



October 16, 2019

Dr. Victoria Saporta  
Chairperson  
Mr. Jonathan Dixon  
Secretary General  
International Association of Insurance Supervisors (IAIS)  
Centralbahnplatz 2  
CH-4051 Basel  
Switzerland

**Re: Draft Issues Paper on the Use of Big Data Analytics in Insurance, For Public Consultation 2 September 2019**

Dear Dr. Saporta and Mr. Dixon:

The Institute of International Finance (IIF) and its insurance members welcome the opportunity to offer comments on the *IAIS Draft Issues Paper on the Use of Big Data Analytics in Insurance, For Public Consultation 2 September 2019* (Draft Issues Paper).

The Draft Issues Paper provides an accurate overview of the various uses of BDA by insurers and provides a helpful discussion of some of the key challenges or risks associated with the various applications of BDA. In certain instances, however, we believe the paper may not address these issues in a sufficiently detailed and balanced manner. For example, we offer suggestions for a more nuanced discussion around the use and collection of data, the potential for bias, the development of personalized products and targeted marketing. As the IAIS delves further into the topic of insurers' use of BDA, we would urge a collaborative approach with industry and other stakeholders (e.g. cross-sectoral standard setters responsible for data privacy and protection initiatives, the research and academic communities, and machine learning and artificial intelligence experts) in order to understand more fully this complex topic. We are pleased that the IAIS has adopted a collaborative approach through the publication for comment of the Draft Issues Paper.

This letter offers feedback on the Draft Issues Paper, as well as some additional considerations that we would propose for further exploration by the IAIS.

Relatedly, the IIF has conducted extensive cross-sectoral research into the topics of machine learning, data privacy and third-party risk management, and a number of our findings are reflected in this comment letter. In addition, the attached report may be of interest to the IAIS and we would be pleased to discuss

in greater detail the topics raised in this letter or in the IIF report with IAIS members and staff addressing BDA issues.<sup>1</sup>

**1. The Draft Issues Paper should focus on advice and guidance to insurance supervisors with respect to the use of BDA by insurers.**

The IAIS has stated that Issues Papers are designed to provide background on particular topics, describe current practices, actual examples or case studies pertaining to a particular topic, and/or identify related regulatory and supervisory issues and challenges. In general, the Draft Issues Paper identifies challenges related to the use of BDA by insurers for supervisory consideration but, at times, it strays into providing guidance to insurers (e.g. Paragraph 47). While we have no issue with the specific guidance offered, it may be premature for the IAIS to offer guidance to the industry on the use of BDA until there has been further dialogue among the IAIS, the industry, and other stakeholders, in order to gain a more thorough and comprehensive understanding of the use of BDA by insurers, the challenges and benefits of BDA, and the control and governance arrangements insurers have in place around their use of BDA.

It could be helpful for the IAIS to convene a roundtable with members and stakeholders to discuss the use of BDA and related model governance and risk management issues. The IIF would be pleased to facilitate such a forum.

**2. The IAIS should recognize the considerable benefits of insurers' use of BDA.**

The IAIS should better balance the discussion of the risks of BDA with an explicit reflection of the benefits of the use of BDA by insurers. BDA tools can play an important role in promoting a customer-centric insurance value chain and in advancing the societal goals of improving insurance inclusion and narrowing insurance protection gaps. BDA can contribute to making insurance products more accessible and can facilitate the underwriting process through more refined policyholder risk assessments, better risk differentiation and, ultimately, more refined risk-based pricing.<sup>2</sup> BDA can also support global financial inclusion by improving model accuracy and overcoming data deficiencies and inconsistencies and, thus, allowing insurers to better assess, price and underwrite risks that, in the past, may have been uninsurable. For example, BDA has enabled the development of parametric products that are customer-friendly and affordably priced. The claims management process can be expedited through the use of digital and geospatial tools and advanced analytics can be deployed to prevent inappropriate claims and detect insurance fraud, ultimately leading to cost savings and greater efficiencies for insurers and policyholders alike.

Paragraph 46 appropriately recognizes the benefits of BDA in enabling the provision of usage-based insurance (UBI) but raises a concern that UBI can create risks if customers forget to activate or deactivate their cover as and when necessary. We believe this risk to be overstated and note that this concern can

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<sup>1</sup> IIF, *Machine Learning Thematic Series: Bias and Ethical Implications in Machine Learning*, May 2019. This report may be accessed at: [https://www.iif.com/Portals/0/Files/Thematic\\_Series\\_Bias\\_and\\_Ethics\\_in\\_ML.pdf](https://www.iif.com/Portals/0/Files/Thematic_Series_Bias_and_Ethics_in_ML.pdf)

<sup>2</sup> A recent EIOPA report on the use of BDA in the motor and health insurance lines of business indicates that there is no evidence, as yet, that an increasing granularity of risk assessments is causing exclusion issues. [https://eiopa.europa.eu/Publications/EIOPA\\_BigDataAnalytics\\_ThematicReview\\_April2019.pdf](https://eiopa.europa.eu/Publications/EIOPA_BigDataAnalytics_ThematicReview_April2019.pdf)

be easily mitigated when insurers provide alerts or periodic reminders to customers. Insurers choosing to offer UBI products have an incentive to make these products attractive to customers by enhancing convenience and ease of use.

### **3. The Draft Issues Paper would benefit from a more nuanced discussion of insurers' use of data.**

While we recognize that insurance regulators and supervisors generally do not have a mandate to address data privacy and data protection issues, these issues are closely related to insurers' use of BDA. Section 2.1 of the Draft Issues Paper (Paragraphs 22-28) appears to treat equally all types of data when, in fact, insurers segment customer data according to the level of sensitivity, particularly in the case of personally identifiable information (PII). The segmentation of customer data cascades into the processing of the data and its use in marketing, underwriting and distribution. We believe it is important for the IAIS to engage with standard setters that have a mandate for data privacy and data protection in order to appreciate more fully how insurers are required to handle customer data in general and PII in particular.

As a related matter, the IAIS should consider the implications of data localization laws and regulations for the development and use of BDA by insurers. Data localization restrictions impede the development and use of BDA by cross-border insurers, an obstacle that redounds to the detriment of policyholders unable to take advantage of the innovative product offerings and streamlined access to insurance markets that BDA techniques can facilitate. The IAIS may wish to consider the impacts of data localization on the global insurance industry in general and on the industry's ability to develop further innovative products and services in particular.

The IAIS correctly observes in Paragraph 106 that legal questions related to the ownership of data may arise when data is received from insureds or third parties. We suggest that, instead of attempting to resolve the significant legal complexities around data ownership (the treatment of which varies across jurisdictions), the IAIS may wish to focus supervisors on whether insurers (and others in the insurance value chain) have received the right to use customer data in accordance with jurisdictional requirements and are using that data in a manner consistent with the fair treatment of customers.

Paragraph 24 raises a concern that passive data collection may result in customers unknowingly sharing data with insurers. Data collection, whether passive or active, generally occurs (and should occur) with prior disclosure to and consent from customers that clearly identifies the type(s) of data collected and the intended use(s) of the data collected. Supervisors have an interest in ensuring that those disclosures are transparent, understandable and meaningful and that consent is knowingly given, considerations that are not unique to the passive collection of customer data.

Paragraph 71 raises a concern that customers who do not have or want access to digital devices or do not wish to provide detailed personal data may become marginalized and excluded from insurance. We do not agree that this should be a significant concern. Insurers can and do serve customers who do not adopt technology, just as they can and do serve customers with a wide variety of risk profiles and needs.

Finally, the Draft Issues Paper would benefit from a further discussion of supervisory approaches to the use of open source data and code by insurers. While the use of open source data and code has many

benefits, the IAIS may wish to consider offering guidance to supervisors on the risks that can arise from the failure to inventory, track and update open source components, faulty, underdeveloped or abandoned open source data or code, or slow patching that can allow hackers to take advantage of vulnerabilities.

#### **4. The Draft Issues Paper would be enhanced by a more thorough discussion of bias.**

The Draft Issues Paper would be enhanced by a more thorough discussion of the challenges around bias. While we agree that machine learning and AI can manifest or perpetuate existing biases, this risk of bias is not new as a result of the development of BDA. Insurers have an obligation to be vigilant in preventing bias, regardless of the methods used to market, underwrite or distribute their products. The benefits of BDA need to be balanced with the risks of bias and improper discrimination. The fact that the risk of bias is not new as a result of the development of BDA should be highlighted in discussions among supervisors at the IAIS.

The Draft Issues Paper also could be enhanced by a definition of bias that distinguishes and emphasizes statistical bias as opposed to more popular, social definitions of bias. Different types of bias (e.g. selection bias, survivorship bias and association bias) could be highlighted, along with techniques and processes for overcoming these sources of bias. For example, to counter potential association bias, or the use of data in the training set that correlates positively with protected or sensitive characteristics that cannot be used explicitly, an insurer could, among other measures: (i) track the lifecycle of the training dataset, (ii) review the dataset to detect encoded bias in the features, (iii) improve the representativeness of the dataset to include underrepresented data, (iv) consider the need for *a posteriori* bias correction to neutralize the impact of a sensitive attribute, and (v) apply quality control processes to ensure that the integrity of the dataset is maintained over time. Moreover, BDA can be used proactively by insurers to identify sources of bias and errors in data.

#### **5. The Draft Issues Paper should reflect insurers' governance and risk management of the use of BDA.**

BDA models, like other models used by insurers, are subjected to rigorous model risk governance and independent testing and validation policies and processes throughout the life of the model. Insurers subject key model assumptions and model output to independent human expert oversight, review and control to prevent overconfidence in model solutions. Insurers can use a range of techniques in order to help detect and address potential sources of model bias or error, including challenger or benchmark algorithms and models and the use of different datasets for training, testing and validation. When models are less explainable, additional processes are considered to assure that results can be meaningfully interpreted. Centralized data lakes, warehouses and inventories can help track data and improve data quality. Documentation and an audit trail can facilitate good model governance and provide for management accountability.

The IAIS should elaborate on the suggestion in Paragraph 100 that supervisors may wish to conduct (either directly or through the use of independent third-party audit and validation parties) sample verification and integrity checks on the algorithm process as well as the outcome of the process in ensuring fair customer outcomes. If the IAIS determines to adopt such a suggestion, we would value additional

discussion on the criteria for determining the parties capable of performing such analyses, as the state of the art in BDA and modeling is dynamic and expertise is limited.

**6. The IAIS should avoid the duplication of existing Insurance Core Principles that also apply to the ethical use of BDA.**

ICP 19, Conduct of Business, provides extensive guidance to supervisors in their development of standards that require insurers to treat customers fairly. This guidance applies equally to the supervision of the use of BDA by insurers. The IAIS should review ICP 19 and other ICPs related to the fair treatment of customers to determine if there are any gaps that need to be addressed in order to reflect the use of BDA by insurers. New principles and guidance should be proposed only in the event that there are material gaps in existing supervisory materials.

**7. The IAIS should coordinate with global standard setters in order to align and coordinate insurance principles and guidance where appropriate.**

The IAIS should consider further coordination with global standard setters, particularly those with a cross-sectoral mandate to address data privacy and data protection, in order to align insurance principles and guidance where appropriate. These standard setters would include, at the global level, the Organization for Economic Cooperation and Development (OECD).<sup>3</sup>

Coordination with global standard setters can promote a level playing field among market participants engaging in the same or similar activities and can avoid regulatory and market fragmentation. However, while alignment and coordination generally should be a goal of standard setters, there are situations in which different principles and guidance are appropriate for different sectors. The IAIS should carefully consider whether, and to what extent, global principles and guidance reflect the insurance business model and practices and make adaptations as appropriate.

**8. The benefits of more personalized retail insurance products and targeted marketing should be more fully explored.**

The Draft Issues Paper describes the use of targeted marketing to “nudge” customers towards specific products and services and the IAIS raises concerns that targeted marketing could limit the ability of customers to compare a wider variety of offerings, and could result in less informed decision-making, reduced choice, over-insurance, and greater difficulties in product switching. The Draft Issues Paper claims that targeted marketing could cause consumers to disengage, if consumers perceive that insurers are opportunistic.

We encourage the IAIS to adopt a more balanced discussion of targeted marketing. Personalized products can meet customer needs by tailoring the scope and amount of coverage and by setting premium levels

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<sup>3</sup> For example, the OECD has adopted five complementary values-based principles for the responsible stewardship of trustworthy AI: <https://www.oecd.org/going-digital/ai/principles/>. In addition, as the Draft Issues Paper notes, some supervisors impose conduct of business requirements on insurers (e.g. the Singapore Monetary Authority’s principles to promote fairness, ethics, accountability and transparency (FEAT Principles)).

that reflect the personalized coverage. BDA solutions can identify individuals who could benefit from personalized products and alert those individuals to possible protection gaps or the availability of new offerings. Mass offerings, on the other hand, can lead to over-insurance and higher prices to consumers when product design is inflexible.

Paragraphs 61 and 62 and Paragraphs 93 through 95 suggest that BDA can exacerbate disparities in the availability and pricing of insurance products. Concerns regarding insurance availability and pricing are not unique to the use of BDA by insurers and, as we have noted elsewhere in this letter, BDA can improve insurance availability and help insurers tailor coverage and pricing to customer needs and risk profiles.

**9. The Draft Issues Paper should better elaborate the benefits of BDA for commercial insurance.**

The Draft Issues Paper has a strong focus on personal lines insurance and the application of BDA throughout the personal lines product lifecycle. We would encourage the IAIS to also consider and further elaborate the benefits of the application of BDA techniques to the commercial insurance product lifecycle, including in sales and marketing, distribution, underwriting, pricing and claims handling. (For example, the Draft Issues Paper could explore the use of BDA techniques to enhance geospatial technologies used in marine and aviation insurance.) The applications and benefits of BDA techniques in commercial insurance can differ significantly from the applications and benefits of BDA techniques in personal lines insurance and these differences should be highlighted.

**10. The discussion of genetic data in Paragraph 73 and the examples following Paragraph 73 could be elaborated and balanced with a discussion of emerging best practices for governance and oversight.**

Paragraph 73 appropriately recognizes some of the concerns related to the use of genetic data by insurers. We encourage the IAIS to balance these concerns with a discussion of emerging best practices that impose strict controls on, and oversight of, the use of genetic data. We would revise the third and fourth sentences of this Paragraph to state, “Supervisors should advise insurers to proceed with due care in their use of genetic data and probabilistic models, in light of concerns about potential bias and uninsurability. In some jurisdictions, legislation restricts the use of genetic and related data for insurance purposes.”

**11. Examples used in the Draft Issues Paper should be elaborated with an explanation of the underlying methodology.**

The examples used in the Draft Issues Paper would benefit from a further explanation of the underlying causes of the problematic behavior. For example, after Paragraph 37, an example is given of a BBC investigation that appeared to reveal biased data used in a car insurance comparison website. A description of the underlying causes – for example, methodological or design flaws in the BDA utilized by the insurer or the lack of proper model governance – could help to substantiate whether biased data was the reason for the difference in treatment (as opposed to other legitimate variables such as driving records). A description of the underlying causes could produce important “lessons learned” for both insurers and supervisors.

**12. As a next step, the IAIS should convene a roundtable with members and stakeholders to discuss the use of BDA by insurers and related model governance and risk management issues.**

As noted in the introduction to this letter, the use of BDA by insurers is a new, multi-faceted and quickly evolving space that necessitates a collaborative approach with industry and other stakeholders.

We would encourage the IAIS to further engage in dialogue with a range of stakeholders, including the industry, the academic community, advocacy and research organizations, and fellow supervisors and global standard setters, including those responsible for other financial services sectors, data privacy, competition and data protection. The IIF would be pleased to facilitate such a forum.

After engaging in significant and substantive stakeholder dialogue, we would encourage the IAIS to provide further advice to supervisors and engage in supervisory capacity building on issues related to insurers' use of BDA.

We appreciate the opportunity to comment on the Draft Issues Paper and look forward to continuing to discuss the important issues surrounding the use of BDA in insurance with IAIS members and other interested parties.

Respectfully submitted,

Mary Frances Monroe