

# MoneyLion Loans Fraud-Detection Challenge

## Data Dictionary

In the **data.zip** file you will find 2 files:

1. **loan.csv**
2. **payment.csv**

### 1. loan.csv:

In this file there are **18** columns:

1. **loanId**: This is a unique loan identifier. Use this for joins with the **payment.csv** file
2. **anon\_ssn**: This is a hash based on a client's **SSN** (Anonymous ssn). You can use this as if it is a SSN to compare if a loan belongs to a previous customer.
3. **payFrequency**: This column represents repayment frequency of the loan:
  - **B** is biweekly payments
  - **I** is irregular
  - **M** is monthly
  - **S** is semi monthly
  - **W** is weekly
4. **apr**: Annual Percentage Rate of the loan (%)
5. **applicationDate**: Date of application (start date)
6. **originated**: Indicates if the loan has been initiated (underwriting process started).
7. **originatedDate**: Date of origination, day the loan was originated
8. **nPaidOff**: Number of MoneyLion loans previously paid off by the client.
9. **approved**: Indicates if the loan has been approved (final step of underwriting).
10. **isFunded**: Whether or not a loan is ultimately funded. a loan can be voided by a customer shortly after it is approved, so not all approved loans are ultimately funded.
11. **loanStatus**: Current loan status (this column is used for prediction). Most are self-explanatory. Below are the statuses which need clarification:
  - **Withdrawn Application**: The applicant has withdrawn their loan application before it was approved or funded.

- **Paid Off Loan:** The loan has been fully paid off by the borrower according to the repayment terms.
- **Rejected:** The loan application was rejected, typically due to failure to meet underwriting criteria.
- **New Loan:** A newly approved loan that has not yet been funded.
- **Internal Collection:** The loan is being managed and collected internally by MoneyLion due to missed payments or delinquency.
- **CSR Voided New Loan:** A new loan application was voided by a customer service representative (CSR) before funding.
- **External Collection:** The loan has been transferred to an external collection agency for management and collection.
- **Returned Item:** A payment on the loan has been returned due to insufficient funds in the borrower's account.
- **Customer Voided New Loan:** The borrower voided a new loan application before funding.
- **Credit Return Void:** The loan was voided due to a credit return, typically related to a refunded transaction.
- **Pending Paid Off:** The loan is in the process of being paid off, but the process is pending completion.
- **Charged Off Paid Off:** The loan has been charged off as a loss by MoneyLion but has also been paid off by the borrower.
- **Settled Bankruptcy:** The loan has been settled as part of a bankruptcy proceeding.
- **Settlement Paid Off:** The loan has been paid off through a settlement agreement.
- **Charged Off:** The loan has been charged off as a loss by MoneyLion due to non-payment.
- **Pending Rescind:** The loan is pending rescission, meaning it may be canceled or reversed.
- **Customver Voided New Loan:** Typo: Likely should be "Customer Voided New Loan". Similar to "Customer Voided New Loan", indicating the borrower voided a new loan application before funding.
- **Pending Application:** The loan application is pending review and approval.
- **Voided New Loan:** The loan application was voided before funding.

- **Pending Application Fee:** The loan application is pending due to the application fee not being paid.
  - **Settlement Pending Paid Off:** The loan is pending being paid off through a settlement agreement.
12. **loanAmount:** Principal amount of the loan (\$) (for non-funded loans this will be the principal in the loan application)
13. **originallyScheduledPaymentAmount:** This is the Initially scheduled repayment amount (\$) (if a customer pays off all his scheduled payments, this is the amount we should receive)
14. **state:** State of the client
15. **Lead type:** The lead type determines the underwriting rules for a lead.
- **bvMandatory:** leads that are bought from the ping tree – required to perform bank verification before loan approval
  - **lead:** very similar to bvMandatory, except bank verification is optional for loan approval
  - **california:** similar to lead, but optimized for California lending rules
  - **organic:** customers that came through the MoneyLion website
  - **rc\_returning:** customers who have at least 1 paid off loan in another loan portfolio. (The first paid off loan is not in this data set).
  - **prescreen:** preselected customers who have been offered a loan through direct mail campaigns
  - **express:** promotional “express” loans
  - **repeat:** promotional loans offered through sms
  - **instant-offer:** promotional “instant-offer” loans
16. **Lead cost:** Cost associated with acquiring the lead (\$)
17. **fpStatus:** Result of the first payment of the loan:
- **Checked:** payment is successful
  - **Rejected:** payment is unsuccessful
  - **Cancelled:** payment is cancelled
  - **No Payments/No Schedule:** loan is not funded
  - **Pending:** ACH attempt has been submitted to clearing house but no response yet
  - **Skipped:** payment has been skipped
  - **None:** No ACH attempt has been made yet – usually because the payment is scheduled for the future

18. **clarityFraudId**: unique underwriting id

Every row represents an accepted loan application/ successfully funded loan.

Missing values can exist. Some fields are only implemented after the loan application was made.

## 2. payment.csv:

In this file there are **9** columns:

1. **loanId**: This is a unique loan identifier. Use this for joins with the loan.csv file
2. **isCollection**: A loan can have a custom-made collection plan if the customer has trouble making repayments as per the original schedule. TRUE means the payment is from a custom-made collection plan.
3. **installmentIndex**: This counts the nth payment for the loan. First payment is 1, 2<sup>nd</sup> payment is 2 and so on. This index resets for collection payment plans. So some loans can have 2 payments with the same installmentIndex. One from the regular plan and one from the collection plan.
4. **Paymentdate**: Effective of payment
5. **Principal**: principal component of the payment
6. **Fees**: Fee/ interest amount of the payment
7. **paymentAmount**: Total amount of the payment. Usually equals to fees + principal
8. **paymentStatus**:
  - **Checked**: payment is successful
  - **Rejected**: payment is unsuccessful
  - **Cancelled**: payment is cancelled
  - **Pending**: ACH attempt has been submitted to clearing house but no response yet
  - **Skipped**: payment has been skipped
  - **None** : No ACH attempt has been made yet – usually because the payment is scheduled for the future
  - Rejected awaiting retry: retrying a failed ACH attempt.
9. **paymentReturnCode**: these are ACH error codes to explain why the payment failed. You can find more information about this at the end of this document, or visit the following link: <https://www.vericheck.com/ach-return-codes/>

Each row in this file represents an ACH attempt (either scheduled for the future or has elapsed in the past) associated to the loan.

## Appendix:

### ACH return codes:

<b>R01</b>	Insufficient Funds
<b>R02</b>	Account Closed
<b>R03</b>	No Account/Unable to Locate Account
<b>R04</b>	Invalid Account Number
<b>R05</b>	Unauthorized Debit Entry
<b>R06</b>	Returned per ODFI's Request
<b>R07</b>	Authorization Revoked by Customer (adjustment entries)
<b>R08</b>	Payment Stopped or Stop Payment on Item
<b>R09</b>	Uncollected Funds Customer Advises Not Authorized; Item Is Ineligible, Notice Not Provided,
<b>R10</b>	Signatures Not Genuine, or Item Altered (adjustment entries)
<b>R11</b>	Check Truncation Entry Return
<b>R12</b>	Branch Sold to Another DFI
<b>R13</b>	RDFI not qualified to participate
<b>R14</b>	Representative Payee Deceased or Unable to Continue in that Capacity Beneficiary or Account Holder (Other Than a Representative Payee)
<b>R15</b>	Deceased
<b>R16</b>	Account Frozen
<b>R17</b>	File Record Edit Criteria (Specify)
<b>R20</b>	Non-Transaction Account
<b>R21</b>	Invalid Company Identification
<b>R22</b>	Invalid Individual ID Number
<b>R23</b>	Credit Entry Refused by Receiver
<b>R24</b>	Duplicate Entry
<b>R29</b>	Corporate Customer Advises Not Authorized
<b>R31</b>	Permissible Return Entry (CCD and CTX only)
<b>R33</b>	Return of XCK Entry