LexisNexis® InstantID®

Version 1.2

Contents

Executive Summary

LexisNexis® InstantID® is an electronic identity verification system that reports the degree to which an input consumer identity matches the consumer identity information on record at LexisNexis®.

Development Purpose and Intended Use

InstantID is intended to summarize the results of the identity verification into three categorical verification indices to let institutions automate non-documentary identity verification processes. InstantID also provides a set of potential risk indicators that alert users to high fraud risk conditions detected in association with the input consumer identity or identity elements.

InstantID

An InstantID search consists of a consumer's input first name, last name, residential address, SSN (Social Security number), phone number, DOB (date of birth), DL (driver license) number, and DL state. The internal process includes searching the identity data that is on record at LexisNexis to determine whether an identity has been reported that matches components of the input identity set.

Data that is reported to LexisNexis includes public record data that is sourced from county government (for example, civil courts, law enforcement, property deeds, and tax assessments), state government (for example, courts, voter registration, driver license, vehicle registrations, occupational licenses, and other registrations and licenses), and federal government sources (for example, bankruptcy courts and federal courts). Other reporting sources include commercially-available data sourced from public utilities, national credit reporting agencies, land line and mobile phone carriers, student directories, and other consumer identity sources.

The InstantID results consist of the following numeric output components: the NAS (name, address, and SSN) index, the NAP (name, address, and phone number) index, and the CVI (comprehensive verification index).

The NAS is a numeric value that ranges from 0 to 12 and explicitly reports which of the following input identity elements were verified with an identity that is on record at LexisNexis: first name, last name, residential address, and SSN. A value of 12 indicates that all four elements were verified to an identity on record. A value of 0 indicates that none of the four elements were verified to an identity on record. For intermediate values, see "Name Address SSN Index" on page 8.

The NAP index is a numeric value that ranges from 0 to 12 and explicitly reports which of the following input identity elements were verified with an identity that is on record at LexisNexis: first name, last name, residential address, and phone number. A value of 12 indicates that all four elements verified to an identity that is on record. A value of 0 indicates that none of the four elements were verified to an identity that is on record. For intermediate values, see "NAP Verification" on page 18.

The CVI is a numeric value that ranges from 00 to 50 and summarizes the results of the NAS index and the NAP index, subject to certain risk condition overrides and optional configuration settings. A value of 50 indicates strong verification of input identity elements with an identity that is on record at LexisNexis. A value of 00 indicates failure to verify any of the input identity elements. A value of 10 is reserved for contradictory verification results (for example, input SSN belongs to a different identity) or certain high risk conditions (for example, input information matches to an identity that is reported as deceased). Intermediate values of 20, 30, and 40 represent different levels of partial verification success.

Financial institutions can use InstantID as an electronic identity verification process to automate their CIP (customer identification program) and KYC (know your customer) authentication requirements.

InstantID can also return up to six potential risk indicators, and can return verified and corrected name, address, phone number, SSN, DOB, and other supplemental data. InstantID can also be configured to return all of the potential risk indicators if more than six are associated with a particular identity.

Assumptions and Limitations

The matching algorithms that are used to determine the NAS index and NAP index rely on proprietary name matching technology that includes fuzzy matching to detect spelling variations, nickname lookup, substring and hyphenated name parsing, and statistical name frequency analysis to detect high confidence close matches.

These patented and proprietary matching and linking methods are based on over 30 years of experience as the leading compiler of public record consumer data. InstantID has been a leading identity authentication process used by the financial industry for over 15 years and has been accepted as an accurate and trusted electronic identity verification technology.

Results, Performance, and Impact

InstantID CVI values can be used to determine whether additional documentation or authentication is required.

The following table shows the distribution of InstantID CVI values for a sample of 300,000 records that was processed in May 2016. This sample represented a consumer lender with broad national coverage and a mix of prime and subprime applicants.

Distribution of Values

CVI	Number of Accounts	Percent of File	Cumulative Percent of File
00	230	0.1%	100.0%
10	7,289	2.4%	99.9%
20	8,189	2.7%	97.5%
30	11,590	3.9%	94.8%
40	38,703	12.9%	90.9%
50	233,999	78.0%	78.0%
Total	300,000		

A typical financial institution will consider a CVI value of 40 or 50 to be well verified. For this broad sample, 90.9 percent of the applications received a well-verified CVI value of 40 or 50. Most financial institutions consider a CVI value of 40 or higher to be electronically verified and require no additional documentation or authentication.

Development Purpose and Application

InstantID was developed in 2002 to assist financial institutions to comply with the USA PATRIOT Act (Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act) and KYC requirements that pertain to verification of account owner identity.

InstantID is designed to provide an electronic identity verification tool that can quickly confirm that an identity is known from public record or institutional reporting sources and that can assist in the automated resolution of identity issues and verification requirements.

Collaboration with Business Units

InstantID was developed by LexisNexis to provide financial institutions with a means to compare an identity presented for account opening against all the reported identities from public record, national credit bureaus, utility sources, government sources, and institutional sources through an automated electronic interface.

InstantID allows the automation of previously manually-conducted searches against electronic databases, using robust search and matching technology to replace human data entry and search term selection.

Interconnectedness

InstantID relies on proprietary search and matching technology developed by LexisNexis.

There are no other embedded risk models. The NAP, NAS, and CVI results are calculated using explicitly documented, rule-based logic, and do not rely on predictive algorithms.

Development History

InstantID was developed in 2002. An enhanced version of InstantID was released in 2014 that allowed policy modifications to the logic that calculated the CVI.

These parameter-based modifications gave the option to increment the CVI values of 10, 20 or 30 by 10 points if the input DOB or the input driver license were matched and verified to identity data on record at LexisNexis. CVI values can only increment by 10 points if the returned value has not been capped or overridden to the value by a high risk condition.

Framework and Theory

InstantID is a rule-based identity verification tool that provides an electronic summary of the result of searching the LexisNexis data platform using the identity components of first name, last name, address, SSN, phone number, DOB, and driver license number.

Name Address SSN Index

The InstantID NAS summary is an index from 0 through 12 that indicates the level of the match of the submitted name, address, and SSN.

Reporting sources include national credit bureau header records, utility source records, and public records. The NAS index returns a value of 0 to 12, where each level corresponds to an explicitly-defined combination of verified identity elements.

The following table contains possible values for InstantID NAS summaries and descriptions of their meanings.

NAS Index Values

NAS Value	Description
0	Nothing found for input criteria
1	Input SSN is associated with a different name and address
2	Input First name and Last Name matched
3	Input First name and Address matched
4	Input First name and SSN matched
5	Input Last name and Address matched
6	Input Address and SSN matched
7	Input Last name and SSN matched
8	Input First name, Last name and Address matched
9	Input First name, Last name and SSN matched
10	Input First name, Address, and SSN matched
11	Input Last name, Address, and SSN matched
12	Input First name, Last name, Address and SSN matched

A NAS value of 0 indicates that none of the input identity elements (first name, last name, address, or SSN) could be verified by the sources that report name, address, and SSN.

A NAS value of 1 indicates that the SSN is found to be associated with a different name and address.

The NAS index is constructed to return the highest value obtained that is by a comparison of the input name, address, and SSN to the identities that are on record. For example, if the first name, last name, and address are verified, and the SSN is associated with a different name and address, then the NAS index returns a value of 8. The fact that the SSN is associated with a different name and address is reported through the associated warning codes.

Name Address Phone Index

The InstantID NAP summary is an index from 0 through 12 that indicates the level of the match of the submitted name, address, and phone number.

Reporting sources include phone directory and utility records, and can include contributed inquiry records from the LexisNexis® Fraud Defense Network Event Activity data. Note that the NAP index provides very timely updates to name and address verification. While a phone number is also reported as a component of the NAP index, a phone number is not required to verify name and address through these sources.

The following table contains possible values for InstantID NAP summaries and descriptions of their meanings.

NAP Index Values

NAP Value	Description
0	Nothing found for input criteria
1	Input Phone is associated with a different name and address
2	First name and Last name matched
3	First name and Address matched
4	First name and Phone matched
5	Last name and Address matched
6	Address and Phone matched
7	Last name and Phone matched
8	First name, Last name, and Address matched
9	First name, Last name, and Phone matched
10	First name, Address, and Phone matched
11	Last name, Address, and Phone matched
12	First name, Last name, Address, and Phone matched

A NAP value of 0 indicates that none of the input identity elements (first name, last name, address, or phone number) could be verified by the sources that report name, address, and phone number.

A NAS value of 1 indicates that the phone number is associated with a different name and address. The NAP index is constructed to return the highest value that is obtained by a comparison of the input name, address, and phone number to the identities that are on record.

Comprehensive Verification Index

The results of the NAS and NAP verification levels are summarized in the CVI, which is a six-level indicator with discrete values of 00, 10, 20, 30, 40, and 50.

A higher value indicates that more identity elements were verified.

The following table contains possible CVI values and descriptions of their meanings.

CVI Values

CVI Value	Description
0	Nothing verified
10	Critical ID elements not verified, are associated with different person(s), or indications such as OFAC matches, deceased/invalid SSN, SSN issued prior to DOB, etc. exist
20	Minimal verification, critical ID elements not verified or associated with different person(s)
30	Several ID elements verified
40	Last name, address and SSN or phone verified; first name, phone or SSN verification failures
50	Full name, address, phone, SSN verified

CVI Calculation

The CVI is calculated through an explicit set of rules and has several options that you can use to modify the CVI calculation.

Procedure:

1. Calculate the NAS using the input name, address, and SSN to search against credit bureau header, utility sources, and public record data to determine which identity elements are verified on those sources.

2. Calculate the NAP using the input name, address, and phone to search against phone directory and utility records, and can include contributed inquiry records from the LexisNexis Fraud Defense Network Event Activity data to determine which identity elements are verified on those sources.

3. Determine the initial CVI value in the CVI matrix table, which is a 13-by-13 matrix using the 0–12 NAS and the 0–12 NAP.

    Each cell has a CVI value.

4. Apply the following default high risk rules to force certain observed conditions to a CVI value of 10 regardless of their matrix cell:

   - `The SSN reported, or identity reported as deceased`
   - `The SSN Issued prior to input DOB`
   - `SSN is invalid format`
   - `The address is invalid and the phone is invalid`
   - `The input identity matches an identity on the OFAC file`

5. Apply default high risk rules to force certain observed conditions to a CVI value of 20 if they scored 30 or higher and had either of the following conditions:

   - `Input SSN is associated with a different last name than the input last name`
   - `Input SSN is not associated with any identity on file, but a different SSN is on record for the subject`

6. If the parameter settings indicate that the options are selected, then apply optional default high risk rules.

   Force the CVI to a value of 10 if any of the following conditions are found:

   - `Input address is a PO Box`
   - `Multiple SSNs reported for the subject identity`
   - `Multiple identities associated with the input SSN`
   - `The input SSN is not the primary SSN for the input identity`

7. If the parameter settings indicate that one or both of the following options is selected and verified, then apply the optional CVI augment to raise the CVI by a value of 10 unless the CVI is already at a value of 40 or is capped or overridden by a high risk condition:

   - `Input DOB is verified with DOB on record`
   - `Input Driver License is verified with driver license on record`

Assumptions and Limitations

The InstantID service makes assumptions and has limitations.

Assumptions

The matching algorithms used by InstantID rely on proprietary string matching and phonetic matching of name fields to allow name matches without requiring exact character matching of input names to names on record.

This matching includes nickname equivalence (for example, Jim = James) and phonetic matching (for example, Christenson = Christiansen). Supporting fields clarify exactly what information was on record and used for matching, providing disclosure of the conditions where an exact match was not found. Based on more than three decades of experience in public record matching for names from all 50 states and the U.S. territories, the assumptions regarding name matching are judged to be robust and accurate to a high degree of precision.

Limitations

SSN values are reported to LexisNexis through a limited number of sources.

These sources include three national credit bureaus, utility sources, and some public records, such as bankruptcy filings. Consequently, SSN verification rates for unbanked or "credit invisible" populations are much lower than for credit active populations. Efforts to extend account privileges to unbanked segments may suffer if SSN verification is a requirement, as these populations are unlikely to be have an SSN on record. Many financial institutions do not require SSN verification as long as there is no evidence of an incorrect or invalid SSN on input.

Alternative Considered Frameworks and Theories

InstantID was designed to expedite the verification of consumer identity elements by utilizing sophisticated matching and linking to search our repository of over 280 million active U.S. consumers. Verification results and supporting warning codes and data fields have evolved over 15 years in production as one of the most robust electronic identity verification services available.

Development Data and Sources

InstantID uses the LexisNexis database of reported consumer identities to verify an input identity against the universe of known identities on record. Data sources include records from all 50 states and U.S. territories, with active and current coverage of more than 280 million adult U.S. consumers.

The following list includes the data sources that are reported to LexisNexis:

- Tri-Bureau credit source (non-trade line) data
- Property tax records
- Property deeds data
- Professional licenses
- Student directories
- Aircraft registrations
- Watercraft registrations
- DMV (Department of Motor Vehicles) records
- Death Master data
- States deceased records
- Bankruptcy files
- Hunting and Fishing licenses

- Federal explosives data
- Federal firearms data
- Foreclosures data
- Driver license data
- Tax liens and court judgments
- Workers Compensation data
- White pages phone data
- U.S. Coast Guard data
- Utility data
- Voter registration data
- Cell phone directory data
- Phone data non-white pages

Credit header and utility source data update monthly or more frequently. Phone connect data updates daily. Property tax records usually update annually. Many of the remaining sources are event-driven and typically update within a month of the triggering event, although some update daily.

Data Quality and Reconciliation

InstantID is built using only trusted, high-quality data sources that LexisNexis acquires directly from public records or from institutional partners with demonstrated coverage and accuracy.

The quality of the data sources is demonstrated by the following statistics:

- Coverage is very high, with verification rates of name and SSN typically over 90 percent.
- DOB verification is typically over 80 percent.
- Address verification is lower, as address is not a persistent identity element. Address verification is generally over 75 percent.
- Data sources used for verification have been very stable over time, with primary sources in place for well over 10 years.
- Student directory data was added prior to 2010 and resulted in improved identity verification rates of young adults.
- Incremental public record data sourced from counties have been added over time. LexisNexis currently has public records from over 2,800 of the 3,143 counties, parishes, and boroughs in the United States, including all of the most-populated jurisdictions.

Data Exclusion

InstantID is a rule-based identity authentication system that expects the request to include the subject's first name, last name, residential address, SSN, DOB, phone number, and driver license number (optional).

InstantID attempts to complete a verification with fewer input fields (for example, first name, last name, and address). Care should be taken in interpreting the NAP index, NAS index, and CVI when fewer input fields are provided.

Dependent Variable Definition

No dependent variable was used in the development of InstantID.

The NAP, NAS, and CVI are descriptive indices that summarize the results of identity searching and matching using the entered set of identity elements compared against all of the reported identities in the LexisNexis data repository. InstantID is not a predictive model or an estimation tool; it is a measure of identity verification success.

Independent and Predictive Variable Definitions

No predictive variables were used in the development of InstantID.

InstantID makes use of the identity records that are reported to LexisNexis from credit bureaus, government sources, property records, student directories, court records, licenses, phone directories, and other consumer records.

Sampling Approach

A production data sample of InstantID transactions was used to conduct a recent audit of InstantID results to demonstrate the current verification rates and consistency of outcome reporting of electronic identity verification results.

This sample was pulled from a full day of production transactions across all InstantID users in March 2016. This sample consisted of 72,356 InstantID transactions with a mix of prime, underbanked, and unbanked applicants.

Verification Audit Results

Verification of audit results was performed for the NAS index, NAP index, and CVI.

NAS Verification

Verification of audit results was performed for the NAS index.

The following table lists the verification results of the individual identity elements for the key output indices of InstantID.

NAS Verification

NAS Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
0	Nothing Matched	1,906	2.6%	19.0%	35.4%	41.1%	0.0%	25.7%	3.2%
1	Contrary SSN	505	3.3%	16.0%	29.9%	36.5%	0.0%	19.2%	10.0%
2	First and Last	3,961	8.8%	100.0%	100.0%	38.7%	0.0%	40.3%	79.9%
3	First and Address	32	8.9%	100.0%	25.0%	100.0%	0.0%	18.8%	56.3%
4	First and SSN	214	9.1%	100.0%	31.3%	37.2%	100.0%	37.7%	76.2%
5	Last and Address	16	9.2%	18.8%	100.0%	100.0%	0.0%	42.9%	30.0%
6	Last and SSN	83	9.3%	18.1%	19.3%	100.0%	100.0%	42.6%	91.0%
7	Last and SSN	65	9.4%	6.2%	100.0%	37.0%	100.0%	40.8%	65.0%
8	First Last Address	5,244	16.6%	100.0%	100.0%	100.0%	0.0%	60.9%	90.7%
9	First Last SSN	17,100	40.3%	100.0%	100.0%	34.0%	100.0%	44.4%	90.0%
10	First Address SSN	249	40.6%	100.0%	30.9%	100.0%	100.0%	56.7%	95.4%
11	Last Address SSN	84	40.7%	8.3%	100.0%	100.0%	100.0%	60.6%	86.4%
12	Name Address SSN	42,897	100.0%	100.0%	100.0%	100.0%	100.0%	65.3%	95.4%
		72,356		97.0%	97.2%	81.2%	93.8%	58.1%	90.3%

As the table indicates, individual identity elements are consistently 100 percent verified when the NAS index level specifies that a given element was verified. While the NAS index is defined solely from sources that include NAS, the overall verification results are for all sources. For example, address verifications occur in NAP values that do not include address verification.

NAP Verification

Verification of audit results was performed for the NAP index.

The following table lists the verification results of the address elements for the key output indices of InstantID.

NAP Verification

NAP Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
0	Nothing Matched	9,999	13.8%	87.2%	86.4%	30.9%	86.3%	0.0%	77.3%
1	Contrary SSN	1.365	15.7%	82.9%	82.1%	29.6%	82.1%	0.0%	71.6%
2	First and Last	5,539	23.4%	100.0%	100.0%	23.8%	96.0%	0.0%	91.5%
3	First and Address	1,060	24.8%	100.0%	86.4%	100.0%	90.4%	0.0%	87.7%
4	First and Phone	243	25.2%	100.0%	81.9%	47.2%	92.1%	100.0%	82.7%
5	Last and Address	4,889	31.9%	92.7%	100.0%	100.0%	86.3%	0.0%	82.7%
6	Last and Phone	1,182	33.6%	89.4%	89.4%	100.0%	89.0%	100.0%	83.0%
7	Last and Phone	1,307	35.4%	92.3%	100.0%	56.1%	90.5%	100.0%	85.9%
8	First Last Address	19,997	63.0%	100.0%	100.0%	100.0%	95.5%	0.0%	92.2%
9	First Last Phone	4,531	69.3%	100.0%	100.0%	45.6%	96.3%	100.0%	95.1%
10	First Address Phone	486	69.9%	100.0%	84.6%	100.0%	97.6%	100.0%	96.1%
11	Last Address Phone	2,989	71.4%	97.0%	100.0%	100.0%	94.2%	100.0%	91.5%
12	Name Address Phone	18,769	100.0%	100.0%	100.0%	100.0%	97.0%	100.0%	96.7%
		72,356		97.0%	97.2%	81.2%	93.8	58.1%	90.3%

Results for the NAP indicate that individual identity elements are consistently 100 percent verified when the NAP level specifies that a given element was verified. While the NAP index is defined solely from sources that include NAP, the overall verification results are for all sources.

The audit results for the NAS index and NAP index confirm that the individual identity elements corresponding to each level of the index are 100 percent verified when the index describes them as verified.

CVI Calculation

The CVI is calculated through an explicit set of rules and has several options that you can use to modify the CVI calculation.

Procedure:

1. Calculate the NAS using the input name, address, and SSN to search against credit bureau header, utility sources, and public record data to determine which identity elements are verified on those sources.

2. Calculate the NAP using the input name, address, and phone to search against phone directory and utility records, and can include contributed inquiry records from the LexisNexis Fraud Defense Network Event Activity data to determine which identity elements are verified on those sources.

3. Determine the initial CVI value in the CVI matrix table, which is a 13-by-13 matrix using the 0–12 NAS and the 0–12 NAP.

   Each cell has a CVI value.

4. Apply the following default high risk rules to force certain observed conditions to a CVI value of 10 regardless of their matrix cell:

   - `The SSN reported, or identity reported as deceased`
   - `The SSN Issued prior to input DOB`
   - `SSN is invalid format`
   - `The address is invalid and the phone is invalid`
   - `The input identity matches an identity on the OFAC file`

5. Apply default high risk rules to force certain observed conditions to a CVI value of 20 if they scored 30 or higher and had either of the following conditions:

   - `Input SSN is associated with a different last name than the input last name`
   - `Input SSN is not associated with any identity on file, but a different SSN is on record for the subject`

6. If the parameter settings indicate that the options are selected, then apply optional default high risk rules.

    Force the CVI to a value of 10 if any of the following conditions are found:

    - `Input address is a PO Box`
    - `Multiple SSNs reported for the subject identity`
    - `Multiple identities associated with the input SSN`
    - `The input SSN is not the primary SSN for the input identity`

7. If the parameter settings indicate that one or both of the following options is selected and verified, then apply the optional CVI augment to raise the CVI by a value of 10 unless the CVI is already at a value of 40 or is capped or overridden by a high risk condition:

    - `Input DOB is verified with DOB on record`
    - `Input Driver License is verified with driver license on record`

CVI – Default Logic

The audit results for the CVI demonstrate that verification rates align well with CVI value.

CVI values of 50 have 100 percent verification of first name, last name, address, and SSN, while CVI values of 40 are nearly as high. Many financial institutions consider a CVI of 40 or higher as well verified, and some consider a 30 to be well enough verified. Others have implemented conditional acceptance of CVI 30 depending on which elements are verified.

The following table describes the default logic for the CVI.

CVI – Default Logic

CVI Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
00	Nothing Verified	1,423	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%
10	Critical ID elements not verified, contrary findings, high risk conditions, deceased	4,538	6.3%	95.9%	92.8%	29.8%	57.6%	22.2%	73.3%
20	Minimal verification, critical ID elements not verified	11,920	16.5%	96.4%	98.5%	31.2%	88.2%	18.8%	83.2%

CVI – Default Logic (Continued)

CVI Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
30	Several elements verified	4,520	6.2%	98.6%	98.5%	42.0%	92.6%	89.5%	91.9%
40	Last name, address and SSN or phone verified but missing some verification	7,907	10.9%	99.0%	100.0%	100.0%	89.1%	28.4%	93.2%
50	Full name, address and SSN verified	42,048	58.1%	100.0%	100.0%	100.0%	100.0%	71.2%	95.6%
		72,356		97.0%	97.2%	81.2%	93.8%	58.1%	90.3%

Augment CVI with Date of Birth and Driver License

An optional setting in InstantID allows the CVI to be incrementally adjusted depending on whether the DOB or driver license is verified. Many systems do not accept a driver license, but most will include a DOB.

The following table shows the impact to CVI distributions when this setting is turned on.

CVI – Augment CVI with Date of Birth and Driver License

CVI Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
00	Nothing Verified	1,352	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	Critical ID elements not verified, contrary findings, high risk conditions, deceased,	2,191	3.0%	89.0%	87.7%	49.5%	55.2%	32.6%	39.0%
20	Minimal verification, critical ID elements not verified	5,528	7.6%	93.2%	97.3%	33.0%	65.3%	20.8%	59.6%

CVI – Augment CVI with Date of Birth and Driver License (Continued)

CVI Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
30	Several elements verified	9,545	13.2%	98.7%	98.3%	27.8%	93.6%	24.4%	95.8%
40	Last name, address and SSN or phone verified but missing some verification	11,692	16.2%	99.2%	99.4%	83.3%	91.4%	52.7%	95.6%
50	Full name, address and SSN verified	42,048	58.1%	100.0%	100.0%	100.0%	100.0%	71.2%	95.6%
		72,356		97.0%	97.2%	81.2%	93.8%	58.1%	90.3%

Estimation Overview

InstantID does not contain any estimated coefficients or predictive model elements.

The NAS index, NAP index, and CVI are each descriptive classification variables that summarize the verification results obtained when the input subject's name, address, SSN, phone, and DOB are compared against all the reported identities from public record and institutional reporting sources. There are no parameter estimates in these indices. Each level of the NAS index and NAP index has a discrete definition based on which identity elements are verified. The CVI is determined by the NAS index and NAP index, modified by override rules.

Estimation Development

Sampling design, model segmentation, variable selection, and model estimation were not considered in the development of InstantID.

Sampling Design

No development sample was used for the creation of InstantID.

Segmentation

There is no model segmentation in InstantID. All records are processed identically and assigned to a discrete value of NAS index, NAP index, and CVI based on identity verification results.

Variable Selection

InstantID is not a predictive model and does not contain any independent variables. There was no target or performance variable.

Estimation

No model estimation was used in the development of InstantID.

The NAS index, NAP index, and CVI are each descriptive classification variables that summarize the verification results obtained when the input subject's name, address, SSN, phone number, and DOB are compared against all of the reported identities from public record and institutional reporting sources.

Calibration Overview

The components of InstantID include three indices that provide categorical numeric output: NAS, NAP, and CVI.

The NAS index explicitly describes the results of verifying the subject's first name, last name, address, and SSN against public record and institutional records that report the known adult identities in the United States from credit bureau sources, utility sources, and certain public record sources. The NAS index has values from 0–12, each of which corresponds to a particular combination of first name, last name, address, and SSN verification.

The NAP index explicitly describes the results of verifying the subject's first name, last name, address, and phone number against public record and institutional records that report the known adult identities in the United States from phone directory and utility records and can include contributed inquiry records from our LexisNexis Fraud Defense Network Event Activity. The NAP index has values from 0–12, each of which corresponds to a particular combination of first name, last name, address, and phone verification.

The CVI summarizes the NAS index and NAP index results along with certain high risk conditions into one of the following values: 00, 10, 20, 30, 40, and 50.

Name Address SSN Index

The InstantID NAS summary is an index from 0 through 12 that indicates the level of the match of the submitted name, address, and SSN.

Reporting sources include national credit bureau header records, utility source records, and public records. The NAS index returns a value of 0 to 12, where each level corresponds to an explicitly-defined combination of verified identity elements.

The following table contains possible values for InstantID NAS summaries and descriptions of their meanings.

NAS Index Values

NAS Value	Description
0	Nothing found for input criteria
1	Input SSN is associated with a different name and address
2	Input First name and Last Name matched
3	Input First name and Address matched
4	Input First name and SSN matched
5	Input Last name and Address matched
6	Input Address and SSN matched
7	Input Last name and SSN matched
8	Input First name, Last name and Address matched
9	Input First name, Last name and SSN matched
10	Input First name, Address, and SSN matched
11	Input Last name, Address, and SSN matched
12	Input First name, Last name, Address and SSN matched

A NAS value of 0 indicates that none of the input identity elements (first name, last name, address, or SSN) could be verified by the sources that report name, address, and SSN.

A NAS value of 1 indicates that the SSN is found to be associated with a different name and address.

The NAS index is constructed to return the highest value obtained that is by a comparison of the input name, address, and SSN to the identities that are on record. For example, if the first name, last name, and address are verified, and the SSN is associated with a different name and address, then the NAS index returns a value of 8. The fact that the SSN is associated with a different name and address is reported through the associated warning codes.

Name Address Phone Index

The InstantID NAP summary is an index from 0 through 12 that indicates the level of the match of the submitted name, address, and phone number.

Reporting sources include phone directory and utility records, and can include contributed inquiry records from the LexisNexis Fraud Defense Network Event Activity data. Note that the NAP index provides very timely updates to name and address verification. While a phone number is also reported as a component of the NAP index, a phone number is not required to verify name and address through these sources.

The following table contains possible values for InstantID NAP summaries and descriptions of their meanings.

NAP Index Values

NAP Value	Description
0	Nothing found for input criteria
1	Input Phone is associated with a different name and address
2	First name and Last name matched
3	First name and Address matched
4	First name and Phone matched
5	Last name and Address matched
6	Address and Phone matched
7	Last name and Phone matched
8	First name, Last name, and Address matched
9	First name, Last name, and Phone matched
10	First name, Address, and Phone matched
11	Last name, Address, and Phone matched
12	First name, Last name, Address, and Phone matched

A NAP value of 0 indicates that none of the input identity elements (first name, last name, address, or phone number) could be verified by the sources that report name, address, and phone number.

A NAS value of 1 indicates that the phone number is associated with a different name and address. The NAP index is constructed to return the highest value that is obtained by a comparison of the input name, address, and phone number to the identities that are on record.

Comprehensive Verification Index

The results of the NAS and NAP verification levels are summarized in the CVI, which is a six-level indicator with discrete values of 00, 10, 20, 30, 40, and 50.

A higher value indicates that more identity elements were verified.

The following table contains possible CVI values and descriptions of their meanings.

CVI Values

CVI Value	Description
0	Nothing verified
10	Critical ID elements not verified, are associated with different person(s), or indications such as OFAC matches, deceased/invalid SSN, SSN issued prior to DOB, etc. exist
20	Minimal verification, critical ID elements not verified or associated with different person(s)
30	Several ID elements verified
40	Last name, address and SSN or phone verified; first name, phone or SSN verification failures
50	Full name, address, phone, SSN verified

Testing and Process Verification

A production data sample of InstantID transactions was used to conduct an audit of InstantID results in order to demonstrate the current verification rates and consistency of outcome reporting of electronic identity verification results.

The sample was pulled from a full day of production transactions across all InstantID users in March 2016. This sample consisted of 72,356 InstantID transactions with a mix of prime, underbanked, and unbanked applicants.

Performance on Out-of-Sample Data

The following tables demonstrate the verification results for the key output indices of InstantID on a sample from March 2016.

NAS Verification

Verification of audit results was performed for the NAS index.

The following table lists the verification results of the individual identity elements for the key output indices of InstantID.

NAS Verification

NAS Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
0	Nothing Matched	1,906	2.6%	19.0%	35.4%	41.1%	0.0%	25.7%	3.2%
1	Contrary SSN	505	3.3%	16.0%	29.9%	36.5%	0.0%	19.2%	10.0%
2	First and Last	3,961	8.8%	100.0%	100.0%	38.7%	0.0%	40.3%	79.9%
3	First and Address	32	8.9%	100.0%	25.0%	100.0%	0.0%	18.8%	56.3%
4	First and SSN	214	9.1%	100.0%	31.3%	37.2%	100.0%	37.7%	76.2%
5	Last and Address	16	9.2%	18.8%	100.0%	100.0%	0.0%	42.9%	30.0%
6	Last and SSN	83	9.3%	18.1%	19.3%	100.0%	100.0%	42.6%	91.0%
7	Last and SSN	65	9.4%	6.2%	100.0%	37.0%	100.0%	40.8%	65.0%
8	First Last Address	5,244	16.6%	100.0%	100.0%	100.0%	0.0%	60.9%	90.7%
9	First Last SSN	17,100	40.3%	100.0%	100.0%	34.0%	100.0%	44.4%	90.0%
10	First Address SSN	249	40.6%	100.0%	30.9%	100.0%	100.0%	56.7%	95.4%
11	Last Address SSN	84	40.7%	8.3%	100.0%	100.0%	100.0%	60.6%	86.4%
12	Name Address SSN	42,897	100.0%	100.0%	100.0%	100.0%	100.0%	65.3%	95.4%
		72,356		97.0%	97.2%	81.2%	93.8%	58.1%	90.3%

As the table indicates, individual identity elements are consistently 100 percent verified when the NAS index level specifies that a given element was verified. While the NAS index is defined solely from sources that include NAS, the overall verification results are for all sources. For example, address verifications occur in NAP values that do not include address verification.

NAP Verification

Verification of audit results was performed for the NAP index.

The following table lists the verification results of the address elements for the key output indices of InstantID.

NAP Verification

NAP Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
0	Nothing Matched	9,999	13.8%	87.2%	86.4%	30.9%	86.3%	0.0%	77.3%
1	Contrary SSN	1.365	15.7%	82.9%	82.1%	29.6%	82.1%	0.0%	71.6%
2	First and Last	5,539	23.4%	100.0%	100.0%	23.8%	96.0%	0.0%	91.5%
3	First and Address	1,060	24.8%	100.0%	86.4%	100.0%	90.4%	0.0%	87.7%
4	First and Phone	243	25.2%	100.0%	81.9%	47.2%	92.1%	100.0%	82.7%
5	Last and Address	4,889	31.9%	92.7%	100.0%	100.0%	86.3%	0.0%	82.7%
6	Last and Phone	1,182	33.6%	89.4%	89.4%	100.0%	89.0%	100.0%	83.0%
7	Last and Phone	1,307	35.4%	92.3%	100.0%	56.1%	90.5%	100.0%	85.9%
8	First Last Address	19,997	63.0%	100.0%	100.0%	100.0%	95.5%	0.0%	92.2%
9	First Last Phone	4,531	69.3%	100.0%	100.0%	45.6%	96.3%	100.0%	95.1%
10	First Address Phone	486	69.9%	100.0%	84.6%	100.0%	97.6%	100.0%	96.1%
11	Last Address Phone	2,989	71.4%	97.0%	100.0%	100.0%	94.2%	100.0%	91.5%
12	Name Address Phone	18,769	100.0%	100.0%	100.0%	100.0%	97.0%	100.0%	96.7%
		72,356		97.0%	97.2%	81.2%	93.8	58.1%	90.3%

Results for the NAP indicate that individual identity elements are consistently 100 percent verified when the NAP level specifies that a given element was verified. While the NAP index is defined solely from sources that include NAP, the overall verification results are for all sources.

The audit results for the NAS index and NAP index confirm that the individual identity elements corresponding to each level of the index are 100 percent verified when the index describes them as verified.

CVI Calculation

The CVI is calculated through an explicit set of rules and has several options that you can use to modify the CVI calculation.

Procedure:

1. Calculate the NAS using the input name, address, and SSN to search against credit bureau header, utility sources, and public record data to determine which identity elements are verified on those sources.

2. Calculate the NAP using the input name, address, and phone to search against phone directory and utility records, and can include contributed inquiry records from the LexisNexis Fraud Defense Network Event Activity data to determine which identity elements are verified on those sources.

3. Determine the initial CVI value in the CVI matrix table, which is a 13-by-13 matrix using the 0–12 NAS and the 0–12 NAP.

    Each cell has a CVI value.

4. Apply the following default high risk rules to force certain observed conditions to a CVI value of 10 regardless of their matrix cell:

    - `The SSN reported, or identity reported as deceased`
    - `The SSN Issued prior to input DOB`
    - `SSN is invalid format`
    - `The address is invalid and the phone is invalid`
    - `The input identity matches an identity on the OFAC file`

5. Apply default high risk rules to force certain observed conditions to a CVI value of 20 if they scored 30 or higher and had either of the following conditions:

    - `Input SSN is associated with a different last name than the input last name`
    - `Input SSN is not associated with any identity on file, but a different SSN is on record for the subject`

6. If the parameter settings indicate that the options are selected, then apply optional default high risk rules.

    Force the CVI to a value of 10 if any of the following conditions are found:

    - `Input address is a PO Box`
    - `Multiple SSNs reported for the subject identity`
    - `Multiple identities associated with the input SSN`
    - `The input SSN is not the primary SSN for the input identity`

7. If the parameter settings indicate that one or both of the following options is selected and verified, then apply the optional CVI augment to raise the CVI by a value of 10 unless the CVI is already at a value of 40 or is capped or overridden by a high risk condition:

    - `Input DOB is verified with DOB on record`
    - `Input Driver License is verified with driver license on record`

CVI – Default Logic

The audit results for the CVI demonstrate that verification rates align well with CVI value.

CVI values of 50 have 100 percent verification of first name, last name, address, and SSN, while CVI values of 40 are nearly as high. Many financial institutions consider a CVI of 40 or higher as well verified, and some consider a 30 to be well enough verified. Others have implemented conditional acceptance of CVI 30 depending on which elements are verified.

The following table describes the default logic for the CVI.

CVI – Default Logic

CVI Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
00	Nothing Verified	1,423	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%
10	Critical ID elements not verified, contrary findings, high risk conditions, deceased	4,538	6.3%	95.9%	92.8%	29.8%	57.6%	22.2%	73.3%
20	Minimal verification, critical ID elements not verified	11,920	16.5%	96.4%	98.5%	31.2%	88.2%	18.8%	83.2%

CVI – Default Logic (Continued)

CVI Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
30	Several elements verified	4,520	6.2%	98.6%	98.5%	42.0%	92.6%	89.5%	91.9%
40	Last name, address and SSN or phone verified but missing some verification	7,907	10.9%	99.0%	100.0%	100.0%	89.1%	28.4%	93.2%
50	Full name, address and SSN verified	42,048	58.1%	100.0%	100.0%	100.0%	100.0%	71.2%	95.6%
		72,356		97.0%	97.2%	81.2%	93.8%	58.1%	90.3%

Augment CVI with Date of Birth and Driver License

An optional setting in InstantID allows the CVI to be incrementally adjusted depending on whether the DOB or driver license is verified. Many systems do not accept a driver license, but most will include a DOB.

The following table shows the impact to CVI distributions when this setting is turned on.

CVI – Augment CVI with Date of Birth and Driver License

CVI Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
00	Nothing Verified	1,352	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	Critical ID elements not verified, contrary findings, high risk conditions, deceased,	2,191	3.0%	89.0%	87.7%	49.5%	55.2%	32.6%	39.0%
20	Minimal verification, critical ID elements not verified	5,528	7.6%	93.2%	97.3%	33.0%	65.3%	20.8%	59.6%

CVI – Augment CVI with Date of Birth and Driver License (Continued)

CVI Value	Verification Description	Number of Cases	Cuml % File	First Name Matched	Last Name Matched	Address Matched	SSN Matched	Phone Matched	DOB Matched
30	Several elements verified	9,545	13.2%	98.7%	98.3%	27.8%	93.6%	24.4%	95.8%
40	Last name, address and SSN or phone verified but missing some verification	11,692	16.2%	99.2%	99.4%	83.3%	91.4%	52.7%	95.6%
50	Full name, address and SSN verified	42,048	58.1%	100.0%	100.0%	100.0%	100.0%	71.2%	95.6%
		72,356		97.0%	97.2%	81.2%	93.8%	58.1%	90.3%