

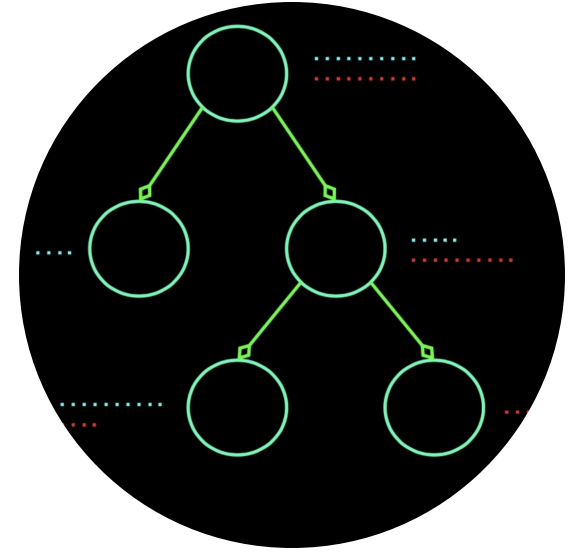
SCIENCE FAIR LOG BOOK

*PERSONALIZED PREVENTATIVE HEALTHCARE
TREATMENTS*

USING DATA SCIENCE TO DELIVER VALUE TO
HEALTHCARE

MAYA WEIS & RAPHAEL SIMANTOV

GRADE 6



Log Book Checklist

PRESENTATION TITLE

- 1) Title Page – includes the title of your experiment, your name, grade, school and is centered on your Display Board
- 2) Table of Contents – follows the title page
- 3) Acknowledgements – this page lists all assistance from outside sources
- 4) Scientific Question – is written out and a brief description of why you chose it
- 5) Scientific Method
 - Background research
 - Hypothesis is clearly stated
 - Materials are listed
 - Procedure is complete and includes an illustration/picture of your set up/through various stages
 - Data is sorted and graphs are complete with summaries*
 - Conclusion is clearly stated
- 6) Next Steps
 - Real world applications and importance are clearly stated
 - Improvement opportunities are clearly stated
 - Future questions are clearly stated
 - New problems (if they exist) are clearly stated
- 7) Your journal entries are fully completed
 - Each entry is dated/timed
 - Entries include feelings, successes, frustrations, insights, and questions
 - Entries include summaries of daily progress
 - Entries include plans, sketches, tables, and graphs
- 8) Copy of CJA Science Fair Handbook (already provided to you or available on Google Classroom)

*done in presentation

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Safety Agreement

To participate in the science fair, I accept the full responsibility to:

- Be sure that my science fair activities are monitored by my teacher or family members – (asking for supervision and permission as required)
- Use patience and common sense when working with science equipment and materials
- Report any accidents to my teacher or family members regardless of size
- Be aware of eyewash stations, first aid kits, emergency exits, muster points or fire alarms in my workspace
- Never touch or taste my supplies unless approved by my teacher or family member
- Ensure that the clothes I am wearing are appropriate and non-constrictive for my science experiment
- Wash my hands before and after conducting my experiment
- Not consume food or drinks while working on or conducting my experiments
- Accept responsibility to clean my work space at various stages of my experiment and when done
- Be aware of possible explosive, toxic, oxidizing, corrosive, flammable, or radioactive materials
- Store this document in my Log Book

I _____ recognize that by participating in the CJA Science Fair, I am responsible for my own safety and the safety of those around me. I agree to follow the above and any added safety guidelines outlined in this safety agreement. I certify that I have read over the safety agreement.
In addition, I certify that I have fully read page 1-6 of the CJA Science Fair Handbook.

Signatures

Student Name: Raphael Sinanta

Student Signature: Raphael Sinanta

Supervising Family Member's Name: MICHAEL SINANTA

Supervising Family Member's Signature: [Signature]

Approving Teachers Name: _____

Approving Teachers Signature: _____

Today In Science - Logbook

Date: Jan 4

Title: Personalized Preventative Healthcare Treatments

Notes:

Table of contents: Acknowledgements, ^{Scientific Question} Variables, Background, Purpose, Materials, Procedure, Data Collection,

Results, Conclusions, Next Steps

Acknowledgements: We would like to thank Raphael's sister and our scientific coordinator, for guiding us in times when we are stuck or don't know how to progress.

Scientific Question: We chose this project after watching a video about how huge amounts of datasets reveal patterns which can't be seen by watching individual behaviors.

Variables:

Manipulated: habits/behaviors of participants

Responding: health status of the participants (whether they are healthy or sick)

Controlled: Our project doesn't have a controlled variable.

Date: Jan 14

Notes:

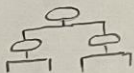
Background: A decision tree used to illustrate a top-down breakdown of an entire subject into individual boxes. In medicine, it could help doctor diagnose and decide on the best treatment for a patient by considering various factors such as age, habit and medical history.

Purpose: Generalized medicine is given to everyone and won't help as much as medicine specifically tailored to the individual.

Hypothesis: we don't have a hypothesis because this is an innovation project.

3 Materials: paper health questionnaires, computers (Google sheets), questionnaire responses

Procedure: 1) developed questionnaire 2) handed out and collected questionnaire 3) classified each



Date: Procedure cont feb 7

Notes:

participant as "healthy" or "not healthy". 4) processed the data by using data science methodology

5) analyzed the data using decision tree and found most common behaviours between healthy people

6) drew conclusion

Data Collection: We didn't include any controlled variables because there is no need to have controlled variables for us to meet our objective.

Results: We wrote the results online on the computer because there are so many numbers and it is so long that it would take too much room to write it on paper.

Conclusions: In our project, we demonstrate that even a short decision tree that is based on information from only 159 participants can be used to derive relevant information about healthy habits and personalize guidance towards healthier lifestyle.

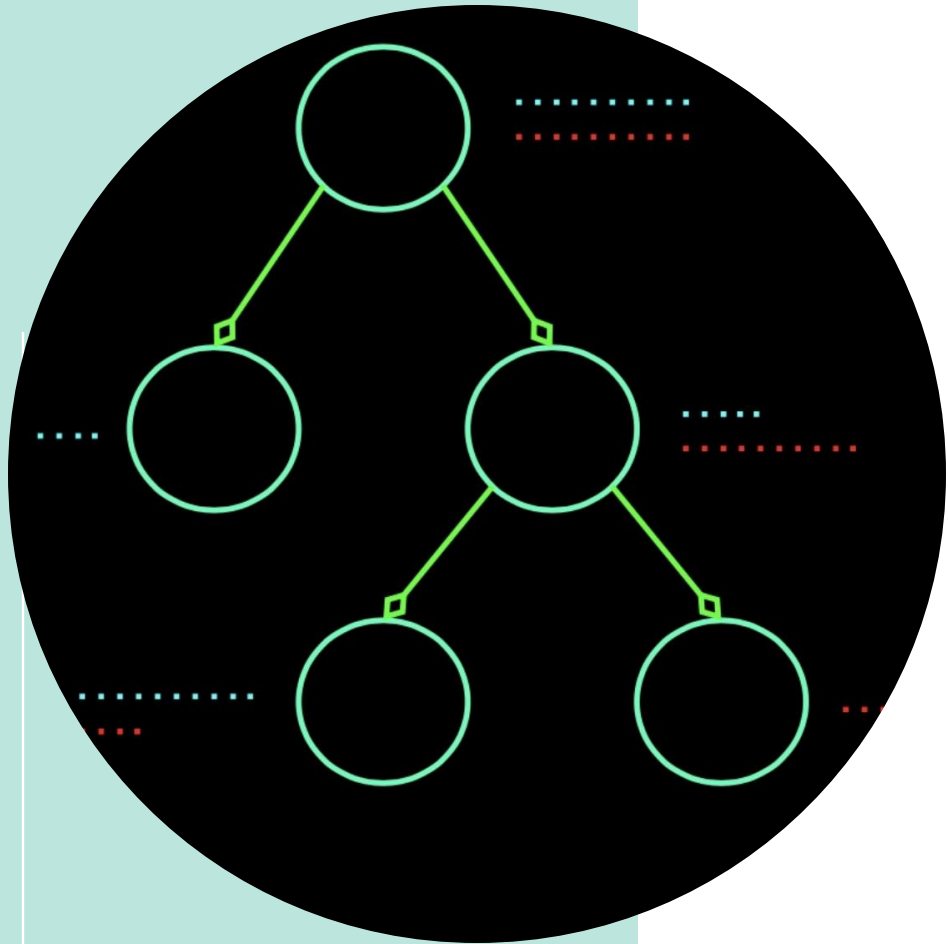
Date: conclusions cont feb 9

Notes:

we conclude that questionnaires with more intricate questions that are given to more people can create a more accurate system and tailor better personalized programs for each individual, maximizing the potential to improve the population's health.

Next steps: a) The same methods that we used for personalized preventative healthcare treatments can be used for other subjects, such as, how to complete homework on time by asking children questions

such as: how many hours after school they do homework, if they leave homework to the weekend, etc. We can also ask them questions to improve their sleeping schedule like whether they take a shower before bed or if they drink water right before bed.



Date: feb 10
Notes:
 b) we only analyzed data from 159 participants. More participants would allow us to identify trends more accurately.
* Asking more specific and intricate questions may reveal more trends for example asking about age and gender may reveal the best behaviours of healthy and young individuals versus healthy adults, healthy male versus healthy female, etc.
We conducted our research in January and therefore the 3 month period that we analyzed was October to December, which are cold months in Calgary. A research that is conducted over the summer may reveal different results.

Date: _____
Notes:

Thank You!

Decision Tree

*Using Data Science to
Deliver Value to Healthcare*

