**Supplemental Digital Content 1.** Summary of Results from Latent Profile Analysis

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** | **Average within- and between-group estimated probabilities from latent profile analysis** | | | | | | **n (%) of respondents** | **BIC\* values** |
| 1-Group model |  |  |  |  |  |  | 12,308 (100) | 338,330 |
| 2-Group model | Group 1 | Group 2 | Sum |  |  |  |  | 279,661 |
| Group 1 | 0.98 | 0.02 | 1.00 |  |  |  | 4,445 (36) |  |
| Group 2 | 0.01 | 0.99 | 1.00 |  |  |  | 7,863 (64) |  |
| 3-Group model | Group 1 | Group 2 | Group 3 | Sum |  |  |  | 261,440 |
| Group 1 | 0.999 | >0.00 | >0.00 | 1.00 |  |  | 2,706 (22) |  |
| Group 2 | >0.00 | 0.96 | 0.04 | 1.00 |  |  | 2,937 (24) |  |
| Group 3 | >0.00 | 0.02 | 0.98 | 1.00 |  |  | 6,665 (54) |  |
| 4-Group model | Group 1 | Group 2 | Group 3 | Group 4 | Sum |  |  | 254,664 |
| Group 1 | 0.999 | >0.00 | >0.00 | >0.00 | 1.00 |  | 2,672 (22) |  |
| Group 2 | >0.00 | 0.99 | >0.00 | 0.01 | 1.00 |  | 2,291 (19) |  |
| Group 3 | >0.00 | >0.00 | 0.93 | 0.07 | 1.00 |  | 2,094 (17) |  |
| Group 4 | >0.00 | >0.00 | 0.04 | 0.96 | 1.00 |  | 5,251 (43) |  |
| 5-Group model | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Sum |  | 252,799 |
| Group 1 | 0.999 | >0.00 | >0.00 | >0.00 | >0.00 | 1.00 | 2,670 (22) |  |
| Group 2 | >0.00 | 0.99 | >0.00 | >0.00 | 0.01 | 1.00 | 2,286 (19) |  |
| Group 3 | >0.00 | >0.00 | 0.89 | 0.11 | 0.00 | 1.00 | 498 (4) |  |
| Group 4 | >0.00 | >0.00 | 0.04 | 0.86 | 0.11 | 1.00 | 2,355 (19) |  |
| Group 5 | >0.00 | >0.00 | >0.00 | 0.06 | 0.94 | 1.00 | 4,499 (37) |  |

N = 12,308

To determine the optimal number of groups, smaller BIC values represent a more parsimonious model fit. In addition, higher average within-group and lower average between-group estimated probabilities represent more reliable classifications. Therefore, a 2-group model was the most optimal fit for the data. A careful examination of a three-group solution showed that the mean values for all 13 activities by each group provided a less meaningful interpretation of the difference between 2 of the 3 groups.

\*BIC, Bayesian information criterion.

**Supplemental Digital Content 2.** Heat Map Visualization of the Frequency of Observation/Feedback (% More Than 5 Times) by Specialty for Each of the Core Entrustable Professional Activities1-11 and 13.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Specialty** | **Total, n**  (**n = 12,308)** | **Core EPAs 1-11, and 13: % reporting observation/feedback more than 5 times** | | | | | | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **13** |
| Anesthesiology | 777 | 73 | 86 | 86 | 60 | 83 | 93 | 76 | 59 | 80 | 53 | 37 | 14 |
| Emergency medicine | 1,236 | 70 | 88 | 88 | 67 | 84 | 93 | 74 | 62 | 79 | 71 | 41 | 11 |
| Family medicine | 1,039 | 71 | 86 | 86 | 59 | 85 | 92 | 74 | 56 | 79 | 48 | 30 | 5 |
| General surgery\* | 943 | 71 | 85 | 87 | 57 | 84 | 93 | 75 | 52 | 78 | 53 | 31 | 10 |
| Internal medicine | 2,613 | 72 | 87 | 88 | 70 | 84 | 93 | 78 | 59 | 80 | 50 | 31 | 8 |
| Obstetrics and gynecology | 875 | 70 | 88 | 88 | 54 | 86 | 95 | 75 | 54 | 79 | 47 | 31 | 8 |
| Ophthalmology | 277 | 77 | 88 | 87 | 68 | 87 | 94 | 77 | 55 | 80 | 54 | 37 | 11 |
| Orthopaedic surgery | 521 | 76 | 88 | 87 | 60 | 83 | 92 | 80 | 56 | 81 | 54 | 42 | 14 |
| Other surgical specialty† | 667 | 72 | 87 | 87 | 57 | 84 | 93 | 78 | 52 | 78 | 51 | 32 | 12 |
| Pediatrics | 1,228 | 71 | 87 | 88 | 63 | 84 | 93 | 74 | 66 | 81 | 44 | 25 | 5 |
| Psychiatry | 676 | 78 | 89 | 88 | 64 | 86 | 94 | 80 | 59 | 83 | 52 | 38 | 8 |
| Radiology | 558 | 72 | 82 | 83 | 60 | 82 | 90 | 74 | 55 | 75 | 49 | 34 | 13 |
| All other specialties‡ | 898 | 74 | 88 | 88 | 66 | 86 | 94 | 78 | 56 | 81 | 50 | 35 | 8 |
| All respondents | 12,308 | 72 | 87 | 87 | 63 | 84 | 93 | 76 | 58 | 80 | 52 | 33 | 9 |
| p Value§ | - | 0.017 | 0.025 | 0.185 | <0.001 | 0.319 | 0.220 | 0.002 | <0.001 | 0.098 | <0.001 | <0.001 | <0.001 |

Color shading ranges from red, indicating relatively low percentages, to green, indicating relatively high percentages. The mid-point color (yellow) was set at the median (63) of the percentage values for all specialty by entrustable professional activity (EPA) (Supplemental Digital Content 2)/procedure (Supplemental Digital Content 3) cells within both Supplemental Digital Content 2 and Supplemental Digital Content 3.

\* “Surgery-general” includes surgery, vascular surgery, and thoracic surgery.

† “Surgery-other” includes neurological surgery; otolaryngology; plastic surgery; and urology.

‡ “All other specialties” includes dermatology; neurology; child neurology; pathology; physical medicine and rehabilitation; preventive medicine; radiation oncology; medical genetics.

§ Chi-square tests of association.

**Supplemental Digital Content 3.** Heat Map Visualization of the Frequency of Observation/Feedback (% More Than 5 Times) by Specialty for Each of 6 Procedures

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Specialty** | **Total, n**  **(n = 12,308)** | **% reporting observation/feedback more than 5 times** | | | | | |
| **Perform basic cardio-pulmonary resuscitation** | **Perform bag and mask ventilation** | **Perform sterile technique** | **Perform venipuncture** | **Insert an IV line** | **Place a urinary catheter** |
| Anesthesiology | 777 | 16 | 86 | 90 | 62 | 72 | 37 |
| Emergency medicine | 1,236 | 29 | 44 | 86 | 48 | 49 | 37 |
| Family medicine | 1,039 | 9 | 20 | 84 | 21 | 18 | 27 |
| General surgery\* | 943 | 14 | 35 | 91 | 33 | 29 | 66 |
| Internal medicine | 2,613 | 13 | 23 | 81 | 22 | 18 | 30 |
| Obstetrics and gynecology | 875 | 7 | 22 | 92 | 23 | 20 | 66 |
| Ophthalmology | 277 | 16 | 29 | 87 | 32 | 27 | 37 |
| Orthopaedic surgery | 521 | 20 | 28 | 94 | 32 | 28 | 56 |
| Other surgical specialty† | 667 | 12 | 32 | 93 | 30 | 26 | 66 |
| Pediatrics | 1,228 | 6 | 17 | 79 | 18 | 15 | 26 |
| Psychiatry | 676 | 12 | 20 | 80 | 17 | 16 | 29 |
| Radiology | 558 | 15 | 29 | 86 | 35 | 30 | 36 |
| All other specialties‡ | 898 | 10 | 19 | 83 | 21 | 17 | 30 |
| All respondents | 12,308 | 14 | 30 | 85 | 29 | 27 | 39 |
| p Value§ | - | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

Color shading ranges from red, indicating relatively low percentages, to green, indicating relatively high percentages. The mid-point color (yellow) was set at the median (63) of the percentage values for all specialty by entrustable professional activity (Supplemental Digital Content 2)/procedure (Supplemental Digital Content 3) cells within both Supplemental Digital Content 2 and 3.

\* “Surgery-general” includes surgery, vascular surgery, and thoracic surgery.

† “Surgery-other” includes neurological surgery; otolaryngology; plastic surgery; and urology.

‡ “All other specialties” includes dermatology; neurology; child neurology; pathology; physical medicine and rehabilitation; preventive medicine; radiation oncology; medical genetics.

§ Chi-square tests of association.

**Supplemental Digital Content 4.** Heat Map Visualization of the Mean (SD) Skill Acquisition Agreement Values by Specialty for Each Core Entrustable Professional Activity

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Specialty, total n (n = 12,308)** | **Core EPA: Mean skill acquisition agreement (SD)\*** | | | | | | | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| Anesthesiology, 777 | 3.72 | 3.50 | 3.49 | 2.91 | 3.58 | 3.63 | 3.49 | 3.19 | 3.66 | 3.33 | 3.06 | 3.12 | 2.74 |
| (0.49) | (0.57) | (0.59) | (1.02) | (0.58) | (0.55) | (0.61) | (0.84) | (0.54) | (0.71) | (0.94) | (0.85) | (1.11) |
| Emergency medicine, 1,236 | 3.79 | 3.66 | 3.60 | 3.06 | 3.61 | 3.70 | 3.53 | 3.32 | 3.67 | 3.60 | 3.12 | 3.25 | 2.75 |
| (0.43) | (0.52) | (0.55) | (0.95) | (0.59) | (0.51) | (0.65) | (0.81) | (0.56) | (0.59) | (0.93) | (0.84) | (1.09) |
| Family medicine, 1,039 | 3.76 | 3.51 | 3.45 | 2.91 | 3.65 | 3.64 | 3.49 | 3.24 | 3.67 | 3.17 | 3.10 | 3.03 | 2.64 |
| (0.47) | (0.58) | (0.60) | (0.94) | (0.55) | (0.54) | (0.59) | (0.75) | (0.53) | (0.75) | (0.83) | (0.85) | (1.02) |
| General surgery†, 943 | 3.78 | 3.59 | 3.55 | 2.89 | 3.69 | 3.72 | 3.54 | 3.25 | 3.69 | 3.36 | 3.01 | 3.24 | 2.75 |
| (0.51) | (0.59) | (0.62) | (1.04) | (0.59) | (0.53) | (0.65) | (0.86) | (0.57) | (0.75) | (1.04) | (0.87) | (1.10) |
| Internal medicine, 2,613 | 3.77 | 3.58 | 3.55 | 3.11 | 3.67 | 3.69 | 3.57 | 3.26 | 3.70 | 3.24 | 3.08 | 2.83 | 2.67 |
| (0.45) | (0.56) | (0.58) | (0.91) | (0.55) | (0.51) | (0.60) | (0.80) | (0.53) | (0.77) | (0.93) | (1.02) | (1.07) |
| Obstetrics and gynecology, 875 | 3.80 | 3.56 | 3.47 | 2.68 | 3.63 | 3.72 | 3.54 | 3.23 | 3.70 | 3.23 | 2.99 | 3.07 | 2.58 |
| (0.42) | (0.56) | (0.59) | (1.10) | (0.58) | (0.51) | (0.60) | (0.82) | (0.53) | (0.77) | (0.94) | (0.86) | (1.06) |
| Ophthalmology, 277 | 3.73 | 3.57 | 3.52 | 3.03 | 3.64 | 3.70 | 3.59 | 3.26 | 3.65 | 3.30 | 3.19 | 3.14 | 2.81 |
| (0.47) | (0.52) | (0.59) | (1.04) | (0.53) | (0.47) | (0.54) | (0.81) | (0.55) | (0.73) | (0.92) | (0.93) | (1.12) |
| Orthopaedic surgery, 521 | 3.81 | 3.65 | 3.62 | 3.08 | 3.67 | 3.73 | 3.66 | 3.40 | 3.74 | 3.46 | 3.34 | 3.38 | 3.03 |
| (0.47) | (0.55) | (0.58) | (1.03) | (0.55) | (0.50) | (0.55) | (0.79) | (0.50) | (0.71) | (0.87) | (0.79) | (1.06) |
| Other surgical specialties‡, 667 | 3.79 | 3.63 | 3.58 | 2.90 | 3.68 | 3.74 | 3.64 | 3.27 | 3.70 | 3.34 | 3.10 | 3.25 | 2.80 |
| (0.48) | (0.56) | (0.60) | (1.11) | (0.59) | (0.54) | (0.60) | (0.89) | (0.61) | (0.82) | (0.98) | (0.87) | (1.14) |
| Pediatrics, 1,288 | 3.77 | 3.51 | 3.46 | 2.88 | 3.69 | 3.71 | 3.52 | 3.31 | 3.72 | 3.10 | 2.88 | 2.77 | 2.59 |
| (0.44) | (0.57) | (0.59) | (0.97) | (0.51) | (0.48) | (0.59) | (0.76) | (0.49) | (0.78) | (0.98) | (0.98) | (1.06) |
| Psychiatry, 676 | 3.69 | 3.49 | 3.42 | 2.91 | 3.62 | 3.61 | 3.50 | 3.18 | 3.67 | 3.17 | 3.15 | 2.88 | 2.72 |
| (0.54) | (0.64) | (0.66) | (1.04) | (0.60) | (0.59) | (0.62) | (0.85) | (0.58) | (0.84) | (0.92) | (0.97) | (1.09) |
| Radiology, 558 | 3.70 | 3.54 | 3.52 | 2.93 | 3.59 | 3.61 | 3.51 | 3.16 | 3.59 | 3.26 | 3.10 | 2.98 | 2.73 |
| (0.50) | (0.57) | (0.58) | (1.03) | (0.59) | (0.56) | (0.59) | (0.89) | (0.58) | (0.77) | (0.91) | (0.97) | (1.10) |
| All other specialties§, 898 | 3.76 | 3.56 | 3.54 | 3.00 | 3.68 | 3.69 | 3.58 | 3.23 | 3.70 | 3.22 | 3.17 | 2.99 | 2.79 |
| (0.45) | (0.57) | (0.57) | (0.97) | (0.54) | (0.51) | (0.59) | (0.86) | (0.51) | (0.78) | (0.88) | (0.98) | (1.03) |
| All respondents, 12,308 | 3.76 | 3.57 | 3.52 | 2.96 | 3.65 | 3.69 | 3.54 | 3.26 | 3.69 | 3.28 | 3.08 | 3.02 | 2.71 |
| (0.47) | (0.57) | (0.59) | (1.00) | (0.56) | (0.52) | (0.61) | (0.82) | (0.54) | (0.76) | (0.94) | (0.94) | (1.08) |
| p Value║ | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

Color shading ranges from red, indicating relatively low percentages, to green, indicating relatively high percentages. The mid-point color (yellow) was set at the median (3.49) of the mean skill acquisition agreement values for all specialty by entrustable professional activity (EPA) cells shown above. SDs for the means are in parentheses.

\* To the statement, “Indicate whether you agree or disagree with the following statements about your preparedness for beginning a residency program: I have the skills to…”, respondents could select strongly disagree (=0), disagree (=1), neutral (=2), agree (=3), or strongly agree (=4).

† “General surgery” includes surgery, vascular surgery, and thoracic surgery.

‡ “Other surgical specialty” includes neurological surgery; otolaryngology; plastic surgery; and urology.

§ "All other specialties" includes dermatology; neurology; child neurology; pathology; physical medicine and rehabilitation; preventive medicine; radiation oncology; medical genetics.

║ 1-way analysis of variance.

**Supplemental Digital Content 5.** Heat Map Visualization of the Mean Skill Acquisition Agreement Values by All Surgical Specialties vs All Non-Surgical Specialties for Each Core Entrustable Professional Activity.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Specialty, total n (n = 12,308)** | **Core EPA: Mean skill acquisition agreement (SD)\*** | | | | | | | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| All surgical†, 3,283 | 3.79 | 3.60 | 3.54 | 2.88 | 3.66 | 3.72 | 3.58 | 3.27 | 3.70 | 3.33 | 3.09 | 3.21 | 2.76 |
| (0.47) | (0.56) | (0.60) | (1.08) | (0.58) | (0.52) | (0.61) | (0.84) | (0.55) | (0.77) | (0.97) | (0.87) | (1.10) |
| All non-surgical‡, 9,025 | 3.76 | 3.56 | 3.51 | 3.00 | 3.65 | 3.67 | 3.53 | 3.25 | 3.68 | 3.27 | 3.07 | 2.96 | 2.69 |
| (0.46) | (0.57) | (0.59) | (0.96) | (0.56) | (0.52) | (0.60) | (0.81) | (0.54) | (0.76) | (0.92) | (0.96) | (1.07) |
| All respondents, 12,308 | 3.76 | 3.57 | 3.52 | 2.96 | 3.65 | 3.69 | 3.54 | 3.26 | 3.69 | 3.28 | 3.08 | 3.02 | 2.71 |
| (0.47) | (0.57) | (0.59) | (1.00) | (0.56) | (0.52) | (0.61) | (0.82) | (0.54) | (0.76) | (0.94) | (0.94) | (1.08) |
| p Value║ | 0.001 | 0.002 | 0.015 | <0.001 | 0.157 | <0.001 | <0.001 | 0.216 | 0.111 | <0.001 | 0.378 | <0.001 | 0.001 |

Color shading ranges from red, indicating relatively low percentages, to green, indicating relatively high percentages. The mid-point color (yellow) was set at the median (3.52) of the mean skill acquisition agreement values for all surgery/non-surgery by entrustable professional activity (EPA) cells shown above. SDs for the means are in parentheses.

\* To the statement, “Indicate whether you agree or disagree with the following statements about your preparedness for beginning a residency program: I have the skills to…”, respondents could select strongly disagree (=0), disagree (=1), neutral (=2), agree (=3), or strongly agree (=4).

† “All surgical” includes general surgery; neurological surgery; obstetrics & gynecology; ophthalmology; orthopaedic surgery; otolaryngology; plastic surgery; thoracic surgery; urology; vascular surgery.

‡ “All non-surgical” includes anesthesiology; child neurology; dermatology; emergency medicine; family medicine; internal medicine; medical genetics; neurology; pathology; pediatrics; physical medicine and rehabilitation; preventive medicine; psychiatry; radiology; and radiation oncology.

§ Difference between 2 means.