

Emma Gibson

✉ emgibson@mit.edu
 ☎ (+1) 617 313 2463
 🌐 [linkedin.com/in/emmagibson014](https://www.linkedin.com/in/emmagibson014)

EDUCATION

Massachusetts Institute of Technology
 PhD, Operations Research 2016–2022

Stellenbosch University
 MSc, Logistics 2015–2016

University of the Witwatersrand
 Honours, Applied Mathematics 2014
 BSc, Mathematical Sciences 2011–2013

SKILLS

Languages: English, Afrikaans, French (B2)

Programming: R, Shiny, Julia, Python, SAS, MATLAB, Mathematica

Optimisation: Gurobi, JuMP, CPLEX

Modelling & Statistics: Markov models, decision trees, survival analysis, causal inference, simulation (agent-based/DES), neural networks, imputation

SERVICE AND LEADERSHIP

MIT ORC REFS: Mediation, peer support, and conflict management for graduate students. 2019–2022

MIT GSC Sustainability Committee 2018–2020

AWARDS

MSOM Practice-based Research Competition (1st place) [\[view presentation\]](#) 2021

POMS Health Applications Society Best Paper Competition (2nd place) 2021

INFORMS Doing Good with Good OR Competition (1st place) 2020

Fulbright Foreign Student Award 2016

REFERENCES

Prof. Jónas Jónasson (joj@mit.edu)
 MIT Sloan School of Management
 Prof. Georgia Perakis (georgiap@mit.edu)
 MIT Sloan School of Management

WORK & RESEARCH EXPERIENCE

MIT | Research

- **Sample Transport Optimisation, Riders 4 Health Malawi** 2018–2022
 Developed an algorithm to optimise dynamic routes and schedules for transporting diagnostic samples (e.g., HIV, TB, Covid-19) between clinics and laboratories in Malawi (Julia, JuMP, Gurobi, R). Designed and maintained mHealth platforms to collect data from health facilities (USSD, SMS) and track samples within the national diagnostic network (CommCare, XML, PHP). Developed dashboards, pipelines for monitoring & evaluation, and stakeholder reports. Designed and managed a field trial (51 health facilities, 6 couriers, 150 health workers) which reduced transportation delays by 25% and eliminated 55% of unnecessary trips.
- **Survival Analysis & Personalised Medicine** 2016–2018
 Developed an algorithm to generate globally optimised decision trees for censored survival outcomes (Julia, Gurobi) and built machine learning models for personalised survival predictions and treatment recommendations for breast cancer (Julia, R, SQL) based on electronic health records, insurance claims, and genomic data.

MIT | Teaching

- **Teaching Assistant, The Analytics Edge** Spring 2018, 2021
 Analytics and machine learning (R, Julia).
- **Instructor, MBAn Orientation Software Training** Fall 2019
 Linear and mixed-integer optimisation (Julia, JuMP, Gurobi).

Stellenbosch University/Zithulele Hospital | Research 2015–2016
 Developed an interactive decision tool (Python) to model congestion, visualise queue dynamics, and optimise staff scheduling at Zithulele Hospital (Eastern Cape, South Africa).

TMS Research | Junior Analyst 2013–2014
 Market research, survey data analysis, software tool assessment.

RECENT PUBLICATIONS

- [Redesigning Sample Transportation in Malawi Through Improved Data Sharing and Daily Route Optimization](#). MSOM, under revision.
- [An Unstructured Supplementary Service Data System for Daily Tracking of Patient Samples and Diagnostic Results in a Diagnostic Network in Malawi: System Development and Field Trial](#). JMIR, 2021.
- [Optimal Survival Trees](#). Machine Learning, to appear.