

A cluster analysis of medical student characteristics and practice intentions

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PURPOSE

To investigate whether cluster analysis could be used to identify sub-groups of commencing students based on demographic characteristics and career interests from a national medical student database. The ultimate purpose was to identify meaningful groups of students who could be targeted for intervention and/or streamed medical education to better meet workforce needs as well as student expectations.

DATA

MSOD is Australia's main data collection tool for medical student information. Since 2005, data have been collected from domestic and international students on entry to medical school and again on exit from the course. Medical Schools provide additional data for each year of training. This study was based on the MSOD Commencement Survey for 878 students who commenced medical education in 2005 and 2,044 in 2006. Other aspects of the project involved the analysis of exit survey data for 264 students in 2008 and 1,073 in 2009 for these cohorts.

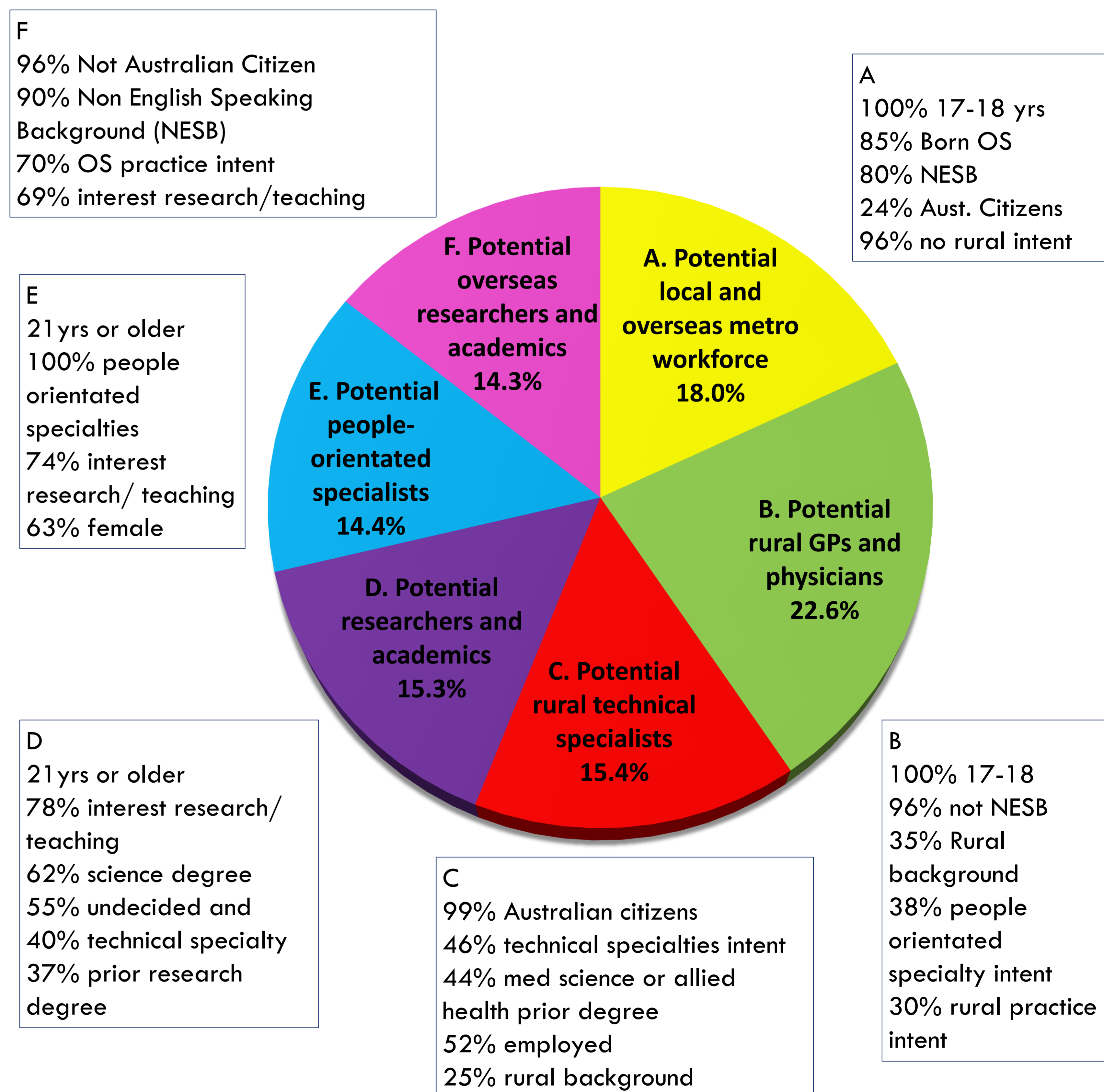
VARIABLE SELECTION

- 23 variables were selected after extensive preliminary analyses.
- Variables included 4 demographic, 3 ethnicity, 3 tertiary education, 5 financial, 2 practice intention location and 6 practice intention area.
- All dummy variables (0/1) except age (5 group ordinal)
- Multicollinearity avoided by no inter-correlations >0.65
- Steering Committee of experts participated in the variable selection and cluster evaluations.
- All analyses were conducted using PASW Statistics 18.

CLUSTER ANALYSIS METHOD

- Two step cluster analysis and hierarchical clustering using Wards method suggested a 6 cluster solution for the data.
- K-Means cluster analysis was used to identify the final solution and was successfully achieved in <15 iterations with all variables being significant.
- The 6 cluster solution was evaluated using Discriminant Analysis with 75% development and a 25% validation sample with very high predictability:
 - 95.7% of development sample correctly predicted
 - 95.9% of validation sample correctly predicted.
 - 21 of the 23 variables significant F statistic in the Discriminant Analysis; the two least predictable variables were interest in paediatrics and undecided about future specialty.

Summary of Clusters



Conclusions and recommendations

The results can be used to provide streamed medical experiences to students grouped on the basis of several rather than isolated characteristics. For example, rural medical education experiences for technically orientated students (Cluster C) should be different to older students with a more definite career intention towards people orientated specialties (Cluster E). So doing could well enhance the achievement of workforce targets in Australian medical education for rural locations and specialties of need and also better meet student expectations.

