



# Mortgage Data Standards

Technology, business and policy joining forces to advance the industry

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# Executive summary



In this report, we analyse the potential impact of initiating a system of data standards in the Canadian mortgage industry. Based on findings from various reports commissioned by CMHC and other literature, we find that the development of a mortgage data standards framework in Canada represents a potential net benefit to all industry participants, by:

- **generating operational efficiencies** of at least \$4 billion annually;
- **accelerating digitization and the future of mortgages** with a foundation for innovation development and easier technology adoption;
- **reducing mortgage funding costs** by increased investor confidence; and
- **enabling** the full potential of **advanced analytics** for business development.

These impacts are essential factors to ensure Canadians have access to a well-functioning, reliable and affordable housing system that will not only remain stable but is also able to thrive in the ever-changing technology environment.

The report also looks at the costs and path of adopting the data standards. Based on experiences in other countries, for firms of all types, including those with complex legacy systems, benefits outweigh costs and all transition costs can be recouped within a five-year time frame for all firms. Following that transition period, the benefits will continue to accrue. Additionally, from the experience we have observed in the U.S., there are different paths to the adoption of data standards that can mitigate the transition costs:

- Transitions are typically performed alongside other technology investments that are justified by business needs; the costs are therefore blended with other expenses that would occur regardless of the data standards transition.

- Data standards provide a reference for any technology transformation to start with, which can sometimes save time and effort.
- Even without modifying systems, gains can be generated as standards provide a single reference to map against, thereby making all data exchanges more aligned.
- Firms that already use modern technologies would be able to adopt with minimal efforts.
- Data standards allow firms to easily integrate technologies created by outside firms into their business processes.

The report encompasses findings from three studies conducted by third-party organizations on behalf of CMHC, including literature reviews, surveys, modelling, data mapping, consultations with over 35 industry participants and experts in Canada, and consultations with organizations abroad who are doing business in a system where data standards are well established.

The objectives were to develop and quantify facts on those potential benefits; identify within the current system where friction points would be most easily addressed or would generate the greatest return; and to assess how existing systems of standards are aligned with the needs of the Canadian industry and could accelerate its development.

In light of the potential benefits identified in this study, CMHC is committed to pursuing the development of a system of data standards in collaboration with organizations that play a role within the mortgage lending ecosystem in Canada who also wish to see these opportunities come to fruition. The report discusses some of the upcoming activities that are needed to move toward a system of standards, where all mortgage participants could have access to a well-defined reference model to use in their operations, when and where it helps.

## What Are Data Standards?

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- An agreed-upon set of data elements, data definitions and data relationships that make up a reference model to facilitate the exchange of data.
- A common reference model developed by and for mortgage industry participants.
- Commonly agreed-upon definitions, relationships and processes.
- Can be used as guidelines in data models, data exchanges, forms and business operations.
- Developed from business needs, with technology and in regulatory requirements.

## Toward Digitization and the Future of Mortgages

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- As the mortgage industry becomes increasingly digitized, data standards facilitate this process by:
  - eliminating the need to create new data dictionaries for each of these new products;
  - accelerating innovation developments by providing an easy reference for innovation incubation; and
  - making adoption easier by lowering the commitment as innovations fit within current operating data.
- Examples of promising technologies that require consistent data to function:
  - Microservices – can accelerate time to market, thus increasing customer satisfaction.
  - Blockchain – can provide lenders with competitive loan offers and secure transactions.
  - Application Programming Interface technology (APIs) – can provide data access to engage potential borrowers.
  - Artificial intelligence – can help identify fraud and detect anti-money laundering patterns.
- Despite rapidly increasing consumer demand toward services online throughout the mortgage loan processes (for example, mortgage search functions and loan origination systems [LOS] including pre-qualification), Canada still remains far behind the U.S. in part because of the lack of data standards.

## Increased Operational Efficiencies

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Data standards are estimated to have the potential to generate \$4 billion per year in operating costs savings through the following:

- Reduced staff intervention for reconciling data values and definitions and eliminate the requirement to recollect similar data.
- Improved mortgage application processes reducing the number of person days required from the original intake of application information to loan closing.
- Reduced number of custom IT interfaces, which will extend to interactions with LOS providers, credit report providers, appraisers, brokers, title insurers and lenders.
- Cut post-closing period.
- Allowing technology providers to build single integrations that can then be reused with any firm who builds to the same standard. This eliminates the need to create similar products for multiple firms.



## Facilitate Mortgage Funding

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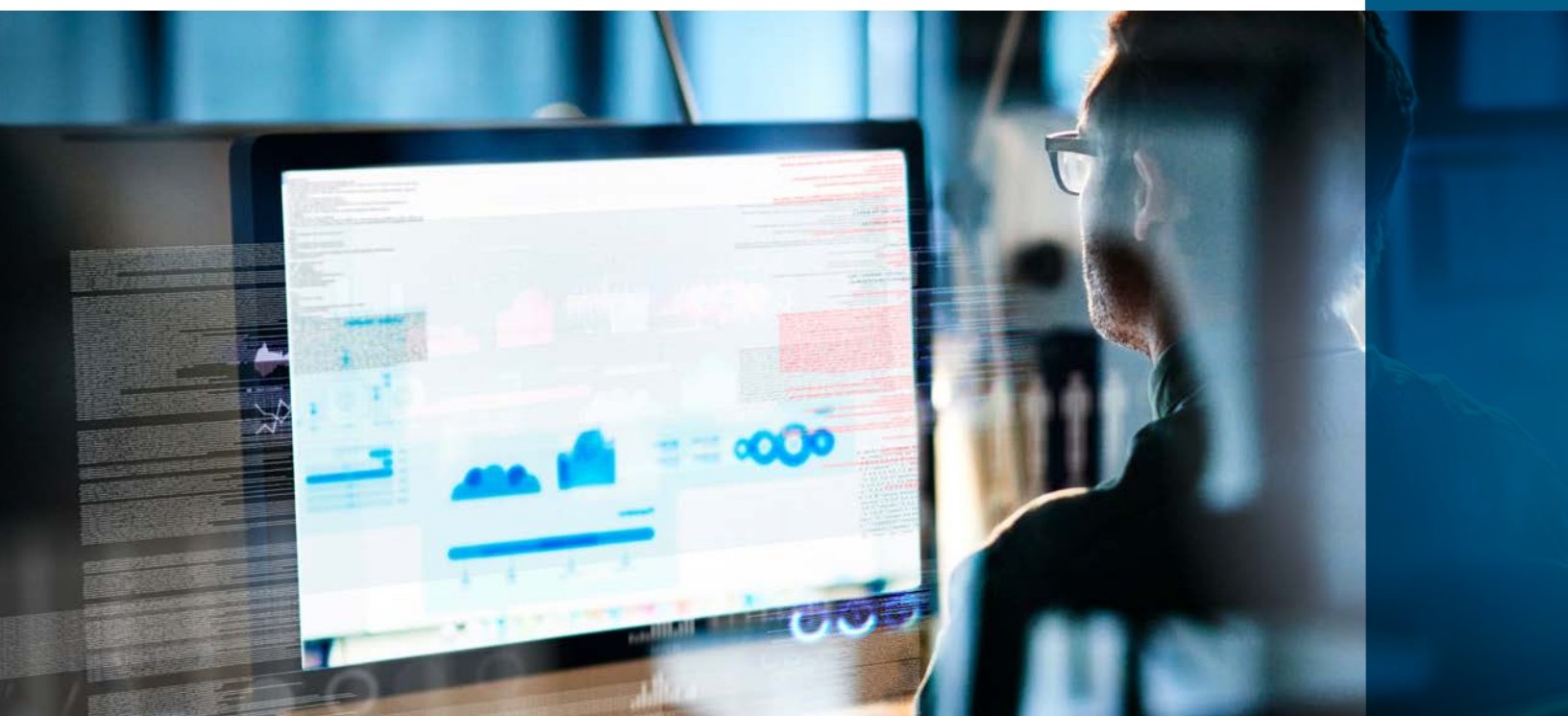
Mortgage standards minimize information asymmetry issues by providing investors with better confidence through precision and clarity in the data they use to make decisions, which can:

- incentivize the private label mortgage securitization market;
- reduce risk of systemic mispricing of risk and potential pricing overcorrection, particularly to asset/mortgage-backed securities;
- reduce the risk of adverse selection by increasing the investors' ability to measure credit risk, collateral value and prepayment risk;
- enable to better estimate credit risk, reduce prepayment risk dependency on guarantors and allow rating firms to make decisions; and
- attract an increased number of participants to the market as investors get a clearer view of the Canadian market and institutional investors get increased level of confidence.

## Enhanced Analytics and Data Sharing

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- The lack of data standards has played a significant role in restricting the availability, reliability and timeliness of housing finance data in Canada.
- Increased market intelligence and advanced analytics resulting from data standards would allow industry participants to:
  - make better decisions by accessing additional and better data;
  - answer key questions related to market trends; and
  - better assess risk.
- CMHC is building a housing data exchange to support decision making by industry participants by making standardized, real-time housing data available.
- The Mortgage Industry Data Analytics Application (MIDAA), the first application in the Data Exchange, joins multiple data sources, analytics and a variety of tools for financial institutions.
- The establishment of a common language will enable CMHC to provide more data, in both scope and granularity.



# Introduction



With a rapidly changing mortgage landscape, the usability of data is imperative to further allow the application of digital services and facilitate the transformation of the Canadian mortgage industry, keep operating costs low, allow for advanced analytics and facilitate mortgage funding. As data sharing increases and technologies improve, data management is becoming even more crucial for businesses to maintain their competitiveness and innovate in this transforming market. In this context, data standards provide a high potential opportunity to enable the mortgage finance market in Canada to function at its best.

Having access to a system of data standards provides participants within the industry a reference that they can use in their own operations. This model provides the confidence that it is consistent and coherent within the context in which firms operate, including technologies, regulatory requirements and more.

From a housing system perspective, a convergence of data elements and definitions in the industry has the potential to stimulate a well-functioning mortgage market, ensuring that it remains stable and becomes more effective.

From a business operations perspective, there is a consensus from various industry participants that many data pain points currently exist during the process of either creating, funding or servicing a mortgage. Not only would a data standards program address these inefficiencies, but it also has a great potential of generating substantial annual savings for the lending and other entities involved in the mortgage life cycle.

CMHC knows that to reach its goal of everyone in Canada having housing they can afford and that meets their needs by 2030, it is essential to ensure that well-priced and reliable mortgages are available and that the housing and financial markets are stable. A full set of data standards would ensure that these definitions work for firms across the industry spectrum. An important note is that data standards would not determine what data is necessary, but only provide the definition that is commonly used in the industry. In other words, only after a business need is established would the data standards become relevant.

**“For us, data standardization just makes sense.” – Simone Tilley, General Manager Residential Broker, ANZ Bank**

## What are data standards?

Data standards are an agreed-upon set of data elements, data definitions and data relationships that make up a reference model that industry agrees to use at its own pace to facilitate the exchange of data. Data standards are proven successful in different countries across the globe. The most prominent example comes from the U.S.A., where the Mortgage Industry Standards Maintenance Organization (MISMO) was formed in 1999 and gained broad adoption in 2008-2010. In the case of MISMO, as in the Australian standard LIXI, a common language was agreed upon to facilitate exchanges of information in their respective mortgage finance industries. These standards are accepted across the industry and they are developed and maintained by the various entities involved in the mortgage life cycle.

To validate the benefits suggested in the literature and by standards organizations, CMHC commissioned three independent studies to determine the potential impacts of data standards. These studies focus on the potential benefits and costs specific to the Canadian housing finance system, while doing a deep dive into the American experience with mortgage industry data standards. While there are some differences between Canadian and U.S. mortgages and their respective markets, many similarities exist between the two systems, specifically when looking at it from a data perspective.

- **Cost-benefit analysis:** KPMG looked at the advantages firms would gain on an ongoing basis and the costs to implement data standards. This study was conducted in two phases: first, a review of the Canadian industry to identify issues caused by the lack of standards and second, a review of the experience in the U.S. with the MISMO data standard.
- **Mortgage funding costs and investor confidence:** Prism Economics and Analysis evaluated the impacts of data quality on investor confidence in mortgage-backed assets. This study included an in-depth review of literature, interviews with industry participants and experts, as well as an econometric simulation.
- **Adequacy of MISMO for Canada:** Actualize Consulting, a firm that specializes in the MISMO model, has evaluated the suitability of MISMO for Canada by mapping Canadian metadata to the MISMO model. This identified where the MISMO model would align perfectly to the Canadian industry needs, align partially and where it would not.

Our analysis also assesses the costs for firms to adopt mortgage data standards. While transitioning an existing individual system to one that would be based on a commonly agreed-upon reference model may be costly in isolation, the research shows the following:

- For firms with systems that are easier to transition, such as firms with modern IT systems or firms that use off-the-shelf systems, the costs would be minimal.
- For firms with significant legacy technology infrastructure, the costs could be significant. However, firms in the U.S. were able to mitigate the costs with certain strategies.
- Expenses are spread over time and transitions are typically performed at the same time as other technology transformations required for business needs, blending those costs with investments that would be incurred anyways.
- Firms can still see benefits even without a change to their systems as they can use the reference model to produce a mapping of their data that they can reuse in their multiple data exchanges, providing some of the benefits identified.
- Even for these firms, the cost-benefit analysis showed that the benefits outweigh the costs in the first five years. Following the transition period, the benefits would continue to accrue while the costs would be minimal.

# Toward digitization and the future of mortgages



## A foundation for innovation

As the mortgage industry becomes increasingly digitized, there are a number of new innovations that will require data to be exchanged quickly and automatically between different players, which data standards will help facilitate. As firms begin creating these new services, they will need to define and agree to the data definitions and data elements they will be using for these processes. Data standards facilitate this process by eliminating the need for groups of firms to create new data dictionaries for each of these new products. Data standards provide the foundation for firms to innovate on top of, such that Fannie Mae stated that “without this foundation, the mortgage industry does not successfully go digital.”<sup>1</sup> This sentiment was also mentioned by a major lender in the cost-benefit analysis. The data standards CMHC is pursuing will provide this foundation for the Canadian mortgage industry to explore at full speed new innovations that have the potential to open new opportunities for housing efficiencies and improved affordability. Further, data standards ensure that firms will be able to operate with many different products simultaneously without having to reconcile across different systems or forgo potential partnerships.

## Digitization of the mortgage process

Consumers increasingly demand services online throughout the mortgage loan processes, for example, mortgage search functions and loan origination systems (LOS), including pre-qualification. Firms in the U.S. are able to approve a loan in under 15 minutes to a borrower on their phone. Canada remains far behind the U.S. in part because of the lack of data standards. This type of digitization is becoming expected for consumers in other industries, and the mortgage industry will be no exception.<sup>2</sup> New fintechs will increasingly move into this space with these services and could replace traditional lenders if they do not move toward digitization.<sup>3</sup>

<sup>1</sup> Bhogaraju, P., Barchitta, S., Burgess, J., and Israel, N. (October 2019) *Without Data Standards, the Mortgage Industry Doesn't Go Digital*, Fannie Mae.

<sup>2</sup> See Gladly (2018) *Customer Service Expectations Survey: Trends and Insights from Consumers about Customer Service* and Bhogaraju, P., Barchitta, S., Burgess, J., and Israel, N. (October 2019) *Without Data Standards, the Mortgage Industry Doesn't Go Digital*, Fannie Mae.

<sup>3</sup> For example, Quicken Loans, a fintech, has become one of the largest lenders in the U.S. market and is exploring entering the Canadian market.

**As APIs have grown, a growing number of mortgage executives, business leaders and even software vendors have all said they want these systems to “talk MISMO.” Creating API standards that work for all parties would improve the consumer experience, reduce costs and fully realize the benefits of current and future API technologies. When accompanied by guidelines and technical components, such standards would ensure interoperability between the increasing number of systems being deployed in the mortgage process today.” – Bill Klumper, Consultant, FirstStep Software Systems and Christopher Stookey, Wells Fargo**



Automatic processes allow businesses to create innovative digital systems that ultimately improve the borrowing experience for their clients. Microservices, blockchain, Application Programming Interfaces (APIs) and artificial intelligence all require consistent data to function.<sup>4</sup> Not only do these products improve the customer experience, they have the potential to significantly lower risks for lenders.

Another financial services innovation that will allow banks to create services enhancing the client experience and will require common data terminology in the industry is open banking. Open banking is a concept that will allow customers to share their personal data between firms and have more control over its use.<sup>5</sup> Open banking has the potential to enable fully end-to-end digital mortgages in Canada by significantly reducing the effort and time required to compile borrower information by allowing for near-instantaneous verification of identity, income and banking transaction history. This creates the potential for further automation of risk-scoring and underwriting decisions.

To be able to fully utilize the data that customers provide them, the receiving institution must be able to properly understand this data. The data standards play an essential role in this process, as there is little built-in incentive for the originator of the data to ensure that the receiver is able to understand it. However, if the standards are followed by both parties, the receiver of the data will immediately and seamlessly ingest the data. The full benefits of open banking to institutions and to consumers will not be realized without data standards being adopted by the industry. While mortgage lending is just one aspect of the financial market, the data standards CMHC is proposing can fulfill the requirements for this area.

## B2B process improvements

Beyond the client experience, many new technologies have the potential to help businesses manage their processes with other organizations. The cost-benefit analysis highlighted examples on point of sale solutions, smart APIs, automatic verification of employment and artificial intelligence in appraisals as other innovations in the mortgage industry that have been built with the support of data standards in the U.S.

One example in recent years of these innovations beginning in Canada is CMHC's initiative to create a blockchain to allow

firms to create mortgage-backed securities (MBS) pools.<sup>6</sup> This program is expected to deliver cost savings and improved transparency to the ecosystem, but has required the development team to carefully consider the common terms they are proposing.<sup>7</sup> As the primary facilitator of NHA MBS in Canada, and thus the sole definer of many NHA MBS pool object terms, this has been comparatively easy relative to other potential uses of blockchain in the mortgage industry.

**Mortgage fraud in the U.S. has been reduced by data standards – the most common reason given being the existence of third-party verification services (companies that verify employment, income and assets) on the basis of analyses of standardized data.**

As blockchain is pursued more broadly in the mortgage industry, it will have to overcome the issue of inconsistent data definitions across an increasing number of firms. Even as the MISMO standards are gaining significant adoption in the U.S. market, a lack of industry-wide data standards is still cited as the top impediment to introducing emerging technologies, such as blockchain<sup>8</sup>. MISMO is taking the lead in solving these issues, with the recent creation of a blockchain community of practice in 2018.<sup>9</sup> That group has been charged with achieving interoperability in blockchain and creating standards for “how transactions and transactional data are recorded and/or referenced” on blockchains. A similar standard is required for blockchain to be widely used in the Canadian mortgage industry.

<sup>4</sup> See Fannie Mae (2019) for more discussion on how the mortgage industry can implement each of these.

<sup>5</sup> For more information, see the [government of Canada website on open banking](#).

<sup>6</sup> Blockchain is a set of discrete technical capabilities that combines a shared distributed ledger database that is replicated across multiple nodes containing transactions in an append-only structure using cryptographic methods to ensure integrity of the ledger and validation of the content of each transaction with multiple nodes.

<sup>7</sup> The benefits of the MBS Pool Blockchain align with many of the benefits further explored in this report, including, ecosystem cost reductions, improved loan security and transparency, reduced systemic risk, improved market stability and improves MBS liquidity and investor appeal.

<sup>8</sup> Fannie Mae, 2019

<sup>9</sup> Communities of practice are MISMO's committees that work on specific areas for standards. Examples include origination, credit reporting, servicing, property and valuation services. For a comprehensive list please refer to the MISMO website: <http://www.mismo.org/get-started/participate-in-a-mismo-workgroup>

Fannie Mae's Collateral Underwriter tool is a technology that has the ability to automatically perform collateral risk assessments, which allows low-risk mortgages to move quickly through the system. The tool is a web-based application that helps lenders manage collateral risk by identifying overvaluations, poor appraisal quality and ineligible property/policy compliance risks. This reduces their own risk and provides their lender partners with certainty on the status of its loan more quickly.<sup>10</sup> Fannie Mae relies upon the MISMO standards to gain comfort that the data it receives from its partners is always used in the same way.

## Reduction in mortgage fraud: A case study

Better data integration that allows for increased machine learning and artificial intelligence can be applied to many business needs, including preventing mortgage fraud. During the cost-benefit analysis's review of the impact of MISMO in the U.S., several interviewees stated unequivocally that mortgage fraud in the U.S. has been reduced by data standards—the most common reason given being the existence of third-party verification services (companies that verify employment, income and assets) on the basis of analyses of standardized data.

Instances of fraud and misstatement result in major costs to financial institutions. These types of costs can vary from direct costs to financial institutions, such as borrower defaults, to indirect costs, such as rejection of default insurance claims. According to the latest CoreLogic report,<sup>11</sup> about 1% of mortgage loan applications in the U.S. contained fraud, as of the second quarter of 2018—this includes both mortgage purchases and refinance transactions—and most mortgage fraud is committed by bona fide borrowers, by various means, the most common one being income fabrication.

In Canada, CMHC research finds limited evidence of potential misstatement of income on mortgage applications; however, we also found that mortgages with higher misstatement experience more instances of default on mortgages. Credit Bureau Equifax says it has been able to flag over \$1-billion worth of attempted mortgage fraud among its lender clients since 2013.<sup>12</sup>

Mortgage underwriting involves a complex process that requires several soft and hard data elements. Processing these data elements to flag potential instances of fraud or misrepresentation needs to be a systematic approach. For this systematic approach to yield consistent and reliable outcomes, there needs to be a consistency between how different institutions define, store and handle similar data elements.

Another reliable approach to reduce the instances of fraud in the industry is to share suspicious cases. The Canadian mortgage industry benefits from Citadel, a data-sharing platform offered by Equifax.<sup>13</sup> The following table provides an international comparative analysis of Citadel and similar platforms. Consistent data elements and availability of data through these platforms would significantly reduce instances of fraud.

This section has discussed a number of new and innovative products that could be developed in the mortgage industry with the underlying reality that data standards are a key foundational component. Therefore, as industry looks for increased digitization it should ensure that data standards become commonplace in the industry.

**Data standards ensure that firms will be able to operate with many different products simultaneously without having to reconcile across different systems or forgo potential partnerships.**

<sup>10</sup> Bhogaraju, P., Barchitta, S., Burgess, J., and Israel, N. (October 2019) *Without Data Standards, the Mortgage Industry Doesn't Go Digital*, Fannie Mae.

<sup>11</sup> CoreLogic, 2018, *Mortgage Fraud Report*.

<sup>12</sup> Globe and Mail, May 15, 2018, *How Mortgage Fraud is Thriving in Canada's Hot Housing Market*.

<sup>13</sup> [Citadel Product Overview, Equifax](#).

## Comparative analysis of automated fraud detection tool

	Citadel (Canada)	LoanSafe (U.S.)	FraudGuard (U.S.)	Hunter (U.K.)
Provider	Equifax	CoreLogic	Interthinks	Experian
Service provided by private sector	✓	✓	✓	✓
Data sharing on applications suspicious for fraud	✓	✓	✓	✓
Allows users to create customized rules for fraud detection	✓	✗	✗	✓
Data includes all available applications (past/present, suspicious for fraud/non-suspicious applications)	✓	✓	✓	✓
Widely used in the industry	✓	✓	✓	✓
Data includes detailed application information	✗	✓	✓	✓
Matches applications and compares information in different applications	✓	✓	✓	✓
Matches application data with property information	✓	✓	✓	✗
Provides a fraud risk score for each application	✓	✓	✓	✓

# Operational efficiencies



Data management, which data standards greatly simplifies, is a key aspect of the mortgage lending process for all industry participants. The use of data standards can create cost reductions for firms on an ongoing basis. Even though costs are incurred in a transition to data standards, the cost-benefit analysis estimated \$4 billion in potential annual savings across the Canadian industry from three of the specific benefits identified:

- Reduced required staff time by lenders due to higher-quality data: by 81 hours less per loan over the life of the mortgage
- Reduced loan processing times: by 2.9 days
- Fewer custom IT interfaces: by up to \$1 million saved per year, per firm

The assessment also took into consideration the costs that may be associated with modifications to align with a reference model. From the experience in the U.S., the costs to update an existing data structure to align with the standards will depend on the size of the organization, the complexity of their legacy data system and the degree of difference between their legacy data structure and the standards structure. It also depends greatly on the speed of the transition as firms will be able to integrate a transition

to data standards with other, pre-planned updates to their technology systems.

Isolating costs associated with a transition to a system of data standards was, however, nearly impossible for organizations that were consulted. Given the voluntary nature of data standards, firms were usually finding ways to optimize their transition for their individual needs and would align the transition along with other technology investments that were justified by business needs. The costs were therefore blended with other expenses that would have occurred without standards. Firms used the standards where and when it was beneficial to them and did not have an instantaneous transition for the purposes of adopting data standards.

The cost-benefit analysis was able to quantitatively estimate three benefit categories based on the U.S. experience with the MISMO data standards at US\$25 billion. Expressing this in the Canadian context would put the benefits at \$4 billion per year in annual savings across the Canadian mortgage industry (see table 1). Additionally, there were other costs savings that were identified during the consultations, but could not be estimated with a sufficient level of confidence. However, these could be as or more significant than the three quantified benefits. For more details on the costs and the benefits, see the full cost-benefit analysis.

**Table 1. Estimated potential cost savings in Canadian mortgage lending processes**

Benefit category	Annual benefit to Canadian industry
Reduced required staff time by lenders due to higher-quality data	\$3.2 billion
Reduced loan processing times	\$906 million
Fewer custom IT interfaces	\$19 million
Reduced hedging costs	Unquantified
Reduced post-closing costs	Unquantified
Reduced development costs for technology providers	Unquantified

*(CMHC calculations based on the cost-benefit analysis)*

## Reduced required staff time by lenders due to higher-quality data

Data standards reduce the amount of staff intervention required for reconciling data values and definitions, by ensuring that there are no manipulations required due to different definitions, and eliminate the requirement to recollect similar data. Staff time includes time for data entry (including multiple entry of the same data), for reconciling data values and definitions and for correcting inaccurate or incomplete data. The types of transactions that lenders have that lead to these inefficiencies are with underwriters, servicers, mortgage insurers and regulators and concern loan details, arrears details, property details, income details and verification and appraisal details.

**The cost-benefit analysis estimated \$4 billion in potential annual savings across the Canadian industry.**

To determine the value of annual savings to lenders in the U.S. from this benefit category, U.S. industry experts were asked to determine the number of hours saved per mortgage. The interviewees estimated on average that 81 hours were saved per mortgage. Using industry average salary levels, that results in \$2,430 in savings per loan. Applying this estimate to the total size of the U.S. industry leads to total annual savings of \$19.346 billion. This being the largest benefit aligns with a Fannie Mae 2018 survey on mortgage data initiatives that found the main benefit to lenders was “enhanced data accuracy and consistency in mortgage transactions.”<sup>14</sup>

## Reduced loan processing times

As a result of more efficient mortgage application processing, the number of person-days required to process loans from the original intake of application information to loan closing can be reduced. This reduction allows firms to reduce staffing or allow the same staff to process more loans. Person-days can be reduced by data standards through the realization of a number of the other benefits, but this benefit specifically refers to the reduction realized as a result of reduced time to interpret data, reduced time applying decision making to inconsistent data and simple data entry processes. Ultimately, based on interviewees with U.S. mortgage industry experts,

it was estimated that 23 person-hours less staff time were required for loan application processing. Extrapolating with similar estimates of average salaries and the number of mortgages issued per year, the total annual benefit is estimated at \$5.503 billion. The cost-benefit analysis estimates the annual savings to the U.S. industry from this benefit category to be \$5.503 billion.

## Fewer custom IT interfaces

As firms interact with a number of different business partners, they must prepare their systems to integrate successfully with each of their partners. For example, for a lender that works with the three mortgage insurers, it must create an interface for each one. Under a system of data standards, that would be unnecessary because each insurer would request data in the same format.<sup>15</sup> This benefit extends to interactions with LOS providers, credit report providers, appraisers, brokers, title insurers and lenders. Variables used to calculate this benefit include, for each type of entity, the number of IT interfaces, the cost per interface and the number of firms operating in the U.S. The interface costs for each mortgage insurer were estimated at \$30,000, for LOS providers at \$50,000, for Credit Report Providers at \$40,000, and for appraisal management companies and title appraisers at \$35,000. Looking at lender interactions with mortgage insurers, LOS providers, credit providers, appraisal management firms and title insurers, the cost-benefit analysis estimates total annual savings of \$112.7 million for the U.S. industry. The largest benefit is to LOS providers, which are estimated to save approximately \$1 million, each, per year.

## Reduced hedging costs

As discussed above in other benefits, data standards have the potential to significantly reduce the time to process a loan, including the time between when an agreement is reached with the borrower until the lender sells the mortgage. During this period, lenders face the risk that interest rates could change. Hedging insurance protects lenders against this risk. Less time during this period reduces the cost of this insurance and the likelihood of significant changes is less in a shorter period of time. While there is some overlap with other benefit categories about the reduced time, this reduction in hedging costs is not included in any of those calculations. One way that data standards have reduced hedging costs in the U.S. is how the MISMO standards have allowed the GSEs (Fannie Mae and Freddie Mac) to create and accept eNotes. The Mortgage Bankers Association estimates that this has reduced hedging insurance costs by up to 12 basis points. Interviewees in the cost-benefit analysis suggested this was one of the main benefits of data standards.

<sup>14</sup> Fannie Mae, January 2018, [Mortgage Lender Sentiment Survey](#).

<sup>15</sup> Note that the data standards would not compel the insurers to request certain data, and all firms would still have full control over what data they choose to collect and share.



**Ultimately, based on interviewees with U.S. mortgage industry experts, it was estimated that 23 person-hours less staff time were required for loan application processing.**

### **Reduced post-closing costs**

Post-closing comprises the quality assurance activities that need to be carried out before a mortgage is sold. During consultations in the U.S., interviewees suggested that data standards helped contribute to reducing the post-closing period by half. Given the differences between the Canadian and U.S. markets, this benefit is likely less consequential for Canada, given that, generally, less time is spent on post-closing activities. By improving the consistency and reliability of data, data standards allow for exception-based processing rather than a review of all data. Because data standards create a set of rules that help ensure the integrity of the data, lenders are required to review only those elements of the mortgage that do not pass a rules test.

One example of reduced post-closing activities due to the MISMO standards is the appraisal waiver program of the GSEs in the U.S. This program allows lenders to forgo requiring an appraisal on low-risk loans. This is a new program but is quickly growing, with Fannie Mae targeting 5% of their loans to use this program. Assuming Fannie Mae and Freddie Mac both achieve this target, the potential benefit is approximately \$7.5 billion annually. As this program is still new and relatively small, the time savings are also not captured in the other benefit categories. Data standards, however, are not a sufficient condition to allow for appraisal waivers, but they are a necessary prerequisite. In other words, data standards are required for appraisal waivers, but do not automatically result in an appraisal waiver program. While this program is not applicable to Canada, it highlights the potential of having data standards to reduce post-closing activities.

## Reduced development costs for technology providers

Data standards allow technology providers to build single integrations that can then be reused with any firm who builds to the same standard. This eliminates the need to create similar products for multiple firms. Technology providers have expressed that data standards allowed them to increase the scope of what they can apply their technology to and allow them to focus on building functionality instead of integrations. Potential alignment between the MISMO standards and the future Canadian standards could also potentially allow technology providers to adapt products they have created for the U.S. market to the Canadian market and vice versa.

**“There’s a need for data standardization to facilitate change more easily over time.” – Simone Tilley, General Manager Residential Broker, ANZ**

## Canadian mortgage industry operational inefficiencies

From a survey conducted in the Canadian industry, we identified a number of data transactions that are problematic for various participants. These areas are identified as potential ways data standards could be most effective in alleviating business challenges and making the Canadian system more efficient and resilient.

- Lenders noted particular challenges in transmitting data to regulators. This issue has been greatly mitigated in the U.S. because of data standards as all federal housing agencies in the U.S. (HUD, FHFA, Fannie Mae, Freddie Mac, Ginnie Mae, etc.) are required by executive order to use the MISMO standards when they request data. This has greatly reduced confusion in the data requests from regulators as the data is asked for in the same language and same format that the industry is accustomed to. Additionally, the MISMO organization provides for efficiently structured discussion between the industry and regulators, particularly the GSEs, on data-related issues to ensure that all data exchanges are as frictionless as possible for both parties.

- Mortgage loan insurers have challenges in receiving property details, applicant details and estimates for renovations. All three areas are major components of the MISMO standard, with the mortgage insurance community of practice being one of the most active in the MISMO organization. The elimination of these issues has the potential to realize a number of the benefits discussed above, including reducing staff time at the mortgage loan insurers and reducing insurance processing times.
- Title insurers have challenges in receiving policy details. This is another area where data standards can provide consistency to the information that is being provided. Transaction type and policy type are two data points that are inconsistent across the industry but could have agreed-upon enumerations.
- Brokers have challenges in transmitting proof of deposit and source of funds as this information needs to be verified more than once. Other challenges exist with the financial status of applicants, appraised value of the property, and approved mortgage terms and conditions. Consistent requirements could reduce the number of interactions between lenders, underwriters, insurers and regulators.

**In a transaction where one party experiences inefficiencies, both parties are negatively impacted.**

In a transaction where one party experiences inefficiencies, both parties are negatively impacted even if the other party doesn't observe the inefficiencies. Therefore, organizations may not directly observe all the inefficiencies that negatively affect them. For instance, when brokers have challenges in transmitting proof of deposit, lenders are also indirectly affected. With data standards reducing the costs of doing business, we expect that some of these savings would be realized by both parties in the transaction. For major lenders who directly observe fewer of these inefficiencies, this could mean paying lower ancillary fees. Therefore, it is important for firms looking at understanding how data standards can affect their business operations to also consider how it can impact their business partners in order to fully capture their operational efficiency gains.



“Rather than a hodge-podge of custom interfaces, having a consistent vocabulary and data model across providers and clients, across products, and across silos within your organisation can reduce overall complexity.

LIXI provides exactly that consistency through our suite of standards that cover the end to end lending process, providing a data dictionary, glossary and data schema. Whilst industry data standards might look more complex than needed for some tasks, the overall reduction in complexity can provide a compelling business case.”

– Shane Rigby, CEO, LIXI Limited



# Facilitation of mortgage funding



## Reducing risk premium lowers funding costs for lenders

The creation of data standards in the securitization market has the potential to significantly reduce information asymmetry between issuers and investors by reducing misunderstanding of the data and increasing the reliability of third-party credit rating agencies. Reductions in information asymmetry in the securitization market attract more investors and lower funding costs for lenders. The ability for the securitization market to function to its best resides in part in information transparency to all parties during the issuance of mortgage bonds and securities. As investors gain more confidence in their understanding of the assets they are purchasing and the risk they are taking, they become more willing to purchase more of the assets and accept lower risk premiums on their returns. For mortgage lenders, this means there may be an increase in the number of investors interested in purchasing mortgage-backed assets at competitive risk returns, resulting in continuous access to low-cost funding.

**Reductions in information asymmetry in the securitization market attract more investors and lower funding costs for lenders.**

An active secondary market, where investors can actively exchange RMBS, will reduce liquidity risk. This is especially important in the RMBS market where liquidity risk is in addition to default risk, as investors will price their ability to resell the security. If this risk is high and investors expect to have difficulty selling their asset due to low liquidity, they will require a higher risk premium to compensate. A viable

secondary market in RMBS requires ready access to data on the underlying mortgages that is reliable, complete, consistent and current as pricing becomes more challenging as securities mature. In Canada, the secondary market is relatively small and could be reinvigorated if investors had access to the following:

- The information on securitized mortgages in the original offering documents, which are not always current and sometimes become less relevant with time.
- Consistent and clear loan-level data to strengthen the accuracy of models used by rating agencies to forecast credit risk.
- Data allowing investors to understand which borrowers are more likely to take advantage of prepayment options and more information on the location and condition of properties.

Even when investors in residential mortgage-backed securities (RMBS) have the technical capacity to assess credit and prepayment risk, errors or additional risks may arise if there is a lack of clear data definitions, thus increasing the dependency on guarantors or the reputation of the issuers, and/or the opinions from rating firms. According to U.S. experts on the RMBS market, prior to 2008, there were no broadly accepted data standards in the mortgage industry, resulting in data loss and data obsolescence. This continuous uncertainty impacted the quality and consistency of the data to measure credit risk and thus the reliability of credit ratings.

Several factors exist that can potentially weaken the quality, consistency and completeness of mortgage data and thereby hinder the ability of investors and credit rating agencies to assess financial risk. For example:

- the originators of mortgages (banks, credit unions and mortgage brokers) may apply different definitions to comparable variables;
- the originators may omit to collect some types of information that are relevant to assessing the default risk, prepayment risk or collateral risk;

- the originators may have data that is relevant to evaluating the credit risk or prepayment risk, but omit to make that data available when the mortgage is securitized;
- the originators may apply different standards for verifying the accuracy of data on the borrower or the property;
- data may not be compiled in compatible formats, which becomes relevant when a mortgage is transferred from its originator to the administrator of a securitized mortgage pool; and
- data may not be current—this is especially relevant when the circumstances of the borrower change or when the property has been upgraded or impaired.

MISMO standards in the U.S. have given investors more confidence in their ability (and the ability of credit rating agencies) to evaluate the credit risk in securitized mortgage pools. Industry experts believe that substantial progress has been made as a result of the initiatives of MISMO. For example, credit spreads on GSE-sponsored MBS issues have returned to pre-crisis levels. This was interpreted as a reflection of restored investor confidence thanks to the strengthening mortgage data standards, more stringent underwriting standards, an increase in capital reserves, more reliable credit facilities and the use of credit risk transfer insurance.

## Reduce decisions that could lead to systemic risks and lack of innovation

Decisions based on information imbalances can result in systemic vulnerabilities and lack of innovation. We have seen during the 2008 financial crisis the harm that information asymmetry can do to the financial markets as high-risk mortgage loans in the U.S. were packaged in securities as overvalued and overrated assets before being sold to investors. Information asymmetries can lead to systemic mis-pricing of risk and lead to potential pricing overcorrections, particularly to asset-/mortgage-backed securities, directly affecting investors, lenders, rating firms and other players in the mortgage market.

As capital markets tend to overreact and accentuate trends, deficiencies or gaps in information to investors can exacerbate the impact of changes to their confidence levels, which can create negative downward credit spirals and curtail the supply of mortgage financing. This was partially the origin of the liquidity crunch observed in the residential mortgage market in the U.S. in 2008, which resulted in the collapse of the private label securitization.<sup>16</sup> This product has not recovered to pre-crisis levels in over a decade after the decline. In Canada, the private securitization peaked at 5% of outstanding mortgage credit in 2000, but has largely disappeared following the 2008 crisis.

Following the 2008 crisis, many experts within the American mortgage industry highlighted the lack of data standards concerning mortgage securitizations as a key factor that had to be addressed. One chief executive, upon the announcement of a new MISMO workgroup in this area, stated that the lack of standards leads to inefficiencies and confusion in the market that affect originators, aggregators and the overall housing market.<sup>17</sup> This sentiment was also mentioned by several of the interviewees in the cost-benefit analysis.

One direct consequence of data standards in the U.S. was “the GSEs’ ability to relieve lenders from certain origination representations and warranties.”<sup>18</sup> This led to additional time and effort savings by mortgage sellers.

Pursuant to the Dodd-Frank Act, the Securities and Exchange Commission (SEC) was mandated to establish disclosure standards for all types of MBS. These disclosure standards are considered to be rigorous. Information asymmetry, therefore, is now not seen by industry experts as an important factor in constraining the recovery of the private-label MBS market in the U.S. However, the same experts have noted that the private label market has lagged behind the GSE market in adopting MISMO data standards, thus providing a reason why this market has not yet fully recovered.

**Mortgage data standards represent a foundational piece needed in Canada to minimize information asymmetry issues and incentivize the private label market.**

## A key factor to reviving the RMBS market in Canada

Mortgage data standards represent a foundational piece needed in Canada to minimize information asymmetry issues and incentivize the private label market by increasing investors’ confidence in the liquidity of the secondary market and their ability to measure credit risk, collateral value and prepayment risk. Given the growth of the uninsured mortgage segment in Canada, lenders will increasingly be looking for options for funding the mortgages they originate. The governor of the

<sup>16</sup> In 2007, at the onset of the crisis, private securitization experienced a near total meltdown and has yet to recover to pre-crisis levels.

<sup>17</sup> Mortgage Bankers Association, October 2018, *MISMO Seeks Input on Standardized Dataset for Private Label Mortgage Assets*.

<sup>18</sup> Urban Institute, 2018, *The Case for Uniform Mortgaging Servicing Standards*.

Bank of Canada has recently commented in a speech that “while traditional funding has relied on government-supported mortgage-backed securities, a private mortgage-backed securities market could be a more flexible source of funding.”<sup>19</sup> Indeed, in 2019 about 60% of mortgages originated were uninsured, while in 2012, this share was at 39%.<sup>20</sup>

Financial institutions are more actively using private mortgage-backed securities as a source of long-term funding and innovation. A recent example is Toronto Dominion Bank’s Canadian private label RMBS deal issued in February 2020, which is the first issue of its kind aggregating mortgages originated by other lenders. This transaction is adding to other private level issuances from BMO, Home Trust and MCAP all signalling interest from lenders and the investor community in reviving the private label market. Mortgage data standards will be another piece in the equation facilitating innovation and further growth in this sector.

The process of creating and using data standards has been adopted significantly more in the GSE space than in private securitizations in part due to the different pace of adoption of data standards. However, the advantages have been compelling enough to push the process forward in the private sphere, where the MISMO workgroup is looking to “help enable rating agencies to grade mortgage assets more precisely and produce a smoother, more efficient securitization process.”<sup>21</sup> Fields in this new dataset include current payment status, prepayment penalty calculations, senior lien details and more. Similar efforts in Canada could support and revive the private label RMBS market.

## Modelling the impact of data consistency and disclosure

Investors’ confidence is key for making RMBS a cost-efficient, stable source of funding for mortgage lenders. However, the extent to which data consistency and disclosure could impact the RMBS market is less clear. The mortgage funding cost and investor confidence study undertook to model this issue.

### Objective of the model

In order to estimate these impacts with more precision, Prism Economics, in collaboration with Canadian Centre for Economic Analysis, used an agent-based model<sup>22</sup> to understand the role of information in a securitized market under two scenarios: a low-risk scenario similar to the current system where mortgages are insured and principal and interest payments to the investors are guaranteed under the NHA MBS program and a high-risk scenario similar to a

private securitization market without government guarantees where returns are at risk from rises in unemployment, declines in housing prices and increases in the level of defaults. The model simulates how volume, volatility, and spreads relative to the Government of Canada bonds will change as more information is made available and as the number of investors in the market increases.

### Decision simulation

The model used in this analysis is based on investors who seek to maximize their portfolio returns in a two-asset environment where there is one risky asset and one risk-free asset<sup>23</sup> (Under a constant risk aversion assumption, investors in the simulation attempt to maximize their returns based on their individual estimates of the future value and return of each asset). The market and trader model can be used to understand market behaviour involving a choice between any risky asset and a risk-free asset.

### Key assumptions

By introducing more information to the market, investors are better able to estimate the value of the RMBS. This, in turn, leads to more investors adopting a longer-term approach in valuation and RMBS trading. This increase in the number of market participants with a long-term strategy reduces liquidity risk and ultimately impact investors’ confidence.

### Key results

The model shows that:

1. increased information reduces spreads over Government of Canada (GoC) bonds, suggesting that data standards could generate a positive impact for investors and lenders even when MBS are relatively risk-free;
2. the impact of adding information is greater in a high-risk environment, suggesting that investors’ confidence will increasingly be a key factor as private RMBS become a more important source of funding; and
3. increasing the number of market participants is almost equally important to trading volumes and therefore liquidity as adding information.<sup>24</sup> The lack of understanding of the Canadian mortgage and housing market has been seen as a factor limiting the involvement of international investors. A system of data standards may provide additional documentation and resources to increase this knowledge and foster participation.

<sup>19</sup> Stephen S. Poloz, Governor of the Bank of Canada, Canadian Credit Union Association and the Winnipeg Chamber of Commerce, May 6, 2019.

<sup>20</sup> CMHC’s Residential Mortgage Industry Report.

<sup>21</sup> Mortgage Bankers Association, October 2018, MISMO Seeks Input on Standardized Dataset for Private Label Mortgage Assets.

<sup>22</sup> This method has the advantage to understand market structures and how they respond under stress. The three pillars of agent-based modelling—agent heterogeneity, bounded rationality and agent learning—make agent-based models potentially more insightful than conventional econometric and general equilibrium models, which generally assume homogeneity and fully rational behaviour, as well as behavioural stability over time.

<sup>23</sup> Yamamoto, R., 2011, Order aggressiveness, pre-trade transparency, and long memory in an order-driven market. *Journal of Economic Dynamics and Control*, 35, 1938–1963. and, Lespagnol, V., Rouchier, J. Trading Volume and Price Distortion: An Agent-Based Model with Heterogenous Knowledge of Fundamentals. *Comput Econ* 51, 991–1020 (2018).

<sup>24</sup> Shimer, T., and Robert, L. “Private information in the mortgage market: evidence and a theory of crises” Series on Central Banking Analysis and Economic Policies no. 19 (2014). Harvard.

# Enhanced analytics and data sharing



## Improving data consistency allows for better availability

The establishment of a common language in the field of mortgage finance has the potential to increase data reliability and create better statistics on market trends, allowing policy and business decisions to be better informed. The lack of data standards (that is, the existence of multiple data terminologies and definitions across the mortgage industry) has restricted the availability, the reliability and the timeliness of housing finance data in Canada, therefore limiting the ability to produce analysis and market intelligence.

Through our mandate to contribute to the financial market efficiency and stability, we have been leading a number of initiatives to fill in housing finance data gaps since 2014. These projects consist in making use of existing regulatory and administrative data, as well as creating collection instruments to fill in the gaps and make them publicly available. Industry participants noted the lack of data as a key vulnerability for the industry.

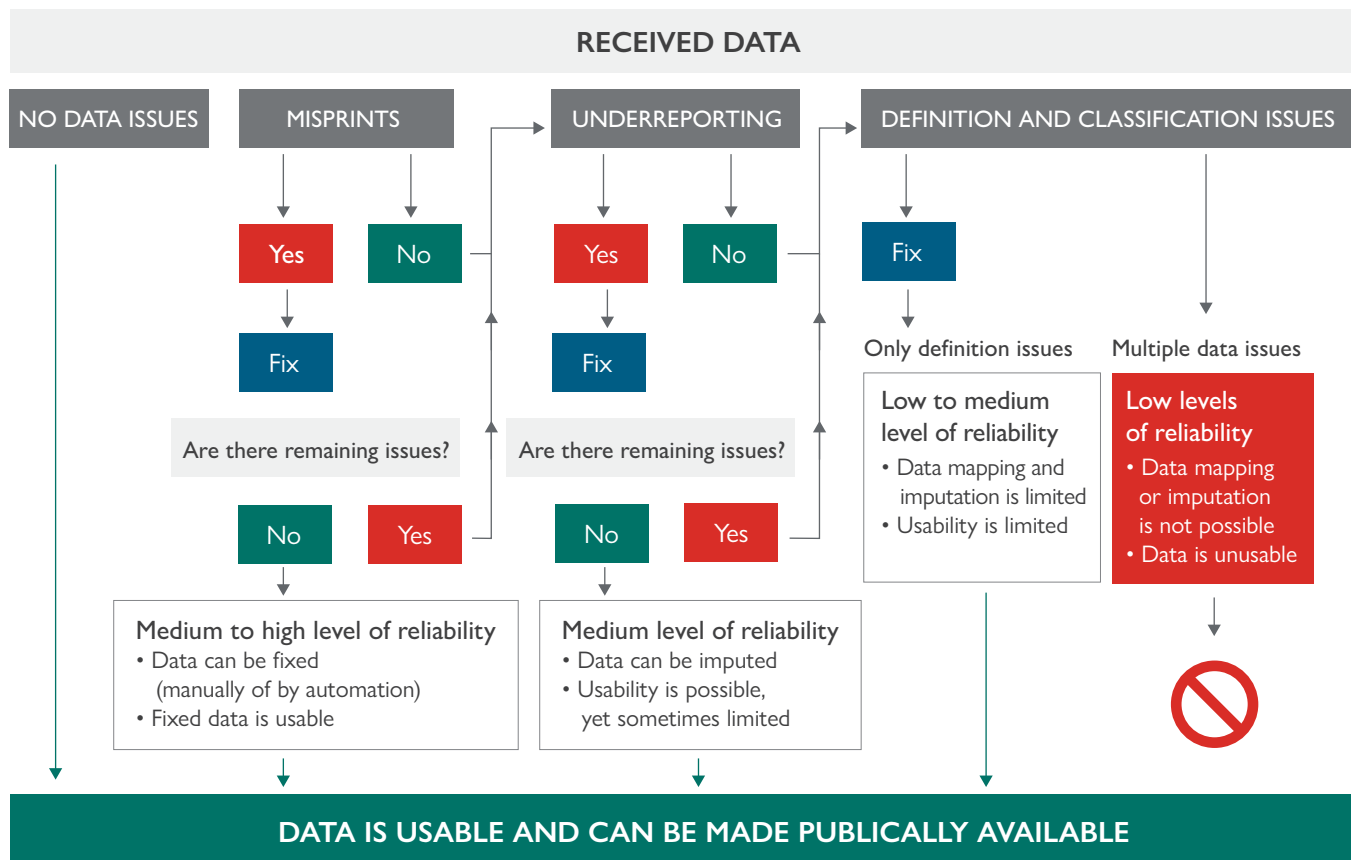
Across these projects, we have encountered considerable data issues and inconsistencies. Our deep dive into reporting, survey and administrative data have highlighted challenges for mortgage participants to provide accurate and consistent data. The reporting issues and inconsistencies were classified into three categories:

- Definition and classification inconsistencies: issues related to the underlying definitions of the data.
- Misprints: data issues related to data formatting or typos.
- Underreporting: refers to cases where the data is not complete or available. In the cases of aggregated datasets, data is not representative.

Definition and classification inconsistencies are the main source of data discrepancies and represent some of the most challenging issues to map correctly in order to enhance data quality. In cases of multiple inconsistencies found in one dataset, such as definition issues and underreporting, the data cannot be used, given the low level of reliability (see figure 4.1).

**The lack of data standards has restricted the availability, the reliability and the timeliness of housing finance data in Canada, therefore limiting the ability to produce analysis and market intelligence.**

Figure 4.1



Some challenges frequently observed in the variety of administrative and regulatory datasets include:

- Loan classification: some financial institutions classify loans as residential based on the usage of the property, others on the number of units and yet others based on the borrowers' characteristics. This is mostly the case for rental, multi-unit properties and mixed-use properties (for example, commercial and residential). If a loan is erroneously classified, the discrepancy affects the entire set of data, which limits the reliability and the ability to compare their portfolios and mortgage activity within the industry accurately.
- Flows: renewals and refinances, or purchases and sales are examples of inconsistent reporting that restrict benchmarking capabilities and access to accurate market intelligence.

### Enhancing data quality and sharing improves anti-money laundering techniques: A use case

Consistent definitions increase the comparability and usability of the data. A clear use case was put forward recently by the Government of British Columbia, who released two reports

on money laundering through B.C.'s real estate sector. The reports<sup>25</sup> highlight data sharing and data quality as the key potential enhancements to anti-money laundering techniques. Data is in fact the key to effective AML [anti-money laundering] prevention and detection efforts. The first report proposes a series of recommendations such as:

- a data-sharing framework that provides each agency with access to public domain data (including land data, data from federal and provincial agencies, and proprietary and confidential data) in a way that facilitates analysis and investigation;
- a comprehensive review of data sharing and confidentiality related to anti-money laundering activities; and
- mortgage lending businesses to maintain know-your-customer records and records of the source of mortgage payment funds from borrowers.

Nonetheless, the reports highlight poor quality of data as an impediment to such recommendations and a vulnerability in the system. As a concrete example, much of the data collected by the Land Title and Survey Authority is in a format that cannot be machine-readable, and most fields in its electronic forms are not reliant on drop-down options but rather,

<sup>25</sup> "Combatting Money Laundering in BC Real Estate" and "Turning the Tide - An Independent Review of Money Laundering in B.C. Real Estate, Luxury Vehicle Sales & Horse Racing".

allow an applicant to enter any text or figures they wish. This makes it difficult to conduct the sort of analysis that could identify suspicious transactions and patterns.

Data standards can increase the effectiveness of anti-money laundering techniques by:

- increasing the effectiveness of data accessing and data sharing when all the data is under a commonly understood format and commonly understood definitions;
- ensuring that a data-sharing framework is understandable by all parties and connects data in a way that makes the information useful;
- increasing access to and tracking of borrower information; and
- reducing the need for more intervention to protect against money laundering.

## Unlock the potential of advanced analytics

Quality and consistency of data continue to be an impediment when attempting to build analysis, especially as features are automated and produced in a timelier fashion (now nearing real time). In the current context, advanced analytics tools require tailoring to each system's data structure, which limits data interoperability and leads to high development costs. These tools can provide highly valuable insights for decision makers and increase the accessibility to business analytics, but these high costs to adopt often reduce added value of those potential tools when evaluated in isolation. A broader approach to data alignment can accelerate this process and streamline adoption. A few examples of advanced analytics applications that were partially facilitated by an industry-wide coordination on data alignment include the following:

- *CoreLogic* in the U.S. offers a data-enabled software platform, which cultivates a broad range of data sources and provides a wide range of data and analytics services, including consumer, financial and property data.
- *Biopharmaceutical Data Exchange* supports research and development data sharing between participant companies by connecting de-identified clinical and preclinical information through a single platform. In addition to deepening research insights, this app has led to increased confidence in early decision making.

## CMHC's investment in advanced analytics

As part of its corporate strategy, CMHC has targeted the building of a housing data exchange as a key pillar to achieving our affordability mission. The vision is to improve housing affordability by making standardized, real-time housing data

available, hence improving decisions among industry participants. More specifically, CMHC's Data Exchange is a suite of applications and analytical tools, each targeting a specific housing market participant and addresses their decisions and information needs.

*The Mortgage Industry Data Analytics Application (MIDAA)* is the first application launched as part of the Data Exchange program, which is exclusively intended for financial institutions. Through this application, CMHC is currently providing two products:

- *Mortgage 360* is a benchmarking tool, allowing financial institutions to compare their data with industry trends, which includes real-time data and different analytical views. This product is expected to be progressively expanded through user input and the inclusion of additional data fields and sources.
- *Securitization Analytics* is an investment analytics product focused on securitization data. This product provides analysts with the ability to assess the potential performance of mortgage pools. The tool was developed to meet the particular interests of investors and institutions that issue mortgage-backed securities.

By joining multiple data sources, analytics and a variety of tools, MIDAA's objective is to allow participants in the mortgage finance industry to make better decisions by accessing additional and better data. Making use of housing finance data allows CMHC to provide the opportunity to establish consistent and expandable data architecture and structure within our ecosystem. Data standards can enable us to provide more data, in both scope and granularity, thus increasing access to publicly available quality statistics on the state and trends of the Canadian mortgage market.

**CMHC's Data Exchange is a suite of applications and analytical tools, each targeting a specific housing market participant and addresses their decisions and information needs.**

# The path to the initiation of a mortgage data standard in Canada



Given the results of our research and the potential of the system of standards, not only to solve some of the current frictions in the system, but also to enable the transition to the future, we are looking into the options to initiate such system in Canada. To achieve this, there are known challenges and opportunities, notably in how to leverage existing mortgage data standards to accelerate developing the Canadian version, and in how to establish a governance structure that provides clear rules of engagement for this coordination effort by all industry participants.

## Developing the standard

One of the key challenges in the initiation of a data standard in Canada will be to develop all the supporting materials in an effective and comprehensive manner. Data standards would typically provide a range of documents including the following:

- Plain language data dictionaries
- Machine-readable data dictionaries (XML, JSON, UML, etc.)
- Business process-specific user guides
- Training and education materials

These materials would cover, eventually, the entire mortgage industry spectrum. MISMO has 32 communities of practice that cover business areas such as servicing, origination, property valuation and emerging technologies. LIXI has 18 standards that cover aspects such as settlements, title insurance, credit applications and valuations. The discussion on Canadian mortgage industry operational inefficiencies in the operational efficiency section provides an idea of which areas Canada could target first for data standards.

The development of these standards can be greatly accelerated in Canada by leveraging documentation and models found in existing mortgage industry data standards. To assess the adequacy of the MISMO model for the needs of the Canadian industry, CMHC commissioned a study evaluating the alignment of the MISMO model with CMHC's data models and a selection of other firms. The study found that the Canadian mortgage industry data aligns well with the MISMO model, but there are some concepts that are not in the MISMO model. However, these missing terms are not inconsistent with the structure of the MISMO model and could be added. Therefore, Canada could benefit from using the MISMO model. CMHC continues to explore ways to facilitate an easy development process for data standards in Canada.

**The development of these standards can be greatly accelerated in Canada by leveraging documentation and models found in existing mortgage industry data standards.**

## **Governance model: defining rules of engagement that work for all for an effective collaboration**

The second key challenge in creating an industry-wide data standard will be to establish an effective governance framework. This framework would outline roles, responsibilities and processes that structure the creation and maintenance of data standards. It must appropriately and reliably gain input from all industry participants. While data standards can be developed without this framework at the initiation of a system of standards within an industry, it typically becomes rapidly vital to have an overarching framework and processes to maintain and scale the standards to an industry-wide tool.

CMHC has begun to outline the key considerations that need to happen by comparing existing models, including from MISMO, LIXI, FIBO, other standards in the finance industry and from standards organizations outside the finance industry. Considerations include legal questions (ownership, privacy, etc.), the development process, the approval process, the personnel appointment process, resource management, etc. Key to this research is understanding the potential to house this coordination function within an existing organization and to understand mortgage industry participants' views on the questions.

To facilitate this process, following the release of this report, CMHC will hold a series of conversations with mortgage industry participants to determine how a governance model can be established that functions best for the unique makeup of the Canadian mortgage industry.



# Conclusion



In pursuit of our ambitious housing affordability goal, we are seeking solutions that contribute to fostering an efficient mortgage finance system. This report demonstrates that data standards have the potential to provide the Canadian mortgage industry with a number of substantial benefits that lead to improved financial stability and to efficiency gains across the mortgage lending process by:

- providing the foundation for sector-wide innovations in the mortgage market that allow for easier and faster adaptation to new technologies;
- reducing operating costs associated with and caused by inefficient data exchanges;
- providing lenders with additional cost-competitive funding options by increasing investors' confidence in the securitization market; and
- allowing businesses, regulators and policy makers to base decisions on enhanced analytics that provide comprehensive insights.

The research has also found that, while there are costs to transition to data standards, the operational benefits alone could be sufficient to offset the costs within a five-year time frame for all firms, including those with complex legacy IT systems. We also found that firms usually conduct a phased transition to data standards that focuses on the most beneficial business areas.

Indeed, from the experience we have observed in the U.S., there are different paths to the adoption of data standards that can mitigate the transition costs:

- Firms typically performed transitions to data standards along with other technology investments that are justified by business needs so the costs are, therefore, blended with other expenses that would occur regardless of the data standards transition.
- Data standards provide a reference for any technology transformation to start with, which can sometimes save time and effort.
- Even without modifying systems, data standards can generate gains as a single reference to map against, which makes all data exchanges more aligned.
- Firms that already use modern technologies are able to adopt with minimal efforts.

Taken all together, there are benefits that can be generated in the short term by solving existing frictions in the mortgage system, providing cost savings and improving decision making. The data standards' value becomes much greater when looking into the future, where technological changes will be ongoing and necessary. These benefits are both at the institution level providing tools for firms to focus on their core business and service, and at the system level providing tools for regulators, investors and other decision makers to evaluate the full picture with more clarity. For CMHC, these benefits are one of the conditions to achieving our aspiration to see everyone in Canada having access to a home they can afford and that meets their needs.