Environ Health Perspect

DOI: 10.1289/EHP1699

Supplemental Material

Traffic-Related Air Pollution and All-Cause Mortality during Tuberculosis Treatment in California

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Table S1: Unadjusted hazard ratios for mortality during TB treatment for selected predictors.

Predictor	HR	*p*-Value
Traffic volume, nearest road, 100 m buffer (vh/24h)	--	--
Q1	1.00	--
Q2	1.03 (0.86, 1.22)	0.78
Q3	1.13 (0.96, 1.36)	0.15
Q4	1.18 (0.99, 1.39)	0.06
Q5	1.23 (1.04, 1.45)	0.02
p-Trend		0.004
Traffic volume, highest trafficked road, 100 m buffer (vh/24h)	--	--
Q1	1.00	--
Q2	1.07 (0.89, 1.28)	0.46
Q3	1.33 (1.12, 1.57)	0.001
Q4	1.31 (1.11, 1.56)	0.002
Q5	1.31 (1.10, 1.55)	0.002
p-Trend	--	<0.001
Traffic density, 100 m buffer (vh·km/h)	--	--
Q1	1.00	--
Q2	1.00 (0.83, 1.19)	0.98
Q3	1.09 (0.92, 1.30)	0.33
Q4	1.39 (1.18, 1.64)	<0.001
Q5	1.23 (1.03, 1.45)	0.02
p-Trend	--	<0.001
Foreign birth	0.80 (0.73, 0.87)	<0.001
Residence within city limits	0.81 (0.71, 1.02)	0.08
Unemployment	2.70 (2.46, 2.96)	<0.001
Homelessness	1.14 (0.97, 1.33)	0.11
Substance abuse	1.07 (0.95, 1.21)	0.25
Combined pulmonary and extrapulmonary TB	1.83 (1.65, 2.04)	<0.001
TB meningitis	2.18 (1.78, 2.68)	<0.001
Miliary TB	2.47 (2.04, 2.99)	<0.001
Smear positive TB	1.49 (1.37, 1.62)	<0.001
Microbiologically confirmed TB	4.13 (3.49, 4.89)	<0.001
MDR TB	0.50 (0.35, 0.74)	<0.001
Cavitary TB	0.81 (0.73, 0.90)	<0.001
Diabetes[a]	2.53 (2.12, 3.04)	<0.001
HIV-infection	1.61 (1.40, 1.86)	<0.001
Non HIV immuno-suppression[a]	3.91 (3.13, 4.88)	<0.001
End-stage renal disease[a]	6.48 (5.08, 8.27)	<0.001

Abbreviations: HR, hazard ratio; Q1-Q5, quintiles 1 through 5, where Q5 is the highest quintile of traffic exposure; vh, vehicle; h, hour; p-Trend, the p-value for the trend across quintiles of traffic exposure; TB, tuberculosis; MDR, multi-drug resistant

[a]Represents subgroup analyses of patients enrolled from 2010-12

Table S2. Adjusted[a] mortality hazard ratios (95% CI) for bilevel traffic density[b] in each buffer, stratified by self-reported comorbidity, 2010-2012.

Population	N	100 m buffer	200 m buffer	300 m buffer	400 m buffer
2010-12 subgroup	6,158	1.25 (0.95, 1.65)	1.00 (0.81, 1.25)	0.98 (0.79, 1.21)	0.93 (0.76, 1.14)
Any comorbidity					
No	4,406	1.45 (0.96, 2.18)	1.17 (0.83, 1.63)	0.88 (0.64, 1.21)	0.89 (0.65, 1.21)
Yes	1,752	1.15 (0.80, 1.65)	0.97 (0.73, 1.29)	1.09 (0.83, 1.42)	0.99 (0.77, 1.29)
p-Interaction	--	0.41	0.40	0.31	0.58
Diabetes					
No	4,776	1.22 (0.86, 1.73)	1.06 (0.80, 1.40)	0.92 (0.70, 1.19)	0.87 (0.67, 1.12)
Yes	1,382	1.36 (0.88, 2.11)	1.00 (0.71, 1.40)	1.12 (0.81, 1.55)	1.07 (0.78, 1.46)
p-Interaction	--	0.70	0.81	0.33	0.30
Non HIV immuno-suppression					
No	5,748	1.41 (1.04, 1.91)	1.03 (0.81, 1.32)	0.99 (0.78, 1.25)	1.00 (0.80, 1.25)
Yes	410	0.58 (0.30, 1.11)	0.81 (0.49, 1.34)	0.81 (0.51, 1.29)	0.71 (0.46, 1.12)
p-Interaction	--	0.01	0.39	0.45	0.19
End-stage renal disease					
No	5,942	1.28 (0.95, 1.72)	1.02 (0.80, 1.30)	1.01 (0.81, 1.27)	0.96 (0.77, 1.20)
Yes	216	1.08 (0.52, 2.25)	0.97 (0.58, 1.61)	0.93 (0.56, 1.52)	0.95 (0.59, 1.53)
p-Interaction	--	0.67	0.86	0.75	0.96

[a]Adjusted for age, sex, race, ethnicity, foreign-birth, recent immigration within 5 years prior to TB diagnosis, population density, region, unemployment within one year prior to TB diagnosis, homeless within one year prior to TB diagnosis, excess alcohol and/or recreational drug use within one year prior to TB diagnosis, and HIV-infection.

[b]The HR represents the highest quintile traffic density compared to the lowest quintile traffic density in each effect modifier level and buffer.

*A statistically significant trend (p-trend<0.05) exists across quintiles.

Table S3. Secondary outcome by nearest-road traffic volumes, 100 m buffer, Kaplan-Meier survival analysis

Exposure	Secondary outcome	
Nearest-road traffic volume quintiles	Median (IQR) days to culture conversion	Median (IQR) days to successful treatment completion
All quintiles	54 (32-83)	256 (190-309)
Q1	56 (34-86)	252 (191-306)
Q2	55 (34-82)	255 (189-306)
Q3	54 (34-81)	252 (190-309)
Q4	54 (33-83)	258 (191-313)
Q5	53 (33-83)	261 (191-317)
p-Value[a]	0.24	0.08

Abbreviations: Q1-Q5, quintiles 1 through 5, where Q5 is the highest quintile of traffic exposure

[a]Statistical significance between Q5 and Q1 exposures was determined using log-rank tests.

Table S4. Adjusted mortality hazard ratios (95% CI) for nearest road traffic volumes, 100 m buffer, by Cox model.

Exposure	Cox model	
Nearest-road traffic volumes, quintiles	Standard multivariable Cox model[a]	Multivariable Cox model[a] with addition of MDR TB and Cavitary TB covariates
Q1	1.00	1.00
Q2	1.03 (0.86, 1.25)	1.06 (0.87, 1.29)
Q3	1.14 (0.95, 1.37)	1.19 (0.98, 1.44)
Q4	1.19 (0.99, 1.43)	1.22 (1.01, 1.48)
Q5	1.28 (1.07, 1.53)	1.28 (1.06, 1.55)
p-Trend	0.002	0.003

[a]Adjusted for age, sex, race, ethnicity, foreign-birth, recent immigration within 5 years prior to TB diagnosis, population density, region, unemployment within one year prior to TB diagnosis, homeless within one year prior to TB diagnosis, excess alcohol and/or recreational drug use within one year prior to TB diagnosis, and HIV-infection.

Table S5. Adjusted[a] mortality hazard ratios (95% CI) for highest quintile traffic density[b] in each buffer, stratified by effect modifier level.

Population	N	100 m buffer	200 m buffer	300 m buffer	400 m buffer
MDR TB					
No	23,942	1.17 (0.96, 1.42)*	1.15 (0.97, 1.36)	1.15 (0.98, 1.34)	1.04 (0.89, 1.22)
Yes	351	1.47 (0.20, 10.6)	1.10 (0.24, 4.97)	2.74 (0.30, 24.6)	0.75 (0.21, 2.65)
p-Interaction	--	0.85	0.53	0.24	0.72
Cavitary TB					
No	25,319	1.13 (0.70, 1.83)*	1.19 (1.01, 1.42)*	1.16 (0.98, 1.37)	1.09 (0.92, 1.28)
Yes	6,139	1.30 (0.86, 2.03)	1.07 (0.74, 1.56)	0.96 (0.67, 1.40)	0.92 (0.65, 1.30)
p-Interaction	--	0.85	0.40	0.13	0.59

Abbreviations: HR, hazard ratio; MDR, multi-drug resistant; TB, tuberculosis

[a]Adjusted for age, sex, race, ethnicity, foreign-birth, recent immigration within 5 years prior to TB diagnosis, population density, region, unemployment within one year prior to TB diagnosis, homeless within one year prior to TB diagnosis, excess alcohol and/or recreational drug use within one year prior to TB diagnosis, and HIV-infection.

[b]The HR represents the highest quintile traffic density compared to the lowest quintile traffic density in each effect modifier level and buffer.

*A statistically significant trend (p-trend<0.05) exists across quintiles.

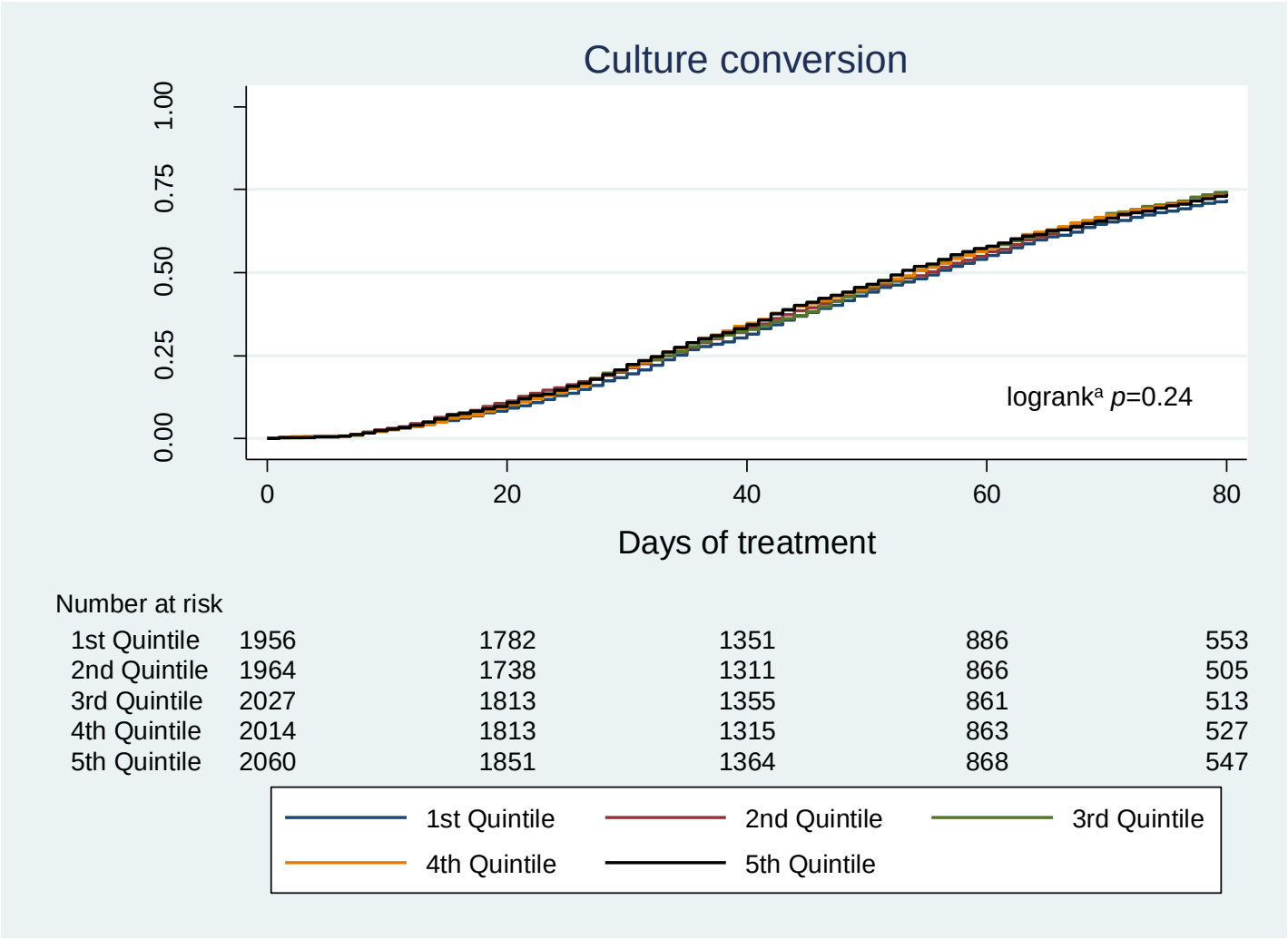

Figure S1. Kaplan-Meier survival analysis for *Mycobacterium tuberculosis* culture conversion (from positive to negative) by nearest-road traffic volume quintile in the 100 m buffer.

[a]Logrank test for statistical significance comparing 5th quintile to 1st quintile traffic volumes.

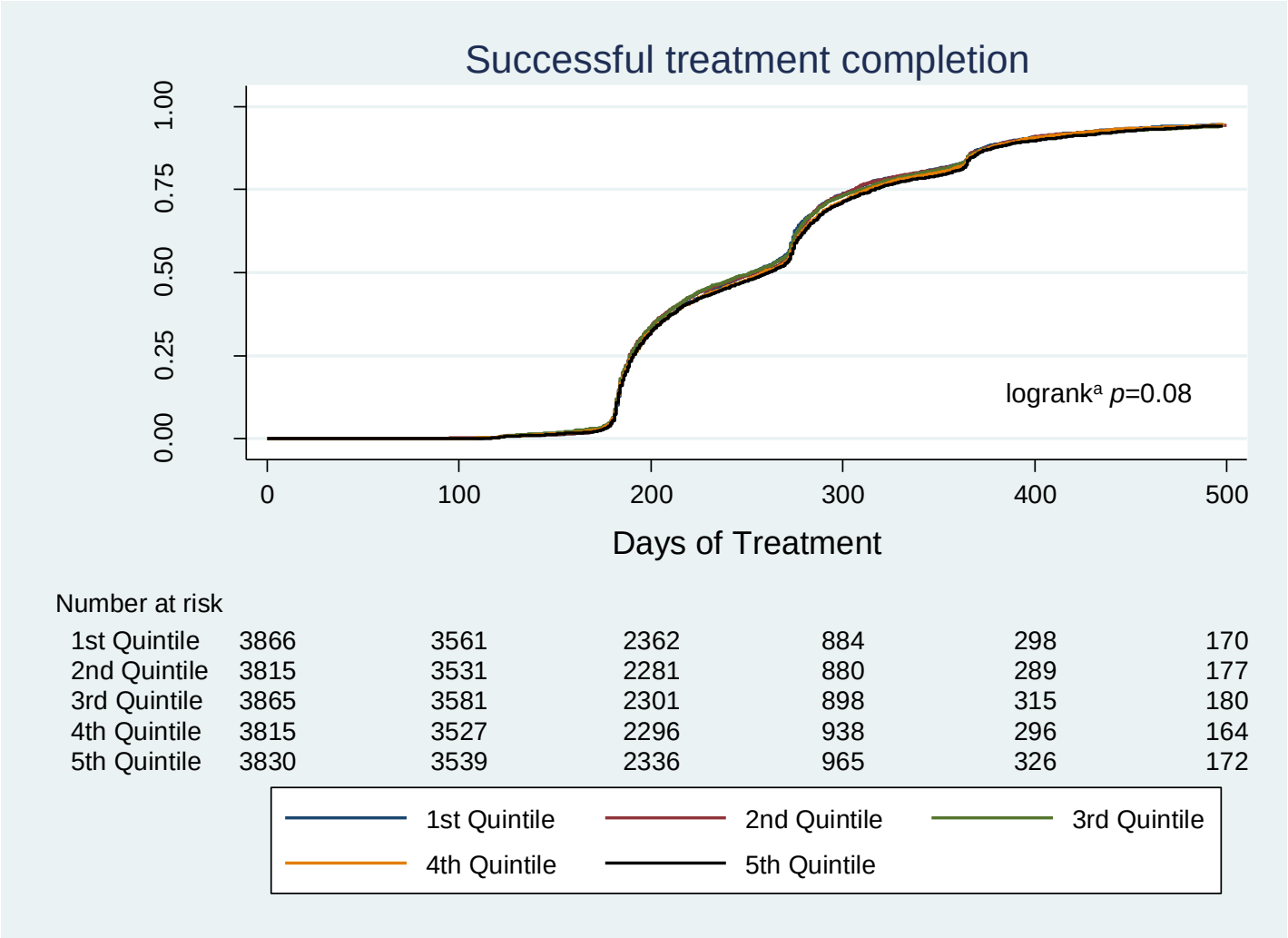

Figure S2. Kaplan-Meier survival analysis for successful TB treatment completion by nearest-road traffic volume quintile in the 100 m buffer.

[a]Logrank test for statistical significance comparing 5th quintile to 1st quintile traffic volumes.