Materials and Methods of the Single Injection Count Total Regression Model

Regression modeling was calculated using the **R** interface (R Development Core Team, 2014). Environmental factors relating to clinical adoption were gathered from video annotations, survey results, and demographic information collected throughout the study period. The data was transformed to remove longitudinal effects to create a model that reflects the clinical impact over the entire time period. The **MASS** package stepAIC algorithm performed bidirectional model selection using AIC (Akaike information criterion) as the selection measure. Related variables of interest were visualized by scattermatrix supplied by the **car** package.

Six Factors investigated:

* Prior regional block performance (count)
* Participant age (years)
* Participant experience (years)
* Participant gender
* Teaching affiliation
* Total of Scores received during AssessmentTime2 [0-30]

Model Results

Model selection identified three relevant variables. The final model showed the number of prior single-injection regional blocks to be the paramount factor in explaining post-seminar practice with a coefficient (0.83) indicating a nearly equivalent average number of blocks performed in the following 12 month period at baseline. The number of years of experience was also a significant factor with a coefficient of 0.58. Scattermatrix visualization and low correlation with post-performance(0.06) indicates that the years of experience is indirectly related to the dependent variable and instead has a more direct effect on prior practice reported at Time0. A slightly higher average was conferred by teaching affiliation (teaching hospital/non-teaching), and although this variable was retained by the model, it tested non-significant (p value = 0.16). In the final model, gender, practice test scores, and age were eliminated as poor explanatory variables, giving the overall model an adjusted R-squared of 0.52.

Average monthly practice of continuous blocks showed a different pattern of implementation. The coefficient of practice to baseline was 1.81, indicating a nearly doubling of blocks performed after seminar. Although the majority of participants did not actively practice in continuous blocks in the 0-12 month period, a minority of the population increased in use drastically as compared to respective single injection practice.

R stat package

R Development Core Team (2014). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <http://www.R-project.org/>.

‘MASS’ package

Venables, W. N. & Ripley, B. D. (2002) Modern Applied Statistics with S. Fourth Edition. Springer, New York. ISBN 0-387-95457-0

‘car’ package

John Fox and Sanford Weisberg (2011). An {R} Companion to Applied Regression, Second Edition. Thousand Oaks CA: Sage. <URL:http://socserv.socsci.mcmaster.ca/jfox/Books/Companion>

‘psych’ package

Revelle, W. (2013) psych: Procedures for Personality and Psychological Research, Northwestern University, Evanston, Illinois, USA, http://CRAN.R-project.org/package=psych Version = 1.3.2.

‘irr’ package

Matthias Gamer, Jim Lemon and Ian Fellows Puspendra Singh <puspendra.pusp22@gmail.com> (2012). irr: Various Coefficients of Interrater Reliability and Agreement. R package version 0.84. http://CRAN.R-project.org/package=irr

Posting of R source code if required by the publication

https://github.com/ajkou/FAER\_Study/blob/master/FAER%20stats.R