



SDI Review Form 1.6

Journal Name:	British Journal of Mathematics & Computer Science
Manuscript Number:	2013_BJMCS_6470
Title of the Manuscript:	THE BETA GENERALIZED INVERSE WEIBULL DISTRIBUTION
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)
Compulsory REVISION comments		
Minor REVISION comments	This paper introduces and studies a beta generalization form of the Generalized Inverse Weibull distribution, as introduced and discussed by Mudholkar et al., Jiang et al. and De Gusmao et al., and denoted by BIGW. General statistical properties are presented, as well as the ML estimators, and moment estimators. A Monte Carlo simulation is performed under different sample sizes and its goodness-of-fit is tested on a specific data set. This 5 parameter BGIW distribution generalizes other generalized distributions, like the Beta Inverse Weibull, Generalized Inverse Exponential, Inverse Rayleigh, and Inverse Weibull, among others. Comments: 1. Interesting theoretical study, although generalization involving many parameters is difficult to handle, especially when it comes to MLE estimation etc. 2. * Although the relations of the paper are overall well understood, relations (14), (18) and (21) are not so straightforward. I would thus invite the authors to elaborate a bit on the integration part (before they are presented). Although relation (21) is complicated (with the 2 infinite sums), authors may add some comment that this relation can always be numerically evaluated/approximated for the corresponding finite sums.	Done



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	3. * Interesting facts about the asymptotic behaviour (lines 236-240). Please provide some reference. 4. * In Table 4, we observe that the AIC criteria's measures for the BGIW and the BIW distribution are numerically similar for this particular data set. Thus, authors may comment that: ...although evidently the beta generalization of the BIW distribution is hardly better than the plain BIW distribution (as far as the AIC criteria's measure is concerned), the beta generalization of BIW, provided by the BGIW, remains an overall better approach for the MLE, as the 2 extra parameters a and b (i.e. the beta generalization) are involved. Syntax Comments: 1. The paper must follow the template of the Journal (Word template in this case) and thus a major reformatting is necessary. For example the body text must be Arial, normal, 10 font, justified etc. Also, after the section CONCLUSION, a section named COMPETING INTERESTS must follow, in which, provided that there is no potential conflict of interest (such as employment, consultancies, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding), the following sentence must be written: "Authors have declared that no competing interests exist." Moreover, according to Journal's template, a section named AUTHORS' CONTRIBUTIONS must follow and authors may use the following wordings for this section: " 'Author A' designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. 'Author B' and 'Author C' managed the analyses of the study. 'Author C' managed the literature searches..... All authors read and approved the final manuscript." Otherwise, authors may write "All authors contributed equally and significantly to this research work. All authors read and approved the final manuscript." The REFERENCES section has to be rewritten in the form: * (Journal example)	Done DONE!! Done
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	[1] Mudholkar GS, Srivastava DK, Kollia GD. A generalization of the Weibull distribution with application to the analysis of survival data. J Americ Statist Assoc. 1996;91:1575–1583. (book example) [19] Lawless JF. Statistical Models and Methods for Life Time Data. 2nd ed. New York: Wiley; 2003.	
2.	* All the symbolic names of the variables throughout the paper (ex.: X, θ, a, b,...) has to be in italics (i.e. X, θ, a, b,...) as it is appeared in Appendix, except of the usual functions (i.e. $\ln x$, $\cos x$, etc.). I strongly suggest the use of the MathType software for the mathematical expressions (especially in a Word document).	Done
3.	* In Appendix, change the function "$\ln$" (wherever appeared in italics) into "$\ln$" or "$\log$". Moreover, the large summation symbol must be used also in lines (364) & (365). Also the line-breaking of the equation in (365) has to include the last symbols of its first line (364), i.e. "$(b -$" at the beginning of its second line (365). Lines (10), (167), (174) and (188): Rewrite "r^{th}" to "$r\text{-th}$".	Done
4.	* Line (36): Authors may write the equation as a single equation line (not as an in-line equation inside the body text).	Done
5.	* Lines (74), (76), (190) and (195): Authors may use the large integration symbol (as these equations are not in-line ones).	Done
6.	* Lines (83), (91), (94), (97), (168), (171), (172), (175), (190), (192), (195), (197), (208), (218) and (219): Authors may use the large summation symbol (as these equations are not in-line ones).	Done
7.	* Line (214): Authors may use the Greek capital letter Π for the product symbol (i.e. $\prod_{i=1}^n$), while for the in-line equation (215) use the large	Done



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	$\prod_{i=1}^n(\cdot)$ symbol (two occurrences).	
8.	* Line (126): Authors may write $GIW(\alpha, \beta, \theta)$ and $BIW(\alpha, \beta, a, b)$ outside their parentheses. This holds for all appeared distributions in section 3.	Done
9.	Lines (138), (139) and the $IR(\eta)$ row line of Table 1: Is the relation “ $r = \alpha^2$ ” correct? Is it “ $r = \alpha - 2$ ”? Revise.	Done
10.	* In the last row of Table 1 delete a spare comma.	Done
11.	Line (159): Authors may use the symbol “log” instead of “ln”. Use the same logarithm symbol throughout the paper and the Appendix. (I suggest “log” as it is commonly used in probability).	Done
12.	* Line (150): Authors may write: $\dots = \alpha \left[-\frac{1}{\theta} \log I_u^{-1}(a, b) \right]^{-1/\beta}.$	Done
13.	* Line (156): Authors may write: $t = \alpha \left(-\frac{1}{\theta} \log B \right)^{-1/\beta}.$	Done
14.	* Line (175): Authors may use the combination symbol $\binom{r}{k}$ instead of C_k^r .	Done
15.	* Line (176): Authors may write $\alpha_3 = M_3 / M_2^{3/2}$ and $\alpha_4 = M_4 / M_2^2$ for expressions of α_3 and α_4 , as they are in-line equations.	Done
16.	* Line (197): Authors may write $u^k / k!$, as it is an in-line equation.	Done
17.	* Line (206): Change “mr” to “ m_r ”.	Done
18.	* Line (210): Change “Equation” to “equation”.	Done
19.	* Line (213): Rewrite “n” in the same level as the body text.	Done



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	20. * Line (238): Rewrite “An asymptotic confidence bounds...” as “Asymptotic confidence bounds...”	Done
	21. * Line (239): Rewrite in-line equation to $\left(\hat{v}_i \pm z_{\gamma/2} \sqrt{v^{ij}}\right)$.	Done
	22. * Line (240): Rewrite $z_{\frac{\gamma}{2}}$ as $z_{\gamma/2}$ and $(1-\gamma/2)$ as $(1-\gamma/2)$.	Done
	23. * Line (243): Revise the 3 line paragraph. For example, authors may rewrite “...(MLE’s) is studied...” as something like “(MLE’s) and studied...”	Done
	24. * Line (248): Rewrite “... R packages.” as “... R package.”	Done
	25. * Line (257): Rewrite “... 5 parameters BGIW” as “... 5 parameter BGIW distribution”.	Done
	26. * Lines (264 & 265): Remove the parentheses from (K.S. = 0.1053) and (P = 0.91).	Done
	27. * Line (267): Rewrite “... K.S.goodness of fit...” as “K.S. goodness-of-fit...”	Done
	28. * Line (271): I suppose the authors mean “...fibbers of length 1”. If so please rewrite.	Done
	29. * Line (278 & 279): Rewrite “MLE s” as “MLE’s” and “... the criteria’s AIC measure” as “... the AIC criteria’s measure”.	Done
	30. * Line (283-284): Rewrite “... the beta inverse distribution...” as “... the beta inverse Weibull distribution”.	Done



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<u>Optional/General</u> comments		
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* Done by Authors: Lamya A. Baharith, Salwa A Mousa , Mahmoud A. Atallah, Sohaila H. Elgayar