**To-Do’s for Developing Opioid-Abuse Predictor**

Created: 06/23/2023 by Tom Lever

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**Tasks For Tom That Morgan And Srimann Have Completed**

1. Read foundational literature on predicting opioid abuse using techniques like factor analysis and models like RNN's.
2. Gain access to NIH Researcher Workbench.
3. Experiment with NIH Researcher Workbench.
4. Watch tutorials from Julia and Julia and NIH Researcher Workbench.
5. Access data.
6. Conduct basic EDA.

**Tasks For All (A) Of Morgan (M), Srimann (S), and Tom (T)**

*Italics*: Requires Coordination

Non-Italics: Does Not Require Coordination

1. *A: Receive Srimann and Morgan's presentations from Tuesday, 06/20/2023 on distinction between opioid abuse and dependence and general functions and code.*
2. *A: Hear from Claudia Scholz about physicians to whom we can talk.*
3. *A: Meet with Julia to discuss previous research and Morgan and Srimann's research ideas on Monday, 06/26/2023*
4. *A: Complete System Description with sections for Context, Opportunity Opioid-Abuse Predictor Will Address, What Opioid-Abuse Predictor Will Do, and Iterations Of Development.*
5. *A: Complete System Diagram.*
6. *A: Complete Use Case – Request Prediction Of Whether Patient Will Abuse Opioids.*
7. *A: Complete Interface Design – Requester And Opioid-Abuse Predictor.*
8. *A: Choose data.*
9. *A: Choose a population of interest / subset of patients.*
10. *A: Choose a method of grouping patients.*
11. M/T: Understand principal-component analysis, factor analysis, and partial least-squares regression for each of modeling, dimension reduction, and data preprocessing.
12. M/T: Design, implement, and tune principal-component analyses, factor analyses, and/or partial least-squares regressions.
13. *A: Choose a set of input predictors, a set of predictor transformations, and methods of aggregating predictors (e.g., Principal-Component Analysis, Factor Analysis).*
14. S/T: Understand motivation and ideas behind types of predictive models (e.g., factor analysis, RNN’s), architectures, and hyperparameters.
15. S/T: Design, implement, and tune predictive models. A model may include predictor transformations and methods of aggregating predictors.
16. *A: Choose how to evaluate performance (e.g., a balance of recall and precision).*
17. *A: Evaluate performance of models.*
18. *A: Choose type of model, architecture, and hyperparameters for final model.*
19. *A: Evaluate performance of final model.*
20. *A: Provide documentation for final model.*
21. *A: Write a summarizing paper.*
22. *A: Provide a summarizing presentation.*