Vanderbilt-Nigeria Biostatistics Training Program: Results from a Skills Workshop

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Background & Objectives

The **Vanderbilt-Nigeria Biostatistics Training Program (VN-BioStat)** aims to establish a research and training platform of biostaticians performing HIV-related research in Nigeria, ultimately with the goal of creating biostatistics leadership in Nigeria in order to advance HIV research. This goal is met through intensive on-site workshops and hands-on learning in Nigeria for trainees with some prior familiarity with statistics and biomedical research. Here, we present the results of a skills workshop focused on **abilities in R statistical software**.

Methods

- Trainees attended an five-day interactive workshop of at Aminu Kano Teaching Hospital in Kano, Nigeria, with the goal of developing statistical skills in R.
  - The first day established important foundational topics to ensure all participants started at a similar level
- Participants completed pre- & post- workshop surveys assessing self-perceived confidence in specific abilities in R, as seen in Table 1,

Analytic Approach

- For both pre- & post- workshop surveys, participants ranked their confidence in specific abilities on a scale of 1 to 4 (1= not confident at all, and 4= very confident)
- Rankings were transformed to: 4= 100, 3= 75, 2= 50, and 1= 25.
- Averages of confidences in specific abilities were taken with transformed values
- The **gap** was calculated from the difference between the pre- and post- workshop averages.
- The **percent increase** in confidence was calculated by dividing the gap by the pre-workshop average.

Acknowledgements

Results

Table 1: Improvements in confidence in R by ability

Topic	Pre-Workshop Average Confidence	Post-Workshop Average Confidence	Gap	% Increase in Confidence
Fit and interpret results from a logistic regression model	71	90	19	27
Fit and interpret results from a linear regression model	73	90	17	24
Fit and interpret results from an ordinal regression model	60	88	28	46
Fit and interpret results from a semiparametric linear transformation model	51	80	29	58
Expand continuous covariates in regression models using splines and interpret results	45	85	40	89
Include and interpret interactions in regression models	54	87	33	61
Perform power/sample size calculations	53	87	34	64
Simulate data to investigate power and properties of a statistical method	52	88	36	69
Apply statistics to biomedical applications	66	87	21	33

Discussion

The VN-BioStat program builds upon prior efforts in expanding biostatistics capacity in Africa. This workshop demonstrates the importance of collaborative partnerships in order to build successful advanced biostatistics training initiatives.

The focus on specific techniques in R within the context of HIV research fostered an environment conducive to active learner engagement and provided participants with valuable opportunities to bridge gaps between theory and practice.

Tailoring of workshops to those with backgrounds in math, statistics, and computer science allowed for coverage of advanced quantitative concepts

Conclusion

The VN-Biostat program demonstrates that an interactive workshop aimed at building biostatistics capacity in Nigeria was effective in that participants' confidence in abilities improved for all topics covered by the workshop.

We hope that insights gained from this experience will inform the development of similar training programs in comparable low-resourced settings

Future workshops will provide greater levels of supplementary resources for self-learning in order to facilitate better preparation.

Participating Institutions

VANDERBILT UNIVERSITY MEDICAL CENTER
Vanderbilt Institute for Global Health

AMINU KANO TEACHING HOSPITAL

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References

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