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Engineers are well-placed when calculating the required resistance for natural and non-natural hazards. However, there are two main problems with the current approach. First, while hazards are one of the primary causes of catastrophic damage and the design against risk contributes vastly to the cost in design and construction, it is only considered late in the development process. Second, current design approaches tend to provide guidelines that do not explain the rationale behind the presented values, leaving the engineer without any true understanding of the actual risk of a hazard occurring. Data is a key aspect in accurate prediction, though its sources are often sparsely distributed and engineers rarely have the background in statistics to process this into meaningful and useful results. This thesis explores the existing approaches to designing against hazards, focussing on natural hazards such as earthquakes, and the type of existing geographic information systems (GIS) that exist to assist in this process. A conceptual design for a hazard-related GIS is then proposed, looking at the key requirements for a system that could communicate key hazard-related data and how it could be designed and implemented. Sources for hazard-related data are then discussed. Finally, models and methodologies for interpreting hazard-related data are examined, with a schematic for how a hazard focussed system could be structured. These look at how risk can be predicted in a transparent way which ensures that the user of such a system is able to understand the hazard-related risks for a given location. Singh introduces valuable techniques for weighing and evaluating alternatives in decision making with a focus on risk analysis for identifying, quantifying, and mitigating risks associated with construction projects. The rates of globalization and growth of the human population puts ever increasing pressure on the agricultural sector to intensify and grow more complex, and with this intensification comes an increased risk of outbreaks of infectious livestock diseases. At the same time, and for the same reasons, the detrimental effect that humans have on other species with which we share the environment has never been more apparent, as the current rates of species loss from ecological communities rival those of ancient mass extinction events. In order to find ways to lessen the effects of and eventually solve such problems we need ways to quantify the risks involved, something that can be difficult when for instance the sheer size or sensitivity of the systems makes practical experimentation unsuitable. For these situations mathematical models have become invaluable tools due to their flexibility and noninvasiveness. This thesis presents

four works involving the quantification of risk in livestock epidemic and ecological contexts using mathematical models. Two of them deal with extinctions of species within model ecological communities, and how species interactions play a role in the identity of the lost species following perturbations to specific species (Papers I and II). The other two regard how the spatial layout of the underlying population of livestock premises affect the risk of foot and mouth disease outbreaks among farms in the USA, and how models of such outbreaks can be optimized to improve their usefulness (Papers III and IV). Ecological communities consist of species and the often intricate pattern of interactions between them. These interspecies connections can propagate effects caused by disturbances in one end of the network, through the community via the links, to other parts of the network. In some cases, a reduction in the abundance of one species can cause the extinction of a second species before the first species disappears, something called functional extinction. Despite this, many conservation efforts revolve around simply keeping populations of single species at a high enough level for their own survival. In a model setting, the study of Paper I explores and attempts to quantify how common such functional extinctions are in relation to the alternative outcome that a perturbed species itself becomes extinct. This is done by first constructing stable model food webs describing predator-prey interactions of up to 50 species, parameterized through allometric relationships between metabolic processes and body size. Then the smallest amount of extra mortality that can be applied to each and every species in the web before any species become extinct is determined. The study shows that in these model communities, more often than not (>80%) another species, rather than the species that is subjected to the additional mortality will be the one to become extinct first. The approach of Paper I is taken further in Paper II by applying the same methodology to ecological networks that include mixtures of both antagonistic (predator-prey) and mutualistic (e.g. pollination and seed dispersal) interactions. The results further reinforce the findings of Paper I, and show that ecological networks containing a mixture of antagonistic and mutualistic interactions are more sensitive to functional extinctions than purely antagonistic or purely mutualistic ones, an important finding considering the diversity of interaction types in natural systems. Furthermore, the type of species found to have the lowest threshold before becoming functionally extinct were those with a mixture of interaction types, such as pollinating insects. Both Paper I and II consolidate the notion that when doing conservation work it is important to have the entire community in mind by considering the population sizes that are viable from a multi-species perspective, rather than just focusing on the minimum population sizes that are viable for the individual species. In Papers III and IV the focus changes somewhat, from models of ecological systems to models of how infectious livestock disease spread between farms in spatially explicit contexts. For this kind of model, information about the spatial distribution of the hosts is of course crucial, but not always readily available. In the USA, the only available information about livestock premises demography is aggregated at the county scale, meaning that the spatial

distribution of the premises within each county is unknown. However, a method exists to simulate realistic stochastic spatial configurations of premises using a set of predictor variables, such as topology, climate and roads. An alternative approach that have been used previously is to assume a uniformly random spatial distribution of premises within each county. But to what extent does the choice between these two methods affect the model's evaluation of the risk of disease outbreaks? In Paper III, this is analyzed specifically for foot and mouth disease. Through simulated outbreaks and by looking at the reproductive ratio of the disease, the outbreak dynamics within the two different spatial configurations of premises are compared. The results show that there is a clear difference in the risk of outbreaks between them, with the non-uniform distributions showing a general pattern of higher outbreak risk. However this difference is dependent on the size and geographic location of the county that the outbreak start in with larger counties in the west of the US showing a stronger effect. When running numerical simulations with large scale models such as the one used in Paper III, a considerable amount of replication is usually necessary in order to account for the high degree of stochasticity inherent to the problem. Even further replication is required when performing sensitivity analyses of model parameters or when exploring different scenarios, for instance when trying to determine the optimal control strategy for a disease. For this reason, the amount and quality of results that can be produced by such studies can quickly become limited by the availability of computational resources. Finding ways to optimize the computations involved with regard to simulation time is therefore of great value as it can be directly related to the robustness of the results. In Paper IV, an efficient optimization method for the kind of kernel-based local disease spread model used in paper III is presented. The method revolves around constructing a grid structure that is overlaid on top of the farm landscape and dividing the infection process into two steps, first evaluating if any farms within one of the grid squares can become infected given an over-estimation of the probability of infection, and then only if so, evaluate actual infection of a subset of the farms within the receiving square. The method is compared to similar published methods and is shown to be more efficient in most cases, while also being easy to implement and understand. Furthermore, while other methods often involve approximations of the transmission process in order to improve computational speed, the method of Paper IV is shown to be exact. This is a major advantage, since with an approximative method the extent to which the results are affected by the simplification is unknown unless the effect of the approximation is explicitly quantified. In most cases, such quantification would require extensive simulations with the unsimplified approach, something which of course may not be feasible. This paper discusses methods to quantify risk and uncertainty in macroeconomic forecasts. Both, parametric and non-parametric procedures are developed. The former are based on a class of asymmetrically weighted normal distributions whereas the latter employ asymmetric bootstrap simulations. Both procedures are closely related. The bootstrap is applied to the structural macroeconometric model of the Bundesbank for

Germany. Forecast intervals that integrate judgement on risk and uncertainty are obtained. Dry roasting is used to control Salmonella contamination on peanuts. The goal of this research is to develop an enhanced understanding of modeling pathogen-reduction achieved during roasting of low-moisture foods by incorporating product and process factors in inactivation models. The objectives to accomplish this goal are: (1) Select and parameterize a model to quantify inactivation kinetics for Enterococcus faecium on the surface of peanuts during convective dry roasting, (2) Develop a heat and mass transfer model to quantify transient temperature and moisture at the surface of peanuts during convective dry roasting, (3) Evaluate the impact of heat transfer properties on predicted log reduction of E. faecium on peanuts.Shelled peanuts inoculated with E. faecium were treated at various air temperatures (121, 149, and 177??C) and air velocities (1.0 and 1.3 m/s) at several times. Sample temperature was measured during treatment. Moisture content was measured and E. faecium were enumerated after treatment. Inactivation was modeled as a function of time, product temperature, and product moisture for the whole data set, and then separately for each air velocity. Multiple primary model (log-linear and Weibull) and secondary model (Bigelow-type, and Bigelow-type modified to include water activity or moisture content) combinations were used and evaluated for fit. In general, the models with more terms tended to fit better than the simplest model form, with decreasing RMSE, residuals, and AICc as the model became more complex. However, when comparing observed data vs. predicted data for the four model forms evaluated, it was evident that the practical differences between the model forms were small. The recommended model form was the log-linear primary model combined with the Bigelow-type secondary model because it will be easier to implement in an industrial setting.A 1-D model was developed in COMSOL to determine the effects of dry roasting on temperature and moisture profiles at the surface of the peanut. Heat transfer was described using Fourier's law, where the heat was transferred to the peanut through convection and through the peanut by conduction. Mass transfer was described using Fick's law, where the water was driven out of the peanut through diffusion and evaporated from the surface through conduction. Values for the properties of the peanut and air, as well as thermal and mass transfer properties were either directly measured or obtained from the literature. Scaled sensitivity coefficients were calculated for the heat and mass transfer parameters - thermal conductivity, specific heat, convective heat transfer coefficient, mass diffusivity of water in peanut, and mass transfer coefficient. This analysis showed that the mass transfer properties (mass diffusivity of water in peanut and mass transfer coefficient) were unimportant to the model, and the most important property was the convective heat transfer coefficient, followed, by the specific heat, and thermal conductivity. With this information, these parameters were measured experimentally or optimized in the model to obtain more accurate values. The model's accuracy was improved from 9.61 to 3.97??C with these improved values.Sensitivity analysis was performed on a combined heat transfer and microbial inactivation model. This analysis entailed iterating heat transfer properties

between an order of magnitude below and above their original baseline values. Results indicated that substantial changes in thermal conductivity did not make much of a difference in the time to reach a 5-log reduction, but overestimating specific heat and underestimating the convective heat transfer coefficient resulted in much longer times to a 5-log reduction. The liberalization of electricity markets has forced the energy producing companies to react to the new situation. The abolishment of monopolies and the launch of open markets have increased the need of calculating costs closer to the profit frontier to be still competitive, not only against the other German but also against foreign suppliers. Thus, an efficient risk management and risk controlling are needed to ensure the financial survival of the company even during bad times. In this work we use the RAROC methodology to develop a Monte Carlo Simulation based model to quantify risks related to wholesale electricity contracts, also called full load contracts. We do not only consider risk due to market price fluctuations but also due to correlation effects between the spot market price and the load curve of a single customer. Probabilistic risk analysis aims to quantify the risk caused by high technology installations. Increasingly, such analyses are being applied to a wider class of systems in which problems such as lack of data, complexity of the systems, uncertainty about consequences, make a classical statistical analysis difficult or impossible. The authors discuss the fundamental notion of uncertainty, its relationship with probability, and the limits to the quantification of uncertainty. Drawing on extensive experience in the theory and applications of risk analysis, the authors focus on the conceptual and mathematical foundations underlying the quantification, interpretation and management of risk. They cover standard topics as well as important new subjects such as the use of expert judgement and uncertainty propagation. The relationship of risk analysis with decision making is highlighted in chapters on influence diagrams and decision theory. Finally, the difficulties of choosing metrics to quantify risk, and current regulatory frameworks are discussed. This report presents the findings of a project to examine media coverage of risk-related stories using three complementary approaches. The first approach was a rudimentary analysis of words used by the media. The second adopted a higher level of analysis, focusing on the writing style of journalists who made significant contributions to particular stories. The third used an experimental simulation to examine some of the key ingredients of stories that capture the public mood. A start-to-finish guide for realistically measuring cybersecurity risk In the newly revised How to Measure Anything in Cybersecurity Risk, Second Edition, a pioneering information security professional and a leader in quantitative analysis methods delivers yet another eye-opening text applying the quantitative language of risk analysis to cybersecurity. In the book, the authors demonstrate how to quantify uncertainty and shed light on how to measure seemingly intangible goals. It's a practical guide to improving risk assessment with a straightforward and simple framework. Advanced methods and detailed advice for a variety of use cases round out the book, which also includes: A new “Rapid Risk Audit” for a first quick quantitative risk assessment. New research

on the real impact of reputation damage New Bayesian examples for assessing risk with little data New material on simple measurement and estimation, pseudo-random number generators, and advice on combining expert opinion Dispelling long-held beliefs and myths about information security, How to Measure Anything in Cybersecurity Risk is an essential roadmap for IT security managers, CFOs, risk and compliance professionals, and even statisticians looking for novel new ways to apply quantitative techniques to cybersecurity. Using the factor analysis of information risk (FAIR) methodology developed over ten years and adopted by corporations worldwide, Measuring and Managing Information Risk provides a proven and credible framework for understanding, measuring, and analyzing information risk of any size or complexity. Intended for organizations that need to either build a risk management program from the ground up or strengthen an existing one, this book provides a unique and fresh perspective on how to do a basic quantitative risk analysis. Covering such key areas as risk theory, risk calculation, scenario modeling, and communicating risk within the organization, Measuring and Managing Information Risk helps managers make better business decisions by understanding their organizational risk. Uses factor analysis of information risk (FAIR) as a methodology for measuring and managing risk in any organization. Carefully balances theory with practical applicability and relevant stories of successful implementation. Includes examples from a wide variety of businesses and situations presented in an accessible writing style. A report on the latest developments that aims to aid executive decision-making for both financial institutions and regulators. Review of Quantifying Risk Through Bankability Reports for the SunShot Review. In this Thesis we addressed two very important themes related to quantitative risk management. On one hand, we provided relevant results about the analysis of extreme value distributions; on the other hand, we also presented different results concerning the dependence modelling between extreme value distributions. These results will be useful in the calculation of the capital requirement in the context of Solvency II in terms of quantifying the risk when the data contain extreme values. This can occur when we analyse operational risk and subscription risk, where the company could have losses that have a very low probability but can reach high values, i.e. "rare cases". Specifically, two lines of research were examined in this Thesis: the dependence between two random variables from the viewpoint of the copulae and the nonparametric methods to estimate the cumulative distribution function and quantile. In addition some questions related to the theory of extreme values were considered: extreme value copulae and maximum domain of attraction of extreme value mixture distributions. Inference on copulae was necessary for analysing the structure of dependence between variables. For this, using the definition of max-stable, we generalised the test of extreme value copula to cover a more extensive alternative hypothesis. In the context of copulae, nonparametric estimation of the cdf was useful for obtaining the pseudo-observations and for estimating the marginals. We proposed the use of new nonparametric methods that improve the accuracy in the risk estimations. To illustrate the usefulness of

the methods analysed in this Thesis, we used data on the costs of accidents in auto insurance. Specifically, we used two databases, the first contains information from a sample of bivariate costs and the second contains information related to a sample of univariate cost for different types of policyholders. From our data, we found that the Gumbel copula with DTKE (double transformed kernel estimation) marginals provides a good fit. With this copula we obtained a balanced risk estimation that guarantees that the risk is not underestimated and, where it is relevant, not overestimated in excess. In a lot of analyses -in economics, finance, insurance, demography,...- the fit of cdf is very important for evaluating the probability of extreme situations. In these cases, the data are usually generated by a continuous random variable whose distribution may be the result of the mixture of different EVDs; then both the classical parametric models and the classical nonparametric estimates do not work for the estimation of the cdf. All those problems were addressed in last chapter. There we presented a method to estimate cdf that is suitable when the loss is a heavy tailed random variable. The proposed double transformation kernel using the bias-corrected technique, in general, provides good fit results for the Gumbel and Fréchet types of extreme value distributions, especially when the sample size is small. We show, when the sample size is small, that our proposed BCDTKE (bias-corrected double transformed kernel estimator) improves the classical kernel estimator and bias-corrected classical kernel estimator of the cumulative distribution function when the distribution is a right extreme value distribution and the maximum domain of attraction is the one associated with a Fréchet type distribution. Finally we provided some theoretical results about the maximum domain of attraction of extreme value mixture distributions.We concluded that the heavier tail (Fréchet type) prevails over the lighter tails (Gumbel type). Through the process of quantitative risk management, project managers can convert the impact of risk on the project into numerical terms, which is often used todetermine the cost and time contingencies of the project. This paper provides an overview of quantitative risk assessment methods and a real world example of how QRAs were effectively used on a capital project in the mining industry. The author describes the three risk elements that concern project management, explores several methods of contingency determination, and concludes by explaining the value that QRAs can add when the project is set up for their use. This book is used in many university courses for SOA Exam MLC preparation. The Fifth Edition is the official reference for CAS Exam LC. The Sixth Edition of this textbook presents a variety of stochastic models for the actuary to use in undertaking the analysis of risk. It is designed to be appropriate for use in a two or three semester university course in basic actuarial science. It was written with the SOA Exam MLC and CAS Exam LC in mind. Models are evaluated in a generic form with life contingencies included as one of many applications of the science. Students will find this book to be a valuable reference due to its easy-to-understand explanations and end-of-chapter exercises. In 2013 the Society of Actuaries announced a change to Exam MLC's format, incorporating 60% written answer questions and new standard notation and

terminology to be used for the exam. There are several areas of expanded content in the Sixth Edition due to these changes. Six important changes to the Sixth Edition: WRITTEN-ANSWER EXAMPLES This edition offers additional written-answer examples in order to better prepare the reader for the new SOA eam format. NOTATION AND TERMINOLOGY CONFORMS TO EXAM MLC MQR 6 fully incorporates all standard notation and terminology for exam MLC, as detailed by the SOA in their document Notation and Terminology Used on Exam MLC. MULTI-STATE MODELS Extension of multi-state model representationt to almost all topics covered in the text. FOCUS ON NORTH AMERICAN MARKET AND ACTUARIAL PROFESSION This book is written specifically for the multi-disciplinary needs of the North American Market. This is reflected in both content and terminology. PROFIT TESTING, PARTICIPATING INSURANCE, AND UNIVERSAL LIFE MQR 6 contains an expanded treatment of these topics. THIELE'S EQUATION Additional applications of this important equation are presented, to more fully prepare the reader for exam day. A separate solutions manual with detailed solutions to all of the text exercises is also available. Please see the Related Items Tab for a direct link I selected Models for Quantifying Risk as the text for my class. Given that the syllabus had changed quite dramatically from prior years, I was looking for a text that would cover all the material in the new syllabus in a way that was rigorous, easy to understand, and would prepare students for the May 2012 MLC exam. To me, the text with the accompanying solutions manual does precisely that. --Jay Vadiveloo, Ph.D., FSA, MAAA, CFA, Math Department, University of Connecticut I found that the exposition of the material is thorough while the concepts are readily accessible and well illustrated with examples. The book was an invaluable source of practice problems when I was preparing for the Exam MLC. Studying from it enabled me to pass this exam." -- Dmitry Glotov, Math Department, University of Connecticut "This book is extremely well written and structured." -- Kate Li, Student, University of Connecticut "Overall, the text is thorough, understandable, and well-organized. The clear exposition and excellent use of examples will benefit the student and help her avoid 'missing the forest for the trees'. I was impressed by the quality and quantity of examples and exercises throughout the text; students will find this collection of problems sorted by topic valuable for their exam preparation. Overall, I strongly recommend the book." -- Kristin Moore, Ph.D., ASA, University of Michigan PART 1? WHY RISK ASSESSMENT -- Chapter 1? Understanding Risk Assessement -- 1.1The Target Risks -- 1.2The Quantitative Definition of Risk -- 1.3The Meaning of Quantification -- 1.4Form of the Results of a Quantitative Risk Assessment -- 1.5References -- Chapter 2? Analytical Foundations of Quantitative Risk Assessment -- 2.1Quantitative Definition of Risk -- 2.2The Scenario Approach to Quantitative Risk Assessment -- 2.3Interpretation of Probability and Likelihood -- 2.4Quantification of the Scenarios -- 2.5Assembling the Results -- 2.6References -- Chapter 3? The Rational Management of Catastrophic Risks -- 3.1Benefits of Quantitative Risk Assessment -- 3.2The Role of the Case Studies -- 3.3Comparing Quantitative Risks Using the Case Studies --

3.4Observations from the Case Studies -- 3.5Insights from Comparing Results -- 3.6Where Do We Go from Here? -- References -- PART 2? Risk Assessment Case Studies -- Chapter 3? Risk of a Catastrophic Hurricane in -- 3.1Summary of the Risk Assess ... This book offers a practical answer for the non-mathematician to all the questions any businessman always wanted to ask about risk quantification, and never dare to ask. Enterprise-wide risk management (ERM) is a key issue for board of directors worldwide. Its proper implementation ensures transparent governance with all stakeholders' interests integrated into the strategic equation. Furthermore, Risk quantification is the cornerstone of effective risk management,at the strategic and tactical level, covering finance as well as ethics considerations. Both downside and upside risks (threats & opportunities) must be assessed to select the most efficient risk control measures and to set up efficient risk financing mechanisms. Only thus will an optimum return on capital and a reliable protection against bankruptcy be ensured, i.e. long term sustainable development. Within the ERM framework, each individual operational entity is called upon to control its own risks, within the guidelines set up by the board of directors, whereas the risk financing strategy is developed and implemented at the corporate level to optimise the balance between threats and opportunities, systematic and non systematic risks. This book is designed to equip each board member, each executives and each field manager, with the tool box enabling them to quantify the risks within his/her jurisdiction to all the extend possible and thus make sound, rational and justifiable decisions, while recognising the limits of the exercise. Beyond traditional probability analysis, used since the 18th Century by the insurance community, it offers insight into new developments like Bayesian expert networks, Monte-Carlo simulation, etc. with practical illustrations on how to implement them within the three steps of risk management, diagnostic, treatment and audit. With a foreword by Catherine Veret and an introduction by Kevin Knight. In the aftermath of the recent financial crisis, the federal government has pursued significant regulatory reforms, including proposals to measure and monitor systemic risk. However, there is much debate about how this might be accomplished quantitatively and objectively—or whether this is even possible. A key issue is determining the appropriate trade-offs between risk and reward from a policy and social welfare perspective given the potential negative impact of crises. One of the first books to address the challenges of measuring statistical risk from a system-wide persepective, Quantifying Systemic Risk looks at the means of measuring systemic risk and explores alternative approaches. Among the topics discussed are the challenges of tying regulations to specific quantitative measures, the effects of learning and adaptation on the evolution of the market, and the distinction between the shocks that start a crisis and the mechanisms that enable it to grow. Much of actuarial science deals with the analysis and management of financial risk. In this text we address the topic of loss models, traditionally called risk theory by actuaries, including the estimation of such models from sample data. The theory of survival models is addressed in other texts, including the ACTEX work entitled Models for Quantifying Risk which might be

considered a companion text to this one. In Risk Models and Their Estimation we consider as well the estimation of survival models, in both tabular and parametric form, from sample data. This text is a valuable reference for those preparing for Exam C of the Society of Actuaries and Exam 4 of the Casualty Actuarial Society. A separate solutions' manual with detailed solutions to the text exercises is also available. Presents systems-based theory, methodology, and applications in risk modeling, assessment, and management This book examines risk analysis, focusing on quantifying risk and constructing probabilities for real-world decision-making, including engineering, design, technology, institutions, organizations, and policy. The author presents fundamental concepts (hierarchical holographic modeling; state space; decision analysis; multi-objective trade-off analysis) as well as advanced material (extreme events and the partitioned multi-objective risk method; multi-objective decision trees; multi-objective risk impact analysis method; guiding principles in risk analysis); avoids higher mathematics whenever possible; and reinforces the material with examples and case studies. The book will be used in systems engineering, enterprise risk management, engineering management, industrial engineering, civil engineering, and operations research. The fourth edition of Risk Modeling, Assessment, and Management features: Expanded chapters on systems-based guiding principles for risk modeling, planning, assessment, management, and communication; modeling interdependent and interconnected complex systems of systems with phantom system models; and hierarchical holographic modeling An expanded appendix including a Bayesian analysis for the prediction of chemical carcinogenicity, and the Farmer’s Dilemma formulated and solved using a deterministic linear model Updated case studies including a new case study on sequential Pareto-optimal decisions for emergent complex systems of systems A new companion website with over 200 solved exercises that feature risk analysis theories, methodologies, and application Risk Modeling, Assessment, and Management, Fourth Edition, is written for both undergraduate and graduate students in systems engineering and systems management courses. The text also serves as a resource for academic, industry, and government professionals in the fields of homeland and cyber security, healthcare, physical infrastructure systems, engineering, business, and more. This thesis is devoted to the modelling and measurement of multivariate operational risk, multivariate business risk, and the aggregation of different risk types. A bank's total operational risk is modelled by a multivariate compound Poisson process for which the dependence structure is described by the new concept of a Lévy copula. In doing so, we obtain closed-form approximations for the operational Value-at-Risk. The quantification of business risk is based on discounted future cash flows, which are modelled by different Gauss processes. This gives insight into the so-called Capital-at-Risk of a financial institution. Finally, we compare different risk-aggregation techniques and present a new approach how expert knowledge can be included when calculating the correlation between different risk types. With a weight-of-the-evidence approach, cancer risk assessment indentifies hazards, determines dose-response relationships, and assesses exposure to

characterize the true risk. This book focuses on the quantitative methods for conducting chemical cancer risk assessments for solvents, metals, mixtures, and nanoparticles. It links these to the basic toxicology and biology of cancer, along with the impacts on regulatory guidelines and standards. By providing insightful perspective, Cancer Risk Assessment helps researchers develop a discriminate eye when it comes to interpreting data accurately and separating relevant information from erroneous. Risk assessment for geologic CO2 storage including quantification of risks is an area of active investigation. The National Risk Assessment Partnership (NRAP) is a US-Department of Energy (US-DOE) effort focused on developing a defensible, science-based methodology and platform for quantifying risk profiles at geologic CO2 sequestration sites. NRAP has been developing a methodology that centers round development of an integrated assessment model (IAM) using system modeling approach to quantify risks and risk profiles. The IAM has been used to calculate risk profiles with a few key potential impacts due to potential CO2 and brine leakage. The simulation results are also used to determine long-term storage security relationships and compare the long-term storage effectiveness to IPCC storage permanence goal. Additionally, we also demonstrate application of IAM for uncertainty quantification in order to determine parameters to which the uncertainty in model results is most sensitive. The perception, assessment and management of risk are increasingly important core principles for determining the development of both policy and strategic responses to civil and environmental catastrophes. Whereas these principles were once confined to some areas of activity i.e. financial and insurance, they are now widely used in civil and environmental engineering. Comprehensive and readable, Civil and Environmental Risk: Mitigation and Control, provides readers with the mathematical tools and quantitative methods for determining the probability of a catastrophic event and mitigating and controlling the aftermath. With this book engineers develop the required skills for accurately assessing risk and formulating appropriate response strategies. The two part treatment starts with a clear and rigorous exposition of the quantitative risk assessment process, followed by self-contained chapters concerning applications. One of the first books to address both natural and human generated disasters, topics include events such as pandemic diseases, climate changes, major hurricanes, super earthquakes, mega tsunamis, volcanic eruptions, industrial accidents and terrorist attacks. Case studies appear at the end of the book allowing engineers to see how these principles are applied to scenarios such as a super hurricane or mega tsunamis, a reactor core melt down in a nuclear plant, a terrorist attack on the national electric grid, and an abrupt climate change brought about by a change in the ocean currents in the North Atlantic. Written by the current Chairman of the U.S. Nuclear Waste Technical Review Board, Environmental risk managers will find this reference a valuable and authoritative guide both in accurately calculating risk and its applications in their work. Key Features Mathematical tools for calculating and Controlling Catastrophic Risk Presents a systematic method for ranking the importance of societal threats Includes both Natural and Industrial Catastrophes

Case studies cover such events as pandemic diseases, climate changes, major hurricanes, super earthquakes, mega tsunamis, volcanic eruptions, industrial accidents, and terrorist attacks. Traditional studies of sexual assault in the prison system have focused upon identifying those inmates most likely to perpetrate the offence. However, little research has been conducted upon better identification of those inmates most at risk for sexual assault victimization. The purpose of this study was to analyze an existing dataset in order to evaluate if risk of sexual assault in prison could be quantified through qualitative data. Using secondary qualitative data of 409 males in 30 institutions in 10 states, theoretical risk-assessment indices were created based upon a review of the relevant literature. Reliability was then assessed of the constructed indices, and was followed by Exploratory Factor Analyses (EFA) to further construct reliable and valid risk-assessment indices. Results indicated that the identified variables could be used for quantification of risk assessment. By extracting quantifiable risk assessment from qualitative data, further insight was gleaned as how to more effectively construct risk assessment instruments to more accurately measure sexual assault in prisons.

- How To Measure Anything In Cybersecurity Risk
- Quantifying Risk Modelling And Estimation
- Quantifying Risk For Sexual Assault In Prisons
- Quantifying Risk Through Bankability Reports
- Internal Modelling CAD II
- Quantifying Risk In Epidemiological And Ecological Contexts
- Innovative Methods Of Quantifying Risk And Insights Into The Epidemiology Of Various Cancers
- Quantifying Risk Amplification Processes A Multi Level Approach
- Probabilistic Risk Analysis
- WebShipCost
- Quantifying Risk With Selection Of The Natural Gas Maximum Daily Quantity
- Measuring And Managing Information Risk
- Predicting Extreme Events
- Quantifying Risk And Uncertainty In Macroeconomic Forecasts
- Developing Model based Tools For Quantifying Risk Mitigation And Validating Commercial Dry Roasters
- Quantifying Risk And Uncertainty In Macroeconomic Forecasts
- Risk Modeling Assessment And Management
- Quantification Of Key Long term Risks At CO2 Sequestration Sites
- Quantifying Risk In The Electricity Business
- Quantitative Risk Management And Decision Making In Construction
- Quantifying And Controlling Catastrophic Risks
- Quantifying Risk Using Copulae And Kernel Estimators
- Swimming Performance Of Juvenile Paddlefish
- Cancer Risk Assessment