



**SOCIETY OF
ACTUARIES®**

*Arab Actuarial Conference
Session 13 - Strategy for Developing University &
Professional Actuarial Curriculum*

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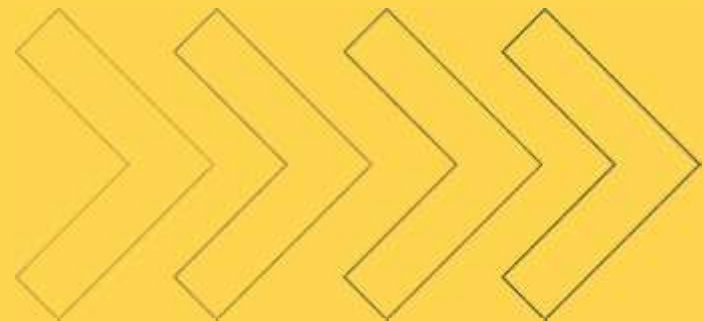
11 May 2023

The education evolution - data

- ASA Pathway Update – with a focus on Analytics
- Micro-Credentials
- Certificates



Why Analytics?



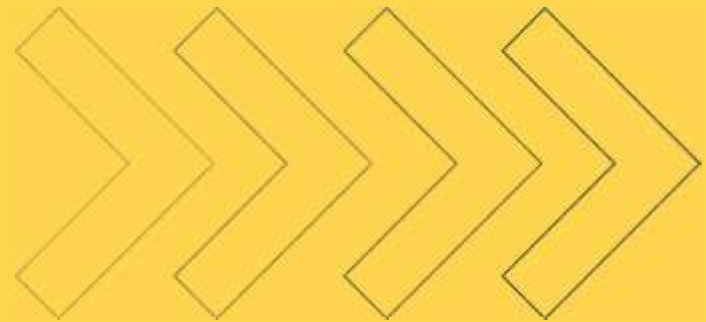
Why are New Approaches Needed?

- **Before:** Goal was to answer a specific question
 - Does drug A work better than drug B?
- Common features
 - Desire to get answer as quick as possible
 - Costly data
- Therefore
 - Want to get an answer with fewest possible observations
 - Small data makes it hard to distinguish a real effect from the luck inherent in the sample
 - May miss a meaningful effect

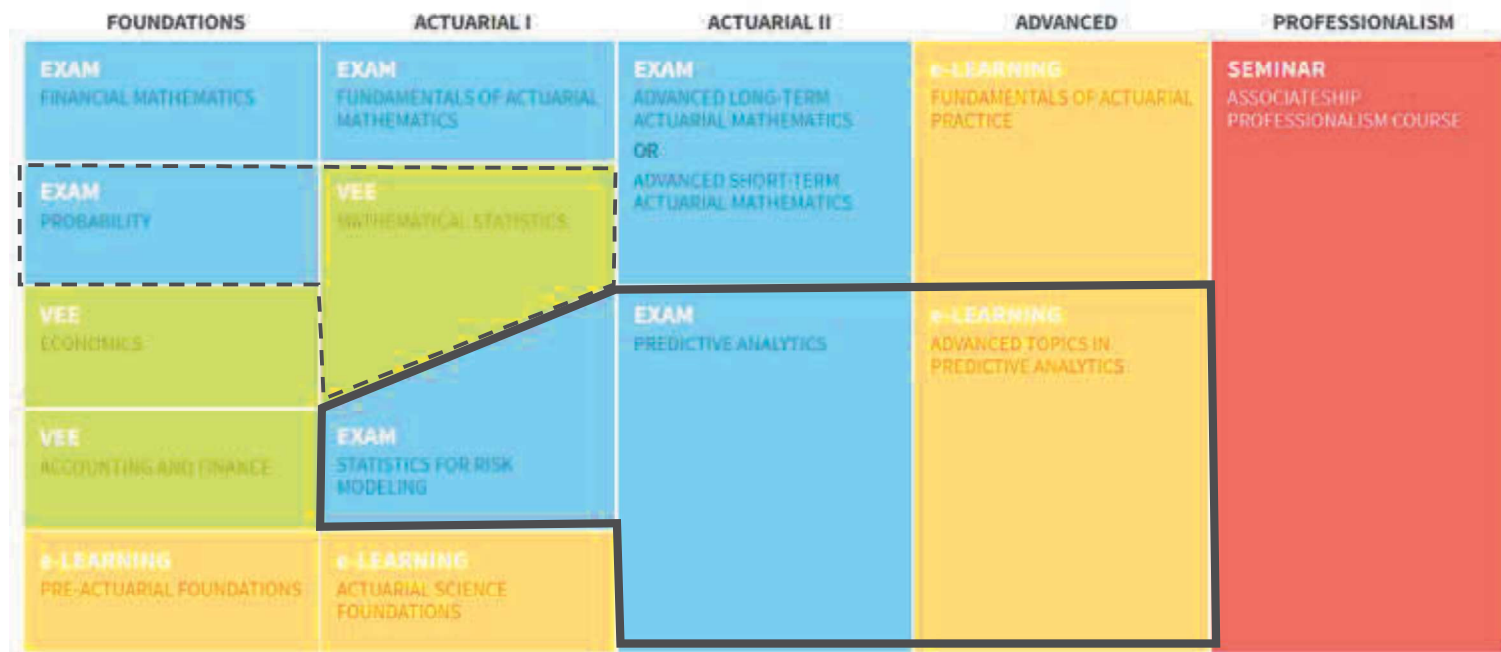
Why are New Approaches Needed?

- **Today:** Goal is to understand and predict
 - What factors are related to lapse rates?
 - What is the mortality rate for those with a particular set of attributes?
- Common features
 - Significant amount of data
 - Larger number of variables
- Therefore
 - May find relationships that aren't there
 - May find relationships that aren't meaningful

Data Analytics Evolution at the SOA



Associate of the Society of Actuaries (ASA)



Exam SRM (Statistics for Risk Modeling)

- 3.5-hour proctored multiple-choice exam with 35 questions, three sessions per year
- Demonstrate an understanding of basic terminology and methods
 - Machine learning (e.g., bias/variance tradeoff, cross validation, train/test/validate, regularization)
 - Supervised learning (generalized linear models, time series, decision trees)
 - Unsupervised learning (cluster and principal components)

Exam PA (Predictive Analytics)

- 3.5-hour proctored, written answer, exam
- Twice per year
- Conducted at a Prometric test center using Word, Excel, R, and Rstudio
- Hands-on implementation of the methods and models from the SRM exam
- E-learning modules provide the education

ATPA (Advanced Topics in Predictive Analytics)

- New in 2022, three submission windows per year
- Take-home test completed over 96 hours
- E-learning instruction
 - Ethical use of data and models
 - Communication
 - Data preparation including merging
 - Additional models (Generalized additive models, Bayesian analysis, Neural networks, Stacked models, Mixed effects models)

SOA Micro-Credentials

- Part of the ASA Pathway
- Digital badges to show progress
- Signals to employers candidates have mastered the curriculum material



Pre-Actuarial Foundations
Micro-credential*



Actuarial Science Foundations
Micro-credential*



Data Science for Actuaries
Micro-credential*

Learn more at soa.org/SOAR

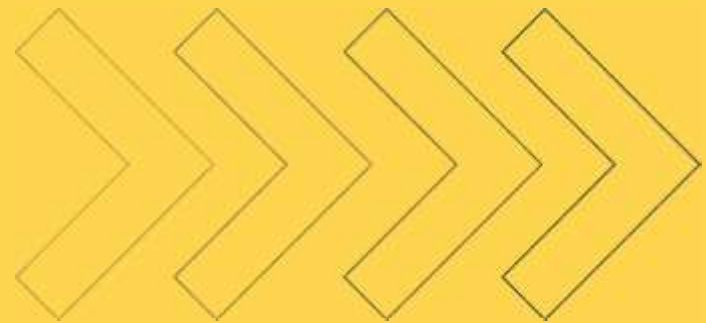
Post-credentialing focus (certificates)

- Predictive Analytics Certificate (updated)
- Advanced Topics in PA Certificate (2022)
- Ethical and Responsible Use of Data and Models (2022)
 - A (mostly) nontechnical coverage of an ethical framework and regulatory requirements and constraints
- IFRI Certificate (2020)
 - Primarily focused on IFRS17
- Climate Risk Certificate (2023)



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Appendix Slides (not intended for use in presentation)



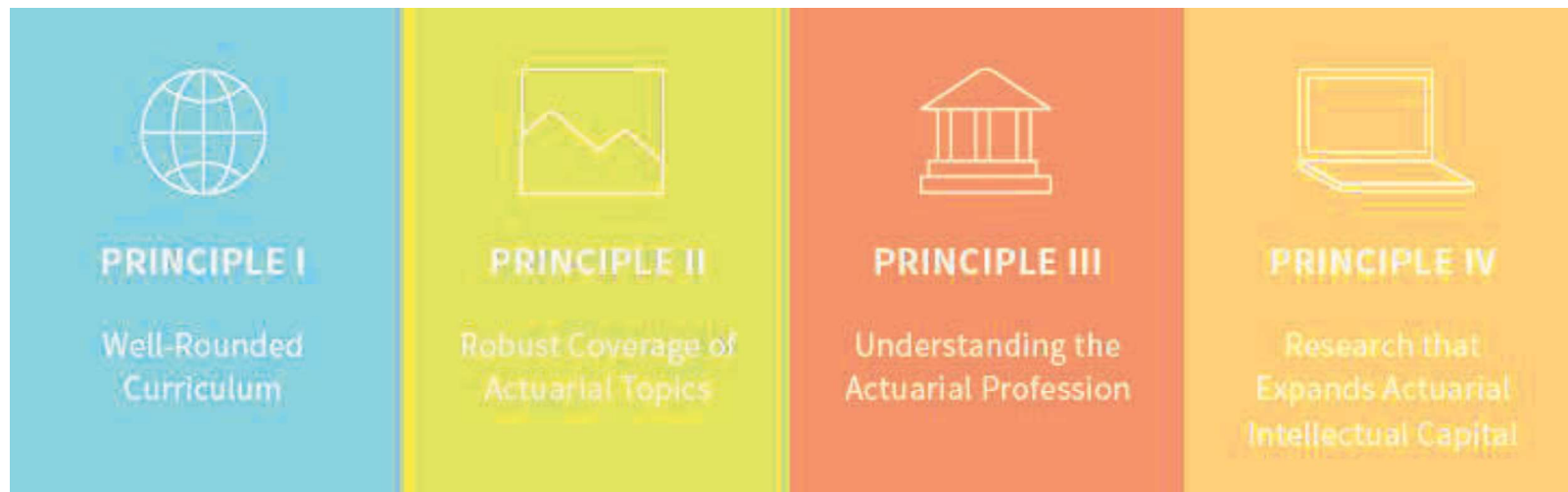
Associate of the Society of Actuaries (ASA)

FOUNDATIONS	ACTUARIAL I	ACTUARIAL II	ADVANCED	PROFESSIONALISM
EXAM FINANCIAL MATHEMATICS	EXAM FUNDAMENTALS OF ACTUARIAL MATHEMATICS	EXAM ADVANCED LONG-TERM ACTUARIAL MATHEMATICS OR: ADVANCED SHORT-TERM ACTUARIAL MATHEMATICS	e-LEARNING FUNDAMENTALS OF ACTUARIAL PRACTICE	SEMINAR ASSOCIATESHIP PROFESSIONALISM COURSE
EXAM PROBABILITY	VEE MATHEMATICAL STATISTICS			
VEE ECONOMICS	EXAM STATISTICS FOR RISK MODELING	EXAM PREDICTIVE ANALYTICS	e-LEARNING ADVANCED TOPICS IN PREDICTIVE ANALYTICS	
VEE ACCOUNTING AND FINANCE				
e-LEARNING PRE-ACTUARIAL FOUNDATIONS	e-LEARNING ACTUARIAL SCIENCE FOUNDATIONS			

Fellow of the Society of Actuaries (FSA)



Quality Actuarial Program Principles



SOA University Recognition Tiers



Validation by Educational Experience (VEE)



Universities & Colleges with
Actuarial Programs (UCAP)

Introductory or Advanced
recognition tiers



Centers of Actuarial Excellence (CAE)