Errata to published manuscript of Opdyke, J.D., "Estimating Operational Risk Capital with Greater Accuracy, Precision, and Robustness," *The Journal of Operational Risk*, Issue 9, Number 4, December, 2014.

Erratum #	Page	
1	14	
	Reads	…for each of the 1000 estimated $\widehat{\beta}$ we calculated…
	Fix	…for each of the 1000 estimated $\widehat{\beta}s$ we calculated…
2	16	
	Reads	…from the author upon request).[25] All demonstrate that for sufficiently extreme percentiles (eg, $p > 0.999$), VaR is a convex function of either one or both of the severity parameters (and a linear function of the others).
	Fix	…from the author upon request). All demonstrate that for sufficiently extreme percentiles (eg, $p > 0.999$), VaR is a convex function of either one or both of the severity parameters (and a linear function of the others).[25]
3	16, Fn 25	
	Reads	$\partial^2 VaR / \partial\sigma^2 = VaR \times \left[\Phi^{-1} p\right]^2$
	Fix	$\partial^2 VaR / \partial\sigma^2 = VaR \times \left[\Phi^{-1}(p)\right]^2$
4	20	
	Reads	And this is consistent with graphing VaR as a function of the parameter values, then attributing
	Fix	And this is consistent with graphing VaR as a marginal function of each parameter, then attributing
5	21	
	Reads	…is shown in 216 simulation studies summarized…
	Fix	…is shown in the 216 simulations summarized…
6	21, Fn 30	
	Reads	…so it had become the widely used default. Also note that (2.2) require only
	Fix	…so it has become the widely used default. Also note that (2.2) requires only
7	23, Fn 32	
	Reads	…and the CvM tests.
	Fix	…and the Cramér von Mises (CvM) tests.
8	29	
	Reads	…extreme value theory – peaks over threshold (EVT-POT; see Chavez-Demoulin et al 2014) estimator,[38] robust estimators such as the quantile distance estimator (QD; see Ergashev 2008), optimal bias-robust estimator (OBRE; see Opdyke and Cavallo 2012a) the CvM estimator (not to be confused with
	Fix	…extreme value theory – peaks over threshold estimator (EVT-POT; see Chavez-Demoulin et al 2014),[38] robust estimators such as the quantile distance estimator (QD; see Ergashev 2008), optimal bias-robust estimator (OBRE; see Opdyke and Cavallo 2012a) the Cramér von Mises estimator (CvM; not to be confused with
9	33, Fig. 4	
	Reads	Nonlinear interpolation via (3.3) with roots…
	Fix	Nonlinear interpolation via (3.4) with roots…

10	34	
	Reads	(ii) using straightforward simulation study
	Fix	(ii) using a straightforward simulation study
11	35, Fig. 5 x, y axes	
	Reads	Parameter 1 Parameter 2
	Fix	Parameter 1 / σ_1 Parameter 2 / σ_2
12	36, Fn 44	
	Reads	weight = [1 – p_{sev}] x 2[1 – p_{freq}]
	Fix	weight = [1 – p_{sev}] x 2 x [1 – p_{freq}]
13	38	
	Reads	$q\#stdev = \sqrt{\frac{\chi_k^2 p \cdot \left(1 + z_1 z_2 \rho_{1,2}\right)}{2}}$
	Fix	$q\#stdev = \sqrt{\frac{\chi_k^2 \left(p\right) \cdot \left(1 + z_1 z_2 \rho_{1,2}\right)}{2}}$
14	38	
	Reads	…so far "out-of-sample", or VaR is the
	Fix	…so far "out-of-sample", VaR is the
15	39	
	Reads	…joint parameter distribution)obtained from (3.2)) and a pair
	Fix	…joint parameter distribution)obtained from (3.3)) and a pair
16	49	
	Reads	In other words, they can only be
	Fix	In other words, any differences can only be
17	50	
	Reads	Tables F4a,b–F8a,b) at www.DataMineit.com.
	Fix	Tables F4a,b–F8a,b at www.DataMineit.com).
18	50	
	Reads	and part (a) of Table 7 on page 55,
	Fix	and part (b) of Table 7 on page 55,
19	51	
	Reads	…still much closer to true capital (see Tables F5a,b
	Fix	…still much closer to true capital than MLE (see Tables F5a,b
20	59	
	Reads	(see part (b) of Table 7 on page 52).
	Fix	(see part (b) of Table 7 on page 55).
21	61, Fn 66	
	Reads	…is only about p = 0.016.
	Fix	…is only about Pr = 0.016.
22	64	
	Reads	…to rightly encourage research to focus on operational risk capital estimation on the capital distribution, where it belongs.
	Fix	…to rightly encourage operational risk capital estimation research to focus on the capital distribution, where it belongs.
23	66	

	Reads	APPENDIX A. PROBABILITY DISTRIBUTION FUNCTION,
	Fix	APPENDIX A. PROBABILITY DENSITY FUNCTION,
24	67	
	Read	$j = \left(-u^2/2\right)\Big/\sqrt{2\pi}$
	Fix	$j = \exp\left(-u^2/2\right)\Big/\sqrt{2\pi}$
25	69, Fn 70	
	Reads	$\delta(z) = \partial \ln \Gamma z / \partial z$ and $\tau(z) = \partial^2 \ln \Gamma z / \partial^2 z$
	Fix	$\delta(z) = \partial \ln \Gamma(z) / \partial z$ and $\tau(z) = \partial^2 \ln \Gamma(z) / \partial^2 z$
26	70	
		$A = trigamma(a) - \frac{\left[\int_{1^+}^{H} \ln(b) + \ln(\ln(x)) - digamma(a)\, f(x)dx\right]^2}{\left[1 - F(H;a,b)\right]^2}$
		$A = trigamma(a) - \frac{\left[\int_{1^+}^{H} \left[\ln(b) + \ln(\ln(x)) - digamma(a)\right] f(x)dx\right]^2}{\left[1 - F(H;a,b)\right]^2}$
27	70	
	Reads	$-\frac{\left[1-F(H;a,b)\right]\cdot \int_{1^+}^{H} \left[\ln(b) + \ln(\ln(x)) - digamma(a)\right]^2 - trigamma(a)\, f(x)dx}{\left[1-F(H;a,b)\right]^2}$
	Fix	$-\frac{\left[1-F(H;a,b)\right]\cdot \int_{1^+}^{H} \left(\left[\ln(b) + \ln(\ln(x)) - digamma(a)\right]^2 - trigamma(a)\right) f(x)dx}{\left[1-F(H;a,b)\right]^2}$
28	70	
	Reads	$-\frac{\left[1-F(H;a,b)\right]\cdot \int_{1^+}^{H} \left[\ln(b) + \ln(\ln(x)) - digamma(a)\right] \cdot \left[\frac{a}{b} - \ln(x)\right] f(x)dx}{\left[1-F(H;a,b)\right]^2}$
	Fix	$-\frac{\left[1-F(H;a,b)\right]\cdot \int_{1^+}^{H} \left(\left[\ln(b) + \ln(\ln(x)) - digamma(a)\right] \cdot \left[\frac{a}{b} - \ln(x)\right]\right) f(x)dx}{\left[1-F(H;a,b)\right]^2}$
29	70	
	Reads	$-\frac{\int_{1^+}^{H} \ln(b) + \ln(\ln(x)) - digamma(a)\, f(x)dx \cdot \int_{1^+}^{H} \left(\frac{a}{b} - \ln(x)\right) f(x)dx}{\left[1-F(H;a,b)\right]^2}$
	Fix	$-\frac{\int_{1^+}^{H} \left[\ln(b) + \ln(\ln(x)) - digamma(a)\right] f(x)dx \cdot \int_{1^+}^{H} \left(\frac{a}{b} - \ln(x)\right) f(x)dx}{\left[1-F(H;a,b)\right]^2}$

30	70	
	Reads	$$D=\frac{a}{b^2}-\frac{\left[\int_{1^+}^{H}\left(\frac{a}{b}-\ln(y)\right)f(x)dx\right]^2+\left[1-F(H;a,b)\right]\cdot\int_{1^+}^{H}\frac{a(a-1)}{b^2}-\frac{2a\ln(y)}{b}+\left[\ln(y)\right]^2 f(x)dx}{\left[1-F(H;a,b)\right]^2}$$
	Fix	$$D=\frac{a}{b^2}-\frac{\left[\int_{1^+}^{H}\left(\frac{a}{b}-\ln(y)\right)f(x)dx\right]^2+\left[1-F(H;a,b)\right]\cdot\int_{1^+}^{H}\left[\frac{a(a-1)}{b^2}-\frac{2a\ln(y)}{b}+\left[\ln(y)\right]^2\right]f(x)dx}{\left[1-F(H;a,b)\right]^2}$$