Supplementary Data for "Energy Performance Impacts of Occupant-Driven Window Operation" Paper

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This document contains estimated intercepts and coefficients for the window-opening and window-closing behavior models developed as part of a study currently under review. The results are based on data collected from Apartments 2, 3, and 4 at KTH Live-In Lab during different time periods and were used for modeling occupant-driven window operations. These coefficients were used in the analyses and simulations described in [1]. This supplementary material is provided to support reproducibility of the results.

Researchers who wish to use the coefficients presented in this document are kindly requested to cite the original manuscript [1].

Table 1: Estimated intercepts and coefficients of the window-opening and window-closing models of Apartment 2, derived from data collected between October 2020 and February 2021.

Drivers	Opening action			Closing action		
	Coeff.	Conf. interval		Coeff.	Conf. interval	
		2.5%	97.5%		2.5%	97.5%
α_{DS1}	-2.919	-2.954	-2.884	0.535	0.329	0.74
α_{DS2}	-0.912	-0.93	-0.894	1.089	0.99	1.188
α_{DS3}	-2.732	-2.761	-2.704	-	-	-
$\beta_{T_{indoor}}$	-	-	-	-0.413	-0.47	-0.355
$\beta_{\log(CO_2)}$	1.798	1.784	1.812	0.177	0.107	0.246
$\beta_{T_{outside}}$	1.72	1.705	1.735	-0.309	-0.38	-0.238
β_{DHI}	-0.705	-0.724	-0.686	0.494	0.381	0.607

Table 2: Estimated intercepts and coefficients of the window-opening and window-closing models of Apartment 2, derived from data collected between October 2021 and February 2022.

Drivers	Opening action			Closing action		
	Coeff.	Conf. interval		Coeff.	Conf. interval	
		2.5%	97.5%		2.5%	97.5%
α_{DS1}	0.217	0.202	0.231	0.935	0.890	0.980
α_{DS2}	-0.372	-0.387	-0.357	0.837	0.803	0.872
α_{DS3}	-2.759	-2.793	-2.725	0.231	0.171	0.291
$\beta_{T_{indoor}}$	0.284	0.272	0.295	0.216	0.197	0.235
$\beta_{\log(CO_2)}$	0.566	0.556	0.577	0.094	0.050	0.137
$\beta_{T_{outside}}$	0.421	0.410	0.432	-1.051	-1.074	-1.027
β_{DHI}	0.437	0.426	0.447	-0.005	-0.014	0.024

Table 3: Estimated intercepts and coefficients of the window-opening and window-closing models of Apartment 3, derived from data collected between October 2020 and February 2021.

Drivers	Opening action			Closing action		
	Coeff.	Conf. interval		Coeff.	Conf. interval	
		2.5%	97.5%		2.5%	97.5%
α_{DS1}	0.489	0.477	0.501	-	-	-
α_{DS2}	-0.146	-0.158	-0.134	0.6	0.482	0.717
α_{DS3}	-2.631	-2.658	-2.603	0.654	0.302	1.006
$\beta_{T_{indoor}}$	0.804	0.794	0.814	-0.308	-0.382	-0.235
$\beta_{\log(CO_2)}$	0.138	0.131	0.146	-	-	-
$\beta_{T_{outside}}$	-0.276	-0.288	-0.264	-0.412	-0.552	-0.272
β_{DHI}	-	-	-	-	-	-

References

[1] M. Farjadnia, A. Fontan, M. Molinari, and K. H. Johansson, "Energy performance impacts of occupant-driven window operation," manuscript submitted for publication, 2025.

Table 4: Estimated intercepts and coefficients of the window-opening and window-closing models of Apartment 4, derived from data collected between October 2020 and February 2021.

Drivers	Opening action Coeff.	Conf. interval 2.5%	97.5%	Closing action Coeff.	Conf. interval 2.5%	97.5%
α_{DS1}	0.655	0.64	0.669	-	-	-
α_{DS2}	-1.853	-1.874	-1.831	-	-	-
α_{DS3}	-4.053	-4.088	-4.017	-1.74	-2.506	-0.974
$\beta_{T_{indoor}}$	-0.417	-0.433	-0.401	-	-	-
$\beta_{\log(CO_2)}$	1.346	1.334	1.359	-0.238	-0.46	-0.015
$\beta_{T_{outside}}$	1.691	1.673	1.708	0.863	0.534	1.192
β_{DHI}	-0.493	-0.504	-0.481	-0.462	-0.632	-0.292

Table 5: Estimated intercepts and coefficients of the window-opening and window-closing models of Apartment 4, derived from data collected between October 2022 and February 2023.

Drivers	Opening action Coeff.	Conf. interval 2.5%	97.5%	Closing action Coeff.	Conf. interval 2.5%	97.5%
α_{DS1}	-0.89	-0.911	-0.869	0.109	0.074	0.143
α_{DS2}	0.3	0.286	0.313	0.413	0.388	0.437
α_{DS3}	0.094	0.078	0.11	0.564	0.538	0.589
$\beta_{T_{indoor}}$	0.372	0.357	0.387	-0.413	-0.434	-0.391
$\beta_{\log(CO_2)}$	-0.047	-0.06	-0.035	-0.195	-0.216	-0.175
$\beta_{T_{outside}}$	0.92	0.906	0.934	-0.852	-0.877	-0.827
β_{DHI}	0.375	0.364	0.385	-0.004	-0.02	0.012

Table 6: Estimated intercepts and coefficients of the window-opening and window-closing models of Apartment 4, derived from data collected between October 2023 and February 2024.

Drivers	Opening action Coeff.	Conf. interval 2.5%	97.5%	Closing action Coeff.	Conf. interval 2.5%	97.5%
α_{DS1}	-0.996	-1.018	-0.974	-0.053	-0.087	-0.019
α_{DS2}	-0.248	-0.261	-0.234	0.603	0.571	0.635
α_{DS3}	0.757	0.742	0.771	0.526	0.499	0.553
$\beta_{T_{indoor}}$	0.147	0.138	0.155	-0.104	-0.12	-0.089
$\beta_{\log(CO_2)}$	0.185	0.176	0.193	0.064	0.044	0.085
$\beta_{T_{outside}}$	0.523	0.514	0.532	-0.855	-0.876	-0.834
β_{DHI}	0.308	0.297	0.32	0.448	0.431	0.466