

# Envestnet | Yodlee Risk Insight Solutions

Envestnet® | Yodlee® Risk Insight Solutions are designed to use consumer permissioned data specifically for credit and lending use cases within an FCRA compliance framework. By combining access to transaction level data from over 15,000 data sources, proprietary data enrichment and machine learning algorithms, as well as a flexible rules based calculation engine, Risk Insight Solutions deliver comprehensive, powerful reports that can be used throughout the lending process.

## The Advantages of Consumer Permissioned Data in Credit Decisions

Consumer permissioned data is defined as transactional and account level information accessed through the explicit permission of a consumer directly from a data source. By entering a username, password, and any other authentication credentials, consumers are allowing Envestnet | Yodlee to access data on their behalf. This method can produce a far more holistic, comprehensive, and verified view of a consumer's financial picture than any other method available today.

- Moving Beyond the Credit Report:** Traditional credit reports provide a summary view of certain types of liabilities as well as past payment behavior on those liabilities. While proven to be predictive of future risk, it is a limited view of the consumer's actual financial condition. By factoring in assets (cash, investments), income (payroll, benefits, contract work, investment income), and non-credit recurring expenses (rent, utilities, support payments), a more complete picture emerges. There is strong evidence that combining these types of data with traditional credit reports can yield significant risk separation, especially for the 180 million consumers who are thin/no file, unscorable, or subprime.
- The Complete Picture:** Consumers have the ability to provide access to any account from a data source supported by Risk Insight. For lenders, this provides visibility into assets, income, and expenses at every institution where the consumer transacts – not just a subset of contributed or held information. With the breadth of data sources supported by Risk Insight, the likelihood of assembling this comprehensive picture is very high.
- Up to the Minute Information:** Because Risk Insight accesses transactional and account information on-demand in real time, information is always current.

Because of this capability, information not yet on a consumer's credit report becomes visible, such as new loans or other obligations, allowing lenders to make better risk decisions and protect against fraud.



- Thin/No File and Unscorable Consumers:**

Approximately 58 million consumers in the US either have no credit file, or have insufficient information in the file to generate a credit score. Called the "Credit Invisibles" by the CFPB, these range from millennials just entering the workforce that are often distrustful of traditional credit sources to recent immigrants that have not yet had an opportunity to establish credit. These consumers are often difficult to approve due to a lack of risk information. By using consumer permissioned asset, income, and expense information, Risk Insight creates a profile that can be used for better risk decisions in these underserved markets.

## Consumer and Lender Protection – Using an FCRA Framework

Envestnet | Yodlee has implemented an FCRA compliance framework for all consumer permissioned data to be used at any point in a lending decision. Whether the use is for pre-qualification, decisioning, underwriting and verification of application information, or account review and monitoring, reports are managed in the same way as at the traditional credit bureaus. This framework is familiar to lenders and provides for an established process for consumer transparency and rights of dispute while guiding the appropriate use of consumer information. Envestnet | Yodlee has ongoing key relationships with regulators, including the CFPB, FTC, and OTC, and is dedicated to ensuring compliance with consumer protection safeguards and security.

Envestnet | Yodlee adheres to an FCRA compliance framework wherever possible, recognizing that the nature of consumer permissioned data and how it is acquired isn't contemplated under the law.

- **Disclosure and Dispute:** Consumers can approach Envestnet | Yodlee at any time to obtain a full disclosure of information available based on accounts where consumers have provided credentials. If consumers wish to dispute any information as inaccurate, Envestnet | Yodlee will assist the consumer to work with the source institution to make corrections. The nature of real-time transactional data does not lend itself to the same errors typically encountered on traditional credit reports, such as split or mixed files. Generally, errors found in a report prepared by Risk Insight would be reflected on the originating institution site. In addition to providing disclosures, Risk Insight also enables consumers to view reports delivered to lenders.
- **Permissible Purpose:** Envestnet | Yodlee requires that lenders disclose their uses for consumer permissioned data to the consumer as the furnisher of the data, as well as to be logged against the inquiry for a report. In addition, lenders must clearly disclose any third parties that will be allowed to view the report and how that information may be used. Provided that clear consumer consent has been obtained for all uses of the report, lenders have flexibility to use the data within the scope of what is permissible under the law, including marketing and pre-qualification programs, ongoing account review and monitoring, and de-identified use in modeling and research. For other related applications outside lending, Envestnet | Yodlee's other products provide robust solutions.
- **Adverse Action:** If the information provided in a Risk Insight report is used in any kind of adverse action as defined in the FCRA, lenders are required to disclose the information used and Envestnet | Yodlee as the source in the same manner as a traditional credit reporting agency.

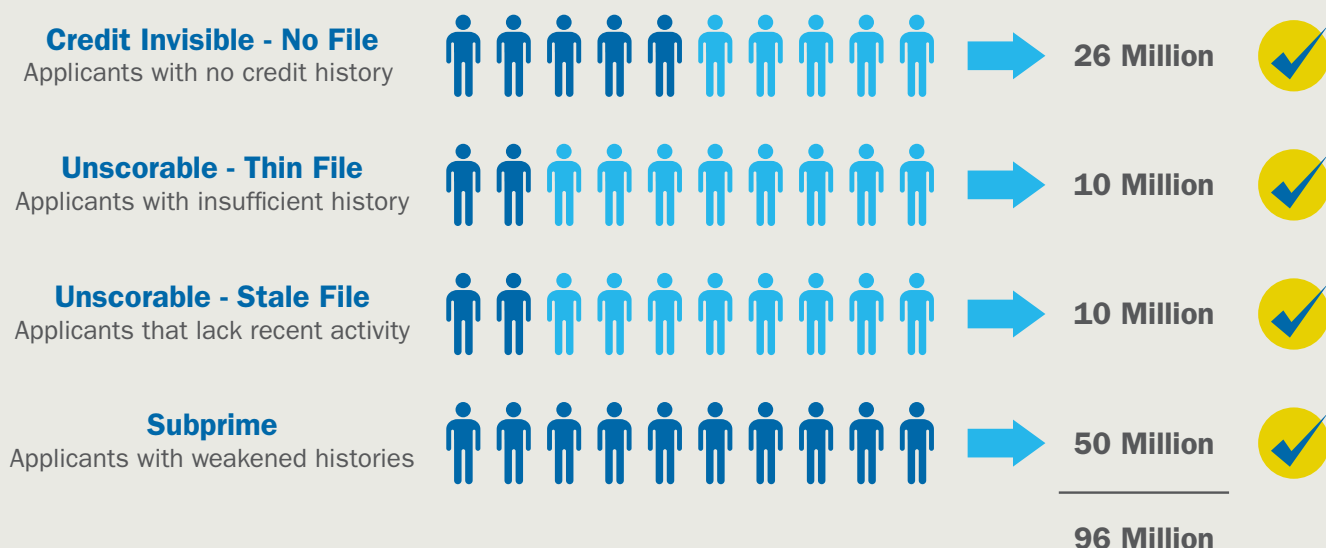
## Envestnet | Yodlee Risk Insight Solutions

Envestnet | Yodlee Risk Insight includes a range of solutions designed to meet the needs of lenders for a variety of different use cases. These solutions can be combined and customized in the report that is delivered. The report is the center of the solution, and while it is similar in some ways to the report that is issued by a traditional credit bureau, it is different in the scope of information as well as how it is delivered. Reports are based off up-to-date information obtained directly from consumer permissioned access to one or more data sources and can include information on banking accounts (DDA, savings, money market, etc.), investment (brokerage, retirement, 401(k), etc.), credit cards, and loans. Reports can be delivered as a JSON data package, in a formatted and printable PDF document, or as an HTML based on-screen display as needed. The formats are interchangeable and all three can be delivered for any report request.

When delivered, reports can contain any of the following types of information:

- **Transactional and Account Data:** This reflects the information received directly from the data source as it is supplied. It includes information on individual transactions, investment holdings, and account data such as current balance. The data presented is unaltered from the originating data source.
- **Derived Data:** Derived data is provided by Envestnet | Yodlee's Transactional Data Enrichment (TDE) algorithms, which use advanced data sciences and machine learning capabilities based on the tens of millions of users on our platform. This includes clarified descriptions and categorizations of transactions.

## Consumer Financial Protection Bureau (CFPB) Credit Metrics



The CFPB Office of Research. "Data Point: Credit Invisibles." Consumer Financial Protection Bureau. May 2015.  
[http://files.consumerfinance.gov/f/201505\\_cfpb\\_data-point-credit-invisibles.pdf](http://files.consumerfinance.gov/f/201505_cfpb_data-point-credit-invisibles.pdf) and <http://www.fico.com/en/blogs/risk-compliance/us-credit-quality-rising-the-beat-goes-on/>

- **Calculated Values:** Calculated values, sometimes referred to as attributes or characteristics, are rules driven summary values derived from transactions either within or across multiple accounts. Simple examples include Total Current Balance or Annual Net Income, while some values such as Cash Flow and Depletion Matrices can use complex rules and definitions. An unlimited number of calculated values can be provided on a report, and are highly customizable through the configuration driven rules engine at the heart of Risk Insight.
  - **Evaluations:** Evaluations leverage the same rules engine as calculated values, but provide a determination if a defined criteria has been met. Some examples could be whether there are any NSF charges in a DDA account, or if the total net payroll falls within an estimated gross range that matches a consumer stated income from an application. Evaluations can be expressed as a simple Yes/No and can be used to create flags for review to decrease processing time in approval and underwriting reviews.
  - **Application Information:** Reports can also leverage information provided by a consumer in an application. This can include personal information, reported income and liabilities, and any other information supplied in the request for a report. This information can be application information and can also include evaluation criteria to be used in calculations, such as a definition of large deposit that is specific for each application.
  - **Downloaded Statements:** When necessary, PDF statements obtained directly from a data source can be appended to the report, subject to availability. The information contained within these statements cannot be used in any calculated values or evaluations, but provide official copies for underwriting.
- Risk Insight delivers combinations of the above data to meet specific needs for lenders through our solutions packages listed below. Custom reports are also available.
- **Transactional Account Insight:** Transactional Account Insight provides the raw transactional and account data directly from the data source, and can also include Transactional Data Enrichment information such as simplified descriptions and categorization.
  - **Verification Insight:** Verification Insight provides detailed account holder, account number, routing number, and other information that assists in authentication of account validity for funds deposit as well as account ownership to help prevent fraud.
  - **Asset Insight:** Asset Insight provides detailed intra-account and cross-account calculations around total assets in various classes (cash, liquid investments, retirement, other non-liquid investments, etc.), balances (running balance, average daily balances, min/max balances, beginning balance, etc.), large deposit flags, and other related calculations and evaluations.
  - **Income Insight:** Income Insight provides a window into a consumer's income profile, including income derived from both payroll and non-payroll sources, including contract, regular deposits such as rental income, retirement distributions, investment income, support payments, government benefits, and more.
  - **Expense Insight:** Expense Insight provides detailed information on consumer expenses in various categories, including discretionary and non-discretionary spend, housing and utility payments, and debt service payments. It also provides insight into cash flow, expense to income ratios, cash depletion matrices, and related calculations.
  - **Pre-Qualification:** A pre-qualification report uses various criteria provided in a report request and determines if the consumer's profile meets the criteria on various aspects without revealing specific information. This provides for a method to receive limited information in a cost-efficient manner when compliance boundaries indicate that detailed information should not be released.
  - **Mortgage Asset Verification:** The Mortgage Asset Verification report is a specific package designed to meet Fannie Mae and Freddie Mac requirements for receiving rep and warrants relief in mortgage for asset verification. It includes components of Transactional Insight, Asset Insight, and Verification Insight, as well as the ability for the GSE or other investors to independently retrieve a copy of a report for underwriting. (This product is currently in pilot with general availability to be announced).

## Income Insight – A Deeper Look

Income verification solutions have been challenged to provide real-time accurate income information for payroll, and often have little insight into non-payroll sources of income. Many rely on limited direct access to employers, dated information such as tax returns, or require the consumer to produce documentation which is sometimes subject to fraudulent alteration. Consumer permissioned transactional data provides an insight into the actual income received by a consumer from all sources. Before Risk Insight, the challenge with using this data is that it is often difficult to understand the difference between income, non-income deposits, and transfers, especially given the wide variability in transaction descriptions from different data sources.

Risk Insight leverages Envestnet | Yodlee's proprietary data intelligence and machine learning algorithms to overcome these challenges. Through continual training and access to tens of millions of consumer accounts and billions of transactions, the system is able to recognize different types of income as well as separate out non-income and transfer deposits with a high degree of accuracy.

- **Recurring Income:** The algorithms look beyond the identification of specific income transactions to spot patterns that recognize recurring regular income from a specific source. Tolerances for variance in date and amount are incorporated into the model, as are potential smoothing and identification of any missing transactions from the series. The algorithm can also identify series from multiple sources to separate out multiple earners or income from multiple streams. The algorithm recognizes payroll, contracting, benefits payments, regular disbursements or investment income (such as from an annuity), and recurring counter deposits that have a sufficiently regular pattern.
- **Non-Recurring Income:** Transactions which are classified as income but do not meet the relatively strict definitions for recurrence are classified as non-recurring income. This includes regular income with large variation in amount, other payroll events such as bonuses or commission payments especially when received from a source that has been identified as associated with a recurring income series, and other one-time income events based on source of transaction.
- **Classification of Non-Income Deposits:** The identification of deposits that are not income related is equally important for understanding a consumer's full income profile. This includes transfers and recurring transfers, whether or not the source destination can be specifically identified. The algorithm also looks to separate non-income deposits such as expense reimbursements even when the source is similar to payroll.

Model performance against manual identification is regularly monitored and used to improve the algorithm, resulting in an income identification rate currently greater than 90%.

## Lender and Consumer Experience

Risk Insight includes the components necessary to request and receive reports as well as gather consumer permission and credentials. They are integral to the product and included with access to reports. These components provide for a full consumer and lender experience that can be deployed for a minimal or even zero integration environment and can also be accessed through our Fully Restful API architecture in whole or as individual components, allowing lenders to tailor the experience to their particular use case and needs.

- **Lender Portal:** The Lender Portal provides the necessary functionality for a lender to request a specific report type and input the appropriate application and evaluation criteria for that type of report. It also includes the ability to review previous report requests and manage requests that have not yet been fulfilled by a consumer. While most lenders choose to implement this in an integrated fashion to existing systems, some use cases require requestors place orders over a fully co-brandable web or mobile based experience.
- **Consumer Portal:** The Consumer Portal provides the method for consumers to provide credentials and multi-factor authentication challenges, select the specific accounts to be submitted from an institution when multiple accounts are present, submit the report when complete, and view a copy of the report. It also provides the ability for the consumer to return at a later point in order to provide additional requested information for a report order, or engage in FCRA compliance activities such as viewing a disclosure or creating a dispute request. The portal supports experiences in which consumers are free to select accounts to include in a report, as well as use cases where lenders specify which accounts are to be included (this specific flow is common for the Mortgage Asset Verification report). The portal is fully co-brandable and available as a web-based embeddable and fully responsive experience, which is highly recommended due to the complexities associated with credential and multi-factor authentication gathering, or through the Fully Restful API architecture. The experience can also be packaged into a mobile application for iOS or Android as needed.
- **Engaged and Remote Flows:** Risk Insight accommodates two different use cases for consumer interaction experience.
  - **Engaged:** In an engaged flow, the consumer is present in an online flow when the request for a report is generated. The consumer is immediately directed to the consumer portal to begin the process of providing credentials in a seamless manner.
  - **Remote:** In a remote flow, the consumer is not engaged in an online process at the time the request for the report is made, so it is necessary to contact the consumer and provide a link in order to engage. Risk Insight includes the capability to send branded emails and SMS text messages to consumers through a rules based approach that allows for different follow-up or abandon messages in order to maximize consumer response rates.
- **Third Party Access:** Risk Insight also includes the capability for an authorized third party to view a report based on the same consumer permissioned data used to deliver a lender report. This is frequently used for investor underwriting or purchasing, especially in mortgage when working with any of the GSEs. A unique reference number is provided with each report that can be used when authorized by the lender to obtain a report based on the same information. The report delivered is not the same report and may not include the same calculated values or evaluations. Third Party Access is available only through the Fully Restful API architecture.

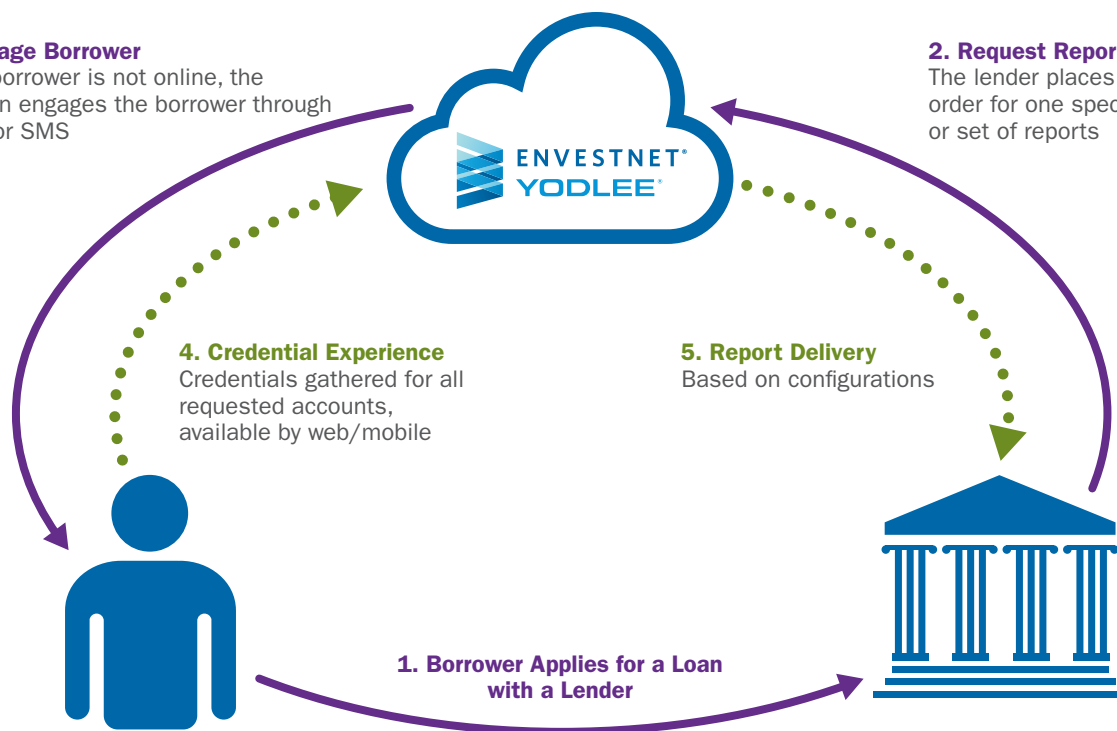


### 3. Engage Borrower

If the borrower is not online, the solution engages the borrower through email or SMS

### 2. Request Report

The lender places an order for one specific, or set of reports



### 4. Credential Experience

Credentials gathered for all requested accounts, available by web/mobile

### 5. Report Delivery

Based on configurations

### 1. Borrower Applies for a Loan with a Lender

## Process Steps

**Step 1:** Borrower applies for a loan with a lender

**Step 2:** Request for report(s) can be seamless and embedded in the application flow, or requested by a loan officer at a later point

**Step 3:** The borrower is engaged to begin the Risk Insight flow. If the borrower is not online, The Risk Insight solution engages the borrower through email or SMS

**Step 4:** Credentials gathered for all requested accounts available via web and/or mobile

**Step 5:** Based on lender configurations, reports are created and are available by JSON data feed, API, HTML, and/or PDF

## Platform Spotlight – Risk Insight Rules Engine

The Rules Engine is at the heart of Risk Insight, providing a flexible and powerful methodology to quickly create and deploy new calculated values, evaluations, and comparisons on reports. Rules are configured through an analyst level user interface instead of relying on complex scripting languages or coding, dramatically reducing the time required to create or modify calculations.

- **Flexibility:** The power of the Rules Engine lies within its flexibility to perform many different types of calculations with complex rules and limitations. Rules can be as simple as summing the same value across multiple accounts, or can include complex waterfall decisions with branching algorithms to derive different calculations depending on various input values.
- **Range of Information:** The Rules Engine is able to use all the data provided by data sources, including transactional and account data as well as derived data from Transactional Data Enrichment, for the full depth

of transactions provided. This allows for complex calculations that leverage information from different types of accounts and different types of transactions, often for a year or more of transaction history. Application information, including personal information or stated income, can also be leveraged for comparisons or to influence calculations.

- **Nested Rules:** The Rules Engine allows for a rule to use other rules that have already been created as an input or as part of a calculation in order to simplify management of sophisticated calculations. For example, a net income calculation can leverage a variety of different potential sources, including different weighting on various sources or whether or not certain sources are included. Once this rule has been defined, that net income calculation can then be leveraged as a basis for other rules, which creates consistency and also ensures that any underlying changes to the basic rule are automatically deployed across any rules that use it, preventing errors in calculations that are often very difficult to detect.

- **Application Behavior:** The Rules Engine can also be used to determine application behavior. One way this is leveraged is in the selection of contact strategies and the determination of which message to send to a consumer depending on a variety of conditions, such as how or where the application was made, how the report request was performed, whether the consumer has responded to previous attempts to contact, if the consumer has previously abandoned, and even if the consumer has only partially completed a request. Using the Rules Engine in this manner allows for the development of sophisticated business strategies and flows without the expense and time required for custom development.

## Event Based Management Reports

At every point in the process of requesting and fulfilling a report, Risk Insight creates highly granular events. These events can then be used to deliver a set of key management reports to understand behavior for both lender personnel as well as consumers. Custom reports can be developed within the application as needed. Some example of management reports can include:

- **Credential Gathering Performance:** The system generates events that are specific to each step of the credential gathering process. This report provides visibility into the exact points where consumers are abandoning or failing the process in order to identify opportunities for optimization.

- **Report Usage:** Full usage details can be assembled around reports ordered and the originating source, which can be valuable for management purposes especially in distributed environments with point of sale usage or independent teams (such as mortgage loan officers).

## The Future of Lending Decisions

Envestnet | Yodlee believes that alternative data is the future of lending. Insight into a consumer's assets, income, and expenses when appended to traditional credit reporting opens credit markets to otherwise underserved consumers like the "credit invisibles" – and it helps lenders close more loans with confidence in their risk decisions. We invite you to take the next step and learn more about how to leverage consumer permissioned data to qualify, decision, underwrite, and manage your portfolio by contacting Envestnet | Yodlee today.



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