**SUPPLEMENTARY MATERIAL**

**Table 1s:** Absolute and relative frequency of every notes for soprano roles

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Albigaille** | **Elvira** | **Lady** | **Gilda** | **Leonora1** | **Violetta** | **Elena** | **Maria** | **Amelia** | **Oscar** | **Leonora2** | **Elisabetta** | **Aida** | **Desdemona** | **Alice** | **Nannetta** |
| **C#6** | 0(0) | 0(0) | 1 (0.03) | 1 (0.04) | 1 (0.03) | 4 (0.08) | 1 (0.02) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| **C6** | 5(0.19) | 13 (0.43) | 6 (0.19) | 4 (0.14) | 8 (0.21) | 18 (0.36) | 7 (0.15) | 2 (0.09) | 4 (0.14) | 4 (0.21) | 0(0) | 0(0) | 4(0.15) | 0(0) | 2(0.08) | 1(0.07) |
| **B5** | 8(0.30) | 14 (0.47) | 20 (0.62) | 10 (0.36) | 0(0) | 1(0.02) | 24 (0.50) | 3 (0.14) | 6(0.21) | 4 (0.21) | 11(0.42) | 4(0.13) | 6(0.22) | 3(0.14) | 7(0.27) | 3(0.21) |
| **Bb5** | 17(0.65) | 49 (1.63) | 31 (0.96) | 55 (1.97) | 53 (1.37) | 44 (0.89) | 23 (0.48) | 20 (0.90) | 43 (1.54) | 20(1.03) | 13 (0.49) | 22(0.71) | 33(1.21) | 15(0.70) | 2(0.08) | 3(0.21) |
| **A5** | 45(1.71) | 86 (2.86) | 44 (1.36) | 37 (1.32) | 34(0.88) | 58 (1.17) | 98 (2.03) | 21 (0.95) | 65 (2.32) | 38(1.95) | 21 (0.80) | 24(0.77) | 43(1.57) | 11(0.51) | 20(0.77) | 18(1.24) |
| **G#5** | 57(2.16) | 35 (1.16) | 115 (3.57) | 108 (3.87) | 77(1.99) | 82 (1.66) | 93 (1.93) | 35 (1.58) | 56 (2) | 36(1.85) | 32(1.21) | 45(1.44) | 43(1.57) | 23(1.07) | 13(0.50) | 25(1.73) |
| **G5** | 120 (4.56) | 190 (6.32) | 91 (2.82) | 82 (2.94) | 122(3.15) | 176 (3.56) | 156 (3.23) | 73 (3.30) | 80 (2.86) | 91 (4.67) | 46 (1.74) | 62(1.99) | 84(3.07) | 37(1.72) | 45(1.73) | 17(1.17) |
| **F#5** | 109 (4.14) | 92 (3.06) | 134 (4.16) | 168 (6.02) | 49 (1.26) | 45 (0.91) | 157 (3.25) | 83 (3.75) | 70 (2.50) | 49 (2.52) | 90(3.41) | 97(3.11) | 94 (3.44) | 55(2.56) | 63(2.42) | 30(2.07) |
| **F5** | 188 (7.14) | 302 (10.04) | 225 (6.98) | 139 (4.98) | 342 (8.83) | 378 (7.65) | 230 (4.77) | 120 (5.42) | 185 (6.60) | 192 (9.86) | 84(3.19) | 152(4.87) | 120(4.39) | 110(5.12) | 84(3.22) | 34(2.35) |
| **E5** | 210 (7.97) | 275 (9.14) | 228 (7.07) | 194 (6.95) | 156 (4.03) | 354 (7.16) | ***393 (8.15)*** | 106 (4.79) | 201(7.18) | 94 (4.83) | 215(8.15) | 138(4.43) | 191(6.98) | 167(7.77) | 280(10.75) | 133(9.18) |
| **Eb5** | 199 (7.56) | 190 (6.32) | 238 (7.38) | ***371 (13.28)*** | 380 (9.81) | 435 (8.80) | 265 (5.49) | 203 (9.18) | 134(4.78) | 167 (8.58) | 193(7.32) | ***281******(9.01)*** | 220(8.04) | 108(5.02) | 75(2.88) | 69(4.76) |
| **D5** | ***264 (10.02)*** | ***374 (12.43)*** | 194 (6.02) | 326 (11.67) | 259 (6.69) | 479 (9.69) | 300 (6.22) | ***260 (11.75)*** | ***228 (8.14)*** | 223 (11.45) | 192(7.28) | 191(6.13) | 227(8.30) | 161(7.49) | 179(6.87) | 109(7.52) |
| **C#5** | 144(5.47) | 101 (3.36) | 244 (7.57) | 240 (8.59) | 255 (6.58) | 319 (6.45) | 284 (5.89) | 166 (7.50) | 192(6.85) | 134(6.88) | 164 (6.22) | 280(8.98) | 205(7.50) | 139(6.47) | 174 (6.68) | 109(7.52) |
| **C5** | 225 (8.54) | 316 (10.51) | 241 (7.47) | 201 (7.20) | **449 (11.59)** | ***692 (14)*** | 390 (8.08) | 212 (9.58) | 216 (7.71) | ***243 (12.48)*** | 260(9.86) | 274(8.79) | ***266******(9.73)*** | ***176******(8.19)*** | 230(8.83) | 146(10.08) |
| **B4** | 176 (6.68) | 118 (3.92) | 200 (6.20) | 203 (7.27) | 140 (3.61) | 316 (6.39) | 392 (8.13) | 113 (5.11) | 155 (5.53) | 90 (4.62) | ***305******(11.57)*** | 147(4.71) | 135(4.94) | 152 (7.07) | ***333******(12.78)*** | ***203******(14.01)*** |
| **Bb4** | 101 (3.83) | 177 (5.88) | 217 (6.73) | 154 (5.51) | 367 (9.47) | 400(8.09) | 318 (6.59) | 183 (8.27) | 216 (7.71) | 200(10.27) | 167 (6.33) | 223(7.15) | 183(6.69) | 162(7.53) | 84(3.22) | 78(5.38) |
| **A4** | 176 (6.68) | 175 (5.82) | 138 (4.28) | 95 (3.40) | 214 (5.52) | 258 (5.22) | 327 (6.78) | 120 (5.42) | 205 (7.32) | 107 (5.50) | 129 (4.89) | 251 (8.05) | 137(5.01) | 121(5.63) | 290 (11.13) | 137(9.45) |
| **G#4** | 86(3.26) | 58 (1.93) | ***286 (8.87)*** | 124 (4.44) | 304 (7.85) | 323 (6.54) | 270 (5.60) | 87 (3.93) | 160 (5.71) | 53(2.72) | 134 (5.08) | 234(7.50) | 143(5.23) | 135(6.28) | 120(4.61) | 105(7.25) |
| **G4** | 140 (5.32) | 137 (4.55) | 116 (3.60) | 79 (2.83) | 219 (5.65) | 224 (4.53) | 207 (4.29) | 129 (5.83) | 120 (4.28) | 79(4.06) | 120 (4.55) | 210(6.74) | 128(4.68) | 88(4.09) | 193(7.41) | 62(4.28) |
| **F#4** | 71(2.70) | 53 (1.76) | 118 (3.66) | 76 (2.72) | 51 (1.32) | 69 (1.40) | 161 (3.34) | 92 (4.16) | 87 (3.11) | 25(1.28) | 130 (4.93) | 129(4.14) | 83(3.03) | 121(5.63) | 121(4.64) | 73(5.04) |
| **F4** | 111 (4.21) | 108 (3.59) | 180 (5.58) | 47 (1.68) | 126 (3.25) | 140 (2.83) | 218 (4.52) | 77 (3.48) | 170 (6.07) | 59(3.03) | 115 (4.36) | 141(4.52) | 140(5.12) | 87(4.05) | 79(3.03) | 18(1.24) |
| **E4** | 62(2.35) | 43 (1.43) | 53 (1.64) | 38 (1.36) | 44 (1.14) | 60 (1.21) | 213 (4.42) | 21 (0.95) | 71(2.53) | 10(0.51) | 96 (3.64) | 71(2.28) | 87(3.18) | 96(4.47) | 115(4.41) | 41(2.83) |
| **Eb4** | 40(1.52) | 39 (1.30) | 45 (1.40) | 22 (0.79) | 120 (3.10) | 39 (0.79) | 132 (2.74) | 41 (1.85) | 33(1.18) | 11(0.56) | 45 (1.71) | 47(1.51) | 59(2.16) | 119(5.53) | 23(0.88) | 17(1.17) |
| **D4** | 35(1.33) | 28 (0.93) | 24 (0.74) | 7 (0.25) | 58 (1.50) | 21 (0.42) | 62 (1.29) | 26 (1.18) | 38(1.36) | 16(0.82) | 20(0.76) | 39(1.25) | 43(1.57) | 25(1.16) | 54(2.07) | 5(0.35) |
| **C#4** | 14(0.53) | 11 (0.37) | 15 (0.47) | 5 (0.18) | 17 (0.44) | 1 (0.02) | 65 (1.35) | 13 (0.59) | 12(0.43) | 1 (0.05) | 18(0.68) | 26(0.83) | 46(1.68) | 21(0.98) | 2(0.08) | 1(0.07) |
| **C4** | 23(0.87) | 13 (0.43) | 13 (0.40) | 0(0) | 24 (0.62) | 5 (0.10) | 21 (0.44) | 4 (0.18) | 35(1.25) | 1(0.05) | 26(0.99) | 16 (0.51) | 14(0.51) | 13 (0.60) | 5(0.19) | 1(0.07) |
| **B3** | 8(0.30) | 2 (0.07) | 6 (0.19) | 7 (0.25) | 1(0.03) | 1(0.02) | 6 (0.12) | 0(0) | 10(0.36) | 0(0) | 10(0.38) | 10(0.32) | 1(0.04) | 3 (0.14) | 11(0.42) | 10(0.69) |
| **Bb3** | 0(0) | 8 (0.27) | 2 (0.06) | 0(0) | 2 (0.05) | 0(0) | 5 (0.10) | 2 (0.09) | 6(0.21) | 0(0) | 1(0.04) | 4(0.13) | 0(0) | 2(0.09) | 1(0.04) | 1(0.07) |
| **A3** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 3 (0.06) | 0(0) | 3(0.11) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| **G#3** | 0(0) | 1 (0.03) | 0(0) | 0(0) | 2 (0.05) | 0(0) | 1 (0.02) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| **G3** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1 (0.02) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| **F#3** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1 (0.02) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| **Total** | 2634 | 3008 | 3225 | 2793 | 3874 | 4942 | 4824 | 2212 | 2801 | 1947 | 2637 | 3118 | 2735 | 2150 | 2605 | 1449 |

**NOTE:** Frequencies are reported as N(%)

**Table 2s:** Absolute and relative frequency of every notes for mezzosoprano and contralto roles

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Fenena** | **Maddalena** | **Azucena** | **Ulrica** | **Preziosilla** | **Eboli** | **Amneris** | **Quickly** |
| **C6** | 0(0) | 0(0) | 1(0,04) | 0(0) | 2(0,12) | 0(0) | 0(0) | 0(0) |
| **B5** | 0(0) | 0(0) | 0(0) | 0(0) | 7(0,43) | 2(0,08) | 2(0,07) | 0(0) |
| **Bb5** | 0(0) | 0(0) | 3(0,13) | 0(0) | 1(0,06) | 5(0,21) | 10(0,37) | 0(0) |
| **A5** | 8(0,84) | 0(0) | 9(0,39) | 0(0) | 5(0,30) | 14(0,59) | 7(0,26) | 0(0) |
| **G#5** | 2(0,21) | 0(0) | 1(0,04) | 3(0,27) | 12(0,73) | 13(0,55) | 19(0,71) | 0(0) |
| **G5** | 8(0,84) | 0(0) | 33(1,43) | 12(1,09) | 19(1,16) | 27(1,14) | 28(1,04) | 3(0,14) |
| **F#5** | 13(1,36) | 1(0,13) | 24(1,04) | 11(1) | 42(2,56) | 23(0,97) | 31(1,15) | 3(0,14) |
| **F5** | 20(2,09) | 0(0) | 60(2,59) | 8(0,72) | 24(1,46) | 66(2,79) | 74(2,75) | 10(0,48) |
| **E5** | 50(5,22) | 3(0,40) | 120(5,19) | 41(3,71) | 122(7,44) | 95(4,02) | 88(3,27) | 48(2,31) |
| **Eb5** | 54(5,64) | 4(0,53) | 79(3,41) | 25(2,26) | 87(5,30) | 87(3,68) | 101(3,75) | 13(0,63) |
| **D5** | 100(10,44) | 48(6,32) | 190(8,21) | 40(3,62) | 72(4,39) | 121(5,12) | 140(5,20) | 60(2,89) |
| **C#5** | 51(5,32) | 28(3,69) | 73(3,15) | 73(6,61) | 135(8,23) | 178(7,54) | 110(4,08) | 58(2,79) |
| **C5** | 68(7,10) | 28(3,69) | 256(11,06) | 61(5,52) | 131(7,99) | 186(7,87) | 212(7,87) | 121(5,83) |
| **B4** | 100(10,44) | 48(6,32) | 293(12,66) | 84(7,60) | ***227******(13,84)*** | 186(7,87) | 212(7,87) | 151(7,27) |
| **Bb4** | 56(5,85) | 38(5,01) | 103(4,45) | 65(5,88) | 81(4,94) | 138(5,84) | 125(4,64) | 87(4,19) |
| **A4** | ***145******(15,14)*** | 162(21,34) | ***300******(12,96)*** | 89(8,05) | 100(6,10) | 167(7,07) | **316****(11,73)** | 210(10,12) |
| **G#4** | 16(1,67) | ***173******(22,79)*** | 130(5,62) | 106(9,59) | 94(5,73) | 134(5,67) | 175(6,50) | 96(4,62) |
| **G4** | 80(8,35) | 33(4,35) | 198(8,56) | 75(6,79) | 148(9,02) | 166(7,03) | 187(6,94) | 236(11,37) |
| **F#4** | 51(5,32) | 48(6,32) | 104(4,49) | 76(6,88) | 119(7,26) | 126(5,33) | 143(5,31) | 127(6,12) |
| **F4** | 66(6,89) | 32(4,22) | 78(3,37) | ***110******(9,95)*** | 29(1,77) | ***266******(11,26)*** | 199(7,39) | 125(6,02) |
| **E4** | 24(2,51) | 44(5,80) | 111(4,80) | 81(7,33) | 91(5,55) | 172(7,28) | 191(7,09) | ***289******(13,92)*** |
| **Eb4** | 9(0,94) | 20(2,64) | 54(2,33) | 39(3,53) | 36(2,20) | 81(3,43) | 102(3,79) | 78(3,76) |
| **D4** | 17(1,77) | 17(2,24) | 54(2,33) | 22(1,99) | 20(1,22) | 51(2,16) | 69(2,56) | 97(4,67) |
| **C#4** | 4(0,42) | 17(2,24) | 5(0,22) | 27(2,44) | 22(1,34) | 34(1,44) | 88(3,27) | 53(2,55) |
| **C4** | 13(1,36) | 13(1,71) | 16(0,69) | 40(3,62) | 3(0,18) | 20(0,85) | 32(1,19) | 110(5,30) |
| **B3** | 4(0,42) | 2(0,26) | 15(0,65) | 6(0,54) | 9(0,55) | 2(0,08) | 23(0,85) | 68(3,28) |
| **Bb3** | 0(0) | 0(0) | 0(0) | 6(0,54) | 0(0) | 2(0,08) | 5(0,19) | 11(0,53) |
| **A3** | 0(0) | 0(0) | 4(0,17) | 3(0,27) | 2(0,12) | 0(0) | 2(0,07) | 11(0,53) |
| **G#3** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 2(0,07) | 3(0,14) |
| **G3** | 0(0) | 0(0) | 0(0) | 2(0,18) | 0(0) | 0(0) | 0(0) | 8(0,39) |
| **Total** | 958 | 759 | 2314 | 1105 | 1640 | 2362 | 2693 | 2076 |

**NOTE:** Frequencies are reported as N(%)

**Table 3s:** Absolute and relative frequency of every notes for tenor roles

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Ismaele** | **Ernani** | **Macduff** | **Duca** | **Manrico** | **Alfredo** | **Arrigo** | **Gabrilele** | **Riccardo** | **Alvaro** | **Don Carlo** | **Radames** | **Cassio** | **Otello** | **Fenton** |
| **D5** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,02) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| **C#5** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| **C5** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 2(0,04) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,03) | 0(0) |
| **B4** | 0(0) | 0(0) | 0(0) | 1(0,04) | 0(0) | 0(0) | 2(0,04) | 0(0) | 0(0) | 2(0,08) | 7(0,19) | 0(0) | 1(0,12) | 2(0,06) | 1(0,09) |
| **Bb4** | 1(0,08) | 4(0,12) | 7(0,56) | 11(0,39) | 1(0,03) | 4(0,13) | 31(0,64) | 9(0,51) | 11(0,31) | 10(0,39) | 30(0,80) | 24(0,97) | 2(0,24) | 9(0,29) | 5(0,45) |
| **A4** | 21(1,72) | 53(1,59) | 10(0,81) | 26(0,91) | 31(1,05) | 36(1,19) | 79(1,63) | 25(1,41) | 49(1,36) | 20(0,79) | 34(0,90) | 40(1,62) | 20(2,37) | 31(1,01) | 19(1,70) |
| **G#4** | 27(2,22) | 45(1,35) | 69(5,56) | 105(3,69) | 69(2,34) | 64(2,11) | 128(2,63) | 59(3,34) | 67(1,87) | 69(2,71) | 68(1,81) | 44(1,78) | 18(2,13) | 59(1,91) | 26(2,33) |
| **G4** | 57(4,68) | 233(6,98) | 53(4,27) | 114(4,01) | 178(6,03) | 145(4,79) | 186(3,83) | 54(3,05) | 131(3,65) | 96(3,77) | 117(3,11) | 105(4,25) | 20(2,37) | 85(2,76) | 37(3,31) |
| **F#4** | 155(12,73) | 122(3,65) | 90(7,25) | 192(6,75) | 135(4,57) | 74(2,44) | 206(4,24) | 119(6,73) | 98(2,73) | 87(3,42) | 139(3,70) | 86(3,48) | 39(4,62) | 155(5,03) | 55(4,92) |
| **F4** | 80(6,57) | 335(10,03) | ***196******(15,79)*** | 240(8,44) | 268(9,08) | 280(9,25) | 487(10,02) | 88(4,97) | 301(8,38) | 174(6,83) | 201(5,35) | 193(7,82) | 61(7,23) | 170(5,52) | 53(4,74) |
| **E4** | ***176******(14,45)*** | 398(11,92) | 95(7,66) | 193(6,78) | 250(8,47) | 242(7,99) | 447(9,20) | 160(9,04) | 288(8,02) | 186(7,30) | 281(7,47) | 155(6,28) | 59(6,99) | 278(9,02) | 107(9,57) |
| **Eb4** | 92(7,55) | 319(9,55) | 103(8,30) | ***468******(16,45)*** | ***389******(13,18)*** | 283(9,35) | 339(6,98) | 164(9,27) | 335(9,33) | 293(11,50) | 428(11,38) | 196(7,94) | 74(8,77) | 246(7,98) | 99(8,86) |
| **D4** | 153(12,56) | ***449******(13,45)*** | 72(5,80) | 202(7,10) | 325(11,01) | 364(12,02) | 461(9,49) | 155(8,76) | 261(7,27) | 160(6,28) | 265(7,05) | 214(8,67) | ***97******(11,49)*** | 239(7,76) | 105(9,39) |
| **C#4** | 71(5,83) | 151(4,52) | 92(7,41) | 343(12,06) | 327(11,08) | 200(6,61) | 448(9,22) | ***194******(10,97)*** | 344(9,58) | 242(9,50) | 300(7,98) | 205(8,31) | 86(10,19) | 289(9,38) | 59(5,28) |
| **C4** | 68(5,58) | 389(11,65) | 118(9,51) | 182(6,40) | 327(11,08) | ***426******(14,07)*** | ***591******(12,17)*** | 144(8,14) | ***430******(11,97)*** | ***303******(11,90)*** | ***440******(11,70)*** | 243(9,85) | 89(10,55) | ***360******(11,68)*** | ***122******(10,91)*** |
| **B3** | 95(7,80) | 210(6,29) | 91(7,33) | 133(4,67) | 140(4,74) | 165(5,45) | 350(7,20) | 161(9,10) | 193(5,37) | 186(7,30) | 329(8,75) | ***265******(10,74)*** | 68(8,06) | 266(8,63) | 111(9,93) |
| **Bb3** | 26(2,13) | 182(5,45) | 34(2,74) | 206(7,24) | 164(5,56) | 285(9,41) | 336(6,92) | 99(5,60) | 265(7,38) | 202(7,93) | 290(7,71) | 191(7,74) | 44(5,21) | 172(5,58) | 97(8,68) |
| **A3** | 86(7,06) | 114(3,41) | 37(2,98) | 115(4,04) | 197(3,29) | 150(4,95) | 204(4,20) | 110(6,22) | 215(5,99) | 94(3,69) | 145(3,86) | 148(6,00) | 48(5,69) | 155(5,03) | 50(4,47) |
| **G#3** | 8(0,66) | 82(2,46) | 69(5,56) | 148(5,20) | 102(3,46) | 105(3,47) | 235(4,84) | 80(4,52) | 223(6,21) | 135(5,30) | 226(6,01) | 74(3,00) | 27(3,20) | 200(6,49) | 71(6,35) |
| **G3** | 34(2,79) | 96(2,88) | 37(2,98) | 36(1,27) | 117(3,96) | 120(3,96) | 100(2,06) | 40(2,26) | 119(3,31) | 103(4,04) | 249(6,62) | 81(3,28) | 34(4,03) | 157(5,10) | 52(4,65) |
| **F#3** | 10(0,82) | 53(1,59) | 14(1,13) | 48(1,69) | 6(0,20) | 27(0,89) | 69(1,42) | 72(4,07) | 65(1,81) | 80(3,14) | 65(1,73) | 63(2,55) | 16(1,90) | 80(2,60) | 27(2,42) |
| **F3** | 18(1,48) | 48(1,44) | 19(1,53) | 32(1,12) | 14(0,47) | 48(1,59) | 106(2,18) | 9(0,51) | 114(3,17) | 64(2,51) | 99(2,63) | 67(2,71) | 15(1,78) | 48(1,56) | 10(0,89) |
| **E3** | 12(0,99) | 19(0,57) | 18(1,45) | 15(0,53) | 8(0,27) | 6(0,20) | 21(0,43) | 5(0,28) | 26(0,72) | 21(0,82) | 30(0,80) | 29(1,18) | 6(0,71) | 42(1,36) | 6(0,54) |
| **Eb3** | 3(0,25) | 6(0,18) | 13(1,05) | 22(0,77) | 3(0,10) | 4(0,13) | 13(0,27) | 2(0,11) | 30(0,84) | 12(0,47) | 10(0,27) | 19(0,77) | 14(1,66) | 25(0,81) | 5(0,45) |
| **D3** | 12(0,99) | 8(0,24) | 1(0,08) | 2(0,07) | 0(0) | 0(0) | 11(0,23) | 2(0,11) | 13(0,36) | 4(0,16) | 4(0,11) | 6(0,24) | 0(0) | 5(0,16) | 0(0) |
| **C#3** | 4(0,33) | 14(0,42) | 1(0,08) | 8(0,28) | 1(0,03) | 0(0) | 3(0,06) | 3(0,17) | 9(0,25) | 2(0,08) | 1(0,03) | 12(0,49) | 2(0,24) | 4(0,13) | 1(0,09) |
| **C3** | 5(0,41) | 2(0,06) | 1(0,08) | 3(0,11) | 0(0) | 0(0) | 2(0,04) | 2(0,85) | 3(0,08) | 1(0,04) | 2(0,05) | 1(0,04) | 4(0,47) | 2(0,06) | 0(0) |
| **B2** | 4(0,33) | 5(0,15) | 1(0,08) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,03) | 0(0) |
| **Bb2** | 0(0) | 2(0,06) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,03) | 1(0,04) | 0(0) | 7(0,28) | 0(0) | 0(0) | 0(0) |
| **Total** | 1218 | 3339 | 1241 | 2845 | 2952 | 3028 | 4858 | 1769 | 3591 | 2547 | 3760 | 2468 | 844 | 3081 | 1118 |

**NOTE:** Frequencies are reported as N(%)

**Table 4s:** Absolute and relative frequency of every notes for baritone roles

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Nabucco** | **Carlo V** | **Macbeth** | **Rigoletto** | **Conte** | **Germont** | **Monforte** | **Paolo** | **Simone** | **Renato** | **Don Carlo** | **Melitone** | **Rodrigo** | **Amonasro** | **Iago** | **Falstaff** | **Ford** |
| **B4** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,03) | 0(0) |
| **Bb4** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| **A4** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 3(0,09) | 3(0,08) | 0(0) |
| **G#4** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) |
| **G4** | 2(0,08) | 3(0,11) | 3(0,10) | 7(0,20) | 2(0,08) | 0(0) | 1(0,03) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,06) | 4(0,14) | 0(0) | 3(0,09) | 3(0,08) | 10(0,41) |
| **F#4** | 0(0) | 5(0,19) | 6(0,20) | 3(0,08) | 13(0,49) | 4(0,20) | 7(0,24) | 0(0) | 5(0,19) | 9(0,32) | 6(0,32) | 8(0,46) | 11(0,39) | 4(0,38) | 13(0,37) | 10(0,27) | 9(0,37) |
| **F4** | 31(1,23) | 62(2,33) | 43(1,42) | 60(1,69) | 66(2,50) | 42(2,07) | 41(1,38) | 4(0,36) | 28(1,04) | 55(1,93) | 16(0,86) | 16(0,91) | 31(1,11) | 18(1,70) | 26(0,74) | 27(0,73) | 10(0,41) |
| **E4** | 37(1,47) | 97(3,65) | 68(2,25) | 57(1,60) | 57(2,16) | 11(0,54) | 92(3,11) | 2(0,18) | 64(2,38) | 64(2,24) | 81(4,36) | 58(3,30) | 57(2,04) | 19(1,79) | 65(1,84) | 93(2,51) | 68(2,81) |
| **Eb4** | 136(5,40) | 136(5,11) | 150(4,97) | 179(5,03) | 102(3,87) | 126(6,22) | 125(4,22) | 22(1,97) | 82(3,04) | 93(3,26) | 94(5,06) | 56(3,19) | 77(2,76) | 52(4,90) | 56(1,59) | 63(1,70) | 80(3,30) |
| **D4** | 278(11,03) | 294(11,05) | 179(5,93) | 132(3,71) | 154(5,84) | 159(7,85) | 166(5,61) | 28(2,51) | 153(5,68) | 174(6,09) | 64(3,44) | 120(6,83) | 121(4,33) | 53(5,00) | 181(5,13) | 187(5,05) | 134(5,53) |
| **C#4** | 303(12,02) | 251(9,43) | 323(10,69) | 346(9,73) | 198(7,51) | 137(6,76) | 267(9,02) | 26(2,33) | 225(8,35) | 199(6,97) | 227(12,22) | 177(10,07) | 208(7,45) | 81(7,63) | 266(7,54) | 189(5,10) | 84(3,47) |
| **C4** | **402****(15,95)** | **457****(17,17)** | **524****(17,35)** | **672****(18,89)** | **381****(14,46)** | 326(16,09) | 286(9,66) | **174****(15,58)** | **472****(17,53**) | 357(12,50) | 166(8,93) | **192****(10,93)** | **304****(10,89)** | **142****(13,38)** | 326(9,24) | 360(9,72) | 188(7,76) |
| **B3** | 184(7,30) | 195(7,33) | 309(10,23) | 228(6,41) | 120(4,55) | 102(5,03) | 216(7,29) | 125(11,19) | 210(7,80) | 166(5,81) | **250****(13,46)** | 168(9,56) | 282(10,10) | 68(6,41) | **400****(11,33)** | 363(9,80) | 236(9,74) |
| **Bb3** | 377(14,96) | 299(11,24) | 264(8,74) | 372(10,46) | 346(13,13) | **329****(16,24)** | 270(9,12) | 75(6,71) | 308(11,44) | **366****(12,82)** | 115(6,19) | 153(8,71) | 249(8,92) | 137(12,91) | 183(5,19) | 158(4,27) | 107(4,41) |
| **A3** | 198(7,86) | 263(9,88) | 263(8,71) | 197(5,54) | 245(9,30) | 119(5,87) | 267(9,02) | 110(9,85) | 293(10,88) | 278(9,74) | 146(7,86) | 110(6,26) | 294(10,53) | 86(8,11) | 372(10,54) | **431****(11,64)** | 226(9,32) |
| **G#3** | 175(6,94) | 166(6,24) | 240(7,94) | 369(10,37) | 254(9,64) | 164(8,09) | **315****(10,64)** | 69(6,18) | 175(6,50) | 156(5,46) | 178(9,58) | 162(9,22) | 235(8,42) | 82(7,73) | 250(7,08) | 240(6,48) | 153(6,31) |
| **G3** | 131(5,20) | 179(6,73) | 227(7,51) | 212(5,96) | 206(7,82) | 160(7,90) | 191(6,45) | 151(13,52) | 264(9,80) | 219(7,67) | 108(5,8)1 | 127(7,23) | 275(9,85) | 88(8,29) | 339(9,61) | 393(10,61) | 268(11,06) |
| **F#3** | 64(2,54) | 33(1,24) | 60(1,99) | 198(5,57) | 60(2,28) | 58(2,86) | 184(6,21) | 109(9,76) | 119(4,42) | 87(3,05) | 113(6,08) | 95(5,41) | 144(5,16) | 38(3,58) | 275(7,79) | 263(7,10) | 223(9,20) |
| **F3** | 108(4,29) | 103(3,87) | 193(6,39) | 214(6,02) | 201(7,63) | 156(7,70) | 217(7,33) | 59(5,28) | 127(4,72) | 284(9,95) | 77(4,14) | 110(6,26) | 152(5,44) | 84(7,92) | 291(8,25) | 233(6,29) | 123(5,07) |
| **E3** | 25(0,99) | 61(2,29) | 57(1,89) | 91(2,56) | 66(2,50) | 22(1,09) | 110(3,71) | 69(6,18) | 70(2,60) | 110(3,85) | 129(6,94) | 71(4,04) | 157(5,62) | 17(1,60) | 189(5,36) | 269(7,26) | 167(6,89) |
| **Eb3** | 28(1,11) | 16(0,60) | 46(1,52) | 103(2,90) | 74(2,81) | 53(2,62) | 97(3,28) | 21(1,88) | 51(1,89) | 108(3,78) | 47(2,53) | 49(2,79) | 108(3,87) | 33(3,11) | 108(3,06) | 120(3,24) | 100(4,13) |
| **D3** | 31(1,23) | 16(0,60) | 30(0,99) | 32(0,90) | 21(0,80) | 32(1,58) | 18(0,61) | 20(1,79) | 27(1,00) | 68(2,38) | 13(0,70) | 24(1,37) | 27(0,97) | 12(1,13) | 60(1,70) | 141(3,81) | 98(4,04) |
| **C#3** | 6(0,24) | 7(0,26) | 17(0,56) | 50(1,41) | 30(1,14) | 18(0,89) | 54(1,82) | 13(1,16) | 9(0,33) | 21(0,74) | 14(0,75) | 32(1,82) | 13(0,47) | 36(3,39) | 38(1,08) | 57(1,54) | 48(1,98) |
| **C3** | 3(0,12) | 15(0,56) | 18(0,60) | 22(0,62) | 30(1,14) | 6(0,30) | 24(0,81) | 28(2,51) | 10(0,37) | 26(0,91) | 6(0,32) | 18(1,02) | 29(1,04) | 6(0,57) | 63(1,79) | 83(2,24) | 38(1,57) |
| **B2** | 1(0,04) | 0(0) | 1(0,03) | 7(0,20) | 2(0,08) | 1(0,05) | 8(0,27) | 12(1,07) | 1(0,04) | 7(0,25) | 7(0,38) | 7(0,40) | 6(0,21) | 2(0,19) | 7(0,20) | 8(0,22) | 27(1,11) |
| **Bb2** | 0(0) | 2(0,08) | 0(0) | 6(0,17) | 4(0,15) | 1(0,05) | 3(0,10) | 0(0) | 0(0) | 2(0,07) | 1(0,05) | 0(0) | 6(0,21) | 2(0,19) | 13(0,37) | 4(0,11) | 10(0,41) |
| **A2** | 0(0) | 1(0,04) | 0(0) | 0(0) | 1(0,04) | 0(0) | 0(0) | 0(0) | 0(0) | 6(0,21) | 0(0) | 2(0,11) | 1(0,04) | 1(0,09) | 1(0,03) | 2(0,05) | 7(0,29) |
| **G#2** | 0(0) | 0(0) | 0(0) | 0(0) | 2(0,08) | 0(0) | 2(0,07) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,04) | 0(0) | 0(0) | 1(0,03) | 5(0,21) |
| **G2** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,06) | 0(0) | 0(0) | 0(0) | 1(0,03) | 3(0,12) |
| **F#2** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,03) | 0(0) | 1(0,04) |
| **F2** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,04) |
| **Total** | 2520 | 2661 | 3021 | 3557 | 2635 | 2026 | 2961 | 1117 | 2693 | 2855 | 1858 | 1757 | 2792 | 1061 | 3529 | 3703 | 2424 |

**NOTE:** Frequencies are reported as N(%)

**Table 5s:** Absolute and relative frequency of every notes for bass roles

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Zaccaria** | **Silva** | **Banco** | **Sparafucile** | **Ferrando** | **Procida** | **Fiesco** | **Guardiano** | **Filippo** | **Inquisitore** | **Ramfis** |
| **F#4** | 4(0,22) | 6(0,21) | 0(0) | 1(0,14) | 0(0) | 0(0) | 0(0) | 2(0,14) | 2(0,11) | 0(0) | 0(0) |
| **F4** | 4(0,22) | 6(0,21) | 0(0) | 2(0,29) | 5(0,28) | 10(0,28) | 2(0,15) | 0(0) | 3(0,16) | 4(0,85) | 3(0,21) |
| **E4** | 28(1,52) | 17(0,61) | 5(0,61) | 4(0,57) | 20(1,13) | 27(0,75) | 7(0,52) | 15(1,06) | 11(0,58) | 2(0,42) | 16(1,10) |
| **Eb4** | 20(1,08) | 64(2,28) | 5(0,61) | 8(1,15) | 17(0,96) | 31(0,86) | 5(0,37) | 12(0,84) | 16(0,85) | 3(0,64) | 22(1,51) |
| **D4** | 146(7,91) | 52(1,86) | 5(0,61) | 35(5,02) | 19(1,07) | 66(1,83) | 23(1,71) | 19(1,34) | 62(3,28) | 21(4,45) | 25(1,71) |
| **C#4** | 75(4,06) | 90(3,21) | 19(2,30) | 49(7,03) | 39(2,20) | 194(5,38) | 43(3,19) | 39(2,74) | 73(3,86) | 34(7,20) | 49(3,36) |
| **C4** | 128(6,93) | 270(9,64) | 56(6,78) | 30(4,30) | 96(5,41) | 238(6,59) | 108(8,01) | 41(2,89) | 131(6,92) | 43(9,11) | 62(4,25) |
| **B3** | **297****(16,09)** | 213(7,60) | 55(6,66) | 65(9,33) | 137(7,72) | 237(6,57) | 100(7,42) | 136(9,57) | 82(4,33) | 36(7,63) | 88(6,03) |
| **Bb3** | 122(6,61) | **369****(13,17)** | 80(9,69) | 43(6,17) | 43(2,42) | 197(5,46) | 102(7,57) | 56(3,94) | 203(10,72) | 49(10,38) | 130(8,90) |
| **A3** | 290(15,71) | 258(9,21) | 79(9,56) | **98****(14,06)** | **220****(12,39)** | 335(9,28) | 113(8,38) | 143(10,06) | 164(8,66) | **52****(11,02)** | 134(9,18) |
| **G#3** | 68(3,68) | 164(5,86) | **119****(14,41)** | 24(3,44) | 144(8,11) | **406****(11,25)** | 132(9,79) | **144****(10,13)** | 145(7,66) | 26(5,51) | **144****(9,86)** |
| **G3** | 179(9,70) | 248(8,85) | 84(10,17) | 34(4,88) | 206(11,61) | 150(4,16) | **137****(10,16)** | 109(7,67) | 178(9,40) | 29(6,14) | 124(8,49) |
| **F#3** | 136(7,37) | 168(6,00) | 53(6,42) | 38(5,45) | 149(8,39) | 272(7,54) | 122(9,05) | 92(6,47) | 66(3,49) | 33(6,99) | 93(6,37) |
| **F3** | 48(2,60) | 221(7,89) | 61(7,38) | 70(10,04) | 106(5,97) | 284(7,87) | 63(4,67) | 56(3,94) | **227****(11,99)** | 24(5,08) | 136(9,32) |
| **E3** | 67(3,63) | 181(6,46) | 64(7,75) | 49(7,03) | 168(9,46) | 254(7,04) | 63(4,67) | 133(9,36) | 112(5,92) | 37(7,84) | 98(6,71) |
| **Eb3** | 22(1,19) | 109(3,89) | 29(3,51) | 14(2,01) | 126(7,10) | 184(5,10) | 115(8,53) | 72(5,07) | 109(5,76) | 15(3,18) | 88(6,03) |
| **D3** | 135(7,31) | 79(2,82) | 20(2,42) | 65(9,33) | 59(3,32) | 172(4,77) | 62(4,60) | 108(7,60) | 84(4,44) | 15(3,18) | 86(5,89) |
| **C#3** | 13(0,70) | 56(2,00) | 33(4,00) | 19(2,73) | 50(2,82) | 160(4,43) | 60(4,45) | 39(2,74) | 58(3,06) | 10(2,12) | 50(3,42) |
| **C3** | 20(1,08) | 86(3,07) | 27(3,27) | 40(5,74) | 73(4,11) | 178(4,93) | 50(3,71) | 88(6,19) | 93(4,91) | 32(6,78) | 33(2,26) |
| **B2** | 22(1,19) | 26(0,93) | 26(3,15) | 6(0,86) | 43(2,42) | 87(2,41) | 18(1,34) | 58(4,08) | 9(0,48) | 3(0,64) | 17(1,16) |
| **Bb2** | 8(0,43) | 51(1,82) | 1(0,12) | 0(0) | 35(1,97) | 54(1,50) | 9(0,67) | 14(0,99) | 37(1,95) | 2(0,42) | 33(2,26) |
| **A2** | 7(0,38) | 52(1,86) | 3(0,36) | 1(0,14) | 6(0,34) | 44(1,22) | 2(0,15) | 22(1,55) | 11(0,58) | 0(0) | 18(1,23) |
| **G#2** | 1(0,05) | 7(0,25) | 1(0,12) | 0(0) | 14(0,79) | 15(0,42) | 2(0,15) | 4(0,28) | 5(0,26) | 1(0,21) | 5(0,34) |
| **G2** | 3(0,16) | 7(0,25) | 0(0) | 0(0) | 0(0) | 4(0,11) | 6(0,45) | 17(1,20) | 9(0,48) | 0(0) | 3(0,21) |
| **F#2** | 3(0,16) | 0(0) | 0(0) | 1(0,14) | 0(0) | 4(0,11) | 2(0,15) | 0(0) | 0(0) | 0(0) | 2(0,14) |
| **F2** | 0(0) | 1(0,04) | 1(0,12) | 1(0,14) | 0(0) | 5(0,14) | 2(0,15) | 2(0,14) | 3(0,16) | 0(0) | 1(0,07) |
| **E2** | 0(0) | 0(0) | 0(0) | 0(0) | 0(0) | 1(0,03) | 0(0) | 0(0) | 0(0) | 1(0,21) | 0(0) |
| **Total** | 1846 | 2801 | 826 | 697 | 1775 | 3609 | 1348 | 1421 | 1893 | 472 | 1460 |

**NOTE:** Frequencies are reported as N(%)