

Famine at birth: long-term health effects of the 1974–75 Bangladesh famine

Shaikh M.S.U. Eskander^{1,2*} and Edward B. Barbier³

¹Department of Health Policy and Organization, School of Public Health, University of Alabama at Birmingham, AL, USA, ²Grantham Research Institute on Climate Change and the Environment (GRI) and Centre for Climate Change Economics and Policy (CCCEP), London School of Economics and Political Science, London, UK and ³Department of Economics, Colorado State University, Fort Collins, CO, USA

*Corresponding author. E-mail: Eskander@uab.edu, S.M.Eskander@lse.ac.uk

ONLINE APPENDIX

Table A1. Greater districts of Bangladesh

| Sl. No. | Old / greater districts | List of current districts |
|----------------|--------------------------------|--|
| 1 | Barisal | Barguna, Barisal, Bhola, Jhalokati, Patuakhali, Pirojpur |
| 2 | Bogra | Bogra, Jaipurhat |
| 3 | Chittagong | Chittagong, Cox's Bazar |
| 4 | CHT | Bandarban, Khagrachari, Rangamati |
| 5 | Comilla | Brahmanbaria, Chandpur, Comilla |
| 6 | Dhaka | Dhaka, Gazipur, Manikganj, Munshiganj, Narayanganj, Narsingdi |
| 7 | Dinajpur | Dinajpur, Panchagarh, Thakurgaon |
| 8 | Faridpur | Faridpur, Gopalganj, Madaripur, Rajbari, Shariatpur |
| 9 | Jessore | Jessore, Jhenaidah, Magura, Narail |
| 10 | Khulna | Bagerhat, Khulna, Satkhira |
| 11 | Kushtia | Chuadanga, Kushtia, Meherpur |
| 12 | Mymensingh | Jamalpur, Kishoreganj, Mymensingh, Netrokona, Sherpur, Tangail |
| 13 | Noakhali | Feni, Lakshmipur, Noakhali |
| 14 | Pabna | Pabna, Sirajganj |
| 15 | Rajshahi | Naogaon, Natore, Nawabganj, Rajshahi |
| 16 | Rangpur | Gaibandha, Kurigram, Lalmonirhat, Nilphamari, Rangpur |
| 17 | Sylhet | Habiganj, Maulvibazar, Sunamganj, Sylhet |

Table A2. Sampling distribution

| | Unaffected regions | Other famine regions | Primary famine region: Rangpur | Total |
|------------------------------|--------------------|----------------------|--------------------------------|-------|
| Unaffected cohorts (1973–75) | 904 | 248 | 83 | 1,235 |
| Famine cohorts (1978–81) | 1,115 | 283 | 91 | 1,489 |
| Total | 2,019 | 531 | 174 | 2,724 |

Notes. Famine regions and cohorts correspond to section 4.2.

Table A3. Parallel trends

| Variables | Healthy lifetime | % of healthy lifetime |
|----------------------|-------------------|-----------------------|
| Other famine regions | -0.733 (0.985) | -1.203 (3.145) |
| Rangpur region | 1.437 (0.466) | 6.488 (1.345) |
| Constant | 24.334 (0.342) | 86.283 (1.203) |
| No. of observations | 1,235 | 1,235 |
| R-squared | 0.002 | 0.003 |

Notes. Standard errors clustered at the district level are shown in parentheses. Parallel trends assumption is investigated by employing the regression $y_i = \alpha_0 + \vartheta R + \epsilon_i$ for the unaffected cohorts. All the variables follow their respective definitions in table 1.

Table A4. Balancing properties

| Variables | For unaffected cohorts (i.e., FC = 0) | | | | | For affected cohorts (i.e., FC = 1) | | | | |
|-------------|---------------------------------------|------------------|------------------|-----------------|-----------------|-------------------------------------|------------------|------------------|-----------------|-----------------|
| | FR 0 | FR 1 | FR 2 | FR 1 – FR 0 | FR 1 – FR 0 | FR 0 | FR 1 | FR 2 | FR 1 – FR 0 | FR 1 – FR 0 |
| Location | 0.60 [0.49] | 0.69 [0.47] | 0.80 [0.41] | 0.08 (0.03) | 0.19 (0.06) | 0.60 [0.49] | 0.68 [0.47] | 0.79 [0.41] | 0.07 (0.03) | 0.19 (0.05) |
| ALF | 60.62 [13.36] | 69.13 [4.31] | 74.72 [2.15] | 8.51 (0.83) | 14.10 (1.33) | 74.91 [13.36] | 84.20 [5.80] | 87.79 [1.30] | 9.29 (0.79) | 12.87 (1.29) |
| Education | 4.32 [4.58] | 3.38 [4.51] | 3.49 [4.61] | -0.94 (0.33) | -0.82 (0.52) | 4.25 [4.85] | 3.75 [4.76] | 2.65 [3.99] | -0.49 (0.32) | -1.60 (0.52) |
| Agriculture | 0.26 [0.44] | 0.32 [0.47] | 0.43 [0.50] | 0.06 (0.03) | 0.17 (0.05) | 0.27 [0.44] | 0.37 [0.48] | 0.40 [0.49] | 0.10 (0.03) | 0.12 (0.05) |
| Landholding | 22.43 [60.73] | 22.65 [55.93] | 34.98 [85.53] | 0.22 (4.43) | 12.55 (7.09) | 29.52 [74.07] | 30.00 [61.06] | 34.37 [92.75] | 0.48 (4.86) | 4.85 (7.97) |
| No. of Obs. | 904 | 248 | 83 | 1,235 | 1,235 | 1,115 | 283 | 91 | 1,489 | 1,489 |

Notes: Standard errors in parentheses “()” and standard deviations in brackets “[]”. The table presents estimates from regressions of whether exposure to the 1974-75 famine affects the variables identified in column headings. Regressions are estimated using the specification $g_i = \alpha_0 + \theta C + \vartheta R + \beta \times (R \times C) + \epsilon_i$, where g_i denotes the variable of interest identified in column headings. All the variables follow their respective definitions in table 1. Additional variables are defined as: agriculture (whether agricultural household or not), solvency (whether spends at or above national average expenditure level or not), SSN (whether receives social safety net supports or not) and primary (whether received at least primary level education or not). The parameter of interest, $\hat{\beta}$, is given by the coefficients of (Famine cohort \times Famine region). Famine regions and cohorts follow the definitions in section 4.2.

Table A5. Health adversities of the 1974 famine – alternative regions

| Variables | Combined famine regions and excluding CHT, Chittagong, Dhaka, and Sylhet | | Separate famine regions and excluding CHT, Chittagong, Dhaka, and Sylhet | |
|-------------------------------------|---|-----------------------|---|-----------------------|
| | Healthy lifetime | % of healthy lifetime | Healthy lifetime | % of healthy lifetime |
| Famine cohort × All famine region | -1.625 (0.873) | -5.017 (2.771) | | |
| Famine cohort × Other famine region | | | -1.525 (1.049) | -4.422 (3.222) |
| Famine cohort × Rangpur region | | | -1.889 (0.872) | -6.587 (3.095) |
| Location | -0.932 (0.886) | -3.121 (2.891) | -0.930 (0.886) | -3.110 (2.891) |
| Education | 0.060 (0.080) | 0.200 (0.254) | 0.060 (0.080) | 0.198 (0.255) |
| HIS (ALF) | -14.374 (19.259) | -30.481 (61.333) | -15.581 (20.091) | -37.659 (64.000) |
| HIS (Landholding) | 0.020 (0.168) | 0.013 (0.555) | 0.020 (0.168) | 0.015 (0.556) |
| Constant | 98.531 (96.820) | 239.506 (308.368) | 104.590 (100.981) | 275.514 (321.724) |
| No. of observations | 1,988 | 1,988 | 1,988 | 1,988 |
| R-squared | 0.243 | 0.204 | 0.243 | 0.204 |
| Year FE | YES | YES | YES | YES |
| Thana FE | YES | YES | YES | YES |
| HIES FE | YES | YES | YES | YES |

Notes: Standard errors clustered at the district level are shown in parentheses. The table presents estimates from regressions of whether exposure to the 1974–75 famine induces long-term health adversities, according to the empirical specification (1). All the variables follow their respective definitions in table 1. All regressions include the indicator variables for year of birth, subdivision/thana of birth, and survey year. The parameter of interest, $\hat{\beta}$, is given by the coefficients of “*Famine cohort × Famine region*”. Famine regions and cohorts follow the definitions in section 4.2.

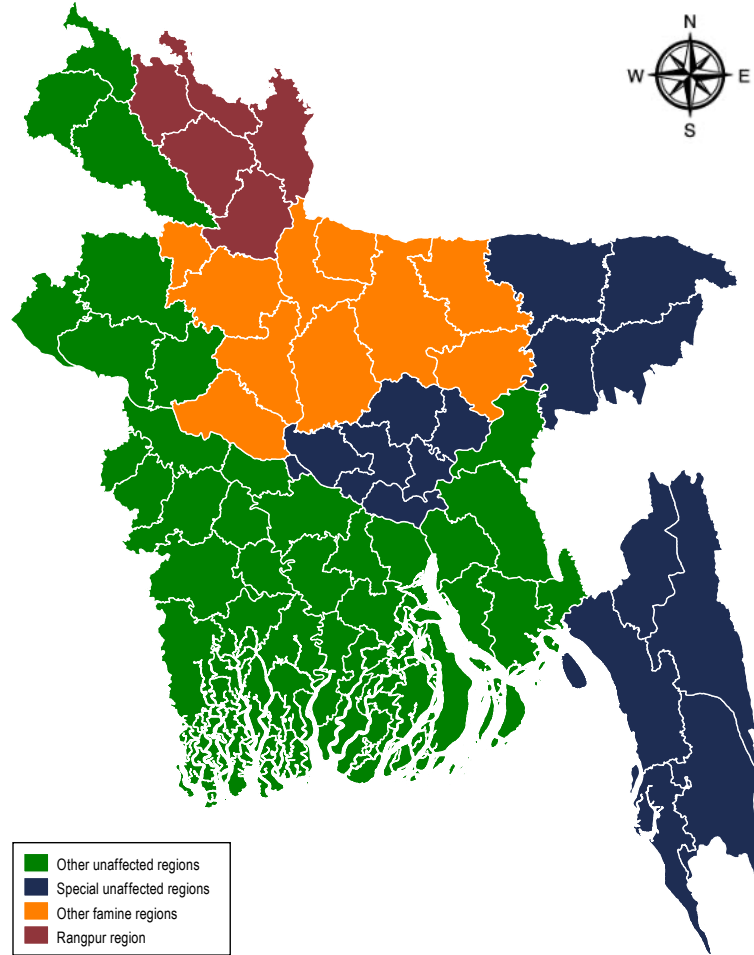


Figure A1. Famine regions.

Data sources. Famine regions are identified based on Alamgir (1980), Alamgir and Salimullah (1977), and van Schendel (2009). Famine regions follow the definitions in section 4.2.