Additional file 1: Supplementary tables and figures

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Table S1 – Overview of parameters to model household movements

Parameters	Values	Source
Household movements		
Fraction of non-married individuals moving randomly	India and Chattisgarh: *0.98 (only males)* Brazil and Para State: *0.75 (only males)* Indonesia and Madura: *1.0 (only males)*	Calibrated
Age range of random movements of non-married individuals	India and Chattisgarh: *18-28yrs* Brazil and Para State: *12-22yrs* Indonesia and Madura: *12-22yrs*	Calibrated
Household size to move to	India and Chattisgarh: *Triangular(0,4,3)* Brazil and Para State: *Triangular(0,4,2)* Indonesia and Madura: *Triangular(0,4,2)*	Calibrated
Rate at which households are split after adding a married couple	All: *Exponential(12)*	Fischer et al. 2010
Fraction of individuals moving to child after becoming a widow/widower	All: *1.0*	Calibrated
Fraction moving to partner after marriage	All: Males: *0.0*; Females: *0.75*	Fischer et al. 2010
Fraction of moving person that create their own household	India and Chattisgarh: *0.0* Brazil and Para State: *0.01* Indonesia and Madura: *0.0*	Calibrated

Table S2 – Overview of parameters to model leprosy

Parameters	Values	Source
Natural History of infection		
Susceptible	20%; Allocation randomly determined	Fischer et al. 2010
MB/PB proportion	India and Chattisgarh: *PB 52%; MB 48%* Brazil and Para State: *PB 34%; MB 66%* Indonesia and Madura: *PB17%; MB 83%*	NLEP[a] SINAN[b] NLR[c]
PB asymptomatic state	Mean duration: *4.2 yrs (SD: 1.9); Gamma distributed*	Fine, 1982; Meima et al. 2004
PB recovered	Mean duration: *5 yrs; Exponentially distributed*	Fischer et al. 2010
MB asymptomatic	Mean duration: *11.1 yrs (SD: 5.0); Gamma distributed*	Fischer et al. 2010
Treatment		
Treatment	Dapsone: 1970-1990 Dapsone relapse: 0.015 y^{-1} MDT: since 1990 MDT relapse: 0.001y^{-1} Relapse to MB: 90% Relapse to PB: 10%	International Leprosy Association Technical Forum, 2002
Control		
Active case detection	India and Chattisgarh: *none* Brazil and Para State: *since 2003; coverage 0.59* Indonesia and Madura: *since 2009; coverage 0.12*	Lockwood et al. 2014 Ministry of Health, Brazil NLR[c]
Passive case detection	India and Chattisgarh: *1970: 13yrs; 1980: 11yrs; 1990: 9yrs; 1997: 8.5yrs; 1998: 5.5yrs; 1999: 3yrs; 2001: 2yrs; 2005: 3yrs; 2012: 2.5yrs; After 2014: 2yrs* Brazil and Para State: *1970: 18yrs; 1990: 16yrs; 1996: 15yrs; 1997: 14yrs; 1998: 12yrs; 2001: 10.5yrs; 2002: 9yrs; 2003: 5.5yrs; 2008: 4.5yrs; After 2011: 3yrs* Indonesia and Madura: *1970: 10yrs; 1980: 8yrs; 1989: 5.5yrs; 1997: 5yrs; 1998:5.5yrs; 2004: 4.5yrs; After 2011: 2yrs*	Calibrated
BCG coverage in infants	Protective effect of 60%	Schuring et al. 2009
Transmission		
Contact rate in the general population	India: *0.970; 95% CI: 0.929-1.011* Chhattisgarh: *1.679; 95% CI: 1.638-1.720* Brazil: *0.367; 95% CI: 0.326-0.408* Pará State: *0.543; 95% CI: 0.503-0.584* Indonesia: *0.104; 95% CI: 0.063-0.145* Madura: *0.235; 95% CI: 0.194-0.276*	Calibrated
Contact rate within households	0.98	Fischer et al. 2010
Infectivity	PB: *not infectious* MB: *Asymptomtic: 0-1 (linear increase); Symptomatic: 1 (constant)*	Meima et al. 2004

[a]National Leprosy Elimination Programme; [b]Sistema de Informações de Agravos de Notificação; [c]Netherlands Leprosy Relief foundation

Figure S1 – Population size from 1820 to 2030.
The solid line is the exponential growth curve used as input for the model.

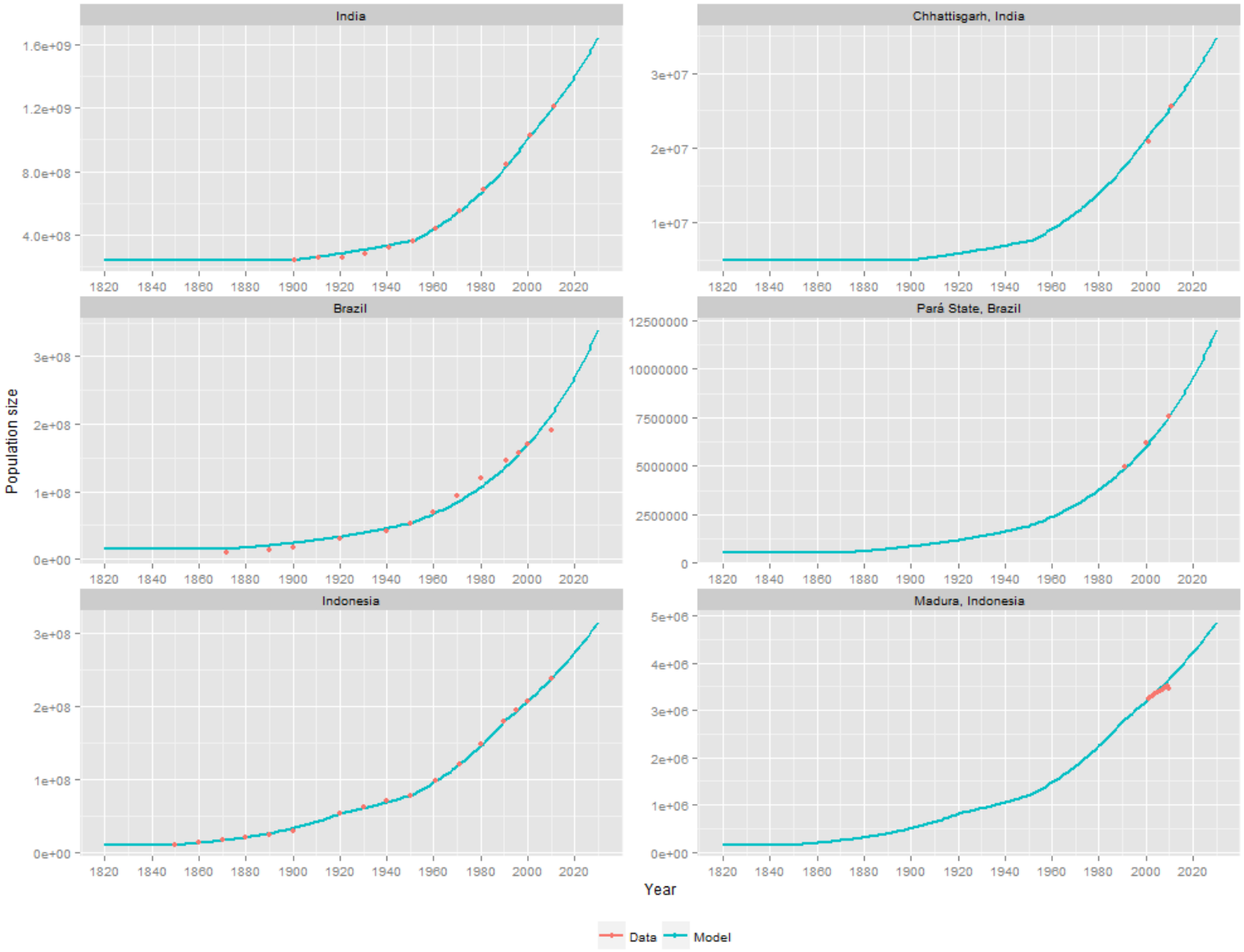


Figure S2 – Simulated new case detection rate trends by leprosy classification (PB and MB).
Simulated MB proportions matched the MB proportions from the data (India: 48%, Brazil: 66%, Indonesia: 83%)

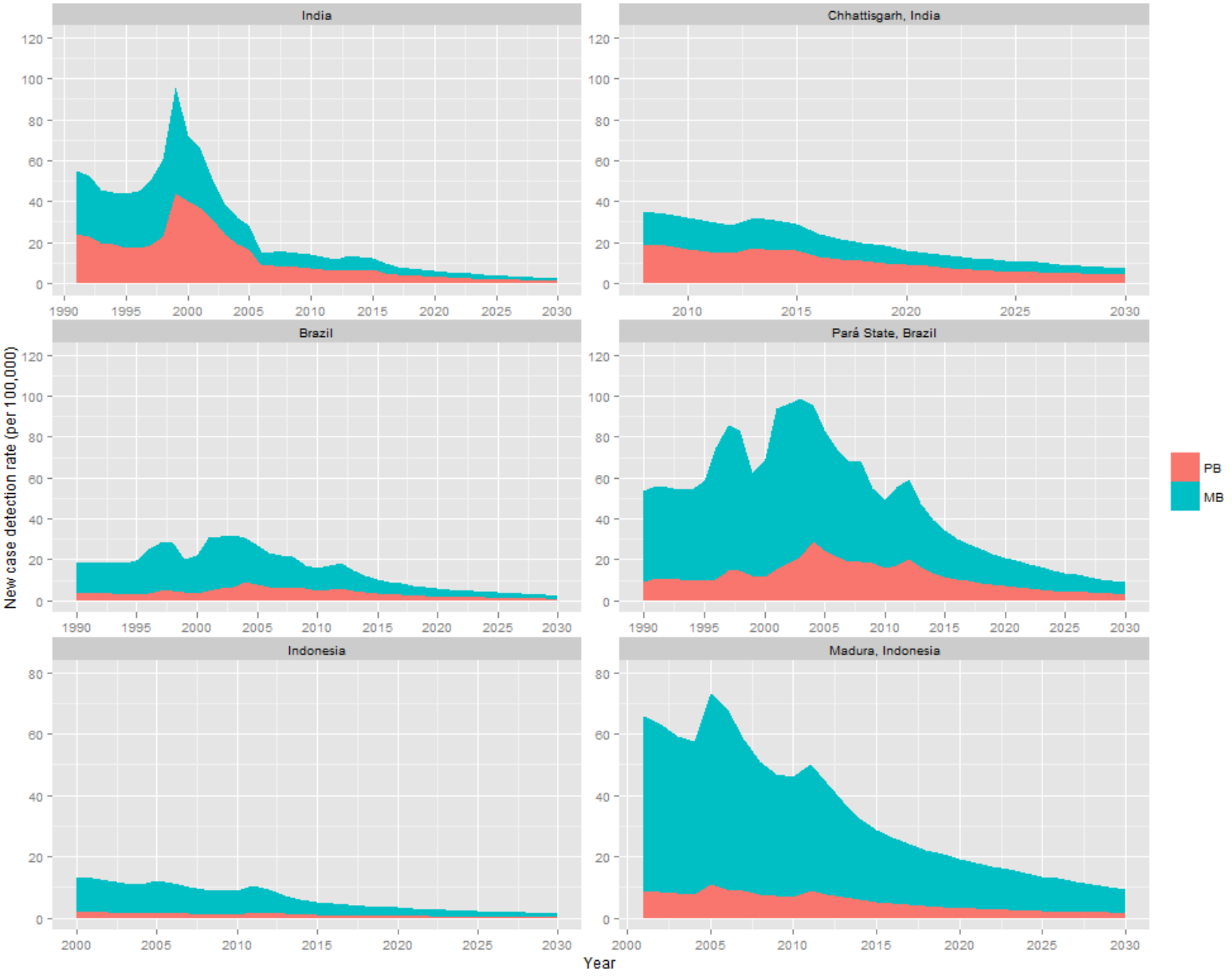


Figure S3 – Predicted annual number of new cases until 2030 assuming continuation of the present leprosy control strategy.

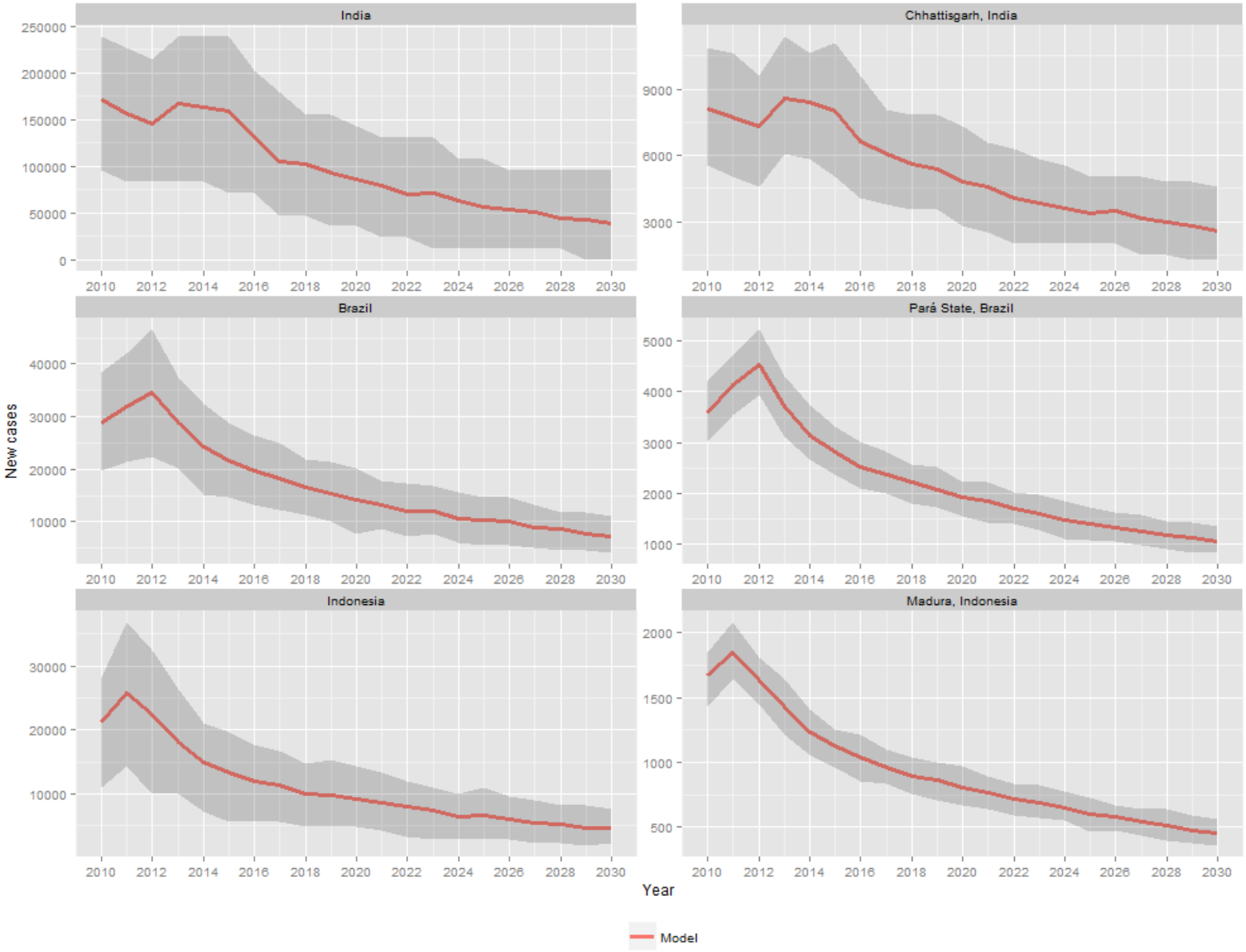


Figure S4 – Simulated age distribution of new leprosy cases over time.

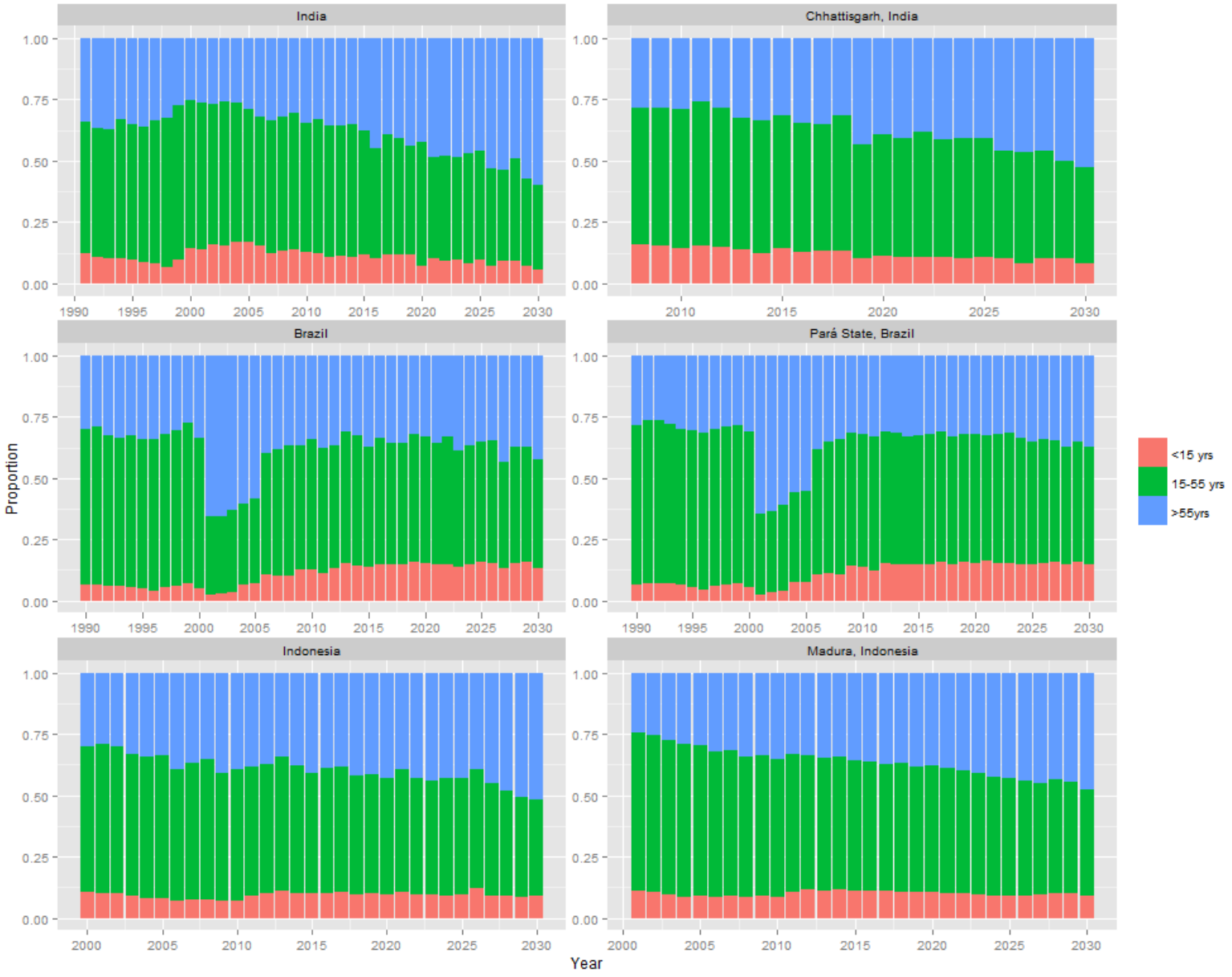
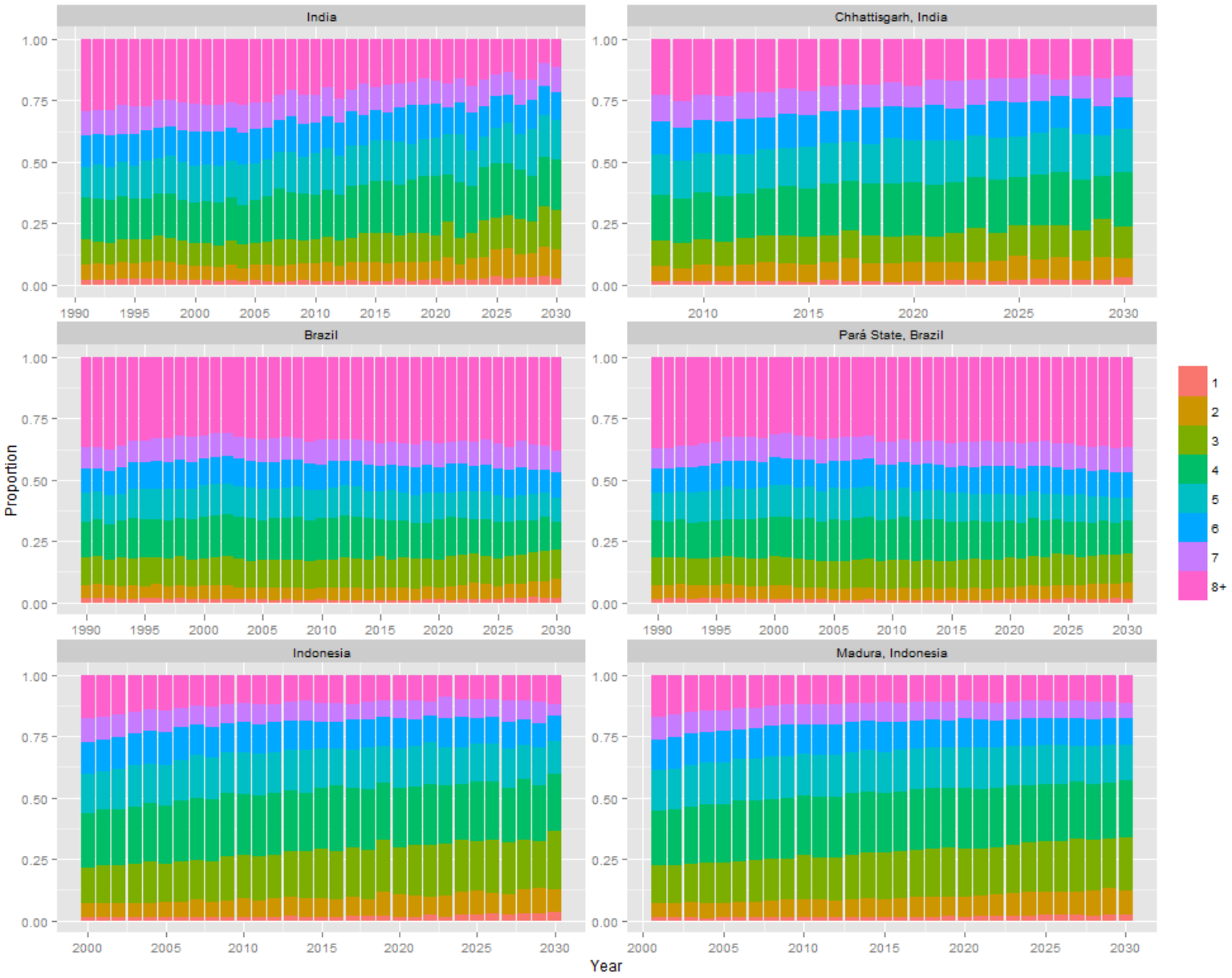


Figure S5 – Simulated household size distribution of new leprosy cases over time.



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