Algorithmic Impact Assessment Results

Version: 0.10.0

Project Details

1. **Name of Respondent**

   MEDOUNE BOYE

2. **Job Title**

   Senior Economic Analyst / Business Strategies Consultant

3. **Department**

   Employment and Social Development (Department of)

4. **Branch**

   Benefits and Integrated Services Branch (BISB)

5. **Project Title**

   Machine Learning Workload

6. **Project ID from IT Plan**

   N.A

7. **Departmental Program (from Department Results Framework)**

   Employment Insurance Program

8. **Project Phase**

   Implementation

   [Points: 0]

9. Please provide a project description:

Reducing Recalculation Workload through Machine Learning

Background:

The recalculation of Employment Insurance (EI) benefits involves conducting a comprehensive review and reassessment of a claim in response to new information or changes in circumstances. The primary objective is to ensure accurate benefit calculations, whether they result in overpayment, underpayment, or no change.

The introduction of Web and Electronic Record of Employments (ROEs) has significantly increased the number of recalculations. Since 2013, approximately 300,000 Recalculation Work Items are generated annually, and during the pandemic, the number surged to over 1.7 million due to simplification measures.

To address this workload, a Machine Learning (ML) algorithm is being trained to analyze EI production data. The ML model specifically focuses on terminated or dormant claims and aims to predict the potential outcomes of recalculations.

The implementation of the ML model aims to reduce the backlog of recalculation work items, thereby easing the workload on officers. By prioritizing cases that have a significant impact on claimants or the EI program, officers can allocate their attention more effectively to critical tasks, resulting in improved service delivery.

Before deploying the ML model, strict adherence to the guidelines set by the Treasury Board of Canada Secretariat (TBS) for Automated Decision Systems (ADS) is crucial. The TBS has been regulating the use of ML within the Government of Canada since April 1st, 2020. Compliance with the TBS Directive for ADS requires a rigorous approval process to ensure adherence to established standards. For more information on TBS Automated Decision Making, please visit: AI CoE - Home (sharepoint.com)

In addition to the TBS approval process, there are additional risk mitigation measures in place. Randomized manual spot checks conducted by agents are used to review claims with no anticipated change in benefits. Furthermore, if a client makes an inquiry about their file, officers proceed with the recalculation process. The Integrity Service Branch (ISB) is responsible for reviewing undeclared contentious issues to ensure accuracy and fairness. Additionally, the workload process is modified to prioritize active claims, allowing for efficient allocation of resources.

About The System

10. Please check which of the following capabilities apply to your system.

Content generation: Analyzing large data sets to categorize, process, triage, personalize, and serve specific content for specific contexts.

Section 1: Impact Level: 1

Current Score: 30

Raw Impact Score: 30

Mitigation Score: 29

Section 2: Requirements Specific to Impact Level 1

Peer review

None

Gender-based Analysis Plus

None

Notice

None

Human-in-the-loop for decisions

Decisions may be rendered without direct human involvement.

Explanation

In addition to any applicable legal requirement, ensure that a meaningful explanation is published for common decision results. The explanation must provide a general description of:

- the role of the system in the decision-making process;
- input data, its source and method of collection;
- the criteria used to evaluate input data and the operations applied to process it;
- the output produced by the system and any relevant information needed to interpret it in the context of the administrative decision; and
- the principal factors behind a decision.

Explanations must also inform clients of relevant recourse options, where appropriate.

Descriptions must be made available in plain language through the Algorithmic Impact Assessment and discoverable via a departmental website.

Training

None

IT and business continuity management

None

Approval for the system to operate.

None

Other requirements

The Directive on Automated Decision-Making also includes other requirements that must be met for all impact levels.

[Directive on Automated Decision-Making](#)

Contact your institution's ATIP office to discuss the requirement for a Privacy Impact Assessment as per the Directive on Privacy Impact Assessment.

Section 3: Questions and Answers

Section 3.1: Impact Questions and Answers

Reasons for Automation

1. What is motivating your team to introduce automation into this decision-making process? (Check all that apply)

Existing backlog of work or cases

Lower transaction costs of an existing program

2. What client needs will the system address and how will this system meet them? If possible, describe how client needs have been identified.

This will allow the program to close claim recalculations which have no impact on the claimant and prioritize claim recalculations which have a greater likelihood of resulting in a change of benefit for the claimant.

3. Please describe any public benefits the system is expected to have.

The implementation of the ML model aims to reduce the backlog of recalculation work items, thereby easing the workload on officers. By prioritizing cases that have a significant impact on claimants or the EI program, officers can allocate their attention more effectively to critical tasks, resulting in improved service delivery.

4. How effective will the system likely be in meeting client needs?

Very effective

[Points: +0]

5. Please describe any improvements, benefits, or advantages you expect from using an automated system. This could include relevant program indicators and performance targets.

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6. Please describe how you will ensure that the system is confined to addressing the client needs identified above.

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In addition to the TBS approval process, there are additional risk mitigation measures in place. Randomized manual spot checks conducted by agents are used to review claims with no anticipated change in benefits. Furthermore, if a client makes an inquiry about their file, officers proceed with the recalculation process. The Integrity Service Branch (ISB) is responsible for reviewing undeclared contentious issues to ensure accuracy and fairness. Additionally, the workload process is modified to prioritize active claims, allowing for efficient allocation of resources.

7. Please describe any trade-offs between client interests and program objectives that you have considered during the design of the project.

No trade-offs. This model benefits client interest and support program objectives.

8. Have alternative non-automated processes been considered?

Yes

[Points: +0]

9. If non-automated processes were considered, why was automation identified as the preferred option?

The implementation of the ML model aims to reduce the backlog of recalculation work items, thereby easing the workload on officers. By prioritizing cases that have a significant impact on claimants or the EI program, officers can allocate their attention more effectively to critical tasks, resulting in improved service delivery.

10. What would be the consequence of not deploying the system?

Service cannot be delivered in a timely or efficient manner.

[Points: +2]

Risk Profile

11. Is the project within an area of intense public scrutiny (e.g. because of privacy concerns) and/or frequent litigation?

No

[Points: +0]

12. Are clients in this line of business particularly vulnerable?

No

[Points: +0]

13. Are stakes of the decisions very high?

No

[Points: +0]

14. Will this project have major impacts on staff, either in terms of their numbers or their roles?

No

[Points: +0]

15. Will the use of the system create or exacerbate barriers for persons with disabilities?

No

[Points: +0]

Project Authority

16. Will you require new policy authority for this project?

No

[Points: +0]

About the Algorithm

17. The algorithm used will be a (trade) secret.

No

[Points: +0]

18. The algorithmic process will be difficult to interpret or to explain

No

[Points: +0]

About the Decision

19. Please describe the decision(s) that will be automated.

In order to reduce a backlog of older claim recalculations, a Machine Learning model will be used to triage them.
The model classifies claim recalculations into three categories of outcomes: Increase in benefit rate, Decrease in benefit rate, No Change in benefit rate.

This will allow the program to close claim recalculations which have no impact on the claimant and prioritize claim recalculations which have a greater likelihood of resulting in a change of benefit for the claimant.

20. Does the decision pertain to any of the categories below (check all that apply):

Social assistance (employment insurance, disability claims)

[Points: +1]

Impact Assessment

21. Which of the following best describes the type of automation you are planning?

Partial automation (the system will contribute to administrative decision- making by supporting an officer through assessments, recommendations, intermediate decisions, or other outputs)

[Points: +2]

22. Please describe the role of the system in the decision-making process.

In order to reduce a backlog of older claim recalculations, a Machine Learning model will be used to triage them.

The model classifies claim recalculations into three categories of outcomes: Increase in benefit rate, Decrease in benefit rate, No Change in benefit rate.

This will allow the program to close claim recalculations which have no impact on the claimant and prioritize claim recalculations which have a greater likelihood of resulting in a change of benefit for the claimant.

23. Will the system be making decisions or assessments that require judgement or discretion?

No

[Points: +0]

24. Please describe the criteria used to evaluate client data and the operations applied to process it.

The model has been developed by Employment Insurance Program Performance in consultation with several stakeholders within the EI program. A Random Forest model was applied to data from EI Production systems.

25. Please describe the output produced by the system and any relevant information needed to interpret it in the context of the administrative decision.

The recalculation of Employment Insurance (EI) benefits involves conducting a comprehensive review and reassessment of a claim in response to new information or changes in circumstances. The primary objective is to ensure accurate benefit calculations, whether they result in overpayment, underpayment, or no change.

The model classifies claim recalculations into three categories of outcomes:

- Increase in benefit rate (underpayment),
- Decrease in benefit rate (overpayment),
- No Change in benefit rate (No Change).

26. Will the system perform an assessment or other operation that would not otherwise be completed by a human?

No

[Points: +0]

27. Is the system used by a different part of the organization than the ones who developed it?

No

[Points: +0]

28. Are the impacts resulting from the decision reversible?

Reversible

[Points: +1]

29. How long will impacts from the decision last?

Impacts are most likely to be brief

[Points: +1]

30. Please describe why the impacts resulting from the decision are as per selected option above.

The implementation of the ML model aims to reduce the backlog of recalculation work items, thereby easing the workload on officers. By prioritizing cases that have a significant impact on claimants or the EI program, officers can allocate their attention more effectively to critical tasks, resulting in improved service delivery.

31. The impacts that the decision will have on the rights or freedoms of individuals will likely be:

Little to no impact

[Points: +1]

32. Please describe why the impacts resulting from the decision are as per selected option above.

The implementation of the ML model aims to reduce the backlog of recalculation work items, thereby easing the workload on officers. By prioritizing cases that have a significant impact on claimants or the EI program, officers can allocate their attention more effectively to critical tasks, resulting in improved service delivery.

33. The impacts that the decision will have on the equality, dignity, privacy, and autonomy of individuals will likely be:

Little to no impact

[Points: +1]

34. Please describe why the impacts resulting from the decision are as per selected option above.

The implementation of the ML model aims to reduce the backlog of recalculation work items, thereby easing the workload on officers. By prioritizing cases that have a significant impact on claimants or the EI program, officers can allocate their attention more effectively to critical tasks, resulting in improved service delivery.

35. The impacts that the decision will have on the health and well-being of individuals will likely be:

Little to no impact

[Points: +1]

36. Please describe why the impacts resulting from the decision are as per selected option above.

This process will reduce the number of revised claims in the inventory, which will allow officers to focus on Work Items that have an impact to the client and that require attention and specific skills.

37. The impacts that the decision will have on the economic interests of individuals will likely be:

Little to no impact

[Points: +1]

38. Please describe why the impacts resulting from the decision are as per selected option above.

The model accurately identifies claims with no change in benefits at a rate of 90%. The worst-case scenario occurs when a claim, eligible for a higher benefit rate, is erroneously classified as having no change.

39. The impacts that the decision will have on the ongoing sustainability of an environmental ecosystem, will likely be:

Little to no impact

[Points: +1]

40. Please describe why the impacts resulting from the decision are as per selected option above.

This process will reduce the number of revised claims in the inventory, which will allow officers to focus on Work Items that have an impact to the client and that require attention and specific skills.

About the Data - A. Data Source

41. Will the Automated Decision System use personal information as input data?

Yes

[Points: +4]

42. Have you verified that the use of personal information is limited to only what is directly related to delivering a program or service?

Yes

[Points: +0]

43. Is the personal information of individuals being used in a decision-making process that directly affects those individuals?

Yes

[Points: +2]

44. Have you verified if the system is using personal information in a way that is consistent with: (a) the current Personal Information Banks (PIBs) and Privacy Impact Assessments (PIAs) of your programs or (b) planned or implemented modifications to the PIBs or PIAs that take new uses and processes into account?

Yes

[Points: +0]

45. What is the highest security classification of the input data used by the system? (Select one)

Protected A

[Points: +1]

46. Who controls the data?

Federal government

[Points: +1]

47. Will the system use data from multiple different sources?

Yes

[Points: +4]

48. Will the system require input data from an Internet- or telephony-connected device? (e.g. Internet of Things, sensor)

No

[Points: +0]

49. Will the system interface with other IT systems?

Yes

[Points: +4]

50. Who collected the data used for training the system?

Your institution

[Points: +1]

51. Who collected the input data used by the system?

Your institution

[Points: +1]

About the Data - B. Type of Data

52. Will the system require the analysis of unstructured data to render a recommendation or a decision?

No

[Points: 0]

Section 3.2: Mitigation Questions and Answers Consultations

1. Internal Stakeholders (federal institutions, including the federal public service)

Yes

[Points: +1]

2. Which Internal Stakeholders have you engaged?
- Data Governance
- Program Policy
- Legal Services
- Communications services
- Access to Information and Privacy Office

3. External Stakeholders (groups in other sectors or jurisdictions)

No

[Points: +0]

De-Risking and Mitigation Measures - Data Quality

4. Do you have documented processes in place to test datasets against biases and other unexpected outcomes? This could include experience in applying frameworks, methods, guidelines or other assessment tools.

Yes

[Points: +2]

5. Is this information publicly available?

No

[Points: +0]

6. Have you developed a process to document how data quality issues were resolved during the design process?

Yes

[Points: +1]

7. Is this information publicly available?

No

[Points: +0]

8. Have you undertaken a Gender Based Analysis Plus of the data?

No

[Points: +0]

9. Is this information publicly available?

No

[Points: +0]

10. Have you assigned accountability in your institution for the design, development, maintenance, and improvement of the system?

Yes

[Points: +2]

11. Do you have a documented process to manage the risk that outdated or unreliable data is used to make an automated decision?

Yes

[Points: +2]

12. Is this information publicly available?

No

[Points: +0]

13. Is the data used for this system posted on the Open Government Portal?

No

[Points: +0]

De-Risking and Mitigation Measures - Procedural Fairness

14. Does the audit trail identify the authority or delegated authority identified in legislation?

Yes

[Points: +1]

15. Does the system provide an audit trail that records all the recommendations or decisions made by the system?

Yes

[Points: +2]

16. Are all key decision points identifiable in the audit trail?

Yes

[Points: +2]

17. Are all key decision points within the automated system's logic linked to the relevant legislation, policy or procedures?

No

[Points: +0]

18. Do you maintain a current and up to date log detailing all of the changes made to the model and the system?

Yes

[Points: +2]

19. Does the system's audit trail indicate all of the decision points made by the system?

Yes

[Points: +1]

20. Can the audit trail generated by the system be used to help generate a notification of the decision (including a statement of reasons or other notifications) where required?

No

[Points: +0]

21. Does the audit trail identify precisely which version of the system was used for each decision it supports?

Yes

[Points: +2]

22. Does the audit trail show who an authorized decision-maker is?

No

[Points: +0]

23. Is the system able to produce reasons for its decisions or recommendations when required?

No

[Points: +0]

24. Is there a process in place to grant, monitor, and revoke access permission to the system?

No

[Points: +0]

25. Is there a mechanism to capture feedback by users of the system?

No

[Points: +0]

26. Is there a recourse process established for clients that wish to challenge the decision?

Yes

[Points: +2]

27. Does the system enable human override of system decisions?

Yes

[Points: +2]

28. Is there a process in place to log the instances when overrides were performed?

Yes

[Points: +1]

29. Does the system's audit trail include change control processes to record modifications to the system's operation or performance?

No

[Points: +0]

30. Have you prepared a concept case to the Government of Canada Enterprise Architecture Review Board?

Yes

[Points: +1]

De-Risking and Mitigation Measures - Privacy

31. If your system uses or creates personal information, have you undertaken a Privacy Impact Assessment, or updated an existing one?

Yes

[Points: +1]

32. Have you designed and built security and privacy into your systems from the concept stage of the project?

Yes

[Points: +1]

33. Is the information used within a closed system (i.e. no connections to the Internet, Intranet or any other system)?

Yes

[Points: +1]

34. If the sharing of personal information is involved, has an agreement or arrangement with appropriate safeguards been established?

Yes

[Points: +1]

35. Will you de-identify any personal information used or created by the system at any point in the lifecycle?

Yes

[Points: +1]

36. Please describe your de-identification method(s).

Create a primary key