

Energy Epidemiology: using building data to support energy and carbon policy in Latin America



Sao Paulo, Brazil, 23rd-25th April 2018

Assessing thermal comfort and Indoor Air Quality in low energy retrofit dwellings

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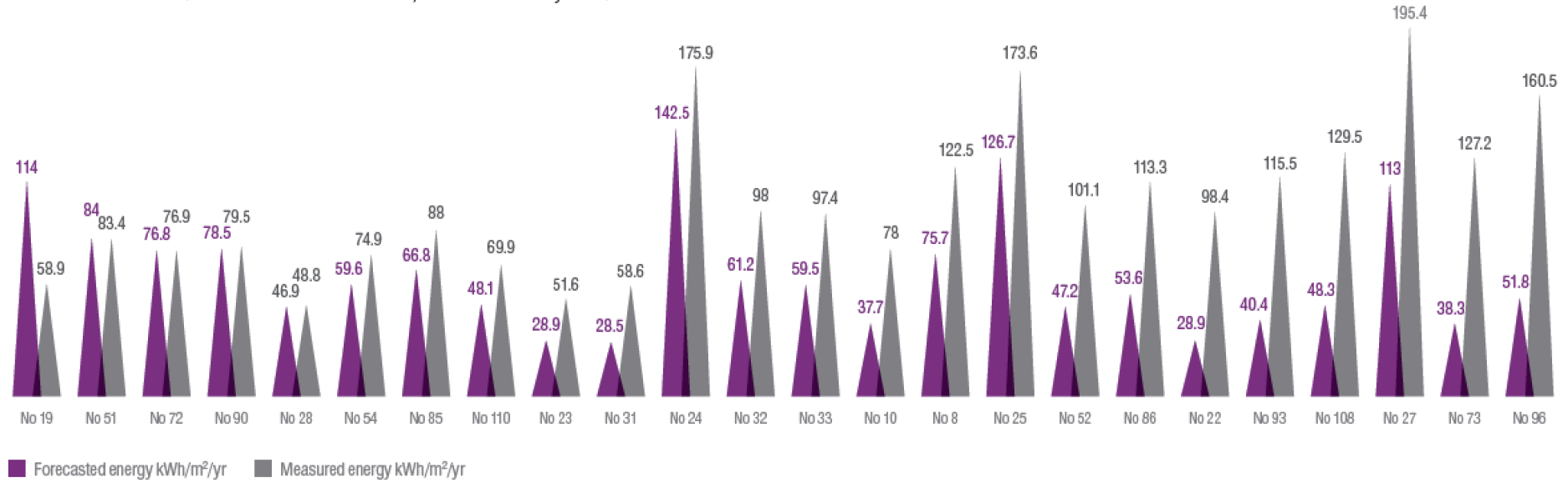
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Performance Gap

... was at least 66% more than the forecast, in one item by 246% more.



If you don't measure it,
you can't improve it

Peter Drucker

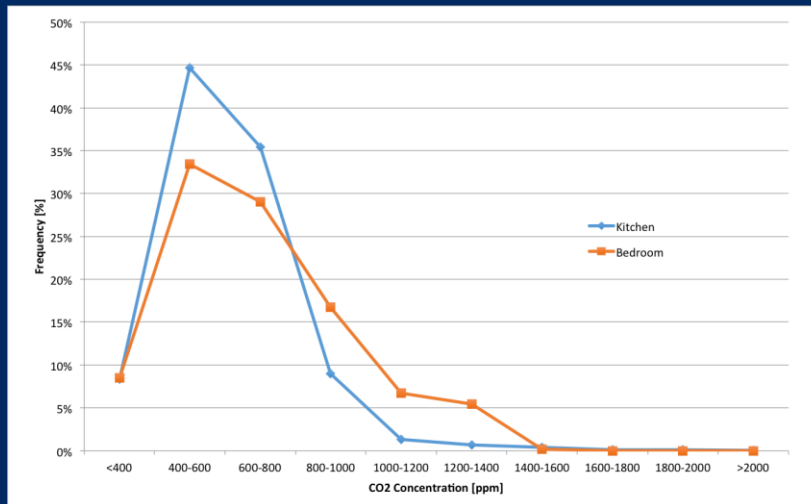
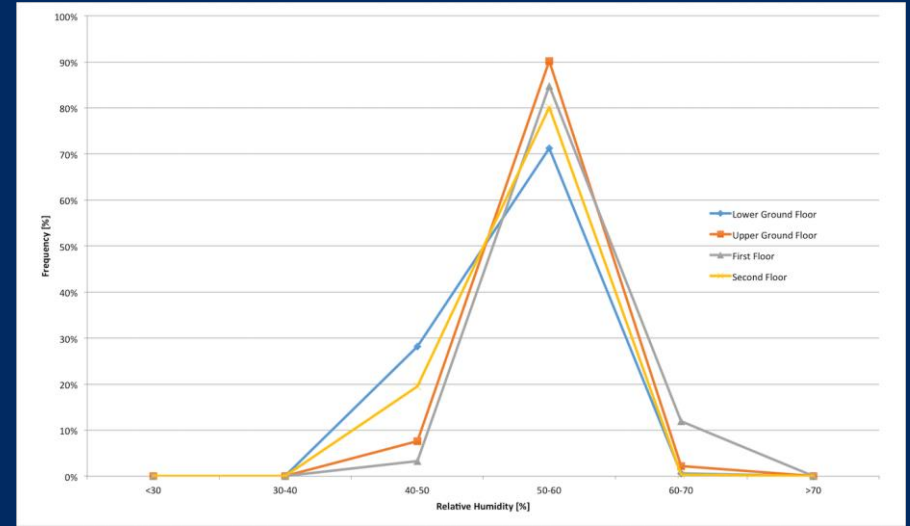
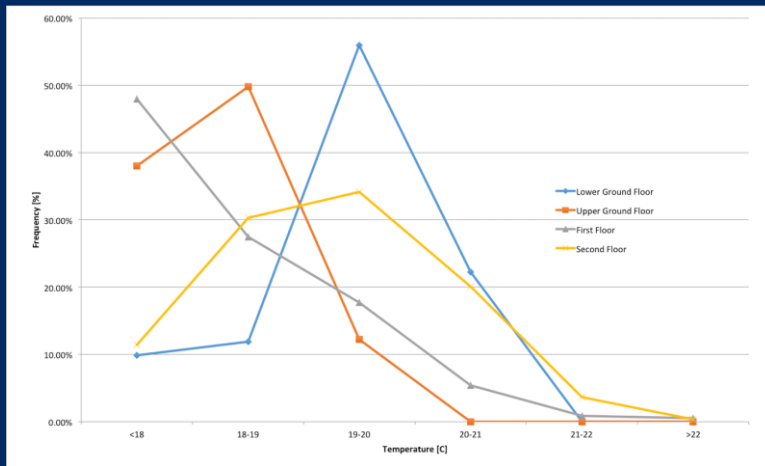


Flats / Period	06/03/2012 to 25/06/2012	25/06/2012 to 03/07/2012	03/07/2012 to 18/11/2012	18/11/2012 to 17/12/2012	17/12/2012 to 01/03/2013	01/03/2013 to 20/06/2013	20/06/2013 to 28/08/2013	28/08/2013 to 25/10/2013	25/10/2013 to 15/11/2013	15/11/2013 to 27/12/2013	27/12/2013 to 17/01/2014	17/01/2014 to 11/02/2014	11/02/2014 to 14/03/2014	14/03/2014 to 13/06/2014
Flat 1														
Flat 2														
Flat 3														
Flat 4														
Flat 5														
Flat 6														
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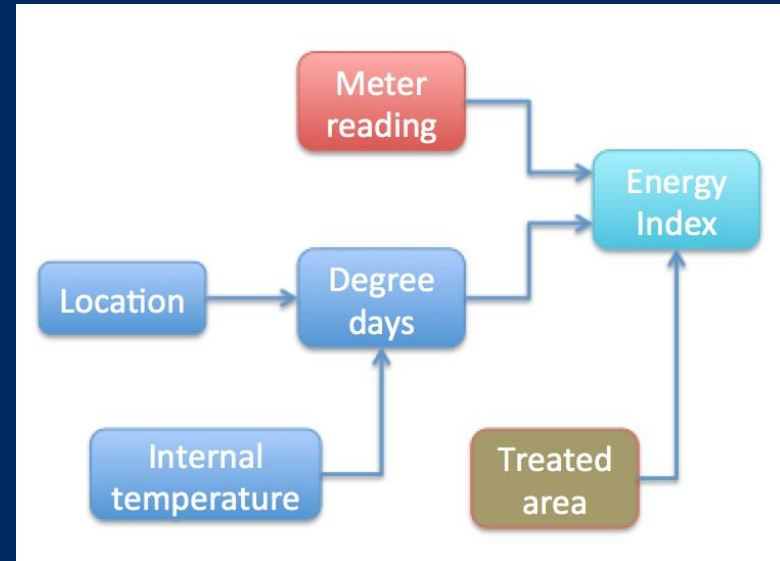
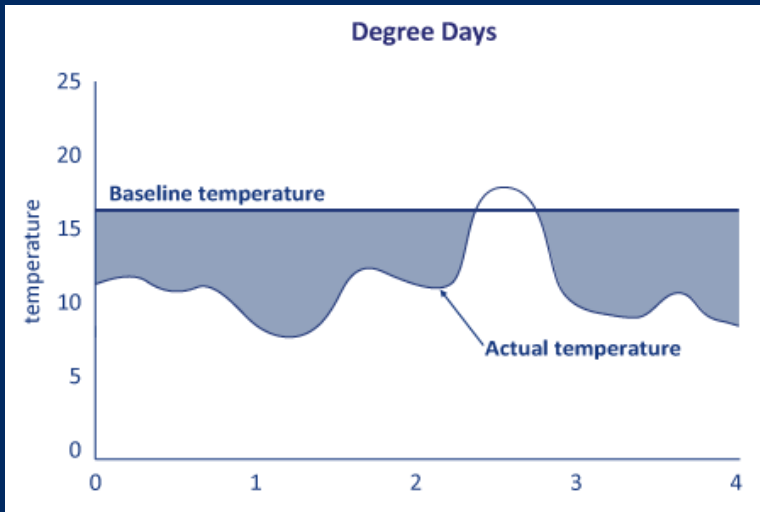
■ Data Recorded
■ No Data



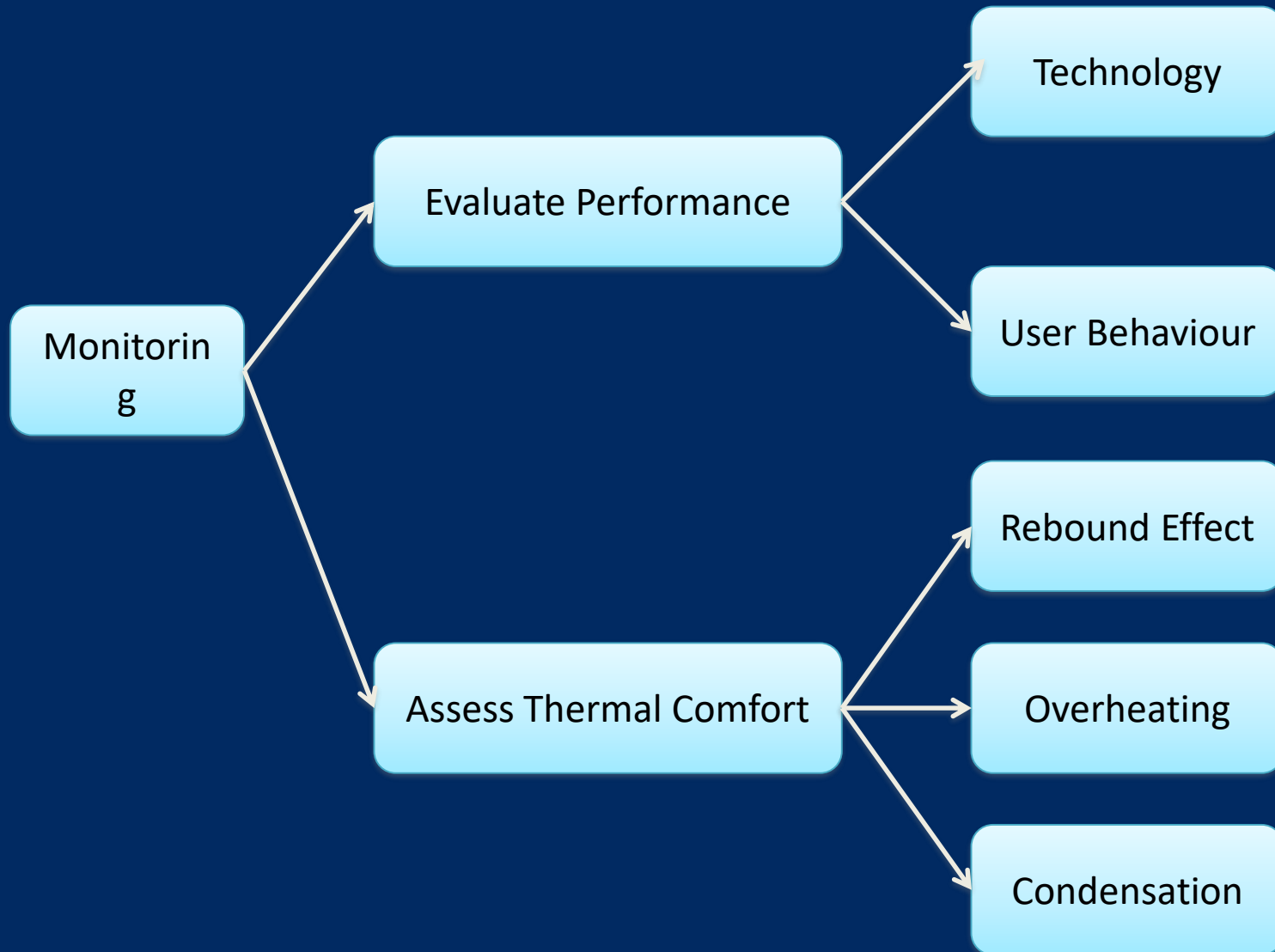
		Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
Flat	1	-58.5	-55.7	-50.4	-32.8	-56.5	-47.3
Flat	2	-22.1	-44.7	-47.6	-1.2	-38.1	-16.9
Flat	3	-13.5	-14.6	85.7	36.7	-17.5	13.9
Flat	4	-16.2	19.1	-68.8	34.4	-24.9	-1.3
Flat	5	-22.7	-22.3	-15.8	13.8	-36.1	-11.8
Flat	6	-14.5	-98.9	-125.8	82.5	-40.4	7.0
Flat	7	-13.4	-7.6	-52.2	8.6	-17.8	14.8
Flat	8	-1.0	-19.2	-20.6	23.0	-15.4	14.5
Flat	9	-4.3	21.2	-56.9	15.3	-20.9	-4.9
Flat	10	-11.6	-5.4	-58.4	11.1	-5.7	-18.4
Flat	11	-4.5	36.5	-34.6	18.2	-20.5	13.5
Flat	12	-8.2	-4.2	-67.0	8.2	-16.8	11.2
Flat	13	-31.3	60.2	-126.1	-68.4	-18.8	9.8
Flat	14						
Flat	15	-49.6	-628.6	44.8	-68.0	-15.6	29.1
Flat	16	-97.8	-80.9	-103.5	-61.3	-72.9	-69.1
Flat	17						



Energy Index Methodology



Electric Storage Heaters			Air Source Heat Pump		
R2	15.5 Degree	Int Temp	R2	15.5 Degree	Int Temp
Flat 7	0.7058	0.9222	Flat 1	0.8535	0.8368
Flat 8	0.6338	0.9342	Flat 2	0.4826	0.9273
Flat 9	0.6212	0.6821	Flat 4	0.9905	0.8842
Flat 10	0.9497	0.8126	Flat 5	0.6706	0.5502
Flat 3	0.0003	0.7753	Flat 6	0.1186	0.3886
Flat 11	0.053	0.4722	Flat 12	0.9651	0.9655
			Flat 13	0.1868	0.7944
Average	0.4940	0.7664	Average	0.6097	0.7639
SD	0.3812	0.1722	SD	0.3584	0.2139





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Thank you very much



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