

Online Supplementary Material for: “Johannesburg’s ‘poor housing, good health’ paradox: the role of health status assessment, statistical modelling, residential context and migrant status” – Tables S1, S2 and S3. (see: <https://doi.org/10.1016/j.puhe.2020.04.039>)

Comment: Table S1 indicates the larger number of rooms and greater access to services available to households occupying dwellings classified as ‘formal’ when compared to those classified as ‘informal’, regardless of whether this classification was made through interviewer observation or respondent self-reports.

Table S1. Room number and service access of dwellings occupied by households across Gauteng (n=24,727), classified as ‘formal’ or ‘informal’ by interviewers¹ and respondents² during the GCRO QoL-III survey.

Dwelling classification undertaken by:	Interviewer		Respondent	
Dwelling classified as:	Formal n=20,977	Informal n=3,750	Formal n=21,296	Informal n=3,431
Household characteristic:	n(%)	n(%)	n(%)	n(%)
Number of rooms				
1	3,321 (15.8)	2,164 (57.7)	3,542 (16.6)	1,943 (56.6)
2	3,459 (16.5)	934 (24.9)	3,531 (16.6)	862 (25.1)
3	5,877 (28.0)	451 (12.0)	5,905 (27.7)	423 (12.3)
4	3,112 (14.8)	141 (3.8)	3,111 (14.6)	142 (4.1)
5	2,673 (12.7)	42 (1.1)	2,677 (12.6)	38 (1.1)
6+	2,535 (12.1)	18 (0.5)	2,530 (11.9)	23 (0.7)
Household water source				
Piped into dwelling	16,376 (78.1)	881 (23.5)	16,393 (77.0)	864 (25.2)
Piped into yard	4,063 (19.4)	1,165 (31.1)	4,232 (19.9)	996 (29.0)
Street taps	189 (0.9)	1,366 (36.4)	238 (1.1)	1,317 (38.4)
Water tanker	68 (0.3)	182 (4.9)	91 (0.4)	159 (4.6)
Borehole, rainwater, dam/river	281 (1.3)	156 (4.2)	342 (1.6)	95 (2.8)
Household toilet access				
Flush toilet	20,276 (96.7)	1,597 (42.6)	20,407 (95.8)	1,466 (42.7)
Pit latrine or chemical	582 (2.8)	1,513 (40.3)	717 (3.4)	1,378 (40.2)
Bucket/none	119 (0.6)	640 (17.1)	172 (0.8)	587 (17.1)
Refuse removal				
Household/street collection	19,830 (94.5)	2,111 (56.3)	20,023 (94.0)	1,918 (55.9)
Communal refuse dump	223 (1.1)	283 (7.5)	225 (1.1)	281 (8.2)
No refuse removal	924 (4.4)	1,356 (36.2)	1,048 (4.9)	1,232 (35.9)
Lighting energy source				
Electricity	20,379 (97.2)	2,096 (55.9)	20,571 (96.6)	1,904 (55.5)
Gas/LPG	122 (0.6)	46 (1.2)	122 (0.6)	46 (1.3)
Paraffin	126 (0.6)	601 (16.0)	154 (0.7)	573 (16.7)
Candles	262 (1.3)	889 (23.7)	352 (1.7)	799 (23.3)
Solar	40 (0.2)	48 (1.3)	47 (0.2)	41 (1.2)
Other	48 (0.2)	70 (1.9)	50 (0.2)	68 (2.0)

¹Interviewers were asked to select “Which type of dwelling does this household occupy?” for which “Informal dwelling or shack in backyard” and “Informal dwelling NOT in backyard, e.g. in informal squatter settlement or on a farm” were the two of the 14 responses coded as ‘informal’ by the GCRO and used as such in the present study.

²Two of the 15 response options offered to respondents for the question: “Please tell me about your tenure in this dwelling. Is it ...” were deemed relevant to the classification of formal vs. informal housing; namely: “Informal dwelling or shack, paying rent” and “Informal dwelling or shack, not paying rent”.

Comment: Tables S2 and S3 indicate that similar findings were obtained for analyses using “health-limited work” and “health-limited social activities” as those obtained using “health-limited work and/or social activities” (as described in Table 2 (main manuscript)).

Table S2. Multivariable logistic regression models exploring the relationship between a range of demographic, economic, household, psychosocial characteristics and health-limited work amongst n=1,494 households in eight of the poorest Wards of the City of Johannesburg (after De Wet et al.⁷; Sample 1). Models 1-2 mimic the analytical models used by De Wet et al.⁷, in which all covariates were included simultaneously in a single step; while Models 3 and 4 includes covariates entered one-by-one in a sequential fashion¹ as determined by the DAG (see Figure 1; Model 4 including additional adjustment for migrant status). All results are presented as Odds Ratios (OR) with 95% Confidence Intervals in parentheses (95%CI).

Covariates entered: Adjustment for migrant status: Characteristic (referent)	Model 1 Simultaneously No OR(95%CI)	Model 2 Simultaneously No OR(95%CI)	Model 3 Sequentially No OR(95%CI) ¹	Model 4 Sequentially Yes OR(95%CI) ¹
Age (18-25yrs)				
26-35yrs	1.36 (1.00,1.86) ³	1.34 (0.98,1.83) ³	1.32 (0.98,1.79)	1.32 (0.98,1.79)
36-45yrs	1.82 (1.31,2.53) ³	1.82 (1.31,2.54) ³	1.86 (1.36,2.56)	1.86 (1.36,2.56)
46-60yrs	2.51 (1.80,3.51) ³	2.51 (1.80,3.51) ³	2.69 (1.95,3.73)	2.69 (1.95,3.73)
>60yrs	5.94 (3.67,9.64) ³	5.99 (3.69,9.74) ³	6.54 (4.06,10.51)	6.54 (4.06,10.51)
Gender (Male)				
Female	1.62 (1.29,2.03) ³	1.55 (1.24,1.95) ³	1.61 (1.29,2.00)	1.61 (1.29,2.00)
Educational attainment (Primary or lower; <Grade 8)				
Secondary or higher	-	-	0.96 (0.70,1.31)	0.96 (0.70,1.31)
Migrant status (Gauteng resident)				
Internal (most urban)	-	-	-	0.93 (0.63,1.37)
Internal (least urban)	-	-	-	0.66 (0.52,0.84)
Transnational	-	-	-	0.56 (0.37,0.85)
Length of residence in current dwelling (≥18 months)				
<18 months	0.78 (0.55,1.12) ^{2,3}	0.76 (0.53,1.08) ^{2,3}	0.75 (0.53,1.06)	0.84 (0.59,1.20)
Employment (Unemployed)				
Employed	0.99 (0.78,1.25) ^{2,3}	0.98 (0.77,1.24) ^{2,3}	1.00 (0.79,1.26)	1.03 (0.81,1.30)
Housing tenure (Rented)				
Owned	1.09 (0.85,1.38) ^{2,3}	-	1.10 (0.86,1.39)	1.03 (0.81,1.32)
Housing type (Informal)				
Formal	0.96 (0.71,1.29) ^{2,3}	1.23 (0.95,1.59) ^{2,3}	1.31 (1.01,1.70)	1.19 (0.91,1.56)
Number of people in the household (1-3 people)				
Four or more people	-	-	0.94 (0.75,1.18)	0.88 (0.70,1.11)
Household services (Two or less)				
Water, electricity and toilet	1.84 (1.33,2.55) ²	-	1.89 (1.36,2.62)	1.79 (1.28,2.49)

Table S2. Continued

Social participation (No participation)				
Participation in at least one club or organisation	-	1.53 (1.22,1.91) ^{2,3}	1.51 (1.20,1.89)	1.48 (1.18,1.86)
Social trust (Most people can be trusted)				
Need to be very careful	-	1.38 (1.03,1.86) ²	1.36 (1.01,1.84)	1.37 (1.01,1.84)
Household adult food poverty (Not skipped a meal in the past year)				
Skipped a meal	-	-	0.87 (0.65,1.15)	0.86 (0.64,1.14)

¹Age and gender were adjusted for one another; and all subsequent covariates were adjusted for age and gender, and any preceding covariates (as in Figure 1).

²Under-adjusted (given the availability of data on potential confounders that have not been included in the model).

³Inappropriately adjusted (given the inclusion of likely mediators in the model).

Table S3. Multivariable logistic regression models exploring the relationship between a range of demographic, economic, household, psychosocial characteristics and health-limited social activities amongst n=1,494 households in eight of the poorest Wards of the City of Johannesburg (after De Wet et al.⁷; Sample 1). Models 1-2 mimic the analytical models used by De Wet et al.⁷, in which all covariates were included simultaneously in a single step; while Models 3 and 4 includes covariates entered one-by-one in a sequential fashion¹ as determined by the DAG (see Figure 1; Model 4 including additional adjustment for migrant status). All results are presented as Odds Ratios (OR) with 95% Confidence Intervals in parentheses (95%CI).

Covariates entered:	Model 1	Model 2	Model 3	Model 4
Adjustment for migrant status:	Simultaneously	Simultaneously	Sequentially	Sequentially
Characteristic (referent)	No	No	No	Yes
	OR(95%CI)	OR(95%CI)	OR(95%CI) ¹	OR(95%CI) ¹
Age (18-25yrs)				
26-35yrs	1.29 (0.94,1.77) ³	1.27 (0.92,1.74) ³	1.26 (0.93,1.71)	1.26 (0.93,1.71)
36-45yrs	1.86 (1.33,2.59) ³	1.86 (1.34,2.60) ³	1.91 (1.39,2.63)	1.91 (1.39,2.63)
46-60yrs	2.22 (1.59,3.10) ³	2.23 (1.59,3.11) ³	2.44 (1.76,3.38)	2.44 (1.76,3.38)
>60yrs	4.83 (3.03,7.69) ³	4.88 (3.06,7.77) ³	5.29 (3.35,8.35)	5.29 (3.35,8.35)
Gender (Male)				
Female	1.46 (1.17,1.83) ³	1.39 (1.11,1.74) ³	1.43 (1.15,1.78)	1.43 (1.15,1.78)
Educational attainment (Primary or lower; <Grade 8)				
Secondary or higher	-	-	1.01 (0.74,1.38)	1.01 (0.74,1.38)
Migrant status (Gauteng resident)				
Internal (most urban)	-	-	-	0.76 (0.52,1.12)
Internal (least urban)	-	-	-	0.64 (0.50,0.81)
Transnational	-	-	-	0.45 (0.30,0.69)
Length of residence in current dwelling (≥18 months)				
<18 months	0.98 (0.69,1.40) ^{2,3}	0.94 (0.66,1.34) ^{2,3}	0.91 (0.64,1.29)	1.05 (0.74,1.50)
Employment (Unemployed)				
Employed	1.07 (0.85,1.36) ^{2,3}	1.06 (0.84,1.34) ^{2,3}	1.09 (0.86,1.38)	1.13 (0.89,1.43)
Housing tenure (Rented)				
Owned	1.16 (0.91,1.48) ^{2,3}	-	1.20 (0.94,1.52)	1.11 (0.87,1.42)
Housing type (Informal)				
Formal	1.14 (0.84,1.55) ^{2,3}	1.47 (1.13,1.91) ^{2,3}	1.56 (1.20,2.03)	1.37 (1.04,1.80)
Number of people in the household (1-3 people)				
Four or more people	-	-	1.02 (0.81,1.27)	0.94 (0.75,1.18)
Household services (Two or less)				
Water, electricity and toilet	1.84 (1.32,2.55) ²	-	1.85 (1.33,2.58)	1.73 (1.23,2.42)

Table S3. Continued.

Social participation (No participation)				
Participation in at least one club or organisation	-	1.59 (1.27,2.00) ^{2,3}	1.56 (1.24,1.96)	1.53 (1.22,1.92)
Social trust (Most people can be trusted)				
Need to be very careful	-	1.34 (1.00,1.80) ²	1.33 (0.99,1.79)	1.33 (0.98,1.79)
Household adult food poverty (Not skipped a meal in the past year)				
Skipped a meal	-	-	0.82 (0.61,1.09)	0.80 (0.60,1.07)

¹Age and gender were adjusted for one another; and all subsequent covariates were adjusted for age and gender, and any preceding covariates (as in Figure 1).

²Under-adjusted (given the availability of data on potential confounders that have not been included in the model).

³Inappropriately adjusted (given the inclusion of likely mediators in the model).