

Appendix A: List of words for English monophthongs taken from ISC

NOTE: the letters following the words refer to the subjects' identification code.

List of words for English monophthongs taken from ISC (female Persian subjects):

/i:/	/ɪ/	/e/	/æ/
easy_n	big_n	educated_m	badly_n
people_n	big_n	get_m	actually_n
achieve_m	big_n	better_m	have_n
teach_m	sixteen_m	better_m	bad_n
season_m	specific_m	better_m	have_n
peaceful_s	big_m	educated_m	have_m
easily_s	decision_s	get_m	back_m
see_s	decision_s	seventeen_s	have_m
eager_s	different_s	best_s	have_m
peaceful_f.s	visit_s	better_s	satisfy_s
people_f.s	visit_f.s	better_s	have_s
people_f.s	big_f.s	less_s	have_s
see_f.s	big_f.s	less_s	back_s
Egypt_f.s	visit_f.s	best_s	back_s
see_f.s	big_y	best_s	bad_f.s
people_f.s	conditions_y	better_s	have_f.s
easily_y	sixteen_sh	seventeen_f.s	fashion_f.s
people_y	kidds_sh	best_f.s	have_f.s
people_y	sixteen_f.e	seven_y	actually_y
easily_y	pick_f.e	better_sh	back_y
people_sh	sister_f.e	decoration_sh	have_y
teachers_f.e	sister_f.e	better_f.e	have_y
people_f.e	sister_f.e	better_f.e	have_sh
people_f.e	big_f.e	better_f.e	have_sh
people_f.e		better_f.e	have_sh
people_f.e			have_sh
			bad_sh
			back_sh
			back_sh
			have_sh
			back_f.e
			back_f.e
			have_f.e
			accent_f.e
			have_f.e
			have_f.e
			has_f.e
			has_f.e
			have_f.e

/ɑ:/	/ʌ/	/ɒ/	/ɔ:/	/ʊ/	/u:/	/ɜ:/
hard_n	study_n	impossible_n	daughter_m	good_n	do_n	person_n
father_s	study_n	shopping_m	daughter_s	good_n	do_n	curly_n
father_s	study_n	shopping_m	talk_f.s	good_n	too_n	university_m
father_f.e	study_m	shop_m	talk_y	good_n	do_m	person_m
father_f.e	other_m	cottage_m	thought_y	good_n	do_s	third_m
	husband_m	stock_m		good_n	two_y	university_f.s
	studying_s	stock_m		good_n	two_sh	university_y
	just_s	job_s		good_n	do_sh	
	just_s	bother_s		good_m	two_f.e	
	study_s	doctor_s		good_m	do_f.e	
	study_s	office_s		good_s	too_f.e	
	study_s	doctor_s		good_s		
	husband_f.s	cottage_s		good_f.s		
	study_f.s	cottage_s		good_f.s		
	study_f.s	population_s		good_y		
	just_f.s	job_s		good_y		
	study_y	body_s		good_sh		
	study_y	job_f.s		good_sh		
	study_y	doctor_f.s		good_sh		
	public_y	job_y				
	just_y	shopping_y				
	studies_sh	job_f.e				
	studying_sh	job_f.e				
	studying_sh	hot_f.e				
	study_sh					
	study_sh					
	study_sh					
	study_sh					
	study_sh					
	study_sh					
	just_sh					
	studying_f.e					
	study_f.e					
	studying_f.e					
	studying_f.e					

List of words for English monophthongs taken from ISC (male Persian subjects):

/i:/	/ɪ/	/e/	/æ/
Egypt_sab	visit_sab	get_sab	actually_sab
people_sab	visit_sab	better_sab	actually_sab
people_sab	kids_sab	better_sab	actually_sab
beach_sab	kid_sab	accept_a.h.m	actually_sab
even_a.h.m	big_sab	second_a.h.m	actually_sab
people_a.h.s	sixteen_a.h.m	get_m	actually_sab
people_m	business_a.h.m	better_m	actually_sab
people_m	business_a.h.m	better_m	actually_sab
people_m	visit_a.h.m	better_m	having_sab
sea_m	city_a.h.s	better_m	actually_sab
sea_m	visit_a.h.s	better_m	have_sab
beach_m	city_a.h.s	better_h	actually_sab
sea_m	visit_a.h.s	get_h	actually_sab
see_h	give_m	best_m.a	actually_a.h.m
beaches_h	exam_m	best_m.a	exam_a.h.m
beaches_h	big_m	penthouse_m.a	have_a.h.m
see_h	visual_h		actually_a.h.m
see_h	big_h		actually_a.h.m
beaches_h	visit_h		have_a.h.s
see_h	civil_m.a		has_a.h.s
see_h	civil_m.a		has_a.h.s
see_h	civil_m.a		have_a.h.s
seeking_m.a	certificate_m.a		back_m
	different_m.a		has_m
	different_m.a		have_m
			has_m
			have_h
			have_m.a
			bachelor_m.a
			have_m.a
			have_m.a

/ɑ:/	/ʌ/	/ɒ/	/ɔ:/	/ʊ/	/u:/	/ɜ:/
Pass_a.h.m	study_sab	doctor_a.h.m	talk_a.h.m	good_sab	too_sab	Germany
pass_m	governor_sab	doctor_a.h.m		good_sab	do_sab	_sab
fast_h	study_sab	doctor_a.h.m		good_a.h.m	too_sab	girl_sab
father_m.a	study_sab	job_a.h.m		good_a.h.m	do_sab	surgeon_a
	governor_sab	doctor_a.h.m		good_a.h.m	two_sab	.h.m
	studying_a.h.m	job_a.h.s		good_m	do_sab	
	study_a.h.m	office_h		good_h	two_m	
	study_a.h.m	office_h		good_h	two_m	
	study_a.h.m	job_m.a			do_m	
	study_a.h.m	job_m.a			choose_m	
	study_a.h.s				two_h	
	study_a.h.s				two_h	
	study_m				two_m.a	
	study_m				choose_m.a	
	study_m					
	study_m					
	study_h					
	study_m.a					
	study_m.a					
	study_m.a					

List of words for English diphthongs taken from ISC (female Persian subjects):

/ɪə/	/əʊ/	/aɪ/	/ɔɪ/	/eɪ/	/aʊ/	/eə/	/ʊə/
idea_m	so_n	buy_n	enjoy_s	vocation_n	house_n	hair_n	sure_y
idea_m	so_n	buy_n		hey_m	house_n		sure_f.e
here_m	go_n	five_m		stay_s	house_m		
	go_n	high_m		education_s	house_f.s		
	go_n	decide_m		situation_s	house_f.s		
	so_n	high_s		stay_s	house_y		
	so_n	buy_s		stay_s	house_y		
	so_n	buy_s		stay_s	house_y		
	so_n	hi_f.s		engaged_f.s	house_y		
	go_m	five_f.s		engaged_f.s	house_y		
	spoken_m	decide_y		ok_f.s	house_y		
	go_s	decide_y		ok_y	house_y		
	ago_s	goodbye_sh		eight_y	house_sh		
	go_s	buy_f.e		age_y			
	go_s	buy_f.e		ok_y			
	go_s			stay_sh			
	go_s			stay_sh			
	so_f.s			say_sh			
	go_f.s			stay_sh			
	so_f.s			stay_sh			
	go_f.s			hate_sh			
	go_f.s			stay_sh			
	so_f.s			stay_sh			
	go_f.s			say_sh			
	suppose_y			say_sh			
	go_y			stay_f.e			
	go_y			stay_f.e			
	go_y			say_f.e			
	go_y			ok_f.e			
	go_y			stay_f.e			
	go_y			favourite_f.e			
	go_sh			stay_f.e			
	go_sh			stay_f.e			
	go_sh			stay_f.e			
	go_sh						
	go_f.e						
	go_f.e						
	so_f.e						
	goes_f.e						
	goes_f.e						
	go_f.e						
	so_f.e						

List of words for English diphthongs taken from ISC (male Persian subjects):

/ɪə/	/əʊ/	/aɪ/	/ɔɪ/	/eɪ/	/aʊ/	/eə/	/ʊə/
here_h	go_sab	buy_sab	boy_sab	education_sab	house_sab	hair_sab	sure_a.h.m
	go_sab	high_sab	boy_sab	education_sab	house_sab	parents_a.h.m	sure_a.h.s
	go_a.h.m	eyes_sab	choice_a.h	say_sab	house_sab	parents_m.h	tourist_h
	hope_a.h.m	invite_sab	.m	say_sab	houses_a.h.m	parents_m.h	
	hope_a.h.m	high_a.h.m		table_sab	houses_a.h.m	aerospace_m.a	
	hope_a.h.m	high_a.h.m		day_a.h.m	house_a.h.s		
	go_a.h.m	buy_a.h.m		state_a.h.m	house_m		
	go_a.h.s	buy_a.h.m		save_m	house_m		
	go_a.h.s	hi_a.h.s		eight_h	house_m		
	go_a.h.s	high_a.h.s		basic_h	house_m		
	go_m	buy_m.a		take_h	house_h		
	ago_h			say_h	house_h		
	go_h			say_h	doubt_m.a		
	go_h			day_h	house_m.a		
	go_h			baby_h			
	so_h			vacation_h			
	so_h			stay_h			
	so_h			eighteen_m.a			
	go_h						
	so_h						
	go_h						
	so_h						
	go_h						
	go_h						
	ago_m.a						

Appendix B: Sample of Questionnaire

speaker Number : <input type="checkbox"/>
1. Name and Family:
2. Gender: Male <input type="checkbox"/> Female <input type="checkbox"/>
3. Age: <input type="checkbox"/>
4. Which Grade are you in and which course are you studying?
5. Where are you from in Iran?
6. How long you have been in Malaysia?
7. Which language do you speak with family? (your first language)
8. How long have you studied English language?
9. In which level of learning English are you in now? (Please specify your proficiency level)

Appendix C: The values of the individual subjects for monophthongs (WLC)

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
heed1_1	485	2479	132	316	2488	134
heed1_2	587	2219	117	317	2536	151
heed2_1	487	2909	173	283	2621	158
heed2_2	471	3071	200	309	2604	174
heed3_1	285	1030	171	218	2413	215
heed3_2	379	3167	220	191	2450	220
heed4_1	253	1387	120	342	2290	130
heed4_2	598	1872	202	353	2340	133
heed5_1	345	2750	212	280	2351	87
heed5_2	331	2834	173	302	2322	96
heed6_1	281	2955	259	455	2024	169
heed6_2	645	2668	209	364	2167	174
heed7_1	432	2761	167			
heed7_2	346	2739	224			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
hid1_1	484	2493	99	326	2551	134
hid1_2	537	2377	126	322	2439	152
hid2_1	442	1835	186	318	2564	99
hid2_2	494	2894	195	324	2610	92
hid3_1	476	2601	123	206	2368	145
hid3_2	608	2500	114	215	2339	180
hid4_1	227	2422	169	316	2424	95
hid4_2	589	2302	197	375	2245	120
hid5_1	465	2717	142	296	2344	147
hid5_2	335	1203	197	295	2355	118
hid6_1	454	2584	162	414	1975	160
hid6_2	500	2575	184	456	2146	148
hid7_1	316	2908	171			
hid7_2	361	2723	209			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
head1_1	692	2145	114	535	2022	112
head1_2	694	2163	137	458	2162	117
head2_1	736	2060	131	527	2330	147
head2_2	756	2043	167	575	2262	130
head3_1	722	1850	116	492	1935	174
head3_2	736	2147	112	478	1893	178
head4_1	565	2003	181	531	2161	133
head4_2	621	1660	157	538	2072	124
head5_1	611	2365	198	402	2037	118
head5_2	628	2433	176	414	2135	135
head6_1	608	2390	150	539	2005	158
head6_2	753	2226	190	553	2117	138
head7_1	653	2031	171			
head7_2	668	2047	196			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
had1_1	1036	1854	129	676	1662	158
had1_2	998	1850	113	780	1773	165
had2_1	953	1879	146	984	1866	133
had2_2	971	1913	199	909	1953	233
had3_1	984	2005	130	810	1625	152
had3_2	989	1841	135	745	1575	196
had4_1	1041	1458	150	683	1947	118
had4_2	1093	1502	148	637	1928	130
had5_1	995	2095	155	663	1572	103
had5_2	981	2163	192	688	1608	98
had6_1	953	2051	167	756	1816	191
had6_2	1127	1978	193	802	1819	203
had7_1	843	1760	160			
had7_2	916	1820	192			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
hard1_1	901	1685	196	553	1052	132
hard1_2	844	1495	200	521	1036	182
hard2_1	807	1286	223	693	1113	232
hard2_2	822	1255	227	713	1113	185
hard3_1	822	1355	144	596	943	169
hard3_2	793	1442	146	609	1045	220
hard4_1	479	946	188	523	1052	141
hard4_2	750	1465	274	623	1114	150
hard5_1	778	1531	180	552	1115	180
hard5_2	792	1950	211	584	1130	164
hard6_1	873	1266	232	586	971	228
hard6_2	897	1388	265	616	887	262
hard7_1	757	1416	268			
hard7_2	721	1354	264			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
hud1_1	879	1544	132	707	1222	169
hud1_2	893	1577	117	666	1231	140
hud2_1	583	1240	173	793	1349	116
hud2_2	811	1155	200	747	1217	161
hud3_1	509	1598	171	700	1218	103
hud3_2	692	1704	220	645	1144	178
hud4_1	452	945	120	575	1085	112
hud4_2	414	931	202	623	1094	118
hud5_1	855	1470	212	607	1253	78
hud5_2	856	1308	173	587	1200	86
hud6_1	925	1561	259	652	1023	196
hud6_2	974	1580	209	663	1023	154
hud7_1	845	1317	167			
hud7_2	648	1332	224			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
hod1_1	859	1549	127	698	1219	193
hod1_2	652	1610	122	655	1239	140
hod2_1	830	1219	145	820	1213	152
hod2_2	863	1351	158	778	1178	300
hod3_1	569	1330	98	411	828	187
hod3_2	651	1223	112	630	1060	160
hod4_1	883	1648	146	593	1186	127
hod4_2	888	1790	166	608	1136	129
hod5_1	925	1701	123	605	1200	110
hod5_2	866	1466	188	566	1328	110
hod6_1	812	1276	200	623	1165	194
hod6_2	922	1462	200	586	803	253
hod7_1	694	1155	199			
hod7_2	643	1179	183			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
horde1_1	647	1491	178	456	848	187
horde1_2	658	1752	210	436	802	169
horde2_1	678	1342	192	495	942	192
horde2_2	731	1284	224	527	1062	257
horde3_1	553	1097	153	391	839	168
horde3_2	546	1101	157	430	932	227
horde4_1	398	1095	225	502	976	166
horde4_2	426	1283	269	542	956	150
horde5_1	523	1482	215	407	971	135
horde5_2	596	1695	230	432	1023	124
horde6_1	875	1908	238	430	738	220
horde6_2	792	1493	251	408	682	259
horde7_1	598	1166	236			
horde7_2	540	1110	257			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
hood1_1	656	1776	120	572	1153	113
hood1_2	544	1691	124	363	925	138
hood2_1	623	1275	141	336	1423	132
hood2_2	676	1282	176	453	1809	147
hood3_1	633	1793	101	355	912	201
hood3_2	574	1551	128	326	1249	100
hood4_1	404	642	135	405	1056	97
hood4_2	469	1261	147	388	975	126
hood5_1	456	1309	166	367	1021	102
hood5_2	455	1298	169	300	939	102
hood6_1	876	1352	183	421	1152	161
hood6_2	823	1436	196	409	1073	176
hood7_1	515	1272	115			
hood7_2	486	1436	144			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
who'd1_1	555	1521	108	347	964	156
who'd1_2	522	1410	118	422	1225	118
who'd2_1	437	1009	223	305	1296	198
who'd2_2	468	1144	194	303	1410	222
who'd3_1	346	1134	137	237	749	195
who'd3_2	374	1139	165	250	784	217
who'd4_1	263	1492	185	349	824	126
who'd4_2	395	1058	250	355	823	142
who'd5_1	488	1332	215	301	878	107
who'd5_2	439	1186	192	300	879	102
who'd6_1	290	837	235	412	1001	178
who'd6_2	734	1823	226	440	1172	172
who'd7_1	397	889	212			
who'd7_2	412	913	215			

Target Words	Female			Male		
	F1 (Hz)	F2 (Hz)	length	F1 (Hz)	F2 (Hz)	length
heard1_1	661	1737	177	490	1622	216
heard1_2	640	1669	164	433	1556	179
heard2_1	666	1751	172	513	1777	233
heard2_2	689	1746	191	398	2140	233
heard3_1	459	1904	134	490	1410	207
heard3_2	496	2053	166	470	1606	206
heard4_1	487	1541	263	455	1759	124
heard4_2	556	1352	287	459	1630	171
heard5_1	545	1698	219	443	1719	147
heard5_2	564	1721	249	454	1705	142
heard6_1	565	1715	255	439	1682	231
heard6_2	629	2102	258	348	1749	235
heard7_1	667	1631	238			
heard7_2	545	1635	235			

Appendix D: Average Rate of Change (ROC) in Hz/Sec for Centring Diphthongs

Average Rate of Change (ROC) in Hz/Sec for the /ɪə/ vowel of 13 Persian English Speakers

Female speakers	F1 ROC	F2 ROC	Male Speakers	F1 ROC	F2 ROC
hered1_1	672	-627	hered1_1	745	-1163
hered1_2	301	-642	hered1_2	605	-505
hered2_1	382	-1880	hered2_1	779	-4854
hered2_2	418	-2298	hered2_2	354	-3306
hered3_1	40	-2307	hered3_1	-1070	-2541
hered3_2	721	-940	hered3_2	290	-1589
hered4_1	973	3270	hered4_1	535	-679
hered4_2	-655	-288	hered4_2	220	-2104
hered5_1	-102	-224	hered5_1	607	-3131
hered5_2	133	223	hered5_2	941	-3005
hered6_1	379	-3256	hered6_1	725	-1665
hered6_2	498	-1450	hered6_2	566	-393
hered7_1	399	-867	Average	441	-2078
hered7_2	403	-3194			
Average	326	-1034			

Average Rate of Change (ROC) in Hz/Sec for the /ʊə/ vowel of 13 Persian English Speakers

Female speakers	F1 ROC	F2 ROC	Male Speakers	F1 ROC	F2 ROC
hoar1_1	-458	-354	hoar1_1	297	934
hoar1_2	-937	-407	hoar1_2	141	288
hoar2_1	-83	528	hoar2_1	-74	965
hoar2_2	116	-219	hoar2_2	-371	266
hoar3_1	1371	4032	hoar3_1	-568	295
hoar3_2	1231	2277	hoar3_2	-790	124
hoar4_1	10	1372	hoar4_1	307	793
hoar4_2	-1236	-602	hoar4_2	132	1039
hoar5_1	-304	893	hoar5_1	377	2443
hoar5_2	187	491	hoar5_2	271	2098
hoar6_1	624	2485	hoar6_1	406	1341
hoar6_2	-503	-5164	hoar6_2	250	594
hoar7_1	319	782	Average	31	932
hoar7_2	365	457			
Average	50	469			

Average Rate of Change (ROC) in Hz/Sec for the /eə/ vowel of 13 Persian English Speakers

Female speakers	F1 ROC	F2 ROC	Male Speakers	F1 ROC	F2 ROC
haired1_1	-528	-208	haired1_1	-826	-789
haired1_2	-1225	-625	haired1_2	-721	-832
haired2_1	-180	-3406	haired2_1	-226	-3668
haired2_2	-632	-3949	haired2_2	-904	-1299
haired3_1	-106	9285	haired3_1	295	-3523
haired3_2	-6	-2215	haired3_2	-685	-2570
haired4_1	-438	-3883	haired4_1	-437	-267
haired4_2	17	-33	haired4_2	-497	-1085
haired5_1	-409	-1084	haired5_1	-7	-1167
haired5_2	-842	-1108	haired5_2	-448	-1048
haired6_1	97	-1011	haired6_1	-56	81
haired6_2	-442	-1766	haired6_2	-204	-417
haired7_1	-552	798	Average	-393	-1382
haired7_2	72	-4245			
Average	-370	-961			

Appendix E: Average Rate of Change (ROC) in Hz/Sec for Closing Diphthongs

Average Rate of Change (ROC) in Hz/Sec for the /aɪ/ vowel of 13 Persian English Speakers

Female speakers	F1 ROC	F2 ROC	Male Speakers	F1 ROC	F2 ROC
hide1_1	-2448	5327	hide 1_1	-1434	4587
hide1_2	-724	6760	hide 1_2	-1026	3408
hide2_1	-2021	6080	hide 2_1	-1271	4516
hide2_2	-1828	2412	hide 2_2	-1297	3914
hide3_1	-2844	5165	hide 3_1	-1300	6069
hide3_2	-2661	5374	hide 3_2	-1354	3219
hide4_1	-128	3307	hide 4_1	-944	4742
hide4_2	-2126	641	hide 4_2	-2165	3629
hide5_1	449	5426	hide 5_1	-1756	4653
hide5_2	-2085	5424	hide 5_2	-1970	4917
hide6_1	-1887	3297	hide 6_1	-589	3344
hide6_2	-2117	3542	hide 6_2	-793	3524
hide7_1	-1276	2482	Average	-1325	4210
hide7_2	-956	3522			
Average	-1618	4197			

Average Rate of Change (ROC) in Hz/Sec for the /ɔɪ/ vowel of 13 Persian English Speakers

Female speakers	F1 ROC	F2 ROC	Male Speakers	F1 ROC	F2 ROC
hoyed1_1	-453	5387	hoyed1_1	-96	5105
hoyed1_2	-1479	774	hoyred1_2	-468	4498
hoyed2_1	-660	1134	hoyed2_1	-947	6162
hoyed2_2	-706	5881	hoyed2_2	-739	2716
hoyed3_1	-2374	-1519	hoyed3_1	-434	6088
hoyed3_2	-182	5074	hoyed3_2	-336	3730
hoyed4_1	-740	3957	hoyed4_1	147	6664
hoyed4_2	-1732	-601	hoyed4_2	-648	7441
hoyed5_1	-510	3770	hoyed5_1	-695	6170
hoyed5_2	-52	5607	hoyed5_2	-687	6391
hoyed6_1	-1271	5420	hoyed6_1	-111	4045
hoyed6_2	-2028	3297	hoyed6_2	-21	3964
hoyed7_1	-248	5241	Average	-420	5248
hoyed7_2	-154	4500			
Average	-899	3423			

Average Rate of Change (ROC) in Hz/Sec for the /eɪ/ vowel of 13 Persian English Speakers

Female speakers	F1 ROC	F2 ROC	Male Speakers	F1 ROC	F2 ROC
hayed1_1	-1336	1008	hayed1_1	-750	1448
hayed1_2	-1259	556	hayed1_2	-327	1873
hayed2_1	-1931	-1473	hayed2_1	-1713	1257
hayed2_2	-1491	-221	hayed2_2	-1100	419
hayed3_1	-2528	-12755	hayed3_1	-1144	792
hayed3_2	-1168	54	hayed3_2	-774	1115
hayed4_1	-1021	549	hayed4_1	-1047	-322
hayed4_2	-1178	1017	hayed4_2	-1020	-352
hayed5_1	-375	-411	hayed5_1	-796	250
hayed5_2	-396	-125	hayed5_2	-329	305
hayed6_1	-785	-29	hayed6_1	-719	254
hayed6_2	-1303	0	hayed6_2	-653	1739
hayed7_1	-1185	1215	Average	-864	731
hayed7_2	-702	542			
Average	-1190	-719			

Average Rate of Change (ROC) in Hz/Sec for the /aʊ/ vowel of 13 Persian English Speakers

Female speakers	F1 ROC	F2 ROC	Male Speakers	F1 ROC	F2 ROC
how'd1_1	-2476	-736	how'd1_1	-1665	-1388
how'd1_2	-2771	-290	how'd1_2	-243	-830
how'd2_1	-1177	590	how'd2_1	-776	1492
how'd2_2	-1169	1265	how'd2_2	-1876	-805
how'd3_1	-2314	289	how'd3_1	-2064	40
how'd3_2	-2005	-1069	how'd3_2	-1556	-676
how'd4_1	-2543	1814	how'd4_1	-361	2905
how'd4_2	-2528	-2110	how'd4_2	-1242	2863
how'd5_1	-4283	-4151	how'd5_1	-543	1012
how'd5_2	-2518	-1937	how'd5_2	-2718	926
how'd6_1	-2169	-749	how'd6_1	-1809	-2228
how'd6_2	-1501	-401	how'd6_2	-1446	-1693
how'd7_1	-1	-1	Average	-1358	135
how'd7_2	-1347	-443			
Average	-2057	-566			

Average Rate of Change (ROC) in Hz/Sec for the /əʊ/ vowel of 13 Persian English Speakers

Female speakers	F1 ROC	F2 ROC	Male Speakers	F1 ROC	F2 ROC
hoed1_1	-1292	-1233	hoed1_1	-2066	-258
hoed1_2	-768	-599	hoed1_2	268	1373
hoed2_1	-294	1798	hoed2_1	-930	1676
hoed2_2	-128	1384	hoed2_2	-733	456
hoed3_1	278	4069	hoed3_1	-506	711
hoed3_2	271	1530	hoed3_2	-201	-373
hoed4_1	-534	-3579	hoed4_1	-176	2813
hoed4_2	-852	537	hoed4_2	-756	3131
hoed5_1	458	656	hoed5_1	-326	2736
hoed5_2	-143	-1031	hoed5_2	-503	2898
hoed6_1	-600	1764	hoed6_1	484	3889
hoed6_2	-1128	2488	hoed6_2	-99	-11
hoed7_1	-606	587	Average	-462	1587
hoed7_2	-885	158			
Average	-444	609			