SOCIETY OF ACTUARIES ACTUARIAL INNOVATION AND TECHNOLOGY PROGRAM STEERING COMMITTEE

2020 DATA VISUALIZATION CONTEST

These are the Official Rules governing the Society of Actuaries' ("SOA") "Actuarial Innovation and Technology Steering Committee: ("AITSC") 2020 Data Visualization Contest" ("Contest"). In these rules, "you" and "your" refers to an eligible Contest entrant ("Entrant"). By entering, Entrants acknowledge compliance with these Official Rules, including all eligibility requirements.

1. BACKGROUND AND CONTENT

Data visualizations are used to convey complex data in an understandable way and in line with business goals. Both actuaries and non-actuaries are continually being tasked with finding innovative ways in which to present data patterns that are hidden within complex data sets. This contest seeks to give actuaries and non-actuaries the chance to showcase their ability to tell a story by creating data visualizations for one of two standard datasets that have been created for this purpose.

The Actuarial Innovation and Technology Steering Committee of the Society of Actuaries is sponsoring this competition to encourage contestants to find innovative usages for data visualization software.

2. GOAL FOR THE VISUALIZATIONS

We have provided two datasets for entrants. Submissions need only be based on the data in one of the datasets – there is no need to analyze both datasets. The visualizations should highlight patterns in the data and any underlying stories being told by these datasets that would be useful to the (fictitious) company behind the data shown.

3. DATASET

The visualizations must be applied to one of the two standard datasets that we have provided.

One of the datasets shows sales data for an insurance company. The fields are described in appendix.

The other dataset shows group lapse and mortality data. The fields in the data are described appendix.

4. CONTEST ENTRY PERIOD

Submission period begins **December 11, 2020 at 12:00:01 a.m.** Central Standard Time ("CST") and ends **January 15, 2021 at 11:59:59 p.m.** CST (Entry Period). You may enter the Contest by sending your Submission prior to the close of the Entry Period. For large file (e.g. data visualization program, video) Submissions, send your intent to enter with your contact information prior to the close of the Entry Period, and you will receive further instructions.

Please submit your all your Submissions or intend via e–mail by January 15, 2021 to:

Korrel Crawford, Senior Research Administrator
Society of Actuaries
e–mail: kcrawford@soa.org

Selection of the prize winners will take place on or before February 15, 2021.

5. COUNTRY OF RESIDENCE REQUIREMENTS

The Contest is open only to legal residents of the United States and Canada (void in Quebec) who are at least eighteen (18) years of Age or the age of majority as of December 11, 2020. All employees of Society of Actuaries ("Sponsor"), their contractors or agents (all of the foregoing, together with Sponsor collectively, "Sweepstake Entities"), and their immediate family members and those with whom they are domiciled are ineligible to enter or win the Sweepstake. All applicable federal, state, provincial and local laws and regulations apply.

6. CONTEST GUIDELINES

Submissions should showcase innovative usages for data visualization software that will impact actuarial work. The Submissions must meet the following rules:

- Entrants must submit the complete data visualization program ("Program") used for the visualization and/or any information referenced in the Submission. Entrants must include the name and version of the software.
- Entrants must submit a presentation ("Submission") with their chosen format: a written essay, a PowerPoint or a video.
    - a) Essay Requirements:
        - i. Maximum of 2,000 words. In the event that an essay exceeds 2,000 words, the essay may be declined or returned to the author with a request for further editing and resubmission. There is no requirement for formal or extensive footnoting.
        - ii. Essays may be in Microsoft® Word or PDF format.
    - b) PowerPoint Requirements:
        - i. Maximum of twenty (20) slides. In the event that a PowerPoint exceeds 20 slides, the submission may be declined or returned to the author with a request for further editing and resubmission.
    - c) Video Requirements:
        - i. Minimum of two (2) minutes and a maximum of eight (8) minutes. In the event that a video exceeds 8 minutes, the video may be declined or returned to the author with a request for further editing and resubmission.
        - ii. MP4 or MPEG video files are preferred for video Submissions
- Submissions must be in English.
- When emailing a Submission, the email must include the Entrant's name, credentials or designations (if appropriate); title; organization/company; e-mail address, physical address; and phone number and contact information for the co-author/co-presenter, if applicable. All co-authors have to notify the SOA with their acknowledgment to participate in this contest.
- By entering a Submission in this Contest, you and your co-author(s) are agreeing to provide the SOA with the right to publish your Submission, in accordance with Section 11.
- Submissions that contain any overt political statements, commercial content, and other inappropriate material will not be accepted. Articles must comply with the SOA's antitrust guidelines.

7. JUDGING

The winning Submissions will be determined based on the following criteria: Creativity; Originality; Practical Significance (e.g. the extent to which an idea could contribute to the further development of solutions); and Overall Submission Quality. Submissions will be graded by the Project Oversight Group ("POG") of the AITSC. One judge will be named the Chairperson of the panel.

In the event of a tie, the Chairperson's scores will be used to determine the winning Submission. The judges' decision is final and binding, as will be the Chairperson's in the event of a tie. The judges reserve the right not to award any prizes if they determine that no submission is qualified. The judges reserve the right to modify the judging process.

8. AWARDS

There will be three (3) prizes awarded in this competition: one (1) $1,000 USD prize for "first place;" and two (2) prizes of $500 each for "second place". If the Submission has more than one author/presenter, the prize will be divided among the co-authors/co-presenters equally. In exchange for award money, selected authors will be required to assign all copyrights for their submissions to the Society of Actuaries.

Prize Winner(s) will be determined on or before February 15, 2021 at approximately 10:00:00 AM CDT at the offices of the SOA located at 475 N. Martingale Rd., Suite 600, Schaumburg, Illinois 60173 USA, and the Prize Winner(s) will be notified no later than February 28, 2021. Prize Winners will be announced publicly on or about February 28, 2021. The SOA will mail a check to the Prize Winners at its own expense. The Prize Winners will be required to complete Affidavit of Eligibility/Liability/Publicity Release (where legal) and W9 or W-8BEN Taxpayer Form. These documents must be signed, notarized and returned within fourteen (14) days of issuance of notification. Failure to comply will result in disqualification and the Prize will be forfeited. All taxes on the Prizes and other expenses related to accepting and/or using the Prizes not listed in these Official Rules are the sole responsibility of the Prize Winners, who will receive an IRS Form 1099 reflecting the final actual value of the Prize. Prizes are not transferable or equivalent for Canadian entrants. No substitution allowed except, at the SOA's sole discretion, a prize of equal or greater value may be substituted.

9. SUBMISSION RULES

Entrants may submit a maximum of one (1) Submissions, either individually or with a co-author/co-presenter. No purchase necessary to enter or win. Odds of winning depend on the number of Submissions received and their quality. By entering a Submission in the Contest, Entrant is verifying ownership of the Submission and compliance with the Official Rules. Submissions cannot infringe upon any third-party personal or proprietary rights. Any Entrant whose Submission contains elements not owned by the Entrant must be able to provide legal releases for such use, including Sponsors' use, in a form satisfactory to the judges.

10. PARTICIPANT OBLIGATIONS
   a. By entering, Entrants consent to the use of their name, Submission, biographical information, photographs and/or likenesses for advertising and publicity purposes without additional compensation (except where prohibited) by SOA for purposes concerning this Contest or succeeding contests and for publicity, special events and advertising purposes in connection with promoting the Society of Actuaries, the SOA's Actuarial Innovation and Technology research program, the SOA website and/or this Contest or succeeding contests.
   b. By entering, Entrants grant SOA a perpetual, royalty-free, non-exclusive, non-transferable license to publish, display, and reproduce their Submission in any and all media, in whole or in part, throughout the world for any purpose including commercial purposes. Entrants hereby grant the Sponsor permission to format their Submission for the Sponsor's purposes at the Sponsor's sole discretion.
   c. By entering, Entrants grant SOA an unlimited license to print or republish their submissions, with proper attribution given to the author(s).
   d. By entering, each Entrant agrees to defend, indemnify, release and hold harmless the Sponsor from and against any and all losses, demands, damages, rights, claims, injuries, actions and liabilities of any kind arising out of or related to Entrant's participation in the Contest. Any disputes that may arise hereunder shall be governed in all respects by the laws of the State of Illinois without regard to the conflicts of laws principles of any jurisdiction. Venue with respect to

any such disputes shall be had in the state and federal courts of the State of Illinois. Sponsor's failure to enforce any term of these rules shall not constitute a waiver of that provision. In any cause of action, the Sponsor's liability will be limited to five hundred dollars ($500.00), and in no event shall the Sponsor be liable for attorneys' fees and/or experts' fees and costs. By participating in the Contest, each Entrant waives the right to claim any additional damages whatsoever, including, but not limited to, punitive, consequential, incidental or indirect damages.

11. PUBLICATION AND PRESENTATION

Depending on how many entries are received and the diversity among the submissions, a suitable format for electronic publication and dissemination will be selected. Submissions may also be presented at SOA meetings, webcasts, or other professional development events.

In addition, other venues for publication or presentation of the ideas outside of the SOA will considered. It is hoped that publication of the visualizations will further knowledge and stimulate discussion as well as promote future efforts in this area.

12. PERSONAL INFORMATION

The personal information collected through this Contest is subject to SOA's Privacy Policy, located at http://www.soa.org/legal/privacy-policy/. By entering this Contest, you agree to the use of your personal information as described in the above Privacy Policy.

13. SPONSORS

The Sponsor of this Contest is the Society of Actuaries' Actuarial Innovation and Technology Steering Committee 475 N. Martingale Road, Suite 600, Schaumburg, IL 60173 USA.

14. QUESTIONS

Please direct any questions regarding this Contest to:

Korrel Crawford, Senior Research Administrator
Society of Actuaries
e–mail: kcrawford@soa.org

APPENDIX 1 - Sales data

The data is intended to represent term life quotes from March 3, 2020 to November 7, 2020.

Some applications qualify for accelerated underwriting, the ones that do not are underwritten manually.

Management Information
Management is interested in seeing the following:

1. Sales pipeline to understand why some applications are not purchased
2. Profile of applicants
3. Underwriter performance

Data Fields

FIELD NAME	FORMAT	DEFINITION
id	Integer	Applicant Id
Age	Integer	Age of applicant
Gender	Alpha numeric	Applicant gender (M = Male, F = Female)
Smoker	Alpha numeric	Applicant smoker status (NS = Non-smoker, S = Smoker)
Location	Alpha numeric	Description of sales region based on US Census Bureau regions
Quoted Benefit	Integer ($)	Benefit amount quoted
Quoted Term	Integer	Policy Term (this can be any term from 10 years to 20 years, policy term cannot be change after it is quoted)
Quoted Premium	Numeric ($)	Premium quoted
Date of Quote	Date (yyyy-mm-dd)	Date quote is given
Date Application Received	Date (yyyy-mm-dd), or blank	Date the application is submitted, blank if no application was submitted. Note, the date of application may be later than November 7, as the data includes applications that were quoted before this date and completed after this date.
Height (inches)	Integer	Applicant height in inches, zero if no application was submitted

Weight (lbs)	Integer	Applicant weight in lbs, zero if no application was submitted
BMI	Numeric, or blank	Applicant BMI, zero if no application was submitted
Accelerated Decision	True / False, or blank	TRUE = Accelerated underwriting FALSE = Manual underwriting Blank if no application was submitted
UW Decision	Alpha numeric	Underwriting decision: Standard – standard risk, can be issued as applied for Rated – substandard risk, loading needs to be applied Declined – application was declined by the underwriter Withdrawn – Applicant withdrew their application Blank if no application was submitted
Underwriter	Alpha numeric	Name of the underwriter if manually underwritten
Percent Loading	Integer	Percentage loading added to the risk premium, i.e. 175 = 175%
Per mille Loading	Integer	Per mille loading added to the risk premium
Date of UW Decision	Date (yyyy-mm-dd), or blank	Date underwriting decision as published, blank if not decisions (i.e. not standard, rated or declined). Note, the date of uw decision may be later than November 7, as the data includes applications that were quoted before this date and completed after this date.
Date of Purchase	Date (yyyy-mm-dd), or blank	Date policy was purchased, blank if not purchased. Note, the date of purchase may be later than November 7, as the data includes applications that were quoted before this date and completed after this date.

Purchase Benefit	Integer ($)	Benefit purchased. If the applicant was rated, they may change the benefit amount from the amount originally applied for.
Purchase Premium	Numeric ($)	Premium for policy, includes risk loadings
Campaign	Alpha numeric	Name of sales campaign used by marketing.

Appendix 2 – Group Experience

The data is intended to represent the experience for the block of policies

Management is interested in seeing the following:

1. The performance of various companies tracking their expected mortality
2. The drivers of the variation of the mortality

FIELD NAME	FORMAT	DEFINITION
company_id	Character	Company ID number, there are 150 companies
participant_id	Character	Id of participant for specific company.
year	Numeric	year of experience
age	Numeric	oldest age of participant in the year
face_amount	Numeric	coverage amount of the participant in the year
sex	Character	sex of the participant
collar	Character	assumed collar of participants, these are all blue and can be ignored
region	Character	Region the company (US) is located. See region map, 9 possible values (NW,N,NE,W,C,E,SW,S,SE)
industry	Character	Industry the company is grouped in. 5 possible values
death	Numeric	0 = alive in the year 1 = died in the year
lapse	Numeric	0 = did not lapse (remained) with the company 1 = lapsed (left) their company, mortality unknown
qx_prescribed	Numeric	prescribed industry mortality rate/1000