



SDI Review Form 1.6

Journal Name:	British Journal of Mathematics & Computer Science
Manuscript Number:	2013_BJMCS_5981
Title of the Manuscript:	Modeling and parameter sensitivity analysis of population dynamics in Uganda
Type of the Article	Research Paper

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<u>Compulsory</u> REVISION comments	This paper is technically not sound. In the solution for the differential equation (eq (1)), the fraction beta/alpha should be reversed. Equation(3) mathematically makes no sense. The left hand side is also the left hand side of Equation(1), yet, the authors state that Equation(3) should be the derivative of Equation(1). W.r.t. the right hand side of Equation(3), it is not clear whether the authors wanted to apply the chain rule, or wanted to write down the total derivative. The notation $P \Theta_r$ is also not clear (I read it as P in which parameter Θ_r appears and is changeable). Furthermore, the authors apply the sensitivity analysis on the differential equation. But, this differential equation is easily solvable, why not applying the sensitivity analysis on the solution? The initial condition is known, as the initial population of the country at a certain time is given.	- First and foremost my sincere word of thanks to the reviewer for all the useful suggestion and comments. - The technicality of the paper has been improved upon as requested. The mathematical formulation and notations used for each individual equation has been checked and revised accordingly. In some few cases the notations were altered to improve the paper clarity. - A justification for the choice of model formalism has also been provided in the revised paper. The relevant citations have been included where applicable.
<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments	-A paragraph that discusses the state of the art w.r.t. population models is missing. The reason why the model used in this manuscript is a good model for this case study is not given. -On line 63, the notation P_{max} is given, I don't think that	- These individual issues have been addressed as requested/ pointed out by the reviewer. - I think the reviewer misunderstood the point, the symbol "$\gg$" in $P(0) \gg 0$ is



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	this is a good notation, as one wants to refer to the limit (the value on infinity). I would stick to $P(\infty)$. -On line 65, the authors write down: $P(0) \gg 0$ i.e. $P(0)$ different from 0. Please note that $P(0)=1$ is also different from zero, yet does not fulfil $P(0) \gg 0$. -Why is a local sensitivity analysis chosen? Other methods exist as well, yet no foundation for the choice of this analysis is given. - Equation(3) makes no sense - Equations(4) and (5) are not clear, what is S, how were these equations derived? - Line 87: what is the state variable here? - Lines 93-95 are not clear. - Line 103: point of inflection? - Figure 1: something is went wrong with the axes labels, the legends ,... I also don't think that Figure 1 (c) represents the change in sensitivity but rather how good the population model fits the data.	meant to show that the initial population size is well far away from zero, 0 [e.g. in millions of people] and not "different from zero" as stated by the reviewer. - Given the research question or object at hand, the local sensitivity analysis was considered appropriate and sufficient to tackle the challenge, hence the choice. - Fig.1 is now clear and Fig. 1C actually is a plot of the sensitivity functions in time – contrary to what the reviewer thinks. A plot of how good the population model fits the data is given in Fig. 1B. - Fig. 1 has also been plotted to make it clearer and in line with the associated changes in notation in the text and notations in the manuscript. - Overall the entire manuscript has been thoroughly revised for any typos and validity of content.
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