



Web Figure 1: Recruitment flow chart for the Indian Migration Study 2005-2007.

Web Table 1: **Subject (factory worker or spouse) characteristics by responder status**

| Characteristics | Responders | Non-responders | No consent |
|---|---------------------|-----------------------|----------------------|
| N | 3537 | 3565 | 492 |
| Male, N (%) | 1,800 (50.9) | 2,057 (57.7) | 279 (56.7) |
| Age, mean (SD) | 41.7 (9.2) | 41.9 (9.6) | 46.2 (7.9) |
| Hindu religion, N (%) | 3,243 (91.7) | 3,345 (93.8) | 446 (90.7) |
| Married, N (%) | 3,436 (97.1) | 3,439 (96.5) | 478 (97.1) |
| Self reported high blood pressure, heart disease or stroke, N (%) | 684 (19.3) | 526 (14.8) | 104 (21.1) |
| Currently smoke/chew tobacco, N (%) | 646 (18.3) | 723 (20.3) | 80 (16.3) |
| Distance in hours from factory to place of origin, Mean (SD) (Q1; Q3) | 6.5 (7.0) (2; 9) | 6.8 (8.0) (1; 9) | 8.2 (9.6) (2; 12) |
| Migrant, N (%) | 2,112 (59.7) | 2,165 (60.7) | 372 (75.6) |

Web table 2: Levels of cardio-metabolic risk factors by percentage of life spent in an urban area

| Outcome variable | Adjusted Mean in Groups of Percent Urban Life | |
|--|---|-------------------------|
| | Men | Women |
| % Body Fat (%)*** ### | | |
| 0 Urban life-years | 21.72 [21.43, 22.01] | 29.49 [29.00, 29.98] |
| 0 < Urban Life ≤ 35% | 24.26 [23.55, 24.98] | 30.93 [30.19, 31.67] |
| 35% < Urban Life ≤ 50% | 24.90 [24.30, 25.51] | 32.20 [31.48, 32.93] |
| 50% < Urban Life ≤ 62.5% | 25.63 [25.09, 26.16] | 31.96 [31.35, 32.56] |
| More than 62.5% urban life | 25.67 [25.12, 26.22] | 32.46 [31.68, 33.25] |
| Systolic BP (mmHg)** | | |
| 0 Urban life-years | 123.14 [122.24, 124.05] | 120.14 [118.69, 121.59] |
| 0 < Urban Life ≤ 35% | 124.76 [122.52, 126.99] | 119.18 [116.94, 121.42] |
| 35% < Urban Life ≤ 50% | 124.44 [122.55, 126.33] | 119.28 [117.11, 121.45] |
| 50% < Urban Life ≤ 62.5% | 124.36 [122.69, 126.02] | 119.57 [117.76, 121.38] |
| More than 62.5% urban life | 126.32 [124.62, 128.01] | 119.16 [116.82, 121.50] |
| Diastolic BP (mmHg)*** | | |
| 0 Urban life-years | 77.09 [76.48, 77.69] | 76.90 [76.00, 77.79] |
| 0 < Urban Life ≤ 35% | 78.73 [77.23, 80.23] | 77.42 [76.04, 78.79] |
| 35% < Urban Life ≤ 50% | 78.72 [77.45, 79.99] | 77.01 [75.67, 78.35] |
| 50% < Urban Life ≤ 62.5% | 78.98 [77.86, 80.09] | 76.77 [75.65, 77.88] |
| More than 62.5% urban life | 79.84 [78.70, 80.98] | 77.54 [76.10, 78.98] |
| Body mass index (kg/m²)*** ### | | |
| 0 Urban life-years | 22.03 [21.85, 22.22] | 22.98 [22.61, 23.34] |
| 0 < Urban Life ≤ 35% | 22.98 [22.52, 23.44] | 23.70 [23.14, 24.27] |
| 35% < Urban Life ≤ 50% | 23.42 [23.04, 23.81] | 25.11 [24.57, 25.66] |
| 50% < Urban Life ≤ 62.5% | 23.73 [23.39, 24.07] | 25.32 [24.86, 25.78] |
| More than 62.5% urban life | 23.96 [23.61, 24.31] | 25.39 [24.79, 25.98] |
| Waist circumference (cm) *** ### | | |
| 0 Urban life-years | 81.77 [81.25, 82.29] | 76.19 [75.32, 77.07] |
| 0 < Urban Life ≤ 35% | 84.51 [83.22, 85.80] | 78.59 [77.23, 79.94] |
| 35% < Urban Life ≤ 50% | 85.21 [84.12, 86.31] | 80.06 [78.74, 81.37] |
| 50% < Urban Life ≤ 62.5% | 87.19 [86.23, 88.15] | 80.23 [79.14, 81.32] |
| More than 62.5% urban life | 87.15 [86.17, 88.13] | 80.92 [79.51, 82.33] |
| Total cholesterol (mmol/L) * | | |
| 0 Urban life-years | 4.58 [4.52, 4.65] | 4.77 [4.67, 4.87] |
| 0 < Urban Life ≤ 35% | 4.59 [4.43, 4.74] | 4.81 [4.65, 4.96] |
| 35% < Urban Life ≤ 50% | 4.73 [4.60, 4.87] | 4.74 [4.59, 4.90] |
| 50% < Urban Life ≤ 62.5% | 4.77 [4.65, 4.89] | 4.79 [4.66, 4.92] |
| More than 62.5% urban life | 4.66 [4.54, 4.78] | 4.77 [4.60, 4.94] |

Notes: Adjusted means in groups of percent urban life for men and women. All models include a random effect of sib-pairs. **Non-migrants are in zero urban life years group.** The **models are adjusted for age group, factory and socio-economic group.** * ~ p<0.05, ** ~ p<0.01, *** ~ p<0.001 for the test for trend in percent urban life in men and # ~ p<0.05, ## ~ p<0.01, ### ~ p<0.001 for the test for trend in percent urban life in women. ^{a)} Geometric mean.

Web table 2 (contd.): **Levels of cardio-metabolic risk factors by percentage of life spent in an urban area**

| Outcome variable | Adjusted Mean in Groups of Percent Urban Life | |
|--|---|-------------------|
| | Men | Women |
| LDL-cholesterol (mmol/L) * | | |
| 0 Urban life-years | 2.78 [2.72, 2.83] | 2.92 [2.82, 3.01] |
| 0 < Urban Life ≤ 35% | 2.79 [2.65, 2.93] | 2.97 [2.83, 3.11] |
| 35% < Urban Life ≤ 50% | 2.91 [2.80, 3.03] | 2.90 [2.76, 3.04] |
| 50% < Urban Life ≤ 62.5% | 2.89 [2.78, 2.99] | 2.97 [2.85, 3.08] |
| More than 62.5% urban life | 2.86 [2.76, 2.96] | 2.98 [2.83, 3.13] |
| HDL-cholesterol (mmol/L) | | |
| 0 Urban life-years | 1.14 [1.13, 1.16] | 1.20 [1.18, 1.23] |
| 0 < Urban Life ≤ 35% | 1.14 [1.10, 1.17] | 1.19 [1.16, 1.22] |
| 35% < Urban Life ≤ 50% | 1.17 [1.14, 1.20] | 1.21 [1.18, 1.25] |
| 50% < Urban Life ≤ 62.5% | 1.15 [1.13, 1.18] | 1.19 [1.16, 1.22] |
| More than 62.5% urban life | 1.14 [1.11, 1.16] | 1.17 [1.13, 1.20] |
| Triglycerides (mmol/L) *^a | | |
| 0 Urban life-years | 1.31 [1.27, 1.34] | 1.29 [1.24, 1.34] |
| 0 < Urban Life ≤ 35% | 1.34 [1.26, 1.43] | 1.28 [1.20, 1.36] |
| 35% < Urban Life ≤ 50% | 1.32 [1.26, 1.40] | 1.26 [1.19, 1.34] |
| 50% < Urban Life ≤ 62.5% | 1.43 [1.36, 1.49] | 1.26 [1.20, 1.32] |
| More than 62.5% urban life | 1.34 [1.27, 1.40] | 1.23 [1.15, 1.31] |
| HOMA score ***^a | | |
| 0 Urban life-years | 1.01 [0.96, 1.07] | 1.14 [1.05, 1.23] |
| 0 < Urban Life ≤ 35% | 1.13 [1.00, 1.28] | 1.13 [1.01, 1.28] |
| 35% < Urban Life ≤ 50% | 1.01 [0.90, 1.12] | 1.31 [1.17, 1.48] |
| 50% < Urban Life ≤ 62.5% | 1.27 [1.15, 1.39] | 1.28 [1.16, 1.42] |
| More than 62.5% urban life | 1.32 [1.20, 1.46] | 1.20 [1.05, 1.36] |
| Fasting glucose (<7) (mmol/L) ** ^a | | |
| 0 Urban life-years | 4.98 [4.95, 5.02] | 4.95 [4.90, 5.00] |
| 0 < Urban Life ≤ 35% | 4.98 [4.90, 5.07] | 4.95 [4.88, 5.03] |
| 35% < Urban Life ≤ 50% | 4.99 [4.91, 5.06] | 5.07 [4.99, 5.15] |
| 50% < Urban Life ≤ 62.5% | 5.10 [5.03, 5.17] | 4.99 [4.93, 5.06] |
| More than 62.5% urban life | 5.07 [5.00, 5.14] | 4.93 [4.85, 5.01] |
| Fasting insulin (mU/L) ***^a | | |
| 0 Urban life-years | 4.66 [4.43, 4.89] | 5.24 [4.86, 5.65] |
| 0 < Urban Life ≤ 35% | 5.14 [4.56, 5.79] | 5.21 [4.63, 5.85] |
| 35% < Urban Life ≤ 50% | 4.59 [4.15, 5.08] | 5.99 [5.34, 6.71] |
| 50% < Urban Life ≤ 62.5% | 5.66 [5.18, 6.19] | 5.90 [5.37, 6.49] |
| More than 62.5% urban life | 6.00 [5.49, 6.57] | 5.60 [4.96, 6.33] |

Notes: Adjusted means in groups of percent urban life for men and women. **Non-migrants are in zero urban life years group.** All models include a random effect of sib-pairs. The **models are adjusted for age group, factory and socio-economic group.** * ~ $p < 0.05$, ** ~ $p < 0.01$, *** ~ $p < 0.001$ for the test for trend in percent urban life in men and # ~ $p < 0.05$, ## ~ $p < 0.01$, ### ~ $p < 0.001$ for the test for trend in percent urban life in women.
^a) Geometric mean.

Web table 3: **Effect modification of the association between urban life years and % body fat, systolic blood pressure (SBP) and fasting insulin by selected participant characteristics: Men**

| Effect modifier | % Body fat. Effect of urban life- years first 10 years, per 10 years. (95% CI) | % Body fat. Effect of urban life- years after 10 years, per 10 years. (95% CI) | SBP Effect of urban life- years per 10 years (95% CI) | Insulin Effect of urban life- years per 10 years (95% CI) |
|--------------------------------|---|---|--|--|
| Age 45 | | | | |
| Age < 45 | 2.89 [0.69, 5.09] | 0.62 [-0.14, 1.37] | 1.37 [-0.55, 3.29] | 0.88 [0.63, 1.23] |
| Age ≥ 45 | 0.09 [-3.96, 4.13] | -0.02 [-0.48, 0.44] | 1.44 [0.07, 2.81] | 0.84 [0.57, 1.23] |
| Marital status | | | | |
| Not married | -0.12 [-5.77, 5.54] | -0.06 [-1.35, 1.24] | 1.03 [-2.45, 4.51] | 1.12 [0.93, 1.35] |
| Currently married | 2.90 [0.93, 4.88] | 0.12 [-0.27, 0.52] | 1.45 [0.30, 2.61] | 1.07 [1.01, 1.14] |
| Household type | | | | |
| Nuclear family or single | 2.33 [-0.01, 4.67] | 0.16 [-0.26, 0.58] | 1.35 [0.10, 2.61] | 1.08 [1.01, 1.15] |
| Extended family | 3.40 [0.29, 6.50] | -0.11 [-0.73, 0.51] | 1.57 [-0.09, 3.23] | 1.06 [0.97, 1.15] |
| Socio-economic position | | | | |
| | | | ** | |
| Low/ Middle | 12.17 [6.10, 18.25] | -0.50 [-1.54, 0.53] | 2.21 [-0.96, 5.38] | 1.01 [0.86, 1.20] |
| High | 1.36 [-0.57, 3.30] | 0.14 [-0.25, 0.54] | 1.37 [0.21, 2.53] | 1.08 [1.01, 1.14] |
| Occupation | | | | |
| Manual / Housework | 3.52 [-0.60, 7.65] | -0.04 [-0.89, 0.82] | 1.72 [-0.59, 4.02] | 1.08 [0.96, 1.22] |
| Skilled manual | 2.12 [-0.75, 4.98] | 0.16 [-0.32, 0.64] | 1.79 [0.33, 3.24] | 1.09 [1.01, 1.18] |
| Non-manual | 2.68 [-0.51, 5.86] | 0.04 [-0.52, 0.61] | 0.93 [-0.62, 2.48] | 1.04 [0.96, 1.13] |

* ~ $p < 0.05$, ** ~ $p < 0.01$, *** ~ $p < 0.001$ for the test of no effect modification

Web table 3 (contd.): **Effect modification of the association between urban life years and % body fat, systolic blood pressure (SBP) and fasting insulin by selected participant characteristics: Women**

| Effect modifier | % Body fat. Effect of urban life-years first 10 years, per 10 years. (95% CI) | % Body fat. Effect of urban life-years after 10 years, per 10 years. (95% CI) | SBP Effect of urban life-years per 10 years (95% CI) | Insulin Effect of urban life-years first 10 years per 10 years (95% CI) | Insulin Effect of urban life-years after 10 years per 10 years (95% CI) |
|--------------------------------|--|--|---|--|--|
| Age 45 | | (borderline) | | | |
| Age < 45 | 4.26 [2.05, 6.47] | 0.22 [-0.69, 1.13] | 0.12 [-2.10, 2.33] | 1.28 [0.89, 1.84] | 0.95 [0.82, 1.10] |
| Age ≥ 45 | -2.70 [-8.08, 2.69] | 0.51 [-0.30, 1.31] | 1.41 [-0.63, 3.45] | 2.05 [0.85, 4.90] | 0.90 [0.78, 1.02] |
| Marital status | | | | * | |
| Not married | 4.41 [-1.79, 10.61] | -1.26 [-2.96, 0.43] | 0.47 [-1.94, 2.87] | 4.53 [1.72, 11.96] | 0.85 [0.65, 1.11] |
| Currently married | 3.45 [1.29, 5.61] | 0.38 [-0.23, 0.99] | 0.84 [-0.66, 2.35] | 1.19 [0.84, 1.68] | 0.93 [0.85, 1.03] |
| Household type | | | * | | |
| Nuclear family or single | 1.85 [-0.39, 4.08] | 0.31 [-0.32, 0.94] | 0.96 [-0.56, 2.48] | 1.43 [0.98, 2.06] | 0.92 [0.83, 1.02] |
| Extended family | 7.61 [4.04, 11.17] | -0.40 [-1.36, 0.56] | 0.32 [-1.39, 2.03] | 1.21 [0.68, 2.17] | 0.95 [0.82, 1.12] |
| Socio-economic position | | | * | | |
| Low/ Middle | 5.20 [-1.70, 12.09] | -2.94 [-5.55, -0.33] | -1.16 [-5.21, 2.89] | 1.94 [0.65, 5.84] | 1.03 [0.68, 1.56] |
| High | 3.14 [1.01, 5.27] | 0.25 [-0.34, 0.83] | 0.81 [-0.69, 2.31] | 1.27 [0.89, 1.80] | 0.92 [0.84, 1.01] |
| Occupation | | | | | |
| Manual / Housework | 3.71 [1.60, 5.81] | 0.07 [-0.54, 0.68] | 0.99 [-0.53, 2.51] | 1.41 [1.00, 2.00] | 0.93 [0.84, 1.02] |
| Skilled manual | 0.45 [-10.68, 11.59] | 1.86 [-0.32, 4.04] | -1.59 [-4.24, 1.05] | 1.66 [0.27, 10.42] | 1.10 [0.76, 1.58] |
| Non-manual | 1.68 [-6.34, 9.70] | 0.24 [-1.29, 1.77] | 0.88 [-1.18, 2.94] | 0.80 [0.23, 2.78] | 0.92 [0.73, 1.16] |

* ~ $p < 0.05$, ** ~ $p < 0.01$, *** ~ $p < 0.001$ for the test of no effect modification