

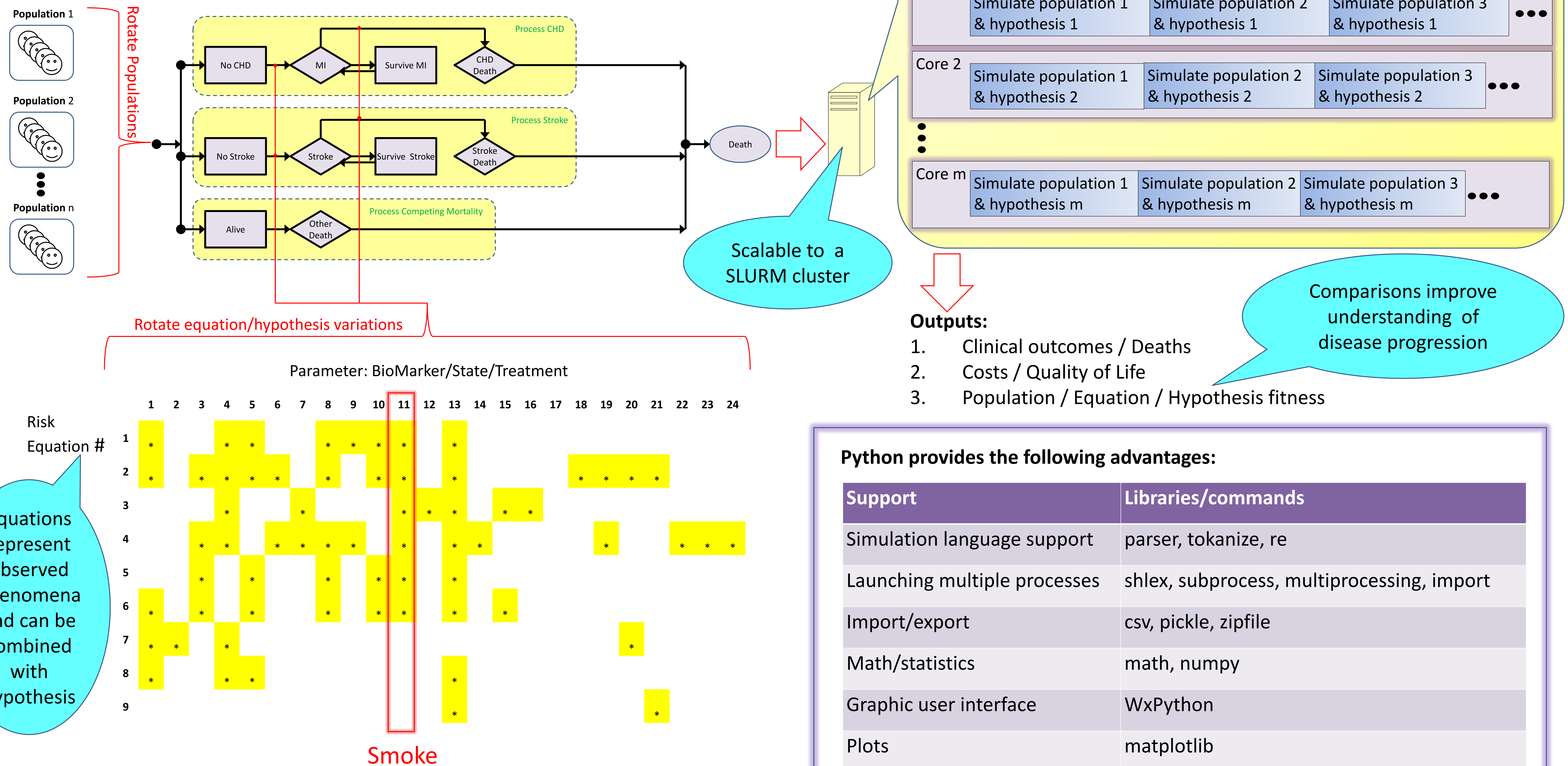
The Reference Model for Disease Progression

Jacob Barhak Ph.D.

<http://sites.google.com/site/jacobbarhak/>

SciPy 2012, 18-19 July 2012

- Prototype utilizing computing power to model chronic disease progression
- Built from literature references and hence the name
- Designed to serve as a reference for new equations and populations



Inputs are based on secondary data:

- Published Risk Equations
- Published Clinical Trials, i.e. no real individual data
- Other publications

Allows the model to access more population sets and cover more phenomena

Acknowledgments:

The GPL modeling framework described above was supported by the Biostatistics and Economic Modeling Core of the MDRTC (P60DK020572) and by the Methods and Measurement Core of the MCDTR (P30DK092926), both funded by the National Institute of Diabetes and Digestive and Kidney Diseases. The modeling framework was initially defined as GPL and was funded by Chronic Disease Modeling for Clinical Research Innovations grant (R21DK075077) from the same institute. The Reference Model was developed independently without financial support.

Python provides the following advantages:

Support	Libraries/commands
Simulation language support	parser, tokenize, re
Launching multiple processes	shlex, subprocess, multiprocessing, import
Import/export	csv, pickle, zipfile
Math/statistics	math, numpy
Graphic user interface	WxPython
Plots	matplotlib

Reference:

- Barhak J., Isaman D.J.M., Ye W., Lee D.: Chronic disease modeling and simulation software. Journal of Biomedical Informatics, Volume 43, Issue 5, October 2010, Pages 791–799, <http://dx.doi.org/10.1016/j.jbi.2010.06.003>
- Barhak J., The Reference Model in the Mount Hood #6-2012 validation challenge and the uncertainty challenge. The Mt hood challenge 6, June 7-8, 2012. Johns Hopkins Mt. Washington Conference Center.