**Supplementary Table 1.** Descriptive statistics for participants (n=3,387) with standardized Mini-Mental State Examination (SMMSE) and Quick Mild Cognitive Impairment (Q*mci*) scores available, comparing patients with normal controls (NC), mild cognitive impairment (MCI) and dementia, grouped according to age (≤75, >75 years) and education (<12, ≥12 years). IQR, interquartile range

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Subgroup**  (years) | **Diagnosis** | **Number** | **Gender**  (Male) | **Age**  **Median**  **(**IQR) | **Education**  **Median**  **(**IQR) | **SMMSE**  **Median**  **(**IQR) | **Q*mci***  **Median**  **(**IQR) |
| **Age ≤ 75**  **Edu < 12** | **All** | 502 | 57.0% | 71±6  (67-73) | 10±2  (8-10) | 26±9  (20-29) | 52±37  (30-67) |
| **NC** | 134 | 51.5% | 68±7  (65-72) | 10±1  (9-10) | 29±2  (28-30) | 70.5±15  (63-78) |
| **MCI** | 135 | 56.3% | 71±5  (68-73) | 9±2  (8-10) | 27±3  (26-29) | 58±20  (45-65) |
| **Dementia** | 233 | 60.6% | 72±5  (69-74) | 9±2  (8-10) | 21±9  (16-25) | 31±28.5  (17.5-46) |
| **Age ≤ 75**  **Edu ≥ 12** | **All** | 1009 | 47.6% | 67±11  (61-72) | 14±4  (12-16) | 29±5  (25-30) | 66±33  (46-79) |
| **NC** | 497 | 39.0% | 64±11  (59-70) | 15±4  (13-17) | 30±1  (29-30) | 78±14  (70-84) |
| **MCI** | 206 | 52.9% | 69±10  (63-73) | 14±4  (12-16) | 28±5.25  (25.75-30) | 59±22.25  (47.75-70) |
| **Dementia** | 306 | 58.1% | 70±10  (64-74) | 14±4  (12-16) | 23±7  (19-26) | 40±25  (26-51) |
| **Age > 75**  **Edu < 12** | **All** | 784 | 50.8% | 81±5  (78-83) | 9±2 (8-10) | 24±7  (20-27) | 42±27  (28-55) |
| **NC** | 63 | 49.2% | 80±7  (77-84) | 9±2  (8-10) | 28±2  (27-29) | 67±13  (59-72) |
| **MCI** | 162 | 59.3% | 80±6  (77-83) | 9±2  (8-10) | 28±3  (26-29) | 54.5±17  (45-62) |
| **Dementia** | 559 | 48.5% | 81±5  (78-83) | 9±2  (8-10) | 23±6  (19-25) | 37±23  (25-48) |
| **Age > 75**  **Edu ≥ 12** | **All** | 849 | 47.9% | 80±5  (78-83) | 14±4  (12-16) | 26±8  (21-29) | 49±29.5  (33.5-63) |
| **NC** | 154 | 46.4% | 80±4  (79-83) | 14±5  (12-17) | 29±2  (28-30) | 71±13.5  (63.75-77.25) |
| **MCI** | 196 | 56.3% | 80±4  (78-82) | 14±4  (12-16) | 28±2  (27-29) | 58±18  (48-66) |
| **Dementia** | 499 | 45.2% | 81±6  (78-84) | 13±4  (12-16) | 22±8  (18-26) | 38±23  (26-49) |

**Supplementary Table 2.** Tables comparing cut-off scores for the Standardized Mini-Mental State Examination (SMMSE) and Quick Mild Cognitive Impairment (Q*mci*) screen, for the total sample (n=3,387), and according to age (≤ 75 & >75) and education (<12 and ≥12) for each diagnostic classification, for a selection of cut-off scores including sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), false positive and false negative rates with 95% confidence intervals (CI). MCI, mild cognitive impairment

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Overall: Cognitive Impairment from Normal Controls  (n=3,387) | <30 | 91%  (90-93) | 43%  (40-46) | 82%  (81-84) | 64%  (60-68) | 57%  (54-60) | 9%  (7-10) | <65 | 87%  (86-89) | 80%  (78-83) | 93%  (92-94) | 69%  (66-72) | 20%  (17-22) | 13%  (11-14) |
| <29 | 83%  (81-84) | 72%  (69-75) | 89%  (88-91) | 59%  (56-62) | 28%  (25-31) | 17%  (16-19) | <64 | 86%  (85-87) | 83%  (81-86) | 94%  (93-95) | 67%  (65-70) | 17%  (14-19) | 14%  (13-15) |
| <28 | 74%  (73-76) | 88%  (85-90) | 94%  (93-95) | 54%  (52-57) | 12%  (10-15) | 26%  (24-27) | <63 | 85%  (83-86) | 85%  (83-87) | 94%  (93-95) | 66%  (63-69) | 15%  (13-17) | 15%  (14-17) |
| <27 | 66%  (64-68) | 94%  (93-96) | 97%  (96-98) | 49%  (47-52) | 6%  (4-7) | 34%  (32-36) | <62 | 83%  (82-85) | 87%  (84-89) | 95%  (94-96) | 64%  (61-67) | 13%  (11-16) | 17%  (15-18) |
| <26 | 58%  (56-60) | 97%  (96-98) | 98%  (98-99) | 45%  (42-47) | 3%  (2-4) | 42%  (40-44) | <61 | 82%  (80-83) | 88%  (86-90) | 95%  (94-96) | 63%  (60-65) | 12%  (10-14) | 18%  (17-20) |
| <25 | 50%  (48-52) | 99%  (98-99) | 99%  (99-100) | 41%  (39-43) | 1%  (1-2) | 50%  (48-52) | <60 | 81%  (79-82) | 89%  (87-91) | 95%  (95-96) | 61%  (59-64) | 11%  (9-13) | 19%  (18-21) |
| <24 | 43%  (41-45) | 99%  (98-100) | 99%  (99-100) | 38%  (36-40) | 1%  (0-2) | 57%  (55-59) | <59 | 79%  (78-81) | 90%  (88-92) | 96%  (95-97) | 60%  (58-63) | 10%  (8-12) | 21%  (19-22) |
| <23 | 37%  (35-39) | 99%  (99-100) | 99%  (99-100) | 35%  (33-37) | 1%  (0-1) | 63%  (61-65) | <58 | 78%  (76-79) | 92%  (90-94) | 96%  (96-97) | 59%  (56-61) | 8%  (6-10) | 22%  (21-24) |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Overall: MCI from Normal Controls  (n=1,641) | <30 | 81%  (78-84) | 43%  (40-46) | 56%  (53-58) | 72%  (68-76) | 57%  (54-60) | 19%  (16-22) | <65 | 70%  (67-73) | 80%  (78-83) | 76%  (73-79) | 76%  (73-78) | 20%  (17-22) | 30%  (27-33) |
| <29 | 63%  (60-66) | 72%  (69-75) | 66%  (63-70) | 69%  (66-72) | 28%  (25-31) | 37%  (34-40) | <64 | 67%  (64-71) | 83%  (81-86) | 78%  (75-81) | 74%  (72-77) | 17%  (14-19) | 33%  (29-36) |
| <28 | 46%  (43-50) | 88%  (85-90) | 76%  (73-80) | 65%  (62-68) | 12%  (10-15) | 54%  (50-57) | <63 | 65%  (61-68) | 85%  (83-87) | 79%  (76-82) | 73%  (71-76) | 15%  (13-17) | 35%  (32-39) |
| <27 | 33%  (30-36) | 94%  (93-96) | 84%  (80-88) | 62%  (59-64) | 6%  (4-7) | 67%  (64-70) | <62 | 62%  (58-65) | 87%  (84-89) | 80%  (77-83) | 72%  (69-75) | 13%  (11-16) | 38%  (35-42) |
| <26 | 24%  (21-27) | 97%  (96-98) | 89%  (85-93) | 59%  (57-62) | 3%  (2-4) | 76%  (73-79) | <61 | 59%  (55-62) | 88%  (86-90) | 81%  (78-84) | 71%  (68-74) | 12%  (10-14) | 41%  (38-45) |
| <25 | 18%  (15-20) | 99%  (98-99) | 92%  (87-96) | 58%  (55-60) | 1%  (1-2) | 82%  (80-85) | <60 | 56%  (53-60) | 89%  (87-91) | 82%  (79-85) | 70%  (67-73) | 11%  (9-13) | 44%  (40-47) |
| <24 | 12%  (10-15) | 99%  (98-100) | 90%  (85-96) | 56%  (54-59) | 1%  (0-2) | 88%  (85-90) | <59 | 54%  (50-57) | 90%  (88-92) | 83%  (79-86) | 69%  (66-72) | 10%  (8-12) | 46%  (43-50) |
| <23 | 8%  (6-10) | 99%  (99-100) | 90%  (83-97) | 55%  (53-58) | 1%  (0-1) | 92%  (90-94) | <58 | 51%  (48-55) | 92%  (90-94) | 84%  (81-88) | 68%  (66-71) | 8%  (6-10) | 49%  (45-52) |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Overall: MCI from Dementia  (n=2,512) | >27 | 54%  (50-57) | 87%  (85-88) | 64%  (60-68) | 81%  (79-83) | 13%  (12-15) | 46%  (43-50) | >49 | 67%  (63-70) | 77%  (75-79) | 55%  (52-59) | 84%  (82-86) | 23%  (21-25) | 33%  (30-37) |
| >26 | 67%  (64-70) | 81%  (79-83) | 60%  (57-64) | 85%  (83-87) | 19%  (17-21) | 33%  (30-36) | >48 | 69%  (66-72) | 74%  (72-76) | 54%  (51-57) | 85%  (83-86) | 26%  (24-28) | 31%  (28-34) |
| >25 | 76%  (73-79) | 73%  (71-75) | 55%  (52-58) | 87%  (86-89) | 27%  (25-29) | 24%  (21-27) | >47 | 72%  (68-75) | 73%  (71-75) | 53%  (50-56) | 85%  (84-87) | 27%  (25-29) | 28%  (25-32) |
| >24 | 82%  (80-85) | 65%  (62-67) | 50%  (48-53) | 89%  (88-91) | 35%  (33-38) | 18%  (15-20) | >46 | 74%  (71-77) | 71%  (69-73) | 53%  (50-56) | 86%  (84-88) | 29%  (27-31) | 26%  (23-29) |
| >23 | 88%  (85-90) | 57%  (54-59) | 47%  (44-50) | 91%  (90-93) | 43%  (41-46) | 12%  (10-15) | >45 | 76%  (73-79) | 69%  (67-71) | 52%  (49-55) | 87%  (85-89) | 31%  (29-33) | 24%  (21-27) |
| >22 | 92%  (90-94) | 49%  (47-52) | 44%  (42-47) | 93%  (92-95) | 51%  (48-53) | 8%  (6-10) | >44 | 78%  (75-81) | 67%  (65-69) | 51%  (48-54) | 87%  (85-89) | 33%  (31-35) | 22%  (19-25) |
| >21 | 94%  (92-96) | 42%  (40-45) | 42%  (39-44) | 94%  (92-96) | 58%  (55-60) | 6%  (4-8) | >43 | 79%  (76-82) | 64%  (62-67) | 49%  (47-52) | 88%  (86-89) | 36%  (33-38) | 21%  (18-24) |
| >20 | 96%  (94-97) | 36%  (33-38) | 39%  (37-42) | 95%  (93-97) | 64%  (62-67) | 4%  (3-6) | >42 | 80%  (77-83) | 62%  (60-64) | 48%  (45-51) | 88%  (86-90) | 38%  (36-40) | 20%  (17-23) |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Overall: Dementia from everything else  (n=3,387) | <30 | 96%  (95-97) | 32%  (30-34) | 60%  (58-62) | 88%  (86-91) | 68%  (66-70) | 4%  (3-5) | <58 | 89%  (88-91) | 72%  (70-74) | 77%  (75-79) | 86%  (84-88) | 28%  (26-30) | 11%  (9-12) |
| <29 | 92%  (90-93) | 56%  (53-58) | 69%  (67-71) | 86%  (84-88) | 44%  (42-47) | 8%  (7-10) | <57 | 88%  (86-89) | 73%  (71-75) | 77%  (76-79) | 85%  (83-87) | 27%  (25-29) | 12%  (11-14) |
| <28 | 87%  (85-88) | 72%  (70-74) | 77%  (75-78) | 84%  (82-86) | 28%  (26-30) | 13%  (12-15) | <56 | 87%  (85-88) | 74%  (72-76) | 78%  (76-80) | 84%  (82-86) | 26%  (24-28) | 13%  (12-15) |
| <27 | 81%  (79-83) | 82%  (80-83) | 82%  (81-84) | 80%  (78-82) | 18%  (17-20) | 19%  (17-21) | <55 | 85%  (83-87) | 76%  (74-78) | 79%  (77-81) | 83%  (81-85) | 24%  (22-26) | 15%  (13-17) |
| <26 | 73%  (71-75) | 87%  (86-89) | 86%  (84-88) | 75%  (73-77) | 13%  (11-14) | 27%  (25-29) | <54 | 84%  (82-85) | 78%  (75-80) | 80%  (78-82) | 82%  (80-84) | 22%  (20-25) | 16%  (15-18) |
| <25 | 65%  (62-67) | 91%  (90-92) | 88%  (87-90) | 71%  (69-73) | 9%  (8-10) | 35%  (33-38) | <53 | 82%  (80-84) | 79%  (77-81) | 81%  (79-82) | 80%  (78-82) | 21%  (19-23) | 18%  (16-20) |
| <24 | 57%  (54-59) | 94%  (92-95) | 90%  (89-92) | 67%  (65-69) | 6%  (5-8) | 43%  (41-46) | <52 | 80%  (78-82) | 80%  (78-82) | 81%  (79-83) | 79%  (77-81) | 20%  (18-22) | 20%  (18-22) |
| <23 | 49%  (47-52) | 96%  (95-97) | 92%  (91-94) | 64%  (62-66) | 4%  (3-5) | 51%  (48-53) | <51 | 78%  (76-80) | 81%  (79-83) | 82%  (80-83) | 78%  (76-80) | 19%  (17-21) | 22%  (20-24) |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age ≤ 75 & Edu < 12: Cognitive Impairment from Normal Controls  (n=502) | <30 | 91%  (88-94) | 31%  (23-39) | 79%  (75-82) | 57%  (45-68) | 69%  (61-77) | 9%  (6-12) | <59 | 77%  (72-81) | 84%  (78-90) | 93%  (90-96) | 57%  (50-64) | 16%  (10-22) | 23%  (19-28) |
| <29 | 82%  (78-86) | 60%  (51-68) | 85%  (81-89) | 55%  (47-63) | 40%  (32-49) | 18%  (14-22) | <58 | 75%  (71-79) | 86%  (80-92) | 94%  (91-96) | 56%  (49-62) | 14%  (8-20) | 25%  (21-29) |
| <28 | 74%  (70-79) | 78%  (71-85) | 90%  (87-93) | 52%  (45-59) | 22%  (15-29) | 26%  (21-30) | <57 | 74%  (69-78) | 87%  (82-93) | 94%  (91-97) | 55%  (48-61) | 13%  (7-18) | 26%  (22-31) |
| <27 | 65%  (60-70) | 90%  (84-95) | 94%  (92-97) | 48%  (42-54) | 10%  (5-16) | 35%  (30-40) | <56 | 72%  (67-76) | 89%  (83-94) | 95%  (92-97) | 53%  (47-60) | 11%  (6-17) | 28%  (24-33) |
| <26 | 57%  (51-62) | 96%  (92-99) | 97%  (95-99) | 44%  (39-50) | 4%  (1-8) | 43%  (38-49) | <55 | 70%  (66-75) | 92%  (87-96) | 96%  (94-98) | 53%  (47-59) | 8%  (4-13) | 30%  (25-34) |
| <25 | 49%  (44-54) | 99%  (96-101) | 99%  (97-100) | 41%  (36-47) | 1%  (0-4) | 51%  (46-56) | <54 | 68%  (63-73) | 93%  (88-97) | 96%  (94-98) | 51%  (45-58) | 7%  (3-12) | 32%  (27-37) |
| <24 | 45%  (40-50) | 99%  (98-101) | 99%  (98-101) | 40%  (34-45) | 1%  (0-2) | 55%  (50-60) | <53 | 67%  (62-72) | 93%  (89-98) | 96%  (94-99) | 51%  (44-57) | 7%  (2-11) | 33%  (28-38) |
| <23 | 42%  (37-47) | 99%  (98-101) | 99%  (98-101) | 38%  (33-43) | 1%  (0-2) | 58%  (53-63) | <52 | 66%  (61-71) | 96%  (92-99) | 98%  (96-99) | 50%  (44-57) | 4%  (1-8) | 34%  (29-39) |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age ≤ 75 & Edu < 12: MCI from Normal Controls  (n=269) | <30 | 84%  (78-91) | 31%  (23-39) | 55%  (49-62) | 67%  (55-78) | 69%  (61-77) | 16%  (9-22) | <68 | 82%  (76-89) | 61%  (53-69) | 68%  (61-75) | 77%  (69-85) | 39%  (31-47) | 18%  (11-24) |
| <29 | 67%  (60-75) | 60%  (51-68) | 63%  (55-71) | 65%  (56-73) | 40%  (32-49) | 33%  (25-40) | <67 | 79%  (72-86) | 65%  (57-73) | 69%  (62-77) | 76%  (68-83) | 35%  (27-43) | 21%  (14-28) |
| <28 | 53%  (44-61) | 78%  (71-85) | 70%  (61-79) | 62%  (55-69) | 22%  (15-29) | 47%  (39-56) | <66 | 76%  (69-83) | 66%  (58-74) | 70%  (62-77) | 74%  (66-81) | 34%  (26-42) | 24%  (17-31) |
| <27 | 36%  (27-44) | 90%  (84-95) | 77%  (67-88) | 58%  (51-65) | 10%  (5-16) | 64%  (56-73) | <65 | 74%  (67-81) | 71%  (63-79) | 72%  (64-79) | 73%  (65-81) | 29%  (21-37) | 26%  (19-33) |
| <26 | 24%  (17-31) | 96%  (92-99) | 84%  (73-96) | 55%  (49-62) | 4%  (1-8) | 76%  (69-83) | <64 | 70%  (63-78) | 73%  (66-81) | 73%  (65-80) | 71%  (63-79) | 27%  (19-34) | 30%  (22-37) |
| <25 | 16%  (10-23) | 99%  (96-101) | 92%  (81-103) | 54%  (48-60) | 1%  (0-4) | 84%  (77-90) | <63 | 68%  (60-76) | 76%  (69-83) | 74%  (66-82) | 70%  (63-78) | 24%  (17-31) | 32%  (24-40) |
| <24 | 12%  (6-17) | 99%  (98-101) | 94%  (83-105) | 53%  (47-59) | 1%  (0-2) | 88%  (83-94) | <62 | 62%  (54-70) | 80%  (73-87) | 76%  (68-84) | 68%  (60-75) | 20%  (13-27) | 38%  (30-46) |
| <23 | 10%  (5-16) | 99%  (98-101) | 93%  (81-106) | 52%  (46-59) | 1%  (0-2) | 90%  (84-95) | <61 | 59%  (50-67) | 81%  (75-88) | 76%  (68-84) | 66%  (59-73) | 19%  (12-25) | 41%  (33-50) |

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| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age ≤ 75 & Edu < 12: MCI from Dementia  (n=368) | >27 | 47%  (39-56) | 87%  (82-91) | 67%  (58-77) | 74%  (69-79) | 13%  (9-18) | 53%  (44-61) | >47 | 67%  (60-75) | 77%  (71-82) | 63%  (55-71) | 80%  (75-85) | 23%  (18-29) | 33%  (25-40) |
| >26 | 64%  (56-73) | 82%  (77-87) | 67%  (59-76) | 80%  (75-85) | 18%  (13-23) | 36%  (27-44) | >46 | 70%  (63-78) | 76%  (70-81) | 63%  (55-71) | 82%  (76-87) | 24%  (19-30) | 30%  (22-37) |
| >25 | 76%  (69-83) | 76%  (70-81) | 64%  (57-72) | 85%  (80-90) | 24%  (19-30) | 24%  (17-31) | >45 | 73%  (66-81) | 73%  (68-79) | 61%  (54-69) | 83%  (77-88) | 27%  (21-32) | 27%  (19-34) |
| >24 | 84%  (77-90) | 68%  (62-74) | 60%  (53-67) | 88%  (83-93) | 32%  (26-38) | 16%  (10-23) | >44 | 76%  (68-83) | 73%  (67-78) | 61%  (54-69) | 84%  (79-89) | 27%  (22-33) | 24%  (17-32) |
| >23 | 88%  (83-94) | 64%  (58-70) | 59%  (52-65) | 90%  (86-95) | 36%  (30-42) | 12%  (6-17) | >43 | 76%  (68-83) | 72%  (66-77) | 61%  (53-68) | 84%  (78-89) | 28%  (23-34) | 24%  (17-32) |
| >22 | 90%  (84-95) | 60%  (53-66) | 56%  (50-63) | 91%  (86-95) | 40%  (34-47) | 10%  (5-16) | >42 | 76%  (68-83) | 71%  (65-77) | 60%  (53-67) | 83%  (78-89) | 29%  (23-35) | 24%  (17-32) |
| >21 | 90%  (85-95) | 56%  (49-62) | 54%  (48-61) | 91%  (86-96) | 44%  (38-51) | 10%  (5-15) | >41 | 77%  (70-84) | 69%  (63-75) | 59%  (52-66) | 84%  (79-89) | 31%  (25-37) | 23%  (16-30) |
| >20 | 92%  (87-96) | 50%  (43-56) | 51%  (45-58) | 91%  (86-96) | 50%  (44-57) | 8%  (4-13) | >40 | 79%  (72-85) | 67%  (60-73) | 58%  (50-65) | 84%  (79-90) | 33%  (27-40) | 21%  (15-28) |

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| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age ≤ 75 & Edu < 12: Dementia from everything else  (n=502) | <30 | 95%  (93-98) | 23%  (18-28) | 52%  (47-57) | 85%  (77-93) | 77%  (72-82) | 5%  (2-7) | <58 | 90%  (86-94) | 68%  (62-74) | 71%  (66-76) | 88%  (84-93) | 32%  (26-38) | 10%  (6-14) |
| <29 | 91%  (87-94) | 46%  (40-52) | 59%  (54-64) | 85%  (79-91) | 54%  (48-60) | 9%  (6-13) | <57 | 88%  (84-93) | 70%  (64-75) | 72%  (66-77) | 87%  (83-92) | 30%  (25-36) | 12%  (7-16) |
| <28 | 87%  (82-91) | 62%  (57-68) | 67%  (61-72) | 84%  (79-89) | 38%  (32-43) | 13%  (9-18) | <56 | 87%  (82-91) | 71%  (66-77) | 72%  (67-78) | 86%  (82-91) | 29%  (23-34) | 13%  (9-18) |
| <27 | 82%  (77-87) | 77%  (72-82) | 75%  (70-81) | 83%  (78-88) | 23%  (18-28) | 18%  (13-23) | <55 | 87%  (82-91) | 75%  (70-80) | 75%  (70-80) | 87%  (82-91) | 25%  (20-30) | 13%  (9-18) |
| <26 | 76%  (70-81) | 86%  (82-90) | 82%  (77-87) | 80%  (76-85) | 14%  (10-18) | 24%  (19-30) | <54 | 84%  (79-88) | 75%  (70-81) | 75%  (69-80) | 84%  (80-89) | 25%  (19-30) | 16%  (12-21) |
| <25 | 68%  (62-74) | 91%  (88-94) | 87%  (82-92) | 77%  (72-81) | 9%  (6-12) | 32%  (26-38) | <53 | 82%  (77-87) | 76%  (71-81) | 75%  (69-80) | 83%  (78-87) | 24%  (19-29) | 18%  (13-23) |
| <24 | 64%  (58-70) | 94%  (91-97) | 90%  (85-94) | 75%  (70-80) | 6%  (3-9) | 36%  (30-42) | <52 | 80%  (75-85) | 77%  (72-82) | 75%  (70-81) | 82%  (77-87) | 23%  (18-28) | 20%  (15-25) |
| <23 | 60%  (53-66) | 94%  (92-97) | 90%  (86-95) | 73%  (68-78) | 6%  (3-8) | 40%  (34-47) | <51 | 79%  (73-84) | 78%  (73-83) | 76%  (70-81) | 81%  (76-86) | 22%  (17-27) | 21%  (16-27) |

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| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age ≤ 75 & Edu ≥ 12: Cognitive Impairment from Normal Controls  (n=1,009) | <30 | 85%  (82-88) | 50%  (46-54) | 64%  (60-67) | 77%  (72-81) | 50%  (46-54) | 15%  (12-18) | <64 | 78%  (74-81) | 91%  (88-93) | 89%  (87-92) | 80%  (76-83) | 9%  (7-12) | 22%  (19-26) |
| <29 | 77%  (73-80) | 81%  (77-84) | 80%  (77-84) | 77%  (73-81) | 19%  (16-23) | 23%  (20-27) | <63 | 76%  (73-80) | 92%  (90-95) | 91%  (88-94) | 79%  (76-82) | 8%  (5-10) | 24%  (20-27) |
| <28 | 69%  (65-73) | 94%  (92-96) | 92%  (89-95) | 74%  (71-78) | 6%  (4-8) | 31%  (27-35) | <62 | 75%  (72-79) | 93%  (91-96) | 92%  (90-95) | 79%  (75-82) | 7%  (4-9) | 25%  (21-28) |
| <27 | 58%  (54-62) | 98%  (97-99) | 97%  (95-99) | 69%  (66-73) | 2%  (1-3) | 42%  (38-46) | <61 | 75%  (71-78) | 95%  (93-97) | 93%  (91-96) | 78%  (75-82) | 5%  (3-7) | 25%  (22-29) |
| <26 | 50%  (46-55) | 99%  (98-100) | 98%  (96-100) | 66%  (63-69) | 1%  (0-2) | 50%  (45-54) | <60 | 74%  (70-78) | 96%  (94-97) | 95%  (92-97) | 78%  (75-82) | 4%  (3-6) | 26%  (22-30) |
| <25 | 43%  (38-47) | 99%  (98-100) | 98%  (96-100) | 63%  (59-66) | 1%  (0-2) | 57%  (53-62) | <59 | 72%  (68-76) | 96%  (94-98) | 95%  (93-97) | 77%  (74-80) | 4%  (2-6) | 28%  (24-32) |
| <24 | 37%  (32-41) | 99%  (98-100) | 97%  (95-100) | 60%  (57-64) | 1%  (0-2) | 63%  (59-68) | <58 | 71%  (67-74) | 97%  (96-99) | 96%  (94-98) | 76%  (73-79) | 3%  (1-4) | 29%  (26-33) |
| <23 | 29%  (25-33) | 100%  (99- 100) | 99%  (97-100) | 58%  (54-61) | 0%  (0-1) | 71%  (67-75) | <57 | 68%  (64-72) | 97%  (96-99) | 96%  (94-98) | 75%  (72-78) | 3%  (1-4) | 32%  (28-36) |

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| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age ≤ 75 & Edu ≥ 12: MCI from Normal Controls  (n=703) | <30 | 74%  (68-80) | 50%  (46-54) | 38%  (33-43) | 82%  (78-86) | 50%  (46-54) | 26%  (20-32) | <72 | 80%  (74-85) | 72%  (68-76) | 54%  (48-60) | 89%  (86-92) | 28%  (24-32) | 20%  (15-26) |
| <29 | 59%  (53-66) | 81%  (77-84) | 56%  (50-63) | 83%  (79-86) | 19%  (16-23) | 41%  (34-47) | <71 | 78%  (72-83) | 75%  (71-78) | 56%  (50-62) | 89%  (86-92) | 25%  (22-29) | 22%  (17-28) |
| <28 | 46%  (39-52) | 94%  (92-96) | 76%  (68-83) | 81%  (77-84) | 6%  (4-8) | 54%  (48-61) | <70 | 75%  (69-81) | 78%  (74-81) | 58%  (52-64) | 88%  (85-91) | 22%  (19-26) | 25%  (19-31) |
| <27 | 33%  (26-39) | 98%  (97-99) | 87%  (80-95) | 78%  (75-81) | 2%  (1-3) | 67%  (61-74) | <69 | 74%  (68-80) | 81%  (78-85) | 62%  (56-68) | 88%  (85-91) | 19%  (15-22) | 26%  (20-32) |
| <26 | 25%  (19-31) | 99%  (98-100) | 89%  (82-97) | 76%  (73-79) | 1%  (0-2) | 75%  (69-81) | <68 | 70%  (64-77) | 82%  (79-86) | 62%  (56-68) | 87%  (84-90) | 18%  (14-21) | 30%  (23-36) |
| <25 | 20%  (14-25) | 99%  (98-100) | 89%  (80-98) | 75%  (72-78) | 1%  (0-2) | 80%  (75-86) | <67 | 69%  (63-75) | 85%  (81-88) | 65%  (59-71) | 87%  (84-90) | 15%  (12-19) | 31%  (25-37) |
| <24 | 16%  (11-20) | 99%  (98-100) | 86%  (75-98) | 74%  (71-77) | 1%  (0-2) | 84%  (80-89) | <66 | 64%  (57-70) | 87%  (84-90) | 66%  (60-73) | 85%  (82-88) | 13%  (10-16) | 36%  (30-43) |
| <23 | 9%  (5-13) | 100%  (99- 100) | 90%  (78-103) | 73%  (69-76) | 0%  (0-1) | 91%  (87-95) | <65 | 61%  (54-67) | 90%  (87-92) | 71%  (64-77) | 85%  (82-88) | 10%  (8-13) | 39%  (33-46) |

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| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age ≤ 75 & Edu ≥ 12: MCI from Dementia  (n=512) | >29 | 26%  (20-32) | 93%  (90-96) | 71%  (61-81) | 65%  (61-70) | 7%  (4-10) | 74%  (68-80) | >53 | 63%  (56-69) | 79%  (75-84) | 67%  (61-74) | 76%  (71-81) | 21%  (16-25) | 37%  (31-44) |
| >28 | 41%  (34-47) | 88%  (85-92) | 70%  (62-78) | 69%  (64-73) | 12%  (8-15) | 59%  (53-66) | >52 | 66%  (59-72) | 77%  (72-82) | 66%  (59-72) | 77%  (72-82) | 23%  (18-28) | 34%  (28-41) |
| >27 | 54%  (48-61) | 84%  (80-88) | 70%  (63-77) | 73%  (69-78) | 16%  (12-20) | 46%  (39-52) | >51 | 67%  (60-73) | 75%  (71-80) | 65%  (58-71) | 77%  (72-82) | 25%  (20-29) | 33%  (27-40) |
| >26 | 67%  (61-74) | 75%  (71-80) | 65%  (59-71) | 78%  (73-82) | 25%  (20-29) | 33%  (26-39) | >50 | 67%  (61-73) | 74%  (69-79) | 64%  (57-70) | 77%  (72-82) | 26%  (21-31) | 33%  (27-39) |
| >25 | 75%  (69-81) | 68%  (62-73) | 61%  (55-67) | 80%  (75-85) | 32%  (27-38) | 25%  (19-31) | >49 | 70%  (64-77) | 73%  (68-78) | 64%  (58-70) | 79%  (74-83) | 27%  (22-32) | 30%  (23-36) |
| >24 | 80%  (75-86) | 58%  (53-64) | 56%  (51-62) | 81%  (76-86) | 42%  (36-47) | 20%  (14-25) | >48 | 71%  (65-78) | 72%  (67-77) | 63%  (57-69) | 79%  (74-84) | 28%  (23-33) | 29%  (22-35) |
| >23 | 84%  (80-89) | 51%  (45-56) | 54%  (48-59) | 83%  (77-88) | 49%  (44-55) | 16%  (11-20) | >47 | 75%  (69-81) | 68%  (63-74) | 62%  (56-68) | 80%  (76-85) | 32%  (26-37) | 25%  (19-31) |
| >22 | 91%  (87-95) | 43%  (37-48) | 52%  (47-57) | 87%  (82-93) | 57%  (52-63) | 9%  (5-13) | >46 | 76%  (70-82) | 66%  (60-71) | 60%  (54-66) | 80%  (75-85) | 34%  (29-40) | 24%  (18-30) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age ≤ 75 & Edu ≥ 12: Dementia from everything else  (n=1,009) | <30 | 93%  (90-96) | 43%  (39-47) | 42%  (38-45) | 93%  (90-96) | 57%  (53-61) | 7%  (4-10) | <63 | 91%  (88-94) | 79%  (75-82) | 65%  (60-69) | 95%  (93-97) | 21%  (18-25) | 9%  (6-12) |
| <29 | 88%  (85-92) | 69%  (66-73) | 55%  (51-60) | 93%  (91-95) | 31%  (27-34) | 12%  (8-15) | <62 | 90%  (86-93) | 79%  (76-82) | 65%  (61-70) | 95%  (93-96) | 21%  (18-24) | 10%  (7-14) |
| <28 | 84%  (80-88) | 82%  (80-85) | 68%  (63-72) | 92%  (90-94) | 18%  (15-20) | 16%  (12-20) | <61 | 90%  (86-93) | 81%  (78-84) | 67%  (62-72) | 95%  (93-96) | 19%  (16-22) | 10%  (7-14) |
| <27 | 75%  (71-80) | 89%  (87-91) | 75%  (70-80) | 89%  (87-92) | 11%  (9-13) | 25%  (20-29) | <60 | 90%  (86-93) | 82%  (79-85) | 68%  (64-73) | 95%  (93-97) | 18%  (15-21) | 10%  (7-14) |
| <26 | 68%  (62-73) | 92%  (90-94) | 78%  (73-83) | 87%  (84-89) | 8%  (6-10) | 32%  (27-38) | <59 | 88%  (84-92) | 83%  (80-86) | 69%  (65-74) | 94%  (92-96) | 17%  (14-20) | 12%  (8-16) |
| <25 | 58%  (53-64) | 93%  (92-95) | 79%  (74-85) | 84%  (81-86) | 7%  (5-8) | 42%  (36-47) | <58 | 86%  (82-90) | 84%  (82-87) | 70%  (66-75) | 93%  (91-95) | 16%  (13-18) | 14%  (10-18) |
| <24 | 51%  (45-56) | 95%  (93-96) | 81%  (75-86) | 82%  (79-84) | 5%  (4-7) | 49%  (44-55) | <57 | 84%  (80-88) | 85%  (82-87) | 71%  (66-75) | 92%  (90-94) | 15%  (13-18) | 16%  (12-20) |
| <23 | 43%  (37-48) | 97%  (96-98) | 86%  (81-92) | 80%  (77-82) | 3%  (2-4) | 57%  (52-63) | <56 | 83%  (79-87) | 86%  (83-88) | 72%  (67-77) | 92%  (90-94) | 14%  (12-17) | 17%  (13-21) |

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| **Subgroup** | **SMMSE**  **Cut-off** | | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age > 75 & Edu < 12: Cognitive Impairment from Normal Controls  (n=784) | <30 | | 96%  (95-97) | 22%  (12-32) | 93%  (92-95) | 33%  (19-47) | 78%  (68-88) | 4%  (3-5) | <57 | 83%  (80-86) | 79%  (69-89) | 98%  (97-99) | 29%  (22-36) | 21%  (11-31) | 17%  (14-20) |
| <29 | | 89%  (87-91) | 48%  (35-60) | 95%  (93-97) | 27%  (19-36) | 52%  (40-65) | 11%  (9-13) | <56 | 82%  (79-85) | 79%  (69-89) | 98%  (97-99) | 27%  (21-34) | 21%  (11-31) | 18%  (15-21) |
| <28 | | 80%  (77-83) | 70%  (59-81) | 97%  (95-98) | 23%  (17-29) | 30%  (19-41) | 20%  (17-23) | <55 | 79%  (76-82) | 81%  (71-91) | 98%  (97-99) | 25%  (19-31) | 19%  (9-29) | 21%  (18-24) |
| <27 | | 75%  (72-78) | 86%  (77-94) | 98%  (97-99) | 23%  (18-28) | 14%  (6-23) | 25%  (22-28) | <54 | 77%  (74-80) | 86%  (77-94) | 98%  (97-99) | 25%  (19-31) | 14%  (6-23) | 23%  (20-26) |
| <26 | | 65%  (62-69) | 90%  (83-98) | 99%  (98-100) | 19%  (14-23) | 10%  (2-17) | 35%  (31-38) | <53 | 75%  (72-78) | 87%  (79-96) | 99%  (98-100) | 24%  (18-29) | 13%  (4-21) | 25%  (22-28) |
| <25 | | 57%  (53-60) | 95%  (90-100) | 99%  (98-100) | 16%  (12-20) | 5%  (0-10) | 43%  (40-47) | <52 | 73%  (70-76) | 87%  (79-96) | 98%  (97-100) | 22%  (17-27) | 13%  (4-21) | 27%  (24-30) |
| <24 | | 47%  (44-51) | 95%  (90-100) | 99%  (98-100) | 14%  (10-17) | 5%  (0-10) | 53%  (49-56) | <51 | 70%  (67-73) | 87%  (79-96) | 98%  (97-100) | 20%  (16-25) | 13%  (4-21) | 30%  (27-33) |
| <23 | | 38%  (35-42) | 95%  (90-100) | 99%  (98-100) | 12%  (9-15) | 5%  (0-10) | 62%  (58-65) | <50 | 69%  (65-72) | 90%  (83-98) | 99%  (98-100) | 20%  (16-25) | 10%  (2-17) | 31%  (28-35) |
|  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE**  **Cut-off** | | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age > 75 & Edu < 12: MCI from Normal Controls  (n=225) | <30 | | 86%  (80-91) | 22%  (12-32) | 74%  (68-80) | 38%  (22-53) | 78%  (68-88) | 14%  (9-20) | <68 | 89%  (84-94) | 48%  (35-60) | 81%  (76-87) | 63%  (49-76) | 52%  (40-65) | 11%  (6-16) |
| <29 | | 69%  (61-76) | 48%  (35-60) | 77%  (70-84) | 37%  (27-48) | 52%  (40-65) | 31%  (24-39) | <67 | 86%  (80-91) | 56%  (43-68) | 83%  (78-89) | 60%  (48-73) | 44%  (32-57) | 14%  (9-20) |
| <28 | | 44%  (37-52) | 70%  (59-81) | 79%  (71-87) | 33%  (25-41) | 30%  (19-41) | 56%  (48-63) | <66 | 85%  (79-90) | 60%  (48-72) | 85%  (79-90) | 60%  (48-72) | 40%  (28-52) | 15%  (10-21) |
| <27 | | 36%  (28-43) | 86%  (77-94) | 87%  (78-95) | 34%  (27-42) | 14%  (6-23) | 64%  (57-72) | <65 | 81%  (75-87) | 65%  (53-77) | 86%  (80-91) | 58%  (46-69) | 35%  (23-47) | 19%  (13-25) |
| <26 | | 24%  (17-31) | 90%  (83-98) | 87%  (77-97) | 32%  (25-38) | 10%  (2-17) | 76%  (69-83) | <64 | 78%  (72-85) | 68%  (57-80) | 86%  (81-92) | 55%  (44-66) | 32%  (20-43) | 22%  (15-28) |
| <25 | | 19%  (13-25) | 95%  (90-100) | 91%  (81-101) | 31%  (25-38) | 5%  (0-10) | 81%  (75-87) | <63 | 76%  (69-83) | 70%  (59-81) | 87%  (81-92) | 53%  (42-64) | 30%  (19-41) | 24%  (17-31) |
| <24 | | 11%  (6-16) | 95%  (90-100) | 86%  (71-101) | 29%  (23-36) | 5%  (0-10) | 89%  (84-94) | <62 | 70%  (63-77) | 71%  (60-83) | 86%  (80-92) | 48%  (38-58) | 29%  (17-40) | 30%  (23-37) |
| <23 | | 7%  (3-11) | 95%  (90-100) | 80%  (60-100) | 29%  (22-35) | 5%  (0-10) | 93%  (89-97) | <61 | 66%  (59-73) | 75%  (64-85) | 87%  (81-93) | 46%  (36-56) | 25%  (15-36) | 34%  (27-41) |
|  | |
|  | |
| **Subgroup** | **SMMSE**  **Cut-off** | | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age > 75 & Edu < 12: MCI from Dementia  (n=721) | >28 | | 31%  (24-39) | 95%  (93-97) | 64%  (53-74) | 83%  (80-86) | 5%  (3-7) | 69%  (61-76) | >48 | 69%  (61-76) | 76%  (73-80) | 46%  (39-52) | 89%  (87-92) | 24%  (20-27) | 31%  (24-39) |
| >27 | | 56%  (48-63) | 90%  (87-92) | 62%  (54-70) | 87%  (85-90) | 10%  (8-13) | 44%  (37-52) | >47 | 70%  (63-77) | 75%  (71-79) | 45%  (39-51) | 90%  (87-92) | 25%  (21-29) | 30%  (23-37) |
| >26 | | 64%  (57-72) | 86%  (84-89) | 58%  (51-65) | 89%  (87-92) | 14%  (11-16) | 36%  (28-43) | >46 | 73%  (66-80) | 73%  (69-77) | 44%  (38-50) | 90%  (88-93) | 27%  (23-31) | 27%  (20-34) |
| >25 | | 76%  (69-83) | 77%  (74-81) | 49%  (43-55) | 92%  (89-94) | 23%  (19-26) | 24%  (17-31) | >45 | 75%  (68-81) | 72%  (68-75) | 43%  (37-49) | 91%  (88-93) | 28%  (25-32) | 25%  (19-32) |
| >24 | | 81%  (75-87) | 68%  (64-72) | 42%  (37-48) | 93%  (90-95) | 32%  (28-36) | 19%  (13-25) | >44 | 75%  (69-82) | 69%  (65-73) | 41%  (35-47) | 91%  (88-93) | 31%  (27-35) | 25%  (18-31) |
| >23 | | 89%  (84-94) | 58%  (54-62) | 38%  (33-43) | 95%  (92-97) | 42%  (38-46) | 11%  (6-16) | >43 | 78%  (71-84) | 67%  (63-71) | 40%  (35-46) | 91%  (88-94) | 33%  (29-37) | 22%  (16-29) |
| >22 | | 93%  (89-97) | 47%  (43-51) | 34%  (29-38) | 96%  (93-98) | 53%  (49-57) | 7%  (3-11) | >42 | 78%  (71-84) | 65%  (61-69) | 39%  (34-44) | 91%  (88-94) | 35%  (31-39) | 22%  (16-29) |
| >21 | | 94%  (90-98) | 41%  (37-45) | 32%  (27-36) | 96%  (93-98) | 59%  (55-63) | 6%  (2-10) | >41 | 78%  (71-84) | 61%  (57-65) | 37%  (32-42) | 90%  (88-93) | 39%  (35-43) | 22%  (16-29) |

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| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age > 75 & Edu < 12: Dementia from everything else  (n=784) | <30 | 99%  (98-100) | 16%  (12-21) | 75%  (71-78) | 86%  (76-96) | 84%  (79-88) | 1%  (0-2) | <53 | 85%  (82-88) | 66%  (60-72) | 86%  (83-89) | 64%  (58-70) | 34%  (28-40) | 15%  (12-18) |
| <29 | 95%  (93-97) | 36%  (30-42) | 79%  (76-82) | 74%  (65-82) | 64%  (58-70) | 5%  (3-7) | <52 | 82%  (79-85) | 67%  (61-73) | 86%  (83-89) | 60%  (54-66) | 33%  (27-39) | 18%  (15-21) |
| <28 | 90%  (87-92) | 60%  (53-66) | 85%  (82-88) | 71%  (64-77) | 40%  (34-47) | 10%  (8-13) | <51 | 80%  (77-83) | 71%  (65-77) | 87%  (84-90) | 59%  (53-65) | 29%  (23-35) | 20%  (17-23) |
| <27 | 86%  (84-89) | 70%  (64-76) | 88%  (85-91) | 68%  (62-74) | 30%  (24-36) | 14%  (11-16) | <50 | 79%  (76-82) | 73%  (67-79) | 88%  (85-91) | 58%  (52-64) | 27%  (21-33) | 21%  (18-24) |
| <26 | 77%  (74-81) | 80%  (75-85) | 91%  (88-93) | 59%  (53-64) | 20%  (15-25) | 23%  (19-26) | <49 | 76%  (73-80) | 75%  (69-80) | 88%  (85-91) | 56%  (50-62) | 25%  (20-31) | 24%  (20-27) |
| <25 | 68%  (64-72) | 85%  (81-90) | 92%  (89-95) | 52%  (47-57) | 15%  (10-19) | 32%  (28-36) | <48 | 75%  (71-79) | 76%  (71-82) | 89%  (86-92) | 55%  (50-61) | 24%  (18-29) | 25%  (21-29) |
| <24 | 58%  (54-62) | 91%  (87-94) | 94%  (91-96) | 46%  (42-51) | 9%  (6-13) | 42%  (38-46) | <47 | 73%  (69-77) | 78%  (73-84) | 89%  (86-92) | 54%  (49-59) | 22%  (16-27) | 27%  (23-31) |
| <23 | 47%  (43-51) | 93%  (90-97) | 95%  (92-97) | 42%  (37-46) | 7%  (3-10) | 53%  (49-57) | <46 | 72%  (68-75) | 80%  (74-85) | 90%  (87-93) | 53%  (48-58) | 20%  (15-26) | 28%  (25-32) |

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| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age > 75 & Edu ≥ 12: Cognitive Impairment from Normal Controls  (n=849) | <30 | 92%  (90-94) | 38%  (31-46) | 87%  (85-89) | 51%  (42-60) | 62%  (54-69) | 8%  (6-10) | <59 | 79%  (76-82) | 83%  (77-89) | 95%  (94-97) | 47%  (41-53) | 17%  (11-23) | 21%  (18-24) |
| <29 | 82%  (79-85) | 61%  (53-69) | 90%  (88-93) | 43%  (36-49) | 39%  (31-47) | 18%  (15-21) | <58 | 77%  (74-80) | 88%  (82-93) | 97%  (95-98) | 46%  (40-52) | 12%  (7-18) | 23%  (20-26) |
| <28 | 73%  (69-76) | 82%  (76-88) | 95%  (93-97) | 40%  (35-45) | 18%  (12-24) | 27%  (24-31) | <57 | 76%  (73-79) | 88%  (83-93) | 97%  (95-98) | 45%  (39-50) | 12%  (7-17) | 24%  (21-27) |
| <27 | 63%  (60-67) | 91%  (86-95) | 97%  (95-99) | 36%  (31-40) | 9%  (5-14) | 37%  (33-40) | <56 | 75%  (72-78) | 90%  (86-95) | 97%  (96-99) | 44%  (39-50) | 10%  (5-14) | 25%  (22-28) |
| <26 | 56%  (52-60) | 98%  (96-100) | 99%  (98-100) | 33%  (29-37) | 2%  (0-4) | 44%  (40-48) | <55 | 74%  (71-77) | 91%  (86-95) | 97%  (96-99) | 43%  (38-49) | 9%  (5-14) | 26%  (23-29) |
| <25 | 49%  (45-53) | 99%  (97-100) | 99%  (99-100) | 30%  (26-34) | 1%  (0-3) | 51%  (47-55) | <54 | 72%  (69-75) | 92%  (88-96) | 98%  (96-99) | 42%  (37-47) | 8%  (4-12) | 28%  (25-31) |
| <24 | 43%  (39-47) | 99%  (98-101) | 100%  (99- 100) | 28%  (24-32) | 1%  (0-2) | 57%  (53-61) | <53 | 70%  (67-73) | 94%  (90-97) | 98%  (97-99) | 41%  (36-46) | 6%  (3-10) | 30%  (27-33) |
| <23 | 38%  (35-42) | 99%  (98-101) | 100%  (99- 100) | 26%  (23-30) | 1%  (0-2) | 62%  (58-65) | <52 | 67%  (64-71) | 94%  (90-98) | 98%  (97-99) | 39%  (34-44) | 6%  (2-10) | 33%  (29-36) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age > 75 & Edu ≥ 12: MCI from Normal Controls  (n=350) | <30 | 80%  (74-85) | 38%  (31-46) | 62%  (56-68) | 60%  (50-69) | 62%  (54-69) | 20%  (15-26) | <73 | 91%  (87-95) | 43%  (35-51) | 67%  (61-73) | 80%  (71-88) | 57%  (49-65) | 9%  (5-13) |
| <29 | 56%  (49-63) | 61%  (53-69) | 65%  (58-72) | 52%  (45-60) | 39%  (31-47) | 44%  (37-51) | <72 | 91%  (87-95) | 45%  (38-53) | 68%  (62-74) | 80%  (72-89) | 55%  (47-62) | 9%  (5-13) |
| <28 | 38%  (31-45) | 82%  (76-88) | 73%  (65-82) | 51%  (45-57) | 18%  (12-24) | 62%  (55-69) | <71 | 90%  (86-94) | 52%  (44-60) | 70%  (65-76) | 80%  (72-88) | 48%  (40-56) | 10%  (6-14) |
| <27 | 24%  (18-31) | 91%  (86-95) | 77%  (67-88) | 49%  (43-54) | 9%  (5-14) | 76%  (69-82) | <70 | 87%  (83-92) | 55%  (47-62) | 71%  (65-77) | 77%  (69-85) | 45%  (38-53) | 13%  (8-17) |
| <26 | 19%  (13-24) | 98%  (96-100) | 93%  (84-101) | 49%  (43-54) | 2%  (0-4) | 81%  (76-87) | <69 | 83%  (78-88) | 58%  (50-66) | 71%  (66-77) | 73%  (65-81) | 42%  (34-50) | 17%  (12-22) |
| <25 | 13%  (9-18) | 99%  (97-100) | 93%  (83-102) | 47%  (42-53) | 1%  (0-3) | 87%  (82-91) | <68 | 80%  (74-85) | 60%  (52-67) | 72%  (66-78) | 70%  (62-78) | 40%  (33-48) | 20%  (15-26) |
| <24 | 9%  (5-13) | 99%  (98-101) | 95%  (85-105) | 46%  (41-52) | 1%  (0-2) | 91%  (87-95) | <67 | 76%  (69-82) | 63%  (55-71) | 72%  (66-78) | 67%  (59-75) | 37%  (29-45) | 24%  (18-31) |
| <23 | 6%  (3 – 9) | 99%  (98-101) | 92%  (78-107) | 45%  (40- 51) | 1%  (0-2) | 94%  (91-97) | <66 | 70%  (63-76) | 66%  (59-74) | 72%  (66-79) | 63%  (56-71) | 34%  (26-41) | 30%  (24-37) |

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| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age > 75 & Edu ≥ 12: MCI from Dementia  (n=695) | >29 | 20%  (15-26) | 97%  (95-98) | 70%  (58-82) | 76%  (72-79) | 3%  (2-5) | 80%  (74-85) | >48 | 75%  (69-81) | 73%  (69-77) | 52%  (46-58) | 88%  (85-91) | 27%  (23-31) | 25%  (19-31) |
| >28 | 44%  (37-51) | 92%  (90-94) | 68%  (60-76) | 81%  (77-84) | 8%  (6-10) | 56%  (49-63) | >47 | 77%  (71-83) | 71%  (67-75) | 51%  (45-57) | 89%  (86-92) | 29%  (25-33) | 23%  (17-29) |
| >27 | 62%  (55-69) | 86%  (83-89) | 64%  (57-71) | 85%  (82-88) | 14%  (11-17) | 38%  (31-45) | >46 | 79%  (73-85) | 70%  (66-74) | 51%  (45-56) | 89%  (86-93) | 30%  (26-34) | 21%  (15-27) |
| >26 | 76%  (69-82) | 79%  (75-82) | 58%  (52-64) | 89%  (86-92) | 21%  (18-25) | 24%  (18-31) | >45 | 82%  (77-88) | 68%  (64-72) | 50%  (45-55) | 91%  (88-94) | 32%  (28-36) | 18%  (12-23) |
| >25 | 81%  (76-87) | 71%  (67-75) | 52%  (47-58) | 91%  (88-93) | 29%  (25-33) | 19%  (13-24) | >44 | 84%  (78-89) | 66%  (62-70) | 49%  (44-54) | 91%  (88-94) | 34%  (30-38) | 16%  (11-22) |
| >24 | 87%  (82-91) | 63%  (59-68) | 48%  (43-53) | 92%  (90-95) | 37%  (32-41) | 13%  (9-18) | >43 | 85%  (80-90) | 62%  (58-66) | 47%  (42-52) | 91%  (88-94) | 38%  (34-42) | 15%  (10-20) |
| >23 | 91%  (87-95) | 56%  (52-60) | 45%  (40-50) | 94%  (91-97) | 44%  (40-48) | 9%  (5-13) | >42 | 86%  (81-91) | 60%  (55-64) | 46%  (40-51) | 91%  (88-94) | 40%  (36-45) | 14%  (9-19) |
| >22 | 94%  (91-97) | 51%  (47-55) | 43%  (38-48) | 95%  (93-98) | 49%  (45-53) | 6%  (3-9) | >41 | 86%  (81-91) | 57%  (53-61) | 44%  (39-49) | 91%  (88-94) | 43%  (39-47) | 14%  (9-19) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE**  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) | **Q*mci***  **Cut-off** | **Sensitivity**  (95% CI) | **Specificity**  (95% CI) | **PPV**  (95% CI) | **NPV**  (95% CI) | **FALSE**  **positive**  (95% CI) | **FALSE**  **negative**  (95% CI) |
| Age > 75 & Edu ≥ 12: Dementia from everything else  (n=849) | <30 | 97%  (95-98) | 28%  (24-33) | 66%  (62-69) | 85%  (79-92) | 72%  (67-76) | 3%  (2-5) | <55 | 86%  (82-89) | 71%  (67-76) | 81%  (78-84) | 78%  (73-82) | 29%  (24-33) | 14%  (11-18) |
| <29 | 92%  (90-94) | 51%  (46-57) | 73%  (70-76) | 82%  (77-87) | 49%  (43-54) | 8%  (6-10) | <54 | 84%  (81-87) | 74%  (69-78) | 82%  (79-85) | 77%  (72-81) | 26%  (22-31) | 16%  (13-19) |
| <28 | 86%  (83-89) | 71%  (66-76) | 81%  (78-84) | 79%  (74-83) | 29%  (24-34) | 14%  (11-17) | <53 | 82%  (79-86) | 75%  (71-80) | 83%  (79-86) | 75%  (70-80) | 25%  (20-29) | 18%  (14-21) |
| <27 | 79%  (75-82) | 82%  (78-86) | 86%  (83-90) | 73%  (69-77) | 18%  (14-22) | 21%  (18-25) | <52 | 80%  (76-83) | 77%  (73-82) | 83%  (80-87) | 73%  (68-77) | 23%  (18-27) | 20%  (17-24) |
| <26 | 71%  (67-75) | 89%  (85-92) | 90%  (87-93) | 68%  (64-72) | 11%  (8-15) | 29%  (25-33) | <51 | 78%  (74-82) | 80%  (76-84) | 85%  (81-88) | 72%  (67-76) | 20%  (16-24) | 22%  (18-26) |
| <25 | 63%  (59-68) | 92%  (89-95) | 92%  (89-95) | 64%  (60-68) | 8%  (5-11) | 37%  (32-41) | <50 | 76%  (72-80) | 82%  (78-86) | 86%  (82-89) | 71%  (66-75) | 18%  (14-22) | 24%  (20-28) |
| <24 | 56%  (52-60) | 95%  (92-97) | 94%  (91-96) | 60%  (56-64) | 5%  (3-8) | 44%  (40-48) | <49 | 73%  (69-77) | 85%  (81-88) | 87%  (84-90) | 69%  (64-73) | 15%  (12-19) | 27%  (23-31) |
| <23 | 51%  (47-55) | 96%  (94-98) | 95%  (93-98) | 58%  (54-62) | 4%  (2-6) | 49%  (45-53) | <48 | 71%  (67-75) | 86%  (82-89) | 88%  (84-91) | 68%  (63-72) | 14%  (11-18) | 29%  (25-33) |

**Supplementary Table 3.** Tables comparing cut-off scores for the Standardized Mini-Mental State Examination (SMMSE) and Quick Mild Cognitive Impairment (Q*mci*) screen, calculated using Youden’s Index for the total sample (n=3,387), and according to age (≤ 75 & >75) and education (<12 and ≥12) for each diagnostic classification including sensitivity and specificity analysis with 95% confidence intervals (CI). MCI, mild cognitive impairment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Total (n=3,387) | Test | Positive | Negative | cutoff | Sensitivity 95% CI | Specificity 95% CI |
|
| Cognitive Impairment from Normal Controls | SMMSE | 2,512 | 875 | <28 | 74%  (73%-76%) | 88%  (85%-90%) |
| Cognitive Impairment from Normal Controls | Q*mci* | 2,512 | 875 | <62 | 83%  (82%-85%) | 87%  (84%-89%) |
| MCI from Normal Controls | SMMSE | 766 | 875 | <29 | 63%  (60%-66%) | 72%  (69%-75%) |
| MCI from Normal Controls | Q*mci* | 766 | 875 | <67 | 77%  (74%-80%) | 75%  (72%-78%) |
| MCI from Dementia | SMMSE | 766 | 1,746 | >25 | 76%  (73%-79%) | 73%  (71%-75%) |
| MCI from Dementia | Q*mci* | 766 | 1,746 | >45 | 76%  (73%-79%) | 69%  (67%-71%) |
| Dementia from everything else | SMMSE | 1,746 | 1,641 | <27 | 81%  (79%-83%) | 82%  (80%-83%) |
| Dementia from everything else | Q*mci* | 1,746 | 1,641 | <54 | 84%  (82%-85%) | 78%  (75%-80%) |
|  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Age ≤ 75 & Edu < 12 | Test | Positive | Negative | cutoff | Sensitivity 95% CI | Specificity 95% CI |
|
| Cognitive Impairment from Normal Controls | SMMSE | 368 | 134 | <27 | 65%  (60%-70%) | 90%  (84%-95%) |
| Cognitive Impairment from Normal Controls | Q*mci* | 368 | 134 | <55 | 70%  (66%-75%) | 92%  (87%-96%) |
| MCI from Normal Controls | SMMSE | 135 | 134 | <28 | 53%  (44%-61%) | 78%  (71%-85%) |
| MCI from Normal Controls | Q*mci* | 135 | 134 | <65 | 74%  (67%-81%) | 71%  (63%-79%) |
| MCI from Dementia | SMMSE | 135 | 233 | >23 | 88%  (83%-94%) | 64%  (58%-70%) |
| MCI from Dementia | Q*mci* | 135 | 233 | >44 | 76%  (68%-83%) | 73%  (67%-78%) |
| Dementia from everything else | SMMSE | 233 | 269 | <26 | 76%  (70%-81%) | 86%  (82%-90%) |
| Dementia from everything else | Q*mci* | 233 | 269 | <55 | 87%  (82%-91%) | 75%  (70%-80%) |
|  |  |  |  |  |  |  |
| Age ≤ 75 & Edu ≥ 12 | Test | Positive | Negative | cutoff | Sensitivity 95% CI | Specificity 95% CI |
|
| Cognitive Impairment from Normal Controls | SMMSE | 512 | 497 | <28 | 69%  (65%-73%) | 94%  (92%-96%) |
| Cognitive Impairment from Normal Controls | Q*mci* | 512 | 497 | <60 | 74%  (70%-78%) | 96%  (94%-97%) |
| MCI from Normal Controls | SMMSE | 206 | 497 | <29 | 59%  (53%-66%) | 81%  (77%-84%) |
| MCI from Normal Controls | Q*mci* | 206 | 497 | <69 | 74%  (68%-80%) | 81%  (78%-85%) |
| MCI from Dementia | SMMSE | 206 | 306 | >26 | 67%  (61%-74%) | 75%  (71%-80%) |
| MCI from Dementia | Q*mci* | 206 | 306 | >49 | 70%  (64%-77%) | 73%  (68%-78%) |
| Dementia from everything else | SMMSE | 306 | 703 | <28 | 84%  (80%-88%) | 82%  (80%-85%) |
| Dementia from everything else | Q*mci* | 306 | 703 | <60 | 90%  (86%-93%) | 82%  (79%-85%) |
|  |  |  |  |  |  |  |
| Age > 75 & Edu < 12 | Test | Positive | Negative | cutoff | Sensitivity 95% CI | Specificity 95% CI |
|
| Cognitive Impairment from Normal Controls | SMMSE | 721 | 63 | <27 | 75%  (72%-78%) | 86%  (77%-94%) |
| Cognitive Impairment from Normal Controls | Q*mci* | 721 | 63 | <54 | 77%  (74%-80%) | 86%  (77%-94%) |
| MCI from Normal Controls | SMMSE | 162 | 63 | <27 | 36%  (28%-43%) | 86%  (77%-94%) |
| MCI from Normal Controls | Q*mci* | 162 | 63 | <64 | 78%  (72%-85%) | 68%  (57%-80%) |
| MCI from Dementia | SMMSE | 162 | 559 | >25 | 76%  (69%-83%) | 77%  (74%-81%) |
| MCI from Dementia | Q*mci* | 162 | 559 | >45 | 75%  (68%-81%) | 72%  (68%-75%) |
| Dementia from everything else | SMMSE | 559 | 225 | <26 | 77%  (74%-81%) | 80%  (75%-85%) |
| Dementia from everything else | Q*mci* | 559 | 225 | <50 | 79%  (76%-82%) | 73%  (67%-79%) |
|  |  |  |  |  |  |  |
| Age > 75 & Edu ≥ 12 | Test | Positive | Negative | cutoff | Sensitivity 95% CI | Specificity 95% CI |
|
| Cognitive Impairment from Normal Controls | SMMSE | 695 | 154 | <28 | 73%  (69%-76%) | 82%  (76%-88%) |
| Cognitive Impairment from Normal Controls | Q*mci* | 695 | 154 | <56 | 75%  (72%-78%) | 90%  (86%-95%) |
| MCI from Normal Controls | SMMSE | 196 | 154 | <28 | 38%  (31%-45%) | 82%  (76%-88%) |
| MCI from Normal Controls | Q*mci* | 196 | 154 | <70 | 87%  (83%-92%) | 55%  (47%-62%) |
| MCI from Dementia | SMMSE | 196 | 499 | >26 | 76%  (69%-82%) | 79%  (75%-82%) |
| MCI from Dementia | Q*mci* | 196 | 499 | >45 | 82%  (77%-88%) | 68%  (64%-72%) |
| Dementia from everything else | SMMSE | 499 | 350 | <27 | 79%  (75%-82%) | 82%  (78%-86%) |
| Dementia from everything else | Q*mci* | 499 | 350 | <51 | 78%  (74%-82%) | 80%  (76%-84%) |

**Supplementary Table 4.** Tables comparing likelihood ratios for the Standardized Mini-Mental State Examination (SMMSE) and Quick Mild Cognitive Impairment

(Q*mci*) screen, for the total sample (n=3,387), and according to age (≤ 75 & >75) and education (<12 and ≥12) for each diagnostic classification, for a selection of cut-off scores around the optimal. CI, cognitive impairment; MCI, mild cognitive impairment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Overall: Cognitive Impairment from Normal Controls (n=3,387) | <30 | 1.61 | 0.20 | <65 | 4.47 | 0.16 |
| <29 | 2.93 | 0.24 | <64 | 5.08 | 0.17 |
| <28 | 5.97 | 0.29 | <63 | 5.65 | 0.18 |
| <27 | 11.83 | 0.36 | <62 | 6.22 | 0.20 |
| <26 | 22.04 | 0.43 | <61 | 6.68 | 0.21 |
| <25 | 36.66 | 0.50 | <60 | 7.34 | 0.22 |
| <24 | 37.76 | 0.58 | <59 | 7.97 | 0.23 |
| <23 | 45.88 | 0.64 | <58 | 9.43 | 0.24 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Overall: MCI from Normal Controls (n=1,641) | <30 | 1.43 | 0.44 | <65 | 3.59 | 0.37 |
| <29 | 2.23 | 0.51 | <64 | 3.98 | 0.39 |
| <28 | 3.70 | 0.62 | <63 | 4.32 | 0.42 |
| <27 | 5.90 | 0.71 | <62 | 4.61 | 0.44 |
| <26 | 9.14 | 0.78 | <61 | 4.81 | 0.47 |
| <25 | 12.95 | 0.83 | <60 | 5.14 | 0.49 |
| <24 | 10.85 | 0.89 | <59 | 5.42 | 0.51 |
| <23 | 10.28 | 0.93 | <58 | 6.22 | 0.53 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Overall: MCI from Dementia (n=2,512) | >27 | 4.08 | 0.53 | >49 | 2.84 | 0.44 |
| >26 | 3.49 | 0.41 | >48 | 2.69 | 0.42 |
| >25 | 2.79 | 0.33 | >47 | 2.61 | 0.39 |
| >24 | 2.32 | 0.28 | >46 | 2.54 | 0.37 |
| >23 | 2.02 | 0.22 | >45 | 2.47 | 0.34 |
| >22 | 1.81 | 0.17 | >44 | 2.35 | 0.34 |
| >21 | 1.63 | 0.14 | >43 | 2.22 | 0.32 |
| >20 | 1.49 | 0.12 | >42 | 2.12 | 0.32 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Overall: Dementia from everything else (n=3,387) | <30 | 1.41 | 0.13 | <58 | 3.16 | 0.15 |
| <29 | 2.06 | 0.15 | <57 | 3.23 | 0.17 |
| <28 | 3.08 | 0.18 | <56 | 3.38 | 0.18 |
| <27 | 4.39 | 0.24 | <55 | 3.54 | 0.20 |
| <26 | 5.77 | 0.31 | <54 | 3.72 | 0.21 |
| <25 | 7.16 | 0.39 | <53 | 3.88 | 0.23 |
| <24 | 8.85 | 0.46 | <52 | 3.94 | 0.25 |
| <23 | 11.53 | 0.53 | <51 | 4.16 | 0.27 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age ≤ 75 & Edu < 12: Cognitive Impairment from Normal Controls (n=502) | <30 | 1.33 | 0.28 | <59 | 4.89 | 0.28 |
| <29 | 2.04 | 0.30 | <58 | 5.29 | 0.29 |
| <28 | 3.31 | 0.33 | <57 | 5.80 | 0.30 |
| <27 | 6.22 | 0.39 | <56 | 6.41 | 0.32 |
| <26 | 12.62 | 0.46 | <55 | 8.57 | 0.32 |
| <25 | 32.95 | 0.52 | <54 | 9.14 | 0.34 |
| <24 | 60.08 | 0.56 | <53 | 9.95 | 0.36 |
| <23 | 55.71 | 0.59 | <52 | 14.69 | 0.36 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age ≤ 75 & Edu < 12: MCI from Normal Controls (n=269) | <30 | 1.23 | 0.50 | <68 | 2.12 | 0.29 |
| <29 | 1.67 | 0.55 | <67 | 2.26 | 0.32 |
| <28 | 2.35 | 0.61 | <66 | 2.27 | 0.36 |
| <27 | 3.40 | 0.72 | <65 | 2.55 | 0.37 |
| <26 | 5.29 | 0.80 | <64 | 2.62 | 0.41 |
| <25 | 10.92 | 0.85 | <63 | 2.85 | 0.42 |
| <24 | 15.88 | 0.89 | <62 | 3.09 | 0.47 |
| <23 | 13.90 | 0.90 | <61 | 3.14 | 0.51 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age ≤ 75 & Edu < 12: MCI from Dementia (n=368) | >27 | 3.56 | 0.61 | >47 | 2.91 | 0.42 |
| >26 | 3.58 | 0.43 | >46 | 2.93 | 0.39 |
| >25 | 3.12 | 0.31 | >45 | 2.76 | 0.36 |
| >24 | 2.64 | 0.24 | >44 | 2.75 | 0.34 |
| >23 | 2.45 | 0.19 | >43 | 2.67 | 0.34 |
| >22 | 2.22 | 0.17 | >42 | 2.59 | 0.35 |
| >21 | 2.04 | 0.17 | >41 | 2.49 | 0.33 |
| >20 | 1.83 | 0.16 | >40 | 2.35 | 0.32 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age ≤ 75 & Edu < 12: Dementia from everything else (n=502) | <30 | 1.24 | 0.20 | <58 | 2.81 | 0.15 |
| <29 | 1.68 | 0.20 | <57 | 2.90 | 0.17 |
| <28 | 2.31 | 0.21 | <56 | 3.03 | 0.19 |
| <27 | 3.56 | 0.23 | <55 | 3.43 | 0.18 |
| <26 | 5.35 | 0.28 | <54 | 3.41 | 0.22 |
| <25 | 7.65 | 0.35 | <53 | 3.37 | 0.24 |
| <24 | 10.12 | 0.38 | <52 | 3.54 | 0.26 |
| <23 | 10.70 | 0.43 | <51 | 3.58 | 0.27 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age ≤ 75 & Edu ≥ 12: Cognitive Impairment from Normal Controls (n=1,009) | <30 | 1.71 | 0.30 | <64 | 8.20 | 0.25 |
| <29 | 4.01 | 0.29 | <63 | 9.99 | 0.26 |
| <28 | 11.39 | 0.33 | <62 | 11.35 | 0.26 |
| <27 | 28.93 | 0.43 | <61 | 13.73 | 0.27 |
| <26 | 41.74 | 0.50 | <60 | 16.77 | 0.27 |
| <25 | 42.52 | 0.58 | <59 | 18.90 | 0.29 |
| <24 | 36.30 | 0.64 | <58 | 25.03 | 0.30 |
| <23 | 72.80 | 0.71 | <57 | 24.27 | 0.33 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age ≤ 75 & Edu ≥ 12: MCI from Normal Controls (n=703) | <30 | 1.48 | 0.52 | <72 | 2.83 | 0.28 |
| <29 | 3.10 | 0.50 | <71 | 3.06 | 0.30 |
| <28 | 7.56 | 0.58 | <70 | 3.35 | 0.33 |
| <27 | 16.16 | 0.69 | <69 | 3.90 | 0.32 |
| <26 | 20.51 | 0.76 | <68 | 3.98 | 0.36 |
| <25 | 19.78 | 0.81 | <67 | 4.45 | 0.37 |
| <24 | 15.44 | 0.85 | <66 | 4.79 | 0.42 |
| <23 | 22.92 | 0.91 | <65 | 5.80 | 0.44 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age ≤ 75 & Edu ≥ 12: MCI from Dementia (n=512) | >29 | 3.65 | 0.80 | >53 | 3.04 | 0.47 |
| >28 | 3.47 | 0.67 | >52 | 2.86 | 0.45 |
| >27 | 3.47 | 0.54 | >51 | 2.71 | 0.44 |
| >26 | 2.75 | 0.43 | >50 | 2.59 | 0.44 |
| >25 | 2.33 | 0.37 | >49 | 2.63 | 0.40 |
| >24 | 1.91 | 0.34 | >48 | 2.51 | 0.40 |
| >23 | 1.71 | 0.31 | >47 | 2.37 | 0.36 |
| >22 | 1.59 | 0.22 | >46 | 2.22 | 0.36 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age ≤ 75 & Edu ≥ 12: Dementia from everything else (n=1,009) | <30 | 1.63 | 0.17 | <63 | 4.23 | 0.12 |
| <29 | 2.86 | 0.17 | <62 | 4.34 | 0.13 |
| <28 | 4.78 | 0.19 | <61 | 4.66 | 0.13 |
| <27 | 6.89 | 0.28 | <60 | 4.92 | 0.13 |
| <26 | 8.34 | 0.35 | <59 | 5.15 | 0.15 |
| <25 | 8.89 | 0.45 | <58 | 5.46 | 0.16 |
| <24 | 9.62 | 0.52 | <57 | 5.52 | 0.19 |
| <23 | 14.33 | 0.59 | <56 | 5.89 | 0.20 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age > 75 & Edu < 12: Cognitive Impairment from Normal Controls (n=784) | <30 | 1.23 | 0.18 | <57 | 4.03 | 0.21 |
| <29 | 1.70 | 0.23 | <56 | 3.96 | 0.23 |
| <28 | 2.64 | 0.29 | <55 | 4.15 | 0.26 |
| <27 | 5.25 | 0.29 | <54 | 5.42 | 0.26 |
| <26 | 6.86 | 0.38 | <53 | 5.93 | 0.28 |
| <25 | 11.91 | 0.45 | <52 | 5.73 | 0.31 |
| <24 | 9.90 | 0.55 | <51 | 5.52 | 0.34 |
| <23 | 8.01 | 0.65 | <50 | 7.22 | 0.34 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age > 75 & Edu < 12: MCI from Normal Controls (n=225) | <30 | 1.10 | 0.64 | <68 | 1.70 | 0.23 |
| <29 | 1.31 | 0.66 | <67 | 1.93 | 0.26 |
| <28 | 1.47 | 0.80 | <66 | 2.13 | 0.26 |
| <27 | 2.51 | 0.75 | <65 | 2.33 | 0.28 |
| <26 | 2.53 | 0.84 | <64 | 2.47 | 0.32 |
| <25 | 3.89 | 0.86 | <63 | 2.52 | 0.34 |
| <24 | 2.33 | 0.93 | <62 | 2.44 | 0.42 |
| <23 | 1.56 | 0.97 | <61 | 2.60 | 0.46 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age > 75 & Edu < 12: MCI from Dementia (n=721) | >28 | 6.07 | 0.72 | >48 | 2.90 | 0.41 |
| >27 | 5.55 | 0.49 | >47 | 2.81 | 0.40 |
| >26 | 4.72 | 0.41 | >46 | 2.71 | 0.37 |
| >25 | 3.34 | 0.31 | >45 | 2.63 | 0.35 |
| >24 | 2.53 | 0.27 | >44 | 2.41 | 0.36 |
| >23 | 2.10 | 0.19 | >43 | 2.34 | 0.33 |
| >22 | 1.75 | 0.16 | >42 | 2.20 | 0.34 |
| >21 | 1.59 | 0.15 | >41 | 2.00 | 0.36 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age > 75 & Edu < 12: Dementia from everything else (n=784) | <30 | 1.18 | 0.07 | <53 | 2.52 | 0.23 |
| <29 | 1.48 | 0.14 | <52 | 2.50 | 0.27 |
| <28 | 2.22 | 0.17 | <51 | 2.77 | 0.28 |
| <27 | 2.90 | 0.19 | <50 | 2.91 | 0.29 |
| <26 | 3.86 | 0.28 | <49 | 3.02 | 0.32 |
| <25 | 4.62 | 0.38 | <48 | 3.18 | 0.33 |
| <24 | 6.17 | 0.47 | <47 | 3.36 | 0.34 |
| <23 | 7.06 | 0.57 | <46 | 3.50 | 0.36 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age > 75 & Edu ≥ 12: Cognitive Impairment from Normal Controls (n=849) | <30 | 1.49 | 0.21 | <59 | 4.70 | 0.25 |
| <29 | 2.10 | 0.30 | <58 | 6.26 | 0.26 |
| <28 | 4.14 | 0.33 | <57 | 6.49 | 0.27 |
| <27 | 6.98 | 0.40 | <56 | 7.68 | 0.28 |
| <26 | 28.81 | 0.45 | <55 | 8.12 | 0.29 |
| <25 | 37.89 | 0.51 | <54 | 9.23 | 0.30 |
| <24 | 66.03 | 0.57 | <53 | 10.79 | 0.32 |
| <23 | 58.94 | 0.62 | <52 | 11.55 | 0.35 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
| **Prevalence of MCI: 56%** |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age > 75 & Edu ≥ 12: MCI from Normal Controls (n=350) | <30 | 1.29 | 0.53 | <73 | 1.60 | 0.20 |
| <29 | 1.44 | 0.72 | <72 | 1.67 | 0.19 |
| <28 | 2.15 | 0.75 | <71 | 1.87 | 0.20 |
| <27 | 2.69 | 0.83 | <70 | 1.92 | 0.23 |
| <26 | 9.69 | 0.83 | <69 | 1.97 | 0.29 |
| <25 | 10.21 | 0.88 | <68 | 1.98 | 0.34 |
| <24 | 14.14 | 0.91 | <67 | 2.04 | 0.39 |
| <23 | 9.43 | 0.94 | <66 | 2.07 | 0.45 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age > 75 & Edu ≥ 12: MCI from Dementia (n=695) | >29 | 5.99 | 0.82 | >48 | 2.79 | 0.34 |
| >28 | 5.47 | 0.61 | >47 | 2.67 | 0.32 |
| >27 | 4.57 | 0.44 | >46 | 2.61 | 0.30 |
| >26 | 3.55 | 0.31 | >45 | 2.55 | 0.26 |
| >25 | 2.77 | 0.27 | >44 | 2.44 | 0.25 |
| >24 | 2.37 | 0.21 | >43 | 2.25 | 0.24 |
| >23 | 2.07 | 0.16 | >42 | 2.13 | 0.24 |
| >22 | 1.91 | 0.12 | >41 | 2.00 | 0.24 |
|  |  |  |  |  |  |  |
| **Subgroup** | **SMMSE** | **Positive** | **Negative** | **Q*mci*** | **Positive** | **Negative** |
|  | **Cut-off** | **Likelihood** | **Likelihood** | **Cut-off** | **Likelihood** | **Likelihood** |
|  |  | **Ratio** | **Ratio** |  | **Ratio** | **Ratio** |
| Age > 75 & Edu ≥ 12: Dementia from everything else (n=849) | <30 | 1.35 | 0.12 | <55 | 2.99 | 0.20 |
| <29 | 1.89 | 0.16 | <54 | 3.20 | 0.21 |
| <28 | 2.99 | 0.19 | <53 | 3.35 | 0.23 |
| <27 | 4.45 | 0.26 | <52 | 3.49 | 0.26 |
| <26 | 6.19 | 0.33 | <51 | 3.90 | 0.28 |
| <25 | 7.92 | 0.40 | <50 | 4.22 | 0.29 |
| <24 | 10.34 | 0.46 | <49 | 4.74 | 0.32 |
| <23 | 13.70 | 0.51 | <48 | 4.98 | 0.34 |