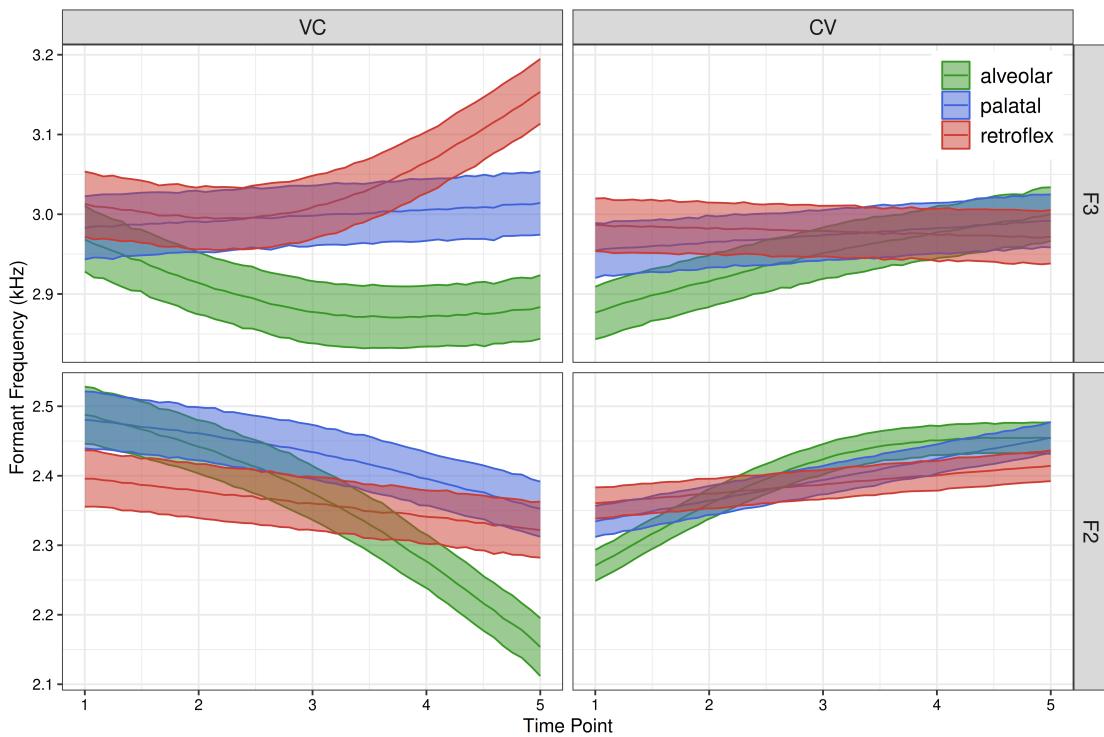
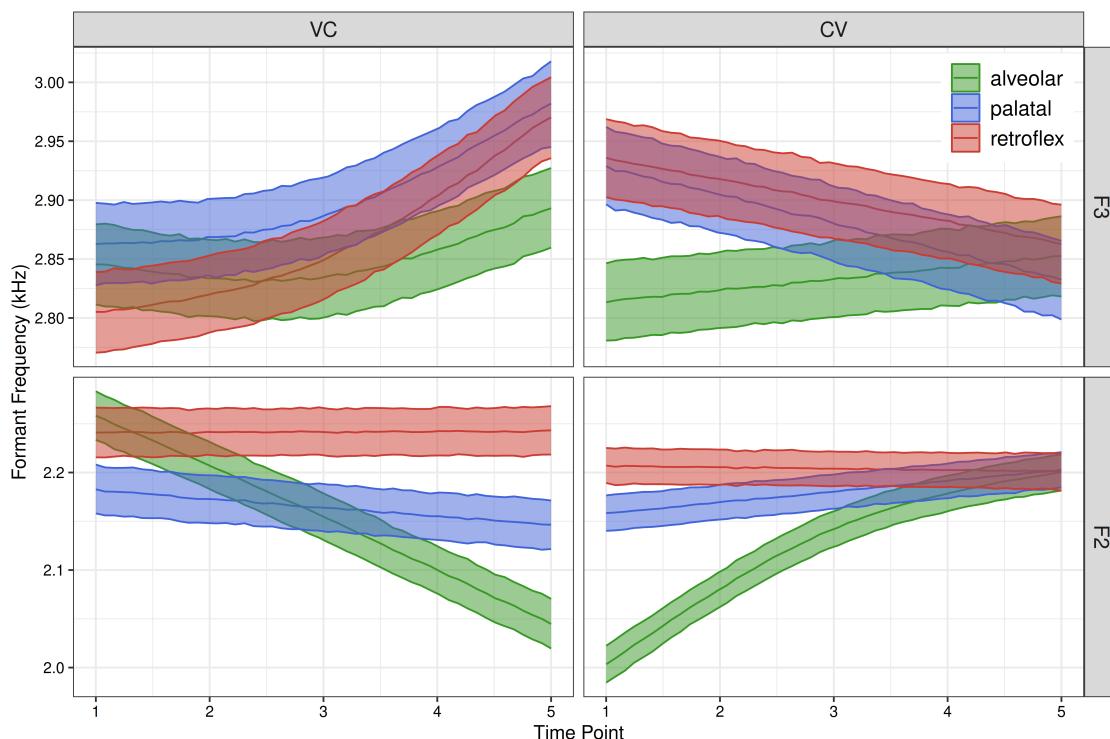


<b>Parameter</b>	<b>Position</b>	<b>Alveolar – Palatal</b>	<b>Alveolar – Retroflex</b>	<b>Palatal – Retroflex</b>
AMP (dB)	VCV	-1.552 [-2.7, -0.4] Ss: P>A: 9; P=A: 6; A<P: 1	-2.328 [-3.6, -1.0] Ss: R>A: 11; A=R: 4; A>R: 1	-0.747 [-1.8, 0.2] Ss: P=R: 11; R>P: 4
	CV	-2.124 [-3.4, -1.0] Ss: P>A: 12; P=A: 3; A>P: 1	-2.645 [-3.9, -1.3] Ss: R>A: 13; A=R: 2; A>R: 1	-0.486 [-1.5, 0.5] Ss: P=R: 13; R>P: 3
SPF (kHz)	VCV	2.947 [ 2.5, 3.4] Ss: A>P: 16	3.181 [ 2.8, 3.6] Ss: A>R: 16	0.229 [-0.0, 0.5] Ss: P=R: 14; P>R: 2
	CV	3.123 [ 2.7, 3.5] Ss: A>P: 16	3.535 [ 3.1, 3.9] Ss: A>R: 16	0.407 [ 0.2, 0.6] Ss: P>R: 8; P=R: 8
LF TILT	VCV	-0.769 [-2.0, 0.5] Ss: P=A: 11; P>A: 4; A>P: 1	-1.723 [-3.0, -0.4] Ss: R=A: 9; R>A: 7	-0.957 [-1.9, -0.1] Ss: P=R: 15; R>P: 1
	CV	-2.252 [-3.5, -1.0] Ss: P>A: 8; P=A: 8	-2.820 [-4.1, -1.5] Ss: R>A: 10; R=A: 6	-0.550 [-1.5, 0.4] Ss: R=A: 16
HF TILT	VCV	-1.853 [-2.9, -0.7] Ss: P>A: 9; P=A: 7	-1.885 [-3.0, -0.7] Ss: R>A: 9; R=A: 7	-0.041 [-0.7, 0.6] Ss: P=R: 16
	CV	-2.301 [-3.3, -1.2] Ss: P>A: 10; P=A: 6	-2.464 [-3.6, -1.3] Ss: R>A: 11; R=A: 5	-0.162 [-0.8, 0.4] Ss: P=R: 16
$\mu_1$ (kHz)	VCV	2.234 [ 1.9, 2.6] Ss: A>P: 16	2.488 [ 2.1, 2.8] Ss: A>R: 16	0.251 [ 0.0, 0.5] Ss: P=R: 10; P>R: 6
	CV	2.351 [ 2.0, 2.7] Ss: A>P: 16	2.631 [ 2.3, 3.0] Ss: A>R: 16	0.276 [ 0.1, 0.5] Ss: P=R: 9; P>R: 7
$\mu_2$ (kHz)	VCV	0.065 [-0.1, 0.3] Ss: A>P: 6; P>A: 5; A=P: 5	0.133 [-0.1, 0.3] Ss: A>R: 6; A=R: 6; R>A: 4	0.069 [ 0.0, 0.5] Ss: P=R: 12; P>R: 4
	CV	-0.069 [-0.3, 0.1] Ss: P>A: 10; A>P: 5; A=P: 1	-0.048 [-0.2, 0.2] Ss: R>A: 10; A>R: 6	0.021 [-0.1, 0.1] Ss: P=R: 12; P>R: 3; R>P: 1
$\mu_3$	VCV	-1.620 [-2.0, -1.3] Ss: P>A: 16	-1.851 [-2.2, -1.5] Ss: R>A: 16	-0.228 [-0.4, -0.0] Ss: P=R: 11; R>P: 5
	CV	-1.655 [-2.0, -1.3] Ss: P>A: 16	-1.898 [-2.3, -1.6] Ss: R>A: 16	-0.242 [-0.5, -0.0] Ss: P=R: 11; R>P: 5
$\mu_4$	VCV	0.953 [-0.4, 2.2] Ss: A>P: 7; A=P: 5; P>A: 4	0.925 [-0.6, 2.4] Ss: A>R: 8; R>A: 4; A=R: 4	-0.025 [-0.7, 0.7] Ss: P=R: 14; P>R: 1; R>P: 1
	CV	1.073 [-0.3, 2.4] Ss: A>P: 7; A=P: 5; P>A: 4	0.816 [-0.7, 2.3] Ss: A>R: 8; R>A: 4; A=R: 4	-0.258 [-1.0, 0.4] Ss: P=R: 14; P>R: 1; R>P: 1

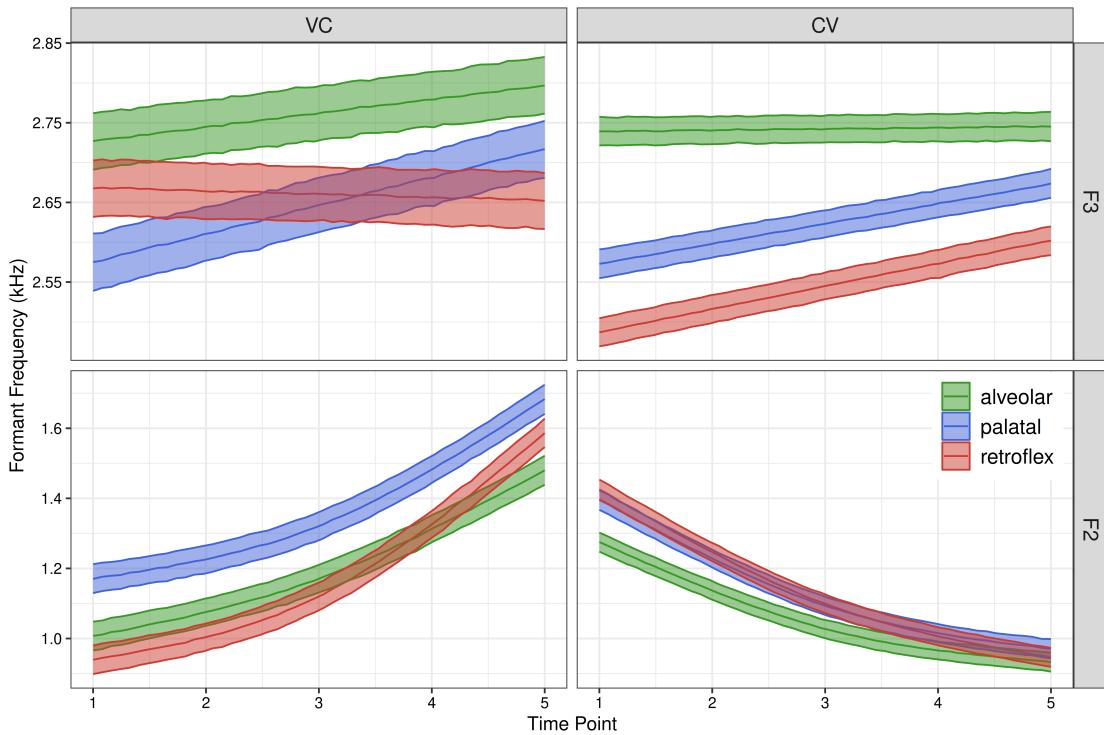
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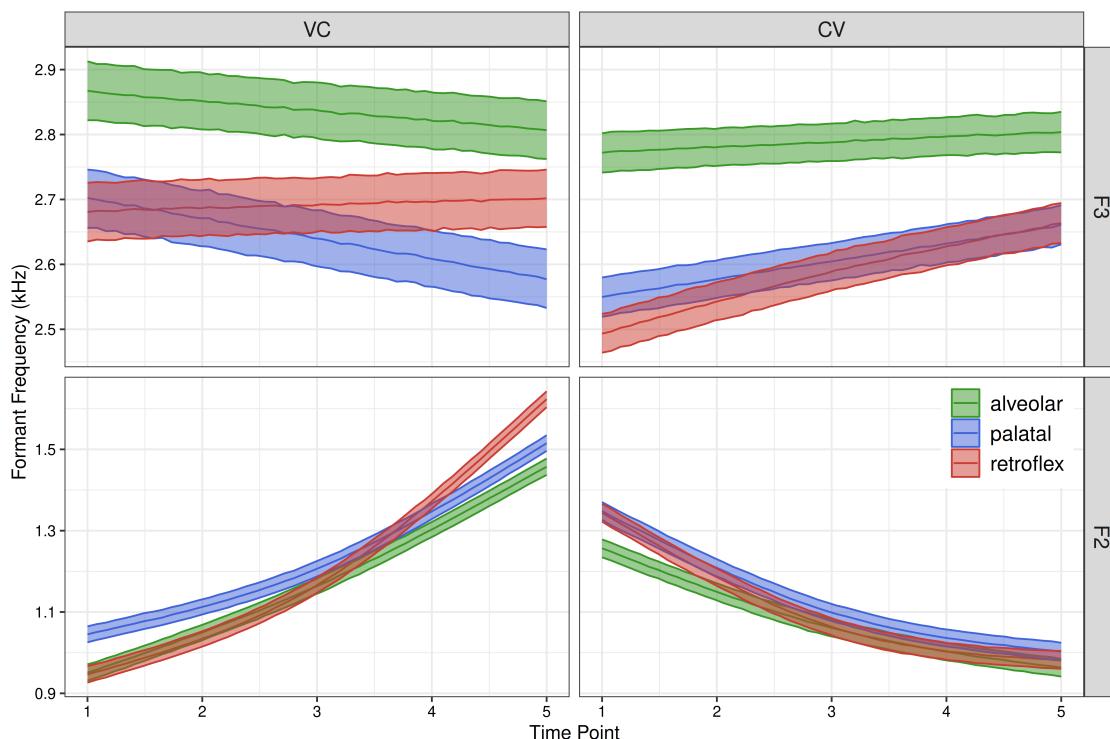
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## Time Periods of Significant Formant Contrasts

<b>Vowel</b>	<b>Position</b>	<b>Formant</b>	<b>Alv. – Pal.</b>	<b>Alv – Ret.</b>	<b>Pal – Ret.</b>
/i/	VC	F2	– (86-90)	~	~
		F3	~	– (75-90)	~
	CV	F2	~	~	~
		F3	~	~	~
	VC	F2	~	– (73-90)	~
		F3	~	~	~
	CV	F2	– (10-23)	– (10-28)	~
		F3	~	~	~
/e/	VC	F2	– (70-90)	– (74-90)	~
		F3	~	~	~
	CV	F2	– (10-35)	– (10-17)	+ (10-50)
		F3	~	+ (26-50)	~
	VC	F2	– (50-56)	– (81-90)	+ (50-61) – (87-90)
		F3	+ (57-90)	+ (54-90)	~
	CV	F2	– (10-11)	~	~
		F3	+ (10-50)	+ (10-50)	~
/a/	VC	F2	– (74-90)	~	+ (50-79)
		F3	+ (50-55)	~	~
	CV	F2	– (10-14)	– (10-21)	~
		F3	+ (10-50)	+ (10-50)	+ (10-47)

## Supervised Model Results (CV)

<b>Speaker</b>	<b>POA</b>	<b>p_alv</b>	<b>p_pal</b>	<b>p_ret</b>
F01	alveolar	87.6	6.6	5.8
F01	palatal	12.2	48.3	39.6
F01	retroflex	1.4	35.1	63.5
F02	alveolar	94.8	4.1	1.1
F02	palatal	2.8	54.6	42.6
F02	retroflex	3.2	42.7	54.2
F03	alveolar	95.3	3.9	0.8
F03	palatal	2.3	52.5	45.1
F03	retroflex	1.6	36.2	62.3
F04	alveolar	89.8	7.0	3.2
F04	palatal	3.6	56.4	40.1
F04	retroflex	2.7	42.1	55.2
F05	alveolar	82.6	12.1	5.3
F05	palatal	7.6	50.9	41.5
F05	retroflex	5.4	50.4	44.2
F06	alveolar	95.4	3.6	1.1
F06	palatal	2.1	52.7	45.2
F06	retroflex	2.7	39.0	58.3
F07	alveolar	71.6	15.0	13.4
F07	palatal	13.0	51.7	35.3
F07	retroflex	8.9	39.8	51.4
F08	alveolar	93.6	5.2	1.2
F08	palatal	3.6	50.7	45.7
F08	retroflex	2.5	43.5	53.9
M01	alveolar	95.3	3.4	1.3
M01	palatal	2.0	47.6	50.4

M01 retroflex 1.5 49.0 49.5

M02 alveolar 96.4 2.7 0.9  
M02 palatal 1.6 47.1 51.3  
M02 retroflex 1.9 44.7 53.4

M03 alveolar 77.7 16.0 6.2  
M03 palatal 13.5 49.8 36.7  
M03 retroflex 2.4 48.5 49.1

M04 alveolar 84.8 12.5 2.7  
M04 palatal 10.7 48.1 41.2  
M04 retroflex 5.8 43.9 50.3

M05 alveolar 91.7 6.4 1.9  
M05 palatal 4.4 52.4 43.2  
M05 retroflex 3.8 49.9 46.2

M06 alveolar 88.6 7.6 3.8  
M06 palatal 3.3 51.4 45.3  
M06 retroflex 4.4 45.7 49.9

M07 alveolar 96.2 2.8 0.9  
M07 palatal 14.1 43.3 42.6  
M07 retroflex 0.6 41.2 58.2

M08 alveolar 86.9 9.0 4.1  
M08 palatal 17.9 56.4 25.6  
M08 retroflex 1.1 34.1 64.9

## Supervised Model Results (VCV)

<b>Speaker</b>	<b>POA</b>	<b>p_alv</b>	<b>p_pal</b>	<b>p_ret</b>
F01	alveolar	76.2	16.9	6.8
F01	palatal	32.1	34.4	33.5
F01	retroflex	1.5	31.1	67.4
F02	alveolar	77.0	18.8	4.3
F02	palatal	16.5	45.6	37.8
F02	retroflex	7.1	40.9	52.0
F03	alveolar	81.0	15.6	3.5
F03	palatal	11.1	42.5	46.4
F03	retroflex	7.5	33.9	58.6
F04	alveolar	75.3	15.3	9.4
F04	palatal	14.0	42.4	43.6
F04	retroflex	5.9	40.0	54.1
F05	alveolar	68.0	23.0	9.0
F05	palatal	25.1	44.8	30.1
F05	retroflex	5.7	38.5	55.8
F06	alveolar	70.9	23.1	6.0
F06	palatal	15.4	50.2	34.4
F06	retroflex	9.0	39.2	51.8
F07	alveolar	58.0	29.9	12.1
F07	palatal	24.8	42.5	32.7
F07	retroflex	12.1	37.6	50.3
F08	alveolar	84.6	12.6	2.7
F08	palatal	15.4	45.4	39.2
F08	retroflex	4.0	40.3	55.7
M01	alveolar	83.0	12.1	4.9
M01	palatal	10.1	51.7	38.2

M01 retroflex 5.2 40.4 54.4

M02 alveolar 80.8 14.2 5.0  
M02 palatal 13.0 48.7 38.2  
M02 retroflex 8.4 40.5 51.2

M03 alveolar 60.8 26.7 12.5  
M03 palatal 20.9 48.6 30.6  
M03 retroflex 10.0 38.8 51.2

M04 alveolar 70.6 21.2 8.2  
M04 palatal 11.8 48.7 39.5  
M04 retroflex 9.6 41.1 49.3

M05 alveolar 69.5 23.9 6.6  
M05 palatal 12.8 51.3 36.0  
M05 retroflex 7.9 39.7 52.4

M06 alveolar 73.6 17.9 8.5  
M06 palatal 9.5 47.7 42.8  
M06 retroflex 10.2 37.0 52.9

M07 alveolar 80.8 15.5 3.7  
M07 palatal 17.6 42.2 40.2  
M07 retroflex 4.2 39.3 56.5

M08 alveolar 67.8 22.8 9.5  
M08 palatal 34.1 44.9 21.0  
M08 retroflex 2.7 36.1 61.2