Supplementary Table I: The influence of personal and situational variables on PSQI

Each of the listed variables represents a separate univariate logistic regression model for the dichotomized PSQI explained by that variable and adjusted for WTN levels and province. The OR (CI) and p-value columns for each of the three predictors in the logistic regression models represent the odds ratio (confidence interval) and statistical significance of the corresponding predictor while adjusting for the other two. It should be emphasized that variables considered in the univariate analysis have been previously demonstrated to be related to the modeled endpoint and/or considered by the authors to conceptually have a potential association with the modeled endpoint. The PSQI score was dichotomized with the objective to model the proportion of individuals with poor sleep quality (i.e., PSQI > 5). As the analysis of each listed variable only adjusts for WTN category and province, interpretation of any individual relationship must be made with caution.

Variable	Group	n(%)[b]	PSQI[a] OR (CI)[c]	p-value[d]	Sound Bin p-value[e]	Province p-value[f]	Nagelkerke pseudo R^{2}[g]	H-L test[h]
WTN levels	<25dBA	40 (49.4)			0.4740	0.6997	0.00	0.5246
	[25-30)dBA	45 (48.9)						
	[30-35)dBA	138 (46.5)						
	[35-40)dBA	227 (44.4)						
	[40-46]dBA	106 (46.7)						
Background nighttime sound (BNTS)	<40 dBA	114 (45.8)	0.92 (0.52, 1.62)	0.9727	0.5674	0.6980	0.00	0.3729
	[40, 50) dBA	195 (45.1)	0.91 (0.55, 1.51)					
	[50, 55) dBA	213 (46.7)	0.96 (0.58, 1.58)					
	≥55 dBA	34 (47.9)	reference group					
Sex	Male	254 (43.0)	reference group	0.0407	0.5053	0.7799	0.01	0.6513
	Female	302 (48.9)	1.27 (1.01, 1.59)					
Age group	≤24	25 (34.7)	0.70 (0.41, 1.20)	0.0143	0.5256	0.6579	0.01	0.5883
	25-44	140 (42.9)	0.98 (0.71, 1.36)					
	45-64	270 (50.8)	1.35 (1.01, 1.81)					
	65+	121 (43.4)	reference group					
Marital Status	Married/Common-law	381 (45.7)	1.03 (0.74, 1.44)	0.8412	0.5408	0.6631	0.00	0.7517
	Widowed/Separated/Divorced	97 (47.8)	1.12 (0.74, 1.69)					
	Single, never been married	76 (45.0)	reference group					
Employment	Yes	290 (41.0)	reference group	<0.0001	0.7115	0.7329	0.02	0.7295
	No	266 (53.3)	1.64 (1.30, 2.07)					

Variable	Group	n(%)[b]	PSQI[a] OR (CI)[c]	p-value[d]	Sound Bin p-value[e]	Province p-value[f]	Nagelkerke pseudo R^{2}[g]	H-L test[h]
Employment Schedule	regular daytime/evening shift	201 (39.1)	0.57 (0.44, 0.73)	0.0001	0.6816	0.6919	0.03	0.5110
	regular night/rotating shift or irregular schedule	78 (48.1)	0.82 (0.57, 1.17)					
	Split shift/on call or casual/other	11 (34.4)	0.46 (0.22, 0.97)					
	Unemployed[i]	266 (53.3)	reference group					
Level of Education	≤High School	302 (45.9)	1.11 (0.71, 1.73)	0.8416	0.4870	0.7311	0.00	0.7532
	Trade/Certificate/College	214 (46.6)	1.15 (0.73, 1.81)					
	University	39 (43.3)	reference group					
Income	<60K	254 (49.5)	reference group	0.0744	0.2988	0.1941	0.01	0.1282
	60-100K	131 (44.3)	0.81 (0.61, 1.08)					
	≥100K	88 (40.4)	0.70 (0.51, 0.97)					
Alcohol use	Do not drink alcohol	129 (48.3)	1.11 (0.75, 1.66)	0.6052	0.4971	0.8517	0.00	0.4592
	≤3 times/month	217 (46.9)	1.05 (0.73, 1.52)					
	1-3 times/week	136 (42.9)	0.90 (0.61, 1.32)					
	≥4 times/week	73 (45.6)	reference group					
Smoking status	Current	135 (49.1)	1.27 (0.95, 1.70)	0.2148	0.4952	0.7391	0.00	0.7219
	former	197 (47.6)	1.19 (0.92, 1.55)					
	never	224 (43.2)	reference group					
BMI group	<25 underweight-normal	168 (45.2)	0.94 (0.70, 1.25)	0.8885	0.3874	0.7732	0.00	0.8195
	[25-30) overweig	186 (45.4)	0.95 (0.71, 1.25)					
	≥30 obese	178 (46.7)	reference group					
Caffeine consumption	None	76 (47.5)	0.78 (0.49, 1.25)	0.0567	0.5159	0.8756	0.01	0.7082
	1 or 2 cups/day	257 (42.3)	0.64 (0.43, 0.94)					
	3 or 4 cups/day	156 (49.4)	0.84 (0.56, 1.28)					
	5 or more cups/day	67 (53.6)	reference group					
Currently pregnant	Yes	7 (63.6)	2.04 (0.59, 7.03)	0.2589	0.4883	0.7508	0.00	0.4792
	No	548 (45.8)	reference group					
Self reported sleep disturbance[m]	High	142 (87.7)	10.86 (6.69, 17.64)	<0.0001	0.5503	0.4634	0.15	0.8034
	Low	413 (39.6)	reference group					
Type of dwelling	Single detached homes	502 (45.3)	reference group	0.1033	0.7009	0.8561	0.00	0.4634

Variable	Group	n(%)[b]	PSQI[a] OR (CI)[c]	p-value[d]	Sound Bin p-value[e]	Province p-value[f]	Nagelkerke pseudo R^{2g}	H-L test[h]
	semi/duplex/apartment	54 (54.5)	1.42 (0.93, 2.17)					
Property ownership	Own	474 (45.0)	reference group	0.0692	0.6363	0.8238	0.00	0.5757
	rent	82 (53.2)	1.38 (0.98, 1.94)					
Façade type	Fully Bricked	156 (46.4)	1.10 (0.84, 1.46)	0.4467	0.6169	0.4930	0.00	0.7387
	Partially Bricked	105 (49.5)	1.22 (0.89, 1.69)					
	No Brick/Other	295 (44.7)	reference group					
Bedroom volume ($1000ft^3$)	b(SE)[j]	0.063 (0.067)	1.07 (0.94, 1.21)	0.3424	0.4079	0.6923	0.00	0.8503
Bedroom location	Basement	21 (53.8)	1.46 (0.75, 2.83)	0.5147	0.4742	0.6575	0.00	0.6326
	First floor	380 (46.3)	1.08 (0.84, 1.40)					
	Second floor or higher	155 (44.5)	reference group					
Closing bedroom window to block outside noise	Yes	238 (62.3)	2.66 (2.07, 3.42)	<0.0001	0.3868	0.4177	0.07	0.8938
	No	316 (38.5)	reference group					
Source identified as cause for closing window:								
Road traffic	Yes	117 (67.2)	2.79 (1.98, 3.92)	<0.0001	0.5597	0.5411	0.04	0.8599
	No	436 (42.4)	reference group					
Aircraft	Yes	2 (66.7)	2.34 (0.21, 25.88)	0.4883	0.4073	0.7039	0.00	0.4796
	No	551 (46.0)	reference group					
Rail	Yes	16 (66.7)	2.36 (1.00, 5.59)	0.0504	0.5237	0.6008	0.01	0.5345
	No	537 (45.6)	reference group					
Wind turbines	Yes	93 (69.4)	3.32 (2.23, 4.95)	<0.0001	0.0254[k]	0.5529	0.04	0.2722
	No	460 (43.1)	reference group					
Other	Yes	95 (58.6)	1.79 (1.28, 2.50)	0.0008	0.6334	0.7214	0.01	0.3568
	No	458 (44.0)	reference group					
Sleep improved by closing window	Yes	182 (57.4)	2.17 (1.67, 2.83)	<0.0001	0.3745	0.4199	0.09	0.7981
	No	53 (85.5)	9.48 (4.61, 19.48)					
	Did not need to close window	316 (38.5)	reference group					
Bedroom window type	Single pane	50 (51.5)	1.20 (0.53, 2.73)	0.5433	0.3995	0.8367	0.00	0.8172
	Double pane	490 (45.6)	0.95 (0.46, 1.96)					
	Triple pane	14 (46.7)	reference group					
Bedroom on quiet side	Yes	305 (44.5)	0.74 (0.47, 1.17)	0.3093	0.4212	0.6975	0.00	0.8611
	No	207 (47.6)	0.85 (0.53, 1.36)					
	There is no quiet side	43 (51.8)	reference group					

Variable	Group	n(%)[b]	PSQI[a] OR (CI)[c]	p-value[d]	Sound Bin p-value[e]	Province p-value[f]	Nagelkerke pseudo R^{2}[g]	H-L test[h]
Air conditioner in dwelling	Yes	433 (45.7)	0.93 (0.66, 1.31)	0.6690	0.4215	0.9699	0.00	0.2186
	No	123 (47.5)	reference group					
Air conditioning unit in bedroom	Yes	39 (49.4)	1.06 (0.63, 1.80)	0.8837	0.4324	0.9490	0.00	0.8562
	No	58 (46.0)	0.93 (0.58, 1.48)					
	central AC or other	336 (45.2)	0.90 (0.63, 1.29)					
	NO AC	123 (47.5)	reference group					
Number of years hearing the WT	Do not hear wind turbines	274 (43.1)	reference group	0.0128	0.0319[L]	0.9495	0.01	0.6699
	less than 1 year	27 (45.8)	1.23 (0.71, 2.12)					
	1 year or more	253 (49.6)	1.51 (1.15, 1.99)					
Complaint about WT	Yes	19 (57.6)	1.64 (0.81, 3.31)	0.1690	0.3750	0.9362	0.00	0.7016
	No	533 (45.5)	reference group					
Concerned about physical safety	High	53 (71.6)	3.33 (1.98, 5.62)	<0.0001	0.1491	0.5999	0.03	0.6800
	Low	498 (44.3)	reference group					
Personal benefits	Yes	33 (30.3)	reference group	0.0009	0.9473	0.6907	0.01	0.9463
	No	499 (47.5)	2.08 (1.35, 3.21)					
Audible wind turbines	Yes	282 (49.2)	1.47 (1.13, 1.91)	0.0045	0.0397[L]	0.7929	0.01	0.8266
	No	274 (43.1)	reference group					
Audible road traffic	Yes	473 (47.7)	1.48 (1.09, 2.00)	0.0115	0.3391	0.8150	0.01	0.6011
	No	83 (38.4)	reference group					
Audible aircraft	Yes	286 (48.0)	1.17 (0.93, 1.47)	0.1713	0.4337	0.7544	0.00	0.3732
	No	270 (44.1)	reference group					
Audible rail	Yes	93 (41.3)	0.76 (0.56, 1.04)	0.0833	0.2725	0.9936	0.00	0.5581
	No	463 (47.1)	reference group					
ONT: audible rail	Yes	93 (41.3)	0.74 (0.54, 1.01)	0.0577	0.0985		0.01	0.9847
	No	363 (47.1)	reference group					
Annoyed by snoring	High	45 (76.3)	4.04 (2.19, 7.45)	<0.0001	0.4066	0.6481	0.03	0.7168
	Low	511 (44.5)	reference group					
Source of sleep disturbance								
Wind turbines	Yes	60 (75.0)	4.37 (2.57, 7.41)	<0.0001	0.0331[L]	0.5850	0.04	0.4840
	No	474 (43.2)	reference group					

Variable	Group	n(%)[b]	PSQI[a] OR (CI)[c]	p-value[d]	Sound Bin p-value[e]	Province p-value[f]	Nagelkerke pseudo R^{2g}	H-L test[h]
Children	Yes	44 (44.9)	0.97 (0.64, 1.48)	0.9008	0.2636	0.9430	0.00	0.5039
	No	490 (45.4)	reference group					
Pets	Yes	43 (46.2)	1.05 (0.69, 1.61)	0.8279	0.2627	0.9321	0.00	0.3422
	No	491 (45.3)	reference group					
Neighbours	Yes	24 (64.9)	2.25 (1.13, 4.48)	0.0206	0.3298	0.8168	0.01	0.4786
	No	510 (44.7)	reference group					
Stress/anxiety	Yes	51 (69.9)	2.98 (1.79, 4.99)	<0.0001	0.2696	0.9639	0.02	0.4166
	No	483 (43.7)	reference group					
Health related/physical	Yes	96 (71.6)	3.47 (2.34, 5.15)	<0.0001	0.4629	0.8831	0.05	0.5543
pain	No	438 (42.0)	reference group					
Snoring	Yes	31 (51.7)	1.30 (0.77, 2.18)	0.3258	0.2754	0.9501	0.00	0.3553
	No	503 (45.0)	reference group					
Other	Yes	336 (61.0)	3.39 (2.67, 4.32)	<0.0001	0.4921	0.4732	0.11	0.2804
	No	198 (31.6)	reference group					
Sensitivity to noise	High	113 (66.1)	2.63 (1.87, 3.70)	<0.0001	0.4647	0.5733	0.04	0.6084
	Low	441 (42.7)	reference group					
Annoyance to WTN	High	58 (67.4)	2.80 (1.74, 4.51)	<0.0001	0.1252	0.4978	0.02	0.4882
	Low	497 (44.3)	reference group					
Annoyance with blinking	High	81 (68.1)	2.90 (1.93, 4.37)	<0.0001	0.1596	0.3680	0.03	0.6417
lights	Low	473 (43.6)	reference group					
Shadow flicker annoyance	High	63 (66.3)	2.65 (1.69, 4.16)	<0.0001	0.1159	0.6113	0.02	0.4803
	Low	490 (44.2)	reference group					
Notice vibrations	Yes	34 (61.8)	2.03 (1.16, 3.55)	0.0130	0.3169	0.7298	0.01	0.4679
	No	517 (45.0)	reference group					
Annoyance with	High	15 (78.9)	4.68 (1.54, 14.21)	0.0065	0.3439	0.6907	0.01	0.5355
vibrations/rattles	Low	536 (45.3)	reference group					
Migraines	Yes	191 (67.5)	3.24 (2.44, 4.30)	<0.0001	0.2860	0.3486	0.08	0.8526
	No	364 (39.4)	reference group					
Dizziness	Yes	182 (68.2)	3.27 (2.45, 4.36)	<0.0001	0.3240	0.6267	0.07	0.6166
	No	374 (39.7)	reference group					
Tinnitus	Yes	177 (62.5)	2.40 (1.83, 3.16)	<0.0001	0.4615	0.7113	0.04	0.1642
	No	379 (41.0)	reference group					

Variable	Group	n(%)[b]	PSQI[a] OR (CI)[c]	p-value[d]	Sound Bin p-value[e]	Province p-value[f]	Nagelkerke pseudo R^{2}[g]	H-L test[h]
Chronic Pain	Yes	186 (66.2)	3.00 (2.26, 3.97)	<0.0001	0.4966	0.3357	0.07	0.9125
	No	368 (39.8)	reference group					
Asthma	Yes	67 (66.3)	2.48 (1.61, 3.81)	<0.0001	0.5669	0.7078	0.02	0.2872
	No	489 (44.2)	reference group					
Arthritis	Yes	223 (57.5)	1.99 (1.55, 2.54)	<0.0001	0.5230	0.5560	0.03	0.9741
	No	332 (40.5)	reference group					
Chronic bronchitis/	Yes	48 (67.6)	2.61 (1.56, 4.35)	0.0002	0.5513	0.5685	0.02	0.6635
emphysema/COPD	No	506 (44.6)	reference group					
Diabetes	Yes	61 (55.5)	1.52 (1.02, 2.25)	0.0389	0.4626	0.8218	0.01	0.7391
	No	493 (45.0)	reference group					
Heart disease	Yes	53 (56.4)	1.56 (1.02, 2.39)	0.0403	0.5185	0.7036	0.01	0.4127
	No	503 (45.2)	reference group					
Diagnosed sleep disorder	Yes	85 (71.4)	3.32 (2.19, 5.03)	<0.0001	0.5804	0.3919	0.04	0.9639
	No	471 (43.3)	reference group					
Restless leg syndrome	Yes	114 (67.1)	2.79 (1.98, 3.94)	<0.0001	0.3419	0.4184	0.04	0.8848
	No	442 (42.6)	reference group					

[a] the logistic regression is modelling the probability of poor sleep or a global PSQI score >5

[b] observed frequency and proportion of people with "poor sleep" in each subgroup of variable

[c] OR(CI) odds ratio and 95% confidence interval based on logistic regression model with reference group as indicated for each variable in the table

[d] p-value from logistic regression model testing the significant difference between prevalence rates in the subgroups of interest listed in "Variable" column

[e] p-value from logistic regression model testing the significant difference between prevalence rates in WTN exposure groups

[f] p-value from logistic regression model testing the significant difference between prevalence rates between the two provinces

[g] Nagelkerke pseudo R^2 is a measure of the explained variance in the model and is referred to as a generalization of the coefficient of determination

[h] H-L: Hosmer-Lemeshow goodness of fit test, p>0.05 indicates a good fit

[i] Unemployment includes stay at home parents, retired, as well as not currently employed

[j] slope (b) and standard error (SE) of slope in logistic regression model

Variable	Group	n(%)[b]	PSQI[a] OR (CI)[c]	p-value[d]	Sound Bin p-value[e]	Province p-value[f]	Nagelkerke pseudo R^{2}[g]	H-L test[h]

[k] coefficient of WTN was negative indicating that for every unit increase (moving towards the louder WTN groups), the proportion of people with "poor sleep" decreased. Though the proportion of people with "poor sleep" was significantly higher among those who had to close their windows due to WTN ($p<0.0001$), this proportion did decrease as the WTN exposure group increased. It is interesting to note here that when participants receiving personal benefits were removed from the analysis there was no relationship between the proportion of respondents with "poor sleep" and WTN exposure group.

[L] coefficient of WTN was negative indicating that for every unit increase (moving towards the louder WTN groups), the proportion of people with "poor sleep" decreased. Though the proportion of people with "poor sleep" was significantly higher among those who hear WTN or specified that WTN was a cause for sleep disturbance, this proportion did decrease as the WTN exposure group increased. It is interesting to note here that when participants receiving personal benefits were removed from the analysis there was no relationship between the proportion of respondents with "poor sleep" and WTN exposure group.

[m] Evaluates the magnitude of reported sleep disturbance for any reason over the previous year while at home

Supplementary Table II: The influence of personal and situational variables on actigraphy measures

			Sleep Latency						
			mean (CI)[a]	Pair wise tests	p-value[b]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
WTN levels	<25dBA	46 (7.0)	16.34 (11.40, 21.28)			0.9051	0.8435	0.3254	0.9182
	[25-30)dBA	48 (7.3)	12.34 (8.88, 15.80)						
	[30-35)dBA	164 (25.1)	12.51 (10.54, 14.49)						
	[35-40)dBA	272 (41.6)	13.02 (11.39, 14.65)						
	[40-46]dBA	124 (19.0)	12.64 (10.50, 14.78)						
Background nighttime sound (BNTS)	<40 dBA	159 (24.3)	13.14 (10.99, 15.29)		0.7780	0.8521	0.8469	0.3258	0.6719
	[40, 50) dBA	224 (34.3)	14.10 (12.03, 16.16)						
	[50, 55) dBA	237 (36.2)	13.24 (11.10, 15.38)						
	>=55 dBA	34 (5.2)	11.20 (8.13, 14.27)						
Sex	Male	289 (44.2)	14.65 (12.95, 16.34)		0.0604	0.8957	0.8414	0.3278	0.9879
	Female	365 (55.8)	12.45 (10.77, 14.13)						
Age group	≤24	32 (4.9)	13.35 (8.57, 18.14)		0.0720	0.8649	0.8481	0.3277	0.9446
	25-44	148 (22.6)	10.78 (8.94, 12.62)						
	45-64	302 (46.2)	13.40 (11.68, 15.12)						
	65+	172 (26.3)	15.63 (13.20, 18.06)						
Marital Status	Married/Common-law	451 (69.0)	13.27 (11.72, 14.82)		0.8743	0.9095	0.8462	0.3247	0.9441
	Widowed/Separated/Divorced	125 (19.1)	14.39 (11.70, 17.08)						
	Single, never been married	78 (11.9)	12.24 (9.71, 14.76)						
Employment	Yes	327 (50.0)	12.49 (10.99, 13.98)		0.2682	0.9059	0.8452	0.3280	0.9111
	No	327 (50.0)	14.16 (12.35, 15.97)						
Employment Schedule	regular daytime/evening shift	307 (46.9)	12.57 (11.02, 14.13)		0.4095	0.9107	0.8457	0.3334	0.9132
	Split shift/on call or casual/other	20 (3.1)	11.40 (7.23, 15.56)						
	Unemployed[M]	327 (50.0)	14.17 (12.36, 15.98)						
Level of Education	≤High School	355 (54.3)	14.05 (12.34, 15.76)		0.3417	0.8833	0.8454	0.3240	0.8942
	Trade/Certificate/College	240 (36.7)	12.55 (10.72, 14.37)						
	University	59 (9.0)	12.63 (9.53, 15.74)						

			Sleep Latency						
			mean (CI)[a]	Pair wise tests	p-value[b]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
Income	<60K	303 (46.3)	13.82 (12.14, 15.50)		0.0887	0.7785	0.9528	0.2952	0.9114
	60-100K	150 (22.9)	14.44 (11.90, 16.98)						
	≥100K	121 (18.5)	11.69 (9.53, 13.85)						
Alcohol use	Do not drink alcohol	167 (25.5)	13.31 (10.96, 15.67)		0.9364	0.9131	0.8431	0.3219	0.9484
	≤3 times/month	254 (38.8)	14.09 (12.27, 15.91)						
	1-3 times/week	149 (22.8)	12.10 (10.39, 13.81)						
	≥4 times/week	84 (12.8)	13.51 (9.82, 17.19)						
Smoking status	Current	136 (20.8)	13.61 (11.03, 16.20)		0.2904	0.9058	0.8447	0.3245	0.8595
	former	230 (35.2)	13.57 (11.68, 15.46)						
	never	288 (44.0)	13.07 (11.29, 14.84)						
BMI group	<25 underweight-normal	193 (30.9)	12.04 (9.93, 14.16)	A	0.0012	0.8999	0.7878	0.3217	0.6897
	[25-30) overweight	232 (37.1)	13.38 (11.44, 15.32)	AB					
	≥30 obese	200 (32.0)	15.72 (13.58, 17.87)	B					
Caffeine consumption	None	81 (12.4)	11.68 (9.32, 14.04)		0.3924	0.9401	0.8442	0.3275	0.8670
	1 or 2 cups/day	319 (48.8)	12.55 (10.95, 14.15)						
	3 or 4 cups/day	178 (27.2)	15.23 (12.68, 17.77)						
	5 or more cups/day	76 (11.6)	13.58 (11.07, 16.09)						
Self-reported sleep disturbance[n]	High	85 (13.0)	12.89 (10.31, 15.47)		0.8840	0.9082	0.8430	0.3285	0.9031
	Low	568 (86.9)	13.43 (12.03, 14.83)						
Sleep medication	Yes	85 (13.0)	13.55 (10.67, 16.43)		0.5214	0.9167	0.8479	0.3252	0.9375
	No	569 (87.0)	13.34 (11.92, 14.75)						
Type of dwelling	Single detached homes	593 (90.7)	13.52 (12.06, 14.97)		0.5081	0.8772	0.8412	0.3271	0.9416
	semi/duplex/apartment	61 (9.3)	12.35 (9.52, 15.17)						
Property ownership	Own	568 (86.9)	13.05 (11.57, 14.53)		0.9284	0.9094	0.8435	0.3254	0.9101
	rent	86 (13.2)	15.11 (11.42, 18.79)						
Façade type	Fully Bricked	188 (28.8)	12.51 (10.27, 14.76)		0.4486	0.8711	0.8444	0.3285	0.6401
	Partially Bricked	102 (15.6)	13.38 (10.40, 16.35)						
	No Brick/Other	364 (55.7)	13.62 (12.10, 15.14)						
Bedroom volume (1000ft^3)	b(SE)	639 (97.7)	0.0280 (0.0466)		0.5511	0.8960	0.8455	0.2449	0.7271

			Sleep Latency						
			mean (CI)[a]	Pair wise tests	p-value[b]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
Bedroom location	Basement	14 (2.1)	14.14 (8.18, 20.11)		0.7716	0.9097	0.8411	0.3255	0.8837
	First floor	453 (69.3)	13.16 (11.70, 14.62)						
	Second floor or higher	187 (28.6)	13.72 (11.53, 15.91)						
Closing bedroom window to block outside noise	Yes	211 (32.3)	12.22 (10.42, 14.01)		0.1731	0.8759	0.8457	0.2667	0.8628
	No	440 (67.3)	13.94 (12.36, 15.52)						
Source identified as cause for closing window:[L]									
Road traffic	Yes	95 (14.5)	11.82 (9.73, 13.91)		0.5376	0.8940	0.8519	0.2725	0.8674
	No	555 (84.9)	13.67 (12.21, 15.13)						
Rail	Yes	11 (1.7)	6.84 (3.03, 10.65)		0.3970	0.8671	0.8477	0.2734	0.8157
	No	639 (97.7)	13.51 (12.15, 14.87)						
Wind turbines	Yes	70 (10.7)	13.28 (10.53, 16.04)		0.4974	0.8913	0.8491	0.2726	0.8816
	No	580 (88.7)	13.39 (12.02, 14.75)						
Other	Yes	89 (13.6)	12.07 (9.35, 14.79)		0.0607	0.8860	0.8530	0.2760	0.9154
	No	561 (85.8)	13.63 (12.24, 15.02)						
Sleep improved by closing window	Yes	169 (25.8)	12.52 (10.54, 14.50)		0.4171	0.8814	0.8552	0.2903	0.8414
	No	39 (6.0)	11.11 (8.39, 13.82)						
	Did not need to close window	440 (67.3)	13.93 (12.35, 15.51)						
Bedroom window type	Single pane	57 (8.7)	12.22 (8.01, 16.43)		0.2285	0.9100	0.8169	0.3610	0.8956
	Double pane	581 (88.8)	13.49 (12.05, 14.92)						
	Triple pane	15 (2.3)	14.67 (5.97, 23.36)						
Bedroom on quiet side	Yes	370 (56.6)	12.87 (11.28, 14.45)		0.5257	0.8919	0.8418	0.3188	0.9094
	No	237 (36.2)	13.67 (11.65, 15.69)						
	There is no quiet side	46 (7.0)	15.81 (10.85, 20.77)						
Air conditioner in dwelling	Yes	497 (76.0)	13.25 (11.43, 15.07)		0.9051	0.9051	0.8434	0.3254	0.8761
	No	157 (24.0)	13.54 (11.21, 15.87)						
Air conditioning unit in bedroom	Yes	47 (7.2)	10.31 (7.89, 12.73)		0.6744	0.9034	0.8448	0.3251	0.9905
	No	63 (9.6)	15.15 (11.11, 19.19)						
	central AC or other	387 (59.2)	13.50 (11.39, 15.62)						
	NO AC	157 (24.0)	13.42 (11.09, 15.75)						

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Sleep Latency p-value[b] Variable	Sound Bin	Day	SoundBin *Day	Province
Any windows in the room	Yes	3258[j]	13.10 (11.65, 14.55)		0.6269	0.7004	0.7763	0.2904	0.6182
in which you slept	No	194[j]	16.37 (11.60, 21.13)						
At least one window open	Yes	1368[j]	13.43 (11.29, 15.57)		0.8550	0.5761	0.4787	0.2659	0.5646
	No	1854[j]	13.20 (11.70, 14.70)						
Number of years hearing	Do not hear wind turbines	331 (50.6)	13.41 (11.76, 15.07)		0.4124	0.7706	0.8504	0.3500	0.8900
the WT	less than 1 year	30 (4.6)	11.46 (8.79, 14.13)						
	1 year or more	291 (44.5)	13.58 (11.71, 15.44)						
Complaint about WT	Yes	26 (4.0)	9.85 (7.34, 12.37)		0.0727	0.9131	0.8517	0.3474	0.9557
	No	625 (95.6)	13.54 (12.18, 14.90)						
Concerned about physical	High	41 (6.3)	10.69 (7.94, 13.45)		0.2868	0.9084	0.8676	0.3392	0.6970
safety	Low	608 (93.0)	13.45 (12.09, 14.81)						
Personal benefits	Yes	59 (9.0)	14.73 (10.31, 19.16)		0.8494	0.8903	0.8718	0.4202	0.8522
	No	571 (87.3)	13.13 (11.77, 14.49)						
Audible wind turbines	Yes	323 (49.4)	13.32 (11.56, 15.07)		0.2049	0.7527	0.8473	0.3266	0.8556
	No	331 (50.6)	13.40 (11.75, 15.05)						
Audible road traffic	Yes	546 (83.5)	13.52 (12.17, 14.87)		0.3236	0.8861	0.8506	0.3224	0.8780
	No	108 (16.5)	12.72 (9.96, 15.47)						
Audible aircraft	Yes	347 (53.1)	13.70 (11.98, 15.42)		0.7698	0.9074	0.8443	0.3252	0.9009
	No	307 (46.9)	12.97 (11.32, 14.62)						
Audible rail	Yes	120 (18.4)	13.98 (10.94, 17.03)		0.3607	0.9286	0.8445	0.3218	0.8725
	No	534 (81.7)	13.25 (11.91, 14.60)						
ONT: audible rail	Yes	120 (23.7)	14.83 (11.85, 17.80)		0.2817	0.8597	0.7146	0.8760	
	No	387 (76.3)	13.97 (12.17, 15.77)						
Annoyed by snoring	High	33 (5.1)	15.36 (9.60, 21.12)		0.1684	0.8898	0.8415	0.3217	0.9235
	Low	621 (95.0)	13.28 (11.91, 14.65)						
Source of sleep disturbance									
Wind turbines	Yes	37 (5.7)	12.18 (9.16, 15.20)		0.4626	0.8627	0.8373	0.4470	0.9388
	No	594 (90.8)	13.43 (12.04, 14.81)						

			Sleep Latency						
			mean (CI)[a]	Pair wise tests	p-value[b]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
Children	Yes	45 (6.9)	14.74 (9.85, 19.63)		0.6072	0.8765	0.8404	0.4465	0.9122
	No	586 (89.6)	13.26 (11.92, 14.60)						
Pets	Yes	47 (7.2)	11.35 (8.22, 14.48)	A	0.0229	0.9098	0.8457	0.4385	0.7606
	No	584 (89.3)	13.53 (12.12, 14.94)	B					
Neighbours	Yes	20 (3.1)	12.94 (8.19, 17.68)		0.7633	0.8795	0.8388	0.4463	0.8711
	No	611 (93.4)	13.40 (12.01, 14.79)						
Stress/anxiety	Yes	35 (5.4)	10.30 (7.41, 13.18)		0.2436	0.8608	0.8361	0.4481	0.8739
	No	596 (91.1)	13.56 (12.15, 14.98)						
Health related/physical pain	Yes	84 (12.8)	11.60 (8.82, 14.38)		0.1644	0.8473	0.8378	0.4482	0.8448
	No	547 (83.6)	13.65 (12.18, 15.12)						
Snoring	Yes	32 (4.9)	16.97 (9.51, 24.43)		0.4505	0.8912	0.8373	0.4446	0.8908
	No	599 (91.6)	13.19 (11.86, 14.52)						
Other	Yes	312 (47.7)	13.18 (11.44, 14.92)		0.7883	0.8937	0.8391	0.4458	0.9105
	No	319 (48.8)	13.56 (11.88, 15.25)						
Sensitivity to noise	High	99 (15.1)	11.34 (9.26, 13.43)		0.2964	0.8962	0.8600	0.3393	0.8042
	Low	552 (84.4)	13.68 (12.26, 15.11)						
Annoyance to WTN	High	42 (6.4)	11.96 (8.43, 15.49)		0.2646	0.9212	0.8507	0.3326	0.9296
	Low	611 (93.4)	13.45 (12.11, 14.80)						
Annoyance with blinking lights	High	59 (9.0)	12.01 (9.05, 14.96)		0.5677	0.9146	0.8500	0.3319	0.9361
	Low	594 (90.8)	13.47 (12.12, 14.82)						
Shadow flicker annoyance	High	44 (6.7)	11.77 (8.88, 14.67)		0.6473	0.8975	0.8420	0.3483	0.9810
	Low	608 (93.0)	13.48 (12.12, 14.84)						
Notice vibrations	Yes	32 (4.9)	13.12 (10.33, 15.91)		0.3628	0.9056	0.8493	0.3593	0.9468
	No	616 (94.2)	13.49 (12.12, 14.85)						
Annoyance with vibrations/rattles	High	9 (1.4)	15.12 (10.24, 20.00)		0.1595	0.9072	0.8478	0.3591	0.9025
	Low	639 (97.7)	13.46 (12.11, 14.80)						
Migraines	Yes	171 (26.2)	12.05 (10.28, 13.81)		0.7449	0.9019	0.8441	0.3252	0.8994
	No	483 (73.9)	13.76 (12.25, 15.26)						
Dizziness	Yes	163 (24.9)	12.25 (10.43, 14.06)		0.5889	0.9010	0.8449	0.3245	0.9061
	No	491 (75.1)	13.72 (12.21, 15.24)						

			Sleep Latency						
			mean (CI)[a]	Pair wise tests	p-value[b]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
Tinnitus	Yes	163 (24.9)	12.89 (10.86, 14.92)		0.4156	0.9143	0.8385	0.3152	0.8422
	No	490 (74.9)	13.55 (12.05, 15.05)						
Chronic Pain	Yes	175 (26.8)	13.21 (11.10, 15.32)		0.8500	0.8982	0.8452	0.3156	0.8648
	No	478 (73.1)	13.40 (11.94, 14.86)						
Asthma	Yes	59 (9.0)	9.06 (6.70, 11.42)	A	0.0092	0.8675	0.8444	0.3196	0.8713
	No	595 (91.0)	13.86 (12.45, 15.28)	B					
Arthritis	Yes	225 (34.4)	12.65 (11.00, 14.31)		0.6885	0.9025	0.8436	0.3253	0.9313
	No	429 (65.6)	13.74 (12.14, 15.34)						
Chronic bronchitis/	Yes	46 (7.0)	14.04 (8.50, 19.58)		0.2925	0.9069	0.8258	0.3672	0.8568
emphysema/COPD	No	607 (92.8)	13.31 (11.99, 14.63)						
Diabetes	Yes	70 (10.7)	14.49 (10.70, 18.27)		0.2908	0.9085	0.8406	0.3207	0.8532
	No	584 (89.3)	13.20 (11.90, 14.51)						
Heart disease	Yes	54 (8.3)	14.06 (10.30, 17.82)		0.2573	0.9266	0.8455	0.3283	0.9261
	No	600 (91.7)	13.30 (11.88, 14.71)						
Diagnosed sleep disorder	Yes	64 (9.8)	12.95 (9.98, 15.91)		0.4491	0.9330	0.8454	0.3252	0.9845
	No	590 (90.2)	13.42 (11.98, 14.85)						
Restless leg syndrome	Yes	98 (15.0)	14.09 (10.80, 17.37)		0.9192	0.9065	0.8435	0.3252	0.9152
	No	556 (85.0)	13.26 (11.93, 14.59)						

[a] Least square means based on original scale of data and corresponding 95% confidence interval (CI), linear mixed effects model

[b] p-values for the different factors in the mixed effect model based on log(x+1) for sleep latency

[c] observed frequency and proportion of respondents in each subgroup of variable. The % does not always sum to 100 due to missing values

[i] pregnancy status was also considered, but analysis was not conducted due to the small number of pregnant women who participated in the sleep actimetry component of the study (n<5)

[j] based on the number of sleep nights, because people could have slept in a different room on a particular night, or window was open on only certain nights

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Sleep Latency p-value[b] Variable	Sound Bin	Day	SoundBin *Day	Province

[L] Aircraft noise leading to closure of bedroom window was also considered, but analysis was not conducted due to the small number of these responses (n<5)

[M] Unemployment includes stay at home parents, retired, as well as not currently employed

[n] Evaluates the magnitude of reported sleep disturbance for any reason over the previous year while at home

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Each of the listed variable represents a separate univariate GEE regression model for the modeled actigraphy endpoint explained by that variable and adjusted for WTN levels, province, day of the week, and the interaction between WTN groups and day of the week. It should be emphasized that variables considered in the univariate analysis have been previously demonstrated to be related to the modeled endpoint and/or considered by the authors to conceptually have a potential association with the modeled endpoint. As the analysis of each listed variable only adjusts for WTN category and province, interpretation of any individual relationship must be made with caution. The wrist actigraphy endpoint of number of awakening bouts does not follow a normal distribution; therefore to analyze awakening bouts a Poisson distribution was assumed. The number of awakening bouts was analyzed with respect to the total time spent in bed and is reported as a rate of the number of awakening bouts per 60 min in bed. Sleep efficiency, sleep latency, and WASO were transformed in order to normalize the data and stabilize the variance. In the GEE models, statistical tests were based on transformed data. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints.

Supplementary Table II: The influence of personal and situational variables on actigraphy measures

			Sleep Efficiency						
			mean (CI)[a]	Pair wise tests	p-value[d]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
WTN levels	<25dBA	46 (7.0)	84.71 (83.25, 86.17)			0.2420	0.7549	0.1862	0.9229
	[25-30)dBA	48 (7.3)	86.49 (85.12, 87.87)						
	[30-35)dBA	164 (25.1)	84.82 (83.86, 85.78)						
	[35-40)dBA	272 (41.6)	85.33 (84.60, 86.05)						
	[40-46]dBA	124 (19.0)	85.01 (84.05, 85.98)						
Background nighttime sound (BNTS)	<40 dBA	159 (24.3)	85.38 (84.44, 86.33)		0.7166	0.2977	0.7537	0.1810	0.9907
	[40, 50) dBA	224 (34.3)	85.36 (84.38, 86.33)						
	[50, 55) dBA	237 (36.2)	85.23 (84.42, 86.04)						
	>=55 dBA	34 (5.2)	83.98 (81.92, 86.05)						
Sex	Male	289 (44.2)	84.41 (83.60, 85.22)	A	0.0035	0.2460	0.7538	0.1862	0.9240
	Female	365 (55.8)	85.89 (85.25, 86.52)	B					
Age group	≤24	32 (4.9)	85.08 (83.38, 86.78)	AB	0.0339	0.1354	0.7644	0.1997	0.9159
	25-44	148 (22.6)	86.40 (85.54, 87.25)	A					
	45-64	302 (46.2)	84.81 (84.03, 85.58)	B					
	65+	172 (26.3)	85.12 (84.27, 85.97)	AB					
Marital Status	Married/Common-law	451 (69.0)	85.43 (84.77, 86.09)		0.3986	0.2827	0.7559	0.1853	0.9549
	Widowed/Separated/Divorced	125 (19.1)	84.97 (83.96, 85.97)						
	Single, never been married	78 (11.9)	84.83 (83.76, 85.91)						
Employment	Yes	327 (50.0)	85.62 (84.96, 86.28)		0.1641	0.2352	0.7515	0.1907	0.9222
	No	327 (50.0)	84.95 (84.21, 85.70)						
Employment Schedule	regular daytime/evening shift	307 (46.9)	85.72 (85.05, 86.38)		0.2238	0.1894	0.7543	0.1872	0.9194
	Split shift/on call or casual/other	20 (3.1)	84.39 (81.90, 86.87)						
	Unemployed[M]	327 (50.0)	84.96 (84.22, 85.70)						
Level of Education	≤High School	355 (54.3)	84.79 (84.07, 85.50)		0.0529	0.2394	0.7471	0.1860	0.8747
	Trade/Certificate/College	240 (36.7)	85.87 (85.08, 86.66)						
	University	59 (9.0)	85.73 (84.51, 86.94)						

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Sleep Efficiency p-value[d]				
					Variable	Sound Bin	Day	SoundBin *Day	Province
Income	<60K	303 (46.3)	85.32 (84.57, 86.08)		0.2488	0.2624	0.3759	0.0683	0.9648
	60-100K	150 (22.9)	84.97 (84.04, 85.90)						
	≥100K	121 (18.5)	85.98 (85.01, 86.95)						
Alcohol use	Do not drink alcohol	167 (25.5)	85.56 (84.63, 86.50)		0.3526	0.2463	0.7547	0.1842	0.9077
	≤3 times/month	254 (38.8)	85.46 (84.70, 86.21)						
	1-3 times/week	149 (22.8)	85.06 (84.15, 85.97)						
	≥4 times/week	84 (12.8)	84.43 (83.15, 85.71)						
Smoking status	Current	136 (20.8)	84.97 (83.80, 86.15)		0.4469	0.2371	0.7579	0.1892	0.8691
	former	230 (35.2)	85.01 (84.24, 85.78)						
	never	288 (44.0)	85.66 (84.96, 86.35)						
BMI group	<25 underweight-normal	193 (30.9)	85.96 (85.18, 86.73)	A	0.0267	0.4340	0.7890	0.2066	0.7565
	[25-30) overweight	232 (37.1)	85.02 (84.11, 85.93)	AB					
	≥30 obese	200 (32.0)	84.55 (83.71, 85.38)	B					
Caffeine consumption	None	81 (12.4)	85.67 (84.49, 86.86)	AB	0.0255	0.2597	0.7644	0.1962	0.9016
	1 or 2 cups/day	319 (48.8)	85.85 (85.15, 86.54)	A					
	3 or 4 cups/day	178 (27.2)	84.08 (83.06, 85.09)	B					
	5 or more cups/day	76 (11.6)	85.46 (84.45, 86.48)	AB					
Self-reported sleep disturbance[n]	High	85 (13.0)	85.25 (84.07, 86.42)		0.8168	0.2358	0.7547	0.1817	0.9543
	Low	568 (86.9)	85.28 (84.69, 85.86)						
Sleep medication	Yes	85 (13.0)	85.94 (84.55, 87.33)		0.2144	0.2467	0.7475	0.1856	0.8923
	No	569 (87.0)	85.15 (84.59, 85.72)						
Type of dwelling	Single detached homes	593 (90.7)	85.27 (84.68, 85.86)		0.8143	0.2341	0.7543	0.1865	0.9307
	semi/duplex/apartment	61 (9.3)	85.26 (83.62, 86.91)						
Property ownership	Own	568 (86.9)	85.36 (84.77, 85.94)		0.4808	0.2697	0.7569	0.1853	0.8729
	rent	86 (13.2)	84.82 (83.56, 86.08)						
Façade type	Fully Bricked	188 (28.8)	85.35 (84.42, 86.27)		0.9150	0.2416	0.7543	0.1868	0.9128
	Partially Bricked	102 (15.6)	84.99 (83.82, 86.17)						
	No Brick/Other	364 (55.7)	85.33 (84.68, 85.97)						
Bedroom volume (1000ft^3)	b(SE)	639 (97.7)	0.0004 (0.0040)		0.9230	0.3428	0.8899	0.2230	0.6648

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Sleep Efficiency p-value[d]				
					Variable	Sound Bin	Day	SoundBin *Day	Province
Bedroom location	Basement	14 (2.1)	85.13 (82.34, 87.92)		0.4021	0.2439	0.7570	0.1857	0.9238
	First floor	453 (69.3)	85.06 (84.38, 85.73)						
	Second floor or higher	187 (28.6)	85.69 (84.89, 86.49)						
Closing bedroom window to block outside noise	Yes	211 (32.3)	85.64 (84.92, 86.36)		0.2944	0.2366	0.7664	0.1799	0.8731
	No	440 (67.3)	85.08 (84.42, 85.75)						
Source identified as cause for closing window:[L]									
Road traffic	Yes	95 (14.5)	85.77 (84.83, 86.72)		0.4403	0.2439	0.7799	0.1878	0.9343
	No	555 (84.9)	85.18 (84.57, 85.79)						
Rail	Yes	11 (1.7)	85.79 (83.48, 88.09)		0.8308	0.2466	0.7828	0.1892	0.9282
	No	639 (97.7)	85.26 (84.69, 85.84)						
Wind turbines	Yes	70 (10.7)	85.41 (84.11, 86.71)		0.7893	0.2500	0.7822	0.1881	0.9322
	No	580 (88.7)	85.26 (84.68, 85.84)						
Other	Yes	89 (13.6)	85.89 (84.91, 86.87)		0.1993	0.2641	0.7779	0.1891	0.9673
	No	561 (85.8)	85.15 (84.54, 85.76)						
Sleep improved by closing window	Yes	169 (25.8)	85.74 (84.96, 86.52)		0.3884	0.2172	0.7499	0.1849	0.9016
	No	39 (6.0)	85.26 (83.93, 86.59)						
	Did not need to close window	440 (67.3)	85.08 (84.41, 85.75)						
Bedroom window type	Single pane	57 (8.7)	85.22 (83.81, 86.62)		0.9502	0.2513	0.7547	0.1970	0.9457
	Double pane	581 (88.8)	85.28 (84.68, 85.88)						
	Triple pane	15 (2.3)	85.29 (82.36, 88.21)						
Bedroom on quiet side	Yes	370 (56.6)	85.21 (84.51, 85.91)		0.8179	0.2305	0.7403	0.1932	0.9309
	No	237 (36.2)	85.48 (84.72, 86.24)						
	There is no quiet side	46 (7.0)	84.88 (83.07, 86.69)						
Air conditioner in dwelling	Yes	497 (76.0)	85.38 (84.52, 86.23)		0.7177	0.2434	0.7552	0.1851	0.7747
	No	157 (24.0)	85.12 (84.24, 86.01)						
Air conditioning unit in bedroom	Yes	47 (7.2)	85.13 (83.08, 87.18)		0.9348	0.2500	0.7546	0.1868	0.7404
	No	63 (9.6)	85.52 (84.11, 86.93)						
	central AC or other	387 (59.2)	85.40 (84.55, 86.25)						
	NO AC	157 (24.0)	85.11 (84.23, 86.00)						

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Sleep Efficiency p-value[d] Variable	Sound Bin	Day	SoundBin *Day	Province
Any windows in the room	Yes	3258[j]	85.30 (84.68, 85.91)		0.2876	0.4986	0.5082	0.1360	0.8137
in which you slept	No	194[j]	84.13 (82.54, 85.72)						
At least one window open	Yes	1368[j]	85.32 (84.62, 86.02)		0.9178	0.4325	0.4220	0.1640	0.5720
	No	1854[j]	85.24 (84.54, 85.94)						
Number of years hearing	Do not hear wind turbines	331 (50.6)	85.40 (84.69, 86.11)		0.7222	0.2420	0.7600	0.1919	0.8390
the WT	less than 1 year	30 (4.6)	84.60 (82.42, 86.78)						
	1 year or more	291 (44.5)	85.20 (84.36, 86.04)						
Complaint about WT	Yes	26 (4.0)	87.13 (85.37, 88.88)		0.0627	0.2534	0.7580	0.2033	0.9836
	No	625 (95.6)	85.22 (84.63, 85.80)						
Concerned about physical	High	41 (6.3)	84.72 (83.12, 86.33)		0.3698	0.2234	0.7399	0.1578	0.7821
safety	Low	608 (93.0)	85.35 (84.77, 85.93)						
Personal benefits	Yes	59 (9.0)	85.18 (83.46, 86.90)		0.9115	0.2038	0.7569	0.1183	0.9869
	No	571 (87.3)	85.21 (84.61, 85.81)						
Audible wind turbines	Yes	323 (49.4)	85.11 (84.27, 85.94)		0.5430	0.2219	0.7553	0.1860	0.8945
	No	331 (50.6)	85.38 (84.67, 86.09)						
Audible road traffic	Yes	546 (83.5)	85.25 (84.64, 85.85)		0.7180	0.2636	0.7551	0.1865	0.9110
	No	108 (16.5)	85.38 (84.31, 86.46)						
Audible aircraft	Yes	347 (53.1)	85.19 (84.47, 85.91)		0.7136	0.2570	0.7545	0.1866	0.9054
	No	307 (46.9)	85.38 (84.68, 86.07)						
Audible rail	Yes	120 (18.4)	84.74 (83.57, 85.92)		0.4541	0.2510	0.7533	0.1814	0.9144
	No	534 (81.7)	85.37 (84.78, 85.96)						
ONT: audible rail	Yes	120 (23.7)	85.33 (84.33, 86.33)		0.7218	0.2991	0.4384	0.2268	
	No	387 (76.3)	85.64 (85.06, 86.21)						
Annoyed by snoring	High	33 (5.1)	84.87 (83.30, 86.44)		0.4565	0.2378	0.7550	0.1846	0.9270
	Low	621 (95.0)	85.29 (84.71, 85.87)						
Source of sleep disturbance									
Wind turbines	Yes	37 (5.7)	85.49 (83.74, 87.23)		0.9282	0.2003	0.8044	0.1786	0.6219
	No	594 (90.8)	85.36 (84.76, 85.95)						

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Sleep Efficiency p-value[d]				
					Variable	Sound Bin	Day	SoundBin *Day	Province
Children	Yes	45 (6.9)	86.16 (84.64, 87.68)		0.2576	0.2062	0.8053	0.1787	0.6580
	No	586 (89.6)	85.28 (84.68, 85.88)						
Pets	Yes	47 (7.2)	85.81 (84.23, 87.40)		0.4256	0.2318	0.7992	0.1787	0.5846
	No	584 (89.3)	85.33 (84.73, 85.93)						
Neighbours	Yes	20 (3.1)	86.52 (84.18, 88.86)		0.2636	0.1969	0.8059	0.1806	0.5646
	No	611 (93.4)	85.33 (84.73, 85.92)						
Stress/anxiety	Yes	35 (5.4)	85.90 (83.82, 87.99)		0.4950	0.1935	0.8043	0.1806	0.6180
	No	596 (91.1)	85.33 (84.74, 85.92)						
Health related/physical pain	Yes	84 (12.8)	84.97 (83.62, 86.33)		0.4303	0.2258	0.8056	0.1794	0.6477
	No	547 (83.6)	85.42 (84.83, 86.01)						
Snoring	Yes	32 (4.9)	85.44 (83.69, 87.20)		0.9714	0.2011	0.8045	0.1785	0.6266
	No	599 (91.6)	85.36 (84.76, 85.95)						
Other	Yes	312 (47.7)	85.21 (84.41, 86.01)		0.4121	0.2267	0.8058	0.1779	0.6841
	No	319 (48.8)	85.49 (84.82, 86.15)						
Sensitivity to noise	High	99 (15.1)	85.65 (84.58, 86.73)		0.5232	0.2422	0.7669	0.1823	0.8426
	Low	552 (84.4)	85.23 (84.64, 85.83)						
Annoyance to WTN	High	42 (6.4)	86.02 (84.34, 87.71)		0.2881	0.2482	0.7614	0.1948	0.7605
	Low	611 (93.4)	85.28 (84.71, 85.86)						
Annoyance with blinking lights	High	59 (9.0)	84.85 (83.29, 86.42)		0.5697	0.2464	0.7630	0.1937	0.8745
	Low	594 (90.8)	85.33 (84.76, 85.90)						
Shadow flicker annoyance	High	44 (6.7)	84.86 (83.24, 86.49)		0.5847	0.2409	0.7582	0.1923	0.8406
	Low	608 (93.0)	85.33 (84.75, 85.91)						
Notice vibrations	Yes	32 (4.9)	85.82 (84.00, 87.64)		0.5500	0.2859	0.7059	0.2246	0.8560
	No	616 (94.2)	85.27 (84.69, 85.85)						
Annoyance with vibrations/rattles	High	9 (1.4)	86.20 (83.93, 88.48)		0.5252	0.2828	0.7082	0.2243	0.8437
	Low	639 (97.7)	85.29 (84.71, 85.86)						
Migraines	Yes	171 (26.2)	85.16 (84.13, 86.18)		0.7365	0.2434	0.7575	0.1859	0.9431
	No	483 (73.9)	85.31 (84.72, 85.89)						
Dizziness	Yes	163 (24.9)	85.82 (84.90, 86.74)		0.1164	0.1887	0.7528	0.1855	0.8930
	No	491 (75.1)	85.10 (84.49, 85.71)						

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Sleep Efficiency p-value[d] Variable	Sound Bin	Day	SoundBin *Day	Province
Tinnitus	Yes	163 (24.9)	85.22 (84.24, 86.20)		0.8025	0.2622	0.7391	0.1877	0.9183
	No	490 (74.9)	85.29 (84.68, 85.91)						
Chronic Pain	Yes	175 (26.8)	84.92 (83.93, 85.91)		0.4364	0.2561	0.7616	0.1947	0.9849
	No	478 (73.1)	85.38 (84.78, 85.98)						
Asthma	Yes	59 (9.0)	85.20 (83.35, 87.05)		0.9862	0.2485	0.7549	0.1862	0.9243
	No	595 (91.0)	85.28 (84.71, 85.85)						
Arthritis	Yes	225 (34.4)	85.24 (84.40, 86.08)		0.8654	0.2416	0.7547	0.1862	0.9292
	No	429 (65.6)	85.29 (84.66, 85.93)						
Chronic bronchitis/	Yes	46 (7.0)	84.70 (82.47, 86.94)		0.7615	0.3010	0.7834	0.1880	0.9329
emphysema/COPD	No	607 (92.8)	85.29 (84.74, 85.84)						
Diabetes	Yes	70 (10.7)	83.64 (81.91, 85.37)		0.0570	0.2156	0.7476	0.1914	0.7775
	No	584 (89.3)	85.51 (84.98, 86.05)						
Heart disease	Yes	54 (8.3)	84.95 (83.13, 86.77)		0.7963	0.2469	0.7547	0.1871	0.9245
	No	600 (91.7)	85.31 (84.74, 85.87)						
Diagnosed sleep disorder	Yes	64 (9.8)	84.72 (82.81, 86.62)		0.7049	0.2502	0.7559	0.1869	0.9635
	No	590 (90.2)	85.33 (84.77, 85.89)						
Restless leg syndrome	Yes	98 (15.0)	84.50 (83.09, 85.91)		0.3326	0.2411	0.7556	0.1884	0.9493
	No	556 (85.0)	85.39 (84.83, 85.95)						

[a] Least square means based on original scale of data and corresponding 95% confidence interval (CI), linear mixed effects model

[c] observed frequency and proportion of respondents in each subgroup of variable. The % does not always sum to 100 due to missing values

[i] pregnancy status was also considered, but analysis was not conducted due to the small number of pregnant women who participated in the sleep actimetry component of the study (n<5)

[j] based on the number of sleep nights, because people could have slept in a different room on a particular night, or window was open on only certain nights

[d] p-values for the different factors in the mixed effect model based on arcsin(sqrt(x)) for sleep efficiency

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Sleep Efficiency p-value[d]				
					Variable	Sound Bin	Day	SoundBin *Day	Province

[L] Aircraft noise leading to closure of bedroom window was also considered, but analysis was not conducted due to the small number of these responses (n<5)

[M] Unemployment includes stay at home parents, retired, as well as not currently employed

[n] Evaluates the magnitude of reported sleep disturbance for any reason over the previous year while at home

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Each of the listed variable represents a separate univariate GEE regression model for the modeled actigraphy endpoint explained by that variable and adjusted for WTN levels, province, day of the week, and the interaction between WTN groups and day of the week. It should be emphasized that variables considered in the univariate analysis have been previously demonstrated to be related to the modeled endpoint and/or considered by the authors to conceptually have a potential association with the modeled endpoint. As the analysis of each listed variable only adjusts for WTN category and province, interpretation of any individual relationship must be made with caution. The wrist actigraphy endpoint of number of awakening bouts does not follow a normal distribution; therefore to analyze awakening bouts a Poisson distribution was assumed. The number of awakening bouts was analyzed with respect to the total time spent in bed and is reported as a rate of the number of awakening bouts per 60 min in bed. Sleep efficiency, sleep latency, and WASO were transformed in order to normalize the data and stabilize the variance. In the GEE models, statistical tests were based on transformed data. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints.

Supplementary Table II: The influence of personal and situational variables on actigraphy measures

			Wake after Sleep Onset					
		mean (CI)[a]	Pair wise tests	p-value[e]				
Variable[i]	Group	n(%)[c]		Variable	Sound Bin	Day	SoundBin *Day	Province
WTN levels	<25dBA	46 (7.0)	58.83 (52.78, 64.87)		0.0655	0.2452	0.4975	0.9058
	[25-30)dBA	48 (7.3)	49.11 (43.72, 54.50)					
	[30-35)dBA	164 (25.1)	55.39 (52.04, 58.74)					
	[35-40)dBA	272 (41.6)	53.08 (50.35, 55.80)					
	[40-46]dBA	124 (19.0)	55.46 (51.45, 59.47)					
Background nighttime sound (BNTS)	<40 dBA	159 (24.3)	50.65 (46.94, 54.36)	A	0.0059	0.0409	0.2376	0.4926	0.2421
	[40, 50) dBA	224 (34.3)	52.83 (49.46, 56.21)	AB				
	[50, 55) dBA	237 (36.2)	57.97 (54.72, 61.21)	BC				
	>=55 dBA	34 (5.2)	67.23 (57.00, 77.46)	C				
Sex	Male	289 (44.2)	55.12 (52.16, 58.09)		0.5077	0.0649	0.2436	0.4959	0.9396
	Female	365 (55.8)	53.83 (51.23, 56.42)					
Age group	≤24	32 (4.9)	55.43 (47.27, 63.59)		0.2749	0.0451	0.2418	0.5036	0.9989
	25-44	148 (22.6)	51.48 (47.78, 55.18)					
	45-64	302 (46.2)	54.63 (51.86, 57.40)					
	65+	172 (26.3)	56.39 (52.83, 59.96)					
Marital Status	Married/Common-law	451 (69.0)	53.81 (51.31, 56.30)		0.8811	0.0708	0.2452	0.5001	0.9350
	Widowed/Separated/Divorced	125 (19.1)	56.59 (52.05, 61.14)					
	Single, never been married	78 (11.9)	54.13 (49.85, 58.41)					
Employment	Yes	327 (50.0)	51.53 (48.94, 54.12)	A	0.0100	0.0540	0.2333	0.5038	0.8954
	No	327 (50.0)	56.93 (54.09, 59.78)	B				
Employment Schedule	regular daytime/evening shift	307 (46.9)	51.32 (48.72, 53.92)	A	0.0344	0.0515	0.2341	0.5043	0.8937
	Split shift/on call or casual/other	20 (3.1)	54.28 (44.29, 64.26)	AB				
	Unemployed[M]	327 (50.0)	56.91 (54.08, 59.75)	B				
Level of Education	≤High School	355 (54.3)	57.03 (54.30, 59.75)	A	0.0063	0.0540	0.2343	0.4870	0.8369
	Trade/Certificate/College	240 (36.7)	51.36 (48.25, 54.48)	B				
	University	59 (9.0)	50.85 (46.73, 54.96)	AB				

Variable[i]	Group	n(%)[c]	Wake after Sleep Onset mean (CI)[a]	Pair wise tests	p-value[e] Variable	Sound Bin	Day	SoundBin *Day	Province
Income	<60K	303 (46.3)	55.19 (52.49, 57.89)		0.6238	0.1800	0.0942	0.7804	0.8121
	60-100K	150 (22.9)	53.28 (49.76, 56.80)						
	≥100K	121 (18.5)	52.14 (47.86, 56.41)						
Alcohol use	Do not drink alcohol	167 (25.5)	53.64 (50.06, 57.23)		0.2472	0.0614	0.2439	0.5030	0.8957
	≤3 times/month	254 (38.8)	53.36 (50.25, 56.46)						
	1-3 times/week	149 (22.8)	55.57 (51.97, 59.17)						
	≥4 times/week	84 (12.8)	57.04 (52.36, 61.72)						
Smoking status	Current	136 (20.8)	51.92 (48.04, 55.80)	A	0.0232	0.0581	0.2446	0.5087	0.8659
	former	230 (35.2)	57.03 (53.97, 60.09)	B					
	never	288 (44.0)	53.26 (50.22, 56.31)	AB					
BMI group	<25 underweight-normal	193 (30.9)	53.40 (50.26, 56.54)		0.4367	0.1128	0.4564	0.3610	0.9993
	[25-30) overweight	232 (37.1)	53.51 (50.30, 56.71)						
	≥30 obese	200 (32.0)	56.40 (52.81, 59.99)						
Caffeine consumption	None	81 (12.4)	53.60 (49.08, 58.13)		0.2813	0.0724	0.2442	0.5011	0.9171
	1 or 2 cups/day	319 (48.8)	53.37 (50.39, 56.36)						
	3 or 4 cups/day	178 (27.2)	57.05 (53.53, 60.58)						
	5 or more cups/day	76 (11.6)	52.86 (48.70, 57.02)						
Self-reported sleep disturbance[n]	High	85 (13.0)	53.18 (48.61, 57.74)		0.6744	0.0656	0.2492	0.4911	0.9048
	Low	568 (86.9)	54.51 (52.23, 56.80)						
Sleep medication	Yes	85 (13.0)	50.92 (45.82, 56.01)		0.1056	0.0599	0.2373	0.4988	0.8705
	No	569 (87.0)	54.99 (52.70, 57.28)						
Type of dwelling	Single detached homes	593 (90.7)	54.06 (51.67, 56.46)		0.7394	0.0849	0.2458	0.4971	0.8967
	semi/duplex/apartment	61 (9.3)	56.49 (51.30, 61.69)						
Property ownership	Own	568 (86.9)	53.84 (51.41, 56.27)		0.3007	0.0803	0.2474	0.4951	0.8295
	rent	86 (13.2)	57.25 (52.62, 61.88)						
Façade type	Fully Bricked	188 (28.8)	54.18 (50.28, 58.08)		0.9344	0.0725	0.2450	0.5017	0.8964
	Partially Bricked	102 (15.6)	54.97 (50.39, 59.56)						
	No Brick/Other	364 (55.7)	54.27 (51.74, 56.80)						
Bedroom volume (1000ft^3)	b(SE)	639 (97.7)	-0.0481 (0.0880)		0.5930	0.1042	0.2361	0.5882	0.9281

			Wake after Sleep Onset						
			mean (CI)[a]	Pair wise tests	p-value[e]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
Bedroom location	Basement	14 (2.1)	71.43 (58.14, 84.72)	A	0.0285	0.0696	0.2422	0.4952	0.8960
	First floor	453 (69.3)	55.01 (52.49, 57.53)	AB					
	Second floor or higher	187 (28.6)	52.14 (49.01, 55.28)	B					
Closing bedroom window to block outside noise	Yes	211 (32.3)	53.46 (50.48, 56.44)		0.6381	0.0579	0.2544	0.5162	0.8743
	No	440 (67.3)	54.83 (52.26, 57.40)						
Source identified as cause for closing window:[L]									
Road traffic	Yes	95 (14.5)	53.25 (48.80, 57.70)		0.6943	0.0598	0.2618	0.5012	0.8966
	No	555 (84.9)	54.58 (52.23, 56.92)						
Rail	Yes	11 (1.7)	60.85 (49.97, 71.73)		0.1882	0.0797	0.2627	0.4963	0.9701
	No	639 (97.7)	54.25 (52.03, 56.46)						
Wind turbines	Yes	70 (10.7)	50.89 (45.83, 55.95)		0.2140	0.0611	0.2644	0.5027	0.8802
	No	580 (88.7)	54.64 (52.39, 56.89)						
Other	Yes	89 (13.6)	53.73 (49.75, 57.70)		0.8916	0.0615	0.2632	0.5025	0.9019
	No	561 (85.8)	54.49 (52.14, 56.85)						
Sleep improved by closing window	Yes	169 (25.8)	52.39 (49.13, 55.65)		0.1385	0.0435	0.2540	0.5263	0.9465
	No	39 (6.0)	57.54 (51.84, 63.24)						
	Did not need to close window	440 (67.3)	54.88 (52.31, 57.44)						
Bedroom window type	Single pane	57 (8.7)	57.60 (51.55, 63.65)		0.2688	0.0659	0.2377	0.4600	0.7600
	Double pane	581 (88.8)	54.16 (51.96, 56.36)						
	Triple pane	15 (2.3)	44.68 (33.19, 56.18)						
Bedroom on quiet side	Yes	370 (56.6)	53.86 (51.29, 56.43)		0.3574	0.0809	0.2417	0.4846	0.8497
	No	237 (36.2)	54.38 (51.23, 57.53)						
	There is no quiet side	46 (7.0)	58.32 (52.15, 64.48)						
Air conditioner in dwelling	Yes	497 (76.0)	54.56 (51.54, 57.58)		0.7235	0.0654	0.2453	0.4976	0.8922
	No	157 (24.0)	54.10 (50.66, 57.55)						
Air conditioning unit in bedroom	Yes	47 (7.2)	53.31 (48.03, 58.60)		0.9718	0.0640	0.2447	0.4981	0.8477
	No	63 (9.6)	55.70 (49.38, 62.03)						
	central AC or other	387 (59.2)	54.60 (51.40, 57.80)						
	NO AC	157 (24.0)	54.06 (50.60, 57.52)						

			Wake after Sleep Onset						
			mean (CI)[a]	Pair wise tests	p-value[e]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
Any windows in the room	Yes	3258[j]	54.30 (52.10, 56.50)		0.7226	0.3249	0.3864	0.7028	0.9819
in which you slept	No	194[j]	53.90 (47.92, 59.87)						
At least one window open	Yes	1368[j]	54.69 (52.24, 57.15)		0.6052	0.0141	0.4067	0.8061	0.1901[k]
	No	1854[j]	54.15 (51.95, 56.35)						
Number of years hearing	Do not hear wind turbines	331 (50.6)	55.30 (52.55, 58.04)		0.4796	0.0771	0.2456	0.5112	0.7864
the WT	less than 1 year	30 (4.6)	54.27 (46.66, 61.88)						
	1 year or more	291 (44.5)	52.05 (48.81, 55.30)						
Complaint about WT	Yes	26 (4.0)	49.92 (42.00, 57.84)		0.3096	0.0807	0.2389	0.5231	0.8852
	No	625 (95.6)	54.37 (52.16, 56.57)						
Concerned about physical	High	41 (6.3)	53.20 (46.94, 59.45)		0.8351	0.0723	0.2304	0.4756	0.8564
safety	Low	608 (93.0)	54.34 (52.15, 56.53)						
Personal benefits	Yes	59 (9.0)	52.70 (47.44, 57.97)		0.7148	0.0502	0.2697	0.3794	0.8586
	No	571 (87.3)	54.70 (52.37, 57.03)						
Audible wind turbines	Yes	323 (49.4)	52.63 (49.35, 55.90)		0.3480	0.0639	0.2461	0.4962	0.9579
	No	331 (50.6)	55.49 (52.72, 58.26)						
Audible road traffic	Yes	546 (83.5)	53.83 (51.56, 56.10)		0.2793	0.0560	0.2430	0.4954	0.9546
	No	108 (16.5)	56.70 (51.98, 61.43)						
Audible aircraft	Yes	347 (53.1)	52.86 (50.22, 55.51)		0.0885	0.0477	0.2447	0.4933	0.9900
	No	307 (46.9)	56.19 (53.30, 59.08)						
Audible rail	Yes	120 (18.4)	54.21 (49.73, 58.69)		0.6912	0.0633	0.2454	0.5001	0.8227
	No	534 (81.7)	54.40 (52.09, 56.72)						
ONT: audible rail	Yes	120 (23.7)	53.68 (49.74, 57.62)		0.6280	0.2821	0.4305	0.8716	
	No	387 (76.3)	54.10 (51.61, 56.60)						
Annoyed by snoring	High	33 (5.1)	55.93 (48.80, 63.06)		0.5452	0.0632	0.2440	0.4962	0.9077
	Low	621 (95.0)	54.30 (52.06, 56.54)						
Source of sleep disturbance									
Wind turbines	Yes	37 (5.7)	49.30 (42.83, 55.77)		0.2358	0.0647	0.2752	0.6099	0.6022
	No	594 (90.8)	54.14 (52.00, 56.28)						

			Wake after Sleep Onset						
			mean (CI)[a]	Pair wise tests	p-value[e]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
Children	Yes	45 (6.9)	50.75 (45.49, 56.01)		0.2492	0.0549	0.2778	0.6024	0.7076
	No	586 (89.6)	54.31 (52.12, 56.50)						
Pets	Yes	47 (7.2)	53.24 (46.98, 59.49)		0.8135	0.0660	0.2747	0.6076	0.6655
	No	584 (89.3)	54.05 (51.87, 56.23)						
Neighbours	Yes	20 (3.1)	54.62 (42.66, 66.58)		0.7857	0.0621	0.2752	0.6075	0.6564
	No	611 (93.4)	53.98 (51.81, 56.14)						
Stress/anxiety	Yes	35 (5.4)	55.65 (48.28, 63.01)		0.7000	0.0653	0.2756	0.6106	0.6804
	No	596 (91.1)	53.90 (51.77, 56.04)						
Health related/physical	Yes	84 (12.8)	53.45 (49.18, 57.72)		0.9868	0.0633	0.2754	0.6083	0.6777
pain	No	547 (83.6)	54.08 (51.82, 56.33)						
Snoring	Yes	32 (4.9)	51.75 (45.50, 58.00)		0.7015	0.0623	0.2756	0.6091	0.6766
	No	599 (91.6)	54.12 (51.94, 56.30)						
Other	Yes	312 (47.7)	53.85 (51.08, 56.61)		0.9431	0.0625	0.2756	0.6081	0.6862
	No	319 (48.8)	54.12 (51.43, 56.81)						
Sensitivity to noise	High	99 (15.1)	54.73 (50.20, 59.26)		0.8238	0.0753	0.2190	0.5522	0.8089
	Low	552 (84.4)	54.15 (51.84, 56.46)						
Annoyance to WTN	High	42 (6.4)	50.49 (43.71, 57.27)		0.2191	0.0777	0.2456	0.5180	0.6578
	Low	611 (93.4)	54.24 (52.07, 56.42)						
Annoyance with blinking	High	59 (9.0)	52.51 (46.17, 58.85)		0.4857	0.0737	0.2436	0.5162	0.6569
lights	Low	594 (90.8)	54.20 (52.03, 56.37)						
Shadow flicker annoyance	High	44 (6.7)	53.81 (46.67, 60.94)		0.8288	0.0739	0.2387	0.5262	0.7261
	Low	608 (93.0)	54.14 (51.96, 56.31)						
Notice vibrations	Yes	32 (4.9)	51.15 (44.06, 58.23)		0.4491	0.0814	0.1925	0.5152	0.7700
	No	616 (94.2)	54.31 (52.11, 56.51)						
Annoyance with	High	9 (1.4)	49.53 (43.75, 55.32)		0.4001	0.0793	0.1928	0.5138	0.7580
vibrations/rattles	Low	639 (97.7)	54.22 (52.04, 56.39)						
Migraines	Yes	171 (26.2)	52.83 (49.36, 56.31)		0.2666	0.0625	0.2399	0.4944	0.8431
	No	483 (73.9)	54.83 (52.41, 57.25)						
Dizziness	Yes	163 (24.9)	53.13 (49.64, 56.61)		0.2933	0.0553	0.2433	0.4942	0.8860
	No	491 (75.1)	54.77 (52.32, 57.21)						

			Wake after Sleep Onset						
			mean (CI)[a]	Pair wise tests	p-value[e]				
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin *Day	Province
Tinnitus	Yes	163 (24.9)	53.91 (50.44, 57.38)		0.8717	0.0695	0.2332	0.4976	0.9187
	No	490 (74.9)	54.53 (52.05, 57.01)						
Chronic Pain	Yes	175 (26.8)	56.05 (52.30, 59.81)		0.4316	0.0713	0.2433	0.4964	0.9409
	No	478 (73.1)	53.81 (51.46, 56.17)						
Asthma	Yes	59 (9.0)	55.03 (48.63, 61.42)		0.9916	0.0650	0.2453	0.4979	0.9061
	No	595 (91.0)	54.30 (52.03, 56.57)						
Arthritis	Yes	225 (34.4)	55.20 (52.04, 58.36)		0.4329	0.0610	0.2442	0.4989	0.9303
	No	429 (65.6)	53.95 (51.44, 56.47)						
Chronic bronchitis/	Yes	46 (7.0)	55.75 (48.64, 62.86)		0.7539	0.0908	0.2333	0.5370	0.9002
emphysema/COPD	No	607 (92.8)	54.40 (52.15, 56.66)						
Diabetes	Yes	70 (10.7)	59.21 (54.32, 64.10)		0.1053	0.0584	0.2394	0.4950	0.8051
	No	584 (89.3)	53.66 (51.37, 55.95)						
Heart disease	Yes	54 (8.3)	56.22 (50.68, 61.77)		0.7217	0.0664	0.2453	0.4971	0.9075
	No	600 (91.7)	54.18 (51.89, 56.47)						
Diagnosed sleep disorder	Yes	64 (9.8)	51.20 (44.76, 57.65)		0.1667	0.0533	0.2444	0.5008	0.7761
	No	590 (90.2)	54.73 (52.41, 57.04)						
Restless leg syndrome	Yes	98 (15.0)	54.04 (49.67, 58.40)		0.7889	0.0659	0.2447	0.4979	0.8980
	No	556 (85.0)	54.42 (52.08, 56.77)						

[a] Least square means based on original scale of data and corresponding 95% confidence interval (CI), linear mixed effects model

[c] observed frequency and proportion of respondents in each subgroup of variable. The % does not always sum to 100 due to missing values

[i] pregnancy status was also considered, but analysis was not conducted due to the small number of pregnant women who participated in the sleep actimetry component of the study (n<5)

[j] based on the number of sleep nights, because people could have slept in a different room on a particular night, or window was open on only certain nights

[e] p-values for the different factors in the mixed effect model based on sqrt(x) for wake after sleep onset

[k] the interaction between WTN and province was significant in this model (p=0.0176), specifically, the difference between WTN was found only in PEI (p=0.0099) with WTN <25 having higher WASO periods than WTN categories [25, 30), [30, 35) and [35, 40)dBA; no differences found in ON (p=0.2696).

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Wake after Sleep Onset: Pair wise tests	p-value[e]: Variable	Sound Bin	Day	SoundBin *Day	Province

[L] Aircraft noise leading to closure of bedroom window was also considered, but analysis was not conducted due to the small number of these responses (n<5)

[M] Unemployment includes stay at home parents, retired, as well as not currently employed

[n] Evaluates the magnitude of reported sleep disturbance for any reason over the previous year while at home

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Each of the listed variable represents a separate univariate GEE regression model for the modeled actigraphy endpoint explained by that variable and adjusted for WTN levels, province, day of the week, and the interaction between WTN groups and day of the week. It should be emphasized that variables considered in the univariate analysis have been previously demonstrated to be related to the modeled endpoint and/or considered by the authors to conceptually have a potential association with the modeled endpoint. As the analysis of each listed variable only adjusts for WTN category and province, interpretation of any individual relationship must be made with caution. The wrist actigraphy endpoint of number of awakening bouts does not follow a normal distribution; therefore to analyze awakening bouts a Poisson distribution was assumed. The number of awakening bouts was analyzed with respect to the total time spent in bed and is reported as a rate of the number of awakening bouts per 60 min in bed. Sleep efficiency, sleep latency, and WASO were transformed in order to normalize the data and stabilize the variance. In the GEE models, statistical tests were based on transformed data. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints.

Supplementary Table II: The influence of personal and situational variables on actigraphy measures

			Awakening Bouts during sleep						
			mean (CI)[a]	Pair wise tests	rate(CI)[f]	p-value[g]			
Variable[i]	Group	n(%)[c]				Variable	Sound Bin	Day	SoundBin *Day	Province
WTN levels	<25dBA	46 (7.0)	24.26 (22.28, 26.25)		2.37 (2.13, 2.64)		0.2460	0.7033	0.9128	0.6150
	[25-30)dBA	48 (7.3)	21.08 (19.14, 23.02)		2.17 (1.90, 2.48)					
	[30-35)dBA	164 (25.1)	24.57 (23.01, 26.14)		2.50 (2.27, 2.74)					
	[35-40)dBA	272 (41.6)	23.37 (22.40, 24.35)		2.48 (2.32, 2.65)					
	[40-46]dBA	124 (19.0)	23.84 (22.55, 25.13)		2.26 (2.03, 2.51)					
Background nighttime sound (BNTS)	<40 dBA	159 (24.3)	21.80 (20.49, 23.11)		2.41 (2.20, 2.62)	0.7851	0.3031	0.7441	0.8985	0.8184
	[40, 50) dBA	224 (34.3)	23.41 (22.20, 24.62)		2.33 (2.17, 2.52)					
	[50, 55) dBA	237 (36.2)	24.56 (23.40, 25.71)		2.32 (2.15, 2.51)					
	>=55 dBA	34 (5.2)	27.92 (23.32, 32.52)		2.59 (2.08, 3.21)					
Sex	Male	289 (44.2)	24.00 (22.88, 25.11)		2.32 (2.16, 2.50)	0.7307	0.2424	0.6965	0.9170	0.6170
	Female	365 (55.8)	23.02 (22.13, 23.90)		2.36 (2.23, 2.50)					
Age group	≤24	32 (4.9)	25.70 (22.39, 29.02)		2.50 (2.02, 3.10)	0.8718	0.2490	0.7210	0.9120	0.6044
	25-44	148 (22.6)	23.95 (22.57, 25.33)		2.34 (2.14, 2.56)					
	45-64	302 (46.2)	23.42 (22.42, 24.43)		2.36 (2.20, 2.54)					
	65+	172 (26.3)	22.67 (21.46, 23.87)		2.30 (2.14, 2.47)					
Marital Status	Married/Common-law	451 (69.0)	23.61 (22.71, 24.51)		2.32 (2.18, 2.46)	0.0854	0.2680	0.7177	0.9191	0.7030
	Widowed/Separated/Divorced	125 (19.1)	22.12 (20.69, 23.55)		2.27 (2.06, 2.50)					
	Single, never been married	78 (11.9)	24.45 (22.71, 26.19)		2.63 (2.36, 2.94)					
Employment	Yes	327 (50.0)	23.73 (22.75, 24.70)		2.36 (2.21, 2.53)	0.8191	0.2447	0.7054	0.9130	0.6145
	No	327 (50.0)	23.15 (22.17, 24.13)		2.34 (2.20, 2.49)					
Employment Schedule	regular daytime/evening shift	307 (46.9)	23.81 (22.79, 24.82)		2.36 (2.20, 2.53)	0.9734	0.2471	0.7057	0.9142	0.6115
	Split shift/on call or casual/other	20 (3.1)	22.69 (20.66, 24.71)		2.34 (1.93, 2.83)					
	Unemployed[M]	327 (50.0)	23.15 (22.17, 24.13)		2.33 (2.20, 2.48)					
Level of Education	≤High School	355 (54.3)	23.96 (23.00, 24.93)		2.39 (2.24, 2.54)	0.6203	0.2382	0.7167	0.9130	0.6316
	Trade/Certificate/College	240 (36.7)	22.64 (21.57, 23.71)		2.30 (2.14, 2.46)					
	University	59 (9.0)	23.35 (21.30, 25.40)		2.29 (1.99, 2.65)					

			Awakening Bouts during sleep						
			mean (CI)[a]	Pair wise tests	rate(CI)[f]	p-value[g]			
Variable[i]	Group	n(%)[c]				Variable	Sound Bin	Day	SoundBin *Day	Province
Income	<60K	303 (46.3)	22.79 (21.82, 23.76)		2.26 (2.11, 2.42)	0.3865	0.2554	0.4558	0.6796	0.7483
	60-100K	150 (22.9)	23.63 (22.36, 24.90)		2.41 (2.21, 2.62)					
	≥100K	121 (18.5)	24.31 (22.77, 25.86)		2.39 (2.16, 2.65)					
Alcohol use	Do not drink alcohol	167 (25.5)	22.22 (21.01, 23.43)		2.22 (2.03, 2.43)	0.3632	0.2193	0.7205	0.9150	0.4770
	≤3 times/month	254 (38.8)	23.68 (22.51, 24.85)		2.38 (2.21, 2.55)					
	1-3 times/week	149 (22.8)	24.08 (22.79, 25.37)		2.36 (2.16, 2.59)					
	≥4 times/week	84 (12.8)	24.15 (22.49, 25.81)		2.50 (2.24, 2.78)					
Smoking status	Current	136 (20.8)	21.51 (20.22, 22.79)		2.14 (1.93, 2.37)	0.0919	0.3006	0.7084	0.9154	0.6029
	former	230 (35.2)	24.23 (23.08, 25.38)		2.40 (2.23, 2.59)					
	never	288 (44.0)	23.71 (22.64, 24.78)		2.41 (2.26, 2.57)					
BMI group	<25 underweight-normal	193 (30.9)	23.53 (22.33, 24.72)		2.29 (2.10, 2.50)	0.5608	0.2504	0.6396	0.8313	0.2604
	[25-30) overweight	232 (37.1)	23.94 (22.76, 25.11)		2.42 (2.24, 2.60)					
	≥30 obese	200 (32.0)	23.59 (22.31, 24.88)		2.38 (2.20, 2.57)					
Caffeine consumption	None	81 (12.4)	22.19 (20.55, 23.83)		2.18 (1.94, 2.44)	0.1109	0.2481	0.7247	0.9090	0.4809
	1 or 2 cups/day	319 (48.8)	23.85 (22.79, 24.92)		2.38 (2.22, 2.54)					
	3 or 4 cups/day	178 (27.2)	24.01 (22.67, 25.35)		2.46 (2.26, 2.68)					
	5 or more cups/day	76 (11.6)	21.91 (20.46, 23.36)		2.15 (1.93, 2.40)					
Self-reported sleep disturbance[n]	High	85 (13.0)	22.64 (20.98, 24.30)		2.30 (2.07, 2.57)	0.7373	0.2484	0.7089	0.9157	0.6119
	Low	568 (86.9)	23.52 (22.73, 24.32)		2.35 (2.23, 2.48)					
Sleep medication	Yes	85 (13.0)	22.01 (20.28, 23.74)		2.30 (2.08, 2.54)	0.6355	0.2526	0.7050	0.9127	0.6219
	No	569 (87.0)	23.68 (22.89, 24.47)		2.36 (2.23, 2.49)					
Type of dwelling	Single detached homes	593 (90.7)	23.60 (22.76, 24.44)		2.39 (2.26, 2.52)	0.1815	0.2768	0.6803	0.9214	0.5698
	semi/duplex/apartment	61 (9.3)	22.27 (20.48, 24.07)		2.18 (1.93, 2.45)					
Property ownership	Own	568 (86.9)	23.41 (22.56, 24.26)		2.36 (2.23, 2.50)	0.6398	0.2303	0.6961	0.9162	0.5851
	rent	86 (13.2)	23.51 (21.84, 25.17)		2.29 (2.05, 2.56)					
Façade type	Fully Bricked	188 (28.8)	23.33 (21.96, 24.70)		2.39 (2.18, 2.61)	0.8706	0.2335	0.7065	0.9186	0.5000
	Partially Bricked	102 (15.6)	23.88 (21.89, 25.88)		2.36 (2.08, 2.67)					
	No Brick/Other	364 (55.7)	23.33 (22.46, 24.20)		2.33 (2.20, 2.47)					
Bedroom volume (1000ft^3)	b(SE)	639 (97.7)	0.0256 (0.0250)			0.3257	0.1795	0.7476	0.8795	0.6072

			Awakening Bouts during sleep							
			mean (CI)[a]	Pair wise tests	rate(CI)[f]	p-value[g]				
Variable[i]	Group	n(%)[c]				Variable	Sound Bin	Day	SoundBin *Day	Province
Bedroom location	Basement	14 (2.1)	31.81 (21.86, 41.76)		3.32 (2.27, 4.85)	0.3753	0.2367	0.7681	0.8660	0.6053
	First floor	453 (69.3)	23.39 (22.49, 24.29)		2.38 (2.24, 2.51)					
	Second floor or higher	187 (28.6)	23.00 (21.92, 24.09)		2.35 (2.18, 2.53)					
Closing bedroom window to block outside noise	Yes	211 (32.3)	23.28 (22.16, 24.40)		2.34 (2.18, 2.51)	0.7322	0.2616	0.7180	0.9250	0.6565
	No	440 (67.3)	23.53 (22.65, 24.41)		2.37 (2.24, 2.51)					
Source identified as cause for closing window:[L]										
Road traffic	Yes	95 (14.5)	23.54 (21.87, 25.21)		2.36 (2.14, 2.60)	0.9858	0.2488	0.7154	0.9247	0.6355
	No	555 (84.9)	23.43 (22.62, 24.24)		2.36 (2.23, 2.48)					
Rail	Yes	11 (1.7)	26.68 (23.07, 30.30)		2.38 (1.96, 2.88)	0.9200	0.2518	0.7151	0.9240	0.6340
	No	639 (97.7)	23.38 (22.62, 24.15)		2.36 (2.24, 2.48)					
Wind turbines	Yes	70 (10.7)	22.97 (21.02, 24.92)		2.48 (2.20, 2.80)	0.3702	0.2557	0.7198	0.9259	0.6372
	No	580 (88.7)	23.48 (22.71, 24.25)		2.35 (2.23, 2.47)					
Other	Yes	89 (13.6)	23.18 (21.77, 24.59)		2.23 (2.01, 2.47)	0.2240	0.2467	0.7109	0.9273	0.5900
	No	561 (85.8)	23.50 (22.68, 24.32)		2.39 (2.26, 2.52)					
Sleep improved by closing window	Yes	169 (25.8)	22.94 (21.71, 24.18)		2.29 (2.12, 2.48)	0.2358	0.2395	0.7232	0.9240	0.6480
	No	39 (6.0)	24.91 (22.69, 27.14)		2.59 (2.29, 2.94)					
	Did not need to close window	440 (67.3)	23.53 (22.65, 24.41)		2.37 (2.24, 2.51)					
Bedroom window type	Single pane	57 (8.7)	23.04 (20.99, 25.09)		2.20 (1.91, 2.54)	0.5837	0.2581	0.7065	0.9188	0.4947
	Double pane	581 (88.8)	23.54 (22.75, 24.33)		2.37 (2.24, 2.50)					
	Triple pane	15 (2.3)	20.63 (15.64, 25.63)		2.20 (1.62, 2.98)					
Bedroom on quiet side	Yes	370 (56.6)	23.07 (22.15, 23.99)		2.36 (2.22, 2.52)	0.8174	0.2282	0.7028	0.9077	0.6102
	No	237 (36.2)	23.64 (22.53, 24.75)		2.30 (2.14, 2.48)					
	There is no quiet side	46 (7.0)	25.20 (22.91, 27.48)		2.37 (2.06, 2.71)					
Air conditioner in dwelling	Yes	497 (76.0)	23.78 (22.62, 24.95)		2.35 (2.19, 2.53)	0.9310	0.2467	0.7045	0.9135	0.6539
	No	157 (24.0)	22.92 (21.70, 24.14)		2.34 (2.15, 2.55)					
Air conditioning unit in bedroom	Yes	47 (7.2)	23.01 (20.92, 25.09)		2.52 (2.21, 2.87)	0.2776	0.2919	0.6643	0.9240	0.6845
	No	63 (9.6)	22.89 (20.67, 25.10)		2.09 (1.78, 2.44)					
	central AC or other	387 (59.2)	24.16 (22.89, 25.43)		2.38 (2.20, 2.59)					
	NO AC	157 (24.0)	22.89 (21.66, 24.11)		2.35 (2.16, 2.56)					

			Awakening Bouts during sleep						
			mean (CI)[a]	Pair wise tests	rate(CI)[f]	p-value[g]			
Variable[i]	Group	n(%)[c]				Variable	Sound Bin	Day	SoundBin *Day	Province
Any windows in the room in which you slept	Yes	3258[j]	23.59 (22.79, 24.39)		2.34 (2.21, 2.48)	0.6383	0.2951	0.3653	0.9299	0.6977
	No	194[j]	23.64 (21.61, 25.66)		2.39 (2.15, 2.66)					
At least one window open	Yes	1368[j]	23.33 (22.38, 24.27)		2.36 (2.22, 2.51)	0.7916	0.2963	0.5517	0.8923	0.6089
	No	1854[j]	23.70 (22.78, 24.62)		2.38 (2.24, 2.53)					
Number of years hearing the WT	Do not hear wind turbines	331 (50.6)	23.90 (22.94, 24.86)		2.35 (2.21, 2.50)	0.2492	0.2135	0.6955	0.9171	0.7110
	less than 1 year	30 (4.6)	25.05 (22.05, 28.06)		2.73 (2.26, 3.29)					
	1 year or more	291 (44.5)	22.22 (21.05, 23.39)		2.29 (2.12, 2.48)					
Complaint about WT	Yes	26 (4.0)	22.56 (19.14, 25.99)		2.35 (1.98, 2.78)	0.9743	0.2031	0.7004	0.9214	0.6756
	No	625 (95.6)	23.42 (22.65, 24.19)		2.34 (2.22, 2.47)					
Concerned about physical safety	High	41 (6.3)	22.21 (19.80, 24.62)		2.53 (2.24, 2.84)	0.2014	0.2153	0.7039	0.9098	0.6931
	Low	608 (93.0)	23.48 (22.71, 24.24)		2.33 (2.20, 2.45)					
Personal benefits	Yes	59 (9.0)	23.19 (21.22, 25.16)		2.20 (1.88, 2.57)	0.3361	0.2437	0.8024	0.9081	0.4909
	No	571 (87.3)	23.52 (22.71, 24.33)		2.38 (2.25, 2.51)					
Audible wind turbines	Yes	323 (49.4)	22.62 (21.46, 23.78)		2.35 (2.17, 2.53)	0.9420	0.2457	0.7029	0.9137	0.6069
	No	331 (50.6)	23.94 (22.98, 24.90)		2.35 (2.21, 2.50)					
Audible road traffic	Yes	546 (83.5)	23.27 (22.46, 24.07)		2.36 (2.24, 2.50)	0.5015	0.2888	0.6962	0.9161	0.6468
	No	108 (16.5)	24.10 (22.46, 25.73)		2.28 (2.06, 2.52)					
Audible aircraft	Yes	347 (53.1)	22.93 (21.96, 23.90)		2.39 (2.24, 2.54)	0.4069	0.2550	0.6991	0.9080	0.6537
	No	307 (46.9)	24.01 (23.00, 25.02)		2.30 (2.15, 2.47)					
Audible rail	Yes	120 (18.4)	23.82 (21.90, 25.74)		2.41 (2.14, 2.70)	0.6889	0.2476	0.7143	0.9083	0.5439
	No	534 (81.7)	23.35 (22.56, 24.15)		2.35 (2.23, 2.47)					
ONT: audible rail	Yes	120 (23.7)	23.38 (21.75, 25.00)		2.33 (2.10, 2.59)	0.7637	0.1202	0.5770	0.3993	
	No	387 (76.3)	23.23 (22.31, 24.15)		2.29 (2.14, 2.45)					
Annoyed by snoring	High	33 (5.1)	26.02 (21.54, 30.50)		2.57 (2.06, 3.22)	0.4681	0.2710	0.7331	0.9032	0.6198
	Low	621 (95.0)	23.31 (22.55, 24.08)		2.36 (2.24, 2.48)					
Source of sleep disturbance										
Wind turbines	Yes	37 (5.7)	23.13 (20.47, 25.80)		2.51 (2.15, 2.94)	0.2681	0.3162	0.7711	0.8897	0.9626
	No	594 (90.8)	23.32 (22.56, 24.09)		2.29 (2.17, 2.42)					

			Awakening Bouts during sleep							
			mean (CI)[a]	Pair wise tests	rate(CI)[f]	p-value[g]				
Variable[i]	Group	n(%)[c]				Variable	Sound Bin	Day	SoundBin *Day	Province
Children	Yes	45 (6.9)	23.84 (22.02, 25.65)		2.22 (1.90, 2.59)	0.6175	0.3319	0.7570	0.8875	0.9327
	No	586 (89.6)	23.27 (22.47, 24.06)		2.31 (2.18, 2.45)					
Pets	Yes	47 (7.2)	23.55 (21.23, 25.87)		2.24 (1.85, 2.72)	0.7584	0.3316	0.7552	0.8874	0.9049
	No	584 (89.3)	23.30 (22.53, 24.06)		2.31 (2.18, 2.44)					
Neighbours	Yes	20 (3.1)	23.15 (18.91, 27.39)		1.90 (1.51, 2.38)	0.0999	0.3242	0.7392	0.8806	0.8149
	No	611 (93.4)	23.32 (22.55, 24.09)		2.32 (2.20, 2.45)					
Stress/anxiety	Yes	35 (5.4)	23.08 (20.21, 25.96)		2.21 (1.81, 2.71)	0.6866	0.2993	0.7554	0.8937	0.9124
	No	596 (91.1)	23.33 (22.56, 24.10)		2.30 (2.18, 2.44)					
Health related/physical	Yes	84 (12.8)	23.32 (21.32, 25.32)		2.60 (2.32, 2.92)	0.0554	0.3441	0.7493	0.8860	0.9537
pain	No	547 (83.6)	23.32 (22.51, 24.12)		2.29 (2.17, 2.42)					
Snoring	Yes	32 (4.9)	23.43 (21.50, 25.36)		2.38 (2.10, 2.69)	0.5851	0.3042	0.7581	0.8867	0.9250
	No	599 (91.6)	23.31 (22.53, 24.09)		2.29 (2.17, 2.43)					
Other	Yes	312 (47.7)	22.98 (21.97, 24.00)		2.38 (2.22, 2.54)	0.2414	0.3755	0.7439	0.8839	0.9855
	No	319 (48.8)	23.59 (22.61, 24.57)		2.26 (2.11, 2.42)					
Sensitivity to noise	High	99 (15.1)	23.17 (21.49, 24.85)		2.36 (2.12, 2.63)	0.8446	0.2270	0.6999	0.9078	0.5852
	Low	552 (84.4)	23.46 (22.66, 24.27)		2.34 (2.21, 2.47)					
Annoyance to WTN	High	42 (6.4)	21.19 (18.57, 23.82)		2.35 (1.99, 2.77)	0.9913	0.2159	0.6999	0.9204	0.6998
	Low	611 (93.4)	23.44 (22.69, 24.20)		2.35 (2.23, 2.47)					
Annoyance with blinking	High	59 (9.0)	23.61 (20.52, 26.69)	A	2.84 (2.42, 3.34)	0.0309	0.2566	0.7576	0.8964	0.5180
lights	Low	594 (90.8)	23.36 (22.61, 24.11)	B	2.35 (2.23, 2.47)					
Shadow flicker annoyance	High	44 (6.7)	24.25 (20.46, 28.03)		2.81 (2.35, 3.37)	0.0786	0.2330	0.7586	0.8948	0.6866
	Low	608 (93.0)	23.32 (22.57, 24.08)		2.35 (2.23, 2.47)					
Notice vibrations	Yes	32 (4.9)	22.45 (19.99, 24.90)		2.29 (1.88, 2.80)	0.8576	0.2098	0.7699	0.8582	0.6812
	No	616 (94.2)	23.44 (22.68, 24.20)		2.33 (2.21, 2.46)					
Annoyance with	High	9 (1.4)	21.36 (18.07, 24.64)		2.37 (1.99, 2.81)	0.8642	0.2079	0.7708	0.8611	0.6826
vibrations/rattles	Low	639 (97.7)	23.42 (22.66, 24.17)		2.33 (2.21, 2.46)					
Migraines	Yes	171 (26.2)	22.57 (21.31, 23.84)		2.44 (2.24, 2.65)	0.2529	0.2651	0.6969	0.9164	0.5522
	No	483 (73.9)	23.68 (22.84, 24.51)		2.32 (2.19, 2.45)					
Dizziness	Yes	163 (24.9)	22.28 (21.07, 23.48)		2.29 (2.13, 2.47)	0.4436	0.2410	0.7112	0.9103	0.6369
	No	491 (75.1)	23.79 (22.93, 24.65)		2.37 (2.24, 2.51)					

			Awakening Bouts during sleep						
			mean (CI)[a]	Pair wise tests	rate(CI)[f]	p-value[g]			
Variable[i]	Group	n(%)[c]				Variable	Sound Bin	Day	SoundBin *Day	Province
Tinnitus	Yes	163 (24.9)	23.07 (21.66, 24.48)		2.41 (2.22, 2.62)	0.4811	0.2505	0.7443	0.9113	0.6197
	No	490 (74.9)	23.54 (22.71, 24.38)		2.33 (2.20, 2.47)					
Chronic Pain	Yes	175 (26.8)	22.49 (21.13, 23.85)		2.40 (2.21, 2.61)	0.5304	0.2411	0.7369	0.9137	0.6038
	No	478 (73.1)	23.71 (22.87, 24.54)		2.33 (2.20, 2.47)					
Asthma	Yes	59 (9.0)	22.61 (20.26, 24.97)		2.35 (2.00, 2.77)	0.9708	0.2511	0.7037	0.9134	0.6120
	No	595 (91.0)	23.51 (22.74, 24.29)		2.35 (2.23, 2.48)					
Arthritis	Yes	225 (34.4)	22.52 (21.37, 23.68)		2.29 (2.11, 2.47)	0.4163	0.2371	0.6807	0.9184	0.6212
	No	429 (65.6)	23.88 (22.99, 24.76)		2.37 (2.23, 2.51)					
Chronic bronchitis/	Yes	46 (7.0)	22.43 (20.02, 24.84)		2.17 (1.86, 2.54)	0.2525	0.3320	0.6822	0.9114	0.6877
emphysema/COPD	No	607 (92.8)	23.55 (22.76, 24.33)		2.38 (2.26, 2.51)					
Diabetes	Yes	70 (10.7)	23.70 (21.75, 25.65)		2.35 (2.05, 2.71)	0.9824	0.2445	0.7036	0.9140	0.6083
	No	584 (89.3)	23.38 (22.60, 24.17)		2.35 (2.23, 2.47)					
Heart disease	Yes	54 (8.3)	22.01 (20.27, 23.75)		2.27 (2.03, 2.56)	0.5829	0.2433	0.7167	0.9104	0.6147
	No	600 (91.7)	23.57 (22.77, 24.37)		2.36 (2.23, 2.49)					
Diagnosed sleep disorder	Yes	64 (9.8)	22.15 (19.20, 25.11)		2.46 (2.11, 2.88)	0.5642	0.2490	0.7238	0.9075	0.5640
	No	590 (90.2)	23.56 (22.78, 24.34)		2.35 (2.23, 2.47)					
Restless leg syndrome	Yes	98 (15.0)	22.24 (20.67, 23.82)		2.14 (1.88, 2.43)	0.1008	0.2405	0.6863	0.9210	0.6676
	No	556 (85.0)	23.61 (22.80, 24.41)		2.38 (2.26, 2.50)					

[a] Least square means based on original scale of data and corresponding 95% confidence interval (CI), linear mixed effects model

[c] observed frequency and proportion of respondents in each subgroup of variable. The % does not always sum to 100 due to missing values

[i] pregnancy status was also considered, but analysis was not conducted due to the small number of pregnant women who participated in the sleep actimetry component of the study (n<5)

[j] based on the number of sleep nights, because people could have slept in a different room on a particular night, or window was open on only certain nights

[f] Least squares means of the rates per 60 minutes, and corresponding 95% confidence interval, based on mixed effects poisson regression model

[g] p-values for the different factors in the generalized mixed effects model using Poisson errors

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Awakening Bouts during sleep rate(CI)[f]		p-value[g]		
					Variable	Sound Bin	Day	SoundBin *Day	Province

[L] Aircraft noise leading to closure of bedroom window was also considered, but analysis was not conducted due to the small number of these responses (n<5)

[M] Unemployment includes stay at home parents, retired, as well as not currently employed

[n] Evaluates the magnitude of reported sleep disturbance for any reason over the previous year while at home

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Each of the listed variable represents a separate univariate GEE regression model for the modeled actigraphy endpoint explained by that variable and adjusted for WTN levels, province, day of the week, and the interaction between WTN groups and day of the week. It should be emphasized that variables considered in the univariate analysis have been previously demonstrated to be related to the modeled endpoint and/or considered by the authors to conceptually have a potential association with the modeled endpoint. As the analysis of each listed variable only adjusts for WTN category and province, interpretation of any individual relationship must be made with caution. The wrist actigraphy endpoint of number of awakening bouts does not follow a normal distribution; therefore to analyze awakening bouts a Poisson distribution was assumed. The number of awakening bouts was analyzed with respect to the total time spent in bed and is reported as a rate of the number of awakening bouts per 60 min in bed. Sleep efficiency, sleep latency, and WASO were transformed in order to normalize the data and stabilize the variance. In the GEE models, statistical tests were based on transformed data. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints.

Supplementary Table II: The influence of personal and situational variables on actigraphy measures

			Total sleep time							
			mean (CI)[a]	Pair wise tests	p-value					
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin* Day	Province	SoundBin* Province[h]
WTN levels	<25dBA	46 (7.0)	458.00 (428.08, 487.93)			0.7222	0.3504	0.2353	0.5283	0.0223
	[25-30)dBA	48 (7.3)	462.68 (427.47, 497.90)							
	[30-35)dBA	164 (25.1)	464.00 (441.44, 486.57)							
	[35-40)dBA	272 (41.6)	449.10 (433.95, 464.24)							
	[40-46]dBA	124 (19.0)	445.78 (426.60, 464.96)							
Background nighttime sound (BNTS)	<40 dBA	159 (24.3)	437.07 (418.14, 456.01)		0.0532	0.9992	0.3344	0.2390	0.6354	0.0364
	[40, 50) dBA	224 (34.3)	454.17 (437.37, 470.98)							
	[50, 55) dBA	237 (36.2)	472.13 (453.79, 490.47)							
	>=55 dBA	34 (5.2)	482.29 (440.65, 523.93)							
Sex	Male	289 (44.2)	457.95 (441.20, 474.69)		0.7012	0.7217	0.3510	0.2345	0.5304	0.0241
	Female	365 (55.8)	454.42 (442.15, 466.68)							
Age group	≤24	32 (4.9)	467.20 (420.48, 513.92)		0.1862	0.7225	0.3409	0.2356	0.5012	0.0326
	25-44	148 (22.6)	460.97 (441.69, 480.25)							
	45-64	302 (46.2)	446.02 (431.16, 460.88)							
	65+	172 (26.3)	466.88 (450.05, 483.71)							
Marital Status	Married/Common-law	451 (69.0)	458.91 (446.28, 471.54)		0.3583	0.7406	0.3536	0.2347	0.5169	0.0236
	Widowed/Separated/Divorced	125 (19.1)	453.68 (432.20, 475.16)							
	Single, never been married	78 (11.9)	440.45 (415.82, 465.07)							
Employment	Yes	327 (50.0)	449.56 (435.76, 463.35)		0.1489	0.7791	0.3461	0.2381	0.5376	0.0197
	No	327 (50.0)	461.80 (447.73, 475.88)							
Employment Schedule	regular daytime/evening shift	307 (46.9)	450.56 (436.23, 464.89)		0.1838	0.7658	0.3435	0.2373	0.5478	0.0217
	Split shift/on call or casual/other	20 (3.1)	437.23 (408.33, 466.13)							
	Unemployed[M]	327 (50.0)	461.96 (447.81, 476.10)							
Level of Education	≤High School	355 (54.3)	458.88 (445.18, 472.58)		0.4989	0.7071	0.3446	0.2363	0.4987	0.0184
	Trade/Certificate/College	240 (36.7)	449.43 (434.29, 464.58)							
	University	59 (9.0)	464.63 (432.47, 496.79)							

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Total sleep time p-value					
					Variable	Sound Bin	Day	SoundBin* Day	Province	SoundBin* Province[h]
Income	<60K	303 (46.3)	462.17 (446.80, 477.54)		0.3415	0.8232	0.1074	0.2741	0.5713	0.0292
	60-100K	150 (22.9)	446.17 (427.96, 464.38)							
	≥100K	121 (18.5)	455.40 (434.55, 476.26)							
Alcohol use	Do not drink alcohol	167 (25.5)	459.88 (440.84, 478.93)		0.7268	0.7127	0.3442	0.2364	0.4345	0.0283
	≤3 times/month	254 (38.8)	458.86 (443.62, 474.10)							
	1-3 times/week	149 (22.8)	450.44 (432.91, 467.97)							
	≥4 times/week	84 (12.8)	446.23 (418.35, 474.12)							
Smoking status	Current	136 (20.8)	442.43 (420.59, 464.28)		0.2334	0.7663	0.3498	0.2354	0.5227	0.0164
	former	230 (35.2)	464.09 (448.51, 479.68)							
	never	288 (44.0)	455.31 (440.96, 469.66)							
BMI group	<25 underweight-normal	193 (30.9)	462.10 (444.43, 479.76)		0.5602	0.2493	0.5235	0.2353	0.6339	0.0027
	[25-30) overweight	232 (37.1)	450.38 (434.56, 466.21)							
	≥30 obese	200 (32.0)	454.73 (437.53, 471.93)							
Caffeine consumption	None	81 (12.4)	467.26 (441.66, 492.87)		0.4808	0.7274	0.3549	0.2381	0.5110	0.0224
	1 or 2 cups/day	319 (48.8)	460.06 (445.58, 474.54)							
	3 or 4 cups/day	178 (27.2)	447.63 (429.63, 465.63)							
	5 or more cups/day	76 (11.6)	449.69 (427.27, 472.12)							
Self-reported sleep disturbance[n]	High	85 (13.0)	446.14 (422.57, 469.71)		0.3682	0.7196	0.3473	0.2297	0.4796	0.0239
	Low	568 (86.9)	457.10 (445.37, 468.83)							
Sleep medication	Yes	85 (13.0)	468.13 (444.10, 492.15)		0.2575	0.7689	0.3527	0.2370	0.5638	0.0227
	No	569 (87.0)	453.80 (442.03, 465.57)							
Type of dwelling	Single detached homes	593 (90.7)	455.12 (443.29, 466.96)		0.6928	0.7617	0.3491	0.2355	0.5243	0.0273
	semi/duplex/apartment	61 (9.3)	461.70 (430.33, 493.07)							
Property ownership	Own	568 (86.9)	454.77 (442.79, 466.75)		0.5910	0.7796	0.3476	0.2350	0.5067	0.0268
	rent	86 (13.2)	462.56 (435.47, 489.66)							
Façade type	Fully Bricked	188 (28.8)	454.21 (433.93, 474.48)		0.8694	0.7377	0.3482	0.2360	0.5617	0.0215
	Partially Bricked	102 (15.6)	460.53 (439.85, 481.22)							
	No Brick/Other	364 (55.7)	455.29 (442.21, 468.38)							
Bedroom volume (1000ft^3)	b(SE)	639 (97.7)	-9.6358 (5.0709)		0.0621	0.7707	0.2797	0.2408	0.4464	0.0220

Variable[i]	Group	n(%)[c]	Total sleep time mean (CI)[a]	Pair wise tests	p-value Variable	Sound Bin	Day	SoundBin* Day	Province	SoundBin* Province[h]
Bedroom location	Basement	14 (2.1)	527.83 (431.13, 624.52)		0.3529	0.7878	0.3553	0.2398	0.4695	0.0274
	First floor	453 (69.3)	453.07 (440.28, 465.86)							
	Second floor or higher	187 (28.6)	456.59 (440.70, 472.49)							
Closing bedroom window to block outside noise	Yes	211 (32.3)	454.16 (437.99, 470.33)		0.7546	0.7281	0.3278	0.2520	0.5218	0.0228
	No	440 (67.3)	456.91 (444.18, 469.63)							
Source identified as cause for closing window:[L]										
Road traffic	Yes	95 (14.5)	455.93 (433.34, 478.52)		0.9792	0.7508	0.3376	0.2541	0.5143	0.0198
	No	555 (84.9)	456.24 (444.42, 468.05)							
Rail	Yes	11 (1.7)	488.98 (443.45, 534.51)		0.1973	0.7643	0.3387	0.2538	0.5859	0.0189
	No	639 (97.7)	455.60 (444.14, 467.07)							
Wind turbines	Yes	70 (10.7)	436.92 (412.03, 461.82)		0.1022	0.8903	0.3425	0.2532	0.5032	0.0220
	No	580 (88.7)	457.66 (446.05, 469.27)							
Other	Yes	89 (13.6)	462.71 (437.53, 487.89)		0.5606	0.7882	0.3401	0.2546	0.5271	0.0193
	No	561 (85.8)	455.11 (443.38, 466.85)							
Sleep improved by closing window	Yes	169 (25.8)	456.76 (439.01, 474.51)		0.7141	0.7179	0.3123	0.2406	0.5260	0.0216
	No	39 (6.0)	444.44 (414.64, 474.25)							
	Did not need to close window	440 (67.3)	456.95 (444.15, 469.75)							
Bedroom window type	Single pane	57 (8.7)	481.31 (444.70, 517.93)		0.0734	0.7561	0.3186	0.2470	0.3536	0.0248
	Double pane	581 (88.8)	453.45 (441.49, 465.41)							
	Triple pane	15 (2.3)	411.11 (369.81, 452.41)							
Bedroom on quiet side	Yes	370 (56.6)	447.96 (434.34, 461.59)		0.0857	0.6592	0.3420	0.2461	0.4612	0.0207
	No	237 (36.2)	464.72 (448.05, 481.38)							
	There is no quiet side	46 (7.0)	476.49 (443.05, 509.92)							
Air conditioner in dwelling	Yes	497 (76.0)	463.42 (448.41, 478.44)		0.1842	0.7486	0.3516	0.2322	0.7457	0.0269
	No	157 (24.0)	446.05 (427.25, 464.85)							
Air conditioning unit in bedroom	Yes	47 (7.2)	432.15 (408.64, 455.65)	A	0.0382	0.8076	0.3496	0.2363	0.5736	0.0283
	No	63 (9.6)	486.25 (449.29, 523.21)	B						
	central AC or other	387 (59.2)	465.30 (448.56, 482.03)	B						
	NO AC	157 (24.0)	444.85 (426.01, 463.69)	AB						

			Total sleep time							
			mean (CI)[a]	Pair wise tests	p-value					
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin* Day	Province	SoundBin* Province[h]
Any windows in the room	Yes	3258[j]	457.98 (444.30, 471.66)		0.2452	0.7564	0.4084	0.5422	0.8532	0.0172
in which you slept	No	194[j]	439.63 (409.22, 470.04)							
At least one window open	Yes	1368[j]	459.40 (442.71, 476.08)		0.8182	0.8676	0.3008	0.6812	0.8428	0.0315
	No	1854[j]	457.70 (442.51, 472.88)							
Number of years hearing	Do not hear wind turbines	331 (50.6)	463.77 (450.07, 477.46)	A	0.0212	0.9814	0.3448	0.2389	0.5220	0.0284
the WT	less than 1 year	30 (4.6)	417.67 (388.42, 446.92)	B						
	1 year or more	291 (44.5)	445.15 (427.45, 462.85)	AB						
Complaint about WT	Yes	26 (4.0)	458.72 (423.65, 493.79)		0.8758	0.7313	0.3348	0.2382	0.5285	0.0222
	No	625 (95.6)	455.90 (444.34, 467.46)							
Concerned about physical	High	41 (6.3)	420.46 (398.13, 442.79)	A	0.0034	0.8334	0.3293	0.2466	0.5904	0.0316
safety	Low	608 (93.0)	458.36 (446.79, 469.93)	B						
Personal benefits	Yes	59 (9.0)	467.63 (432.20, 503.07)		0.4416	0.7447	0.3585	0.2685	0.3341	0.0325
	No	571 (87.3)	453.10 (441.36, 464.84)							
Audible wind turbines	Yes	323 (49.4)	442.70 (425.73, 459.66)	A	0.0391	0.9878	0.3427	0.2326	0.5824	0.0255
	No	331 (50.6)	464.27 (450.58, 477.96)	B						
Audible road traffic	Yes	546 (83.5)	453.48 (441.10, 465.86)		0.2707	0.7623	0.3451	0.2347	0.5715	0.0255
	No	108 (16.5)	466.85 (444.69, 489.01)							
Audible aircraft	Yes	347 (53.1)	448.12 (434.24, 462.01)		0.0637	0.8146	0.3466	0.2326	0.5399	0.0302
	No	307 (46.9)	464.35 (449.49, 479.21)							
Audible rail	Yes	120 (18.4)	453.90 (430.23, 477.57)		0.8476	0.7259	0.3495	0.2355	0.5056	0.0299
	No	534 (81.7)	456.27 (444.47, 468.07)							
ONT: audible rail	Yes	120 (23.7)	476.57 (453.74, 499.40)		0.9536	0.6307	0.5168	0.5176		
	No	387 (76.3)	477.32 (462.87, 491.78)							
Annoyed by snoring	High	33 (5.1)	445.96 (419.40, 472.52)		0.4561	0.7179	0.3483	0.2350	0.5348	0.0224
	Low	621 (95.0)	456.45 (444.88, 468.02)							
Source of sleep disturbance										
Wind turbines	Yes	37 (5.7)	421.09 (396.45, 445.74)	A	0.0050	0.9396	0.3485	0.2195	0.5697	0.0434
	No	594 (90.8)	458.68 (446.68, 470.68)	B						

			Total sleep time							
			mean (CI)[a]	Pair wise tests	p-value					
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin* Day	Province	SoundBin* Province[h]
Children	Yes	45 (6.9)	473.27 (435.03, 511.52)		0.3717	0.8583	0.3390	0.2165	0.5883	0.0410
	No	586 (89.6)	455.73 (443.56, 467.91)							
Pets	Yes	47 (7.2)	465.90 (429.51, 502.30)		0.6200	0.8662	0.3400	0.2172	0.6722	0.0437
	No	584 (89.3)	456.87 (444.93, 468.81)							
Neighbours	Yes	20 (3.1)	533.19 (455.04, 611.33)		0.0565	0.8923	0.3504	0.2245	0.8386	0.0547
	No	611 (93.4)	455.38 (443.61, 467.15)							
Stress/anxiety	Yes	35 (5.4)	488.10 (435.74, 540.46)		0.2341	0.8813	0.3446	0.2246	0.6889	0.0418
	No	596 (91.1)	455.86 (443.88, 467.83)							
Health related/physical	Yes	84 (12.8)	425.61 (404.21, 447.01)	A	0.0024	0.7226	0.3430	0.2193	0.4949	0.0328
pain	No	547 (83.6)	461.66 (449.25, 474.07)	B						
Snoring	Yes	32 (4.9)	456.90 (431.08, 482.73)		0.9690	0.8797	0.3445	0.2177	0.6374	0.0443
	No	599 (91.6)	457.41 (445.37, 469.45)							
Other	Yes	312 (47.7)	449.54 (434.76, 464.32)		0.1175	0.8228	0.3424	0.2195	0.5444	0.0414
	No	319 (48.8)	464.03 (448.85, 479.22)							
Sensitivity to noise	High	99 (15.1)	446.08 (426.52, 465.64)		0.2697	0.7279	0.3239	0.2273	0.4495	0.0195
	Low	552 (84.4)	457.45 (445.44, 469.46)							
Annoyance to WTN	High	42 (6.4)	439.57 (412.03, 467.10)		0.2337	0.7846	0.3409	0.2386	0.5002	0.0225
	Low	611 (93.4)	456.54 (445.02, 468.06)							
Annoyance with blinking	High	59 (9.0)	410.14 (387.85, 432.44)	A	0.0001	0.8358	0.3331	0.2375	0.3770	0.0284
lights	Low	594 (90.8)	458.36 (446.81, 469.92)	B						
Shadow flicker annoyance	High	44 (6.7)	422.13 (400.98, 443.27)	A	0.0019	0.8640	0.3337	0.2359	0.4843	0.0280
	Low	608 (93.0)	457.62 (446.02, 469.22)	B						
Notice vibrations	Yes	32 (4.9)	453.65 (413.16, 494.14)		0.8972	0.7191	0.3658	0.2530	0.5096	0.0261
	No	616 (94.2)	456.32 (444.80, 467.84)							
Annoyance with	High	9 (1.4)	450.08 (407.32, 492.83)		0.7772	0.7141	0.3666	0.2535	0.5065	0.0263
vibrations/rattles	Low	639 (97.7)	456.27 (444.81, 467.72)							
Migraines	Yes	171 (26.2)	437.05 (418.78, 455.31)	A	0.0160	0.7250	0.3576	0.2284	0.4288	0.0147
	No	483 (73.9)	461.41 (449.55, 473.27)	B						
Dizziness	Yes	163 (24.9)	457.75 (439.33, 476.17)		0.8055	0.7300	0.3498	0.2353	0.5343	0.0246
	No	491 (75.1)	455.34 (443.00, 467.67)							

			Total sleep time							
			mean (CI)[a]	Pair wise tests	p-value					
Variable[i]	Group	n(%)[c]			Variable	Sound Bin	Day	SoundBin* Day	Province	SoundBin* Province[h]
Tinnitus	Yes	163 (24.9)	449.68 (431.69, 467.67)		0.3773	0.7134	0.3454	0.2344	0.5286	0.0204
	No	490 (74.9)	458.24 (445.71, 470.78)							
Chronic Pain	Yes	175 (26.8)	452.70 (433.42, 471.97)		0.6992	0.6969	0.3465	0.2352	0.4848	0.0200
	No	478 (73.1)	456.67 (444.43, 468.91)							
Asthma	Yes	59 (9.0)	447.49 (417.59, 477.40)		0.5424	0.7186	0.3517	0.2363	0.5151	0.0229
	No	595 (91.0)	456.84 (445.17, 468.50)							
Arthritis	Yes	225 (34.4)	457.06 (440.77, 473.36)		0.8534	0.7297	0.3498	0.2343	0.5368	0.0226
	No	429 (65.6)	455.37 (442.42, 468.32)							
Chronic bronchitis/	Yes	46 (7.0)	463.77 (423.00, 504.54)		0.6797	0.7412	0.3471	0.2520	0.5709	0.0216
emphysema/COPD	No	607 (92.8)	455.20 (443.71, 466.69)							
Diabetes	Yes	70 (10.7)	461.72 (429.73, 493.71)		0.6867	0.7360	0.3489	0.2348	0.5184	0.0219
	No	584 (89.3)	455.17 (443.73, 466.60)							
Heart disease	Yes	54 (8.3)	461.56 (429.49, 493.64)		0.7069	0.7511	0.3513	0.2343	0.5168	0.0224
	No	600 (91.7)	455.28 (443.57, 466.98)							
Diagnosed sleep disorder	Yes	64 (9.8)	429.93 (401.83, 458.02)		0.0642	0.6271	0.3495	0.2362	0.3961	0.0216
	No	590 (90.2)	458.57 (446.86, 470.28)							
Restless leg syndrome	Yes	98 (15.0)	446.59 (421.67, 471.52)		0.4129	0.6965	0.3495	0.2353	0.5306	0.0214
	No	556 (85.0)	457.43 (445.68, 469.17)							

[a] Least square means based on original scale of data and corresponding 95% confidence interval (CI), linear mixed effects model

[c] observed frequency and proportion of respondents in each subgroup of variable. The % does not always sum to 100 due to missing values

[i] pregnancy status was also considered, but analysis was not conducted due to the small number of pregnant women who participated in the sleep actimetry component of the study (n<5)

[j] based on the number of sleep nights, because people could have slept in a different room on a particular night, or window was open on only certain nights

[h] The interaction between WTN and province was significant (p=0.0223). Levels of total sleep time are similar between ON and PEI at each WTN group except at the highest WTN (≥40dBA), where ON has significantly higher total sleep time compared to PEI (p=0.0377). When considering the relationship between total sleep time and WTN group in each province there was no significant difference between WTN in PEI (p=0.0769); in ON also, there is no significant difference in total sleep time between WTN groups (p=0.4288). With other confounders in the model, the interaction between WTN and province still remains significant (0.01<p<0.05). The difference was always between the highest WTN groups in ON and PEI, with ON having higher total sleep time compared to PEI. No differences were observed in PEI between WTN groups, or in ONT. This interaction is no longer significant in the multiple mixed effects models for total sleep time.

Variable[i]	Group	n(%)[c]	mean (CI)[a]	Pair wise tests	Total sleep time					
					p-value					
					Variable	Sound Bin	Day	SoundBin* Day	Province	SoundBin* Province[h]

[L] Aircraft noise leading to closure of bedroom window was also considered, but analysis was not conducted due to the small number of these responses (n<5)

[M] Unemployment includes stay at home parents, retired, as well as not currently employed

[n] Evaluates the magnitude of reported sleep disturbance for any reason over the previous year while at home

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Each of the listed variable represents a separate univariate GEE regression model for the modeled actigraphy endpoint explained by that variable and adjusted for WTN levels, province, day of the week, and the interaction between WTN groups and day of the week. It should be emphasized that variables considered in the univariate analysis have been previously demonstrated to be related to the modeled endpoint and/or considered by the authors to conceptually have a potential association with the modeled endpoint. As the analysis of each listed variable only adjusts for WTN category and province, interpretation of any individual relationship must be made with caution. The wrist actigraphy endpoint of number of awakening bouts does not follow a normal distribution; therefore to analyze awakening bouts a Poisson distribution was assumed. The number of awakening bouts was analyzed with respect to the total time spent in bed and is reported as a rate of the number of awakening bouts per 60 min in bed. Sleep efficiency, sleep latency, and WASO were transformed in order to normalize the data and stabilize the variance. In the GEE models, statistical tests were based on transformed data. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints.

Supplementary Table III: Correlation between PSQI scores and sleep actigraphy endpoints

Observed correlations between the PSQI and the actigraphy endpoints. Tests were only conducted for corresponding endpoints, with the exception that the global PSQI score was compared to all actigraphy measurements.

		Mean of Sleep Actigraphy endpoints				
PSQI Scale		Sleep Latency	Sleep Efficiency	WASO	Awakening Bouts	Total Sleep Time
Sleep Latency	n	647				
	Pearson (p-value)[a]	0.02 (0.6939)				
Sleep Efficiency	n		654			
	Pearson (p-value)[a]		-0.10 (0.0134)[b]			
Sleep Disturbance	n			649	649	
	Pearson (p-value)[a]			0.07 (0.0709)	0.02 (0.6904)	
Duration of Sleep	n					654
	Pearson (p-value)[a]					-0.12 (0.0023)[c]
Global PSQI	n	640	640	640	640	640
	Pearson (p-value)[a]	0.01 (0.8668)	-0.07 (0.0994)	0.01 (0.7296)	-0.03 (0.5163)	-0.03 (0.4732)

[a] Results were similar between the Pearson and Spearman correlation coefficient therefore only the Pearson correlation coefficient is presented here.

[b] Sleep efficiency, as measured by the PSQI, was found to correlate negatively with sleep efficiency measured by sleep actigraphy (n=654, r = -0.10, p=0.0134). A negative correlation indicates that as the PSQI score for sleep efficiency increased (i.e. worse sleep efficiency), sleep efficiency from the actigraphs had correspondingly lower values.

[c] The rating of sleep duration, as measured by PSQI, correlated negatively with total sleep time as measured by actigraphy (n=654, r = -0.12, p=0.0023). A negative correlation indicates that as the PSQI score for sleep duration increased (i.e. worse sleep duration or less time sleeping), the actual sleep time as measured by actigraphy decreased.

Supplementary Table IV: Multiple generalized estimating equations (GEE) regression model for sleep efficiency

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Multiple GEE regression models for each actigraphy endpoint were developed using the stepwise method with a 20% significance entry criterion and a 10% significance criterion to remain in the model. An unstructured variance-covariance structure between sleep nights was applied to all endpoints with the exception of sleep latency, where compound symmetry was used. The wrist actigraphy endpoint of sleep efficiency does not follow a normal distribution, because it is a proportion ranging between 0 and 1. Therefore, sleep efficiency was transformed in order to normalize the data and stabilize the variance. In the GEE models, statistical tests were based on transformed data in order to satisfy the normality and constant variance assumptions. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints. All regression models for actigraphy endpoints were adjusted for provincial differences. Province was treated as a confounder in the model with associated adjustments, as required. Day of the week was forced into the model.

Variable	Group	LSM (95% CI)[a]	PWT[b]	p-value[b]
WTN levels (dB)[c]	<25	85.62 (83.97, 87.28)		0.3932
	[25−30)	87.28 (85.55, 89.01)		
	[30−35)	85.82 (84.52, 87.13)		
	[35−40)	85.97 (84.86, 87.08)		
	[40-46]	86.16 (84.84, 87.48)		
Day of the week	Friday	86.44 (85.09, 87.79)		0.8192
	Saturday	86.43 (85.25, 87.61)		
	Sunday	86.07 (84.82, 87.32)		
	Monday	86.14 (84.99, 87.29)		
	Tuesday	85.92 (84.72, 87.12)		
	Wednesday	86.27 (85.06, 87.47)		
	Thursday	85.93 (84.71, 87.14)		
Province	PEI	86.07 (84.84, 87.29)		0.6412
	ON	86.27 (85.13, 87.41)		
Sex	Male	85.62 (84.47, 86.77)	A	0.0454
	Female	86.72 (85.61, 87.83)	B	
Level of Education	≤High School	85.55 (84.50, 86.60)	A	0.0325
	Trade/Certificate/College	86.74 (85.59, 87.89)	B	
	University	86.22 (84.68, 87.77)	AB	
Complaint about wind turbines	Yes	87.10 (85.27, 88.94)		0.062
	No	85.24 (84.56, 85.91)		
BMI group	<25 underweight-normal	86.82 (85.63, 88.01)		0.0625
	25−<30 overweight	86.05 (84.87, 87.23)		
	≥30 obese	85.64 (84.41, 86.86)		
Caffeine consumption (cups/day)	None	86.64 (85.10, 88.18)	AB	0.039
	1 or 2	86.53 (85.47, 87.59)	A	
	3 or 4	84.95 (83.66, 86.25)	B	
	5 or more	86.56 (85.22, 87.90)	AB	

n=618, sleep nights=3561, QIC=3639

[a] LSM - Least squares means of sleep efficiency (x) for each group after adjusting for all other variables in the multiple GEE regression model and corresponding 95% confidence interval (CI).

[b] p-values and pairwise tests (PWT) based on the transformed variable (arcsin(sqrt(x))) in order to satisfy model assumptions of normality and constant variance. Groups within a variable with the same letter are statistically similar whereas groups with different letters are statistically different.

[c] the interaction between WTN group and Day of the week was included in the model and was not significant p=0.2218.

Supplementary Table V: Multiple generalized estimating equations (GEE) regression model for sleep latency

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Multiple GEE regression models for each actigraphy endpoint were developed using the stepwise method with a 20% significance entry criterion and a 10% significance criterion to remain in the model. An unstructured variance-covariance structure between sleep nights was applied to all endpoints with the exception of sleep latency, where compound symmetry was used. Sleep latency was transformed in order to normalize the data and stabilize the variance. In the GEE models, statistical tests were based on transformed data in order to satisfy the normality and constant variance assumptions. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints. All regression models for actigraphy endpoints were adjusted for provincial differences. Province was treated as a confounder in the model with associated adjustments, as required. Day of the week was forced in.

Variable	Group	LSM (95% CI)[a]	PWT[b]	p-value[b]
WTN levels (dB)[c]	<25	15.08 (10.03, 20.13)		0.6491
	[25−30)	10.88 (6.45, 15.32)		
	[30−35)	9.95 (7.02, 12.87)		
	[35−40)	10.71 (7.88, 13.54)		
	[40-46]	10.92 (7.01, 14.82)		
Day of the week	Friday	11.08 (6.82, 15.33)		0.9272
	Saturday	12.53 (8.74, 16.33)		
	Sunday	11.89 (8.35, 15.43)		
	Monday	12.04 (8.84, 15.23)		
	Tuesday	10.78 (7.67, 13.88)		
	Wednesday	11.62 (8.25, 14.98)		
	Thursday	10.62 (7.74, 13.50)		
Province	PEI	11.03 (7.93, 14.13)		0.2992
	ON	11.98 (9.81, 14.16)		
Age group	≤24	10.90 (6.50, 15.31)	AB	0.0234
	25-44	8.90 (5.79, 12.01)	A	
	45-64	11.69 (9.27, 14.12)	AB	
	65+	14.53 (11.32, 17.74)	B	
Closure of bedroom windows-"Other"[d]	Yes	10.90 (7.38, 14.42)	A	0.0417
	No	12.12 (10.10, 14.13)	B	
BMI group	<25 underweight-normal	9.63 (6.81, 12.44)	A	0.0027
	25−<30 overweight	11.26 (8.43, 14.09)	AB	
	≥30 obese	13.64 (10.59, 16.69)	B	
Asthma	Yes	9.19 (5.78, 12.60)	A	0.0112
	No	13.82 (11.68, 15.97)	B	

n = 526, sleep nights=3017, QIC=3068

[a] LSM Least squares means of sleep latency for each group after adjusting for all other variables in the multiple GEE regression model and corresponding 95% confidence interval (CI).

[b] p-values and pairwise tests (PWT) based on the transformed sleep latency variable (log(x+1)) in order to satisfy model assumptions of normality and constant variance. Groups within a variable with the same letter are statistically similar whereas groups with different letters are statistically different.

[c] the interaction between WTN group and Day of the week was included in the model and was not statistically significant p=0.3888.

[d] The source identified by participants as the cause of closing bedroom windows to reduce noise levels was not road traffic, aircraft, rail or wind turbines.

Supplementary Table VI: Multiple generalized estimating equations (GEE) regression model for total sleep time

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Multiple GEE regression models for each actigraphy endpoint were developed using the stepwise method with a 20% significance entry criterion and a 10% significance criterion to remain in the model. An unstructured variance-covariance structure between sleep nights was applied to all endpoints with the exception of sleep latency, where compound symmetry was used. In the GEE models, statistical tests were based on transformed data in order to satisfy the normality and constant variance assumptions. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints. All regression models for actigraphy endpoints were adjusted for provincial differences. Province was treated as a confounder in the model with associated adjustments, as required. Day of the week was forced in.

Variable	Group	LSM (95% CI)[a]	PWT[b]	p-value[b]
WTN levels (dB)[c]	<25	462.41 (407.97, 516.84)		0.8002
	[25−30)	453.43 (401.10, 505.76)		
	[30−35)	455.22 (406.72, 503.72)		
	[35−40)	466.12 (416.21, 516.02)		
	[40-46]	472.95 (422.09, 523.81)		
Day of the week	Friday	451.31 (402.05, 500.56)		0.2854
	Saturday	467.85 (420.10, 515.60)		
	Sunday	472.45 (422.56, 522.35)		
	Monday	468.71 (419.17, 518.24)		
	Tuesday	460.11 (411.50, 508.71)		
	Wednesday	461.72 (413.92, 509.51)		
	Thursday	452.03 (403.33, 500.73)		
Province	PEI	471.20 (419.16, 523.24)		0.2628
	ON	452.84 (406.56, 499.12)		
Background nighttime sound level (dB)	<40	434.24 (387.45, 481.02)	A	0.048
	40−<50	460.71 (412.39, 509.03)	AB	
	50−<55	472.06 (421.79, 522.34)	B	
	>55-61	481.09 (423.54, 538.64)	AB	
Bedroom window type	Single	498.85 (439.95, 557.75)		0.0544
	Double	460.17 (419.01, 501.33)		
	Triple	427.06 (367.63, 486.49)		
Air conditioning unit in bedroom	Yes	434.68 (385.77, 483.59)	A	0.0313
	No	489.20 (431.00, 547.39)	AB	
	central AC or other	475.02 (426.85, 523.20)	B	
	NO AC	449.20 (398.73, 499.66)	AB	
Sleep disturbed by neighbours	Yes	501.92 (423.27, 580.58)	A	0.0373
	No	422.13 (393.09, 451.16)	B	
Sleep disturbed by pain	Yes	446.11 (396.61, 495.61)	A	0.0084
	No	477.94 (431.56, 524.31)	B	
Annoyed with blinking lights	High	438.82 (388.85, 488.80)	A	0.0006
	Low	485.23 (439.16, 531.29)	B	
Bedroom on quiet side	Yes	445.59 (398.61, 492.57)		0.0742
	No	462.96 (416.76, 509.15)		
	There is no quiet side	477.53 (420.75, 534.31)		
Diagnosed sleep disorder	Yes	448.90 (397.93, 499.87)		0.0969
	No	475.15 (428.50, 521.79)		

n=619, sleep nights=3552, QIC=3644

[a] LSM Least squares means of total sleep time for each group after adjusting for all other variables in the multiple GEE regression model and corresponding 95% confidence interval (CI).

[b] p-values and pairwise tests (PWT) based on the total sleep time. Groups within a variable with the same letter are statistically similar whereas groups with different letters are statistically different.

[c] the interaction between WTN group and Day of the week was included in the model and was not statistically significant p=0.2866.

Supplementary Table VII: Multiple generalized estimating equations (GEE) regression model for duration of awakenings after sleep onset (WASO)

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Multiple GEE regression models for each actigraphy endpoint were developed using the stepwise method with a 20% significance entry criterion and a 10% significance criterion to remain in the model. An unstructured variance-covariance structure between sleep nights was applied to all endpoints with the exception of sleep latency, where compound symmetry was used. WASO was transformed in order to normalize the data and stabilize the variance. In the GEE models, statistical tests were based on transformed data in order to satisfy the normality and constant variance assumptions. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints. All regression models for actigraphy endpoints were adjusted for provincial differences. Province was treated as a confounder in the model with associated adjustments, as required. Day of the week was forced in the model.

Variable	Group	LSM (95% CI)[a]	PWT[b]	p-value[b]
WTN levels (dB)[c]	<25	62.00 (55.14, 68.85)	A	0.0056
	[25−30)	51.67 (44.14, 59.20)	B	
	[30−35)	56.11 (50.81, 61.42)	AB	
	[35−40)	57.80 (52.36, 63.24)	AB	
	[40-46]	62.06 (55.64, 68.48)	A	
Day of the week	Friday	54.47 (48.89, 60.05)		0.2245
	Saturday	55.61 (50.53, 60.68)		
	Sunday	61.84 (55.74, 67.95)		
	Monday	58.92 (53.29, 64.56)		
	Tuesday	58.76 (53.05, 64.47)		
	Wednesday	58.21 (52.84, 63.58)		
	Thursday	57.68 (51.18, 64.17)		
Province	PEI	59.57 (53.81, 65.32)		0.0968
	ON	56.29 (51.25, 61.33)		
Background nighttime sound level (dB)	<40	51.10 (45.38, 56.83)	A	0.0071
	40−<50	54.79 (49.72, 59.86)	AB	
	50−<55	58.52 (53.19, 63.86)	B	
	>55-61	67.29 (57.17, 77.41)	B	
Employment	Yes	55.38 (50.15, 60.62)	A	0.0143
	No	60.47 (55.21, 65.74)	B	
Level of Education	≤High School	60.83 (55.70, 65.96)	A	0.0409
	Trade/Certificate/College	56.73 (51.42, 62.04)	B	
	University	56.22 (49.94, 62.50)	AB	
Bedroom location	Basement	68.20 (56.32, 80.08)	A	0.0471
	First floor	53.80 (50.07, 57.53)	AB	
	Second floor or higher	51.78 (47.59, 55.98)	B	
Audible aircraft	Yes	56.10 (50.84, 61.37)	A	0.0464
	No	59.75 (54.51, 65.00)	B	
Smoking status	Current	54.85 (49.02, 60.67)	A	0.0086
	Former	60.81 (55.43, 66.19)	B	
	Never	58.13 (52.75, 63.50)	AB	
Sleep medication	Yes	54.80 (48.58, 61.03)	A	0.0214
	No	61.05 (56.09, 66.01)	B	

n=647, sleep nights=3728, QIC=3812

[a] LSM - Least squares means of wake after sleep onset for each group after adjusting for all other variables in the multiple GEE regression model and corresponding 95% confidence interval (CI).

[b] p-values and pairwise tests (PWT) based on the transformed WASO variable (sqrt(x)) in order to satisfy model assumptions of normality and constant variance. Groups within a variable with the same letter are statistically similar whereas groups with different letters are statistically different.

[c] the interaction between WTN group and Day of the week was included in the model and was not statistically significant p=0.5071.

Supplementary Table VIII: Multiple generalized estimating equations (GEE) regression models for the rate of awakening bouts to total time in bed (rate is per 60 minutes in bed)

Repeated-measures data from all wrist actigraphy measurements were modeled using the generalized estimating equations (GEE) method. Multiple GEE regression models for each actigraphy endpoint were developed using the stepwise method with a 20% significance entry criterion and a 10% significance criterion to remain in the model. An unstructured variance-covariance structure between sleep nights was applied to all endpoints with the exception of sleep latency, where compound symmetry was used. The wrist actigraphy endpoint of rate of awakening bouts does not follow a normal distribution, because it is a count (awakening bouts). Therefore, to analyze awakening bouts a Poisson distribution was assumed. The number of awakening bouts was analyzed with respect to the total time spent in bed and is reported as a rate of the number of awakening bouts per 60 min in bed. In the GEE models, statistical tests were based on transformed data in order to satisfy the normality and constant variance assumptions. Because back-transformation was not possible for some endpoints, the arithmetic mean (least squares mean [LSM]) is presented for all endpoints. All regression models for actigraphy endpoints were adjusted for provincial differences. Province was treated as a confounder in the model with associated adjustments, as required. Day of the week was forced in the model.

Variable	Group	LSM (95% CI)[a]	PWT[b]	LSR (95% CI)[c]	p-value[b]
WTN levels (dB)[c]	<25	23.19 (20.58, 25.79)		2.55 (2.21, 2.94)	0.3726
	[25−30)	20.57 (17.87, 23.26)		2.45 (2.07, 2.89)	
	[30−35)	24.00 (21.26, 26.75)		2.73 (2.37, 3.13)	
	[35−40)	22.56 (20.57, 24.56)		2.68 (2.40, 2.99)	
	[40-46]	22.85 (20.68, 25.02)		2.46 (2.13, 2.83)	
Day of the week	Friday	22.04 (19.93, 24.15)		2.61 (2.33, 2.92)	0.8312
	Saturday	22.70 (20.55, 24.85)		2.55 (2.28, 2.86)	
	Sunday	23.41 (21.34, 25.49)		2.61 (2.33, 2.92)	
	Monday	22.94 (20.71, 25.16)		2.56 (2.28, 2.87)	
	Tuesday	22.76 (20.53, 24.99)		2.55 (2.27, 2.87)	
	Wednesday	22.32 (20.17, 24.47)		2.51 (2.24, 2.81)	
	Thursday	22.26 (20.13, 24.40)		2.59 (2.31, 2.90)	
Province	PEI	22.14 (19.87, 24.41)		2.57 (2.26, 2.93)	0.9565
	ON	23.13 (21.13, 25.13)		2.57 (2.30, 2.86)	
Marital Status	Married/Common-law	22.63 (20.48, 24.77)	A	2.44 (2.18, 2.74)	0.0541
	Widowed/Separated/Divorced	21.48 (19.15, 23.81)	AB	2.45 (2.14, 2.81)	
	Single, never been married	23.79 (21.34, 26.25)	B	2.83 (2.47, 3.24)	
Caffeine consumption	None	21.46 (19.02, 23.89)		2.35 (2.02, 2.74)	0.0742
(cups/day)	1 or 2	23.42 (21.38, 25.47)		2.67 (2.39, 2.98)	
	3 or 4	23.61 (21.06, 26.16)		2.79 (2.45, 3.18)	
	5 or more	22.05 (19.75, 24.34)		2.49 (2.18, 2.86)	
Sleep disturbed by pain	Yes	22.68 (19.89, 25.46)	A	2.76 (2.39, 3.18)	0.0242
	No	22.59 (21.00, 24.18)	B	2.39 (2.16, 2.64)	
Annoyance with blinking lights	High	22.85 (19.46, 26.24)	A	2.85 (2.41, 3.37)	0.0157
	Low	22.42 (21.25, 23.59)	B	2.31 (2.12, 2.52)	
Restless leg syndrome	Yes	21.95 (19.72, 24.18)	A	2.41 (2.09, 2.77)	0.0373
	No	23.32 (21.14, 25.50)	B	2.74 (2.47, 3.05)	

n=626, sleep nights=3595, QIC=-87635

[a] LSM - Least squares means of awakening bouts for each group after adjusting for all other variables in the multiple GEE regression model and corresponding 95% confidence interval (CI).

[b] p-values and pairwise tests (PWT) based on the rate of awakening bouts to total time in bed. Groups within a variable with the same letter are statistically similar whereas groups with different letters are statistically different.

[c] LSR Least square means of ratios of each group after adjusting for all other variables in the multiple GEE regression model and corresponding 95% confidence interval (CI). The ratio is the rate of number of awakening bouts per 60 minutes time spent in bed.

[d] the interaction between WTN group and Day of the week was included in the model and was not statistically significant p=0.8478.