]	10					Devoiced
87	zona	[ɐ ˈzonɐ]	84					Voiced
88	zurrar	[ɐ zuˈχaɾ]	16					Devoiced
89	exacto	[iˈzat]	43					Devoiced
90	mesinha	[mɨˈziɲɐ]	50					Devoiced
91	beleza	[bɨˈlezɐ]	135					Devoiced
92	mezinha	[mɛˈziɲɐ]	27					Devoiced
83	Zézé	[ˈzɛzɛ]	129					Devoiced
93	Brasil	[bɾɐˈzil]	58					Devoiced
94	azar	[ɐˈzaɾ]	97					Devoiced
95	azul	[ɐˈzul]	33					Devoiced
96	mazinha	[maˈziɲɐ]	37					Devoiced
97	asa	[ˈazɐ]	19					Voiced
98	rosa	[ˈχɔzɐ]	14					Devoiced
99	acusar	[ɐkuˈzaɾ]	146					Devoiced
100	peso	[ˈpez]	60			-		Devoiced
101	doze	[ˈdoz]	132			-		Devoiced
102	amoroso	[ɐmuˈɾoz]	8			-		Devoiced

Table 3.36: Fricative /ʃ/ in Corpus 3 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
103	chicote	[ɐ ʃiˈkɔ]	134				
104	chegar	[ɐ ʃɨˈgaɾ]	65				
105	cheta	[ɐ ˈʃetɐ]	30				
106	cheque	[ɐ ˈʃɛk]	36				
107	chefe	[ɐ ˈʃɛf]	11				
108	chamar	[ɐ ʃɐˈmaɾ̥]	28				
109	chá	[ɐ ʃa]	51				
110	choca	[ɐ ˈʃɔkɐ]	116				
111	chocho	[ɐ ˈʃoʃ]	76				
112	chocha	[ɐ ˈʃoʃɐ]	80				
113	chorar	[ɐ ʃuˈɾaɾ]	78				
114	bicha	[ˈbiʃɐ]	142				
115	bexiga	[bˈʃigɐ]	106	-			
116	bochecha	[bˈʃeʃɐ]	154				
117	este	[ˈeʃt]	54			-	
118	achar	[ɐˈʃaɾ]	114				
119	bolacha	[bˈlaʃɐ]	15				
120	tocha	[ˈtɔʃɐ]	121				
112	chocha	[ˈʃoʃɐ]	80				
116	bochecha	[bˈʃeʃɐ]	154	-			
121	diz	[diʃ]	96			-	
122	mares	[ˈmaɾ̥ʃ]	130	-		-	
123	mês	[ˈmeʃ]	112			-	
124	pés	[pɛʃ]	62			-	
125	meche	[ˈmɛʃ]	141			-	
126	perdas	[ˈpɐɾdɐʃ]	29			-	
127	capaz	[kɐˈpaʃ]	91			-	
128	tacho	[ˈtaʃ]	133			-	
129	pós	[pɔʃ]	70			-	
130	pôs	[poʃ]	144			-	
131	mocho	[ˈmoʃ]	109			-	
111	chocho	[ɐ ˈʃoʃ]	76			-	
132	dos	[ˈduʃ]	138			-	
133	capucho	[kɐˈpuʃ]	74			-	

Table 3.37: Fricative /ʒ/ in Corpus 3 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
134	girar	[ɐ ʒiˈɾaɾ]	48					Partially Devoiced
135	Gigi	[ɐ ʒ iˈʒi]	145					Devoiced
136	gelado	[ɐ ʒˈladu]	127			-		Devoiced
137	gelo	[ɐ ˈʒelu]	119					Devoiced
138	germe	[ɐ ˈʒɛɾm]	72					Devoiced
139	jaqueta	[ɐ ʒɐˈketɐ]	20					Devoiced
140	jacto	[ɐ ˈʒat]	123					Devoiced
141	jóia	[ɐ ˈʒɔjɐ]	143					Devoiced
142	jogo	[ɐ ˈʒo̥g]	3					Devoiced
143	judeu	[ɐ ʒuˈdew]	32					Partially Devoiced
144	originar	[oɾiʒiˈnaɾ]	1					Voiced
135	Gigi	[ʒiˈ ʒ i]	145					Partially Devoiced
145	tijolo	[tˈʒol]	110	-				Devoiced
146	arejar	[ɐɾˈʒaɾ]	46	-				Devoiced
147	Beja	[ˈbɛʒɐ]	52					Devoiced
148	agir	[ɐˈ ʒ iɾ̥]	108					Devoiced
149	cajado	[kɐˈʒad]	63					Devoiced
150	ajudar	[ɐˈʒudaɾ]	66					Devoiced
151	haja	[ˈaʒɐ]	12					Devoiced
152	aloja	[ɐˈlɔʒɐ]	151					Devoiced
153	tugir	[tuˈʒiɾ]	120					Devoiced
154	pejo	[ˈpeʒ]	25			-		Devoiced
155	age	[ˈaʒ]	79			-		Devoiced
156	hoje	[ˈoʒ]	38			-		Devoiced
157	tojo	[ˈtoʒ]	9			-		Devoiced

Table 3.38: Fricative /f/ in Corpus 4 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
1	fala	[u ˈfalɐ]	4_2	64	149	36	11.3
2		[u ˈfalɐ]	4_2r	56	109	44	15.5
3	foge	[ɐ ˈfɔʒɨ]	2_155	62	132	40	43.5
4	foge	[ɐ ˈfɔʒ]	2_155r	38	126	-	61.7
5	fogo	[u ˈfogu]	10_101	52	148	40	24.1
6		[u ˈfogu]	10_101r	49	137	39	77.9
7	furar	[fuˈɾaɾ]	9_44	68	104	57	13.1
8		[fuˈɾaɾ]	9_44r	46	93	62	0.7
9	benefício	[bɨniˈfisju]	1_49	58	130	30	34.7
10		[bɨniˈfisju]	1_49r	57	131	32	28.2
11	benéfico	[bɨˈnɛfku]	8_89	54	109	-	21.0
12		[bɨˈnɛfiku]	8_89r	54	85	42	26.1
13	café	[kɐˈfɛ]	7_31	55	101	29	53.7
14		[kɐˈfɛ]	7_31r	56	114	35	40.7
15	chefe	[ˈʃɛfa]	4_11	39	89	-	44.3
16		[ˈʃɛfa]	4_11r	37	85	-	34.5

Table 3.39: Fricative /v/ in Corpus 4 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
17	viver	[d v i'veɾ]	8_122	-	85	56	26.7	Devoiced
18		[i̞ v i̞'veɾ]	8_122r	34	49	48	44.8	Devoiced
19	vermelho	[u vi̞ɾ'meʎu]	10_86	34	43	32	1.8	Voiced
20		[u vi̞ɾ'meʎu]	10_86r	49	57	47	9.4	Voiced
NOT USED	ver	[v eɾ̥]	8_102	-				Partially Devoiced
NOT USED		[v eɾ̥]	8_102r	-				Voiced
21	ver	[veɾ]	12_102	-	94	39	1.5	Voiced
22		[v eɾ̥]	12_102r	-	48	38	9.7	Partially Devoiced
23	vaca	[ɐ 'vakɐ]	2_92	34	61	48	4.1	Voiced
24		[ɐ 'vakɐ]	2_92r	46	67	35	13.5	Devoiced
25	volta	[i̞ 'vɔltɐ]	8_81	25	44	43	5.4	Voiced
26		[d 'vɔltɐ]	8_81r	-	55	40	0.2	Devoiced
27	voo	[u vow]	3_17	43	77	40	1.6	Voiced
28		[u vow]	3_17r	32	65	56	1.0	Voiced
29	vogar	[i 'vugaɾ]	5_7	35	72	44	1.8	Voiced
30		[i 'vuga]	5_7r	45	72	39	32.9	Devoiced
17	viver	[vi' v eɾ]	8_122	41	68	44	49	Devoiced
18		[vi' v eɾ]	8_122r	51	59	39	53.9	Devoiced
31	possível	[pu'si v ɛl]	11_95	41	58	33	1.5	Voiced
32		[pu'si v ɛl]	11_95r	39	53	38	8.9	Partially Devoiced
33	altivo	[al'tivu]	4_124	48	66	29	58.0	Devoiced
34		[al'tivu]	4_124r	30	101	31	1.5	Voiced
35	dever	[di̞'veɾ]	12_22	27	70	34	1.4	Voiced
36		[di̞'veɾ]	12_22r	32	41	40	0.2	Voiced
37	avó	[ɐ'vɔ]	1_88	32	96	22	22.9	Devoiced
38		[ɐ'vɔ]	1_88r	43	45	56	42.6	Devoiced
39	ave	['avi̞]	3_45	37	75	27	5.4	Partially Devoiced
40		['avi̞]	3_45r	49	70	37	10.7	Partially Devoiced
41	cava	['kavɐ]	12_24	24	56	32	3.6	Voiced
42		['kavɐ]	12_24r	36	60	42	16.9	Devoiced
43	bravo	['bɾavu]	6_100	45	57	49	2.2	Voiced
44		['bɾavu]	6_100r	45	63	30	51.3	Devoiced
45	nova	['nɔvɐ]	8_147	39	52	43	10.4	Voiced
46		['nɔvɐ]	8_147r	39	49	48	2.4	Voiced
47	move	['mɔv ɐ]	3_67	32	42	-	1.3	Voiced
48		['mɔv ɐ]	3_67r	38	56	-	14.7	Devoiced

Table 3.40: Fricative /s/ in Corpus 4 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
49	sítio	[u ˈsitju]	5_77	82	162	35	33.6
50		[u ˈsitju]	5_77r	49	154	30	25.8
51		[u ˈsitju]	11_77	24	152	39	3.5
52		[u ˈsitju]	11_77r	26	156	38	21.6
53	sede	[dɨ ˈsedɨ]	4_75	104	161	37	17.8
54		[d ˈsedɨ]	4_75r	-	142	39	8.0
55	seta	[ɐ ˈsɛtɐ]	3_34	44	129	43	10.8
56		[ɐ ˈsɛtɐ]	3_34r	45	155	41	22.7
57	sala	[a ˈsalɐ]	8_13	70	128	44	31.4
58		[a ˈsalɐ]	8_13r	56	145	40	33.8
59		[ɐ ˈsalɐ]	12_13	49	144	42	24.7
60		[a ˈsalɐ]	12_13r	40	146	35	84.5
61	só	[w sɔ]	6_5	51	151	48	43.7
62		[w sɔ]	6_5r	57	173	45	66.9
63	subir	[ɐ suˈbiɾ]	3_139	34	144	32	16.1
64		[ɐ s uˈbiɾ̥]	3_139r	41	148	43	10.8
65	benefício	[bɨnɨˈfi s ju]	1_49	34	117	55	8.0
66		[bɨnɨˈfi s ju]	1_49r	33	141	30	5.1
67	ressaca	[ɾ̥ɨˈ s akɐ]	7_82	53	164	39	83.6
68		[ɾ̥ˈ s akɐ]	7_82r	-	169	43	7.3
69	condessa	[kõˈdesɐ]	9_153	39	95	43	9.0
70		[kõˈdesɐ]	9_153r	42	113	41	18.2
71	assar	[ɐˈsaʰɾʰ]	12_137	50	163	-	10.8
72		[ɐˈ s aɾ̥]	12_137r	50	146	50	47.2
73	possível	[puˈ s ivɛl]	11_95	34	134	37	7.1
74		[puˈ s ivɛl]	11_95r	29	161	45	4.5
75	caça	[ˈkas]	7_35	82	144	-	1.2
76	doce	[ˈdos]	1_56	79	272	-	14.0
77		[ˈdos]	1_56r	92	250	-	23

Table 3.41: Fricative /z/ inCorpus 4 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
78	Zita	[ɐ ˈzitɐ]	9_68	58	100	44	50.6	Devoiced
79		[ɐ ˈzitɐ]	9_68r	48	106	55	12.8	Devoiced
80	Zé	[u zɛ]	6_85	55	91	31	20.7	Devoiced
81		[u zɛ]	6_85r	52	85	40	50.1	Devoiced
82	zarpar	[ɐ z ɐɾɾˈpaɾ]	3_113	33	49	24	4.1	Voiced
83		[ɐ z ɐɾɾˈpaɾ]	3_113r	33	50	40	3.8	Voiced
84	zona	[ɐ ˈzonɐ]	2_84	60	107	24	14.5	Partially Devoiced
85		[ɐ ˈzonɐ]	2_84r	45	125	52	13.6	Devoiced
86	mesinha	[mɨˈzi̯ɲɐ]	8_50	32	58	22	4.6	Voiced
87		[mɨˈzi̯ɲɐ]	8_50r	23	86	21	5.5	Partially Devoiced
88	Brasil	[bɾɐˈ z il]	10_58	65	129	53	21.3	Devoiced
89		[bɾɐˈ z il]	10_58r	46	128	44	52.2	Devoiced
90	azul	[ɐˈzul]	10_33	46	98	31	28.3	Partially Devoiced
91		[ɐˈzul]	10_33r	47	100	40	32.7	Devoiced
92	asa	[ˈazɐ]	3_19	33	56	31	25.3	Devoiced
93		[ˈazɐ]	3_19r	24	73	44	20.6	Devoiced
94	rosa	[ˈʁɔ z ɐ]	4_14	36	71	45	67.8	Devoiced
95		[ˈʁɔ z ɐ]	4_14r	42	90	50	58.0	Devoiced
96	beleza	[bɨˈlez]	4_135	42	121	-	20.2	Devoiced
97		[bɨˈlez]	4_135r	72	109	-	2.9	Devoiced
98	doze	[ˈdoz]	8_132	104	149	-	29.5	Devoiced
99		[ˈdoz]	8_132r	65	268	-	30.3	Devoiced

Table 3.42: Fricative /ʃ/ in Corpus 4 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
100	chegar	[w ʃɨˈgaɾ]	7_65	44	138	58	30.5
101		[w ʃɨˈgaɾ]	7_65r	50	132	61	14.8
102	chefe	[u ˈʃ ɛf]	4_11	32	186		26.4
103		[u ˈʃ ɛf]	4_11r	31	153		9.4
104	chá	[ɐ ʃa]	11_51	40	154	28	51.3
105		[ɐ ʃa]	11_51r	34	171	49	12.4
106	choca	[ɐ ˈʃɔkɐ]	9_116	58	132	42	17.4
107		[ɐ ˈʃɔkɐ]	9_116r	53	120	42	204.7
108	chocha	[ɐ ˈʃ oʃɐ]	1_80	42	147	39	56.0
109		[ɐ ˈʃ oʃɐ]	1_80r	41	158	38	55.2
110	chorar	[u ʃuˈɾaɾ]	5_78	48	133	35	96.5
111		[u ʃuˈɾaɾ]	5_78r	34	153	36	16.2
112	meche	[ˈmɛʃɨ]	12_141	48	182	74	20.8
113		[ˈmɛʃɨ]	12_141r	46	167	53	24.2
114	achar	[ɐˈʃaɾ]	11_114	52	146	48	21.8
115		[ɐˈʃa]	11_114r	40	148	49	29.8
108	chocha	[ˈʃo ʃ ɐ]	1_80	45	107	42	63.2
109		[ˈʃo ʃ ɐ]	1_80r	32	143	29	35.0
116	mares	[ˈmaʃ]	10_130	38	40	-	33.2
117		[ˈmaʃ]	10_130r	50	44	-	159.0
118	dos	[ˈduʃ]	8_138	39	47	-	77.3
119		[ˈduʃ]	10_138r	40	65	-	35.3

Table 3.43: Fricative /ʒ/ in Corpus 4 (Speaker LMTJ).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
120	Gigi	[ɐ ʒ i'ʒi]	1_145	52	90	25	14.2	Devoiced
121		[ɐ ʒ i'ʒi]	1_145r	46	56	34	102.9	Devoiced
122	gelo	[u 'ʒelu]	2_119	60	77	32	20.7	Devoiced
123		[u 'ʒelu]	2_119r	41	73	39	10.0	Partially Devoiced
124	jóia	[ɐ 'ʒɔjɐ]	9_143	38	88	21	31.3	Devoiced
125		[ɐ 'ʒɔjɐ]	9_143r	38	104	24	32.9	Devoiced
126	judeu	[u ʒu'dew]	6_32	39	73	30	14.6	Devoiced
127		[u ʒu'dew]	6_32r	30	93	34	14.6	Devoiced
120	Gigi	[ʒi' ʒ i]	1_145	41	109	39	2.6	Voiced
121		[ʒi' ʒ i]	1_145r	44	124	28	7.5	Partially Devoiced
128	arejar	[ɐɾɨ'ʒaɾ]	5_46	37	97	23	16.9	Devoiced
129		[ɐɾ̥ɨ ʒ aɾ]	5_46r	-	68	40	8.0	Devoiced
130	ajudar	[ɐ'ʒudaɾ]	6_66	57	85	39	89.4	Devoiced
131		[ɐ'ʒudaɾ]	6_66r	43	85	34	53.0	Devoiced
132	age	['aʒɨ]	1_79	19	65	32	9.6	Devoiced
133		['aʒɨ]	1_79r	19	74	35	36	Devoiced
134	foge	['fɔ ʒ ɨ]	2_155	17	56	32	3.7	Partially Devoiced
135	foge	['fɔ ʒ d]	2_155r	47	92	-	85.5	Devoiced
136	hoje	['oʒ]	5_38	79	156	-	78.0	Devoiced
137		['oʒ ɐ]	5_38r	47	104		58.4	Devoiced
138	dos	['duʒ d]	8_138r	38	48	-	3.6	Voiced
139		['duʒ m]	10_138	21	49	-	14.5	Voiced

Table 3.44: Fricative /f/ in Corpus 4 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
1	fala	[u ˈfalɐ]	4_2				
2		[u ˈfalɐ]	4r1_2				
3		[u ˈfalɐ]	4r2_2				
4	foge	[ɐ ˈfɔʒɨ]	2_155				
5		[ɐ ˈfɔʒɨ]	2r1_155				
6		[ɐ ˈfɔʒɨ]	2r2_155				
7	fogo	[u ˈfogu]	10_101				
8		[u ˈfogu]	10r1_101				
9		[u ˈfogu]	10r2_101				
10	furar	[fuˈɾaɾ]	9_44	-			
11		[fuˈɾaɾ]	9r1_44	-			
12		[fuˈɾaɾ]	9r2_44	-			
13	benefício	[bɨnɨˈfisju]	1_49				
14		[bɨnɨˈfisju]	1r1_49				
15		[bɨnɨˈfisju]	1r2_49				
16	benéfico	[bɨˈnɛfik]	8_89				
17		[bɨˈnɛfik]	8r1_89				
18		[bɨˈnɛfi]	8r2_89				
19	café	[kɐˈfɛ]	7_31				
20		[kɐˈfɛ]	7r1_31				
21		[kɐˈfɛ]	7r2_31				
22	chefe	[ˈʃɛfa]	4_11				
23		[ˈʃɛfa]	4r1_11				
24		[ˈʃɛfa]	4r2_11				

Table 3.45: Fricative /v/ (Word-Initial) in Corpus 4 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
25	viver	[i̥ v i'veɾ]	8_122					Voiced
26		[i̥ v i'veɾ]	8r1_122					Voiced
27		[i̥ v 'veɾ]	8r2_122			-		Voiced
28	vermelho	[u vɨɾ'meʎu]	10_86					Voiced
29		[u vɨɾ'meʎu]	10r1_86					Partially Devoiced
30		[u vɨɾ'meʎu]	10r2_86					Devoiced
31	ver	[veɾ]	8_102	-				Devoiced
32		[veɾ]	8r1_102	-				Voiced
33		[veɾ]	8r2_102	-				Voiced
34		[ʃ veɾ]	12_102	-				Voiced
35		[ʃ veɾ]	12r1_102	-				Partially Devoiced
36		[ʃ v eɾ]	12r2_102	-				Devoiced
37	vaca	[ɐ 'vakɐ]	2_92					Voiced
38		[ɐ 'vakɐ]	2r1_92					Devoiced
39		[ɐ 'vakɐ]	2r2_92					Voiced
40	volta	[i̥ 'vɔltɐ]	8_81					Devoiced
41		[i̥ 'vɔltɐ]	8r1_81					Devoiced
42		[i̥ 'vɔltɐ]	8r2_81					Partially Devoiced
43	voo	[u vow]	3_17					Devoiced
44		[u vow]	3r1_17					Partially Devoiced
45		[u vow]	3r2_17					Devoiced
46	vogar	[i 'vugaɾ]	5_7					Devoiced
47		[i 'vugaɾ]	5r1_7					Devoiced
48		[i 'vugaɾ]	5r2_7					Devoiced

Table 3.46: Fricative /v/ (Word-Medial and Word-Final) in Corpus 4 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
25	viver	[viˈ v ɐɾ]	8_122					Partially Devoiced
26		[viˈ v ɐɾ]	8r1_122					Partially Devoiced
27		[vˈ v ɐɾ]	8r2_122	-				Devoiced
49	possível	[pˈsi v l]	11_95			-		Voiced
50		[pˈsi v l]	11r1_95			-		Voiced
51		[pˈsi v l]	11r2_95			-		Voiced
52	altivo	[alˈtivu]	4r1_124					Devoiced
53	dever	[dɨˈveɾ]	12_22					Partially Devoiced
54		[dɨˈveɾ]	12r1_22					Devoiced
55		[dɨˈveɾ]	12r2_22					Devoiced
56	avó	[ɐˈvɔ]	1_88					Devoiced
57		[ɐˈvɔ]	1r1_88					Devoiced
58		[ɐˈvɔ]	1r2_88					Devoiced
59	ave	[ˈavɨ]	3_45					Voiced
60		[ˈavɨ]	3r1_45					Partially Devoiced
61		[ˈavɨ]	3r2_45					Partially Devoiced
62	cava	[ˈkavɐ]	12_24					Voiced
63		[ˈkavɐ]	12r1_24					Voiced
64		[ˈkavɐ]	12r2_24					Voiced
65	bravo	[ˈbɾavu]	6r1_100					Partially Devoiced
66		[ˈbɾavu]	6r2_100					Voiced
67	nova	[ˈnɔvɐ]	8_147					Voiced
68		[ˈnɔvɐ]	8r1_147					Devoiced
69		[ˈnɔvɐ]	8r2_147					Devoiced
70	altivo	[alˈtiv f]	4_124			-		Devoiced
71		[alˈtiv f]	4r2_124			-		Partially Devoiced
72	bravo	[ˈbɾav d]	6_100			-		Voiced
73	move	[ˈmɔv ɐ]	3_67					Partially Devoiced
74		[ˈmɔv ɐ]	3r1_67					Devoiced
75		[ˈmɔv ɐ]	3r2_67					Partially Devoiced

Table 3.47: Fricative /s/ in Corpus 4 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
76	sítio	[u ˈsitju]	5_77				
77		[u ˈsitju]	5r1_77				
78		[u ˈsitju]	5r2_77				
79		[u ˈsitju]	11_77				
80		[u ˈsitju]	11r1_77				
81		[u ˈsitju]	11r2_77				
82	sede	[ɨ ˈsedɨ]	4_75				
83		[ɨ ˈsedɨ]	4r1_75				
84		[ɨ ˈsedɨ]	4r2_75				
85	seta	[ɐ ˈsɛt]	3_34				
86		[ɐ ˈsɛt]	3r1_34				
87		[ɐ ˈsɛt]	3r2_34				
88	sala	[a ˈsalɐ]	8_13				
89		[a ˈsalɐ]	8r1_13				
90		[a ˈsalɐ]	8r2_13				
91		[ɐ ˈsalɐ]	12_13				
92		[ɐ ˈsalɐ]	12r1_13				
93		[ɐ ˈsalɐ]	12r2_13				
94	só	[w sɔ]	6_5				
95		[w sɔ]	6r1_5				
96		[w sɔ]	6r2_5				
97	subir	[ɐ suˈbiɾ]	3_139				
98		[ɐ suˈbiɾ]	3r1_139				
99		[ɐ suˈbiɾ]	3r2_139				
100	benefício	[bɨnɨˈfi s ju]	1_49				
101		[bɨnɨˈfi s ju]	1r1_49				
102		[bɨnɨˈfi s ju]	1r2_49				
103	ressaca	[χˈ s akɐ]	7_82	-			
104		[χˈ s akɐ]	7r1_82	-			
105		[χˈ s akɐ]	7r2_82	-			
106	condessa	[kõˈdesɐ]	9_153				
107		[kõˈdesɐ]	9r1_153				
108		[kõˈdesɐ]	9r2_153				
109	assar	[ɐˈsaɾ]	12_137				
110		[ɐˈ s aɾ̥]	12r1_137				
111		[ɐˈsaɾ]	12r2_137				
112	possível	[pˈ s ivl]	11_95	-			
113		[pˈ s ivl]	11r1_95	-			
114		[pˈ s ivl]	11r2_95	-			
115	caça	[ˈkas]	7_35			-	
116		[ˈkas]	7r1_35			-	
117		[ˈkas]	7r2_35			-	
118	doce	[ˈdos]	1_56			-	
119		[ˈdos]	1r1_56			-	
120		[ˈdos]	1r2_56			-	

Table 3.48: Fricative /z/ in Corpus 4 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
121	Zita	[ɐ ˈzitɐ]	9_68					Devoiced
122		[ɐ ˈzit]	9r1_68					Devoiced
123		[ˈzitɐ]	9r2_68	-				Devoiced
124	Zé	[u zɛ]	6_85					Devoiced
125		[u zɛ]	6r1_85					Devoiced
126		[u zɛ]	6r2_85					Devoiced
127	zarpar	[ɐ zɐɾˈpaɾ]	3_113					Devoiced
128		[ɐ zɐɾˈpaɾ]	3r1_113					Devoiced
129		[ɐ zɐɾˈpaɾ]	3r2_113					Devoiced
130	zona	[ɐ ˈzonɐ]	2_84					Devoiced
131		[ɐ ˈzonɐ]	2r1_84					Partially Devoiced
132		[ɐ ˈzonɐ]	2r2_84					Voiced
133	mesinha	[mɨˈzi̯ɲɐ]	8_50					Devoiced
134		[mɨˈzi̯ɲɐ]	8r1_50					Devoiced
135		[mɨˈzi̯ɲɐ]	8r2_50					Devoiced
136	beleza	[bɨˈlezɐ]	4_135					Devoiced
137	Brasil	[bɾɐˈzil]	10_58					Devoiced
138		[bɾɐˈzil]	10r1_58					Devoiced
139		[bɾɐˈzil]	10r2_58					Devoiced
140	azul	[ɐˈzul]	10_33					Devoiced
141		[ɐˈzul]	10r1_33					Devoiced
142		[ɐˈzul]	10r2_33					Voiced
143	asa	[ˈazɐ]	3_19					Devoiced
144		[ˈazɐ]	3r1_19					Devoiced
145		[ˈazɐ]	3r2_19					Devoiced
146	rosa	[ˈχɔ z ɐ]	4_14					Voiced
147		[ˈʁɔ z ɐ]	4r1_14					Partially Devoiced
148		[ˈχɔ z ɐ]	4r2_14					Partially Devoiced
149	beleza	[bɨˈlez]	4r1_135			-		Devoiced
150		[bɨˈlez]	4r2_135			-		Devoiced
151	doze	[ˈdoz]	8_132			-		Devoiced
152		[ˈdoz]	8r1_132			-		Devoiced
153		[ˈdoz]	8r2_132			-		Devoiced

Table 3.49: Fricative /ʃ/ in Corpus 4 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
154	chegar	[w ʃɨˈgaɾ]	7_65				
155		[w ʃɨˈgaɾ]	7r1_65				
156		[w ʃɨˈgaɾ]	7r2_65				
157	chefe	[u ˈʃɛf]	4_11				
158		[u ˈʃɛf]	4r1_11				
159		[u ˈʃɛf]	4r2_11				
160	chá	[ɐ ʃa]	11_51				
161		[ɐ ʃa]	11r1_51				
162		[ɐ ʃa]	11r2_51				
163	choca	[ɐ ˈʃɔkɐ]	9_116				
164		[ɐ ˈʃɔkɐ]	9r1_116				
165		[ɐ ˈʃɔkɐ]	9r2_116				
166	chocha	[ɐ ˈʃoʃɐ]	1_80				
167		[ɐ ˈʃoʃɐ]	1r1_80				
168		[ɐ ˈʃoʃɐ]	1r2_80				
169	chorar	[u ʃuˈɾaɾ]	5_78				
170		[u ʃuˈɾaɾ]	5r1_78				
171		[u ʃuˈɾaɾ]	5r2_78				
172	meche	[ˈmɛʃɨ]	12_141				
173		[ˈmɛʃɨ]	12r2_141				
174	achar	[ɐˈʃaɾ]	11_114				
175		[ɐˈʃaɾ]	11r1_114				
176		[ɐˈʃaɾ]	11r2_114				
166	chocha	[ˈʃoʃɐ]	1_80				
167		[ˈʃoʃɐ]	1r1_80				
168		[ˈʃoʃɐ]	1r2_80				
177	meche	[ˈmɛʃ v]	12r1_141			-	

Table 3.50: Fricative /ʒ/ in Corpus 4 (Speaker CFGA).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
178	Gigi	[ɐ ʒ i'ʒi]	1_145					Voiced
179		[ɐ ʒ i'ʒi]	1r1_145					Voiced
180		[ɐ ʒ i'ʒi]	1r2_145					Partially Devoiced
181	gelo	[u 'ʒelu]	2_119					Devoiced
182		[u 'ʒelu]	2r1_119					Devoiced
183		[u 'ʒelu]	2r2_119					Devoiced
184	jóia	[ɐ 'ʒɔjɐ]	9_143					Devoiced
185		[ɐ 'ʒɔjɐ]	9r1_143					Devoiced
186		[ɐ 'ʒɔjɐ]	9r2_143					Devoiced
187	judeu	[u ʒu'dew]	6_32					Devoiced
188		[u ʒu'dew]	6r1_32					Devoiced
189		[u ʒu'dew]	6r2_32					Devoiced
178	Gigi	[ʒi' ʒ i]	1_145					Voiced
179		[ʒi' ʒ i]	1r1_145					Partially Devoiced
180		[ʒi' ʒ i]	1r2_145					Devoiced
190	arejar	[ɐɾɨ'ʒaɾ]	5_46					Partially Devoiced
191		[ɐɾɨ'ʒaɾ]	5r1_46					Devoiced
192		[ɐɾ'ʒaɾ]	5r2_46	-				Devoiced
193	ajudar	[ɐ'ʒudaɾ]	6_66					Devoiced
194		[ɐ'ʒudaɾ]	6r1_66					Devoiced
195		[ɐ'ʒudaɾ]	6r2_66					Devoiced
196	age	['aʒɨ]	1r2_79					Devoiced
197	hoje	['oʒɨ]	5r1_38					Devoiced
198		['oʒɨ]	5r2_38					Devoiced
199	foge	['fɔ ʒ ɨ]	2_155					Voiced
200		['fɔ ʒ ɨ]	2r1_155					Voiced
201		['fɔ ʒ ɨ]	2r2_155					Devoiced
202	mares	['maɾʒ]	10_130	-		-		Devoiced
203		['maɾʒ]	10r1_130	-		-		Devoiced
204		['maɾʒ]	10r2_130	-		-		Devoiced
205	age	['aʒ ɐ̃]	1_79					Devoiced
206		['aʒ ɐ̃]	1r1_79					Devoiced
207	hoje	['oʒ]	5_38			-		Devoiced
208	dos	['duʒ d]	8_138			-		Partially Devoiced
209		['duʒ d]	8r1_138			-		Devoiced
210		['duʒ d]	8r2_138			-		Devoiced
211		['dʒ m]	10_138	-		-		Devoiced
212		['duʒ m]	10r1_138			-		Devoiced
213		['duʒ m]	10r2_138			-		Devoiced

Table 3.51: Fricative /f/ in Corpus 4 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
1	fala	[u ˈfalɐ]	4_2				
2		[u ˈfalɐ]	4r1_2				
3		[u ˈfalɐ]	4r2_2				
4	foge	[ɐ ˈfɔʒɨ]	2_155				
5		[ɐ ˈfɔʒɨ]	2r1_155				
6		[ɐ ˈfɔʒɨ]	2r2_155				
7	fogo	[u ˈfogu]	10_101				
8		[u ˈfogu]	10r1_101				
9		[u ˈfogu]	10r2_101				
10	furar	[fuˈɾaɾ]	9_44	-			
11		[fuˈ̥ɾaɾ]	9r1_44	-			
12		[fuˈɾḁɾ]	9r2_44	-			
13	benefício	[bɨnɨˈfisju]	1_49				
14		[bɨnɨˈfisju]	1r1_49				
15		[bɨnɨˈfisju]	1r2_49				
16	benéfico	[bɨˈnɛfik]	8_89				
17		[bɨˈnɛfi]	8r1_89				
18		[bɨˈnɛfik]	8r2_89				
19	café	[kɐˈfɛ]	7_31				
20		[kɐˈfɛ]	7r1_31				
21		[kɐˈfɛ]	7r2_31				
22	chefe	[ˈʃɛfa]	4_11				
23		[ˈʃɛfa]	4r1_11				
24		[ˈʃɛfa]	4r2_11				

Table 3.52: Fricative /v/ (Word-Initial) in Corpus 4 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
25	viver	[d v i'veɾ]	8_122	-				Voiced
26		[d v i'veɾ]	8r1_122	-				Voiced
27		[i̥ v i'veɾ]	8r2_122					Devoiced
28	vermelho	[u vɨɾ'meʎu]	10_86					Voiced
29		[u vɨɾ'meʎu]	10r1_86					Devoiced
30		[u vɨɾ'meʎu]	10r2_86					Devoiced
31	ver	[veɾ]	8_102	-				Voiced
32		[veɾ]	8r1_102	-				Devoiced
33		[veɾ]	8r2_102	-				Voiced
34		[ʃ v eɾ]	12_102	-	-	-	-	Devoiced
35		[ʃ v eɾ̥]	12r1_102	-	-	-	-	Devoiced
36		[ʃ v eɾ]	12r2_102	-	-	-	-	Devoiced
37	vaca	[ɐ 'vakɐ]	2_92					Devoiced
38		[ɐ 'vakɐ]	2r1_92					Devoiced
39		[ɐ 'vakɐ]	2r2_92					Devoiced
40	volta	[d 'vɔltɐ]	8r1_81	-	-	-	-	Devoiced
41		[d 'vɔltɐ]	8r2_81	-	-	-	-	Devoiced
42	voo	[u vow]	3_17					Voiced
43		[u vow]	3r1_17					Partially Devoiced
44		[u vow]	3r2_17					Devoiced
45	vogar	[i 'vugaɾ]	5_7					Voiced
46		[i 'vugaɾ]	5r1_7					Voiced
47		[i 'vugaɾ]	5r2_7					Devoiced

Table 3.53: Fricative /v/ (Word-Medial and Word-Final) in Corpus 4 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
25	viver	[viˈ v ɐɾ]	8_122					Voiced
26		[viˈ v ɐɾ]	8r1_122					Devoiced
27		[viˈ v ɐɾ]	8r2_122					Voiced
48	possível	[puˈsi v ɛl]	11_95					Voiced
49		[puˈsi v ɛl]	11r1_95					Voiced
50		[puˈsi v ɛl]	11r2_95					Voiced
51	altivo	[alˈtivu]	4_124					Devoiced
52		[alˈtivu]	4r2_124					Partially Devoiced
53	dever	[dɨˈveɾ]	12_22					Devoiced
54		[dɨˈ v ɐɾ̥ɨ]	12r1_22					Devoiced
55		[dɨˈveɾ]	12r2_22					Voiced
56	avó	[ɐˈvɔ]	1_88					Partially Devoiced
57		[ɐˈvɔ]	1r1_88					Voiced
58		[ɐˈvɔ]	1r2_88					Voiced
59	ave	[ˈavɨ]	3_45					Devoiced
60		[ˈavɨ]	3r1_45					Devoiced
61		[ˈavɨ]	3r2_45					Devoiced
62	cava	[ˈkavɐ]	12_24					Devoiced
63		[ˈkavɐ]	12r1_24					Devoiced
64		[ˈkavɐ]	12r2_24					Devoiced
65	bravo	[ˈbɾavu]	6_100					Devoiced
66		[ˈbɾavu]	6r1_100					Voiced
67		[ˈbɾavu]	6r2_100					Devoiced
68	nova	[ˈnɔvɐ]	8_147					Voiced
69		[ˈnɔvɐ]	8r1_147					Voiced
70		[ˈnɔvɐ]	8r2_147					Voiced
71	altivo	[alˈtiv f]	4r1_124			-		Devoiced
72	move	[ˈmɔv ɐ]	3_67					Devoiced
73		[ˈmɔv ɐ]	3r1_67					Voiced
74		[ˈmɔv ɐ]	3r2_67					Devoiced

Table 3.54: Fricative /s/ in Corpus 4 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
75	sítio	[u ˈsitju]	5_77				
76		[u ˈsitju]	5r1_77				
77		[u ˈsitju]	5r2_77				
78		[u ˈsitju]	11_77				
79		[u ˈsitju]	11r1_77				
80		[u ˈsitju]	11r2_77				
81	sede	[d ˈsedɨ]	4_75	-			
82		[ˈsedɨ]	4r1_75	-			
83		[d ˈsedɨ]	4r2_75	-			
84	seta	[ɐ ˈsɛtɐ]	3_34				
85		[ɐ ˈsɛtɐ]	3r1_34				
86		[ɐ ˈsɛtɐ]	3r2_34				
87	sala	[a ˈsalɐ]	8r1_13				
88		[a ˈsalɐ]	8r2_13				
89		[ɐ ˈsalɐ]	12_13				
90		[ɐ ˈsalɐ]	12r1_13				
91		[ɐ ˈsalɐ]	12r2_13				
92	só	[w sɔ]	6_5				
93		[w sɔ]	6r1_5				
94		[w sɔ]	6r2_5				
95	subir	[ɐ suˈbiɾ]	3_139				
96		[w suˈbiɾ]	3r1_139				
97		[ɐ suˈbiɾ]	3r2_139				
98	benefício	[bɨnɨˈfi s ju]	1_49				
99		[bɨnɨˈfi s ju]	1r1_49				
100		[bɨnɨˈfi s ju]	1r2_49				
101	ressaca	[ɾ̥ˈ s akɐ]	7_82	-			
102		[ɾ̥ˈ s̆ akɐ]	7r1_82	-			
103		[ɾ̥ˈ s̆ akɐ]	7r2_82	-			
104	condessa	[kõ̆ˈdesɐ]	9_153				
105		[kõˈdesɐ]	9r1_153				
106		[kõˈdesɐ]	9r2_153				
107	assar	[ɐˈ s aɾ̥]	12_137				
108		[ɐˈsaɾ]	12r1_137				
109		[ɐˈ s aɾ̥]	12r2_137				
110	caça	[ˈkasɐ]	7_35				
111		[ˈkasɐ]	7r1_35				
112		[ˈkasɐ]	7r2_35				
113	possível	[puˈ s ivɛl]	11_95				
114		[puˈ s ivɛl]	11r1_95				
115		[puˈ s ivɛl]	11r2_95				
116	doce	[ˈdos]	1_56			-	
117		[ˈdos]	1r1_56			-	
118		[ˈdos]	1r2_56			-	

Table 3.55: Fricative /z/ in Corpus 4 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
119	Zita	[ɐ ˈzitɐ]	9_68					Devoiced
120		[ɐ ˈzitɐ]	9r1_68					Partially Devoiced
121		[ɐ ˈzitɐ]	9r2_68					Devoiced
122	Zé	[u zɛ]	6_85					Devoiced
123		[u zɛ]	6r1_85					Devoiced
124		[u zɛ]	6r2_85					Devoiced
125	zarpar	[ɐ zɐɾˈpaɾ]	3_113					Devoiced
126		[ɐ z ɐɾ̥ˈpaɾ]	3r1_113					Partially Devoiced
127		[ɐ z ɐɾ̥ˈpaɾ]	3r2_113					Devoiced
128	zona	[ɐ ˈzonɐ]	2_84					Devoiced
129		[ɐ ˈzonɐ]	2r1_84					Devoiced
130		[ɐ ˈzonɐ]	2r2_84					Devoiced
131	mesinha	[mɨˈziɲɐ]	8_50					Voiced
132		[mɨˈziɲɐ]	8r1_50					Devoiced
133		[mɨˈziɲɐ]	8r2_50					Devoiced
134	beleza	[bɨˈlezɐ]	4_135					Voiced
135		[bɨˈlezɐ]	4r1_135					Devoiced
136		[bɨˈlezɐ]	4r2_135					Devoiced
137	Brasil	[bɾɐˈzil]	10_58					Devoiced
138		[bɾ̥ɐˈz ɨl]	10r1_58					Devoiced
139		[bɾɐˈzil]	10r2_58					Devoiced
140	azul	[ɐˈzul]	10_33					Devoiced
141		[ɐˈzul]	10r1_33					Devoiced
142		[ɐˈzul]	10r2_33					Devoiced
143	asa	[ˈazɐ]	3_19					Devoiced
144		[ˈazɐ]	3r1_19					Devoiced
145		[ˈazɐ]	3r2_19					Voiced
146	rosa	[ˈɾozɐ]	4_14					Devoiced
147		[ˈɾozɐ]	4r1_14					Devoiced
148		[ˈɾozɐ]	4r2_14					Devoiced
149	doze	[ˈdozɨ]	8r2_132					Devoiced
150	doze	[ˈdoz]	8_132			-		Devoiced
151		[ˈdoz]	8r1_132			-		Devoiced

Table 3.56: Fricative /ʃ/ in Corpus 4 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
152	chegar	[w ʃɨˈgaɾ]	7_65				
153		[w ʃɨˈgaɾ]	7r1_65				
154		[w ʃˈgaɾ]	7r2_65			-	
155	chefe	[u ˈʃɛf]	4_11				
156		[u ˈʃɛf]	4r1_11				
157		[u ˈʃɛf]	4r2_11				
158	chá	[ɐ ʃa]	11_51				
159		[ɐ ʃa]	11r1_51				
160		[ɐ ʃa]	11r2_51				
161	choca	[ɐ ˈʃɔkɐ]	9_116				
162		[ɐ ˈʃɔkɐ]	9r1_116				
163		[ɐ ˈʃɔkɐ]	9r2_116				
164	chocha	[ɐ ˈʃoʃɐ]	1_80				
165		[ɐ ˈʃoʃɐ]	1r1_80				
166		[ɐ ˈʃoʃɐ]	1r2_80				
167	chorar	[u ʃuˈɾaɾ]	5_78				
168		[u ʃuˈɾaɾ]	5r1_78				
169		[u ʃuˈɾaɾ]	5r2_78				
170	achar	[ɐˈʃaɾ]	11_114				
171		[ɐˈʃaɾ]	11r1_114				
172		[ɐˈʃaɾ]	11r2_114				
164	chocha	[ˈʃoʃ ɐ]	1_80				
165		[ˈʃoʃ ɐ]	1r1_80				
166		[ˈʃoʃ ɐ]	1r2_80				
173	meche	[ˈmɛʃ v]	12_141			-	
174		[ˈmɛʃ v]	12r1_141			-	
175		[ˈmɛʃ v]	12r2_141			-	

Table 3.57: Fricative /ʒ/ in Corpus 4 (Speaker ACC).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
176	Gigi	[ɐ ʒ i ˈʒi]	1_145					Devoiced
177		[ɐ ʒ i ˈʒi]	1r1_145					Devoiced
178		[ɐ ʒ i ˈʒi]	1r2_145					Devoiced
179	gelo	[u ˈʒelu]	2_119					Partially Devoiced
180		[u ˈʒelu]	2r1_119					Partially Devoiced
181		[u ˈʒelu]	2r2_119					Devoiced
182	jóia	[ɐ ˈʒɔjɐ]	9_143					Devoiced
183		[ɐ ˈʒɔjɐ]	9r1_143					Devoiced
184		[ɐ ˈʒɔjɐ]	9r2_143					Devoiced
185	judeu	[u ʒu ˈdew]	6_32					Devoiced
186		[u ʒu ˈdew]	6r1_32					Devoiced
187		[u ʒu ˈdew]	6r2_32					Partially Devoiced
176	Gigi	[ʒi ˈ ʒ i]	1_145					Devoiced
177		[ʒi ˈ ʒ i]	1r1_145					Devoiced
178		[ʒi ˈ ʒ i]	1r2_145					Devoiced
188	arejar	[ɐɾ ˈʒaɾ]	5_46	-				Partially Devoiced
189		[ɐɾ ˈʒaɾ]	5r1_46	-				Partially Devoiced
190		[ɐɾ ˈʒaɾ]	5r2_46	-				Partially Devoiced
191	ajudar	[ɐ ˈʒudaɾ]	6_66					Devoiced
192		[ɐ ˈʒudaɾ]	6r1_66					Devoiced
193		[ɐ ˈʒudaɾ]	6r2_66					Devoiced
194	age	[ˈaʒ ɨ]	1_79					Devoiced
195		[ˈaʒ ɨ]	1r1_79					Devoiced
196		[ˈaʒ ɨ]	1r2_79					Devoiced
197	hoje	[ˈoʒ ɨ]	5_38					Voiced
198		[ˈoʒ ɨ]	5r1_38					Devoiced
199		[ˈoʒ ɨ]	5r2_38					Devoiced
200	foge	[ˈfɔ ʒ ɨ]	2_155					Devoiced
201		[ˈfɔ ʒ ɨ]	2r1_155					Devoiced
202		[ˈfɔ ʒ ɨ]	2r2_155					Voiced
203	mares	[ˈmaɾʒ]	10_130	-		-		Devoiced
204		[ˈmaɾʒ d]	10r1_130	-		-		Partially Devoiced
205		[ˈmaɾʒ d]	10r2_130	-		-		Devoiced
206	dos	[ˈduʒ]	8_138			-		Devoiced
207		[ˈduʒ d]	8r1_138			-		Voiced
208		[ˈduʒ]	8r2_138			-		Voiced
209		[ˈduʒ m]	10_138			-		Partially Devoiced
210		[ˈduʒ]	10r1_138			-		Voiced
211		[ˈduʒ]	10r2_138			-		Partially Devoiced

Table 3.58: Fricative /f/ in Corpus 4 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
1	fala	[u ˈfalɐ]	4_2				
2		[u ˈfalɐ]	4r_2				
3	foge	[ɐ ˈfɔʒɨ]	2_155				
4		[ɐ ˈfɔʒɨ]	2r_155				
5	fogo	[u ˈfogu]	10_101				
6		[u ˈfogu]	10r_101				
7	furar	[fuˈɾaɾ]	9_44	-			
8		[fuˈɾaɾ]	9r_44	-			
9	benefício	[bɨnɨˈfisju]	1_49				
10		[bɨnɨˈfisju]	1r_49				
11	benéfico	[bɨˈnɛfik]	8_89				
12		[bɨˈnɛfik]	8r_89				
13	café	[kɐˈfɛ]	7_31				
14		[kɐˈfɛ]	7r_31				
15	chefe	[ˈʃɛfa]	4_11				
16		[ˈʃɛfa]	4r_11				

Table 3.59: Fricative /v/ in Corpus 4 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
17	viver	[d v i'veɾ]	8_122	-				Devoiced
18		[d v i'veɾ]	8r_122	-				Devoiced
19	vermelho	[u vɨɾ'meʎu]	10_86					Voiced
20		[u vɨɾ'meʎu]	10r_86					Partially Devoiced
21	ver	[veɾ]	8_102	-				Voiced
22		[veɾ]	8r_102	-				Voiced
23		[ʃ veɾ]	12_102	-				Voiced
24		[ʃ veɾ]	12r_102	-				Devoiced
25	vaca	[ɐ 'vakɐ]	2_92					Devoiced
26		[ɐ 'vakɐ]	2r_92					Voiced
27	volta	[d 'vɔltɐ]	8_81	-				Voiced
28		[d 'vɔltɐ]	8r_81	-				Partially Devoiced
29	voo	[u vow]	3_17					Voiced
30		[u vow]	3r_17					Voiced
31	vogar	[i 'vugaɾ]	5_7					Devoiced
32		[i 'vugaɾ]	5r_7					Devoiced
17	viver	[vi v eɾ]	8_122					Voiced
18		[vi v eɾ]	8r_122					Voiced
33	possível	[p'si v ɛl]	11_95					Voiced
34		[p'si v ɛl]	11r_95					Voiced
35	dever	[dɨ'veɾ]	12_22					Partially Devoiced
36		[d'veɾ]	12r_22	-				Voiced
37	avó	[ɐ'vɔ]	1_88					Devoiced
38		[ɐ'vɔ]	1r_88					Devoiced
39	ave	['avɨ]	3_45					Devoiced
40		['avɨ]	3r_45					Voiced
41	cava	['kavɐ]	12_24					Voiced
42		['kavɐ]	12r_24					Voiced
43	bravo	['bɾavu]	6_100					Voiced
44		['bɾavu]	6r_100					Voiced
45	nova	['nɔvɐ]	8_147					Devoiced
46		['nɔvɐ]	8r_147					Devoiced
47	altivo	[al'tiv f]	4_124			-		Voiced
48		[al'tiv f]	4r_124			-		Voiced
49	move	['mɔv ɐ]	3_67					Devoiced
50		['mɔv ɐ]	3r_67					Devoiced

Table 3.60: Fricative /s/ in Corpus 4 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
51	sítio	[u ˈsitju]	5_77				
52		[u ˈsitju]	5r_77				
53		[u ˈsitju]	11_77				
54		[u ˈsitju]	11r_77				
55	sede	[d ˈsedɨ]	4_75	-			
56		[d ˈsedɨ]	4r_75	-			
57	seta	[ɐ ˈsɛtɐ]	3_34				
58		[ɐ ˈsɛtɐ]	3r_34				
59	sala	[ɐ ˈsalɐ]	8_13				
60		[ɐ ˈsalɐ]	8r_13				
61		[ɐ ˈsalɐ]	12_13				
62		[ɐ ˈsalɐ]	12r_13				
63	só	[w sɔ]	6_5				
64		[w sɔ]	6r_5				
65	subir	[ɐ suˈbiɾ]	3_139				
66		[ɐ [s] uˈbiɾ̥]	3r_139				
67	benefício	[bɨnɨˈfi [s] ju]	1_49				
68		[bɨnɨˈfi [s] ju]	1r_49				
69	ressaca	[χˈ [s] akɐ]	7_82	-			
70		[χˈ [s] akɐ]	7r_82	-			
71	condessa	[kõˈdesɐ]	9_153				
72		[kõˈdesɐ]	9r_153				
73	assar	[ɐˈ [s] aɾ̥]	12_137				
74		[ɐˈ [s] aɾ̥]	12r_137				
75	caça	[ˈkasɐ]	7_35				
76		[ˈkasɐ]	7r_35				
77	possível	[pˈ [s] ivɛl]	11_95	-			
78		[pˈ [s] ivɛl]	11r_95	-			
79	doce	[ˈdos]	1_56			-	
80		[ˈdos]	1r_56			-	

Table 3.61: Fricative /z/ in Corpus 4 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
81	Zita	[ɐ ˈzitɐ]	9_68					Devoiced
82		[ɐ ˈzitɐ]	9r_68					Voiced
83	Zé	[u zɛ]	6_85					Partially Devoiced
84		[u zɛ]	6r_85					Devoiced
85	zarpar	[ɐ zɐɾˈpaɾ]	3_113					Devoiced
86		[ɐ zɐɾˈpaɾ]	3r_113					Devoiced
87	zona	[ɐ ˈzonɐ]	2_84					Devoiced
88		[ɐ ˈzonɐ]	2r_84					Devoiced
89	mesinha	[mɨˈziɲɐ]	8_50					Devoiced
90		[mɨˈziɲɐ]	8r_50					Devoiced
91	beleza	[bɨˈlezɐ]	4_135					Devoiced
92		[bɨˈlezɐ]	4r_135					Devoiced
93	Brasil	[bɾɐˈzil]	10_58					Voiced
94		[bɾɐˈzil]	10r_58					Devoiced
95	azul	[ɐˈzul]	10_33					Partially Devoiced
96		[ɐˈzul]	10r_33					Partially Devoiced
97	asa	[ˈazɐ]	3_19					Devoiced
98		[ˈazɐ]	3r_19					Devoiced
99	rosa	[ˈχɔ z ɐ]	4_14					Partially Devoiced
100		[ˈχɔ z ɐ]	4r_14					Voiced
101	doze	[ˈdoz]	8_132			-		Devoiced
102		[ˈdoz]	8r_132			-		Devoiced

Table 3.62: Fricative /ʃ/ in Corpus 4 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}
103	chegar	[w ʃˈgaɾ]	7_65			-	
104		[w ʃˈgaɾ]	7r_65			-	
105	chefe	[u ˈʃɛf]	4_11				
106		[u ˈʃɛf]	4r_11				
107	chá	[ɐ ʃa]	11_51				
108		[ɐ ʃa]	11r_51				
109	choca	[ɐ ˈʃɔkɐ]	9_116				
110		[ɐ ˈʃɔkɐ]	9r_116				
111	chocha	[ɐ ˈʃoʃɐ]	1_80				
112		[ɐ ˈʃoʃɐ]	1r_80				
113	chorar	[ɾ ʃuˈɾaɾ]	5_78	-			
114		[ɾ ʃuˈɾaɾ]	5r_78	-			
115	achar	[ɐˈʃaɾ]	11_114				
116		[ɐˈʃaɾ̥]	11r_114				
111	chocha	[ˈʃoʃɐ]	1_80				
112		[ˈʃoʃɐ]	1r_80				
117	meche	[ˈmɛʃ v]	12_141			-	
118		[ˈmɛʃ v]	12r_141			-	

Table 3.63: Fricative /ʒ/ in Corpus 4 (Speaker ISSS).

	Example	IPA	File N.	VF (ms)	F (ms)	FV (ms)	r_{σ^2}	Voicing
119	Gigi	[ɐ ʒ i'ʒi]	1_145					Partially Devoiced
120		[ɐ ʒ i'ʒi]	1r_145					Devoiced
121	gelo	[u 'ʒelu]	2_119					Partially Devoiced
122		[u 'ʒelu]	2r_119					Partially Devoiced
123	jóia	[ɐ 'ʒɔjɐ]	9_143					Devoiced
124		[ɐ 'ʒɔjɐ]	9r_143					Devoiced
125	judeu	[u ʒu'dew]	6_32					Devoiced
126		[u ʒu'dew]	6r_32					Devoiced
119	Gigi	[ʒi' ʒ i]	1_145					Devoiced
120		[ʒi' ʒ i]	1r_145					Voiced
127	arejar	[ɐɾi̥ ʒ aɾ]	5_46					Devoiced
128		[ɐɾ̥' ʒ aɾ]	5r_46	-				Partially Devoiced
129	ajudar	[ɐ'ʒudaɾ]	6_66					Devoiced
130		[ɐ'ʒudaɾ]	6r_66					Devoiced
131	age	['aʒi̥]	1_79					Devoiced
132		['aʒi̥]	1r_79					Devoiced
133	hoje	['oʒi̥]	5r_38					Devoiced
134	foge	['fɔ ʒ i̥]	2_155					Partially Devoiced
135		['fɔ ʒ i̥]	2r_155					Devoiced
136	dos	['duʒi̥]	8_138					Partially Devoiced
137	mares	['maɾʒ]	10_130	-		-		Devoiced
138		['maɾʒ]	10r_130	-		-		Devoiced
139	hoje	['oʒ]	5_38			-		Devoiced
140	dos	['duʒ]	8r_138			-		Devoiced
141		['duʒ]	10_138			-		Devoiced
142		['duʒ]	10r_138			-		Devoiced