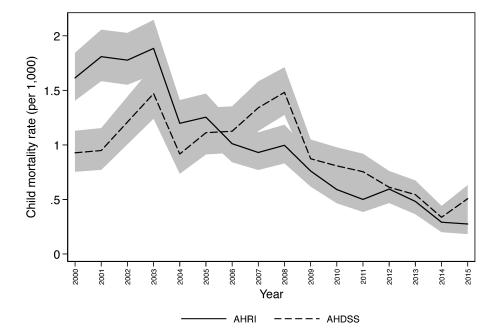
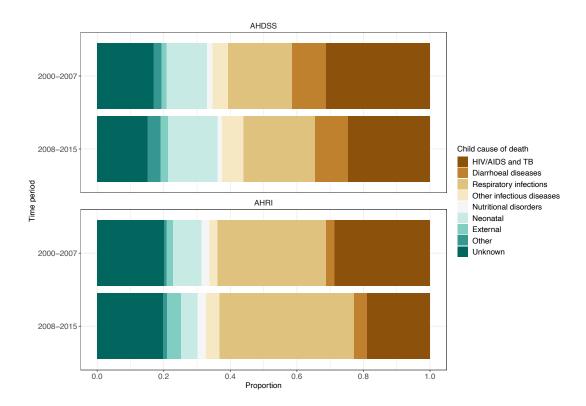
Supplemental Figure 1. Child mortality rates by year, Agincourt Health and Demographic Surveillance System (AHDSS) and Africa Health Research Institute (AHRI), South Africa 2000-2015.



Supplemental Figure 2. Distribution of child causes of death over time, Agincourt Health and Demographic Surveillance System (AHDSS) and Africa Health Research Institute (AHRI), South Africa 2000-2007 and 2008-2015. Child causes of death classified by InterVA-5 based on VA.



Supplemental Table 1. Multilevel relative risk regression of child death on household structure and controls, Agincourt Health and Demographic Surveillance System (AHDSS) and Africa Health Research Institute (AHRI), South Africa 2000-2015 (n=3,637,638 child months).

Site AHRI		RRR	95% CI	p-value
AHRI AHDSS 0.757 [0.647, 0.887] 0.001 Time period 2000 to 2007 1	Site	mux	70 /0 01	praide
AHDSS 0.757 [0.647, 0.887] 0.001 Time period 2000 to 2007 1 - [0.346, 0.498] <0.001 Site X time period AHDSS X 2008 to 2015 1.454 [1.251, 1.689] <0.001 Sex of child Female 1 - [1.049, 1.204] 0.001 Child age (months) <		1	_	
Time period 2000 to 2007			[0.647, 0.887]	0.001
2000 to 2007 1 - 2008 to 2015 0.415 [0.346, 0.498] <0.001			[0.0.7, 0.007]	0.001
2008 to 2015 0.415 [0.346, 0.498] <0.001	-	1	-	
Site X time period AHDSS X 2008 to 2015 1.454 [1.251, 1.689] <0.001			[0.346, 0.498]	< 0.001
AHDSS X 2008 to 2015 Sex of child Female Male 1.124 1.049, 1.204] O.001 Child age (months) <1 1		01.12	[0.0 .0, 050]	0.001
Sex of child Female 1 - Male 1.124 [1.049, 1.204] 0.001 Child age (months) - - <1 1 - - 1 to 6 0.38 [0.342, 0.423] <0.001 7 to 23 0.177 [0.159, 0.196] <0.001 24 to 59 0.035 [0.031, 0.039] <0.001 Multiple birth - - - Singleton 1 - - - Multiple birth 1.818 [1.557, 2.124] <0.001 Mother's age at birth (years 1 - - - Mother's age at birth (years 1 -	•	1.454	[1,251, 1,689]	< 0.001
Female 1 - Male 1.124 [1.049, 1.204] 0.001 Child age (months)		11.10	[1.201, 1.005]	0.001
Male 1.124 [1.049, 1.204] 0.001 Child age (months)		1	_	
Child age (months) < 1			[1.049, 1.204]	0.001
1		1112	[110.5, 11.20.]	0.001
1 to 6 0.38 [0.342, 0.423] <0.001	- · · · · · · · · · · · · · · · · · · ·	1	_	
7 to 23 24 to 59 0.035 [0.031, 0.039] <0.001 Multiple birth Singleton Multiple birth 1.818 [1.557, 2.124] <0.001 Mother's age at birth (years 15-19 0.864 [0.780, 0.956] 0.005 20-24 1 25-29 1.264 [1.148, 1.392] <0.001 30-34 1.089 [0.969, 1.225] 0.152 35+ 1.237 [1.091, 1.403] 0.001 Number ages 0-5 0 1 - 1 1 1.098 [1.011, 1.192] 0.027 2+ 1.251 [1.138, 1.376] <0.001 Number ages 5-19 0 1 1 - 1 to 2 0.98 [0.849, 1.132] 0.787 3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 1 - 3 to 4 0.975 [0.879, 1.081] 0.631			[0.342, 0.423]	< 0.001
24 to 59 0.035 [0.031, 0.039] <0.001				
Multiple birth 1 - Multiple birth 1.818 [1.557, 2.124] <0.001 Mother's age at birth (years 15-19 0.864 [0.780, 0.956] 0.005 20-24 1 - - 25-29 1.264 [1.148, 1.392] <0.001				
Singleton 1 - Multiple birth 1.818 [1.557, 2.124] <0.001 Mother's age at birth (years 15-19 0.864 [0.780, 0.956] 0.005 20-24 1 - - 25-29 1.264 [1.148, 1.392] <0.001		******	[*****]	*****
Multiple birth 1.818 [1.557, 2.124] <0.001 Mother's age at birth (years 0.864 [0.780, 0.956] 0.005 20-24 1 - 25-29 1.264 [1.148, 1.392] <0.001	-	1	_	
Mother's age at birth (years 15-19 0.864 [0.780, 0.956] 0.005 20-24 1 25-29 1.264 [1.148, 1.392] -0.001 30-34 1.089 [0.969, 1.225] 0.152 35+ 1.237 [1.091, 1.403] 0.001 Number ages 0-5 0 1 - 1 1.098 [1.011, 1.192] 0.027 2+ 1.251 [1.138, 1.376] -0.001 Number ages 5-19 0 1 - 1 to 2 0.98 [0.849, 1.132] 0.787 3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 - 3 to 4 0.975 [0.879, 1.081] 0.631		1.818	[1.557, 2.124]	< 0.001
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	-		[/]	
20-24 25-29 1.264 [1.148, 1.392] <0.001 30-34 1.089 [0.969, 1.225] 0.152 35+ 1.237 [1.091, 1.403] 0.001 Number ages 0-5 0 1		0.864	[0.780, 0.956]	0.005
30-34			-	
30-34	25-29	1.264	[1.148, 1.392]	< 0.001
35+ 1.237 [1.091, 1.403] 0.001 Number ages 0-5 0 1 - 1 1.098 [1.011, 1.192] 0.027 2+ 1.251 [1.138, 1.376] <0.001 Number ages 5-19 0 1 - 1 to 2 0.98 [0.849, 1.132] 0.787 3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 - 3 to 4 0.975 [0.879, 1.081] 0.631	30-34	1.089		
Number ages 0-5 0	35+	1.237		0.001
0 1 - 1.098 [1.011, 1.192] 0.027 2+ 1.251 [1.138, 1.376] <0.001 Number ages 5-19 0 1 - 1 - 1 to 2 0.98 [0.849, 1.132] 0.787 3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 - 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Number ages 0-5		. , ,	
2+ 1.251 [1.138, 1.376] <0.001 Number ages 5-19 0 1 - 1 to 2 0.98 [0.849, 1.132] 0.787 3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 - 3 to 4 0.975 [0.879, 1.081] 0.631		1	-	
2+ 1.251 [1.138, 1.376] <0.001 Number ages 5-19 0 1 - 1 to 2 0.98 [0.849, 1.132] 0.787 3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 - 3 to 4 0.975 [0.879, 1.081] 0.631	1	1.098	[1.011, 1.192]	0.027
Number ages 5-19 0 1 - 1 to 2 0.98 [0.849, 1.132] 0.787 3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 - 3 to 4 0.975 [0.879, 1.081] 0.631	2+	1.251		< 0.001
0 1 - 1 to 2 0.98 [0.849, 1.132] 0.787 3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 - 3 to 4 0.975 [0.879, 1.081] 0.631	Number ages 5-19			
3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 - 3 to 4 0.975 [0.879, 1.081] 0.631		1	-	
3 to 4 0.928 [0.800, 1.076] 0.321 5+ 1.044 [0.894, 1.219] 0.588 Number ages 20+ 0 to 2 1 - 3 to 4 0.975 [0.879, 1.081] 0.631	1 to 2	0.98	[0.849, 1.132]	0.787
Number ages 20+ 0 to 2 1 - 3 to 4 0.975 [0.879, 1.081] 0.631	3 to 4	0.928	[0.800, 1.076]	0.321
0 to 2 3 to 4 1 - 0.879, 1.081] 0.631	5+			0.588
0 to 2 3 to 4 1 - 0.879, 1.081] 0.631	Number ages 20+		- · · · ·	
_ , _ j		1	-	
	3 to 4	0.975	[0.879, 1.081]	0.631
	5+	0.938		0.249

Household structure			
Nuclear	1	-	
Vertical only	1.644	[1.325, 2.041]	< 0.001
Horizontal/vertical	1.635	[1.408, 1.898]	< 0.001
No parents, kin present	2.906	[2.169, 3.895]	< 0.001
Mother only	1.554	[1.313, 1.839]	< 0.001
Other	1.809	[1.411, 2.319]	< 0.001
Site X household structure			
AHDSS X Vertical only	1.181	[0.892, 1.563]	0.245
AHDSS X Horizontal/vertical	1.07	[0.877, 1.305]	0.506
AHDSS X No parents, kin present	0.938	[0.595, 1.479]	0.784
AHDSS X Mother only	1.373	[1.112, 1.696]	0.003
AHDSS X Other	1.932	[1.339, 2.787]	< 0.001
Time period X household structure			
2008 to 2015 X Vertical only	0.842	[0.632, 1.122]	0.241
2008 to 2015 X Horizontal/vertical	0.905	[0.742, 1.104]	0.324
2008 to 2015 X No parents, kin present	0.818	[0.506, 1.323]	0.413
2008 to 2015 X Mother only	1.2	[0.973, 1.479]	0.089
2008 to 2015 X Other	1.07	[0.725, 1.578]	0.734
	Parameter		
σ_{mother}^2	3.152	[2.574, 3.859]	

Supplemental Table 2. Multilevel relative risk regression of child death on kin presence and controls, Agincourt Health and Demographic Surveillance System (AHDSS) and Africa Health Research Institute (AHRI), South Africa 2000-2015 (n=3,637,638 child months).

Site AHRI 1 - AHDSS 0.874 [0.794, 0.961] 0.006 Time period 2000 to 2007 1 - - 2008 to 2015 0.456 [0.399, 0.520] <0.001 Site X time period AHDSS X 2008 to 2015 1.437 [1.241, 1.664] <0.001 Sex of child - - - Female 1 - - Male 1.125 [1.050, 1.205] 0.001 Child age (months) - - - <1 1 - - 1 to 6 0.379 [0.341, 0.422] <0.001 7 to 23 0.176 [0.159, 0.195] <0.001 Multiple birth 1.804 [1.545, 2.106] <0.001 Multiple birth 1.804 [1.545, 2.106] <0.001 Mother's age at birth (years 1 - - 15-19 0.866 [0.780, 0.961] 0.007 20-24 1 - - 25-29 1.277 [1.155, 1.413] <0.001 Number		RRR	95% CI	p-value
AHDSS	Site			
Time period 2000 to 2007	AHRI	1	-	
2000 to 2007 1 - 2008 to 2015 0.456 [0.399, 0.520] <0.001	AHDSS	0.874	[0.794, 0.961]	0.006
2008 to 2015 0.456 [0.399, 0.520] <0.001	Time period			
Site X time period AHDSS X 2008 to 2015 1.437 [1.241, 1.664] <0.001	2000 to 2007	1	-	
AHDSS X 2008 to 2015 Sex of child Female Male 1.125 [1.050, 1.205] 0.001 Child age (months) <1 1	2008 to 2015	0.456	[0.399, 0.520]	< 0.001
Sex of child Female 1 - Male 1.125 [1.050, 1.205] 0.001 Child age (months) - - - <1 1 to 6 0.379 [0.341, 0.422] <0.001 7 to 23 0.176 [0.159, 0.195] <0.001 24 to 59 0.035 [0.031, 0.039] <0.001 Multiple birth 1 - - Singleton 1 - - - Multiple birth 1.804 [1.545, 2.106] <0.001 Mother's age at birth (years 1 - - 15-19 0.866 [0.780, 0.961] 0.007 20-24 1 - - 20-24 1 - - 20-29 1.277 [1.155, 1.413] <0.001 30-34 1.127 [0.995, 1.278] 0.06 35+ 1.309 [1.143, 1.499] <0.001 Number ages 0-5 0 1 - 1 1 - - 1 1 <th< td=""><td>Site X time period</td><td></td><td></td><td></td></th<>	Site X time period			
Female Male 1 - Male (Male) 1.125 [1.050, 1.205] 0.001 Child age (months)	AHDSS X 2008 to 2015	1.437	[1.241, 1.664]	< 0.001
Male 1.125 [1.050, 1.205] 0.001 Child age (months)	Sex of child			
Child age (months) <1	Female	1	-	
1	Male	1.125	[1.050, 1.205]	0.001
1 to 6 0.379 [0.341, 0.422] <0.001	Child age (months)			
7 to 23 24 to 59 0.035 [0.031, 0.039] <0.001 Multiple birth Singleton Multiple birth 1.804 [1.545, 2.106] <0.001 Mother's age at birth (years 15-19 0.866 [0.780, 0.961] 0.007 20-24 1 25-29 1.277 [1.155, 1.413] <0.001 30-34 3.5+ 1.127 [0.995, 1.278] 0.06 35+ 1.309 [1.143, 1.499] <0.001 Number ages 0-5 0 1 - 1 1.096 [1.009, 1.190] 0.029 2+ 1.249 [1.136, 1.373] <0.001 Number ages 5-19 0 1 - 1 to 2 1.069 [0.917, 1.246] 0.395 3 to 4 1.014 [0.864, 1.189] 0.865 5+ 1.147 [0.969, 1.357] 0.11 Number ages 20+ 0 to 2 1 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	<1	1	-	
24 to 59 Multiple birth Singleton Multiple birth 1.804 [1.545, 2.106] Multiple birth Mother's age at birth (years 15-19 0.866 [0.780, 0.961] 0.007 20-24 1 25-29 1.277 [1.155, 1.413] -0.001 30-34 1.127 [0.995, 1.278] 0.06 35+ 1.309 [1.143, 1.499] -0.001 Number ages 0-5 0 1 - 1 1.096 [1.009, 1.190] 0.029 2+ 1.249 [1.136, 1.373] -0.001 Number ages 5-19 0 1 - 1 to 2 1.069 [0.917, 1.246] 0.395 3 to 4 1.014 [0.864, 1.189] 0.865 5+ 1.147 [0.969, 1.357] 0.11 Number ages 20+ 0 to 2 1 - 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	1 to 6	0.379	[0.341, 0.422]	< 0.001
Multiple birth 1 - Singleton 1 - Multiple birth 1.804 [1.545, 2.106] <0.001	7 to 23	0.176	[0.159, 0.195]	< 0.001
Singleton 1 - Multiple birth 1.804 [1.545, 2.106] <0.001 Mother's age at birth (years 15-19 0.866 [0.780, 0.961] 0.007 20-24 1 - - 25-29 1.277 [1.155, 1.413] <0.001	24 to 59	0.035	[0.031, 0.039]	< 0.001
Multiple birth 1.804 [1.545, 2.106] <0.001	Multiple birth			
Mother's age at birth (years 15-19 0.866 [0.780, 0.961] 0.007 20-24 1 25-29 1.277 [1.155, 1.413] -(0.001) 30-34 1.127 [0.995, 1.278] 0.06 35+ 1.309 [1.143, 1.499] -(0.001) Number ages 0-5 0 1 - 1 1.096 [1.009, 1.190] 0.029 2+ 1.249 [1.136, 1.373] -(0.001) Number ages 5-19 0 1 - 1 to 2 1.069 [0.917, 1.246] 0.395 3 to 4 1.014 [0.864, 1.189] 0.865 5+ 1.147 [0.969, 1.357] 0.11 Number ages 20+ 0 to 2 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	Singleton	1	-	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Multiple birth	1.804	[1.545, 2.106]	< 0.001
20-24 25-29 1.277 [1.155, 1.413] <0.001 30-34 35+ 1.309 [1.143, 1.499] <0.001 Number ages 0-5 0 1 - 1 1.096 [1.009, 1.190] 0.029 2+ 1.249 [1.136, 1.373] <0.001 Number ages 5-19 0 1 - 1 to 2 1.069 [0.917, 1.246] 0.395 3 to 4 1.014 [0.864, 1.189] 0.865 5+ 1.147 [0.969, 1.357] 0.11 Number ages 20+ 0 to 2 1 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	Mother's age at birth (years			
25-29 30-34 30-34 1.127 [0.995, 1.278] 0.06 35+ 1.309 [1.143, 1.499]	15-19	0.866	[0.780, 0.961]	0.007
30-34	20-24	1	-	
35+ 1.309 [1.143, 1.499] <0.001	25-29	1.277	[1.155, 1.413]	< 0.001
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	30-34	1.127	[0.995, 1.278]	0.06
0 1 - 1 1.096 [1.009, 1.190] 0.029 2+ 1.249 [1.136, 1.373] <0.001	35+	1.309	[1.143, 1.499]	< 0.001
1 1.096 [1.009, 1.190] 0.029 2+ 1.249 [1.136, 1.373] <0.001	Number ages 0-5			
2+ 1.249 [1.136, 1.373] <0.001 Number ages 5-19 0 1 - 1 to 2 1.069 [0.917, 1.246] 0.395 3 to 4 1.014 [0.864, 1.189] 0.865 5+ 1.147 [0.969, 1.357] 0.11 Number ages 20+ 0 to 2 1 - 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	0	1	-	
Number ages 5-19 0	1	1.096	[1.009, 1.190]	0.029
0 1 - 1 to 2 1.069 [0.917, 1.246] 0.395 3 to 4 1.014 [0.864, 1.189] 0.865 5+ 1.147 [0.969, 1.357] 0.11 Number ages 20+ 0 to 2 1 - 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	2+	1.249	[1.136, 1.373]	< 0.001
0 1 - 1 to 2 1.069 [0.917, 1.246] 0.395 3 to 4 1.014 [0.864, 1.189] 0.865 5+ 1.147 [0.969, 1.357] 0.11 Number ages 20+ 0 to 2 1 - 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	Number ages 5-19			
3 to 4 1.014 [0.864, 1.189] 0.865 5+ 1.147 [0.969, 1.357] 0.11 Number ages 20+ 0 to 2 1 - 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06		1	-	
5+ 1.147 [0.969, 1.357] 0.11 Number ages 20+ 0 to 2 1 - 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	1 to 2	1.069	[0.917, 1.246]	0.395
Number ages 20+ 0 to 2 1 - 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	3 to 4	1.014	[0.864, 1.189]	0.865
Number ages 20+ 0 to 2 1 - 3 to 4 0.953 [0.861, 1.056] 0.359 5+ 0.903 [0.811, 1.004] 0.06	5+		-	
0 to 2 3 to 4 5+ 1 0.953 [0.861, 1.056] 0.359 0.903 [0.811, 1.004] 0.06	Number ages 20+			
5+ 0.903 [0.811, 1.004] 0.06	_	1	-	
5+ 0.903 [0.811, 1.004] 0.06	3 to 4	0.953	[0.861, 1.056]	0.359
	5+		-	0.06
	Parental presence		_ · · · · ·	

Both parents	1	-	
One parent	1.569	[1.363, 1.807]	< 0.001
Neither parent	2.623	[2.058, 3.343]	< 0.001
Related adult presence			
No	1	-	
Yes	2.954	[1.769, 4.931]	< 0.001
Parental presence X related adult presence			
One parent X related adult present	0.316	[0.188, 0.530]	< 0.001
Neither parent X related adult present	0.307	[0.171, 0.551]	< 0.001
Related siblings			
No	1	-	
Yes	0.712	[0.606, 0.837]	< 0.001
Parental presence X related siblings			
One parent X related siblings present	1.464	[1.233, 1.737]	< 0.001
Neither parent X related siblings present	1.518	[1.070, 2.153]	0.019
Time period X related adult presence			
2008 to 2015 X related adult presence	0.806	[0.698, 0.932]	0.004
	Parameter		
σ_{mother}^2	1.128	[0.944, 1.349]	

Supplemental Table 3. Multilevel relative risk regression of child death on household structure and controls, Agincourt Health and Demographic Surveillance System (AHDSS) and Africa Health Research Institute (AHRI), South Africa 2000-2015 (n=3,637,638 child months). Estimation sample restricted to those with household SES information.

	RRR	95% CI	p-value
Site			
AHRI	1	-	
AHDSS	0.772	[0.625, 0.954]	0.017
Time period			
2000 to 2007	1	-	
2008 to 2015	0.391	[0.305, 0.501]	< 0.001
Site X time period			
AHDSS X 2008 to 2015	1.395	[1.141, 1.705]	0.001
Sex of child			
Female	1	-	
Male	1.134	[1.037, 1.240]	0.006
Child age (months)			
<1	1	-	
1 to 6	0.355	[0.304, 0.415]	< 0.001
7 to 23	0.176	[0.152, 0.205]	< 0.001
24 to 59	0.036	[0.030, 0.042]	< 0.001
Multiple birth			
Singleton	1	-	
Multiple birth	1.58	[1.281, 1.948]	< 0.001
Mother's age at birth (years			
15-19	0.897	[0.785, 1.024]	0.107
20-24	1	-	
25-29	1.364	[1.202, 1.548]	< 0.001
30-34	1.175	[1.008, 1.368]	0.039
35+	1.391	[1.183, 1.634]	< 0.001
Number ages 0-5		_	
0	1	-	
1	1.049	[0.943, 1.167]	0.375
2+	1.225	[1.082, 1.387]	0.001
Number ages 5-19		_	
0	1	-	
1 to 2	1.031	[0.855, 1.243]	0.746
3 to 4	0.949	[0.782, 1.152]	0.594
5+	1.034	[0.843, 1.268]	0.748
Number ages 20+		. , ,	
0 to 2	1	-	
3 to 4	0.912	[0.798, 1.041]	0.174
5+	0.868	[0.753, 1.002]	0.053
		[· · · · · · · · · · · · · · · · · · ·	-

Household structure			
Nuclear	1	-	
Vertical only	1.851	[1.374, 2.495]	< 0.001
Horizontal/vertical	1.733	[1.408, 2.131]	< 0.001
No parents, kin present	3.356	[2.292, 4.914]	< 0.001
Mother only	1.716	[1.357, 2.170]	< 0.001
Other	1.892	[1.335, 2.680]	< 0.001
Site X household structure			
AHDSS X Vertical only	1.099	[0.752, 1.604]	0.627
AHDSS X Horizontal/vertical	1.127	[0.863, 1.470]	0.38
AHDSS X No parents, kin present	1.072	[0.619, 1.857]	0.804
AHDSS X Mother only	1.309	[0.981, 1.746]	0.067
AHDSS X Other	2.069	[1.274, 3.360]	0.003
Time period X household structure			
2008 to 2015 X Vertical only	0.734	[0.502, 1.075]	0.112
2008 to 2015 X Horizontal/vertical	0.838	[0.648, 1.085]	0.181
2008 to 2015 X No parents, kin present	0.763	[0.416, 1.399]	0.382
2008 to 2015 X Mother only	1.278	[0.978, 1.669]	0.073
2008 to 2015 X Other	1.044	[0.624, 1.745]	0.87
Household SES			
Low	1	-	
Middle	0.949	[0.852, 1.058]	0.346
High	0.788	[0.702, 0.883]	< 0.001
Household head gender			
Female	1	-	
Male	1.104	[0.999, 1.220]	0.052
	Parameter		
σ_{mother}^2	3.152	[2.574, 3.859]	

Supplemental Table 4. Multilevel relative risk regression of child death on kin presence and controls, Agincourt Health and Demographic Surveillance System (AHDSS) and Africa Health Research Institute (AHRI), South Africa 2000-2015 (n=2,468,466 child months). Estimation sample restricted to those with household SES information.

_	RRR	95% CI	p-value
Site	KKK	73 /0 CI	p-value
AHRI	1	_	
AHDSS	0.903	[0.797, 1.022]	0.106
Time period	0.303	[0.797, 1.022]	0.100
2000 to 2007	1		
2000 to 2007 2008 to 2015	0.442	- [0.367_0.532]	<0.001
	U. 44 2	[0.367, 0.532]	< 0.001
Site X time period AHDSS X 2008 to 2015	1 274	[1 120 1 472]	0.002
Sex of child	1.374	[1.129, 1.672]	0.002
Female	1		
		- [1 020 1 040]	0.005
Male Child aga (months)	1.136	[1.039, 1.242]	0.005
Child age (months)	1		
<1 1 to 6	1 0 254	- [0 202 0 41 4]	<0.001
1 to 6	0.354	[0.303, 0.414]	< 0.001
7 to 23	0.176	[0.152, 0.204]	< 0.001
24 to 59	0.036	[0.030, 0.042]	< 0.001
Multiple birth			
Singleton	1	-	.0.001
Multiple birth	1.571	[1.275, 1.936]	< 0.001
Mother's age at birth (years		.	
15-19	0.889	[0.775, 1.019]	0.091
20-24	1	-	
25-29	1.4	[1.227, 1.597]	< 0.001
30-34	1.246	[1.059, 1.466]	0.008
35+	1.523	[1.280, 1.812]	< 0.001
Number ages 0-5			
0	1	-	
1	1.046	[0.941, 1.163]	0.406
2+	1.219	[1.077, 1.380]	0.002
Number ages 5-19			
0	1	-	
1 to 2	1.19	[0.974, 1.454]	0.089
3 to 4	1.103	[0.894, 1.360]	0.36
5+	1.212	[0.971, 1.513]	0.089
Number ages 20+		_	
0 to 2	1	-	
3 to 4	0.89	[0.780, 1.015]	0.081
5+	0.827	[0.719, 0.951]	0.008
		, , ,]	

Parental presence			
Both parents	1	-	
One parent	1.609	[1.341, 1.930]	< 0.001
Neither parent	2.865	[2.086, 3.933]	< 0.001
Related adult presence			
No	1	-	
Yes	4.031	[2.137, 7.604]	< 0.001
Parental presence X related adult presence			
One parent X related adult present	0.228	[0.120, 0.432]	< 0.001
Neither parent X related adult present	0.229	[0.110, 0.474]	< 0.001
Related siblings			
No	1	-	
Yes	0.6	[0.487, 0.739]	< 0.001
Parental presence X related siblings			
One parent X related siblings present	1.695	[1.360, 2.113]	< 0.001
Neither parent X related siblings present	1.84	[1.185, 2.856]	0.007
Time period X related adult presence			
2008 to 2015 X related adult presence	0.722	[0.599, 0.871]	0.001
Household SES			
Low	1	-	
Middle	0.946	[0.849, 1.054]	0.314
High	0.784	[0.699, 0.879]	< 0.001
Household head gender			
Female	1	-	
Male	1.107	[1.004, 1.221]	0.042
	Parameter		
σ_{mother}^2	3.375	[2.494, 4.568]	